

Modification Kit for Philips UA-1752 Night Driving Periscopes



The proposed Solution

Given the good condition of the periscopes, the proposed solution for the upgrade is:

- Retain the outer shell of the periscope, the head prism and the two eyepiece lenses.
- Replace the Gen I, XX1080 tubes with current in 18 mm format.
- Replace the objective lenses in order for the new objectives to be compatible with the 18mm tubes.
- Finally, replace the high voltage power supply with new low power compatible with the power requirement of the 18mm tubes.

Background

- There is a number of armored vehicles around the world, and in particular the Leopard family, that use the Night Driving Periscope (NDP) model UA-1752, manufactured by Philips Usfa.
- These periscopes have been produced in the 1960s and have two identical and independent optical channels. Each channel has an objective lens, a first generation (Gen I) Phillips model XX1080 image intensifier tube, and one eyepiece lens while outside the vehicle there is a common prism.

The Obsolescence Problem

- Besides the fact that most of the NDPs are in excellent condition, there are serious problems of technical support and maintenance because the XX1080 tube is not in production any longer by Philips.
- The dimensions of the XX1080 tubes are not optically or geometrically compatible to any tubes available in the market today and thus a drop-in replacement is not possible.
- The performance of the XX1080 tube are far below the current tubes. Indicatively it is mentioned that the resolution in the centre is 27 lp/mm in comparison to the 64 lp/mm which is achieved by most current tubes, having a negative effect to the total NDP performance.



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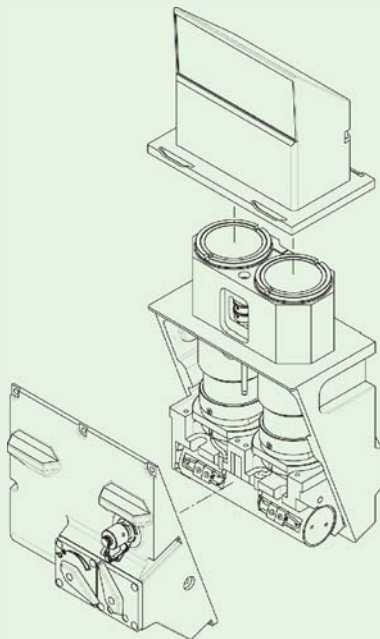
The Upgrade Kit Composition

The upgrade kit developed by Theon Sensors is composed of:

- Two (2) 18 mm inverting image intensifier tubes with housing assembly.
- Two (2) new objective lens assemblies.
- One (1) power adapter assembly.



Upgraded Kit Composition

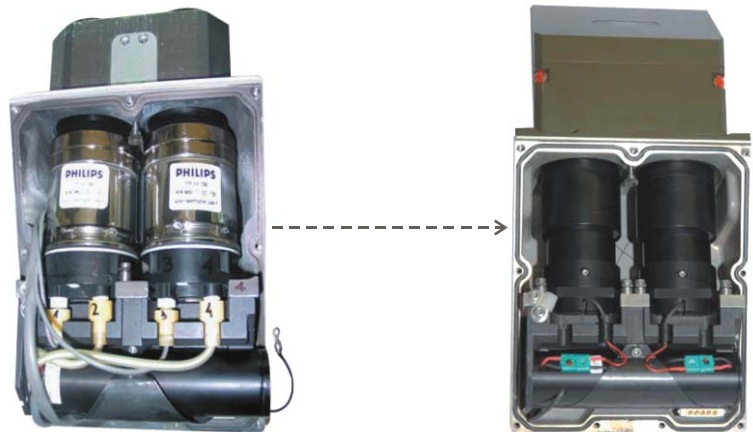


Features

- Three-fold increase in system resolution and performance
- Standard 18 mm format tubes with fast phosphors for increased driving speeds and guaranteed continuous logistics support
- Same power supply
- Same controls and switches-No operator Training required
- External dimensions of viewer remain unchanged
- No machining in the periscope or the vehicle

System Performance

Resolution (target USAF 100% contrast at 20m)	>1.2 lp/mrad@30mlux >0.8 lp/mrad@1mlux
Field of view	58 degrees
Magnification	1X±5%
Distortion	<4%
Collimation -Convergence	<30'
-Divergence	<15'
-Dipvergence	<15'



Original Configuration

Upgraded Configuration