N Pump Design Features
(Typical features for N-3085 - 3127)

1. **Cable Entry**
   Cable entry consists of a gland nut, cable strain relief, and compressible rubber bushing, flanked by stainless steel washers to seal off the motor area.

2. **Junction Box**
   The cable entry junction chamber and motor are separated by a stator lead sealing gland.

3. **Bearings**
   Bearings are rated for a minimum Lₐ₀ bearing life of 50,000 hours. The upper guide bearing is a single row ball bearing. The lower bearing consists of a two-row angular contact ball bearing. The bearings are sealed and permanently lubricated with high temperature grease.

4. **Shaft**
   Motor shaft and rotor are a single integral unit. The short overhang of the shaft virtually eliminates shaft deflection, resulting in increased seal and bearing life, low vibration levels and quiet operation. Shaft is stainless steel.

5. **Motor**
   (Standard or optional Premium Efficiency type)
   The high performance submersible induction motors are designed and manufactured by Flygt to be used specifically with Flygt pumps. Stators are Class H insulated using the trickle impregnation method and rated to 356°F. The stators are shrink fit into the stator housing, providing superior heat transfer. Stators incorporate three thermal switches connected in series (one in each phase).

   A leakage sensor is available as an option to detect water in the stator chamber. The Float Leakage Sensor (FLS) is a small float switch used to detect the presence of water in the stator chamber. When activated, the FLS will stop the motor and send an alarm, both local and/or remote.

6. **Shaft Seals**
   Two sets of mechanical seals operate independently of each other. This design provides superior reliability and sealing of the motor from pumped liquid.

7. **Impeller**
   The standard N impeller is of grey iron. Select impellers are available in Hard-Iron® (25% chrome cast iron), dynamically balanced, semi-open, multi-vane, back swept, screw-shaped, non-clog design. The impeller leading edges are mechanically self-cleaned automatically upon each rotation as they pass across a spiral groove located on the volute suction area. The screw-shaped leading edges of the grey iron impeller are hardened to Rc 45, Hard-Iron® impellers to Rc 60 and are capable of handling solids, fibrous materials, heavy sludge and other matter normally found in wastewater. The screw shape of the impeller inlet provides an inducing effect for the handling of up to 5% sludge and rag-laden wastewater. Pumps, equipped with the Adaptive N impeller, have impellers available in grey cast iron or Duplex stainless steel (AISI 329) and capable of momentarily moving axially upwards a distance of 15mm/0.6-in. to allow larger debris to pass through and immediately return to normal operating position. The impeller to volute clearance is readily adjustable by means of a single trim screw. Wear rings are not required.

8. **Volute/Suction Cover**
   Pump volute is of grey cast iron, Class 35B, non-concentric design with smooth passages large enough to pass any solids that may enter the volute inlet. The volute has a replaceable suction cover insert ring in which are cast spiral-shaped, sharp-edged groove(s). The spiral groove(s) provide trash release pathways and sharp edge(s) across which each impeller vane leading edge shall cross during rotation so to remain unobstructed. The insert ring for use with grey iron and stainless steel impellers has a guide pin integral to the casting and is cast of ASTM A-48, Class 35B grey iron or Hard-Iron™ for use with select Hard-Iron™ impellers and provides effective sealing between the multi-vane semi-open impeller and the volute housing.
N Pump Design Features
(Typical features for N-3153 - 3315)

1. **Cable Entry**
   Cable entry consists of two compressible rubber bushings to seal off motor area and relieve strain on the cable. Two sealing bushings means high reliability in difficult applications.

2. **Junction Box**
   For the connection of the stator leads, power cable and the pilot cable, the drive unit is provided with a terminal block that is easily accessible by lifting off the entrance cover. The stator leads are brought to the terminal block through a penetration in the top of the stator housing. This opening is sealed off with a compressible rubber bushing. The stator leads are brought through holes in the bushing which is then compressed around the leads and against the walls of the opening.

3. **Bearings**
   Bearings are rated for a minimum L₁₀ bearing life of 50,000 hours. The upper guide bearing is a two-row angular contact ball bearing. The lower bearing consists of a two-row angular contact ball bearing. The bearings are sealed and permanently lubricated with high temperature grease.

4. **Shaft**
   Motor shaft and rotor are a single integral unit. The short overhang of the shaft virtually eliminates shaft deflection, resulting in increased seal and bearing life, low vibration levels and quiet operation. Shaft is stainless steel.

5. **Motor (Standard or optional Premium Efficiency type)**
   The high performance submersible induction motor is designed and manufactured by Flygt to be used specifically with Flygt pumps. Stator is Class H insulated using the trickle impregnation method and rated to 356°F.
   The stator is shrink fit into the stator housing, providing superior heat transfer. The stator incorporates three thermal switches connected in series (one in each phase). Optional premium efficiency motors meet the efficiency levels specified in the IEC standard 60034-30 for international efficiency, Class IE3.

   **Cooling system**
   In wet-pit applications, the surrounding liquid cools the pump. In more demanding applications, or in dry-pit installations, all pumps can be provided with an integral closed-loop cooling system. The coolant is circulated around the motor by an integrated pump.

6. **Shaft Seals**
   The Plug-in™ seal unit has corrosion resistant tungsten carbide faces. This design provides superior reliability and sealing of the motor from pumped liquid.
   Seal wear protection: Spin-out™ is a patented design that protects the outer seal by expelling abrasive particles from the seal chamber. A float switch, installed in the seal leakage chamber, will activate if leakage into the chamber reaches 50% chamber capacity, signaling the need to schedule an inspection.

7. **N Impeller**
   The standard impeller is of Hard-Iron® (ASTM A-532 Alloy III A 25% chrome cast iron). Select impellers are also available in grey cast iron or Duplex stainless steel (AISI 329), dynamically balanced, semi-open, multi-vane, back swept, screw-shaped, non-clog design. The impeller leading edges are mechanically self-cleaned automatically upon each rotation as they pass across a spiral groove located on the volute suction area. The Hard-Iron™ impeller is hardened to Rc 60 and is capable of handling solids, fibrous materials, heavy sludge and other matter normally found in wastewater. The screw shape of the impeller inlet provides an inducing effect for the handling of up to 5% sludge and rag-laden wastewater. The impeller to volute clearance is readily adjustable by means of a single trim screw. Wear rings are not required.

8. **Volute/Suction Cover**
   Pump volute is of grey cast iron, Class 35B, non-concentric design with smooth passages large enough to pass any solids that may enter the volute inlet. The volute has a replaceable suction cover insert ring in which are cast spiral-shaped sharp-edged groove(s). The spiral groove(s) provide trash release pathways and sharp edge(s) across which each impeller vane leading edge crosses during rotation so to remain unobstructed. The insert ring, used in conjunction with Hard-Iron® impellers, is cast of Hard-Iron™ (ASTM A-532 Alloy III A 25% chrome cast iron) and provides effective sealing between the multi-vane semi-open impeller and the volute housing.
C Pump Design Features
(Typical features for standard drive C-3085 - 3127 pumps)

1. **Cable Entry**
   Cable entry consists of a gland nut, cable strain relief, and compressible rubber bushing, flanked by stainless steel washers to seal off the motor area.

2. **Junction Box**
   The cable entry junction chamber and motor are separated by a stator lead sealing gland.

3. **Bearings**
   Bearings are rated for a minimum L₁₀ bearing life of 50,000 hours. The upper guide bearing is a single row ball bearing. The lower bearing consists of a two-row angular contact ball bearing. The bearings are sealed and permanently lubricated with high temperature grease.

4. **Shaft**
   Motor shaft and rotor are a single integral unit. The short overhang of the shaft virtually eliminates shaft deflection, resulting in increased seal and bearing life, low vibration levels and quiet operation. Shaft is stainless steel.

5. **Motor**
   The motor is designed and manufactured by Flygt as a high performance submersible induction motor to be used specifically with Flygt pumps. Stator is Class H insulated rated to 356°F. Stator is shrink fit into the stator housing, providing superior cooling by the pumped liquid which passes directly outside the stator housing. The stator incorporates thermal switches connected in series to monitor each phase. An optional float switch (FLS) placed in the lower part of the stator housing reacts if liquid enters this area. When activated, the FLS will stop the motor and send an alarm, both local and/or remote.

6. **Shaft Seals**
   Two sets of mechanical seals operate independently of each other. This design provides superior reliability and sealing of the motor from pumped liquid.

7. **Impellers:**
   Standard single and multi-vane impellers are of grey cast iron, dynamically balanced, double shrouded non-clogging design having a long throughlet without acute turns. The impellers are capable of handling solids, fibrous materials, heavy sludge and other matter commonly found in wastewater.

**N Impeller (optional)**
Models C-3085-3127 can be fitted with N technology impellers by means of retro-fit kits readily available. Select N impellers are available in Hard-Iron® (25% Chrome), grey cast iron (A48, Class 35B), or Duplex stainless steel (AISI 329).

8. **Wear Rings**
   The impeller and pump housing are equipped with easily replaceable wear rings. Volute wear ring is brass. Impeller wear ring is stainless steel. (wear rings are not required with N impellers).

9. **Volute/Suction Cover**
   Pump volute is of grey cast iron, Class 35B, non-concentric design with smooth passages large enough to pass any solids that may enter the volute inlet. The volute used with the N impeller has a replaceable suction cover insert ring in which are cast spiral-shaped, sharp-edged groove(s). The spiral groove(s) provide trash release pathways and sharp edge(s) across which each impeller vane leading edge crosses during rotation so to remain unobstructed. The insert ring, on volutes used with N impellers, has a guide pin integral to the casting and is cast of ASTM A-48, Class 35B grey iron or Hard-Iron® when used with select Hard-Iron® impellers. This provides effective sealing between the multi-vane semi-open N impeller and the volute housing.
1. **Cable Entry**
   Cable entry consists of a two compressible rubber bushings, flanked by stainless steel washers, to seal off the motor area and relieve strain on the cable.

2. **Junction Box**
   The junction box is hermetically sealed from the motor.

3. **Bearings**
   Bearings are rated in excess of 100,000 hours of operation (L10 rated life). The upper guide bearing is a single row roller bearing. The lower bearings consist of at least one roller bearing for radial forces and one or two angular contact ball bearings for axial thrust. The lower bearing housing includes an independent thermal sensor to monitor the bearing temperature. If a high temperature occurs, the sensor will activate an alarm and shut the pump down. The bearings are sealed and permanently lubricated with grease.

4. **Shaft**
   Motor shaft and rotor are a single integral unit. Shaft is completely isolated and cannot come in contact with the pumped media. Shaft material is AISI 431 stainless steel.

5. **Motor**
   The motor is designed and manufactured by Flygt as a high performance submersible induction motor to be used specifically with Flygt pumps. Stator is Class H insulated using the trickle impregnation method and rated to 356°F. Stator is shrink fit into the stator housing, providing superior cooling by the pumped liquid which passes directly outside the stator housing. Select drive units available with closed loop cooling. Thermal switches are embedded in the stator end coils to monitor the temperature of each phase winding. One PT-100 type temperature sensor is installed in the stator winding. These thermal switches are used in conjunction with and supplemental to external motor overload protection and are connected to the control panel.
   A float switch (FLS) placed in the lower part of the stator housing reacts if liquid enters this area. A pump memory module is provided and mounted in the junction chamber to record pump run time, number of starts as well as contain the motor unit performance and manufacturing data and service history.

6. **Shaft Seals**
   Two sets of mechanical seals operate independently of each other within a common seal lubricant bath. The rotating seal ring of the upper seal has small back-swept grooves laser inscribed upon its face to act as a pump as it rotates, returning any fluid that should enter the dry motor chamber back into the lubricant chamber. This design provides superior reliability and sealing of the motor from pumped liquid.

7. **Impellers:**
   Standard multi-vane impeller is of grey cast iron, dynamically balanced, double shrouded, non-clogging design having a long throughlet without acute turns. The impeller is capable of handling solids, fibrous materials, heavy sludge and other matter found in wastewater.

**N Impeller (optional)**
Models C-3231 - 3400 can be fitted with N technology impellers of grey cast iron by means of retrofit kits readily available. Impellers in Duplex stainless steel (AISI 329) are also available for select pump models (contact Flygt representative for details).

8. **Wear Rings**
   The impeller and pump housing on “C” pumps are equipped with easily replaceable wear rings. Volute wear ring is brass. Impeller wear ring is stainless steel. (wear rings are not required on pumps equipped with N impellers).

9. **Volute**
   Pump volute is a single-piece grey cast iron, Class 35B, non-concentric design with smooth passages large enough to pass any solids that may enter the “C” impeller. (see Volute/Suction Cover description on previous page regarding use with N impellers).