



# Design Appraisal Document

**Lloyd's Register EMEA**  
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Date  
**22 July 2025**

Please quote this reference number on all future communications  
**TSO-25-038485-VSZ**

## Machinery General Design Appraisal

**Client** : Lagersmit Sealing Solutions B.V., Alblasserdam NL  
**Manufacturer** : Lagersmit Sealing Solutions B.V., Alblasserdam NL  
**Subject** : General Design Appraisal of "SUPREME" Sterntube and Thruster Seals  
**G.A. Registration No.** : ROT.20.M.019 (E2)

This Machinery General Design Appraisal is valid for a period of 5 years from the date of issue or until a change of the Rules, whichever comes first.

This Design Appraisal Document supersedes the previous Document No. RTS-ENG-201972, Issue No. 1 dated 10 July 2023. The plans remains applicable.

1. The Plans and Documents as listed in paragraph 1 of the appendix have been examined for compliance with

*Rules and Regulations for the Classification of Ships, July 2025, Part 5, Chapter 6;*

*Rules and Regulations for the Classification of Special Service Craft, July 2025, Part 11, Chapter 2;*

*Rules and Regulations for the Classification of Inland Waterways Ships, July 2025 Part 5, Chapter 4,*

and will be assigned an appraisal status, as indicated, in accordance with the following conditions and comments:-

FINAL ACCEPTANCE OF ACTUAL ITEM(S) DEPEND(S) ON SATISFACTORY SURVEY AND TESTING

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## 2. Details

|                             |   |   |
|-----------------------------|---|---|
| Equipment                   | : | Sterntube and Thruster Seals  |
| Type                        | : | SUPREME STA, STA2, STA3, SVA, SVA2, SVA3<br>SUPREME SG, SG2, SG3, SGV, SGV2, SGV3<br>SUPREME STF, STF2, STF3<br>SUPREME TS3, TS4, TS4-2, TSV4<br>SUPREME LDA, LDF<br>SUPREME SAA, SAA2, SAA3<br>SUPREME SGA, SGA2, SGA3 |
| Propeller Shaft Lubrication | : | Oil or Grease   |

| Type                                | Seal Range [mm] | Shaft Range [mm] | Specification No. |
|-------------------------------------|-----------------|------------------|-------------------|
| Supreme STA - Aft seal assembly     | 110-1250        | 70-1176          | 04-10-100         |
| Supreme SG - Aft seal assembly      | 110-1250        | 70-1176          | 04-20-100         |
| Supreme SGV - Aft seal assembly     | 110-1250        | 70-1176          | 04-25-100         |
| Supreme LDA - Aft seal assembly     | 110-260         | 70-248           | 04-30-100         |
| Supreme LDF - Forward seal assembly | 110-220         | 70-208           | 04-35-100         |
| Supreme STF - Forward seal assembly | 110-1250        | 70-1176          | 04-15-100         |
| Supreme SVA - Aft seal assembly     | 110-1250        | 70-1176          | 04-12-100         |
| Supreme SAA - Aft seal assembly     | 110-380         | 70-362           | 04-60-100         |
| Supreme SGA - Aft seal assembly     | 110-380         | 70-362           | 04-65-100         |

## 3. General comments – All types

1. The seals are to be installed in accordance with the Manufacturer's instructions and to the requirements of the Rules, and tried under working conditions, all to the attending Surveyor's satisfaction. AQS
2. Sealing faces are to be examined at each drydocking. AQS
3. Materials for oil sealing between the stern bush and propeller boss, such as the stern tube AFT seals etc., are to be made and tested in accordance with the Rules "Manufacture, Testing and Certification of Materials".  
 a) Materials for other applications, the manufacturer's materials will be accepted where they are in accordance with a recognised National Standard applicable to the intended services. The installation is to the attending Surveyor's satisfaction. --
4. It is noted that the material for the bolting intended for the inboard seal is "steel" and concluded that quality 8.8 or equivalent will be used. AQS

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**C. Oil Lubricated Seals:-**

1. Vessels built in compliance with the Ship Rules being fitted with these type of oil glands may be eligible for the Notation OG in the supplement to the Register Book for Periodical Survey Purposes. (Part 5, Chapter 6, Section 3.12.10 refers). --
2. The frequency of the complete screwshaft survey and survey extensions are to comply with the requirements of Part 1, Chapter 3, Section 17 of the Ship Rules and Part 1, Chapter 3, Sections 11 & Chapter 4, Section 10 of the SSC Rules. --
3. For IWW vessels screw shafts are to be withdrawn at intervals of five (5) years as per Part 1, Chapter 3, Section 15 of the IWW Rules. --
4. The above oil glands are also acceptable for ships having an IWS notation (Part 5, Chapter 6, Section 3.12.13 of the Ship Rules refers). However, it is noted that oil spillage could occur when removing the stainless steel plug which could be unacceptable for the relevant National Authorities. --
5. For vessels where ShipRight descriptive note SCM (Screwshaft Condition Monitoring) is requested, the oil glands are capable of being replaced without removal of the propeller or withdrawal of the screwshafts. The frequency of survey intervals and extensions are to comply with the relevant requirements in Part 1, Chapter 3, Section 17 of the Ship Rules or Part 1, Chapter 3, Section 11 of the SSC Rules. --

**D. Piping Diagrams:-**

1. The lubrication system is not part of the scope of supply of IHC Sealing Solutions. Final approval of the lubrication system diagram is to be arranged through the yard. AQS
2. Wall thickness of pipes to be in compliance with the applicable Rule requirements (Part 5, Chapter 12 of the Ship Rules or Part 15, Chapter 1 of the SSC Rules or Part 5, Chapter 10 of the IWW Rules refers). AQS
3. Connections on oil tanks other than top connections to be provided with a valve or cock secured to the tank. AQS
4. Means for ascertaining the temperature of the oil in the stern tube are to be provided as per Part 5, Chapter 6, Section 3.12.10 of the Ship Rules or Part 11, Chapter 2, Section 4.16.9 of the SSC Rules, as applicable. AQS
5. Grease lubrication system details were not available to be submitted for each application. AQS
6. Hoses between tank and forward seal to be of an approved type. AQS
7. Air release pipe on FWD Seal Tank to be led to above the loaded waterline in a safe position all to the Surveyor's satisfaction. AQS

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**E. VENTUS System:-**

|    |   |     |
|----|---|-----|
| 1. | The air supply system shall have sufficient redundancy i.e. a single failure shall not render the whole system inoperable.                                    | AQS |
| 2. | Outlets of relief valves to be led to a safe position all to the Surveyor's satisfaction.   | AQS |
| 3. | It is noted that the air release valve will be fitted with parallel thread and the locking or securing arrangements are to be to the Surveyor's satisfaction. | AQS |
| 4. | The VENTUS Valve is to be protected from mechanical damage all to the Surveyor's satisfaction.  | --  |
| 5. | It is noted that the VENTUS Valve is a proprietary item and it is recommended to carry a spare on board for replacement if considered necessary.              | --  |
| 6. | The SUPREME Ventus – Air Type Seal may be fitted on ships eligible for ECO Notation.  | --  |
| 7. | Procedures covering the handling of the Lubrication Oil are to be in compliance with Part 7, Chapter 11, Section 2.6.12 for ships having ECO Notation.        | AQS |

**F. Athmos System:-**

|    |  |     |
|----|--|-----|
| 1. | The SUPREME Athmos – Air Type Seals may be fitted on ships eligible for ECO Notation.  | --  |
| 2. | Procedures covering the handling of the Lubrication Oil are to be in compliance with Part 7, Chapter 11, Section 2.6.12 for ships having ECO Notation. | AQS |

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Lead Specialist- Piping Systems  
Global Technical Support Office

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## Appendix

1. The documents listed below have been examined

| Document No.       | Rev.      | Title   | Status | Date        |
|--------------------|-----------|---|--------|-------------|
| <b>SUPREME LDA</b> |           |   |        |             |
| 04-30-100          | 21-Jul-15 | Product Specification - Supreme LDA – Aft Seal Assembly     | SI     | 11-Aug-2020 |
| PID-LD             | C         | Supreme LD Piping Diagram                                   | SI     | 11-Aug-2020 |
| PID-LD-G           | A         | Supreme Piping Diagram                                      | SI     | 11-Aug-2020 |
| TA-SUP-X30         | C         | Supreme LDA   | AQ     | 11-Aug-2020 |
| <b>SUPREME LDF</b> |           |   |        |             |
| 04-35-100          | 21-Jul-15 | Product Specification - Supreme LDF – Forward Seal Assembly | SI     | 11-Aug-2020 |
| TA-SUP-X31         | C         | Supreme LDF   | AQ     | 11-Aug-2020 |
| <b>SUPREME SAA</b> |           |   |        |             |
| 04-60-100          | 07-Okt-19 | Product Specification - Supreme SAA – Aft Seal Assembly     | SI     | 11-Aug-2020 |
| PID-SAA-2017       | C         | Supreme Athmos Piping Diagram MK2017                        | SI     | 11-Aug-2020 |
| TA-SUP-X60         | A         | Supreme SAA   | AQ     | 11-Aug-2020 |
| <b>SUPREME SG</b>  |           |   |        |             |
| 04-20-100          | 07-Okt-19 | Product Specification - Supreme SG – Aft Seal Assembly      | SI     | 11-Aug-2020 |
| PID-SG             | E         | Supreme SeaGuard Piping Diagram                             | SI     | 11-Aug-2020 |
| TA-SUP-X10         | B         | Supreme SG  | AQ     | 11-Aug-2020 |
| <b>SUPREME SGA</b> |           |   |        |             |
| 04-65-100          | 07-Okt-19 | Product Specification - Supreme SGA – Aft Seal Assembly     | SI     | 11-Aug-2020 |
| PID-SGA-2017       | C         | Supreme SeaGuard Athmos Piping Diagram MK2017               | SI     | 11-Aug-2020 |
| TA-SUP-X65         | A         | Supreme SGA   | AQ     | 11-Aug-2020 |
| <b>SUPREME SGV</b> |           |   |        |             |
| 04-25-100          | 07-Okt-19 | Product Specification - Supreme SGV – Aft Seal Assembly     | SI     | 11-Aug-2020 |
| PID-SGV-2017       | G         | Supreme SeaGuard Ventus Piping Diagram MK2017               | SI     | 11-Aug-2020 |
| TA-SUP-X15         | B         | Supreme SGV   | AQ     | 11-Aug-2020 |
| <b>SUPREME STA</b> |           |   |        |             |
| 04-10-100          | 4-Okt-19  | Product Specification - Supreme STA – Aft Seal Assembly     | SI     | 11-Aug-2020 |
| PID-ST             | D         | Supreme ST Piping Diagram                                   | SI     | 11-Aug-2020 |
| TA-SUP-X01         | B         | Supreme STA   | AQ     | 11-Aug-2020 |

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|---------------------|-----------|--|--------|-------------|
| <b>SUPREME STF</b>  |           |  |        |             |
| 04-15-100           | 04-Okt-19 | <b>Product Specification - Supreme STF – Forward Seal Assembly</b> | SI     | 11-Aug-2020 |
| PID-ST              | C         | <b>Supreme ST Piping Diagram</b>                                   | SI     | 11-Aug-2020 |
| TA-SUP-X20          | B         | <b>Supreme STF</b>   | AQ     | 11-Aug-2020 |
| <b>SUPREME SVA</b>  |           |  |        |             |
| 04-12-100           | 04-Okt-19 | <b>Product Specification - Supreme SVA – Aft Seal Assembly</b>     | SI     | 11-Aug-2020 |
| PID-SVA-2017        | H         | <b>Supreme Ventus Piping Diagram MK2017</b>                        | SI     | 11-Aug-2020 |
| TA-SUP-X05          | D         | <b>Supreme SVA</b>   | AQ     | 11-Aug-2020 |
| <b>SUPREME TS3</b>  |           |  |        |             |
| PID-TS3             | B         | <b>Supreme TS3 Piping Diagram</b>                                  | SI     | 11-Aug-2020 |
| TA-SUP-X40          | B         | <b>Supreme TS3 Thruster Seal Assembly</b>                          | AQ     | 11-Aug-2020 |
| <b>SUPREME TS4</b>  |           |  |        |             |
| PID-TS4             | B         | <b>Supreme TS4 Piping Diagram</b>                                  | SI     | 11-Aug-2020 |
| TA-SUP-X41          | C         | <b>Supreme TS4 Thruster Seal Assembly</b>                          | AQ     | 11-Aug-2020 |
| <b>SUPREME TSV4</b> |           |  |        |             |
| PID-TSV-AZIM        | A         | <b>PID-TSV-AZIM Lip Seal Monitoring Piping Diagram</b>             | SI     | 11-Aug-2020 |
| TA-SUP-X43          | C         | <b>Supreme TSV4 Thruster Seal Assembly</b>                         | AQ     | 11-Aug-2020 |
| TA-FWD-OT           | A         | <b>FWD Oil Tank</b>  | SI     | 11-Aug-2020 |
| TA-SUP-OPT          | B         | <b>Optional Extras</b>   | SI     | 11-Aug-2020 |

2. The documents listed below have been considered together with the submitted documents in the appraisal

| Document No. | Rev.       | Title                               |
|--------------|------------|-------------------------------------|
| 01-60-100    | 06-Apr-16  | <b>Lagersmit Engineering Manual</b> |
| 01-60-105    | 23-11-2017 | <b>Encoding Seals</b>               |

### Appraisal Status Key

AQ Approval subject to the matters raised that require resolution – and provided the arrangements are to the surveyor's satisfaction

AQS Details to be submitted by the client to the local surveyor's Office responsible for surveying the building and the arrangements verified in accordance with the Rule/Regulations requirements by the surveyor.

SI Retained as supporting documentation for information only

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## Appendix

### Appraisal Status Key

- A Approved - provided the arrangements are to the surveyor's satisfaction
- SI Retained as supporting documentation for information only
- C Cancelled

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