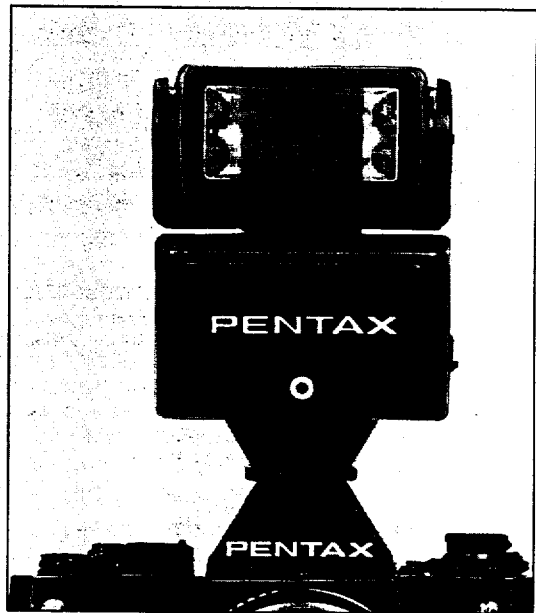


PENTAX®

AF 280T

AUTOMATIC ELECTRONIC FLASH UNIT



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FEATURES OF THE AF 280T

The Pentax AF 280T offers you two-level automatic flash control through the built-in sensor and two-level High/Low manual flash. Additional standard features include a convenient rotating flash head that permits 180° horizontal and 90° vertical bounce flash operation. There's also a click-stop setting at -15° for close-ups. And for difficult bounce or other complex flash situations, the auto check lamp confirms the lens aperture setting by pressing the test button in Auto modes.

Moreover, in addition to the above benefits, the AF 280T also features the special benefits of a "dedicated" and TTL flash with many of the latest Pentax cameras.

How to use this manual

Regardless of the type of camera you own, be sure to read the "Flash Preparation" section of this manual beforehand, after which, pause briefly at the "Flash Synchronization/Operational Features" section (pages 10-11) to examine the particular features that the AF 280T has to offer when used with your camera.

Cameras without "dedicated"/TTL flash provision:

All sections of the manual, except TTL Auto Flash Operation, contain information pertinent to the operation of this flash unit with your camera. Please read carefully.

Cameras with "dedicated" flash provision

When operated at the two-level auto mode settings and also at the MS (manual w/auto

sync) settings, your camera will have the added benefits of automatic flash synchronization and viewfinder flash data indication with the AF 280T.

Cameras with TTL Auto Flash Provision:

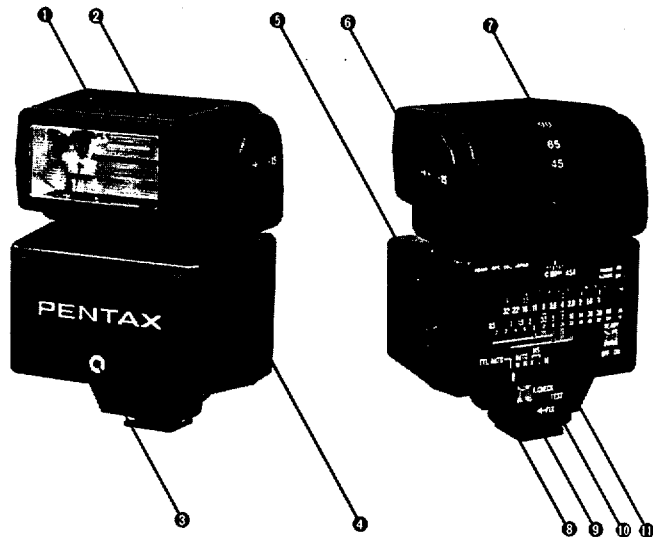
Pentax cameras featuring a TTL flash metering system were designed for TTL Auto Flash operation with the AF 280T. With such cameras, the "TTL Auto" is the main operating mode, so after examining the chart on pages 10-11, skip directly to the "TTL Auto Flash Operation" section to gain an understanding of basic flash operation with your camera. Then, go on to read the other sections. In the "MS (Manual with auto-sync) or "M" (Manual) modes, "Slow-Speed sync" (Flash synchronization at a slower shutter speed) is possible.

NOTE: For operation of the AF 280T with late model Pentax cameras not specifically mentioned in this manual, refer to your camera instruction booklet.

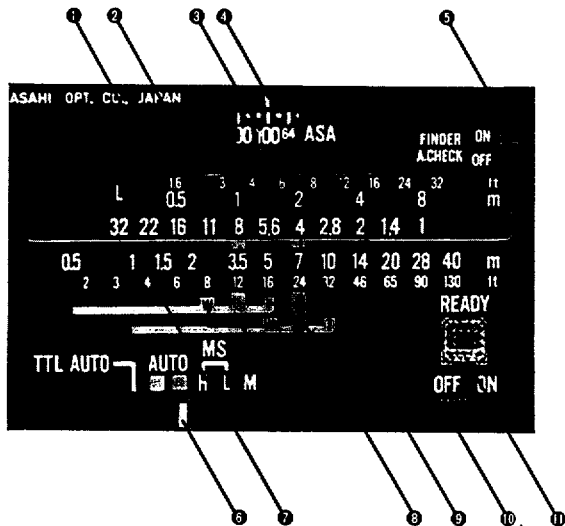
PRECAUTIONS

- Do not use the flash unit where it may come in contact with rain or water because the flash unit is not weather resistant. Should the flash unit get dripping or splashing water, wipe it off immediately with a dry soft cloth.
 - Do not expose the batteries to excessive heat such as sunshine, fire or the like.
 - Do not recharge the alkaline batteries.
 - As flash unit contains high voltage circuitry, never disassemble. If repair is required, contact a Pentax service facility.
 - Never touch internal parts of the flash if they become exposed from dropping the flash unit for some other reason, as there is danger of an electric shock.
 - Do not use the flash near anyone's eyes, as it may hurt them. Be particularly careful with the flash around infants.
-
- **"RED EYE"**
The RED EYE phenomenon occurs when the flash illumination reflects off the retina because the pupils open up in the dark. Although it is impossible to prevent it entirely, it can be minimized by lighting up the location up to about EV8 (ISO 100) level or shooting in a close distance from the subject.

DESCRIPTION OF PARTS



- ① Flash head
- ② Slots for Wide-Angle/
Tele Adaptors
- ③ Auto flash sensor
- ④ Battery compartment
lock lever
- ⑤ Battery compartment
cover
- ⑥ Flash head lock lever
- ⑦ Flash head angle scale
- ⑧ Hotshoe bracket
- ⑨ Auto exposure check
lamp
- ⑩ Thumbscrew
- ⑪ Test button



Flash Control Panel

- ① L Distance scale (for MS "L" setting)
- ② Aperture scale
- ③ ASA/ISO window
- ④ ASA/ISO film speed index mark
- ⑤ Viewfinder auto check ON/OFF switch
- ⑥ Flash mode selector lever
- ⑦ Distance scale
- ⑧ Wide-Angle/Tele Adaptor aperture indices
- ⑨ Two-level Auto aperture indices
- ⑩ ON/OFF Switch
- ⑪ Flash ready lamp

FLASH PREPARATION

Inserting the batteries

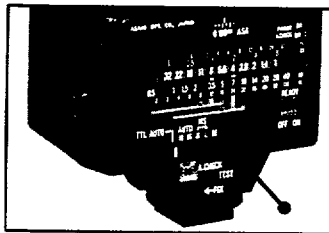
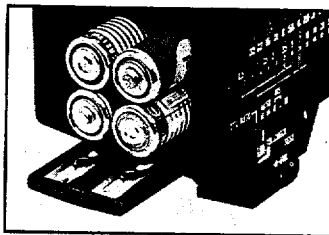
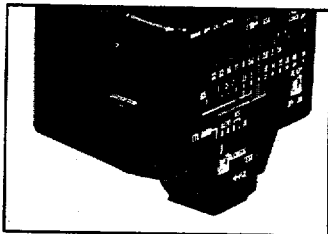
1. Press down on the arrowhead marking on the battery compartment cover and slide the lever with your thumb until the cover pops open.
2. Insert four AA size penlight batteries into the battery compartment in accordance with the plus/minus (+ -) markings and close the cover.

Test flash: Before mounting the flash unit on the camera, it's a good idea to test it to see if the flash

is functioning properly. Slide the flash unit's ON/OFF switch to the ON position.

In a few seconds, the flash ready lamp above the power switch will light, indicating that the capacitor has charged. After the lamp lights, press the test button (TEST) to discharge the flash; then, slide the power switch back to OFF.

NOTE: If the ready lamp fails to light within 30 seconds, batteries may be inserted improperly (if new) or worn out (if old).



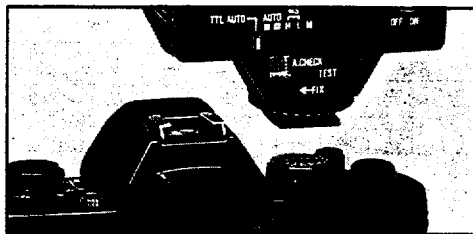
Mounting the flash unit

1. Slide the flash unit's hotshoe bracket into the camera hotshoe (this is easier if you grasp the flash unit at the bottom near the bracket). Make sure the bracket slides all the way into the hotshoe to ensure proper contact.

2. Turn the thumbscrew in the direction of the arrow (FIX) so that the unit is firmly fixed to the camera.

To remove the flash unit: Loosen the thumbscrew and slide the bracket out of the hotshoe.

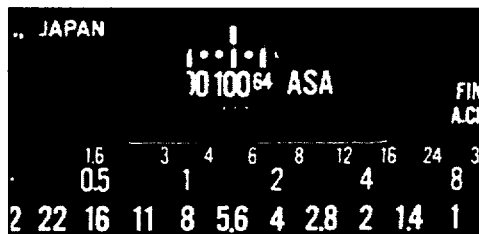
- When the flash unit is attached to the 67 II camera, an optional Hotshoe Grip 67 II is required.



Indexing the ASA/ISO film speed

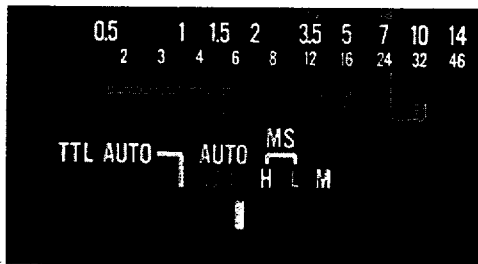
Before operating the flash unit, index the ASA/ISO film speed number of the film loaded in your camera by sliding the ASA/ISO film speed lever of the flash unit's control panel until the ASA/ISO film speed number aligns with the white film speed index mark.

NOTE: If you neglect to index the film speed properly, the indicated f-stops will not give the proper exposure.



THE MODE SELECTOR

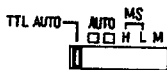
Located at the base of the control panel on the back of the flash unit, the mode selector lever enables selection of any of the AF 280T's six flash operating modes. To select the mode of operation, slide the mode selector lever until the white index mark on the back of the selector corresponds with the index mark for the desired operating mode.



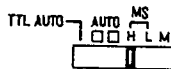
8

COMPATIBLE CAMERAS AND FLASH MODES

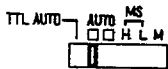
Name of Camera / Flash Mode	AUTOFOCUS CAMERA, LX, SUPER A, 645, 67 II	PROGRAM A, A3 series, P30 series, P50, ME Super, MG, MZ-M, 67
TTL AUTO	○	—
AUTO (GREEN•RED)	○	○
MS	○	○
M	○	○



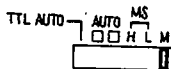
TTL AUTO This setting is used for the Through-The-Lens flash control with Pentax cameras featuring TTL flash metering systems (see page 16).



MS (H, L) At these settings, manual flash with automatic flash synchronization and viewfinder flash ready indication is offered with recent Pentax cameras. With other cameras, these settings offer normal high/low manual flash (see page 19).



TWO-LEVEL AUTO These settings are used for auto flash operation with all cameras; flash output is controlled by the built-in auto flash sensor. The **GREEN** setting is used for low flash output; the **RED** setting for high output flash (see page 12).



M (Manual) This setting offers full output manual operation. With Pentax cameras offering TTL/dedicated flash mode, this setting enables you to override the camera's TTL/dedicated flash features (see page 21).

FLASH SYNCHRONIZATION/OPERATIONAL FEATURES

The method of flash synchronization and the operational features of the AF 280T vary depending upon the camera you are using. Two-level Auto, MS (Manual with auto sync) and M (standard Manual) flash operation are featured with all cameras that offer hotshoe synchronization, and TTL Auto flash operation is available with the Pentax cameras that have TTL flash sensor built-in. With optional accessories such as the Hotshoe Grip and the Sync Cord 4P, you can use the AF 280T as a grip type flash, away from the camera. In addition, with certain other Pentax cameras, automatic flash synchronization and viewfinder flash ready indication are offered along with other dedicated flash features (as indicated in the chart). For further information about features, be sure to refer to your camera instruction manual.

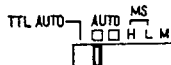
10

	LX	645
Flash Mode	TTL Auto, Two-level Auto, Two-level MS, M	TTL Auto, Two-level Auto, Two-level MS, M
Automatic Sync-speed setting	With shutter dial set at AUTO ① ② ③	With any of Auto exposure modes and Metered-Manual mode ① ② ③
Automatic Aperture setting	No	With the lens aperture ring set at the "A" ① ②
Flash ready Indication on camera	LED sign in viewfinder ① ② ③	1) LED sign in viewfinder 2) LCD sign on external display ① ② ③
Auto Flash Check on camera	LED sign in viewfinder ① ②	LED sign in viewfinder ① ②

① TTL Auto ② Auto modes ③ MS

SF series, Super A/ Super Program	Z-/PZ series	MZ-/ZX series	645N	67 II	Program A/Program Plus, A3/A3000, P30/P3, P50/P5, P30 _w /P3 _n , P30 _r
TTL Auto, Two-level Auto, Two-level MS, M	TTL Auto, Two-level Auto, Two-level MS, M				Two-level Auto Two-level MS, M
With any of Auto exposure modes and Metered-Manual mode ① ② ③	With any of Auto exposure modes and Metered-Manual mode ① ② ③				With any of Auto exposure modes and Metered-Manual mode (Except A3/A3000) ② ③
With the lens aperture ring set at the "A" ① ②	With the lens aperture ring set at the "A" (Except 67 II) ① ②				With the lens aperture ring set at the "A" ②
LED or LCD sign in viewfinder ① ② ③	LCD sign in viewfinder ① ② ③				LED/LCD sign in viewfinder ② ③
LED or LCD sign in viewfinder ① ②	No				LED/LCD sign in viewfinder ②

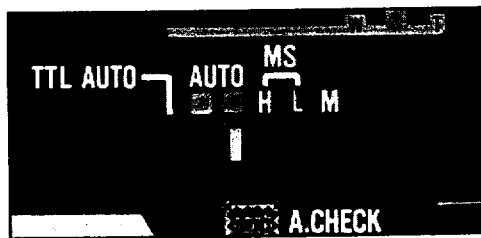
TWO-LEVEL AUTO FLASH OPERATION



The AF 280T offers Two-Level (high/low) auto flash operation via the flash unit's built-in sensor with all cameras featuring hotshoe synchronization.

- 1) Set the ASA/ISO film speed of the film in your camera in the ASA/ISO window of the flash unit control panel (see page 7).
- 2) Set the camera's shutter speed/control dial to the proper synchronization mode (pages 10 - 11).
- 3) Set the mode selector lever on the flash control panel to either the RED or GREEN Auto setting in accordance with the adjacent chart. Either mode may be used for the 1m - 3.5m operating range; with subjects closer than 1m, however, the GREEN setting must be used to obtain the proper exposure. Conversely, for subjects beyond 3.5 meters the high output RED mode must be used.

◆When used with Pentax cameras having a programmed AE function with the aperture ring of th lens set at A, the aperture is automatically set to the programmed f-stop on completion of the charging.



GREEN or RED: 1m – 3.5m (3.2ft – 11.5ft)
It is simplest to use the RED mode for this range and also saves batteries. The GREEN setting may be used when a smaller lens aperture is desired.

GREEN ONLY: 0.5–1m (1.6ft–3.2ft)
Overexposure results when the RED setting is used for subjects closer than 1 meter; for subjects closer than 0.5 meter, switch to manual flash (see pages 19 - 21).

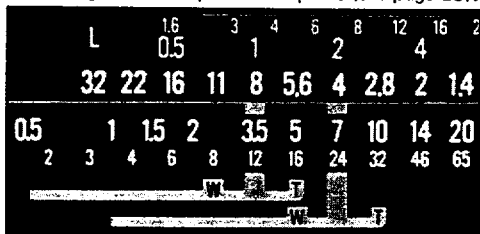
RED ONLY: 3.5–7m (11.5–24ft)
Underexposure will result if the GREEN setting is used for subjects beyond 3.5 meters; use manual flash for subjects further than 7 meters (see pages 19 - 21).

Setting the F-Stop

1) Pick out the f-stop on the aperture scale of the flash control panel that is directly above the index mark for the mode you have selected. If you are using ASA/ISO 100 film, and the GREEN setting, for example, you would use an aperture of f/8; with the RED setting, it would be f/4.

2) Set the aperture ring of the lens to the correct f-stop.

NOTE: The RED and GREEN W and T markings are provided for indexing the f-stop when using the Wide-Angle and Telephoto Adaptors (see page 26).

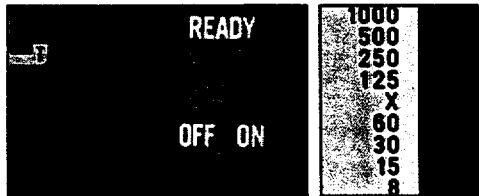


Shooting:

Slide the flash unit ON/OFF switch to the ON and compose the picture. Shoot anytime after the flash ready lamp lights.

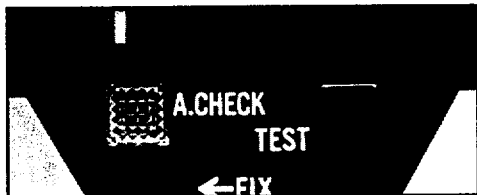
Viewfinder Flash Ready Indication:

Pentax cameras featuring dedicated flash provision also offer the additional benefit of flash ready indication inside the viewfinder. When the flash unit reaches its charge, the LED or LCD flash ready indicator inside the viewfinder will glow to signal that the flash is ready. (The method of indication varies from camera to camera; refer to the camera instruction manual for operating details.)



Automatic Exposure Check:

Another advantage of the AF 280T is that you can make sure your subject is within the flash unit's automatic exposure control range by pressing the "Test" button before actually making the exposure. If the subject is within the auto operating range and proper exposure is possible, the auto check lamp (A. CHECK) of the flash unit will light after the exposure. If the lamp does not light, use a more powerful flash setting or move closer to the subject.

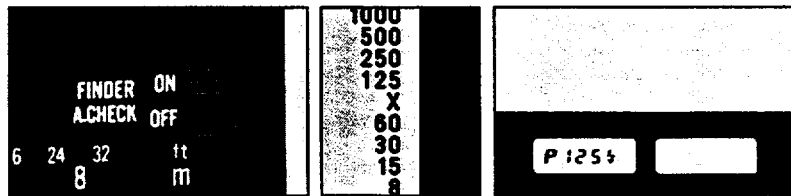


Viewfinder Exposure Confirmation

In addition to the auto check lamp on the flash unit, the LX, 645, and other "programmed" Pentax models (refer to pages 10 and 11) also provide auto flash confirmation inside the viewfinder, following your flash exposures. If the subject received sufficient light, the LED or LCD flash ready indicator inside the viewfinder will flicker.

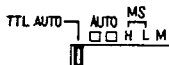
Flash Override

With the Pentax LX featuring IDM system, when the flash is set in TTL Auto or Two-level Auto flash mode, the camera's auto exposure system will override the flash when the shutter speed exceeds the required flash speed (see "TTL AUTO OPERATION," page 16).



TTL AUTO FLASH OPERATION

Using the AF 280T on the Pentax cameras featuring TTL flash metering system enables you to take flash photographs in the TTL Auto Flash mode. The LX couples with the flash within the camera's ASA/ISO range of 6 - 800, while other models featuring TTL flash metering system, 25 - 800. In this mode, the flash is directly controlled by the amount of light coming in through the lens and reflected from the film plane. This automatic flash mode permits you to use any lens aperture within the flash unit's operating range and eliminates all the complicated calculations in using filters and close-up accessories. Moreover, bounce flash operation is made easier, while full integration with the camera's automatic exposure system enables metering of both ambient and electronic flash lighting during the exposure.



Shooting

- 1) Set the ASA/ISO film speed in the ASA/ISO window on the back of the flash unit (see page 7).
- 2) Set the flash mode selector to "TTL AUTO."
- 3) Leave the camera's shutter dial set to "Automatic," and switch the flash unit "ON." The camera automatically synchronizes for flash at "X" when the flash unit charges. In addition, both the flash ready indicator in the finder and the ready lamp on the back of the flash unit illuminate as ready lights.
- 4) Select the desired f-stop, then after checking that the subject is within the flash range offered at your f-stop (see following paragraph or TTL Auto Flash Range Chart), take the picture.

F-Stop Selection

The flash range varies of course depending upon the f-stop in use. At small apertures, distance is reduced considerably. It's a good idea to check that the f-stop in use will offer adequate exposure.

Checking the Exposure

Maximum distances: With distant subjects, merely glance at the aperture scale on the back of the flash unit. The figure on distance scale below the f-stop you have selected is the maximum flash range for that aperture. With ASA/ISO 100 film at f/8, for example, the maximum range is 3.5m, at f/2, it is 14m.

Minimum distances: When shooting closer subjects at wider apertures, it's a good idea to check the flash range.

For details, refer to the TTL AUTO FLASH RANGE on page 19.

32	22	16	11	8	5.6	4	2.8	2
0.5	1	1.5	2	3.5	5	7	10	14

Quick calculation of minimum distances: In situations where it is inconvenient to carry the chart or you should forget it, you can also easily determine the "safe" minimum distances by the following simple calculation. With the AF 280T, the minimum distance is approximately 1/5 of the maximum distance at any given f-stop. When using ASA/ISO 100 film at f/2, for example

$$14 \text{ (meters)} \div 5 = 2.8 \text{ (meters)}$$

Auto Flash Exposure Check

Pre-exposure checks for the auto flash range cannot be made with the flash mode selector set at TTL Auto as the sensor is inside the camera. However, if the aperture you select is the same or wider than the aperture indicated by the red or green marks, you can make an approximate check by moving the mode selector to either the red or green Two-Level Auto flash setting (whichever is appropriate) and pressing the test button. If the subject is properly exposed, the A. CHECK lamp will light. Turn the lever to the TTL Auto mode setting before making the actual exposure.

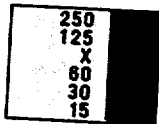
- When the subject is closer than the auto operating range or white or black even in the auto operating range, the Auto Flash Exposure Check function may not properly work, due to reflectance. In such a case, use the M or MS mode by referring to the flash control panel.



Viewfinder Auto Exposure Confirmation

On TTL Auto, the AF-280T signals confirmation inside the viewfinder after the picture is taken ensuring that your subject received adequate flash exposure. Immediately after a properly exposed photo on TTL Auto, the viewfinder flash ready indicator flickers. If the indicator does not light, additional distance or aperture adjustments are required. The viewfinder signal can be turned off with the FINDER A. CHECK switch on the back of the flash.

- When this flash is used on Pentax cameras featuring a TTL flash metering system (except the LX), with its A-, F- or FA- lens set at the "A" position, the programmed f-stop will be automatically set as soon as the flash is fully charged.



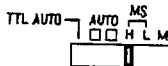
TTL AUTO FLASH RANGE (ASA/ISO 100)

Distance	0.25	0.5	1	2	3.5	5	7	10	14	20	25(m)
f/1.2											
f/1.4											
f/2											
f/2.8											
f/4*											
f/5.6											
f/8											
f/11											
f/16											
f/22											
Distance	0.8	1.6	3	6	12	16	24	32	46	66	82(ft.)

● The chart is based on ASA/ISO 100. So, at ASA/ISO 400, the distances are doubled, while at ASA/ISO 25, the distances halved.

* When used on the Pentax cameras featuring a TTL flash metering system (except the LX), with its A-, F- or FA- lens set to "A" position, the programmed f-stop will be automatically set according to the ASA/ISO. And the TTL Auto Flash range will be fixed distance of 1.3 - 7m (f/4 at ASA/ISO 100).

MS MANUAL (Manual Flash with Auto Synch)



There are options of full output flash at the high (H) setting, or a low-level flash output at the low (L) setting—the latter is very convenient for close-ups or work requiring a fast recycle time. In addition, when Pentax cameras offering TTL/dedicated flash functions are used at either of the MS settings, the camera synchronizes automatically for flash on charging. When used on a Pentax camera featuring a Programmed AE with "Manual" exposure mode, "Slow-Speed Sync." synchronization at any shutter speed slower than the sync speed. When the AF-280F is used at the MS settings with cameras not having dedicated flash provision, the standard two-level manual flash operation is offered.

●When this flash unit is used on any "programmed" Pentax camera in this flash mode, with its A-series, F-series or FA-series lens set to "A" (Auto), the dedicated flash provision does not function.

- 1) Set the ASA/ISO film speed of the film in your camera on the back of the flash unit (see page 7).
- 2) Set the flash mode selector to the desired H or L mode setting.
- 3) For automatic synchronization with cameras offering TTL/dedicated flash provision, camera's "Auto" or "Manual" mode may be used. For cameras without TTL/dedicated provision, set the shutter speed at "X" or slower.

NOTE: With the LX, the fail-safe feature whereby the non-flash exposure overrides flash at fast shutter speeds is still offered, even when synchronized at "X." When manual flash without the flash override feature is desired, or when synchronization is desired at speeds other than "X," switch to the "M" manual flash mode (see page 21).

Exposure Setting

1) First focus on the subject and look up the subject distance with the distance scale on the back of the flash unit. Then pick out the f-stop aligned with the distance indicated. When using the high setting, use the standard white distance scale below the aperture scale; for the low setting, use the yellow L distance scale above the aperture scale.

		32	22	16	11	8	5.6	4	2.8	2	1.4	1	
H	0.5	1	1.5	2	3.5	5	7	10	14	20	28	40	m
			L	0.5	1	2	4	8					m
L		32	22	16	11	8	5.6	4	2.8	2	1.4	1	

When you wish to use a specific lens aperture, choose the lens aperture first, then adjust the subject distance accordingly.

2) Set the selected f-stop considering flash range and switch the flash unit on. When the flash ready lamp lights either on the back of the flash or inside the viewfinder (with cameras having dedicated/TTL flash provision), press the shutter button all the way to take the picture.

Be sure to turn the flash unit off immediately when no longer needed.

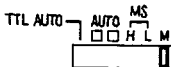
Guide Numbers:

You can also calculate the correct aperture setting for manual flash by dividing the guide number by the flash-to-subject distance. With ASA/ISO 100 film at H and the subject at 7 meters, for example, the correct f/stop would be $GN28 \div 7 = 4$ or $f/4$ (to determine the aperture setting with guide numbers that are in feet, divide the guide number in feet by the distance in feet).

Guide Number Chart

ASA/ISO		50	100	200	400
H	m (G.No.)	20	28	40	55
	ft. (G.No.)	65	90	130	180
L	m (G.No.)	5.7	8	11	15
	ft. (G.No.)	18.7	26	36	49

MANUAL FLASH AT "M"



When the flash mode lever of the AF 280T is set to "M," full output manual flash is obtained as with the H setting of the MS mode. In this mode, however, automatic synchronization at "X" and viewfinder flash ready indication are not offered with cameras having TTL/dedicated flash provision.

- 1) Set the ASA/ISO film speed on the film loaded in the camera in the ASA/ISO window on the back of the flash (see page 7).
- 2) Set the flash mode selector to "M."
- 3) Set the shutter dial to "X" (sync speed) or below.
- 4) Calculate the exposure as indicated in "Exposure Setting" on page 21 using the standard white distance scale below the aperture scale. Then, switch the flash unit ON; take the picture when the ready lamp on the back of the flash glows.

ROTATING FLASH HEAD



The flash head of the AF 280T features full 105° vertical and 180° horizontal rotation which is highly convenient for bounce flash and other special flash techniques.

Bouncing the light off of ceilings or walls is a very effective way of avoiding the flat lighting or harsh shadows which often accompany direct flash lighting.

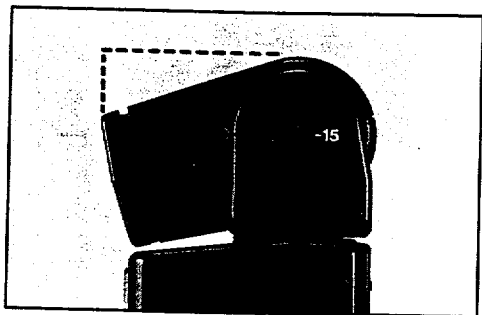
Bounce Flash on Auto: When bounce flash is performed in either the TTL Auto or Two-Level Auto flash modes, compensation isn't required as the automatic flash sensor automatically computes the exposure. Moreover, to assure that the angle you have chosen includes your subject, you can perform a test flash by first pressing the "Test" button at either two-level Auto modes; if your subject is correctly exposed, the A. CHECK lamp will light in green after you press the test button; if it doesn't, exposure adjustments are required.

Bounce Flash on Manual: When performing bounce flash on manual, it is generally sufficient to exposure one or two additional stops beyond the f-stop. indicated by the guide number calculation. However, because exposure is highly influenced by the nature of the reflective surface and the color of surrounding objects, formulas are quite varied. For bounce flash, it's helpful to read a flash photo guidebook beforehand.

Close-ups

For close-ups such as desk-top work at distances of less than one meter, the flash head may be angled to -15° . To lower the flash head, slide the flash head lock lever toward the back of the flash unit, and angle the head downward. In addition to the TTL auto and the GREEN two-level auto settings, the L setting of the MS mode is highly convenient for close-up work when using small lens apertures.

Do not attempt to lower the head without first releasing the lock or breakage could result.



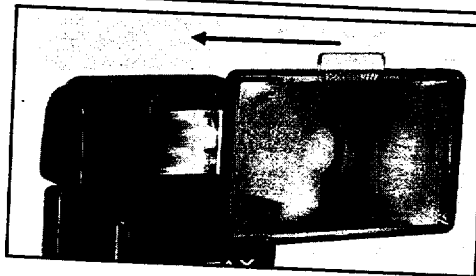
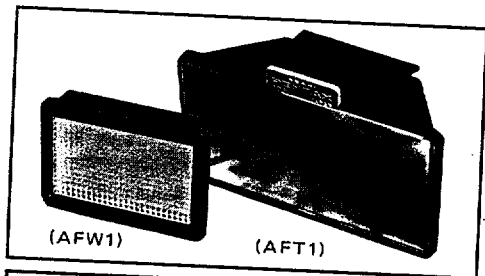
BATTERY PRECAUTIONS

- Protect your flash from leakage by removing the batteries whenever the flash unit will not be used for long periods of time.
- When the ready lamp no longer lights within 30 seconds after a test flash, it's time to replace batteries (replace earlier when faster recycling times are desired.)
- Use batteries that are fairly new, as performance tends to deteriorate with batteries that have exceeded the expiration date marked on the battery contacts. Performance also varies depending upon brand and type. Best results are obtained with high-performance alkaline batteries. Rechargeable Ni-Cad batteries offer the advantage of shorter initial recycling times but give less total flashes per charge.
- Batteries are also sensitive to cold and performance tends to deteriorate at temperatures near freezing. Performance is restored to normal as soon as batteries are subjected to room temperatures. It's a good idea to have a set of spares on hand that have been kept warm when shooting in freezing weather.

ALWAYS KEEP BATTERIES OUT OF THE REACH OF CHILDREN AND NEVER THROW USED BATTERIES INTO FIRE OR EXPOSE TO EXCESSIVE HEAT TO GUARD AGAINST EXPLOSION.

- Replace all the batteries at the same time. Do not mix battery brands and types, or old batteries with new ones.

WIDE ANGLE/TELEPHOTO LENS ADAPTORS



The Pentax AFW 1 Wide-Angle Adaptor and the AFT 1 Telephoto Adaptor offer greater flash beam control when used in conjunction with the AF 280T in both auto and manual flash modes. The Wide-Angle Adaptor extends flash coverage for use with 35mm-format wide-angle lenses down to 24mm, and improves results with 28mm and 30mm wide-angle lens. The Telephoto Adaptor offers greater concentration of the flash beam with 35mm-format telephoto lenses in the 85mm–200mm range.

How To Attach the Adaptors

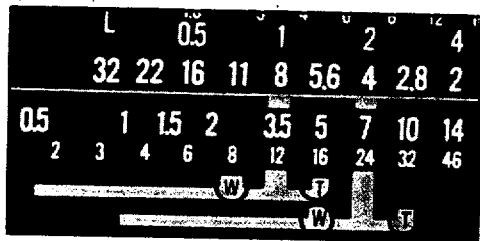
Fit either adaptor into the slots at the top and bottom of the flash head, and slide it in all the way until it is centered over the flash head.

Automatic Flash Exposure with the Adaptors

When either the Wide-Angle or Telephoto Adaptor are used when the flash unit is set for Two-Level Auto Flash operation, the W and T indices of the respective GREEN and RED aperture indices on the back of the flash unit are used as a guide for maximum distance selection. Using the GREEN auto mode

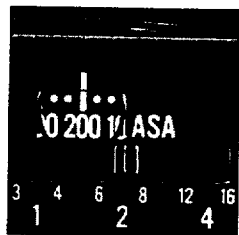
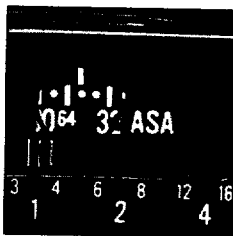
with ASA/ISO 100 film, for example, the flash range would be up to 8 feet with Wide-Angle Adaptor and 16 feet with the Telephoto Adaptor; in the RED mode it would be 16 feet with the Wide-Angle Adaptor and 32 feet with the Telephoto Adaptor. Note that the flash range decreases when the Wide-Angle Adaptor is used and increases for the Telephoto Adaptor as indicated by the respective W and T index markings.

During TTL Auto operation, compensation for the Adaptors is performed by the camera's metering system.



Manual Flash Exposure with the Adaptors

To compensate for manual flash exposure with the adaptors, halve the ASA/ISO film speed setting in the ASA/ISO window on the back of the flash when using the Wide-Angle Adaptor, and double the setting with the Telephoto Adaptor. With ASA/ISO 100 film using the Wide-Angle Adaptor you would set the dot representing ASA/ISO 50 in the ASA/ISO window, with the telephoto Adaptor align ASA/ISO 200 in the ASA/ISO window.



SPECIFICATIONS

Type	Multi-mode, shoe-mount thyristor electronic flash unit.
Mounting	Direct to camera hotshoe
Guide Number (at ASA/ISO 100)	28 in meters (90 in feet) at full output 8 in meters (26 in feet) at low output
Operating Modes	TTL Auto: Measures light at film plane via camera's exposure sensor when used with cameras offering TTL provision. Two-Level Auto: High/low auto flash via flash unit's built-in sensor with choice of f-stops. MS: Two-Level high/low manual providing automatic synchronization/viewfinder data readout coupling with cameras featuring TTL/dedicated flash; fast recycle at low setting. "M": Manual flash permitting synchronization at "X."
Auto Flash Ranges	At red setting: 1-7 meters (3.5-24 ft.) At green setting: 0.5-3.5 meters (1.6 ~ 11.5ft)
Flash-Coverage Angle	About 50° (vertical) and about 65° (horizontal); equivalent to the angle of view of 35mm-format at 28mm wide-angle lens and the angle of view of 645 format at 45mm wide-angle and the angle of view of 67 format at 90mm lens
TTL Auto Range	0.25-20 meters (0.8 ~ 65 ft.) at ASA/ISO 100 with an f/1.4 lens
Auto Sensor Angle	20°
Apertures on Auto	TTL Auto: All apertures at ranges specified on flash control panel. Two Level Auto: f/4 at ASA/ISO 100, f/8 at ASA/ISO 400 on RED; f/8 at ASA/ISO 100, f/16 ASA/ISO 400 on GREEN.

**Number of Flashes/
Recycling Times**

	GN 28		GN 8	
	Alkaline	Nicad	Alkaline	Nicad
Power Source:	Alkaline	Nicad	Alkaline	Nicad
Number of Flashes:	100	80	550	500
Recycling Times:	8sec.	6sec.	0.6sec.	0.5sec.

Flash Control Panel Data	ASA/ISO film speed index, Distance scale (standard and low), Aperture scale, Two-Level auto aperture indices (including W and T indices for Wide-Angle, Telephoto Adapters), six-way flash mode selector, viewfinder auto check ON/OFF switch, flash ready lamp, flash ON/OFF switch, auto check lamp, test button.
Color Temperature	Balanced for daylight
Synchronization/ Dedicated Flash	Automatic synchronization with the shutter dial set to "Automatic" when used with Pentax cameras having TTL/dedicated flash provision; synchronization for cameras without dedicated flash provision as specified in camera's instruction manual; automatic cameras with viewfinder shutter speed indication may use indicated auto speeds for flash.
Bounce Flash	Vertical and horizontal bounce flash capacity via rotating flash head; vertical angles from -15° ~ 90° with click-stops settings at -15° , 0° , 45° , 65° and 90° (lock release provided to lower flash head below 0°); horizontal rotation 180° to the right (with click-stops at 45° , 90° and 180°); rotates 90° to the left with click-stops at 45° and 90° .
Power Sources	Four AA size 1.5v alkaline or NiCad Batteries.
Size	80mm x 68mm x 116mm (3.1" x 2.7" x 4.6")
Weight	300g (10.6oz) without batteries.
Accessories	Case
Optional Accessories	AFW-1 Wide Angle Adaptor, AFT-1 Telephoto Adaptor.

- Recycle times and number of flashes depend on power source used; condition of the batteries and distances between flash and subject are given as approximations only.

SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT ANY OBLIGATION ON THE PART OF THE MANUFACTURER.



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The CE marking assures that this product complies with the requirements of the EC directive for safety.