Original

EXAKTA

Dresden

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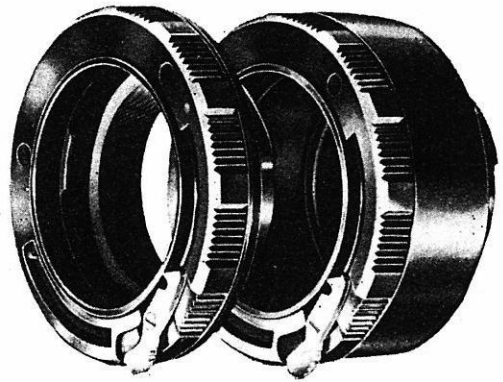
EXAKTA
RTL1000

Intermediate Rings



INSTRUCTIONS FOR USE

General

The new, genuine single-lens reflex camera simplifies extremely the full utilization of the interesting and fascinating field of close-ups. As you have got accustomed with standard shootings, the single view-finder and measuring system of this type of camera offers to check the picture section, distinctness and depth of field. The exchangeability of the lenses as well as the focal plane shutter separate from the lens enable you to easily extend the tube by 'introducing' intermediate rings. As you know, such an extension will be necessary as soon as you will approach the object nearer than the helical thread of your lens allows. Perhaps you remember of the double or triple extension of the old plate-type camera. By means of the intermediate rings (or the close-up bellows attachment) you will obtain the same effect. In this way the representation of small and smallest objects or details of them up to their original size or even in an enlarged scale will be possible. For the case of need we should like to explain you some expressions repeatedly used in these Instructions for Use.

"Image distance" means the distance between image plane and lens whereas "subject distance" means that between lens and object.

The tables of these Instructions for Use specify the image scale (β') with the use of one intermediate ring or certain combinations of them. As in case of an enlarged image distance (i.e. with the use of intermediate rings or close-up bellows attachments) the brightness of the image will decrease, the exposure time in comparison with normal taking must be longer. Therefore, these lists give the factors valid for various cases. When, however, the camera is used with the TTL prism attachment, this computation is saved because the prolonged exposure time necessary in case of extending accessories is automatically taken into account by the internal metering system.

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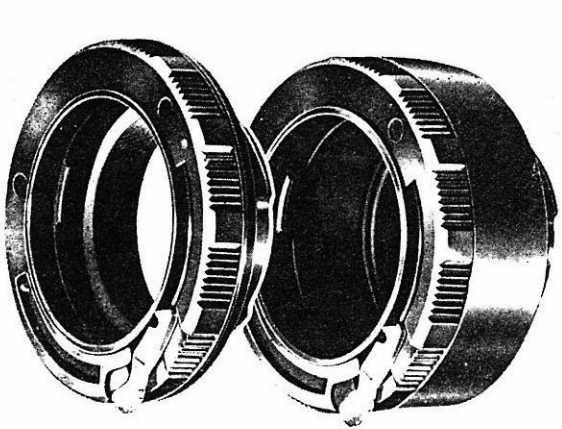
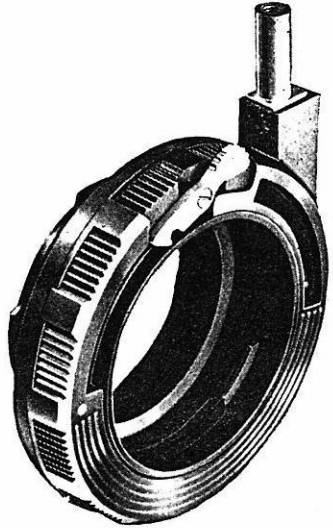
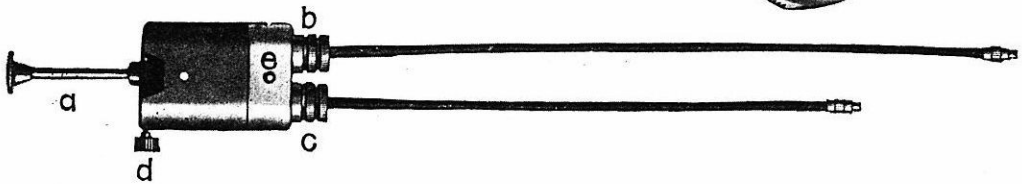
10	Large slide rail	715.521
11	Revering ring M 49 x 0.75	715.951
12	Rear bayonet ring	718.100



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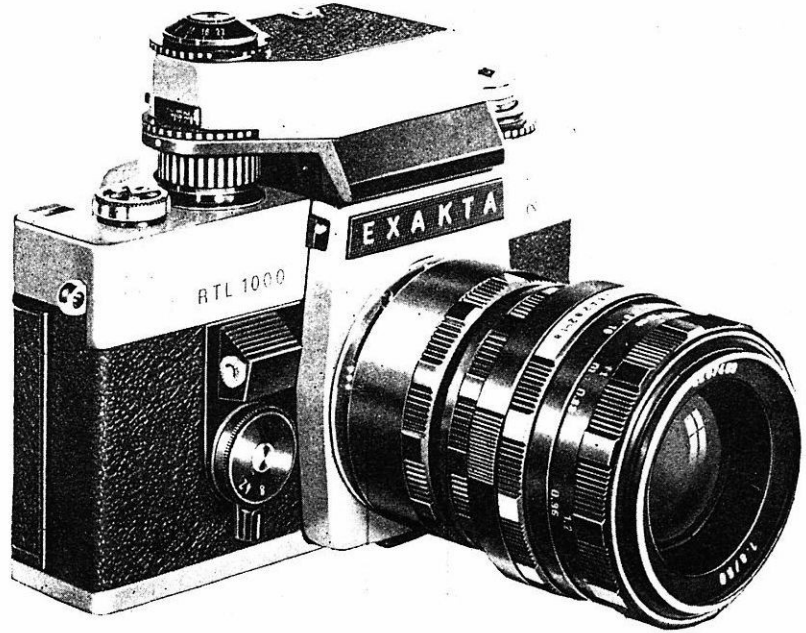
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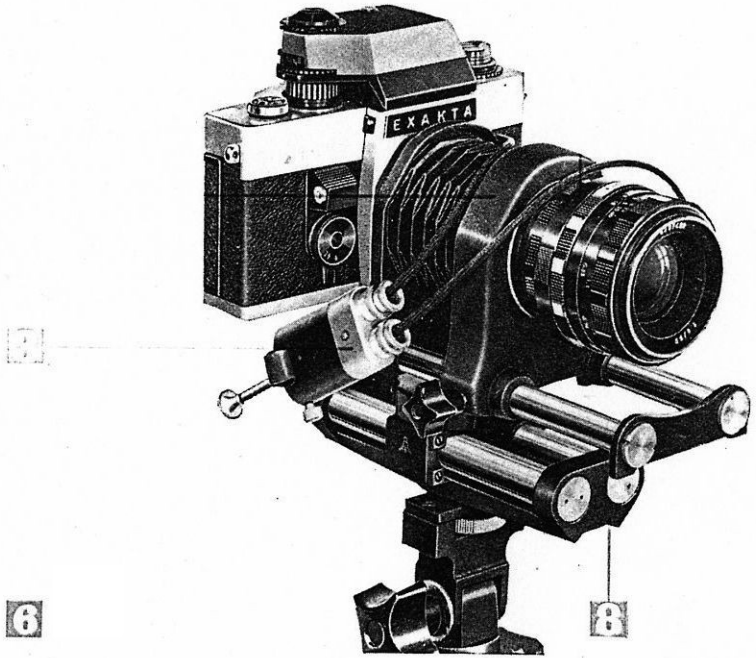
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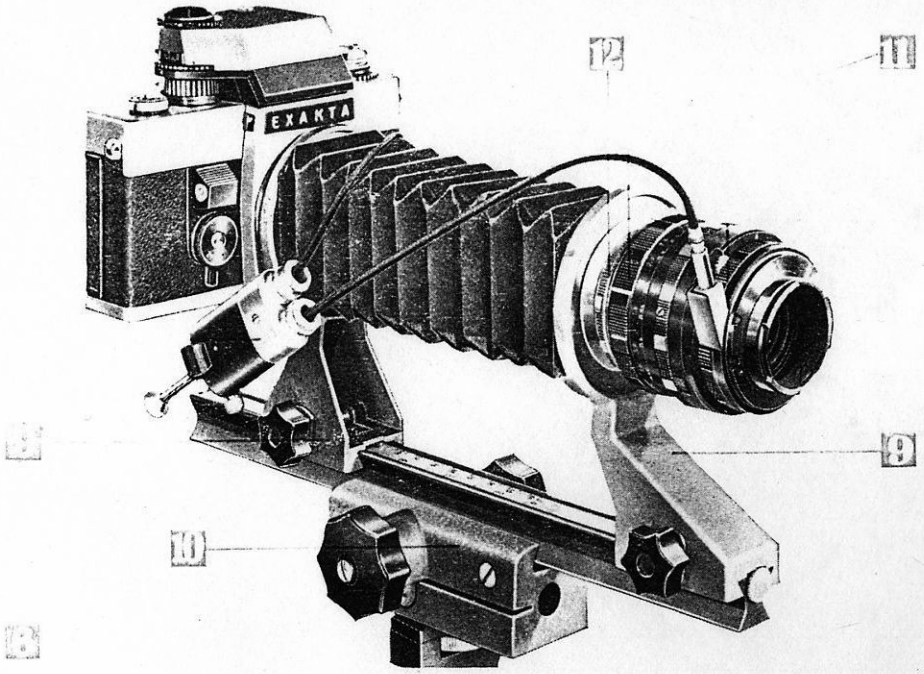
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Intermediate rings with plunger

Tube extension 12.5 mm and 25.0 mm **208.401**

In their interior, these intermediate rings have a transmitting plunger which connects the camera and the diaphragm plunger of the lens. The special intermediate ring with cable release connection is, therefore, not required.
The image sharpness and the image section are set, the depth of field is judged as well as the TTL-metering system is checked as usual in the prism viewfinder or finder hood. For focusing, the camera is approached to the object until the best sharpness is obtained. If you use a tripod we recommend the focusing slide (208.201). For the determination of the exposure time take into account the fact that the considerable extension in case of close-ups makes necessary an appropriate prolongation of the exposure time. When the TTL-prism attachment is applied, this additional prolongation will be taken into account automatically.
The intermediate rings can also be used in connection with supplementary lenses provided they have an automatic pressure diaphragm.
For tables regarding image scale, exposure factor etc. please compare pages 12 and 13.

Special intermediate ring with cable release connection

Extension 14 mm **208.403**

If the automatic diaphragm control of the lenses with internal release shall be maintained in connection with the miniature close-up bellows attachment (717.600) or the large close-up bellows attachment (bellows attachment 715.522 and slide rail 715.521). A special intermediate ring with cable release connection must be inserted between the lens and the relevant close-up bellows attachment. The additional extension of 14 mm must be taken into consideration in such a case. The automatic diaphragm control is released at the correct time by a double cable release. For a close-up having an image scale exceeding $\beta' = 1.5$ we recommend to turn the rear lens of the objective towards the object. The special intermediate ring is left on the lens, and the reversing ring (715.951) must be screwed into the filter thread of the lens.
For mounting the lens intended for reversal in the lens carrier of the appropriate bellows-attachment, a rear bayonet ring (comprised in the set of tubes and bayonet rings, or spare part order No. 718.100) is inserted.
In case of reversal with tubes and bayonet rings (718.000), replace only the front bayonet ring by the reversing ring.
When the lens is used in such a manner, focusing via the helical thread of the lens will not be possible. When using a tripod the object is focused by the slide rail (208.201) provided at the miniature close-up bellows attachment (717.600) or by the slide rail (715.521) of the large close-up bellows attachment.
When reversing the lens, usually an additional extension is obtained which is not listed in our tables.

Double cable release

Before the double cable release is used for the first time, adjust it once in connection with the concerning lens of the camera by pressing down slowly the release button (a) of the double cable release which effects first the closing of the diaphragm and subsequently immediate operation of the shutter.
At first loosen both the counter nuts (b), then unscrew or screw in the thread bushings (c). The diaphragm is released the sooner the deeper the bushing is screwed in. After the adjustment has been terminated, both the counter nuts (b) are re-tightened while arresting the thread bushings (c). For exposure times exceeding 1 s (B) the double cable release can be locked in its screwed-in condition by tightening the knurled screw (d). Only when this screw has been loosened, the shutter closes again. The metal cap in which the thread bushings with the releases are housed can be pulled off from the double cable release when the little buttons (e) are pressed down simultaneously. In this way, the cable releases may be exchanged if necessary.

Formulas important for close-up work:

Subject distance	$a = \frac{a' \cdot f}{a' - f} = \left(\frac{1}{\beta'} + 1\right) \cdot f = \frac{a' \cdot f}{z'}$
Image distance	$a' = \frac{a \cdot f}{a - f} = (\beta' + 1) \cdot f = \frac{a \cdot z'}{f}$
Image scale	$\beta' = \frac{y'}{y} = \frac{a' - f}{f} = \frac{z'}{f}$
Extension	$z' = \beta' \cdot f = \frac{y' \cdot f}{y}$
Image size	$y' = \frac{y \cdot z'}{f}$
Subject size	$y = \frac{y' \cdot f}{z'}$
Exposure factor (normal position of lens)	$v = \left(\frac{a'}{f}\right)^2 = (\beta' + 1)^2 = \left(\frac{\beta'}{\beta'_B} + 1\right)^2$
Exposure factor (reversely applied lenses)	$v = \left(\frac{1}{\beta'_B} + \beta'\right)^2$

β'_B = Pupil magnification of lens

$\beta'_B = \frac{\text{dia of emerging pupil}}{\text{dia of incident pupil}}$

β'_B = for Domiplan 2.8/50 and PENTACON auto 1.8/50 = 1

β'_B = for PENTACON auto 2.8/29 = 1.90

β'_B = for PENTACON auto 2.8/100 = 0.65

β'_B = for PENTACON 2.8/135 = 0.65

β'_B = for Sonnar 4/135 = 0.53

When applying the TTL prism attachment (measuring through the lens) the exposure factor v is not taken into account.

For lenses, focal length 50 mm

Extension	Subject distance	Image distance	Total distance	Image scale	Represented size of subject	Exposure factor
mm	mm	mm	mm		mm x mm	
5	550	55	605	0.1	240 x 310	1.2
10	300	60	360	0.2	120 x 180	1.4
12.5	258	63	321	0.25	100 x 150	1.5
15	217	65	282	0.3	80 x 120	1.7
20	175	70	245	0,4	60 x 90	2,0
25	150	75	225	0.5	48 x 72	2.3
30	133	80	213	0.6	40 x 60	2.6
35	121	85	206	0.7	34 x 51	2.9
37.5	117	88	205	0.75	32 x 48	3.0
40	113	90	203	0.8	30 x 45	3.2
45	106	95	201	0.9	27 x 40	3.6
50	100	100	200	1.0	24 x 36	4.0
60	92	110	202	1.2	20 x 30	4.8
70	86	120	206	1.4	17 x 26	5.8
80	81	130	211	1.6	15 x 23	6.8
90	78	140	218	1.8	13 x 20	7.8
100	75	150	225	2.0	12 x 18	9.0
110	73	160	233	2.2	11 x 16	10.2
120	71	170	241	2,4	10 x 15	11,6
130	69	180	249	2.6	9 x 14	13.0
140	68	190	258	2.8	9 x 13	14.4
150	67	200	267	3.0	8 x 12	16.0
160	66	210	276	3.2	8 x 11	17.6
170	65	220	285	3.4	8 x 11	19.4
180	64	230	294	3.6	7 x 10	21.2
190	63	240	303	3.8	6 x 9	23.0
200	63	250	313	4.0	6 x 9	25.0
220	61	270	331	4.4	5 x 8	29.0

For lenses, focal length 100 mm

Extension	Subject distance	Image distance	Total distance	Image scale	Represented size of subject	Exposure factor	Exposure factor for Orestor 2.8/100
mm	mm	mm	mm		mm x mm		
5	2100	105	2205	0.05	480 x 720	1.1	1.2
10	1100	110	1210	0.10	240 x 360	1.2	1.3
12.5	933	113	1046	0.13	200 x 300	1.25	1.4
15	767	115	882	0.15	160 x 240	1.3	1.5
20	600	120	720	0.20	120 x 180	1.4	1.7
25	500	125	625	0,25	96 x 144	1,6	1,9
30	433	130	563	0,30	80 x 120	1,7	2,1
35	386	135	521	0.35	69 x 103	1.8	2.3
37,5	368	138	506	0,38	64 x 96	1,9	2,5
40	350	140	490	0.40	60 x 90	2.0	2.6
45	322	145	467	0.45	53 x 80	2.1	2.9
50	300	150	450	0.50	48 x 72	2.3	3.1
60	267	160	427	0.60	40 x 60	2.6	3.7
70	243	170	413	0.70	34 x 51	2.9	4.4
80	225	180	405	0.80	30 x 45	3.2	4.8
90	211	190	401	0.90	27 x 40	3.6	5.7
100	200	200	400	1.00	24 x 36	4.0	6.5
110	191	210	401	1.10	22 x 33	4.4	7.3
120	183	220	403	1.20	20 x 30	4.8	8.1
130	177	230	407	1.30	18 x 27	5.3	9.0
140	171	240	411	1.40	17 x 26	5.8	9.9
150	167	250	417	1.50	16 x 24	6.3	10.9
160	163	260	423	1.60	15 x 23	6.8	12.0
170	159	270	429	1.70	14 x 21	7.3	13.0
180	156	280	436	1.80	13 x 20	7.8	14.2
190	153	290	443	1.90	13 x 19	8.4	15.4
200	150	300	450	2.00	12 x 18	9.0	16.7
220	145	320	465	2,20	11 x 16	10,2	19,2

For lenses, focal length 135 mm

Subject distance	Image distance	Total distance	Image scale	Represented size of subject	Exposure factor	Exposure factor for S 4/135 aus Jena *)	Exposure factor for Orestor 2.8/135 *)
mm	mm	mm		mm x mm			
3780	140	3920	0.04	600 x 900	1.1	1.2	1.1
1958	145	2103	0.07	343 x 514	1.2	1.3	1.2
1654	148	1807	0.09	281 x 421	1.2	1.4	1.3
1350	150	1500	0,11	218 x 327	1,2	1,5	1,4
1046	155	1201	0.15	160 x 240	1.3	1.6	1.5
864	160	1024	0.19	126 x 189	1.4	1.8	1.7
742	165	908	0.22	109 x 164	1.5	2.0	1.8
656	170	826	0.26	92 x 138	1.6	2.2	2.0
623	173	796	0.28	86 x 129	1.7	2.4	2.1
591	175	766	0.30	80 x 120	1.7	2.5	2.1
540	180	720	0.33	73 x 109	1.8	2.6	2.3
500	185	685	0.37	65 x 97	1.9	2.9	2.5
439	195	634	0.44	55 x 82	2.1	3.3	2.8
395	205	600	0.52	46 x 69	2.3	4.0	3.2
363	215	578	0.59	41 x 61	2.5	4.5	3.6
338	225	563	0.67	36 x 54	2.8	5.1	4.1
317	235	552	0,74	32 x 49	3,0	5,8	4,6
301	245	546	0.82	29 x 44	3.3	6.5	5.1
287	255	542	0,89	27 x 40	3,6	7,2	5,6
275	265	540	0.96	25 x 38	3.9	7.9	6.1
265	275	540	1.04	23 x 35	4.2	8.8	6.8
257	285	542	1.11	21 x 32	4.5	9.5	7.3
249	295	544	1.18	20 x 30	4.8	10.4	7.9
242	305	547	1.26	19 x 29	5.1	11.4	8.6
236	315	551	1.33	18 x 27	5.4	12.3	9.3
231	325	556	1.41	17 x 26	5.8	13.4	10.0
226	335	561	1.48	16 x 25	6.2	14.4	10.7
218	355	573	1.63	15 x 22	6.9	16.4	12.3

*) The exposure factors differing from normal are due to the construction of the lens

Please kindly take care of these instructions. Objectionable use of the accessories may cause damages the remedy of which will not be within our garantee.
Further development of the accessories may lead to slight differences from the details given in this leaflet.

Kombinat

VEB PENTACON DRESDEN

Deutsche Demokratische Republik