



Ministry of Defence

Defence Standard

00-25 (PART 1)/Issue 2

30 September 1987

**HUMAN FACTORS
FOR DESIGNERS OF EQUIPMENT
PART 1: INTRODUCTION**

This Defence Standard supersedes
Def Stan 00-25 (Part 1) Issue 1
dated 29 November 1983

AMENDMENTS ISSUED SINCE PUBLICATION

AMD NO	DATE OF ISSUE	TEXT AFFECTED	SIGNATURE & DATE

Revision Note

Issue 1 of this Part was published in advance of the other Parts. This revision more fully reflects the full range and scope of the twelve Parts of the Standard.

Historical Record

Human Factors for Designers of Naval Equipment 1971. (A Naval handbook in two volumes.)

Def Stan 00-25: Human Factors for Designers of Equipment. (A tri-Service Standard in twelve Parts).

Arrangement of Defence Standard 00-25

The arrangement of the Parts comprising Def Stan 00-25 is shown below:

- Part 1 - Introduction
- Part 2 - Body Size
- Part 3 - Body Strength and Stamina
- Part 4 - Workplace Design
- Part 5 - Stresses and Hazards
- Part 6 - Vision and Lighting
- Part 7 - Visual Displays
- Part 8 - Auditory Information
- Part 9 - Voice Communication
- Part 10 - Controls
- Part 11 - Design for Maintainability
- Part 12 - Systems

HUMAN FACTORS FOR DESIGNERS OF EQUIPMENT

PART 1: INTRODUCTION

PREFACE

This Defence Standard supersedes
Def Stan 00-25 (Part 1)/1 dated
29 November 1983

i In 1977 the Senior Psychologist (Naval) forwarded a proposal for the production of a tri-Service human factors handbook, thus bringing together in a single source the individual human factors efforts of each Service. This proposal went ahead under the auspices of the Steering Committee on the Tri-Service Human Factors Handbook (SCOTSH). It was subsequently arranged for the handbook to be published by the Directorate of Standardization as Def Stan 00-25 (Parts 1-12).

ii This Defence Standard should be viewed as a permissive guideline, rather than as a mandatory piece of technological law.

iii Where safety and health is concerned, particular attention is drawn to this Standard as a source of advice on safe working limits, stresses and hazards etc.

iv Users of this Standard shall note that some material contained in the other Parts may be claimed to be subject to copyright in this or other countries. In such cases copyright where known is acknowledged.

v This Standard has been devised for the use of the Crown and of its contractors in the execution of contracts for the Crown and, subject to the Unfair Contract Terms Act 1977, the Crown will not be liable in any way whatever (including, but without limitation, negligence on the part of the Crown, its servants or agents) where the Standard is used for other purposes.

vi This Standard has been agreed by the authorities concerned with its use and shall be incorporated whenever relevant in all future designs, contracts, orders etc and whenever practicable by amendment to those already in existence. If any difficulty arises which prevents application of the Defence Standard, the Directorate of Standardization shall be informed so that a remedy may be sought.

vii Any enquiries regarding this Standard in relation to an invitation to tender, or a contract in which it is invoked, are to be addressed to the responsible technical or supervising authority named in that invitation to tender or contract.

1 Scope

This Part of this Defence Standard describes the aim, background and structure of the other Parts.

2 Aim

The principal aim of Def Stan 00-25 is to provide an up-to-date source-book of Human Factors (Ergonomics) data and guidance for designers of Defence material. Particular care has been taken to make the Standard applicable across all three Services. It is important to note that it has been written and edited for a primary readership comprising designers representing a wide spectrum of technical background and knowledge. As a consequence of this the subject matter of the Standard is very broad and the text has been deliberately structured to include extensive references and bibliography lists in order to direct readers to more detailed reference works as appropriate. Those readers with a Human Factors specialist background should find the Standard to be a valuable data summary.

2.1 Advances in technology have inspired important advances in the design and development of equipment and facilities for use by the Armed Forces. Arising from this there has been a tendency in recent years for designers to commit themselves to inexorable increases in equipment complexity. More often such equipment interfaces with, or is directly controlled by one or more human operators. In these circumstances Human Factors has a vital role in providing designers with information on behavioural and biomedical aspects of human performance. The subject matter of Human Factors is therefore very wide, covering main subject disciplines such as physiology, psychology and sociology, also recruitment and training of personnel, job design, and career planning.

2.2 Experience has shown that it is essential for the Human Factors requirements to be considered early in the design phases of procurement of material. This optimization of the man-machine combination will contribute to a result which most closely matches initial design performance predictions and costs.

3 Background

Authors for the various Parts have been selected and commissioned by SCOTSH for their specialist expertise and are drawn from MOD, Industry and the Universities. Subsequent editing has been undertaken by a Working Group, reporting to SCOTSH, whose Chairman and members consist of Human Factors specialists employed by MOD.

3.1 Membership of SCOTSH and its Working Group reflect the tri-Service nature of the Standard, this has been provided by the following Service Human Factors Establishments and MOD branches.

Senior Psychologist (Naval)	Science 3 (Air)
Admiralty Research Establishment	HQ RAF Support Command
Institute of Naval Medicine	Royal Aircraft Establishment
A Org & Sec (HF)	Institute of Aviation Medicine
Army Personnel Research Establishment	Directorate of Standardization

4 Structure

4.1 The Standard has been structured to contain human data, design guidance and a comprehensive overview of system design and its evolution. Part 12 can be considered to be the foundation upon which the whole of the Standard rests.

- Part 1: Introduction
Aim and Background.
- Part 2: Body Size
Structural and functional anthropometrics.
- Part 3: Body Strength and Stamina
Factors affecting posture and work capacity.
- Part 4: Workplace Design
Functional anthropometrics within the workspace envelope.
- Part 5: Stresses and Hazards
Environmental factors which affect work efficiency.
- Part 6: Vision and Lighting
Visual performance and lighting design.
- Part 7: Visual Displays
Display visibility, comprehension and presentation.
- Part 8: Auditory Information
Properties, effects of noise, signals recognition.
- Part 9: Voice Communication
Speech mechanism, auditory threshold and signal processing.
- Part 10: Controls
Optimum size, shape and dynamics relevant to the control task.
- Part 11: Design for Maintainability
The philosophy of maintainability and requirements of the maintainer.
- Part 12: Systems
Overview of system design.

Two or more Parts may apply to any one equipment and it is, therefore, essential that all Parts be read and used where appropriate.

4.2 Complementing Def Stan 00-25 and two video films -

Design of Equipment
The Human Factor

Design of Equipment
The Human Factor
Light and Vision

A2982, running time 17 mins

A2324, running time 11 mins

The above films are available on loan from the following sources:

4.2 (Contd)

MOD - Directorate of Naval Education and Training Support (DNETS)
Old Admiralty Building, Spring Gardens
London SW1A 2BE

Non MOD - Services Sound and Vision Corporation
Chalfont Grove, Gerrards Cross
Bucks SL9 8TN

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Ministry of Defence
Directorate of Standardization
Kentigern House
65 Brown Street
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The following Defence Standard file reference relates to the work on this Standard - D/D Stan/328/1/1.

Contract Requirements

When Defence Standards are incorporated into contracts users are responsible for their correct application and for complying with contract requirements.

Revision of Defence Standards

Defence Standards are revised when necessary by the issue either of amendments or of revised editions. It is important that users of Defence Standards should ascertain that they are in possession of the latest amendments or editions. Information on all Defence Standards is contained in Def Stan 00-00 (Part 3) Section 4, Index of Standards for Defence Procurement - Defence Standards Index published annually and supplemented periodically by Standards in Defence News. Any person who, when making use of a Defence Standard encounters an inaccuracy or ambiguity is requested to notify the Directorate of Standardization without delay in order that the matter may be investigated and appropriate action taken.

DEF STAN 00-25 (PART 1)/ISSUE 2

HUMAN FACTOR FOR DESIGNERS OF EQUIPMENT

PART 1: INTRODUCTION

AMENDMENT 1 (Corrections)

1. Page 3, Clause 4.2

Delete: A2324
Substitute: A3234

2. Page 4, Clause 4.2 (Contd)

Delete: in toto
Substitute: MOD - Services Sound and Vision Corporation
Chalfont Grove
Gerrards Cross
Bucks SL9 8TN

Non-MOD - Videotel Marine International Ltd
Ramillies House
1-2 Ramillies Street
London W1V 1DF

(for hire or sale)

3. Make a note of this amendment on the amendment record.

D/D Stan 328/1/1

19 April 1988
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