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PENTAX®

AF 280T

AUTOMATIC ELECTRONIC FLASH UNIT



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FEATURES OF THE AF 280T

No matter what type of hotshoe synch camera you own, on the basis of its general features alone, you'll find the Pentax AF 280T one of the most convenient flash units you've ever worked with. That's because it not only offers you two-level automatic flash control through the built-in sensor at the base of the flash head, it also features two-level High/Low manual flash with a fast recycle at the low setting. 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 on the back of the unit lets you pretest the flash by lighting after you press the test button.

Moreover, in addition to offering the above benefits with all cameras featuring hotshoe synch, the AF 280T also features the special benefits of a "dedicated" and/or TTL flash with many of the latest model Pentaxes.

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

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pertinent to the operation of this flash unit with your camera and should be read carefully in order to take maximum advantage of the many benefits the flash unit has to offer.

Cameras with "dedicated" flash provision

When operated at the two-level auto mode settings and also at the MS (manual w/auto synch) settings, your camera will have the added benefits of automatic flash synchronization and viewfinder flash data indication with the AF 280T. Thus, as with cameras not offering this provision, carefully read all sections of the manual, paying particular attention to the notes on "dedicated" flash operation offered in pertinent sections of the text, in order to fully understand the advantages the AF 280T has to offer with your camera.

Cameras with TTL Auto Flash Provision:

Cameras featuring the IDM (Integrated Direct Metering) system of exposure measurement were especially 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 of the manual, paying particular attention to the "MS" (Manual w/auto synch) and "M" (Manual) sections, as there will be occasions when one form of manual flash is more advantageous than the other.

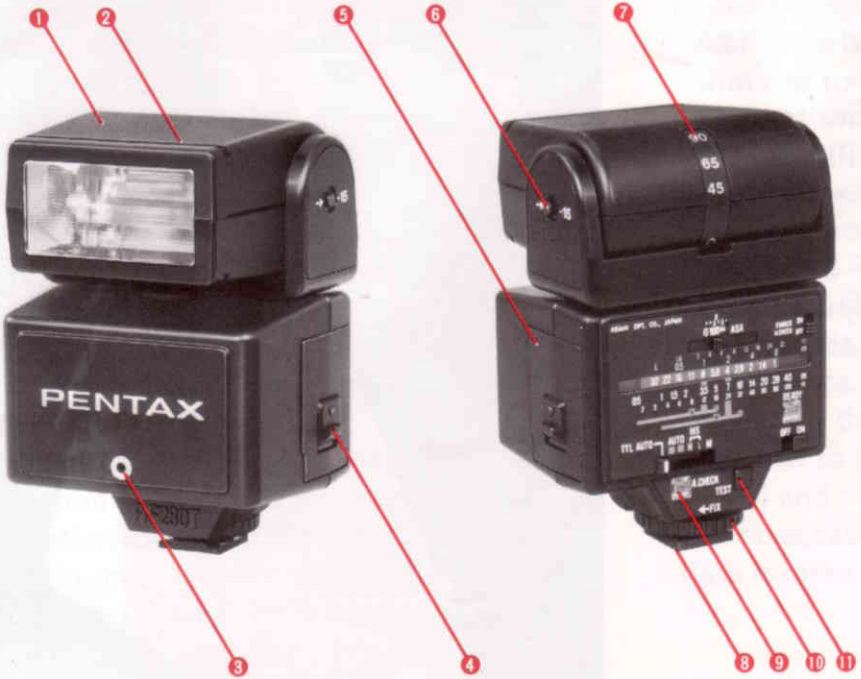
Because the advantages of through-the-lens flash outweigh those of two-level auto flash operation with your camera use of this mode is unnecessary. Thus, it would save time if you omit the "Two-Level Auto Flash Operation" section entirely, or save it for last.

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



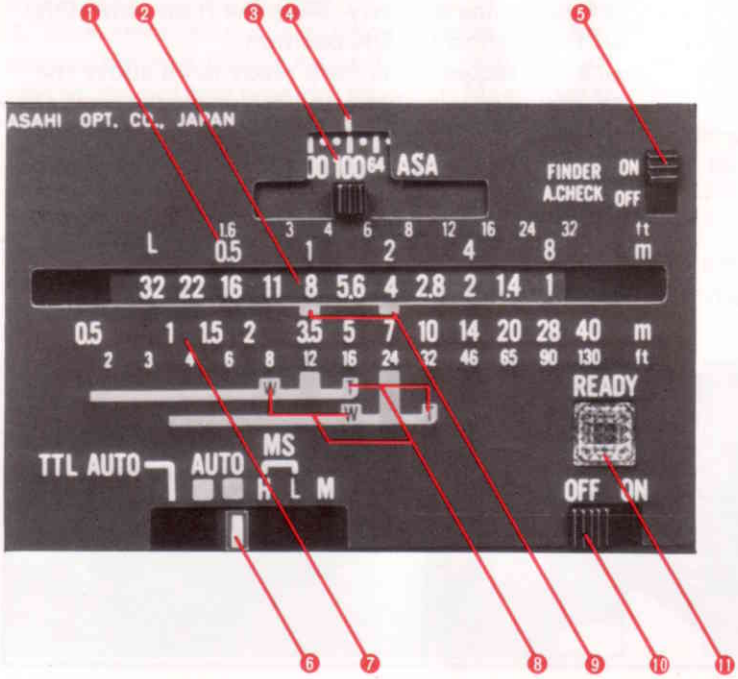
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DESCRIPTION OF PARTS



1. Rotating 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

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Flash Control Panel

1. L Distance scale (for MS "L" setting)
2. Aperture scale
3. ASA window
4. ASA 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

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FLASH PREPARATION

Inserting the batteries

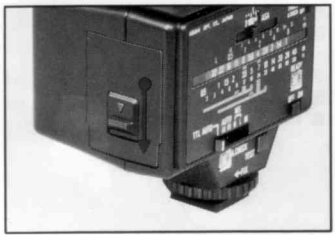
1. Press down on the arrowhead marking on the battery compartment cover and slide the lever with your thumb until the cover pops open.

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).







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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.

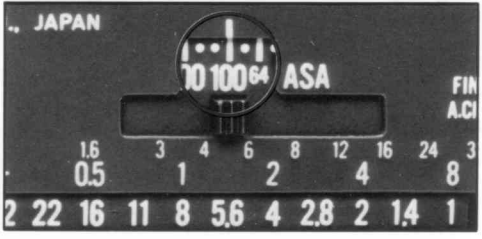
To remove the flash unit: Loosen the thumbscrew and slide the bracket out of the hotshoe.



Indexing the ASA film speed

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

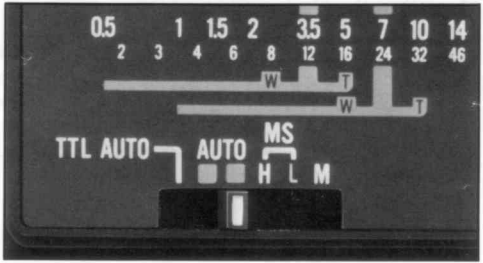
NOTE: If you neglect to index the film speed properly, the indicated f-stops will not give the proper exposure.



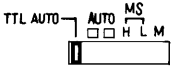
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THE MODE SELECTOR

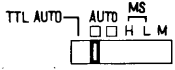
Located at the base of the control panel on the back of the flash unit, the mode selector lever enables selection of any of the AF 280T's six flash operating modes. To select the mode of operation, slide the mode selector lever until the white index mark on the back of the selector corresponds with the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



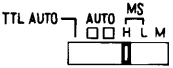
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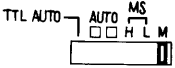
TTL AUTO This setting is used for through-the-lens integrated flash control with Pentax cameras featuring IDM or similar TTL flash metering systems (see page 16).



TWO-LEVEL AUTO These dual-mode settings are used for auto flash operation with all cameras not offering TTL operation; in this instance, flash output is controlled by the flash unit's built-in auto flash sensor. The GREEN setting is used for low flash output; the RED setting for high output flash (see page 12).



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 standard high/low manual flash (see page 19).



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).

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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. Both Two-Level Auto and Manual flash operation are featured with all cameras that offer hotshoe synchronization, and TTL flash is available with the pentax cameras featuring TTL auto flash operation. 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).

Method of Synchronization: With Pentax cameras mentioned specifically in the chart, flash synchronization is possible as indicated in the column of the chart representing your camera. For cameras offering TTL/ dedicated flash provision that are not mentioned specifically on the chart, refer to your camera instruction manual for synchronization and operating details.

With older model Pentax cameras and cameras of other makes, synchronization is basically as indicated in the last column of the chart. However, there are exceptions; be sure to refer to your camera instruction manual for details.

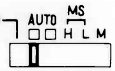
	LX
Flash Mode	TTL Auto, Two-level Auto, Two-level MS, M (Manual)
Automatic Sync	At 1/50 sec. with shutter speed dial set at "Automatic", on charging
Manual Sync	At "X" (1/75 sec.) setting of shutter speed dial
Flash Ready Indication	1) LED lamp inside viewfinder 2) Flash ready lamp on flash unit
Auto Flash Check	1) Flickering LED lamp inside viewfinder 2) Auto check lamp on flash unit

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Super A, Super Program	Program A, Program Plus	ME-F, ME Super	MG, MV, MV-1
TTL Auto, Two-level Auto, Two-level MS, M (Manual)	Two-level Auto, Two-level MS, M (Manual)	Two-level Auto, Two-level MS, M (Manual)	Two-level Auto, Two-level MS, M (Manual)
At 1/125 sec. with shutter mode dial set at "Auto", on charging	At 1/100 sec. with shutter dial set at AUTO, on charging	At 1/125 sec. with shutter mode dial set at "Auto" or "M", on charging	At 1/100 sec. with shutter mode dial set at "Auto", on charging
At "125 X" setting of shutter mode dial	At "100 ϟ" setting of shutter dial	At "125 X" setting of shutter mode dial	At "100 X" setting of shutter mode dial
1) LCD sign inside viewfinder 2) Flash ready lamp on flash unit	1) LCD sign inside viewfinder 2) Flash ready lamp on flash unit	1) LED lamp inside viewfinder 2) Flash ready lamp on flash unit	1) LED lamp inside viewfinder 2) Flash ready lamp on flash unit
1) Flickering LCD sign inside viewfinder 2) Auto check lamp on flash unit	1) Flickering LCD sign inside viewfinder 2) Auto check lamp on flash unit	Auto check lamp on flash unit	Auto check lamp on flash unit

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TWO-LEVEL AUTO FLASH OPERATION



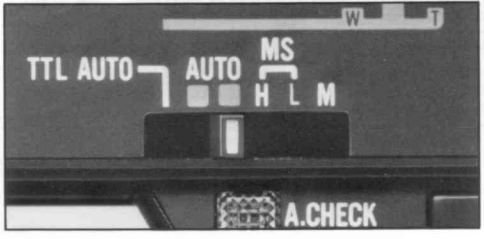
The AF 280T offers Two-Level (high/low) auto flash operation via the flash unit's built-in sensor with all cameras featuring hotshoe synchronization. The dual RED/GREEN Auto settings on the control panel of the flash unit are the standard settings for auto flash operation with all cameras except those having TTL flash provision (see page 16).

Preliminaries

1) Set the ASA film speed of the film in your camera in the ASA 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. When depth-of-field control is desired, 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.



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GREEN or RED: 1m–3.5m (3.2ft–11.5ft) RED mode saves the battery consumption and shortens the recycling time. GREEN mode allows greater depth of field, since the lens is closed down.

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).

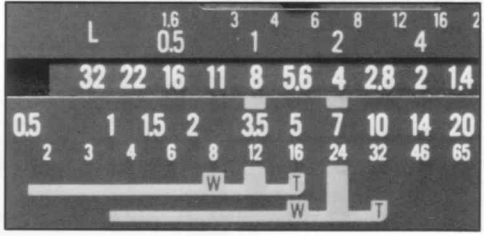
RED ONLY: 3.5–7m (11.5–24ft) Underexposure will result if the GREEN setting is used for subjects beyond 3.5 meters; use manual flash for subjects further than 7 meters (see pages 19 - 21).

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 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).



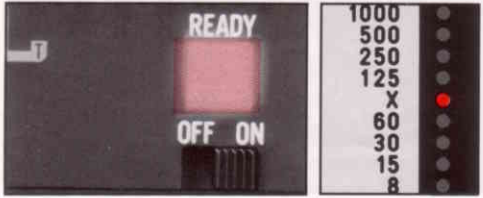
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Shooting:

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 right 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) on the back of the flash unit will flicker after the exposure. If the lamp does not light, use a more powerful flash setting or move closer to the subject.



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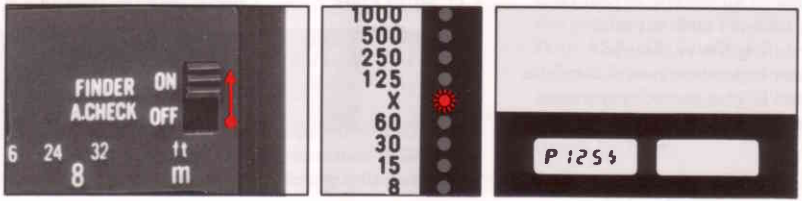
Viewfinder Exposure Confirmation

In addition to the auto check lamp on the flash unit, the LX, Super A and Super Program also provide auto exposure confirmation right 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. If the lamp does not light, additional flash exposure is required.

Camera Overrides Flash

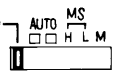
(Cameras with TTL Provision Only):

With the Pentax cameras featuring TTL auto flash operation, 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).



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TTL AUTO FLASH OPERATION



Using the AF280T on the LX, Super A or Super Program 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 the Super A or Super Program, 25 -800. In this mode, the flash is directly controlled by the amount of light coming in through the taking 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. Accordingly, the non-flash exposure system overrides the flash when not needed to give correct exposure even in changing lighting conditions.

Shooting

1) Set the ASA film speed in the ASA 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 LED 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 exposure range offered at your f-stop (see following paragraph or TTL Auto Flash Range Chart), take the picture.

F-Stop Selection

The versatility of the AF 280T's TTL flash control system permits you to select any f-stop within the TTL flash coupling range. The flash range varies of course depending upon the f-stop in use. At midrange apertures it's virtaully unnecessary to check the exposure using standard ASA film speeds at average

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subject distances, while with wide apertures and standard film speeds you get auto flash coverage all the way to distances of 15 and 20 meters.
At relatively small apertures, however, distances are reduced considerably, so until you get an ideal of the working ranges, 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 100 film at f/8, for example, the maximum range is 3.5 m, at f/2, it is 14 m.



Minimum distances: With film speeds of ASA 100 or slower it's safe to shoot at minimum distances down to 1 meter using all apertures of f/5.6 or smaller. However, when shooting closer subjects at smaller apertures, or subjects from 1 to 4 meters 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.

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 working distances by the the following simple calculation. As the minimum distance is approximately 1/5 that of the maximum distance at any given f-stop, divide the maximum distance for the f-stop in use by 5. With ASA 100 film at f/2, for example: 14 (meters) ÷ 5 = 2.8 (as the actual distance is 2.5 meters, this gives you a leeway of 0.3 meters or approximately 10%. When a more precise calculation is required, divide by 5.4).

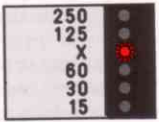
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Auto Flash Exposure Check



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 auto check lamp on the back of the flash will flicker. Turn the lever to the TTL Auto mode setting before making the actual exposure.

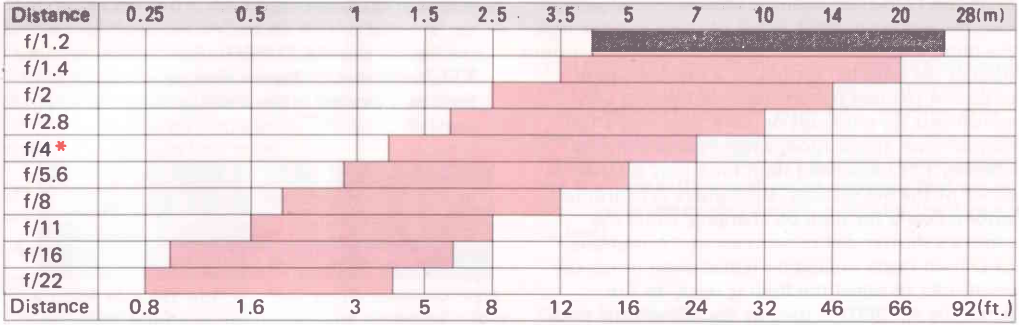
Viewfinder Auto Exposure Confirmation



On TTL Auto, the AF-280T signals confirmation right 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. For fast action flash photography the viewfinder signal can be turned off with the FINDER A. CHECK switch on the back of the flash.

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TTL AUTO FLASH RANGE (ASA/ISO 100)

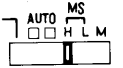


• The chart is based on ASA/ISO 100. So, at ASA/ISO 400, the distances are doubled, while at ASA/ISO 25, the distances halved.

* In the Programmed AE or Shutter-priority AE mode of the Super A or Super Program, the aperture is automatically set depending on the ASA/ISO number of the film used, and the TTL Auto Flash range becomes a fixed distance of 1.3 – 7 m (at ASA/ISO 100, f/4).

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MS MANUAL (Manual Flash with Auto Synch)



A unique feature of the AF 280T is its two-level (high/low) MS flash settings. When the flash mode selector is positioned at either of these two settings, the photographer has the option of either 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, while the camera's shutter dial remains set at "Automatic." LED flash ready indication is also given inside the viewfinder to signal the flash is ready to fire. When the AF 280T is used at the MS settings with cameras not having dedicated flash provision, standard two-level manual flash is offered.

Preliminaries

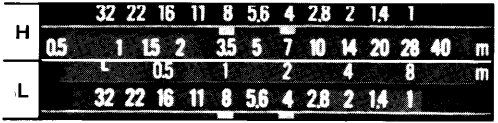
1) Set the ASA film speed of the film in your camera on the back of the flash unit (see page 7).
2) Set the flash mode selector to the desired H or L mode setting.
3) For automatic synchronization with cameras offering TTL/dedicated flash provision, leave the camera shutter dial set to "Automatic" (or "M" in the case of the ME SUPER). For cameras without TTL/dedicated flash provision, synchronize with flash as indicated in the chart on pages 10 - 11.

NOTE: With cameras having TTL flash provision such as 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).

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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.



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

2) Set the f-stop indicated with the lens aperture ring 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:

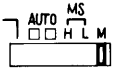
You can also calcuate the correct aperture setting for manual flash by dividing the guide number by the flash-to-subject distance. With ASA 100 film at H and the subject at 7 meters, for example, the correct f/stop would be GN28 ÷ 7 = 4 or f/4 (to determine the aperture setting with guide numbers that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

Guide Number Chart

ASA		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"

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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.

Preliminaries

1) Set the ASA film speed of the film loaded in the camera in the ASA window on the back of the flash (see page 7).

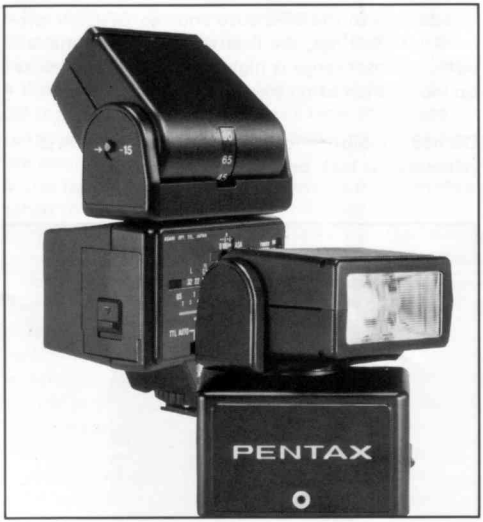
2) Set the flash mode selector to "M."

3) With non-dedicated cameras synchronize for flash by setting the shutter speed dial as described in the chart on page 10 – 11. With auto cameras having dedicated flash provision, use the "X" setting. With the Pentax LX or other TTL/dedicated cameras having full manual speeds (except the ME SUPER), use speeds of "X" or below for flash.

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.

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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. Moreover, the flash head may also be angled downward to -15° for close-up flash work.

Preliminaries

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. For vertical bounce flash, raise the flash head to the desired angle indicated on the back of the flash head (the head features click-stops at the 45°, 65° and 90° settings). For horizontal bounce flash, the head rotates up to 180° to the right and 90° to the left with in-between clickstops at 45°.

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

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perform a test flash by first pressing the "Test" button on the back of the flash unit; if your subject is correctly exposed, the auto check lamp (A. CHECK) will flicker in green after you press the test button; if it doesn't flicker, exposure adjustments are required.

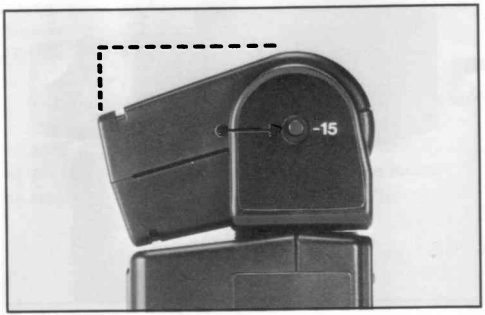
Bounce Flash on Manual: When performing bounce flash on manual, it is generally sufficient to exposure one or two additional stops beyond the f-stop indicated by the guide number calculation. However, because exposure is highly influenced by the nature of the reflective surface and the color of surrounding 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 with its closer range 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.



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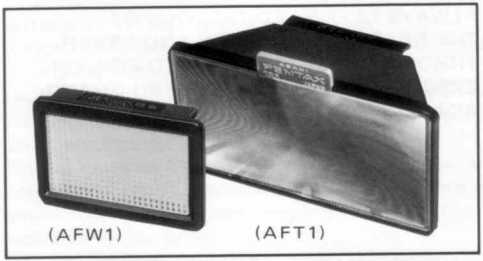
BATTERY CARE

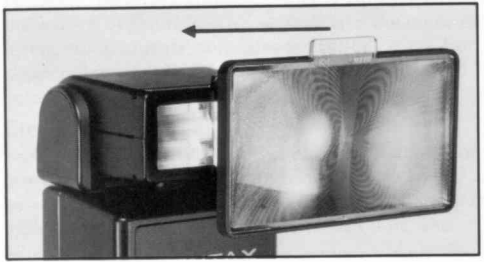
- Protect your flash from leakage by removing the batteries whenever the flash unit will not be used for long periods of time.
- When the ready lamp no longer lights within 30 seconds after a test flash, it's time to replace batteries (replace earlier when faster recycling times are desired.)
- Use batteries 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 batteires. 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 trends 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 for 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.

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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 conjuntion with the AF 280T in both auto and manual flash modes. The Wide-Angle Adaptor extends flash coverage for use with 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 telephoto lenses in the 85mm–200mm range.

How To Attach the Adaptors

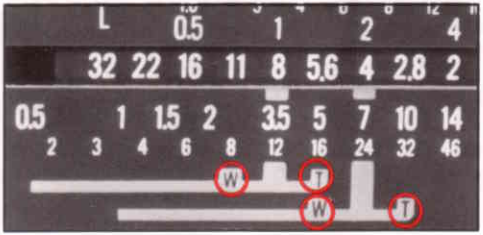
Fit either adaptor into the slots at the top and bottom of the flash head, and slide it in all the way until it is centered over the flash head.

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

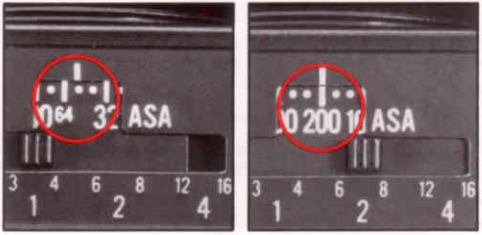
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with ASA 100 film, for example, the flash range would be up to 8 feet with Wide-Angle Adaptor and 16 feet with the Telephoto Adaptor; in the RED mode it would be 16 feet with the Wide-Angle Adaptor and 32 feet with the Telephoto Adaptor. Note that 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 film speed setting in the ASA window on the back of the flash when using the Wide-Angle Adaptor, and double the setting with the Telephoto Adaptor. With ASA 100 film using the Wide-Angle Adaptor you would set the dot representing ASA 50 in the ASA window, with the telephoto Adaptor align ASA 200 in the ASA window.



SPECIFICATIONS

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Type
Multi-mode, shoe-mount thyristor electronic flash unit with TTL Auto, Two-Level Auto, Two-Level Manual and standard Manual flash modes.

Mounting
Direct to camera hotshoe

Guide Number (at ASA 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. **M/S Manual:** 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)

TTL Auto Range
0.25—20 meters (0.8 ~ 65 ft.) at ASA 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 100, f/8 at ASA 400 on RED; f/8 at ASA 100, f/16 ASA 400 on GREEN.

Number of Flashes/ Recycling Times

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

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Flash Control Panel Data	ASA 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.
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.