

# **Fristam** PUMPS®

*Engineered For Lasting Performance®*



**FP**

**FPX**

**FPR**



## **Sanitary Centrifugal Pumps**

# Fristam Pride

Fristam is a global manufacturer of sanitary centrifugal and positive displacement pumps, mixers and blenders respected for unmatched performance, reliability, and technical superiority.

Fristam manufactured its first pump in 1931. Today, Fristam equipment is used by many of the world's top dairy, beverage, brewing, bio-pharmaceutical, and food processing companies.

# High Lifetime Value

The solid design, precise machining, and robust construction of a Fristam pump ensures efficiency and operational reliability. Fristam pumps simply run better and last longer.

# Quality Control

Fristam Pumps USA designs, manufactures, and assembles its pumps in the United States. Each component is carefully checked from raw material through final assembly. The result of this effort is a pump worthy of the valuable product your company produces. To achieve the highest level of quality, Fristam offers the most comprehensive testing and documentation packages in the sanitary pump industry.



**Designed, Manufactured & Assembled in Middleton, WI**

## Experience and Expertise

Over the past 100 years, Fristam has built its reputation with experience, attention to detail, and a willingness to adapt to changing needs. Fristam's strong applications engineering capabilities make it the most reliable source for straight, smart answers to process needs.

## Fast Delivery, New Solutions

Manufacturing in the United States ensures Fristam customers receive prompt delivery, not lead times measured in months.

Additionally, if a new production challenge arises, Fristam is responsive and able to develop new solutions quickly.

## Dedicated Support

Fristam's dedication and quality service do not end with your initial purchase. An international network of manufacturing facilities, sales offices and distribution supports Fristam's commitment to customer satisfaction.

## Why Customers Choose Fristam

*"simply better pumps"*

*"reliable, dependable"*

*"high standard for sanitization and performance"*

*"knowledgeable people who help solve problems"*

## **Fristam Centrifugal Lifetime Value**

- **High Efficiency**
- **Low Maintenance**
- **Gentle Product Handling**
- **Complete CIP'ability**
- **Low NPSH Requirements**
- **Long Seal Life**
- **Reliability and Durability**
- **Quiet Operation**



**FRISTAM**  
*Engineered For Lasting Performance®*

# **“Fristams are the best pumps going.”**

*– Maintenance Manager, Dairy Plant*



## **Heavy-Duty Construction**

Fristam centrifugal housings, covers, and impellers are made from 316L stainless steel castings and forgings for more substantial mass. Other centrifugal manufacturers use thinner stamped or pressed steel.

Due to its solid construction, a Fristam can withstand more hydraulic shock and cavitation which can ruin a pump.

## **Internal Seal**

Fristam’s unique internal seal uses the cooling and lubrication of the product to provide longer seal life.

## **Close Internal Clearance**

Internal clearances are as tight as 0.020 inches, making the pumps highly efficient and very gentle on product.

## **Optimized Impeller**

The ‘optimized vane angle’ design of Fristam impellers maximizes efficiency and allows for low NPSH requirements. A Fristam centrifugal runs smoothly and quietly.

## **Fristam Centrifugal Pumps Specifications**

Models: 26 (each series)

Motor Size: up to 100 HP

Flow Rate: up to 2000 GPM

Viscosity: up to 1200 CPS

Inlet Pressure: up to 150 PSI

Discharge Pressure: up to 450 ft. head / 195 PSI

## Seal Life Measured in Years

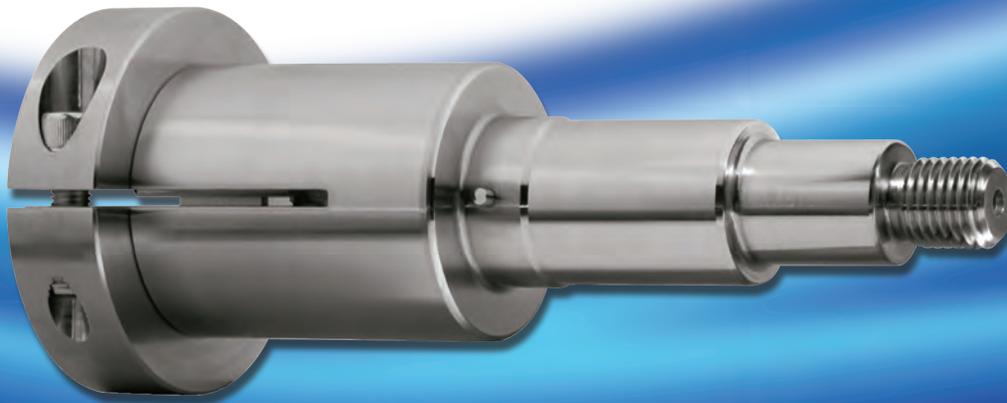
Seal life is critical to pump performance. Fristam's unique internal seal uses the cooling and lubrication of the product to provide longer seal life.

Even under extreme conditions, Fristam's seal life is often measured in years. Some companies have tried to copy Fristam seal designs. None can match the quality and performance of an original Fristam seal.

## Easy Maintenance

### Self-Aligning Shaft

The self-aligning Fristam shaft design allows for easy installation and gapping. The concentric collar on the shaft prevents run-out, protecting from seal damage.



### Simple Tools

No special tools are needed to service Fristam centrifugal pumps.

# The Evolution of Fristam Centrifugal Pumps

The FP Series is the original Fristam pump which established the standards for high performance centrifugals. The success of the FP led satisfied customers to request a Fristam pump for less severe applications. The result was the FPX, a pump combining the same pump head with a modified mounting flange and shaft. Since its introduction, the FPX has become an industry standard for most general applications.



Single or Double Seal

Pedestal-Mounted  
for Heavy Duty

## FP

The FP's heavy cast iron pedestal reduces noise and vibration and helps dissipate heat.

Its double mechanical seal option offers flexibility for vacuum withdrawal, aseptic processing, and abrasive products.



Single Seal Only

Standard Duty

## FPX

Available in single seal only, the FPX is the pump of choice for standard applications, including product transfer; CIP supply; and pumping to fillers, separators, and heat exchangers.

## FPR Front-Loading Seal

In 2004, Fristam Pumps again responded to user requests for a centrifugal pump that continued the legacy of the FP and FPX, but offered a new feature to make maintenance even easier: a front-loading seal.

Today, processors can choose from all three series for maximum flexibility.



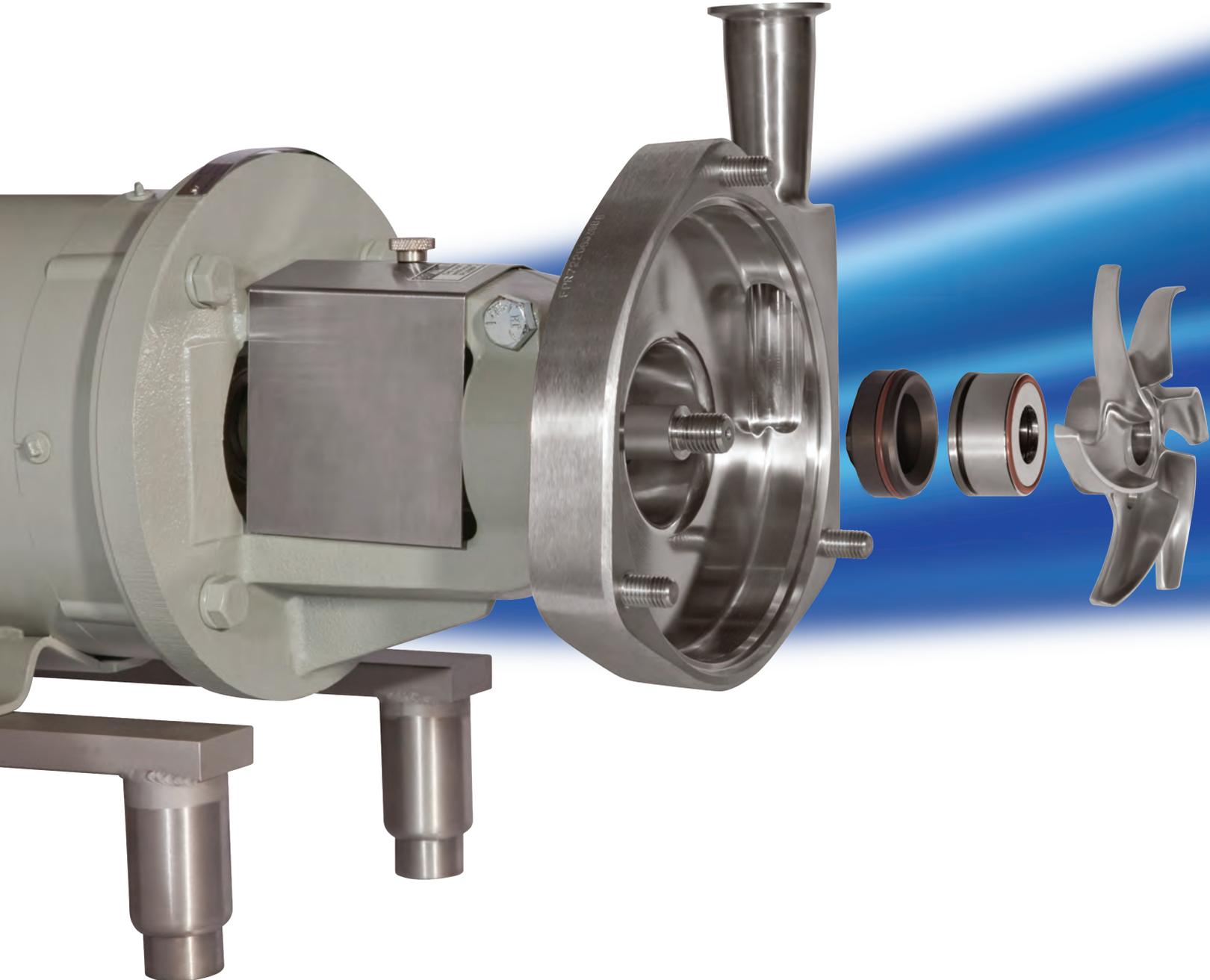
Single or Double Seal

All Duties

# FPR: Fast, In-line Seal Changes

FPR Series centrifugal pumps reduce maintenance time and effort. Designed with a front-loading seal, the FPR allows production personnel to service the pump in place—processors no longer need to pull pumps out of line to change seals, single or double.

Simply remove the cover and impeller, and the rotating and stationary seals can be removed by hand. There is no need to disassemble the housing from the pump.



## FPR: Less Maintenance Inventory

Only two seal sizes are needed to fit all models (except 4001, see below). For each pump model, seal size remains the same regardless of motor size.

Fristam pump shafts are designed to fit both the single and double mechanical seal arrangements. This reduces the number of shafts needed to stock for spare parts.

## High Flow FPR 4001

For large capacity processing, the FPR 4001 can achieve flow rates of up to 2000 gallons/minute.

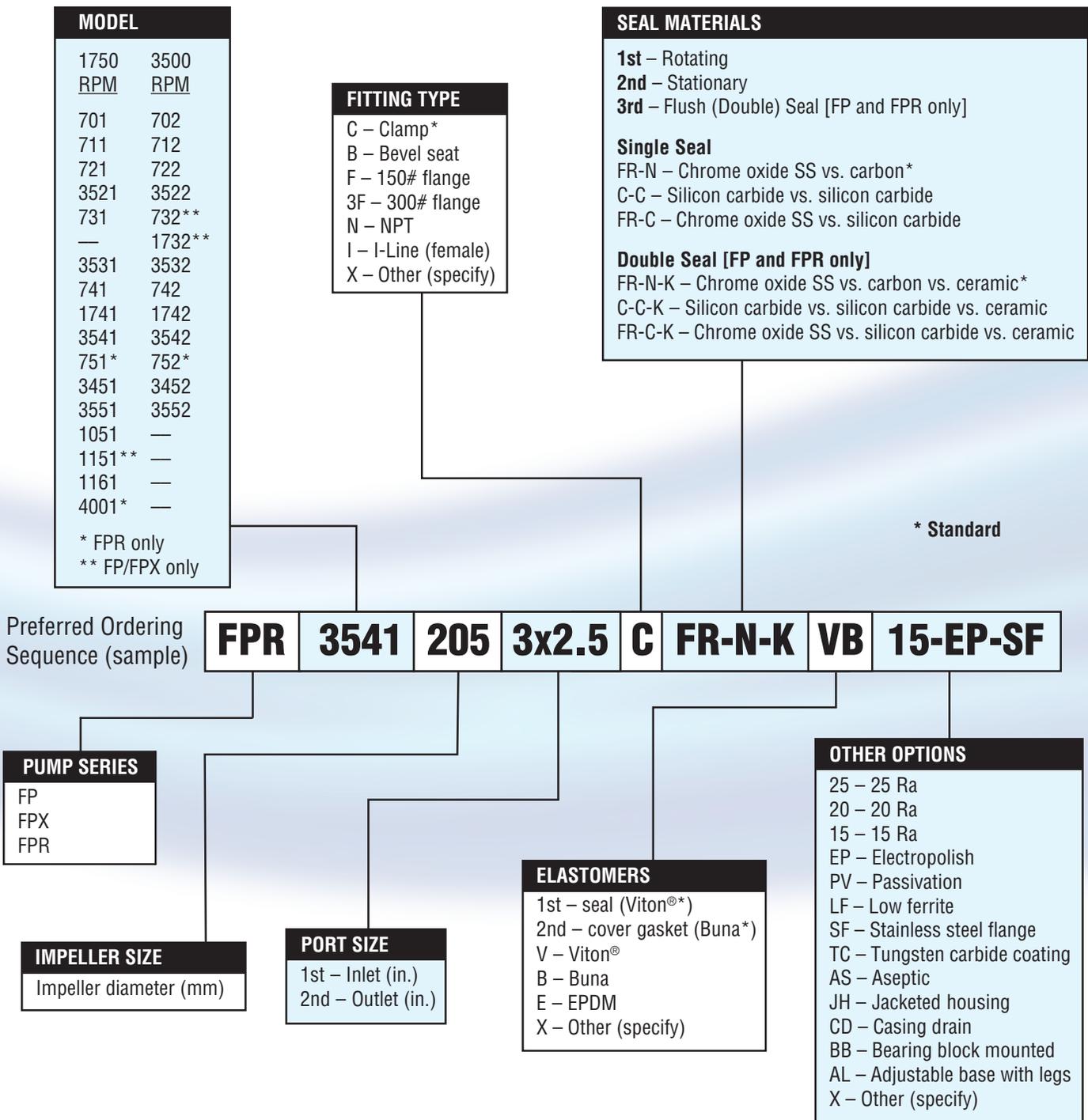
Its 6-inch inlet and 14-inch impeller make it ideal for moving large amounts of non-viscous liquid.



***“...reliable, easy maintenance, very good centrifugal pump...”***

*– Maintenance Planner, Pharmaceutical Facility*

# Fristam Centrifugal Options and Ordering Matrix



## Fristam Centrifugal Specialty Pumps

- Water for Injection
- Aseptic
- Jacketed Housing

## Pharmaceutical Options

All standard stainless steel components are 316L. Special castings are available in low-ferrite stainless steel or high-performance alloys such as Hastelloy® and AL-6XN®. Class VI elastomers are standard for pharmaceutical applications, with perfluoroelastomers available. Seal materials include stainless steel, ceramic, silicon carbide, and tungsten carbide.

Electropolishing and enhanced internal surface finishes to 15 Ra are available on most products.

Casing drain and mounting options provide complete drainability critical for long-term system cleanliness. Pumps can be easily configured for steam-in-place sterilization, with no external cooling devices required.

### Water For Injection (WFI) Pumps

Fristam is the industry leader for WFI and other high purity service. Fristam WFI centrifugal pumps are a precision adaptation of our FP, FPX, and FPR pumps. They feature an advanced seal design that protects product sterility, saves valuable product and provides for long seal life.

Fristam pioneered a pressurized double seal flush system that ensures product sterility and saves valuable product by maintaining positive pressure in the critical seal area. The internal seal design provides extra cooling and lubrication on the front seal face to significantly extend seal life and provide for more system uptime.

Numerous seal and piping configurations, including single seal piping, are available to meet your processing requirements.



### Comprehensive Documentation Package

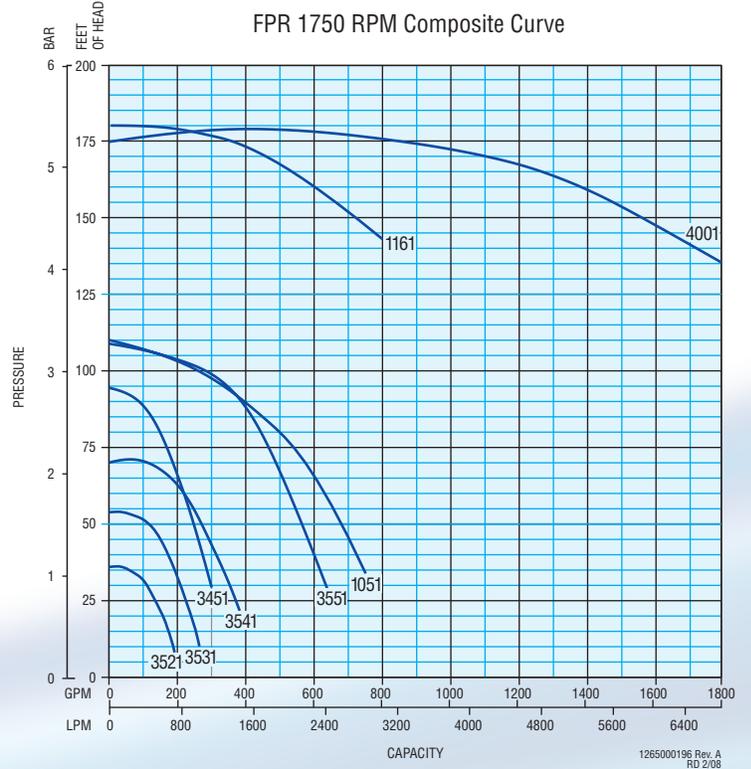
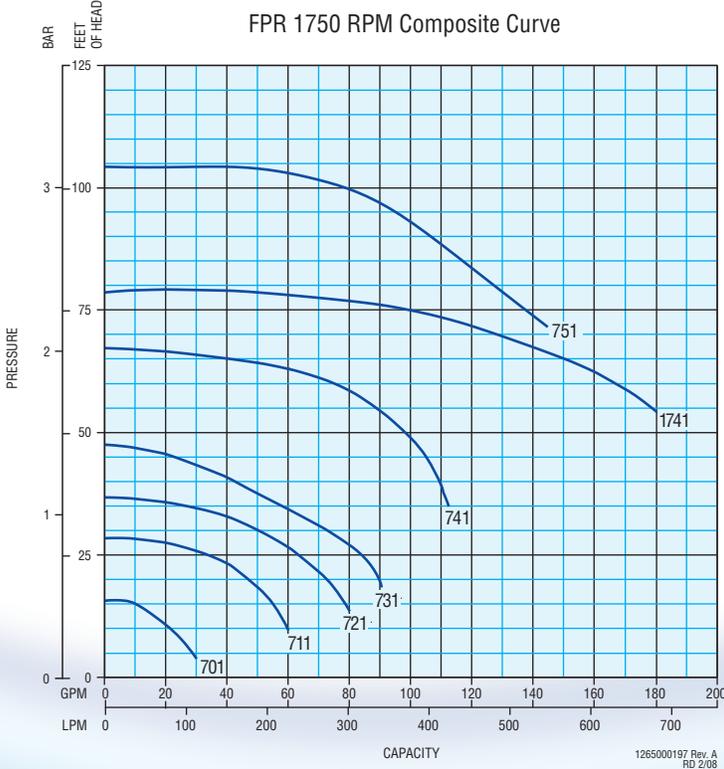
- Certified Drawings
- Mill Certification
- Physical Certifications
- Material Verification
- Conformance
- Warranty Statement
- Certified Finish
- Passivation of Pump
- Stainless Steel Tag
- Paper Location Tag
- Certified Welding
- Hydrostatic Test
- Dynamic Seal Test
- Short Run Test
- Performance Test
- NPSH Test
- Witness Test
- Vibration Test
- Ferrite Test
- Saline Test
- Seismic Calculation

## Mission Statement

To be the leader in achieving total customer satisfaction by providing the highest value pumps and “Whatever-it-takes” customer service.

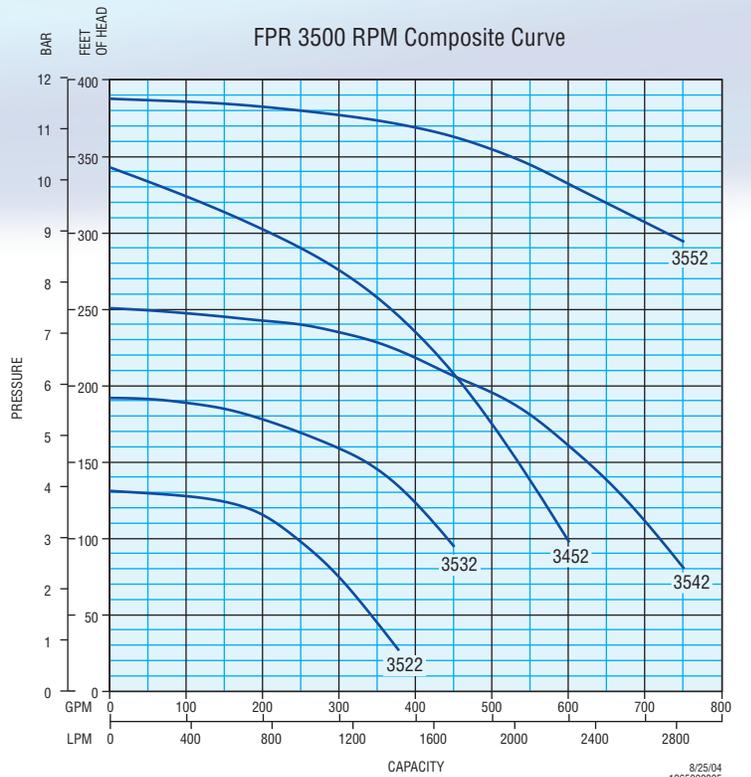
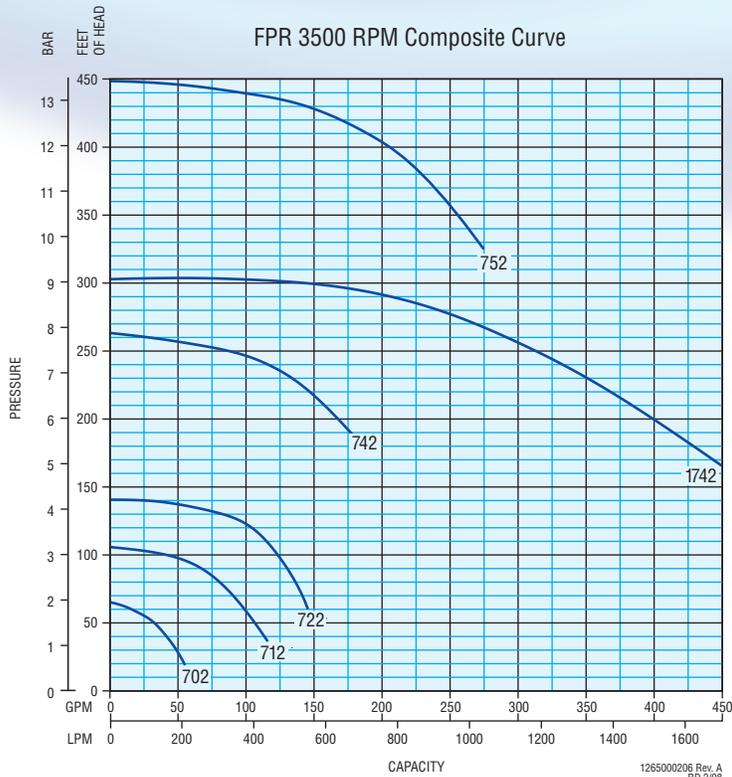
# FPR Composite Performance Curves—1750 RPM\*

Performance curves based on tests using 70° water. Actual performance may vary by application or product.



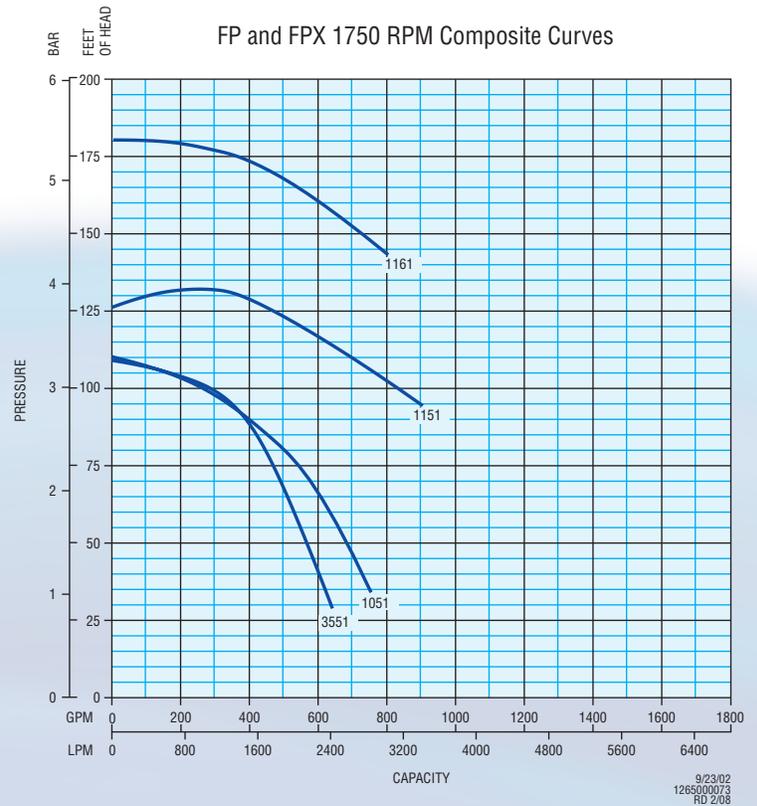
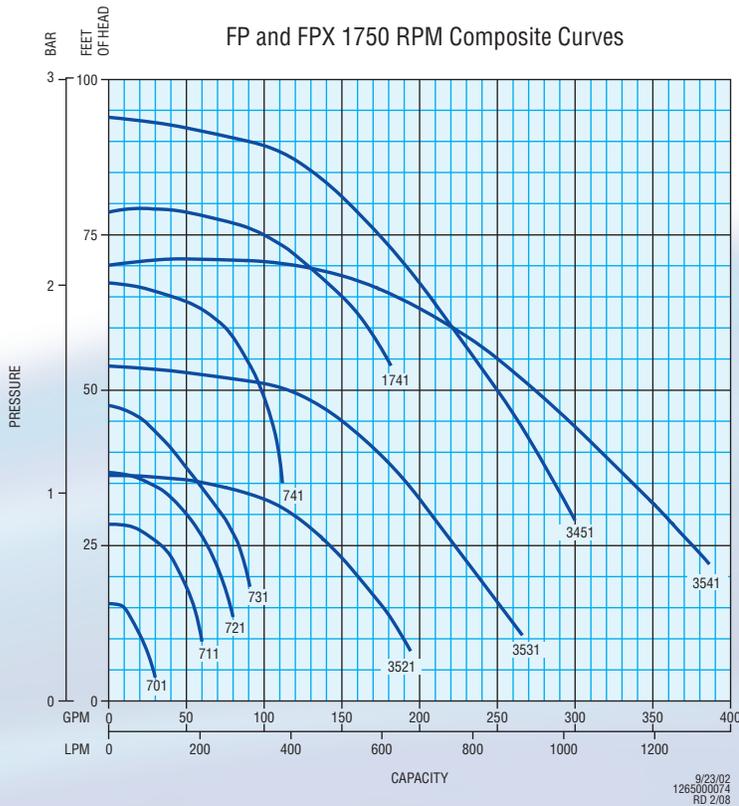
# FPR Composite Performance Curves—3500 RPM\*

Performance curves based on tests using 70° water. Actual performance may vary by application or product.



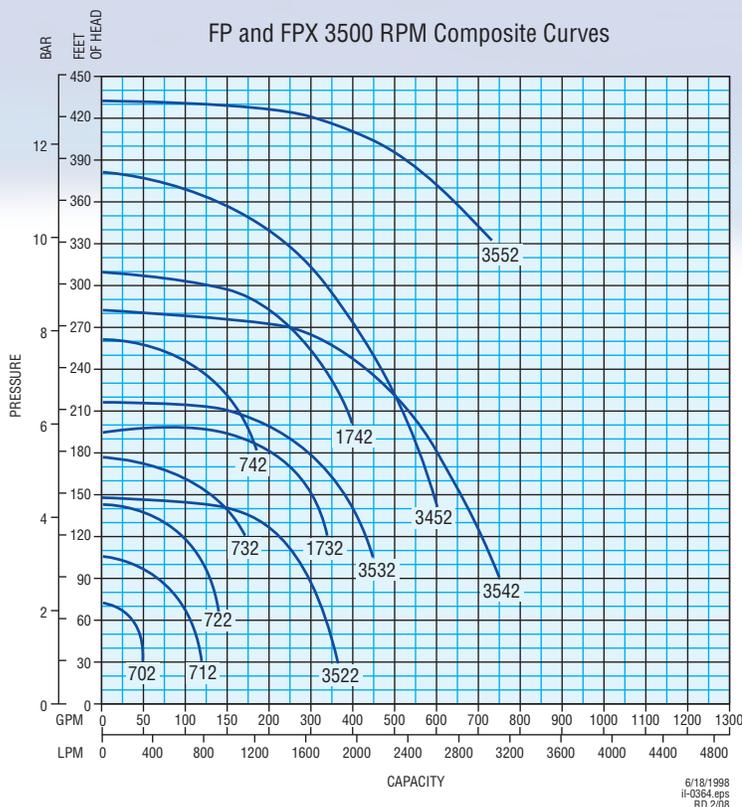
# FP/FPX Composite Performance Curves—1750 RPM\*

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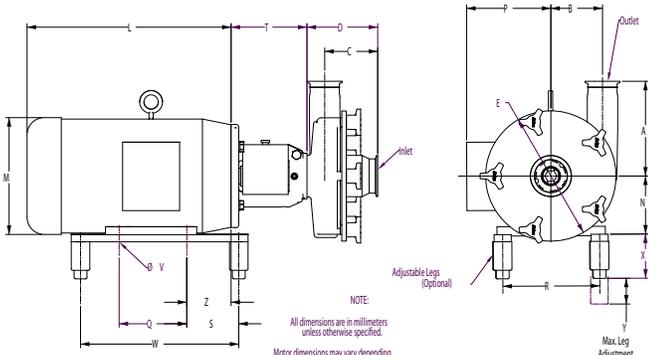
# FP/FPX Composite Performance Curves—3500 RPM\*

Performance curves based on tests using 70° water. Actual performance may vary by application or product.



\*See the Fristam Centrifugal Curve Book or visit [www.fristam.com/usa](http://www.fristam.com/usa) for individual pump performance curves.

# FP/FPX Single Flange Dimensional Drawing

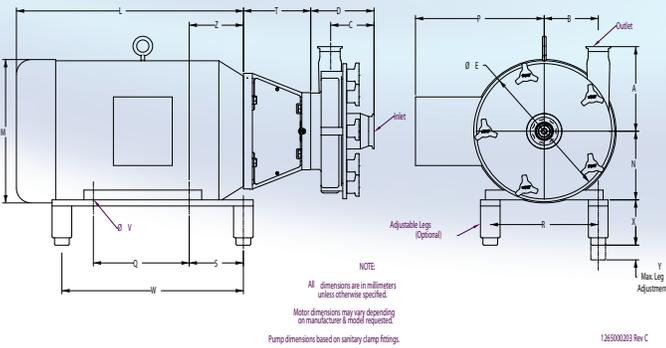


NOTE:  
All dimensions are in millimeters unless otherwise specified.  
Motor dimensions may vary depending on manufacturer & model requested.  
Pump dimensions based on sanitary clamp fittings.

PUMP MODEL	INLET	OUTLET	A	B	C	D	E
FPR 701/702	1.5"	1.5"	108	44.5	106.5	139.5	150
			4.25"	1.75"	4.19"	5.49"	5.91"
FPR 711/712	2"	1.5"	144	58	113	145	185
			5.67"	2.28"	4.45"	5.71"	7.28"
FPR 721/731/722	2"	1.5"	170	79	113	145	230
			6.69"	3.11"	4.45"	5.71"	9.06"
FPR 741/742	2.5"	2"	195	96	101	136	270
			7.68"	3.78"	3.98"	5.35"	10.63"
FPR 1741/1742	2.5"	2"	200	91	104	145.5	270
			7.87"	3.58"	4.09"	5.73"	10.63"
FPR 3521/3522	2.5"	2"	190	80	118	157.5	230
			7.48"	3.15"	4.65"	6.2"	9.06"
FPR 3531/3532	2.5"	2"	191	95	115.5	157.5	260
			7.52"	3.74"	4.55"	6.2"	10.24"
FPR 3541/3542	3"	2.5"	211	115	118	157.5	290
			8.31"	4.53"	4.65"	6.2"	11.42"

MOTOR HP	MOTOR FRAME	L	M	N	P	Q	R	S	T	V	W	X	Y	Z
1 HP	143TC	284	175	89	133	101.6	140	127	120	8.7	356	98	38	57.2
1.5 HP	145TC	284	175	89	133	127	140	127	120	8.7	356	98	38	57.2
2 HP	145TC	284	175	89	133	127	140	127	120	8.7	356	98	38	57.2
3 HP	182TC	340	221	114	149	114	191	108	169	10.3	356	98	38	69.9
3 HP	182TC	354	221	114	149	114	191	108	169	10.3	356	98	38	69.9
5 HP	184TC	354	221	114	149	140	191	108	169	10.3	356	98	38	69.9
5 HP	184TC	354	221	114	149	140	191	108	169	10.3	356	98	38	69.9
7.5 HP	184TC	423	221	114	149	140	191	108	169	10.3	356	98	38	69.9
7.5 HP	213TC	403	260	133	187	140	216	108	169	10.3	356	98	38	88.9
10 HP	215TC	403	260	133	187	178	216	108	169	10.3	356	98	38	88.9
10 HP	215TC	416	260	133	187	178	216	108	169	10.3	356	98	38	88.9
15 HP	215TC	515	260	133	187	178	216	108	169	10.3	356	98	38	88.9
15 HP	254TC	499	327	159	244	210	254	102	169	13.5	406	98	38	108.0
20 HP	256TC	499	327	159	244	254	254	102	169	13.5	406	98	38	108.0
20 HP	256TC	499	327	159	244	254	254	102	169	13.5	406	98	38	108.0
25 HP	284TSC	588	371	178	333	241	279	121	179	13.5	445	118	45	120.7
25 HP	284TC	588	371	178	333	241	279	121	179	13.5	445	118	45	120.7
30 HP	286TSC	588	371	178	333	279	279	121	179	13.5	445	118	45	120.7
30 HP	286TC	588	371	178	333	279	279	121	179	13.5	445	118	45	120.7
40 HP	324TSC	636	419	203	359	267	318	121	179	16.7	470	118	45	133.4
40 HP	324TC	636	419	203	359	267	318	121	179	16.7	470	118	45	133.4
50 HP	326TSC	636	419	203	359	305	318	121	179	16.7	470	118	45	133.4
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# FP/FPX Double Flange Dimensional Drawing

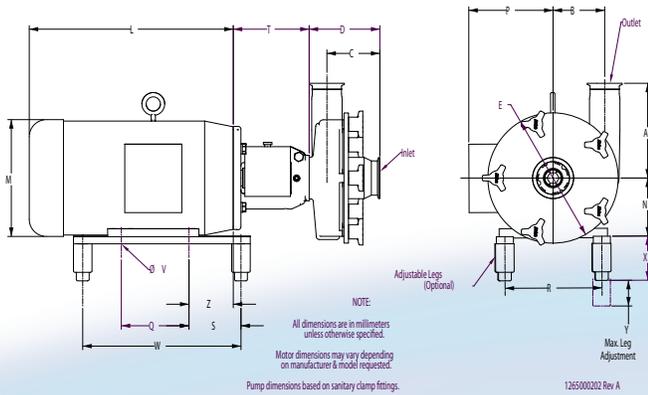


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Motor dimensions may vary depending on manufacturer & model requested.  
Pump dimensions based on sanitary clamp fittings.

PUMP MODEL	INLET	OUTLET	A	B	C	D	E
FPR 751/752	3"	2"	205	145	99	142	379
			8.07"	5.71"	3.9"	5.59"	14.92"
FPR 3451/3452	3"	2"	211	140	114	160.5	350
			8.31"	5.51"	4.49"	6.32"	13.78"
FPR 3551/3552	3"	2.5"	230	140	119	170	350
			9.06"	5.51"	4.69"	6.69"	13.78"
FPR 1051	4"	4"	250	170	167	202.5	406
			9.84"	6.69"	6.57"	7.97"	15.98"
FPR 1161	4"	4"	250	170	110.5	146	406
			9.84"	6.69"	4.35"	5.75"	15.98"

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5 HP	184TC	347	221	114	149	140	191	108	160	10.3	356	98	38	69.9
5 HP	184TC	347	221	114	149	140	191	108	160	10.3	356	98	38	69.9
7.5 HP	184TC	386	221	114	149	140	191	108	160	10.3	356	98	38	69.9
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10 HP	215TC	388	260	133	187	178	216	108	160	10.3	356	98	38	88.9
15 HP	215TC	436	260	133	187	178	216	108	160	10.3	356	98	38	88.9
15 HP	254TC	447	327	159	244	210	254	102	160	13.5	406	98	38	108
20 HP	256TC	491	327	159	244	254	254	102	160	13.5	406	98	38	108
20 HP	256TC	499	327	159	244	254	254	102	160	13.5	406	98	38	108
25 HP	284TSC	588	371	178	333	241	279	121	174	13.5	445	118	45	121
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30 HP	286TSC	588	371	178	333	279	279	121	174	13.5	445	118	45	121
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50 HP	326TSC	636	419	203	359	305	318	121	209	16.7	470	118	45	133
50 HP	326TC	636	419	203	359	305	318	121	209	16.7	470	118	45	133
60 HP	364TC	685	470	229	383	286	356	89	209	16.7	508	127	45	149
60 HP	364TSC	685	470	229	383	286	356	89	209	16.7	508	127	45	149
75 HP	365TC	685	470	229	383	311	356	89	209	16.7	508	127	45	149
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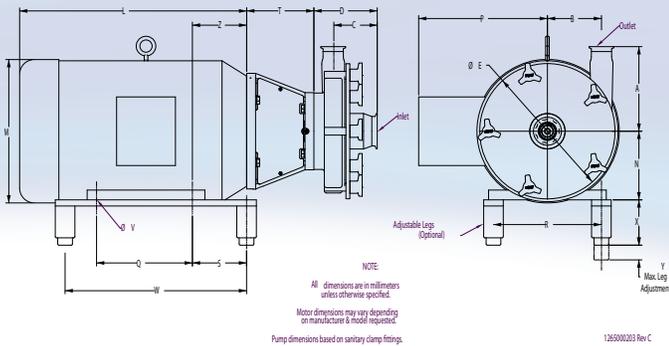
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60 HP	364TSC	685	470	229	383	286	356	89	209	16.7	508	127	45	149
75 HP	365TSC	685	470	229	383	311	356	89	209	16.7	508	127	45	149

\*Visit [www.fristam.com/usa](http://www.fristam.com/usa) for FPR 4001 dimensional drawings.



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