HEALTH TECHNICAL MEMORANDUM 62

Building Component Series
Demountable storage system

2005

STATUS IN WALES

APPLIES

This document replaced
HTM 62 Building Component Series
Demountable storage system
1989

GIG CYMRU NHS WALES
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Status Note amended March 2013

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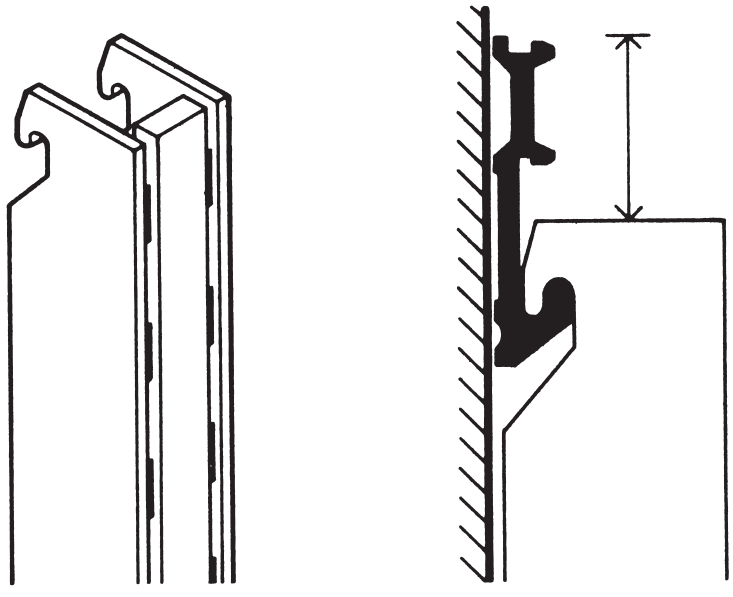

HTM 62
Demountable storage system

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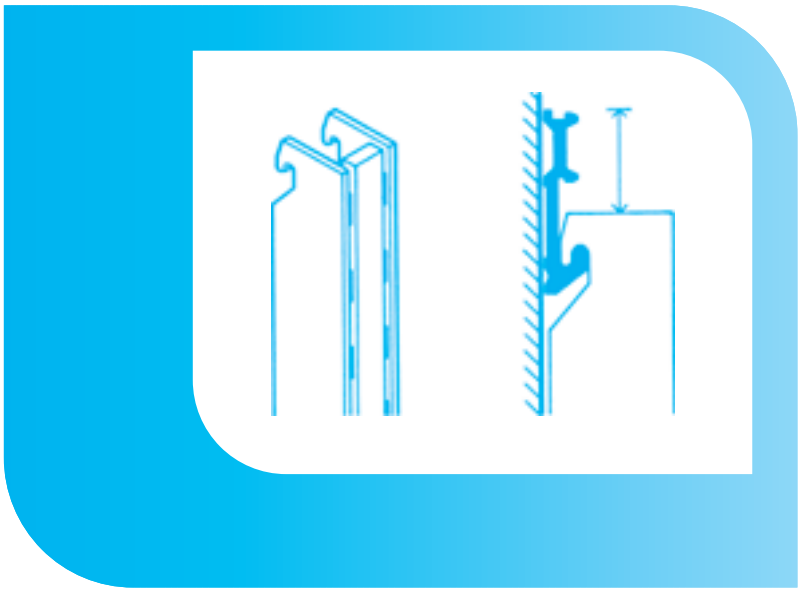

HTM 62
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London: The Stationery Office

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Online

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ISBN 0-11-322690-X

First published 1989; second edition 2005

Printed in the United Kingdom for The Stationery Office

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Contents

1 Introduction

BACKGROUND

1.1 This is one of a series of Health Technical Memoranda which provide specifications and design guidance on building components for health buildings.

1.2 The numbers and titles of the HTMs in the series are:

54 User manual

55 Windows

56 Partitions

57 Internal glazing

58 Internal doorsets

59 Ironmongery

60 Ceilings

61 Flooring

62 Demountable storage system

63 Fitted storage system

64 Sanitary assemblies

66 Cubicle curtain track

67 Laboratory fitting out systems

68 Duct and panel assemblies

69 Protection

71 Materials management modular storage.

1.3 To reduce development costs and timescale to a minimum, the demountable storage system has been developed around certain components for which patent and copyright are held by one company.

1.4 Other proprietary systems may be offered which satisfy the criteria.

SCOPE AND STATUS

1.5 This HTM offers guidance on the technical design and output specifications of a demountable storage system suitable for use in health buildings.

1.6 It is intended to provide users and manufacturers with an achievable solution to the problems associated with fitted installations.

1.7 It does not preclude the possibility of the development and introduction to the NHS of alternative versions of a demountable storage system in due course.

1.8 Paragraphs 3.3–3.28 on the description of support components provide outline descriptions of the components around which the system has been developed and which (with the exception of the mobile support units) are obtainable only from the patent and copyright holder named in that section.

1.9 Paragraphs 3.37–3.98 on the description of user components provide outline descriptions of components which (together with the mobile support units) are open to manufacturing and supply competition.

1.10 The content of this HTM does not diminish either the manufacturer's responsibility for fitness for purpose of products or the design team's responsibility for selection and application of products to meet project requirements. Design teams are also reminded of their obligations under the Construction, Design and Management (CONDAM) Regulations 1994 (as amended 2000) to ensure safe construction.

RELATIONSHIP TO OTHER DATA

1.11 The main sources of data used in the preparation of this HTM are listed in the References section.

1.12 This HTM was prepared for publication in January 2005. After this date, readers should ensure that they use the latest or new edition of all building legislation, British Standards etc, which may post-date the publication of this document.

1.13 First preference should be given to products and services from sources which have been registered under BSI Quality Assurance procedures or other certification schemes. Suppliers offering products other than to British Standards should provide evidence to show that their products are at least equal to such Standards.

1.14 Any enquiries regarding the technical content of this HTM should be e-mailed to nhsestates@dh.gsi.gov.uk.

2 System description

GENERAL PRINCIPLES

2.1 The system is based on a horizontal rail fixed to walls at door-head height.

2.2 Components providing a wide range of storage, work surface and other user facilities (referred to collectively as "user components") are suspended free of wall and floor surfaces:

- either directly from the rail;
- or on slotted uprights hooked onto the rail;
- or on mobile floor-standing frames (referred to collectively as "support components").

2.3 The only permanent fixings are between rail and wall. All other connections are of the placement type, allowing complete freedom of movement and interchange of component parts within the functional and dimensional constraints of the system.

BENEFITS

2.4 The system offers the following benefits when compared with a fitted system:

- greater flexibility in design briefing, and capability to respond to changes in user requirements, right up to the commissioning stage;
- reduction of builders' work to the fixing of the rail;
- corresponding reduction in requirements for supervision of work on site, "snagging" etc;
- user capability to change layouts without recourse to specialist skills and without risk of damaging engineering services or wall surfaces;
- a wide choice of storage and other facilities to meet specific and precisely defined user requirements;
- proprietary components can be accommodated in the system;
- more effective cleaning and maintenance of the component parts of the system, walls and floor;
- capability of maximising storage capacity within a given space.

MAIN DIMENSIONS

Vertical

2.5 The main vertical dimensions for the system are derived from:

- the location of the rail on the wall;
- standard lengths of slotted upright (1844 mm long; 919 mm short);
- requirements for coordination with engineering services.

2.6 Thus in Figures 1 and 2:

- X is the dimension from finished floor level to top of rail. This must be determined by requirements for alignment of the rail with adjacent doorsets and other design considerations;
- Y is the installed length of the slotted upright measured from top of rail. See paragraph 3.8 for the dimensional relationship between top of rail and top of slotted upright and the standard long and short lengths of the latter;
- Z is the dimension from finished floor level to the bottom end of an installed slotted upright.

2.7 In the case of the long slotted upright (see Figure 1), the Z dimension will depend on requirements for the location of engineering terminals.

2.8 In the case of the short slotted upright, the Z dimension will depend on requirements for clearance over fixtures (for example a radiator) or over mobile equipment parked against the wall (as illustrated in Figure 2).

2.9 In either type of situation, the required Z dimension can be achieved by site-cutting of the slotted uprights to reduce their length.

2.10 All other vertical dimensions within the Y zones are determined by the vertical dimensions of the user components and whether they are of the type which are supported by slotted uprights or directly by the rail. In the former case, a number of alternative vertical locations are possible; in the latter case, only one.

Figure 1 Configuration with long slotted upright

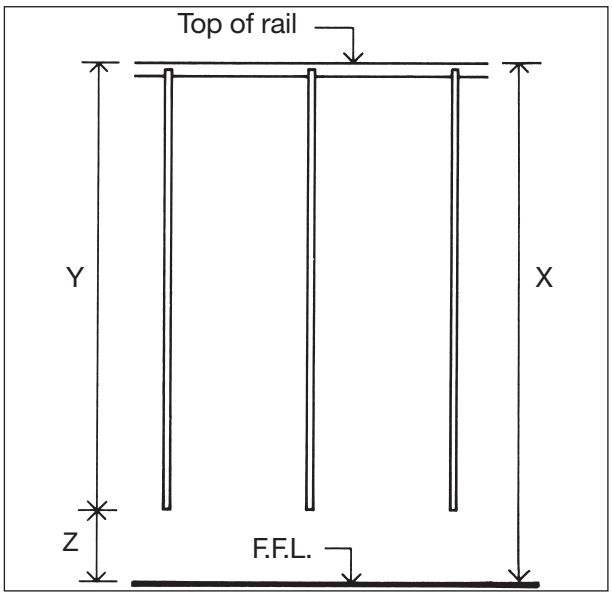
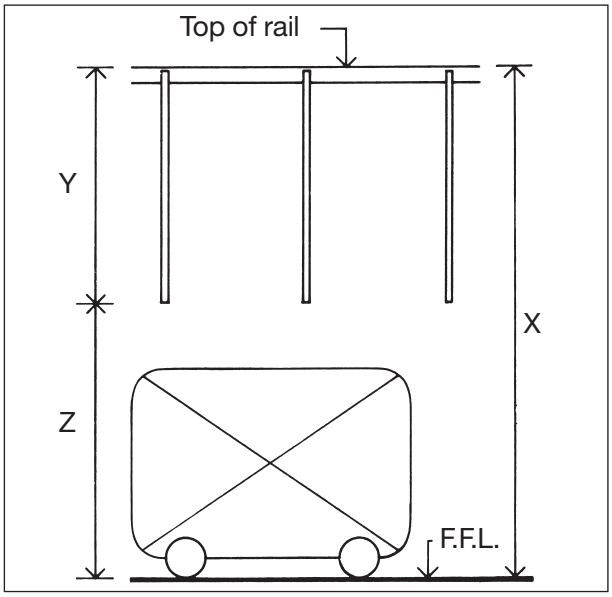


Figure 2 Configuration with short slotted upright

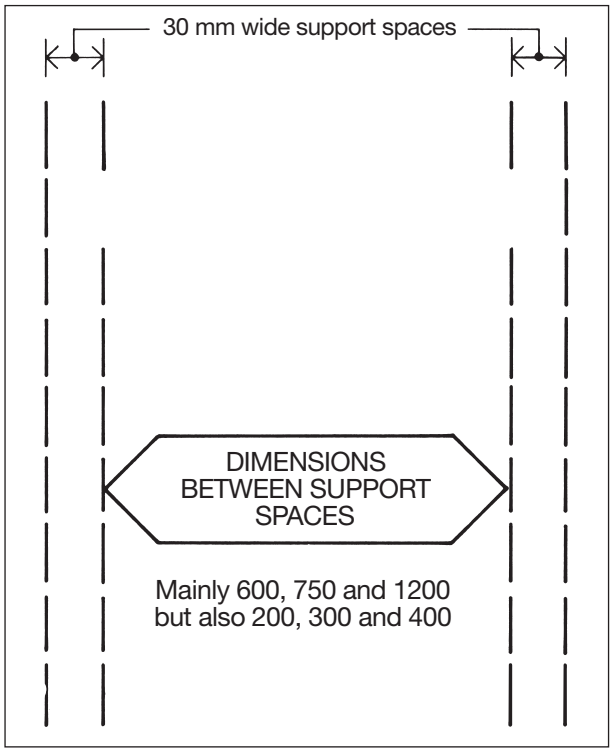


Horizontal

2.11 Horizontal dimensions are dependent on the particular form of slotted upright on which the system is based and its relationship to the user components it supports. The preferred dimensions are 600 mm and 750 mm and are based on proprietary user components. In the case of the slotted uprights supplied by Toprail Systems Limited (see paragraphs 3.3–3.28), horizontal dimensions relate to the space between uprights.

2.12 The support spaces are not needed where user components are connected directly to the rail. However, they may be retained as space available within the overall width of an installation to allow for possible later substitution of user components supported on slotted uprights (see Figure 3).

Figure 3 Horizontal dimensions



3 Component parts of the system

LIST OF COMPONENTS

Support components

3.1 The following list outlines the range of support components:

- rail and cover;
- end stops for rail;
- slotted uprights;
- slotted upright security clip;
- book-end brackets;
- heavy duty brackets;
- heavy duty rail;
- small insert support set;
- large insert support set;
- carcass security set;
- carcass hook;
- board hook;
- S-hook;
- mobile support units.

User components

3.2 The following list outlines the range of user components:

- Open storage:
  - (i) carcass units;
  - (ii) built-up units;
- Closed storage:
  - (i) cupboards with up-and-over door;
  - (ii) cupboards with side-hung doors;
  - (iii) medicines cupboard (lockable);
  - (iv) urine test cupboard (lockable);
  - (v) drawer units;
- Boards and panels:
  - (i) dry marker boards;
  - (ii) pin boards;
  - (iii) equipment panels: type A;
  - (iv) equipment panels: type B;
  - (v) grooved panels;
  - (vi) instrument rail panel;
  - (vii) dispenser panels;
- Shelves:
  - (i) one-piece shelves;
  - (ii) three-piece shelves;
  - (iii) writing or display shelves;
  - (iv) work surface shelves;
  - (v) filing shelves;
  - (vi) heavy duty shelves;
- Ancillary components:
  - (i) tote boxes and other proprietary containers;
  - (ii) catheter trays;
  - (iii) accessory backboard;
- Worktops:
  - (i) aluminium;
  - (ii) linoleum faced;
  - (iii) post-formed laminate-faced;
  - (iv) stainless steel (plain);
  - (v) stainless steel (dished).

DESCRIPTION OF SUPPORT COMPONENTS

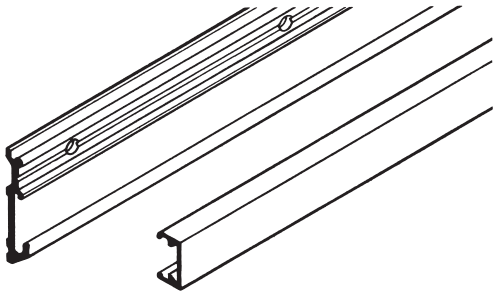
3.3 Except where otherwise stated the components shown in this section are fabricated from aluminium alloy with all exposed surfaces satin-anodised.

3.4 The following (paragraphs 3.6–3.27) are outline descriptions only and are not intended to be product specifications.

3.5 The product specifications of proprietary systems should be obtained from the manufacturers together with any technical details which manufacturers of the user components or users of the system may require.

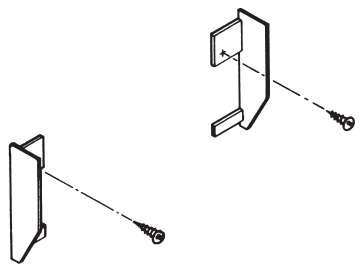
Rail and cover

3.6 These are supplied as a pair in 2400 mm lengths. The rail is 56 mm between top and bottom edges and has fifteen 7.25 mm diameter fixing holes at approximately 167 mm centres starting 30 mm from either end. The cover is secured by a snap-on action.



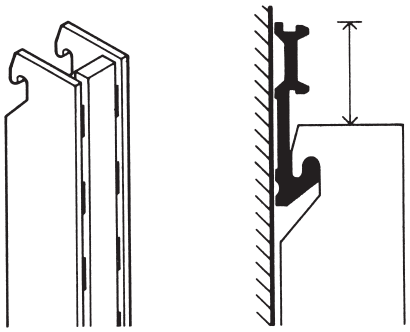
End stops for rail

3.7 These are supplied as a handed pair complete with screws. They are intended for use only where ends of rails are exposed.



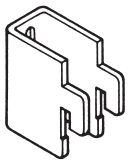
Slotted uprights

3.8 These are available in two lengths, long (1844 mm) and short (919 mm). Note the relationship of these to top of rail when installed.



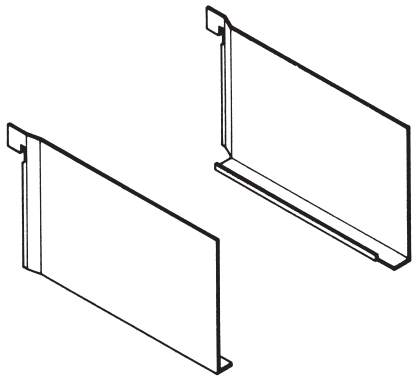
Slotted upright security clip

3.9 These are supplied singly without screws. They are intended for use in securing the bottom ends of slotted uprights to the wall.



Book-end brackets

3.10 These are supplied in handed pairs in two sizes to suit 250 mm and 325 mm deep shelves. The upstands engage in grooves in the underside of board material shelves. No fixings are required. They are also available in an epoxy-coated finish.



Heavy duty brackets

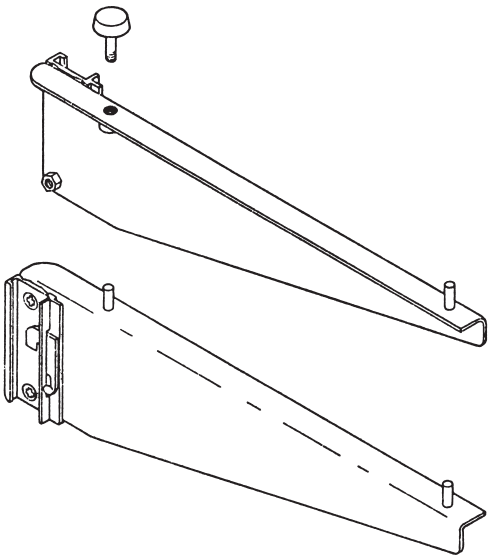
3.11 These are designed to support heavy duty shelves, worktops and sinks. They are supplied as handed pairs or as single intermediate supports.

3.12 The details of the top edge of these brackets vary according to the user components they are required to support. These variants are:

- one spigot at front end and threaded hole at rear to receive milled-head holding-down bolt which passes through the flange of a metal worktop or heavy duty shelf;

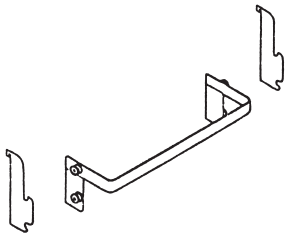
- spigots front and rear to engage in holes on underside of a board material worktop or heavy duty shelf.

3.13 Spigots can be removed when brackets are used as intermediate supports.



Heavy duty rail

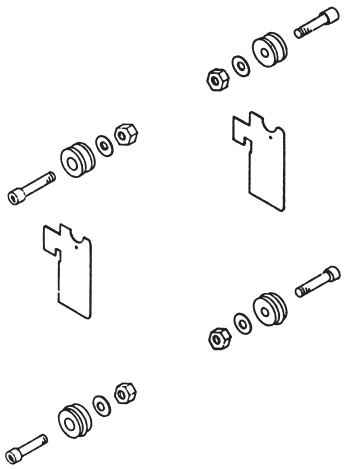
3.14 These are supplied with a large support insert set in 6 m widths only. The rail must be specified as having a particular purpose so that it can be supplied with hooks or other attachments (for example, for supporting items of orthopaedic equipment).



Small insert support set

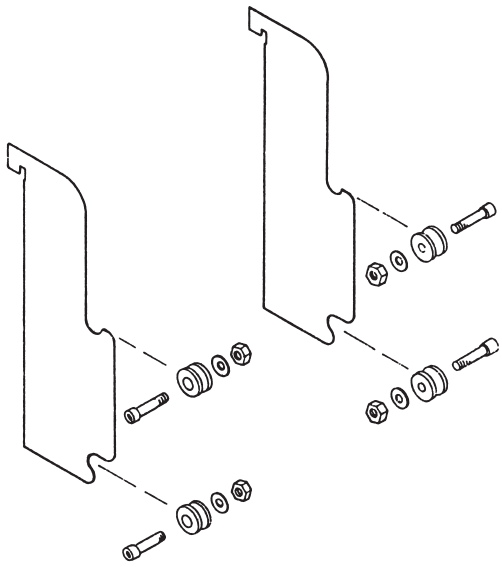
3.15 These are supplied as a set with a user component to be supported on slotted uprights. The two pairs of bobbins are pre-fixed to the user component and the inserts supplied loose.

3.16 When the latter are hooked into position on a pair of slotted uprights and the user component (with bobbins attached) offered up into position, the upper grooved bobbins engage on the inserts and the lower flanged bobbins engage in grooves in the slotted uprights.



Large insert support set

3.17 These are the same as the small insert support sets except that upper and lower bobbins are grooved and engage in the inserts. They are intended for heavy duty in situations involving fairly frequent relocation of the user component. For these reasons, their use in the system is limited to supporting the heavy duty rail (see paragraph 3.14), writing or display shelves (see paragraphs 3.77–3.79) and work surface shelves (see paragraphs 3.80–3.81).

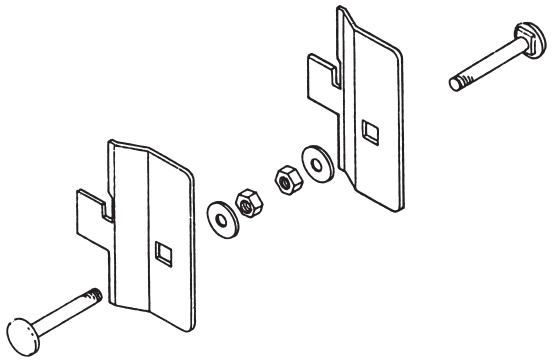


Carcass security set

3.18 These are supplied as a set for attachment to lockable closed storage units (other than medicine cupboards) to prevent unauthorised removal of the unit from an installed position.

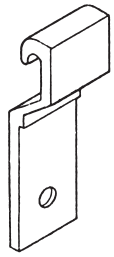
3.19 The hooks on the plates engage in the slotted uprights to prevent the unit being lifted off its insert supports.

3.20 The unit must be lockable to prevent access to the securing nuts and the sides of the carcass pre-drilled for the bolts.



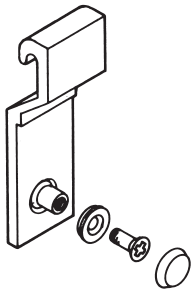
Carcass hook

3.22 These are supplied without fixing screws and designed for letting into the backs of carcasses which are required to hang direct from the rail.



Board hook

3.28 This has a similar function to the above, but is supplied with fixings for attachment to boards through the face of the material.



S-hook

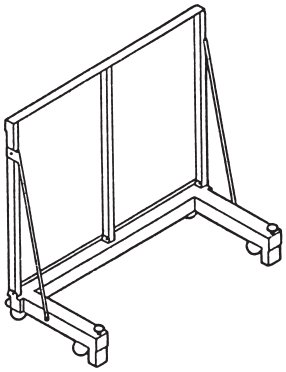
3.21 This is a general purpose hook for supporting items for which this method of suspension is appropriate.

Mobile support units

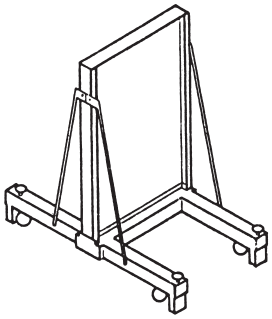
3.23 These units are intended to provide small areas of vertical surface with integral slotted uprights which will accommodate any components.

3.24 They are capable of being easily moved and parked to suit user activities and to facilitate floor cleaning.

3.25 They are available as high-backed single-sided units or as low-backed single-sided units thus:



or as low-backed double-sided units thus:



3.26 Single-sided units should fold for ease of transport and manoeuvring in narrow spaces; their front-to-back dimension should enable easy passage through door openings when in use. Also they should be designed to park back-to-back to form double-sided assemblies.

3.27 All units should be fitted with levelling/stabilising devices.

PERFORMANCE OF SUPPORT COMPONENTS

3.29 Loading tests on the rail and slotted uprights have shown that the support system itself is unlikely to fail due to overloading in normal health building conditions. Tests showed that, when the rail was bolted to steel, the slotted upright failed at a load of 850 kg. This means that the construction and condition of the wall or partition and the type of fixing device employed are critical factors in determining the safe working load for a particular installation. Other factors that should be considered are:

- the amount of deflection in the rail, at points of connection of slotted uprights, which will be acceptable;
- the extent to which loads imposed on an installation might be increased by the users during its life as a result of changes in user requirements;
- the factor of safety applied in calculating a safe working load.

3.30 As a result of the tests referred to above, a safe working load is offered as general guidance only and is based on:

- a 265 mm rail with two fixings 30 mm from the ends of the rail mounted on a hollow plasterboard partition with two layers of 9.5 mm plasterboard installed in accordance with the relevant sections of BS 8212:1995;
- maximum deflection of the rail of 2 mm at the point of connection of a slotted upright;
- a factor of safety of 3;
- 6 mm diameter proprietary metal cavity fixing devices.

3.31 Within the above criteria, a safe working load of 25 kg per slotted upright can be considered.

3.32 In new hollow plasterboard partitions, a timber nogging fitted between metal studs at rail level and occupying the full width of the cavity should provide safe working loads. See HTM 56 – 'Partitions' for details of standards relating to strength and stability.

3.33 For installations to be mounted on existing hollow plasterboard partitions without timber noggings, the load-bearing performance of the partition may be improved by reinforcing the face of the plasterboard behind the rail with spacer strips.

3.34 New masonry walls and partitions designed and constructed in accordance with the relevant recommendations of BS 5628-1–3 and using fixings recommended by the masonry and fixings manufacturers, including the appropriate factors of safety, should provide safe working loads.

3.35 Safe working loads for installations mounted on existing masonry walls and partitions will depend on the condition of the masonry and the condition and thickness of plasterwork or other facing materials.

3.36 Users should make a careful assessment of local conditions, select suitable fixing devices and carry out loading tests to determine safe working loads for installations.

DESCRIPTION OF USER COMPONENTS

3.37 This section describes the component parts of the system from which the majority of storage requirements in health buildings can be met.

3.38 It is intended that all the user components covered in the following pages will be obtainable on a competitive basis from a number of sources.

3.39 To ensure fitness for purpose, and compatibility with the system, users are strongly advised to obtain products which comply with the performance requirements set out in BS 4875-5, 7 and 8.

3.40 The component illustrations in this section are intended to provide a general indication only of the system design requirements, and the descriptions are confined to:

- method of support;
- main dimensions;
- intended use (if not self-evident);
- reference to aspects of fitting out of the components etc, which will be subject to manufacturer design initiatives.

3.41 Coordinating dimensions are given as appropriate under the following designations:

H = the vertical height of the component;

W = the width of the component;

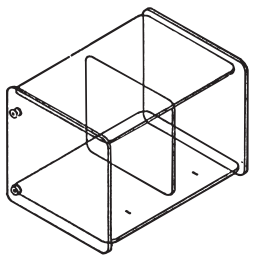
D = the depth (front to back) of the component.

3.42 All user components should be delivered to site complete with appropriate support components for attachment to slotted uprights or the rail.

3.43 For specifications of materials and finishes of these components, see the Appendix.

Open storage

Carcass units



H	W	D
425	600	325
425	600	425
425	750	325
425	750	425

3.44 These are connected to slotted uprights by a small insert support set as illustrated, or by integral hooks.

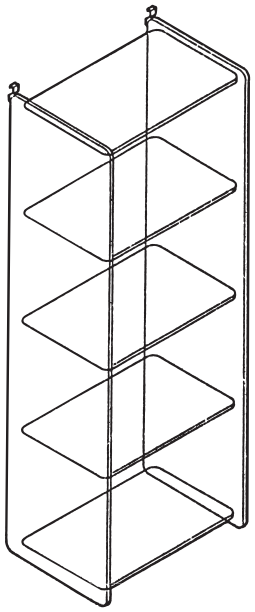
3.45 The deeper unit should be used under worktops or in the same bay as other user components of equal depth.

3.46 Refer to manufacturers' product data for details of alternative positions of vertical divider(s) and/or shelving.

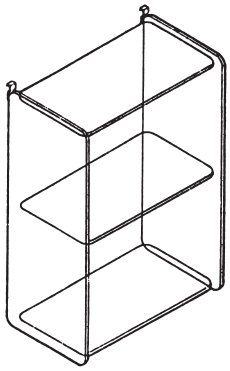
Built-up units

3.47 These are rail-hung or built-up on slotted uprights.

3.48 Refer to manufacturers' product data for availability and details of assembly of separate side panels, shelving and vertical dividers.



H	W	D
1800	600	325
1800	600	425
1800	750	325
1800	750	425



H	W	D
900	600	325
900	600	425
900	750	325
900	750	425

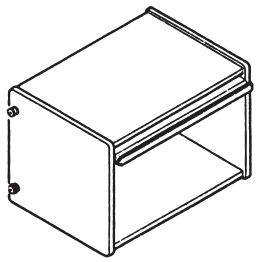
Closed storage

3.49 Carcass units connect to slotted uprights by small insert support sets. Hinged doors open through 180°.

Cupboards with up-and-over door

3.50 The deeper units should be used under worktops or in the same bay as other user components of equal depth. The 325 mm depth units are intended for use above worktop level, but care should be taken that the projection of the door when retracted does not create a hazard for users.

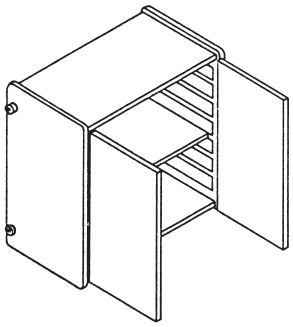
3.51 Refer to manufacturers' product data for details of alternative shelf and tray arrangements, optional provision of locks and details of up-and-over door gears.



H	W	D
425	600	325
425	600	425
425	750	325
425	750	425

Cupboards with side-hung doors

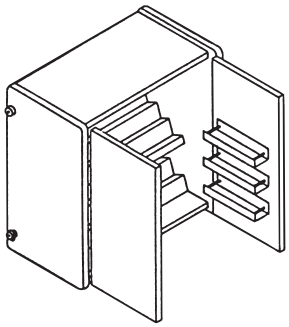
3.52 Refer to manufacturers' product data for details of alternative shelf and tray arrangements and optional provision of locks.



H	W	D
600	600	250
600	600	325
600	600	425
600	750	250
600	750	325
600	750	425

Medicines cupboard (lockable)

3.53 Refer to manufacturers' product data for details of alternative shelving arrangements and lock.



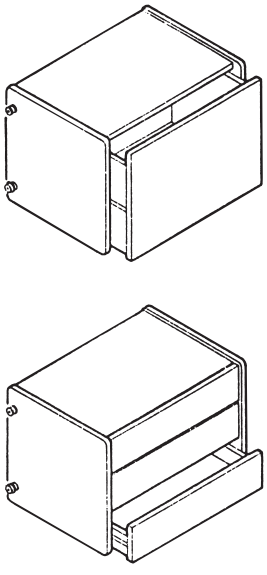
H	W	D
600	600	325

Urine test cupboard (lockable)

3.54 These are as illustrated above, but with a central vertical divider panel and any required combination of stepped and adjustable shelving.

Drawer units

3.55 Refer to manufacturers' product data for H dimensions of drawers, optional provision of locks and details of drawer sliding gear.



H	W	D
425	600	425

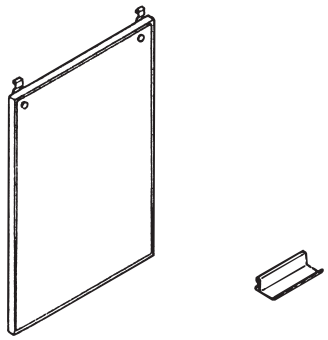
Boards and panels

3.56 H dimensions of rail-hung boards and panels are from top of rail.

Dry marker boards

3.57 These are rail-hung, complete with marker shelf.

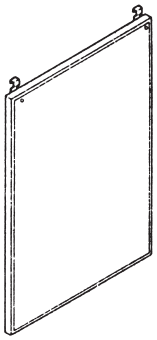
3.58 They are intended for use as dry-wipe boards and/or magnetic boards.



H	W	D
950	600	–
950	1200	–

Pin boards

3.59 These are rail-hung.

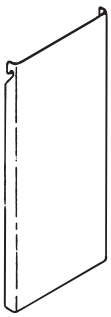


H	W	D
950	600	–
950	1200	–

Equipment panels: Type A

3.60 These are rail-hung.

3.61 They are intended for mounting a wide variety of equipment by drilling and bolting to the panels hung direct from the rail.

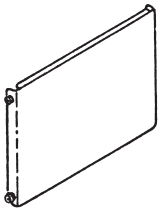


H	W	D
950	200	–
950	300	–
950	400	–
950	600	–
1200	200	–
1200	300	–
1200	400	–
1200	600	–

Equipment panels: Type B

3.62 These are connected to slotted uprights by small insert support sets.

3.63 They have the same function as the rail-hung equipment panels but because of their method of support can be located in a number of different positions vertically and above or below other similarly supported components.



H	W	D
300	600	–
600	600	–
1000	600	

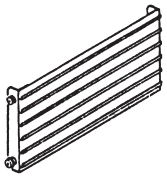
Grooved panels

3.64 These panels are connected to slotted uprights by small insert support sets.

3.65 They provide a means of supporting hook-on type components such as tote boxes and catheter trays.

3.66 If two or more of these panels are mounted side-by-side in adjoining bays, some types of hook-on components can bridge the gap(s) between them.

3.67 Refer to manufacturers' product data for details of the grooves and upstands on these panels, which may be discontinuous.

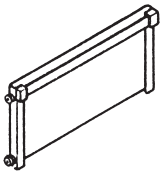


H	W	D
150	600	–
300	600	–
450	600	–
150	750	–
300	750	–
450	750	–

Instrument rail panel

3.68 These are connected to slotted uprights by a small insert support set.

3.69 They provide a means of supporting a length of proprietary instrument rail, thus enabling equipment compatible with the rail to be mounted and demounted at will.



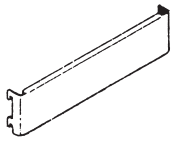
H	W	D
300	600	–

Dispenser panels

3.70 These are connected to slotted uprights by integral hooks.

3.71 They provide a means of supporting dispensers of various kinds directly above work surfaces.

3.72 They have integral hooks top and bottom which engage in the slotted uprights and prevent tilting of the panel when a dispenser is in use.



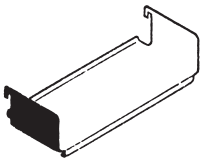
H	W	D
150	600	–
300	600	–

Shelves

One-piece shelves

3.73 These are connected to slotted uprights by integral hooks.

3.74 They are intended for use in medical/nursing areas as they have no joints and rounded internal angles for ease of cleaning.

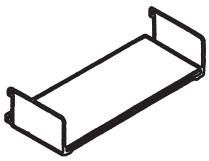


H	W	D
130	300	250
130	600	250
130	600	375
130	750	250
130	750	375

Three-piece shelves

3.75 These are connected to slotted uprights by book-end brackets.

3.76 They are intended for use in general areas. In particular the 7.5 m versions are intended for bulk storage.



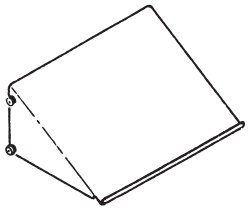
H	W	D
130	600	250
130	600	325
130	750	250
130	750	325

Writing or display shelves

3.77 These are connected to slotted uprights by large insert support sets.

3.78 They are intended for use in busy medical/nursing areas where staff need to do paperwork in a standing position.

3.79 Alternatively they can serve as display shelves in libraries or tutorial areas or for holding items such as X-ray envelopes which need to be kept flat.



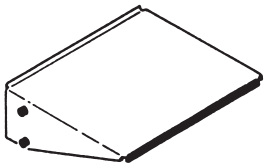
H	W	D
200	600	500
200	750	500

Work surface shelves

3.80 These are connected to slotted uprights by large insert support sets.

3.81 They are intended for use where:

- a single-bay width of work surface is acceptable;
- they will be fairly frequently adjusted for height or relocated; and
- they need not match adjoining work surfaces.

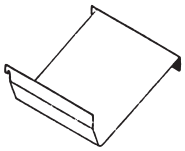


H	W	D
200	600	500
200	750	500

Filing shelves

3.82 These are connected to slotted uprights by integral hooks.

3.83 They are intended for use in areas involving office-type activities or in diagnostic areas for storing X-ray envelopes etc.



H	W	D
200	300	250
200	300	325

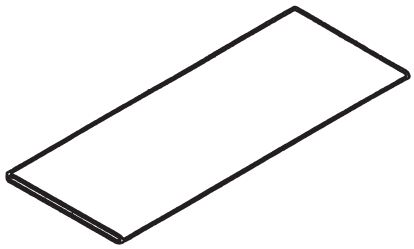
Heavy duty shelves

3.84 These are connected to slotted uprights by heavy duty support set brackets.

3.85 They are intended for use in providing for storage of linen, packaged goods etc.

3.86 These shelves are intended for use as discrete units located back to wall between a pair of slotted uprights.

3.87 In situations where maximum continuity of heavy duty shelving is desirable, the shelving units pass in front of the slotted uprights with ends butting on the centre lines of the uprights. Thus the widths of such units are not defined in the system and are subject to project requirements. In all such cases spans between support brackets will need to be compatible with loading requirements.



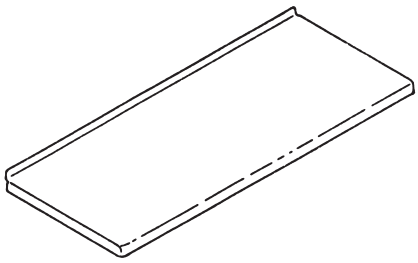
H	W	D
–	600	500
–	750	500

Worktops

3.88 These are connected to slotted uprights by heavy duty brackets: 600 mm and 750 mm units require a pair; 1200 mm and 1500 mm units require three brackets.

Aluminium

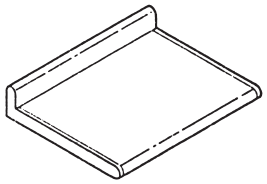
3.89 These are intended for use as work surfaces or as deep shelves in medical/nursing areas.



H	W	D
–	600	500
–	750	500
–	1230	500
–	1530	500

Linoleum faced

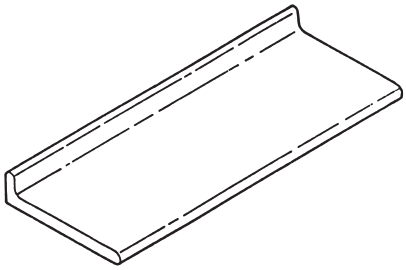
3.90 Intended for use at standing or sitting height where activities call for a softer desk-like surface.



H	W	D
200	600	500
200	750	500
200	1230	500
200	1530	500

Post-formed laminate-faced

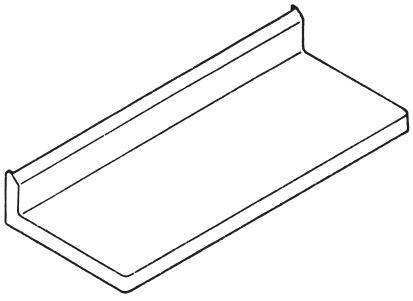
3.91 These are intended for use in medical/nursing or pharmacy manufacturing areas. In the latter situation, requirements for a greater height of the upstand may have to be met.



H	W	D
200	600	500
200	750	500
200	1230	500
200	1530	500

Stainless steel (plain)

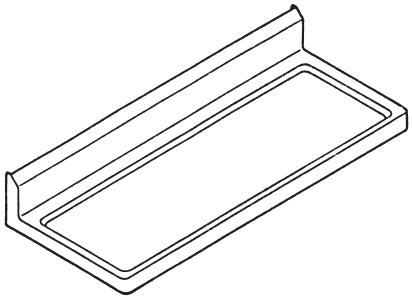
3.92 These are intended for use as heavy duty work surfaces for dry, or relatively dry, activities.



H	W	D
200	600	500
200	750	500
200	1230	500
200	1530	500

Stainless steel (dished)

3.93 These are intended for use in proximity to, but not for, wet activities.



H	W	D
200	600	500
200	750	500
200	1230	500
200	1530	500

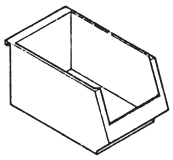
Ancillary components

3.94 This section is intended to give some examples only of components of an ancillary type, which, as a group, will be largely subject to user initiatives in finding solutions to their requirements and what is available on the market (with or without adaptation to be compatible with the system).

3.95 Because of their ancillary nature, no dimensions are given, and the illustrations are intended to be only very generally indicative of their respective types.

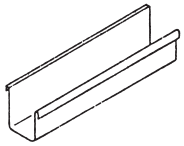
Tote boxes and other proprietary containers

3.96 Plastic tote boxes with open tops (as illustrated or with transparent covers) hook onto the grooved panels. Many other types of preformed or knock-down container are available for hook-on attachment or shelf mounting. This group of components provides an economical means of containing small items with direct user access and, if suitably located, can eliminate the need for labelling.



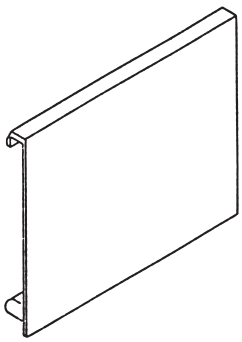
Catheter trays

3.97 These hook onto the grooved panels. Apart from their volume (in relation to the items to be held in them), the main consideration is their width in relation to the panel widths.



Accessory backboard

3.98 These are hung direct from the rail and have a similar function to Type A equipment panels, but differ in that they are intended to be supplied with items such as coat hooks and in sizes and materials to suit their specific function.



4 Performance

STRENGTH

4.1 Open and closed storage drawer units, shelves and mobile support units should be tested for strength by the methods described in BS 4875-5, 7 and 8, simulating in-use conditions.

4.2 Worktops should be tested by the methods and to the criteria listed in the Appendix.

SURFACE FINISHES

4.3 Surface finishes of components fabricated from wood or wood-based materials should be tested using the methods described in the following Standards:

- BS EN 12720:1997 'Furniture. Assessment of surface resistance to cold liquids';
- BS EN 12721:1997 'Furniture. Assessment of surface resistance to wet heat';
- BS EN 12722:1997 'Furniture. Assessment of surface resistance to dry liquids';
- BS 3962-5:1980 'Methods of test for finishes for wooden furniture. Assessment of surface resistance to cold oils and fats';
- BS 3962-6:1980 'Methods of test for finishes for wooden furniture. Assessment of resistance to mechanical damage'.

4.4 Finished surfaces should be smooth and free from application marks.

4.5 Plastic laminates should be specified in accordance with BS EN 438-1:1991 and tested in accordance with BS EN 438-2:1991.

4.6 All mild steel components must be treated to be corrosion resistant.

4.7 All surfaces of units should have a true, flat and smooth finish.

SURFACE SPREAD OF FLAME

4.8 When tested in accordance with BS 476-7, painted and lacquered surfaces should achieve a minimum of Class 4, and melamine-veneered surfaces Class 3.

TESTING OF HINGES, LOCKS AND LATCHES

4.9 The performance of individual fittings should comply with relevant British Standards (see the Appendix).

5 Design application

COORDINATION WITH BUILDING AND ENGINEERING DESIGN

5.1 Because the system comprises what is essentially loose equipment located on a rail or on mobile frames, the location and method of fixing the rail are the only considerations regarding coordination with building design.

5.2 Given the necessary coordination between building and engineering design, there should be no difficulty in fixing the rail in new work, but care should be taken in existing buildings to avoid puncturing concealed engineering services.

USE OF NON-STANDARD USER COMPONENTS

5.3 Any width of user component can be used in conjunction with the system, provided that:

- the principles of attachment to the support components are adhered to;
- all such non-standard user components within a bay are of the same width.

6 The system in use

RE-USE OF COMPONENTS

6.1 The system offers considerable scope for the development of facilities and procedures within a hospital for:

- the surrender of components which have become surplus to requirements as a result of changes in user activities;
- the supply of alternative, additional or replacement components;
- planned maintenance and repair of components.

CLEANING AND MAINTENANCE

6.2 A new "model cleaning contract" for hospitals has been developed. This has three key aspects:

- National Standards of Cleanliness (introduces measures for HCAI cleaning and disinfection);
- NHS Cleaning Manual (sets out best practice methods for cleaning);
- cleaning frequencies (these should be determined to address the element of risk identified in accordance with the National Standards of Cleanliness and taking into account any further advice and guidance in the model cleaning contract and the NHS Cleaning Manual).

6.3 Routine cleaning of the system should be carried out in accordance with the above guidance.

Appendix – Supplementary specification and design data

MATERIALS AND FINISHES FOR COMPONENTS

Materials/finishes listed below are preferred solutions. Other suitable finishes, such as plastic laminate or veneer, may be used where appropriate.

Cupboards and drawer carcasses:

- MDF with pigmented acid catalyst finish to all exposed surfaces inside and outside.

Side-hung doors/drawer fronts:

- MDF with pigmented acid catalyst finish to all exposed surfaces inside and outside.

Drawer bottoms and cupboard backs:

- duo-faced hardboard/MDF.

Built-up units and up-and-over doors:

- aluminium sheet pigmented epoxy-coated; or
- polycarbonate sheet, clear polished.

Dry marker boards (magnetic):

- mild steel with vitreous enamel finish.

Pin boards:

- 6 mm (minimum) linoleum on suitable substrate pin board in rigid aluminium frame with epoxy powder coating.

Equipment panels and plumbing services panel:

- aluminium sheet with epoxy powder coating.

Worktops:

- anodised or epoxy-coated aluminium;
- high density chipboard with linoleum finish;
- high density chipboard with post-forming grade laminate;
- stainless steel.

Shelves:

- aluminium sheet, epoxy-coated;
- chipboard with laminate on all faces.

Sinks:

- stainless steel.

SPECIFICATION REFERENCES FOR MATERIALS AND FINISHES LISTED ABOVE

- BS 1186-2:1988 ‘Timber for and workmanship in joinery. Specification for workmanship’.
- BS 1186-3:1990 ‘Timber for and workmanship in joinery. Specification for wood trim and its fixings’.
- BS EN 120:1992 ‘Wood-based panels. Determination of formaldehyde content. Extraction method called the perforator method’.
- BS EN 310:1993 ‘Wood-based panels. Determination of modulus of elasticity in bending and of bending strength’.
- BS EN 312:2003 ‘Particleboards. Specifications’.
- BS EN 316:1999 ‘Wood fibreboards. Definition, classification and symbols’.
- BS EN 317:1993 ‘Particleboards and fibreboards. Determination of swelling in thickness after immersion in water’.
- BS EN 318:2002 ‘Wood-based panels. Determination of dimensional changes associated with changes in relative humidity’.
- BS EN 319:1993 ‘Particleboards and fibreboards. Determination of tensile strength perpendicular to the plane of the board’.
- BS EN 320:1993 ‘Fibreboards. Determination of resistance to axial withdrawal of screws’.
- BS EN 321:1993 ‘Fibreboards. Cyclic tests in humid conditions’.
- BS EN 322:1993 ‘Wood-based panels. Determination of moisture content’.
- BS EN 323:1993 ‘Wood-based panels. Determination of density’.

- BS EN 324-1:1993 ‘Wood-based panels. Determination of dimensions of boards. Determination of thickness, width and length’.
- BS EN 324-2:1993 ‘Wood-based panels. Determination of dimensions of boards. Determination of squareness and edge straightness’.
- BS EN 325:1993 ‘Wood-based panels. Determination of dimensions of test pieces’.
- BS EN 382-1:1993 ‘Fibreboards. Determination of surface absorption. Test method for dry process fibreboards’.
- BS EN 438-1:1991 ‘Decorative high-pressure laminates (HPL) sheets based on thermosetting resins. Specifications’.
- BS EN 438-2:1991 ‘Decorative high-pressure laminates (HPL) sheets based on thermosetting resins. Determination of properties’.
- BS EN 622-1:1997 ‘Fibreboards. Specifications. General requirements’.
- BS EN 622-2:1997 ‘Fibreboards. Specifications. Requirements for hardboards’.
- BS EN 622-3:1997 ‘Fibreboards. Specifications. Requirements for medium boards’.
- BS EN 622-4:1997 ‘Fibreboards. Specifications. Requirements for softboards’.
- BS EN 622-5:1997 ‘Fibreboards. Specifications. Requirements for dry process boards (MDF)’.
- BS EN 942:1996 ‘Timber in joinery. General classification of timber quality’.
- BS EN 10029:1991 ‘Specification for tolerances on dimensions, shape and mass for hot rolled steel plates 3 mm thick or above’.
- BS EN 10048:1997 ‘Hot rolled narrow steel strip. Tolerances on dimensions and shape’.
- BS EN 10051:1992 ‘Specification for continuously hot-rolled uncoated plate, sheet and strip of non-alloy and alloy steels. Tolerances on dimensions and shape’.
- BS EN 10095:1999 ‘Heat resisting steels and nickel alloys’.
- BS EN 10258:1997 ‘Cold-rolled stainless steel narrow strip and cut lengths. Tolerances on dimensions and shape’.
- BS EN 10259:1997 ‘Cold-rolled stainless and heat resisting steel wide strip and plate/sheet. Tolerances on dimensions and shape’.
- BS EN 12104:2000 ‘Sheet linoleum, cork carpet and linoleum tiles’.

GENERAL NOTES

All surfaces of units should have a flat true and smooth finish.

Experience has shown that melamine coatings and plastic foil edgings to chipboard are not suitable for use in health buildings.

Laminate-only end-facings to worktops are not suitable for health buildings.

The final choice of materials and finishes must be the responsibility of the specifier, based on test-proven performance, availability, and cost.

References

ACTS AND REGULATIONS

(The) Building Regulations 2000 (SI 2000: 2531). HMSO, 2000. http://www.hmso.gov.uk/si/si2000/20002531.htm

(The) Construction (Design and Management) [CONDAM] Regulations 1994, SI 1994 No 3140. HMSO, 1995. http://www.hmso.gov.uk/si/si1994/Uksi_19943140_en_1.htm

(The) Construction (Design and Management) (Amendment) Regulations 2000, SI 2000 No 2380. HMSO, 2000. http://www.legislation.hmso.gov.uk/si/si2000/20002380.htm

(The) Disability Discrimination Act 1995. HMSO, 1995. http://www.legislation.hmso.gov.uk/acts/acts1995/Ukpga_19950050_en_1.htm

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HTM 56 – 'Partitions'. The Stationery Office, 2005.

HTM 63 – 'Fitted storage systems'. The Stationery Office, 2005.

NHS Cleaning Manual http://patientexperience.nhsestates.gov.uk/clean_hospitals/ch_content/home/home.asp

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BRITISH STANDARDS

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