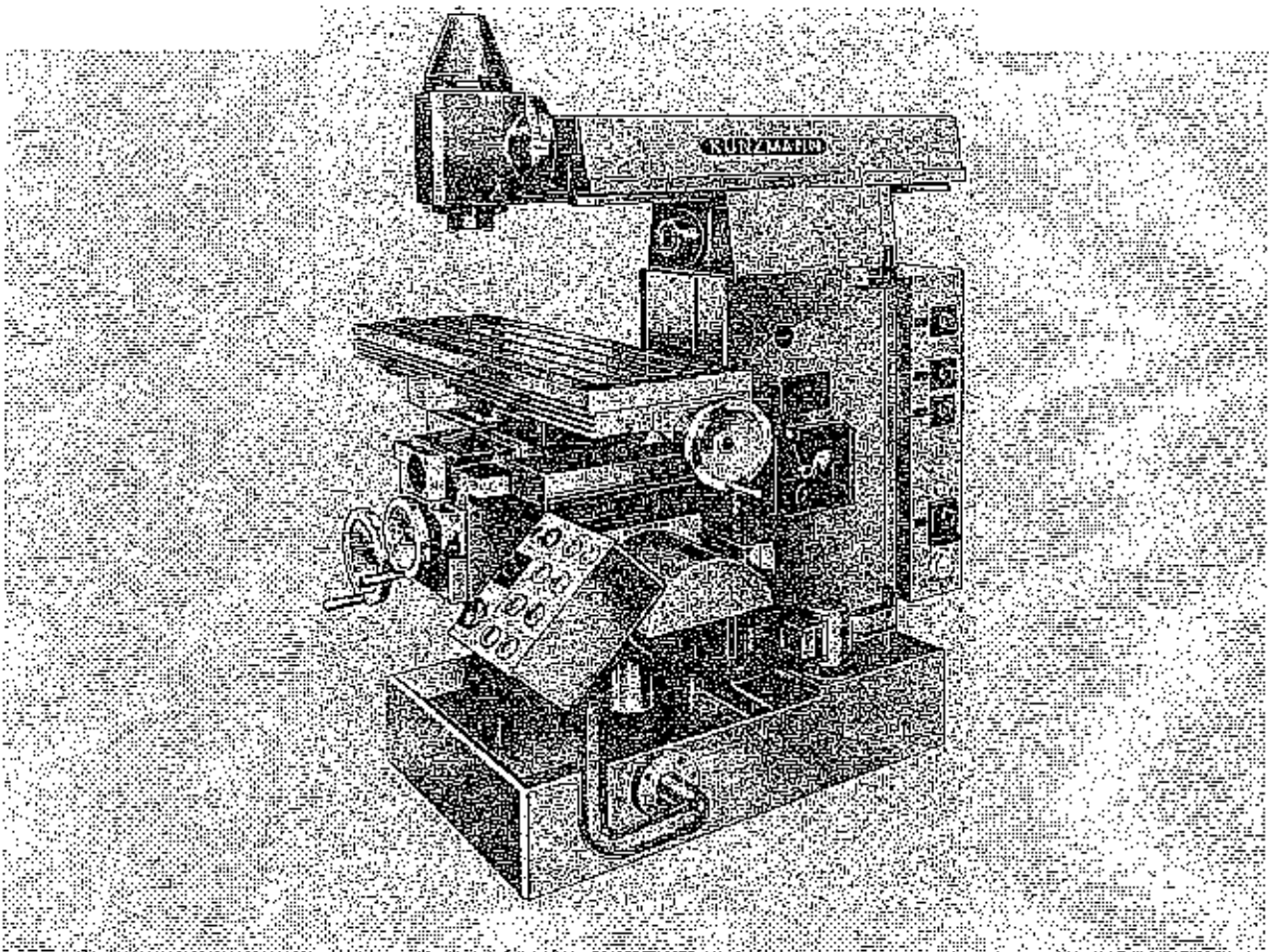


Operating instructions

Universal milling and drilling machine
UF 8/3



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Translation of the original operating instructions

Always read operating instructions prior to starting work!

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Assembling drawings with references of parts

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Page 50	Top slide
Page 51	Milling head

Enclosures:

Recommendations of lubricants for Kunzmann Milling Machines

Coolant pump (Brinkmann)

Gear units (Ortlinghaus)

Direct current - motor (Indramat)

Speed controlling device (Indramat)

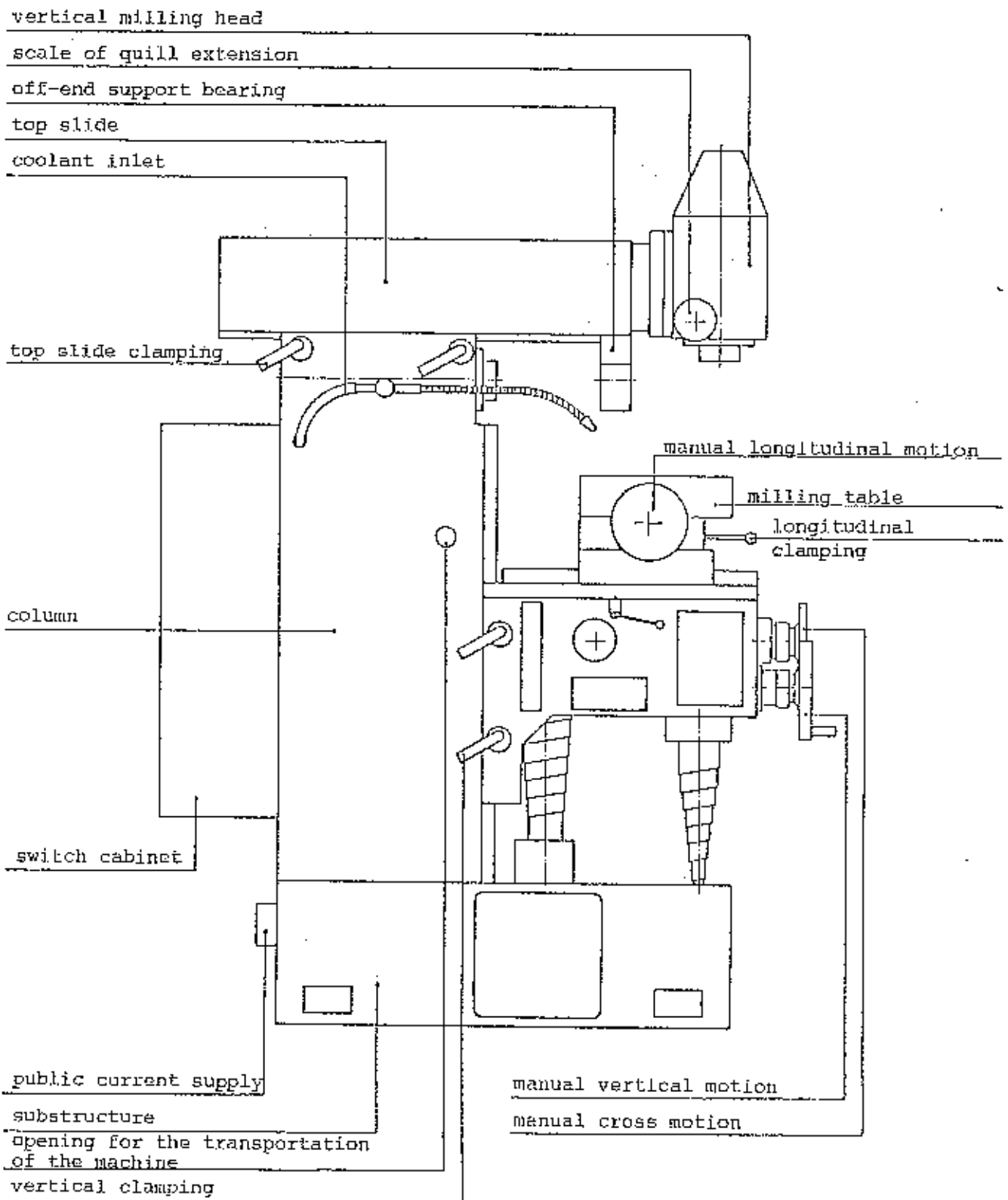
Service instructions MDC 10 (Indramat)

Electric

- Page 60 Wiring diagram Page 1
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- Page 63 Wiring diagram Page 4
-
- Page 65 Switchgear in electrical box
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Only for machines with slotting head

- Page 80 Assemblage of slotting head
- Page 81 Slotting head



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selective system of gear shifting for the milling spindle

programming switch upon request

swinging arm for the control panel

hexagon receiver of socket head wrench for quill stroke

switch desk

clamping of the milling head quill

horizontal milling spindle

oil-level sight glass for the gear

cross clamping

feed motor

coolant measuring stick
coolant pump

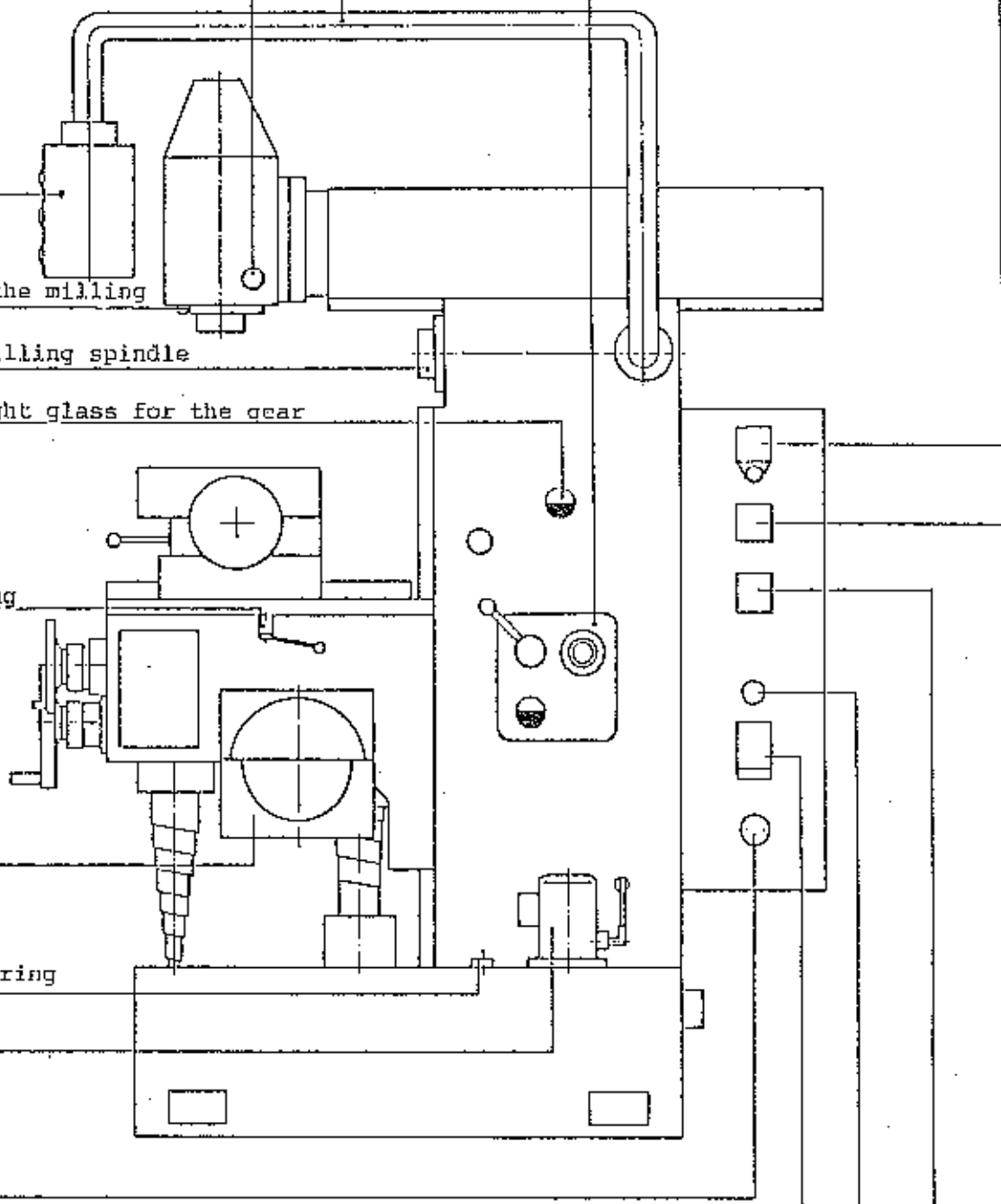
socket

main switch to be locked

signal lamp

milling spindle switch

coolant switch



Technical Specifications

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Page 7

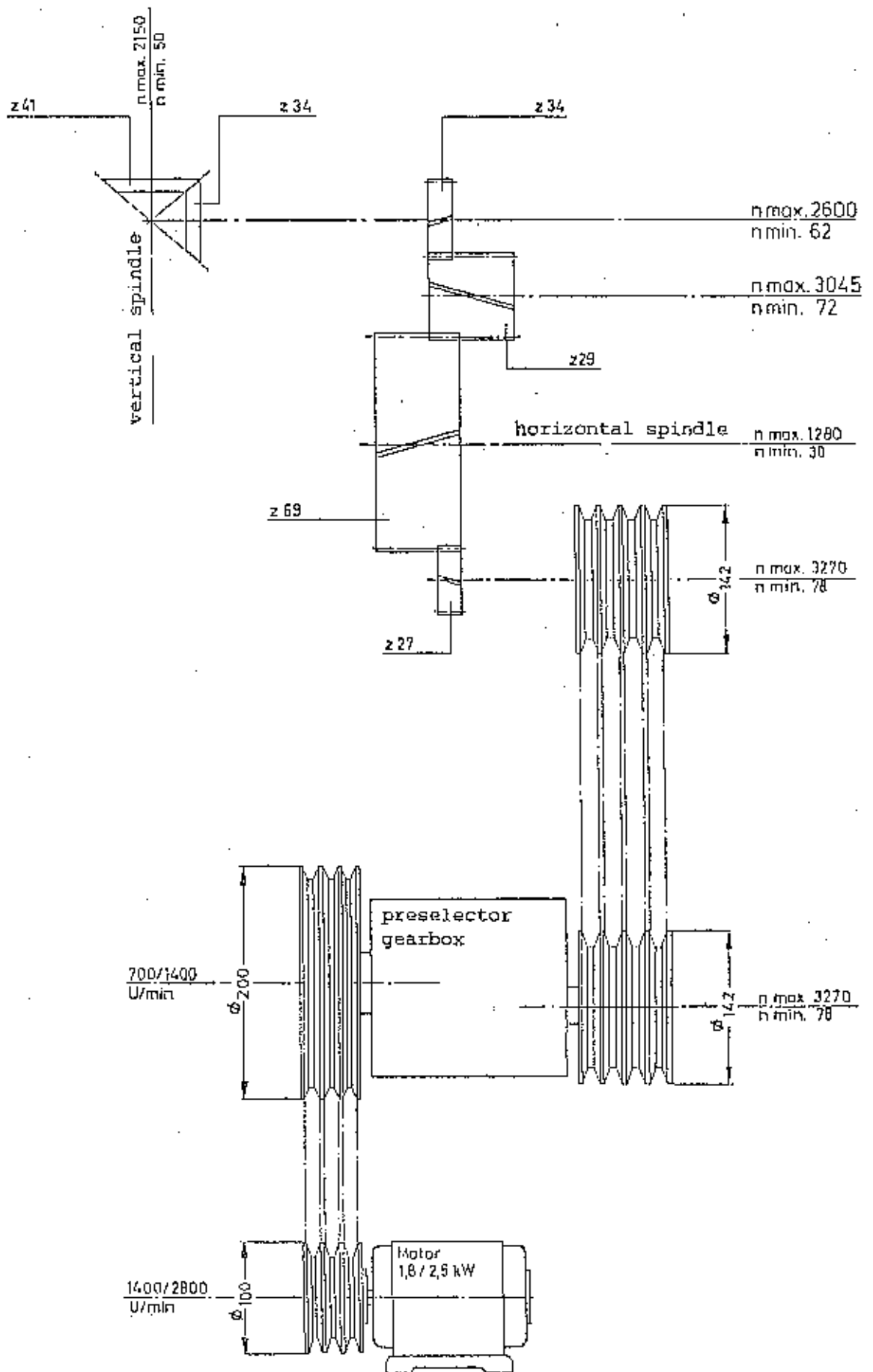
Milling table	clamping area clamping slots slot width slot distance swivel feature degree	1000 x 315 mm 5 14 H 7 56 mm +/- 45°
Working range (traverses in mm)	longitudinal by hand execution "K" longitudinal automatic execution "K" longitudinal by hand execution "T" longitudinal automatic execution "T" transverse by Hand transverse automatic vertical by hand vertical automatic transverse including adjustment of the top slide	600 590 550 540 200 190 410 400 336
Distances in mm	table top until centre of horizontal spindle table top until bottom edge of the vertical head	400 450
Milling spindle	spindle taper speeds horizontal speeds vertical switch steps geometrically stepped quill stroke vertical head, swivel feature vertical head displaceable distance from the centre of the horizontal spindle to the bottom border of the off-end support	SK 30 or SK 40 or MK 4 30 to 1280 RPM 50 to 2150 RPM 18 60 mm 360° 136 mm 87 mm
Feed or with	continuous longitudinal and transverse continuous vertical rapid transverse rapid vertical longitudinal change-over gear	0 - 1000 mm/min. 0 - 250 mm/min. 2000 mm/min. 250 mm/min. 13 - 328 mm/min.
Main drive	motor pole-changeable	1400/2800 RPM
Weight	net/include of seaworthy case	1450/1800 kg
Dimensions (packed)	length x width x height	1,60 x 1,50 x 2,00 m

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Scheme of the main drive

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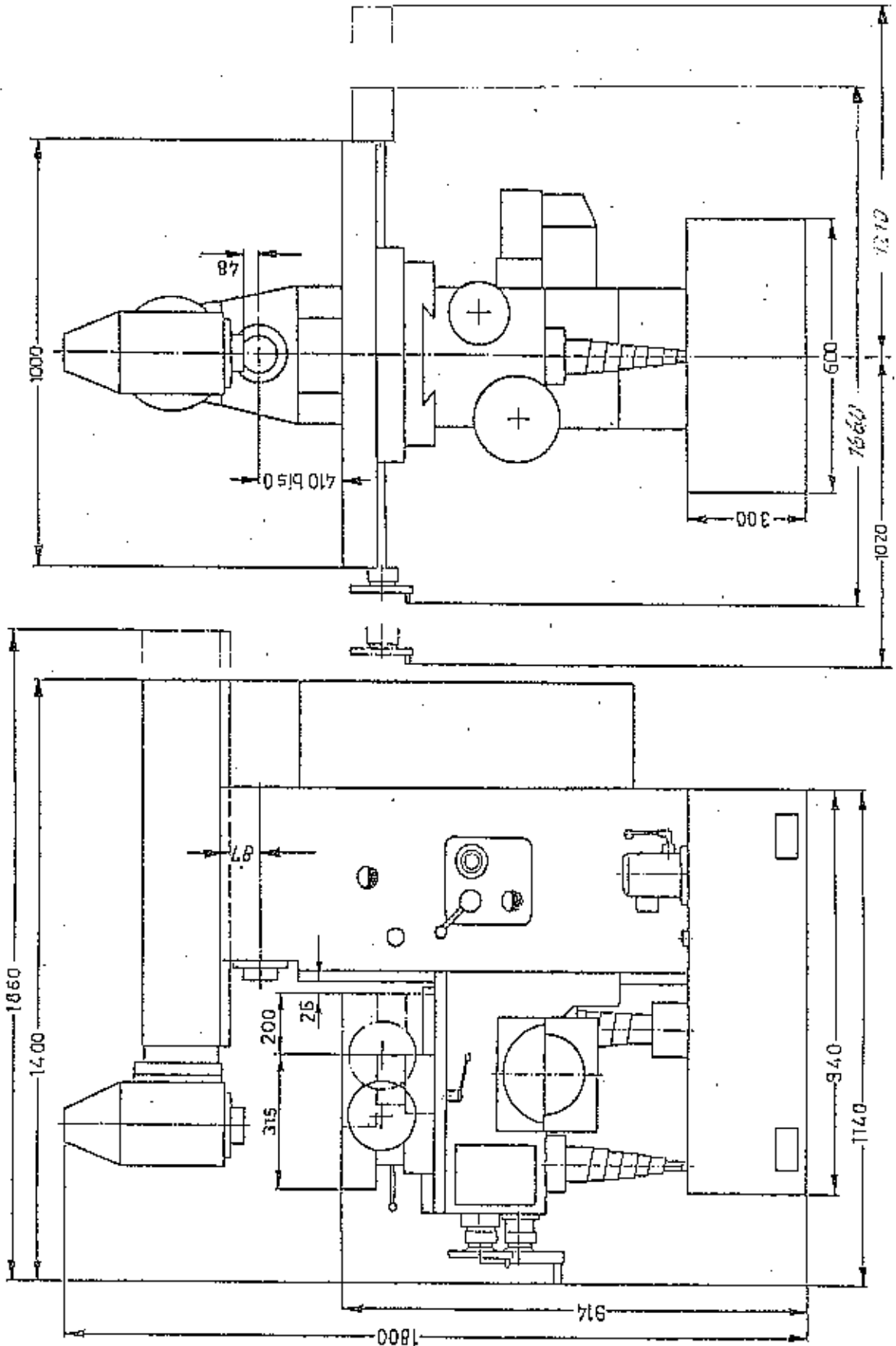
Page 8



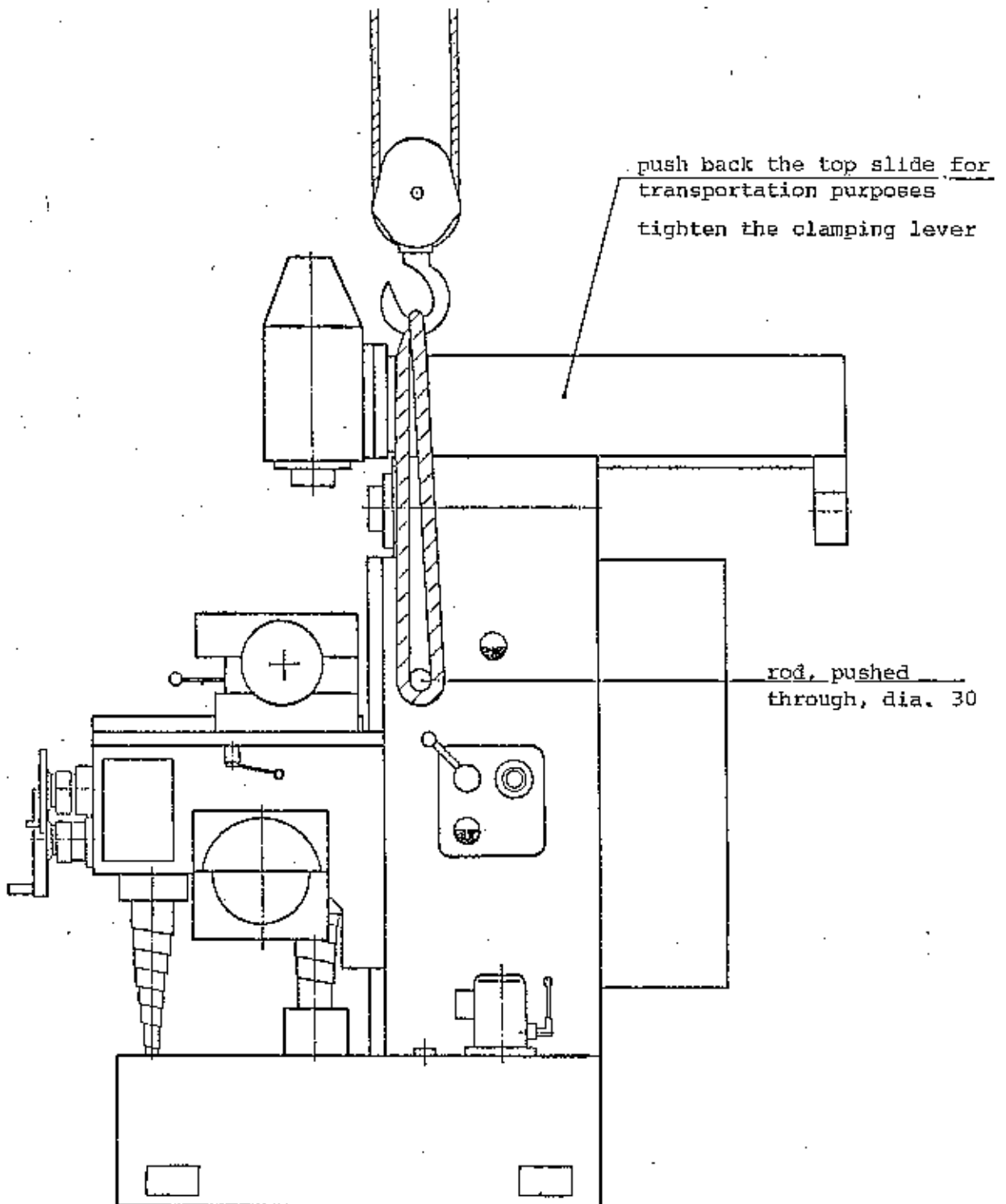
Dimensions and required space

UF 8/3

Page 9

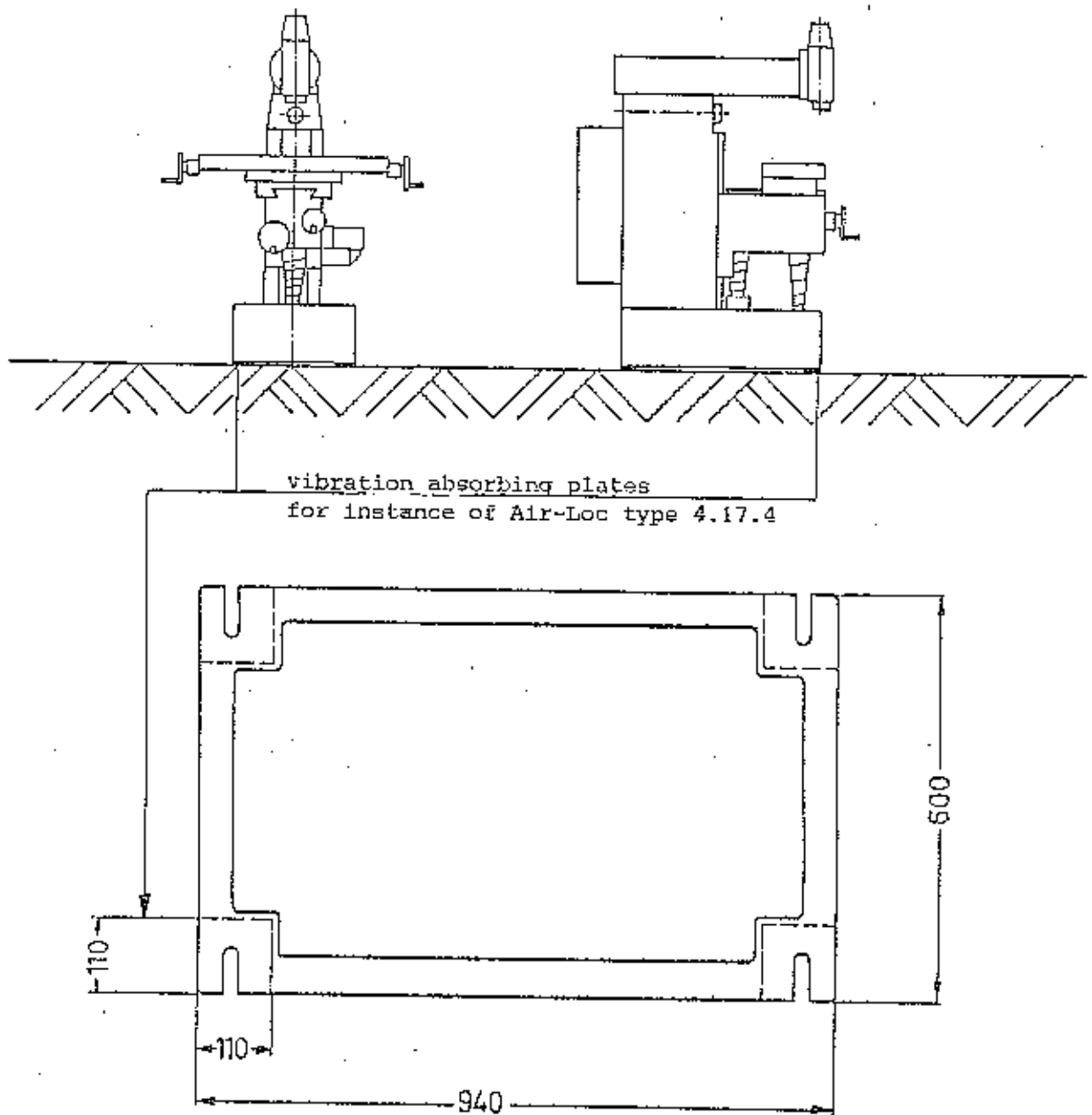


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Required elements for the transportation:

- 1 piece of round steel of dia. 30 mm, length 600 mm
- 1 rope of transportation, admissible load minimum 2500 kgs



It is possible to erect the machine on any smooth ground of good foundation. Thus, a special foundation for the machine is not necessary.

It is recommended to erect the machine on plates showing vibration absorbing properties. In this way, all internal and external vibrations are chiefly suppressed.

It is useful to align the machine by means of an air level. The alignment shall be carried out in longitudinal and cross directions, placing sheets underneath which are firmly connected to the ground (for instance glued). For this purpose, put the air level on the table surface.

We shall equip and wire the machine in accordance with the service voltage required and precised by the customer in his order sheet.

The feed line to the public supply box housed in the substructure shall be encased in a steel armoured conduit, while a minimum cross section of 5 x 2,5 mm is required for the feed line.

Connect the green-yellow protective wire of the feed line to the corresponding terminal in the public supply box.

This box also houses the additional terminals in the order of succession, N - L1, L2, L3.

Primary and secondary connections respectively outlets of the transformer are protected.

In addition to fuses and with the object of overload protection, bi-metal relays are connected in series to the main and to the advance motor at the corresponding contactors.

The motor of the cooling pump is protected against excess current by means of a special motor protecting switch. Therefore the pump is not protected anymore by fusible plugs.

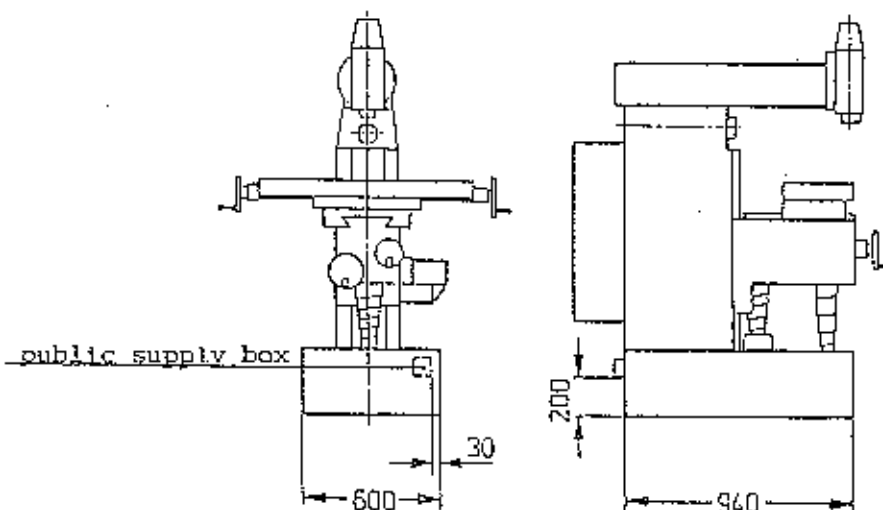
After connection to the public supply, check the adequate direction of rotation of the milling spindle.

Set the milling cutter switch to the right to ("I") (clockwise direction) in the switch cabinet.

Press the push button on the control panel "Fräser ein" (milling cutter on).

Now the horizontal milling spindle must turn to the right (clockwise direction).

In the negative, change two phases on the main switch connection in order to obtain the correct direction of rotation of the motor.



1. Inspect the oil sight glasses (see page 30) with respect to sufficient oil level.
2. Release all clamping levers on the adjusting slides, set the cut-out cams for the limit switches to the extreme final positions and tighten them.
3. On the control panel set the rotary potentiometer to zero by turning it to the left until it reaches the stop.
4. Adjust one of the three lowest revolution speeds on the pre-selecting gearing.

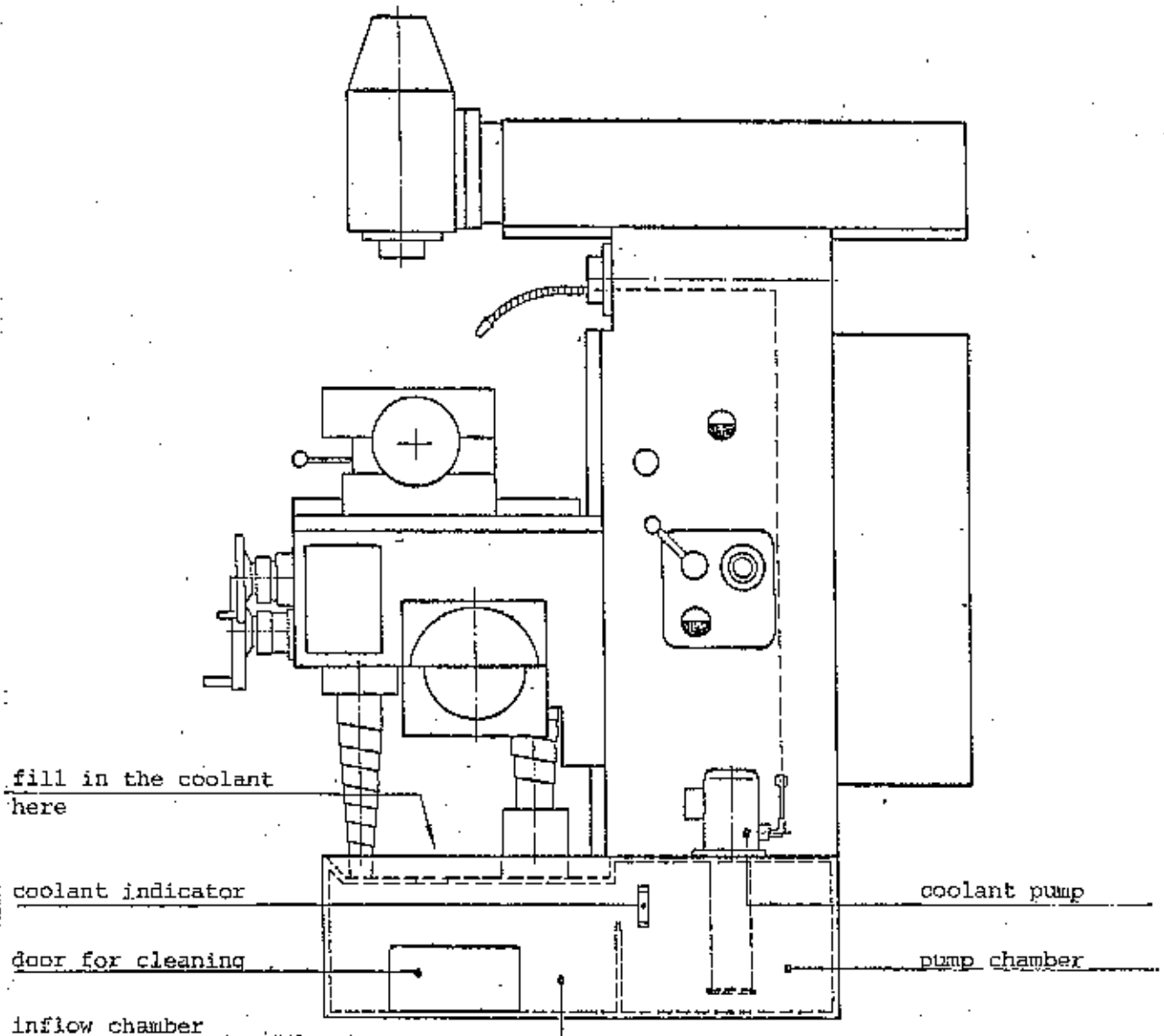
Once the requirements 1 to 4 are fully met, it is possible to switch the machine electrically.

5. Set the main switch on the switch cabinet to "I". Now the control or signal lamp must light up.
6. Programm-switch on "0" position.
7. Switch on the switch for the milling spindle on the switch cabinet. This switch also serves to change the sense of rotation of the milling spindle, i.e. the milling spindle motor may be set to the double revolution speed.

Attention: Do not switch this push button directly from a high revolution speed into a lower one at running milling spindle. Always switch off first the motor by using the push button "milling cutter off" (Fräser aus) on the control panel.

8. Switch on the coolant pump on the switch cabinet.
9. Press the push button "milling cutter on" (Fräser ein) on the control panel. Now the milling spindle will be running.
10. The required moving sense of the feed advance is switched electrically by pressing a selector switch for directions.
11. The preselected moving direction of the feed advance is switched electrically by pressing the push button "advance on" (Vorschub ein).
12. Now it is possible to adjust the advance speed infinitely variable ranging from 0 to 1000 mm/min on the rotary potentiometer.
13. Whether the feed advance is running or not, it is possible to operate with the rapid motion in the adjusted direction by pressing the selector-switch for rapid motion in any position. However, the rapid motion will be running only as long as the push button is pressed by hand.

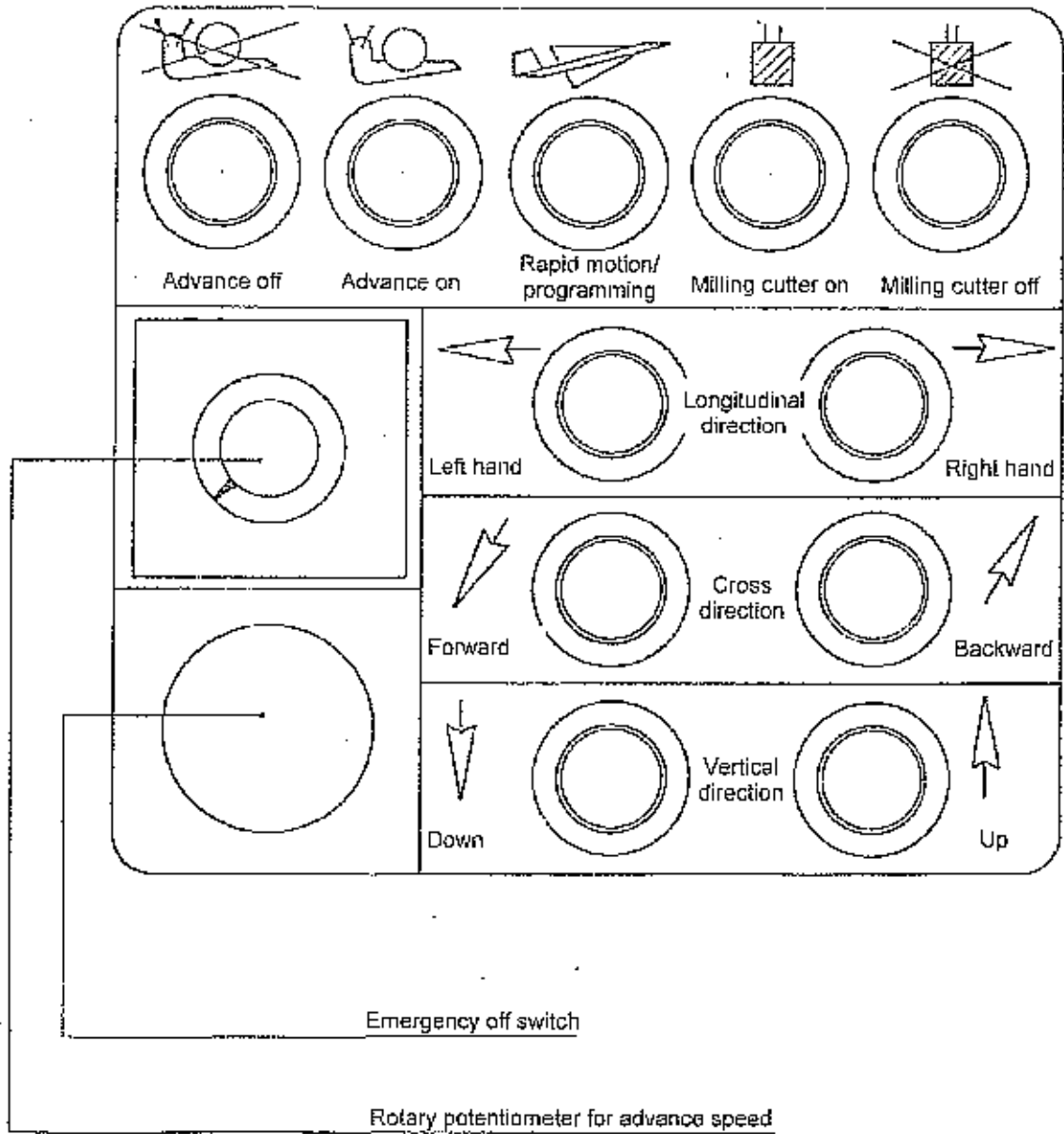
Prior to the initiation of the machine, all conditions for the electrical connection must be fully ensured. Take special care to inspect the moving senses of the feed advances. (See page 16.)



It is possible to operate the coolant pump with a coolant emulsion or with cutting oil. The substructure is laid out as coolant tank with a volumetric capacity of 20 litres. The liquid level shall not exceed the maximum line of contents and may be checked by means of coolant indicator.

Dismantle the coolant pump when cleaning the inflow chamber. Now it is possible to empty the inflow chamber via the pump chamber.

After having removed the door for cleaning, it is possible to clean the inflow chamber.



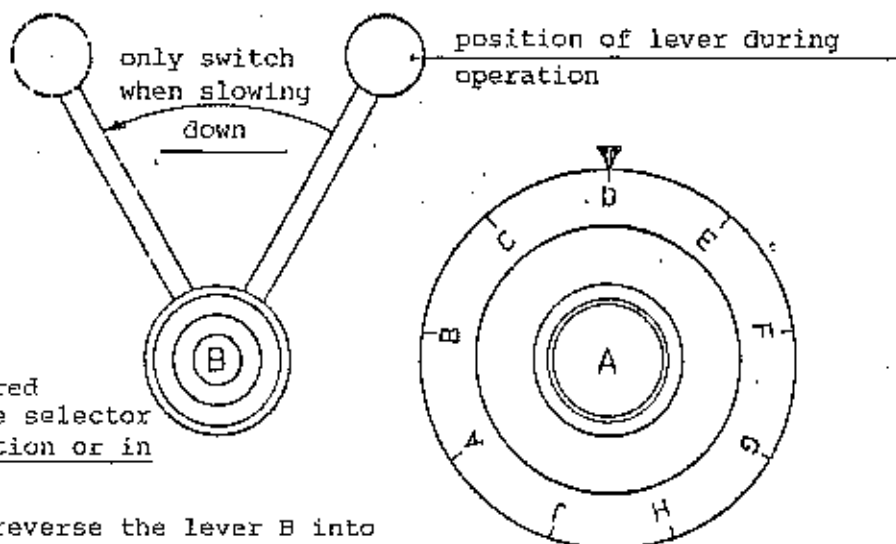
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7537 Remchingen 3 - Nöttingen

Type		Year of construction		Serial No.						
S p i n d l e s p e e d s R P M										
Switch step		A	B	C	D	E	F	G	H	J
Horizon- tally	I	30	43	65	101	144	213	303	432	640
	II	60	87	129	202	289	426	606	865	1280
Verti- cally	I	50	73	109	170	243	358	510	728	1075
	II	100	146	217	340	486	716	1019	1455	2150

For the adjustment of the milling spindle speeds, first set the revolution speed at the main motor. This is effected by means of the switch "Frässpindel" (milling spindle) at the switch cabinet. The switch is provided with the switch steps "I" and "II". These switch steps are divided into each of 18 speeds for the horizontal and vertical spindle in the preselector gearbox. If the horizontal spindle should run at 200 RPM, set the milling spindle switch to the switch step "II". Then turn on the dial the letter "D" underneath the arrow. The desired revolution speed is achieved by switching the lever.



ATTENTION !

1. Preselect the required spindle speed at the selector dial A during operation or in idle position.
2. When slowing down, reverse the lever B into direction of arrow, thus switching the preselected revolution speed.
3. Reset the lever B immediately in position of operation. (see above)
Switch on the machine!

It is absolutely essential to observe the following instructions for the clamping of the milling mandrel:

1. Firmly draw in the milling mandrel in the taper bore hole of the milling spindle by means of the milling mandrel screw. While drawing in, take the milling mandrel at the collar and turn it opposite to the direction of rotation of the milling mandrel screw.
2. If the mandrel got stuck, turn back the milling mandrel screw again, until it is not exposed anymore to the tensile stress (however, make sure not to press out again the mandrel).
3. Retighten the milling mandrel screw moderately so that it retains the milling mandrel as well as itself.

Notes:

Re.1: It is necessary to turn the milling mandrel opposite to the retaining position, in order to avoid that the driving surface of the collar on the milling mandrel would touch the spindle. Otherwise, the mandrel might get toed in, impeding the cone from irreproachable drawing in the taper bore hole. Following negative consequences could result from it:

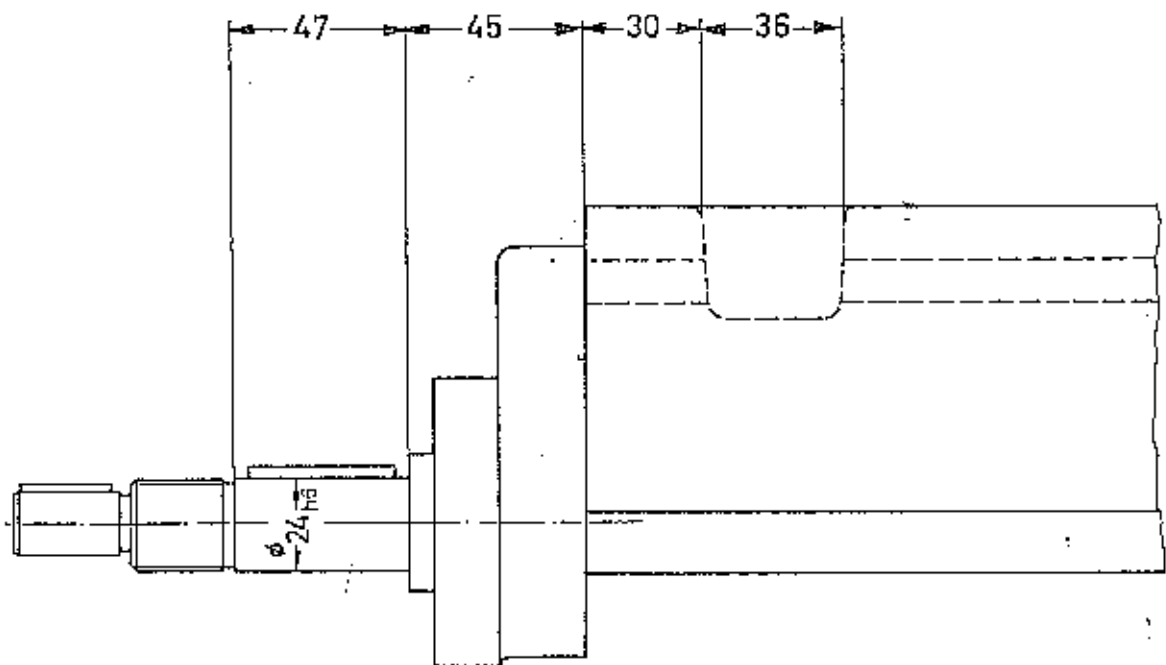
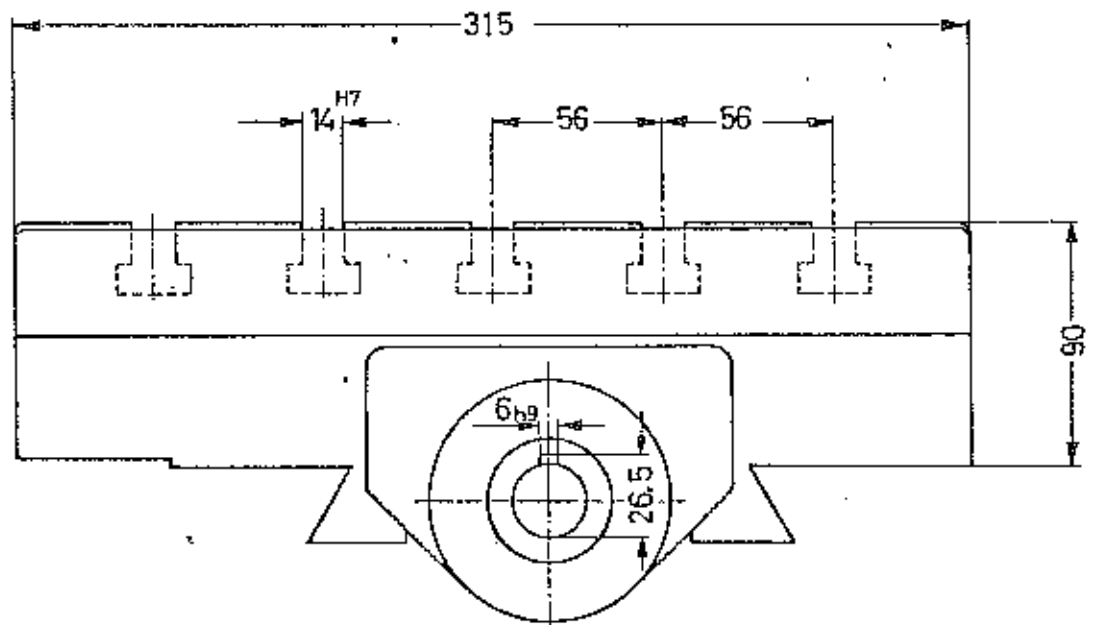
- a) No exact centering of the milling mandrel,
- b) between the milling mandrel cone and the taper bore hole of the spindle an insufficient adhesive force to ensure a safe slaving of the milling mandrel. In fact, the driving surfaces on the milling mandrel collar are only intended to produce safety but not to ensure slaving. (A milling mandrel is clamped correctly if a light metallic bang is heard when releasing it).

Re.2 and 3:

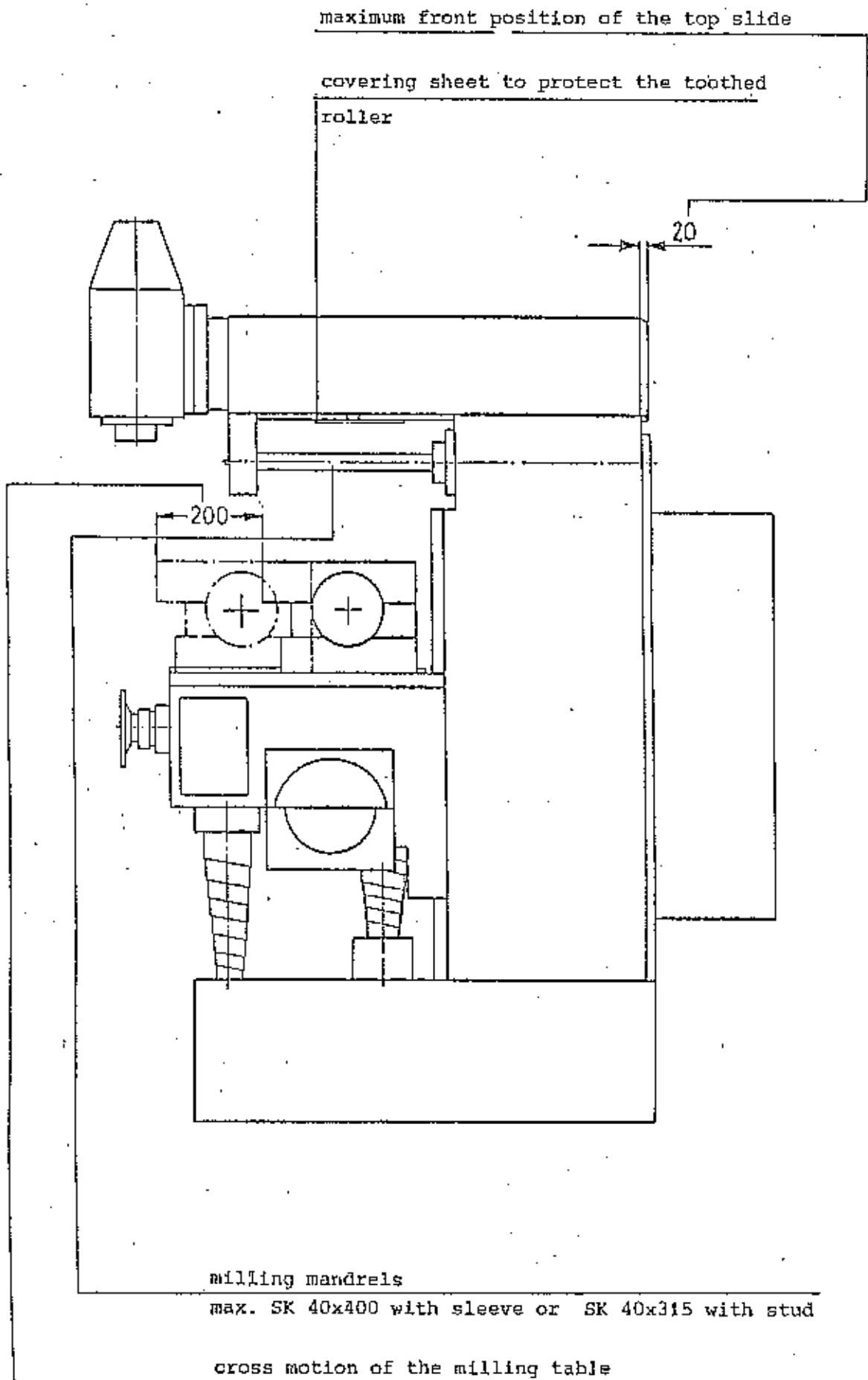
It is necessary to observe this procedure for the following reason:

If the milling mandrel screw is not released a little after it has drawn the mandrel into the taper bore hole, it remains under the stress which has been necessary first to draw in the milling mandrel in the bore hole.

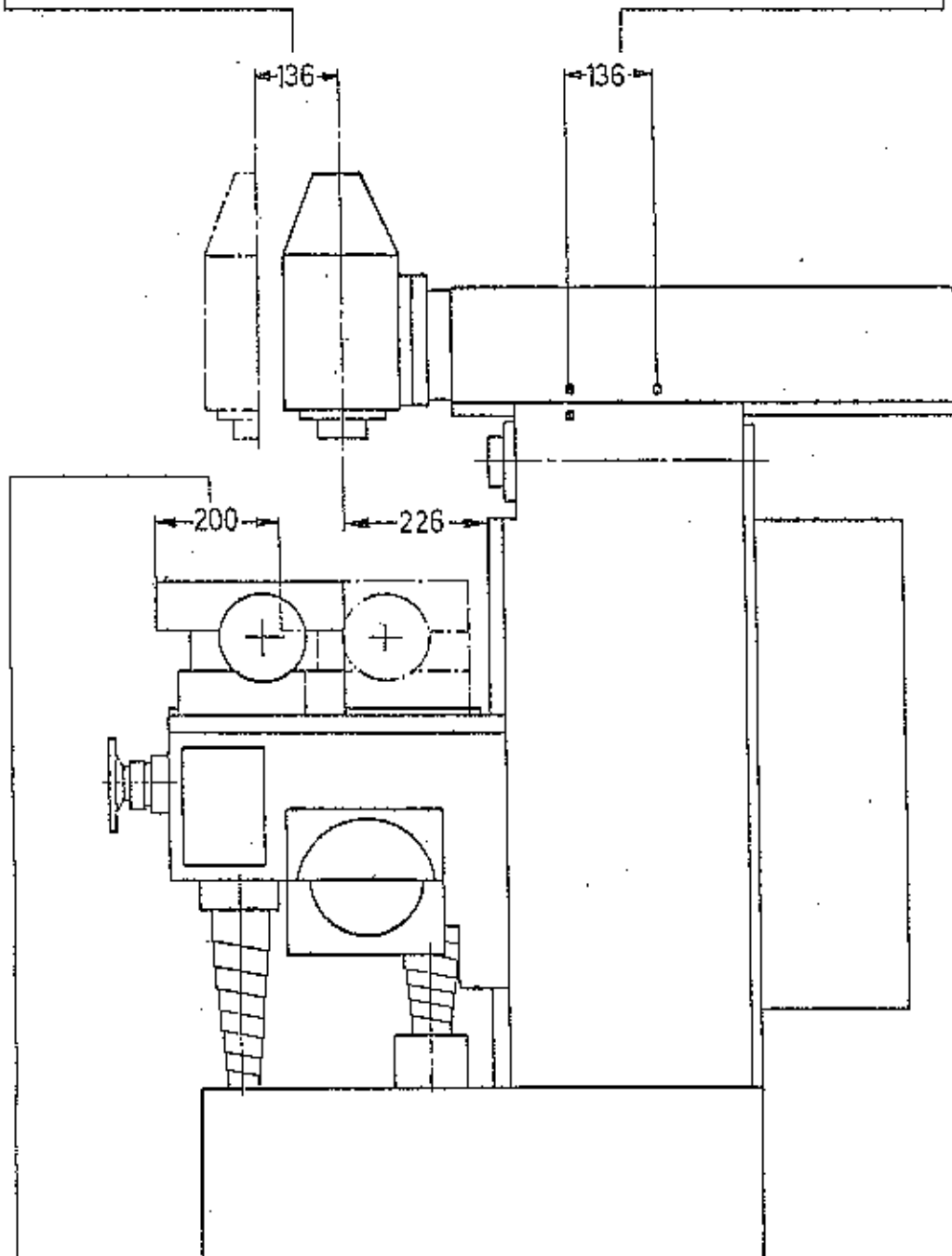
So if during operation and consequently because of the normal heating up of the machine the taper bore hole of the milling spindle dilates, the milling mandrel screw being still under stress would still draw further the milling mandrel into the inner cone. Once the spindle is cold, the milling mandrel would stuck (shrink collar effect) fast and it will be rather difficult then to release it.



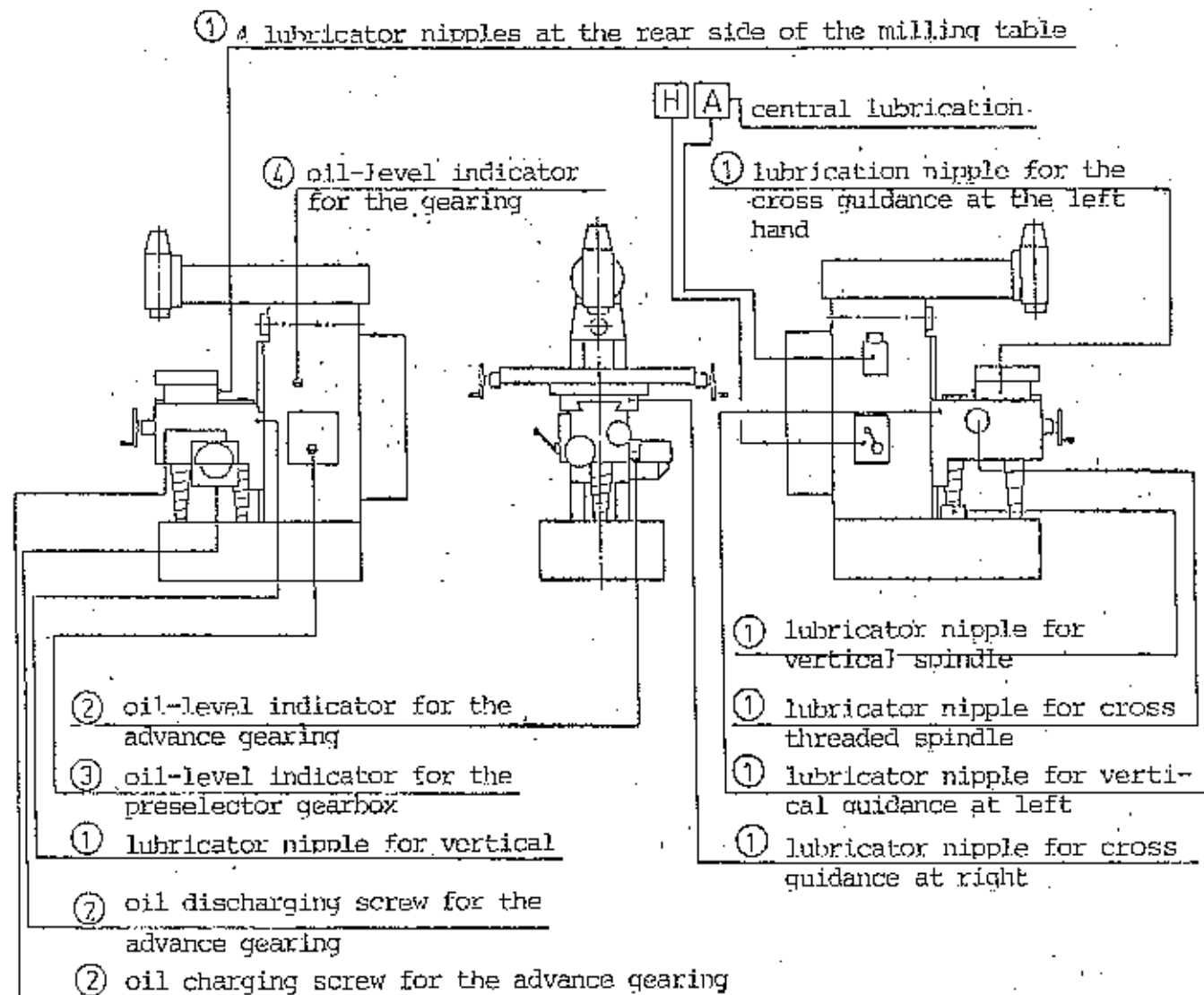
Progression of the table threads spindle tr 26 x 4



The two points illustrate the reach of displacement of the top slide with driven milling head



cross motion of the milling table

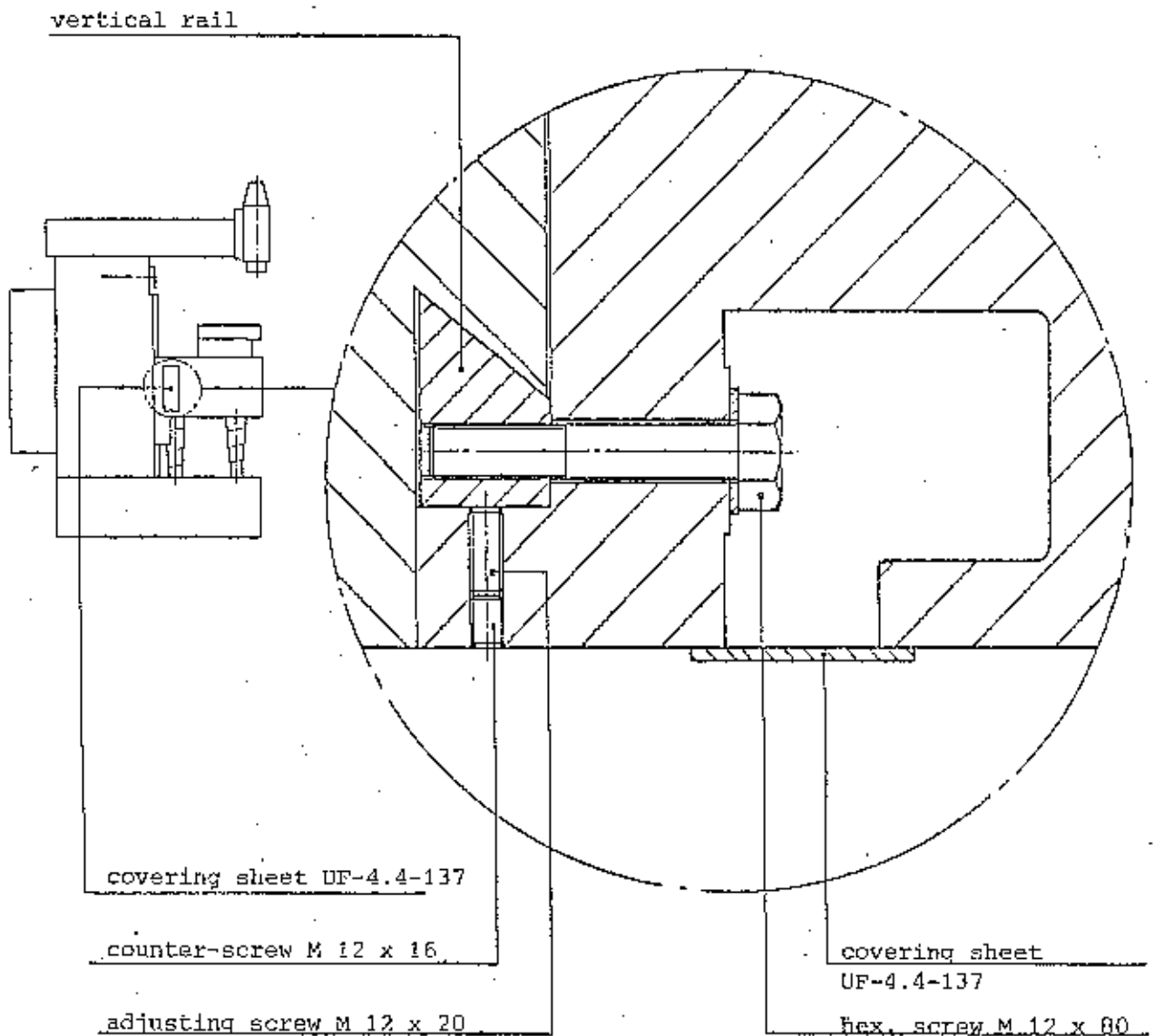


○ single lubrication spots = daily before operation

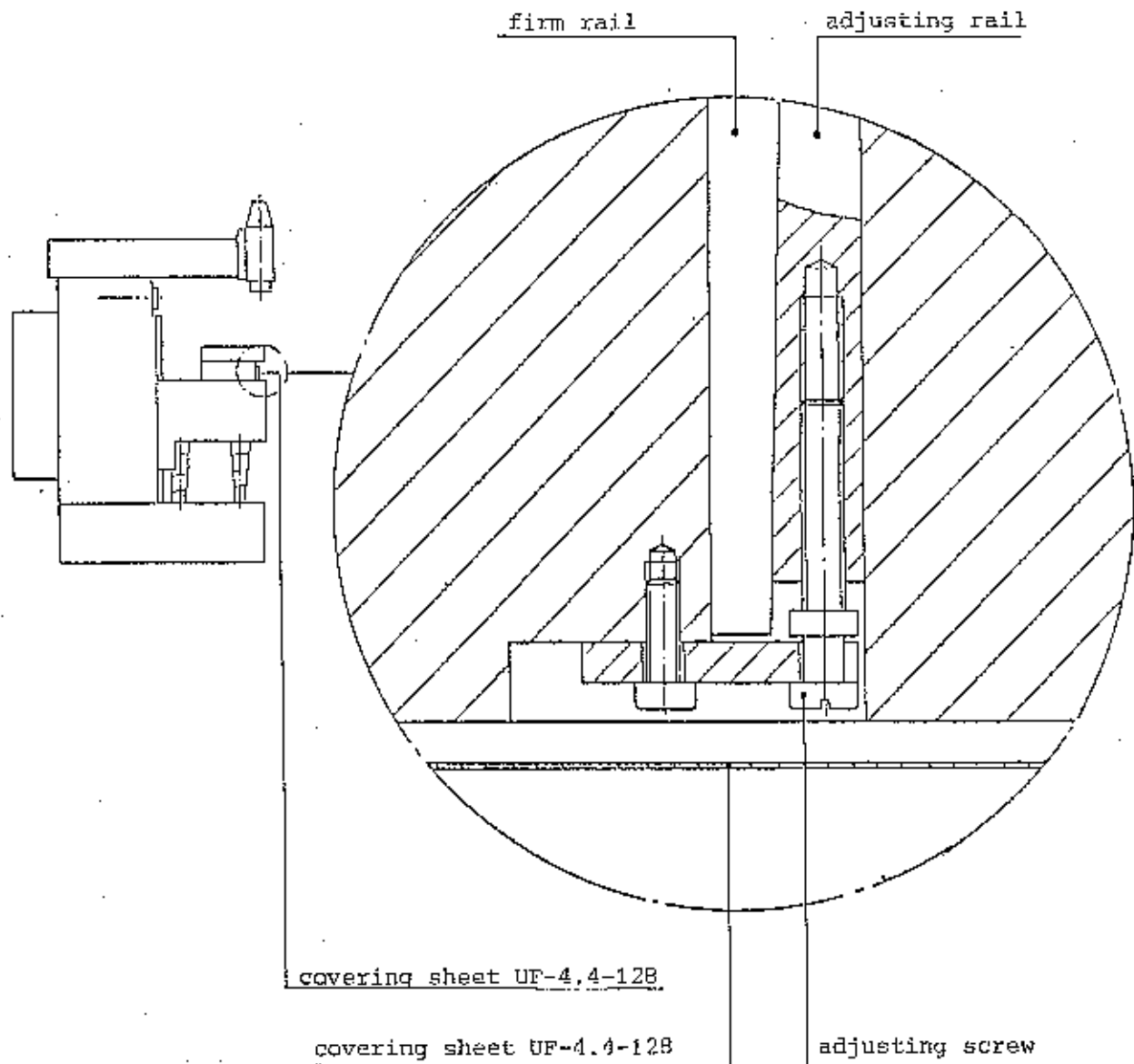
H central lubrication, hand-operated

A central lubrication, automatic

grease point	frequency of lubrication	type of lubrication	quantity of lubricants	lubricants	DIN 51502	notes
①	daily	oil lubricator nipple	3-4 strokes with the grease gun	CASTROL MAGNA BTH 68	C-LP 36	see page 30
②	yearly	oil change	0,65 litres	CASTROL VARIO HDX	C-LP 36	see page 30
③	yearly	oil change	0,50 litres	CASTROL VARIO HDX	C-LP 36	see page 43
④	yearly	oil change	3,00 litres	CASTROL VARIO HDX	C-LP 36	see page 43
H	daily	central lubrication hand operated	5-6 strokes	CASTROL MAGNA BDX 68	⬡	central lubrication only as additional equipment
A	electrical operated	central lubrication, automatic	capacity = 2,7 litres	oil for guide way		examine volume

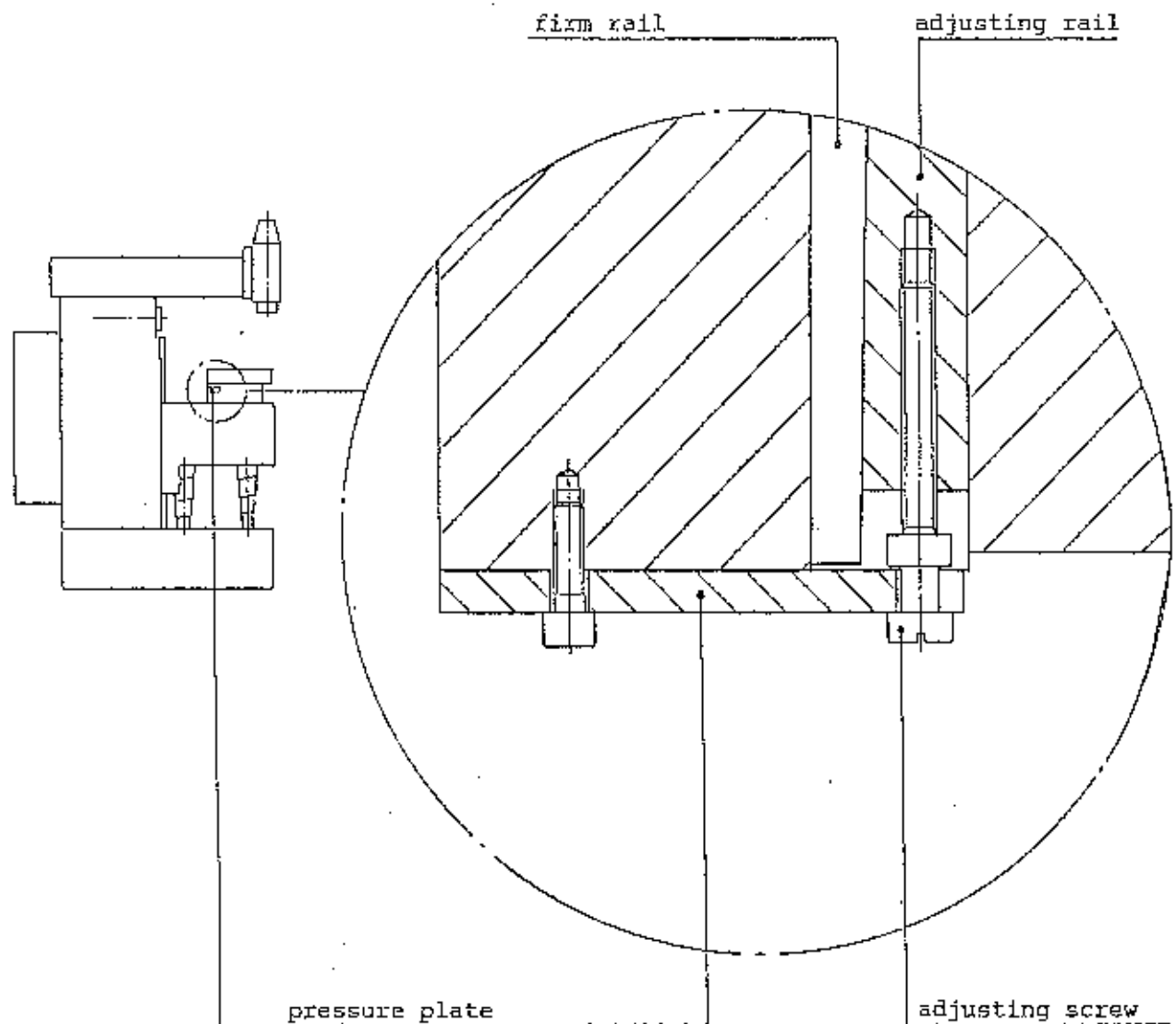


1. Take off the covering sheet UF-4.4-137.
2. Release the upper hex. screw M 12 x 80 and retighten it with approx. 10 kp at the ring spanner.
3. Release the second hex. screw M 12 x 80 from the top and retighten it well as well. Subsequently release all 5 screws from the top to the bottom and retighten them.
4. Remove the counter-screws M 12 x 16.
5. Slightly readjust the adjusting screws M 12 x 20.
6. Turn in again the counter-screws M 10 x 12 and retighten them.
7. Firmly tighten the hex. screw M 12 x 16.
8. Turning the vertical hand-wheel, you could check now the slide for easy running.



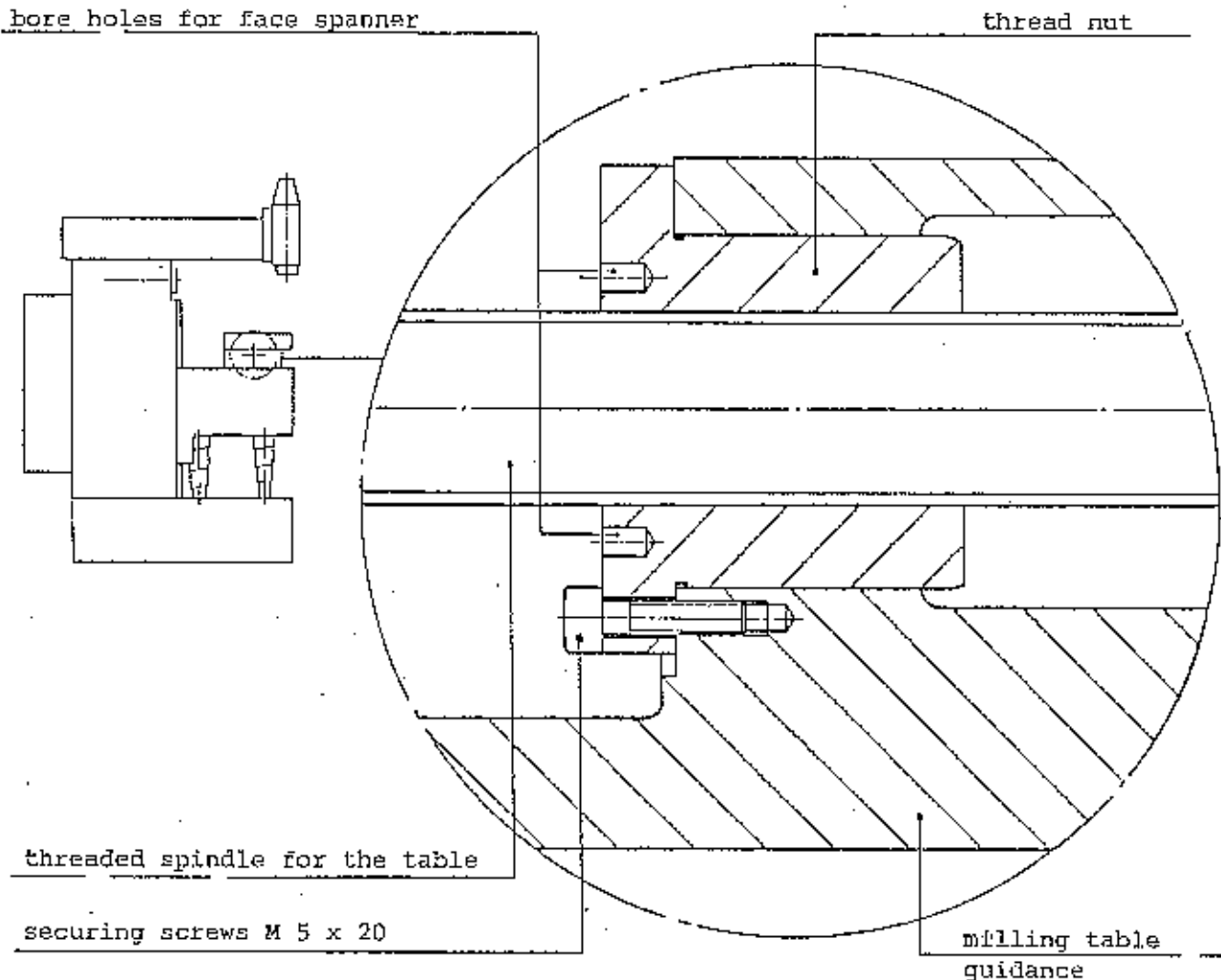
1. Remove the covering sheet UF-4.4-128 with felt.
2. Turn out the counter-screw M 5 x 45 with inner hexagon (it is mounted diagonally over the adjusting screw with slot).
3. Displace the adjusting rail against the firm rail, using the adjusting screw.
4. Counter again, using the inner hex. screw M 5 x 45.
5. While turning the cross hand-wheel, check the slide for easy running.

For readjustment of the cross rail, make sure not to press the rail against the rear covering sheet. If this would happen after repeated readjustments, shorten the rail at its rear end.



The readjusting attachment for the longitudinal rail is mounted laterally underneath the milling table at the left hand side of the milling table guidance.

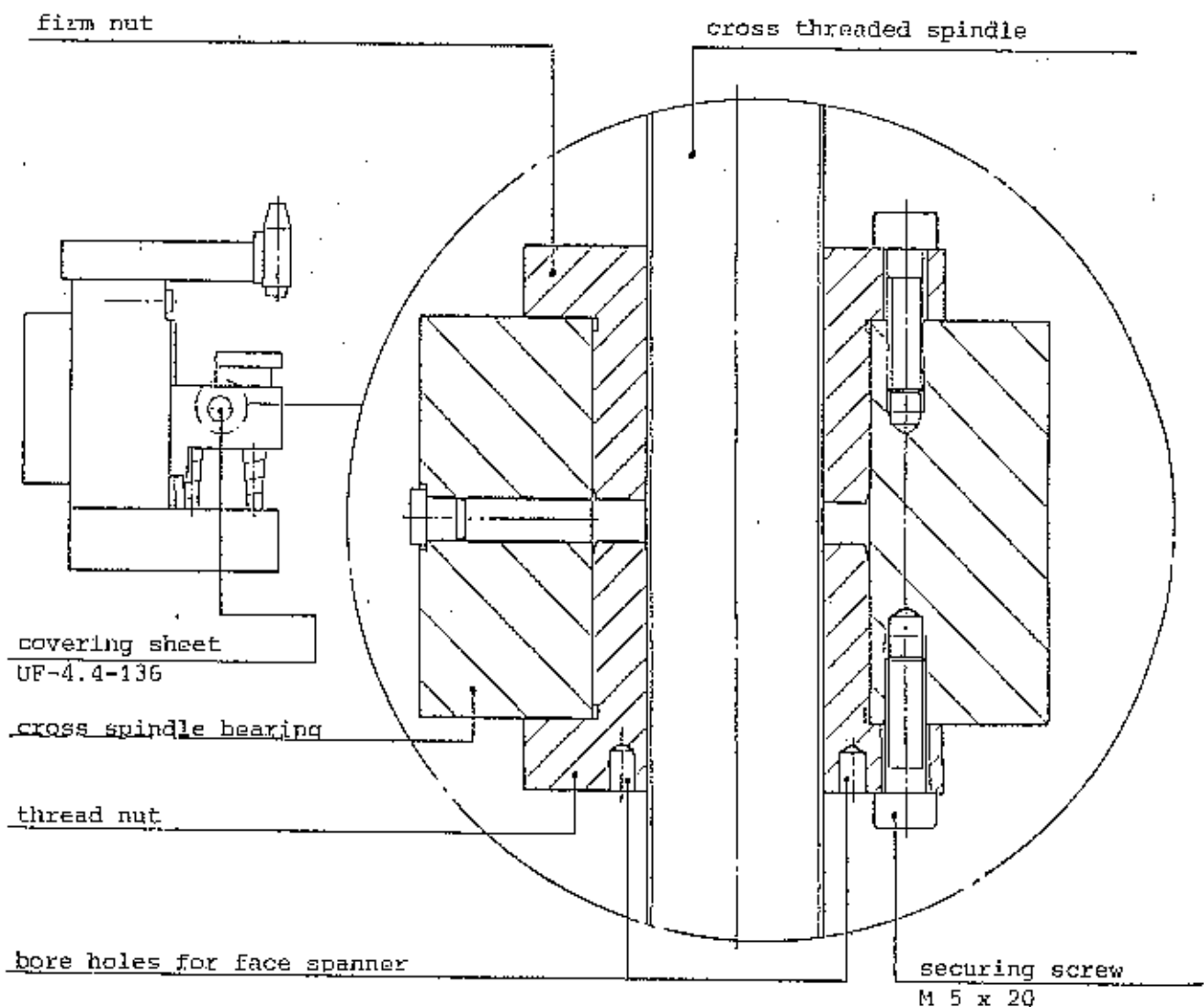
1. Turn out the counter-screw M 5 x 50 with inner hexagon (it is fitted diagonally over the adjusting screw with slot).
2. Displace the adjusting rail against the firm rail, using the adjusting screw.
3. Counter again, using the inner hex. screw M 5 x 50.
4. While turning the longitudinal hand-wheel, check the milling table for easy running.



The thread nut is installed in the table guidance underneath the milling table at the left hand side. The adjusting nut is directly accessible,

1. Release the securing screws M 5 x 20.
2. Readjust the thread nut by turning the face spanner.
3. Retighten firmly the securing screws M 5 x 20.
4. While turning the longitudinal hand-wheel, check the milling table for easy running.

When the oblong holes for the securing screws are used fully after repeated readjustings, it is possible to adjust the thread nut by means of the firm nut at the other side of the table guidance, allowing to reuse the oblong holes again.

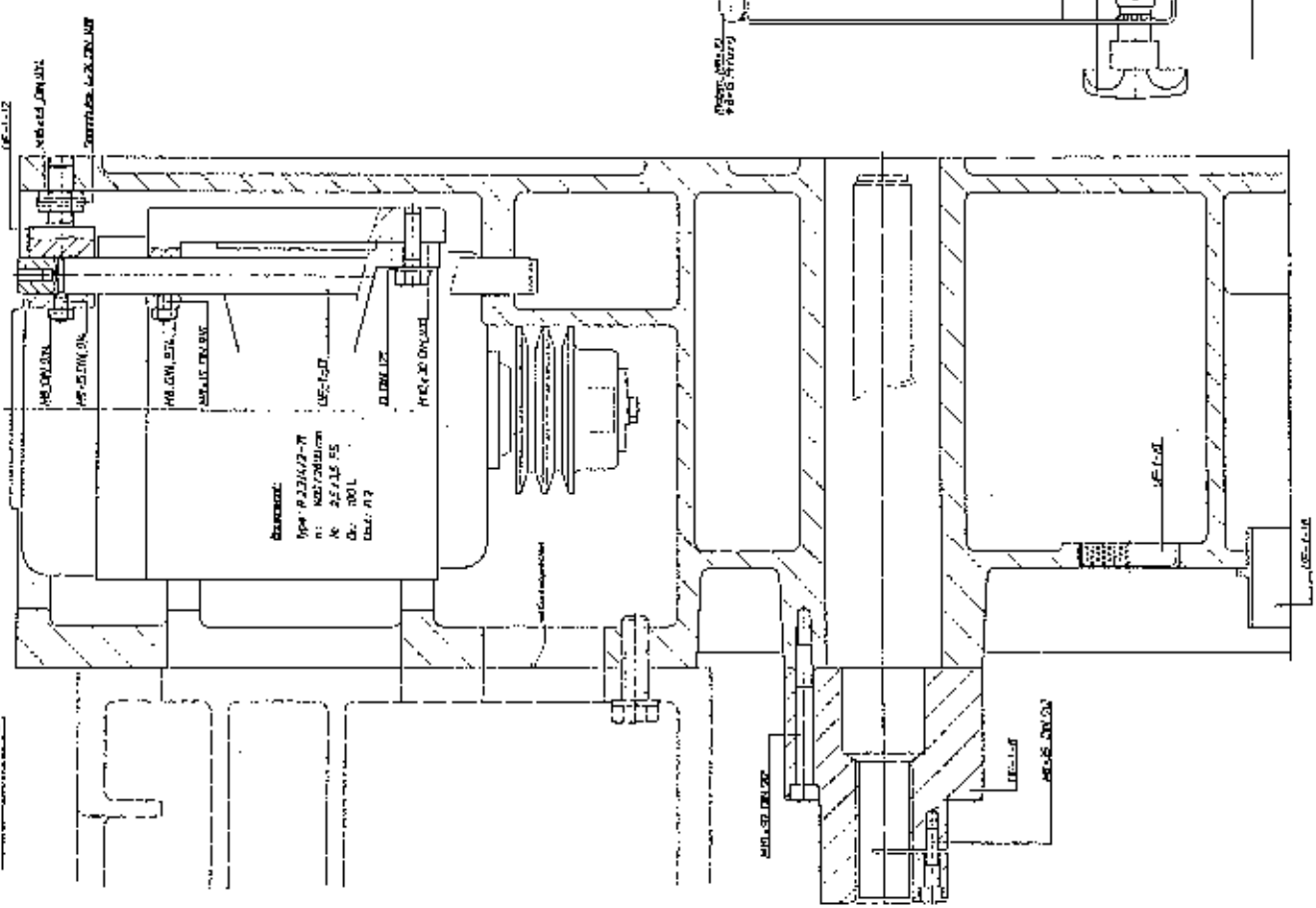


1. Remove the covering sheet UF-4.4-136 laterally at the bracket.
2. Turn the cross hand-wheel so as to adjust the cross bearing until it gets visible through the opening which is formed by this operation.
3. Release the securing screws M 5 x 20.
4. Readjust the thread nut by turning the face spanner. (The thread nut is also accessible from underneath in the corner bracket.)
5. Retighten the securing screws M 5 x 20.
6. While turning the cross hand-wheel, check the milling table for easy running.

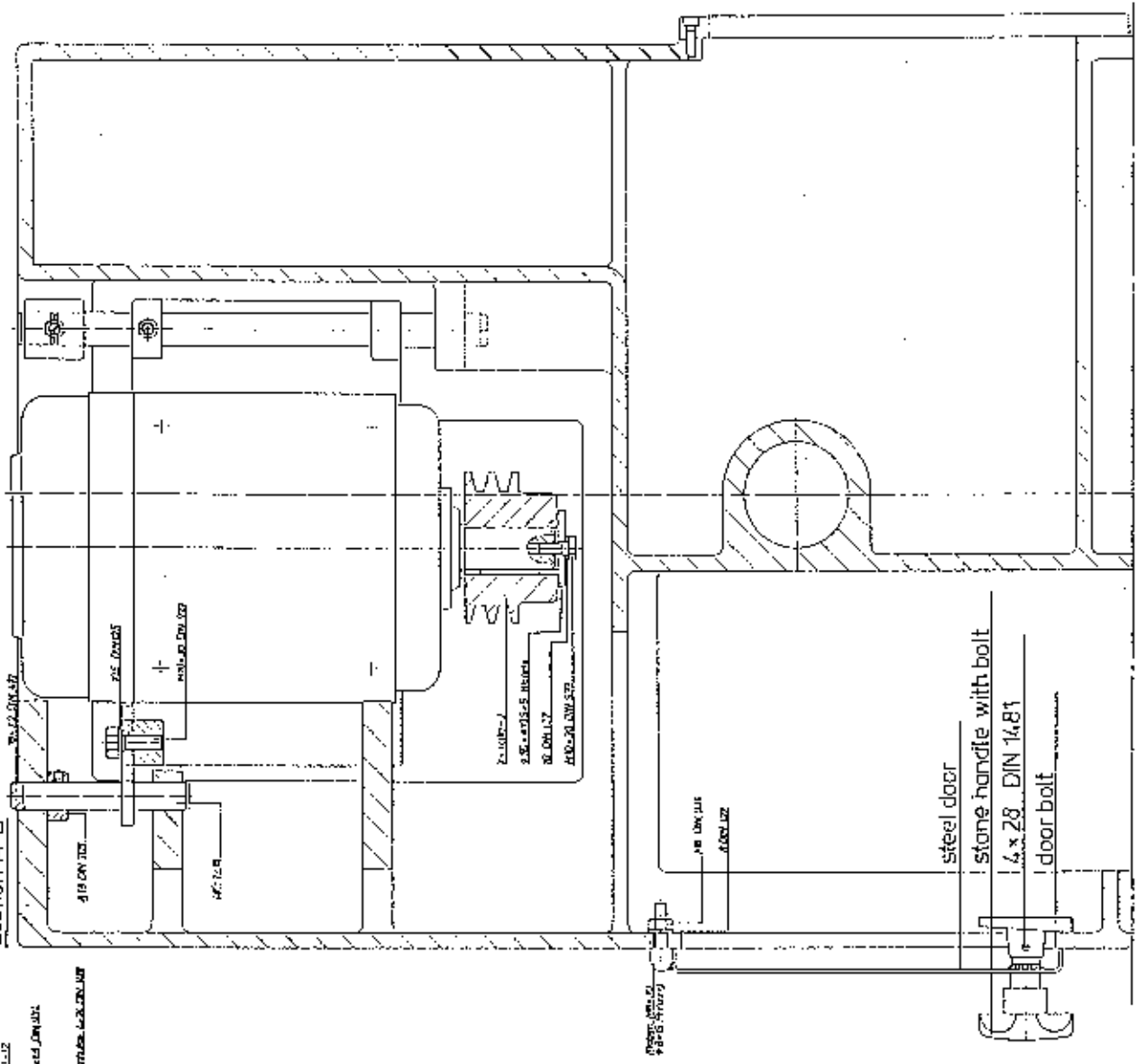
When the oblong holes for the securing screws are fully used after repeated readjustings, it is possible to adjust the thread nut by means of the firm nut at the other side of the cross bearing, allowing then to reuse the oblong holes again.

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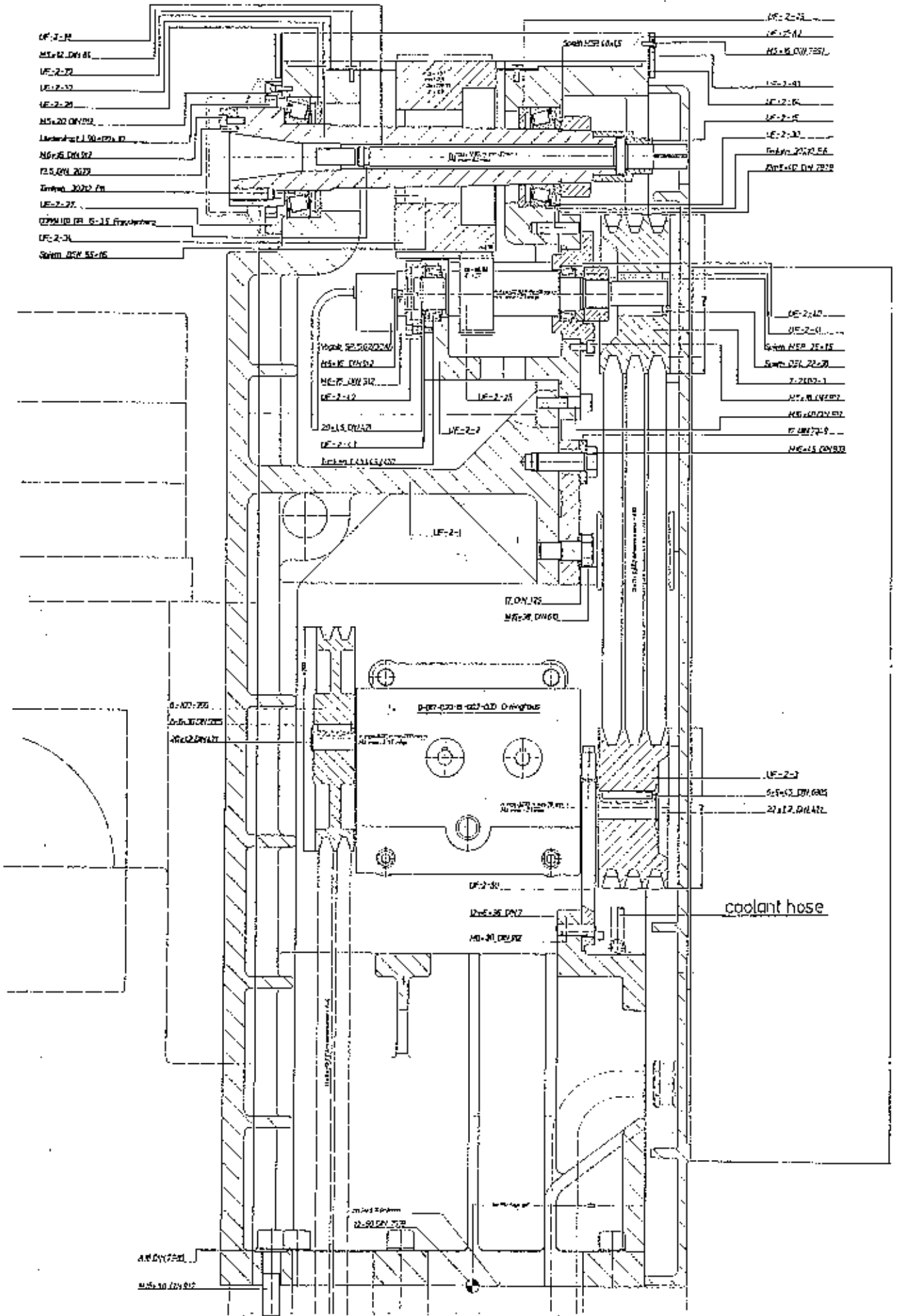
Section C-D



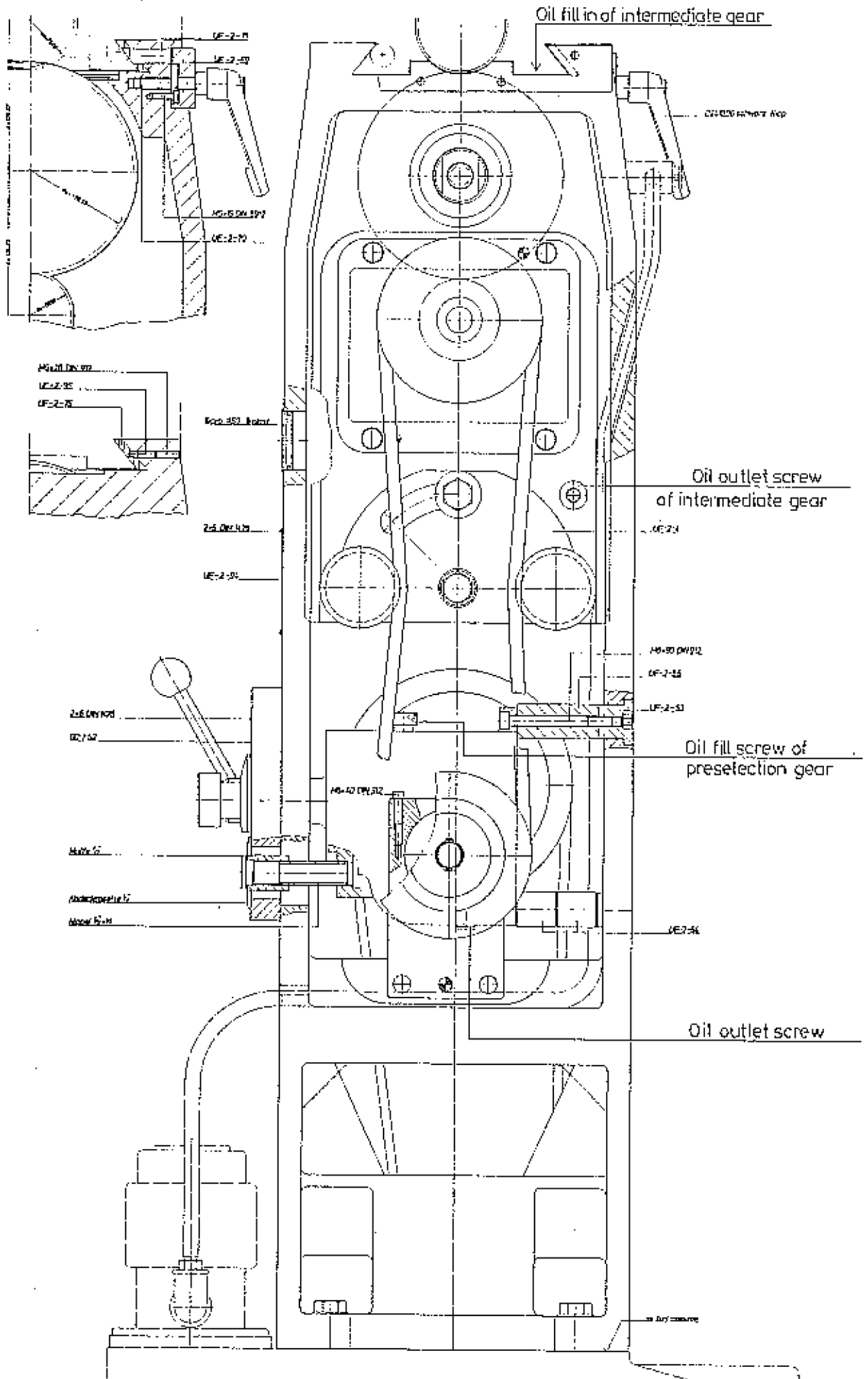
Section A-B



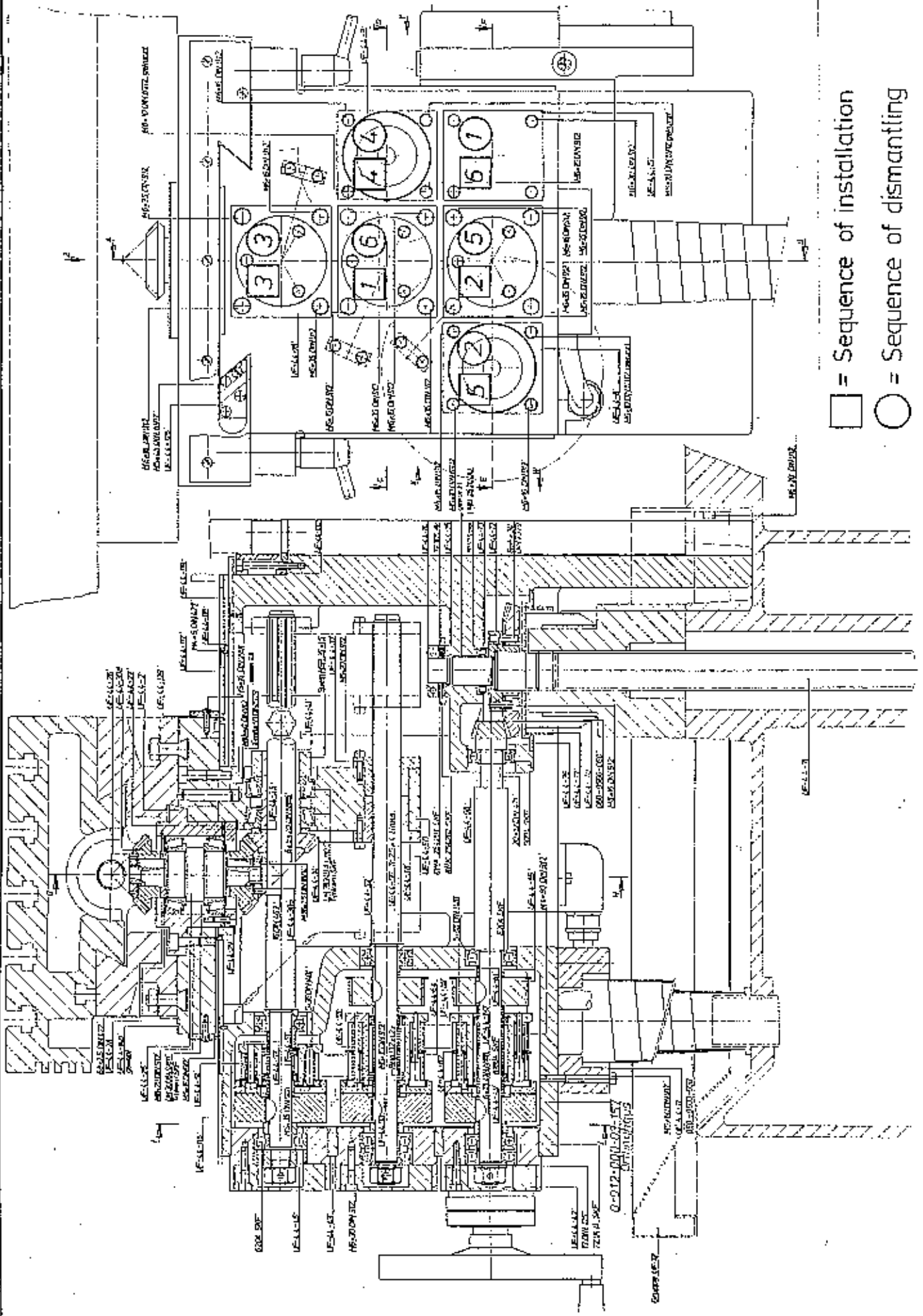
steel door
stone handle with bolt
4 x 28 DIN 1481
door bolt



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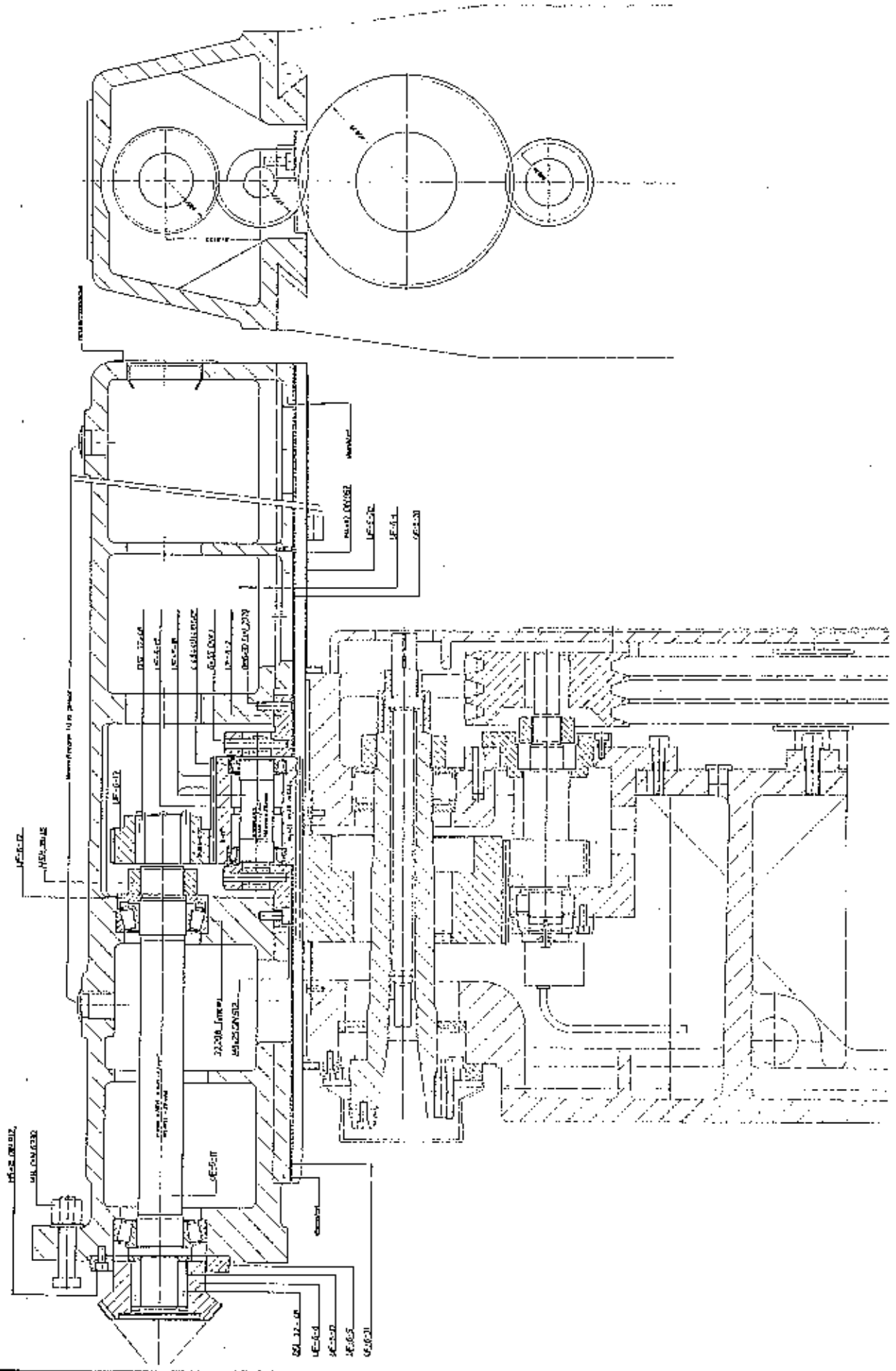


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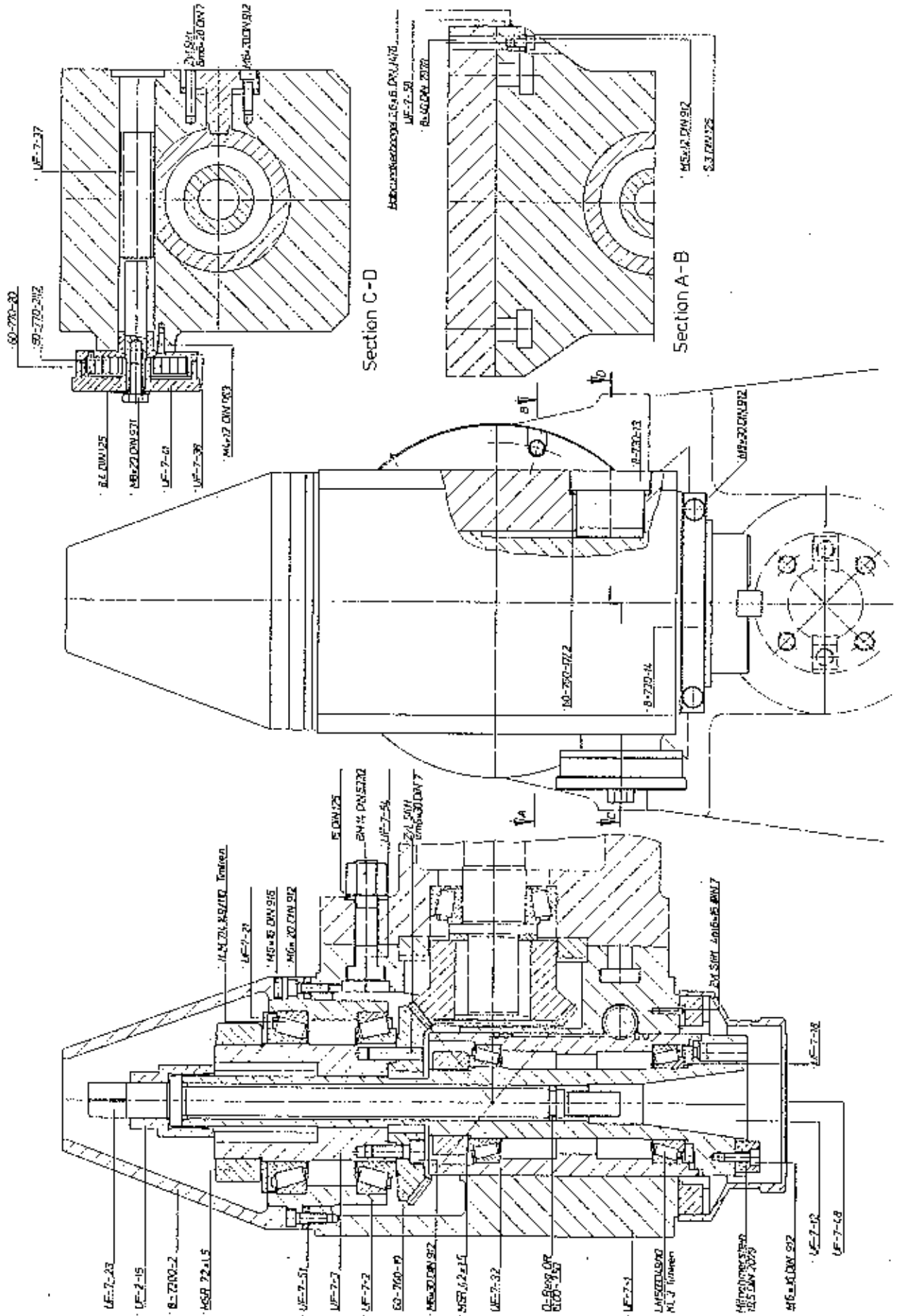


- = Sequence of installation
- = Sequence of dismantling

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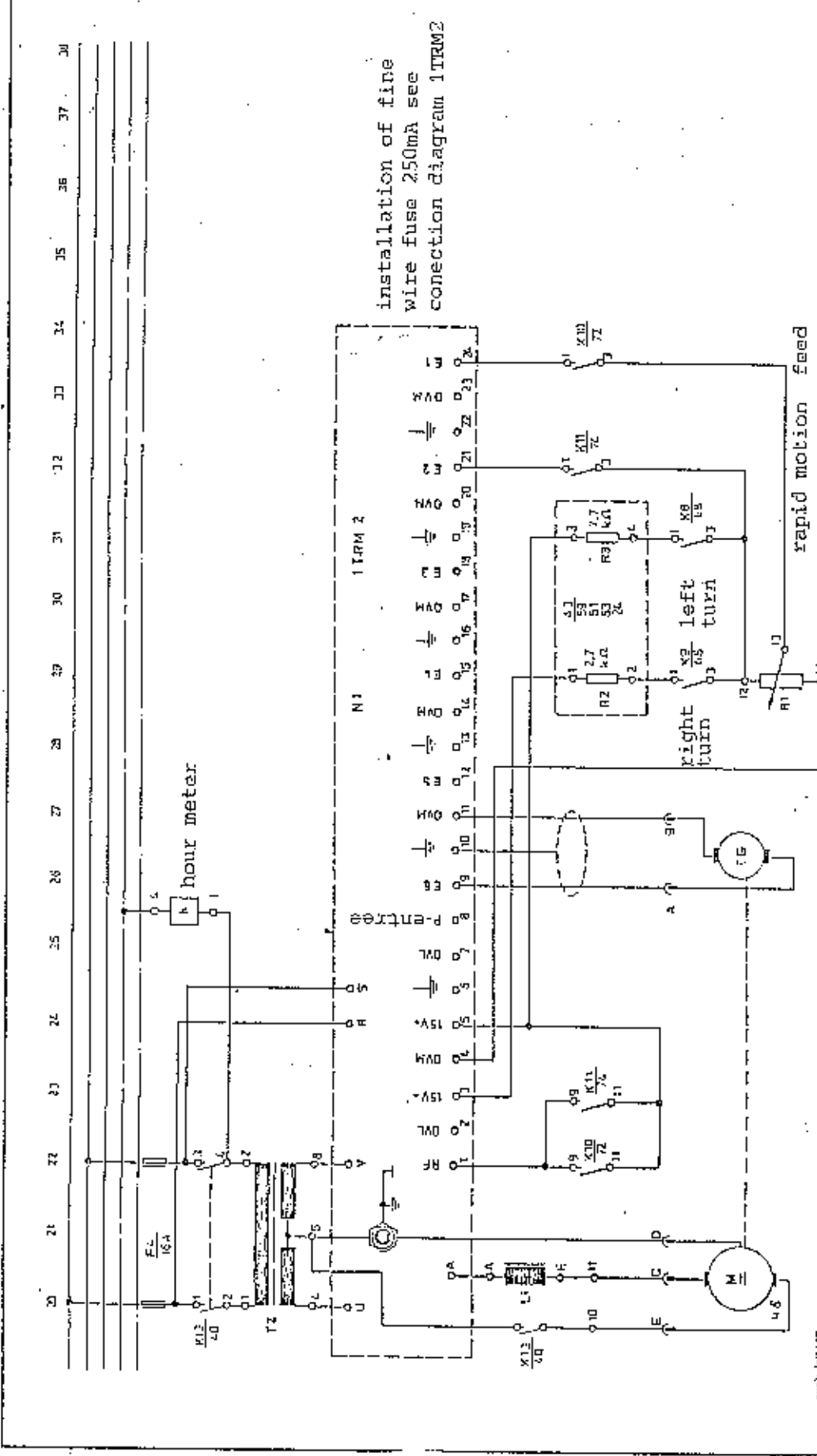


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20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38



installation of fine
wire fuse 250mA see
connection diagram 11RM2

- zahl. bezeichnung**
- 1 - emergency - off
 - 2 - milling cutter - off
 - 3 - feed - off
 - 4 - feed - on
 - 5 - right hand
 - 6 - backside
 - 7 - forward
 - 8 - stop
 - 9 - stop - on
 - 10 - stop - on
 - 11 - milling machine - on
 - 12 - rapid motion - on
 - 13 - with milling spindle loose
 - 14 - 16
 - 15 - 17
 - 16 - 18
 - 17 - 19
 - 18 - 20
 - 19 - 21
 - 20 - 22
 - 21 - 23
 - 22 - 24
 - 23 - 25
 - 24 - 26
 - 25 - 27
 - 26 - 28
 - 27 - 29
 - 28 - 30
 - 29 - 31
 - 30 - 32
 - 31 - 33
 - 32 - 34
 - 33 - 35
 - 34 - 36

- zahl. bezeichnung**
- 14 - left hand
 - 15 - right hand
 - 16 - crank - backward
 - 17 - crank - forward
 - 18 - stop
 - 19 - stop

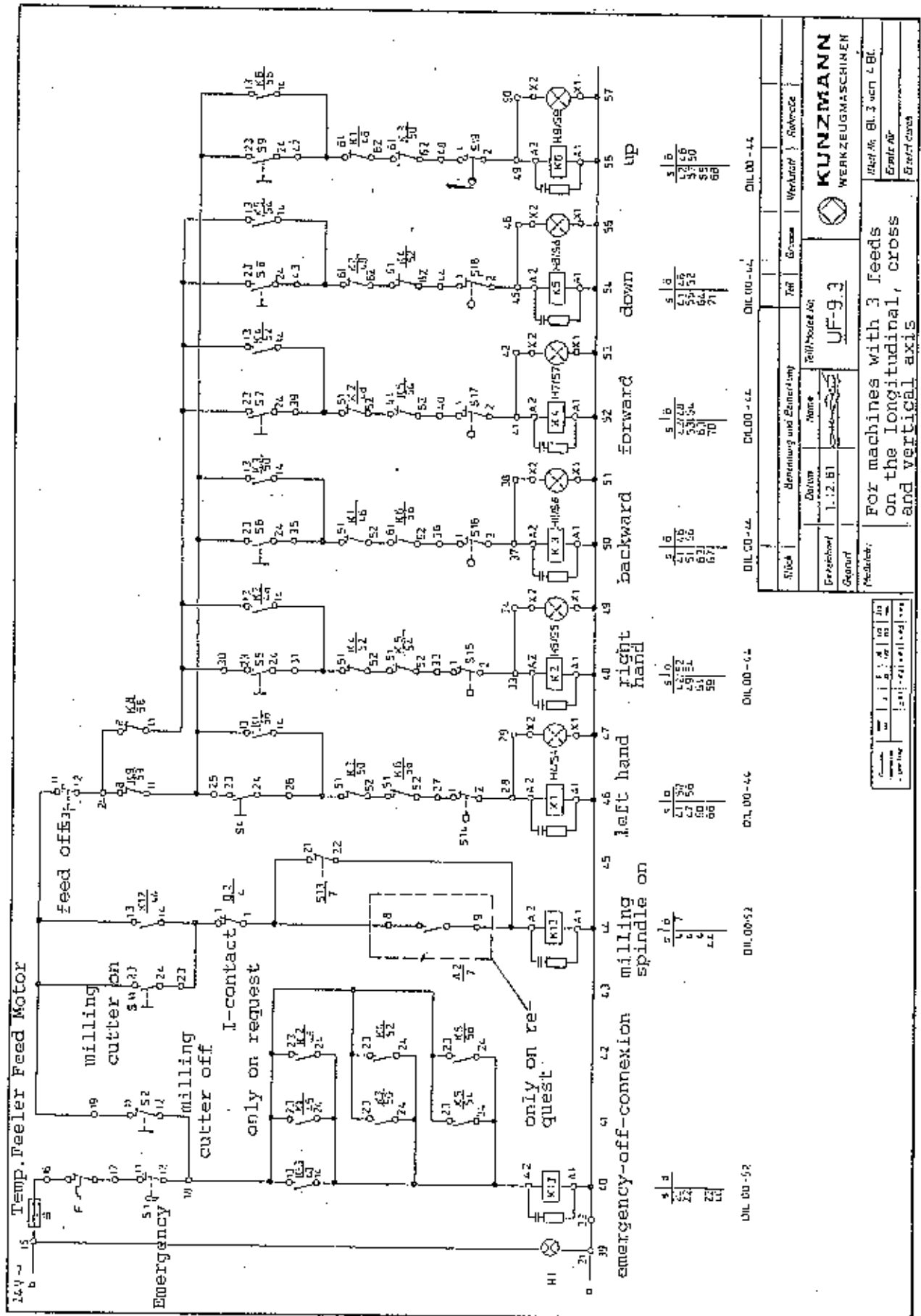
Zusatz	9.3	Gruppen	Werkzeugmaschinen	Abteilung	
Bezeichnung und Zeichnung	UF 9.3				
Gezeichnet	30.11.51	Werk	KUNZMANN WERKZEUGMASCHINEN		
Geprüft		Werkzeugmaschinen	UF 9.3		
Freigegeben		Für Maschinen mit 3 Feeds auf der Längs- und Vertikalachse			

Wiring diagram

UF 8/3

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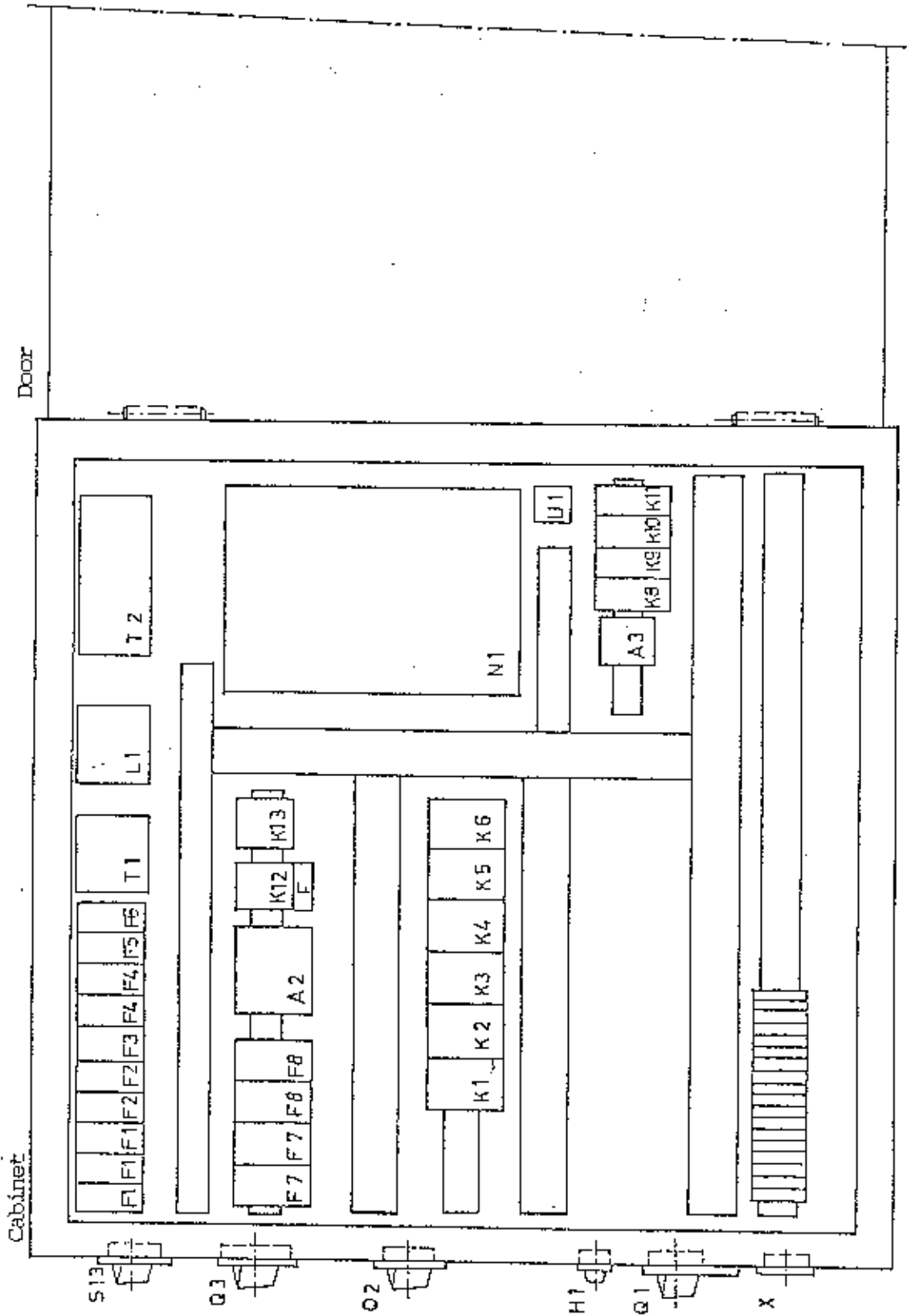
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KUNZMANN
WERKZEUGMASCHINEN

Maßstab: Bl. 3 von 4 Bl.
 Zeichner:
 Geprüft:

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List of electrical parts

UF8/3

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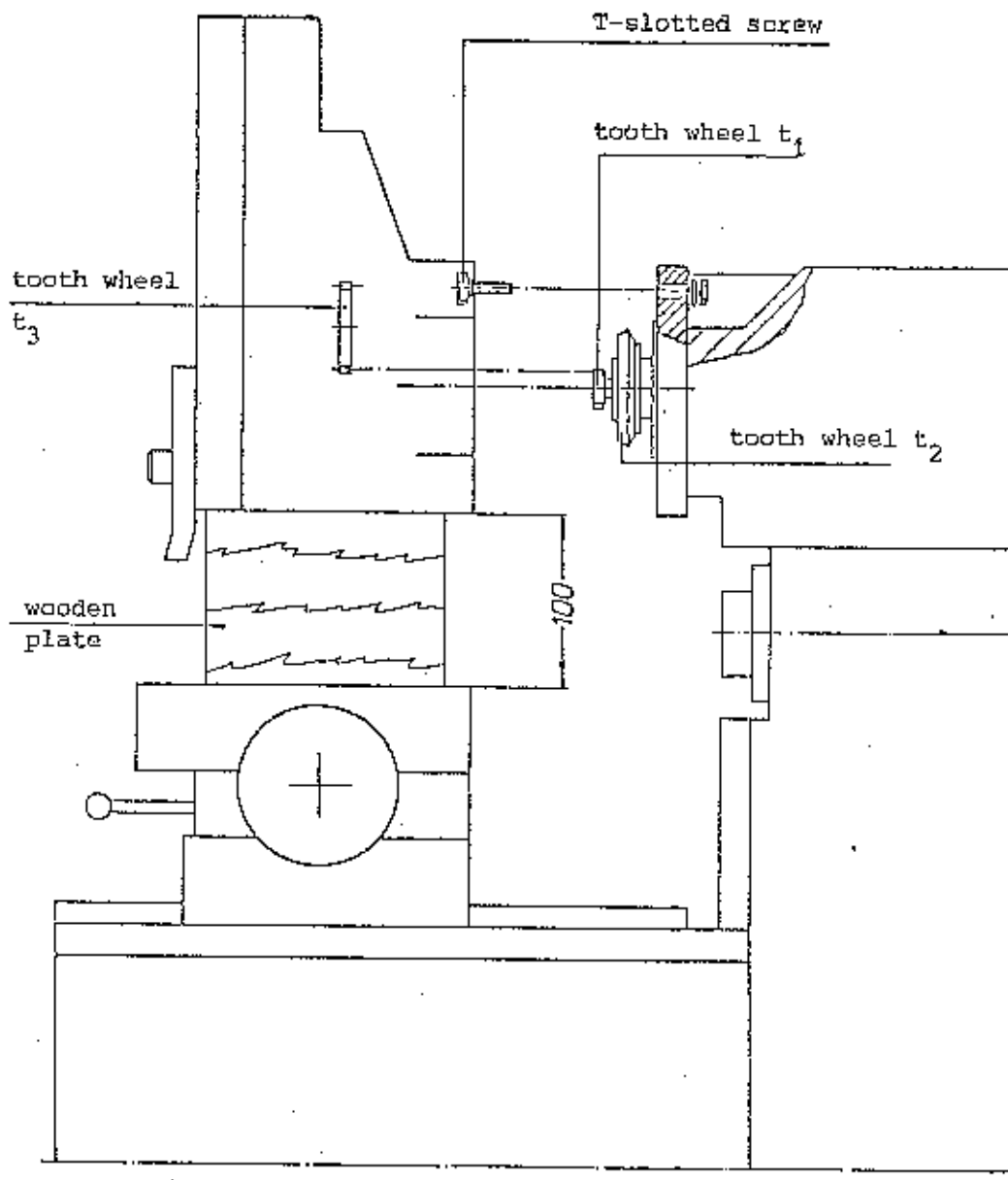
Q 1	Mains main switch	VN 16 A4 Fib/HS/3 S	Nr. 77210	ELEKTRA
Q 2	Switch for main motor	VN 16 WP Fib	Nr. 39628	ELEKTRA
Q 3	Coolant pump switch	M Fib / KA	Nr. 72208	ELEKTRA
S 1	Emergency-off push button	1Ö + 1S	DRANE 55 red	ELAN
S 3	Feed off push button	1Ö + 1S	DTANE red	ELAN
S 2	Milling cutter off push button	1Ö + 1S	DTANE red	ELAN
S 4	Direction push button	1Ö + 1S	DLEE white/white	ELAN
S 5	Direction push button	1Ö + 1S	DLEE white/white	ELAN
S 6	Direction push button	1Ö + 1S	DLEE white/white	ELAN
S 7	Direction push button	1Ö + 1S	DLEE white/white	ELAN
S 8	Direction push button	1Ö + 1S	DLEE white/white	ELAN
S 9	Direction push button	1Ö + 1S	DLEE white/white	ELAN
S 10	Feed on push button	1Ö + 1S	DLEE green/green	ELAN
S 11	Milling cutter on push button	1Ö + 1S	DTANE green	ELAN
S 12	Rapid motion push button	1Ö + 1S	DTANE yellow	ELAN
K 12	Contactor	24 V 50 Hz	DIL 00 M/22	Moeller
K 13	Contactor	24 V 50 Hz	DIL 00 M/22	Moeller
K 1	Contactor	24 V 50 Hz	DIL R 40/04	Moeller
K 2	Contactor	24 V 50 Hz	DIL R 40/04	Moeller
K 3	Contactor	24 V 50 Hz	DIL R 40/04	Moeller
K 4	Contactor	24 V 50 Hz	DIL R 40/04	Moeller
K 5	Contactor	24 V 50 Hz	DIL R 40/04	Moeller
K 6	Contactor	24 V 50 Hz	DIL R 40/04	Moeller
K 8	Relais	24 V =	RN 301024	Schrack
K 9	Relais	24 V =	RN 301024	Schrack
K 10	Relais	24 V =	RN 301024	Schrack
K 11	Relais	24 V =	RN 301024	Schrack

List of electrical parts

UF 8/3

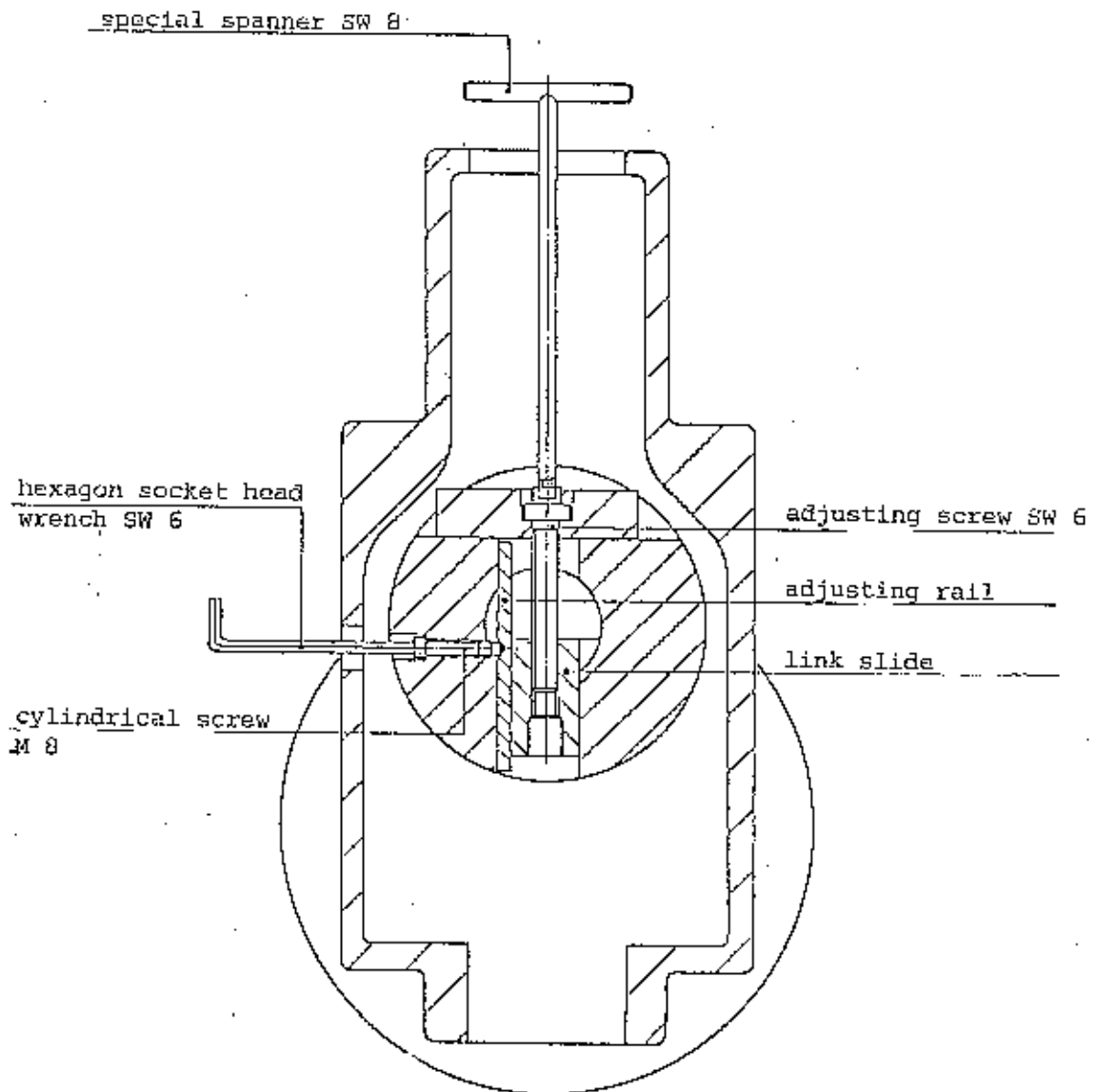
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F 1	Fuses Neozed	16 A	Siemens
F 2	Fuses Neozed	4 A	Siemens
F 3	Fuses Neozed	6 A	Siemens
F 4	Fuses Neozed	16 A	Siemens
F 5	Fuses Neozed	4 A	Siemens
F 6	Fuses Neozed	2 A	Siemens
F 7	Sililized superflink	16 A	Siemens
F 8	Sililized superflink	16 A	Siemens
F 1E	Bi-Relais	ZO - 12	Mbeller
H 1	Lamp	Art.Nr. 3.721.010.00/Art.Nr. 3.700.367.09	Schiele
T 1	Control transformer	NTR - P - 1443 165 VA	Pech
T 2	Control transformer	WEM BV 21047 prim. 380 V sek. 2 x 120 V 2 kVA	Gass
M 5	Coolant motor	380 V 0,10 kW T25/270	Brinkmann
M 6	Feed motor	MDC 10,10H / MS - 0/SO 2	Indramat
M 4	Main motor	380 V 50 Hz 2,6/3,2 kW R3/4/2-75	Bauknecht
L 1	Inductance for servo-amplifier	WEM BV 17 986 GJD 2	Gass
U 1	Selenium-Rectifier	B 50/40 - 1,2	Herrmann
R 2	Resistance	2,7 kOhm 0,5 W	
R 3	Resistance	2,7 kOhm 0,5 W	
N 1	Servo-Amplifier	TRM 2 Modul TSS 7/011	Indramat
A 2	Milling brake	Type: P 4 B/ 3 NK / 15A / 220 / 380 V	Pilz
R 1	Potentiometer	10 K + FN 121	Preh
	Varistor	S 14 K 150	Siemens
	Wall socket	2-polig 16 A	Stecker-Technik
	Glow lamp	30 V 0,08 Amp. BA 9 S	
h	Working hour counters	UWZ 48	Grässlin



1. Release the nuts on the back stop flange holding the vertical milling head and take it off.
2. Fix the tooth wheel t_1 by means of a cylindrical screw M 8 x 50 DIN 912 (in addition use a spring ring A 8 DIN 127) and three cylindrical pins 6 x 6 x 24 DIN 7 on tooth wheel t_2 .
3. Put the slotting head with the incorporated T-slotted screws on the milling table (wooden plate approx. 100 mm of thickness) and move it forward to the back stop flange.
4. Press the slotting head to the back stop, put the T-slotted screws through the bore hole and tighten with the nuts.

Tooth wheel t_1 and t_3 are engaged, the slotting head is ready for operation.



Stroke adjustment at the slotting head:

1. Adjust the percussion slide until the adjusting spindle with the special spanner SW 8 gets visible through the lateral bore hole at the slotting head.
2. Release the cylindrical screw M 8 by means of the hexagon socket head wrench SW 6. (The adjusting rail is set free).
3. It is possible to adjust the stroke length by means of the special spanner SW 8 by regulating the link slide.
4. After having adjusted the stroke length, retighten again the cylindrical screw M 8.