Close at hand

Pumps for Hygienic Fluid Handling Equipment, January 2021

Everything at your fingertips

Alfa Laval's solutions for hygienic applications are the result of continuous innovation, and our dedicated efforts to meet the challenges faced by industries. With the Alfa Laval online catalogue, detail of our comprehensive product range can now be conveniently at your fingertips at all times.

Whatever you need, and wherever you are, Alfa Laval's components and expertise are always readily available through our network of over 1500 channel partners, supported by our own sales companies around the world.

Alfa Laval has a wide range of tools and resources to make life easier. Our online catalogue is easily accessible and updated regularly. We also offer the possibility to download 2D and 3D drawings. Go to www.alfalaval.com/high.

At www.alfalaval.com/biopharm you can download the comprehensive Q-doc documentation for our UltraPure portfolio.

Our channel partners also have access to a growing pool of resources at the Alfa Laval eBusiness portal, including full documentation, real-time stock availability and the opportunity to order and track shipments online. As well as being kept up to date on the latest developments through the InSight newsletter.

Discover a world of hygienic solutions at our dedicated portals:

www.alfalaval.com/biopharm
www.alfalaval.com/food

Technical Information

Stainless Steel and Rubber Materials

Stainless Steel

Our stainless steel material have the following demands to the contents of the most essential alloys:

Descriptions	Standard	Chrome Cr%	Nickel Ni%	Molybdenum Mo%	Carbon C%
AISI 304	ASTM A270	18.0-20.0	8.0-10.5	0.0	≤ 0.08
AISI 304L	ASTM A270	18.0-20.0	8.0-12.0	0.0	≤ 0.03
AISI 316L	ASTM A270	16.0-18.0	10.0-14.0	2.0-3.0	≤ 0.03
1.4301 (304)	EN 10088-1 (X 5CrNi18-10)	17.0-19.5	8.0-10.5	0.0	≤ 0.07
1.4307 (304L)	EN 10088-1 (X 2CrNi18-9)	17.5-19.5	8.0-10.0	0.0	≤ 0.03
1.4401 (316)	EN 10088-1 (X 5CrNiMo17-12-2)	16.5-18.5	10.0-13.0	2.0-2.5	≤ 0.07
1.4404 (316L)	EN 10088-1 (X 2CrNiMo17-12-2)	16.5-18.5	10.0-13.0	2.0-2.5	≤ 0.03
1.4435 (316L)	EN 10088-1 (X 2CrNiMo18-14-3)	17.0-19.0	12.5-15.0	2.5-3.0	≤ 0.03
1.4571 (316TI)	EN 10088-1 (X6CrNiMoTi17-12-2)	16.5-18.5	10.5-13.5	2.0-2.5	≤ 0.08

Rubber Materials

In order to obtain the longest possible lifetime for rubber seals it is essential to choose the right quality for the actual duty. Consequently when choosing rubber quality, the characteristics of the different rubber types should be considered. All product wetted rubber material are in conformity of FDA.

EPDM Rubber (Ethylene Propylene)

EPDM rubber is widely used within the food industry as it is resistant to most products used in this sector. Another advantage is that it may be used to a recommend max. temperatures of 140°C (244°F). However, there is one essential limitation, EPDM is not resistant to organic and non-organic oils and fats. The resistance to ozone is excellent.

Actylonitrile Butadiene Rubber, NBR

NBR is the rubber type most frequently used for technical purposes. It is quite resistant to most hydrocarbons, e.g oil, grease and fat. It is sufficiently resistant to diluted lye and nitric acid and may be used to a recommend max. 95°C (203°F). As NBR is attacked by ozone it may not be exposed to ultraviolet rays and should thus consequently be stored so that this is avoided.

Silicone Rubber, Q

The most significant quality of silicone rubber is that it can be applied from temperatures below -50°C (-58°F) to approx. + 180°C (356°F) and still keep its elasticity. The chemical resistance is satisfactory to most products. However, undiluted lye and acids as well as hot water and steam may destroy silicone rubber. The resistance to ozone is good.

Fluorine Rubber, FPM

FPM is often used when other rubber types are unsuited, especially at high temperatures up to approx. 180°C (356°F). The chemical resistance is good to most products, however hot water, steam, lye, acid and alcohol should be avoided. The resistance to ozone is good.

Hydrogenated actylonitrileButadiene Rubber, HNBR

Mechanically strong and normally resistant to ozone and strong oxidizers, animal and vegetable fats, nonpolar solvents, oils and lubricants, water and aqueous solutions. The recommend max. temperature is 130°C (266°F).

Perfluoroalkoxy polymer, PFA

PFA is very similar to PTFE, but opposite to those PFA is thermo plastic and has minimal porosity. PFA has a very high mechanical strength which makes it a perfect choice when dealing with abbrasive products. The PFA seal offers longer service intervals. The recommend max. temperature for the PFA seal is 90°C (194°F).

Product and chemical resistance of flexible rubber materials

The information below is intended as an aid in selecting the best rubber quality for an actual application. It is not possible to state any general lifetime of rubber seals as many factors influence it: chemical attack, temperature, mechanical wear etc. Extreme temperatures, even within the generally accepted limits, may worsen other kinds of attack and thus reduce the lifetime.

Ratings

1 = Unsuitable.
2 = Limited suitability.
3 = Normal suitability.
4 = High suitability.
- = Not recommended for other reasons.

The table contains data which have been complied from the results of our own tests and the recommendations of our raw material suppliers. The data should be considered as recommendations only and will be brought up-to-date from time to time. They are based on constant contact with the specified product.
In case of doubt or lack of information it would be advisable to consult us directly, which will enable us to investigate specific applications.

Product or process		NBR[1)]	HNBR[2)]	EPDM[3)]	Q[4)]	FPM[5)]	PTFE[6)]
Dairy products (milk, cream)		3	3-4	3-4	3-4	-	3-4
Dairy products (sour milk products)		3	3-4	3-4	3-4	-	3-4
Brewery products (beer, hops etc.)		3	3-4	3-4	1-2	2-3	3-4
Wine and yeast		3	3-4	4	4	2-3	3-4
Animal and vegetable fats	100°C	3	4	1-2	3	4	3-4
Water and water solutions	< 70°C	3	4	4	3	2-4	3-4
Hot water and steam	< 130°C	1	4	4	2	-	3-4
Concentrated fruit juices and etheral oils	< 100°C	1	-	1	1	3	3-4
Non-oxydising acids	< 80°C	1-2	2	3	1-2	2	3-4
Oxydising acids	< 80°C	-	2	3	1	2	3-4
Weak concentrate of lye	< 100°C	2	3-4	4	2	2	3-4
Strong concentrate of lye	< 100°C	1	2-3	3	1	1	3-4
Mineral oils	< 110°C	3	4	-	-	4	3-4
Aliphatic carburetted hydrogen (hexane)		3	3	1	1	4	3-4
Aromatic carburetted hydrogen (benzole)		1	2	1	1	3	3-4
Alcohols		1-3	2-3	2-3	3-4	3-4	3-4
Ester and ketones		1-2	1-2	1-2	1-2	3-4	3-4
Ether		1	2	1	1-3	3-4	3-4
Methylene chloride		1	2	1	2-3	3-4	3-4
Ozyne and atmospheric conditions		1-2	3	4	4	3-4	3-4

International designation of flexible rubber materials according to ISO R 1629.

ISO = International standard.

Notes

	Designation of flexible rubber materials	Abbreviation symbol
1)	Nitrile rubber	N
2)	Hydrogenated actylonitrile rubber	H
3)	Ethylene propylene rubber	E
4)	Silicone rubber	Q
5)	Fluorinated rubber	F
6)	Polytetraflour ethylene	

Technical Information

Compliance and certification

We can provide documented and certified compliance with a broad spectrum of relevant international and local hygiene standards, worldwide. This helps you Significantly reduce the engineering costs of setting up and operating standards-compliant processing plants around the world.

For special requests please contact your local Alfa Laval organisation

Authorized to carry the 3A symbol

The mission of 3-A SSI is to enhance product safety for consumers of food, beverages, and pharmaceutical products through the development and use of 3-A Sanitary Standards and 3-A Accepted Practices.
The 3-A Symbol is a registered mark used to identify equipment that meets 3-A Sanitary Standards for design and fabrication.

ATEX is based on the requirement of the European Directive 94/9/EC (also known as ATEX 95 (100a)), the Equipment Directive. The name ATEX (ATmospheres EXplosible) is commonly given to the framework for controlling explosive atmospheres and the standards of equipment and protective systems used in them

The European Hygienic Engineering & Design Group (EHEDG) is a consortium of equipment manufacturers, food industries, research institutes as well as public health authorities and was founded in 1989 with the aim to promote hygiene during the processing and packing of food products.
EHEDG has authorised the use of the EHEDG Certification logo for Alfa Laval equipment complying with the EHEDG hygienic design criteria. The Certification include cleanability testing of equipment according to the methodology described in EHEDG guidelines.

All valves are delivered with Alfa Laval Q-doc including:
- 3.1 certificate in accordance to EN 10204
- FDA compliance and USP Class VI declaration
- TSE statement
- Surface finish declaration (Ra)
- Manufacturing and quality

CE marking is a mandatory conformity mark for products placed on the market in the European Economic Area (EEA). With the CE marking on a product the manufacturer ensures that the product conforms with the essential requirements of the applicable EC directives. The letters "CE" stand for "Conformité Européenne" ("European Conformity").

1. Pumps

Our pumps are developed not only to meet your demands for safety, efficiency and hygiene, but also to ensure the careful handling of your products.

Hygienic product animations

Get a look inside our products and see how it works. Mouseover the image and click to see animations.

- See more at:

http://www.alfalaval.com/products/fluid-handling/hygienic-product-animations

- Pumps

Alfa Laval SRU Rotary lobe pump

Alfa Laval LKH Prime Centrifugal pumps

Alfa Laval SX Rotary lobe pump

Alfa Laval LKH Centrifugal pumps

Alfa Laval OptiLobe Rotary lobe pump

Alfa Laval SolidC Centrifugal pumps

Alfa Laval Twin Screw pump

This page is intentionally left blank

Pumps for hygienic use

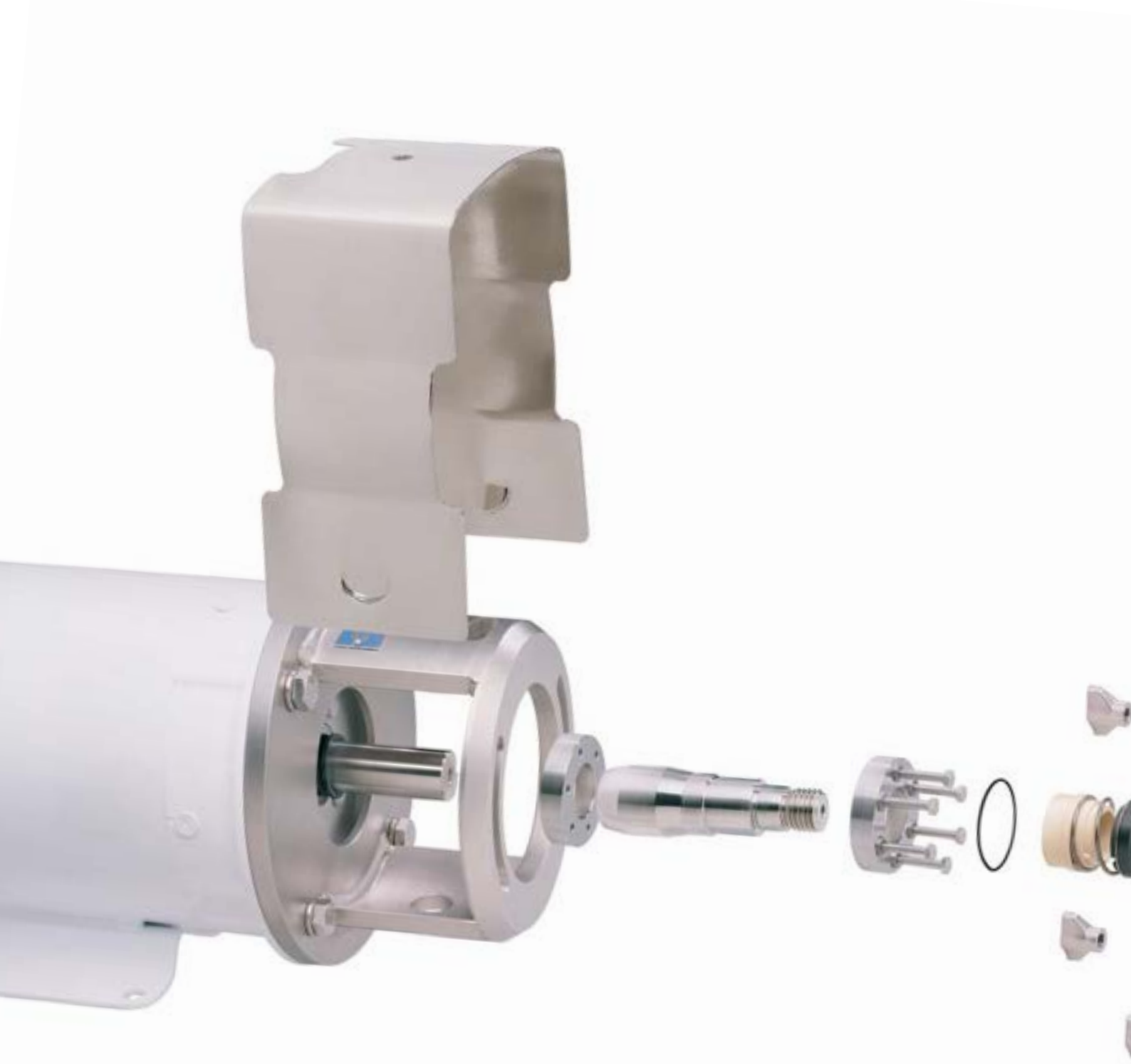
The complete line

Everything you need, everywhere you need it

Alfa Laval provides the widest range of hygienic products and accessories in the world. Designed for superior safety, efficiency and cleanliness, they ensure careful product handling in the food, dairy, beverage, biotech, pharmaceutical and personal care industries.

Our pumps, heat exchangers, valves, automation, tank equipment and installation material offer solutions for all process stages – and almost certainly the solution you need.

This brochure introduces our quality pumps for hygienic applications. For complete technical details and product specification, please contact your local Alfa Laval supplier or visit us at **www.alfalaval.us**



Gentle product treatment
Our centrifugal pumps are renowned for their ability to move products gently and efficiently. The integrity of your product is assured, regardless whether you choose a premium or standard-duty model.

Advanced hygienic design
With emphasis on features such as optimized internal geometry and profiled o-rings, our centrifugal pumps are ideal for Cleaning In Place (CIP) and offer exceptional levels of hygiene. All are authorized to carry the 3A symbol and have been tested in accordance with EHEDG requirements.

Advanced seal design
Our LKH premium pumps (models 5-60) and our SolidC standard-duty pumps share the same mechanical shaft seal, which simplifies maintenance and spare parts inventory. Combined with the quick and easy front-loading design, this reduces maintenance costs, increases uptime and reduces the cost of ownership.

Easy seal conversion
The external design of our centrifugal pumps, as well as the seal's construction, is designed to make seal conversion as fast and as simple as possible.
Our premium LKH pumps can be converted from single to flushed or double-mechanical seals, while our standard-duty SolidC pumps can be converted from single to flushed shaft seals.

Centrifugal pumps

Alfa Laval's centrifugal pumps are built to perform in all areas – from process quality to overall energy efficiency. In addition to gentle product handling and a wide range of hygienic features, they provide a long and trouble-free service life that ensures low cost of ownership.

Our centrifugal pump series can be divided into two categories, premium and standard-duty.

The first category comprises our various LKH series, which handle even specialized needs such as multistage, high-pressure, self-priming and high-purity applications. The second focuses on cost efficiency and includes our standard duty SolidC pump series.

Computer-designed impellers
Our centrifugal pump impellers are computer-designed and hydraulically balanced for optimum performance. Both the impellers and their retaining screws (optional) are smooth, which keeps them from accumulating product and makes cleaning more effective.

Efficient performance
Our centrifugal pumps consume less power and exhibit low noise levels. In addition, they minimize the risk of cavitation thanks to low NPSH requirements.

Premium pumps

Quiet but rugged, Alfa Laval's LKH series of centrifugal pumps are the ultimate solution for gentle and efficient product handling. Through a combination of enlarged inlets and advanced impeller design, they offer an unobstructed product flow and very low NPSH requirements.

LKH pumps are designed for Cleaning In Place (CIP). Polished models are USDA approved and exceed 3A standards, so you can always be sure of the greatest possible hygiene.

LKH pumps are available in capacities of up to 1,300 gal/min and/or pressures up to 525 head in feet of water (227 psi), with different versions available for specific applications.

LKH 75

Designed for high flow rates with very gentle product treatment, the LKH-75 is ideally suited for high volume milk receiving required by the largest dairies. Like the entire LKH series, the LKH-75 features enlarged inlets combined with an advanced impeller design, resulting in unobstructed product flow and very low NPSH requirements. The pump has a capacity of 600 gpm at 180 head (in feet of water) at only 1,800 RPM, and features low power consumption and noise emission levels. This translates to high flow rates with extremely gentle product treatment which are critical to maintain the taste and value drivers of high volume milk production.

LKH-UltraPure

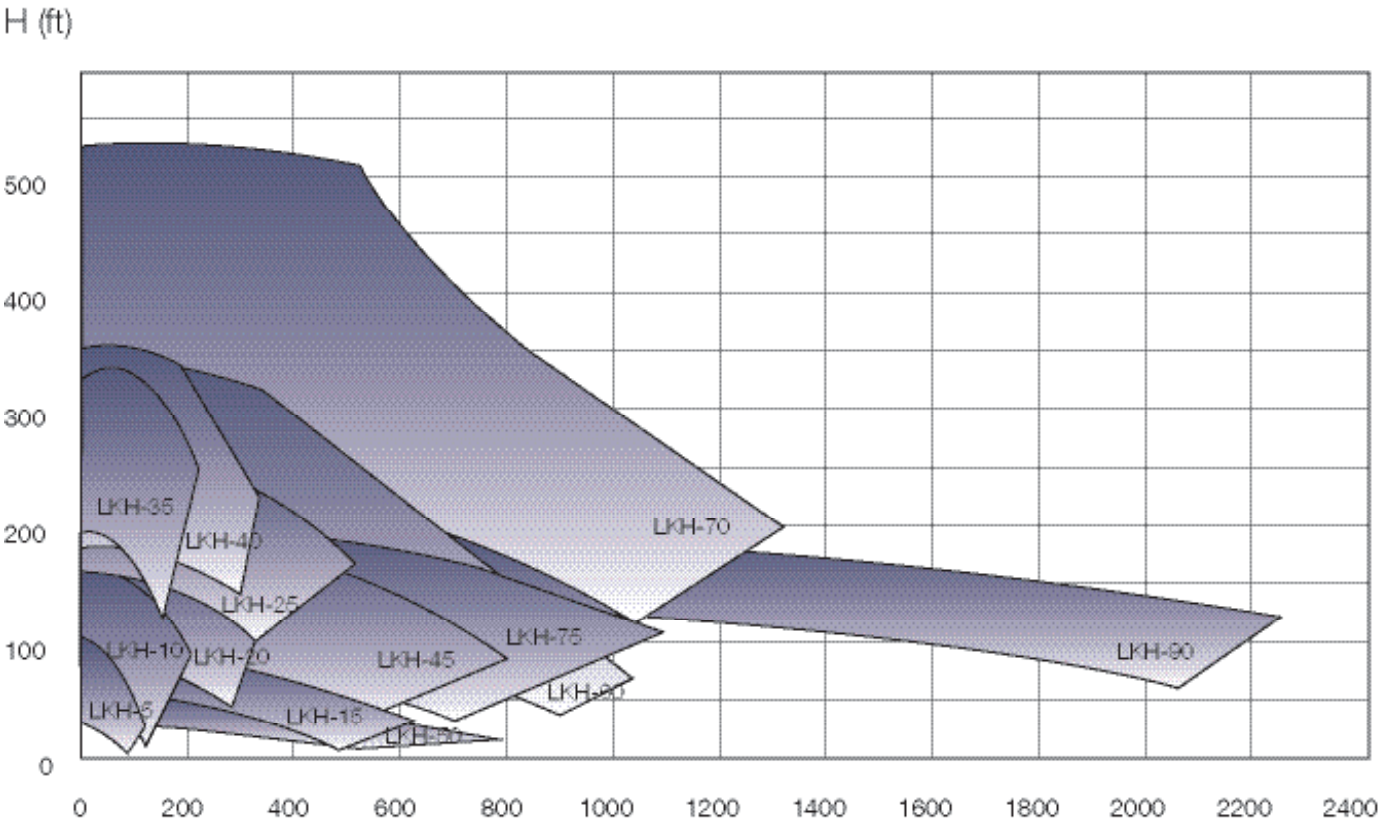
LKH-UltraPure pumps are high-purity models that meet specifications for water-for-injection (WFI) and other demanding applications. Authorized to carry the 3A symbol, they are ideal for both CIP and Sterilization In Place (SIP), as well as manual cleaning. LKH-UltraPure pumps are also available with a 20 Ra finish and a flushed seal kit.

LKHP-High Pressure

Pumps in the LKHP-High Pressure series feature a reinforced pump casing and backplate, as well as high-pressure internal seals and multiple heavy-duty studs. The result is inlet pressures as high as 600 PSI, making the LKHP ideal for nanofiltration and reverse osmosis filtration. The seals can be removed in a matter of seconds, without removal of the back plate.

LKH-High Multistage

Designed to 3A standards and available in two, three or four stage models, 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 1,340 head (580 psi) and deliver boost pressures up to 554 head (240 psi). This makes them suitable for both reverse osmosis and ultrafiltration.



LKH performance LKH pumps are available for capacities up to 1,300 gallons/minute and pressures up to 525 head in feet of water (275 psi).

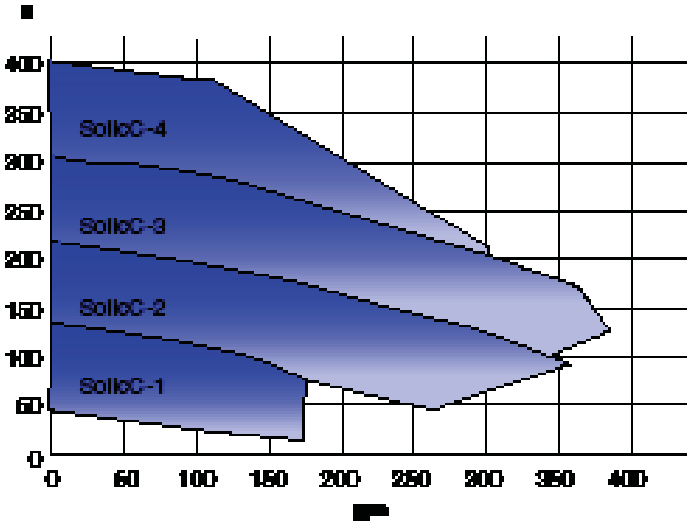
Standard-duty pumps

Alfa Laval's standard-duty centrifugal pumps are designed as a reliable, cost-effective solution. In addition to gentle product handling and efficient operation, one seal fits the entire SolidC range and most LKH pumps.

The highlight of our standard-duty pumps is the SolidC series, which combines a practical, cost-effective design with similar characteristics of our premium LKH centrifugal pumps

SolidC

The SolidC pump series is a reliable and cost-effective solution for simple transport duties up to 380 gallons/minute. It utilizes the same mechanical shaft seal found in our LKH series, which is front-loaded and easily replaced without removing the backplate. SolidC pumps are available in four sizes and comply with 3A, CE and EHEDG requirements.
When replacing the seal, the SolidC features a self-centering stub shaft so no dial gauge is needed to achieve .001" T.I.R.



SolidC performance SolidC is a reliable, cost-effective centrifugal pump for standard duties up to 380 gallons/minute.

Liquid ring pumps

Liquid ring pumps are an ideal solution when gases are contained in the process medium. Because the pumps are self-priming when the casing is half filled with fluid, they are capable of pumping from a suction line that is partly filled with air or other gases.

Alfa Laval's liquid ring pumps are specially developed for use in food, chemical and pharmaceutical industries, where they are often used as return pumps in Cleaning-In-Place (CIP) systems.

MR-Liquid Ring

Through its simplicity of design, the MR series of liquid ring pumps combines high efficiency with low maintenance. The impeller is cast with straight, radial vanes and is fixed onto a pump shaft within a covered pump casing. A standard electric motor is used to drive the MR pump head.

Rotary lobe pumps

Designed for low, medium and high-viscosity media, Alfa Laval rotary lobe pumps are the fulfilment of more than 50 years of commitment to rotary lobe pump technology. Their gentle pumping action and reliable performance are the result of continuous development, which is based upon years of experience and carried out at our advanced production and R&D facilities.

Our rotary lobe pump portfolio includes three ranges: SX, SRU and OptiLobe. Each of these is robustly constructed and offers Alfa Laval's high standards of quality and reliability, and each is positioned for a different type of demand. Collectively, they provide operating economy and high flexibility of use.

Gentle, hygienic design

With their high-precision rotors and low-shear operation, our rotary lobe pumps ensure the gentle movement of delicate products. The pumps offer a number of features that maximize cleanability, and their construction provides compliance with the world's leading hygienic standards.

Modular pump design

Our rotary lobe pumps feature a modular construction. This design feature increases flexibility and reduces spare parts inventory.

Universal mounting

To allow high flexibility when fitting the pump into a production line, all of our rotary lobe pumps can be mounted in either a vertical or horizontal port position (with the exception of the larger SX models).

Improved drainability

All of our rotary lobe pumps can be drained easily when mounted in vertical port position. In the case of our OptiLobe and SX pumps, cusps are retained in vertical configurations for greater efficiency.

Easy seal retrofit

The seals of our rotary lobe pumps are designed for quick and simple upgrading. Our broad range of seals includes many seal types and configurations, which can be tailored to your need and application.

Heavy duty gearbox construction

Our rotary lobe pumps are fitted with a cast iron gearbox incorporating heavy-duty taper roller bearings and torque locking assemblies that allow for easy maintenance and high reliability. The pump rotors are driven by a high-precision involute spline drive.

CIP and SIP

Our rotary lobe pumps are ideal for both Cleaning-in-Place (CIP) and Sterilization-in-Place (SIP) applications.

Standards and approvals

All of our rotary lobe pumps are compliant with the EHEDG, 3A and FDA hygienic standards. In addition, our SX and SRU pumps have approval for use in explosive environments.

SX

The SX is Alfa Laval's premium rotary lobe pump, designed for use in sensitive and ultra-clean applications. With optimized pump head geometry and multi-lobe rotors, SX pumps ensure low-shear operation with minimum pulsation. This makes them the best choice for maintaining the integrity of delicate products.

SX pumps feature front-loading mechanical seals, as well as a profiled gasket system for the highest level of hygienic sealing. Pump hygiene is further improved by a low-profile rotor nut, which enhances the pump cleanability.

Higher surface finishes up to 20 Ra are available, as well as electro-polishing and 3.1 material traceability.

SRU

The SRU is Alfa Laval's core rotary lobe pump. In addition to handling the widest range of temperatures and pressures, SRU pumps offer the most extensive options in our rotary lobe pump portfolio. Their heavy-duty construction and unparalleled flexibility make them an engineered solution for the most demanding applications.

Among the many SRU options are saddles and jackets for heating/cooling the pump head and an integrated pressure relief valve and retangular inlet for pumping high viscosity fluids. A wide selection of standard seal options are available, together with proprietary seals to suit most applications.

There are tri-lobe and bi-lobe rotors to choose from, which can be manufactured from various materials. Bi-lobe alloy rotors can be used for closer tolerances and higher efficiencies on low-viscosity products.

Higher surface finishes up to 20 Ra are also available, as well as electro-polishing.

OptiLobe

The OptiLobe is Alfa Laval's rotary lobe pump intended for general applications. Available in an optimized range with fewer options, OptiLobe pumps combine cost-effective simplicity with Alfa Laval quality and reliability.

OptiLobe pumps feature a paint-free design with front-loading seals and tri-lobe rotors. They are the latest example of Alfa Laval's leadership in innovative design and advanced manufacturing processes.

Solutions for your application...

Alfa Laval has hygienic pumps for every need, however large or small. Each one is an efficient and reliable product, designed to carry out its tasks effectively for years on end.

Drawing on experience from a broad range of industries and an even broader range of pumping applications, we can provide solutions for specialized as well as general demands. From low viscosities to high, we have both the knowledge and the products to create a solution.

Food and beverages

Alfa Laval pumps facilitate the gentle and careful processing of foods and beverages. Their total hygiene ensures product quality, while their efficient operation provides maximum cost efficiency.

Dairy

Alfa Laval pumps supply the impeccable quality needed in working with dairy products. Their thorough, durable engineering ensures that raw materials are handled with the highest standards of reliability and hygiene.

Brewing

With hygienic design and gentle handling, Alfa Laval pumps provide breweries with effective ways of transferring brewery products. All brewing stages are catered for, no matter what the type of beer or the brewing process used.

Biopharm

Alfa Laval pumps meet the stringent hygienic requirements of the biotech and pharmaceutical industries. Several of our pump ranges are specifically designed for and used in ultra-hygienic applications.

...and service to match

Alfa Laval's service mission is to bring you expertise, enabling you to achieve the highest level of performance. With Alfa Laval as your performance partner, you have a trusted local provider for all your needs – and one that offers all the advantages of a global organization.

Alfa Laval takes care of your basic requirements, such as delivering replacement parts to your door and keeping your equipment in top condition. But as your local consultants, we also share our process and equipment knowledge with you. Our expertise in separation, heat transfer and fluid handling technologies can all be put to good use in optimizing your plant.

Alfa Laval spare parts

Investing in quality brings you long-term savings. That's why investing in genuine spare parts pays off.

With Alfa Laval spare parts, you know exactly what you get: quality spare parts that are the product of extensive research and development. Our spare parts are all precisely engineered and manufactured to endure the specific application for which they were designed.

Moreover, Alfa Laval spare parts are rigorously tested in our materials laboratory under actual operating conditions. So you can count not only on the perfect fit, but also on optimal performance.

Plan your budget and downtime

To get the best possible return on your investment, you must be able to rely on your equipment. Scheduled preventive maintenance – with Alfa Laval maintenance programs, performance agreements and genuine Alfa Laval spare parts – allows you to plan both your operating budget and your downtime.

	Centrifugal Pumps						Rotary Lobe Pumps		
	LKH	LKH Multi-stage	LKHPF	LKH-UP	LKH evap	SolidC	Op-tiLobe	SRU	SX
Main duties									
Dairy									
Milk	•	•				•			
Milk/cream pasteurization	•	•			•	•	•	•	•
Cultured milk	•	•					•	•	•
Whey	•	•	•		•		•	•	•
Curd							•	•	•
Ice cream pasteurization	•	•							
Cheese							•	•	•
Yoghurt							•	•	•
High pressure filtration		•	•						
Brewery									
Wort	•	•				•	•	•	
Beer	•	•				•	•	•	
Beer pasterization - feed	•	•							
Beer pasterization - booster		•							
Yeast							•	•	•
Beverages									
Clarified juices, drinks, wine	•	•				•	•	•	
Juice/drinks with pulp/fibres	•	•					•	•	•
Clarified fruit & sugar conc.	•	•				•	•	•	•
Sugar dissolving	•	•				•	•	•	•
Final sirup	•	•				•	•	•	•
Other food									
Low viscous products	•	•				•	•	•	
High viscous products	•	•					•	•	•
Vegetable oil	(•)					•	•	•	
Non evaporating products									
Prepared food							•	•	•
Pharma									
High purity water	•			•					
WFI				•					
CIP return									
Parenterals								•	•
Opthalmic								•	•
Ingestibles								•	•
Utilities									
Water	•	•				•			
CIP feed	•			•		•			
CIP return									
Carbonisation (CO_2)	•	•							
Personal Care									
Soap							•	•	•
Cosmetics							•	•	•
General Centrifugal, Liquid Ring and Rotary Lobe Pump range overview									
Flow Range [US GPM]	2201	330	1211	396		374	211	467	502
Head 60Hz [ft]	518	787	518	344		394			
Max. Inlet pressure [psi]	145	580	600	145		58	116	290	218
Max. Visc [cP]	1000	1000	1000	1000		500	10^6	10^6	10^6
Max. Temp. F	284	284	284	284		248	266	392	302

1.1 Centrifugal Pumps

The Centrifugal Pumps from Alfa Laval are your best solution to pump liquids gently and efficiently.

Alfa Laval LKH

Centrifugal Pumps

Introduction

The Alfa Laval LKH Centrifugal Pump is a premium pump for use in hygienic applications. To increase process productivity, it is distinguished by high efficiency, gentle product treatment, chemical resistance, and a wide range of flow rates, pressures and options.

Precision-engineered, the LKH pump delivers greater energy efficiency than similar pumps. Its optimized design, premium motor, tight tolerances and advanced impeller design minimize recirculation and reduce energy consumption.

Application

Designed for Cleaning-in-Place (CIP), the Alfa Laval LKH is ideal for hygienic applications within the dairy, food, beverage and personal care industries that require gentle product treatment and reliable operation.

The LKH pump is available in 13 sizes to handle capacities up to 2200 USGPM and differential pressures up to 525 feet at 60 Hz.

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.
- Wide performance envelope: reduce need for parallel and serial pump installations and ensure pump operating with high efficiency.
- Maximized uptime and reduced maintenance costs: robust mechanical design and ease of maintenance with modular front-loading seals.

Standard design

All media contacting steel components like pump casing, impeller, impeller nut and backplate are in AISI 316L. Four adjustable stainless steel legs support the complete unit.

A compression coupling securely attaches the stub shaft to the motor shaft with precision alignment, and the semi-open impeller with a special vane design ensures efficient and gentle handling of the product as it moves through the pump.

As standard, the LKH pump is equipped with a single mechanical shaft seal but is also available with a single flushed or a double mechanical shaft seal. The front-loading shaft seal, with the spring and washers mounted on the atmospheric side, 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.

Authorized to carry the 3A symbol

TECHNICAL DATA

Materials	
Product wetted steel parts:	AISI 316L
Other steel parts:	Stainless steel
Inside surface finish:	Mech. ≤ 32 Ra
Product wetted elastomers:	EPDM
Rotary seal face:	Carbon
Stationary seal face:	Silicon Carbide

Motor
Standard C-faced, foot mounted motor according to NEMA standard. 3 phase, 60 HZ, 230/460V. 3500 RPM or 1750 RPM. Premium efficiency, Class F. Note different frame sizes. LKH-75 and -90 only low speed (1750 RPM).

Motor sizes	
60Hz:	1 - 100 Hp

OPERATING DATA

Max inlet pressure	
LKH-5:	87 PSI (6 bar)
LKH-10 - 60:	145 PSI (10 bar)
LKH-70 - LKH-90	72.5 PSI (5 bar)

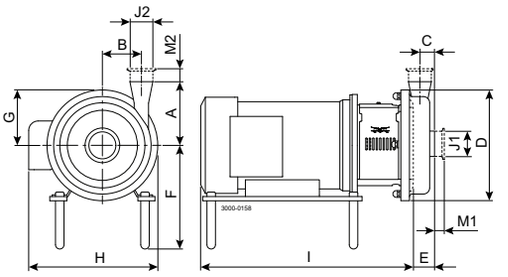
Temperature	
Temperature range:	14°F to +284° F (EPDM)
Flush media:	Max 158°F
Flush housing sterilization (pump not in operation):	Max 257°F

Flushed shaft seal:	
Water pressure inlet:	Max. 14.5 PSI.(1 bar)
Water consumption:	4-8 USGPH

Double mechanical shaft seal:	
Water pressure inlet, LKH-5 to -60:	Max. 72.5 PSI. (5 bar)
Water pressure inlet, LKH-70 to -90:	Max. 43.5 PSI. (3 bar)
Water consumption:	4-8 USGPH

Connections for flushed and double mechanical shaft seal	
LKH-5 - 90:	1/8" G

Dimensions (inch)



Pump specific measures

Pump Model	LKH-5	LKH-10	LKH-15	LKH-20	LKH-25	LKH-35	LKH-40	LKH-45	LKH-50	LKH-60	LKH-70	LKH-75	LKH-90
A	6.220	5.591	6.535	7.087	7.598	7.598	8.346	7.598	8.071	10.276	10.000	10.197	12.205
B	2.756	3.425	2.598	3.465	4.173	4.685	4.961	3.819	4.646	4.016	5.787	6.929	9.843
C	0.866	0.906	1.693	1.063	1.260	0.906	1.102	1.614	1.378	2.441	0.984	1.890	2.559
D	7.441	9.724	9.724	9.961	11.929	11.929	12.953	12.953	12.953	12.953	16.063	18.425	19.843
E	1.654	2.008	3.425	2.480	2.706	2.126	2.520	2.520	3.031	4.173	2.992	3.622	3.740

Motor specific measures

Motor TC/TSC	56TC	143TC	145TC	182TC	184TC	213TC	215TC	254TC	256TC	284TSC	286TSC	324TSC	326TSC	364TSC	365TSC
Motor HP	1.0	1.5	2.0	3.0	5.0	7.5	10.0	15.0	20.0	25.0	30.0	40.0	50.0	60.0	75.0
F(max)*	8.110	8.110	8.110	9.094	9.094	9.843	9.843	10.866	10.866	11.614	11.614	12.598	12.598	13.622	13.622
G	3.307	3.504	3.543	4.488	4.488	5.394	5.394	6.772	6.772	7.677	7.677	8.425	8.504	9.331	9.331
H	8.937	9.094	9.094	11.102	11.102	13.071	13.071	17.795	17.795	20.945	20.945	23.346	23.346	26.811	26.811
I (LKH-5)	13.307	14.843	-	18.268	-	-	-	-	-	-	-	-	-	-	-
I (LKH-10 to LKH-60)	-	14.843	15.118	17.992	18.150	21.024	21.024	26.063	27.835	28.583	30.039	33.071	34.646	34.449	-
I (LKH-70 to LKH-90)	-	-	-	-	-	21.811	21.811	26.575	28.346	29.094	30.551	33.583	35.157	34.961	38.346

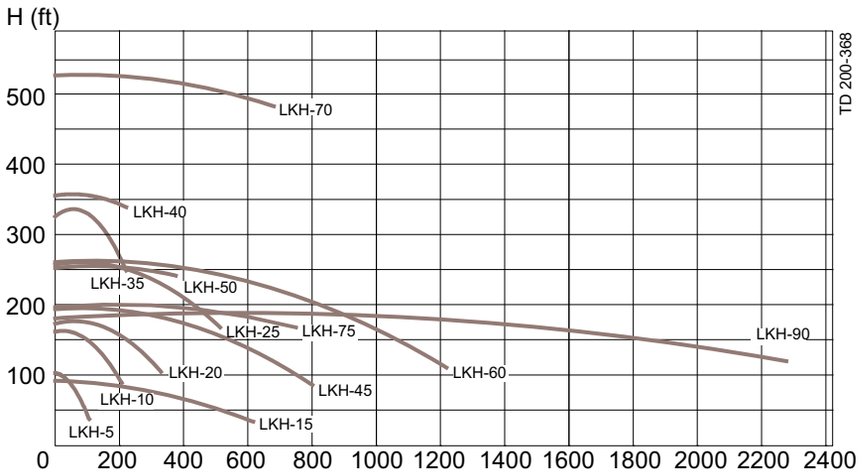
Motor overview

Pump Model	LKH-5	LKH-10	LKH-15	LKH-20	LKH-25	LKH-35	LKH-40	LKH-45	LKH-50	LKH-60	LKH-70	LKH-75	LKH-90
Motor range (TC/TSC)	56TC-182TC	56TC-254TC	145TC-154TC	145TC-256TC	145TC-286TSC	182TC-286TSC	182TC-286TSC	182TC-286TSC	182TC-324TSC	213TC-364TSC	213TC-405TSC	254TC-326TSC	286TSC-405TSC

Connections

Pump Model		LKH-5	LKH-10 LKH-20 LKH-35	LKH-15 LKH-45 LKH-50 LKH-70	LKH-25	LKH-40	LKH-60 LKH-70	LKH-60 LKH-70	LKH-90
TRI-Clamp	M1	1.13	1.13	1.13	1.13	1.13	1.13	1.5	1.5
	M2	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.5
J1*		2.00"	2.50"	4.00"	3.00"	3.00"	4.00"	6.00"	6.00"
J2*		1.50"	2.00"	3.00"	2.50"	2.00"	4.00"	4.00"	6.00"

Flow chart



Options

A. Impeller with reduced diameter.
B. Flushed shaft seal.
C. Double mechanical shaft seal.
D. Rotating seal face of Silicon Carbide.
E. Product wetted elastomers NBR, FPM or FEP.
F. ½" or ¾" tri clamp drain connection.
G. Product wetted surface finish Ra ≤ 20.
H. Inducer (LKH-10 to -50).
I. Counter flanges, seal rings and bolts for flanged connections (industrial version).
J. Standard clearance is 0.02" (0.04" for LKH-70 to LKH-90) and can be made up to 0.098").
K. Motor enclosures: washdown, TEFC, explosion proof, inverter duty and others upon request.
L. Motor for other voltage and/or frequency.

Ordering

Please state the following when ordering:

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

Note!

For further details, see also ESE00698.

Alfa Laval LKHM-110P and LKH-120/P Multi-Stage

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:	Acid-resistant steel, AISI 316L and AISI 329L
Other steel parts:	Stainless steel, AISI 304
Product wetted seals:	EPDM
Other O-rings:	EPDM.
Finish:	Polished ≤32Ra and 3A approved.

Motor	
Standard C-Face, foot mounted motor according to NEMA standard at 3500. Premium efficiency, insulation Class F. High Thrust Bearings Required.	
Hp	Horsepower requirements based on flow curves.
Voltage and frequency	3 phase, 60 Hz, 230-460v standard. Other voltages and frequencies available upon request.

Connections for FSS:
6mm tube/Rp 1/8"

OPERATING DATA

Max. outlet pressure, LKHM-110/P, LKHM-120/P:	
Limited by the strength of the pump casing:	580 PSI (40 bar) temperature < 104° F.
Limited by the strength of the pump casing:	290 PSI (20 bar) temperature > 104° F.

Temperature range:	14°F to +284 °F (EPDM).
Water pressure:	Normally atmospheric, max. 15 PSI (flushed seal).
Water consumption:	0.066 -0.13 US GPM (flushed seal)
Noise level (at 3.3 ft):	60-80 dB (A).

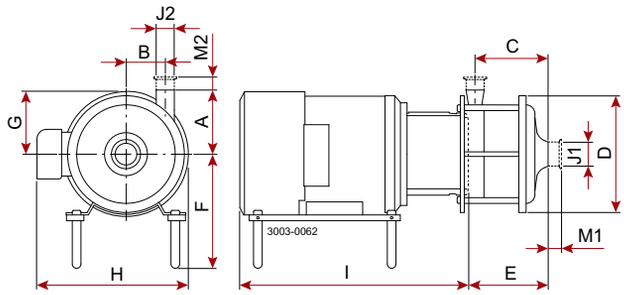
Max inlet pressure
(Temperature < 40°C)

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
(in)



Pump specific measures

Pump Model	LKH-112	LKH-113	LKH-114	LKH-122	LKH-123	LKH-124
A	5.512	5.512	5.512	10.433	10.433	10.433
B	3.386	3.386	3.386	4.409	4.409	4.409
C	2.992	4.646	6.299	3.346	5.591	7.874
D	10.079	10.079	10.079	13.189	13.189	13.189
E	1.496	5.433	7.008	4.409	6.654	8.898

Motor specific measures

Motor TC/TSC	213TC	215TC	254TC	256TC	284TSC	324TSC	326TSC	364TSC	365TSC	405TSC
Motor HP	7.5	10.0	15.0	20.0	25.0	40.0	50.0	60.0	75.0	100.0
F(max)*	9.843	9.843	10.866	10.866	11.614	12.598	12.598	13.622	13.622	13.622
G	5.394	5.394	6.772	6.772	7.677	8.425	8.504	9.331	9.331	9.331
H	13.071	13.071	17.795	17.795	20.945	23.346	23.346	26.811	26.811	26.811
I	21.024	21.024	26.063	27.835	28.583	33.071	34.646	34.449	38.346	38.346

Motor overview

Pump Model	LKH-112	LKH-113	LKH-114	LKH-122	LKH-123	LKH-124
Motor range (IEC)	213TC-284TSC	213TC-284TSC	213TC-284TSC	324TSC-364TSC	324TSC-405TSC	324TSC-405TSC

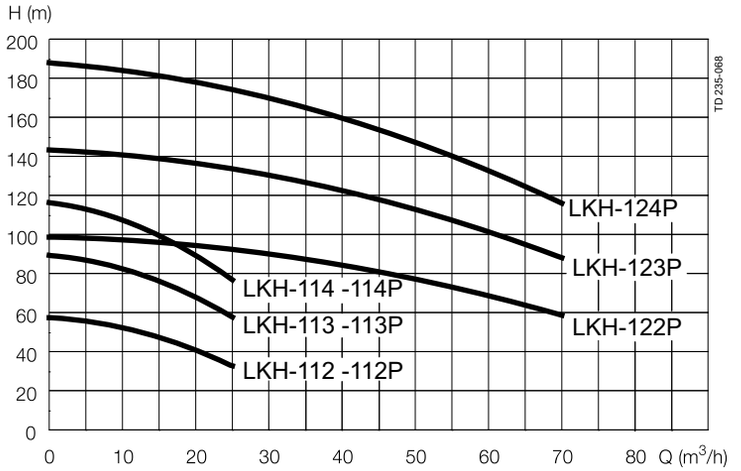
Dimensional data are based on 2 pole, Sterling motors.

Connections

Pump Model		LKH-112 LKH-113 LKH-114	LKH-122 LKH-123 LKH-124
Tri-Clamp	M1	0.827	-
	M2	0.827	-
Heavy duty clamp	M1	-	1.14
	M2	-	1.14
Flange acc. To EN1092	M1	-	2.21
	M2	-	2.21
J1*		2"	3"
J2*		1.5"	2.5"

* Other dimensions available on request.

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



Options

A. Motor with increased safety/flame proof motor. (only LKH-110)
B. Flushed shaft seal.
C. Impeller with reduced diameter.
D. Product wetted seals of Buna (NBR), or Fluorinated rubber (FPM).
E. Rotating seal ring of Silicon Carbide.
F. Surface roughness, product wetted parts: unpolished, 32Ra, micro inches (0.8 mm), or higher finishes

Ordering

Please state the following when ordering:

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.

Alfa Laval LKHPF

Centrifugal pumps

Introduction

The Alfa Laval LKHPF Centrifugal Pump for High Inlet Pressure is a high-pressure, high-efficiency centrifugal pump suited for high-pressure filtration applications. To increase process productivity, it is distinguished by high efficiency, low energy consumption, gentle product treatment, chemical resistance, and a wide range of flow rates, pressures and options.

Precision-engineered, the LKHP Filtration pump delivers greater energy efficiency than similar premium pumps. Its optimized design, premium motor, tight tolerances and advanced impeller design minimize recirculation and reduce energy consumption.

Applications

Designed for inlet pressures up to 40 bar and for Cleaning-in-Place (CIP), the Alfa Laval LKHPF pump is ideal for use in filtration systems across the food, beverage, home-personal care, biotechnology and pharmaceutical industries. Tough under pressure, the LKHPF is ideal for demanding nanofiltration and reverse osmosis filtration installations.

The LKHPF pump is available in nine sizes to handle capacities up to 280 m3/h and differential pressures up to 11 bar at 50 Hz.

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.
- Wide performance envelope: reduce need for parallel and serial pump installations and ensure pump operating with high efficiency.
- High inlet pressure: designed for inlet pressures up to 40 bar and can therefore be used in the most demanding applications within filtration.

Standard design

All media contacting steel components like pump casing, impeller, impeller nut 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.

A compression coupling securely attaches the stub shaft to the motor shaft with precision alignment, and the semi-open impeller with a special vane design ensures efficient and gentle handling of the product as it moves through the pump.

As standard, the LKHPF 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.

With heavy-duty pump casing and backplate, high-pressure internal seals and multiple heavy-duty studs, the pump is capable of handling very high inlet pressures.

TECHNICAL DATA

Materials	
Product wetted steel parts:	Acid-resistant steel AISI 316L and AISI 329L.
Other steel parts:	Stainless steel AISI 304.
Product wetted seals:	EPDM
Optional:	NBR (Buna); FPM (Viton)
Finish:	Polished ≤32 Ra.

Motor
Special high thrust bearing NEMA C-Face motor, foot mounted motor according to NEMA standards at 3500 RPM. Premium efficiency, TEFC, insulation Class F

Connections	
Connections for flushed shaft seal:	1/4 tube/Rp 1/8

OPERATING DATA

Pressure	
Max. inlet pressure:	600 PSI.
Water pressure:	Max. 14.5 PSI

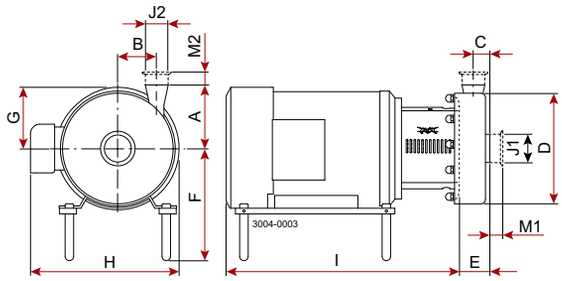
Temperature	
Temperature range:	14° F to 284° F (EPDM).

Water consumption	
Water consumption:	4-8 usgph

(Flushed seal)

Noise	
Noise level (at 3 ft.):	60 - 80 dB (A).

Dimensions (in)



Pump specific measures

Pump Model	LKHPF-10	LKHPF-20	LKHPF-25	LKHPF-35	LKHPF-40	LKHPF-45	LKHPF-50	LKHPF-60	LKHPF-70
A	5.591	7.087	7.598	7.598	8.346	7.598	8.071	10.315	10.000
B	3.425	3.425	4.173	4.685	4.961	3.819	4.646	4.016	5.787
C	1.142	1.693	1.496	1.102	1.339	1.693	1.654	1.654	1.102
D	9.724	9.961	11.929	11.929	12.953	11.929	12.953	12.953	16.063
E	2.520	3.071	3.228	2.598	3.031	3.661	3.583	3.661	3.661

Motor specific measures

Motor TC/TSC	213TC	215TC	254TC	256TC	284TSC	286TSC	324TSC	326TSC	364TSC	365TSC
Motor HP	7.5	10.0	15.0	20.0	25.0	30.0	40.0	50.0	60.0	75.0
F(max)*	9.843	9.843	10.866	10.866	11.614	11.614	12.598	12.598	13.622	13.622
G	5.394	5.394	6.772	6.772	7.677	7.677	8.425	8.504	9.331	9.331
H	13.071	13.071	17.795	17.795	20.945	20.945	23.346	23.346	26.811	26.811
I (LKHPF-10 to LKHPF-60)	21.024	21.024	26.063	27.835	28.583	30.039	33.071	34.646	34.449	-
I (LKHPF-70)	21.811	21.811	26.575	28.346	29.094	30.551	33.583	35.157	34.961	38.346

*Possible to reduce dimension F by min. XX mm for all pump models. For smaller models it will be possible to reduce dimension F even further.

Motor overview

Pump Model	LKHPF-10	LKHPF-20	LKHPF-25	LKHPF-35	LKHPF-40	LKHPF-45	LKHPF-50	LKHPF-60	LKHPF-70
Moter range (TC/TSC)	213TC	213TC-215TC	213TC-256TC	213TC-256TC	215TC-286TSC	213TC-256TC	213TC-286TSC	213TC-286TSC	234TSC-405TSC

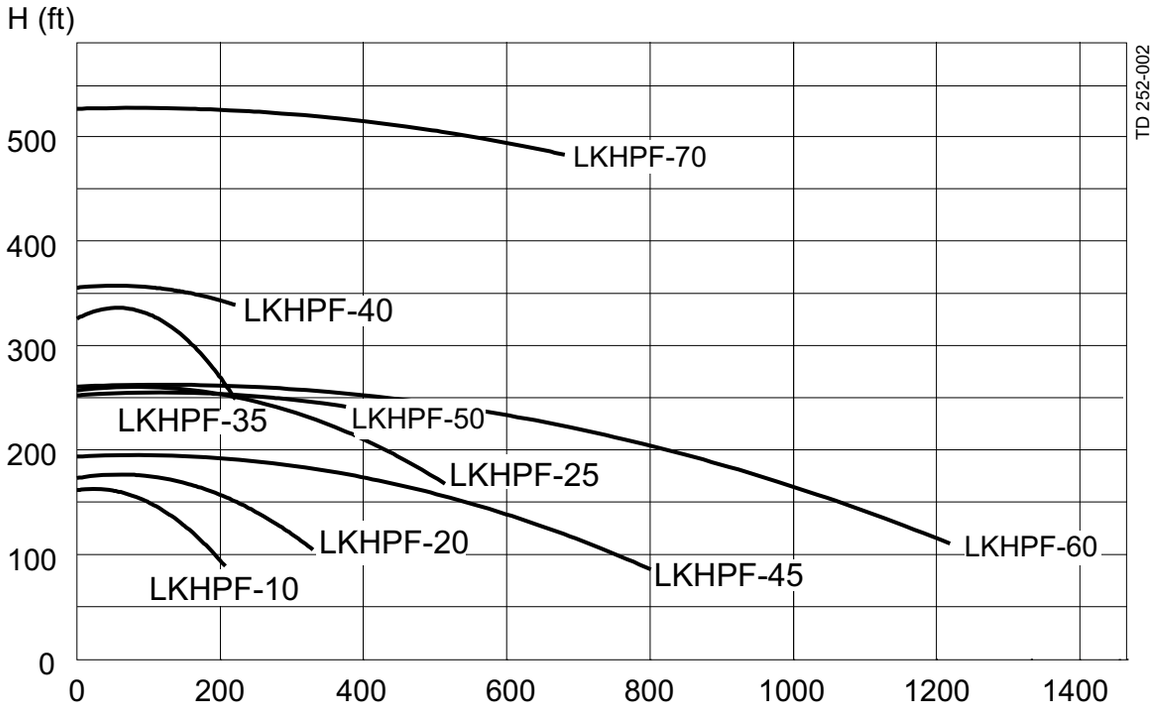
Dimensional data are based on 2 pole, Sterling motors.

Connections

Pump Model		LKHPF-10 LKHPF-20 LKHPF-35	LKHPF-25	LKHPF-40	LKHPF-45 LKHPF-50 LKHPF-70	LKHPF-60
Tri-Clamp	M1	1.12	1.12	1.12	1.12	1.12
	M2	1.12	1.12	1.12	1.12	1.12
J1*		2.50"	3.00"	3.00"	4.00"	4.00"
J2*		2.00"	2.50"	2.00"	3.00"	4.00"

* Other dimensions available on request.

Flow chart



Options

A. Impeller with reduced diameter.
B. Motor for other voltage and/or frequency.
C. Flushed shaft seal.
D. Caunder connection.

Ordering

Please state the following when ordering:

- Pump size.
- Connections.
- Impeller diameter.
- Motor size.
- Single or flushed shaft seal.
- Elastomer type
- Optional extras.

Material grades

- Surface roughness, product wetted parts: unpolished, 32Ra, micro inches (0.8 mm), or higher finishes.
- Seals in Nitrile (NBR/Buna) or Fluorinated rubber (FPM/Viton).

Alfa Laval LKHU - UltraPure

Centrifugal pumps

Introduction

The Alfa Laval LKH UltraPure Centrifugal Pump is designed for use in high-purity applications where high efficiency, exceptional cleanability, contamination safety, robust design and low maintenance are of paramount importance. With verified cleanability, these pumps provide unobstructed product flow, very low NPSH requirements and excellent hydraulic efficiency.

Precision-engineered, the LKH UltraPure pump delivers greater energy efficiency than similar pumps. Its optimized design, premium motor, tight tolerances and advanced impeller design minimize recirculation and reduce energy consumption.

Applications

The Alfa Laval LKH UltraPure pump is designed to meet the stringent demands and regulations of high-purity applications across the biotechnology and pharmaceutical industries which require equipment with the highest material integrity.

All pumps are delivered with a complete Alfa Laval Q-doc package. Q-doc provides easier validation, proof of origin and compliance for inspection according to Good Manufacturing Practice (GMP) and ASME BPE requirements.

The LKH UltraPure pump is available in eight sizes to handle capacities up to 1300 USGPM and differential pressures up to 500 feet at 60 Hz.

Benefits

- Energy efficient: superior efficiency resulting in reduced energy consumption and CO2 footprint.
- Maximized uptime and reduced maintenance costs: robust mechanical design and ease of maintenance with modular front-loading seals.
- Low contamination risk: comes with full material traceability and USP Class VI elastomers to reduce risk of process contamination from extractables.
- Smooth qualification, validation and process control: material traceability, and pump supplied with the Alfa Laval Q-doc package in line with Good Documentation Practice (GDP).

Standard design

All media contacting steel components like pump casing, impeller, impeller nut and backplate are in AISI 316L with material traceability 3.1 according to EN 10204. Product wetted elastomers are specified to USP Class VI, 121°C, Chapter 88 and Chapter 87. Four adjustable stainless steel legs support the complete unit.

A compression coupling securely attaches the stub shaft to the motor shaft with precision alignment, and the semi-open impeller with a special vane design ensures efficient and gentle handling of the product as it moves through the pump.

As standard, the LKH UltraPure pump is equipped with a single mechanical shaft seal but is also available with a double mechanical shaft seal. The front-loading shaft seal, with the spring and washers mounted on the atmospheric side, 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.

Authorized to carry the 3A symbol

TECHNICAL DATA

Materials	
Product wetted steel parts:	AISI 316L and 329L with material traceability 3.1 according to EN 10204 (Mill test reports)
Other steel parts:	Stainless steel
Inside surface finish:	Electropolished Ra ≤ 15 µin
External finish:	Ra 32 µin
Product wetted elastomers:	EPDM - USP Class VI, 249.8°F. Chapter 88, and Chapter 87
Rotary seal face:	Silicon Carbide
Stationary seal face:	Silicon Carbide

Motor
Standard C-faced, foot mounted motor according to NEMA standard. 3 phase, 60 HZ, 230/460V. 3500 RPM or 1750 RPM. Premium efficiency, Class F.

Motor sizes	
60Hz:	2 - 100 Hp

OPERATING DATA

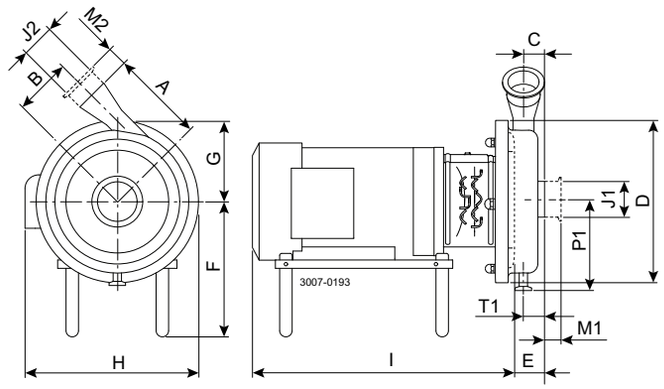
Max inlet pressure	
LKH UltraPure 10 - 60:	145 PSI (10 bar)
LKH UltraPure 70	72.5 PSI (5 bar)

Temperature	
Temperature range:	14°F to +284°F (EPDM)
Flush media:	Max 158°F
Flush housing sterilization (pump not in operation):	Max 257°F

Double mechanical shaft seal	
Water pressure inlet, LKH UltraPure 10 - 60:	Max. 72.5 PSI (5 bar)
Water pressure inlet, LKH UltraPure 70:	Max. 43.5 PSI (3 bar)
Water consumption:	4 - 8 USGPH

Connections for double mechanical shaft seal	
LKH UltraPure 10 - 70:	1/8" G

Dimension



Pump specific measures

Pump Model	LKH UltraPure-10	LKH UltraPure-20	LKH UltraPure-25	LKH UltraPure-35	LKH UltraPure-40	LKH UltraPure-45	LKH UltraPure-60	LKH UltraPure-70
A	5.591	7.087	7.598	7.598	8.346	8.346	10.276	10.000
B	3.425	3.465	4.173	4.685	4.961	4.961	4.016	5.787
C	0.906	1.063	1.260	0.906	1.102	1.102	2.441	0.984
D	9.724	9.961	11.929	11.929	12.953	12.953	12.953	16.063
E	2.008	2.480	2.717	2.126	2.520	2.520	4.173	2.992
P1	5.283	5.516	6.388	6.604	7.071	5.335	6.878	8.598
T1	0.803	1.219	1.441	0.850	1.262	1.992	0.953	1.453

Motor specific measures

Motor TC/TSC	143TC	145TC	182TC	184TC	213TC	215TC	254TC	256TC	284TSC	286TSC	324TSC	326TSC	364TSC	365TSC
Motor HP	1.0-1.5	2.0	3.0	5.0	7.5	10.0	15.0	20.0	25.0	30.0	40.0	50.0	60.0	75.0
F(max)*	8.110	8.110	9.094	9.094	9.843	9.843	10.866	10.866	11.614	11.614	12.598	12.598	13.622	13.622
G	3.504	3.543	4.488	4.488	5.394	5.394	6.772	6.772	7.677	7.677	8.425	8.504	9.331	9.331
H	9.094	9.094	11.102	11.102	13.071	13.071	17.795	17.795	20.945	20.945	23.346	23.346	26.811	26.811
I (LKH-10 to LKH-60)	14.843	15.118	17.992	18.150	21.024	21.024	26.063	27.835	28.583	30.039	33.071	34.646	34.449	-
I (LKH-70)	-	-	-	-	21.811	21.811	26.575	28.346	29.094	30.551	33.583	35.157	34.961	38.346

*Possible to reduce dimension F by min. 2.32 in for all pump models. For smaller models it will be possible to reduce dimension F even further.

Frame overview

Pump Model	LKH UltraPure-10	LKH UltraPure-20	LKH UltraPure-25	LKH UltraPure-35	LKH UltraPure-40	LKH UltraPure-45	LKH UltraPure-60	LKH UltraPure-70
Moter range (TC/TSC)	143TC-256TC	143TC-256TC	143TC-364TSC	143TC-364TSC	143TC-364TSC	143TC-364TSC	143TC-364TSC	215TC-405TSC

Drain diameter

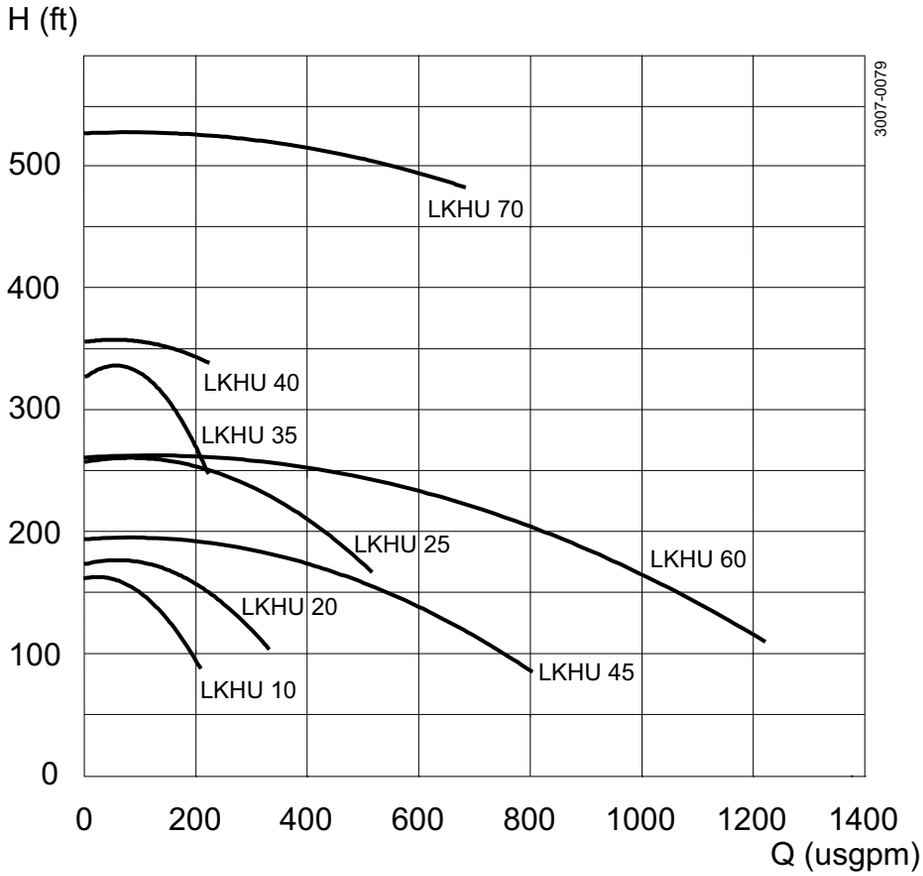
	TC Clamp
1/2"	1/2"

Dimensions are for guidance only. For exact measures of specific pump specifications, please refer to Anytime Configurator.

Connections

Pump Model		LKH UltraPure-10 LKH UltraPure-20 LKH UltraPure-35	LKH UltraPure-25	LKH UltraPure-40	LKH UltraPure-45 LKH UltraPure-70	LKH UltraPure-60
TRI-Clamp	M1	1.13	1.13	1.13	1.13	1.13
	M2	1.13	1.13	1.13	1.13	1.13
J1*		2,50"	3,00"	3,00"	4,00"	4,00"
J2*		2,00"	2,50"	2,00"	3,00"	4,00"

Flow chart – Frequency: 60Hz - Speed (synchr): 3600 rpm



Q-doc

Standard documentation package:

- Declaration of compliance to EN 10204 type 3.1 (MTR)
- Declaration of compliance to the U.S. Food & Drug Administration CFR 21 (non-metallic parts)
- Declaration of compliance to the U.S. Pharmacopeia (Elastomers and polymers)
- TSE (Transmissible Spongiform Encephalopathy) / ADI (Animal Derivative Ingredient) declaration
- Declaration of surface finish compliance
- Declaration of passivation and electro polishing (if specified)
- 3.1 certification in accordance to EN10204
- Pump performance test certificate

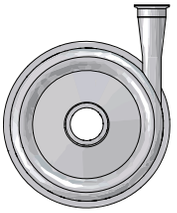
Optional documentation:

- Hydrostatic test certificate
- Surface measurement report
- Delta ferrite report (impeller)

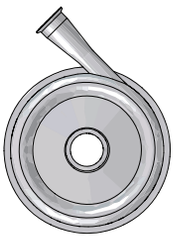
Options

A. Impeller with reduced diameter.
B. Impeller with delta ferrite max. 1%.
C. Motor for other voltage and/or frequency.
D. 1800 rpm. motor
E. Motor with increased safety/flame proof motor.
F. Double mechanical shaft seal.
G. Pump with legs.
H. 3/4" drain connection.
I. Horizontal drain connection, see illustration below.
J. Special flush arrangement with 1/2" Alfa Laval Unique DVST UltraPure diaphragm valve, needle valve and flow meter, see illustration below.
K. No drain.
L. Product wetted surface finish mechanically polished to Ra ≤ 20 µin.
M. Passivated surface.
N. Product wetted elastomers FPM or FEP to USP Class VI, 121°C Chapter 88, and Chapter 87.
O. Hydrostatic testing with certificate.
P. Surface finish measurement with certificate.
Q. Horizontal top, 90° or horizontal bottom outlet, see illustration below.

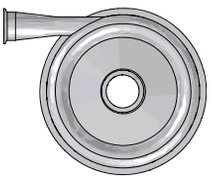
Available outlet positions



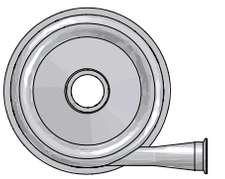
0°



45°



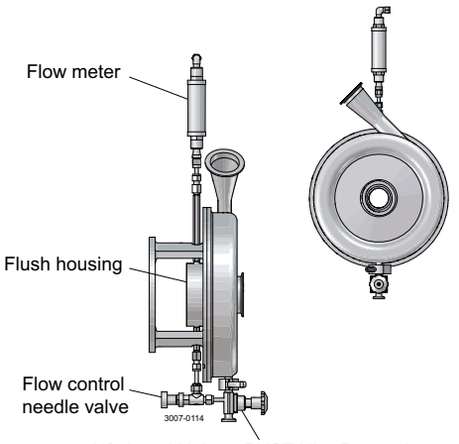
Horizontal top



Horizontal bottom

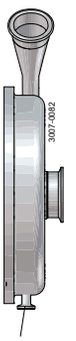
Flush arrangement

With the flush kit arrangement some process fluid is passing through the flush housing of the double mechanical seal, creating a barrier from the atmosphere to avoid potential process contamination across the seal face.

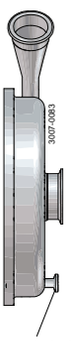


Alfa Laval Unique DVST UltraPure valve

Available drain connections



½" or ¾" vertical drain:
- Tri-clamp for ASME



½" or ¾" horizontal drain:
- Tri-clamp for ASME

Ordering

Please state the following when ordering:

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

Note! For further details, see also Instruction manual ESE01703. This product has EHEDG certificate

Alfa Laval LKH Prime

Centrifugal pumps

Introduction

Based on the market-leading Alfa Laval LKH pump, the Alfa Laval LKH Prime Centrifugal Pump is a versatile, highly efficient self-priming pump for use in hygienic applications, especially tank emptying and CIP return applications. With its combination of air-screw technology and advanced design, the pump can remove air from the suction pipe.

Precision-engineered, the LKH Prime delivers greater energy efficiency than similar pumps. Its optimized design, premium motor, tight tolerances and advanced impeller and airscrew design minimize recirculation and reduce energy consumption.

Application

The LKH Prime pump is designed to meet the stringent hygienic requirements across the food, dairy, beverage, and home-personal care industries. It is ideal for tank emptying and CIP return applications. With verified and effective CIP cleanability, the LKH Prime can be used as a product pump as well.

The LKH Prime is available in three sizes to handle capacities up to 100 m3/h and differential pressures up to 7.5 bar at 50 Hz.

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 and effective CIP cleanability.
- Quiet: operates very quietly compared to other self-priming pumps improving the working environment.
- Reduced capital investment: designed for Cleaning-in-Place (CIP) duties containing entrained air but can also pump product reducing need for additional pump.

Standard design

All media contacting steel components like pump casing, impeller, airscrew, front cover, recirculation pipe 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.

A compression coupling securely attaches the stub shaft to the motor shaft with precision alignment, and the semi-open impeller with a special vane design ensures efficient handling of the product as it moves through the pump.

As standard, the LKH prime pump is equipped with a single mechanical shaft seal but is also available with a double mechanical shaft seal. The front-loading shaft seal, with the spring and washers mounted on the atmospheric side, 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.

Working principle

On applications where the pumped media contains a mixture of air and liquid in the suction line, airscrew rotation causes the formation of a continuous liquid ring within the canister. Due to the eccentric position of the canister relative to the airscrew, an air chamber forms between the liquid ring and the airscrew, which separates into air pockets between the air-screw vanes.

The continuous rotation of the air-screw forces air pockets through the canister into the suction stage of the impeller which are then pumped out via the discharge.

Liquid is returned from the discharge via the recirculation pipe into the canister to ensure the liquid ring is maintained at all times. When there is no air present, the canister and recirculation loop have no function and are fully filled with liquid. The liquid passes through the canister into the suction stage of the impeller, allowing the pump to act as a traditional centrifugal pump.

Authorized to carry the 3A symbol

TECHNICAL DATA

Standard materials	
Product wetted steel parts:	W. 1.4404 (316L).
Other steel parts:	Stainless steel.
Inside surface finish:	Mech Ra ≤ 32.
Product wetted elastomers:	EPDM.

Motor
Standard C-faced, foot mounted motor according to NEMA standard. 3500 RPM. Premium efficiency, Class F. Note different frame sizes.

Connections	
Connections for double mechanical shaft seal	1/8" NPT

Min/Max speed	
Air evacuation:	2800 - 3600 rpm.
Pumping product (no air):	900 - 3600 rpm.

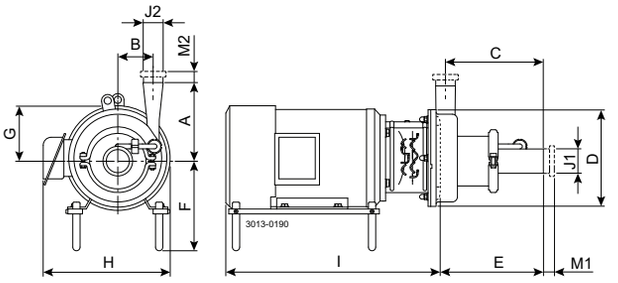
OPERATING DATA

Pressure	
Max inlet pressure:	72.5 PSI (5 bar).

Temperature	
Temperature range:	14°F to 284°F (EPDM).

Double mechanical shaft seal	
Water pressure inlet:	Max. 72.5 PSI (5 bar).
Water consumption:	4-8 US gph.

Dimensions (inch)



Pump specific measures

Pump Model	LKH Prime 10	LKH Prime 20	LKH Prime 40
A	6.85	7.36	10.20
B	3.35	3.62	4.96
C	8.74	9.76	10.67
D	9.72	9.96	12.95
E	9.64	11.02	11.85

Motor specific measures

Motor TC/TSC	182TC	184TC	213TC	215TC	254TC	256TC	284TSC	286TSC	324TSC	326TSC	364TSC
Motor HP	3.0	5.0	7.5	10.0	15.0	20.0	25.0	30.0	40.0	50.0	60.0
F(max)*	9.09	9.09	9.84	9.84	10.87	10.87	11.61	11.61	12.60	12.60	13.62
G	4.49	4.49	5.39	5.39	6.77	6.77	7.68	7.68	8.43	8.50	9.33
H	11.10	11.10	13.07	13.07	17.80	17.80	20.94	20.94	23.35	23.35	26.81
I	17.99	18.15	21.02	21.02	26.06	27.83	28.58	30.04	33.07	34.65	34.45

Motor overview

Pump Model	LKH Prime 10	LKH Prime 20	LKH Prime 40
Motor range (TC/TSC)	182TC-215TC	182TC-256TC	254TC-286TSC

Dimensional data are based on 2 pole, Sterling motors.

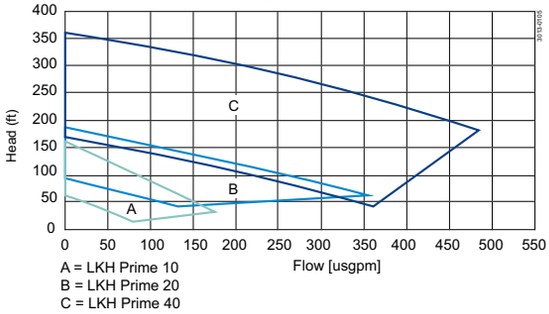
Connections

Pump Model		LKH Prime 10	LKH Prime 20	LKH Prime 40
TRI-Clamp	M1	1.13	1.13	1.13
	M2	1.13	1.13	1.13
J1*		2.00"	2.50"	3.00"
J2*		2.00"	2.00"	2.50"

* Other dimensions available on request.

Flow chart

Frequency: 60Hz - Speed (synchr): 3600 rpm



Options

A. Impeller with reduced diameter.
B. Motor enclosures: washdown, TEFC, explosion proof, inverter duty and others upon request.
C. Double mechanical shaft seal.
D. Product wetted surface finish Ra ≤ 20.
E. Product wetted elastomers of Nitrile (NBR) or Fluorinated rubber (FPM).
F. Rotating seal ring of Silicon Carbide.
G. 1/2" or 3/4" tri clamp drain connections (two connections)

Ordering

Please state the following when ordering:

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

Alfa Laval LKH Prime UltraPure

Centrifugal pumps

Introduction
The Alfa Laval LKH Prime UltraPure Centrifugal Pump is designed for use in high-purity applications where high efficiency, exceptional cleanability, contamination safety, robust design and low maintenance are of paramount importance.

Precision-engineered, the LKH Prime UltraPure delivers greater energy efficiency than similar pumps. Its optimized design, premium motor, tight tolerances and advanced impeller and airscrew design minimize recirculation and reduce energy consumption.

Applications
The Alfa Laval LKH Prime UltraPure is designed to meet the stringent demands and regulations of high-purity applications across the biotechnology and pharmaceutical industries that require equipment with the highest material integrity. It is ideal for tank emptying and CIP return applications; it has verified and effective CIP cleanability. The LKH Prime UltraPure can also be used as a product pump.

All pumps are delivered with a complete Alfa Laval Q-doc package. Q-doc provides easier validation, proof of origin and compliance for inspection purposes according to Good Manufacturing Practice (GMP) and ASME BPE requirements.

The LKH Prime UltraPure pump is available in two sizes to handle capacities up to 70 m3/h and differential pressures up to 4 bar at 50 Hz.

Benefits
- Energy efficient: superior efficiency resulting in reduced energy consumption and CO2 footprint.
- Quiet: operates very quietly compared to other self-priming pumps, thereby improving the working environment.
- Low contamination risk: comes with full material traceability and USP Class VI elastomers to reduce risk of process contamination from extractables.
- Smooth qualification, validation and process control: material traceability, and pump supplied with the Alfa Laval Q-doc package in line with Good Documentation Practices (GDP).

Standard design
All media contacting steel components like pump casing, impeller, airscrew, front cover, recirculation pipe and backplate are in W. 1.4404 (AISI 316L) with material traceability 3.1 according to EN 10204. Product wetted elastomers are specified to USP Class VI, 121°C, Chapter 88 and Chapter 87. A stainless steel shroud protects the motor and four adjustable stainless steel legs support the complete unit.

A compression coupling securely attaches the stub shaft to the motor shaft with precision alignment, and the semi-open impeller with a special vane design ensures efficient handling of the product as it moves through the pump.

As standard, the LKH prime pump is equipped with a single mechanical shaft seal but is also available with a double mechanical shaft seal. The front-loading shaft seal, with the spring and washers mounted on the atmospheric side, 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.

Working principle
On applications where the pumped media contains a mixture of air and liquid in the suction line, airscrew rotation causes the formation of a continuous liquid ring within the canister. Due to the eccentric position of the canister relative to the airscrew, an air chamber forms between the liquid ring and the airscrew, which separates into air pockets between the air-screw vanes.

The continuous rotation of the airscrew forces air pockets through the canister into the suction stage of the impeller which are then pumped out via the discharge.

Liquid is returned from the discharge via the recirculation pipe into the canister to ensure the liquid ring is maintained at all times. When there is no air present, the canister and recirculation loop have no function and are fully filled with liquid. The liquid passes through the canister into the suction stage of the impeller, allowing the pump to act as a traditional centrifugal pump.

Authorized to carry the 3A symbol

TECHNICAL DATA

Standard materials	
Product wetted steel parts:	AISI 316L and 329L with material traceability 3.1 acc. to EN 10204 (Mill test reports).
Other steel parts:	Stainless steel.
Inside surface finish:	EP Ra ≤ 15 µin.
Product wetted elastomers:	EPDM- USP Class VI, 121°C Chapter 88, and Chapter 87.

Motor
Standard C-faced, foot mounted motor according to NEMA standard. 3500 RPM. Premium efficiency, Class F. Note different frame sizes.

Connections	
Connections for double mechanical shaft seal	1/8" NPT

Min/max motor speed	
Air evacuation:	2800 - 3600 rpm
Pumping product (no air):	900 - 3600 rpm

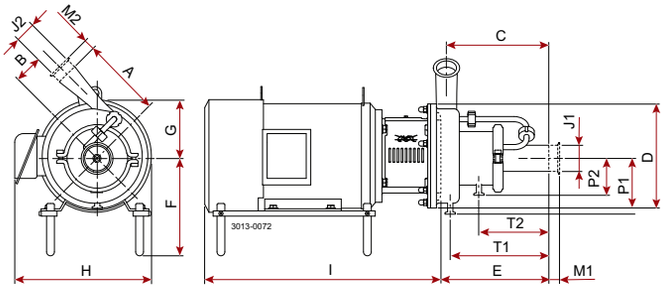
OPERATING DATA

Pressure	
Max inlet pressure:	72.5 PSI (5 bar).

Temperature	
Temperature range:	14°F to 284°F (EPDM).

Double mechanical shaft seal	
Water pressure inlet:	Max. 72.5 PSI (5 bar).
Water consumption:	4-8 US gph.

Dimensions



Pump specific measures

Pump Model	LKH Prime UltraPure 10	LKH Prime UltraPure 20
A	6.85	7.36
B	3.35	3.62
C	8.74	9.76
D	9.72	9.96
E	9.64	11.02
P1	4.57	4.84
P2	3.24	3.27
T1	8.63	9.41
T2	6.35	6.69

Motor specific measures

Motor TC/TSC	182TC	184TC	213TC	215TC	254TC	256TC
Motor HP	3.0	5.0	7.5	10.0	15.0	20.0
F(max)*	9.09	9.09	9.84	9.84	10.87	10.87
G	4.49	4.49	5.39	5.39	6.77	6.77
H	11.10	11.10	13.07	13.07	17.80	17.80
I	17.99	18.15	21.02	21.02	26.06	27.83

Motor overview

Pump Model	LKH Prime UltraPure 10	LKH Prime UltraPure 20
Motor range (TC/TSC)	182TC-215TC	182TC-256TC

Dimensional data are based on 2 pole, Sterling motors.

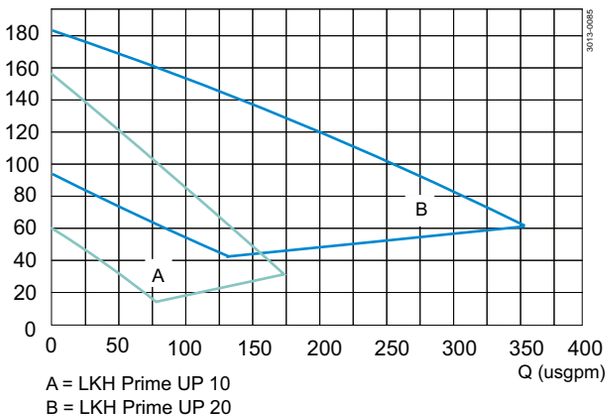
Connections

Pump Model		LKH Prime UltraPure 10	LKH Prime UltraPure 20
TRI-Clamp	M1	1.13	1.13
	M2	1.13	1.13
J1*		2.00"	2.50"
J2*		2.00"	2.00"

	TC Clamp
1/2"	0.5
3/4"	0.75

Flow chart

Frequency: 60Hz - Speed (synchr): 3600 rpm
H (ft)



A = LKH Prime UP 10
B = LKH Prime UP 20

(usgpm)

Options

A. Impeller with reduced diameter.
B. Motor with increased safety/flame proof motor.
C. Double mechanical shaft seal.
D. Product wetted surface finish mechanically polished to Ra 20 µin.
E. Passivated surface.
F. Product wetted elastomers FPM or FEP to USP Class VI, 121°C Chapter 88, and Chapter 87.
G. 3/4" drain connection.
H. No drain
I. 0° outlet position.
J. Hydrostatic testing with certificate.
K. Surface finish measurement with certificate.

Q-doc

Standard documentation package:

- Declaration of compliance to EN 10204 type 3.1 (MTR)
- Declaration of compliance to the U.S. Food & Drug Administration CFR 21 (non-metallic parts)
- Declaration of compliance to the U.S. Pharmacopeia (Elastomers and polymers)
- TSE (Transmissible Spongiform Encephalopathy) / ADI (Animal Derivative Ingredient) declaration
- Declaration of surface finish compliance
- Declaration of passivation and electro polishing (if specified)
- 3.1 certification in accordance to EN10204
- Pump performance test certificate

Optional documentation:

- Hydrostatic test certificate
- Surface measurement report

Ordering

Please state the following when ordering:

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

Alfa Laval LKH Evap

Centrifugal pumps

Introduction

The Alfa Laval LKH Evap Centrifugal Pump is a premium pump for use in hygienic applications. As a low-NPSHr, high-efficiency centrifugal pump, the LKH Evap is a tailored evaporator pump supported by strong and extensive documentation, including a comprehensive vacuum curve package. It features a special scraper impeller, ClearFlow, that solves the product buildup problem in high solids applications, which can prolong production time between cleaning.

Precision-engineered, the LKH Evap pump delivers greater energy efficiency than similar pumps. Its optimized design, premium motor, tight tolerances and advanced impeller design minimize recirculation and reduce energy consumption.

Applications

The LKH Evap Centrifugal Pump is designed for hygienic applications across the dairy, food, beverage, brewery, alcohol, ethanol, starch and chemical industries. It is ideal for use in evaporation duties for applications, such as liquid concentration and powder processing as well as plant and equipment dewatering.

The LKH Evap pump is available in 10 sizes to handle capacities up to 280 m3/h and differential pressures up to 11 bar at 50 Hz.

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 and effective Cleaning-in-Place.
- Low NPSHr: reduced NPSHr enables optimized system designs.
- Maximized uptime and reduced maintenance costs: robust mechanical design and ease of maintenance with modular front-loading seals.

Standard design

All media contacting steel components like pump casing, impeller, impeller nut 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.

A compression coupling securely attaches the stub shaft to the motor shaft with precision alignment, and the semi-open impeller with a special vane design ensures efficient and gentle handling of the product as it moves through the pump.

As standard, the LKH Evap pump is equipped with a single mechanical shaft seal but is also available with a single flushed or a double mechanical shaft seal. The front-loading shaft seal, with the spring and washers mounted on the atmospheric side, 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.

LKH Evap is available with the Clear Flow Impeller which is to be used in applications where there is a risk of building up a hard layer of product between impeller and backplate.

TECHNICAL DATA

Materials	
Product wetted steel parts:	Acid-resistant steel AISI 316L and AISI 329
Other steel parts:	Stainless steel AISI 304.
Finish:	Polished ≤32Ra. and 3A approved.
Product wetted seals:	EPDM.
Optional:	NBR, FPM, FEP.
Single seal SSS/Flushed shaft seal FSS:	SiC/C or SiC/SiC.
Double seal DMSS:	SiC/C or SiC/SiC.

Motor

Standard C-faced, foot mounted motor according to NEMA standard. 3500 RPM or 1750 RPM. efficiency, Class F. Note different frame sizes.

LKH Evap-75 only low speed (1750 RPM).

Voltage and frequency

3 phase, 60 HZ, 230/460V standard. Other voltages and frequencies available upon request.

Connections for FSS and DMSS:

1/4 tube/Rp 1/8

OPERATING DATA

Max. inlet pressure	
LKH Evap-10 to -60	145 PSI
LKH Evap-70 to -75	72.5 PSI

Temperature	
Temperature range	14°F to +284°F (EPDM)

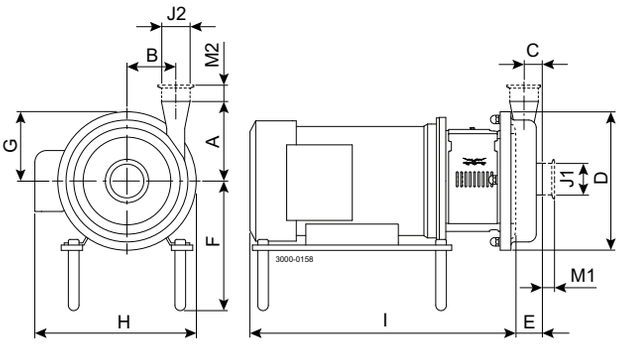
Flushed shaft seal:	
Water pressure inlet:	Max. 14.5 PSI.
Water consumption:	4-8 usgph

Double mechanical shaft seal:	
LKH Evap-5 to -60:	Max. 72.5 PSI.
LKH Evap-70 to -75:	Max. 43.5 PSI.

Noise level	
Noise level (at 3.3 ft.):	60 - 85 dB (A).

Water consumption:	
Water consumption:	4 - 8 usgph

Dimensions (inch)



Pump specific measures

Pump Model	LKHe-vap-10	LKHe-vap-15	LKHe-vap-20	LKHe-vap-25	LKHe-vap-35	LKHe-vap-40	LKHe-vap-45	LKHe-vap-50	LKHe-vap-60	LKHe-vap-70	LKHe-vap-75
A	5.591	6.535	7.087	7.598	7.598	8.346	8.346	8.071	10.276	10.000	10.197
B	3.425	2.598	3.465	4.173	4.685	4.961	4.961	4.646	4.016	5.787	6.929
C	0.906	1.693	1.063	1.260	0.906	1.102	1.102	1.378	2.441	0.984	1.890
D	9.724	9.724	9.961	11.929	11.929	12.953	12.953	12.953	12.953	16.063	18.425
E	2.008	3.425	2.480	2.717	2.126	2.520	2.520	3.031	4.173	2.992	3.622

Motor specific measures

Motor TC/TSC	143TC	145TC	182TC	184TC	213TC	215TC	254TC	256TC	284TSC	286TSC	324TSC	326TSC	364TSC	365TSC
Motor HP	1.0-1.5	2.0	3.0	5.0	7.5	10.0	15.0	20.0	25.0	30.0	40.0	50.0	60.0	75.0
F(max)*	8.110	8.110	9.094	9.094	9.843	9.843	10.866	10.866	11.614	11.614	12.598	12.598	13.622	13.622
G	3.504	3.543	4.488	4.488	5.394	5.394	6.772	6.772	7.677	7.677	8.425	8.504	9.331	9.331
H	9.094	9.094	11.102	11.102	13.071	13.071	17.795	17.795	20.945	20.945	23.346	23.346	26.811	26.811
I (LKHevap-10 to LKHevap-60)	14.843	15.118	17.992	18.150	21.024	21.024	26.063	27.835	28.583	30.039	33.071	34.646	34.449	-
I (LKHevap-70 to LKHevap-75)	-	-	-	-	21.811	21.811	26.575	28.346	29.094	30.551	33.583	35.157	34.961	38.346

*Possible to reduce dimension F by min. XX mm for all pump models. For smaller models it will be possible to reduce dimension F even further.

Motor overview

Pump Model	LKHe-vap-10	LKHe-vap-15	LKHe-vap-20	LKHe-vap-25	LKHe-vap-35	LKHe-vap-40	LKHe-vap-45	LKHe-vap-50	LKHe-vap-60	LKHe-vap-70	LKHe-vap-75
Moter range (TC/TSC)	143TC -254TC	145TC- 254TC	145TC- 256TC	145TC- 286TSC	182TC- 286TSC	182TC- 286TSC	182TC- 286TSC	182TC- 324TSC	213TC- 326TC	254TC- 326TSC	254TC- 326TSC

Dimensional data are based on 2 pole. Sterling motors.

Connections

Pump Model		LKHevap-10 LKHevap-20 LKHevap-35	LKHevap-15 LKHevap-45 LKHevap-50 LKHevap-70	LKHevap-15 LKHevap-45 LKHevap-50	LKHevap-25	LKHevap-40	LKHevap-60	LKHevap-60 LKHevap-75
Tri-Clamp	M1	1.13	1.13	1.13	1.13	1.13	1.13	1.13
	M2	1.13	1.13	1.13	1.13	1.13	1.13	1.13
J1*		2.5"	4.00"	3.00"	3.00"	3.00"	3.00"	3.00"
J2*		2.00"	3.00"	3.00"	2.00"	2.00"	4.00"	4.00"

* Other dimensions available on request.

Options

A. Impeller with reduced diameter.
B. Motor for other voltage and/or frequency.
C. Motor enclosures: washdown, TEFC, explosion proof, inverter duty and others upon request.
D. Inducer (only LKH Evap 10 to -50).
E. Flushed shaft seal.
F. Double mechanical shaft seal.
G. Counter connections.
H. Clear Flow Impeller. Special designed impeller for applications where there is a risk of building up a hard layer of product between impeller and backplate.
I. Surface roughness, product wetted parts: $R_a \leq 32$ µin.
J. Product wetted seals of Nitrile (NBR), Fluorinated rubber (FPM) or FEP.
K. Rotating seal ring of Silicon Carbide.

Ordering

Please state the following when ordering:

- Pump size.
- Version, hygienic or industrial.
- Connections.
- Seal and Elastomer Type
- Impeller diameter.
- Motor size.
- Voltage and frequency.
- Flow, pressure and temperature.
- Density and viscosity of the product.
- Options.

Note!

For further details, see also instruction manual.

Alfa Laval SolidC

Centrifugal pumps

Introduction

The Alfa Laval SolidC Centrifugal Pump is designed for basic transport of fluids in hygienic applications. It provides reliable, low-maintenance operation. With its hygienic design, cost-effective operation and quick, easy maintenance, the SolidC offers excellent value for money.

Applications

Designed for Cleaning-in-Place (CIP), the Alfa Laval SolidC is ideal for basic duties across the dairy, food, beverage and personal care industries in which hygienic treatment is required. Typical applications are pumping of CIP solutions, utilities, cooling or heating water, and other simple transport duties.

The SolidC pump is available in four sizes to handle capacities up to 75 m3/hour and differential pressures up to 8 bar at 50Hz.

Benefits

- Hygienic: designed according to international hygienic design standards and with verified effective CIP cleanability.
- Cost-effective operation: consistent performance ensured.
- Quick and easy maintenance: wear parts changed in just a few minutes.

Standard design

All media contacting steel components like pump casing, impeller, impeller nut 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.

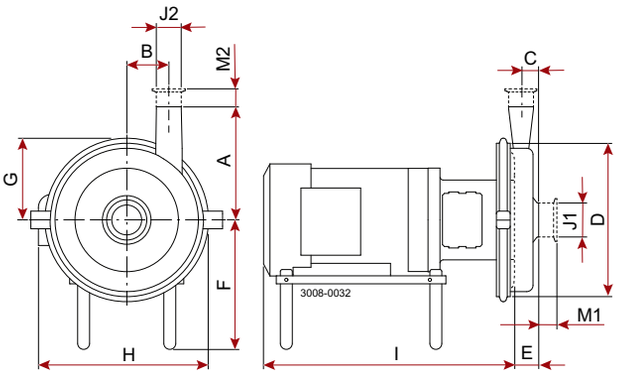
The semi-open impeller with a special vane design and balance holes enhance circulation around the shaft seal and reduce axial forces. This maximizes cleanability while minimizing wear on the shaft seal and motor bearings.

As standard, the SolidC pump is equipped with a single mechanical shaft seal, but is also available with a single flushed mechanical shaft seal. The secondary seal of the flushed seal is a long-lasting lip seal. The front-loading shaft seal, with the spring and washers mounted on the atmospheric side, 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

OPERATING DATA

Dimensions (inch)



Pump specific measures

Pump Model	SolidC-1	SolidC-2	SolidC-3	SolidC-4
A	7.087	7.874	8.268	9.055
B	2.638	3.701	4.764	4.724
C	1.102	1.378	1.220	1.063
D	9.370	8.937	12.244	13.110
E	1.575	1.850	1.732	1.732

Motor specific measures

Motor TC/TSC	143TC	145TC	182TC	184TC	213TC	215TC	254TC	256TC	284TSC	286TSC
Motor HP	1.5	2.0	3.0	5.0	7.5	10.0	15.0	20.0	25.0	295
F(max)*	8.110	8.110	9.094	9.094	9.843	9.843	10.866	10.866	11.614	11.614
G	3.504	3.504	4.370	4.488	5.394	5.394	6.772	6.772	7.677	7.677
H	9.094	9.094	11.102	11.102	13.071	13.071	452725.400	17.795	20.945	20.945
I	15.669	16.220	18.543	18.701	22.480	22.480	26.417	28.189	29.055	30.512

*Possible to reduce dimension F by min. XX mm for all pump models. For smaller models it will be possible to reduce dimension F even further.

Motor overview

Pump Model	SolidC-1	SolidC-2	SolidC-3	SolidC-4
Moter range (TC/TSC)	143TC-215TC	182TC-256TC	184TC-286TSC	215TC-286TSC

Dimensional data are based on 2 pole, Sterling motors.

Connections

Pump Model		SolidC-1	SolidC-2	SolidC-3	SolidC-4
Tri-Clamp	M1	0.50	0.50	0.50	1.13
	M2	0.50	0.50	0.50	0.50
J1*		2.00"	2.50"	3.00"	3.00"
J2*		1.50"	1.50"	1.50"	2.00"

* Other dimensions available on request.

Options

A. Impeller with reduced diameter.
B. Flushed shaft seal.
C. Rotating seal face of Silicon Carbide.
D. Product wetted elastomers NBR or FPM.
E. Product wetted surface finish mechanically polished to Ra ≤ 0.8 µm.
F. Surface finish measurement with certificate (Ra ≤ 0.8 µm).
G. Motor for other voltage and/or frequency.
H. Half speed motor.

Ordering

Please state the following when ordering:

- Pump size.
- Connections. (Tri-Clamp®)
- Impeller diameter.
- Motor size.
- Seal and Elastomer Type
- Voltage and frequency.
- Flow, pressure and temperature.
- Density and viscosity of the product.
- Options.

Note!

For further details, see also ESE00797.

Performance Curves

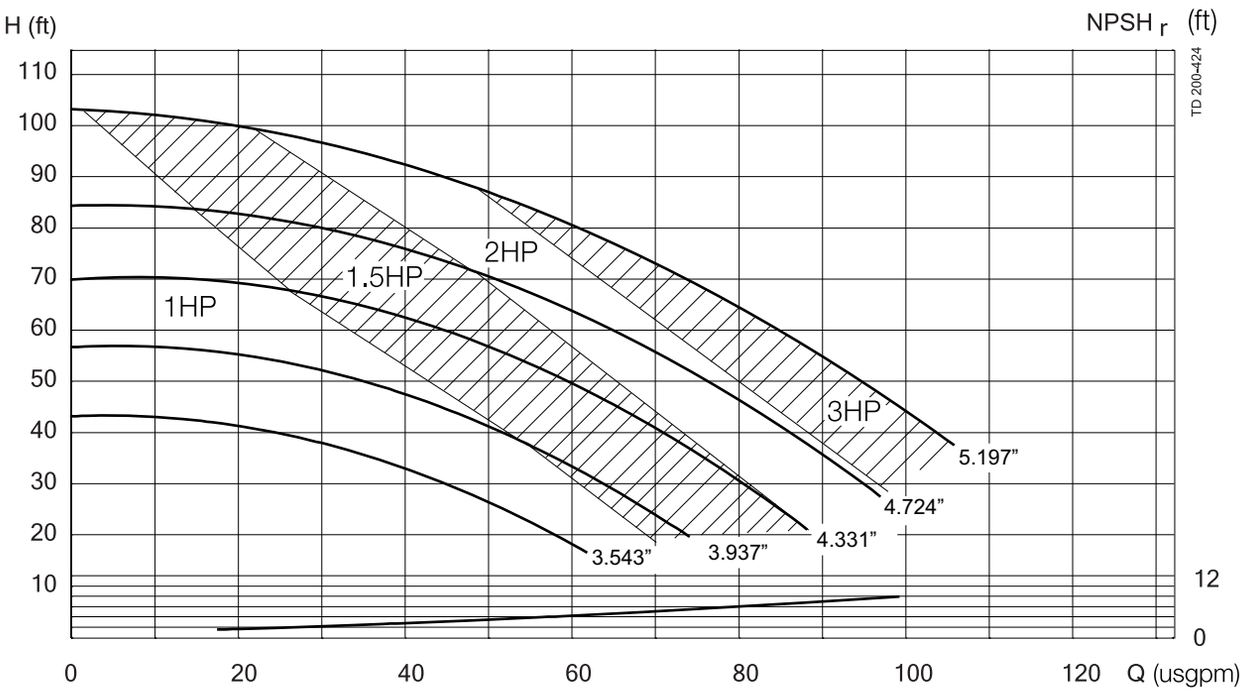
Alfa Laval LKH-5, 60 Hz

Motor:	**3600rpm. synchr.**
Tolerance:	±5%
Impeller, Max. dia.:	5.197”
Impeller, Min. dia.:	3.54”
Pump inlet, Dia.:	2”, DN 50
Pump outlet, Dia.:	1½”, DN 40

Performance data refer to water at 68 °F.

NOTE! The curves refer to motor: 3.4 Hp, 3460 rpm. asynchr., 60 Hz. For smaller motors, reduce head (H) with: 3%.

DO NOT FORGET THE SAFETY FACTOR.



Performance Curves

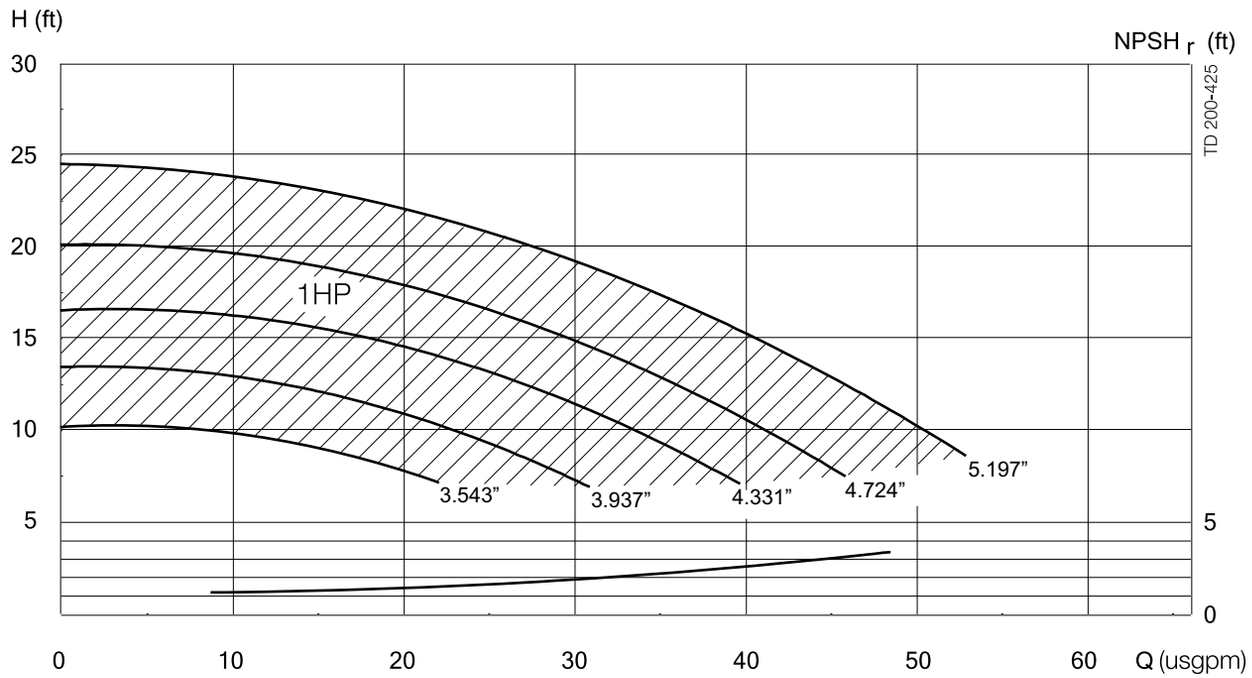
Alfa Laval LKH-5, 60 Hz

Motor:	**1750rpm. synchr.**
Tolerance:	±5%
Impeller, Max. dia.:	5.197”
Impeller, Min. dia.:	3.54”
Pump inlet, Dia.:	2”, DN 50
Pump outlet, Dia.:	1½”, DN 40

Performance data refer to water at 68 °F.

NOTE! The curves refer to motor: 1.7 Hp, 1700 rpm. asynchr., 60 Hz. For smaller motors, reduce head (H) with: 3%.

DO NOT FORGET THE SAFETY FACTOR.



Performance Curves

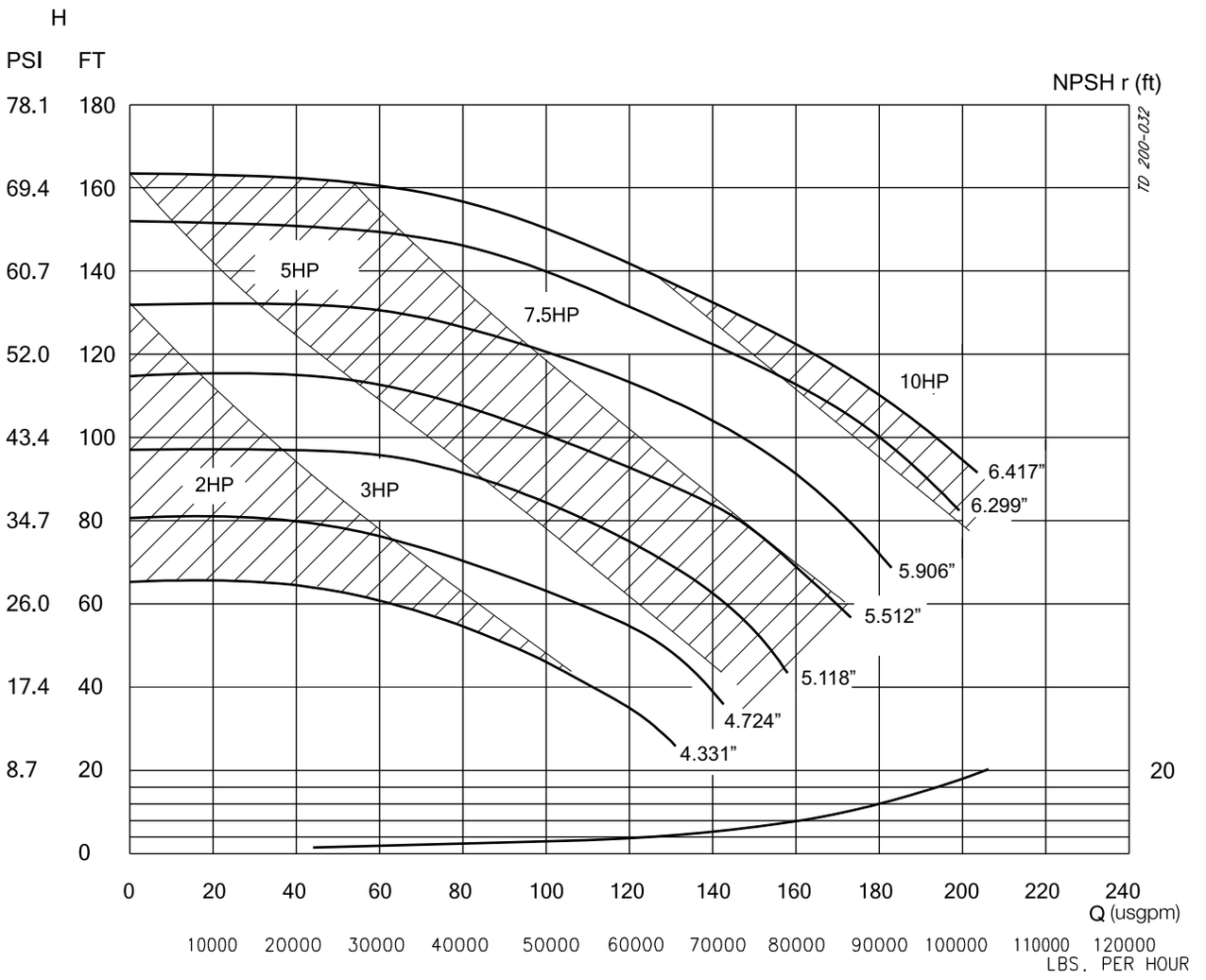
Alfa Laval LKH-/ LKHUP-/ LKHPF-/ LKH Evap-10, 60 Hz

Motor:	**3600 rpm. synchr.**
Tolerance:	±5%
Impeller, Max. dia.:	6.417" mm
Impeller, Min. dia.:	4.331"
Pump inlet, Dia.:	2½", DN 65
Pump outlet, Dia.:	2", DN 50

Performance data refer to water at 68 °F.

NOTE! The curves refer to motor: 11.5 Hp, 3500 rpm. asynchr., 60 Hz.
For smaller motors, reduce head (H) with: 3%.

DO NOT FORGET THE SAFETY FACTOR.



Performance Curves

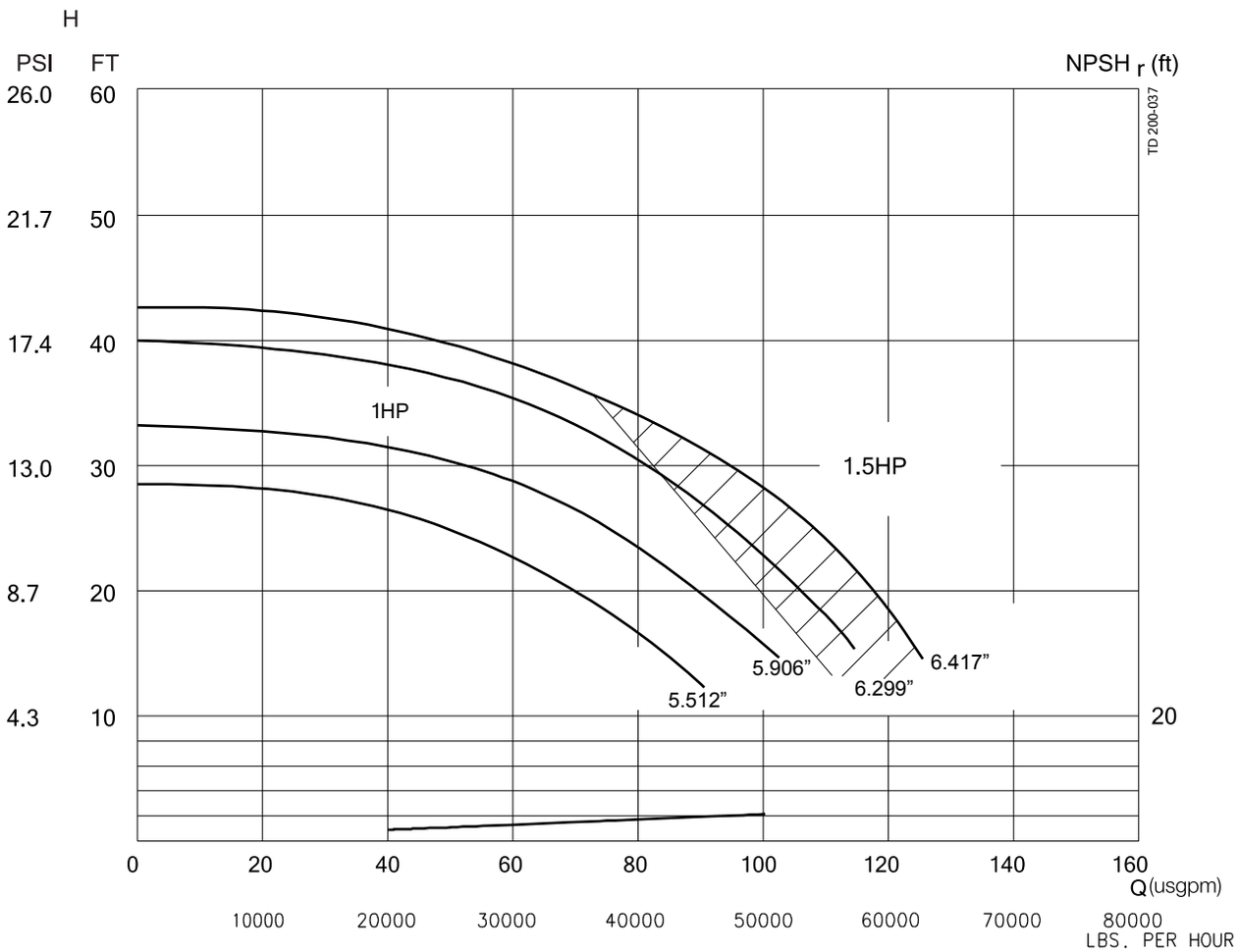
Alfa Laval LKH-/ LKHUP-/ LKHPF-/ LKH Evap-10, 60 Hz

Motor:	**1800 rpm. synchr.**
Tolerance:	±5%
Impeller, Max. dia.:	6.417"
Impeller, Min. dia.:	5.512"
Pump inlet, Dia.:	2½", DN 65
Pump outlet, Dia.:	2", DN 50

Performance data refer to water at 68 °F.

NOTE! The curves refer to motor: 2.4 Hp, 1750 rpm. asynchr., 60 Hz. For smaller motors, reduce head (H) with: 3%.

DO NOT FORGET THE SAFETY FACTOR.



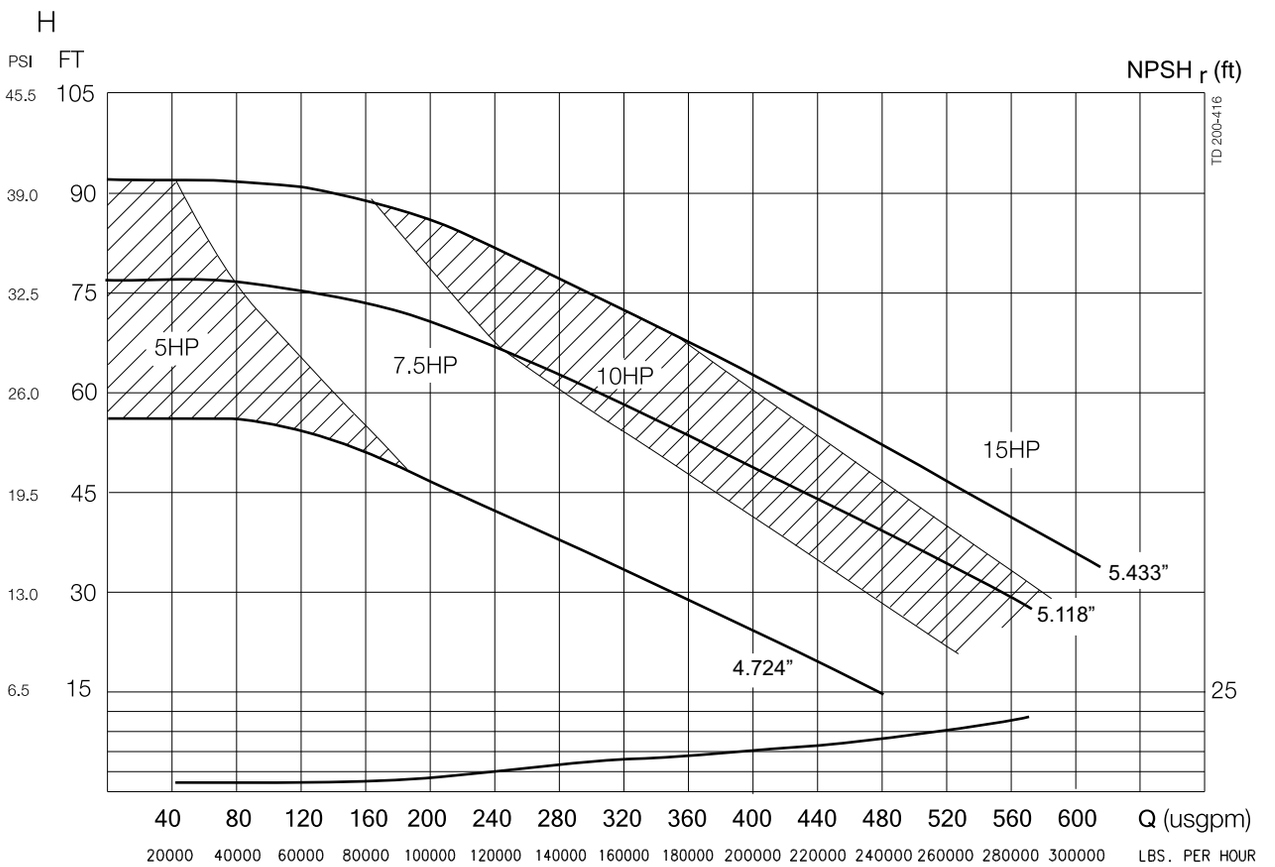
Performance Curves

Alfa Laval LKH-/ LKH Evap-15, 60 Hz

Motor:	**3600 rpm. synchr.**
Tolerance:	±5%
Impeller, Max. dia.:	5.433”
Impeller, Min. dia.:	4.724"
Pump inlet, Dia.:	4"
Pump outlet, Dia.:	3”

Performance data refer to water at 68°F

NOTE! The curves refer to motor: 11.5 Hp, 3455 rpm. asynchr., 60 Hz. For smaller motors, reduce head (H) with: 3%.
DO NOT FORGET THE SAFETY FACTOR.



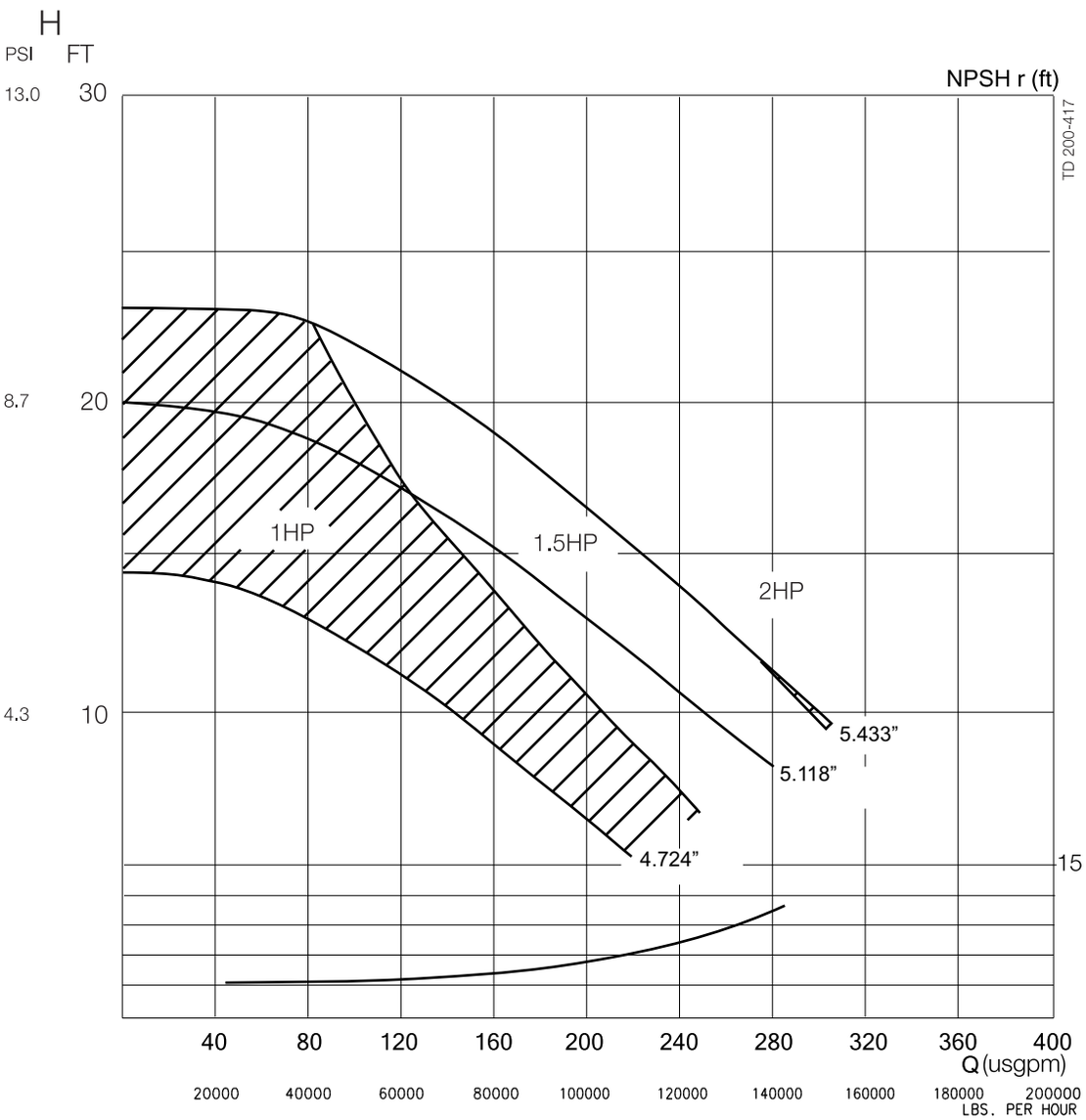
Performance Curves

Alfa Laval LKH-/ LKH Evap-15 , 60 Hz

Motor:	**1750 rpm. synchr.**
Tolerance:	±5%
Impeller, Max. dia.:	5.433”
Impeller, Min. dia.:	4.72”
Pump inlet, Dia.:	4”
Pump outlet, Dia.:	3”

Performance data refer to water at 68°F

NOTE! The curves refer to motor: 2.4 Hp, 1710 rpm. asynchr., 60 Hz. For smaller motors, reduce head (H) with: 3%.



Note: If Clear Flow impeller is mounted the performance can be up to 10% lower than on the curves shown.

Performance Curves

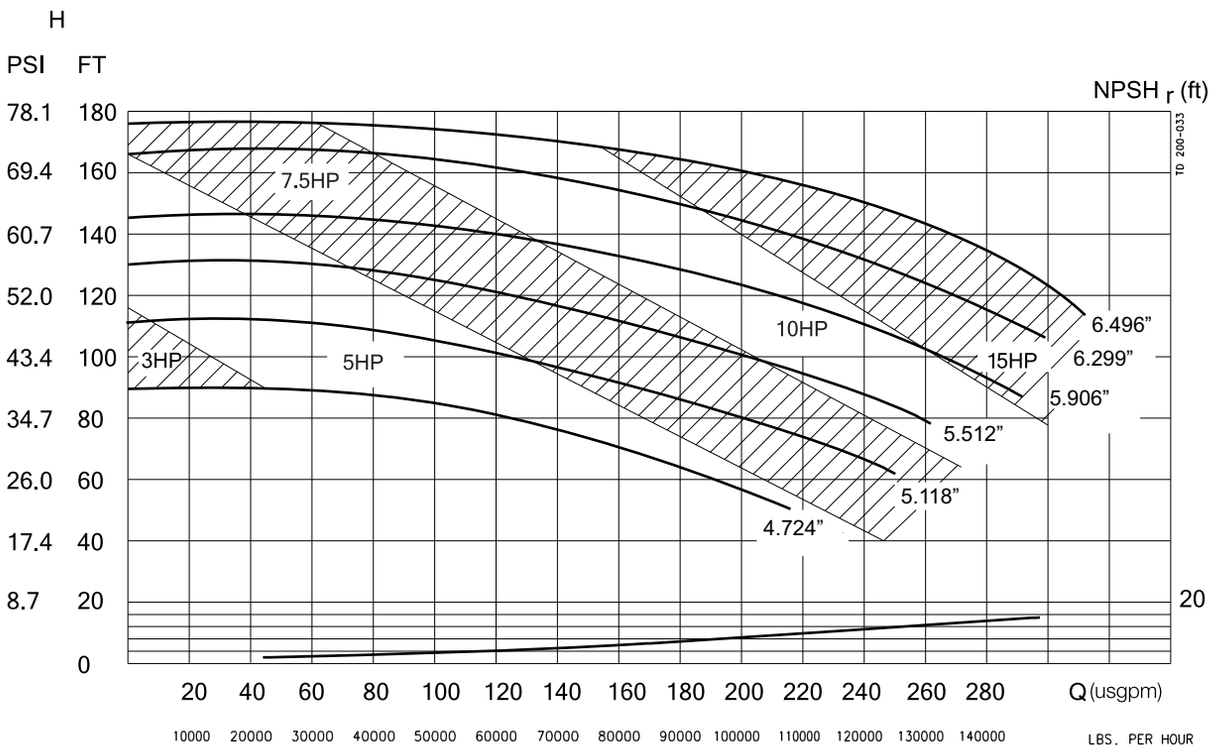
Alfa Laval LKH-/ LKHUP-/ LKHPF-/ LKH Evap-20, 60 Hz

Motor:	**3500 rpm. synchr.**
Tolerance:	±5%
Impeller, Max. dia.:	6.496”
Impeller, Min. dia.:	4.724”
Pump inlet, Dia.:	2½”, DN 65
Pump outlet, Dia.:	2”, DN 50

Performance data refer to water at 68 °F.

NOTE! The curves refer to motor: 16.8 Hp, 3500 rpm. asynchr., 60 Hz.
For smaller motors, reduce head (H) with: 3%.

DO NOT FORGET THE SAFETY FACTOR.



Performance Curves

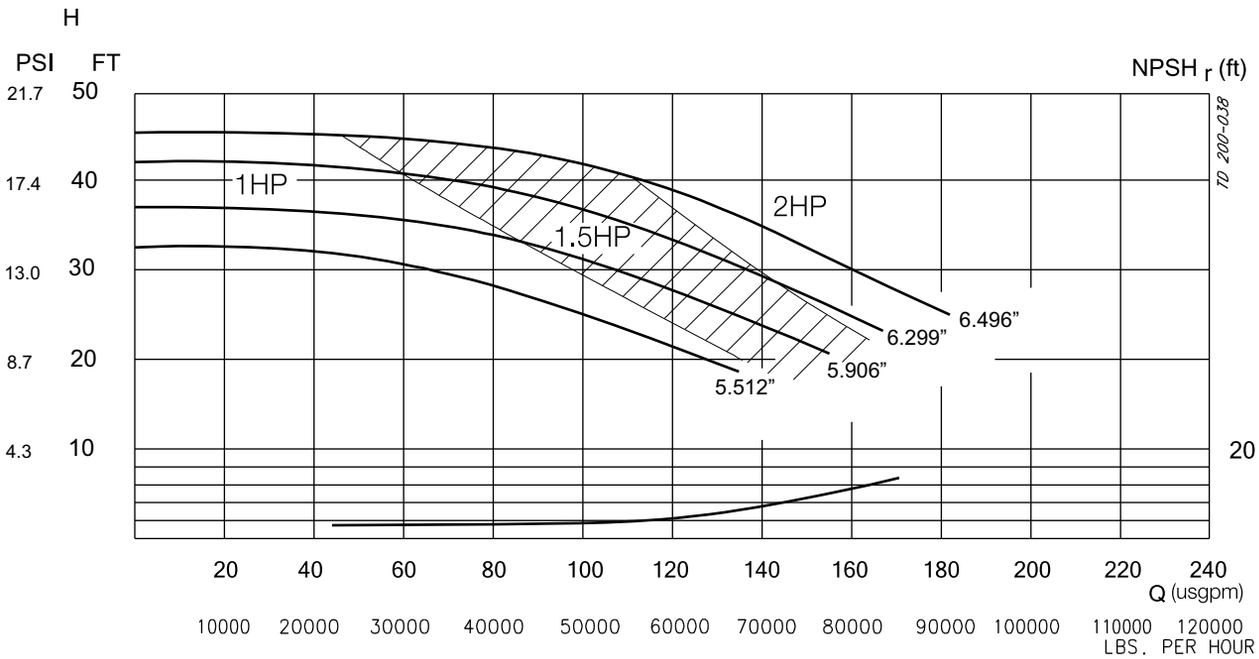
Alfa Laval LKH-/ LKHUP-/ LKHPF-/ LKH Evap-20, 60 Hz

Motor:	**1750 rpm. synchr.**
Tolerance:	±5%
Impeller, Max. dia.:	6.496”
Impeller, Min. dia.:	5.512”
Pump inlet, Dia.:	2½”, DN 65
Pump outlet, Dia.:	2”, DN 50

Performance data refer to water at 68 °F.

NOTE! The curves refer to motor: 2.4 Hp, 1750 rpm. asynchr., 60 Hz. For smaller motors, reduce head (H) with: 3%.

DO NOT FORGET THE SAFETY FACTOR.



Performance Curves

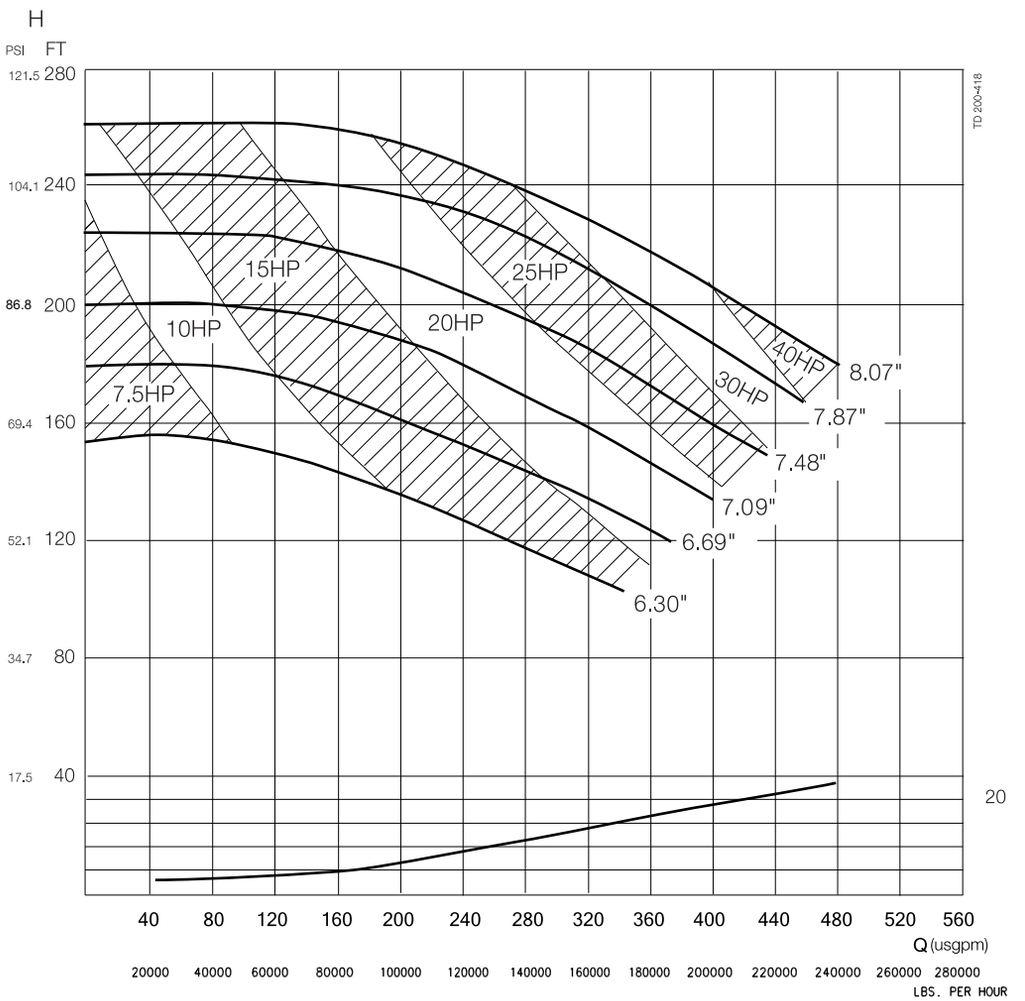
Alfa Laval LKH-/ LKHUP-/ LKHPF-/ LKH Evap-25 , 60 Hz

Motor:	**3500 rpm. synchr.**
Tolerance:	±5%
Impeller, Max. dia.:	8.070”
Impeller, Min. dia.:	6.299”
Pump inlet, Dia.:	3”, DN 80
Pump outlet, Dia.:	2½”, DN 65

Performance data refer to water at 68 °F.

NOTE! The curves refer to motor: 33.5 Hp, 3545 rpm. asynchr., 60 Hz. For smaller motors, reduce head (H) with:
- 3% for 16.8-28.2 Hp.
- 5% for 8.5-11.5 Hp.

DO NOT FORGET THE SAFETY FACTOR.



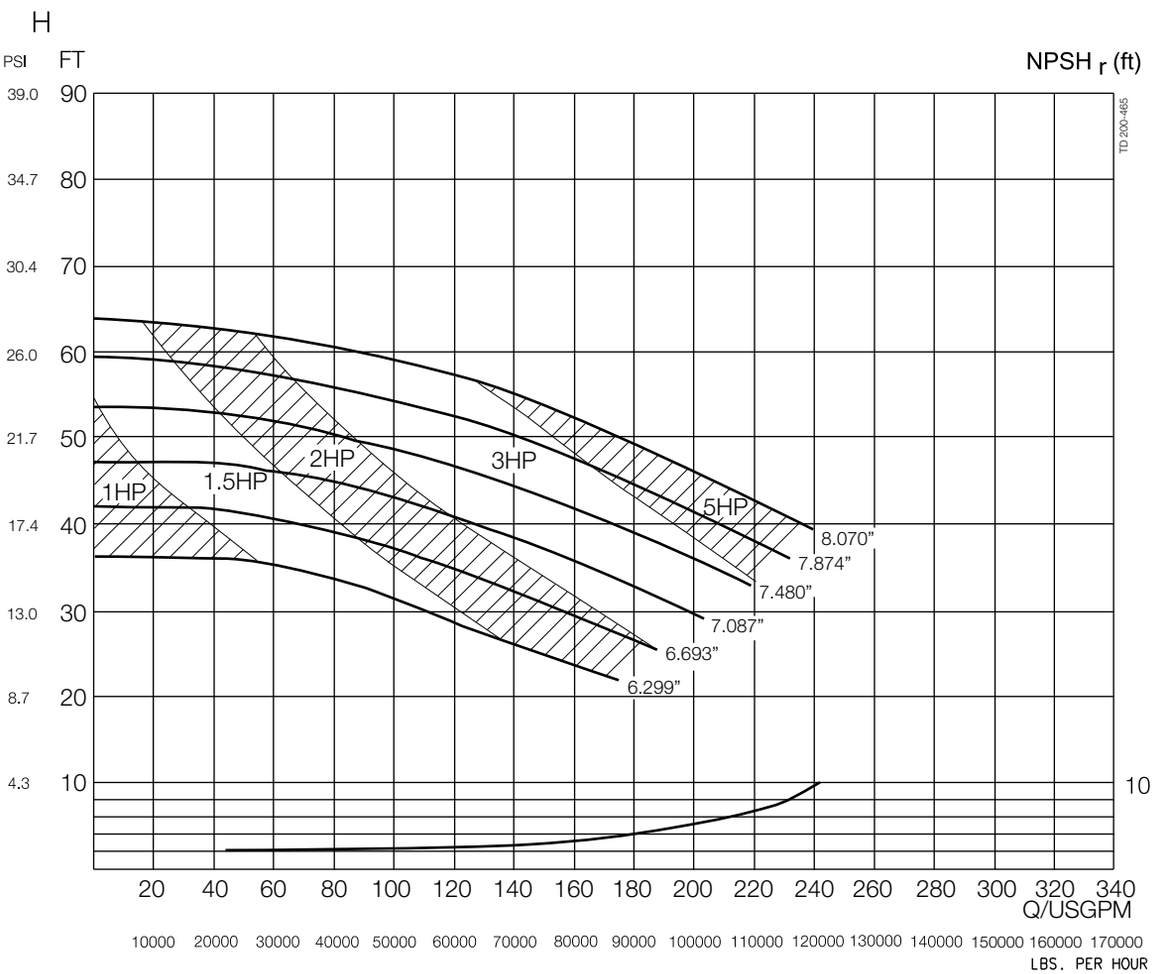
Performance Curves

Alfa Laval LKH-/ LKHUP-/ LKHPF-/ LKH Evap-25, 60 Hz

Motor:	**1750 rpm. synchr.**
Tolerance:	±5%.
Impeller, Max. dia.:	8.070”
Impeller, Min. dia.:	6.299”
Pump inlet, Dia.:	3”, DN 80
Pump outlet, Dia.:	2½”, DN 65

:
Performance data refer to water at 68 °F.

NOTE! The curves refer to motor: 4.7 Hp (3.5 kW), 1720 rpm. asynchr., 60 Hz.
DO NOT FORGET THE SAFETY FACTOR.



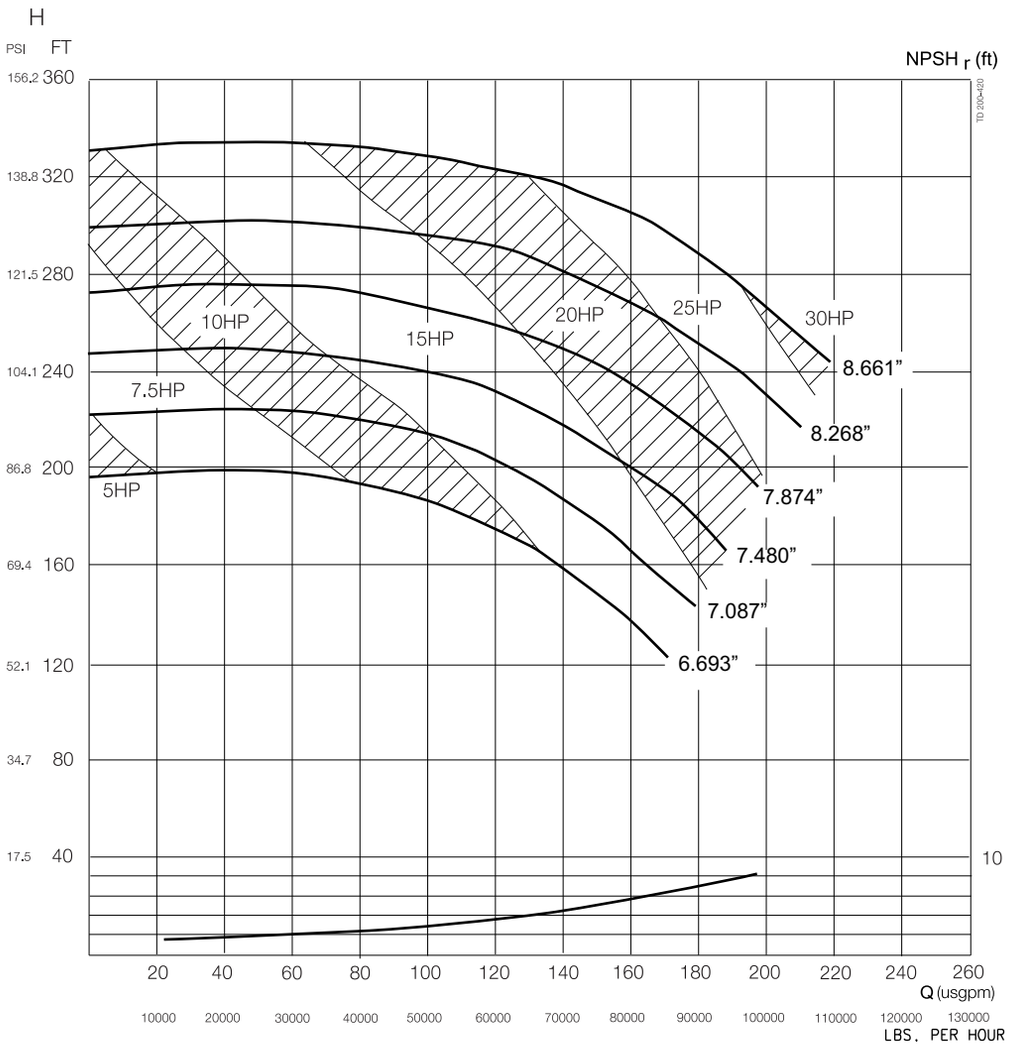
Performance Curves

Alfa Laval LKH-/ LKHUP-/ LKHPF-/ LKH Evap-35, 60 Hz

Motor:	**3500 rpm. synchr.**
Tolerance:	±5%
Impeller, Max. dia.:	8.661”
Impeller, Min. dia.:	6.69”
Pump inlet, Dia.:	2.5”, DN 65
Pump outlet, Dia.:	2”, DN 50

Performance data refer to water at 68 °F.
NOTE! The curves refer to motor: 28.2 Hp, 3535 rpm. asynchr., 60 Hz.
For smaller motors, reduce head (H) with:
- 3% 16.8-22.8 Hp.
- 3% 8.5-11.5 Hp.

DO NOT FORGET THE SAFETY FACTOR.

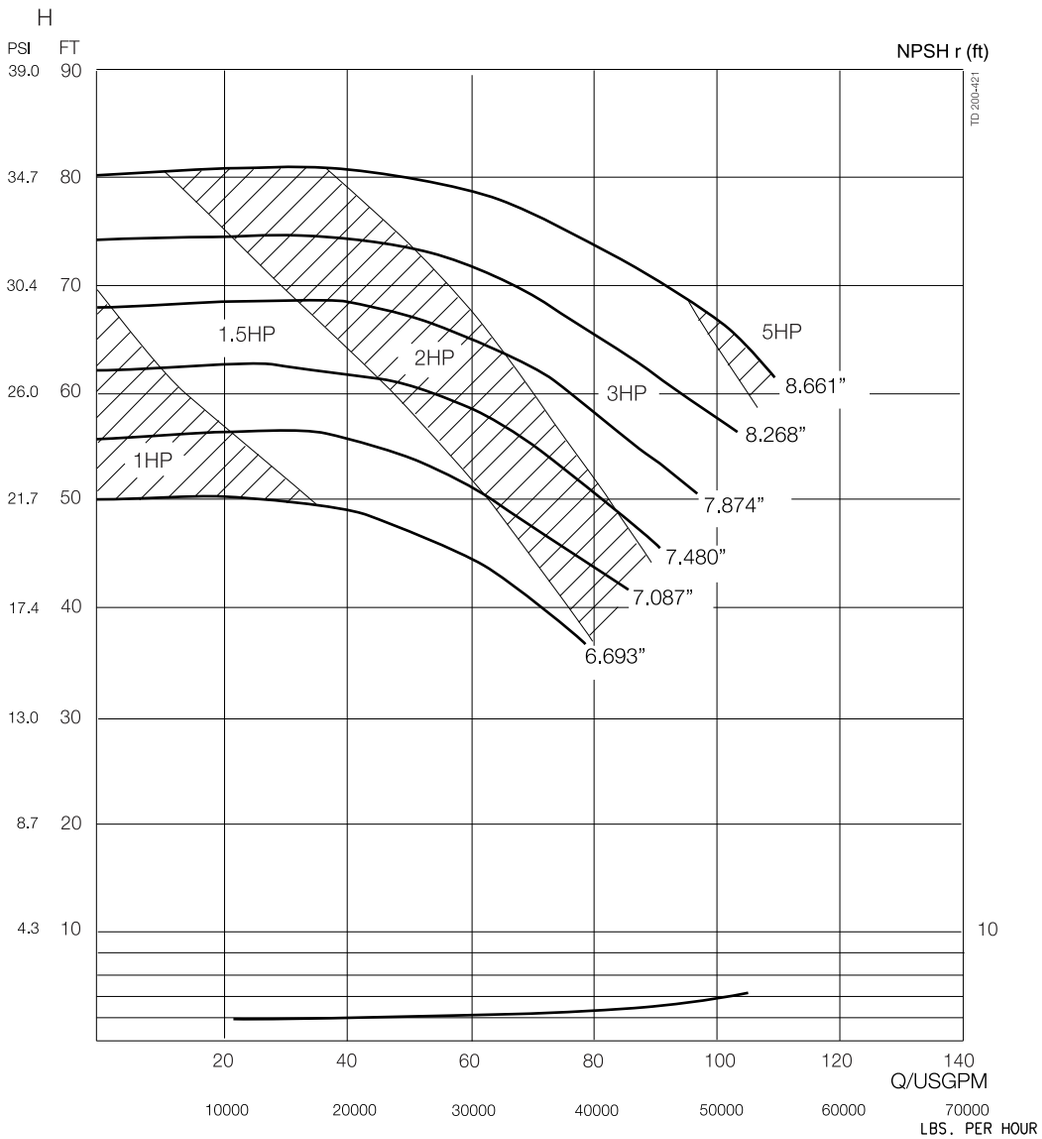


Performance Curves

Alfa Laval LKH-/ LKHUP-/ LKHPF-/ LKH Evap-35, 60 Hz

Motor:	**1750 rpm. synchr.**
Tolerance:	±5%.
Impeller, Max. dia.:	8.661”
Impeller, Min. dia.:	6.69”
Pump inlet, Dia.:	2½”, DN 65
Pump outlet, Dia.:	2”, DN 50

Performance data refer to water at 68 °F.
NOTE! The curves refer to motor: 3.4 Hp, 1720 rpm. asynchr., 60 Hz.
DO NOT FORGET THE SAFETY FACTOR.



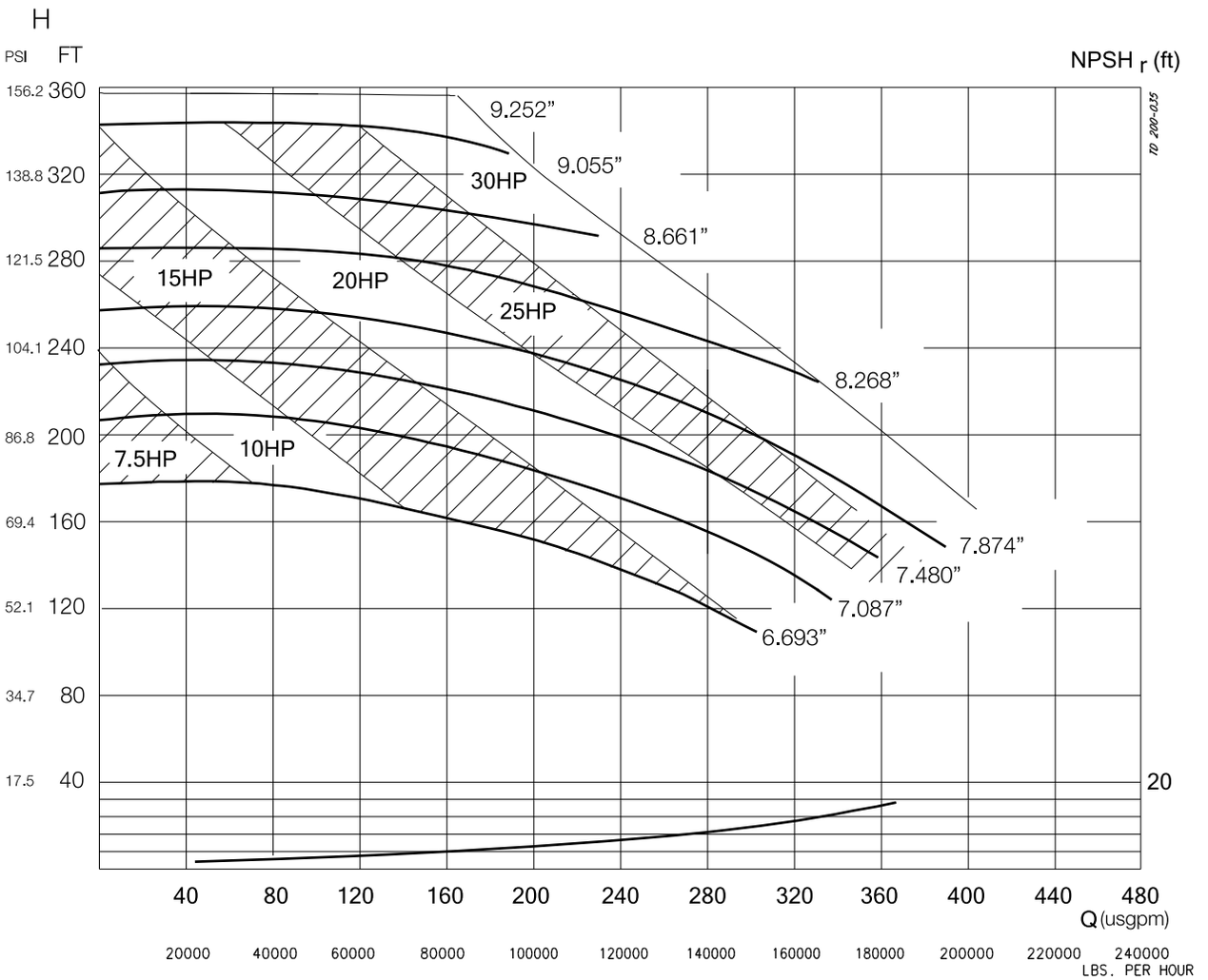
Performance Curves

Alfa Laval LKH-/ LKHUP-/ LKHPF-/ LKH Evap-40, 60 Hz

Motor:	**3500 rpm. synchr.**
Tolerance:	±5%
Impeller, Max. dia.:	9.252”
Impeller, Min. dia.:	6.693”
Pump inlet, Dia.:	3”, DN 80
Pump outlet, Dia.:	2”, DN 65

*LKHUP-40: 51 mm, DN50
Performance data refer to water at 68 °F.
NOTE! The curves refer to motor: 33.5 Hp, 2940 rpm. asynchr., 60 Hz.
For smaller motors, reduce head (H) with:
- 3% for 16.8-28.2 Hp.
- 5% for 11.5 Hp.

DO NOT FORGET THE SAFETY FACTOR.

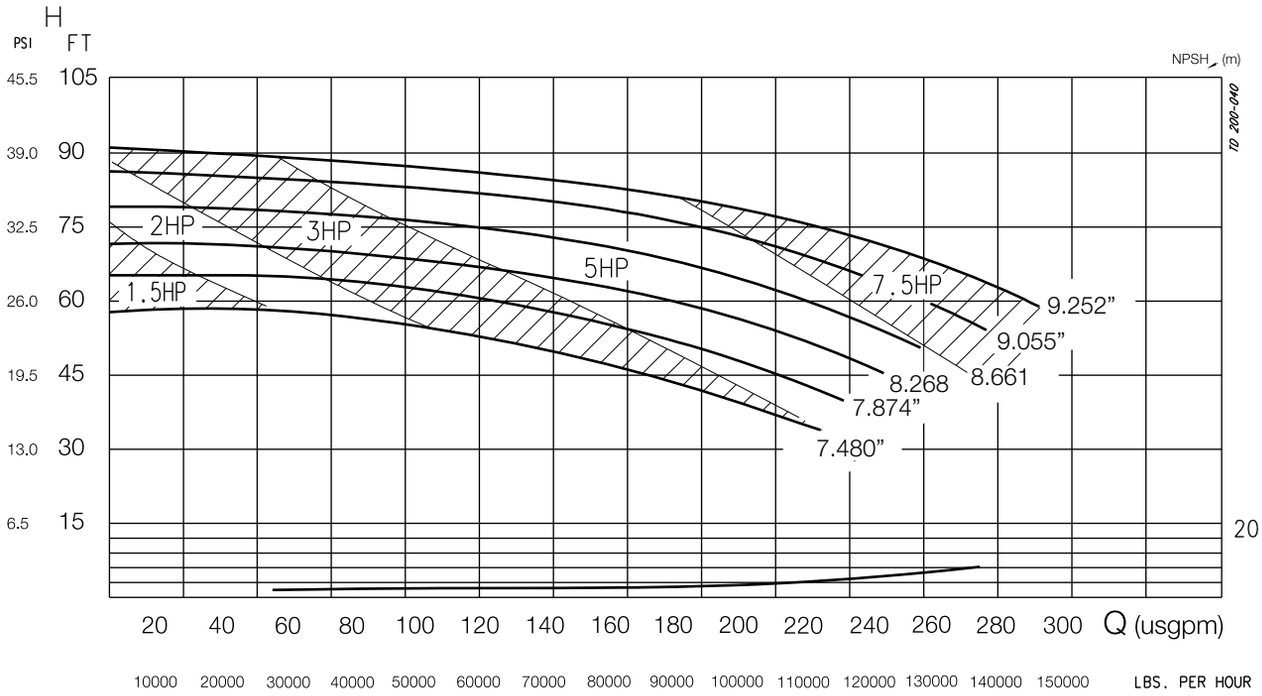


Performance Curves

Alfa Laval LKH-/ LKHUP-/ LKHPF-/ LKH Evap-40, 60 Hz

Motor:	**1750 rpm. synchr.**
Tolerance:	±5%
Impeller, Max. dia.:	9.252"
Impeller, Min. dia.:	7.480"
Pump inlet, Dia.:	3", DN 80
Pump outlet, Dia.:	2", DN 65

Performance data refer to water at 68 °C.
NOTE! The curves refer to motor: 8.5 Hp, 1750 rpm. asynchr., 60 Hz.. For smaller motors, reduce head (H) with 5%
DO NOT FORGET THE SAFETY FACTOR.



Performance Curves

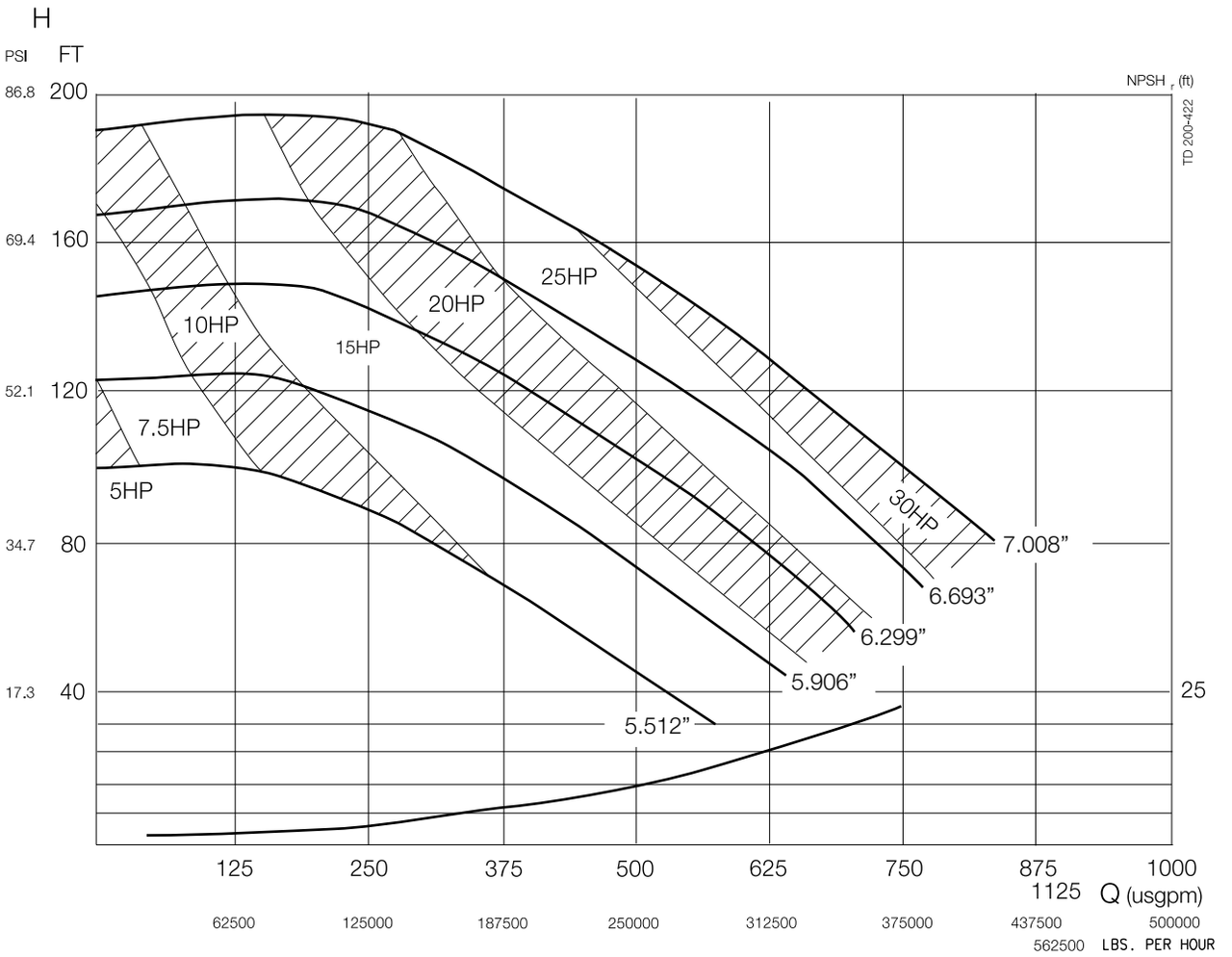
Alfa Laval LKH-/ LKHUP-/ LKHPF-/ LKH Evap-45, 60 Hz

Motor:	**3500 rpm. synchr.**
Tolerance:	±5%
Impeller, Max. dia.:	7.008”
Impeller, Min. dia.:	5.512”
Pump inlet, Dia.:	4”, DN 100
Pump outlet, Dia.:	3”, DN 80

Performance data refer to water at 20 °F.

NOTE! The curves refer to motor: 33.5 Hp, 3545 rpm. asynchr., 60 Hz.
For smaller motors, reduce head (H) with:
- 3% for 16.8-28.2 Hp.
- 5% for 8.5-11.5 Hp.

DO NOT FORGET THE SAFETY FACTOR.

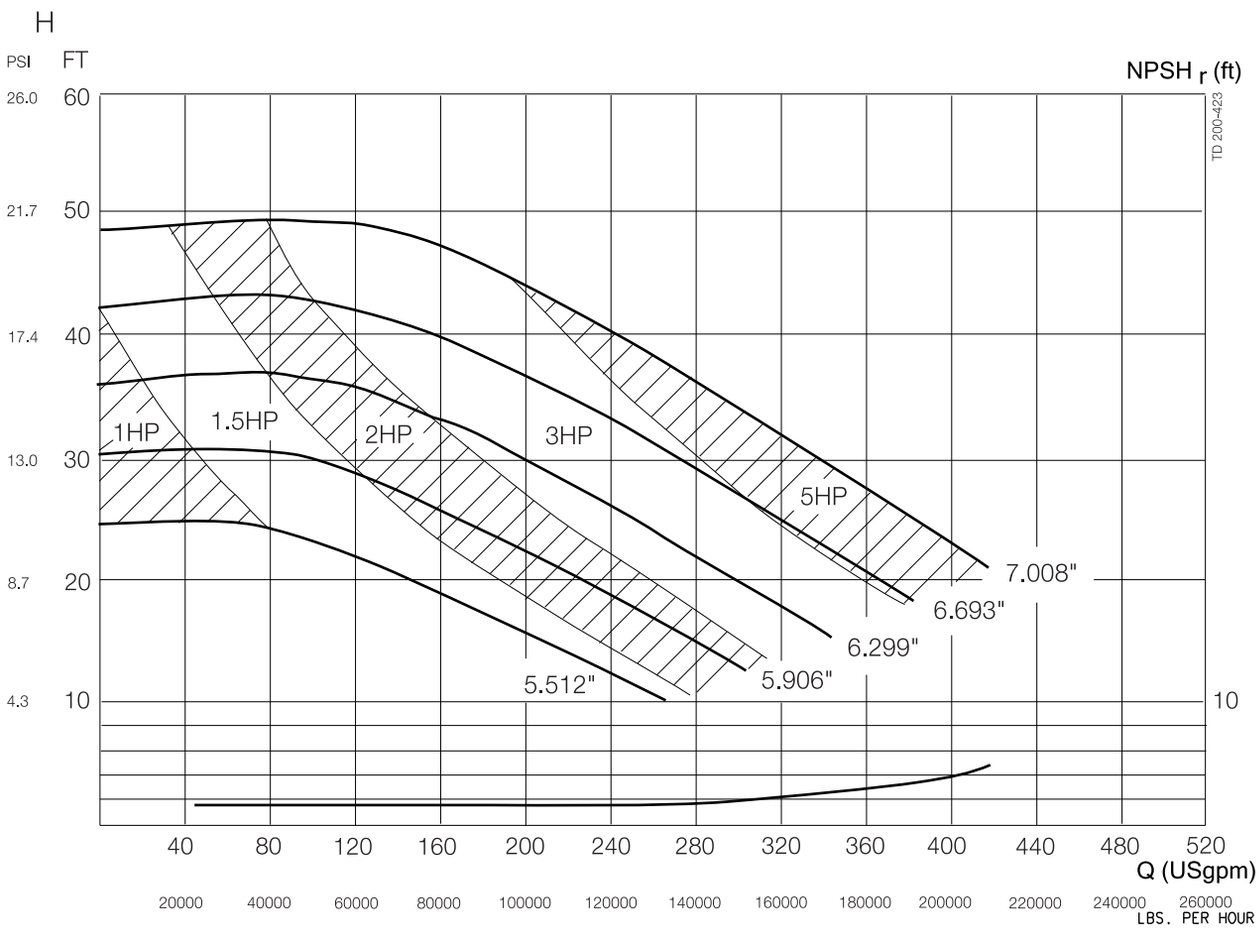


Performance Curves

Alfa Laval LKH-/ LKHUP-/ LKHPF-/ LKH Evap-45, 60 Hz

Motor:	**1750 rpm. synchr.**
Tolerance:	±5%.
Impeller, Max. dia.:	7.008”
Impeller, Min. dia.:	5.512”
Pump inlet, Dia.:	4”, DN 100
Pump outlet, Dia.:	3”, DN 80

Performance data refer to water at 20 °F.
NOTE! The curves refer to motor: 4.7 Hp, 1720 rpm. asynchr., 60 Hz.
For smaller motors.
DO NOT FORGET THE SAFETY FACTOR.



Performance Curves

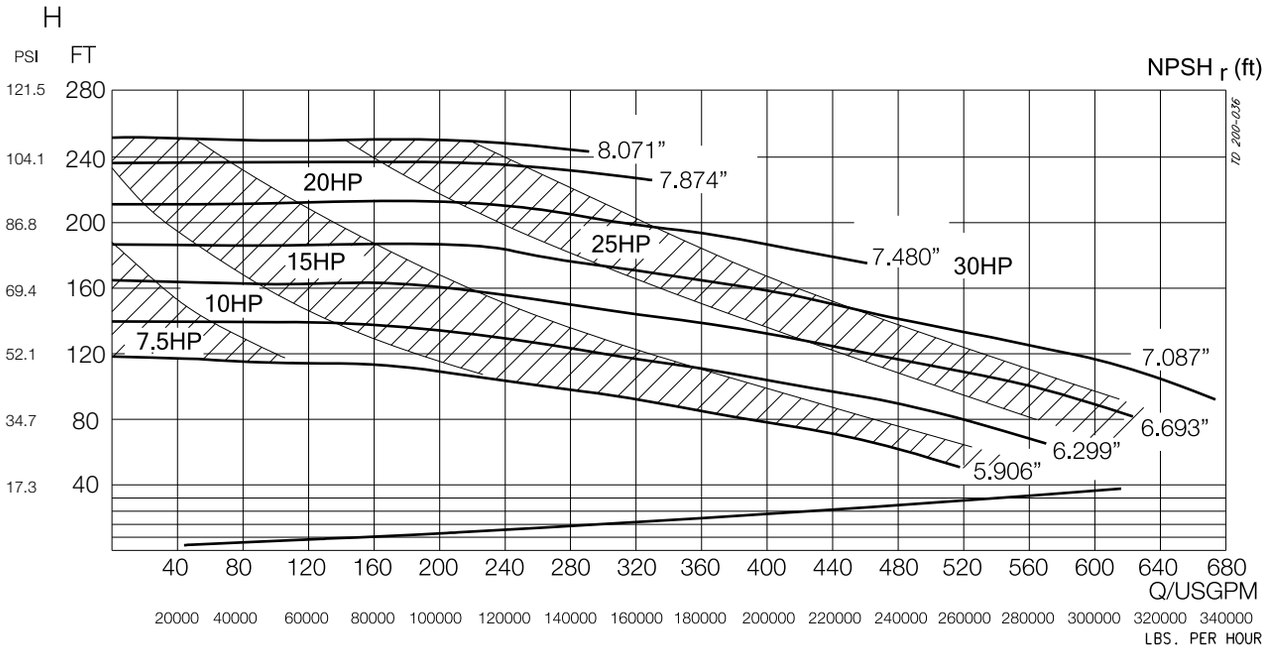
Alfa Laval LKH-/ LKHPF-/ LKH Evap-50, 60 Hz

Motor:	**3500 rpm. synchr.**
Tolerance:	±5%
Impeller, Max. dia.:	8.070”
Impeller, Min. dia.:	5.906"
Pump inlet, Dia.:	4”, DN 100
Pump outlet, Dia.:	3”, DN 80

Performance data refer to water at 20 °F.
NOTE! The curves refer to motor: 33.5 Hp, 3500 rpm. asynchr., 60 Hz.
For smaller motors, reduce head (H) with:

- 3% for 16.8-28.2 Hp.
- 5% for 8.5-11.5 Hp.

DO NOT FORGET THE SAFETY FACTOR.

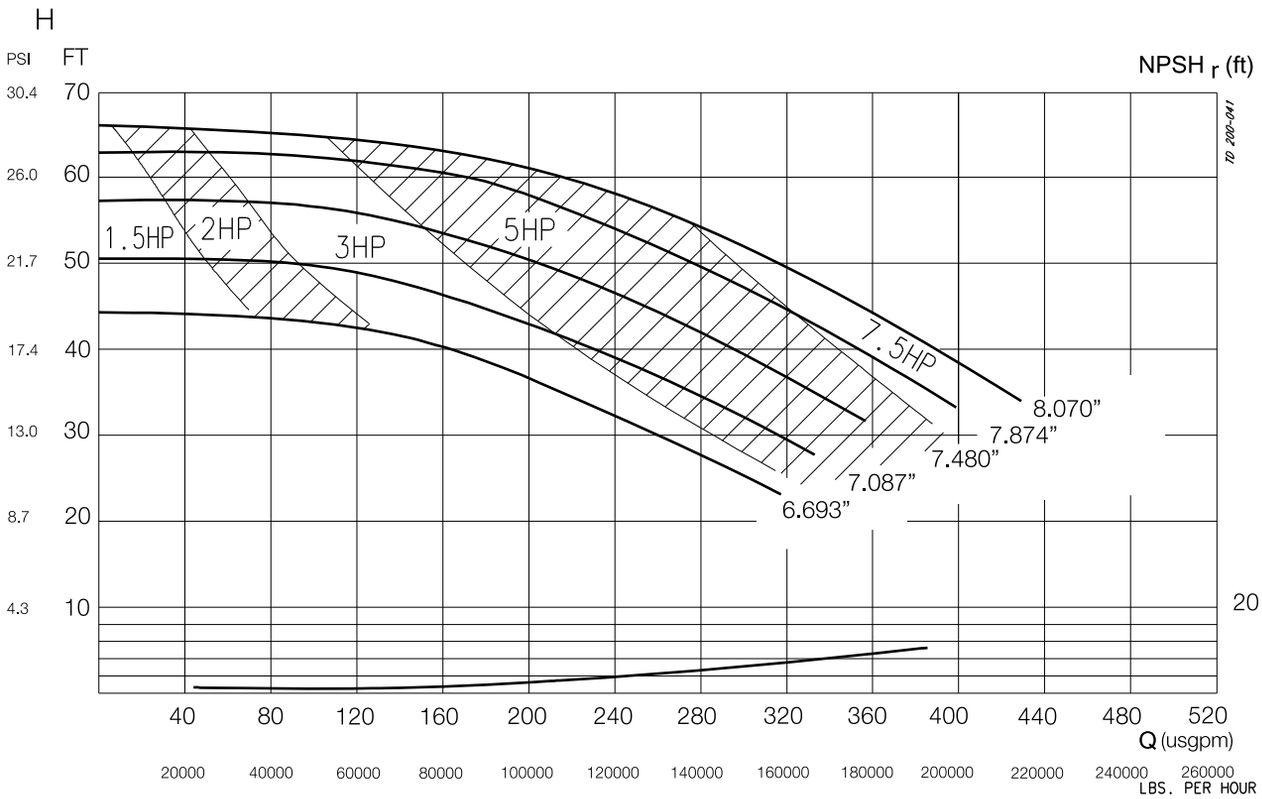


Performance Curves

Alfa Laval LKH-/ LKHPF-/ LKH Evap-50, 60 Hz

Motor:	**1750 rpm. synchr.**
Tolerance:	±5%
Impeller, Max. dia.:	8.070”
Impeller, Min. dia.:	6.693”
Pump inlet, Dia.:	4”, DN 100
Pump outlet, Dia.:	3”, DN 80

Performance data refer to water at 68 °F.
NOTE! The curves refer to motor: 6.0 Hp, 1750 rpm. asynchr., 60 Hz. For smaller motors, reduce head (H) with 5%
DO NOT FORGET THE SAFETY FACTOR.



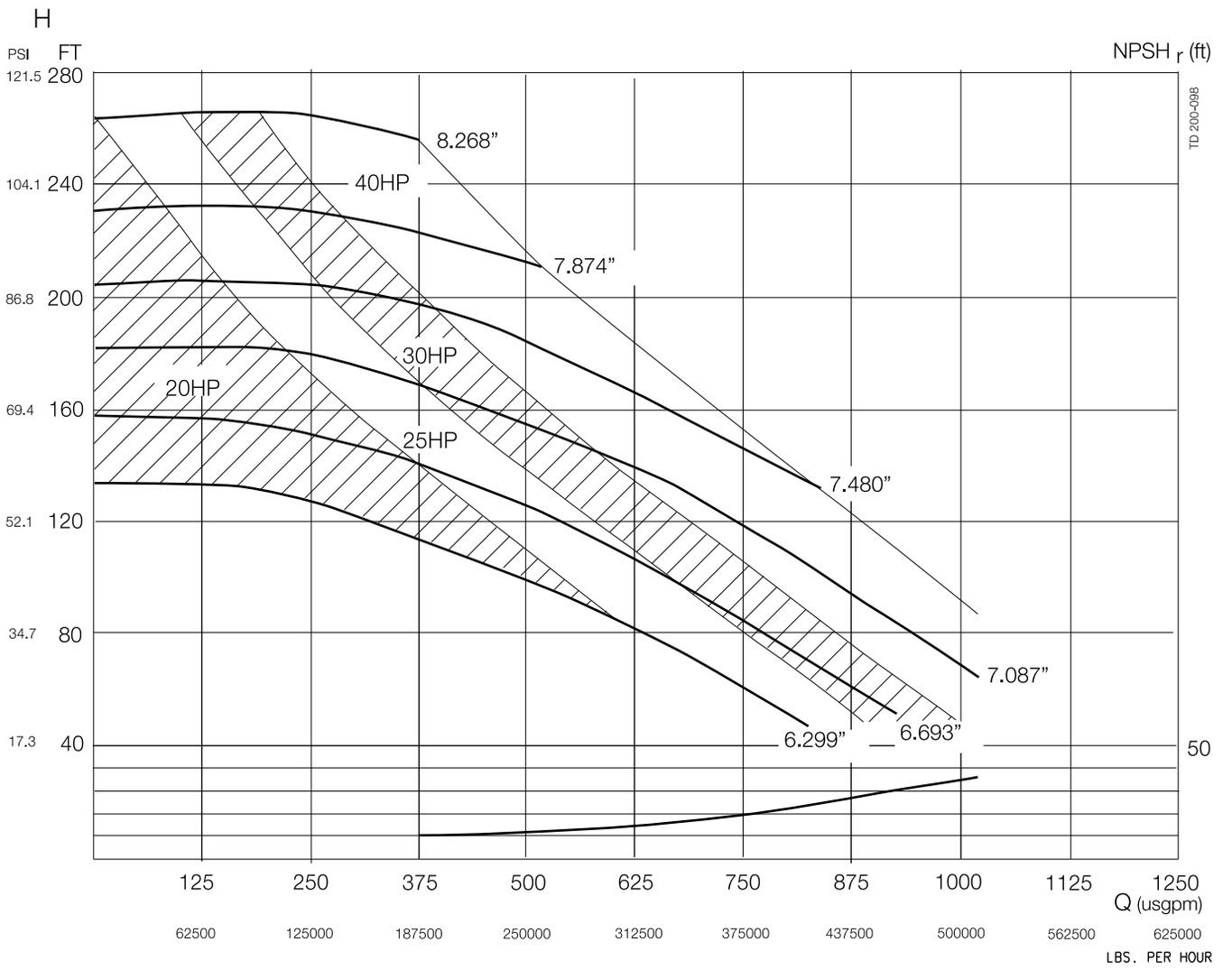
Performance Curves

Alfa Laval LKH-/ LKHUP-/ LKHPF-/ LKH Evap-60, 60 Hz

Motor:	**3500 rpm. synchr.**
Tolerance:	±5%
Impeller, Max. dia.:	8.268”
Impeller, Min. dia.:	6.299”
Pump inlet, Dia.:	- 4”, DN 100 - 6”, DN 150
Pump outlet, Dia.:	- 4” mm, DN 100

Performance data refer to water at 68 °C.

NOTE! The curves refer to motor: 46.9 Hp, 3500 rpm. asynchr., 60 Hz.
For smaller motors, reduce head (H) with:3% for 16.8-28.2 Hp.
6% for 8.5-11.5 Hp.
DO NOT FORGET THE SAFETY FACTOR.

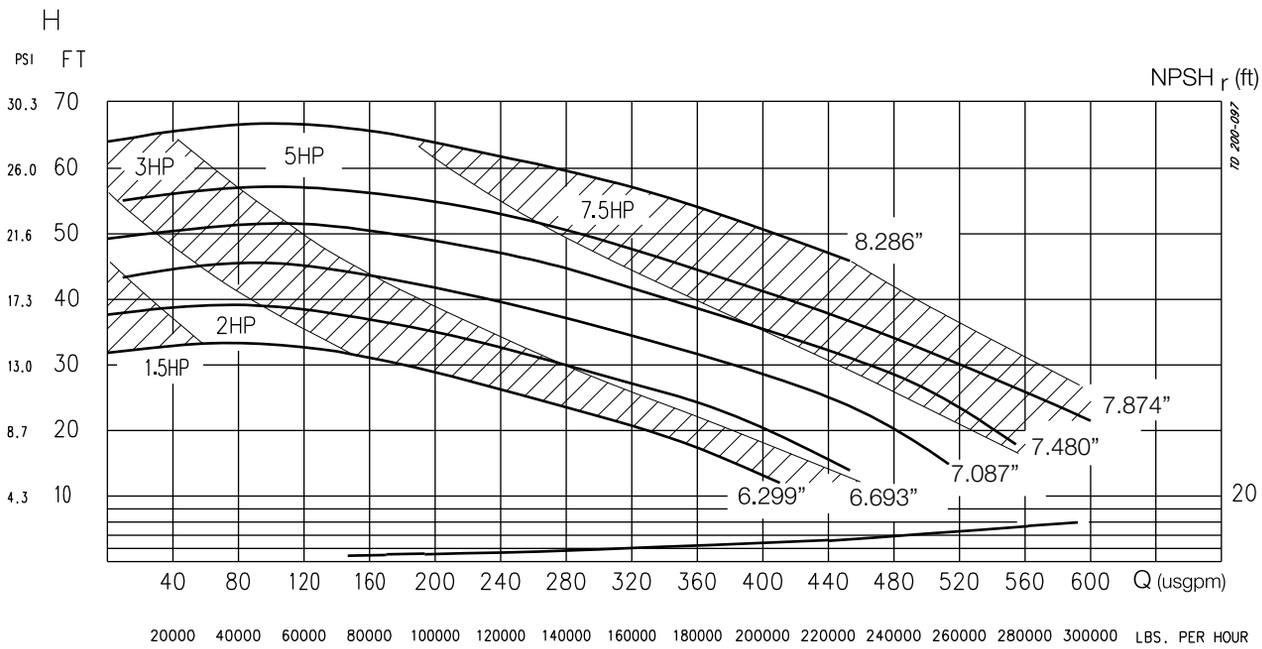


Performance Curves

Alfa Laval LKH-/ LKHUP-/ LKHPF-/ LKH Evap-60, 60 Hz

Motor:	**1750 rpm. synchr.**
Tolerance:	±5%
Impeller, Max. dia.:	8.268”
Impeller, Min. dia.:	6.299”
Pump inlet, Dia.:	- 4”, DN 100
	- 6”, DN 150
Pump outlet, Dia.:	- 4”, DN 100

Performance data refer to water at 68 °F.
NOTE! The curves refer to motor: 8.5 Hp, 1750 rpm. asynchr., 60 Hz. For smaller motors, reduce head (H) with 5%.
DO NOT FORGET THE SAFETY FACTOR.

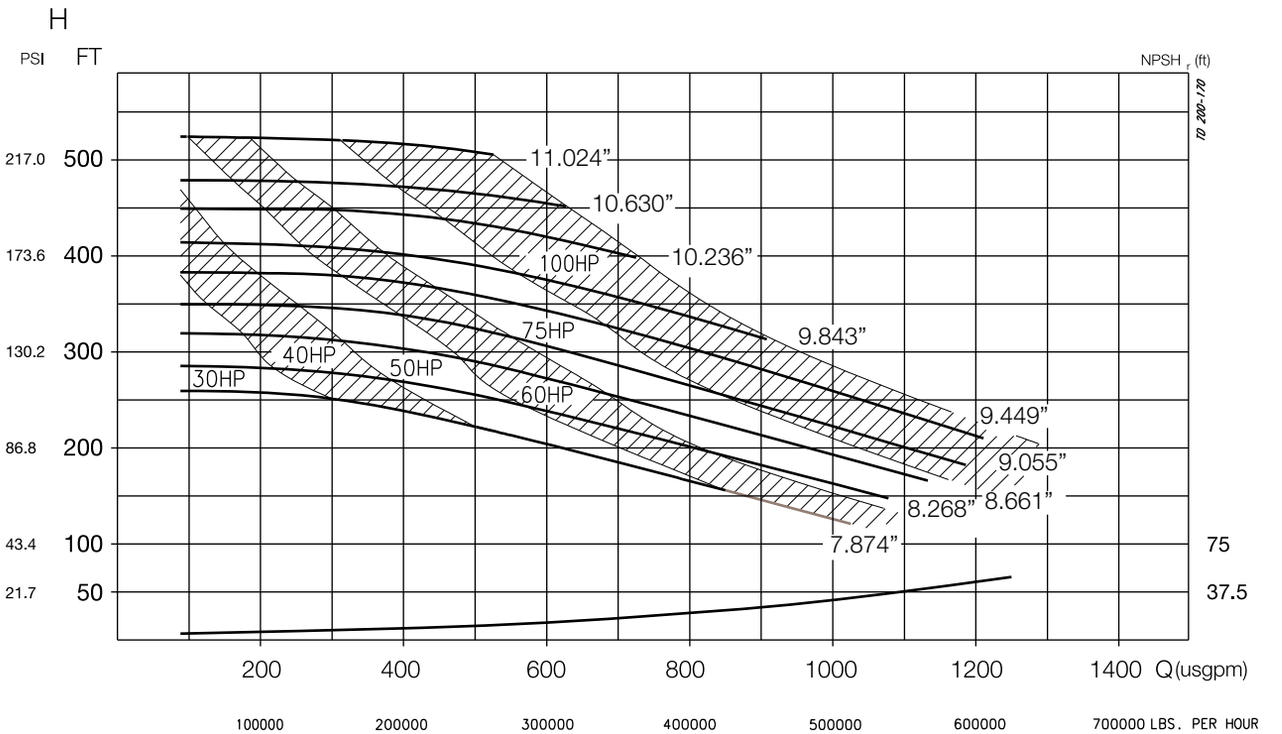


Performance Curves

Alfa Laval LKH-/ LKHUP-/ LKHPF-/ LKH Evap-70, 60 Hz

Motor:	**3500 rpm. synchr.**
Tolerance:	±5%
Impeller, Max. dia.:	11.024”
Impeller, Min. dia.:	7.874”
Pump inlet, Dia.:	4”, DN 100
Pump outlet, Dia.:	3”, DN 80

Performance data refer to water at 68 °F.
NOTE! The curves refer to motor: 115.3 Hp, 3565 rpm. asynchr., 60 Hz.
For smaller motors, reduce head (H) with: -3%.
DO NOT FORGET THE SAFETY FACTOR.

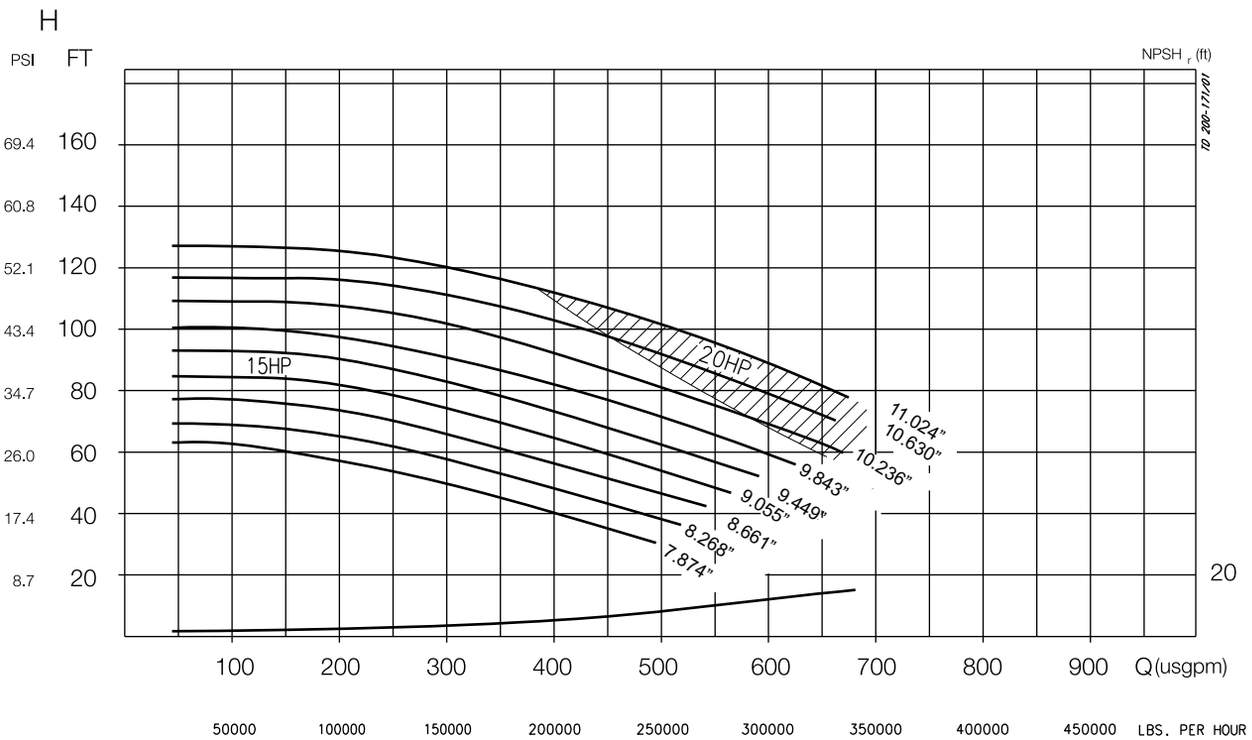


Performance Curves

Alfa Laval LKH-/ LKHUP-/ LKHPF-/ LKH Evap-70, 60 Hz

Motor:	**1750rpm. synchr.**
Tolerance:	±5%
Impeller, Max. dia.:	11.024”
Impeller, Min. dia.:	7.874”
Pump inlet, Dia.:	4”, DN 100
Pump outlet, Dia.:	3”, DN 80

Performance data refer to water at 68 °F.
NOTE! The curves refer to max. motor: 22.8 Hp, 1750 rpm. asynchr., 60 Hz.
DO NOT FORGET THE SAFETY FACTOR.



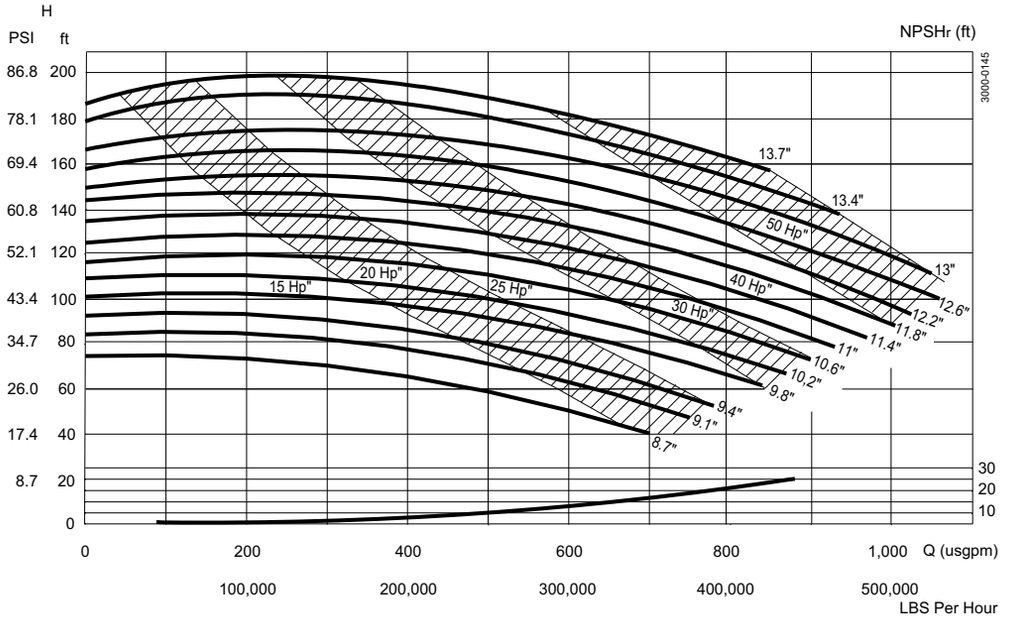
Performance Curves

Alfa Laval LKH-/ LKHP-/ LKHI / LKH Evap-75, 60 Hz

Motor:	**1775 rpm. synchr.**
Tolerance:	±5%
Impeller, Max. dia.:	13.7” (348 mm)
Impeller, Min. dia.:	8.7” (220 mm)
Pump inlet, Dia.:	4” (101.6 mm)
Pump outlet, Dia.:	4” (101.6 mm)

Performance data refer to water at 68°F (20°C).

NOTE!The curves refer to max. motor: 40 Hp (30 kW), 1775 rpm. asynchr., 60 Hz.
DO NOT FORGET THE SAFETY FACTOR.



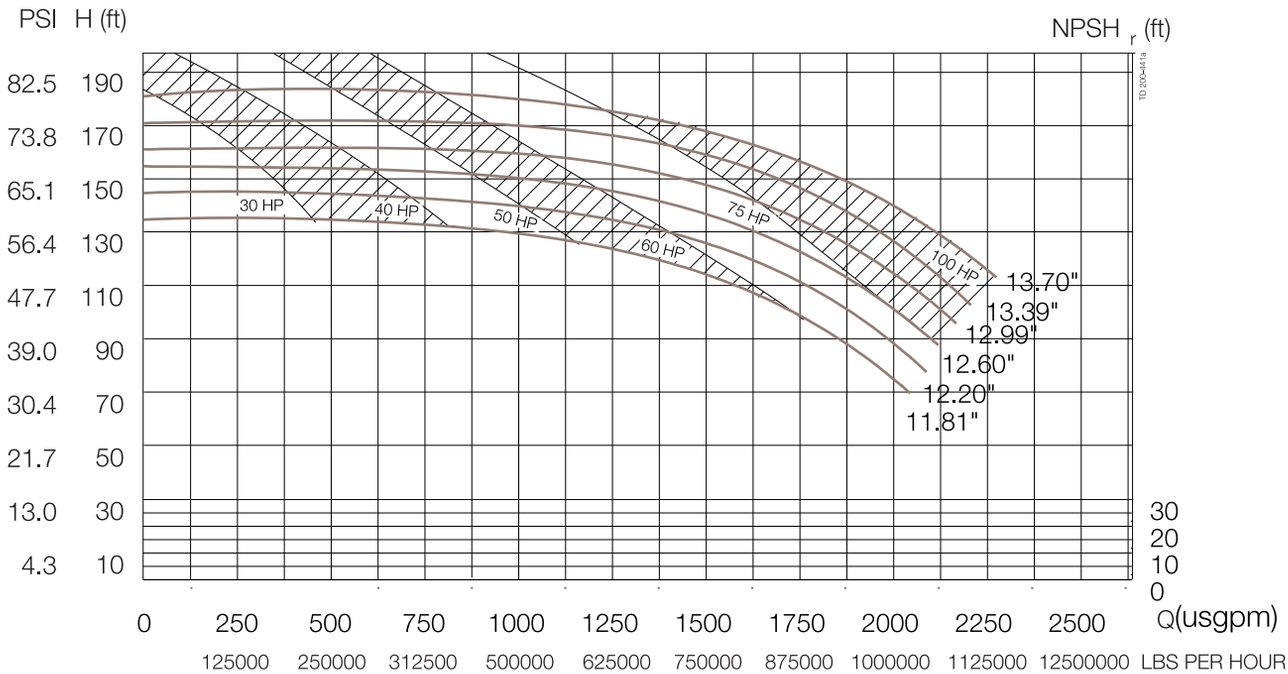
Note: If Clear Flow impeller is mounted the performance can be up to 10% lower than on the curves shown.

Performance Curves

Alfa Laval LKH-90, 60 Hz

Motor:	**1775 rpm. synchr.**
Tolerance:	±5%.
Impeller, Max. dia.:	13.7”
Impeller, Min. dia.:	11.81”
Pump inlet, Dia.:	6”, DN 150
Pump outlet, Dia.:	6”, DN 150

Performance data refer to water at 68 °F.
NOTE! The curves refer to motor: 75 kW, 1490 rpm. asynchr., 50 Hz. For smaller motors, reduce head (H) with: 3%.
DO NOT FORGET THE SAFETY FACTOR.

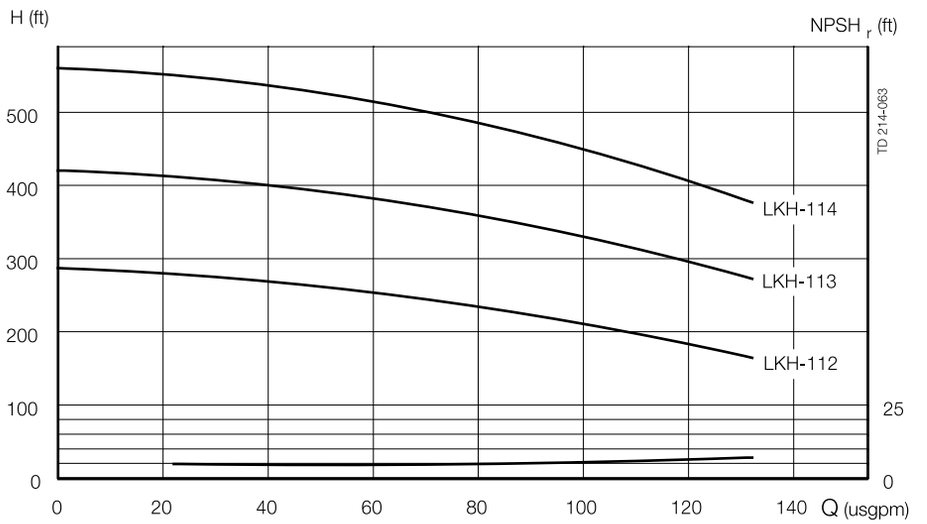


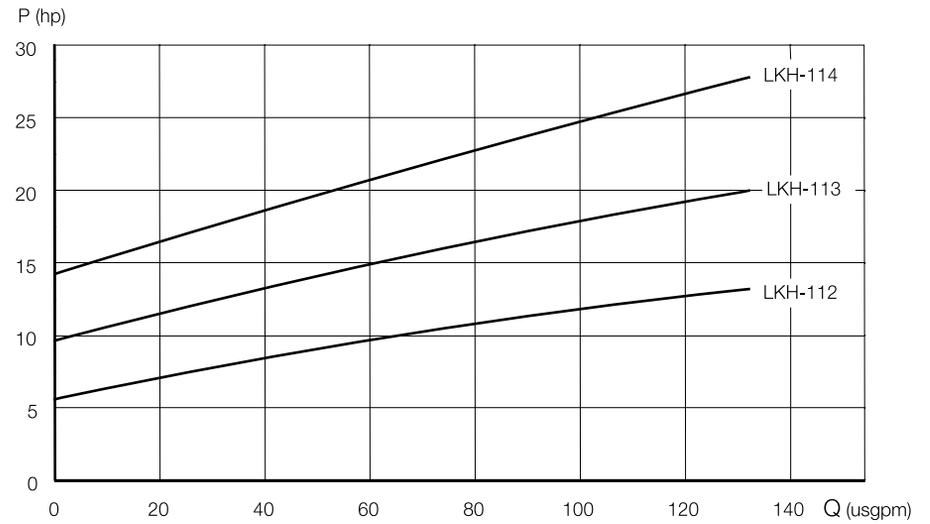
Performance Curves

Alfa Laval LKHM-110 Multi-Stage, 60 Hz

Motor:	**3600 rpm. synchr.**
Tolerance:	±5%.
Impeller,	
LKH-112	2 x dia.: 6.42”.
LKH-113	3 x dia.: 6.42”.
LKH-114	4 x dia.: 6.42”.
Pump inlet, Dia.:	2”, DN 50.
Pump outlet, Dia.:	1½”, DN 40.

Performance data refer to water at 68 °F.
NOTE! The curves refer to max. motor: LKH-112, 16.8 Hp 3515 rpm. asynchr, 60 Hz. LKH-113, 22.8 Hp 3505 rpm. asynchr, 60 Hz. LKH-114, 28.2 Hp 3510 rpm. asynchr, 60 Hz. For smaller motors, reduce head (H) by: 3%.
DO NOT FORGET THE SAFETY FACTOR.





Performance Curves

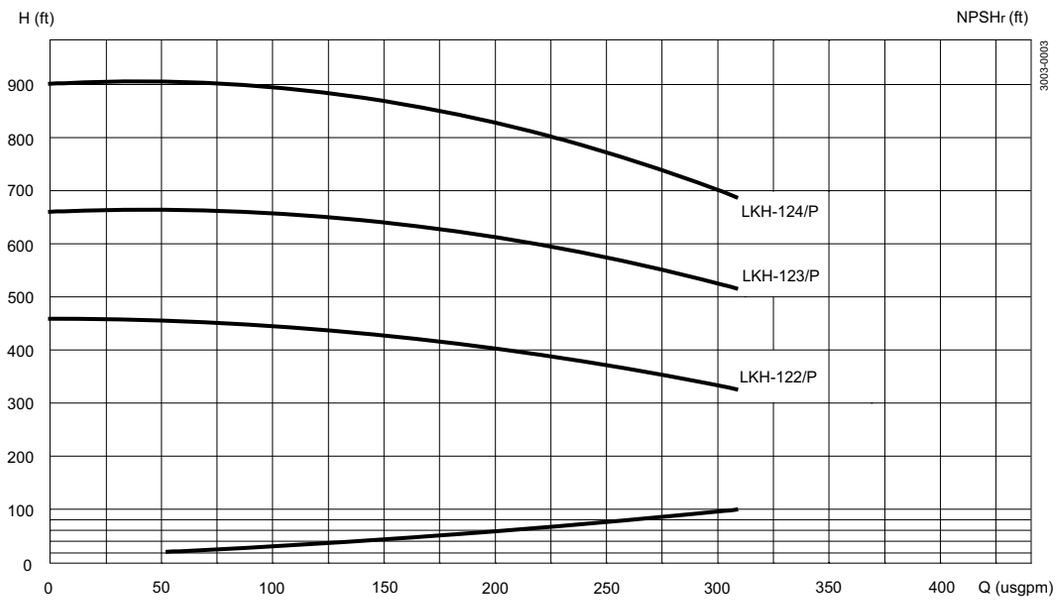
Alfa Laval LKHM-120/P Multi-Stage, 60 Hz

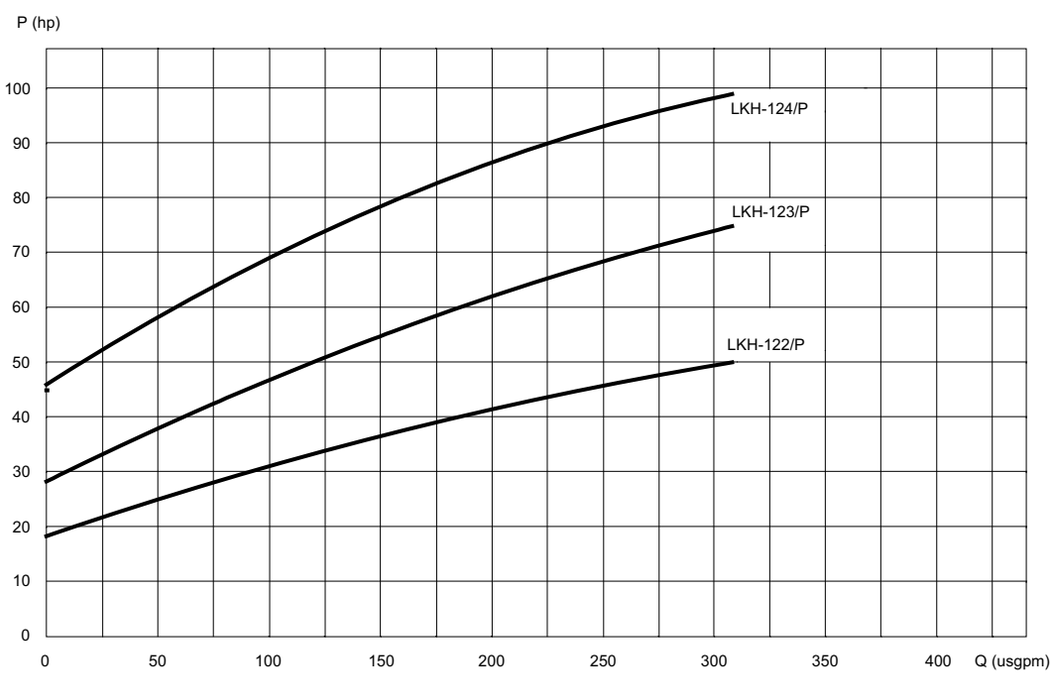
Motor:	**3600 rpm. synchr.**
Tolerance:	±5%
Impeller,, LKH-122/P:	8.11”
Pump inlet, Dia.:	3”, DN 80
Pump outlet, Dia.:	2½”, DN 65

NOTE! The curves refer to max. motor: LKH-122/P, 22 kW, 2950 rpm. asynchr., 50 Hz LKH-123/P, 37 kW 2940 rpm. asynchr., 50 Hz LKH-124/P, 45 kW 2955 rpm. aysnchr., 50 Hz For smaller motors, reduce head (H) by 3% For inlet pressure > 10 bar, reduce head (H) by 5%

Performance data refer to water at 68 °F.

DO NOT FORGET THE SAFETY FACTOR.





Performance Curves

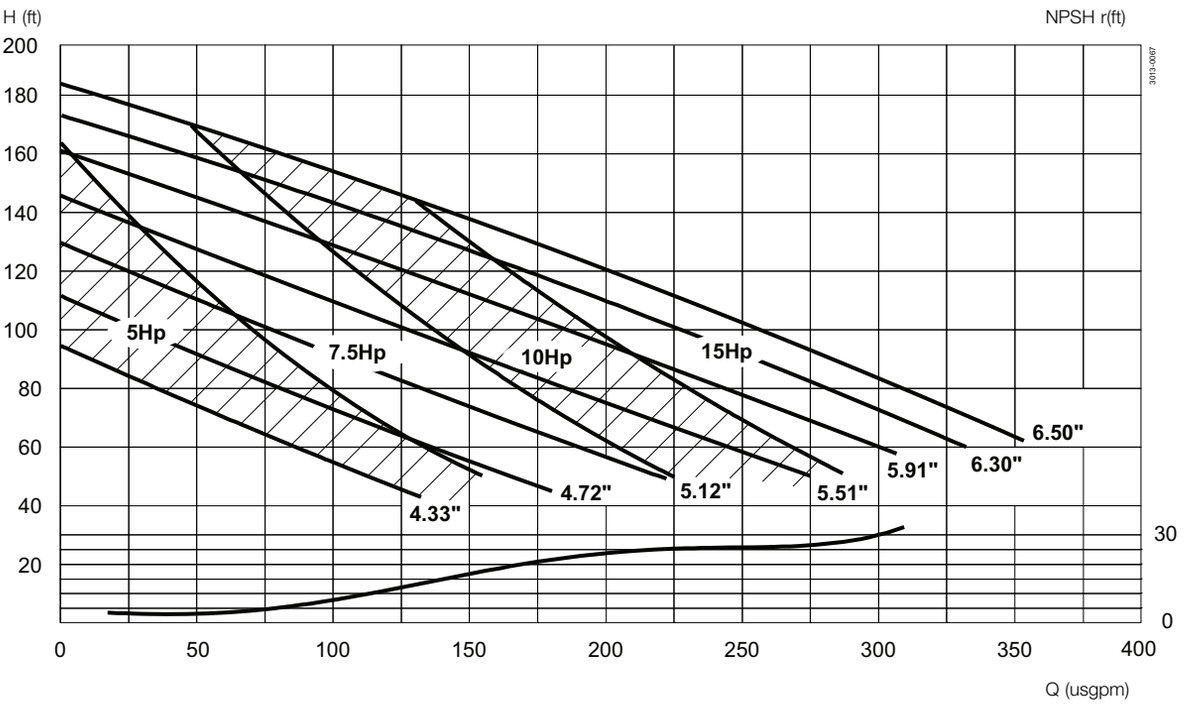
Alfa Laval LKH Prime/LKH Prime UltraPure 20

	60 Hz
Motor:	**3500 rpm. synchr.**
Tolerance:	±8% for Q
Tolerance:	±6% for H
Impeller, Max. dia.:	6.496” (165 mm)
Impeller, Min. dia.:	4.331” (110 mm)
Pump inlet, Dia.:	2.5” (63.5 mm, DN 65)
Pump outlet, Dia.:	2” (51 mm, DN 50)

Performance data refer to water at 68 °F. (20 °C)

NOTE! The curves refer to motor: 17.5 Hp (13 kW), 3547 rpm. asynchr., 60 Hz. For smaller motors, reduce head (H) with: 3%.

DO NOT FORGET THE SAFETY FACTOR.



Performance Curves

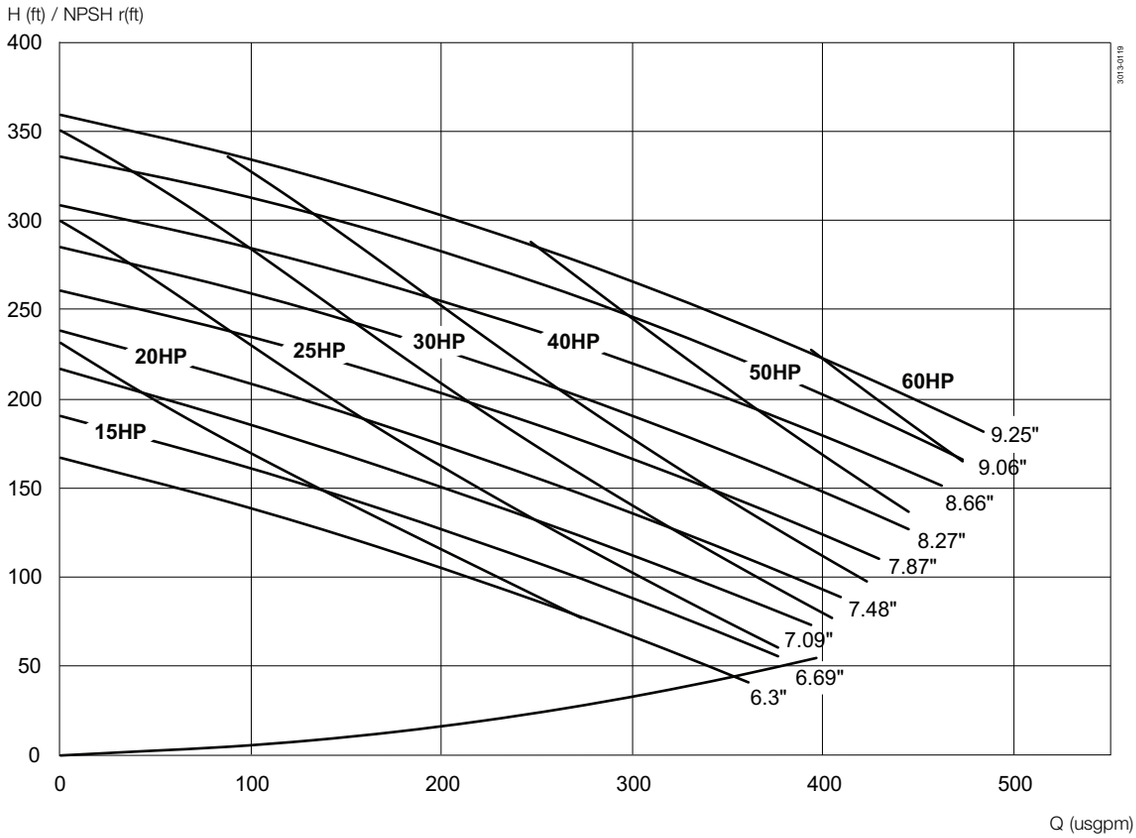
Alfa Laval LKH Prime 40

	60 Hz
Motor:	3500 rpm. synchr.
Tolerance:	±8% for Q
Tolerance:	±6% for H
Impeller, Max. dia.:	9.251" (235mm)
Impeller, Min. dia.:	6.299" (160mm)
Pump inlet, Dia.:	3" (76.1mm/ DN80)
Pump outlet, Dia.:	2½" (63.5mm/ DN65)

Performance data refer to water at 68 °F. (20 °C)

NOTE! The curves refer to motor: 60Hp (45kW), 3520 Rpm. asynchr., 60 Hz. For smaller motors, reduce head (H) with: 3%.

DO NOT FORGET THE SAFETY FACTOR.



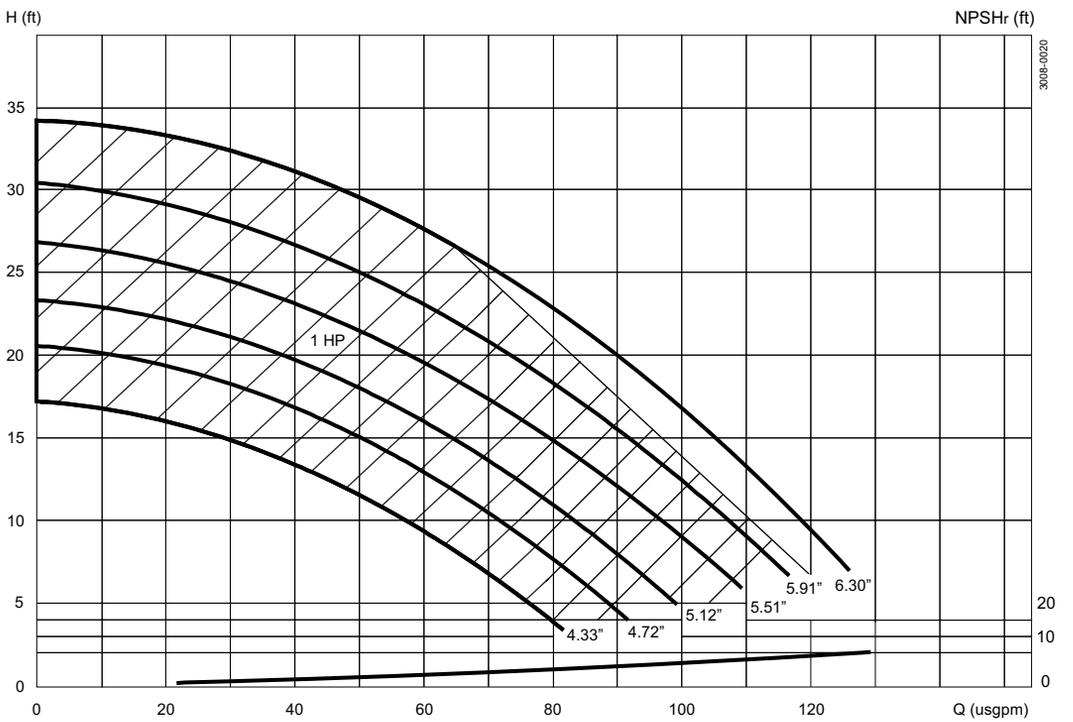
Performance Curves

Alfa Laval SolidC-1, 60 Hz

Motor:	**1800 rpm. synchr.**
Tolerance:	±8% for Q
	±6% for H
Impeller, Max. dia.:	6.30”
Impeller, Min. dia.:	4.33”
Pump inlet, Dia.:	2”, DN 50
Pump outlet, Dia.:	1½”, DN 40

Performance data refer to water at 20 °C.

Performance data refer to water at 68 °F.
NOTE! The curves refer to motor: 2.4 Hp, 1710 rpm. asynchr., 60 Hz.
DO NOT FORGET THE SAFETY FACTOR.

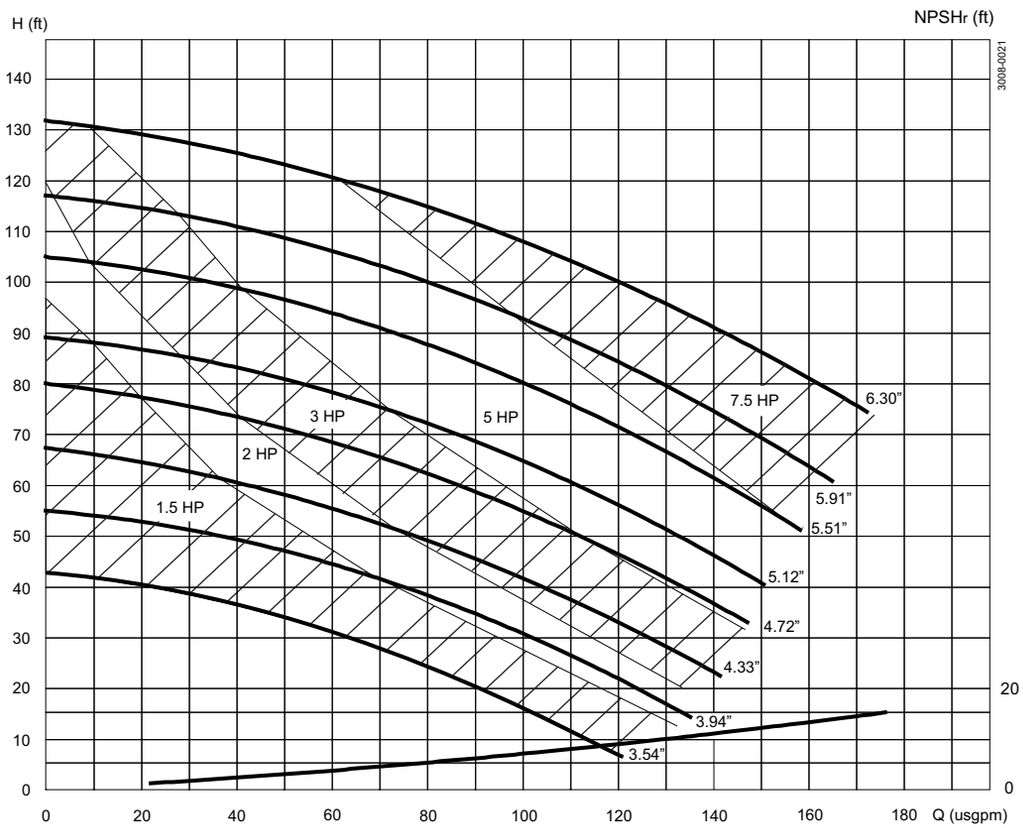


Performance Curves

Alfa Laval SolidC-1, 60 Hz

Motor:	**3600 rpm. synchr.**
Tolerance:	±8% for Q
	±6% for H
Impeller, Max. dia.:	6.30”
Impeller, Min. dia.:	3.54”
Pump inlet, Dia.:	2”, DN 50
Pump outlet, Dia.:	1½”, DN 40

Performance data refer to water at 58 °F.
NOTE! The curves refer to max. motor: 8.85 HP, 3540 rpm. asynchr., 60 Hz. For smaller motors, reduce head (H) with: 3%.
DO NOT FORGET THE SAFETY FACTOR.

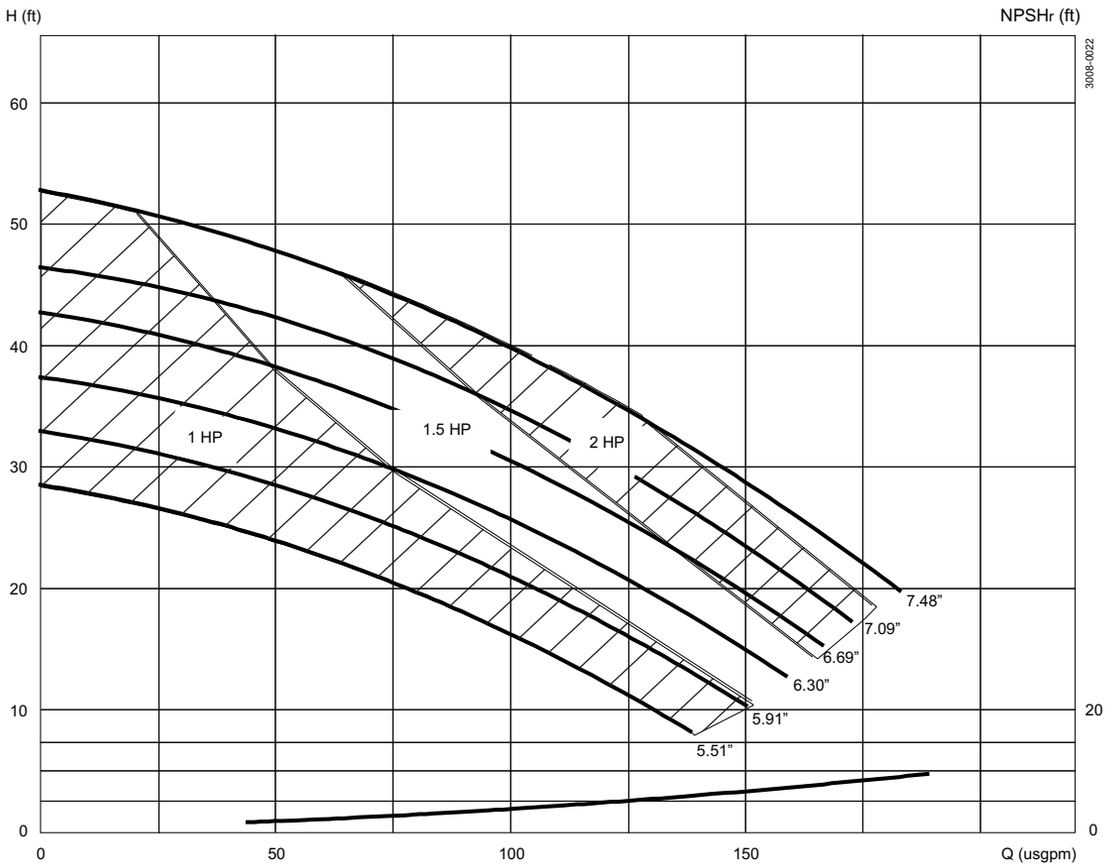


Performance Curves

Alfa Laval SolidC-2, 60 Hz

Motor:	**1800 rpm. synchr.**
Tolerance:	±8% for Q
	±6% for H
Impeller, Max. dia.:	7.48”
Impeller, Min. dia.:	5.51”
Pump inlet, Dia.:	2½”, DN 65
Pump outlet, Dia.:	1½”, DN 40

Performance data refer to water at 68 °F.
NOTE! The curves refer to motor: 3,6 Hp, 1710 rpm. asynchr., 60 Hz.
For smaller motors, reduce head (H) with: 3%.
DO NOT FORGET THE SAFETY FACTOR.



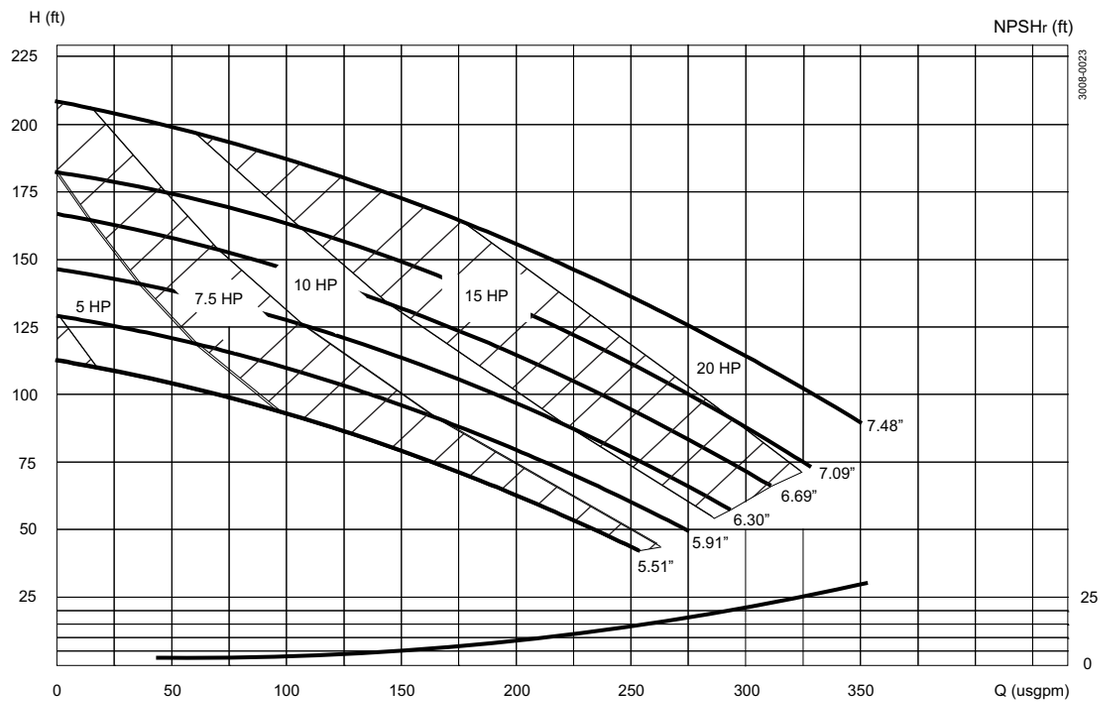
Performance Curves

Alfa Laval SolidC-2, 60 Hz

Motor:	**3600 rpm. synchr.**
Tolerance:	±8% for Q
	±6% for H
Impeller, Max. dia.:	7.48”
Impeller, Min. dia.:	5.51”
Pump inlet, Dia.:	2½”, DN 65
Pump outlet, Dia.:	1½”, DN 40

Performance data refer to water at 68 °F.
NOTE! The curves refer to motor: 22.8 Hp, 3535 rpm. asynchr., 60 Hz.
For smaller motors, reduce head (H) with: 3%.

DO NOT FORGET THE SAFETY FACTOR.

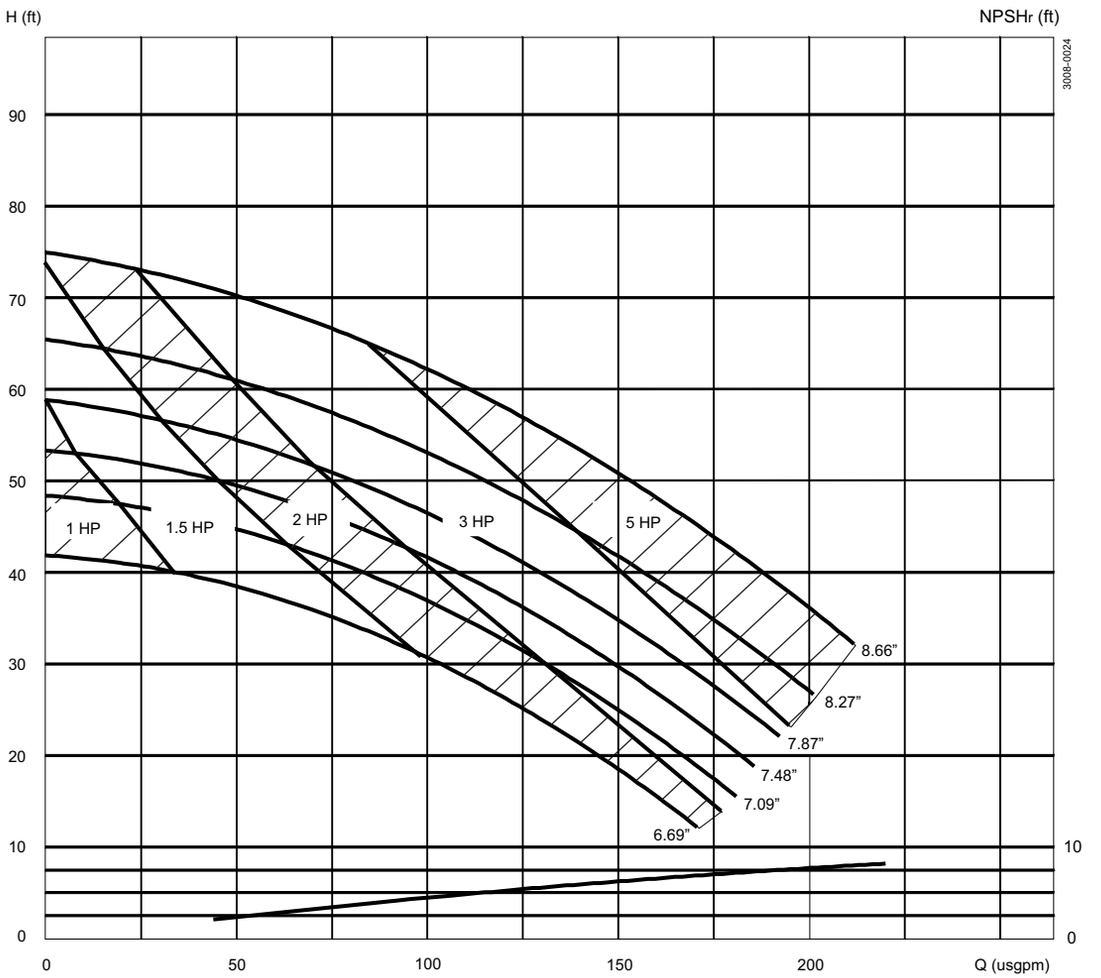


Performance Curves

Alfa Laval SolidC-3, 60 Hz

Motor:	**1800 rpm. synchr.**
Tolerance:	±8% for Q
	±6% for H
Impeller, Max. dia.:	8.66”
Impeller, Min. dia.:	6.69”
Pump inlet, Dia.:	3”, DN 80
Pump outlet, Dia.:	1½”, DN 40

Performance data refer to water at 68 °F.
NOTE! The curves refer to motor: 8.4 Hp, 1720 rpm. asynchr., 60 Hz.
For smaller motors, reduce head (H) with: 3%.
DO NOT FORGET THE SAFETY FACTOR.

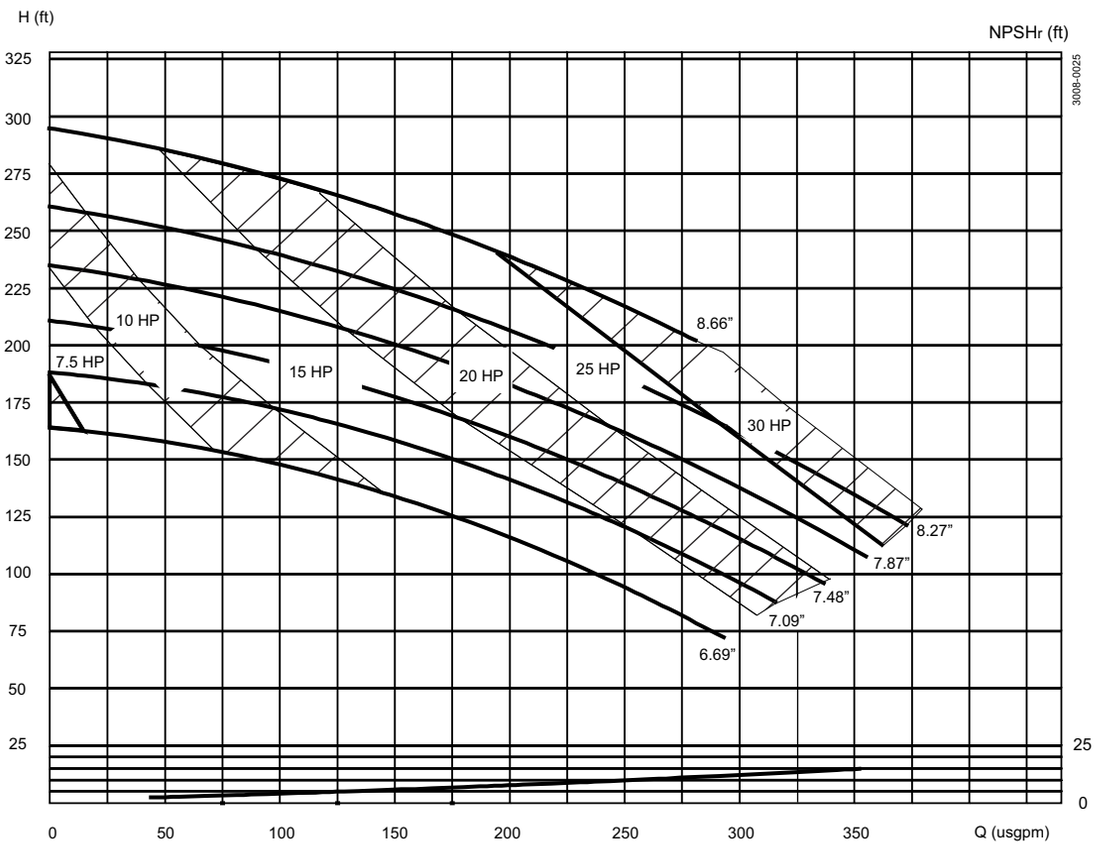


Performance Curves

Alfa Laval SolidC-3, 60 Hz

Motor:	**3600 rpm. synchr.**
Tolerance:	±8% for Q
	±6% for H
Impeller, Max. dia.:	8.66”
Impeller, Min. dia.:	6.69”
Pump inlet, Dia.:	3”, DN 80
Pump outlet, Dia.:	1½”, DN 40

Performance data refer to water at 68 °F.
NOTE! The curves refer to motor: 3.6 kW, 1720 rpm. asynchr., 60 Hz.
For smaller motors, reduce head (H) with: 3%.
DO NOT FORGET THE SAFETY FACTOR.

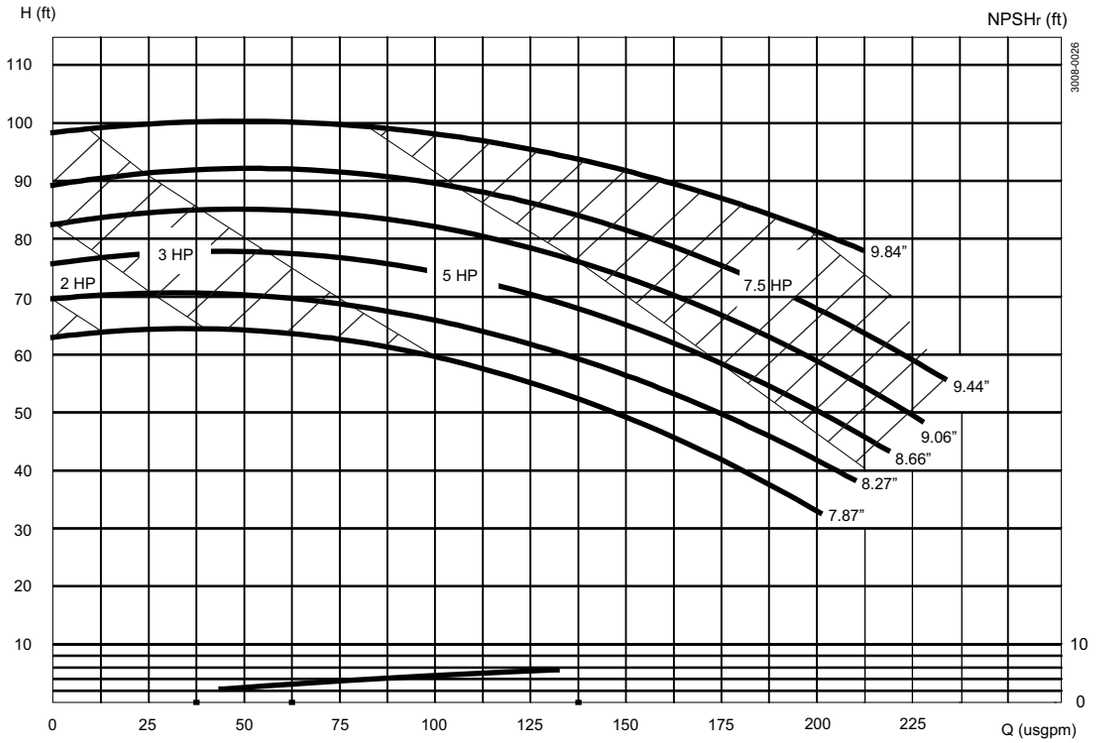


Performance Curves

Alfa Laval SolidC-4, 60 Hz

Motor:	**1800 rpm. synchr.**
Tolerance:	±8% for Q
	±6% for H
Impeller, Max. dia.:	9.84”
Impeller, Min. dia.:	7.87”
Pump inlet, Dia.:	3”, DN 80
Pump outlet, Dia.:	2”, DN 50

Performance data refer to water at 68 °F.
NOTE! The curves refer to motor: 9.1 Hp, 1770 rpm. asynchr., 60 Hz.
For smaller motors, reduce head (H) with: 3%.
DO NOT FORGET THE SAFETY FACTOR.

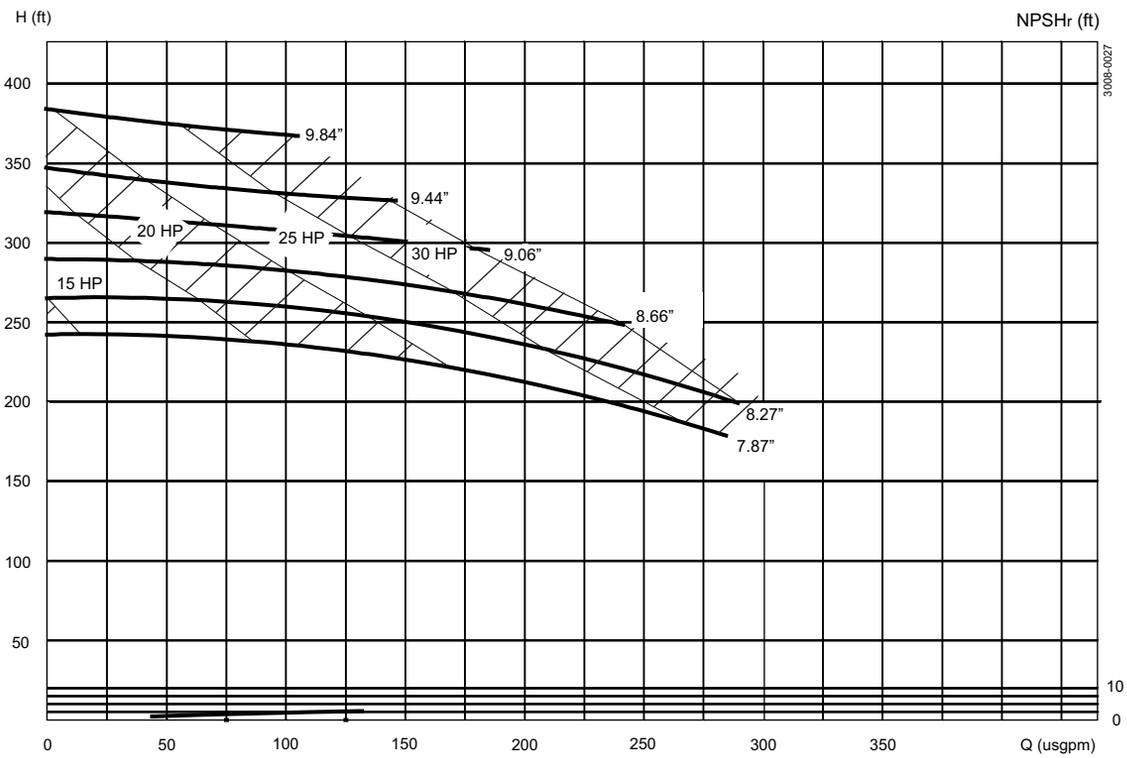


Performance Curves

Alfa Laval SolidC-4, 60 Hz

Motor:	**3600 rpm. synchr.**
Tolerance:	±8% for Q
	±6% for H
Impeller, Max. dia.:	9.84”
Impeller, Min. dia.:	7.87”
Pump inlet, Dia.:	3”, DN 80
Pump outlet, Dia.:	2”, DN 50

Performance data refer to water at 68 °F.
NOTE! The curves refer to motor: 33.5 Hp, 3555 rpm. asynchr., 60 Hz.
DO NOT FORGET THE SAFETY FACTOR.



Consider the information below when selecting a LKH pump.
Note: The configuration shown below will not reflect the actual model number shown on the Customer Order Acknowledgement.

LKH	25	M	165	S	2	E	S	21	A	B	N	-	010	A	36	T	S	P
❶	❷	❸	❹	❺	❻	❼	❽	❾	❿	⓫	⓬	⓭	⓮	⓯	⓰	⓱	⓲	⓳
0000	00	0	000	0	0	0	0	00	0	0	0	-	000	0	00	0	0	0

❶ **Style LKH**

❷ **Model & Port Size**
- 05 2" x 1½"
- 10 2½" x 2"
- 15 4" x 3"
- 20 2½" x 2"
- 25 3" x 2½"
- 35 2½" x 2"
- 40 3" x 2"
- 45 4" x 3"
- 50 4" x 3"
- 60 4" x 4"
- 66 6" x 4"
- 70 4" x 3"
- 75 4" x 4"
- 90 6" x 6"

❸ **Connection Type**
- **M = Tri-Clamp (Std.)**
- F = Flange
- T = Bevel Seat
- S = NPT
- E = SMS

❹ **Impeller Size (mm)**

❺ **Seal Type**
- **S = Single Shaft Seal (Std. DG)**
- F = Flushed Shaft Seal (FG)
- D = Double Shaft Seal (EG)

❻ **Seal Face Materials**
- **2 = C vs. SC (Std.)**
- 4 = SC vs. SC

❼ **Elastomer Material**
- **E = EPDM**
- Y = Viton
- U = Buna
- W = White EPDM
- K = Kalrez
- G = PTFE Encapsulated
- T = Kalrez/PTFE
- X = PI Silicon VI
- V = Class VI EPDM
- S = Silicone

❽ **Leg Bracket**
- N = No
- S = Stainless Steel

❾ **Motor Frame**
- 56 = 56C
- 14 = 143TC/145TC
- 18 = 182TC/184TC
- 21 = 213TC/215TC
- 25 = 254TC/256TC
- 28 = 284TSC/286TSC
- 32 = 324TSC/326TSC
- 36 = 364TSC/365TSC
- 40 = 404TSC/405TSC

❿ **Casing Drain**
- A = No Drain
- B = C4H (90° Discharge ½" Horiz. Drain)
- C = C4V (90° Discharge ½" Vert. Drain)
- D = K4H (45° Discharge ½" Horiz. Drain)
- E = K4V (45° Discharge ½" Vert. Drain)
- F = C6H (90° Discharge ¾" Horiz. Drain)
- G = C6V (90° Discharge ¾" Vert. Drain)
- H = K6H (45° Discharge ¾" Horiz. Drain)
- J = K6V (45° Discharge ¾" Vert. Drain)
- K = A4H (Horiz. Discharge ½" Horiz. Drain)
- L = A4V (Horiz. Discharge ½" Vert. Drain)
- M = A6H (Horiz. Discharge ¾" Horiz. Drain)
- N = A6V (Horiz. Discharge ¾" Vert. Drain)

⓫ **Finish**
- A = 32 Ra Mech.
- B = 20 Ra Mech.
- C = 15 Ra EP
- E = Industrial
- I = 20 Ra MEch. + EP

⓬ **Passivation** (always yes with EP finish)
- Y = Yes
- N = No

⓭ **Options**
- - = No options
- L = Inducer
- M = SS Drive Ring

⓮ **Horse Power**

P50 = ½ HP	015 = 15 HP
P75 = ¾ HP	020 = 20 HP
001 = 1 HP	025 = 25 HP
1P5 = 1½ HP	030 = 30 HP
002 = 2 HP	040 = 40 HP
003 = 3 HP	050 = 50 HP
005 = 5 HP	060 = 60 HP
7P5 = 7½ HP	075 = 75 HP
010 = 10 HP	100 = 100 HP

⓯ **Voltage**
- A = 3/60/208-230/460
- B = 3/60/230-460
- C = 3/60/575
- D = 3/60/200
- E = 3/60/380
- F = 3/60/460
- J = 3/50/190-380
- K = 3/50/208-416
- L = 3/50/220-440
- M = 3/50/200-400

⓰ **RPM**
- 15 = 1500
- 18 = 1800
- 30 = 3000
- 36 = 3600

⓱ **Motor Type**
- T = TEFC
- N = TENV
- W = Washdown
- X = Explosion Proof
- C = Chemical Duty
- S = Stainless Steel - W/D

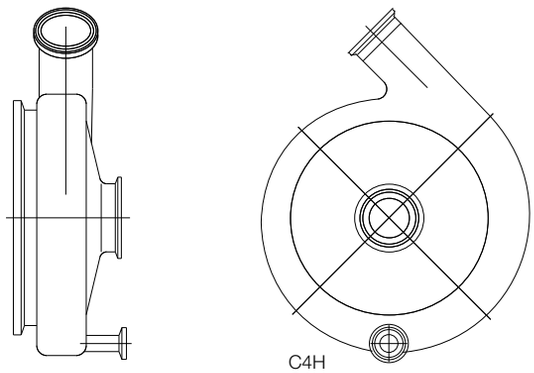
⓲ **Manufacturer**
- S = Sterling
- B = Baldor

⓳ **Options**
- B = Inverter Duty
- C = Thermisters
- D = Thermistats
- E = High Thrust
- P = Premium Efficient

* Refer to tables for impeller sizes available per model types.
** Other options available upon request.
All motors will have locked bearings to limit axial shaft movement to .007" or less.

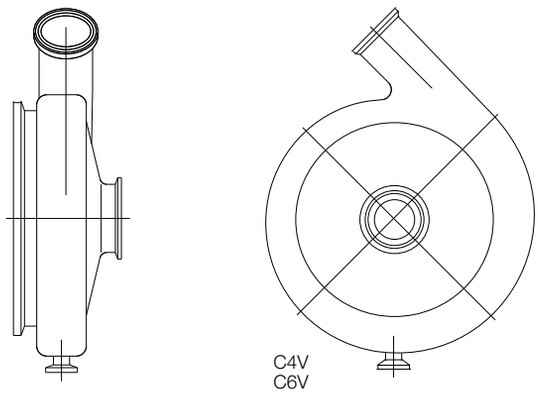
Consider the information below when selecting a LKH pump.
Note: The configuration shown below will not reflect the actual model number shown on the Customer Order Acknowledgement.

"Horizontal" Drains
K4H
K6H

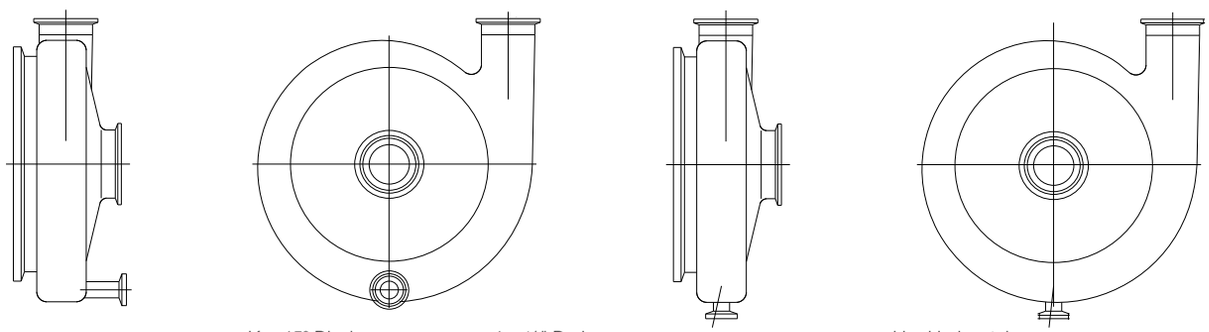


C4H
C6H

"Vertical" Drains
K4V
K6V



C4V
C6V



K = 45° Disch.
C = 90° Disch.

4 = ½" Drain
6 = ¾" Drain

H = Horizontal
V = Vertical

030		3600	B		286	TSC	FC	FF	G		S	00
❶		❷	❸		❹	❺	❻	❼	❽		❾	❿
000	-	0000	0	-	000	000	00	00	0	-	0	00

❶ **Horsepower**
P50 - 0.5
P75 - 0.75
001 - 1.0
IP5 - 1.5
002 - 2.0 HP
003 - 3.0
005 - 5.0
7P5 - 7.5
010 - 10
015 - 15
020 - 20
030 - 30
040 - 40
050 - 50
060 - 60
070 - 70
100 - 100
150 - 150

RPM
❷ 1800
3600
1500
3000
0900
1200

❸ **Ph/Cyc/Volt/Volt**
A - 3/60/208/230-460
B - 3/60-230/460
C - 3/60/575
D - 3/60/200/360
E - 3/60/380
F - 3/60/460
J - 3/50/190/380
K - 3/50/208-416
L - 3/50/220/416
M - 3/50/200/400
N - 3/50/220/440
Q - 1/60/230
R - 1/60/115/230
S - 3/60/208

❹ **Frame**
056
143
145
182
184
213
215
254
256
284
286
324
326
364
365
404
405

❺ **Face and Feet**
TCO - TC Footed
TSC - TSC Footed (284 - 405)
T00 - T Footed

❻ **Enclosure**
FC - TEFC
NV - TENV
WD - Washdown
CD - Chem Duty
XP - Ex Proof**
IE - IEEE 841XL
SV - Severe Duty

❼ **Body Type & Efficiency**
SM - Smooth Standard
FF - Finned Standard
SP - Smooth Premium
FP - Finned Premium

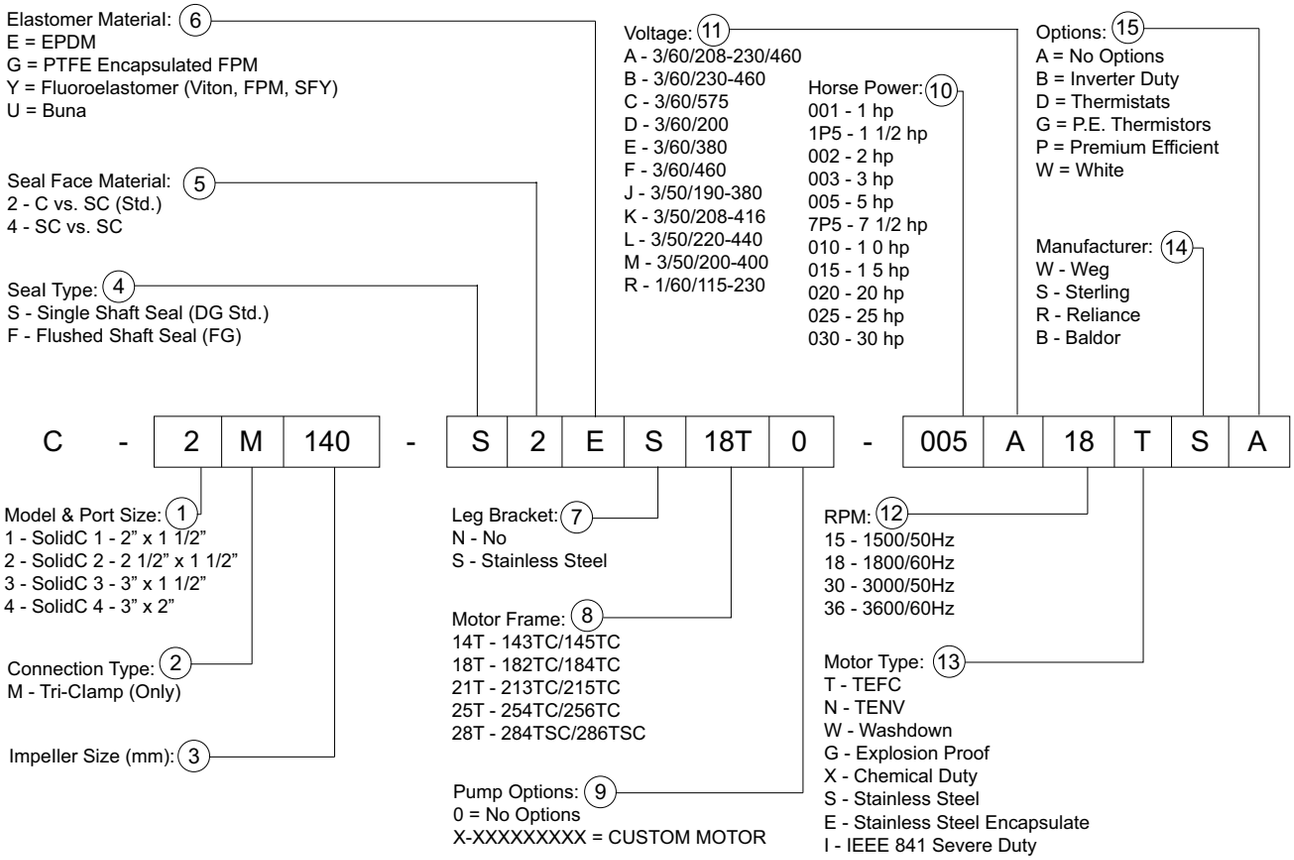
❽ **Finish**
W - White (LKH Std.)
S - Stainless Steel
F - Paint Free
P - Powder Coated

❾ **Vendor**
S - Sterling
B - Baldor

❿ **Special Options**
00 - No Options
ID - Inverter Duty
TM - Thermisters
TS - Thermistats
HT - High Thrust Bearings***
SE - Super E
HE - High Trust Inverter Duty***
PT - PE Thermisters

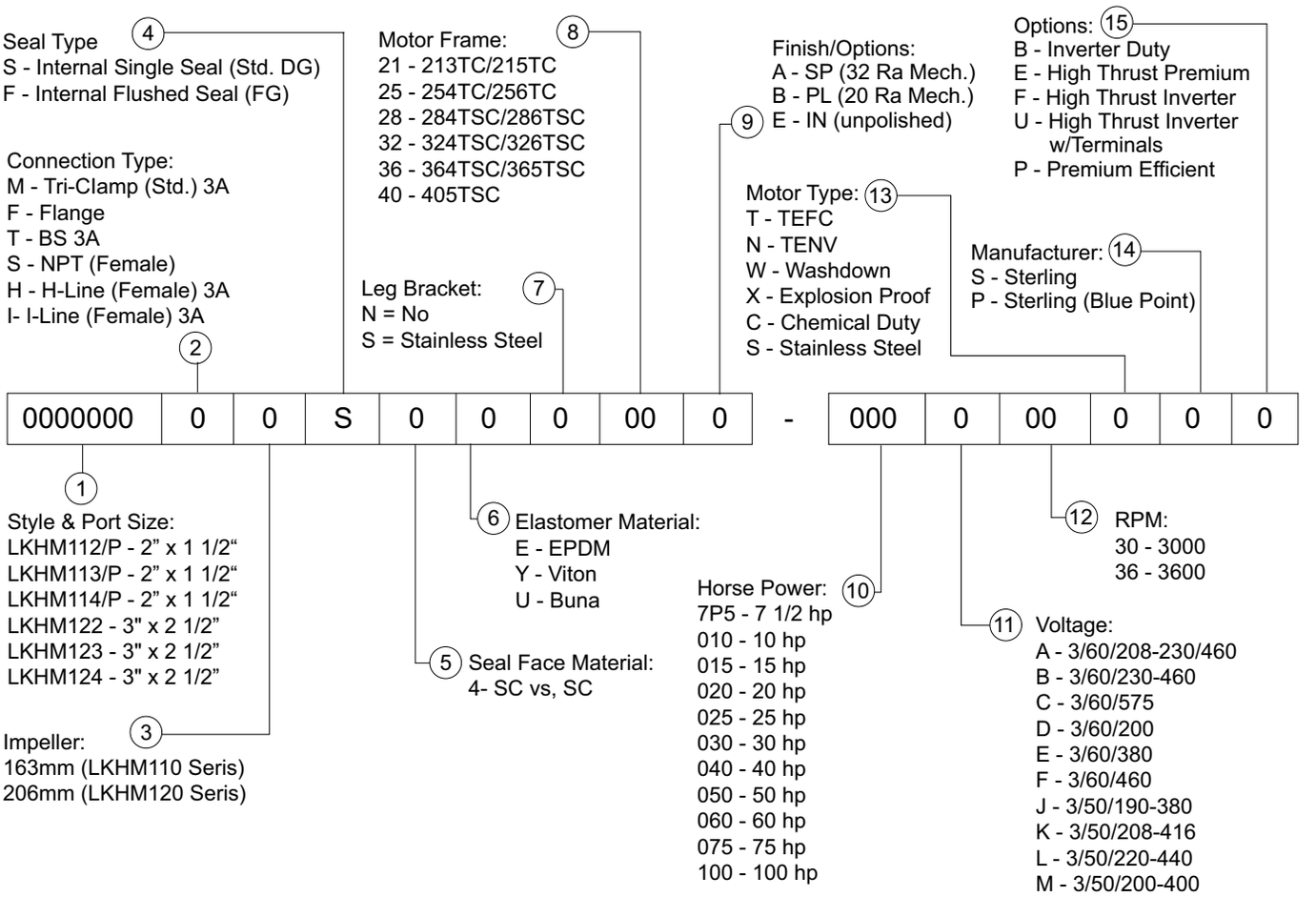
Note!
All motors will have locked bearings to limit axil shaft movement to 0.007" or less.

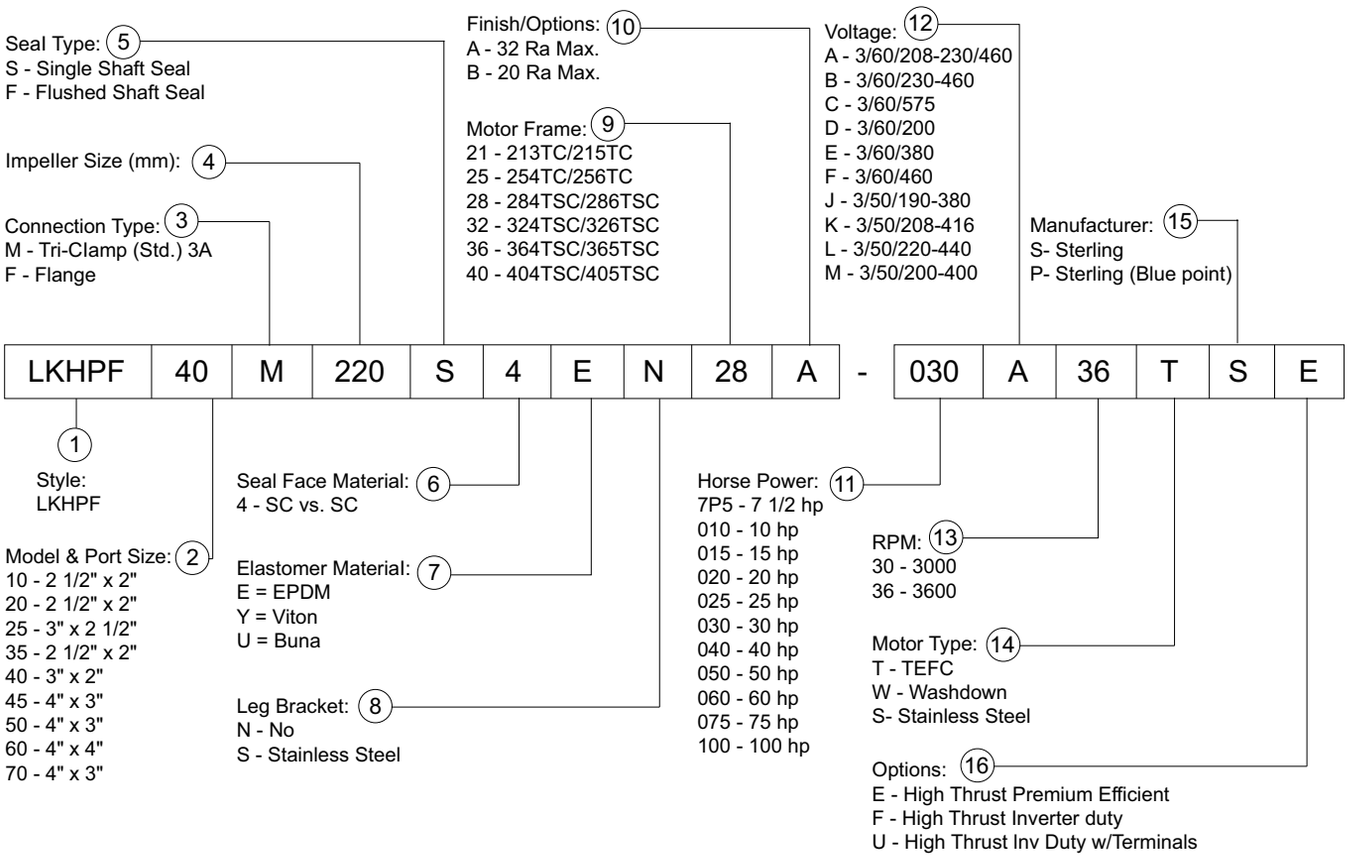
* Locked bearings are standard on all motors
** XP = Cl 1, Grp. D, Div. 1, Grp. F & G, other enclosures avaiable upon request.
*** High Thrust bearings must be specified for LKHPF and LKHM pumps.



NOTE:
***HIGH THRUST BEARING PREMIUM EFFICIENT MOTORS STANDARD
ALL MOTORS WILL HAVE LOCKED BEARINGS TO
LIMIT AXIAL SHAFT MOVEMENT TO .0007” OR LESS.

Description codes





NOTE:
***HIGH THRUST BEARING PREMIUM EFFICIENT MOTORS STANDARD
ALL MOTORS WILL HAVE LOCKED BEARINGS TO
LIMIT AXIAL SHAFT MOVEMENT TO .0007" OR LESS.

LKHU	25	M	165	S	4	V	S	21	A	I	N	N		010	B	36	W	S	P
❶	❷	❸	❹	❺	❻	❼	❽	❾	❿	⓫	⓬	⓭	⓮	⓯	⓰	⓱	⓲	⓳	⓴
0000	00	0	000	0	0	0	0	00	0	0	0	0	-	000	0	00	0	0	0

❶ **Style LKHU**

❷ **Model & Port Size**
10 2½" x 2"
20 2½" x 2"
25 3" x 2½"
35 2½" x 2"
40 3" x 2"

❸ **Connection Type**
M = Tri-Clamp (Std.)

❹ **Impeller Size (mm)**

❺ **Seal Type**
S = Single Shaft Seal (Std. DG)
F = Flushed Shaft Seal (FG)
D = Double Shaft Seal (EG)

❻ **Seal Face Materials**
4 = SC vs. SC (Std.)
2 = SC vs. Carbon

❼ **Elastomer Material**
V = EPDM CLASS VI (Std.)
Y = Viton
U = Buna
W= White EPDM
K = Kalrez
G = PTFE Encap. FPM
X = PL Silicone VI
S = Silicone

❽ **Leg Bracket**
N = No
S = Stainless Steel

❾ **Motor Frame**
14 = 143TC/145TC
18 = 182TC/184TC
21 = 213TC/215TC
25 = 254TC/256TC
28 = 284TSC/286TSC

❿ **Casing Drain**
A = NO DRAIN
B = C4H (90° Discharge ½" Horiz. Drain)
C = C4V (90° Discharge ½" Vert. Drain)
D = K4H (45° Discharge ½" Horiz. Drain)
E = K4V (45° Discharge ½" Vert. Drain)
F = C6H (90° Discharge ¾" Horiz. Drain)
G = C6V (90° Discharge ¾" Vert. Drain)
H = K6H (45° Discharge ¾" Horiz. Drain)
J = K6V (45° Discharge ¾" Vert. Drain)
K = A4H (Horiz. Discharge ½" Horiz. Drain)
L = A4V (Horiz. Discharge ½" Vert. Drain) n)
M = A6H (Horiz. Discharge ¾" Horiz. Drai
N = A6V (Horiz. Discharge ¾" Vert. Drain)

⓫ **Finish/Options**
I = 20Ra Mech. & EP (Std.)
B = 20Ra Mech.
C = 15Ra EP

⓬ **Passivation** (Always yes with EP finish)
Y = Yes
N = No

⓭ **Low Ferrite**
Y = Yes
N = No

⓮ **Options**
- = No Options
B = WFi Piping
D = SS Drive Ring **-** Single Seal

⓯ **Horse Power**
1P5 = 1½ HP
002 = 2 HP
003 = 3 HP
005 = 5 HP
7P5 = 7½ HP
010 = 10 HP
015 = 15 HP
020 = 20 HP
025 = 25 HP
030 = 30 HP

⓰ **Voltage**
A = 3/60/208-230/460
B = 3/60/230-460
C = 3/60/575
D = 3/60/200
E = 3/60/380
F = 3/60/460
J = 3/50/190-380
K = 3/50/208-416
L = 3/50/220-440
M = 3/50/200-400

⓱ **RPM**
15 = 1500
18 = 1800
30 = 3000
36 = 3600

⓲ **Motor Type**
T = TEFC
N = TENV
W= Washdown
X = Explosion Proof
C = Chemical Duty
S = Stainless Steel

⓳ **Manufacturer**
S = Sterling
B = Baldor

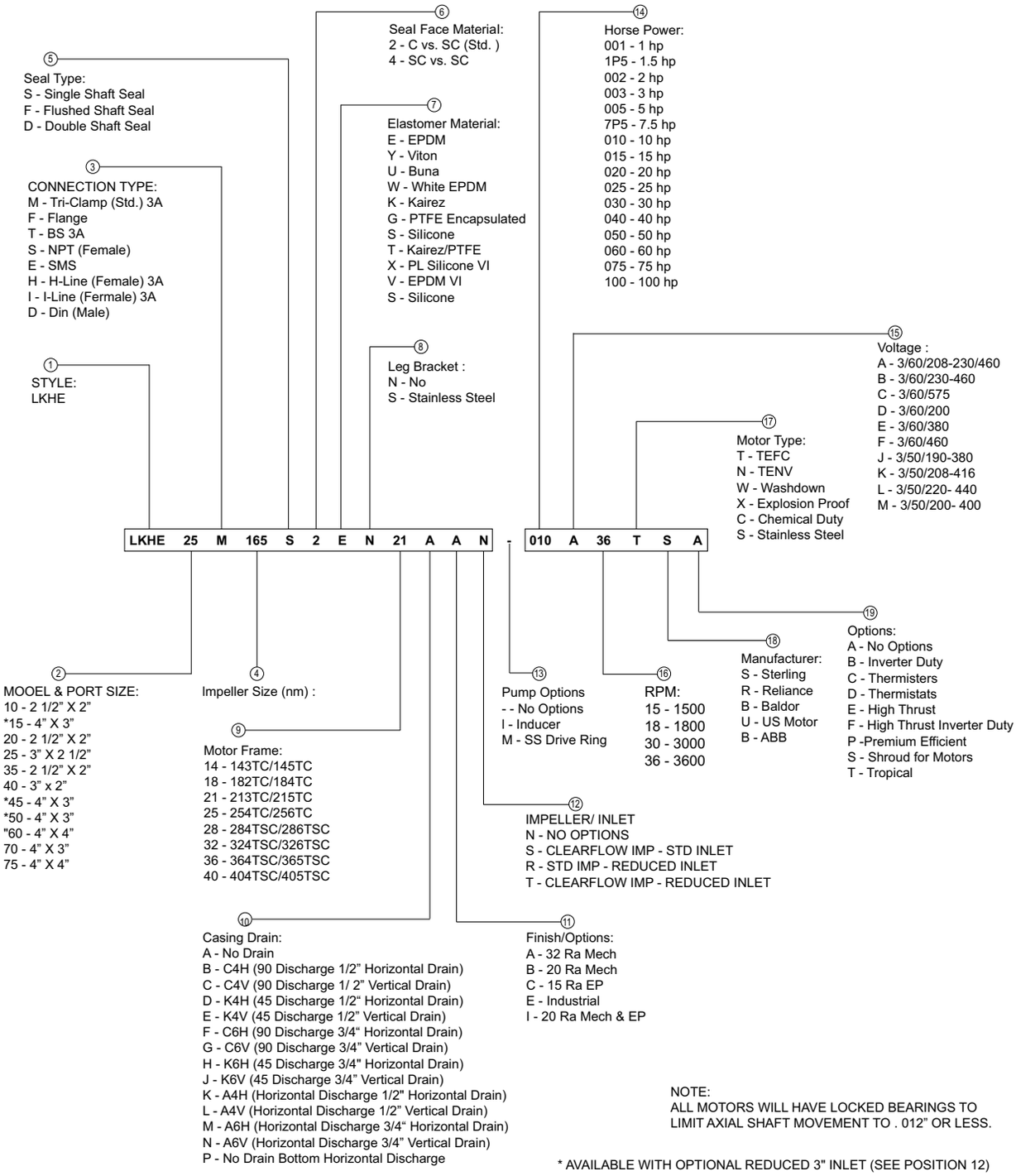
⓴ **Options**
B = Inverter Duty
C = Thermisters
D = Thermistats
E = High Thrust
P = Premium Efficient

Note

HP	RPM	FRAME	AXIAL Load in LBS
30	3600	286TSC	650
40	3600	324TSC	820
50	3600	326TSC	1150
60	3600	364TSC	1150
75	3600	365TSC	1150
100	3600	405TSC	1150

* Refer to tables for impeller sizes available per model types.
** Other options available upon request.
All motors will have locked bearings to limit axial shaft movement to .007" or less.

Description codes



NOTE:
ALL MOTORS WILL HAVE LOCKED BEARINGS TO LIMIT AXIAL SHAFT MOVEMENT TO . 012" OR LESS.

* AVAILABLE WITH OPTIONAL REDUCED 3" INLET (SEE POSITION 12)

Product Code: 5301

Hygienic Version less motor
Single Shaft Seal
EPDM O-rings
Tri-Clamp® (Standard)*
Polished version is authorized to carry the 3A Symbol

Impeller Diameter (MM)	Frame Size	Carbon vs. Silicon Carbide	USD LLP Less Mtr.	Silicon Carbide vs. Silicon Carbide	USD LLP Less Mtr.
					LKH-5 - 2" x 1.5", AISI T316L
132	56C 182/184TC				
					LKH-10 - 2.5" x 2", AISI T316L
163	143/145TC 213/215TC				
					LKH-15 - 4" x 3", AISI T316L
138	143/145TC 213/215TC				
					LKH-20 - 2.5" x 2", AISI T316L
165	143/145TC 254/256TC				
					LKH-25 - 3" x 2.5", AISI T316L
205	143/145TC 324/326TSC				
					LKH-35 - 2.5" x 2", AISI T316L
220	143/145TC 284/286TSC				
					LKH-40 - 3" x 2", AISI T316L
235	182/184TC 324/326TSC				
					LKH-45 - 4" x 3", AISI T316L
178	143/145TC 284/286TSC				
					LKH-50 - 4" x 3", AISI T316L
205	182/184TC 324/326TSC				

Product Code: 5301

Hygienic Version less motor
Single Shaft Seal
EPDM O-rings
Tri-Clamp® (Standard)*
Polished version is authorized to carry the 3A Symbol

Impeller Diameter (MM)	Frame Size	Carbon vs. Silicon Carbide	USD LLP Less Mtr.	Silicon Carbide vs. Silicon Carbide	USD LLP Less Mtr.
					LKH-60 - 4" x 4" AISI T316L
210	213/215TC 324/326TSC				
					LKH-66 - 6" x 4" AISI T316L
210	213/215TC 324/326TSC				
					LKH-70 - 4" x 3", AISI T316L
280	254/256TC 364/365TSC				
					LKH-75 - 4" x 4", AISI T316L
348	254/256TC 324/326TSC				
					LKH-90 - 6" x 4", AISI T316L
348	284/286TSC 405TSC				

Pump Size	Motor Size	LLP USD	Options
			Seals
LKH 5 - 60			Flushed Shaft Seal Double Mechanical Seal Seals: NBR (Nitrile) Seals: FPM (Viton)
LKH 70-90			Flushed Shaft Seal Double Mechanical Seal Seals: NBR (Nitrile) Seals: FPM (Viton)
			Special Connections
LKH 5 LKH 10, 20 & 35 LKH 15, 45 & 50 LKH 25 LKH 40 LKH 60 LKH 70			Flange Connections Flange Connections Flange Connections Flange Connections Flange Connections Flange Connections Flange Connections
			Impeller / Inducer
LKH 5 - 90 LKH 10 - 50*			Reduced Impeller Inducer (*Inducer not available for LKH-15)
			Surface Roughness, Product Wetted Parts
LKH-5 LKH 10, 15 & 20 LKH 25 LKH 35 LKH 40 - 45 LKH 50 LKH 60 LKH 70			20 Ra Mechanical 20 Ra Mechanical 20 Ra Mechanical 20 Ra Mechanical 20 Ra Mechanical 20 Ra Mechanical 20 Ra Mechanical 20 Ra Mechanical
LKH 5 -35 LKH 40 - 70			Passivation Only Passivation Only
			Drain
LKH 5 - 70			1/2" or 3/4" Tri-Clamp
			S.S. Legs
	1/2 - 30 HP 40 - 50 HP 60 - 100 HP		
		Net Price USD	
LKH 5 - 90			Stainless Steel Tags
		Net Price USD	**Documentation**
LKH 5 - 90 LKH 5 - 90 LKH 5 - 90			Certified Drawing Hydrostatic Test Certified Performance Test

Product Code: 5378

Hygienic Polished
Single internal mechanical seal
EPDM o-rings
Tri-Clamp® connections

Impeller Diameter (MM)	Frame Size	Silicon Carbide vs. Silicon Carbide	LLP USD Less Mtr.
LKHM-112/P - 2" x 1.5", AISI T316L			
163	213/215TC 284/286TSC		
LKHM-113/P - 2.0" x 1.5", AISI T316L			
163	213/215TC 284/286TSC		
LKHM-114/P - 2.0" x 1.5", AISI T316L			
163	213/215TC 284/286TSC		
LKHM - 122 - 3" x 2.5", AISI T316L			
206	284/286TSC 324/326TSC		
LKHM - 123 - 3" x 2.5", AISI T316L			
206	284/286TSC 364/365TSC		
LKHM - 124 - 3" x 2.5", AISI T316L			
206 206	324/326TSC 405TSC		

Pump Size	Motor Size	LLP USD	Options
			Seals
LKHM 112-123 -124 LKHM 112-123 -124			Flushed Shaft Seal Seals: FPM (Viton)
			S.S. Legs
	1/2 - 30 HP 40 - 50 HP 60 - 100 HP		

Product Code: 5357

Single mechanical seal: SiC v. SiC
EPDM O-rings
Tri-Clamp® Connections
Polished version is authorized to carry the 3A Symbol

Impeller Diameter (MM)		Frame Size	Silicon Carbide vs. Silicon Carbide	LLP USD Less Mtr.
				LKHPF-10 - 2.5" x 2", AISI T316L
163	6.42	143/145TC 213/215TC		
				LKHPF-20 - 2.5" x 2", AISI T316L
165	6.5	143/145TC 254/256TC		
				LKHPF-25 - 3" x 2.5", AISI T316L
205	8.07	143/145TC 254/256TC		
				LKHPF-35 - 2.5" x 2", AISI T316L
220	8.66	143/145TC 284/286TSC		
				LKHPF-40 - 3" x 2", AISI T316L
235	9.25	182/184TC 324/326TSC		
				LKHPF-45 - 4" x 3", AISI T316L
178	7.01	143/145TC 284/286TSC		
				LKHPF-50 - 4" x 3", AISI T316L
205	8.07	182/184TC 324/326TSC		
				LKHPF-60 - 4" x 4" AISI T316L
210	8.27	213/215TC 324/326TSC		
				LKHPF-70 - 4" x 4" AISI T316L
280		284/286TSC 405TSC		

Pump Size	Motor Size	LLP USD	Options	
				Seals
LKHPF 10 - 70			Flushed Shaft Seal Seals: FPM (Viton)	
				Special Connections
LKHPF 10, 20, 35 LKHPF 15, 45, 50, 70 LKHPF 25 LKHPF 40 LKHPF 60			Flange Connections Flange Connections Flange Connections Flange Connections Flange Connections	
				Impeller
LKHPF 10 - 70			Reduced Impeller	
				S.S. Legs
	1/2 - 30 HP 40 - 50 HP 60 - 100 HP			

Product Code: 5380

All LKHU Pumps come standard with:
Mechanical Seal: SiC vs. SiC
USP Class VI EPDM o-rings
15 Ra Electropolished, Heat Trace (Material Cert), and
1/2" Vertical Drain
Tri-Clamp® Connections
Authorized to carry the 3A Symbol

Impeller Diameter (MM)	Impeller Diameter (Inch)	Frame Size	Silicon Carbide vs. Silicon Carbide	LLP USD Less Mtr.
				LKHU-10
163	6.42	143/145TC 213/215TC		
				LKHU-20
165	6.50	213/215TC 254/256TC		
				LKHU-25
205	8.07	143/145TC 284/286TSC		
				LKHU-35
220	8.66	143/145TC 284/286TSC		
				LKHU-40
235	9.25	182/184TC 284/286TSC		
				LKHU-45
178	7.01	143TC - 364TSC		
				LKHU-60
210	8.27	143TC - 364TSC		
				LKHU-66
210	8.27	143TC - 364TSC		
				LKHU-70
280	11.02	215TC - 405TSC		

LKHU UltraPure Centrifugal Pump - Options

All LKHU Pumps come standard with:
Mechanical Seal: SiC vs. SiC
USP Class VI EPDM o-rings
15 Ra Electropolished, Heat Trace (Material Cert), and
1/2" Vertical Drain
Tri-Clamp® Connections
Authorized to carry the 3A Symbol

	Type	Options	LLP USD
	LKHU 10 - 40	FPM Class VI FEP Class VI	
		Surface Finish Mapping Hydrostatic Test	
			Seals
	LKHU 10 - 40	Double Mechanical Seal Seals: FPM (Viton) Seals: FEP (CLASS VI)	
			Impeller
	LKHU 10 - 40	Reduced Impeller	
			Surface Roughness, Product Wetted Parts
	LKHU 10 - 40 LKHU 10 - 40	20 Ra Mechanical Low Ferrite - Product Wetted Steel Parts - ferrite max. 5%	
			Drain
	LKHU 10 - 40	1/2" Tri-Clamp	
			Specials
	LKHU 10 - 40	WFI Flush Piping Assembly	
			S.S. Legs
	1/2 - 30 HP		
			Net Price
	LKHU 10-40	Stainless Steel Tags	
			Documentation - Net Price
	LKHU 10-40 LKHU 10-40	Certified Drawing Hydrostatic Test	

Product Code: 5301

Hygienic Version less motor
Single Shaft Seal
EPDM O-rings
Tri-Clamp® (Standard)*
Polished version is authorized to carry the 3A Symbol

Impeller Diameter (MM)	Frame Size	Carbon vs. Silicon Carbide	USD LLP Less Mtr.
LKHPM-20 - 2.5" x 2", AISI T316L			
165	143/145TC 284TSC		

Pump Size	Motor Size	LLP USD	Options
			Seals
LKHPM-20			SIC/SIC Seal Double Mechanical Seal Seals: NBR (Nitrile) Seals: FPM (Viton)
			Impeller
LKHPM-20			Reduced Impeller
			Surface Roughness, Product Wetted Parts
LKHPM-20			20 Ra Mechanical
			Drain
LKHPM-20			1/2" or 3/4" Tri-Clamp
			S.S. Legs
	1/2 - 30 HP		
		Net Price USD	
LKHPM-20			Stainless Steel Tags
		Net Price USD	**Documentation**
LKHPM-20 LKHPM-20 LKHPM-20			Certified Drawing Hydrostatic Test Certified Performance Test

Options and PPL configurator
Product code: 5390

Connections: TriClamp for ASME
Seals: Single shaft seal (SSS) SiC/SiC, EPDM
1/2" drain connections, Ra 32 µinch contact finish, outlet position 45°
Material traceability to EN 10.204 3.1
Motors according to IEC, shrouded

Impeller Diameter (MM)	Impeller Diameter (Inch)	Frame Size	Silicon Carbide vs. Silicon Carbide	LLP USD Less Mtr.
				LKHU-20
165	6.50	213/215TC		

Pump Size	Options	LLP USD
		Seals
	Double Mechanical Seal Seals: FPM (Viyon)	
		Impeller
LKHU 10 - 40	Reduced Impeller	
		Surface Roughness, Product Wetted Parts
LKHU 10 - 40	15 Ra Electropolish & Passivation	
		Drain
LKHU 10 - 40	Tri-Clamp	
		S.S. Legs
1/2 - 30 HP		
LKHU 10 - 40	Stainless Steel Tags	
		Documentation
LKHU 10 - 40	Hydrostatic Test	

Product Code: 5384

Single mechanical seal
EPDM O-rings
Tri-Clamp Connections, 3A approved

Impeller Diameter (MM)	Impeller Diameter (Inch)	Frame Size	Carbon vs. Silicon Carbide	LLP USD Less Mtr.
				SOLID C-1 - 2" x 1.5", AISI T316L
160	6.30	143/145TC 213/215TC		
				SOLID C-2 - 2.5" x 1.5", AISI T316L
190	7.48	143/145TC 254/256TC		
				SOLID C-3 - 3" x 1.5", AISI T316L
220	8.66	143/145TC 284/286TSC		
				SOLID C-4 - 3" x 2", AISI T316L
250	9.84	143/145TC 284/286TSC		

Pump Size	Motor Size	Options	LLP USD
		SiC/SiC seal face option / adder	**Seals**
SolidC 1-4		Flushed Shaft Seal Seals: NBR (Nitrile) Seals: FPM (Viton)	
			Impeller
		Reduced Impeller	
			S.S. Legs
	1/2 - 30 HP		

This page is intentionally left blank

1.2 Rotary Lobe Pumps

The Rotary Lobe Pumps from Alfa Laval are able to handle low, medium and high viscosity media. These pumps are used where gentle, Hygienic processing is a requirement.

Alfa Laval OptiLobe

Rotary lobe pumps

Introduction

The Alfa Laval OptiLobe Rotary Lobe Pump is a cost-effective alternative for general applications that require gentle product treatment and easy serviceability. Versatile, dependable and energy efficient, this hygienic positive displacement pump enhances both process flexibility and operational reliability.

The pump is designed according to the most stringent hygienic design standards and with verified, effective Cleaning-in-Place.

Applications

The OptiLobe Rotary Lobe Pump is designed for gentle product treatment in general applications across the dairy, food, beverage, home and personal care industries.

The OptiLobe pump is available with 10 different pump head displacements based on five different gearbox modules to handle flow rates up to 77 m^3/h and differential pressures up to 8 bar.

Benefits

- Cost-effective, hygienic pump.
- Optimal product quality due to gentle, low-shear operation.
- Robust design for long service life.
- Easy maintenance due to self-setting, front-loading seals.
- Low total cost of ownership.

Standard design

All media contacting steel components, like the rotor case, front cover, rotors and rotor nuts, are in W. 1.4404 (AISI 316L). With stainless steel bearing housing, canister and feet, the OptiLobe pump has an all stainless steel exterior, making it corrosion resistant.

The pump features the Alfa Laval EasyFit front-loading seal, which allows quick and easy inspection or replacement without the need to disassemble pipework. Single and single-flushed shaft seals are available as options.

The Alfa Laval OptiLobe can be supplied either as a bare shaft pump or mounted on a base plate complete with coupling, guard, gear motor and shroud for easy, plug-and-play installation.

Working principle

A gear train in the pump gearbox drives the rotors and provides accurate synchronization of the tri-lobe rotors. The movement of the counter-rotating rotors creates a partial vacuum that allows atmospheric pressure or other external pressures to force fluid into the pump chamber. As the rotors revolve, an expanding cavity forms, filling with fluid. As the blades disengage, each dwell forms a cavity. As the rotor blades engage, the cavity diminishes and fluid is displaced into the outlet port.

Authorized to carry the 3A symbol

TECHNICAL DATA

Standard specification	
Product wetted steel parts:	W. 1.4404 (316L)
Inside surface finish:	Mech Ra ≤ 31
Gear canister:	Stainless steel
Base plate:	Stainless steel
Coupling guard:	Stainless steel
Rotor:	Tri-lobe
Product wetted elastomers:	EPDM
Other elastomers:	NBR
Shaft seal:	Single mechanical EasyFit
Rotary seal face:	Carbon
Stationary seal face:	Stainless steel

Shaft seals	
EasyFit single and single flush available. All options are fully front loading and interchangeable.	
Max flush pressure, single flush:	7 psi
Water consumption, single flush:	8 gph
Flush connections:	BSPT or NPT

Temperature	
Max process and CIP temperature (dependent on rotor selection)	266°F

Motors
Gear motor, 4 poles, to NEMA standard, premium efficiency, suitable for frequency conversion.

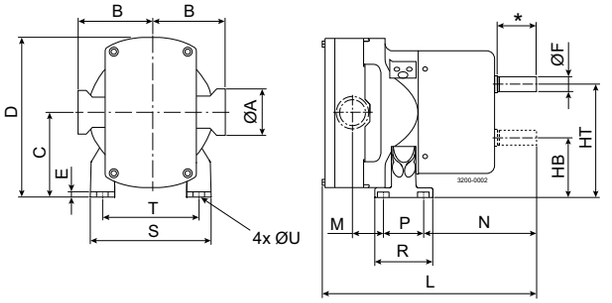
Warranty
Extended 3-years warranty on OptiLobe pumps. The warranty covers all non wear parts on the condition that genuine Alfa Laval Spare Parts are used.

Process data

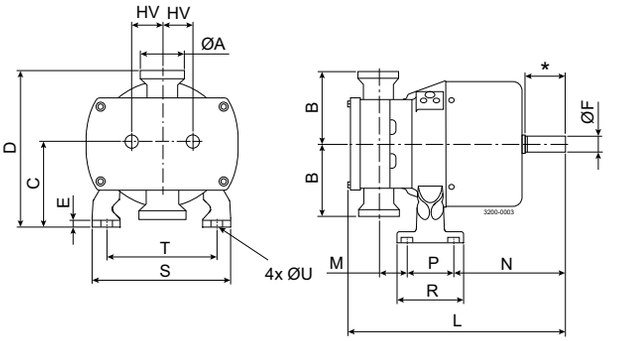
	Displacement			Inlet/Outlet		Diff. Pressure		Max Speed
	Litres/ rev	Imp gall/ 100 rev	US gall/ 100 rev	mm	inch	bar	psi	rpm
OptiLobe 12	0.06	1.23	1.48	25	1	8	115	1000
OptiLobe 13	0.10	2.18	2.61	40	1.5	8	115	1000
OptiLobe 22	0.17	3.74	4.49	40	1.5	8	115	1000
OptiLobe 23	0.21	4.62	5.55	40	1.5	8	115	1000
OptiLobe 32	0.32	7.04	8.45	50	2	8	115	1000
OptiLobe 33	0.40	8.80	10.57	50	2	8	115	1000
OptiLobe 42	0.64	14.08	16.91	65	2.5	8	115	1000
OptiLobe 43	0.82	18.04	21.66	80	3	8	115	1000
OptiLobe 52	1.17	25.74	30.89	80	3	8	115	750
OptiLobe 53	1.72	37.84	45.41	100	4	8	115	750

1.2

Dimensions (inch)



Horizontally Ported



Vertically Ported

* Shaft length G; Key width K; Key length J.

	Pump Model	A (FLANGE <O>)	B (Port Width Dim)	C (Port Height Dim)	D (Overall Height))	E (Foot Thickness)	F(Shaft <O>)	G (Shaft Length)	HB (Btm Shaft Height)	HT (Top Shaft Height)	HV (SHAFT OFFSET)
10	12	0.98	3.39	3.74	6.73	0.45	0.63	1.57	2.68	4.80	1.06
	13	1.57	3.39	3.74	6.73	0.45	0.63	1.57	2.68	4.80	1.06
20	22	1.57	3.78	4.72	8.48	0.57	0.79	1.97	3.31	6.14	1.42
	23	1.57	3.78	4.72	8.48	0.57	0.79	1.97	3.31	6.14	1.42
30	32	1.97	4.72	5.35	9.88	0.57	0.94	1.99	3.62	7.09	1.73
	33	1.97	4.72	5.35	9.88	0.57	0.94	1.99	3.62	7.09	1.73
40	42	2.56	5.12	6.26	11.57	0.77	1.18	2.20	4.17	8.35	2.09
	43	3.15	5.43	6.26	11.57	0.77	1.18	2.20	4.17	8.35	2.09
50	52	3.15	6.38	7.72	14.41	0.81	1.77	3.52	5.20	10.24	2.52
	53	3.94	6.38	7.72	14.41	0.81	1.77	3.52	5.20	10.24	2.52

	Pump Model	J (Key Length)	K (Key Width)	L (Overall Length)	M (Front Bolt Hole to Port)	N (Back Bolt Hole to End of Shaft)	P (Bolt Hole Length)	R (Foot Length)	S (Foot Width)	T (Bolt Hole Width)	U (Bolt Hole <O>)
10	12	1.18	0.20	9.07	1.08	4.23	2.36	3.31	4.96	3.70	0.39
	13	1.18	0.20	9.59	1.36	4.23	2.36	3.31	4.96	3.70	0.39
20	22	1.26	0.26	10.91	1.38	5.49	2.36	3.54	6.38	4.88	0.47
	23	1.26	0.26	11.26	1.73	5.49	2.36	3.54	6.38	4.88	0.47
30	32	1.57	0.31	11.97	1.38	6.18	2.52	3.74	7.56	5.91	0.47
	33	1.57	0.31	12.44	1.85	6.18	2.52	3.74	7.56	5.91	0.47
40	42	1.57	0.31	14.61	2.02	6.34	3.94	5.71	9.25	7.09	0.55
	43	1.57	0.31	15.24	2.38	6.34	3.94	5.71	9.25	7.09	0.55
50	52	2.76	0.55	16.08	2.44	4.80	4.72	6.69	11.22	8.27	0.55
	53	2.76	0.55	20.02	3.13	4.80	4.72	6.69	11.22	8.27	0.55

Options

A. Single mechanical shaft seal with flush.
B. Silicon Carbide/Carbon seal faces.
C. Silicon Carbide/Silicon Carbide seal faces.
D. Product wetted elastomers in FPM.
E. Heating and cooling front cover.
F. Horizontal or vertical porting.
G. Stainless steel shroud covering coupling and motor.
H. Baseplate fitted with adjustable stainless steel ball feet.

Pump sizing

In order to correctly size a rotary lobe pump some essential information is required. Provision of this information listed below enables our Technical Support personnel to obtain the optimum pump selection.

Product/Fluid Data

- Fluid to be pumped
- Viscosity
- Pumping temperature, minimum, normal and maximum
- Cleaning in Place temperature(s), minimum, normal and maximum

Performance Data

- Flow rate, minimum, normal and maximum
- Discharge head/pressure (closest to pump outlet)
- Suction condition

Alfa Laval SRU

Rotary lobe pump

Introduction

The Alfa Laval SRU Rotary Lobe Pump is a reliable positive displacement pump for the gentle handling of sensitive process fluids. The pump is carefully engineered to provide reliable performance, trouble-free operation and superior energy efficiency for demanding applications. It is an excellent choice for duties that require contamination-proof pumps to meet high standards of hygiene, low-shear and low-pulsation operation.

The pump is designed according to the most stringent hygienic design standards and with verified, effective Cleaning-in-Place.

Applications

The SRU Rotary Lobe Pump is designed for gentle handling of sensitive process fluids across the dairy, food, beverage, brewing, chemical, pharmaceutical, and home and personal care industries.

Its smooth, low-shear pumping action makes the pump suitable for handling media of varying viscosities, whether low or high-from creams, gels, emulsions, and aerated mixtures to delicate cells and organic solids in suspension.

The SRU Rotary Lobe Pump is available with 12 different pump head displacements based on six different gearbox modules to handle flow rates up to 106 m^3/h and differential pressures up to 20 bar.

Benefits

- Consistent performance.
- Minimal risk of contamination.
- Low maintenance, increased process uptime.
- Modular design for greater flexibility to configure exactly the right solution for specific process requirements.

Standard design

All media contacting steel components, like the rotor case, front cover, rotors and rotor nuts, are in W. 1.4404 (AISI 316L). The robust cast iron gearbox provides maximum shaft rigidity and easy oil seal replacement. The gearbox design is universal, which enables the flexibility of mounting pumps with the inlet and outlet ports in either a vertical or horizontal plane by changing the foot and its position.

The standard Alfa Laval SRU Rotary Lobe Pump has tri-lobe rotors. Optional bi-lobe rotors for handling fluids containing large delicate solids are available. All rotors are available in three temperature ratings enabling the pump to be operated at maximum process temperatures of 70°C, 130°C and 200°C for both fluid pumped and CIP.

Single, single flushed, and double mechanical shaft seals as well as packed gland, unflushed or flushed, are available.

The Alfa Laval SRU can be supplied either as a bare shaft pump or mounted on a base plate complete with coupling, guard, gear motor and shroud for easy, plug-and-play installation.

Working principle

A gear train in the pump gearbox drives the rotors and provides accurate synchronization of the tri-lobe rotors. The movement of the counter-rotating rotors creates a partial vacuum that allows atmospheric pressure or other external pressures to force fluid into the pump chamber. As the rotors revolve, an expanding cavity forms, filling with fluid. As the blades disengage, each dwell forms a cavity. As the rotor blades engage, the cavity diminishes and fluid is displaced into the outlet port.

TECHNICAL DATA

Standard specification	
Product wetted steel parts:	W. 1.4404 (316L)
Inside surface finish:	Mech Ra ≤ 31
Gearbox:	Cast iron
Base plate:	Stainless steel
Coupling guard:	Stainless steel
Rotor:	Tri-lobe, 158°F
Product wetted elastomers:	EPDM
Other elastomers:	NBR
Shaft seal:	Single mechanical (R90)
Rotary seal face:	Carbon
Stationary seal face:	Stainless steel

Shaft seals	
Single, single flush, double mechanical and packed gland, flushed and unflushed, available. For EHEDG compliance Hyclean type must be used.	
Max flush pressure, single flush:	7 psi
Max flush pressure, double mechanical:	1 bar over product pressure
Max flush pressure, packed gland, flushed:	1 bar over product pressure
Water consumption, flushed or double mechanical:	0.13 gallon/min
Flush connections:	BSPT or NPT

Temperature	
Max process and CIP temperature (dependent on rotor selection)	158°C , 266°C or 392°C

Motor
Gear motor, 4 poles, to IEC metric standard, 50/60 Hz, suitable for frequency conversion, IP55, insulation class F.

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

Flows/Pressures/Connections

SRU Series	Build Selection			SRU Model	Displacement			Inlet and Outlet Connection Size				Differential Pressure (see note 1)		Maximum Speed
								Hygienic		Enlarged				
	Pump Head Code	Gear-box	Shaft		Litres/rev	Imp gall/ 100 rev	US gall/ 100 rev	mm	in	mm	in	bar	psi	rev/min
1	005	L or H	D	SRU1NLD	0.053	1.17	1.4	25	1	-	-	8	115	1000
	008	L or H	D	SRU1WLD	0.085	1.87	2.25	25	1	40	1.5	5	75	1000
2	013	L or H	S	SRU2NLS	0.128	2.82	3.38	25	1	40	1.5	10	145	1000
	013	L or H	D	SRU2NLD	0.128	2.82	3.38	25	1	40	1.5	15	215	1000
	018	L or H	S	SRU2WLS	0.181	3.98	4.78	40	1.5	50	2	7	100	1000
	018	L or H	D	SRU2WLD	0.181	3.98	4.78	40	1.5	50	2	10	145	1000
3	027	L or H	S	SRU3NLS	0.266	5.85	7.03	40	1.5	50	2	10	145	1000
	027	L or H	D	SRU3NLD	0.266	5.85	7.03	40	1.5	50	2	15	215	1000
	038	L or H	S	SRU3WLS	0.384	8.45	10.15	50	2	65	2.5	7	100	1000
	038	L or H	D	SRU3WLD	0.384	8.45	10.15	50	2	65	2.5	10	145	1000
4	055	L or H	S	SRU4NLS	0.554	12.19	14.64	50	2	65	2.5	10	145	1000
	055	L or H	D	SRU4NLD	0.554	12.19	14.64	50	2	65	2.5	20	290	1000
	079	L or H	S	SRU4WLS	0.79	17.38	20.87	65	2.5	80	3	7	100	1000
	079	L or H	D	SRU4WLD	0.79	17.38	20.87	65	2.5	80	3	15	215	1000
5	116	L or H	S	SRU5NLS	1.16	25.52	30.65	65	2.5	80	3	10	145	600
	116	L or H	D	SRU5NLD	1.16	25.52	30.65	65	2.5	80	3	20	290	600
	168	L or H	S	SRU5WLS	1.68	36.95	44.39	80	3	100	4	7	100	600
	168	L or H	D	SRU5WLD	1.68	36.95	44.39	80	3	100	4	15	215	600
6	260	L or H	S	SRU6NLS	2.60	57.20	68.70	100	4	100	4	10	145	600
	260	L or H	D	SRU6NLD	2.60	57.20	68.70	100	4	100	4	20	290	600
	353	L or H	S	SRU6WLS	3.53	77.65	93.26	100	4	150	6	7	100	600
	353	L or H	D	SRU6WLD	3.53	77.65	93.26	100	4	150	6	15	215	600

L - Horizontal Porting

H - Vertical Porting

S - Stainless Steel

D - Duplex Stainless Steel

Note 1. These pressure ratings may vary for pumps with certain threaded connections.

Maximum Solid Size Capability

	Max. size of spherical solids			
	Bi-lobe rotors		Tri-lobe rotors	
	mm	in	mm	in
SRU1/005	8	0.31	6	0.24
SRU1/008	8	0.31	6	0.24
SRU2/013	8	0.31	6	0.24
SRU2/018	13	0.51	9	0.35
SRU3/027	13	0.51	9	0.35
SRU3/038	16	0.63	11	0.43
SRU4/055	16	0.63	11	0.43
SRU4/079	22	0.87	15	0.59
SRU5/116	22	0.87	15	0.59
SRU5/168	27	1.06	18	0.71
SRU6/260	27	1.06	18	0.71
SRU6/353	37	1.46	24	0.94

Weight

	Bare Shaft Pump (lbs)	
	Horizontal porting	Vertical porting
SRU1N	37	39
SRU1W	41	44
SRU2N	66	70
SRU2W	68	72
SRU3N	121	127
SRU3W	127	134
SRU4N	242	256
SRU4W	254	267
SRU5N	326	408
SRU5W	344	425
SRU6N	503	573
SRU6W	514	584

Shaft Seal Options

- Single or single flush/quench.
  R90 or Hyclean type mechanical seals.
- Double R90 type mechanical seal for flush (steam barrier for aseptic application).
- Packed gland (unflushed or flushed versions).

Note: EHEDG compliance only for Hyclean type mechanical seals.

Materials for Mechanical Seals

Carbon/Stainless steel, Tungsten Carbide/Tungsten Carbide, Silicon Carbide/Silicon Carbide or variations of these materials to suit fluid being pumped and/or application requirements. (N.B. Material variants are not available on all R90/Hyclean seal types)

Pump Sizing

In order to correctly size a rotary lobe pump some essential information is required. Provision of this information listed below enables our Technical Support personnel to obtain the optimum pump selection.

Product/Fluid Data

- Fluid to be pumped
- Viscosity
- SG/Density
- Pumping temperature, minimum, normal and maximum
- Cleaning in Place temperature(s), minimum, normal and maximum

Performance Data

- Flow rate, minimum, normal and maximum
- Discharge head/pressure (closest to pump outlet)
- Suction condition

Standard Specification Options

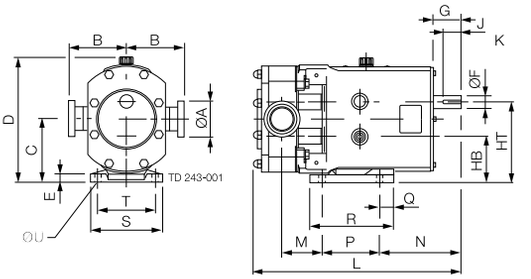
- Tri-clamp inlet and outlet ports standard
- Specification of inlet and outlet ports (Screwed male to BSP, DIN11851, SMS. ISS/IDF, RJT, or Flanged to EN1092-1 B1 PN16, ASA/ANSI 150, BS10E and other standards).
- Rotorcase Cover with integral Pressure Relief Valve.
- Heating/Cooling Saddle Jackets for Rotorcase and Jacket for Rotorcase Cover (not available when relief valve fitted).
- Bi-lobe Rotors in stainless steel and non-galling alloy.
- Complete pump unit comprising: Pump + Baseplate (mild or stainless steel) + coupling with guard + Geared electric motor suitable for (or supplied with) frequency speed control or manual variable speed drive (advise motor enclosure and electrical supply).

1.2

Dimensions

Horizontally ported

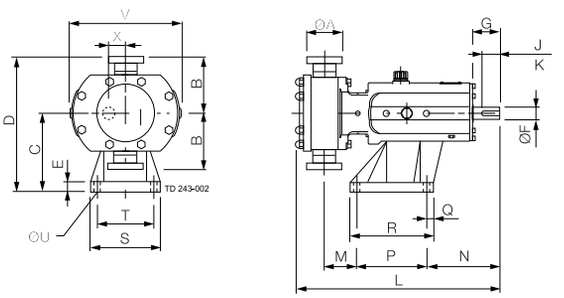
A1 denotes hygienic port dimension
A2 denotes enlarged port dimension



PUMP	A1	A2	B	C	D	E	F	G	HB	HT	J	K	L	M	N	P	Q	R	S	T	U
SRU1N	1.00	-	3.74	3.56	7.44	0.39	0.63	1.57	2.68	4.45	1.18	0.2	11.18	1.65	4.88	3.15	0.39	3.94	3.94	3.15	0.39
SRU1W	1.00	1.50	3.74	3.56	7.44	0.39	0.63	1.57	2.68	4.45	1.18	0.2	11.57	1.89	4.88	3.15	0.39	3.94	3.94	3.15	0.39
SRU2N	1.00	1.50	4.13	4.53	9.17	0.63	0.87	1.97	3.35	5.71	1.26	0.24	13.35	2.36	5.16	3.94	0.75	5.20	4.88	3.94	0.47
SRU2W	1.50	2.00	4.13	4.53	9.17	0.63	0.87	1.97	3.35	5.71	1.26	0.24	13.74	2.50	5.16	3.94	0.75	5.20	4.88	3.94	0.47
SRU3N	1.50	2.00	4.92	5.41	10.71	0.71	1.10	2.36	3.94	6.89	1.57	0.31	17.28	3.25	6.93	4.92	1.18	7.13	6.06	4.92	0.55
SRU3W	2.00	2.50	4.92	5.41	10.71	0.71	1.10	2.36	3.94	6.89	1.57	0.31	17.80	3.43	6.93	4.92	1.18	7.13	6.06	4.92	0.55
SRU4N	2.00	2.50	5.91	6.42	12.80	0.79	1.49	3.15	4.53	8.31	2.48	0.39	21.30	3.98	8.82	5.91	1.38	7.95	7.24	5.91	0.55
SRU4W	2.50	3.00	5.91	6.42	12.80	0.79	1.49	3.15	4.53	8.31	2.48	0.39	21.97	4.33	8.82	5.91	1.38	7.95	7.24	5.91	0.55
SRU5N	2.50	3.00	6.89	7.68	15.04	0.87	1.77	4.33	5.31	10.04	2.76	0.55	24.76	3.80	10.98	7.09	1.38	9.45	8.27	7.09	0.55
SRU5W	3.00	4.00	6.89	7.68	15.04	0.87	1.77	4.33	5.31	10.04	2.76	0.55	25.67	4.25	10.98	7.09	1.38	9.45	8.27	7.09	0.55
SRU6N	4.00	-	7.48	8.86	17.17	0.87	1.89	4.33	6.10	11.61	2.76	0.55	29.45	4.88	10.51	10.24	0.79	11.81	8.66	7.48	0.55
SRU6W	4.00	6.00	7.48	8.86	17.17	0.87	1.89	4.33	6.10	11.61	2.76	0.55	30.63	5.49	10.51	10.24	0.79	11.81	8.66	7.48	0.55

Vertically ported

A1 denotes hygienic port dimension
A2 denotes enlarged port dimension



PUMP	A1	A2	B	C	D	E	F	G	J	K	L	M	N	P	Q	R	S	T	U	V	X
SRU1N	1.00	-	3.74	4.45	8.19	0.59	16	1.57	1.18	5	11.18	1.93	4.61	3.15	0.87	4.49	4.09	3.15	0.39	6.85	0.89
SRU1W	1.00	1.50	3.74	4.45	8.19	0.59	16	1.57	1.18	5	11.57	2.17	4.61	3.15	0.87	4.49	4.09	3.15	0.39	6.85	0.89
SRU2N	1.00	1.50	4.13	5.79	9.92	0.63	22	1.97	1.26	6	13.35	2.64	4.88	3.94	0.47	4.88	4.88	3.94	0.47	8.39	1.18
SRU2W	1.50	2.00	4.13	5.79	9.92	0.63	22	1.97	1.26	6	13.74	2.78	4.88	3.94	0.47	4.88	4.88	3.94	0.47	8.39	1.18
SRU3N	1.50	2.00	4.92	6.89	11.81	0.87	28	2.36	1.57	8	17.28	2.66	6.34	6.10	0.59	7.28	6.10	4.92	0.55	9.69	1.48
SRU3W	2.00	2.50	4.92	6.89	11.81	0.87	28	2.36	1.57	8	17.80	2.83	6.34	6.10	0.59	7.28	6.10	4.92	0.55	9.69	1.48
SRU4N	2.00	2.50	5.91	8.39	14.29	0.98	38	3.15	2.48	10	12.30	3.07	7.76	7.87	0.67	9.21	7.24	5.91	0.55	11.85	1.89
SRU4W	2.50	3.00	5.91	8.39	14.29	0.98	38	3.15	2.48	10	21.97	3.43	7.76	7.87	0.67	9.21	7.24	5.91	0.55	11.85	1.89
SRU5N	2.50	3.00	6.89	10.12	17.01	1.06	45	4.33	2.76	14	24.76	3.60	10.39	7.87	0.79	9.45	8.66	7.09	0.55	13.82	2.36
SRU5W	3.00	4.00	6.89	10.12	17.01	1.06	45	4.33	2.76	14	25.67	4.05	10.39	7.87	0.79	9.45	8.66	7.09	0.55	13.82	2.36
SRU6N	4.00	-	7.48	11.61	19.09	1.06	48	4.33	2.76	14	29.45	4.88	10.51	10.24	0.79	11.81	9.84	8.27	0.55	15.75	2.76
SRU6W	4.00	6.00	7.48	11.61	19.09	1.06	48	4.33	2.76	14	30.63	5.49	10.51	10.24	0.79	11.81	9.84	8.27	0.55	15.75	2.76

Alfa Laval SX

Rotary lobe pumps

Introduction

The Alfa Laval SX Rotary Lobe Pump is designed with optimized pump head geometry and multi-lobe rotors to ensure low-shear operation with minimum pulsation. This makes the SX the best choice for maintaining the integrity of delicate products.

The pump is designed according to the most stringent hygienic design standards and with verified, effective Cleaning-in-Place (CIP) and Sterilization-in-Place (SIP).

Applications

The SX Rotary Lobe pump is designed for gentle transportation of process fluids in hygienic and ultra-clean applications in the biotechnology and pharmaceutical industries, in the home and personal care sector, and for demanding food applications.

The SX Rotary Lobe Pump is available with 14 different pump head displacements based on seven different gearbox modules to handle flow rates up to 115 m^3/h and differential pressures up to 15 bar.

Benefits

- Low pulsation and very gentle pumping, making the pump ideal for sensitive products.
- Minimized shearing for protecting end-product quality.
- Low maintenance, increased process uptime.
- Maximized performance and minimized risk of contamination.

Standard design

All media contacting steel components, like the rotor case, front cover, rotors and rotor nuts, are in W. 1.4404 (AISI 316L). The robust cast iron gearbox provides maximum shaft rigidity and easy oil seal replacement. The gearbox design is universal which enables the flexibility of mounting pumps with the inlet and outlet ports in either a vertical or horizontal plane by changing the foot and its position.

The standard Alfa Laval SX has four-lobe rotors rated to 150°C, facilitating use with CIP and SIP processes.

Fully front-loading and fully interchangeable single, single flushed, and double mechanical shaft seals are available. All media contacting elastomers are controlled compression joints, the latest technology where static and dynamic elastomer seals are used to prevent leakage of pumped media to the atmosphere.

The Alfa Laval SX can be supplied either as a bare shaft pump or mounted on a base plate complete with coupling, guard, gear motor and shroud for easy, plug-and-play installation.

Working principle

A gear train in the pump gearbox drives the rotors and provides accurate synchronization of the multi-lobe rotors. The movement of the counter-rotating rotors creates a partial vacuum that allows atmospheric pressure or other external pressures to force fluid into the pump chamber. As the rotors revolve, an expanding cavity forms, filling with fluid. As the blades disengage, each dwell forms a cavity. As the rotor blades engage, the cavity diminishes, and fluid is displaced into the outlet port.

1.2

TECHNICAL DATA

Standard specification	
Product wetted steel parts:	W. 1.4404 (316L)
Inside surface finish:	Mech Ra ≤ 32
Gearbox:	Cast iron
Base plate:	Stainless steel
Coupling guard:	Stainless steel
Rotor:	Four-lobe
Product wetted elastomers:	EPDM
Other elastomers:	FPM
Shaft seal:	Single mechanical (R00)
Rotary seal face:	Carbon
Stationary seal face:	Stainless steel

Shaft seals	
Single, single flush and double mechanical available. All options are fully front loading and interchangeable.	
Max flush pressure, single flush:	7.25 psi
Max flush pressure, double mechanical:	1 bar over product pressure
Water consumption, flushed or double mechanical:	0.13 gallon/min
Flush connections:	BSPT or NPT

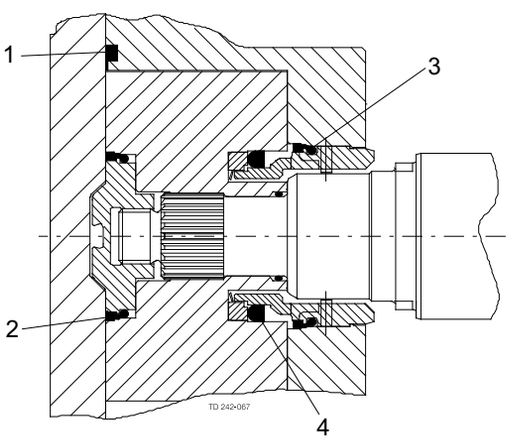
Temperature	
Max process and CIP temperature	302°F

Motor
Gear motor, 4 poles, to IEC metric standard, 50/60 Hz, suitable for frequency conversion, IP55, insulation class F.

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

Media contacting elastomers

All media contacting elastomers are controlled compression joints, the latest technology where static and dynamic elastomer seals are used to prevent pumped media leaking to atmosphere.



1. Front cover compression joint
2. Spline sealing cup seal
3. Cup seal
4. Squad ring

Flows/Pressures/Connections

SX Series	SX Model	Displacement			Inlet and Outlet Connection Size		Differential Pressure (see note 1)		Maximum Speed
		Litre/rev	Imp gall/100 rev	US gall/100 rev	mm	in	bar	psi	rev/min
1	SX1NLD	0.05	1.11	1.32	25	1	12	175	1200
	SX1WLD	0.07	1.54	1.85	40	1.5	7	100	1200
2	SX2NLD	0.128	2.82	3.38	40	1.5	15	215	1000
	SX2WLD	0.181	3.98	4.78	50	2	7	100	1000
3	SX3NLD	0.266	5.85	7.03	50	2	15	215	1000
	SX3WLD	0.35	7.70	9.25	65	2.5	7	100	1000
4	SX4NLD	0.46	10.12	12.15	50	2	15	215	1000
	SX4WLD	0.63	13.86	16.65	65	2.5	10	145	1000
5	SX5NLD	0.82	18.04	21.67	65	2.5	15	215	600
	SX5WLD	1.15	25.30	30.38	80	3	10	145	600
6	SX6NLD	1.40	30.80	36.99	80	3	15	215	500
	SX6WLD	1.90	41.80	50.20	100	4	10	145	500
7	SX7NLD	2.50	55.00	66.05	100	4	15	215	500
	SX7WLD	3.80	83.60	100.40	150	6	10	145	500

Note 1. These pressure ratings may vary for pumps with certain threaded connections.

1.2

Maximum Solid Size Capability

Pump sizes	Max. size of spherical solids (in)
SX1	0.28
SX2	0.39
SX3	0.51
SX4	0.63
SX5	0.75
SX6	0.98
SX7	1.10

Weight

Model	Bare Shaft Pump (lbs.)	
	Horizontal porting	Vertical porting
SX1NLD	37	39
SX1WLD	39	41
SX2NLD	75	77
SX2WLD	77	79
SX3NLD	130	134
SX3WLD	134	138
SX4NLD	247	254
SX4WLD	260	267
SX5NLD	342	342
SX5WLD	364	364
SX6NLD	613	613
SX6WLD	639	639
SX7NLD	741	758
SX7WLD	789	807

Shaft Seal Options

- Single or single flush/quench (steam barrier for aseptic application) R00 type mechanical seals.
- Double R00 type mechanical seal for flush.

All sealing options are fully front loading and fully interchangeable without the need for additional housings or pump component changes. Specialised seal setting of the mechanical seal is not required as the seal is dimensionally set on assembly. This feature further enhances fast and efficient on-site seal interchangeability.

Materials for Mechanical Seals

Carbon/Stainless Steel, Silicon Carbide/Silicon Carbide or variations of these materials to suit fluid being pumped and/or application requirements. The seal seat and face material combinations are all EHEDG compliant.

Standard Specification Options

- Tri-clamp inlet and outlet ports standard
- Screwed male inlet and outlet ports to DIN11851, DIN11864, SMS, ISS/IDF, RJT or Tri-clamp.
- Heating/Cooling Jacket for Rotorcase Cover.
- ATEX compliance.
- Complete pump unit comprising: Pump + Baseplate (mild or stainless steel) + coupling with guard + Geared electric motor suitable for (or supplied with) frequency speed control or manual variable speed drive (advise motor enclosure and electrical supply).

Pump Sizing

In order to correctly size a rotary lobe pump some essential information is required. Provision of this information listed below enables our Technical Support personnel to obtain the optimum pump selection.

Product/Fluid Data

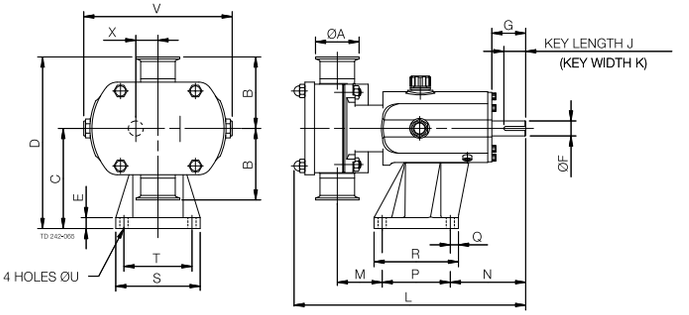
- Fluid to be pumped
- Viscosity
- SG/Density
- Pumping temperature, minimum, normal and maximum
- Cleaning in Place temperature(s), minimum, normal and maximum

Performance Data

- Flow rate, minimum, normal and maximum
- Discharge head/pressure (closest to pump outlet)
- Suction condition

Bareshaft Pump Dimensions

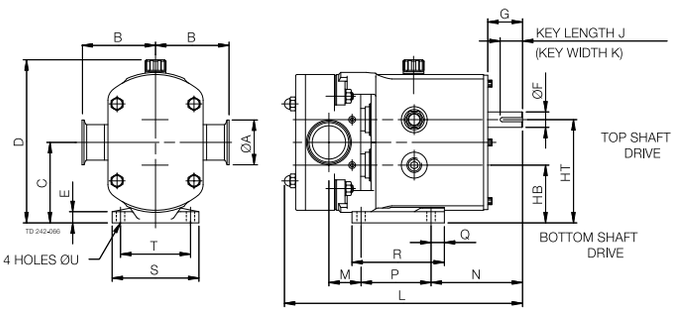
Vertically ported



All dimensions in inches, except where noted

PUMP	A	B	C	D	E	F	G	J	K	L	M	N	P	Q	R	S	T	U	V	X
SX1NLD	1.00	3.74	4.45	8.19	0.63	0.63	1.57	1.18	0.20	11.14	2.11	3.94	3.15	0.87	4.49	4.09	3.15	0.39	7.05	0.93
SX1WLD	1.50	3.74	4.45	8.19	0.63	0.63	1.57	1.18	0.20	11.65	2.36	3.94	3.15	0.87	4.49	4.09	3.15	0.39	7.05	0.93
SX2NLD	1.50	4.13	5.79	9.92	0.63	0.87	1.97	1.26	0.24	12.87	2.30	4.37	3.94	0.47	4.88	4.88	3.94	0.47	8.62	1.28
SX2WLD	2.00	4.13	5.79	9.92	0.63	0.87	1.97	1.26	0.24	13.50	2.58	4.37	3.94	0.47	4.88	4.88	3.94	0.47	8.62	1.28
SX3NLD	2.00	4.92	6.89	11.81	0.87	1.10	2.36	1.57	0.31	17.09	2.85	5.59	6.10	0.59	7.28	6.10	4.92	0.55	9.96	1.48
SX3WLD	2.50	4.92	6.89	11.81	0.87	1.10	2.36	1.57	0.31	17.72	3.07	5.59	6.10	0.59	7.28	6.10	4.92	0.55	9.96	1.48
SX4NLD	2.00	5.91	8.39	14.29	0.98	1.50	3.15	2.48	0.39	20.35	2.95	6.85	7.87	0.67	9.21	7.24	5.91	0.55	12.09	1.95
SX4WLD	2.50	5.91	8.39	14.29	0.98	1.50	3.15	2.48	0.39	21.10	3.20	6.85	7.87	0.67	9.21	7.24	5.91	0.55	12.09	1.95
SX5NLD	2.50	6.89	10.12	17.01	1.06	1.77	4.33	2.76	0.55	23.70	2.40	10.39	7.87	0.79	9.45	8.66	7.09	0.55	13.81	2.36
SX5WLD	3.00	6.86	10.12	17.01	1.06	1.77	4.33	2.76	0.55	24.80	3.17	10.39	7.87	0.79	9.45	8.66	7.09	0.55	13.81	2.36
SX6NLD	3.00	7.48	11.61	19.09	1.06	1.89	4.33	2.76	0.55	27.20	3.07	10.51	10.24	0.79	11.81	9.84	8.27	0.55	15.75	2.76
SX6WLD	4.00	7.48	11.61	19.09	1.06	1.89	4.33	2.76	0.55	28.31	3.54	10.51	10.24	0.79	11.81	9.84	8.27	0.55	15.75	2.76
SX7NLD	4.00	8.07	14.37	22.44	1.02	2.36	4.33	3.54	0.71	30.20	3.70	11.34	11.02	0.98	12.99	11.42	9.45	0.71	18.70	3.21
SX7WLD	6.00	8.07	14.37	22.44	1.02	2.36	4.33	3.54	0.71	32.32	4.76	11.34	11.02	0.98	12.99	11.42	9.45	0.71	18.70	3.21

Horizontally ported



All dimensions in inches, except where noted

PUMP	A	B	C	D	E	F	G	HB	HT	J	K	L	M	N	P	Q	R	S	T	U
SX1NLD	1.00	3.74	3.54	7.40	0.39	0.63	1.57	2.62	4.47	1.18	0.20	11.14	1.16	4.61	3.15	0.98	4.53	3.94	3.15	0.39
SX1WLD	1.50	3.74	3.54	7.40	0.39	0.63	1.57	2.62	4.47	1.18	0.20	11.65	1.69	4.61	3.15	0.98	4.53	3.94	3.15	0.39
SX2NLD	1.50	4.13	4.53	9.17	0.63	0.87	1.97	3.25	5.81	1.26	0.24	12.87	1.52	5.16	3.94	0.75	5.20	4.88	3.94	0.47
SX2WLD	2.00	4.13	4.53	9.17	0.63	0.87	1.97	3.25	5.81	1.26	0.24	13.50	1.79	5.16	3.94	0.75	5.20	4.88	3.94	0.47
SX3NLD	2.00	4.92	5.43	10.75	0.71	1.1	2.36	3.96	6.91	1.57	0.31	17.09	2.74	6.89	4.92	1.18	7.13	6.06	4.92	0.55
SX3WLD	2.50	4.92	5.43	10.75	0.71	1.1	2.36	3.96	6.91	1.57	0.31	17.72	2.95	6.89	4.92	1.18	7.13	6.06	4.92	0.55
SX4NLD	2.00	5.91	6.42	12.80	0.79	1.5	3.15	4.47	8.37	2.48	0.39	20.35	2.95	8.81	5.91	1.38	7.95	7.24	5.91	0.55
SX4WLD	2.50	5.91	6.42	12.80	0.79	1.5	3.15	4.47	8.37	2.48	0.39	21.10	3.21	8.81	5.91	1.38	7.95	7.24	5.91	0.55
SX5NLD	2.50	6.89	7.68	15.04	0.87	1.77	4.33	5.31	10.04	2.76	0.55	23.70	2.60	10.98	7.09	1.38	9.45	8.27	7.09	0.55
SX5WLD	3.00	6.89	7.68	15.04	0.87	1.77	4.33	5.31	10.04	2.76	0.55	24.80	3.37	10.98	7.09	1.38	9.45	8.27	7.09	0.55
SX6NLD	3.00	7.48	8.86	17.17	0.87	1.89	4.33	6.10	11.61	2.76	0.55	28.20	3.07	10.51	10.2	0.79	11.81	8.66	7.48	0.55
SX6WLD	4.00	7.48	8.86	17.17	0.87	1.89	4.33	6.10	11.61	2.76	0.55	28.31	3.54	10.51	10.2	0.79	11.81	8.66	7.48	0.55
SX7/NLD	3.94	8.07	10.89	20.63	1.06	2.36	4.33	7.68	14.09	3.54	0.71	30.20	3.90	10.75	11.42	0.98	13.39	11.42	9.45	0.71
SX7/WLD	5.91	8.07	10.89	20.63	1.06	2.36	4.33	7.68	14.09	3.54	0.71	32.32	4.96	10.75	11.42	0.98	13.39	11.42	9.45	0.71

Alfa Laval SX UltraPure

Rotary lobe pumps

Introduction
The Alfa Laval SX UltraPure Rotary Lobe Pump is designed with optimized pump head geometry and multi-lobe rotors to ensure low-shear operation with minimum pulsation. This makes the SX UltraPure the best choice for maintaining the integrity of delicate products in high-purity applications.

The pump is designed according to the most stringent hygienic design standards and with verified, effective Cleaning-in-Place (CIP) and Sterilization-in-Place (SIP).

Applications
The SX UltraPure Rotary Lobe Pump is designed for gentle transportation of process fluids in high-purity applications across the biotechnology, pharmaceutical, and home and personal care industries.

The SX UltraPure is available with 14 different pump head displacements based on seven different gearbox modules to handle flow rates up to 115 m^3/h and differential pressures up to 15 bar.

Benefits
- Low pulsation and very gentle pumping, making the pump ideal for sensitive products.
- Minimized shearing to protect end-product quality.
- Low maintenance, increased process uptime.
- Low contamination risk due to full material traceability and USP Class VI elastomers that reduce the risk of process contamination from extractables.
- Smooth qualification, validation and process control: material traceability, and pump supplied with the Alfa Laval Q-doc package in line with Good Documentation Practices.

Standard design
All media contacting steel components, like the rotor case, front cover, rotors and rotor nuts, are in W. 1.4404 (AISI 316L). The stainless steel gearbox provides maximum shaft rigidity and easy oil seal replacement. The gearbox design is universal, which enables the flexibility of mounting pumps with the inlet and outlet ports in either a vertical or horizontal plane by changing the foot and its position.

The standard Alfa Laval SX UltraPure has four-lobe rotors rated to 150°C, facilitating use with CIP and SIP processes.

Fully front-loading and fully interchangeable single, single flushed and double mechanical shaft seals are available. All media contacting elastomers are controlled compression joints, the latest technology where static and dynamic elastomer seals are used to prevent leakage of pumped media to the atmosphere.

The Alfa Laval SX UltraPure can be supplied either as a bare shaft pump or mounted on a base plate complete with coupling, guard, gear motor and shroud for easy, plug-and-play installation.

Working principle
A gear train in the pump gearbox drives the rotors and provides accurate synchronization of the multi-lobe rotors. The movement of the counter-rotating rotors creates a partial vacuum that allows atmospheric pressure or other external pressures to force fluid into the pump chamber. As the rotors revolve, an expanding cavity forms, filling with fluid. As the blades disengage, each dwell forms a cavity. As the rotor blades engage, the cavity diminishes and fluid is displaced into the outlet port.

Authorized to carry the 3A symbol

1.2

TECHNICAL DATA

Standard specification	
Product wetted steel parts:	W. 1.4404 (316L) with material traceability 3.1 according to EN 10204
Inside surface finish:	Mech Ra ≤ 32
Gearbox:	Stainless steel
Base plate:	Stainless steel
Coupling guard:	Stainless steel
Rotor:	Four-lobe
Product wetted elastomers:	EPDM - USP Class VI, 121°C. Chapter 88, and Chapter 87
Other elastomers:	FPM
Shaft seal:	Single mechanical (R00)
Rotary seal face:	Silicon Carbide
Stationary seal face:	Silicon Carbide

Shaft seals	
Single, single flush and double mechanical available. All options are fully front loading and interchangeable.	
Max flush pressure, single flush:	Max. 7.25 psi
Max flush pressure, double mechanical:	Max. 1 bar over product pressure
Water consumption, flushed or double mechanical:	0.13 gallon/min
Flush connections:	BSPT or NPT

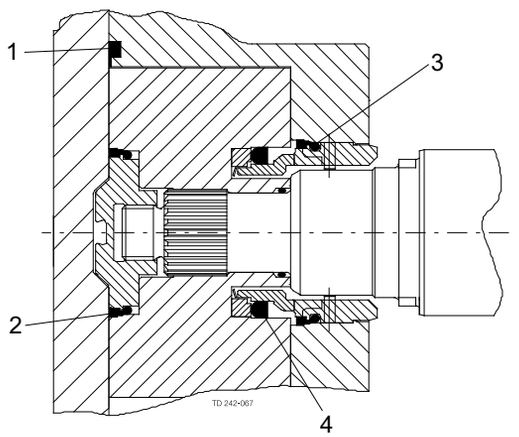
Temperature	
Max process and CIP temperature	302ºF

Motor
Gear motor, 4 poles, to IEC metric standard, 50/60 Hz, suitable for frequency conversion, IP55, insulation class F.

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

Media contacting elastomers

All media contacting elastomers are controlled compression joints, the latest technology where static and dynamic elastomer seals are used to prevent pumped media leaking to atmosphere.



1. Front cover compression joint
2. Spline sealing cup seal
3. Cup seal
4. Squad ring

Flows/Pressures/Connections

SX Model	Displacement			Inlet and Outlet Connection Size		Differential Pressure (see note 1)		Maximum Speed
	Litre/rev	Imp gall/100 rev	US gall/100 rev	mm	in	bar	psi	rev/min
SX UltraPure 1NDL	0.05	1.11	1.32	25	1	12	175	1200
SX UltraPure 1WLD	0.07	1.54	1.85	40	1.5	7	100	1200
SX UltraPure 2NDL	0.128	2.82	3.38	40	1.5	15	215	1000
SX UltraPure 2WLD	0.181	3.98	4.78	50	2	7	100	1000
SX UltraPure 3NDL	0.266	5.85	7.03	50	2	15	215	1000
SX UltraPure 3WLD	0.35	7.70	9.25	65	2.5	7	100	1000
SX UltraPure 4NDL	0.46	10.12	12.15	50	2	15	215	1000
SX UltraPure 4WLD	0.63	13.86	16.65	65	2.5	10	145	1000
SX UltraPure 5NDL	0.82	18.04	21.67	65	2.5	15	215	600
SX UltraPure 5WLD	1.15	25.30	30.38	80	3	10	145	600
SX UltraPure 6NDL	1.40	30.80	36.99	80	3	15	215	500
SX UltraPure 6WLD	1.90	41.80	50.20	100	4	10	145	500
SX UltraPure 7NDL	2.50	55.00	66.05	100	4	15	215	500
SX UltraPure 7WLD	3.80	83.60	100.40	150	6	10	145	500

Note 1. These pressure ratings may vary for pumps with certain threaded connections.

Weight

Model	Bare Shaft Pump lbs.	
	Horizontal porting	Vertical porting
SX UltraPure 1NLD	37	39
SX UltraPure 1WLD	39	41
SX UltraPure 2NLD	75	77
SX UltraPure 2WLD	77	79
SX UltraPure 3NLD	130	134
SX UltraPure 3WLD	134	138
SX UltraPure 4NLD	247	254
SX UltraPure 4WLD	260	267
SX UltraPure 5NLD	342	342
SX UltraPure 5WLD	364	364
SX UltraPure 6NLD	613	613
SX UltraPure 6WLD	639	639
SX UltraPure 7NLD	-	750
SX UltraPure 7WLD	-	798

Shaft Seal Options

- Single or single flush/quench (steam barrier for aseptic application) R00 type mechanical seals.
- Double R00 type mechanical seal for flush.

All sealing options are fully front loading and fully interchangeable without the need for additional housings or pump component changes. Specialised seal setting of the mechanical seal is not required as the seal is dimensionally set on assembly. This feature further enhances fast and efficient on-site seal interchangeability.

Materials for Mechanical Seals

As standard the SX UltraPure is supplied with EHEDG compliant Silicon Carbide/Silicon Carbide seal faces avoiding any risk of potential extractable contamination.

Standard Specification Options

- Screwed male inlet and outlet ports to DIN11851, SMS, RJT, Triclamp for ASME, DIN 32676 Clamp, DIN 11864-1 (Union) Form A, DIN 11864-2 (Flange) Form A or DIN 11864-3 (Clamp) Form A.
- Heating/Cooling Jacket for Rotorcase Cover.
- Product wetted surface finish electropolished to Ra 15 µin.
- Passivated surface.
- Surface finish measurement with certificate.
- Hydrostatic testing with certificate.
- ATEX compliance.
- Complete pump unit comprising: Pump + stainless steel baseplate + coupling with guard + Geared electric motor suitable for (or supplied with) frequency speed control or manual variable speed drive (advise motor enclosure and electrical supply).
- Low delta ferrite material for product wetted components.
- High alloy materials for product wetted components i.e AL6XN or Titanium.

Q-doc

Standard documentation package:

- Declaration of compliance with Regulation (EC) No.: 1935/2004
- Declaration of compliance to EN 10204 type 3.1 (MTR)
- Declaration of compliance to the U.S. Food & Drug Administration CFR 21 (non-metallic parts)
- Declaration of compliance to the U.S. Pharmacopeia (Elastomers and polymers)
- TSE (Transmissible Spongiform Encephalopathy) / ADI (Animal Derivative Ingredient) declaration
- Declaration of surface finish compliance
- Declaration of passivation and electro polishing (if specified)
- 3.1 certification in accordance to EN10204
- Pump performance test certificate

Optional documentation:

- Hydrostatic test certificate
- Surface measurement report

Pump Sizing

In order to correctly size a rotary lobe pump some essential information is required. Provision of this information listed below enables our Technical Support personnel to obtain the optimum pump selection.

Product/Fluid Data

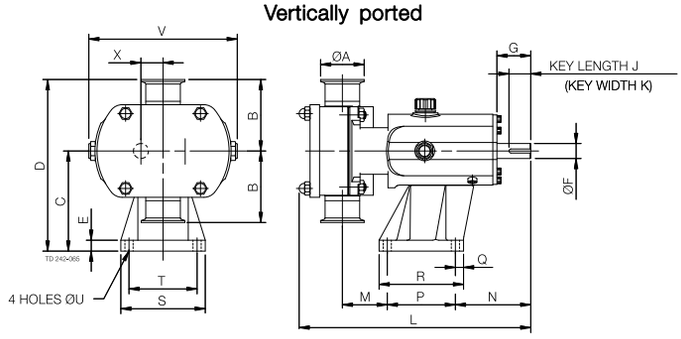
- Fluid to be pumped
- Viscosity
- SG/Density
- Pumping temperature, minimum, normal and maximum
- Cleaning in Place temperature(s), minimum, normal and maximum

Performance Data

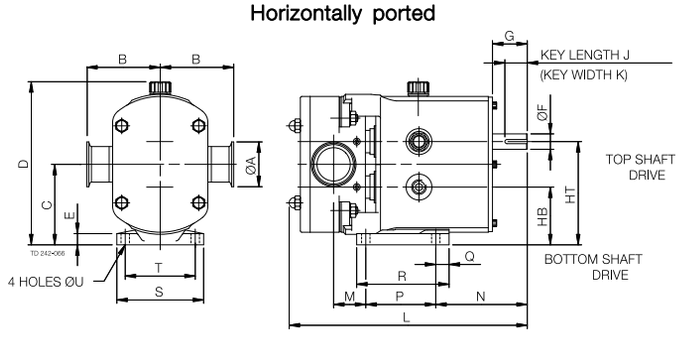
- Flow rate, minimum, normal and maximum
- Discharge head/pressure (closest to pump outlet)
- Suction condition

Bareshaft Pump Dimensions

Vertically ported



Horizontally ported



All dimensions in inches, except where noted

PUMP	A	B	C	D	E	F	G	J	K	L	M	N	P	Q	R	S	T	U	V	X
SX UltraPure 1NLD	1.00	3.74	4.45	8.19	0.63	0.63	1.57	1.18	0.20	10.87	2.13	3.94	3.15	0.87	4.49	4.09	3.15	0.39	7.05	0.93
SX UltraPure 1WLD	1.50	3.74	4.45	8.19	0.63	0.63	1.57	1.18	0.20	11.38	2.36	3.94	3.15	0.87	4.49	4.09	3.15	0.39	7.05	0.93
SX UltraPure 2NLD	1.50	4.13	5.79	9.92	0.63	0.87	1.97	1.26	0.24	12.76	2.32	4.37	3.94	0.47	4.88	4.88	3.94	0.47	8.62	1.28
SX UltraPure 2WLD	2.00	4.13	5.79	9.92	0.63	0.87	1.97	1.26	0.24	13.39	2.60	4.37	3.94	0.47	4.88	4.88	3.94	0.47	8.62	1.28
SX UltraPure 3NLD	2.00	4.92	6.89	11.81	0.87	1.10	2.36	1.57	0.31	16.97	2.83	5.59	6.10	0.59	7.28	6.10	4.92	0.55	9.96	1.48
SX UltraPure 3WLD	2.50	4.92	6.89	11.81	0.87	1.10	2.36	1.57	0.31	17.60	3.03	5.59	6.10	0.59	7.28	6.10	4.92	0.55	9.96	1.48
SX UltraPure 4NLD	2.00	5.91	8.39	14.29	0.98	1.50	3.15	2.48	0.39	20.24	2.95	6.85	7.87	0.67	9.21	7.24	5.91	0.55	12.09	1.95
SX UltraPure 4WLD	2.50	5.91	8.39	14.29	0.98	1.50	3.15	2.48	0.39	20.98	3.19	6.85	7.87	0.67	9.21	7.24	5.91	0.55	12.09	1.95
SX UltraPure 5NLD	2.50	6.89	10.12	17.01	1.18	1.77	4.33	2.76	0.55	23.58	2.40	10.39	7.87	0.79	9.45	8.66	7.09	0.55	13.58	2.36
SX UltraPure 5WLD	3.00	6.86	10.12	17.01	1.18	1.77	4.33	2.76	0.55	24.65	3.19	10.39	7.87	0.79	9.45	8.66	7.09	0.55	13.58	2.36
SX UltraPure 6NLD	3.00	7.48	11.61	19.09	1.18	1.89	4.33	2.76	0.55	27.05	3.03	10.51	10.24	0.79	11.81	9.84	8.27	0.55	15.75	2.76
SX UltraPure 6WLD	4.00	7.48	11.61	19.09	1.18	1.89	4.33	2.76	0.55	28.15	3.50	10.51	10.24	0.79	11.81	9.84	8.27	0.55	15.75	2.76
SX UltraPure 7NLD	4.00	8.07	14.37	22.44	1.18	2.36	4.33	3.54	0.71	30.04	3.70	11.34	11.02	0.98	12.99	11.42	9.45	0.71	18.70	3.21
SX UltraPure 7WLD	6.00	8.07	14.37	22.44	1.18	2.36	4.33	3.54	0.71	32.17	4.76	11.34	11.02	0.98	12.99	11.42	9.45	0.71	18.70	3.21

All dimensions in inches, except where noted

PUMP	A	B	C	D	E	F	G	HB	HT	J	K	L	M	N	P	Q	R	S	T	U
SX UltraPure 1NLD	1.00	3.74	3.54	7.40	0.39	0.63	1.57	2.62	4.47	1.18	0.20	10.87	1.46	4.61	3.15	0.98	4.53	3.94	3.15	0.39
SX UltraPure 1WLD	1.50	3.74	3.54	7.40	0.39	0.63	1.57	2.62	4.47	1.18	0.20	11.38	1.69	4.61	3.15	0.98	4.53	3.94	3.15	0.39
SX UltraPure 2NLD	1.50	4.13	4.53	9.17	0.63	0.87	1.97	3.25	5.81	1.26	0.24	12.76	1.54	5.16	3.94	0.75	5.20	4.88	3.94	0.47
SX UltraPure 2WLD	2.00	4.13	4.53	9.17	0.63	0.87	1.97	3.25	5.81	1.26	0.24	13.39	1.81	5.16	3.94	0.75	5.20	4.88	3.94	0.47
SX UltraPure 3NLD	2.00	4.92	5.43	10.75	0.71	1.1	2.36	3.96	6.91	1.57	0.31	16.97	2.72	6.89	4.92	1.18	7.13	6.06	4.92	0.55
SX UltraPure 3WLD	2.50	4.92	5.43	10.75	0.71	1.1	2.36	3.96	6.91	1.57	0.31	17.60	2.91	6.89	4.92	1.18	7.13	6.06	4.92	0.55
SX UltraPure 4NLD	2.00	5.91	6.42	12.80	0.79	1.5	3.15	4.47	8.37	2.48	0.39	20.24	2.95	8.86	5.91	1.38	7.95	7.24	5.91	0.55
SX UltraPure 4WLD	2.50	5.91	6.42	12.80	0.79	1.5	3.15	4.47	8.37	2.48	0.39	20.98	3.19	8.86	5.91	1.38	7.95	7.24	5.91	0.55
SX UltraPure 5NLD	2.50	6.89	7.68	14.80	0.79	1.77	4.33	5.31	10.04	2.76	0.55	23.58	1.81	10.98	7.09	1.38	10.83	8.27	7.09	0.55
SX UltraPure 5WLD	3.00	6.89	7.68	14.80	0.79	1.77	4.33	5.31	10.04	2.76	0.55	24.65	2.60	10.98	7.09	1.38	10.83	8.27	7.09	0.55
SX UltraPure 6NLD	3.00	7.48	8.86	16.89	0.79	1.89	4.33	6.10	11.61	2.76	0.55	27.05	3.07	10.47	10.2	1.57	14.57	8.66	7.48	0.55
SX UltraPure 6WLD	4.00	7.48	8.86	16.89	0.79	1.89	4.33	6.10	11.61	2.76	0.55	28.15	3.54	10.47	10.2	1.57	14.57	8.66	7.48	0.55

L22 - 15 - M - Q02 - A - A - A - A
1 2 3 4 5 6 7 8

1 Model Size
L22
L23
L32
L33
L42
L43

2 Port Size
15 (40 mm) 1½"
20 (50 mm) 2"
25 (65 mm) 2½"
30 (80 mm) 3"

3 Model Size
M = Triclamp

4 Seal/Elastomer
Q02 - Easy Fit SS/C FPM
Q06 - Easy Fit SS/C EPDM
Q12 - Easy Fit SC/C FPM
Q16 - Easy Fit SC/C EPDM
Q22 - Easy Fit SC/SC FPM
Q26 - Easy Fit SC/SC EPDM
S02 - Easy Fit SS/C Flush FPM
S06 - Easy Fit SS/C Flush EPDM
S12 - Easy Fit SC/C Flush FPM
S16 - Easy Fit SC/C Flush EPDM
S22 - Easy Fit SC/SC Flush FPM
S26 - Easy Fit SC/SC Flush EPDM

5 Rotor Type & Clearance
A = SS Trilobe (8 bar, 130°C, 266°F)

6 Shaft Position
A - Vertical Left Side Drive
B - Vertical Right Side Drive
C - Horizontal Bottom Drive
D - Horizontal Top Drive

7 Surface Finish
A = Standard 32 Ra

8 Elastomer
A = No Options

SRU3	N	L	S	-	20	M	G	E	2	C	B	A	A		C	512	002	439
❶	❷	❸	❹		❺	❻	❼	❽	❾	❿	⓫	⓬	⓭		⓮	⓯	⓰	⓱
0000	0	0	0	-	00	0	0	0	0	0	0	0	0	-	0	000	000	000

❶ Model Size
SRU1
SRU2
SRU3
SRU4
SRU5
SRU6

❷ Casing Code
N - Narrow
W - Wide

❸ Power Frame
L - Long

❹ Power Frame
S - Std. Pressure (SS)
D- High Pressure (Duplex)

❺ Port Size
10 - 1" (1N, 1W, 2N)
15 - 1½" (1W, 2N, 2W, 3N)
20 - 2" (2W, 3N, 3W, 4N)
25 - 2½" (3W, 4N, 4W, 5N)
30 - 3" (4W, 5N, 5W)
40 - 4" (5W, 6N, 6W)
60 - 6" (6W)

❻ Connection Type
M - Tri-Clamp® (Std.)
A - Rectangular Inlet x Tri-Clamp
E - Bevel Seat
F - 150# RF Flange
H - Rectangular Inlet x SMS

❼ Seal Type
G - Single Mechanical Hyclean (Std.)
J - Single Flushed[2] Hyclean
D - Single Mechnical (R90)
E - Double Mechanical (R90)
F - Single Flushed[2] (R90)

[2]Flush is external lip seal furnished in Buna N and/or SFY (Fluoroelastomer).

❽ Elastomer
U - Buna
Y - SFY (Fluoroelastomer)
E - EPDM
W - White EPDM
P - (Class VI) EPDM
G - PTFE Encapsulated Viton
K - Kalrez
S - Silicone
G - PTFE Encapsulated
T - Kalrez/PTFE
X - Platium Cured Silicone Class VI

❾ Seal Face Combination
High Clean Seal (G,H,J)
0 - Carbon vs. SS
2 - Carbon vs. SC
4 - SC vs. SC
8 - SC vs. SC Inserted
R90 Mechanical Seal-Single (D & F)
0 - SS Face vs. Carbon Seat
1 - SS Face vs. Inserted Carbon Seat
2 - SC vs. Inserted Carbon
3 - TC vs. TC
4 - SC vs. SC
5 - TC vs. Inserted Carbon
7 - TC vs. SC

R90 Mechanical Seal-Double (E)
6 - TC vs. TC Inboard & Outboard
9 - SC vs. SC Inboard, SC vs. Carbon Outboard
A - SS vs. Carbon Inboard & Outboard
E - SC vs. Carbon Inserted Inboard, SS vs. Carbon Outboard
T - TC vs. TC Inboard, TC vs. Carbon inserted Outboard

❿ Rotor Type & Clearance

Temp. Clearance	Tri Lobe		Bi Lobe	
	SS	Rubber	Non-galling	SS
Cold 70°C (Temps to 158 °F)	C	M	J	R
Warm 130°C (159°F to 266 °F)	W	N/A	K	S
Hot 200°C (267°F to 392 °F)	H	N/A	L	T

⓫ Shaft Position
A = Vertical Port - Left side drive
B = Vertical Port - Right side drive std.
C = Horizontal Port - Bottom drive
D = Horizontal Port - Top drive

⓬ Surface Finish & Tracebility
A - 32 Ra Std.
B - 32 Ra & EP & Passivation
C - 20 Ra Mech. & EP & Passivation
F - 32 Ra & 3.1B
H - 20 Ra Mech./EP & Pass. & 3.1B
J - 20 Ra Mech./EP & Pass. & Hydrostatic Test
K - 20 Ra Mech./EP & Pass. & 3.1B & Hydrostatic Test
L - 32 Ra 3.1B & Hydrostatic Test
S - 32 Ra Mech. & Hydrostatic Test
S - 32 Ra Mech. & Hydrostatic Test

⓭ Other Options
A = No Option
J = Jacket
R = Relief Valve
S = Heating Saddles
D = Drain Hole
P = Passivation Only
LF = Low Ferrite
X = Hastelloy

⓮ Gearmotor Type
A - G Standard efficient
B - SG Standard efficient WD
C - PG Premium efficient
D - SPG Premium efficient WD
E - IG Inverter Duty
F - SIG Inverter Duty WD
G - EG Explosion Proof
H - EIG Explosion Proof Inverter Duty
I - SSG S.S. Motor w/Steelette Reducer
J - SSR S.S. Moter w/Steelette Reduce

⓯ Gearmotor Size*

302	702
402	712
512	802
602	812
612	902

⓰ HP

P50 - ½	010 - 10
P75 - 3/4	015 - 15
001 - 1	020 - 20
1P5 - 1½	025 - 25
002 - 2	030 - 30
003 - 3	040 - 40
005 - 5	050 - 50
7P5 - 7½	

⓱ Gearmotor RPM
000 to 999

* Sterling gearmotors are standard. Others available upon request.

SX3	N	L	D	-	20	M	D	E	2	03	A	A	1	-	C	512	002	439
❶	❷	❸	❹		❺	❻	❼	❽	❾	❿	⓫	⓬	⓭		⓮	⓯	⓰	⓱
0000	0	0	0	-	00	0	0	0	0	0	0	0	0	-	0	000	000	000

❶ **Model Size**
SX1
SX2
SX3
SX4
SX5
SX6
SX7

❷ **Casing Code**
N - Narrow
W - Wide

❸ **Power Frame**
L - Long

❹ **Shaft Material**
D - Duplex

❺ **Port Size**
10 - 1" (1N)
15 - 1.5" (1W, 2N)
20 - 2" (2W, 3N, 4N)
25 - 2.5" (3W, 4W, 5N)
30 - 3" (5W, 6N)
40 - 4" (6W, 7N)
60 - 6" (7W)

❻ **Connection Type**
M - Tri-Clamp®

❼ **Seal Type**
D - Single Mechnical (R00)
E - Double Mechanical (R00)
F - Single Flushed[2] (R00)
[2]Flush is external lip seal-furnished in Buna and/or SFY (Fluoroelastomer)

❽ **Elastomer**
E - EPDM (Class IV)
X - Silicone
V - FPM (Viton)

❾ **Seal Face Combinations**
0 - Carbon vs. SS
2 - Carbon vs. SC
4 - SC vs. SC

❿ **Rotor Type & Clearance**
03 - 43 psi (3 bar)
05 - 70 psi (5 bar)
07 - 100 psi (7 bar)
10 - 145 psi (10 bar)
12 - 174 psi (12 bar)
15 - 215 psi (15 bar

⓫ **Shaft Position**
A - Horizontal Port - (Top Side Drive)
B - Horizontal Port - (Bottom Side Drive)
C - Vertical Port - (Left Side Drive - Bi-Directional)

⓬ **Surface Finish & Tracebility**
A - 32 Ra Std.
B - 32 Ra & EP
C - 20 Ra Mech. & EP
F - 32 Ra & Heat Traceable 3.1
H - 20 Ra Mech., EP & Heat Traceable 3.1
J - 20 Ra Mech., EP & Hydrostatic Test
K - 20 Ra Mech., EP, Heat Traceable 3.1 & Hydrostatic Test
L - 32 Ra, EP, Heat Traceable 3.1 & Hydrostatic Test
S - 32 Ra Mech. & Hydrostatic Test

⓭ **Cover Options**
1 - No options
J - Jacket

⓮ **Gear Motor Type**
A - G Standard Efficient
B - SG Standard Efficient WD
C - PG Premium Efficient
D - SPG Premium Efficient WD
E - IG Inverter Duty
F - SIG Inverter Duty WD
G - EG Explosion Proof
H - EIG Explosion Proof Inverter Duty

⓯ **Gear Motor Size**
302 702
402 712
512 802
602 812
612 902

⓰ **HP**
P50 - 0.5
P75 - 0.75
001 - 1
1P5 - 1.5
002 - 2
003 - 3
005 - 5
7P5 - 7.5
010 - 10
015 - 15
020 - 20
025 - 25
030 - 30
040 - 40
050 - 50

⓱ **Gear Motor RPM**
000 to 999

* Sterling gearmotors are standard others available upon request.

Product Code: 5338

OptiLobe 22
1½" Tri-Clamp connection
Stainless steel tri-lobe rotors for 266°F / 116 PSI max.
Gear canister - 304 stainless steel
Bearing housing
Shafts - duplex stainless steel
Pumphead - product wetted components in 316L

Desc	Seal	LLP USD
		EPDM elastomers
L22	EasyFit SS/C EasyFit SC/C EasyFit SC/SC	
		FPM (Viton) elastomers
	EasyFit SS/C EasyFit SC/C EasyFit SC/SC	
		EPDM elastomers - Flush
	EasyFit SS/C Flush NPT EasyFit SC/C Flush NPT EasyFit SC/SC Flush NPT EasyFit SC/SC Flush NPT	
		FPM (Viton) elastomers - Flush
	EasyFit SS/C Flush NPT EasyFit SC/C Flush NPT EasyFit SC/SC Flush NPT	

1.2

Product Code: 5338

OptiLobe 23
1½" Tri-Clamp connection
Stainless steel tri-lobe rotors for 266°F / 116 PSI max.
Gear canister - 304 stainless steel
Bearing housing
Shafts - duplex stainless steel
Pumphead - product wetted components in 316L

Desc	Seal	LLP USD
		EPDM elastomers
L23	EasyFit SS/C EasyFit SC/C EasyFit SC/SC	
		FPM (Viton) elastomers
	EasyFit SS/C EasyFit SC/C EasyFit SC/SC	
		EPDM elastomers - Flush
	EasyFit SS/C Flush NPT EasyFit SC/C Flush NPT EasyFit SC/SC Flush NPT	
		EPDM elastomers - Flush
	EasyFit SS/C Flush NPT EasyFit SC/C Flush NPT EasyFit SC/SC Flush NPT	

Product Code: 5338

OptiLobe 32
2" Tri-Clamp connection
Stainless steel tri-lobe rotors for 266°F / 116 PSI max.
Gear canister - 304 stainless steel
Bearing housing
Shafts - duplex stainless steel
Pumphead - product wetted components in 316L

Desc	Seal	LLP USD
		EPDM elastomers
L32	EasyFit SS/C EasyFit SC/C EasyFit SC/SC	
		FPM (Viton) elastomers
	EasyFit SS/C EasyFit SC/C EasyFit SC/SC	
		EPDM elastomers - Flush
	EasyFit SS/C Flush NPT EasyFit SC/C Flush NPT EasyFit SC/SC Flush NPT	
		FPM (Viton) elastomers - Flush
	EasyFit SS/C Flush NPT EasyFit SC/C Flush NPT EasyFit SC/SC Flush NPT	

1.2

Product Code: 5338

OptiLobe 33
2" Tri-Clamp connection
Stainless steel tri-lobe rotors for 266°F / 116 PSI max.
Gear canister - 304 stainless steel
Bearing housing
Shafts - duplex stainless steel
Pumphead - product wetted components in 316L

Desc	Seal	LLP USD
		EPDM elastomers
L33	EasyFit SS/C EasyFit SC/C EasyFit SC/SC	
		FPM (Viton) elastomers
	EasyFit SS/C EasyFit SC/C EasyFit SC/SC	
		EPDM elastomers - Flush
	EasyFit SS/C Flush NPT EasyFit SC/C Flush NPT EasyFit SC/SC Flush NPT	
		FPM (Viton) elastomers - Flush
	EasyFit SS/C Flush NPT EasyFit SC/C Flush NPT EasyFit SC/SC Flush NPT	

Product Code: 5338

OptiLobe 42
2½" Tri-Clamp connection
Stainless steel tri-lobe rotors for 266°F / 116 PSI max.
Gear canister - 304 stainless steel
Bearing housing
Shafts - duplex stainless steel
Pumphead - product wetted components in 316L

Desc	Seal	LLP USD
		EPDM elastomers
L42	EasyFit SS/C EasyFit SC/C EasyFit SC/SC	
		FPM (Viton) elastomers
	EasyFit SS/C EasyFit SC/C EasyFit SC/SC	
		EPDM elastomers - Flush
	EasyFit SS/C Flush NPT EasyFit SC/C Flush NPT EasyFit SC/SC Flush NPT	
		FPM (Viton) elastomers - Flush
	EasyFit SS/C Flush NPT EasyFit SC/C Flush NPT EasyFit SC/SC Flush NPT	

Product Code: 5338

OptiLobe 43
3" Tri-Clamp connection
Stainless steel tri-lobe rotors for 266°F / 116 PSI max.
Gear canister - 304 stainless steel
Bearing housing
Shafts - duplex stainless steel
Pumphead - product wetted components in 316L

Desc	Seal	LLP USD
		EPDM elastomers
L43	EasyFit SS/C EasyFit SC/C EasyFit SC/SC	
		FPM (Viton) elastomers
	EasyFit SS/C EasyFit SC/C EasyFit SC/SC	
		EPDM elastomers - Flush
	EasyFit SS/C Flush NPT EasyFit SC/C Flush NPT EasyFit SC/SC Flush NPT	
		FPM (Viton) elastomers - Flush
	EasyFit SS/C Flush NPT EasyFit SC/C Flush NPT EasyFit SC/SC Flush NPT	

Product Code: 5321

Hygienic AISI 316L Stainless Steel
Single Hyclean mechanical seals with carbon/stainless steel faces
EPDM elastomers
Trilobe SS - Cold Rotors
Tri-Clamp® Connections. 3A approved

Standard Pressure version (Stainless Steel Shafts)			Connection size
Model	Max. Pressure (psi)	LLP USD	Inch
SRU2NLS	145		1½
SRU2WLS	100		2
SRU3NLS	145		2
SRU3WLS	100		2½
SRU4NLS	145		2½
SRU4WLS	100		3
SRU5NLS	145		3
SRU5WLS	100		4
SRU6NLS	145		4
SRU6WLS	100		4
SRU6WLS	100		6

High Pressure version (Duplex Stainless Steel Shafts)			Connection size
Model	Max. Pressure (psi)	LLP USD	Inch
SRU1NLD	115		1
SRU1WLD	75		1½
SRU2NLD	215		1½
SRU2WLD	145		2
SRU3NLD	215		2
SRU3WLD	145		2½
SRU4NLD	290		2½
SRU4WLD	215		3
SRU5NLD	290		3
SRU5WLD	215		4
SRU6NLD	290		4
SRU6WLD	215		4
SRU6WLD	215		6

Product Code: 5321

Hygienic AISI 316L Stainless Steel
Single Hyclean mechanical seals with carbon/silicon carbide faces
EPDM elastomers
Trilobe SS - Cold Rotors
Tri-Clamp® Connections. 3A approved

Standard Pressure version (Stainless Steel Shafts)			Connection size
Model	Max. Pressure (psi)	LLP USD	Inch
SRU2NLS	145		1½
SRU2WLS	100		2
SRU3NLS	145		2
SRU3WLS	100		2½
SRU4NLS	145		2½
SRU4WLS	100		3
SRU5NLS	145		3
SRU5WLS	100		4
SRU6NLS	145		4
SRU6WLS	100		4
SRU6WLS	100		6

High Pressure version (Duplex Stainless Steel Shafts)			Connection size
Model	Max. Pressure (psi)	LLP USD	Inch
SRU1NLD	115		1
SRU1WLD	75		1½
SRU2NLD	215		1½
SRU2WLD	145		2
SRU3NLD	215		2
SRU3WLD	145		2½
SRU4NLD	290		2½
SRU4WLD	215		3
SRU5NLD	290		3
SRU5WLD	215		4
SRU6NLD	290		4
SRU6WLD	215		4
SRU6WLD	215		6

Hygienic AISI 316L Stainless Steel
Single Hyclean mechanical seals with silicon carbide
vs. silicon carbide faces
EPDM elastomers
Trilobe SS - Cold Rotors
Tri-Clamp® Connections. 3A approved

Standard Pressure version (Stainless Steel Shafts)			Connection size
Model	Max. Pressure (psi)	LLP USD	Inch
SRU2NLS	145		1½
SRU2WLS	100		2
SRU3NLS	145		2
SRU3WLS	100		2½
SRU4NLS	145		2½
SRU4WLS	100		3
SRU5NLS	145		3
SRU5WLS	100		4
SRU6NLS	145		4
SRU6WLS	100		4
SRU6WLS	100		6

High Pressure version (Duplex Stainless Steel Shafts)			Connection size
Model	Max. Pressure (psi)	LLP USD	Inch
SRU1NLD	115		1
SRU1WLD	75		1½
SRU2NLD	215		1½
SRU2WLD	145		2
SRU3NLD	215		2
SRU3WLD	145		2½
SRU4NLD	290		2½
SRU4WLD	215		3
SRU5NLD	290		3
SRU5WLD	215		4
SRU6NLD	290		4
SRU6WLD	215		4
SRU6WLD	215		6

Pump	LLP USD	
		Hyclean Mechanical Seal Options
SRU1 SRU2 SRU3 SRU4 SRU5 SRU6		Flush for Hyclean Single Mechanical Seal. All Seals with EPDM, NBR, or FPM O-Rings. FPM Lip Seal Only.
SRU1-SRU6		USP Class VI EPDM O-Rings. Certificate Supplied with Order. Only with a minimum of 20 Ra and 3.1b MTR's

Pump	LLP USD	
		R90 Single Mechanical Seal Option
SRU1 SRU2 SRU3 SRU4 SRU5 SRU6		Single - Stainless Steel Face vs Carbon Seat
SRU1 SRU2 SRU3 SRU4 SRU5 SRU6		Single - Stainless Steel Face vs Inserted Carbon Seat
SRU1 SRU2 SRU3 SRU4 SRU5 SRU6		Single - Silicon Carbide Face vs Inserted Carbon Seat
SRU1 SRU2 SRU3 SRU4 SRU5 SRU6		Single - Silicon Carbide Face vs Silicon Carbide Seat

Pump	LLP USD	
		R90 Single Flush Mechanical Seal Option
SRU1 SRU2 SRU3 SRU4 SRU5 SRU6		Single Flush - Stainless Steel Face vs Carbon Seat
SRU1 SRU2 SRU3 SRU4 SRU5 SRU6		Single Flush - Stainless Steel Face vs Inserted Carbon Seat
SRU1 SRU2 SRU3 SRU4 SRU5 SRU6		Single Flush - Silicon Carbide Face vs Inserted Carbon Seat
SRU1 SRU2 SRU3 SRU4 SRU5 SRU6		Single Flush - Silicon Carbide Face vs Silicon Carbide Seat
		R90 Double Flush Mechanical Seal Option
SRU1 SRU2 SRU3 SRU4 SRU5 SRU6		Silicon Carbide Face vs Silicon Carbide Seat - Inboard Silicon Carbide Face vs Carbon Inserted Seat - Outboard
SRU1 SRU2 SRU3 SRU4 SRU5 SRU6		Stainless Steel Face vs Carbon Seat - Inboard Stainless Steel Face vs Carbon Seat - Outboard
SRU1 SRU2 SRU3 SRU4 SRU5 SRU6		Silicon Carbide Face vs Carbon Inserted Seat - Inboard Stainless Steel Face vs Carbon - Outboard

Pump	LLP USD	
		Rotors
SRU1N SRU1W SRU2N SRU2W SRU3N SRU3W SRU4N SRU4W SRU5N SRU5W SRU6N SRU6W		Stainless Steel Bilobe.
SRU1N SRU1W SRU2N SRU2W SRU3N SRU3W SRU4N SRU4W SRU5N SRU5W SRU6N SRU6W		Non-Galling Bilobe Alloy

Pump	LLP USD	
		Special Connections
SRU1N SRU1W SRU2N SRU2W SRU3N SRU3W SRU4N SRU4W SRU5N SRU5W SRU6N SRU6W		Rectangular Inlet
SRU1N (1") SRU1W (1.5") SRU2N (1.5") SRU2W (2") SRU3N (2") SRU3W (2.5") SRU4N (2.5") SRU4W (3") SRU5N (3") SRU5W (4")		Flanged Connection with Bend (Top Port will come Flanged / Bottom Port will come Flanged with Elbow on Vertically Ported Pumps Only)
SRU6N (4") SRU6W (6")		Flanged Connection (Vertical & Horizontal)
SRU1 - SRU6		Bevel Seat, SMS, NPT or DIN

Pump	LLP USD	
		Pump Head Heating/Cooling
SRU1 SRU2 SRU3 SRU4 SRU5 SRU6		Heating Saddles (Rotorcase 1/4" NPT) Heating Saddles (Rotorcase 3/8" NPT)
SRU1 SRU2 SRU3 SRU4 SRU5 SRU6		Jacketed Front Covers (3/8" NPT). Not available with integral pressure relief valve.
		Integral Pressure Relief Valve
SRU1 SRU2 SRU3 SRU4 SRU5 SRU6		Front Cover Relief Valve
		Surface Finish - Wetted Components Only
SRU1 SRU2 SRU3 SRU4 SRU5 SRU6		20 Ra Mechanical + Electropolish
SRU1-SRU6		Material Traceability to EN 10204 3.1B. Stainless Steel product wetted parts only (i.e. rotorcase, rotors, rotor nuts, rotorcase cover, shafts and mechanical seal carriers including metal seal faces if applicable). Certification - 9630068053
	Net Price USD	Testing / Documentation
SRU1 - SRU6		Hydrostatic Test - 9630056725 (Certificate Supplied with Order)
	Net Price USD	Testing / Documentation
SRU1 - SRU6 SRU1 - SRU6		Certified General Arrangement - 9630056721 Certified Performance Test - 9630056723 Automatically included when you purchase 3.1b MTR´s

Product Code: 5322

Hygienic AISI 316L Stainless Steel
Mechanical (R00) Seal with Silicon Carbide vs. Silicon Carbide faces.
Class VI EPDM O-Ring
Tri-Clamp® Connections. 3A approved.
20 Ra Mechanical and Electropolished to 0.5 Ra with
Traceability to EN 10204 3.1

Item No.	Model	Max. Pressure (bar)	LLP USD	Connection Size	
				Inch	mm
				SX - Vertically Ported - Left Side Drive	
9630857975	SX1NLD	6		1	25
9630857977	SX1WLD	7		1½	40
9630126361	SX2NLD	5		1½	40
9630858477	SX2NLD	15		1½	40
9630126362	SX2WLD	7		2	50
9630126333	SX3NLD	5		2	50
9630067287	SX3NLD	15		2	50
9630126363	SX3WLD	7		2½	65
9630126364	SX4NLD	5		2	50
9630857978	SX4NLD	15		2	50
9630126365	SX4WLD	5		2½	65
9630126382	SX4WLD	10		2½	65
9630857980	SX5NLD	15		2½	65
9630126367	SX5WLD	10		3	80
9630126368	SX6NLD	15		3	80
9630126426	SX6WLD	10		4	100
9630857981	SX7NLD	15		4	100
9630067267	SX7WLD	10		6	150

1.2

Product Code: 5322

Hygienic AISI 316L Stainless Steel
Mechanical (R00) Seal with Silicon Carbide vs. Silicon Carbide faces.
Class VI EPDM O-Ring
Tri-Clamp® Connections. 3A approved.
20 Ra Mechanical and Electropolished to 0.5 Ra

Item No.	Model	Max. Pressure (bar)	LLP USD	Connection Size	
				Inch	mm
				SX - Vertically Ported - Left Side Drive	
9630111456	SX1NLD	6		1	25
9630857976	SX1WLD	7		1½	40
9630858476	SX2NLD	15		1½	40
9630102783	SX2NLD	5		1½	40
9630857897	SX2WLD	7		2	50
9630111459	SX3NLD	5		2	50
9630080468	SX3NLD	15		2	50
9630067224	SX3WLD	7		2½	65
9630126422	SX4NLD	5		2	50
9630102764	SX4NLD	15		2	50
9630111462	SX4WLD	5		2½	65
9630857979	SX4WLD	10		2½	65
9630111463	SX5NLD	15		2½	65
9630100068	SX5WLD	10		3	80
9630067030	SX6NLD	15		3	80
9630101407	SX6WLD	10		4	100
9630111860	SX7NLD	15		4	100
9630101409	SX7WLD	10		6	150

Pump	LLP USD	
		Mechanical Seal Options
SX1 SX2 SX3 SX4 SX5 SX6 SX7		Single Flush for R00 Mechanical Seal. All Seals with USP Class VI EPDM or FDA Approved FPM. Squad Rings and Cup Seals.
SX1 SX2 SX3 SX4 SX5 SX6 SX7		R00 Mechanical Seal - Double for Flush. Inboard Seal - SiC/SiC, Outboard Seal - C/SS. All Seals with USP Class VI EPDM or FDA Approved FPM. Squad Rings and Cup Seals.
SX1 SX2 SX3 SX4 SX5 SX6 SX7		R00 Mechanical Seal - Double for Flush. Inboard Seal - SiC/SiC, Outboard Seal - C/SiC. All Seals with USP Class VI EPDM or FDA Approved FPM. Squad Rings and Cup Seals.
		Pump Head Heating/Cooling
SX1 SX2 SX3 SX4 SX5 SX6 SX7		Rotorcase Cover Heating/Cooling Device.
	Net Price USD	Testing / Documentation
SX1 - SX7		Hydrostatic Test - 9630056725 (Certificate Supplied with Order)
	Net Price USD	Testing / Documentation
SX1 - SX7 SX1 - SX7		Certified General Arrangement - 9630056721 Certified Performance Test - 9630056723 Automatically included when you purchase 3.1b MTR´s

1.2

DIN 11851 male screwed connections, EPDM elastomers, stainless steel multi-lobe rotors and Material traceability to EN 10.204 3.1
Product code: 5399

Item No.	LLP USD	Max. Pressure (PSI)	Model	Connection Size	
				inch	mm
Single R00 mechanical seals with silicon carbide/silicon carbide seal faces			SX UltraPure - Vertically Ported		
-	6985	174.0	SX UltraPure 1/005	1.0	25
-	7408	101.5	SX UltraPure 1/007	1.5	40
-	7847	217.6	SX UltraPure 2/013	1.5	40
-	8679	101.5	SX UltraPure 2/018	2.0	50
-	11246	217.6	SX UltraPure 3/027	2.0	50
-	12491	101.5	SX UltraPure 3/035	2.5	65
-	14877	217.6	SX UltraPure 4/046	2.0	50
-	16124	145.0	SX UltraPure 4/063	2.5	65
-	19717	217.6	SX UltraPure 5/082	2.5	65
-	20964	145.0	SX UltraPure 5/115	3.0	80
-	28445	217.6	SX UltraPure 6/140	3.0	80
-	30106	145.0	SX UltraPure 6/190	4.0	100
-	35185	217.6	SX UltraPure 7/250	4.0	100
-	39551	145.0	SX UltraPure 7/380	6.0	150

SX UltraPure 1 - 6 also available horizontally ported.

For fixed speed drive units, please see SX section.

Options to be specified at time of order.
Product code: 5399

Pump	LLP USD	
		Mechanical seal options
SX UltraPure 1	808	Flush for R00 Mechanical Seal. SiC/SiC All seals with EPDM or FPM.
SX ultraPure 2	922	
SX UltraPure 3	1154	
SX UltraPure 4	1384	
SX UltraPure 1	2294	R00 Mechanical Seal - Double for Flush. - Inboard Seal - SiC/SiC, Outboard Seal - C/SiC All seals with EPDM or FPM.
SX ultraPure 2	2700	
SX UltraPure 3	3482	
SX UltraPure 4	4139	
SX UltraPure 5	5247	
SX UltraPure 6	5317	
SX UltraPure 7	9178	
		Pump head heating/cooling
SX UltraPure 1	753	Pump head heating/cooling - Rotorcase Cover Heating/Cooling Device.
SX ultraPure 2	768	
SX UltraPure 3	1077	
SX UltraPure 4	1225	
SX UltraPure 5	1332	
SX UltraPure 6	1629	
SX UltraPure 7	1629	
		Surface finish - Wetted components only
SX UltraPure 1	884	Product wetted surface finish electropolished to Ra ≤ 0.38 µm.
SX ultraPure 2	1063	
SX UltraPure 3	1431	
SX UltraPure 4	1977	
SX UltraPure 5	2789	
SX UltraPure 6	3310	
SX UltraPure 7	3310	

This page is intentionally left blank

1.3 Twin screw pumps

Designed for process flexibility, the Alfa Laval Twin Screw Pump is built on a robust, reliable platform that meets stringent hygienic standards. It is capable of handling both product transfer and Cleaning-in-Place (CIP).

Product leaflets

Alfa Laval Twin screw

Positive displacement pumps

Introduction

The Alfa Laval Twin Screw Pump combines process duties typically handled by positive displacement with Cleaning-in-Place (CIP) duties typically handled by centrifugal pumps. This provides a robust and reliable platform that offers greater process flexibility.

Designed for process flexibility, the Alfa Laval Twin Screw Pump is built on a robust, reliable platform that meets stringent hygienic standards. It is capable of handling both product transfer and CIP. Its low pulsation characteristics and excellent solids-handling capability reduce the risk of product damage, thereby improving product quality.

The pump is designed according to the most stringent hygienic design standards and with verified, effective CIP.

Applications

Designed for handling sensitive, abrasive and high and low viscosity fluids, the Alfa Laval Twin Screw Pump is ideal for use in hygienic applications across the dairy, food, beverage, and home and personal care industries. Quiet and virtually pulse-free, the pump provides smooth and gentle operation, making it an excellent choice for handling sensitive products.

Two-in-one operation provides easy handling of process media of varying viscosities as well as CIP fluids. This simplifies piping and pump control, cutting costs and minimizing contamination risks.

Superior suction performance with excellent lift capability and low NPSHr provides installation flexibility and increases product recovery.

The Alfa Laval Twin Screw Pump is available in twelve models based on four frame sizes. Each frame size is available with three different screw profiles for varying pressure, flow and solids-handling capabilities.

Benefits

- Greater process flexibility.
- Ease of service, increased process uptime.
- Robust reliable design, reducing cost of ownership and increasing process uptime.
- Improved product quality.
- Exceptional hygiene and cleanability.

Standard design

All media contacting steel components, like pump casing, front cover and feed screws are in W. 1.4404 (AISI 316L). Furthermore, the pump casing is diffusion hardened. A stainless steel gearbox, end cover and foot ensure increased life and assist in washdown.

The gearbox is designed with the timing gears located between the bearing sets, rather than external to them. This allows the bearing location to be optimized in order to provide maximum support to the shaft assembly, thereby providing a robust rigid design. The internal gearcase design optimizes oil circulation to both sets of bearings and the timing gears with an oil sump design. This improves the lubrication effect on both bearings and timing gears, minimizing the energy produced due to friction and thereby reducing heat generation within the pump gearbox.

The front-loading, self-setting cartridge design makes it easy to replace the shaft seal while the pump is in place. Single, single flush and double mechanical cartridge seals are available. All options are fully front-loading and interchangeable.

The Alfa Laval Twin Screw Pump can be supplied either as a bare shaft pump or mounted on a base plate complete with coupling, guard, shroud and a direct coupled motor or a gear motor for easy, plug-and-play installation.

Working principle

The Alfa Laval Twin Screw Pump is a positive displacement pump. As the pump rotates, the intermeshing of the two contra-rotating screws, along with the pump casing, form volumetric chambers. These chambers fill with the pumped fluid and move the fluid axially from the suction side of the pump to the higher pressure discharge side.

Authorized to carry the 3A symbol

TECHNICAL DATA

Standard specification	
Pump casing	W. 1.4404 (316L), diffusion hardened
Screws, front cover, seal housing:	W. 1.4404 (316L)
Inside surface finish:	Mech Ra ≤ 32
Gear box:	Stainless steel
Base plate:	Stainless steel
Coupling guard:	Stainless steel
Product wetted elastomers:	EPDM
Other elastomers:	FPM
Shaft seal:	Single flush
Rotary seal face:	Silicon Carbide
Stationary seal face:	Silicon Carbide

Shaft seals	
Single, Single flush and double mechanical cartridge seals available. All options are fully front loading and interchangeable.	
Max flush pressure, single flush:	7.25 psi
Max flush pressure, double mechanical:	232 psi (max 87 psi over product pressure)
Water consumption, single flush and double mechanical:	0.13 gallon/min
Flush connections, OS12-36:	G 1/4" or NPT 1/4"
Flush connections, OS42-46:	G 1/2" or NPT 1/2"

Pressure	
Max inlet pressure:	232 psi
Max discharge pressure:	232 psi

Temperature	
Max process temperature:	212ºF
Max CIP/SIP temperature:	302ºF

Motor
Direct coupled motor, 4, 6 or 8 poles, or gear motor, 4 poles, to Nema standard, premium efficiency, suitable for frequency conversion.

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

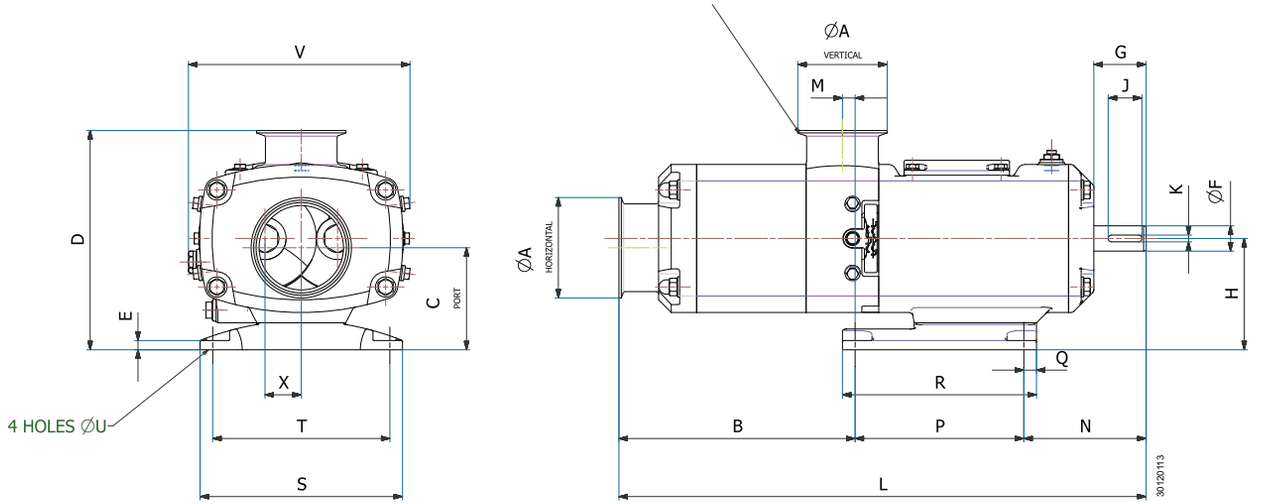
Operating data

Model	Max Flow	Max Differential Pressure	Max speed		Max Particle Size
			Process	CIP	
	gpm	psi	rpm	rpm	inch
OS12	27	232	2800	3300	0.24
OS14	46	174	2800	3300	0.43
OS16	70	116	2800	3300	0.67
OS22	80	232	2500	3300	0.47
OS24	107	174	2500	3300	0.63
OS26	161	116	2500	3300	0.94
OS32	153	232	2200	3000	0.63
OS34	205	174	2200	3000	0.83
OS36	308	116	2200	3000	1.26
OS42	294	232	1800	2800	0.83
OS44	394	174	1800	2800	1.14
OS46	591	116	1800	2800	1.69

1.3

Dimension

PUMP SHOWN WITH TRI-CLAMP, SUCTION AND DISCHARGE CONNECTIONS



Model	ØA Vertical Inch	B Inch	D Inch	E Inch	F Inch	G Inch	H Inch	J Inch	K Inch	L Inch	M Inch	N Inch	P Inch	Q Inch	R Inch	S Inch	T Inch	U Inch	V * Inch	X Inch
OS12 OS14 OS16	1 1½ 2	6.69	7.09	0.28	0.71	1.97	3.54	1.57	0.24	15.94	0.39	4.33	4.92	0.39	5.70	6.10	5.31	0.35	7.42	1.10
OS22 OS24 OS26	1½ 2 2½	8.76	8.66	0.35	0.79	21.46	4.41	1.57	0.24	19.88	0.49	4.63	6.50	0.49	7.48	7.87	6.89	0.43	8.50	1.30
OS32 OS34 OS36	2½ 3	11.02	10.24	0.43	1.18	2.44	5.20	1.57	0.31	24.61	0.59	5.71	7.87	0.59	9.06	9.45	8.27	0.51	10.33	1.69
OS42 OS44 OS46	3 4	14.17	13.78	0.59	1.77	3.43	5.51	2.76	0.55	31.10	0.79	7.09	9.84	0.79	11.42	12.60	11.02	0.68	13.62	2.28

* Dimension 'V' is with flush plugs installed - NPT adaptors will increase this dimension by ~0.4 inch.

Model	ØA Horizontal Inch	C Tri-Clamp Inch
OS12	1.5	2.77
OS14	2	3.02
OS16	2.5	3.27
OS22	2	3.49
OS24	2.5	3.74
OS26	3	4.00
OS32 OS34	3	4.23
OS36	4	4.71
OS42 OS44	4	5.80
OS46	6	6.77

Options

A. Single mechanical shaft seal.
B. Double mechanical shaft seal.
C. Silicon Carbide/Carbon seal faces
D. Product wetted elastomers in FPM or FFPM.
E. Diffusion hardened screws.
F. Heating jacket.
G. Rectangular inlet.
H. Hydrostatic testing with certificate.
I. Reversed flow.
J. Bottom inlet or outlet.
K. Baseplate fitted with adjustable stainless steel ball feet.

Pump sizing

In order to correctly size a twin screw pump some essential information is required. Provision of this information listed below enables our Technical Support personnel to obtain the optimum pump selection. Specific CIP data are important as well.

Product/Fluid Data

- Fluid to be pumped
- Viscosity
- Pumping temperature, minimum, normal and maximum
- Cleaning in Place temperature(s), minimum, normal and maximum

Performance Data

- Flow rate, minimum, normal and maximum
- Discharge head/pressure (closest to pump outlet)
- Suction condition

Note!

For further details, see also 100000817.

This product has EHEDG certificate

This page is intentionally left blank

1.4 Sensing and control

Understanding the running condition of equipment and whether service or maintenance is required is paramount to keeping plant and processes running efficiently and cost effective.

Product leaflet

1.4

Alfa Laval CM Condition Monitor

Sensing and control

Introduction

Understanding the running condition of equipment and whether service or maintenance is required is paramount to keeping plant and processes running efficiently and cost effective.

The Alfa Laval CM condition monitor is a quick and easy battery operated device, to attach to rotating equipment and detect any change in the equipment behaviour compared to the benchmark baseline on set-up. Providing users with easy, safe data via bluetooth to enable them to optimise process uptime, assist in maintenance scheduling and efficiency and reduce operating costs.

The Alfa Laval CM periodically measures the tri-axial vibration of the installed unit and the internal temperature storing 3 months of data for analysis, comparing it to the original baseline set-up values and pre-set warning and alarms, which if exceeded provide a visible indication via its LED and via the users mobile device.

In addition, unique identification can provide the user with service data of the equipment and contacts of service partners to ease the maintenance process, ensuring asset value, total cost of ownership and process continuity.

Applications

Designed for hygienic applications, the Alfa Laval CM is suited for use in the dairy, food, beverage, personal care, pharmaceutical and biotechnology industries. In particular the applications where the customer is focused on continuous processing manufacturing where the preventative maintenance attributes can be fully appreciated.

Benefits

- Designed to ensure hygienic integrity, suitable for plant washdown.
- Easy, low cost installation and set-up. No cables required.
- Intuitive mobile app.
- Safe data collection.
- 3 months trend data assist in early detection of process instability, maintenance scheduling & failure analysis.

Standard design

The Alfa Laval CM is a stand-alone PA12 plastic hermetically sealed battery powered monitoring device suitable for use in a hygienic environment with washdown. It is attached to the rotating equipment by a 6mm stainless steel screw. A stainless-steel adaptor will be supplied to retrofit to existing and new Alfa Laval equipment dependent on product size and model.

Working principles

The Alfa Laval CM uses a 3-axis accelerometer and internal temperature sensor to collect and store up to 3 months of data in its onboard memory. In addition, a Bluetooth antenna enables it to connect to an IOS or Android mobile device where it is presented in an intuitive and user-friendly form via an Alfa Laval supplied application for the condition monitor.

When the monitor senses some vibration it activates, starts the running hours counter and monitors the tri-axial vibration and internal temperature of the unit at pre-set intervals determined by the user. This information is sent via Bluetooth to a mobile device running the application if within 20 meters of the condition monitor.

The user can then use the app to review vibration data shown in Fast Fourier Transform (FFT) to review current trend condition against original benchmark values, and in the case of a failure, potentially use the data for system root cause analysis.

In addition, the application shows battery status, historical data for vibration and in unit temperature, total running hours, and information on the unit under monitoring.

Setting up the device is a simple process which is guided by the app.

Technical data

General	
Plastic parts	PA12
Steel parts	1.4301 (AISI 304)
Battery	Lithium Thionyl Chloride
Battery life	2 years typically (data acquisition request every 6 hours)
Size	Ø57mm x 27.9mm deep (2.24” x 1.06”)
Weight	100 grams (3.5 oz)

Environment	
Ambient temperature	-10°C to +60°C (-14°F to +140°F)
Protection class	IP69K & NEMA4PW

Operating parameters	
Vibration frequency	From 10 Hz to 2.5 kHz
3-axis vibration range	0 - 16 g
Mounting surface temperature	-10°C to +80°C (-14°F to +176°F)
Bluetooth range	20 meters (65 Ft) line of sight
Mobile app	Available for iOS and Android

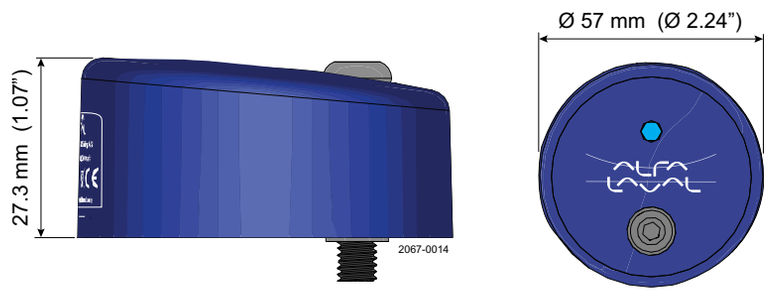
Compliances

The Alfa Laval CM is in compliance to CE, NEMA, IP, Reach & RoHS2. For further compliances, please contact Alfa Laval.

Warranty

12 months for date of despatch. Due to the varied ways that Product(s) can be accessed and/or configured during use, battery life is excluded from the warranty.

Dimensions



8010005353	CM WITH ADAPTER 4 SX7	8010005353
8010005352	CM WITH ADAPTER 3 SRU/SX4-6	8010005352
8010005351	CM WITH ADAPTER 2 SRU/SX2-3	8010005351
8010005350	CM WITH ADAPTER 1 SRU/SX1	8010005350
8010000561	CONDITION MONITOR	8010000561

This page is intentionally left blank

Alfa Laval in brief

Alfa Laval is a leading global provider of specialized products and engineered solutions.

Our equipment, systems and services are dedicated to helping customers to optimize the performance of their processes. Time and time again.

We help our customers to heat, cool, separate and transport products such as oil, water, chemicals, beverages, foodstuffs, starch and pharmaceuticals.

Our worldwide organization works closely with customers in almost 100 countries to help them stay ahead.

How to contact Alfa Laval

Contact details for all countries are continually updated on our website. Please visit www.alfalaval.com to access the information.

100001536ENUS-1 2101