NAndtB/25 - Training Pack for Personnel Required to Administer Near Vision Test per NANDTB/24

Compiled by the UK NANDTB
Background

- EN4179:2005 required near vision acuity to Jaeger No. 1 or equivalent, not less than 30cm/12 in in at least one eye, natural or corrected.
- Vision acuity in EN4179:2009 changed to 20/25 (Snellen) at 16” (42cm) +/- 1” (2.54cm) or equivalent in at least one eye, natural or corrected.
- There are methods other than Snellen for examining near vision eyesight acuity and there is considerable debate even within the medical field as to “equivalency” of vision requirements.
- Responsible Level 3’s will find it difficult to obtain clearly defined supporting medical evidence regarding the equivalency of vision requirements.
- The numerous potential avenues for equivalency provides scope for variation and error.
Compliance (pre 2011)

EN4179/NAS410

20/25 (Snellen) @ 16” +/- 1”

Acceptable Equivalents

Jaeger Chart

#1 @ ≥12”

Point Chart

N4 @ ≥16”

FAA 8500-1

Other ‘Snellen’ 16” charts

Sloan Characters

‘Sans Serif’ font

Potential Others

BS4274-1 (2003)

ISO8596 (2009)

Distance reading standards Not suitable for near vision
Global Standard

- An agreed global standard for NDT personnel would eliminate the problems of variation and mitigate the risk of error. A standardised solution is required taking the following essential attributes into consideration:
  - Optotype
  - Optotype size based upon 5 minutes of arc
  - Optotype spacing
  - Eye to optotype distance
  - Illumination
  - Acceptance criteria
  - Use of both eyes (as used for inspection)

- **Optotype** = the E shaped character of defined proportions and of various sizes that are used to verify near vision acuity
UK NANDTB Policy

- Single Option - Visual acuity tests to be carried out:
  - Using the UK NANDTB chart and NANDTB/24
  - Using the actual eye wear used in the inspection process
    - Note: This includes corrective lenses and/or eye protection as normally used.

- “Equivalents” not permitted within UK jurisdiction
- Existing certification valid until expiration
- Responsible Level 3 accountable for training and delegations
  - Note: No Medical/Optical alternative test permitted (eg Optometrist Standard tests)

- Functional NEAR VISION Acuity Test
  - Not for colour vision
  - Not medical examination
  - Employers should consider this separately – as for VDU operators etc.
The vision examination for trainee, Level 1-Limited, Level 1, Level 2, and Level 3 personnel shall assure that the applicant’s near vision and colour perception meet the requirements of Table 5. Vision requirements do not apply to instructors or auditors. Near vision tests shall be administered annually and colour perception tests shall be administered at least every five years. The employer shall ensure the flow-down of the Table 5 vision requirements to all necessary personnel and/or facilities. These tests shall be administered by trained personnel designated by the Responsible Level 3 or by qualified medical personnel. When vision correction is necessary to pass the visual acuity exam, vision correction shall be worn during all testing/inspections. Any limitations in colour perception shall be evaluated by the Responsible Level 3 prior to certification and must be approved in writing.

Table 5 — Vision requirements Examination Requirements

Near Vision - 20/25 (Snellen) at 16" (42 cm) ± 1" (2.54 cm) or equivalent a in at least one eye, natural or corrected.

 Colour Perception - Personnel shall be capable of adequately distinguishing and differentiating colours used in the process involved.

Equivalency to be determined by the Responsible Level 3.
UK NANDTB Advisory AD002 (iss 2)

Action:

The Tumbling E NDT near vision acuity test is downloadable via the UK NANDTB website.  
http://www.bindt.org/NANDTB

The controlling procedure, NANDTB-24, which defines how the test shall be administered and by whom is also available via the UK NANDTB website.

This test is deemed by the UK NANDTB as equivalent to the requirements of EN4179 (and NAS410).

This test maybe used with immediate effect. Employer written practices and/or procedures need to be revised to recognise the application of this NDT near vision acuity test.

As of 1st January 2011, application of this near vision acuity test to NDT personnel under UK jurisdiction will be mandatory. No other equivalents will be permitted.
The website of the UK's Aerospace NDT Board

Please click here to contact Mr. Alex Lambe or Mr. Jon Biddulph for any enquiries.

The Board is an independent national aerospace body chartered by the following aerospace prime contractors and design authorities:
NANDTB Vision Requirements

UK National Aerospace NDT Board

The labour document has been prepared by the UK NANDTB to address near vision acuity for NDT personnel where EN 4178/NAS 410 requirements apply.

This document specifies the form of the optocast, the test procedure and the acceptance level for near vision acuity of NDT personnel. It also addresses the qualification requirements for personnel permitted to carry out the test. This standard only addresses near vision acuity under defined conditions similar to those encountered during routine NDT inspection. It does not address an individual’s overall visual acuity and users are advised to consider the need for a general eye examination by specialist medical personnel to ensure general vision acuity is appropriate for job function. It is not intended that this document address any colour vision requirement.

To download this document click here.
To download the tumbling F Charts click here.

© UK NANDTB

Nadcap®
Welcome to the website for the UK NAndT Near Vision Standard test forms. Below are links for both the test form itself and the instructions for administering the test. This content requires Adobe PDF reader which can be downloaded HERE.

To generate a random test PDF, click the link opposite. To ensure correct size of the printed test select 'Page Scaling - none' in the print menu. See instructions for print quality information.

To view the instructions form for administration of the test click the link opposite.

To return to the previous page click the 'BACK' button opposite.

© 2010 E M Inspection Co Ltd
UK NAndtB 24 Annex C

NDT Near Vision Acuity Test

To be administered in accordance with the conditions defined in the UK NAndtB 24 Instruction document.

---

Test 65

Block A  
250 mm (±5mm)  
Block B

---

LINE  
HEIGHT

---

w e m e w  
w m w e e  
w e m e w  
w e m e w  
w e m e w  
w e m e w  
w e m e w  
w e m e w  

---

Line 1  
Line 2  
Line 3  
Line 4  
Line 5  
Line 6  
Line 7  
Line 8  
Line 9  
Line 10

---

Copyright © 2005 NAndtB - All rights reserved.
Welcome to the website for the UK NAndTB Near Vision Standard test forms. Below are links for both the test form itself and the instructions for administering the test. This content requires Adobe PDF reader which can be downloaded [HERE].

To generate a random test PDF, click the link opposite. To ensure correct size of the printed test select 'Page Scaling - None' in the print menu. See instructions for print quality information.

To view the instructions form for administration of the test, click the link opposite.

To return to the previous page, click the 'BACK' button opposite.

© 2010 E M Inspection Co Ltd
**UK National Aerospace NDT Board**

c/o The British Institute of NDT
Newton Building, St George’s Avenue
Northampton, NN4 6JB
United Kingdom

Tel: +44 (0)1604 803 011
Fax: +44 (0)1604 803 010
E-mail: alex.lembe@na.ndt.org

**NA NDT B**
© UK NA NDT B

---

**Contents**

<table>
<thead>
<tr>
<th>Contents</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword</td>
<td>3</td>
</tr>
<tr>
<td>Introduction</td>
<td>3</td>
</tr>
<tr>
<td>1. Scope</td>
<td>2</td>
</tr>
<tr>
<td>2. Normative references</td>
<td>2</td>
</tr>
<tr>
<td>3. Terms and definitions</td>
<td>3</td>
</tr>
<tr>
<td>4. Chart-Peel Quality</td>
<td>3</td>
</tr>
<tr>
<td>5. Health and Safety</td>
<td>3</td>
</tr>
<tr>
<td>6. Personnel administering the Test</td>
<td>3</td>
</tr>
<tr>
<td>7. Test Charts</td>
<td>3</td>
</tr>
<tr>
<td>8. Test Procedure</td>
<td>3</td>
</tr>
<tr>
<td>8.1 Test correlates</td>
<td>4</td>
</tr>
<tr>
<td>8.2 Data to Chart Distance</td>
<td>4</td>
</tr>
<tr>
<td>8.3 Candidate’s Response</td>
<td>4</td>
</tr>
<tr>
<td>8.4 The Test</td>
<td>5</td>
</tr>
<tr>
<td>8.5 Acceptance Level</td>
<td>5</td>
</tr>
<tr>
<td>Annex A</td>
<td>6</td>
</tr>
<tr>
<td>Annex B</td>
<td>7</td>
</tr>
<tr>
<td>Annex C</td>
<td>8</td>
</tr>
</tbody>
</table>

**NA NDA B4 - Near Vision Standard**

Page 1 of 5

Issued: 03/03/10
Salient Points

- Failure to meet the defined level of acuity, in some cases, may be due to the quality of the test chart produced. Care should be exercised to ensure that the quality of the test chart is appropriate and where personnel fail to meet the required level the quality of the chart should be reviewed before declaring an individual has inadequate near vision.
- Personnel shall be adequately trained before administering this test. Training and delegation of personnel authorised to conduct tests shall be the responsibility of the Responsible Level 3. Such nominations shall be made in writing and form part of the formal records for that individual. Medical personnel including Optometrists are not exempt from this requirement.
- The two blocks of optotypes (Annex A) have been developed to accommodate the different types of printing equipment commonly encountered. The block which prints best shall be used.
- The annotated 250mm distance between the defined marks shall be measured and shall not be less than 245mm nor more than 255mm.
- The charts are generated randomly.
- Visible, white light of 500 ±200 lux shall be used to illuminate the chart.
- The chart shall be positioned on a flat surface and the candidate shall move towards the chart to the test distance of 400 ±25 mm.
- Candidates shall wear the same eyewear, if any, as used during routine NDT inspection. This may be personal protective equipment and/or corrective lenses.
- It is expected that the candidate will be able to identify the orientation of each of the individual optotypes. “UP, DOWN, LEFT and RIGHT” or similar.
The Test

- The test shall not be limited to a test of an individual eye. Both eyes shall be used together as for normal NDT inspection.
- The examiner will have established which of the two blocks of optotypes are to be administered as the test and the chart may optionally be identified by a pen line through the redundant block.
- The candidate shall identify the characters starting from the left side of line 1 moving to the right until a response is given for each of the 5 characters. This shall be repeated for lines 2 onwards until the candidate reaches the limit of their capability.
- The examiner should prepare a results sheet in advance or record the candidate’s response in a manner that allows verification of correctness.
- Near vision acuity is considered acceptable where the candidate correctly identifies all the individual optotypes (5 out of 5 on each line) for lines 1 to 9 inclusive. Where a candidate fails to achieve this the examiner shall verify that the test chart or test conditions were not the cause of failure before sending the candidate for further tests for corrective lenses or a more comprehensive assessment of near vision acuity.
### Record

- Use eyesight test record card

- Alternatively, the actual vision chart used maybe maintained as the record along with the following:
  - Name of individual
  - Check number
  - Dept. No
  - Date of Birth
  - Date tested
  - Optical aids worn during test
  - Acuity level achieved
  - Name/signature of trained and approved administrator
Benefits

• Is Universal - No language/alphabet dependency
• Based on vision acuity – not reading ability
• Based on resolution of 6 mins of arc - as 20/25 Snellen
• Can be administered locally
• Directly controlled by Responsible Level 3
• Basically “fail safe”
• Administered under defined conditions
• Auditable
• Based on accepted scientific principles (eg BS 4274-1, ISO 8596)
• Can be carried out in inspection area
• May be carried out in conjunction with annual performance review