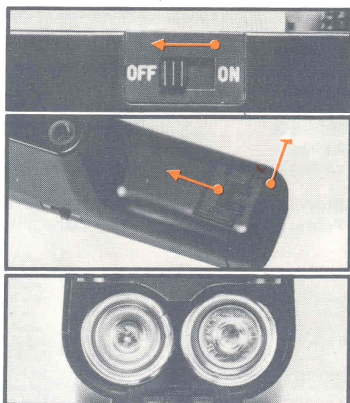


MISE EN PLACE DES PILES

1 Assurez-vous que l'interrupteur d'alimentation de l'entraîneur est bien placé sur « OFF ».

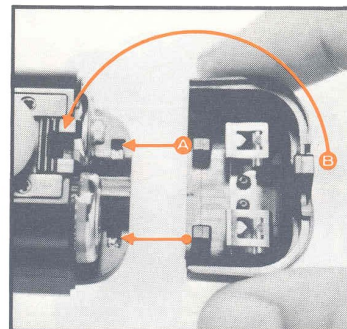
2 En tenant l'entraîneur la tête en bas, faites glisser avec l'ongle, le verrou du conteneur à piles dans le sens de la flèche, et enlevez le couvercle de l'autre main.

3 Introduisez 2 piles bâton AA dans le compartiment en respectant la polarité indiquée à l'intérieur.



4 Remplacez le couvercle du compartiment-piles en repoussant le verrou avec l'ongle, et en introduisant d'abord les pattes inférieures (A) du couvercle puis la patte supérieure (B). Lachez le verrou qui reviendra alors bloquer le couvercle.

° **Contrôle des piles:** Si le rythme du moteur devient lent ou irrégulier les piles sont hors d'usage. Remplacez-les par des piles bâton AA haute performance (piles alcalines). Le film ne sera pas entraîné si les piles ne sont pas correctement placées.





Avance du film: A chaque fois que vous armez, après avoir déclenché, le film avance, et dans la fenêtre au dos de l'appareil est indiqué le numéro de la vue à prendre (2, 3, 4, etc) jusqu'à la fin de la cartouche.

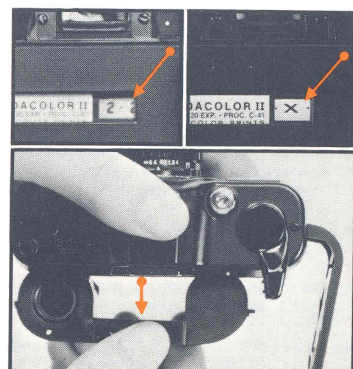
A la fin de la cartouche

1 Selon le type de cartouche, la dernière vue exposée portera le n° 12 ou le n° 20. Dans les deux cas, un « X » apparaîtra dans la fenêtre du dos après la dernière vue. Continuez à actionner le levier d'armement 2 ou 3 fois après l'apparition du « X » ou jusqu'à la fin du film.

ATTENTION: Quand le levier d'armement se bloque, vous avez atteint la fin du film. Cessez alors d'armer et ne cherchez pas à forcer pour éviter d'endommager l'appareil.

2 Ouvrez le dos de l'appareil et faites sortir la cartouche d'une petite tape en retournant l'appareil.

* Pour l'usage de l'entraîneur, référez-vous au chapitre « Entraîneur 110 » de ce livret.



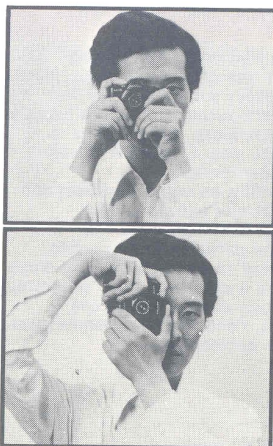
PRISE DE VUE

Elevez l'appareil au niveau de l'œil, puis après avoir mis au point, pressez le déclencheur. La photo est prise!

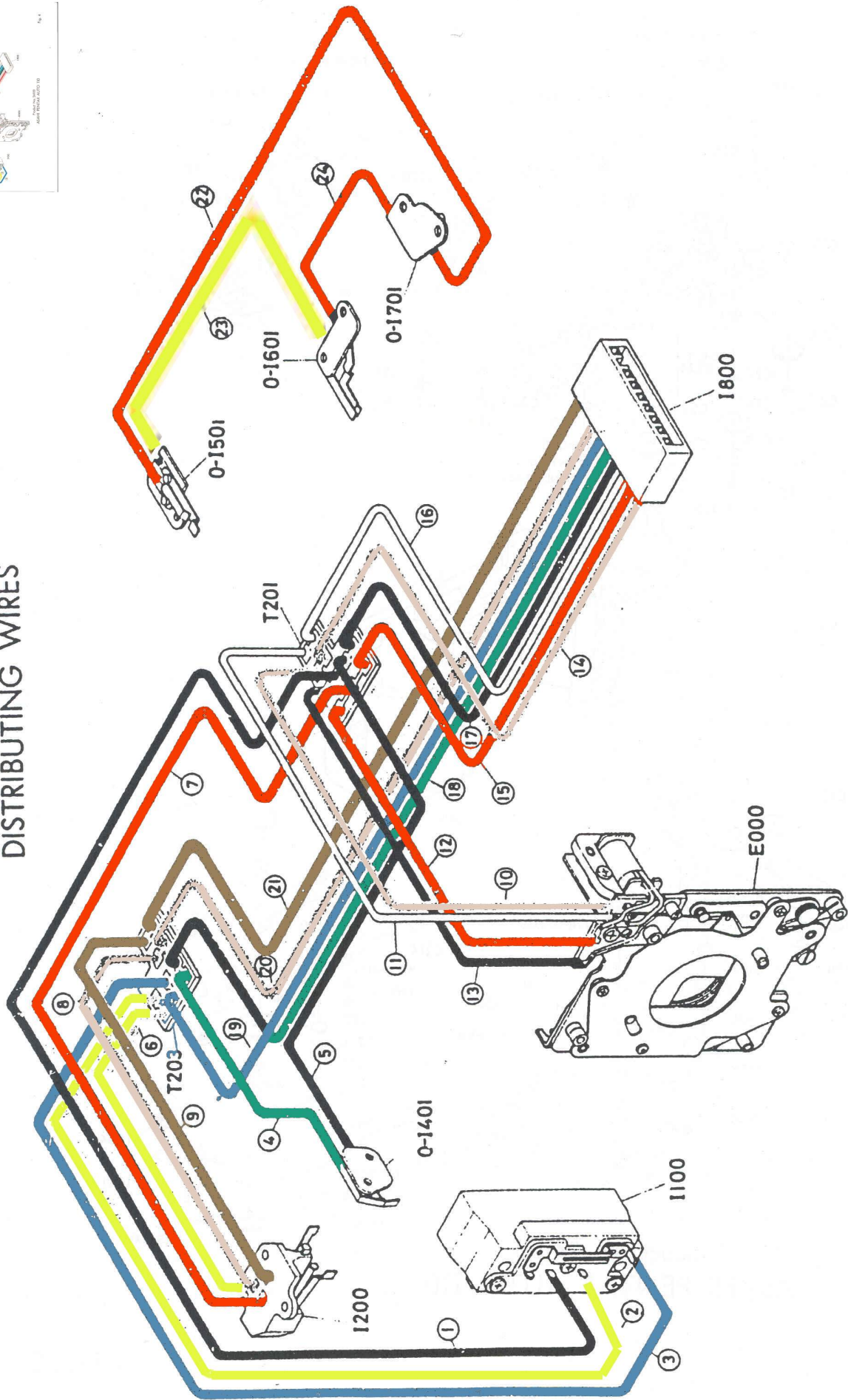
Maniement en position horizontale: Tenez fermement l'ensemble appareil-entraîneur comme sur l'image.

Maniement en position verticale: Pour utiliser l'appareil muni de l'entraîneur en position verticale, il est nécessaire de le maintenir fermement, comme le montre l'illustration, afin d'augmenter sa stabilité.

Cette position augmente les risques de mouvements involontaires: si vous ne tenez pas l'appareil de la manière indiquée, vous risquez d'obtenir des images floues.



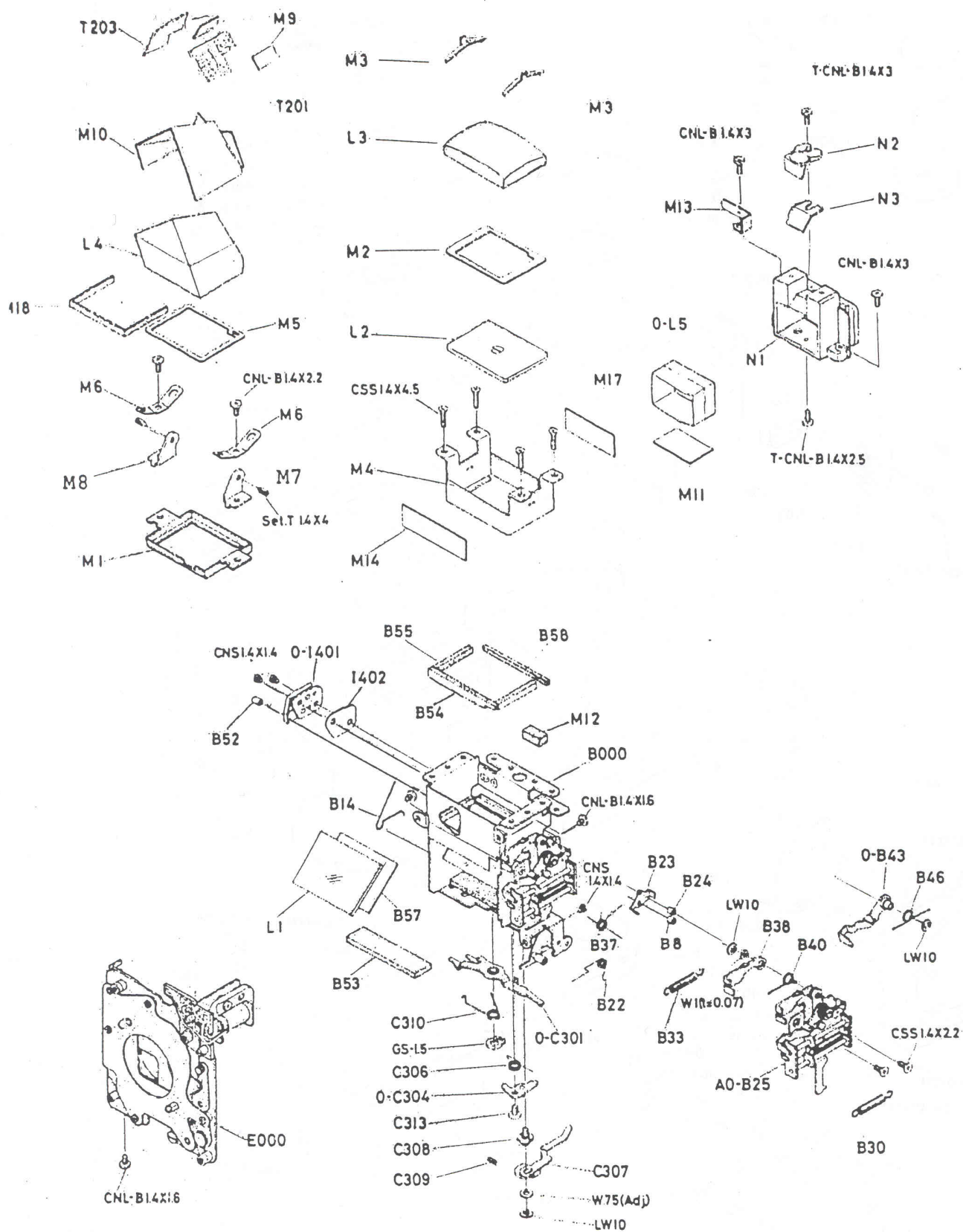
DISTRIBUTING WIRES



Product No. 24100
ASAHI PENTAX AUTO 110

Fig. 4

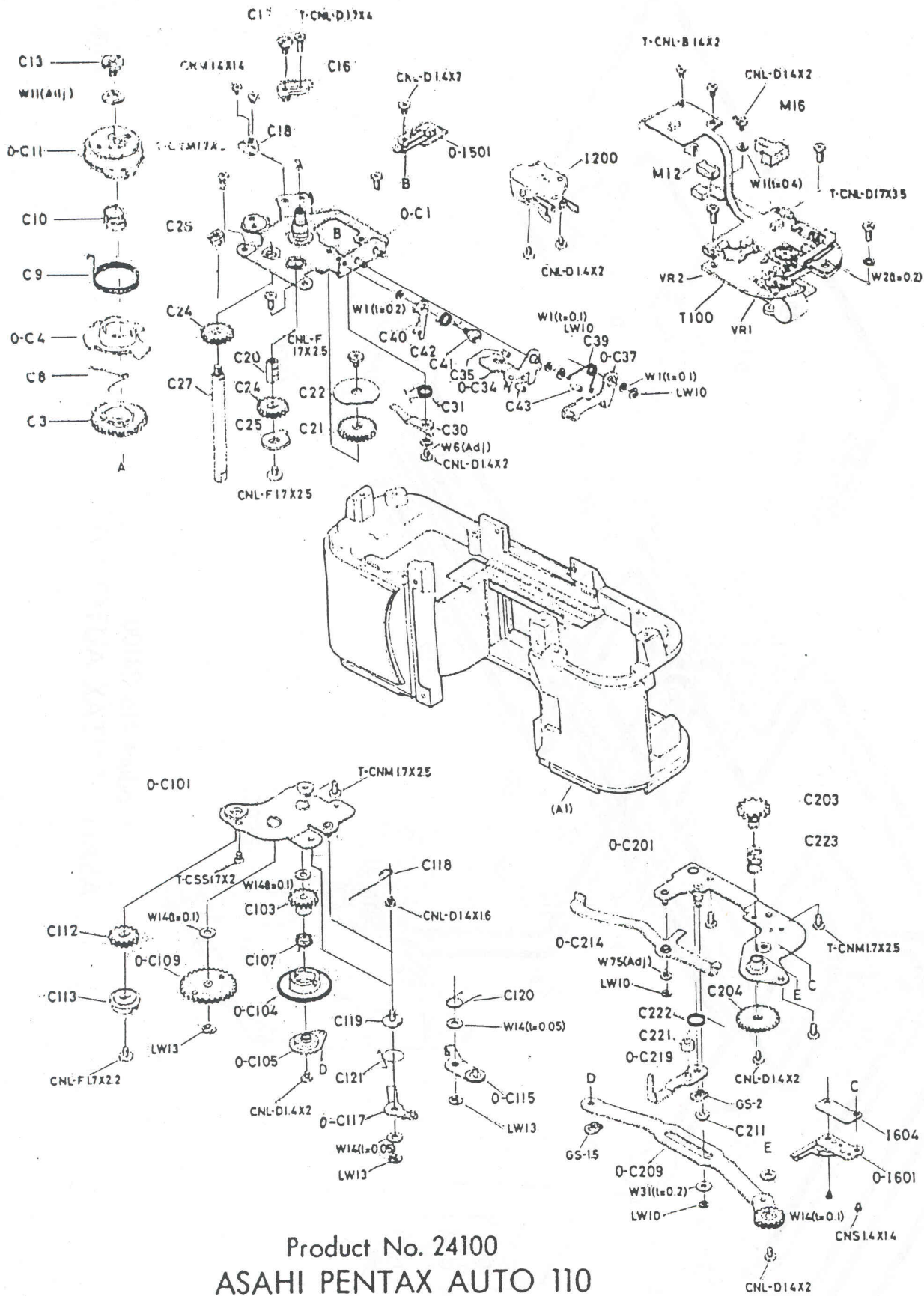
EXPLODED ILLUSTRATION



Product No. 24100
ASAHI PENTAX AUTO 110

Fig. 2

EXPLODED ILLUSTRATION



Product No. 24100
ASAHI PENTAX AUTO 110

Fig. 3

Modification Changes
January, 1979

Product No. 24100

Asahi Pentax Auto 110

Old		New
0-A102	Front board assembly	1-A102
A111	Collar	A111-01
A112	Release lock lever spring	A112-01
C3	1st wind gear	C3-01
C20	2nd wind gear shaft	C20-01
C21(A,B,C,)	2nd wind gear	C21-01(A,B,C)
C22	Release restriction plate	C22-01
M5	LED frame	M5-01
N1	Eyepiece frame	N1-01
T100	P.C. board pattern assembly	T100-01

New Parts

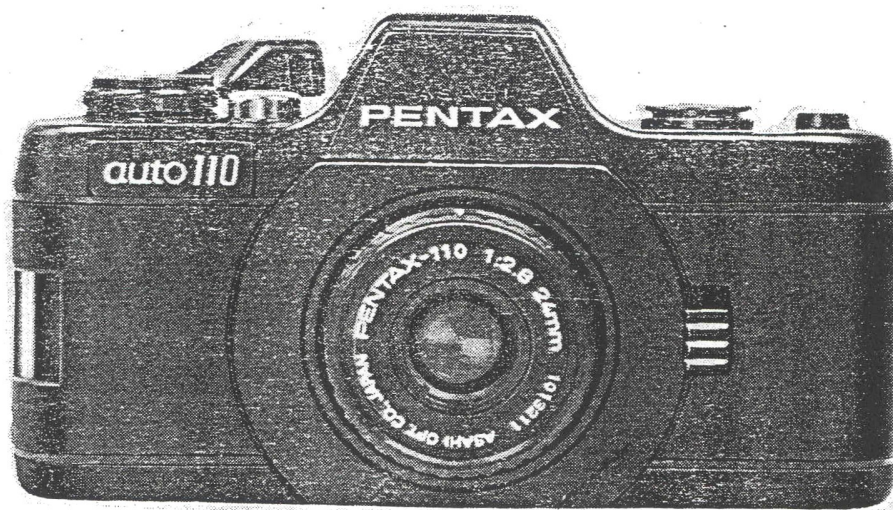
T210	Cord holder
T211	Relay P.C. board
T300	LED P.C. board pattern assembly

Discontinued parts

I800	Connector
M13	Cord holder
M15	Dust prevention sheet A (at T100)
M16 x 2	Dust prevention sheet B (at A300)
T201	Relay P.C. board A
T203	Relay P.C. board B

PRODUCT No.24100

ASAHI PENTAX *auto 110*



LIST OF SERVICE PARTS

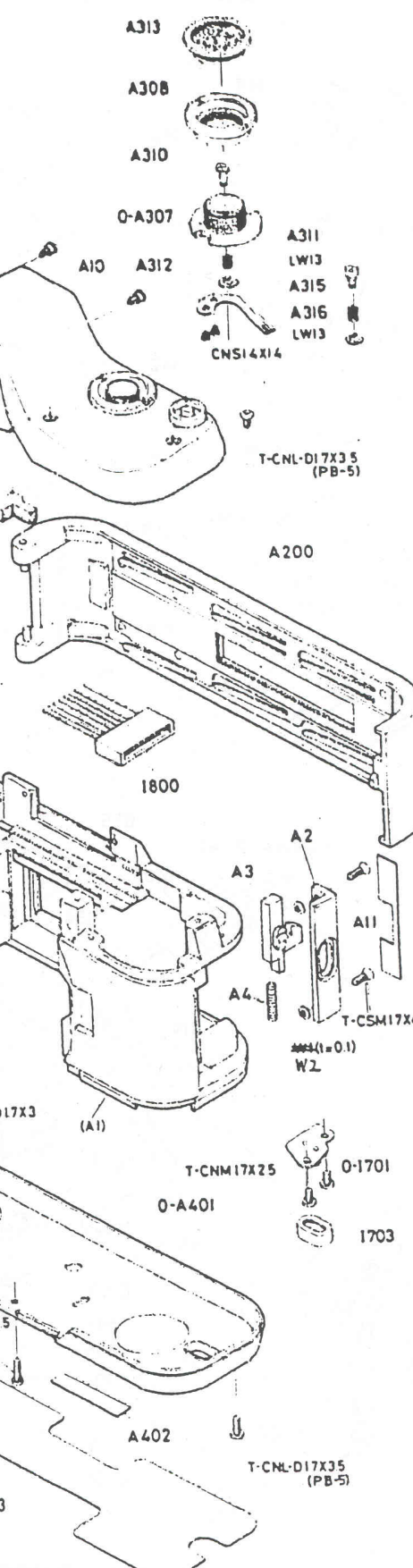
Product No. 24100

ASAHI PENTAX auto 110

Note: 1. The parts with numbers starting '0-' are assemblies.

2. Only available parts are listed below.

Parts No.	Description	Quantity	Interchangeability
A2	Key cover	1	
A3	Key	1	
A4	Key spring	1	
A5	Light seal plate A	1	
A6	Tripod seat	1	
A7	Strap shaft	1	
A8	Mirror charge lever retainer	1	
A9	Light seal	1	
A10	Top cover retainer screw	2	
A11	Back cover adjusting seal	1	
A13	Front cover seal	2	
A101	Front cover	1	
0-A102	Front board assy. (A102, A105, A107, A109, A113)	1	
1-A102	(A102, A105, A107, A109-01, A113)		
A103	Mount	1	
A104	Mount spring	1	
0-A106	Mount lock lever assy. (A106, A116)	1	
A108	Mount lock lever spring	1	
A110	Release lock lever	1	

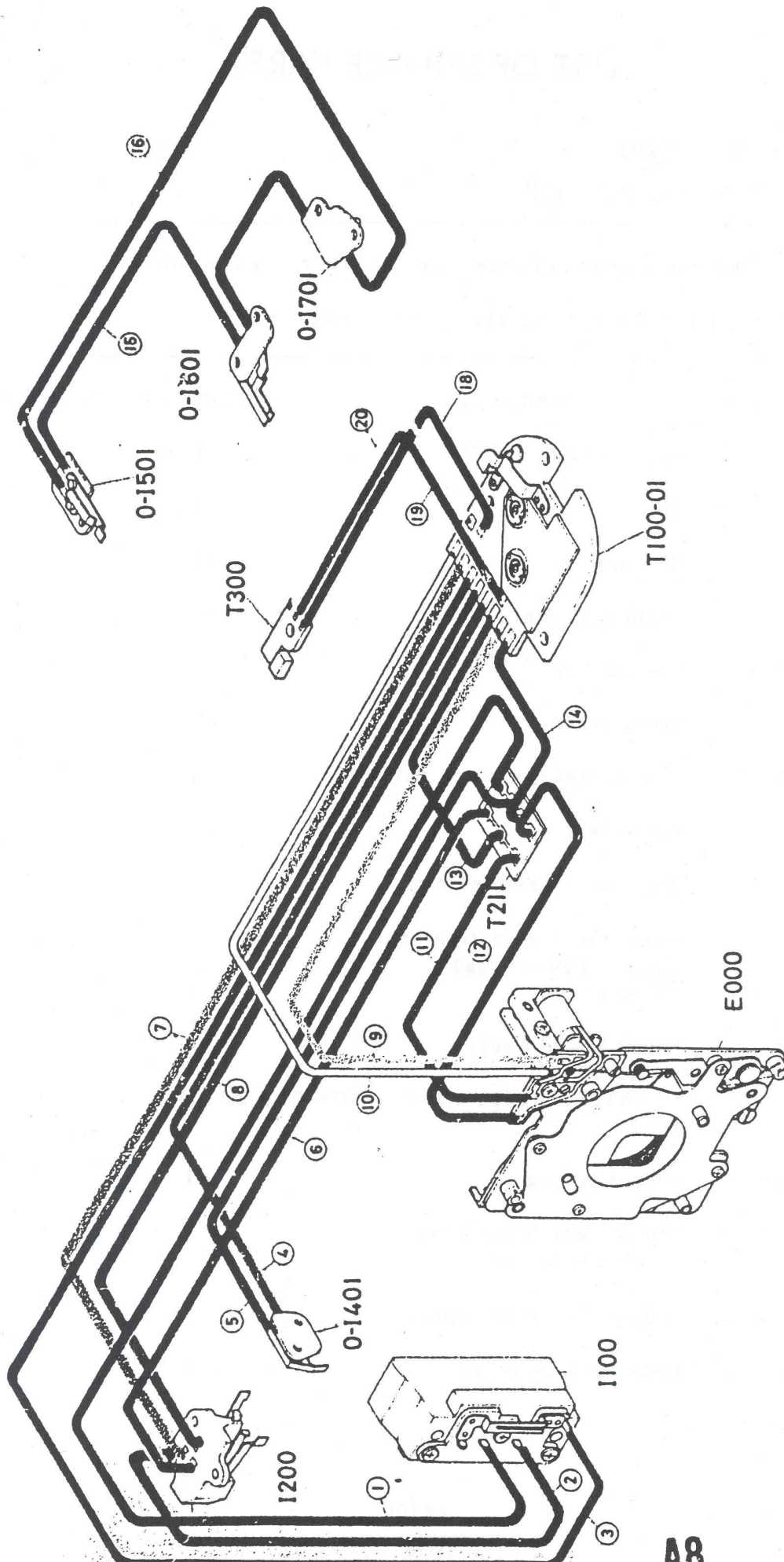


Product No. 24100
ASAHI PENTAX AUTO 110

Fig. 1

A4

DISTRIBUTING WIRES



Product No. 24100
ASAHI PENTAX auto 110

Fig. 4 - 1

Parts No.	Description	Quantity	Interchangeability
C35	Insulation tube A	1	
0-C37	Release actuating plate assy. (C37, C33, C38)	1	
C39	Release actuating spring	1	
C40	Hook lever	1	
C41	Hook lever shaft	1	
C42	Hook lever spring	1	
C43	Insulation tube B	2	
0-C101	Bottom mech. plate A assy. (C101, C26, C102, C108, C114)	1	
C103	6th wind gear	1	
C104	Ratchet wheel	1	
0-C105	Link seat assy. (C105, C106)	1	
C107	Anti-reverse spring	1	
0-C109	5th wind gear assy. (C109, C110 x2, C111 x2)	1	
C112-00A	4th wind gear a	1	
-00B	" b		
-00C	" c		
C113	Joint	1	
0-C115	Ratchet assy. (C115, C116, W70)	1	
0-C117	Bottom wind stopper assy. (C117, B27)	1	
C118	Anti-reverse stopper	1	
C119	Stopper shaft	1	
C120	Ratchet spring	1	
C121	Bottom wind stopper spring	1	

Parts No.	Description	Quantity	Interchangeability
A111	Collar 0.9mm	1	
A111-01	Collar 0.75mm	1	
A112	Release lock lever spring	1	
A112-01	Release lock lever sprong	1	
A114-00A	Adjusting washer a (t=0.4)		
-00B	" b (t=0.3)		
-00C	" c (t=0.2)	1	
-00D	" d (t=0.1)		
-00E	" e (t=0.05)		
-00F	" f (t=0.03)		
A115	Light seal plate B	1	
A200	Back cover assy. (A201, A202, A203, A204 x2)	1	
A300	Top cover assy. (A301~A305, 0-A307, A308, A310~A316, M16 x2, CNL-D1.7x2.5, CNS1.4x1.4 x2, LW10, LW13 x2, W75)	1	
A302	Shutter release button	1	
A303	Shutter release button spring	1	
A304	Lock spring	1	
A305	Shutter release button shaft	1	
0-A307	X-contact seat assy, (A307, A309)	1	
A308	X-contact seat nut	1	
A310	X-contact pin	1	
A311	X-contact spring A	1	
A312	X-contact spring B	1	
A313	X-contact cap	1	
A315	Auto-manual switch button	1	
A316	Auto-manual switch button spring	1	
0-A401	Bottom cover assy. (A401, A403)	1	

Parts No.	Description	Quantity	Interchangeability
I108	ASA switch lever	1	
0-I110	Battery holder assy. (I110, I111)	1	
I111	Polarity label	1	
I200	Power and Memory switch block	1	
0-I401	X-safety switch assy. (I401, I402, I403, I404, I405 x2)	1	
I402	Insulation sheet	1	
0-I501	Winder switch A assy. (I501, I405 x2, I502, I503)	1	
0-I601	Winder switch B assy. (I601, I405 x2, I602, I603, I604)	1	
I604	Insulation sheet	1	
0-I701	Winder contact circuit board assy. (I701, I702 x2)	1	
I703	Contact seat	1	
* I800	Connector	1	
L1	Mirror	1	
L2	Fresnel lens	1	
L3	Ground glass	1	
L4	Penta prism	1	
0-L5	Eyepiece assy. (L5, L6)	1	
M1	Prism seat	1	
M2-01	Ground glass mask	1	
M3	Ground glass retainer	1	
M4	Ground glass frame	1	
M5-01	LED frame	1	

* discontinued

24100

A15

7/12

Description	Surface treatment	Position of use	Quantity
CNL-E1.7 x 4	"	C11, C14	2
CNL-F1.7 x 2	"	C20, C25	1
		C20, C22	1
Set T1.4 x 4	"	M7, M8	2
T-CSS1.7 x 2	"	A1, C101	1
T-CSM1.7 x 4	"	A1, A2	2
T-CNM1.7 x 2.5	"	A1, C101	1
		A1, C201	3
		A1, I701	2
T-CNM1.7 x 3	"	A1, C1	3
T-CNL-B1.4 x 2	"	N1, T100	2
T-CNL-B1.4 x 2.5	"	N1	1
T-CNL-B1.4 x 3	"	I101, I102	3
		N1, N2	1
T-CNL-D1.7 x 3	"	A1, A8	1
T-CNL-D1.7 x 3.5	"	A1, T100	3
T-CNL-D1.7 x 3.5	Black nickel (PB-5)	A1, A301	3
		A1, A401	2
T-CNL-D1.7 x 4	Black nickel	A1, C16	1
		A1, A102	4
		A1, I101	2
T-CNL-D1.7 x 4.5	"	A1, A201, I101	2
T-CNL-D1.7 x 5	"	A1, A6	3

Washers:

Description	Material	Thickness	Position of use	Quantity
W1	Teflon	0.4mm	B50, T103	1
W1	Brass	0.1	A109	1
			A1, A2	2
		0.2	C32, C33	2
			C41	1

Parts No.	Description	Quantity	Interchangeability
0-C201	Bottom mech. plate 'B' assy. (C201, C202, C205, C210, C212, C218)	1	
C203	9th wind gear	1	
C204	8th wind gear	1	
0-C209	Wind link assy. (C209, C206, C207, C208)	1	
C211	Wind link collar	1	
0-C214	Mirror charge lever assy. (C214, C213)	1	
0-C219	Shutter charge lever assy. (C219, C220)	1	
C221	Shutter charge lever pin roller	1	
C222	Shutter charge lever spring	1	
C223	9th wind gear friction spring	1	
0-C301	Ratchet release lever assy. (C301, C302)	1	
0-C304	Release lever hook plate assy. (C304, C311)	1	
C306	Hook lever spring	1	
C307	Film spacing lever	1	
C308	Film spacing lever shaft	1	
C309	Film spacing lever spring	1	
C310	Release lever spring	1	
C313	Hook plate shaft retainer screw	1	
E000	Shutter block	1	
1101	Battery case	1	
0-1102	Battery case base plate assy. (1102, 1107)	1	

Parts No.	Description	Quantity	Interchangeability
0-C1	Top mech. plate assy. (C1, C2, C19, C26, C29, C32 x2)	1	
C3-01	1st wind gear	1	
0-C4	Wind ring assy. (C4, C7)	1	
C8	Ratchet spring	1	
C9	Wind lever spring	1	
C10	Friction spring	1	
0-C11	Wind lever seat assy. (C11, C12)	1	
C13	Wind shaft retainer screw	1	23900-C154
C14	Wind lever	1	
C15	Wind lever covering	1	
C16	Wind stopper	1	
C17	Wind lever spring hanger	1	
C18	Pre-advance angle spring	1	
C20-01	2nd wind gear shaft	1	
C21-00A -00B -00C	2nd wind gear	1	
C22	Release restriction plate	1	
C24	3rd wind gear	2	
C25	Wind restriction plate	1	
C27	Wind shaft	1	
C28	Wind shaft nut	1	
C30	Wind restriction lever	1	
C31	Wind restriction lever spring	1	
0-C34	Release actuating lever assy. (C34, C33, C36)	1	

Parts No.	Description	Quantity	Interchangeability
M6	Focus adjustment spring	2	
M7	Prism retainer A	1	
M8	Prism retainer B	1	
M9	Prism protection plate	2	
M10	Prism protector	1	
M11	Eyepiece protection plate	1	
* M15	Dust prevention sheet A	2	
* M13	Cord holder	1	
M14	Dust prevention seal	1	
* M16	Dust prevention sheet B	3	
M17	Dust prevention sheet C	1	
M18	Dust prevention string	1	
N1-01	Eyepiece frame	1	
N2	Light measuring prism	1	
N3	Eyepiece light seal frame	1	
T100-01	P. C. board pattern assy. (I109 x2, I301, I302, I303, I304)	1	
* T201	Relay P.C. board A	1	
* T203	Relay P.C. board B	1	
T210	Cord holder	1	
T211	Relay P.C. board	1	
T300	LED P.C. board pattern assembly	1	

* discontinued

Parts No.	Description	Quantity	Interchangeability
A402	Serial number plate	1	
A403	Scratch protection seal	1	
B000	Mirror housing complete assy. (B1~B4, B5 x6, B7, E8, B9 x2, B10~B33 B34 x2, B35 x2, B36~B54, B55 x2, B56~B60, C303, C305, C308, C312, L1, CNS1.4x1.4 x7, CSS1.4x1.6 x4)	1	
P8	Flip up pin roller	1	
B14	Light seal actuating plate spring	1	
B22	Restitution plate hook lever spring	1	
B23	Bounce prevention lever	1	
B24	Bounce prevention lever retainer	1	
A0-B25	Mirror actuating plate assy. (B25, B33, B34 x2, B38, B47, LW10 x2)	1	
B30	Mirror flip up spring	1	
B33	Mirror restitution spring	1	
B37	Mirror restoring spring	1	
B38	Mirror flip up plate hook lever	1	
B40	Flip up plate hook lever spring	1	
0-B43	Shutter opening lever assy. (B43, B45)	1	
B46	Opening lever spring	1	
B52	Insulation tube	1	
B53	Light seal A	1	
B54	Light seal B	1	
B55	Light seal C	2	
B57	Mirror adhesive tape	1	
B58	Mirror sheet light seal	1	

Description	Material	Thickness	Position of use	Quantity
W2	Brass	0.1	A1, A2	2
W2	Brass	0.2	T100	1
W6	"	0.03, 0.04	C29	1
W11	"	0.05, 0.1, 0.2	C2	1
W14	"	0.05	C114	1
			C119	1
		0.1	A105	1
			C102	1
			C108	1
			C203, C204	1
			C205	1
W31	"	0.2	C210	1
W75	"	0.05, 0.1, 0.15, 0.2	A305	1
			C212	1
			C308	1

Lock washers:

Description	Position of use	Quantity
LW10	A305	1
	B39	1
	B44	1
	C32	2
	C210	1
	C212	1
	C308	1
LW13	A310	1
	A315	1
	C108	1
	C114	1
	C119	1
LW17	A105	1
GS-1.5	A109	1
	C106	1
	C303	1
GS-2	C218	1



Asahi Optical Co., Ltd. C.P.O. 895, Tokyo 100-91, JAPAN
Asahi Optical Europe N.V. Weveldaan 3-5, 1930 Zaventem Zuid-7, BELGIUM
Pentax Handelsgesellschaft mbH Postfach 54 0169, 2000 Hamburg 54, WEST GERMANY
Pentax U.K. Limited Pentax House, South Hill Avenue, South Harrow, Middlesex HA2 0LT, U.K.
Pentax France S.A. Z.I. Argenteuil, 12, Rue Ambroise-Croizat, 95100 Argenteuil, FRANCE
Pentax (Schweiz) AG Industriestrasse 2, 8305 Dietlikon ZH, SWITZERLAND
Pentax Svenska AB Box 650, S-751 27 Uppsala, SWEDEN
Pentax Nederland Spineveld 25, 4815 HR Breda, THE NETHERLANDS
Pentax Corporation 35 Inverness Drive East, Englewood, Colorado 80112, U.S.A.
Pentax Canada Inc. 1760 West 3rd Avenue, Vancouver, B.C. V6J 1K5, CANADA
Asahi Optical Brasileira Ind. e Com. Ltda. Rua Capitão Antonio Rosa 376, Sala 121 Ed. PBK, São Paulo, BRASIL

06636 ENG

Specifications are subject to change without notice.

10/84 Printed in Japan

PENTAX

PENTAX-110 LENSES



LIST OF STANDARD PARTS

Product No. 24100

ASAHI PENTAX auto 110

Small screws:

Description	Surface treatment	Position of use	Quantity
CSS1.4 x 2.2	Black nickel	B25, B35	2
CSS1.4 x 4.5	"	B1, M4, M6	2
		B2, M4, M6	2
CNS1.4 x 1.4	"	A307, A312	2
		B1, I401	2
		C201, I601	2
		B1, E000	1
CNS1.7 x 2.8	Nickel	A102, A103	3
CNS1.7 x 4.5	Black nickel (PB-5)	A101, A102, A401	1
CNM1.4 x 1.4	Black nickel	C1, C18	2
CNL-B1.4 x 1.6	"	B1, E000	1
		B2, E000	2
CNL-B1.4 x 1.6	Nickel	A103, A104	3
CNL-B1.4 x 2.2	Black nickel	B1, M6, M7	1
		B2, M6, M8	1
CNL-B1.4 x 3	"	B50, N1	2
CNL-D1.4 x 1.6	"	C101, C118	1
CNL-D1.4 x 2	"	C29, C30	1
		C102, C105	1
		B50, T100	1
		C203, C204	1
		C1, I200	2
		C205, C206	1
		C1, I500	1
CNL-D1.4 x 2.5	"	A102, E000	4
CNL-D1.7 x 2.2	"	A101, A102	1
CNL-D1.7 x 2.5	Black nickel	A1, A317	1
CNI-E1.7 x 2.2	"	C27, C112, C113	1

24100

A17

9/12

Lead wires:

Lead wire No.	Length	Color	Position of use	Quantity
1	140mm	Black	1100, T201	1
2	110	Yellow	1100, T203	1
3	110	Blue	1100, T203	1
4	35	Green	1400, T203	1
5	65	Black	1400, T201	1
6	50	Yellow	1200, T203	1
7	80	Red	1200, T201	1
8	45	Grey	1200, T203	1
9	45	Brown	1200, T203	1
10	25	Pink	E000, T201	1
11	25	White	E000, T201	1
12	20	Red	E000, T201	1
13	25	Black	E000, T201	1
14	30	Pink	1800, T201	1
15	30	Red	1800, T201	1
16	30	White	1800, T201	1
17	30	Black	1800, T201	1
18	85	Green	1800, T203	1
19	85	Blue	1800, T203	1
20	75	Grey	1800, T203	1
21	70	Brown	1800, T203	1
22	125	Red	0-1501, 0-1701	1
23	160	Yellow	0-1501, 0-1601	1
24	20	Black	0-1601, 0-1701	1

CONTENTS

Names of parts / Special notes	1
Basic lens terminology	2
Specifications	4
Lens construction	5
Comparative shots	6
Changing lenses	7
Focusing	8
Standard lens.....	9
Telephoto lenses	10
Wide-angle lenses	11
Panfocus lens	12
Zoom lens.....	14
Filters and close-up attachments	16
Lens care	19
Warranty policy	20

charges are to be borne by the owner. If your Pentax lens was purchased outside of the country where you wish to have serviced during the warranty period, regular handling and servicing fees may be charged by the manufacturer's representatives in that country. Notwithstanding this, your Pentax camera or lens returned to the manufacturer will be serviced free of charge according to this procedure and warranty policy. In any case, however, shipping charges and customs clearance fees are to be borne by the owner. To prove the date of your purchase when required, please keep the receipts or bills covering the purchase of your equipment for at least a year. Before sending your equipment for servicing, please make sure that you are sending it to the manufacturer's authorized representatives or their accredited repair shops, unless you are sending it directly to the manufacturer. Always obtain a quotation of the service charge, and only after you accept the quoted service charge, instruct the service station to proceed with the servicing.

This warranty policy does not apply to Pentax products purchased in the U.S.A., U.K., or Canada. The local warranty policies available from Pentax distributors in those countries supersede this warranty policy.

WARRANTY POLICY

All Pentax lenses purchased through authorized bona fide photographic distribution channels are guaranteed against defects of material or workmanship for a period of twelve months from date of purchase. Service will be rendered and defective parts will be replaced without cost to you within that period, provided the equipment has not been abused, altered, or operated contrary to instruction. Because the tolerances, quality, and design compatibility of lenses other than Pentax lenses are beyond our control, damage caused by use of such lenses will not be covered by this warranty policy. The manufacturer or its authorized representatives shall not be liable for any repair of alterations except those made with its written consent and shall not be liable for damages from delay or loss of use or from other indirect or consequential damages of any kind, whether caused by defective material or workmanship or otherwise; and it is expressly agreed that the liability of the manufacturer or its representatives under all guarantees or warranties, whether expressed or implied, is

strictly limited to the replacement of parts as hereinbefore provided.

PROCEDURE DURING 12-MONTH WARRANTY PERIOD

Any Pentax lens which proves defective during the 12-month warranty period should be returned to the dealer from whom you purchased the equipment or to the manufacturer. If there is no representative of the manufacturer in your country, send the equipment to the manufacturer, with postage prepaid. In this case, it will take a considerable length of time before the equipment can be returned to you owing to the complicated customs procedures required in Japan in importing and re-exporting photographic equipment. If the equipment is covered by warranty, repairs will be made and parts replaced free of charge, and the equipment will be returned to you upon completion of servicing. If the equipment is not covered by warranty, regular charges of the manufacturer or of its representatives will apply. Shipping

NAMES OF PARTS



SPECIAL NOTES

- To determine the 35mm format focal length equivalence of a Pentax-110 lens, multiply its focal length x2 (e.g. 110 format 50mm lens = 35mm format 100mm lens).
- There are no aperture settings on Pentax 110 lenses. Aperture is set automatically by the diaphragm mechanism of the camera's programmed shutter system.

SPECIFICATIONS

• Type	• Focal length	• Lens construction (Groups—Elements)	• Angle of view (Degrees)	• Minimum focusing (m)	• Diameter & length (mm)	• Filter size (mm)	• Weight (gr.)
Standard	24mm	5-6	47	0.35	30 x 13	25.5	13
Wide-angle	18mm	6-6	61.5	0.25	34 x 21	30.5	27
Telephoto	50mm	5-5	24	0.9	43 x 27	37.5	57
Telephoto	70mm	5-6	17.2	1.5	51 x 50.5	49	160
PF	18mm	6-6	61.5	—	34 x 21	30.5	29
Zoom	20-40mm	8-8	57.5-31	0.7	54 x 45.2-65.4	49	174

Note: • PF is a fixed-focus lens.

- There are no aperture settings on Pentax-110 lenses. The aperture is set automatically by the diaphragm mechanism of the camera's programmed shutter system.

• Close-up attachments

Close-up attachments (or lenses) screw into the filter thread of a lens to enable closer focusing and higher magnification. Exposure is automatically controlled when a close-up attachment is used with a Pentax-110 lens, and no special adjustments are required. Focusing is

also done the usual way, but focusing range and magnification are altered, as indicated in the chart on the next page. The 70mm and 20-40mm zoom lens accept all close-up attachments with a 49mm diameter.



BASIC LENS TERMINOLOGY

The number of millimeters that designates a lens — such as the “24mm” in “Pentax-110 24mm lens” — indicates the **focal length** of that lens.

Focal length is the distance between the point of focus and the film plane. By increasing the focal length, you increase the size of any object framed by the camera, in the same way as a telescope gives you a closer look at things. And, like a telescope, a lens with a long focal length (“telephoto”) decreases the breadth of your field of vision.

This is expressed as a narrower **angle of view**; the angle formed by two lines extended from the point of focus to

diagonally opposed corners of the picture frame when the lens is focused to infinity.

That’s why the distance between camera and target is “cut in half” when the 50mm lens is used in place of the 24mm standard lens; and why the shorter focal length/wider angle of view of an 18mm lens lets you put more of a panorama into the picture frame.

LENS CARE

- Do not use thinner, alcohol, or ethylene liquids to clean the lens.
- Use a blower brush to remove dust and dirt from the surface of the lens. To remove smears and smudges, clean front and rear glass surfaces of the lens by wiping them gently with lens cleaning paper or a soft cloth dampened in lens cleaning solution.
- Keep camera and lenses in a cool, dry, well-ventilated place.
- Always cover the lens with both front and rear caps when it is not in use.
- Make it a habit to protect the lens from rough objects with casing, cloth, etc. when carrying it in your pocket.

Precaution on Auto 110 Lens Removal

When changing lenses or removing the lens on the camera, slide the lens release button upward and, without letting go, turn the lens counterclockwise until it slips out of the mount. Never attempt to remove a lens without first unlocking the mount by sliding the lens release button upward, as damage to the mount could result.

FILTERS AND CLOSE-UP ATTACHMENTS

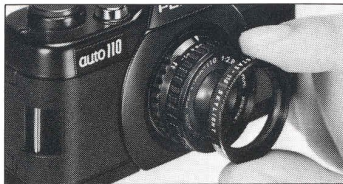
- **Filters for 18mm, 24mm, and 50 mm lenses**

Skylight and UV filters are available for all these lenses.

- **Filters for the 70mm and 20–40mm zoom lenses**

All 49mm diameter filters made for 35mm camera lenses can also be screwed into the thread of the 70mm or the 20–40mm zoom lens.

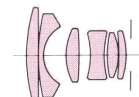
N.B.: It's advisable to keep a filter over your lens at all times, to protect its front element. A UV or skylight filter is good for this purpose.



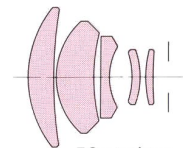
LENS CONSTRUCTION



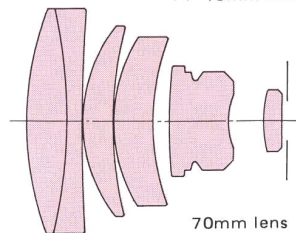
24mm lens



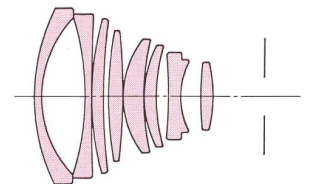
18mm lens &
PF 18mm lens



50mm lens



70mm lens

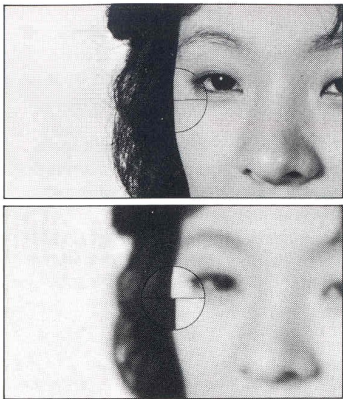


Zoom 20~40mm lens

FOCUSING

Look through the viewfinder eyepiece and turn the focusing ring of the lens to bring the image into focus. Sharp focus can be obtained by focusing on any part of the focusing screen. To be assured of pinpoint focusing, however, check your focus against the spot in the center of the screen. If the image is completely intact, focus is precise. If the image is split or broken, adjust the focusing ring further until both halves of the image fit together perfectly.

* For those who find focusing difficult because of poor eyesight, corrective eyepieces are available.



Using the Close-up attachment

You can take extreme close-up photographs by screwing on a Close-up Attachment W21 (optional) into the filter thread. Because this is a fixed-focus lens, you can take photographs only at a preset distance of approx. 25cm between the subject and the film plane, i.e., when the focusing image is aligned. Extreme close-up photos cannot be taken at other distances.

Magnification: 1/11.3 times.

Size of framed target area:

14.7 x 19.2mm.

The PF lens accepts filters and a lens hood with 30.5mm diameter.

Using an auto flash unit

When using an Auto Flash with the PF lens, refer to the chart below for effective flash range.

Film	Auto Flash	Effective Range
ASA 100	AF100P	approx. 2m ~ 3.5m
	AF130P	approx. 2m ~ 4.6m
ASA 400	AF100P	approx. 1.4m ~ 3.5m
	AF130P	approx. 1.4m ~ 4.6m

19. C100 Bottom mech. plate A complete assy.

T-CSS1.7x2

T-CNM1.7x2.5

C119 Stopper shaft

24100K-C119-A

20. A3 Key

A11 Back cover adjusting seal

T-CSM1.7x4x2

A2 Key cover

A3 Key

A4 Key spring

W2 t=0.2x2

CLOSE-UP ATTACHMENTS

No.	Used with	Focusing Range	Magnification
W21	18mm wide-angle	16.0 ~ 26.0cm	1/5.7 ~ 1/11.3X
S31	24mm standard	20.0 ~ 36.0cm	1/6.1 ~ 1/12.7X
S16	24mm standard	15.0 ~ 20.0cm	1/4.1 ~ 1/6.4X
T86	50mm telephoto	48.5 ~ 91.9cm	1/8.0 ~ 1/17.1X
T43	50mm telephoto	34.4 ~ 48.9cm	1/5.4 ~ 1/8.6X
T160 (49mm)	70mm telephoto	8.5 ~ 17.0cm	1/10 ~ 1/23X
T80 (49mm)	70mm telephoto	6.0 ~ 8.9cm	1/7 ~ 1/11X
T80 (49mm)	20 ~ 40mm zoom (at 20mm)	44.8 ~ 90.7cm	1/18 ~ 1/39X
T80 (49mm)	20 ~ 40mm zoom (at 40mm)	43.5 ~ 88.6cm	1/10 ~ 1/21X
S40 (49mm)	20 ~ 40mm zoom (at 40mm)	43.5 ~ 88.6cm	1/7 ~ 1/10X
S25 (49mm)	20 ~ 40mm zoom (at 40mm)	26.1 ~ 33.0cm	1/5 ~ 1/6X

* 1X magnification = life size (i.e. the image of the subject on film has the same dimensions as the actual subject itself.)



ZOOM LENS



• **Pentax-110 20–40mm zoom**
(equivalent to a 35mm format 40–80mm zoom lens)
This zoom covers every focal length between 20mm and 40mm. At 20mm, it's a wide-angle; at 40mm, it's a moderate telephoto. And since it offers every angle of view in-between, it also encompasses the standard perspective. As this is a "one touch" zoom lens, moving the focusing ring back and forth lets you zoom in and out. Focusing itself is done the usual way, by twisting the ring.

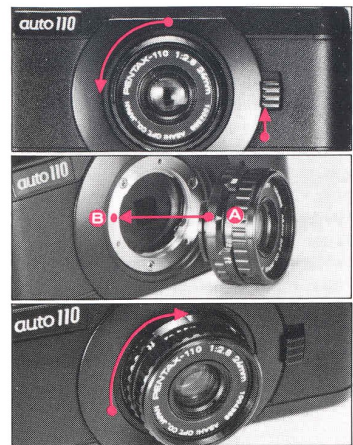
CHANGING LENSES

Lens removal

Push upwards on the lens release lever and turn the lens approximately 90 degrees to the left until the lens slips out of the mount.

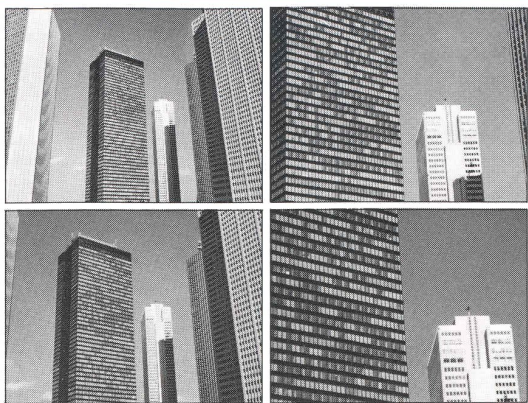
Lens mounting

1. Match up the red distance scale index of the lens **A** with the red dot on the camera body **B** and insert the lens into the body.
2. Turn the lens to the right until it locks in place, with the red distance scale index positioned at the top.



COMPARATIVE SHOTS

The camera position was the same for all these photos. Only the lens was changed.

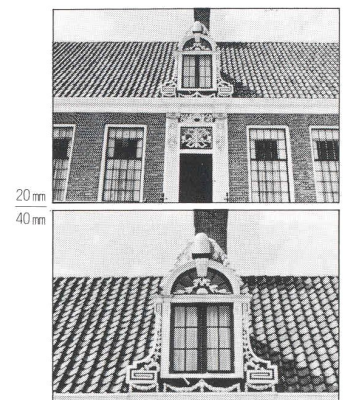


18mm	50mm
24mm	70mm

The best way to use this lens is to set it at 40mm, focus on your main target, then zoom out until you've framed the shot you want.

Like the 70mm lens, the 20–40mm zoom has a 49mm diameter filter thread, so it accepts many Pentax 35mm SLR filters and attachments.

N.B.: Because of its size, this lens will hit against the tripod mount if the camera is mounted directly on the tripod. To prevent this, screw in the tripod spacer between camera and tripod mount.



TELEPHOTO LENSES

- **Pentax-110 50mm**

(equivalent to a 35mm format 100mm lens)

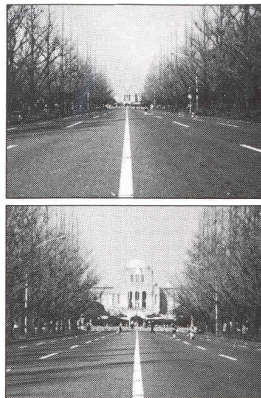
- **Pentax-110 70mm**

(equivalent to a 35mm format 140mm lens)

When the subject of your photograph is far away, or impossible to get near to, a telephoto lens helps. For example, the 70mm lens can make your target seem almost 3 times closer to you than the standard lens. And, incidentally, it also accepts many of the filters and attachments for Pentax 35mm SLRs because its filter thread has a 49mm diameter.

N.B.: Because of their size, these lenses will hit against the tripod mount if the camera is mounted directly onto the tripod. To prevent this, screw in the tripod spacer between camera and tripod mount.

24 mm
70 mm



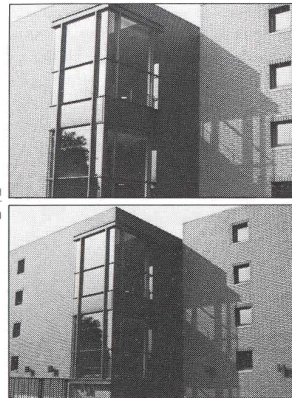
WIDE ANGLE LENSES

- **Pentax-110 18mm** (equivalent to a 35mm format 36mm lens)

You want to put more of the landscape into your photograph, or, perhaps, you want to put several people into an indoor shot — but you can't get far back enough to do so with the standard lens. That's when you need this wide angle lens.

The 18mm lens also exaggerates perspective. It makes near objects seem larger, and distant objects seem smaller, than they would to the naked eye. This trait is often exploited for dramatic effects.

24 mm
18 mm



USING THE PF (PAN FOCUS) LENS

The pan-focus lens allows you to take photos without focusing. Simply look through the viewfinder, frame your subject and then press the shutter release. Depending on the distance to the subject, there may be a slight split in the center circle in the viewfinder,



but if the subject is at least 1.75m away, the entire photo will always be in focus because of the deep range of focus of this lens. There will be some variation in the actual effective range of focus, depending on the brightness of the subject, as follows:

Conditions	Effective Range
Outdoors Clear	approx. 1m ~ ∞
Outdoors Cloudy	approx. 1.5m ~ ∞

When the yellow light (LED) shows in the viewfinder, take precautions against camera movement.

STANDARD LENS

- Pentax-110 24mm (equivalent to a 35mm format 48mm lens)

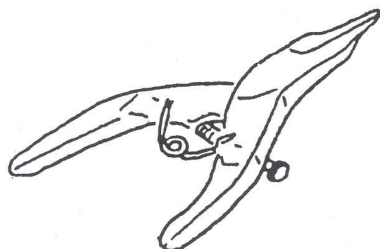
Weighing just 13 grams and only 13mm long, this is the smallest Pentax-110 lens. It is also the lens that most closely matches perspective as seen through the human eye.



12. C200 Bottom mech. plate B complete assy.
 A8 Mirror charge lever retainer
 T-CNL-D1.7x3
 C200 Bottom mech. plate B complete assy.
 T-CNM1.7x2.5x3

GS1.5

GP-51-0A



Gripping pliers
 GP-51-0A

13. 0-C115 Ratchet assy.

LW13

0-C115 Ratchet assy.

W14 t=0.05mm

C120 Ratchet spring

14. C112 4th wind gear

CNL-F1.7x2.2

C113 Joint

C112 4th wind gear

*Holding Link seat assy. (0-C105), loosen CNL-F1.7x2:2
 to prevent Anti-reverse stopper (C118) from bending.

15. 0-C117 Bottom wind stopper assy.

LW13

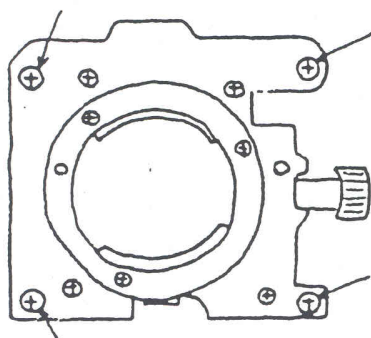
W14 t=0.05mm

0-C117 Bottom wind stopper assy.

C121 Bottom wind stopper spring

16. B000 and E000 Mirror housing complete assy. and Shutter block

T-CNL-D1.7x4x4



*Pull out a assembled Mirror housing and Shutter
 block just this side with enough care about lead
 wires around the back side of Mirror housing
 and the coupled parts.

17. T300 LED P.C. board pattern assy.

CNL-D1.4x2

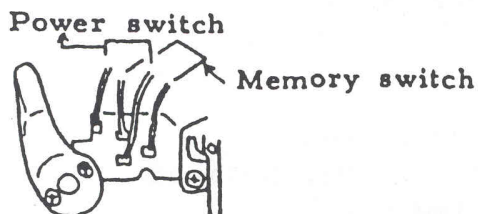
W1 t=0.4mm (Teflon, black)

18. C000 Top mech. plate complete assy.

T-CNM1.7x3x3

T-CNL-D1.7x4

Check with a tester, connected with two red lead wires (or a soldering joint) of Power and Memory switch block (I 200)



Adjustment can be made by bending at the base of shorter contact piece.



- d. Memory switch must open at the same time when Release actuating plate assy. (0-C37) comes off Hook lever (C40).

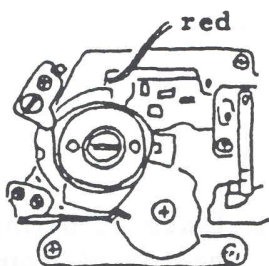
Check with a tester, connected with the gray lead wire and the brown lead wire of Power and Memory switch block (I 200).

Adjustment can be made by bending at the base of longer contact piece.



- e. Release actuating lever assy. (0-C34) should be back up after depressed, and hook with Hook lever (C40) by the spring tension of Power switch contact piece.

- 2) If every points mentioned above were good, install Top mech. plate assy. (C000) to the body.



T-CNM1.7x3x3
T-CNL-D1.7x4

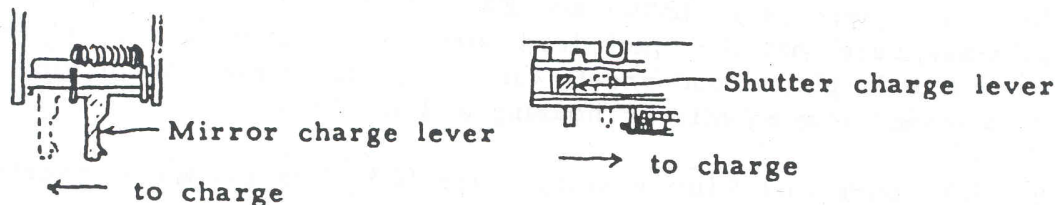
*Make sure that the red lead wire coming from Battery case assy. (I 100) is properly placed through the cutout of Top mech. plate assy. (C000).

4. T300 LED P.C. board pattern assy.

CNL-D1.4x2.5
W1 t=0.4mm (Teflon, black)

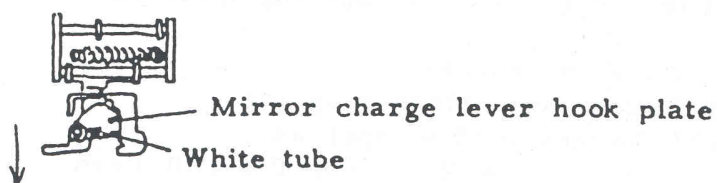
5. B000 and E000 Mirror housing and Shutter block complete assy.

- 1) Before installing Mirror housing and Shutter block complete assy. (B000 and E000) to the body, check following points and adjust if necessary.
 - a. Charge Mirror housing and Shutter block.



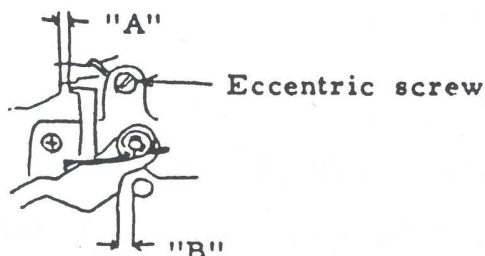
While observing the sectors*, release only Mirror housing by pushing down Mirror charge lever hook plate (white tube part), as shown below.

*Sectors — Shutter and diaphragm blades of shutter block.



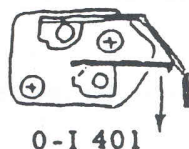
After Mirror housing and Shutter block were released, the gap "A" should be less than the gap "B".

If the gap "A" is more than the gap "B", the sectors may move in checking the point mentioned above.



Adjust the gap "A" by turning the eccentric screw if necessary.

b. Synchro safety switch (0-I 401)



Push the lower contact piece downward, and see if the upper contact piece follows along with the lower contact piece.

Adjust it by bending the contact piece if necessary.

*Synchro safety switch prevents the Auto-flash unit from misfiring due to the operation of the power switch.

Assembly procedures

1. A3 Key

W2 t=0.1x2

A4 Key spring

A3 Key

A2 Key cover

T-CSM1.7x4x2

Check the function of Key (A3) after installed.

All Back cover adjusting seal

2. C100 Bottom mech. plate A complete assy.

Before installing, check if the rotation of gears smooth or not.

T-CSS1.7x2

T-CNM1.7x2.5

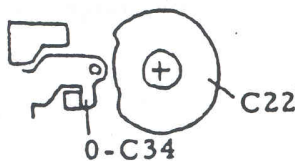
C119 Stopper shaft

3. C000 Top mech. plate complete assy.

1) Before installing to the body, check following points.

a. While lightly touching Release restriction plate (C22) with a finger, wind Wind lever (C14) once or twice.

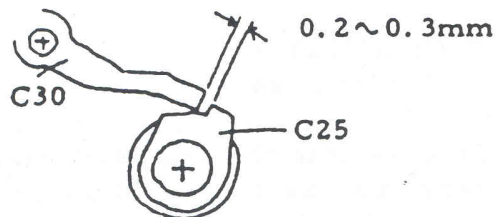
Confirm if Release restriction plate (C22) stops at the position, as shown below.



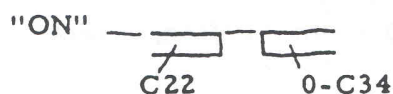
The center of cutaway side must be faced with Release actuating lever assy. (0-C34) just in the middle.

b. Check if Wind restriction lever (C30) moves freely as Release actuating lever assy. (0-C34) is depressed.

Check if there is a gap, 0.2 ~ 0.3mm, between Wind restriction lever (C30) and Wind restriction plate (C25), as shown below.



c. Power switch must close when the top of Release actuating lever assy. (0-C34) comes at the same height as the top of Release restriction plate (C22), as shown below.



13. Soldering

3 lead wires	T211 Relay P.C. board
2 "	I 200 Power and Memory switch block
2 "	0-I 501 Winder switch A assy.
3 "	I 100 Battery case assy.

*Do not melt Wind lever (C14) with the hot soldering iron.

14. A200 Back cover

15. I 100 (I 101, 0-I 102) Battery case assy.

T-CNL-D1.7x4.5x2

T-CNL-D1.7x4x2

Make sure that the lead wires are not pinched between the battery case and the body.

Check ASA switching as follows.

Check the continuity between the black lead wire and the blue lead wire with a circuit tester;

ASA320

Continued

The switch pin, located at the left side of the battery case, is not pushed.

ASA80

Discontinued

The switch pin is pushed.

16. T100-01 P.C. board pattern assy.

T-CNL-D1.4x2.5x2

T-CNL-D1.7x3x3

17. 0-I 601 Winder switch B assy.

CNS1.4x1.4x2

Check ON/OFF switching as follows.

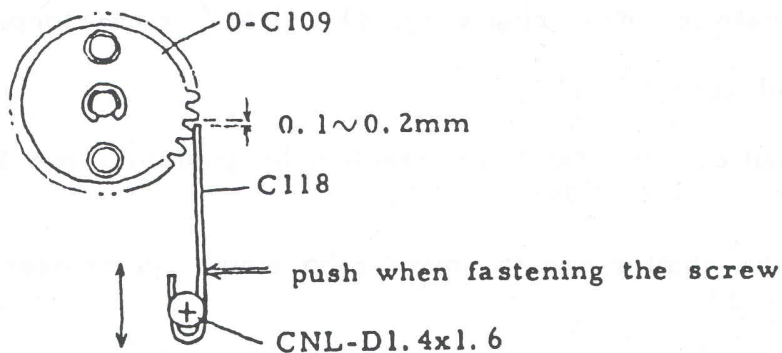
- When charged, the contact pieces should be opened.
- When released, the contact pieces should be closed.
- When the 1st wind is made, the contact pieces should be closed.
- When the 2nd wind is made, the contact pieces should be opened.

18. Soldering

11 lead wires	T100-01 P.C. board pattern assy.
2 "	0-I 601 Winder switch B assy.

*Bundle the lead wires nicely.

Check the function of the auto-shutter several times.



*When fix Anti-reverse stopper (C118) with CNL-D1.4x1.6, push Anti-reverse stopper (C118) against 5th wind gear assy. (0-C109) by the screw driver.

*Anti-reverse stopper (C118) must push 5th wind gear assy. (0-C109) with its spring tention.

- 4) Check if the top of Anti-reverse stopper (C118) touches the side of the tooth of 5th wind gear assy. (0-C109) after Wind lever (C14) has returned to the pre-advance angle position.



*2/3 diameter of Anti-reverse stopper (C118) must hit with the tooth of 5th wind gear assy. (0-C109) as shown left.

9. 0-C115 Ratchet assy.

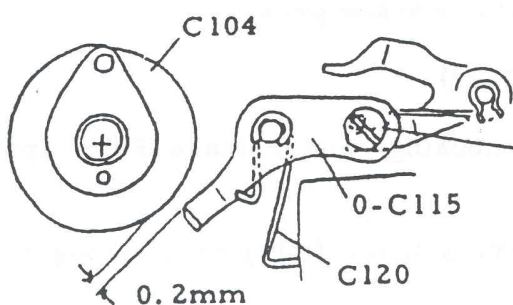
Install Ratchet assy. (0-C115) at the condition of the shutter and the mirror housing charged.

C120 Ratchet spring

W14 t=0.05mm

0-C115 Ratchet assy.

LW13



- 1) Adjust a gap of 0.2mm between Ratchet wheel (C104) and Ratchet assy. (0-C115) by turning the adjusting screw.

- 2) Check if the claw of Ratchet assy. (0-C115) latches the tooth of Ratchet wheel (C104) when release Film spacing lever (C307).

10. C200 Charge lever complete assy.

T-CNM1.7x2.5x3

GS1.5

A8 Mirror charge lever retainer

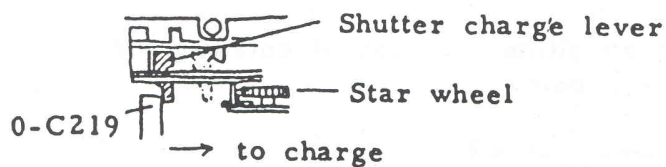
T-CNL-D1.7x3

Install Charge lever complete assy. (C200) at the charged condition of the shutter and the mirror housing.

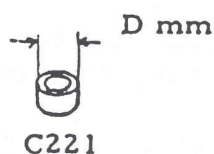
After installed, see if the shutter and the mirror housing are charged properly, having adequate plays in the movement of the charge levers (both the shutter charge lever and the mirror charge lever).

1) The shutter charge lever

- a. Wind Wind lever (C14) twice, while observing the shutter charge lever assy. (0-C219).
- b. Check if the shutter charge lever assy. (0-C219) pushes the shutter charge lever beyond the point where the shutter charged; The star wheel moves 3~6 teeth after the shutter has been charged.



- c. There are three kinds of Shutter charge lever pin collar (C221) for adjustment.

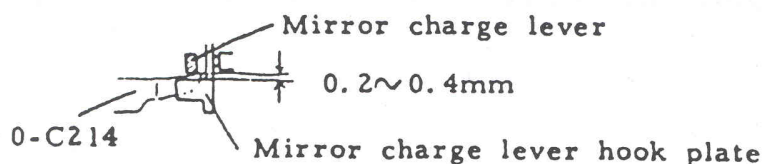


	D mm
C221-00A	2.6
-00B	2.8
-00C	3.0

* Refer to Notice of modification No. 651.

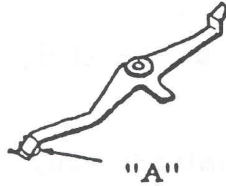
2) The mirror charge lever

- a. Wind Wind lever (C14) twice, while observing the mirror charge lever assy. (0-C214).
- b. Check if the mirror charge lever assy. (0-C214) pushes the mirror charge lever beyond the point where the mirror charge lever is hooked; the mirror charge lever should pass over 0.2mm~0.4mm beyond the point.



c. Adjust it by re-positioning Charge lever complete assy. (C200).

d. If could not adjust by re-positioning, bend Mirror charge lever assy. (0-C214) at the place shown "A".



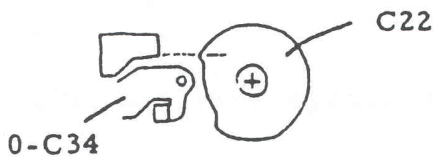
Mirror charge lever assy. (0-C214)

Check all functions several times.

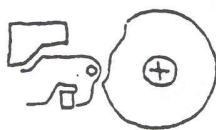
Check if Shutter charge lever assy. (0-C219) and Mirror charge lever assy. (0-C214) should return to the original position after charged.

11. Re-confirm the position of Release restriction plate (C22).
After installed Charge lever complete assy. (C200), re-confirm the position of Release restriction plate (C22) at the conditions mentioned below.

1) At the released condition, the top of cutaway side is not below the point as shown below.



2) At the condition of Wind restriction lever (C30) hooked with Wind restriction plate (C25), push down Release actuating lever assy. (0-C34).



Release restriction lever assy. (0-C34) must return to the original position by own tension, without touching on Release restriction plate (C22).

*This check is especially necessary for the proper function of winding when 110 WINDER attached.

12. Positioning of LED

Position the LED part properly, so that the green and the yellow LEDs are seen nicely.



Put Dust prevention sheet B (M16) after finished the positioning.

Check points

	ASA	LV window	VR to be adjusted	EV reading
a	80	LV6	VR 1	0 ~ +0.3EV
b	80	LV12	VR 2	0 ~ +0.3EV
c	320	LV6	VR 1	0 ~ -0.3EV
d	320	LV12	VR 2	0 ~ -0.3EV

c: If a reading is greatly off "-0.3EV", adjust with VR 1.

d: If a reading is greatly off "-0.3EV", adjust with VR 2.

*If both errors are the same greatness, it is not necessary to adjust.

*After adjusted with VR 1 and VR 2 at c. and d., re-check a reading of a. and b..

Standard for the servicing.

ASA	LV window	Tolerance
80	LV6	$\pm 1.35\text{EV}$
80	LV12	$\pm 1.3\text{EV}$
320	LV6	$\pm 1.45\text{EV}$
320	LV12	$\pm 1.35\text{EV}$

*Acceptable uneven exposure within 0.9EV, but also acceptable if uneven exposures more than 0.9EV are detected two times in ten times.

*Battery check

As there is no "battery check adjustment" provided, check if the battery check operates properly.

2.2 volt	LED off
2.7 volt	LED on

22. Finder focus adjustment with the master lens (ML-241)

Master lens 50mm	ML-241
one scale	0.02mm
Tolerance	
$\pm 0.04\text{mm}$	

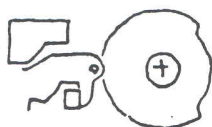
23. Winder switches

1) Winder switch B assy. (0-I 601)

Refer to Page 12-17.

2) Winder switch A assy. (0-I 501)

a. Wind Wind lever (C14) once. Release restriction plate (C22) positioned as shown below.



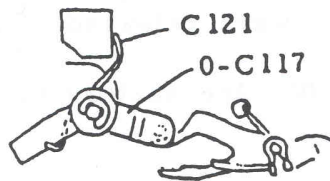
- 4) Depress the shutter release button gradually.
The meter of circuit tester should indicate that the switch turns OFF.
- 5) If the switch remains ON, remove Top cover assy. (A300) and re-adjust the switch contacts.

- c. All moving parts
Check if all moving parts operate properly with the lens mounted on the shutter block.
- 2) Make sure following points when install Mirror housing and Shutter block complete assy. (B000 and E000) to the body.
 - a. Make sure that the black lead wire coming from the synchro safety switch is placed underneath the eye-piece frame, not having the wire pinched between Mirror housing and the body.
 - b. Make sure that Film spacing lever (C307) is properly inserted into the cutout hole of the body.
- 3) Install Mirror housing and Shutter block complete assy. (B000 and E000) to the body.

T-CNL-D1.7x4x4

After installed, check if Film spacing lever (C307) moves smoothly.

6. 0-C117 Bottom wind stopper assy.
 - C121 Bottom wind stopper spring
 - 0-C117 Bottom wind stopper assy.
 - W14 t=0.05, 0.07, 0.1mm
 - LW13



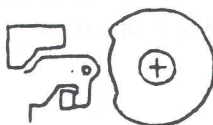
7. C112 4th wind gear
 - C112 4th wind gear
 - C113 Joint

CNL-F1.7x3.2

Adjustment of the gap between Wind ring assy. (0-C4) and Wind stopper (C16).

- 1) Charge the shutter and the mirror housing.
- 2) Release Film spacing lever (C307), and turn Ratchet wheel (C104) clockwise until it stops.
- 3) Wind Wind lever (C14) twice while touching slightly Release restriction plate (C22).

*Make sure that Release restriction plate (C22) must stops at the place, as shown left.



*Release restriction plate (C22) must be held with a finger while Wind lever (C14) returning after wound twice.

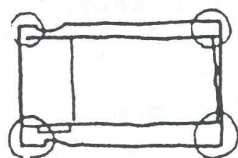
24100

C8

19. Mechanical back focus

Mechanical back focus measurement

$26.90 \pm 0.04\text{mm}$



○ = Check part

Adjusting washer (A114)

A114-00A	t=0.4mm
-00B	t=0.3mm
-00C	t=0.2mm
-00D	t=0.1mm
-00E	t=0.05mm
-00F	t=0.03mm

Find the highest point in each check part, as shown above, to get a correct mechanical back focus measurement.

20. Viewfinder

1) clean the viewfinder.

2) Adjust the parallax. (50mm lens is recommended)

21. Exposure calibration

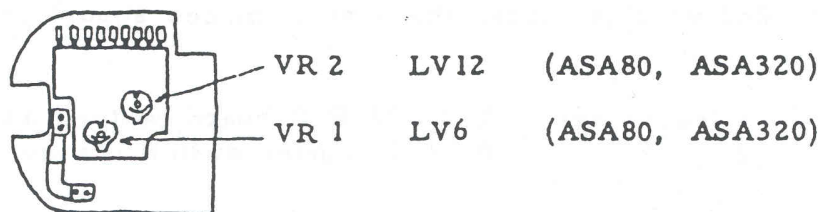
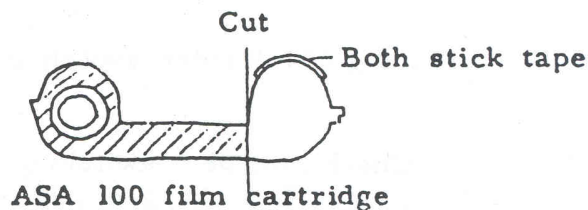
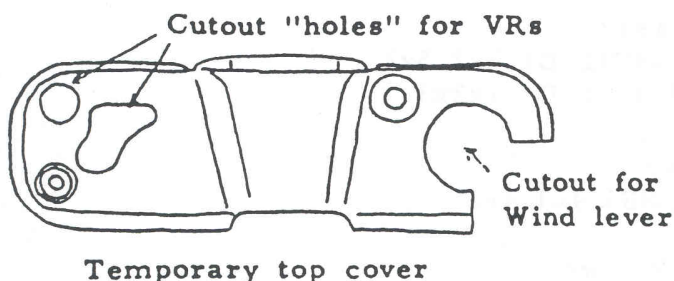
Prepare the following.

- *Temporary top cover
- *Light measuring master lens
- *Shutter speed tester
- *Power source adapter cord for 24100 or Temporary film cartridge
- *Black tape for covering the eye-piece

LML-241

7PE-25A3

PA-241-01



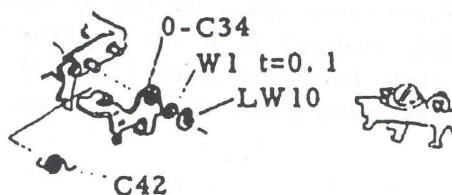
T100-01 P.C. board pattern assy.

6. 0-C34 Release actuating lever assy.

W1 t=0.1mm

LW10

C42 Hook lever spring

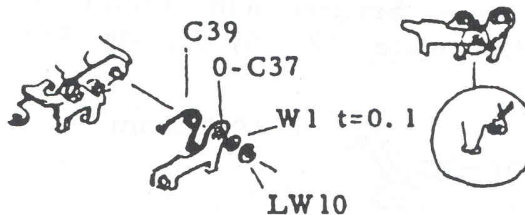


7. C39 Release actuating spring

0-C37 Release actuating plate assy.

W1 t=0.1mm

LW10

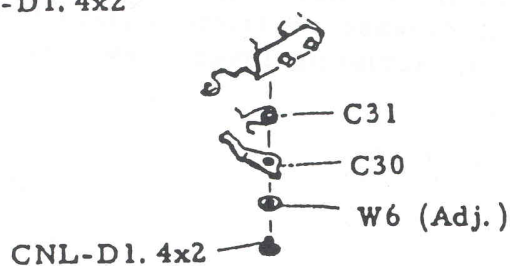


8. C31 Wind restriction lever spring

C30 Wind restriction lever

W6 (Adj.)

CNL-D1.4x2

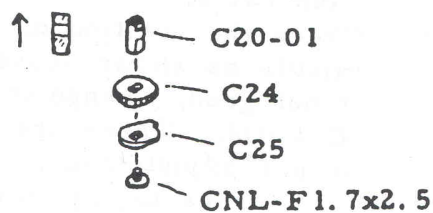


9. C20-01 2nd wind gear shaft

C24 3rd wind gear

C25 Wind restriction plate

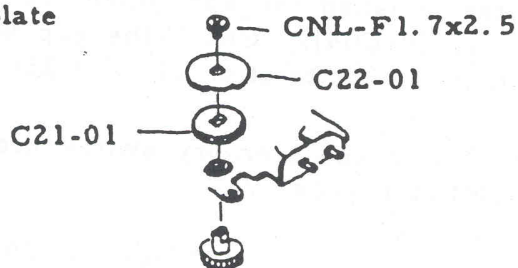
CNL-F1.7x2.5



10. C21-01 2nd wind gear

C22-01 Release restriction plate

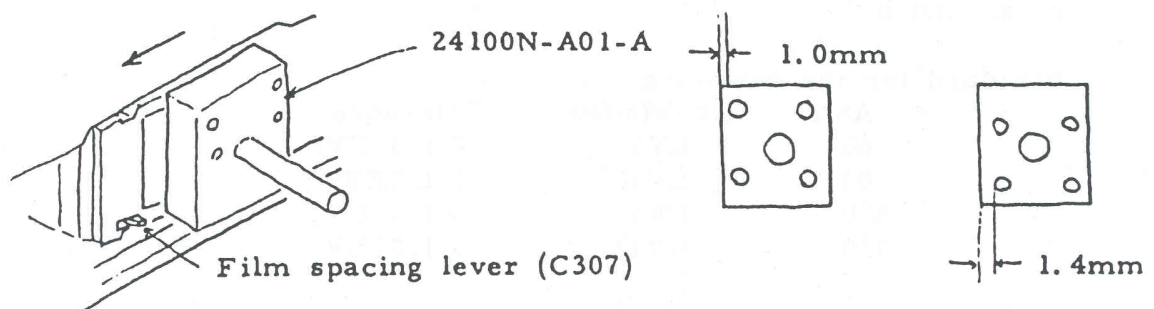
CNL-F1.7x2.5



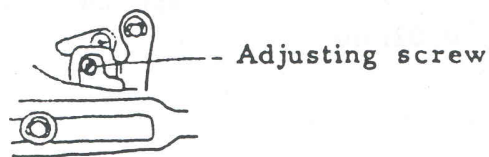
- b. Gradually depress Release actuating lever assy. (0-C34).
- c. At when Release actuating lever assy. (0-C34) touched Release restriction plate (C22), the switch must turn OFF.
- d. If necessary, adjust it by bending the upper contact piece of the switch.
- e. Confirm that the switch must have a proper contact pressure when turn on. (The lower contact piece must push up the upper contact piece after when the both contact pieces touched).

24. Film spacing lever

Confirm the function of Film spacing lever (C307) at the charged condition.



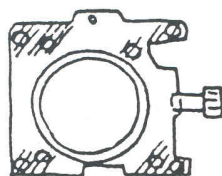
- 1) Place Film spacing lever jig (24100N-A01-A) on the film aperture.
- 2) Slowly slide the jig to the left.
 - a. Film spacing lever (C307) should not drop in at the distance of 1.0mm from the edge of the film aperture.
 - b. Film spacing lever (C307) should drop in at the distance of 1.4mm from the edge of the film aperture.
- 3) Adjust it by the adjusting screw as shown below.



25. A101 Front cover

CNL-D1.7x2.2

*Before install Front cover (A101), apply "dull black paint" to the areas as shown below.



26. I 703 Contact seat

27. 0-1401 Bottom cover assy.

CNS1.7x4.5

T-CNL-D1.7x3.5x2

28. Remove Wind lever (C14)

29. A300 Top cover assy.

A10x2 Top cover retainer screw

T-CNL-D1.7x3.5x2

Install Wind lever (C14) temporary.

CNL-E1.7x4x2

30. Switching stroke of Auto-manual button

Check the auto-manual switching with the jig (24100N-A314-A-1).



"L" 0.8mm

Auto ON

"L" 0.4mm

Manual ON

*If necessary, remove Wind lever (C14) and Top cover assy. (A300).

Then adjust the contact pieces of the auto-manual switch on the circuit board to perform switching properly.

31. Synchronization of Auto-flash unit

Check if the auto-flash unit fires properly, synchronizing with the shutter operation.

See the attached explanation of Flash testing jig (FTJ-241).

32. C14 Wind lever

CNL-E1.7x4x2

C15 Wind lever covering

23600K-C135-K

33. Re-confirm the function of Winder switch A assy. (0-I 501).

Although Winder switch A assy. (0-I 501) has been checked, make sure once again that the switch functions properly after installing Top cover assy. (A300); Release actuating lever assy. (0-C34) may be depressed by the shutter button of Top cover assy. (A300).

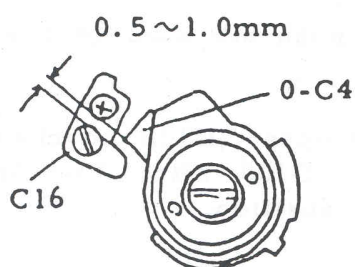
1) Connect the tester rods with the contacts of the winder contact circuit board assy. (0-I 701).

2) Wind Wind lever (C14) once.

3) Check the continuity between the contacts.

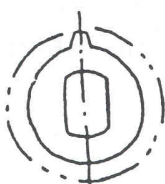
The meter of circuit tester should indicate that the switch remains ON.

- 4) Turn Release restriction plate (C22) slightly counterclockwise to make a proper gap between Wind ring assy. (0-C4) and Wind stopper (C16).
- 5) Install 4th wind gear (C112).
- 6) Release the shutter (with the lens mounted) by pushing down Release actuating lever assy. (0-C34).
- 7) Charge again the shutter and the mirror housing, and release Film spacing lever (C307).
- 8) Slide off Bottom wind stopper assy. (0-C117), and wind Wind lever (C14) twice while observing Wind stopper (C16).
See if there is a gap, 0.5~1.0mm, between Wind ring assy. (0-C4) and Wind stopper (C16), as shown below.

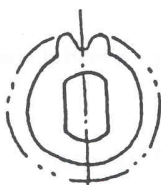


If there is no gap or too much gap, try to use the other gears.
A proper gear should be selected out of the following three kinds.

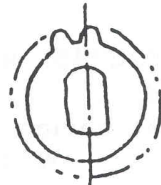
C112-00A



C112-00B



C112-00C



*There are two stoppers in 5th wind gear assy. (0-C109). So that check of the gap must be done with two stoppers.

8. Adjustment of Anti-reverse stopper (C118)

- 1) Charge the shutter and the mirror housing, and release Film spacing lever (C307).
- 2) Wind Wind lever (C14), and hold Wind lever (C14) as it stops at Wind stopper (C16).
- 3) While holding Wind lever (C14), adjust a gap, 0.1~0.2mm, between the top of Anti-reverse stopper (C118) and the side of the tooth of 5th wind gear assy. (0-C109), as shown in next page.

Install Power and Memory switch block (I 200) after bent the longer contact piece of the power switch upward, aprox. 30°, as shown below.



30°

— to return Release actuating lever assy. (0-C34) to the original position properly.

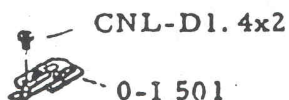
Check the function of Release actuating lever assy. (0-C34) after installed.

Adjustment of the power and memory switch.

Refer to the page 4 5.

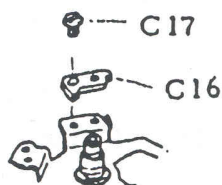
12. 0-I 501 Winder switch A assy.

CNL-D1.4x2

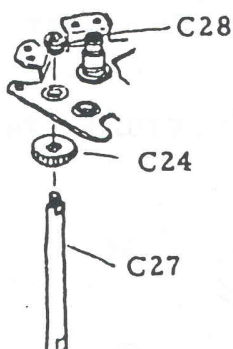


Assembly procedure of Top mech. plate complete assy. (C000)

1. C16 Wind stopper
C17 Wind lever spring hanger



2. C24 3rd wind gear
C27 Wind shaft
C28 Wind shaft nut



3. C3-01 1st wind gear
0-C4 Wind ring assy.
C9 Wind lever spring
C10 Friction spring
0-C11 Wind lever seat assy.
W11 (Adj.)
C13 Wind shaft retainer screw = Left handed
C14 Wind lever
CNL-E1.7x4

- a. C3-01 1st wind gear
b. 0-C4 Wind ring assy.

Install Ratchet spring (C8) to Wind ring assy. (0-C4).
After installed Wind ring assy. (0-C4) to 1st wind gear (C3),
Check the function of ratchet by turning Wind ring assy. (0-C4).



- c. C9 Wind lever spring



- d. C10 Friction spring

PRODUCT No.66502

ASAHI PENTAX *110* WINDER



09.78.3H

e. 0-C11 Wind lever seat assy.

*Apply a proper quantity of L101 (oil barrier) around the screw holes of CNL-E1.7x4.



0-C11

f. C13 Wind shaft retainer screw = Left handed

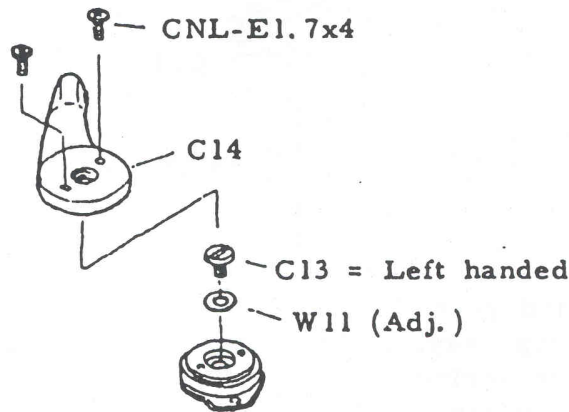
*Apply a proper quantity of SCREW LOCK on the tooth of Wind shaft retainer screw (C13).

W11 t=0.05, 0.1, 0.2mm

Adjust a vertical play of Wind lever seat assy. (0-C11), less than 0.05mm, by W11.

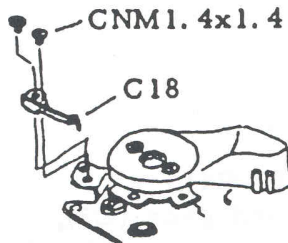
g. C14 Wind lever

CNL-E1.7x4x2



4. C18 Pre-advance angle spring

CNM1.4x1.4



*Pre-advance angle spring (C18) must hit with the outer surface of 0-C11 properly.



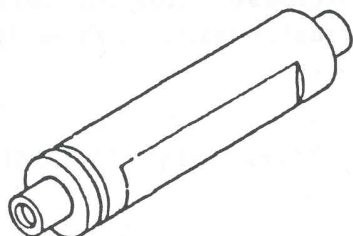
5. C40 Hook lever

C41 Hook lever shaft

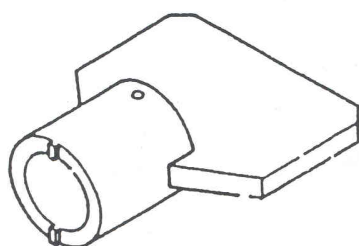
W1 t=0.2mm



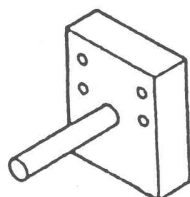
SPECIAL TOOLS FOR 24100



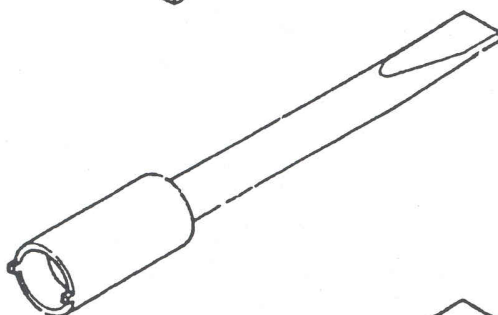
24100N-A314-A-1



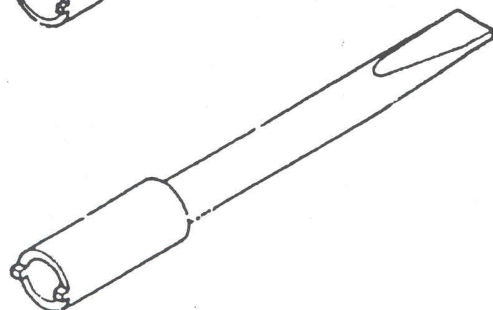
24100K-A308-A-1



24100N-A01-A



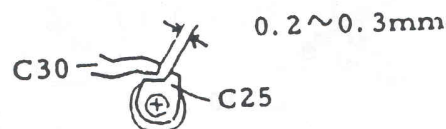
24100K-C119-A



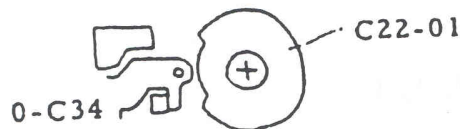
24100K-C308-A

Positioning of Release restriction plate (C22-01)

- a. Hold Wind lever (C4) at the condition which Wind ring assy. (0-C4) and Wind stopper (C4) hit together.
Or holding 1st wind gear (C3-01), return Wind lever (C14) slowly.
—— 1st wind gear (C3-01) does not move back along with Wind lever (C14).
- b. Install 2nd wind gear shaft (C20-01), assembled with C24, C25 and CNL-F1.7x2.5, to Top mech. plate assy. (0-C1).
Depress Release actuating lever assy. (0-C34). And make a gap, 0.2~0.3mm, between Wind restriction lever (C30) and Wind restriction plate (C25) by turning Wind restriction plate (C25).

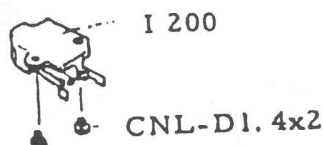


- c. At the condition of a. and b., engage 2nd wind gear (C21-01) with 1st wind gear (C3-01).
- d. Install Release restriction plate (C22-01), and fix with CNL-F1.7x2.5.
*The cutaway side of Release restriction plate (C22-01) must be faced with Release actuating lever assy. (0-C34).



- e. While lightly holding Release restriction plate (C22-01) with a finger, wind twice.
Check the position of Release restriction plate (C22-01), just in the middle as shown above.
If not good, change the engagement of gears or replace 2nd wind gear (C21-01). There are four kinds of 2nd wind gear (C21-01) for a proper adjustment.
*Refer to the notice of modification No. 645.
- f. After finished the adjustment of e., depress Release actuating lever assy. (0-C34). Check the gap between Wind restriction lever (C30) and Wind restriction plate (C25), mentioned at b..

11. I 200 Power and Memory switch block CNL-D1.4x2x2



24100

C22

LIST OF SERVICE PARTS

Product No. 66502

ASAHI PENTAX 110 WINDER

Note: 1. The parts with numbers starting '0-' are assemblies.

2. Only available parts are listed below.

Parts No.	Description	Quantity	Interchangeability
0-Y1	Body proper assy. (Y1, Y4)	1	
0-Y2	Battery cover assy. (Y2, Y10)	1	
Y3	Spacer	1	
Y5	Hook plate	1	
Y6	Hook plate cover	1	
Y7	Hook plate spring	1	
Y8	Switch indication plate	1	
Y9	Sheet	1	
Y11	Name plate	1	
0-Y101	Mech. plate A assy. (Y101, Y104, Y107)	1	
0-Y105	Mech. plate B assy. (Y105, Y106)	1	
Y108	Joint	1	
Y109-01	Joint shaft	1	
Y110-01	Joint retainer screw	1	
Y111	Joint spring	1	
0-Y112-01	Joint gear assy. 112-01, Y113, Y114-01, Y115-01)	1	
Y116	Ratchet claw spring	1	
Y117-01	Ratchet	1	

Parts No.	Description	Quantity	Interchangeability
Y118	Cam	1	
Y119	Clutch gear	1	
Y120	Roller	1	
Y121	Roller retainer screw	1	
Y122	Winding torque adjustment nut	1	
Y123	Clutch spring	1	
Y124	Pinion gear	1	
Y125	Reduction gear A	1	
0-Y126	Reduction gear B assy. (Y126, Y148)	3	
Y127	Gear shaft A	1	
Y128	Gear shaft B	1	
Y129	Clutch contact piece A	1	
0-Y130	Clutch contact piece B assy. (Y130, Y131, Y132x2)	1	
Y133	Connector	1	
Y134	Connector pin A	1	
Y135	Connector pin B	1	
Y136	Connector contact piece A	1	
0-Y137	Connector contact piece B assy. (Y137, Y131, Y132x2)	1	
0-Y138	Battery hold plate assy. (Y138, Y139, Y140x2)	1	
Y141	Switch retainer plate	1	
Y144	Wire hold tape	1	
Y145	Insulation seal	1	
Y146	Battery polarity label	2	

Parts No.	Description	Quantity	Interchangeability
Y201	Motor	1	
Y202	Switch	1	
Y203	Switch cover	1	
Y204	Relay switch	1	
Y205	Relay switch hold tape	1	
Y206	Ground contact piece	1	

Lead wires:

Lead wire No.	Length	Color	Position of use	Quantity
1	40mm	Blue	0-Y130, Y204	1
2	50	Purple	0-Y130, 0-Y137	1
3	15	Yellow	0-Y138, Y202	1
4	40	Orange	Y202, Y204	1
5	25	Black	Y204, Y206	1

TECHNICAL REPORT

テクニカル リポート

ASAHI PENTAX 110 WINDER (Product No.66502)

A) Adjustment of winding torque

In servicing, adjustment of winding torque may be in good if each picture frame can be transported one by one surely under loaded film.

Tolerance

within 1.5kg-cm at 2.5 volts (Regulated DC power supply)

A Fixing screw (CNS1.4x1.6) 固定ネジ

Adjust winding torque by up and down of A

Roller (Y120)

Cam

Aを上下させることによって巻上トルクを調整すること。

A) 巻上トルク調整

客品修理において、巻上トルク調整はフィルム装填状態において、各フレームが駒づつ確実に送られれば良しとする。

規格

2.5V供電した時

1.5kg-cm 以内のトルクであること。

B) Adjustment of clutch switch

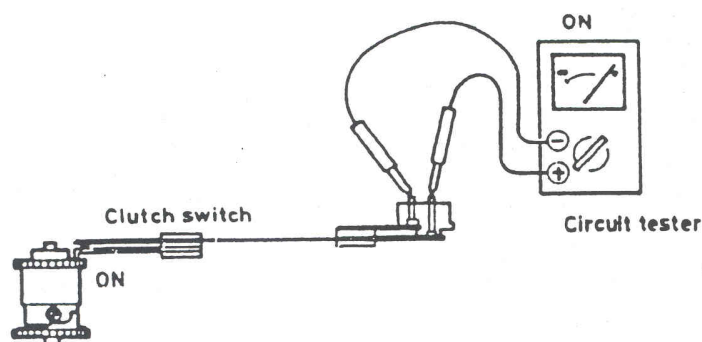
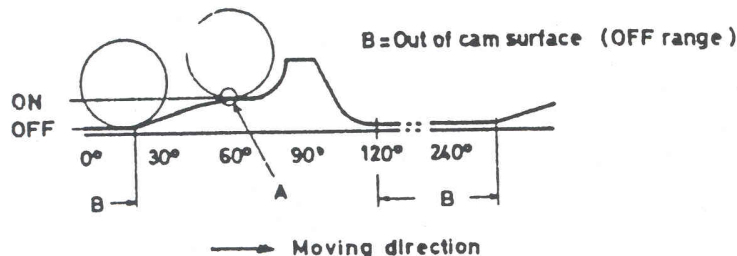
- 1) Clutch switch must be ON just when roller run up cam surface pointed A. At A point, enough contact pressure should be necessary to be better contact efficiency.

- 2) Clutch switch must be OFF around out of cam surfaces.

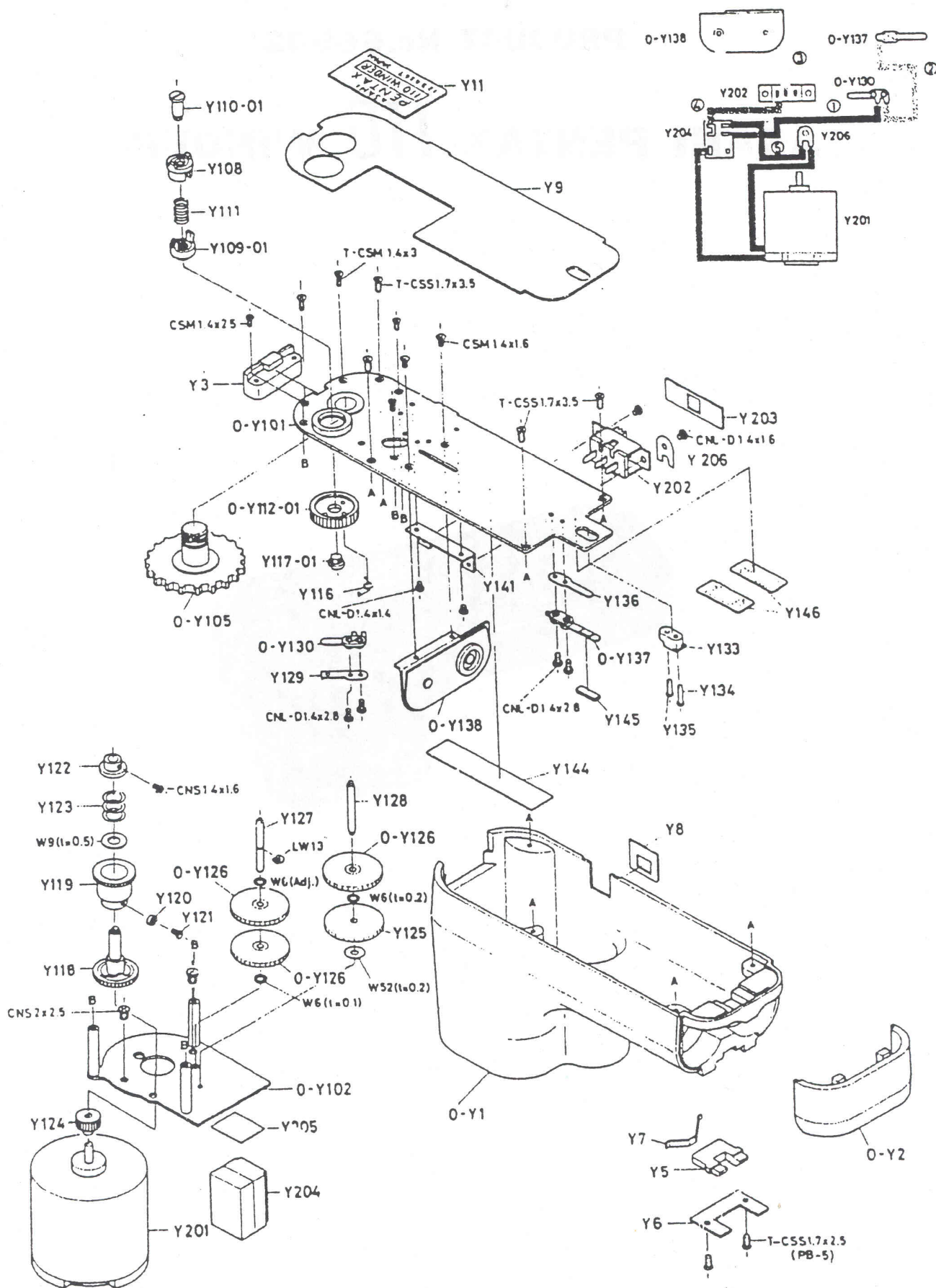
B) クラッチスイッチの調整

1) ローラーがAで示したカム面に乗り上げた時にONであること。A部分において、クラッチ接片間は十分な接触圧があること。——接触効率を良好にする為。

2) クラッチスイッチはカム面以外では、OFFになっていること。

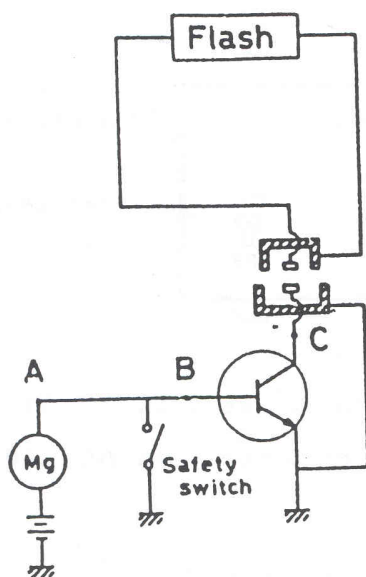


EXPLODED ILLUSTRATION



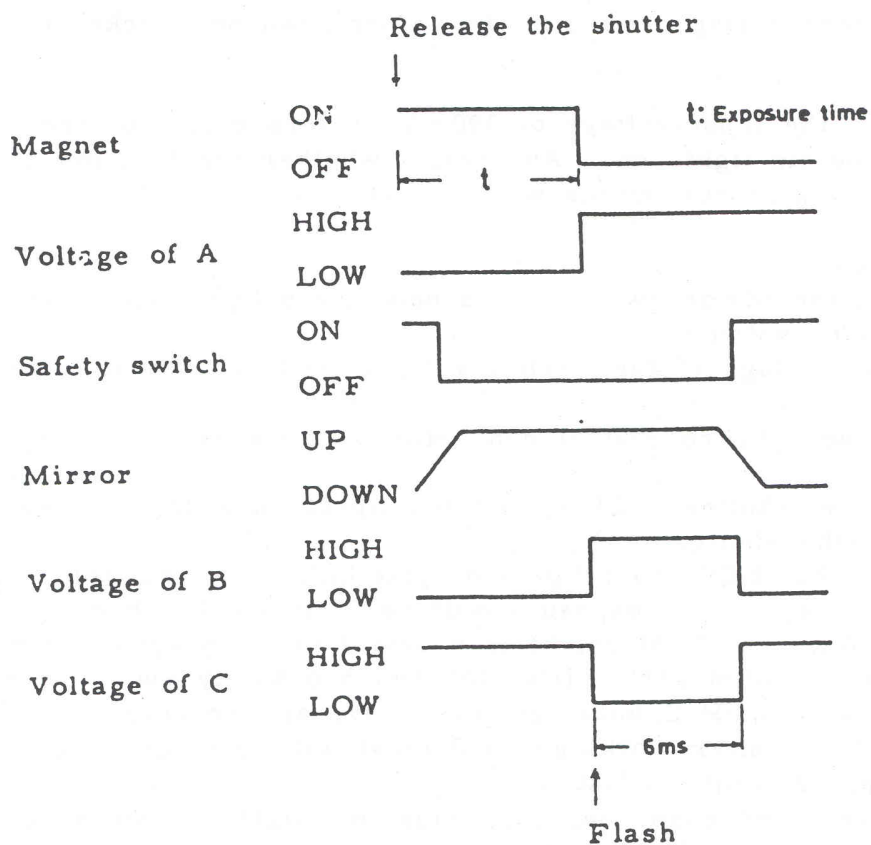
Product No. 66502
 ASAHI PENTAX 110 WINDER
 70

SYNCHRO SWITCH CIRCUIT



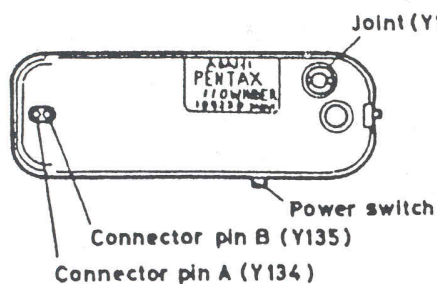
Synchro switch circuit become ON condition only when the voltage of C in the circuit gets less than 300mv.

Actuating sequence



C) Check

C) 点検



Power switch
DC power supply

ON パワスイッチ ON
2.5 volts DC2.5V

- 1) Joint (Y108) rotates to counterclockwise when shorted between Connector pin A (Y134) and Connector pin B (Y135).
- 2) Joint (Y108) starts to rotate to counterclockwise just after Roller (Y120) was located on cam surface by turning Joint (Y108) to clockwise with tweezers or others.
And Joint (Y108) stops the rotation when power switch was OFF.
- 3) Power source voltage (2.5 volts) comes up surely between Connector pin A (Y134) and Connector pin B (Y135).
- 4) Under the condition as mentioned below, Joint (Y108) must be rotated and repeats the rotation until power switch is OFF.

Connector pin A + side
Connector pin B - side

- Winder unit is attached to camera body.
- Power switch of winder unit is ON.
- Without film cartridge.

1) コネクターピンA(Y134)とコネクターピンB(Y135)間をショートさせた時にジョイント(Y108)は反時計方向に回転すること。

2) ジョイント(Y108)を時計方向にピンセット等で回し、ローラ(Y120)がカム面に乗り上げた直後にジョイントは反時計方向に回転し始めること。
そして、パワースイッチをOFFにした時にジョイント(Y108)は回転を止めること。

3) コネクターピンA(Y134)とコネクターピンB(Y135)間に2.5ボルトが検出されること。

コネクターピン A + サイド
コネクターピン B - サイド

4) 下記に示した状態の際ジョイント(Y108)はパワースイッチをOFFにするまで空送りをくり返すこと。

○ カメラボディにワインダーを取付ける。

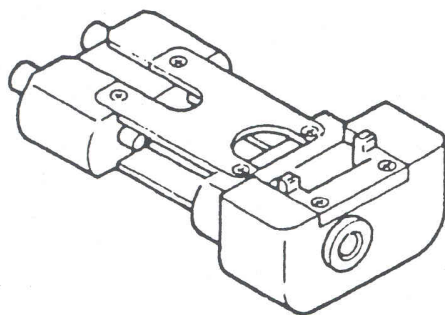
○ ワインダーのパワースイッチをONにする。

○ フィルムカートリッジなし。

D) Special tool

D) 特殊工具

110 ワインダー用電源アダプター



Power source adapter for 110 WINDER

LIST OF STANDARD PARTS

Product No. 66502

ASAHI PENTAX 110 WINDER

Small screws:

Description	Surface treatment	Position of use	Quantity
CNS1.4x1.6	Black nickel	Y118, Y122	1
CNS2x2.5	"	0-Y101, Y201	2
CSM1.4x1.6	"	0-Y101, Y138	2
CSM1.4x2.5	"	0-Y101, 0-Y102	3
CNL-D1.4x1.4	"	0-Y101, Y141	2
CNL-D1.4x2.8	"	0-Y101, 0-Y130 0-Y101, 0-Y137	2 2
T-CSS1.7x2.5	" (PB-5)	0-Y1, Y6	2
T-CSS1.7x3.5	"	0-Y1, 0-Y101	4
T-CSM1.4x3	"	Y3, 0-Y101	2

Washers:

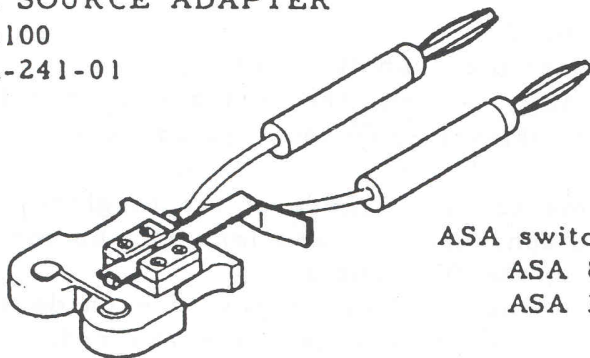
Description	Material	Thickness	Position of use	Quantity
W6	Brass	0.1mm	Y126	2
W9	"	0.5mm	Y119, Y123	1
W50	"	0.1mm	Y128	1

Lock washer

Description	Surface treatment	Position of use	Quantity
LW13	Steel	Y127	1

The explanation of Power source adapter for 24100 (PA-241-01)

POWER SOURCE ADAPTER
FOR 24100
PA-241-01



Red plug —To plus (+) terminal
Black plug —To minus (-) terminal

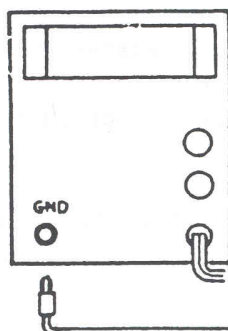
ASA switching lever

ASA 80 — Pushed in.
ASA 320 — Pulled out.

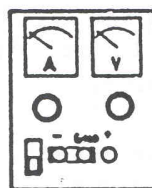
Caution:

When use PA-241-01 to measure exposure values, be sure to connect the ground between Shutler speed tester (7PE-25A3) and D.C. power supply. If not, it causes becoming uneven exposure values. Max. capacity of D.C. power supply must be over 0.5A.

Shutter speed tester
7PE-25A3



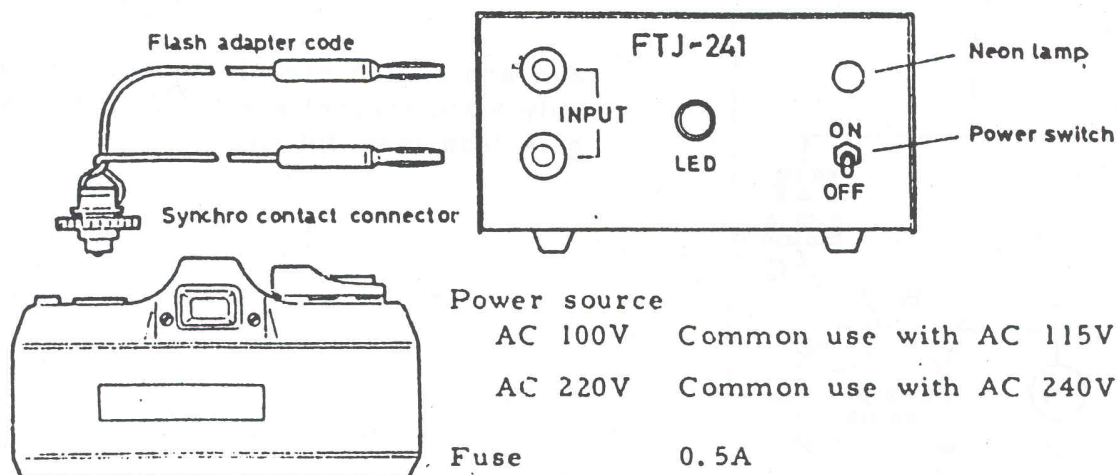
D.C. power supply



Max. capacity Over 0.5A

To the ground terminal

24100 FLASH TESTING JIG (FTJ-241)



*Power source voltage must be defined when order this jig.

Contents

Flash synchronizing circuit in the camera can be checked by using this jig.

Only when the input voltage of 300mV or less exists on the input terminals, LED in the jig lights on. And detect whether the function of flash synchronizing circuit works well or not.

Way of use

1. Turn on the power switch. The neon lamp lights on by switching the power switch.
2. Insert two plugs of the flash adapter code to the input terminals in the jig.
3. Install the synchro contact connector to the synchro terminal of the camera.
4. Charge the shutter. LED must not lights on while winding.
5. Release the shutter.
6. Confirm that LED must lights on just before the shutter closed. In this case, a long exposure will be facilitate to check, If LED does not light on, it is a defect of flash synchronization. Check all related parts. (Ex. the synchro safety switch, the synchro contact pieces, P.C.board pattern assy. and so on.)
7. During the shutter working, LED must not lights on, except for only the point as mentioned at 6.
8. At the released condition, LED must not lights on when pushed down the shutter button several times. If does, it is a mis-firing. Check the contact pressure of safety switch and related parts.

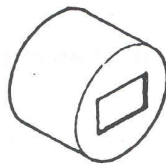
b. Set the switches and the LV knob, as follows.

ASA	100
S. SPEED	EV
FUNCTION	CAL
LV	10

c. Put the light sensitivity correction standard jig (LSC-241), assembled with the light measuring master lens for 24100 (LML-241), just front of the brightness surface and adjust the SENS VR so that the indicator shows 0EV



Light measuring master lens for 24100 LML-241



Light sensitivity correction standard jig
LSC-241

Measurement of the amount of exposures and the shutter speed

1) Measurement of the amount of exposures for 24100 AUTO 110

a. Install the 110 mask on the light receiving unit.

b. Set the switches, as follows.

ASA	80 or 320
S. SPEED	EV
FUNCTION	MEAS

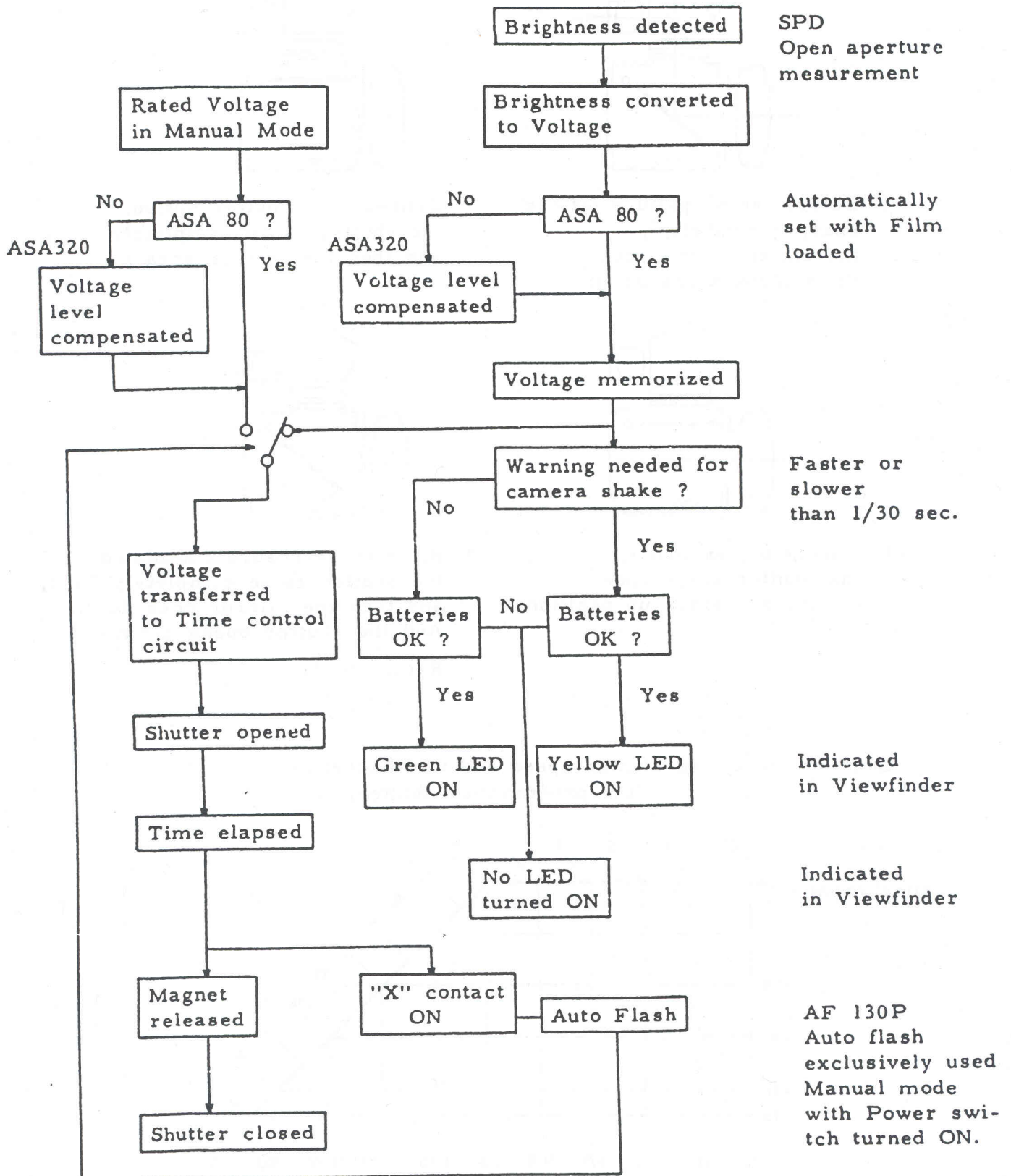
c. Set the LV to be measured by turning the LV knob.

d. The LV to be measured at this time is indicated on the LV lamp.

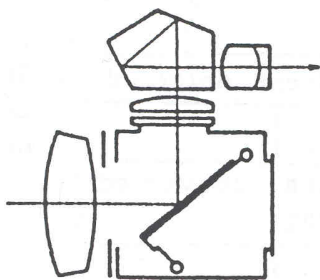
e. When the camera is released, the amount of exposures will be indicated on the indicator as the error to the rated value.

f. When the camera is released, confirm the AUTO lamp signals ON-OFF signs. This indicates whether the information on the indicator is correct or not.

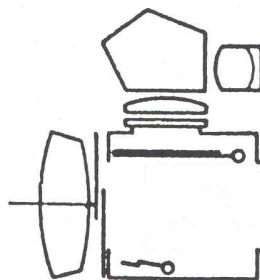
SEQUENCE DIAGRAM OF CONTROL AND PERFORMANCE



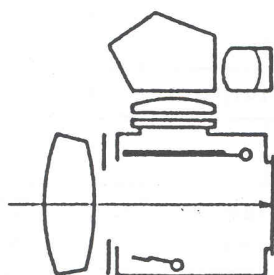
The shutter and the mirror actuating procedure



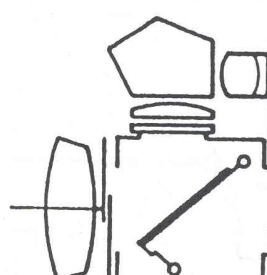
1. Before taking picture (at the charged condition), the shutter stays open the mirror stays down.



2. Depress the shutter button, the shutter close completely first, and then the mirror goes up.



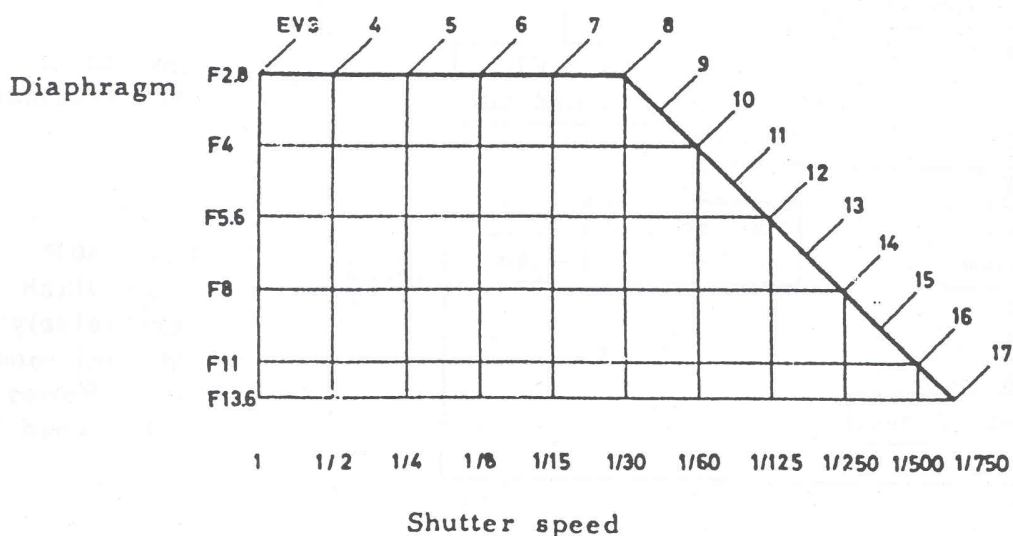
3. During the exposure, the shutter stays open, the mirror stays up position.



4. After the exposure completed, the shutter close completely first, and then the mirror goes down. And the shutter opens again.

Return to 1.

Combination of the shutter speed and the diaphragm (the programmed shutter)



SHUTTER SPEED TESTER 7PE-25A3

This tester is designed for measuring the shutter speed and the amount of exposures.

By S.S-EV switch, the amount of received light on the surface of the film on any other camera can be measured and the error to the standard amount is to be indicated on EV basis.

It is designed compacted to be used portably.

Items and objects to be measured

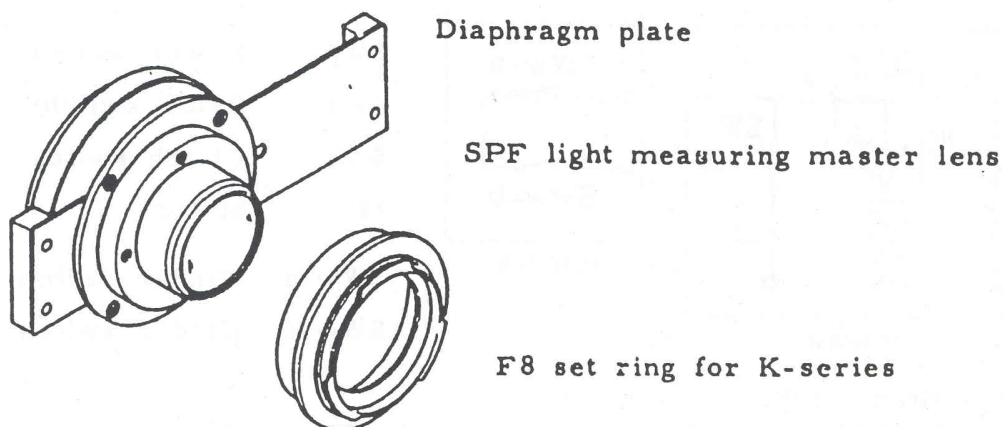
- 1) Shutter speed for 35mm focal plane shutter camera
 - a. When the diaphragm is fully opened, the center exposure time to each degree of the brightness (FO) is detected by using F8 set ring.
 - b. The center exposure time to each degree of the brightness of a camera installed on diaphragm F8 fixed lens can be measured.
- 2) The amount of exposures on the film surface
The errors of the standard amount of exposures to each degree of the brightness on any of the EE camera can be measured.

Correction and Adjustment

- 1) Correction of the brightness
 - a. Connect the voltage meter to the lamp voltage terminal.
 - b. Put the power switch ON.
 - c. 4 or 5 minutes after the power switch is ON, it is to be adjusted.
 - d. Put the EV checker just in front of the brightness surface.
 - e. Turn the LV knob at LV16. Adjust the voltage of LV16 by turning VR for LV16 located at the right side of the cover.
The voltage should be adjusted at 105V.
 - f. Adjust the brightness of LV16 by turning the lamp removing screw located underneath the measuring table.
 - g. Adjust the brightness of each degree (LV) by turning each VR.
And confirm that the voltage of each LV should be in the range between 100V—110V.
 - h. When the lamp voltage exceed or less the above stated range, adjust it by moving the slit of the inner turret.
 - i. When low brightness is to be adjusted, be careful not to be influenced by any lights from outside.
- 2) OFF SET adjustment
 - a. 4 or 5 minutes after the power switch is ON, it is to be adjusted.
 - b. Set the switches, as follows.

ASA	320
S. SPEED	EV
FUNCTION	CAL
 - c. Shade the light perfectly from the light receiving unit.
 - d. Adjust the OFF SET VR by turning so that the OFF SET lamp is ON.
- 3) Correction of EV sensitivity
 - a. Install the light receiving unit on the light sensitivity correction standard jig (LSC-241).
with the light measuring master lens (LML-241)

3) Measurement of the auto-shutter speed for K2 and ME



- Mount F8 set ring to the camera body.
- Put SPF light measuring master lens and the camera body with F8 set ring onto the measuring table.
- Set the diaphragm plate to the full open aperture.
- Set the switches, as follows.

ASA	100
S. SPEED	FO
FUNCTION	MEAS

As the above mentioned combinations, measure the auto-shutter speed and the meter indication in each LV.

Measurement of the mechanical speed for other cameras.

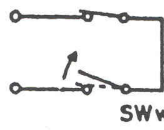
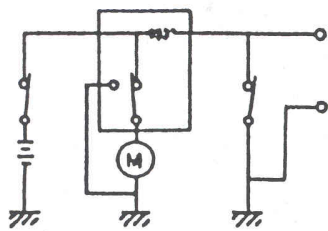
- Mount F8 set ring to the camera body.
- Put SPF light measuring master lens and the camera body with F8 set ring onto the measuring table.
- Set the diaphragm plate to the full open aperture.
- Set the switches, as follows.

ASA	100
S. SPEED	FO
FUNCTION	MEAS

- Set the LV knob at LV10.

As the above mentioned combinations, measure the mechanical speed.

4. After charged the mirror housing

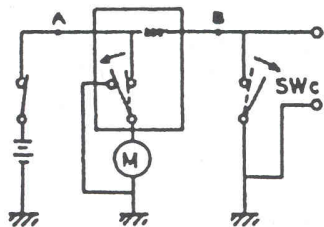


SWw-b ON → OFF

Even if SWw-b becomes OFF, SWc is still ON condition. So that the motor still rotating.

The film transport is still going.

5. After completed the film transport



- a. Release the film spacing lever by a film perforation. As a result, the winding stops. Then SWc is going OFF.

SWc ON → OFF

- b. At this moment of SWc become OFF, the circuit of SWr switches from NO-COM to NC-COM because of no current flows between A and B.

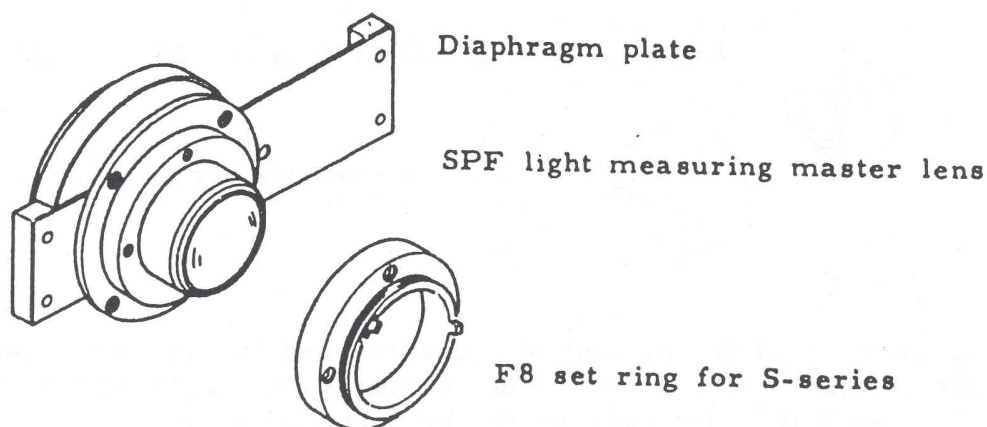
Then Motor stops to rotate suddenly.

6. Return to 1.

Measurement of the auto-shutter speed for 35mm focal plane shutter camera

1) Preparations

- a. Dismount F8 set ring from SPF light measuring master lens.
- b. Prepare a dismounted F8 set ring for the screw mount type, and a F8 set ring for the bayonet mount type.
- c. Install the 35mm camera mask on the light receiving unit.
- d. Confirm the OFF SET, adjust if necessary.
- e. Confirm the EV sensitivity, adjust if necessary.



2) Measurement of the auto-shutter speed for ES and ESII

At the open-aperture measurement:

- a. Mount F8 set ring to the camera body.
- b. Put SPF light measuring master lens and the camera body with F8 set ring onto the measuring table.
- c. Set the diaphragm plate to the full open aperture.
- d. Set the switches, as follows.

ASA	100
S. SPEED	FO
FUNCTION	MEAS

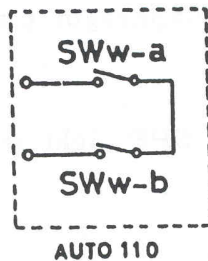
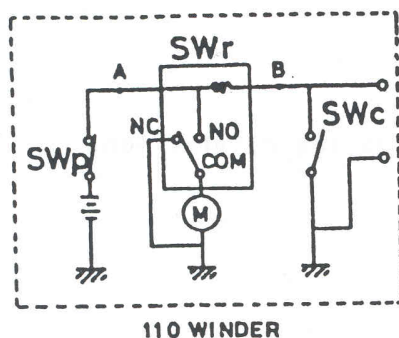
As the above mentioned combinations, measure the auto-shutter speed and the meter indication in each LV.

At the stop-down measurement:

- a. the same as above.
- b. the same as above.
- c. Set the diaphragm plate to the diaphragm F8.
- d. Set the switches, as follows.

ASA	100
S. SPEED	F8
FUNCTION	MEAS

AUTO 110 AND 110 WINDER SEQUENCE OF ACTUATING CIRCUIT

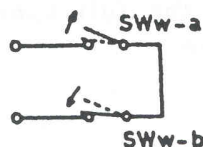
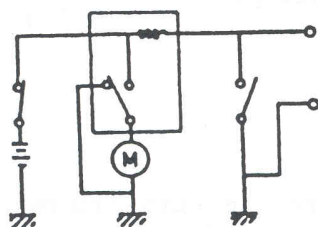


SWp	Power switch
SWr	Relay switch*
SWc	Clutch switch
M	Motor
SWw-a	Winder switch A
SWw-b	Winder switch B

*Relay switch SWr

The NC-COM circuit switches over to the NO-COM circuit when the current flows between A and B.

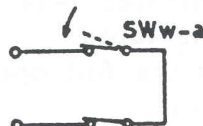
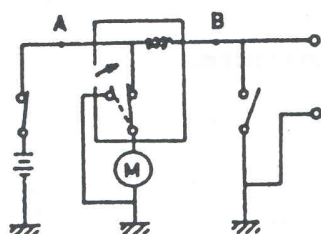
1. At the released condition—the shutter button is depressed downward.



SWw-a ON → OFF
SWw-b OFF → ON

Motor does not rotate.

2. At the released condition—the shutter button is returning to the original position.

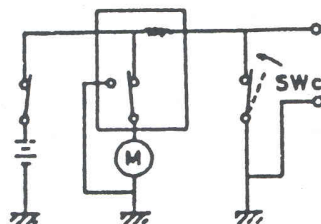


a. SWw-a OFF → ON

- b. At the moment of SWw-a becomes ON, the current flows between A and B. Then the NC-COM circuit in SWr switches over to the NO-COM circuit.

Motor rotates from this moment.

3. On the winding

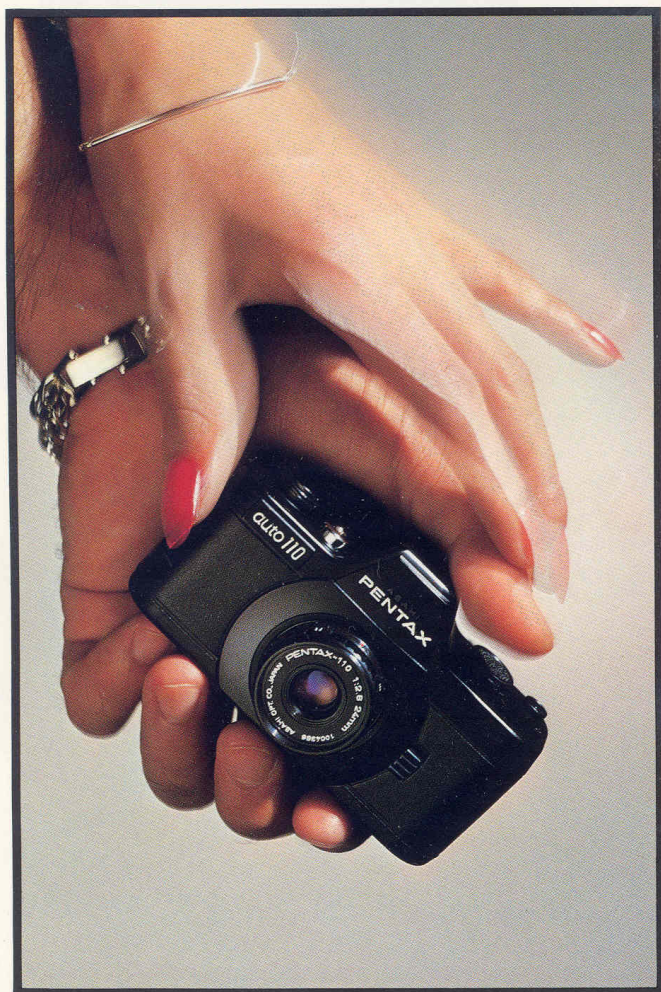


SWc OFF → ON

Refer to "110 WINDER TECHNICAL REPORT".

THE PENTAX AUTO 110 WORLD OF POCKETABLE PLEASURE...

Every few years a new concept evolves that adds a completely new dimension to the world of photography. Meet the latest— the Pentax AUTO 110. It's a fully automatic 110 pocket camera that fits neatly into the palm of your hand. And, it's also a lot more. It's a precision-engineered single-lens reflex camera scaled exactly along the lines of the popular 35mm SLR camera. As such, it combines both the compactness and easy cartridge loading of the 110 film format with many of the systems advantages found only on the latest 35mm SLRs. It features the Pentax-110 Bayonet Mount for quick lens changes with Pentax-110 accessory wide-angle and telephoto lenses. And, it also features thru-the-lens viewing via a large pentaprism viewfinder with a split-image focusing screen. Also like the latest 35mm SLRs, it features a fully automatic SPD metering system that works in conjunction with an electronic programmed shutter to select both shutter speed and lens aperture.



AF 130P



AF 100P

AUTO 110 SPECIFICATIONS

Type TTL metering 110 SLR camera with bayonet mount (80-degree setting angle)

Film Cartridge-loading 110 film (13mm x 17mm format); ASA film speed set automatically for film in use.

Lens Pentax-110 24mm F2.8; Focusing range: 0.35m ~ ∞.

Viewfinder Eye-level pentaprism finder with quick-return mirror; green and yellow LEDs indicate correct/incorrect exposure; Magnification: 0.75X showing 87% of picture area; central split-image focusing spot surrounded by matte field.

Exposure Metering Center-weighted, TTL metering at full aperture via SPD cell; EV Range: 3 - 17 (24mm F2.8 lens; ASA 100).

Shutter/Automatic Diaphragm Programmed electronic behind-the-lens shutter with programmed body diaphragm; Range: 1/750 sec. at f/13.5 to 1 sec. at F2.8.

Other Features Two-stroke film advance lever, synch terminal for automatic flash synch with AF 130P auto flash; tripod socket, lens release button, battery holder tray; exposure count via back cover window, winder capability.

Power Source: Two 1.5V silver-oxide batteries (G-13)

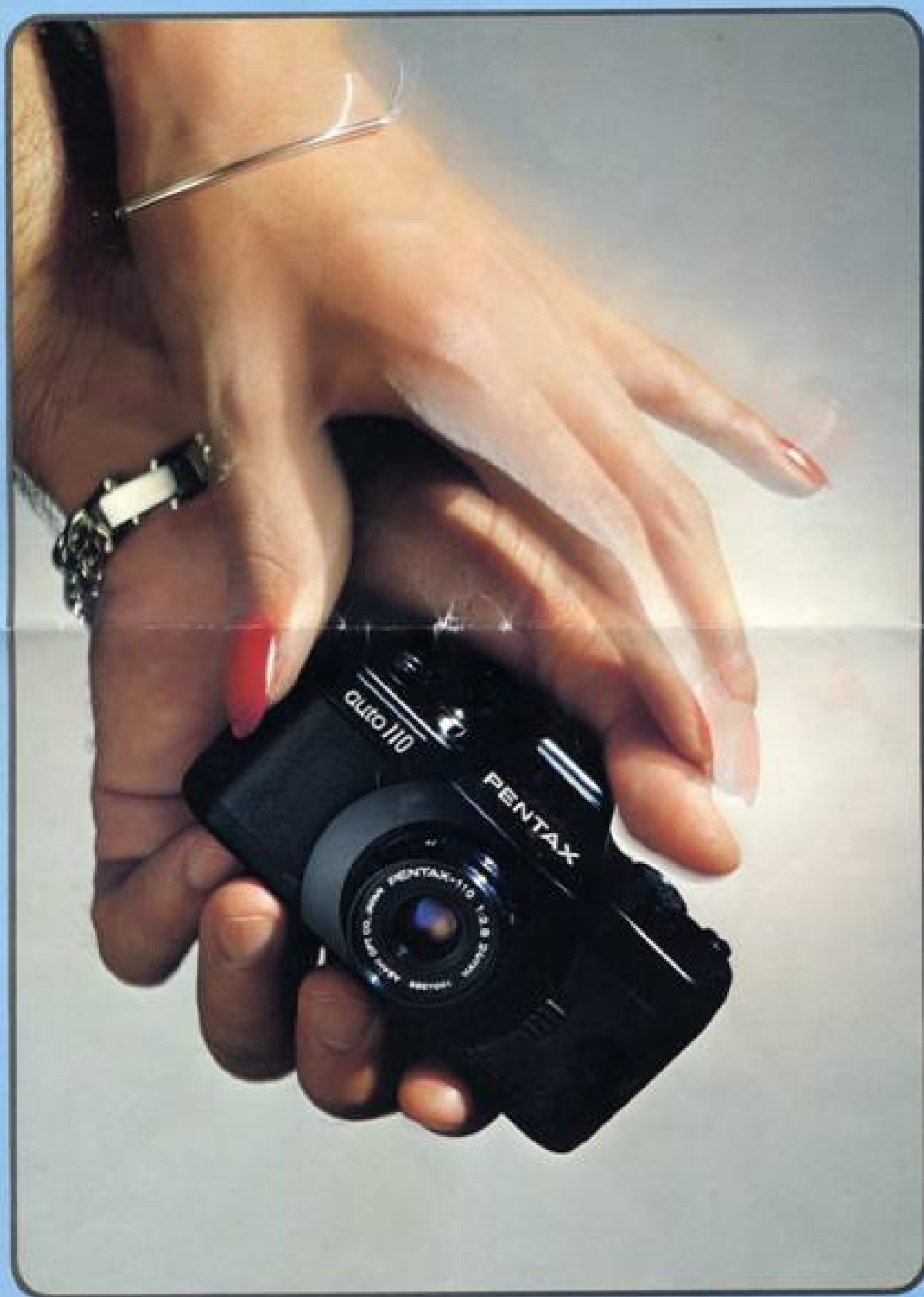
Size 56mm x 99mm x 45mm (2.2" x 3.9" x 1.8") w/lens

Weight 172 grams (6.1 ozs) w/lens.

**"POCKET"
SLR
SYSTEM**

PENTAX

auto 110



THE FIRST 110 SYSTEM SLR
with interchangeable lenses, automatic exposure,
auto winder and electronic flash

AUTO FLASH UNITS



For photography outdoors at night, in low light, or indoors in dimly lit rooms, the Pentax Auto 110 photographer has a choice of two convenient auto electronic flash units. Both are "dedicated" units which synchronize automatically with the camera and feature a sensor eye that cuts off the flash at exactly the right moment for perfect exposures with virtually every shot. Use either unit anytime the yellow LED inside the camera viewfinder lights to guarantee striking photos of your subject in poor lighting conditions.

• AF 130P Auto Flash Unit

The larger of the two, this unit features a guide number of 13 (ASA 100 in meters) and attaches to the special flash shoe on top of the camera. The AF 130P automatically synchronizes with the camera's programmed shutter at 1/30 sec. at f/2.8 with ASA 100 film (1/30 sec. at f/5.6 with ASA 400). Other features include test button/ready lamp, power switch. Flash coverage angle: 45° vertical, 55° horizontal. 71mm x 41mm x 63mm; 102g/3.6 ozs. (w/o batteries). Operates on two 1.5V AA cells.

• AF 100P Auto Flash

The highly compact and lightweight AF 100P is ideal for situations where optimum compactness is of prime concern. Like the AF 130P it also mounts to the special flash shoe on top of the camera, but hugs the body closely for snug handling. Synchronizes automatically with programmed shutter at 1/30 sec. at f/2.8 with ASA 100 film (1/30 sec. at f/5.6 with ASA 400). Features include test button/ready lamp, power switch. Flash coverage angle: 45° vertical, 55° horizontal. 63mm x 49mm x 48.5mm; 100g/3.5 ozs. (with batteries). Powered by two 1.5V AAA cells.



And there's much, much more. The AUTO 110 features systems options such as its own automatic winder unit for easy automatic film wind. Then, for low-light flash photography, there are the AF 130P and AF 100P, both dedicated electronic flash units. For people who like to experiment in the realm of close-up and special effects photography, the system also features accessory close-up lenses for macrophotography, assorted filters, plus lens hoods and viewfinder eyepiece correction lenses. In addition, there's an assortment of cases for camera, individual accessories or the entire system . . .

Featuring just about everything a camera its size could offer, the Pentax AUTO 110 welcomes you to its truly unique world of pocketable pleasure!



PENTAX-110 INTERCHANGEABLE LENSES

Also on hand to expand the range of your photographic pleasure with the AUTO 110 are PENTAX-110 bayonet-mount interchangeable lenses. In addition to the 24mm F2.8 standard lens (equivalent to a 50mm standard lens in the 35mm format), the 18mm F2.8 wide-angle and the 50mm F2.8 telephoto Pentax-110 interchangeable lenses are also available. The largest of these three lenses is even smaller than a pipe bowl; while the combined weight of all three is 94 grams — making Pentax-110 lenses truly the world's lightest interchangeable lenses!

• PENTAX-110 24mm F2.8 Standard Lens

The most compact of the three lenses in the series, the standard lens weighs an unbelievable 13 grams. Recommended for general shooting, it features natural perspective and maintains relative sizes of the background, middle ground and foreground. **Construction:** 6 elements/5 groups **Angle of view:** 47° **Min. focus:** 0.35m; 29.6mm (dia.) x 12.8mm (length); 13 grams.



• PENTAX-110 18mm F2.8 Wide-Angle Lens

Wide-angle lenses produce a wider angle of view than the standard lens, thus enabling you to get more into the picture. The Pentax-110 wide-angle lens weighs a mere 28 grams and is equivalent to a 35mm wide-angle lens in the 35mm format. An ideal lens for panoramic scenic shots, group portraits and sweeping special effects. **Construction:** 6 elements/6 groups **Angle of view:** 61.5° **Min. focus:** 0.25m; 34mm (dia.) x 21mm (length); 28 grams.



• PENTAX-110 50mm F2.8 Telephoto Lens

Telephoto lenses are used to reach out and bring distant objects up close. The Pentax 50mm F2.8 telephoto weighs a mere 53 grams and has a focal length approximately equivalent to a 100mm telephoto lens in the 35mm format. An ideal lens for closely framed portraits, sports events, candid shots as well as general telephoto uses. **Construction:** 5 elements/5 groups **Angle of view:** 24° **Min. focus:** 0.9m; 43mm (dia.) x 27.2mm (length); 53 grams.



LENS ACCESSORIES FURTHER EXPAND RANGE OF APPLICATION

• Close-up Attachment lenses, Filters, Lens Hoods . . .

An assortment of accessories is also available for each of the Pentax-110 interchangeable lenses. **Close-up attachment lenses** are available for each of the three master lenses to enable a variety of close-up applications. In addition, there are **Skylight** and **UV** filters for all the three lenses. Other lens and viewfinder accessories include eyesight correction lenses, lens hoods, and lens caps, as well as cases for individual lenses and lens accessories.

FILTERS

• Type	• Size	• Lens
UV	25.5mm	24mm F2.8
Skylight	25.5mm	24mm F2.8
UV	30.5mm	18mm F2.8
Skylight	30.5mm	18mm F2.8
UV	37.5mm	50mm F2.8
Skylight	37.5mm	50mm F2.8



CLOSE-UP LENSES

• No.	• Used with:	• Focusing Range	• Magnification
S31	24mm F2.8 standard	20 ~ 36cm	1/6.1 ~ 1/12.7
S16	24mm F2.8 standard	15 ~ 20cm	1/4.1 ~ 1/6.4
W21	18mm F2.8 wide-angle	16 ~ 26cm	1/5.7 ~ 1/11.3
T86	50mm F2.8 telephoto	48.5 ~ 91.9cm	1/8.0 ~ 1/17.1
T43	50mm F2.8 telephoto	34.4 ~ 48.9cm	1/5.4 ~ 1/8.6



THE PENTAX AUTO 110 WORLD OF POCKETABLE PLEASURE...

Every few years a new concept evolves that adds a completely new dimension to the world of photography. Meet the latest — the Pentax AUTO 110. It's a fully automatic 110 pocket camera that fits neatly into the palm of your hand. And, it's also a lot more. It's a precision-engineered single-lens reflex camera scaled exactly along the lines of the popular 35mm SLR camera. As such, it combines both the compactness and easy cartridge loading of the 110 film format with many of the systems advantages found only on



the latest 35mm SLRs. It features the Pentax-110 Bayonet Mount for quick lens changes with Pentax-110 accessory wide-angle and telephoto lenses. And, it also features thru-the-lens viewing via a large pentaprism viewfinder with a split-image focusing screen. Also like the latest 35mm SLRs, it features a fully automatic SPD metering system that works in conjunction with an electronic programmed shutter to select both shutter speed and lens aperture.

And there's much, much more. The AUTO 110 features systems options such as its own automatic winder unit for easy automatic film wind. Then, for low-light flash photography, there are the AF 130P and AF 100P, both dedicated electronic flash units. For people who like to experiment in the realm of close-up and special effects photography, the system also features accessory close-up lenses for macro photography, assorted filters, plus lens hoods and viewfinder eyepiece correction lenses. In addition, there's an assortment of cases for camera, individual accessories or the entire system . . .

Featuring just about everything a camera its size could offer, the Pentax AUTO 110 welcomes you to its truly unique world of pocketable pleasure!



A POCKET FULL OF MIRACLES

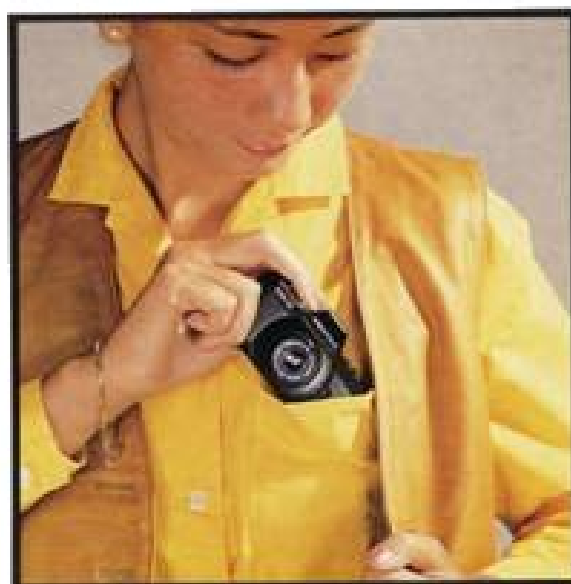
• Easy Cartridge Loading, Automatic Film Speed Setting

There's no film loading hassle with the AUTO 110. Just open the back cover, pop in a 110 film cartridge and reclose the cover. The film speed is set automatically for all available ASA film speeds, permitting use of both popular ASA 100 film and high-speed ASA 400. It also accepts slower slide films. You can easily tell what exposure you are on by the number visible in the large, back cover window.



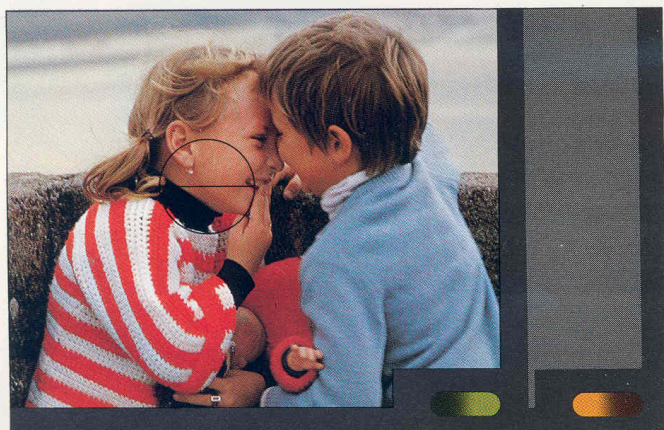
• AUTO 110 in One Pocket, Accessories in Another

It's hardly enough to say that the AUTO 110 is a pocketable camera, it's a *pocketable* *photographical system*. Roughly as high and wide as a pack of cigarettes, it's so easy to carry about that you'll want to keep it with you at all times. And, it slips easily into shirt pockets, jacket pockets or handbags, even with the standard lens attached. What's more, the accessories are pocketable as well. That's not to say that you can put the whole system into one pocket. But, you can fit both accessory wide-angle and telephoto lenses together with filters, close-up lenses, etc., inside a small case and slip them into another pocket. And for times when you really want to go all out, the entire system — winder and flash unit along with interchangeable lenses, filters, lens hoods, etc. — can be carried over your shoulder in a case no larger than what you would use to carry regular 35mm camera!



PROGRAMMED ELECTRONIC SHUTTER MAKES EXPOSURE SETTING A THING OF THE PAST

Photography with the AUTO 110 is simplicity in itself thanks to employment of a programmed electronic shutter—the optimum exposure system for this type of camera. Manual shutter speed and lens aperture setting have both been eliminated entirely, leaving exposure determination to the camera's infinitely faster electronic circuitry. The AUTO 110's thru-the-lens instantaneous-response SPD light metering system takes a center-weighted, open-aperture light reading when the shutter button is depressed; and works with the shutter to automatically select the shutter speed and lens aperture for you in accordance with lighting conditions. Further facilitating compactness and handling ease with the AUTO 110, aperture setting is via a built-in body diaphragm which replaces individual lens diaphragms and makes Pentax-110 interchangeable lenses incredibly light. Aperture and shutter speed range is from a fast 1/750 sec. at F/13.5 to 1 full sec. at F/2.8, for low-light photography.



● Large, Bright Pentaprism Viewfinder

The AUTO 110 viewfinder has a 0.75X magnification and shows 87% of the picture area — as much as viewfinders found on some 35mm SLRs, and much more than those found on rangefinder cameras three times its size. Exposure information is provided by two LED (light-emitting diode) indicators at the lower right hand corner of the viewfinder. When the green LED lights up, it indicates that exposure is adequate and gives you the go ahead to shoot.

● Yellow LED

Outdoors at night or dusk, or indoors in dimly lit rooms, the Yellow LED indicator in the viewfinder will light. This indicates that the shutter speed selected by the camera will be too slow for correct exposure without picture blur, and warns you to use a tripod or switch to flash photography for better results.

PENTAX-110 24mm F2.8 Standard Lens

The most compact of the three lenses in the series, the standard lens weighs an unbelievable 13 grams. Recommended for general shooting, it features natural perspective and maintains relative sizes of the background, middle ground and foreground. **Construction:** 6 elements/5 groups **Angle of view:** 47° **Min. focus:** 0.35m; 29.6mm (dia.) x 12.8mm (length); 13 grams.



PENTAX-110 18mm F2.8 Wide-Angle Lens

Wide-angle lenses produce a wider angle of view than the standard lens, thus enabling you to get more into the picture. The Pentax-110 wide-angle lens weighs a mere 28 grams and is equivalent to a 35mm wide-angle lens in the 35mm format. An ideal lens for panoramic scenic shots, group portraits and sweeping special effects. **Construction:** 6 elements/6 groups **Angle of view:** 61.5° **Min. focus:** 0.25m; 34mm (dia.) x 21mm (length); 28 grams.



PENTAX-110 50mm F2.8 Telephoto Lens

Telephoto lenses are used to reach out and bring distant objects up close. The Pentax 50mm F2.8 telephoto weighs a mere 53 grams and has a focal length approximately equivalent to a 100mm telephoto lens in the 35mm format. An ideal lens for closely framed portraits, sports events, candid shots as well as general telephoto uses. **Construction:** 5 elements/5 groups **Angle of view:** 24° **Min. focus:** 0.9m; 43mm (dia.) x 27.2mm (length); 53 grams.



110 WINDER



• Automatic Film Advance, Built-in Grip

The handy 110 Winder unit attaches easily to the tripod socket at the base of the camera in seconds. The battery-powered winder advances the film a frame at a time after you release the shutter and features its own built-in grip to provide a firm hold.

• Readies Automatically for the First Exposure

After you insert a new film cartridge into the camera, just switch the winder on. The film automatically winds on to the first exposure and you are ready to take your first picture.

• Winds Film Out at the End of the Roll, Also

Then, after you have shot your last exposure, the 110 Winder winds the film out to the end of the roll for you. You only have to open the back cover and remove the film for processing.

• Other Features

The Winder is powered by two 1.5V AA size penlight batteries and winds up to 100 rolls of film per replacement when high powered batteries are used. 52mm x 39mm x 100mm; 112g/4 ozs. (w/o batteries).

AUTO FLASH UNITS



AF 130P



AF 100P

For photography outdoors at night, in low light, or indoors in dimly lit rooms, the Pentax Auto 110 photographer has a choice of two convenient auto electronic flash units. Both are "dedicated" units which synchronize automatically with the camera and feature a sensor eye that cuts off the flash at exactly the right moment for perfect exposures with virtually every shot. Use either unit anytime the yellow LED inside the camera viewfinder lights to guarantee striking photos of your subject in poor lighting conditions.

• AF 130P Auto Flash Unit

The larger of the two, this unit features a guide number of 13 (ASA 100 in meters) and attaches to the special flash shoe on top of the camera. The AF 130P automatically synchronizes with the camera's programmed shutter at 1/30 sec. at f/2.8 with ASA 100 film (1/30 sec. at f/5.6 with ASA 400). Other features include test button/ready lamp, power switch. Flash coverage angle: 45° vertical, 55° horizontal, 71mm x 41mm x 63mm; 102g/3.6 ozs. (w/o batteries). Operates on two 1.5V AA cells.

• AF 100P Auto Flash

The highly compact and lightweight AF 100P is ideal for situations where optimum compactness is of prime concern. Like the AF 130P it also mounts to the special flash shoe on top of the camera, but hugs the body closely for snug handling. Synchronizes automatically with programmed



shutter at 1/30 sec. at f/2.8 with ASA 100 film (1/30 sec. at f/5.6 with ASA 400). Features include test button/ready lamp, power switch. Flash coverage angle: 45° vertical, 55° horizontal, 63mm x 49mm x 48.5mm; 100g/3.5 ozs. (w/o batteries). Powered by two 1.5V AAA cells.

AUTO 110 SPECIFICATIONS

Type TTL metering 110 SLR camera with bayonet mount.

Film Cartridge-loading 110 film (13mm x 17mm format); ASA film speed set automatically for film in use.

Lens Pentax-110 24mm F2.8; Focusing range: 0.35m - ∞.

Viewfinder Eye-level pentaprism finder with quick-return mirror; green and yellow LEDs indicate adequate/inadequate exposure for hand-held shooting (i.e., above/below 1/30 sec.); Magnification: 0.75X showing 87% of picture area; central split-image focusing spot surrounded by matte field.

Exposure Metering Center-weighted, TTL metering at full aperture via SPD cell; EV Range: 3 - 17 (24mm F2.8 lens; ASA 100).

Shutter/Automatic Diaphragm Programmed electronic behind-the-lens shutter with programmed body diaphragm; Range: 1/750 sec. at f/11.5 to 1 sec. at F2.8.

Other Features Two-stroke film advance lever, synch terminal for automatic flash synch with AF 130P auto flash; tripod socket, lens release button, battery holder tray; exposure count via back cover window, winder capability.

Power Source Two 1.5V silver-oxide batteries (G-13)

Size 56mm x 99mm x 45mm (2.2" x 3.9" x 1.8") w/lens

Weight 172 grams (6.1 ozs) w/lens.



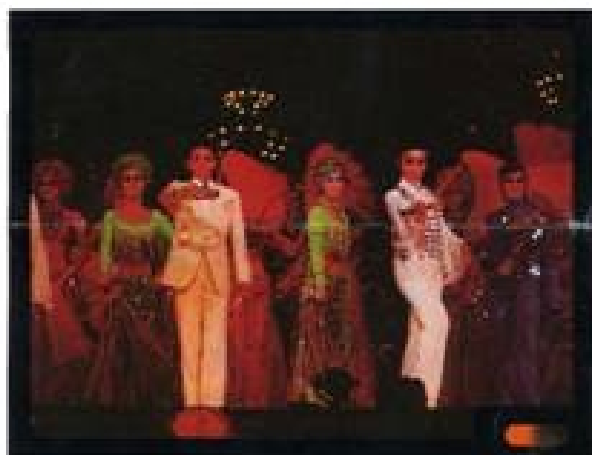
Asahi Optical Co., Ltd. C.P.O. 886, Tokyo 100-01, JAPAN
Asahi Optical Europe N.V. Willemsdijk 25, 1020 Zaandam Zuid-7, BE/SSUR
Pentax Handelsgesellschaft mbH, 2000 Hamburg 56 (Lokstedt), Germany 64, WEST GERMANY
Pentax Corporation 9 Inverness Drive East, Englewood, Colorado 80112, U.S.A.
Pentax of Canada Ltd. 1180 West 8th Avenue, Vancouver, B.C. V6P 1K5, CANADA
Pentax U.K. Ltd. Pentax House, South Hill Avenue, South Harrow, Middlesex HA2 0LT, U.K.
Asahi Optical (Australia) Pty. Ltd. c/o Cam. LMA, P.O. Box 60, Sydney, NSW, 1585, New South Wales, AUSTRALIA

PROGRAMMED ELECTRONIC SHUTTER MAKES EXPOSURE SETTING A THING OF THE PAST

Photography with the AUTO 110 is simplicity in itself thanks to employment of a programmed electronic shutter—the optimum exposure system for this type of camera. Manual shutter speed and lens aperture setting have both been eliminated entirely, leaving exposure determination to the camera's infinitely faster electronic circuitry. The AUTO 110's thru-the-lens instantaneous-response SPD light metering system takes a center-weighted, open-aperture light reading when the shutter button is depressed; and works with the shutter to automatically select the shutter speed and lens aperture for you in accordance with lighting conditions. Further facilitating compactness and handling ease with the AUTO 110, aperture setting is via a built-in body diaphragm which replaces individual lens diaphragms and makes Pentax-110 interchangeable lenses incredibly light. Aperture and shutter speed range is from a fast 1/750 sec. at F/13.5 to 1 full sec. at F/2.8, for low-light photography.

• Large, Bright Pentaprism Viewfinder

The AUTO 110 viewfinder has a 0.75X magnification and shows 87% of the picture area — as much as viewfinders found on some 35mm SLRs, and much more than those found on rangefinder cameras three times its size. Exposure information is provided by two LED (light-emitting diode) indicators at the lower right hand corner of the viewfinder. When the green LED lights up, it indicates that exposure is adequate and gives you the go ahead to shoot.



• Yellow LED

Outdoors at night or dusk, or indoors in dimly lit rooms, the Yellow LED indicator in the viewfinder will light. This indicates that the shutter speed selected by the camera will be too slow for correct exposure without picture blur, and warns you to use a tripod or switch to flash photography for better results.



• Programmed shutter mechanism

• Inner workings of the AUTO 110



• 35mm SLR Focusing, Too . . .

Focusing with the AUTO 110 is easy, and, like its 35mm SLR cousin, extremely precise. For quick focus, you merely turn the focusing ring on the lens until the images come in sharp on any part of the viewing screen. And for pinpoint focus, you can adjust the images in the split-image focusing spot in the center of the finder until the two join exactly. Accessory viewfinder correction lenses are also available from -3 to +5 diopters for persons needing eyesight correction.



OUT OF FOCUS



IN FOCUS

PENTAX

auto 110 super



Actual Size.

A POCKET FULL OF MIRACLES

• Easy Cartridge Loading, Automatic Film Speed Setting

There's no film loading hassle with the AUTO 110. Just open the back cover, pop in a 110 film cartridge and reclose the cover. The film speed is set automatically for all available ASA film speeds, permitting use of both popular ASA 100 film and high-speed ASA 400. It also accepts slower slide films. You can easily tell what exposure you are on by the number visible in the large, back cover window.



• AUTO 110 in One Pocket, Accessories in Another

It's hardly enough to say that the AUTO 110 is a pocketable camera. It's a *pocketable photographic system*. Roughly as high and wide as a pack of cigarettes, it's so easy to carry about that you'll want to keep it with you at all times. And, it slips easily into shirt pockets, jacket pockets or handbags, even with the standard lens attached. What's more, the accessories are pocketable as well. That's not to say that you can put the whole system into one pocket. But, you can fit both accessory wide-angle and telephoto lenses together with filters, close-up lenses, etc., inside a small case and slip them into another pocket. And for times when you really want to go all out, the entire system — winder and flash unit along with interchangeable lenses, filters, lens hoods, etc. — can be carried over your shoulder in a case no larger than what you would use to carry regular 35mm camera!

110 WINDER



• Automatic Film Advance, Built-in Grip

The handy 110 Winder unit attaches easily to the tripod socket at the base of the camera in seconds. The battery-powered winder advances the film a frame at a time after you release the shutter and features its own built-in grip to provide a firm hold.

• Readies Automatically for the First Exposure

After you insert a new film cartridge into the camera, just switch the winder on. The film automatically winds on to the first exposure and you are ready to take your first picture.

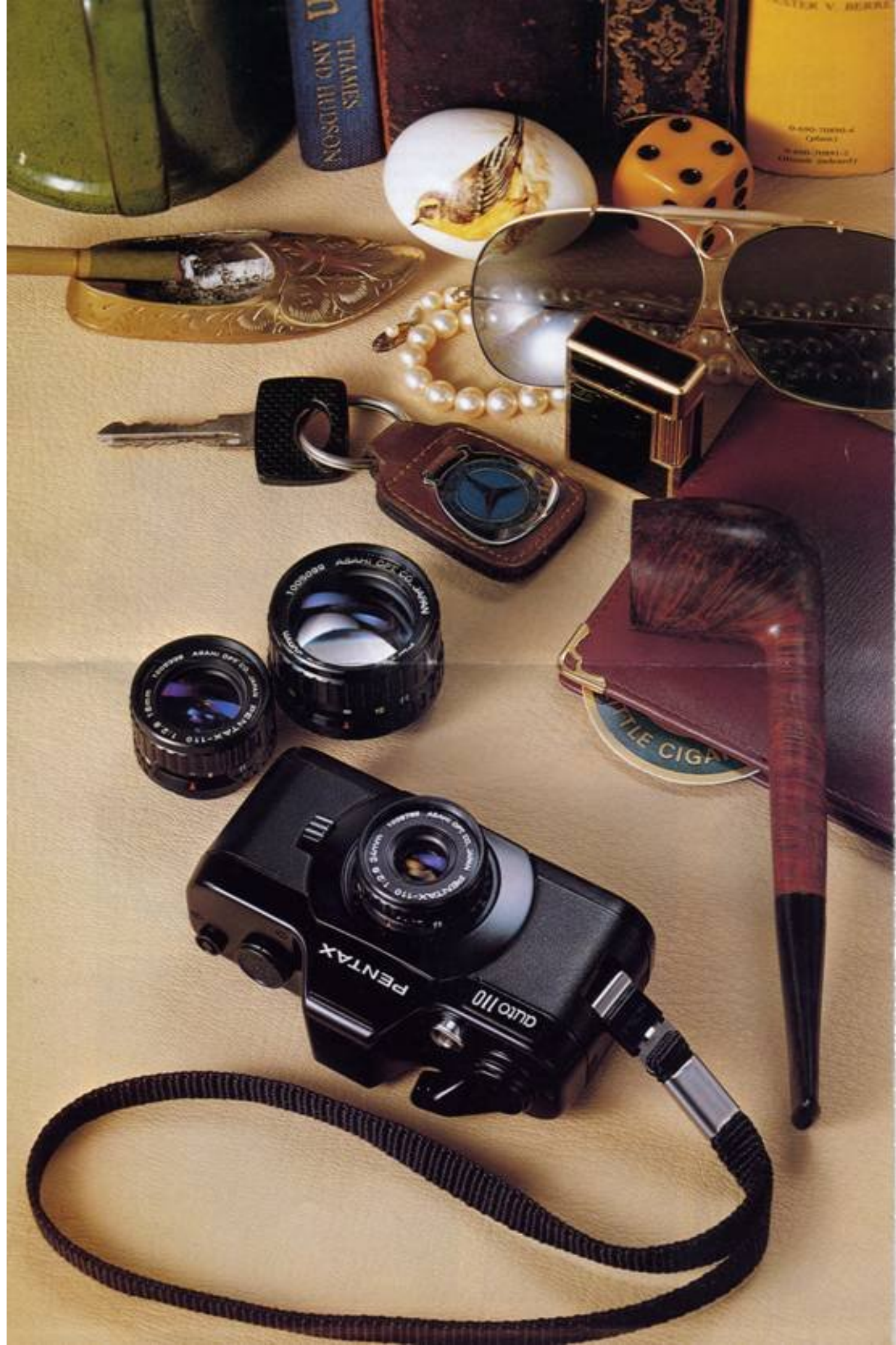
• Winds Film Out at the End of the Roll, Also

Then, after you have shot your last exposure, the 110 Winder winds the film out to the end of the roll for you. You only have to open the back cover and remove the film for processing.

• Other Features

The Winder is powered by two 1.5V AA size penlight batteries and winds up to 100 rolls of film per replacement when high powered batteries are used. 52mm x 35mm x 100mm; 112g/4 ozs. (w/o batteries).





LENS ACCESSORIES FURTHER EXPAND RANGE OF APPLICATION

● Close-up Attachment lenses, Filters, Lens Hoods . . .

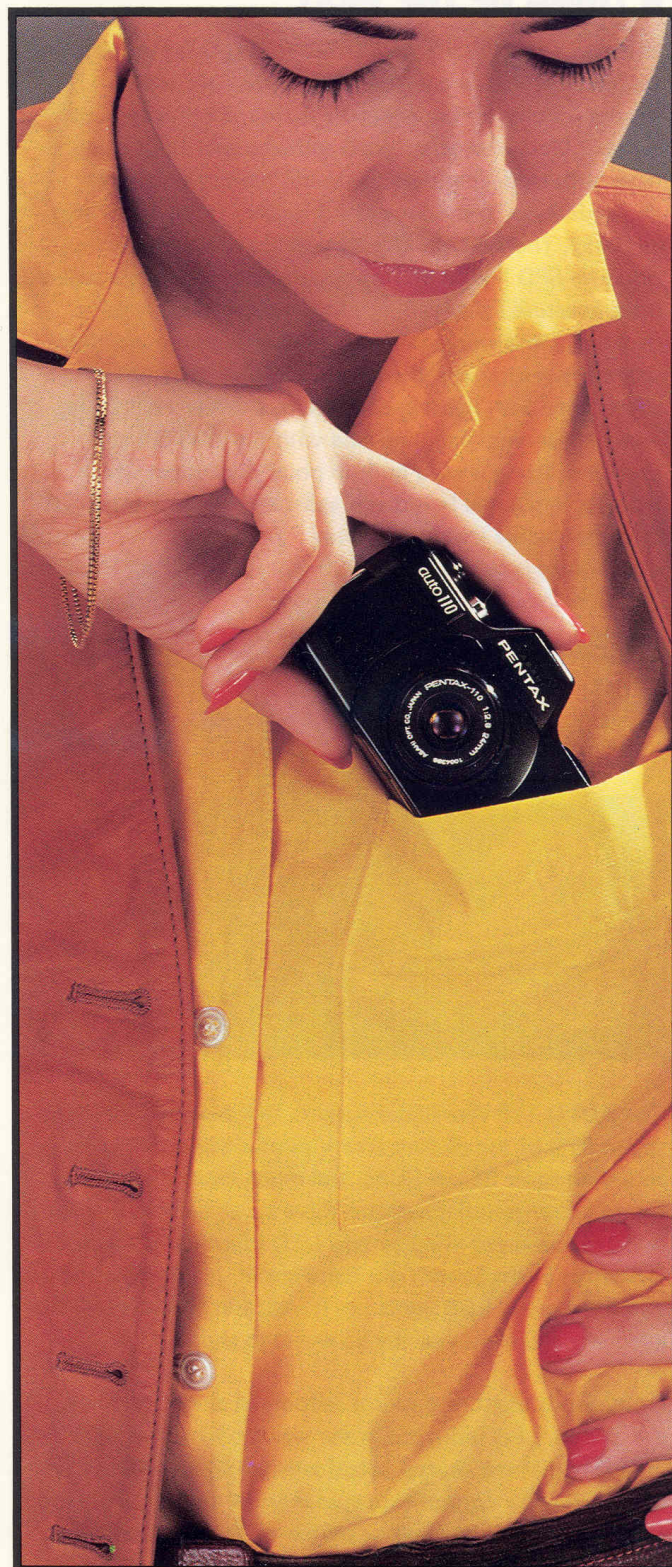
An assortment of accessories is also available for each of the Pentax-110 interchangeable lenses. **Close-up attachment lenses** are available for each of the three master lenses to enable a variety of close-up applications. In addition, there are **Skylight** and **UV** filters for all the three lenses. Other lens and viewfinder accessories include eyesight correction lenses, lens hoods, and lens caps, as well as cases for individual lenses and lens accessories.



CLOSE-UP LENSES



● No.	● Used with:	● Focusing Range	● Magnification
S31	24mm F2.8 standard	20 ~ 36cm	1/6.1 ~ 1/12.7
S16	24mm F2.8 standard	15 ~ 20cm	1/4.1 ~ 1/6.4
W21	18mm F2.8 wide-angle	16 ~ 26cm	1/5.7 ~ 1/11.3
T86	50mm F2.8 telephoto	48.5 ~ 91.9cm	1/8.0 ~ 1/17.1
T43	50mm F2.8 telephoto	34.4 ~ 48.9cm	1/5.4 ~ 1/8.6



logy creates a miniature marvel

Achieving perfect exposures with the Auto 110 Super is as easy as reading a traffic light. Before taking a photo, gently press the shutter button to activate the light meter. A green light in the right hand corner of the viewfinder shows you that the light on your subject is bright enough for the camera to select a shutter speed from 1/400 to 1/45 of a second. You can always go on green. It's the signal for you to press the shutter button with complete confidence.

If the LED is flashing yellow, it means that the light on your subject is not bright enough and the camera has selected a shutter speed slower than 1/45 of a second. In this case, it's best to use flash or mount the camera on a tripod.



The smallness and lightness of the Auto 110 Super is a sign of advanced technology. Every moving part and electronic circuit in the camera is designed for many years of flawless performance. In particular, the lens mount and the behind-the-lens programmed electronic shutter are engineered in keeping with the tradition of outstanding durability and value that has made Pentax one of the most trusted names in photography.



Specifications for Pentax Auto 110 Super

Type: TTL metering 110 SLR camera
Film: Cartridge-loading 110 film (135mm x 17mm format)
Lens Mount: Bayonet mount with 80-degree setting angle
Viewfinder: Eye-level pentaprism finder with quick-return mirror; split-micrometer system; magnification 0.75X; 87% of picture area shown; -1.15 Diopter
Finder Display: Green LED means the shutter speed is over 1/45 sec.
 Yellow Led. means the shutter speed is under 1/45 sec.
Battery Check: LEDs in viewfinder cease to light on battery failure.
Exposure Metering: Center-weighted, TTL metering at full aperture via SPD cell;
 EV Range: 3-17 (Mmm 1/2 8 lens; ASA/ISO 100)
 +1.5 EV exposure compensation
Shutter/Diaphragm: Programmed electronic behind-the lens shutter with programmed body diaphragm; Shutter speed range: 1/400 sec. to 1 sec.
Shutter Release: Electro-magnetic shutter release with electronic shutter lock
Self-Timer: Electronic self-timer which is activated by shutter release button; approx. 10 sec. delay LED flickers slowly for first 8 sec., quickly for last 2 sec.
Flash Sync: Synchronizes automatically with AF130P and AF100P Flash Units.
Film Wind: Single-stroke film advance lever, 144° throw with a stand-off angle of 55°
Power Source: Two 1.5V alkaline or silver-oxide batteries.
Size & Weight: 99 (w) x 58 (h) x 32mm (D) 164g (w/without batteries)



Exposure Compensation Increases Versatility

If you're taking a portrait of a subject in front of a sun-filled window or some other strong source of light, you may have problems with a completely automatic camera. The subject's face is likely to come out too dark while the background is correctly exposed because the camera's metering system has been tricked by the two sharply contrasting light levels. To help you achieve perfect exposures even in 'back-lighting' situations, the Auto 110 Super offers an exposure compensation system. When your subject is standing in front of a strong light source, simply press the exposure compensation button, and the camera will automatically adjust exposure control to +1.5EV so that the subject comes out bright and clear. The exposure compensation system is easy to use, yet it gives you added freedom and lets you take dramatic photos with unusual lighting effects.



Put Yourself in the Photo with an Electronic Self-Timer



Taking photos of your family and friends is often more fun if you can get into the picture, too. And you can do exactly that with the electronic self-timer built into the Auto 110 Super. Simply set the selector dial to S, cock and press the shutter release. Then you have ten seconds to position yourself in front of the lens. A red LED on the pentaprism helps you count the seconds. It flickers slowly during the first 8 seconds and quickly during the last two.



Auto 110 Super

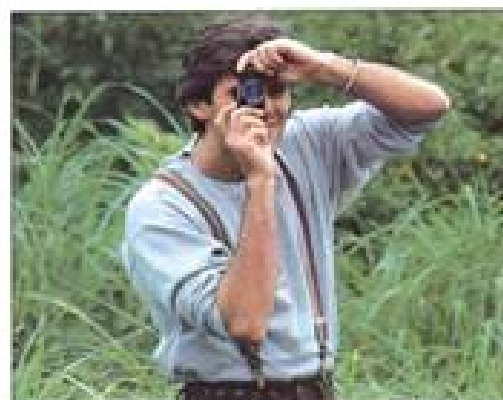
The Unique Palm-Size SLR System

In the Auto 110 Super, Pentax gives you the ultimate 110 SLR system camera. It's the ultimate in features and technology. It's also the ultimate in miniaturization and convenience. In fact, never before has a camera so small offered so much versatility.

To let you shoot on the spur of the moment, the Auto 110 Super offers programmed automation— an exposure system that eliminates worries about aperture setting and shutter speed. When you see a green light in the viewfinder, simply press the shutter button. A gentle touch will do because the Auto 110 Super has an electromagnetic shutter release. It's ultra-soft to prevent the camera-shake that can cause blurred photos with other small cameras.

Like all Pentax SLRs, the Auto 110 Super lets you frame and focus your picture in a clear, bright viewfinder that shows exactly what will appear on your print. If the image seems too far, too close, too cramped, change to a telephoto, zoom, close-up or wide-angle lens. Use filters for varied creative effects, or flash to achieve precisely the lighting you want, or an automatic film-winder for action sequences.

The Auto 110 Super system gives you all the essential capabilities of a full-size SLR. Yet everything has been miniaturized for pocketability and handling ease. The small size and large capabilities of the Auto 110 Super result from a very high level of electronics technology and mechanical engineering. That's why the Auto 110 Super will not only give you a great deal of pleasure, it's also a camera you can own with pride and use with confidence for many years to come.



Shaped like a 35mm SLR to give you a firm grip. Close-ups are easy.

- **SMALL.** The whole system is so portable you can carry it everywhere.
- **SIMPLE.** Fully automatic programmed exposure and snap-in cartridge film.
- **CREATIVE.** All the advantages of a high-quality SLR.
- **VERSATILE.** Six interchangeable lenses to broaden your perspective.
- **EXCITING.** A complete system to explore, including winder, flash and accessories.



Smaller and simpler than 35mm SLRs

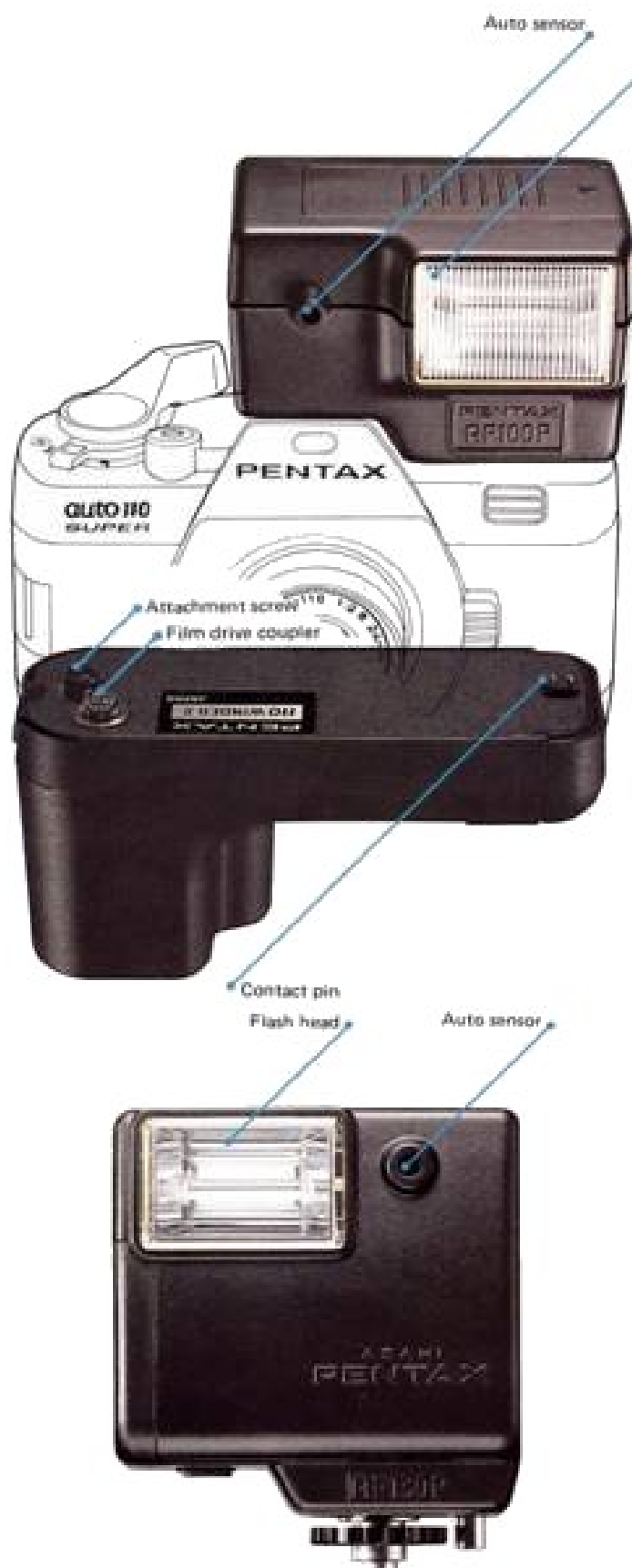
The Auto 110 Super weighs about one-fifth as much as a compact 35mm SLR. In fact, a complete Auto 110 Super system (camera body, three lenses and flash) weighs less than the body alone of most full-size SLRs. Easy film-loading is another advantage. 110 film is packaged in cartridges that snap in and pop out with no trouble at all. You never have to touch the film, worry about winding it onto a spool or make any adjustments for film speed. Loading is finished in seconds, and 110 film makes excellent prints.



Flash is fully automatic.



With Auto Winder, you're always ready to shoot.



Dedicated Flash and Auto-Winder Complete the 110 System.

The Winder II lets you shoot frame after frame automatically if you keep your finger on the shutter release. Or, if you want to shoot one frame at a time, take your finger off the shutter button after each exposure. In this case, single-frame film advance is automatic. An added benefit of the Winder II is that it helps you take an even firmer grip on the camera.

Dedicated Auto Flash AF100P. Small and simple.

A mini-flash for a compact camera, the AF 100P weighs a mere 100 grams. Anytime you see a flashing yellow light in the viewfinder, simply switch on the flash. The camera automatically selects the shutter speed (1/60 sec). The AF 100P has a sensor eye that automatically cuts off the flash at the right instant. And a ready light on the unit tells you when the flash is ready to fire.

Dedicated Auto Flash AF130P. Just as simple. But slightly larger.

Like the AF 100P, this unit mounts easily on the hotshoe on top of the camera. It weighs slightly more at 145 grams, but it offers a wider flash range from 0.8 - 4.6 meters. Features of the AF 130P include ready light, sensor eye and automatic sync with the camera's shutter speed.

PENTAX 110 WINDER II

Type: Automatic film winder for Pentax Auto 110 Super
 Film advance mode: Single-frame and continuous mode
 Shutter release: Via camera shutter button
 Power source: Two AA-size penlight batteries
 Min. number of rolls: About 50 rolls of 20 exposure film with manganese batteries; about 100 rolls of 20 exposure film with alkaline batteries.
 Winding interval: About 1.5 sec. per frame
 Size: 99 (W) x 52 (H) x 34 (D) mm
 Weight: 150 grams (with two AA-size penlight batteries)

PENTAX AF100P AUTO FLASH

Type: Clip-on type dedicated auto flash unit
 Guide number: 2.2-10 (ASA/ISO 100 in meters)
 Auto flash range: 0.8-3.6m (ASA/ISO 100-400)
 Power source: Two 1.5V AAA-size batteries
 Flash frequency and recycling time: Approx. 50 times; approx. 8 sec.
 Flash sync: Via special flash shoe; auto sync at 1/60 sec. 1/2.8 (ASA/ISO 100), 1/125 sec. 1/5.6 (ASA/ISO 400)
 Size: 63 (W) x 49 (H) x 48.5 (D) mm
 Weight: 80g (without batteries)

PENTAX AF130P AUTO FLASH

Type: Clip-on type dedicated auto flash unit
 Guide number: 2.2-13 (ASA/ISO 100 in meters)
 Auto flash range: 0.8-4.6m (ASA/ISO 100-400)
 Power source: Two 1.5V AA-size alkaline batteries
 Flash frequency and recycling time: Approx. 60 times; approx. 10 sec.
 Flash sync: Via special flash shoe; auto sync at 1/60 sec. 1/2.8 (ASA/ISO 100), 1/125 sec. 1/5.6 (ASA/ISO 400)
 Size: 63 (W) x 72 (H) x 41 (D) mm
 Weight: 100g (without batteries)

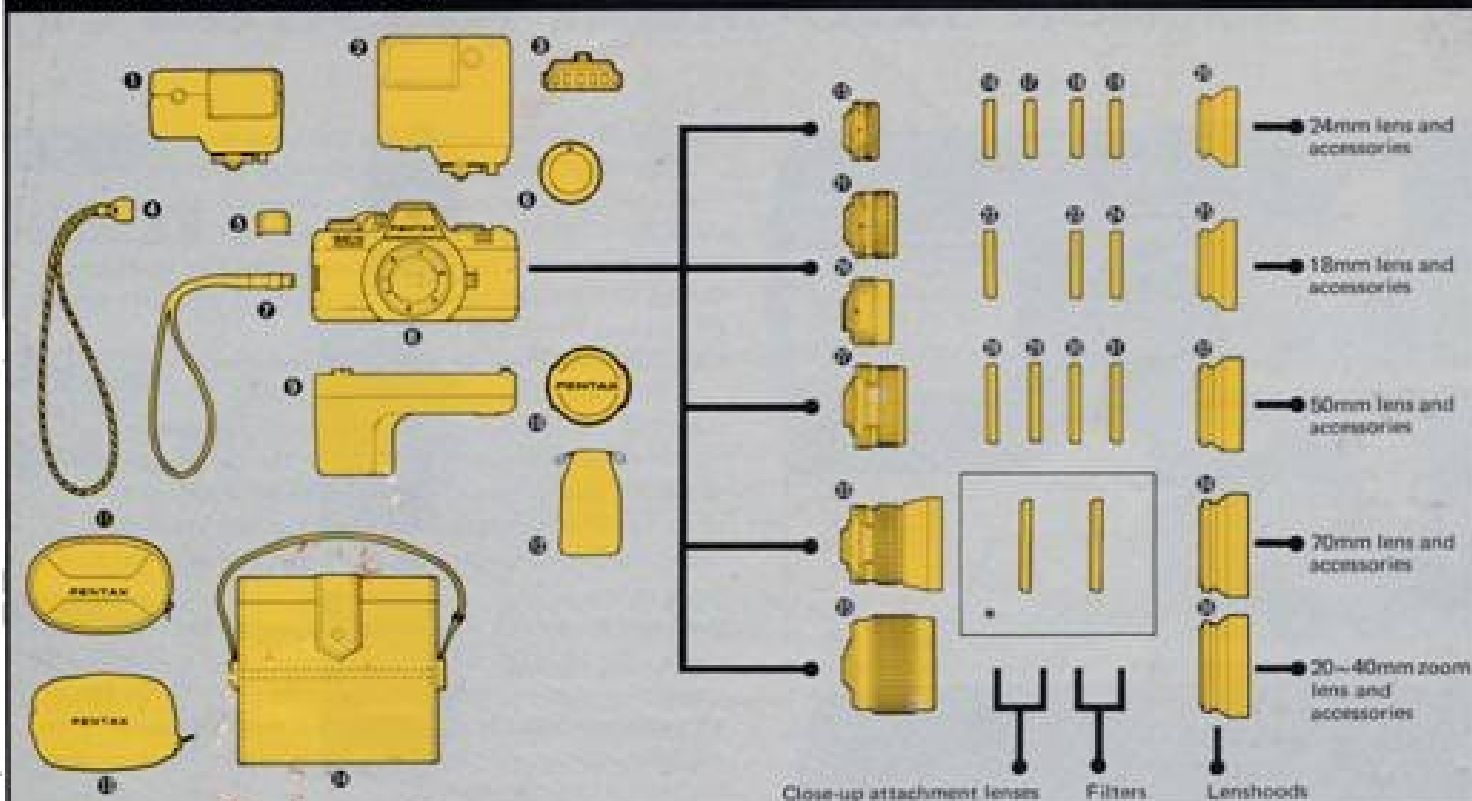


Close-up attachments. Auto 110 Super lets you get right next to your subject so you can fill the frame with a flower petal, a butterfly wing, a drop of water. Close-up photography is an exciting feature of SLR cameras like Auto 110 Super.

PENTAX 110 CLOSE-UP LENSES AND FILTERS

Type	Used with	Focusing Range (cm)	Magnification
S31	24mm f/2.8	20-36	1/6.1-1/12.7
S16	24mm f/2.8	15-30	1/4.1-1/6.4
W21	18mm f/2.8	16-26	1/5.7-1/11.3
T86	50mm f/2.8	48.5-91.9	1/8.0-1/17.1
T43	50mm f/2.8	34.4-48.9	1/5.4-1/8.6
For 24mm f/2.8 Lens (25.5mm dia.) UV, Skylight			
For 18mm f/2.8 Lens (30.5mm dia.) UV, Skylight			
For 50mm f/2.8 Lens (37.5mm dia.) UV, Skylight			

PENTAX AUTO 110 SUPER SYSTEM



- ① AF100P
- ② AF130P
- ③ Tripod Spacer
- ④ Chain strap for Auto 110
- ⑤ Correction lenses (-5 ~ +3 Diopters)
- ⑥ Body mount cap
- ⑦ Strap
- ⑧ Pentax Auto 110 Super body
- ⑨ 110 Winder II
- ⑩ Lens caps
- ⑪ Soft case for Auto 110 Super with 50mm f/2.8
- ⑫ Case for 110 Lens
- ⑬ Soft case for Auto 110 Super
- ⑭ Gadget bag

- ⑮ Pentax-110 24mm f/2.8 (Standard)
- ⑯ Close-up attachment lens S31 (for 24mm f/2.8)
- ⑰ Close-up attachment lens S16 (for 24mm f/2.8)
- ⑱ UV filter (for 24mm f/2.8)
- ⑲ SKYLIGHT filter (for 24mm f/2.8)
- ⑳ Lenshood for 24mm f/2.8
- ㉑ Pentax-110 18mm f/2.8 (Wide Angle)
- ㉒ Close-up attachment lens W21 (for 18mm f/2.8)
- ㉓ UV filter (for 18mm f/2.8)
- ㉔ SKYLIGHT filter (for 18mm f/2.8)
- ㉕ Lenshood for 18mm f/2.8
- ㉖ Pentax-110 PF 18mm f/2.8 (Pan Focus)
- ㉗ Pentax-110 50mm f/2.8 (Telephoto)

- ㉘ Close-up attachment lens T86 (for 50mm f/2.8)
- ㉙ Close-up attachment lens T43 (for 50mm f/2.8)
- ㉚ UV filter (for 50mm f/2.8)
- ㉛ SKYLIGHT filter (for 50mm f/2.8)
- ㉜ Lenshood for 50mm f/2.8
- ㉝ Pentax-110 70mm f/2.8 (Telephoto)

* Use filters and close-up lenses of 49mm size from the 35mm Pentax SLR system.

- ㉞ Lenshood for 70mm f/2.8
- ㉟ Pentax-110 20-40mm f/2.8 (Zoom)
- ㊱ Lenshood for 20-40mm f/2.8

Specifications are subject to change without notice.

PENTAX®

Asahi Optical Co., Ltd. C.P.O. 898, Tokyo 100-81, JAPAN
 Asahi Optical Europe N.V. Willevalaan 3-5, 1930 Zaventem Zuid-7, BELGIUM
 Pentax Handelsgesellschaft mbH, 2000 Hamburg 54, Julius-Vossler-Straße 104, Postfach 540189, W. GERMANY
 Pentax U.K. Limited Pentax House, South Hill Avenue, South Harrow, Middlesex HA2 0LT, U.K.
 Pentax France S.A., 21, Avenue de la République, 12 rue Ambroise Croizat, 95100 Argenteuil, FRANCE
 Pentax (Schweiz) AG Industriestrasse 2, 8305 Dietikon 2H, SWITZERLAND
 Pentax Svenska AB Box 650, 75137 Uppsala, SWEDEN
 Pentax Nederland Sprinkeld 25, 4815 RH Breda, THE NETHERLANDS
 Pentax Corporation 35 Inverness Drive East, Englewood, Colorado 80112, U.S.A.
 Pentax Canada Inc. 1760 West 3rd Avenue, Vancouver, B.C. V6J 1K5, CANADA
 Asahi Optical (Brazil) Ind. e Com. Ltda. Rua Capitão Antonio Rosa, 376 - Sala 121 Ed. PRK São Paulo-SP, BRAZIL



Inside Auto 110 Super—High technology

A

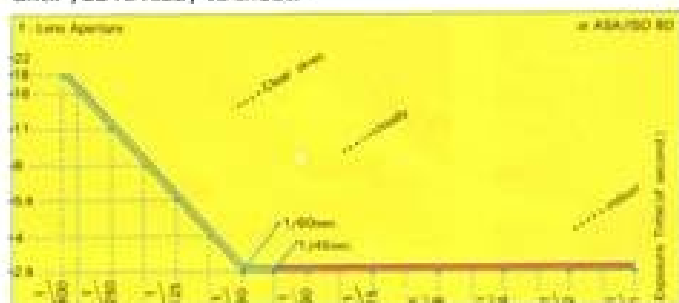
Programmed Automation Guarantees Success

For many people, setting shutter speed and lens aperture is a complex chore that takes time and detracts from the pleasure of photography. The Auto 110 Super does all that for you, flawlessly and instantly, with an auto exposure program calculated to take maximum advantage of the camera's size and characteristics.

The diagram shows how the camera automatically adjusts shutter speed and aperture, responding with stopless precision to all the subtleties of changing light conditions. The camera reads the light that comes

through the lens because this is precisely the light that will expose your film when you press the shutter release. And the system is center-weighted to ensure that the subject in the middle of your photo is beautifully exposed.

As a general rule, you'll find that it's most convenient to keep the selector dial of your Auto 110 Super on the A (auto) position. However, if you want to use the electronic self-timer, switch the dial to S (self-timer). Or if you've already cocked the shutter and want to prevent an accidental exposure, set the dial to L (lock) until you're ready to shoot.



B

Electro-Magnetic Shutter Prevents Blurred Photos

If the camera moves slightly in your hands while you're taking a picture, your photo may appear blurry and out of focus. This problem is especially common with small, light cameras. And that's why the Auto 110 Super features an electro-magnetic shutter release with an action so soft and smooth that camera-shake is virtually eliminated (at speeds down to 1/45 of a second). In fact, with programmed exposure and electro-magnetic shutter release, the Auto 110 Super takes almost all the worry out of photography, leaving you free to concentrate on creativity and fun.



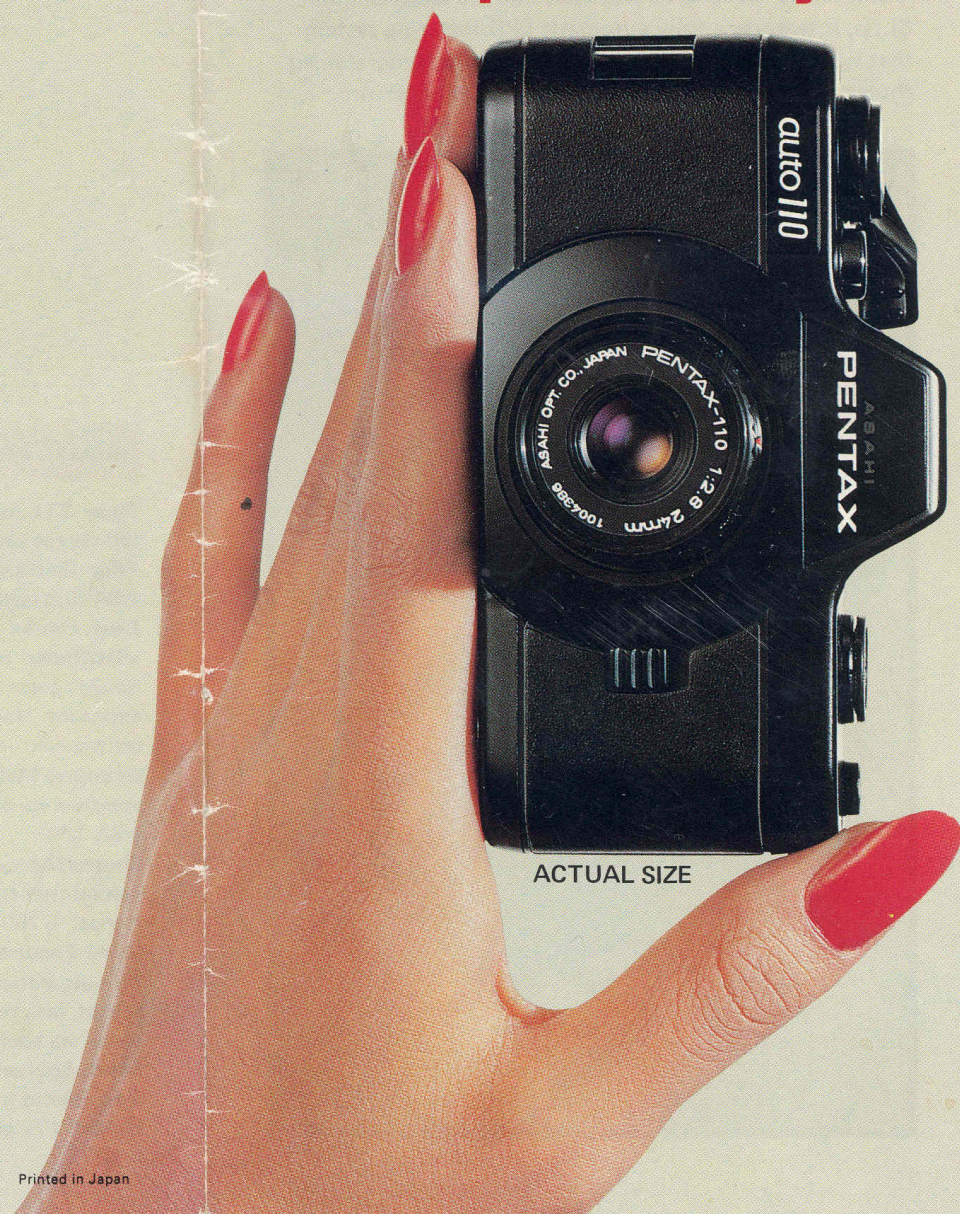


Asahi Optical Co., Ltd. C.P.O. 895, Tokyo 100-91, JAPAN
Asahi Optical Europe N.V. Weveldlaan 3-5, 1930 Zaventem Zuid-7, BELGIUM
Pentax Handelsgesellschaft mbH. 2000 Hamburg 54 (Lokstedt), Grandweg 64, WEST GERMANY
Pentax Corporation 9 Inverness Drive East, Englewood, Colorado 80112, U.S.A.
Pentax of Canada Ltd. 1760 West 3rd Avenue, Vancouver, B.C. V6J 1K5, CANADA
Asahi Optical Brasileira Ind. e Com. Ltda. Rua Estados Unidos, 1053, São Paulo-SP, BRASIL

PENTAX

auto 110

pocket SLR system



ACTUAL SIZE

A Full Set of Palm-Size Lenses

STANDARD

PENTAX 110
24mm f/2.8



24mm f/2.8 (Standard lens, equivalent to 50mm for 35mm camera)

This lens, the lightest and smallest in the system, is the starting point for your exploration of photography. Covering the same angle of vision as the human eye, it creates natural perspective.

WIDE-ANGLE

PENTAX 110
18mm f/2.8



18mm f/2.8 (Wide-angle lens, equivalent to 35mm for 35mm camera)

With a minimum focusing distance of only 0.25 meters, this lens is excellent for close-ups. With its wide angle of view, it also lets you take panoramic scenic shots or group portraits. And it's easy to focus, too.

PAN FOCUS

PENTAX 110 PF
18mm f/2.8



PF 18mm f/2.8 (Pan focus lens)

The pan focus lens is always in focus. Its extensive depth of field lets you take pictures of any object from 1.75 meters away all the way out to infinity, without adjusting the focus. In fact, there's no focusing ring to adjust. Pan focus pictures have a unique feeling of clarity extending far into the distance. The lens is great for sports and candid photos, too.

TELEPHOTO

PENTAX 110
50mm f/2.8



50mm f/2.8 (Telephoto lens, equivalent to 100mm for 35mm camera)

An easy-to-use, pocketable telephoto lens. It's fine for portraits, lets you isolate subjects in the middle distance, and creates a natural, pleasing perspective.

TELEPHOTO

PENTAX 110
70mm f/2.8



70mm f/2.8 (Telephoto lens, equivalent to 140mm for 35mm camera)

Compact yet powerful, this lens brings true telephoto capabilities to the Auto 110 Super system. It pulls far-off objects right up close; or lets you take large close-ups of things nearby. It allows you to experiment with the compressed perspective of telephoto lenses; or isolate your subject against an artistically faded background. Featuring a large aperture, it's easy to handle and accepts all 49mm filters.

ZOOM

PENTAX 110
ZOOM
20-40mm f/2.8



20-40mm f/2.8 (Zoom lens, equivalent to 40-80mm zoom for 35mm camera)

This is actually three lenses in one—wide-angle, standard and moderate telephoto. It gives you a great deal of flexibility in framing and is extremely easy to use with a single ring for zooming and focus. Fine for sports, portraits or all-around photography, this handy, high-quality zoom fits right in your pocket.



18mm



20mm



24mm



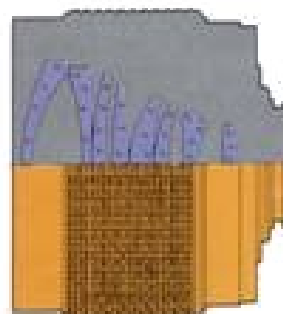
40mm



50mm



70mm



PENTAX 110 LENSES

Lens Name	Angle of View	Lens Const. (elem./ groups)	Min. Focus (m)	Dia. x Length (mm)	Weight (g)
24mm f/2.8 (Standard)	47°	6/5	0.25	29.5 x 13	13
18mm f/2.8 (Wide-Angle)	61.5°	6/6	0.25	34 x 21	27
PF 18mm f/2.8 (Pan-Focus)	61.5°	6/6	—	34 x 21	29
50mm f/2.8 (Telephoto)	24°	5/5	0.9	43 x 27	57
70mm f/2.8 (Telephoto)	17.2°	6/5	1.5	51 x 50.5	169
20-40mm f/2.8 (Zoom)	57.5° - 31°	8/8	0.7	54 x 45.2	174

* The filter diameter for 70mm and Zoom 20-40mm lenses is 49mm. Use filters, hoods and close-up attachments from 35mm format Pentax SLR system. See instruction manual for details.

PENTAX®

Copyright © Asahi Optical Co., Ltd. 1982

Asahi Optical Co., Ltd. C.P.O. 895, Tokyo 100-91, JAPAN

Asahi Optical Europe N.V. Weveldlaan 3-5, 1930 Zaventem Zuid-7, BELGIUM

Pentax Handelsgesellschaft mbH. 2000 Hamburg 54 (Lokstedt), Julius-Vosseler-Straße 104, Postfach 54 01 69, WEST GERMANY

Pentax U.K. Limited Pentax House, South Hill Avenue, South Harrow, Middlesex HA2 0LT, U.K.

Pentax France S.A., 72-76 rue Paul Vaillant Couturier, 92300 Levallois-Perret, FRANCE

Pentax (Schweiz) AG Industriestrasse 2, 8305 Dietlikon ZH, SWITZERLAND

Pentax Svenska AB Hornsgatan 50A, 11721 Stockholm, SWEDEN

Pentax Nederland Spinnveld 25, 4815 HR Breda, THE NETHERLANDS

Pentax Corporation 35 Inverness Drive East, Englewood, Colorado 80112, U.S.A.

Pentax Canada Inc. 1760 West 3rd Avenue, Vancouver, B.C. V6J 1K5, CANADA

Asahi Optical Brasileira Ind. e Com. Ltda. Rua Estados Unidos, 1053, Sao Paulo-SP, BRASIL



06651/ENG

Specifications are subject to change without notice.

6/83 Printed in Belgium

PENTAX

auto 110 super



WARRANTY POLICY

All Pentax cameras purchased through authorized bona fide photographic distribution channels are guaranteed against defects of material or workmanship for a period of twelve months from date of purchase. Service will be rendered and defective parts will be replaced without cost to you within that period, provided the equipment has not been abused, altered, or operated contrary to instruction. Because the tolerances, quality, and design compatibility of lenses other than Pentax lenses are beyond our control, damage caused by use of such lenses will not be covered by this warranty policy. The manufacturer or its authorized representatives shall not be liable for any repair or alternations except those made with its written consent and shall not be liable for damages from delay or loss of use or from other indirect or consequential damages of any kind, whether caused by defective material or workmanship or

otherwise; and it is expressly agreed that the liability of the manufacturer or its representatives under all guarantees or warranties, whether expressed or implied, is strictly limited to the replacement of parts as hereinbefore provided.

Procedure During 12-month Warranty Period

Any Pentax which proves defective during the 12-month warranty period should be returned to the dealer from whom you purchased the equipment or to the manufacturer. If there is no representative of the manufacturer in your country, send the equipment to the manufacturer, with postage prepaid. In this case, it will take a considerable length of time before the equipment can be returned to you owing to the complicated customs procedures required in Japan in importing and re-exporting photographic equipment. If the equip-

CONTENTS

Specifications	2	Changing lenses	25
Names of parts	4	Using the PF (panfocus) lens	26
Basic operating instructions	6	Exposure compensation	28
Shutter mode selector	11	Self-timer	29
Battery loading	12	Aperture and shutter speed relationship ..	30
Battery life	14	Lenses available	32
Battery precautions	15	Auto flash units	34
Film loading	16	110 Winder II/Other accessories	35
Advancing the film	17	Using a tripod	36
Focusing	18	Corrective eyepieces	37
Exposure check	20	Using the handstrap and soft case	38
Holding the camera	22	Handling precautions	39
At the end of the roll	24	Warranty policy	40

PENTAX-110 INTERCHANGEABLE LENSES

Also on hand to expand the range of your photographic pleasure with the AUTO 110 are PENTAX-110 bayonet-mount interchangeable lenses. In addition to the 24mm F2.8 standard lens (equivalent to a 50mm standard lens in the 35mm format), the 18mm F2.8 wide-angle and the 50mm F2.8 telephoto Pentax-110 interchangeable lenses are also available. The largest of these three lenses is even smaller than a pipe bowl; while the combined weight of all three is 94 grams — making Pentax-110 lenses truly the world's lightest interchangeable lenses!



24mm



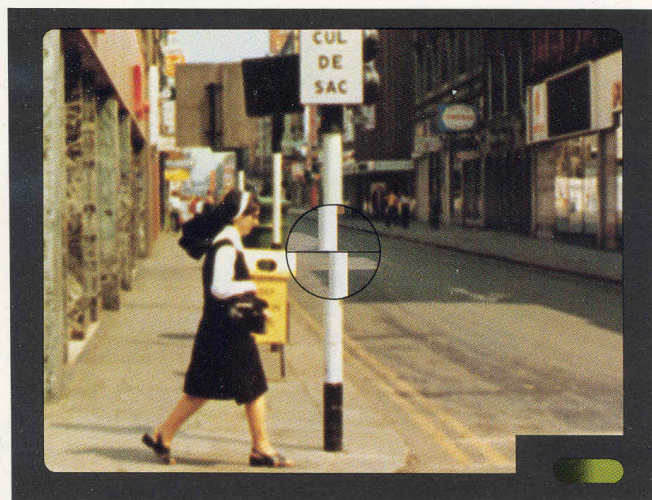
18mm



50mm

35mm SLR FOCUSING, TOO...

Focusing with the AUTO 110 is easy, and, like its 35mm SLR cousin, extremely precise. For quick focus, you merely turn the focusing ring on the lens until the images come in sharp on any part of the viewing screen. And for pinpoint focus, you can adjust the images in the split-image focusing spot in the center of the finder until the two join exactly. Accessory viewfinder correction lenses are also available from -3 to +5 diopters for persons needing eyesight correction.



SPECIFICATIONS

Type	TTL metering 110 AE SLR camera with bayonet mount for interchangeable lenses.
Film Type	Cartridge-loading 110 film.
Negative Format	13mm x 17mm.
Lens	Pentax-110 24mm f/2.8; 47-degree angle of view; 25.5mm filter threads. Focusing Range: 0.35m—∞.
Lens Mount	110 bayonet mount; 80-degree setting angle.
Viewfinder	Eye-level pentaprism finder with quick-return mirror.
Focusing	Central split-image focusing spot surrounded by microprism collar in mat field.
Viewfinder Information	Green LED indicates adequate shutter speed (minimum of 1/45 sec. at f/2.8); yellow LED indicates slow shutter speed (less than 1/45 sec.) requiring use of tripod or auto flash to avoid camera shake. Magnification: 0.75X showing 87% of the picture area.
Battery Check	Viewfinder LEDs fail to light on depressing shutter button when batteries are low.
Exposure Metering	Center-weighted, TTL metering at full aperture via SPD cell. EV Range from 3 (approx. 1 sec. at f/2.8) to 17 (approx. 1/400 sec. at f/18) with ISO/ASA 100 film.

HANDLING PRECAUTIONS

Take care not to drop the camera or knock it against anything solid. Do not store it in a place with high temperature and humidity. Be aware that the inside of an automobile often becomes extremely hot. Do not store the camera in a drawer with mothballs or similar products as they may damage the camera or film. Do not wipe the camera or lens with solvents such as paint thinner or alcohol when cleaning. Use a blower to blow away dust from the lens and other glass surfaces, and then clean with a lens brush.

Precaution on Auto 110 Super Lens Removal

When changing lenses or removing the lens on the camera, slide the lens release button upward and, without letting go, turn the lens counterclockwise until it slips out of the mount. Never attempt to remove a lens without first unlocking the mount by sliding the lens release button upward, as damage to the mount could result.