DNV·GL

Certificate No:
TAM00000HN

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Air Compressor

with type designation(s)
LMF11sl/138, LMF16sl/138-175, LMF16sl/138-207, LMF20sl/138-175, LMF20sl/138-207, LMF25sl/138-207, LMF21s/138-207, LMF26s/138-207, LMF31s/138-207, LMF36s/138-207, LMF51s/138-207, LMF56s/138-207, LMF62s/138-207, LMF70s/138-207, LMF78s/138-207.

Issued to
Leobersdorfer Maschinenfabrik GmbH
Leobersdorf, Austria

is found to comply with
DNV GL rules for classification – Ships

Application :

Seismic or general application on board of ships (except main functions)
Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.
The Type Approval covers the piston compressors and interconnecting piping.
Max. working press.: 230
Operating media: Air, Nitrogen

Issued at **Hamburg** on **2017-09-11**
This Certificate is valid until **2022-09-10**.
DNV GL local station: **Augsburg**

Approval Engineer: **Christian Kaemmer**

for **DNV GL**

Olaf Drews
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

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Product description

The complete LMF compressor package comprises a screw compressor, a piston compressor, coolers, separators and interconnecting piping mounted on a skid.

The piston compressors are constructed as a three stage, water cooled boxer-compressors with two double acting cylinders.

This Type Approval covers only the piston compressors and interconnecting piping.
The approval does not include driving member, screw compressor, control system, connected instrumentation, heat exchangers and pressure vessels.

Application/Limitation

Safety valve setpoint may be lower than the design pressure of stages.

Type LMF11sl-25sl	Design pressure	Capacity	Power
LMF11sl/138	Suction: 6 bar 1st stage: 10 bar 2nd stage: 25 bar 3rd stage: 80 bar 4th stage: 170 bar	11 m³/min	182 kW ~1600 rpm
LMF16sl/138-175	Suction: 6 bar 1st stage: 10 bar 2nd stage: 25 bar 3rd stage: 80 bar 4th stage: 170 bar 4th stage: 195 bar	16 m³/min	230 kW ~1500 rpm
LMF16sl/138-207	Suction: 6 bar 1st stage: 10 bar 2nd stage: 25 bar 3rd stage: 80 bar 4th stage: 170 bar 4th stage: 230 bar	16 m³/min	230 kW ~1600 rpm
LMF20sl/138-175	Suction: 6 bar 1st stage: 10 bar 2nd stage: 25 bar 3rd stage: 80 bar 4th stage: 170 bar 4th stage: 230 bar	20 m³/min	265 kW ~1600 rpm
LMF20sl/138-207	Suction: 6 bar 1st stage: 10 bar 2nd stage: 25 bar 3rd stage: 80 bar 4th stage: 170 bar 4th stage: 230 bar	20 m³/min	265 kW ~1500 rpm
LMF25sl/138-207	Suction: 6 bar 1st stage: 12 bar 2nd stage: 30 bar 3rd stage: 90 bar 4th stage: 170 bar 4th stage: 230 bar	25 m³/min	297 kW 1500/1600 rpm

Type LMF21s-36s	Design pressure	Capacity	Power
LMF21s/138-207	Suction: 14 bar 1st stage: 34 bar 2nd stage: 88 bar 3rd stage: 170 bar 3rd stage: 230 bar	21 m³/min	202 kW/ 1500/1800 rpm
LMF26s/138-207	Suction: 14 bar 1st stage: 34 bar 2nd stage: 88 bar 3rd stage: 170 bar 3rd stage: 230 bar	26 m³/min	232 kW/ 1500/1800 rpm
LMF31s/138-207	Suction: 16 bar 1st stage: 45 bar 2nd stage: 115 bar 3rd stage: 170 bar 3rd stage: 230 bar	31 m³/min	257 kW/ 1500/1800 rpm
LMF36s/138-207	Suction: 16 bar 1st stage: 45 bar 2nd stage: 115 bar 3rd stage: 170 bar 3rd stage: 230 bar	36 m³/min	283 kW/ 1500/1800 rpm
Type LMF51s-78s	**Design pressure**	**Capacity**	**Power**
LMF51s/138-207	Suction: 16 bar 1st stage: 50 bar 2nd stage: 115 bar 3rd stage: 160 bar 3rd stage: 230 bar	51 m³/min	425 kW/ 1500 rpm
LMF56s/138-207	Suction: 16 bar 1st stage: 50 bar 2nd stage: 115 bar 3rd stage: 160 bar 3rd stage: 230 bar	56 m³/min	447 kW/ 1500 rpm
LMF62s/138-207	Suction: 16 bar 1st stage: 50 bar 2nd stage: 115 bar 3rd stage: 160 bar 3rd stage: 230 bar	62 m³/min	461 kW/ 1600 rpm
LMF70s/138-207	Suction: 16 bar 1st stage: 50 bar 2nd stage: 115 bar 3rd stage: 160 bar 3rd stage: 230 bar	70 m³/min	524kW/ 1600/1800 rpm
LMF78s/138-207	Suction: 16 bar 1st stage: 50 bar 2nd stage: 115 bar 3rd stage: 160 bar 3rd stage: 230 bar	78 m³/min	546 kW/ 1600/1800 rpm

The design pressures are referred to the piston compressor stages.
Hence, 1st stage for piston compressor corresponds to 2nd compression stage for the whole unit.

Type Approval documentation

Marking of product

The products are to be marked with manufacturer's name or trademark and type designation.

Periodical assessment

For retention of the type approval certificate periodical assessments shall be carried out at production places by DNVGL surveyor.
The objective of the periodical assessment is to verify that the design and production conditions for the type approval have not been altered.

Main scope of the assessment:
- verification of the production and quality control system
- inspection of factory samples, selected at random from the production line (where practicable)
- review of quality control documentation of recent deliveries
- review of drawings in production to verify any design changes which may have an impact on data specified in the type approval certificate, performance and range of application
- verification of the product marking

Periodical assessment is to be performed after 2 years and after 3.5 years.
A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE