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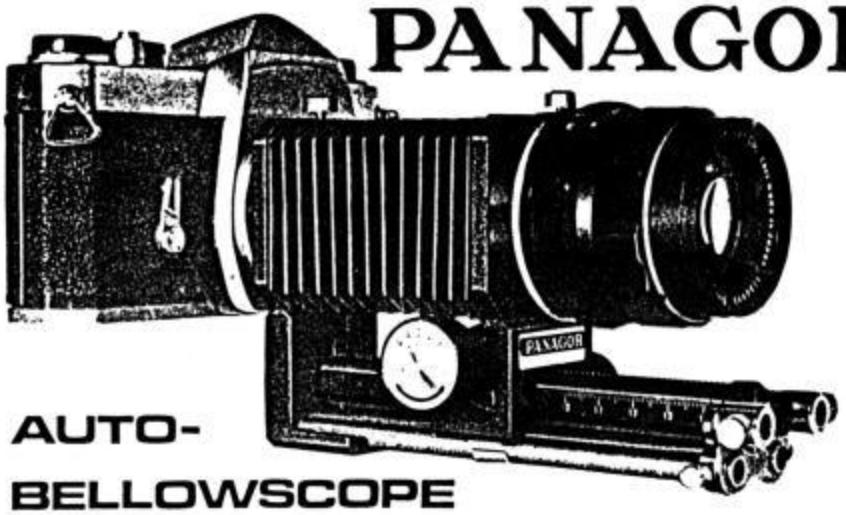

AUTO-
BELLOWSCOPE

CAMERA HAYES
2 BROOKLANDS ROAD
BLETCHLEY BUCKS
0908 71631

Photography With The Bellowscope®

The Bellowscope's function is to provide an additional variable amount of extension between the lens and the camera body. This added extension becomes necessary when an increase in the focusing range of the camera lens is desired, as in close-up photography. The Bellowscope is also used to adapt long lenses to the camera body by providing the proper extension and the means for focusing such lenses.

Bellowscope Use With Lenses Fitted For The Camera.

Any lens made for a specific camera has a fixed focusing range which is limited by the amount of travel provided by the lens barrel. This range varies according to the focal length and the individual design of the lens barrel, but generally 50(58)mm normal lenses have a range from 1½ (0.4m) or 3 feet (0.9m) to infinity, 90mm lenses from 3 feet(0.9 meter) to infinity and 135mm lenses from 5 feet (1.5 meter) to infinity. When it becomes necessary to focus closer than the near limit of these lenses, the use of a Bellowscope is required.

Attaching the Bellowscope.

Remove the lens from the camera body and attach the Bellowscope in the same manner as the lens mount.
Extend the bellows by rotating the drive wheel which is engraved "movement". The desired extension can be locked by holding the drive wheel and rotating clockwise the opposite wheel which is engraved "clamp"

On the Praktica, Pentax and Leica models of the Bellowscope there is an orienting lock screw on the rear adapter which permits the Bellowscope to be seated squarely on the camera.

The scales engraved on the tracks of some Bellowscope models indicate the magnification ratio with lenses of the focal length shown.

Exposure.

Exposure is determined by the proper combination of shutter speed and f (diaphragm) stop. The shutter speed, of course, remains unchanged by the addition of the Bellowscope, but the f value varies with the amount of bellows extension. The f value of a lens is calibrated, and is completely accurate only when the lens is focused at infinity. In normal camera use the error in the f stop resulting from the extension of the lens when focused at distances closer than infinity can be ignored since it is minor and is well within the range of the film's latitude. With a bellows unit the lens is extended beyond the point at which exposure compensation can be neglected, making it necessary to apply the proper exposure correction factor.

Adapting Long Focus Lenses.

Since long focus lenses, from large cameras, can often be purchased very reasonably or may already be a part of the equipment of the photographer, one may wish to adapt such lenses to the 35 mm camera. The Bellowscope provides the ideal device for such adaptation. The method of attaching the lens to the Bellowscope can usually be accomplished by purchasing a body cap for the particular make of camera and utilizing this body cap as a lens board in the Bellowscope. Some lenses are too large in diameter to mount into a body cap in which case special adaptation is required.

Automatic Bellowscope.

The automatic Bellowscope for Pentax mount is available.
This couples the operation of the automatic lens diaphragm to the body.

Caution.

Please DON'T push the pin during the operation of the Bellow's extension, because the auto mechanism is built-in the inside of the track, as otherwise, the bellow is broken.

TWIN RAIL BELLOWS

With the specially designed twin rail, the TWIN RAIL BELLOWS offers the foremost steadiness for the movement with camera-lens. This flat twin rail system has proved to be particularly strong and stable against twisting power from any direction, unlike the ordinary two-rail system bellows.

EXTENDING THE BELLOWS

The bellows unit is extended by rotating the DRIVE wheel on the front standard boards. Lock the unit at any extension by holding the DRIVE wheel while turning clockwise the LOCK wheel on the opposite side. The LOCK wheel may also be used as a DRIVE wheel by turning it in a counter-clockwise direction until it engages the driveshaft.

CLOSE-UP DATA FOR 50-MM. LENSES

Length of extension in mm	Distance from subject to lens in mm	Total distance from film to subject in mm	Scale of subject image to life size	Required exposure increase
0	infinity	infinity	variable	1.00
5	550	605	0.1	1.21
10	300	360	0.2	1.44
15	217	282	0.3	1.65
20	175	245	0.4	1.96
25	150	225	0.5	2.25
30	133	213	0.6	2.56
35	121	206	0.7	2.89
40	113	203	0.8	3.24
45	106	201	0.9	3.61
50	100	200	1.0	4.00
70	86	206	1.4	5.76
100	75	225	2.0	9.00
120	71	241	2.4	11.60
150	67	267	3.0	16.00

CLOSE-UP DATA FOR 58-MM. LENSES

0	infinity	infiniy	variable	1.00
5	731	794	0.09	1.18
10	394	462	0.17	1.37
15	282	355	0.26	1.59
20	226	304	0.35	1.81
25	192	275	0.43	2.05
30	170	258	0.52	2.30
35	154	247	0.60	2.60
40	142	240	0.69	2.85
45	133	236	0.78	3.17
50	125	233	0.86	3.46
70	106	234	1.21	4.87
100	92	250	1.72	7.42
120	86	264	2.07	9.42
150	80	288	2.58	12.90

CLOSE-UP DATA FOR 105-MM. LENSES

Length of extension in mm	Distance from subject to lens in mm	Total distance from film to subject in mm	Scale of subject image to life size	Required exposure increase
0	infinity	infinity	variable	1.00
5	2310	2420	0.05	1.10
10	1208	1323	0.10	1.21
15	840	960	0.14	1.30
20	656	781	0.19	1.42
25	546	676	0.22	1.49
30	473	608	0.29	1.66
35	420	560	0.33	1.77
40	381	526	0.38	1.90
45	350	500	0.43	2.05
50	326	481	0.48	2.19
70	263	438	0.67	2.79
100	215	420	0.95	3.80
120	197	422	1.14	4.58
150	178	433	1.43	5.91

CLOSE-UP DATA FOR 135-MM. LENSES

0	infinity	infinity	variable	1.00
5	3780	3920	0.04	1.07
10	1958	2103	0.07	1.15
15	1350	1500	0.11	1.23
20	1046	1201	0.15	1.32
25	864	1024	0.19	1.40
30	743	908	0.22	1.49
35	656	826	0.26	1.59
40	591	766	0.30	1.68
45	540	720	0.33	1.78
50	500	685	0.37	1.88
70	395	600	0.52	2.30
100	317	552	0.54	3.03
120	287	542	0.89	3.57
150	256	541	1.12	4 49

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