

NOVAPLEX *Integral*

PROCESS DIAPHRAGM PUMPS





SPXFLOW

SPX FLOW, Inc. (NYSE:FLOW) is a leading manufacturer of innovative flow technologies, many of which help define the industry standard in the market segments they serve. From its headquarters in Charlotte, North Carolina, it operates a sales and support network, centers of manufacturing excellence, and advanced engineering facilities, throughout the world. Its cutting-edge flow components and process equipment portfolio includes a wide range of pumps, valves, heat exchangers, mixers, homogenizers, separators, filters, UHT, and drying technology that meet many application needs. Its expert engineering capability also makes it a premium supplier of customized solutions and complete, turn-key packages to meet the most exacting of installation demands.

Incorporating many leading brands, SPX FLOW has a long history of serving the food and beverage, power and energy, and industrial market sectors. Its designs and engineered solutions help customers drive efficiency and productivity, increase quality and reliability, and meet the latest regulatory demands. In-depth understanding of applications and processes, state-of-the-art Innovation Centers, and advanced pilot/testing technology further assist in optimizing processes and reducing timescales to reliably meet production targets.

To learn more about SPX FLOW capabilities, its latest technology innovations and complete service offerings, please visit www.spxflow.com.

FOR MORE THAN 80 YEARS, SPX FLOW'S BRAN+LUEBBE BRAND HAS BEEN PROVIDING CUSTOMERS WITH HIGH QUALITY METERING, PROCESSING AND ANALYSING EQUIPMENT.

As part of the global SPX FLOW, Inc. , we are one of the world's most reputable manufacturers of metering and process pumps, process systems as well as analyzing technologies. Our engineers have comprehensive process and applications knowledge across a wide range of markets. This has resulted in product innovations and developments which harness the latest technology whilst meeting the highest quality standards.

> Bran+Luebbe®

Process Diaphragm Pumps



*NOVAPLEX Integral Process Pump
Type N-020i*

DIAPHRAGM PUMP TECHNOLOGY

The pumpheads used on the NOVAPLEX *Integral* utilise the hydraulically actuated diaphragm principle. The plunger movement induced by the crank gear acts on hydraulic oil rather than the process fluid directly.

The hydraulic oil in turn displaces a freely moving diaphragm. This diaphragm acts as an hermetic seal separating the hydraulic fluid from the pumped liquid whilst also ensuring zero leakage to the environment.

The Bran+Luebbe NOVAPLEX is a flexible high performance process diaphragm pump for high flow rates and operating pressures.

NOVAPLEX *Integral* pumps are powerful process diaphragm pumps for a variety of applications. They are best suited for critical high pressure installations where the capabilities of traditional metering pumps are exceeded.

NOVAPLEX *Integral* Pumps are ideal for toxic or chemically aggressive liquids and for slurries/suspensions with particle sizes up to 100 µm.

FLUIDS PUMPED (EXAMPLES)

- Ammonia
- Butane
- Hydrocarbon condensate
- Latex emulsion
- Liquefied CO₂
- LPG (Liquefied Petroleum Gas)
- Methanol,
- Naphtha
- Raney nickel suspension
- Sulphuric acid
- Toluene
- Water

PUMPED DUTIES (EXAMPLES)

- Reactor feed pump
- High pressure injection pump
- Transfer pump
- Re-circulation pump

ADVANTAGES

Excellent Emission Control

- Product leakage protection through the use of the double diaphragm design
- Minimal noise levels through the integrated worm gear reducer

High Reliability

- The Bran+Luebbe diaphragm pumphead is of proven design, demonstrated on many varied applications, with diaphragm service life time of 20.000 operating hours being achieved under ideal conditions
- Bran+Luebbe diaphragm pumpheads are protected against damage caused by overload through an internally mounted pressure relief valve
- Low wear resulting from the simple and well proven lubrication system

Simplified Maintenance

- All pumpheads are equipped with an interface for the NOVALINK-CSM 2 diagnostics system
- Modular concept allows easy access to any part of the pump

Minimized Life Cycle Cost

- The use of anti-friction bearings reduces energy consumption
- No additional measures are needed to contain product leakage as the pumphead includes zero emission as an inherent feature of its standard design

Special Operating Conditions

- The use of anti-friction bearings allows the pump to run continuously under a wide range of varying speeds, even at high suction pressures.

FEATURES OF THE NOVAPLEX INTEGRAL PROCESS PUMP

- Double diaphragm pumpheads with
 - positive diaphragm position control
 - built-in pressure relief valve
 - diaphragm failure indication
- Crank gears with
 - integrated lubrication system
 - anti-friction bearings
- Modular concept
- Integrated gear reducer
- Minimized footprint
- Compact design



NOVAPLEX Integral Process Pump Type N-080i-3D

Function of the Bran+Luebbe Diaphragm Pumpheads & Gears

The Bran+Luebbe Positive Diaphragm Position Control (PDPC) system ensures that the diaphragm cannot be damaged even under critical conditions such as blocked pipes or closed valves on both suction or discharge side.

The replenishing valve is activated only when the diaphragm is fully retracted at the end of the suction stroke; the diaphragm itself releases the replenishing valve interlock mechanism by pushing a control pin. This interlock mechanism prevents overfilling of the hydraulic system.

A pressure relief valve within the hydraulic system of the pumphead protects not only the pumphead but also the pump gear from overload due to excessive pressure.

This protection system allows all liquids to be pumped safely including slurries and suspensions.

ADVANTAGES OF POSITIVE DIAPHRAGM POSITION CONTROL (PDPC)

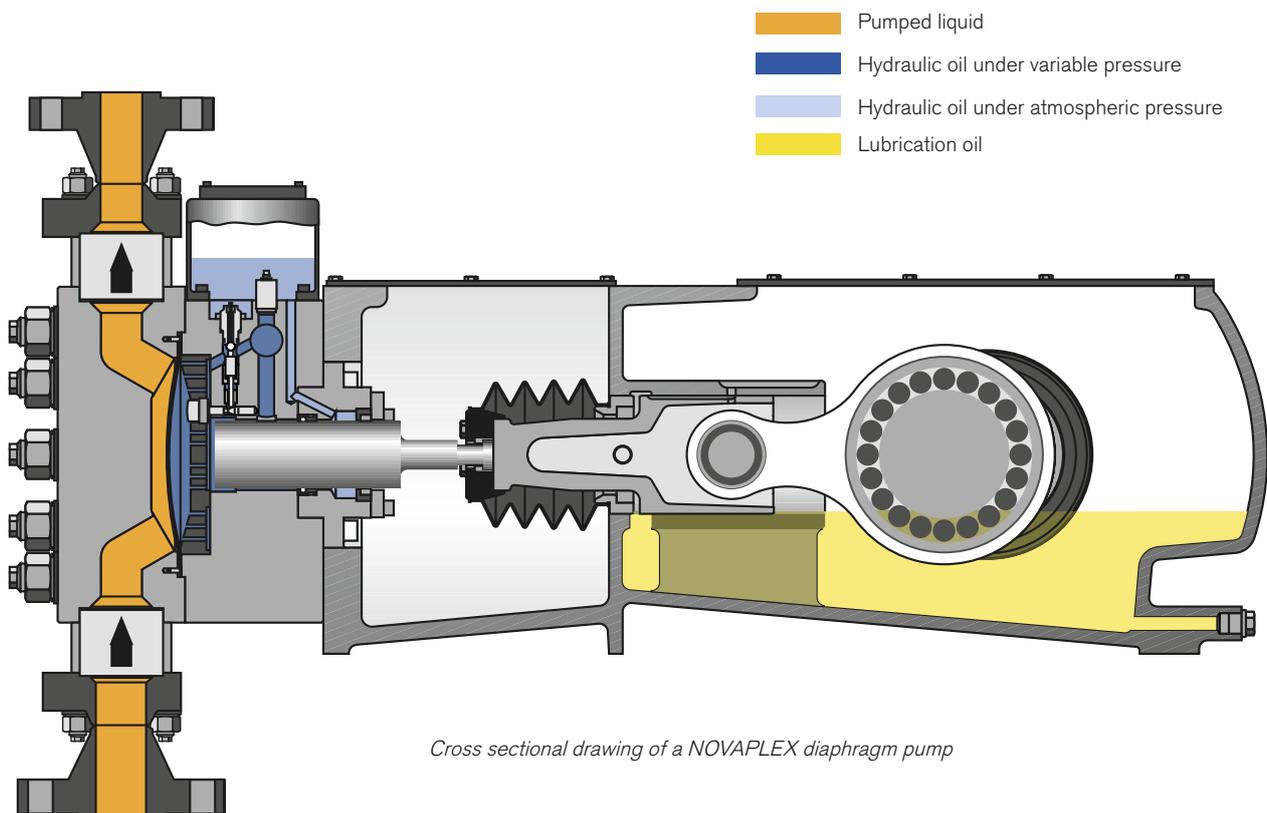
- Increased diaphragm life compared to non-positive control systems
- Diaphragm protection even under critical operating conditions
- High metering reproducibility due to constant hydraulic volume and permanent de-aeration of the hydraulic oil
- Vacuum operation possible
- Dry running capabilities

ADDITIONAL FEATURES OF DOUBLE-DIAPHRAGM PUMPHEADS

Double-diaphragm pumps with diaphragm condition monitoring system offer higher operation security than single diaphragm pumpheads.

A thin circular disc with a capillary system is positioned between the two adjacent diaphragms and connects the interstitial space with the monitoring system. Should either one of the diaphragms be ruptured, the pressure in the interstitial space and the capillary rises. It can be signalled externally by a variety of optional indicating devices such as pressure gauges, pressure switches or pressure sensors.

In the event of one ruptured diaphragm, cross contamination between hydraulic oil and the pumped liquid is prevented. Also, containment of the pumped liquid is still assured therefore avoiding the immediate need for shutting the pump down.



Equipped for Your Requirements

PUMP HEAD TECHNOLOGY

- Hydraulically actuated PTFE double-diaphragm (up to 400 bar)
- Hydraulically actuated stainless steel double-diaphragm (up to 1000 bar)
- Pump head and valve housing in stainless steel. Special materials available for individual applications
- Suction and discharge valves with various geometries with or without springs. Special designs and materials for valve bodies, e.g. for reduced NPSH value
- All pumpheads are equipped with interface for the NOVALINK-CSM 2 diagnostics system

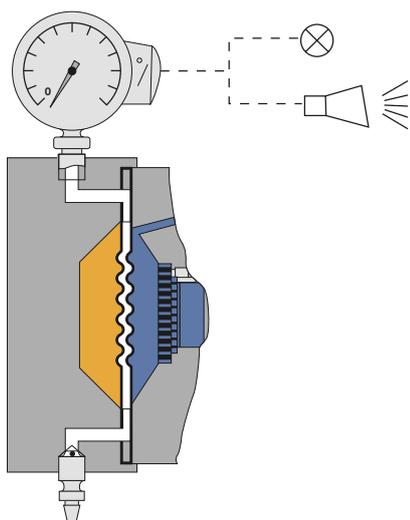
MULTI-HEAD PUMPS

- NOVAPLEX *Integral* process pumps are designed as Triplex pumps
- The integrated gear reducer is based on the proven worm gear technology

FLOW RATE ADJUSTMENT

Infinitely variable flow rate adjustment is achieved by varying the pump stroking speed

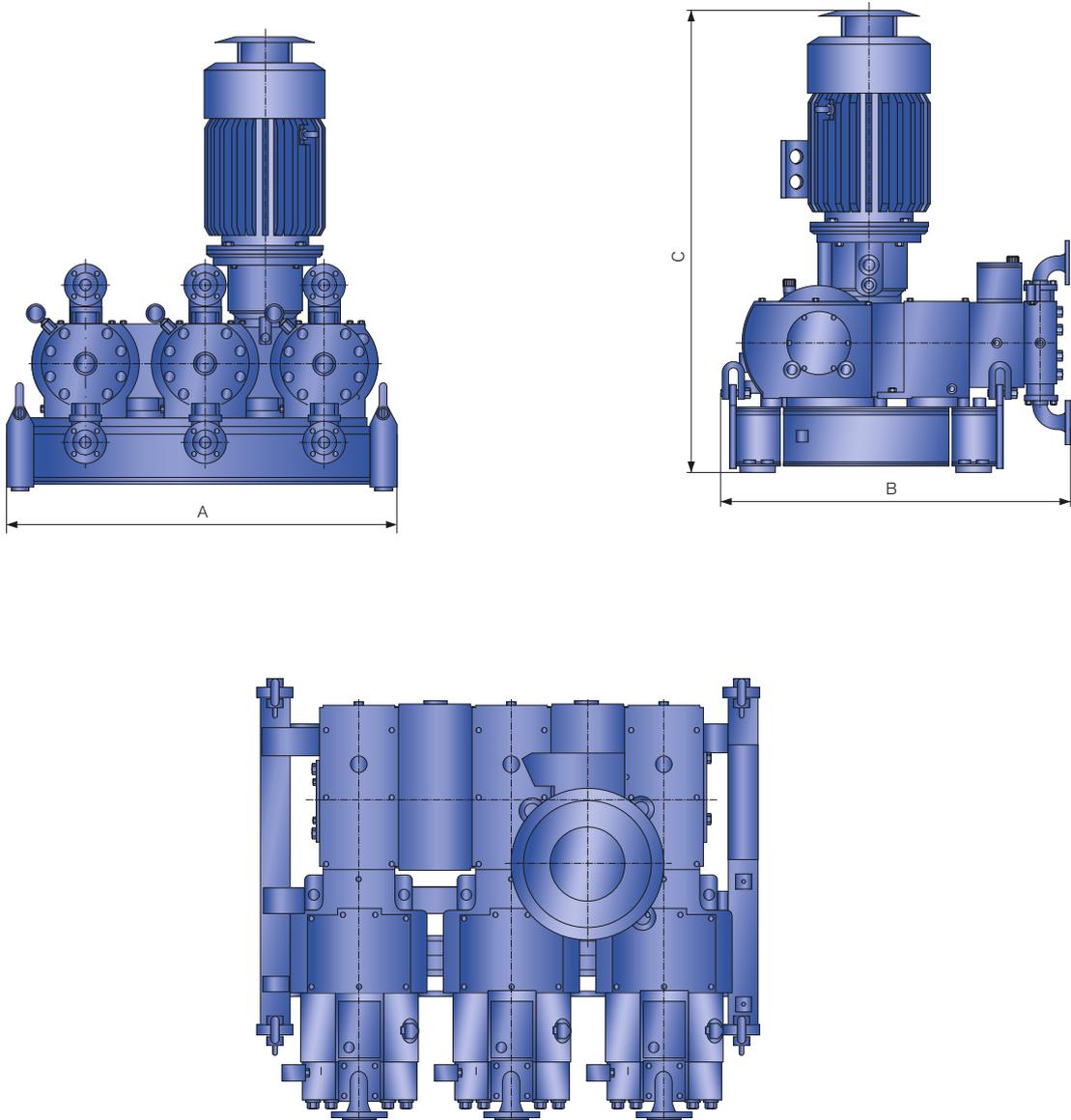
- AC motor with frequency converter
- All other types of variable-speed drive



Schematic of the diaphragm condition monitoring system



Layout and Dimensions

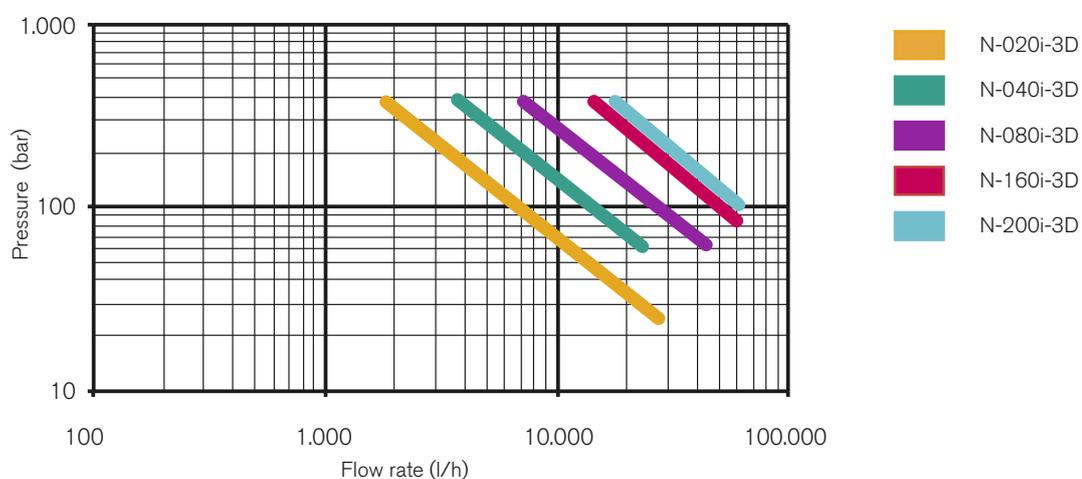


	LENGTH (A)	WIDTH (B)	HEIGHT (C)	APPROX. WEIGHT	OIL CAPACITY	MAX. ELECTR. POWER
	MM	MM	MM	KG	L	KW
N-020i-3D	1,345	1,170	1,580	1,800	45	22-37
N-040i-3D	1,680	1,550	2,250	5,000	85	45-90
N-080i-3D	2,300	1,920	2,500	10,000	150	75-160
N-160i-3D	2,650	2,140	2,950	11,800	230	110-250
N-200i-3D	2,650	2,140	2,950	11,800	230	132-315

Flow rate for NOVAPLEX *Integral* with PTFE Diaphragm

TYPE	PRESSURE (BAR)	MAX. FLOW RATE (M ³ /H)*
N-020i	25 - 400	1.7 - 26.5
N-040i	63 - 400	3.3 - 22.9
N-080i	63 - 400	7.0 - 44.2
N-160i	80 - 400	14.0 - 62.3
N-200i	100 - 400	17.5 - 62.3

*Theoretical values at 100% volume efficiency and stroke frequency 200 1/min, 50Hz



NOVAPLEX *Classic* Process Diaphragm Pumps

Alternatively to the NOVAPLEX *Integral* pumps the NOVAPLEX *Classic* with externally mounted gear reducer, enabling an extended number of pump heads, is available.



Process pump NOVAPLEX Classic Type N-160-4D



Our Service at a Glance



Start up

Regardless of location, on request our SPX FLOW technicians will assist with the installation and professional commissioning of your plant on site and ensure optimum adaptation of our pumps and systems to your production and processing environment. We ensure the full operational capability of our pumps and systems from the start.



Repair

Our experienced service team are available to carry out repairs using the original spare parts from the manufacturer.



Maintenance / Maintenance Contracts

The regular performance of maintenance work by qualified SPX FLOW technicians gives you the assurance of maximum availability of your systems. For this reason we offer maintenance contracts tailored to your needs. We support our products for the entire lifetime of the pump, including all major inspection and maintenance tasks - possible sources of errors are detected and eliminated at an early stage, so that production stops are largely avoided. Your advantage: As a maintenance customer you will enjoy priority in all service issues and receive a discount on spare parts.



Upgrades

We offer customisation of your pump through a conversion, in response to changes in production and process requirements. By using improved designs and new materials, we can optimise the pump performance and increase reliability. This will give you a reasonable alternative to the purchase of a new pump.





Diagnostic - Online / Offline / Remote

With our NOVALINK-CSM 2 system (Continuous Status Monitoring), we provide you with permanent or temporary fault analyses so that you avoid unplanned downtime through early detection of faults.

Advantages:

- Improved pump availability
- Planning of maintenance
- Optimization of production processes



Customer Support / Hotline

Consultation and support are important to us. As a customer you are our number one priority. We can support you if you have diagnostic error messages and assist you in the selection of spare parts. When determining maintenance intervals you can count on SPX FLOW to help.



Spare Parts

By exclusively using original spare parts of consistent high quality, we offer the security of your pump functioning accurately. A high availability of original spare parts in stock gives us the opportunity to supply many spare parts within 24 hours.



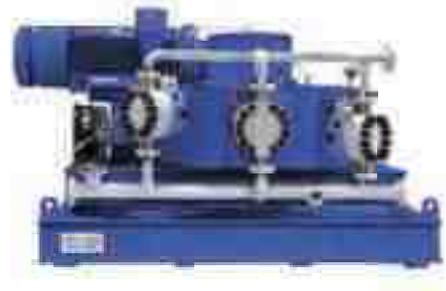
Training

Our training courses are practical and tailored to your needs and provide detailed knowledge about function, design and repair of our pumps and systems. Our training courses are intended for users, technicians or engineers.





NOVAPLEX Classic



NOVAPLEX Vector

As well as the NOVAPLEX *Integral* pumps, the NOVAPLEX *Classic*, with externally mounted gear reducer enabling an extended number of pumpheads and the NOVAPLEX *Vector*, with a unique new gearbox design for small footprints, are available for applications in both the oil & gas industry and the chemical industry.

Global Locations

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