



February 14, 2019

Todd Hills LLC
Attn: Loren Hartelt
1840 Commercial Drive
Walford, IA 52351

RE: Todd Hills First Addition
Todd Hills LLC
DNR Project No. S2019-0191A

Subject: Variance Request from 567 IAC 64 and Design Standards Section 13.4.3

Dear Mr. Hartelt:

After careful and thorough consideration, the Department has approved your February 1, 2019 request for a variance from Iowa Administrative Code Subrule 567-64.2(9) and Chapter 13.4.3 of the Iowa Wastewater Facilities Design Standards, which requires that lift station pumps, other than grinder pumps, have the capability to pass a 3-inch spherical solid.

Based on the documentation presented by your Engineer, it is the determination of this Department that satisfactory justification has been presented to warrant the granting of a variance for the installation of a lift station pump that has the capacity to pass a 1.54-inch spherical solid installed with a trash basket with 1.5-inch diameter holes. The requested variance is deemed to be reasonable and necessary pursuant to the Iowa Code section 455B.181.

The facts presented for the project present unique circumstances and the variance is therefore justified to provide the narrowest exception possible to the provisions of the rule in accordance with Rule 561 IAC 10.5. Since the project planning and construction may last more than one year, the variance is considered to be of a permanent nature. The validity of this variance approval shall last for a period of one year from the date of the construction permit in accordance with Rule 561 IAC 10.5.

This decision is based on our review of justification presented to support the request. Our concurrence with the request is based on the Department's finding that the resulting project will provide substantially equivalent effectiveness as would be provided by technical compliance with the design standard on this issue.

Please feel free to contact Justin Pettit at 515-725-8433 or email justin.pettit@dnr.iowa.gov if you have any questions.

Sincerely,

Jon Tack
Water Quality Bureau Chief

c: MSA Professional Services (Dubuque), Attn: Jake Deaver, PE
DNR FO # 1
DNR Sewage File 6-57-15-0-01

VARIANCE REQUEST

Iowa Department of Natural Resources

Approved *JMP*
02/14/2019

- | | | | |
|-----------------------|--------------------------------|----------------------|--|
| 1. Date: | 02/07/2019 | 14a. Decision: | |
| 2. Reviewer/Engr.: | Justin Pettit | Date: | |
| 3. Date Received: | 02/01/2019 | 14b. Expiration Date | |
| 4. Facility Name: | City of Hiawatha | (if any): | |
| 5. Facility Number: | 6-57-15-0-01 | | |
| 6. County Number: | 57 (Linn) | 15. Appealed: | |
| 7. Program Area: | CP (Wastewater) | Date: | |
| 8. Facility Type: | C01 (Collection/Transport) | | |
| 9. Subject Area: | 344 (Pump Clogging Protection) | | |
| 10. Rule Reference: | 567-64.2(9)a | | |
| 11. Design Std. Ref.: | 13.4.3 | | |
| 12. Consulting Engr.: | MSA Professional Services | | |
| 13. Variance Rule: | 567-64.2(9)c | | |

16. Description of Variance Request:

Todd Hills LLC is requesting a variance from the Iowa Wastewater Facilities Design Standards Chapter 13 - Wastewater Pumping Stations and Force Mains - 13.4.3 (Pump openings) for installing a submersible lift station pump that does not have the capability to pass a 3-inch spherical solid.

17. Applicant's/Consulting Engineer's Justification:

The openings in the proposed trash basket are 1.5 inches. The proposed pump will pass solids of 1.54 inches. The trash baskets will remain in place as long as the pumps are operating. Flygt N technology was designed and produced to handle raw sewage including, but not limited to rags, wet wipes, and nuisance materials that find their way into collection systems. Flygt pumps have been installed in numerous sites rarely having an issue with plugging. The size of pump used for this project is not available from a suitable manufacturer that could pass a 3-inch solid.

18. Department's Justification:

Recommend approval of variance.

The proposed pump is able to pass a 1.54 inch solid (confirmed with product data from Flygt). As noted in previous variance approvals provided by DNR Staff, a trash basket with an opening of 1.5 inches is expected to provide an approvable level of protection for the proposed pump. This is expected to provide equivalent effectiveness to an installation meeting the requirements of 13.4.3

19. Precedents Used:

Winterset - 2/21/18; Slater - 2/6/17; Granger - 8/2/16

20. Staff Reviewer: *[Signature]* **LWB** Date: 02/11/2019
2/11/19

21. Supervisor: *Satya Chennupati* Date: 2/11/2019

22. Authorized by: *[Signature]* Date: 2/11/2019

Explanation of item numbers:

- #1 – Date starting process
- #3 – Date stamped received by Iowa DNR
- #4 – Must always be filled in, even in variance for Iowa DNR
- #11 – If doesn't apply, note "n/a"
- #13 – Rule allowing for an exception
- #14a – "Approved" or "Denied "
- #14b – If variance is permanent, note "permanent" per legal.
- #15 – Date of Decision (#14)
- #16 – Summarize (4-5 short sentences) **with** attached documentation
- #17 – Summarize (4-5 short sentences) **with** attached documentation
- #18 – Summarize (4-5 short sentences) **with** attached documentation
- #19 – Summarize (4-5 short sentences) **with** attached documentation
- #21 – Supervisor
- #22 – Bureau Chief (sometimes same as supervisor)

Note:

#16, #17, #18, & #19: the Reviewer/Engineer summary is important as the technical and knowledgeable entity for the subject matter. Including the attachments is helpful but the Customer Service Team is uncomfortable attempting to summarize the attachments on your behalf.

VARIANCE REQUEST NOTIFICATION
Iowa Department of Natural Resources

All Fields are Required

- | | |
|--------------------------|--------------------|
| 1. Reviewer/Engr.: _____ | 7. Decision: _____ |
| 2. Date Received: _____ | |
| 3. Facility Name: _____ | |
| 4. Program Area: _____ | |
| 5. Subject Area: _____ | |
| 6. Rule Reference: _____ | |

8. Description of Variance Request: **Summarize (250 characters)**

9. Department's Justification: **Summarize (250 characters)**

10. Type name: _____

Supervisor/Bureau Chief/DA

Date

*The original, approvals, letters, code and other supporting documentation is to be maintained by the program in accordance with the [Records Retention Schedule](#).

To Submit: Attach this form to an email and send it to Webmaster@dnr.iowa.gov with the subject line: Variance Submittal (542-0541)

January 25, 2019

Iowa Department of Natural Resources
Attn: Justin Pettit, P.E.
502 East 9th Street
Des Moines, Iowa 50319

RECEIVED

FEB 01 2019

Re: Chapter 13 Variance Request
Todd Hills First Addition Wastewater Pump Station
City of Hiawatha, Linn County, Iowa

Dear Mr. Pettit:

Per 561 Iowa Administrative Code (IAC) Chapter 10, Todd Hills LLC is requesting a variance to the Iowa Department of Natural Resources (IDNR) Wastewater Facilities Design Standards for the above reference project and issuance of the related construction permit. The appropriate permit application forms and review have been previously submitted

The following information has been provided per the IDNR's Variance Request Guidance document:

1. Name, address and telephone number of entity requesting the variance:
Todd Hills LLC
Attn: Loren Hartelt
1840 Commercial Drive
Walford, Iowa 52351
2. Description and citation of specific rule from which a variance is requested:
 - a. A variance is requested for the methods and details of construction as cited in Chapter 3, Section 13.4.3 of the IDNR Wastewater Facilities Design Standards.
3. Specific variance requested, scope, and operative period which the variance will extend:
 - a. The variance requested is to allow the installation of a pump that is unable to pass 3" spheres. The pump specified is a raw sewage, submersible pump with a throughlet of 1.54". More specifically, a Xylem-Flygt NP 3085 MT 3~ Adaptive 462 pump.
4. Relevant facts justifying the variance:
 - a. In Chapter 13, Section 13.4.2 of the IDNR Wastewater Facilities Design Standards, specifies trash baskets with openings not exceeding 2.5 inches. The openings of the trash basket per the enclosed Electric Pump submittal will be 1-½" diameter holes. Lastly, per the enclosed letter from the manufacturer's representative, "(The proposed) pump will not have an issue in this wet well application."
 - b. Initial development requires a pump that is efficient under low flow conditions (100 gpm) and low head conditions (35 ft TDH). The 3.5 hp NP 3085 is the most efficient pump on the market for the design conditions

with efficiencies greater than 50%. The smallest pump that meets the language of Chapter, 13, Section 13.4.2 is drastically overpowered (over 6 hp) and much less efficient under the design conditions. Allowing the proposed NP 3085 pump will reduce electric consumption, decrease operating costs, and help the environment.

5. Contact history with the Department:
 - a. None.
6. Know Department's treatment of similar cases:
 - a. The Engineer is aware of conversations with Electric Pump that variances from Chapter 13 Section 13.4.3 allowing for this pump have been approved subject to decreasing the opening size of the trash blanket.
7. Name, address, and telephone number of any public agency or political subdivision(s) that might be affected by granting the variance:
 - a. City of Hiawatha
Attn: John Bender, City Engineer
101 Emmons Street
Hiawatha, Iowa 52233
8. Name, address, and telephone number of any person or entity that might be affected by granting variance.
 - a. None
9. Identity of those having knowledge of relevant facts concerning the variance:
 - a. Loren Hartelt, Todd Hills LLC, Walford, Iowa
 - b. John Miller, Electric Pump, Des Moines, Iowa
 - c. Jake Deaver, MSA Professional Services, Dubuque, Iowa

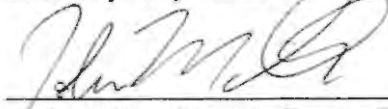
10. Signed release:

I attest to the accuracy of the facts provided in the petition and the reasons as listed to justify issuance of the variance request.



Loren Hartelt, Todd Hills LLC, Walford, Iowa

I attest to the accuracy of the facts provided in the petition and the reasons as listed to justify issuance of the variance request.



John Miller, Electric Pump, Des Moines, Iowa

 SEAL	I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.
	 Jan 25, 2019 _____ Jake Deaver, P.E. Date License Number: 23578 My license renewal date is 12/31/2019 Pages or sheets covered by this seal: <u>Variance request letter.</u>

Please feel free to contact me with any questions pertaining to this variance request at (563) 584-2887 or jdeaver@msa-ps.com.

Best Regards,

MSA Professional Services, Inc.



Jake J. Deaver, PE
Project Engineer



4280 E. 14th St.
Des Moines, IA 50313
Office: 515-265-2222
Toll Free: 800-383-7867
Fax: 515-265-8079

201 4th Ave SW
New Prague, MN 56071
Office: 952-758-6600
Toll Free: 800-536-5394
Fax: 952-758-7778

Date: 1/24/19
Location: Hiawatha, IA – Todd Hills
Contractor: Schrader Excavating
Engineer: MSA Professional Services
Reference: DNR variance for pump throughlet

Electric Pump will be providing two non-clog Flygt pumps for this project, model NP3085MT, 462 impeller, 3.5hp. The throughlet size on this pump is 1.54". We are also providing an aluminum trash basket with the holes of 1 1/2". Our pump will not have an issue in this wet well application.

See the attached information.

Thank you for your consideration,

John Miller (515) 707-6025
cc: Traci Boger (515) 265-2222



Flygt N-pump Series

SELF-CLEANING PUMPS WITH SUSTAINED HIGH EFFICIENCY

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 the patented N-technology with its innovative self-cleaning impeller, Flygt N-pumps deliver the highest total efficiency – lowering your energy bill and reducing 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 lead 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 to be the best and most reliable choice for both dry and submersible installations far and away over our competition.

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
- Stormwater
- 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



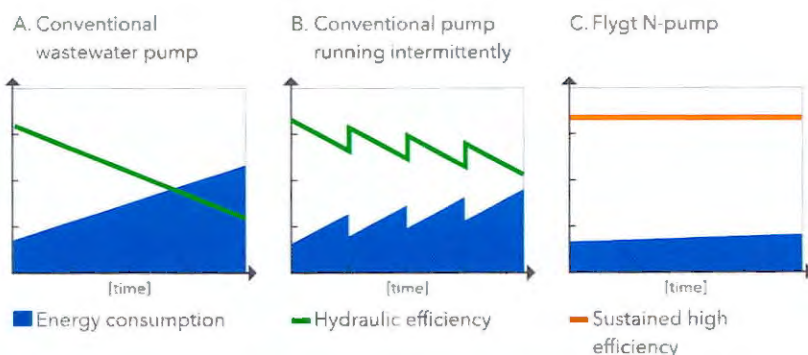
BROAD RANGE CAPACITY

- Ratings from 2.2 hp to 870 hp
- Discharges up to 20" (500 mm)
- Flows up to 16,000 US GPM (1,000 l/s)
- Heads up to 400 ft (120 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 objects 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 buildup reduces the impeller's efficiency, resulting in increased power consumption (Fig. A) and generating increased energy charges.



As solids continue to build up inside the impeller, motor thermal protection can trip causing the pump to stop and leading to costly unplanned service calls. If a conventional wastewater pump runs intermittently, the solids buildup will be removed by backflushing when the pump is shut off at the end of the operating cycle. When the 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 could 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)



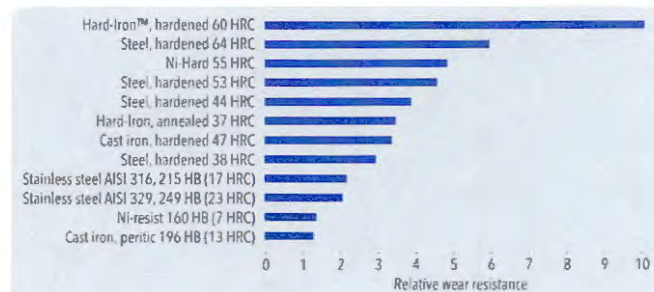
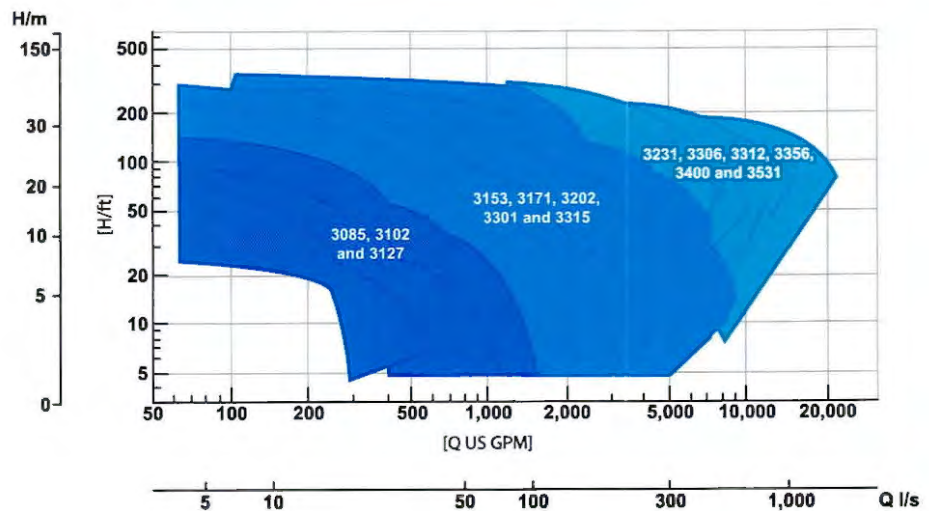
Extra durable option for abrasive and erosion corrosion applications.

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 Class 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 Class B maximum operating temperature rise of 80°C (176°F) to ensure long service life. All motors are capable of fully utilizing the available power while operating on a variable frequency drive.

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

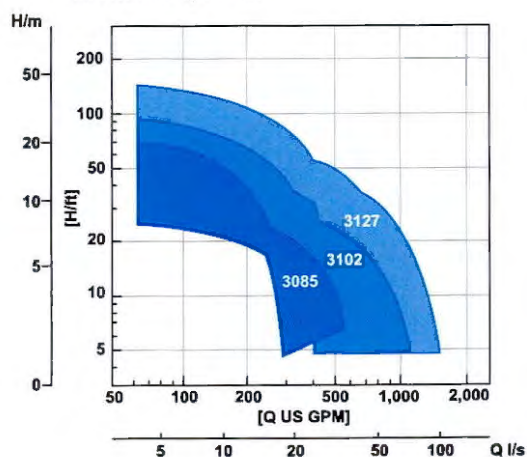
The patented Spin-out™ design expels abrasive particles from the seal chamber, providing protection against wear of the outer seal. As an integral part of the seal chamber, Spin-out™ is as simple as it is effective.

Low capacity pumps



This series of Flygt N-pumps includes three models that handle capacities up to 1,600 US GPM (100 l/s). Like all Flygt N-pumps, these contribute to reducing the total life cycle costs of your installation.

Performance, 60 Hz



Power ratings and size

Model	3085	3102	3127
Rating, hp	2.2-4	5-6	7.5-11
Discharge, in	3" (80 mm)	3" (80 mm) 4" (100 mm) 6" (150 mm)	3" (80 mm) 4" (100 mm) 6" (150 mm)

Methods of installation



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



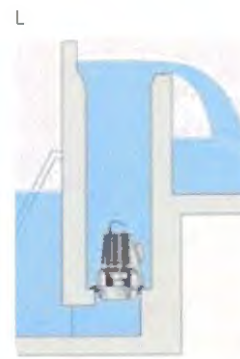
A semi-permanent freestanding installation. Transportable version with pipe or hose connection.



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



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



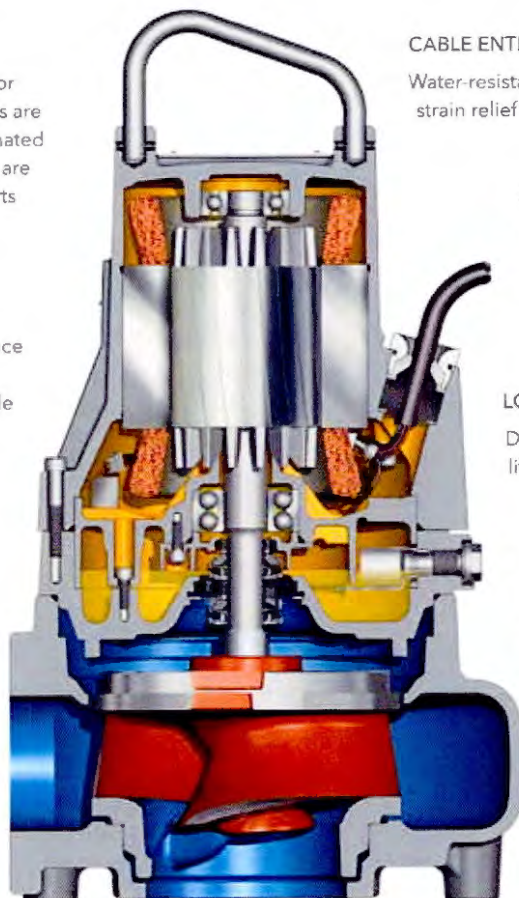
A semi-permanent installation of a pump within a vertical steel or concrete column.

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

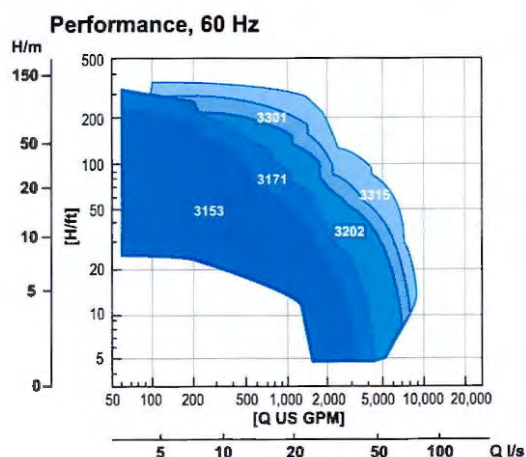
The Flygt N3085 - N3127 feature an adaptive self-cleaning N-impeller that can move axially to enable easy passage of large solids through the pump.



Medium capacity pumps



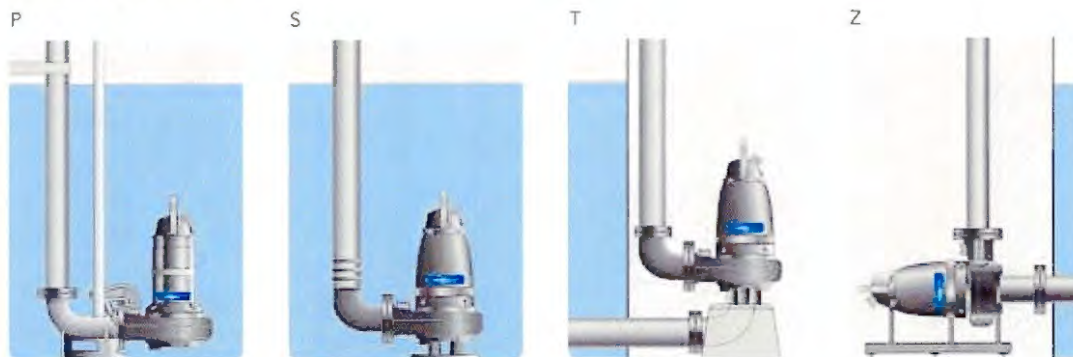
For demanding pumping duties, five models handle fluid transport for capacities up to 8,000 US GPM (500 l/s). Highly efficient, these heavy-duty models provide clog-free performance in order to achieve the best overall life cycle cost.



Power ratings and size

Model	3153	3171	3202	3301	3315
Rating, hp	12-23	25-35	35-75	60-105	85-160
Discharge, in	3" (80 mm)	4" (100 mm)	4" (100 mm)	6" (150 mm)	6" (150 mm)
	4" (100 mm)	6" (150 mm)	6" (150 mm)	10" (250 mm)	10" (250 mm)
	6" (150 mm)	10" (250 mm)	8" (200 mm)	12" (300 mm)	12" (300 mm)
	8" (200 mm)			14" (350 mm)	14" (350 mm)
	10" (250 mm)				

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 freestanding 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

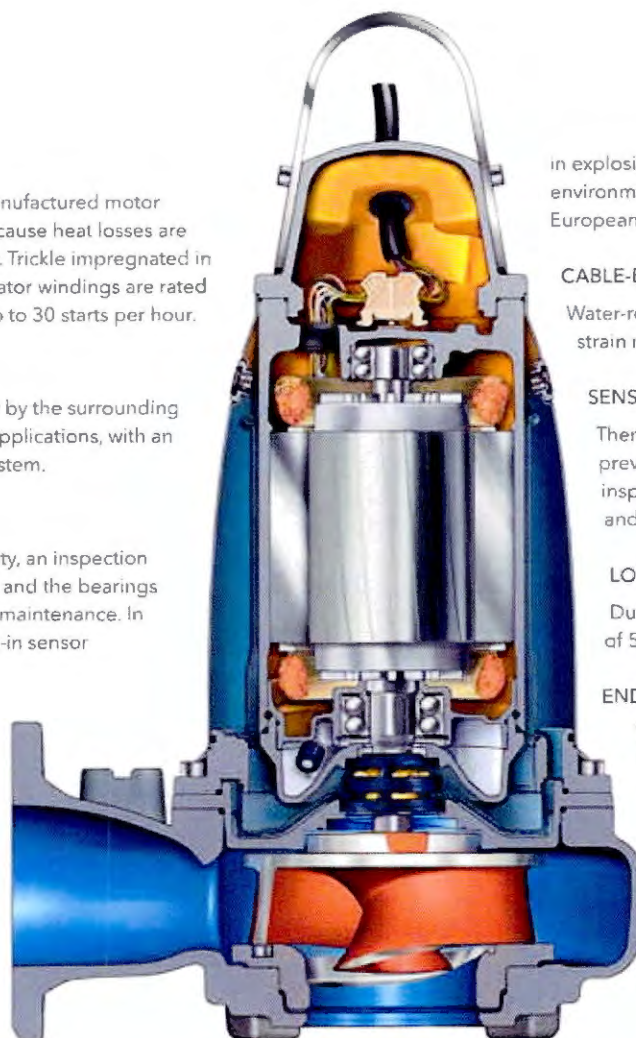
These pumps are cooled either by the surrounding liquid or, in more demanding applications, with an internal closed-loop cooling system.

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 buildup, thus reducing the risk of expensive repair work.

COMPLIANCE

Each pump is tested and approved in accordance with national and international standards, including IEC60034-1 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 with laser-cut spiral grooves.



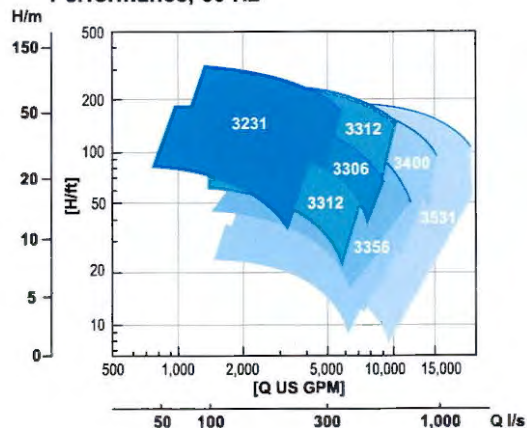
inner seal that acts as a micro-pump and an outer seal that prevents leakage of pumped media into the buffer chamber.

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



Performance, 60 Hz



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.

Power ratings and size

Model	3231	3306	3312	3356	3400	3531
Rating, hp	90-335	70-280	90-470	70-280	60-470	60-870
Discharge, in	8" (200 mm)	12" (300 mm)	12" (300 mm)	14" (350 mm)	16" (400 mm)	20" (500 mm)

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 freestanding 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

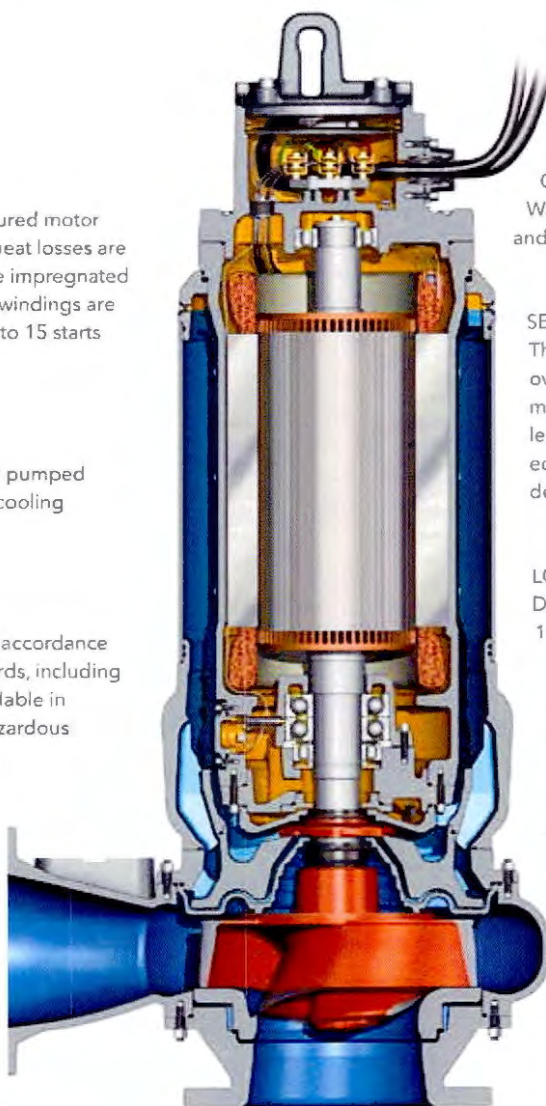
Our specially designed and manufactured motor provides enhanced cooling because heat losses are concentrated around the stator. Trickle impregnated in resin (Class H insulation), the stator windings are rated at 180°C (355°F) and enable up to 15 starts per hour.

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 analog 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

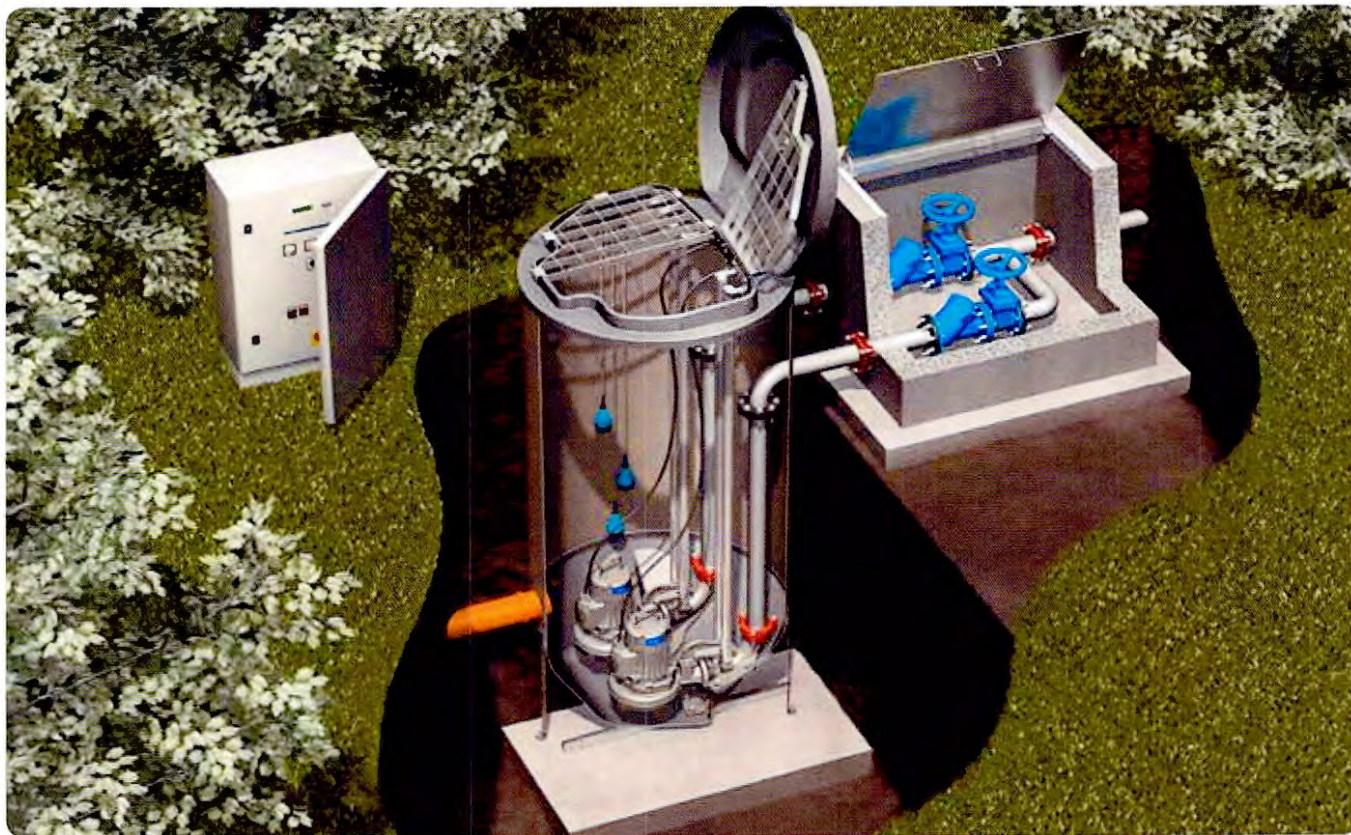
The Active Seal™ system is a patented zero-leakage double-seal system that actively prevents liquid from entering the motor cavity, thereby reducing the risk for bearing and stator failure. It comprises a unique inner seal that acts as a micro-pump and an outer seal that prevents leakage of pumped media 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 as a system 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 that help you decide the best monitoring and control solution for your needs. Whether it's wastewater, stormwater, 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.



Engineered pumping solutions

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

All Flygt monitoring and control equipment integrate easily into SCADA control systems for remote monitoring and control. Flygt PumpView puts you in Total Control, Your Way.



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™				◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
- FGC	◐	◐												

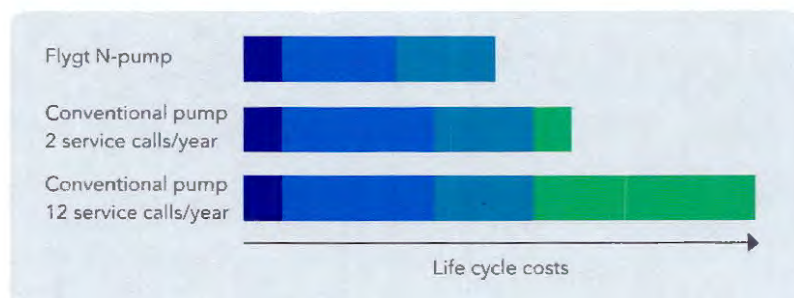
● = Standard

◐ = 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 offer a 20-year availability guarantee.

Xylem ['zīləm]

- 1) The tissue in plants that brings water upward from the roots
- 2) A leading global water technology company

We're 12,000 people 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.



Xylem, Inc.
14125 South Bridge Circle
Charlotte, NC 28273
Tel 704.409.9700
Fax 704.295.9080
855-XYL-H2O1 (855-995-4261)
www.xyleminc.com

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4280 East 14th Street Des Moines, Iowa 50313
Phone – 800-383-7867 Fax – 515-265-8079

Hiawatha, IA –
Todd Hills First Addition Wastewater Pump Station
REVISED Hatch & Trash Basket Submittal

Engineer

MSA
400 Ice Harbor Drive.
Dubuque, IA 52001
563-582-3973

Contractor

Schrader Excavating & Grading Co.
1840 Commercial Drive
Walford, IA 52351
319-845-3061

Supplier

Electric Pump
4280 East 14th Street
Des Moines, Iowa 50313
515-265-2222

Date: January 24, 2019

Please return submittals to:

4280 East 14th Street
Des Moines, Iowa 50313

Attention: Traci Boger

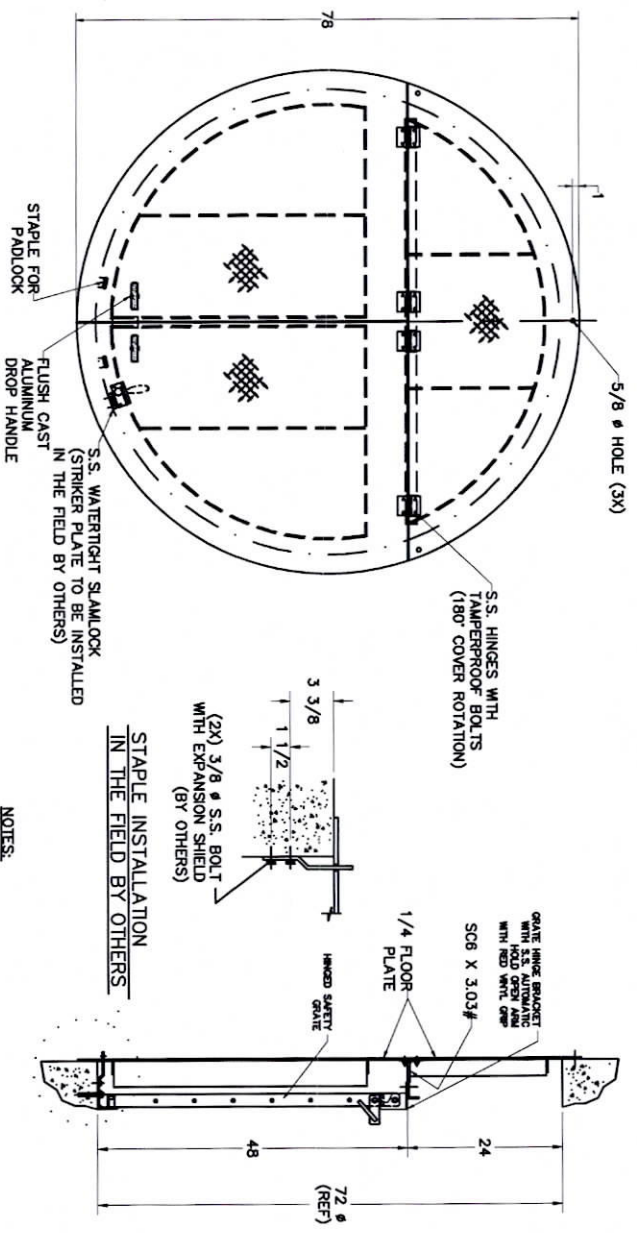
*****Please note: Electric Pump will not order any product until we receive approved submittals back.*****

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USF 72 ID Frogmouth Hatch for Pumps and Trash Basket Qty (1) Part Number 1000114130	1
USF 48"x66" Hatch for Valve Vault Qty (1) Part Number 1000111894	2
USF Trash Basket with 15' rails Qty (1) Part Number 1000054969 Qty (15') Part Number 1000082867	3

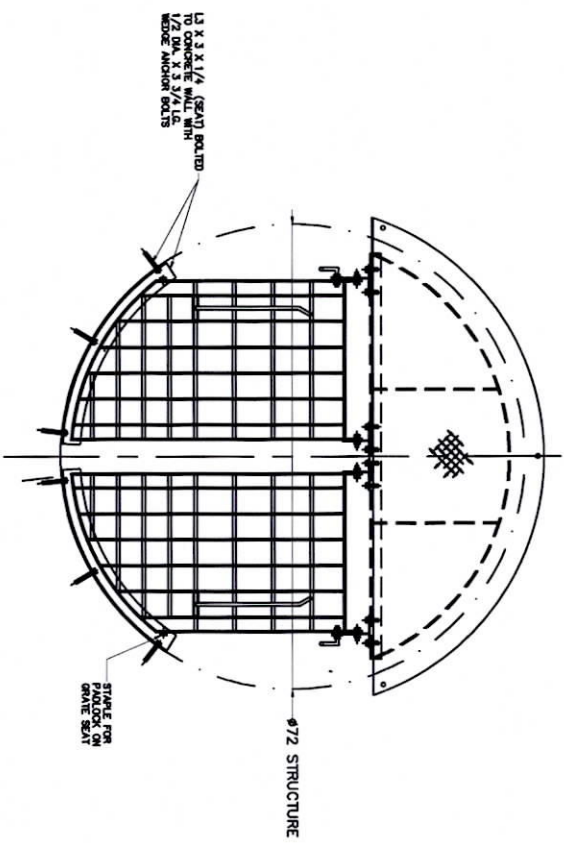
1

TAG: FOR PUMPS AND TRASH BASKET



STAPLE INSTALLATION
IN THE FIELD BY OTHERS

- NOTES:
- 1- MATERIAL: ALUMINUM
 - 2- LOADING: 300 LBS. PER SQ. FT.
 - 3- 316 STAINLESS STEEL BOLTS & NUTS
 - 4- APPROXIMATE WEIGHT: 173 LBS.
 - 5- SAFETY GRATE TO BE PAINTED WITH SAFETY ORANGE POWDER COAT



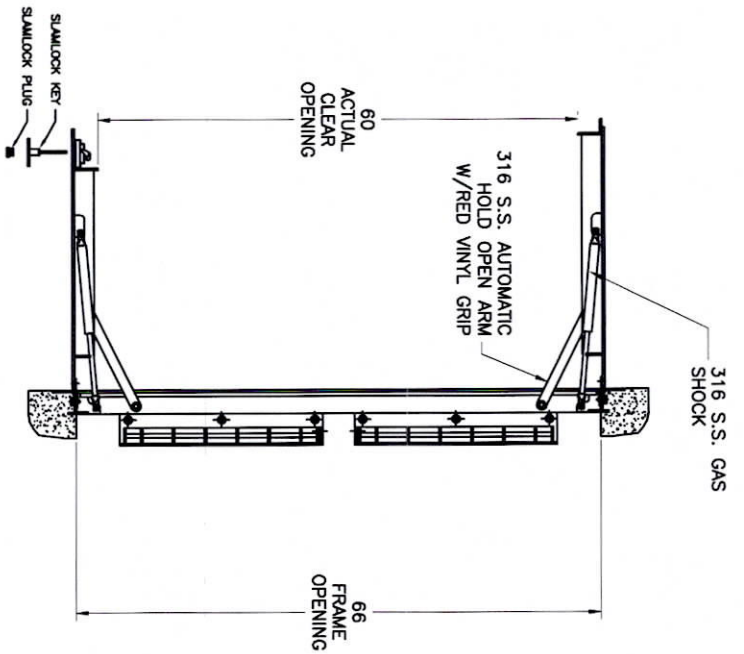
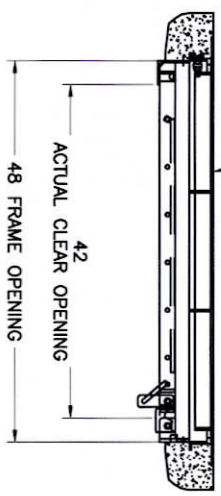
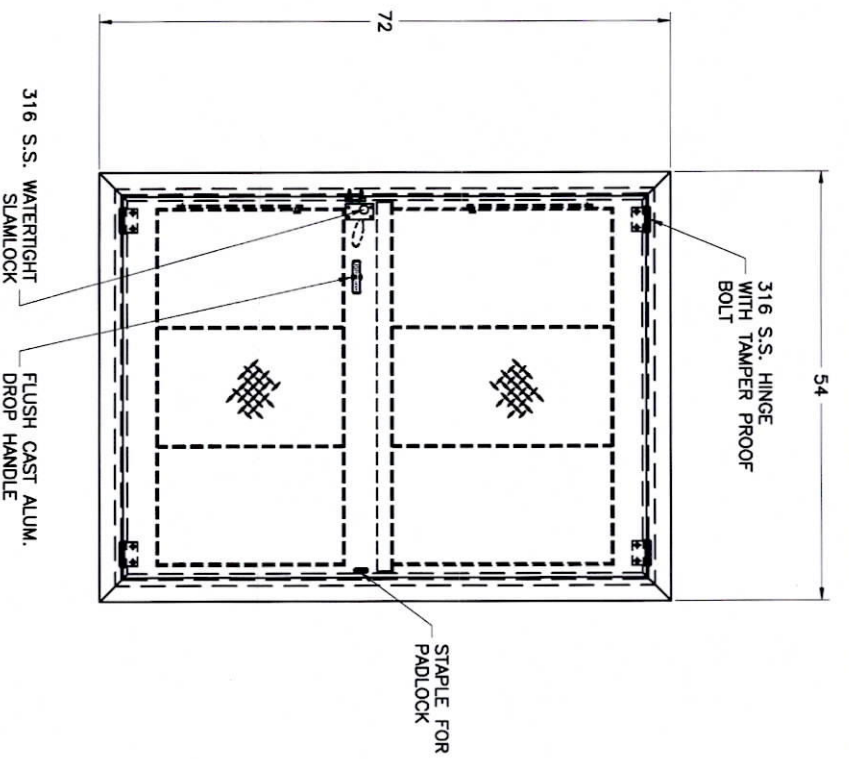
PLAN VIEW OF CONCRETE OPENING AND SAFETY GRATE
(PARTIAL HATCH SHOWN FOR CLARITY)

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INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M	
BREAK ALL SHARP CORNERS & EDGES TO 0.01	
TOLERANCES UNLESS OTHERWISE SPECIFIED:	
INCHES = ± 1/16	
1/16 = ± 1/32	
1/32 = ± 1/64	
COPYRIGHT © 2018 ALL RIGHTS RESERVED	
HATCH BPC 72 I.D. X 78 O.D. ALUMINIUM DOUBLE DOOR & SAFETY GRATES	
DATE: 12/06	REV: 1
BY: RT	CHK: C
APP'D BY: RT	DATE: 1000114130

U.S.F. FABRICATION INC.
HALEAH, FLORIDA

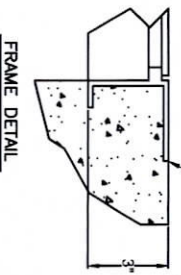
2



- SELECTED FEATURES**
1. S.S GAS SHOCKS
 2. SLAMLOCK
 3. SAFETY GRATING
 4. BITUMINOUS COATING

- NOTES**
1. MATERIAL: ALUMINUM
 2. FINISH: MILL
 3. LOADING: 300 PSF
 4. 316 SS NUTS & BOLTS
 5. AREA OF FRAME IN CONTACT WITH CONCRETE TO BE PAINTED WITH BITUMINOUS COATING
 6. SAFETY GRATING TO BE PAINTED WITH SAFETY ORANGE POWDER COAT
 7. APPROX HATCH WT: 244.92 LBS

1/4" EXTRUDED ANGLE SECTION
W/INTEGRAL SEAT & CONT.
ANCHOR FLANGE
MAT'L ALUM. 6063-T5



NOTE:
AS AN AUTOMATED DRAWING, THE DESIGN HAS NOT BEEN REVIEWED BY
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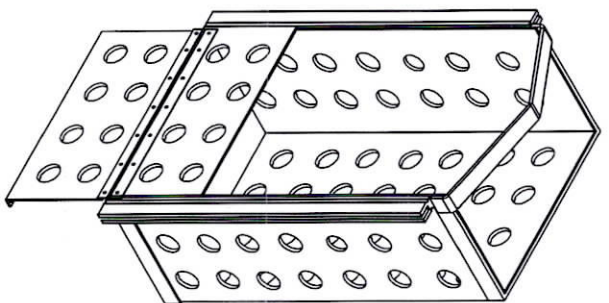
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INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M
BREAK ALL SHARP CORNERS & EDGES TO 0.01
TOLERANCES UNLESS OTHERWISE SPECIFIED FRACTIONAL
INCHES = $\pm 1/16$
1/16 = $\pm 1/32$
1/32 = $\pm 1/64$

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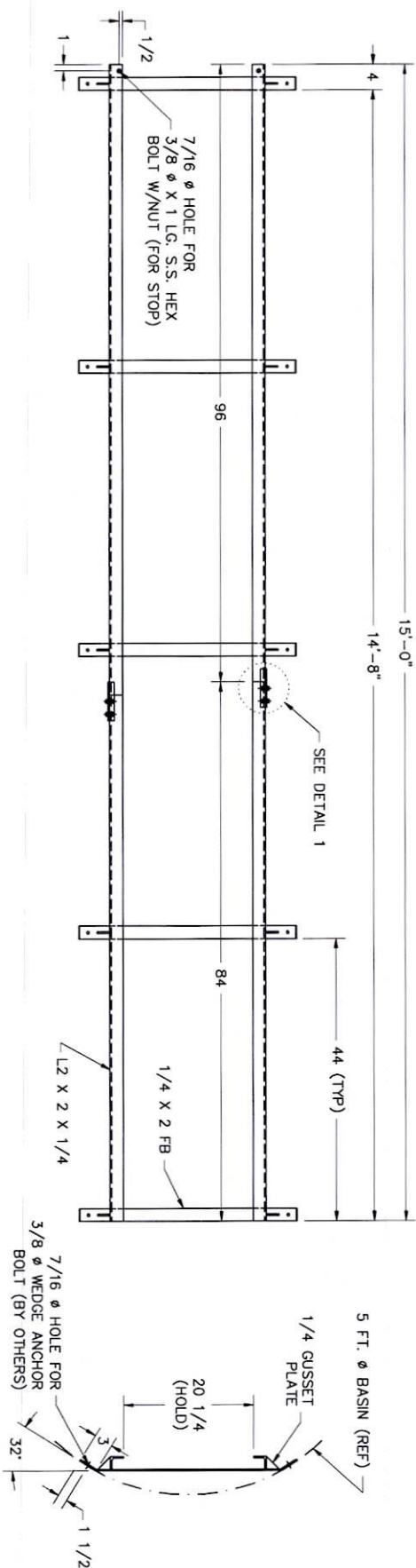
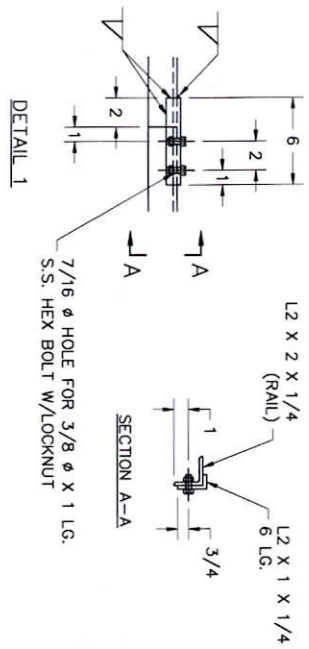
 U.S.F. FABRICATION INC. HIALEAH, FL			
DM: B7:	SCALE:	SHEET:	DATE:
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BOB			
DMG			
1000111894			
		SHEET	REV:
		A	0

3



BOTTOM HINGED LID DETAIL

 U.S.F. FABRICATION INC. HIALEAH, FLORIDA	
TRASH BASKET 8" X 18" X 28" - ALUMINUM W/ 1-BOTTOM HINGED LID	
QUANTITY	1
DATE	01/18/1987
TIME	0
BY	0
DATE	01/18/1987
TIME	0
BY	0



- NOTES:
- 1- MATERIAL: ALUMINUM
 - 2- FOR USE WITH STANDARD ALUMINUM TRASH BASKETS (18 WIDE)
 - 3- RAILS SPLIT FOR SHIPPING & BOLTED TOGETHER IN THE FIELD BY OTHERS

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INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M
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TOLERANCES UNLESS OTHERWISE SPECIFIED:
INCHES = ± 1/16
1/16 = ± 1/32
1/32 = ± 1/64

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 U.S.F. FABRICATION INC. HIALEAH, FLORIDA	
RAILS FOR STD. TRASH BASKET - ALUM.	
15'-0" LG. FOR 5 FT. Ø BASIN	
DATE: 1/12	SCALE: 1" = 1'
DESIGNED BY: DAV	DRAWN BY: C
CHECKED BY: 1000082867	REV: 0