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## CERTIFICATE OF APPROVAL

### No CF 215

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This is to certify that, in accordance with  
TS00 General Requirements for Certification of Fire Protection Products  
The undermentioned products of

## ROYDE & TUCKER LIMITED

**Bilton Road, Cadwell Lane, Hitchin, Hertfordshire, SG4 0SB**  
**Tel: 01462 444444 Fax: 01462 444433**

Have been assessed against the requirements of the Technical Schedule(s)  
denoted below and are approved for use subject to the conditions  
appended hereto:

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#### CERTIFIED PRODUCT

**Hi-Load Hinges Concealed  
Bearing Series**

#### TECHNICAL SCHEDULE

**TS24 - The Contribution of  
Single Action Hinges to the  
Fire Resistance of Door  
Assemblies**

**Signed and sealed for and on behalf of Warringtonfire Testing and Certification Limited**

**Paul Duggan**  
**Certification Manager**



Issued:  
Reissued:  
Valid to:

7<sup>th</sup> October 2000  
15<sup>th</sup> November 2021  
14<sup>th</sup> November 2026

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### HI-LOAD HINGES – CONCEALED BEARING SERIES

1. This certification is provided to the client for its own purposes and we cannot opine on whether it will be accepted by Building Control authorities or any other third parties for any purpose.
2. This approval relates to the use of the following specific Hi-Load stainless steel concealed bearing, single axis hinges:

Reference	Type	Dimension (mm)	Material	EN1935 Grade
H201	Concealed Bearing Lift-Off Hinge	100 X 88 x 3 mm	Stainless Steel	11
H202	Concealed Bearing Lift-Off Hinge	102 x 102 x 3.3 mm	Stainless Steel	13
H203	Concealed Bearing Lift-Off Hinge with dog bolt	102 x 102 x 3.3 mm	Stainless Steel	13
H206 <sup>#</sup>	Concealed Bearing Lift-Off Hinge	102 x 76 x 3 mm	Stainless Steel	11
H207 <sup>#</sup>	Concealed Bearing Hinge 3-Knuckle	102 X 76 X 3 mm	Stainless Steel	13
H208	Concealed Bearing Hinge 3-Knuckle	102 X 89 X 3 mm	Stainless Steel	13
H209	Concealed Bearing Hinge 3-Knuckle	102 X 102 X 3 mm	Stainless Steel	13
H210	Concealed Bearing Hinge 3-Knuckle	114 X 102 X 3.3 mm	Stainless Steel	13
H211 <sup>*</sup>	Concealed Bearing Hinge 3-Knuckle	114 X 114 X 3.3 mm	Stainless Steel	13
G4530 <sup>**</sup>	Concealed Bearing Hinge 3-Knuckle	114 X 76 X 3.25 mm	Stainless Steel	14
G4535 <sup>**</sup>	Concealed Bearing Hinge 3-Knuckle	114 X 89 X 3.25 mm	Stainless Steel	14
G4540 <sup>**</sup>	Concealed Bearing Hinge 3-Knuckle	114 X 102 X 3.25 mm	Stainless Steel	14
G4545 <sup>**</sup>	Concealed Bearing Hinge 3-Knuckle	114 X 114 X 3.25 mm	Stainless Steel	14
G4530-5 <sup>**</sup>	Concealed Bearing Hinge 3-Knuckle with dog bolt	114 X 76 X 3.25 mm	Stainless Steel	14

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Reference	Type	Dimension (mm)	Material	EN1935 Grade
G4535-5**	Concealed Bearing Hinge 3-Knuckle with dog bolt	114 X 89 X 3.25 mm	Stainless Steel	14
G4540-5**	Concealed Bearing Hinge 3-Knuckle with dog bolt	114 X 102 X 3.25 mm	Stainless Steel	14
G4545-5**	Concealed Bearing Hinge 3-Knuckle with dog bolt	114 X 114 X 3.25 mm	Stainless Steel	14

*\*Note specific requirements later in this document for the door thickness and intumescent protection of the H211 hinge.*

*\*\*Note G45xx series are not approved for use with MM/IMM doorsets.*

*#Note specific requirements later in this document for ITT 90 and 120 minutes fire resistance when using H206 & H207 hinge.*

3. This approval relates to their use with the following door assemblies:-

**All hinges - Latched and unlatched, intumescent sealed door assemblies consisting of timber faced and edged leaves with timber, cellulosic or mineral cores, in timber frames having a fire resistance up to 60 minutes (Code ITT).**

**H206 and H207 hinges only - Latched and unlatched, intumescent sealed door assemblies consisting of timber faced and edged leaves with timber, cellulosic or mineral cores, in timber frames having a fire resistance up to 120 minutes (Code ITT).**

**All hinges except G45xx Series - Latched and unlatched, door assemblies consisting of uninsulated or insulated predominantly steel leaves, hung in steel frames with or without intumescent seals having a fire resistance up to 240 minutes (Code IMM/MM).**



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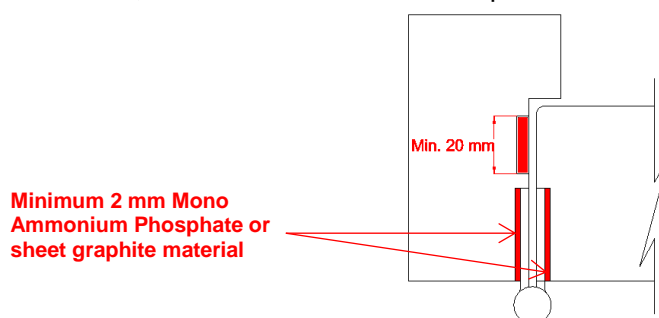
#### HI-LOAD HINGES – CONCEALED BEARING SERIES

4. The hinges are approved on the basis of:
- i. Initial type testing to EN1935 and testing/appraisal to EN 1634-1.
  - ii. A design appraisal against TS24
  - iii. Production surveillance under ISO9001
  - iv. On-going audit testing in accordance with BS EN 1935 requirements
  - v. Inspection and surveillance of factory production control
5. The hinges should only be used with door assemblies of proven fire resistance (as defined in BS EN 1634-1 or BS 476: Part 22: 1987) and those that have been tested with hinges of a similar size, the critical aspects of the doorset construction are considered to be the material of the door frame, the leaf to frame clearance gaps and the lipping material. Attention should be paid to these details and these should not be amended from that previously fire tested. Where this information is not known the following minimum specification will be followed:
- a. 30 and 60 minute timber and mineral-based assemblies (ITT):
    - i) Door frame density (minimum) - 460 kg/m<sup>3</sup> (30 minutes), 640 kg/m<sup>3</sup> (60 minutes)
    - ii) Door leaves shall have a minimum thickness of 44 mm for 30 minute applications and 54 mm for 60 minute applications. (except H211 hinges which shall be a minimum thickness of 54 mm thick)
    - iii) Lipping density (minimum) - 640 kg/m<sup>3</sup>.
    - iv) Where the H211 hinge is incorporated on a standard 54 mm thick ITT FD60, E60 and EI60 door leaf, it shall be positioned such that 2.5 mm of the hinge blade extends beyond the opening face of the door face to ensure 10 mm of door edge material is maintained alongside the hinge blade.
  - b. Steel-based assemblies (MM/IMM)
    - i) Door leaves shall have a minimum thickness of 45 mm for up to 240 minute applications.
6. For 90 minute and 120 minute timber and mineral-based assemblies (ITT), *Royde & Tucker (H206 and H207)* hinges shall only be fitted to doorsets which have previously been tested with hinges of a similar size, subject to the following requirements:

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- i) The required intumescent protection shall be as tested by the chosen door manufacturer. In all cases this shall be a minimum of a 2 mm thick 'Interdens' or graphite based intumescent sheet material incorporated beneath each hinge blade, however, this protection shall be increased as required based on the chosen doorset manufacturers test data.
- ii) Where the perimeter intumescent fire seal tested within the chosen doorset by-passes the hinge, this detail shall be maintained.
- iii) In addition a minimum of 20 mm wide perimeter intumescent fire seal shall by-passed the hinges within the frame rebate or edge of the door leaf. Where the perimeter intumescent fire seal tested within the chosen doorset by-passing the hinge exceeds 20 mm, this increased intumescent protection shall be maintained.



- iv) The critical dimensions of the *Royde & Tucker (H206 and H207)* hinge to be used shall be based on the size of the hinge tested originally by the chosen doorset manufacturer, with the following tolerance:

Hinge Specification of Chosen Doorset	
Component/dimension	Tolerance/Rule
<b>Hinge blade</b>	
Width	+0/-5% of tested hinge
Height	+/-20% of tested hinge
Thickness	+/-15% of tested hinge
<b>Knuckle</b>	
Diameter	Minimum 13 mm
<b>Fixings</b>	
Quantity	Maximum 4No. fixings tested
Size	5 mm dia. Minimum
Length	32 mm
Position (width)	+/-10% from the positions of the fixings in the tested hinge when measured with respect to the centre lines of the blade



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**Note:** Where the Royde & Tucker (H206 and H207) hinge does not comply with the parameters identified above it shall not be used in conjunction with the chosen 90 minute and 120 minute timber and mineral-based assemblies (ITT).

Failure to install the protection will invalidate this certificate

7. When fitted to insulated timber or mineral door assemblies, the required additional intumescent protection will be as follows:
- i) The required protection for 30 minute ITT applications will be 1 mm thickness of mono ammonium phosphate or graphite-based intumescent sheet material (see 'Scope of Approval' below) behind both blades. Except the H211 which requires 2 mm thickness of mono ammonium phosphate or graphite-based intumescent sheet material.
  - ii) The required protection for 60 minute ITT applications will be 1 mm thickness of mono ammonium phosphate or graphite-based intumescent sheet material (see 'Scope of Approval' below) behind both blades. Except the H211 which requires 2 mm thickness of mono ammonium phosphate or graphite-based intumescent sheet material.
  - iii) The required intumescent protection for 90 and 120 minute ITT applications shall be as tested by the chosen door manufacturer. In all cases this shall be a minimum of a 2 mm thick mono ammonium phosphate tested, or graphite based intumescent sheet material (see 'Scope of Approval') incorporated beneath each hinge blade, however, this protection shall be increased as required based on the chosen doorset manufacturers test data.

Failure to install the protection will invalidate this certificate

8. All applications apply to glazed and unglazed doorsets.
9. The hinges may only be fitted in the manner described in this certificate and subject to any limitations on the inclusion of hinges specified for the door leaf. This approval is applicable only to the specified hinges used with door assemblies of proven fire resistance (as defined in BS EN 1634-1 or BS 476: Part 22: 1987) and when using appropriate intumescent protection.
10. All fixings shall be only fitted using the fixings supplied by the hinge manufacturer.



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#### HI-LOAD HINGES – CONCEALED BEARING SERIES

11. The doorset, including door frame and associated building hardware, should be either CERTIFIRE approved for the relevant application and classification or the doorset, including door frame and associated building hardware, should have achieved up to 120 minutes fire resistance (ITT) or up to 240 minutes (MM/IMM) as required when tested, or subsequently assessed to BS EN 1634-1 or BS 476: Part 22: 1987.
12. Regard should be paid to the maximum door mass permitted to be used with the hinge (see classifications).
13. Timber doorsets shall be installed in accordance with BS 8214.
14. The approval relates to on-going production. Product and/or its immediate packaging is identified with the manufacturer's name, the product name or number, the CERTIFIRE name or name and mark, together with the CERTIFIRE certificate number and application where appropriate.

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### HI-LOAD HINGES – CONCEALED BEARING SERIES

15. The following table show acceptable doorset types and fire resistance periods:

Class	Approved Door Type				
	IMM	MM	ITT	ITM	ITC
FD20	✓!	✓!	✓	✗	✗
FD30	✓!	✓!	✓**	✗	✗
FD60	✓!	✓!	✓	✗	✗
FD90	✓!	✓!	✓#	✗	✗
FD120	✓!	✓!	✓#	✗	✗
FD240	✓!	✓!	✗	✗	✗
E 20	✓!	✓!	✓	✗	✗
EI 20	✓!	✓!	✓	✗	✗
E 30	✓!	✓!	✓**	✗	✗
EI 30	✓!	✓!	✓**	✗	✗
E 60	✓!	✓!	✓	✗	✗
EI 60	✓!	✓!	✓	✗	✗
E 90	✓!	✓!	✓#	✗	✗
EI 90	✓!	✓!	✓#	✗	✗
E 120	✓!	✓!	✓#	✗	✗
EI 120	✓!	✓!	✓#	✗	✗
E 240	✓!	✓!	✗	✗	✗
EI 240	✓!	✓!	✗	✗	✗

**Key:**

- ✓ - approved
- ✗ - Not approved
- ✓! - Excludes G45xx series
- ✓\*\* - Where H211 hinges are fitted to FD30, E30 and EI30 doorsets the door leaf shall be a minimum of 54 mm thick.
- ✓# - Applicable to H206 & H207 hinges only





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#### HI-LOAD HINGES – CONCEALED BEARING SERIES

16. Doors are classified as the following types:

**Code ITT** - 20 minute to 120 minute doorsets containing intumescent seals and consisting of timber faced and edged leaves with timber, cellulosic or mineral cores, hung in timber-based frames.

**Code ITM** - 20 minute to 120 minute doorsets containing intumescent seals and consisting of timber faced and edged leaves with timber, cellulosic or mineral cores, hung in metal frames.

**Code ITC** - 20 minute to 120 minute doorsets containing intumescent seals and consisting of timber faced and edged leaves with timber, cellulosic or mineral cores, hung in proprietary composite frames, of which the principal material is other than timber or metal but which may include any other materials.

**Code MM** - 20 to 240 minute doorsets consisting of uninsulated or insulated predominantly steel leaves, hung in steel frames without intumescent seals.

**Code IMM** - 20 to 240 minute doorsets consisting of uninsulated or insulated predominantly steel leaves, hung in steel frames with intumescent seals.

#### Scope of Approval:

- The hinges may not be fitted to timber doorsets without perimeter intumescent fire seals within the frame rebate or edge of the door leaf.
- Where H211 hinges are fitted to FD30, E30 and EI30 doorsets the door leaf shall be a minimum of 54 mm thick.
- Where the H211 hinge is incorporated on a standard 54 mm thick ITT FD60, E60 and EI60 door leaf, it shall be positioned such that 2.5 mm of the hinge blade extends beyond the opening face of the door face to ensure 10 mm of door edge material is maintained alongside the hinge blade.
- Where graphite based intumescent sheet material is to be used in lieu of the mono ammonium phosphate tested, the proposed graphite-based intumescent sheet material, shall have suitable test evidence in the required thickness or less, with timber/mineral-based doorset of the required classification period, in conjunction with steel hinges of a minimum size of 102 mm x 89 mm.



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#### Classification codes

The above approval provides the following classifications for the hinges:

H202, H203, H207, H208, H209, H210 & H211:

4	7	6	1	1	4	0	13
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H201 & H206:

3	7	4	1	1	4	0	11
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G4530, G4535, G4540 & G4545:

4	7	7	1	1	4	0	14
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G4530-5, G4535-5, G4540-5 & G4545-5:

4	7	7	1	1	4	1	14
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#### Further Information

Further information regarding the details contained in this data sheet may be obtained from Royde & Tucker Limited (Tel: 01462 444444).

Further information regarding the CERTIFIRE certification and other approved products can be obtained from CERTIFIRE (Tel: 01925 646777).