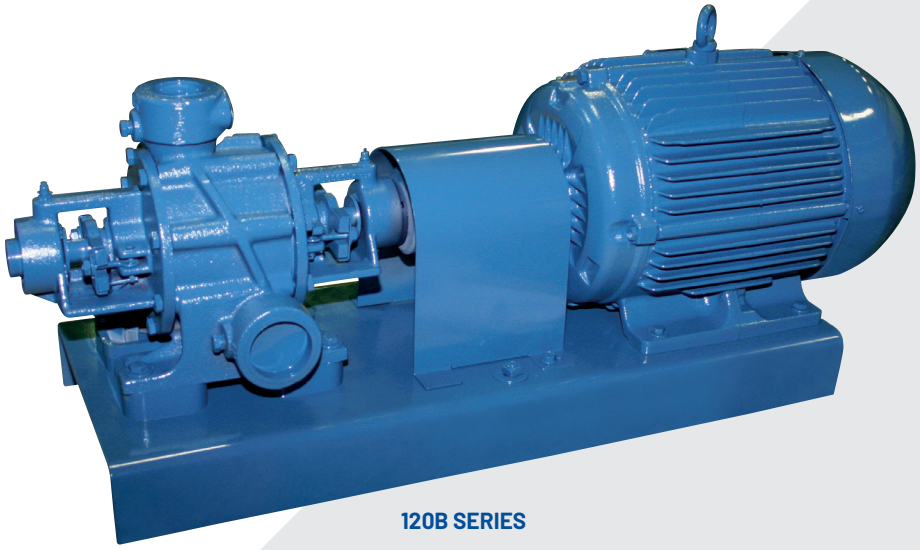
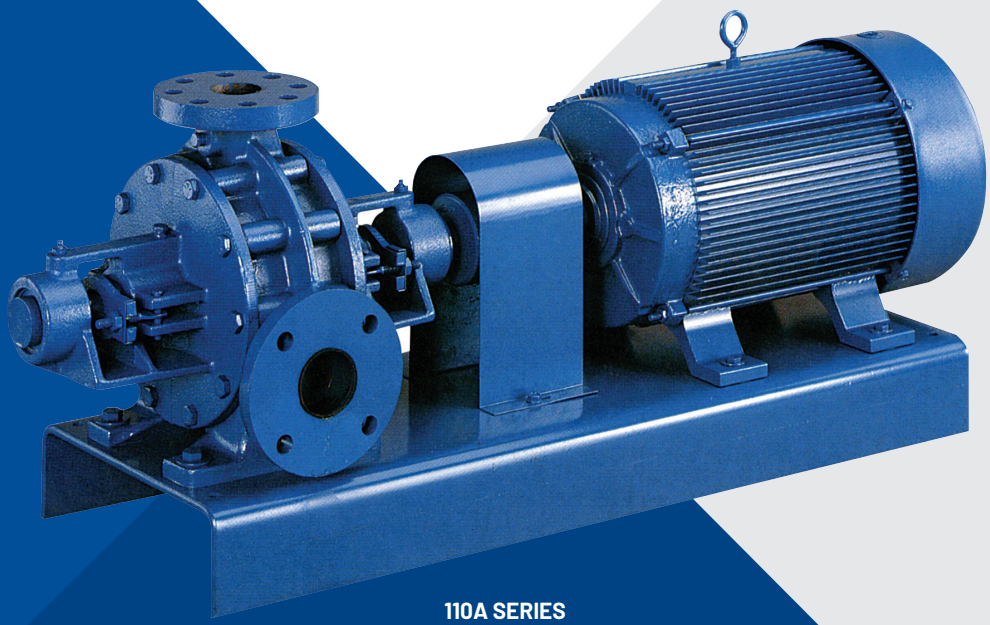
PENTAIR
AURORA

SINGLE STAGE TURBINE PUMPS
110A AND 120B SERIES



120B SERIES



110A SERIES

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SINGLE STAGE TURBINE PUMPS

PENTAIR® AURORA® SINGLE STAGE TURBINE PUMPS 110A AND 120B SERIES

CONSTANT FLOW YOU CAN RELY ON

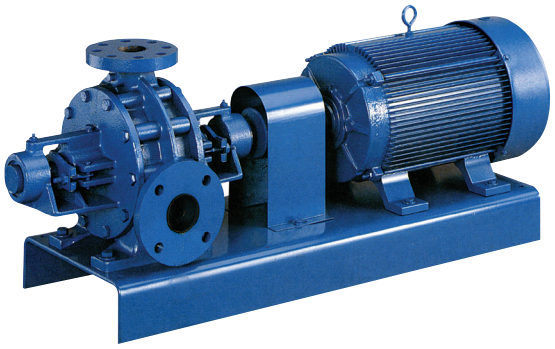
When system service interruption is not an option, you need a turbine pump you can count on to provide consistent, reliable flow. In these applications, constant flow is critical to keep the system operating at optimal levels, with minimal maintenance and low operating costs.

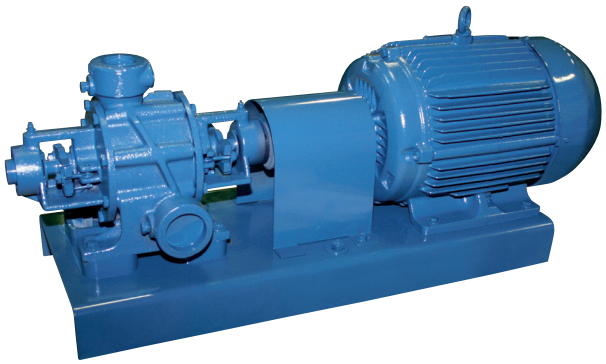
Aurora Single Stage Turbine Pumps are designed for systems that demand high head and low flow. With a steep performance curve, they allow for minimal changes in the capacity, even with large pressure variations.

The constant flow characteristics make the pumps ideal for a variety of applications, including cooling systems, boiler feed, condensate returns, car washes, breweries, and more.

Because they were designed for these applications, Aurora Single Stage Turbine Pumps help provide the reliability you need, along with reduced maintenance and energy use.

That all adds up to helping enable the system reliability that you demand.





110A SERIES

Capacities to 150 GPM • Heads to 480 Feet • Temperatures to 275°F

APPLICATIONS

- Boiler Feed
- Condensate Return
- Cooling Systems
- High Pressure Spray
- Booster Systems
- Jockey Pumps
- Chlorine Injection
- Chemical Feed Systems
- Laundry and Dry Cleaning Systems
- Laser Cooling
- Electrostatic Discharge Machines
- Car Washes

120B SERIES

Capacities to 50 GPM • Heads to 700 Ft. • Temperatures to 275°F

BENEFITS

- Reliability
- Years of Field-Proven Service
- Reduce Energy Consumption
- Trouble-free Operation
- High Performance
- Save Space
- Versatility
- Complete Technical Support
- Low Flow/High Head Capabilities

SINGLE STAGE TURBINE PUMPS

110A SERIES

STANDARD FEATURES

- Bronze fitted construction
- Hydraulically balanced bronze impeller
- Right- or left-hand rotation
- Regreaseable ball bearings
- Short bearing span
- Mechanical seals or graphite impregnated acrylic packing
- 416 hardened stainless steel shaft
- Floating impellers
- Removable channel rings
- VIP Test – Every pump is given a hydrostatic test at 1-1/2 times rated pressure along with a running test for head and capacity performance check

OPTIONAL FEATURES

- All iron, bronze ring or all bronze construction
- 316 stainless steel or Monel® shaft
- External sealing line to stuffing box
- Lantern ring (5 & 6 series only)
- Formed steel or drip-rim bases
- Bypass with manual shut-off valves
- Bypass with relief valve
- Certified performance test data can be supplied consisting of head, capacity and horsepower readings taken over the full operating range of the pump

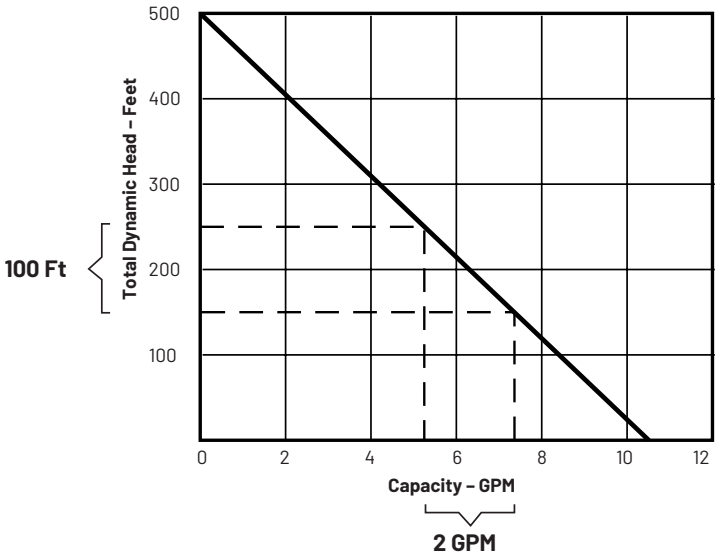
120B SERIES

STANDARD FEATURES

- Bronze fitted construction
- Hydraulically balanced bronze impeller
- Right- or left-hand rotation
- Regreaseable ball bearings
- Short bearing span
- 400# case working pressure
- Mechanical seals or graphite impregnated acrylic packing
- 416 hardened stainless steel shaft
- Floating impellers
- Removable channel rings
- VIP Test – Every pump is given a hydrostatic test at 1-1/2 times rated pressure along with a running test for head/capacity performance check.

OPTIONAL FEATURES

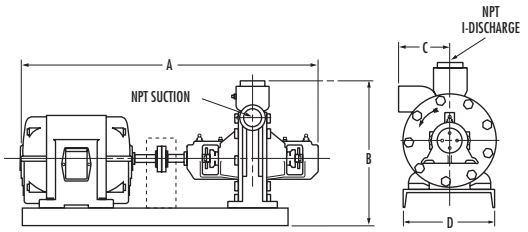
- All iron
- 316 stainless steel or Monel® shaft
- External sealing line to stuffing box
- Lantern ring
- Formed steel or drip-rim bases
- Bypass with manual shut-off valves
- Bypass with relief valve
- Certified performance test data can be supplied consisting of head, capacity and horsepower readings taken over the full operating range of the pump.



1. The curve shows that with a 100 foot change in head, the capacity varies only 2 gallons per minute. You get a virtually constant flow over wide pressure variations to ensure reliable system operation.

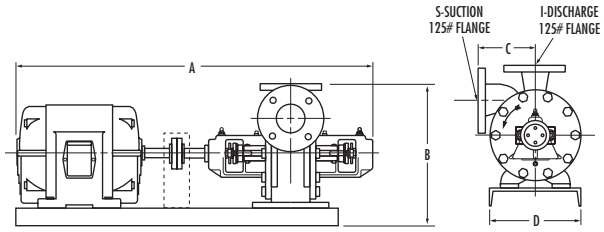
DIMENSION DETAILS - 110A SERIES

TYPE 4 & 5 SERIES



4R, 4RA, 5R, 5RA 4R, 4RA, 5R, 5RA

TYPE 6 SERIES



6RA 6RA

4R	A35, A4, B4, C4, D4, E4 F4, G4, H4, I4, I4A				4RA	M4, P4, R4				NEMA Motor Frame	1750 RPM HP
Unit Weight	Discharge 1¼		Suction 1¼		Unit Weight	Discharge 1½		Suction 1½			
	A	B	C	D		A	B	C	D		
86	24	12	4	7	125	27	11	4	9	56	½, ¾
66	22	13	4	7	108	25	12	4	9	143T	1
71	23	13	4	7	113	26	12	4	9	145T	1½–2
95	24	13	4	9	126	27	12	4	10	182T	3
100	25	13	4	9	131	28	13	4	10	184T	5
161	27	14	4	10	195	30	14	4	12	213T	7½
181	29	14	4	10	215	32	14	4	12	215T	10

5R	D5, E5, F5, G5, H5, I5				5RA	J5, K5, L5, M5, N5, P5				NEMA Motor Frame	1750 RPM HP
Unit Weight	Discharge 1¼		Suction 1¼		Unit Weight	Discharge 1½		Suction 2			
	A	B	C	D		A	B	C	D		
125	28	15	5	9	-	-	-	-	-	56	½, ¾
111	26	15	5	10	128	28	15	5	10	143T	1
116	27	15	5	10	133	29	15	5	10	145T	1½–2
126	28	15	5	10	143	30	15	5	10	182T	3
133	29	15	5	10	148	31	15	5	10	184T	5
195	31	16	6	12	214	33	16	5	12	213T	7½
219	33	16	5	12	234	35	16	5	12	215T	10
332	26	18	5	13	347	38	18	5	13	254T	15
357	38	18	5	13	381	40	18	5	13	256T	20

6RA	G6, H6, J6, K6				NEMA Motor Frame	1750 RPM HP
Unit Weight	Discharge 2½		Suction 3			
	A	B	C	D		
245	35	18	6½	12	182T	3
249	36	18	6½	12	184T	5
341	38	19	6½	13	213T	7½
361	40	19	6½	13	215T	10
436	43	19	6½	13	254T	15
475	45	18	6½	15	256T	20
545	46	19	6½	15	284T	25
575	48	19	6½	15	286T	30

Notes:

1. Dimensions and weights are approximate.
2. Dimensions are in inches and may vary ± 1/8".
3. Not for construction purposes unless certified.
4. Frame sizes shown are for open drip proof motors only.
5. Conduit box is shown in approximate position. Dimensions are not specified as they vary with each motor manufacturer.
6. All flanges are standard flat face.
7. A35, A4, B4, C4 and D4 pumps are also available for 3500 RPM operation. See table on next page.

SELECTION CHARTS - 110A SERIES

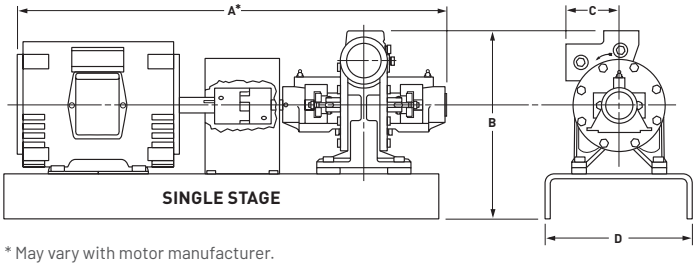
1750 RPM

Capacity GPM	Total Dynamic Head in Feet																			
	10	20	30	40	50	60	70	80	100	115	130	145	160	180	200	220	240	260	280	300	350
2	B4 1/3	B4 1/3	A35 1/3	A35 1/3	A35 1/3	A4 1/3	A4 1/3	A4 1/3	C4 1/3	D4 ½	D4 ½	D4 ½	D4 ½	D4 ¾	D4 ¾	D5 1	D5 1	D5 1	-	-	-
5	C4 1/3	C4 1/3	D4 1/3	D4 1/3	D4 1/3	D4 1/3	D4 1/3	D4 1/3	D4 1/3	E4 ½	F4 1	F4 1	F4 1	F4 1	G4 1	G4 1½	G4 1½	-	-	-	-
10	F4 ½	F4 ½	F4 ½	F4 ½	F4 ½	G4 ¾	G4 ¾	G4 ¾	G4 1	G4 1	G4 1	G4 1	I4 1½	I4 1½	-	-	-	-	-	-	-
15	G4 ½	G4 ½	G4 ½	H4 ¾	H4 ¾	H4 1	H4 1	H4 1	I4 1	I4A 1½	I4A 2	I4A 2	-	-	-	-	-	-	I5 5	I5 5	I5 5
20	H4 ¾	H4 ¾	H4 ¾	H4 ¾	H4 ¾	I4 1	I4A 1½	I4A 1½	I4A 1½	-	-	-	-	-	-	I5 5	I5 5	I5 5	I5 5	I5 5	L5 7½
25	I4A ¾	I4A ¾	I4A ¾	I4A 1	I4A 1	M4A 1½	M4A 1½	M4A 1½	M4 2	M4 3	R4 3	I5 3	I5 3	I5 3	J5 5	J5 5	K5 7½	L5 7½	L5 10	L5 10	L5 10
30	I4A ¾	I4A ¾	M4 1	M4 1	M4 1	M4A 1½	M4A 1½	M4A 1½	P4 3	R4 3	J5 3	J5 5	J5 5	K5 5	K5 5	L5 7½	L5 7½	L5 7½	L5 10	L5 10	-
35	M4 ¾	M4 ¾	M4 1	M4 1	M4 1	M4A 1½	P4 2	P4 2	P4 3	L5 5	K5 5	K5 5	L5 5	L5 5	L5 7½	L5 7½	L5 7½	L5 7½	G6 10	G6 10	-
40	M4 ½	M4 ¾	M4 1	M4 1	M4 1	P4 2	P4 2	P4 2	R4 3	L5 5	L5 5	L5 5	L5 7½	L5 7½	L5 7½	L5 7½	G6 10	G6 10	G6 10	-	-
50	P4 1	P4 1½	P4 1½	P4 1½	R4 2	R4 2	R4 3	L5 3	L5 5	L5 5	L5 5	L5 5	L5 5	P5 10	P5 10	H6 10	-	-	-	-	-
60	R4 1½	R4 1½	R4 1½	R4 2	L5 3	L5 3	L5 3	L5 5	L5 5	P5 7½	P5 7½	P5 10	P5 10	P5 10	H6 10	J6 15	-	-	-	-	-
70	L5 2	L5 3	L5 3	L5 3	L5 3	N5 3	N5 3	N5 5	P5 7½	P5 7½	P5 7½	P5 10	P5 10	H6 10	J6 15	J6 15	-	-	-	-	-
80	M5 1½	M5 1½	N5 2	N5 3	N5 3	N5 3	P5 5	P5 7½	P5 7½	P5 7½	P5 7½	P5 10	H6 10	J6 10	J6 15	-	-	-	-	-	-
90	N5 2	N5 2	N5 2	P5 5	P5 5	P5 5	P5 5	P5 7½	P5 7½	P5 7½	P5 7½	J6 10	J6 10	J6 10	K6 15	-	-	-	-	-	-
100	N5 2	P5 5	P5 5	P5 5	P5 5	P5 5	P5 5	P5 7½	P5 7½	J6 10	J6 10	J6 10	J6 10	K6 15	-	-	-	-	-	-	-
120	P5 5	P5 5	P5 5	P5 5	P5 5	P5 5	J6 7½	J6 7½	J6 7½	J6 10	K6 10	K6 10	-	-	-	-	-	-	-	-	-
150	J6 5	J6 5	J6 5	J6 5	J6 5	K6 7½	K6 7½	K6 7½	-	-	-	-	-	-	-	-	-	-	-	-	-

3500 RPM

Capacity GPM	Total Dynamic Head in Feet								
	50	100	150	200	250	300	350	400	450
2	B4 ½	B4 ½	B4 ¾	B4 ¾	A35 1	A35 1	A4 1½	A4 1½	A4 2
4	B4 ½	A35 ¾	A35 ¾	A35 1	A4 1	A4 1½	D4 3	D4 5	D4 5
6	A35 ½	A4 ¾	A4 ¾	C4 1½	D4 3	D4 3	D4 3	D4 5	D4 5
8	C4 ¾	C4 ¾	C4 1	D4 3	D4 3	D4 3	D4 3	D4 5	D4 5
10	C4 ¾	D4 2	D4 2	D4 3	D4 3	D4 3	D4 3	-	-
12	D4 1½	D4 2	D4 2	D4 3	D4 3	-	-	-	-
14	D4 1½	D4 2	D4 2	-	-	-	-	-	-
15	D4 1½	D4 2	-	-	-	-	-	-	-

DIMENSION DETAILS - 120B SERIES



* May vary with motor manufacturer.

Motor Frame	A*	B	C	D
56	26-11/16	12	4	9
143T	24-11/16	12	4	9
145T	25-11/16	12	4	9
182T	26-13/16	12-1/2	4	10
184T	27-13/16	12-1/2	4	10
213T	29-15/16	13-5/8	4	12
215T	31-15/16	13-5/8	4	12
254T	35-3/16	15-5/8	4	13
256T	37-3/16	15-5/8	4	13

* May vary with motor manufacturer.

Pump Size	Maximum Differential Pressure psi	Maximum HP	
		3500 RPM	1750 RPM
EX4	300	25	7-1/2
FX4	300		
GX4	300		
HX4	225		
IX4	175		

Motor Frame	Horsepower		Motor Weight in Lbs.
	3500 RPM	1750 RPM	
56	–	1/2	50
56	–	3/4	50
143T	1-1/2	1	30
145T	2	1-1/2	35
145T	3	2	35
182T	5	3	45
184T	7-1/2	5	50
213T	10	7-1/2	120
215T	15	–	144
254T	20	–	217
256T	25	–	246

Notes:

1. Dimensions and weights are approximate.
2. All dimensions are in inches and may vary ±1/8".
3. Frame sizes and motor weight are for open drip proof motors only.
4. Conduit box is shown in approximate position. Dimensions are not specified as they vary with each motor manufacturer.
5. Not for construction purposes unless certified.

SELECTION CHARTS - 120B SERIES

1750 RPM

Capacity GPM	Total Dynamic Head in Feet																		
	10	20	30	40	50	60	70	80	100	115	130	145	160	180	200	220	240	260	280	300
2	-	-	-	-	-	-	-	-	-	-	-	-	-	EX4 3/4	FX4 1-1/2	FX4 1-1/2	FX4 1-1/2	GX4 2	GX4 3	GX4 3
4	-	-	-	-	-	-	-	-	-	-	-	EX4 3/4	FX4 1	FX4 1-1/2	GX4 2	GX4 2	GX4 2	-	-	-
6	-	-	-	-	-	-	-	-	EX4 1/2	FX4 1	FX4 1	FX4 1	FX4 1	GX4 1-1/2	GX4 1-1/2	-	-	-	-	-
8	-	-	-	-	-	-	EX4 1/3	EX4 1/2	FX4 3/4	FX4 3/4	FX4 1	GX4 1	GX4 1-1/2	GX4 1-1/2	-	-	-	-	-	-
10	-	-	EX4 1/3	EX4 1/3	FX4 1/2	FX4 1/2	FX4 1/2	FX4 3/4	GX4 1	GX4 1	GX4 1	HX4 1-1/2	IX4 2	-	-	-	-	-	-	-
12	EX4 1/3	EX4 1/3	FX4 1/3	FX4 1/3	FX4 1/2	GX4 3/4	GX4 3/4	GX4 3/4	GX4 3/4	HX4 1-1/2	HX4 1-1/2	IX4 1-1/2	IX4 2	-	-	-	-	-	-	-
14	FX4 1/3	FX4 1/3	FX4 1/3	GX4 1/2	GX4 1/2	GX4 1/2	GX4 3/4	GX4 3/4	HX4 1	HX4 1-1/2	IX4 1-1/2	IX4 1-1/2	-	-	-	-	-	-		
16	GX4 1/2	GX4 1/2	GX4 1/2	GX4 1/2	GX4 1/2	GX4 3/4	HX4 1	HX4 1	HX4 1	IX4 1	IX4 1-1/2	-	-	-	-	-	-	-	-	-
18	GX4 1/2	GX4 1/2	HX4 3/4	HX4 3/4	HX4 3/4	HX4 3/4	HX4 1	HX4 1	IX4 1-1/2	IX4 1-1/2	IX4 1-1/2	-	-	-	-			-	-	-
20	HX4 1/2	HX4 1/2	HX4 3/4	HX4 3/4	HX4 3/4	HX4 3/4	HX4 1	IX4 1-1/2	IX4 1-1/2	-	-	-	-			-	-	-	-	-
22	HX4 1/2	HX4 1/2	HX4 3/4	HX4 3/4	HX4 3/4	HX4 3/4	IX4 1	IX4 1-1/2	-	-	-	-	-	-	-	-	-	-	-	-
24	HX4 1/2	HX4 3/4	HX4 3/4	HX4 3/4	IX4 1	IX4 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	HX4 1/2	HX4 3/4	HX4 3/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	HX4 1/2	HX4 3/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

3500 RPM

Capacity GPM	Total Dynamic Head in Feet													
	50	100	150	200	250	300	350	400	450	500	550	600	650	700
5	-	-	-	-	-	-	-	-	-	EX4 5	EX4 7-1/2	EX4 7-1/2	EX4 7-1/2	EX4 7-1/2
10	-	-	-	-	-	EX4 3	EX4 5	EX4 5	EX4 5	EX4 5	FX4 7-1/2	FX4 7-1/2	FX4 10	-
15	-	EX4 2	EX4 2	EX4 3	EX4 3	EX4 3	FX4 5	FX4 5	FX4 7-1/2	FX4 7-1/2	-	-	-	-
20	-	EX4 2	FX4 3	FX4 3	FX4 3	FX4 5	FX4 5	GX4 7-1/2	GX4 7-1/2	GX4 10	GX4 10	GX4 10	-	-
25	FX4 3	FX4 3	FX4 3	GX4 5	GX4 5	GX4 5	GX4 7-1/2	GX4 7-1/2	GX4 7-1/2	HX4 10	-	-	-	-
30	FX4 3	GX4 3	GX4 5	GX4 5	GX4 5	GX4 5	HX4 10	HX4 10	-	-	-	-	-	-
35	GX4 3	GX4 3	GX4 3	HX4 7-1/2	HX4 7-1/2	HX4 7-1/2	IX4 10	IX4 10	-	-	-	-	-	-
40	HX4 5	HX4 5	HX4 5	HX4 7-1/2	HX4 7-1/2	IX4 10	IX4 10	IX4 10	-	-	-	-	-	-
45	HX4 5	HX4 5	HX4 5	IX4 10	IX4 10	IX4 10	-	-	-	-	-	-	-	-
50	HX4 5	IX4 7-1/2	IX4 7-1/2	IX4 7-1/2	-	-	-	-	-	-	-	-	-	-
55	IX4 7-1/2	-	-	-	-	-	-	-	-	-	-	-	-	-

ENGINEERING SPECIFICATIONS

110A SERIES

DESIGN DETAILS

Area	Dimensions	110-Series Pump Model				
		A35–I4A	M4–R4	D5–I5	J5–P5	G6–K6
Stuffing Box	Packing Rings Per Box	4	5	7	7	8
	Packing Size (Square)	1/4"	9/32"	1/4"	1/4"	5/16"
Shaft	Outside Diameter of Shaft	.590	.787	.787	.984	1.181
Ball Bearings	Inboard Radial	202	204	204	205	206
	Outboard Thrust	300K	303K	303K	304K	305K

Selection charts indicate pump size in upper portion and motor HP in lower portion of each block.

MATERIALS OF CONSTRUCTION

Description	Material
Retainer	Nylon
Bearing Covers	Cast Iron – ASTM A48
Casing	Cast Iron – ASTM A48
Channel Rings	Cast Iron – ASTM A48
Glands	Cast Iron – ASTM A48
Impellers	Bronze – ASTM B62
Packing	Graphited Teflon™ Fiber
Shaft	Stainless Steel – AISI 416

MAXIMUM HORSEPOWER

Pump Sizes	HP
E4, F4, G4, H4, I4, I4A,	4
A35, A4, B4, C4, D4	7½
M4, P4, R4, D5, E5, F5, G5, H5, I5	10
J5, K5, L5, M5, N5, P5	20
G6, H6, J6, K6,	40

MAXIMUM DIFFERENTIAL PRESSURE

Pump Sizes	psi	Pump Sizes	psi
R4	90	A35, A4, B4, C4, D4,E4, F4, G4, H4	200
J6, K6	100	K5	220
P4	110	G5	225
I4A, M4,P5, H6	125	J5	230
I4, I4T, H5, I5, M5, N5, G6	150	F4T, D5, E5, F5	250
L5	175		

Maximum differential pressure based on allowable shaft deflection for standard shafts.

LIMITATIONS

Description	
Max. hydrostatic test pressure	450 psi
except G6-H6-J6-K6	265 psi
Max. case working pressure	300 psi
except G6-H6-J6-K6	175 psi
Max. suction pressure	175 psi
Max. recommended packing box pressure	100 psi
Max. recommended mechanical seal chamber pressure	250 psi
except 114A & 4R	150 psi
Box or seal chamber pressure equals	Suction pressure plus 60% differential pressure.
Max. temperatures	
*Packing	275°F
Std. mechanical seal	225°F
Hi-temp mechanical seal	275°F

*Packing: Suction lift requires lantern ring,115 and 116 Series only.

120B SERIES

DESIGN DETAILS

Area	Dimensions	120 Series Pump Model EX4–IX4
Stuffing Box	Packing rings per box	7
	Packing size (square)	1/4"
Shaft	Outside diameter of shaft	.787
Ball Bearings	Inboard radial	204K
	Outboard thrust	303K

MATERIALS OF CONSTRUCTION

Description	Material
Retainer	Nylon
Bearing Covers	Cast Iron — ASTM A48
Casing	Cast Iron — ASTM A48
Channel Rings	Cast Iron — ASTM A48
Glands	Cast Iron — ASTM A48
Impellers	Bronze — ASTM B62
Packing	Graphited Teflon™ Fiber
Shaft	Stainless Steel — AISI 416

LIMITATIONS

Description	
Maximum Hydrostatic Test Pressure	600 psi
Maximum Case Working Pressure	400 psi
Maximum Suction Pressure	175 psi
Maximum Recommended Packing Box Pressure	100 psi
Maximum Recommended Mechanical Seal Chamber Pressure	250 psi
Box or Seal Chamber Pressure Equals	Suction Pressure Plus 60% Differential Pressure
Maximum Temperatures	
*Packing	275° F
Standard Mechanical Seal	225° F
Hi-Temp Mechanical Seal	275° F
*Packing	Suction Lift Requires Lantern Ring

*Packing: Suction lift requires lantern ring.

Notes:

1. All limitations are based on standard pumps constructed of standard materials and handling water.
2. Maximum suction pressure is based on suction flange pressure rating.

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800 Airport Road | North Aurora, Illinois, USA, 60542 | Ph: 630.859.7000 | pentair.com/aurora

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