PENTAIR

FAIRBANKS NIJHUIS®

SUBMERSIBLE SOLIDS HANDLING PUMPS

www.FairbanksNijhuis.com

PENTAIR

FAIRBANKS NIJHUIS®

Introduction

Fairbanks Nijhuis® manufactures a complete line of submersible pumps for municipal and industrial applications. A long history in pump manufacturing has proven reliability and unmatched quality in our new and retrofit submersible applications. Downtime maintenance due to clogging is virtually eliminated. Our innovative products keep construction costs, installation costs and energy costs below our competitors.

Fairbanks Nijhuis submersible pumps reduce health and safety concerns while featuring a small footprint to make their presence unnoticable. This is a major reason why submersible pumps are superseding traditional sewage pumping stations. Our proven solutions can support an easy conversion of a traditional pumping station into a modern pumping station by simply installing one of our submersible pumps in the wet well. Since submersible pump motors are sealed and weather is not a concern, no above ground structures other than a small kiosk to contain the electrical switchgear and control systems are required.

Applications

Submersible solids handling pumps are widely used in sewage and raw water lift stations, and industrial plants where solids handling service is required.

MUNICIPAL

- Raw sewage lift stations
- Grit handling
- Sludge handling and recirculation
- Digester cleaning
- Storm water and flood control
- Water booster stations

INDUSTRIAL

- Sludge and slurry handling
- Mining
- General industrial and commercial waste
- Milling
- Dewatering
- Irrigation
- Many more

Specs at a Glance

Fairbanks Nijhuis offers three basic submersible solids handling pump configurations in two unique series.

5430W, 5730W and 2430W Series pumps run continuously when submerged and are secured to the pump floor with the discharge hard piped.

5430M, 5730MV and 2430M Series pumps are a pull-up design which allows inspection and discharge connection automatically when the pump is lowered into place. A special guide rail system ensures proper connections are made.

Fairbanks Nijhuis submersible solids handling pumps cover a broad range of hydraulics with unsurpassed dependability. The Fairbanks Nijhuis submersible motors are designed and built in a facility dedicated solely to research, development and testing. Our pumps are supreme in measures of quality and reliability.

5430W/5730W/2430W SERIES AND 5430M/5730MV/2430M SERIES	
Discharge Sizes	2"–24" (50.8–609.8 mm)
Flow Rates	15–27,500 gpm (3.4–6,246 m^3/h)
Head Ranges	5–300 feet (1.5–90 m)

Better By Design

Standard Features

1. Heavy Cast Iron Motor Frame
houses silicon steel laminations of the stator and a reliable die-cast rotor in a high efficiency motor design.

2. One-Piece Shaft
is made of heavy-duty, high quality 416 steel.

3. Two Separate Mechanical Seals
protect the motor from the pumped liquid for additional product reliability. The inner seal uses carbon against ceramic faces. Silicon carbide against tungsten carbide faces are used in the outer seal.

4. Solids Handling Two-Vane and Bladeless Impellers
offering precision cast two-vane and bladeless designs to meet your specific pumping requirements.

5. Optional Stainless Steel Wearing Rings
are available for both the impeller and casing on the two-vane and bladeless impeller designs.

6. Inspection/Drain Plug
on the mechanical seal chamber is standard on all units.

7. Electric Power and Control Cable Assemblies
are epoxy sealed at the motor's entry point. This prevents cable wicking and keeps moisture from entering the motor housing.

8. Automatic-Resetting Thermostats
are embedded in the motor windings to protect from overheating.

9. Primary Moisture Detectors
sense moisture entering the seal cavity and transmit a signal to a compatible controller. (Controller not included.)

10. Motors
are constructed with Class F insulation and rated with a 1.15 service factor or a 1.0 on a vfd and continuous duty at 40° C ambient temperature. The motor enclosure is sealed using O-rings, and has grooved fittings with extra large overlaps.

11. Centerline and Tangential Volute Discharge
designs are available. Both incorporate the two-vane or bladeless impeller designs to enhance solids handling capabilities.

12. Sliding Bracket Assembly
is an integral part of the pumping unit and is constructed for easy installation and removal. When lowered onto the discharge base elbow, the knifing action of the vertical non-sparking metal-to-metal seal provides a self-cleaning, UL Listed and CSA certified design. The separate discharge base-elbow anchored directly to the floor supports the total weight of the pump and provides vertical discharge.

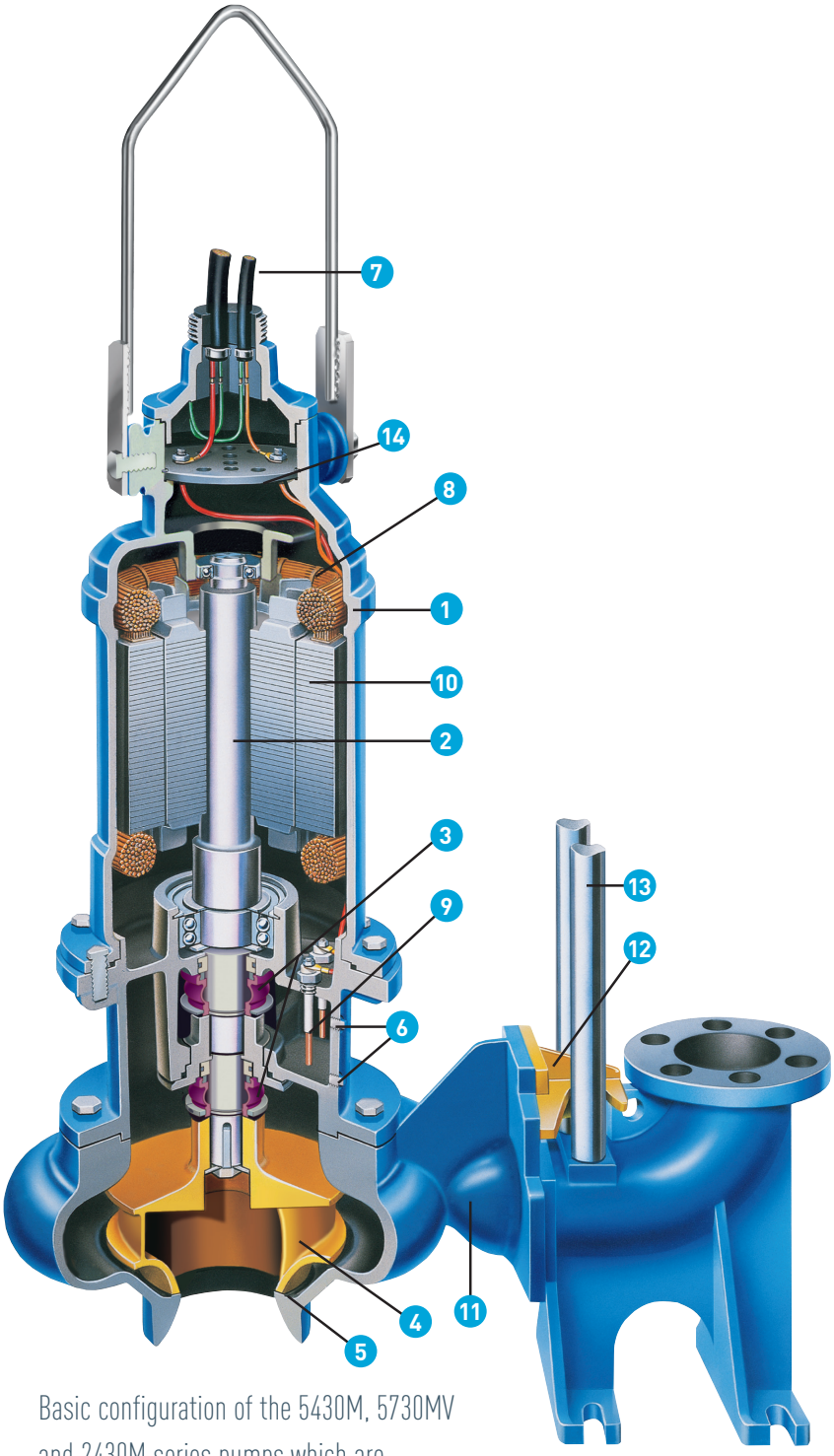
13. Guide Rails
built into our pull-up submersible pumps provide an exact fitting of the pump and discharge piping to raise or lower into the sump. The guide rails make an automatic connection of the pump and discharge piping when lowered into place to eliminate the need to enter the wet well.

14. Power and Control Cable Terminal Board
ensures positive wire connections and provides additional seal between the hostile environment and the motor windings.

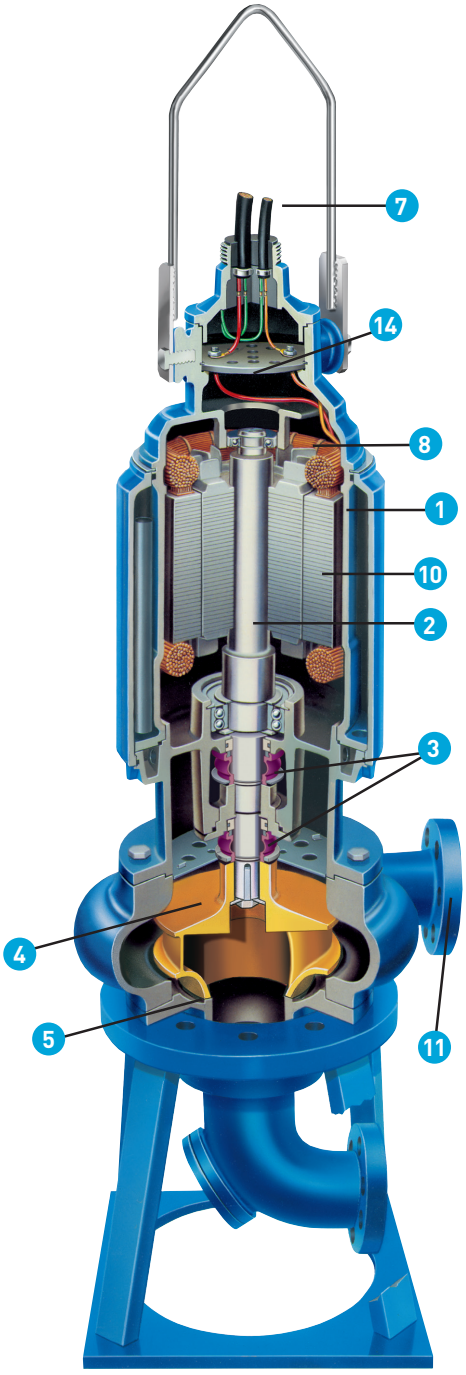
Closed Loop/Self Cooling Motor Design Option (250–360 Frames)
for applications requiring the motor to run non-submerged. An efficient cooling liquid is circulated by an expeller between the inner and outer seals mounted directly to the shaft. Cooling is accomplished by circulating the cooling liquid through the jacket and dissipating heat through an internal heat exchanger.

Heat Exchanger with Drain Plug
is standard on 250–360 frames with closed loop/self cooling.

Secondary Moisture Detection
in closed loop/self cooling design senses moisture entering the motor by utilizing a float switch and sending a signal to a compatible controller. (Controller not included.)



Basic configuration of the 5430M, 5730MV and 2430M series pumps which are designed to be pulled out of the well for inspection and automatic reattachment.



Basic configuration of the 5430WD, 5730WD series and 2430WD series pumps which are bolted to the sump floor and run continuously.

Solids Handling Performance

Two-Vane Impellers

Two-vane impellers feature large passageways, well-rounded leading vanes, and a thick hydrofoil shape to prevent long stringy material from wrapping around the leading edge.

This design channels fluid away from the impeller vanes into the circular flow area of the impeller passageways and casing which enables solids to pass with low turbulence and low radial and bending shaft forces. The result is quiet operations, less abrasive wear and mechanical seals, increased shaft life and reduced maintenance and downtime costs.

Bladeless Impellers

Bladeless impellers are used primarily in sewage lift stations and treatment plants where sewage flows are relatively low. The bladeless impeller will handle 10–25% more solids, long stringy materials and trash than a two-vane impeller.

System Accessories

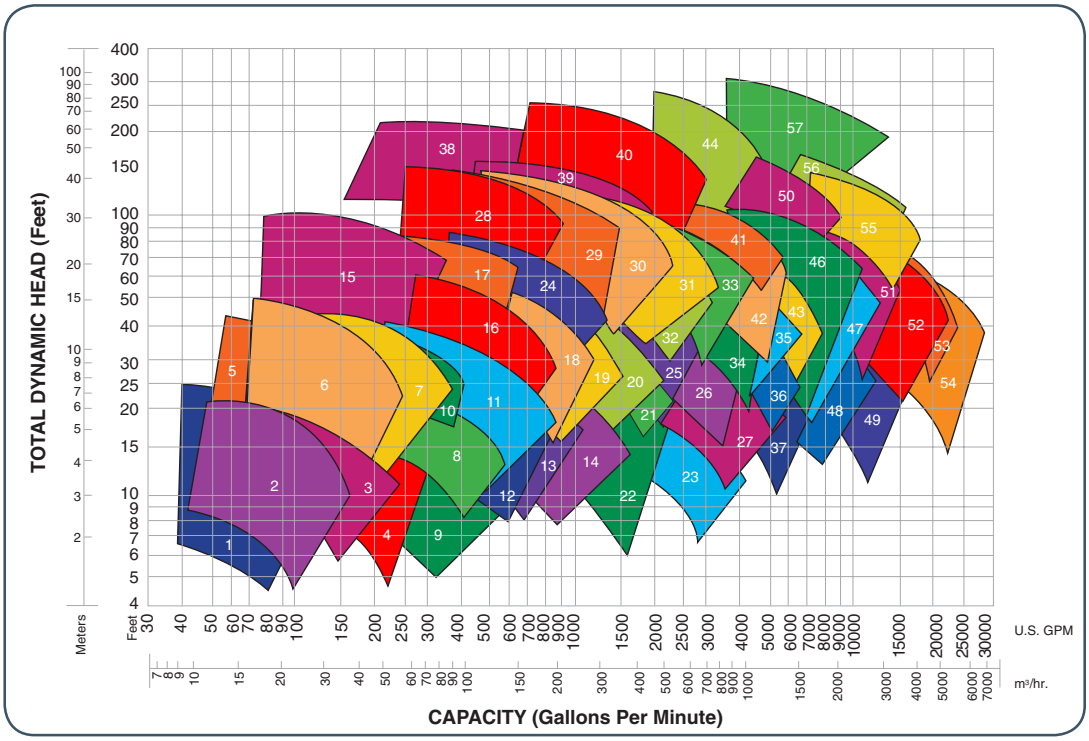
Fairbanks Nijhuis has the experience and knowledge to handle all of your submersible solids handling pump applications. Installation accessories include:

- Control systems complete with level controls
- Starters
- Circuit breakers
- Multiple sump access cover designs
- Guide rail systems
- Discharge piping

Five-Year Warranty

We back our submersible units with a pro-rated five-year warranty. The careful design of our submersible solids handling pumps allows for easy disassembly and service. Parts and service are available through the Fairbanks Nijhuis factory, as well as authorized distributors and repair centers.

Performance Data



Shown below is the performance data for the various pump configurations available for our Submersible Solids Handling Pumps.

Submersible Solids Handling Pumps			
Number	Model	Discharge	RPM
1	5432W	2" (50.8 mm)	870
2	5431W	2" (50.8 mm)	1180
3	5431MW	3" (76.2 mm)	1180
4	5432MW	3" (76.2 mm)	870
5	5432W	2" (50.8 mm)	1180
6	5431W	2" (50.8 mm)	1170
7	5431MW	3" (76.2 mm)	1770
8	5431MW	4" (101.6 mm)	1180
9	5432MW	4" (101.6 mm)	870
10	5432MW	3" (76.2 mm)	1180
11	5432MW	4" (101.6 mm)	1180
12	5433MW	4" (101.6 mm)	870
13	5433MW	5" (127 mm)	870
14	5433MW	6" (152.4 mm)	870
15	5432W	2" (50.8 mm)	1770
16	5431MW	4" (101.6 mm)	1770
17	5432MW	3" (76.2 mm)	1770
18	5433MW	4" (101.6 mm)	1180
19	5433MW	5" (127 mm)	1180
20	5433MW	6" (152.4 mm)	1180
21	5434MW	6" (152.4 mm)	870
22	5434MW	8" (203.2 mm)	705
23	5731MW	12" (304.8 mm)	705
24	5432MW	4" (101.6 mm)	1770
25	5434MW	8" (203.2 mm)	870
26	5435MW	10" (254 mm)	585
27	5731MW	12" (304.8 mm)	880
28	5433MW	3" (76.2 mm)	1770
29	5433MW	4" (101.6 mm)	1770

Submersible Solids Handling Pumps			
Number	Model	Discharge	RPM
30	5433MW	5" (127 mm)	1770
31	5433MW	6" (152.4 mm)	1770
32	5434MW	6" (152.4 mm)	1180
33	5433MW	8" (203.2 mm)	1180
34	5435MW	10" (254 mm)	705
35	5731MW	14" (355.6 mm)	870
36	5731MW	14" (355.6 mm)	705
37	5731MW	16" (406.4 mm)	705
38	5435MW	4" (101.6 mm)	1770
39	5434MW	4" (101.6 mm)	1770
40	5436MW	5" (127 mm)	1770
41	5435MW	8" (203.2 mm)	1180
42	5435MW	10" (254 mm)	880
43	2434MW	12" (304.8 mm)	880
44	5436MW	6" (152.4 mm)	1770
45	5436MW	8" (203.2 mm)	1180
46	5731MW	14" (355.6 mm)	1180
47	5731MW	16" (406.4 mm)	880
48	5731MW	18" (457.2 mm)	585
49	5731MW	20" (508 mm)	585
50	5733MW	14" (355.6 mm)	880
51	5731MW	18" (457.2 mm)	705
52	5731MW	20" (508 mm)	705
53	2434MW	20" (508 mm)	585
54	5731MW	24" (609.6 mm)	585
55	2434MW	16" (406.4 mm)	880
56	5732MW	14" (355.6 mm)	705
57	5733MW	14" (355.6 mm)	1180

THE COMMITMENT OF FAIRBANKS NIJHUIS®

Our distinctive products, market leadership, excellent customer service, and longevity in the industry are all a result of the quality and dedication of our team. Our pumps are machined, built, and tested by highly skilled personnel. Working as a team, our people continually explore new ways to better serve our customers. Product quality, dependability, and innovation are all part of the Fairbanks Nijhuis commitment to excellence.

PENTAIR

3601 FAIRBANKS AVENUE, KANSAS CITY, KANSAS 66106 www.FairbanksNijhuis.com

Because we are continuously improving our products and services, Pentair reserves the right to change specifications without prior notice.
FM-02-1501 12/09/15 © 2015 Pentair Ltd. All Rights Reserved.