STULZ

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Glycol Systems

Engineering Manual
Pump Packages and Remote Outdoor Drycoolers
½ to 10 HP Pumps
10.5 to 667 kW Drycoolers 60 Hz Data

Notice

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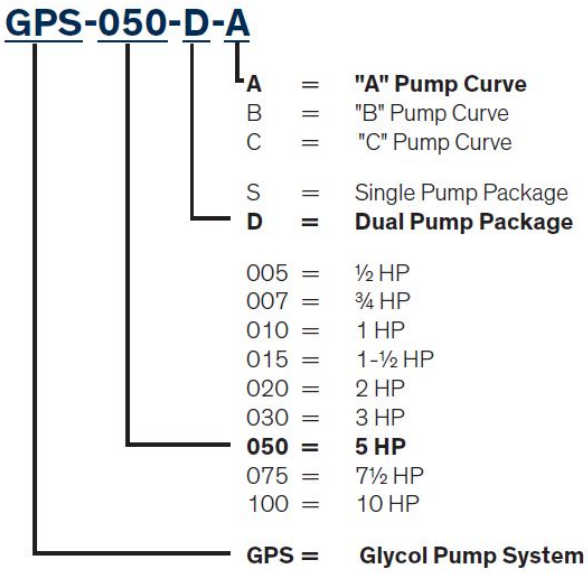
Table of Contents

Pump Package Model Nomenclature



Pump Package Technical Specifications

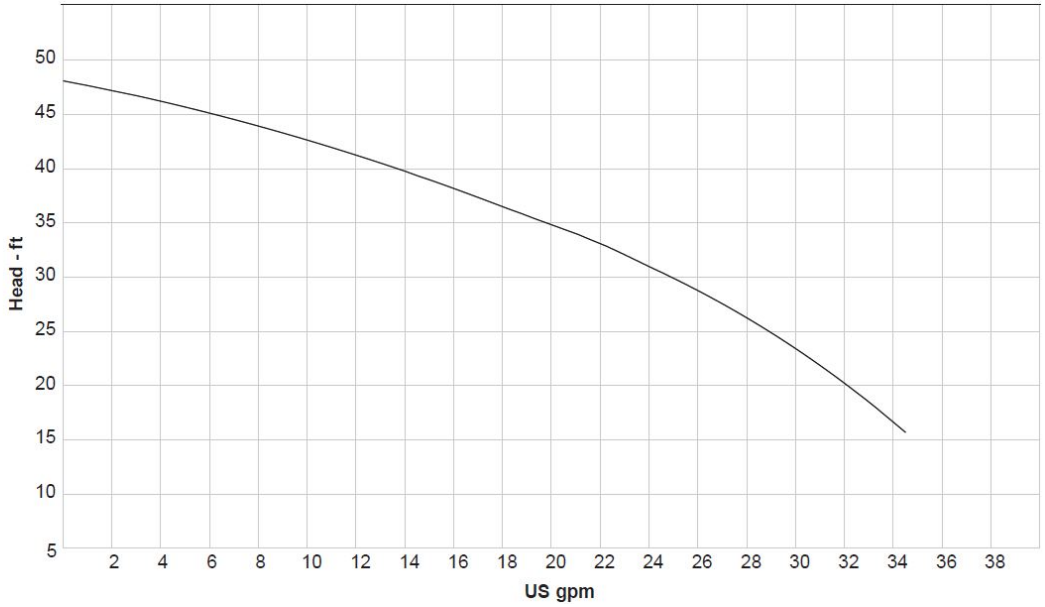
Pump Package Model	HP	Type	Cabinet Dimensions (inches)			Approx. Weight (lb)
			H	W	D	
GPS-005-S-B	½	Single	23.0	18.5	30.2	85
GPS-007-S-B	¾	Single	23.0	18.5	30.2	90
GPS-010-S-A/B/C	1	Single	23.0	18.5	30.2	95
GPS-015-S-A/B/C	1½	Single	30.0	25.4	36.2	105
GPS-020-S-A/B/C	2	Single	30.0	25.4	36.2	110
GPS-030-S-A/B/C	3	Single	30.0	25.4	36.2	115
GPS-050-S-A/B/C	5	Single	30.0	25.4	36.2	160
GPS-075-S-A/B/C	7½	Single	30.0	25.4	36.2	165
GPS-100-S-A/B/C	10	Single	30.0	41.4	42.2	200
GPS-005-D-B	¼	Dual	23.0	26.5	30.2	150
GPS-007-D-B	¾	Dual	23.0	26.5	30.2	160
GPS-010-D-A/B/C	1	Dual	23.0	26.5	30.2	165
GPS-015-D-A/B/C	1½	Dual	30.0	35.4	36.2	195
GPS-020-D-A/B/C	2	Dual	30.0	35.4	36.2	200
GPS-030-D-A/B/C	3	Dual	30.0	35.4	36.2	205
GPS-050-D-A/B/C	5	Dual	30.0	35.4	36.2	300
GPS-075-D-A/B/C	7½	Dual	30.0	35.4	36.2	315
GPS-100-D-A/B/C	10	Dual	30.0	41.4	42.1	387

Pressure Drop/Flow Rate Curves

This section provides pressure drop/flow rate curves for the different GPS pump models. The GPS series provides one to three models per HP rating, specified as A, B, or C in the model number. The A models are ideal for applications with high head pressures with low flow rate. The B models are best for average head pressure and flow rate to achieve higher efficiencies. The C models are designed for situations of low head pressures and high flow rates.

A graph containing a pressure drop curve is provided for each model. Note that curves reflect 40% Ethylene Glycol at 45 °.

GPS-005-()-B



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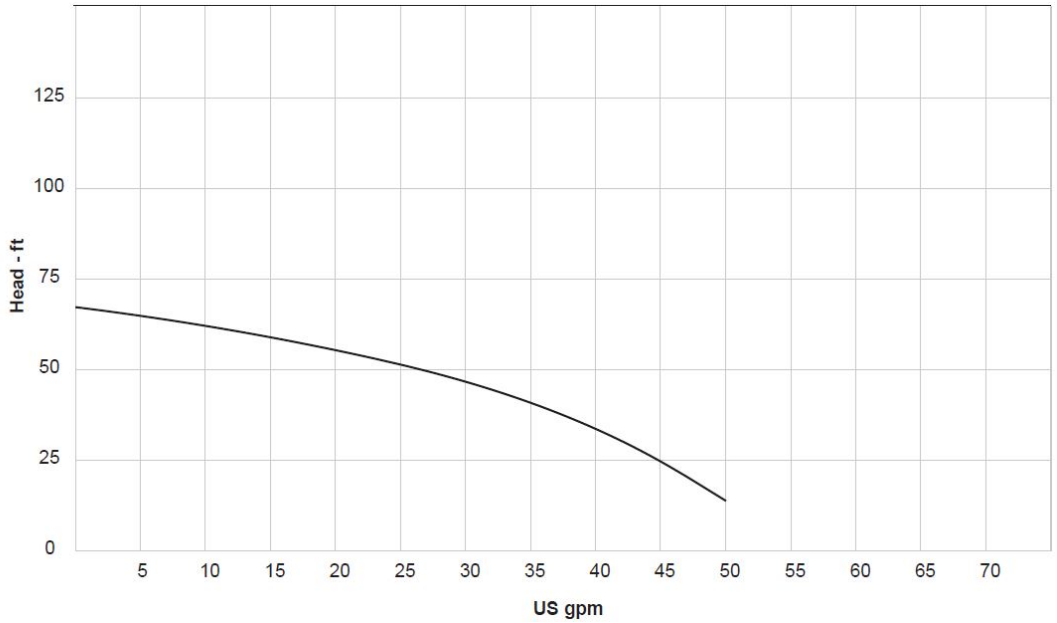

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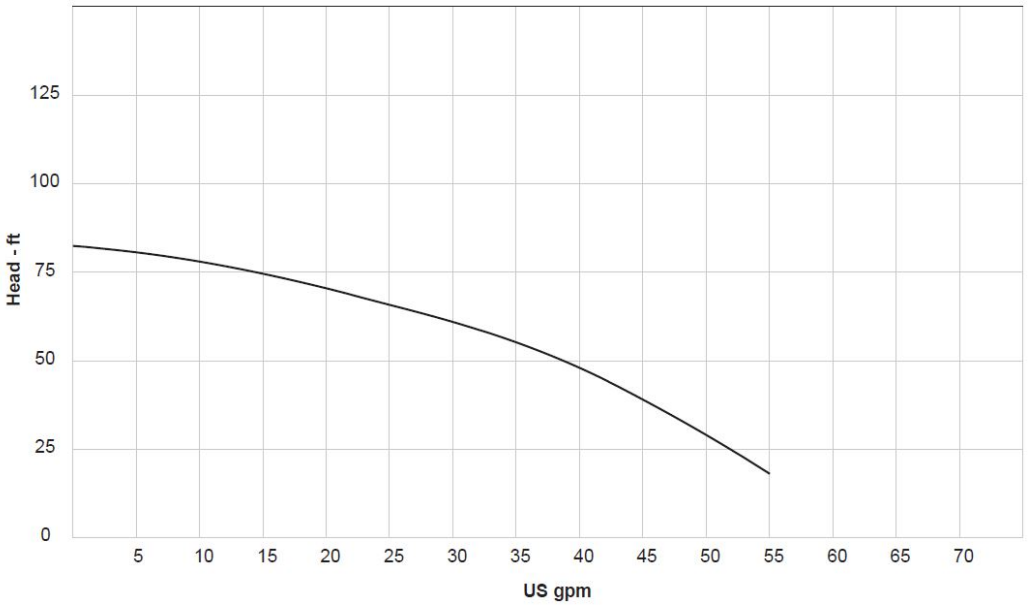

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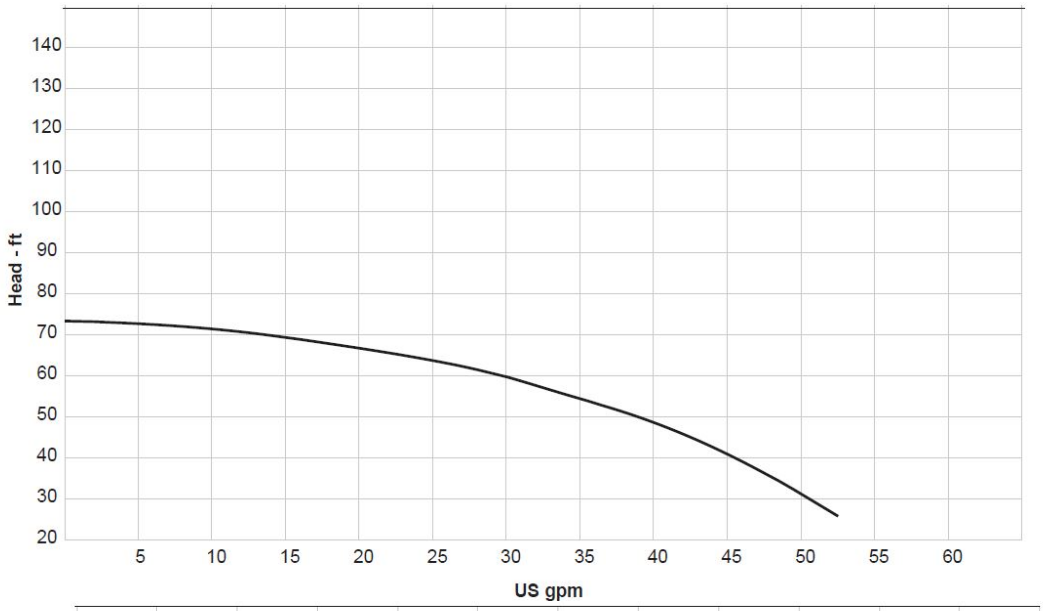

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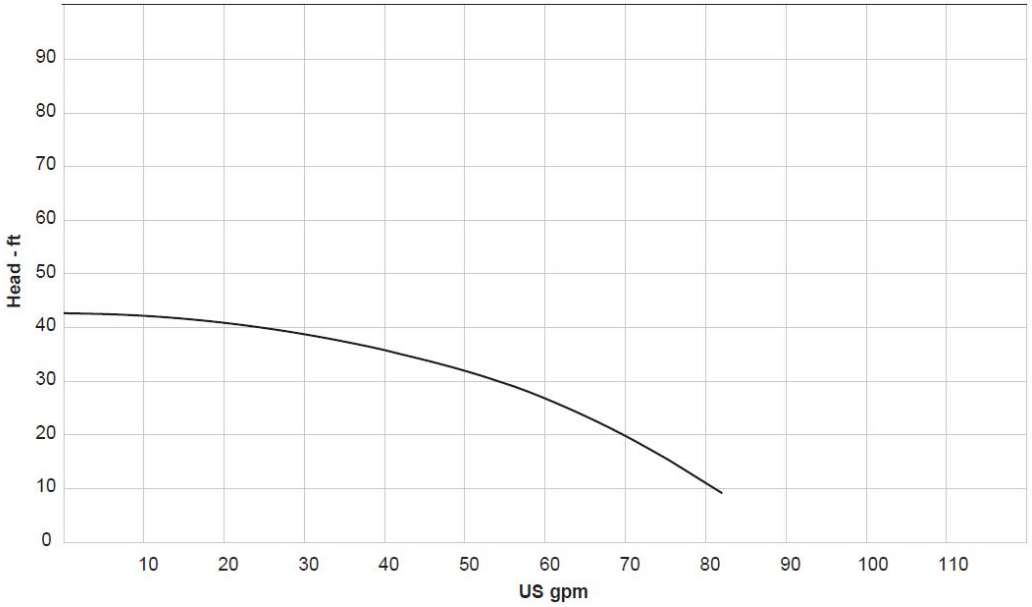

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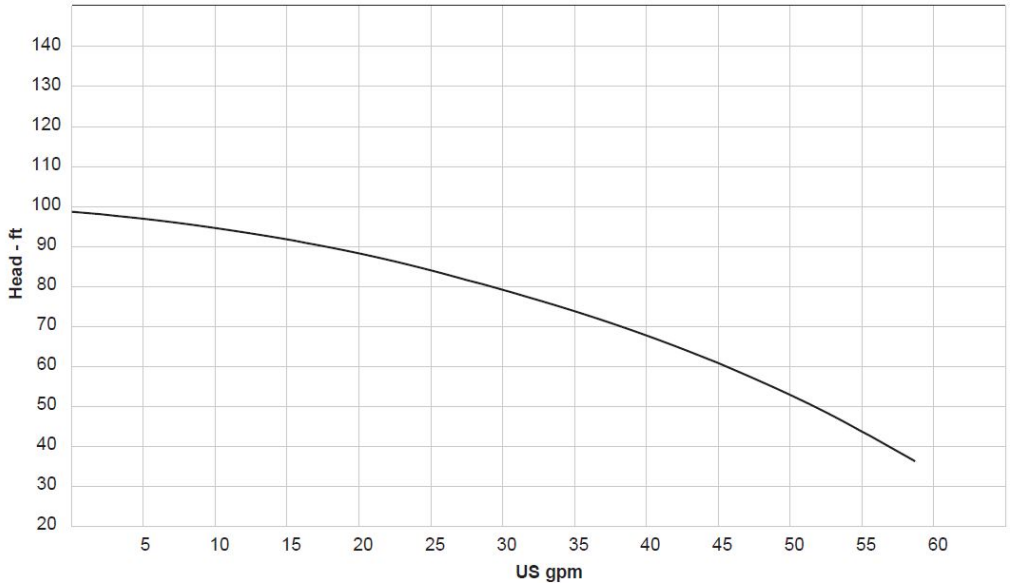

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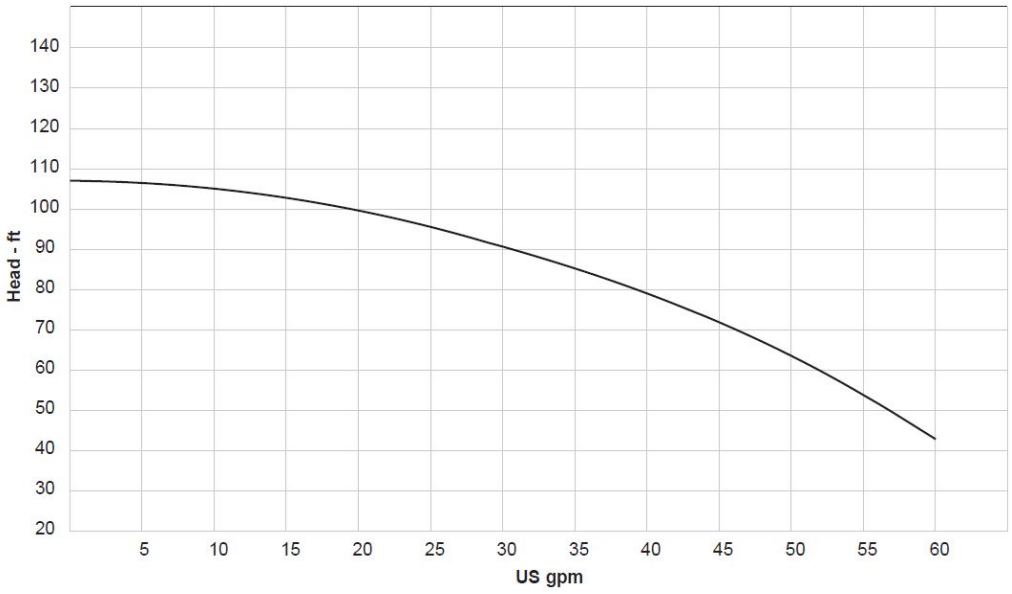

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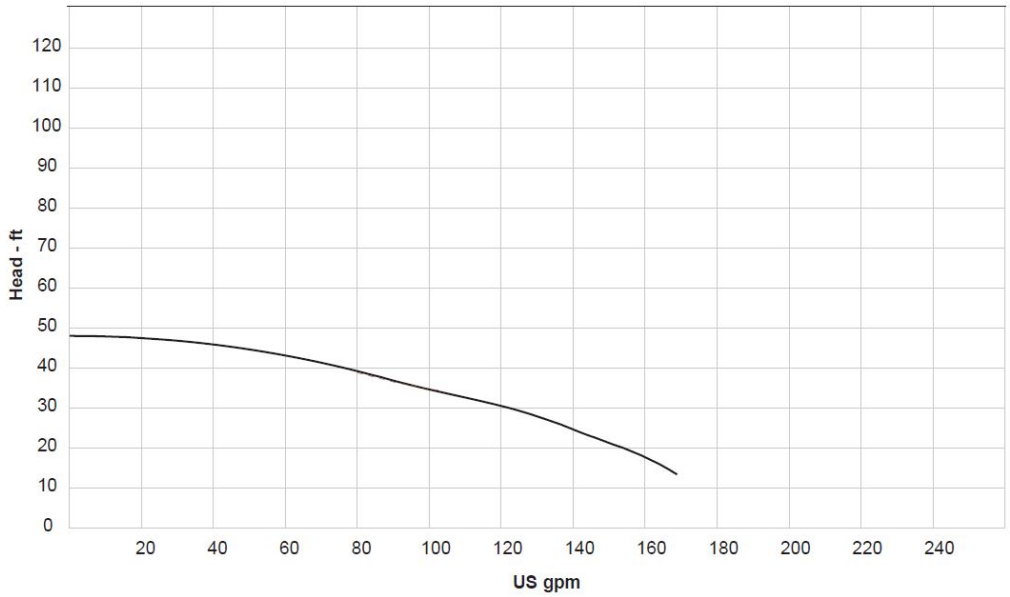

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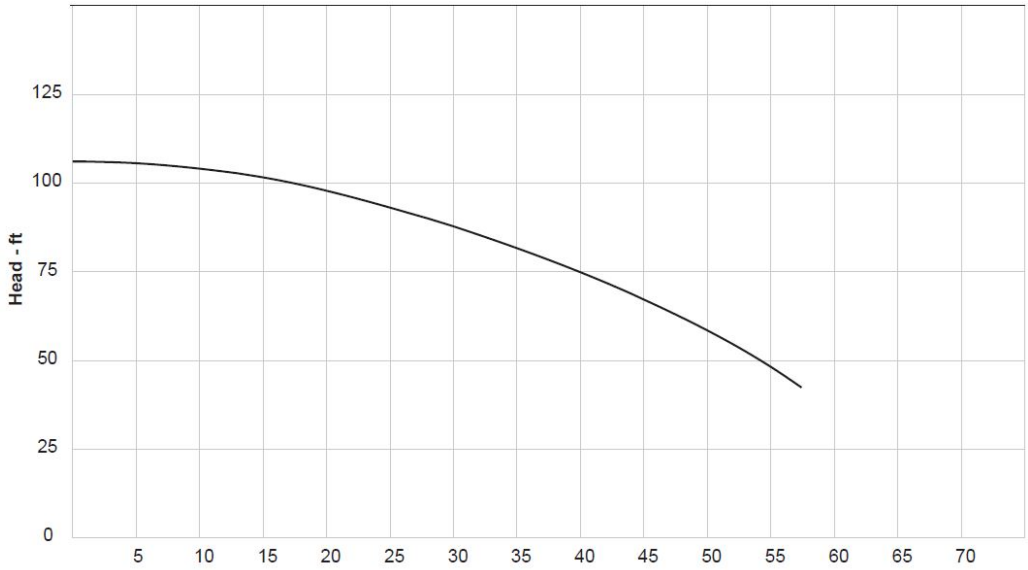

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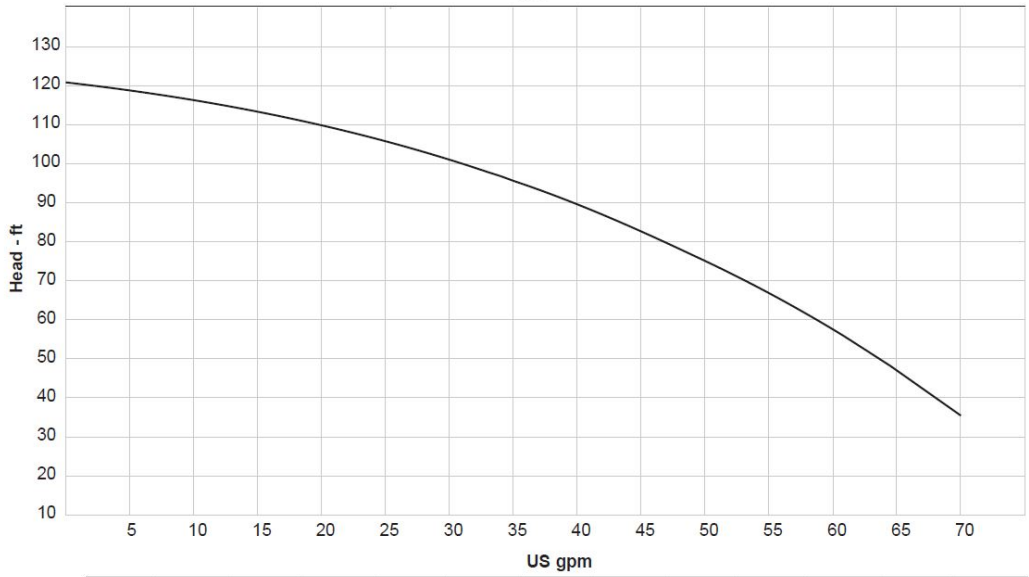

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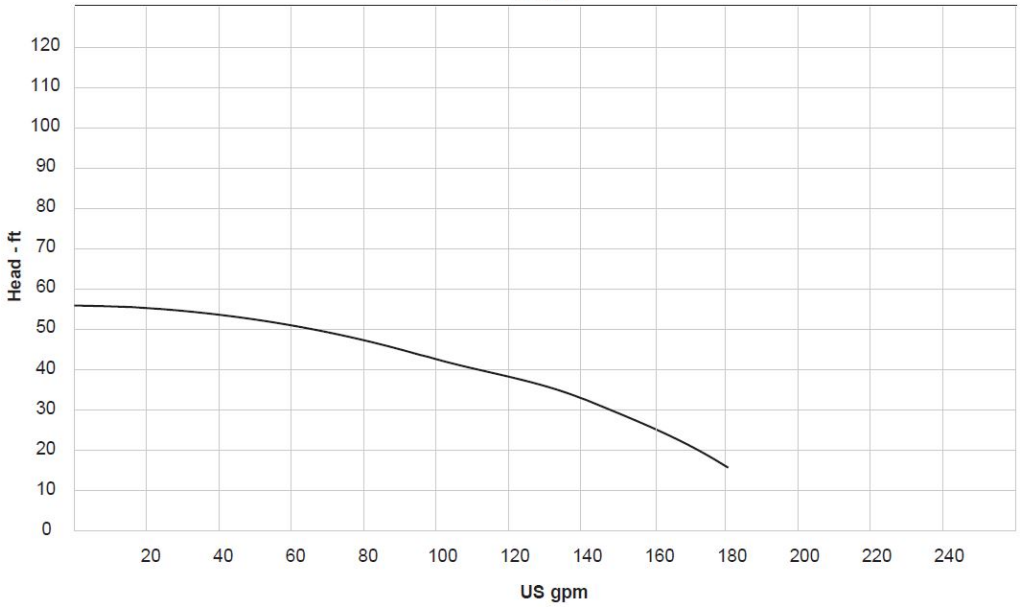

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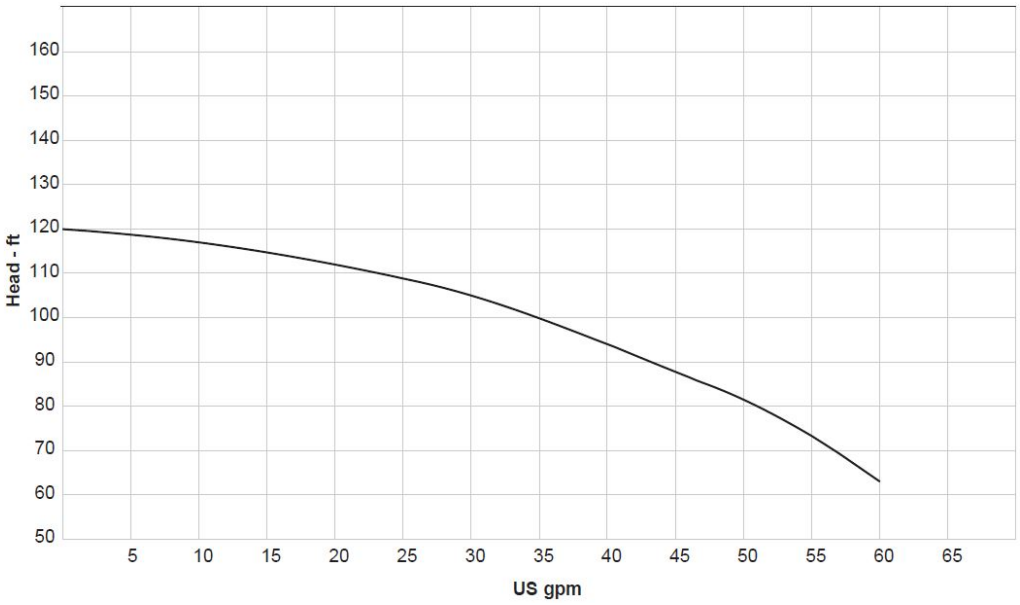

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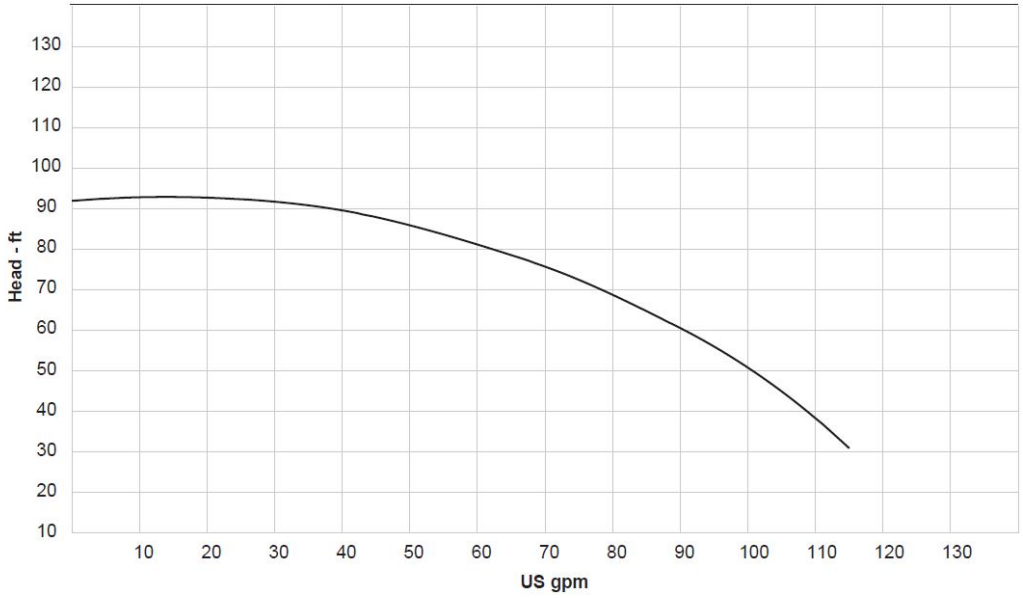

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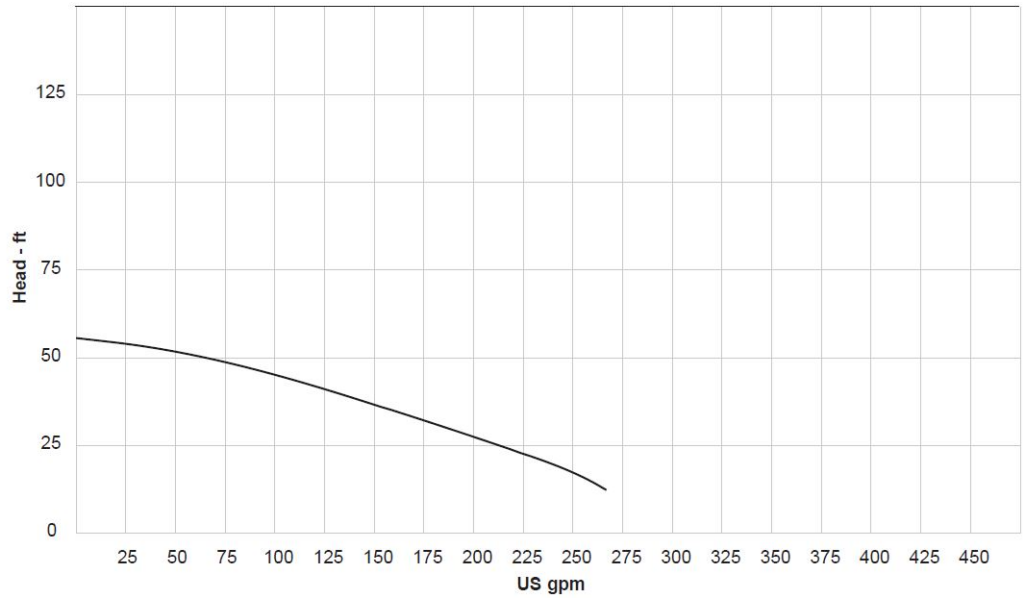

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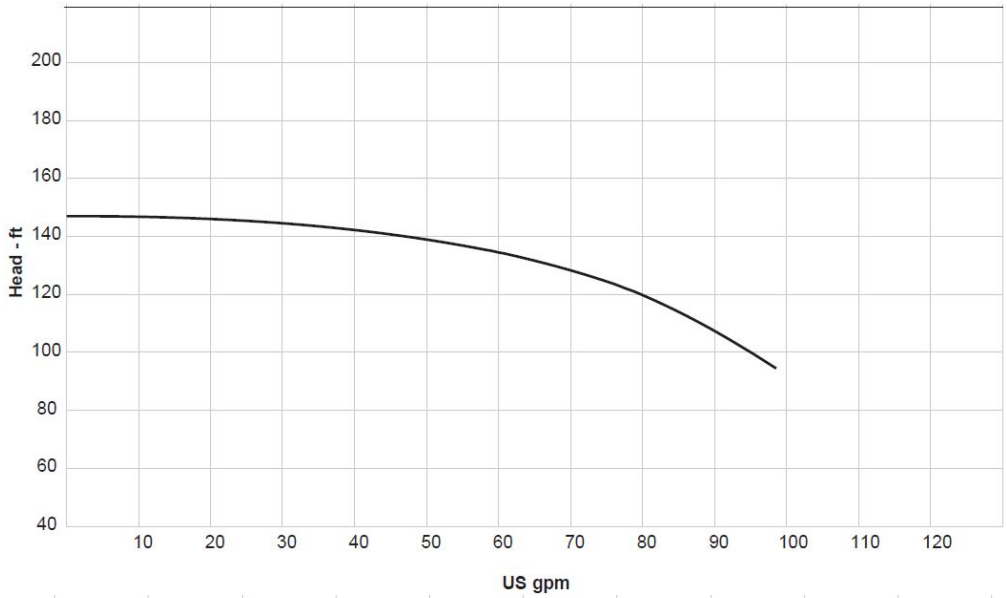

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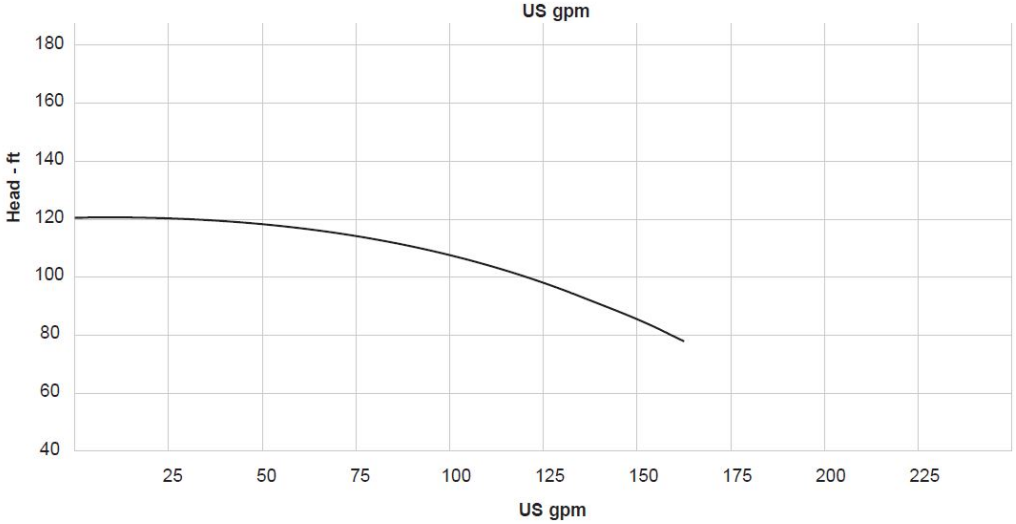

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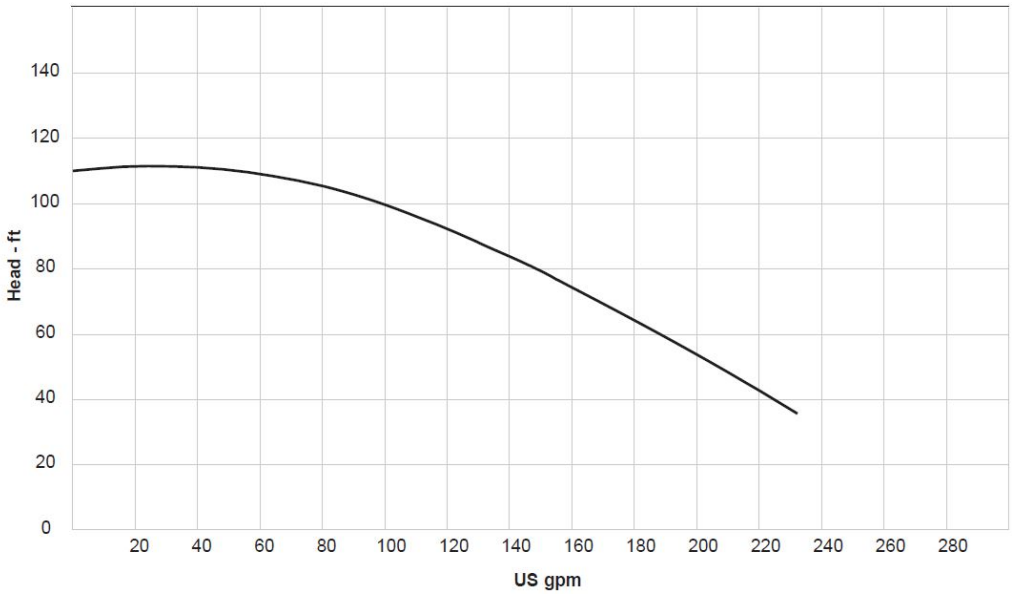

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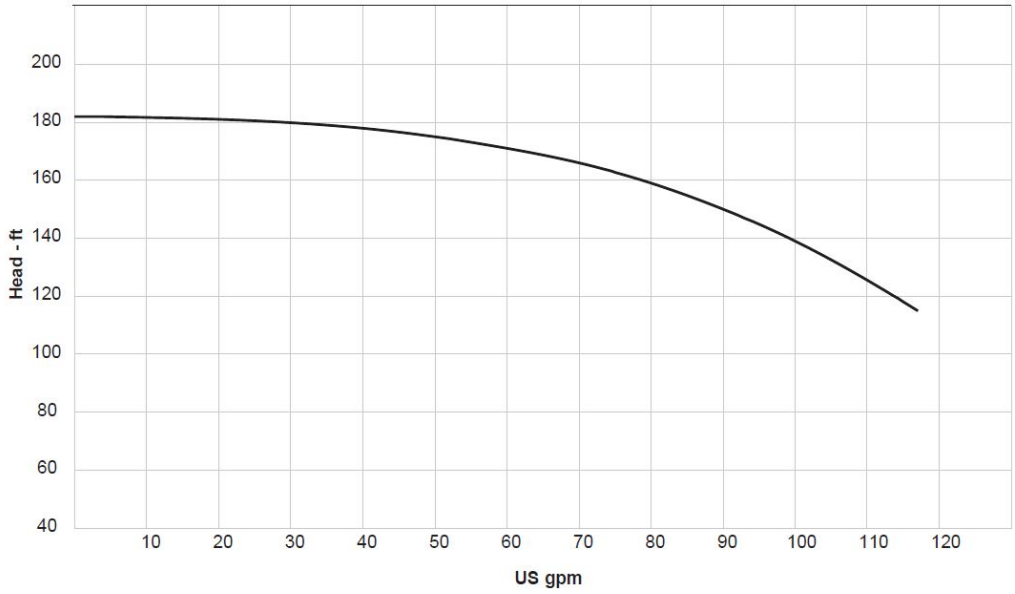

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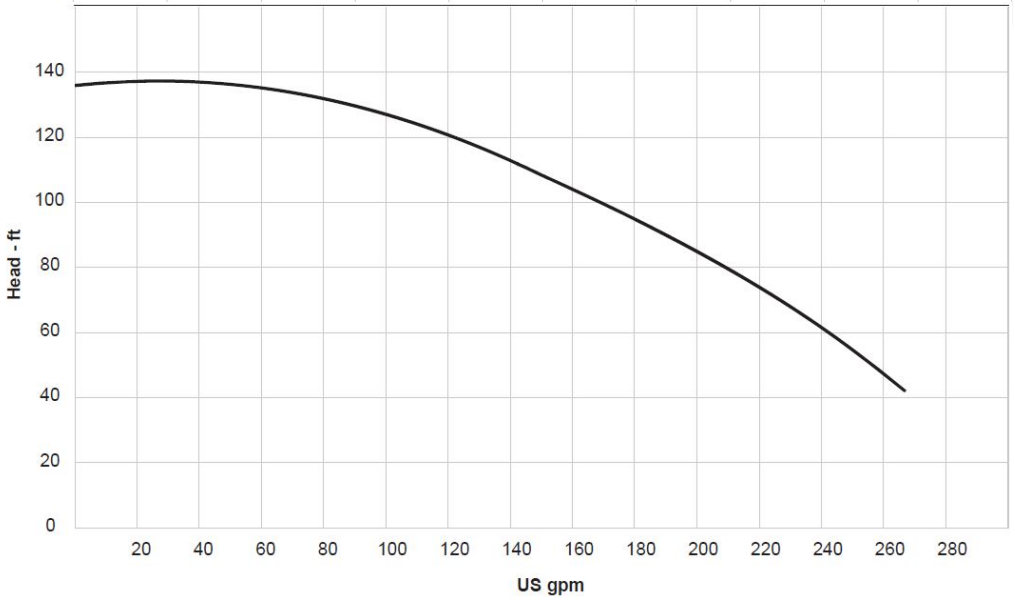

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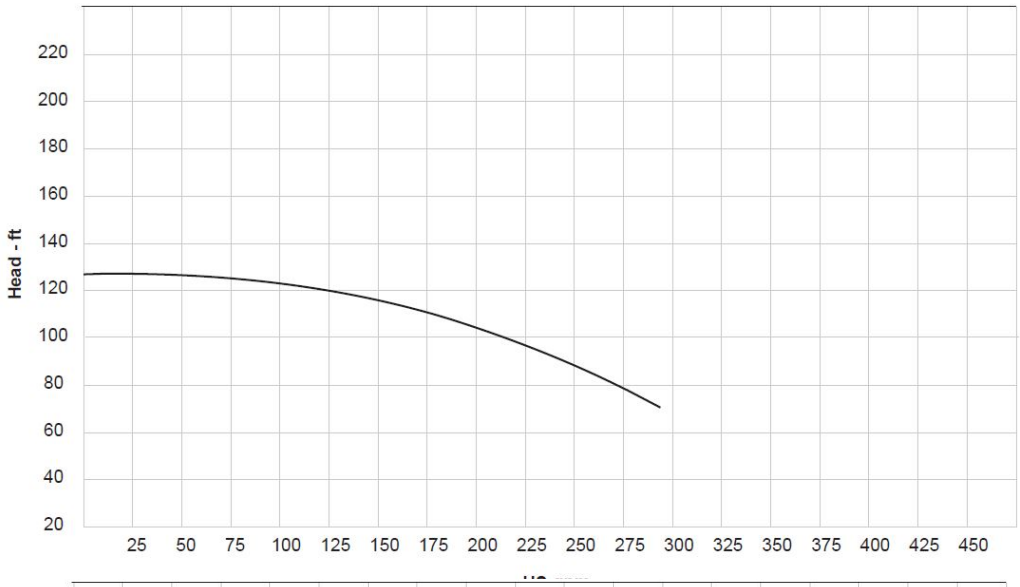

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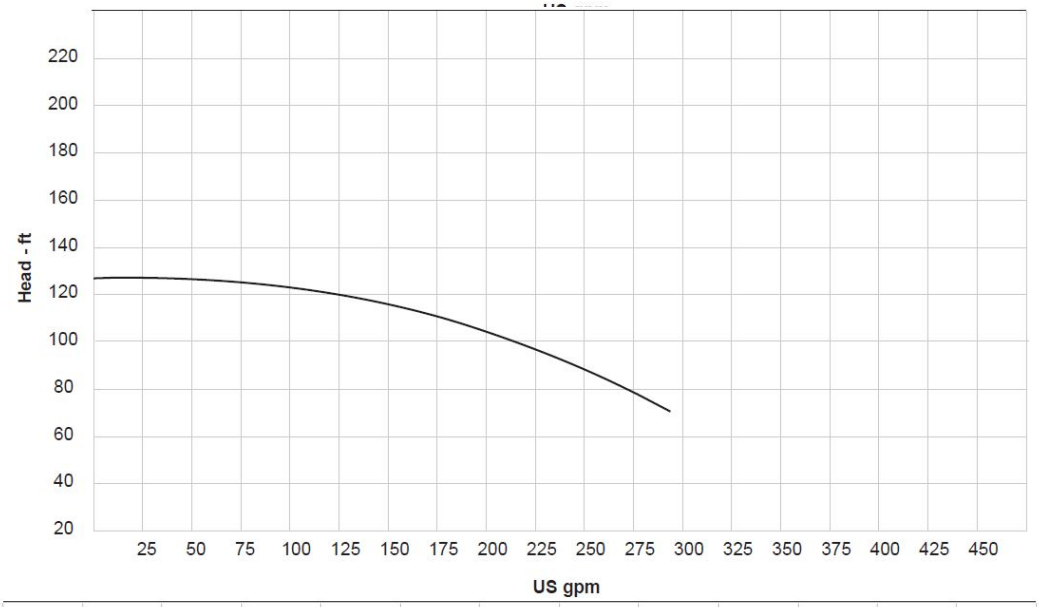

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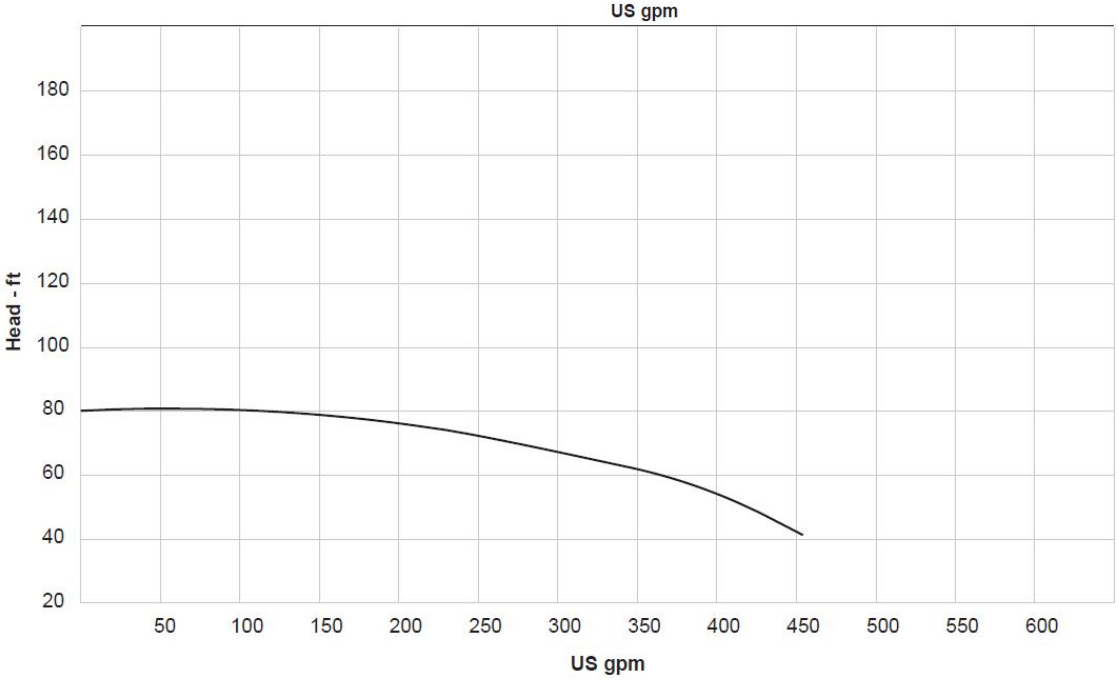
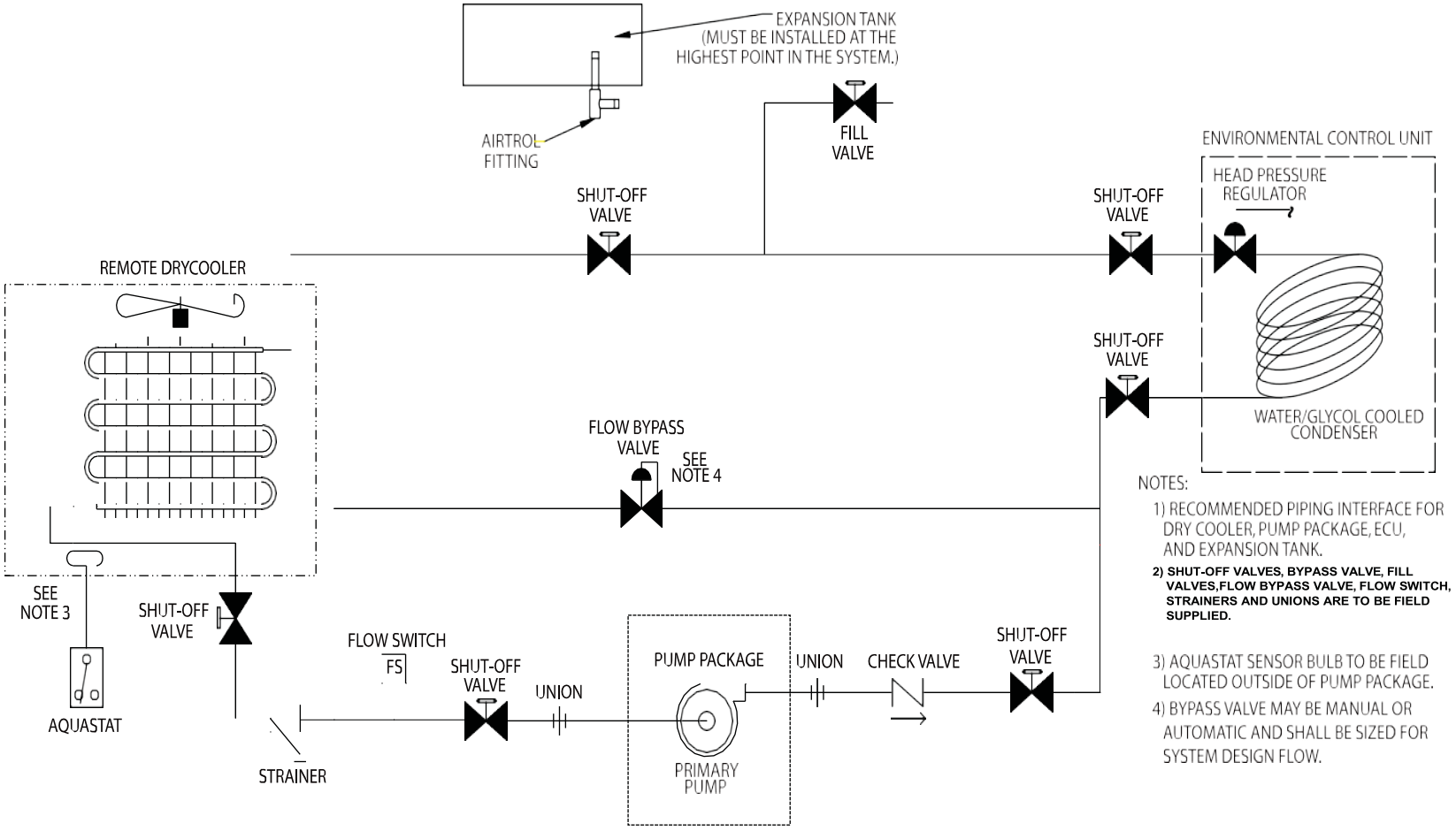


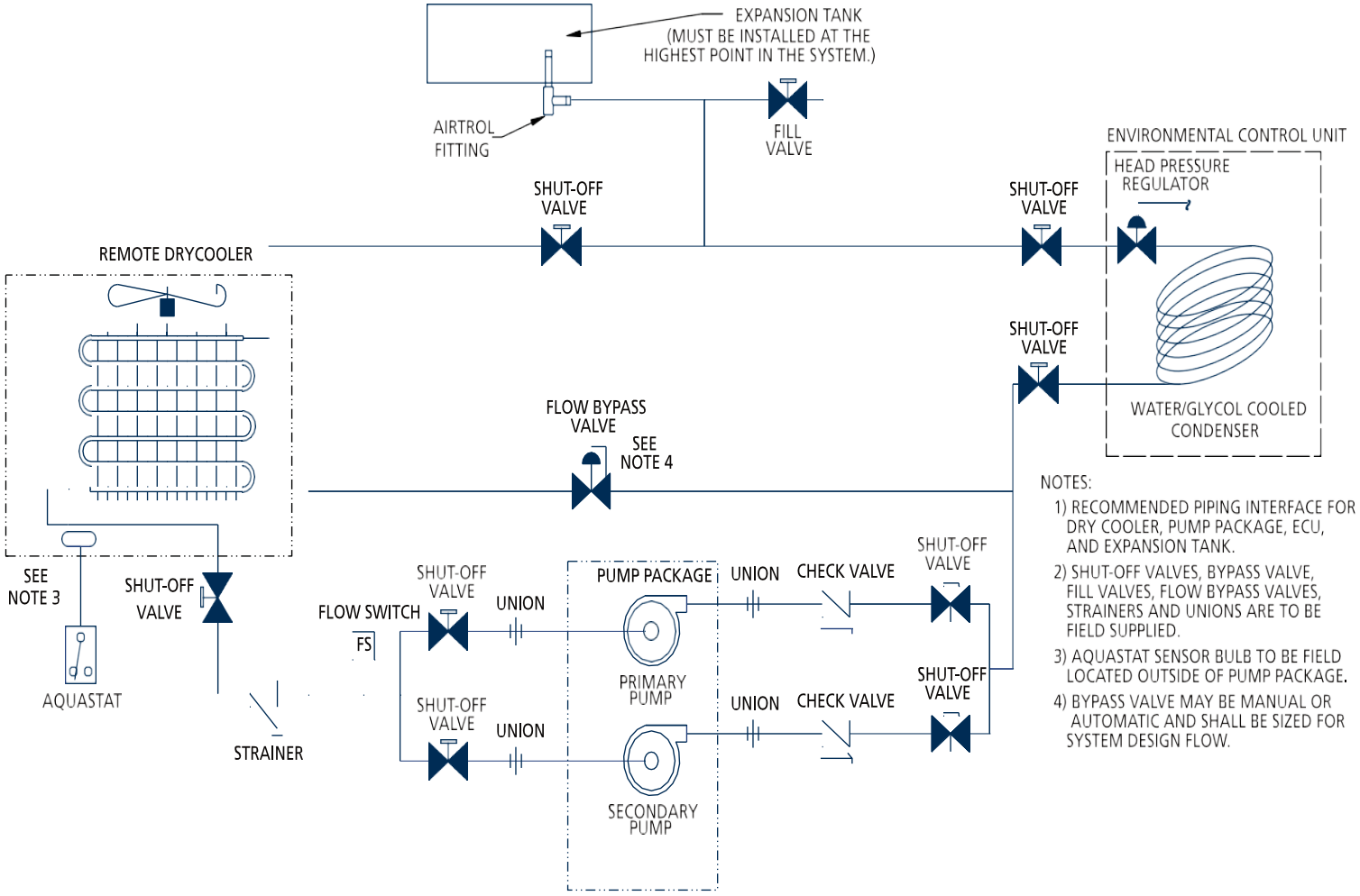
Recommended Piping Schematic — Single Pump

Single Pump Systems

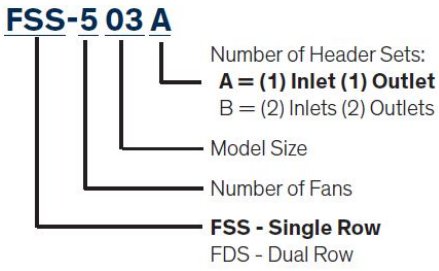


Recommended Piping Schematic — Dual Pump

Dual Pump Systems



Drycooler Model Nomenclature



Single Row Drycooler Capacities

SINGLE ROW FAN CONFIGURATIONS (95 °F Ambient)						SINGLE ROW FAN CONFIGURATIONS (105 °F Ambient)					
95 °F Ambient Selection (40% ethylene glycol, 120 °F EGT / 110 °F LGT)						105°F Ambient Selection (40% ethylene glycol, 120 °F EGT / 110 °F LGT)					
Models FSS-( )	Maximum Flow Rate		Total Heat of Rejection (BTU/H)	Number of Feeds	Con Size (Qty)*	Models FSS-( )	Maximum Flow Rate		Total Heat of Rejection (BTU/H)	Number of Feeds	Conn. Size (Qty)*
	gpm	PD (ftH_2O)					gpm	PD (ftH_2O)			
103A	7	2	33,200	6	1 ¼" (1)	103A	n/a	n/a	n/a	n/a	n/a
104A	n/a	n/a	n/a	n/a	n/a	104A	n/a	n/a	n/a	n/a	n/a
201A	16	6.5	76,800	8	1 ¼" (1)	201A	6	2.4	28,400	6	1 ¼" (1)
202A	22	5.6	102,500	12	1 ½" (1)	202A	n/a	n/a	n/a	n/a	n/a
203A	24	3.9	112,300	16	1 ½" (1)	203A	n/a	n/a	n/a	n/a	n/a
204A	29	4.5	134,600	18	1 ½" (1)	204A	12	5.7	57,000	9	1 ¼" (1)
205A	33	5.7	154,800	18	1 ½" (1)	205A	13	3.1	60,500	12	1 ¼" (1)
206A	42	12.2	196,900	18	2" (1)	206A	16	2.1	75,000	18	1 ¼" (1)
207A	47	14.9	221,500	18	2" (1)	207A	19	2.9	88,400	18	1 ¼" (1)
208A	56	7.1	263,800	27	2" (1)	208A	24	4.5	111,800	18	1 ½" (1)
209A	61	8.2	285,400	27	2" (1)	209A	27	5.5	125,500	18	1 ½" (1)
210A	64	5.4	301,500	36	2" (1)	210A	28	3.5	130,100	24	1 ½" (1)
211A	72	4.4	337,200	45	2" (1)	211A	30	3	149,700	30	1 ½" (1)
301A	84	3.3	393,700	54	2 ½" (1)	301A	39	5	183,400	27	1 ½" (1)
302A	87	2.1	406,300	72	2 ½" (1)	302A	36	3.2	192,000	36	1 ½" (1)
303A	100	3.2	470,200	72	2 ½" (1)	303A	44	2.5	207,100	45	2" (1)
401A	121	7.7	567,500	54	3" (1)	401A	58	12.7	271,800	27	2" (1)
402A	126	4.9	593,700	72	3" (1)	402A	61	8.3	286,400	36	2" (1)
403A	135	3.7	635,700	90	3" (1)	403A	66	6.4	310,800	45	2" (1)
404A	142	4.1	666,900	90	3" (1)	404A	71	7.3	332,900	45	2" (1)
501A	166	9.6	777,500	72	2 ½" (2)	501A	80	16.3	376,400	36	2 ½" (1)
502A	178	7.3	838,300	90	2 ½" (2)	502A	88	13	414,400	45	2 ½" (1)
503A	186	7.9	876,400	90	2 ½" (2)	503A	94	14.6	441,700	45	2 ½" (1)
601A	205	16.2	959,700	72	2 ½" (2)	601A	80	3	375,500	72	2 ½" (1)
602A	220	12.3	1,030,700	90	3" (2)	602A	85	2.2	400,400	90	2 ½" (1)
603A	230	13.4	1,075,400	90	3" (2)	603A	95	2.7	441,900	90	2 ½" (1)
701A	215	20	1,017,200	72	3" (2)	701A	77	3.2	366,000	72	2 ½" (1)
702A	235	15.7	1,091,100	90	3" (2)	702A	90	2.8	420,700	90	2 ½" (1)
703A	240	16.3	1,127,800	90	3" (2)	703A	95	3.1	442,100	90	2 ½" (1)

Dual Row Drycooler Capacities

Dual Row Fan Configurations (95 °F Ambient)						Dual Row Fan Configurations (105 °F Ambient)					
95 °F Ambient Selection (40% ethylene glycol, 120 °F EGT / 110 °F LGT)						105 °F Ambient Selection (40% ethylene glycol, 120 °F EGT / 110 °F LGT)					
Models FDS-( )	Maximum Flow Rate		Total Heat of Rejection (BTU/H)	Number of Feeds	Conn. Size (Qty)*	Models FDS-( )	Maximum Flow Rate		Total Heat of Rejection (BTU/H)	Number of Feeds	Conn. Size (Qty)*
	gpm	PD (ftH_2O)					gpm	PD (ftH_2O)			
401B	120	8	567,400	54	2" (2)	401B	50	4.8	238,700	36	1 ½" (2)
402B	130	5.5	606,600	72	2" (2)	402B	55	3.4	257,400	48	1 ½" (2)
403B	140	4.2	647,800	90	2 ½" (2)	403B	60	2.7	280,600	60	1 ½" (2)
404B	155	14.6	720,800	60	2 ½" (2)	404B	65	3.1	302,200	60	1 ½" (2)
601B	165	3.2	780,700	108	2 ½" (2)	601B	76	4.7	360,600	54	1 ½" (2)
602B	174	2.1	812,700	144	2 ½" (2)	602B	82	3.2	384,000	72	2" (2)
603B	220	12.8	1,032,100	90	3" (2)	603B	105	10	492,200	60	2" (2)
801B	240	7.6	1,131,700	108	3" (2)	801B	115	12.6	541,000	54	2" (2)
802B	255	5.1	1,192,800	144	3" (2)	802B	120	8.1	567,400	72	2" (2)
803B	270	3.7	1,271,300	180	3" (2)	803B	130	6.2	616,300	90	2" (2)
804B	285	4.1	1,335,400	180	3" (2)	804B	140	7.1	660,600	90	2 ½" (2)
1001B	330	9.5	1,552,100	144	3" (3)	1001B	160	16.3	752,900	72	2 ½" (2)
1002B	360	7.4	1,682,600	180	3" (3)	1002B	175	12.8	826,300	90	2 ½" (2)
1003B	375	8	1,757,100	180	3" (3)	1003B	185	14.2	876,200	90	2 ½" (2)
1201B	410	16.2	1,919,400	144	3" (3)	1201B	160	3	750900	144	2 ½" (2)
1202B	440	12.3	2,061,400	180	3" (3)	1202B	170	2.2	800,800	180	2 ½" (2)
1203B	455	13.1	2,144,800	180	3" (3)	1203B	185	2.6	868,500	180	2 ½" (2)
1401B	485	24.9	2,281,200	144	3" (4)	1401B	170	3.8	799,700	144	2 ½" (2)
1402B	520	18.9	2,447,000	180	3" (4)	1402B	195	3.2	913,200	180	2 ½" (2)
1403B	545	20.5	2,553,700	180	3" (4)	1403B	205	3.5	958,200	180	2 ½" (2)

* All connections are MPT

Drycooler selection: Select drycooler based on your required Maximum Glycol System Flow Rate (GPM)@ design summer ambient air temperature (95 °F or 105 °F).

Note: Control panel is located on header connection side (opposite the return bend end).

Altitude Correction Table

Altitude Correction							
Altitude (ft)	0	1000	2000	3000	4000	5000	6000
Correction Factor	1	0.971	0.958	0.945	0.932	0.919	0.905

Single Row Drycooler Technical Data

Drycooler Model	Unit Weight Dry (lb)	Fluid Data		Fan Data				Total ft^3/min 1140 RPM
		Fluid Weight	Operating Charge (gallons)	Quantity of Fans	Fan Diameter	Nominal HP	Fan Configuration	
SINGLE ROW FAN CONFIGURATIONS								
FSS-103A	159	11.6	1.39	1	22"	1/3	1 × 1	4,500
FSS-104A	160	15.8	1.90	1			1 × 1	4,050
FSS-201A	258	22.3	2.68	2	22"	1/3	1 × 2	9,200
FSS-202A	285	33.6	4.03	2			1 × 2	8,300
FSS-203A	312	44.7	5.36	2			1 × 2	7,600
FSS-204A	451	44.8	5.38	2	30" - 3P	1-1/2	1 × 2	16,000
FSS-205A	460	44.8	5.38	2			1 × 2	15,900
FSS-206A	480	67.1	8.05	2			1 × 2	15,600
FSS-207A	501	67.1	8.05	2			1 × 2	15,400
FSS-208A	545	67.1	8.05	2	30" - 4P	1-1/2	1 × 2	21,300
FSS-209A	572	67.1	8.05	2			1 × 2	20,700
FSS-210A	605	89.5	10.74	2			1 × 2	19,700
FSS-211A	660	111.9	13.43	2			1 × 2	19,000
FSS-301A	880	99.4	11.93	3	30" - 4P	1-1/2	1 × 3	31,900
FSS-302A	990	132.7	15.92	3			1 × 3	31,000
FSS-303A	1100	165.8	19.90	3			1 × 3	29,500
FSS-401A	1160	131.8	15.82	4	30" - 4P	1-1/2	1 × 4	42,500
FSS-402A	1210	175.7	21.08	4			1 × 4	41,350
FSS-403A	1270	219.7	26.37	4			1 × 4	39,250
FSS-404A	1320	219.7	26.37	4			1 × 4	37,750
FSS-501A	1510	218.8	26.26	5	30" - 4P	1-1/2	1 × 5	51,650
FSS-502A	1580	273.5	32.82	5			1 × 5	49,000
FSS-503A	1640	273.5	32.82	5			1 × 5	47,150
FSS-601A	1860	261.9	31.43	6	30" - 4P	1-1/2	1 × 6	62,000
FSS-602A	1930	327.4	39.29	6			1 × 6	58,800
FSS-603A	2020	327.4	39.29	6			1 × 6	56,550
FSS-701A	2170	305.6	36.67	7	30" - 4P	1-1/2	1 × 7	72,300
FSS-702A	2250	381.9	45.83	7			1 × 7	68,600
FSS-703A	2350	381.9	45.83	7			1 × 7	65,970

Dual Row Drycooler Technical Data

Drycooler Model	Unit Weight Dry (lb)	Fluid Data		Fan Data				Total ft^3/min 1140 RPM
		Fluid Weight	Operating Charge (gallons)	Quantity of Fans	Fan Diameter	Nominal HP	Fan Configuration	
DUAL ROW FAN CONFIGURATIONS								
FDS-401B	1188	134.3	16.12	4	30" - 4P	1-1/2	2 × 2	43,000
FDS-402B	1254	179.1	21.50	4			2 × 2	41,400
FDS-403B	1310	223.9	26.88	4			2 × 2	39,400
FDS-404B	1365	223.9	26.88	4			2 × 2	38,000
FDS-601B	1805	198.9	23.88	6	30" - 4P	1-1/2	2 × 3	63,800
FDS-602B	2025	265.2	31.84	6			2 × 3	62,000
FDS-603B	2255	331.5	39.80	6			2 × 3	59,000
FDS-801B	2370	263.6	31.64	8	30" - 4P	1-1/2	2 X 4	85,000
FDS-802B	2480	351.3	42.17	8			2 × 4	82,700
FDS-803B	2590	439.2	52.73	8			2 × 4	78,500
FDS-804B	2710	439.2	52.73	8			2 × 4	75,500
FDS-1001B	3080	437.6	52.53	10	30" - 4P	1-1/2	2 × 5	103,300
FDS-1002B	3250	547.0	65.67	10			2 × 5	98,000
FDS-1003B	3390	547.0	65.67	10			2 × 5	94,300
FDS-1201B	3740	523.7	62.87	12	30" - 4P	1-1/2	2 X 6	124,000
FDS-1202B	3990	654.6	78.58	12			2 × 6	117,600
FDS-1203B	4130	654.6	78.58	12			2 × 6	113,100
FDS-1401B	4360	611.0	73.35	14	30" - 4P	1-1/2	2 × 7	144,600
FDS-1402B	4650	763.7	91.68	14			2 × 7	137,200
FDS-1403B	4820	763.7	91.68	14			2 × 7	131,950

Electrical Data

Single Point Power Calculations

Term	Calculation	Description
FLA	Full Load Amps	Add up the FLA's of the dry cooler fan motors, add 0.5 amps for the control transformer, and add the FLA of one of the pump motors. This total is the FLA. See the example below. Pump motor: 8.2 amps Dry cooler: 8.0 amps Control transformer: 0.5 amps 8.2 8.0 + 0.5 **16.7 FLA**
MCA	Minimum Circuit Amps/Wire Size	Take the FLA of the highest load (typically the pump motor) and multiply it by 1.25 and add all the remaining FLA's without the multiplier. This number is the MCA.
MFS	Maximum Fuse Size	Take the FLA of the highest load and multiply it by 2.25, then add all the remaining FLA's without the multiplier. Take this number and round down to the next lowest standard fuse size.

Pump NEC standard fuse sizes: 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 100, 125, 150, 175 so the final MFS would be 35 amps.

Glycol Pump Package Electrical Data

Pump Package Model	HP	208/1/60			208/3/60			460/3/60			575/3/60		
		FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS
GPS-005-S-B	0.5	4.1	5.1	15	3.1	3.9	15	1.2	1.5	15	1.0	1.2	15
GPS-007-S-B	0.75	7.0	8.8	15	3.2	4.0	15	1.5	1.9	15	1.2	1.5	15
GPS-010-S-A/B/C	1.0	6.6	8.3	15	3.4	4.3	15	1.6	2.0	15	1.3	1.6	15
GPS-015-S-A/B/C	1.5	8.6	10.8	15	4.0	5.0	15	1.9	2.4	15	1.5	1.9	15
GPS-020-S-A/B/C	2.0	12.1	15.1	25	5.3	6.6	15	2.5	3.1	15	2.0	2.5	15
GPS-030-S-A/B/C	3.0	n/a	n/a	n/a	7.9	9.9	15	3.6	4.5	15	2.9	3.6	15
GPS-050-S-A/B/C	5.0	n/a	n/a	n/a	12.0	15.0	25	5.9	7.4	15	4.7	5.9	15
GPS-075-S-A/B/C	7.5	n/a	n/a	n/a	18.5	23.1	40	8.4	10.5	15	6.7	8.4	15
GPS-100-S-A/B/C	10.0	n/a	n/a	n/a	24.9	31.1	50	11.6	14.5	25	9.3	11.6	20
GPS-005-D-B	0.5	4.1	5.1	15	3.1	3.9	15	1.2	1.5	15	1.0	1.2	15
GPS-007-D-B	0.75	7.0	8.8	15	3.2	4.0	15	1.5	1.9	15	1.2	1.5	15
GPS-010-D-A/B/C	1.0	6.6	8.3	15	3.4	4.3	15	1.6	2.0	15	1.3	1.6	15
GPS-015-D-A/B/C	1.5	8.6	10.8	15	4.0	5.0	15	1.9	2.4	15	1.5	1.9	15
GPS-020-D-A/B/C	2.0	12.1	15.1	25	5.3	6.6	15	2.5	3.1	15	2.0	2.5	15
GPS-030-D-A/B/C	3.0	n/a	n/a	n/a	7.9	9.9	15	3.6	4.5	15	2.9	3.6	15
GPS-050-D-A/B/C	5.0	n/a	n/a	n/a	12.0	15.0	25	5.9	7.4	15	4.7	5.9	15
GPS-075-D-A/B/C	7.5	n/a	n/a	n/a	18.5	23.1	40	8.4	10.5	15	6.7	8.4	15
GPS-100-D-A/B/C	10.0	n/a	n/a	n/a	24.9	31.1	50	11.6	14.5	25	9.3	11.6	20

Single Row Drycooler Electrical Data

MODEL FSS-( )	Fan HP @ 1-phase	Fan HP @ 3-phase	Unit kW	208-230-1		208-230-3		208	460-1		460-3		460	575-1		575-3		575
				FLA	MCA	FLA	MCA	MFS	FLA	MCA	FLA	MCA	MFS	FLA	MCA	FLA	MCA	MFS
103A	1/3	1/3	0.28	2	15	1.8	15	15	1.1	15	0.9	15	15	1	15*	n/a	n/a	15
104A	1/3	1/3	0.28	2	15	1.8	15	15	1.1	15	0.9	15	15	1	15*	n/a	n/a	15
201A	1/3	1/3	0.47	4	15	3.6	15	15	2.2	15	1.8	15	15	2	15*	n/a	n/a	15
202A	1/3	1/3	0.47	4	15	3.6	15	15	2.2	15	1.8	15	15	2	15*	n/a	n/a	15
203A	1/3	1/3	0.47	4	15	3.6	15	15	2.2	15	1.8	15	15	2	15*	n/a	n/a	15
204A	1	1-1/2	2	9.4	15	13	15	20	4.7	15	6.6	15	15	n/a	n/a	4.3	15	15
205A	1	1-1/2	2	9.4	15	13	15	20	4.7	15	6.6	15	15	n/a	n/a	4.3	15	15
206A	1	1-1/2	2	9.4	15	13	15	20	4.7	15	6.6	15	15	n/a	n/a	4.3	15	15
207A	1	1-1/2	2	9.4	15	13	15	20	4.7	15	6.6	15	15	n/a	n/a	4.3	15	15
208A	n/a	1-1/2	3.6	n/a	n/a	13	15	20	n/a	n/a	6.6	15	15	n/a	n/a	4.3	15	15
209A	n/a	1-1/2	3.6	n/a	n/a	13	15	20	n/a	n/a	6.6	15	15	n/a	n/a	4.3	15	15
210A	n/a	1-1/2	3.6	n/a	n/a	13	15	20	n/a	n/a	6.6	15	15	n/a	n/a	4.3	15	15
211A	n/a	1-1/2	3.6	n/a	n/a	13	15	20	n/a	n/a	6.6	15	15	n/a	n/a	4.3	15	15
301A	n/a	1-1/2	5.4	n/a	n/a	19.5	21.2	25	n/a	n/a	9.9	15	15	n/a	n/a	6.5	15	15
302A	n/a	1-1/2	5.4	n/a	n/a	19.5	21.2	25	n/a	n/a	9.9	15	15	n/a	n/a	6.5	15	15
303A	n/a	1-1/2	5.4	n/a	n/a	19.5	21.2	25	n/a	n/a	9.9	15	15	n/a	n/a	6.5	15	15
401A	n/a	1-1/2	7.2	n/a	n/a	26	27.7	30	n/a	n/a	13.2	15	15	n/a	n/a	8.6	15	15
402A	n/a	1-1/2	7.2	n/a	n/a	26	27.7	30	n/a	n/a	13.2	15	15	n/a	n/a	8.6	15	15
403A	n/a	1-1/2	7.2	n/a	n/a	26	27.7	30	n/a	n/a	13.2	15	15	n/a	n/a	8.6	15	15
404A	n/a	1-1/2	7.2	n/a	n/a	26	27.7	30	n/a	n/a	13.2	15	15	n/a	n/a	8.6	15	15
501A	n/a	1-1/2	9	n/a	n/a	32.5	34.2	40	n/a	n/a	16.5	17.4	20	n/a	n/a	10.8	15	15
502A	n/a	1-1/2	9	n/a	n/a	32.5	34.2	40	n/a	n/a	16.5	17.4	20	n/a	n/a	10.8	15	15
503A	n/a	1-1/2	9	n/a	n/a	32.5	34.2	40	n/a	n/a	16.5	17.4	20	n/a	n/a	10.8	15	15
601A	n/a	1-1/2	10.8	n/a	n/a	39	40.7	45	n/a	n/a	19.8	20.7	25	n/a	n/a	12.9	15	15
602A	n/a	1-1/2	10.8	n/a	n/a	39	40.7	45	n/a	n/a	19.8	20.7	25	n/a	n/a	12.9	15	15
603A	n/a	1-1/2	10.8	n/a	n/a	39	40.7	45	n/a	n/a	19.8	20.7	25	n/a	n/a	12.9	15	15
701A	n/a	1-1/2	12.6	n/a	n/a	45.5	47.2	50	n/a	n/a	23.1	24	25	n/a	n/a	15.1	15.6	20
702A	n/a	1-1/2	12.6	n/a	n/a	45.5	47.2	50	n/a	n/a	23.1	24	25	n/a	n/a	15.1	15.6	20
703A	n/a	1-1/2	12.6	n/a	n/a	45.5	47.2	50	n/a	n/a	23.1	24	25	n/a	n/a	15.1	15.6	20

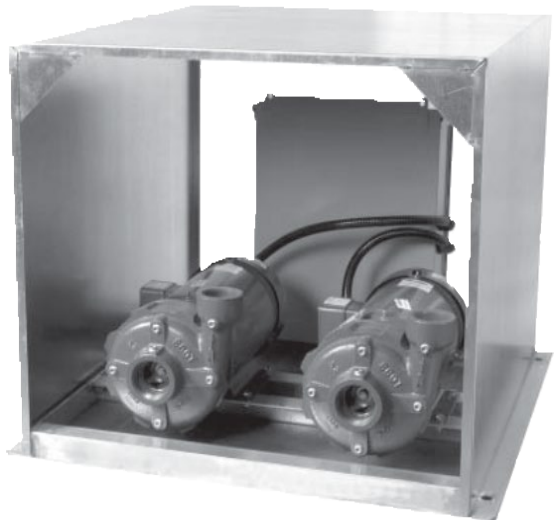
*** - 1/2 HP Motors**

Dual Row Drycooler Electrical Data

MODEL FDS-( )	Fan HP @ 3-phase	Unit kW	208-230/3			460/3			575/3		
			FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS
401B	1-1/2	7.2	26	27.6	30	13.2	15	15	8.6	15	15
402B	1-1/2	7.2	26	27.6	30	13.2	15	15	8.6	15	15
403B	1-1/2	7.2	26	27.6	30	13.2	15	15	8.6	15	15
404B	1-1/2	7.2	26	27.6	30	13.2	15	15	8.6	15	15
601B	1-1/2	10.8	39	40.7	45	19.8	20.7	25	12.9	15	15
602B	1-1/2	10.8	39	40.7	45	19.8	20.7	25	12.9	15	15
603B	1-1/2	10.8	39	40.7	45	19.8	20.7	25	12.9	15	15
801B	1-1/2	14.4	52	53.7	60	26.4	27.3	30	17.2	17.7	20
802B	1-1/2	14.4	52	53.7	60	26.4	27.3	30	17.2	17.7	20
803B	1-1/2	14.4	52	53.7	60	26.4	27.3	30	17.2	17.7	20
804B	1-1/2	14.4	52	53.7	60	26.4	27.3	30	17.2	17.7	20
1001B	1-1/2	18	65	66.7	70	33	33.9	35	21.5	22	25
1002B	1-1/2	18	65	66.7	70	33	33.9	35	21.5	22	25
1003B	1-1/2	18	65	66.7	70	33	33.9	35	21.5	22	25
1201B	1-1/2	21.6	78	79.7	80	39.6	40.5	45	25.8	26.3	30
1202B	1-1/2	21.6	78	79.7	80	39.6	40.5	45	25.8	26.3	30
1203B	1-1/2	21.6	78	79.7	80	39.6	40.5	45	25.8	26.3	30
1401B	1-1/2	25.2	91	92.7	100	46.2	47.1	50	30.1	30.6	35
1402B	1-1/2	25.2	91	92.7	100	46.2	47.1	50	30.1	30.6	35
1403B	1-1/2	25.2	91	92.7	100	46.2	47.1	50	30.1	30.6	35

Product Guide Specifications
½ to 10 HP Pumps
10.5 to 667 kW Drycoolers 60 Hz Data

Glycol Pump Packages



Single Pump Packages
(Models GPS-( )-S-( ))

The system shall be a single pump package designed to provide the total required glycol condenser coolant flow rate at the total rated system pressure drop.

Dual Pump Packages
(Models GPS-( )-D-( ))

The system shall be a dual (two), redundant, pump package designed to provide the total required glycol condenser coolant flow rate at the total rated system pressure drop.

The pump shall be sized to provide:

_____ GPM (total system flow rate)

_____ ft. w.g. (total system press drop)

_____% Ethylene Glycol Solution, or

_____% Propylene Glycol Solution

Quality Assurance

The manufacturer shall maintain a set of international standards of quality management to ensure product quality. Each system shall be subjected to a complete operational and functional test procedure at the factory prior to shipment.

Cabinet Construction

The pumps and main electrical enclosure shall be mounted on a welded aluminum frame and protected by a removable galvanized steel weather cover. The pump controls shall be mounted in a NEMA-3R enclosure at the end of the pump package.

Component Access

Pumps shall be easily accessible via a removable galvanized steel weather cover. Electrical components shall be accessible via a NEMA-3R electrical enclosure with hinged front door.

Electrical System

The system shall incorporate overcurrent and overload protection in accordance with UL 1995 requirements. The control circuit shall be a 24 Vac Class 2 low voltage circuit.

The system shall be complete with:

- 24-Volt Control Transformer
- Main Power Non-Fused Disconnect
- Switch with Lockable Handle
- Main Power Distribution Block and
- Grounding Lug
- Individual Pump Motor Contactors

The drycooler shall be electrically interfaced with the pump package via 24 VAC signal connection.

Standard Fan Cycling Controls
(Models F()S-( ))

Drycooler fans shall automatically cycle ON/OFF based on the leaving glycol temperature as sensed by factory provided Aquastat(s) to maintain proper glycol solution temperature.

Fan Cycling Arrangement

Fan Configuration	Total # of Stages	# Fans Cycled per Stage
1 × 2	2	1
1 × 3	3	
1 × 4	4	
1 × 5	5	
1 × 6	6	
1 × 7	7	
2 × 2	2	2
2 × 3	3	
2 × 4	4	
2 × 5	5	
2 × 6	6	
2 × 7	7	

Free-Cooling Fan Cycling Controls
(Models F( )S-( )-FC)

Drycoolers for use with the Free-Cooling economizer cooling mode shall be provided with fan cycling controls. The drycooler capacity shall be increased by reversing the typical drycooler fan(s) cycling sequence of operation during low ambient conditions to provide the maximum cooling effect for the free-cooling glycol coolant solution.

In addition to the above standard drycooler fan cycling controls Free-Cooling Fan Cycling Controls shall include the following:

- Ambient Free-Cooling Mode Enabling
- Thermostat
- Free-Cooling Mode Aquastat(s) to
- Sense and maintain proper coolant
- Temperature during Free Cooling mode

Note: Consult your STULZ Sales Representative when mixing FC and Non-FC A/C units on the same glycol condenser source loop.

Coils

Drycooler coils shall be high efficiency with corrugated aluminum fins bonded to staggered copper tubes. Coil end plates shall be hot dipped galvanized. Coils shall be pressure tested and pressurized for shipment.

Fan Motors

Fan motors shall be energy efficient direct driven at 1140 RPM (see note) and designed for outdoor drycooler applications. Fan motors shall have thermal overload protection and permanently lubricated ball bearings.

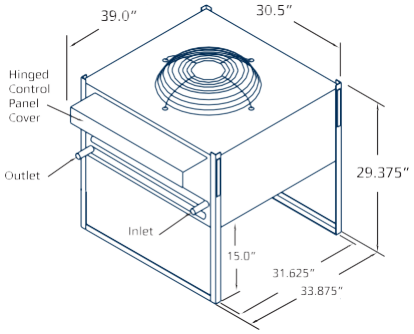
NOTE Lower RPM, low sound power drycoolers are optionally available. Consult your local STULZ Sales Representative for more details.

Fan Blades

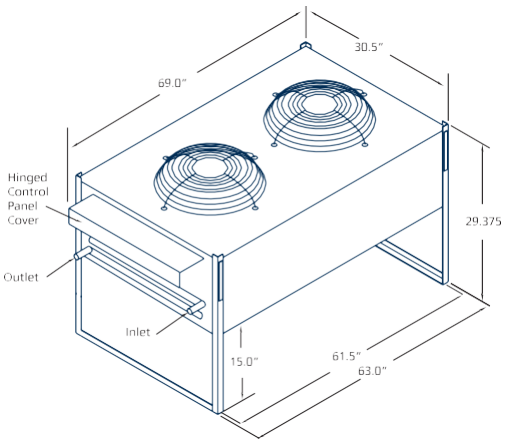
The drycooler shall incorporate direct-driven propeller fan(s). The fan blades shall be made from aluminum and have zinc plated hubs for strength and corrosion protection. Multiple fan drycoolers shall have internal air baffles to prevent air bypass from one fan section to another and to maximize air through each coil section.

Dimensional Data — Remote Outdoor Drycooler Configuration

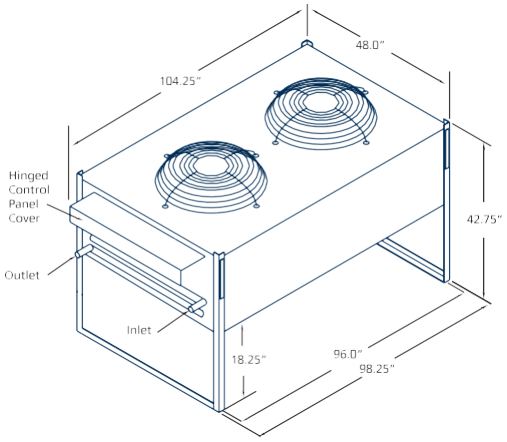
Single Row Fan Configurations



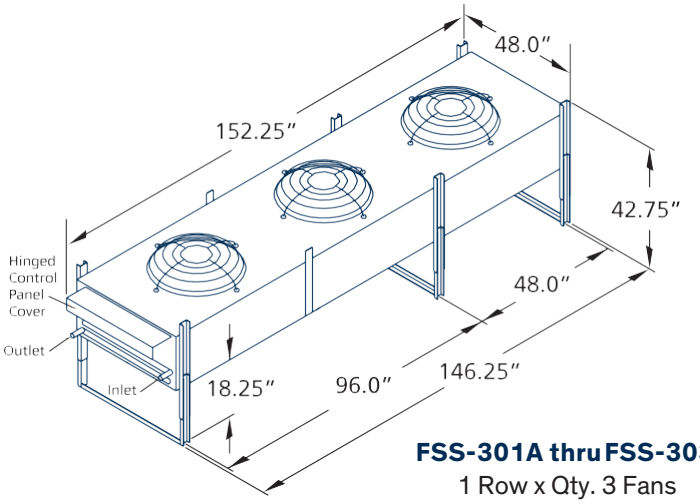
FSS-103A & FSS 104A
1 Row x Quantity 1 Fan



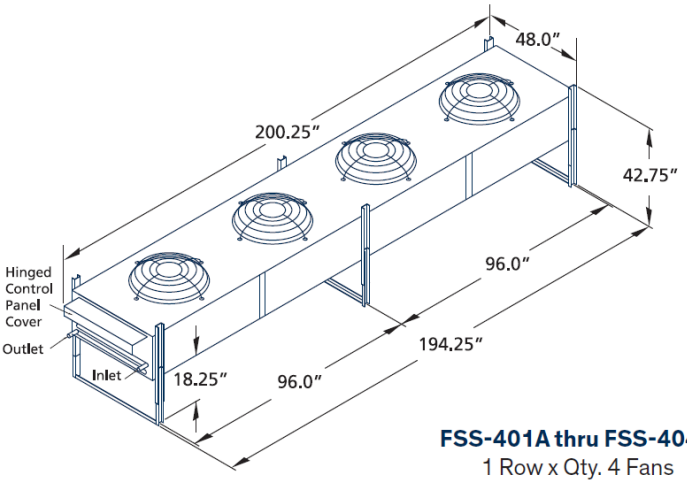
FSS-201A thru FSS-203A
1 Row x Quantity 2 Fans



FSS-204A thru FSS-211A
1 Row x Quantity 2 Fans



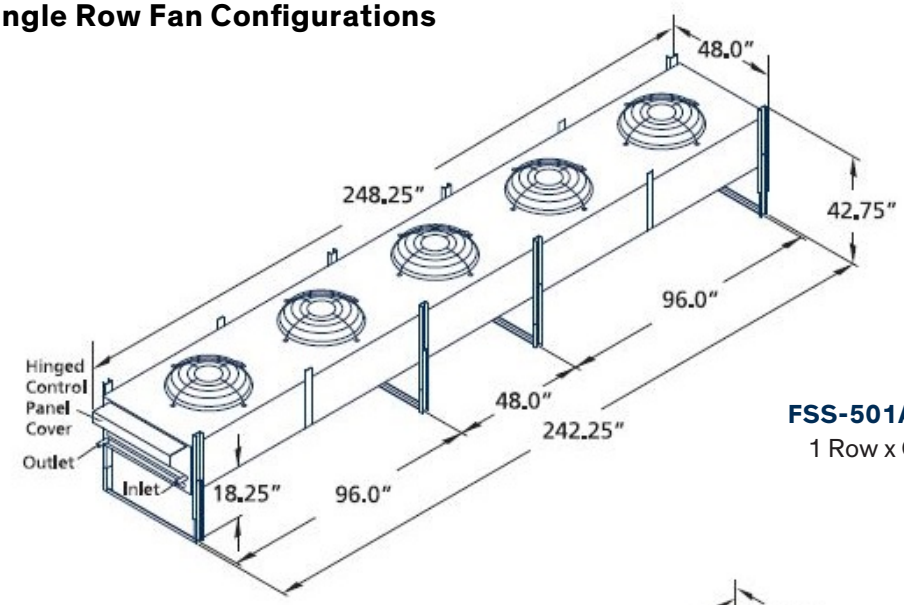
FSS-301A thru FSS-303A
1 Row x Qty. 3 Fans



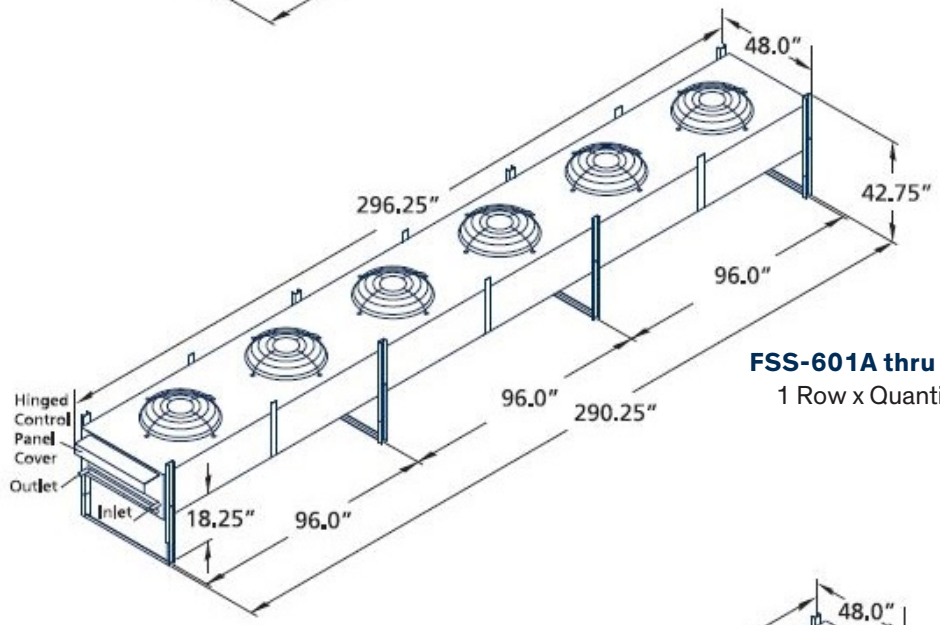
FSS-401A thru FSS-404A
1 Row x Qty. 4 Fans

NOTE: Mounting legs are retracted for shipping.

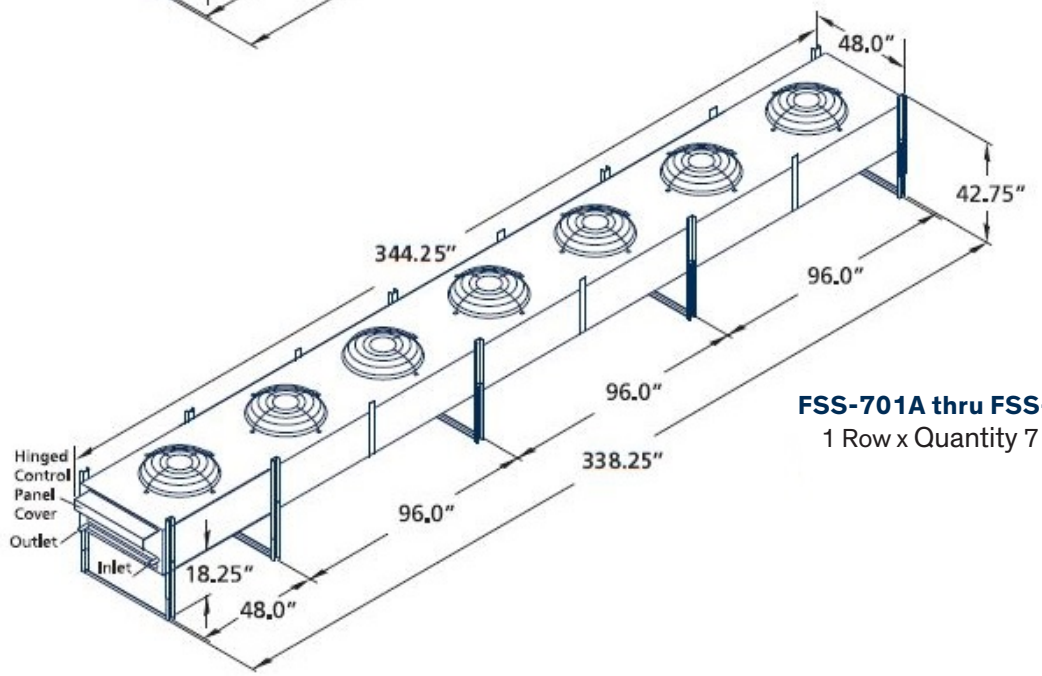
Single Row Fan Configurations



FSS-501A thru FSS-503A
1 Row x Quantity 5 Fans



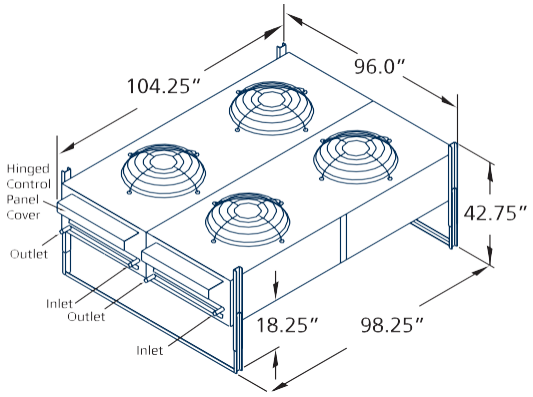
FSS-601A thru FSS-603A
1 Row x Quantity 6 Fans



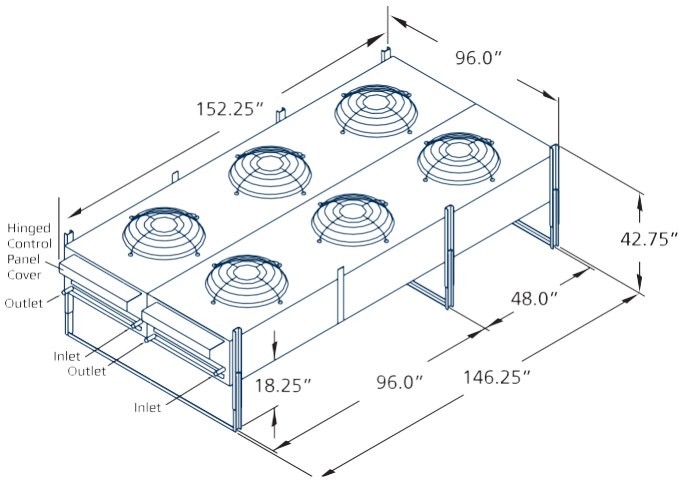
FSS-701A thru FSS-703A
1 Row x Quantity 7 Fans

Dimensional Data — Remote Outdoor Drycooler Configuration

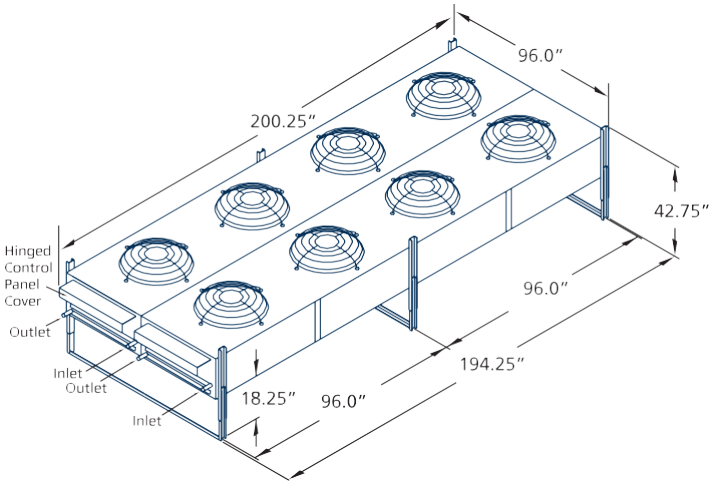
Remote Dual Row Fan Configurations



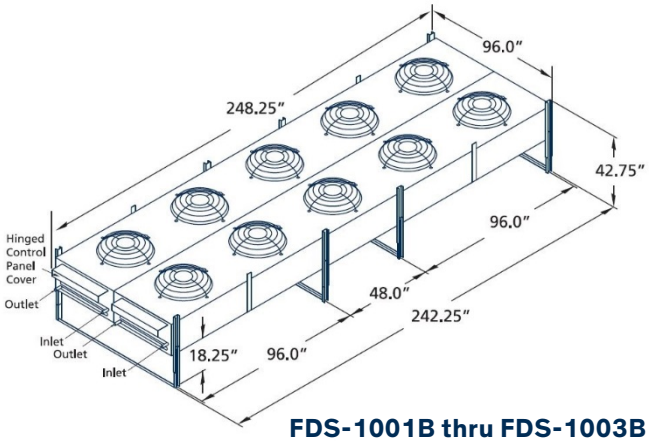
FDS-401B thru FDS-404B
2 Rows x 2 Fans



FDS-602B & FDS-603B
2 Rows x 3 Fans



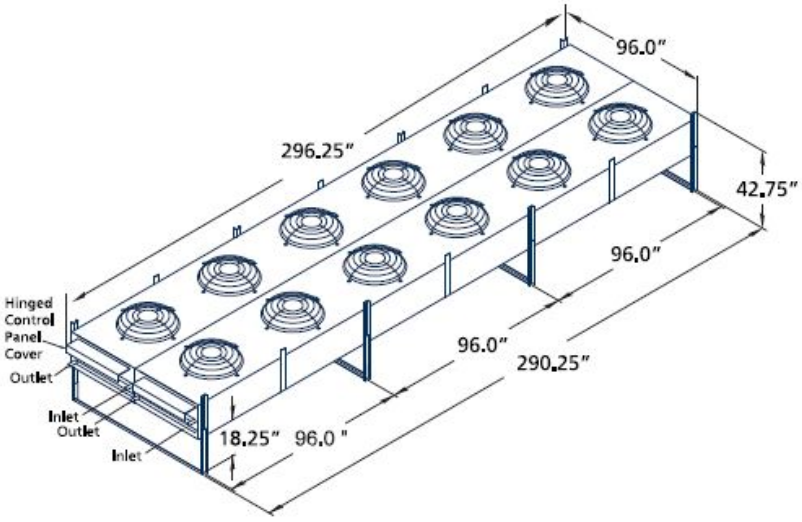
FDS-801B thru FDS-804B
2 Rows x 4 Fans



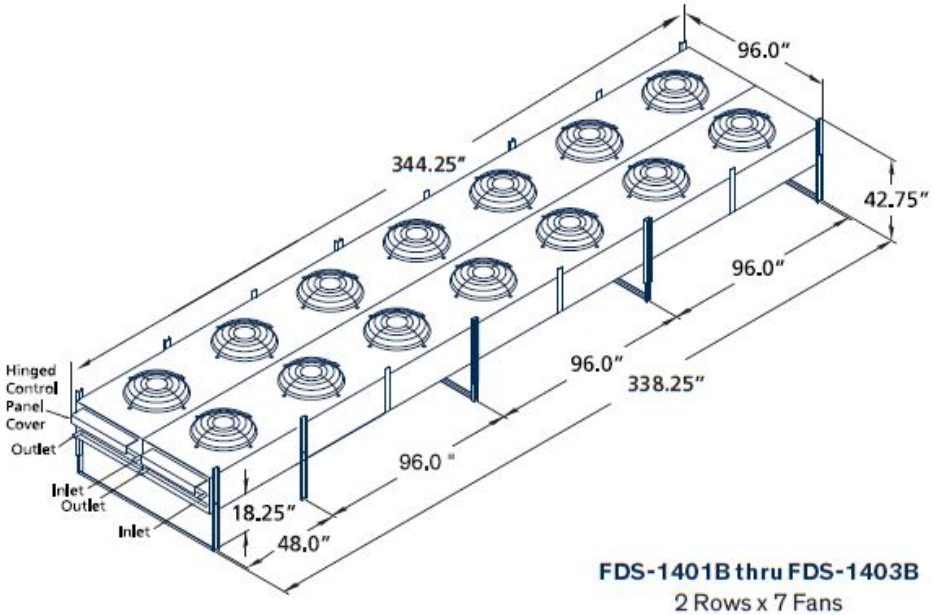
FDS-1001B thru FDS-1003B
2 Rows x 5 Fans

Dimensional Data — Remote Outdoor Drycooler Configurations

Dual Row Fan Configurations



FDS-1201B thru FDS-1203B
2 Rows x 6 Fans



FDS-1401B thru FDS-1403B
2 Rows x 7 Fans

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