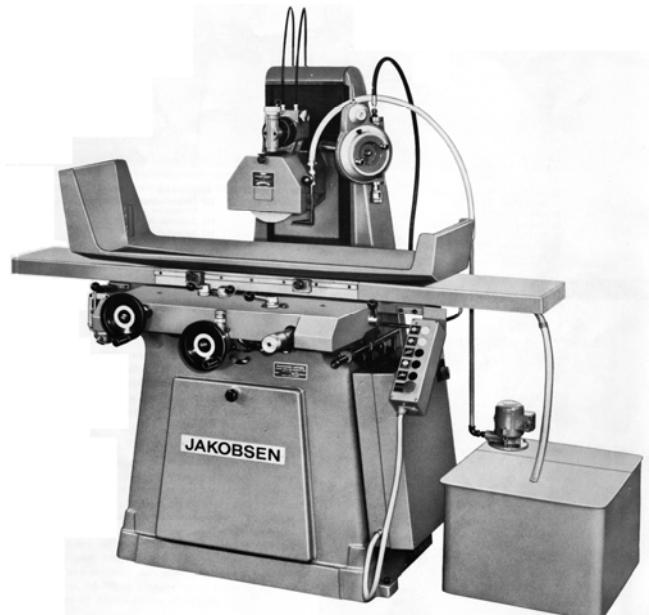




## OPERATION MANUAL + SPARE PARTS LIST



### SJ12 MACHINE

Version 2+3GB

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DEGREASING AND MOUNTING

Before shipment all unpainted surfaces were coated with a rust preventive compound. This may be removed by wiping with rags saturated with paraffin oil (petroleum) and it is especially important to clean the pulleys and the free ends of the longitudinal guide ways.

DO NOT MOVE ANY OF THE CONTROLS OR MOVING PARTS UNTIL THE MACHINE HAS BEEN THOROUGHLY CLEANED.

The end guards of the table is fastened by means of the screws placed in the table ends.

NOTICE THAT THE O-RING IN THE RIGHT-HAND SIDE OF THE TABLE IS PLACED CORRECTLY IN THE GROOVE TO TIGHTEN THE OUTLET OF THE COOLANT.

Now install the driving belt on the pulleys.

INSTALLATION ON FLOOR

The machine must be placed on a solid and vibrationless floor on the 3 levelling screws 032, page 9. It is recommended to use 3 steel plates 100x12 mm as baseplates for the set screws and with a center punch hole for the screws.

With a machine spirit level placed on the ground top surface of the table, level first the machine in the longitudinal direction and thereafter crosswise, whereupon the longitudinal direction is controlled again.

The machine can eventually be bolted to the floor by using  $\frac{1}{2}$ " foundation bolts in the holes just beside the set screws.

Vibration dampers are to be used only where you risk vibration from other machines.

IT IS A CONDITION FOR THE ACCURACY OF THE MACHINE THAT IT RESTS ON THE THREE LEVELLING SCREWS ONLY.

ELECTRICAL CONNECTION

Before connecting the machine to the power supply, make sure that the supply corresponds with the setting of the motors, stated at the connectors in the terminal box in the control cabinet.



The power supply is connected in the control cabinet at the right-hand side of the machine column.

Control the direction of rotation by means of the wheel up- and down pushbutton 010 page 9.

If the symbols do not correspond with the movements, two of the phases at the place where the power supply is connected, must be interchanged and all motors will then automatically have the correct direction of rotation.

DO NOT USE THE GRINDING WHEEL MOTOR FOR CONTROLLING THE DIRECTION OF ROTATION.

#### OIL FILLING

The hydraulic oil is filled into the tank at (016) page 9. The tank contains 5 gallons (24 litres) and the oil must be visible in the oil gauge glass for the machine to work properly.

We recommend MOBIL OIL VACOLINE 1405 as hydraulic oil, but other makes can also be used in accordance with the lubrication chart page 11.

DO NEVER MIX DIFFERENT TYPES OF OIL AND DO ALWAYS USE FRESH AND CLEAN OIL. THE OIL MUST BE CHANGED AT LEAST ONCE A YEAR.

For machines equipped with lubrication attachment for the crossways (optional equipment) use MOBIL OIL VACTRA No. 2 or as stated in the lubrication chartpage 11.

The oil container of the Lubrication attachment contains approx. 1 pint (0.4 litres). The oil level must be controlled at least once a month.

#### STARTING-UP AND RUNNING-IN

Start the hydraulic pump with push-button (011) page 9.

Control the pressure with all movements stopped. The pressure on the gauge (031) must be 143-170 psi



(10-12 kg/cm<sup>2</sup>).

The pressure is adjusted by means of the regulation screw (017). Notice the lock nut.

#### LONGITUDINAL TABLE MOVEMENT

The hydraulic longitudinal table movement is started with lever (023) page 9, which also adjusts the table speed.

The length of stroke is adjusted by the table stop dogs (021) and (024).

The longitudinal cylinders are cleared of air by moving the table dogs out in their extreme position and let the table bottom 5 - 6 times at each end at a very low speed.

The manual longitudinal table movement (optional equipment) is activated by the handwheel (027) page 10.

The hydraulic pump must be stopped and the lever (023) must be completely opened. (at full table speed position)

Then the button (026) is pulled out and the handwheel pushed in.

REMEMBER TO PULL THE HANDWHEEL OUT AGAIN BEFORE THE HYDRAULIC MOVEMENT IS STARTED AGAIN.

#### CROSS SADDLE MOVEMENT

The hydraulic rapid cross saddle movement is started by the lever (037) page 9, which also adjusts the speed.

The direction of the saddle is chosen with the lever (036).

The cross cylinder is cleared of air by bottoming the saddle 5 - 6 times in both ends using the rapid cross saddle movement.

The hydraulic intermittent cross feed is automatically activated, when the longitudinal movement is started.

The direction of the saddle is selected with the lever (036) page 9. The feed rate is adjustable from 1-9 mm (.04-.35") by means of the cross feed adjustment control (08).

The manual cross saddle movement is engaged by turning lever 030 page 9 to the right and at the same time by placing lever 036 in the centre position (on machines equipped with automatic cross reversals the lever 020, page 10, must be turned to pos. MANUEL). The manual cross movement can now be operated by handwheel 028.



One revolution of the handwheel gives a cross feed of  $1/8"$  (3 mm) and one division is equal to  $0.001"$  (.005 mm).

The manual cross feed is equipped with a worm gearing for fine adjustment. The worm is engaged by loosening the regulating screw No. 229 page 20 and turn the bushing No. 225 page 20 until the worm is put in gear, whereafter the regulating screw is tightening again.

When the adjustment screw is engaged the handwheel cannot be used.

#### The automatic cross movement and downfeed.

On machines equipped with this optional equipment the direction of the cross movement is selected by the lever (09) page 10. The reversals are automatic by means of the cross saddle dogs (015) placed on the stop rail on the right-hand side of the machine.

The lever (020) page 10 has three positions: for manual cross feed, for hydraulic intermittent cross feed, and for hydraulic rapid cross movement.

#### VERTICAL MOVEMENT

The rapid power vertical traverse of wheelhead is operated by the wheel up- and down push button (010) page 9.

The manual vertical movement is operated by the handwheel (034) page 9.

One revolution of the handwheel gives a downfeed of 0,3 mm (.0125") and one division is equal to 0.005 mm (.0001").

The automatic downfeed (optional equipment) is operated by means of the scaleknob (01) and the handwheel (04) page 10.

The digits on the scaleknob count the revolutions of the handwheel (04) operated automatically.

The automatic counter can count up to 6 revolutions of the handwheel corresponding to a total downfeed of 1.8 mm (.075")

**THE HANDWHEEL (04) MUST ONLY BE OPERATED WHEN THE SCALEKNOB (01) IS AT ZERO.**



With the scaleknob on infinite (00) the automatic down-feed will continue without automatic stop.

If you want to grind a part of a revolution of the handwheel set this fraction by means of the loose scalering (03) and the scaleknob at 1.

Do not forget to tightening-up the scalering after setting.

The depth of each cutting is variable from 0.002 - 0.02mm (.0001" - .001") by using the regulating screw (05).

To clear the system of air loosen the hose No. 760, page 17 in the connector and hold the reversing lever (09) page 10, open by hand until the oil appears.

#### GRINDING INSTRUCTIONS

In surface grinding the choice is between two methods:  
Face grinding and edge grinding.

Face grinding means grinding with a large cross feed and a small downfeed of about 0.002-0.005mm (.0001"-.0003") and this method will in most cases be the most economical one and will give the best planparallel results.

By edge grinding we recommend to use a bigger downfeed up to 0.3 mm (.0125") and manual operated crossfeed.

Which method to prefer is an individual choice and to a great extend a matter of experience depending on the material, the dimension and partly on the grinding wheel used.

Generally speaking it is recommended to use face grinding particularly on machines equipped with automatic down feed and cross travel.

Edge grinding cannot be advised when grinding wide surfaces as there is a risk for the wheel to be worn out before the whole width has been ground giving a non plan-parrallel-working piece.

#### FITTING, DRESSING AND BALANCING OF GRINDING WHEEL

The grinding wheel is fitted to the wheel hub and mounted on the wheel spindle, whereafter it is dressed until it is round. Eventually the sides of the wheel must be dressed until they are running.

Then the wheel and wheel flange are taken off the spindle by means of the wheel extraction tool, and carefully balanced.

Thereafter the wheel must be dressed and balanced again.



Note that the nut, which fasten the hub to the spindle has left hand thread.

#### WHEEL DRESSING ATTACHMENT

The Hydraulic Wheel Dresser is mounted on top of the wheelhead and permits dressing of the wheel without removing the work from the chuck or the table.

The Lever (No. 1126 - page 25) controls the direction and the Knob (No. 1125) controls the speed, by which the diamond is passed across the wheel. The diamond is fed down vertically by means of the Knob (No. 1118).

DO ALWAYS SCREW THE DIAMOND IN TOP POSITION BEFORE MOUNTING A NEW GRINDING WHEEL.

FOR GOOD DRESSING IT IS ESSENTIAL THAT THE DIAMOND IS SHARP SO ABRASIVE GRAINS WILL BE COMPLETELY FACTURED AND PROJECT FROM WHEEL BOND.

Balancing of the wheel hub and grinding wheel is done by means of the balancing arbor and the balancing stand. Demount of all 3 balancing weights. Find the heaviest spot and place one of the weights here. By placing and moving the other weights symmetrically in proportion to the first placed weight, the unit is balanced as carefully as possible.

#### LUBRICATION

For the machine to work properly, it is a condition that it is lubricated in accordance with the lubrication chart on Page 11. The points of lubrication are shown here.

The spindle bearings are never to be greased, as they are greased once and for all.

#### ONE SHOT-LUBRICATION SYSTEM

Machines equipped with one-shot lubrication attachment for lubrication of the cross ways (optional equipment) must be lubricated twice a day.

The lever is to be pulled out completely, as it is the last part of the movement that gives the impulse.

D O   N O T   L U B R I C A T E   W H E N   G R I N D I N G



INTERRUPTION OF OPERATIONSlackness in the front bearing

The radial slackness is measured by placing the dial micrometer on the spindle head stock and measure on the spindle nose.

This slackness must be from 0.001 - 0.003 mm, and is adjusted by tightening the nut (No. 164 - page 15) anti-clock-wise (left hand thread).

Slackness in the thrust bearing

To adjust the thrust bearing - the slackness must be 0.002 - 0.005 mm. - remove the cap on the right side of the head stock.

The nut (No. 167 - page 15), is locked with 2 locking screws and can be loosened with a 3 mm hexagon-key. When tightening the nut, it is to be held in position by a 5 mm Dia. pin inserted in the hole on the side of the headstock, while the spindle is turned with a key, (the nut has left hand thread). Remember to tighten the locking screws afterwards.

Hydraulic longitudinal movement

- A. If the table speed is too low (By the maximum speed is understood the speed between the turnings, and you must not incalculate the turnings, when the table speed is controlled).
- B. If the table reversals are too long, or the stops pass the reversing lever without turning the table.
- C. If the table speed is unsteady.

Re A 1. Check oil level in the hydraulic tank.

Check oil pressure on the pressure gauge with all movements stopped. The pressure must be 143-170 psi ( $10-12 \text{ kg/cm}^2$ ). If the pressure cannot be brought up to this;

- a. Tighten the belt with the set screw (No. 456) page 23
- b. Check whether spring (No. 206) page 24 is broken.
- c. The pump is worn out and must be replaced.

Re B 1. Move the saddle to the outer position and stop the hydraulic pump.

2. Remove the cover screw (No. 283) page 19, at the under side of the longitudinal valve block and turn the adjustment screw "S" (No. 282) 3 or 4 revolutions backwards, using a 4 mm hexagon-key.
3. Start the hydraulic pump and turn the longitudinal reverse-lever (No. 022) page 9, by hand 3 or 4



times to the right and left; hereby the throttle-place above the set screw "S" is cleaned.

4. Turn the adjustment screw back and adjust the turning length as required and fit the cover screw again.

- Re C 1. Clear the longitudinal cylinder of air by placing the table dogs in their extreme position and let the table bottom at low speed 4 or 5 times in both sides. Change the direction by turning the lever (No. 022) page 9.
2. Control that the automatic lubrication is effective -viz. whether the underside of the table ways are moistred with oil. Otherwise demount the table and clean the oilgrooves with compressed air.

#### HYDRAULIC CROSS MOVEMENT

D. The rapid movement is failing or unsteady.

E. The cross feed is unsteady.

F. The cross feed works in one direction only.

Re. D 1. Put the lever (No. 030) page 9, in the left position.

2. Check that the cross ways are effeciently lubricated.

3. Clear the cross cylinder of air;

Move the saddle 5 or 6 times in bottom in both ends by using the rapid traverse.

4. Are the conditions mentioned under point A-1 and A-2, page 7 fulfilled ??

Re. E 1. Are the conditions mentioned under point A-1 and A-2, page 7 fulfilled ??

2. Is the cross cylinder cleared of air ?

3. Is the spring, pos. No. 331 page 21 in order ??

4. Does the reversing valve for the longitudinal table movement return to centre position by means of the spring (No. 270) page 19, and is this in order ??

Re. F 1. Check that the hub (No. 253-B) page 21 sits tight and in correct position on the valve stem.

2. Check spring (No. 331) page 21.

#### ELECTRICAL MOTORS

1. If all motors stop - check the fuses.

2. If one of the motors is stopped; the bimetal has been overloaded and cuts off the power supply. The re-engagement is made manually by the bimetal.



MANUAL VERTICAL MOVEMENT

The headstock is not moving, when the handwheel is turned:

1. Check that the gearwheel (No. 34) page 16, is tight to the vertical spindle.
2. Check that the brake in the vertical motor can hold the vertical lead screw, when the vertical handwheel is turned.

THE DRIVING BELT FOR THE GRINDING WHEEL RUNS OFF

1. Check that the pulleys are degreased.
2. Check that the belt has a correct tightening.  
The tightening of the belt is made as follows;

The spindle headstock is moved in top position, and the blue cover plate (No. 110) page 14, below on the front of the headstock is removed by removing the two screws (No. 449). Loosen the lock nut, (No. 390), and the stay bolts (No. 178) are equally turned until a proper tightening is obtained. Fasten the locknuts and remount the cover plate and the fancy slip.

Observe that the driving belt runs straight on the pulleys; otherwise it may be necessary to adjust the placing of the motor.

GRINDING FINISH

A poor grinding finish may be caused by one of these reasons;

1. Wrong choice of grinding wheel; consult your supplier of grinding wheels.
2. Bad balancing and bad dressing of the grinding wheel.
3. Poor dressing diamond tip.
4. Slackness in main spindle bearings.

GRINDING WHEEL

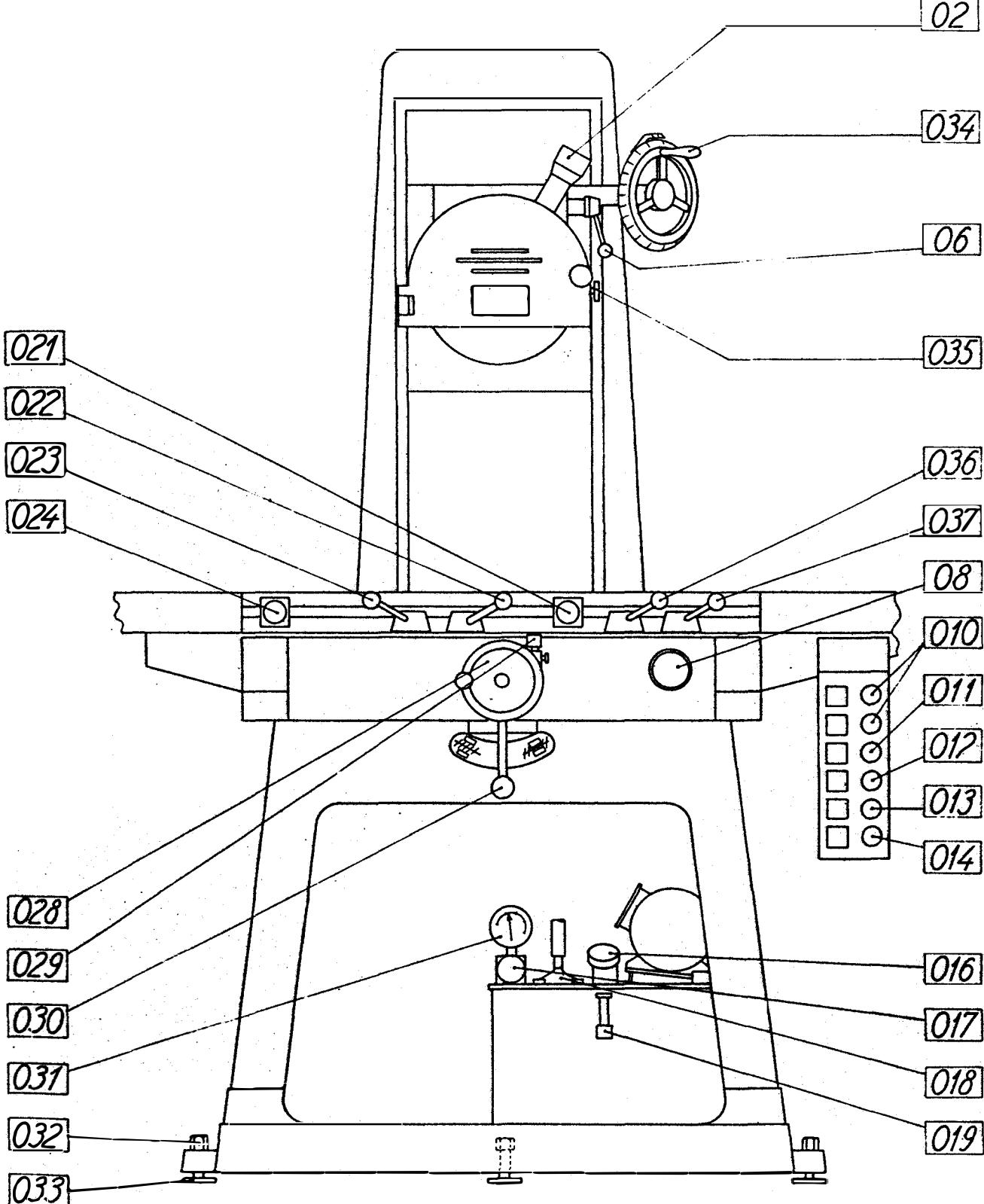
The grinding wheel provided with the machine can be used in most materials. In certain instances it is advisable to buy special wheels for a particular job and your supplier can advise you.

Dimension of a standard type grinding wheel;

outside dia.	8" (10")
width	3/4"
bore	3"

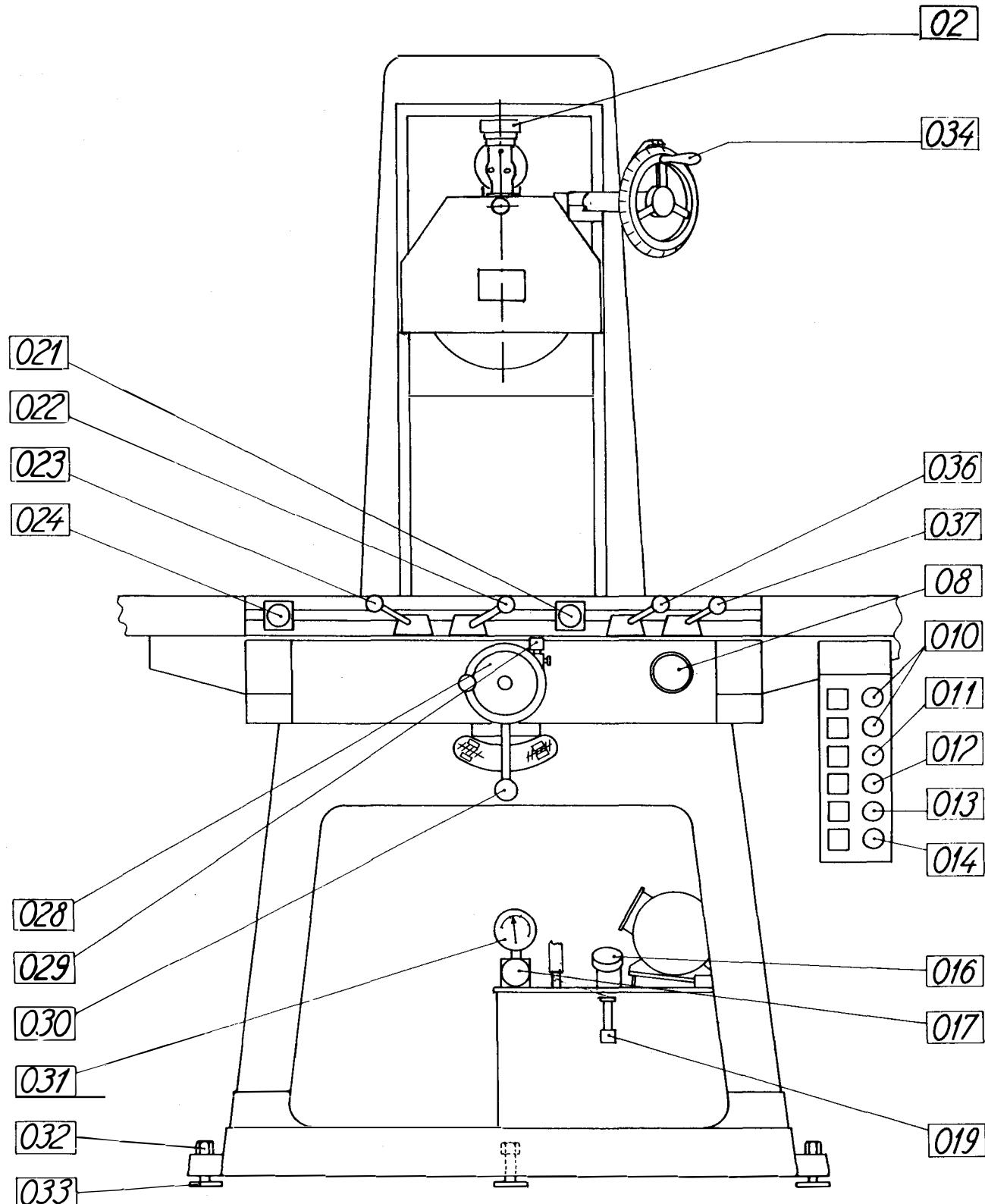
## Control knobs - Standard

<u>POS.NO.</u>	<u>DESCRIPTION</u>	PAGE 9
02	In-feed screw for wheel dresser	
08	Regulating screw for Hydraulic cross feed	
010	Start button for rapid Vertical traverse	
011	Start button for pump motor	
012	Start button for Grinding motor	
013	Start button for Coolant pump motor	
014	Stop button	
016	Filler cap for Hydraulic oil	
017	Regulating screw for Hydraulic pressure	
019	Oil gauge glass for Hydraulic oil	
021	Longitudinal table dog, right	
022	Reverse lever for Longitudinal movement	
023	Start lever for Longitudinal movement	
024	Longitudinal table dog, left	
028	Handwheel for cross movement	
029	Fine adjustment screw for manual cross movement	
030	Lever for changing from Hydraulic to manual cross movement	
031	Pressure gauge	
032	Set screw	
033	Baseplate	
034	Handwheel for Vertical movement	
036	Reverse lever for cross movement	
037	Lever for rapid cross movement	



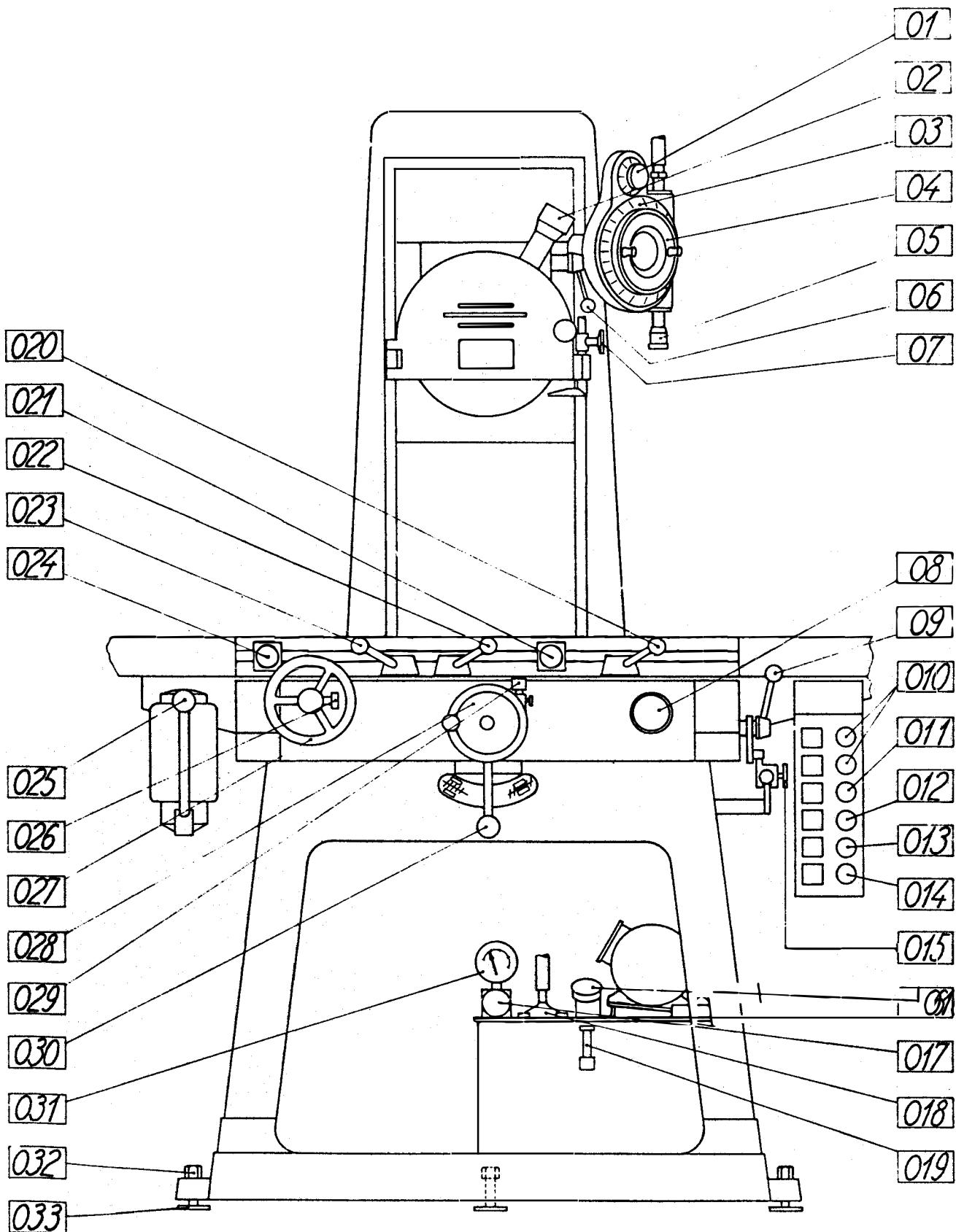
## Control knobs - Standard

<u>POS.NO.</u>	<u>DESCRIPTION</u>	PAGE 9
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017	Regulating screw for Hydraulic pressure	
019	Oil gauge glass for Hydraulic oil	
021	Longitudinal table dog, right	
022	Reverse lever for Longitudinal movement	
023	Start lever for Longitudinal movement	
024	Longitudinal table dog, left	
028	Handwheel for cross movement	
029	Fine adjustment screw for manual cross movement	
030	Lever for changing from Hydraulic to manual cross movement	
031	Pressure gauge	
032	Set screw	
033	Baseplate	
034	Handwheel for Vertical movement	
036	Reverse lever for cross movement	
037	Lever for rapid cross movement	



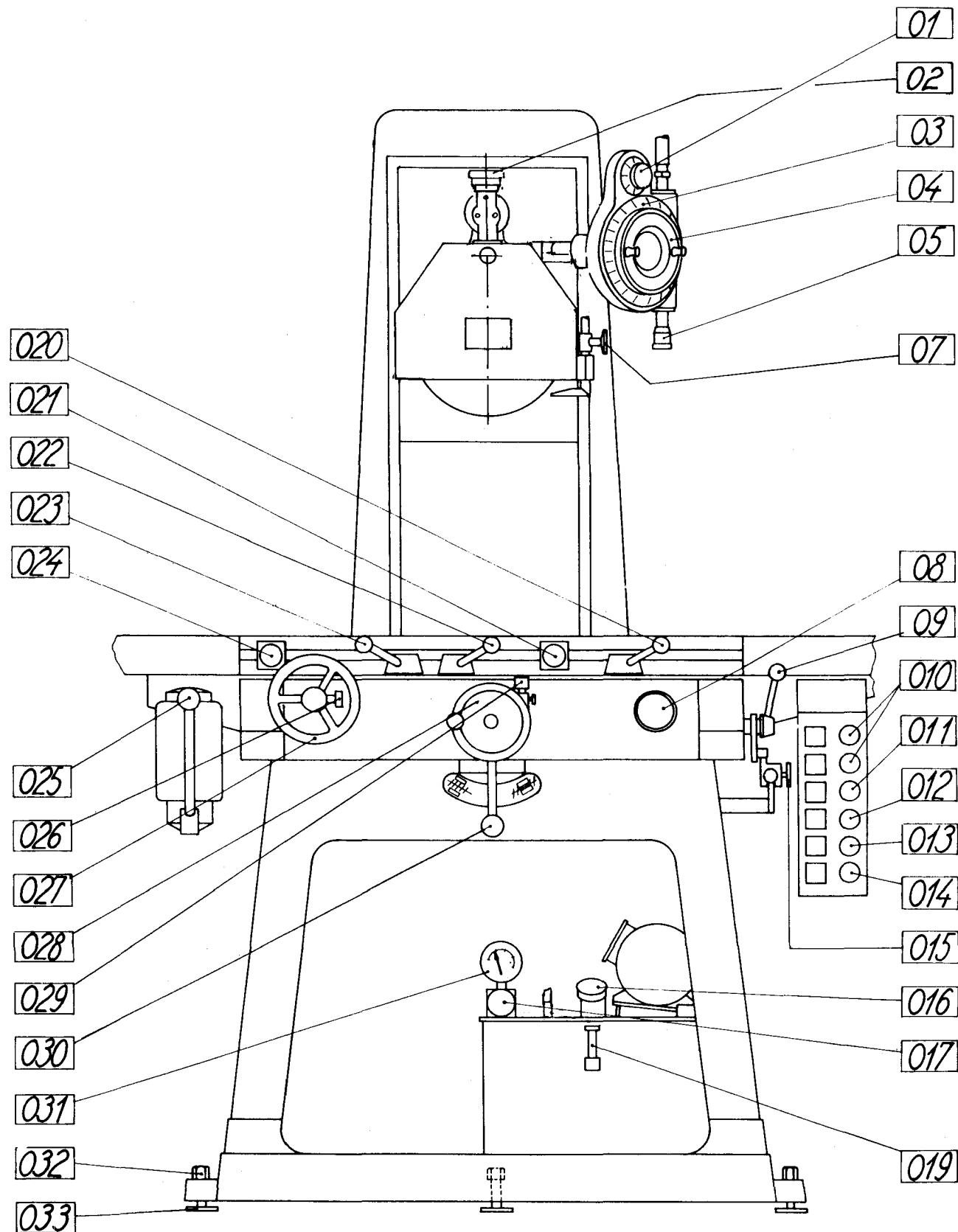
Control knobs with optional equipment

<u>POS.NO.</u>	<u>DESCRIPTION</u>	<u>PAGE 10</u>
01	Scaleknob for Automatic down feed	
02	In-feed screw for wheel dresser	
03	Loose scalering for Automatic down feed	
04	Handwheel for Vertical movement	
05	Regulating screw for down feed	
07	Valve for wet Grinding attachment	
08	Regulating screw for Hydraulic cross feed	
09	Reverse lever for cross movement	
010	Start button for rapid Vertical traverse	
011	Start button for pump motor	
012	Start button for Grinding motor	
013	Start button for Coolant pump motor	
014	Stop button	
015	Cross table dog	
016	Filler cap for Hydraulic oil	
017	Regulating screw for Hydraulic pressure	
019	Oil gauge glass for Hydraulic oil	
020	Control lever for cross movement	
021	Longitudinal table dog, right	
022	Reverse lever for Longitudinal movement	
023	Start lever for Longitudinal movement	
024	Longitudinal table dog, left	
025	Lubrication attachment for cross ways	
026	Lock button for manual Longitudinal movement	
027	Handwheel for Longitudinal manual movement	
028	Handwheel for cross movement	
029	Fine adjustment screw for manual cross movement	
030	Lever for changing from Hydraulic to manual cross movement	
031	Pressure gauge	
032	Set screw	
033	Baseplate	

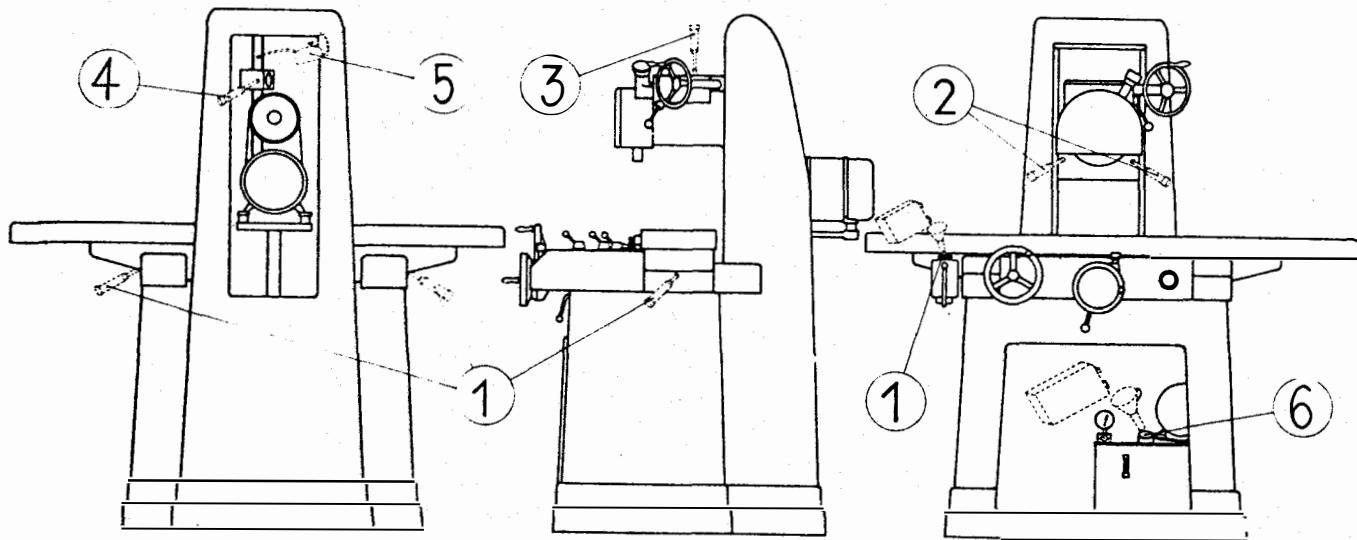


## Control knobs with optional equipment

<u>POS.NO.</u>	<u>DESCRIPTION</u>	<u>PAGE 10</u>
01	Scaleknob for Automatic down feed	
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08	Regulating screw for Hydraulic cross feed	
09	Reverse lever for cross movement	
010	Start button for rapid Vertical traverse	
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014	Stop button	
015	Cross table dog	
016	Filler cap for Hydraulic oil	
017	Regulating screw for Hydraulic pressure	
019	Oil gauge glass for Hydraulic oil	
020	Control lever for cross movement	
021	Longitudinal table dog, right	
022	Reverse lever for Longitudinal movement	
023	Start lever for Longitudinal movement	
024	Longitudinal table dog, left	
025	Lubrication attachment for cross ways	
026	Lock button for manual Longitudinal movement	
027	Handwheel for Longitudinal manual movement	
028	Handwheel for cross movement	
029	Fine adjustment screw for manual cross movement	
030	Lever for changing from Hydraulic to manual cross movement	
031	Pressure gauge	
032	Set screw	
033	Baseplate	

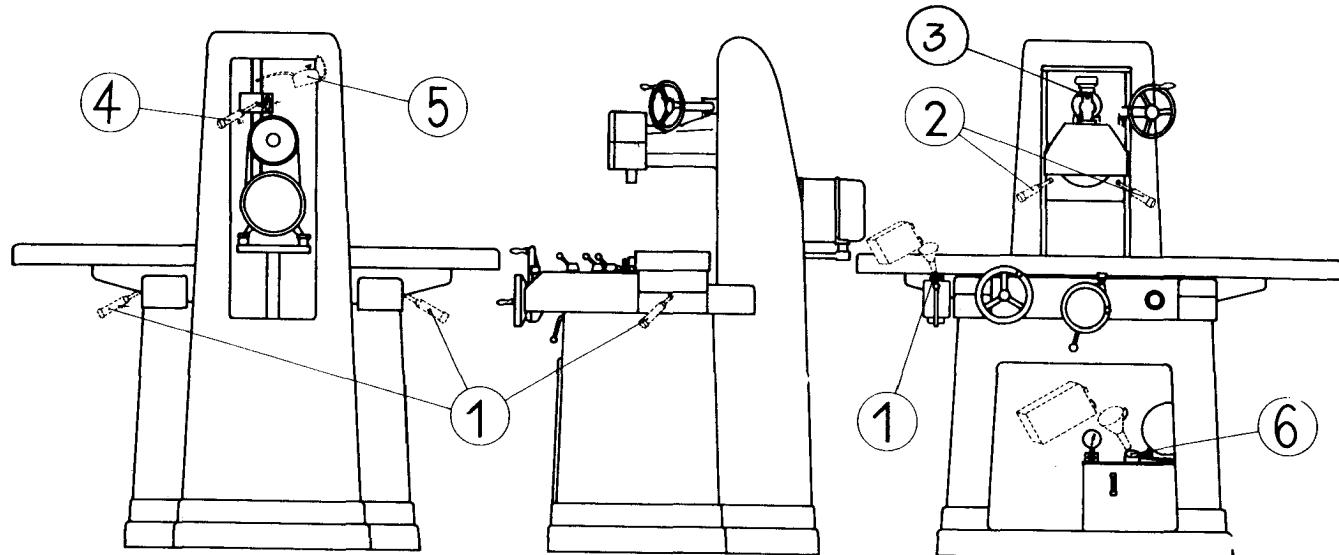






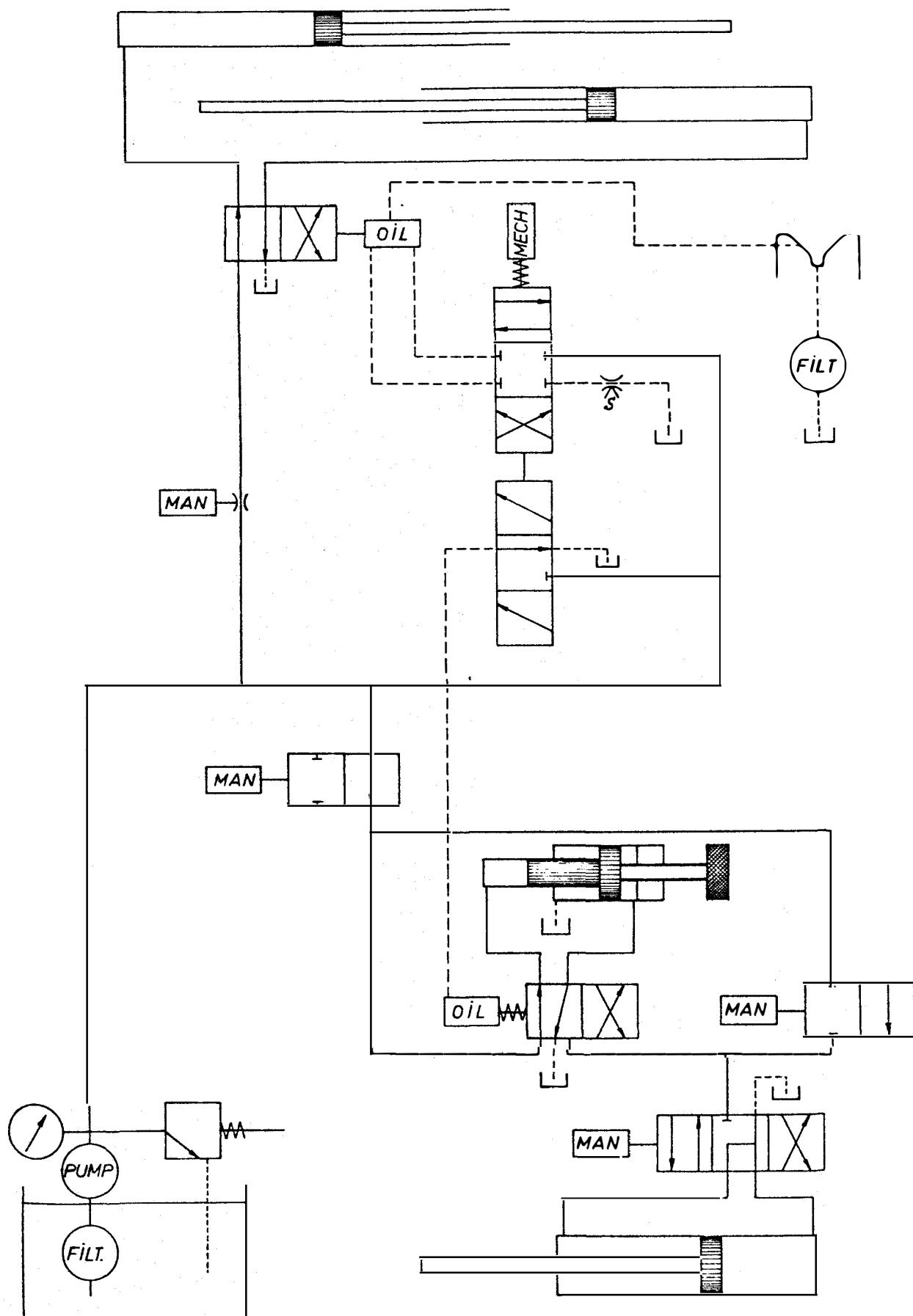
Pos.	Smøresteder Lubricating points Schmierstellen Lieux d'huilage	INTERVAL INTERVALLE Arbejdstimer Working hours Arbeitsstunden Heures de travail	Olie - Oil - Öl - Huile Mobil Oil BP Energol Caltex Castrol Esso Gulf Shell
1	Tværføringer Transverse Ways Querführungen Guides transversaux	8	Vactra nr. 2 HP 20 C Way lubric. D Vactra nr. 2 HP 20 C Way lubric. D
2	Vertikalføringer Vertical ways Vertikalführungen Guides verticaux	24	Magna BD Magna BD Magna BD Febis K 53 Febis K 53 Febis K 53 Febis K 53 Febis K 53
3	Afretter Dresser Abrichter Dresseur	48	Gulfway 52 Gulfway 52 Tonna 33 Tonna 33 Tonna 33 Tonna 33 Tonna 33
4	Snekkehus Worm-gear housing Schneckengehäuse Boite d'engrenages	48	Vacoline 140S HL 80 Regal oil A (R&O) Hyspin 80 ss Teresso 47 Harmony 47 Tellus 27
5	Vertikalspindel Vertical spindle Vertikalspindel Broche verticale	48	Udskift hvert år Charge each year Jährlich umwechsel Échanger tous les ans
6	Hydraulikolie Hydraulic oil Hydrauliköl Huile hydraulique		



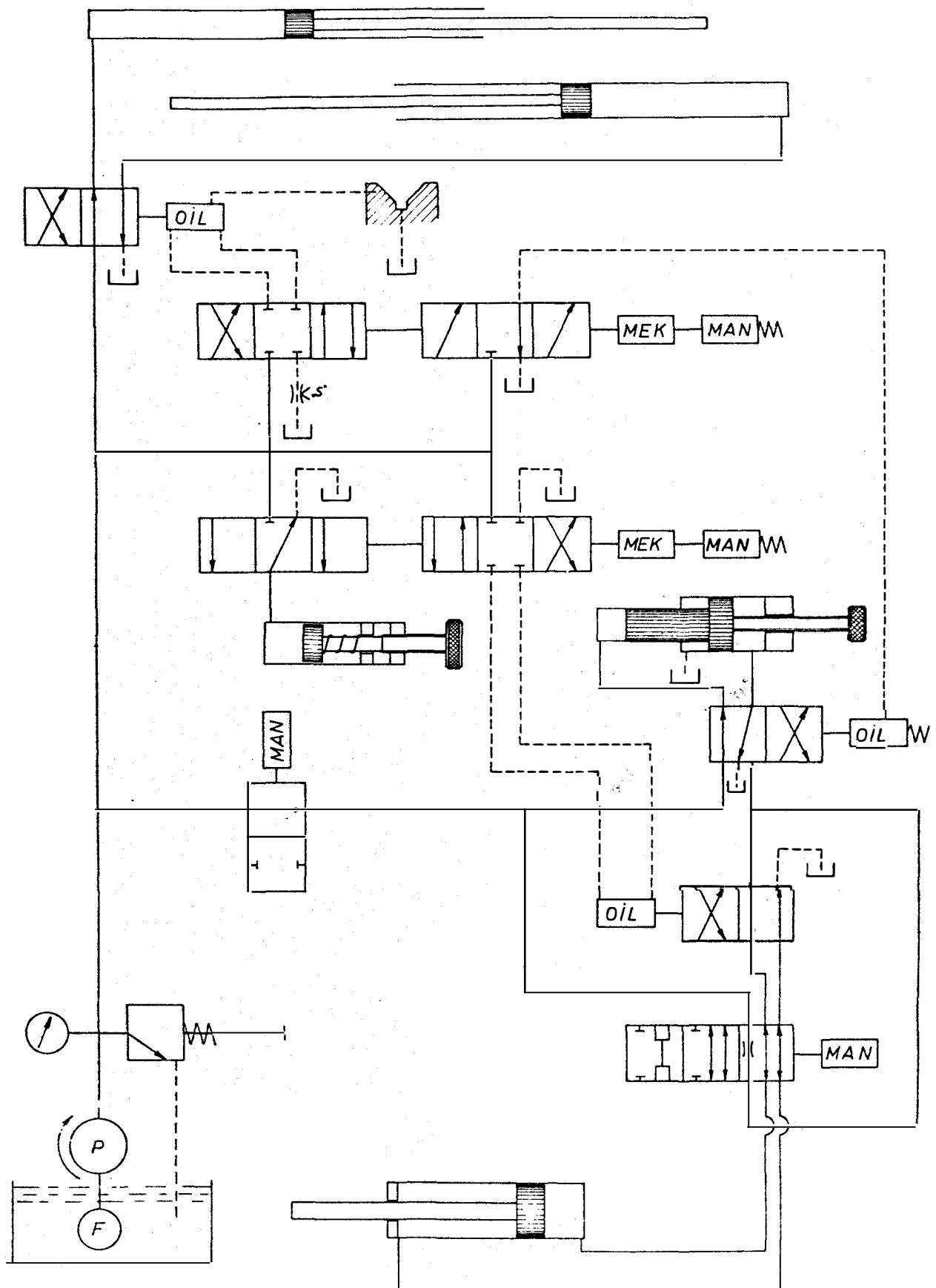


Pos.	Smøresteder Lubricating points Schmierstellen Lieux d'huilage	INTERVAL INTERVALLE Arbejdstimer Working hours Arbeitsstunden Heures de travail	Olie - Oil - Öl - Huile			
			Vacouline 1405	Vactra nr. 2	Vactra nr. 2	Mobil Oil
1	Tværføringer Transverse Ways Querführungen Guides transversaux	8	HL 80	HP 20 C	HP 20 C	BP Energol
2	Vertikalføringer Vertical ways Vertikalführungen Guides verticaux	24	Regal oil A (R&O)	Way lubric. D	Way lubric. D	Caltex
3	Afretter Dresser Abrichter Dresseur	48	Hyspin 80 ss	Magna BD	Magna BD	Castrol
4	Snekkehus Worm-gear housing Schneckengehäuse Boîte d'engrenages	48	Teresso 47	Febis K 53	Febis K 53	Esso
5	Vertikalspindel Vertical spindle Vertikalspindel Broche verticale	48	Harmony 47	Gulfway 52	Gulfway 52	Gulf
6	Hydraulikolie Hydraulic oil Hydrauliköl Huile hydraulique	Udskift hvert år Charge each year Jährlich umwechsel Échanger tous les ans	Tellus 27	Tonna 33	Tonna 33	Shell



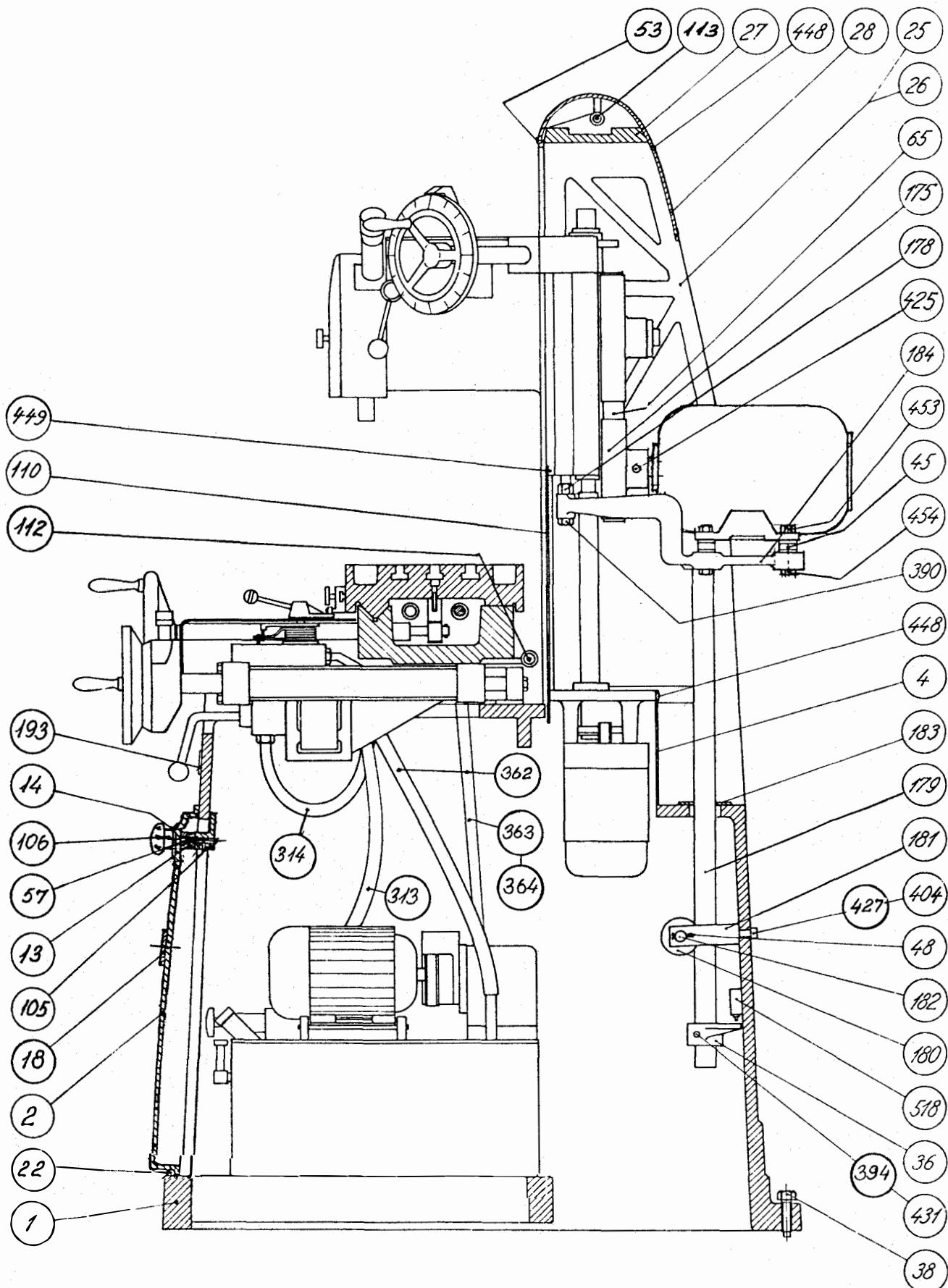






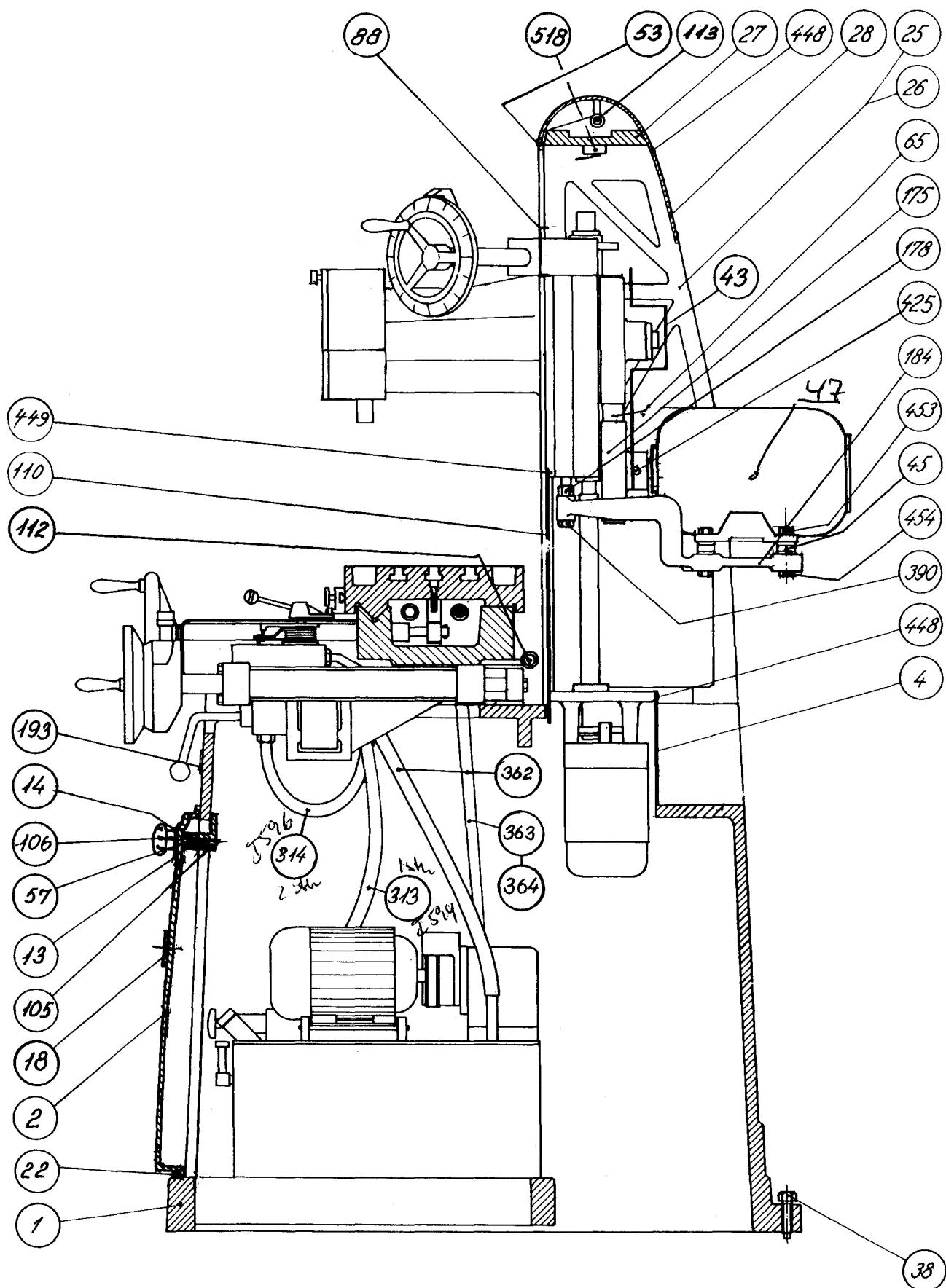
## Cross section

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>PAGE 14</u>
1	Base	
2	Front plate	
4	Cover plate for Vertical motor	
13	Guide for fastener	
14	Disc	
18	Name plate	
22	Grooved pin	
25	Column, left	
26	Column, right	
27	Crown	
28	Guard for crown	
38	Set screw	
43	Guard for pulley	
45	Vibration damper	
53	Fancy slip	
65	Driving belt for spindle	
88	Cover plate	
105	Fastener for front plate	
106	Handle	
110	Plate for roller guard	
112	Roller guard for cross movement	
113	Roller guard for vertical movement	
175	Motor pulley	
178	Stay bolt	
184	Motor bracket	
193	Plate for cross movement	
313	Pressure hose	
314	Pressure hose	
362	Plastic hose	
363	Plastic hose	
364	Plastic hose	
390	Nut	
425	Screw	
432	Screw	
448	Screw	
449	Screw	
453	Set screw	
454	Set screw	
518	Microswitch	



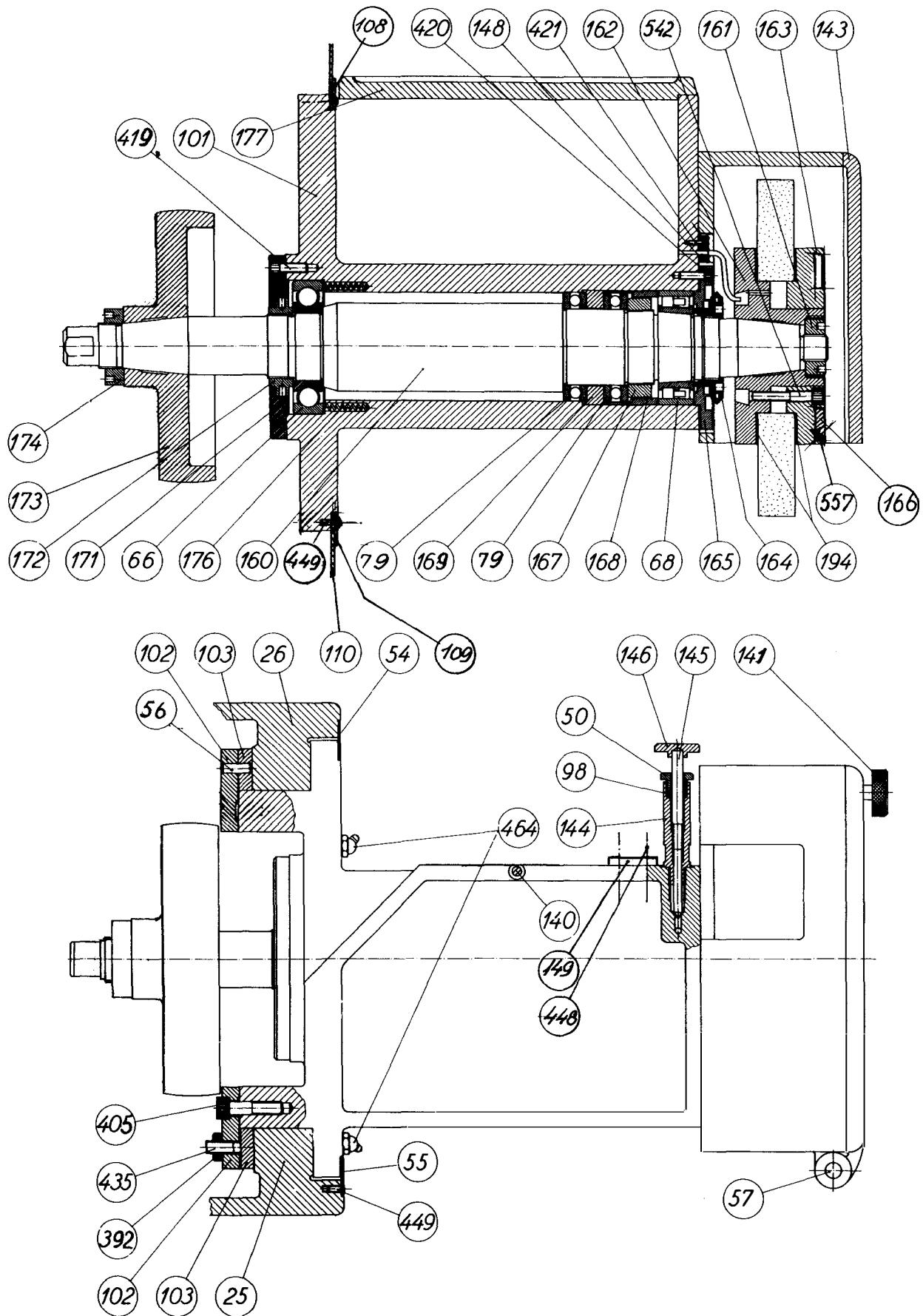
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38	Set screw	
43	Guard for pulley	
45	Vibration damper	
53	Fancy slip	
57	Cylinder pin	
65	Driving belt for spindle	
88	Cover plate	
105	Fastener for front plate	
106	Handle	
110	Plate for roller guard	
112	Roller guard for cross movement	
113	Roller guard for vertical movement	
175	Motor pulley	
178	Stay bolt	
184	Motor Bracket	
193	Plate for cross movement	
313	Pressure hose	
314	Pressure hose	
362	Plastic hose	
363	Plastic hose	
364	Plastic hose	
390	Nut	
425	Set screw	
448	Screw	
449	Screw	
453	Set screw	
454	Set screw	
518	Microswitch	



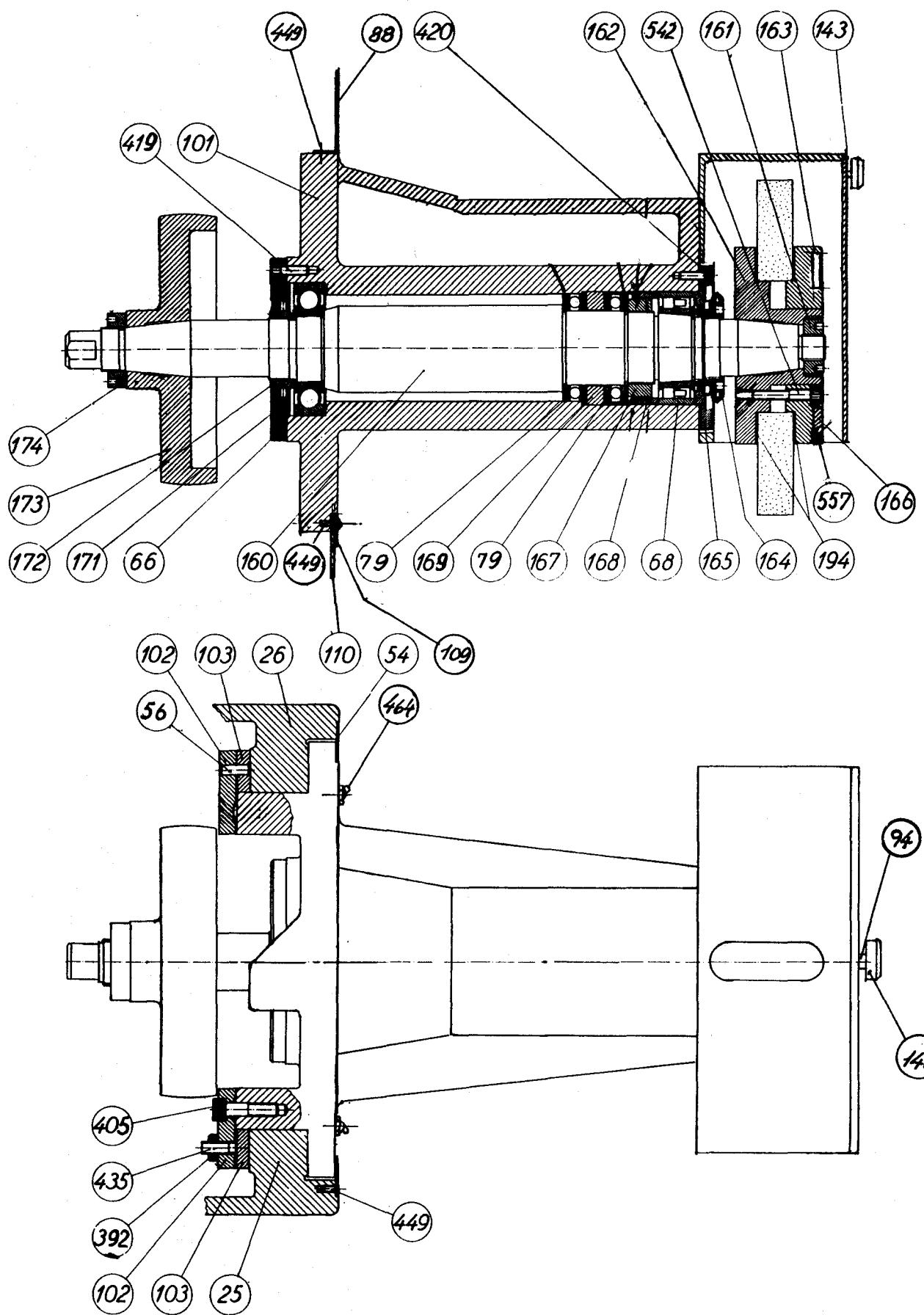
## Wheel spindle

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>PAGE 15</u>
25	Column, left	
26	Column, right	
54	Cover rail, right	
56	Grooved pin	
66	Spindle ball bearing	
68	Spindle ball bearing	
79	Spindle thrust bearing	
88	Cover plate	
94	Pin	
101	Spindle headstock	
102	Rail	
103	List	
110	Plate for roller guard	
143	Cover for wheel guard	
146	Handle	
160	Main spindle	
161	Nut for wheel flange	
162	Wheel hub	
163	Flange for wheel hub	
164	Nut for spindle front bearing	
165	Cover flange, front	
166	Balancing weight	
167	Nut for adjustment of thrust bearing	
168	Bushing for thrust bearing	
169	Distance ring	
171	Seal ring for rear bearing	
172	Nut	
173	Pulley for spindle	
174	Nut for pulley	
194	Rubber disc for wheel hub	
392	Nut	
405	Screw	
419	Screw	
420	Screw	
435	Set screw	
449	Screw	
464	Lubrication nipple	
542	Screw	
557	Screw	



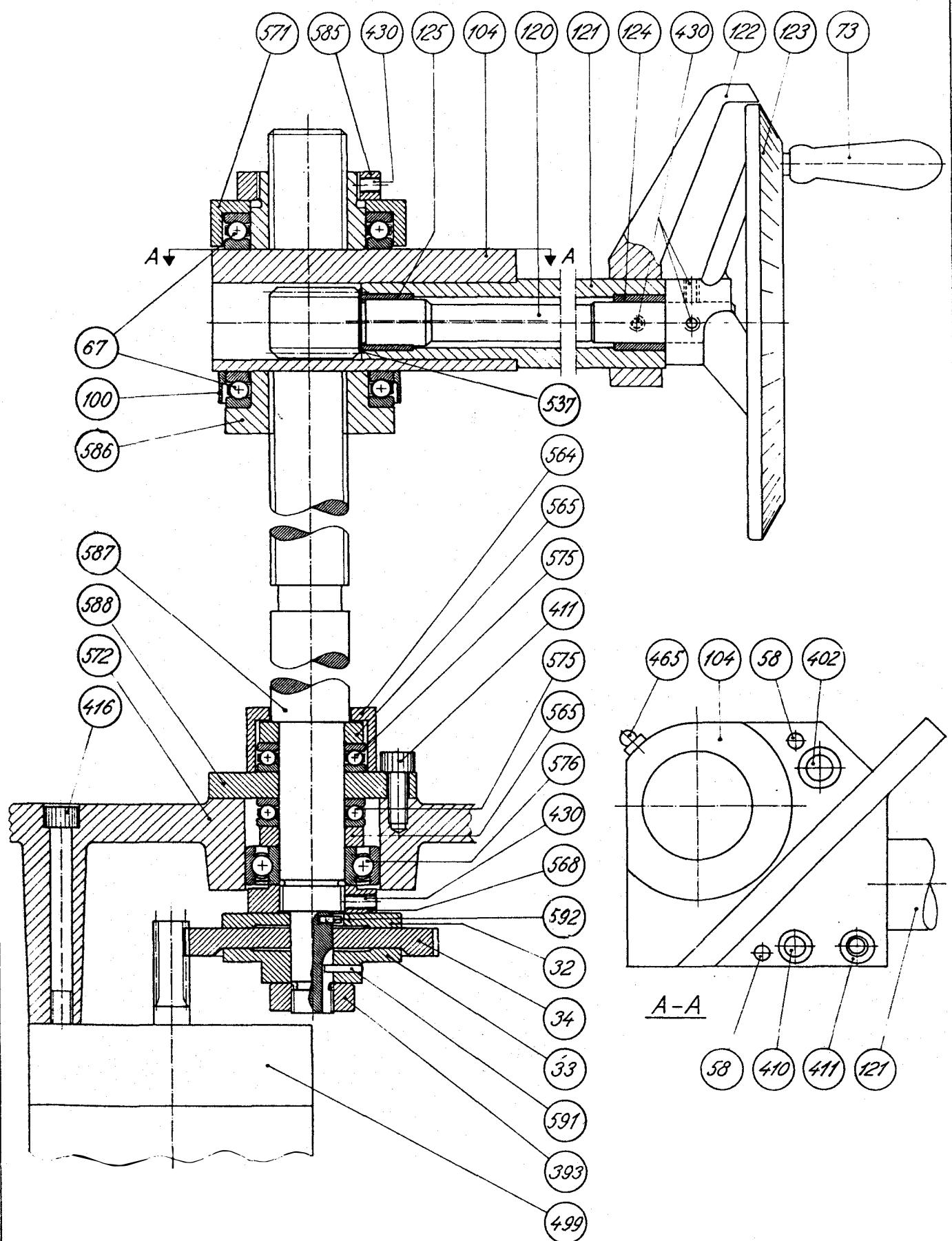
## Wheel spindle

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>PAGE 15</u>
25	Column, left	
26	Column, right	
54	Cover rail, right	
56	Grooved pin	
66	Spindle ball bearing	
68	Spindle ball bearing	
79	Spindle thrust bearing	
88	Cover plate	
94	Pin	
101	Spindle headstock	
102	Rail	
103	List	
110	Plate for roller guard	
143	Cover for wheel guard	
146	Handle	
160	Main spindle	
161	Nut for wheel flange	
162	Wheel hub	
163	Flange for wheel hub	
164	Nut for spindle front bearing	
165	Cover flange, front	
166	Balancing weight	
167	Nut for adjustment of thrust bearing	
168	Bushing for thrust bearing	
169	Distance ring	
171	Seal ring for rear bearing	
172	Nut	
173	Pulley for spindle	
174	Nut for pulley	
194	Rubber disc for wheel hub	
392	Nut	
405	Screw	
419	Screw	
420	Screw	
435	Set screw	
449	Screw	
464	Lubrication nipple	
542	Screw	
557	Screw	



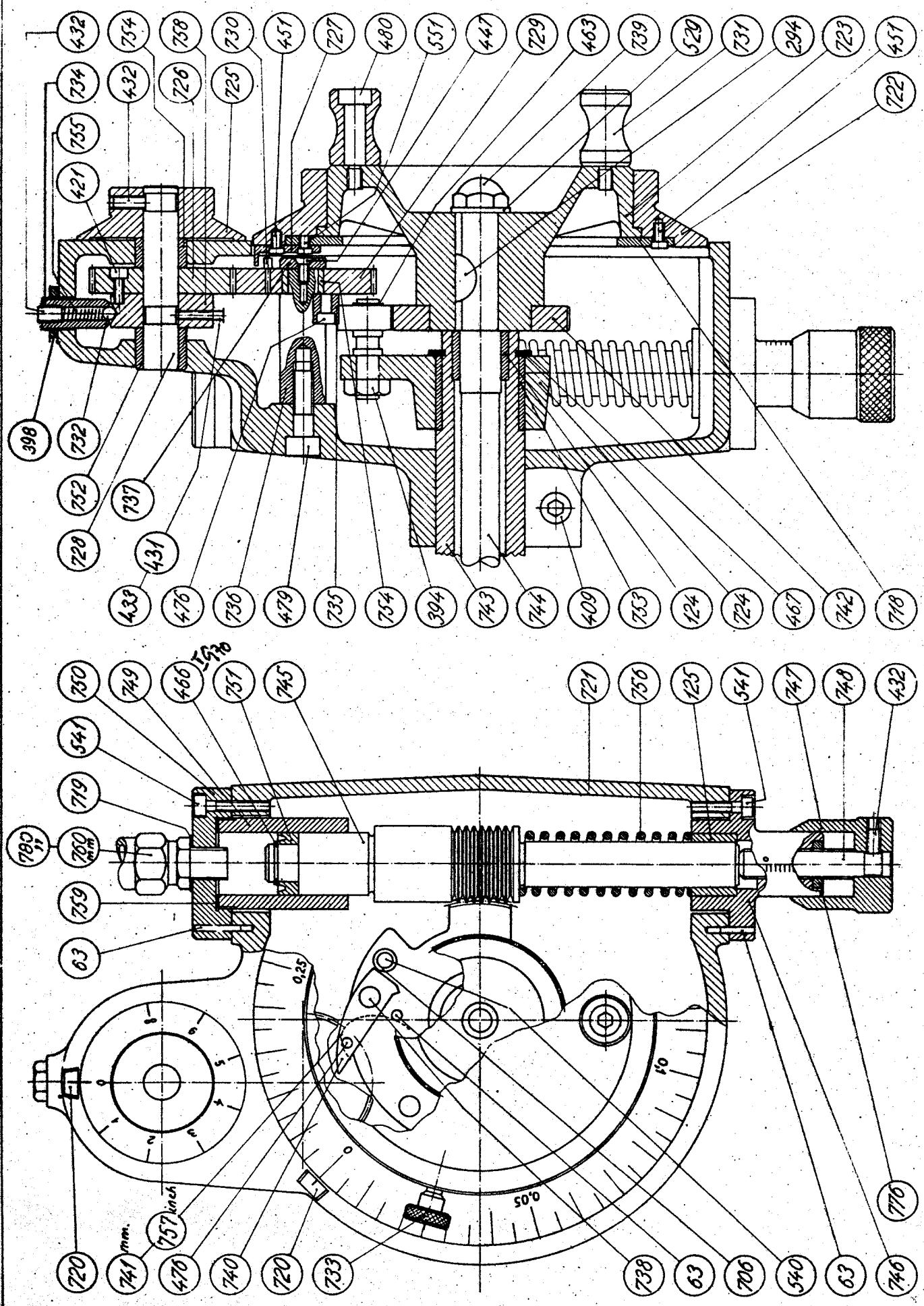
## Vertical Feed System

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>PAGE 16</u>
32	Flange for gear wheel	
33	Hub for wheel	
34	Fibre gear wheel	
58	Conic pin	
67	Ball bearing	
100	Cover ring for thrust bearing	
104	Worm conveyor housing	
111	Scalering	
120	Worm shaft	
121	Bearing bushing	
122	Indicator for fine adjustment	
123	Handwheel	
125	Bearing bushing	
294	Parallel key	
361	Endstop	
393	Nut	
402	Screw	
410	Screw	
411	Screw	
416	Screw	
430	Set screw	
465	Lubrication nipple	
499	Brake motor	
537	Disc guide	
560	Screw	
564	Protection ring, lower	
565	Distance ring	
568	Nut for vertical spindle	
571	Protection ring, upper	
572	Support for vertical spindle	
575	Ball bearing	
576	Ball bearing	
585	Nut for protection ring	
586	Nut for vertical leadscrew	
587	Vertical leadscrew	
588	Flange for bearing	
591	Conic pin	



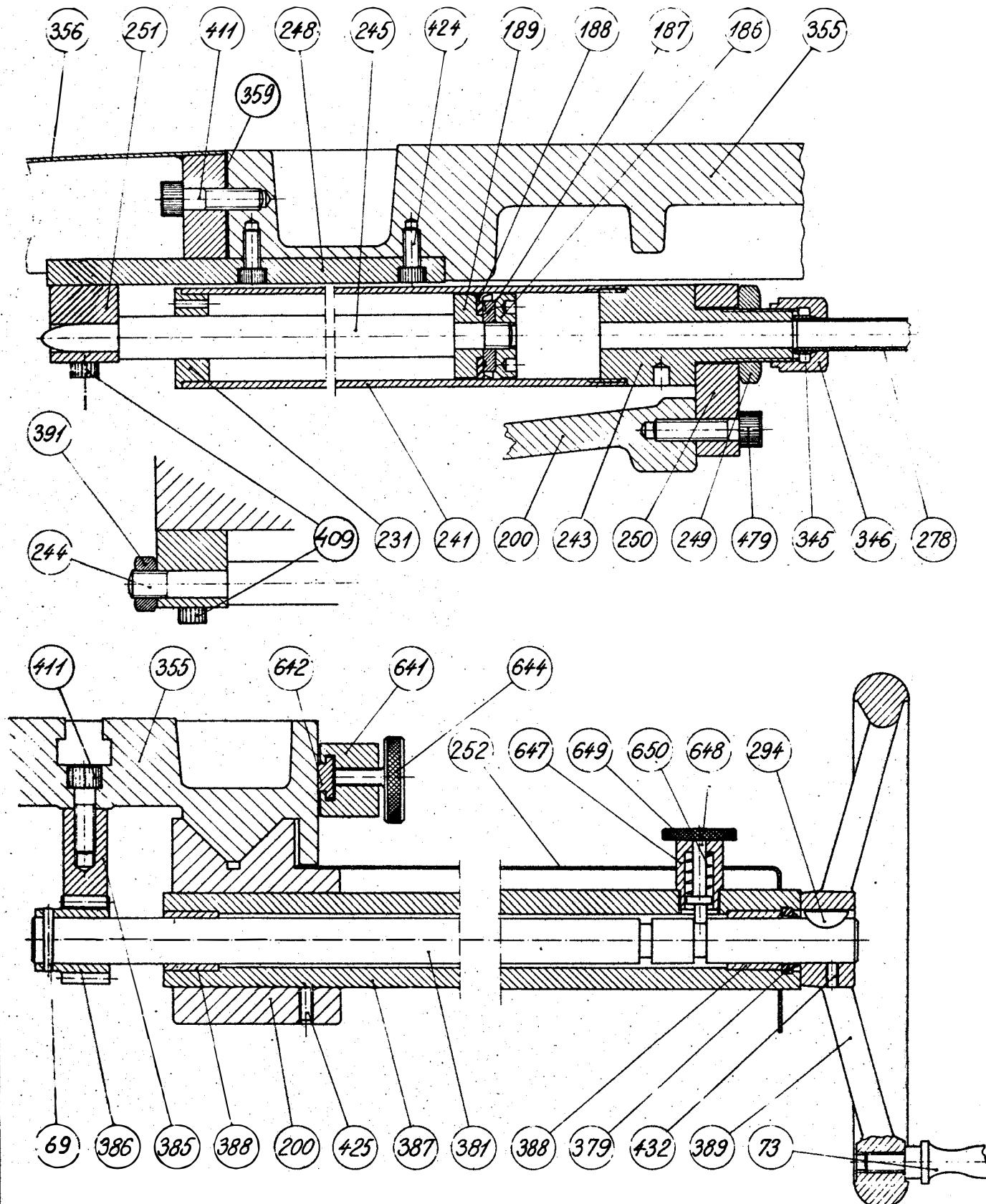
Vertical Feed System with Automatic

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>PAGE</u> 17	
63	Conic pin		
125	Bearing bush		
294	Spring	<u>PART NO.</u>	<u>DESCRIPTION</u>
394	Nut		
398	Nut	752	Bushing
409	Screw	753	Bushing
421	Screw	754	Bushing
431	Screw	755	Spring
432	Set screw	756	Spring for piston
433	Screw	757	Ratchet wheel (inch)
447	Counter screw	758	Locking disc
451	Screw	759	Copper packing
463	Lock washer	776	Nylon washer
466	Lock washer	782	Connection
467	Lock washer		
476	Screw		
479	Screw		
480	Screw		
529	Washer		
540	Screw		
541	Screw		
551	Screw		
706	Excentric		
718	Ring		
719	Copper washer		
720	Zero-point-plate		
721	Housing for automatic		
722	Scalering		
723	Handwheel		
724	Driver		
725	Regulating knob		
726	Gear wheel, upper		
727	Release button		
728	Axis, upper		
729	Gear wheel, lower		
730	Stop key		
731	Handle		
732	Ball		
733	Lock screw		
734	Ball guide		
735	Excentric		
736	Axis, lower		
737	Washer		
738	Excentric pin		
739	Nut		
740	Pawl		
741	Ratchet wheel (metric)		
742	Pawl wheel		
743	Excentric bush		
744	Worm shaft		
745	Piston		
746	Nut		
747	Regulating knob		
748	Regulating screw		
749	Cylinder		
750	Cover		
751	Packing		



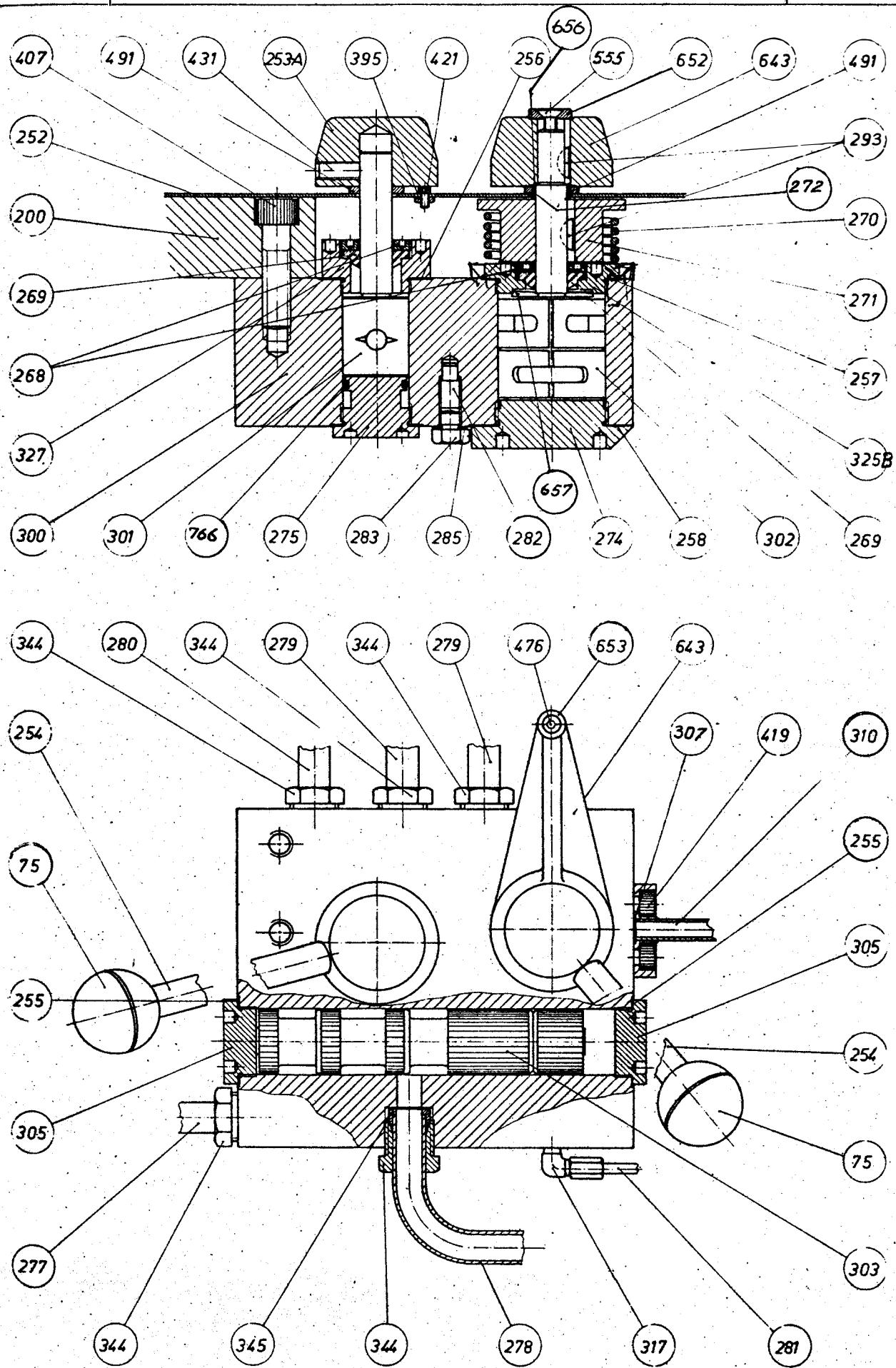
## Longitudinal Movement

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>PAGE 18</u>
69	Conic pin	
187	Distance ring	
188	Seal	
189	Piston	
200	Saddle	
231	Bronze bushing for cylinder	
241	Cylinder	
243	Button plate for cylinder	
244	Piston rod without rack	
245	Piston rod with rack	
248	Extention for table	
249	Nut	
250	Support for cylinder	
251	Anchor block	
252	Cover plate	
278	Inlet pipe for cylinder, right	
294	Spring	
345	Butt-key ring	
346	Pipe connector	
355	Table	
356	End guard, left and right	
361	Endstop	
379	Scrapering for manual table movement	
381	Axis for pinion	
385	Rack for manual table movement	
386	Pinion	
387	Excentric tube for pinion	
388	Bearing bush	
389	Handwheel	
391	Nut	
409	Screw	
411	Screw	
424	Screw	
425	Screw	
462	Seegering	
479	Screw	
560	Screw	
641	Table dog	
642	Rail for table dog	
644	Tightening-up screw for table dog	
647	Bushing for locking device	
648	Pin for locking device	
649	Stop for locking device	
650	Spring	



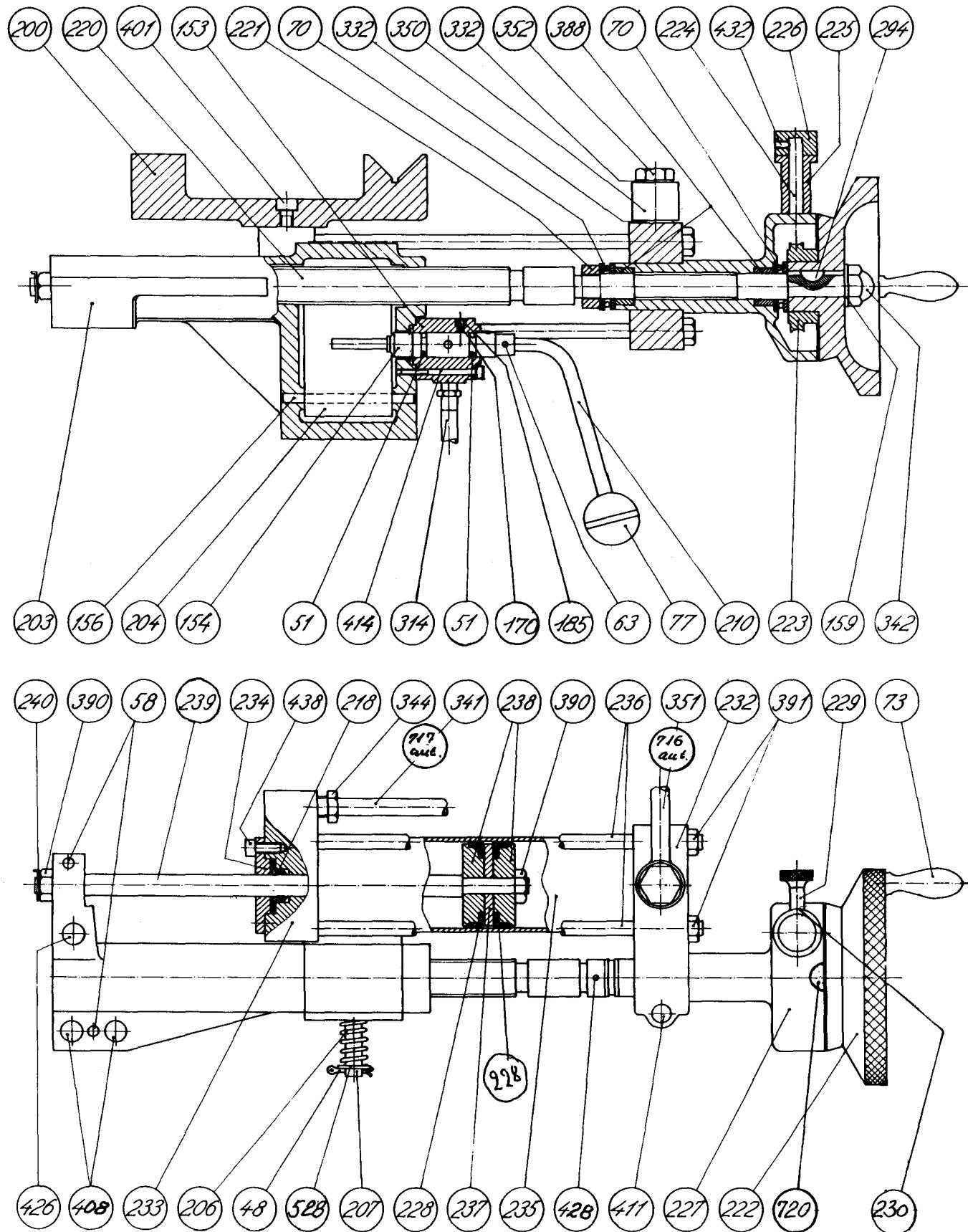
## Hydraulic Valveblock for longitudinal movement

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>PAGE 19</u>
75	Ball	
200	Saddle	
252	Cover plate	
253-A	Hub for valve	
254	Lever for valve	
268	Packing screw for stuffing box	
269	Packing	
270	Spring for reversing valve	
271	Spring housing	
272	Distance bushing	
274	Drain plug	
275	Drain plug	
277	Inlet pipe for longitudinal cylinder, left	
278	Inlet pipe for longitudinal cylinder, right	
279	In- & outlet pipe for pressure hoses	
280	Outlet pipe for return hose	
281	Nylon hose	
282	Set screw	
283	Cover screw	
285	Copper packing	
293	Spring	
297	O-ring	
298	O-ring	
300	Valve block	
301	Main valve	
302	Reversing valve	
303	Sleeve valve	
305	Drain plug for sleeve valve	
307	Fibre packing	
310	Pipe for sleeve valve	
317	Screwed connection	
325-B	Cover for reversing valve	
327	Cover for main valve	
344	Butt-screwed connection	
345	Butt-key ring	
395	Nut	
407	Screw	
419	Screw	
421	Screw	
431	Set screw	
476	Screw	
491	Felt washer	
555	Screw	
643	Reverse lever	
652	Washer for lever	
653	Stop for lever	
656	Disc washer	
657	Thrust bearing	



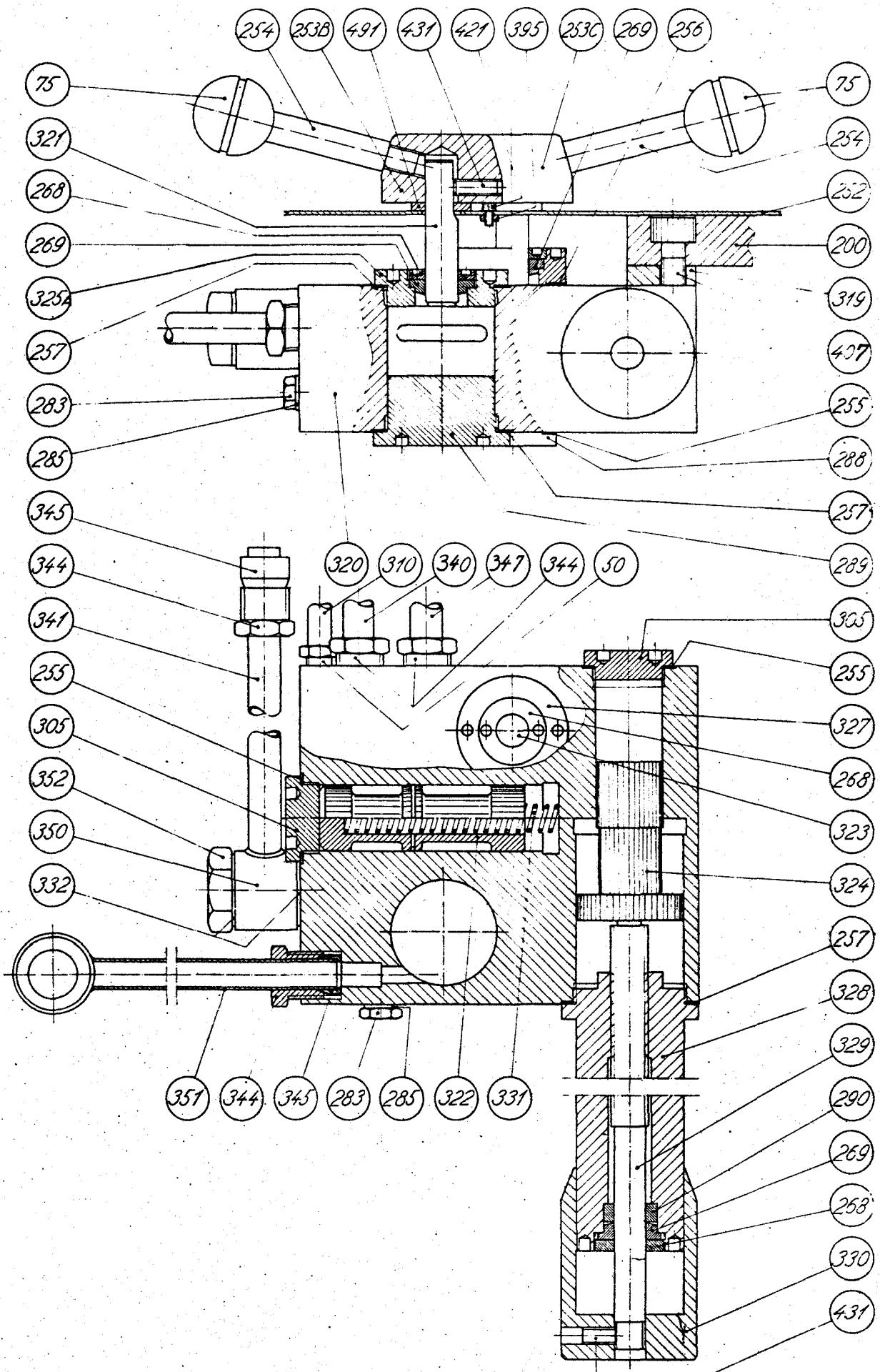
Cross Feed System

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>PAGE 20</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
48	Pin			
51	O-ring			
58	Conic pin			
63	Conic pin			
70	Ball bearing	426		Screw
73	Handle	429		Screw
77	Ball	432		Set screw
153	Housing for stopvalve	438		Screw
154	Cock plug	528		Disc
156	Pin	716		Pipe
170	Stop screw	717		Pipe
185	Copper disc	720		Plate
200	Saddle			
203	Housing for threaded jaw			
204/205	Threaded jaws			
206	Spring			
207	Bolt			
210	Handle for stopvalve			
217	Scalering			
218	Packing			
220	Spindle			
221	Nut for spindle			
222	Handwheel			
223	Worm wheel			
224	Worm			
225	Bearing bush			
226	Fine adjustment screw			
227	Bearing housing			
228	Seal			
229	Thumb screw			
230	Thread bushing			
232	Button plate			
233	Button plate			
234	Cover for cylinder			
235	Cylinder			
236	Bolt for cylinder			
237	Distance block			
238	Button plate			
239	Piston rod			
240	Pawl lock nut			
246	Disc			
294	Spring			
314	Pressure hose			
332	Fibre washer			
341	Copper connection pipe			
342	Top-nut			
344	Butt-screwed connection			
350	Angular screwed connection			
351	Pipe to cross cylinder			
352	Screw			
388	Bearing bush			
390	Nut			
391	Nut			
401	Screw			
408	Screw			
411	Screw			
414	Screw			



## Hydraulic Valve for Cross Movement

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>PAGE 21</u>
50	Screwed connection	
75	Ball	
99	Bushing	
200	Saddle	
252	Cover plate	
253-B	Hub for valve	
253-C	Hub for valve	
254	Lever for valve	
268	Packing screw for stuffing box	
269	Seal	
283	Drain screw	
285	Copper packing	
288	Drain plug	
289	Drain plug	
290	Lining for cover plate	
297	O-ring	
298	O-ring	
305	Drain plug	
310	Pipe for sleeve valve	
319	Distance block	
320	Valve block	
321	Three-way valve	
322	Sleeve valve	
323	Valve for rapid movement	
324	Multi-way valve	
325-A	Cover for three-way valve	
327	Cover for valve	
328	Spindle housing for multi-way valve	
329	Piston	
330	Handle	
331	Spring	
332	Fibre washer	
340	Outlet pipe for return device	
341	Copper connection pipe	
344	Butt-screwed connection	
345	Butt-key ring	
347	Pipe	
350	Angular screwed connection	
351	Pipe for cross cylinder	
352	Screw	
395	Nut	
407	Screw	
421	Screw	
431	Set screw	
491	Felt ring	



**Hydraulic Valveblock for Automatic Cross Movement**

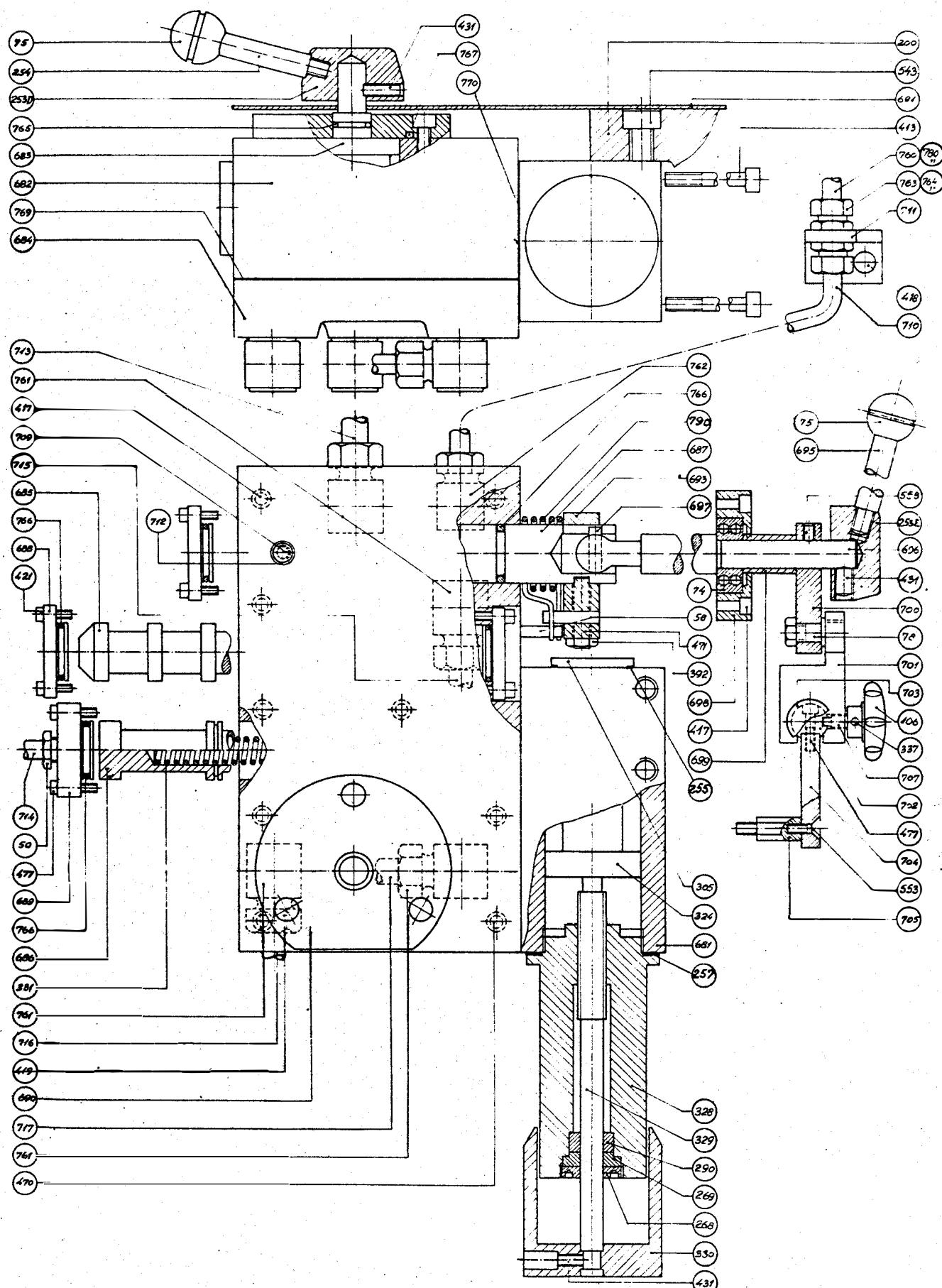
<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>PAGE 22</u>
50	Copper screwed connection	
58	Conic pin	
75	Ball	<u>PART NO.</u>
82	Bearing	<u>DESCRIPTION</u>
99	Butt-key ring	705
106	Handle	707
200	Saddle	709
253-D	Hub for valve	710
253-E	Hub for valve	711
254	Lever for valve	712
268	Packing screw	713
269	Seal	714
290	Lining for coverplate	715
297	O-ring	716
298	O-ring	717
305	Drain plug	760
324	Multi-way valve	761
328	Spindle housing	762
329	Spindle	763
330	Housing	764
331	Spring	765
337	Grooved pin	767
392	Nut	769
413	Screw	770
417	Screw	790
418	Screw	
419	Screw	
421	Screw	
431	Set screw	
470	Screw	
471	Threaded pin	
477	Screw	
543	Screw	
553	Countersink screw	
558	Set screw	
681	Block for multi-way valve	
682	Valve block	
683	Three-way valve	
684	Cover for valveblock	
685	Slide valve	
686	Spring-loaded sleeve valve	
687	Pilot valve	
688	Stuffing box	
689	Stuffing box	
690	Cover	
691	Cover plate	
692	Roller	
693	Spring holder	
695	Reverse lever	
695	Cardan shaft	
697	Driver pin	
698	Bearing housing	
699	Distance ring	
700	Reverse lever	
701	Table dog	
702	Rail for table dog	
703	End stop	
704	Holder for stop rail	



12

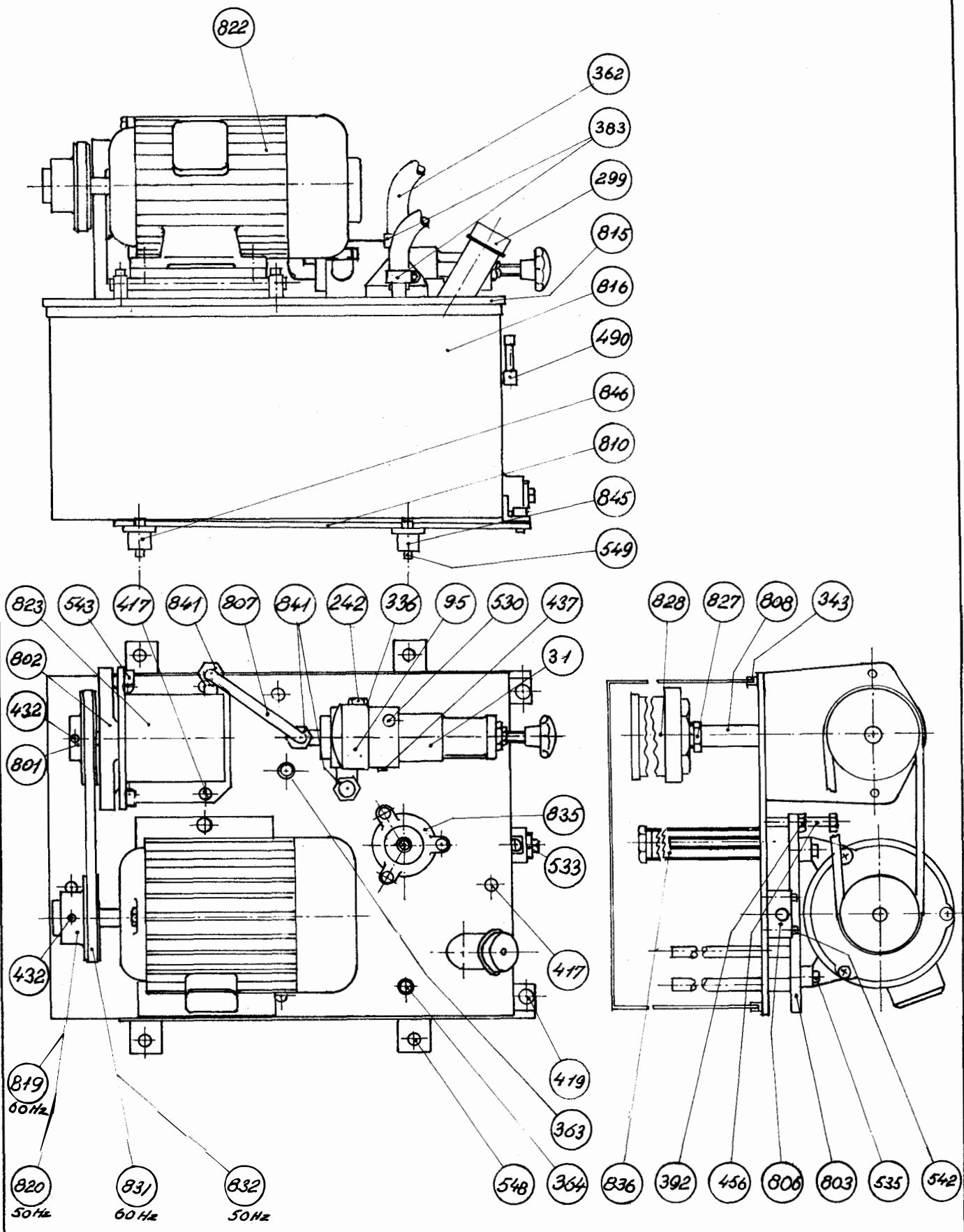
VENTILKLODS FOR AUTOMATISK TVÆRBEVÆGELSE  
HYDRAULIC VALVE FOR AUTOMATIC CROSS MOVEMENT  
VENTILGEHÄUSE FÜR AUTOMATISCHE QUERBEWEGUNG  
HOÎTE DE SOUPAPE POUR LA COURSE TRANSVERSALE AUTOMATIQUE

22



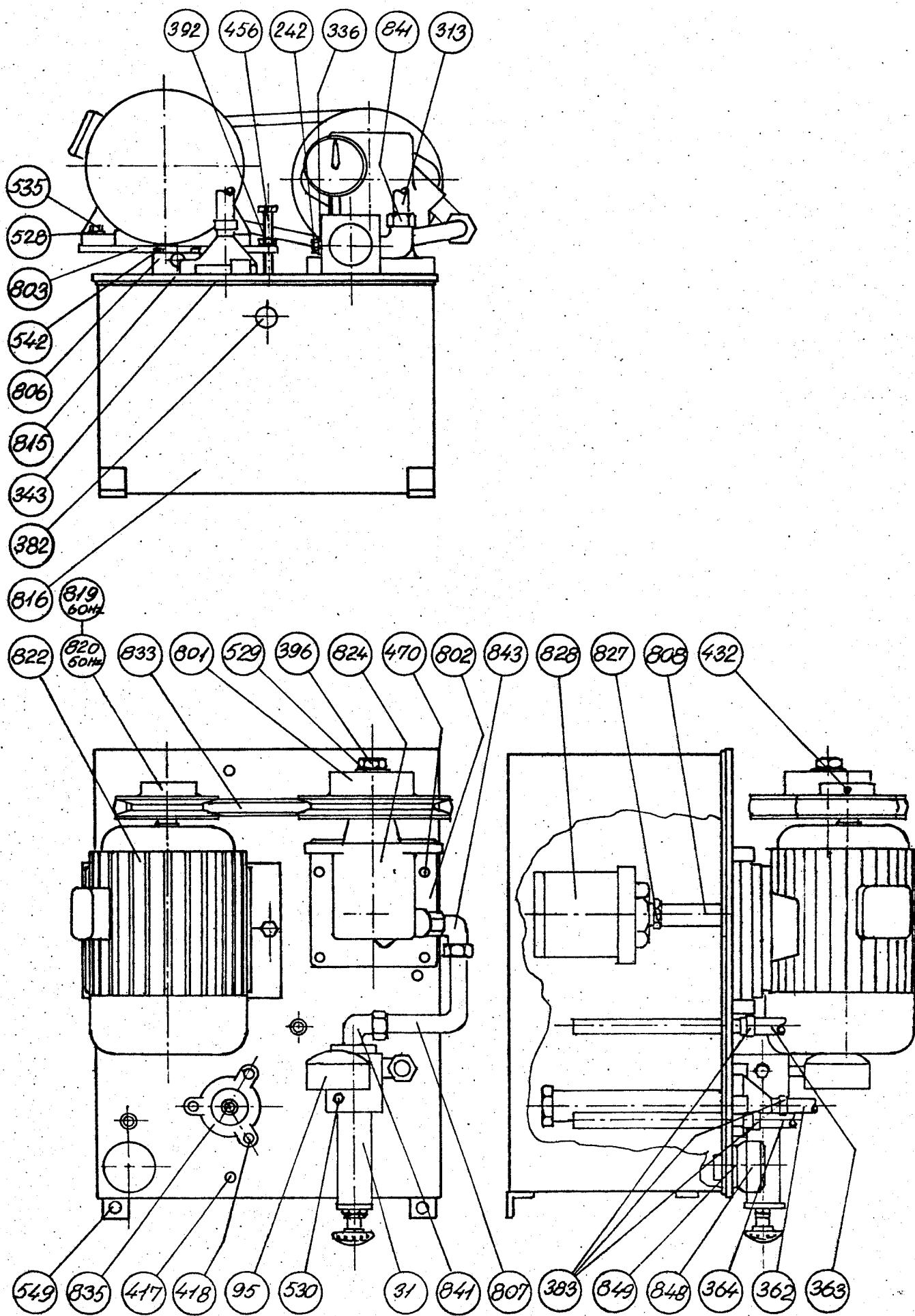
## Hydraulic Pump Unit

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>PAGE 23</u>
31	Housing for overpressure valve	
95	Pressure gauge	
242	Stop screw	
313	Pressure hose	
336	Copper packing	
343	Rubber list for oil tank	
362	Plastic hose, return from lubrication of ways	
363	Plastic hose, return from longitudinal movement	
364	Plastic hose, return from cross movement	
382	Oil control glass	
383	Hose clamp	
392	Nut	
396	Nut	
417	Screw	
432	Screw	
435	Screw	
456	Set screw	
470	Screw	
528	Disc	
529	Disc	
530	Bolt	
542	Screw	
549	Screw	
801	Pulley for pump	
802	Bracket for pump	
803	Dump body for motor	
806	Support for dump body	
807	Outlet pipe for pump	
808	Suction pipe	
809	Connection	
815	Lid for oil tank	
816	Oil tank	
819	Motor pulley 60 Hz	
820	Motor pulley 50 Hz	
822	Pump motor	
824	Pump	
827	Plain bushing	
828	Suction filter	
833	Vee-belt for pump	
841	Fitting	
843	Fitting	
848	Cap for oil filling place	
849	Packing for cap	



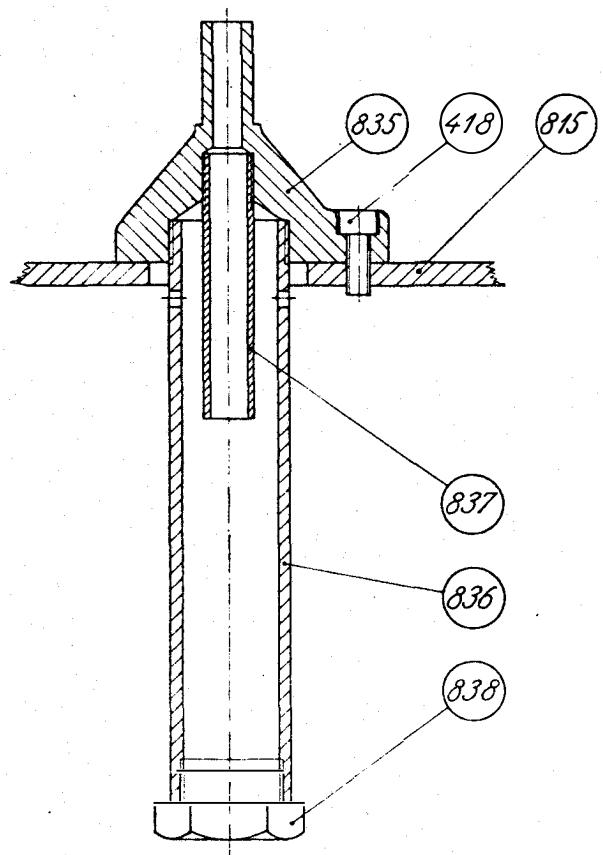
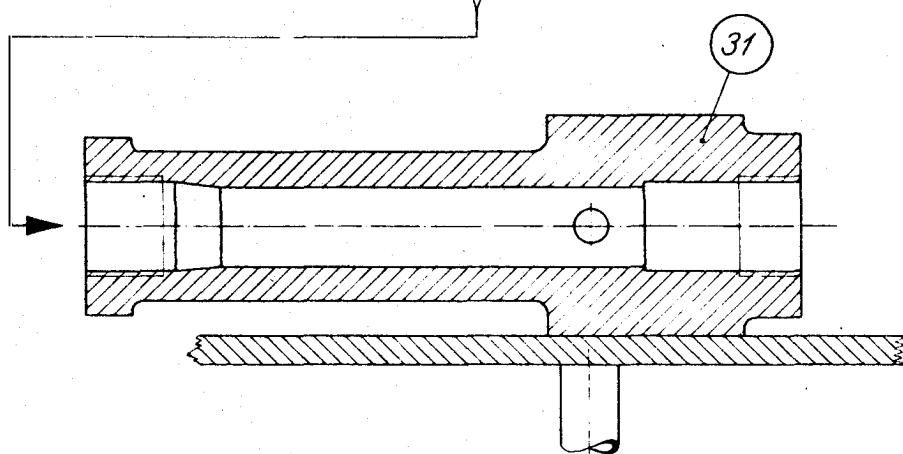
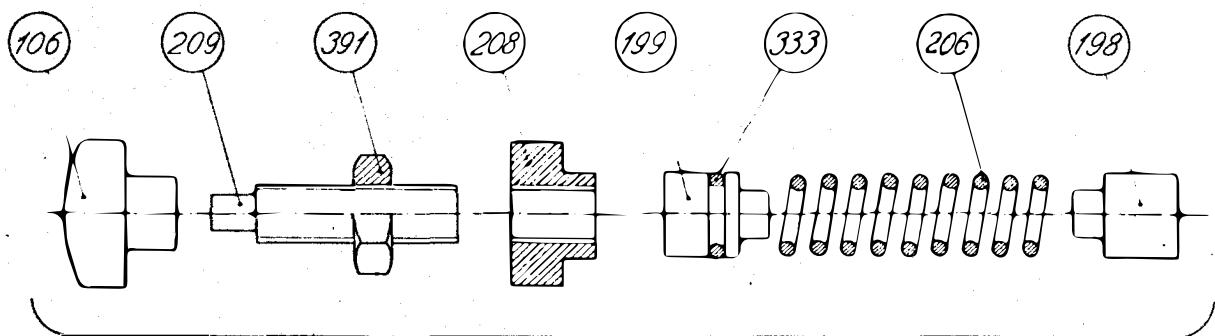
## Hydraulic Pump Unit

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>PAGE 23</u>
31	Housing for overpressure valve	
95	Pressure gauge	
242	Stop screw	
313	Pressure hose	
336	Copper packing	
343	Rubber list for oil tank	
362	Plastic hose, return from lubrication of ways	
363	Plastic hose, return from longitudinal movement	
364	Plastic hose, return from cross movement	
382	Oil control glass	
383	Hose clamp	
392	Nut	
396	Nut	
417	Screw	
432	Screw	
435	Screw	
456	Set screw	
470	Screw	
528	Disc	
529	Disc	
530	Bolt	
542	Screw	
549	Screw	
801	Pulley for pump	
802	Bracket for pump	
803	Dump body for motor	
806	Support for dump body	
807	Outlet pipe for pump	
808	Suction pipe	
809	Connection	
815	Lid for oil tank	
816	Oil tank	
819	Motor pulley 60 Hz	
820	Motor pulley 50 Hz	
822	Pump motor	
824	Pump	
827	Plain bushing	
828	Suction filter	
833	Vee-belt for pump	
841	Fitting	
843	Fitting	
848	Cap for oil filling place	
849	Packing for cap	



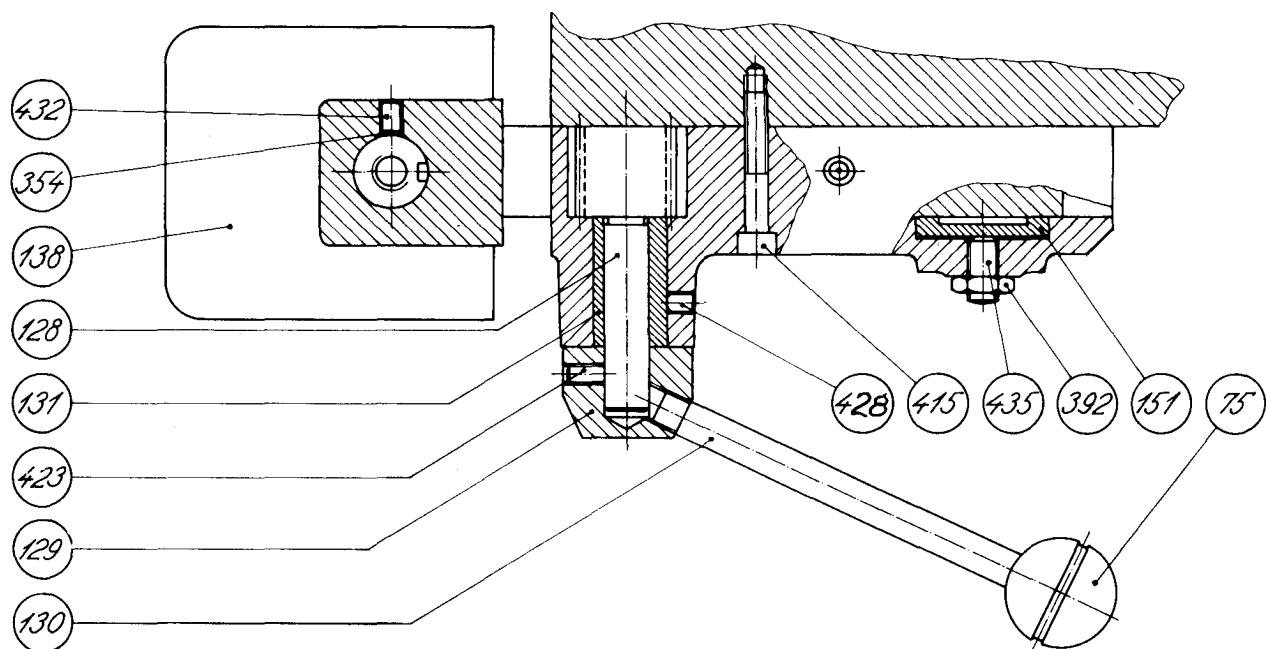
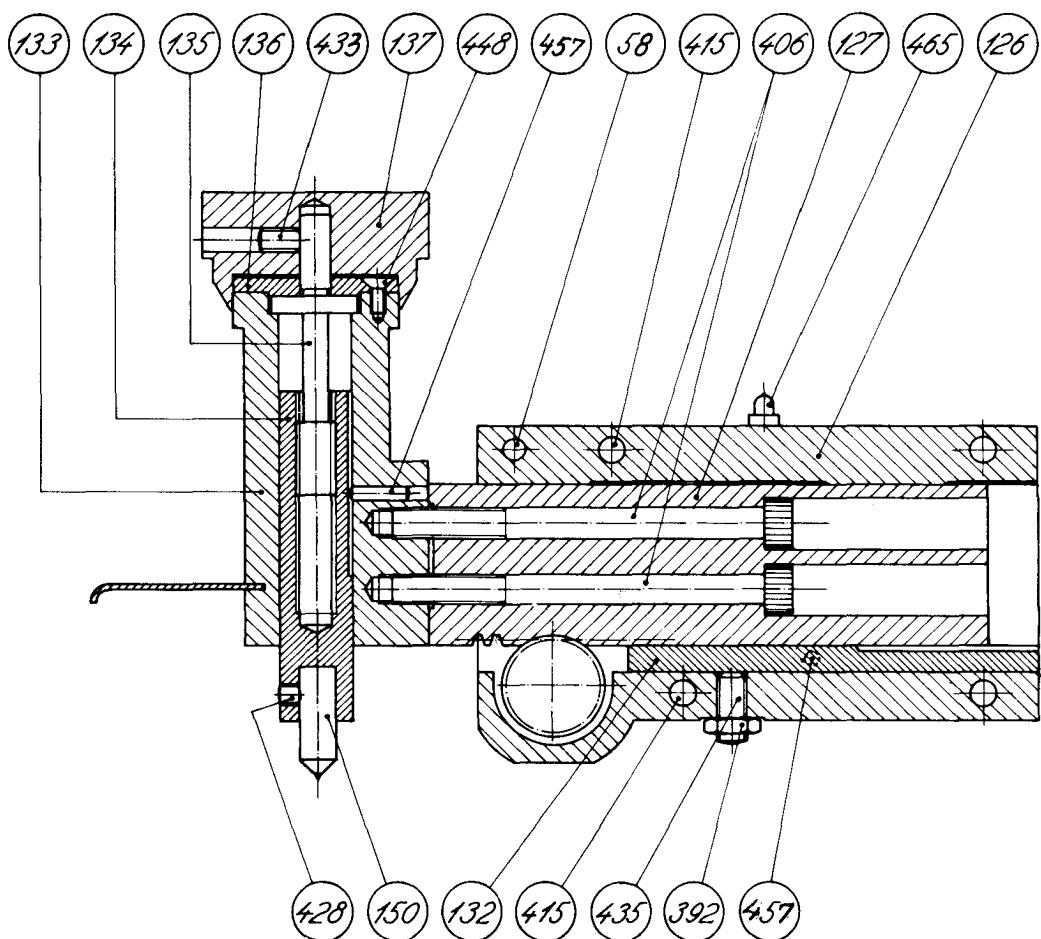
### Additional Pressure Valve

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>PAGE 24</u>
31	Housing for over pressure valve	
106	Handle	
198	Valve cone	
199	Seal plug	
206	Spring	
208	Plain bushing	
209	Regulating screw for pressure	
339	O-ring	
391	Nut	



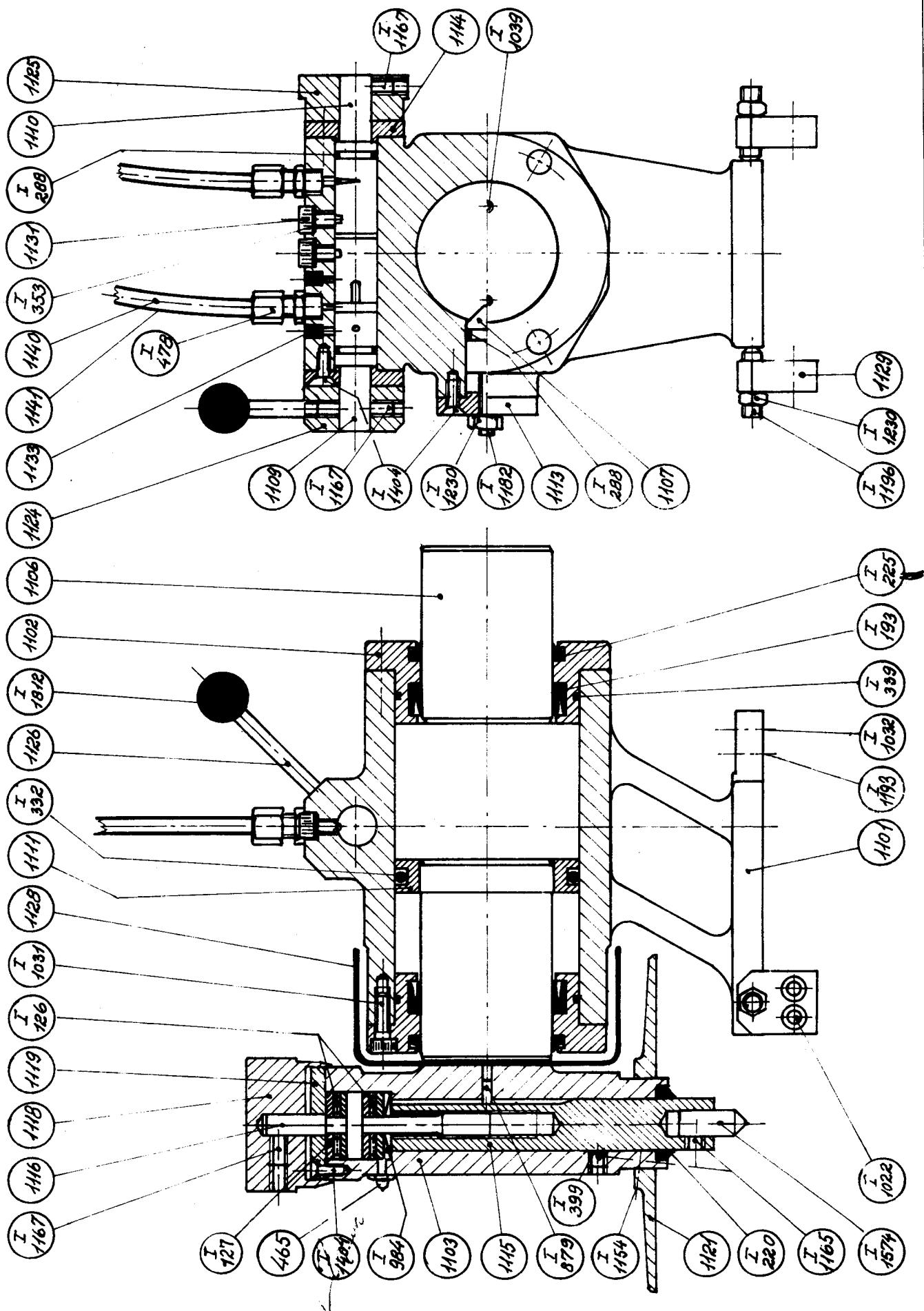
Wheel dressing attachment

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>PAGE 25</u>
I-126	Thrust bearing	
I-127	Disc	
I-193	Packing	
I-220	Seal	
I-225	Seal	
I-288	O-ring	
I-332	O-ring	
I-339	O-ring	
I-353	Copper packing	
I-399	Fibre disc	
465	Lubrication nipple	
I-478	Connection	
I-879	Grooved pin	
I-984	Disc spring	
I-1022	Screw	
I-1031	Screw	
I-1032	Screw	
I-1039	Screw	
1101	Housing for dresser	
1102	End Cover	
1103	Guide for diamondholder	
1106	Piston rod	
1107	Guide slot	
1109	Guide valve	
1110	Speed valve	
1111	Piston	
1113	Cover	
1114	Cover	
1115	Diamondholder	
1116	Spindle for diamondholder	
1118	Handwheel	
1119	Cover for spindle	
1121	Cover plate	
1124	Flange for guide valves	
1125	Knob	
1126	Pin	
1128	Protection cover	
1129	Bracket	
1131	Stop screw	
1133	Plug	
1140	Nylon tube	
1141	Flex for tube	
I-1154	Screw	
I-1165	Screw	
I-1167	Screw	
I-1182	Screw	
I-1193	Screw	
I-1196	Screw	
I-1230	Nut	
I-1404	Screw	
I-1574	Diamond	
I-1812	Ball	



Wheel dressing attachment

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>PAGE 25</u>
I-126	Thrust bearing	
I-127	Disc	
I-193	Packing	
I-220	Seal	
I-225	Seal	
I-288	O-ring	
I-332	O-ring	
I-339	O-ring	
I-353	Copper packing	
I-399	Fibre disc	
465	Lubrication nipple	
I-478	Connection	
I-879	Grooved pin	
I-984	Disc spring	
I-1022	Screw	
I-1031	Screw	
I-1032	Screw	
I-1039	Screw	
1101	Housing for dresser	
1102	End Cover	
1103	Guide for diamondholder	
1106	Piston rod	
1107	Guide slot	
1109	Guide valve	
1110	Speed valve	
1111	Piston	
1113	Cover	
1114	Cover	
1115	Diamondholder	
1116	Spindle for diamondholder	
1118	Handwheel	
1119	Cover for spindle	
1121	Cover plate	
1124	Flange for guide valves	
1125	Knob	
1126	Pin	
1128	Protection cover	
1129	Bracket	
1131	Stop screw	
1133	Plug	
1140	Nylon tube	
1141	Flex for tube	
I-1154	Screw	
I-1165	Screw	
I-1167	Screw	
I-1182	Screw	
I-1193	Screw	
I-1196	Screw	
I-1230	Nut	
I-1404	Screw	
I-1574	Diamond	
I-1812	Ball	



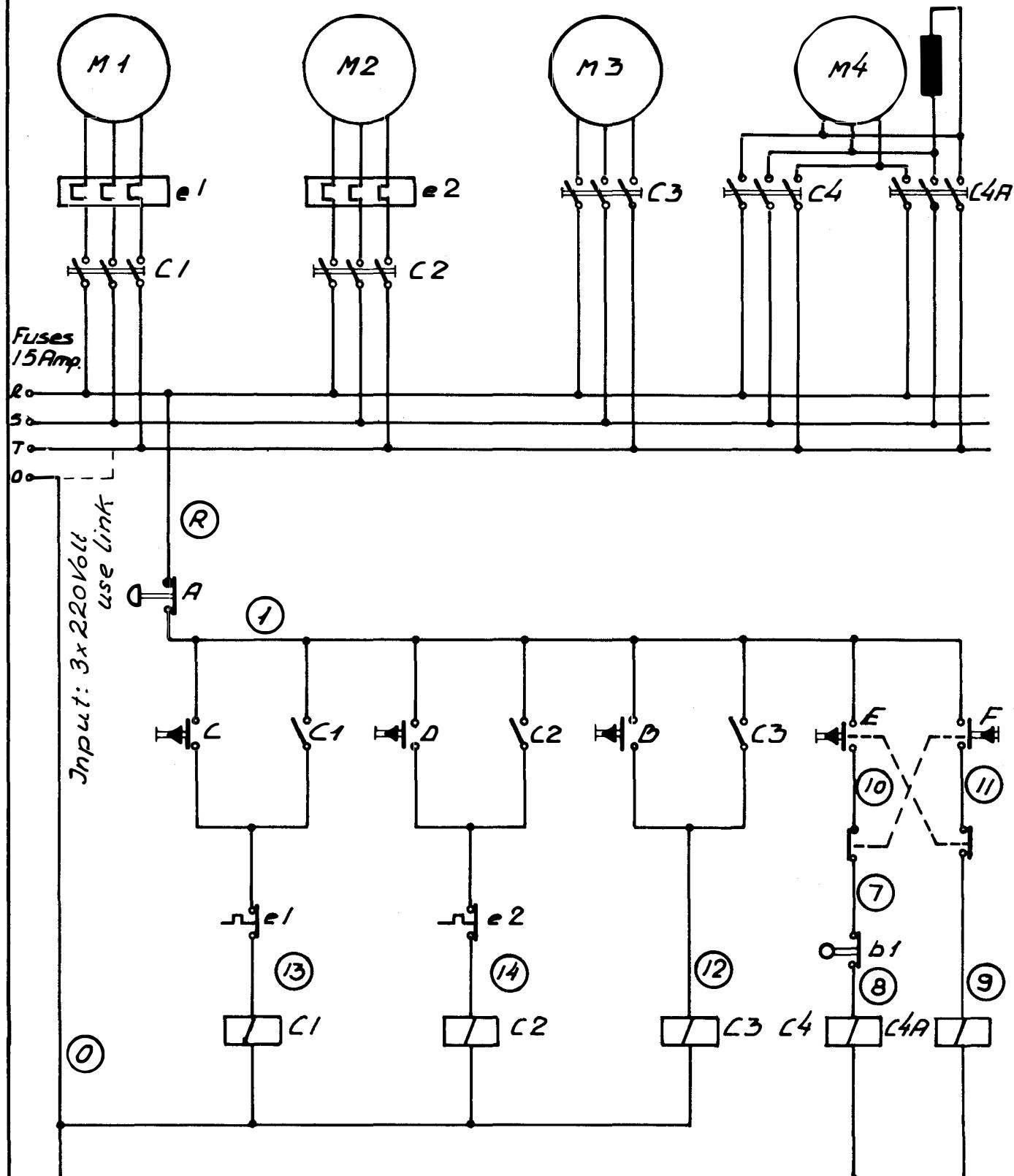


Spindlemotor

Pumpmotor

Coolant  
pumppmotor

Verticalmotor



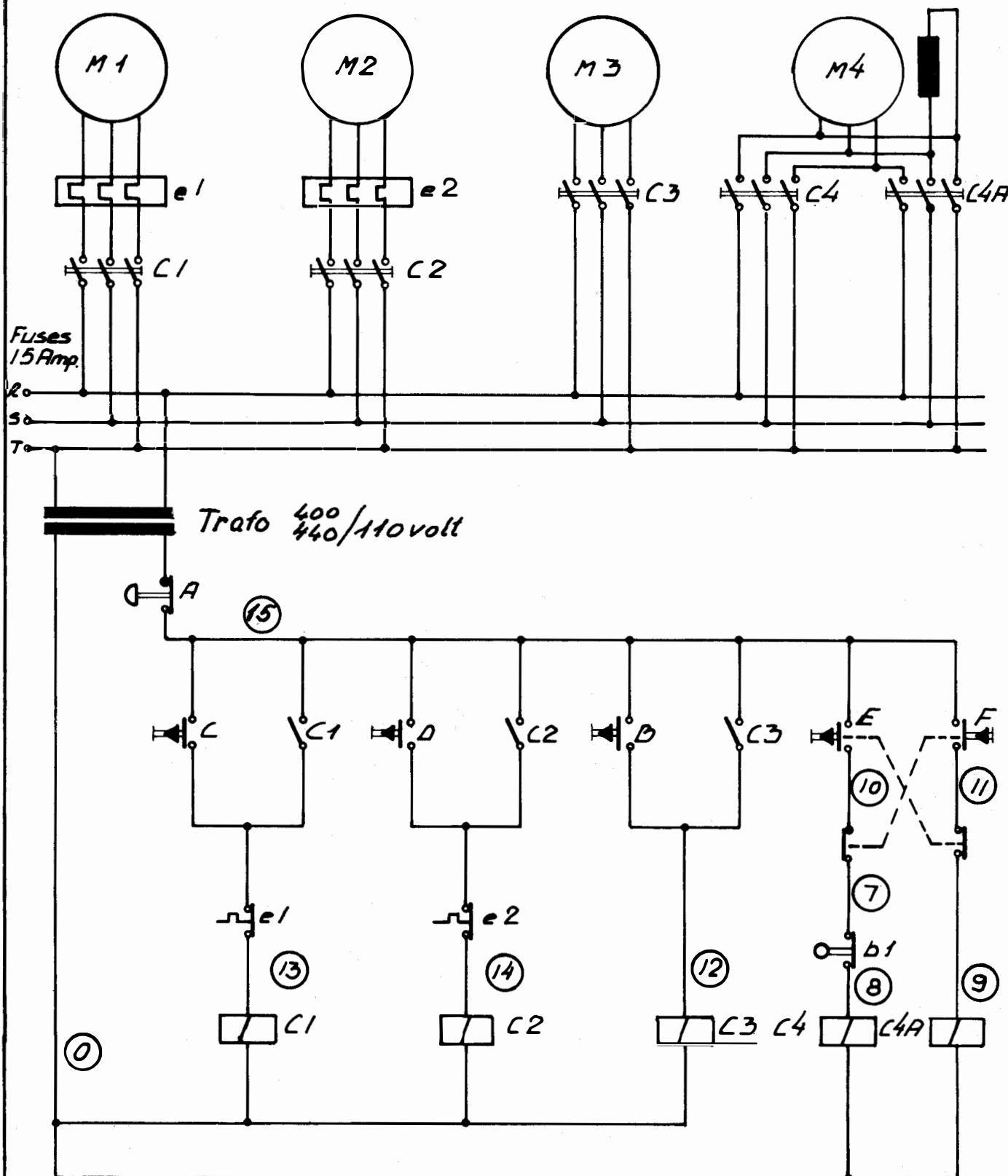


## *Spindlemotor*

## Pumpmotor

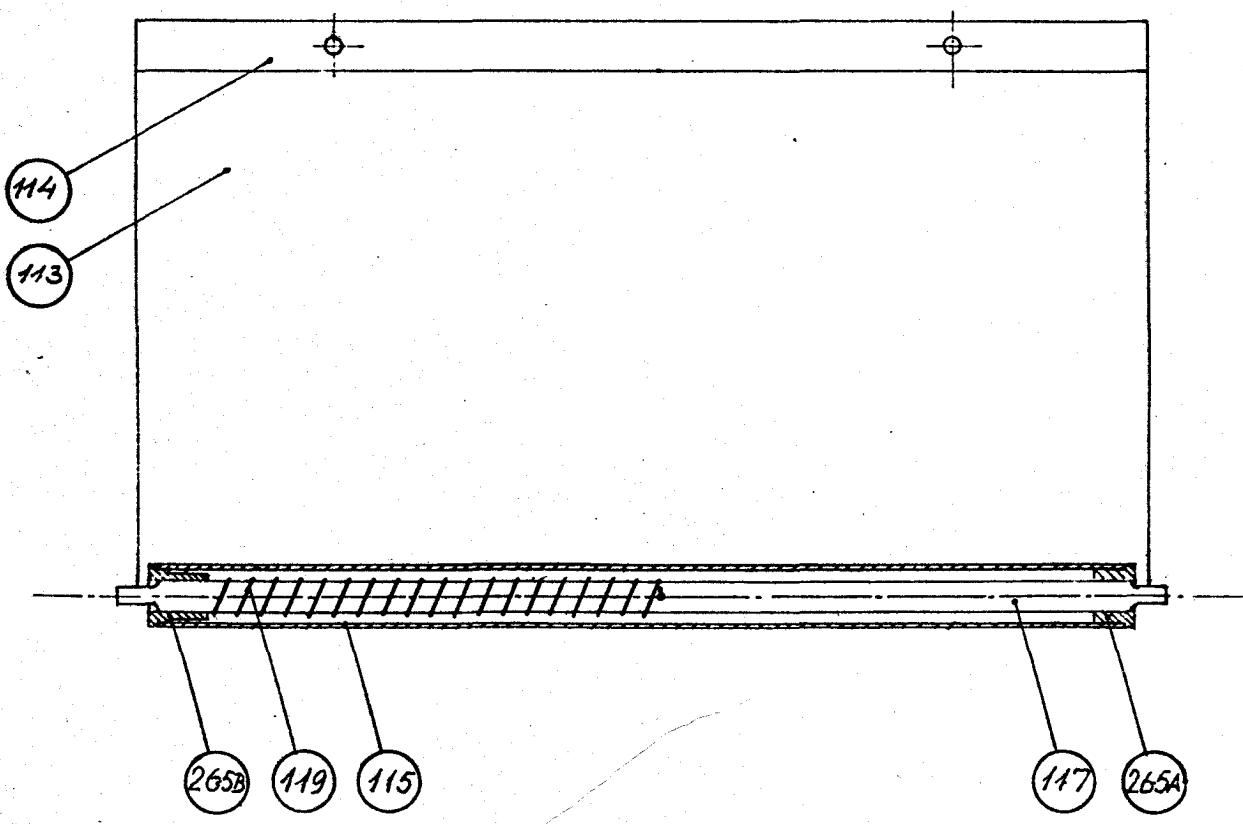
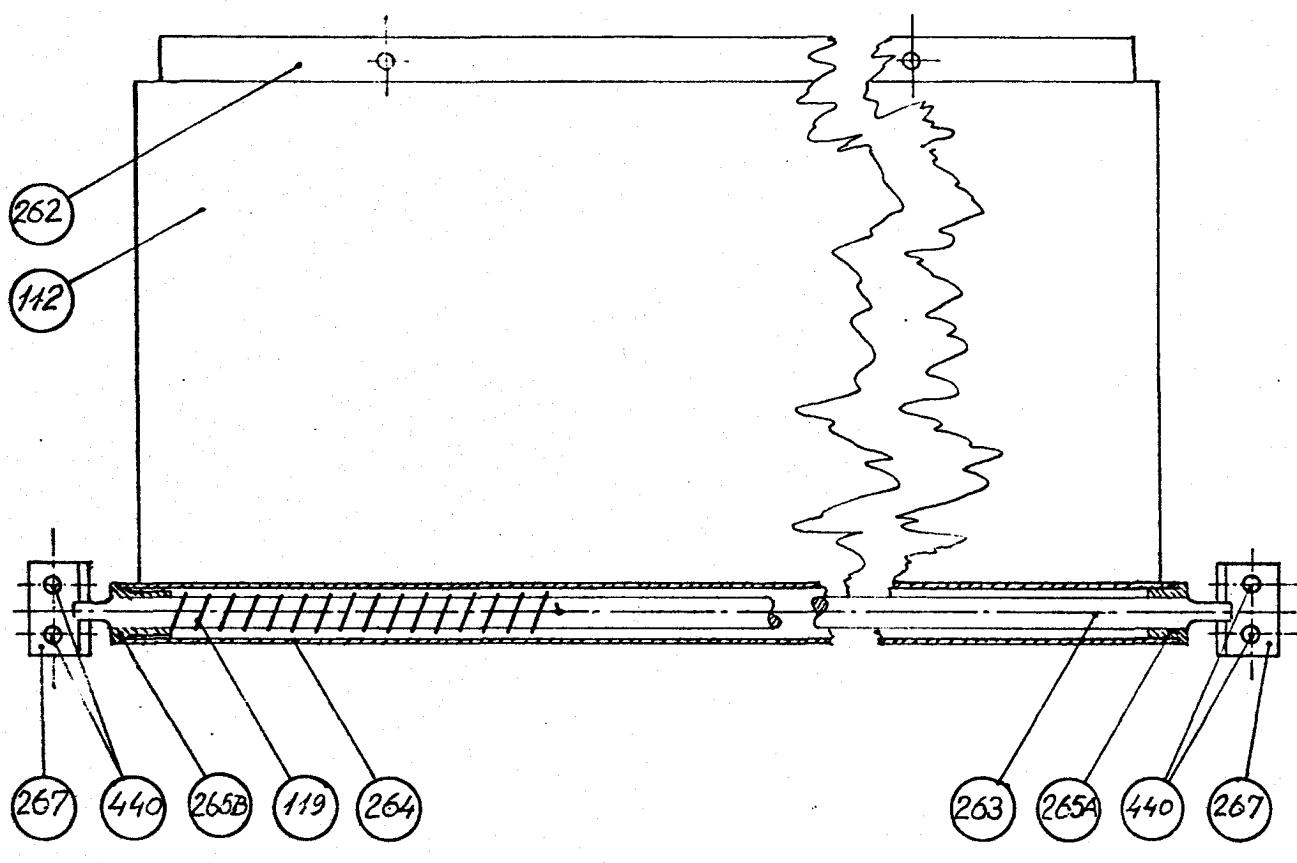
## *Coolant pumpmotor*

## Verticalmotor



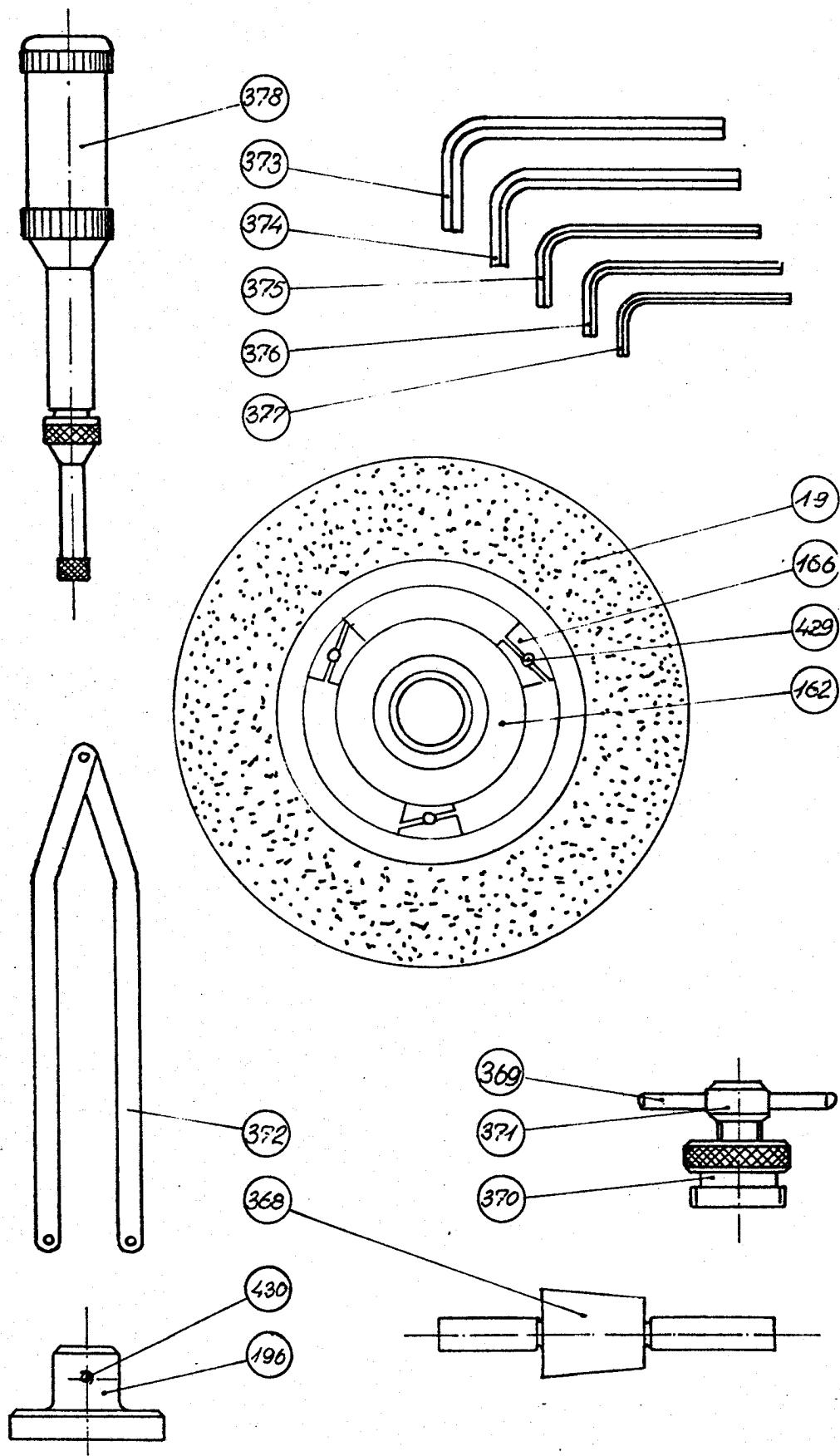
## Guards

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>PAGE 27</u>
112	Protection Guard	
113	Protection Guard	
114	Rail for Guard	
115	Pipe for Guard	
117	Shaft	
119	Spring	
262	Rail	
263	Shaft	
264	Tube	
265-A	Bushing	
265-B	Bushing	
267	Bracket	
440	Screw	



## Equipment

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>PAGE</u> 28
19	Grinding wheel	
162	Wheel flange	
166	Balancing weight	
368	Balancing arbor	
369	Pin for extracting tool	
370	Extracting tool	
371	Screw for extracting tool	
372	Pin spanner	
373	Key	
374	Key	
375	Key	
376	Key	
377	Key	
378	Lubrication hand pump	
429	Screw	







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## PRØVESKEMA for hydraulisk planslibemaskine

Model SJ 12

Maskin Nr.:  
.....

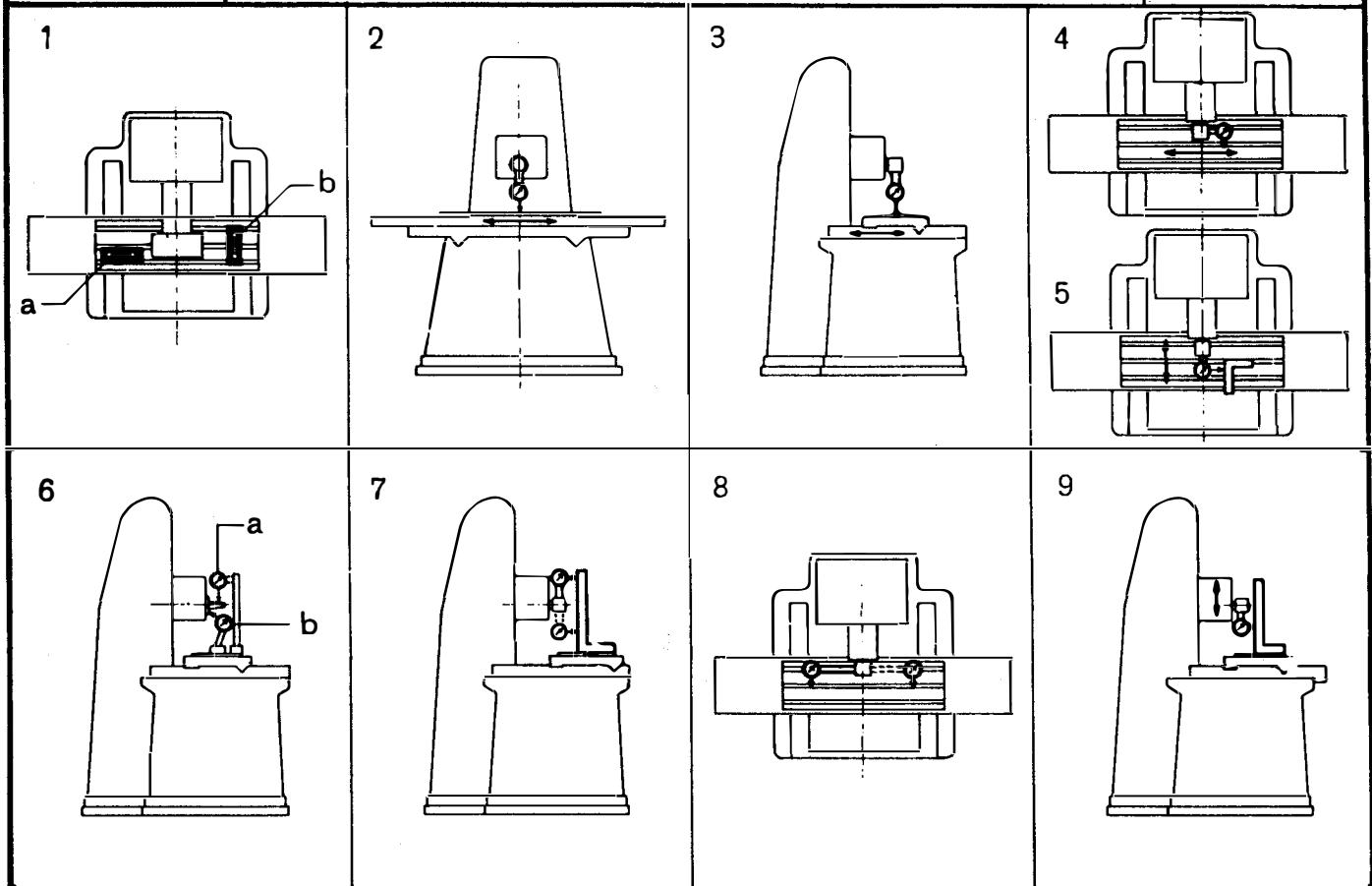
29

	Måling	Tilladelig afvigelse	Målt afvigelse
1 a	Bord lige i længderetningen	0,02 på 1000 mm	.....
1 b	Bord lige i tværretningen	0,02 på 1000 mm	.....
2	Bordets overflade parallelt med længderetningen	0,015 på 1000 mm	.....
3	Bordets overflade parallelt med tværretningen	0,01 på bordbredden	.....
4	Bordets T-riller parallelle med længderetningen	0,015 på 1000 mm	.....
5	Bordets T-riller vinkelret på tværretningen	0,03 på 300 mm	.....
6 a	Slibespindelens rundløb	0,01	.....
6 b	Slibespindelens aksiente kast	0,01	.....
7	Slibespindel parallel med bordet. Måles ved 180° drejning. Arm 100 mm	0,02 på 300 mm	.....
8	Slibespindel vinkelret på bordets T-riller. Måles ved 180° drejning. Arm 200 mm.	0,02 på 300 mm	.....
9	Slibedokkens lodrette bevægelse vinkelret på bordets tværretning	0,02 på 100 mm	.....
	Nøjagtighedsprøve af den arbejdende maskine:  Finslibning:  Grovslibning:	0,01 på 1000 mm  0,03 på 1000 mm	.....





ILLUSTRATION TIL PRØVESKEMA  
ILLUSTRATION FOR TEST CHART  
ILLUSTRATION FÜR PRÜFKARTE  
ILLUSTRATION POUR SCHÉMA DE CONTROL



Elektromotorer - Electrical motors - Elektromotoren - Électromoteurs

Spænding Voltage Spannung Voltage	V.	Frekvens Frequenz Frequenz Fréquence	Hz.
Spindelmotor Spindlemotor Spindelmotor Moteur de l'arbre	HK - HP PS - chev.	omdr./min - RPM umdr./min. - rév/min.	Serie nr. — Serial no. Serien nr. — Série no.
Pumpemotor Pumpmotor Pumpenmotor Moteur de la pompe			
Vertikalmotor Verticalmotor Vertikalmotor Moteur vertical			

