

Sanitary installations

Part 2. Code of practice for space requirements for sanitary appliances

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Committees responsible for this British Standard

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Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
<hr/>	
Code of practice	
1 Scope	1
2 References	1
3 Definitions and conventions	1
4 Appliance space	2
5 Activity space	2
6 Activity spaces for individual sanitary appliances	2
7 Overlap of activity spaces	2
8 General planning of sanitary appliance layouts	3
9 Planning sanitary appliance layouts for domestic situations	3
10 Planning sanitary appliance layouts for non-domestic situations	4
11 Appliances in domestic situations	6
12 Appliances in non-domestic situations	15
13 Overlapping and displaced activity spaces	26
<hr/>	
Annex	
A (informative) Bibliography	32
<hr/>	
Tables	
1 Typical appliance spaces	2
2 Workplace appliances	5
<hr/>	
Figures	
1 Bath	6
2 Showers	6
3 Basins	8
4 Bidet	9
5 WC	9
6 Domestic WC compartments	10
7 Sink	12
8 Washing machines	13
9 Ranges of showers	15
10 Range of hand-rinse basins	16
11 Small wash basins	16
12 Bucket/cleaner's sink	18
13 WC cubicles	19
14 WC cubicles to temporarily accommodate luggage	20
15 Non-domestic WC compartments	22
16 Urinals	24
17 Sanitary towel disposal unit (not in a cubicle)	25
18 Hand drying facilities	25
19 Overlapping and displaced activity spaces	26
20 Minimum room sizes for arrangements of appliances	29
<hr/>	
List of references	Inside back cover
<hr/>	

Foreword

This Part of BS 6465 has been prepared by Subcommittee B/505/21 and is a guide for architects, designers and others who need to provide sanitary appliances in buildings.

The purpose of this standard is to give recommendations for and guidance on the provision of spaces for sanitary appliances in buildings. The recommendations are based upon the committee's experience, practical experiments and data from the documents listed in the bibliography (annex A).

This British Standard takes the form of a code of practice. It should not be quoted as if it were a specification.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Code of practice

1 Scope

This Part of BS 6465 gives recommendations for the spaces to be provided for the location, installation, use and maintenance of sanitary appliances within dwellings, places of work or public amenities.

These recommendations do not cover the needs of all disabled people and reference should be made to BS 5619 and BS 5810.

2 References

2.1 Normative references

This Part of BS 6465 incorporates, by reference, provisions from specific editions of other publications. These normative references are cited at the appropriate points in the text and the publications are listed on the inside back cover. Subsequent amendments to, or revisions of, any of these publications apply to this Part of BS 6465 only when incorporated in it by updating or revision.

2.2 Informative references

This Part of BS 6465 refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back cover, but reference should be made to the latest editions.

3 Definitions

For the purposes of this Part of BS 6465 the definitions given in BS 6100, Section 3.3, apply together with the following:

3.1 appliance space

The area required for the sanitary appliance, and where applicable, any closely related pipework and fittings.

3.2 activity space

The area needed, in addition to the appliance space, for the user to carry out the activity normally associated with the appliance and to enable cleaning and routine maintenance to be carried out.

3.3 circulation space

The area free of obstructions required for access to an appliance without interference to users of other appliances.

3.4 luggage zone

The area allocated to the temporary storage of personal belongings within a WC cubicle. This space may also be used for the temporary parking of pushchairs, prams or shopping trolleys. The actual dimensions of the area should be appropriate to the type of luggage that would normally be expected at that facility.

3.5 circle of clearance

The largest circle that can be projected between the edge of the WC pan, any adjacent obstruction and the door swing.

3.6 domestic situations

Typically, arrangements of sanitary appliances within a family home used by only one person at a time. Users will usually not be wearing outdoor clothing.

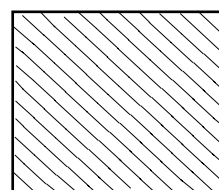
3.7 non domestic applications

Typically, arrangements of sanitary appliances in public or commercial environments often used by more than one person simultaneously. Users may be wearing outdoor clothing and carrying items.

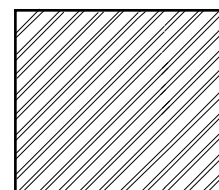
3.8 disposal bin zone

The area allocated to the placement of a sanitary item disposal bin within a WC cubicle or compartment.

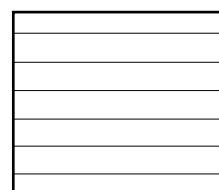
The following convention applies in the figures:



Activity space



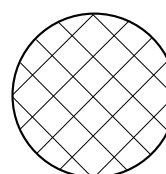
Circulation space



Luggage zone



Disposal bin zone



Circle of clearance

4 Appliance space

The appliance spaces shown in table 1 are based on the most typical size of appliance. The spaces are shown as rectangles rounded up to the nearest 50 mm including allowance for any closely related pipework and fittings. However, while some appliances such as washing machines and shower trays vary only slightly in size, others such as baths, washbasins, kitchen sinks and WC suites can vary considerably and will affect the appliance layout. When specifying differently sized and/or shaped appliances, the geometric envelope that most closely contains them, combined with the relevant activity and circulation spaces, should be used for planning room arrangements.

5 Activity space

The activity space is associated with the appliance sizes given in table 1. The size of the appliance will determine the location of the activity space.

NOTE. Appliance sizes not shown in table 1 may require additional space. This may be critical in small rooms or cubicles.

6 Activity spaces for individual sanitary appliances

The space required to use individual sanitary appliances is shown in figures 1 to 20. Although these are shown as rectangles the dimensions are flexible within sensible limits. The recommended activity space is the overall downward projection of different user areas at various heights¹⁾.

7 Overlap of activity spaces

Examples of overlapping activity spaces are shown in figures 19a) and b). The matrices in figures 20a), b) and c) show the minimum spaces required for various combinations of appliances.

Where the simultaneous use of two adjacent appliances is unlikely, some adjacent spaces may overlap without any inconvenience to the user with consequent savings of space and service runs.

It is also possible to determine constant relationships between the defined activity spaces for each appliance when they are combined in layouts. These relationships are indicated in figure 19a) and b) by:

Table 1. Typical appliance spaces	
Appliance	Plan Dimensions (mm)
Bath	1700 × 800 ¹
Shower	900 × 900
Wash basin (domestic)	700 × 600
Small wash basin (non-domestic)	600 × 450
Hand rinse basin	500 × 400
WC suite (low-level or close-coupled)	700 × 500 ²
WC pan (back-to-wall or wall hung)	600 × 400
Bowl urinal	400 × 400
Bidet	650 × 400
Sink (domestic, inset single bowl)	450 × 450
Sink (bucket/cleaner's)	500 × 400
Washing machine	600 × 600
Dishwashing machine	600 × 600
Hand dryer (electric or towel)	400 × 300
Sanitary towel disposal bin (in a cubicle)	540 × 210 ³
Sanitary item disposal unit (not in a cubicle)	350 × 250 ³
NOTE 1. Baths can vary in size from compact baths, e.g. 1400 mm × 700 mm to luxury ones over 1900 mm × 1000 mm.	
NOTE 2. Dimensions include a cistern of 500 mm width.	
NOTE 3. Bins within cubicles are generally less than 550 mm high. Units to be placed outside of cubicles or for disposal of nappies and incontinence pads may be 100 mm taller.	
NOTE 4. Unless stated otherwise all dimensions are nominal.	

¹⁾ Arm movements require more space than foot movements.

- a) the dimension measured between centre lines of adjacent appliances; or, with the bath and shower, to their outer face. (In this way, the activity spaces will not be affected by differently sized appliances);
- b) the maximum overlap of activity spaces (where appropriate) for each possible combination of the appliances in 100 mm increments.

Where arrangements other than those illustrated in figures 19a) and b), 20a), b) and c) are required, combinations can be built up using the data in this standard.

8 General planning of sanitary appliance layouts

8.1 Bath activity spaces

The 1100 mm × 700 mm clear floor space shown alongside the bath in figure 1 allows for getting in and out of the bath, for drying and for an adult beside the bath bathing a child. The defined area does not extend for the whole length of the bath, and can be positioned at any point along it, although where there is a choice it will preferably be at the tap end. The area beside the bath beyond the activity space should be included within the floor area of the bathroom. This will enable bath taps to be reached, and the bath to be cleaned, from the activity space whatever its position although it can be occupied by a second appliance or by other items such as a stool or laundry box.

8.2 Shower outlets over baths

Unless a side wall is used, a wall or partition is needed across the tap end of a bath for fixing a shower outlet. In some layouts this means that the outlet end of the bath cannot be positioned to give the greatest economy of service runs.

8.3 Window positions in bathrooms

The position of windows will be determined primarily by external factors, but windows in walls adjacent to the bath can be hazardous. They may prove difficult to clean, or to open and close, without standing in the bath. They may also limit privacy for bath users. Unless well insulated, windows set up cooling down-draughts. Windows can prevent the installation of a screen which would allow a bath also to be used for showering. The area of wall directly behind and above the washbasin is often used for fixing a mirror or medicine cabinet and should be left unglazed if practicable.

8.4 Access

Door swings should be allowed for and where total space is limited, alternative types of doors (outward opening, bi-fold, sliding) should be considered. In cubicles and compartments, a 450 mm diameter circle of clearance should be used to check that adequate clearance and access has been provided. Although larger circles of clearance may be provided, small circles could result in clothing touching the appliance and difficult access. Toilet paper holders should not be placed so that they impede access.

8.5 Ducts

The mounting of cisterns and disposal bins within ducts will allow the cubicle or compartment length to be minimized.

8.6 Services

When planning the layout of sanitary appliances and their space requirements it is essential to bear in mind the layout of services to facilitate installation, maintenance and to avoid unsightly pipework arrangements. Reference should also be made to BS 6465 : Part 1. Sanitary appliances with exposed outlets at low level, i.e. baths, bidets, showers and WCs, should be located close to discharge stacks or drain points to ensure access for maintenance and cleaning. For limitations on lengths of discharge pipes from sanitary appliances and other requirements for sanitary pipework see BS 5572. Water supplies should be installed in accordance with BS 6700 and electricity supplies should be installed in accordance with BS 7671.

8.7 Provision for cleaning

To facilitate cleaning, a gap of at least 65 mm should be provided between appliances.

9 Planning sanitary appliance layouts for domestic situations

NOTE. The activity spaces for rooms in various domestic circumstances or where multiple use of a room is rare are explained in this clause. The relevant appliance activity spaces are shown in figures 1 to 8.

9.1 Bathrooms

9.1.1 Houses and flats

The space required for a bathroom will be determined largely by the size and type of bath. A bath or shower and wash basin is the minimum a bathroom should include. Where space is limited a shower and wash basin may be provided. A bathroom may also include a bidet, WC and additional basins.

The design of the household bathroom should accommodate the possibility of alterations to cope with the needs of the elderly, infirm or disabled.

The space recommended for each appliance and activity space is shown in table 1 and figures 1 to 5. Other items that may affect the space requirements when planning a bathroom include:

- a) towel rail;
- b) chair or stool;
- c) laundry basket;
- d) disposal bin
- e) shelf to accommodate washing accessories, (the window sill may provide this if low enough);
- f) mirror;
- g) electric shaver point;
- h) lockable medicine cupboard.

The layout should ensure that the appliances which will be most used by casual visitors, i.e. the WC and basin, are situated closest to the door. This is of particular importance where the bathroom floor forms part of the shower. The shower area should be furthest away from the door to minimize people walking across the shower area.

Where a utility room is not available, a clothes washing machine may be housed in a bathroom rather than in a kitchen.

9.1.2 Accommodation specifically for disabled people

Where disabled people are housed it is likely that a shower will be preferred. Wheelchair users require level access to showers, space beneath wash basins and enough room for manoeuvring. This will require activity spaces to be larger. Where baths are installed the relevant parts of the following clause will apply.

9.1.3 Accommodation specifically for elderly people

Where greater space is needed for mobility aids and for assistance to be provided when necessary, grab rails and poles are best installed to suit the needs of the particular occupant.

Shower cubicles for elderly people should be a minimum of 900 mm square and have level access. A seat within the cubicle should be provided.

NOTE. A traditional bath may be provided or alternatively one of the designs specifically for elderly people. These may have one or more of the following features:

- a) shorter than usual, 1500 mm long instead of 1700 mm;
- b) shallower than usual, 305 mm rather than 355-395 mm;
- c) with cutaway sides;
- d) with special provision for a bath seat.

To assist movement-impaired people in and out of baths a variety of equipment may be used, some of which is mobile. Other equipment may need to be fixed to the floor, wall or ceiling of the bathroom. Such equipment needs sufficient space to operate, and to be out of the way when not in use.

9.1.4 Hotels

En-suite bathrooms will have the same requirements as for a house or flat.

9.2 WC accommodation (other than in or adjacent to bathrooms)

Where additional WCs are provided these should be contained within compartments also containing hand rinsing facilities (see figure 6). The arrangement of the appliances, the direction of the door swing and the width of the door will determine the dimensions of the cubicle. Although activity spaces may overlap, (see clause 6) the 450 mm circle of clearance should not be encroached upon. A distance of at least 400 mm should be provided between the centre line of these appliances and an adjacent wall.

9.3 Kitchens

9.3.1 Houses and flats

The space required for the kitchen appliances will be determined by the occupancy and the type of dwelling. The amount of space recommended is determined by:

- a) the type of sink, whether single, one and a half or double bowl, with or without drainers;
- b) the inclusion, or not, of a dishwashing machine;
- c) the inclusion, or not, of a clothes washing machine.

The space required for these sanitary appliances and appropriate activity space is shown in table 1 and figures 7 and 8.

Items to be considered in planning a kitchen include overlaps of activity space from non-sanitary appliances and circulation space if the kitchen is to be used by more than one person at a time.

9.3.2 Accommodation specifically for disabled or elderly people

Greater activity space is recommended for people using mobility aids.

10 Planning sanitary appliance layouts for non-domestic situations

NOTE. The activity spaces for rooms and buildings in non-domestic circumstances or where multiple use of a room is to be expected are explained in this clause. The relevant appliance activity spaces are shown in clause 12. Overlap of individual activity spaces for ranges of appliances are not shown in the figures for clarity, but should be assumed.

10.1 Workplaces

The spatial requirements for wash basins will depend on the type of work being undertaken. Generally, for office workers and light industrial factory workers where work activity does not cause heavy soiling, the activity spaces for non-domestic situations will apply. However, where work activity causes heavy soiling (such as in garages, depots and building sites) the more generous spatial requirements for wash basins in domestic situations should be considered.

Spatial requirements for other single washing facilities e.g. showers and baths will however, be the same as for domestic use. Activity spaces for other workplace appliances are contained in table 2.

10.1.1 Where WC cubicles (see figure 13) are provided, they should be able to accommodate the chosen WC pan (and cistern, if not duct mounted), have an activity area in front of the pan of 800 mm wide by 600 mm deep and be dimensioned so that the door swing does not enter the circle of clearance. Space must also be allowed for the toilet paper dispenser, coat hook and sanitary disposal bin, none of which must encroach on the circle of clearance.

Where WC compartments (see figure 15) are provided, they should be able to accommodate all the items that a cubicle contains in addition to a hand rinse basin. However, the activity spaces for the WC and basin may overlap resulting in a minimum combined activity space of 700 mm × 800 mm.

10.2 Dimensions of facilities in public conveniences

The dimensional requirements for most of the appliances within public conveniences are, in general, the same as in other places. However, the sizes of WC cubicles should be larger than in workplaces for a number of reasons:

- a) they are used by people likely to be wearing more clothing;
- b) users may have luggage or shopping with them;
- c) adults may be accompanied by small children;

In railway stations, airports and shopping centres many users have bulky luggage or other impedimenta. In places where the nature of the luggage is not known, a luggage zone area of 900 mm × 350 mm should be provided within the cubicle. This zone should not significantly encroach the WC's activity space. To accommodate this luggage zone, the WC pan should be fitted off-centre, towards the side on which the door is hinged, so that the centre of the pan is no closer than 400 mm to the nearest wall (see figure 14a). Other arrangements, such as those shown in figure 14b) and c), can also be used so long as the level of provision is no less.

Appliance	Activity space
Washing trough	1200 mm × 800 mm
Washing carousel	900 mm along the circumference of carousel × 800 mm
Drinking fountain	600 mm × 1000 mm
NOTE 1. Activity spaces are dimensioned width × depth.	
NOTE 2. Unless stated otherwise all dimensions are nominal.	

11 Appliances in domestic situations

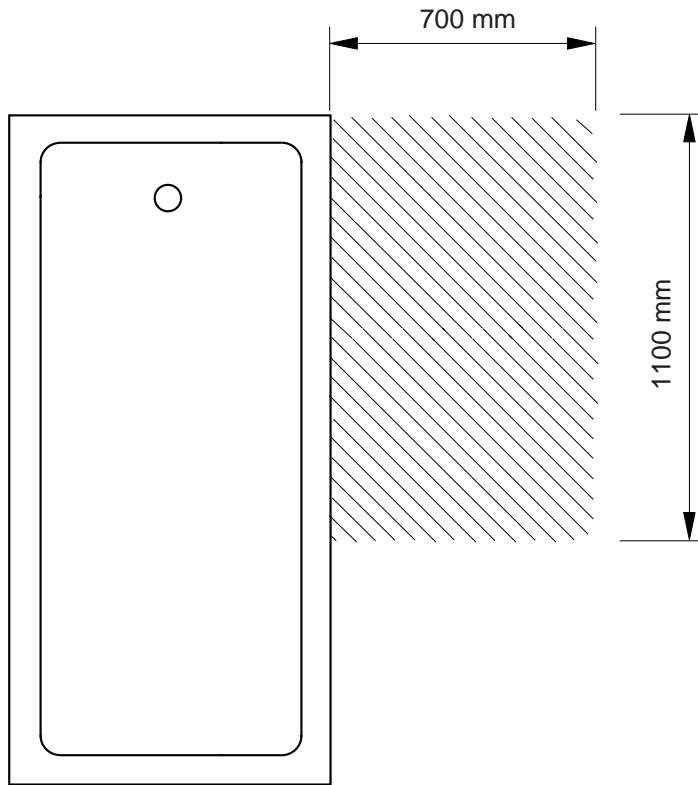
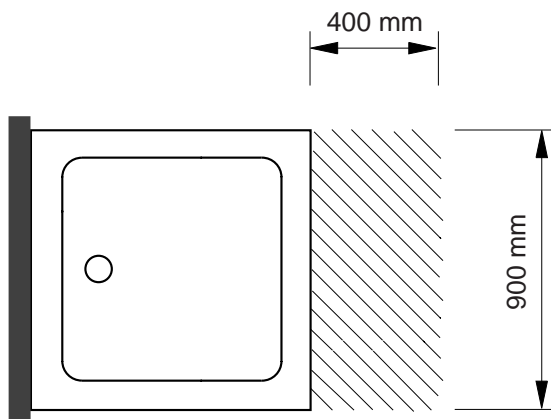


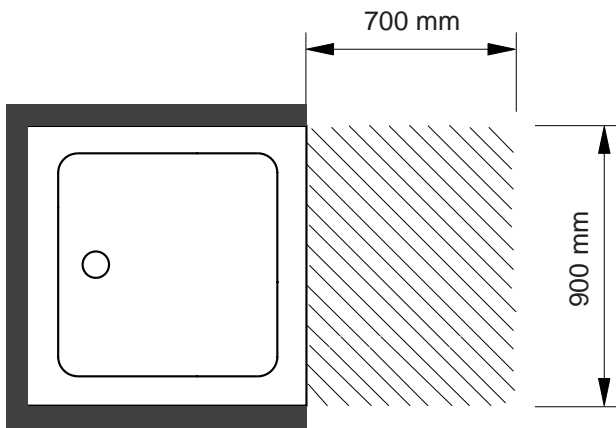
Figure 1. Bath



a) Unenclosed shower with tray

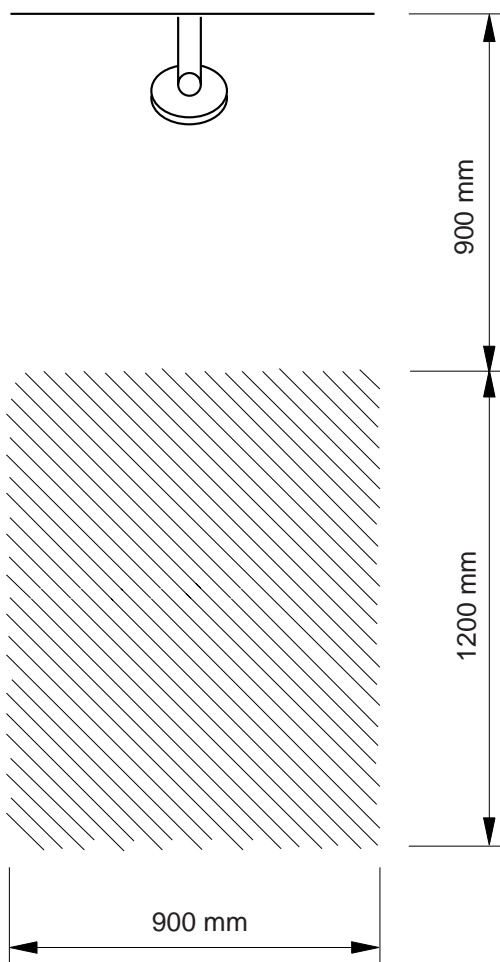
NOTE. The activity space shown is for access from one side of the tray and to facilitate initial drying within the shower. A nearby area of 1100 mm × 900 mm will be required for final drying and dressing.

Figure 2. Showers



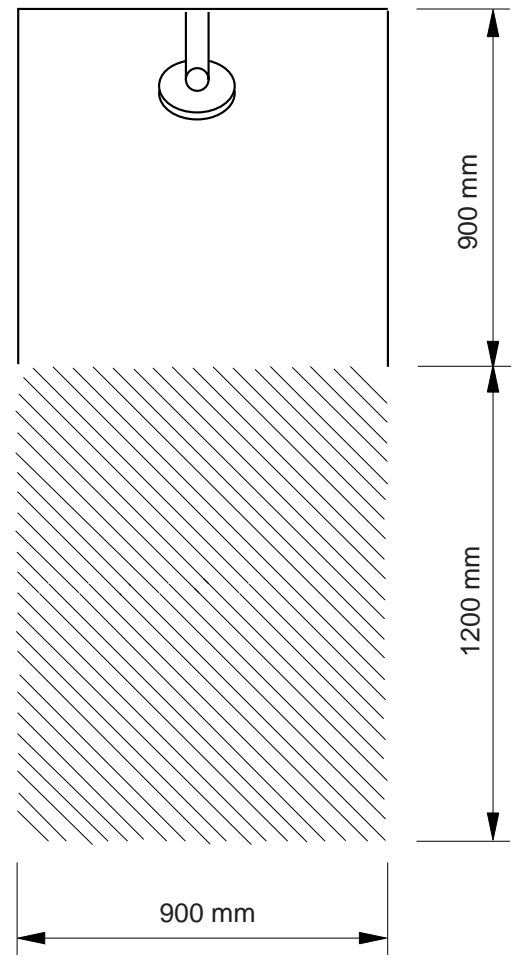
b) Enclosed shower with tray

NOTE. The activity space is adequate for drying. A nearby dressing space is presumed.



c) Unenclosed shower

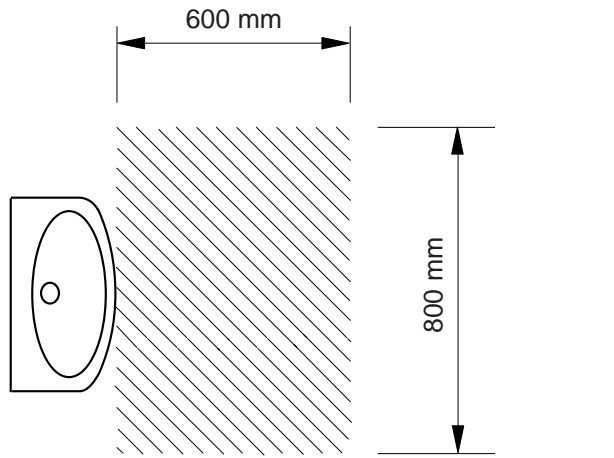
NOTE. Activity space is for drying and dressing



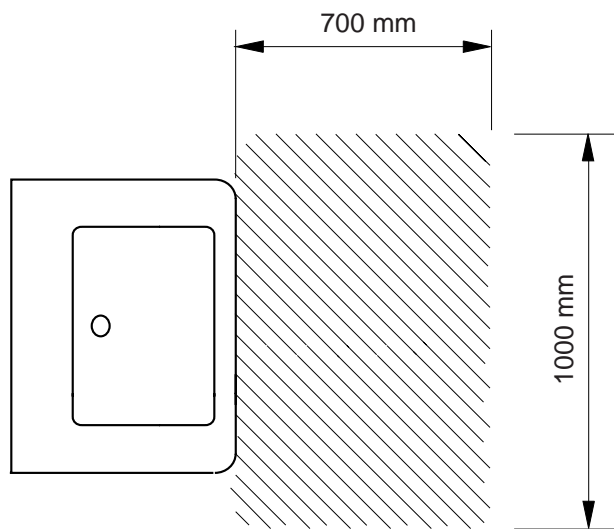
d) Semi-enclosed shower without tray

NOTE. Activity space is for drying and dressing

Figure 2. Showers (concluded)



a) Hand-rinse basin



b) Wash basin (domestic)

Figure 3. Basins

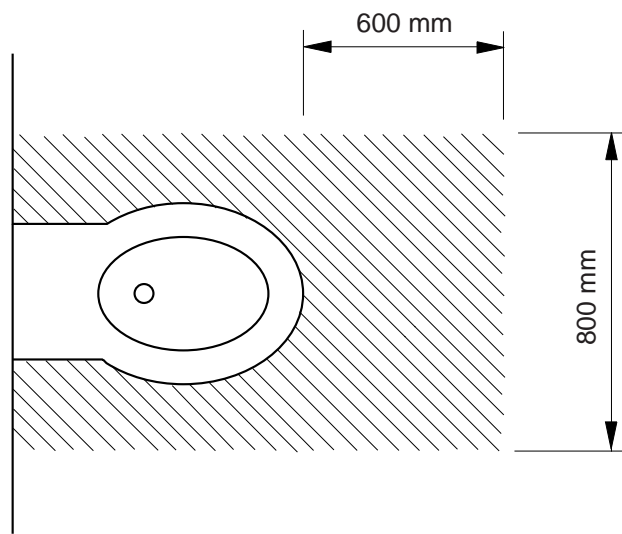
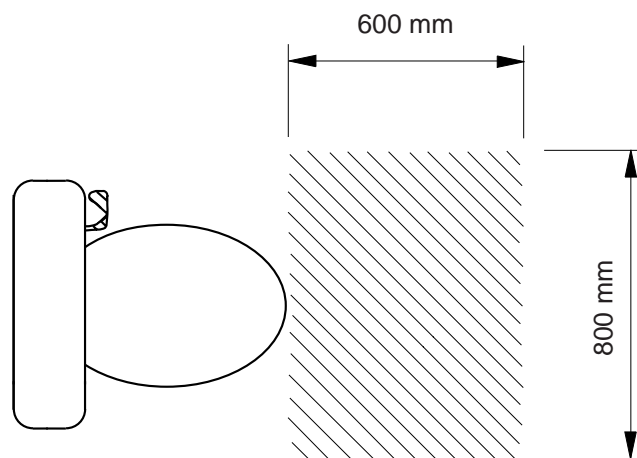


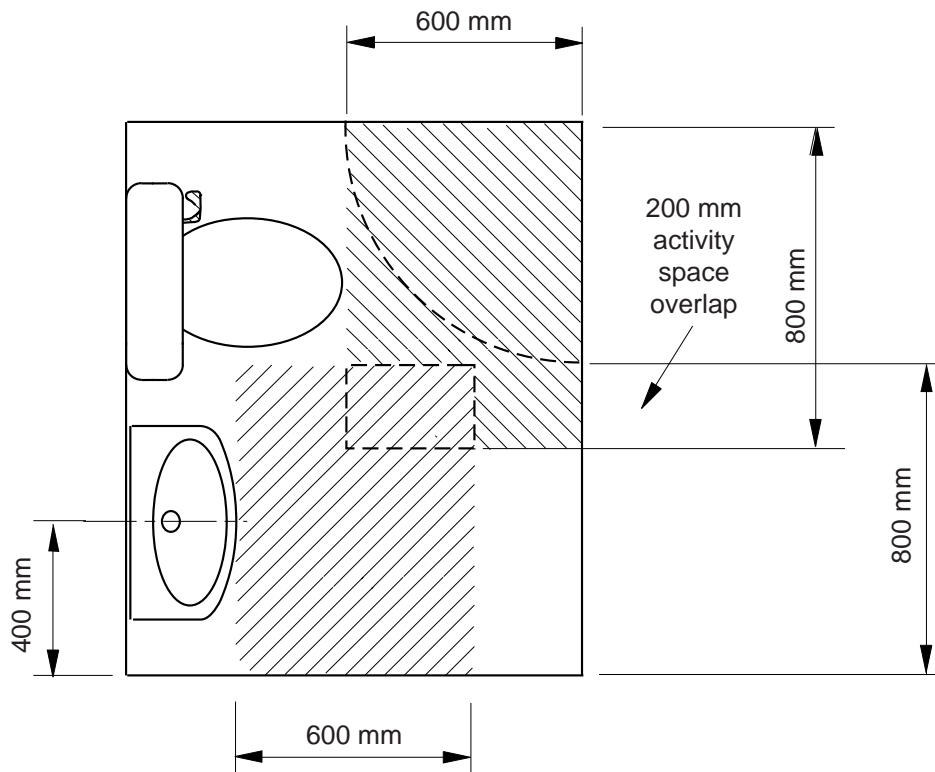
Figure 4. Bidet



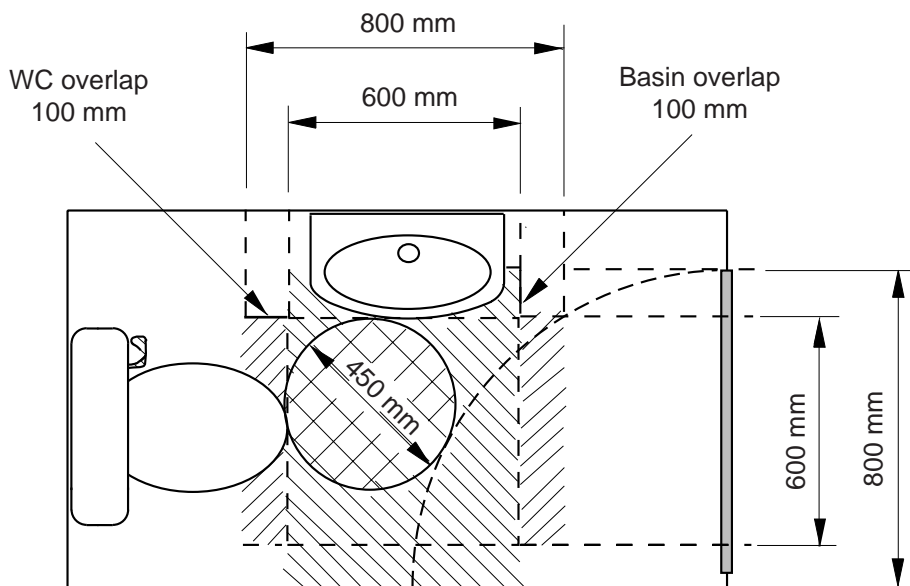
NOTE 1. The use of a duct-mounted or high-level cistern will allow the WC pan to be placed closer to the wall.

NOTE 2. Although a conventional WC suite is shown in the figure, a squatting pan suite may be substituted as the requirements for activity space are similar.

Figure 5. WC

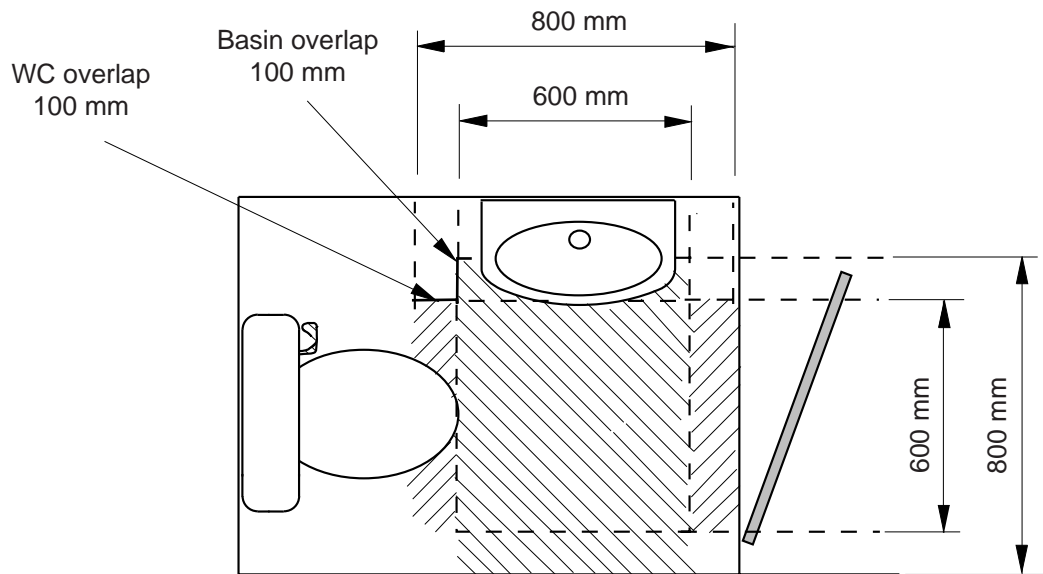


a) WC compartment with appliances on same wall



b) WC compartment with inward opening door and appliances on different walls

Figure 6. Domestic WC compartments



c) WC compartment with outward opening door and appliances on different walls

NOTE 1. The use of a duct-mounted or high-level cistern will allow an overall reduction in the length of the compartment.

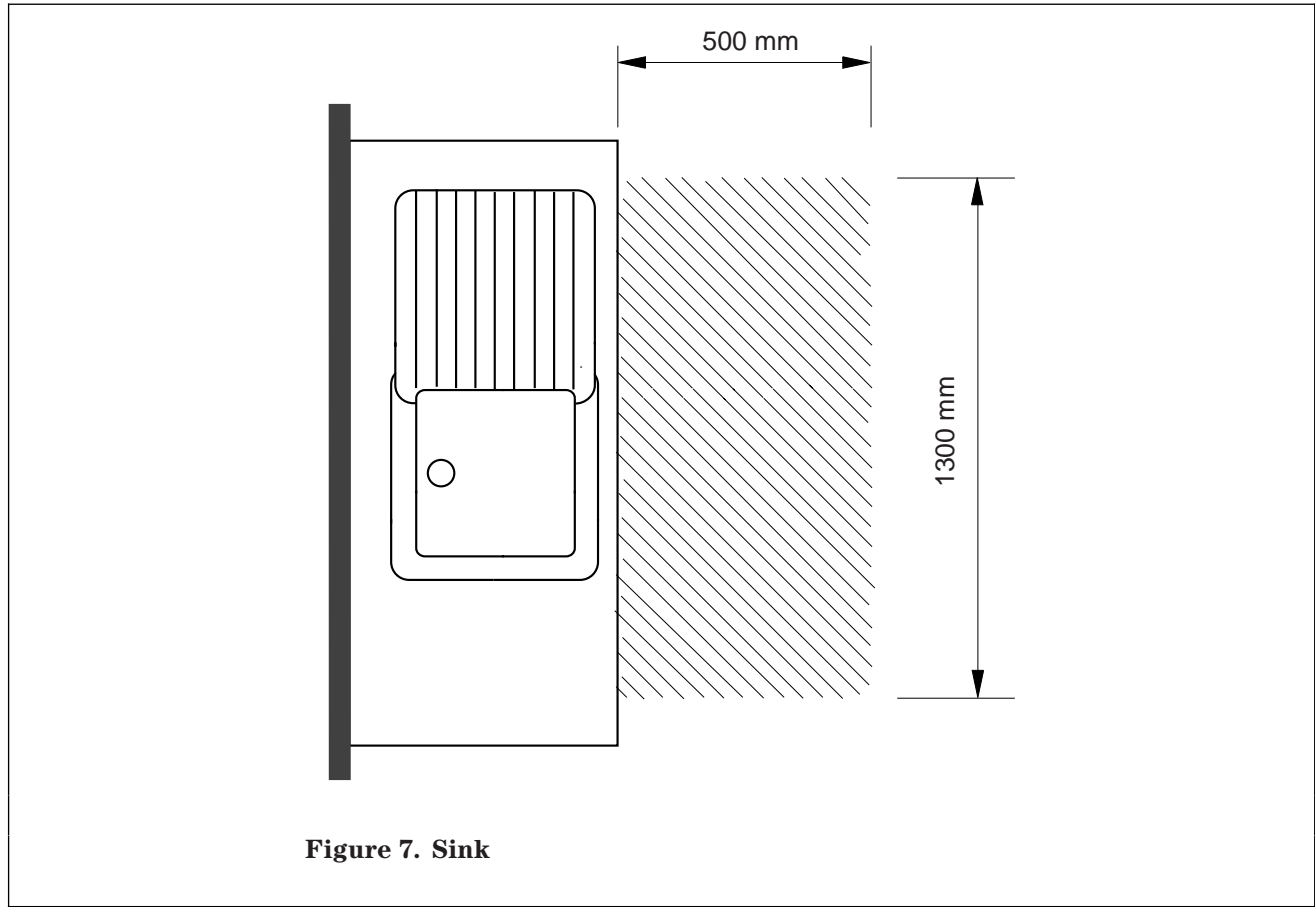
NOTE 2. Offsetting the WC pan is beneficial in accommodating bins and toilet brush holders. Toilet roll holders, or paper dispensers should not be positioned so that access to or use of the appliances is impaired.

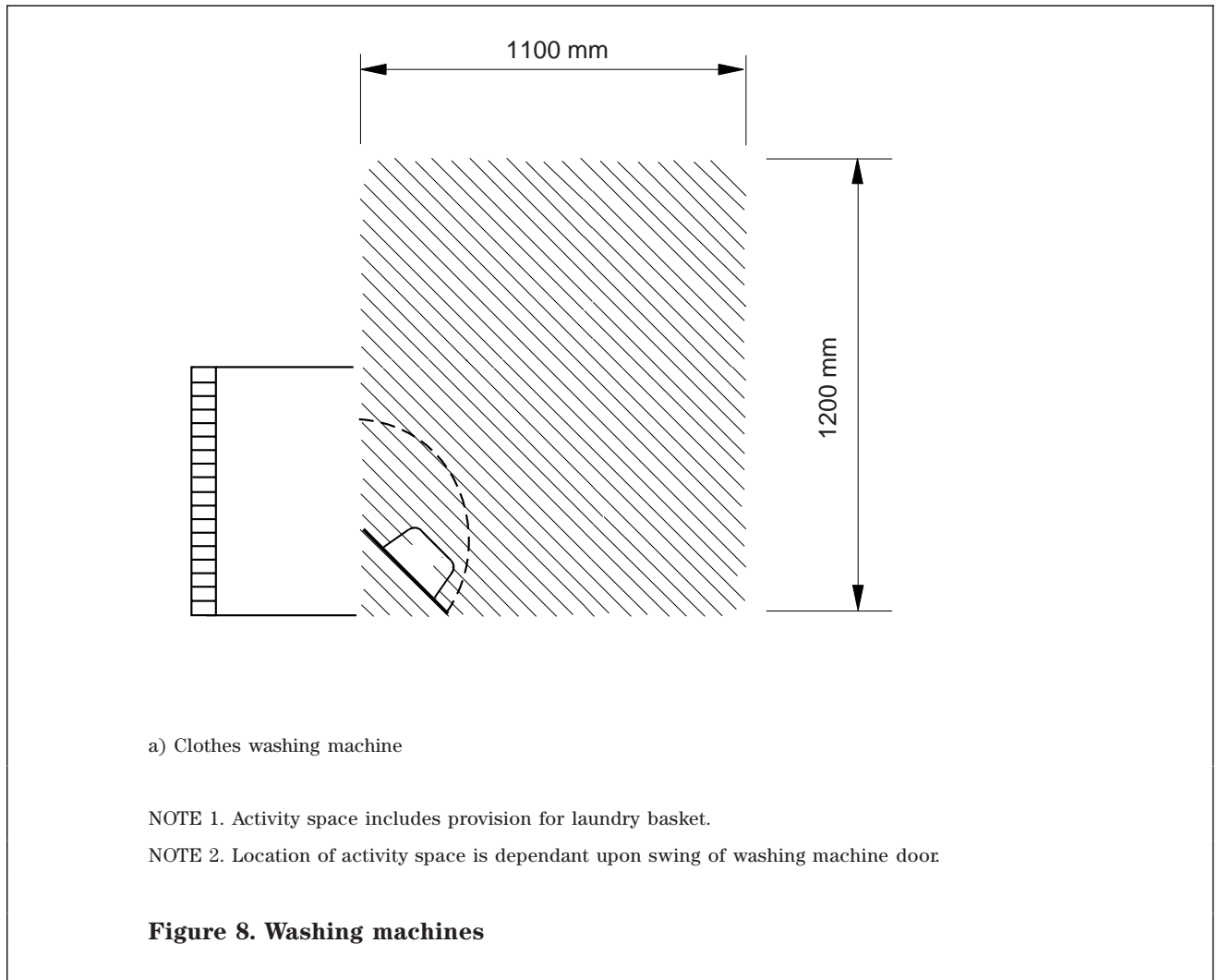
NOTE 3. Adequate space for locating bins should be provided so that they do not obstruct access or interfere with the use of the appliance. It may be objectionable to the user if the bin is in too close proximity to the pan.

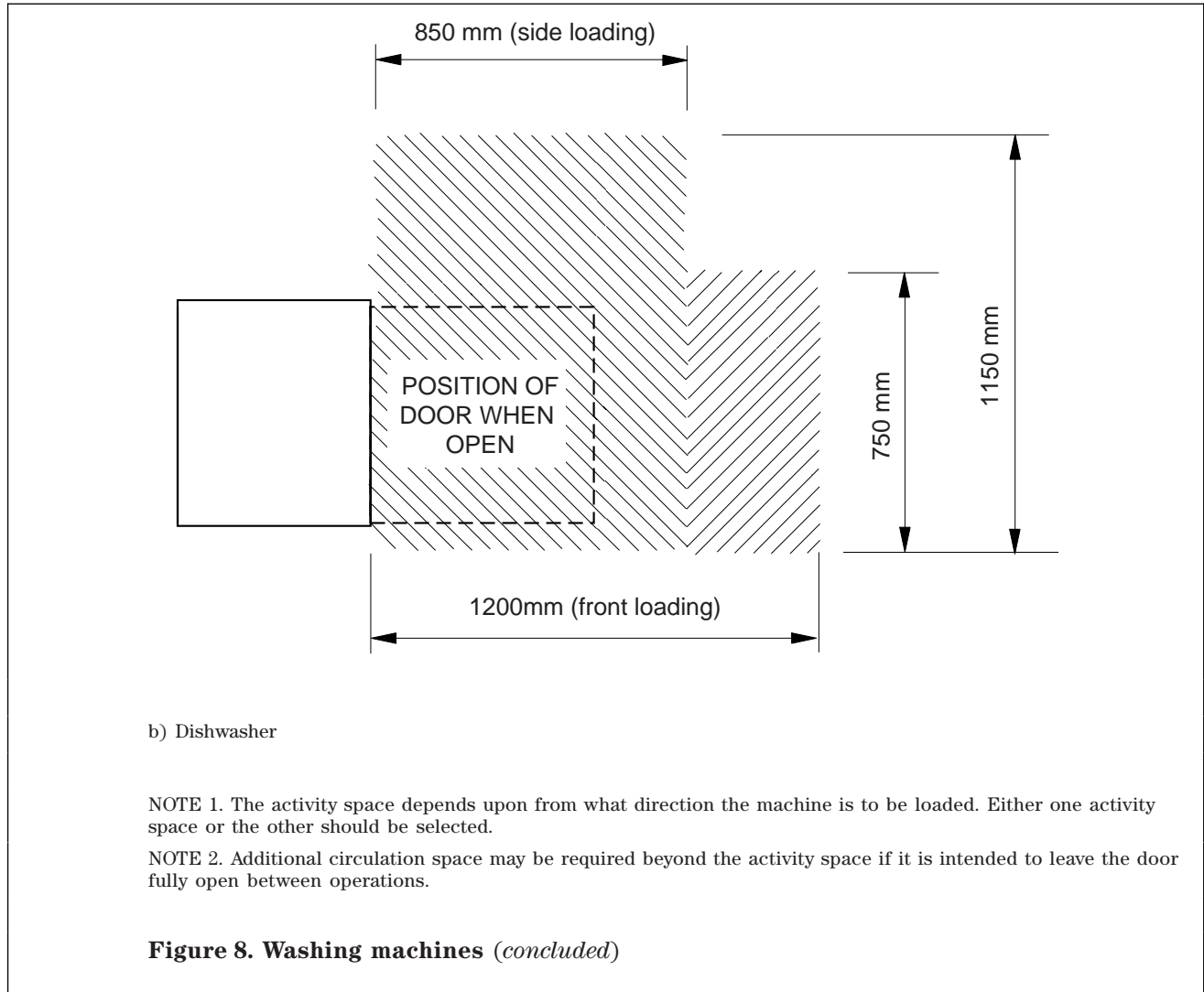
NOTE 4. For further information on overlapping activity spaces see clause 7.

NOTE 5. Although a conventional WC suite is shown in the figures, a squatting pan suite may be substituted as the requirements for activity space are similar.

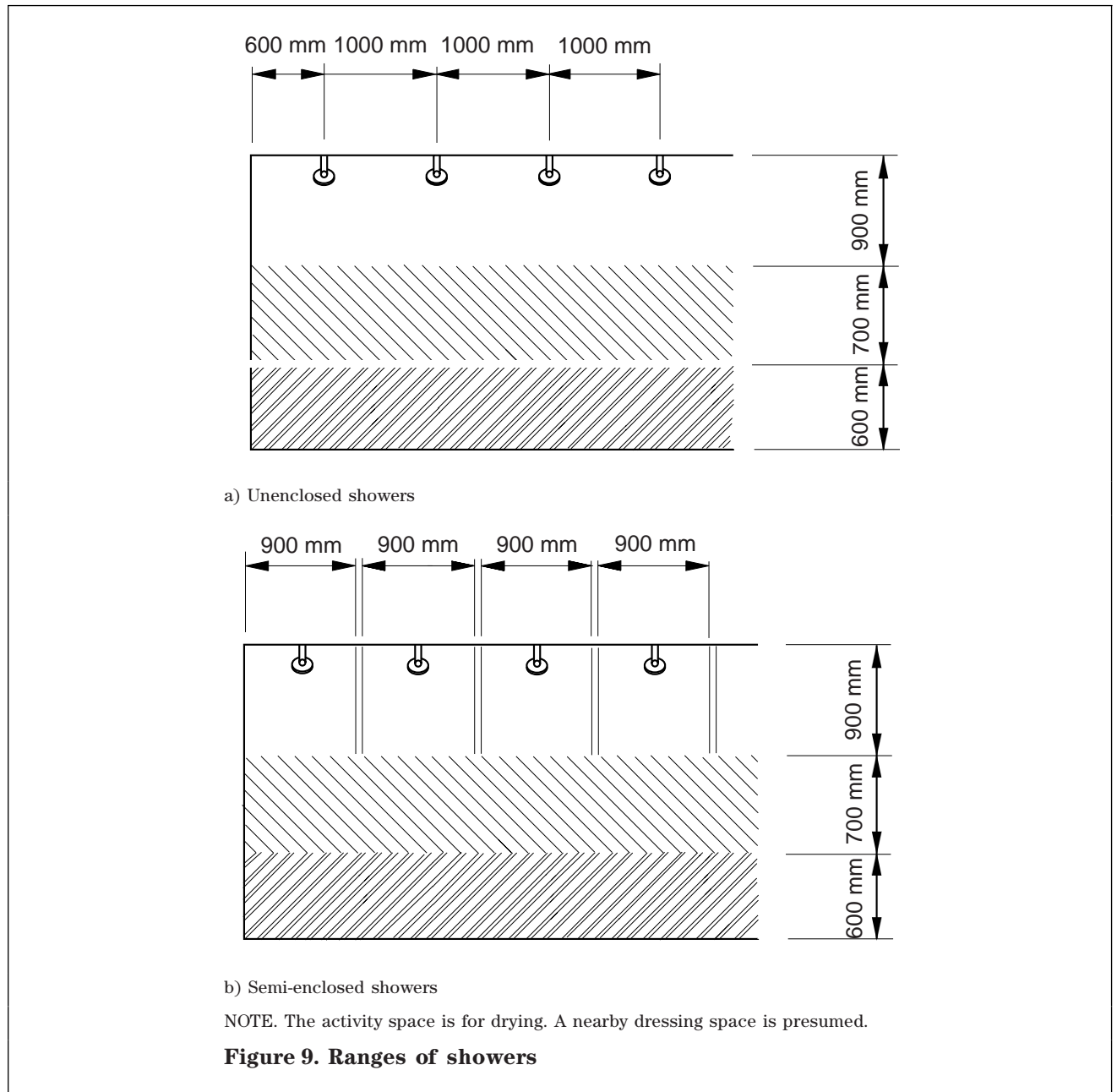
Figure 6. Domestic WC compartments (concluded)

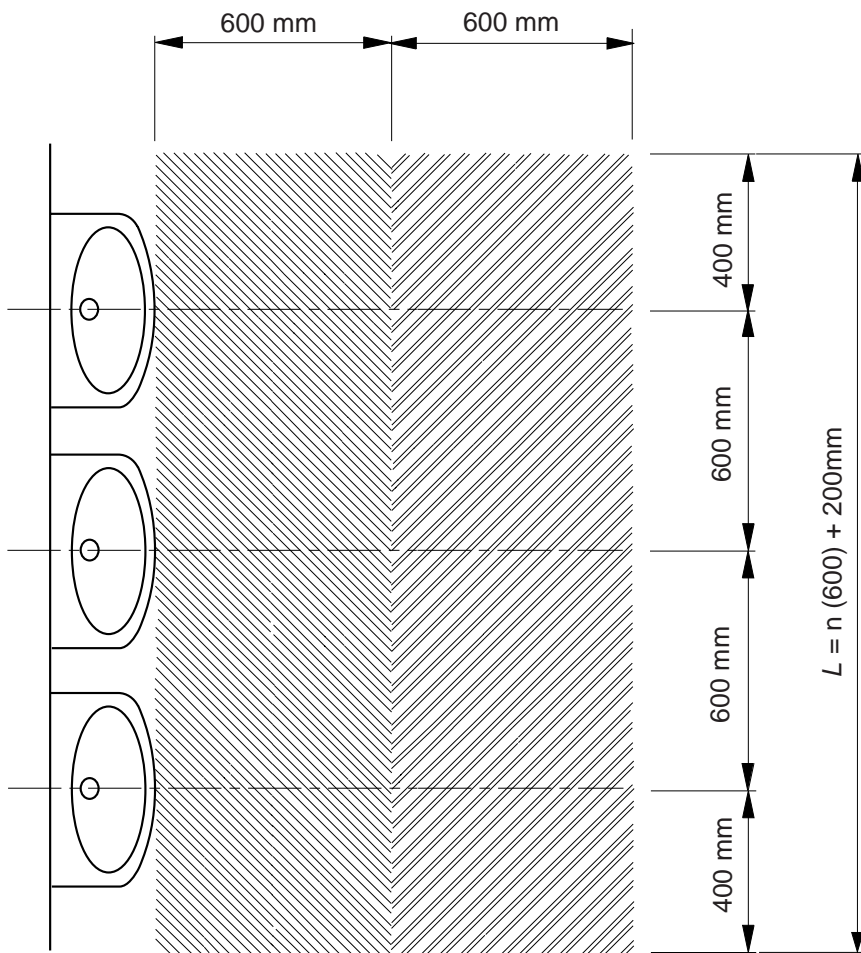






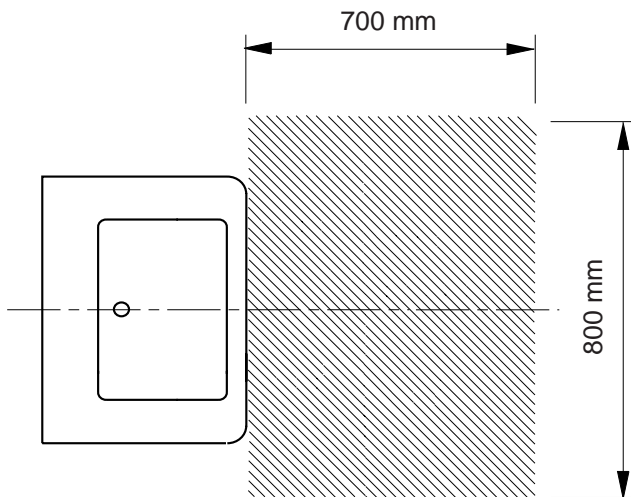
12 Appliances in non-domestic situations





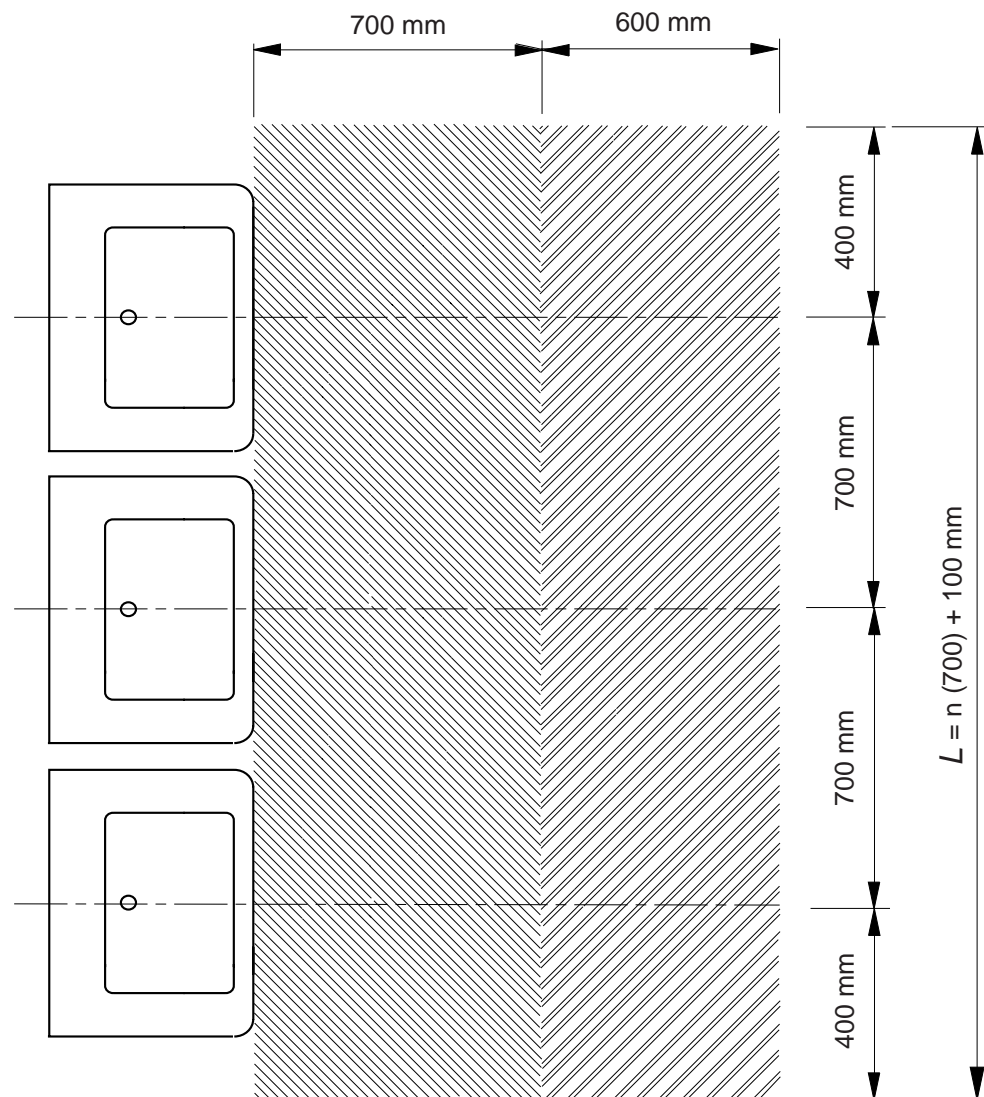
NOTE. L = total width of area;
 n = number of basins.

Figure 10. Range of hand-rinse basins



a) small wash basin

Figure 11. Small wash basins



b) Range of small wash basins

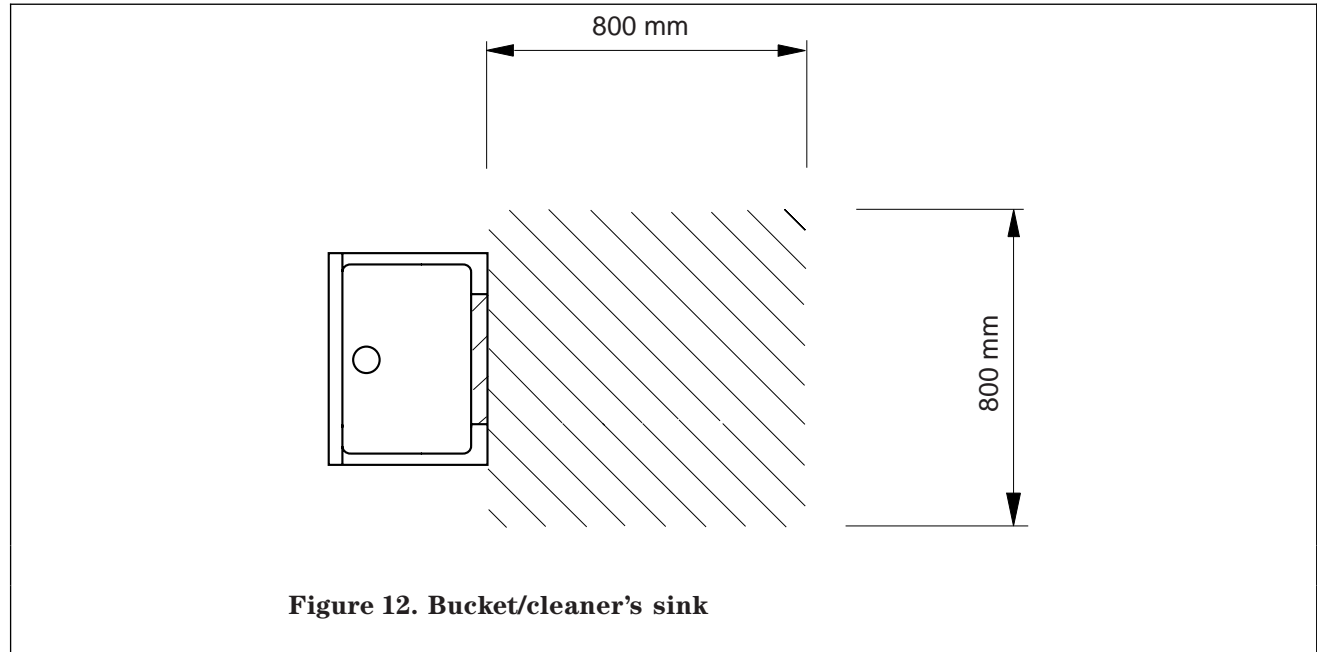
NOTE 1. L = total width of area

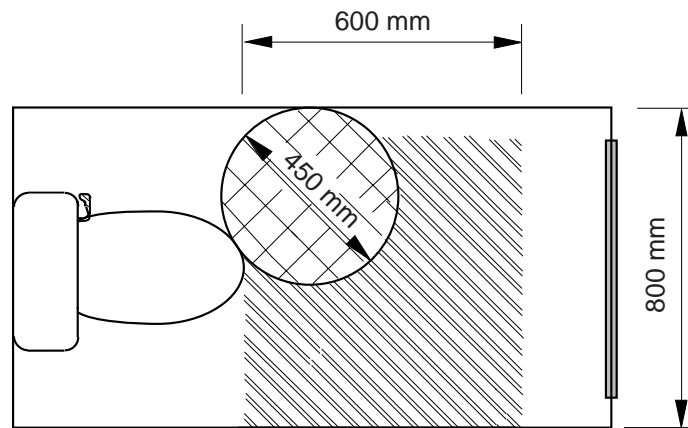
n = number of basins

NOTE 2. Non-domestic wash basins are smaller than domestic wash basins

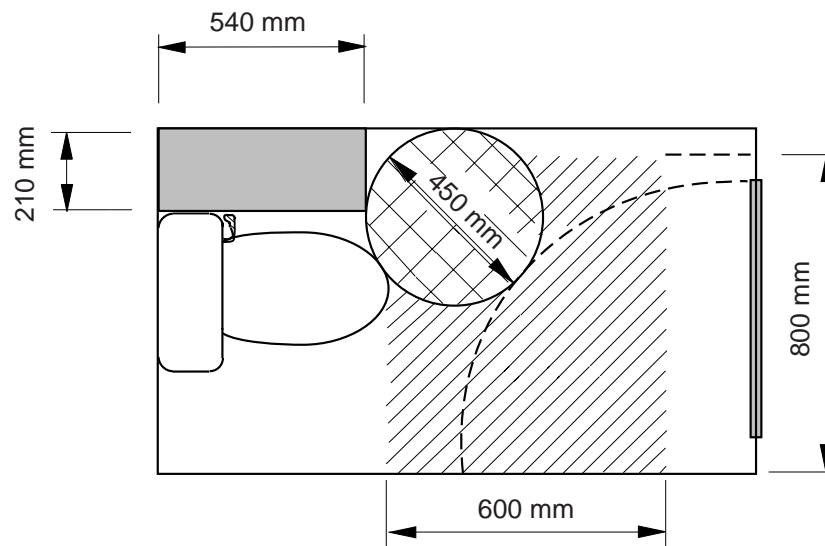
NOTE 3. Wash basins may be installed in a continuous worktop, installed separately side by side or installed with overlaps covering the joints between basins. A gap of at least 65 mm should be allowed between separate washbasins to allow for cleaning. When overlaps cover the joints between basins the width of the washbasins will directly determine the activity space available for individual users.

Figure 11. Small wash basins (concluded)





a) WC in a cubicle without a bin zone



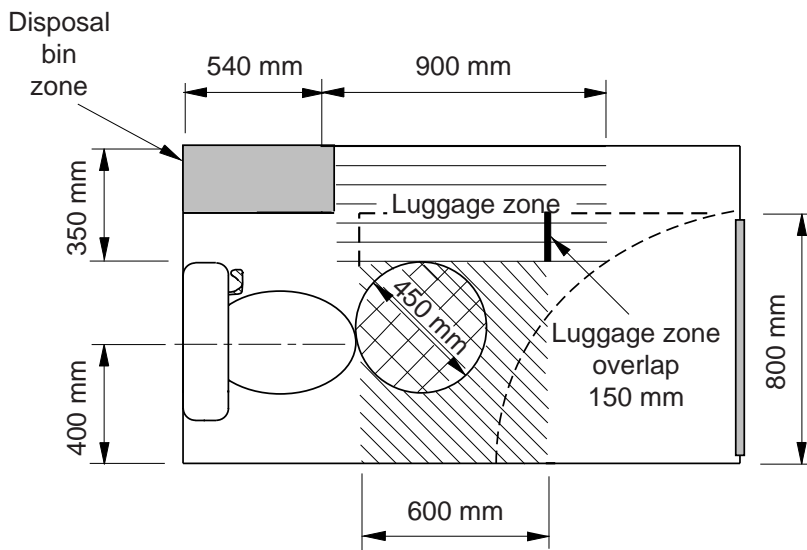
b) WC in a cubicle with a bin zone

NOTE 1. The use of a duct-mounted or high level cistern will allow an overall reduction in the length of the cubicle.

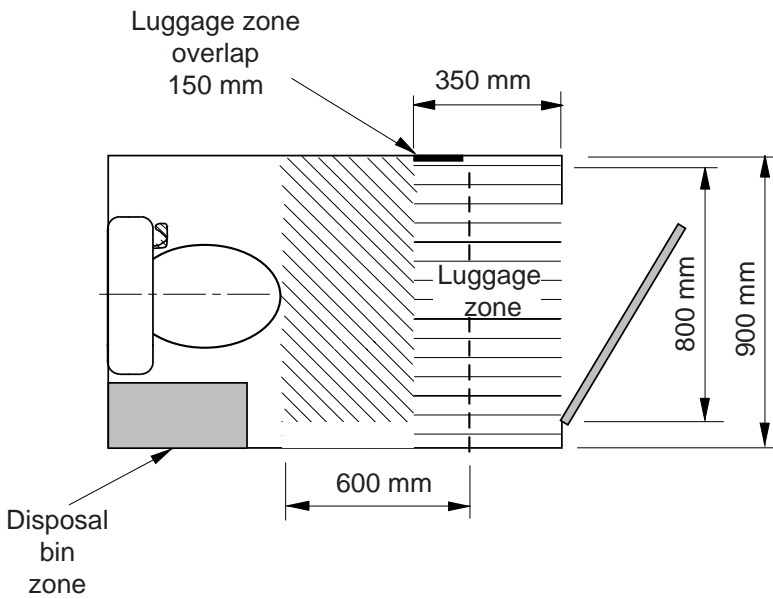
NOTE 2. Offsetting the WC pan is beneficial in accommodating disposal bins and toilet brush holders. Toilet roll holders or paper dispensers should not be positioned so that access to or use of the appliances is impaired.

NOTE 3. Although a conventional WC suite is shown in the figure, a squatting pan suite may be substituted as the requirements for activity space are similar.

Figure 13. WC cubicles

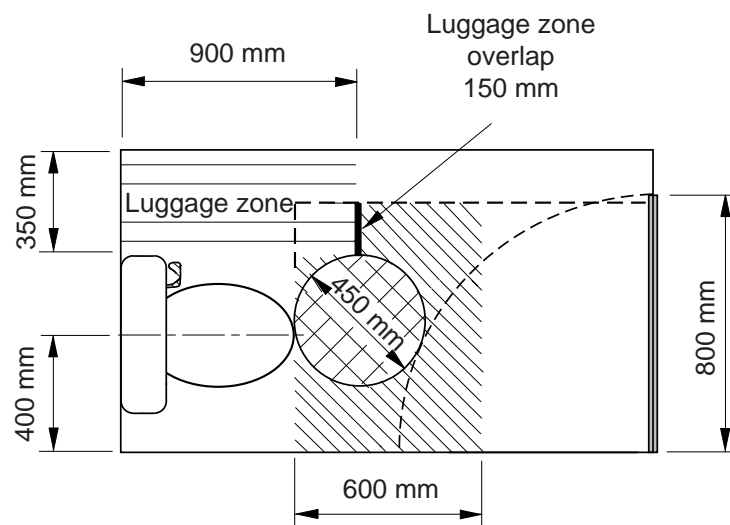


a) Inward opening door cubicle



b) Outward opening door cubicle

Figure 14. WC cubicles to accommodate luggage temporarily



c) Alternative cubicle without bin zone

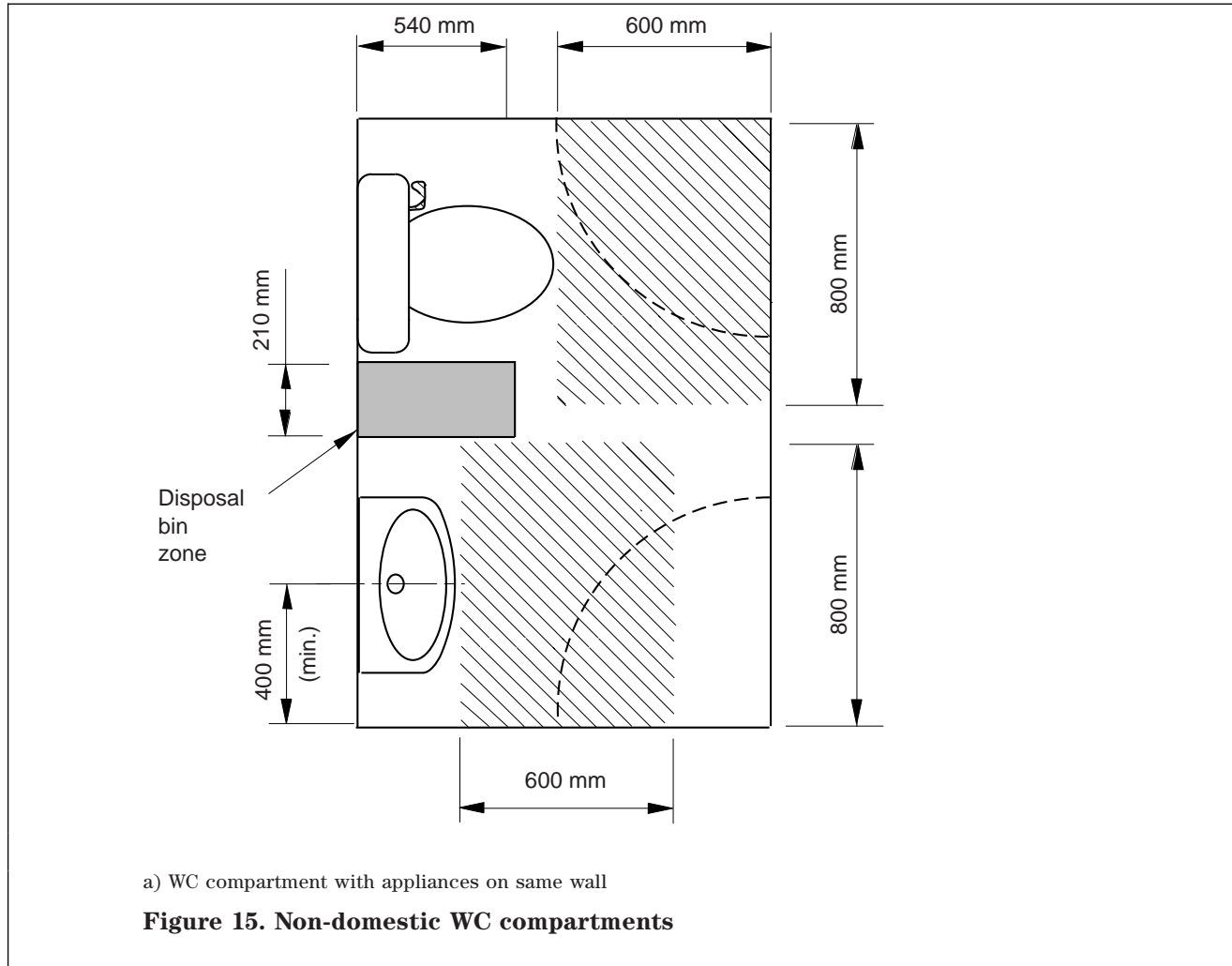
NOTE 1. The use of a duct-mounted cistern will allow an overall reduction in the length of the cubicle.

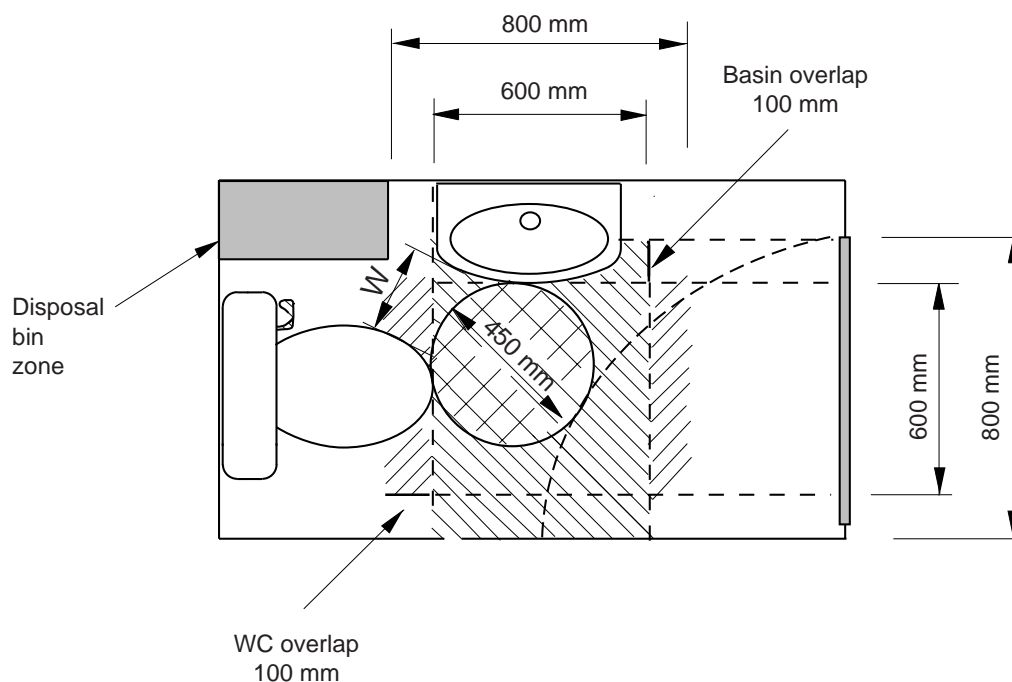
NOTE 2. Offsetting the WC pan, as illustrated, is beneficial in maximizing the luggage zone and accommodating disposal bins and toilet brush holders. Toilet roll holders, or paper dispensers, should not be positioned so that access to or use of the appliances is impaired.

NOTE 3. Adequate space for locating disposal bins should be provided so that they do not obstruct access or interfere with the use of the appliance. It may be objectionable to the user if the bin is in too close proximity to the pan or luggage zone.

NOTE 4. Although a conventional WC suite is shown in the figures, a squatting pan suite may be substituted as the requirements for activity space are similar.

Figure 14. WC cubicles to temporarily accommodate luggage (concluded)





NOTE. Clearance W between basin and WC pan, must exceed width of bin, i.e. be greater than 210 mm.

b) WC compartment with appliances on different walls

NOTE 1. The use of a duct-mounted cistern will allow an overall reduction in the length of the compartment.

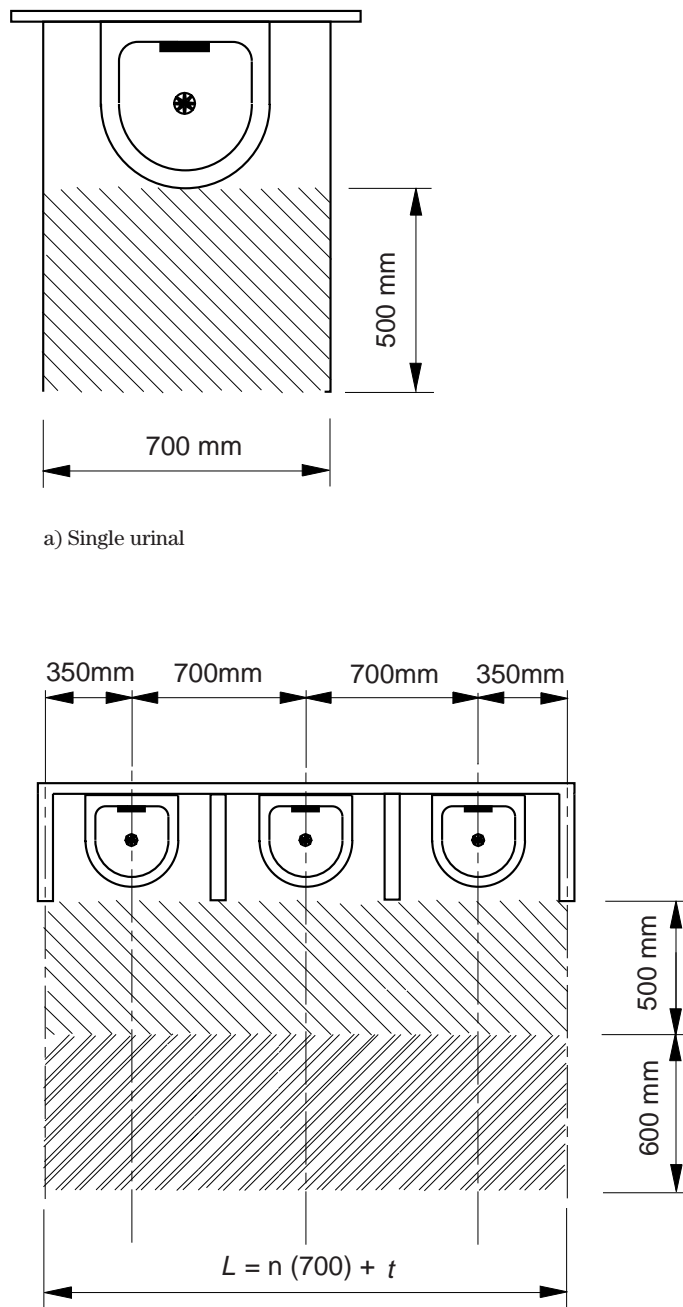
NOTE 2. Offsetting the WC pan is beneficial in accommodating disposal bins and toilet brush holders. Toilet roll holders, or paper dispensers, should not be positioned so that access to or use of the appliances is impaired.

NOTE 3. Adequate space for locating disposal bins should be provided so that they do not obstruct access or interfere with the use of the appliance. The area of the disposal bin zone, 540 mm × 210 mm, will accommodate current sizes of sanitary towel bins intended for use within a cubicle. It may be objectionable to the user if the bin is in too close proximity to the pan.

NOTE 4. For more details on overlapping activity spaces see clause 7.

NOTE 5. Although a conventional WC suite is shown in the figures, a squatting pan suite may be substituted as the requirements for activity space are similar.

Figure 15. Non-domestic WC compartments (concluded)



a) Single urinal

b) Range of urinals

NOTE. L = total width;
 n = number;
 t = screen thickness.

Figure 16. Urinals

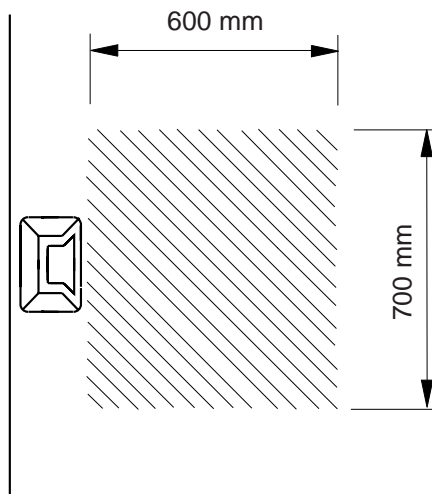


Figure 17. Sanitary towel disposal unit (not in a cubicle)

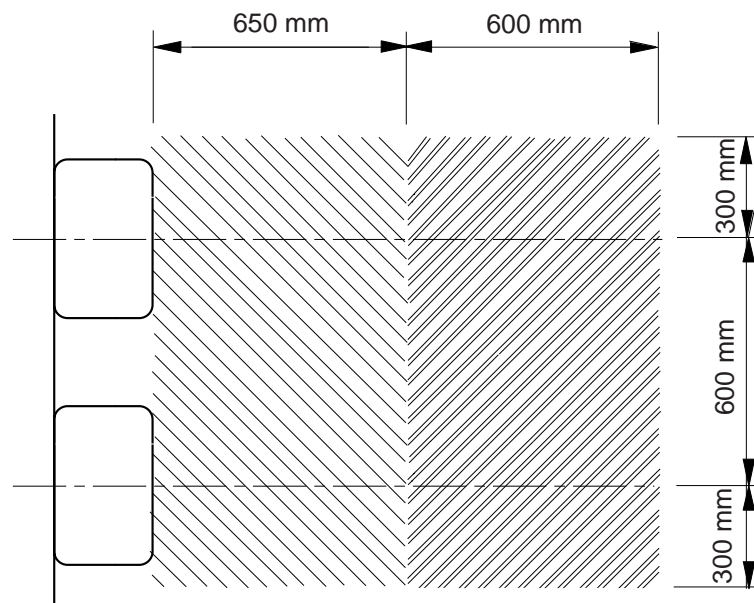
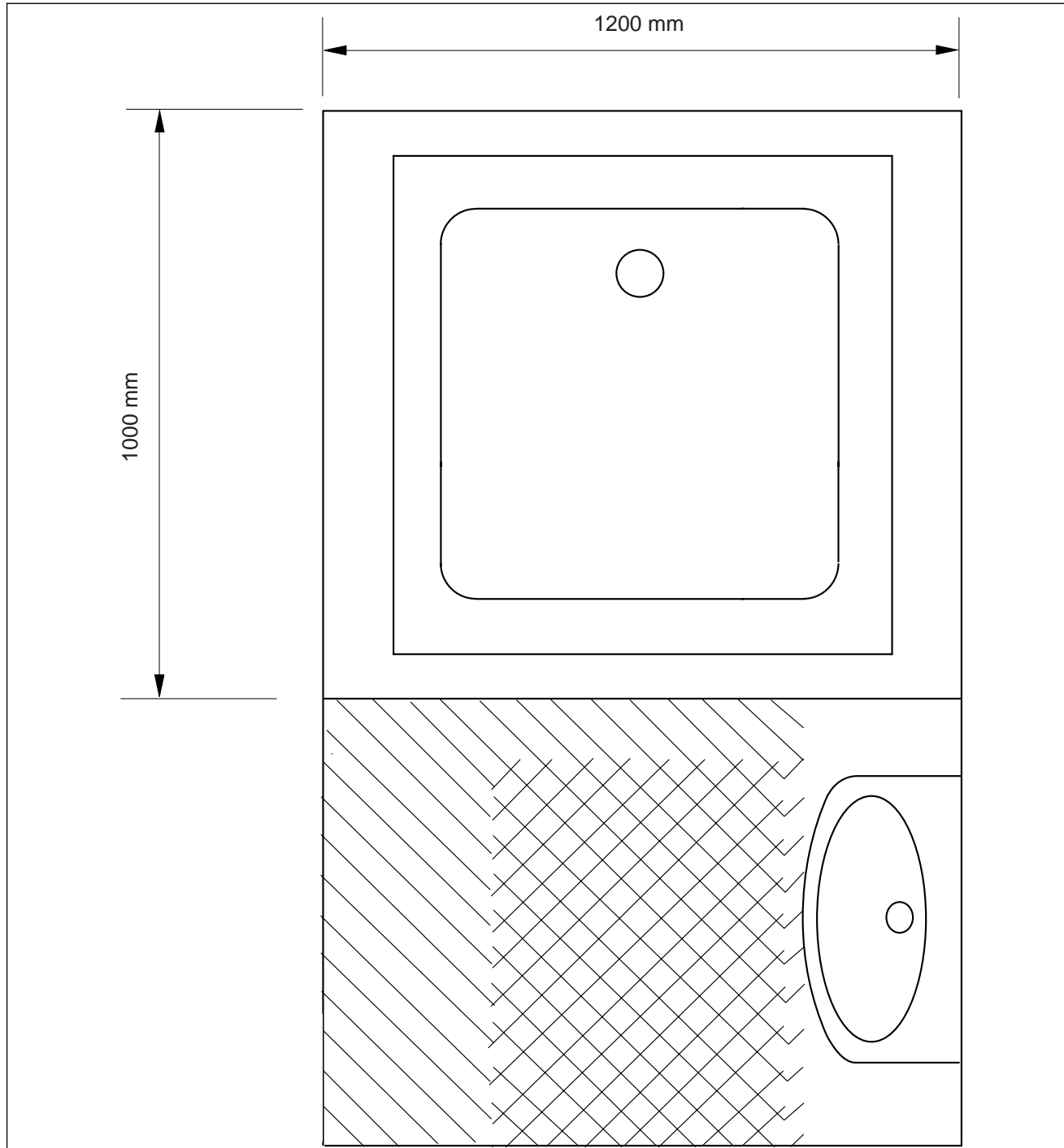


Figure 18. Hand drying facilities

13 Overlapping and displaced activity spaces



a) An example of overlapping and displaced activity spaces

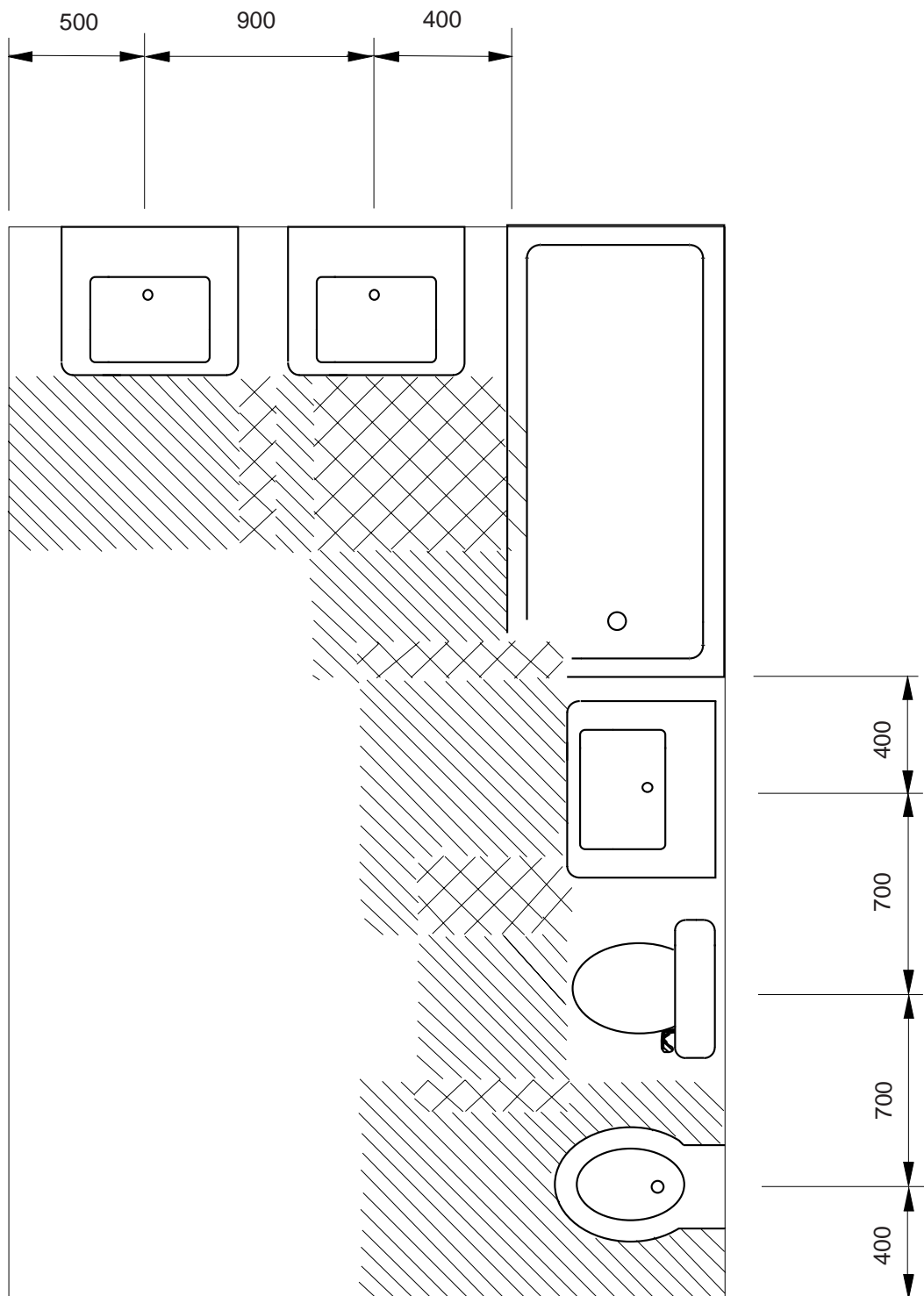
NOTE. This figure shows the arrangement of two appliances within a space where its width is determined by the minimum combination of the width of one appliance and the activity space of the other.

This arrangement has centred the shower tray in a larger enclosure outside which its activity space, of 900 mm × 700 mm, has been displaced and rotated. The hand rinse basin's activity space of 800 mm × 600 mm is superimposed upon the shower's activity space.

The positioning of a tray within a larger enclosure more easily facilitates the provision of a shower seat within the enclosure.

Space not required for the appliances or users can be utilized for pipework ducts.

Figure 19. Overlapping and displaced activity spaces



b) Bathroom layout showing the principles of approach in a domestic bathroom: Overlapping activity spaces

NOTE. This arrangement of appliances illustrates the various ways in which activity spaces can overlap within a room but can not extend beyond walls.
See also clause 7

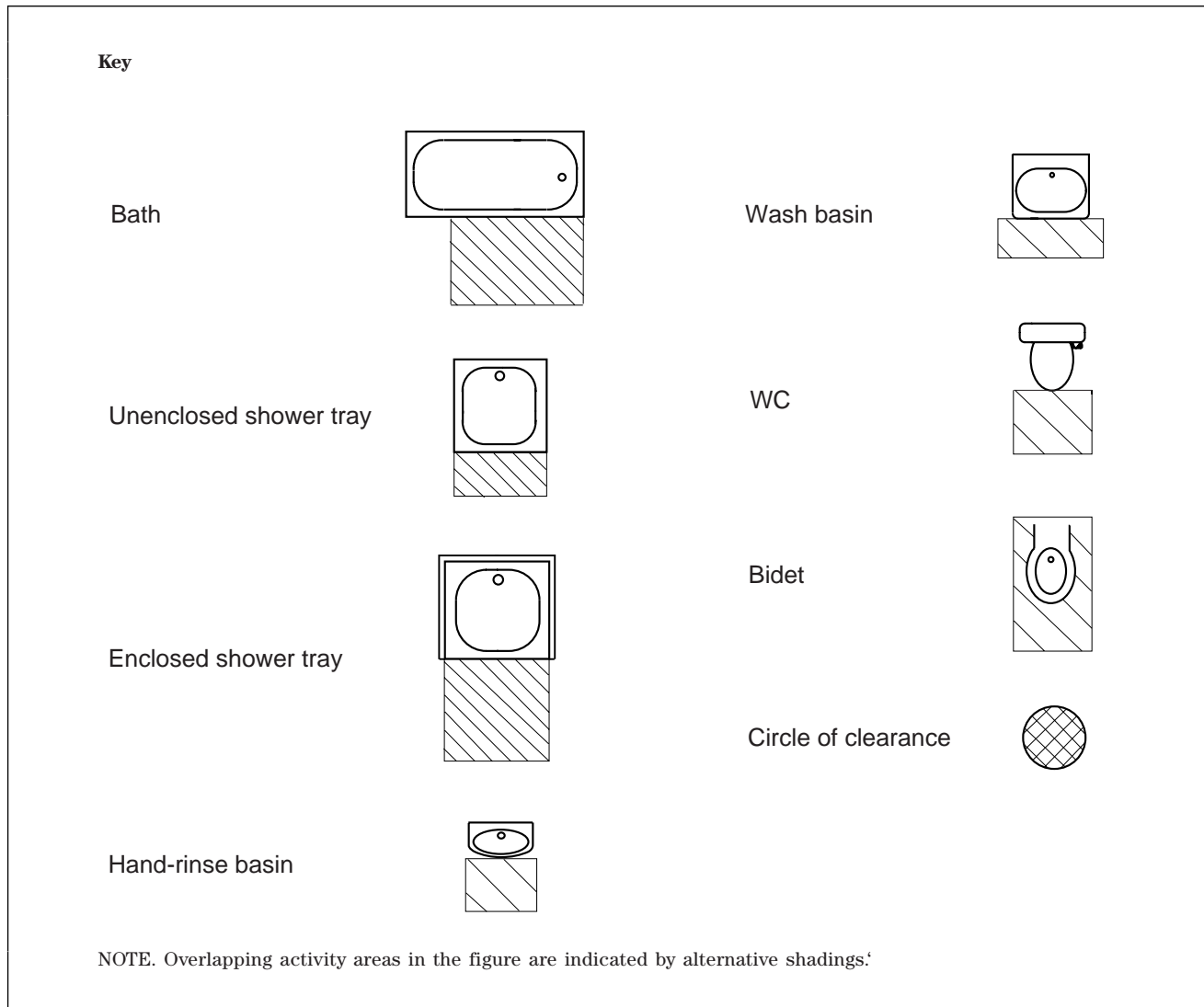
Figure 19. Overlapping and displaced activity spaces (Concluded)

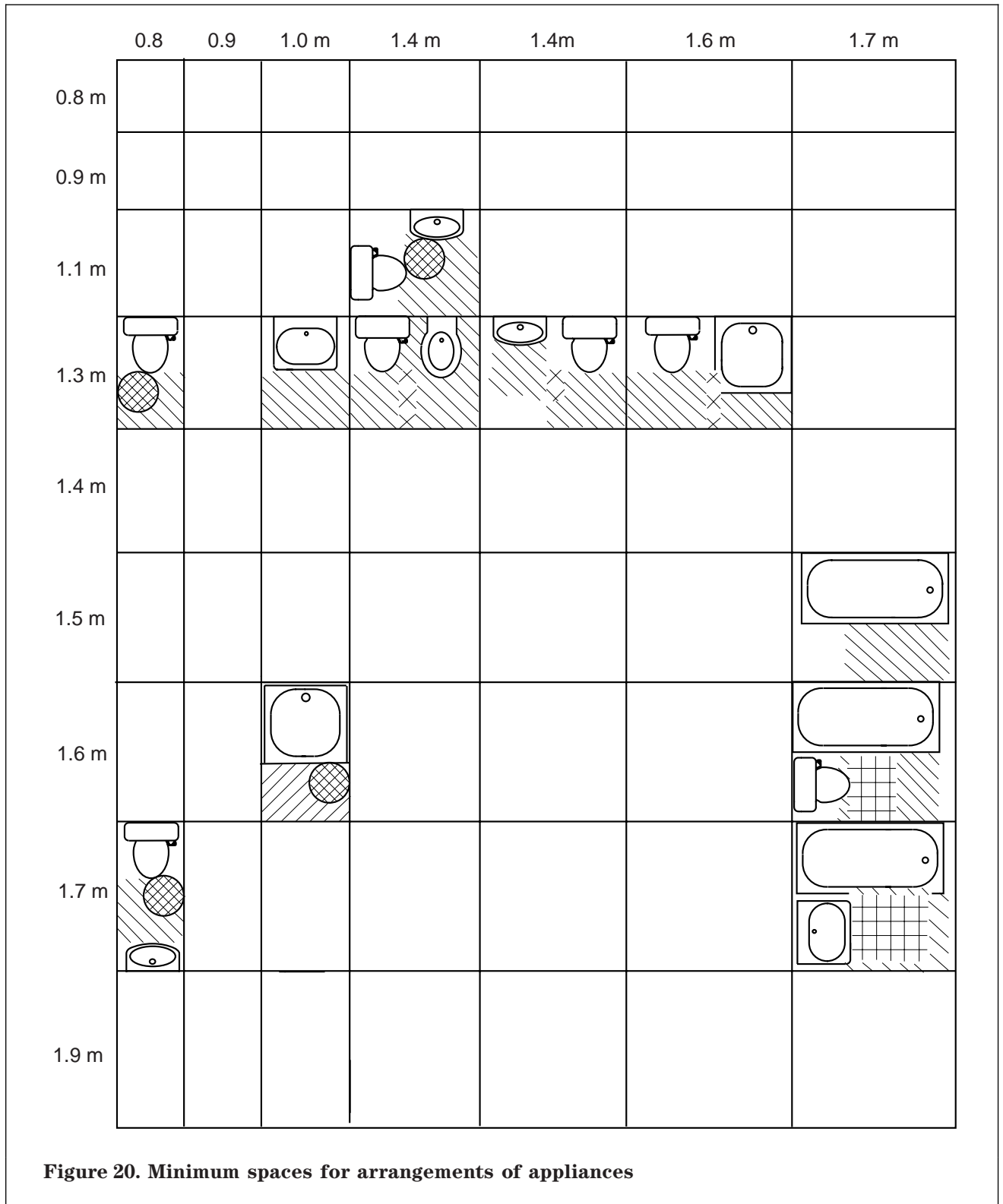
13.1 Introduction to figure 20

The following matrices show the minimum spaces for various appliance arrangements. Different arrangements of the same appliances may result in other sized spaces.

In planning, the matrices can be taken to represent the internal dimensions of rooms or parts of rooms. No account of door location has been taken, but in most situations with more than one appliance, inward opening doors will be easily accommodated. Where a door is expected and an inward swing is critical, a circle of clearance is shown to alert the reader.

The appliances represented in the matrices are dimensioned in accordance with table 1. Although activity spaces should remain constant, appliances of different dimensions may require alternative size spaces. Items with similar activity spaces may be interchanged; such as the WC and bidet.





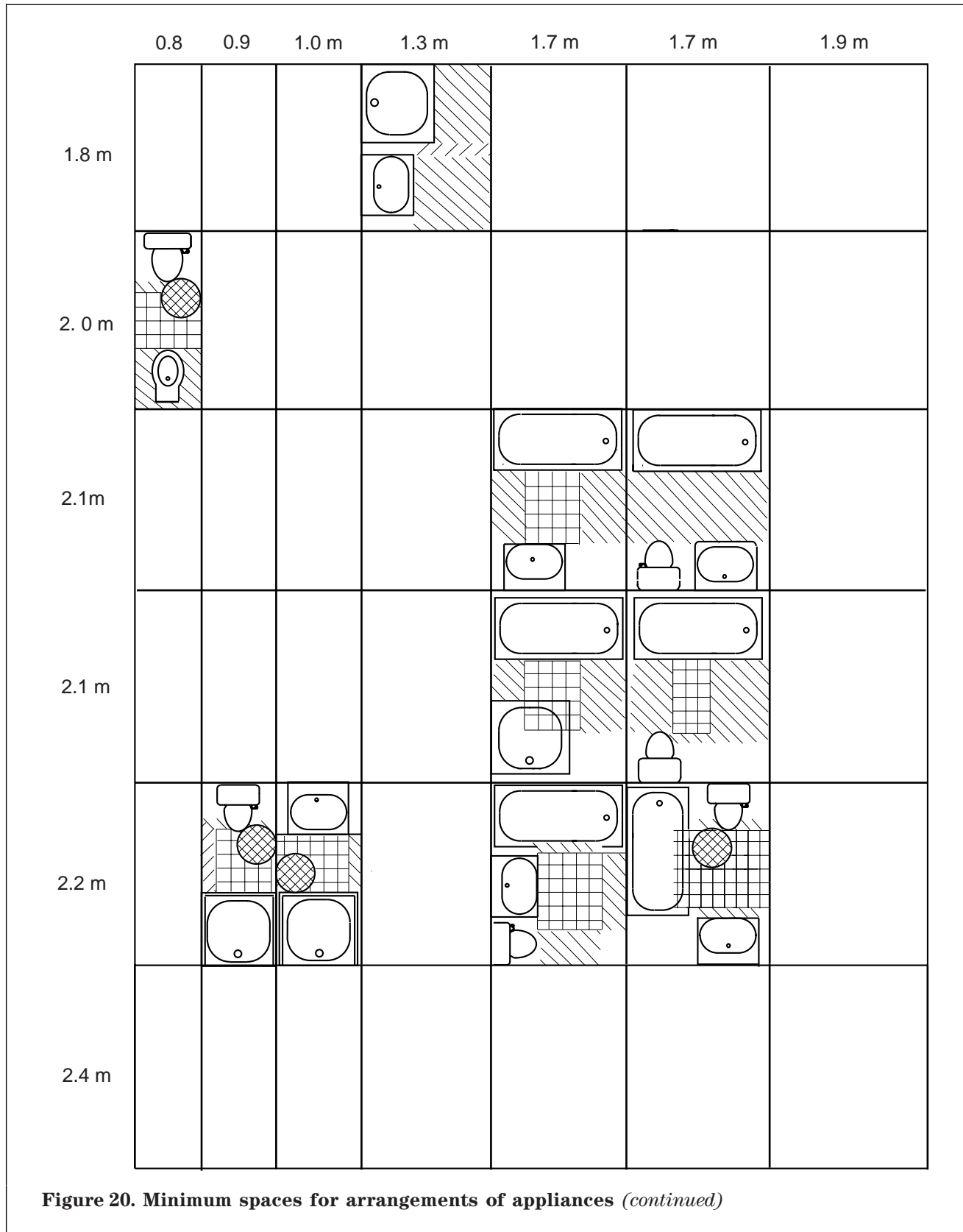
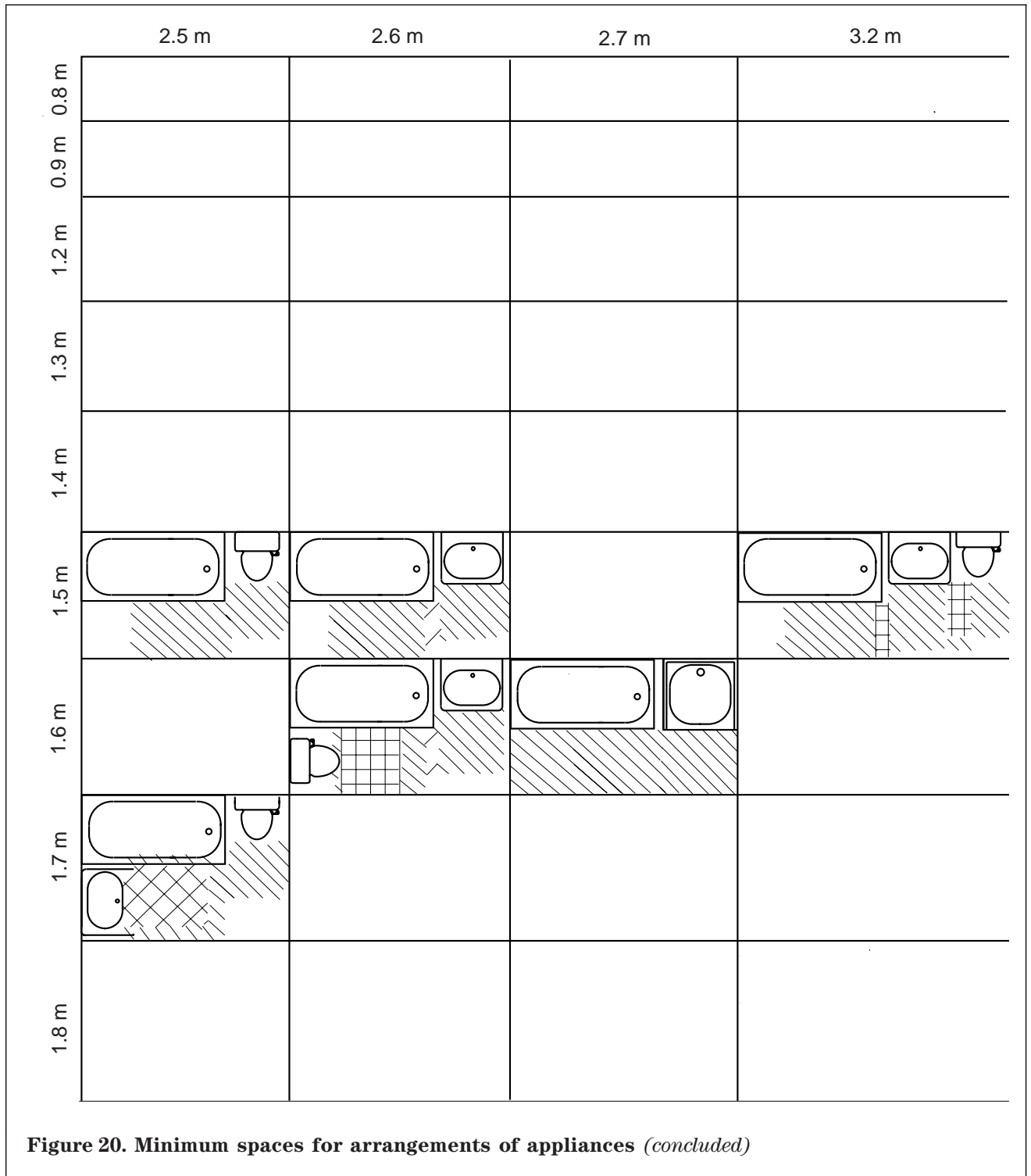


Figure 20. Minimum spaces for arrangements of appliances (continued)



Annex

Annex A (informative)

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List of references (see clause 2)

Normative references

BSI publications

BRITISH STANDARDS INSTITUTION, London

BS 5572 : 1994	<i>Code of practice for sanitary pipework</i>
BS 5619 : 1978	<i>Code of practice for design of housing for the convenience of disabled people</i>
BS 5810 : 1979	<i>Code of practice for access for the disabled to buildings</i>
BS 6100 :	<i>Glossary of building and civil engineering terms</i>
BS 6100 : Part 3	<i>Services</i>
BS 6100 : Section 3.3 : 1992	<i>Sanitation</i>
BS 6465 :	<i>Sanitary installations</i>
BS 6465 : Part 1 : 1994	<i>Code of practice for scale of provision, selection and installation of sanitary appliances</i>
BS 6700 : 1987	<i>Specification for design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages</i>
BS 7671 : 1992	<i>Requirements for electrical installations — IEE Wiring Regulations— Sixteenth edition</i>

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