

**NETZSCH**

Proven Excellence.



## NOTOS<sup>®</sup> Sanitary Twin Screw Pump

NOTOS<sup>®</sup> 2NSH – High Efficiency and Maximum Performance  
for Sanitary Applications

Pumps & Systems

# NOTOS® 2NSH

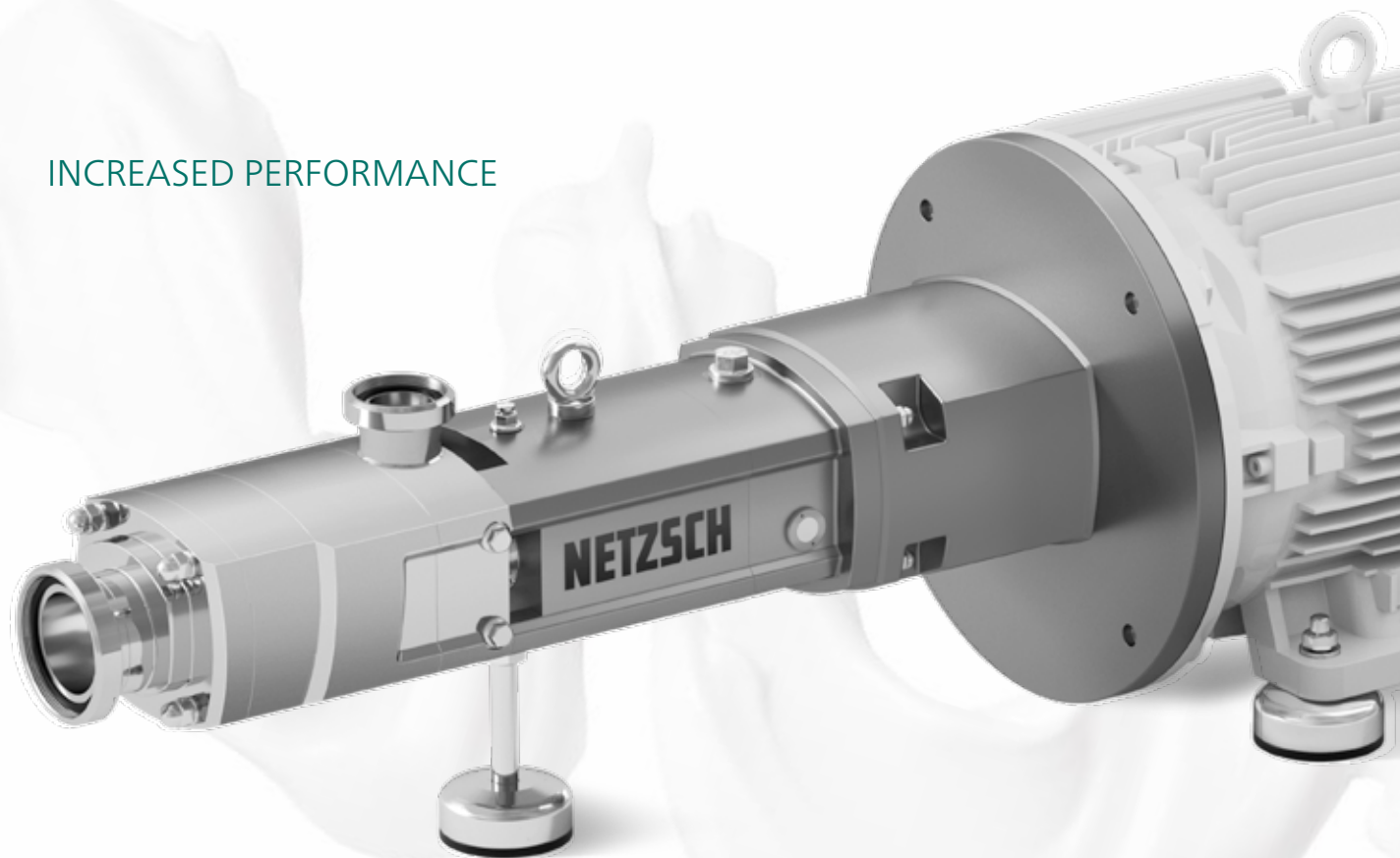
## SANITARY TWIN SCREW PUMP

### The benefit to the customer

Keeping its commitment to developing innovative and efficient solutions for the most demanding industries, NETZSCH presents the NOTOS® Sanitary 2NSH Twin Screw Pump with exclusive full service-in-place. Designed to optimize the transfer at low and high working pressures (up to 360 psi / 25 bar) of fluids with low and high viscosity, such as chocolate, fruit, yogurt, juices, and pumping them while keeping the integrity and natural properties, without any quality loss. This pump is a practical solution that adds more efficiency and technology to the process.

The pump is made of AISI 316L stainless steel and polished according to international standards, making it easy to clean (CIP) and to sterilize (SIP) in place. As there is no contact between the rotating parts, the pump speed can be increased. Therefore, cleaning fluid (CIP fluid) and the main product can be carried out by the 2NSH itself without the need for an auxiliary system or a separate CIP pump.

### INCREASED PERFORMANCE



### INNOVATIVE FULL SERVICE-IN-PLACE (FSIP®)

## General characteristics

NOTOS® 2NSH meets the high requirements of the food, beverage, chemical, pharmaceutical and cosmetic industries:

- Metal parts in contact with the fluid are made of 316L stainless steel
- High suction capability (low NPSHr)
- No contact between the rotating parts
- Reversible flow
- Virtually no flow pulsations
- No dead ends that can harbor bacteria

## Large capacity and pressure range

This pump has a wide range of performance offering flexibility of use.

- Flow rates up to 1,426 gpm / 324 m<sup>3</sup>/h
- Pressure up to 362 psi / 25 bar

## Compact design

Small space requirements due to the compact design, with two mounting options: close-coupled flanged assembly on feet or baseplate assembly.

## Broad range of application examples:

- Food industry: dairy products, delicacies, ketchup, sauces, confectionery, baby food.
- Beverage industry: concentrates, fruit juices, syrups, brewery grains.
- Cosmetic and pharmaceutical industry: creams, lotions, ingredients.
- Chemical industry: adhesives, solvents, paints, varnishes, etc.

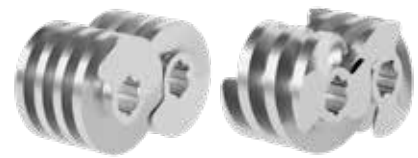
## Your benefits

- Can be both the Product pump and CIP pump in one.
- Front loaded seals for quick and easy maintenance.
- Wide speed range allows for pumping low to high viscosity fluids with the same pump.
- Low shear with virtually no pulsations.
- Bi-directional flow with high suction lift.
- Can pump up to 65% entrained air.
- Can run dry when using a double flush seal.

## Four Different Screw Pitch Options

Stainless steel screws with high efficiency profile that allow more flow per revolution and low fluid shear:

- Balanced with high suction capability.
- All screw pitches are the same diameter and are interchangeable.
- Simple replacement without disassembly of bearings.
- Pitch change allows change of flow, pressure range and solid size within the same pump.



Pitch 1

Pitch 2



Pitch 3

Pitch 4

## Product flexibility

Due to the operation principle and the design of this positive displacement pump, fluids with the following properties can be conveyed:

- Low to high viscosity
- With/without solids
- Shear sensitive and shear-stable

All sizes meet FDA requirements  
Pump sizes 1, 2, and 3 meet 3A and EHEDG requirements



# NOTOS® 2NSH

## Five models for a broad range of applications

With a robust, compact body and efficient design, the NOTOS® 2NSH Sanitary Twin Screw Pump is ideal for industries that prioritize high quality, maximum productivity, and excellence in the process: a reliable, customized solution for each application.

### NOTOS® 2NSH Sanitary Twin Screw Pump – Operating Parameters

Parameters	Models			
	2NSH - L1	2NSH - L2	2NSH - L3	
Max. flow rate*	up to 79 GPM / 18 m <sup>3</sup> /h	up to 211 GPM / 48 m <sup>3</sup> /h	up to 489 GPM / 111 m <sup>3</sup> /h	up to
Maximum rotational speed	up to 3,600 rpm	up to 3,600 rpm	up to 3,600 rpm	
Max. differential pressure	362 psi / 25 bar **	362 psi / 25 bar **	362 psi / 25 bar **	
Viscosity	from 1 to 1,000,000 cP †	from 1 to 1,000,000 cP †	from 1 to 1,000,000 cP †	fr
Temperature of the pumped fluid	from -4 to 265 °F / from -20 to 130 °C †	from -4 to 265 °F / from -20 to 130 °C †	from -4 to 265 °F / from -20 to 130 °C †	f
Suction nozzle	1.5" up to 2.5"	2" up to 4"	3" up to 4"	
Discharge nozzle	1.5" up to 2"	2" up to 3"	2.5" up to 4"	
Installation position	Horizontal / Vertical	Horizontal / Vertical	Horizontal / Vertical	
Wetted parts materials	AISI 316L (standard)	AISI 316L (standard)	AISI 316L (standard)	A
Certification	3A, FDA and EHEDG	3A, FDA and EHEDG	3A, FDA and EHEDG	

\* Considering 3,600 rpm and Pitch 4

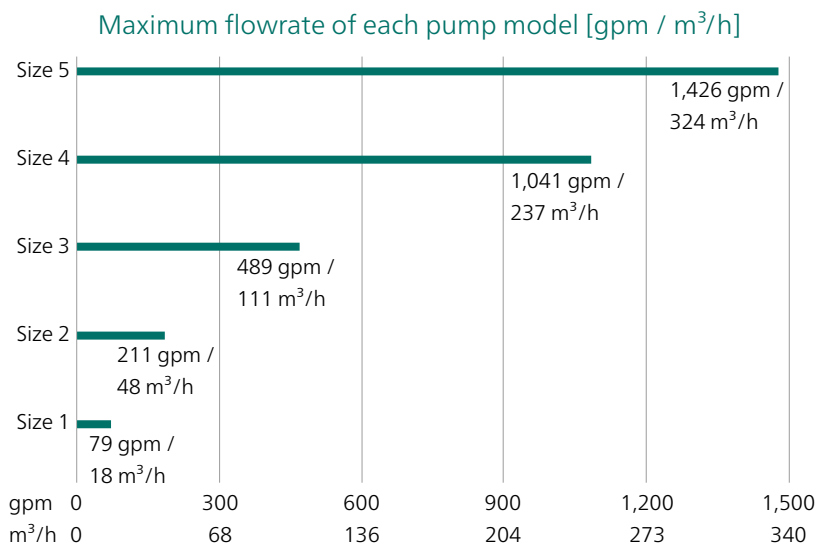
\*\* Dependent upon the screw pitch

† Dependent on the pump speed, size and/or pressure



2NSH - L4	2NSH - L5
up to 1,041 GPM / 237 m <sup>3</sup> /h	up to 1,426 GPM / 324 m <sup>3</sup> /h
up to 3,600 rpm	up to 3,600 rpm
290 psi / 20 bar **	290 psi / 20 bar **
from 1 to 1,000,000 cP †	from 1 to 1,000,000 cP †
from -4 to 265 °F / from -20 to 130 °C †	from -4 to 265 °F / from -20 to 130 °C †
3" up to 4"	4" up to 6"
3" up to 4"	4" up to 6"
Horizontal	Horizontal
AISI 316L (standard)	AISI 316L (standard)
FDA	FDA

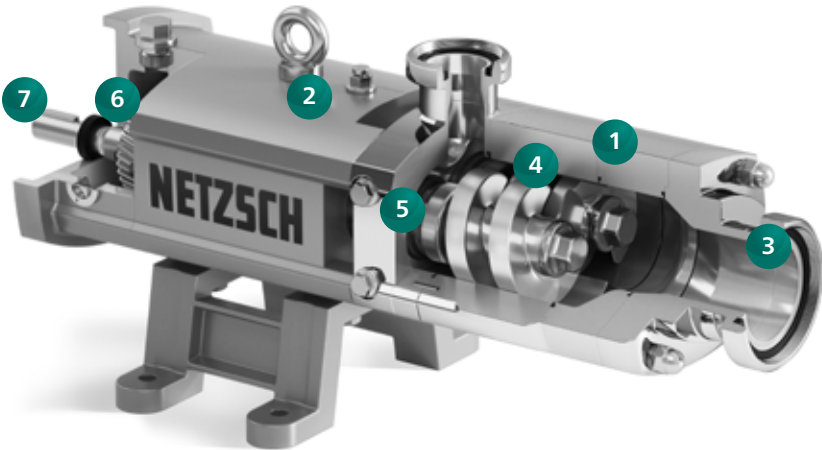
The NOTOS® 2NSH is a sanitary pump family composed of five sizes with four different pitches for each size. In total, there are 20 different combinations covering a wide range of flowrates and applications. The 2NSH will meet the needs of the food, beverage, cosmetic, and chemical industry.



# Perfection down to the last detail

## for outstanding results in your production

The pump shows superior performance and excellent results in day-to-day production because every pump feature is carefully designed. The NOTOS® 2NSH Sanitary Twin Screw Pump is an efficient combination of excellence and quality that results in a unique solution to the market with a compact design. Virtually no pulsations with easy maintenance in two pump designs are some of the advantages.



### 1 Pump housing

Pump housing with a unique design for FSIP® – Full Service-in-Place, allowing for easy and quick pump disassembly, without having to disconnect it from the piping.

### 2 Bearing housing

Standard in SS for corrosion resistance and available in cast iron for better heat dissipation. Bearings are arranged for bi-directional flow without the need for re-orientation.

### 3 Ports

Various sanitary connection options available such as TC, SMS, RJT, DIN and others.

### 4 Screws

Stainless steel screws with high efficiency profile, allowing higher flow rates with low fluid shear. Four pitch options available, all balanced and with high suction capability. Hardened screws available for abrasive applications.



### 5 Shaft sealing

Available with single or double mechanical seals, both with modular cartridge design and interchangeable from one to another. Connections for flushing or quench are standard on all pumps.

### 6 Synchronization gears

Helical gears provide smooth torque transmission to the screws and ensure the contactless operation of the pumping elements.

### 7 Shafts

Large diameter SS shafts designed for high torque and speed capable of rotating in both directions.

## Innovative Full Service-in-Place (FSIP®) design for simplified maintenance

NETZSCH implemented FSIP® as a design concept in other pumps. It simplifies maintenance reducing the amount of repair time needed. FSIP® makes it possible to fully disassemble and assemble the screws and the mechanical seal without removing the pump from the processing line. As a result, servicing downtimes are significantly reduced. FSIP® is an intelligent technological solution that brings even more confidence and reliability to your processes.



NOTOS®  
FSIP® Design

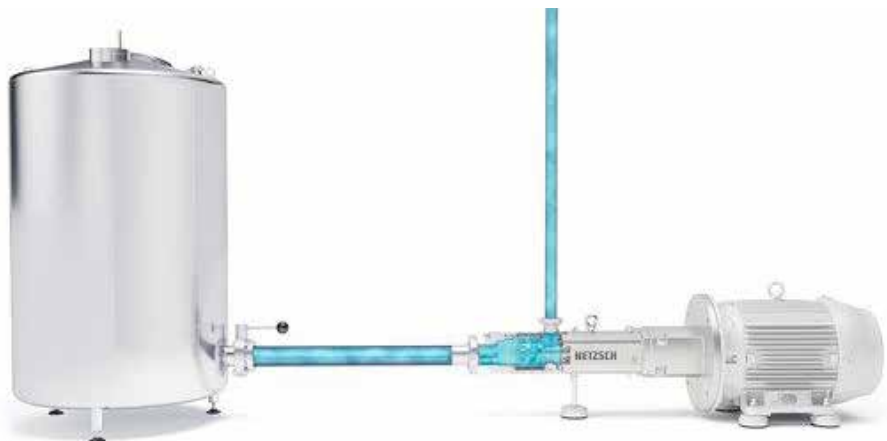


All sizes meet FDA requirements  
Pump sizes 1, 2, and 3 also meet 3A and EHEDG requirements

## Simplify your CIP cleaning process with NOTOS® 2NSH

### Saving costs with NOTOS®

In a conventional CIP cleaning process usually an additional CIP pump is necessary to ensure the cleanliness of the system. With the 2NSH, there is no need for an extra pump because it also operates as a CIP pump during the cleaning process. By-pass valves and additional pipework are not necessary.



### How is it possible?

By increasing the speed, the pump is able to pump thin, water like fluids and viscous fluids with the same pump. Tight tolerances during the manufacturing process guarantees the elevated efficiency, low noise and low vibration — even at high speeds — that are

necessary for CIP cleaning. With a flow velocity of at least 4.9 f/s (1.5 m/s), it is possible for the cleaning liquid to ensure efficient cleaning of the pump, pipes, connections and accessories required by sanitary processes.

One pump for the product and the CIP fluid.

# NOTOS® 2NSH Standard Design with optional features

The NOTOS® 2NSH Sanitary Twin Screw Pumps are also available with a standard, non-FSIP® pump housing. This compact design offers additional options and advantages.

The NOTOS® 2NSH standard pump is more compact than the Full Service-in-Place (FSIP®) model. It is shorter, which facilitates the installation in places with greater space restrictions.

## Optional characteristics

- Heating or cooling jacket
- Vertical orientation
- With funnel inlet for highly viscous fluids
- Footed baseplate design

## Standard characteristics

- Compact design
- Reduced length
- Horizontal orientation
- Tri-Clamp connections
- Close-coupled flange design



ELIMINATE THE CIP PUMP



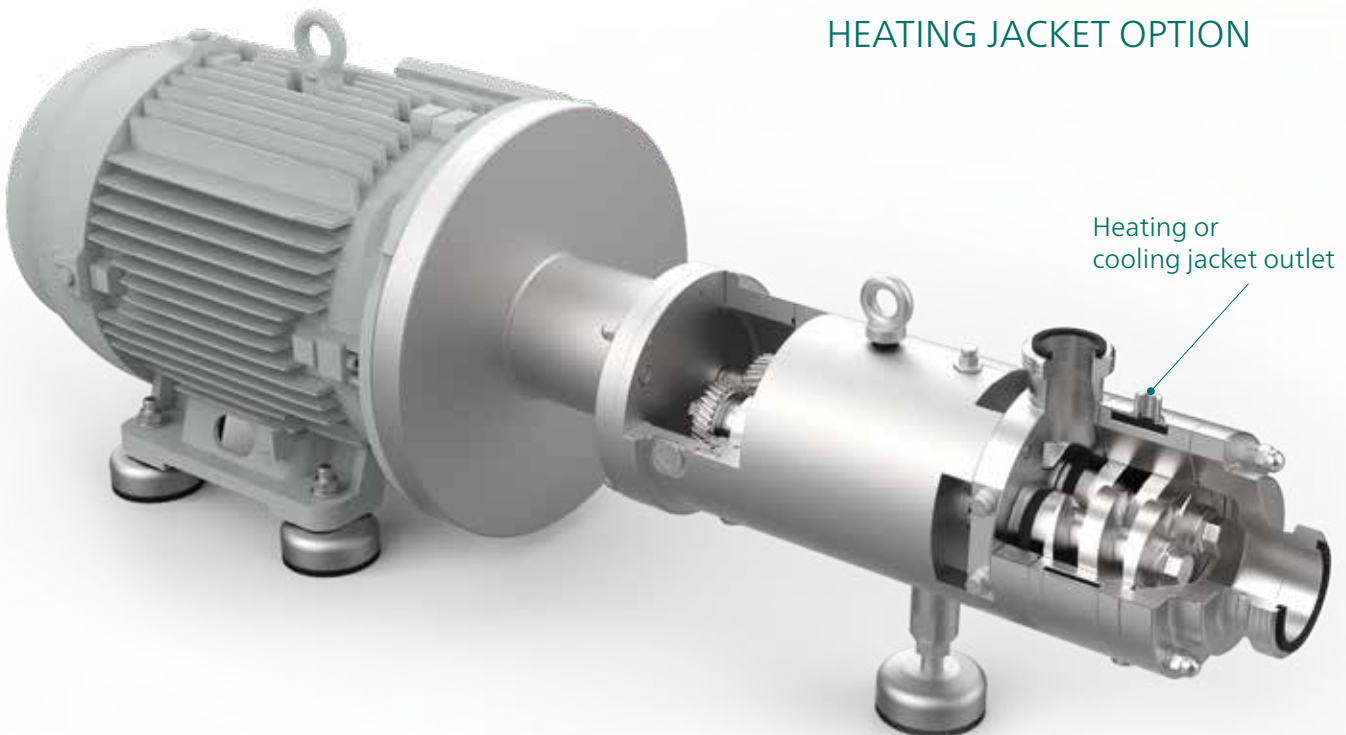
### Adding a jacket for heating or cooling allows temperature control of the fluid

The standard version of the NOTOS® 2NSH Sanitary Twin Screw Pump can be equipped with a heating or cooling jacket. The jacket is installed around the entire housing in which the screws are located. An external, independent circuit heats or cools the jacket. This pump is perfect for applications where the pumped fluid tends to harden or requires temperature control to guarantee its quality.

### General characteristics

- Heating or cooling jacket
- Heating/cooling medium: water 0 - 265 °F / 0 - 130 °C
- Pressure: 45 psi / 3 bar

### HEATING JACKET OPTION



# APPLICATION EXAMPLES OF 2NSH PUMP

## Juice and beverage industry

- Pump: NOTOS® 2NSH Size 4
- Media: Passion fruit concentrate
- Flow rate: 140 gpm / 30 m<sup>3</sup>/h
- Pressure: 116 psi / 8 bar
- Temperature: 40 °F / 5 °C
- Viscosity: 5,000 cP



## Personal care industry

- Pump: NOTOS® 2NSH Size 3
- Media: Toothpaste
- Flow rate: 44 gpm / 10 m<sup>3</sup>/h
- Pressure: 30 psi / 2 bar
- Temperature: 40 °F / 5 °C
- Viscosity: 30,000 cP



# NETZSCH BARREL EMPTYING SYSTEM

## with NOTOS® 2NSH pump

NETZSCH Barrel Emptying Units pump their way through your products, reaching the bottom of the barrel or container in the food, chemical, and pharmaceutical industry with the absolute minimum waste of product – resulting in less than 1 % residual product in the barrel. The heart of the barrel emptying unit is a NOTOS® 2NSH pump. The twin screws create a low pulsation flow to convey the product without damage. The products are only exposed to friction loss through the discharge piping. The NETZSCH single slide rail system raises and lowers the follower plate safely while providing a simple and easy structure to clean.

### Construction features

NETZSCH Barrel emptying NBE 200 with a NOTOS® 2NSH pump Unit is manufactured of stainless steel and is available with wheels for ease of mobility. Sanitary connections are available, such as TC, SMS, RJT, DIN and others.

### Your benefits

- Smooth and steady pumping
- Low pulsation
- Low shear rate
- Products that contain solids in suspension
- Flow independent of temperature or viscosity
- Almost complete emptying, residual product less than 1%

### NBE characteristics

- Continuous or intermittent emptying
- No pressure or flow interruption
- Low-pressure conditions in the entire system
- Suitable for conical barrels
- Adjustable discharge capacity
- Possible to meter directly from the barrel
- Flow in direct proportion to pump speed
- Equipped with VFD for easy adjustment
- Simple, single-rail design

### Applications

- Low to high viscosity
- Non-Newtonian and pastes
- Shear sensitive product
- Pump can handle product up to 500,000 cp



Barrel Emptying

The owner-managed NETZSCH Group is a leading global technology company specializing in mechanical, plant and instrument engineering.

Under the management of Erich NETZSCH B.V. & Co. Holding KG, the company consists of the three business units Analyzing & Testing, Grinding & Dispersing and Pumps & Systems, which are geared towards specific industries and products. A worldwide sales and service network has guaranteed customer proximity and competent service since 1873.

The NETZSCH Business Unit Pumps & Systems offers NEMO® progressing cavity pumps, TORNADO® rotary lobe pumps, NOTOS® multi screw pumps, PERIPRO® peristaltic pumps, macerators/grinders, dosing technology and equipment that are custom built for challenging solutions for different applications globally.

## Proven Excellence. ■

NETZSCH Pumps USA  
119 Pickering Way  
EXTON, PA 19341  
Tel.: 610 363-8010  
Fax: 610 363-0971  
npa@netsch.com

NETZSCH Pumps USA  
1511 FM 1960 Road  
Houston, TX 77073  
Tel.: 346 445-2400  
npa@netsch.com

NETZSCH Canada, Incorporated  
500 Welham Road  
Barrie, ON L4N 8Z7  
Tel.: 866 683-7867  
Fax: 705 797-8427  
ntc@netsch.com

NETZSCH Canada, Incorporated  
5050 76th Ave SE  
Calgary, AB T2C 2X2  
Tel.: 866 683-7867  
ntc@netsch.com



**NETZSCH®**

[pumps-systems.netsch.com](http://pumps-systems.netsch.com)