



UK TYPE-EXAMINATION (MODULE B) CERTIFICATE

This is to certify that:

Lloyd's Register Marine Limited (LRM Ltd) did undertake the relevant type approval procedures for the type of equipment identified below which was found to be in compliance with the requirements of the Merchant Shipping (Marine Equipment) Regulations 2016, as amended, subject to any conditions in the schedule attached hereto.

Manufacturer	MCT Brattberg AB
Address	Lyckeåborg, 371 92 Karlskrona, Sweden
Reference	MSN1874 Amendment 7
Regulation Item (No. & Item Designation)	UK/3.26a Penetrations through 'A' Class divisions: electric cable transits
Product Type	CABLE TRANSITS (STANDARD FIRE TEST)
Product Description	MCT Brattberg "RGS Single or Multiple Cable Rectangular Transits", for use in approved A Class steel and aluminum bulkheads and/or decks and in "CIS 100" Non-load bearing A-60 Sandwich Panel Bulkheads, as described in the attached DAD.
Trade Name	MCT Brattberg "RGS Single or Multiple Cable Rectangular Transits"
Specified Standard	IMO Res. MSC.61 (67)- (FTP Code) Annex 1 Part 3 IMO MSC/Circ.1120 IMO Res. MSC.307 (88)-(2010 FTP Code) Section 8 IMO Res. MSC.307(88) – (2010 FTP Code), Annex 1, Part 3 IMO MSC.1/Circ.1488

The attached Design Appraisal Document (schedule) forms part of this certificate. This certificate remains valid unless suspended, expired or withdrawn, provided the conditions in the attached schedule are complied with and the equipment remains satisfactory in service.

Lloyd's Register Marine Limited (Reg. no. 13281335) is a limited company registered in England and Wales. Registered office: 71 Fenchurch Street, London, EC3M 4BS, UK.
A member of Lloyd's Register group.

Marta Walk

Fire & Safety - Senior Specialist
For and on behalf of Lloyd's Register Marine Ltd. (8512)

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Approved Body authorised by the MCA

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Certificate No: LR22433347UKMB-01

Issue Date: 12/01/2024

Expiry Date: 09/06/2026

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This certificate is issued under the authority of the MCA. This certificate will not be valid if the manufacturer makes any changes or modifications to the approved type of equipment, which have not been notified to, and agreed with the approved body named on this certificate.

During the period of validity of this certificate the applicable regulations (international conventions and the relevant resolutions and circulars of the IMO) and testing standards may change, therefore the product conformity may need to be re-assessed by the Approved Body.

The "UK Mark of Conformity" may only be affixed to the above type approved equipment and a Manufacturer's Declaration of Conformity issued when the production-control phase module (D, E or F) of Schedule 2 of the Merchant Shipping (Marine Equipment) Regulations 2016, as amended is fully complied with and controlled by a written inspection agreement with an Approved Body.

Lloyd's Register Marine Limited (Reg. no. 13281335) is a limited company registered in England and Wales. Registered office: 71 Fenchurch Street, London, EC3M 4BS, UK.
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The undernoted documents have been appraised for compliance with the relevant requirements of International Conventions and the Merchant Shipping (Marine Equipment) Regulations 2016, as amended for the UK Type Examination of marine equipment for use on UK ships

This Design Appraisal Document forms part of the Certificate.

This Certificate is an Amendment of Certificate Number LR22433347UKMB.

Approval Documentation

1. Tests in accordance with IMO Res. MSC.61 (67) - (FTP Code) Annex 1 Part 3:

Building Research Establishment (BRE), Watford, United Kingdom; Fire Test Reports No: 259264A dated 3 June 2010, 262822 dated 1 October 2010, 266413 dated 10 March 2011, 267923 dated 1 June 2011, 271353A dated 30 July 2012, 271353B dated 5 September 2012 and 271351 dated 7 August 2012.

2. Tests in accordance with IMO Res. MSC.307 (88) - (2010 FTP Code) Annex 1, Part 3:

BRE Global, Watford, United Kingdom; Fire Test Reports No: 282342 dated 15 February 2013 and supplementary BRE Global letter dated 6 February 2013, No: 282342A dated 25 April 2013, 290298 dated 15 May 2014, P101462-1000 Issue 1 dated 8 September 2016, P101462-1001 Issue 1 dated 14 September 2018, P101462-1002 Issue 1 dated 15 August 2018, P101462-1006 Issue 1 dated 2 February 2018, P101462-1010 Issue 1 dated 27 November 2019, P101462-1013 Issue 1 dated 1 May 2020, P101462-1021 Issue 1 dated 17 April 2020, P101462-1022 Issue 2 dated 12 May 2021 and P101462-1023 Issue 1 dated 7 December 2020.

Rise Research Institutes of Sweden AB, Boras, Sweden; Fire test report no: O100409-170218-1 dated 25 February 2022.

Manufacturer's Drawings

No: 1210317A to 1210319A, 1220010A to 1220015A, 1220016B, 1220017A to 1220019A and 1220024A to 1220036A (Note: Drawings are for reference only; product installation and insulation arrangements to be in accordance with Conditions of Certification described below. Additionally, where differences exist between the drawings and the Certificate, information in the Certificate must be considered correct and applied).

Conditions of Certification

1. RGS single and multiple cable rectangular transits may be accepted in A-60 Class steel bulkheads and decks approved for General Applications (please see Notes 1&2 below) in accordance with Table 1 and associated Notes (A to E) with approved insulation arrangements, generally as described in MCT Brattberg drawings referenced in Table 1. All insulation fitted to the cable transit steel coaming/frame must overlap the end face(s) by at least 20mm. Final insulation arrangements onboard must be to the satisfaction of the project authority.

Note 1: Bulkheads approved for General Applications are those where the fire hazard can be on either or both sides of the bulkhead i.e., insulated side and/or non-insulated side.

Note 2: For deck applications, IMO considers the fire risk to be on the underside only as stated in 2010 FTP Code Annex 1 Part 3 Appendix 1 Paragraph 1.1; therefore, the cable transits were fire tested in decks in this configuration only. Applications where the fire risk is on the top side of the decks would require case-by-case approval and any additional requirements specified by the design project plan approval authority must also be complied with.

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Table 1: Approved arrangements in A-60 Class steel bulkheads and decks approved for General Applications (also see Notes)

Transit type/size	Maximum Fire Rating	Approved Application	Position of tested transit in division	Approved Cable fill ratio (%)	Maximum cable diameter	Minimum Insulation arrangements
RGS 1x1	A-60	Steel bulkheads and decks	Symmetrical or fire unexposed side only.	1.4 to 82	41	Steel bulkhead cable transits insulation arrangements to be generally as per MCT Brattberg drawings no: 1220016B, 1220017A, 1220019A and 1220028A.
RGS 8x1					110	Steel deck cable transits insulation arrangements to be generally as per MCT Brattberg drawings no: 1220010A and 1220018A.
RGS 8+8x7						
RGS 8+8+8x9		Steel decks only				
RGS 1x1 Back to Back Light					22	Steel bulkhead cable transits (Back to Back) insulation arrangements to be generally as per MCT Brattberg drawings: 1220015A and 1220033A
RGS 8+8x7 BTB Light					40	
RGSFB 6x1		Steel bulkheads only	Fire exposed side (mounting flange also on fire exposed side)	30	32	MCT Brattberg drawing: 1220034A
RGSFB 8x2		Steel bulkheads only	Fire unexposed side (mounting flange on fire exposed side)	78	50	MCT Brattberg drawing: 1220035A
RGSFB 8x2			Steel decks only	Fire unexposed side (mounting flange also on fire unexposed side)		91.3

Notes

- (a) Tested cable transits RGS 1x1 to RGS 8+8x7 (including Back-to-Back Standard or Light options) and all intermediate sizes may be accepted in A-60 Class steel bulkheads.
- (b) Tested cable transits RGS 1x1 to RGS 8+8+8x9 and all intermediate sizes may be accepted in A-60 Class steel decks.
- (c) RGSFB cable transits (bolted flanged version) RGSFB 6x1 and RGSFB 8x2 described in Table 1 may be accepted in A-60 Class steel bulkheads (Note: Intermediate bulkhead transits above RGSFB 6x1 to be fitted in the same configuration as RGSFB 8x2 i.e., transit seal on the fire unexposed side and mounting flange on fire exposed side).
- (d) Only one size of RGSFB transit, size: RGSFB 8x2 may be accepted in A Class steel decks.
- (e) Bolted Flanged RGSFB transits described in (c) and (d) above may also be accepted in welded configuration (RGSF).
- (f) Cable transits can be accepted with the approved cable fill ratio (single or range, as applicable) comprising the tested cable types of size equal to or smaller than tested. The maximum cable diameter for any intermediate transits is to be proportional to the transit size and may be determined by linear interpolation based on the internal cross-sectional area of the transit or the individual unit of multiple unit transits where the cable is to be fitted and must be acceptable to the Project Authority.

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2. RGS single and multiple cable rectangular transits may be accepted in A-60 Class steel bulkheads approved for Restricted Applications (please see Note 3 below) in accordance with Table 2 and associated Notes (a to b) below, with approved insulation arrangements generally as described in in MCT Brattberg drawing No: 1220027A.

Note 3: Bulkheads approved for Restricted Applications are those where the fire hazard is only on the insulated side of the bulkhead in all cases.

Table 2: Approved arrangements in A-60 Class steel bulkheads approved for Restricted Applications (also see Notes)

Transit type/size	Maximum Fire Rating	Approved Application	Position of tested transit in division	Approved Cable fill ratio (%)	Maximum cable diameter	Minimum Insulation arrangements
RGS 1x1	A-60	Steel bulkheads (Restricted Applications)	Symmetrical	6 to 100	23	Cable transit Insulation arrangements in Restricted steel bulkheads to be generally as per MCT Brattberg drawing No: 1220027A.
RGS 8x1				1.5 to 100	41	
RGS 8x3				64	40	

Notes

- (a) Tested cable transits RGS 1 to RGS 8x3 and all intermediate sizes may be accepted in Restricted A Class steel bulkheads.
- (b) Cable transits can be accepted with the approved cable fill ratio (single or range, as applicable) comprising the tested cable types of size equal to or smaller than tested. The maximum cable diameter for any intermediate transits is to be proportional to the transit size and may be determined by linear interpolation based on the internal cross-sectional area of the transit or the individual unit of multiple unit transits where the cable is to be fitted and must be acceptable to the Project Authority.
3. RGS single and multiple cable rectangular transits described in Conditions 1&2 and Tables 1&2 may also be accepted in approved A-0, A-15 and A-30 Class steel divisions (General or Restricted, as applicable), provided they are insulated to the same A-60 specification as in the A-60 fire tests (described in Conditions 1&2 and Tables 1&2, as applicable) and this A-60 insulation extended around the transit for a minimum distance of 200mm, on all fire risk sides of bulkheads and decks (please see Note 2 of Condition 1), as determined by the design project Plan Approval Authority. Note: The above requirement to extend A-60 insulation 200mm around the transit need not be applied for bulkhead transits described in Condition 4 and Table 3 below.
4. RGS single and multiple cable rectangular transits described in Table 3 and associated Notes (a to c) below may be accepted in approved A-0 Class steel bulkheads and decks with no insulation fitted on or around the transit, based on separate testing conducted in accordance with IMO Res. MSC.307(88) -(2010 FTP Code) Annex 1, Part 3 Appendix 2. A.IV.2.2.1.1.

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Table 3: Approved arrangements in A-0 Class steel bulkheads and decks (also see Notes)

Transit type/size	Approved Application	Position of tested transit in bulkhead	Approved Cable fill ratio (%)	Maximum cable diameter	Minimum Insulation arrangements
RGS 8x1	A-0 Class Steel bulkheads only	Symmetrical or fire unexposed side only.	40	39	Insulation not required on or around the transit as per MCT Brattberg drawings 1220026A and 1220030A (for A-0 bulkhead transits) and 1210317A to 1210319A (for A-0 deck transits).
RGS 2x1 back-to-back				24	
RGS 8+8x7 back-to-back				100	
RGS 2x1	A-0 Class Steel decks only	Symmetrical or Non-symmetrical to fire exposed or fire unexposed sides	12.5	17	
RGS 8x3			24	36	
RGSFB 8x2		Restricted to the fire unexposed, topside of the deck only	15.6	36	
RGS 8x1 back-to-back			31.2	36	

Notes

- Only one size single frame cable transit RGS 8x1 may be accepted in A-0 Class steel bulkheads.
- Only one size single frame bolted flanged cable transit RGSFB 8x2 and only one size RGS 8x1 back-to-back cable transit may be accepted in A-0 Class steel decks.
- Tested cable transits RGS 2x1 Back-to-Back up to RGS 8+8x7 Back-to-Back and all intermediate sizes may be accepted in A-0 Class steel bulkheads.
- Tested single frame cable transits RGS 2x1 up to RGS 8x3 and all intermediate sizes may be accepted in A-0 Class steel decks.
- Cable transits can be accepted with the approved cable fill ratio (single or range, as applicable) comprising the tested cable types of size equal to or smaller than tested. The maximum cable diameter for any intermediate transits is to be proportional to the transit size and may be determined by linear interpolation based on the internal cross-sectional area of the transit or the individual unit of multiple unit transits where the cable is to be fitted and must be acceptable to the Project Authority.
- Types: RGSFB and RGB/RGG cable transits are approved for use in the as-tested 100mm thick type: "CIS 100 A-60 Sandwich Panel Bulkhead" only, using steel mounting flange and M8 steel bolts, with as-tested arrangements as described in Table 4 and associated Notes (a to c) below. Use of these transits in other types of sandwich panel bulkheads are outside the scope of this certificate and would require case-by-case approval.

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Table 4: Approved arrangements of RGSFB and RGB/RGG cable transits in as-tested 100mm thick type: “CIS 100 A-60 Sandwich Panel Bulkhead” only (also see Notes)

Transit type/size	Maximum Fire Rating	Approved Application	Position of tested transit in the sandwich panel bulkhead	Approved Cable fill ratio (%)	Maximum cable diameter	Minimum Insulation arrangements
RGSFB 2x1	A-30	“CIS 100” A-60 Sandwich Bulkhead only	Fire unexposed side (mounting flange on fire exposed side)	20 to 60	34	Transits to be fully insulated with 75mm thick, 100kg/m ³ SeaRox SL 620 or equivalent on the side opposite to the transit mounting flange and insulation retained within a 0.6mm thick, 60mm deep steel insulation holder with a 60mm wide flange, generally as described in MCT Brattberg drawings 1220029A and 1220032A.
RGSFB 2x1	A-60		Fire exposed side (mounting flange on fire unexposed side)			
RGSFB 8+8x3	A 60		Fire Exposed or Fire unexposed side (General Applications)		50	
RGB / RGG 8+8x3	A-60		Fire exposed side (mounting flange on fire unexposed side) only			

Notes

- (a) Tested cable transit RGSFB 2x1 and larger transits below RGSFB 8+8x3 are restricted for use on the fire exposed side (mounting flange on fire unexposed side) only for A-60 applications. RGSFB 8+8x3 may be fitted either to the fire exposed or fire unexposed sides as described above.
- (b) Only one tested size of RGB/RGG cable transit, RGB/RGG 8+8x3 may be accepted, restricted to fire exposed side of bulkhead only, as described above.
- (c) Cable transits can be accepted with the approved cable fill ratio (single or range, as applicable) comprising the tested cable types of size equal to or smaller than tested. The maximum cable diameter for any intermediate transits is to be proportional to the transit size and may be determined by linear interpolation based on the internal cross-sectional area of the transit or the individual unit of multiple unit transits where the cable is to be fitted and must be acceptable to the Project Authority.
6. RGS single and multiple cable rectangular transits may be accepted in approved A-60 Class aluminium bulkheads and decks in accordance with Condition 7, Table 5, and associated Notes (a to b) below with approved insulation arrangements, generally as described in MCT Brattberg drawings no: 1220011A to 1220014A.
7. Aluminium bulkheads and decks in all cases must be insulated with an approved system on all fire risk sides (as determined by the design project Plan Approval authority; also see Note 2 of Condition 1) to prevent the core temperature exceeding 2000c and all transits fitted to such divisions must be insulated with an approved A-60 system, generally as described in MCT Brattberg drawings referenced in Table 5. All insulation fitted to the transit coaming/frame must overlap the end face(s) by at least 20mm.

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Table 5: Approved arrangements in A-60 Class aluminium bulkheads and decks (also see Notes)

Transit type/size	Maximum Fire Rating	Approved Application	Position of tested transit in division	Approved Cable fill ratio (%)	Maximum cable diameter	Minimum Insulation arrangements
RGS 1x1	A-60	Aluminium bulkheads and decks	Symmetrical or fire unexposed side only.	40 to 80	50	Aluminium bulkhead cable transit insulation arrangements to be generally as per MCT Brattberg drawings no: 1220012A and 1220013A.
RGS 8+8x7						Aluminium deck cable transit insulation arrangements to be generally as per MCT Brattberg drawings no: 1220011A and 1220014A

Notes

- (a) Tested cable transits RGS 1x1 up to RGS 8+8x7 and all intermediate sizes may be accepted in approved A-60 Class Aluminium bulkheads or decks.
- (b) Cable transits can be accepted with the approved cable fill ratio (single or range, as applicable) comprising the tested cable types of size equal to or smaller than tested. The maximum cable diameter for any intermediate transits is to be proportional to the transit size and may be determined by linear interpolation based on the internal cross-sectional area of the transit or the individual unit of multiple unit transits where the cable is to be fitted and must be acceptable to the Project Authority.
8. Consisting of: MCT Brattberg Mild Steel, Stainless Steel or Aluminium frames minimum 60mm deep and 10mm thick and either bolted on one side or fully welded to the division on both sides; and filled with MCT Brattberg 60mm thick Lycron self-lubricating transit blocks. The types: "Standard Insert Blocks", "Addblocks", "U-Blocks", "Machined blocks to suit non-circular services", "Handi-blocks", "Plugs" and "Wraps" are also accepted. EMP (Electro Magnetic Pulse) types are also accepted.
9. Back-to-back transits are fitted in mild steel sleeves minimum 200mm deep made of 10mm thick steel on the ends and 12mm thick on the sides and fully welded to the steel division on both sides
10. Frame types: RGS, RGSO, RGSF, RGSFO, RGSFBO, RGB, RGS btb, RGSC, RGSFB, RGSK, and RGSR.
11. The cable transit installation/welding arrangements must be as tested in accordance with manufacturer's specifications and to the satisfaction of the attending project surveyor. Any additional requirements specified by the project surveyors for special applications (for example, installations in high stress locations) must also be complied with.
12. Cable transits are to be fitted with the as-tested insulation materials in all cases. Any alternative insulation system proposed must be acceptable to the final Project Authority as being equivalent, at least in fire performance, material properties, thickness and density as the fire tested insulation system. Final insulation arrangements onboard must be to the satisfaction of the attending project surveyor in all cases.
13. Composition, application, and installation of subcomponents, including adhesives, seals and any fire retardants, to be maintained in production and used in accordance with originally tested composition formula and method of application and installation, and manufacturer's instructions.

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14. The certificate holder is solely responsible for the products supplied under this Certificate and to ensure that their products are fully compliant with the relevant statutory regulations and designed, manufactured, and installed to the same quality and specifications as the prototype tested, including components that are designed and manufactured by third parties.
15. Production items of the subject equipment are to be manufactured in accordance with either an approved Production Quality Assurance system (Module D), a Product-Quality assurance system (Module E) or a Product Verification Process (Module F). The UK Conformity Mark cannot be affixed to the product until a conformity assessment module is in place.
16. Each item, batch or lot of the equipment is to have the “UK Conformity Mark” affixed and be issued with a “UK Declaration of Conformity” affixed after a conformity assessment module is in place.
17. Should a change of Place of Production from that stated below be required i.e. where the stages of manufacture/assembly/testing of this product take place, the new Place of Production is to be advised to us prior to the change taking place. This Certificate will require to be updated for Approval to be maintained.
18. The manufacturer must keep a copy of the UK type-examination certificate, its annexes, and additions together with the technical documentation at the disposal of the national authorities for a period of at least 10 years after the UK Conformity Mark has been affixed on the last product manufactured and, in no case for a period shorter than the expected life of the marine equipment concerned.

NOTE

As per Section 2.2.6 of Appendix A.4 or IMO Resolution A.754 (18) the cable transits above have been tested with a range of different types of cables including a range of different conductors sheathing and insulation materials.

ADDITIONAL AD HOC TEST RESULTS (For Information only; outside the scope of this Fire Type Approval Certificate)

1. Various RGS transits were subjected to a hydrostatic pressure test of 5 Bar and a pneumatic pressure test of 4 bar. For water and gas tight applications reference should be made to the manufacturer’s instructions.
2. The transit seal was subject to a blast overpressure with an average value of 0.773 bar for a duration of 240 milliseconds detailed in report on blast loading on steel bulkheads fitted with flexible seals, dated April 1994 by British Gas PLC at Spadeadam.
3. MCT Brattberg pressure test reports: 11201 and 110202 dated 15 June 2011.
4. Back to back arrangements of RGS 2x 1 and RGS 8x1 cable transits with various cables and pipes and sealed with a mix of standard blocks, Add blocks, Handi-blocks, stay plates, end packing STG-1 and press wedge PTG-120, were subjected to separate hydrostatic and pneumatic pressure tests with pressure applied between the RGS seals in the Back to Back frames, increasing pressure in steps every 5 minutes and then held at 6bar water pressure and 4 bar pneumatic pressure with no reported leakage for 30minutes, as detailed in DNV-GL report no.N141GRC2 dated 22 November 2017.
5. RGSF 8x1 Single frame cable transit comprising Handi-blocks with plugs, stay plates and press wedge PTG-120 was subjected to a hydrostatic test increasing pressure in steps and maintained at 6bar for 60minutes followed by a pneumatic test increasing pressure in steps and maintained at 7bar for 30minutes with no reported leakage as described in DNV report no: N141NMEK dated 14th November 2018.
6. RGSF 2x1 and RGSF 8x1 Single frame cable transits comprising cables and pipes, spare blocks, standard blocks, Add-blocks, Handi-blocks, U-Blocks, stay plates, STG end packing and PTG press wedge were subjected to a hydrostatic test increasing pressure in steps and maintained at 6bar for 60minutes with no reported leakage as described in MCT Brattberg test report no: 190614 dated 18th October 2019. The tests were witnessed by Lloyd's Register.

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Marta Walk
Senior Specialist, Fire & Safety
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**For and on behalf of Lloyd's Register Marine Ltd.
(LRM Ltd) - UK Approved Body 8512**

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