MANUAL AND CNC-OPERATED TOOLROOM MILLING MACHINES

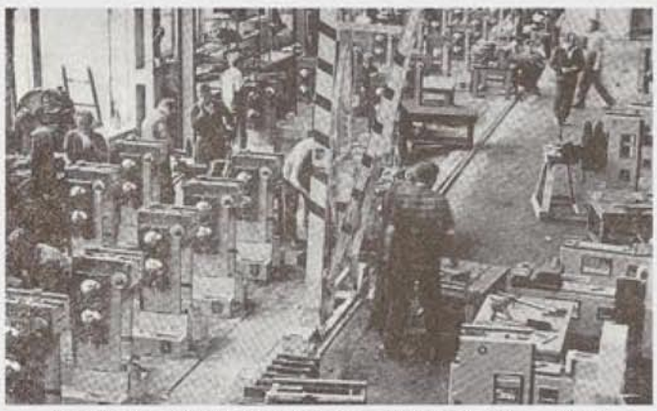
FNX30 | FNE40 | FNE50

Fabryka Obrabiarek Precyzyjnych AVIA S.A.

Fabryka Obrabiarek Precyzyjnych AVIA S.A. Warsaw, Poland (Precision Machine Tools Factory AVIA S.A.) was established in 1902 and is one of the oldest Polish industrial plants. For the last 70 years AVIA has been one of the leading Polish manufacturers of high quality machine tools. Nowadays our brand is widely recognized in Europe, especially in Germany, where we have over 4 500 installations.

Presence of our machine tools on highly industrialized markets stimulates constant growth and competitiveness of our Customers. Proven solutions from AVIA brand also support development of emerging markets in eastern part of Europe.

At present AVIA offers in its product range series of Vertical Machining Centres 3, 4 and 5 axis (continuous), CNC and Manual Universal Milling Machines and Slant Bed CNC Lathes. AVIA is also the manufacturer of machine tools key components i.e. spindles and precision ground ballscrews. We are supplier of ballscrews to some world leading machine tools pro-



Assembly line of AVIA Manual Universal Milling Machines - 1970's

New machine tool designs are made by our own R&D Department. The unique combination of highly skilled young engineers and very experienced designers, being with AVIA for many years, ensures that special "environment" of Research and Development process. Designs are made using computer systems for:

- Solid Modelling Design (CAD-3D),
- Finite Element Method optimization,
- Computer Aided Manufacturing (CAM).

Our aim is not only to develop state-of-the-art machines and deliver them to the Customers, but also to provide training, service and maintenance support as well as the spare parts availability for many years after sale of the machine.

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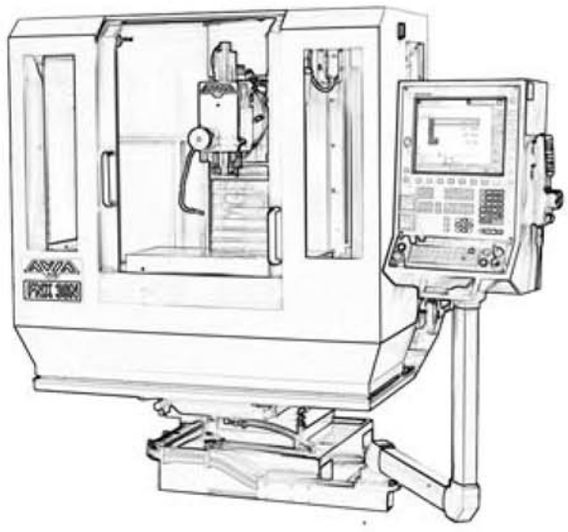
DISCOVER WIDE RANGE OF MANUAL AND CNC TOOLROOM MILLING MACHINES FROM AVIA |



TOOLROOM MILLING MACHINES FNX30 SERIES |

TRAVELS(X/Y/Z): 400x315x350 mm

SPINDLE ISO40: 3.000 rpm

WORKING TABLE: 315x710 mm

MAX. TABLE LOAD: 200 kg

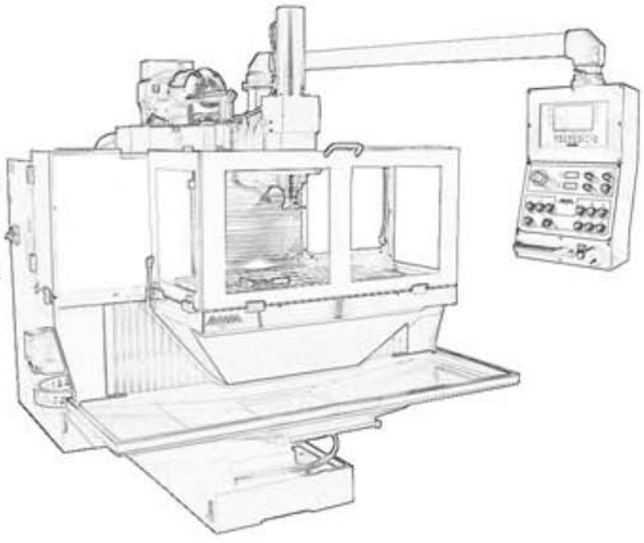
TOOLROOM MILLING MACHINES FNE40 SERIES |

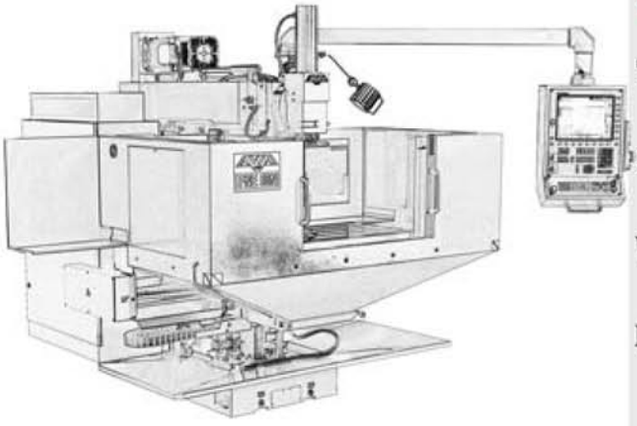
TRAVELS(X/Y/Z): 620x420x400 mm

SPINDLE (H/V) ISO40: 4.000 rpm

WORKING TABLE: 400x800 mm

MAX. TABLE LOAD: 400 kg





TOOLROOM MILLING MACHINES FNE50 SERIES |

TRAVELS(X/Y/Z): 800x500x420 mm

SPINDLE (H/V) ISO40: 4.000 rpm

WORKING TABLE: 500x1000 mm

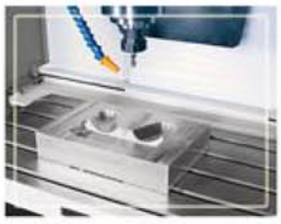
MAX. TABLE LOAD: 500 kg

FNE 40P |

FNX 30N |

Vertical milling head with movable quill

Horizontal spindle



Universal machining for prototyping, tool and mould making.

Steady rest for long milling arbors

Linear axis measurements for quality checks - using special laser equipment

Box-type guideways for stability and rigidity (FNE)

Manual handwheels

Electric parts from well-known European producers

DISCOVER UNIVERSAL MILLING MACHINES DESIGNED TO YOUR NEEDS |

HEIDENHAIN TNC620 |

- modern and reliable CNC systems from Heidenhain,
- fully digital drives for N versions,
- 2 ms single block processing time in standard,
- 19"- inch touchdisplay for comfortable operations and
- shopfloor programming,
- adjustable position of control panel.

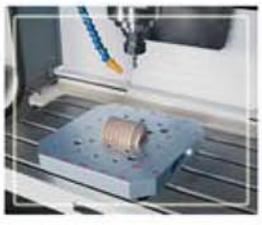
DIGITAL READOUT ND5023 |

- digital readout ND5023 from Heidenhain in P versions,
- linear scales for all axis,
- electronic handwheel on control panel for effortless axis movements,
- manual handwheels for all axes in standard for FNX30 and FNE40 series,

STRAIGHT-CUT CONTROLLER TNC 128 |

TNC 128 is compact and modern straight-cut controller. Thanks to simple and intiutive operation as well as set of built in cykles TNC 128 is ideal solution for universal milling machines. Most common applications are:

MOST COMMON APPLICATIONS OF AVIA MILLING MACHINES |



- mould, die and toolmaking,
- tool-rooms and prototyping,
- maintenance departments,
- educational purposes,
- sub-suppliers industry.

RELIABLE COMPONENTS |

- rigid design of iron castings for achieving high accuracy of machined parts,
- universal design with horizontal and vertical spindle, movable quill and tilting milling head,
- stepless spindle speeds regulation applied for all AVIA milling machines,
- precision ground ballscrew in all axes,
- FNX series milling machines with backlash-free roller-type linear guideways ensure stability and accuracy,
- FNE series milling machines with box-type guideways for stability and rigidity, provides long lasting accuracy,
- FNX and FNE series are equipped with separate, modern AC motors for each linear axis,
- motors are characterized by low power consumption and high overcharge possibilities,
- CE conformed electric parts from well-known European producers are easily available on the market for maintenance purposes.

FNX30 SERIES|

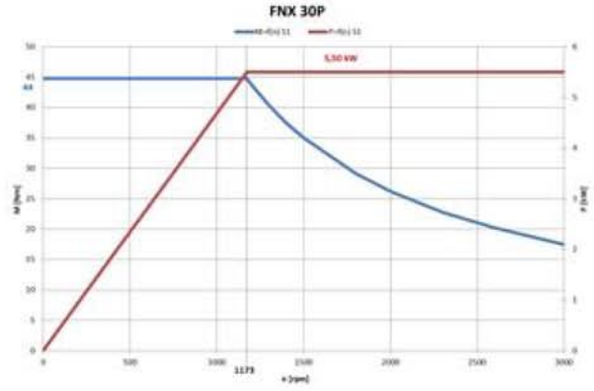
milling machines suitable for education and workshops

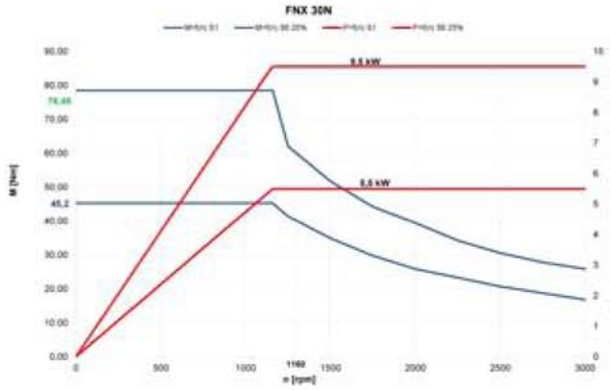
FNX30 SERIES |

Characteristics of execution include:
- rigid design of iron castings for achieving high accuracy of machined parts,
- stepless setting of spindle speeds and feeds enable adjustment of optimal machining parameters for modern tools,
- separate motors for all axes with low power consumption,
- precision ground ballscrew in all axes,
- HEIDENHAIN TNC 620 for N version or 128 for shopflor programing,
- backlash-free roller-type linear guideways ensure stability and rigidity, eliminates stick-slip effect,
- manual handwheels for all 3 axes.

Operator-friendly machines:
- movable and centrally located ergonomic control panel for comfortable operation of machine,
- optional application of electronic handwheel for effortless machine operation,
- movable quill for drilling and milling of deep pockets,
- common tool holders acc. to DIN 2080,
- tilting milling head ± 45°.

Wide range of optional equipment:
- steady rest for long milling arbors for horizontal spindle,
- machine vices and other fixing and clamping accessories,
- dividing head with tailstock, rotary tables and much more.





Technical Data			FNX 30P /FNX 30P NC	FNX 30N
HORIZONTAL TABLE:				
Table surface		mm	315x710	315x710
T-slots: number / size / distance		mm	5 / 14 / 63	5 / 14 / 63
Max. table load		kg	200	200
TRAVELS:				
Longitudinal (X)		mm	400	400
Cross(Y)		mm	315	315
Vertical (Z)		mm	350	350
Min./Max. spindle nose to table distance		mm	100 / 450	100 / 450
FEEDS:				
Feed rate control			stepless	stepless
Feed rate X / Y / Z		mm/min	2000/2000/2000	2000/2000/2000
Rapid traverse X / Y / Z		m/min	5/5/2,5	5/5/3
HORIZONTAL AND VERTICAL SPINDLES:				
Spindle taper		ISO	40	40
Tool holders		DIN	2080	2080
Max. horizontal spindle speed		rpm	3000	3000
Max. vertical spindle speed		rpm	3000	3000
Spindle speed control			stepless	stepless
Tool clamping / unclamping			manual	manual
Spindle power S1 / S6 (25%)		kW	5,5 / -	5,5 / 9,5
Spindle torque S1 / S6 (25%)		Nm	47,7 / -	45 / 78,5
Main motor type		type	inverter controlled	digitally controlled
VERTICAL HEAD:				
Quill travel		mm	80	80
Swivel head angle		degree	±45	±45
CONTROL:				-
Digital Readout	Heidenhain	type	ND 5023 (FNX 30P)	-
Straight-Cut Control	Heidenhain	type	TNC 128 (FNX 30P NC)	-
CNC system	Heidenhain	type	-	TNC 620 19"
MISCELLANEOUS:				
Accuracy of positioning*		mm	-	± 0,010
Repeatability*		mm	-	0,005
Net weight		kg	c.a. 1700	c.a. 1700
Dimensions: X/Y/Z		mm	1520 x 2130 x 1950	1520 x 2130 x 1950

*- acc. to PN-ISO 230-2, execution with linear scales

STANDARD:

- digital readout in 3 axes ND5023 (FNX30P),
- straight-cut control TNC 128 (FNX 30P NC),
- HEIDENHAIN TNC 620 CNC system (FNX30N),
- vertical and horizontal spindle,
- precision ground ballscrews in all three axes,
- roller-type linear guideways for all three axes,
- manual handwheels with scales in all 3 axes,
- guideway covers,
- coolant system,
- manual lubrication system,
- working area enclosure,
- lightning system 24 V with lamp,
- standard painting RAL 7024/7035,
- operator's spanners,
- operator's and programming manuals,
- CE conformity statement.

OPTIONS:

For CNC-operated machines

- linear scales for all 3 axes,
- electronic handwheel,
- workpiece probe,
- CAD/CAM software.

For manual and CNC-operated machines

- steady rest for long milling arbors,
- dividing head with tailstock,
- 3 and 4 jaw chucks for dividing head,
- machine vice,
- boring head,
- toolholders, milling arbors and more.

FNE40 SERIES|

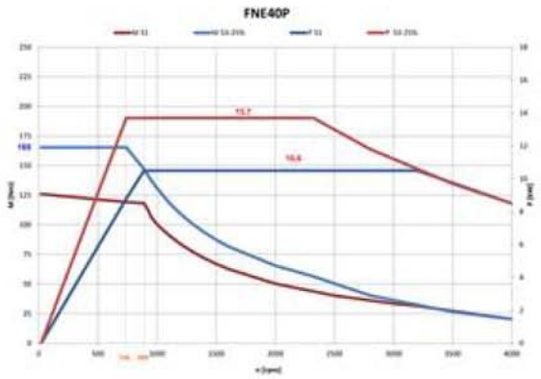
modern
universal
easy to use

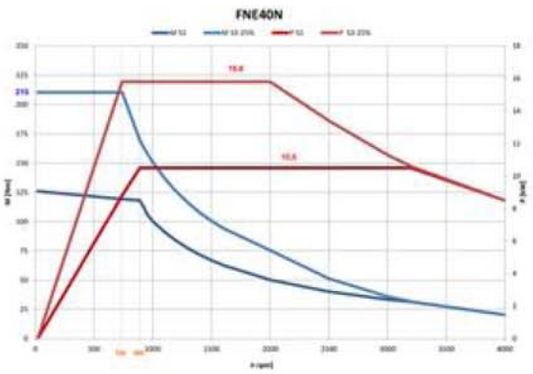
FNE40 SERIES |

Characteristics of execution include:
- rigid design of iron castings for achieving high accuracy of machined parts,
- stepless setting of spindle speeds and feeds enable adjustment of optimal machining parameters for modern tools,
- separate motors for all axes with low power consumption,
- AVIA backlash-free precision ground ballscrews for feed drive,
- HEIDENHAIN TNC 620 for N version or 128 for shopflor programing,
- box-type guideways for stability and rigidity. TURCITE lining minimizes friction and eliminates stick-slip effect,
- manual handwheels with scales for all 3 axes.

Operator-friendly machines:
- all control elements included in central control panel,
- electronic handwheel for effortless machine movements,
- automatic lubrication included with N version,
- button controlled tool clamping / unclamping system.

Wide range of optimal equipment:
- high speed vertical milling head up to 8 000 rpm,
- linear scales in 3 axes, tool probes and workpiece probes,
- slotting head, dividing head with tailstock, rotary tables and much more.





Technical Data		FNE 40P /FNE 40P NC	FNE 40N
HORIZONTAL TABLE:			
Table surface	mm	400 x 800	400 x 800
T-slots: number / size / distance	mm	5 / 14 / 80	5 / 14 / 80
Max. table load	kg	400	400
TRAVELS:			
Longitudinal (X)	mm	620	620
Cross (Y)	mm	420	420
Vertical (Z)	mm	400	400
Min. / Max. spindle nose to table distance	mm	100 / 500	100 / 500
FEEDS:			
Feed rate control		stepless	stepless
Feed rate X / Y / Z	mm/min	2000/2000/2000	2000/2000/2000
Rapid traverse X / Y / Z	m/min	5/5/4	5/5/5
HORIZONTAL AND VERTICAL SPINDLES:			
Spindle taper	ISO	40	40
Tool holders	DIN	69871A	69871A
Pull stud	ISO	7388/2 type B	7388/2 type B
Max. horizontal spindle speed	rpm	4000	4000
Max. vertical spindle speed (standard / option*)	rpm	4000 / 8000*	4000 / 8000*
Spindle speed control		stepless	stepless
Tool unclamping		hydraulic	hydraulic
Spindle power S1 / S3 (25%)	kW	10.5 / 13,7	10,5 / 15,8
Spindle torque S1/ S3 (25%)	Nm	125 / 165	125 / 210
Main motor type	type	inverter controlled	digitally controlled
VERTICAL HEAD:			
Quill travel	mm	80	80
Swivel head angle	degree	±45	±45
CONTROL:			
Digital Readout Heidenhain (standard/option)	type	ND 5023/7013 (FNE 40P)	-
Straight-Cut Control Heidenhain	type	TNC 128 (FNE 40P NC)	-
CNC system Heidenhain	type	-	TNC 620
MISCELLANEOUS:			
Accuracy of positioning**	mm	-	±0,010
Repeatability**	mm	-	0,005
Net weight	kg	c.a. 1900	c.a. 2100
Dimensions: X/Y/Z	mm	2000x2760x2050	2020x2800x2320

*with optional high speed vertical milling head
**- acc. to PN-ISO 230-2, execution with linear scales

STANDARD:

- digital readout ND5023 (FNE 40P),
- Straight-Cut Control TNC128 (FNE 40P NC),
- HEIDENHAIN TNC 620 CNC system (FNE 40N),
- vertical and horizontal spindle,
- precision ground ballscrews in all 3 axes,
- box-type guideways for all 3 axes,
- manual handwheels with scales in all 3 axes,
- water tool coolant system,
- guideway covers,
- steady rest for long milling arbors,
- working area enclosure,
- pull studs – 3 pcs,
- operator's and programming manuals,
- CE conformity statement.

OPTIONS:

For CNC-operated machines

- linear scales in all 3 axes,
- electronic handwheel,
- workpiece probe,
- tool probe,
- CNC rotary table (4th axis),
- CAD/CAM software.

For manual and CNC-operated machines

- high speed vertical milling head - 8000 rpm,
- dividing head with tailstock,
- 3 and 4 jaw chucks for dividing head,
- slotting attachment,
- machine vice,
- plate table,
- tilting table,
- boring head,
- toolholders, milling arbors and more.

FNE50 SERIES |

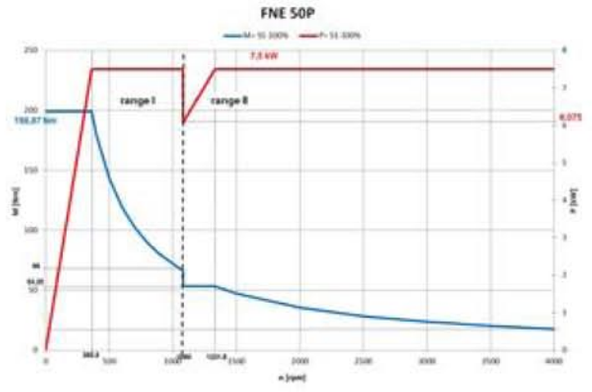
larger
stronger
more productive

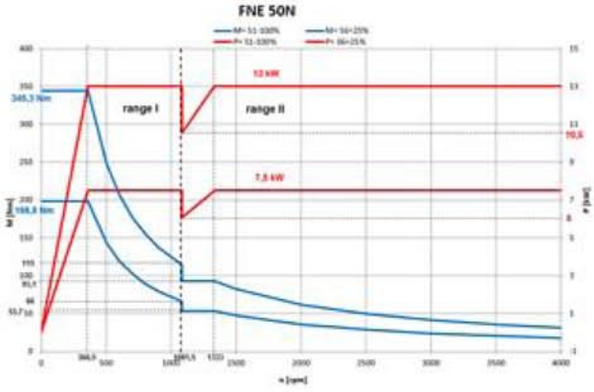
FNE50 SERIES |

Characteristics of execution include:
- rigid design of iron castings for achieving high accuracy of machined parts,
- stepless setting of spindle speeds and feeds enable adjustment of optimal machining parameters for modern tools,
- separate motors for all axes with low power consumption,
- separate motors for all axes,
- precision ground ballscrews fin all axes,
- increased workspace with cabin and allowable table loads up to 500kgs,
- HEIDENHAIN TNC 620 for N version or 128 for shopflor programing,
- box-type guideways for stability and rigidity. TURCITE lining minimizes friction and eliminates stick-slip effect.

Operator-friendly machines:
- all control elements included in central control panel,
- optional application of electronic handwheel for effortless machine operation,
- automatic lubrication included with N version,
- button controlled tool clamping/ unclamping.

Wide range of optional equipment:
- high speed vertical milling head up to 8 000 rpm,





Technical Data		FNE 50P / FNE 50P NC	FNE 50N
HORIZONTAL TABLE:			
Table surface	mm	500 x 1000	500 x 1000
T-slots: number / size / distance	mm	5 / 18 / 100	5 / 18/ 100
Max. table load	kg	500	500
TRAVELS:			
Longitudinal (X) (standard/option)	mm	800 / 1000	800 / 1000
Cross (Y)	mm	500	500
Vertical (Z)	mm	420	420
Min. / Max. spindle nose to table distance	mm	115 / 535	115 / 535
FEEDS:			
Feed rate control		stepless	stepless
Feed rate X / Y / Z	mm/min	2000/2000/2000	2000/2000/2000
Rapid traverse X / Y / Z	m/min	5/5/4	5/5/5
HORIZONTAL AND VERTICAL SPINDLES:			
Spindle taper	ISO	40	40
Tool holders	DIN	69871A	69871A
Pull stud	ISO	7388/2 type B	7388/2 type B
Max. horizontal spindle speed	rpm	4000	4000
Max. vertical spindle speed (standard / option*)	rpm	4000 / 8000*	4000 / 8000*
Spindle speed control		stepless	stepless
Tool unclamping		hydraulic	hydraulic
Spindle power S1 / S6 (25%)	kW	7,5 / -	7,5 / 13
Spindle torque S1/ S6 (25%)	Nm	198,5 / -	198,5 / 344
Main motor type	type	inverter controlled	digitally controlled
VERTICAL HEAD:			
Quill travel	mm	80	80
Swivel head angle	degree	±45	±45
CONTROL:			
Digital Readout Heidenhain (standard/option)	type	ND 5023/7013 (FNE 50P)	-
Straight-Cut Control Heidenhain	type	TNC 128 (FNE 50P NC)	-
CNC system Heidenhain	type	-	TNC 620
MISCELLANEOUS:			
Accuracy of positioning**	mm	-	±0,010
Repeatability**	mm	-	0,005
Net weight	kg	c.a. 2900	c.a. 3000
Dimensions: X/Y/Z	mm	2450 x 3200 x 2100	2450 x 3200 x 2100

*with optional high speed vertical milling head

**- acc. to PN-ISO 230-2, execution with linear scales

STANDARD:

- digital readout ND5023 (FNE 50P),
- Straight-Cut Control TNC128 (FNE 50P NC),
- HEIDENHAIN TNC 620 CNC system (FNE 50N),
- vertical and horizontal spindle,
- precision ground ballscrews in all three axes,
- box-type guideways for all three axes,
- water tool coolant system,
- guideway covers,
- steady rest for long milling arbors,
- working area enclosure,
- pull studs – 3 pcs,
- operator's and programming manuals,
- CE conformity statement.

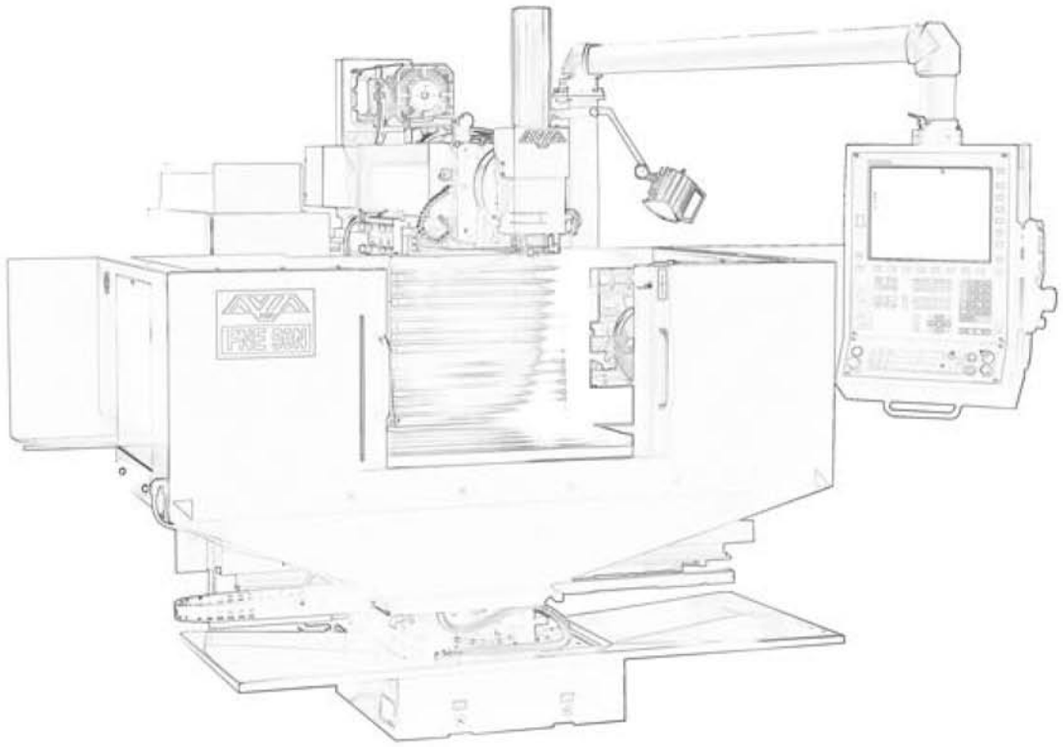
OPCJE:

For CNC-operated machines

- linear scales in all 3 axes,
- electronic handwheel,
- workpiece probe,
- tool probe,
- CNC rotary table (4th axis),
- CAD/CAM software,

For manual and CNC-operated machines

- high speed vertical milling head - 8000 rpm,
- dividing head with tailstock,
- 3 and 4 jaw chucks for dividing head,
- slotting attachment,
- machine vice,
- plate table,
- tilting table,
- boring head,
- toolholders, milling arbors and more,



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