LENNTECH
WATER TREATMENT SOLUTIONS

Water Circulation Pumps & Circulators

FI / SFI Frame-Mounted End Suction Pumps

FI Series Pumps provide the ultimate in reliability and ease of installation for heating, air conditioning, pressure boosting, cooling water transfer, and water supply applications. Quiet, dependable and proven performance: that's the FI Series. Now also available featuring SelfSensing with ProBalance®, ECM motor options and eLink™.

Optimized Efficiency Oe
Featuring **ECM** Technology

SelfSensing Series WITH ProBalance®

eLink™ Taco Connectivity

Taco Comfort Solutions®
A Taco Family Company

©Taco Catalog #: 300-2.4
Supersedes: 05/24/17

Effective Date: 04/06/18
Printed in USA

FI Series Details

Quiet, dependable power and proven performance.

FI Series Pumps meet the latest standards for hydraulic performance and dimensional characteristics. Each is backed by Taco, Inc., a worldwide leader in heating and cooling equipment for more than nine decades.

Improved bearing frame design features sealed for life bearings meeting all industry requirements for a minimum L 10 life of 60,000 hours. Improved design also incorporates a unique sealing system which prevents the migration of water into the bearing frame.

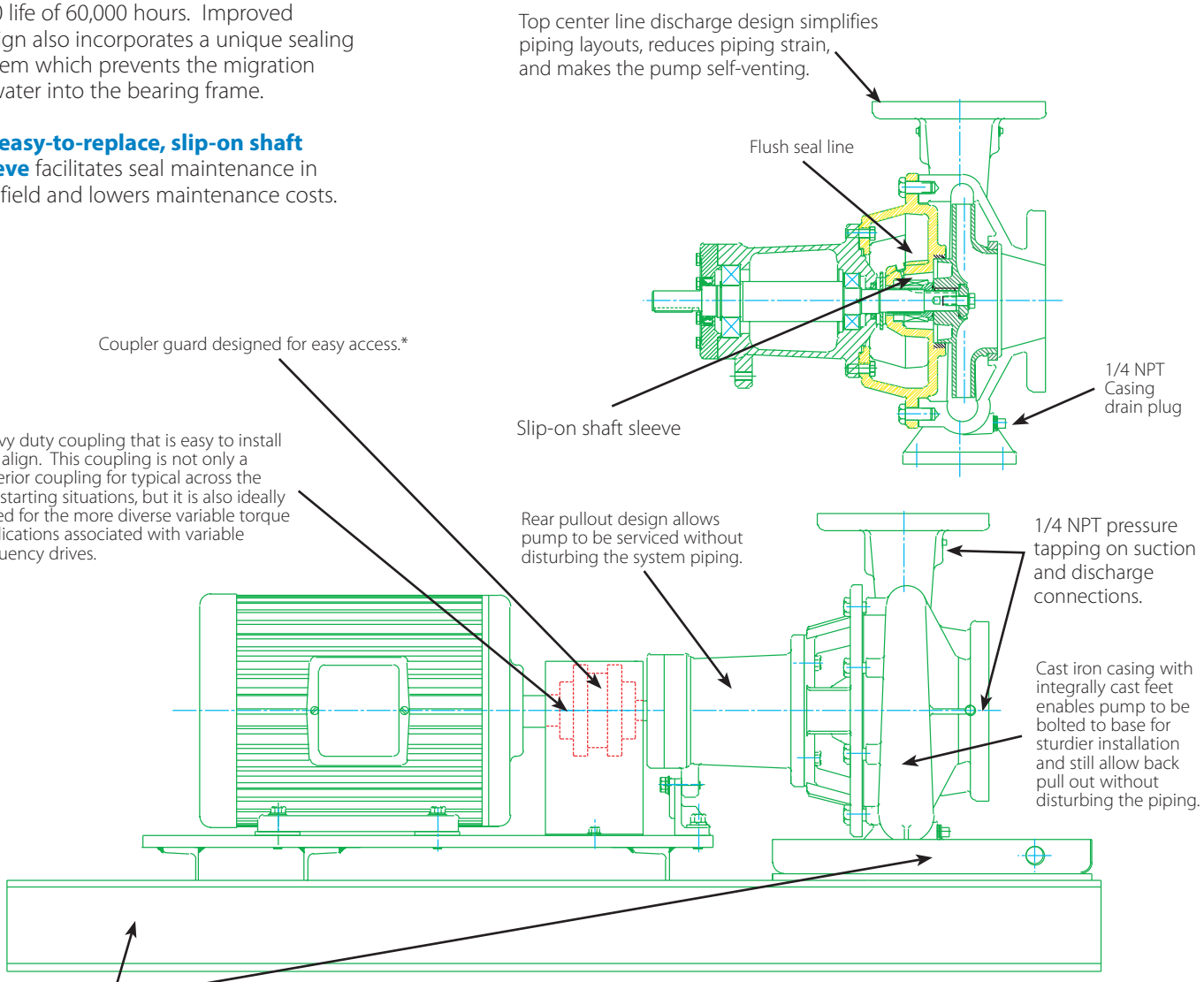
An easy-to-replace, slip-on shaft sleeve facilitates seal maintenance in the field and lowers maintenance costs.

The exclusive dry shaft design protects the pump shaft by eliminating contact between the shaft and the circulating fluid.

Flush seal line taps allow the installation of a filter to protect the seal from non-condensible particles present in systems. In addition, pressure tappings on suction and discharge connections are provided as a standard feature.

A fully welded, rigid structural steel base, with enclosed ends and open grouting area reduces vibration and improves alignment.

Taco FI Pumps are ideally suited for a variety of applications, including heating, air conditioning, pressure boosting, cooling water transfer, and water supply.

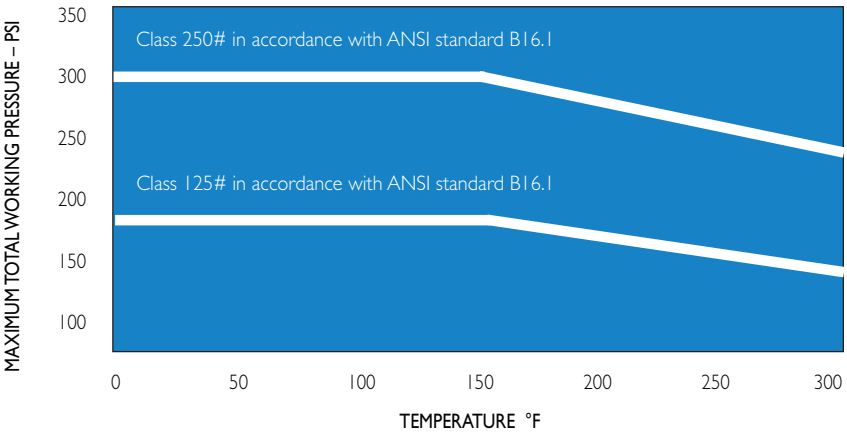


RIGID BASE

- Steel construction provides for rigid base installation.
- Built in drain pan (with 3/4" drain connection), Collects all condensate and seal leakage.
- Ample open space for easy grouting.
- The heavy-duty compact design provides a more stable platform, which meets or exceeds hydraulic institute and industry standard for rigidity and vibration dampening, the base design is an ideal solution for those tight mechanical room installations.
- Facilitates improved alignment and ease of grouting.

** Optional Coupler Guard available which conforms to ANSI 315.1 Section 8 and OSHA 1910.219*

Pressure-Temperature Ratings



OPERATING SPECIFICATIONS		
	Standard	Optional
Flange	ANSI Class 125*	ANSI Class 250*
Pressure	175 PSIG* 1210 KPA	300 PSIG* 2070 KPA
Temperature	250°F 120°C**	250°F 102°C**

** Per Pressure Temperature Ratings chart above.*

ADDITIONAL OPTIONS	
Filters	Cuno 5 Micron
Separators	Kynar Cyclone Separator

** For operating temperatures above 250˚F, a cooled flush is required and is recommended for temperatures above 225˚F for optimum seal life. On closed systems, insert a small heat exchanger in the flush line to cool the seal flushing fluid.

FI Pump Materials of Construction

	BRONZE FITTED			NSF 61		
	STANDARD PUMP CONSTRUCTION		OPTIONAL 125# or 250#	STANDARD PUMP CONSTRUCTION		OPTIONAL 125# or 250#
	125# Flange	250# Flange		125# Flange	250# Flange	
Casing	Cast Iron ASTM A48/A48M-03 Class 30A	Ductile Iron ASTM A536-84 Grade 65-45-12	N/A	Cast Iron ASTM A48/A48M-03 Class 30A	Ductile Iron ASTM A536-84 Grade 65-45-12	N/A
Cover	Cast Iron ASTM A48/A48M-03 Class 30A	Ductile Iron ASTM A536-84 Grade 65-45-12	N/A	Cast Iron ASTM A48/A48M-03 Class 30A	Ductile Iron ASTM A536-84 Grade 65-45-12	N/A
Impeller	Bronze ASTM B584 ALLOY C83600 or C84400	Bronze ASTM B584 ALLOY C83600 or C84400	N/A	Stainless Steel ASTM A351/A 351M-08	Stainless Steel ASTM A351/A 351M-08	N/A
Wear Ring	N/A	N/A	Bronze ASTM B584-98A C92200	N/A	N/A	Bronze ASTM B584-98A C92200
Shaft	Stainless Steel TYPE 416"T" ASTM A582	Stainless Steel TYPE 416"T" ASTM A582	N/A	Stainless Steel TYPE 416"T" ASTM A582	Stainless Steel TYPE 416"T" ASTM A582	N/A
Shaft Sleeve	Bronze ASTM B584-98A C92200	Bronze ASTM B584-98A C92200	Stainless Steel TYPE 303 ASTM A276	Bronze ASTM B584-98A C92200	Bronze ASTM B584-98A C92200	N/A
Mechanical Seal	Ceramic/EPT	Ceramic/EPT	Tungsten Carbide/EPT or Silicon-Carbide/EPT	Ceramic/EPT	Ceramic/EPT	N/A
Seal Flush Line Assembly	N/A	N/A	Copper &Brass C3600	Copper & Brass C3600	Copper & Brass C3600	N/A

N/A - Not Available

Support Documentation

Typical Specification

Furnish and install centrifugal end suction single stage pump(s) with capacities and characteristics as shown on the plans. Pumps shall be Taco Model FI or approved equal.

Pump volute or casing shall be center-line discharge for positive air venting constructed of class 30 cast iron with integrally cast mounting feet. The pump may be fitted with an optional replaceable bronze wear ring, drilled and tapped for gauge ports at both the suction and discharge connections and for drain port at the bottom of the casing. The pumps shall be capable of being serviced without disturbing the system piping.

The impeller shall be bronze and hydraulically balanced by either back vanes or balancing holes. The impeller shall be dynamically balanced to ANSI Grade G6.3 and shall be fitted to the shaft with a key. The pump shall be close coupled to a NEMA standard JM regreaseable motor. The pump shall incorporate a dry shaft design to prevent the circulating fluid from contacting the shaft. The shaft shall be covered with a replaceable bronze (stainless steel) shaft sleeve.

The cast iron pump bearing housing shall have heavy duty permanently lubricated sealed for life ball bearings, replaceable without disturbing the piping connections, and shall have a foot support at the driver end.

The pump shall have a self flushing seal design or a positive external seal flushing line. Pump may be furnished with a seal flush line and a Purocell # 900 replaceable cartridge filter with shut-off isolation valve installed in the seal flushing line. The filter shall have the ability to remove particles down to five microns in size.

The pump seal shall be EPT Ceramic rated 250°F.

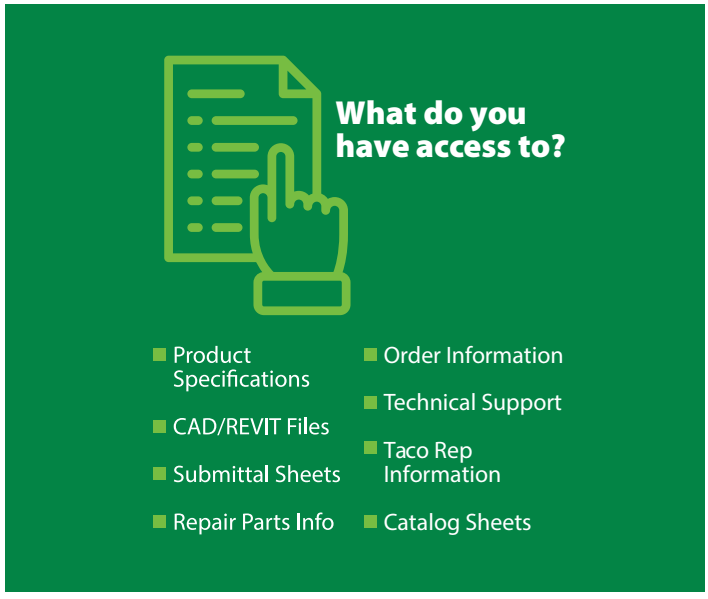
The base shall be made of structural steel. The base shall also include an integral drain pan. A flexible coupler suitable for both across the line starting applications. as well as variable torque loads associated with variable frequency drives, shall connect the pump to the motor and shall be covered by a coupler guard. Contractor shall level and grout each pump according to manufacturers recommendations to ensure proper alignment prior to operation.

eLink™ Taco Connectivity

Taco Tags use the power of NFC technology to provide users with all the relevant documents for a specific product, right on their phone. Your digital document library will always be accessible with the most up to date documentation and product information for that specific piece of equipment.

Utilizing the power of Taco Tags to provide you with all of your documentation needs, Taco is ensuring our user base is informed to take control of their equipment.

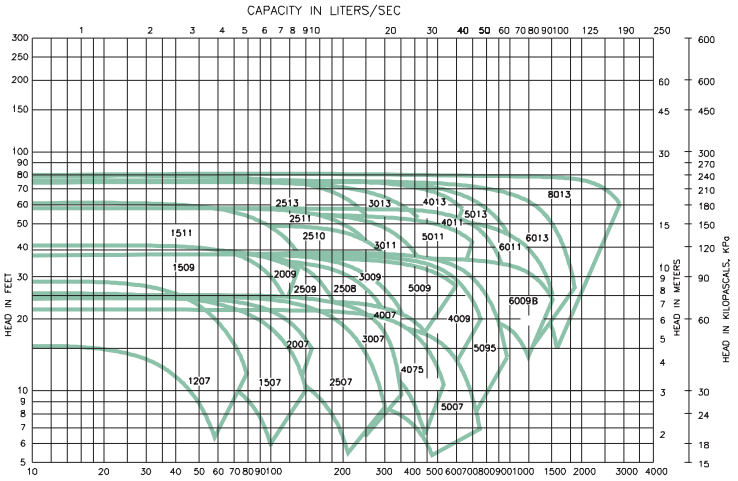
eLink provides easy access to product specs, technical documentation, instruction manuals and much more. Stay tuned as we continue to grow the eLink offerings on Taco commercial equipment.



FI Series Performance Field

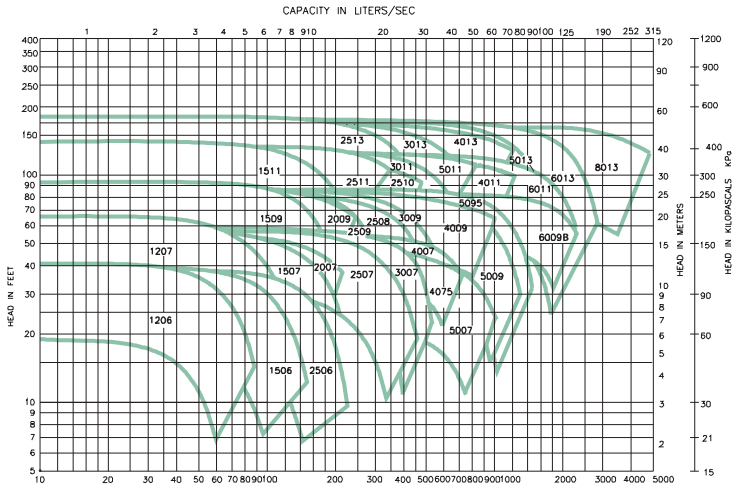
Curves also available on TacoNet.

1160 RPM



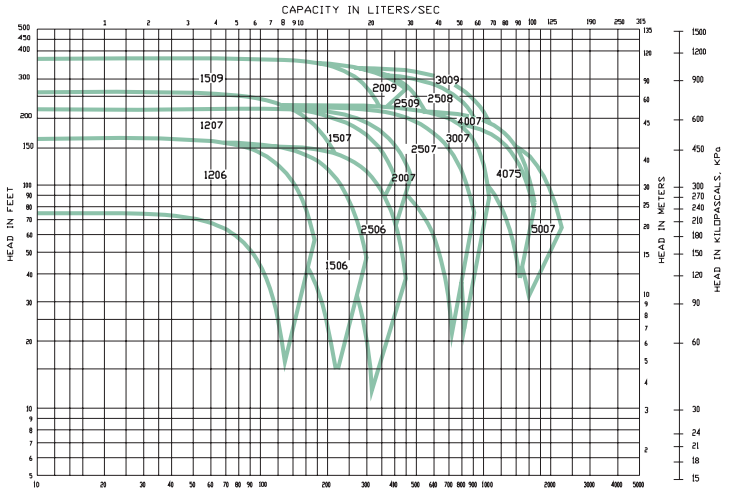
FLOW IN GALLONS PER MINUTE • **1160 RPM** • FI QUICK SELECTION CURVE

1760 RPM



FLOW IN GALLONS PER MINUTE • **1760 RPM** • FI QUICK SELECTION CURVE

3500 RPM



FLOW IN GALLONS PER MINUTE • **3500 RPM** • FI QUICK SELECTION CURVE

Additional Features

SelfSensing Series WITH ProBalance®

A giant leap forward for variable speed pumping

The Self-Sensing Series with ProBalance®. At the heart is the patent pending SelfSensing ProBalance technology. The VFD's SelfSensing capabilities make fast, accurate do-it-yourself system balancing easy. Reduced balancing contractor costs, no expensive wiring, and no additional sensors required. Apply to ALL your pumping needs: both constant flow chiller/boiler pumps and secondary variable flow pumps!

- Integrated pump and drive
- Pump automatically responds to system demand changes
- No remote sensors
- No complex wiring
- Multiple modes:
  - — Constant flow
  - — Constant pressure
  - — Flow compensation
  - — Duplex pump alternation

Parallel Pumping Configuration

The SelfSensing Modulating Pump Controller (MPC) stages individual pumps in parallel configuration for best overall pumping efficiency. The MPC is capable of operating 2 to 4 pumps in parallel for maximum efficiency. The Sensorless Parallel Pump Controller provides single building automation systems connection in either BACnet MSTP or Modbus RTU and is enclosed in a NEMA 4X certified enclosure.

The ultimate in pump protection and electrical safety.

Intertek

The SelfSensing Series also features automatic alerts with optional shutdown for no-flow, dry-run, and end-of-curve operation. That means the seal is safe should someone forget to open a valve or to run the pump without water. What's more, the unit is electronically protected for overload and locked rotor conditions per UL 778 and CSA C22.2 No. 108, so the motor is protected — a real crowd pleaser for insurance companies.

Presenting DIY Balancing

Every HVAC pump needs to be balanced by an expert who must account for construction variables and safety factors. Whether constant or variable speed, the balancing process has to be addressed at commissioning and startup. But what if you could zero in on the true system resistance without inducing false head and balance the pump yourself? You can with Taco's SelfSensing ProBalance® technology.

The benefits of Do-It-Yourself balancing:

- You'll have control over your construction schedule and subcontractors
- Reduced installation costs
- You can help a LEED team get a job into their budget

What kind of savings can you expect?

Balancing a constant flow system with Taco drives saves lots of energy and increases pump life dramatically. For example, a pump that would have run at 1750 rpm @ 60hz is balanced with technology to run at 1458 rpm @50hz. Now the pump consumes 57% of the horsepower and runs 291 fewer revolutions per minute. The savings translate to 419,000 cycles per day or 150M fewer cycles very year. As a result, the pump lasts longer, requires less maintenance, and uses less energy.

To illustrate, using best practices and balancing with drives saved a Tennessee hospital $3,000 in yearly electrical costs on 100 hp chiller pumps running at 47 hz instead of 60 hz.

ProBalance® feature not available in Parallel Pumping Configuration.

High Performance Packages

Take your system to the next level with Taco's *Optimized Efficiency* Packages.

In today's environment, hydronic systems need to be up to date with the latest technology. The market is now driven towards high efficiency solutions by ever increasing regulations and environmental factors. Whether you need the best efficiency to combat high utilities or to reduce your carbon footprint, Taco has you covered.

By utilizing Permanent Magnet motor technology, Taco is bringing the largest ECMs available to the hydronic industry. In combination with our pumps, we aim to optimize your overall efficiency with the latest technology available. Don't get caught wishing you had a more efficient system, lead the charge with pumps that exceed regulations, utilize the latest technology available, and decrease total cost of ownership.

Features

Horsepower Range.....3 - 30hp

RPM 1750

Voltage Options:
3-10 HP = 230V/460V/60/3 useable at 208V, 575V/60/3
15-30 HP = 460V/60/3, 575V/60/3

Motor Enclosure Type.....3-10 hp = TENV
15-30 hp = TEFC

Drive Enclosure Options ....NEMA 1, NEMA12, NEMA4X

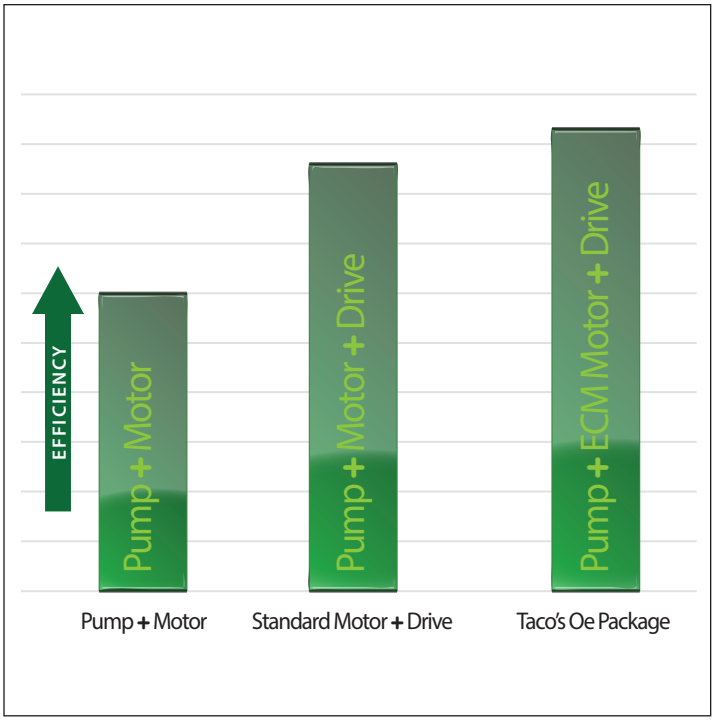
Benefits

- Longer service life, more uptime and higher reliability
- Increased performance, quieter & smoother operation
- Reduced lubrication frequency, resulting in lower maintenance costs
- Low operating temperature
- Flatter motor efficiency profile than the equivalent induction motor as the speed & load decline

Oe Package

The Taco Oe package is designed to increase total efficiency. Taco will not only meet, but exceed the regulations passed down from the DOE. In doing so, we also deliver a complete package to our users that saves on energy and the environment.

Our Oe package is simple, we take our pump, add a Permanent Magnet motor, and top the equipment off with a drive to increase your savings at slower speeds! Taco is the first company to bring ECM technology to hydraulic pumps up to 30hp.



Oe Package including SelfSensing with ProBalance

Everything the Oe package has to offer and the added benefits of the Taco programmed SelfSensing Drives! Increase your performance with the Taco SelfSensing drives included with the Permanent Magnet motor pumps for the best energy rating Taco has to offer. The added benefits of DIY balancing will decrease the total cost of ownership over the lifetime of the pump.

A Variable Frequency Drive is required to operate the Permanent Magnet motor. The Oe package cannot be sold without a drive.

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