AGFA RONDINAX 35 U
Daylight developing tank for all 35-mm. miniature films

Fig. 1

1. Lid.
2. Serrated grip.
3. Lip of tank.
4. Developing chamber.
5. Scale indicating length of film on spiral drum.
6. Film guide bearing.
7. Guiding slot for cutting knife.
8. Loading chamber.
9. Cassette locating peg.
10. Rotating key holding film cassette.
11. Film clip.
12. Tension band.
13. Spiral drum.
14. Film guide.
15. Bearing pegs of the film guide.
16. Indicating pointer.
17. Thermometer.
18. Locking knob.
20. Cutting lever.
Fig. 2

Fig. 3

Detailed Instructions for Using the Agfa Rondinax 35 U Tank

The Rondinax 35 U developing tank may be used for daylight development of all types of commercial film cassettes, and also for most types of film cassette, as indicated on pages 9-12.

It is important, before first using the tank, to read the instructions below carefully, and to carry out the operations they describe, with the tank empty, preferably with a strip of film that is either of no great value or else is known to be worthless and fogged. If this is done, the Rondinax 35 U user will be familiar with what is happening at any given moment and thus is unlikely to make serious mistakes or have any trouble when a real film is first developed.

Preparing the Solutions

Before loading the film into the tank, get ready the following:

1. 7 fluid oz. (200 cc.) of developer, ready for use, and at a temperature of 64° F. (18° C). (See notes on p. 20.)
2. 7 fluid oz. (200 cc.) of clear water for rinsing.
3. 7 fluid oz. (200 cc.) of fixing bath—preferably rapid fixing bath—at a temperature between 64° and 68° F. (18°-20° C).
4. A developing dish, a thermometer, and film scissors.
5. A soft and clean window leather.
6. Two film clips or spring clothes-pegs.

Warming the Tank

Since the temperature needed for correct development is between 64° and 70° F. (18° and 21° C.) it is clear that both the developing solution and the tank itself must be brought separately within this temperature range before the film is loaded into the tank and developed.

Attempts to compensate for excessive or insufficiently high temperatures by varying the time of development are very liable to lead to imperfect results, and should not be made.

The temperature of the empty tank with its lid closed is shown by the built-in thermometer 17 (fig. 1), and it is desirable to keep the tank, when not in use, in a warmed room, since if the tank itself has been kept at a temperature of—say—50° F. (10° C.) it will have to stand in a warm room for about 1½ hours before it has warmed up to 64° F. (18° C.).
Fig. 4


Opening the Tank

Holding the lid 1 (fig. 3) by its serrated grips 2 (fig. 3) the whole lid is pulled off vertically from the tank body. A considerable pull is required to overcome the pressure of the spring clips which hold the tank and lid together.

Adjust the locking knob 18 (fig. 4) by tightening it up until the winding knob 19 (fig. 4) still turns readily, but the bearing is properly water-tight.

Pull out the tension band 12 and hang it taut over the edge of the tank. This is made easier by rotating the spiral drum by the winding knob 19 slightly while the band is pulled. It is important to make certain that the cassette chamber 8, the film guide 14 and the tension band 12 are all completely dry before the film is loaded. If there is any doubt of this, they should be carefully dried with a cloth.
Cutting off the Film Tongue

Films to be developed in the Rondinax 35 U should not be completely re-wound into the cassette. The end of the tongue must protrude far enough to allow the film to be pulled out until the whole length of the tongue appears.

If it proves hard to pull out the film tongue in this way, the cassette may be damaged, and in this case there is a risk that the tank may not load correctly. The cassette should be examined, and the film rewound in the darkroom—if damage has occurred—on to the core of a good cassette. The rewound film should then load correctly into the tank.

The film tongue is now completely cut off with a pair of scissors, as shown in fig. 5, and it must be observed that the cut does not pass through the perforations of the film. (This operation is not necessary with the Karat cassette, since this film has no tongue.) After cutting off the tongue, the leading edge of the film is bevelled off by cutting away a small triangle on each side as shown in the figure. The bevelled edges are then lightly bent under.
Fig. 6

Fig. 7
Loading the Film into the Tank

This operation may be carried out in daylight but on no account in direct sunlight.

Before loading any type of cassette into the tank, the rotating key 10 (fig. 7) must first be turned to the mark “|” and pulled outward: the peg 9 must similarly be pulled outward.

It is important to determine what type of cassette is involved, and to use the appropriate loading operations that are described in detail below.

Types of Cassettes

1. Universal Film Cassettes (Cartridges) or Daylight Cassettes (Cartridges) and Model D Leica Cassettes (Leitz-Agfa Cassettes)

The cassette is lowered vertically into its chamber, the slit of the cassette facing the film guide, and the spool knob facing the rotating key 10 (fig. 7). The peg 9 and the rotating key 10 are then pushed inwards to hold the cassette in position.

The film end is then attached to the clip, and further operations are as described from page 12 onwards.

2. Karat Cassettes (Cartridges)

This type of cassette is loaded into the chamber in the same way as the universal type described above, but the peg 9 and the key 10 must be left in the pulled-out position. The film is then attached to the clip as described on page 12, and the winding knob of the spiral drum very cautiously turned while the leading edge of the film is led into the film guide, for if more than five perforations are drawn out of the Karat cassette there is a risk of fogging the last exposure. The lid is then replaced and the film wound on to the spiral drum as described below. Since the film is not attached to a core of any kind, the film knife need not be used. All further details are given on page 12.
3. **Standard Leitz Metal Cassettes (Model B)**

The cassette is lowered vertically into the chamber with the external spring facing downwards: it must be placed so that when the rotating key 10 (fig. 8) is pushed inwards the large cut-out section beside "C" on the key slides over the operating knob "K" of the cassette. It may be necessary to turn slightly either the cassette or the rotating key before this can be done. Both the peg 9 and the rotating key 10 are then pushed inwards, after which the film may be attached to the film guide 14 as on page 12. The tank is closed with its lid, the rotating key 10 is turned to position "II" in order to open the cassette. Further instructions (winding the film on to the spiral drum, etc.) see page 12.

If only a portion of the film is to be developed (see page 13) turn back the key towards position "I" until a slight resistance is felt. Now the cassette is closed lighttight before cutting off the film.
4. **Contax Cassettes**

With this type of cassette, the tension band is placed so that the film clip 11 lies opened in the recess 23 cut in the partition of the tank (see figure 6). Holding the Contax cassette in the hand, the film is pulled out for about two inches (5 cm.) and its leading edge placed centrally in the open jaws of the film clip. The clip is then closed and its jaws pressed hard together so that the teeth perforate the film.

The film is now cautiously wound towards the spiral drum by the knob 19 (fig. 9) until when the cassette is lowered into its chamber the operating knob "S" (fig. 9) is *exactly* opposite the projection marked "C" and the rotating key 10. The peg 9 is then pressed inwards. Before replacing the lid on the tank *take care* to pull the film taut so that the operating knob "S" is *exactly* opposite the letter "C".
The tank lid is now put on, and the rotating key 10 pressed hard inwards against the cassette and rotated to the position "II". The cassette is now opened.

If only a portion of the film is to be developed (see page 13) turn back the key toward position "I* to close the cassette light-tight before cutting off the film. The Contax cassette may be removed later on and locked by hand.

The further operations with the Contax cassette are normal, as described below.

5. **Robot Cassettes**

These are loaded just in the same way as Universal Film Cassettes, except that the peg V and the key 10 are not pressed inwards after the cassette has been lowered into its chamber. Certain other special cassette types (e.g. Photavit and Ducati) are treated in the same way as the Robot cassette.

Except as has already been indicated, all types of cassettes, once loaded, are treated by the following operations:

**Attaching the Film Clip**

The film clip 11 (fig. 6) attached to the end of the tension band is first opened and then placed in the recess 23 that is found in the centre of the partition of the tank. About ¾" (2 cm.) of film is cautiously pulled out from the cassette (2" or 5 cm. with Contax cassettes), and the leading edge of the film placed centrally in the open jaws of the film clip. The clip is then closed, and its jaws pressed firmly together to make certain that the teeth perforate the film and engage firmly in it.

**Winding the Film on the Spiral Drum**

Except with Karat (page 9) and Contax (page 11) cassettes, the winding knob 19 (fig. 10) of the spiral drum is now cautiously turned slightly in the direction of the arrow marked on it, until about 2" (5 cm.) of film projects from the cassette. This length of film is ample to ensure that the film guide is leading the film correctly into the spiral drum.

It is important that the bevelled edges of the film are lightly bent downwards before they are wound into the film guide: if this is not done difficulties may be experienced in winding the film on to the spiral drum. The tank lid is now replaced, and pressed down vertically on to the tank top to lock it in position.
By turning the winding knob in the direction of its arrow, the film will now be wound into the grooves of the spiral drum. While the winding is going on, the pointer 16 will indicate roughly the number of exposures which have been wound out of the cassette and into the tank. When all the film has been wound on to the spiral drum (the pointer 16 will usually indicate "36" at this stage) a considerable resistance to further winding will be felt. To cut the end of the film loose from the cassette core, the lever 20 which operates the film knife is pressed hard upwards as shown in fig. 10, until it reaches a hard stop.

If only a portion of the film — e.g. 24 exposures — is to be developed, the winding knob is turned until the pointer 16 lies against the figure "24" of the scale 5, and the film knife 20 used to cut off the film at that point. The spiral drum will then have on it the 24 exposures, plus about 2 inches (5 cm.) of extra film. Leica and Contax all-metal cassettes have to be closed before cutting off the film.
Development

The operations of development described below must be carried out in succession, without any break. It is thus essential in advance to know just what must be done, and it is also essential to have read and digested the information on development times and temperatures given on pages 20 to 21.

Before starting development, make certain that the temperature of both solution and tank is correct by means of thermometers. They should both lie in the range 64°-68° F. (18°- 20° C—see p. 5), and the time of development for the particular temperature ruling must be located up from the Table on p. 23.

The flow of developer into the tank is more simple if the thermometer end of the tank is raised slightly, as shown in fig. 11, while the solution is being poured in.

Fig. 11
Pouring in the solution while the winding knob is turned constantly.
7 fluid oz. (200 cc.) of developer are now poured into the rectangular recess formed by the step in the lid, as in fig. 11, and the spiral drum is constantly rotated in a series of jerks of about half a revolution at a time (always in the direction of the arrow) while the solution is being poured. This jerky rotation of the spiral drum by the winding knob must be continued throughout the whole of development: about once every two seconds the drum should be turned forward about half a revolution.

The thermometer on the tank side should be watched during the course of development, and if it shows a permanent change in temperature after the first one or two minutes of development, the total development time must be altered to deal with the new conditions.

Rinsing after Development

When the development time has elapsed, the tank is tilted (holding it as shown in fig. 12) and the developer poured out of the lip at the corner.

Fig. 12. Pouring off the solution, while turning the winding knob.
The winding knob must be turned continuously during this operation. (It is strongly recommended that developer should be used once only.) After all the developer has run out of the tank, 7 fluid oz. (200 cc.) of clear water are poured in (fig. 11), and the winding knob turned for about a minute. The water is then poured out of the tank in the same manner as the developer.

Fixing

After rinsing, 7 fluid oz. (200 cc.) of fixing bath are poured into the tank as before. (See fig. 11.) During fixing, the winding knob must be turned constantly, as before, for the first two minutes or so, after which it may be turned three quarters of a turn every minute for a further eight minutes. After ten minutes, the tank lid is removed and the film examined. If any of it still shows the milky whiteness which indicates unfixed silver salts, the drum is turned so that this portion of the film is immersed in the fixing solution. The tank is then closed again, and a further two minutes given to complete the fixing process.

The fixing bath may be used repeatedly until it is exhausted: details regarding making it up are given on page 21.

Final Washing

After fixing, the film must be thoroughly washed. The lid is removed from the tank, the film guide taken out, and the tank filled with water until the drum is completely immersed. The winding knob is then turned round once or twice to free any air bubbles which may have been trapped. The water is then poured off and fresh put in, the winding knob being rotated as before. After repeating this process two or three times, the locking knob 18 (fig. 13) is undone, the winding knob 19 detached from the drum, and the drum with the film taken out of the tank and placed in a deep bowl (or some similar vessel) and washed in running water under the tap for about 30 minutes.

The film may be completely washed in the tank if desired. The tank should not be filled more than is required to keep the drum fully immersed, and the winding knob turned as described above to remove air bubbles. After five minutes, the water is poured out and replaced, this process being repeated five or six times.
After developing with Agfa Atomal, thorough washing is particularly necessary, and the film should either be given eight to ten changes of water in the tank or else washed in running water for 45 minutes.

To remove the film from the drum, the latter is replaced in the tank, and the locking knob 18 and winding knob 19 are re-attached. The free end of the film is then gripped with a film clip or a spring clothes-peg, as shown in fig. 13, the locking knob 18 loosened slightly, and the film pulled gently out of the drum grooves. The film clip on the tension band is then opened, and the film detached from it.

**Drying**

The two ends of the developed film are fitted with clips, and one end hooked on to a taut string so that the film may hang free without risk of swinging into contact with any other object. Superfluous water, and
water-drops on both front and back, must be removed. This is done by pulling on the clip at the free end of the film to make it taut, and then wiping gently over both sides of the film with a clean, moist and very well washed window leather. The wiping must be exceedingly gentle, and the pull on the lower end of the film not sufficient to detach it from its upper clip. Old rags, however apparently clean, should never be used, since they are liable to cause scratches on the negative image.

Films should not be dried in full sunlight or near radiators of any kind.

Dust is the greatest enemy of all miniature negatives, for every dust grain is enlarged with the image and becomes unpleasantly noticeable in the enlargement. It is thus essential to dry the film in a place that is free from dust.

Cleaning and Reassembling Tank

After use, the tank must be thoroughly washed in water, but it is very important to be certain that neither developer, fixer, nor washing water gets into either the loading chamber 8 (fig. 14) or the slot 7 in which the film knife moves. Water at either of this points will cause trouble.

If by accident a solution or water fouls slot 7, it is essential to detach the film chamber unit from the developing chamber by taking out the three fixing screws 21. This must be done carefully or the screw threads in the plastic material composing the body of the tank will be damaged. The film knife is now exposed to view, and may readily be dried and replaced in its slot. If necessary the spring holding it down must be re-attached.

Cleaning the tank is simplified by taking it to pieces. (See fig. 14.) The locking knob 18 is unscrewed and taken out with the winding knob 19, after which the film guide 14 and finally the spiral drum 13 are removed. The grooves of the spiral drum should be examined, and if necessary cleaned free from gelatine shreds and similar material with a soft brush.

After prolonged use with hard water, chalky deposits may appear in the tank, and should be removed by treatment with very dilute acetic acid solution. After this solution has been used, the tank must be particularly well washed.
When assembling the tank after washing and drying, the spiral drum is first put back. (The square hole in the centre of one side must face the hole in the side of the tank.) In replacing the winding knob 19 and its locking knob 18 the rubber ring 24 and the spacing ring 25 must not be omitted: the rubber ring 24 goes next to the winding knob, with the spacing ring 25 over it. The locking knob is tightened just sufficiently to make the tank water-tight, yet allow the drum to turn readily from the winding knob. Finally, the film guide 14 is replaced. In putting it back, the bearing pegs 15 must lie in the slots 6, as shown in fig. 15.
Developer - Type of Film - Temperature-Development Time

The developer solution must be carefully made up according to the instructions of formula provided. If several films are to be developed one after another, it is preferable to make up a suitable increased volume of developer, and to use the solution once only.

The development instructions provided with the film should always be studied carefully. The development times and temperatures prescribed in them should, in particular, be followed accurately.

When the tank is constantly used under standard conditions — constant temperatures and constant developer concentration — the characteristics of the various types of films very soon become clear, and the specific
times of development required in special circumstances can be readily judged. In the table on page 23 of this booklet we give development times which have been found by practical experience to be suitable for correctly exposed Agfa 35 mm. film when using Agfa Developers, and these should serve as a guide to the user.

**Special Notes**

As will be seen from the table, higher temperatures (70° F. = 21° C.) require a shorter time of development than lower temperatures (64° F. = 18° C). Times for temperatures lying between the values given in the table will be in proportion to the values given. Once a suitable time of development has been found, it should be noted and strictly maintained in future, since it is only in this way that optimum results can constantly be assured.

As a rule, fresh water from the cold tap is too cold to use as a developer solution. It is thus desirable to make up stock solutions in good time and allow them to come to room temperature. Stock solutions should be kept in well-corked brown glass bottles, and not allowed to stand in unheated rooms during the winter months.

**Fixing Baths**

To fix only one film, 1½ oz. (40 gm.) of Agfa Fixing Salt are dissolved in 7 fluid oz. (200 cc.) of water. A stock solution is made by dissolving 7½ oz. (200 gm.) of fixing salt in 35 fluid oz. (1 litre) of water. The solution cools strongly as the salt dissolves, so that fixing baths must be made up in advance and allowed to warm up to 64-68° F. (18°-20° C).
## Development Record for Time and Temperature

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