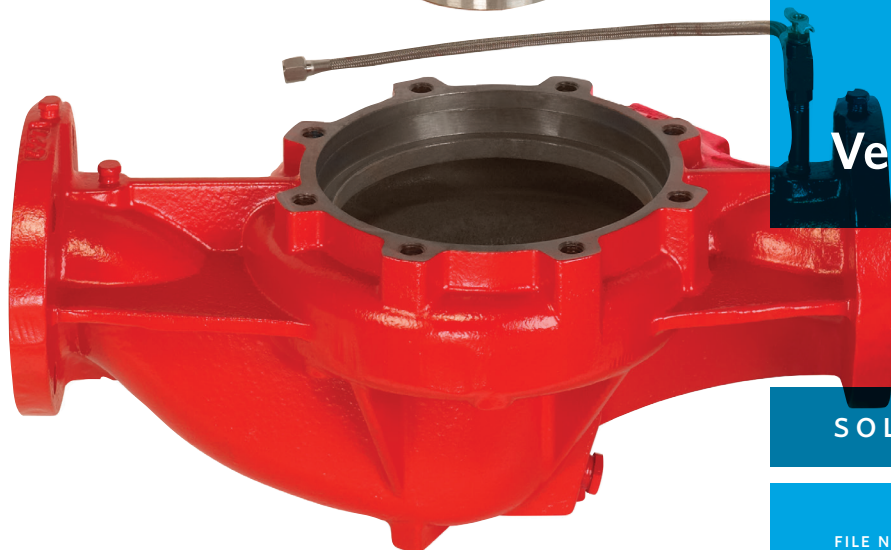




**DESIGN
ENVELOPE**



Vertical In-Line Retrofit

SOLUTION OUTLINE

FILE NO: 100.19
DATE: MARCH 2017

SUPERSEDES: 100.19
DATE: MAY 2016

FORWARD THINKING | RETROFIT

Armstrong's Design Envelope Vertical In-Line Retrofit is a unique retrofit solution that replaces all of the moving parts of a pump, but leaves the existing casing in place.

It's a solution that lets building owners with Armstrong Vertical In-Line pumps revitalize their HVAC system and get all the benefits of Armstrong's industry-leading Design Envelope Sensorless technology at a reduced first cost.

ENERGY SAVINGS

UP TO 70%

Design Envelope technology combines the largest, high-efficiency operating range with sensorless, demand-based control for optimal performance. Upgrading an HVAC system from constant flow to variable flow using Design Envelope can reduce pump operating costs by up to 70%. Even in constant speed HVAC systems, using design envelope technology to maintain the exact flow rate required can reduce pumping costs by 15 to 20%.

DESIGN ENVELOPE



All the value of Design Envelope at an even lower first cost

Cut out the cost of a new casing, new insulation and required pipe pressure testing. The retrofit installation takes less time and reduces the impact on your building operation.

Armstrong Design Envelope pumps also eliminate the need for separate wiring to a drive on the wall., Sensorless technology is embedded in the Design Envelope controller so you avoid the costs for purchase, installation and wiring of differential pressure sensors. Sensorless technology also provides accurate flow monitoring ($\pm 5\%$).

Flexible performance

Standard variable speed controllers can't match the performance efficiency and flexibility of a Design Envelope solution.

Performance management services

Pump Manager is available for all connected pumps as a cloud-based service

Improved reliability

Design Envelope pumps deliver longer motor life through soft starts and reduced operating speeds (20-30%). Sensorless technology also eliminates long-term costs associated with sensor location, accuracy drift and maintenance.

PERFORMANCE PACKAGES



Sensorless Bundle (standard)



Parallel Sensorless Bundle



Energy Performance Bundle (requires Sensorless Bundle)



Protection Bundle (requires Sensorless Bundle)



Zone Optimization



Dual Seasonal Setup

FUNCTIONS INCLUDED

- Sensorless Control
- Flow Readout
- Constant Flow
- Constant Pressure

- Parallel Sensorless Control

- Auto-Flow Balancing
- Maximum Flow Control

- Minimum Flow Control
- Bypass Valve Control

- 2 Sensor Control

- Dual Seasonal Setup

KEY FEATURES

Sensorless technology calculates precise flow-rates to monitor and control motor speed

Exact match of rotating components to existing casing

Factory testing and calibration of every individual Design Envelope pump

Precise demand-based control of pump speed

Built-in WiFi connectivity

Optional Performance Management services

KEEP THE CASING

ADD THE INTELLIGENCE

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