Made in Czechoslovakia

Strojimport

HORIZONTAL BORING MACHINE

TOS

TECHNOIMPEX
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Serial No
2428

W100A

Strojimport

W100A

Main Advantages of Machine

Bed and saddle guideways lined with hardened steel gibs

Longitudinal and cross slide ways coated with plastic

Power clamping of tools in spindle, free of shocks

Machine fitted with three-axis readout system

Wide range of spindle speeds and working feeds available

Faceplate and spindle rotating simultaneously or independently

Speed and feed preselection by a single lever

Dependable central lubrication of guideways

Guideways protected by covers at machining spot

Facility of selecting either 4 or 11 kW motor output saving power consumption

Tradition - High Standard - Quality

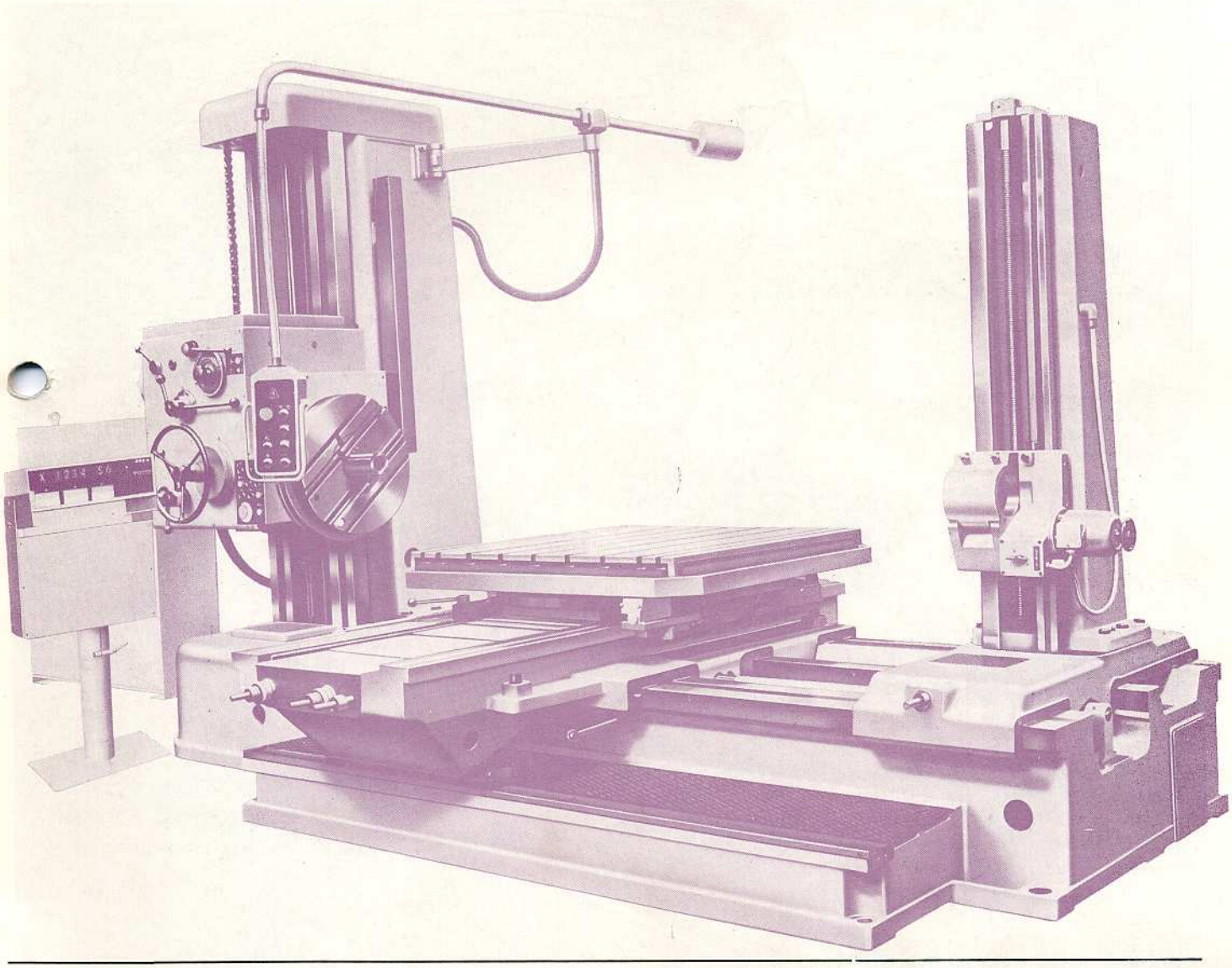
W 100 A Horizontal Boring Machine

The TOS Varnsdorf Concern Enterprise is a significant Czechoslovak builder of medium-size horizontal boring machines. Vast development scheme, modern machinery equipment, long-standing manufacturing tradition along with high-skilled staff enabled the works to rank among the leading enterprises of its kind. High reputation of the TOS Varnsdorf products is reflected in the ever growing export sales to more than 40 countries of all continents. The export sales figure amounts, through many years, to 80 % of the works total production volume.

is a modernized version of the preceding well-proven W 100 model built for more than 30 years, one of the best selling types of conventional horizontal boring machines. The working facilities of the new W 100 A model highlight before all the versatility of the machine which is providing for:

- precision drilling and boring to coordinates
- facing by means of faceplate
- milling with simple or sophisticated cutters
- machining with the aid of long boring bars
- cutting metric of Whitworth threads with single-point tool.

The machine allows for precision and efficient machining of cast or welded workpieces weighing up to 3000 kg.



Bed, Column, Boring Bar Rest

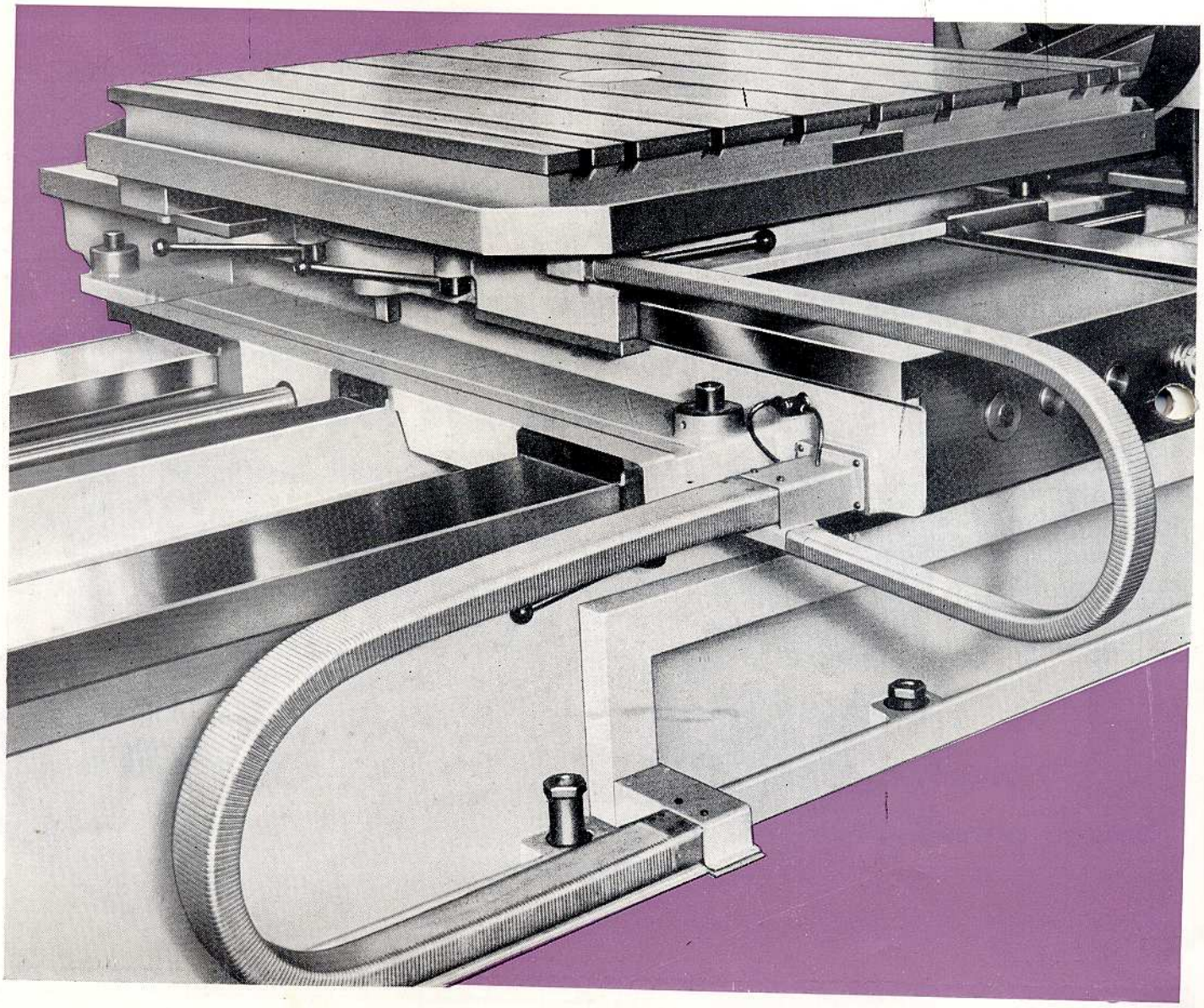
The wide machine bed with three flat, one lateral and one supporting ways is fitted with convenient inside ribbing. It ensures high rigidity and accurate positioning also under maximum load on table and in its extreme positions. The vertical column guideways are precision ground. The right-hand side face of column is especially amply proportioned to provide precise lateral guiding to the headstock. The boring bar rest is adjustable by hand in the longitudinal direction. The boring bar support, receiving bushes and long boring bars, is power-adjustable for height. Fine adjustment is by handwheel arranged on the electric motor shaft.

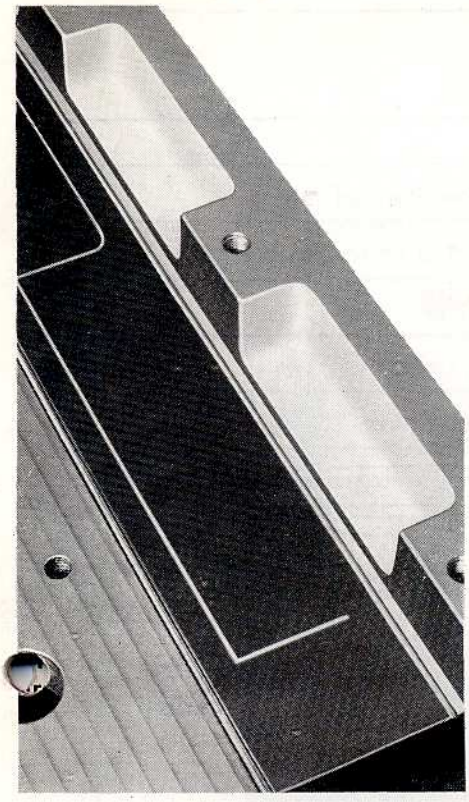
Saddle, Table

A new feature of the described model are its slideways being grouted with plastic thereby substantially reducing friction and, consequently, power consumed to perform power feeds. Motions, even in the lowest feed rates, are proceeding very smoothly, eliminating and risk of seizure.

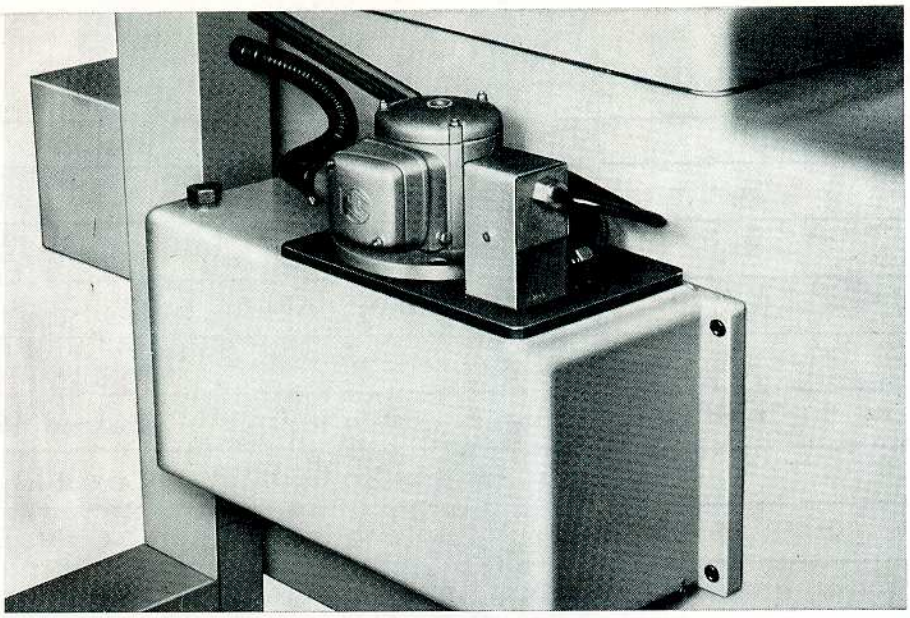
The dark plastic coating, about 3 mm thick, has oil channels milled in it. The slides, once assembled with the matching assembly, are grouted with the mentioned plastic. The coating is accomplished within close limits without calling for any subsequent scraping.

Power distribution on the saddle-table assembly is by means of the STABIFLEX protective flexible steel conduits enhancing safety in operation and facilitating cleaning of the machine.

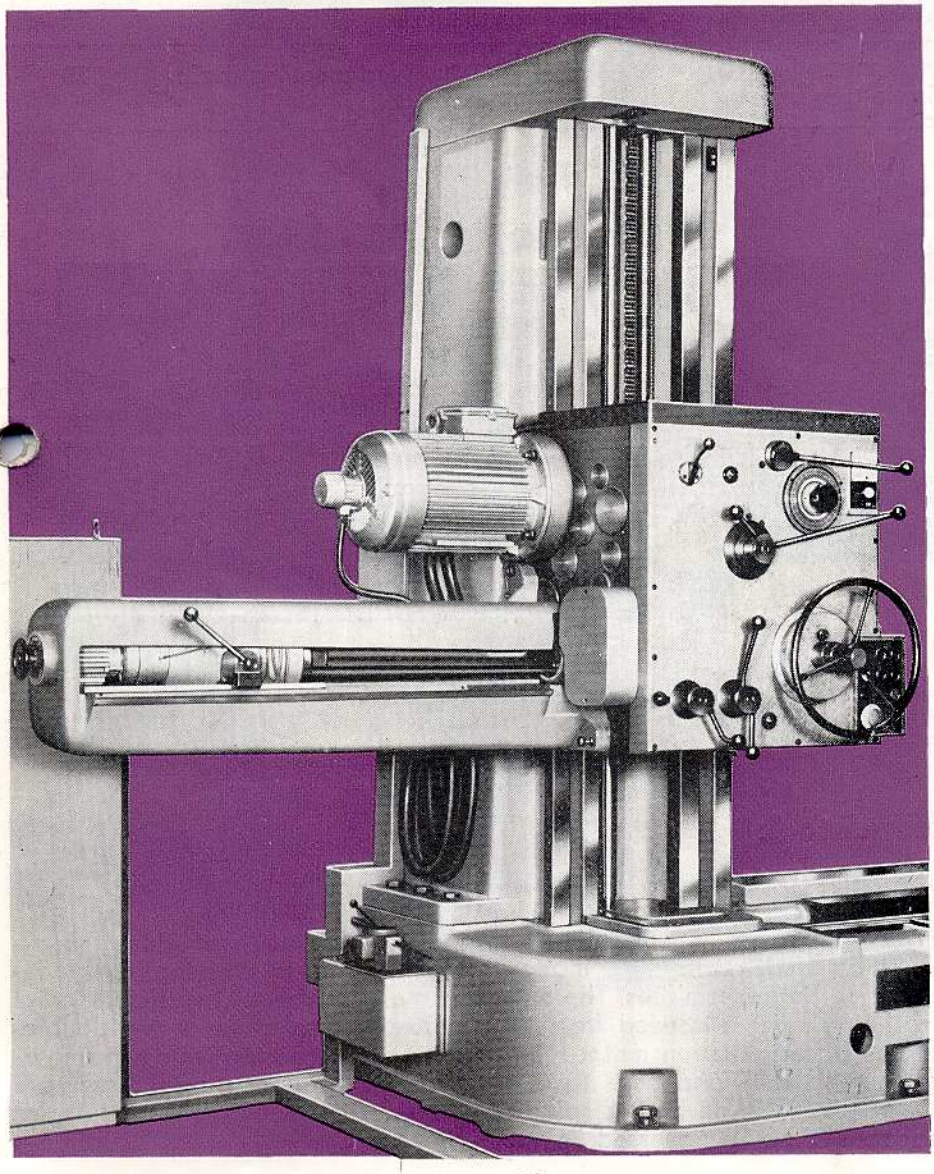




▼ Separate lubrication system of guiding surfaces and oil lubricating pump form a unit — lubricating set. It is located on the left-hand side in the machine bed. It is easily accessible for the purposes of the replenishing of oil as well as the control of the supplied quantity.



▲ A two-way valve provided at the lubrication oil pump enables oil to be directed into one or the other branch.



Central Lubrication

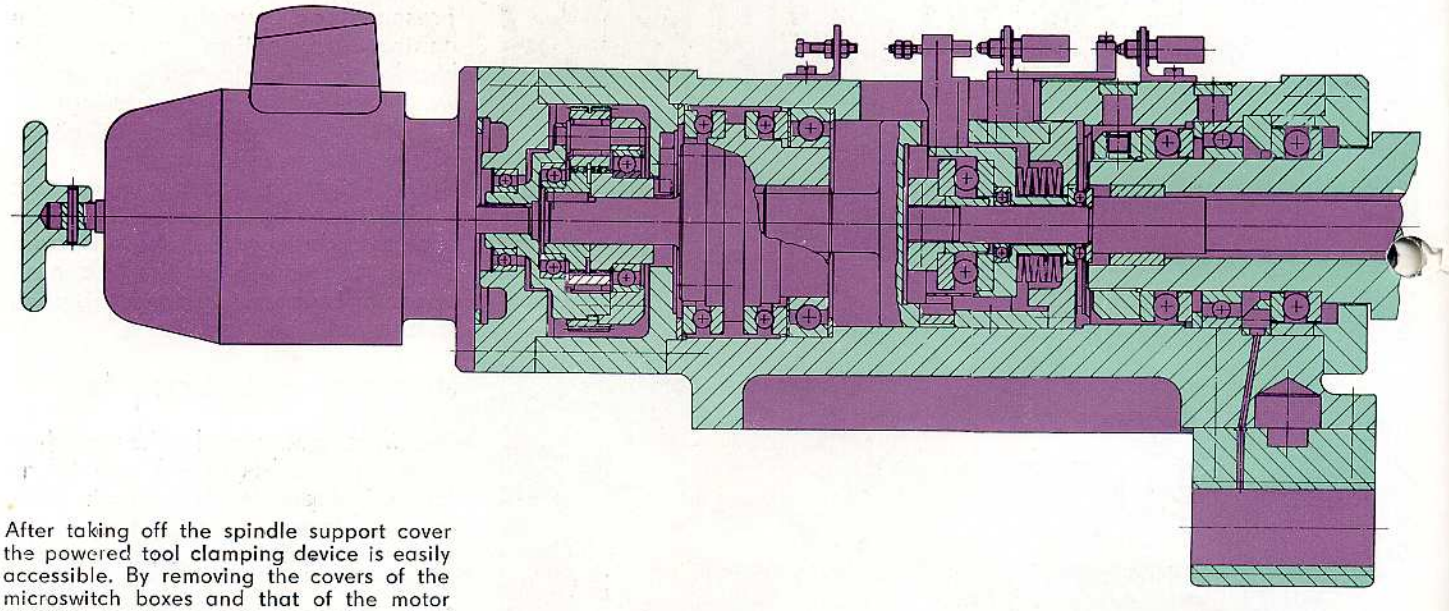
The machine assemblies exposed to an especially high stress, such as the longitudinal and cross slides with the rotary table carrying the workpiece, are lubricated with pressure oil supplied from the central lubrication system. The headstock is lubricated in a similar way. The facility of controlling the volume of oil delivered to either of the lubrication branches makes the lubrication process economic and efficient at the same time. The lubricant delivery, i.e. the oil pump motor, is started by the machine operator by pressing down the push button on the headstock.

Remaining Lubrication

Bearings, gears and other mechanisms in the headstock are lubricated independently with circulating oil drawn by a piston pump from the headstock bottom and delivered to the lubrication spots. A sight glass is provided to check the pump work and an oil gauge to check the oil level. The gearbox underneath the headstock is provided with a self-contained wick-feed lubrication system. The oil level is checked by a dip rod. The remaining parts of the machine are fitted with conveniently arranged nipples supplied by means of a grease gun according to the lubrication time chart of the machine.

Controls on Headstock

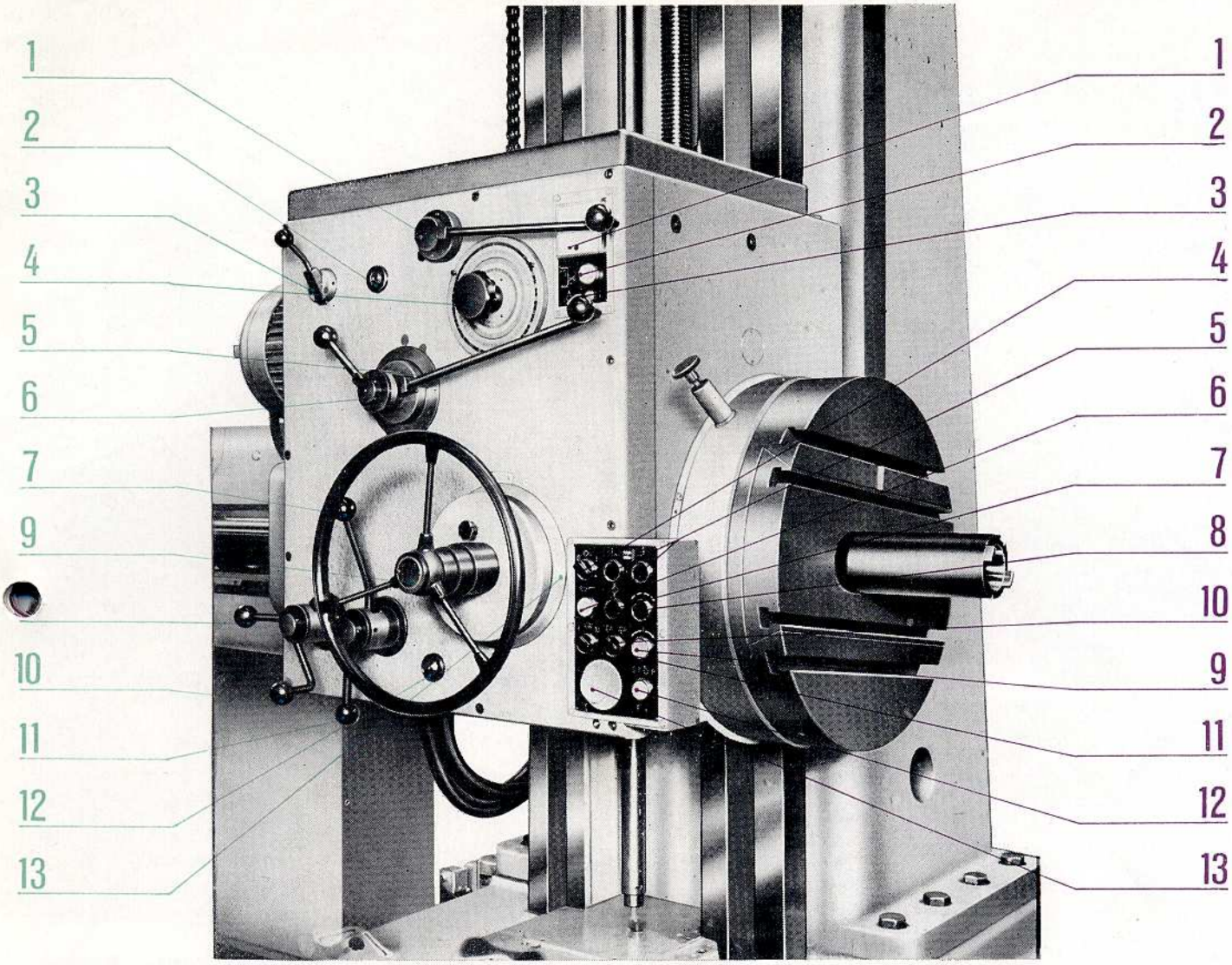
MECHANICAL		ELECTRICAL	
1	Spindle speed and feed control lever	Ammeter to show load of motor	1
2	Sight glass to check oil pump work	Signal bulb — motor ready to start	2
3	Feed safety clutch lever	Sport light switch	3
4	Speed and feed selection dial	Coolant pump switch	4
5	Feed or rapid traverse selecting lever	Powered tool clamping	5
6	Machine assembly selecting lever	Central lubrication to guideways	6
7	Spindle feed tripping lever	Optical readout illumination	7
8	Feed range selecting lever	Spindle tipping button	8
9	Handwheel	Spindle run START button	9
10	Speed range selecting lever	Push button to select sense of spindle rotation	10
11	Facing slide feed tripping lever	Motor output selecting button	11
12	Oil gauge to check oil level in headstock	Motor STOP button	12
13	Disk with depth scale showing amount of spindle traverse	CENTRAL STOP, disconnecting main circuit breaker	13

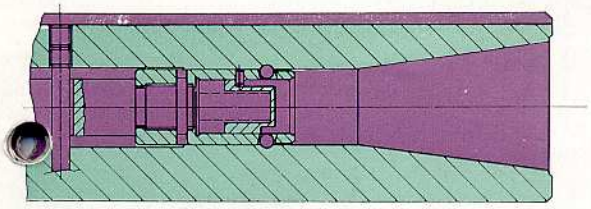


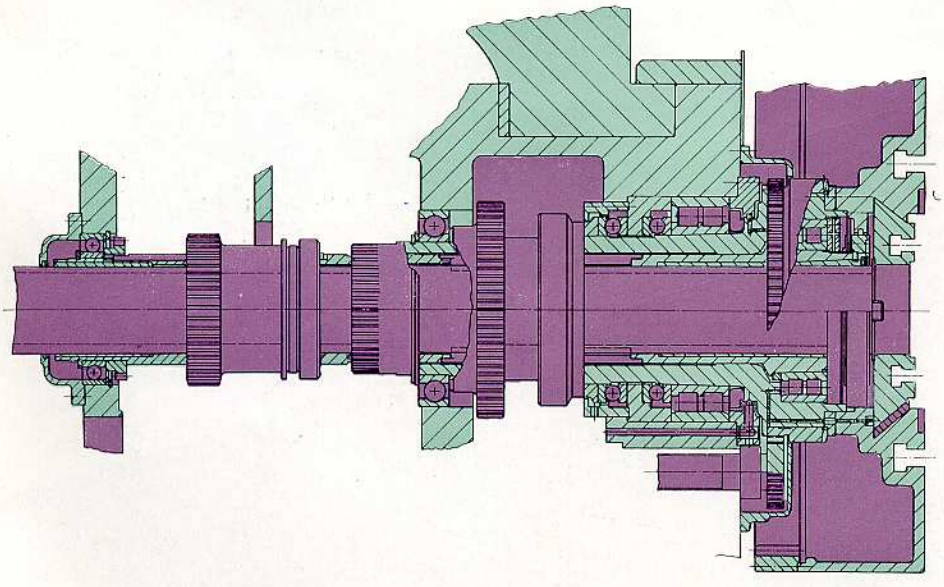
After taking off the spindle support cover the powered tool clamping device is easily accessible. By removing the covers of the microswitch boxes and that of the motor terminal board an easy access is gained to the conductors and terminals to check or to adjust their function.

Headstock

The box-section casting, inside reinforced with ribbing, houses the mechanisms for the selection of spindle speeds and of feed motions of the sliding assemblies. The drive to the spindle is derived from the three-phase induction motor located at the left-hand side face of the headstock. The boring spindle, capable of being traversed, is running in two quills of which the external one is carrying the faceplate with the facing slide. Radial thrusts are taken up by two double-row roller bearings and two single-row ball bearings, axial thrusts are taken up by two one-way thrust bearings.







Section through spindle bearing arrangement.

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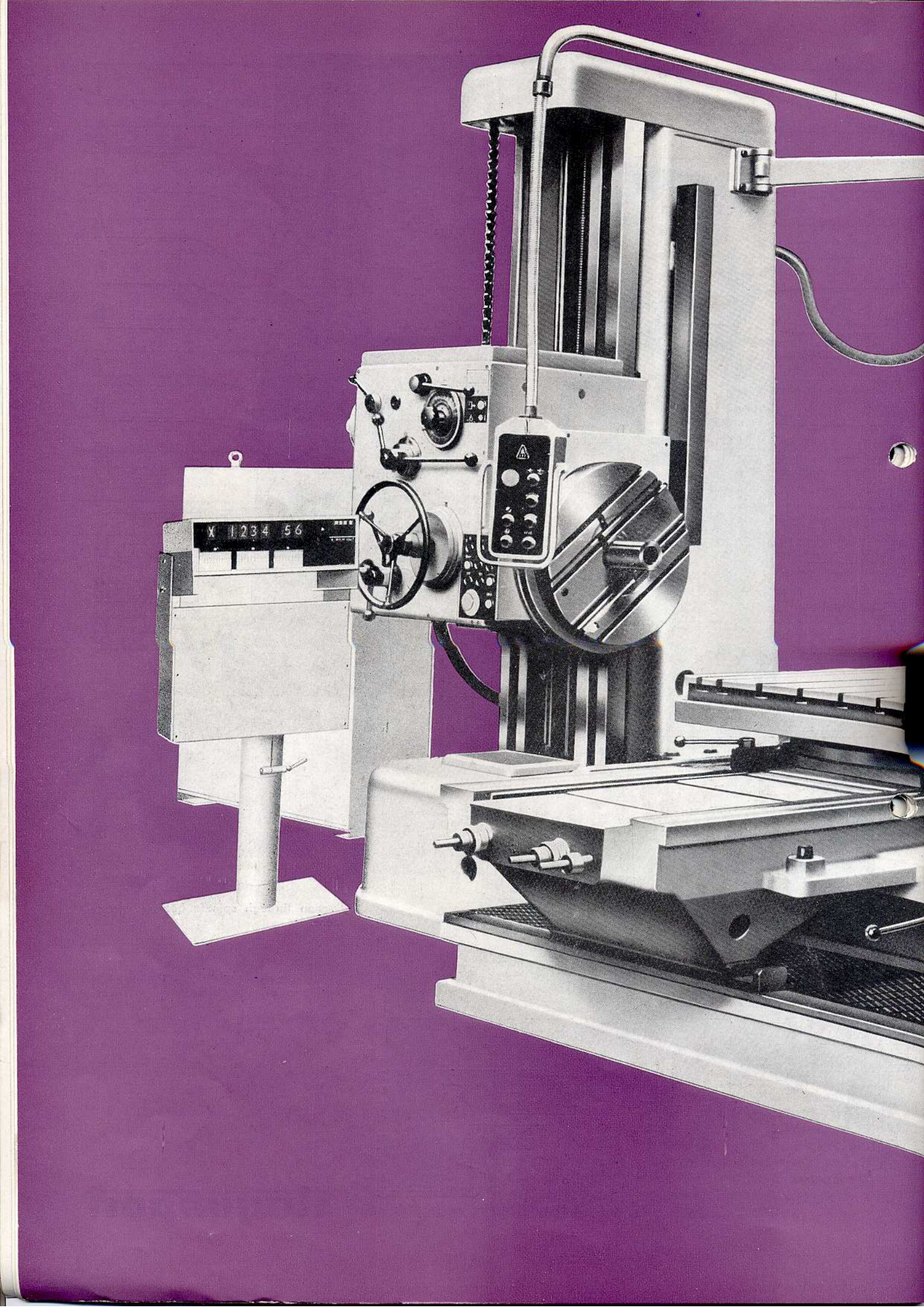
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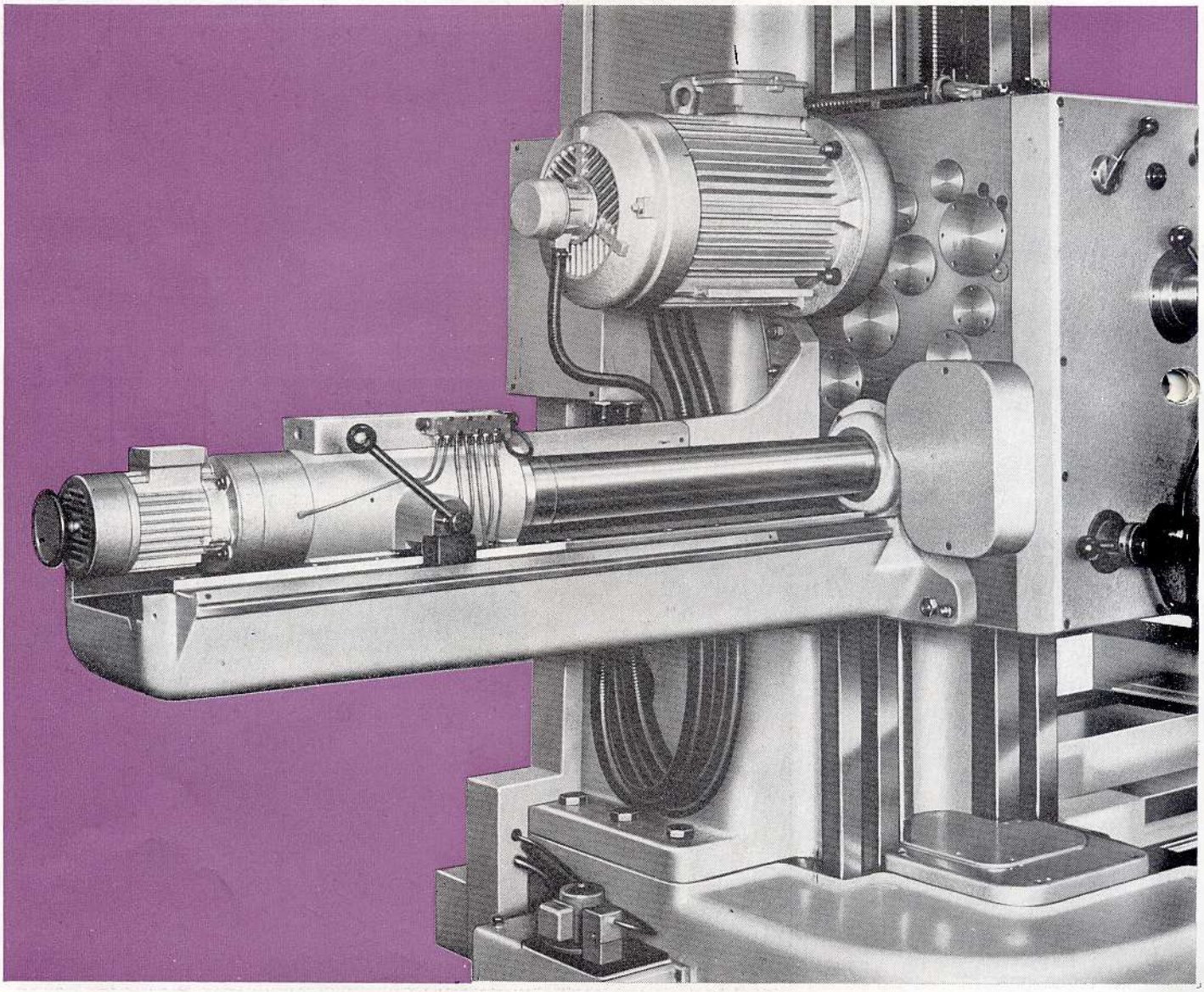
Powered, shockless tool clamping

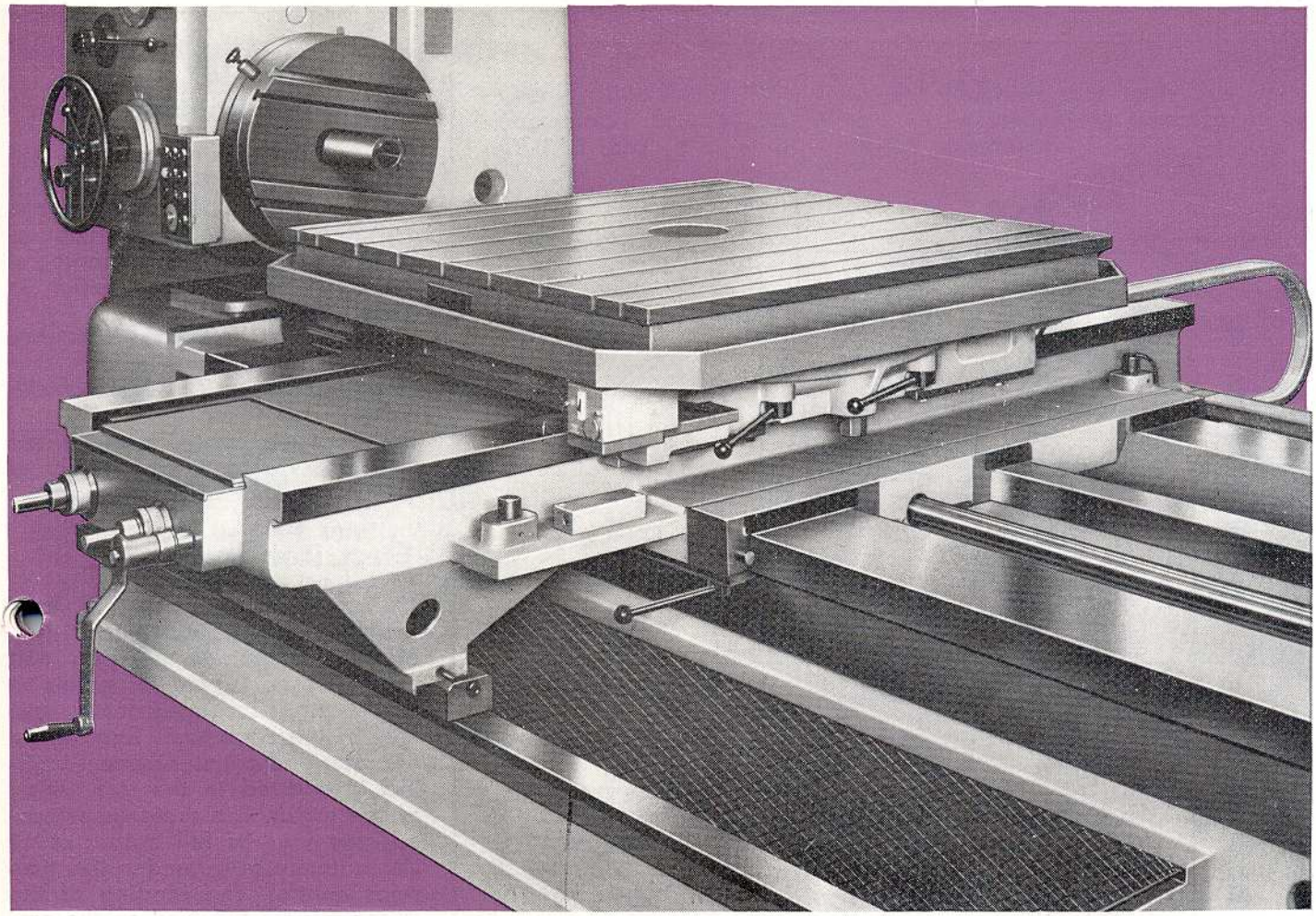
The standard version of the machine is fitted with an ISO 50 taper spindle to ČSN 22 0430. Tools are clamped in the spindle by means of the electric motor, draw-in device and a rod passing through the whole spindle. The tools are provided with clamping extensions. In the course of inserting and clamping the tool in the spindle taper the cylindrical end of its clamping extension is drawn in and gripped by steel balls around its entire circumference. The tool position, i.e. the amount by which the tool is to be rotated, is fixed by the position of the carriers on the spindle nose.

Precision 4x90° Positioning of Rotary Table

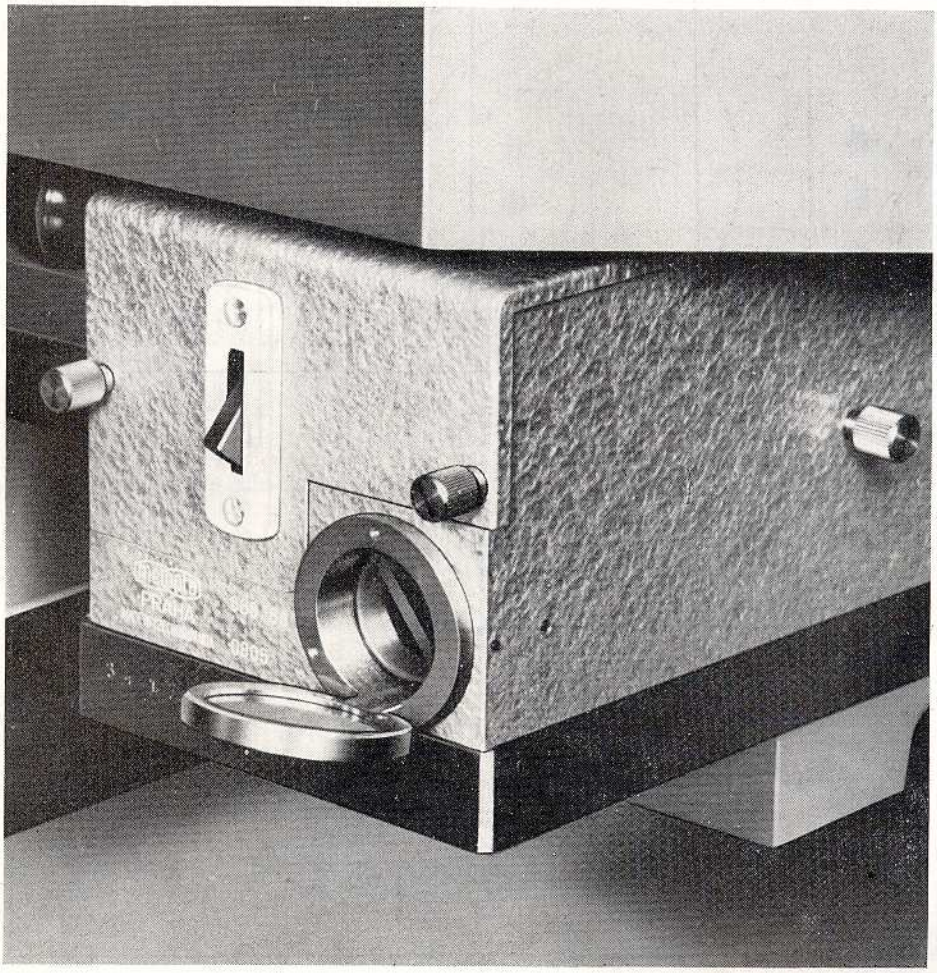
The rotary table indexing into its four 90° positions may be checked by the optical projection readout system. A folding mirror, serving at the same time as screen cover, is capable of being swivelled into any arbitrary position. The movement of the division line into the measuring marker lines is easily observable from operator's post in front of the table saddle, wherefrom the operator controls the table indexing by turning the hand crank.

The positioning accuracy in indexing the table into its four 90° positions with the aid of the optical readout is 8" (angular seconds). The marker lines at the four table corners are adjustable. Therefore on a properly anchored machine upon the specified foundation it is possible, in verifying the table positions using a precision measuring bridge with swing-over arm, to achieve the mentioned optimum accuracy of the 4×90° indexing. After being adjusted the marker lines may be secured to prevent their unwanted dislocation. Besides, the rotary table is fitted with a reference graduation from 0 to 360° on its periphery. The described optical projection readout for the 4×90° table indexing is supplied as standard equipment of every machine.

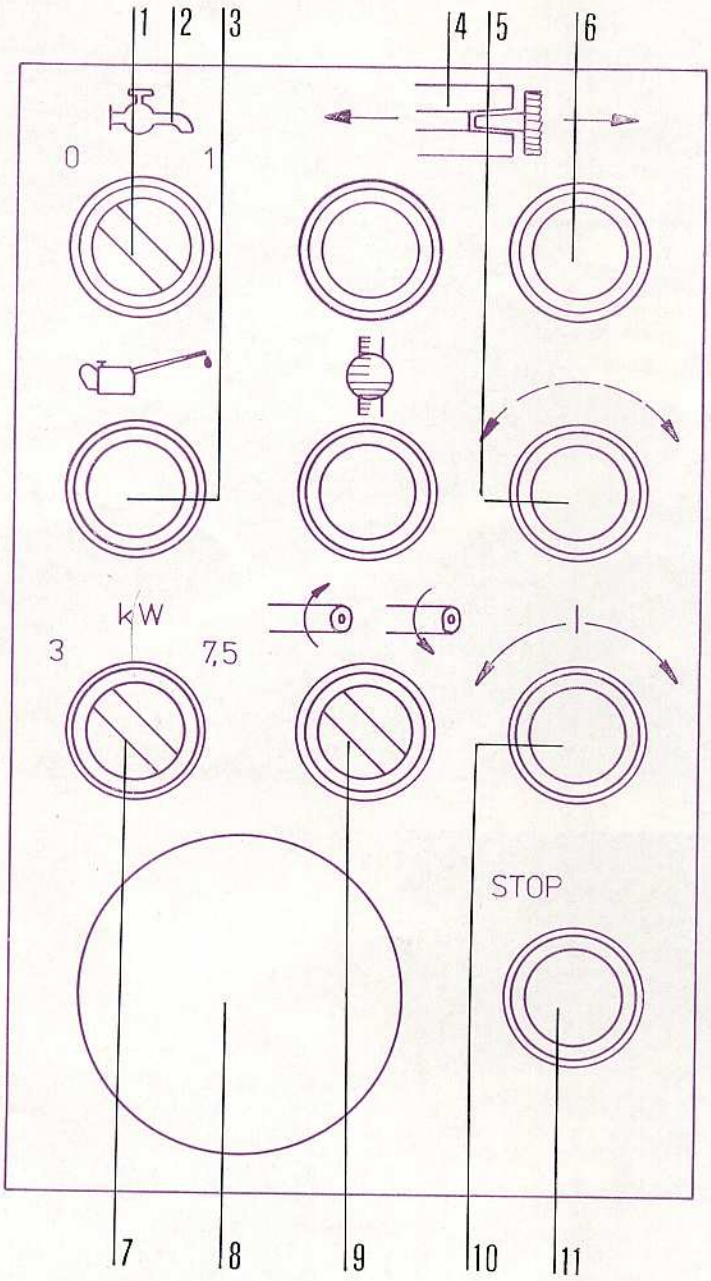




Section through the complete powered tool clamping assembly (MUN). An essential member of the said assembly are the Belleville washers giving the tool clamping device the required elasticity in tensile force.



The optical projection readout of the 4 × 90° table positioning is arranged below the table edge upon a bracket attached to the cross slide. The screen may be easily observed from the post taken by the operator to index the table by means of the hand crank. Levers are provided on the slides to lock the rotary table in any arbitrary position.
The optical table position readout is easily accessible after indexing the table by 45°. Its cleaning or a possible replacement of its projection bulb present no difficulty. A self-contained low-voltage spot light is provided to illuminate the readout.



TESLA NS 114

Digital Indication

TESLA NS 114 simple digital indication is used for the measuring of the areas of the machine moving parts. The equipment operates as an electrooptical scanning of the workpiece or tool position in three co-ordinates:
transversal — X — slide with table
vertical — Y — headstock
longitudinal — Z — slide with table
The reading is carried out in metric measure. The data are displayed on the five-digit read-out panel.

Electrical Equipment

The main drive is obtained from the three-phase induction motor. Starting, stopping, reversing and tipping is performed by means of push buttons arranged at the front face of the headstock. Starting up of motor and counter-current braking is effected in the star wiring of the motor. The motor is switched over into its full output of 11 kW automatically, under the time relay control. The loading of the motor may be followed on the ammeter provided. The motor is protected against overload by means of an overcurrent relay and fuses. The electrical equipment allows but for three-phase current to be supplied. The machine is to be connected to earth, possibly also to a neutral conductor in compliance with the valid regulations.

Legend to fig. 2

The additional pendant offers the following facilities:

1 — Selection of sense of spindle rotation
2 — Spindle tipping button
3 — Spindle run START button
4 — Motor STOP button, counter-current braking
5 — Push button to enable pendant function
6 — Signal bulb announcing pendant enabled
7 — CENTRAL STOP, remote disconnecting of main circuit breaker

Standard Equipment of Machine

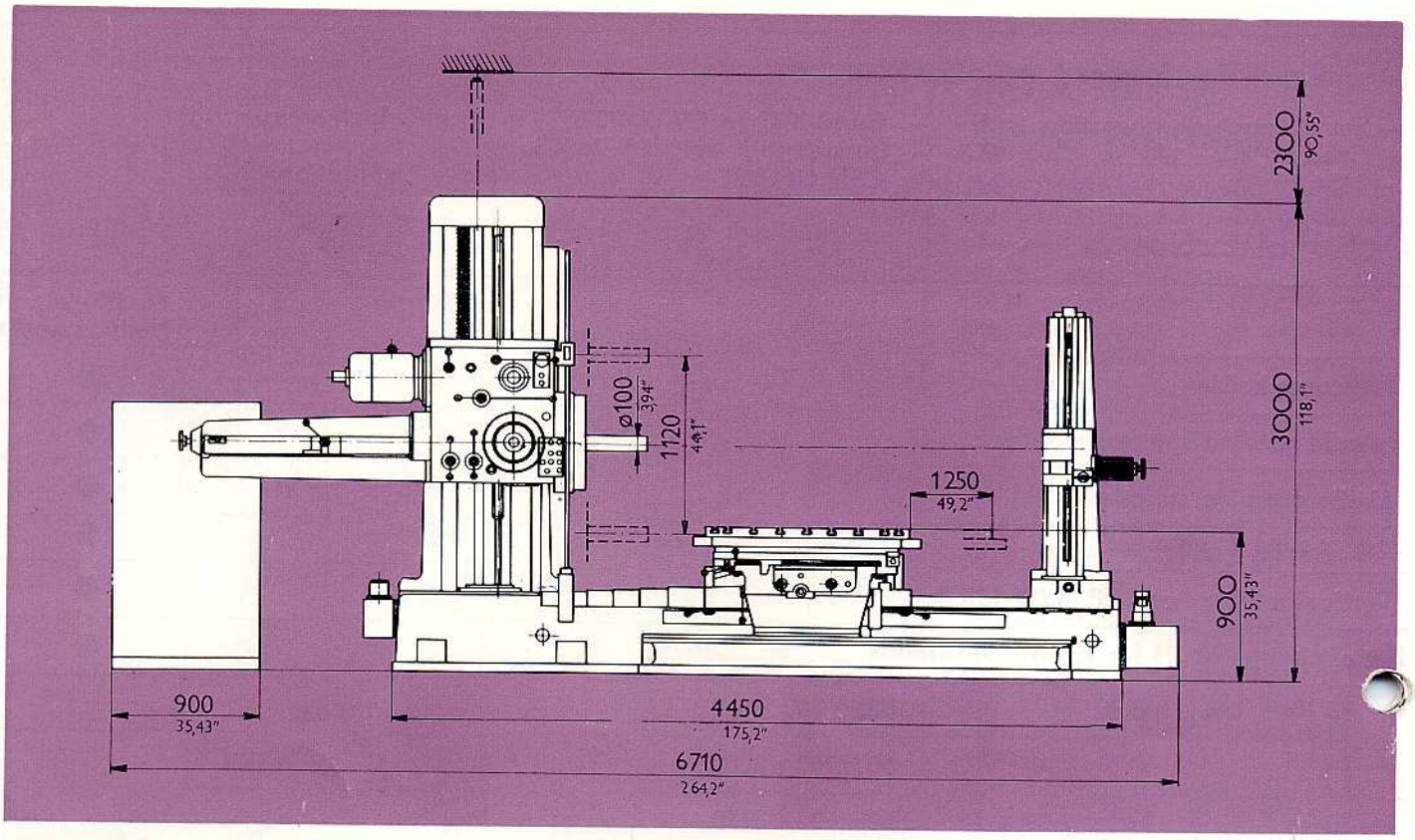
— Set of machine operating tools
— Grease gun 140 to ČSN 23 1454.1
— Crank 250 to PN 60 250
— Suspension bolt M 36×3 to ČSN 02 1369
— Machine spot light
— Accompanying technical documentation.

Optional Extras

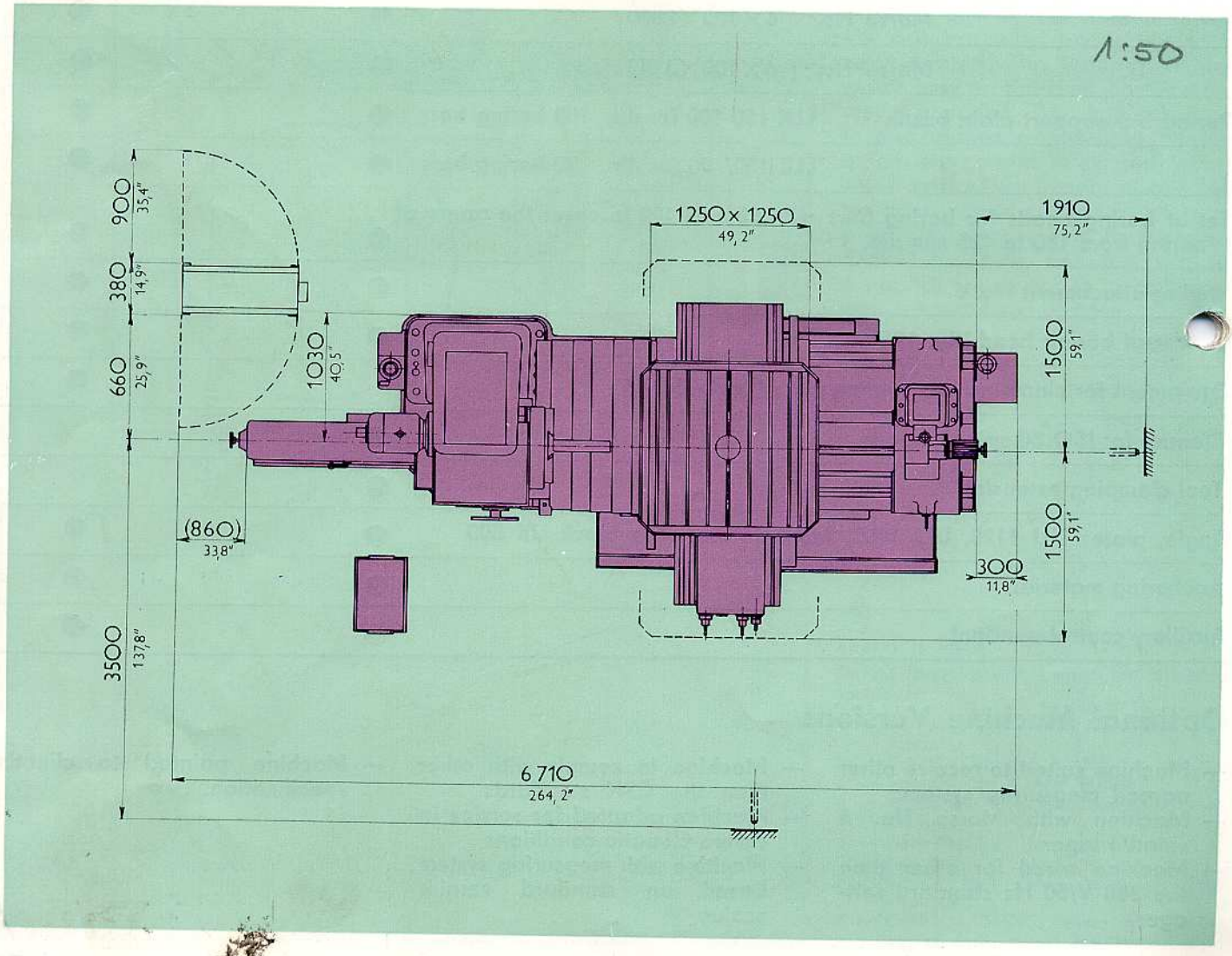
	For ISO 50 spindle	For Morse No. 6 spindle
Telescopic holder	●	●
Spindle guiding support	●	●
Spindle gripping support	●	●
Tool cooling equipment	●	●
Vertical milling head FP 40/W 100 A	●	●
Set of change gears for Whitworth threads	●	●
Boring bars, long, blank 50× 80×2500		
50×100×2000		
50×100×3150		
Morse No. 6× 80×2500	●	●
Morse No. 6×100×2000	●	●
Morse No. 6×100×3150	●	●
Boring bar support plain bushes LLK 150/100 for dia. 100 boring bars	●	●
LLK 150/ 80 for dia. 80 boring bars	●	●
Set of boring heads for boring bars dia. 80 and 100 to cover the range of boring from 180 to 425 mm dia.	●	●
Boring attachment No. 6	●	●
Universal boring head Vhu 125	●	●
Equipment for clamping and forcing out of tools ZVN 6		●
Cleaner for ISO 50 spindle taper	●	
Tool clamping extension	●	
Angle, plates UU 1120, UU 1450, box-type clamping block UK 500	●	●
Anchoring materials	●	●
Auxiliary control pendant	●	●

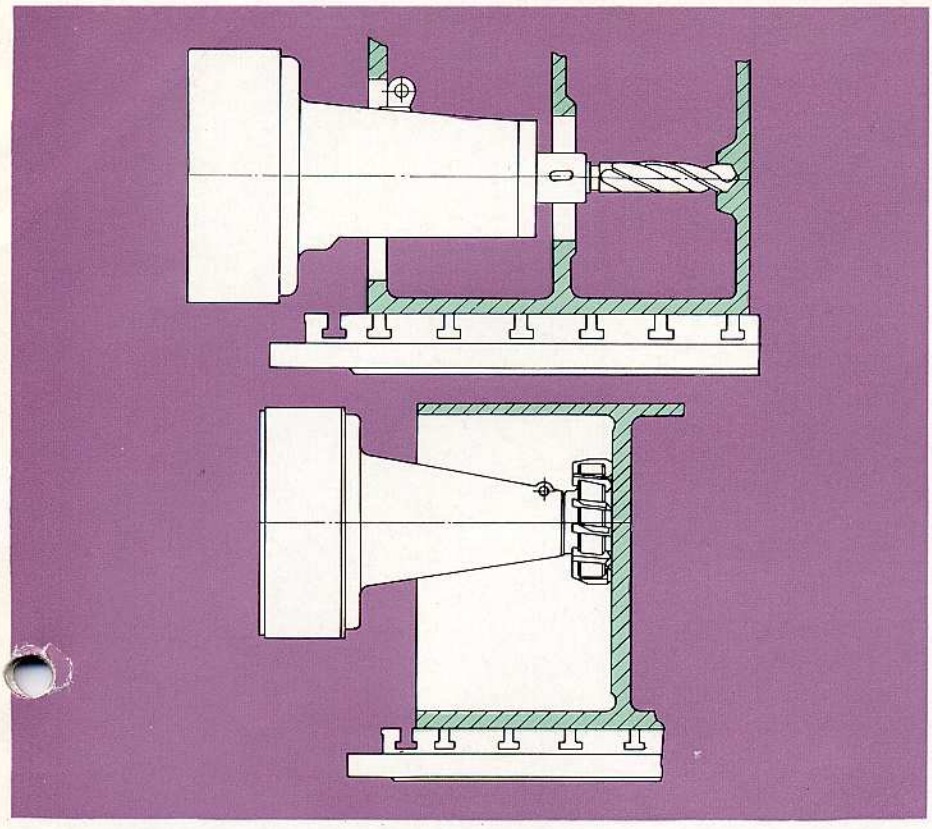
Optional Machine Versions

— Machine suited to receive other agreed measuring system
— Machine with Morse No. 6 spindle taper
— Machine wired for other than the 380 V/50 Hz standard voltage
— Machine to comply with other than the ČSN standards
— Machine adapted for service in severe climatic conditions
— Machine with measuring system based on standard vernier scales
— Machine painted to client's specification.


2300
90,55"
3000
118,1"
ø100
3,94"
1120
44,1"
1250
49,2"
900
35,43"
900
35,43"
4450
175,2"
6710
264,2"

1:50


900
35,4"
380
14,9"
660
25,9"
1030
40,5"
1250 x 1250
49,2"
1910
75,2"
1500
59,1"
1500
59,1"
(860)
33,8"
300
11,8"
3500
137,8"
6710
264,2"



Dimensional drawing of W 100 A machine

The optional machine versions are subject to consulting the machine builder and agreeing client's specification beforehand.

Example of spindle guiding support application

Example of spindle gripping support application

Specifications of W 100 A

Headstock		
Diameter of boring spindle	mm	100
Taper in spindle to ČSN 22 0431		ISO 50
Boring spindle travel	mm	900
Height of boring spindle centreline over table — X axis	mm	1,120
Distance faceplate to boring bar rest	mm	2,800
Max. diameter of facing	mm	900
		23
Spindle speed range	RPM	7.1 to 1,120
Number of faceplate speed steps		16
Range of faceplate speeds	RPM	7.1 to 224
Table		
travel of table in X axis	mm	1,600
gitudinal travel of table in Z (W) axis	mm	1,250
Working surface of table	mm	1,250 × 1,250
Number of T slots		9
Width of T-slots to ČSN 02 1030	mm	22
Spacing of T-slots	mm	160/80
Diameter of centring hole in table	mm	180 H6
Max. weight of workpiece admitted	kg	3,000
Feeds		
Boring feeds: number		32
range	mm/rev	0.02—12
Milling feeds: number		18
range	mm/min	18—900
Facing slide feeds: number		32
range	mm/rev	0.02—12
Circular feeds of table: number		18
range (related to 1,000 mm dia.)	mm/min	25—1,400
Rapid traverse: spindle, headstock, saddle and table	mm/min	2,800
table rotation	RPM	1
boring bar support	mm/min	696
Threads		
Metric threads: number		18
range of pitches obtainable	t.p.i.	0.25—12
Whitworth threads: number		18
range obtainable	t.p.i.	120—2.5
Drive		
Main drive motor (spindle rotation and feed motions): output	kW	11
speed	RPM	1,400
Boring bar rest motor: output	kW	0.55
speed	RPM	2,780
Total input required	kVA	15
Weight of machine, net	kg	14,000

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Made in Czechoslovakia

Illustrations and specifications are not binding in detail.
The designs are subject to modification and improvement without notice.

TOS

Maker:
TOS Varnsdorf
Concern Enterprise
Varnsdorf

Strojimport

Exporter:
LOGOTYP - STROJIMPORT
Praha — ČSSR

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