

## CHAPTER 5

### EYESIGHT AND COLOUR PERCEPTION STANDARDS

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#### ANNEXES

<b>Annex 5A:</b>	Visual Acuity Standards Applicable to all Personnel on the Active and Reserve Lists of the Royal Navy, Royal Marines and QARNNS who joined the Service Before 1 Jan 1995
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<b>Annex 5C:</b>	Calculation of Spherical Equivalent (Equivalent Spherical Error - ESE)

## CHAPTER 5

## EYESIGHT AND COLOUR PERCEPTION STANDARDS

## 0501. Visual Acuity Standards

a. Visual acuity standards applicable to all personnel on the Active and Reserve Lists of the Royal Navy Royal Marines and QARNNS who joined the Service AFTER 1 January 1995 are shown in [Table 5-1](#). below.

Table 5-1. Visual Acuity Standards - After 1 January 1995

<b>Standard I Requirements</b>	<b>Right Eye</b>	<b>E</b>	<b>E</b>	<b>Left Eye</b>
Visual acuity to be achieved without correcting lenses	6/12 N5	3	3	6/12 N5
Visual acuity to be achieved with correcting lenses	6/6 N5	3/1	3/1	6/6 N5
Refraction Limit				
Total hypermetropia	+3.00 sphere			+3.00 sphere
Astigmatism	+1.25 cyl			+1.25 cyl
Myopia (in any meridian)	-0.75 sphere or cyl			-0.75 sphere or cyl
<b>Standard II Requirements</b>	<b>Right Eye</b>	<b>E</b>	<b>E</b>	<b>Left Eye</b>
Visual acuity to be achieved without correcting lenses	6/60	7	8	6/60 or worse
Visual acuity to be achieved with correcting lenses	6/6 N5	7/1	8/2	6/9 N5
Refraction Limit				
Spectacle correction (in any meridian)	±6.00 sphere or cyl			±6.00 sphere or cyl
<b>Standard III Requirements</b>	<b>Right Eye</b>	<b>E</b>	<b>E</b>	<b>Left Eye</b>
Visual acuity to be achieved without correcting lenses	6/60	7	8	6/60 or worse
Visual acuity to be achieved with correcting lenses	Either 6/6 N5 or 6/9 N5 or 6/12 N5	7/1 7/2 7/3	8/5 8/4 8/3	6/24 N10 6/18 N10 6/12 N10
Refraction Limit				
Spectacle correction (in any meridian)	±6.00 sphere or cyl			±6.00 sphere or cyl

b. Prior to January 1995, a lower minimum standard of vision was acceptable as there was no generic requirement for individuals to undergo weapon training. There was also a higher level of vision required for those with bridge watchkeeping responsibilities. The past standards are outlined at [Annex 5A](#).

c. In interpretation of these standards, the current standards apply to all serving personnel, with the exception of those personnel who entered their current branch before 1 January 1995 in Standard II where the lower unaided visual acuity and higher refraction limits remain applicable.

d. In June 2008 the sub-division of Standard II – Entry Standard Requirements – requiring higher visual standards for new entrants was deleted.

**0502. Method of Testing - Visual Acuity**

a. Distance visual acuity is tested using Snellen's charts viewed directly at a distance of 6 metres (20 feet) or in a properly adjusted mirror at 3 metres. Specifications, including general recommendations on lighting, are contained in British Standard 4274 Part 1 2003. Detailed procedures for testing are outlined in JSP 346.

b. Before being given an appointment for an initial medical examination, the recruit is to be questioned as to whether he or she wears spectacles or contact lenses and the following procedure adopted:

(1) Recruits who wear spectacles are to be instructed:

(a) To bring their spectacles with them when attending the medical examination.

(b) To bring a written spectacle prescription which can be obtained from any optician.

(2) Recruits who wear contact lenses (hard or soft) and already have spectacles are:

(a) To be given an appointment at a date no earlier than that which will allow them not to wear contact lenses for 48 hours before the medical examination.

(b) To bring their spectacles with them when attending the medical examination.

(c) To bring a written spectacle prescription which can be obtained from any optician.

(3) Recruits who wear contact lenses but do not own spectacles are:

(a) To be given an appointment at a date no earlier than that which will allow them not to wear contact lenses for 48 hours before the medical examination, but to bring them to the examination, if their civilian appointment allows.

(b) To have their VA checked and recorded unaided first, then to fit their contact lenses and have their aided VA checked and recorded.

(c) To be warned that should other selection procedures prove successful, they will be required to be in possession of spectacles and an appropriate prescription at their initial medical examination.

(d) Serial 83 of F Med 1 is to be annotated 'VA checked with CL only'.

c. At the initial medical, recruits are again to have their VA tested uncorrected and corrected wearing spectacles, having not worn lenses for 48 hours. They should be in possession of a spectacle prescription.

## BRd 1750A

d. Where there is any doubt about a recruit's visual acuity and in particular when he/she is on the borderline of the appropriate entry standards, a report from an optician should be obtained.

### 0503. Ocular Pathology

The following previous ocular pathology or surgery is a bar to acceptance for entry to the Royal Navy:

- Intraocular transplants in young persons.
- Post penetrating injuries to either eye.
- Post keratotomy surgery for myopia.
- Post retinal detachment surgery.
- Keratoconus.

If the examining doctor is in any doubt as to the candidate's acceptability, he/she is to seek the opinion of a Service consultant in ophthalmology.

### 0504. Near Vision Testing

Near vision is tested using Times Roman print on reading charts approved by the British Faculty of Ophthalmologists.

### 0505. Method of Recording PULHHEEMS Equivalent (PE)

Snellen figures	6/6	6/9	6/12	6/18	6/24	6/36	6/60	<6/60
P E	1	2	3	4	5	6	7	8

Right Eye	Left Eye
P E Unaided	P E Unaided
P E with spectacles	P E with spectacles

### 0506. Colour Perception (CP)

There are 5 standards for colour perception graded as follows:

Standard	Test Specification
1	The correct recognition of coloured lights shown through the small paired apertures of the Holmes Wright lantern at LOW brightness at 6 metres distance in complete darkness.
2	The correct recognition of the first 17 plates of the ISHIHARA test (24 plate abridged Edition 1995 or later) shown at random sequence at a distance of 50 - 100 cm under standard fluorescent lighting supplied by an artificial daylight fluorescent lamp (British Standard 950:1967).
3	The correct recognition of coloured lights shown through the paired apertures on the Holmes Wright lantern at HIGH brightness at 6 metres distance in complete darkness.
4	The correct recognition of colours used in relevant trade situations, and assessed by simple tests with coloured wires, resistors, stationery tabs etc.
5	Unable to pass any of the above tests.

**0507. Method of Testing Colour Perception - Ishihara Test**

- a. Ishihara plates are to be used as screening for all entries.
- b. Candidates who pass the Ishihara test are graded CP2 and require no further testing except for those whose critical visual task requires a categorisation of CP1.
- c. Candidates who fail the Ishihara test are further tested for CP3 or CP4 according to requirement.
- d. The Holmes Wright Lantern is to be used to discriminate CP1 and CP3. Appropriate trade testing (normally using a wire board) will discriminate between CP4 and CP5.
- e. Full details of procedures to be used in colour perception testing is at [Annex 5B](#).

**0508. Re-Testing of Colour Perception**

Colour perception does not normally change significantly throughout life. It will require re-testing, therefore, only in certain circumstances:

- a. Before employment in a specialisation requiring a different colour perception standard as shown in the regulations.
- b. If there is any doubt concerning the existing grading.

**0509. Corneal Refractive Surgery**

a. Corneal Refractive Surgery sometimes known as excimer laser treatment, for correction of myopia (short-sightedness) is becoming much more widespread and available on the high street. The procedure, remains relatively new and, even drawing on world-wide experience, there is only limited evidence on the long term effects. There is the potential for disturbances of night vision in some individuals, particularly in the presence of glare. However, the following methods of surgical correction of myopia or hypermetropia are now considered compatible with service on an individual case by case basis for non-specialist employment groups.

- (1) Photo reactive keratectomy (PRK).
- (2) Laser epithelial keratomileusis (LASEK).
- (3) Laser insitu keratomileusis (LASIK).
- (4) Intrastromal corneal rings (ICRs) otherwise known as intrastromal corneal segments (ICSs).

Incisional refractive surgery such as radial keratotomy or astigmatic keratotomy is not acceptable for service.

- b. The standards for new recruits are covered in JSP 346 Paras 0305 and 0306. Calculation of spherical equivalent (equivalent spherical error - ESE) is described at [Annex 5C](#).

c. Serving personnel who wish to have such treatment are to be informed that these procedures are not available from Service sources, and if carried out privately, could have an adverse effect on their future Service career by rendering them unfit for duty. It is also no currently acceptable for Aircrew.

d. Service personnel who have had corneal surgery (conventional or laser) carried out, may remain P2 but are to be referred to a Service consultant ophthalmologist for assessment. If their vision has deteriorated below the necessary standard for their branch they will require to be brought before a Naval Service Medical Board of Survey (NSMBOS).

**0510. Spectacles and Contact Lenses**

There is in general no restriction on the wearing of spectacles or contact lenses (including onboard submarines) provided that the corrected standards of visual acuity are met. Contact lenses may not, however, be worn under General Service Respirators, are not permitted in operational Service diving and are not to be worn by Aircrew. (SPGL 10/99 gives details of exceptions for Aircrew). Those who may wear contact lenses and choose to do so must always have a pair of defence spectacles to wear as an alternative. Defence spectacles are provided from public funds if required for the efficient performance of duties, contact lenses are not.

**0511. Use of Contact Lenses**

a. Contact lenses may well provide advantages over spectacles enhancing peripheral vision and reducing reflection and aberration. They are also more compatible than spectacles with specialist equipment such as night vision goggles. Gas-permeable hard contact lenses cannot be recommended for military use as they cannot be worn on an extended wear basis should the need arise. Tinted lenses are also not permissible. The decision whether or not to wear contact lenses must remain with the individual. The individual must also be responsible for ensuring proper care of contact lenses. The vast majority of complications and ocular pathology arising from contact lens wear are associated with inadequate care of the contact lenses. Lenses must be of a soft type and are to be used on a daily wear basis but have the facility for extended wear if required. That is to say that in normal working they should be inserted at the start of the working day and removed before any periods of sleep but could be left in for an extended period should the operational need arise. The extended period should not be more than 7 days.

b. At all times a pair of spectacles of up to date prescription must be available to the individual. If either eye becomes red or painful the individual must remove both contact lenses and return to wearing his/her spectacles and report to a Medical Officer within 24 hours.

**0512. Application of Eyesight and Colour Perception Standards**

Specialisation/Branch	VA Standard	Colour Perception
<b>Officers</b>		
Aircrew	I	1
Warfare	II	1
ATC, FC, FDO	III*	2
RM Officers	III*	4
Pilots	I	1
Bridge Watchkeepers	II	1
All Other Officers	III*	4
<b>Ratings</b>		
Warfare Branch	II	3
Except:		
AW, AWW	I	3
Missile	I	3
WSM	II	4
REG	II	4
Fleet Air Arm		
ACMN	I	1
METOC	III*	3
PHOT	III*	3
AC	I	2
AH	III*	3
Engineering Branch	III*	4
Except:		
Air Eng Mechs	III*	2
Air Eng Artificers	III*	2
Air Eng Tech	III*	2
All Other Ratings	III*	4
<b>RM Other Ranks</b>		
Except:		
Aircrew	I**	1
Snipers	I**	3
Landing Craft	I**	2
Swimmer Canoeists	III*	3
<b>QARNNS</b>	III*	3

\* See Para 0501 *sub para b*

\*\* Contact lenses not permitted.

**0513. Deterioration of Eyesight in Service**

a. Any serving personnel whose unaided vision in the better eye falls below the standards for branch or the minimum standards for service (6/60 correction greater than  $\pm 6.0$  dioptres for personnel enlisted after 1 Jan 95 or maximum correction  $\pm 7.0$  dioptres before Jan 95) is to be referred for ophthalmic opinion and then to NSMBOS for determination of permanent medical category.

b. **Bridge Watchkeepers.** Officers with bridge watchkeeping responsibilities are required to remain within VA Standard II (corrected) and should be tested annually to ensure that this standard is maintained. Those with the following restrictions must be referred to a service consultant in ophthalmology and thence to NSMBOS to determine permanent medical category:

- (1) Those whose VA cannot be corrected to VA II.
- (2) Those who require greater than 6 dioptres correction to achieve VA II.
- (3) Those whose uncorrected vision is worse than 6/60 in either eye.

c. **Aircrew.** Aircrew who are found for the first time to require corrective lenses are to be refracted and then referred to Central Air and Admiralty Medical Board (CAAMB) for assessment of their flying medical category.

d. **Submarine Periscope Watchkeepers.** Submarine periscope watchkeepers whose correction is greater than  $\pm 3$  dioptres (ie outside the range of periscope optical correction) are to be referred for an ophthalmic opinion and thence to the Senior Medical Officer Submarines, Institute of Naval Medicine.

e. **Seaman Ratings.** Applicants for entry must meet Visual Standard II. However, OM Ratings for AW/AWW Specialisation must achieve Visual Standard I in service.

f. **Royal Marines Officers and Other Ranks.** Royal Marines personnel specialising in Aircrew, bridge watchkeeping and other specialist duties must achieve the standards for that specialisation.

**0514. Binocular Efficiency**

Bifoveal fixation and perfect binocular functions are not essential requirements unless specified but a squint must be cosmetically acceptable. Limits to heterophoria where applicable are as follows:

Function	Efficiency	Applicable
Maddox rod at 6 metres	Esophoria 6 prism dioptres Exophoria 6 prism dioptres Hyperphoria 1 prism dioptre Hypophoria 1 prism dioptre	All RN RM Aircrews
Maddox rod at 33 cm	Esophoria 6 prism dioptres Exophoria 16 prism dioptres Hyperphoria 1 prism dioptre	
Other functions	Recovery on cover test must be rapid, convergence must be maintained at less than 10 cm, stereopsis must be present; anisometropia must not exceed 3.00 ESE.	

**0515. Refraction**

These eyesight standards set limits to the amount of refractive error allowed and it is essential that this is determined at the entry medical examination:

- a. **Hypermetropia.** In a young person, considerable hypermetropia may be present without any apparent effect on either near or distance vision. If hypermetropia is suspected the individual should be referred to an optician for refraction.
- b. **Myopia.** Short sight affects distance visual acuity and its presence is obvious. The candidate should be asked to provide a spectacle prescription that will show the degree of myopia present.

**0516. Other Abnormalities of the Eyes or Visual System**

Any abnormalities of the eye or visual system (congenital, traumatic or pathological) may be cause for rejection even though visual function is within the standard limits, a decision regarding visual fitness for duty must then be made by a consultant ophthalmologist.

**0517. Annual Personal Weapon Test**

It is a PJHQ mandate that all personnel deploying to an operational theatre must have passed the Annual Personal Weapon Test (APWT). To fire an SA80 rifle effectively the user must be able to independently close the LEFT eye. As part of the Entry Medical the Armed Forces Career Office Medical Examiners (AFCO MEs) are to test for the ability to close the LEFT eye independently. Those unable to do so are unfit for entry.