



MUNSCHE

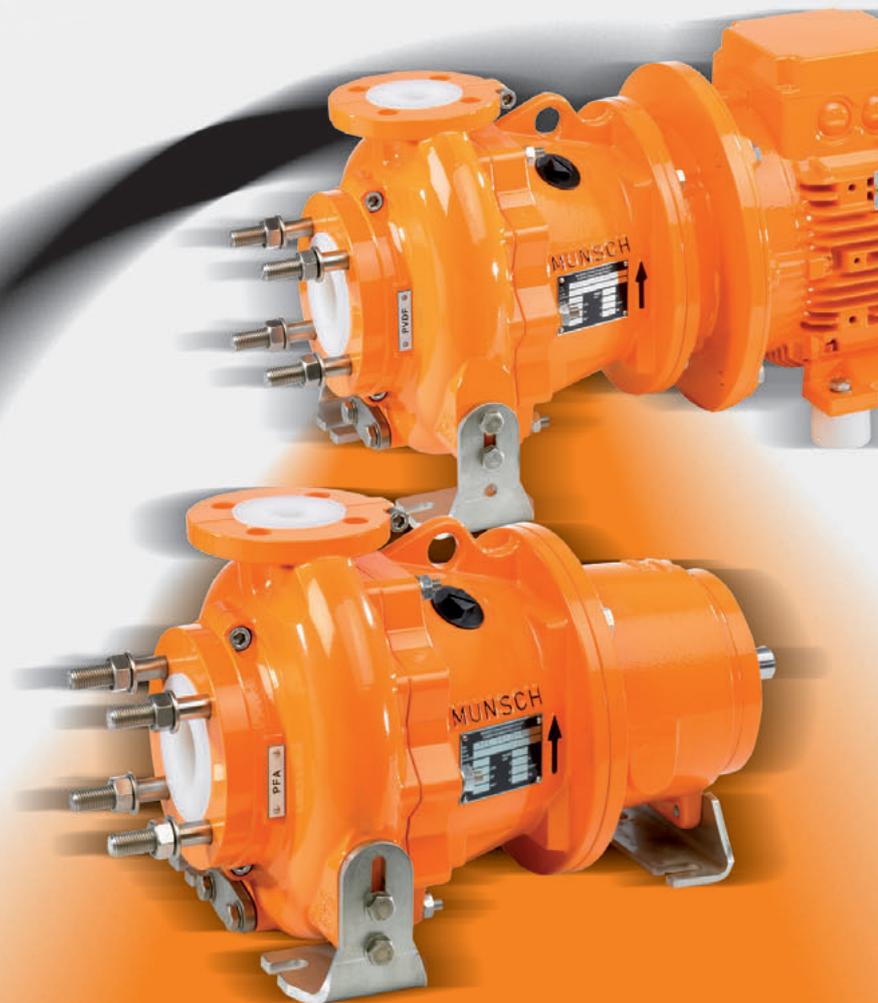
Plastic Pumps for Aggressive Media

Non-Metallic Chemical Pumps

With Mechanical Seal

Standardized Pump NPC
Close-Coupled Pump NPC-B

In PP / PVDF / PFA



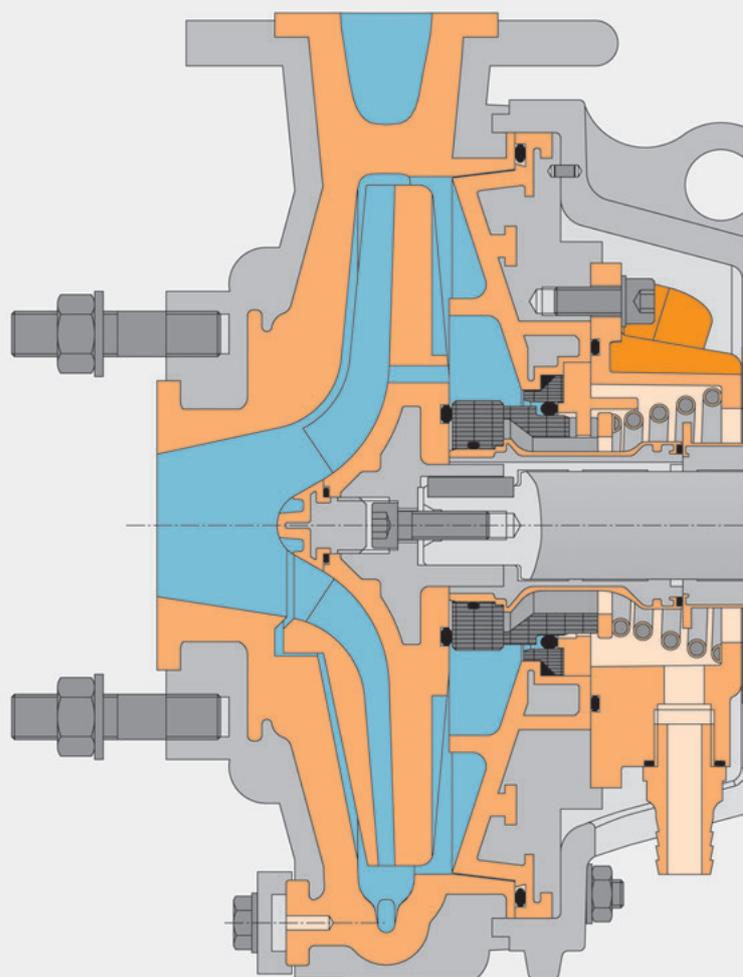
Chemical Pumps with Mechanical Seal

Standardized Pump NPC Close-Coupled Pump NPC-B

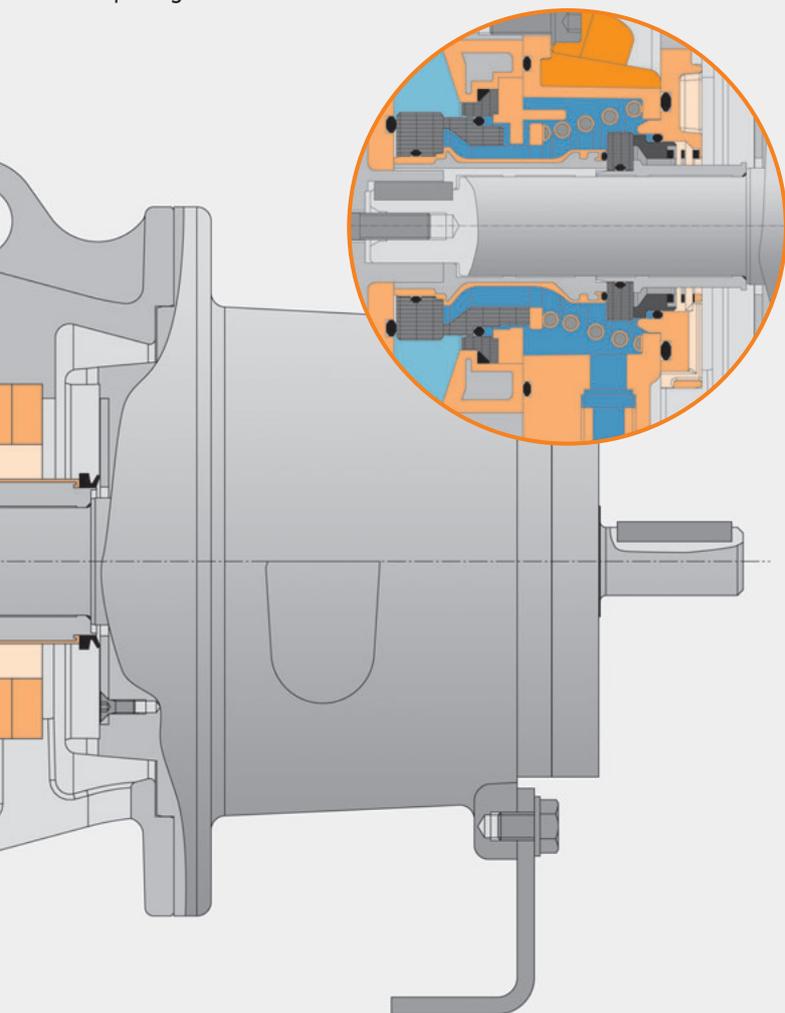
A new generation, thought through to the minute detail and a safe solution for every application – the uncompromising answer to what engineering contractors and plant operators expect from chemical pumps with mechanical seal.

- ▲ **Excellent wear allowance:**
Volute casing with wall thicknesses > 10 mm
- ▲ **Flexible:**
Flushing connections can be readily retrofitted; pocket holes are provided.
- ▲ **Tolerant of solids:**
Deflector keeps solids clear of shaft passage.
- ▲ **Impeller:**
High efficiencies, low NPSH requirements
- ▲ **Steep pump characteristic:**
Exact operating point
- ▲ **Impeller mounting:**
Unaffected by reverse rotation
- ▲ **Maximum containment:**
Intermediate lantern without side openings
- ▲ **Mounting:**
All components bolted with metal-to-metal fit
No adjustment or alignment needed for mechanical seal

- ▲ **Single mechanical seal:**
Direction of rotation independent, metal-free
MUNSCH-REA-F mechanical seal, insensitive to solids



▲ **Double mechanical seal:**
 Shaft sealing solution for fluids posing an environmental hazard



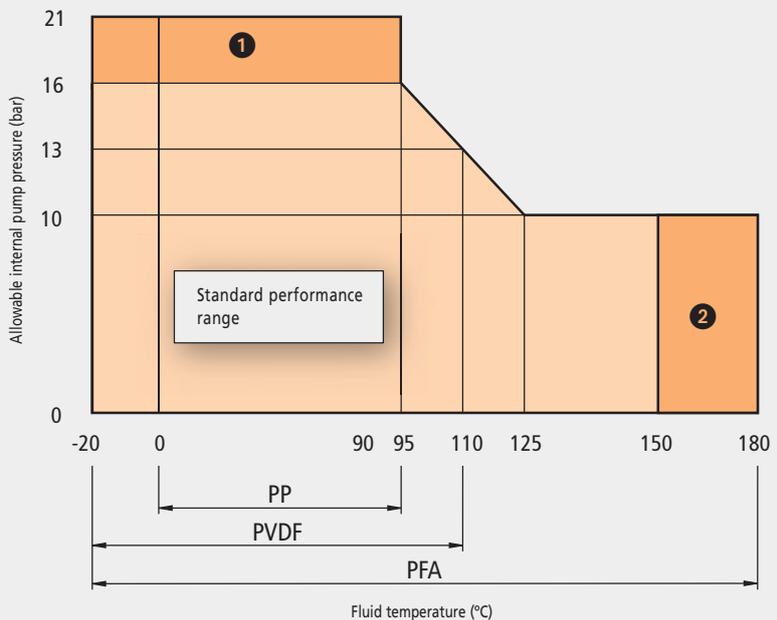
Materials

Volute casing/impeller/casing cover:

PP
 PVDF
 PFA

Performance data

Pump capacity [Q]:	up to	200	m ³ /h
Differential head [H]:	up to	90	m
Solids content:	up to	5	Vol.-%
Particle size:	up to	5	mm
Discharge nozzle:	from DN 25 to DN 65		
Motor rating:			
NPC	up to	30	kW
NPC-B	up to	18.5	kW



Extended performance ranges: ① PVDF, PFA ② PFA

Chemical Pumps with Mechanical Seal

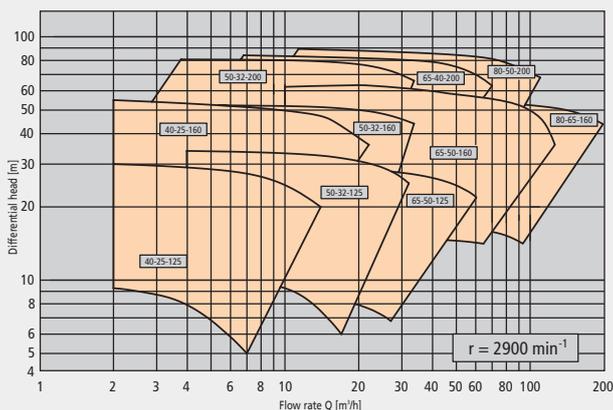
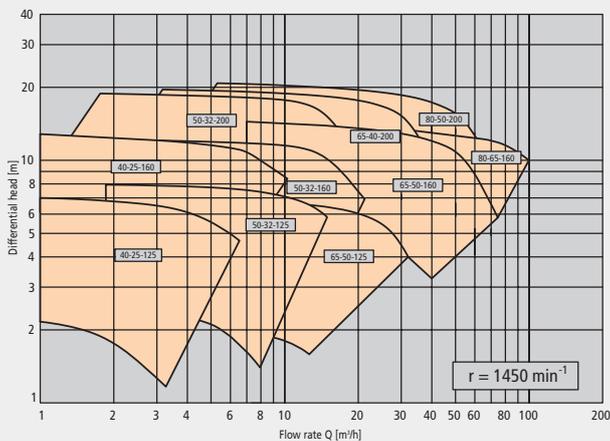
Types of construction and materials – answering every need

Applications

Type NPC and NPC-B pumps are the solution of choice for pumping fluids posing an environmental or health hazard such as acids and alkalis or solvents in the presence or in the absence of solids. Typical applications include the chemical and pharmaceutical industries, electrolysis plants, electroplating plants and metal refining processes.

Types of construction

NPC standardized pump with dimensions to EN 22858/ISO 2858/ISO 5199 or NPC-B close-coupled pump with casing dimensions to EN 22858/ISO 2858, complemented by size 40-25-125, 40-25-160 pumps





Materials

Pump

The non-metallic chemical pumps are available in PP, PVDF as well as in corrosion-resistant PFA for universal fluid compatibility.

Mechanical seal

All silicon carbide components are manufactured from EKasic® C known for its unsurpassed wear and corrosion resistance properties.

MUNSCHE-REA-F single mechanical seal: stationary and rotating seal rings manufactured from EKasic® C; the spring is coated in fluoroplastics.

MUNSCHE-REA-F/D double mechanical seal: product-side stationary and rotating seal rings manufactured from EKasic® C, atmosphere-side stationary seal ring made of carbon; stainless steel spring.

Shaft sleeve

Fluoroplastics-coated stainless steel

Chemical Pumps with Mechanical Seal

Volute casing and casing cover – the solution for the most demanding service

▲ Volute casing

– excellent wear allowance in all service conditions

The pump housing is designed not in annular shape but as a volute casing with a wall thickness of 10 mm minimum throughout offering the advantage of no welds or leak-prone joints. The thick-walled plastics precludes casing deformation, especially at elevated temperatures and/or under vacuum conditions.

The volute casing is completely encased with a metal armour (material number EN-JS 1025; formerly GGG-40.3). Suction and discharge flanges reliably absorb all allowable system pressures and pipe forces.

▲ Pump height-adjustable

– no need for packing pieces

The metal-armoured volute casing is bolted to the base plate with the aid of two rigid stainless steel brackets. The height of the mounting brackets is determined by the standardized centre height (h1) of the pump. Bores and oblong holes provided in the mounting brackets allow an adjustment to the next larger centre height. Packing pieces between the pump and the base plate are not required.



▲ Casing drain

– retrofitting possible

Residual liquid collects at the low point of the volute casing from where it can be drained via a casing drain; the pump can be delivered with drain bore or the bore can be subsequently drilled; a pocket hole is provided.

▲ Temperature measurement

– directly in the product path

A temperature sensor (PT 100) in the volute casing provides direct measurement of the product temperature; the sensor is installed via the casing drain opening.

▲ Flushing connections

– readily mountable at any time

If an external flushing source is needed for the volute casing due to changed operating conditions or if the pump is retrofitted with a double mechanical seal, the flushing connections can be made without the casing cover having to be replaced; pocket holes facilitate the retrofit; the threads for the flushing connections are provided.



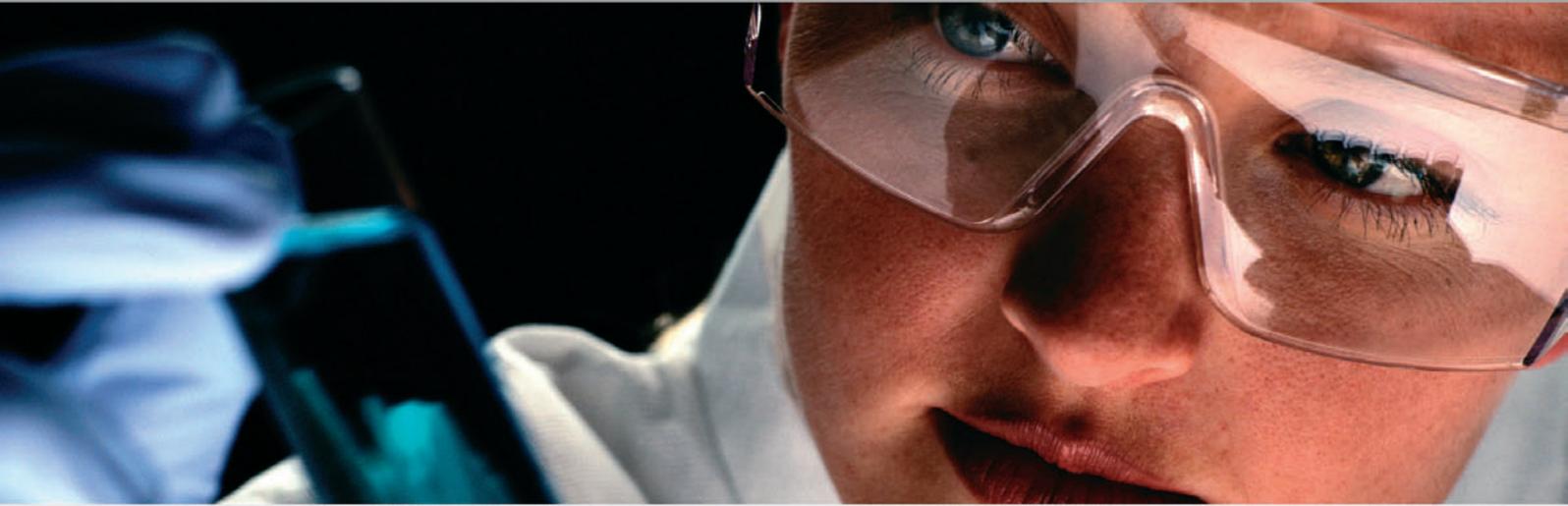
▲ Continuous flushing

– efficient and economical

Continuous flushing effectively protects the seal faces from contact with solids. It ensures reliable protection of the mechanical seal when

- there is a risk of dry-running,
- the fluid pumped has poor lubricating properties,
- the fluid pumped contains undissolved gases
- the fluid is pumped near its boiling point.

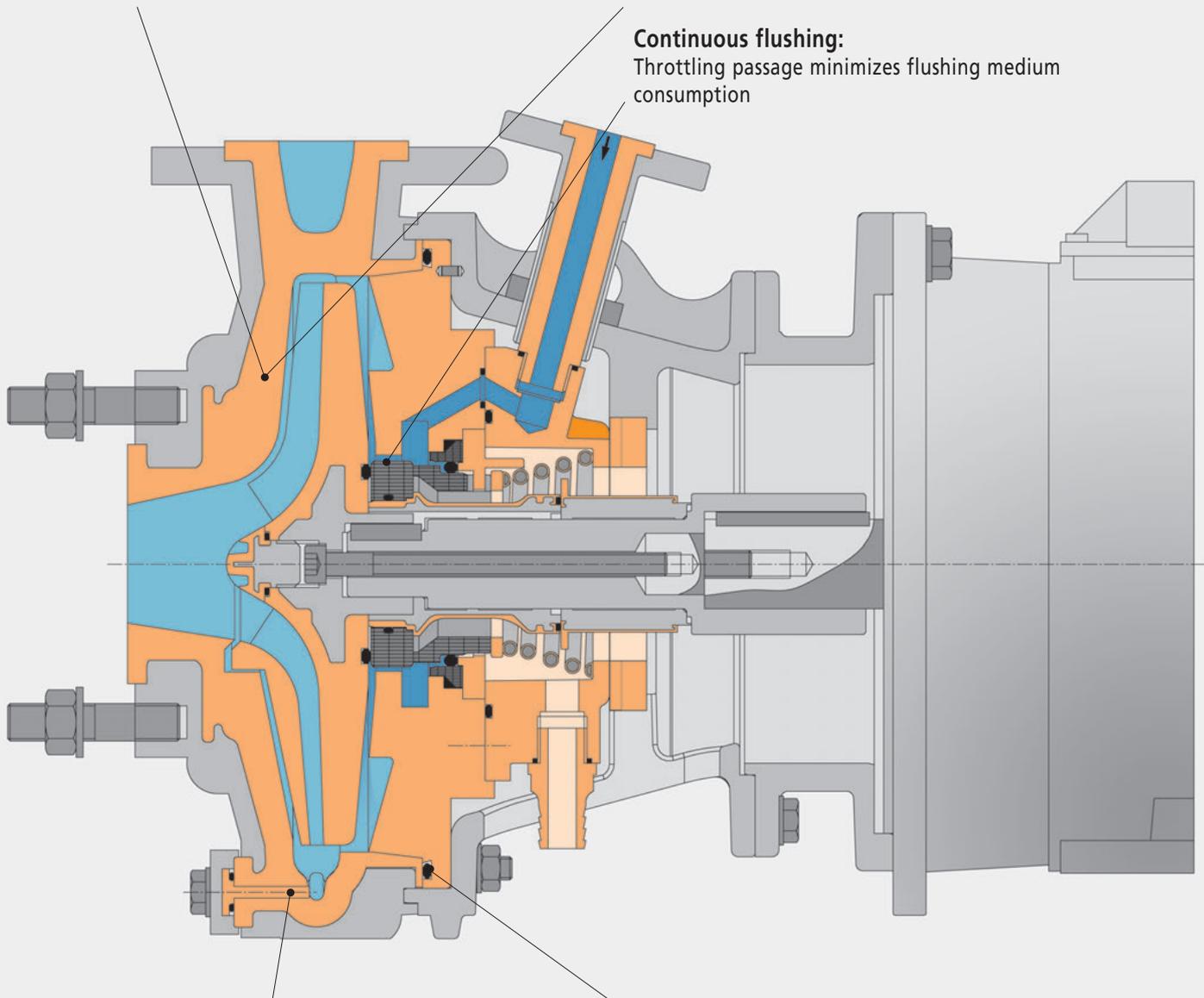
The throttling passage between the casing cover and the rotating seal ring minimizes flushing medium consumption.



Excellent wear allowance:
Volute casing with a wall thickness of 10 mm minimum

Vacuum-resistant volute casing:
Thick-walled plastics retains its shape even at elevated temperatures and/or under vacuum conditions

Continuous flushing:
Throttling passage minimizes flushing medium consumption



Temperature measurement in volute casing:
Temperature sensor is installed in the opening of the casing drain

Pump casing bolted to intermediate lantern with metal-to-metal fit:
O-ring seated to exact preload

Chemical Pumps with Mechanical Seal

The impeller – a dynamic solution

▲ Numerically optimized hydraulic design – ideal fluid dynamics

Conventional design methods meet their practical limits when it comes to designing a pump for maximum performance. Like the aerodynamic bodies of the Formula 1 cars, the fluid dynamics of the new chemical pumps with mechanical seal have been calculated with the latest methods (Computational Fluid Dynamics).



The result is a hydraulic design with a virtually ideal flow profile which means:

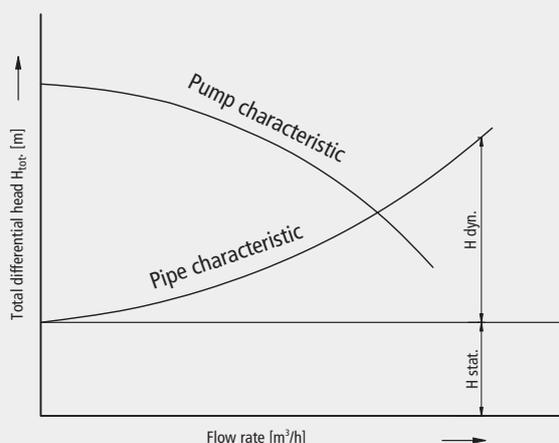
- Higher pump capacity at unchanged differential head
- Energy cost savings
- Improved suction behaviour through low NPSH requirements
- Minimized wear when pumping abrasive fluids
- Reduced running noise

▲ One size smaller – for reduced lifecycle costs

The numerically optimized hydraulic design translates into reduced lifecycle costs of the pumps: reduced capital cost through the selection of smaller pump and motor sizes; reduced installation costs through smaller cable cross-sections and lower-rated motor breakers; energy savings through high pump efficiencies.

▲ Steep performance characteristic – exact operating point

The new chemical pumps with mechanical seal feature a steep performance characteristic. This means that the pumps can be adjusted exactly to the operating point.



▲ Impeller – semi-open or closed design

Depending on the pump size, the pumps can be fitted with a semi-open or a closed impeller. The optimum impeller design is selected on the basis of the hydraulic design and the manufacturing process.

▲ Impeller balance hole – for greater application coverage

Fluids containing undissolved gases: Gas bubbles are discharged via the impeller balance hole and can thus not compromise the function of the mechanical seal.

Solid-laden fluids: The solids deflector causes the greater part of the solids to be deflected and directly recirculated to the product stream. Hence, only a minor portion of the solids enters the mechanical seal area; solids cannot build up in the mechanical seal area and are discharged via the impeller balance hole.

▲ Impeller and pump shaft – reverse rotation safe

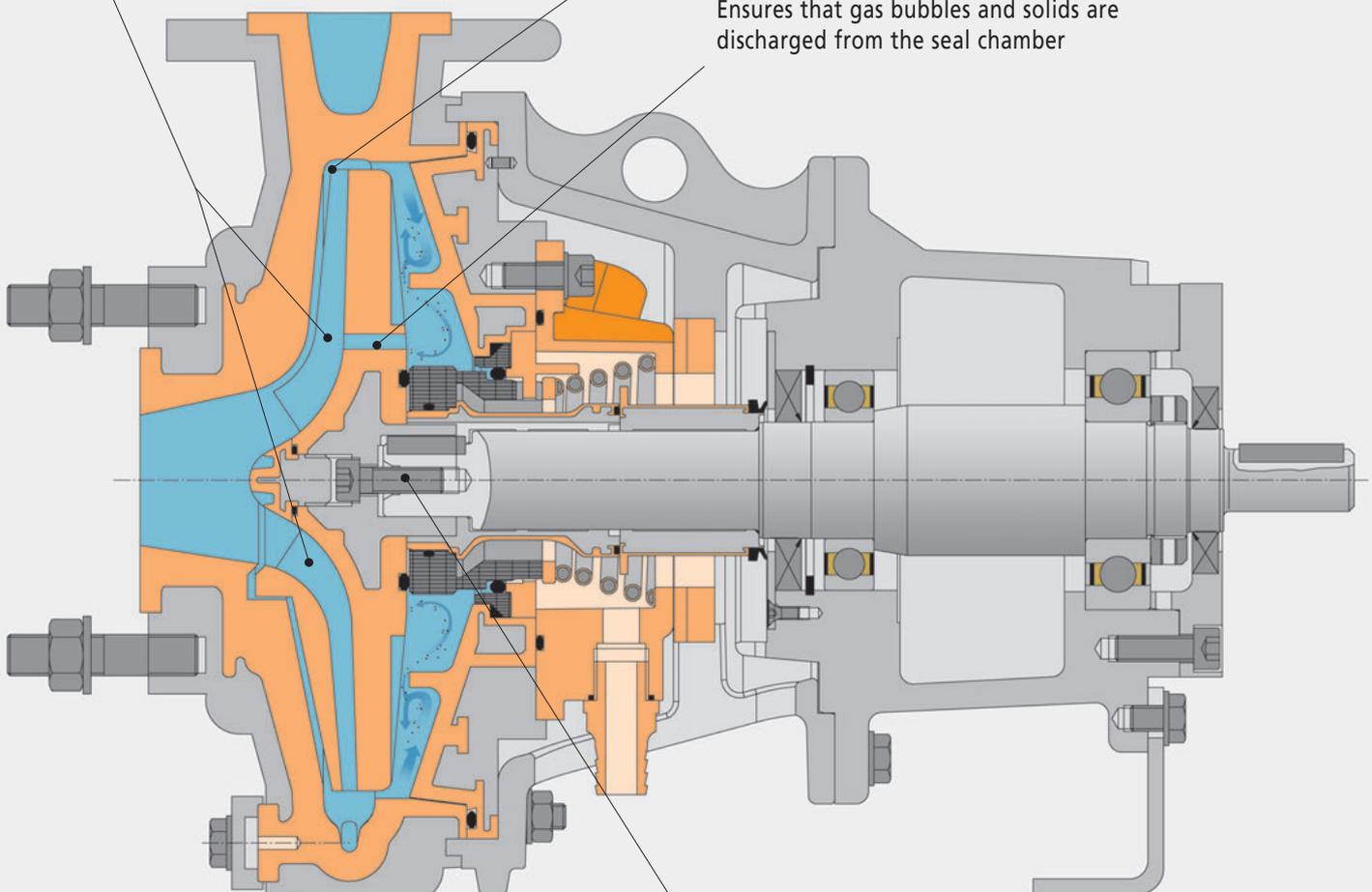
The impeller is positively locked to the pump shaft for reverse rotation protection. Torque is transmitted by a shaft key. If operating conditions change, the impeller can be trimmed or replaced.



Impeller design:
Semi-open or closed

Numerically optimized hydraulic design:
Improves efficiency and reduces lifecycle costs

Impeller balance hole:
Ensures that gas bubbles and solids are discharged from the seal chamber



Reverse rotation protection:
Impeller and pump shaft are two separate components; they are positively locked to one another and are unaffected by reverse rotation

Chemical Pumps with Mechanical Seal

The mechanical seal – designed for demanding duties

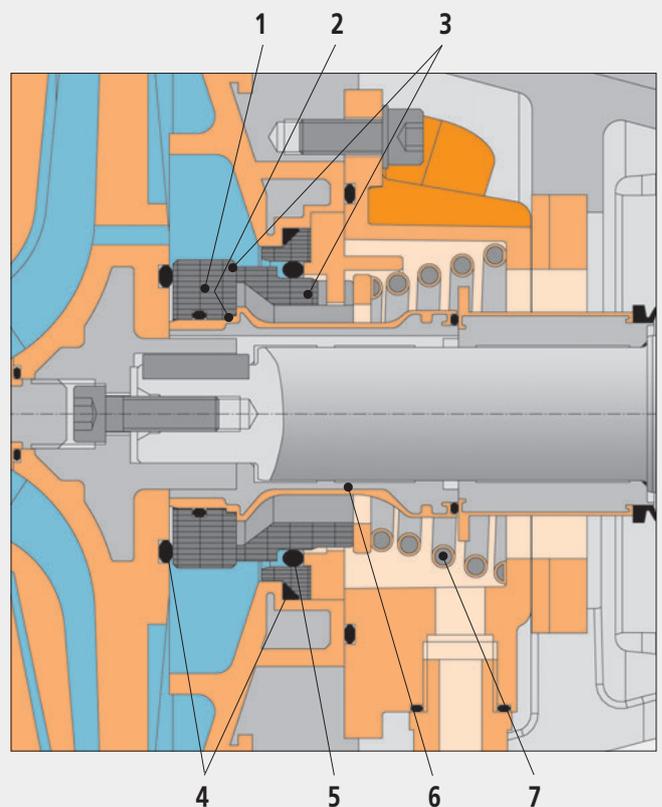
It takes a well-designed mechanical seal to make a good pump perfect. Our development team has created a shaft seal answering to all operator needs:

- use of the same mechanical seal size on all pump sizes,
- a maximum of interchangeable components,
- ease of mounting,
- conversion from single to double mechanical seal possible.

▲ MUNSCH-REA-F single mechanical seal – developed for non-metallic pumps

MUNSCH-REA-F direction of rotation independent, metal-free single mechanical seal with stationary spring. Special features: insensitive to fluids laden with solids; the rotating seal ring in conjunction with the impeller balance hole keep solids clear of the seal faces.

- 1 The rotating seal ring design with a larger outer diameter counteracts edge pressure effectively.
- 2 The rotating seal ring is positively locked to the shaft sleeve.
- 3 Rotating and stationary seal rings are manufactured from EKasic® C. This advanced silicon carbide offers maximum abrasion resistance to virtually all acids and alkalis.
- 4 The static O-rings are seated with a defined preload.
- 5 Optimally positioned between the stationary seal ring and the SSiC thrust ring, the dynamic O-ring reliably prevents fluid releases to atmosphere.
- 6 The CrNiMo shaft sleeve is provided with a fluoroplastics coating; it is positively locked to the shaft.
- 7 The fluoroplastics (E-CTFE)-coated spring is located outside the path of the fluid pumped.



▲ From single to double mechanical seal – ease of conversion

Pumps originally delivered with a MUNSCH-REA-F single mechanical seal can be readily converted to a MUNSCH-REA-F/D double mechanical seal:

- Casing cover is retained
- Few new components required
- No need for adjustment



▲ **MUNSCH-REA-F/D double mechanical seal**

The MUNSCH-REA-F/D double mechanical seal consists of a product-side and an atmosphere-side single mechanical seal.

Product-side mechanical seal:

Direction of rotation independent, metal-free MUNSCH-REA-F single mechanical seal with stationary spring.

Atmosphere-side mechanical seal:

1 The rotating seal ring of EKasic® C (SSiC) is mounted between the product- and atmosphere-side shaft sleeves and designed with a larger outer diameter than the stationary seal ring.

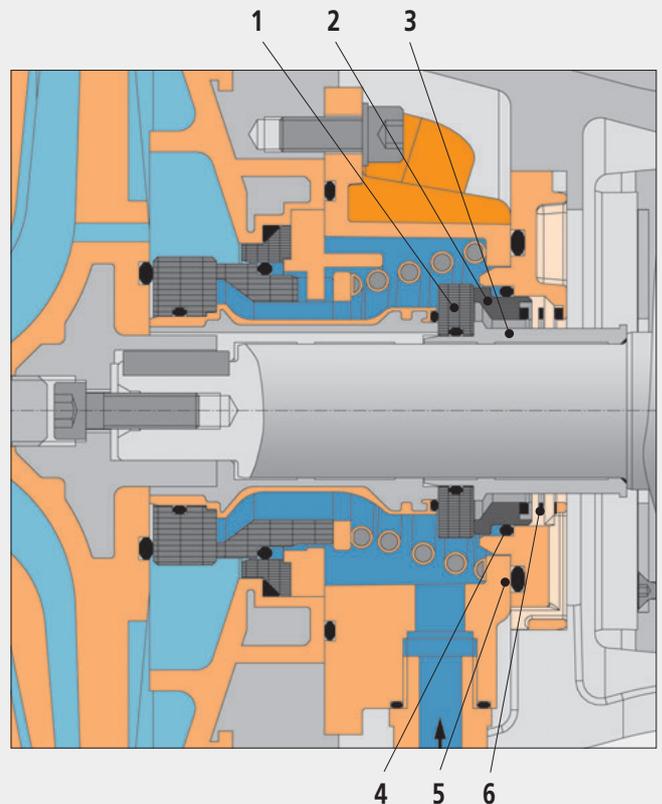
2 Stationary seal ring made of carbon.

3 Shaft sleeve made of stainless steel.

4 Arrangement of the dynamic O-ring between the carbon stationary seal ring and the carbon-fibre reinforced PVDF seal cover ensures reliable sealing over the full range of allowable service temperatures.

5 No adjustment or alignment required when mounting or replacing the seal components.

6 The stainless steel spring is located outside the path of the buffer fluid.



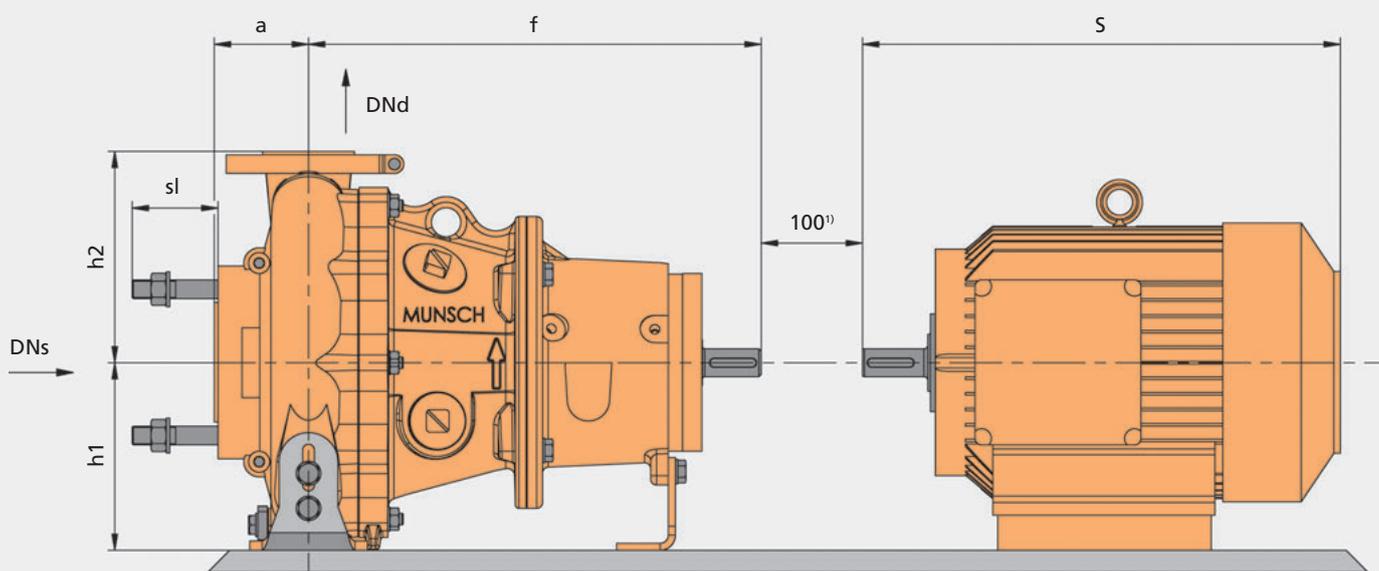
▲ **Simple disassembly/assembly
– no adjustment required**

Disassembly or assembly of the mechanical seal requires no special skills. No adjustments or alignment needed; all components bolted with metal-to-metal fit.

Chemical Pumps with Mechanical Seal

Delivered ready for use – dimensions to DIN/ISO

Standardized pump NPC



Pump size	Pump dimensions						
	DNs	DNd	a	f	h1	h2	sl
40-25-125	40	25	80	385	112	140	70
40-25-160	40	25	80	385	132	160	70
50-32-125	50	32	80	385	112	140	70
50-32-160	50	32	80	385	132	160	70
50-32-200	50	32	80	385	160	180	70
65-40-200	65	40	100	385	160	180	70
65-50-125	65	50	80	385	112	140	70
65-50-160	65	50	80	385	132	160	70
80-50-200	80	50	100	385	160	200	70
80-65-160	80	65	100	385	160	200 ³⁾	70

Flanges to DIN 2533, PN 16
Suction-side studs to DIN 938

Dimensions in [mm]

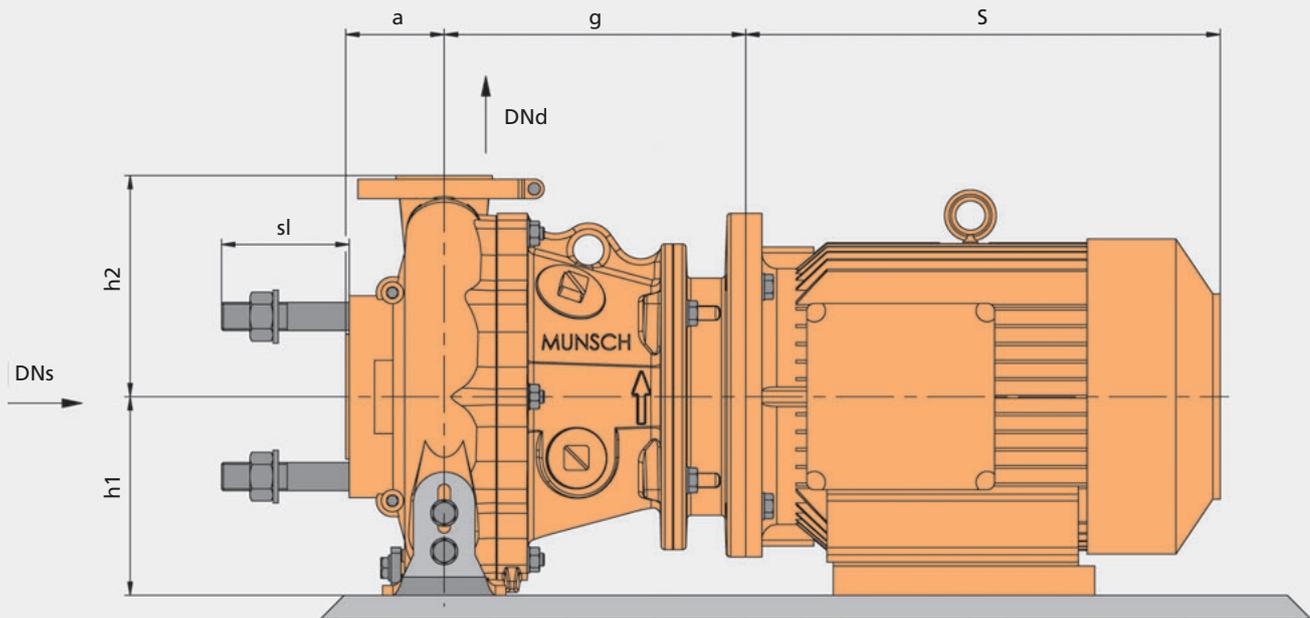
1) Length of spacer piece for spacer coupling, i.e. allows pump removal without disconnection of the motor.

2) Motor length S relates to LOHER motors.

3) According to EN 22858: 180 mm

Motor size	Motor dimensions ²⁾					
	1450 min ⁻¹			2900 min ⁻¹		
	IP55 [kW]	EExell [kW]	S	IP55 [kW]	EExell [kW]	S
100 LB	2.2	2.0	383	3	2.5	383
100 LD	3	2.5	383	-	-	-
112 MB	4	3.6	389	4	3.3	389
132 SB	5.5	5.0	458	5.5	-	458
132 SD	-	-	-	7.5	4.6	458
132 SX	-	-	-	-	5.5	458
160 MB	-	-	-	11	7.5	628
160 MD	-	-	-	15	10	628
160 LB	-	-	-	18.5	12.5	672
180 MB	-	-	-	22	15	696
200 LG	-	-	-	30	20	766
200 LJ	-	-	-	-	24	766
225 MB	-	-	-	-	28	813

Close-coupled pump NPC-B



Pump size	Pump dimensions						
	DNs	DNd	a	g ¹⁾	h1	h2	sl
40-25-125	40	25	80		112	140	70
40-25-160	40	25	80		132	160	70
50-32-125	50	32	80		112	140	70
50-32-160	50	32	80		132	160	70
50-32-200	50	32	80		160	180	70
65-40-200	65	40	100		160	180	70
65-50-125	65	50	80		112	140	70
65-50-160	65	50	80		132	160	70
80-50-200	80	50	100		160	200	70
80-65-160	80	65	100		160	200 ³⁾	70

Pump dimension g	
Motor size	g
100	186
112	186
132	245
160	275

Motor dimensions ²⁾						
1450 min ⁻¹				2900 min ⁻¹		
Motor size	IP55 [kW]	EExell [kW]	S	IP55 [kW]	EExell [kW]	S
100 LB	2.2	2.0	322	3	2.5	322
100 LD	3	2.5	322	-	-	-
112 MB	4	3.6	329	4	3.3	329
132 SB	5.5	5.0	378	5.5	-	378
132 SD	-	-	-	7.5	4.6	378
132 SX	-	-	-	-	5.5	378
160 MB	-	-	-	11	7.5	518
160 MD	-	-	-	15	10	518
160 LB	-	-	-	18.5	12.5	562

Flanges to DIN 2533, PN 16
 Suction-side studs to DIN 938

Dimensions in [mm]
 1) See table "Pump dimension g"
 2) The motor length S relates to LOHER motors.
 3) According to EN 22858: 180 mm

Chemical Pumps with Mechanical Seal

Non-metallic pumps for the CPI – From the Specialist

MUNSCH GmbH is a highly specialized manufacturer of non-metallic pumps. Customers around the globe bank on our pumps whenever it comes to ensuring maximum operating reliability in abrasive and aggressive service conditions.

▲ Design

We design pumps to our customers' specifications

Our engineers develop pumps for your specific needs. Application engineers from industry and university researchers support the development process through to production maturity of the pump. Rising energy prices are posing a new challenge to our development teams: developing high-efficiency pumps is one of their answers. A numerically optimized hydraulic design is their contribution to energy economy.

Another challenge for our engineers is to provide you with pumps that do not only cover the standard performance characteristic range but offer at the same time ample pump head reserves. In tackling this task, they always keep in mind the **FlowStar**[®] concept: operating reliability, robustness, ease of assembly, maximum hydraulic performance and low life-cycle cost.

▲ Manufacture

Our vertical integration makes for short response times

We manufacture all plastic components in-house using granulate or semis as starting products. This makes us independent of external manufacture so that we can respond fast and flexibly to customer needs. Bought-in cast iron or silicon carbide components are standardized and kept on stock in large quantities.

In a single operation, the blanks are further processed to the finished product on our state-of-the-art five-axis milling machines. Each individual component produced is documented in an electronic database so that the original component can be exactly reproduced even after years.

FlowStar[®]





▲ Assembly

Consistent quality documentation ensures traceability

Following release by Quality Assurance, the individual pump components arrive at the assembly workbench just in time. Our assembly team assembles the pumps using the latest methods and performs and documents the quality tests/inspections at defined hold points on the basis of a rigorous test/inspection schedule.

▲ Testing

No pump leaves our production site untested

Each pump is tested on our test bench. Only when the pump achieves the guaranteed operating point, will it be released for shipment. A test report is submitted for each pump delivered.

▲ Service

We are at your service around the globe

MUNSCH chemical pumps operate in Europe and overseas. Thanks to our worldwide sales and service network you will find a technician who is familiar with every detail of our pumps in all industrialized countries. Our local sales and service engineers will be available to you, whether for pump inspection and repair or for on-site advice.



MUNSCH chemical pumps at a glance

- ▲ Innovative products
- ▲ Competent advice
- ▲ Commissioning & on-site operator training
- ▲ Short response times
- ▲ Local service



We are at your service
around the globe!

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