

NETZSCH



Oilfield Products

The Heart of Your Process



NETZSCH

Elastomer Selection

The pumped liquid determines which elastomer to select. The elastomer chosen provides the longest wear possible for various applications. There are many different elastomers available. Those listed below are utilized most often in oilfield environments. Critical operating considerations are identified in the chart.

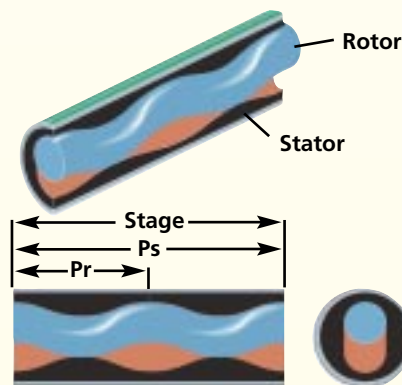
Type	Oil API Limit	Operating Degrees F	Percent Water	Percent CO ₂	Percent H ₂ S	Percent Free Gas	Abrasive Quality
NBR01	12	190	100	5	2	25	Good
NBR02	35	190	95	5	2	35	Very Good
HNBR01	20	300	100	10	6	80	Fair
HT	40	350	60	15	10	50	Poor

Rotor Selection

Just as the elastomer is selected depending on the pumping environment, the rotor is also selected to match certain fluid characteristics, including fluid conditions, corrosivity and solids content. NETZSCH uses state-of-the-art manufacturing and testing methods to assure that each rotor is produced to meet expectations and exact tolerance requirements. In addition, NETZSCH offers a variety of raw materials from the standard hard chrome plated heat-treated steel, to exotic alloys and ceramics to satisfy all application requirements.

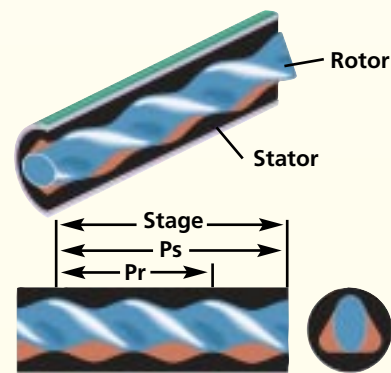
Geometric Design

NETZSCH NEMO® Progressing Cavity Pumps can be supplied in two different rotor geometries: the more common Single Lobe, and the 2/3 Multi-Lobe arrangement. The geometry design is based on the principle developed by Dr. Moineau and licensed to NETZSCH in the early 1950's. Each design has its own characteristics and benefits depending on the application.



Single Lobe

Pr = Rotor Pitch
 Ps = Stator Pitch
 Ps = 2 Pr



Multi-Lobe

Pr = Rotor Pitch
 Ps = Stator Pitch
 Ps = 1.5 Pr



Powerful Oilfield Pumps at Your Service

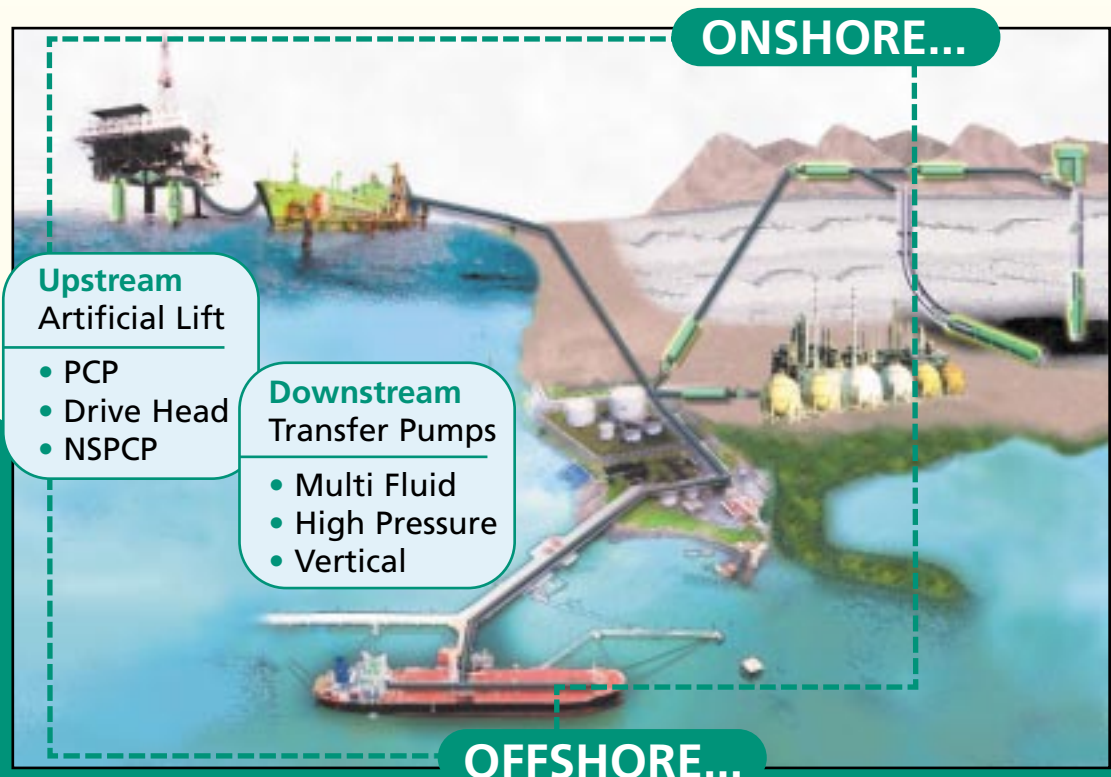
From the world leader in pumping technology, NETZSCH combines proven expertise, engineering excellence, and quality manufacturing to offer you complete artificial lift and surface transfer pump systems. Designed to handle a wide range of fluid properties and volumes, these reliable systems include NEMO® Progressing Cavity Pumps, drive head with motor and injection pumps. High efficiency, low capital costs and low maintenance costs make NETZSCH Oilfield Products the ideal choice for difficult upstream and downstream oilfield transportation applications.

When to Specify NEMO® Progressing Cavity Pumps

NETZSCH NEMO® Pumps are positive displacement pumps that range in size from the industry's smallest metering and dosing pumps to high volume pumps that lift over 4000 b/d from 5600 feet and can produce 40000 b/d at surface conditions.

Progressing cavity pumps are commonly used in oil wells with medium quality oil, water wells, coal bed methane wells, liquid injection and disposal, chemical injection, and three phase flow. NETZSCH NEMO® offers proven solutions to difficult, non-typical applications through its wide range of large capacity and high pressure progressing cavity pumps. NETZSCH NEMO® guarantees you:

- Lower horsepower requirements than alternative pump designs
- Only two wearing parts promising quick and easy repairs
- Decreased operating costs
- Valuable manufacturing downtime savings



Downhole Pumps Manufactured by NETZSCH

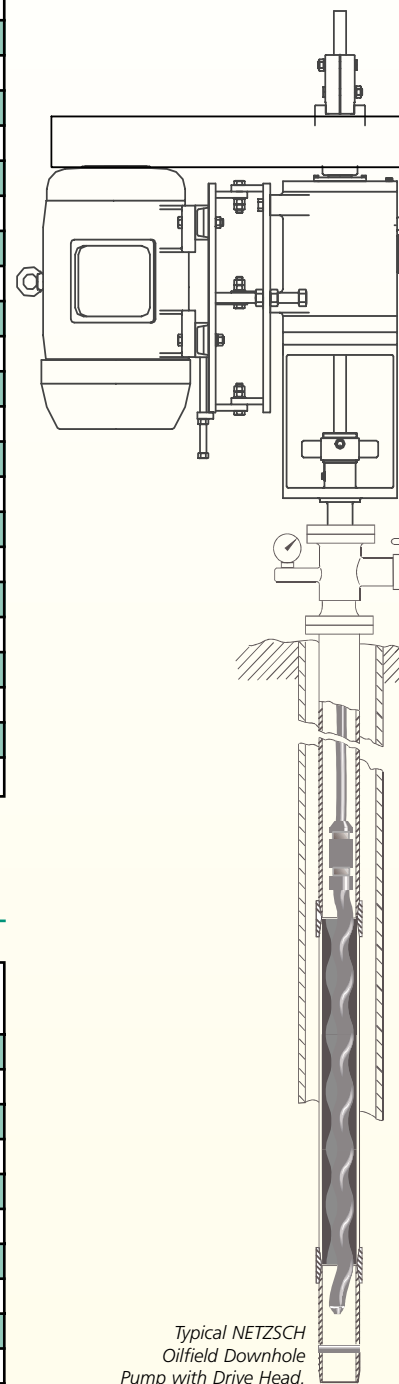
Model	Pumping Range in b/d	Maximum Lift in Feet	Minimum Casing	Minimum Tubing
NTZ166* ST 0.8	5-18	3350	4 1/2"	1.66"
NTZ190* ST 1.1	7-25	3350	4 1/2"	1.66"
NTZ238* ST 1.6	10-35	5600	4 1/2"	1.66"
NTZ238* ST 4.0	25-88	5600	4 1/2"	1.66"
NTZ238* ST 6.2	38-133	5600	4 1/2"	1.9"
NTZ278* ST 4.0	25-88	6700	4 1/2"	1.9"
NTZ278* ST 7.0	44-154	6700	4 1/2"	2.375"
NTZ278* ST 10.0	62-217	6700	4 1/2"	2.375"
NTZ278* ST 14.0	87-305	5600	4 1/2"	2.375"
NTZ278* DT 16.0	100-300	6700	4 1/2"	2.375"
NTZ278* DT 32.0	200-600	6700	4 1/2"	2.375"
NTZ350* ST 16.4	102-357	5600	4 1/2"	2.875"
NTZ350* ST 25.0	156-546	6700	4 1/2"	2.875"
NTZ350* DT 33.0	205-615	6700	4 1/2"	2.875"
NTZ400* ST 33.0	205-718	5600	5 1/2"	2.875"
NTZ400* DT 50.0	312-936	6700	5 1/2"	2.875"
NTZ400* DT 66.0	411-1233	6700	5 1/2"	2.875"
NTZ400* DT 83.0	517-1551	6700	5 1/2"	2.875"
NTZ400* DT 110.0	685-2055	5600	5 1/2"	2.875"
NTZ400* DT 142.0	885-2655	3350	5 1/2"	2.875"
NTZ450* DT 74.0	461-1383	6700	7"	3.5"
NTZ450* ST 78.0	486-1700	4200	7"	3.5"
NTZ500* DT 138.0	860-2580	6700	7"	4.0"
NTZ500* DT 226.0	1408-4224	5600	7"	4.0"

Note: Maximum pump speed for this data is 350 RPM for single lobe and 300 RPM for multi-lobe models. Speed may be altered for specific applications.

Drive Heads Manufactured by NETZSCH

Model	Maximum Horsepower	Maximum Load Lbs.	Brake System	Internal Gear Reduction
NDH-010-DH-05	10	5000	Mechanical	No
NDH-020-DH-20	20	20000	Mech. or Hyd.	No
NDH-030-DH-09	30	9000	Mechanical	No
NDH-030-RH-09	30	9000	Mechanical	1 : 4.375
NDH-060-DH-20	60	20000	Mech. or Hyd.	No
NDH-060-GH-20	60	20000	Mechanical	1 : 5.16
NDH-060-DH-33	60	33000	Mech. or Hyd.	No
NDH-060-GH-33	60	33000	Mechanical	1 : 5.16
NDH-075-DH-33	75	33000	Hydraulic	No
NDH-100-GH-33	100	33000	Hydraulic	1 : 5.16
NDH-150-DH-37	150	37000	Hydraulic	No

Note: All Drive Head models come standard with different size sheaves and belts to obtain design speed within the range of 100 to 500 RPM. Belt protection is standard. The configuration comes standard with a bottom flange connection: 3 1/8" x 2000 PSI. Available polished rod sizes include 1 1/2" and 1 3/4".



Typical NETZSCH Oilfield Downhole Pump with Drive Head.

Surface Transfer Pumps Manufactured by NETZSCH

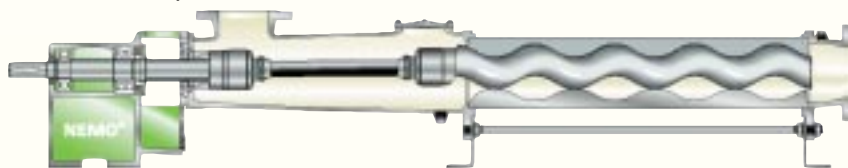
Horizontal Medium Pressure, Medium Volume

These surface transfer pumps utilize the same designs and choice of elastomers as found in the downhole product line. Units can be provided on skids with prime movers or independent pump units where existing accessories can be used. With rates to 4000 b/d, pressures to 3400 PSI, and efficiencies to 95%, a variety of fluids can be transferred, injected, and disposed with this pump design.



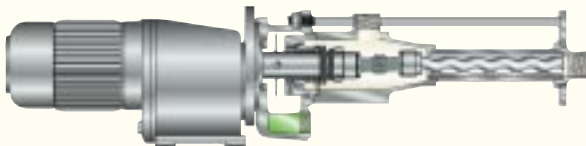
Horizontal Low Pressure, High Volume

These pumps are similar to the horizontal medium pressure pumps in design and options, however they are engineered for high volume, low pressure applications. With rates up to 40000 b/d, pressures up to 700 PSI, and high efficiencies, these pumps are a perfect choice for fluid transfer between two points.



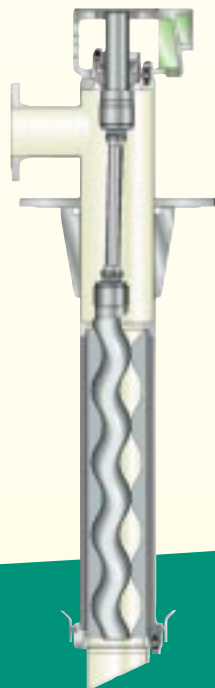
Mini Metering Pumps

NEMO® Mini Metering Pumps are utilized for metering both high and low viscosity materials and offer pulsation-free delivery. Without altering the overall pump dimensions, this low cost modular design offers four rotor/stator element sizes that can be interchanged with minimal downtime.



Vertical Canned Pumps

Commonly used in offshore and pipeline applications, vertical canned pumps provide up to 12000 b/d and up to 170 PSI for liquids of varying consistency and solids content.



Downhole Pumps Manufactured by NETZSCH

- **Standard** downhole sucker rod driven pumps in Single and Multi-Lobe designs
- **Slimhole** pumps for tubingless completions
- **Insert** pumps for retrieving with rods
- **NSPCP** pumps to be run with submersible motors. NETZSCH manufactures a 12:1 gear reducer that mounts between the ESP seal section and the progressing cavity pump

Global Presence

www.netzschusa.com

NETZSCH Incorporated is the North American subsidiary of the globally operating group of NETZSCH companies and is one of the world's leading manufacturers of progressing cavity pumps, wet and dry grinding and dispersion equipment, and filtration systems. The NETZSCH Group of companies has manufacturing and sales facilities in more than 60 countries.

With access to comprehensive global resources in engineering and research and development, NETZSCH brings our customers the optimal benefits of our continually advancing technology. NETZSCH subscribes to recognized worldwide standards in quality certification and process control. Our full capabilities in the functional areas of design, development, production, sales and service meet the highest demands established by the ISO 9001 International Quality Guidelines. Our customers rely on this commitment to deliver products of absolute reliability and exceptional quality.

Located in Exton, Pennsylvania, a western suburb of Philadelphia, our seven acre campus contains over 85,000 square feet of manufacturing, engineering, testing laboratories, marketing and corporate offices. Our employees assist and service the far reaching requirements of our customers throughout North America.

NETZSCH
Incorporated

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