

4 - Technical Manual Collimator SFOM of 83 & 83A

Discussed later in the bombing of the collimators used on AFN armed aircraft category. As I was asked, I put online for all the original instructions January 1958 edition of SFOM 83/83A it seems that this collimator departure made for mobile weapons (in turrets or ports) have been subsequently amended after 1958 to be used as a standard point over armed light aircraft, replacing the other focus then used, he had the advantage of shooting for both automatic weapons as rockets or bombs.

Jacques MOULIN

Technical Manual Collimator SFOM 83 & 83A



TABLE OF CONTENTS ERAS

	Pages
Directory amendments to the documentation	4
Table of figures.....	5
I - NOTICE DESCRIPTIVE ...	
General	I-5
Description collimator	I-9
Media Description Type 812 A	I-11
Directory changes to equipment	I-14 ..
II - MANUAL USE	
Terms of Use	II-3
III - MANUAL DE MAINTENANCE	
Current service	III-3
Maintenance périodique.....	III-3
Repair	III-3
Storage, packaging, transport	III-3

TABLE OF FIGURES

Figure -. It - Collimator SFOM type 83 A mounted on its support Type 812 A
Figure - 1-2 - Optical Pattern (under day and overnight).
Figure - 1-3 - Collimator SFOM without support.
Figure - 1-4 - Collimator SFOM with support.
Figure - 1-5 - any accessories.
Figure - 1-6 - Description of the collimator.
Figure - 1-7 - Lantern lighting.
Figure - 1-8 - Support collimator 812 Type A.
Figure - III-1 - Carrying.

I - NOTICE DESCRIPTIVE



**Fig. I-1. — Collimateur S.F.O.M. type 83 A
monté sur son support type 812 A**

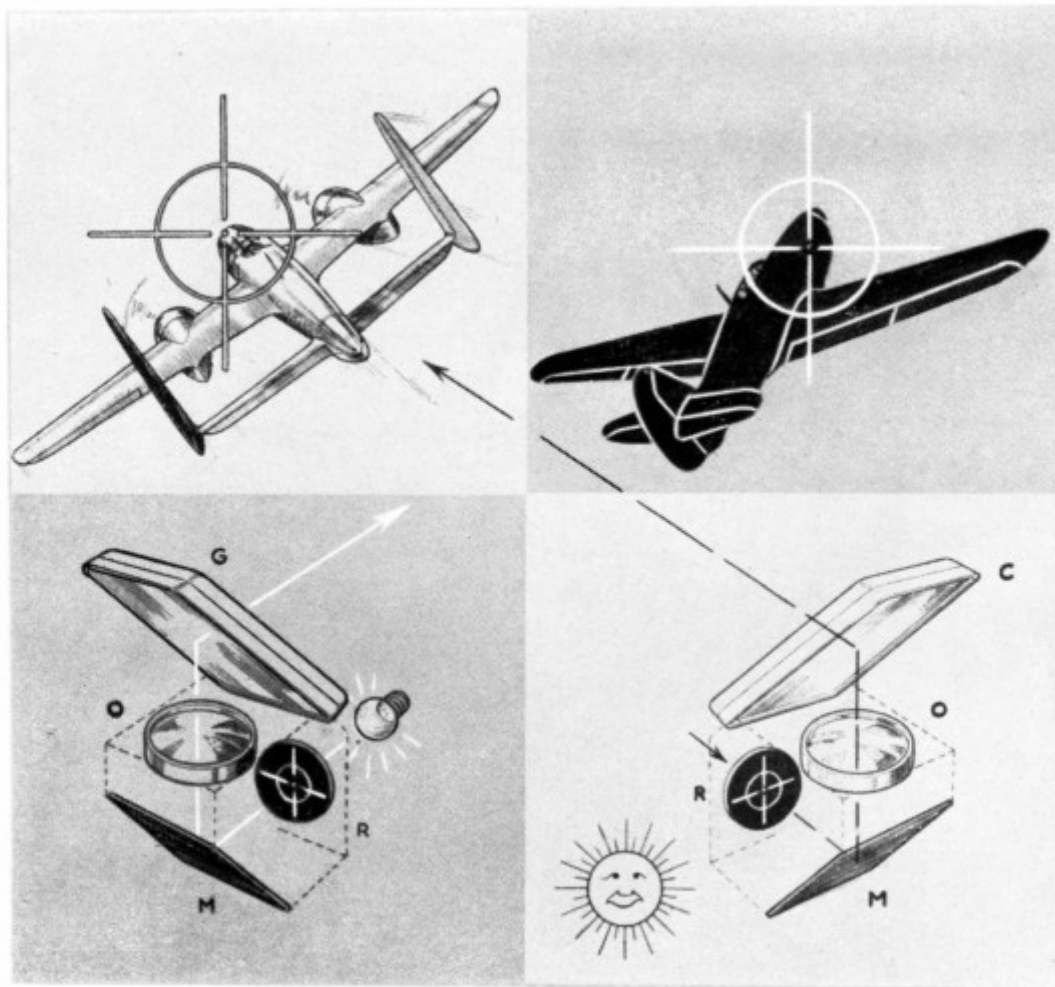


Fig. I-2. — Schéma optique (visée de jour et de nuit).

I - GENERAL.

I-1 - Classification. - The collimator SFOM type 83 A is a simple instrument in question, designed to equip weapons fixed or mobile edge. It can also be used for firing rockets air-ground and dive bombing at low altitude.

. I-2 - Purpose - In this collimator, the line of sight is obtained by projecting the infinite virtual image of an illuminated reticle:

- Day: the light field of view;
- Night: a small auxiliary lamp.

I-3 - Principle.

I-3, 1 - This is a classic collimator consists of a reticle K, M interior mirror, a lens and a mirror O semitransparent C.

Like all devices of this type, it has the following advantages:

I-3 1.1 - The image of the reticle is projected to infinity, so visions without accommodation.

I-3 1.2 - The shooter has a certain area in which it can move the eye without stopping

to see the reticle.

I-3, 1.3 - no eyepiece allows aiming with both eyes open.

I-3 1.4 - The reticle is seen superimposed on the purpose and scope of surrounding target is not limited by any obstacle.

I-3, 2 - In the collimator type 83 A, used with natural day lighting, light rays passing through the reticle are reflected by the semitransparent mirror to the eye of the observer, while the rays from purpose reach the eye after crossing the semi-metallic ice: the contrast between the image of the reticle and the goal is thus brought to a suitable value and remains constant, the field of view is somewhat or strongly light.

The design of the reticle always appears in light blue on the bottom of the goal.

I-3, 3 - At dusk, the semi-transparent mirror is replaced by a clear glass G, and the reticle is topped with a lantern lighting E; the light intensity of the lamp can be adjusted by rheostat.

NOTE: Difference between the collimator SFOM type 83 and type 83 A:

Type 83: Sealing ensured with hermetic.

Type 83 A: Sealing ensured by using O-rings and gaskets plans.

Notches bayonets of enhanced lighting hood.

This change does not affect interchangeability.

I-4 - Characteristics.

I-4, 1 - Dimensions. - See diagrams on page I-7.

I-4, 2 - Masse. - Collimator without lantern 0.560 kg.

- Lantern only 0.150 kg.

- Support only 0.720 kg.

I-4, 3 - Power. - 24-28 volts DC current.

I-4 3.1 - Adjusting the intensity of the lamp is made by a rheostat not supplied with the collimator, and whose characteristics are:

$R = 200$ ohms.

$I_{max} = 0.125$ A.

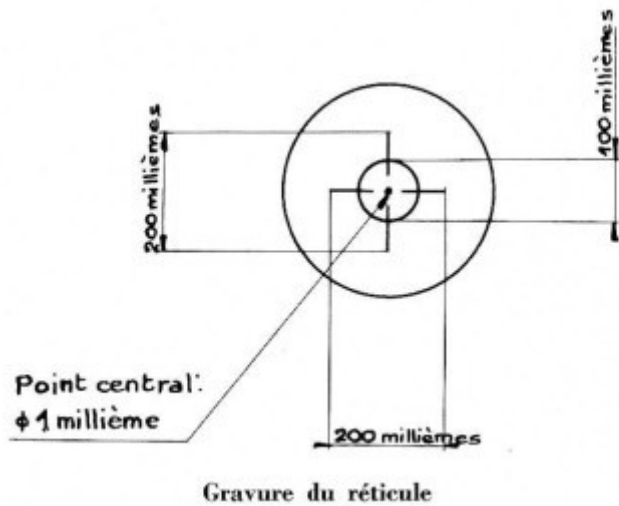
With cut-off limit.

I-4 3.2 - The length of the power cord is normally 60 cm.

I-4, 4 - Job Specifications.

Achromatic lens $F = 80$ mm, 0 mm 40.

Etching reticle:



Optimum distance from the eye of the shooter: $D_{opt} = 15 \text{ cm}$.

Maximum distance from the eye of the shooter: $D_{max} = 25 \text{ cm}$.

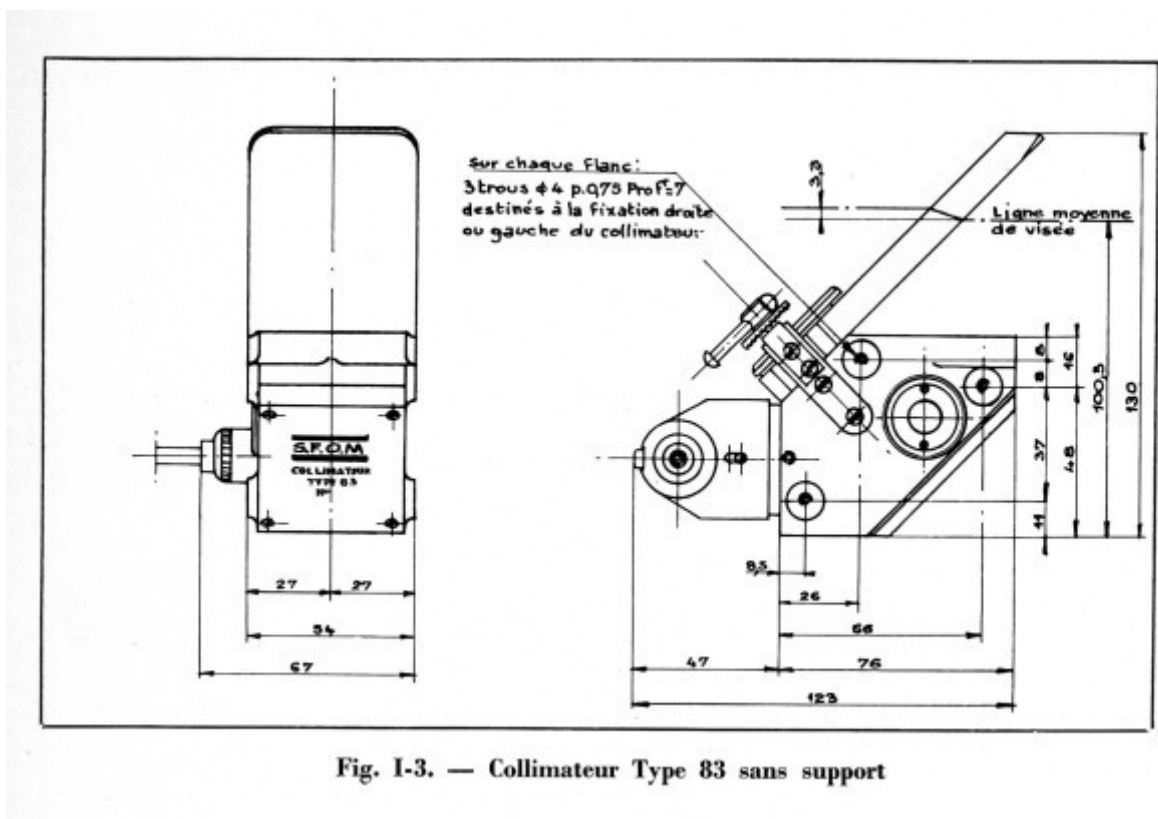
I-4, 5 - Attaching the device.

I-4, 5.1 - II can be attached to the mobile weapon or dashboard with three tapped holes diameter 4, not 0.75, useful depth 7 mm, listed on the outline drawing.

These holes exist on both sides of the apparatus.

I-4, 5.2 - For these holes, it can be attached to one of the four versions support SFOM Type 812 A, 812 B, 813 A, 813 B, defined in Section III-4.

I-4 5.3 - 812 bracket is attached by three holes diamètre 4, not 0.75, useful depth 7 mm, listed on the outline drawing.



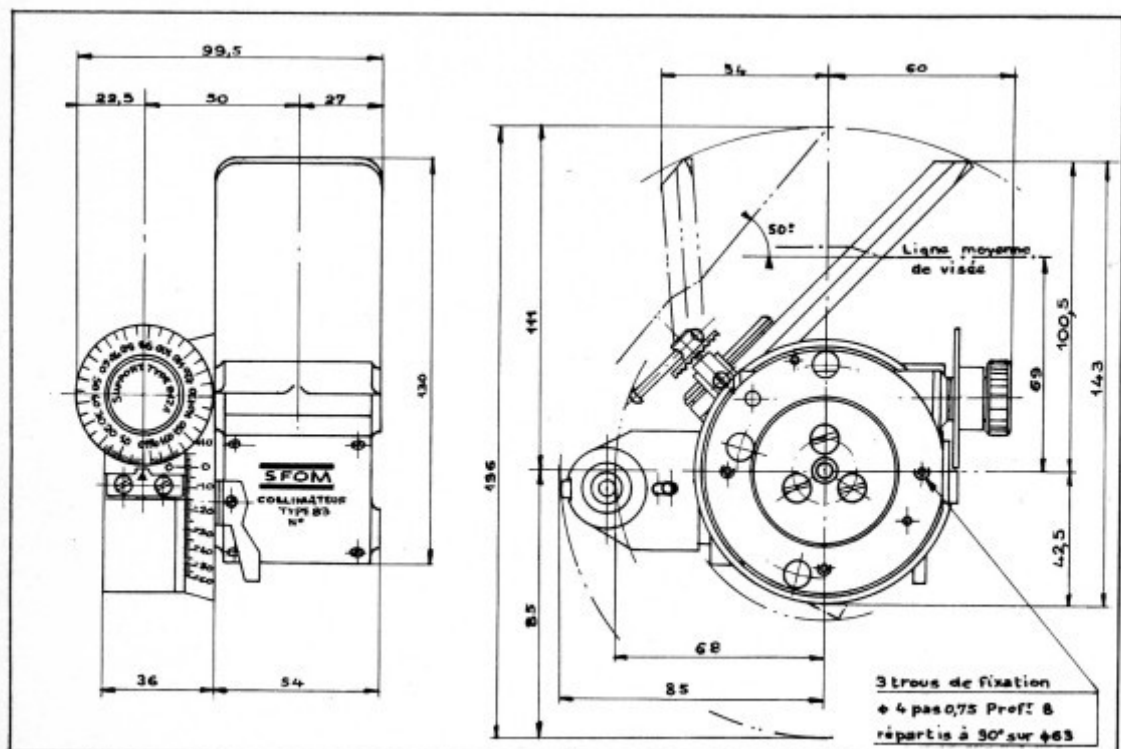


Fig. I-4. — Collimateur Type 83 avec le support Type 812 A

1-4,6 - any accessories.

1-4,6.1 - A case of ice to rest.

1-4,6.2 - A support Lantern at rest.

1-4,6.3 - A housing replacement lamp.

1-4,6.4 - A plug socket to fix flat.

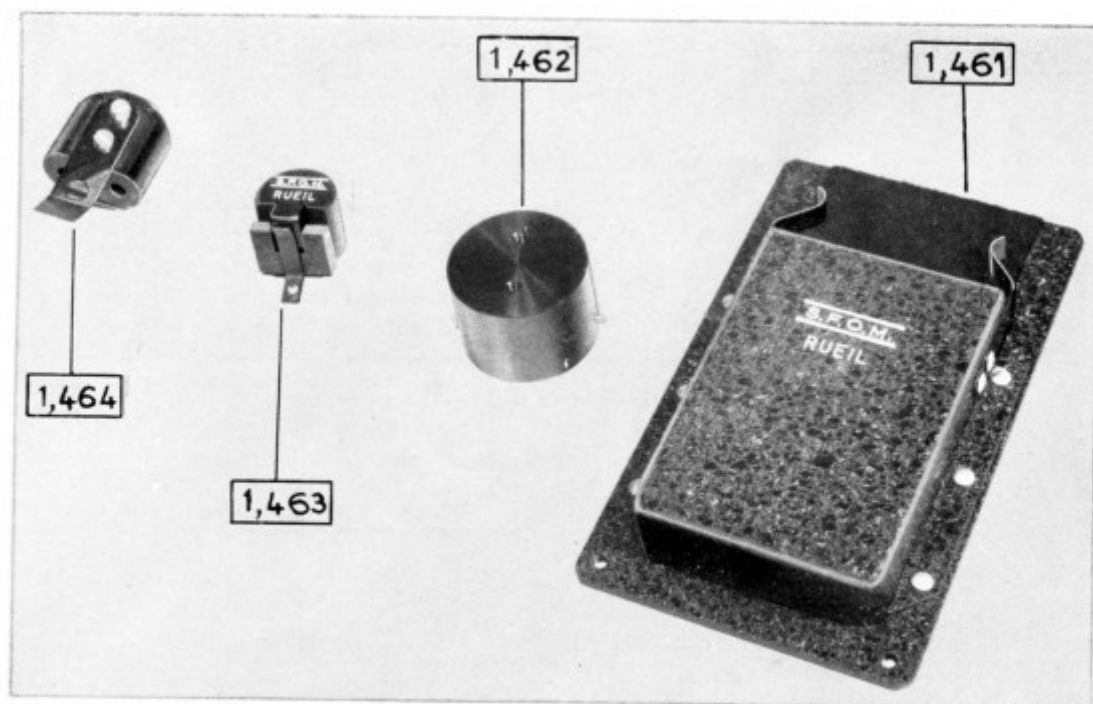


Fig. I-5. — Accessoires éventuels.

DETAILED DESCRIPTION II

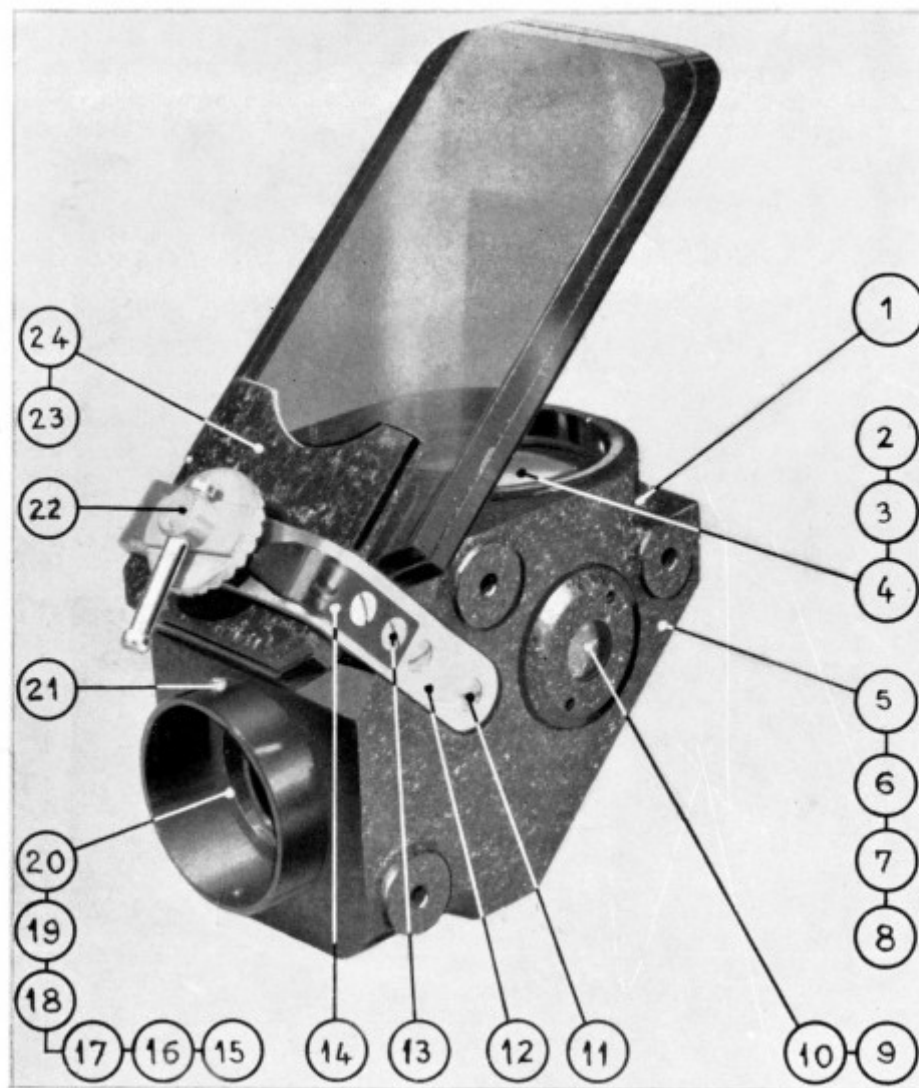


Fig. 1-6. — Description du collimateur.

II-1 - collimator alone without ice

LEGEND

- 1 - Body light alloy cast
- 2 - Objective
- 3 - O-ring target
- 4 - Counter-barrel goal
- 5 - Inside mirror
- 6 - Gasket rubber mirror
- 7 - Cover
- 8-4 screws securing the lid FB/90 2.5 ° x10.
- 9 - Rubber seal capsule dryness
- 10 - Capsule dryness
- 11-4 screws of the caliper FB/90 2.5 mm X 8
- 12 - Fixing bracket ice

- 13-2 fixing screws FB/90 spring 2.5 mm X 4
- 14-spring braking of the screw
- 15 - Cylinder reticle
- 16 - Gasket rubber reticle
- 17 - Reticle meniscus
- 18 - Cross-barrel reticle
- 19 -2 pointed screws fixing the reticle 2.5 x5
- 20 - O-ring mount reticle
- 21 - Screw fastening lug lantern
- 22 - Screw wiper lever press
- 23 - Press-ice
- 24 - rubber seal.

II-2 - Mirrors.

II-2, 1 - The clear glass is a plate with parallel faces 10 mm thick.

II-2, 2 - semi-transparent mirror is constituted by two plates having parallel surfaces, lower blade 1a is semi-silvered on its upper face.

The two glasses are glued to allydiglycol carbonate.

II-3 - Lantern lighting.

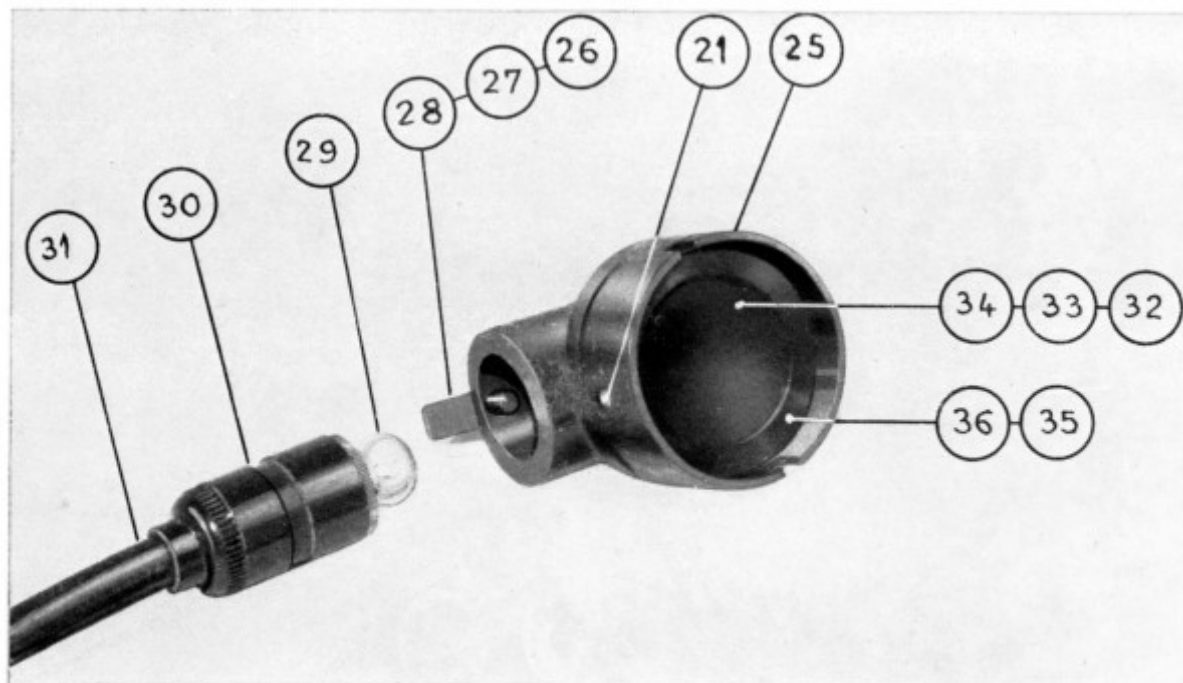


Fig. I-7. — Lanterne d'éclairage.

Fig. 1-7. - Lantern lighting.

21-2 retaining screw barrel capacitor
25 - Lantern Corps
26 -1 screws springs CL 2x4
27 - Counter-leaf spring
28 - Spring hooking up with ergot
29 - Lamp 24-30 volts, 3 watts
30 - reduced Sleeve SFOM
31 - 2 wire conductors
32 - Coil spring
33 - Condenser
34 - Blue Glass
35 - Counter-cylinder capacitor
36 - Cylinder capacitor

III - SUPPORT TYPE 812 A.

III-1 - General. - Support SFOM 812 Type A is intended to facilitate the adjustment of the collimator website SFOM type 83 A. Its design allows display increases of between + 10 ° and - 50 °.

To do this, a knurled knob is available to the driver or mechanic weapons.

A turn the knurled knob, the dial is graduated in milliradians, ensures the rotation in elevation of 10 ° viewfinder.

The movements of the viewfinder are read on a graduated vertical ring in degrees between + 10 ° and - 50 °.

Type A support 812 is adapted to receive the viewfinder right.

Type B support 812 is adapted to receive the viewfinder left.

Type A support 813 is adapted to receive the inverted right viewfinder.

Type B support 813 is adapted to receive the inverted left viewfinder.

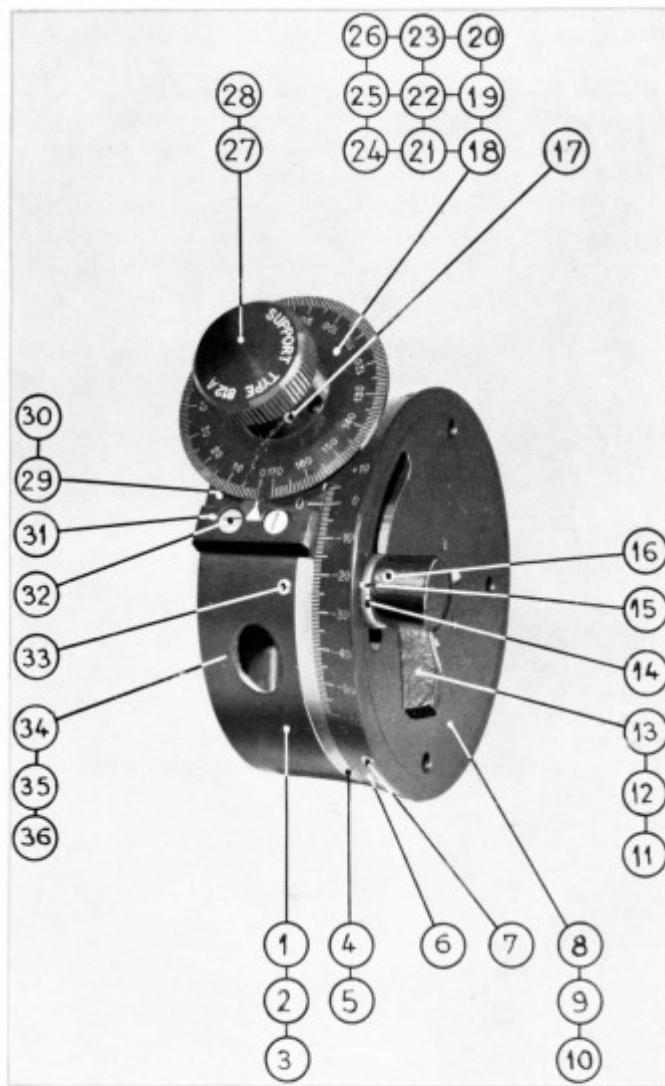


Fig. I-8. — Support type 812 A.

III-2 - Detailed Description.

- 1 - Drum sets.
- 2-1 pin LGC I GO x26 2.5 (stiffening).
- 3-1 pin LGC I GO 2.5 x22 (for attaching the spring).
- 4 - stationary drum flange.
- 5 - 2 F/90 ° 4x12 screws for fixing the flange.
1 screw F/90 ° 4x8 for fixing the flange.
- 6 - Drum dims.
- 7-3 setscrews 3.5 (for fixing the scale drum).
- 8 - movable drum.
- 9 - Spacer.
- 10-1 3x18 drive away.
- 11 - Axis lock.
- 12-1 nut "SIMMONDS" 5 P.

- 13 - Locking lever.
- 14 - Washer steel.
- 15 - friction washer (fiber).
- 16-1 3x4 set screw (for fixing nut "Simmonds").
- 17-3 3x4 set screws (for securing the graduated disk).
- 18 - Graduated disc.
- 19 - Washer tab.
- 20 - Landing stop.
- 21 - Ball and socket joint.
- 22 - Worm.
- 23 - Axis pivot bearing.
- 24-1 2x4 set screw (for fixing the axis of the pivot bearing).
- 25 - Attach spring.
- 26 - Spring of the pivot bearing.
- Knurled knob (to maneuver the worm) - 27.
- 28-1 I 2.5 x13 pin the knurled knob.
- 29-1 plate.
- 30-2 ° F/90 screw x6 2.5 (for fixing the plate).
- 31 - Index.
- 32-2 CL 2.5 x8 screws (for securing the index).
- 33-1 3x5 set screw (to maintain tax freeze).
- 34 - Backplate.
- 35-3 ° F/90 4x35 screws (for attaching the plate against).
- 36 - Wheel tangent.

Manual

I - GENERAL CONDITIONS ESSENTIAL TO INSTALL.

It - The "Airplane" media that receives the collimator and support type 812, should allow to accurately perform the calibration in field in the plane of symmetry of the aircraft.

I-2 - Respect the relative positions of the shooter and the collimator for a correct under all the usual setting positions (1 to 4.4).

I-3 - Observe reticle illumination, fixed or movable part of F aircraft or equipment shall wear shadow on the reticle, in particular we must calibrate it about fifteen degrees to the low, without the cover of the plane appear in the field of the reticle.

I-4 - Leave between the reticle and the nearest plane of the sufficient space for the installation of the lamp housing wall.

I-5 - Ensure the correct alignment of the optical axis of the collimator relative to the firing line.

II - CONDITIONS OF USE.

II-1 - Getting Started.

II-1, 1 - Setting the collimator must be performed on a remote panel harmonization at least fifty meters from the collimator to avoid the effect of parallax.

II-1, 2 - To adjust the support type 812, it is necessary, first, to ensure the consistency of the central point of the reticle viewfinder with the reference point of the panel harmonization.

II-1, 3 - This is done,

II-1, 3.1 - Move the zero scale drum previously unlocked, with the mark 0, then tighten the 3 screws (at least 2 available) of the drum.

II-1, 3.2 - Set the zero of the graduated disc, previously released, with the mark 1, then tighten the 3 screws of the disc.

-1,3.3 II - The drum is graduated-f $\sim 10^\circ - 60^\circ$. H-1 3.4 - The graduated disk is divided into 170 milliradians.

II-1, 3.5 - Around the graduated disc corresponds to a rotation of 10° of the scale drum.

II-2 - Use ground.

II-2, 1 - Starting from a daytime mission, the collimator must be provided with its semi-transparent glass, the reticle must be bare.

II-2, 2 - At the start of a night mission, the collimator must be mvmi of clear ice, the reticle should be wearing his lantern.

II-2, 3 - Setting up a mirror -. Ice should press directly onto the plane of the collimator, as press-ice topped with rubber. Tighten the lever screw hampered by the spring.

II-2, 4 - Miss up the lantern. - Orient, as appropriate, the wire to the right or to the left; lantern is fixed by a cylindrical shaft with bayonet catches compressing the spring.

It is powered by a wire with a plug.

II-3 - Use in flight (*).

II-3, 1 - Aim with both eyes open.

II-3, 2 - For night-vision, set, with the rheostat, the light intensity of the reticle not to be dazzled by its brilliance.

II-3, 3 - Adjust the position of the collimator website using 812-type support, acting as after releasing the lever follows:

II-3 3.1 - For a quick rotation of 10° or a multiple of 10° , lift the button to disengage the worm and worm wheel.

II-3, 3.2 - For additional rotation, turn the knurled knob of the desired value, relock the lever for the desired position and free of any maladjustment vibration.

Maintenance Manual

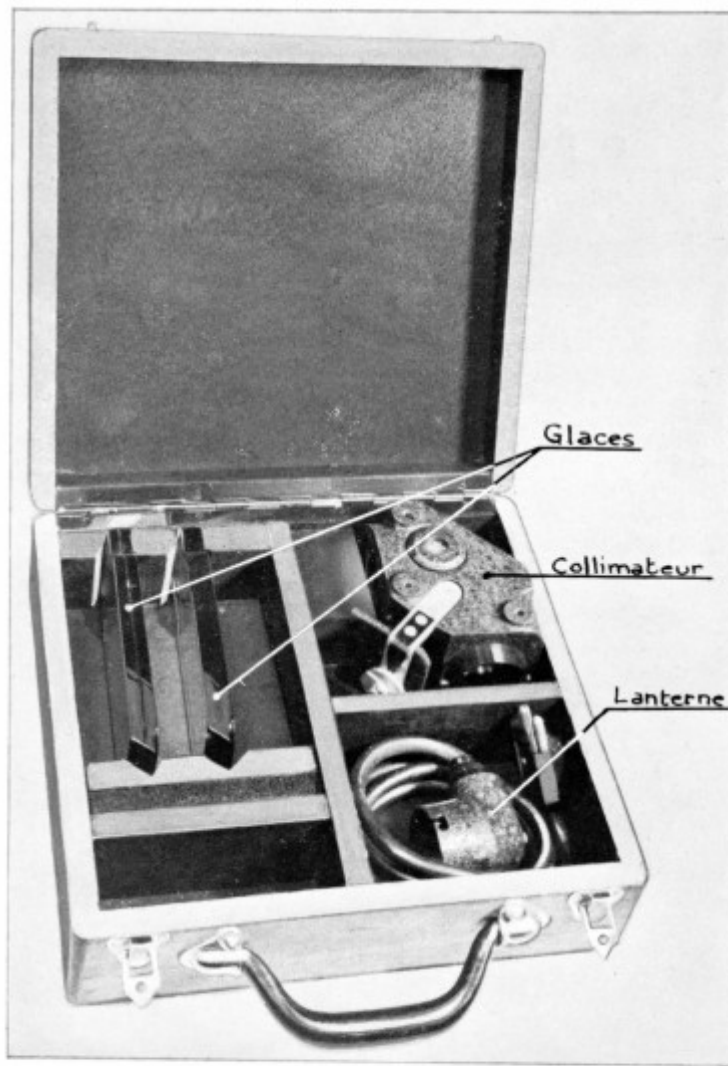


Fig. III-1. — Coffret de transport.

I - CURRENT SERVICE.

Avoid putting your fingers on the polished faces of ice and purpose.

Maintain perfectly clean external optical surfaces: glasses, lens, reticle.

Use a clean, lint-free cloth.

I-1 - Cleaning semitransparent ice collimators SFOM type 83 A.

Following the decision of the CLM 25/11/1958 - PV No. 72048 WSPA / Eq. A.4 of 17.12.1958 which provides for the application of varnish colorless silicone around the edge of the semi-transparent mirrors, replacing the previously used black varnish, the following precautions must be observed to clean the ice:

I-1, 1 - Solvents below are strictly prohibited:

Acetone, ether, benzene, gasoline, trichlorethylene, carbon tetrachloride.

I-1, 2 - Cleaning should be carried out as follows:

1-1,2.1 - Clean with a dry cloth (lint cotton or linen soft cloth) exhaling a light mist on the

polished faces.

I-1, 2.2 - If fat traces remain, moisten the cloth with either alcohol or, better, with detergent and water and complete the operation with a dry cloth.

I-1, 2.3 - Do not soak the ice or in water or in alcohol.

I-1, 3 - silicone varnish is designed to maintain over time a certain state of plasticity that allows it to effectively protect the ice against the infiltration of moisture.

A slightly greasy appearance and the impression of "softness" that allowed to touch are normal and positive.

It should be him avoid shocks and scuffing ensuing, which are - as with any other product - very detrimental to the conservation of ice.

II - MAINTENANCE.

The unit is fully static, no periodicity can be established.

III - REPAIR.

Except the pure and simple glass replacement or rugged capsule dryness repair this unit can only be entrusted to the producing factory or a workshop.

After disassembly, the tests prescribed in technical terms must be applied to the equipment repaired.

III-1 - replacement and regeneration of the capsule dryness.

When the silica gel crystals, originally blue, become pinkish, change the capsule.

To regenerate a saturated capsule, the heating at 150 ° (on a stove top, for example) until the crystals become blue.

Keep the capsule and regenerated in a tight container.

IV - STORAGE, PACKAGING, TRANSPORT.

Unless otherwise market specifications, the collimator, his glasses and his lantern come in wooden carriage flocked internally.

Storage store performs essential in this case.

The support type 812, and possibly additional accessories are supplied in carton outside cabinet.

(*) Note to our readers

Our friend Pierre Binet gives us some guidance on the use of these lenses:

"They come to us a friend who worked in the research department of the SNCASO at that time. Therefore more worthy of consideration than those of "poor" elementary drivers as we were then, with a total information approximately 180 hours of flight, we arrived at EALA. "

"Using the dial on the right side of the unit the following adjustment was made:

- Shooting the gun, setting 0.
- Shooting rockets SNEB, setting - 25 or 30.
- Shooting rockets T.10, setting - 45 or 50.
- Dropping bombs, setting - Or 100 - 105.

The numbers could not be specified and checked.