

Chiltern

INTERNATIONAL FIRE

Formerly part of TRADA Technology Ltd

FIRE TEST CONFIRMATION

TEST No. RF00010

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This document confirms that a fire test to BS 476 : Part 22 was conducted on your specimen on 21st February 2000 and that an assessment of the results indicates that the specimen achieved the performance outlined below. The specimen was delivered on 30th January 2000

SPONSOR	N.V Tools Ltd. St. James's Road, Brentwood, Essex, CM14 4LL	
TEST SPECIMEN CONFIGURATION	Single leaf, single acting doorset fitted with SQSS stainless steel invisible type hinges.	
TEST SPECIMEN	The doorset comprised a Unilin flaxboard core with Nemasu stiles and rails. The leaves were faced with 3mm plywood, tipped with hardwood on the vertical edges and hung on NV Tools Ltd SQSS 219SS stainless steel invisible type hinges into a hardwood door frame.	
DIMENSIONS	The doorleaf - 828mm wide x 2040mm high x 52.5mm thick The hinge - 117.5mm long x 28.6mm wide with a 10.3 thick plate and fitted in a 40.5 deep mortise. The hinges were fitted 200mm, 610mm and 1630mm from the leaf head to the centre of the hinge body.	
TEST RESULT	Integrity	Insulation
	64 (sixty four) minutes	64 (sixty four) minutes

The test result above was obtained from the doorset comprising leaf, frame, ironmongery and intumescent materials. The results are only directly applicable to doorsets constructed to an identical specification to that tested.

THIS IS NOT A TEST REPORT OR CERTIFICATE

Full details of the test and the test construction will be found in our report reference FER/F00010. Whilst the test data within this letter relates to a test which was conducted fully in accordance with BS476: Part22:1987, the presentation of the results in summarised form by way of this letter does not satisfy the requirements of the standard. The presentation of the results in this way is by agreement with the sponsor who wishes to use the information for his own internal use only.



Jonathan Osborn
Senior Engineer



Mostyn Bullock
Fire Test Manager

Date: 20/04/2000

Chiltern International Fire Limited
A member of the TTL Chiltern Group of companies

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Registered Number 3125010 England

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CONFIDENTIAL

Test Report : RF00010

A fire resistance test performed on
a single leaf single acting doorset incorporating
'SOSS 218SS Stainless Steel Invisible Hinges'

Test conducted in accordance with BS 476 : Part 22 : 1987

Test Date: 21 February 2000

Test for :
NV Tools Ltd
St James's Road
Brentwood
Essex
CM14 4LL

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Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

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No. 1762

Chiltern International Fire Limited

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1. Introduction

The hinges and door leaf were supplied for test by the client and delivered in January 2000. Chiltern International Fire Limited (CIFL) further produced the doorset and constructed a timber stud/plasterboard clad partition and installed the doorset into the partition.

2. Specification

Details of the specimen are shown in Figures 1 to 3.

2.1 Door leaves

The leaf measured 2040mm high x 828mm wide x 52.5mm thick. The leaf was hung to open in towards the furnace, which is considered to be the most onerous direction based on experience of testing doors of similar construction. It is therefore the opinion of the laboratory that the test results can be applied to doors opening in either direction. The results of this test were obtained from a door fitted with a latch but disengaged.

The doorset was fitted with 3 No. NV Tools Ltd SOSS 218SS stainless steel invisible type hinges.

2.2 Door perimeter gaps

The gaps between the edge of the doors and frame were measured prior to test. A total of 12 readings were taken. The measurements (in mm) are given in Figure 3.

2.3 Closer Forces

Measured in accordance with FTSG Resolution No 63.

Opening Force (Nm)	Closing Force (Nm)
38	15

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3. Test Conditions

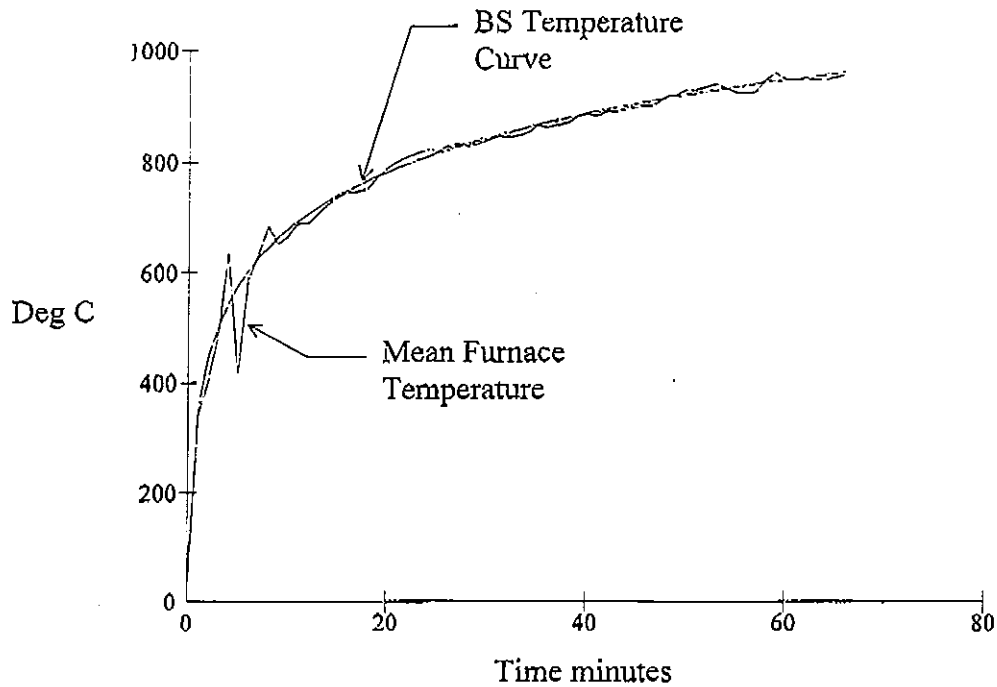
- 3.1 Where areas of the test specification are ambiguous or open to interpretation the Fire Test Study Group Resolutions No's 51, 63, 70, 71, 72 and 78 have been followed (further specific details are available on request). These Resolutions provide basis of common agreements between the fire test laboratories which are members of this Group.
- 3.2 The ambient temperature of the test area at commencement of test was 12°C.
- 3.3 After the first 5 minutes of the test, the furnace pressure was maintained at 0 ± 2 Pa with respect to atmosphere, at a point 1m from the notional floor level.
- 3.4 The furnace was controlled to follow the temperature/time relationship specified in BS 476: Part 20: 1987 as closely as possible, using the average of six thermocouples suitably distributed within the furnace. The temperatures recorded are shown graphically in Section 4.1.
- 3.5 The temperature of the unexposed face was monitored by means of five thermocouples fixed to the surface of the door leaf, and three thermocouples attached to the frame, one at midheight on each jamb, one centrally located above the leaf on the frame head. The thermocouple positions are shown in Figure 3. The average temperature of the door leaf and maximum temperature of the doorset are shown graphically in Section 4.2.

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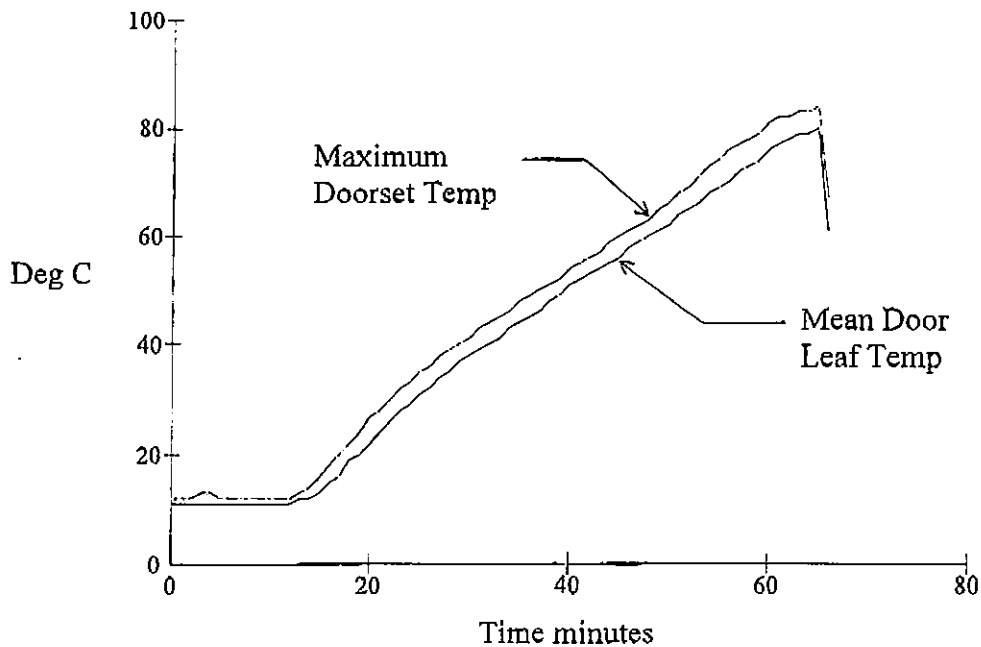
4. Test Results

The following data and observations were recorded during the test.

4.1 Furnace temperature curve



4.2 Unexposed face temperature curves



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4.3 Door Distortion Data

The following tables show the distortion of the doors in mm.

A positive measurement indicates distortion towards the fire.

A negative measurement indicates distortion away from the fire.

J, K and L give vertical movement of the door, a negative reading indicates that the door has dropped.

A	B	C
D	E	F
G	H	I
J	K	L

Leaf (hung on the left and opening in towards the fire)

Time	A	B	C	D	E	F	G	H	I	J	K	L
15	0.5	0.5	2	0.5	3	-1	0	0	0	0	0	-0.5
30	1	1	2.5	1.5	9.5	11	0.5	0	0	0.5	0	-0.5
45	2.5	1	6	1.5	6.5	3.5	2	-0.5	2	-0.5	0.5	0
60	5.5	0	12.5	1	-11.5	6.5	2	-1	6	0	0	-0.5

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4.4. Observations

All comments relate to the unexposed face unless otherwise specified.

Time	Comments
00.00	Test started.
01.34	There is smoke issuing from the latch position.
02.52	There is smoke issuing from the middle hinge position.
06.00	There is smoke issuing from along the closing edge from the latch position to the top corner of the leaf.
37.00	There is a thick resinous like substance coming from between the stop and the leaf along the closing edge.
42.00	There is slight charring of the leaf face at the top and middle hinge positions.
47.40	The level of charring has increased at the top and middle hinge positions.
54.06	There is a glow visible along the bottom of the door approximately 70mm from the bottom hanging corner.
58.21	There is a glow visible at the top hinge position.
62.00	A cotton pad integrity test was performed at the top hinge position, no failure.
64.00	A cotton pad integrity test was performed at the top hinge position, no failure.
64.40	There is continuous flaming from midheight upwards on the hanging and closing edges of the leaf thereby constituting INTEGRITY FAILURE .
66.02	Test terminated.

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4.5 Times to failure

When tested in accordance with BS 476: Part 22: 1987, Method 6, Determination of fire resistance of fully insulated doorsets and shutter assemblies, the requirements of the standard were satisfied for the following periods:

Integrity	64 (sixty four) minutes
Insulation	64 (sixty four) minutes

5. Limitations

The results only relate to the behaviour of the element of construction under the particular conditions of test; they are not intended to be the sole criteria for assessing the potential fire performance of the element in use nor do they reflect the actual behaviour in fires.

The results of this test were obtained using the door to frame gaps recorded in Figure 3. The fire resistance performance of doors of this design may change if substantially different gaps are employed.

The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over 5 years old should be considered by the user. CIFL will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test to ensure that they are consistent with current practices, and if required may endorse the test report.

M J BULLOCK
Fire Testing Manager

J J OSBORN
Senior Fire Test Engineer

Date of issue:

22/03/00

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Description of Construction (refers to Figures 1 to 4)

Leaf - the door leaf was identified as being a Premdor 1 Hour Resistant Fire Door
- Code No: 24138

	Species/type	Dimensions (mm)	Density (kg/m ³)	Moisture (% w/w)	Key to figures
Stiles	Nemasu	69 wide x 48 thick	711-793*	10	5
Rails	Nemasu	75 wide x 48 thick	711-793*	10	11
Core	Unilin flaxboard - tongue and groove jointed to the perimeter framing	48 thick	477*	-	6
Facings	Plywood	3 thick	650**	-	7
Adhesives	Not specified	-	-	-	-
Lippings - vertical edges only	Hardwood	6 thick	650**	10	10

* Stated density, not checked by laboratory

** Nominal density

Door frame

	Species/type	Dimensions (mm)	Density (kg/m ³)	Moisture (% w/w)	Key to figures
Head & Jamb	Sapele	90 wide x 33 thick	650**	9-10	8
Stops	Sapele - planted (pinned)	24 deep	650**	10	9
Architrave	Sapele	45 wide x 16 deep	650**	10	-
Threshold	Non combustible	-	-	-	-

* Stated density not checked by laboratory

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Intumescent materials

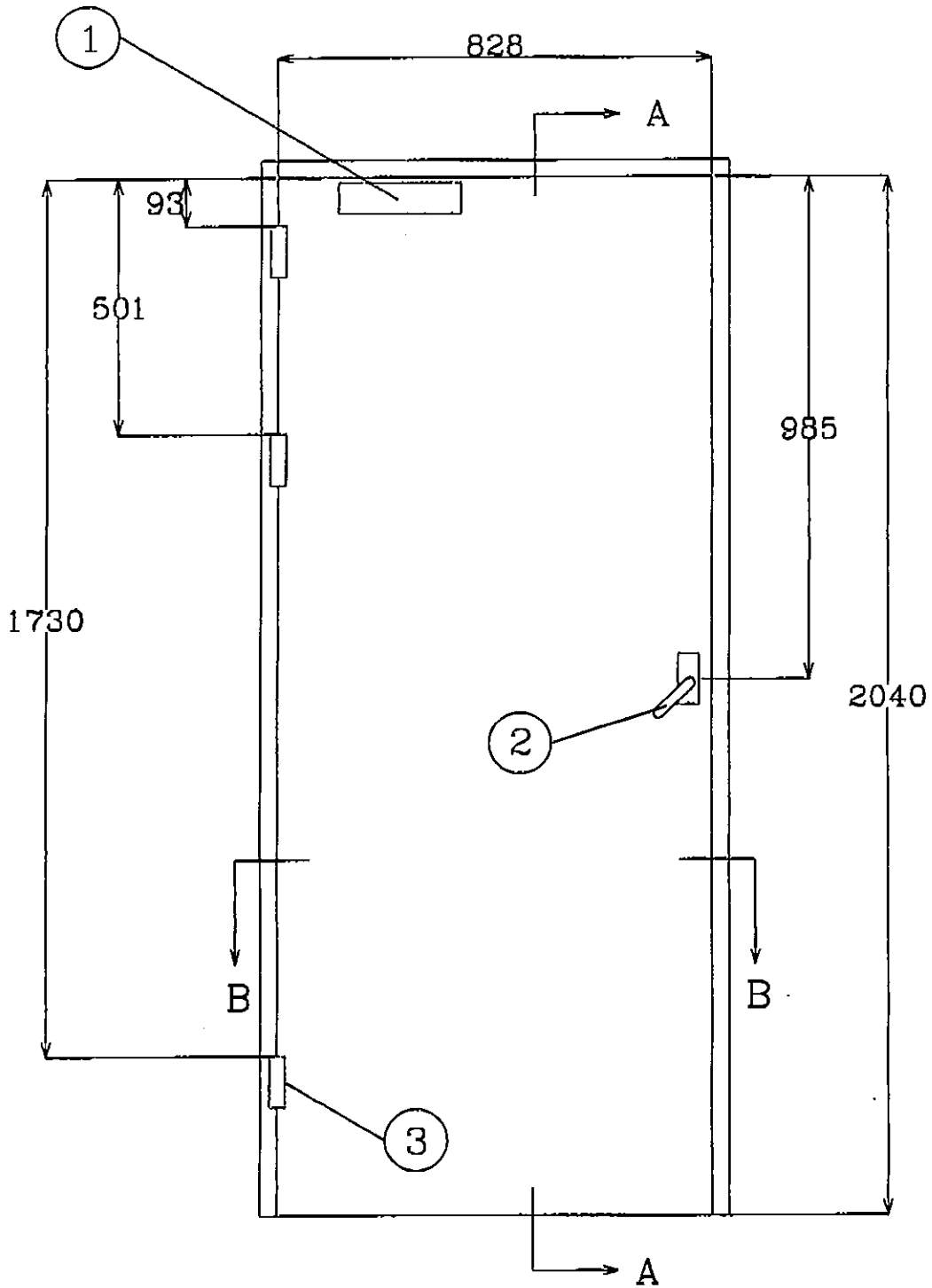
		Make/type	Size (mm)	Location	Key to figures
Door edges	Head	None fitted	-	-	-
	Vertical edges	None fitted	-	-	-
Frame reveal	Head	Lorient Polyproducts Ltd LP2004	20 x 4	Centrally fitted in the frame reveal	4
	Jambs	Lorient Polyproducts Ltd LP2004	20 x 4	Centrally fitted in the frame reveal	4
Around hinges		Fully interrupted	-	-	-
Encasing hinge body		Lorient Polyproducts Ltd mastic	-	Both sections of hinge mechanism bedded on mastic	-
Encasing latch body		Lorient Polyproducts Ltd Interdens	1 thick	Fitted around the latch body	-
Under latch forend		Lorient Polyproducts Ltd Interdens	1 thick	Fitted beneath the forend	-
Under latch keep		Lorient Polyproducts Ltd Interdens	1 thick	Fitted beneath the keep	-

Ironmongery

	Make/type	Size (mm)	Location	Key to figures
Hinges	NV Tools Ltd SOSS 218SS stainless steel invisible type hinges	117.5 long x 28.6 wide with a 10.3 thick plate and fitted in a 40.5 deep mortise	Fitted 200, 610 and 1630 from the leaf head to the centre of the hinge	3
Closer	Dorma Door Controls TS83V	293 x 60	Fitted to the exposed face as per manufacturer's instructions	1
Latch	Henderson Hardware tubular mortise - disengaged	57 x 26 (forend size)	Fitted 1020 from the leaf head	-
Furniture	Aluminium lever handles	100 x 38	Fitted 985 from the leaf head	2

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Figure 1 of 3 | N V Tools Ltd



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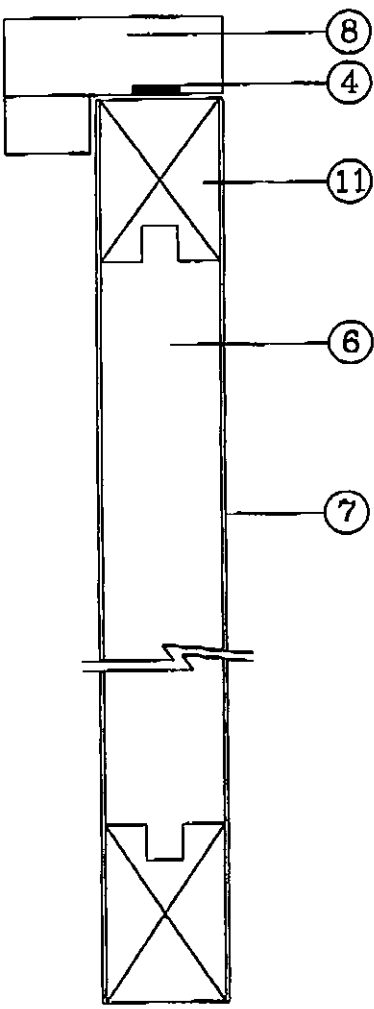
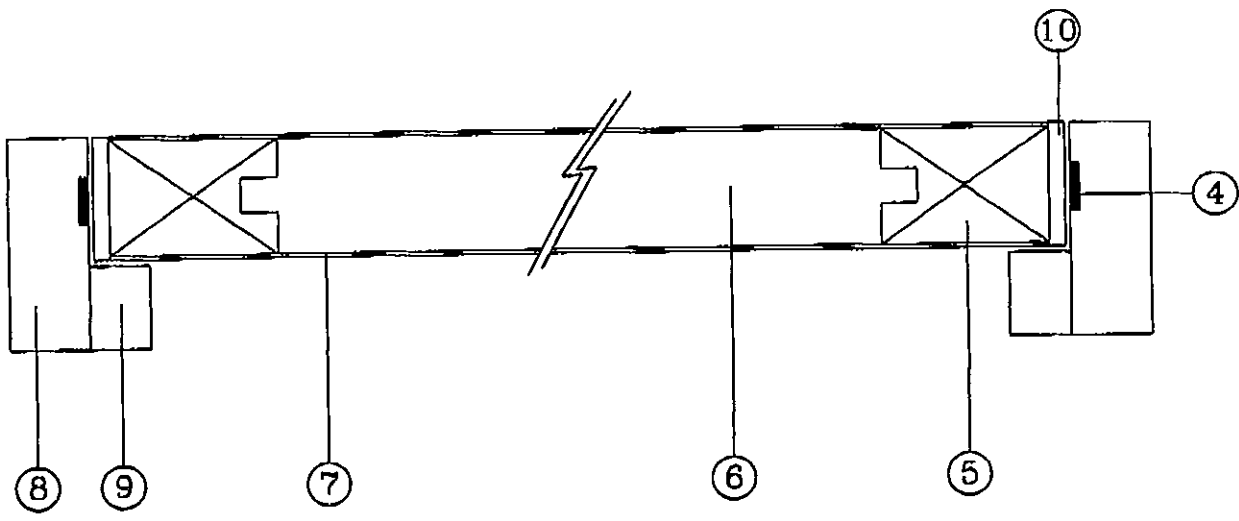
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Title Front Elevation
and Ironmongery Positions

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Figure 2 of 3 | N V Tools Ltd



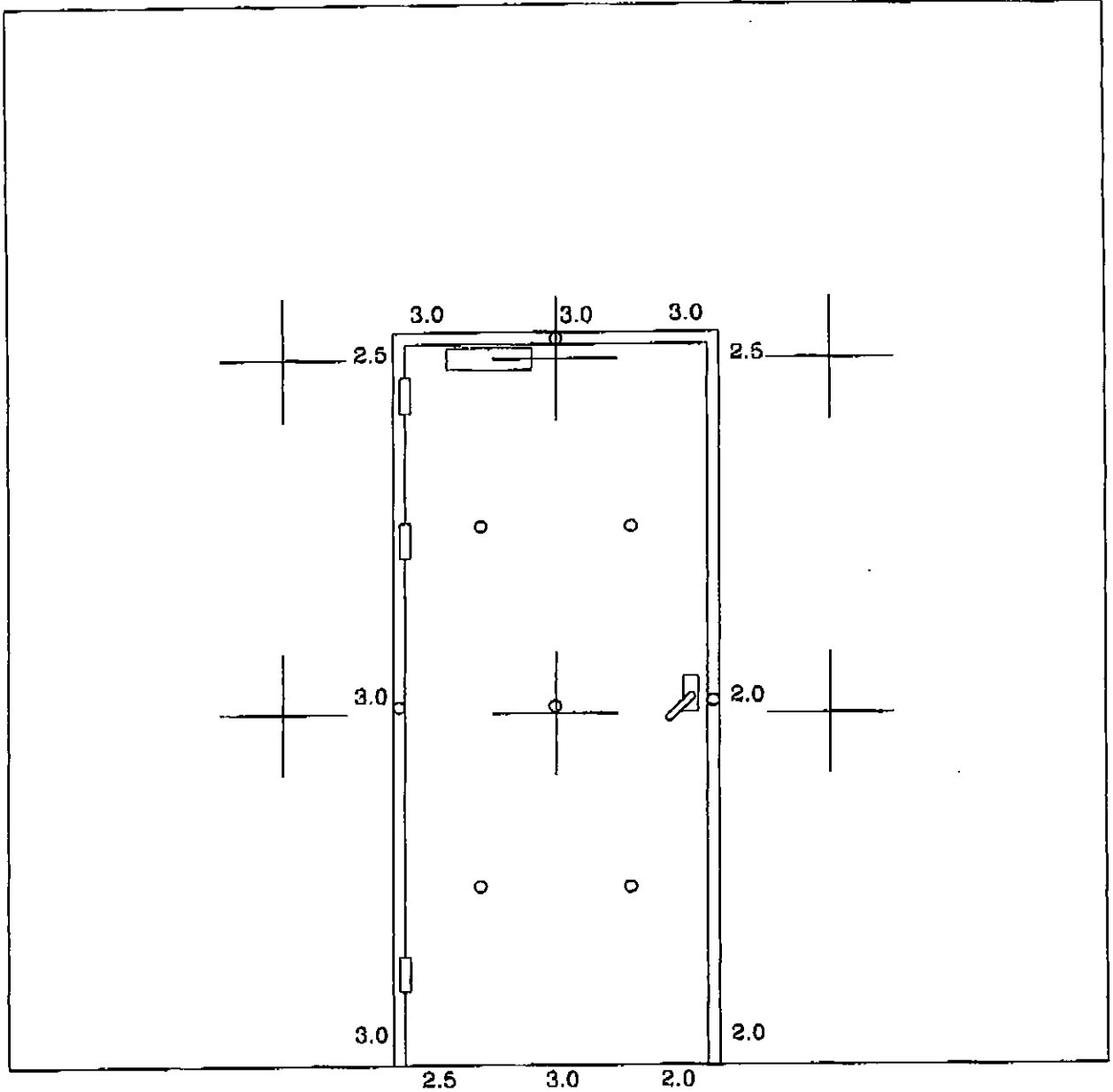
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Figure 3 of 3 N V Tools Ltd



+ : Furnace Thermocouples
 o : Unexposed Face Thermocouples



Viewed From Unexposed Face

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Title Thermocouple positions and door gaps

Date Drawn 21/03/00

Drawn By PJJ

Project No. RF00010

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