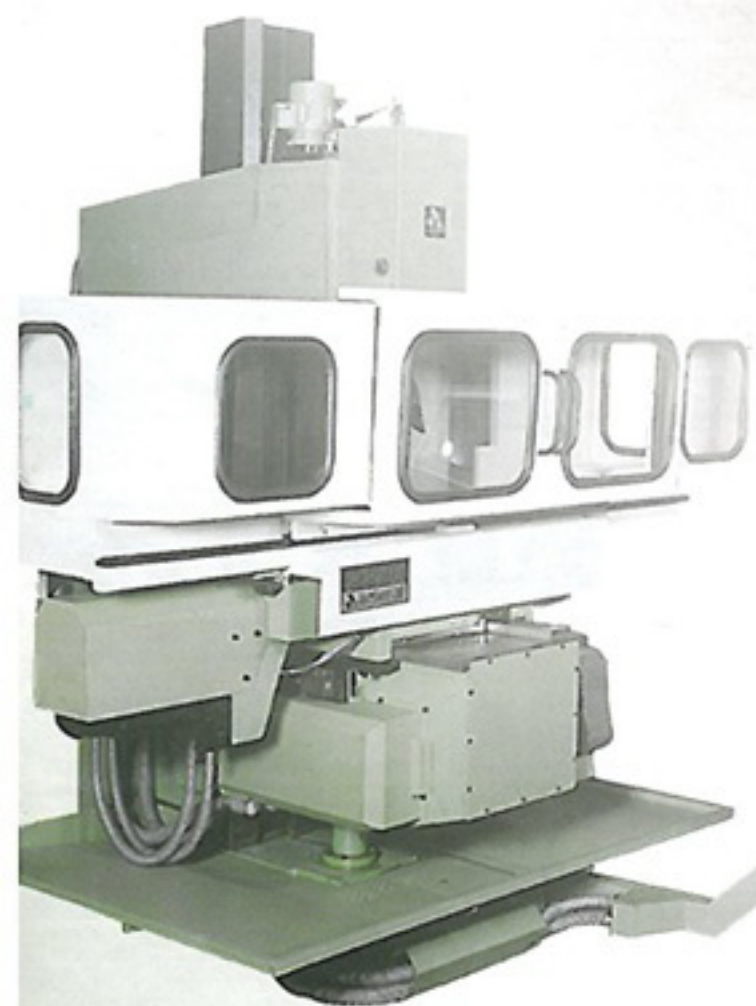


**MILLING MACHINES
DRILLING MACHINES
CNC MILLING MACHINES
SPECIAL PURPOSE MACHINES**



MACHINE TOOL FACTORY



MILLING MACHINES

FU 251M / FU 281 / FU 301 / FU 321M

UNIVERSAL MILLING MACHINES

		FU 251M	FU 281	FU 301	FU 321M
Table size	mm	250 x 1120	280 x 1200	300 x 1250	320 x 1350
Travels X/Y/Z	mm	820/280/410	900/280/410	950/320/410	1000/360/460
Spindle speed range	min ⁻¹	40...2000	40...2000	40...2000	32...1600
Table feed rate X,Y/Z	mm/min	12,5...630/5...262	12,5...630/5...262	12,5...630/5...262	12,5...630/5...262
Table rapid traverse X,Y/Z	mm/min	2500/1040	2500/1040	2500/1040	2500/1040
Main motor power	kW	4	4	5,5	7,5
Spindle nose taper	-	ISO 40	ISO 40	ISO 40	ISO 50
Machine weight	kg	1975	2000	2025	2850

FV 251M / FV 281 / FV 301 / FV 321M

VERTICAL MILLING MACHINES

		FV 251M	FV 281	FV 301	FV 321M
Table size	mm	250 x 1120	280 x 1200	300 x 1250	320 x 1350
Travels X/Y/Z	mm	820/280/410	900/280/410	950/320/410	1000/360/460
Spindle speed range	min ⁻¹	45...2000	45...2000	45...2000	36...1600
Table feed rate X,Y/Z	mm/min	12,5...630/5...262	12,5...630/5...262	12,5...630/5...262	12,5...630/5...262
Table rapid traverse X,Y/Z	mm/min	2500/1040	2500/1040	2500/1040	2500/1040
Main motor power	kW	4	4	4	5,5
Spindle nose taper	-	ISO 40	ISO 40	ISO 40	ISO 50
Machine weight	kg	2275	2300	2325	3100

FUV 251M / FUV 281 / FUV 301 / FUV 321M

UNIVERSAL-VERTICAL MILLING MACHINES

		FUV 251M	FUV 281	FUV 301	FUV 321M
Table size	mm	250 x 1120	280 x 1200	300 x 1250	320 x 1350
Travels X/Y/Z	mm	820/280/410	900/280/410	950/320/410	1000/360/460
Spindle speed range					
- horizontal/vertical	min ⁻¹	40...2000/45...2000	40...2000/45...2000	40...2000/45...2000	32...1600/36...1600
Table feed rate X,Y/Z	mm/min	12,5...630/5...262	12,5...630/5...262	12,5...630/5...262	12,5...630/5...262
Table rapid traverse X,Y/Z	mm/min	2500/1040	2500/1040	2500/1040	2500/1040
Main motor power					
- horizontal/vertical	kW	4/4	4/4	5,5/4	7,5/5,5
Spindle nose taper	-	ISO 40	ISO 40	ISO 40	ISO 50
Machine weight	kg	2575	2600	2625	3500

FU 361 / FU 401

UNIVERSAL MILLING MACHINES

		FU 361	FU 401
Table size	mm	360 x 1500	400 x 1600
Travels X/Y/Z	mm	1150/360/460	1250/360/460
Spindle speed range	min ⁻¹	32...1600	32...1600
Table feed rate X,Y/Z	mm/min	12,5...630/5...262	12,5...630/5...262
Table rapid traverse X,Y/Z	mm/min	2500/1040	2500/1040
Main motor power	kW	7,5	7,5
Spindle nose taper	-	ISO 50	ISO 50
Machine weight	kg	2900	2925



FV 361 / FV 401

VERTICAL MILLING MACHINES

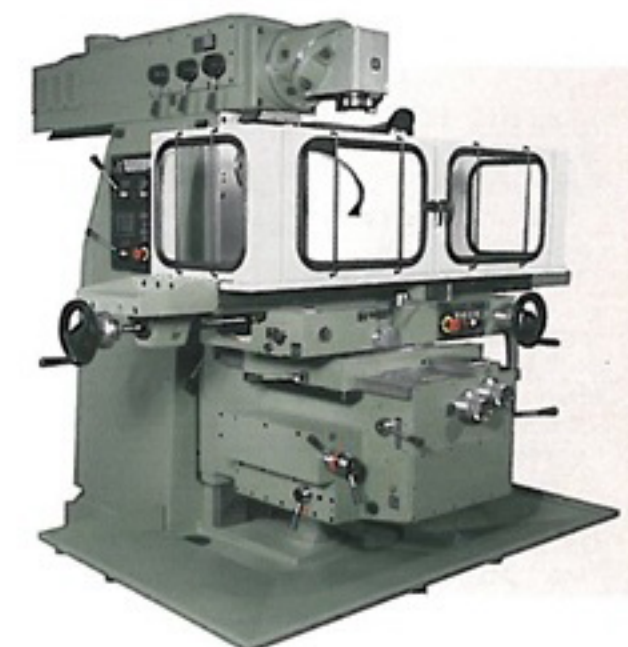
		FV 361	FV 401
Table size	mm	360 x 1500	400 x 1600
Travels X/Y/Z	mm	1150/360/460	1250/360/460
Spindle speed range	min ⁻¹	36...1600	36...1600
Table feed rate X,Y/Z	mm/min	12,5...630/5...262	12,5...630/5...262
Table rapid traverse X,Y/Z	mm/min	2500/1040	2500/1040
Main motor power	kW	5,5	5,5
Spindle nose taper	-	ISO 50	ISO 50
Machine weight	kg	3150	3175



FUV 361 / FUV 401

UNIVERSAL-VERTICAL MILLING MACHINES

		FUV 361	FUV 401
Table size	mm	360 x 1500	400 x 1600
Travels X/Y/Z	mm	1150/360/460	1250/360/460
Spindle speed range			
- horizontal/vertical	min ⁻¹	32...1600/36...1600	32...1600/36...1600
Table feed rate X,Y/Z	mm/min	12,5...630/5...262	12,5...630/5...262
Table rapid traverse X,Y/Z	mm/min	2500/1040	2500/1040
Main motor power			
- horizontal/vertical	kW	7,5/5,5	7,5/5,5
Spindle nose taper	-	ISO 50	ISO 50
Machine weight	kg	3550	3575



MILLING MACHINES

FH 251M / FH 281 / FH 301 / FH 321M

HORIZONTAL MILLING MACHINES

		FH 251M	FH 281	FH 301	FH 321M
Table size	mm	250 x 1120	280 x 1200	300 x 1250	320 x 1350
Travels X/Y/Z	mm	820/280/410	900/280/410	950/320/410	1000/360/460
Spindle speed range	min ⁻¹	40...2000	40...2000	40...2000	32...1600
Table feed rate X,Y/Z	mm/min	12,5...630/5...262	12,5...630/5...262	12,5...630/5...262	12,5...630/5...262
Table rapid traverse X,Y/Z	mm/min	2500/1040	2500/1040	2500/1040	2500/1040
Main motor power	kW	4	4	5,5	7,5
Spindle nose taper	-	ISO 40	ISO 40	ISO 40	ISO 50
Machine weight	kg	1975	2000	2025	2850

FPV 251M / FPV 281 / FPV 301 / FPV 321M

VERTICAL MILLING AND DRILLING MACHINES

		FPV 251M	FPV 281	FPV 301	FPV 321M
Table size	mm	250 x 1120	280 x 1200	300 x 1250	320 x 1350
Travels X/Y/Z	mm	820/280/410	900/280/410	950/320/410	1000/360/460
Spindle speed range	min ⁻¹	65...4500/50...3000*	65...4500/50...3000*	65...4500/50...3000*	65...4500/50...3000*
Table feed rate X,Y/Z	mm/min	12,5...630/5...262	12,5...630/5...262	12,5...630/5...262	12,5...630/5...262
Table rapid traverse X,Y/Z	mm/min	2500/1040	2500/1040	2500/1040	2500/1040
Quill travel	mm	126	126	126	126
Quill feed rate	mm/min ⁻¹	0,04/0,08/0,15	0,04/0,08/0,15	0,04/0,08/0,15	0,04/0,08/0,15
Main motor power	kW	2,2/3,7*	2,2/3,7*	2,2/3,7*	2,2/3,7*
Spindle nose taper	-	ISO 40	ISO 40	ISO 40	ISO 40
Machine weight	kg	1875	1900	1925	2700

*Variator

FPU 251M / FPU 281 / FPU 301 / FPU 321M

UNIVERSAL MILLING AND DRILLING MACHINES

		FPU 251M	FPU 281	FPU 301	FPU 321M
Table size	mm	250 x 1120	280 x 1200	300 x 1250	320 x 1350
Travels X/Y/Z	mm	820/280/410	900/280/410	950/320/410	1000/360/460
Speed range:					
- horizontal spindle	min ⁻¹	40...2000	40...2000	40...2000	32...1600
- vertical spindle	min ⁻¹	65...4500/50...3000*	65...4500/50...3000*	65...4500/50...3000*	65...4500/50...3000*
Table feed rate X,Y/Z	mm/min	12,5...630/5...262	12,5...630/5...262	12,5...630/5...262	12,5...630/5...262
Table rapid traverse X,Y/Z	mm/min	2500/1040	2500/1040	2500/1040	2500/1040
Quill travel	mm	126	126	126	126
Quill feed rate	mm/min ⁻¹	0,04/0,08/0,15	0,04/0,08/0,15	0,04/0,08/0,15	0,04/0,08/0,15
Main motor power:					
- horizontal spindle	kW	4	4	4	7,5
- vertical spindle	kW	2,2/3,7*	2,2/3,7*	2,2/3,7*	2,2/3,7*
Spindle nose taper					
- horizontal/vertical	-	ISO 40/ISO 40	ISO 40/ISO 40	ISO 40/ISO 40	ISO 50/ISO 40
Machine weight	kg	2075	2100	2125	3000

*Variator

FH 361 / FH 401

HORIZONTAL MILLING MACHINES

		FH 361	FH 401
Table size	mm	360 x 1500	400 x 1600
Travels X/Y/Z	mm	1150/360/460	1250/360/460
Spindle speed range	min ⁻¹	32...1600	32...1600
Table feed rate X,Y/Z	mm/min	12,5...630/5...262	12,5...630/5...262
Table rapid traverse X,Y/Z	mm/min	2500/1040	2500/1040
Main motor power	kW	7,5	7,5
Spindle nose taper	-	ISO 50	ISO 50
Machine weight	kg	2900	2925



FPV 361 / FPV 401

VERTICAL MILLING AND DRILLING MACHINES

		FPV 361	FPV 401
Table size	mm	360 x 1500	400 x 1600
Travels X/Y/Z	mm	1150/360/460	1250/360/460
Spindle speed range	min ⁻¹	65...4500/50...3000*	65...4500/50...3000*
Table feed rate X,Y/Z	mm/min	12,5...630/5...262	12,5...630/5...262
Table rapid traverse X,Y/Z	mm/min	2500/1040	2500/1040
Quill travel	mm	126	126
Quill feed rate	mm/min ⁻¹	0,04/0,08/0,15	0,04/0,08/0,15
Main motor power	kW	2,2/3,7*	2,2/3,7*
Spindle nose taper	-	ISO 40	ISO 40
Machine weight	kg	2750	2775

*Variator

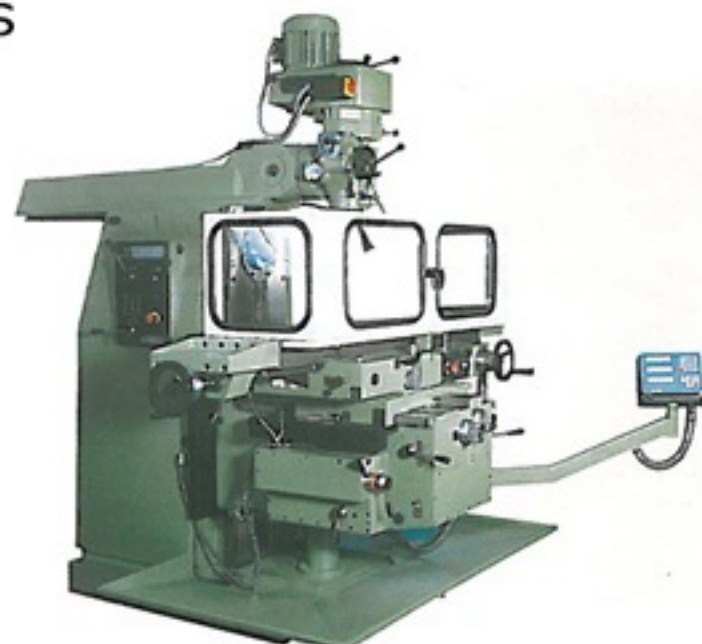


FPU 361 / FPU 401

UNIVERSAL MILLING AND DRILLING MACHINES

		FPU 361	FPU 401
Table size	mm	360 x 1500	400 x 1600
Travels X/Y/Z	mm	1150/360/460	1250/360/460
Speed range:			
- horizontal spindle	min ⁻¹	32...1600	32...1600
- vertical spindle	min ⁻¹	65...4500/50...3000*	65...4500/50...3000*
Table feed rate X,Y/Z	mm/min	12,5...630/5...262	12,5...630/5...262
Table rapid traverse X,Y/Z	mm/min	2500/1040	2500/1040
Quill travel	mm	126	126
Quill feed rate	mm/min ⁻¹	0,04/0,08/0,15	0,04/0,08/0,15
Main motor power:			
- horizontal spindle	kW	7,5	7,5
- vertical spindle	kW	2,2/3,7*	2,2/3,7*
Spindle nose taper			
- horizontal/vertical	-	ISO 50/ISO 40	ISO 50/ISO 40
Machine weight	kg	3050	3075

*Variator



OPTIONAL ACCESSORIES

UFG 285/ UFG 325 UNIVERSAL MILLING HEAD

		UFG 285	UFG 325
Distance from spindle center to vertical guideways	mm	369	380
Spindle nose taper	-	ISO 40	ISO 50



VFG 281/ VFG 323 VERTICAL MILLING HEAD

		VFG 281	VFG 323
Distance from spindle center to vertical guideways	mm	349	435
Spindle nose taper	-	ISO 40	ISO 50



KDM 320 ROTARY INDEX TABLE

Table dia	mm	320
Height	mm	110
Central hole dia	mm	Ø32H6
Key	mm	14 / 18



UDA 130/ UDA 170 UNIVERSAL INDEXING DEVICE

		UDA 130	UDA 170
Center height	mm	130	170
Spindle nose taper	-	MT 4	MT 5



SG 251/ SG 321 SLOTTING HEAD

		SG 251	SG 321
Max. working travel	mm	110	110
Distance from vertical guideways to inner side of tool	mm	327	332



HORIZONTAL SWIVEL VICE

Width of jaws:
160 / 200 mm



ARBOURS (SHORT AND LONG)

Dia 22, 27, 32, 40



DRILLING MACHINES

P 32P

DRILLING MACHINE

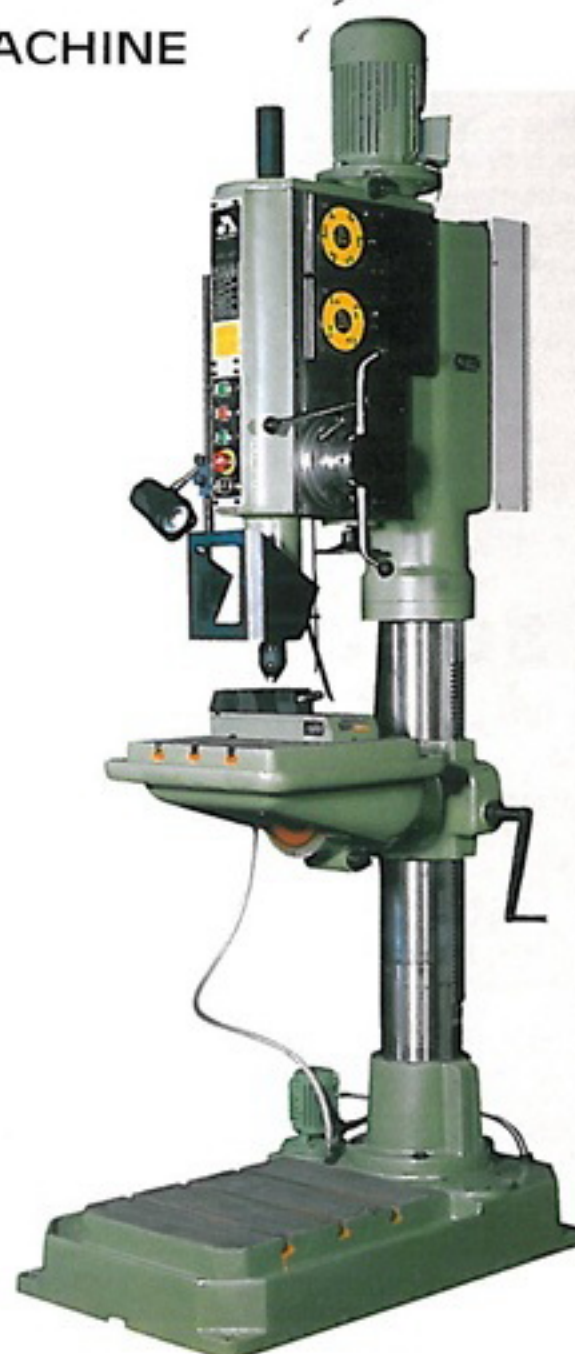
P 32P		
Table size	mm	500 x 400
Quill travel	mm	150
Spindle speed range / No:	min ⁻¹	125...1600 / 10
Spindle feed rate	mm/min ⁻¹	0,1 ; 0,2 ; 0,3
Max. drilling dia	mm	32
Main motor power	kW	0,9 / 1,5
Spindle nose taper	Morse	No 4
Machine weight, approx	kg	360



PK 40 / PK 40F

DRILLING MACHINE/ DRILLING AND MILLING MACHINE

		PK 40	PK 40F
Table size	mm	400 x 500	250 x 630
Quill travel	mm	200	200
Spindle speed range	min ⁻¹	85...1500	85...1500
Spindle feed rate	mm/min ⁻¹	0,1...0,4	0,1...0,4
Max. drilling dia	mm	40	40
Main motor power	kW	2,2	2,2
Spindle nose taper	Morse	No 4	No 4
Machine weight, approx	kg	750	810



CNC MILLING MACHINES

FV 325 04

CNC MILLING MACHINE

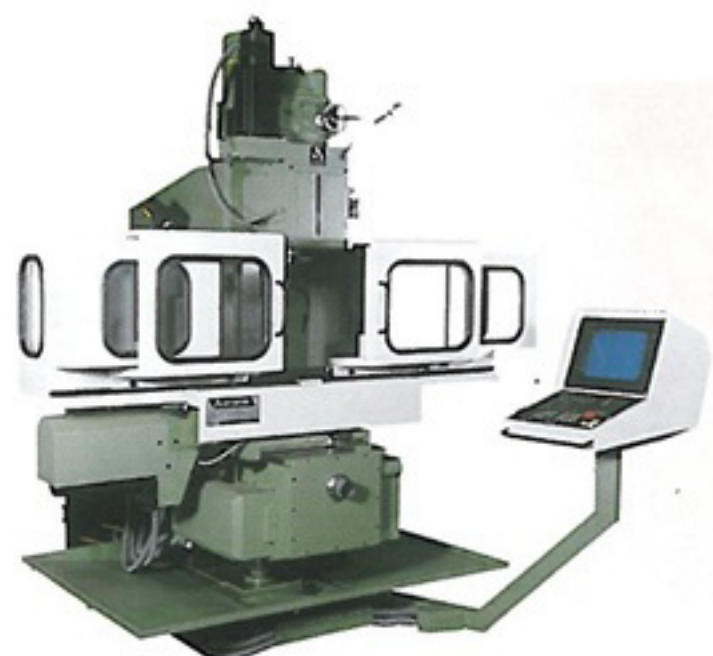
Table size	mm	320 x 1000
Travels X/Y/Z	mm	720 / 320 / 420
Spindle speed range	min ⁻¹	10...4000
Feed rate X,Y/Z	mm/min	10...4000/ 10...1000
Rapid traverse X,Y/Z	mm/min	4000/ 1000
Main motor power	kW	7,5
Spindle nose taper	-	ISO 40
Machine weight	kg	2370



FPV 325 05

CNC MILLING MACHINE

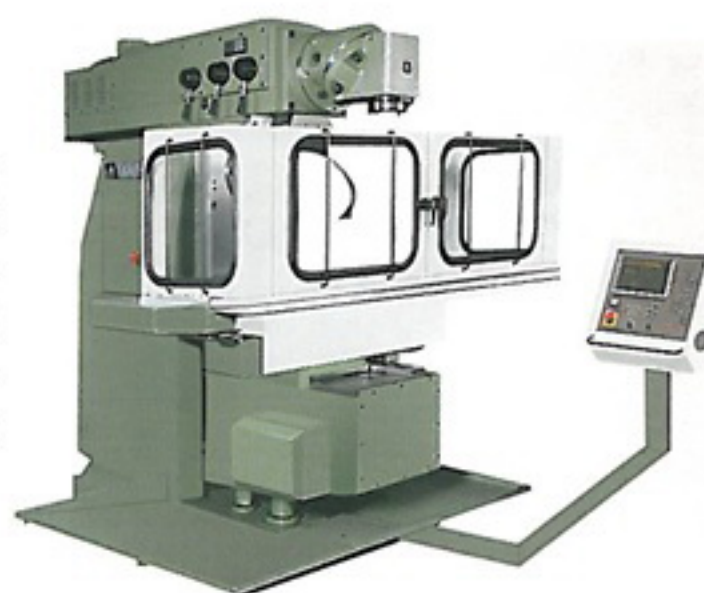
Table size	mm	320 x 1000
Travels X/Y/Z	mm	720 / 320 / 140
Knee travel (auxiliary)	mm	420
Spindle speed range	min ⁻¹	80...3800
Feed rate	mm/min	10...4000
Rapid traverse X,Y/Z	mm/min	4000
Main motor power	kW	3,7
Spindle nose taper	-	ISO 40
Machine weight	kg	2500



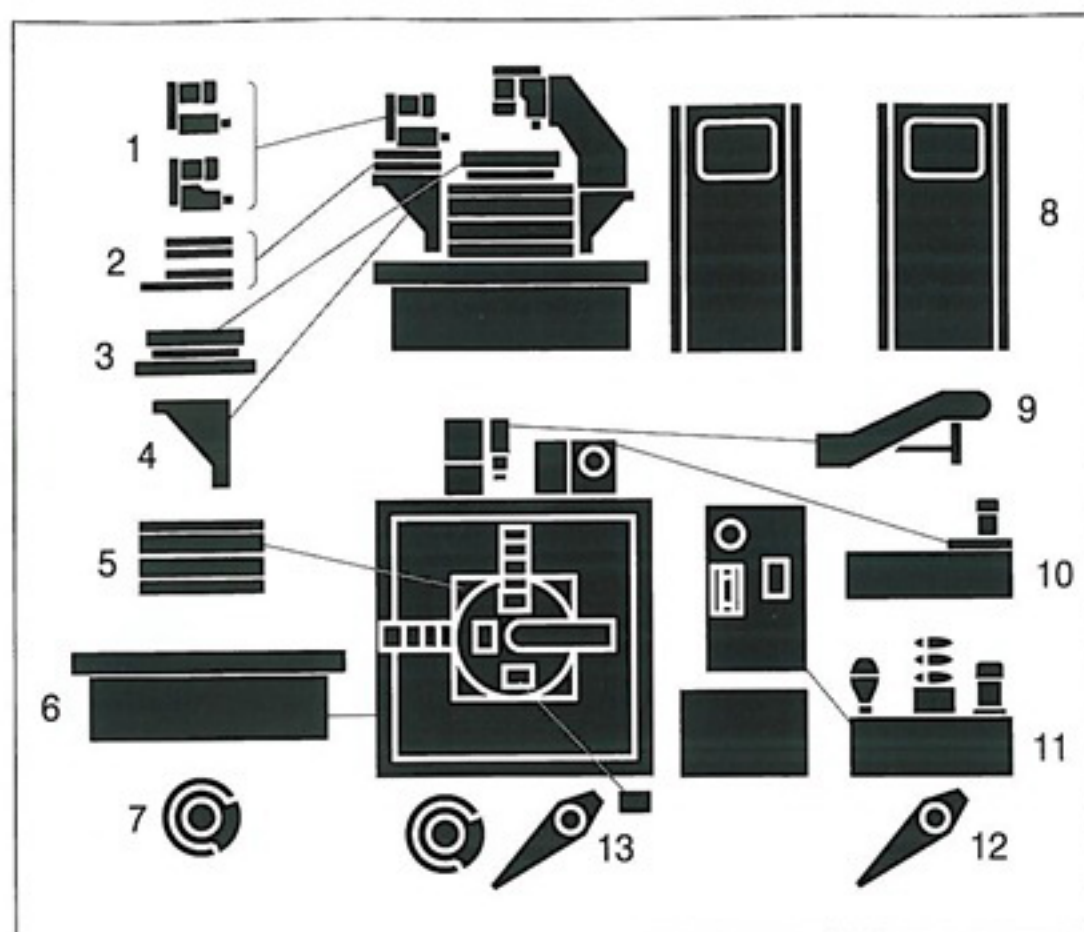
FV 361 03

CNC MILLING MACHINE

Table size	mm	360 x 1000
Travels X/Y/Z	mm	750 / 340 / 450
Spindle speed range / No :	min ⁻¹	45...2000 / 12
Feed rate X,Y/Z	mm/min	2...3000
Rapid traverse X,Y/Z	mm/min	6000/3000
Main motor power	kW	5,5
Spindle nose taper	-	ISO 40 / ISO 50
Machine weight	kg	2700



SPECIAL PURPOSE MACHINES



- The modular construction of well-trying and reliable units makes any technological problems solvable
- High productivity, possibility to machine various types of similar parts and maximum economic efficiency
- Several versions: single-station, multistation, circular and linear units
- Max. number of stations: 12

DIAGRAM:

1. Spindle units	7. Feed magazine
2. Feed units	8. Electric cabinet
3. Rotary tables	9. Chip conveyor
4. Angle brackets	10. Coolant unit
5. Body	11. Hydraulic unit
6. Bases	12. Manipulator
	13. Fixing device

VDM ROTARY INDEXING TABLES

		VDM 160/ 200	VDM 320/ 400	VDM 630/ 800
Table dia	mm	160/ 200	320/ 400	630/ 800
Rated pressure	Pa	$20 \cdot 10^5$	$20 \cdot 10^5$	$20 \cdot 10^5$
Position accuracy		$\pm 3''$	$\pm 3''$	$\pm 3''$



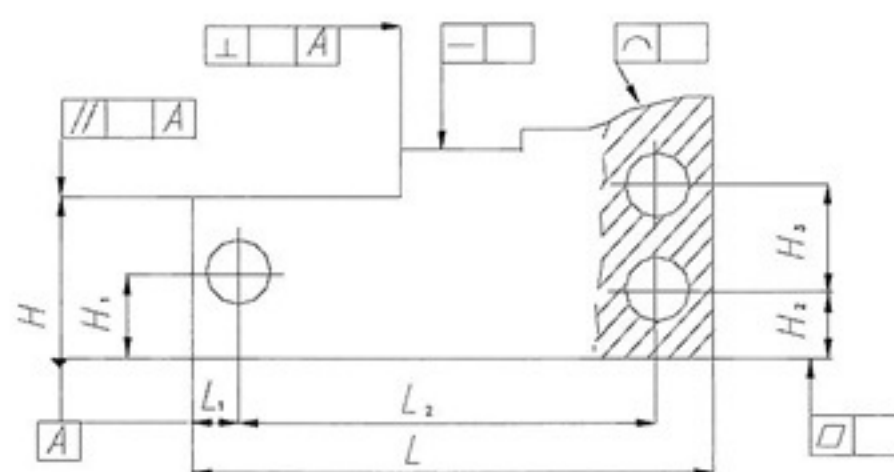
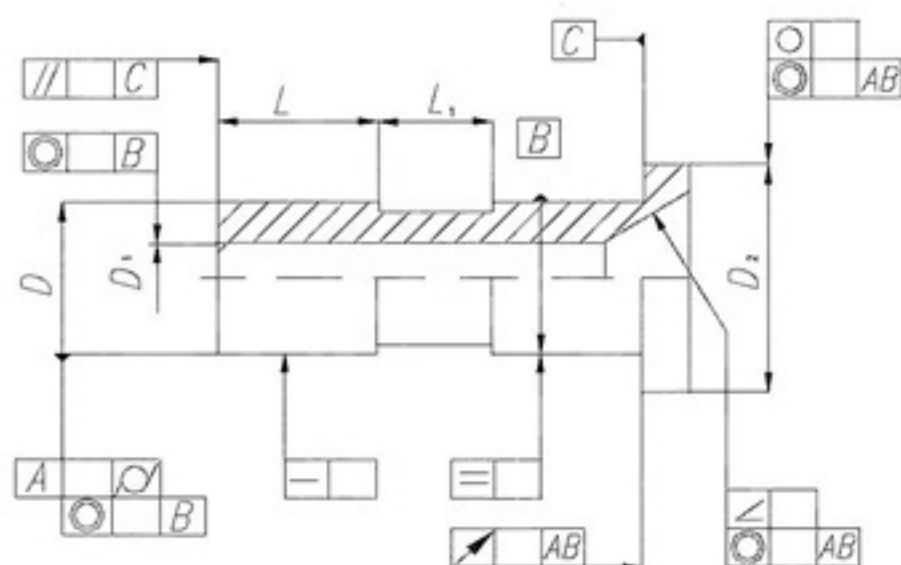
KIMS COORDINATE MEASURING MODULE SYSTEM

Technical characteristics of basic version

Strokes X/Y/Z	mm	600 / 400 / 400
Resolution of reading of linear shifts	μm	1
Position accuracy	μm	$\Delta 95 = \pm (3 + L/200)$
Load capacity	N	2000
Air pressure	MPa	0,3
Overall dimensions (without computing and registration module)	mm	1000 x 1400 x 1800



CONTROLLED PARAMETERS





MACHINE TOOL FACTORY

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E-mail: boss@arsenal.inetg.bg; zmm@arsenal.inetg.bg

