

# Solutions for **Industrial Processes**

metering & process pumps



**seko**



Your Choice,  
Our Commitment

Since 1963, operating originally as Bono Exacta, SEKO's Industrial Process Business Unit has designed and developed API 674 process pumps and API675 metering pumps for the Oil and Gas sector.

With an accumulated experience of over 50 years, SEKO has built a reputation as a true technological leader and has partnered with major sector players, keen to leverage that know-how.

## Committed to Customer satisfaction

SEKO's Industrial Process division works as a true technical consultancy service, working closely with each individual customer from the FEED stage through to the ordering and design, manufacturing and implementation of the plan and then supporting it with after sales technical assistance.

Working with sophisticated CAD stations, 3D modelling and FE software, a team of skilled engineers, provides design and engineering of the SEKO systems, ensuring that they meet the most demanding international standards, such as ASME, ANSI, BS, API and according to the individual customer's project specifications. Our Customers choose to work with SEKO based not only on our ability to offer a total engineering process and a comprehensive supply approach but also because of our:

- Proximity to Customers
- High competitiveness
- Support to customers from the FEED stage up to the equipment commissioning
- After Sales Service for start-up, commissioning and specific dosing problems
- Regular maintenance support programme delivered by dedicated staff
- Quick reaction time
- Training sessions tailored to customer operations and maintenance engineers

## Production and services

SEKO prides itself on developing its own process and metering pump designs for both diaphragm and plunger types. Our pumps are fully tested using our own internally constructed test benches, ensuring the most stringent tests possible, delivering a range that covers a wide range of performances:

**Plunger metering pumps (designed to API 675 standard)** for flow rates up to 8,000 l/h (single head) and pressures up to 600 bar

**Diaphragm metering pumps (designed to API 675 standard)** for flow rates up to 8,000 l/h (single head) and pressures up to 350 bar

**Reciprocating Triplex process pumps (designed to API 674 standard)** for flow rates up to 60,000 l/h and pressures up to 1,200 bar.

SEKO as a Global company operates following UNI EN ISO 9001 standards, and is audited and certified by DET NORSKE VERITAS (DNV). This maximum control on our processes and systems including:

- Annual Management Plan based on market analysis
- Sales Process controls for better assisting/supporting customers
- R&D and Design Innovation processes that deliver "state of the art" products for all specific applications
- Centralized Supply Chain controls to assure the best delivery time with the highest competitiveness
- Lean Production and Just in Time for optimizing costs
- Strict Quality Controls both on received and delivered materials
- Financial Management Plan
- Commitment to OHSAS 18001:2007 Standard



## Worldwide Presence

A network of subsidiaries, agents and distributors around the world ensures our Customers receive the best and quickest response time for commercial and after sales needs.

An After Sales team is available to assist Customers and End Users even at short notice. Spare parts are available for at least 10 years after the delivery of goods while beyond that, spare parts remain available upon specific request, for the entire lifetime of the equipment.

## Application areas

The main industrial application areas for the equipment designed and produced by SEKO are:

- Oil & Gas (on-shore, off-shore, FPSO)
- Petrochemical
- Energy (boilers, desalination, cooling towers, environment).

SEKO also supplies pumps and systems to the:

### Water Treatment

Municipalities; Waste water management

### Industrial Processes sectors

Steel, Ceramics, Food & Beverage, Detergents, Paper, Textile, Pharmaceutical



## Content

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# Exacta Series

Economical and reliable, this series offers the ideal solution for the accurate injection and dosing of industrial chemicals.

To control the stroke variation and consequently the fluid dosage, these kinds of pump adopt the principle of an eccentric shaft based on spring return mechanism (in an aluminium housing), features which assure a reliable and simple maintenance.

The range features low noise worm gear with speed reducers, is available with wetted parts in stainless steel or plastic materials.

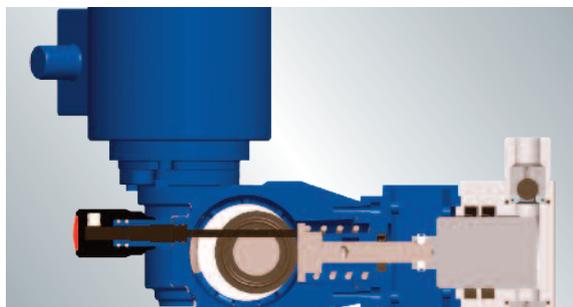
The Exacta Series is suitable for dosing of chemical additives in many application fields including water and wastewater treatment, pulp and paper sector, food & beverage etc.



## Electric Actuator

For automatic, remote adjustment of flow rates.

- Power supply 100 – 250 V, single phase 50 Hz – IP65
- Manual emergency override
- 4÷20mA signal and feedback



## The pump flow rate can be adjusted

- Manually with graduated knob
- Electric servomotor with a 4÷20mA signal and manual emergency override
- Inverter, by regulating the speed of the motor



## Accessories

- Safety valves
- Pulsation Dampers
- Back pressure valves
- Calibration pots

## D Series

Mechanical diaphragm pumps with spring return mechanism

Flow Rate	from 5,5 to 500 l/h (1,45 to 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	from 58 to 116 strokes/minute
Diaphragm diameter	from 65 to 165 mm
Motor Powers	Standard 0,18 - 0,25 - 0,37 kW (IP55)



## K1 Series

Plunger Metering Pumps with spring return mechanism

Flow Rate	from 1,5 to 304 l/h (0,4 to 80,4 gph)
Pressure	SS 316 L Version up to 40 bar (580 psi) PVC Version up to 10 bar (145 psi)
Stroke Rate	from 58 to 116 strokes/minute
Diaphragm diameter	from 6 to 64 mm
Motor Powers	Standard 0,18 - 0,25 kW (IP55)



## K2 Series

Plunger Metering Pumps with spring return mechanism

Flow Rate	from 40 to 1000 l/h (10,5 - 264 gph)
Pressure	SS 316 L Version up to 10 bar (145 psi) PVC Version up to 10 bar (145 psi)
Stroke Rate	from 58 to 116 strokes/minute
Diaphragm diameter	from 25 to 89 mm
Motor Powers	Standard 0,37 - 0,55 - 0,75 kW (IP55)



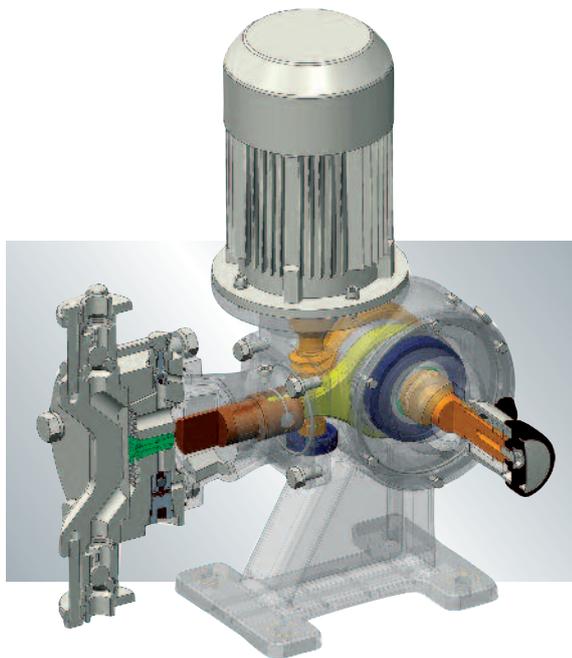
# Nyva Series

## Hydraulic diaphragm metering pumps

Hydraulic diaphragm metering pumps designed to meet API 675 standards and suitable for applications that require very high precision.

Offers a wide range of wetted parts available to suit various applications.

Furthermore, being fully compliant with the ATEX European Directive means that these pumps can also be installed in hazardous areas.



## Mechanisms

### Mechanical return type

Main features:

- Integral worm gearbox, oil bath lubricated with low noise emissions
- Rotating parts on ball bearings to minimize the power consumption
- High precision linear stroke adjustment, both manual and by an electrical actuator

## Hydraulic diaphragm heads

The ideal solution for applications requiring high levels of safety and reliability

- Zero leakage: hermetic construction for dosing toxic, corrosive and other unsafe liquids, where leak free is a critical requirement
- Protection against external pollutants which could contaminate the liquid being pumped
- Flexibility of use: the PTFE diaphragms are compatible with a huge liquid range

## Mechanical refilling system

Maintains a constant volume in the hydraulic chamber, thereby guaranteeing maximum precision and repeatability. It also keeps the deformation of diaphragm under control providing a longer life.



## Venting system

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



## Built in relief valve

Protects the pump against unexpected overpressure.



## Cartridge valves

Ensuring maximum dosing precision, even with small flow rates, the double check valve configurations are available with high precision machined seats.

The metal gaskets for the AISI 316L stainless steel heads, and the FPM gaskets for those in plastic, guarantee maximum chemical compatibility.



## Flow Rate adjustment

Manual or automatic by **AKTUA**.



**AKTUA** electrical actuators have been designed to adjust the pump flow rate remotely (emergency manual override).

- Easier installation in field
- Internal display 4–digit, 7–segment display
- AKTUA calibration possible also with the pump running
- Available in standard version for installation in safe areas or ATEX version for installation in hazardous areas.

## Industrial Applications

- Oil & Gas
- Petrochemical
- Power Generation
- Chemical
- Water & Wastewater
- Food & Beverages
- Pharmaceutical
- Paper
- Textile

## Technical Features

Pressure  
up to 124 bar

Flow Rate  
up to 660 l/h

Temperature  
Ambient: from -5 °C to 40 °C

Wetted parts  
AISI 316L ; PP ; PVDF ; PTFE

## Accessories

- Calibration pots
- Pulsation dampers
- Safety valves
- Back pressure valves

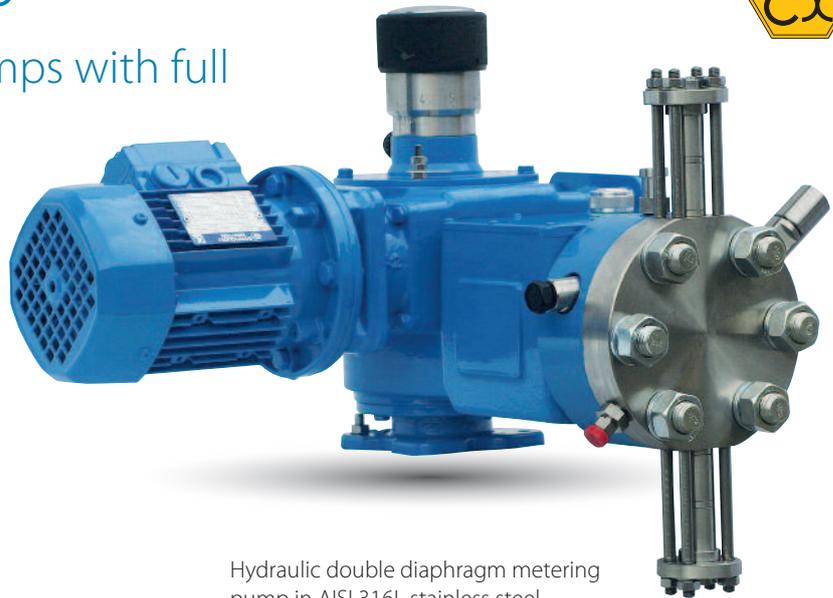
# Nexa Series

## Double Diaphragm pumps with full motion mechanisms

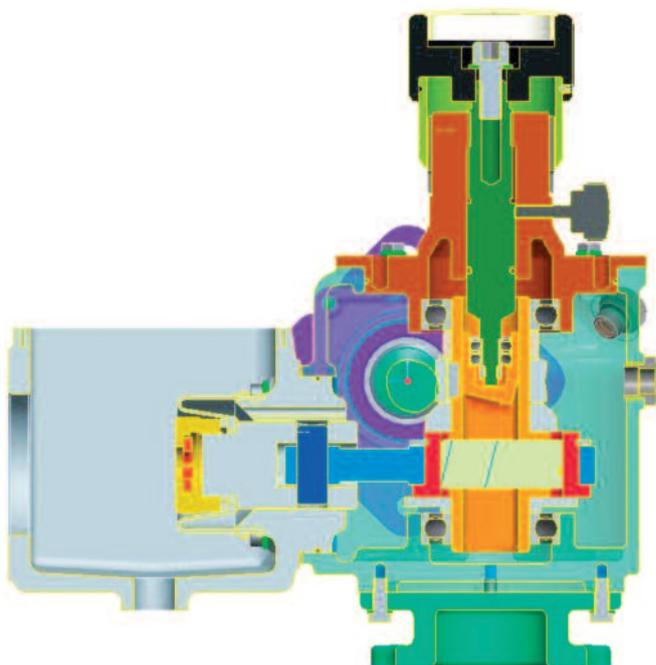
A line of plunger and hydraulic double diaphragm metering pumps designed to meet the API 675 standards.

Offers a wide range of wetted parts available to suit various applications.

Compliance with ATEX directive makes SEKO pumps suitable for being installed even in hazardous areas.



Hydraulic double diaphragm metering pump in AISI 316L stainless steel



## Mechanisms

### Full motion type in different sizes

- Internal worm gearbox, oil bath lubricated with low noise emissions
- Rotating parts on ball bearings to minimize power consumption
- Each mechanism comes complete with an internal gearbox; pumps with different speeds (strokes/min) can therefore be matched to form multi-head pump units, allowing a greater flexibility when selecting the pumps themselves.
- Stroke adjustment with high precision can be achieved, both manually and automatically. Electrical and pneumatic actuators designed by SEKO are available. Also an increase of turndown ratio can be achieved by frequency converter varying the speed of the electrical motor.

## Flexibility

The motor is horizontally assembled on the right, as standard. The pumps can also be supplied with a horizontal left side motor or even vertically assembled, depending on the installation requirements.



Standard version with horizontal motor



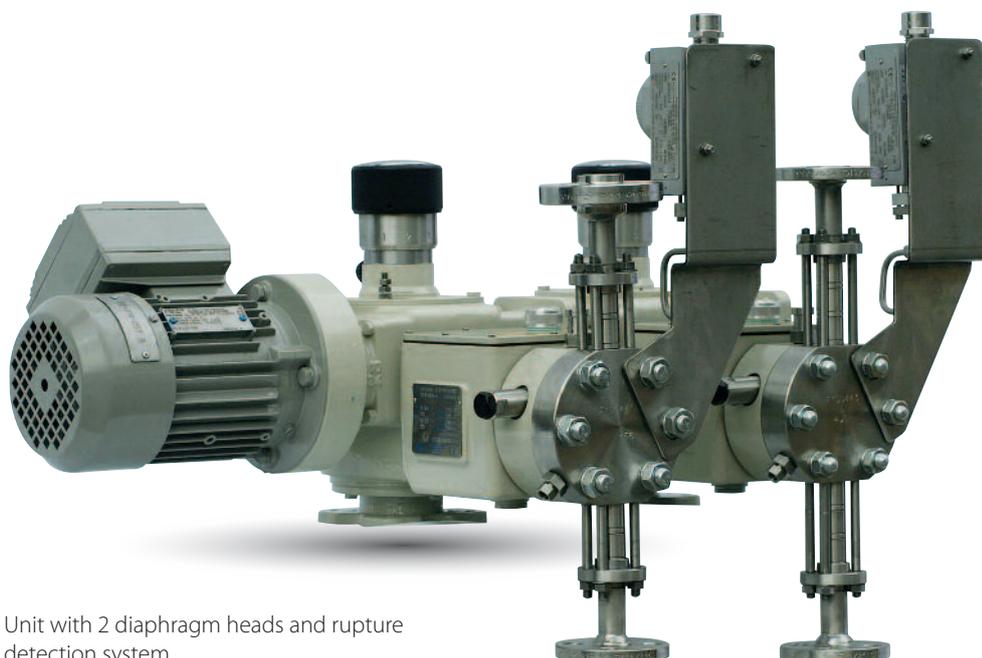
Special version with vertical motor

## Modularity

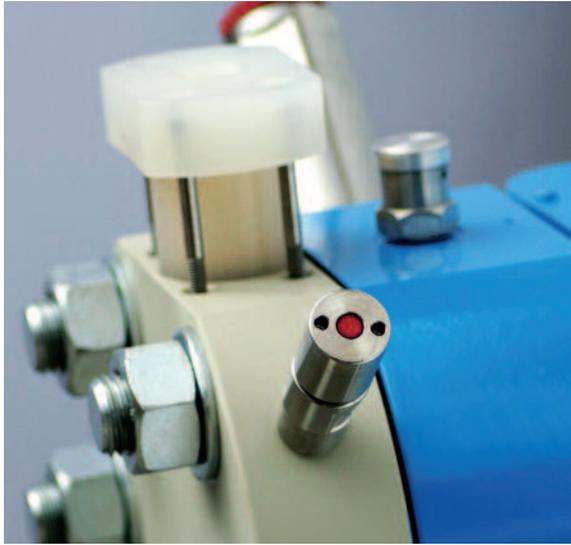
All Nexa mechanisms, even of different sizes, can be easily combined to form metering units with significant construction advantages, simplifying assembly and installation.

- The mechanisms are coupled together using joints with no exposed parts. The result is a compact unit with a strong and properly-aligned connection which does not require the use of a special base
- Another advantage is the possibility of adding a pump to another existing pump just by performing a few simple coupling operations, even on site

Different size mechanisms can be coupled; casings are designed to maintain the same foot level, to allow installation on a flat support base



Unit with 2 diaphragm heads and rupture detection system



## YN, TN, HN, BN Hydraulic double diaphragm heads

The ideal solution for applications requiring high levels of operational safety and reliability:

- Zero leakage; watertight construction for dosing toxic, corrosive and other hazardous liquids, where leak free is absolutely critical
- Protection against external contamination
- Double diaphragm, double protection: if one of the two diaphragms gets damaged, the protection system immediately signals the anomaly; the pump keeps on working and maintenance can be scheduled
- Flexibility of use: the PTFE diaphragms are compatible with a vast assortment of liquids
- Flow rate modularity: the flow rate can be changed by simply replacing the plunger and the relevant seal cartridge which effects a change of plunger diameter.
- Solid suspensions: the diaphragm's correct positioning is ensured by a mechanical system which does not require the use of perforated shields on the process side, thereby allowing for liquids containing solid suspensions to be pumped.
- Construction materials: standard wetted parts are: AISI 316L stainless steel, PP and PVDF. Other materials are available upon request.

## PN, KN Plunger heads

The simplest and most suitable solution for dosing and transferring non-hazardous liquids. Despite their simple design PN and KN heads have special features which offer superior performance

- Very precise plunger surface finishing, with increased hardness for a longer working life
- Perfect alignment of the plunger in the seal
- Adjustable seal provided for flushing or leakage recovery

## Technical Features

### Pressure

up to 350 bar (higher upon request)

### Flow rate

up to 8,000 l/h with a single head

### Fluid temperature

from -10 °C to 90 °C (from -40 °C to 150 °C upon request)

### Wetted parts

AISI 316L ; PP ; PVDF ; PTFE ; Special configurations available upon request

## Mechanical refilling system

Maintains a constant level of the hydraulic fluid, thereby guaranteeing maximum precision and repeatability. Also maintains control over the deformation of the diaphragm, thereby increasing its duration.

## Venting system

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

## Cartridge valves

Ensuring maximum dosing precision, even for small flow rates, double and triple ball configurations are available with high precision seats. They can be replaced without disconnecting the pump from the pipelines. The metal gaskets for the AISI 316L stainless steel heads, and the FPM gaskets for those in plastic, guarantee maximum compatibility.

## Built in relief valve

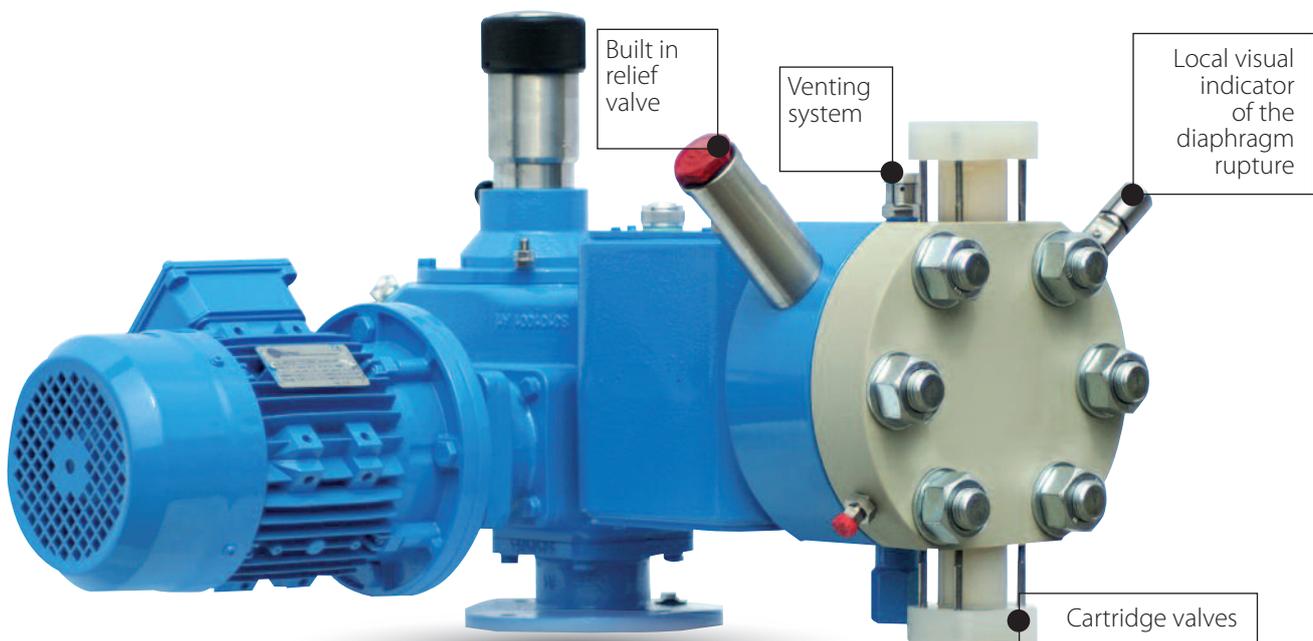
Protects the pump against unexpected overpressure.

## Double diaphragm with rupture detector

Should one of the two diaphragms rupture, the detector activates a local visual indicator or signal. In this emergency situation, the pump keeps working and allows for the necessary maintenance intervention to be scheduled.

## Separation of the hydraulic oil from the mechanism oil

The two fluids have independent and differentiated functions and are therefore kept separate.





## Options

- Automatic, electric or pneumatic adjustment or through an inverter
- Flanged connections
- Heated or cooled heads
- Diaphragm rupture detection

## Accessories

- Calibration pots
- Pulsation dampers
- Safety valves
- Back pressure valves

ATEX metering pump equipped with an electric actuator for flow rate adjustment





## Industrial Applications

- Oil & Gas
- Petrochemical
- Power Generation
- Chemical
- Water & Wastewater
- Food & Beverages
- Pharmaceutical
- Paper
- Textile



Double diaphragm metering pump with PVDF head



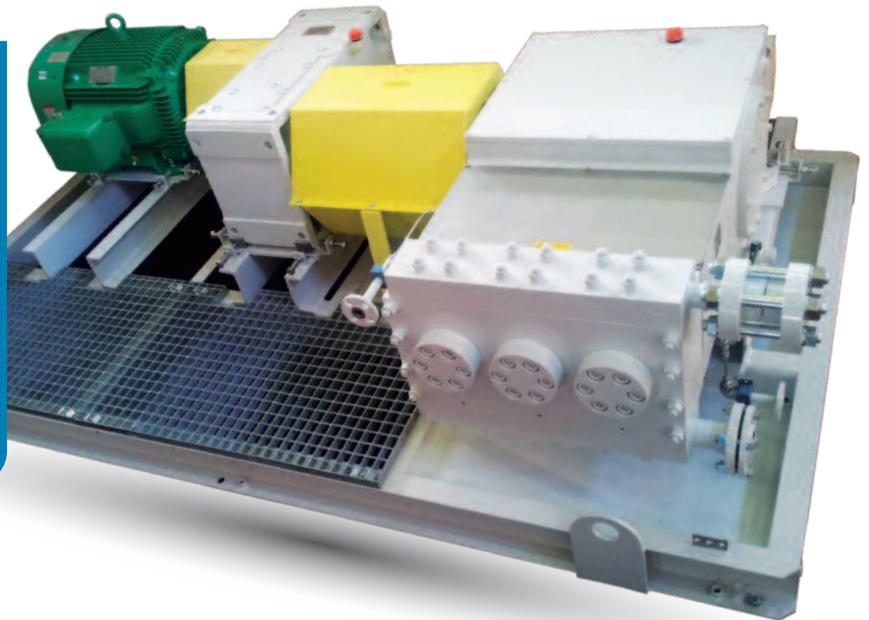
Plunger metering pumps with stainless steel AISI 316L pump head

# 3C Triplex pumps

Designed in accordance with API 674 standard, the 3C Triplex pumps are the result of SEKO's long experience in intensive and continuous Industrial Process applications, where reliability and durability are essential characteristics.



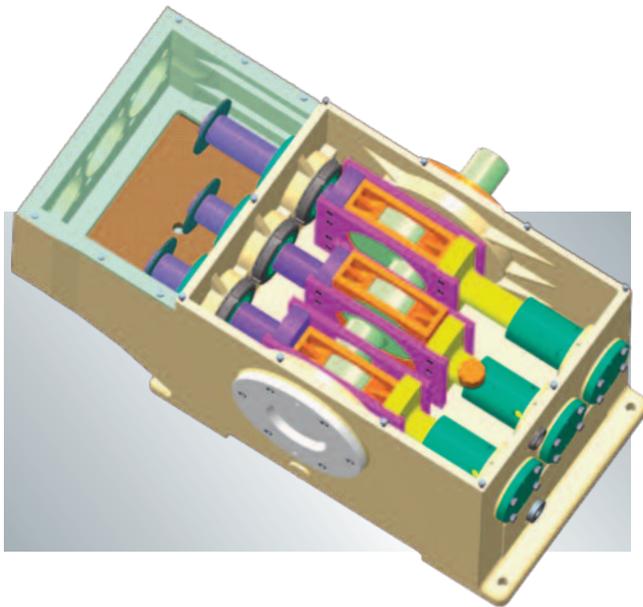
SEKO Triplex Pumps offer the best TCO (Total Cost of Ownership) available on the market paired with worldwide renowned reliability



## Features

## Customers Benefits

<p>Integral lubrication system (no forced lubrication)</p>	<ul style="list-style-type: none"> <li>• Higher reliability</li> <li>• Lower cost</li> <li>• Less maintenance parts</li> <li>• Small footprint</li> <li>• Easier installation &amp; commissioning</li> </ul>
<p>Accurate mass balancing &amp; ruggedness</p>	<ul style="list-style-type: none"> <li>• Longer MTBF</li> <li>• Increased availability</li> <li>• Reduced parts wear</li> </ul>
<p>Lower weight-to-performance ratio</p>	<ul style="list-style-type: none"> <li>• Lightweight baseframe structure</li> <li>• Optimized also for offshore topsides installation</li> <li>• Simpler foundation design</li> </ul>
<p>Unique head design optimized for simple maintenance operations</p>	<ul style="list-style-type: none"> <li>• Extended packing life</li> <li>• Increased productivity</li> <li>• Shorter downtime</li> <li>• Lower maintenance cost</li> </ul>



## Mechanisms

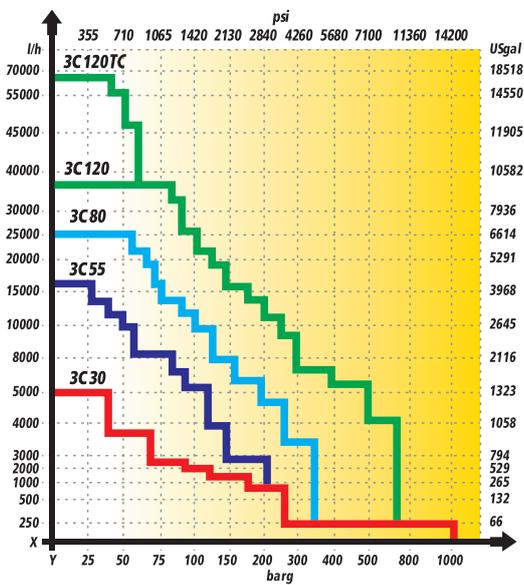
The unique design of the mechanism allows the pump to operate at a very low speed without forced lubrication. The 3C pumps are suitable for applications where a slow plunger motion is required e.g. to avoid cavitation when pumping viscous liquids, hot products or liquids having a low vapor pressure. The range features:

- Silent and vibration free operation due to a proper mass balancing and sizing. The integral crankshaft is supported with roller bearings at both ends. The crossheads are supported at both ends giving very precise alignment of the plunger rods for a longer sealing life.
- Compact and robust assembly provides high performance in limited overall dimensions.
- Low speed design results in high reliability.
- Capacity can be adjusted by an electrical motor speed variation with an appropriated frequency converter.



## Pumps Heads

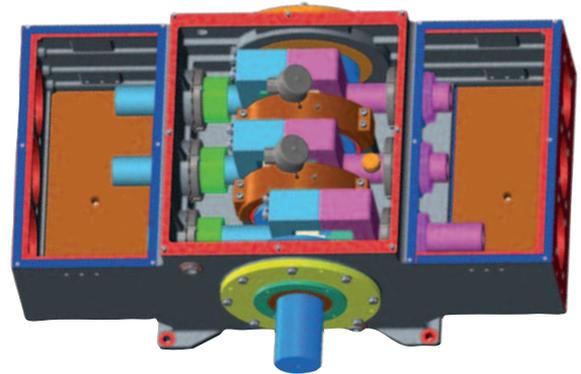
- The three-cylinder pump head is horizontally arranged, the plungers are single acting, valves and seats can be selected among different executions depending on the handled medium.
- The low speed of the pump gives some interesting advantages such as: reduced wear of the moving parts in general and specifically reduced wear of the plungers, valves and packing.
- Plungers and packing maintenance is simplified. The replacement of such components for pump sizes other than 3C can be done from the front of the pump head or from the stuffing box side without disconnecting the pump from the piping.
- Several options for "leakage return to suction" and flushing of stuffing box, for a longer life of the packing and to avoid suction of air from outside causing cavitation are available on request.



Selection Table

### 3C120 TC Execution

The peculiar design of this pump allows to fit two pump heads on the same mechanism, therefore the capacities shown on the "Selection Table" for the 3C120 model can be doubled.



### SW3C Hydraulic diaphragm pumps

For transfer of slurries and high abrasive suspensions. A complete line of pumps equipped with hydraulic diaphragm pump heads designed for the transfer of abrasive suspensions, slurries, and dangerous liquids.

SEKO's solution to pump and dose abrasive liquids is a three-headed hydraulic diaphragm pump. The pump has been designed to be remotely or automatically controlled to meet the process needs. The selection of the contact parts has been studied and made based on SEKO's long experience in the application, and designed to reduce as much as possible the maintenance costs.

The design of the pump permits to save up to 60% of the energy costs when compared with the traditional pumping systems, when based on hydraulic Power Systems.



SW3C90



SW3C90

## Accessories for a correct installation

The trouble-free operation of a pump mainly depends on an installation analysis specific for the required task. The choice of the most suitable accessories and their sizing are very important for a correct performance in a reliable system.



### Safety valves

Safety valves are installed to protect the pump and the pipeline in the case of unexpected overpressure. Reciprocating pumps can reach high pressures in one single stroke, therefore they need to be protected against possible pipe clogging created by sedimentation or accidental closure of a valve. Hydraulic diaphragm pumps are protected with a limiting pressure valve built in the hydraulic circuit. The pipeline should be protected by an in-line pressure safety valve.



### Pulsation dampers

The reciprocating movement of the piston generates pulsations: during each stroke the liquid contained in the suction and discharge lines is accelerated from zero to maximum speed and then decelerated to zero again. Pulsation dampers are the preferred accessories to reduce high pressure fluctuations or to obtain a linearity of the flow.



## Applications

- Oil and Gas: glycol for gas dehydration; methanol injection; well stimulation & service; hydrocarbon condensate
- Iron, steel and metal industry: in metallurgical plants for descaling.
- Chemical industry: fatty acids pumping, for glycerine production, raw material production for surface-active, stearine production.
- Ceramic industry: spray dryer, abrasive suspensions.
- Water Treatment: feeding of factory wastes to the wet oxidation treatment plant, reverse osmosis plants
- Desalination: feeding of the reverse osmosis plants
- Food industry: feeding of fruit puree to the heat exchanger in the pasteurization process, transfer of tomato concentrate, homogenizers feeding.

## Products Line

- Liquid end: SS 316 L, 304 SS or C.S., different material (on request)
- Double head execution for 3C120
- Flow-rate adjustment: by Frequency Converter
- Compliance with International Standards/ Approvals as API 674, ASME, CU TK 012/2011

## TRIPLEX 3C30

Flow rate

from 40 to 5000 l/h

Pressure

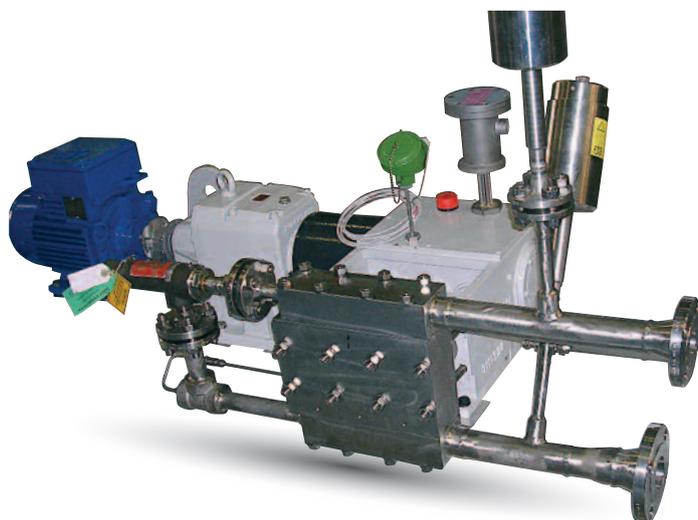
from 1150 to 70 bar

Plunger diameter

from 10 to 40 mm

Motor Power

2,2 • 3 • 4 • 5,5 • 7,5 • 9,2 • 10 • 15 kW



## TRIPLEX 3C55

Flow rate

from 664 to 16.000 l/h

Pressure

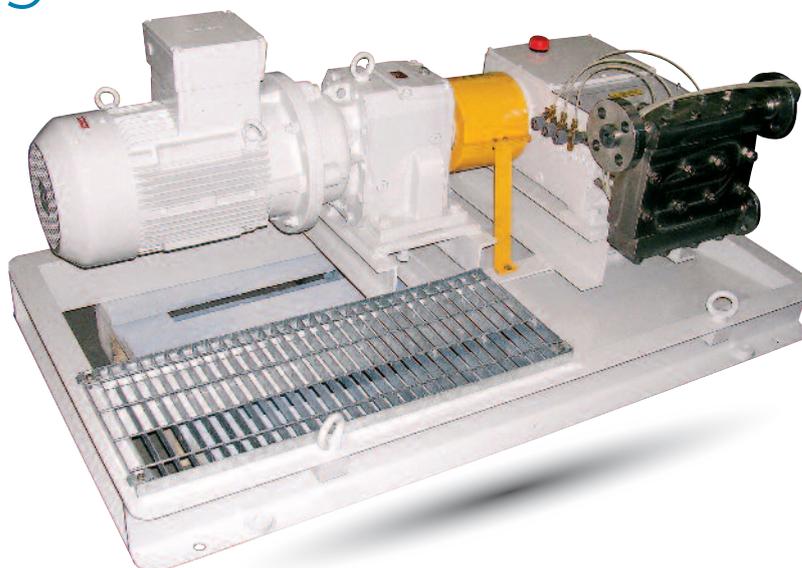
from 214 to 39 bar

Plunger diameter

from 10 to 40 mm

Motor Power

5,5 • 7,5 • 9,2 • 15 • 18,5 • 22 • 30 kW



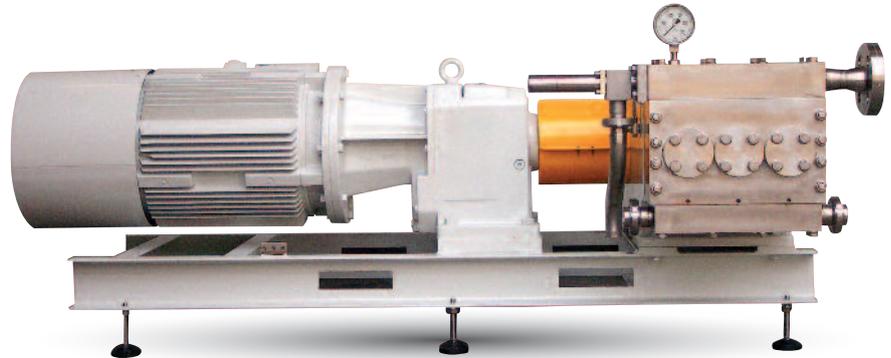
# TRIPLEX 3C80

Flow rate  
from 966 to 25.429 l/h

Pressure  
from 370 to 52 bar

Plunger diameter  
from 30 to 80 mm

Motor Power  
9,2 • 15 • 18,5 • 22 • 30 • 37 • 45 • 55 kW



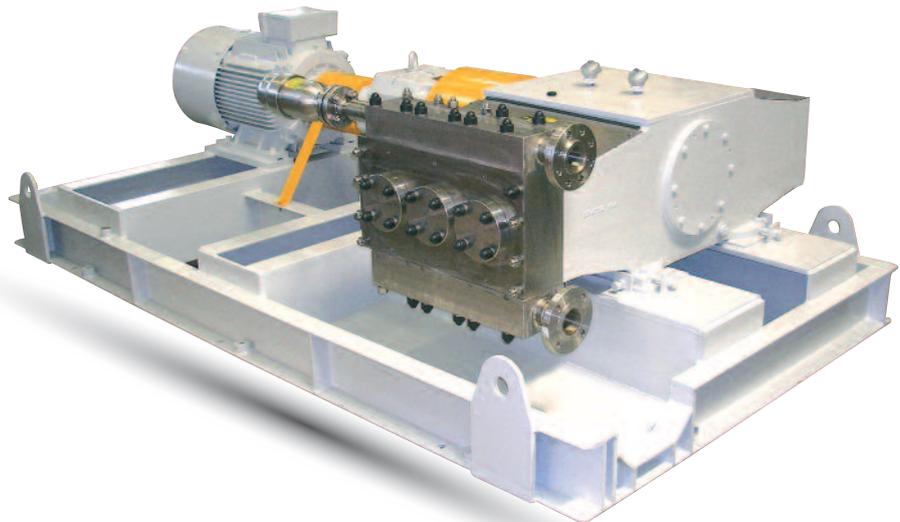
# TRIPLEX 3C120

Flow rate  
from 1450 to 35.000 l/h

Pressure  
from 728 to 80 bar

Plunger diameter  
from 30 to 90 mm

Motor Power  
37 • 45 • 55 • 75 • 90 • 110 kW



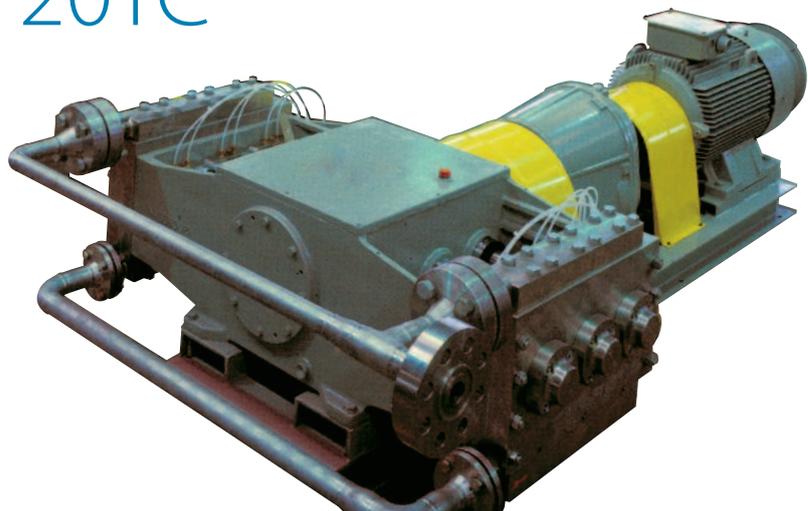
# TRIPLEX 3C120TC

Flow rate  
from 2.900 to 65.000 l/h

Pressure  
from 570 to 62 bar

Plunger diameter  
from 30 to 90 mm

Motor Power  
37 • 45 • 55 • 75 • 90 • 110 kW



# Your Choice, Our Commitment

In the modern Globalised world, being a privately owned Company has significant benefits especially for our Customers, our Partners. For over 40 years, SEKO has developed a Global organisation able to take the longer view, manage the pressure of the now, and to plan for the long term, delivering true Partnership for our Customers, with transparency and mutual respect for each other.

Whether it's for our reknown flexibility, our attention to detail, the high-quality products, or just the way we do business, we understand that it's Your Choice to do business with us. It is Our Commitment to fulfill your needs wherever you, our Customers are.



For more information about our portfolio, worldwide locations, approvals, certifications, and local representatives, please visit [www.seko.com](http://www.seko.com)



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