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**DOORS AND DOOR HARDWARE**

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**1 GENERAL**

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**1.1 INTERPRETATION****Definitions**

For the purposes of this worksection the definitions given below apply.

- Door frame: Includes door trims.
- Doorset: An assembly comprising a door or doors and supporting frame, guides and tracks including the hardware and accessories necessary for operation.
  - . Fire-doorset: A doorset which retains its strength and limits the spread of fire.
  - . Smoke-doorset: A doorset which restricts the movement of smoke.
- Flush door: A door leaf having two flat faces which entirely cover and conceal its structure. It includes doors with cellular and particleboard cores.
- Joinery door: A door leaf having stiles and rails, framed together. A joinery door may also incorporate glazed panels.
  - . Louvred door: A joinery door in which the panel spaces are filled in with louvre blades.

**1.2 INSPECTION****Notice**

Give sufficient notice so that inspection may be made of the following:

- Door frames standing in place before building in to brickwork.
- Door frames installed before fixing trim.

**1.3 SUBMISSIONS****Samples**

Submit samples of all hardware items for approval by the Engineer before use in the works.

**Subcontractors**

Automatic sliding door assemblies: Submit names and contact details of proposed supplier and installer.

**Product warranties**

Automatic sliding door assemblies: Submit a warranty from the supplier and installer for the system and its installation, for a period of at least twelve months from the date of completion.

Hardware: Submit the warranties offered by the manufacturer for the hardware items provided in the works.

**Keys**

Key codes: Submit the lock manufacturer's record of the key coding system showing each lock type, number and type of key supplied, key number for re-ordering, and name of supplier.

Keys: For locks keyed to differ and locks keyed alike, verify quantities against key records, and deliver all keys and records to the Engineer at completion.

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**2 PRODUCTS**

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**2.1 FRAMES****Aluminium frames**

To be assembled from aluminium sections, including necessary accessories such as buffers, strike plates, fixing ties or brackets, and suitable for fixing specified hardware.

**Timber frames**

To be constructed with best quality timber. Obtain approval from the Engineer for the timber selection before use. Construct as shown on the drawings and ensure that all joints are securely made to avoid distortion of the frame in use.

**Steel frames**

To be folded from metallic-coated steel sheet sections, joints to be continuously welded, including necessary accessories such as buffers, strike plates, spreaders, fixing ties or brackets, and suitable for fixing specified hardware.

Finish: Grind the welds smooth, prepare and paint the welded joints with primer. Then prime the entire frame.

Hardware and accessories: Provide for fixing hardware including hinges and closers, using 4 mm backplates inside the frame. Screw fix the hinges into the back plates.

Base metal thickness:

- General:  $\geq 1.1$  mm.
- Fire rated doorsets:  $\geq 1.4$  mm.
- Security doorsets:  $\geq 1.6$  mm.

**2.2 DOORS****Flush doors**

Cellular core flush doors:

- Provide a subframe of 25 mm minimum width timber around openings for louvres and glazing.
- Provide additional material to take hardware and fastenings.
- Cut outs: If openings are required in flush doors (e.g. for louvres or glazing) make the cut outs not closer than 120 mm to the edges of the doors.

Solid core flush doors:

- Core of timber strips laid edge to edge, fully glued to each other and to facings each side of no less than two sheets of timber veneer.
- Single thickness of moisture resistant general purpose particleboard.

Refer to drawings and **Flush Doors Construction Schedule** for details.

**Joinery doors**

Fabricate joinery doors as shown on the drawings and in the **Joinery Doors Construction Schedule**.

**Construction**

Form rebates to suit standard rebated door hardware.

Louvre grilles: Construct by inserting the louvre blades into a louvre frame, and fix the frame into the door.

**Double doors**

Provide rebated meeting stiles unless the doors open in both directions. Chamfer square edged doors to prevent binding between the leaves.

**2.3 DOORSETS****Automatic sliding door assemblies**

Provide auto sliding door assemblies in accordance with the **Automatic door schedule**.

**Toughened glass door assemblies**

Provide toughened glass door assemblies with matching concealed hinges and patch fittings as appropriate. Ensure that all glass edges are protected during installation and polish on completion.

**Fire-resistant doorsets**

Provide fire resistant doors and frames as matched sets for door openings required to have a fire rating.

Provide copies of test certificates from recognised authorities proving the performance of the doorsets.

**Smoke-resistant doorsets**

Provide smoke resistant doors and frames as matched sets for door openings required to have a smoke stopping capability.

Provide copies of test certificates from recognised authorities proving the performance of the doorsets or seals to frames.

**Security screen doorsets**

Provide security screen doorsets in accordance with the **Security screen doors construction schedule**.

**2.4 ANCILLARY MATERIALS****Nylon brush seals**

To be dense nylon bristles locked into galvanized steel strips and fixed in a groove in the edge of the door or in purpose-made anodised aluminium holders fixed to the door

**Pile weather strips**

To be polypropylene or equivalent pile and backing, low friction silicone treated, ultra-violet stabilised.

**Door Seals**

To be proprietary items as identified in Schedules and to approval of Engineer.

**2.5 HINGES****Butt hinge sizes**

Refer to **Hinge table A** and **Hinge table B** in which length (l) is the dimension along the knuckles, and width (w) is the dimension across both hinge leaves when opened flat.

- Steel, stainless steel, brass, bronze butt hinges for timber doors in timber or steel frames: To **Hinge table A**.
- Aluminium hinges for aluminium doors, or for doors of other materials in aluminium frames: To **Hinge table B**.

**Hinge materials**

Aluminium hinges: High tensile aluminium with fixed stainless steel pins in nylon bushes, and with nylon washers to each knuckle joint.

Doors fitted with closers: Provide low friction bearing hinges.

**Hinge pins**

Exterior or security doors opening out: Provide fixed pin hinges.

**Hinge table A**

Nominal hinge size l x w x t (mm)	Door leaves not exceeding any of the following		
	Mass (kg)	Width (mm)	Thickness (mm)
70 x 50 x 1.6	16	620	30
85 x 60 x 1.6	20	820	35
100 x 75 x 1.6	30	920	40
100 x 75 x 2.5	50	920	50
100 x 75 x 3.2	70	1020	50
125 x 100 x 3.2	80	1220	50

**Hinge table B**

Nominal hinge size l x w x t (mm)	Door leaf not exceeding mass (kg)	Minimum construction	
		Knuckles	Screws/hinge leaf
100 x 70 x 3	30	3	3
100 x 80 x 3.5	50	5	4

**Number of hinges**

Provide 3 hinges for doors up to 2200 mm high, and 4 for door leaves between 2200 mm and 3000 mm high.

**Wide throw**

If necessary, provide wide throw hinges to stop doors binding on obstacles such as nibs or deep reveals.

## 2.6 DOOR HANGING SYSTEMS

### General

Provide sliding door tracks in conformance with the schedules.

## 2.7 LOCKS AND LATCHES

### General Door Hardware

Provide hardware of sufficient strength and quality to perform its function, appropriate to the intended conditions of use and climate and fabricated with fixed parts firmly joined.

### Bolts

Provide bolts including barrel bolts and tower bolts with associated hardware, including lock plates, ferrules or floor sockets.

### Furniture

Provide lock and latch furniture suitable for use with the lock or latch to which it is installed with the corresponding level of performance.

### Strike plates

Use strike plates provided with the locks or latches.

### Fire rated door closers

Provide closers tested and certified for use as components of fire door assemblies.

### Door Controllers Performance

Provide door controllers, including door closers, floor or head spring pivots which are suitable for the door type, size, weight and swings required and the operating conditions, including wind pressure.

## 3 EXECUTION

### 3.1 FRAMES

#### General

Install doors so that the frames:

- Are plumb, level and straight within acceptable building tolerances.
- Are fixed or anchored to the building structure to resist the wind loading.
- Will not carry any building loads, including loads caused by structural deflection.
- Allow for thermal movement.

#### Flashing and weatherings

Install moulds, sealant and cement pointing as required so that water is prevented from penetrating the building between the door frame and the building structure.

#### Aluminium frames

Building in to masonry: Screw galvanized steel brackets twice to jambs and build in.

Fixing to masonry openings: Use proprietary expansion anchors and screw through jambs at each fixing.

#### Frame fixing

Brackets: Metallic-coated steel:

- Width:  $\geq 25$  mm.
- Thickness:  $\geq 1.5$  mm.

Jamb fixing centres:  $\leq 600$  mm.

#### Fixing and fasteners

Materials: Use materials compatible with the item being fixed and of sufficient strength, size and quality to perform their function.

Concealed fixings: Provide a corrosion resistant finish.

Exposed fixings: Match exposed fixings to the material being fixed.

Support: Provide appropriate back support (for example blocking and backing plates) for hardware fixings.

Packing: Pack behind fixing points with durable full width packing.

Prepared masonry openings: If fixing timber door frames into existing prepared openings with fastenings through the frame face, make the fastener heads finish below the surface and fill the hole for a smooth surface finish.

**Joints**

Make accurately fitted tight joints so that neither fasteners nor fixing devices such as pins, screws, adhesives and pressure indentations are visible on exposed surfaces.

**Operation**

Ensure moving parts operate freely and smoothly, without binding or sticking and are lubricated.

**Supply**

Deliver door hardware items, ready for installation, in individual complete sets for each door.

- In a separate dust and moisture proof package labelled for the specific door.
- Including the necessary templates, fixings and fixing instructions.

Refer to the drawings and **Flush Doors, Joinery Doors, Security Screen Doors, Fire and Smoke Resistant Doorset Schedules** and **Automatic Door Construction Schedules** for details of frames and doors.

**3.2 COMPLETION****Cleaning**

The Contractor is to clean all frames, doors, glass, hardware at completion. Any damage to frames and doors, or broken glass is to be repaired or replaced to the satisfaction of the Engineer.

**Adjustment**

Leave the hardware properly adjusted with working parts in working order and lubricated where appropriate.

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