

# NETZSCH

Proven Excellence.



Products & Accessories

## TORNADO<sup>®</sup> Rotary Lobe Pump

Compact, robust and powerful

Pumps & Systems

# TORNADO® Rotary Lobe Pumps

HIGHEST STANDARDS OF QUALITY, TECHNOLOGY

The TORNADO® positive displacement, self priming, valveless pumps offer high performance and are selected and configured for the individual requirements of each application. They are designed for continuous and gentle conveying in proportion to speed of nearly all fluids.



## TORNADO® T1-F (MB, XB, XLB Models)

ATEX and CE certified



## TORNADO® T1-F (XXLB Models)

Major benefits of the TORNADO® rotary lobe pumps include minimal space requirements due to their compact design, high performance density and maximum operational reliability based on the unique spatial separation between pump chamber and gear compartment.

TORNADO® rotary lobe pumps are especially easy to service and maintain; all wetted parts are immediately accessible without having to dismantle pipelines or the drive.

### Wide capacity and pressure range

- Flow rates 4 up to 6,100 gpm / 1 up to 1,400 m<sup>3</sup>/h
- Pressures up to 174 psi / 12 bar (standard)

# AND EFFICIENCY

## Advantages of TORNADO® Technology

- Simple Full-Service-in Place® maintenance Reduce repair time by more than 40%. Lower maintenance costs
- Energy efficiency improved up to 25%
- Excellent wear resistance
- Valveless design
- Self-priming
- High efficiency with low space requirement
- High-level operating reliability and robust design
- Optimum material selection for every application
- Conveying of inhomogenous, gaseous, and abrasive product with solids and/or fibers
- Conveys solids, with max. particle size up to 3.7 in / 94 mm
- Conveying of shear-sensitive media and low- or high-viscosity product
- Virtually pulsation-free
- Variable speed and flow rate control by use of frequency inverter
- Conveying of both lubricating and non-lubricating product

## Functioning principle

The TORNADO® rotary lobe pump is a rotating positive displacement pump. The conveyed medium is conveyed from the suction side to the discharge side by conveying elements in a geometrically defined chamber between the lobe and the pump housing.

## Compact design & service friendliness

Thanks to its compact inline design, the pump is easy to integrate into your pipeline system. FSIP® maintenance allows quick and easy access to the pump chamber without dismantling the pump housing and piping, providing more space for inspection, cleaning and maintaining parts.

## Environmental & leakage protection

Optimally dimensioned clearances ensure maximum energy efficiency, which increases the cost-effectiveness of your system and protects the environment. The proven spatial separation of the pump chamber from the bearing housing (GSS= Gearbox Security System Technology) guarantees absolute protection against contamination.

## Economic efficiency & operational safety

The optimized conveying chamber design ensures a longer service life for the lobes, housing and, in particular, the shaft seals. Thanks to the modular design, wear parts can be replaced easily and cost-effectively. In combination with improved efficiency, the life cycle costs of the pump are significantly reduced. At the same time, maintenance times are reduced to a minimum.

## A broad application spectrum

The pumps are preferably used for fluids with the following properties:

- Contain solids and without solids
- Low to high viscosity
- Shear sensitive, i.e. thixotropic & dilatant, pseudoplastic, etc.
- Abrasive
- Lubricating and non-lubricating

# TORNADO<sup>®</sup> Rotary Lobe Pumps

## THE DESIGN



1

### Front cover

Lobes, wear plates and shaft seals can be easily serviced or replaced after opening the front cover, without the need to dismantle the pump casing and piping.

2

### Wear plates

Highly abrasion-resistant, chemically resistant, and replaceable wear plates are located on both ends of the housing as standard.

3

### Lobes

Depending on the application, two-, three- or four-wing, straight or helical lobes in various materials are used. Thus, we offer the optimum combination for every application.

4

### Shaft seal

Service-friendly shaft seals with low-wear, rotation-independent mechanical seals and a wide range of mechanical seal variants for any application.

5

### Housing

One-piece pump housing with flow-optimized profile. Optionally with replaceable, chemically resistant and extremely wear-resistant radial wear plates.

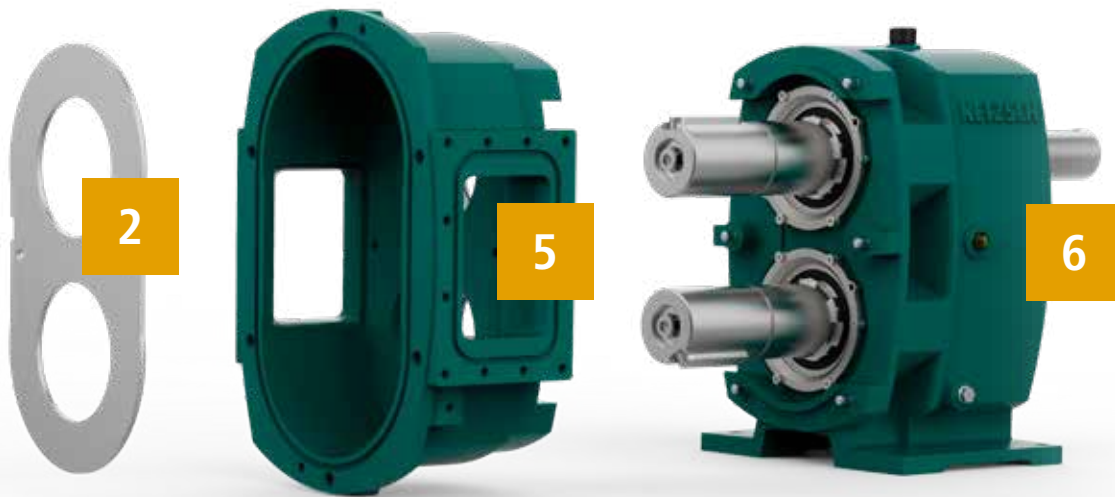
6

### Gearbox

Patented synchronous gearbox with separate seals for pump and gearbox keeps any product leakage away and prevents product from entering the gearbox as well as gearbox oil from entering the pump chamber.



See the  
3D model  
here



### Wear plates

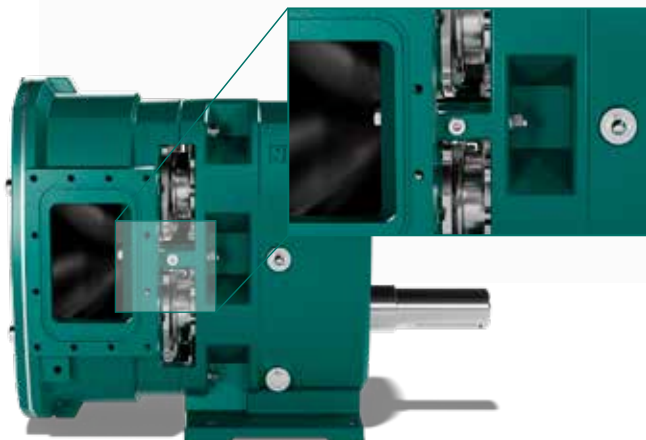
Optional radial wear plates extend the service life of the pumps, particularly when handling abrasive or aggressive media. In case of wear, only the plates need replacement, not the entire housing.



### Housing

Corrosion-resistant stainless steel housing for increased safety and durability in demanding processes.

## NETZSCH GSS TECHNOLOGY



The NETZSCH GSS technology (Gearbox Security System) guarantees you the highest level of operating safety due to the physical separation of pump chamber and gearbox.

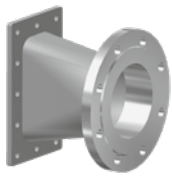
### Your benefits

- Maximum operational safety
- No ingress of media into the gearbox
- No ingress of gearbox oil into the pump chamber
- Lubrication/cooling of the seal through easily accessible flushing/sealing water connections
- Visual inspection of the mechanical seals is always guaranteed

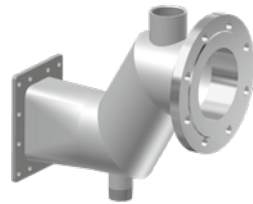
# TORNADO<sup>®</sup> Rotary Lobe Pumps

CUSTOMIZED FOR YOUR APPLICATION

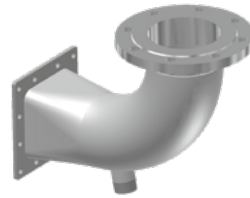
## Adapter Types



Straight adaptor



Gooseneck (liquid trap)



Elbow (90° upwards) adaptor

Pump inlet and outlet adaptors for connection to installation pipework are available in various designs.

### Connection options

Adaptors designed to suit specific installations available on request.

## The Rotor / Lobe Geometries and Materials

low-pulsation, smooth pumping of all product



2 lobe straight



3 lobe helical



4 lobe helical

The rotor geometry and material are selected for the characteristics of the pumped product. Geometries are available for products which are viscous, abrasive or contain solids. Materials tailored to the product characteristics increase the durability of the rotor/lobes and extend service life.

### Barrier pressure system

For reliable and safe operation of shaft seals, additional flushing, quench, or barrier pressure systems are often required to supply the seals with clean process fluid. Quench pots, constant lubrication devices, barrier pressure systems, or thermosiphon systems are available for double mechanical seals. All relevant API seal plans can be offered.



## Versatile combination – flexible installation – consistent pumping capacity



Installation is possible where space is limited by placing a motor above this compact pump for a small footprint



Power take off (PTO) shaft extension for drive from truck or tractor; twin shaft extensions are available where reversible operation is required.



Pump can be driven by a hydraulic motor. Especially suited for mobile applications, for example on tanker trucks. (flexible, weight reduction, extremely compact).



Standard in-line installation with a gearmotor.

Ideal for

### civil protection

#### TORNADO® Mobile

- Constant flow rate, up to 6,100 gpm / 1,400 m<sup>3</sup>/h
- Diesel or electricity driven
- Pressures up to 174 psi / 12 bar, higher pressures on request
- Insensitive to solids, with max. particle size up to 3.7 in / 94 mm
- Insensitive to abrasive media
- Self-priming
- Simple control



Flexible use at any time

### hand cart pumps



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. ■

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