# Alfa Laval LKH Multistage

## Centrifugal pumps

### Introduction

The Alfa Laval LKH-110, LKH-110P and LKH-120P pumps are highly efficient multistage centrifugal pumps for use in hygienic applications. Precision-engineered and available with up to four stages, these LKH Multistage Pumps deliver high energy efficiency. Their optimized design, premium motor, tight tolerances and advanced impeller design minimize recirculation and reduce energy consumption.

### Applications

Available in two-, three or four-stage models, the LKH Multistage Pumps save space and energy by replacing up to three booster pumps in a line. Used primarily in high-pressure applications with low capacity, they withstand system pressures up to 40 bar and deliver differential pressures up to 19 bar at 50 Hz. Designed for Cleaning-in-Place (CIP), the pumps are suitable for, but not limited to, many types of filtration applications across the food, beverage, home-personal care, biotechnology and pharmaceutical industries.

### Benefits

- Energy efficient: superior efficiency resulting in reduced energy consumption and CO2 footprint.
- Hygienic: designed according to the most stringent hygienic design standards and with verified effective CIP cleanability.
- High inlet pressure: designed for inlet pressures up to 40 bar and can therefore be used in the most demanding applications within filtration.
- High differential pressure: reduced need for serial pump installations saves space and energy.

### Standard design

All media contacting steel components like pump casing parts, impellers, and backplate are in W. 1.4404 (AISI 316L). A stainless steel shroud protects the motor and four adjustable stainless steel legs support the complete unit.

As standard, the LKH multistage pump is equipped with an internal single mechanical shaft seal but is also available with a flushed shaft seal. The secondary seal of the flushed seal is a long-lasting lip seal. The front-loading shaft seal makes maintenance fast, easy and inexpensive. It takes just a few minutes to replace the shaft seal. In addition, the balanced design minimizes the risk of seal opening during unforeseen pressure shock.

## TECHNICAL DATA

| Materials | |
|---|---|
| Product wetted steel parts: | W. 1.4404 (316L) and duplex steel |
| Other steel parts: | Stainless steel |
| Inside surface finish: | Standard blasted |
| Product wetted elastomers: | EPDM |
| Ratary seal face: | Carbon |
| Stationary seal face: | Silicon Carbide |

**Motor**

Foot-flanged motor according to the IEC metric standard, 2 poles = 3000/3600 rpm at 50/60 Hz, IP 55 (with drain hole with labyrinth plug), insulation class F. Standard motors with a fixed ball bearing on drive side are fitted to LKH-110 pumps whereas special motors with special bearings are required for LKH-110P and LKH-120P pumps.

| Motor sizes | |
|---|---|
| 50Hz: | 2.2 - 75 kW |
| 60Hz: | 2.5 - 80 kW |

| Min/max motor speed | |
|---|---|
| 2 poles: 2.2 - 75 kW: | 900 - 3600 rpm |

**Warranty**

Extended 3-years warranty on LKH Multistage pumps. The warranty covers all non wear parts on the condition that genuine Alfa Laval Spare Parts are used.

**Connections for FSS:**

6mm tube/Rp 1/8"

## OPERATING DATA

| Temperature | |
|---|---|
| Temperature range: | -10°C to +140°C (EPDM) |
| Flush media: | Max 70°C |

| Flushed shaft seal | |
|---|---|
| Water pressure inlet: | Max. 1 bar |
| Water consumption: | 0.25 - 0.5 l/min |

| Connections for flushed and double mechanical shaft seal | |
|---|---|
| LKHPF 10 - 70: | 1/8" G |

## Max inlet pressure

### (Temperature < 40°C)

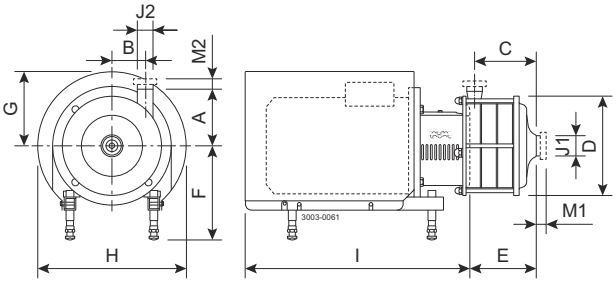
| Pump size | Speed and shaft seal material | | | | | | | | Motor | Backplate |
|---|---|---|---|---|---|---|---|---|---|---|
| | Max 50Hz | | | | Max 60Hz | | | | | |
| | C/SiC | | SiC/SiC | | C/SiC | | SiC/SiC | | | |
| | Max inlet pressure | | | | | | | | | |
| | bar | psi | bar | psi | bar | psi | bar | psi | | |
| LKH-112 | 10 | 145 | 10 | 145 | 10 | 145 | 10 | 145 | Std. | Std. |
| LKH-113 | 10 | 145 | 10 | 145 | 10 | 145 | 10 | 145 | Std. | Std. |
| LKH-114 | 10 | 145 | 10 | 145 | 10 | 145 | 10 | 145 | Std. | Std. |
| LKH-112P | N/A | N/A | 30 | 435 | N/A | N/A | 30 | 435 | Special | Reinforced |
| LKH-113P | N/A | N/A | 30 | 435 | N/A | N/A | 30 | 435 | Special | Reinforced |
| LKH-114P | N/A | N/A | 25 | 363 | N/A | N/A | 25 | 363 | Special | Reinforced |
| LKH-122P | 10 | 145 | 30 | 435 | N/A | N/A | 30 | 435 | Special | Std. |
| LKH-123P | 10 | 145 | 30 | 435 | N/A | N/A | 30 | 435 | Special | Std. |
| LKH-124P | N/A | N/A | 25 | 363 | N/A | N/A | 20 | 290 | Special | Std. |

(Temperature > 40°C)

| Pump size | Speed and shaft seal material | | | | | | | | Motor | Backplate |
|---|---|---|---|---|---|---|---|---|---|---|
| | Max 50Hz | | | | Max 60Hz | | | | | |
| | C/SiC | | SiC/SiC | | C/SiC | | SiC/SiC | | | |
| | Max inlet pressure | | | | | | | | | |
| | bar | psi | bar | psi | bar | psi | bar | psi | | |
| LKH-112 | 10 | 145 | 10 | 145 | 10 | 145 | 10 | 145 | Std. | Std. |
| LKH-113 | 10 | 145 | 10 | 145 | 10 | 145 | 10 | 145 | Std. | Std. |
| LKH-114 | 10 | 145 | 10 | 145 | 10 | 145 | 10 | 145 | Std. | Std. |
| LKH-112P | N/A | N/A | 20 | 290 | N/A | N/A | 15 | 218 | Special | Reinforced |
| LKH-113P | N/A | N/A | 20 | 290 | N/A | N/A | 20 | 290 | Special | Reinforced |
| LKH-114P | N/A | N/A | 20 | 290 | N/A | N/A | 20 | 290 | Special | Reinforced |
| LKH-122P | 10 | 145 | 30 | 435 | N/A | N/A | 30 | 435 | Special | Std. |
| LKH-123P | 10 | 145 | 30 | 435 | N/A | N/A | 30 | 435 | Special | Std. |
| LKH-124P | N/A | N/A | 25 | 363 | N/A | N/A | 20 | 290 | Special | Std. |

## Dimensions

(mm)




### Pump specific measures

| Pump Model | LKH-112 | LKH-113 | LKH-114 | LKH-122 | LKH-123 | LKH-124 |
|---|---|---|---|---|---|---|
| A | 140 | 140 | 140 | 265 | 265 | 265 |
| B | 86 | 86 | 86 | 112 | 112 | 112 |
| C | 76 | 115 | 155 | 85 | 142 | 200 |
| D | 256 | 256 | 256 | 335 | 335 | 335 |
| E | 108 | 138 | 178 | 112 | 169 | 226 |

### Motor specific measures

| Motor IEC<br>Motor kW | IEC90<br>2.2 | IEC100<br>3.0 | IEC112<br>4.0 | IEC132<br>5.5/7.5 | IEC160<br>11/15/18.5 | IEC180<br>22 | IEC200<br>30/37/45 | IEC250<br>55/75 |
|---|---|---|---|---|---|---|---|---|
| F(max)[1] | 262 | 282 | 285 | 304 | 332 | 352 | 372 | 446 |
| G | 157 | 185 | 198 | 196 | 262 | 286 | 399 | 394 |
| H | 288 | 325 | 359 | 383 | 485 | 533 | 670 | 738 |
| I | 434 | 556 | 497 | 607 | 789 | 842 | 980 | 1051 |

[1] Possible to reduce dimension F by min. 59 mm for all pump models. For smaller models it will be possible to reduce dimension F even further.

### Motor overview

| Pump Model | LKH-112 | LKH-113 | LKH-114 | LKH-122 | LKH-123 | LKH-124 |
|---|---|---|---|---|---|---|
| Moter range (IEC) | IEC90-IEC132 | IEC112-IEC160 | IEC132-IEC180 | IEC180-IEC200 | IEC180-IEC250 | IEC200-IEC250 |

Dimensional data are based on 2 pole, ABB motors.

### Connections

| Pump Model | | LKH-112<br>LKH-113<br>LKH-114 | LKH-112P<br>LKH-113P<br>LKH-114P | LKH-122<br>LKH-123<br>LKH-124 |
|---|---|---|---|---|
| Clamp ISO 2037 | M1 | 21 | | |
| | M2 | 21 | | |
| Union ISO(IDF) | M1 | 21 | | |
| | M2 | 21 | | |
| Union DIN/ISO | M1 | 22 | | |
| | M2 | 22 | | |

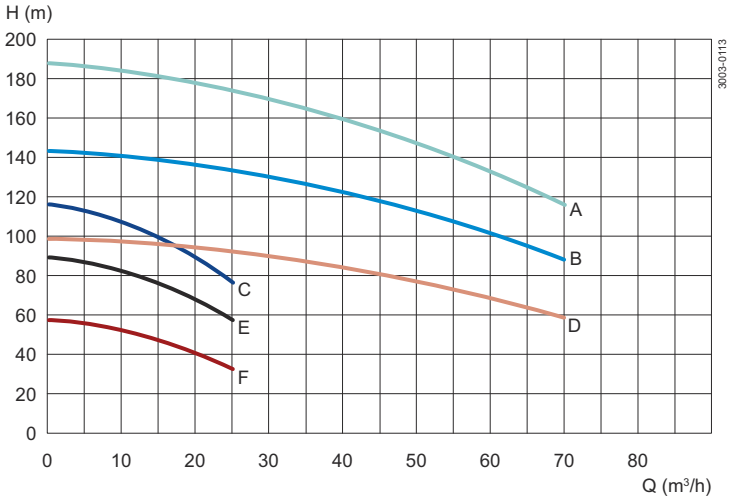
[1] Other dimensions available on request.

| Pump Model | | LKH-112<br>LKH-113<br>LKH-114 | LKH-112P<br>LKH-113P<br>LKH-114P | LKH-122<br>LKH-123<br>LKH-124 |
|---|---|---|---|---|
| Union SMS | M1 | 20 | | |
| | M2 | 20 | | |
| Union (BS)RJT | M1 | 27 | | |
| | M2 | 27 | | |
| Union DS | M1 | 20 | | |
| | M2 | 20 | | |
| Union DIN/DIN | M1 | 22 | | |
| | M2 | 22 | | |
| Clamp ASME BPE | M1 | - | | |
| | M2 | - | | |
| Heavy duty clamp | M1 | | 29 | 29 |
| | M2 | | 29 | 29 |
| Flange acc. to EN1092 | M1 | | - | 56 |
| | M2 | | - | 56 |
| J1[1] | | 51 / 2" | 51 / 2" | 76.5 / 3" |
| J2[1] | | 38 / 1.5" | 38 / 1.5" | 63.8 / 2.5 " |

[1] Other dimensions available on request.

ESE00266/4

## Flow chart




A = LKH-124P
B = LKH-123P
C = LKH-114 -114P
D = LKH-122P
E = LKH-113 -113P
F = LKH-112 -112P

Frequency: 50Hz - Speed (synchr): 3000 rpm

## Options

- Impeller with reduced diameter.
- Flushed shaft seal.
- Rotating seal face of Silicon Carbide.
- Product wetted elastomers NBR or FPM (FPM only with LKH-110).
- Adjustable pads.

## Ordering

Please state the following when ordering:

If the inlet pressure is higher than 10 bar it is necessary to order a special version with a modified motor and a stronger backplate:

For exact specification, please use the Anytime Configurator.

Use the following designation:

- Pump size.
- Version, hygienic or industrial.
- Connections.
- Impeller diameter.

- Motor size.
- Voltage and frequency.
- Flow, pressure and temperature.
- Density and viscosity of the product.
- Options.

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