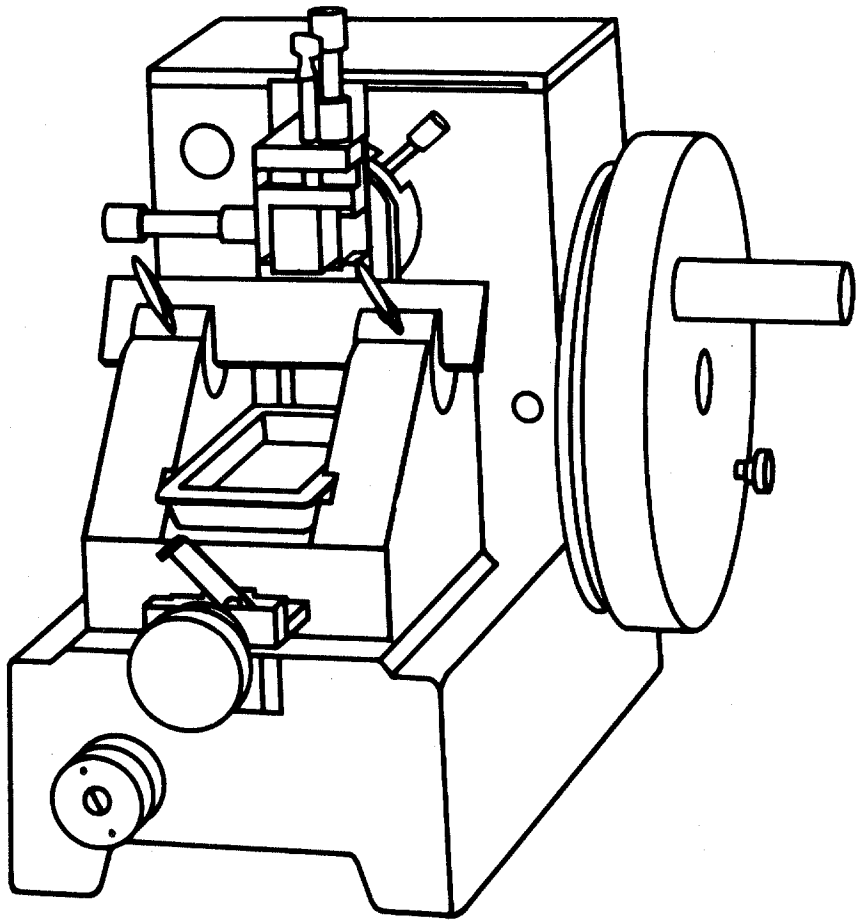
Serienschnitt-Mikrotom
Rotary - Microtome

1510/1512



Ersatzteilliste
spare parts list

Reparaturanleitung
servicing instructions

Leitz

ERNST LEITZ WETZLAR GMBH

This folder contains spare part lists and repair instructions, for the Rotary-Microtome 1510 und 1512.

Concerning the numbering of the pages for instance 7.1 the number before the point is the continuious number of the page. The page with the number 1 behind the point contains the original condition of the instruments, assemblies or operations shown or described on this page.
For changes or variations of the illustrations and informations on this page a supplementary sheet with the next higher successive number behind the point is made up. The changes are made recognizable on the illustration page of the supplementary sheet by an one-or two- linie marking I.e.:

one line below the number:
25 means the part was changed and can be installed to earlier instruments as well.

one line above the number:
25 means the part was changed however cannot be installed to earlier insrtuments. (eventually see our conversion instructions)

one each line above and below the number:
25 means the part has been added and can be installed to earlier instruments as well (eventually see our conversion instructions).

oen each line on both sides of the number:
|25| means the part has been added however cannot be installed to earlier instruments.

The index informs about the supplementary sheets issued so far and the latest edition of the individual page is mentioned in first place.

In the spare parts list a parts list belongs to each illustrated list. On the illustrated list the seperate parts and subgroups are illustrated in the correct sequence of assembly. On the parts list the parts numbers required for ordering, the description, the required number of items, and price groups are indicated. The numbers listed on the illustrated list agree with those on the parts list.

In the repair instructions assembly adjustment, and repairs will be described and explained by means of illustrations. The tools listed therein can be obtained from us.

The number code used in the repair instructions with strokes are not code numbers. This number code serves only for orientation in the search for the indicated part in the spare parts list.

In the number combination, the figure

before the stroke represent the page / the one after the stroke the number of the illustration

example 4.1/15

In the above example this is a cover which according to spare parts list page 4.1 Fig 15 can be ordered under the code number 025-098.018-000.

The components and subgroups should be cleaned with lead - free petrol. Surfaces with wrinkled finish may be cleaned with lead - free petrol and rubber dry after that.

The areas where the lubricant is used, are indicated by symbols. Lubricants to be ordered according to the corresponding code numbers. Other lubricants cannot be used, since perfect function is ensured only with the lubricants approved by us

The parts to which lubricants are to be applied must be clean and dry.

It should be borne in mind that many lubricants do not agree with number of plastic materials which they may dissolve or make swell up, These lubricants should come into contact only with those surface listed in the lubricating chart.

Parts treated with adhesives according to the spare parts list must be free from lubricants, residual adhesives must be removed with the appropriate thinners. Adhesives and thinner to be ordered according to the corresponding code numbers.

With help of the number of the illustrafion on the picture page, the order nummber from the parts list, the description, the required number of items per instruments unit and the price group will be obtained.

All the prices indicated in the spare parts list are net.

Order single spare parts only in the most urgent cases, and never order less than 10 screws, nuts, and washers.

The sureface finish of the standard parts is not indicated by the description. It is indicated in code in box 7 to 9 of the code number. Explanations can be obtained from the sureface finish list.
In case of color changes by instruments or sub assemblies we cannot guarantee for a matching sureface finish of the spare parts supplied.

Parts which have an ordering number consisting of numbers (see price list Micro) cannot be ordered through the techincal service de partment.
Indicate whether part delivery is acceptable.

We are not obliged to supply the parts and subgroups mentioned in this list. We reserve the right to supply, if spare parts ordered are not in stock, components or assembly groups which functionally replace or include the unit ordered.

Modifications states

The respective states of modifications are marked on the lower side of the microtome base by a stamp. Instruments of the first series of the model 1510 were not stamped.

State 01 - model 1510, original state not stamped

Both knife clamps are connected with ledge 025-098.001-235. In the guide ledge of the microtom base the mounting of the sinter bearing was changed.
The cable line on the vertical sledge was replaced by a switch lever, see modification instructions page 101/102.
The transport catch was changed, see modification instructions, page 103.
On the adjustment and clamping device of the ball and socket joint various changes were made.
The hood 4.1/15 and its fixing were changed. The ratchet wheel 3.1/11 was equipped with saw tooth shaped teeth.

State 02 - model 1510 partially stamped

To prevent that sledge 5.1/1 requires readjusting often the teflon sliding angles 5.1/2 are flattened under high pressure, before being glued on.
To achieve a better parallelism the guide way of sledge 5.1/19 and the ledge 5.1/3 are mitted after they have been assembled. If spare parts are required both parts always must be ordered simultaneously.

State 03 - model 1510

A large number of instruments marked 03 were manufactured in a lighter paint (463/11). These instruments are already equipped with the enforced sledge 5.1/1 and correspond to state 05. Only the name plate 1512 is missing.
To improve the lubrication of the drive the shaft 4.1/3 was recersed and the sledge 4.1/1 got an oil slot.

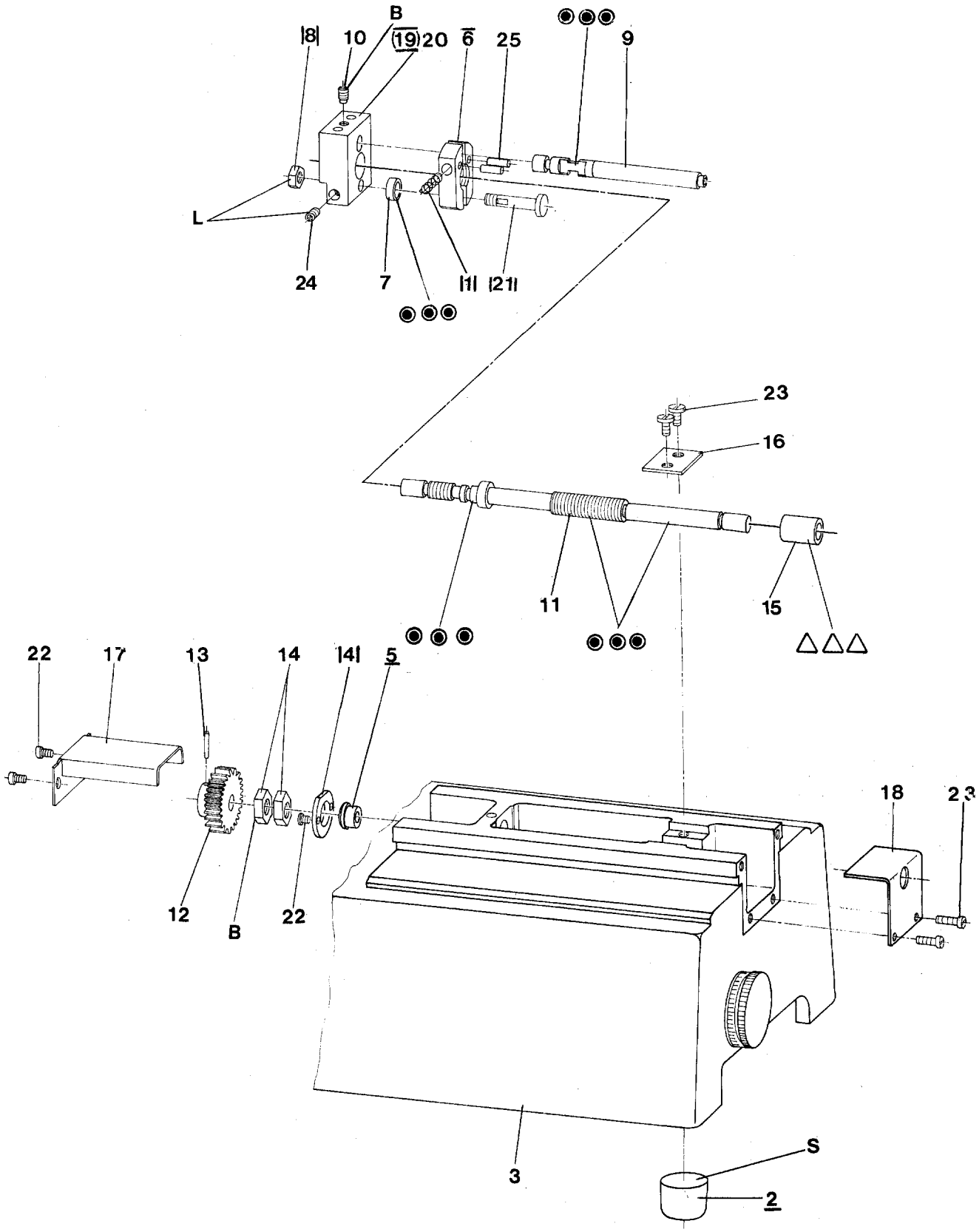
State 04 - no instruments were supplied with this marking.

State 05 - model 1512

From model 1512 on the instruments are stamped as follows:
example : 762/05
number 762 means: the second half of 1976
05 corresponds to modification state 05
The following improvements were made
on the instrument:
- sledge 4.1/8 (for modification see repair instructions page 105)
- sledge guide 4.1/5
- tommy screw 5.1/23 (for elimiation of malfunctions see instructions page 51)
- spindle nut 1.1/19 (for modification see instructions page 105)
- shaft 4.1/3 (for modification see repair instructions page 104)
- bushing 4.1/2 (for modification see repair instructions page 104)
- oiler in sledge 4.1/1

State 06 - model 1512

The position "0" on the gratuated drum 3.1/21 is displaced of 3 intervalls. There fore on setting "0" no movement on the transport mechanism is possible. Besides it is now possible to turn the micrometer spindle to the left ore right side equaly.
The modificated gratuated drum 3.1/21 can be used on all already deliverd instruments model 1510 and 1512.



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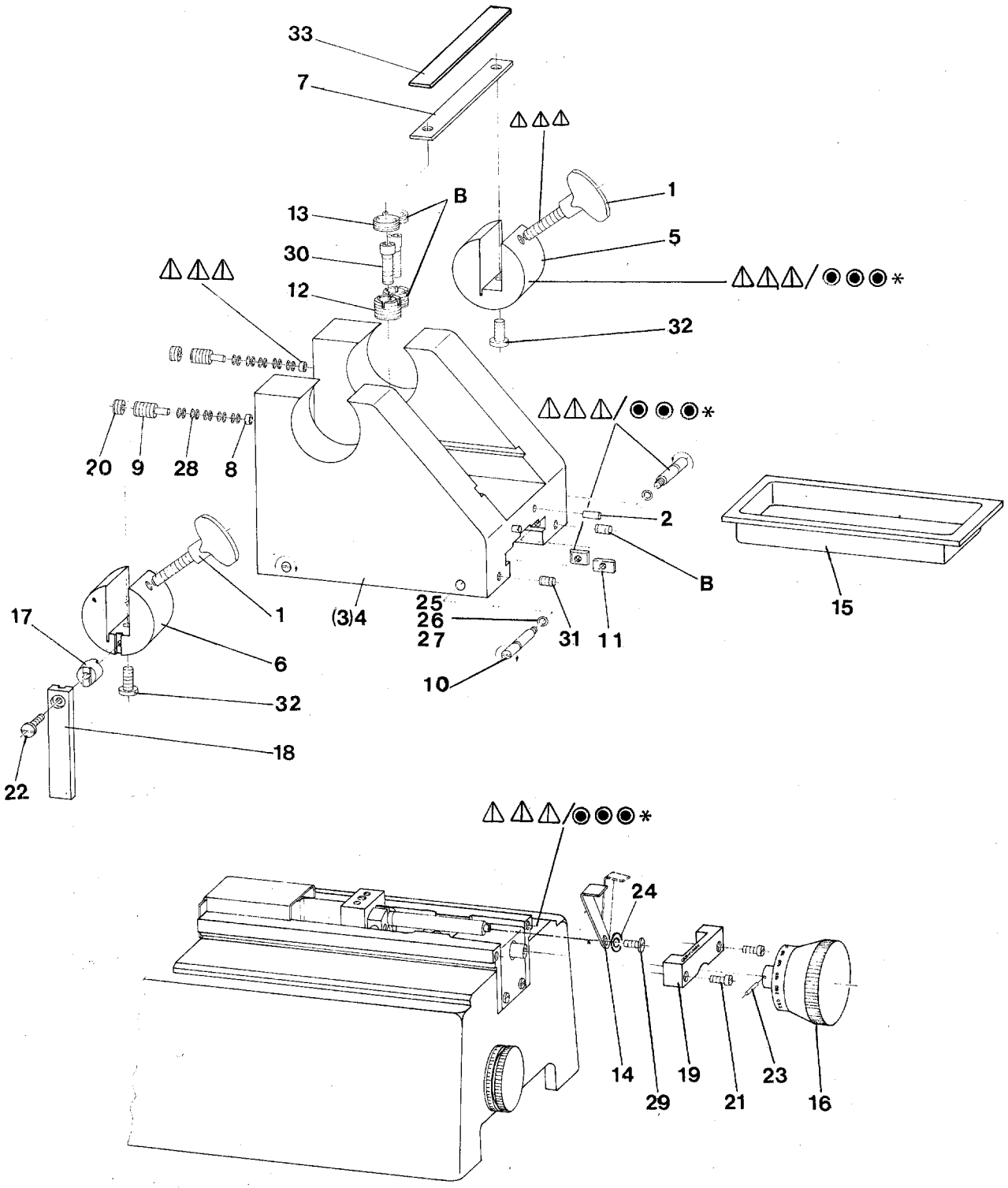
B Sicherungslack / protective lacgner
L Loctite HV 77
S Sicomet 50

Nr. No.	Bestell-Nr. Part-No.	PG	Stück Nos.	Benennung		Description
1	025-024.001-249	12	1	Zugfeder		tension spring
2	025-096.001-020	14	4	Gummifuß		rubber buffer
3	025-098.001-006	60	1	Grundgestell		base
4	025-098.001-183	19	1	Flansch		flange
5	025-098.001-184	10	1	Sinterlager		sinter bearing
6	025-098.001-190	20	1	Spindelmutter		spindle nut
7	025-098.001-193	12	1	Buchse		bushing
8	025-098.001-200	15	1	Mutter		nut
9	025-098.001-202	20	1	Achse		axle
10	025-098.001-203	07	1	Gewindestift		threaded pin
11	025-098.001-208	39	1	Mikrometerspindel		micrometer spindle
12	025-098.001-211	19	1	Zahnrad		gear
13	025-098.001-213	01	1	Zylinderstift		cylindrical pin
14	025-098.001-214	13	2	Mutter		nut
15	025-098.001-216	09	1	Sinterlager		sinter bearing
16	025-098.001-217	11	1	Plättchen		plate
17	025-098.001-220	16	1	Abdeckblech		cover plate
18	025-098.001-223	14	1	Abdeckblech		cover plate
19	025-098.001-335	30	1	Spindelmutter kompl. Abb. Nr. 1, 6-10, 20, 21, 24, 25		spindle nut, compl. Fig. No. 1, 6-10. 20. 21. 24. 25
20	025-098.001-336	19	1	Lagerstück		bearing
21	025-098.001-337	17	1	Stellschraube		adjusting screw
22	700-714.123-000	04	4	Schraube	M3x8 DIN 84	screw
23	700-721.213-000	06	4	Zylinderschraube	AM 3x100 DIN 84	cylindrical head screw
24	703-277.220-000	04	1	Gewindestift	M4x8 DIN 931	threaded pin
25	704-360.220-000	04	2	Paßkerbstift	2x10 DIN 1472	speined pin



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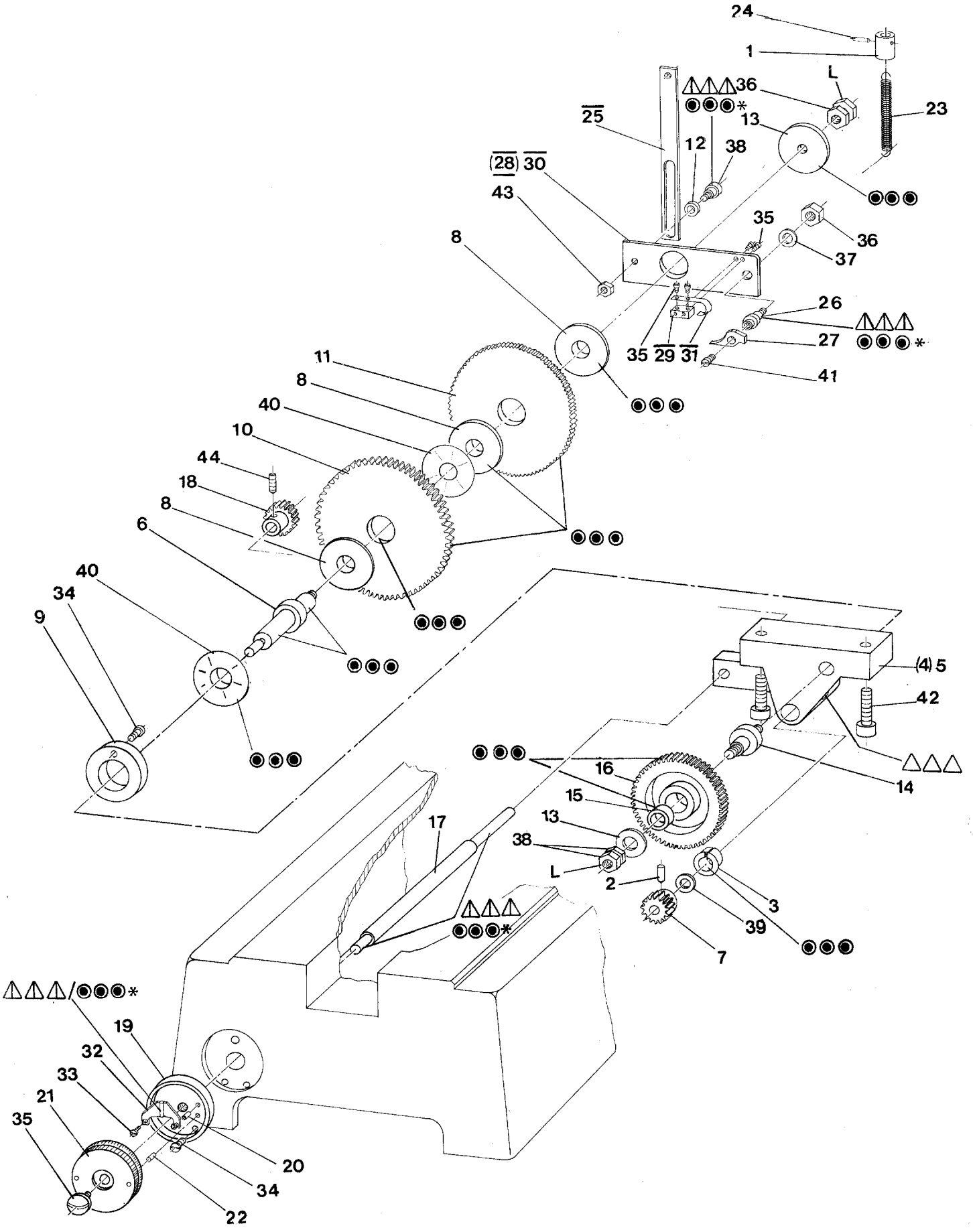
B Sicherungslack
protective lacquer

* Verwendung nur bei Histokrytom
use for Histokryotom only

Nr. No.	Bestell-Nr. Part-No.	PG	Stück Nos.	Benennung	Description
1	025-096.008-030	16	2	Griffschraube	handle screw
2	025-098.001-025	17	2	Zylinderstift	cylindrical pin
3	025-098.001-227	50	1	Messerhalter kompl. Abb. Nr. 4, 10, 11, 25, 26, 27	knife holder compl. Fig. No. 4, 10, 11, 25, 26, 27
4	025-098.001-228	48	1	Messerhalter	knife holder
5	025-098.001-233	23	1	Messerspanner, rechts	knife clamp, right
6	025-098.001-234	23	1	Messerspanner, links	knife clamp, left
7	025-098.001-235	17	1	Leiste	ledge
8	025-098.001-237	13	2	Scheibe	washer
9	025-098.001-238	14	2	Gewindezapfen	threaded bolt
10	025-098.001-244	13	4	Exzenterbolzen	eccentric bolt
11	025-098.001-245	10	4	Gleitstein	sliding bar
12	025-098.001-249	15	2	Gewindebuchse	threaded bush
13	025-098.001-250	15	2	Konterscheibe	counter nut
14	025-098.001-254	16	1	Hebel	lever
15	025-098.017-000	16	1	Auffangschale	drip pan
16	025-098.050-012	24	1	Teilungstrommel	graduated drum
17	025-098.050-020	17	1	Buchse	bush
18	025-098.050-021	17	1	Hebel	lever
19	025-098.050-024	18	1	Indexplatte	index plate
20	050-105.001-222	13	2	Gewindering	threaded ring
21	700-721.213-000	06	8	Zylinderschraube M3x10 DIN 84	cylindrical head screw
22	700-824.213-000	06	1	Zylinderschraube AM4x20 DIN 84	cylindrical head screw
23	704-366.220-000	04	1	Paßkerbstift 2, 5x12 DIN 1472	splined pin
24	704-746.220-000	01	1	Zahnscheibe J4, 3 DIN 6797	lock washer
25	705-594.220-000	03	*	Scheibe 015-121.031-231 0, 06mm	washer
26	705-595.220-000	03	*	Scheibe 015-121.032-231 0, 1mm	washer
27	705-596.220-000	03	*	Scheibe 015-121.033-232 0, 2mm	washer
28	705-845.220-000	03	20	Tellerfeder 015-123.033-463	spring washer
29	708-818.213-000	06	1	Schraube M3x8 DIN 921	screw
30	708-824.000-000	07	2	Zylinderschraube M5x16 DIN 912	cylindrical head screw
31	708-830.220-000	04	4	Gewindestift M4x10 DIN 553	threaded pin
32	709-019.123-000	07	2	Zylinderschraube M5x8 DIN 84	cylindrical head screw
33	025-098.016-000	13	*	Unterlage	spacer

* nach Bedarf / as needed



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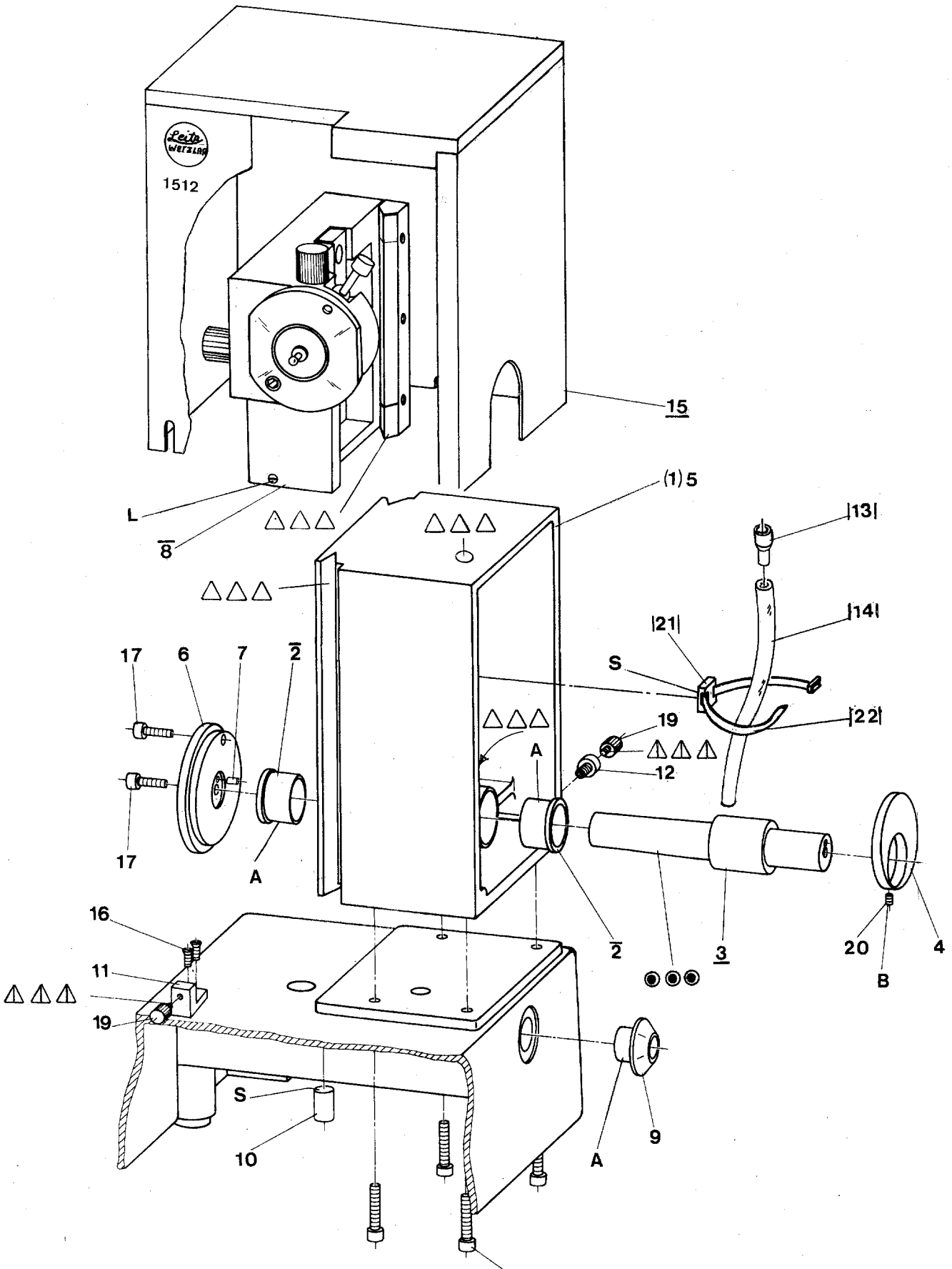
Nr. No.	Bestell-Nr. Part-No.	PG	Stück Nos.	Benennung		Description
1	025-098.001-010	12	1	Hülse		sleeve
2	025-098.001-025	17	1	Zylinderstift		cylindrical pin
3	025-098.001-077	999	2	Folienlager		foil bearing
4	025-098.001-100	47	1	Transportvorrichtung, kompl. Abb. Nr. 2, 3, 5-16, 34, 36, 37, 39, 40, 43		transport mechanism, compl. Fig. No. 2, 3, 5-16, 34, 36, 37, 39, 40, 43
5	025-098.001-102	22	1	Lagerbock		bearing block
6	025-098.001-106	24	1	Achse		axle
7	025-098.001-108	18	1	Ritzel		pinion
8	025-098.001-112	15	3	Distanzscheibe		spacer
9	025-098.001-114	16	1	Bremsscheibe		brake disc
10	025-098.001-116	22	1	Einstellrad		adjustment wheel
11	025-098.001-120	18	1	Sperrad		ratchet wheel
12	025-098.001-139	16	1	Ring		ring
13	025-098.001-142	10	2	Scheibe		washer
14	025-098.001-146	18	1	Lagerzapfen		bolt
15	025-098.001-147	11	1	Lagerbuchse		bearing bushing
16	025-098.001-149	20	1	Zwischenrad		intermediate gear
17	025-098.001-160	18	1	Achse		shaft
18	025-098.001-162	18	1	Zahnrad		gear
19	025-098.001-166	19	1	Lagerflansch		bearing flange
20	025-098.001-169	11	2	Distanzring		spacer
21	025-098.001-172	23	1	Einstellknopf		adjustment knob
22	025-098.001-173	10	2	Zylinderstift		cylindrical pin
23	025-098.001-179	09	1	Zugfeder		tension spring
24	025-098.001-180	09	1	Stift		pin
25	025-098.001-285	15	1	Schalthebel		switch lever
26	025-098.001-292	17	1	Klinkenhalter		pawl holder
27	025-098.001-293	19	1	Sperrklinke		ratchet pawl
28	025-098.001-299	26	1	Transporthebel, kompl. Abb. Nr. 26, 27, 29, 30, 31, 33, 41		transport lever, compl. Fig. No. 26, 27, 29, 30, 31, 33, 41
29	025-098.001-300	12	1	Federhalter		spring holder
30	025-098.001-301	14	1	Transporthebel		transport lever
31	025-098.001-302	10	1	Blattfeder		flat spring
32	032-200.002-015	12	1	Rastfeder		arresting spring
33	700-617.000-000	04	4	Zylinderschraube	M2x6 DIN 84	cylindrical head screw
34	700-721.213-000	06	3	Zylinderschraube	AM3x10 DIN 84	cylindrical head screw
35	703-581-213-000	06	1	Schraube	M4x8 DIN 921	screw

Nr. No.	Bestell-Nr. Part. No.	PG	Stück Nos.	Benennung		Description
36	704-244.220-000	06	3	Sechskantmutter	M6 DIN 934	hexagon nut
37	706-318.220-000	03	1	Scheibe	015-121.066-386	washer
38	706-624.213-000	06	1	Schraube	M3x2,5 DIN 923	screw
39	706-818.220-000	03	1	Scheibe	015-121.088-136	washer
40	707-574.220-000	08	4	Wellenfeder	015-127.153-092	wave shaped spring
41	708-818.213-000	06	1	Schraube	M3x8 DIN 921	screw
42	708-821.000-000	04	2	Zylinderschraube	M6x20 DIN 912	cylindrical head screw
43	708-828.220-000	05	1	Sechskantmutter	BM3 DIN 439	hexagon nut
44	709-018.000-000	04	1	Gewindestift	M4x6 DIN 916	threaded pin



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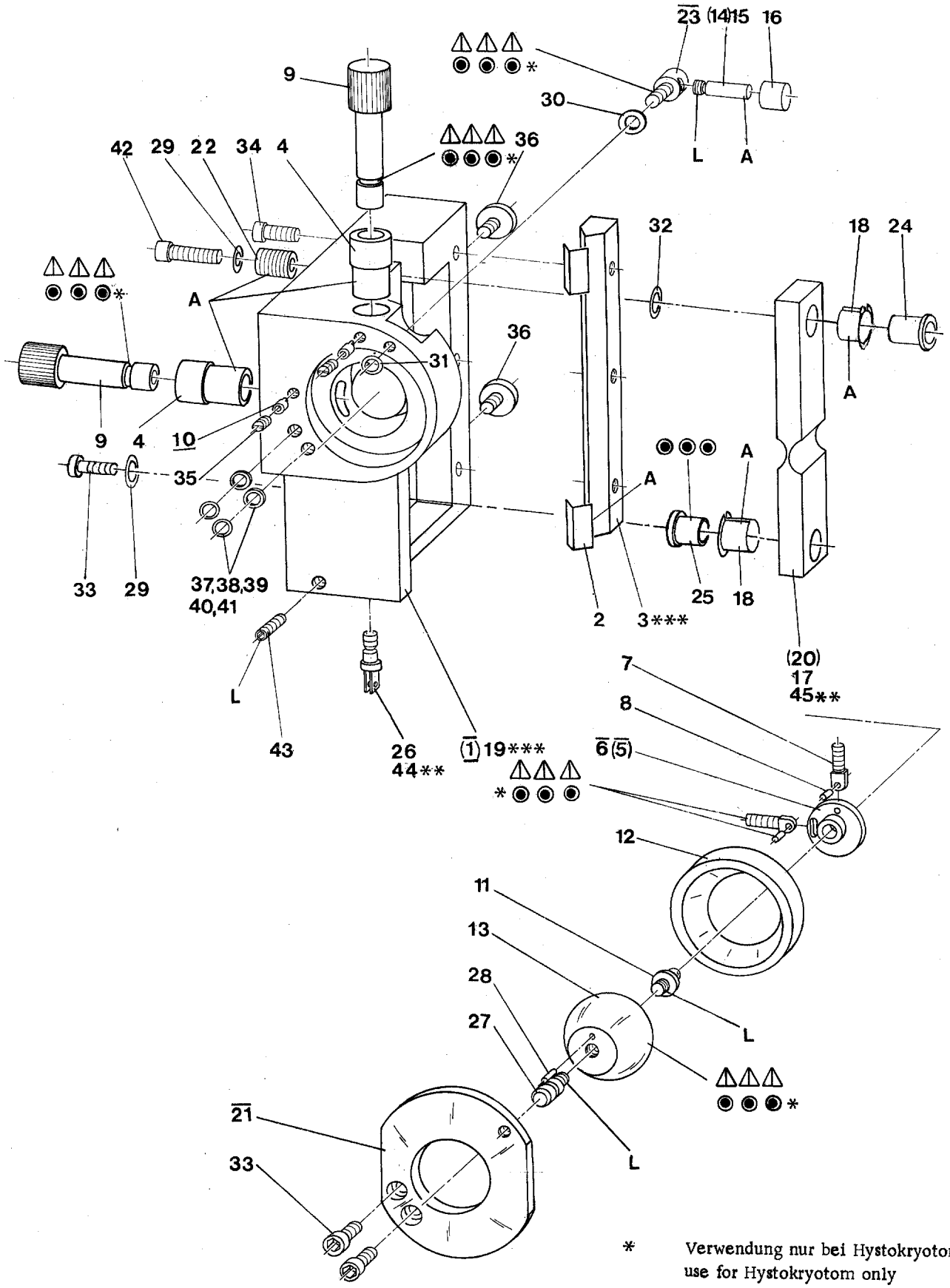
A Araldit 103/Härter 953
S Sicomet 99
L Loctite

Nr. No.	Bestell-Nr. Part-No.	PG	Stück Nos.	Benennung		Description
1	025-098.001-013	48	1	Schlittenführung, kompl. Abb. Nr. 2-7, 13, 14, 17, 20-22		sliding guide, compl. Fig. No. 2-7, 13, 14, 17, 20-22
2	025-098.001-017	10	2	Sinterlager		sinter bearing
3	025-098.001-018	28	1	Achse		axle
4	025-098.001-019	18	1	Exzenterscheibe		excentric disc
5	025-098.001-021	35	1	Schlittenführung		sliding guide
6	025-098.001-024	18	1	Kurbelscheibe		crank disc
7	025-098.001-025	17	1	Zylinderstift		cylindrical pin
8	025-098.001-031	63	1	Schlitten kompl. Siehe Blatt 5.1		sledge, compl. see sheet 5.1
9	025-098.001-095	21	1	Buchse		bush
10	025-098.001-178	04	1	Anschlag		stop
11	025-098.001-266	16	1	Winkel		bracket
12	025-098.001-270	18	2	Gewindebuchse		threaded bush
13	025-098.001-330	13	1	Öleinfüllstutzen		oil filler
14	025-098.001-332	09	1	Verbindungsschlauch 120 lg		tube
15	025-098.018-000	30	1	Haube		cover
16	700-721.213-000	06	2	Zylinderschraube	AM 3x10 DIN 84	cylindrical head screw
17	708-824.000-000	04	1	Zylinderschraube	M5x16 DIN 912	cylindrical head screw
18	708-825.000-000	04	4	Zylinderschraube	M6x25 DIN 912	cylindrical head screw
19	708-169.214-000	14	3	Rändelschraube	M3x6 LN 12071	knurled screw
20	709-250.123-000	04	1	Gewindestift	M3x4 DIN 553	threaded pin
21	839-319.000-000	04	1	Halter	TC 817	holder
22	826-491.000-000	01	1	Kabelbinder		cable bearer



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A Araldid 103/Härter 953 [illegible]

L Loctite

* Verwendung nur bei Hystokryotom
use for Hystokryotom only

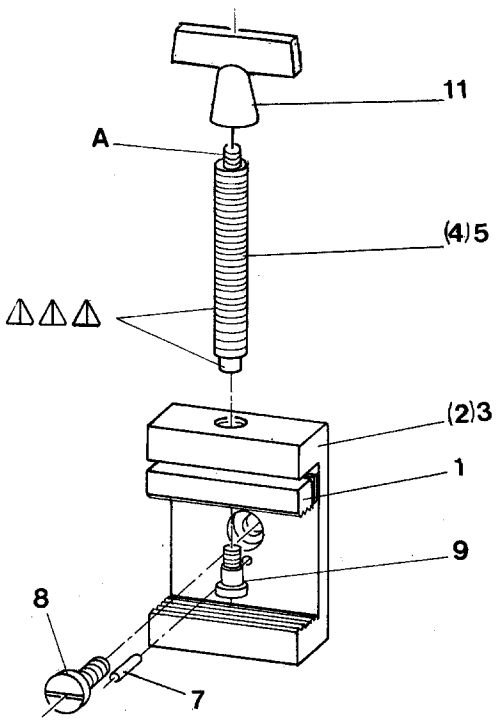
** nur für Modell 1510
for type 1510 only

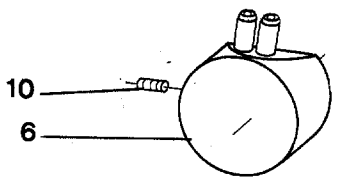
*** Abb. Nr. 3 und Nr. 19 immer zusammen bestellen.
Fig. No. 3 and No. 19 must be ordered together.

Nr. No.	Bestell-Nr. Part-No.	PG	Stück Nos.	Benennung	Description
1	025-098.001-031	63		Schlitten, kompl. Abb. Nr. 2-42	sledge, compl. Fig. No. 2-42
2	025-098.001-036	999	4	Teflon-Winkel	teflon angle
3	025-098.001-038	21	1	Führungsleiste	guide ledge
4	025-098.001-041	12	2	Hülse	sleeve
5	025-098.001-043	22		Stellscheibe, kompl. Abb. Nr. 6-8	adjustment washer, compl. Fig. No. 6-8
6	025-098.001-044	19	1	Stellscheibe	adjustment washer
7	025-098.001-045	15	2	Verstellstück	adjusting piece
8	025-098.001-046	07	2	Zylinderstift	cylindrical head pin
9	025-098.001-048	17	2	Rändelknopf	knurled knob
10	025-098.001-049	12	2	Nutstein	clamping piece
11	025-098.001-052	12	1	Stellbolzen	adjustment bolt
12	025-098.001-054	16	1	Lagerschale	bearing boxe
13	025-098.001-057	22	1	Kugel	ball
14	025-098.001-069	14	1	Knebel, kompl. Abb. Nr. 15, 16	tommy, compl. Fig. No. 15, 16
15	025-098.001-070	12	1	Knebel	tommy
16	025-098.001-071	12	1	Hülse	sleve
17	025-098.001-076	15	1	Kurbelstange, 104 mm lang	connecting rod , 104 mm long
18	025-098.001-077	09	2	Folienlager	foil bearing
19	025-098.001-304	47		Schlitten Abb. Nr. 3, 34	sledge Fig. No. 3, 34
20	025-098.001-308	24	1	Kurbelstange, kompl. Abb. Nr. 17, 18, 25, 26	connecting rod, compl. Fig. No. 17, 18, 25, 26
21	025-098.001-310	24	1	Kugelkappe	ball cap
22	025-098.001-311	22	1	Gewindebuchse	threaded bush
23	025-098.001-313	15	1	Knebelschraube	tommy screw
24	025-098.001-318	19	1	Lagerzapfen	bearing bolt
25	025-098.001-319	19	1	Kurbelzapfen	crank shaft pin
26	025-098.001-322	17	1	Aufnahmestift	holder
27	025-098.052-007	17	1	Aufnahmedorn	recliving lug
28	025-098.052-008	08	1	Zylinderstift	cylindrical pin
29	705-598.220-000	03	2	Scheibe	015-121.056-222 washer
30	706-168.220-000	03	*	Scheibe	015-121.054-162 washer
31	706-262.000-000	03	1	Scheibe	015-122.068-271 washer
32	706-500.000-000	03	1	Scheibe	015-121.058-176 washer
33	708-824.000-000	04	2	Zylinderschraube	M5x16 DIN 912 cylindrical head screw
34	708-825.000-000	04	3	Zylinderschraube	M6x25 DIN 912 cylindrical head screw

Nr. No.	Bestell-Nr. Part. No.	PG	Stück Nos.	Benennung		Description
35	708-826.220-000	05	2	Gewindestift	M2x8 DIN 531	threaded pin
36	708-872.213-000	10	2	Zylinderschraube	015-010.060-006	cylindrical head screw
37		03	*	Scheibe 0,06mm	015-121.031-286	washer 0,06mm
38	709-061.220-000	03	*	Scheibe 0,1mm	015-121,052-286	washer 0,1mm
39	709-062.220-000	03	*	Scheibe 0,3mm	015-121.054-286	washer 0,3mm
40	709-063.220-000	03	*	Scheibe 1,0mm	015-121.058-286	washer 1,0mm
41	706-242,000-000	03	*	Scheibe 1,5mm	015-121.059-286	washer 1,5mm
42	709-443.000-000	03	*	Zylinderschraube	M5x20 DIN 912	cylindrical head screw
43	709-346.000-000	04	1	Gewindestift	M5x20 DIN 914	threaded pin
44	025-098.001-085	15	1	Gewindestift		threaded pin
45	025-098.801-076	15	1	Kurbelstange 115mm lang		connecting rod

* nach Bedarf/as needed



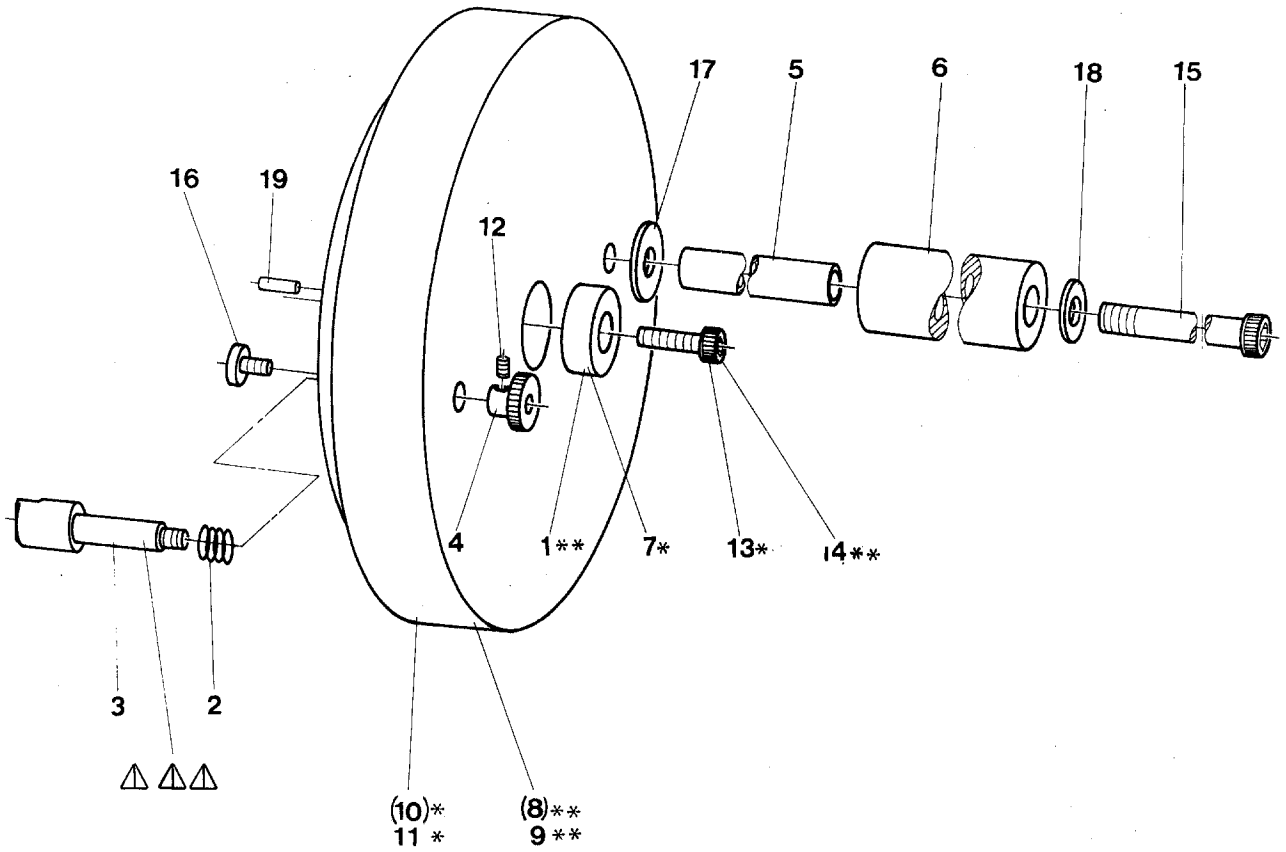


⚠⚠⚠ 410 A Araldit

Nr. No.	Bestell-Nr. Part-No.	PG	Stück Nos.	Benennung		Description
1	025-085.003-009	18	1	Klemmbacken		clamping jaw
2	025-093.004-000	37	1	Objektklemme Abb. Nr. 1, 3, 4, 7, 8, 9,		object clamp 1, 3, 4, 7, 8, 9,
3	025-093.004-006	26	1	Objektklemme		object clamp
4	025-093.004-011	23	1	Druckschraube, Abb. Nr. 5, 11		thumb screw, Fig. No. 5, 11
5	025-093.004-012	17	1	Gewindestück		threaded piece
6	025-095.800-138 *	59	1	Gefrierkammer		freezing chamber
7	704-407.210-000	02	1	Zylinderkerbstift	2x10 DIN 1473	splined pin
8	704-923.213-000	07	1	Zylinderschraube	M 6x12 DIN 7984	cylindrical head screw
9	705-747.213-000	13	1	Linsenschraube	015-010.353-005	oval head screw
10	707-244.163-000	04	1	Gewindestift	AM 4x6 DIN 916	threaded pin
11	708-210.214-000	04	1	Griffmutter	A 32 LN 214	handle nut

* Verwendung nur bei Histokryotom.
use for Hisokryotom only.

Nr. No.	Bestell-Nr. Part-No.	PG	Stück Nos.	Benennung		Description
1	025-085.010-039	20	1	Transportrolle		transport roll
2	025-085.010-042	13	1	Gumistreifen		rubber strab
3	025-085.010-082	13	1	Nippel		nipple
4	025-098.004-000	999	1	Automatische Bandführung, kompl. Abb. Nr. 1-3, 5-21, 24, 26-32		automatic conveyer belt, compl. Fig. No. 1-3, 5-21, 24, 26-32
5	025-098.004-007	30	1	Halter		holder
6	025-098.004-010	15	2	Umlenkrolle, kompl. Abb. Nr. 7, 8, 24		roll, compl. Fig No. 7, 8, 24
7	025-098.004-011	14	2	Hülse		sleeve
8	025-098.004-013	10	1	Achse		shaft
9	025-098.004-021	19	1	Leiste		ledge
10	025-098.004-028	17	1	Rändelschraube		knurled screw
11	025-098.004-029	18	1	Rändelschraube		knurled screw
12	025-098.004-035	49	1	Transporteinrichtung, kompl.		transport mechanism, compl.
13	025-098.004-066	15	1	Rändelknopf		knurled knob
14	025-098.004-094	17	1	Verbindungsstück		connecting piece
15	025-098.004-102	18	1	Verbindungshebel		connecting lever
16	025-098,004-103	19	1	Schraube		screw
17	025-098.004-108	16	1	Transportband		transport belt
18	025-098.004-111	13	1	Achse		shaft
19	025-098.004-112	13	1	Rohr		tube
20	025-098.004-120	10	1	Torisionfeder		torisonal spring
21	025-098.004-121	15	1	Federhülse		spring sleeve
22	025-098.005-000	34	1	Drahtauslöser		release
23	530 335	999	1	Automatische Bandführung, kompl. Abb. Nr. 4, 22, 25, 33		automatic conveyer belt, compl. Fig. No. 4, 22, 25, 33
24	060-185.001-412	05	2	Druckfeder		pressure spring
25	701-813.220-000			Scheibe	6,4 DIN 125	washer
26	702-682.220-000	04	3	Gewindestift	M3x8 DIN 553	threaded pin
27	702-700.220-000	04	1	Gewindestift	M4x8 DIN 553	threaded pin
28	703-124.213-000	06	6	Zylinderschraube	M4x12 DIN 912	cylindrical head screw
29	703-569.213-000	04	1	Schraube	M3x8 DIN 921	screw
30	704-369.220-000	999	1	Paßkerbstift	2,5x20 DIN 1472	splined pin
31	704-750.000-000	999	1	Zahnscheibe	A 5,3 DIN 6797	fanshaped washer
32	704-787,220-000		1	Sicherungscheibe	5 DIN 6799	lock washer
33	708-606.000-000		1	Griffschraube	M6x20 LN 12502	screw



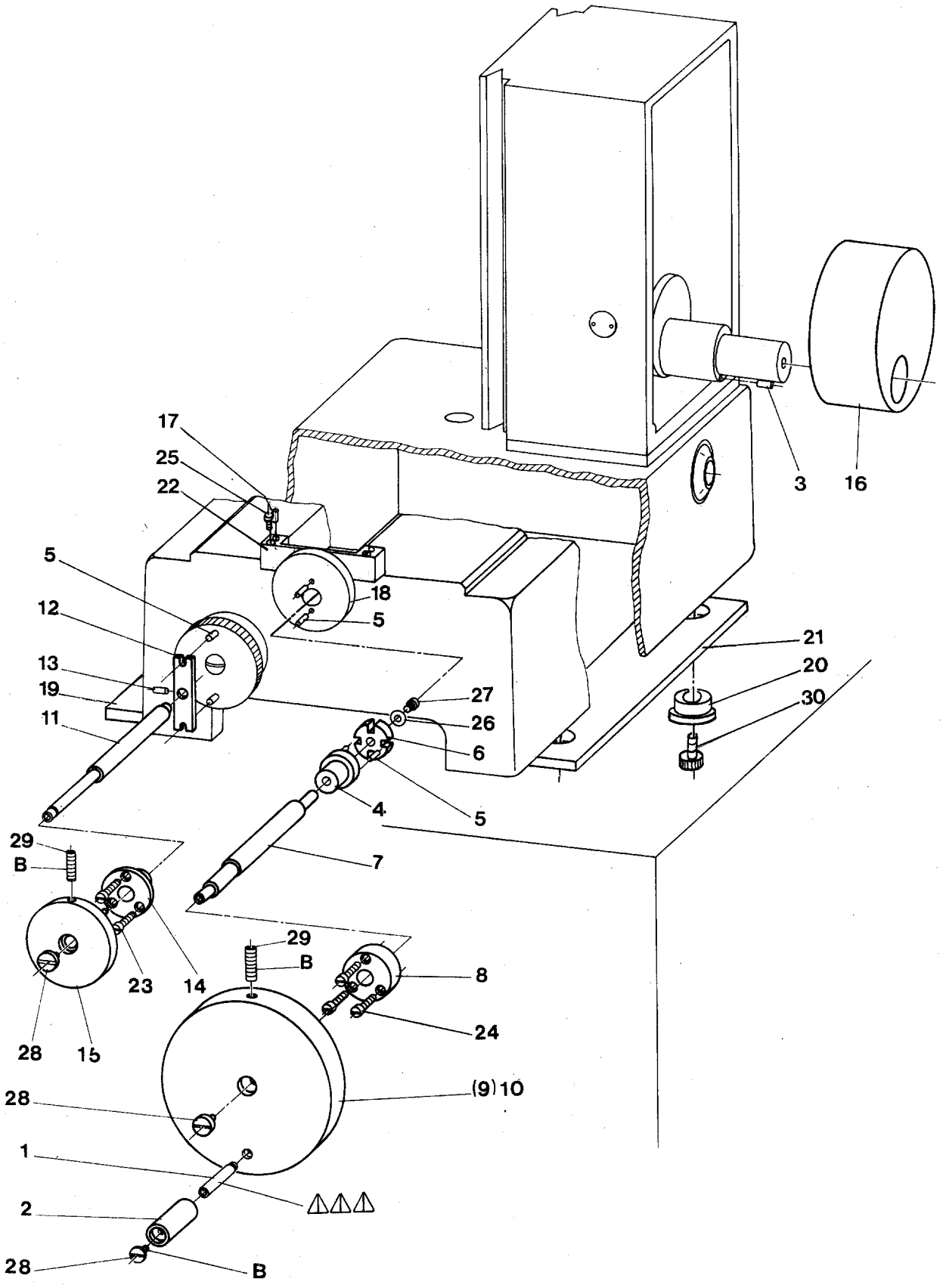
* wird nur benötigt für das Handrad der Standardausführung
only needed omthe hand wheel for the standard type

** wird nur benötigt für das Handrad Histokryotom
only needed on the hand wheel for the Histokryotom

Nr. No.	Bestell-Nr. Part-No.	PG	Stück Nos.	Benennung		Description
1	025-085.002-038**	14	1	Unterlegscheibe		washer
2	025-098.006-010	5	2	Druckfeder		pressure spring
3	025-098.006-012	19	2	Bolzen		bolt
4	025-098.006-018	16	2	Rändelmutter		knurled nut
5	025-098.006-022	14	2	Distanzrohr		spacer
6	025-098.006-032	17	2	Handgriff		handle
7	025-098.006-040*	15	1	Unterlegscheibe		washer
8	025-098.009-000**	49	1	Handrad, kompl. Abb. Nr. 1-6, 9, 12, 14, 15-19		hand wheel, compl. Fig. No. 1-6, 9, 12, 14, 15-19
9	025-098.009-006**	44	1	Handrad		hand weel
10	025-098.019-000*	49	1	Handrad, kompl. Abb. Nr. 2-7, 11-13, 15-19		hand wheel, compl. Fig. No. 2-7, 11-13, 15-19
11	025-098.019-006*	44	1	Handrad		hand wheel
12	702-648.220-000	3	2	Gewindestift	M2x3 DIN 553	threaded pin
13	703-157.213-000*	7	1	Zylinderschraube	M6x20 DIN 912	cylindrical head screw
14	703-171.213-000**	7	1	Zylinderschraube	M8x20 DIN 912	cylindrical head screw
15	703-185.213-000	7	2	Zylinderschraube	M8x80 DIN 912	cylindrical head screw
16	703-580.213-000	6	2	Schraube	M4x8 DIN 912	screw
17	705-906.220-000	3	2	Scheibe	015-121.088-165	washer
18	706-818.220-000	3	2	Scheibe	015-121.088-136	washer
19	707-195.163-000	5	2	Steckkerbstift	3x10 DIN 1474	splined pin

* wird nur benötigt für das Handrad der Standardausführung
only needed for the hand wheel of standard type

** wird nur benötigt für das Handrad der Geräte zu Histokryotom
only needed for the hand wheel of instruments installed in to Histokryotom



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B Sicherungslack LN 452/01/1

Nr. No.	Bestell-Nr. Part-No.	PG	Stück Nos.	Benennung		Description
1	025-084.001-278	14	1	Achse		axle
2	025-084.001-279	17	1	Handgriff		handle
3	025-098.001-025		1	Zylinderstift		cylindrical pin
4	025-098.003-005	999	1	Kupplungsflansch		clutch flange
5	025-098.003-007	999	6	Zylinderstift		cylindrical pin
6	025-098.003-009	999	1	Kupplungsscheibe		thrust plate
7	025-098.003-016	999	1	Achse		axle
8	025-098.003-019	999	1	Lagerbuchse		bearing bush
9	025-098.003-025	999	1	Handrad, kompl. Abb. Nr. 1, 2, 10, 28		hand wheel, compl. Fig. No. 1, 2, 10, 28
10	025-098.003-026	999	1	Handrad		hand wheel
11	025-098.003-041	999	1	Achse		axle
12	025-098.003-043	999	1	Bügel		bow
13	025-098.003-046	999	1	Zylinderstift		cylindrical pin
14	025-098.003-049	999	1	Buchse		bush
15	025-098.003-057	999	1	Knopf		knob
16	025-098.010-000	999	1	Gewicht		weight
17	025-098.052-008	6	3	Zylinderstift		cylindrical pin
18	025-098.052-008	22	1	Kupplungsflansch		coupling flange
19	025-098.052-022	26	1	Leiste		ledge
20	025-098.052-023	15	4	Einsatzbuchse		insert
21	025-098.052-026	20	1	Leiste		ledge
22	025-098.052-031	20	1	Indexplatte		index
23	700-703.213-000	5	3	Zylinderstift	M3x4 DIN 84	cylindrical pin
24	700-721.213-000	5	3	Zylinderschraube	M3x10 DIN 84	cylindrical head screw
25	700-732.213-000	6	2	Schraube	M3x16 DIN 84	screw
26	706-664.220-000	3	1	Scheibe	015-121.036-056	washer
27	708-817.220-000	5	1	Zylinderschraube	M3x4 LN 120 19	cylindrical head screw
28	708-818.213-000	5	3	Schraube	M3 x8 DIN 921	screw
29	708-820.000-000	4	2	Gewindestift	AM 4x16 DIN 916	threaded pin
30	708-822.000-000	4	4	Schraube	M8x20 DIN 912	screw

Every instrument should be maintained regularly and expertly to preserve its functional reliability. Maintenance of the instrument must be carried out more frequently especially when the maintenance recommended in the operating instructions and cleaning has not been thorugh.

Maintenance comprieses and is described under:

1. Checking the instrument for irregular functions, any necessary repairs, defective components.
2. Dismantling, cleaning
3. Assembly, lubrication, and adjustment
4. Cutting tests.

Whether it is possible to carry out repairs within the scope of maintenance depends on the state of the instrument and whether the date of purchase or the last check and adjustment falls within the last two years.

To render a defective instrument operational again as quickly as possible, repairs, if possible, should be carried out on site.

Before starting operations, please note:

Anny accessories of on LEITZ manufacture must be operated or removed by the owner or user of the instrument so that maintenance of the LEITZ instrument can be carried out.

Every instrument is the customer's property and should be treated accordingly. If specimens and other objects not belonging to the outfit obstruct maintenance operations, they should be removed only with the customer's consent.

Tools and aids required:

1 Dial gauge holder 025-098.001-000 W7
1 Millimeasuring instrument - read out 1 um
1 Screwdriver 5 dia
1 Screwdriver 8 dia
1 Plastic mallet
1 Allen key 4mm DIN 911
1 Allen key 5 mm DIN 911
1 Drift 1.9 dia
1 Pinnspanner 025-098.001-249 W1
1 Spanner 025-098.001-250 W2
1 Off-set screwdriver
2 Open-jawed spanner 13 mm (reduce head to 25 mm before starting work)
1 Open-jawed spanner 10 mm
Securing varnish LN 452/01/1
Lubricant 410
Lubricant 601
Lubricant 602
1 forceps
1 flat pliers
cleaning agent

1. Checking

1.1 Section thickness setting

Remove the hood 4.1/15. Tilt the instrument to the left and rotate handwheel 8.1/11, when the setting wheel 3.1/10 must stop in any set position and the block is advanced according to the set section thickness.

1 click = 1 µm

When the ratchet wheel 3.1/11 is pushed alternately to the left and right, more or less play depending on the position will always be found in the transmission. This must, however, be less than the advance of 1 click.

1.2 Vertical sledge

Check the play of the vertical sledge as under 3.5
Permissible tolerance : 0,003 mm

1.3 Knife holder

When the spindle nut is disengaged it must be possible to push the knife holder smoothly forwasds and backwards.
Permissible tolerance: vertical 0,006 mm
lateral 0,02 mm

When the nut is engaged, it must be possible to rotate the coarse adjustment of the knife holder evenly and without play throught the entire adjustment range.
Permissible tolerance in the advance motion: 0,02 mm
The tolerance should be checked only as described under 3.7.

1.4 Crank drive

It must be possible to rotate the handwheel smoothly and evenly, and the drive shaft 4.1/3 should have an axial play of about 0,03 mm.
Dismantle only if necessary.

1.5 Adjustment of the object clamp, adjustment of the knife holder:

Both adjustments must be easy in any position and it must be possible to clamp them.

After the instrument has been checked the owner should be informed about:

the state of instrument	tight movement, disadjustment or wear through - normal use - age - wrong handling - insufficient or wrong maintenance
necessary repairs	required in addition to maintenance
new parts required	- because of wear and tear - to improve the function
available accessories	- to simplify operation - to extend practical range - newly added to the production range

If in the course of this check irregularities are noted whose cure is not described in the maintenance instructions, these must be listed as repairs outside the scope of maintenance.
Before repairs are started, costs must be determined and the customer's consent must be obtained.

2. Dismantling

2.1 Transport device

The transport device should be removed from the instrument only if breakdowns cannot be dealt with while it is in position.

Slacken screw 3.1/21, initially only through 3-4 turns, and remove the setting knob 3.1/35. Slightly tapping the screw, release the setting knob and the shaft 3.1/17 with the gear 2.1/18 all at once. Now push the shaft out of the bearing towards the back. Turn out screw 5.1/40 and unhook the spring 3.1/26 from the spindle 3.1/26. Turn out the two grub screws 3.1/42 and remove the entire transport device.

2.2 Vertical sledge

So that the guide track can be cleaned effectively, the vertical sledge 4.1/8 must always be removed. Turn out the two grub screws 5.1/33 and 5.1/41, pull the vertical sledge upwards out of its guide. Unscrew the handweehl, slacken the grub screw 4.1/17 and pull out the drive shaft 4.1/3.

2.3 Knife holder

If the tolerance stated under 1.3 is not maintained or if the guide tracks are dirty, the knife holder must be dismantled as follow:
Knock out the edged adjusting pin 2.1/23. It is essential to support the micrometer spindle 1.1/11 against the effect of the knock. Pull off the graduated drum 2.1/15, and unscrew the index plate 2.1/19 with spanner 025-098.001-249 W1, turn out the two counter screws 2.1/13 and the two Allen screws 2.1/30. The knife holder 2.1/3 can now be pulled forward out of its guide.

Please note: On no account turn the two threaded bushes 2.1/12 to the left or right, so that their position is maintained for reassembly.

The sliding foils glued to the underside of the knife holder should be protected against damage during dismantling and reassembly.

2.4 Micrometer spindle and spindle nut

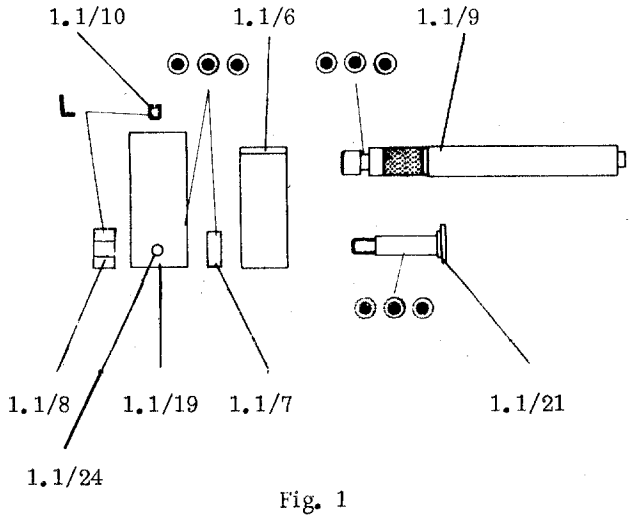
Dismantling should take place only if much dirt has collected and if the tolerance given under 1.1 is exceeded.
After dismantling of all the structural components as described under 2.1 to 2.3, the cover pieces 1.1/17 and 1.1/18 are removed. Knock out the cylindrical pin 1.1/13, unscrew the plate 1.1/16, slacken the two nuts 1.1/14 which at the same time pushes off the gear 1.1/2. Now open the spindle nut and pull the micrometer spindle 1.1/11 out of its bearing.

2.5 Clean with petrol and dry the baseframe, all component groups, separate parts, especially guide faces and the micrometer spindle.

3. Assembly

3.1 Spindle nut

Lubricate all moving parts as well as the thread in the spindle nut as described in Fig. 1. Slacken screw 1.1/24, feed the nut 1.1/8 and tighten screw 1.1/24 again. This must be repeated until a play-free openning and closing of the spindle nut over the shaft 1.1/9 is possible. If only one side of the spindle nut does not automatically close, the adjusting screw 1.1/21 must be slightly slackened or the support face smoothed at the appropriate position of the shaft 1.1/9. Both sides must close simultaneously and spring pressure must be strong enough so that the shaft 1.1/9 is still clamped. Secure the screw 1.1/8 1.1/10 and 1.1/24 with Loctite.

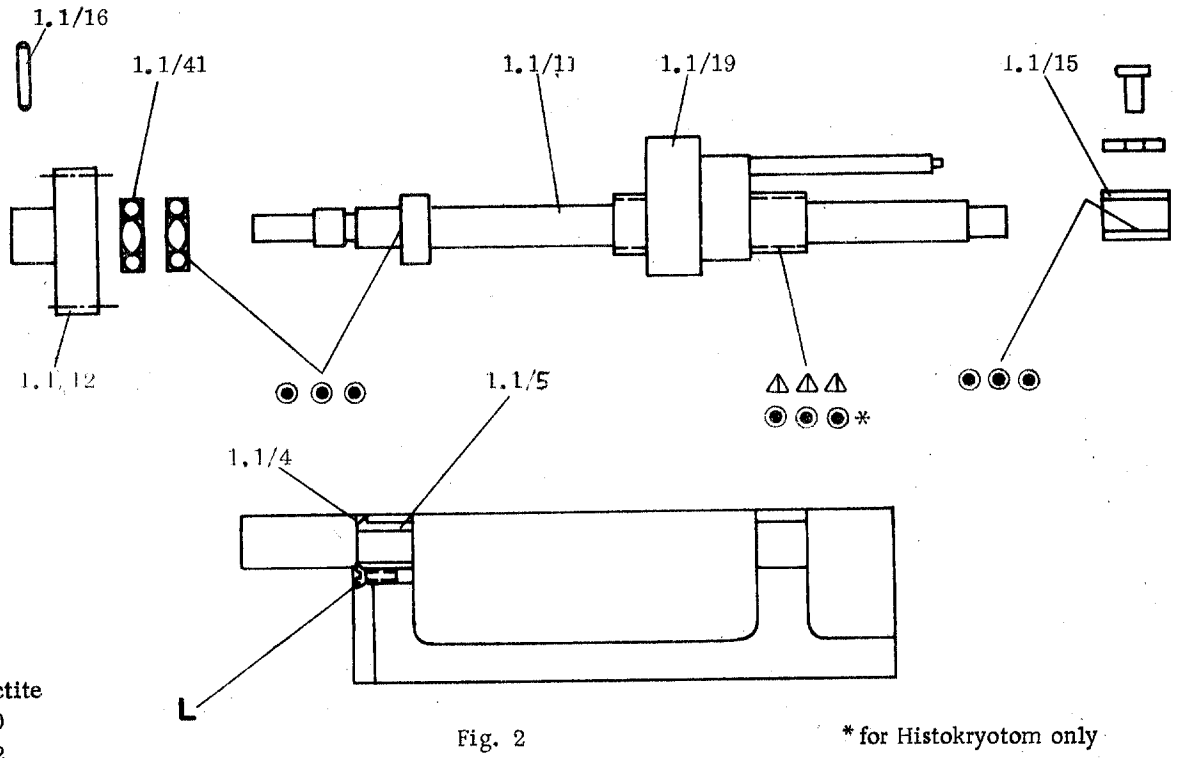


L Loctite
◉◉◉ 602

Fig. 1

3.2 Micrometer spindle

Check the sinter bearing 1.1/5 for a tight fit. Lubricate the two bearings 1.1/5 and 1.1/15 as well as the micrometer thread of the micrometer spindle 1.1/11. Now place the spindle nut 1.1/19 on the micrometer spindle and assemble as shown in Fig. 2 in the reverse order as described under 2.5.



L Loctite
△△△ 410
◉◉◉ 602

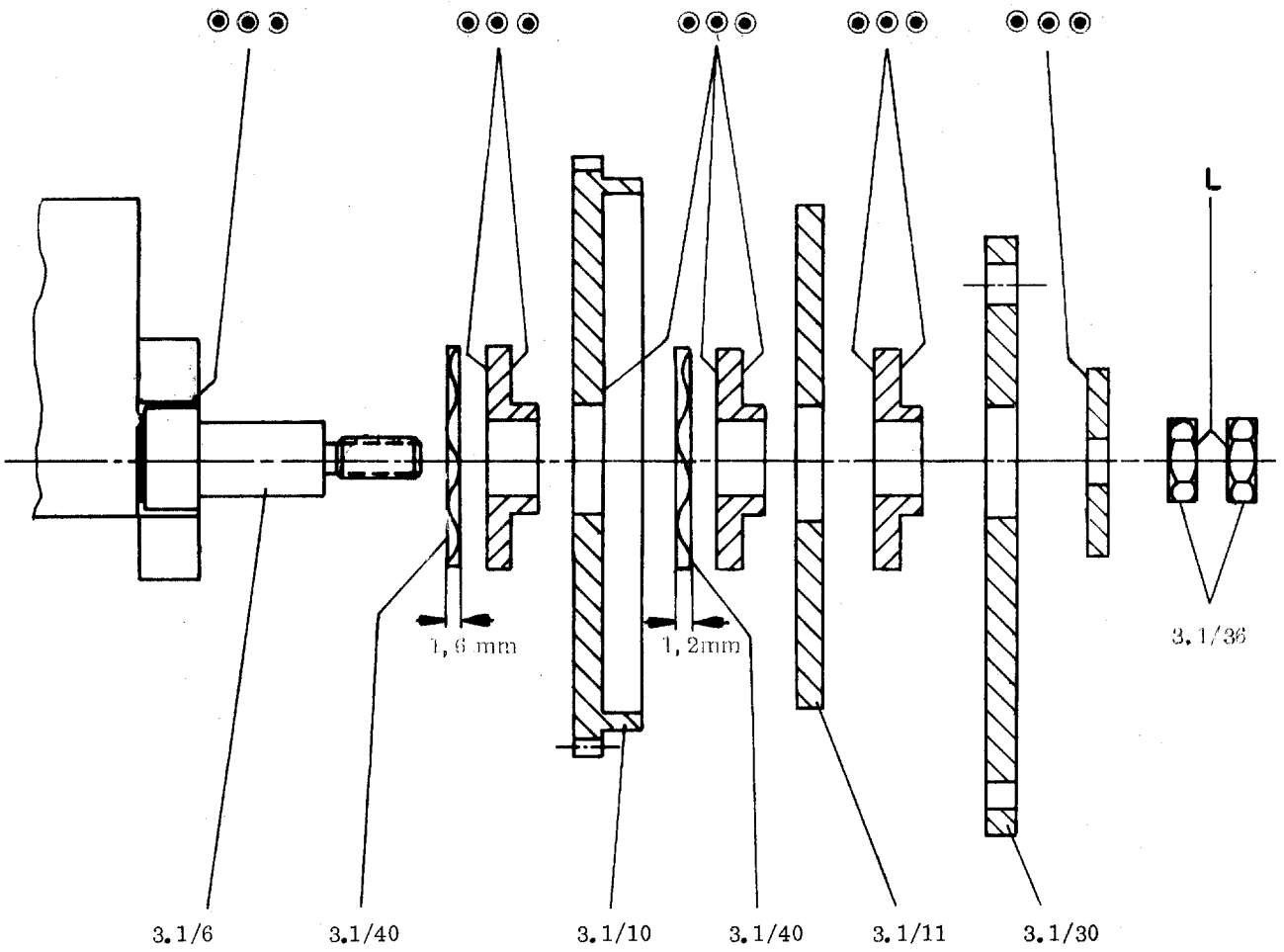
Fig. 2

* for Histokryotom only

Tighten the two nuts 1.1/14 against each other and adjust until the micrometer spindle has no axial play and has true rotation.

3.3 Transport device

Dismantle the advance mechanism in the sequence shown in Fig. 3, and bend the two shaft springs 3.1/40 as required. The shaft spring first to be assembled must have a plane-parallel height of 1,6 mm and the second shaft spring one of 1,2 mm. After cleaning lubricate all parts as shown below. Assemble in the reverse order.



L Loctite
●●● 602

Fig. 3

After assembly the ratched wheel 3.1/11 must be firmly clamped, so that it can be turned only via the shaft 3.1/6. The setting wheel 3.1/10 must remain stationary, the transport lever 3.1/30 must be easily movable.

3.4 Gear

Lubricate all spindles and bearings, see Spare Parts List sheet 3.1 , and check freedom of movement. Push the bearing lock 3.1/5 parallel against the lateral stop face together with the transport device, the stepping spindle and the gears, and push it to left or right until the spindle 3.1/17 can be freely rotated in the mounted state. Firmly screw the bearing block in position and finally secure the intermediate gear 3.1/16 against the gears 3.1/7 and 1.1/12 with manual pressure.
Check the play between the gear wheels in various positions of the gear. To do this, move the ratchet wheel 3.1/11 without moving the gear. There should only be little play between the gear wheel. If necessary readjust the intermediate gear wheel 3.1/16 by releasing the nut 3.1/38 and securing the intermediate gear under still stronger pressure as before.

3.5 Vertical sledge

If necessary lubricate the articulated clamp, tighten the toggle 5.1/14 and check via the object clamp whether the joint is firmly blocked on all sides. If necessary place a washer 5.1/30 under the toggle screw. The ball- and - socket joint must be set so that in the unclamped position the clamp does not tilt under its own weight. A play of about 90° is permissible with knurled screws 5.1/9.

Firmly tighten the connecting rod with screw 5.1/42 which must still easily rotate.

Clean and lubricate all faces of the guide. Lightly lighten the 3 screws 5.1/34, and with the setting screws 5.1/36 set the guide bar 5.1/3 to the sledge guide 4.1/1 so that it has no play. Firmly tighten the 3 screws 5.1/34 when the vertical sledge must drop under its own weight.

Check: Fix the dial gauge holder 025-098.001-000 W7 to the sledge guide with 2 knurled screws and block it with the thrust screw (see Fig. 4). Check the play if the vertical slide as follows in the topmost and bottom-most position: Place the milli-measuring instrument in position, push the vertical sledge firmly in the direction of the milli-measuring instrument and release it. Read the indication of the milli-measuring insrument and push the vertical sledge firmly into opposite direction and release it. The tolerance value is the difference between the two read-outs.

Permissible tolerance: 0,003 mm

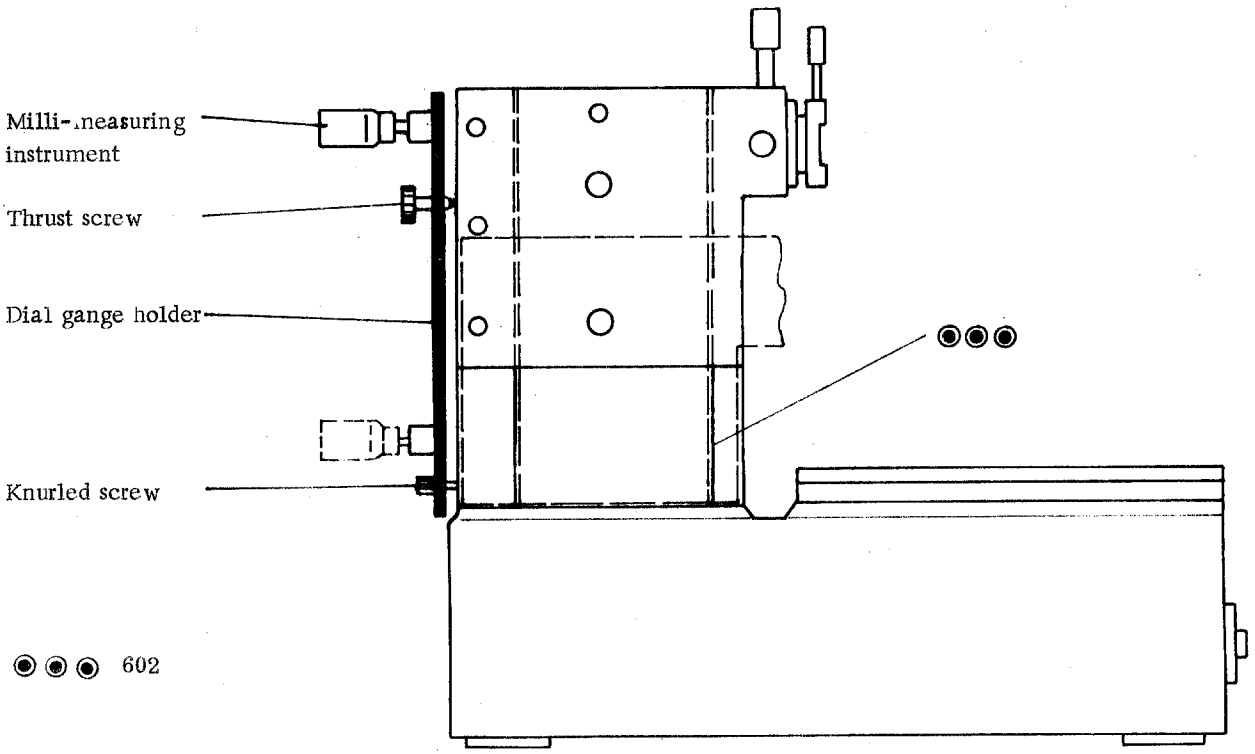


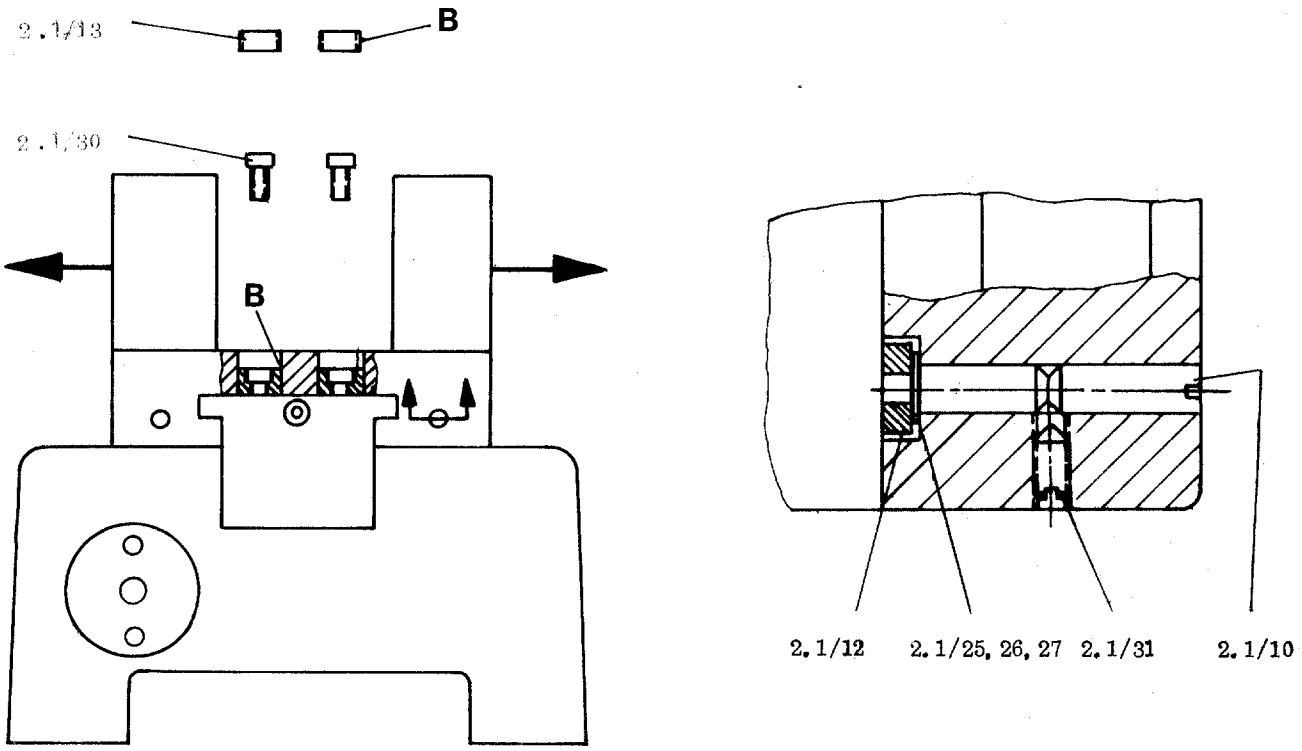
Fig. 4

If the stated tolerance is not reached, repeat the setting as described above.

3.6 Crank drive

If during the maintenance work the instrument has been dismantled completly, assemble the shaft 3.1/3 and the crank disc 3.1/6 with Lubricant 602. The crank rod fixed to the vertical sledge must now be connected with the crank disc, and the handwheel fixed. It must now be possible to rotate the handwheel smoothly and evenly. The drive shaft have a maximum axial play of 0,03 mm.

3.7 Turn the 4 slide bars 2.1/12 into the bottom-most postition through the 4 eccentric pins 2.1/10 with the discs 2.1/25, 26, or 27 pushed on as required. After all the guide tracks have been thoroughly cleaned, push the knife holder on to the guide without lubricant. First feed the two right- hand slide rings and then the left-hand slide bars colckwise over the eccentric pins and secure them with the 4 grub screws 2.1/31, see Fig. 5. It must not be possible to push the knife holder free from play and easily. Check the permissible play, see Check.



B protective laquer LN 452 Fig. 5

If the position of the threaded bushes 2.1/12 has remained unchanged as recommended under 2.3, the spindle nut can be fixed on the knife holder without correction with the screws 2.1/30. If however, the threaded bushes have been turned donwards or upwards, accurate readjustment is necessary.

Feed the two threaded bushes 2.1/12 with the spanner 025-098.001-249 W1, fix the spindle nut with the two screws 2.1/30 and very firmly tighten the two counter screws 2.1/13 with the pin spanner 025-098.001-250 W2.

Please note: If the lever 2. 1/14 has been moved to the left, there must be sufficient play to the left-hand stop, see Fig. 6, so that the spindle nut is completely closed.

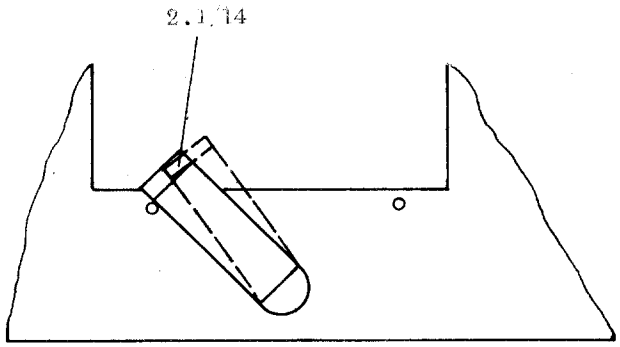


Fig. 6

In the right-hand position of the lever 2. 1/14 the spindle nut must be completely open and it must be possible to push the knife holder forward and backward in the guide track without macking contact with the micrometer spindle (no noise).

Now turn out the counter screws 2. 1/13 and paint B-securing varnish round the two threaded bushes 2. 1/12.

Assemble all the other parts logically in the reverse order as described under 2. 3 and lubricate as stated in the Spare Parts List, Sheet 1. 1 and 2. 1.

Check:

Chuck the dial gauge holder 025-098. 001-000 W7 in the knife holder and set the milli-measuring instrument against a fixed position of the vertical sledge, see Fig. 7.

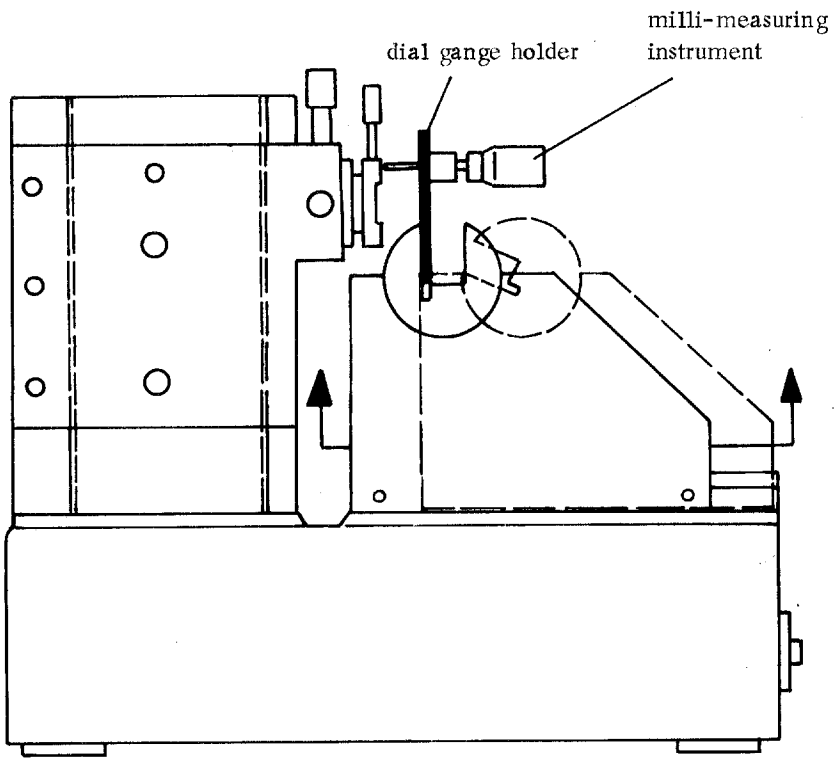


Fig. 7

When the knife holder is alternately pushed across the diagonal from left to right and back, the lateral play should not be more than about 0,02 mm. If it is in excess of this it must be removed, through placing the discs 1.1/25, 26 or 27 accordingly on the 2 left hand eccentric pins, see Fig. 5.

When the spindle nut is open, lift the knife holder in the direction of the arrow, see Fig. 7, once at its front and once at its rear end, and tacke the reading in the milli-measuring instrument each time. The tolerance is the difference between the two readings.

Permissible tolerance:0,006 mm

When the spindle nut is closed, set the milli-measuring instrument as horizontally as possible and determine the play by pushing and pulling the knife holder in the direction of the guide track.

Please note: Here the knife holder must be pushed or pulled only with little force.
Otherwise the tolerance set will be rapidly widened.

Permissible tolerance: 0,02 mm

If the play is excessive or too little, the procedures must be repeated accordingly as described above.

3.8 Section thickness setting

As needed set spring pressure by bending the leaf spring 3.1/31, so that the engagement of the pawl occurs in every set position and after release moves gently over the teeth of the setting wheel 3.1/10. Hook the traction spring 3.1/23 in and fix the switch lever 3.1/25 to the vertical sledge 4.1/8.

Rotate the setting spindle 3.1/17 with gear 3.1/18 until the first tooth for the advance of 1 µm is covered by the setting wheel. Push the setting knob 3.1/21 on the setting spindle in the "0" position and slightly tighten it. Now set the setting knob at 1 µm advance and while rotating the handwheel slowly, check the meshing to the middle of the tooth and correct it via the setting spindle. Repeat this check in 4 to 5 positions of the setting wheel. If necessary turn the setting knob a little to the left or right, so that the chosen section thickness is cut according to the scale indication.

Check: Setting 1 µm = 30 rpm
Setting 5 µm = 50 rpm
Setting 25 µm = 100 rpm

Please note : Although all structural components are set according to the stated tolerances, the advance may occasionally be inaccurate by 1-2 µm during the first advance movement, owing to residual play in the transmission.

4. Cutting tests

I. Object block: Paraffin-embedded histological tissue

Size of block about 30 x 40 mm
Object portion about 20 x 30 mm

II. Microtome knife: Knife profile C (wedge shaped)

III. Cutting

a. Angle of inclination about 4-5°

b. Section thickness 10 µm - 7 µm - 4 µm

c. Cutting rate:

At 10 µm about 100 rpm
At 7 µm about 70 rpm
At 4 µm about 40 rpm

d. Number of sections:

At 10 µm 10 sections
At 7 µm 10 sections
At 4 µm 30 sections

Explanation:

To I. Size of block and object portion can deviate from the stated standard size by about ± 3 mm for reasons of technical preparation.
Histological tissue is not homogeneous, differences in hardness may therefore occur from one block to the next and within a specimen in spite of a preselected original product. If the precautions listed under 2, 3, and 4.do not produce perfect cutting results in such cases, new blocks must be used.

To II. Microtome knives are subject to considerable wear during the cutting of hard objects (for instance uterus) and their life is thereby reduced. No information can be given about the useful life of a microtome knife, because the properties of the material and differences in honing have a considerable effect on it.
Tests should therefore be always carried out only with well honed and sharp microtome knives, i.e. knives used for quality control must be frequently honed.
If chatter occurs, the portion of the knife used must be thoroughly cleaned (front and back) and, if necessary, changed. In some conditions even a new knife should be used. The angle of inclination (inclination of the knife to the surface of the object) also influences section quality.

To III. a. The blocks must be trimmed only in single steps, maximum 15 µm. Failing this, the knives will be damaged or become prematurely blunt; in addition, the object blocks may be damaged.

b. If chatter marks occur during the cutting rates given above, the values should be reduced by a 1/4 or 1/2.
Hard and/or extensive objects always require lower cutting rates.
Cutting rates should not exceed 100 rpm also when hard objects are to be trimmed, to avoid damage to knives and blocks.

c. Not more than 30 sections should be cut in an uninterrupted sequence, because artifacts may be produced on the block owing to contamination of the knife edge, or frictional heat. Should assessment not yet be possible after 30 sections, the knife edge must first be cleaned thoroughly with petrol, or another series of 30 sections produced after about 1 minute with another portion of the knife or with a new knife.

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State of instrument: Ball and socket joint clamp defective.

Cause

The tommy screw 5.1/23 is stripped. For heavy strain this screw with a 4-multiple threaded as used on instruments of the model 1510 was to weak.

Elimination

For installation of a new tommy screw 5.1/23 with 3-multiple thread the ball cap 3.1/21 has to be exchanged too.

Parts required :	1	tomy screw	025-098.001-313	PG 015
	1	ball cap	025-098.001-310	PG 024

Sequence of operation

Remove ball cap 5.1/21, ball 5.1/13 and the bearing seat 5.1/12 and reassemble it again with the new ball cap however without lubrication.
Adjust the movement of the ball bearing as needed with the washer 5.1/37, 5.1/38, 5.1/39, 5.1/40, 5.1/41.
After the adjustment the parts should be lapped in with a mixture of a little lapping compound MICROMANT 500 and oil.
After that wash the bearing thoroughly in Benzin, dry it and assemble it, using the lubricant mentioned on page 5.1. of the spare parts list.

State of instrument: Ball - and - socket - joint clamp jams.

Cause

The adjustment jams when the adjustment disc 5.1/5 is turned to the end of the range of the adjustibility by the two knurled screws 5.1/9.
On Instruments of state 01 the guide slots for the adjustment disc 5.1/6 were parallel to the x- and y- direction instead of radial.

Elimination

When adjustment disc 5.1/5 is installed the two knurled knobs 5.1/9 must be replaced too.

Parts required :	1	adjustment disc	025-098.001-043	PG 022
	2	knurled knobs	025-098.001-048	PG 017

Sequence of operation:

Without removing the sledge 5.1/1 from the instrument the new adjustment disc, as shown on the illustration page 5.1 of the spare parts list, must be exchanged against the earlier version.

Conversion: From cable line to switch lever.

Reason

The transmission of the crank drive to the object feed is done with instruments of the first production series via a cable line. Due to the occasional play of the cable line the set section thickness may vary. To avoid this a switch lever instead of a cable line is mounted to the instruments of newest design.

For the conversion of the first production series the ratchet of latest design as described on page 103 should be mounted simultaneously.

Sequence

The following parts are required:

Fig. No.		Nos.		
1	025-098.001-139	1	ring	
2	025-098.001-178	1	stop	
3	025-098.001-179	1	spring	
4	025-098.001-284	1	holder	
5	025-098.001-285	1	switch lever	
6	025-098.001-286	1	axle	
7	705-672.220-000	(4) as needed	washer	015-121.042-261
8	706-624.213-000	1	screw	M 3x2,5 DIN 923
9	706-639.220-000	2	c-clip	2,3 DIN 6799
10	704-244.220-000	1	nut	M 6 DIN 934

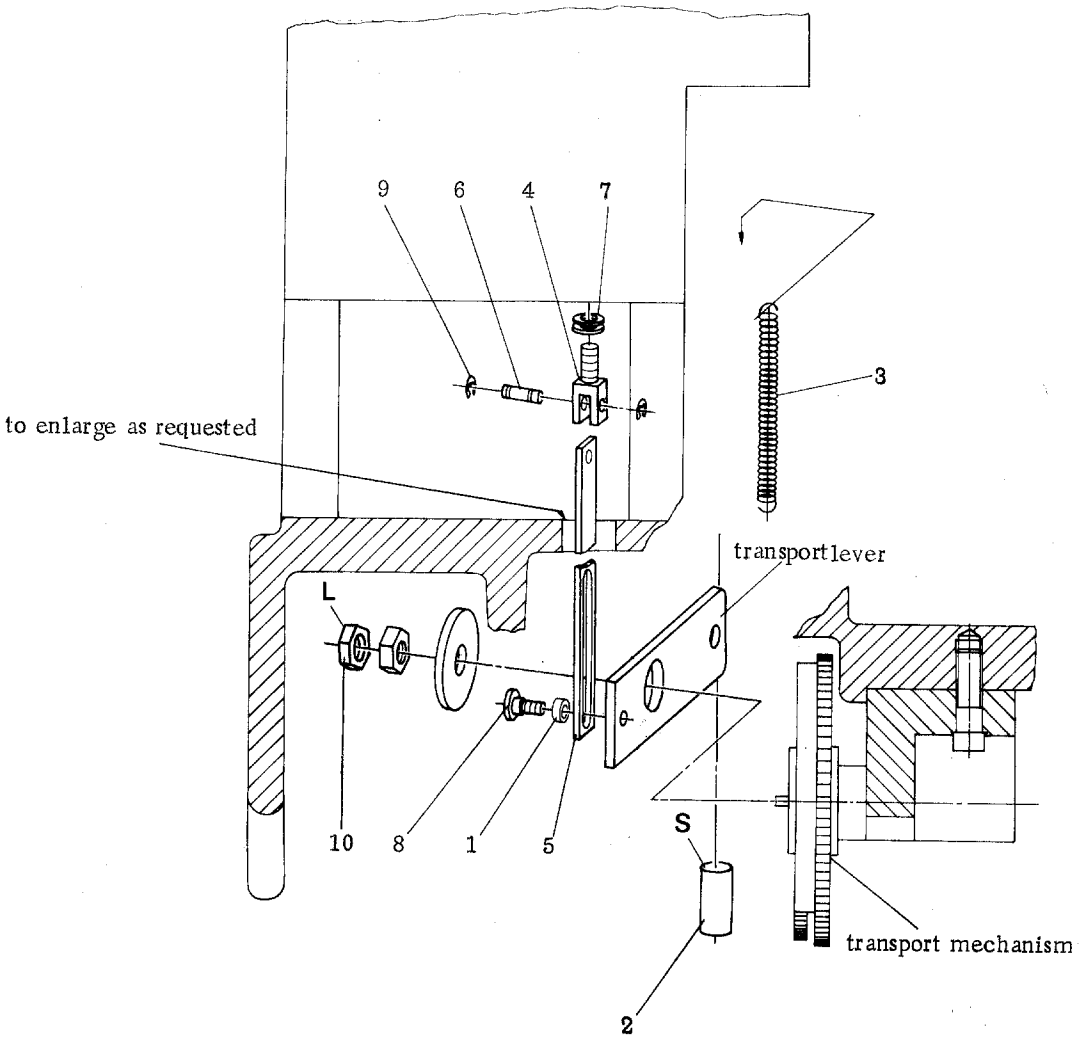
According to the employed new parts the former parts are no longer required.

1. Unscrew cable line with holder from the object sledge and take off transport lever. Enlarge boring in the base to a hole of 24 mm x 12 mm to give sufficient room for the unobstructed movement of the switch lever. Be sure to protect all gliding surfaces against metal clips.
Without dismantling the transport mechanism (see Fig. 1), take off transport lever, unscrew screw /8. and fix switch lever /5 with sleeve /1; mount transport lever as before. For better of transport lever use a second counter nut /10 and secure it with LOCTITE type 77.

2. Firmly screw holder /4 into the object sledge as shown on Fig. 1 with the aid of washer /7. With axle /6 put in the switch lever from above.

   Mount in place of the former 33 mm spring the spring /3 of 55 mm length. Glue in place of the former, shorter, stop of 8 mm the longer stop /2, 16 mm length.

   Possible chatter are thus avoided when cutting.



S sicomet 99

Fig. 1

3. Check section thickness setting, see repairinstructions page 9 section 3.8.

Conversion: Exchanging the catch on the Rotary-Microtome 1500 and Rotary-Microtome 1510

Cause

On both types of instrument catches of different designs were used which are no longer available now. During repairs, the instrument models 1500 amd 1510 must therefore be converted to the catch used on the instrument 1512.

If instruments of model 1510 are alredy fitted with the catch 025-098.001-293 as shown on Fig. 103/1, the conversion must still be carried out, because the previously used leaf spring 025-098.001-296 and the support plate 025-098.001-297 are no longer available.

Tools and aids:

1	pin spanner	016-500.004-000
1	fixed spanner	10 mm
1	screw driver	

1. Conversion of Rotary-Microtome 1500

Parts required:

1	Transport lever, complete	025-098.001-299	PG 026
4	Washers	015-121.153-082	PG 003
2	Washers	015-012.006-033 thickness 1 mm	PG 003

Sequence of operation

Remove the transport lever, earlier version, complete with switch lever from the instrument, and install the transport lever, new version 025-098.001-299 in the reverse order.

The 3 dia. bore for the mounting of the switch lever must be widened to 4 dia. before the new component group is mounted.

Compensate the different thickness of the new transport lever from the previously mounted transport lever with 3-4 washers 015-121.153-082 on the front until the play does not exceed 0,1-0,2 mm.

So that the catch runs on the ratchet wheel with its full width, remove the shaft and pack it with two washers 015-012.006-033, Fig. 1.

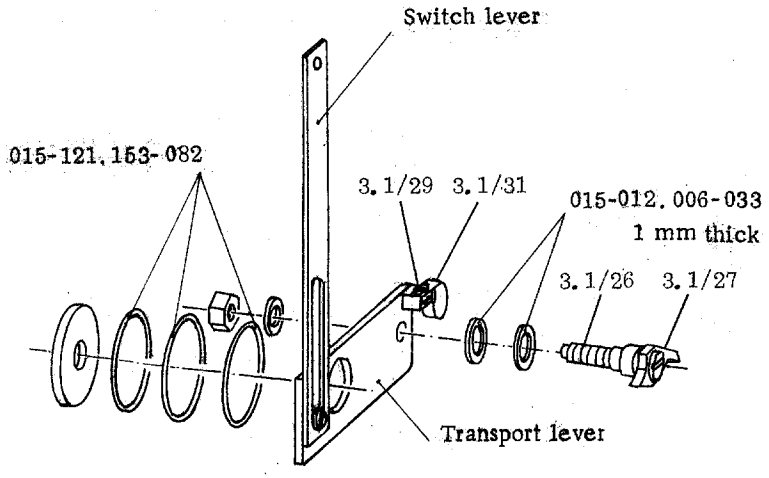


Fig. 1

Note:

On Instruments of earlier version the length of the switch lever was 106 mm, but it is 3 mm shorter on the new component group. The previously used lever should be reinstalled only if difficulties arise with the use of this shorter lever.

Check the section-thickness setting:
Set the knurled knob for setting the section thickness so that the catch of the transport device is advanced only through one tooth per rotation of the handwheel.
If the scale of the setting knob does not point at the 1 µm setting, release the setting knob, turn it appropriately and fasten it so that it engages.
Now carry out this contol over the entrie adjustment range and ensure that the catch engages exactly in the centre of the teeth of the ratchet wheel. For any necessary corrections again release the setting knob and turn the setting spindle a little forward or backward.

2. Conversion of the Rotary-Microtome 1510

Required parts:

1	Transport lever	025-098.001-299	PG 026

Sequence of operation:
Remove the transport lever completly with the switch lever from the instrument and install the transport lever 025-098.001-299 in the reverse order.
Adjust the section thickness setting as described on page 9 of the repair instruction under 3.8.

Conversion: Exchanging the drive shaft on the Rotary-Microtome 1510

Cause:
An aluminium drive shaft was built into the RotaryMicrotome type 1510. This shaft is no longer available and has been replaced by a steel one 025-098.001-018. When the shaft is exchanged, the two foil bearings must also be replaced. It is, however, important that the shaft should be regulary lubricated as described in the operating instruchtions for the instrument.

Tools and aids:

1 set of allen keys
1 hammer 100 gr.
1 punch 4 dia.
Araldite 103/hardener
1 lathe if required

parts required:

1	Steel shaft	025-098.001-018	PG 028
1	foil bearings	025-098.001-016	PG 010

Sequence of operations:
Remove the handwheel and drive shaft, see spare parts list sheet 4.1. Knock out the two foil bearings with a punch and remove residual araldite from the bore.
Glue the new foil bearings into the bearing bush with Araldite 103/953 and push the slightly lubricated steel shaft into the bearing.
During the harding of the adhesive, occasionally rotate the shaft so that it does not adhere. If necessary; the lateral play of the shaft must be adjusted on the lathe.
Assembly is logically in the reverse order from the one described above.

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Conversion: Exchange of the nut for the micrometer spindle.

Cause

The spindle nut installed in the Rotary - Microtome 1512 is an improved version. To improve the function of the Rotary Microtome 1510, the spindle nut should therefore be replaced the improved version on the occasion of maintenance and repair.

Tools and aids:

2 13mm spanners (reduce head to 25mm width before use)
1 off-set screw driver
1 4mm Allen key
1 key 025-098.001-250 W2
1 screwdriver dia 3, 5, 7,
1 rivet puch 1,9 dia
1 hammer
1 lubricant 410
1 lubricant 602
wiping and cleaning agents

Parts required:

1	spindle nut	025-098.001-335	PG 030

Sequence of operations:

Dismantle and clean the instrument as described in Repair Instructions sheet 3 under 2.3, 2.4 and 2.5.
During reassembly, the earlier version of the spindle nut should be replaced by the spindle nut 025-098.001-335.

The instrument is assembled as described in the Repair Instructions on sheet 4 under 3.2 and on sheet 7 under 3.7.
Finally, the section thickness setting see Repair Instructions sheet 9, should be checked and in cases of doubt the cutting action tested, see sheet 10.

Conversion: Exchanging the vertical sledge.

Cause:

On the Rotary Microtome 1510 the vertical sledge was of weaker design than on the present model 1512.
Only the enforced type of sledge 4.1/8 is still available and must be used on model 1510 microtome in case of a repair.

Parts required:

1	sledge, compl.	025-098.001-031	PG 063
1	hood	025-098.018-000	PG 030
1	switch lever	025-098.001-285	PG 015
* 1	hand wheel	025-098.019-000	PG 049

* For the heavier weight of the enforced vertical sledge we recommend to use a model 1512 type hand wheel for drive compensation.

Sequence of operation

Remove the hood and disassemble the earlier version vertical sledge.
After cleaning the guideways install the new sledge 4.1/8 and adjust it according to the repair instructions page 6 section 3.5.
When the switch lever 3.5/25 is assembled the adjustment for the thickness of the sections must be checked, see Repair Instructions, page 9 section 3.8.