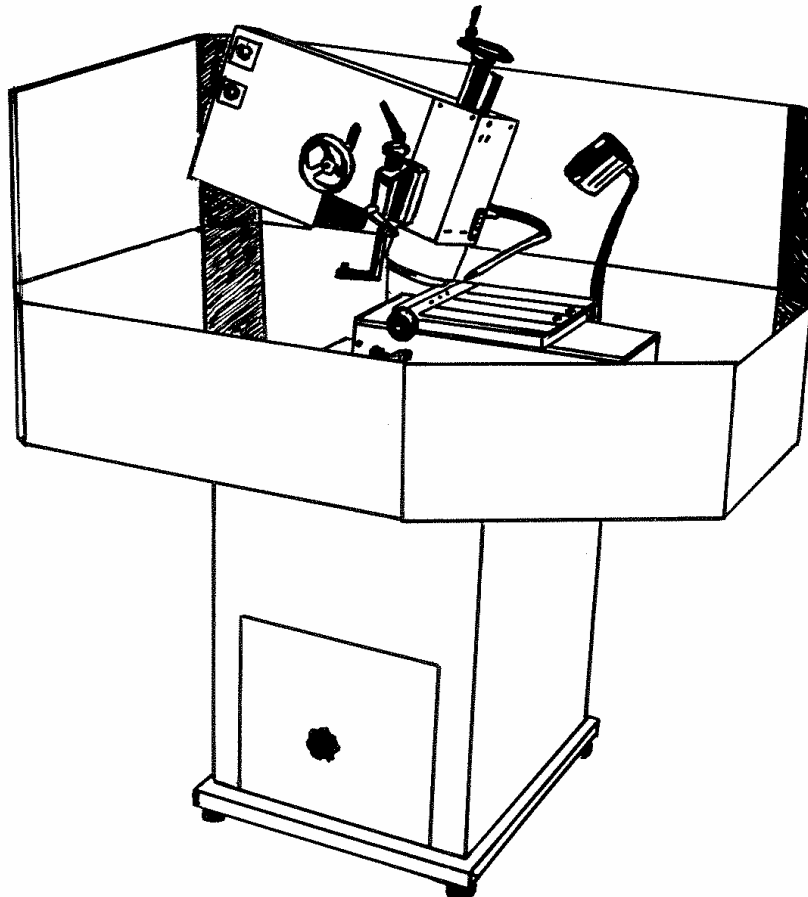


Operating Instructions

KRK 100





**EC DECLARATION OF CONFORMITY
IN COMPLIANCE WITH THE EC MACHINERY DIRECTIVE 89/392/EEC,
ANNEX II A**

We hereby confirm that due to its design and construction and in the type marketed by us the machine designated below conforms with the pertinent essential safety and health requirements of the relevant EC Directive(s).
In case of a modification of the machine which is not agreed with us, this declaration is no longer valid.


Designation of the machine:	Grinding Machine
Type:	KRK 100
No. of manufacturer:	see machine identification label
Pertinent EC Directives:	EC Machinery Directive (89/392/EEC) version 91/368/EEC and e. g. EC Low-Voltage Directive (73/23/EEC) EC Electromagnetic Compatibility Directive (89/336/EEC) version 93/31/EEC
Used harmonized standards, especially:	(e. g. EN 292-1 and EN 292-2; EN 60204-1)
Used national standards and technical specifications, especially:	(Rules valid in Germany until 31.12.1992, e. g. VDI 2854, VBG 1, VBG 5)
Date, signature of manufacturer:	Knecht Maschinenbau GmbH
	Jan. 1995
Information on the signer:	 Manfred Knecht Company President

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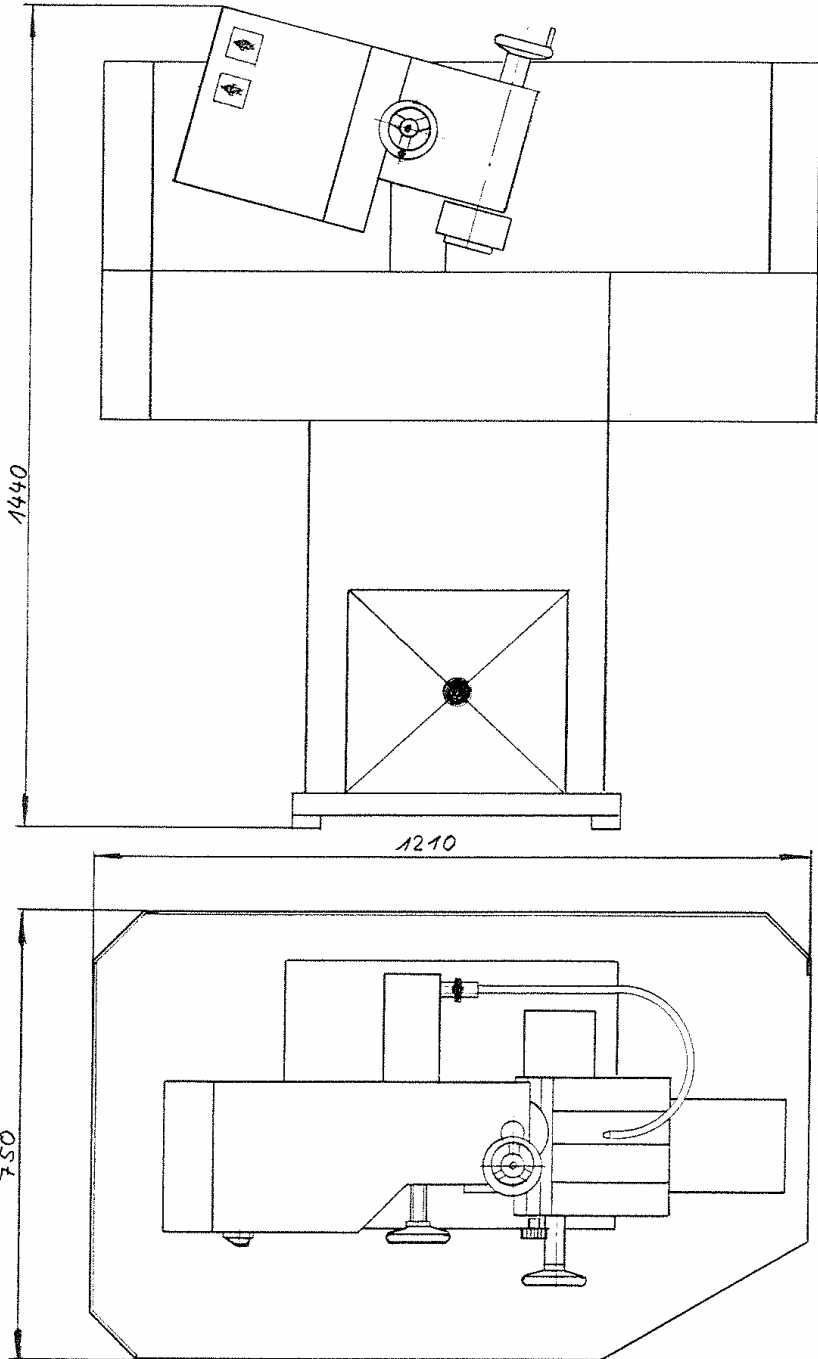
- 12. Grinding of Ring Knives

Care and Maintenance
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- 13. Lubrication
- 14. Cleaning
- 15. Lubrication Chart

In the annex: spare parts list.

KNECHT Maschinenbau	Projekt	KRK 100	Schlüssel	
	Benennung	Dimension Sheet	Datum	10. Feb. 87
Werkstoff/Rohteil			Name	<i>Ken.</i>
			Teil-Nr.	
			Maßstab	1:100
		Vorrichtungen		
		von Nr.	bis Nr.	



Technical Description

=====

2. Erection of Machine

2.1 Packing

The machine is shipped on a sturdy pallet. First take the top off the pallet. After removing the tie bolts on the base of the pallet, the machine can be lifted down.

2.2 Erection

The machine requires a horizontal, flat place to stand on. It can be easily adjusted by altering the machine legs.

2.3 Technical Data

Height	1440mm	
Width	1210mm	
Depth	750mm	
Weight	100kgs	
Max. grinding wheel diameter	400mm	15.8"
Grinding wheel speed	4200 RPM	
Grinding motor	1.1 kW	
Cooling water pump	0.2 kW	
Amperage	3.42 amps.	
Connected load	1.3 kW	
Back-up fuse	16 amps.	

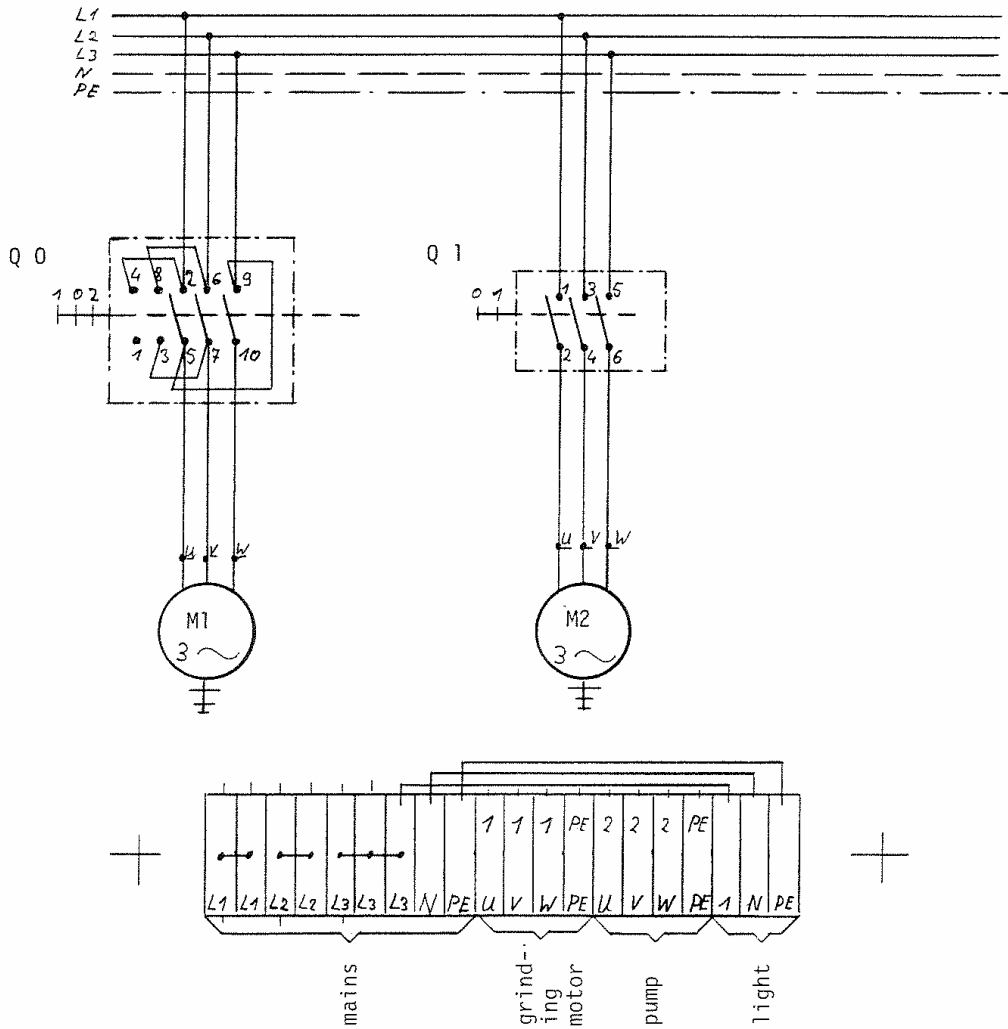
3. Electrical Connection

The machine should only be connected by an electrician.

3.1 Direction of Rotation

The direction of rotation must conform to the arrows on the front of the grinding unit. It is to be checked by briefly switching on the machine.

KNECHT Maschinenbau	Projekt KRK 100	Schlüssel	
	Benennung Circuit Diagram	Datum 27.2.87	Name W/G
Werkstoff/Rohteil	Vorrichtungen		Teil-Nr.
	von Nr.		bis Nr.



- List of units:
- Q0 = reversing switch T0-3-8401
 - Q1 = "ON" switch T0-2-1-2
 - M1 = 1.1 kw motor
 - M2 = cooling water pump

3.3 Key to Units

ITEM DESIGNATION CODE (IEC 113-2 and DIN 40719/2)					
Place/Group No. = Page No.	Item Code Letter	Numbers	Function Letter		
01) superior groups	A	0	Stop controls	A	Switch off (EMERGENCY STOP)
02) with initial	B	1	Start controls	E	Switch on (limit switch contact multiplication)
03) "g" number	C	1	Direction 1	M	Switch power (motor/power contactors)
1) Group numbers	D	2	Direction 2	R	Store permanently (latched auxiliary contactor)
2)	E	3	Star point	T	Slow down (time delay relay)
3)	F	4	Positions		
A1) A special fitting	G	5	Delta		
B2) location precedes	H	1a	or consecutive		
C3) the group no.	I	2a	Parallel-connected items are given		
	J	3b	small additional letters		
	K				
	L				
	M				
	N				
	O				
	P				
	Q				
	R				
	S				
	T				
	U				
	V				
	W				
	X				
	Y				
	Z				

4. Grinding Means

Only the grinding means supplied by us are allowed to be used as otherwise we can no longer guarantee the operating reliability of the machine.

The following grinding means are fitted to the machine:

Grinding Wheel

Material	blue special fused alumina			Workpiece feed	
				by hand	with support
Dimensions	100Øx60x40Ø recess 80x50		Permissible speed	5730 RPM	6680 RPM
Grade	Hardness	Bond	Max. speed	m/s	m/s
40	J	ceramic		30	35
Checked according to Section 3 of the Accident Prevention Regulations VBG 7n6					

Material				Workpiece feed	
				by hand	with support
Dimensions			Permissible speed	RPM	RPM
Grade	Hardness	Bond	Max. speed	m/s	m/s
Checked according to Section 3 of the Accident Prevention Regulations VBG 7n6					

Material				Workpiece feed	
				by hand	with support
Dimensions			Permissible speed	RPM	RPM
Grade	Hardness	Bond	Max. speed	m/s	m/s
Checked according to Section 3 of the Accident Prevention Regulations VBG 7n6					

Material				Workpiece feed	
				by hand	with support
Dimensions			Permissible speed	RPM	RPM
Grade	Hardness	Bond	Max. speed	m/s	m/s
Checked according to Section 3 of the Accident Prevention Regulations VBG 7n6					

5. Control Parts

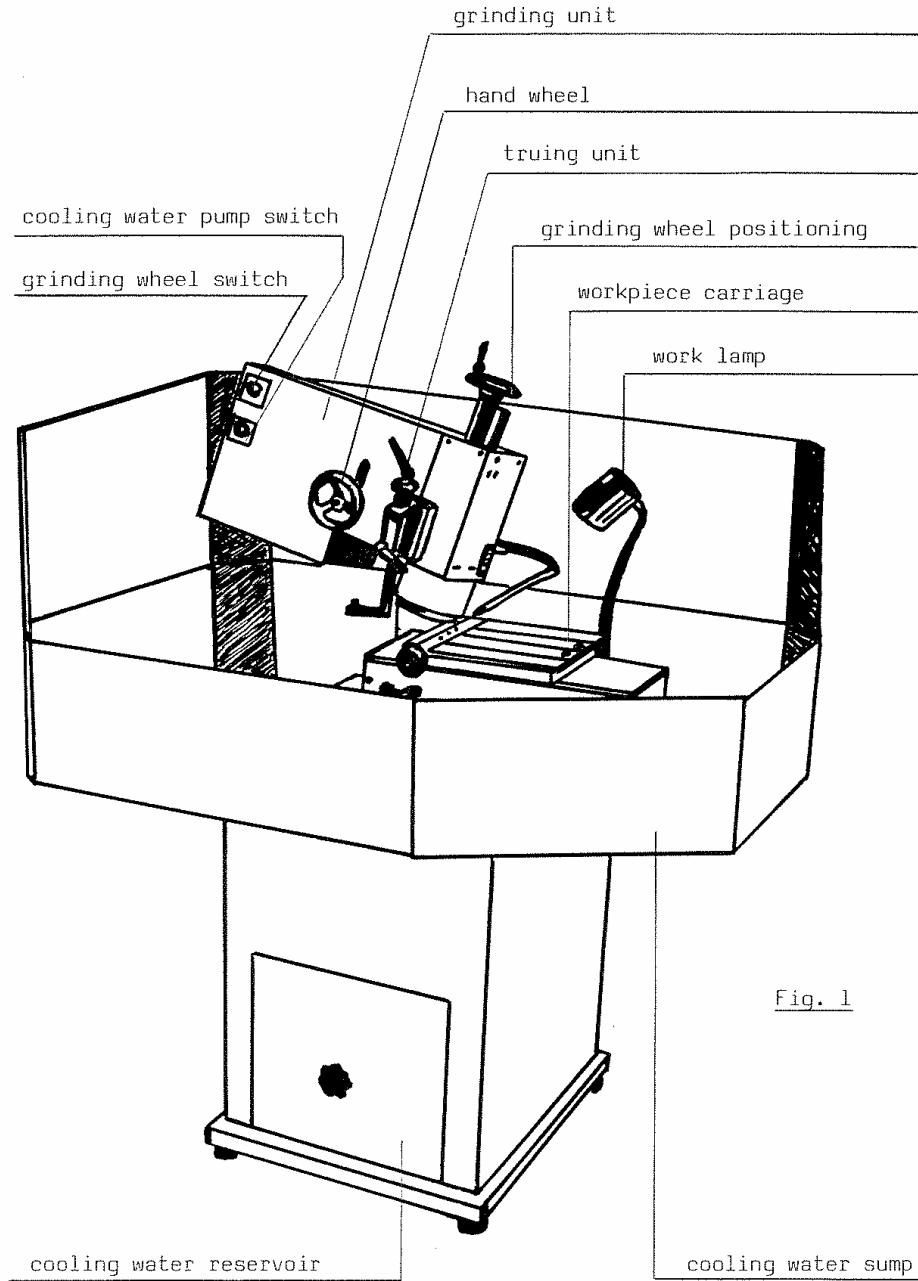


Fig. 1

6. Grinding Wheel Drive

6.1 Design

The grinding drive is arranged as a swiveling unit.

The drive is transmitted to a tapered hub via a V-belt.
The teeth on the hub transfer the force to the grinding spindle.

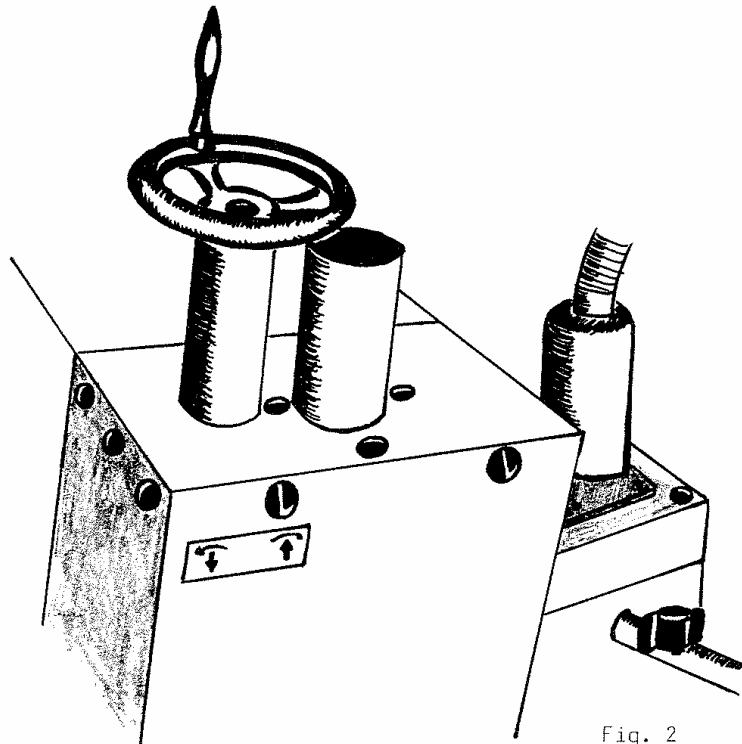


Fig. 2

6.2 Grinding Wheel Positioning

The grinding spindle is mounted in a tailstock sleeve. A hand wheel (Fig. 2) enables the grinding wheel to be fed to the workpiece.

6.3 Changing the Grinding Wheel

The grinding wheel is mounted on a flange by three screws.

To change the grinding wheel, undo these screws by a hexagonal socket head wrench (SW 5) by reaching into the grinding cup from below.

7. Sliding Table

7.1 Control Parts

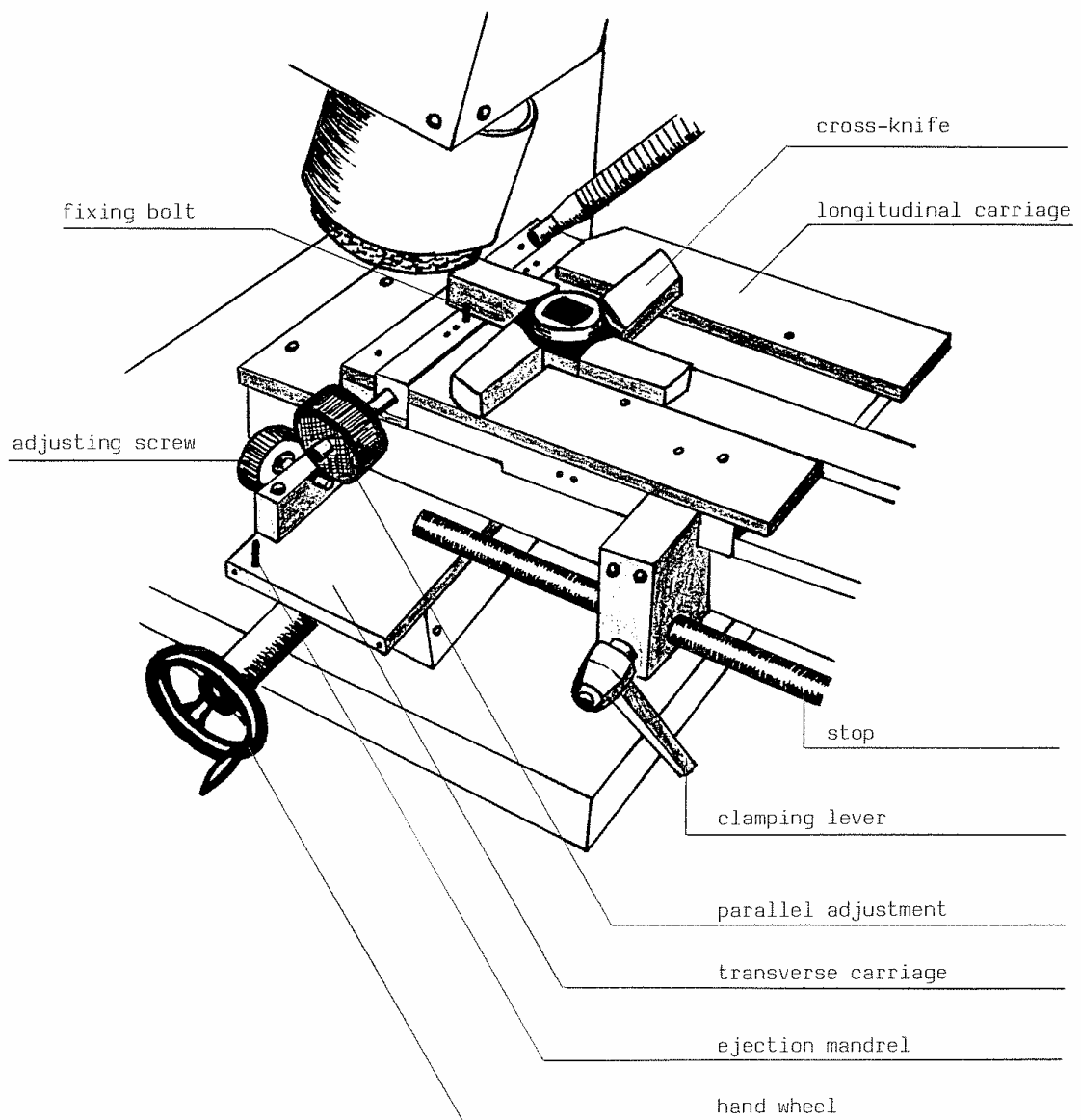


Fig. 3

7.2 Design

The sliding table is for holding the workpiece. It consists of the longitudinal and transverse carriages.

Both tables are mounted in profiled rollers with anti-friction bearings on round guides.

7.3 Workpiece Carrier

The cross-knives are held by centering pieces. There is a centering piece marked accordingly to fit every knife size.

The knife is secured by the fixing bolt to prevent the knife from turning (Fig. 3).

8. Cooling Equipment

8.1 Design

The cooling water is fed to the grinding wheel by an immersion pump (Fig. 4). The cooling water pump is controlled separately.

8.2 Cleaning

We recommend changing the cooling water at weekly intervals. To change, undo the two cross handles on the pump flange (Fig. 4). The pump can now be removed and the cooling water reservoir emptied.

8.3 Cooling Water Additive

A rust inhibitor coolant additive must be added to the cooling water (see lubrication chart 15).

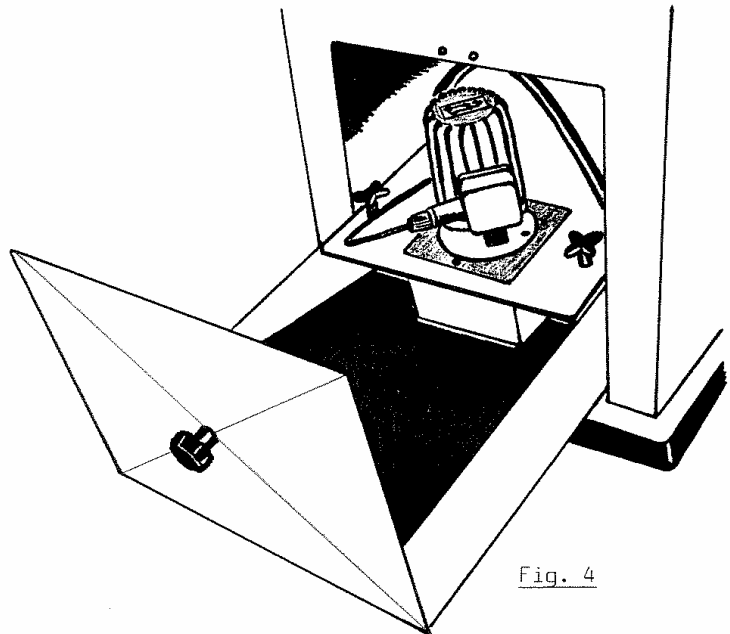


Fig. 4

9. Travel Stop

Owing to the various shapes and sizes of workpieces, the length of longitudinal carriage travel must be limited.

The travel stop serves this purpose (Fig. 5). The rough setting is done by moving the stop rod. The fine setting of the stop is done by the regulating screw.

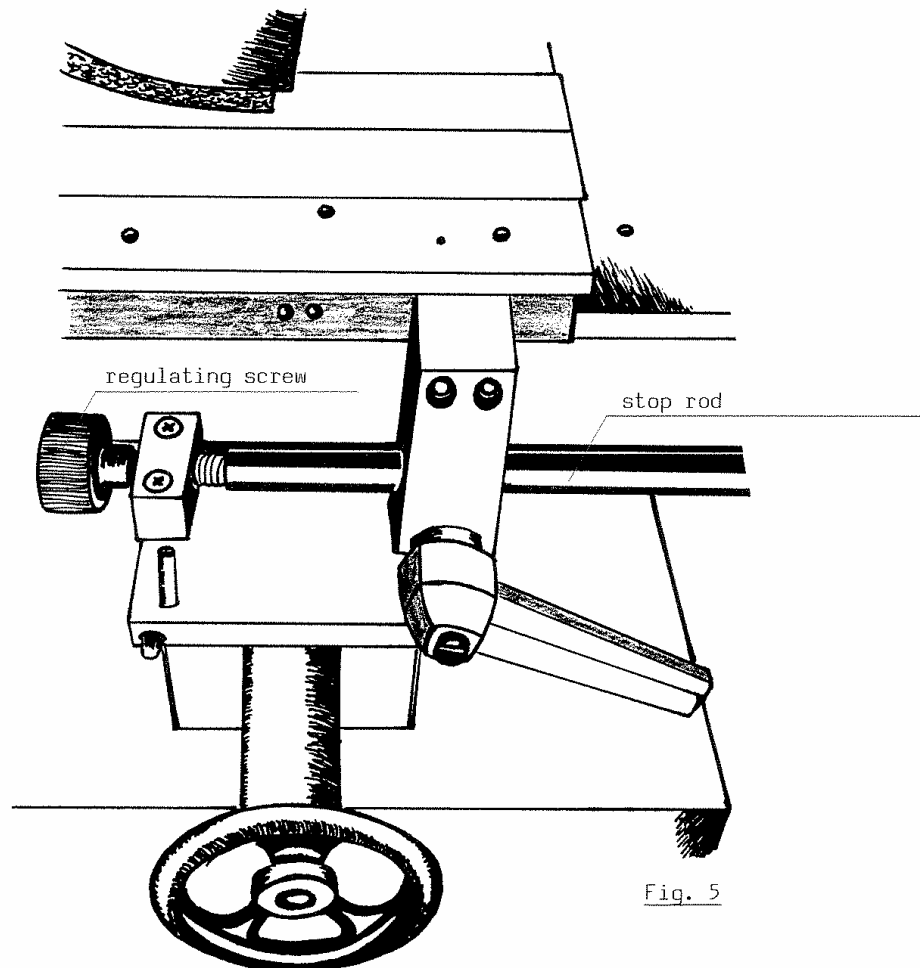


Fig. 5

Grinding
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10. Grinding of Cross Knives, "Unger" System

10.1 Workpiece Carrier

The cross knife is held on the longitudinal carriage by centering pieces as described under point 7.3.

If the knife front is showing towards the operator, put the knife in the front grinder plate of the longitudinal carriage. If it is showing away from the operator, the back row of holes is used.

10.2 Centering the Machine

1. Swivel the grinding unit to 10° (Fig. 6). Swivel to the right or left depending on whether the knife is in the front or back row of holes.

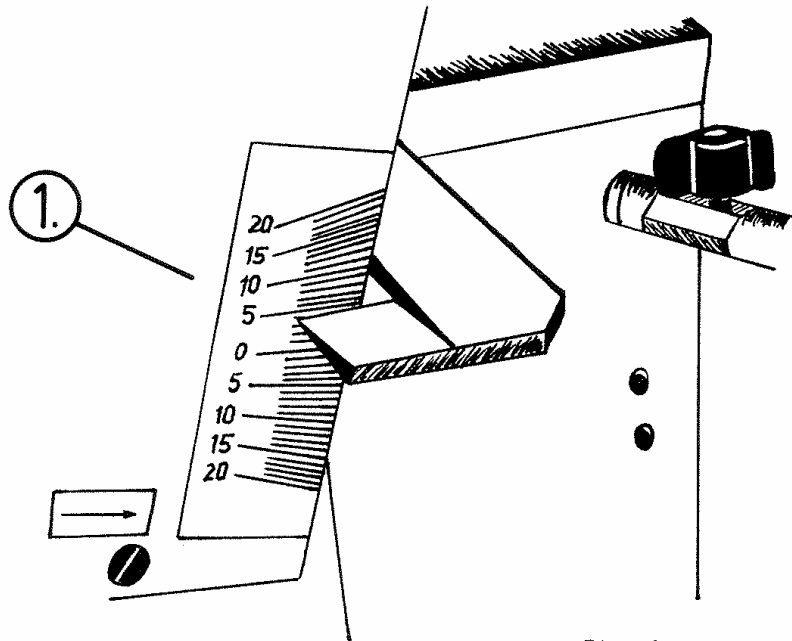


Fig. 6

2. Turn the knife by the parallel adjustment until the knife blades are approximately parallel to the rulers on the longitudinal carriage.
3. Bring the knife with the transverse carriage approximately to the center of the grinding wheel.
4. Set the stop.

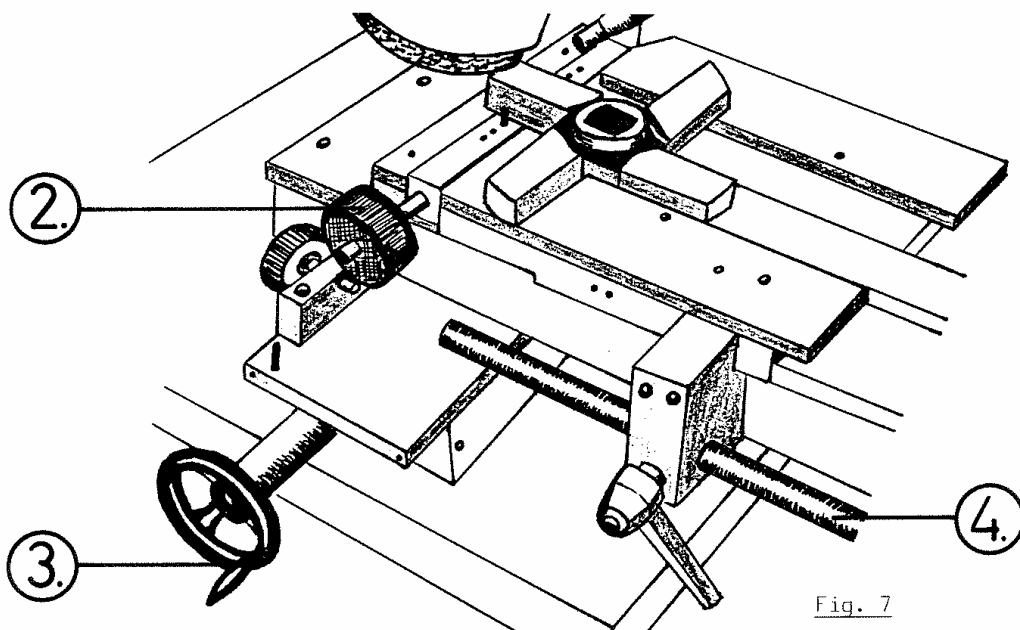


Fig. 7

10.3 Grinding Operation

Switch on the grinding drive. The direction of rotation of the grinding wheel is always towards the fixing bolt (see arrows showing the direction of rotation).

The grinding wheel should catch approximately on the center of the knife blade. Correct if necessary by moving the transverse carriage.

Now make no further corrections. Grind until there is just a chamfer of 0.2 to 0.5mm visible on the cutting edge.

10.4 Truing of the Grinding Wheel

When less sparks are formed during the grinding operation, the grinding wheel needs truing.

Open the clamping lever on the truing unit and press it downwards until the knurl nut rests on the guide housing.

While you are swiveling the truing diamond across the cup wheel, use the other hand to turn the knurl nut by approx. one-eighth of a turn per swiveling motion to the left.

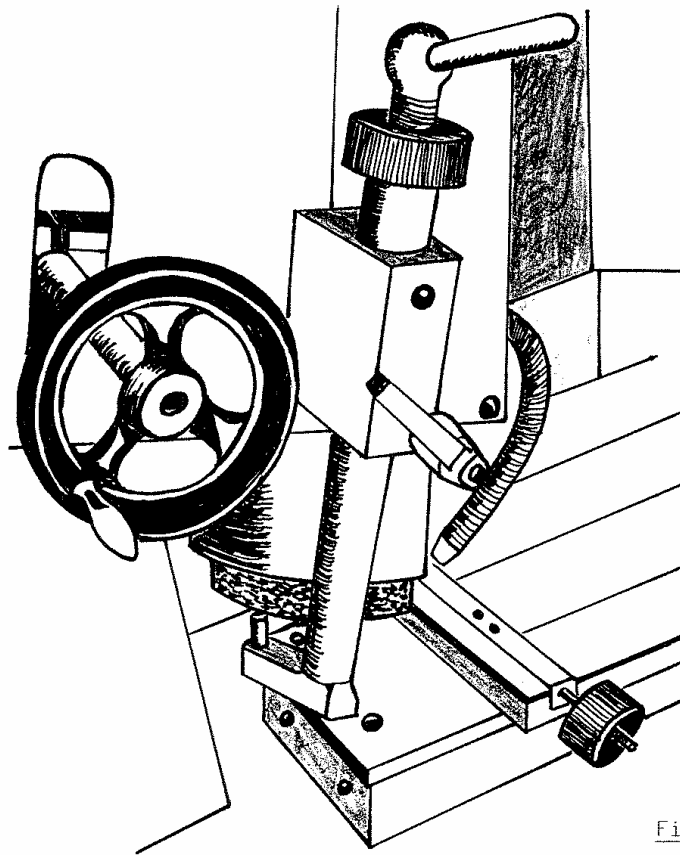


Fig. 8

11. Grinding of Cross Knives, "Enterprise" System

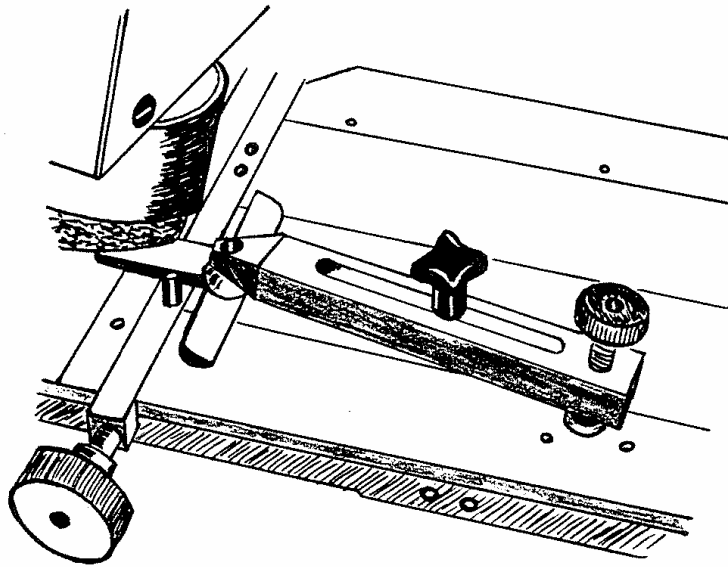


Fig. 9

"Enterprise" System cross knives are ground on one side and therefore do not rest on the knife blades. They have to be clamped down by a clamping claw.

There are centering pieces for holding the knives. They have a pivot on both sides: one is for centering the knife and the other for holding on the longitudinal carriage.

In accordance with the cross knife, screw the suitable clamping plate on the clamping claw and clamp the knife firmly on the table (Fig. 9).

Machine adjustment and grinding operation are as described under 10.2 and 10.3.

12. Grinding of Ring Knives

Ring knives are ground as for the "Unger" System cross knives, but on one side only.

See explanations under 10.2 and 10.3.

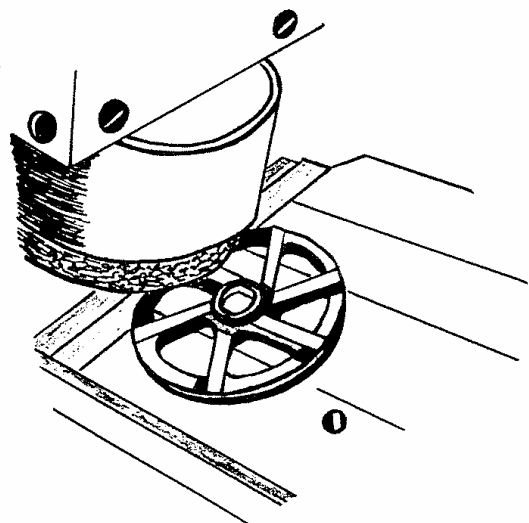


Fig. 10

Care and Maintenance

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13. Lubrication

All bearing points are equipped with waterproof, greased roller bearings and therefore maintenance-free.

The following parts should be greased at intervals of four weeks:

- The knurl screw of the stop
- Guideways of the truing unit
- Parallel adjustment
- Splined shaft (accessible after detaching the plastic shell).

The following parts should be lubricated at intervals of 26 weeks:

- Tailstock sleeve
- Threaded spindle for tailstock sleeve motion
- Guide shafts of the longitudinal carriage.

The tailstock sleeve and threaded spindle are situated behind the metal cover at the front of the grinding head (unscrew four screws).

The guide shafts are accessible after removing the cover on the longitudinal carriage.

14. Cleaning

The machine must be cleaned after every grinding operation as otherwise the grinding sludge will dry and be very difficult to remove.

After cleaning we recommend applying a small amount of acid-free oil to the machine.

The cooling water is to be changed at weekly intervals.

However, if the grinding sludge is filtered out, the cooling water can be used up to three months.

See also explanations in the Lubrication Chart, 15.

15. Lubrication Chart

LUBRICATION CHART AND TABLE OF LUBRICANTS					
Greasing Job	Intervals	OEST	SHELL	ESSO	
Knurl screw stop	4 weeks	H - LP 32	Tellus 32	Nuto H 32	
Guideways of truing unit	4 weeks	H - LP 32	Tellus 32	Nuto H 32	
Parallel adjustment	4 weeks	H - LP 32	Tellus 32	Nuto H 32	
Splined shaft	4 weeks	H - LP 32	Tellus 32	Nuto H 32	
Tailstock sleeve	26 weeks	H - LP 32	Tellus 32	Nuto H 32	
Threaded spindle of tailstock sleeve motion	26 weeks	H - LP 32	Tellus 32	Nuto H 32	
Guide shafts of longitudinal carriage	26 weeks	H - LP 32	Tellus 32	Nuto H 32	
Cooling water additive	1 week	Colometa HM EP	Dromus B	Kutwell 40	
Oiling of machine parts after cleaning	after every grinding job	HENKEL metal polish cleaner MPF 10	SHELL Ondina 1727	ESSO Marcol 80	

SPARE PARTS LIST

KRK 100

SPARE PARTS LIST

KRK 100

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Base Plate / Motor Plate

Item	Article No.	Part No.	Name	No. of units per machine
01	1000460	5200	Motor hood	1
02	4040000	5215	ON switch T0-2-1-2	1
03	4040000	5216	Reversing switch T0-3-8401-Z	1
04	1000140	5204	Switch bracket	1
05	4020000	5217	V-belt 10x825	1
06	1000280	5205	Mounting plate	1
07	1000030	2086	Threaded parts M6xM6	4
08	1000545	3072	Motor plate	1
09	4100000	0174	Motor, 1.1 kW	1
10	2000090	3088	Motor pulley	1
11	4010000	0961	Groove T-blocks M6	4
12	1000235	3089	Motor carriage	1
13	1000035	3090	Counter-bearing	1
14	1000045	3091	Adjusting pedestal	1
15	1000110	3074	Swivel bearing, left	1
16	1000110	3075	Swivel bearing, right	1
17	1000100	3228	Cover	1
18	1000290	3084	Link	1
19	4040000	3397	Halogen lamp HPT 220/24	1
20	1000350	5199	Covering plate, left	1
21	1000350	3226	Support, front	1
22	1000350	3226	Support, rear	1
23	2000326	5201	Covering plate, right	1
24	1000133	5210	Pointer	1
25	2000140	3076	Bearing bolt	1
26	2000080	5218	Sealing ring	1
27	1000090	5212	Counter-support	1
28	1000036	3082	Intermediate plate	1
29	2000100	3080	Worm shaft with worm	1

SPARE PARTS LIST

KRK 100

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Item	Article No.	Part No.	Name	No. of units per machine
30	3020000	3087	Worm gear segment	1
31	1000088	3078	Bearing block, front	1
32	2000120	3081	Rod	1
33	4070000	0055	Hand wheels	3
34	1000556	5207	Covering plate I - base plates	2
35	2000050	5211	Spacers	4
36	1000450	5206	Covering plate II - base plates	2
37	1000550	3127	Base plate	1

Grinding Head

38	1000215	3092	Grinding head cover	1
39	2000080	3053	Shell	1
40	2000070	3060	Starting shell	1
41	1000150	3054	Top plate	1
42	4050000	0026	Collar bush DU 1012 BB	1
43	2000220	3062	Adjusting spindle, vertical	1
44	4050000	1154	Roller bearing 6006 2RS	1
45	2000080	3057	Bearing bush	1
46	2000080	5219	Stop spindle M6	1
47	2000060	3058/59	Pulley with tapered hub	1
48	2000030	3229	Bush	1
49	3020000	3066	Splined shaft	1
50	1000145	3055	Plate, center	1
51	4050000	0007	Roller bearing 6203 2 RS	1
52	2000073	3056	Guide bolt	1
53	2000135	3065	Grinding tailstock sleeve	1
54	4050000	0007	Roller bearing 6203 2 RS	1
55	2000050	3067	Carrier flange	1
56	2000017	3069	Disk	1
57	4050000	0025	DU bush DU 6070	1
58	4050000	0022	DU bush DU 2015	1
59	1000150	3070	Guide	1

SPARE PARTS LIST

KRK 100

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Item	Article No.	Part No.	Name	No. of units per machine
60	1000215	3071	Counter-plate	1
61	2000120	3073	Cover	1
62	4140000	1147	Grinding wheel 100 dia. x 50	1
63	2000050	3068	Clamping flange	1

Tool Carriage

64	2000080	3113	Table shell	1
65	1000200	3119	Slide	1
66	1000041	3120	Holding bracket	1
67	2000049	3121	Knurl nut	1
68	4070000	0060	Clamping lever M8 x 63	1
69	1000080	3236	Holder	1
70	1000250	3239	Tool plate	1
71	1000220	3231	Cover plate, rear	1
72	1000220	3233	Inserts	2
73	1000220	3232	Cover plate, front	1
74	2000290	3238	Stop bolt	1
75	1000536	3143	Covering panels	2
76	1000540	3194	Carrier plate	1
77	1000040	5202	Supporting brackets	2
78	2000528	5205	Guide shaft tool carriages	2
79	1000150	3141	Cushions	2
80	2000049	3196	Rollers	4
81	4050000	0002	Roller bearings 6000 2 RS	8
82	2000035	3195	Shaft rollers	4
83	1000240	3140	Tool carriage plate	1
84	4070000	0122	Knurl bolt M10	1
85	1000040	3237	Stop	1
86	1000317	3103	Plate, top	1
87	1000110	3105	Bearing plate, rear	1
88	1000105	3106	Sliding bearing, rear	1
89	1000225	3104	Tool table base plate	1
90	1000210	3131	Tool carriage cover	1

SPARE PARTS LIST

KRK 100

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Item	Article No.	Part No.	Name	No. of units per machine
91	2000195	3109	Guide shafts	2
92	1000105	3107	Sliding bearing, front	1
93	2000210	3111	Table adjusting spindle	1
94	4050000	0026	DU collar bush DU 1012 BB	1
95	1000110	3108	Bearing plate, front	1

Sheet Metal Parts

96	1001192	5198	Guard	1
97	1001194	5208	Water sump	1
98	1000600	5213	Splash plate	1
99	1000060	3266	Hose holder	1
100	1000628	2194	Base	1
101	1000250	5209	Centering piece holder	1
102	1000030	2320	Threaded parts M8xM6	4
103	1000310	2204	Mounting plate	1
104	4070000	0054	Star knob M12	1
105	1000480	2203	Water box	1
106	1000540	2193	Base frame	1
107	4080000	0128	Rubber feet	4

Truing Unit

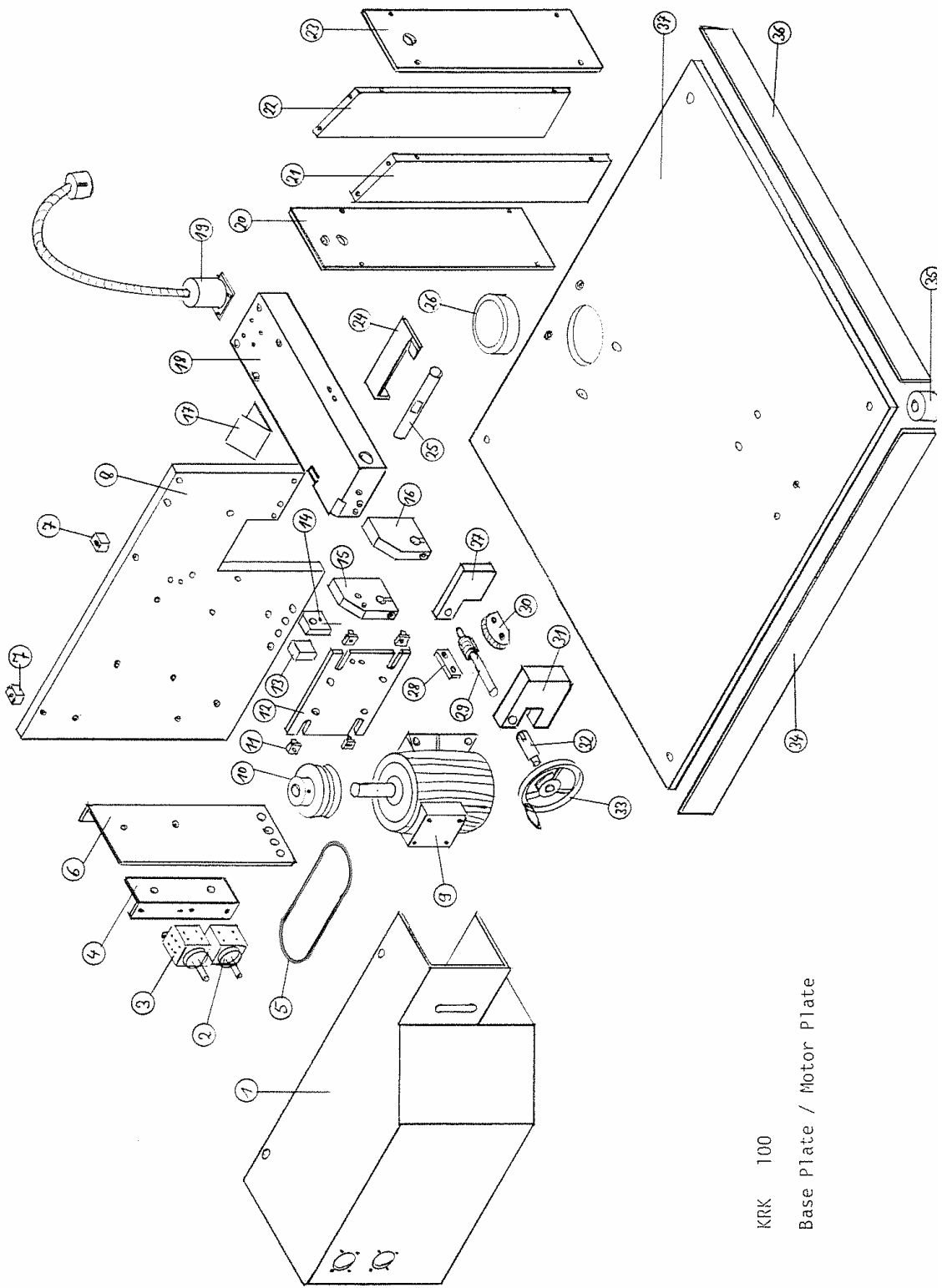
108	4070000	0063	Tapered handle 10 dia. x 76	1
109	2000040	3953	Knurl nut	1
110	4070000	0060	Clamping lever M8x63	1
111	1000080	3954	Guide plate	1
112	1000090	5203	Mounting plate	1
113	2000250	3952	Truing rod	1
114	4140000	5099	Truing diamond 10 dia. x 25	1

SPARE PARTS LIST

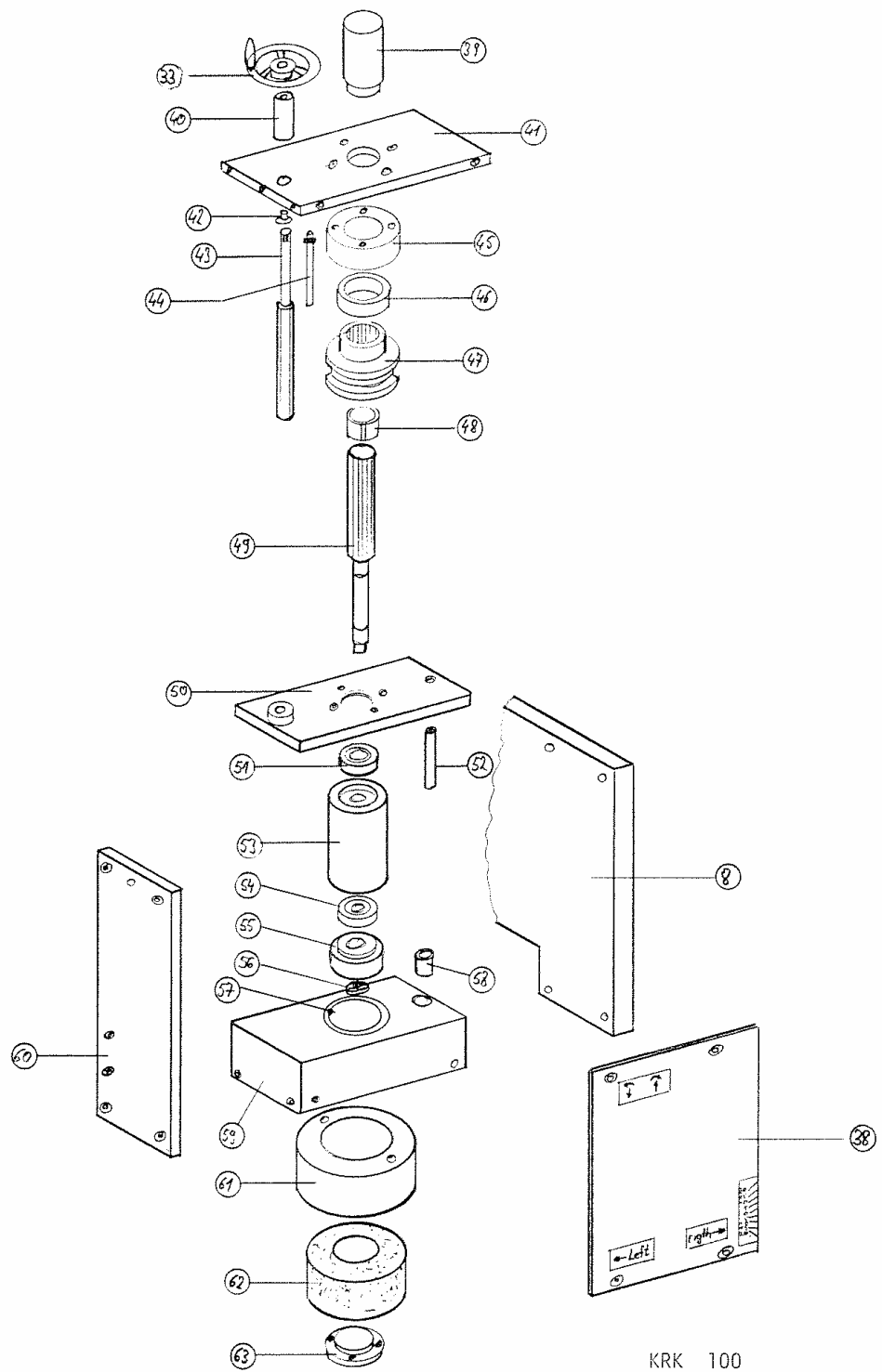
KRK 100

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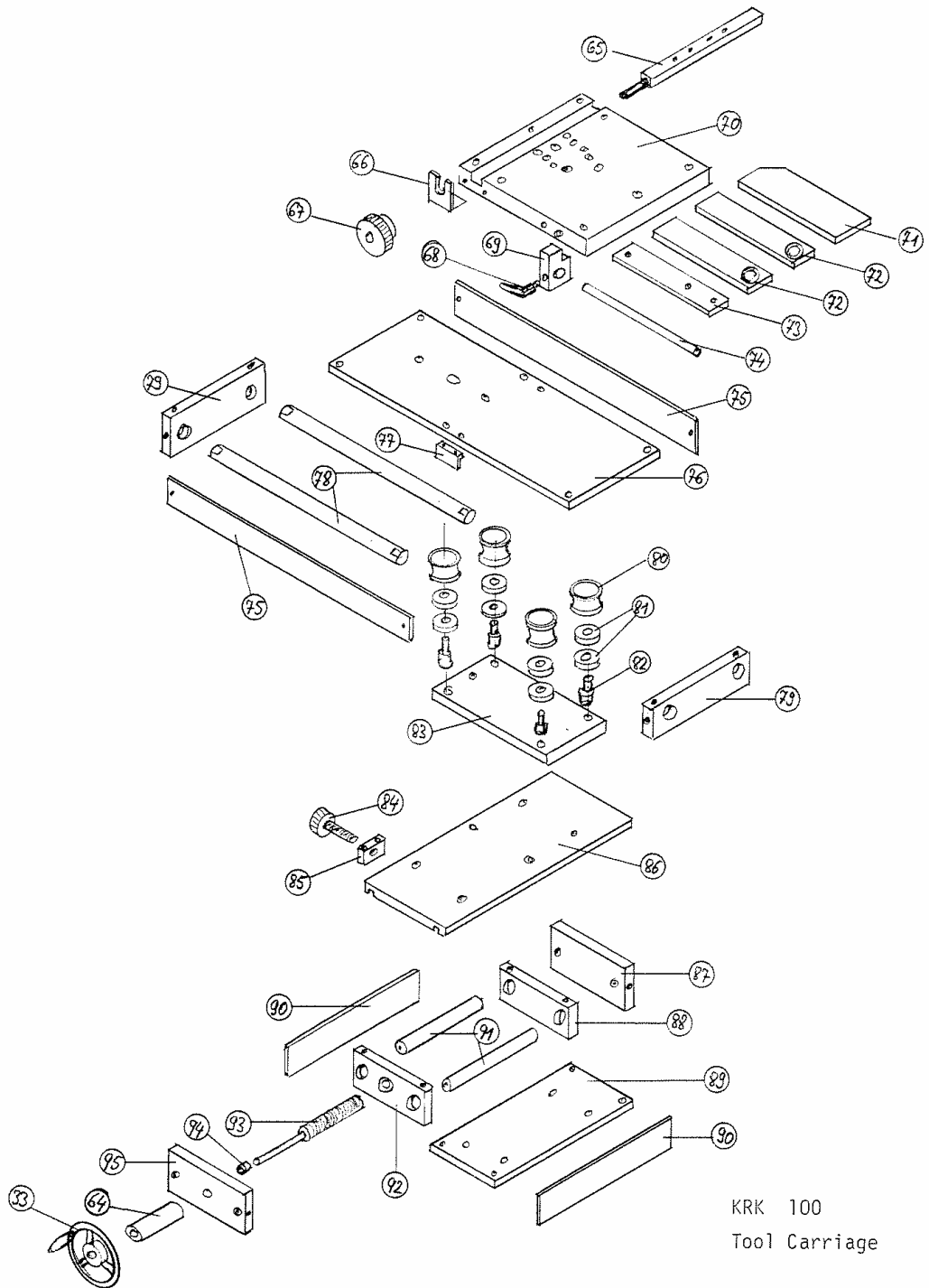
Item	Article No.	Part No.	Name	No. of units per machine
115	4030000	0064	Elbows R 3/8"	2
116	4030000	0072	Screw-in nozzles R 3/8"	2
117	4030000	0077	Nipples R 3/8" x 22	2
118	4030000	0080	Sleeve R 3/8"	1
119	4030000	0070	Ball valve R 3/8"	1
120	4030000	0083	Reducing part 3/8" - 1/4"	1
121	4030000	0098	Coolant hose R 1/4" x 400	1
122	4100000	0185	Cooling water pump	1
123	4030000	0084	Reducing part 1/2" - 3/8"	1
124	4030000		Water hose 10 dia.	1



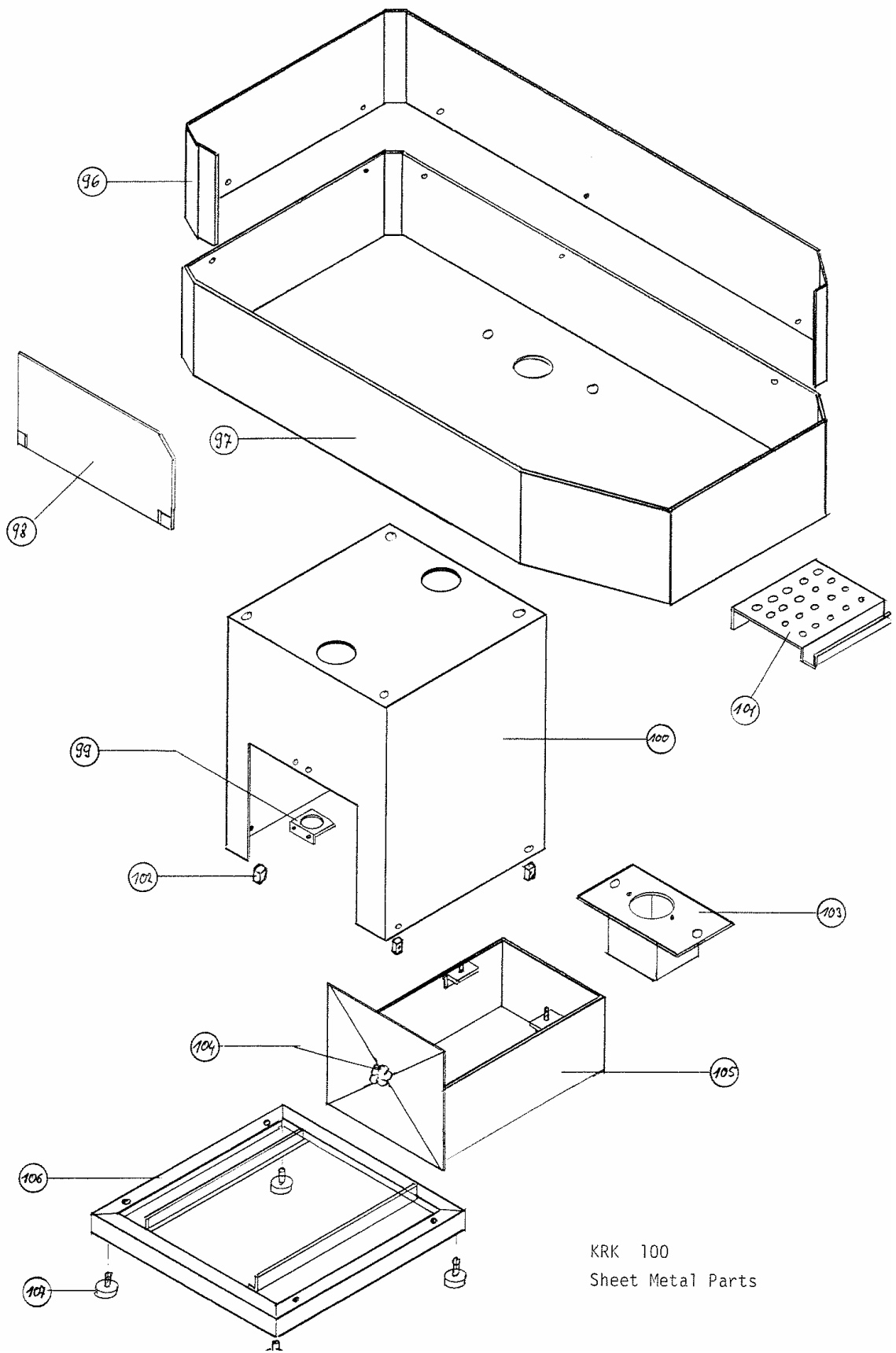
KRK 100
Base Plate / Motor Plate



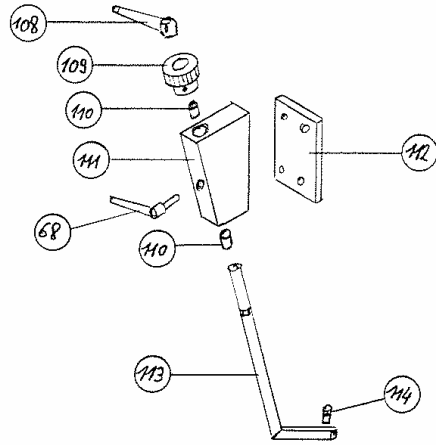
KRK 100
Grinding head



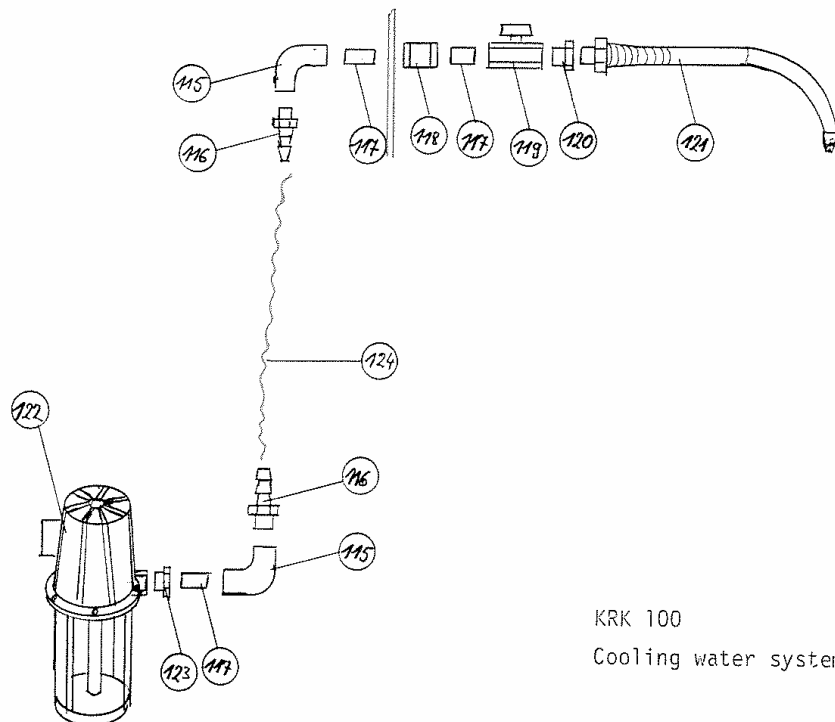
KRK 100
Tool Carriage



KRK 100
 Sheet Metal Parts



KRK 100
Truing Unit



KRK 100
Cooling water system