



EC-TYPE EXAMINATION (MODULE B) CERTIFICATE

This is to certify that:

DBI Certification did undertake the relevant type approval procedures for the type of equipment identified below which was found to be in compliance with requirements of Marine Equipment Directive (MED) 2014/90/EU, subject to any conditions in the schedule attached hereto.

Manufacturer	R&M International GmbH
Address	Schellerdamm 22-24, DE-21079 Hamburg, Germany
Directive Reference	MED Directive 2014/90/EU , Regulation as amended by MED (EU) 2022/1157.
Regulation Item	MED/3.11b – 'A' & 'B' Class divisions fire integrity
Product Type	Class B-15 Ceiling combined with A-30 steel Deck
Product Description	C30 - Ceiling panel with additional fixtures
Specified Standards	IMO Res.MSC.307(88)-(2010 FTP Code), as amended

The attached (*schedule of approval*) forms part of this certificate.



This certificate remains valid unless suspended, expired or withdrawn, provided the conditions in the attached schedule are complied with.

Date of issue	2023-07-05	Issued by DBI Certification Notified Body No. 2531
Expiry date	2028-07-05	

This certificate was first issued 2023-07-05

This equipment is covered by the scope of " Agreement between the European Community and the United States of America on Mutual Recognition of Certificates of Conformity for Marine Equipment" signed February 18th, 2019" According to U.S. Coast Guard Approval Category No.: 46 CFR 164.108. A U.S. Coast Guard approval number will be assigned to the equipment when the production module has been completed and will appear on the production module certificate (module D, E or F) as allowed by the Mutual Recognition Agreement.

Signed

		/	
Name	Merete Poulsen		Lene Skovbjerg
	Responsible for evaluation		Responsible for certification decision

Notes:

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 notified 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 of the Commission Implementing Regulation may change, therefore the product conformity may need to be re-assessed by the Notified Body.

The 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 the Directive is fully complied with.

In case limitations of use apply, these should be indicated of in the Annex

This certificate is issued under the authority of the Danish Maritime Authority.



(Annex)

Schedule of Approval

Place of Production

R&M Alvedoor (Kunshan) Co., Ltd., 75Guchen Road (M) Kunshan, 215300 Kunshan, P.R. of China

Product Description:

The maximum exterior dimensions of the ceiling construction is 2440 x 3040 mm (width x length).

Supporting system:

General profiles:

The ceiling construction is self-supported at the edge, spanning freely for the entire panel length. Edge profiles were mounted to the test frame along all edges.

Edge Profiles:

The ceiling is supported by perimetral 1.0 mm steel L-profiles with dimensions 25 x 40 mm. The profile is mechanically fixed.

Ceiling panels:

Modular dimensions:

Length: 2430 mm (max. panel length 3000mm)

Width: 600/615 mm

Thickness: 30 mm

General:

The ceiling panels were manufactured from 0.6 mm thick steel sheets on the fire exposed side and 0.5 mm on the un-exposed side. The tongues were 26.8 mm mm thick and 24 mm long. The grooves were 26.8 mm wide and 24 mm deep. The grooves were stiffened using 0.5 mm thick steel U-profiles with the dimensions 24.5 x 28.5 x 22.5 mm.

Insulation:

The panels are insulated with one layer of 29 mm thick mineral wool designated Tizol-Flot with a nominal density of 150 kg/ m³. The insulation is adhered to the steel sheets using adhesive dedicated YB2 002X/8001 in/m².the nominal amount 100 ± 10 g.

Fixing:

The ceiling panels are fixed to each other in the joints using steel self-drilling 4.2 x 16 mm screws c-c 300 mm. The ceiling panels are fixed to the edge profile using the self-drilling 4.2 x 16 mm screws c-c 200 mm.

Units:

General:

The units used in the ceiling and their dimensions are described in the following section. Dimensions are as seen from fire exposed side.

Type:	Length (mm)	Width (mm)	Height, above ceiling (mm)
Unit 1: AC Unit, incl. frame	727	727	280
Unit 2: Inspection Hatch, incl. frame	887	687	-
Unit 3: Presence Sensor	-	Ø 88	90
Unit 4: Cable Penetration I	-	Ø 30	-
Unit 5: Cable Penetration II	-	Ø 30	-
Unit 6: HI-FOG Nozzle	-	Ø 30	-

Unit 1: AC Unit

The B-Mar AC unit was mounted on the unexposed side of the ceiling panels on top of a reinforcement. A hatch with the dimensions 649 x 649 mm was installed inside a 670 x 670 mm cut out of the ceiling. A Ø250 mm hole was cut at the center of the hatch and a 650 x



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650 mm diffuser was mounted on the fire exposed side of the hatch to cover the hole.
The unit is installed using a 2.0 mm thick reinforced steel profiles with the dimensions 22 x 38 x 22 mm.

Unit 2: Inspection Hatch

The inspection hatch and frame were fixed into an 840 x 640 mm opening in the ceiling using a piano hinge fastened to the ceiling panels and hatching with steel blind rivets. The inspection hatch was manufactured from two 0.6 mm steel half-shells. The hatch was insulated with 24 mm thick ABM-SR 200 rock wool adhered to the half-shells using YEBOND m². 2002x/8001 adhesive applied at an area density of 100 ± 10 g/m². Two steel turning locks were installed to close the inspection hatch.

Unit 3: Presence Sensor

The presence sensor designated K-bus KNX/EIB was installed into a Ø60 mm cutout in a ceiling panel. The unexposed side of the sensor was covered with a box (150x150x90 mm) made of aluminum coated needle mat designated VitriBond Marine adhered to the ceiling panel(s) using aluminum duct table designated Coroplast 930 Alu SE.

Unit 4: Cable Penetration

I An Ø8 mm electric cable designated CJPF/SC was connected to the ceiling panel using two cable sleeves designated TXOI and sealant designated Sika Firesil Marine N.

Unit 5: Cable Penetration II

An Ø8 mm electric cable designated CJPF/SC was connected to the ceiling panel using two cable sleeves designated TXOI and sealant designated Sika Firesil Marine N. The unexposed side of this unit was covered with an aluminum coated needle mat (150x150mm) designated VitriBond Marine fixed to the ceiling panel(s) using four steel self-driving 4,2 x 16 mm screws and aluminum duct table designated Coroplast 930 Alu SE.

Unit 6: HI-FOG Nozzle

The fire sprinkler designated HI-FOG 3000 was installed through a Ø30 mm cutout from the ceiling panel. The sprinkler was sealed to the ceiling panel using the sealant designated Sika Firesil Marine N. The nozzle was connected to a 90° elbow with a short nipple parallel to the ceiling panel.

Product Classification:

Class B-15 Ceiling combined with A-30 steel Deck

Application / Limitation of Product:

See product description.

The product cannot be installed with the untested side adjacent to the untested side of another bulkhead.

Type Approval Documentation

Test report no. PGA10352 dated 7th of October 2013 (basic ceiling without fittings),

Test report no. PGA10383 dated 22nd of May 2014

Test report no. PGA11233A dated 2nd of July 2018 (ceilings with fittings).

Test report no. PGA10252A dated 1th of May 2023

Technical Documentation

Listed in:

Test report no. PGA10352 dated 7th of October 2013 (basic ceiling without fittings),

Test report no. PGA10383 dated 22nd of May 2014

Test report no. PGA11233A dated 2nd of July 2018 (ceilings with fittings).

Test report no. PGA10252A dated 1th of May 2023

Installation

DBI Certification A/S

Jernholmen 12, 2650 Hvidovre
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E-mail: info@dbcertification.dk
www.dbcertification.dk



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Assembly procedure on board as stated in the test report/assessment, and as per manufacturers instruction, which has to be supplied together with the product.

Marking of Product

The product or packing is to be marked with name of manufacturer, type designation, technical rating and Mark of Conformity.

The 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 ANNEX II of the Directive is fully complied with and controlled by a written inspection agreement with a notified body.

End of Certificate



EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate no.:
MEDB000050G
Revision No:
3

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED). This Certificate is issued by DNV SE based on the notification of the Federal Maritime and Hydrographic Agency of Germany.

This is to certify:

that the A & B Class divisions fire integrity: B class divisions.

with type designation(s)
C30 - Ceiling panel without/with fixtures

issued to

R & M International GmbH
Hamburg, Germany

is found to comply with the requirements in the following Regulations/Standards:

Regulation (EU) 2023/1667,

item No. MED/3.11b. SOLAS 74 as amended, Regulation II-2/3.4 & II-2/9, IMO 2010 FTP Code, IMO MSC/Circ.1120 and IMO MSC.1/Circ.1581

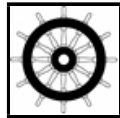
Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2029-05-23**.

Issued at **Hamburg** on **2024-05-24**

DNV local unit:
Hamburg – CMC North/East

Approval Engineer:
Meike Grabau



Notified Body
No.: **0098**



for **DNV SE**

Digitally Signed By:
Christine Mydlak-Röder
Location: **DNV Hamburg,**
Germany

Mydlak-Röder, Christine
Head of Notified Body

A U.S. Coast Guard approval number will be assigned to the equipment when the production module has been completed and will appear on the production module certificate (module D, E or F) of Annex B of the MED is fully complied with and controlled by a written inspection agreement with a Notified Body. The product liability rests with the manufacturer or his representative in accordance with Directive 2014/90/EU.

This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV SE of any changes to the approved equipment. This certificate remains valid unless suspended, withdrawn, recalled or cancelled.

Should the specified regulations or standards be amended during the validity of this certificate, the product is to be re-approved before being placed on board a vessel to which the amended regulations or standards apply.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.





Product description

“C30 - Ceiling panel without/with fixtures”

is a ceiling panel consisting of 29 mm mineral wool covered with 0.6 mm steel sheets on the exposed side and 0.5 mm steel sheets on the unexposed side. The panels are joined to each other with tongue and groove and secured by screws. The mineral wool is fixed to the steel sheets with adhesive of approved type.

For the ceiling core insulating material, one of the following mineral wool types may be installed:

- Tizol-Flot Lamella 150 from Tizol with nominal density of 150 kg/m³ (as tested);
- SeaRox SL 445 from Rockwool International A/S with nominal density of 150 kg/m³ (acc. to assessment no. 20140344);
- ABM-SR 150 from Shanghai ABM Rockwool Co., Ltd. with nominal density of 150 kg/m³ (acc. to assessment no. 20151290).

Total panel thickness: 30 mm.

Following optional installations may be included according to test report PGA10383:

Installation 1 “Loudspeaker”

A loudspeaker model LUNA DL8GH is mounted in the panel in a Ø93 mm cut-out with two spring steel clips. On the unexposed side of the panel the cut-out and the loudspeaker are covered with a cover box having external dimensions of 200 mm x 200 mm (L x W), with a height of 34 mm (excluding thickness of insulation material) as well as 25 mm outer bend along the edges for fixing to the ceiling panel with steel screws. The cable transit is sealed with Rokumarine sealing. Further details acc. to drawing no. SD-30MM+FIXTURES_FIRETEST_11.2013_05-9.

Installation 2 “Downlight Type 1”

A downlight model LightPartner DL04 is mounted in the panel in a Ø68 mm cut-out with three spring steel clips. On the unexposed side of the panel the cut-out and the downlight are covered with a cover box having external dimensions of 200 mm x 200 mm (L x W), with a height of 34 mm (excluding thickness of insulation material) as well as 25 mm outer bend along the edges for fixing to the ceiling panel with steel screws. The cable transit is sealed with Rokumarine sealing. Further details acc. to drawing no. SD-30MM+FIXTURES_FIRETEST_11.2013_06-9.

Installation 3 “Downlight Type 2”

A downlight model Glamox DLT RT(M) FR is mounted in the panel in a 579 mm x 277 mm cut-out with four steel wings from the unexposed side with the cover plate on the exposed side clipped on along the edges. On the unexposed side of the panel the cut-out and the downlight are covered with a cover box having external dimensions of 700 mm x 540 mm (L x W), with a height of 74 mm (excluding thickness of insulation material) as well as 25 mm outer bend along the edges for fixing to the ceiling panel with steel screws. The cable transit is sealed with Rokumarine sealing. Further details acc. to drawing no. SD-30MM+FIXTURES_FIRETEST_11.2013_07-9.

Cover box used in installations 1 to 3 is manufactured by 0.6 mm thick steel sheet and insulated with 6 mm thick Glasroc F Multiboard with nominal density of 1000 kg/m³ which is glued to the box with approved adhesive. For each cover box, 25 mm outer bends are arranged along all edges for fixing the box to the ceiling panel. Between the 25 mm outer bends and the ceiling panel, 6 mm thick strips (made by Glasroc F Multiboard) are fixed with approved adhesive. For insulation of the cover box the following materials may be also used (acc. to assessment 20150182):

- “Promaxon Type A” with density of 850 kg/m³ and thickness of 8 mm or
- “Promina@M” with density of 1000 kg/m³ and thickness of 6 mm,

both manufactured by Promat Research and Technology Centre NV.

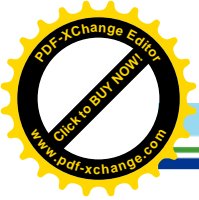
Installation 4 “Smoke detector”

A smoke detector model Siemens SD230N is mounted in the panel in a Ø24 mm cut-out by means of an adaptor and is fixed with two screws. The hole is sealed with Rokumarine sealing. Further details acc. to drawing no. SD-30MM+FIXTURES_FIRETEST_11.2013_09-9.

Following optional installations may be included according to test report PGA11233A:

Installation 5 “AC Unit with hatch”

The hatch with the clear opening of 494 mm x 507 mm is mounted across two panels in a 550 mm x 550 mm cut-out. Both panels are mounted with a reinforcing U-profile of specification 30 mm x 28.5 mm x 30 mm made by 1.5 mm thick steel arranged at the entire length of the panels. The hatch is made by 27 mm thick Tizol-Flot (density 150 kg/m³), with 1.5 mm thick steel sheet glued on the exposed side and 0.5 mm thick steel sheet glued on the unexposed side of the hatch and is reinforced inside with a steel framework of specification 230 mm x 230 mm x 26 mm made by 1.5 mm thick steel. The Z-shaped steel frame of specification 35 mm x 36.5 mm x 16.5 mm made by 1.5 mm thick steel sheet is mounted in the panel opening from the exposed side of the hatch. The clamping L-profile is mounted from the unexposed side on top of the panel opening and is insulated with one layer of 11 mm thick and 35 mm wide Tizol-Flot (density 150 kg/m³) fastened to the ceiling panels with aluminium tape. The Z- and the L-profiles are fixed together with



steel screws along all four sides. The hatch is attached to the frame with a piano hinge fixed to the hatch as well as to the Z-frame with steel pop rivets and is furnished with two pivot locks positioned along the opposite edge of the hatch. The hatch is manufactured with an opening of Ø198 mm at the center for the ventilation unit.

The ventilation unit is mounted on top of the hatch on two steel L-bearings 60 mm x 30 mm x 3 mm which are mounted to a support U-profile 2.0 mm x 20 mm x 35 mm x 20 mm with two M8 x 15 steel bolt/nut. The ends of the two support U-profiles are welded to the Z-frame profile. At one end the AC-Unit is mounted with Ø80 mm pipe and Ø110 mm adaptor. The pipe is mounted to the ceiling panels by means of a steel holder fixed with steel screws to each panel. A diffuser 600 mm x 600 mm x 1.0 mm enameled steel is fixed to the hatch with steel screws on the exposed side. For further details see drawings nos. C30-WITH-FIXTURES_FIRETEST_05.2018_01-15, 10-15, 11-15 and 12-15.

Installation 6 “Downlight Disc lamp”

A down light model Örsjö Disc lamp is mounted in the panel in a Ø20 mm cut-out and is fixed to the ceiling panel by means of the cable and a cable sleeve type TXOI. The cut-out is filled out with sealing material SikaFiresil Marine N and the sealing is also added on top of the panel around the cable. Further details acc. to drawing no.

C30-WITH-FIXTURES_FIRETEST_05.2018_8-15.

Installation 7 “Sprinkler HI-Fog DAVX”

A sprinkler model HI-FOG Davx is mounted on the exposed side of the ceiling panel in a Ø28 mm cut-out. The sprinkler is mounted with a pipe which is fixed to the ceiling panel by means of a holder with steel screws. The cut-out is filled out with sealing material SikaFiresil Marine N and the sealing is also added on top of the panel covering the union nut.

Further details acc. to drawing no. C30-WITH-FIXTURES_FIRETEST_05.2018_9-15.

Installation 8 “Loudspeaker G-SPK-12”

A loudspeaker model G-SPK-12 is mounted in the ceiling panel in Ø70 mm cut-out and is fixed to the exposed side of the ceiling panel with steel screws. On the unexposed side of the panel the entire loudspeaker is covered with a cover box. The edges of the box are bent 90° outwards approx. 25 mm, and they are fixed to the ceiling panel all the way around with 50 mm wide aluminium duct tape. The dimensions of the cover box without the 25 mm bent are 150 mm x 150 mm x 90 mm. Further details acc. to drawing no. C30-WITH-FIXTURES_FIRETEST_05.2018_5-15.

Installation 9 “Loudspeaker G-SPK-11”

A loudspeaker model G-SPK-12 is mounted in the ceiling panel in Ø138 mm cut-out and is fixed to the exposed side of the ceiling panel with steel screws and additionally mounted with a cover. On the unexposed side of the panel the entire loudspeaker is covered with a cover box. The edges of the box are bent 90° outwards approx. 25 mm, and they are fixed to the ceiling panel all the way around with 50 mm wide aluminium duct tape. The dimensions of the cover box without the 25 mm bent are 285 mm x 265 mm x 135 mm. Further details acc. to drawing no.

C30-WITH-FIXTURES_FIRETEST_05.2018_4-15.

Installation 10 “Downlight DL60-R92H”

A down light model DL60-R92H is mounted in the 30 mm thick ceiling panel in a Ø92 mm cut-out. The downlight is mounted in the ceiling panel by means of three suspension brackets. The suspension brackets are a part of the light box and are resting on top of the ceiling panel. The cover plate on the exposed side is clipped on along the edges. On the unexposed side of the panel the entire downlight was covered with a cover box. The edges of the box are bent 90° outwards, 25 mm, and they are fixed to the ceiling panel all the way around with 50 mm wide aluminium duct tape. The dimensions of the cover box without the 25 mm bent are 365 mm x 220 mm x 145 mm. Further details acc. to drawing no. C30-WITH-FIXTURES_FIRETEST_05.2018_6-15.

Installation 11 “Downlight DL60-RF155”

A down light model DL60-RF155 is mounted in the 30 mm thick ceiling panel in a Ø155 mm cut-out. The downlight is mounted in the ceiling panel by means of three suspension brackets. The suspension brackets are a part of the light box and are resting on top of the ceiling panel. The cover plate on the exposed side is clipped on along the edges. On the unexposed side of the panel the entire downlight was covered with a cover box. The edges of the box are bent 90° outwards, 25 mm, and they are fixed to the ceiling panel all the way around with 50 mm wide aluminium duct tape. The dimensions of the cover box without the 25 mm bent are 480 mm x 220 mm x 145 mm. Further details acc. to drawing no. C30-WITH-FIXTURES_FIRETEST_05.2018_7-15.

The soft cover box in installations 8, 9, 10 and 11 is formed from 3 mm thick aluminium coated needle mat of type VitriBond Marine (with nominal density of 220 kg/m³ and manufactured by Culimeta Textiles-Technologie GmbH).

Installation 12 “Hatch for AC unit”

The hatch with the clear opening of 757 mm x 557 mm is mounted across two panels in a 800 mm x 600 mm cut-out. Both panels are mounted with a reinforcing U-profile of specification 30 mm x 28.5 mm x 30 mm made by 1.5 mm thick steel arranged at the entire length of the panels. The hatch is made by 27 mm thick Tizol-Flot (density 150 kg/m³), with 1.5 mm thick steel sheet glued on the exposed side and 0.5 mm thick steel sheet glued on the unexposed side of the hatch. Both galv. steel sheets were bent 90° along all four outer edges. The steel sheets were bent upwards and



downwards respectively overlapping each other along all four outer edges and fixed together by means of M4 steel pop rivets, two at each edge.

A Z-shaped 1.5 mm steel frame 35 mm x 36.5 mm x 16.5 mm was mounted in the panel opening from the exposed side of the hatch. A clamping L-profile was mounted from the unexposed side on top of the panel opening. The clamping frame was insulated with one layer of 10 mm thick and 35 mm wide Tizol-Flot 150 fastened to the ceiling panels with aluminium tape. The Z-Profile and the L-profile were fixed together by means of 3.2 mm x 19 mm (4-7x) self-drilling screws along all four sides.

The hatch was manufactured with an opening of \varnothing 270 mm at the center for the ventilation unit. The hatch was reinforced inside with a steel framework 300 mm x 300 mm x 27 mm x 1.5 mm with a \varnothing 270 mm hole. A diffuser 450 mm x 450 mm was fixed to the hatch by means of four spring-based click systems on the exposed side of the hatch, The hatch was mounted with a piano hinge 24 mm x 1.0 mm fixed to the hatch as well as to the Z-frame by means of 3.0 mm x 6 mm steel pop rivets at c/c 60 mm. The hatch was furnished with two turning locks positioned along the opposite edge of the hatch and 40 mm from the edge.

Following optional installations may be included according to test report PGB10151A:

Installation 13 "Loudspeaker CL-200T"

A loudspeaker model CL-200T is mounted in the ceiling panel in a circular cut out \varnothing 171 mm. The speaker is fixed to the exposed side of the ceiling panel with three 3.5 mm x 25 mm screws. On the unexposed side of the panel the entire speaker is covered with a box made from a 3 mm thick aluminium coated needle mat VitriBond Marine. The edges of the box are bent 90° outwards approx. 25 mm, and they are fixed to the ceiling panel all the way around with 50 mm wide aluminum duct tape.

For further details, please see "Type Examination documentation" below.

Application/Limitation

Approved for use as a horizontal fire retarding division of continuous class B-15.

With a minimum distance between exposed side of the ceiling and the class A structural steel deck of 300 mm, the whole construction may be regarded as a horizontal fire retarding division of class A-30.

Maximum panel size: 1200 mm x 3000 mm (W x L) – see test report no. PGA11552A.

The insulation materials and adhesives used have to be approved according to the Marine Equipment Directive and bear the Mark of Conformity. This requirement may also be applicable for surface materials used, if required by relevant rules and regulations.

Each product is to be supplied with its manual for installation, use and maintenance.

Type Examination documentation

Test report nos.

PGA10352 dated 7 October 2013 (basic ceiling without fittings),

PGA10383 dated 22 May 2014 (ceiling with various units),

PGA11233A dated 2 July 2018 (ceiling with fixtures),

PGA11552A dated 20 September 2019 (max. panel 3 m and continuous ceiling) and

PGB10151A dated 25 October 2021 (ceiling with fixtures)

from DBI - Danish Institute of Fire and Security Technology, Hvidovre, Denmark.

Assessment nos. 20150182 dated 7 July 2015, 20140344 and 20151290 both dated 22 July 2019 all issued by MPA Dresden (Fire Test Laboratory) Germany.

Tests carried out

Tested according to IMO 2010 FTP Code, Part 3 and Part 3 Appendix 4.

Marking of product

The product is to be marked with name and address of manufacturer, type designation, fire-technical rating, MED Mark of Conformity and USCG Approval Number if applicable (see first page).