exakta

A Division of SEKO Group

Solutions for

Industrial Processes

Contents

A key partner to heavy industry

Beginning life as Bono Exacta in 1963, Exakta has become one of the world's leading manufacturers of process and metering pumps for heavy-duty applications.

With vast experience providing integrated and customized dosing solutions across the oil and gas sector, Exakta's expertise means we're a trusted partner of the major players worldwide.

Committed to Customer Satisfaction

At Exakta we work alongside our customers to deliver a bespoke advisory service at every stage. From early project development to on-site installation, we assist in selecting the most suitable accessories, drafting ad-hoc reports, providing technical analysis and issuing predictive maintenance guidance for a complete turnkey service.

Working with sophisticated CAD stations, 3D modelling and FE software, skilled engineers provide design and solution engineering to meet the most demanding international standards including ASME, ANSI, BS and API, tailored to individual project specification.

Certified Manufacturing Processes

Since 1994 Exakta has operated in accordance with ISO 9001 quality management standards, today audited and certified by DET NORSKE VERITAS (DNV). This globally-recognized system ensures customer satisfaction through effective application of processes including:

- Sales process controls to ensure superior customer support
- Design innovation processes that deliver state-of-the-art products for specific applications
- Centralized supply chain controls to minimize delivery times
- Strict quality controls on received and delivered materials

Lean manufacturing processes enable us to be highly flexible and responsive to customer demand and market changes while achieving outstanding environmental performance acknowledged by ISO 14001 certification.

Exakta's dedication to protecting the wellbeing of our employees has been recognised with ISO 45001 certification for occupational health and safety management, confirming an ongoing commitment to reducing workplace risks and creating healthy, safe working conditions for every member of the Exakta team.

Exakta

Industry Sectors

Oil & Gas

From onshore to offshore, dosing solutions in the oil and gas industry must cope with stringent technical specifications and harsh environmental conditions.

In upstream, midstream and downstream applications, operators require process and metering pumps for chemical injection to achieve:

- Equipment protection
- Flow production
- Produced water treatment
- Hydrate control
- Crude oil processing
- Desulphurization
- Sour water stripping
- Gas dehydration
- Deoiling
- Closed drain
- Flushing

It is essential that pumps in this sector are capable of high accuracy, repeatability and linearity, even under high pressure, while adhering to stringent safety regulations and international requirements.

Chemical & Petrochemical

The chemical and petrochemical sectors present some of industry's most complex dosing challenges.

Petroleum refining concerns two major activities: the physical processes of refining crude oil into lubricating or fuel oil and the chemical conversion of feedstock into a wide range of chemicals, including:

- Synthetic fibres and rubbers
- Benzene and its derivatives
- Inorganic chemicals
- Polymers

Chemical and petrochemical applications therefore demand metering pumps that can deliver superior dosing precision alongside the capacity to handle highly-aggressive liquids such as toxic, corrosive and acidic solutions.

Power Generation

Metering pumps are an essential aid to water treatment processes in thermal power plants, with their capacity for achieving highly-accurate dosage and flow rates making them ideal for injecting water-treatment chemicals into make-up water under pressure.

Key water-treatment processes in power generation include:

- Phosphate dosing to prevent scale formation in boiler tubes and maintain pH value to stop corrosion
- Dosing of compounds such as ferric chloride and sulphuric acid for water purification
- Metering caustic soda and detergent for CO_2 scrubbing
- Denitrification via urea and ammonia injection

Chemical metering pumps used in power plants must meet the dual demands of precision and durability in order to help operators maintain efficient running and prevent costly unplanned downtime.

Industrial Effluent Treatment

Industrial operations invariably generate some wastewater, meaning proper treatment of this effluent is crucial for both environmental and economic reasons.

Industrial wastewaters may include: toxic and other harmful materials; steam condensate returning from the process and components that are non-biodegradable or that can reduce the wastewater-treatment system's efficiency.

According to different industrial processes, Exakta is able to handle specific treatments and offer reliable solutions for:

- The pre-treatment stage, where chemical composition of water is adjusted in order to preserve the unit and maximize the performance of the downstream process
- Oil separation, where oils and suspended solids are separated from water
- Chemical and physical treatments to facilitate flocculation and precipitation of solids
- Chemical treatment to provide disinfection and odour control

Oleochemicals

The oleochemicals industry – the extraction of products such as fatty acids, fatty alcohols, methyl esters, fatty amines and glycerine from animal or vegetable fats – is a valuable and sustainable alternative to chemicals from hydrocarbon oils.

Oleochemicals are used in a multitude of products, including toiletries, soaps, food additives, surfactants, detergents and biofuels. Critical processes in this sector include:

- Saponification
- Fractionation
- Transesterification
- Hydrogenation

Pumps used in oleochemical processing must contend with a number of demanding requirements, with essential features including corrosion resistance and the capacity to handle high-temperature fluids. These challenging conditions, coupled with the rapid rise of oleochemicals, mean that pumps are often required to work continuously over long periods, and with limited windows available for maintenance and servicing only the highest levels of durability are acceptable.

Fertilizers

Within agricultural applications, farmers face the ongoing challenge of achieving high yields, minimizing environmental impact and controlling costs when fertilizing crops.

With their high precision, range of flow rates and robustness, metering pumps enable fertilizer manufacturers to safely and sustainably produce primary and multicomponent fertilizers that can have a significant effect on yield and crop quality.

Each type of fertilizer has a different manufacturing process, but all production systems are required to handle raw materials that can be highly abrasive or corrosive and have the potential to cause damage to equipment.

Metering pumps are an essential component of any fully integrated production plant across a variety of fertilizer manufacturing processes.

Desalination

In many parts of the world, seawater desalination is an essential process in the supply of potable and irrigation water. Both thermal (MSF/MED) and membrane (RO) desalination systems rely on precise and effective chemical dosing in order to prevent biofouling, scaling, foaming and corrosion.

Chemical injection pumps must deliver first-class metering accuracy for the dosing of flocculants, coagulants, acids, chlorine and antiscalants that help deliver safe drinking water and maximize the world's most precious resource.

Thanks to advances in pump technology, operators are now able to treat large volumes of seawater at high efficiency in what was previously seen as an expensive means of water treatment.

Plastic Production

Metering pumps are widely used for additive injection during manufacture of foam, insulation, protective coating, adhesives, packaging and countless other products made of polyethylene, polypropylene, polyurethane and polyamide.

Pumps used in plastic production must be robust enough to withstand chemicals that may be toxic or flammable. Plus, with many plants running continuously, the modern dosing system should have the efficiency, flexibility and durability to operate safely and precisely during the dosing of chemicals such as:

- Catalysts and reagents
- Antioxidants for weathering resistance
- Colourants
- Foaming agents
- Lubricant injection
- Antimicrobial injection for biocide treatment

Metal & Mining

High temperatures and continuous duty are just some of the challenging conditions faced by pumping systems in the extraction and refining of metal from the ore.

Modern steel mills produce a variety of metals, meaning pump flexibility is a key asset and the reason operators increasingly seek versatile systems to perform processes including:

- Water treatment for the pre-cooling process
- Treatment of sealing water
- Descaling of carbon steels
- Cleaning of ferrous alloys
- Tailings and wastewater treatment
- Acid injection for ore flotation

Cement Production

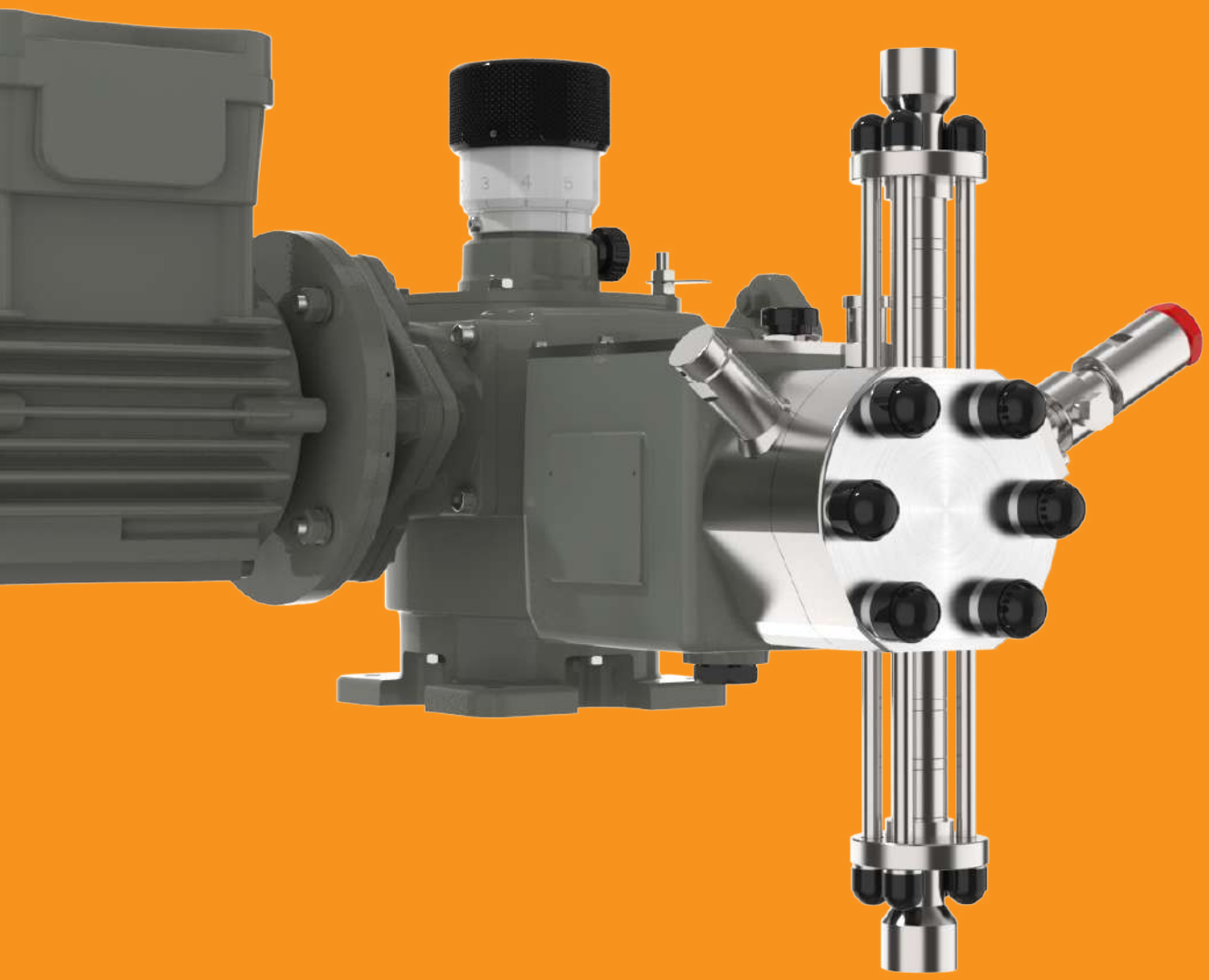
The dosing of additives, treatment of process water and other key applications in cement manufacture require specialist industrial pumps that can deliver a consistently high product standard.

Process and metering pumps help operators to fulfil the requirements of cement manufacturing, where initially a slurry is pumped to blending tanks and homogenized to correct chemical composition. Other chemicals may be added during the grinding process to produce different formulae for waterproofing and corrosion-resistant cements.

Meanwhile, operators seeking to reduce their plant's environmental impact must consider the most suitable pump for the precise treatment of service water.

Nexa Series

Hydraulic double-diaphragm and packed plunger pumps with full-motion mechanisms



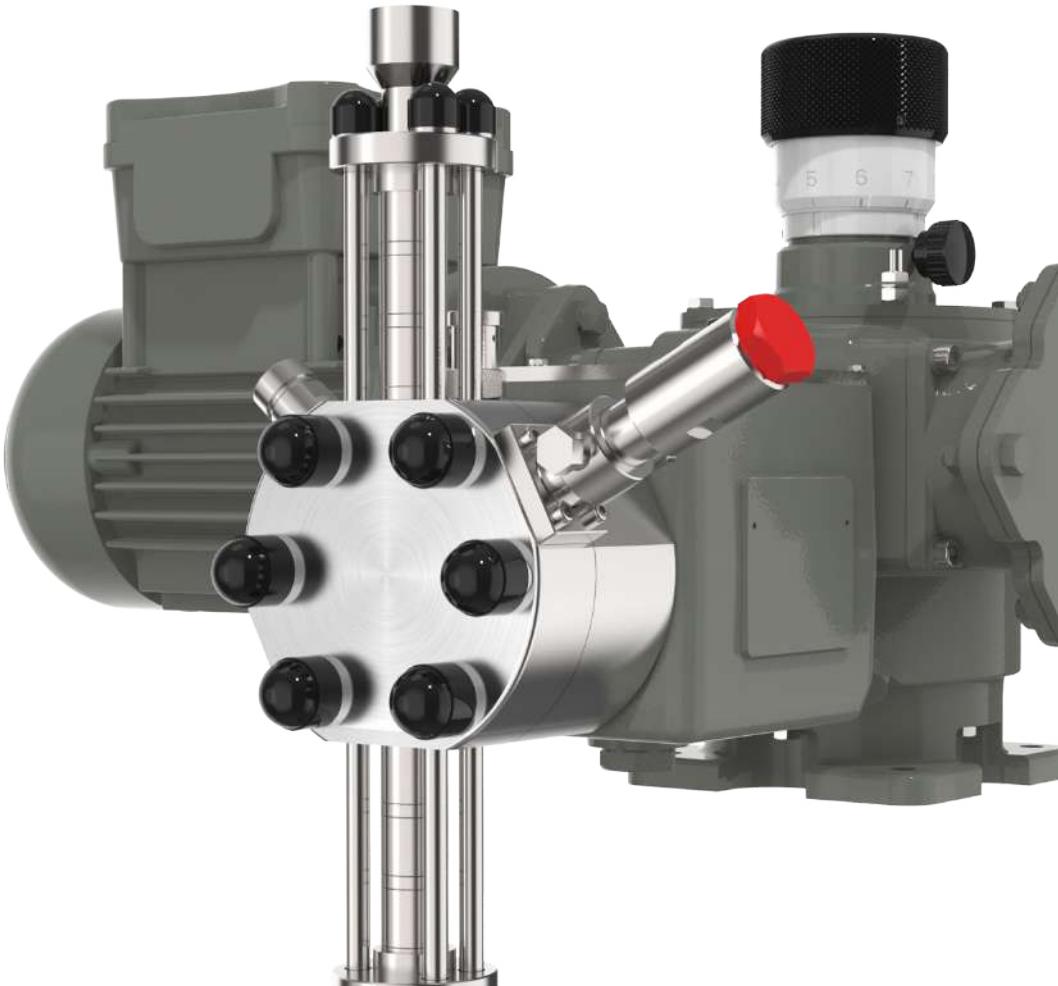
Capable of superior performance in even the most severe operating conditions, the Nexa Series packed-plunger and hydraulic double-diaphragm metering pumps represent one of heavy industry's most versatile, robust and reliable fluid metering and dosing solutions.

Nexa's exceptional build quality enables stable dosing even under extreme operating pressures and temperatures, from wellhead chemical injection in oil and gas applications to pyrophoric liquids handling in chemical compounds manufacturing.

Designed to meet API 675 3rd edition standard, compliant to ATEX2014/34/EU, TR CU 004-010-020-012/2011 and alignable with Shell DEP (various), Norsok M-501 & M-630, NACE 0175 specifications, Nexa can be safely operated in hazardous processes, reassuring operators of the pump's suitability regardless of the application.

Technical Features

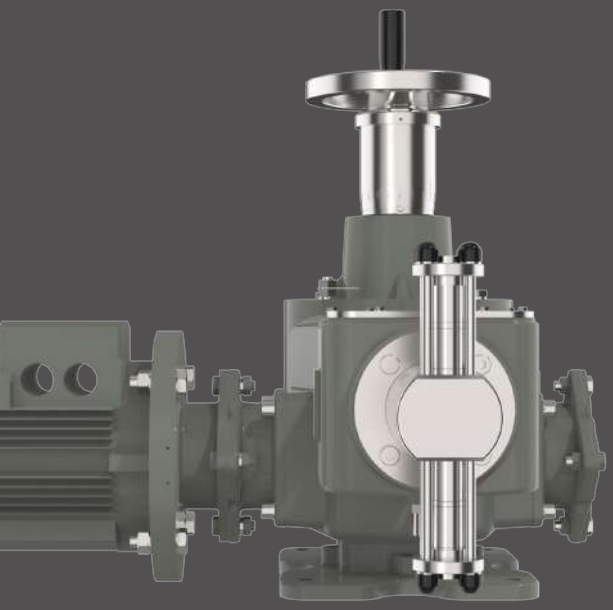
Pressure:	up to 600 barg for hydraulic diaphragm and 650 for packed plunger
Flow rate:	up to 10,000 l/h with a single head
Fluid temperature:	from -20°C to 80°C (from -40°C to 150°C on request)
Wetted parts:	SS 316L, PP, PVDF and PTFE (exotic alloys available on request)



Hydraulic double-diaphragm heads version

A trustworthy solution for applications requiring the highest levels of operational accuracy and reliability. Features include:

- Hydraulic oil-operated diaphragms
- **Double oil** for hydraulics and mechanism lubrication ensuring 100% chemical tightness and operational safety for higher reliability, dosing accuracy and application flexibility
- **Sealed design** for metering hazardous fluids such as toxic or corrosive solutions
- Protection against external contamination
- **Preformed PTFE** diaphragms as standard, for excellent chemical compatibility and increased compactness allow an outstanding level of efficiency
- **Diaphragm rupture detector** available in multiple options:
  - Exakta standard local visual
  - Local visual via pressure gauge
  - Pressure switch (any make, model or case material and signal type: analogue 4 – 20 mA, digital, HART protocol)
  - Pressure transmitter (any make, case material and signal type: analogue 4 – 20 mA, digital, HART protocol)
- Mechanical replenishment system maintains a constant level of the hydraulic fluid, thereby guaranteeing maximum precision and repeatability and enabling diaphragm deformation control for extended life
- Standard wetted parts include 316L stainless steel, PP and PVDF, with other materials available upon request



Packed-plunger heads version

The simplest and most suitable solution for featuring increased resistance and long working life, PN and KN plunger heads boast special features that offer superior performance.

- **Plunger** available with Stellite or ceramic coating and precise surface finish for increased resistance and longer working life
- **Perfect alignment** of the plunger in the seal
- **Adjustable seal** for leakage recovery

Mechanism

Full-motion type in six different sizes, featuring:

- Oil-bath lubrication
- Low-noise internal worm gearbox
- High-precision stroke adjustment for ultrafine volume control
- Increased turndown ratio achievable via frequency converter
- Housing available in cast iron as standard and nodular cast iron to cope with harsh ambient conditions
- Exakta-designed electrical and pneumatic actuators available

Valves

Exakta is committed to developing flexible and customized valve configurations with flow channels specifically designed to improve hydraulic efficiency while coping with different conditions and applications.

SEAM Cone Valve

Thanks to additive manufacturing technology, this valve delivers high performance with SS 3D printing while allowing endless shape possibilities to meet unique in-valve fluid dynamics for every application.

Features

- Lower NPSH required (up to 10%)
- Increased volumetric efficiency (3%)
- 30% lighter than conventional machined valves
- Enhanced durability for longer mean time between repairs

VEEP Cone Valve

Engineered to cater to diverse fluid demands, VEEP Cone Valve offers outstanding performance while ensuring self-cleaning functionality. Its unique operating direction prevents fluid obstruction to the valve's seals and guide, enhancing its reliability.

VEEP Cone Valve's design incorporates a component of engineered polymer compound that provides excellent protection against abrasive fluid particles, ensuring compatibility with particulate and abrasive fluids.

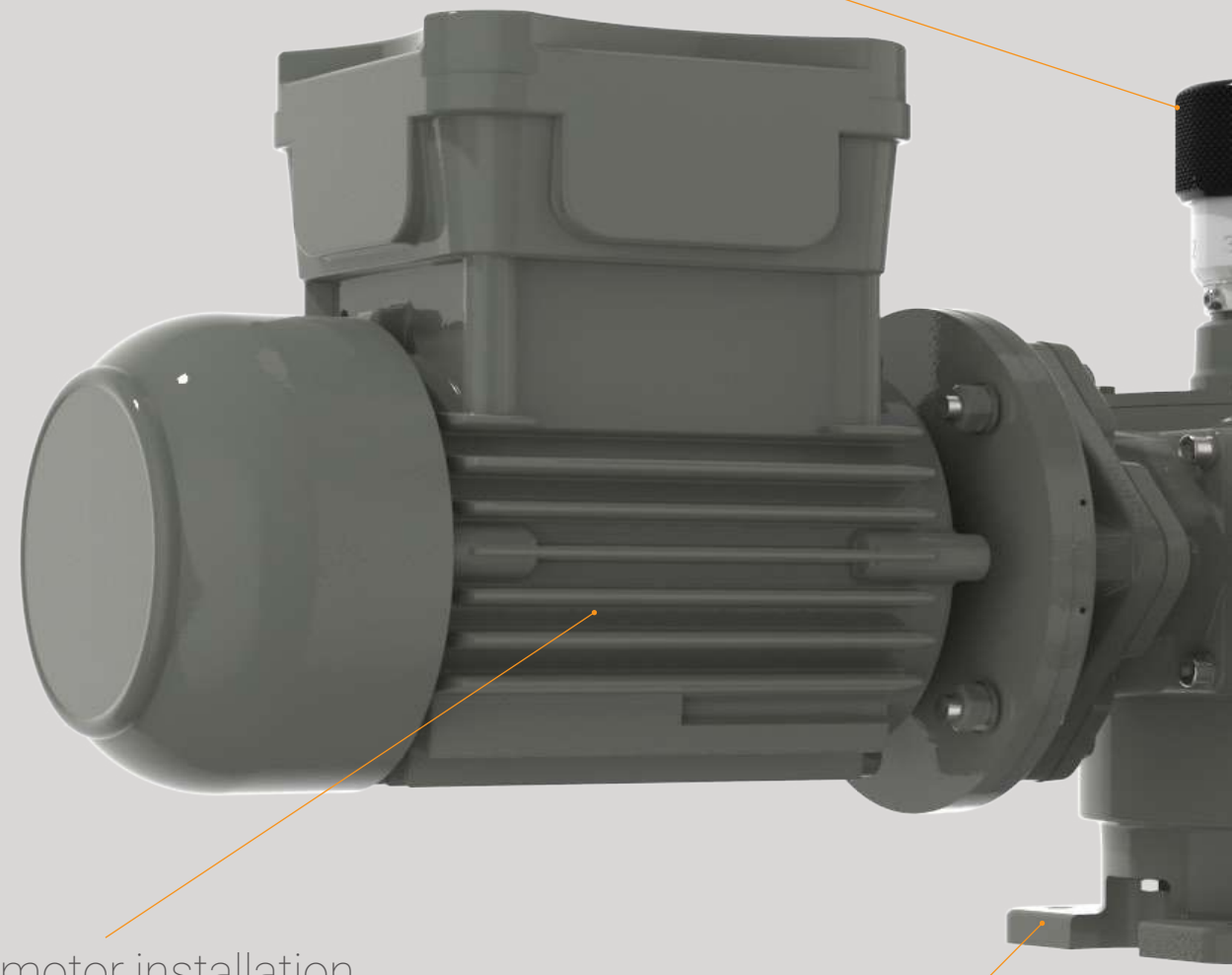
Features

- Lower NPSH required (up to 10%)
- Compatibility with particulate fluids
- Compatibility with abrasive fluids

Nexa Series Features

Stroke adjustment

Flow rate variation is by adjustment from 0 to 100% of the plunger stroke length. Stroke adjustment can be achieved both manually and automatically.



Versatile motor installation

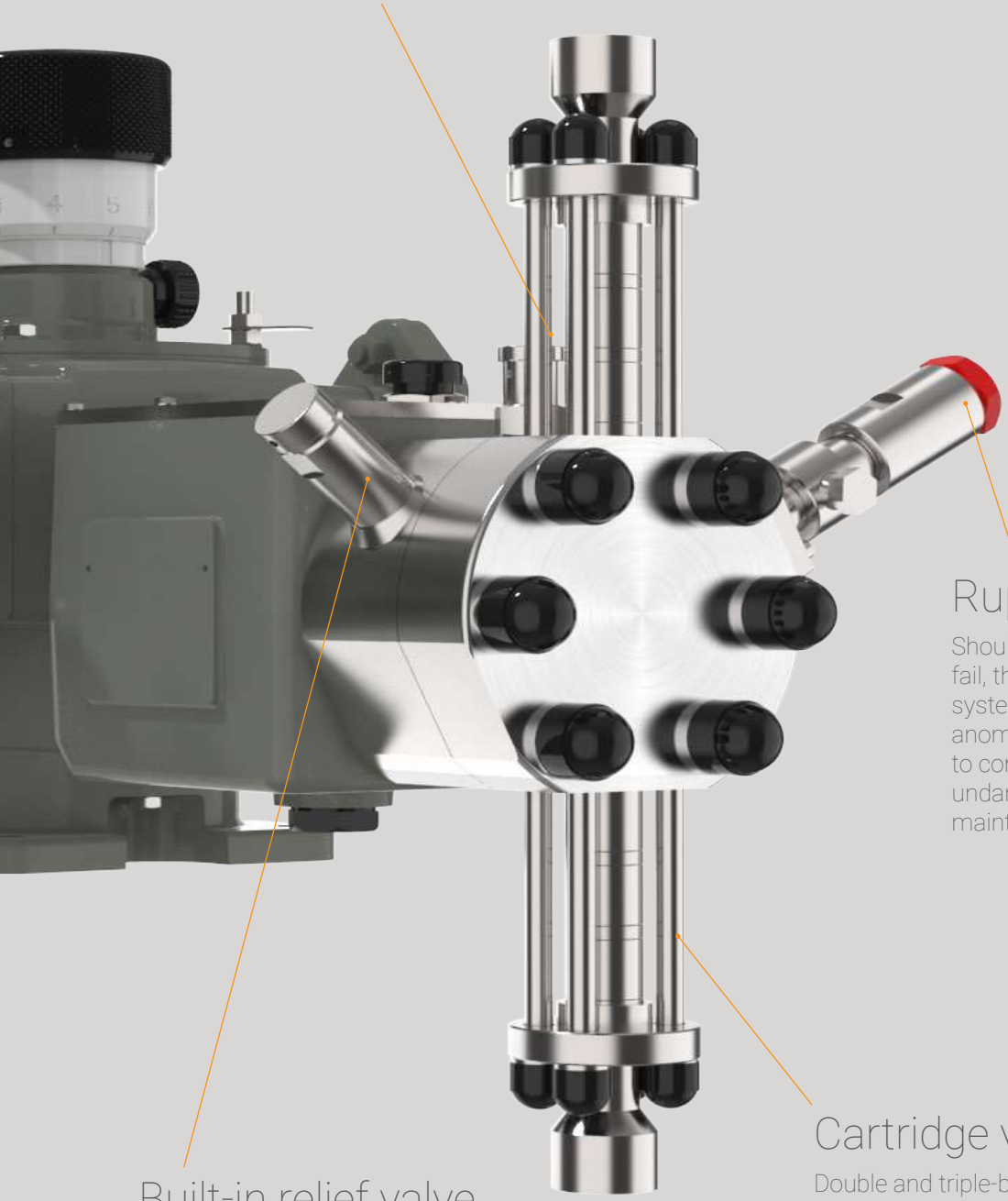
The driving motor can be fitted horizontally (either side) or vertically and can also be supplied suitable for variable speed drive and on demand with relevant inverters and filters.

Bespoke base plate design

Pumps are provided with an API 675 standard or customized base plate, designed according to customer and application requirements.

Venting system

While guaranteeing automatic venting of the hydraulic chamber during operation, this system also facilitates pump start-up with a manual action to purge the air/gas.



Rupture detector

Should one of the two diaphragms fail, the integrated protection system immediately signals the anomaly, allowing the pump to continue functioning on the undamaged diaphragm until maintenance can be scheduled.

Built-in relief valve

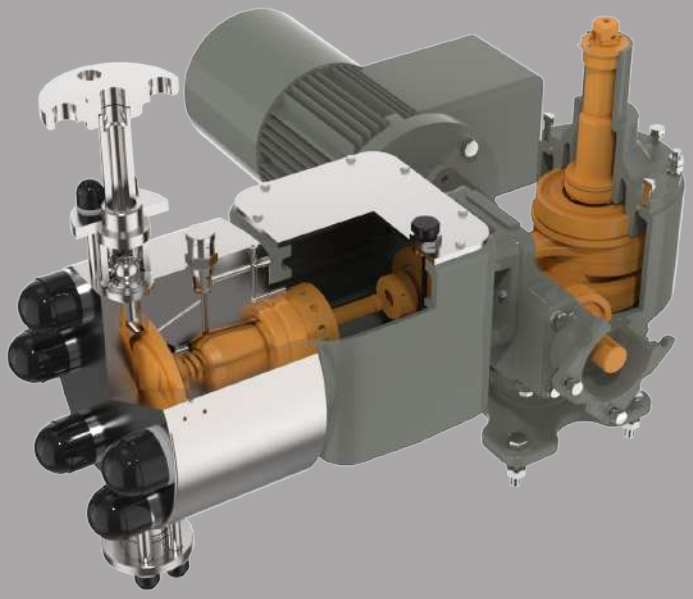
Protects the double-diaphragm pump against unexpected overpressure

Cartridge valves

Double and triple-ball configurations are available with high-precision seats and can be replaced with minimum downtime. The metal gaskets for SS 316L heads, and the FPM gaskets for those in plastic, guarantee maximum fluid compatibility

Nexa XP
Hydraulic configuration

Exakta's broad experience in supporting customers throughout the most challenging projects has led to the development of Nexa XP, a special version of Nexa able to cope with extreme suction conditions and a wide range of chemicals.



XP Hydraulics - Max. pressure 200 barg

Head Size	Max. Flow Rate [l/h]	Fluid Temperature [°C]	NPIPr [barg]	Suction Pressure [barg]
A	11,3	-20 / 150	-0,6	200
B	28,3	-20 / 150	-0,8	200
C	142	-20 / 150	-0,8	200
D1	220	-20 / 150	-0,7	200
D2	375	-20 / 150	-0,8	200
E	709	-20 / 150	-0,8	95
E1	1800	-20 / 150	-0,75	200
F	4800	-20 / 150	-0,75	20
F1	2400	-20 / 150	-0,75	90

These are limit values, please state actual conditions with enquiry.

Nexa XP is the ideal metering solution for fluids with high vapour pressure requiring greater operational safety.

Nexa XP complies with the most stringent requirements in terms of strength and reliability, ensuring:

- Minimized internal stresses thanks to the FEM-designed hydraulic diaphragm
- Compatibility with dangerous, toxic, flammable and pyrophoric chemicals
- Best-in-class NPIP required (down to 0.1 bar)
- Highest admissible suction pressure (200 barg)

Nexa XP's pyrophoric configuration

Nexa XP is designed with the delivery of pyrophoric fluids in mind. In its pyrophoric configuration, Nexa XP guarantees that the critical needs of isolating the chemical from an oxygen source are fully met, even in the toughest conditions.

The hydraulic oil reservoir is hermetically sealed and filled with a constant nitrogen flow, that ensures the internal parts of the pump are completely isolated from oxygen. This built-in nitrogen flushing system protects the liquids from any contact with air in case of diaphragm rupture, maintenance or fluid leakage.

As an extra precaution, pyrophoric configuration can also be provided with an additional specific valve, preventing the risk of fluid leakage where valve retaining bolts may have loosened.

The Nexa XP pyrophoric configuration ensures safe and reliable operation, matching innovation and efficiency.

Hydraulic double-diaphragm heads
Technical information

B Type - Max. pressure 450 barg (600 barg upon request)

Head Size	Max. Flow Rate [l/h]	Fluid Temperature [°C]	Viscosity [cPs]	Material
AH	0,7	-20 /120	500	316L SS
B2	14	-20 /120	500	316L SS
C2	103	-20 /120	500	316L SS
D2	400	-20 /120	500	316L SS
E2	1000	-20 /120	500	316L SS
F2	1200	-20 /120	500	316L SS

H Type - Max. pressure 200 barg

Head Size	Max. Flow Rate [l/h]	Fluid Temperature [°C]	Viscosity [cPs]	Material
A	2,45	-20 /120	1000	316L SS
B	17	-20 /120	1000	316L SS
C	110	-20 /120	1000	316L SS
C (LT)	110	-40 /70	1000	316L SS
D1	162	-20 /120	1000	316L SS
D2	320	-20 /120	1000	316L SS
E2	1500	-20 /120	500	316L SS
F2	2000	-20 /120	500	316L SS

T Type - Max. pressure 120 barg

Head Size	Max. Flow Rate [l/h]	Fluid Temperature [°C]	Viscosity [cPs]	Material
A	8,6	-20 /120	1000	316L SS
B	22,8	-20 /120	1000	316L SS
C	136	-20 /120	1000	316L SS
C(LT)	135	-40/70	1000	316L SS
D1	197	-20 /120	1000	316L SS
D2	350	-20 /120	1000	316L SS
E2	1650	-20 /120	1000	316L SS
F2	2350	-20 /120	500	316L SS
G2	5700	-20 /120	500	316L SS
H2	6800	-20 /120	500	316L SS

Y Type - Max. pressure 40 barg

Head Size	Max. Flow Rate [l/h]	Fluid Temperature [°C]	Viscosity [cPs]	Material
A	11,3	-20 /120	1000	316L SS
B	28,3	-20 /120	1000	316L SS
C	142	-20 /120	1000	316L SS
D1	220	-20 /120	1000	316L SS
D2	375	-20 /120	1000	316L SS
E1	709	-20 /120	1000	316L SS
E2	1800	-20 /120	1000	316L SS
F	3100	-20 /120	1000	316L SS
G	3891	-20 /120	500	316L SS
H	6883	-20 /120	500	316L SS
I	9370	-20 /120	500	316L SS

Y Type - Max. pressure up to 20 barg for plastic head

Head Size	Max. Flow Rate [l/h]	Fluid Temperature [°C]	Viscosity [cPs]	Material
A	11,3	-5 / 50	-10/65	PP-PVDF
B	28,3	-5 / 50	-10/65	PP-PVDF
C	142	-5 / 50	-10/65	PP-PVDF
D1	220	-5 / 50	-10/65	PP-PVDF
D2	375	-5 / 50	-10/65	PP-PVDF
E1	709	-5 / 50	-10/65	PP-PVDF
E2	1800	-5 / 50	-10/65	PP-PVDF
F	3100	-5 / 50	-10/65	PP-PVDF
G	3891	-5 / 50	-10/65	PP-PVDF

Plunger heads
Technical information

P Type - Max. pressure 40 barg

Plunger [mm]	Max. Flow Rate [l/h]	Fluid Temperature [°C]	Viscosity [cPs]	Material
25	153	-20 / 150	1000	316L SS
40	673	-20 / 150	1000	316L SS
50	1078	-20 / 150	1000	316L SS
60	1588	-20 / 150	1000	316L SS
75	2690	-20 / 150	1000	316L SS
95	4110	-20 / 150	1000	316L SS
110	5788	-20 / 150	1000	316L SS
130	7760	-20 / 150	1000	316L SS

K Type - Max. pressure 200 barg

Plunger [mm]	Max. Flow Rate [l/h]	Fluid Temperature [°C]	Viscosity [cPs]	Material
10	4,76	-20 / 150	1000	316L SS / CERAMIC COATING
15	38	-20 / 150	1000	316L SS / CERAMIC COATING
20	140	-20 / 150	1000	316L SS / CERAMIC COATING
25	260	-20 / 150	1000	316L SS / CERAMIC COATING
40	673	-20 / 150	1000	316L SS / CERAMIC COATING

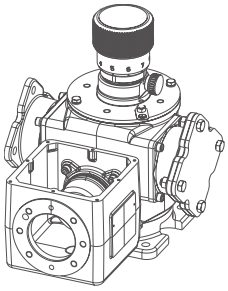
U Type - Max. pressure 650 barg

Plunger [mm]	Max. Flow Rate [l/h]	Fluid Temperature [°C]	Viscosity [cPs]	Material
7	0,7	-20 / 150	1000	316L SS / TUNGSTEN CARBIDE
10	7	-20 / 150	1000	316L SS / TUNGSTEN CARBIDE
12	25	-20 / 150	1000	316L SS / TUNGSTEN CARBIDE
15	72	-20 / 150	1000	316L SS / TUNGSTEN CARBIDE
20	136	-20 / 150	1000	316L SS / TUNGSTEN CARBIDE
25	228	-20 / 150	1000	316L SS / TUNGSTEN CARBIDE

Nexa Mechanism

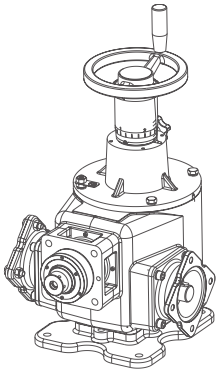
Technical information

Mechanism available in seven different sizes to ensure maximum reliability and best performance.



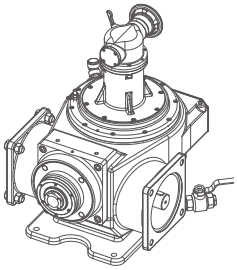
N0, N1 Mechanisms

Size	Stroke Length [mm]	Plunger Diameter Range [mm]	Thrust [kN]	Hydraulic Power [kW]
N0	10	4 - 50	2	0.1
N1	25	6 - 90	5	0.4



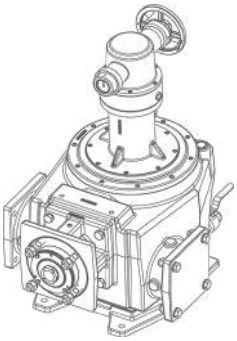
N2, N3 Mechanisms

Size	Stroke Length [mm]	Plunger Diameter Range [mm]	Thrust [kN]	Hydraulic Power [kW]
N2	35	10 - 120	8	1
N3	50	15 - 130	18	3



N4, N5 Mechanisms

Size	Stroke Length [mm]	Plunger Diameter Range [mm]	Thrust [kN]	Hydraulic Power [kW]
N4	70	30 - 130	30	5
N5	70	35 - 140	45	6.5



N6 Mechanism

Size	Stroke Length [mm]	Plunger Diameter Range [mm]	Thrust [kN]	Hydraulic Power [kW]
N6	120	35 - 145	60	15,7

These are limit values, please state actual conditions with enquiry.

A range of benefits

Flexibility

The superior versatility of Nexa's pump drive unit allows motors to be mounted left-sided, right-sided or even vertically depending on the installation requirements.

Nexa also allows different-sized mechanisms to be coupled, with casings designed to maintain the same foot level in order to allow installation on a flat support base.

An internal gearbox allows pumps with different stroke adjustment to be combined to form multi-head units for greater flexibility.

Customization

With Exakta's tailor-made manufacturing approach, customers can personalize their Nexa series pump with multiple drive unit combinations, hydraulic configurations, piping connections, suction and discharge solutions and accessories to withstand temperature extremes, aggressive chemicals and difficult suction conditions encountered in challenging applications.

Modularity

All Nexa mechanisms, regardless of size, can be easily combined to form larger metering units with significant construction advantages, simplifying assembly and installation.

Mechanisms are coupled together using joints with no exposed parts, resulting in a compact unit with a strong and perfectly aligned connection which removes the need for a special base.

As demands change according to fluctuating process conditions, users can quickly and easily add a pump to an existing system by performing a few simple coupling operations, even on site.

Industry applications

Oil & Gas

- Wax inhibitor, pour point depressant, asphaltene inhibitor and scale inhibitor injection to prevent equipment blockage
- Corrosion inhibitor, oxygen scavenger, biocide, demulsifier and foam inhibitor metering to extend the lifetime of pipelines and process equipment
- Dosing of antifoams, de-oilers, demulsifiers, nitrate inhibitors and sodium hypochlorite to eliminate the water-bearing formations of crude oil and natural gas
- Methanol and MEG/TEG injection to control hydrates formation to prevent clogging and choking in flow lines
- Drag-reducing agent and polymer metering to reduce downhole pressure loss during fluid pumping

Chemical & Petrochemical

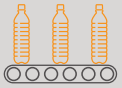
- Caustic soda and organic sulphur injection to reduce refinery column-overhead hydrochloric acid corrosion
- Sour water for stripper column
- Organic chloride, dimethyl disulfide, ammonia, antifoam and odorizing agents for crude oil separation and conversion for further use
- Wash water and condensate disposal and transfer
- Pyrophoric liquids for chemical production

Industrial Effluent Treatment

- Removal of solid particles
- Adjustment of pH levels
- Odour control
- Disinfection
- Sludge treatment and removal
- Alkaline water electrolysis for hydrogen production

Fertilizers

- Metering of nitric acid and ammonia for the production of nitrogenous fertilizers
- Injection of sulphuric acid for the production of phosphorous fertilizer
- Urea production
- Multi-compound fertilizer production



Plastics

- Antioxidants for plastic processing where weathering resistance is needed
- Colourants for coloured plastic parts
- Foaming agents for expanded polystyrene and polyurethane
- Lubricant injection to prevent plastic sticking to the mould
- Antimicrobial injection to provide a biocide treatment for control of germs or fungi.

Power Generation

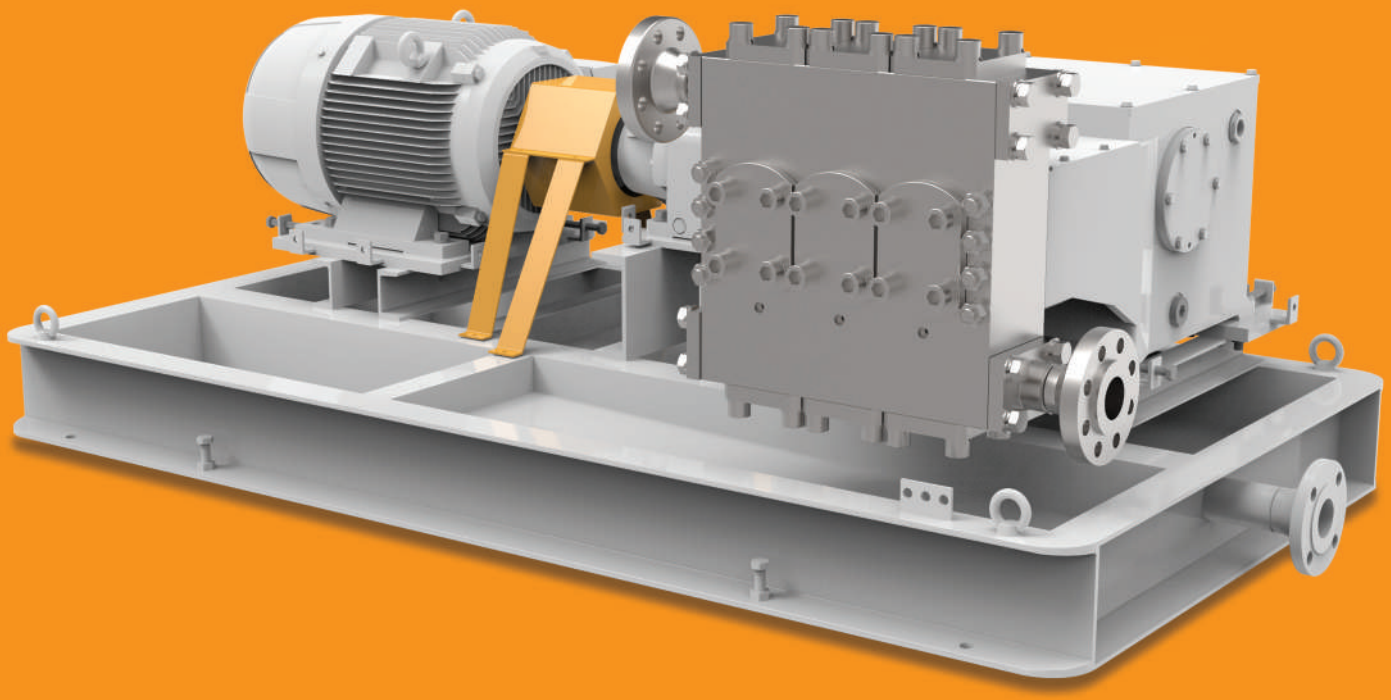
- Phosphate dosing to prevent scale formation in boiler tubes
- Oxygen scavenger to prevent corrosion
- Amine dosing to neutralize carbonic acid present in the condensate
- pH control through ammonia injection
- Biocide for bacteria prevention in boiler tubes
- Liquid CO2 cooling

Oleochemicals

- Fatty acid production and processing for cosmetics, lotion and softener production
- Conversion of fatty acid to biodiesel
- Glycerine processing for concentrated flavour extracts, texture improver and emulsifiers

3C Triplex Pumps Series

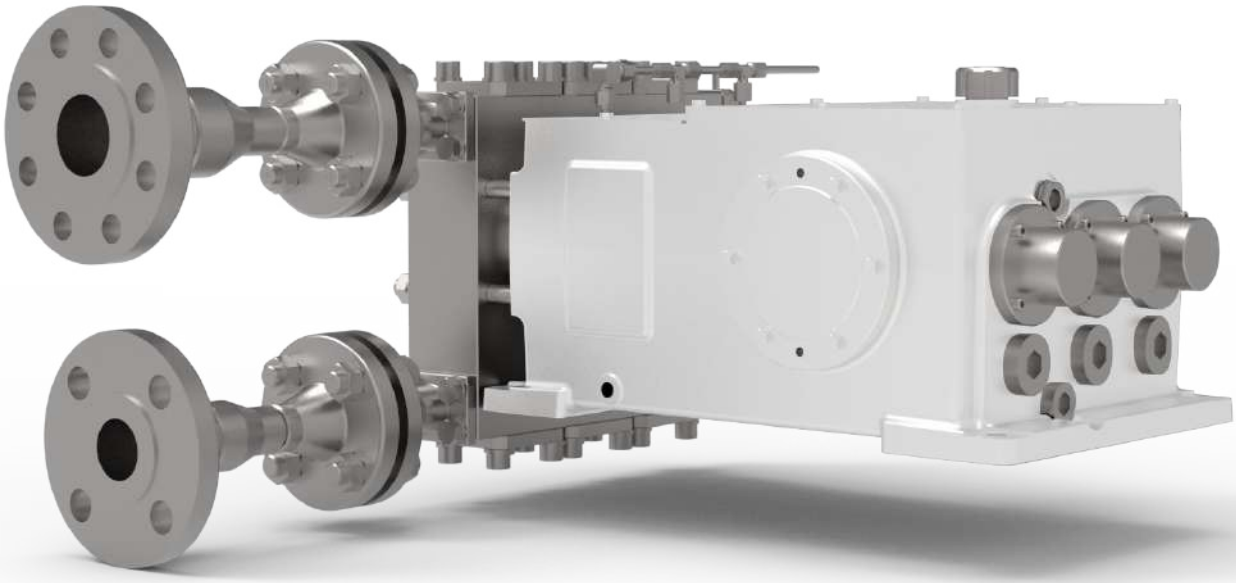
Process pumps for high-pressure duties



A flexible, robust and reliable solution to pumping high-temperature, abrasive and viscous liquids in a multitude of industrial applications, the 3C Triplex pump series offers the best total cost of ownership available on the market.

3C Triplex pumps achieve special operating requirements, allowing customers to build the ideal system for the unique demands of their application.
The distinctive design of the 3C Triplex mechanism allows low-speed operation, resulting in reduced wear of moving parts and high reliability.

These pumps are built in accordance with API 674 standards, compliant to ATEX2014/34/ EU, TR CU 004-010-020-012/2011 and alignable with Shell DEP (various), Norsok M-501 & M-630, NACE 0175 specifications.



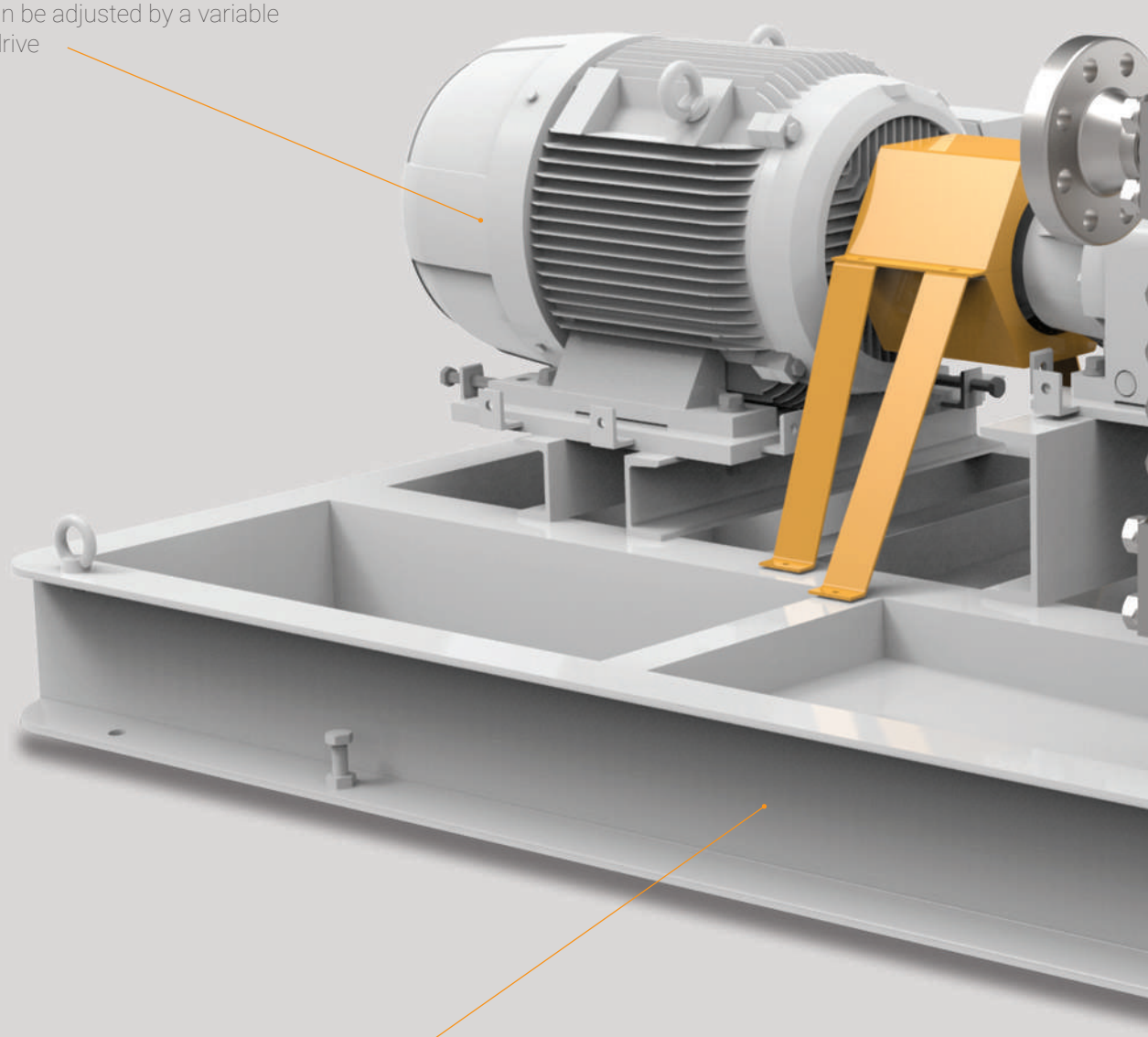
Technical Features

Capacity range:	up to 65,000 l/h, up to 1150 bar
Wetted parts:	SS 316 L, LTCS, Super Duplex, different material (on request)
Flow rate adjustment:	by frequency converter
Compliance:	with international standard approvals as API 674, ASME, TR CU 012/2011

Triplex Series Features

Variable speed drive

Capacity can be adjusted by a variable frequency drive

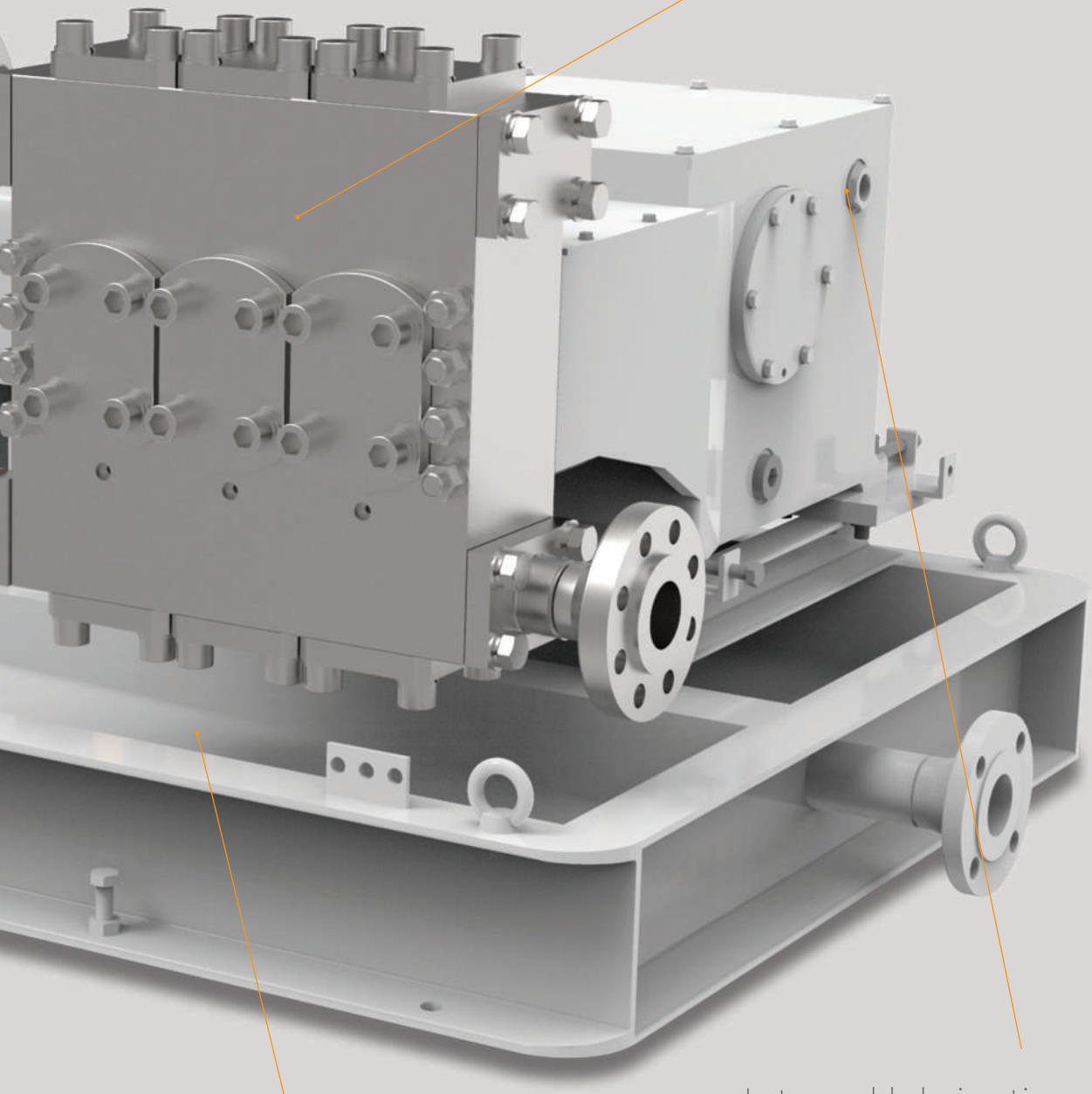


Lower weight-to-performance ratio

Can be installed in different packages and pipelines without disassembling the plant

Unique head design optimized for simple maintenance

Allowing extended packing life, increased productivity, reduced downtime and lower maintenance costs

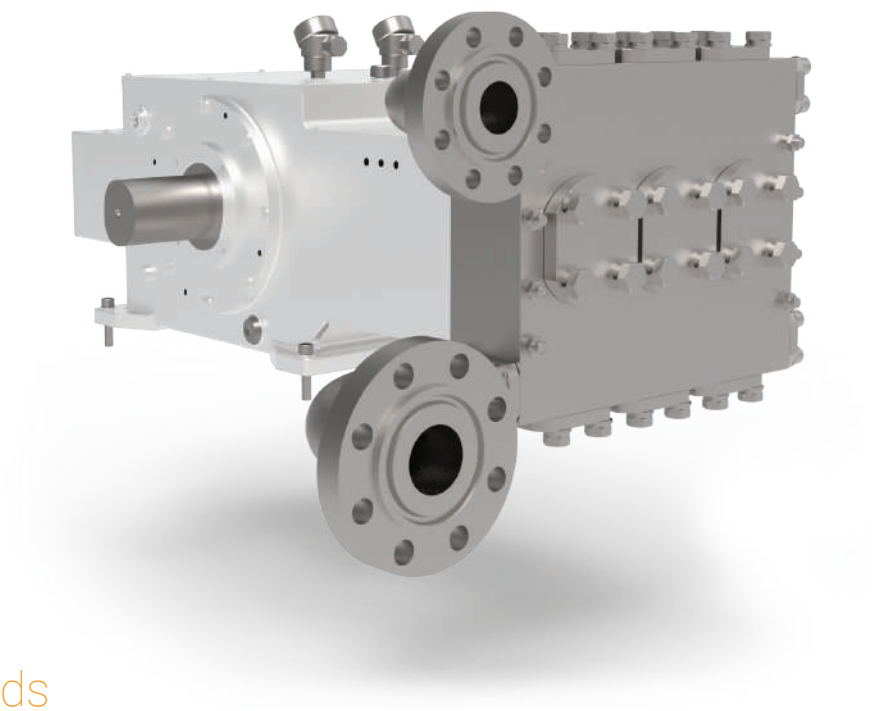


Integral lubrication system

Ensuring high reliability, reduced maintenance, small footprint and simple installation and commissioning

Easily integrated into packages

Allows to be integrated in different packages and pipelines without disassembly the plant



Pump heads

Wetted parts: 316L or 304 stainless steel, duplex steel or carbon steel (exotic alloys available upon request)

The three-cylinder pump head is horizontally arranged, with single-acting plungers and valves and seats that can be selected among different executions depending on the handled fluid

Plungers and packing are easily maintained, with replacement of components for most pump sizes possible without disconnecting the pump from the pipework

Guarantee of a virtually leakage-free process through different options:

- Leakage recovery system
- Packing flushing
- Barrier fluid

Mechanism

The unique design of the 3C Triplex mechanism allows the pump to operate at a very low speed without forced lubrication, making it ideal for applications requiring a slow plunger motion to avoid cavitation when pumping hot or viscous liquids or fluids with high vapour pressure. The range features:

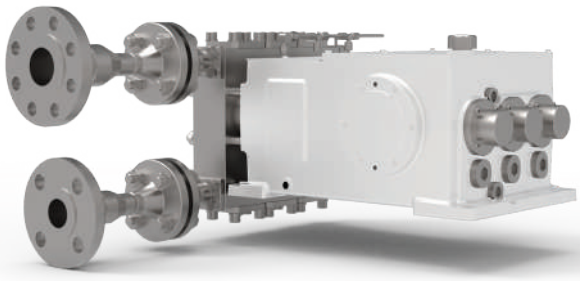
- Silent and vibration-free operation due to proper mass balancing and sizing. The integral crankshaft and crossheads are supported at both ends, giving precise alignment of the plunger rods for a longer sealing life
- A compact and robust assembly, providing high performance within a minimal footprint
- Low-speed operation without forced lubrication, resulting in reduced wear of moving parts and high reliability, ideal for applications requiring a slow plunger motion to avoid cavitation.

Accessories

- Pulsation dampers
- Safety valves

3C 30

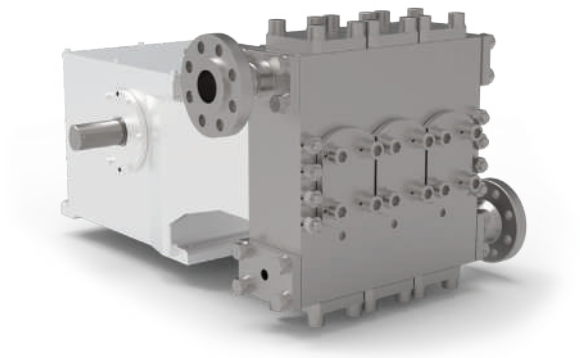
Plunger Diameter [mm]	Max. Pressure [barg]	Max. Flow Rate [m³/h]
10	1146	0.21
15	509	0.46
20	286	0.82
25	183	1.28
30	127	1.85
35	94	2.52
40	72	3.29
45	57	4.16
50	46	5.14



Fluid Temperature [°C]	-20 / 200
Stroke Length [mm]	30
Max. Thrust [kN]	9
Motor Power Range [kW]	2.2 - 15

3C 55

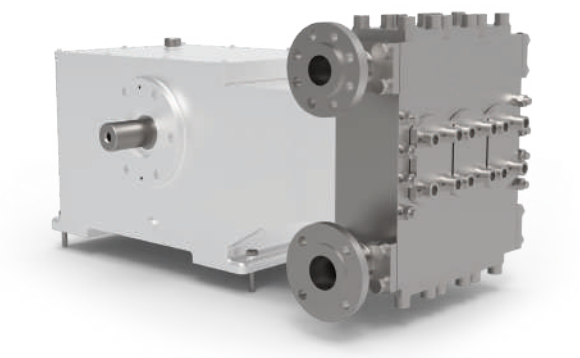
Plunger Diameter [mm]	Max. Pressure [barg]	Max. Flow Rate [m³/h]
20	477	1.18
25	306	1.85
30	212	2.66
35	156	3.62
40	119	4.73
45	94	5.98
50	76	7.39
55	63	8.94
60	53	10.64
65	45	12.48
70	39	14.48



Fluid Temperature [°C]	-20 / 200
Stroke Length [mm]	55
Max. Thrust [kN]	15
Motor Power Range [kW]	5.5 - 30

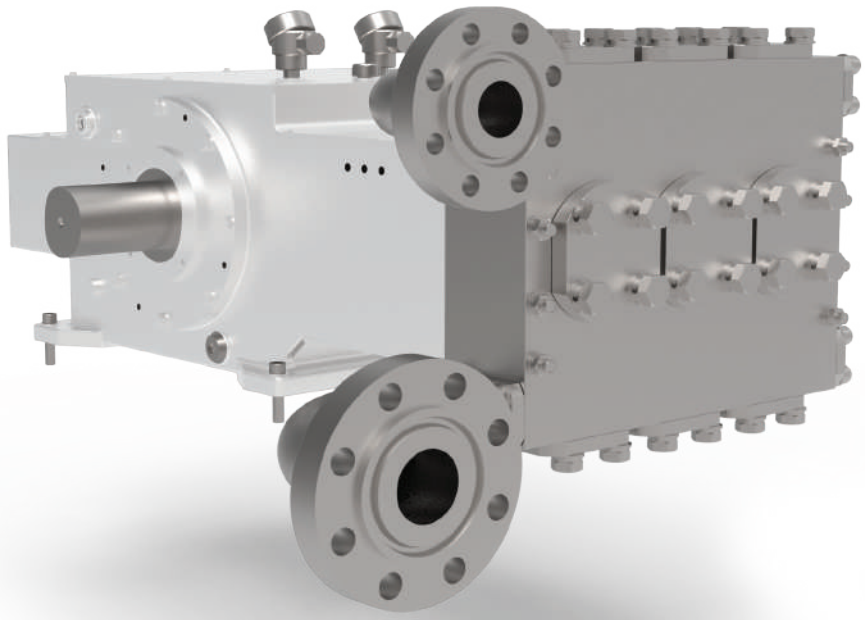
3C 80

Plunger Diameter [mm]	Max. Pressure [barg]	Max. Flow Rate [m³/H]
25	530	2.01
30	368	2.90
35	270	3.95
40	207	5.16
45	163	6.53
50	132	8.06
55	109	9.75
60	92	11.60
65	78	13.62
70	68	15.79
75	59	18.13
80	52	20.63



Fluid Temperature [°C]	-20 / 200
Stroke Length [mm]	80
Max. Thrust [kN]	26
Motor Power Range [kW]	9.2 - 55

3C 120

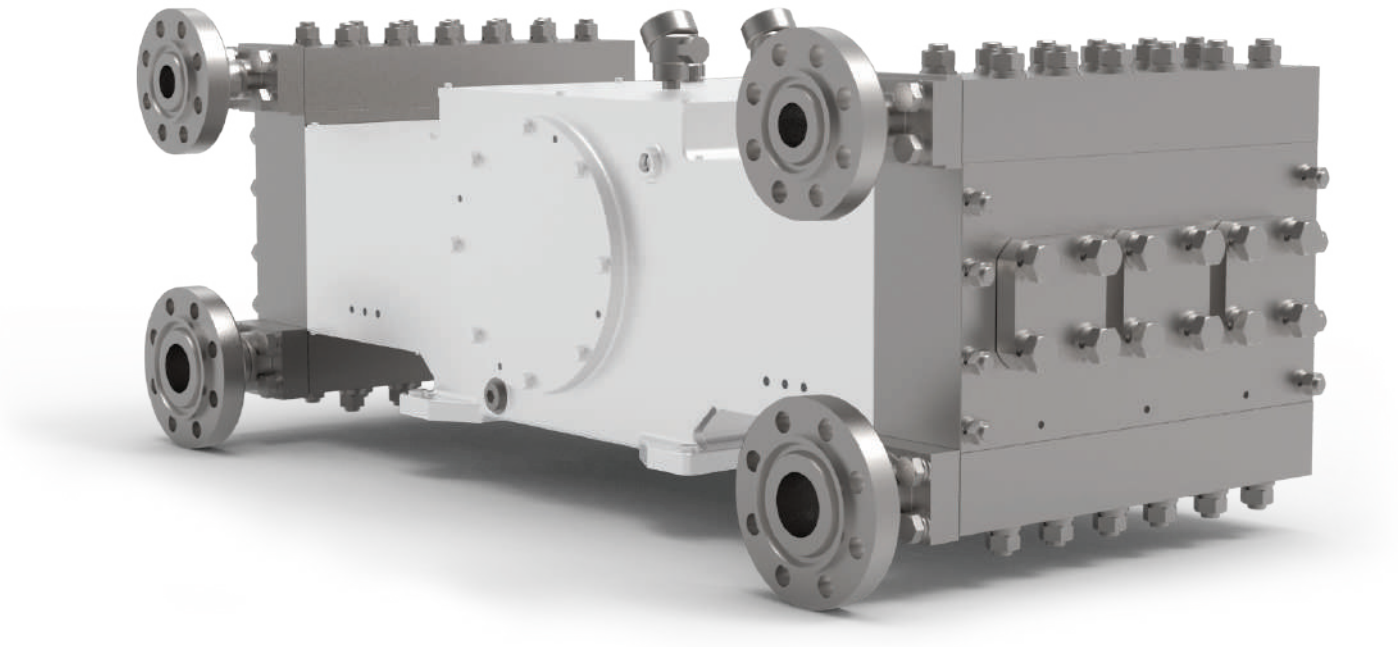


Plunger Diameter [mm]	Max. Pressure [barg]	Max. Flow Rate [m³/h]
27	800	1.50
30	722	3.05
35	530	4.15
40	406	5.42
45	321	6.85
50	260	8.46
55	215	10.24
60	180	12.18
65	154	14.30
70	133	16.58
75	115	19.04
80	101	21.66
85	90	24.45
90	80	27.41
95	72	30.54
100	65	33.84

Fluid Temperature [°C]	-20 / 200
Stroke Length [mm]	120
Max. Thrust [kN]	51
Motor Power Range [kW]	37 - 110

These are limit values, please state actual conditions with enquiry.

3C 120TC



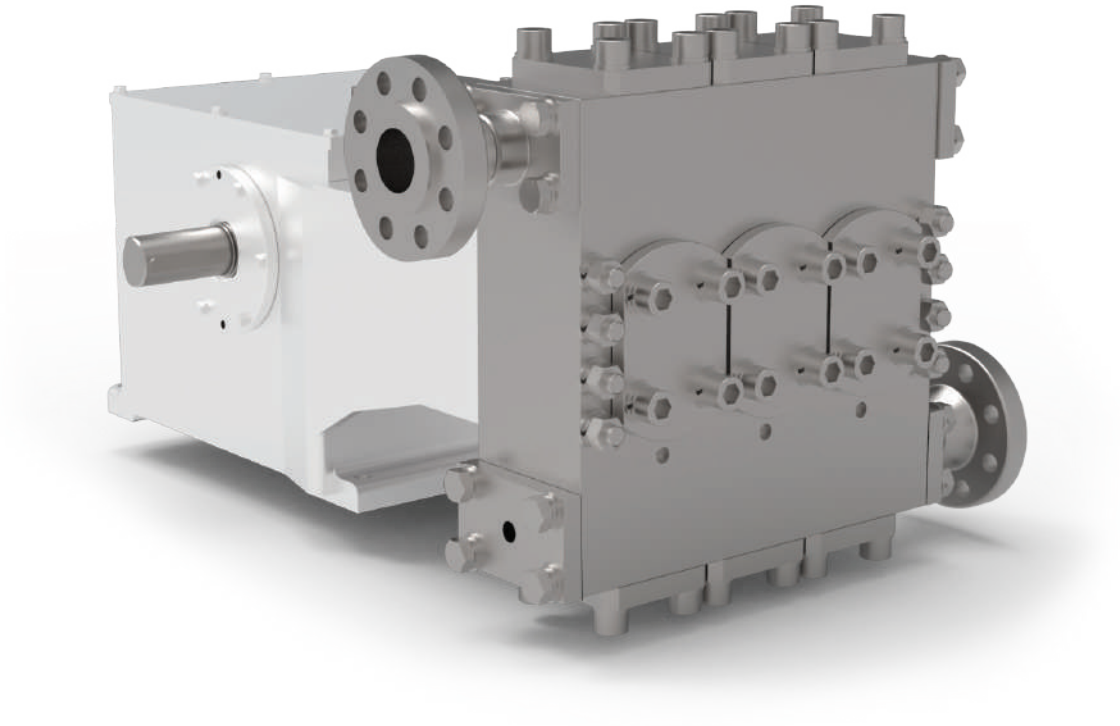
Plunger Diameter [mm]	Max. Pressure [barg]	Max. Flow Rate [m³/h]
30	495	6.09
35	364	8.29
40	279	10.83
45	220	13.71
50	178	16.92
55	147	20.48
60	124	24.37
65	105	28.60
70	91	33.17
75	79	38.07
80	70	43.32
85	62	48.91
90	55	54.83
95	49	61.09
100	45	67.69

Fluid Temperature [°C]	-20 / 200
Stroke Length [mm]	120
Max. Thrust [kN]	35
Motor Power Range [kW]	37 - 110

3C120 TC execution

The unique design of this pump allows two pump heads to be fitted on the same mechanism, therefore achieving a highly effective performance to footprint ratio.

A range of benefits



Customization

With Exakta's support at every stage, these pumps are designed around customers' requests, with a wide choice of wetted parts, leakage control and collection, paint colour, documentation and certification.

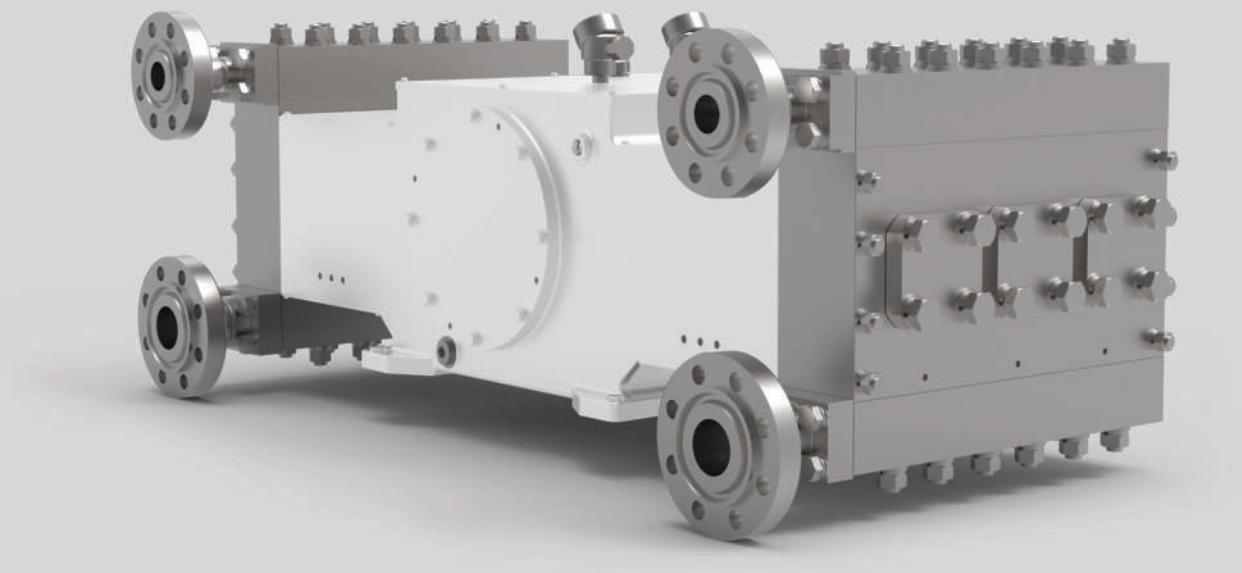
Peace-of-mind solution

3C Triplex pumps can be supplied as part of a complete packaged solution by combining them with fully compatible in-house-designed accessories such as safety valves and pulsation dampers or any third-party ancillaries (motor, reducer, coupling, instrumentation) for a smooth pumping operation.

Reliability

With their outstanding build quality, premium components, low total cost of ownership and long MTBF, 3C Triplex pumps embody Exakta's core values of reliability and robustness, in addition to the durability to withstand temperature extremes, aggressive chemicals and other severe operating conditions encountered in heavy-industrial applications.

Industry applications



Oil & Gas

- Glycol for gas dehydration
- Methanol injection for hydrate control
- Well stimulation and service
- Hydrocarbon condensate and oily water
- Closed drain circulation

Oleochemicals

- Fatty acids pumping
- Glycerine production
- Raw material production for surfaceactive
- Stearin production

Fertilizers

- Urea and ammonia production
- Multi-compound fertilizer production

Metals & Mining

- Solid–liquid extraction or leaching in mineral ore processing
- Removal of sand, oil, rust, colloid and paint from castings
- Descaling in metallurgical plants
- Tailings water

Radix Series

Mechanical diaphragm and plunger spring return pumps

Consistent, economical and robust, the Radix series offers the ideal solution for the high-precision injection and metering of industrial chemicals in multiple application fields including water and wastewater treatment, desalination and cement production.

The Radix Series is available in a standard version for installation in safe areas along with an ATEX-compliant model for use in explosive environments.

Technical Features

Radix is available in both plunger and mechanical diaphragm head versions

Pressure:	up to 20 bar for plunger head configuration, up to 10 bar for diaphragm configuration
Flow rate:	up to 1000 l/h
Mechanical diaphragm:	PTFE
Piston:	available as standard in SS 316 or ceramic
Wetted parts:	SS 316L, PVC, PP and PVDF

Adjustable flow rate

- Manually with graduated knob
- Motor speed regulation via inverter
- Electric servomotor adjusts pump flow rate remotely

Accessories

- Safety valves
- Pulsation dampers
- Backpressure valves
- Calibration pots

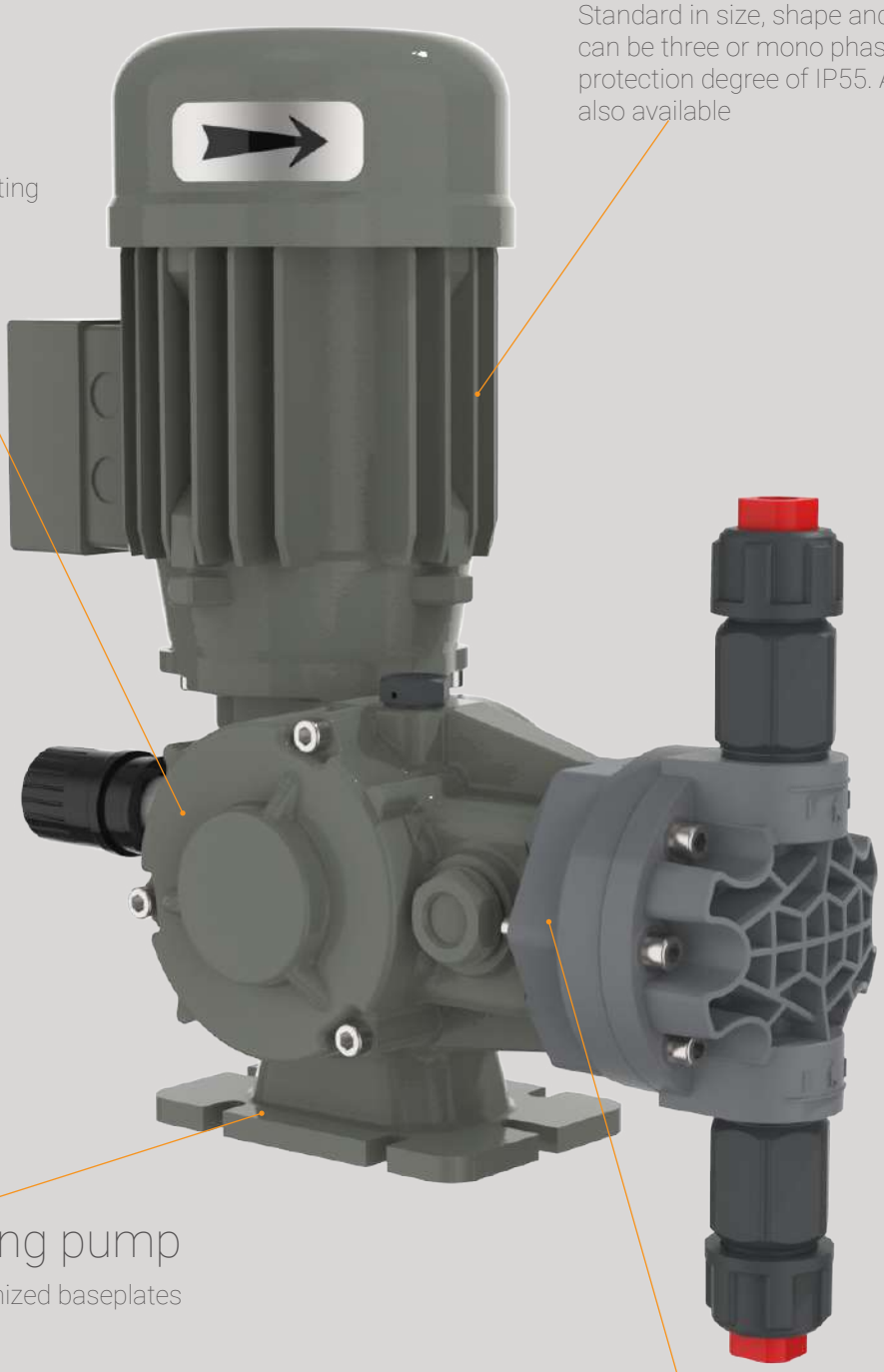
Radix Series Features

Electric motor

Standard in size, shape and connection, can be three or mono phase with a protection degree of IP55. ATEX version also available

Aluminium housing

For excellent operating performance even in demanding environments



Self-standing pump

Ready-to-fit customized baseplates

Pump head combinations

Multiple combinations of pump head and motor power that allows operators the chance to select the optimal combination appropriate to the specific application

D Series

Mechanical diaphragm pumps with spring return mechanism

Flow rate:	5.5 - 500 l/h (1.45 - 132 gph)
Pressure:	SS 316 L version up to 10 bar (145 psi) PP/PVC/PVDF version up to 10 bar (145 psi)
Stroke rate:	58 - 116 strokes/min
Diaphragm:	65 - 165 mm
Power	standard 0.18 - 0.25 - 0.37 kW (IP55)

K1 Series

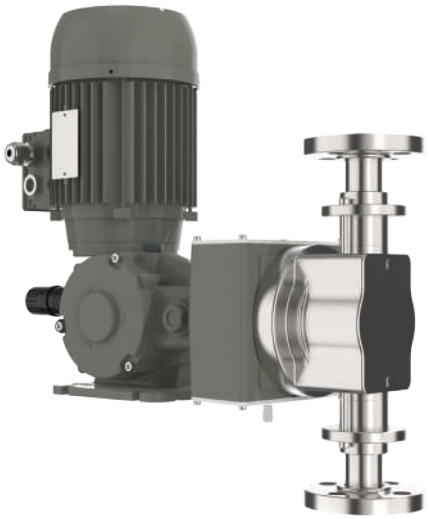
Plunger metering pumps with spring return mechanism

Flow rate:	1.5 - 304 l/h (0.4 - 80.4 gph)
Pressure:	SS 316 L version up to 20 bar (290 psi) PVC version up to 10 bar (145 psi)
Stroke rate:	58 - 116 strokes/min
Piston:	6 - 64 mm
Power	standard 0.18 - 0.25 kW (IP55)

K2 Series

Plunger metering pumps with spring return mechanism

Flow rate:	40 - 1000 l/h (10.5 - 264 gph)
Pressure:	SS 316 L version up to 20 bar (290 psi) PVC version up to 10 bar (145 psi)
Stroke rate:	58 - 116 strokes/min
Piston:	25 - 89 mm
Power	standard 0.37 - 0.55 - 0.75 kW (IP55)



A range of benefits

Reliability

From flocculation in wastewater treatment to dosing stabilizers in food processing, Exakta understands that metering pump precision is essential for ensuring repeatable performance, process integrity, reduced wastage and minimal environmental impact.

Simplicity

One of Radix's great strengths is its lean and clean design, allowing quick and easy servicing alongside reduced maintenance costs while providing compatibility with multiple applications across the heavy-industrial sector.

Premium quality materials

The liquid ends are available in a variety of metal and plastic materials to accommodate a wide range of acids, bases, viscous liquids and additives while the aluminium casing makes Radix suitable to demanding environments.

Industry applications

Industrial Effluent Treatment

- Removal of solid particles
- Adjustment of pH levels
- Odour control
- Disinfection
- Sludge treatment and removal

Desalination

- Regulation of water hardness and pH
- Filtration
- Flocculation
- Acidification
- Remineralisation

Cement Production

- Corrosion inhibitors for pipe cleaning
- Chemical admixtures for performance improvement and modification of concrete properties modification of concrete

Chemical & Petrochemical

- Caustic soda and organic sulphur injection to reduce refinery column-overhead hydrochloric acid corrosion
- Sour water for stripper column
- Organic chloride, dimethyl disulfide, ammonia, antifoam and odorizing agents
- Wash water and condensate disposal and transfer

Actuators

AKTUA series controls are the ideal partner for Exakta dosing pumps, designed to replace manual flow rate control with an automatic and remote system operating in relation to stroke length.

Electric Control

Aktua

Exakta's in-house-designed electrical actuator is made to adjust pump flow rate automatically, remotely and proportionally.

Features:

- Ease of installation in field
- Manual emergency override
- 4 - 20mA signal and feedback
- IP65 and IP66 ingress protection
- Calibration possible during operation

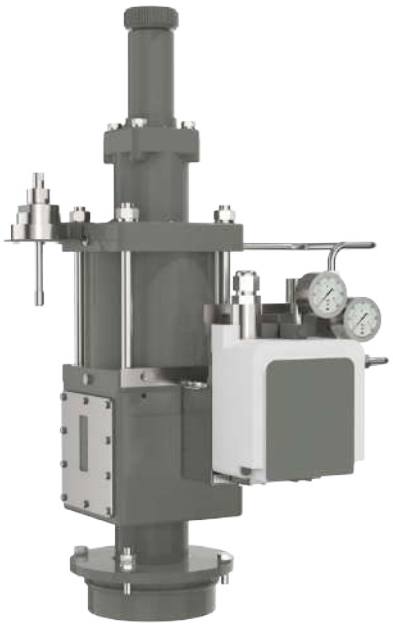
Available in both standard and ATEX versions.

Aktua 10

Exakta's cutting-edge electrical actuator represents the latest advancement in technology to automatically regulate pump flow rate, offering unparalleled precision and exceptional flexibility. This innovative solution incorporates highly precise digital control, allowing for exceptionally fine adjustments.

Features:

- 4 – 20 mA signal and feedback
- 24 VDC or 230 VAC applicable power supply
- 50 Hz or 60 Hz optional frequency
- Absolute encoder
- HART® communication protocol
- Direct drive knob
- IP66 ingress protection
- ATEX compliance



Electro-pneumatic Control

Exakta electro-pneumatic actuator remotely changes stroke length through compressed air. Incoming air is regulated by a pressure regulator, connected via fieldbus to adjust stroke.

Features:

- Ease of installation in field
- Manual emergency override
- 4 – 20 mA signal and feedback on IP converter
- IP66 ingress protection
- Visual indicator
- Manual additional stroke adjustment
- Calibration possible during operation

Available in both standard and ATEX versions.

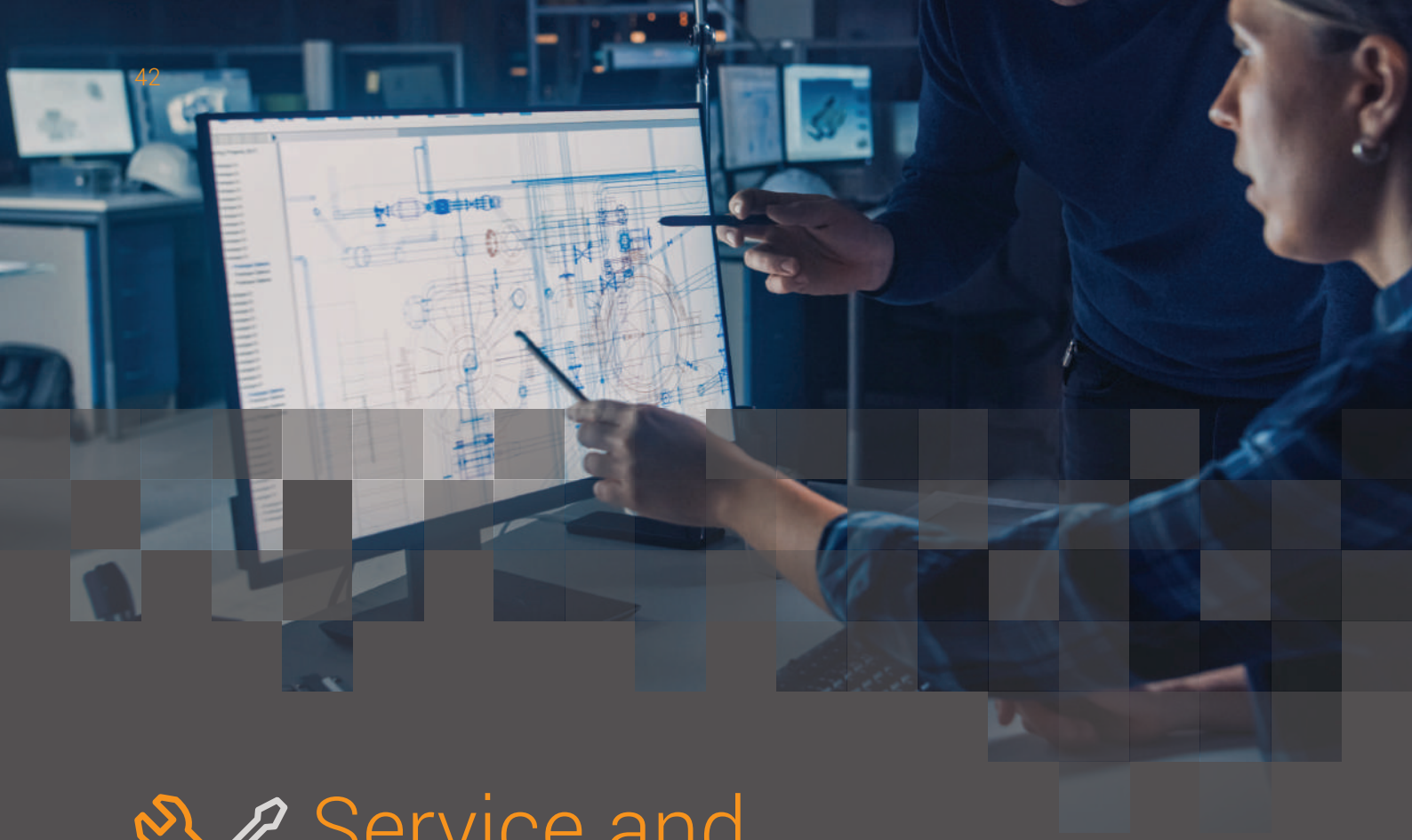
Pneumatic Control

Applied in safe areas, Exakta's pneumatic actuator enables remote adjustment of stroke length via compressed air. The stroke can be regulated within a pressure range of 3 to 15 PSI.

Features:

- Manual emergency override
- Applied directly on the pump
- IP65 and IP66 ingress protection
- Visual indicator
- Manual additional stroke adjustment
- Calibration possible during operation

Available both in standard and ATEX versions.



Service and Maintenance

Our after-sales team is committed to maximizing your equipment operation, providing technical assistance from office or directly on site - both onshore and offshore.

Exakta's service department deals swiftly with enquiries, responding to malfunctions with precise and detailed solutions. The custom design of our pumps calls for specialist servicing, therefore we offer bespoke procedures, reports and technical analysis, ready within a few days of request, that ensure problems are solved without compromising your plant's processes.

A comprehensive service offering:

- Inspection of equipment with detailed report
- Operation & maintenance manual
- Test run procedure
- Provisioning of consumables list
- Pump obsolescence forecasting and overhaul
- Training of site personnel
- Extended warranty terms (upon request)

Exakta has appointed a highly qualified team of engineers and technicians to perform installation, start-up and commissioning activities, as well as provide maintenance contracts according to the specific scope of work.

Providing on-site, onshore, offshore and remote pump analysis and supporting customers with system performance assessment, Exakta helps end users minimize equipment downtime for improved sustainability and smooth production.

Spare Parts and Toolbox

At Exakta, we make life easy for our customers by offering a wide range of genuine spare parts able to tackle the challenges of industrial processes. Knowing the importance of keeping processes running smoothly and efficiently, we support end users and operators with real-time quotations for spare parts. We're able to offer extremely short lead times courtesy of a stockholding of 2,000 kits and components at our central warehouse.

Our spare parts team provides highly qualified advice to accurately identify the right components, helping customers in their selection and speeding up the supply procedure.

Prior to shipping, each part is duly verified to meet quality and certification requirements while special components such as valves come factory pre-set to fulfill the same performance and criteria as the original product and ensure consistent operation.

Whether your pump requires quick maintenance or full-service repair, Exakta's customized kits conveniently provide all the parts you need for an immediate fix.

Our vacuum packaging allows the customer to make an immediate visual check on the integrity and quantity of the parts while preventing quality degradation and ensuring long shelf life.

At Exakt we're well aware of the importance of reducing planned and unplanned downtime, which is why we provide a toolbox equipped with the necessary apparatus for the quick and easy replacement of our spare parts. easy replacement of our spare parts.

The standard supply includes:

- Special tool for packing adjustment
- 6 mm pin punch
- 8 mm pin punch
- 10 mm pin punch
- Bearing extractor
- Vacuum pump kit
- Feeler extractor
- Feeler valve driver
- Torque wrench
- Feeler valve group assembling tool
- 3 pump lifting belts

Other tools can be provided on customer request.

Exakta has invested in the research and implementation of first-rate materials, controlled processes and sustainable solutions such as shipping spare parts in FSC Mix-certified cartons in order to meet our customers' needs while preserving the environment.

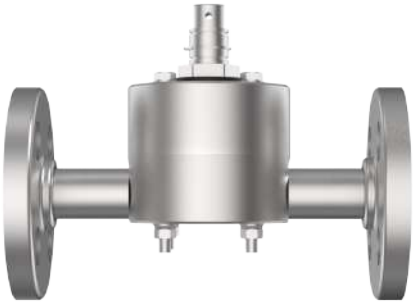
Exakta ancillaries and accessories

Backpressure valves

Exakta pressure-retaining valves, with their compact and reliable set up, are suitable for applications where a constant backpressure is required. These valves prevent the triggering of a siphoning phenomenon that can occur when the pressure on the pump discharge pipeline is lower than the pressure on the pump suction pipeline. Ensuring chemical resistance and extended life with minimal maintenance, backpressure valves are available in different sizes and materials (standard: AISI316L, PVDF, PVC; others available on request) to comply with each and every application.

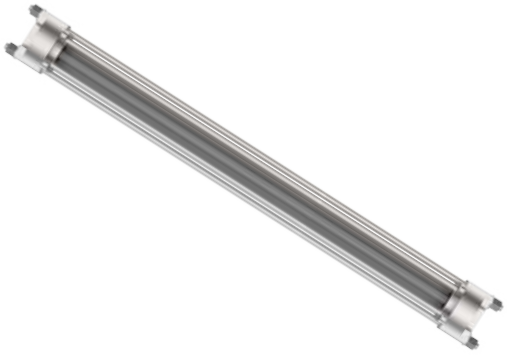
Safety valves

Safety valves are used to protect personnel and equipment from excessive pressure accumulation on pump discharge pipelines in a number of applications. Exakta can offer an extensive range of screwed and flanged valves in a variety of sizes, options and materials to comply with the strictest international standards.



Overpressure valves

Exakta's overpressure valves are designed to protect piping from undesired overpressure. They are available in different sizes and materials, coming as standard in AISI316L, PVDF and PVC with other options available on request. Compact and reliable construction, along with highly chemically resistant gaskets, ensure Exakta PRM valves provide long life with easy low-level maintenance requirement.



Calibration pots

The Exakta-designed calibration pot, with its simple and accurate setup, is available in two material configurations (316L and PVDF) or exotic alloys upon request, granting full compliance with all pumped fluids. The stress-relieved borosilicate glass of the calibration pot body allows clear visibility without environmental impact or chemical risk, while an FEP gasket ensures high chemical compatibility. A graduated scale can be screen printed or laser engraved for durability and easy reading while calibration pots can be equipped with further protection for heavy-duty applications.

Pulsation dampers

Pulsation dampers are crucial for stabilizing flow and pressure in circuits, minimizing or eliminating pulsations to increase the lifetime of the pump and accessories and lower the NPSH required. While also protecting the pump from high pressure peaks, dampers stabilize the flow rate, making it continuous with a linear stream. Exakta can offer a solution for every need:

- Bladder damper, with its multiple combinations for body and bladder materials, covers the most common requirements.
- Bellows damper, an efficient solution for pulsation dampening when liquid compatibility requires the use of PFTE as a separator element between gas and liquid for pressures below 100 bar.
- Membrane damper, an efficient solution for high pressure (up to 700 bars) and when PTFE is needed as a separator element between gas and liquid.

Pressure gauges

Exakta pumps can be equipped with pressure gauges as an alternate diaphragm rupture detection indicator or in line with the discharge piping to measure the actual backpressure.

These instruments are designed to resist the most severe operating conditions created by both the ambient environment and the process medium.

Pressure gauges are available in SS316 and in ATEX certified versions.

Equivalent to pressure gauges are pressure transmitters or pressure switches, which remotely control backpressure and are available upon request.

Your Choice,
Our Commitment

We work every day to turn our passion into ingenious solutions, leveraging operators' insights to meet and exceed expectations. Our dedication to providing consistent support throughout every project stage helps our customers to streamline their processes and overcome current and future challenges.

Vision

ENHANCED COMPETENCIES TO ACHIEVE OUR TARGETS AND GUARANTEE CUSTOMER SATISFACTION

Values

Exakta's commitment to ensuring that our partners' and customers' businesses work efficiently, safely and reliably arises from long-established expertise, pursuit of innovation and a highly-skilled team of specialists.

Everyone, wherever they are or in whichever function they work, shares this driving passion, supported by a company culture that nurtures and develops individuals and teams across a diverse workforce.

In the modern globalized world, Exakta delivers solutions for a dynamic and fast-changing environment while offering a true partnership for customers and employees alike.

Ensure Asset Integrity

Asset integrity applies to the entirety of an assets operation, from the design phase to decommissioning and replacement. Exakta knows the importance of a sound design, conceived to protect connected equipment and reduce operator risk, while manufacturing and installation processes comply with the strictest international standards of quality and safety. For Exakta, operational integrity means also reliability, availability and maintainability of the equipment throughout its operational life

Guarantee Proximity to the Customer

Exakta is committed to interacting and collaborating with customers, ensuring their needs are integrated into equipment design and development. Our team of professionals provides tailored support throughout the project, helping the client manage risks. Exakta's partnership with customers is based upon trust and loyalty that results from transparency and sharing of skills, knowledge and information and ensures customer needs are met and exceeded.

Maximize Customer Revenues

Exakta ensures assets perform efficiently and safely by evolving and streamlining the design, development and production of compliant and versatile products. This allows operators to reduce both capital and operational expenditures and maximize returns on investment and assets in ever-challenging processes.

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