

LR Type Approval Certificate Extension

This is to certify that Certificate No. 01/60001(E2) for the undernoted products is extended and renumbered as shown.

This certificate is issued to:

PRODUCER	Hellan Strainer Company
PLACE OF PRODUCTION	3249 East 80 th Street, Cleveland, Ohio 44104, USA
DESCRIPTION	Fluid Strainers
TYPES	TS, D,Q,311,611,WS,WD
APPLICATION	Fresh & Salt water Systems including fire main. Fuel Oil Systems Lubricating Oil Systems
SPECIFIED STANDARD	LR Rules and Regulations for Classification of Ships LR Rules and Regulations for Classification of Offshore Units ASME B 16.1 –2015 Cast Iron Pipe Flanges and Flanged Fittings ASME B 16.5 – 2013 Pipe Flanges and Flanged Fittings ASME B 16.24 –2016 Cast Copper Alloy Pipe Flanges and Flanged Fittings
SIZE	
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Lloyd's Register Quality Assurance, Inc.
1330 Enclave Parkway, Suite 200
Houston Texas 77077



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Type	TS	D	Q	311	611	WS	WD
Size in inches	1-1/2, 2, 2-1/2, 3	3,4, 6,8, 10,12	14 16	3	6	14 16	20

RATINGS

Mat'l	Class	Temp °F	TS	D	D	D	Q	D	D	WS	WD
			1 1/2 2 2 1/2 3	3	4	6 8 10 12	14 16	311	611	14 & 16	20
Cast Iron A278 CL30	125	150	175	175	175	175	150	-	-	-	-
Cast Steel SA216WCB	150	100	285	285	285	285	285	-	-	-	-
	300	100	-	-	450	450	-	-	-	-	-
Stainless Steel SA351 GR CF8M	150	100	275	275	275	275	-	275	275	-	-
	300	100	-	-	450	450	-	-	-	-	-
Bronze B148 C95800	150	150	-	220	220	220	-	-	-	-	-
Super Duplex SA995 25CR 6A	150	100	-	-	-	275	-	-	-	-	-
Steel SA 516 GR70	150	100	-	-	-	-	-	-	-	150	150
Stainless Steel Type 316	150	100	-	-	-	-	-	-	-	150	150

Pressure – temperature rating in psi at 100°F, for temperatures greater than 100°F-pro-rata the above table values according to applicable flange rating.

'-' not applicable.

OTHER CONDITIONS

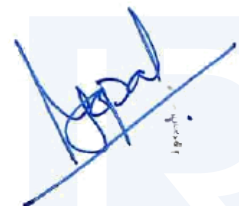
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1. Grey cast iron: Material ASTM 278 Class 30- permitted for Class III Systems only. Also use of this material is not permitted for Fire Extinguishing, Steam, and Hydrocarbon Service & Bilge Systems.
2. Electrical- All electrical drive, components and associated drive mechanism are outside the scope of this approval. For hazardous zones, suitability of the electrical components is to be as per the project requirements.
3. Cooling Water System – Sea water-cooling suction lines to main engines and essential auxiliary engines are to be provided with minimum two complete strainer assembly units with isolating valves such that the filters can be manually cleaned without interruption to the cooling water supply.
4. Lube Oil & Fuel Oil Systems- The filters are to be capable of being cleaned without stopping the engine or reducing the supply of filtered oil, accordingly fuel oil and lube oil systems are to be provided with minimum two complete strainer assembly units with isolating valves such that the filters can be manually cleaned without interruption of supply of fuel /lubricating oil.
5. Firefighting Systems: - Location of filters on the fire water line is such that the rubber rings and gaskets of the filters will not be damaged by a fire in the space being protected.
6. Drain- The drain pipe from the strainers sump area for removing debris are to be provided with suitable isolating arrangement and are to be led to a safe location such that it will not result in flooding of any compartment or uncontrolled release of combustible fluids.
7. Pressure Release- A suitable warning plate is to be installed on each strainer assemblies indicating that the unit is under pressure and before removing the covers, strainers are to be isolated and the pressure released. For fuel oil and lubricating oil service a vent cock or valve is to be provided on the outlet piping.
8. Threaded connections- Threaded connections and threaded swage nipples are not to be used on strainer draining lines for combustible fluids or essential services. The connections are to be flanged type.
9. Ball Valves on the drain line- Metal seated ball valves are to be provided for combustible fluids and essential service or resiliently seated (soft seated) ball valves are to be of fire tested type.

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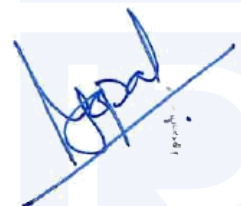
10. Sight Flow Indicators- The sight glass is susceptible to damage and release of contents. Accordingly these indicators are not to be installed on the drain lines for combustible fluid services.

11. Material- Mechanical Properties and certifications of strainers and fittings used in Class I and Class II piping systems on ships or installations classed or intended for classification with LR to comply the relevant sections of Rules for the Manufacture, Testing and Certification of Materials.

"This Certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register of any modification or changes to the equipment in order to obtain a valid certificate."

The Design Appraisal Document No. 01/60001(E3) and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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