SUBMITTAL DATA

Affinity Series

Hydronic Heat Pump with OptiHeat

R-454B / 4-5 Ton / 60Hz

SDW5-0024Y

PROUD MEMBER

Intertek

Water Source HP
ANSI/AHRI/ASHRAE/ISO13256-1

ENERGY STAR PARTNER

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

Affinity Series-
Hydronic Heat Pump with OptiHeat
4-5 Tons 60Hz

YORK®

Nomenclature

1	2	3	4	5-7	8	9	10	11	12	13	14	15	16	17	18	19	20
Y	5	W	Z	060	B	E	1	A	0	R	C	F	F	F	D	1	0

Brand
Y – York

Model
5 – Affinity

Type
W – Water to Water

Cabinet Configuration
Z – Indoor Cube

Unit Capacity
048,060

Refrigerant
B – R454B

Compressor Type
E – Vapor Injection Single Capacity

Voltage
1 – 208-230/60/1

Vintage
A – Current

Hot Water Generation
0 – None

Operating Mode
H – Heating Only
R – Reversible

Water Coil
C – Copper

IntelliStart
0 – None
1 – Yes (048 only)

Mitigation
1 – Sensor Mitigation

Controls
D – Aurora Premium Control (Performance[1] and Refrigeration Monitoring) with EEV and TXV

Future Option
F – Future

Future Option
F – Future

Future Option
F – Future

Rev.: 2/28/25

Notes: 1 – Flow meter for Performance option is shipped inside the unit and must be externally field installed.

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

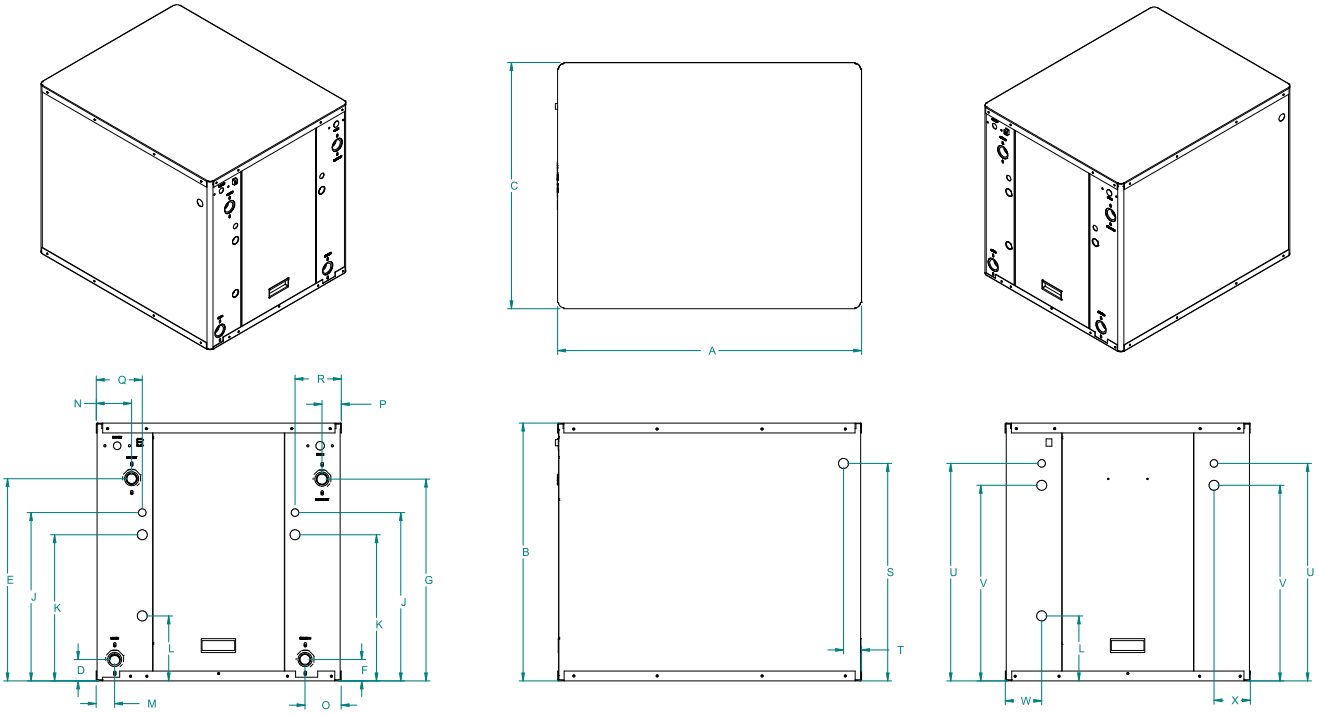
YORK®

AHRI/ISO 13256-2 Performance Ratings

Model	Flow Rate		Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
			Cooling 86°F Source 53.6°F Load		Heating 68°F Source 104°F Load		Cooling 59°F Source 53.6°F Load		Heating 50°F Source 104°F Load		Cooling 77°F Source 53.6°F Load		Heating 32°F Source 104°F Load	
	Load GPM	Source GPM	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP
048	15	15	41,700	13.3	62,700	4.7	44,500	20.1	52,800	3.9	43,000	16.1	42,800	3.3
060	20	20	51,900	13.0	79,600	4.5	57,100	20.1	66,700	3.7	54,200	16.1	54,100	3.2

3/17/25

Dimensional Data



Model		Overall Cabinet			Water Connections						Electrical Knockouts		
		A	B	C	D	E	F	G			J	K	L
		Depth	Height	Width	Load Liquid In	Load Liquid Out	Source Liquid In	Source Liquid Out	Load Water FPT	Source Water FPT	1/2" cond Low Voltage	3/4" cond High Voltage	3/4" cond High Voltage
048	in.	31.0	26.2	25.0	2.2	20.6	2.2	20.6	1-1/4"	1-1/4"	17.1	14.8	6.5
	mm	787.4	665.5	635.0	55.9	523.2	55.9	523.2	31.8	31.8	434.3	375.9	165.0
060	in.	31.0	26.2	25.0	2.4	23.3	2.4	23.3	1-1/4"	1-1/4"	18.0	15.8	6.5
	mm	787.4	665.5	635.0	61.0	592.0	61.0	592.0	31.8	31.8	457.0	401.0	165.0

Model		Water Connections				Electrical Knockout		Electrical Knockout		Electrical Knockout		Electrical Knockout	
		M	N	O	P	Q	R	S	T	U	V	W	X
		Load Liquid In	Load Liquid Out	Source Liquid In	Source Liquid Out	High/Low Voltage	High/Low Voltage	Power Supply	Power Supply	Low Voltage	Power Supply	High/Low Voltage	High/Low Voltage
048	in.	1.8	3.6	3.6	2.0	4.7	4.7	22.0	1.8	22.0	19.8	3.7	3.7
	mm	45.7	91.4	91.4	50.8	119.4	119.4	559.0	45.7	559.0	503.0	94.0	94.0
060	in.	1.8	4.0	4.0	1.8	4.7	4.7	22.0	1.8	22.0	19.8	3.7	3.7
	mm	45.7	101.6	101.6	45.7	119.4	119.4	559.0	45.7	559.0	503.0	94.0	94.0

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

YORK®

Physical Data

Model	048	060
Compressor (1 each)		
Factory Charge R-454B, oz [kg]	100 [2.83]	118 [3.34]
Coax & Piping Water Volume - gal [l]	1.4 [5.25]	1.6 [6.13]
Weight - Operating, lb [kg]	340 [154.2]	360 [163.3]
Weight - Packaged, lb [kg]	355 [161.0]	375 [170.0]

3/17/25

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

YORK®

Electrical Data

Model	Rated Voltage	Voltage Min/Max	Compressor				Load Pump	Source Pump	Total Unit FLA	Min Ckt Amp	Maximum Fuse/HACR
			MCC	RLA	LRA	LRA*					
048	208-230/60/1	198/254	37.8	24.2	178.0	62.0	1.8	5.4	31.4	37.5	60
060	208-230/60/1	198/254	40.3	25.8	178.0	62.0	1.8	5.4	33.0	39.5	60

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Notes:All fuses type "D" time delay (or HACR circuit breaker in USA).
Source pump amps shown are for up to a 1/2 HP pump
Load pump amps shown are for small circulators.
*LRA with IntelliStart installed

Definitions

Abbreviations and Definitions

ELT = entering load fluid temperature to heat pump
SWPD = source coax water pressure drop
LLT = leaving load fluid temperature from heat pump
PSI = pressure drop in pounds per square inch
LGPM = load flow in gallons per minute
FT HD = pressure drop in feet of head
LWPD = load coax water pressure drop
LWT = leaving water temperature
EWT = entering water temperature
Brine = water with a freeze inhibiting solution
kW = kilowatts
EST = entering source fluid temperature to heat pump
HE = heat extracted in MBTUH
LST = leaving source fluid temperature from heat pump
HC = total heating capacity in MBTUH
COP = coefficient of performance, heating [HC/kW x 3.413]
EER = energy efficiency ratio, cooling
TC = total cooling capacity in MBTUH
HR = heat rejected in MBTUH

Reference Calculations

Heating Calculations:	**Cooling Calculations:**
$LWT = EWT - \frac{HE}{GPM \times C^*}$	$LWT = EWT + \frac{HR}{GPM \times C^*}$
$HE = C^* \times GPM \times (EWT - LWT)$	$HR = C^* \times GPM \times (LWT - EWT)$

NOTE: * C = 500 for pure water, 485 for brine.

Pressure Drop

Model	GPM	Pressure Drop (psi)						
		30°F	50°F	70°F	90°F	110°F	130°F	150°F
048	8.0	1.7	1.4	1.4	1.3	1.3	1.2	1.1
	11.5	3.6	3.4	3.2	3.0	2.8	2.6	2.5
	15.0	5.7	5.5	5.1	4.6	4.4	4.3	4.1
	18.5	8.4	8.2	7.7	7.3	6.9	6.7	6.5
060	10.0	3.2	3.0	2.8	2.7	2.5	2.4	2.3
	14.5	5.6	5.4	5.2	4.9	4.7	4.6	4.5
	19.0	8.0	7.7	7.4	7.2	6.9	6.7	6.6
	23.5	11.6	11.4	11.1	10.9	10.4	10.2	10.0

4/10/25

Performance Data

048 - Heating

Source			Load Flow - 11.5 GPM						Load Flow - 15 GPM						Load Flow - 18.5 GPM					
EST °F	Flow GPM	ELT °F	LLT °F	HC kBTUH	Power kW	HE kBTUH	COP	LST °F	LLT °F	HC kBTUH	Power kW	HE kBTUH	COP	LST °F	LLT °F	HC kBTUH	Power kW	HE kBTUH	COP	LST °F
30	8	60	66.9	41.3	2.41	33.1	4.77	20.9	65.2	41.6	2.35	33.6	4.93	20.7	64.1	41.9	2.29	34.1	5.09	20.6
		80	86.8	42.0	3.09	31.5	3.79	21.3	85.1	42.4	3.01	32.1	3.92	21.1	84.0	42.7	2.94	32.7	4.05	21.0
		100	106.8	42.9	3.72	30.2	3.21	21.7	105.0	43.2	3.63	30.8	3.32	21.5	103.9	43.5	3.54	31.5	3.43	21.3
		130	136.8	44.9	4.82	28.4	2.59	22.1	135.0	45.2	4.70	29.2	2.68	21.9	133.8	45.5	4.58	29.9	2.77	21.7
		135	141.8	45.1	5.16	27.4	2.44	22.4	140.0	45.4	5.04	28.2	2.52	22.2	138.8	45.7	4.91	29.0	2.59	30.9
		140	Operation Not Recommended						Operation Not Recommended						Operation Not Recommended					
	12	60	67.0	42.1	2.42	33.8	4.84	22.8	65.3	42.4	2.36	34.4	5.00	22.7	64.2	42.7	2.30	34.9	5.16	22.6
		80	87.0	42.8	3.10	32.3	3.85	23.2	85.2	43.2	3.03	32.8	3.97	23.1	84.1	43.5	2.95	33.4	4.11	22.9
		100	106.9	43.6	3.73	30.9	3.26	23.5	105.1	43.9	3.64	31.5	3.36	23.3	104.0	44.3	3.55	32.2	3.47	23.2
		130	136.9	45.2	4.83	28.7	2.60	23.9	135.0	45.5	4.71	29.4	2.69	23.7	133.9	45.8	4.60	30.2	2.78	23.6
		135	141.9	45.3	5.18	27.7	2.45	24.1	140.0	45.7	5.06	28.4	2.53	23.9	138.8	46.0	4.93	29.2	2.60	28.2
		140	Operation Not Recommended						Operation Not Recommended						Operation Not Recommended					
	15	60	67.2	42.9	2.43	34.6	4.91	24.8	65.4	43.2	2.38	35.1	5.07	24.7	64.3	43.5	2.32	35.6	5.24	24.7
		80	87.1	43.7	3.12	33.0	3.90	25.0	85.3	44.0	3.04	33.6	4.03	25.0	84.2	44.3	2.96	34.2	4.16	24.9
		100	107.0	44.3	3.74	31.6	3.30	25.3	105.2	44.7	3.65	32.2	3.41	25.2	104.1	45.0	3.56	32.8	3.52	25.1
		130	136.9	45.4	4.85	28.9	2.61	25.6	135.1	45.8	4.73	29.6	2.69	25.5	133.9	46.1	4.61	30.4	2.78	25.4
		135	141.9	45.6	5.20	27.9	2.45	25.8	140.0	46.0	5.07	28.7	2.53	25.7	138.9	46.3	4.95	29.4	2.61	25.6
		140	Operation Not Recommended						Operation Not Recommended						Operation Not Recommended					
50	8	60	67.8	46.6	2.31	38.7	5.61	39.2	65.9	46.9	2.26	39.2	5.79	39.1	64.7	47.3	2.20	39.8	5.98	38.9
		80	87.9	48.2	3.13	37.5	4.28	39.5	85.9	48.6	3.06	38.1	4.43	39.4	84.7	48.9	2.98	38.8	4.57	39.2
		100	108.1	50.1	3.78	37.2	3.69	39.6	106.0	50.5	3.69	37.9	3.81	39.4	104.7	50.9	3.59	38.6	3.94	39.3
		130	138.4	53.6	4.86	37.0	3.07	39.7	136.2	54.0	4.75	37.8	3.17	39.5	134.8	54.4	4.63	38.6	3.28	39.2
		135	143.5	54.1	5.20	36.3	2.91	39.9	141.2	54.5	5.08	37.2	3.00	39.6	139.8	54.9	4.95	38.0	3.09	39.4
		140	Operation Not Recommended						Operation Not Recommended						Operation Not Recommended					
	12	60	68.0	47.5	2.33	39.5	5.68	42.2	66.0	47.8	2.27	40.1	5.87	42.1	64.8	48.2	2.21	40.6	6.07	42.0
		80	88.1	49.3	3.13	38.6	4.38	42.4	86.1	49.7	3.06	39.3	4.53	42.3	84.8	50.1	2.98	39.9	4.68	42.2
		100	108.3	51.2	3.94	37.7	3.61	42.6	106.2	51.6	3.85	38.5	3.73	42.4	104.9	52.0	3.75	39.2	3.86	42.3
		130	138.5	54.0	5.16	36.4	2.91	42.8	136.3	54.4	5.03	37.2	3.01	42.7	134.9	54.8	4.90	38.1	3.11	42.5
		135	143.5	54.4	5.36	36.2	2.83	42.9	141.3	54.8	5.23	37.0	2.92	42.7	139.9	55.3	5.10	37.9	3.02	42.8
		140	Operation Not Recommended						Operation Not Recommended						Operation Not Recommended					
	15	60	68.2	48.4	2.34	40.4	5.76	43.8	66.2	48.7	2.28	41.0	5.95	43.8	64.9	49.1	2.22	41.5	6.15	43.7
		80	88.3	50.1	3.16	39.3	4.40	44.0	86.2	50.4	3.09	39.9	4.55	43.9	84.9	50.8	3.01	40.6	4.70	43.8
		100	108.4	51.8	3.80	38.8	3.80	44.1	106.2	52.2	3.71	39.5	3.92	44.0	104.9	52.5	3.61	40.2	4.05	43.9
		130	138.5	54.3	4.90	37.6	3.09	44.2	136.3	54.7	4.78	38.4	3.19	44.1	134.9	55.1	4.66	39.2	3.29	44.0
		135	Operation Not Recommended						141.3	55.2	5.11	37.8	3.02	44.2	139.9	55.6	4.98	38.6	3.12	44.1
		140	Operation Not Recommended						Operation Not Recommended						Operation Not Recommended					
70	8	60	69.5	55.6	2.36	47.6	6.57	56.7	67.4	57.3	2.35	49.2	6.78	56.2	66.0	58.9	2.34	50.9	7.00	55.8
		80	89.7	57.9	3.53	45.8	4.56	57.2	87.4	59.2	3.51	47.3	4.70	56.8	86.0	60.6	3.49	48.7	4.84	56.4
		100	109.9	60.3	4.32	45.5	3.88	57.3	107.6	61.6	3.91	48.2	4.39	56.5	106.1	62.9	3.49	51.0	5.01	55.8
		125	135.2	63.2	5.61	44.0	3.17	57.7	132.7	64.3	5.00	47.2	3.61	56.8	131.1	65.4	4.40	50.4	4.14	55.9
		130	140.3	63.7	5.87	43.7	3.02	57.7	137.7	64.8	5.22	47.0	3.45	56.9	136.1	65.9	4.58	50.3	3.91	56.2
		135	Operation Not Recommended						144.1	67.9	5.85	47.9	3.42	57.6	142.4	68.5	5.18	50.9	3.88	56.9
		140	Operation Not Recommended						Operation Not Recommended						Operation Not Recommended					
	12	60	69.7	57.1	2.35	49.0	6.75	60.3	67.5	58.4	2.36	50.3	6.88	60.1	66.1	59.7	2.37	51.6	7.00	59.8
		80	89.9	59.3	3.40	47.7	4.86	60.6	87.5	59.9	3.25	48.8	5.14	60.4	86.0	60.6	3.10	50.0	5.44	60.1
		100	110.1	61.5	4.44	46.3	3.86	60.8	107.5	61.5	4.13	47.4	4.14	60.6	105.9	61.5	3.83	48.4	3.98	61.0
		125	135.4	64.2	5.74	44.6	3.15	61.1	132.6	63.4	5.24	45.6	3.40	61.0	130.8	62.6	4.74	46.5	3.68	61.2
		130	140.4	64.8	6.00	44.3	3.00	61.2	137.6	63.8	5.46	45.2	3.25	61.0	135.8	62.9	4.92	46.1	3.56	61.2
		135	Operation Not Recommended						142.6	64.2	5.68	44.8	3.15	61.1	140.8	63.1	5.10	45.7	3.44	61.3
		140	Operation Not Recommended						Operation Not Recommended						Operation Not Recommended					
	15	60	70.0	58.5	2.35	50.5	6.94	62.3	67.7	59.5	2.38	51.4	6.97	62.1	66.2	60.4	2.40	52.2	7.01	62.0
		80	90.3	61.1	3.54	49.1	4.81	62.5	87.7	61.5	3.54	49.4	4.83	62.4	86.2	61.9	3.55	49.8	4.86	62.4
		100	110.6	63.8	4.34	49.0	4.09	62.5	107.8	63.6	3.93	50.2	4.51	62.3	106.1	63.4	3.52	51.4	4.17	62.3
		125	135.8	66.7	5.66	47.4	3.32	62.7	132.8	65.3	5.04	48.1	3.65	62.6	131.0	63.9	4.42	49.9	4.03	62.3
		130	140.9	67.2	5.92	47.0	3.16	62.8	137.8	65.6	5.26	47.7	3.47	62.7	135.9	64.1	4.60	48.4	3.79	62.6
		135	Operation Not Recommended						142.7	65.3	5.59	46.2	3.27	62.9	140.8	63.2	4.95	46.3	3.56	62.9
		140	Operation Not Recommended						Operation Not Recommended						Operation Not Recommended					
90	8	60	71.3	65.9	2.20	58.4	8.34	73.6	68.6	66.4	2.16	59.0	8.55	73.5	66.9	66.9	2.13	59.7	8.77	73.3
		80	91.3	67.0	3.06	56.6	6.09	74.1	88.6	67.5	3.01	57.2	6.25	73.9	86.9	68.0	2.96	57.9	6.41	73.8
		100	111.8	70.6	3.80	57.7	5.18	73.8	108.9	71.2	3.73	58.4	5.31	73.6	107.1	71.7	3.67	56.3	4.57	74.2
		125	136.7	71.2	4.95	54.3	4.05	74.7	133.7	71.7	4.87	55.1	4.16	74.5	131.9	72.3	4.78	56.0	4.21	74.3
		130	141.6	71.3	5.18	53.6	3.83	74.9	138.7	71.8	5.09	54.5	3.93	74.7	136.9	72.4	5.00	55.2	4.15	74.5
		135	Operation Not Recommended						Operation Not Recommended						141.6	70.8	4.83	54.4	4.09	74.7
		140	Operation Not Recommended						Operation Not Recommended						Operation Not Recommended					
	12	60	71.6	67.2	2.21	59.6	8.46	77.1	68.8	67.7	2.17	60.3	8.67	77.0	67.1	68.2	2.14	60.9	8.89	76.9
		80	91.6	68.3	3.08	57.8	6.18	77.5	88.8	68.8	3.02	58.5	6.33	77.4	87.0	69.3	2.97	59.2	6.49	77.2
		100	112.0	71.8	3.81	58.8	5.25	77.3	109.1	72.3	3.74	59.6	5.38	77.1	107.2	72.9	3.68	58.9	5.08	77.4
		120	134.3	71.8	4.85	55.3	4.20	78.0	131.3	72.4	4.77	56.1	4.30	77.8	129.5	72.9	4.69	56.9	4.34	77.7
		125	139.2	71.8	5.08	54.5	3.96	78.2	136.3	72.4	5.00	55.3	4.06	78.0	134.4	72.9	4.91	56.1	4.20	77.8
		130	141.7	71.9	5.19	55.0	3.84	79.1	138.9	72.5	5.11	54.6	3.94	79.1	136.5	73.0	4.33	54.1	4.11	79.2
		135	Operation Not Recommended						Operation Not Recommended						141.4	73.1	4.49	53.6	4.09	79.7
		140	Operation Not Recommended						Operation Not Recommended						Operation Not Recommended					
	15	60	71.8	68.5	2.22	60.9	8.57	80.6	69.0	69.0	2.19	61.5	8.79	80.5	67.2	69.5	2.15	62.2	9.01	80.4
		80	91.8	69.6	3.09	59.0	6.26	80.9	88.9	70.1	3.04	59.7	6.42	80.8	87.2	70.6	2.99	60.4	6.58	80.7
		100	112.2	73.0	3.82	59.9	5.32	80.8	109.2	73.5	3.75	60.7	5.45	80.6	107.3	74.1	3.69	61.5	5.59	80.5
		120	131.9	72.5	4.75	56.3	4.34	81.3	128.9	73.0	4.67	57.1	4.45	81.2	127.1	73.6	4.59	57.9	4.46	81.1
		125	136.9	72.3	4.99	55.3	4.10	81.4	133.9	72.9	4.90	56.2	4.20	81.3	132.0	73.4	4.81	57.0	4.25	81.2
		130	141.8	72.2	5.22	54.4	3.85	81.6	138.8	72.8	5.13	55.3	3.95	81.4	137.0	73.3	5.04	56.1	4.05	81.3
		135	Operation Not Recommended						Operation Not Recommended						141.6	71.0	4.84	54.5	4.08	81.5
		140	Operation Not Recommended						Operation Not Recommended						Operation Not Recommended					

4/8/25

Shaded area represents LLT above 145°F. Operating the heat pump with a LLT above 145°F results in the compressor running out of envelope and reducing compressor reliability. You may need to increase load water flow or decrease the set point. Increasing the load water flow will lower the discharge pressure and compressor temperature.

Load flow may have to be adjusted based on source temperature variations.

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

Affinity Series-
Hydronic Heat Pump with OptiHeat
4-5 Tons 60Hz

YORK®

Performance Data cont.

048 - Cooling

Source			Load Flow - 11.5 GPM						Load Flow - 15 GPM						Load Flow - 18.5 GPM					
EST °F	Flow GPM	ELT °F	LLT °F	TC MBTUH	Power kW	HR MBTUH	EER	LST °F	LLT °F	TC MBTUH	Power kW	HR MBTUH	EER	LST °F	LLT °F	TC MBTUH	Power kW	HR MBTUH	EER	LST °F
50	8	50	41.7	42.8	2.16	50.2	18.9	62.8	43.5	43.4	2.16	50.8	19.1	62.9	44.5	44.0	2.16	51.4	19.4	63.1
		70	61.0	46.0	2.19	53.5	20.0	63.6	62.8	46.6	2.19	54.1	20.3	63.8	64.0	47.3	2.19	54.8	20.5	64.0
		90	80.2	49.2	2.22	56.7	21.1	64.5	82.2	49.9	2.21	57.4	21.4	64.7	83.4	50.6	2.21	58.1	21.7	64.8
		110	99.4	52.4	2.25	60.0	22.2	65.3	101.5	53.1	2.24	60.8	22.5	65.5	102.8	53.8	2.24	61.5	22.8	65.7
	12	50	41.9	42.0	2.15	49.4	18.6	58.6	43.6	42.6	2.15	49.9	18.8	58.7	44.6	43.1	2.15	50.4	19.0	58.8
		70	61.1	45.3	2.16	52.7	19.9	59.2	62.9	45.9	2.16	53.2	20.2	59.3	64.1	46.5	2.16	53.8	20.4	59.4
		90	80.3	48.5	2.17	56.0	21.3	59.8	82.3	49.2	2.17	56.6	21.5	59.9	83.5	49.8	2.17	57.2	21.8	60.1
		110	99.5	51.8	2.18	59.3	22.5	60.4	101.6	52.5	2.18	59.9	22.9	60.5	102.9	53.2	2.18	60.6	23.2	60.7
	15	50	42.0	41.3	2.13	48.5	18.4	56.4	43.7	41.7	2.14	49.0	18.5	56.5	44.7	42.2	2.14	49.5	18.7	56.5
		70	61.2	44.6	2.13	51.8	19.9	56.9	63.0	45.1	2.13	52.4	20.1	57.0	64.2	45.6	2.13	52.9	20.3	57.0
		90	80.4	47.9	2.12	55.2	21.4	57.3	82.4	48.5	2.13	55.7	21.7	57.4	83.6	49.1	2.13	56.3	21.9	57.5
		110	99.6	51.2	2.12	58.5	23.0	57.8	101.7	51.9	2.12	59.1	23.3	57.9	103.0	52.5	2.12	59.8	23.6	58.0
70	8	50	42.7	37.7	2.56	46.4	14.0	81.6	44.2	38.3	2.56	47.0	14.2	81.8	45.1	38.9	2.56	47.6	14.4	81.9
		70	61.4	43.8	2.60	52.7	16.0	83.3	63.1	44.4	2.60	53.3	16.2	83.4	64.2	45.0	2.60	53.9	16.4	83.6
		90	80.1	49.9	2.65	59.0	17.9	84.9	82.1	50.6	2.65	59.6	18.1	85.1	83.3	51.2	2.65	60.3	18.4	85.3
		110	98.7	56.0	2.70	65.2	19.7	86.6	101.0	56.7	2.70	65.9	20.0	86.7	102.4	57.4	2.70	66.6	20.2	86.9
	12	50	42.8	37.2	2.54	45.9	13.9	77.9	44.3	37.7	2.55	46.4	14.1	77.9	45.2	38.2	2.55	46.9	14.3	78.0
		70	61.4	43.4	2.57	52.2	16.0	79.0	63.2	44.0	2.57	52.8	16.3	79.1	64.3	44.6	2.57	53.3	16.5	79.2
		90	80.1	49.6	2.60	58.5	18.2	80.1	82.1	50.3	2.60	59.1	18.4	80.3	83.4	50.9	2.60	59.8	18.6	80.4
		110	98.8	55.8	2.62	64.8	20.2	81.3	101.0	56.5	2.62	65.5	20.5	81.4	102.5	57.2	2.62	66.2	20.7	81.5
	15	50	42.9	36.7	2.53	45.3	13.8	75.8	44.3	37.2	2.53	45.8	13.9	75.9	45.3	37.6	2.54	46.3	14.1	76.0
		70	61.5	43.0	2.54	51.7	16.1	76.7	63.2	43.6	2.54	52.2	16.3	76.8	64.3	44.1	2.54	52.8	16.5	76.9
		90	80.2	49.3	2.54	58.0	18.4	77.6	82.2	49.9	2.54	58.6	18.7	77.7	83.4	50.6	2.55	59.3	18.9	77.8
		110	98.8	55.6	2.55	64.3	20.8	78.5	101.1	56.3	2.55	65.0	21.0	78.6	102.5	57.0	2.55	65.8	21.2	78.7
90	8	50	43.6	32.6	2.96	42.7	10.5	100.5	44.9	33.2	2.96	43.2	10.7	100.7	45.7	33.7	2.95	43.8	10.8	100.8
		70	61.8	41.6	3.02	52.0	13.1	102.9	63.4	42.2	3.02	52.5	13.3	103.1	64.5	42.8	3.02	53.1	13.5	103.2
		90	79.9	50.7	3.09	61.2	15.6	105.4	82.0	51.3	3.09	61.8	15.8	105.5	83.3	51.9	3.09	62.4	16.0	105.7
		110	98.1	59.7	3.16	70.4	18.0	107.8	100.5	60.3	3.15	71.1	18.2	107.9	102.0	61.0	3.15	71.7	18.4	108.1
	12	50	43.6	32.4	2.94	42.4	10.4	97.1	44.9	32.9	2.94	42.9	10.6	97.2	45.7	33.4	2.94	43.4	10.8	97.3
		70	61.8	41.5	2.98	51.7	13.2	98.8	63.4	42.1	2.98	52.3	13.4	98.9	64.5	42.7	2.98	52.9	13.6	99.0
		90	79.9	50.7	3.02	61.0	15.9	100.5	82.0	51.3	3.02	61.7	16.1	100.6	83.2	52.0	3.03	62.3	16.3	100.7
		110	98.1	59.9	3.06	70.3	18.6	102.2	100.5	60.6	3.07	71.0	18.8	102.3	102.0	61.3	3.07	71.7	19.0	102.4
	15	50	43.7	32.1	2.93	42.1	10.4	95.2	45.0	32.6	2.93	42.6	10.6	95.3	45.8	33.1	2.93	43.1	10.7	95.4
		70	61.8	41.4	2.94	51.5	13.4	96.5	63.5	42.0	2.95	52.0	13.5	96.6	64.5	42.6	2.95	52.6	13.7	96.7
		90	79.9	50.7	2.96	60.8	16.3	97.8	82.0	51.4	2.96	61.5	16.5	97.9	83.2	52.1	2.97	62.2	16.7	98.0
		110	98.0	60.0	2.97	70.2	19.2	99.2	100.5	60.8	2.98	71.0	19.4	99.3	102.0	61.5	2.99	71.7	19.6	99.4
110	8	50	44.5	27.6	3.36	39.0	7.8	119.4	45.6	28.0	3.35	39.5	7.9	119.5	46.3	28.5	3.35	39.9	8.1	119.7
		70	62.1	39.5	3.44	51.2	10.9	122.6	63.7	40.0	3.44	51.7	11.0	122.7	64.7	40.5	3.44	52.2	11.2	122.9
		90	79.8	51.4	3.53	63.4	13.8	125.8	81.9	52.0	3.52	64.0	14.0	126.0	83.2	52.5	3.52	64.6	14.2	126.1
		110	97.4	63.3	3.61	75.6	16.7	129.0	100.0	63.9	3.61	76.3	16.8	129.2	101.6	64.6	3.61	76.9	17.0	129.3
	12	50	44.5	27.5	3.34	38.9	7.8	116.3	45.6	28.0	3.34	39.4	8.0	116.4	46.3	28.5	3.34	39.9	8.1	116.5
		70	62.1	39.6	3.40	51.2	11.1	118.5	63.7	40.2	3.40	51.8	11.2	118.6	64.7	40.8	3.40	52.4	11.4	118.8
		90	79.7	51.8	3.45	63.5	14.3	120.8	81.8	52.4	3.45	64.2	14.4	120.9	83.1	53.0	3.46	64.8	14.6	121.0
		110	97.3	63.9	3.50	75.8	17.3	123.0	99.9	64.6	3.51	76.6	17.5	123.1	101.5	65.3	3.52	77.3	17.6	123.3
	15	50	44.5	27.5	3.33	38.9	7.9	114.6	45.6	28.0	3.33	39.4	8.0	114.7	46.3	28.5	3.32	39.9	8.2	114.8
		70	62.1	39.8	3.35	51.3	11.3	116.4	63.7	40.4	3.35	51.9	11.5	116.5	64.7	41.0	3.36	52.5	11.6	116.5
		90	79.7	52.1	3.37	63.6	14.7	118.1	81.8	52.8	3.38	64.4	14.9	118.2	83.1	53.6	3.39	65.1	15.0	118.3
		110	97.2	64.5	3.39	76.0	18.0	119.8	99.8	65.3	3.41	76.9	18.2	119.9	101.5	66.1	3.42	77.7	18.3	120.1

4/8/25

Load flow may have to be adjusted based on source temperature variations.

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

Affinity Series-
Hydronic Heat Pump with OptiHeat
4-5 Tons 60Hz

YORK®

Performance Data

060 - Heating

Source			Load Flow - 15 GPM						Load Flow - 20 GPM						Load Flow - 25 GPM					
EST	Flow	ELT	LLT	HC	Power	HE	COP	LST	LLT	HC	Power	HE	COP	LST	LLT	HC	Power	HE	COP	LST
ºF	GPM	ºF	ºF	kBTUH	kW	kBTUH		ºF	ºF	kBTUH	kW	kBTUH		ºF	ºF	kBTUH	kW	kBTUH		ºF
30	10	60	66.5	50.9	2.83	41.3	5.02	20.9	64.7	51.3	2.76	41.9	5.18	20.8	63.7	51.7	2.69	42.5	5.35	20.6
		80	86.4	51.8	3.67	39.2	3.92	21.3	84.6	52.1	3.58	39.9	4.05	21.2	83.6	52.5	3.49	40.6	4.19	21.0
		100	106.3	52.8	4.77	36.6	3.09	21.9	104.5	53.2	4.65	37.4	3.19	21.7	103.5	53.6	4.53	38.2	3.29	21.6
		130	136.4	55.2	6.38	33.4	2.41	22.6	134.5	55.6	6.23	34.4	2.49	22.4	133.4	56.0	6.07	35.3	2.57	22.2
		135	141.3	55.4	6.76	32.3	2.29	22.8	139.5	55.8	6.59	33.3	2.36	22.6	138.3	56.2	6.43	34.3	2.43	22.4
		140	Operation Not Recommended						Operation Not Recommended						143.3	56.4	6.79	33.3	2.31	22.6
	15	60	66.6	51.9	2.84	42.2	5.09	23.0	64.9	52.3	2.77	42.9	5.25	22.9	63.8	52.7	2.70	43.5	5.43	22.8
		80	86.5	52.7	3.69	40.2	3.98	23.3	84.7	53.1	3.60	40.9	4.11	23.2	83.7	53.5	3.51	41.6	4.25	23.1
		100	106.5	53.7	4.78	37.4	3.13	23.8	104.6	54.1	4.66	38.2	3.23	23.7	103.5	54.5	4.55	39.0	3.34	23.5
		130	136.4	55.6	6.40	33.7	2.42	24.4	134.5	56.0	6.25	34.7	2.49	24.2	133.4	56.4	6.09	35.6	2.58	24.0
		135	141.4	55.7	6.78	32.6	2.30	24.5	139.5	56.2	6.62	33.6	2.37	24.4	138.4	56.6	6.45	34.6	2.44	24.2
		140	Operation Not Recommended						Operation Not Recommended						143.3	56.8	6.81	33.5	2.32	24.4
	20	60	66.7	52.9	2.86	43.2	5.16	25.1	65.0	53.3	2.79	43.8	5.33	25.1	63.9	53.7	2.72	44.4	5.50	25.0
		80	86.7	53.7	3.71	41.1	4.03	25.4	84.8	54.2	3.62	41.8	4.17	25.3	83.7	54.6	3.53	42.5	4.30	25.2
		100	106.6	54.6	4.79	38.2	3.17	25.7	104.7	55.0	4.67	39.1	3.28	25.6	103.6	55.4	4.56	39.9	3.39	25.5
		130	136.5	55.9	6.43	34.0	2.42	26.1	134.6	56.3	6.27	34.9	2.50	26.0	133.4	56.8	6.11	35.9	2.59	25.9
		135	141.4	56.1	6.81	32.9	2.30	26.2	139.5	56.5	6.64	33.9	2.38	26.1	138.4	56.9	6.47	34.9	2.45	26.0
		140	Operation Not Recommended						Operation Not Recommended						143.4	57.1	6.84	33.8	2.33	26.1
50	10	60	67.9	61.5	2.87	51.7	5.96	38.5	65.9	61.9	2.80	52.4	6.15	38.4	64.6	62.4	2.73	53.1	6.36	38.2
		80	88.0	63.6	3.81	50.6	4.65	38.8	85.9	64.0	3.71	51.4	4.80	38.6	84.6	64.5	3.62	52.2	4.96	38.4
		100	108.0	65.0	4.99	48.0	3.63	39.3	105.8	65.5	4.87	48.9	3.74	39.1	104.5	66.0	4.75	49.8	3.87	38.9
		130	138.0	67.0	6.58	44.6	2.84	40.0	135.7	67.5	6.41	45.6	2.93	39.8	134.4	68.0	6.25	46.7	3.03	39.6
		135	143.0	67.4	6.96	43.7	2.70	40.2	140.7	67.9	6.79	44.7	2.79	40.0	139.4	68.4	6.62	45.8	2.88	39.8
		140	Operation Not Recommended						Operation Not Recommended						Operation Not Recommended					
	15	60	68.1	62.7	2.89	52.8	6.04	41.2	66.0	63.1	2.82	53.5	6.24	41.1	64.7	63.6	2.78	54.1	6.37	41.0
		80	88.2	64.8	3.83	51.7	4.71	41.4	86.0	65.3	3.73	52.5	4.87	41.2	84.7	65.8	3.69	53.2	4.97	41.1
		100	108.2	66.1	5.00	49.0	3.68	41.8	105.9	66.6	4.88	49.9	3.80	41.6	104.6	67.1	4.82	50.6	3.87	41.5
		130	138.1	67.5	6.60	44.9	2.85	42.4	135.8	68.0	6.44	46.0	2.94	42.2	134.4	68.5	6.36	46.8	3.00	42.1
		135	143.1	67.8	6.98	44.0	2.71	42.6	140.8	68.3	6.81	45.1	2.80	42.4	139.4	68.9	6.73	45.9	2.85	42.2
		140	Operation Not Recommended						Operation Not Recommended						Operation Not Recommended					
	20	60	68.3	63.8	2.90	53.9	6.12	43.8	66.1	64.3	2.83	54.7	6.33	43.8	64.8	64.8	2.83	55.1	6.37	43.7
		80	88.4	66.0	3.85	52.9	4.78	44.0	86.1	66.5	3.75	53.7	4.93	43.9	84.8	67.0	3.75	54.2	4.97	43.8
		100	108.3	67.1	5.01	50.0	3.73	44.3	106.0	67.6	4.89	50.9	3.85	44.2	104.7	68.1	4.89	51.5	3.88	44.1
		130	138.1	67.9	6.62	45.3	2.85	44.8	135.8	68.4	6.46	46.4	2.95	44.7	134.4	68.9	6.46	46.9	2.97	44.6
		135	143.1	68.3	7.01	44.4	2.72	44.9	140.8	68.8	6.84	45.5	2.81	44.8	139.4	69.3	6.84	46.0	2.83	44.7
		140	Operation Not Recommended						Operation Not Recommended						Operation Not Recommended					
70	10	60	69.2	70.4	2.90	60.5	6.76	56.5	67.1	73.5	2.84	63.8	7.21	55.8	65.8	76.6	2.78	67.1	7.68	55.1
		80	89.1	71.3	4.08	57.3	4.86	57.2	87.0	74.8	3.96	61.3	5.26	56.3	85.7	78.3	3.82	65.3	5.70	55.4
		100	109.1	72.3	5.28	54.3	3.82	57.8	107.0	76.5	5.10	59.1	4.17	56.8	105.7	80.7	4.90	64.0	4.59	55.7
		130	139.0	74.5	7.05	50.4	2.94	58.6	137.0	80.1	6.78	57.0	3.29	57.2	135.8	85.7	6.46	63.6	3.69	55.8
		135	Operation Not Recommended						142.0	80.4	7.06	56.3	3.18	57.4	140.8	86.1	6.72	63.2	3.57	55.9
		140	Operation Not Recommended						Operation Not Recommended						Operation Not Recommended					
	15	60	69.5	72.7	2.91	62.7	6.95	59.5	67.2	74.9	2.85	65.1	7.31	59.1	65.8	77.1	2.79	67.6	7.69	58.6
		80	89.4	73.7	4.11	59.7	4.99	60.0	87.1	76.2	3.98	62.7	5.34	59.5	85.8	78.8	3.84	65.7	5.71	58.9
		100	109.4	74.8	5.31	56.7	3.92	60.5	107.1	77.8	5.12	60.3	4.23	59.8	105.7	80.8	4.91	64.0	4.58	59.2
		125	136.9	76.5	6.95	52.8	3.09	61.1	134.6	80.4	6.66	57.7	3.38	60.2	133.3	84.3	6.35	62.6	3.71	59.3
		130	139.3	76.6	7.10	52.4	3.00	62.0	137.1	80.5	6.80	57.3	3.29	61.3	135.7	84.3	6.48	62.2	3.62	60.6
		135	Operation Not Recommended						142.1	80.9	7.08	56.8	3.19	60.4	140.7	85.0	6.75	61.9	3.51	59.4
		140	Operation Not Recommended						Operation Not Recommended						Operation Not Recommended					
	20	60	69.8	75.0	2.93	65.0	7.13	62.5	67.3	76.3	2.87	66.5	7.41	62.3	65.9	77.6	2.81	68.0	7.70	62.2
		80	89.8	76.1	4.13	62.0	5.13	62.8	87.3	77.7	4.00	64.0	5.41	62.6	85.8	79.2	3.86	66.1	5.71	62.4
		100	109.7	77.2	5.34	59.0	4.03	63.2	107.2	79.0	5.13	61.5	4.29	62.9	105.7	80.9	4.92	64.1	4.58	62.6
		125	134.7	78.6	6.85	55.2	3.23	63.6	132.2	80.8	6.54	58.4	3.47	63.2	130.7	82.9	6.24	61.7	3.74	62.9
		130	139.7	78.9	7.15	54.5	3.07	63.6	137.2	81.1	6.83	57.8	3.31	63.3	135.6	83.4	6.51	61.2	3.57	62.9
		135	Operation Not Recommended						142.1	81.5	7.11	57.2	3.19	63.3	140.6	83.8	6.77	60.7	3.45	63.0
		140	Operation Not Recommended						Operation Not Recommended						Operation Not Recommended					
90	10	60	70.9	82.6	2.94	72.6	7.83	73.7	68.1	83.3	2.89	73.4	8.03	73.6	66.4	83.9	2.84	74.2	8.23	73.4
		80	91.6	89.0	3.76	76.2	6.59	73.0	88.5	89.7	3.70	77.0	6.75	72.8	86.7	90.3	3.63	77.9	6.93	72.6
		100	111.7	91.7	4.71	75.6	5.42	73.1	108.6	92.4	4.63	76.6	5.56	72.9	106.8	93.1	4.55	77.6	5.70	72.6
		125	136.7	93.3	6.34	71.6	4.16	73.9	133.5	94.0	6.24	72.7	4.26	73.7	131.6	94.7	6.13	73.8	4.37	73.5
		130	141.7	93.6	6.67	70.8	3.90	74.1	138.5	94.3	6.56	71.9	4.00	73.9	136.6	95.0	6.44	73.0	4.10	73.6
		135	Operation Not Recommended						143.3	92.4	7.05	68.3	3.67	74.6	141.6	94.8	6.73	71.8	3.93	73.9
		140	Operation Not Recommended						Operation Not Recommended						Operation Not Recommended					
	15	60	71.1	84.2	2.95	74.1	7.94	77.5	68.2	84.9	2.90	75.0	8.14	77.3	66.5	85.5	2.85	75.8	8.35	77.2
		80	91.8	90.7	3.78	77.8	6.68	76.9	88.7	91.4	3.71	78.7	6.85	76.7	86.9	92.1	3.65	79.6	7.02	76.6
		100	112.0	93.2	4.72	77.1	5.49	77.0	108.8	93.9	4.64	78.1	5.63	76.8	106.9	94.7	4.56	79.1	5.78	76.7
		125	136.8	94.0	6.37	72.3	4.18	77.7	133.6	94.7	6.26	73.4	4.28	77.5	131.7	95.4	6.15	74.5	4.36	77.4
		130	141.8	94.2	6.69	71.3	3.92	77.9	138.6	94.9	6.58	72.4	4.01	77.7	136.7	95.6	6.46	73.5	4.12	77.5
		135	Operation Not Recommended						143.3	93.0	7.08	68.8	3.68	78.3	141.6	95.0	6.75	72.0	3.92	77.7
		140	Operation Not Recommended						Operation Not Recommended						Operation Not Recommended					
	20	60	71.3	85.8	2.97	75.7	8.05	81.2	68.4	86.5	2.92	76.5	8.26	81.1	66.7	87.1	2.86	77.3	8.47	81.0
		80	92.0	92.4	3.80	79.4	6.77	80.8	88.9	93.1	3.73	80.4	6.94	80.7	87.0	93.8	3.67	81.3	7.12	80.6
		100	112.2	94.8	4.74	78.6	5.57	80.9	108.9	95.5	4.66	79.6	5.71	80.8	107.0	96.2	4.57	80.6	5.86	80.7
		125	136.9	94.8	6.39	73.0	4.20	81.5	133.7	95.5	6.28	74.1	4.31	81.4	131.8	96.2	6.17	75.1	4.34	81.3
		130	141.9	94.8	6.72	71.8	3.93	81.6	138.6	95.5	6.60	72.9	4.03	81.5	136.7	96.2	6.49	74.1	4.13	81.4
		135	Operation Not Recommended						143.4	93.6	7.10	69.3	3.69	81.9	141.6	95.3	6.77	72.1	3.91	81.6
		140	Operation Not Recommended						Operation Not Recommended						Operation Not Recommended					

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Shaded area represents LLT above 145ºF. Operating the heat pump with a LLT above 145ºF results in the compressor running out of envelope and reducing compressor reliability. You may need to increase load water flow or decrease the set point. Increasing the load water flow will lower the discharge pressure and compressor temperature.

Load flow may have to be adjusted based on source temperature variations.

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

Performance Data cont.

060-Cooling

Source		Load Flow - 10 GPM							Load Flow - 15 GPM						Load Flow - 20 GPM					
EST ºF	Flow GPM	ELT ºF	LLT ºF	TC MBTUH	Power kW	HR MBTUH	EER	LST ºF	LLT ºF	TC MBTUH	Power kW	HR MBTUH	EER	LST ºF	LLT ºF	TC MBTUH	Power kW	HR MBTUH	EER	LST ºF
50	10	50	39.4	48.6	2.83	58.2	16.3	61.8	42.7	49.3	2.84	59.0	16.5	62.0	44.3	49.9	2.85	59.7	16.6	62.1
		70	58.4	52.5	2.87	62.3	17.4	62.7	61.9	53.1	2.88	62.9	17.5	62.8	63.7	53.7	2.89	63.5	17.7	62.9
		90	77.3	56.5	2.92	66.4	18.4	63.5	81.2	57.0	2.92	66.9	18.6	63.6	83.1	57.4	2.92	67.4	18.7	63.7
		110	96.3	60.5	2.96	70.6	19.4	64.4	100.4	60.8	2.96	70.9	19.6	64.5	102.5	61.2	2.95	71.3	19.7	64.6
	15	50	39.6	47.5	2.75	56.8	16.4	57.6	42.8	48.2	2.76	57.6	16.6	57.7	44.4	48.8	2.77	58.3	16.7	57.8
		70	58.6	51.1	2.78	60.6	17.4	58.1	62.1	51.7	2.79	61.2	17.6	58.2	63.9	52.3	2.80	61.8	17.8	58.3
		90	77.7	54.7	2.81	64.3	18.5	58.6	81.4	55.2	2.82	64.8	18.6	58.7	83.3	55.7	2.82	65.4	18.8	58.8
		110	96.7	58.4	2.84	68.1	19.5	59.1	100.7	58.8	2.85	68.5	19.6	59.2	102.7	59.2	2.85	68.9	19.7	59.2
	20	50	39.8	46.3	2.68	55.5	16.5	55.4	43.0	47.0	2.68	56.2	16.7	55.5	44.5	47.8	2.69	56.9	16.9	55.6
		70	58.9	49.7	2.69	58.9	17.5	55.8	62.3	50.3	2.70	59.5	17.7	55.9	64.0	50.9	2.71	60.1	17.8	55.9
		90	78.1	53.0	2.71	62.2	18.6	56.2	81.7	53.5	2.72	62.8	18.7	56.2	83.5	54.0	2.73	63.3	18.8	56.3
		110	97.2	56.3	2.73	65.6	19.6	56.5	101.0	56.7	2.74	66.0	19.7	56.6	102.9	57.1	2.75	66.5	19.8	56.6
70	10	50	40.0	45.4	3.50	57.4	12.3	81.5	43.1	46.3	3.52	58.3	12.5	81.7	44.6	47.2	3.53	59.2	12.7	81.9
		70	58.7	51.0	3.57	63.2	13.6	82.7	62.1	51.8	3.58	64.0	13.7	82.9	63.8	52.6	3.59	64.9	13.9	83.1
		90	77.3	56.7	3.64	69.1	14.8	84.0	81.1	57.3	3.65	69.8	14.9	84.1	83.1	58.0	3.66	70.5	15.1	84.2
		110	95.9	62.3	3.71	74.9	15.9	85.2	100.2	62.8	3.72	75.5	16.1	85.3	102.3	63.4	3.72	76.1	16.2	85.4
	15	50	40.2	44.8	3.41	56.4	12.5	77.4	43.2	45.7	3.43	57.4	12.7	77.5	44.6	46.6	3.44	58.3	12.9	77.6
		70	58.9	50.1	3.47	62.0	13.7	78.1	62.2	50.9	3.48	62.8	13.9	78.3	63.9	51.7	3.49	63.6	14.1	78.4
		90	77.5	55.5	3.52	67.5	15.0	78.9	81.3	56.2	3.53	68.2	15.1	79.0	83.2	56.8	3.54	68.9	15.3	79.1
		110	96.2	60.8	3.57	73.0	16.2	79.7	100.4	61.4	3.58	73.6	16.3	79.8	102.4	61.9	3.59	74.2	16.4	79.8
	20	50	40.3	44.1	3.33	55.5	12.6	75.3	43.2	45.1	3.34	56.5	12.8	75.4	44.7	46.0	3.35	57.4	13.1	75.5
		70	59.0	49.2	3.36	60.7	13.9	75.9	62.3	50.0	3.37	61.5	14.1	75.9	64.0	50.8	3.38	62.4	14.3	76.0
		90	77.8	54.3	3.40	65.9	15.2	76.4	81.5	55.0	3.41	66.6	15.3	76.5	83.3	55.6	3.42	67.3	15.5	76.5
		110	96.5	59.4	3.43	71.1	16.5	76.9	100.6	59.9	3.44	71.7	16.5	77.0	102.6	60.4	3.46	72.2	16.6	77.1
90	10	50	40.7	42.3	4.17	56.5	9.6	101.2	43.5	43.4	4.19	57.7	9.8	101.4	44.9	44.4	4.21	58.8	10.0	101.7
		70	59.0	49.6	4.27	64.1	11.0	102.8	62.3	50.5	4.28	65.1	11.2	103.0	63.9	51.5	4.30	66.2	11.4	103.2
		90	77.3	56.8	4.37	71.7	12.4	104.4	81.1	57.7	4.38	72.6	12.5	104.6	83.0	58.5	4.39	73.5	12.7	104.7
		110	95.5	64.1	4.47	79.3	13.6	105.9	99.9	64.8	4.48	80.1	13.8	106.1	102.1	65.6	4.49	80.9	13.9	106.3
	15	50	40.7	42.1	4.07	56.0	9.8	97.2	43.5	43.2	4.09	57.2	10.0	97.3	44.9	44.3	4.11	58.4	10.3	97.5
		70	59.1	49.2	4.15	63.3	11.3	98.2	62.3	50.1	4.16	64.4	11.4	98.3	64.0	51.1	4.18	65.4	11.6	98.5
		90	77.4	56.2	4.22	70.6	12.6	99.2	81.2	57.1	4.24	71.5	12.8	99.3	83.1	57.9	4.25	72.4	12.9	99.5
		110	95.7	63.3	4.30	78.0	14.0	100.2	100.0	64.0	4.31	78.7	14.1	100.3	102.2	64.7	4.33	79.4	14.2	100.4
	20	50	40.8	41.9	3.98	55.5	10.0	95.2	43.5	43.1	3.99	56.7	10.3	95.3	44.9	44.3	4.01	57.9	10.5	95.4
		70	59.1	48.8	4.03	62.5	11.5	95.9	62.4	49.8	4.05	63.6	11.7	96.0	64.0	50.8	4.06	64.6	11.9	96.1
		90	77.5	55.6	4.08	69.6	12.9	96.6	81.3	56.5	4.10	70.4	13.1	96.7	83.1	57.3	4.11	71.3	13.2	96.8
		110	95.9	62.5	4.14	76.6	14.4	97.4	100.1	63.1	4.15	77.3	14.4	97.4	102.3	63.7	4.17	78.0	14.5	97.5
110	10	50	41.3	39.2	4.83	55.7	7.7	120.9	43.9	40.4	4.86	57.0	7.9	121.1	45.2	41.7	4.89	58.4	8.1	121.4
		70	59.3	48.1	4.96	65.0	9.2	122.8	62.5	49.2	4.99	66.2	9.4	123.1	64.0	50.4	5.01	67.5	9.6	123.3
		90	77.2	57.0	5.09	74.3	10.6	124.8	81.0	58.0	5.11	75.5	10.8	125.0	82.9	59.1	5.13	76.6	10.9	125.2
		110	95.2	65.9	5.22	83.7	12.0	126.7	99.6	66.8	5.24	84.7	12.1	126.9	101.8	67.8	5.25	85.7	12.3	127.2
	15	50	41.3	39.4	4.73	55.6	7.9	117.0	43.8	40.8	4.75	57.0	8.1	117.2	45.1	42.1	4.78	58.4	8.4	117.4
		70	59.3	48.2	4.83	64.7	9.5	118.2	62.4	49.4	4.85	65.9	9.7	118.4	64.0	50.5	4.87	67.2	9.9	118.6
		90	77.2	57.0	4.93	73.8	11.0	119.5	81.0	58.0	4.95	74.9	11.1	119.7	83.0	59.0	4.97	75.9	11.3	119.8
		110	95.2	65.7	5.03	82.9	12.4	120.8	99.6	66.6	5.05	83.8	12.5	120.9	101.9	67.4	5.06	84.7	12.7	121.0
	20	50	41.2	39.7	4.63	55.5	8.2	115.0	43.8	41.1	4.65	57.0	8.4	115.2	45.1	42.5	4.67	58.4	8.7	115.3
		70	59.2	48.4	4.70	64.4	9.8	116.0	62.4	49.5	4.72	65.6	10.0	116.1	64.0	50.7	4.74	66.9	10.2	116.2
		90	77.2	57.0	4.77	73.3	11.3	116.9	81.1	57.9	4.79	74.3	11.5	117.0	83.0	58.9	4.81	75.3	11.6	117.1
		110	95.2	65.6	4.84	82.1	12.9	117.8	99.7	66.3	4.86	82.9	13.0	117.9	101.9	67.1	4.88	83.7	13.1	118.0

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