LCR HIGH-PRESSURE SERIES

Vertical Multistage Centrifugal Pumps
50 Hz

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Lubi

Passion for Pumps™

LCRH HIGH-PRESSURE VERTICAL MULTISTAGE CENTRIFUGAL PUMPS

INTRODUCTION

The Lubi **LCRNHS, LCRH** and **LCRNH** series pumps are high-pressure, non-self-priming, vertical multistage centrifugal pumps with axial suction and discharge ports .

The high-pressure is achieved in two ways:

1.) SINGLE PUMP SYSTEM:

In this system a standard vertical multistage centrifugal pump is fitted with a high-speed Lubi motor with integrated frequency converter.

- Type LCRNHS
- Available models: LCRNHS 1 & LCRNHS 3

2.) TWO PUMP SYSTEM (FEED PUMP + HIGH-PRESSURE PUMP):

The pump consist of 2 pumps and they are installed in series. The first pump is a Feed pump which is standard vertical multistage centrifugal pumps i.e. LCR, LCRN. The second pump is a High-pressure pump i.e LCRH, LCRNH especially designed for high pressure. A feed pump is connected with a high-pressure pump in series and thus high-pressure is achieved.

- Type LCRH and LCRNH
- Available models: LCRNH 3 to LCRNH 150
  LCRH 32 to LCRH 150

The high-pressure pump comes in two designs depending on pump size.

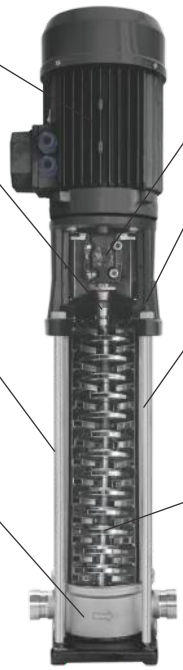
- ❒ LCRNHS 1, 3 & LCRNH 2 to 20: The chamber stack is upside-down as compared to a standard LCRN pump.
- ❒ LCRH, LCRNH 32 to 150: Standard LCR, LCRN pump with or without bearing flange.

The pressure generated by the high-pressure pump makes special demands to the design. This leaflet primarily describes the following aspects where the high-pressure pump is different from the standard pump:

- ❒ design
- ❒ operating conditions
- ❒ performance curves
- ❒ dimensions.

The performance curves show the high-pressure pump connected in series with a standard pump with various numbers of stages.

DESIGN FEATURES



Motor
Highly efficient, silent and reliable motor operation.

Shaft seal
Maintenance-free cartridge type mechanical shaft seal as standard which increases reliable pumping operation, ensure safe handling and enables easy access & easy serviceability.

Outer sleeve
Wear and corrosion resistance, made out of stainless steel AISI 304 (for LCR)/stainless steel AISI 316 (for LCRN).

Base
The base has a suction and discharge connections in the same horizontal plane (in-line) and have the same pipe sizes. Made out of ductile cast iron for LCR pump and stainless steel CF 8M for LCRN pump.

Coupling

Pump head
CED coated rust proof designed, robust cast iron pump head.

Tiebolts
The chamber stack and the outer sleeve are secured between the pump head and the base by means of heavy duty robust tiebolts.

Impellers
State-of-the-art hydraulic designed stainless steel AISI 304 (for LCR) / stainless steel AISI 316 (for LCRN) sheet metal impellers which offers a very low coefficient of friction and also offers wear & corrosion resistance.

APPLICATIONS

These pumps are suitable for a various types of applications demanding high-pressure, reliable and cost-efficient supply.

These pumps are suitable for a wide variety of applications from pumping of potable water to the pumping of chemicals.

Typical applications are as below:

Pressure boosting

- ❒ Process water systems
- ❒ Washing and cleaning systems
- ❒ High-pressure wash down systems
- ❒ Boiler feed and condensate systems.

Water treatment

- ❒ Ultra-filtration systems
- ❒ Reverse osmosis systems.

OPERATING CONDITIONS

Flow range : 0.8 to 180 m³/h
Max. operating pressure : 50 bar
Ambient temperature : Max. + 40°C
Liquid temperature range: -30°C to +120°C

MOTOR

LCRH, LCRNH pumps are fitted with a Totally Enclosed Fan Cooled, 2-pole motors with principal dimensions in accordance with the EN standards. Electrical tolerances according to EN 60034.

Motor type : TEFC 2-pole motor
Ratings : 1 phase - 0.37 to 2.2 kW
3 phase - 0.37 to 75 kW
Rated speed : 2900 rpm
Mounting designation: Up to 4 kW - V18 and From 5.5 kW - V1
Enclosure class : IP 55
Insulation class : F
Efficiency class : EFF2
Nominal voltage : 1 phase 220-230/240 V - 0.37 to 2.2 kW
(Tolerance ±10%) 3 phase 220-240/380-415 V - 0.37 to 1.5 kW
3 phase 380-415 V - 2.2 to 75 kW
Supply frequency : 50 Hz

PUMPED LIQUIDS

Thin non-explosive liquids and not containing solid particles or fibers are suitable. The liquid must also not chemically attack the pump materials. When pumping liquids with a density and/or viscosity higher than that of water, oversized motors must be used, if required. Whether a pump is suitable for a particular liquid depends on a number of factors of which the most important are the chloride content, pH value, temperature and content of chemicals, oils etc. Please note that aggressive liquids (e.g sea water and some acids) may attack or dissolve the protective oxide film of the stainless steel and thus cause corrosion.

The LCRH, LCRNH pump types are suitable for the following liquids.

LCRH

- ❒ Non-corrosive liquids.
- ❒ For liquid transfer, circulation and pressure boosting of cold or hot clean water.

LCRNHS, LCRNH

- ❒ Industrial liquids.
- ❒ In systems where all parts in contact with the liquid must be made of high-grade stainless steel.

OPERATING RANGE OF THE SHAFT SEAL

The operating range of the shaft seal depends on operating pressure, pump type, type of shaft seal and liquid temperature. The following temperature range apply to clean water and water with anti-freeze liquids.

SHAFT SEAL	DESCRIPTION	MAX. TEMPERATURE RANGE [°C]
HBQE	Cartridge type shaft seal, Carbon/Sic/SS 316/EPDM	0°C to +120°C
HQQE	Cartridge type shaft seal, Sic/Sic/SS 316/EPDM	-40°C to +120°C
HBQV	Cartridge type shaft seal, Carbon/Sic/SS 316/FKM	0°C to +90°C
HQQV	Cartridge type shaft seal, Sic/Sic/SS 316/FKM	-20°C to +90°C

SECTIONAL DRAWING & MATERIALS

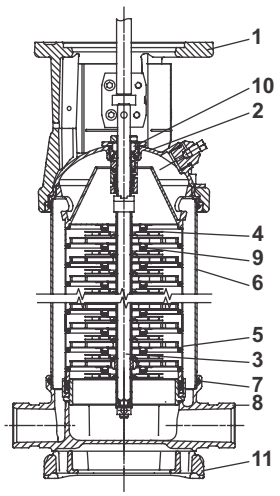


FIG. 1 LCRNHS 1 AND 3

POS.	COMPONENT	MATERIAL	LCRNHS 1 & 3	
			EN/DIN	AISI/ASTM
1	Pump head	Cast iron EN-GJL-200	EN-JL 1030	ASTM 25B
2	Pump head cover	Stainless steel	1.4408	CF 8M eq. to AISI 316
3	Shaft	Stainless steel	1.4401 1.4460	AISI 316 AISI 329
4	Impeller	Stainless steel	1.4401	AISI 316
5	Chamber	Stainless steel	1.4401	AISI 316
6	Outer sleeve	Stainless steel	1.4401	AISI 316
7	O-ring for outer sleeve	EPDM or FKM		
8	Base	Stainless steel	1.4408	CF 8M eq. to AISI 316
9	Neck ring	PTFE		
10	Shaft seal	Cartridge type		
11	Base plate	Cast iron EN-GJL-200	EN- JL1030	ASTM 25B
	Other rubber parts	EPDM or FKM		

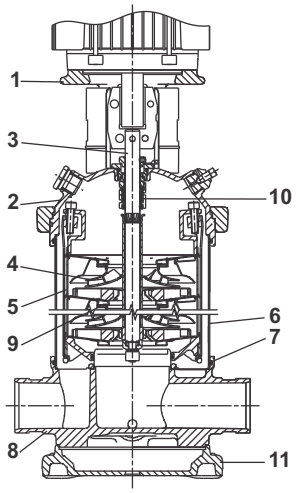


FIG. 2 LCRNH 2, 3, 5, 10, 15 AND 20

POS.	COMPONENT	MATERIAL	LCRNH 2, 3, 5, 10, 15 & 20	
			EN/DIN	AISI/ASTM
1	Pump head	Cast iron	EN-GJS-450-10	
2	Pump head cover	Stainless steel	1.4408	CF 8M eq. to AISI 316
3	Shaft	Stainless steel	1.4460	AISI 329
4	Impeller	Stainless steel	1.4401	AISI 316
5	Chamber	Stainless steel	1.4401	AISI 316
6	Outer sleeve	Stainless steel	1.4401	AISI 316
7	O-ring for outer sleeve	EPDM or FKM		
8	Base	Stainless steel	1.4408	CF 8M eq. to AISI 316
9	Neck ring	PTFE		
10	Shaft seal	Cartridge type		
11	Base plate	Cast iron EN-GJL-200	0.6020	ASTM 25B
	Other rubber parts	EPDM or FKM		

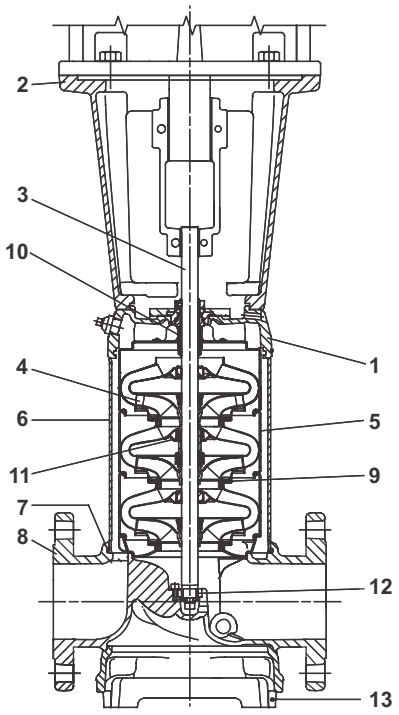


FIG. 3 LCRH, LCRNH 32, 45, 64 AND 90

POS.	COMPONENT	MATERIAL	LCRH, LCRNH 32, 45, 64 & 90	
			EN/DIN	AISI/ASTM
2	Motor stool	Cast iron EN-GJL-200	EN-JL1030	ASTM 25B
3	Shaft	Stainless steel	1.4462	
4	Impeller	Stainless steel	1.4401	AISI 316
5	Chamber	Stainless steel	1.4401	AISI 316
6	Outer sleeve	Stainless steel	1.4401	AISI 316
7	O-ring for outer sleeve	EPDM or FKM		
9	Neck ring	Carbon-graphite filled PTFE		
10	Shaft seal	Cartridge type		
11	Bearing ring	Bronze/Carbon graphite filled PTFE		
12	Bottom bearing ring	Ceramic/Tungsten Carbide		
13	Base plate	Cast iron EN-GJS-500-7	EN-JS1050	ASTM 80-55-06
		Stainless steel		
	Other rubber parts	EPDM or FKM		

LCR, LCRH 32, 45, 64 & 90

1	Pump head	Cast iron EN-GJS-500-7	EN-JS1050	
8	Base	Cast iron EN-GJS-500-7	EN-JS1050	

LCRN, LCRNH 32, 45, 64 & 90

1	Pump head	Stainless steel	1.4408	CF 8M eq.to AISI 316
8	Base	Stainless steel	1.4408	CF 8M eq. to AISI 316

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SECTIONAL DRAWING & MATERIALS

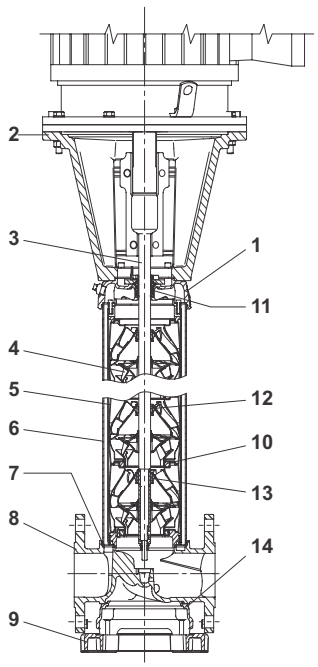


FIG. 4 LCRH, LCRNH 120 AND 150

POS.	COMPONENT	MATERIAL	LCRH, LCRNH 120 & 150	
			EN/DIN	AISI/ASTM
2	Motor stool (11-45 kW)	Cast iron EN-GJL-200	EN-JL1030	A48-30B
	Motor stool (55-75 kW)	Cast iron EN-GJS-500-7	EN-JS1050	A 536 65-45-12
6	Outer sleeve	Stainless steel	1.4401	AISI 316
7	O-ring for outer sleeve	EPDM or FKM		
9	Base plate	Cast iron EN-GJS-500-7	EN-JS1050	A 536 65-45-12
10	Neck ring	PTFE		
11	Shaft seal*	Cartridge type		
12	Support bearing	PTFE		
13	Bearing ring	SiC/SiC		
	Other rubber parts	EPDM or FKM		

LCR, LCRH 120 & 150

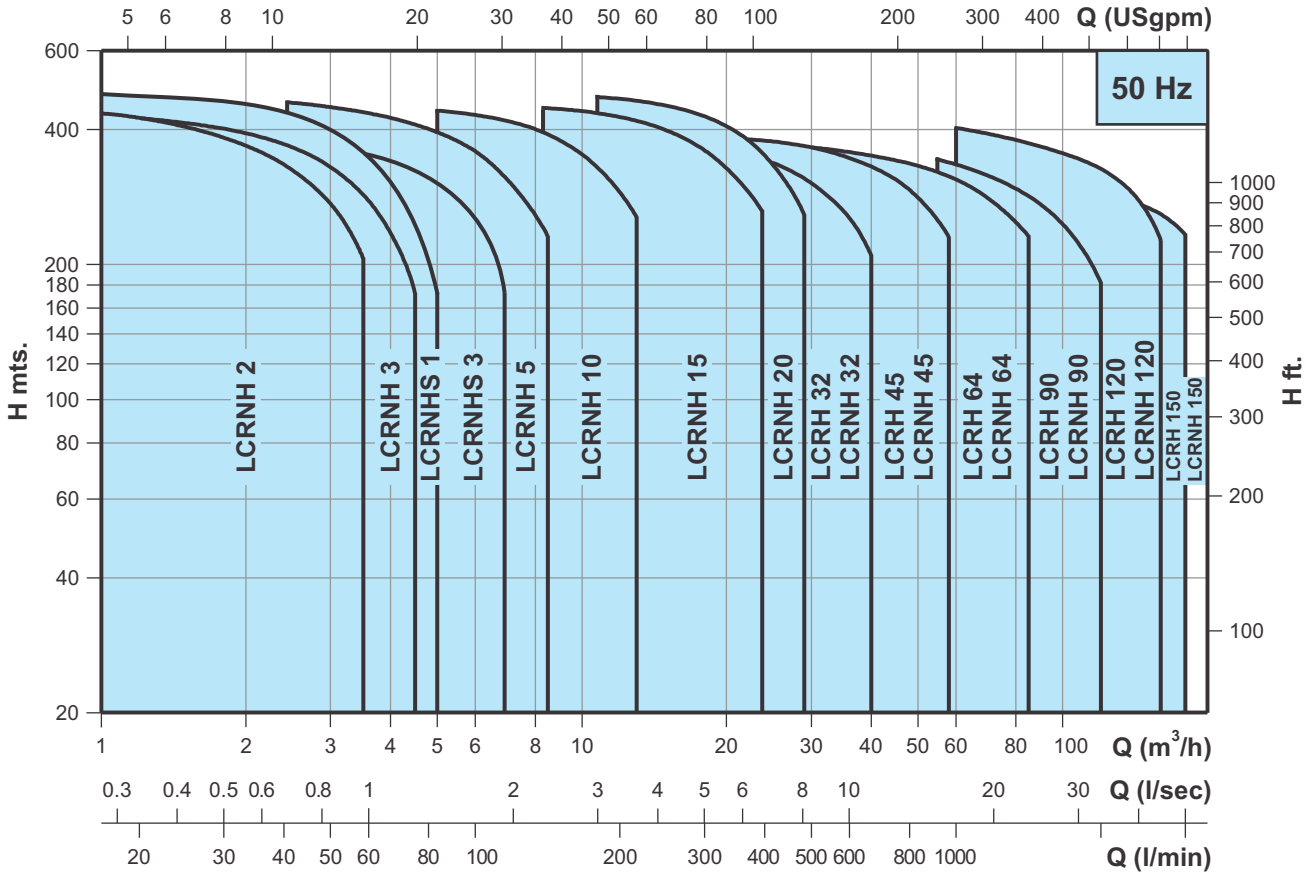
1	Pump head	Cast iron EN-GJS-500-7	EN-JS1050	A 536 65-45-12
3	Shaft	Stainless steel	1.4057	AISI 431
4	Impeller	Stainless steel	1.4301	AISI 304
5	Chamber	Stainless steel	1.4301	AISI 304
8	Base	Cast iron EN-GJS-500-7	EN-JS1050	A 536 65-45-12

LCRN, LCRNH 120 & 150

1	Pump head	Stainless steel	1.4408	CF 8M eq. to AISI 316
3	Shaft	Stainless steel	1.4462	SAF 2205
4	Impeller	Stainless steel	1.4401	AISI 316
5	Chamber	Stainless steel	1.4401	AISI 316
8	Base	Stainless steel	1.4408	CF 8M eq. to AISI 316
14	Base plate	Cast iron EN-GJS-500-7	EN-JS1050	A 536 65-45-12

* Ø22 mm shaft - 11 to 45 kW, Ø32 mm shaft - 55 to 75 kW

PERFORMANCE RANGE



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Product Improvement is a continuous process at 'LUBI'. The data given in this publication is therefore subject to revision.

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