General:

When considering doorsets for public buildings there is a tendency to concentrate on particular performances e.g. fire performance, acoustic properties etc. This can lead to an oversight of the basic function of a doorset which is to provide a means for 'traffic' to pass from one side of a wall to the other.

To perform in any other role, the doorset must work reliably over a long period of time and often under conditions were the doorsets are subjected to abuse. If the door does not close properly then all of the other performances that might otherwise be attributed to the particular location will be undermined.

British Standard Draft for Development DD171 : 1987 provides a means for the mechanical testing of doorsets with the complete doorset being subjected to various levels of abuse to allow for the evaluation of mechanical performances by Grading according to the following criteria:

LD = Light Duty : Low frequency use by those with a high incentive to exercise care. e.g. by private house owners - small risk of accident occurring or abusive use.

MD = Medium Duty : medium frequency use primarily by those with some incentive to exercise care - some chance of accident occurring or mild abuse.

HD = Heavy Duty : High frequency use by public and others with little incentive to exercise care. Risk of accident with probability of some abuse. e.g. offices, particularly offices open to the public.

SD = Severe Duty : High frequency use with risk of accidental damage and possibility of violent abusive usage. e.g. Hospitals, secure penal & mental establishments etc.

It is important to appreciate that DD171 testing relates to the doorset as a whole i.e. including ironmongery and quality of installation.

MECHANICAL TEST DATA - Strebord[44]

Test	Measurement and / or Assessment of		Acceptance Limit	Measured Performance Strebord[44] Door 1 Actual	Door 1 Grade	Door 2 Actual	Door 2 Grade
Slamming Shut	Overall condition - 150No. Impacts		No damage	No apparent damage	SD	No apparent damage	SD
Slamming Open	Overall condition - Impact energy = 50J		No damage	No apparent damage	SD	No apparent damage	SD
Heavy Body Impact	Residual Deflection in mm Overall condition - Impact energy = 150J		Max. 2mm No damage	<2mm No apparent damage	SD	<2mmNo apparent damage	SD
Hard body Impact	Grade LD Grade MD Grade HD Grade SD	Maximum Deformation in mm. - Impact energy = 8J	Max. 1.25mm Max. 1.25mm Max. 1.25mm Max. 1.25mm	< 1.25mm No apparent damage	SD	< 1.25mm No apparent damage	SD
Torsion	Deflection in mm /	Maximum Residual - Applied force = 400N	No min. limit Max. 3mm	< 3mm No apparent damage	SD	< 3mm No apparent damage	SD
Downward Deformation	Deflection in mm	Maximum Residual - Applied force = 500N	No min. limit Max. 3mm	<3mm No apparent damage	SD	<3mm No apparent damage	SD
Closure against obstruction	Overall condition - Applied force = 200N		No damage	No apparent damage	SD	No apparent damage	SD
Jarring	Overall condition - 200No. Impacts		No damage	No apparent damage	SD	No apparent damage	SD
Abuse	Overall condition - Applied force = 750N		No damage	No apparent damage	SD	No apparent damage	SD
Operation Force N (Newtons)	Age 5~7 Age 8~11 Age 60~75	Lever / Knob operating force.	30 / 20N 70 / 35N 70 / 35N	7.7 / 21.2N	5~7 yr. old	5.1 / 5.7N	5~7 yr. old

Strebord©
Door Core

Mechanical Performance

Frames:

DD171 Mechanical performance testing has been carried out with both softwood (450kg/M3) and hardwood (640kg/M3) frames.

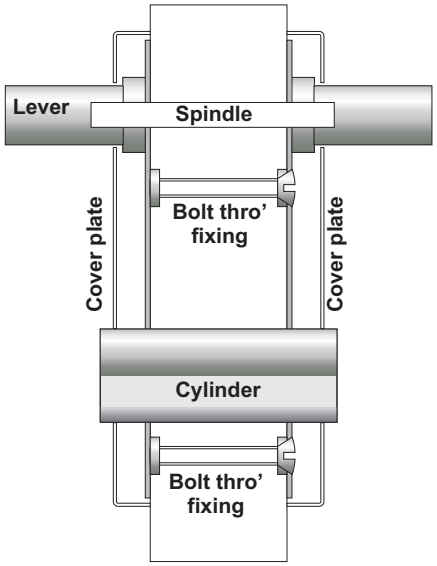
The minimum frame specification being 70x32mm fin. with a 20x12mm pinned or screwed & glued planted doorstop. Frames to be glued mortice & tennon jointed.

Ironmongery:

Hinges: Tests were carried out using 3No. Royde & Tucker 102 Hi load hinges using standard fixings to the frame and 1 1/2in. No. 10 fully threaded twinfast chipboard screws into the door leaf.
Hinges of a similar design and fixing pattern may be used where fixed in a similar manner.

Locks / Latches: Tests were carried out using the Dorma 515mm latch with 55mm backset in conjunction with Dorma Art.19 strike plate and Ogro ZS8100 leverset with Orgo ZS7020L backplate.
Similar lock / latch designs (i.e. not exceeding 18mm thickness lock / latch body with 25mm wide (or less) forend / strike plates) may be used in conjunction with backplate fittings with bolt through fixings. e.g. ASSA 6650 leversets & ASSA 320 / 330 cylinder roses.

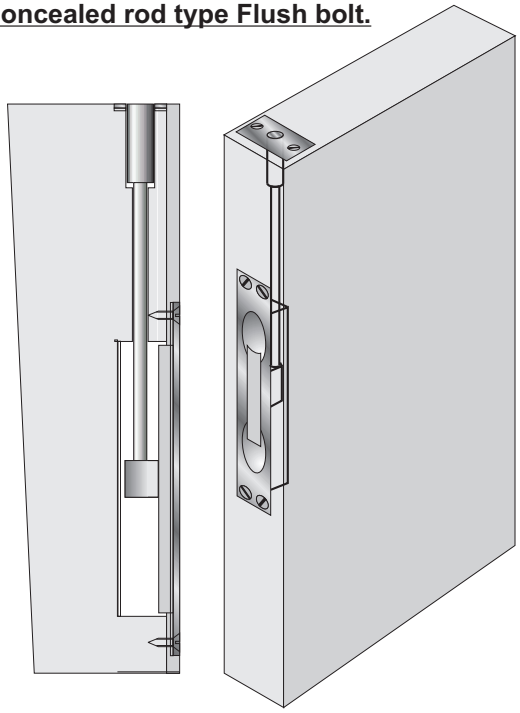
Recommended Lock / Latch fitting.



Surface Mounted Closers: Tests were carried out using a Dorma TS83 single action closer secured to a mounting plate that was fitted to the door leaf with 4No. 1 1/4in. No.10 chipboard screws.
Surface mounted closers of a similar design with a minimum of 4No. 1 1/4in. No. 10 chipboard screw fixings may be used.

Other Ironmongery: Additional surface mounted ironmongery may be used without detriment to mechanical performance. e.g. kick & buffer plates.
Pull handles should be of the 'bolt-through' type used in conjunction with load spreading washers on the bolted face with pull handle fixings covered by a finger plate.
Surface mounted Emergency Exit & Panic devices as described in the Ironmongery section may be used.
Surface mounted barrel bolts (e.g. Versabolt IR Laidlaw Ref. 34 008) or concealed rod type edge fixed flush bolts (e.g. John Planck Ltd. Ref. RB-001 or 001R) may be used for pairs of doors with minimal degradation of mechanical performances.

Recommended
Concealed rod type Flush bolt.



PAS 23-1 : 1999, Clauses 6.3 & 6.11:

In addition to the DD171 Mechanical Tests, Strebord[44©] doors have been successfully tested to 500,000 cycles by reference to the cyclic operation tests described in PAS 23, with no evident degradation to the fixing of ironmongery.