



OPERATOR'S MANUAL
FOR
UNIVERSAL MILLING MACHINE

MODEL N.º FV-4 - *INCHES*

SERIAL NUMBER OF THE MACHINE

VOLTAGE

CYCLES

(All rights reserved)

ITZIAR-DEBA



Your "ANAYAK" machine will always correctly run if all the instructions for service and operation are duly followed, as stated on this handbook.

We beg to remark that this book has not been written to occupy a place at any file, but for the operator's use and employment, to help him to solve in any moment, the doubts he may have, and specially on the first days of handling the machine.

However, and if in spite of the help of this book you find difficulties, do not hesitate in writing us, stating the number of the machine, and employing all names employed on same.

So that the labour of our client's service be most effective, we beg you to send us, upon reception of the machine, the acknowledge-bill hereunder.

RECEPTION BILL

The machine number has been received
by the house
located in

The machine has been received in the following conditions:

State of the machine

State of the accessories

Result of the checking

Date



important

Before starting to run the machine, check carefully that the following instructions have been accomplished:

- 1— Move the machine according to instructions given on pages n.º 4 and 5.
- 2— Clean the grease or anti-rust.
- 3— Unfasten n.º 20 table locking screws (page n.º 13), n.º 21 cross-slide handwheel (page n.º 13), and n.º 22 knee handwheel (page n.º 13).
- 4— Level the machine (pages n.º 8 and 9).
- 5— Wire to electric component according to instructions (page n.º 4)
- 6— Oil the machine according to instructions (pages n.º 10 and 11).
- 7— Start (pages n.º 14, 15 and 16).

VERY-IMPORTANT: Whenever you need to make enquiries about the machine or you require for spare parts for this machine, besides giving the part number you must make reference to the machine number which appears on one end of the table.



load and unload of the machine

The operation of loading and unloading the machine is performed by introducing the hook A of the crane into the ring hook B, which it has, page 5.

When lifted, the machine must be completely horizontal.

In order that the machined and polished surfaces are not damaged during the transportation, these parts are protected with special greases and anticorrosives.

It is very important that when you receive the machine and before working its controls you clean it with disolvents and then you oil it, following for this operation, the instructions on pages 10 and 11. Then loosen the blocking bolts of the table, those of the cross slide and those of the knee. Then move the table, cross slide and vertical slide with your hand, so that the oil goes to all the surfaces.

cooling

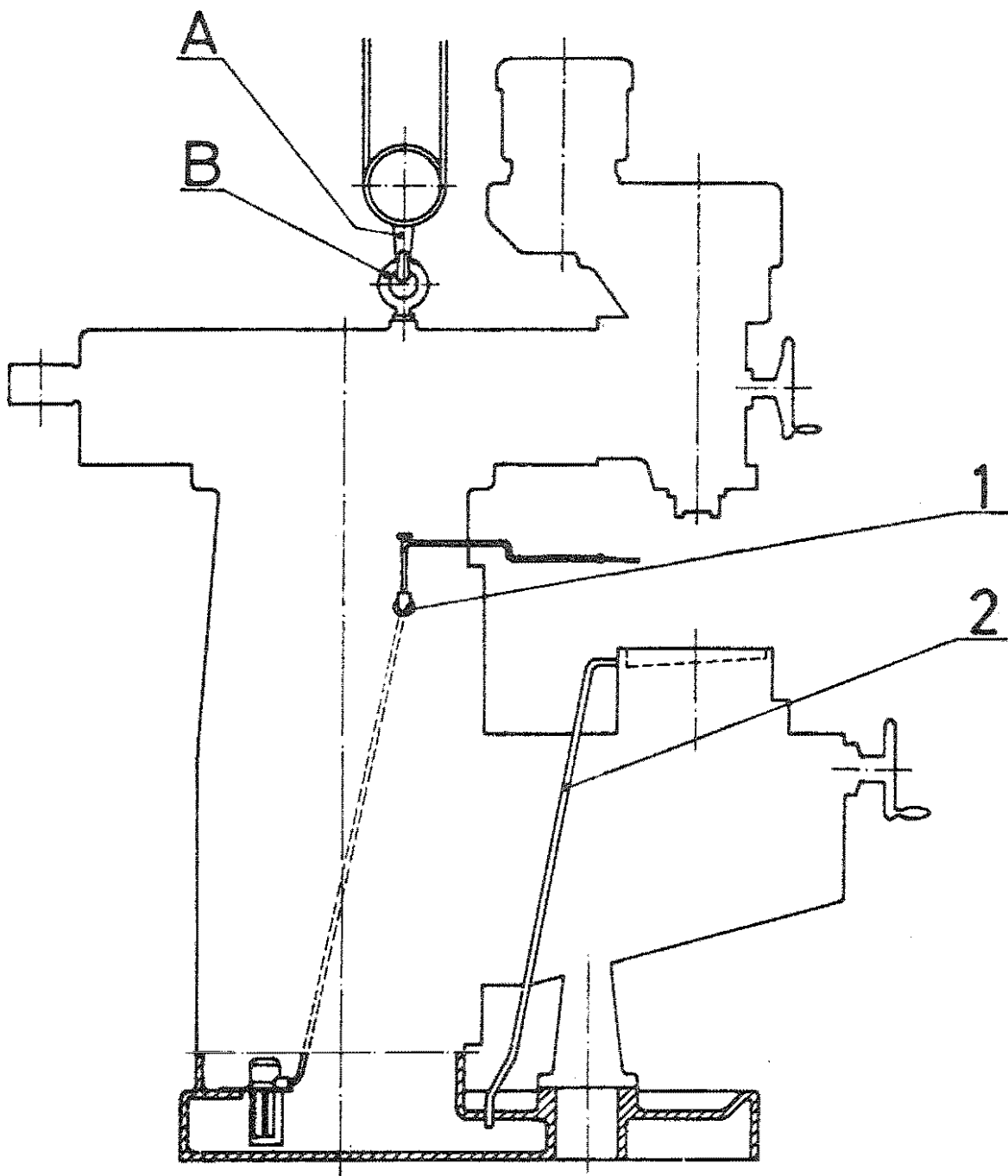
The running of the cooling liquid is ensured by an electropump placed at the foot of the machine, page 5. The electropump draws in the liquid from the tank which is at the foot also and pushes it through the exhaust tube and fosset no. 1.

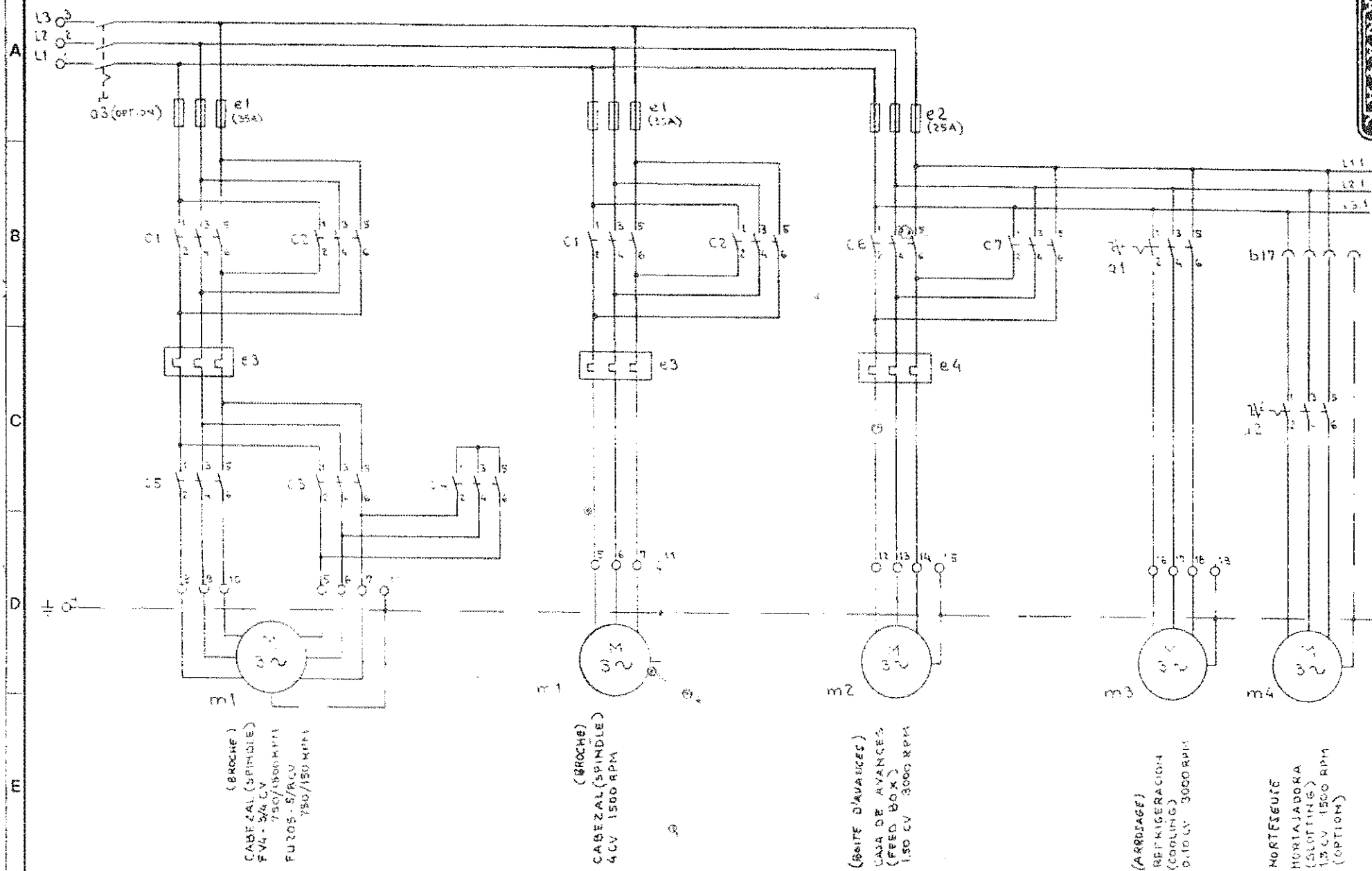
The recovery of the cooling liquid is done by means of the channels of the slide and through the flexible tube no. 2.

electric connection electrical equipment

The connection from the mains is made by loosening the bolts which are on the right side of the machine making accessible the input terminals between which is the earthing, painted in white.

The chart of electrical distribution is placed on the machine body, and you can see it if you loosen the bolts and rotate the cover aforementioned.



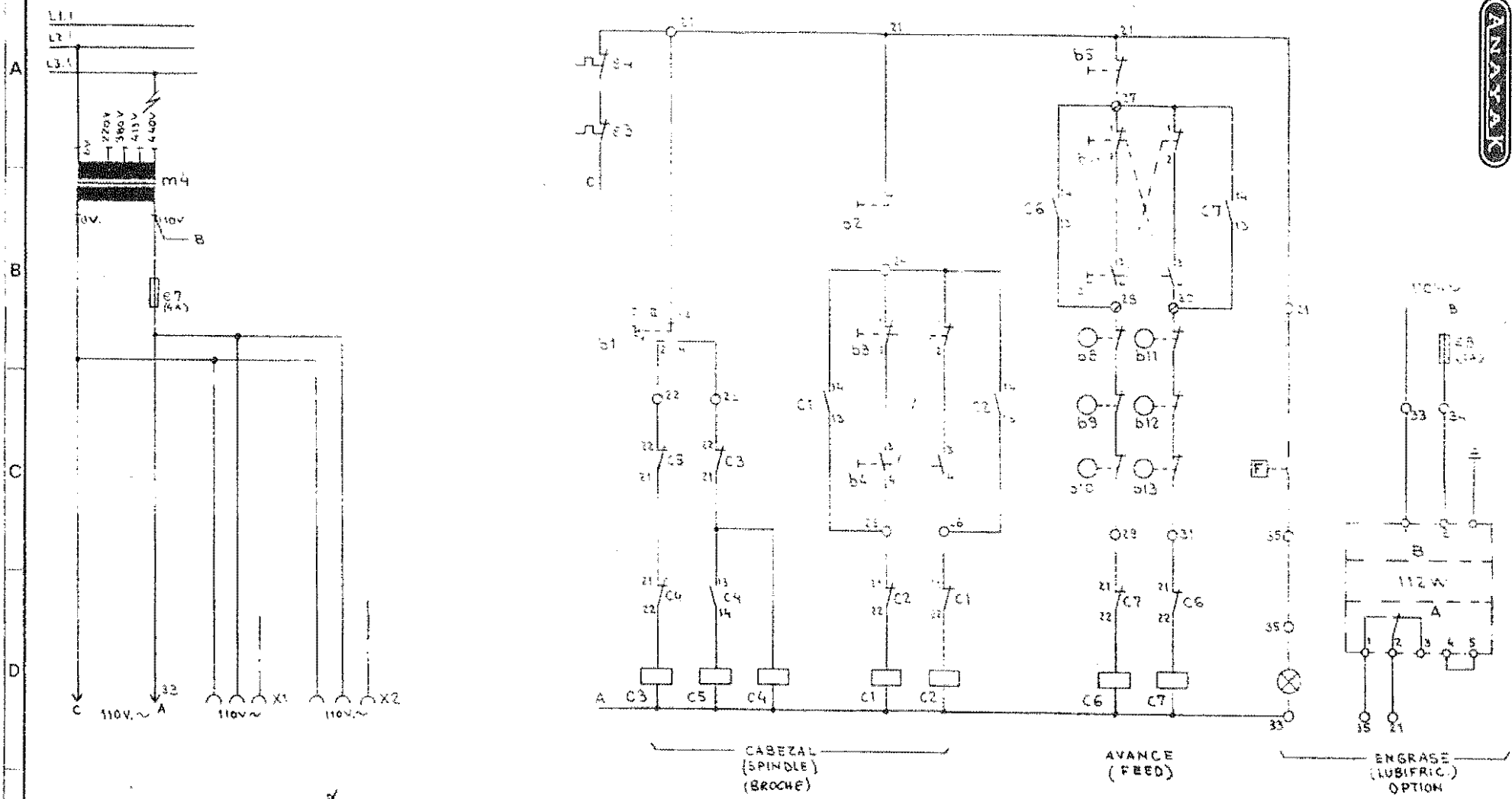


	FECHA	Firma
Dibujado	12-11-85	<i>[Signature]</i>
Comprobado		
Modificado		

N° 3-001.007

CLIENTE
ANAYAK

FU-205 y FV-4





foundations

The machine will be placed on a concrete footing, prepared a few days before the reception of the machine. The sizes of the concrete footing for the instalment of the machine are on page 9.

The composition of the mixture has no particular conditions, just having to keep in mind the habitual conditions, making sure that the place is absolutely safe for the weight of the machine, which approximately is 2050 kgs.

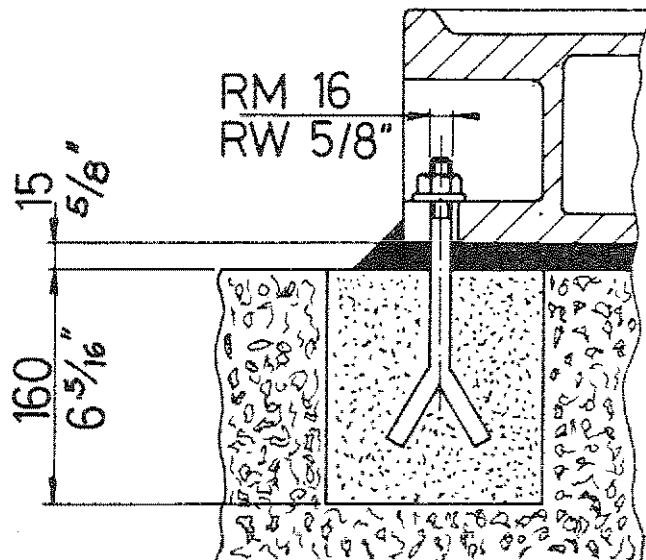
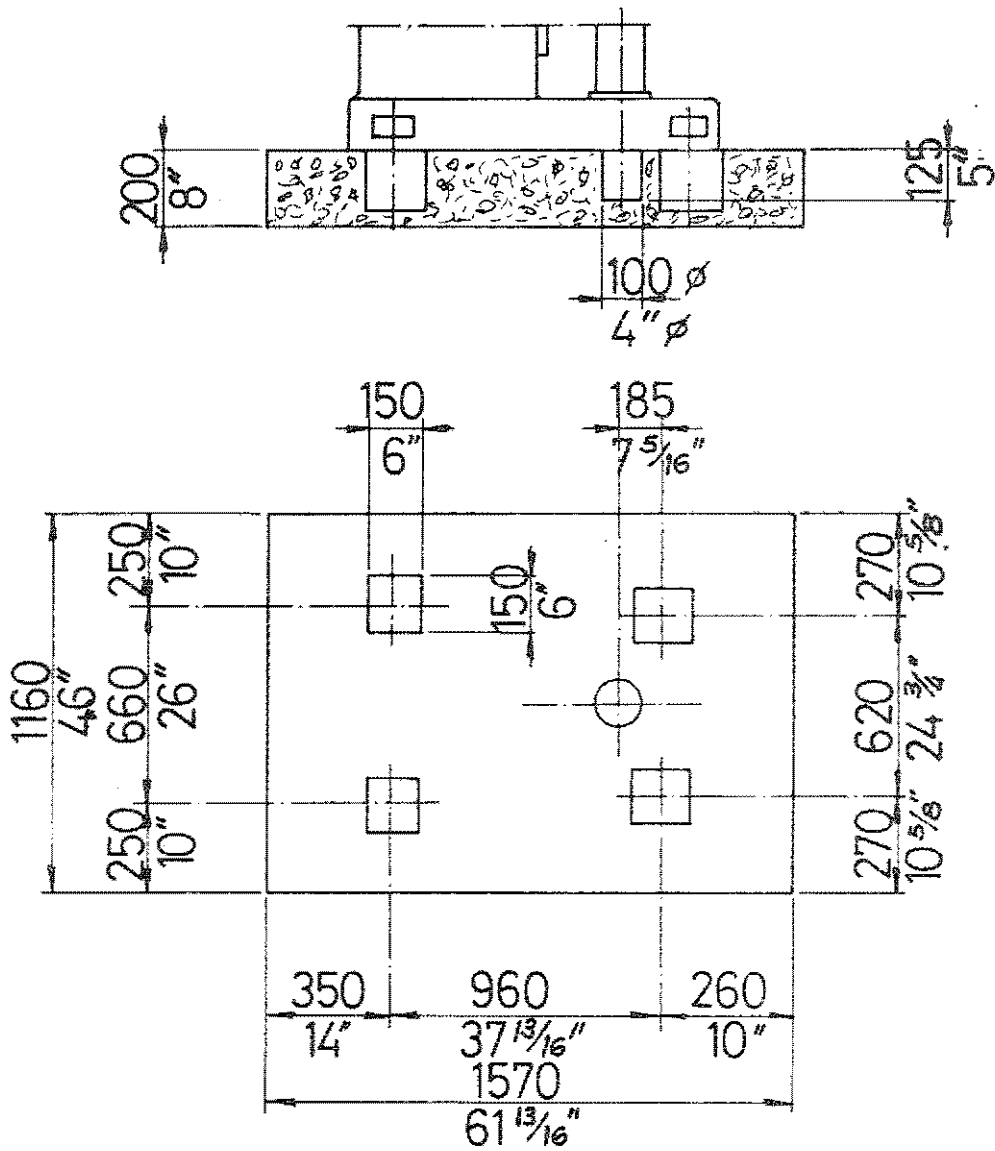
Before the concrete gets hard, you must level the machine. The levelling of the machine is a very important operation for the working of the same; this must be done with a precision level put into the longitudinal and transversal table. If you use levelling blocks, they must be placed at the four corners of the footing, as well as in the middle of the front and back sides; if you do not use levelling blocks, the ground must be so flat that, by means of conical wedges set at different points of the machine, it gets the maximum rest which is possible; once this operation has been performed, you will place the anchoring bolts and then you will concrete the four holes in the concrete footing, and you will also fill with concrete the boundary of the base to make sure the rigidity of machine.

When the concrete is set and makes one body with the machine, you must tighten the nuts of the anchoring bolts and verify again the levelling of the machine.

IMPORTANT NOTE

Make a hole of approximately 100 mm. $\varnothing$ and 125 mm. deep, as indicated on page 9; this is necessary because the spindle screw comes out of the footing 100 mm. in its maximum run of 500 mm.

If you do not make that hole, maximum vertical run is reduced to 400 mm.





Greasing instructions for machine maintenance,

Page Nr. 11

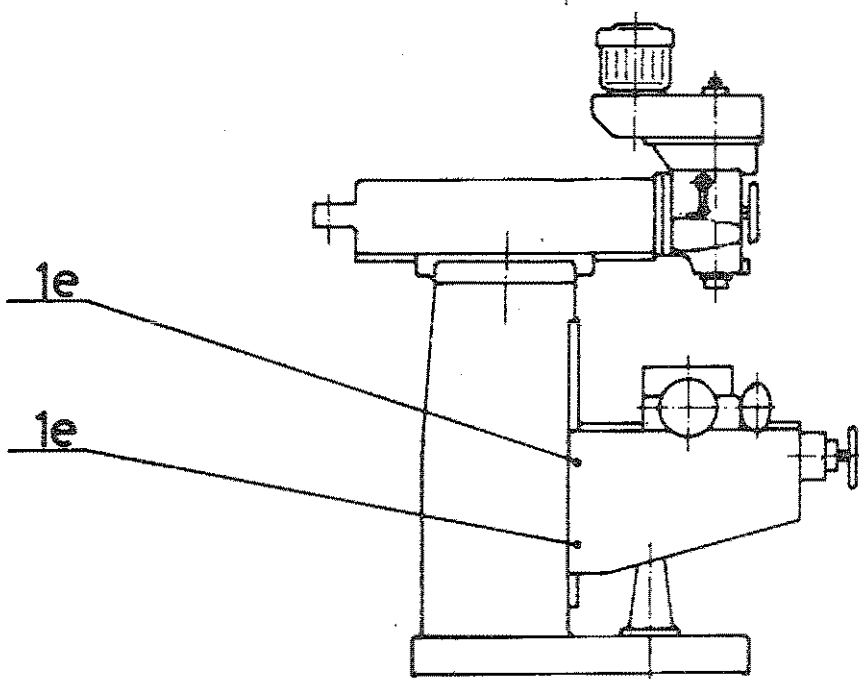
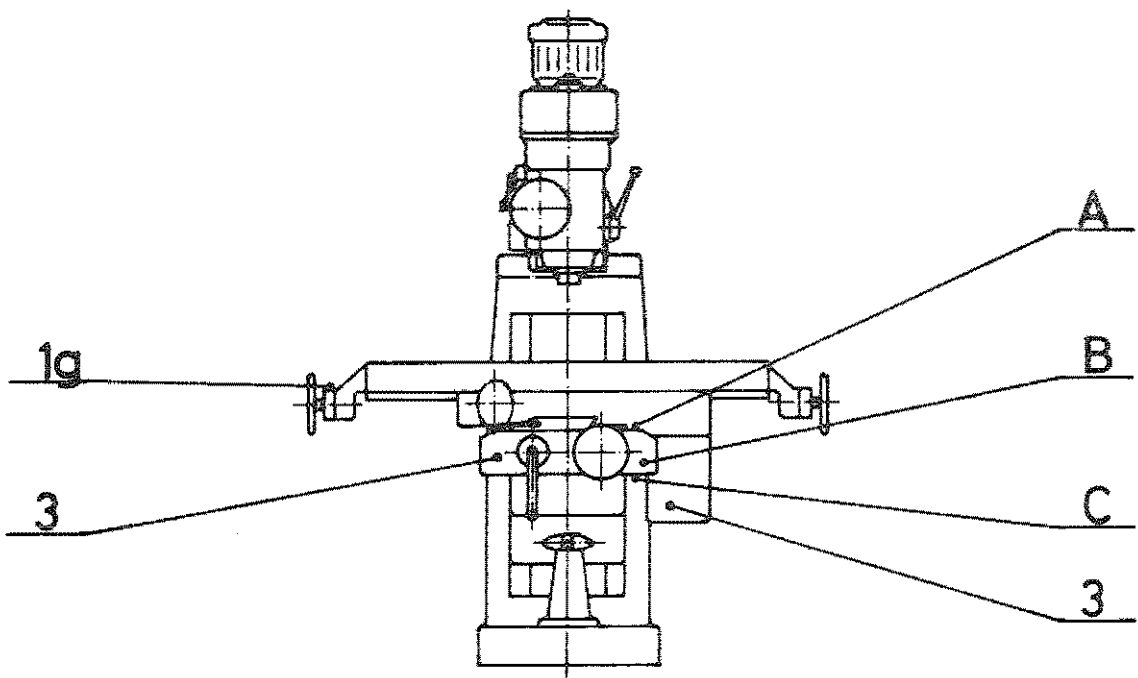
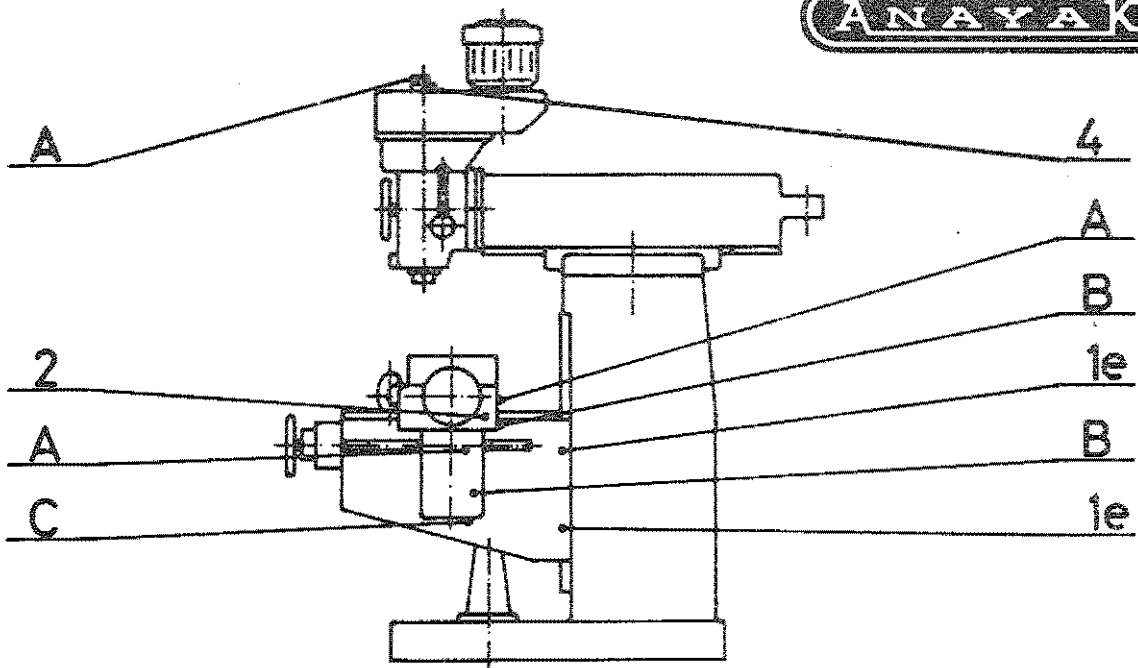
Nr.	GREASING POINT	LUBR. QUANTITY	GREASING FREQUENCY	OIL CLASS
1e	Lubrication by oil gun. Greasing the frame and Knee ways.	1-3 Pressings.	Each eight hours of working.	HOUGHTON STAP-320 CHEMSA LUB
1g	Lubrication by oil gun. Greasing taper needle bearings of the longitudinal spindle.	1-2 pressings.	same	same
2	LUBRICATION BY PUMP: Greasing: Longitudinal spindle cross spindle, way of right side of rigid saddle with table bearing of taper gears, upper part of powerfeed and inner bearing of front handwheel.	0,30 kgs.	Action pump 3 times all 8 hours.	CHEMSA LUB-7 HOUGHTON STAP EP-90
3	AUTOMATIC LUBRICATION Greasing: Complete powerfeed device.	0,50 kgs.	Continuous	CHEMSA LUB-6 HOUGHTON STAP-3
4	AUTOMATIC LUBRICATION Greasing: Head gearing system.	0,05 kgs.	Continuous	same

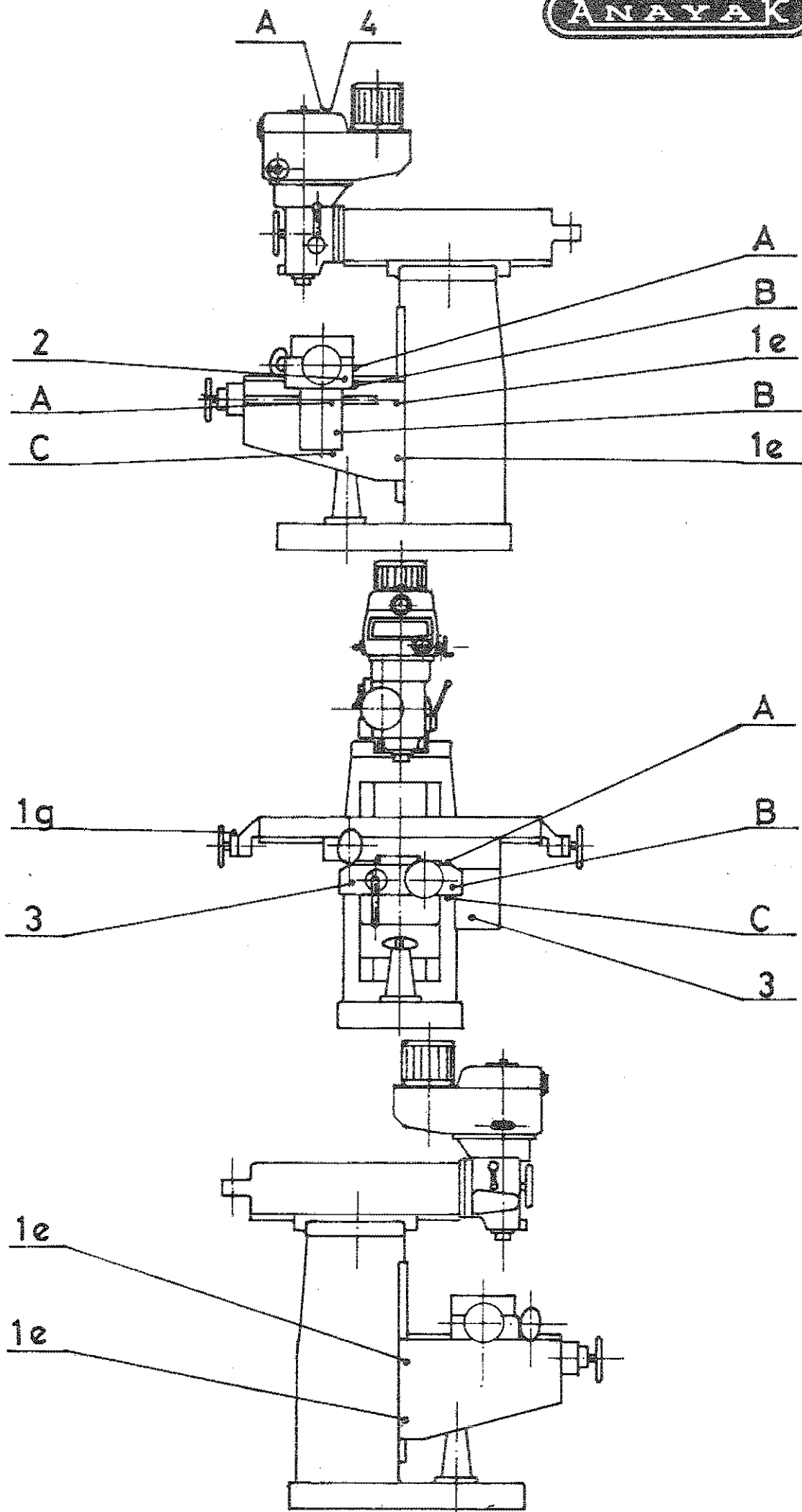
A = Remove cover to fill tank

B = Oil level

C = Remove cover to take liquid out

NOTE: For a longer life and better performance of our machines, we recommend to follow instruction of this table, and to use oils stated or it or some similar ones without preference of order.



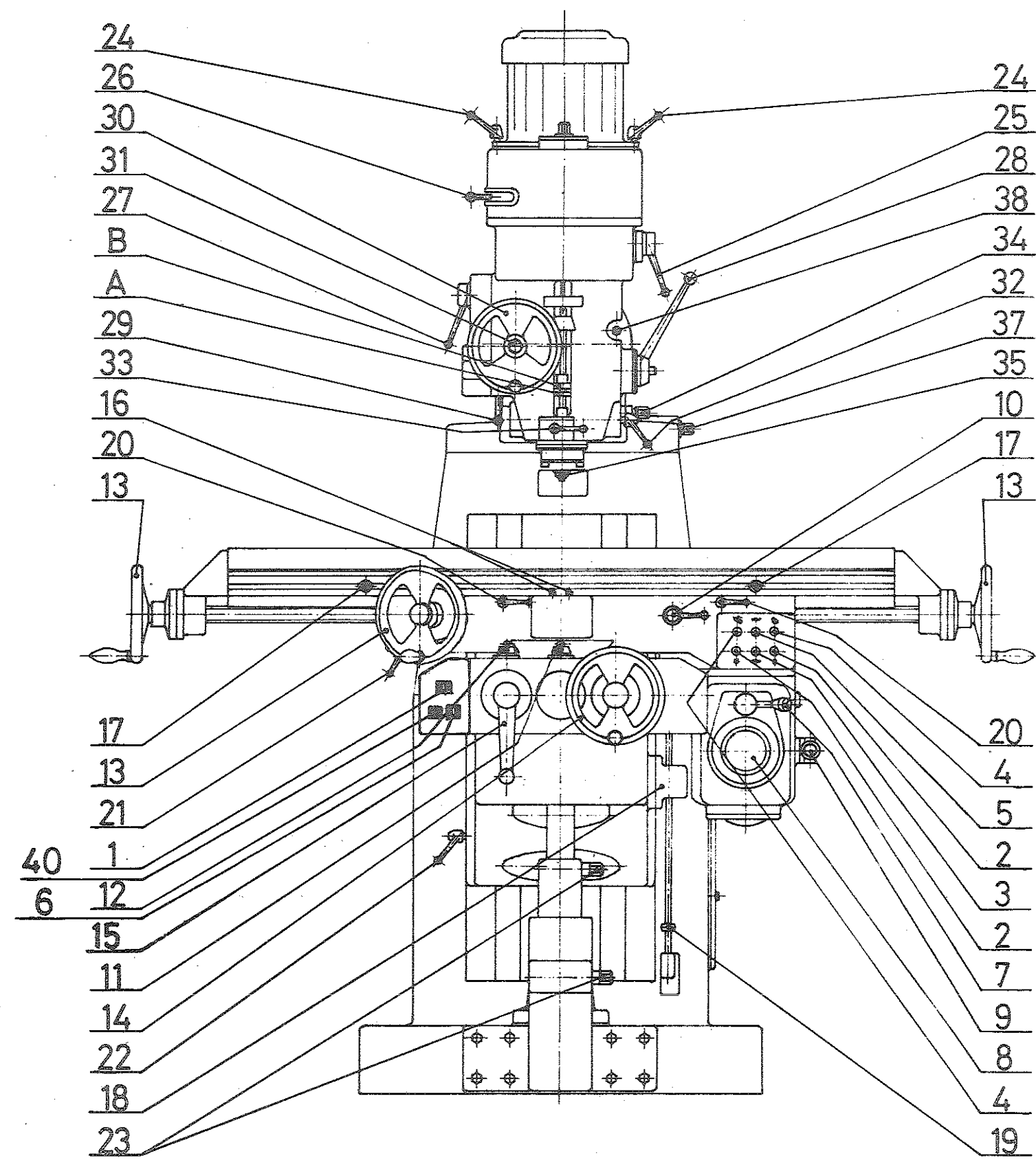
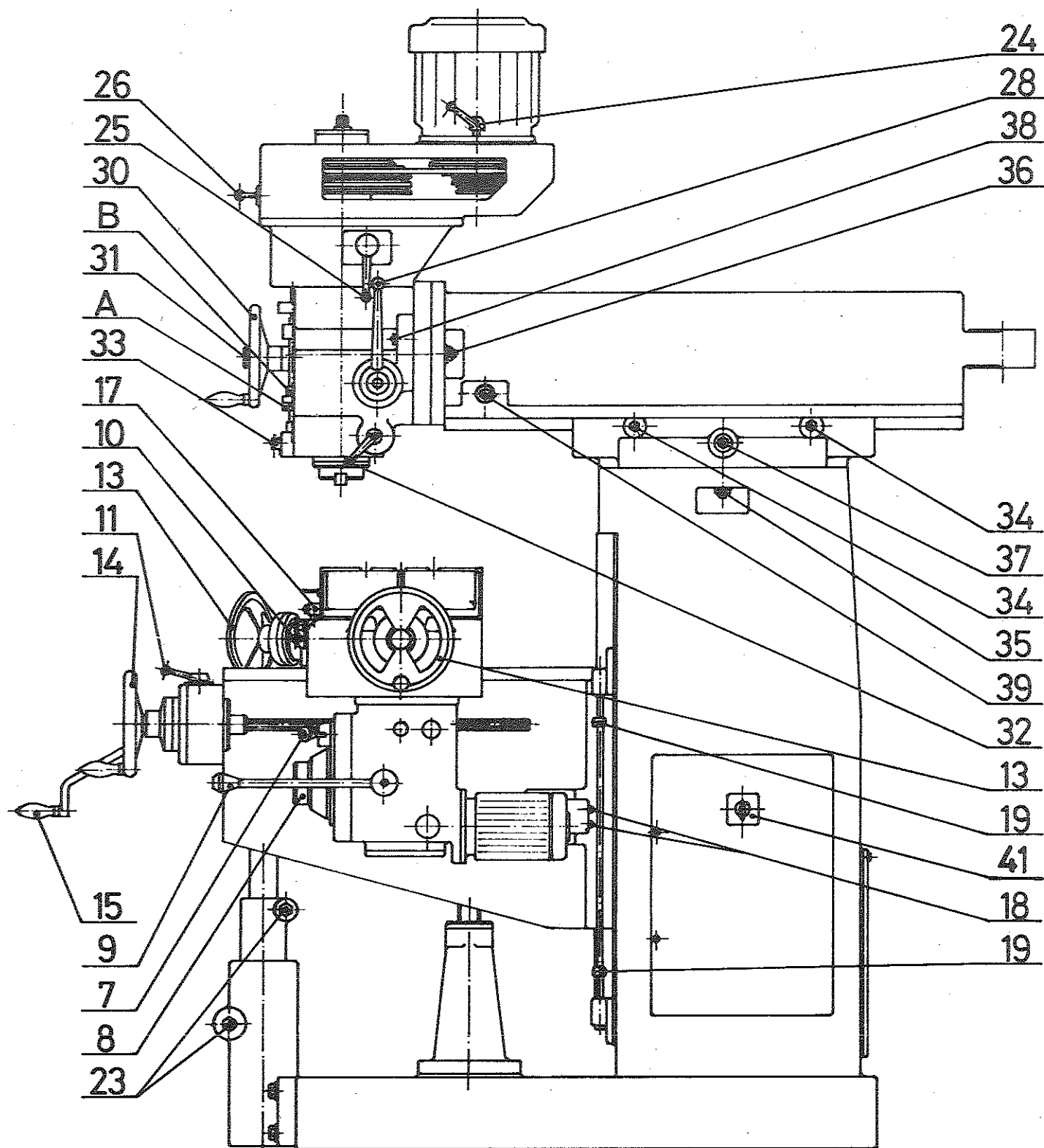




GENERAL DESCRIPTION OF THE MACHINE

- 1— High and low speed switch
- 2— Head turning direction push-buttons
- 3— Head stop push-buttons
- 4— Feed direction push-buttons
- 5— Powerfeed stop
- 6— Coolant switch
- 7— High and low feed selector
- 8— Feed selector
- 9— Rapid feed lever
- 10— Engage and disengage control of the longitudinal automatic movement
- 11— Engage disengage control of the cross automatic movement
- 12— Engage disengage control of the vertical automatic movement
- 13— Longitudinal movement handwheels
- 14— Cross movement handwheel
- 15— Vertical manual movement lever
- 16— Automatic longitudinal movement stop micros
- 17— Automatic longitudinal movement stops
- 18— Automatic vertical movement stop micros
- 19— Automatic vertical movement stops
- 20— Longitudinal movement block handles
- 21— Cross movement block handles
- 22— Vertical movement block handles
- 23— Block screws of the telescopic front support (extra attachment)
- 24— Handle to change step and to tight the cog belt.
- 25— Clutch control for high and low speeds
- 26— Brake control of the main spindle pulley
- 27— Selector of quill feeds
- 28— Manual quick feed control of quill
- 29— Clutch control for automatic quill movement
- 30— Handwheel for sensitive quill movement
- 31— Quill feed selection pin, up and down feed
- 32— Quill block
- 33— Manual stop control of the quill automatic
- 34— Ram block screw
- 35— Ram turn fasten screws
- 36— Head block screws
- 37— Longitudinal ram movement control
- 38— Cross pin for 90° position with table
- 39— Worm screw for 180° movement
- 40— Rotary slotting attachment switch
- 41— General contact breaker

NOTE: See figure with numbered description on page No. 13





START UP AND OPERARION OF THE MACHINE SERVIVING INSTRUCTIONS

High and Low Speed Switch. N.º 1, sheet 13

The switch has three positions; in central position the motor and spindle stop, in position 1 the motor revolves at 1500 rpm., (high speed), in position 2 the motor revolves at 750 rpm. (low speed).

Quill Feed Selector Control, N.º 27, sheet 13

With this control the three main shaft feeds, upwards and downwards, are selected, with a feed of 0,037 - 0,075 and 0,15 per each spindle turn.

The feed position is indicated on plate attached to the machine under the control panel.

Quill Feed Manual Control, N.º 28, sheet 13

This control is used for the manual feed of the quill, but for this operation the control N.º 29, sheet, has to be necessarily disengaged.

Automatic Longitudinal Movement Control, N.º 10, sheet 13

This control has two positions: clutched and unclutched. To change feed directions there are two knobs N.º 4, carrying each a plate stating the 3 directions.

Automatic Cross Movement Control, N.º 11, sheet 13

This control has two positions: clutched and unclutched. To change feed direction press knobs N.º 4.

Automatic Vertical Movement Control, N.º 12, sheet 13

This control has two positions, clutched and unclutched. To change feed direction press knobs N.º 4.

Step Changing and Belt Tightening Control, N.º 24, sheet 13

To change the belt from one step to another the following procedure will be carried out.

- A) Remove the two levers
- B) Move the motor towards the spindle
- C) Place the trapezoidal belt on the wanted step
- E) Tighten both levers
- D) Tighten the belt properly

High and Low Clutch Control, N.º 25, sheet 13

The machine has a plate showing two red and green circles, when the control is on red point position, speeds are fast; when in green point, speeds are slow.

It is advisable to make the main spindle turn when actuating the control to ease the mechanism clutching.

DO NOT vary speed while the motor is running.



Main Shaft Pulley Brake Control, N.º 26, sheet 13

This control is used when a quick stop of main or spindle, after switching the motor off is required. To achieve it just turn right or left the handle.

Quill Automatic Movement Clutch Control, N.º 29, sheet 13

To get the head moving automatically up or down, clutch first pin N.º 31 and after control N.º 29.

Quill Manual Sensitive Feed Wheel, N.º 30, sheet 13

To use this wheel, clutch, previously, control 29 and place pin N.º 31 on its central, no speed, position.

Up and Down Quill Movement Selector Pin, N.º 31, sheet 13

This control has three positions.

- 1) Pushed in: the quill goes up.
- 2) Central position the quill does not move.
- 3) Pull out: the quill goes down.

Quill Blocking Control, N.º 32, sheet 13

When quill or main shaft sleeve displacement is not required, it is advisable to block it; e. g. on milling operations etc, the quill will be blocked by means of that control.

Quill Automatic Movement Stop Manual Control, N.º 33, sheet 13

When the head is in upwards or downwards automatic movement, push control N.º 33 to stop this motion.

Travel End Stops

Travel end stops for the three automatic motions are achieved by means of micro-switches and sliding stops, which limit the intended run length.

Ram Position

The ram position can be regulated by loosening the two stops N.º 34 and turning handle 37 left or right until reaching the appropriated position.

CAUTION: Special care must be paid to secure the ram on its working position.

NOTE: On heavy mill works, it is advisable to place the head as close to the machining component as possible, in order to get the maximum rigidity.

Table Leadscrews Adjustment

When because of the continuous use the nuts get worn and leadscrews get backlash, they will be readjusted in the following manner:

- 1) Unloose, with the allen key supplied with the machine, the four screws which hold nut M.º H-4, sheet 27, and turn clockwise the nut until achieving a perfect adjustment.
- 2) Tighten the screws without turning the nut.



Cross Screw Adjustment

Operations

- 1) Introduce a 5 mm. allen key, between faces and to the knee bottom part, loosening the screws which hold the nut. Turn the nut counter-clockwise until achieving a perfect screw adjustment.
- 2) Tighten the screws whitout turning the nut.

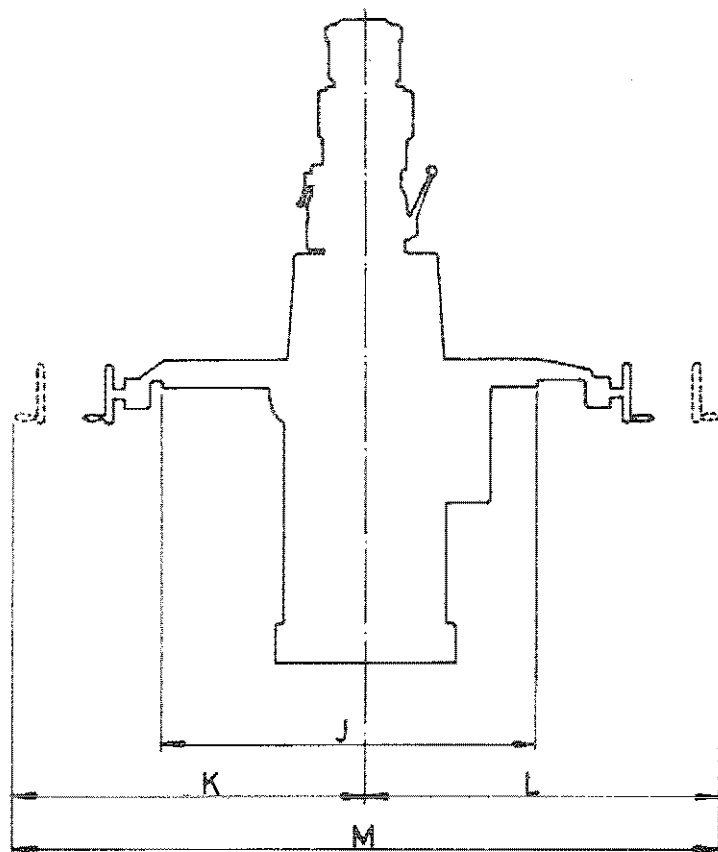
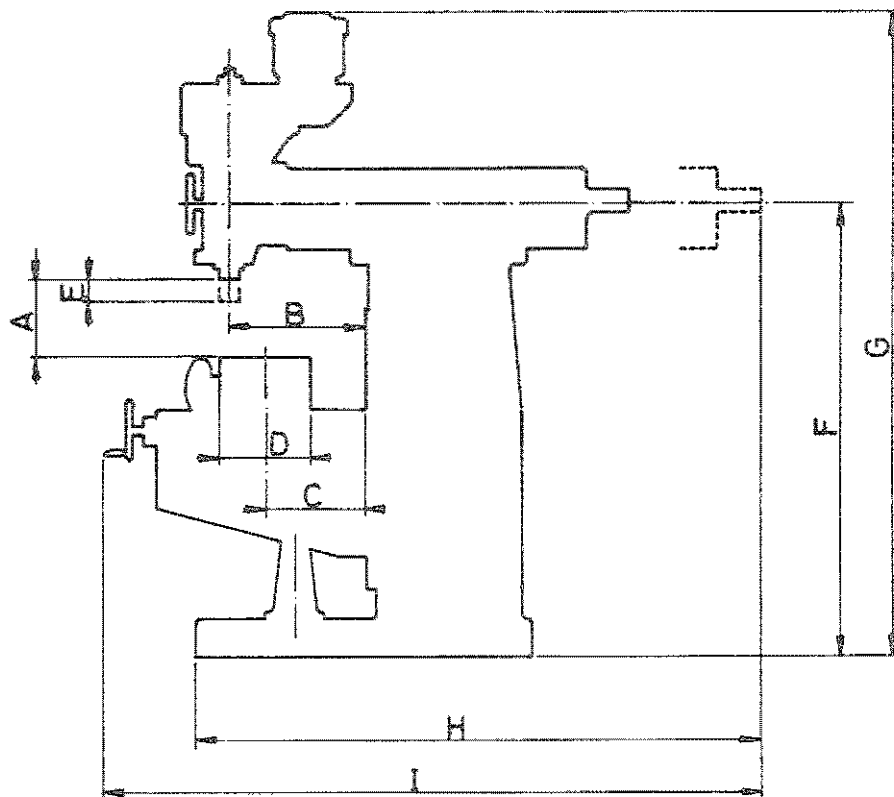
Re-adjustment of the Taper Rulers

The taper rulers located between table and cross saddle; cross saddle and knee, knee and frame, ram and turning support respectively, are adjusted by means of their respective screws: loosening the thinner side of the rulers, and tightening with the opposite side screw.

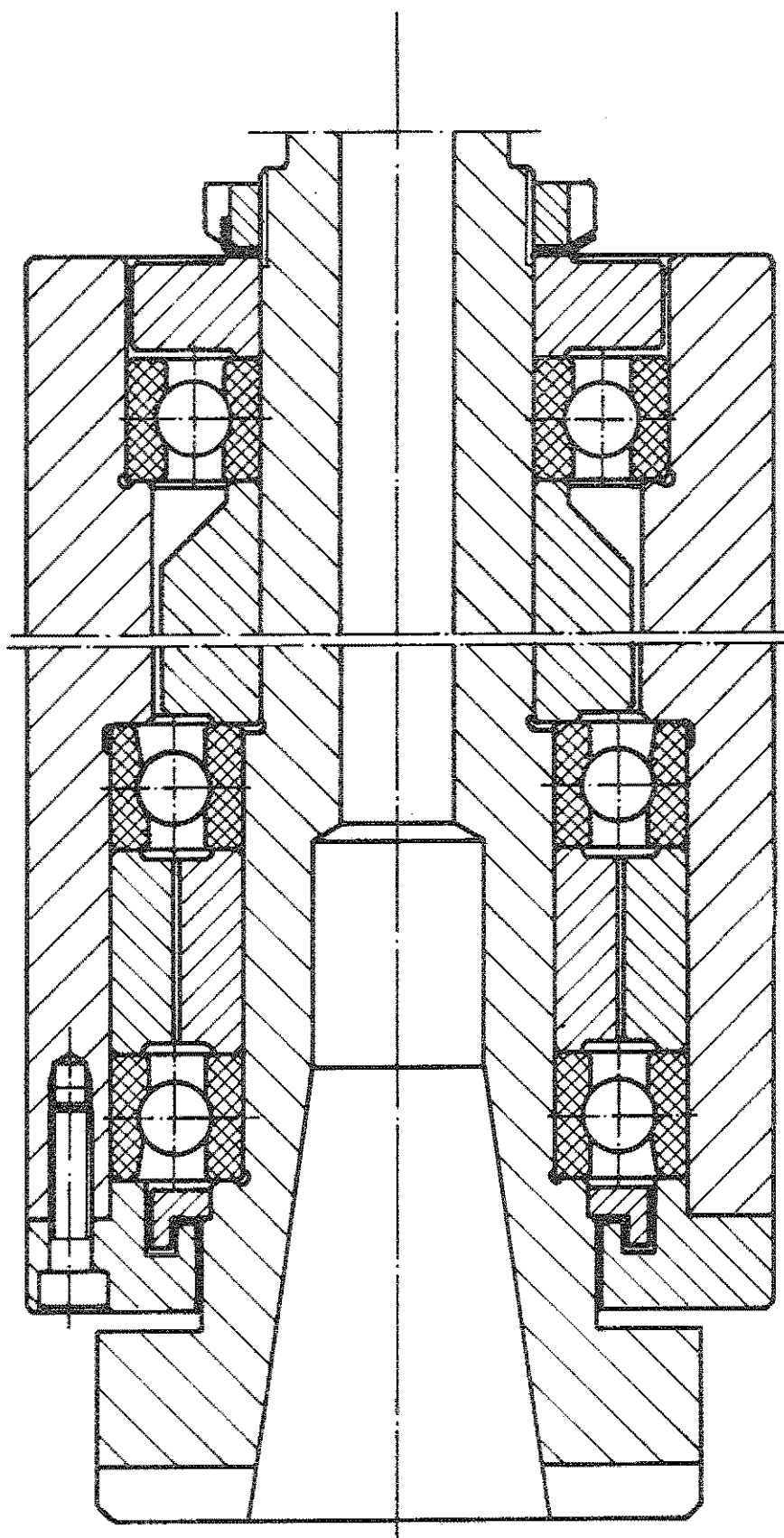
Quill or Main Spindle

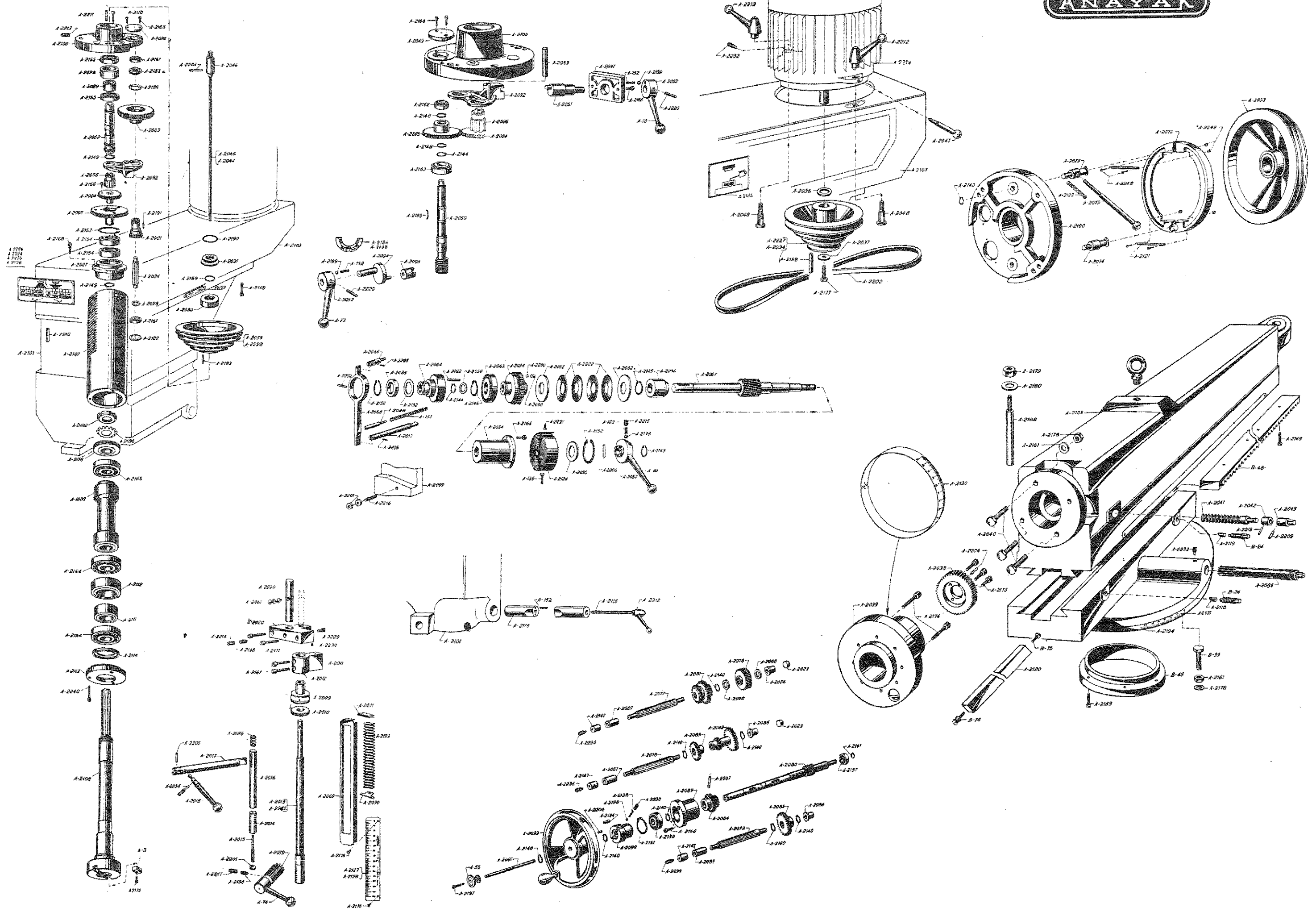
On page Nr. 18; the spindle and quill assembly are described.

ANAYAK



	A		B		C		D	E	F	G	H	I	J	K	L	M
	min.	max.	min.	max.	min.	max.										
mm.	0	500	155	795	160	560	305	150	1560	2210	1745	2325	1240	1230	1470	2700
inch.	0	19 ¹¹ / ₃₂	6 ³ / ₃₂	31 ⁹ / ₃₂	6 ⁹ / ₃₂	22 ¹ / ₃₂	12 ¹ / ₆₄	5 ¹⁹ / ₃₂	61 ¹⁵ / ₃₂	87	68 ¹¹ / ₁₆	91 ¹⁷ / ₃₂	48 ¹⁵ / ₃₂	48 ¹⁵ / ₃₂	57 ⁷ / ₈	106 ³ / ₃₂





PART LIST OF THE HEAD FV-3V

N.º	Designation	N.º	Designation	N.º	Designation
A-3	Special key	A-2054	Cover, Tool-holder	A-2120	Conical straight edge
A-55	Control finger	A-2056	Bearing	A-2122	Brake control spring
A-63	Disengaging shaft	A-2057	Control	A-2124	Helical spring
A-73	Control lever	A-2058	Rim gear	A-2125	Disengaging shaft spring
A-74	Control lever	A-2059	Adjusting washer	A-2127	Head straight edge mm.
A-82	Control lever	A-2060	Finger	A-2128	Head straight edge inches
A-151	Spring	A-2061	Arm	A-2130	Measuring straight edge
A-152	Spring	A-2062	Spring seat washer		
A-153	Spring	A-2063	Slip clutch	A-2137	Stud R.M. 6 x 1
A-155	Screw	A-2064	Fast clutch	A-2138	Spring
		A-2065	Bearing	A-2139	Bearing N.º 3203
A-164	Stud R.M. 6 x 1	A-2066	Arm support	A-2140	Spring washer E-17
A-165	Stud R.M. 6 x 1	A-2067	Shaft with gear	A-2141	Spring washer E-12
A-239	Nut RW.	A-2068	Arm	A-2142	Spring washer E-14
A-240	Check-nut RW	A-2069	Guard plate	A-2143	Spring washer E-20
B-24	Screw	A-2072	Brake shoe	A-2144	Spring washer E-25
B-39	Screw R.M. 12 x 2	A-2075	Brake control	A-2145	Spring washer E-30
B-45	Guiding sleeve	A-2076	Rim gear	A-2146	Spring washer E-40
		A-2077	Shaft N.º 1	A-2147	Bolt
A-2000	Spur gear	A-2078	Shaft N.º 2	A-2148	Spring washer E-22
A-2001	Spur gear, shol holder	A-2079	Shaft N.º 3	A-2149	Spring washer E-45
A-2003	Spur gear	A-2080	Worm	A-2150	Spring washer E-38
A-2004	Spur gear, broaching	A-2081	Triple spur gear	A-2151	Spring washer I-40
A-2005	Spur gear	A-2082	Double spur gear	A-2152	Spring washer I-55
A-2006	Clutch	A-2083	Spur gear	A-2154	Bearing N.º 6209
A-2009	Nut, head screw	A-2084	Double spur gear	A-2157	Bearing N.º 6201
A-2010	Check-nut	A-2085	Spur gear	A-2161	Bearing N.º 30204
A-2011	Stroke limiter, hollow shaft	A-2086	SELFOIR Gear B 11 B-12-17-20/22-3	A-2162	Bearing N.º 30203
A-2012	Pointing arrow	A-2087	SELFOIR Gear B 11 A-12-17-25	A-2163	Bearing N.º 30205
A-2013	Head spindle	A-2088	Adjusting washer	A-2164	FAFNIR bearing 2 MM 209 WI-CR
A-2014	Rack shaft	A-2089	Bearing holder	A-2165	FAFNIR bearing MM 208 K-CR
A-2015	Adjusting stud	A-2091	Control shaft	A-2166	Allen screw 6 x 15
A-2016	Disengaging shaft	A-2092	Shoe	A-2167	Allen screw 6 x 35
A-2017	Clutching and releasing shaft	A-2094	Control shaft	A-2169	Allen screw 8 x 25
A-2018	Control lever	A-2095	Shoe	A-2170	Allen screw 8 x 35
A-2019	Disengaging gear	A-2097	Cover	A-2171	Allen screw 8 x 40
A-2020	Arm support	A-2099	Side cover	A-2172	Allen screw 8 x 50
A-2023	Plug	A-2101	Body	A-2173	Allen screw 10 x 25
A-2024	Slide gears holding shaft	A-2102	Removing washer	A-2174	Allen screw 10 x 45
		A-2104	Ram base	A-2176	Screw C.P. 6 x 10
A-2026	Cover	A-2105	Ram	A-2178	Hexagonal nut R.M. 16 x 2
A-2038	Rim gear, head rotation	A-2106	Frame	A-2179	Hexagonal nut R.M. 12 x 1,75
A-2040	Head clamping screw	A-2107	Hole shaft, ball bearing	A-2180	Washer Ø 12
A-2041	Worm, head rotation	A-2108	Main shaft ball bearing	A-2181	Washer Ø 16
A-2042	Bearing, head rotation	A-2109	Distance sleeve	A-2182	Clamping nut KM-8
A-2043	Worm head, head rotation	A-2110	Shutter sleeve	A-2183	Clamping nut KM-7
A-2044	Tie rod R.M. 16 x 2	A-2111	Distance sleeve	A-2185	Shutter washer MB-7
A-2045	Tie rod R.W. 5/8 - 11 H"	A-2112	Distance sleeve	A-2188	Taper threaded pin 14 x 120
A-2046	Tie rod head	A-2113	Cover	A-2191	Key 8 x 7 x 18
A-2049	Hollow shaft feed worm cover	A-2114	Shutter sleeve	A-2192	Key 8 x 7 x 40
A-2050	Hollow shaft feed worm	A-2115	Stop bolt	A-2194	Key 6 x 6 x 20
A-2051	Control shaft with eccentric wheel	A-2116	Brake stud	A-2195	Key 6 x 6 x 28
A-2052	Control lever support	A-2118	Front clamping bolt	A-2197	Screw C.R. R.M. 4 x 25
A-2053	Shoe support shaft	A-2119	Rear clamping bolt	A-2198	Steel ball Ø 5
				A-2199	Steel ball Ø 6
				A-2200	Steel ball Ø 10
				A-2201	Hexagonal nut R.M. 6 x 1



PART LIST OF THE HEAD FV-3V

N.º	Designation	N.º	Designation
A-2204	Pin GO-1 $\varnothing$ 8 x 22 Sider-Alda	A-2534	Allen screw RM 6 x 1 x 22
A-2205	Pin GO-2 $\varnothing$ 5 x 15 Sider-Alda	A-2535	Cylindrical pin $\varnothing$ 8 x 6 x 32
A-2206	Pin $\varnothing$ 6 x 40 EL-BA	A-2536	Cylindrical pin $\varnothing$ 8 x 6 x 28
A-2207	Pin $\varnothing$ 5 x 28 EL-BA	A-2537	Cylindrical pin $\varnothing$ 6 x 6 x 32
A-2208	Pin $\varnothing$ 6 x 14 EL-BA		
A-2209	Pin GO-1 $\varnothing$ 6 x 28 Sider-Alda	A-2540	Countersunk screw M 6 x 1 x 18
A-2210	Pin $\varnothing$ 10 x 32 EL-BA	A-2541	Counterunk screw M 6 x 1 x 15
A-2211	Pin $\varnothing$ 10 x 45 EL-BA		
A-2212	Handle with clutch R.M. 12	A-2544	Shutter washer MB 4
A-2215	Allen screw R.M. 6 x 10		
A-2216	Allen screw R.M. 6 x 30	A-2547	Screw C/e RM. 12 x 1,75 x 30
A-2220	Taper pin $\varnothing$ 6	A-2548	Driven pulley, without spring M 40 S
A-2221	Screw C.P. R.M. 5 x 8	A-2549	Driven pulley D 40 S
A-2222	Leaf spring	A-2550	Allen screw RM 5 x 0,8 x 8
A-2229	Pin		
A-2230	Allen screw R.M. 4 x 10	A-2552	Removing screw RM 12 x 1,75
A-2232	Allen screw R.M. 8 x 1,25	A-2553	Belt 1250 W-40
A-2233	Allen screw R.M. 8 x 1,25	A-2554	Graduated scale, german
A-2234	Allen screw R.M. 8 x 1,25	A-2555	Graduated scale, spanish
A-2235	Lubricator 6		
A-2236	Lubricator 8		
A-2241	Head spindle RW	A-2558	Tachometer
A-2250	Pin GO 8 x 36		
A-2500	Housing	A-2561	Plug
A-2501	Housing		
A-2502	Housing		
A-2503	Arm		
A-2504	Bracket		
A-2506	Bracket	A-2566	Graduated scale DOALL
A-2507	Spur gear with clutch		
A-2509	Tank		
A-2510	Shaft		
A-2513	Washer	A-2573	Washer
A-2514	Washer	A-2574	Clamping washer
A-2515	Washer	A-2575	Shutter washer
		A-2576	Allen wcrew
A-2517	Adjusting washer		
A-2518	Special motor 4 HP/1500 r.p.m.		
A-2519	Brake support		
A-2520	Brake shaft		
A-2521	Tachometer		
A-2522	Tie rod head		
A-2523	Dise for "O" ring		
A-2524	Adjusting washer		
A-2525	Spring washer I-90		
A-2526	Spring washer E-50		
A-2528	Spring washer E-55		
A-2533	Allen screw RM 8 x 1,25 x 25		

PARTS OF MODEL FV-3 FV-4

No.	Name	No.	Name	No.	Name
A-3	Special gib	A-2033	Main shaft pulley 50 Hz. motor	A-2081	Triple straight gear
A-55	Control point	A-2034	Pulley 50 Hz. motor	A-2082	Double straight gear
A-73	Control lever	A-2036	Motor pulley adjusting washer	A-2083	Straight gear
A-74	Control lever	A-2037	Motor pulley washer	A-2084	Double straight gear
A-82	Control lever	A-2038	Head rotation ring	A-2085	Straight gear
A-151	Spring	A-2039	Head support	A-2086	Bearing SELFOIL BILL B12-17-20/22
A-152	Spring	A-2040	Head adjusting screw	A-2087	Bearing SELFOIL BILL A-12-17-25
A-153	Screw	A-2041	Head rotation worm	A-2088	Adjusting washer
A-155	Screw	A-2042	Head rotation bearing	A-2089	Bearing holder
A-164	Capscrew R.M. 6 x 1	A-2043	Head rotation worm	A-2090	Clutch
A-165	Capscrew R.M. 6 x 1	A-2044	Tension member R.M. 16 x 2	A-2091	Control shaft
B-24	Screw	A-2045	Tension member R.W. 5/8-11 H"	A-2092	Shoe
B-39	Screw R.M. 16 x 2	A-2046	Tension member head	A-2093	Wheel
B-45	Guide bushing	A-2047	Motor control lever	A-2094	Control shaft
B-48	Rack	A-2048	Motor adjusting screw	A-2095	Shoe
A-2000	Straight gear	A-2049	Cover of quill travel worm	A-2096	Straight gear
A-2001	Straight gear for shoe	A-2050	Quill travel worm	A-2097	Cover
A-2002	Straight gear with clutch	A-2051	Control lever with eccentric	A-2098	Spring holder point
A-2003	Straight gear	A-2052	Control lever support	A-2099	Side cover
A-2004	Brushed straight gear	A-2053	Shoe support shaft	A-2100	Frame
A-2005	Straight gear	A-2054	Parts holder cover	A-2101	Body
A-2006	Clutch	A-2055	Washer	A-2102	Puller washer
A-2007		A-2056	Bearing	A-2103	Motor support frame
A-2008		A-2057	Lever	A-2104	Ram base
A-2009	Head spindle nut	A-2058	Ring	A-2105	Ram
A-2010	Counternut	A-2059	Adjusting washer	A-2106	Framework
A-2011	Quill end of travel	A-2060	Point	A-2106-1	Framework
A-2012	Indicating arrow	A-2061	Arm	A-2107	Quill for ball bearings
A-2013	Head spindle	A-2062	Spring leaning washer	A-2108	Main shaft for ball bearings
A-2014	Rack shaft	A-2063	Sliding clutch	A-2109	Spacing washer
A-2015	Adjusting capcrew	A-2064	Steady clutch	A-2110	Shooter bushing
A-2016	Shooting shaft	A-2065	Bearing	A-2111	Spacing bush
A-2017		A-2066	Arm support	A-2112	Spacing bush
A-2018	Control lever	A-2067	Shaft with gear	A-2113	Cover
A-2019	Shooting gear	A-2068	Arm	A-2114	Shooter bushing
A-2020	Arm support	A-2069	Protection plate	A-2115	Stud bolt
A-2021		A-2070	Bellows tightening plate	A-2116	Brake pin
A-2022		A-2071	Bellows tightening spring	A-2117	
A-2023	Plug	A-2072	Brake shoe	A-2118	
A-2024	Sliding gears shaft holder	A-2073	Brake shaft	A-2119	
A-2025		A-2074	Brake support	A-2120	Conical rule
A-2026	Cover	A-2075	Brake lever	A-2121	Brake spring
A-2027	Bearing holder bushing	A-2076	Ring	A-2122	Brake control spring
A-2028	Spacing bushing	A-2077	No. 1 shaft	A-2123	Protective bellows
A-2029	Spacing bushing	A-2078	No. 2 shaft	A-2124	Spiral spring
A-2030	Oil tank	A-2079	No. 3 shaft	A-2125	Shooting shaft spring
A-2031	Oil tank plug	A-2080	Worm shaft	A-2126	Speeds plate motor 50 Hz.
A-2032				A-2127	Head rule in mm.
				A-2128	Head rule in inches

PARTS OF MODEL FV-3 FV-4

No.	Name	No.	Name	No.	Name
A-2129	Reduction gears indicating plate	A-2177	Screw H. Hexagonal 8 x 20	A-2225	Speeds plate with range from 58 to 3000 r.p.m. 60 Hz.
A-2130	Head graduated rule	A-2178	Nut R.M. hexagonal 16 x 2	A-2226	Speeds plate with range from 75 to 5750 r.p.m. 60 Hz.
A-2131	Ram support graduated rule	A-2179	Nut. R.M. hexagonal 12 x 1,75	A-2227	Motor pulley with range from 62 to 4750 r.p.m.
A-2132		A-2180	Washer Ø 12	A-2228	Main shaft pulley
A-2133	Plate of quill feeds in inches and in English	A-2181	Washer Ø 16	A-2229	Allen setscrew RM 8 x 10
A-2134	Plate of quill feeds in mm. and in English	A-2182	Tightning nut KM-8	A-2230	Allen setscrew RM 4 x 10
A-2135	Indicating plate of head lubrication	A-2183	Tightning nut KM-7	A-2231	
A-2136		A-2184			
A-2137	Pin R.M. 6 x 1	A-2185	Lock washer MB-7	A-2232	Allen setscrew R.M. 8 x 1,25
A-2138	Spring	A-2186	Lock washer MB-8	A-2233	Allen setscrew R.M. 8 x 1,25
A-2139	Bearing No. 3203	A-2187		A-2234	Allen setscrew R.M. 8 x 1,25
A-2140	Elastic ring E-17	A-2188	Conical pin with dowel screw 14 x 120	A-2235	Oiler of 6
A-2141	Elastic ring E-12	A-2189	Toric joint AN-29	A-2236	Oiler of 8
A-2142	Elastic ring E-14	A-2190	Toric joint AN-35	A-2237	Handle to weld to a pipe wrench for nut of R.M. 16 x 2
A-2143	Elastic ring E-20	A-2191	Gib 8 x 7 x 18	A-2238	Spring holder pinscrew
A-2144	Elastic ring E-25	A-2192	Gib 8 x 7 x 40	A-2239	Shooting shaft
A-2145	Elastic ring E-30	A-2193	Gib 8 x 7 x 45	A-2240	Allen screw R.M. 4 x 20
A-2146	Elastic ring E-40	A-2194	Gib 6 x 6 x 20	A-2241	Head spindle RW
A-2147	Bolt	A-2195	Gib 6 x 6 x 28	A-2242	Screw C.P. R.M. 4 x 15
A-2148	Elastic ring E-22	A-2196	Framework	A-2243	Hexagonal nut R.M. 8 x 1,25
A-2149	Elastic ring E-45	A-2197	Screw R.H. R.M. 4 x 25	A-2244	Gapscrew R.M. 8 x 15
A-2150	Elastic ring E-38	A-2198	Steel ball Ø 5	A-2245	Indicating plate FV-4
A-2151	Elastic ring I-40	A-2199	Steel ball Ø 6	A-2246	Indicating plate FV-3
A-2152	Elastic ring I-55	A-2200	Steel ball Ø 10	A-2247	Lock pin
A-2153	Elastic ring I-85	A-2201	Hexagonal nut R.M. 6 x 1	A-2248	Hexagonal screw R.M. 4 x 15
A-2154	Bearing No. 6209	A-2202	Trapezoidal saddle	A-2249	Hexagonal nut R.M. 4
A-2155	Bearing No. 6009	A-2203	Pin 60-1 Ø 6 x 24 Sider Alda	A-2250	Pin GO 8 x 36
A-2156		A-2204	Pin 60-1 Ø 8 x 22 Sider Alda	B - 74	Screw.
A-2157	Bearing No. 6201	A-2205	Pin 60-1 Ø 5 x 14 Sider Alda	B - 75	Screw.
A-2158		A-2206	Pin Ø 6 x 40 EL-BA		
A-2159		A-2207	Pin Ø 5 x 28 EL-BA		
A-2160		A-2208	Pin Ø 6 x 14 EL-BA		
A-2161	Bearing No. 30204	A-2209	Pin GO-1 Ø 6 x 28 Sider Alda		
A-2162	Bearing No. 30203	A-2210	Pin Ø 10 x 32 EL-BA		
A-2163	Bearing No. 30205	A-2211	Pin Ø 10 x 45 EL-BA		
A-2164	Bearing FAFFNIR 2 MM 209 WI-CR	A-2212	Handle with clutch R.M. 12		
A-2165	Bearing FAFFNIR MM 208 K-CR	A-2213	Allen pin R.M. 10 x 1,5		
A-2166	Allen screw 6 x 15	A-2214			
A-2167	Allen screw 6 x 35	A-2215	Allen pin R.M. 6 x 10		
A-2168	Allen screw 8 x 20	A-2216	Allen pin R.M. 6 x 30		
A-2169	Allen screw 8 x 25	A-2217			
A-2170	Allen screw 8 x 35	A-2218			
A-2171	Allen screw 8 x 40	A-2219	3-4 HP. motor		
A-2172	Allen screw 8 x 50	A-2220	Conical pin Ø 6		
A-2173	Allen screw 10 x 25	A-2221	Screw F.H. R.M. 5 x 8		
A-2174	Allen screw 10 x 45	A-2222	Flange spring		
A-2175	Allen screw 6 x 20	A-2223			
A-2176	Screw F.H. 6 x 10	A-2224	Speeds plate with range from 62 to 4750 r.p.m. 50Hz.		



FV-4 AND FU-205 MILLING MACHINES

MECHANICAL SAFETY OF THE KNEE UNIT

The knee unit is equipped with an automatic safety device which goes off when the table meets an overload on its longitudinal movement. In figure of page 23, drawing no. 1, you can see an overall picture of that device.

It is only meant for the longitudinal movement of the table.

This device works in the following way:

The machine meets an overloaded obstacle in its movement, spring A-152 yields; at this moment detail H-41 turns, and thus gearing H-40 is not working, and keeps on turning until the overload disappears.

IMPORTANT: If the device goes off too easily, you must graduate it in the following manner:

Take out the allen bolt no. H-48 which is on the fixed slide. Then with an allen key, which goes with the machine, turn one fourth of a turn bolt no. H-45, counterclockwise. Then verify how it goes off.

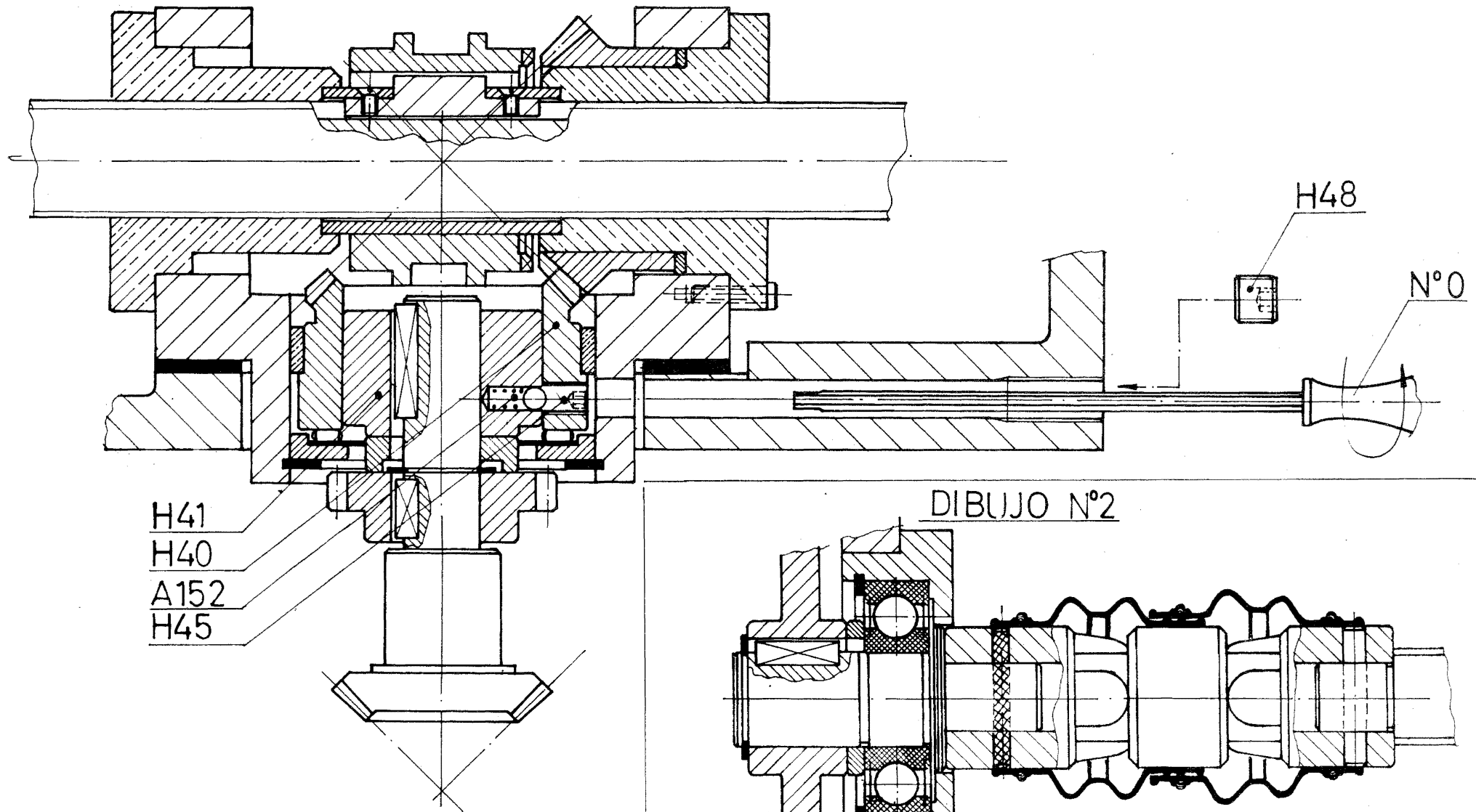
Safety for the cross movement of the table.

On page drawing no. 2 you can see that device, it is got with a Ø 4 of F-114 pin.

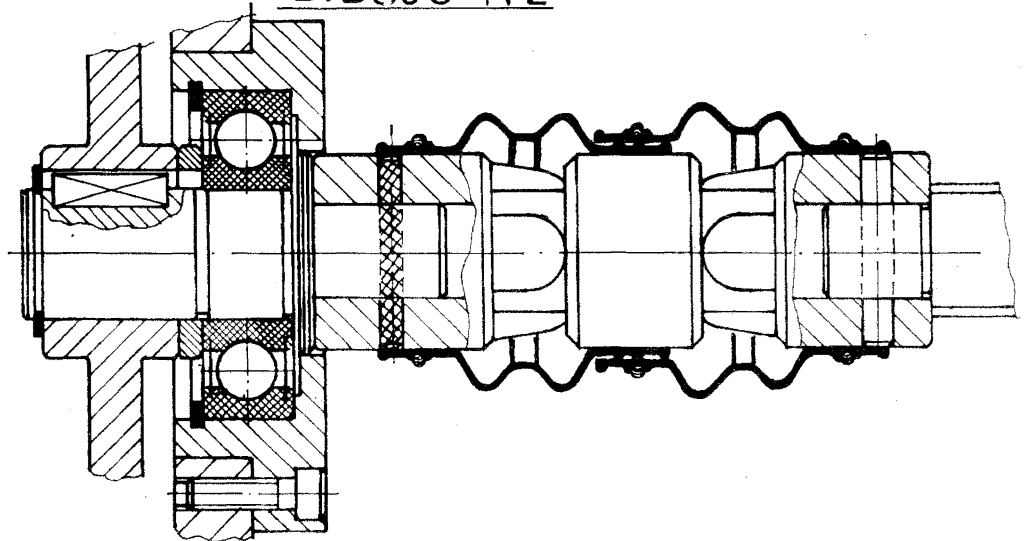
That pin in on the drive shaft of the feed box.

NOTE: This device works satisfactorily in the 90% of the cases.

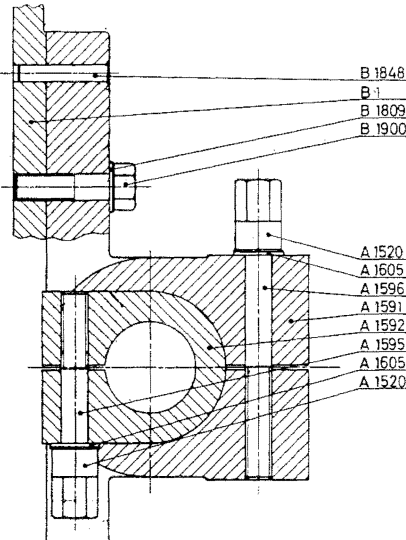
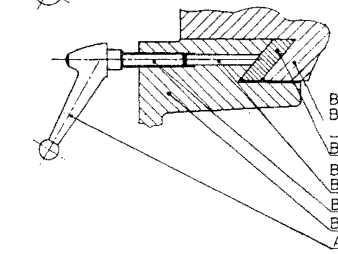
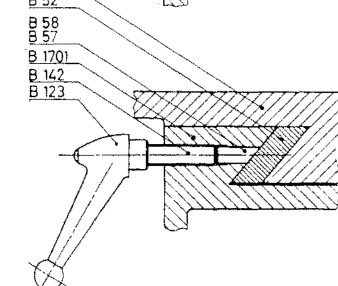
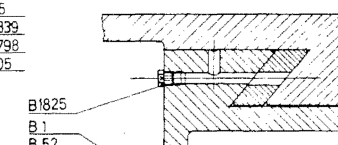
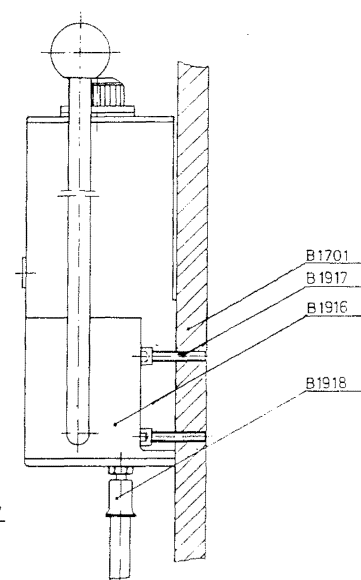
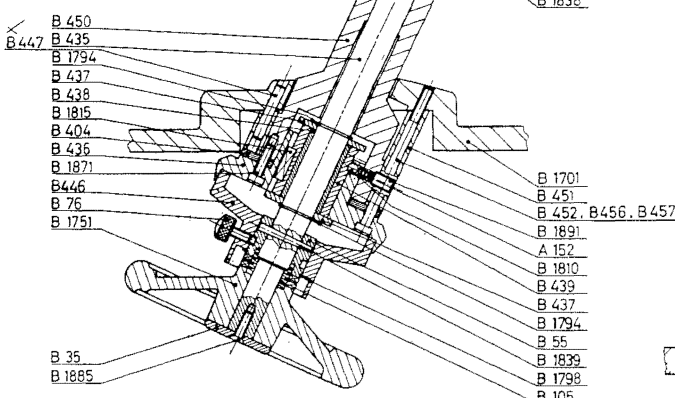
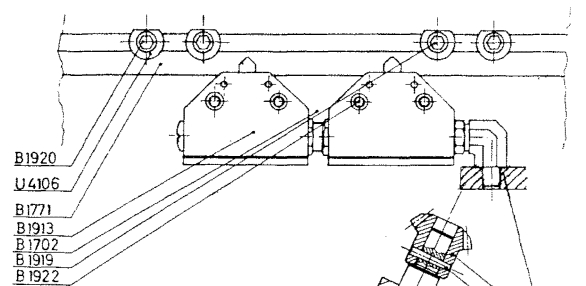
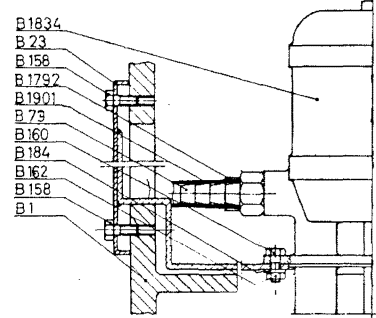
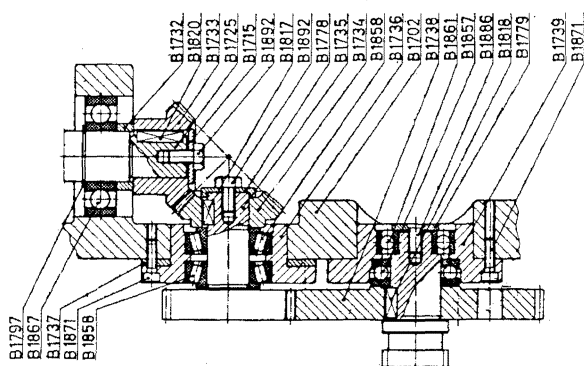
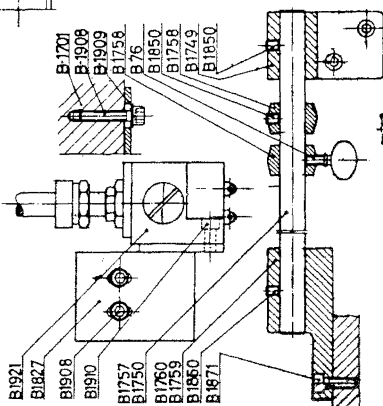
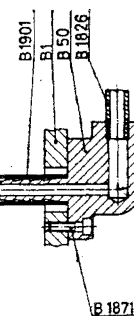
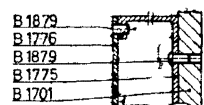
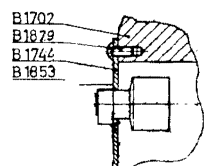
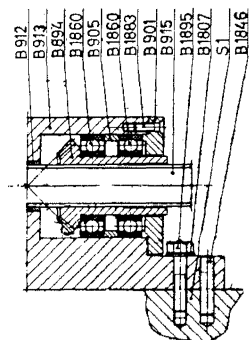
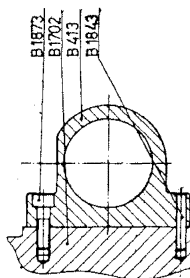
DIBUJO N°1



DIBUJO N°2



ANAYAK





PART LIST OF THE AUTOMATIC CROSS FEEDBOX

REFERENCE FV-2-B

NUMBER NAME

A-74 Control lever
A-152 Spring
A-1520 Locknut
A-1572 Fixed vertical spindle screw, FU-205 RM
A-1585 Vertical nut support, FU-205
A-1586 Vertical nut, FU-205 RM
A-1587 Vertical spindle screw, FU-205 RM
A-1588 Vertical nut, FU-205 RM
A-1589 Washer FU-205
A-1590 Vertical spindle screw FU-205 RM
A-1591 Guiding shaft support
A-1592 Double guiding shaft
A-1593 Washer
A-1594 Guiding shaft
A-1595 Locking bolt
A-1596 Locking stud bolt
A-1605 Lock washer

A-1610 Washer FU-205
A-1690 Vertical nut FU-205 RW
A-1691 Vertical nut FU-205 RW
A-1692 Vertical spindle screw FU-205 RW
A-1693 Vertical spindle screw FU-205 RW
A-1695 Fixed vertical spindle screw FU-205 RW
A-2106 Frame or body
A-2138 Spring
B-11 Wheel
B-14 Vertical nut FV-4 RM
B-23 Back cover
B-33 Slide brake bolt

B-35 Washer
B-38 Nonius
B-42 Cover
B-50 Support
B-52 Knee conical ruler
B-54 Cover
B-55 Clutch
B-57 Lock bolt
B-58 Lock bolt
B-61 Table spindle screw, 1340 RW
B-66 Knee covering plate
B-67 Knee covering plate
B-68 Knee covering plate
B-69 Table spindle screw, 1340 RM
B-71 Vertical nut FV-4 RW
B-74 Bolt
B-75 Bolt
B-76 Nonius bolt
B-77 Plug bolt
B-78 Mouth
B-79 Electric pump mouth
B-105 Spring
B-142 Knee brake bolt
B-148 Cushion
B-404 Regulating ring
B-408 Regulating washer

NUMBER NAME

B-409 Bearing
B-410 Bevel gear
B-411 Bevel gear
B-412 Gib
B-413 Support
B-415 Ridig slide conical guide
B-435 Shaft
B-436 Cover
B-437 Washer
B-438 Bearing
B-439 Bushing
B-443 Spring
B-446 Nonius
B-869 SELFOIL bushing, B-11 A-22x28x30
B-890 Cross stop
B-894 Spiral bevel gear
B-895 Straight gear
B-896 Straight gear
B-897 Straight gear with clutch
B-898 Bolt shaft
B-899 Bearing
B-900 Bearing
B-901 Cover
B-902 Bearing holder cover
B-903 Bearing holder cover
B-904 Set washer
B-905 Supplement washer
B-906 Set washer

B-910 Set washer
B-911 Straight gear
B-913 Conical gearing supports
B-914 Supplement shaft
B-915 Grooved shaft
B-930 Gib
B-964 ROTPAR universal joint, reference double type, HH-92 N-18
B-965 Cylindrical pin 6 x 36 ELBA
B-967 Rubber protector
B-968 Cardan spring
B-1701 Vertical slide
B-1702 Transversal slide
B-1703 Table conical guide
B-1704 Cross slide brake bolt
B-1705 Spindle screw support
B-1706 Nut support
B-1707 Supplement washer
B-1708 Supplement washer
B-1709 Gear ring
B-1711 Spiral bevel gear
B-1712 Straight gear
B-1713 Table screw spindle support
B-1714 Set washer
B-1715 Washer
B-1716 Shaft



NUMBER NAME

B-1717	Straight gear
B-1718	Output washer
B-1719	
B-1720	
B-1721	Cross spindle screw RM
B-1722	Straight gear with clutch
B-1723	Cover
B-1724	
B-1725	Vertical shaft
B-1726	Clutch
B-1727	Cover
B-1728	Distributing box
B-1729	Distributing box cover
B-1730	Cover
B-1731	Straight Bevel gearing
B-1732	Set washer
B-1733	Spiral bevel gear
B-1734	Spiral bevel gear
B-1735	Straight gear shaft
B-1736	Bearing holder cover
B-1737	Set washer
B-1738	Straight gear
B-1739	Bearing holder cover
B-1740	Fixed vertical spindle screw, FV-4 RM
B-1741	Vertical nut support
B-1742	Control with cam
B-1743	
B-1744	Switch holder cover
B-1745	
B-1746	
B-1747	Name plate
B-1748	Lock flat iron
B-1749	Support FU-205
B-1750	Butt rod FU-205
B-1751	Front wheel
B-1752	Table screw spindle RM 1541
B-1753	
B-1754	
B-1755	
B-1756	
B-1757	Butt rod FV-4
B-1758	Vertical butt
B-1759	Upper support FV-4
B-1760	Lower support FV-4
B-1761	Bushing
B-1762	Control with cam
B-1763	Table screw spindle RW 1541
B-1764	
B-1765	Stud bolt RM 8 x 15
B-1766	Stud bolt RM 6 x 8
B-1767	
B-1768	
B-1769	Cross spindle screw RW
B-1770	Fixed vertical spindle screw FV-4 RW
B-1771	Table 1340
B-1772	Cross nut RW
B-1773	Table spindle screw support

NUMBER NAME

B-1774	Table 1541
B-1775	Junction box
B-1776	Cover
B-1777	Handle
B-1778	Washer
B-1779	Washer
B-1780	
B-1781	
B-1782	Short locking bolt
B-1783	Long locking bolt
B-1784	Cross nut RW
B-1785	Stud bolt RM 14 x 2
B-1786	Bearing holder cover
B-1787	Safety pin
B-1788	Cross slide bolt
B-1789	Nonius holder shaft
B-1790	Guide cleaner
B-1791	Guide cleaner
B-1792	SAPA clamp Ø 22-25
B-1793	SAPA clamp Ø 25-28
B-1794	Elastic ring E-20
B-1795	Elastic ring E-22
B-1796	Elastic ring E-25
B-1797	Elastic ring E-30
B-1798	Elastic ring E-36
B-1799	Elastic ring E-44
B-1800	Elastic ring E-45
B-1801	Elastic ring E-46
B-1802	Allen bolt RM 6 x 12
B-1803	Elastic ring 1-52
B-1804	Elastic ring 1-62
B-1805	Elastic ring 1-80
B-1806	Lock washer MB-5
B-1807	Flat washer Ø 8
B-1808	Flat washer Ø 10
B-1809	Flat washer Ø 16
B-1810	Steel ball Ø 5
B-1811	
B-1812	Oiling distributing set
B-1813	Gib 6 x 6 x 15
B-1814	Gib 6 x 6 x 18
B-1815	Gib 6 x 6 x 20
B-1816	Gib 6 x 6 x 30
B-1817	Gib 8 x 7 x 15
B-1818	Gib 8 x 7 x 18
B-1819	Gib 8 x 7 x 22
B-1820	Gib 8 x 7 x 30
B-1821	Gib 10 x 8 x 20
B-1822	Name plate
B-1823	Cover
B-1824	Rotating handle shaft
B-1825	Oiler RM 8
B-1826	Cooling articulated tap
B-1827	Micro support
B-1828	
B-1829	
B-1830	Rotating handle



NUMBER NAME

B-1831
B-1832 Transversal micro
B-1833
B-1834 Coolant pump
B-1835
B-1836
B-1837
B-1838 Conical pin $\varnothing$ 5 x 25
B-1839 Conical pin $\varnothing$ 5 x 35
B-1840
B-1841 Allen stud bolt RM 10 x 15
B-1842
B-1843 Straight pin RM 6 x 35
B-1844 Straight pin $\varnothing$ 8 x 25
B-1845 Straight pin $\varnothing$ 8 x 30
B-1846 Straight pin $\varnothing$ 8 x 35
B-1847 Straight pin $\varnothing$ 8 x 40
B-1848 Straight pin $\varnothing$ 10 x 55
B-1849 Allen stud bolt RM 4 x 12
B-1850 Allen stud bolt RM 6 x 10
B-1851 Allen stud bolt RM 8 x 10
B-1852 Allen stud bolt RM 10 x 10
B-1853 Start switch
B-1854 Drill screw coolant return
B-1855 Pin bearing INA HK-2520
B-1856 Angular bearing 7205
B-1857 Axial bearing 51206
B-1858 Conical bearing 30205
B-1859 Conical bearing 31305
B-1860 Rigid bearing 6007-2RS
B-1861 Rigid bearing 6204-2RS
B-1862 Rigid bearing 6206-2RS
B-1863
B-1864 Rigid bearing 6304
B-1865 Rigid bearing 6304-2RS
B-1866 Rigid bearing 6305
B-1867 Rigid bearing 6306-2RS
B-1868
B-1869 Allen bolt RM 5 x 20
B-1870 Allen bolt RM 6 x 15
B-1871 Allen bolt RM 6 x 20
B-1872 Allen bolt RM 8 x 20
B-1873 Allen bolt RM 8 x 25
B-1874 Allen bolt RM 10 x 25
B-1875 Allen bolt RM 10 x 35
B-1876 Allen bolt RM 10 x 90
B-1877
B-1878 C.G.S. bolt RM 5 x 15
B-1879 C.G.S. bolt RM 6 x 10
B-1880 C.P. bolt RM 4 x 5

NUMBER NAME

B-1881
B-1882
B-1883 C.P. bolt RM 5 x 15
B-1884 C.P. bolt RM 6 x 10
B-1885 C.P. bolt RM 6 x 15
B-1886 C.P. bolt RM 8 x 15
B-1887
B-1888
B-1889 Hexagonal bolt RM 5 x 10
B-1890 Hexagonal bolt RM 6 x 15
B-1891 Hexagonal bolt RM 6 x 20
B-1892 Hexagonal bolt RM 8 x 15
B-1893
B-1894 Hexagonal bolt RM 8 x 30
B-1895 Hexagonal bolt RM 8 x 35
B-1896
B-1897 Hexagonal bolt RM 10 x 50
B-1898 Hexagonal bolt RM 10 x 55
B-1899 Hexagonal bolt RM 10 x 65
B-1900 Hexagonal bolt RM 10 x 60
B-1901 Rubber pipe $\varnothing$ 22 x $\varnothing$ 12 x 1200
B-1902 Rubber pipe $\varnothing$ 25 x $\varnothing$ 15 x 1400
B-1903 Set nut KM-5
B-1904
B-1905 Hexagonal nut RM 8
B-1906
B-1907 Allen stud bolt RM 14 x 15
B-1908
B-1909
B-1910
B-1911
B-1912 Steel ball $\varnothing$ 6
H-3 Bushing nut RW
H-4 Bushing nut RW
H-5 Intermediate ring
H-6 Set washer
H-7 Gib
H-10
H-32 Bushing nut RM
H-33 Bushing nut RM
H-40 Straight conical gear
H-41 Jack
H-42 Bushing
H-44 Bearing holder
B-45 Bolt R.M. 8 x 1,25
H-46 Washer
H-47 Needle axial bearing
AXK-5070



MACHINE ACCESSORIES

FEEDBOX LONGITUDINAL TRAVERSE SERVICE INSTRUCTIONS

This FEEDBOX is equipped with three (3) levers or controls and a feeds reversing gear selector, as shown on Page 13 and now being described as follows:

Automatic longitudinal or traversing motion clutch/release lever for table no. 10; feeds reversing gear lever no. 7; feeds selector handwheel no. 8 and table fast feeds lever.

The unit is capable of operating with twelve (12) feeds that range from 12 to 530 mm. per minute and a 2150 mm. per minute fast feed; these are obtained in the following manner:

Lever no. 7 has two (2) positions including handwheel no. 8.6; when the lever coincides with the red colour position, six (6) feeds are obtained on giving the selector one complete revolution or turn.

When lever no. 7 is in the blue colour position, the remaining six (6) feeds are obtained. The plate attached to the handwheel selector serves to indicate the number of feeds in mm. per minute as traveled by the table, in every one of the corresponding positions.

Lever no. 9 has three (3) positions; when it is inclined downwards, the machine operates with the twelve (12) normal working feeds; when in the mid dead point position and inclined upwards, the fast feed is achieved.

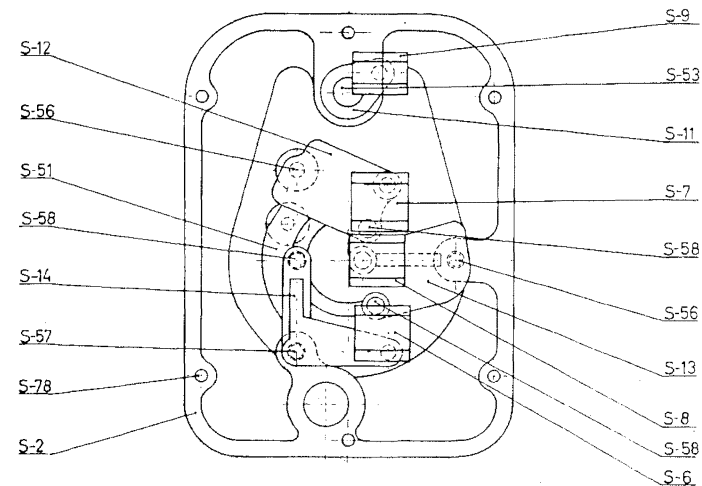
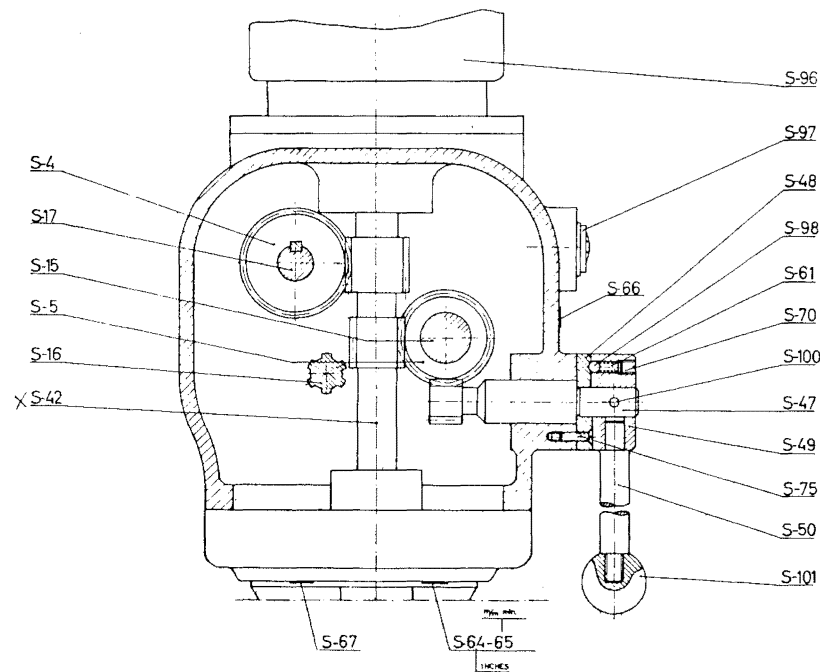
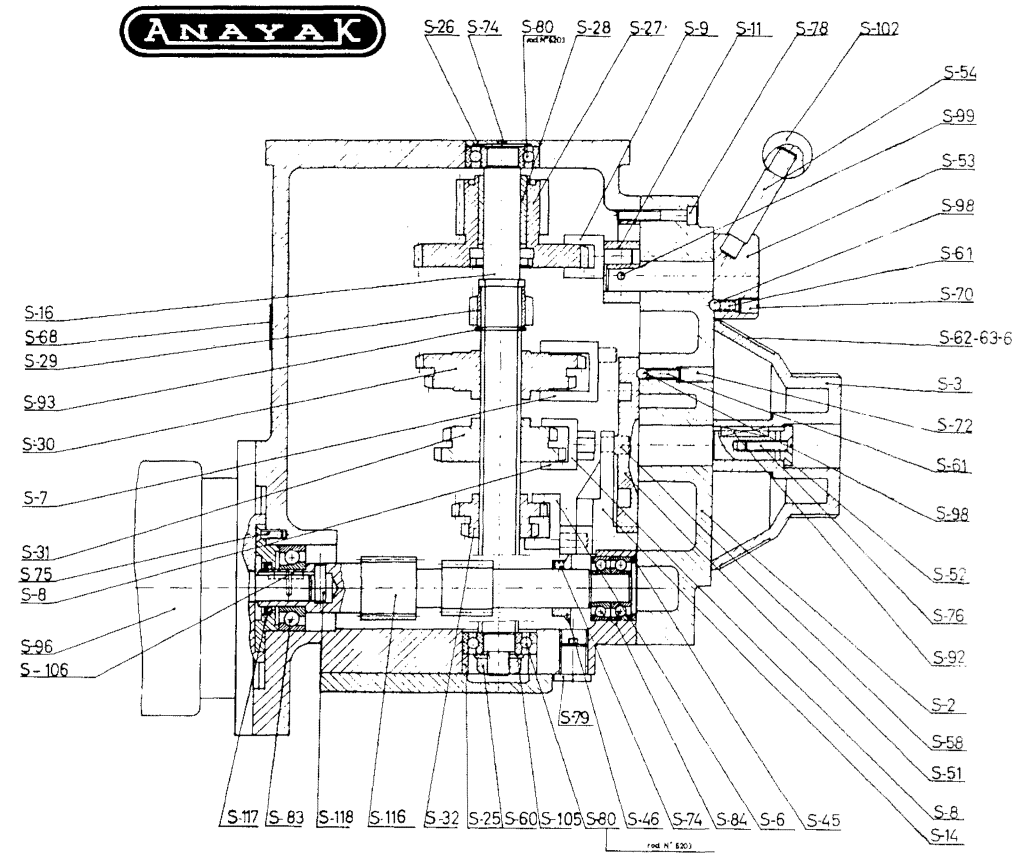
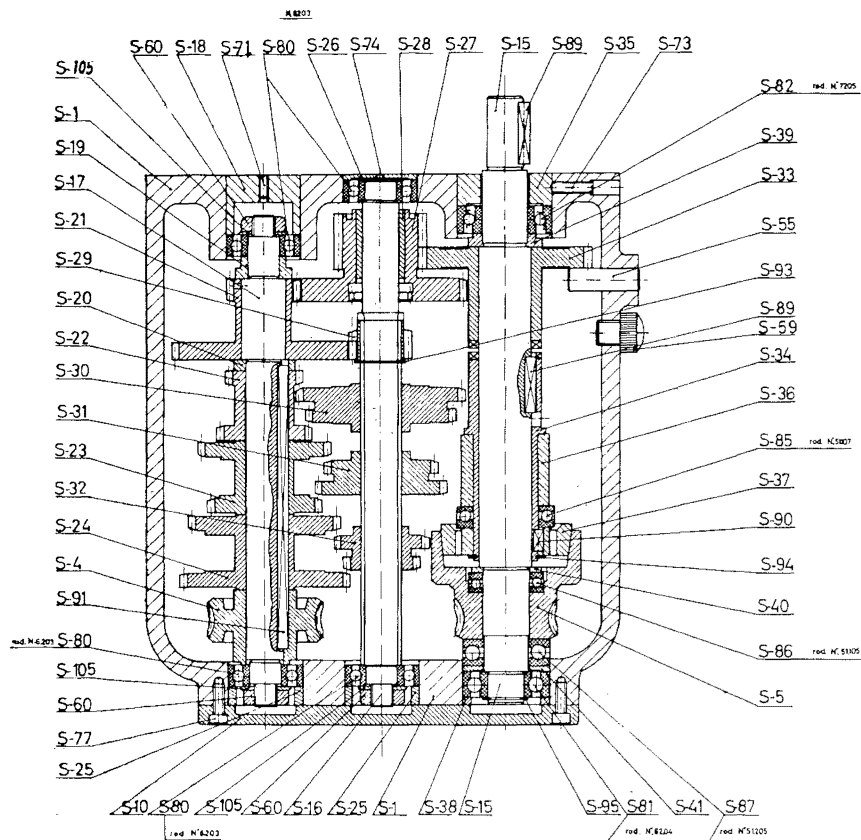
NOTE:

Use selector for feeds reversing if motor is running.

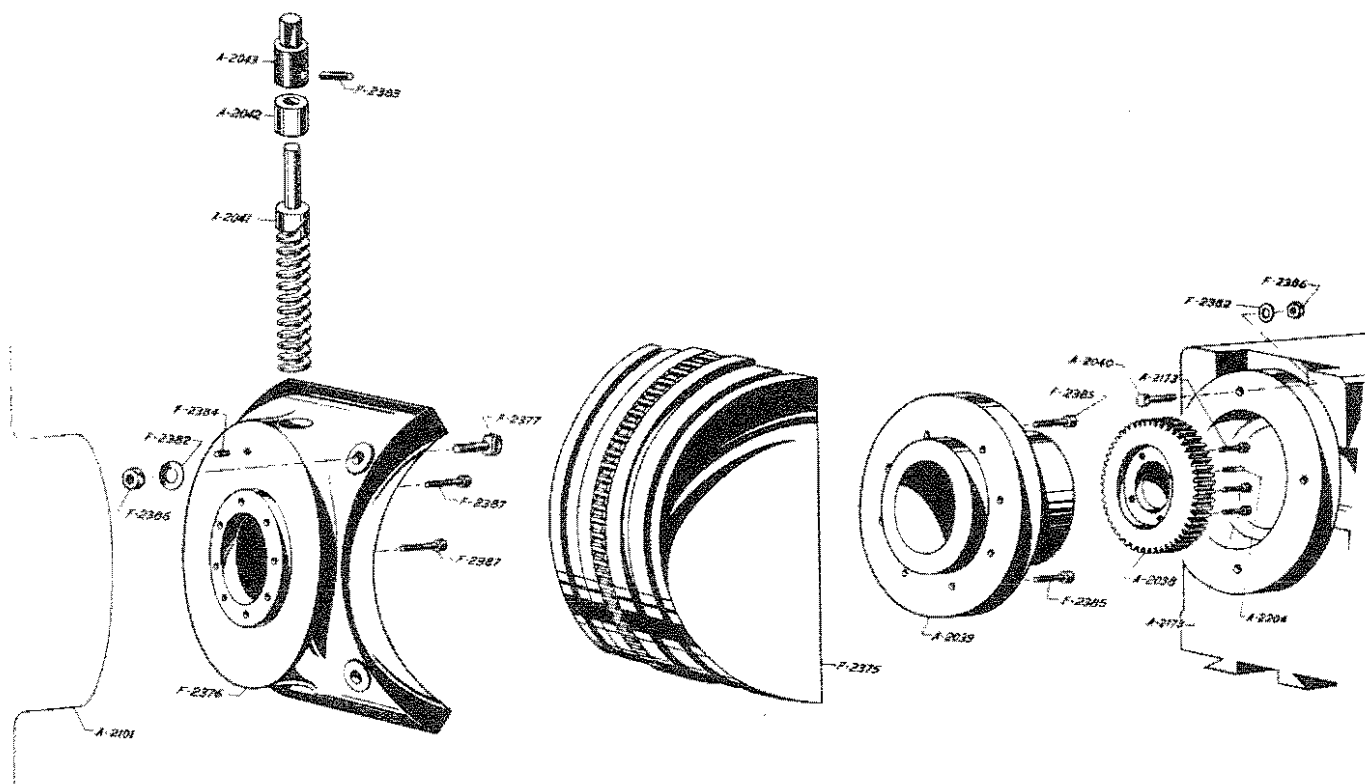
All feedbox arbors, shafts and gearing mechanism are built of nickel-chrome steel.

PARTS FOR THE POWERFEED GEAR BOX

N.º	NAME	N.º	NAME
S - 1	Powerfeed case	S - 62	Feed rate dial.
S - 2	Powerfeed cover	S - 63	Feed plate mm.
S - 3	Feed selection control dial	S - 64	Feed range indicator plate.
S - 4	Bronze worm gear, primary shaft.	S - 65	Plate mm.
S - 5	Bronze worm gear with clutch.	S - 66	Rapid range indicator plate.
S - 6	Upper bronze sliding feed gear yokes.	S - 67	Feed range indicator arrow.
S - 7	Middle bronze sliding feed gear yokes.	S - 68	Motor fan ahroud.
S - 8	Lower sliding feed gear yokes.	S - 69	Indication plate.
S - 9	Two speed bronze sliding gear yoke.	S - 70	Allen pin, metric th. 8 x 10.
S - 10	Bottom cover.	S - 71	Allen pin, metric th. 5 x 15.
S - 11	Shaft for high and low speed selector.	S - 72	Allen pin, metric th. 8 x 20.
S - 12	Upper control arm to go with "6".	S - 73	Allen pin, metric th. 6 x 25.
S - 13	Middle control arm to go wiht "7".	S - 74	Allen pin, metric th. 5 x 5.
S - 14	Lower control arm to go wiht "8".	S - 75	Fat head screw, metric 5 x 15.
S - 15	Final drive shaft.	S - 76	Flat head screw, metric 6 x 20.
S - 16	Idler shaft.	S - 77	Allen screw.
S - 17	Primary shaft.	S - 78	Allen screw.
S - 18	Cover fer primary shaft.	S - 79	Oil relase.
S - 19	Flanged spacer primary shaft.	S - 80	Bearing N.º 6203
S - 20	Flat top spacer primary shaft.	D - 81	Bearing N.º 6204
S - 21	Top low speed double gear.	S - 82	Bearing N.º 7205.
S - 22	Upper middle low speed double gear.	S - 83	Bearing N.º 7204.
S - 23	Lower middle low speed double gear.	S - 84	Bearing N.º 7202
S - 24	Botton low speed double gear.	S - 85	Bearing N.º 51107.
S - 25	6203 bearing spacer.	S - 86	Bearing N.º 51105.
S - 26	Idler shaft cover.	S - 87	Bearing N.º 51205.
S - 27	Top idler gear.	S - 88	
S - 28	Top idler gear baring.	S - 89	Key.
S - 29	Top idler gear.	S - 90	Key.
S - 30	Upper middle idler gear.	S - 91	Key.
S - 31	Lower middle idler gear.	S - 92	Key.
S - 32	Bottom idler gear.	S - 93	Retaining ring E 22.
S - 33	Clutch gear.	S - 94	Retaining ring E 35.
S - 34	Hollow clutch sahft with engaging lugs.	S - 95	Retaining ring E 20.
S - 35	Top drive shaft bearing spacer.	S - 96	3/4 H.P. motor 3.000 r.p.m.
S - 36	Rack for rapid traverse.	S - 97	Oil sight level case.
S - 37	Clutch.	S - 98	Steel detent ball.
S - 38	Bearing spacer.	S - 99	Feed range shaft pin.
S - 39	Top spacer for drive shaft.	S - 100	Rapid lever hub shaft pin.
S - 40	Top thrust bearing spacer.	S - 101	Rapid lever handle knob.
S - 41	Bottom thrust bearing spacer.	S - 102	Feed range lever knob.
S - 42		S - 103	
S - 43		S - 104	
S - 44		S - 105	Spacer, metric thread 12.
S - 45	Worm shaft front spacer.	S - 106	Key 5 x 32.
S - 46	Oil finger worm shaft.	S - 107	Indication plate.
S - 47	Rapid traverse pinion shaft.	S - 108	Indication plate.
S - 48	Rapid traverse pinion shaft spacer.	S - 109	Indication plate.
S - 49	Rapid traverse handle hub.	S - 110	Protective plate (1,5 H.P.).
S - 50	Rapid traverse handle shaft.	S - 111	Protective plate (0,75 H.P.).
S - 51	Feed dial control shaft.	S - 112	Indication plate.
S - 52	Feed dial retaining washer.	S - 113	Indication plate.
S - 53	Two speed lever hub.	S - 114	Cover.
S - 54	Two speed range lever handle.	S - 116	Double worm.
S - 55	Gear stop bolt.	S - 117	INA G 20 x 28 x 4 seal.
S - 56	Control arm pin bolts.	S - 118	Taper pin Ø 6 x 6 x 20 ELBA
S - 57	Control arm pin bolts.	S - 120	1,5 H.P. motor.
S - 58	Control arm pin bolts.	S - 121	Indication plate.
S - 59	Oil entrance screw.	S - 122	Indication plate.
S - 60	Bottom nut, idler shaft.	S - 123	Indication plate.
S - 61	Ball detent spring.		



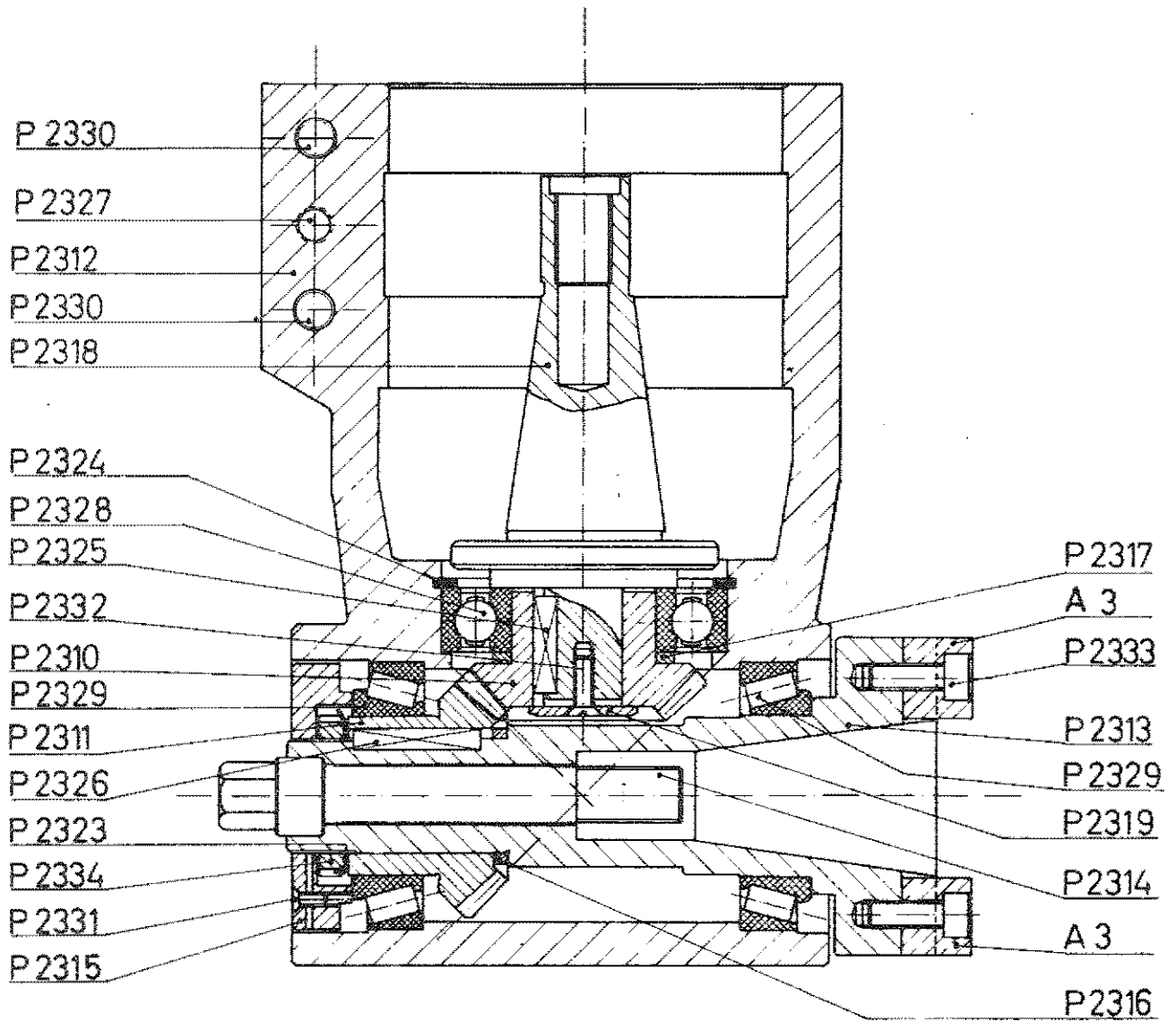
ANAYAK





PARTS LIST OF FRONT MOVEMENT REFERENCE FV-3-F

Number	NAME
A-2038	Crown
A-2039	Head support
A-2040	Head locking screw
A-2041	Worm
A-2042	Bushing
A-2043	Worm head
A-2101	Head
A-2173	Allen bolt R.M. 10 x 35
A-2204	Pin G01 Ø 8 x 22 SIDER ALDA
F-2375	Body
F-2376	Support
F-2377	Bolt
F-2378	
F-2379	
F-2380	
F-2381	
F-2382	Flat washer Ø 16,5
F-2383	Pin G01 Ø 6 x 28 SIDER ALDA
F-2384	Allen stud bolt R.M. 10 x 20
F-2385	Allen bolt R.M. 10 x 45
F-2386	Hexagonal nut R.M. 16 x 2
F-2387	Allen bolt R.M. 10 x 55

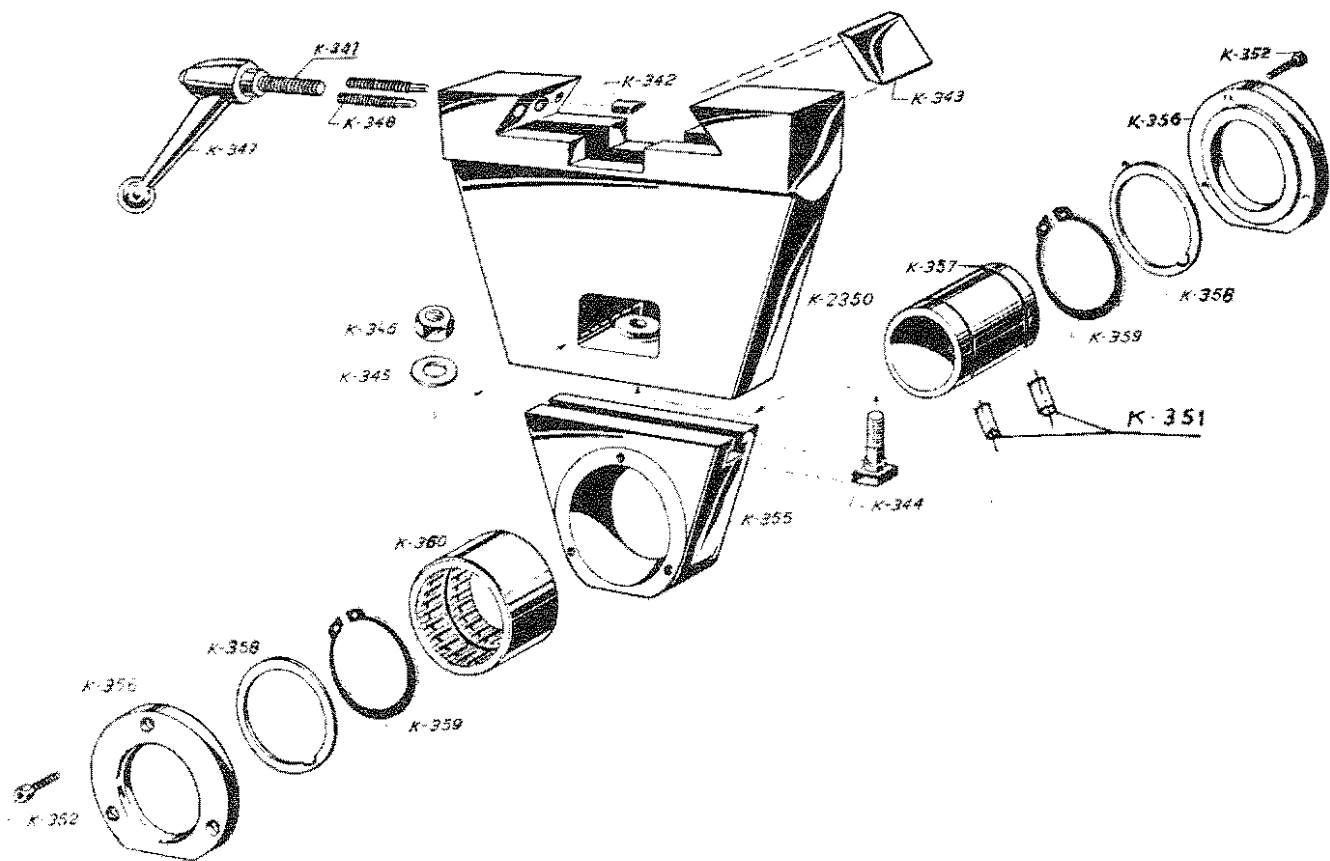




PARTS OF THE RIGHT ANGLE MILLING ATTACHMENT

REF. DFP

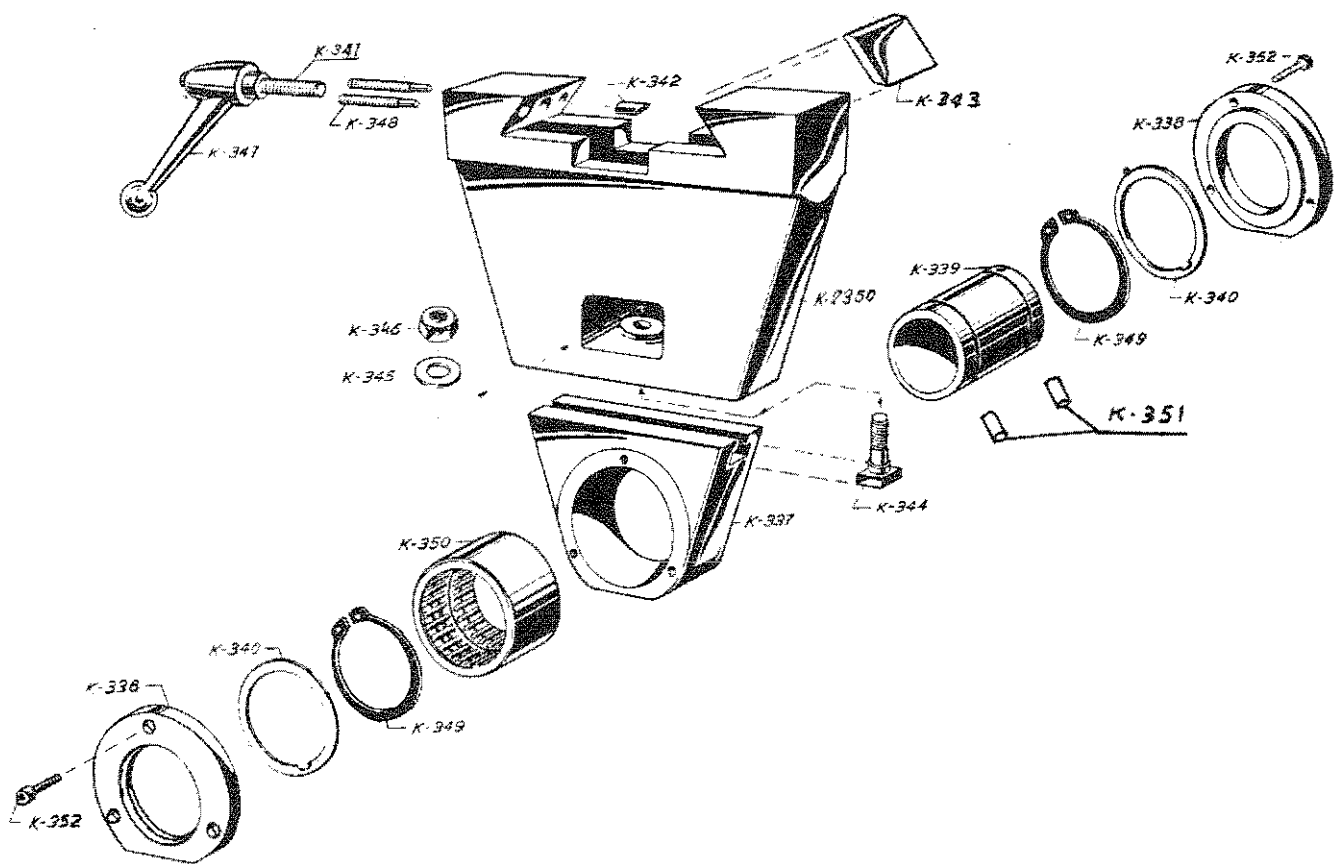
N.º	NAME
P-2310	Spiral bevel gear
P-2311	Spiral bevel gear
p-2312	Frame
P-2313	Main shaft ISO-40
P-2314	Tension member ISO-40
P-2315	Cover
P-2316	Adjusting washer
P-2317	Adjusting washer
P-2318	Driving shaft ISO-40
P-2319	Washer
P-2320	
P-2321	
P-2322	
P-2323	Lock washer MB-6
P-2324	Elastic ring I-80
P-2325	Pin 6 x 6 x 28
P-2326	Pin 6 x 6 x 36
P-2327	Capscrew Allen RM 10 x 38
P-2328	Bearing 6208 2 RS
P-2329	Bearing 32009 x
P-2330	Allen screw RM 10 x 70
P-2331	Screw C.P. RM 4 x 8
P-2332	Screw C.P. RM 6 x 15
P-2333	Screw allen R.M. 6 x 15
P-2334	Adjusting nut KM-6
A-3	Pin





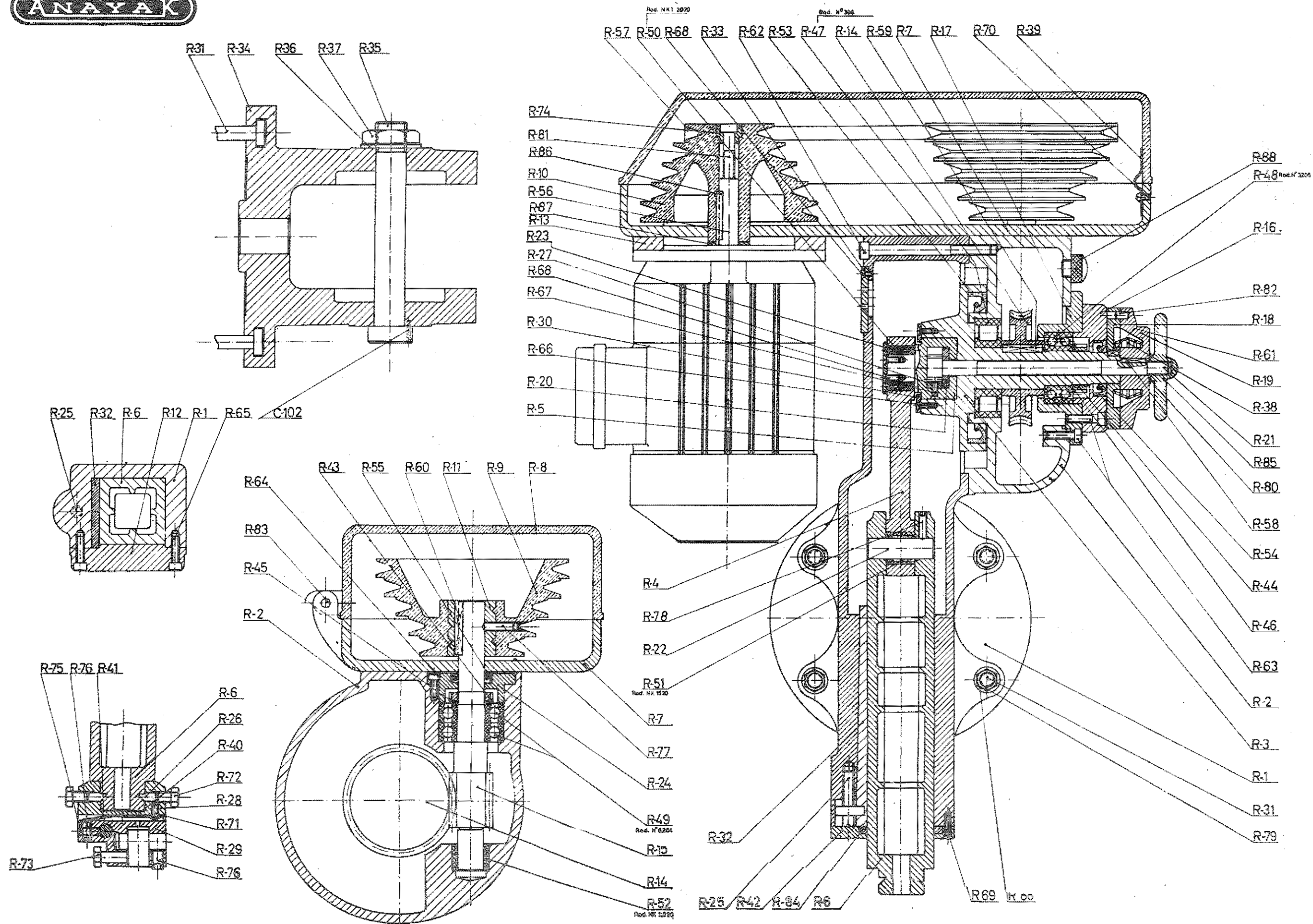
parts of model DFK right angle milling attachment

Nr.	DESCRIPTION
K-341	Cross screw
K-342	Pin
K-343	Ruler
K-344	Hexagonal screw met. th. 12 x 40
K-345	Washer $\varnothing$ 12,5
K-346	Hexagonal nut met. th. 12 x 1,75
K-347	Handle
K-348	Allen cross screw met. th. 8 x 50
K-351	Pin $\varnothing$ 2 x 4,5
K-352	Allen screw
K-353	
K-354	
K-355	Bearing holder
K-356	Cover
K-357	Bushing $\varnothing$ 42
K-358	Extra washer
K-359	Elastic ring E-52
K-360	Bearing INA-RNA-6909
K-2350	Body



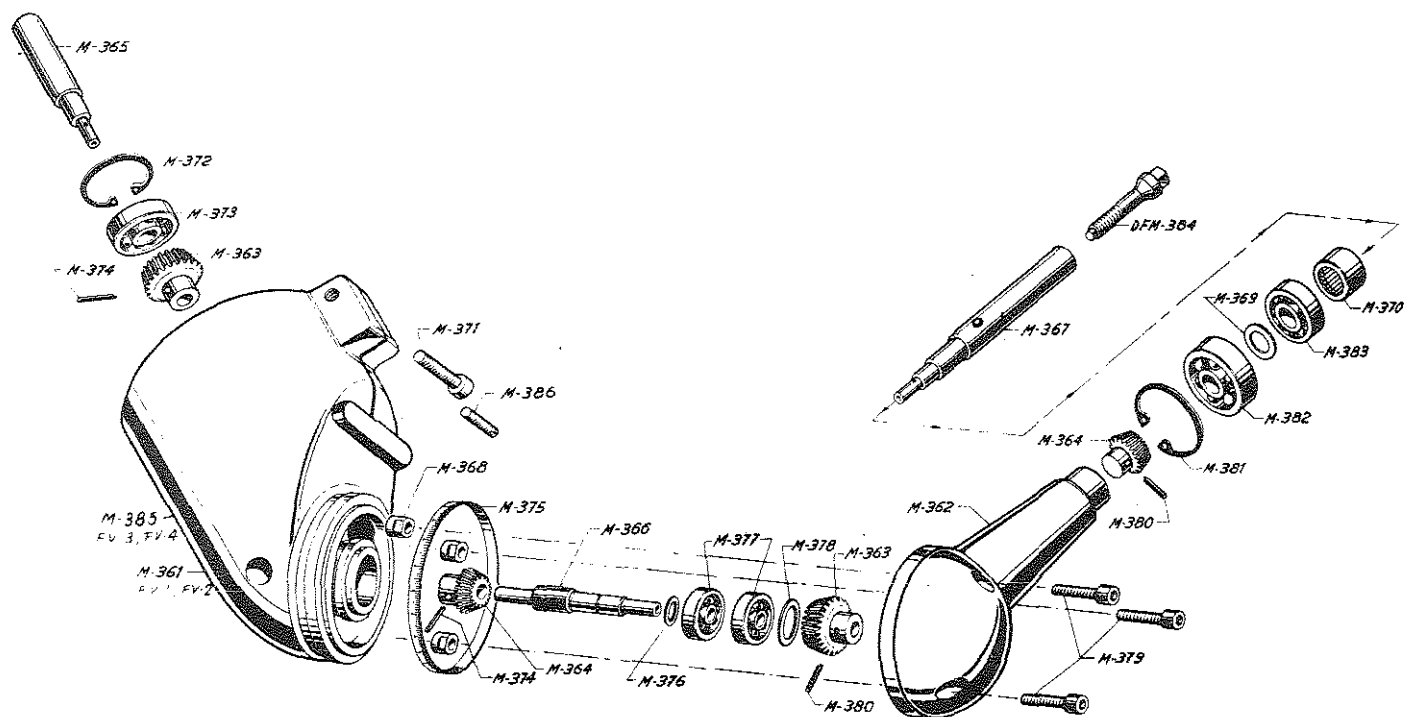
parts of model DFK right angle milling attachment

Nr.	DESCRIPTION
K	
K-337	Bearing holder
K-338	Cover
K-339	Bushing
K-340	Extra washer
K-341	Cross screw
K-342	Pin
K-343	Ruler
K-344	Hexagonal screw met. th. 12 x 40
K-345	Washer Ø 12,5
K-346	Hexagonal nut met. th. 12 x 1,75
K-347	Handle
K-348	Allen cross screw met. th. 8 x 50
K-349	Elastic ring F-48
K-350	Bearing nr. R.N.A. 6908
K-351	Pin Ø 2 x 4,5
K-352	Allen screw
K-2350	Body FU-3 - FU-4



parts of model DFR slotting attachment

Nr.	DESCRIPTION	Nr.	DESCRIPTION
R-1	Body	R-45	Lock washer MB-4
R-2	Support	R-46	Lock washer MB-5
R-3	Axis	R-47	Bearing nr. N 306
R-4	Connecting rod	R-48	Bearing nr. 3205
R-5	Slider	R-49	Bearing nr. 6204
R-6	Saddle	R-50	Bearing nr. NKI 20200
R-7	Motor frame	R-51	Bearing nr. NK 1520
R-8	Cover	R-52	Bearing nr. HK 2020
R-9	Worm pulley	R-53	Oil retainer $\varnothing 80 \times \varnothing 110 \times 13$
R-10	Motor pulley	R-54	Oil retainer $\varnothing 23 \times \varnothing 40 \times 8$
R-11	Pulley bushing	R-55	Oil retainer $\varnothing 19 \times \varnothing 30 \times 7$
R-12	Cover	R-56	$\frac{1}{2}$ HP. motor 1500 r.p.m.
R-13	Motor support	R-57	V. Belt 192
R-14	Crown	R-58	Bolt 4 x 4 x 18
R-15	Worm axis	R-59	Bolt 6 x 6 x 28
R-16	Cover	R-60	Bolt 6 x 6 x 40
R-17	Bearing holder cover	R-61	Bolt 4 x 4 x 75
R-18	Washer	R-62	Allen screw met. th. 8 x 100
R-19	Travel regulating plate	R-63	Allen screw met. th. 6 x 20
R-20	Washer	R-64	Allen screw met. th. 5 x 10
R-21	Gear	R-65	Allen screw met. th. 6 x 15
R-22	Shaft	R-66	C.P. screw met. th. 5 x 10
R-23	Washer	R-67	C.P. screw met. th. 6 x 10
R-24	Cover	R-68	C.P. screw met. th. 4 x 10
R-25	Screw	R-69	C.P. screw met. th. 5 x 15
R-26	Point	R-70	C.P. screw met. th. 4 x 10
R-27	Rack	R-71	C.P. screw met. th. 5 x 10
R-28	Tool holder support	R-72	Hexagonal screw met. th. 8 x 10
R-29	Tool holder	R-73	Hexagonal screw met. th. 8 x 20
R-30	End-stop	R-74	Guide bushing
R-31	Screw	R-75	Allen cross screw met. th. 5 x 15
R-32	Taper ruler	R-76	Allen cross screw met. th. 8 x 15
R-33	Washer	R-77	Allen cross screw met. th. 6 x 25
R-34	Support	R-78	Allen cross screw met. th. 6 x 20
R-35	Shaft	R-79	Nut met. th. 10 x 15
R-36	Washer	R-80	Washer $\varnothing 10$
R-37	Nut	R-81	Screw
R-38	Spring	R-82	Pin $\varnothing 5 \times 9$
R-39	Spring	R-83	Cross pin $\varnothing 6 \times 25$
R-40	Spring	R-84	Filter
R-41	Shaft	R-85	Nut
R-42	Filter holder	R-86	Bolt
R-43	Nut KM 4 X	R-87	Washer
R-44	Nut KM 5		





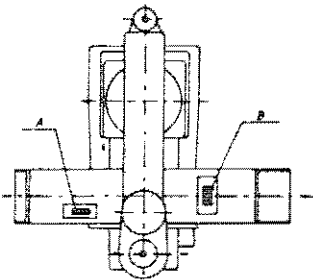
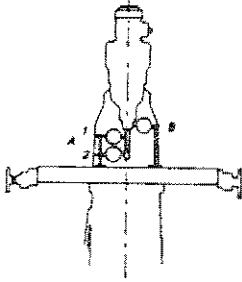
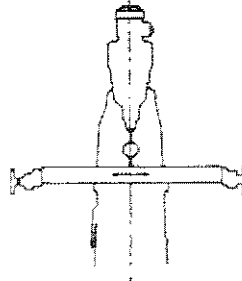
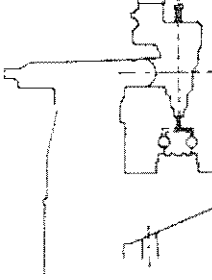
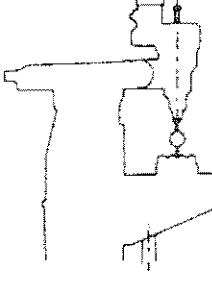
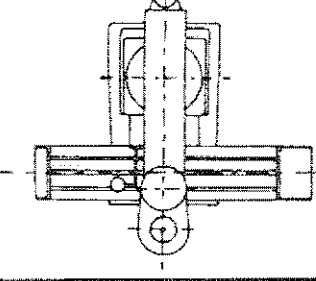
parts of model DFM all angle milling attachment

Nr.	DESCRIPTION
M - 361	Body FV - 1 - FV - 2.
M-362	Body
M-363	Bevel gear
M-364	Bevel gear
M-365	Drive shaft
M-366	Shaft
M-367	Collet holder shaft
M-368	Nut
M-369	Spring
M-370	Bearing HK 1412
M-371	Screw
M-372	Washer
M-373	Bearing nr. 6300
M-374	Taper pin
M-375	Graduated ruler
M-376	Washer
M-377	Bearing nr. EL 8 Z
M-378	Washer
M-379	Allen screw
M-380	Taper pin
M-381	Elastic ring
M-382	Bearing nr. 6200
M-383	Bearing nr. 6001
M-384	Collet
M-385	Body
M - 385	Body FV - 3 - FV - 4
M - 386	Prisionero allen M - 10 x 20

VERIFICATION CARD AS PER SCHLESINGER STANDARDS

MACHINE

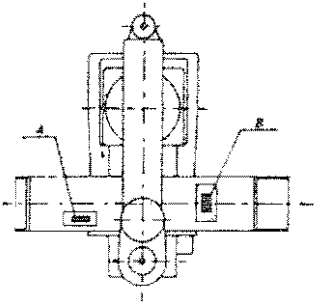
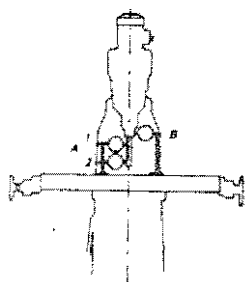
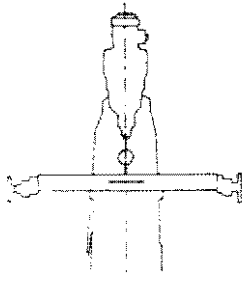
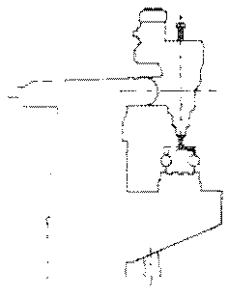
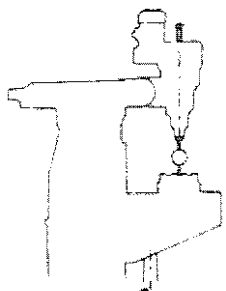
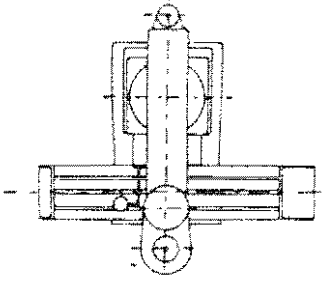
N.º

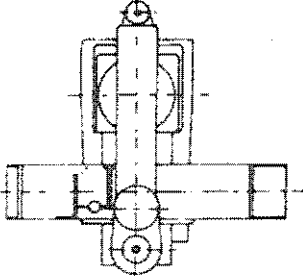
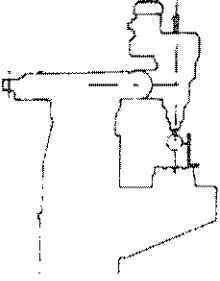
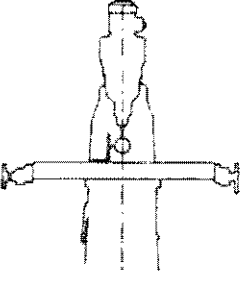
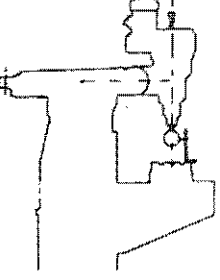
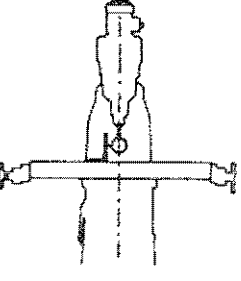
N.º	SCHEME	PURPOSE OF THE TEST	Recommend. verific. devices.	Error in mm.	
				permit.	verif.
1		Plane of the table surface. —A— longitudinal travel. —B— transversal travel.	rulers and stay-wedges	0,040 en 1.000 mm. 0,040 en 1.000 mm.	
2		Concentricity of the inner taper of the main spindle. A-1). At the outgoing of the housing. 2). At a distance of the final outgoing of 300 mm. B). Concentricity of the centering front of the spindle end. C). Swing of the face of the spindle end.	Verification watch Spindle well ground	0,010 0,020 0,010 0,020	
3		Parallelism of the table surface on its transversal travel.	Verification watch	0,020 en 500 mm.	
4		Perpendicularity of the cutter spindle to the table surface.	Verification watch	0,020 en 300 mm.	
5		Parallelism of the table surface on its longitudinal travel.	Verification watch	0,020 en 300 mm.	
6		Parallelism of the central slot on the longitudinal travel of the table.	Verification watch	0,020 en 300 mm.	

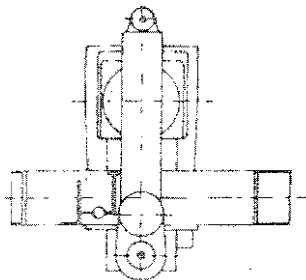
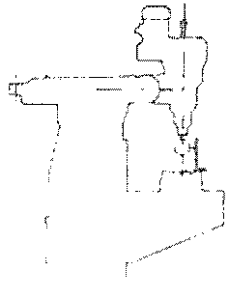
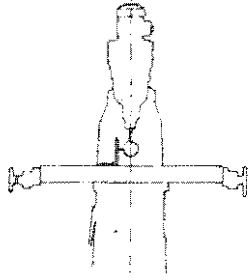
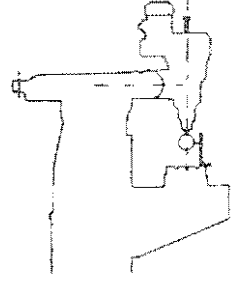
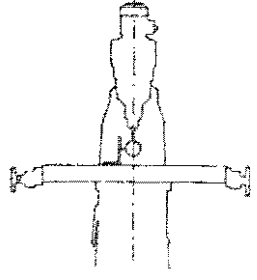
VERIFICATION CARD AS PER SCHLESINGER STANDARDS

MACHINE

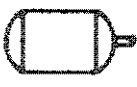
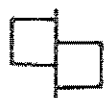
N.º

N.º	SCHEME	PURPOSE OF THE TEST	Recommend. verific. devices.	Error	
				permit.	verif.
1		Plane of the table surface. —A— longitudinal travel. —B— transversal travel.	rulers and stay-wedges	,0016 in 40 inches ,0016 in 39 inches	
2		Concentricity of the inner taper of the main spindle. A-1). At the outgoing of the housing. 2). At a distance of the final outgoing of 300 mm. B). Concentricity of the centering front of the spindle end. C). Swing of the face of the spindle end.	Verification watch Spindle well ground	,0004 ,0008 ,0004 ,0008	
3		Parallelism of the table surface on its transversal travel.	Verification watch	,0008 in 19 1/2"	
4		Perpendicularity of the cutter spindle to the table surface.	Verification watch	,0008 on 11 3/4"	
5		Parallelism of the table surface on its longitudinal travel.	Verification watch	,0008 on 11 3/4"	
6		Parallelism of the central slot on the longitudinal travel of the table.	Verification watch	,0008 on 11 3/4"	

N.º	SCHEME	PURPOSE OF THE TEST	Recommend. verific. devices.	Error in mm.	
				permit.	verif.
7		Precision of the table slot for a width of 10 to 12 14 to 18 18 Perpendicularity of the longitudinal travel of the table on its transversal travel.	Gauge Verifying watch	0,015 0 0,020 0 0,030 0 0,020 en 300 mm.	
8		Motion of the cutter spindle, perpendi- cular to the table on the longitudinal spindle of the machine.	Verifying watch and square	0,020 en 300 mm.	
9		So, on the perpendicular plane to the pre- ceding one.	Verifying watch and square	0,020 en 300 mm.	
10		Perpendicularity of the table surface with the vertical travel of the console on the frame. On a perpendicular plane to the simetry plane of the machine.	Verifying watch and square	0,020 en 300 mm.	
11		So, on the simetry plane of the machine.	Verifying watch and square	0,020 en 300 mm.	
12					

N.º	SCHEME	PURPOSE OF THE TEST	Recommend. verific. devices.	Error	
				permit.	verif.
7		Precision of the table slot for a width of 10 to 12 14 to 18 18 Perpendicularity of the longitudinal travel of the table on its transversal travel.	Gauge Verifying watch	,0008 ,0008 ,0012 ,0008 11 ³ / ₄ "	
8		Motion of the cutter spindle, perpendi- cular to the table on the longitudinal spindle of the machine.	Verifying watch and square	,0008 11 ³ / ₄ "	
9		So, on the perpendicular plane to the pre- ceeding one.	Verifying watch and square	,0008 11 ³ / ₄ "	
10		Perpendicularity of the table surface with the vertical travel of the console on the frame. On a perpendicular plane to the simetry plane of the machine.	Verifying watch and square	,0008 11 ³ / ₄ "	
11		So, on the simetry plane of the machine.	Verifying watch and square	,0008 11 ³ / ₄ "	
12					

MEANING OF THE SYMBOLS APPEARING ON THE MACHINE

	General switch		Electric motor
	R.p.m.		Quick
STOP	Stop		Slow
	Miller		Rotation direction
	Not to change in operation		Stem advance in in/rotation
	Stem advance in mm/rotation		Avances
	Geared		
	Advance direction		1 Division
	1 Turn		Cooling pump
	Oiling Stop		Shear safety
	Hydraulic transmission pump		Tracer
	Automatic cycle		Automatic cycle stop