

RA310

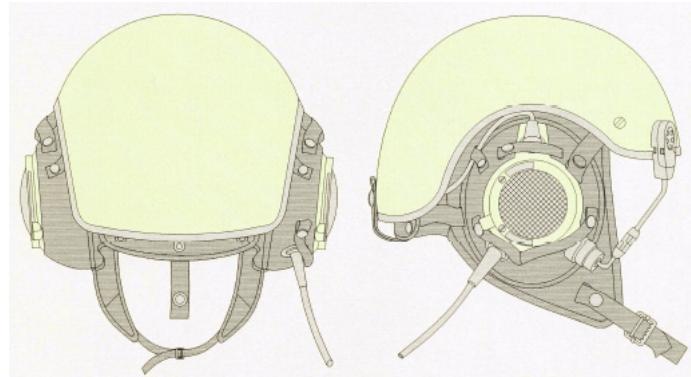
Ventilated Tank Helmet

Headsets: Dismounted



Helmet

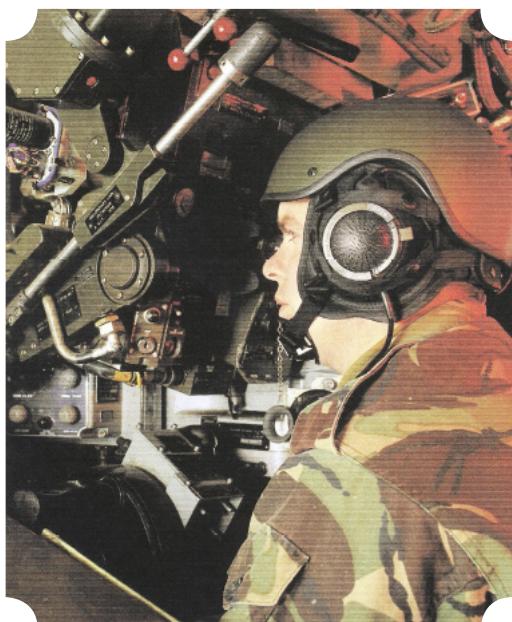
VTH is a two piece helmet designed specifically to provide maximum impact protection, combined with maximum comfort, particularly in hot climates. First, there is a lightweight cotton drill, ventilated soft helmet with closed cell foam strips to provide the impact protection. Second, there is a hard helmet shell, which attaches to the top of the soft helmet to provide additional protection, while still retaining full ventilation over the head. For logistic simplicity, the single size helmet is designed to fit most heads by means of simple strap adjustments.



Headset

The helmet incorporates mountings for a headset, which is designed to give good noise protection and to provide good communications even under high noise conditions.

The standard headset is fitted with a boom-mounted, high quality, noise-cancelling microphone, which provides discrimination between close speech and high levels of ambient noise. Optional types of boom microphone are available, miniature moving coil, magnetic and an electret type; a throat microphone is also available. If required, an optional Voice Operated Switch can be incorporated in the headset to further reduce the noise exposure in 'Live Intercom' situations.



VTH Options

Active Noise Reduction

Even with the excellent passive attenuation offered by the VTH earshell, the very high noise levels that are associated with modern armoured vehicles can still cause crew fatigue, poor communications intelligibility and hearing damage.

To resolve this situation, Esterline Racal Acoustics provides Active Noise Reduction (ANR) technology. The ANR system, described, is conveniently enclosed in modules which are fitted into both earshells. Esterline Racal Acoustics are world leaders in the production of ANR for Armoured Fighting Vehicles.

Talk-Through

The standard VTH is fitted with the unique Esterline Racal Acoustics patented acoustic valve. This simple mechanical device, which needs no power supply, provides the user with the valve closed, or the reception of natural airborne sounds such as speech or warnings with the valve open. An explosive sound attenuator protects the wearer from high level impulse noise, even with the acoustic valve open.

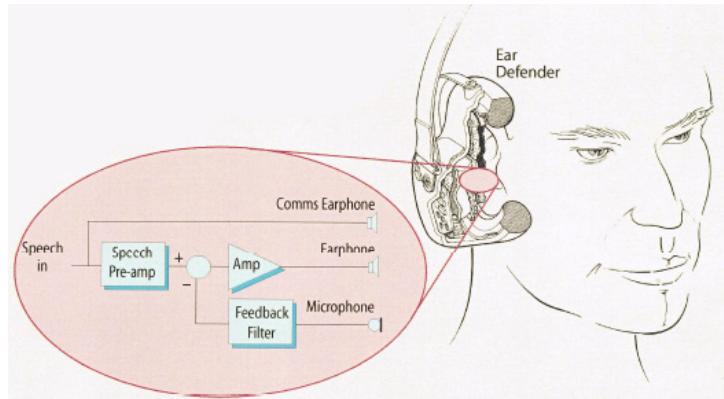
Where power is available, the talk-through facility can be provided using an electronic valve. When switched on, microphones on each earshell feed external sounds to the ear via an amplifier, which ensures that the sound level does not exceed the Health and Safety limit of 85 dB(A).

Other Options

In addition to the optional equipment described, Esterline Racal Acoustics can also provide an extensive range of cables, plugs and PTT switches depending on user requirements. The hard shell is also available in desert sand and black as options to the standard colour of drab olive green.

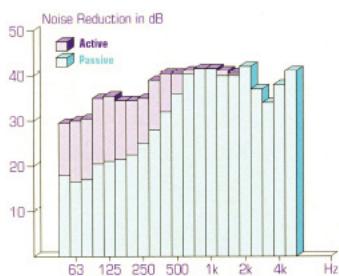
ANR Principle

The principle of ANR is based upon the concept of cancelling a signal by superimposing upon it an identical signal which is in antiphase. Noise within the earshell is detected by a small sensor microphone and this signal is then inverted in phase and driven back into the earshell via the earphone. In this way more than 97% of the low frequency noise energy entering the earshell will be cancelled. Any speech signals detected by the sensor microphone are electronically processed and are not affected by the cancellation.



Headset Attenuation Data

Typical Headset Performance Figures



Noise Reduction

The semi-subjective attenuation characteristics of the Headset, when properly fitted, are typically as shown below:

Attenuation dB			
Frequency	Hz	Passive	Active
63	16	12	
125	19	17	
250	22	11	
500	33	8	
1k	40	-	
2k	39	-	
4k	38	-	

Electro-Acoustic Data

Earphones

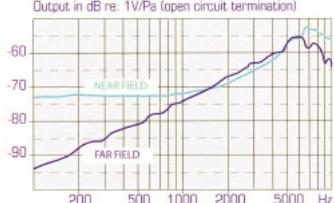
Transducer Part No	19575/1
Transducer Type	high power earphone
Sensitivity	95 dB re 2 x 10 ⁻⁵ Pa for 1 mW to each earphone at 1 kHz (in earshell). Measured on B & K 4153 Artificial Ear
Frequency Response	<p>Output in dB re: 20μPa for input of 1V rms</p>
Impedance	300 Ω ± 25% at 1 kHz (each earphone)
Climatic	Fully tropicalised

Boom Microphones

Transducer Part No	25690
Transducer Type	miniature noise cancelling moving coil microphone
Sensitivity	- 64 dB re 1V/Pa, open circuit at 1 kHz
Typical Frequency Response	<p>Output in dB re: 1V/Pa (open circuit termination)</p>
Impedance	200 Ω at 1 kHz
Noise Cancelling Performance	better than 15 dB at 100 Hz, falling to zero above 1.5 kHz
Climatic	environmentally protected

Electro-Acoustic Data continued

Transducer Part No	13750
Transducer Type	tropicalised noise cancelling magnetic microphone
Sensitivity	- 64 dB re 1 V/Pa at 1 kHz 
Frequency Response	
Impedance	300 Ω
Noise Cancellation	approximately 20 dB at low frequencies, reducing in effect as the frequency increases and reverting to normal pressure operation at 3.2 kHz

Transducer Part No	8600
Transducer Type	miniature noise cancelling electret microphone
Sensitivity	- 72 dB re 1 V/Pa at 1 kHz, when terminated in an impedance of 300 Ω 
Typical Frequency Response	For AFV applications the microphone response can be adjusted to roll off at low frequencies
Power Supply	3 to 30 V DC with a current of less than 0.1 mA
Impedance	200 Ω at 1 kHz
Noise Cancelling Performance	better than 20 dB at 100 Hz, falling to zero above 1.5 kHz
Climatic	environmentally protected

Electrical Data

Switches

In-line and earshell push-to-talk switches can be supplied to suit customer requirements.

Cables

A variety of both straight and coiled cables to Military Standards can be supplied to suit customer requirements.

Physical Data

Mass

Mass: 850 g

Environmental

Designed to meet the requirements of Defence Specification DEF133 Category L3, Ground Equipment.

Usage Temperature	- 30°C to + 55°C
Storage Temperature	- 40°C to + 70°C
Humidity Range	Up to 95% RH

Head Protection

Helmet with anti-fragment shell in position

Bump Impact:	Meets the requirements of TLA-084. Applied energy 15 NM. Maximum transmitted force 5 kN.
Penetration:	The helmet, with the anti-fragment shell in position, is not pierced or greatly indented by the impact of a spherical steel projectile of 6.35 mm diameter at a velocity of 130 m/s.
NB:	Higher ballistic protection levels are available with V50 ratings of 430 m/s and 670 m/s.

Compatibility with Vehicle Systems

Sighting Systems: Helmets providing impact protection often impede access to the gun sighting system. VTH can be used without the anti-fragment shell, inside the tank, and therefore give free access to the gunsight without modification.

Connection to the Vehicle System: Can be supplied for use with the British Army Clansman, the Racal 400/600, the American ANVRC, AN/VIC, the Royal Ordnance ROVIS or other harnesses.

September 2018

All specifications are subject to change without notice

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