

VERTICAL LATHES

SKIQ 8

12

16

20

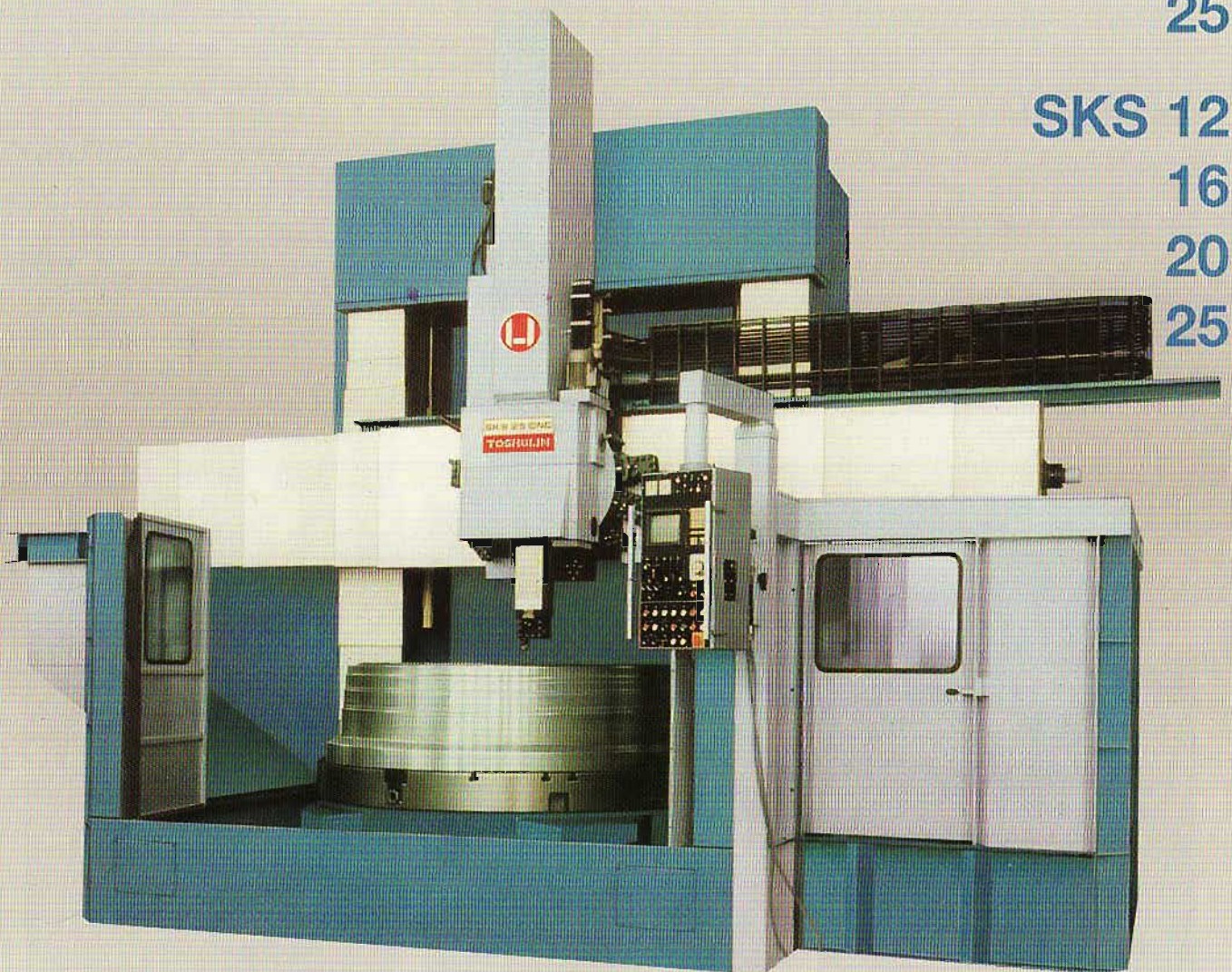
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SKS 12

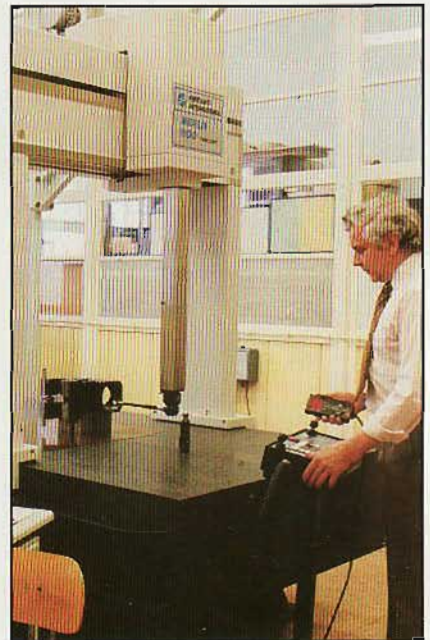
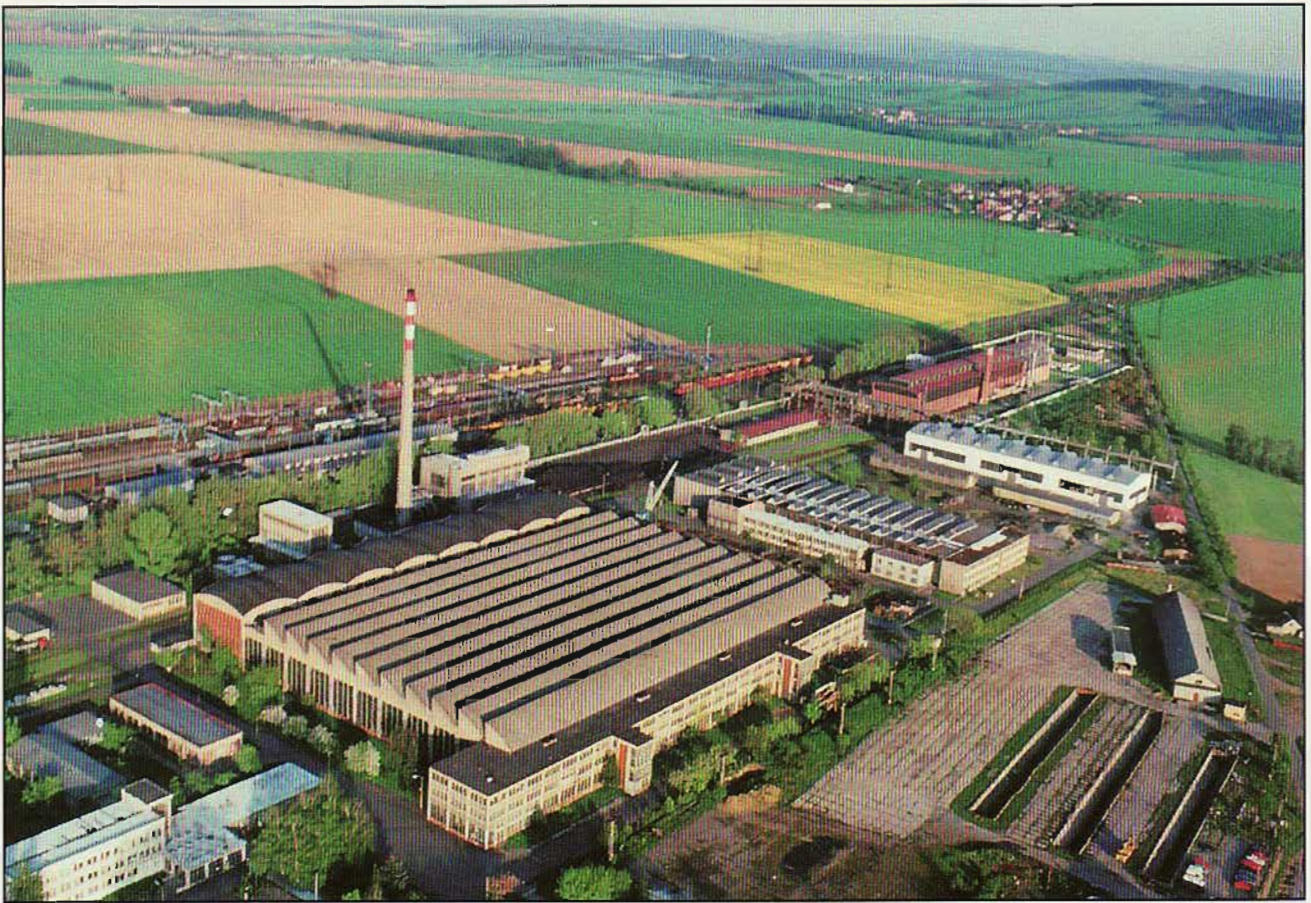
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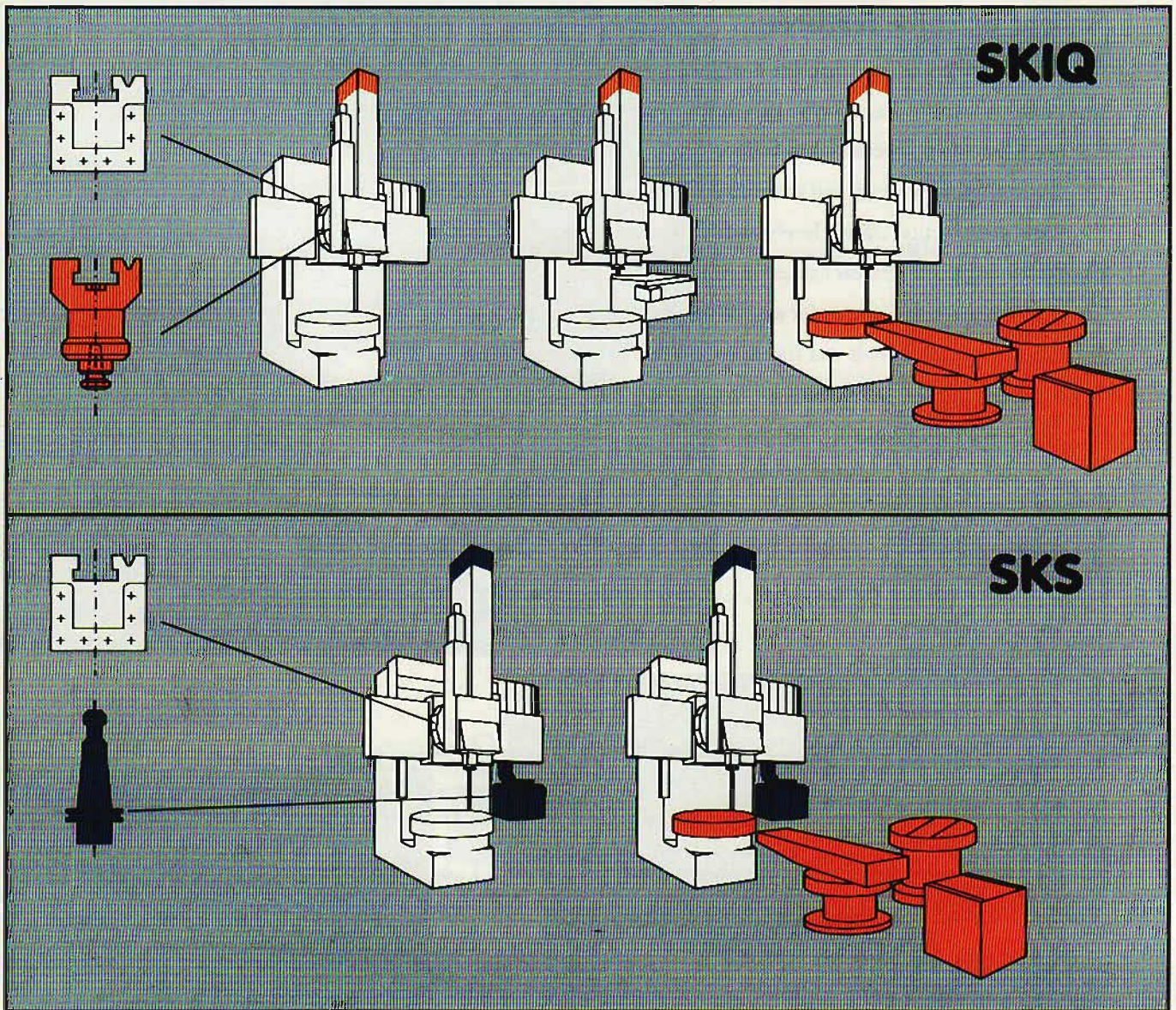
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TOSHULIN



The TOSHULIN began the manufacture of metal cutting machines to include vertical lathe & bridge type milling machines, shapers and planers in 1950. The development of single column vertical turning and boring machines began in 1959, followed by the implementation of numerical control in the 1960's. At present, TOSHULIN specializes in the design and build of highly accurate CNC vertical turning and boring machines (VTL's) with the emphasis of mill turn capability.



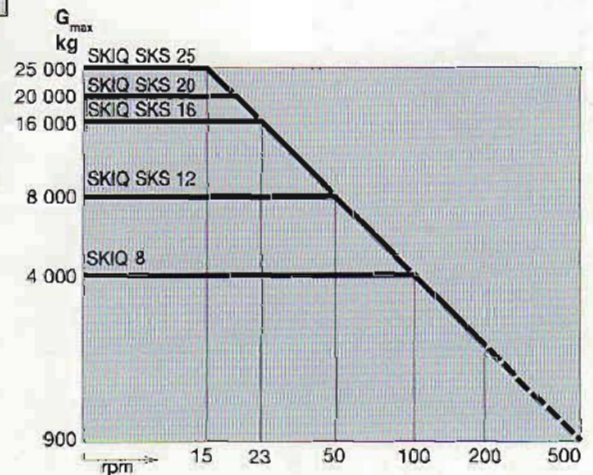
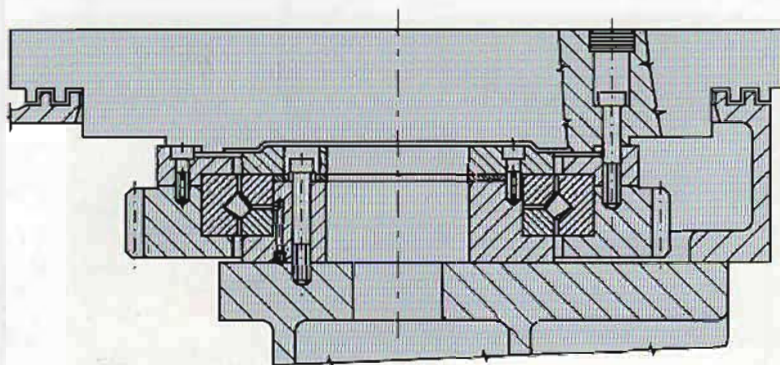
The TOSHULIN product line consists of two series of machines - the SKIQ and SKS. The SKIQ Series has five different models (Sizes) and the SKS four different models. Both types of machines can be equipped with an automatic pallet shuttle system with the exception of the SKIQ 8.

The SKIQ models are standard two axis machines expandable to five axis (Side head and C axis) with 15 tool capacity magazine.

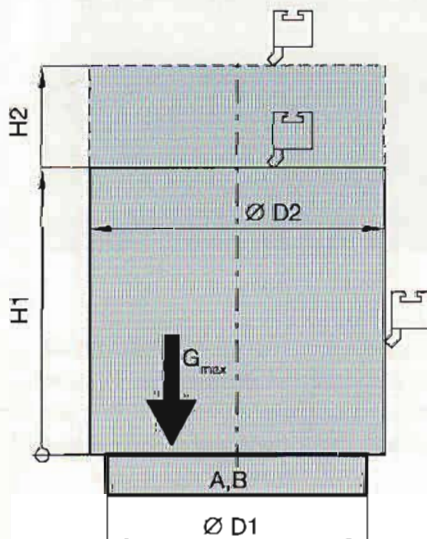
The SKS models are standard three axis machines which include the 15 tool capacity magazine for turning tools and 24 tool capacity automatic tool changer for milling tools.

Salient machine features:

- Five different sizes and machine configurations.
- From standard two axis to five axis machine capability.
- Multi machining operations to include: turning, drilling, boring, milling and grinding.
- Latest CNC technology and control systems.
- Rigid construction affords heavy and accurate machining.
- Automatic workpiece exchange via pallet system.
- Backlash free ball screws for axis drives and preloaded pinion for rotary (C) axis.
- Infinitely variable feeds and speeds (with two gear ranges).
- Magazine provides 15 stations for turning tools, SKS offers an additional 24 tool capacity ATC.
- Four jaw chuck standard, other chuck configurations available optionally.
- Machine guarding and chip conveyor are standard.

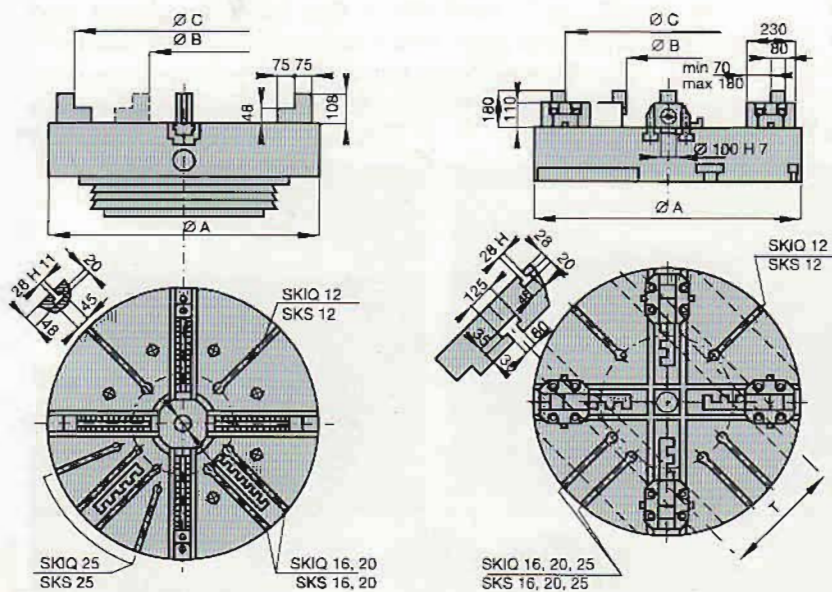
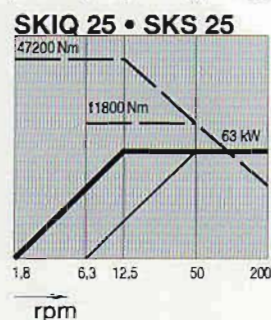
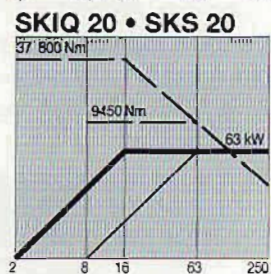
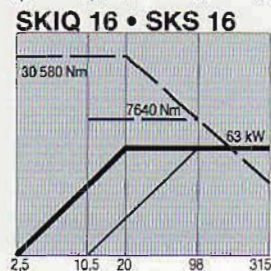
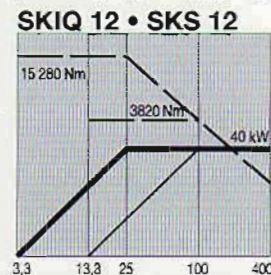
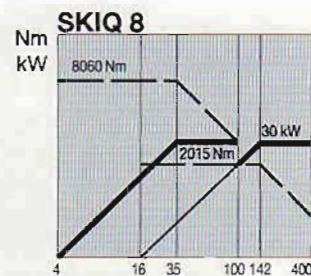


Limiting the maximum workpiece weight in dependence on the table speed.



SKIQ	SKS	A=TABLE					B=PALLET					
		D1	D2	H1	H2	Gmax	D1	D2	H1	H2	Gmax	
		mm					kg	mm				kg
8	-	800	1000	750	-	4000	-	-	-	-	-	
12	12	1250	1400	1400	1900	8000	1250	1400	1150	1650	5000	
16	16	1600	2000	1500	2000	12000	1600	2000	1250	1750	6000	
20	20	2000	2300	1500	2000	20000	2000	2300	1250	1750	8000	
25	25	2500	2900	1640	1940	25000	2500	2900	1390	1690	10000	

The data for the machine with the three-jaw chuck are valid for the SKIQ 8 machine.



SKIQ	SKS	Ø A	Ø B _{min.}	Ø C _{max.}
8*	-	800	245	505
12	12	1250	260	1120
16	16	1600	260	1470
20	20	2000	260	1870
25	25	2500	260	2380

SKIQ	SKS	Ø A	Ø B _{min.}	Ø C _{max.}	T
12	12	1250	150	1100	630
16	16	1600	130	1450	800
20	20	2000	150	1850	1000
25	25	2500	150	2350	1250

The values are given in mm.

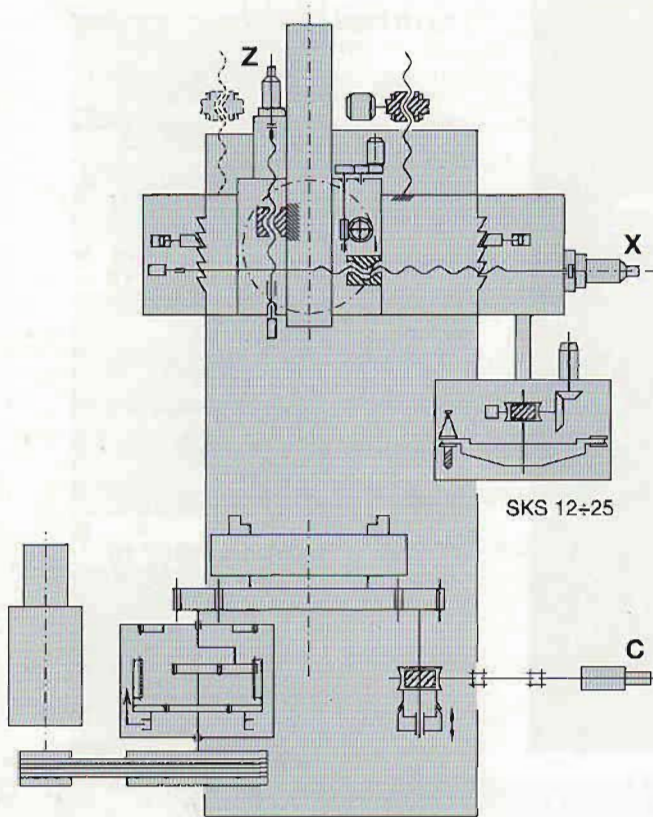
* for 3-jaw chuck only

The face plate in combination with the four jaw power chuck provides for independent adjustment of the jaws to allow gripping of round and irregular shaped piece parts.

The automatic pallet system consists of a set-up and active load stations. The pallet is transferred from the set-up station on to rotary manipulator where the pallet may be stored at a load station(s) or positioned on to the machine table.

Course of the table power output and the table torsional moment.

Major machine members are built of a good grade of meehanite cast iron. Special care is taken in the design to minimize inaccnacy due to thermal distortion and high unit loading.

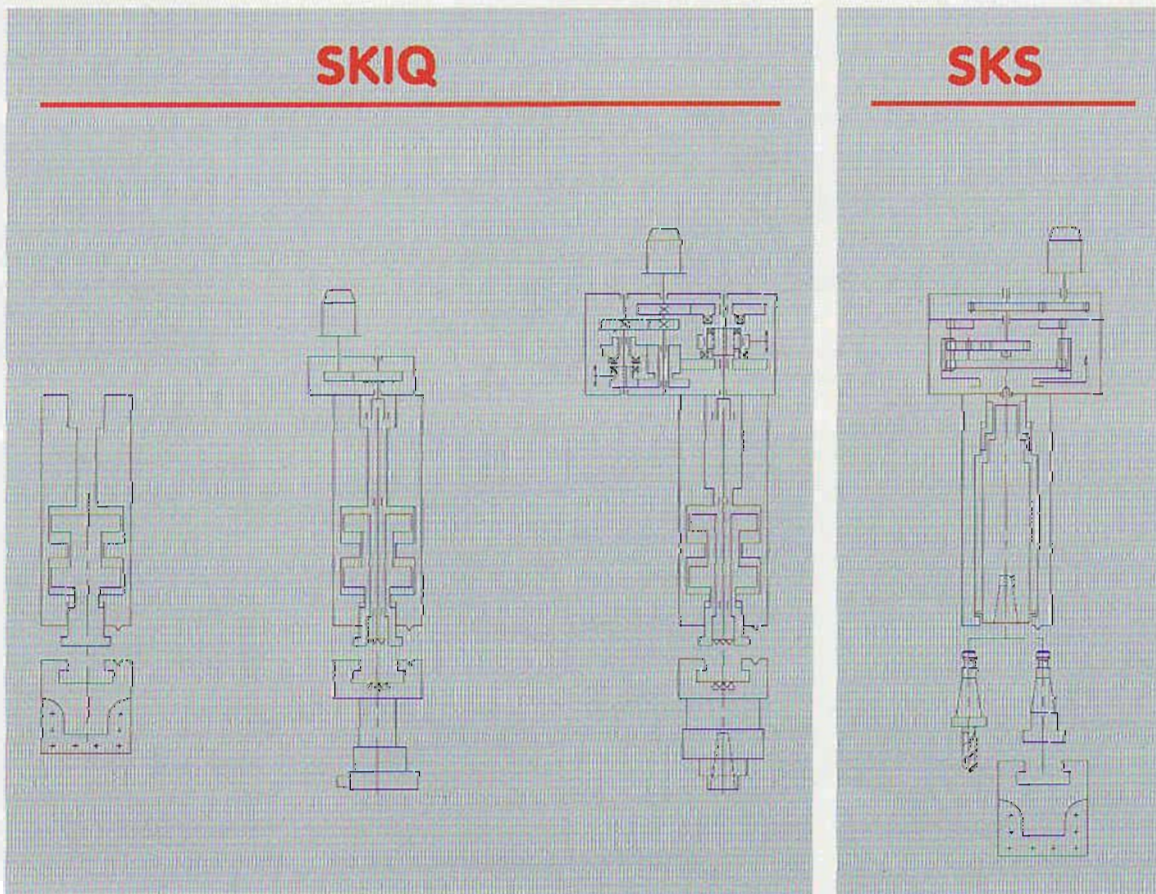


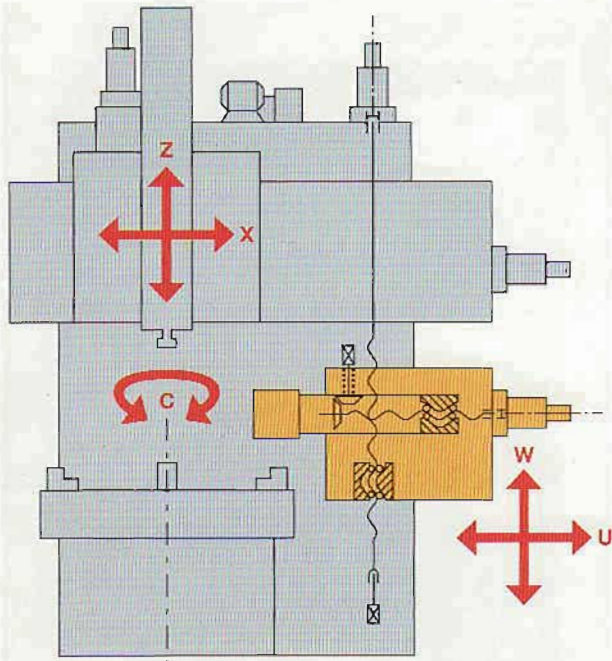
The cross rail is adjustable in 100 mm increments. Each increment is accurately positioned and the rail is clamped hydraulically. The rail is equipped with a rigid slide ram (180 mm x 200 mm).

The grinding spindle is driven by a 4 kW motor. Two sizes of wheels are available: the 150 mm size affords 3800 RPM, the 250 mm size affords 1900 RPM. Wheel diameters up to 150 mm can be stored in the tool magazine.

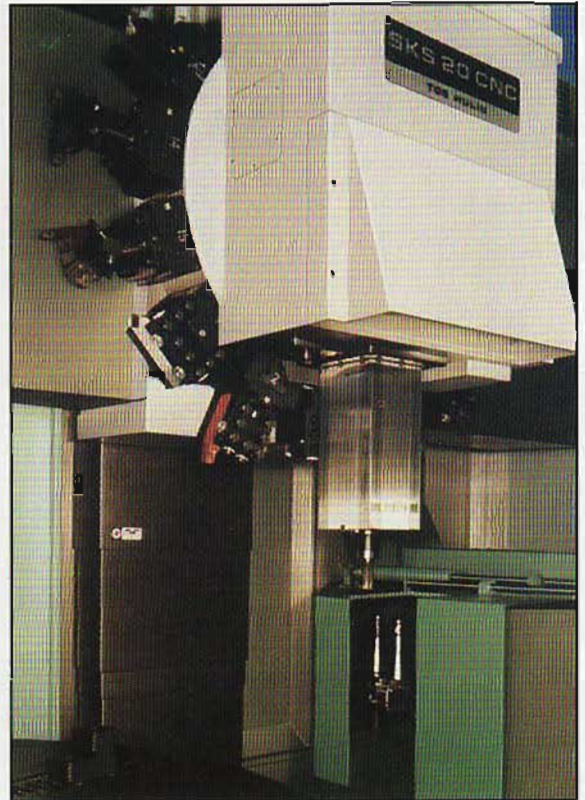
Slide ram with the drive for the rotary spindles - SKIQ. The drive for the rotary spindles is executed over the three-step gearbox with the speed range of 8 to 3312 RPM and with the power output of 15 kW. The rotary spindles are placed in the magazine for the tool holders.

Slide ram with the drive for the rotary tools - SKS. It is specified also for the rotary tools with the ISO 50 taper. The spindle speed is in the range of 4 to 3000 RPM in two steps with the motor power output of 15 kW.





Except for SKIQ 8 and SKS 25, the machines of the SKIQ type may be equipped with a **side head**. The CNC controlled side head has a four station turret that can be indexed in both directions. The turret uses 40 mm x 40 mm size tool holders and is capable of delivering a cutting force (thrust load) of 2035 pounds.

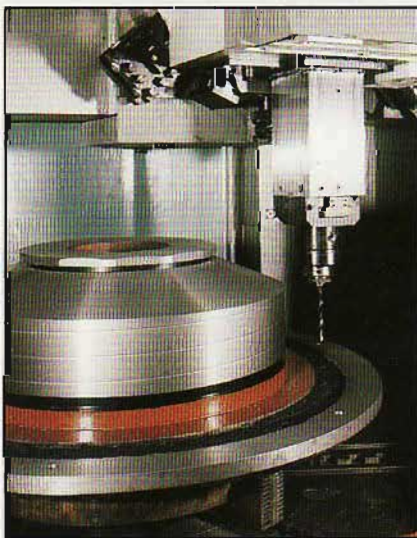


Station magazine

The 15 station rotary magazine can store both turning and millings tool. For the SKS machine, an additional 24 station automatic tool changer is provided as standard.

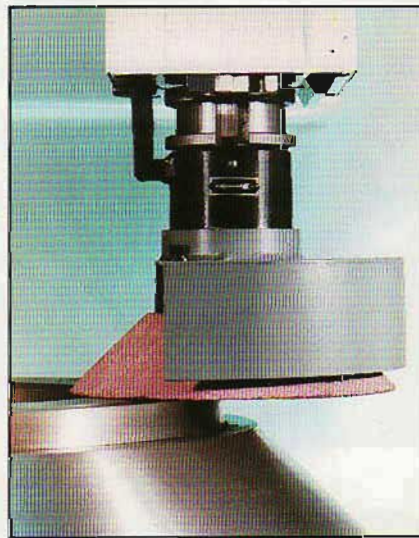
Third controlled axis (C) - Face Plate:

The machines' tables (spindle) may be equipped with a separate positioning and milling control.



DRILLING

the maximum diameter of 75 mm while drilling in steel of 600 MPa or threading up to the maximum size of M42 x 3.



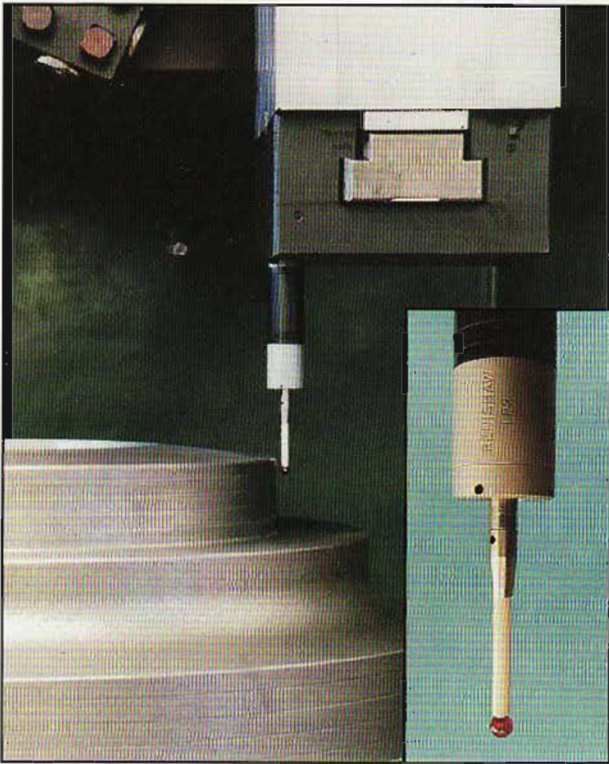
GRINDING

the surface quality can be reached of 0.8 μm.

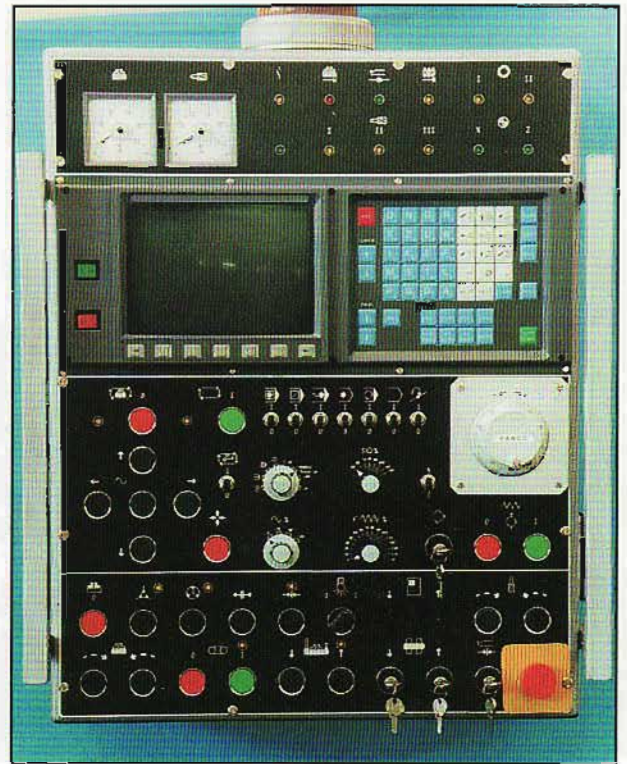


MILLING

maximum 300 cm³/min.



The machine may be equipped with a part probe which allows for automatic inspection and measurement of the piece parts.

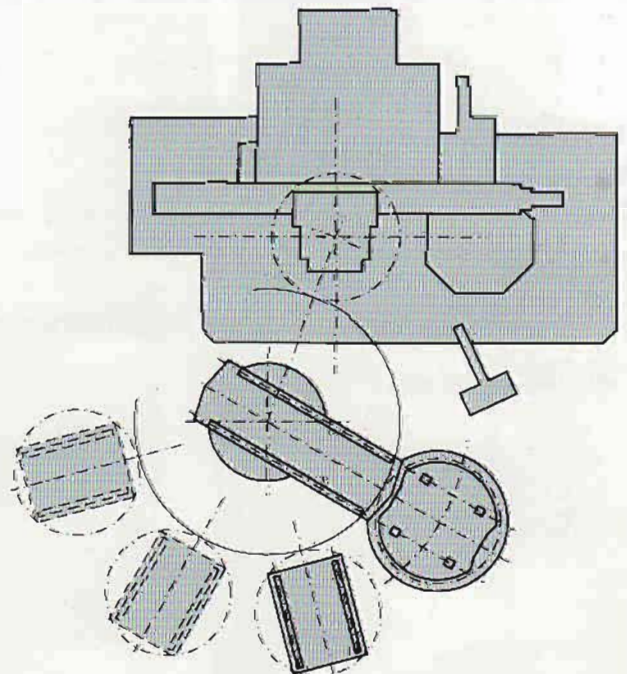


TOSHULIN offers the latest in CNC Technology from Fanuc and Siemens. The controls and machine software allow for ease of operation and programming.



Automatic Workpiece Exchange:

All TOSHULIN machines can be equipped with a pallet system excluding the SKIQ 8 model. The pallet locators are designed in accordance DIN 55201, TGL 43225/02, ISO/TC 39/SC 3N 233 standards. The pallet system consists of pallet locating and clamping on the table, the rotary manipulator, storage table, set-up table and pallet(s).



Standard Machine Features:

SKIQ

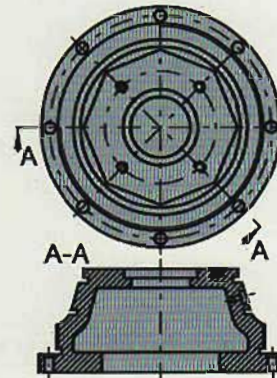
- turning-type execution
- four-jaw table with the chuck with the exception of SKIQ 8
- three-jaw table - SKIQ 8
- magazine for tool holders with fifteen positions
- CNC control system
- protective guards for the table space
- side chip conveyers

SKS

compared with SKIQ, the machine execution is extended by:

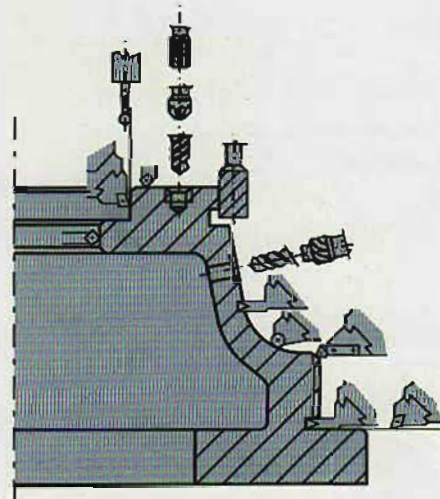
- drive for rotary tools
- magazin for rotary tools - 24 places
- third controlled axis "C"

Due to its many models, configurations, and technical expertise, TOSHULIN can provide a machine which meets the exacting requirements of the customers parts and manufacturing operations. Complete turnkey systems can be provided.

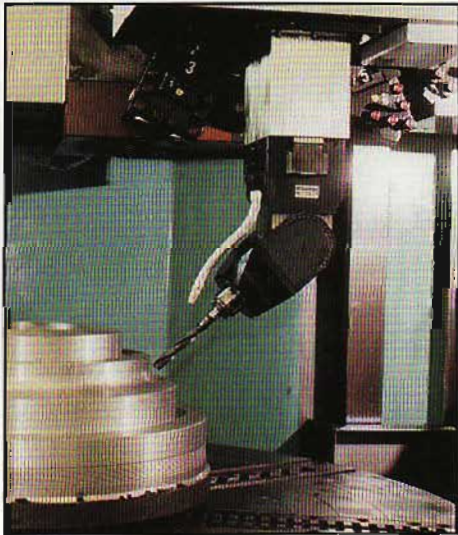
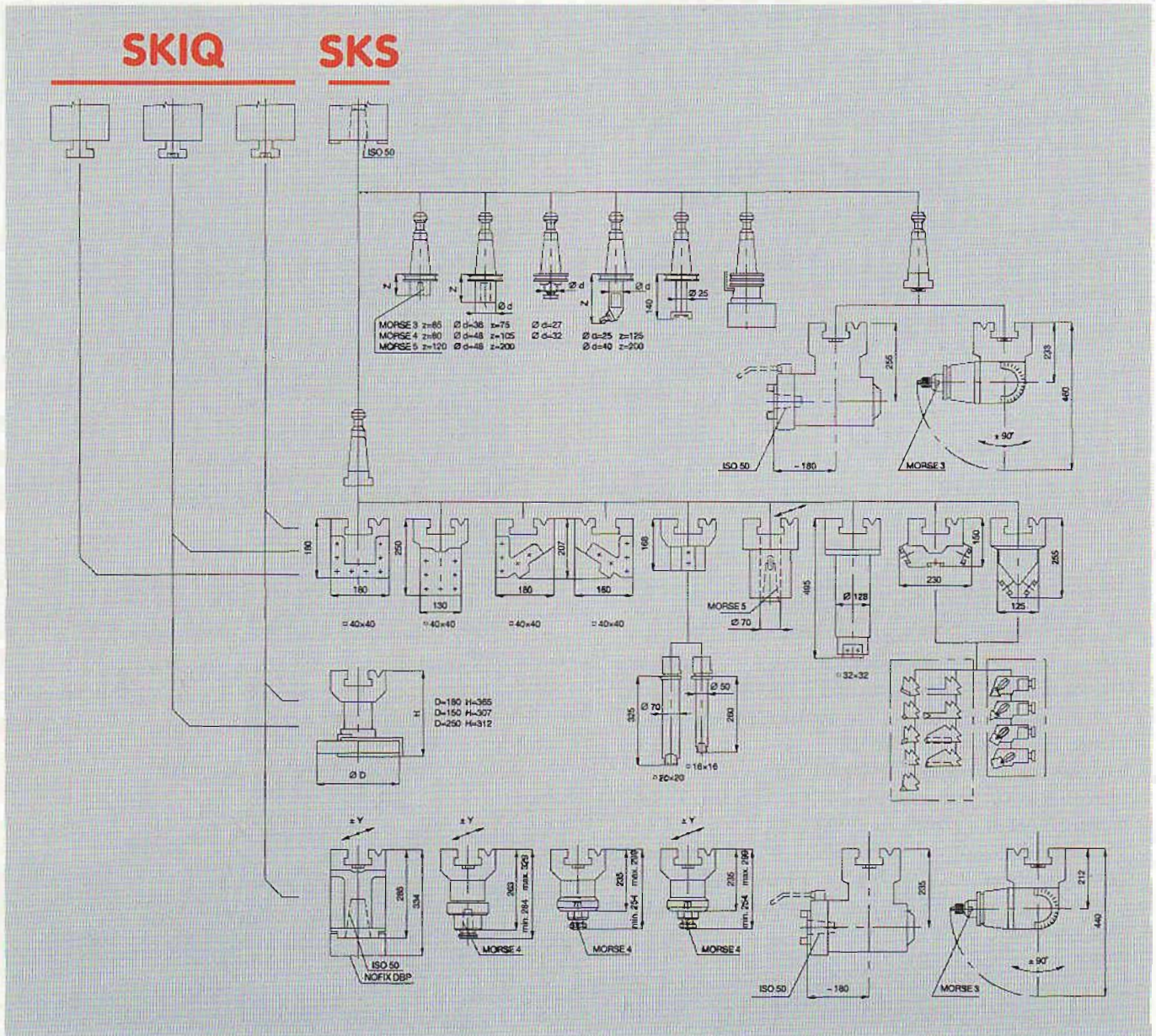


Other Machine Features:

- Grinding spindle - SKIQ & SKS
- Milling spindle - SKIQ & SKS
- Side head with 4 station turret on SKIQ 12, 16, 20
- C Axis control - SKIQ - option, SKS - standard
- Part & Tool probe - SKIQ & SKS
- Increased spindle speed - SKIQ & SKS
- Increased motor power output - SKIQ & SKS
- Increased height - exception SKIQ 8
- Thermal stabilization of table - SKIQ & SKS (standard)
- Three jaw chuck - exception SKIQ 25 & SKS 25
- Four jaw cast iron face plate with jaws adjusted independently - SKIQ & SKS
- Pallet system - SKIQ & SKS
- Flood coolant system - low and high pressure - SKIQ & SKS
- Chip bin - SKIQ & SKS
- Front chip conveyor with standard height and high discharge height - SKIQ & SKS
- Operator control panel - SKIQ & SKS
- Machine electives arranged for customers power requirements - SKIQ & SKS
- Machine painted in special color - SKIQ & SKS



TOSHULIN



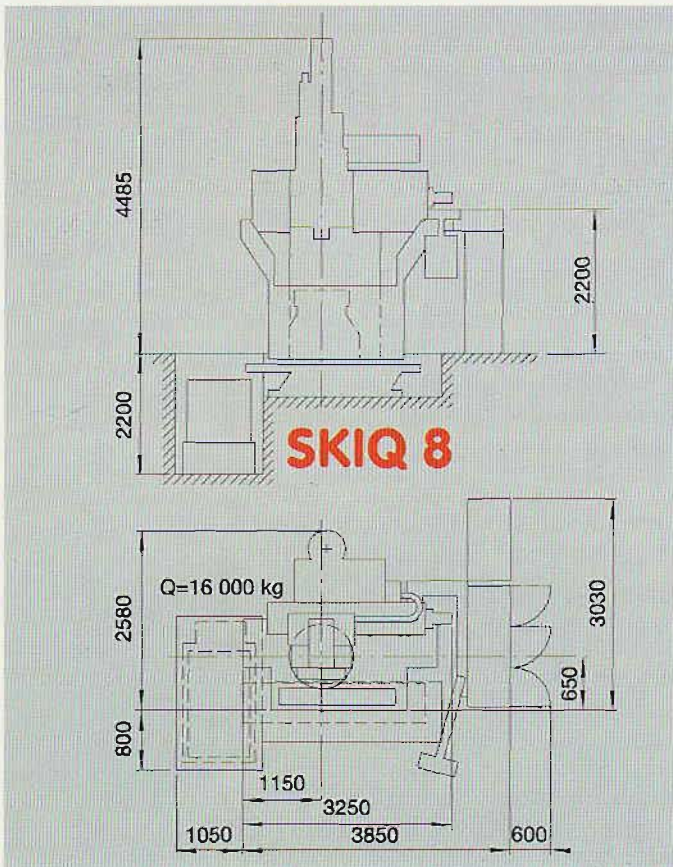
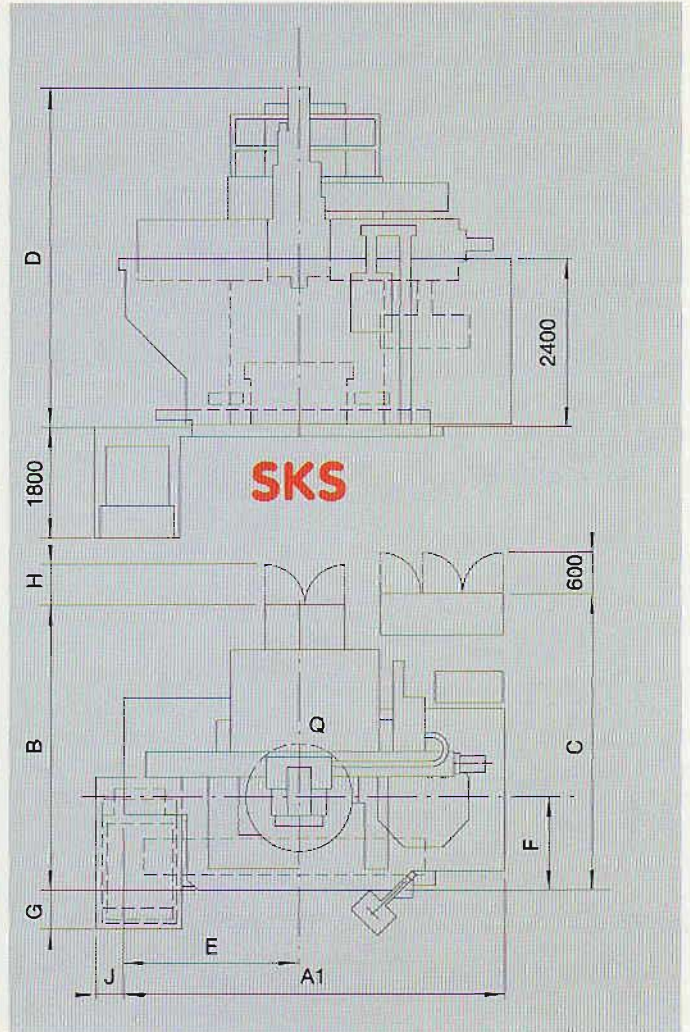
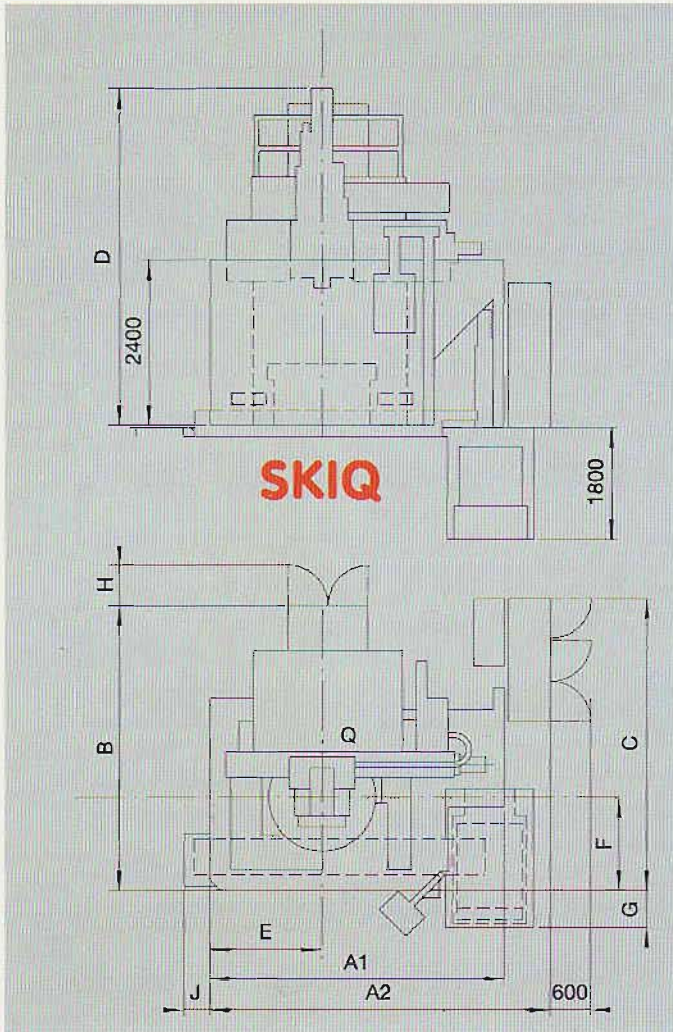
Special accessories

- tooling according to the machine execution according to the choice
- adaptors for tooling systems
e.g.: SANDVIK-COROMANT CAPTO, KENNAMETAL KM, HERTEL FTS
- angle head with the manual adjusting in the range of $0^\circ - 90^\circ$
- fixed angle head 90°
- setting-up device for tools off-set
- lubricating oils for the machine
- refill (Nitrogen) for pressure accumulators

Standard machine accessories

- usual maintenance tooling - 1 set
- filling device for accumulators
- foundation bolts - 1 set
- one basic tool holder
- tool-holder hanger
- quick-wearing spare parts - 1 set
- 2 sets of accompanying technical documentation in english

The manufacturing works TOSHULIN executes the machine assembly, machine service, training and it ensures manufacturing the required spare parts.



		SKIQ			
		12	16	20	25
mm	A1	3870	4275	4480	5380
	A2	4520	4925	5130	6030
	B	3930	4155	4230	4710
	C	3950	4175	4450	4590
	D	5390	5490	5490	5630
	E	1400	1650	1655	2240
	F	1150	1345	1385	1710
	G	850	455	455	400
	H	610	610	610	1130
	J	520	420	515	190
kg	Q	23 000	29 000	33 000	52 000

		SKS			
		12	16	20	25
mm	A1	5080	5625	5965	7120
	B	3930	4155	4245	4710
	C	4128	4245	4320	5180
	D	5890	5990	5990	6130
	E	2130	2580	2660	3500
	F	1150	1345	1385	1710
	G	450	395	440	400
	H	610	610	610	1130
	J	620	470	390	0
	kg	Q	24 000	30 000	34 000

The dimensions and weights are valid for the standard machine executions.

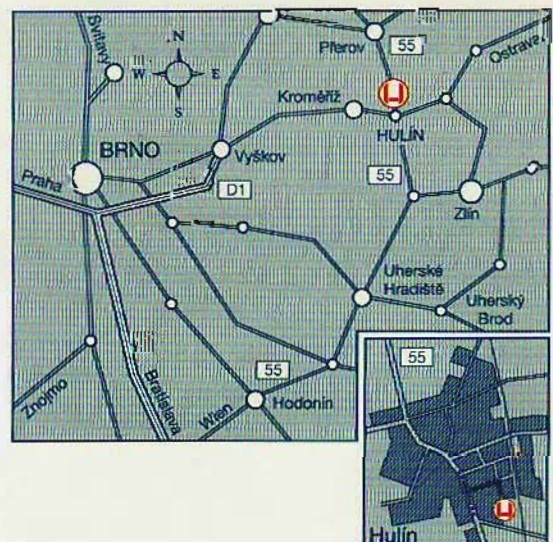
MAIN TECHNICAL PARAMETERS

Type		SKIQ 8 CNC B		SKS, CNC, SKIQ, CNC C		
		8	12	16	20	25
Table diameter	mm	8000	1250	1600	2000	2500
Maximum diameter at peripheral turning	mm	1000	1400	2000	2300	2900
Maximum diameter at facing - SKIQ	mm	1000	1400	2000	2300	2900
- SKS	mm	-	1400	1900	2300	2900
Maximum workpiece diameter	mm	1000	1400	2000	2300	2900
Maximum workpiece height - standard execution	mm	750	1400	1500	1500	1640
- increased execution	mm	-	1900	2000	2000	1940
Maximum workpiece weight	kg	4000	8000	12000	20000	25000
Slide-ram stroke (Z-axis)	mm	630	1000	1000	1000	1000
Cross-rail shifting - standard execution	mm	-	800	800	800	1000
- increased execution	mm	-	1300	1300	1300	1300
Carriage motion from the table centre (X-axis)						
to the right/to the left - SKIQ	mm	625/80	840/80	1165/80	1265/80	1550/200
to the right/to the left - SKS	mm	-	800/100	1100/1020	1300/1040	1550/1350
Maximum uninterrupted cutting force on the carriage	N	30000	44000	44000	44000	44000
Maximum torsional moment on the face plate	Nm	8080	15280	30600	37800	47200
Table speed, stepless adjustable						
- standard speed	rpm	4-400	3.3-400	2.5-315	2-250	1.8-200
- increased speed	rpm	5-500	3.3-500	2.5-400	2-315	1.8-250
Working feed	mm/min	1-4000	1-4000	1-4000	1-4000	1-4000
Rapid traverse	mm/min	8000	10000	10000	10000	10000
Feed at threading	mm/rev	0.01-400	0.01-400	0.01-400	0.01-400	0.01-400
Main motor power output	kW	39(40)	40(63)	63(80)	63(80)	63(80)
Total machine power input	kVA	55(65)	84(107)	107(124)	107(124)	110(127)
Different main parameters of the machine with palletization						
Maximum workpiece height - standard execution	mm	-	1150	1250	1250	1390
- increased execution	mm	-	1750	1750	1750	1690
Maximum workpiece weight	kg	-	5000	6000	8000	10000
Table speed - C-axis	rpm	-	0.01-7.4	0.01-8.2	0.01-5	0.01-4

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We reserve the right to change the data in this catalogue in some details regarding to the permanent technical machine development.