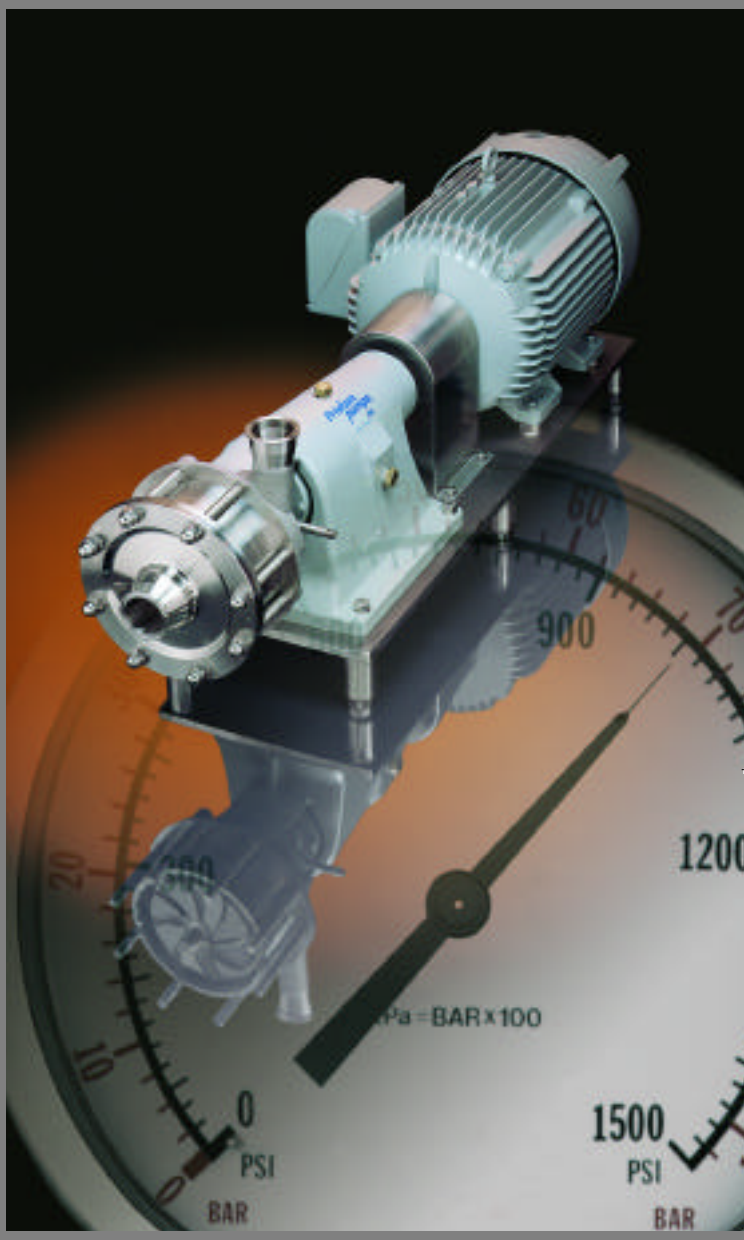
High Pressure
Sanitary Centrifugal Pumps



FM and FPH Series

Fristam Pumps…
Perfor mance You've Come To Expect

Fristam Pumps

FM and FPH Series: Fristam's High Pressure Centrifugal Pumps

Fristam Pumps, Inc.

Fristam is an international manufacturer of sanitary centrifugal and positive displacement pumps respected for performance, reliability and technical superiority. Fristam's high pressure pumps provide a cost effective solution for your high pressure applications.

High Inlet and Discharge Pressure Capabilities

Fristam has been manufacturing high pressure centrifugal pumps since 1981. Constructed of stainless steel to Fristam's traditional high standards, these pumps operate with inlet pressures from 600 to 1000 PSI and generate discharge pressures up to 1250 PSI while providing even, non-pulsating product flow.

Details on each of Fristam's high pressure pumps follow on pages 2-11.

High Pressure Pump Benefits

- Low acquisition and maintenance costs
- Even, non-pulsating product flow
- Internal seal provides long, trouble-free operation
- Discharge pressures to 1250 PSI
- Inlet pressures to 1000 PSI
- Extended life of filtration membranes
- High flow rates
- Sanitary construction
- Ability to clean-in-place (CIP)

Typical Applications

- Reverse Osmosis Systems
- Filtration
- Pressure Feed
- Recirculation

Seals

Seals are a key element of Fristam's reputation for outstanding performance. The high pressure pumps are no exception. Our internal, double mechanical seals were designed for long service, continuous performance and durability. These seals handle up to 1000 PSI inlet pressure.

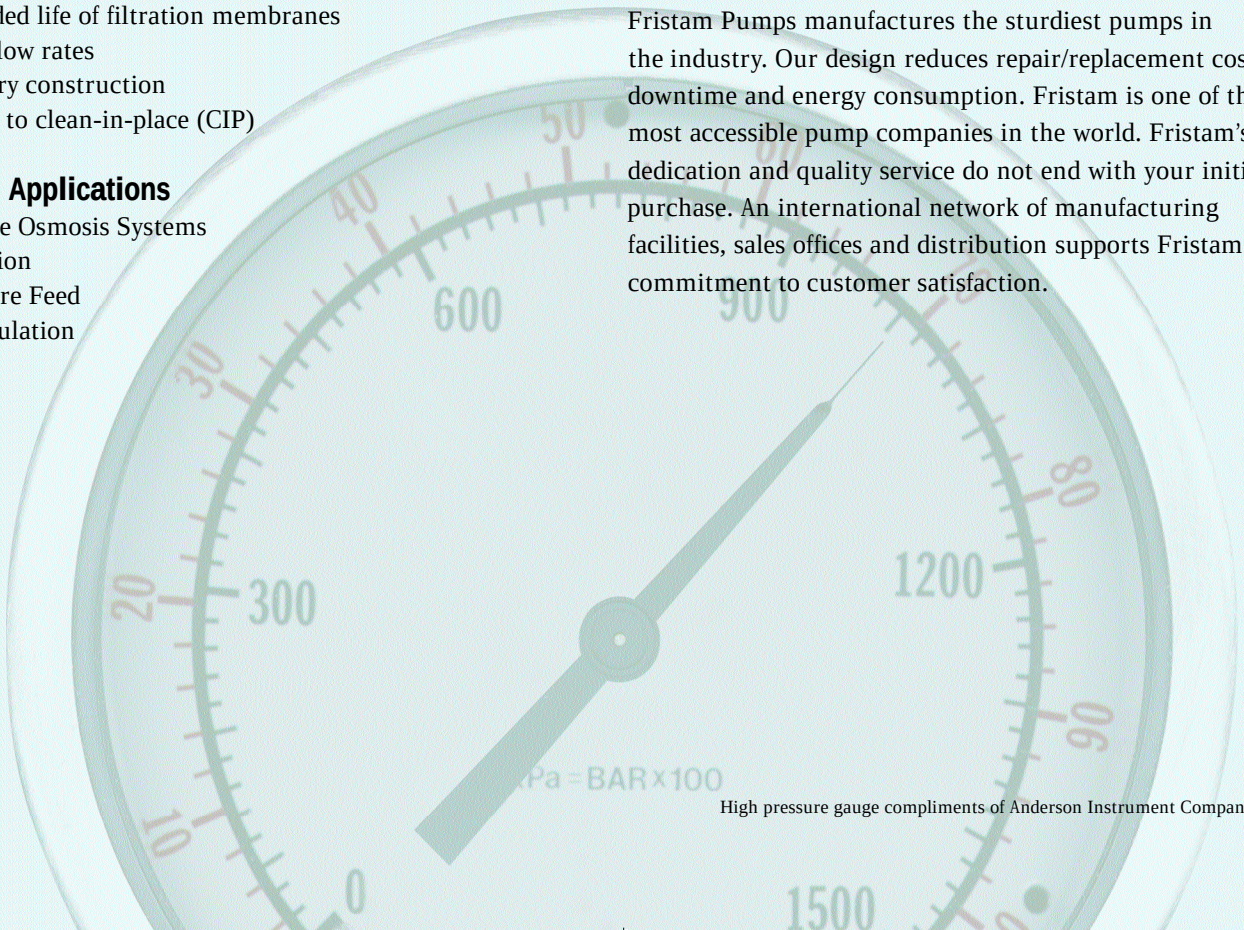
- Standard seal materials:
  Silcon Carbide vs. Silicon Carbide (except FPHP 722)
- Standard FPHP 722 seal materials:
  Tungsten Carbide vs. Tungsten Carbide
- Standard secondary seal material:
  Silicon Carbide vs. Carbon
- Standard elastomers: Viton

3-A, GMP, U.S.D.A., F.D.A. and ISO 9001

Fristam complies with and supports regulatory standards. Our high pressure pumps meet all applicable industry standards for performance, cleanliness and design. As a registered ISO 9001 company, Fristam is committed to consistent quality products.

Fristam's Commitment

Fristam Pumps manufactures the sturdiest pumps in the industry. Our design reduces repair/replacement costs, downtime and energy consumption. Fristam is one of the most accessible pump companies in the world. 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.



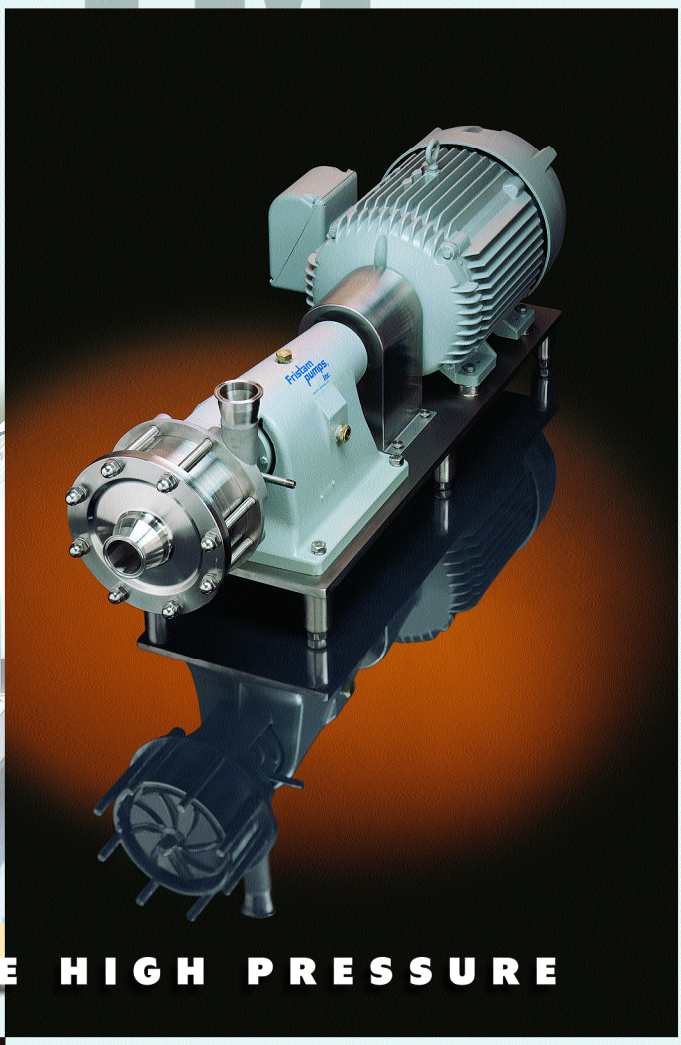
High pressure gauge compliments of Anderson Instrument Company, Inc.

FM Muti-Stage High Pressure Pumps

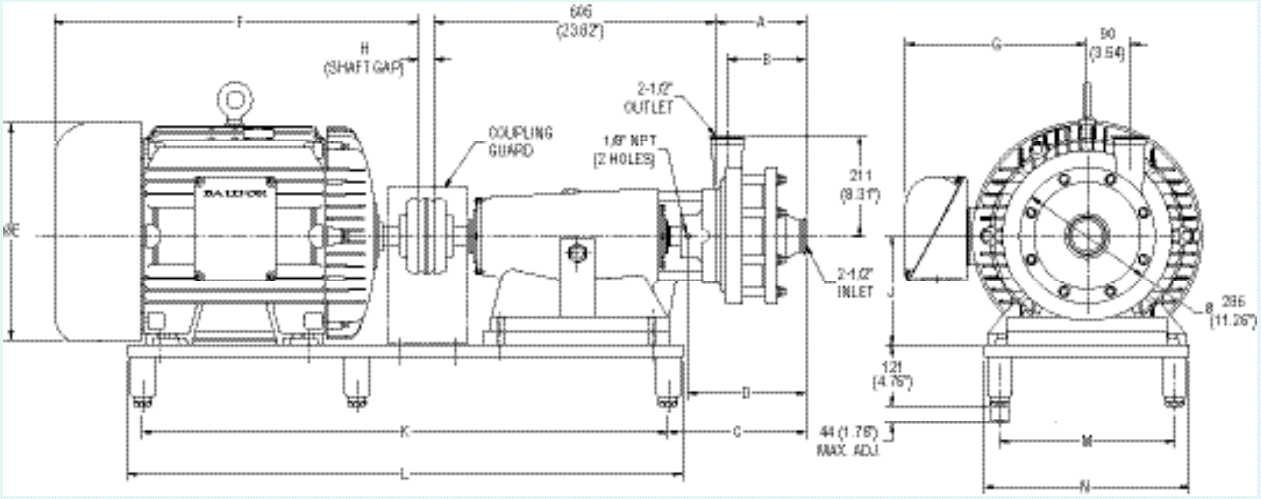
FM Series multi-stage pumps are available in one, two, three or four stages with each additional stage increasing the pump's discharge pressure capabilities. Single stage pumps are often used as re-circulation loop pumps. Two, three and four stage pumps are typically used to produce the required system pressure for a reverse osmosis system. The FM multi-stage pump is capable of flow rates up to 300 GPM. By placing pumps in series, a maximum discharge pressure of 1250 PSI can be achieved.

FM pumps are built with a heavy-duty bearing block assembly, mounted on a stainless steel base, complete with a coupling and coupling guard. The bearing block uses labyrinth oil seals and heavy-duty bearings. A close-coupled version (CCFM) is available for applications with space constraints.

FM pumps have become the benchmark for reverse osmosis system pumps with a non-pulsating flow and lower maintenance costs. Additionally, the FM's seal and bearing life are usually measured in years rather than months.



FM Dimensional Drawing

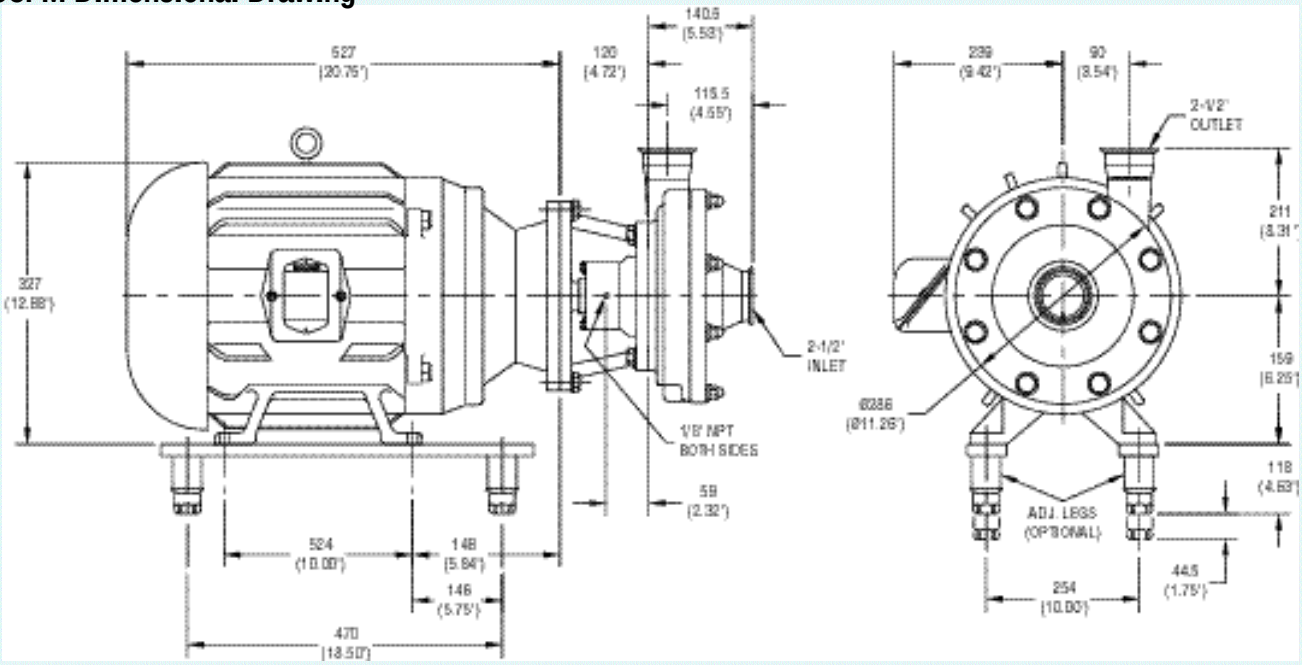


Pump Model	A	B	C	D
FM 312 (1 stage)	141 (5.55")	116 (4.57")	239 (9.41")	200 (7.87")
FM 322 (2 stage)	190 (7.48")	165 (6.50")	288 (11.34")	249 (9.80")
FM 332 (3 stage)	240 (9.45")	215 (8.46")	338 (13.31")	299 (11.77")
FM 342 (4 stage)	290 (11.42")	265 (10.43")	388 (15.28")	349 (13.74")

Note: All dimensions are in millimeters (inches) unless otherwise specified.
Motor dimensions may vary depending on manufacturer requested.
Pump dimensions are based on clamp fittings.

Motor HP	NEMA Frame	E	F	G	H	J	K	L	M	N
7.5 HP	213T	263(10.34")	469 (18.47")	220 (8.67")	16 (.63")	200 (7.87")	1083 (42.62")	1143 (45.00")	321 (12.62")	381 (15.00")
10 HP	215T	263 (10.34")	469 (18.47")	220 (8.67")	16 (.63")	200 (7.87")	1083 (42.62")	1143 (45.00")	321 (12.62")	381 (15.00")
15 HP	254T	270 (10.62")	536 (21.09")	225 (8.86")	6 (.25")	200 (7.87")	1083 (42.62")	1143 (45.00")	321 (12.62")	381 (15.00")
20HP	256T	270 (10.62")	580 (22.84")	225 (8.86")	6 (.25")	200 (7.87")	1083 (42.62")	11.43 (45.00")	321 (12.62")	381 (15.00")
25HP	284TS	395 (15.56")	670 (26.39")	333 (13.11")	19 (.75")	200 (7.87")	1083 (42.62")	1143 (45.00")	321 (12.62")	381 (15.00")
30HP	286TS	395 (15.56")	670 (26.39")	333 (13.11")	19 (.75")	200 (7.87")	1083 (42.62")	1143 (45.00")	321 (12.62")	381 (15.00")
40HP	324TS	430 (16.94")	731 (28.78")	371 (14.62")	6 (.25")	203 (8.00")	1083 (42.62")	1143 (45.00")	321 (12.62")	381 (15.00")
50HP	326TS	430 (16.94")	731 (28.78")	371 (14.62")	6 (.25")	203 (8.00")	1083 (42.62")	1143 (45.00")	321 (12.62")	381 (15.00")
60HP	364TS	483 (19.00")	780 (30.72")	380 (14.96")	6 (.25")	229 (9.00")	1108 (43.62")	1168 (46.00")	371 (14.62")	432 (17.00")
75HP	365TS	483 (19.00")	780 (30.72")	380 (14.96")	6 (.25")	229 (9.00")	1108 (43.62")	1168 (46.00")	371 (14.62")	432 (17.00")

CCFM Dimensional Drawing



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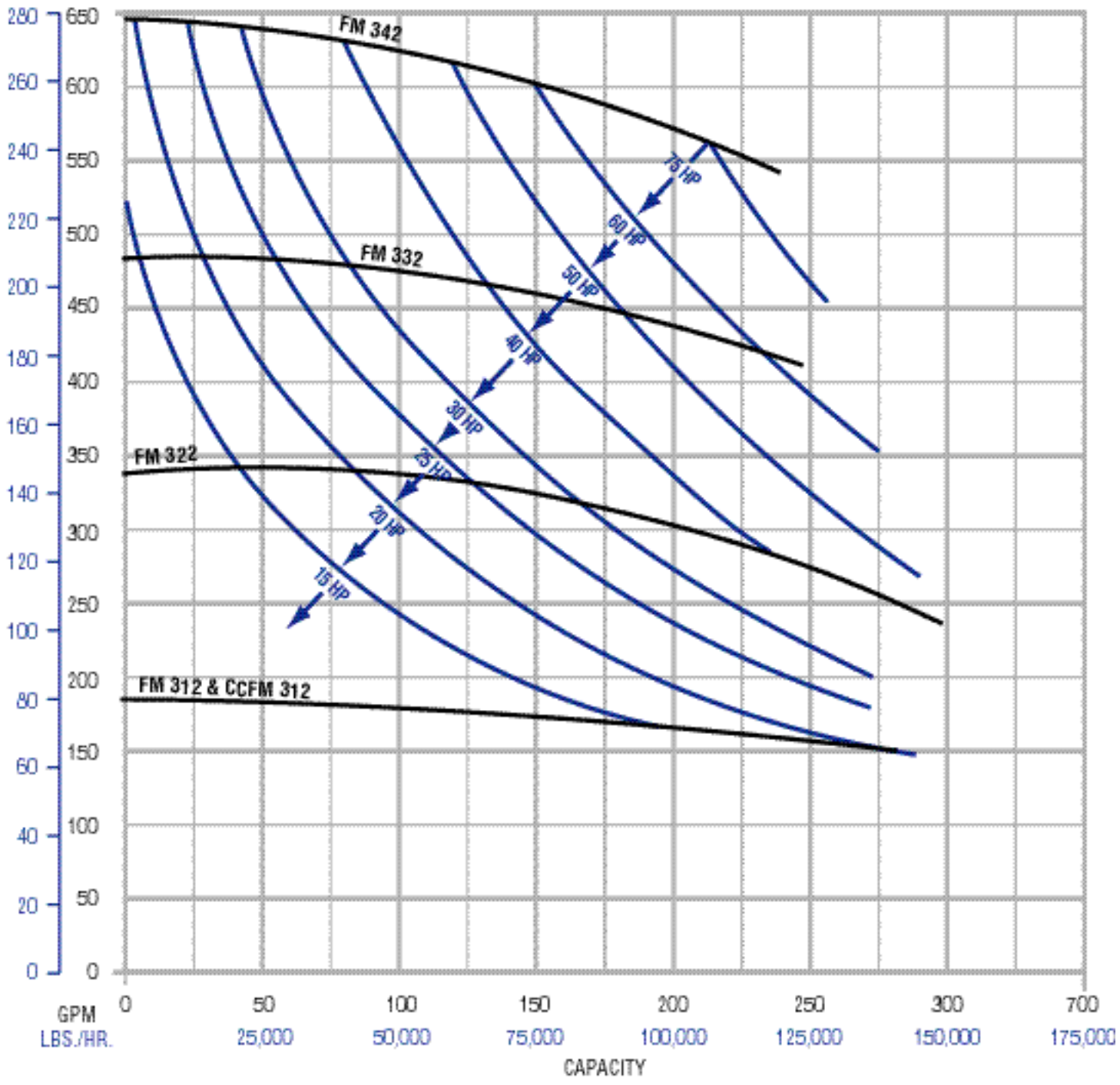
FM & CCFM 3500 RPM Composite Performance Curve

Performance curves based on tests using 70°F water. A tolerance of ±5% applies to all figures.

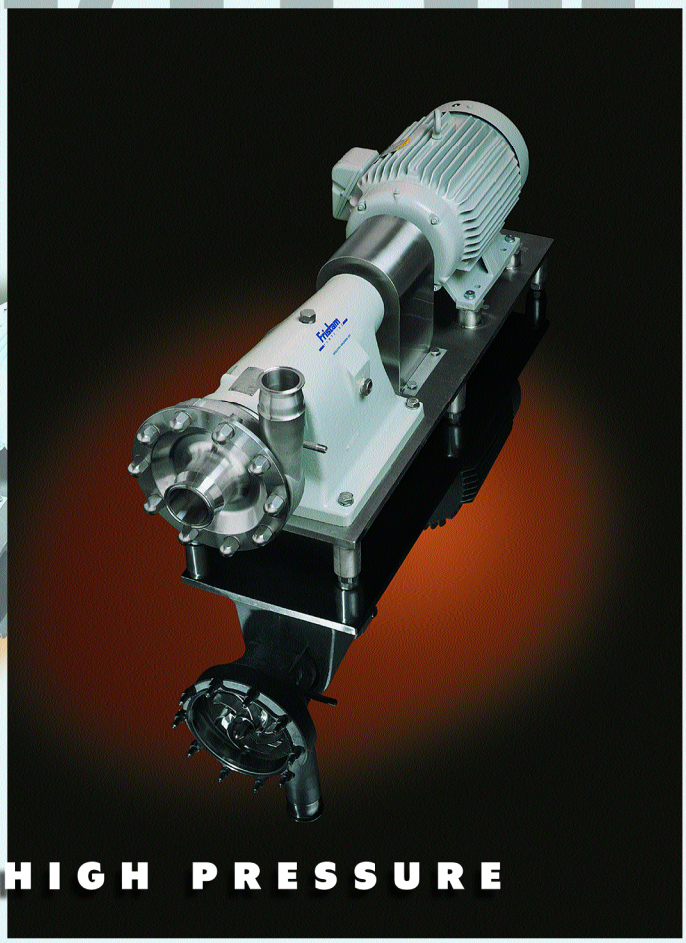


FPH/FPHP High Pressure Pumps

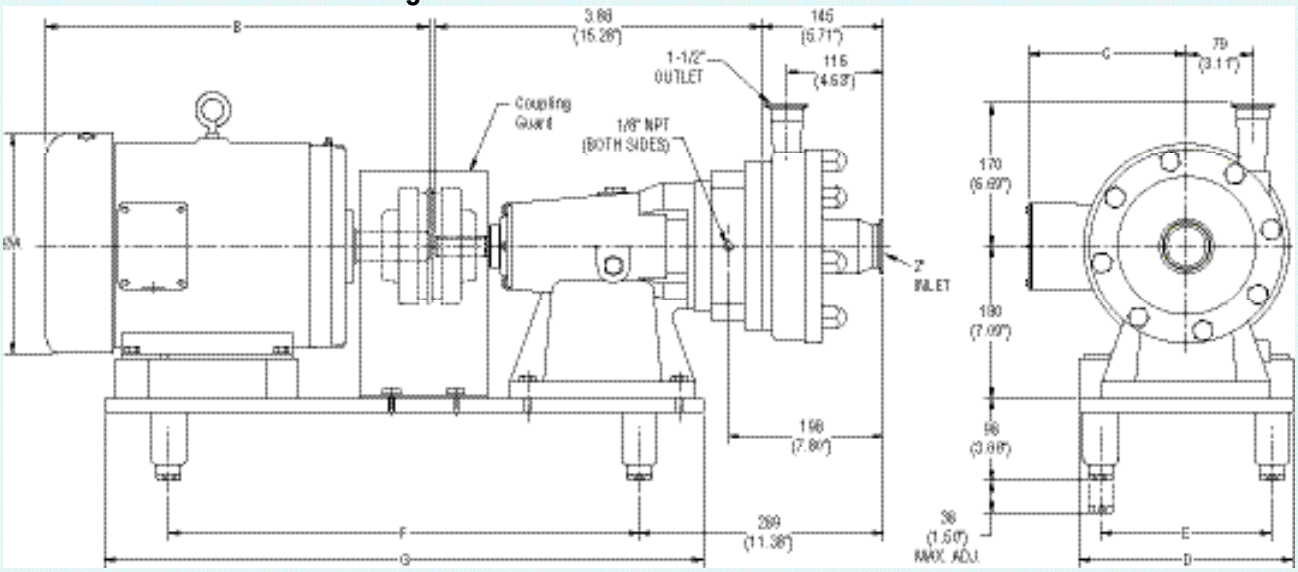
Fristam's FPH and FPHP Series sanitary centrifugal high-pressure pumps extend the operating capability of the Fristam multi-stage product line. These models offer greater flexibility when designing or updating reverse osmosis systems or handling high process line pressures. The FPHP 722 offers lower flow rates and is often used for pilot plants. The FPH 3542, FPHP 3542 and FPH 3552 are capable of flow rates up to 750 GPM. Both the FPH and FPHP pumps are modified versions of Fristam's heavy duty FP Series. A close-coupled version of the FPH is available for applications with space constraints.

Maximum Inlet Pressure Rating

Max. PSI	Models	
600	FPH 3542	FPH 3552
1000	FPHP 722	FPHP 3542



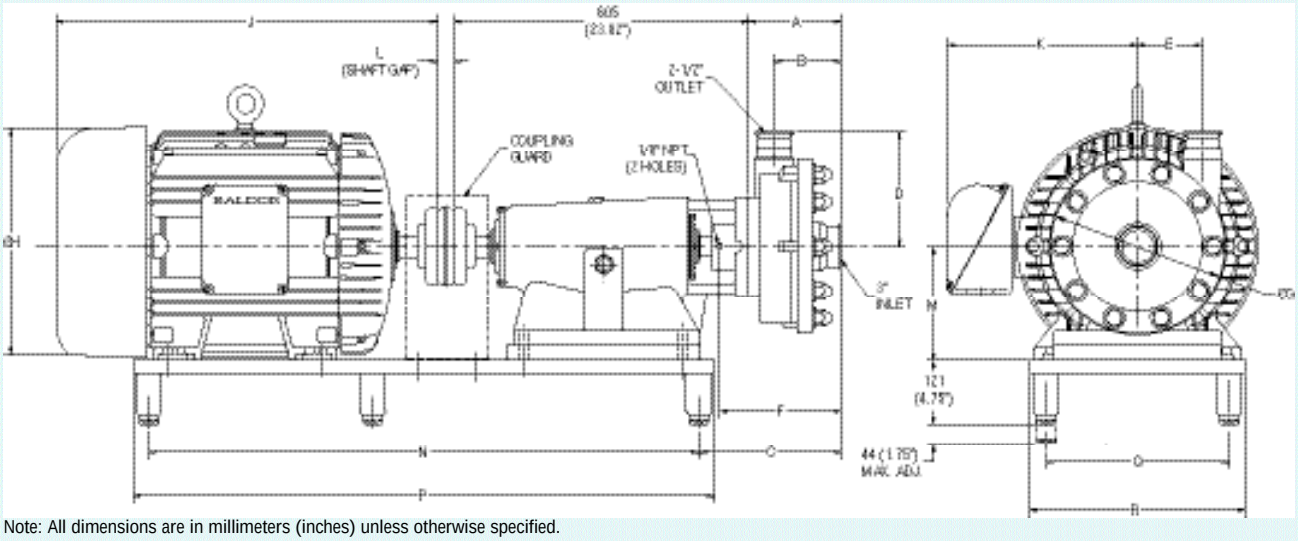
FPHP 722 Dimensional Drawing



Note: All dimensions are in millimeters (inches) unless otherwise specified.
Motor dimensions may vary depending on manufacturer requested.
Pump dimensions are based on clamp fittings.

Motor HP	NEMA Frame	A	B	C	D	E	F	G
3HP	182T	216 (8.50")	385 (15.14")	132 (5.21")	241 (9.50")	191 (7.50")	483 (19.00")	635 (25.00")
5HP	184T	216 (8.50")	420 (16.55")	152 (5.97")	241 (9.50")	191 (7.50")	483 (19.00")	635 (25.00")
7.5HP	213T	263 (10.34")	469 (18.47")	220 (8.67")	254 (10.00")	208 (8.00")	559 (22.00")	711 (28.00")
10 HP	215T	263 (10.34")	469 (18.47")	220 (8.67")	254 (10.00")	208 (8.00")	559 (22.00")	711 (28.00")

FPH/FPHP 3500 Series Dimensional Drawing



Note: All dimensions are in millimeters (inches) unless otherwise specified.
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Pump dimensions are based on clamp fittings.

Pump Model	A	B	C	D	E	F	G
FPH & FPHP 3542	165 (6.50")	119 (4.68")	263 (10.35")	211 (8.31")	115 (4.53")	224 (8.82")	290 (11.42")
FPH 3552	171 (6.73")	120 (4.72")	266 (10.59")	231 (9.09")	140 (5.51")	230 (9.06")	350 (13.78")

Motor HP	NEMA Frame	H	J	K	L	M	N	P	Q	R
10 HP	215T	263 (10.34")	469 (18.47")	220 (8.67")	16 (.63")	133 (5.25")	1083 (42.62")	1143 (45.00")	321 (12.62")	381 (15.00")
15 HP	254T	270 (10.62")	536 (21.09")	225 (8.86")	6 (.25")	200 (7.87")	1083 (42.62")	1143 (45.00")	321 (12.62")	381 (15.00")
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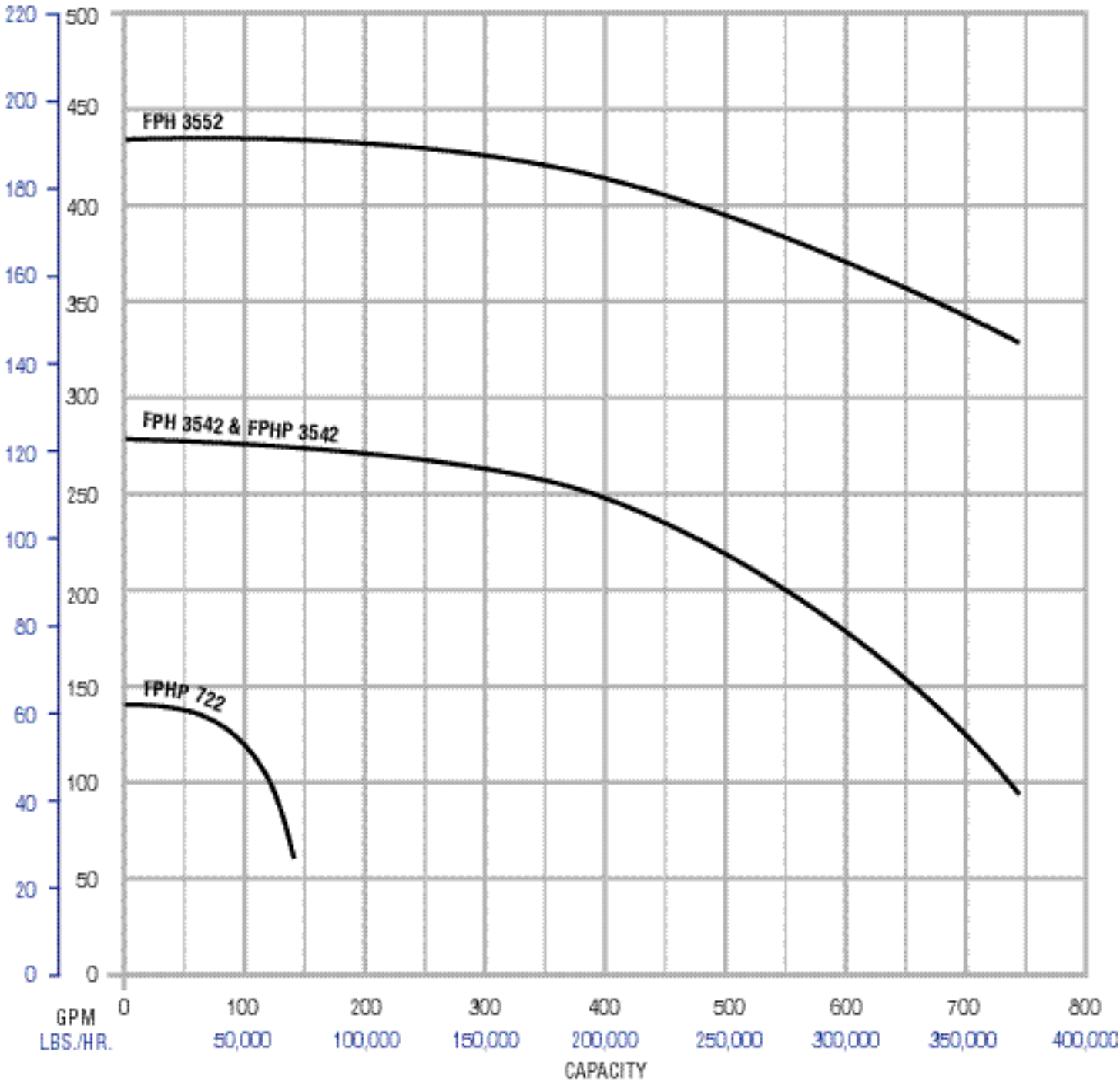
FPH/FPHP 3500 RPM Composite Performance Curve

Performance curves based on tests using 70°F water. A tolerance of ±5% applies to all figures.



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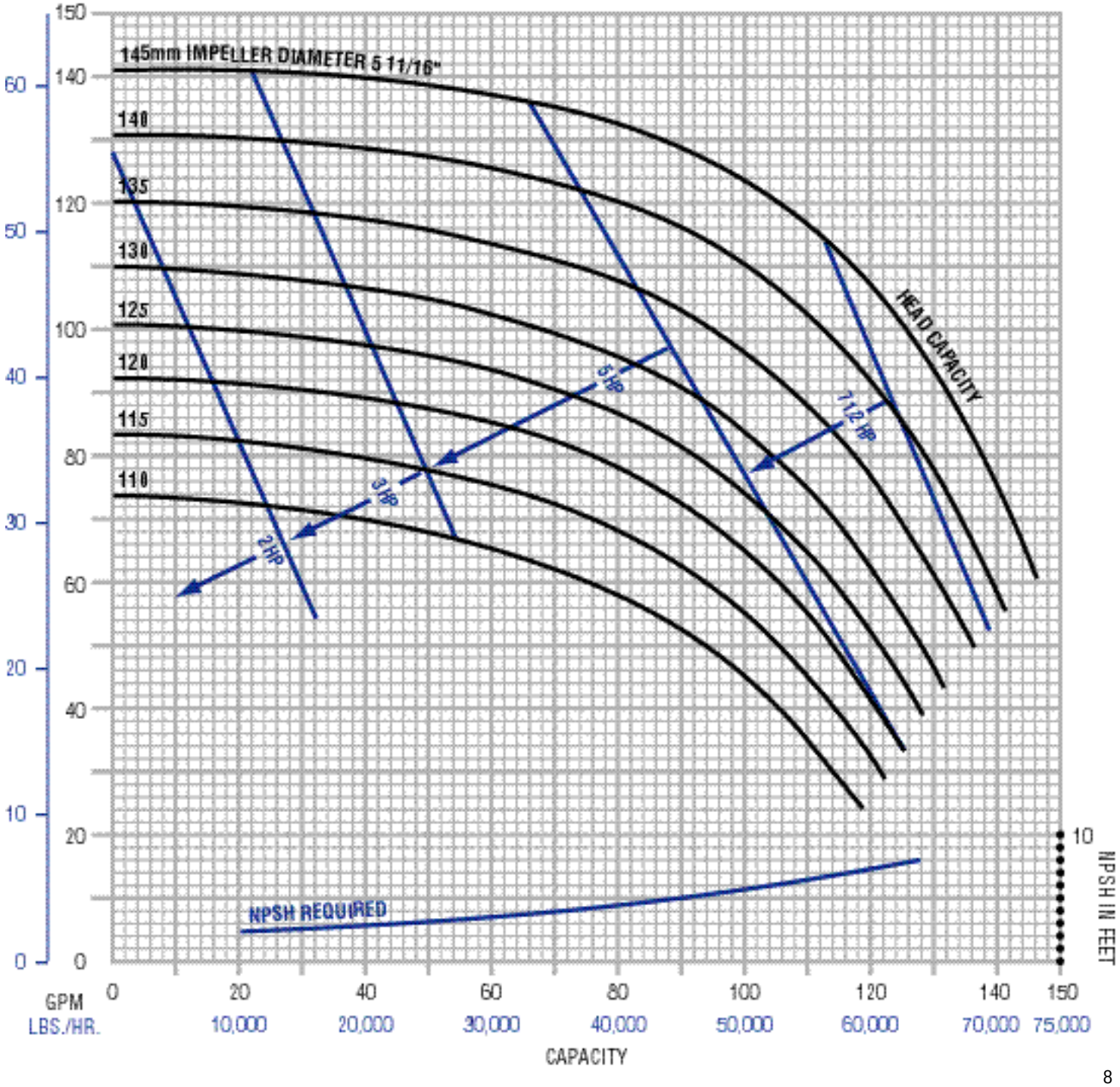
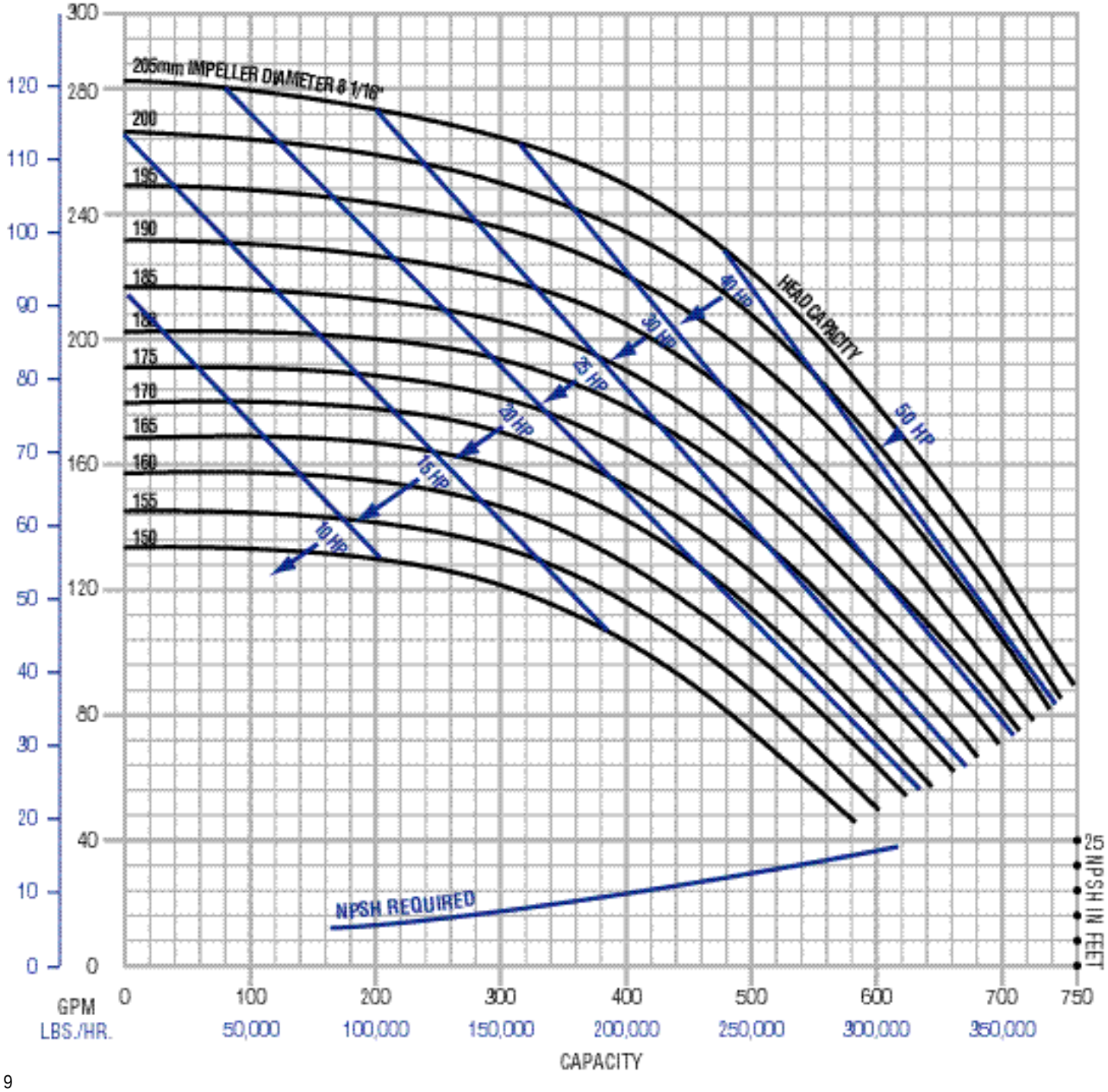
FPHP 722 3500 RPM Inlet 2"-Outlet 1 1/2"

Performance curves based on tests using 70°F water. A tolerance of ±5% applies to all figures.



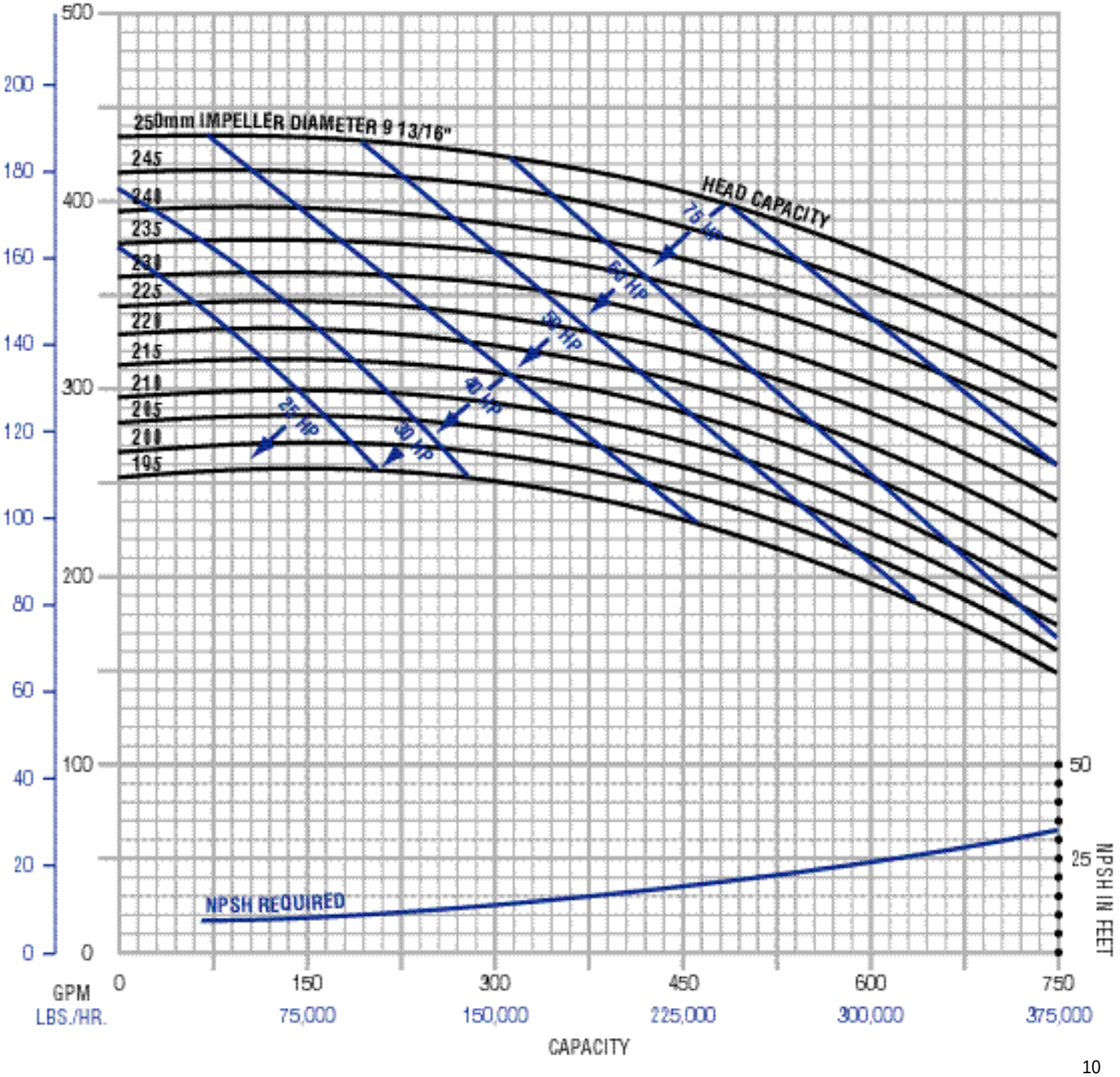
FPH/FPHP 3542 3500 RPM Inlet 3"-Outlet 2 1/2"

Performance curves based on tests using 70°F water. A tolerance of ±5% applies to all figures.



FPH 3552 3500 RPM Inlet 3"-Outlet 2 1/2"

Performance curves based on tests using 70°F water. A tolerance of ±5% applies to all figures.



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