

Flygt N-pump series

SELF-CLEANING PUMPS WITH SUSTAINED HIGH EFFICIENCY

50 Hz

FLYGT

a xylem brand

Sustained high efficiency is priceless

Flygt N-pumps take on the toughest applications and get the job done. Every component is designed and manufactured to deliver sustained high efficiency. Thanks to patented N-technology with its innovative self-cleaning impeller, Flygt N-pumps deliver the highest total efficiency. It lowers your energy bill and reduces unplanned maintenance costs. That adds up to total peace of mind – and big savings over the long term.



Our vast fluid handling knowledge and dedication to research and development leads to technological advances and continuous improvement.

That's why our Flygt N-pumps are at work in more than a hundred thousand installations worldwide. They have proven, by far, to be the best and most reliable choice for both dry and submersible installations.

Robust and reliable
Every Flygt N-pump is tested in the factory to ensure high performance and premium quality. Flygt products deliver outstanding, cost-effective performance that has been proven in applications such as:

- Wastewater
- Storm water
- Sludge
- Industrial effluent
- Raw water
- Cooling water



THE N-PUMP ADVANTAGE

- Patented technology
- Innovative design
- Sustained high efficiency
- Self-cleaning ability
- Modular design
- Reliable
- Fewer unplanned service calls



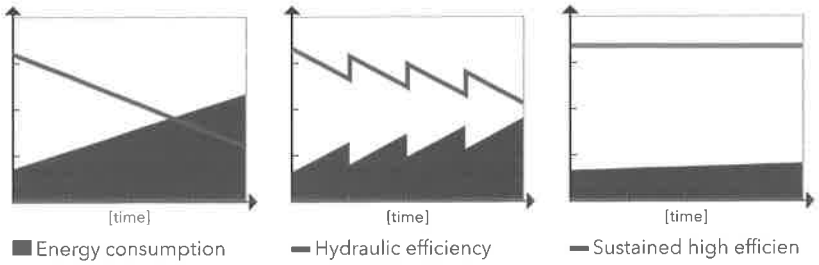
BROAD RANGE CAPACITY

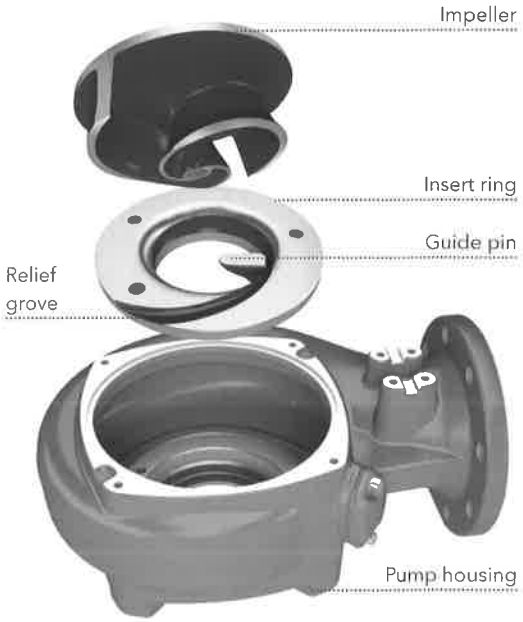
- Ratings from 1,3 kW to 680 kW
- Discharge up to 500 mm
- Flow up to 1,000 l/s
- Heads up to 100 m
- Submersible and dry installations
- Every Flygt pump is performance tested in the factory
- Can handle dry solids up to 8%

Self-cleaning N-pump saves money

Sustained high efficiency

When solid object such as stringy fibrous material and modern trash, enter the inlet of a conventional pump, they tend to get caught on the leading edges of the impeller vanes. This build-up reduces the impeller's efficiency, resulting in increased power consumption (Fig. A). This increased rate of power consumption generates an increase in energy charges.





As solids continue to build-up inside the impeller, motor thermal protection can trip causing the pump to stop. This leads to costly unplanned service calls. If a conventional wastewater pump runs intermittently, the solids build-up will be removed by backflushing when the pump is shut off at the end of the operating cycle. When next cycle begins, efficiency returns to its initial value since the impeller is free from solid objects (Fig B).

The high efficiency of the Flygt N-pump is sustained over time due to its self-cleaning ability, keeping energy costs to a minimum (Fig. C).

All Flygt N-pumps have the same self-cleaning performance regardless of duty point.

THE SELF-CLEANING CONCEPT

Stage 1. Most solid objects entering the pump will pass through the impeller between the impeller vanes. If an object gets caught on the leading edge of one of the vanes, it will slide along the backswept shape towards the perimeter of the inlet.



Stage 2. The solid object will slide along the tip of the impeller vane inside the relief groove. The guide pin in the insert ring will push all types of solids away from the center of the impeller, along the leading edge and out through the relief groove.



Broad capacity range to suit your application

Flexible and modular design
Flygt N-technology enables you to tailor the hydraulics to meet the requirements of virtually any application. Choose the hardened cast iron version for typical wastewater applications and the chopper ring version for cutting long fibers or solids. The Hard-Iron™ version should be used in abrasive applications and waters that cold cause erosion corrosion due to high oxygen content.

Whatever you choose, you never sacrifice pump efficiency - and you can easily switch the module if the operating conditions change.

Cast iron



Cast iron impeller with hardened edges and insert ring for typical pumping applications.

Hard-Iron™ (60 HRC)

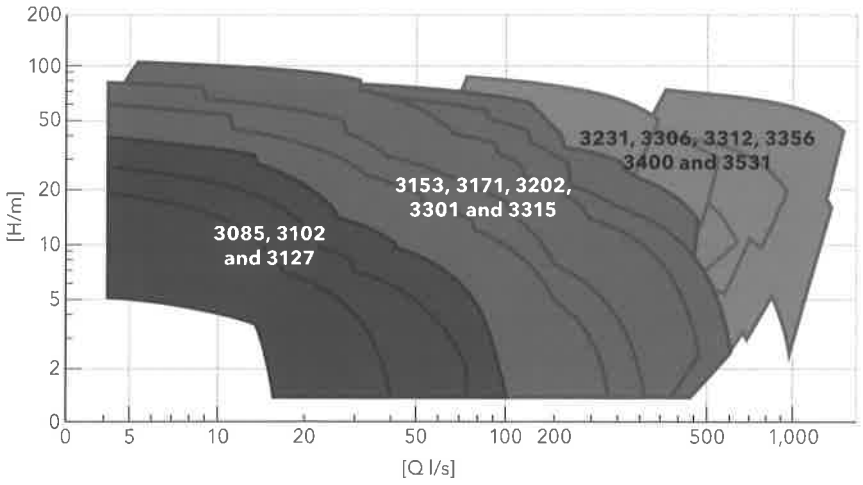


Extra durable option for abrasive and erosion corrosion applications.

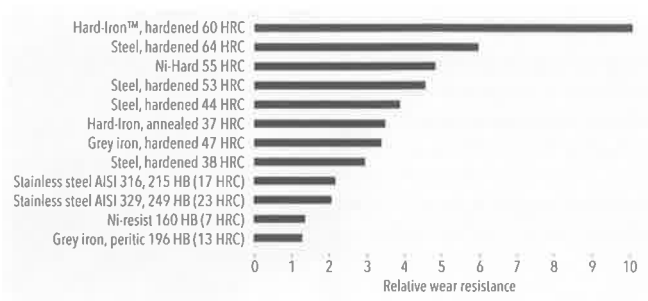
Chopper ring for cutting long fibers or solids.

Top performance with a broad capacity range

- Large capacity pumps
- Medium capacity pumps
- Low capacity pumps



Composite curves for comparison purposes only. Consult engineering data for exact flow and head capabilities.



HARD-IRON™ (60 HRC) FOR THE TOUGHEST WASTEWATER CHALLENGES

Accelerated wear tests prove that Hard-Iron™ hydraulic components keep on working efficiently with minimal wear after pumping water with a very high concentration of coarse sand (2,400 tons).

Flygt N-pumps with Hard-Iron™ components continue to deliver sustained high efficiency without clogging or erosion corrosion, prolonging lifetime by 200 percent compared to standard hardened cast iron hydraulics.

Designed and engineered for longer life

Xylem specially designs and manufactures Flygt N-pump components, such as the motor, seals and shaft, to optimize operation and prolong pump service life.

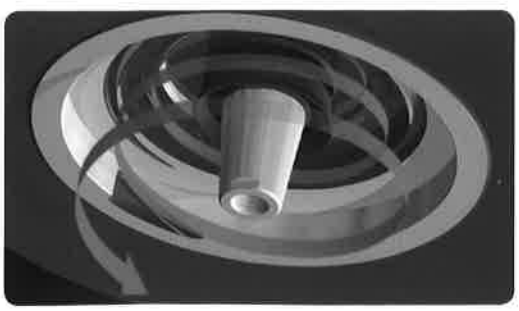
Motor
The C lass H squirrel-cage induction motor delivers outstanding performance and superior heat transfer in submersible and dry installations. Heat losses are concentrated around the shrink-fitted stator, which is cooled by means of the surrounding water. The motor has a NEMA C lass B maximum operating temperature rise of 80°C (176°F) to ensure long service life. Prepared for variable speed operation, all motors are capable of fully utilizing the available power.

For an even higher overall efficiency, premium efficiency motors IE3 are available.

Long-life seals
Durable tungsten carbide seals offer exceptional mechanical strength as well as superior sliding properties even when running dry. These low-friction seals withstand thousands of hours of high-pressure operation under extreme conditions without cracking, seizing up or showing signs of unacceptable wear.

Low shaft deflection
To minimize vibration, promote quiet operation and prolong seal and bearing life, all Flygt N-pumps feature a short shaft overhang to reduce shaft deflection.





SPIN-OUT™ SEAL PROTECTION FOR PUMPS WITH CAVITIES IN THE SEAL CHAMBER

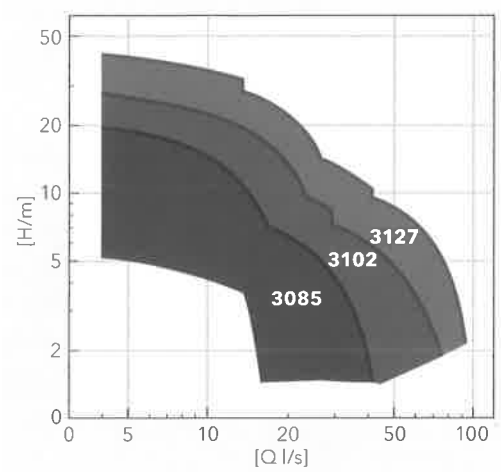
The patented Spin-out™ design expels abrasive particles from the seal chamber, providing protection against wear of the outer seal. As an integral part of the seal chamber, Spin-out™ is as simple as it is effective.

Low capacity pumps



This series of Flygt N-pumps includes three models that handle capacities up to 100 l/s. Like all Flygt N-pumps, these contribute to reducing the total life cycle costs of your installation.

Performance, 50 Hz



Power ratings and size

Model	3085	3102	3127
Rating, kW	1.3–2.4	3.1–4.2	4.7–7.4
Discharge, mm (in)	80 (3")	80 (3")	80 (3")
		100 (4")	100 (4")
		150 (6")	150 (6")

Methods of installation

P



For semi-permanent wet well installations. The pump is installed with twin guide bars on a discharge connection.

S



A semi-permanent free standing installation. Transportable version with pipe or hose connection.

T



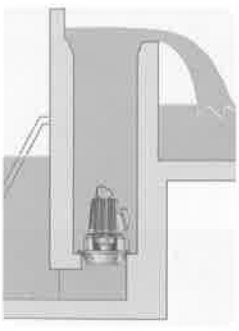
A vertically-mounted, permanent dry well or in-line installation with flange connections for suction and discharge pipework.

Z



A horizontally-mounted, permanent dry well or in-line installation with flange connections for suction and discharge pipework.

L



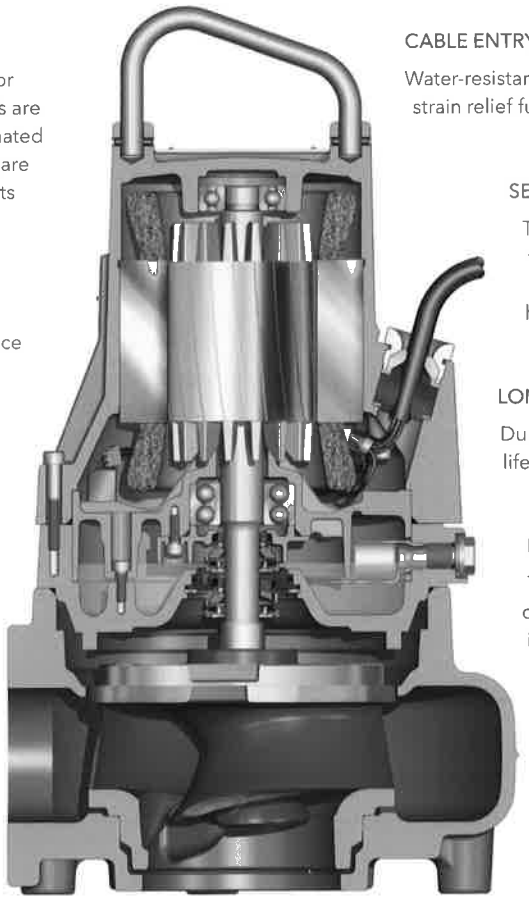
A semi-permanent installation of a pump within a vertical steel or concrete column.

BETTER HEAT TRANSFER

Our specially designed and manufactured motor provides enhanced cooling because heat losses are concentrated around the stator. Trickle impregnated in resin (Class H insulation), the stator windings are rated at 180°C (355°F) and enable up to 30 starts per hour.

COMPLIANCE

Each pump is tested and approved in accordance with national and international standards, including 60034-1 and CSA. Pumps are available in explosion-proof versions for use in hazardous environments, and are approved by the Factory Mutual, European Standard and IEC.



CABLE ENTRY

Water-resistant cable entry provides both sealing and strain relief functions to ensure a safe installation.

SENSORS

Thermal sensors embedded in the stator windings prevent overheating. Optional leakage sensors in the stator and oil housings are also available.

LONG-LIFE BEARINGS

Durable bearings provide a minimum service life of 50,000 hours.

ENDURING SEALS

The Griploc™ system consists of two sets of mechanical shaft seals that operate independently to provide double security against leakage.

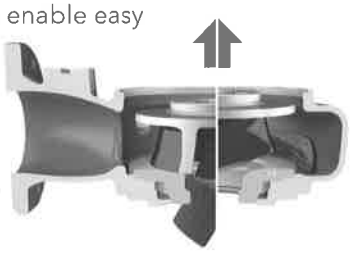


Griploc™ seal

With a robust design, Griploc™ seals offer consistent performance and trouble-free operation in challenging environments. Solid seal rings minimize leakage and the patented griplock spring, which is tightened around the shaft, provides axial fixation and torque transmission. In addition, the Griploc™ design facilitates quick and correct assembly and disassembly.

Adaptive N-impeller

The Flygt N3085 - N3127 feature an adaptive self-cleaning N-impeller that can move axially to enable easy passage of large solids through the pump.

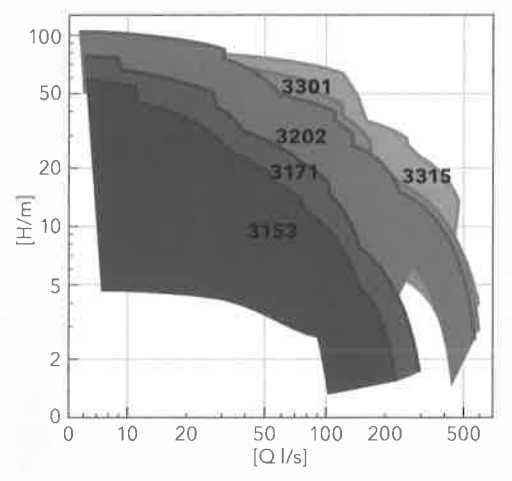


Medium capacity pumps



For demanding pumping duties, five models handle fluid transport for capacities up to 500 l/s. Highly efficient, these heavy-duty models provide clog- free performance in order to achieve the best overall life cycle cost.

Performance, 50 Hz

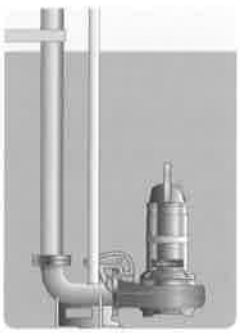


Power ratings and size

Model	3153	3171	3202	3301	3315
Rating, kW	7.5-15	15-22	22-47	37-70	55-105
Discharge, mm (in)	80 (3")	100 (4")	100 (4")	150 (6")	150 (6")
	100 (4")	150 (6")	150 (6")	250 (10")	250 (10")
	150 (6")	250 (10")	200 (8")	300 (12")	300 (12")
	200 (8")		300 (12")	350 (14")	350 (14")
	250 (10")				

Methods of installation

P



For semi-permanent wet well installations. The pump is installed with twin guide bars on a discharge connection.

S



A semi-permanent free standing installation. Transportable version with pipe or hose connection.

T



A vertically-mounted, permanent dry well or in-line installation with flange connections for suction and discharge pipework.

Z



A horizontally-mounted, permanent dry well or in-line installation with flange connections for suction and discharge pipework.

BETTER HEAT TRANSFER

Our specially designed and manufactured motor provides enhanced cooling because heat losses are concentrated around the stator. Trickle impregnated in resin (Class H insulation), the stator windings are rated at 180°C (355°F) and enable up to 30 starts per hour.

EFFICIENT COOLING

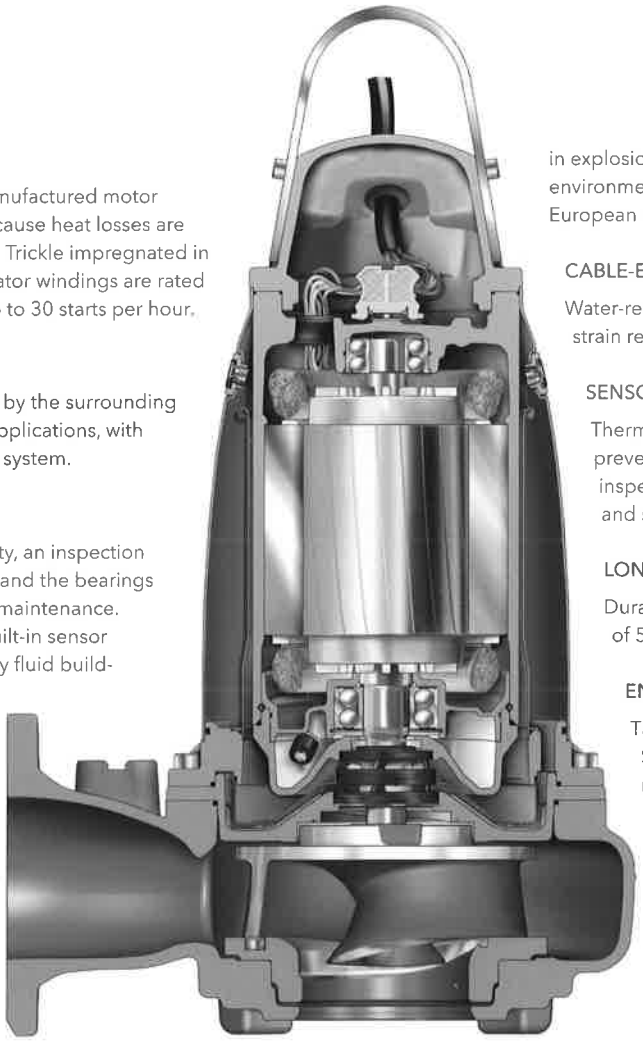
These pumps are cooled either by the surrounding liquid or, in more demanding applications, with an internal closed-loop cooling system.

INSPECTION CHAMBER

To increase operational reliability, an inspection chamber between the seal unit and the bearings enables rapid spot checks and maintenance. In the case of a seal failure, a built-in sensor provides an early warning of any fluid build-up, thus reducing the risk of expensive repair work.

COMPLIANCE

Each pump is tested and approved in accordance with national and international standards, including 60034-1 and CSA. Pumps are available in explosion-proof versions for use in hazardous environments, and are approved by the Factory Mutual, European Standard and IEC.



CABLE-ENTRY

Water-resistant cable entry provides both sealing and strain relief functions to ensure a safe installation.

SENSORS

Thermal sensors embedded in the stator windings prevent overheating, and a leakage sensor in the inspection chamber minimizes the risk for bearing and stator failure.

LONG-LIFE BEARINGS

Durable bearings provide a minimum service life of 50,000 hours.

ENDURING SEALS

The Flygt Plug-in™ seal with the Active Seal™ system offers increased sealing reliability and zero leakage into the motor, thereby reducing the risk of bearing and stator failure.

Flygt Plug-in™ seal with Active Seal™ system
The Flygt Plug-in™ seal is a seal unit that eliminates the risks associated with incorrect installation and careless handling. It comprises the Active Seal™ system in one easy-to-handle unit.

The Active Seal™ system is a patented zero-leakage double-seal system that actively prevents liquid from entering the motor cavity, thereby reducing the risk for bearing and stator failure. It comprises a unique inner seal that acts as a micro-pump and an outer seal that prevents leakage of pumped media into the buffer chamber.



Inner seal with laser-cut spiral grooves.



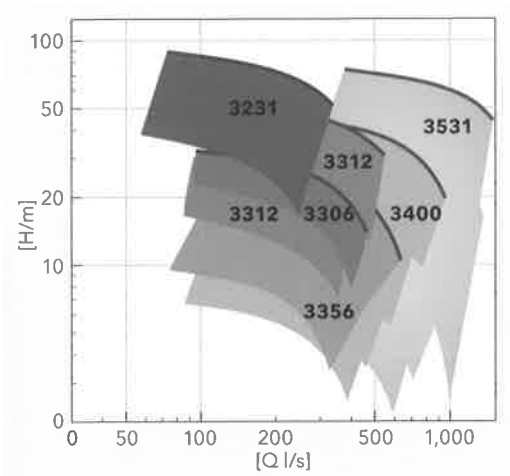
Laser-cut grooves on the inner seal create a hydrodynamic pumping effect that prevents any leakage from entering the motor. This translates into enhanced sealing reliability, reduced downtime and fewer unscheduled maintenance checks. In addition, regular service inspections can be prolonged in many applications.

Large capacity pumps



When higher capacity is required, the Flygt N-pump series has five pumps to do the job. These models deliver unprecedented pumping power – reliably and efficiently.

Performance, 50 Hz

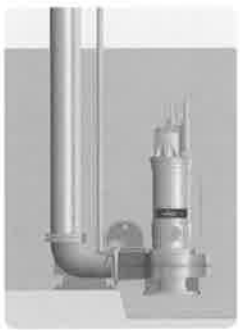


Power ratings and size

Model	3231	3306	3312	3356	3400	3531
Rating, kW	70-215	58-100	55-250	45-140	40-310	40-680
Discharge, mm (in)	200 (8")	300 (12")	300 (12")	350 (14")	400 (16")	500 (20")

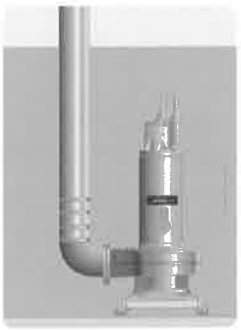
Methods of installation

P



For semi-permanent wet well installations. The pump is installed with twin guide bars on a discharge connection.

S



A semi-permanent free standing installation. Transportable version with pipe or hose connection.

T



A vertically-mounted, permanent dry well or in-line installation with flange connections for suction and discharge pipework.

Z



A horizontally-mounted, permanent dry well or in-line installation with flange connections for suction and discharge pipework.

BETTER HEAT TRANSFER

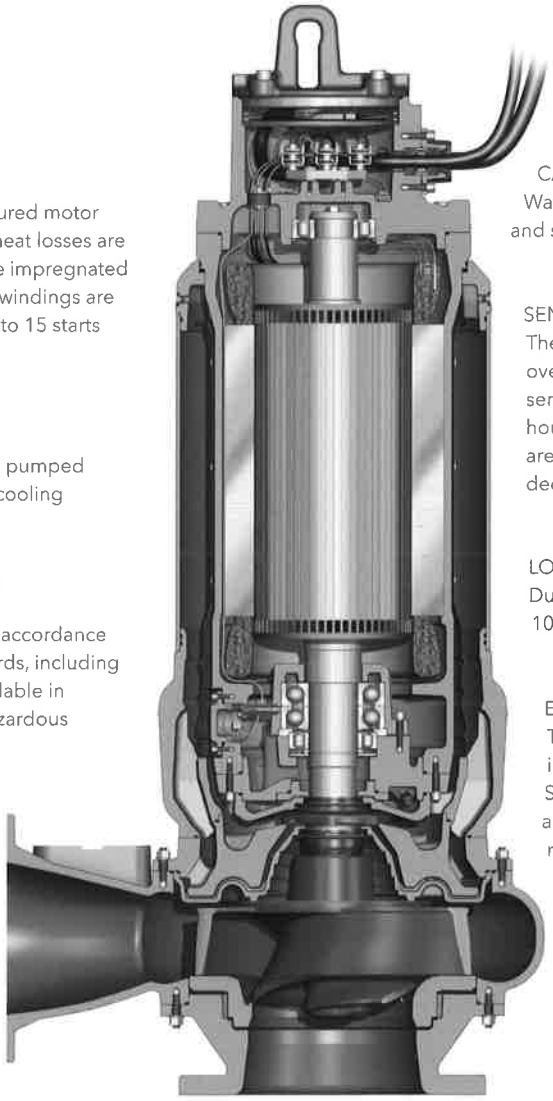
Our specially designed and manufactured motor provides enhanced cooling because heat losses are concentrated around the stator. Trickle impregnated in resin (Class H insulation), the stator windings are rated at 180°C (355°F) and enable up to 15 starts per hour.

EFFICIENT COOLING

These pumps are cooled either by the pumped liquid or with an internal closed-loop cooling system.

COMPLIANCE

Each pump is tested and approved in accordance with national and international standards, including IEC 60034-1 and CSA. Pumps are available in explosion-proof versions for use in hazardous environments, and are approved by the Factory Mutual, European Standard and IEC.



CABLE ENTRY

Water-resistant cable entry provides both sealing and strain relief functions for a safe installation.

SENSORS

Thermal sensors in the stator windings prevent overheating, and an analogue temperature sensor monitors the lower bearing. The stator housing/leakage chamber and the junction box are equipped with leakage sensors. The sensors decrease the risk of bearing and stator failure.

LONG-LIFE BEARINGS

Durable bearings provide a minimum service life of 100,000 hours.

ENDURING SEALS

Two sets of mechanical shaft seals work independently for double security. The Active Seal™ system offers increased sealing reliability and zero leakage into the motor, thereby reducing the risk of bearing and stator failure.

Zero leakage into the motor cavity

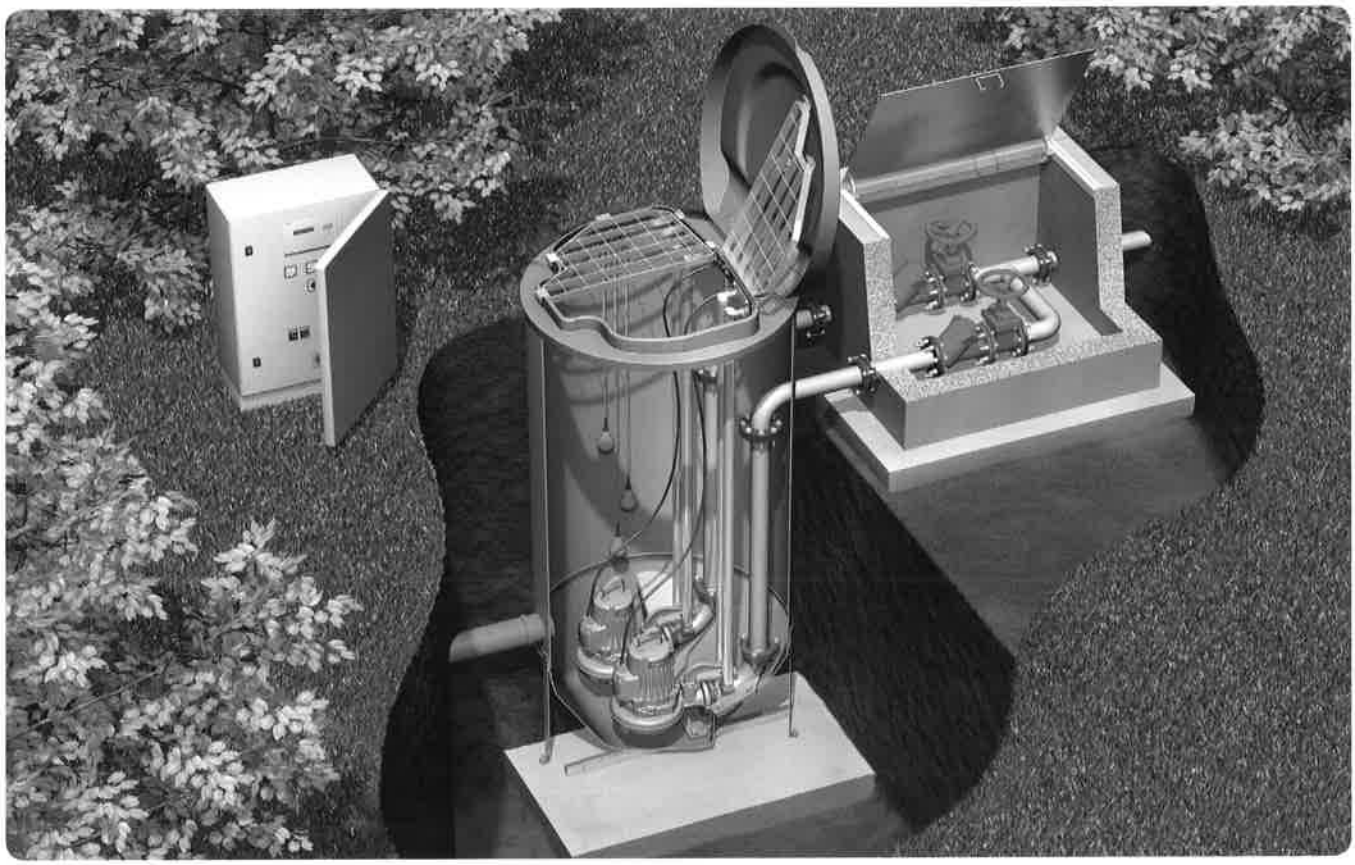
The Active Seal™ system is a patented zero-leakage double-seal system that actively prevents liquid from entering the motor cavity, thereby reducing the risk for bearing and stator failure. It comprises a unique inner seal that acts as a micro-pump and an outer seal that prevents leakage of pumped media into the buffer chamber.



Laser-cut grooves on the inner seal create a hydrodynamic pumping effect that prevents any leakage to enter the motor.

This translates into enhanced sealing reliability, reduced downtime and fewer unscheduled maintenance checks. In addition, regular service inspections can be prolonged in many applications.

Complete solutions for your needs



Ready-to-install pre-engineered, prefabricated pumping solutions
Flygt offers several packaged solutions combining our premium N- pumps with dedicated monitoring and control options and pre-fabricated pump stations designed for your needs. The prefabricated pump stations are available in a range of designs and sizes, all supplied complete with the necessary materials and equipment to allow ease and speed of installation and commissioning.

Our Packaged solutions have a self cleaning design and are tested to work perfectly together to give you the ultimate performance within wastewater pumping.



Flygt SmartRun™



Flygt Multismart™

MONITORING AND CONTROL

Our state-of-the-art solutions are designed to ensure pumps work at optimum efficiency, to provide key data, to increase reliability and to prevent pump breakdown.

Our monitoring and control systems are designed for use in a variety of pumping applications. It is the specific conditions at each pump station which help you decide the best monitoring and control solution for your needs. Whether it's wastewater, storm water, effluent, RAS, WAS, lightly contaminated water or clean water it all demands a different solution. Naturally each system is designed to work well on its own. However our pumps and monitoring & control systems are optimized to work even better together.



All Flygt monitoring and control equipment integrates easily into SCADA control systems for remote monitoring and control. While Flygt AquaView 7 puts you in Total Control, Your Way.

Engineered pumping solutions

Flygt's standard pump station designs are based on our long history within wastewater pumping. Our engineers work closely with you, from design and system analysis to selection of pumps, installation equipment and monitoring & control solutions. Whether we recommend a proved Flygt standard design or develop a custom solution for you, we can offer you reliable and cost-effective pumping solutions meeting your specific requirements.



FLYGT N-PUMPS: SUBMERSIBLE AND DRY INSTALLATIONS

Flygt N-pumps are an excellent choice for handling solids in dry-pit installations. Originally designed for submersible conditions, our pumps eliminate the risk of damage to the motor due to station flooding. Submersible or dry-installed Flygt N-pumps deliver superior clog-free operation with minimal maintenance and substantial energy savings.

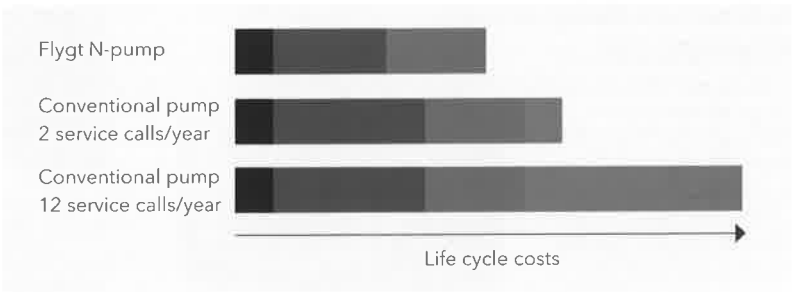
The power to adapt

Options table

Customize your Flygt N-pump with optional equipment.

Flygt N-pump model	3085	3102	3127	3153	3171	3202	3301	3315	3231	3306	3312	3356	3400	3531
Option/Product														
Motor														
Premium efficiency (IE3)	◖	○	○	○	○	○	○		◖	◖	◖	◖	◖	◖
Hydraulic														
Guidepin	●	●	●	◐	◐	◖								
Hard-Iron™	○	○	○	○	○	○	○	○	○		○	○		○
Chopper			○	◖	◖	◖								
Adaptive N	●	●	●											
Seal system														
Griploc™ seal	●	●	●											
Plug-in™ seal				●	●	●	●	●						
Active Seal™				●	●	●	●	●	●	●	●	●	●	●
Spin-out™	●	●	●	●	●	●	●	●	◖	◖	◖	◖	◖	◖
Seal flush									○	○	○	○	○	○
Cooling system														
1. w/o cooling jacket	●	●	●	●	●	●	●	●	●	●	●	●	●	●
2. Closed Loop Cooling				○	○	○	○	○	◖	◖	◖	◖	◖	◖
3. Pump media									○	○	○	○	○	○
4. External				○	○	○	○	○	○	○	○	○	○	○
Installation														
P	●	●	●	●	●	●	●	●	●	●	●	●	●	●
S	●	●	●	●	●	●	◖	◖	●	●	●			
T	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Z	●	●	●	●	●	●	●	●	●	●	●	●	●	●
L		●	●											
Accessories														
Flush valve	○	○	○	◖	◖	◖	◖	◖						
Pump monitor *Prepared for*														
- Mini CAS	●	●	●	●	●	●	●	●						
- MAS					○	○	○	○	●	●	●	●	●	●
Pump control														
- SmartRun™	○	○	○	○	○	○	○							
- MultiSmart				○	○	○	○	○	○	○	○	○	○	○
- MyConnect	○	○	○	○	○									
- FGC	○	○												

● = Standard
○ = Optional
◐ = Standard but also optional depending on model
◖ = Standard or not available depending on model
◖ = Optional or not available depending on model



SELF CLEANING SAVES MONEY

Schematic overview of calculations made on a 30kW Flygt N-pump.

Purchase cost
Energy cost
Service cost
Unplanned maintenance cost

Supporting your business, every step of the way

Extensive engineering know-how
Xylem has extensive knowledge of fluid dynamics and vast practical experience in designing, operating and maintaining efficient wastewater transport systems. We provide a broad range of engineering services, including:

- System analysis and calculations
- Sump design
- Water hammer calculations
- Pump start analysis
- Transient analysis
- Computational Fluid Dynamics (CFD)
- Scale model testing

In short, we can assist you with everything you need for optimal performance and economical, energy-efficient operation.

Empower your system
With Flygt monitoring and control products, you can control and optimize the performance of every component of your system. This helps reduce stress on pumps, valves and mains, enable reliable, efficient operation and prolong service lifetime.



Support for your Flygt pumps
Our global network of local service centers and service partners, provide integrated services to support safe, efficient and reliable operation. To ensure trouble-free operation and minimal downtime, count on us for quick, professional response and quality maintenance services, using genuine Flygt spare parts.



EXTENSIVE MONITORING AND CONTROL

We supply hardware and software for complete process systems - from individual pump drives, starters, sensors and controllers to system software and scalable scada systems.



GENUINE FLYGT SPARE PARTS AND WARRANTY

When downtime isn't an option, rely on our global service network to deliver genuine Flygt spare parts to you - quickly and efficiently. All Flygt spare parts are backed by a solid 15-year availability guarantee. Large capacity pumps even 20-year.

What can Xylem do for you?

Xylem |'zīləm|

1) The tissue in plants that brings water upward from the roots;
2) a leading global water technology company.

We're a global team unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation.

For more information on how Xylem can help you, go to xyleminc.com.

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Tel: +65.6507.6999

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