

DATE: _____ CUSTOMER: _____
 PHONE: _____ CONTACT: _____
 FAX: _____ EMAIL: _____

Pipe Information

DIAMETER OF PIPE: <input type="checkbox"/> IN <input type="checkbox"/> FT <input type="checkbox"/> Other: _____		LENGTH: <input type="checkbox"/> IN <input type="checkbox"/> FT <input type="checkbox"/> Other: _____	
PIPE MATERIAL: _____			
INSULATION TYPE: _____		THICKNESS: _____	
TEMP TO MAINTAIN: <input type="radio"/> F <input type="radio"/> C	MIN AMBIENT TEMP: <input type="radio"/> F <input type="radio"/> C	= ΔT (Delta T)	
MIN STARTUP TEMP: <input type="radio"/> F <input type="radio"/> C	MAX EXPOSURE TEMP: <input type="radio"/> F <input type="radio"/> C		
AREA CLASS: <input type="checkbox"/> INDOOR <input type="checkbox"/> OUTDOOR	MAX WIND SPEED: _____ MPH		
CORROSIVE PRESENT? <input type="checkbox"/> YES <input type="checkbox"/> NO	CORROSIVE TYPE: _____		
SAFETY FACTORY: _____			
VOLTAGE: _____	BREAKER SIZE: _____	BREAKER TYPE: _____	
WATTS/LINEAR FT: <i>See Chart 1</i>	INSULATION ADJUSTMENT FACTOR: <i>See Chart 2</i>		
VALVE FACTOR: <i>See Chart 3</i>	REQUIRED CABLE / FOOT: <i>See Chart 4</i>		

Equipment Information

TYPE	QTY	ALLOWANCE	TOTAL FOOTAGE
FLANGE PAIR		1.5	
PIPE SUPPORT		2	
BUTTERFLY VALVE		2.5	
BALL VALVE		2.7	
GLOVE VALVE		4	
GATE VALVE		5	

CALCULATED HEAT LOSS:	
LENGTH REQUIRED:	
CABLE SELECTED:	

Sketch Area

Bill of Materials

	ITEM NUMBER	DESCRIPTION	QTY	UNITS
CABLE				
CONTROL				
Connections				
POWER				
SPLICE / TEE				
END SEAL				
Attachments				
TAPE				
CABLE TIES				
PIPE STRAPS				
CAUTION LABELS				

Heat Loss Chart for Pipes by Size:

ΔT	Heat Loss Chart for Pipes by Size:																		INSL THK	
	0.25	0.5	0.75	1	1.5	2	2.5	3	4	6	8	10	12	14	16	18	20	24	30	
25	0.6	0.7	0.8	1	1.2	1.5	1.7	2	2.4	3.3	4.2	5.2	6	6.6	7.5	8.4	9.2	11	13.6	
50	1.2	1.5	1.7	2	2.5	3	3.4	4	4.9	6.9	8.7	10.6	12.4	13.5	15.3	17.1	18.9	22.5	28	
75	1.8	2.3	2.6	3	3.9	4.6	5.3	6.2	7.6	10.6	13.3	16.3	19.1	20.8	23.6	26.3	29.1	34.7	43	
100	2.5	3.2	3.6	4.2	5.3	6.3	7.2	8.4	10.4	14.4	18.2	22.2	26	28.4	32.2	36	39.8	47.3	58.7	
125	3.2	4	4.6	5.3	6.8	8	9.3	10.8	13.3	18.5	23.3	28.5	33.3	36.4	41.2	46	50.9	60.6	75.1	
150	3.9	5	5.7	6.5	8.4	9.8	11.4	13.3	16.3	22.7	28.6	35	40.9	44.6	50.6	56.5	62.5	74.4	92.2	
175	4.7	5.9	6.8	7.8	10	11.7	13.6	15.8	19.4	27	34.2	41.7	48.8	53.3	60.4	67.5	74.6	88.7	110	
200	5.5	6.9	7.9	9.1	11.7	13.7	15.9	18.5	22.7	31.6	39.9	48.7	57	62.2	70.5	78.8	87.1	103.7	128.5	
225	6.3	8	9.1	10.5	13.4	15.8	18.2	21.2	26.1	36.3	45.9	56	65.5	71.5	81	90.6	100.1	119.1	147.7	1 IN.
250	7.1	9	10.3	11.9	15.2	17.9	20.7	24.1	29.6	41.2	52	63.5	74.3	81.1	91.9	102.7	113.5	135.2	167.6	
275	8	10.1	11.6	13.3	17.1	20.1	23.2	27.1	33.2	46.2	58.4	71.3	83.5	91.1	103.2	115.3	127.5	151.7	188.1	
300	8.9	11.3	12.9	14.9	19	22.4	25.8	30.1	37	51.5	65	79.4	92.9	101.3	114.8	128.4	141.9	168.9	209.4	
325	9.8	12.5	14.2	16.4	21	24.7	28.6	33.3	40.8	56.8	71.8	87.7	102.6	111.9	126.9	141.8	156.7	186.5	231.3	
350	10.8	13.7	15.6	18	23.1	27.1	31.3	36.5	44.8	62.4	78.8	96.2	112.6	122.9	139.3	155.7	172	204.8	253.9	
375	11.8	15	17.1	19.7	25.2	29.6	34.2	39.9	48.9	68.1	86.1	105.1	123	134.2	152	169.9	187.8	223.5	277.1	
400	12.8	16.3	18.5	21.4	27.4	32.2	37.2	43.3	53.2	74	93.5	114.2	133.6	145.8	165.2	184.6	204	242.9	301.1	
25	0.5	0.6	0.7	0.8	0.9	1.1	1.3	1.4	1.7	2.4	3	3.6	4.2	4.6	5.2	5.8	6.4	7.5	9.3	
50	1	1.2	1.4	1.6	1.9	2.2	2.6	3	3.6	4.9	6.1	7.4	8.6	9.4	10.6	11.8	13	15.5	19.1	
75	1.5	1.9	2.1	2.4	3	3.5	3.9	4.5	5.5	7.5	9.4	11.4	13.3	14.4	16.3	18.2	20	23.8	29.4	
100	2.1	2.5	2.9	3.3	4.1	4.7	5.4	6.2	7.5	10.3	12.8	15.5	18.1	19.7	22.2	24.8	27.3	32.4	40.1	
125	2.6	3.3	3.7	4.2	5.2	6	6.9	7.9	9.6	13.1	16.4	19.9	23.2	25.2	28.5	31.7	35	41.5	51.3	
150	3.2	4	4.5	5.1	6.4	7.4	8.5	9.7	11.8	16.1	20.1	24.4	28.4	30.9	34.9	38.9	42.9	50.9	62.9	
175	3.9	4.8	5.4	6.1	7.6	8.8	10.1	11.6	14.1	19.2	24	29.1	33.9	36.9	41.6	46.4	51.2	60.7	75	
200	4.5	5.6	6.3	7.1	8.9	10.3	11.8	13.6	16.4	22.4	28	34	39.6	43	48.6	54.2	59.7	70.9	87.6	1.5 IN.
225	5.2	6.4	7.2	8.2	10.2	11.8	13.5	15.6	18.9	25.8	32.2	39	45.4	49.4	55.8	62.2	68.6	81.4	100.6	
250	5.9	7.2	8.1	9.3	11.6	13.4	15.3	17.7	21.4	29.2	36.5	44.3	51.5	56.1	63.3	70.6	77.8	92.3	114.1	
275	6.6	8.1	9.1	10.4	13	15.1	17.2	19.8	24	32.8	41	49.7	57.8	62.9	71.1	79.2	87.3	103.6	128	
300	7.3	9	10.5	11.6	14.5	16.8	19.2	22.1	26.7	36.5	45.6	55.3	64.3	70	79.1	88.1	97.2	115.3	142.4	
325	8.1	10	11.2	12.8	16	18.5	21.2	24.4	29.5	40.3	50.4	61	71	77.3	87.3	97.3	107.3	127.3	157.2	
350	8.9	11	12.3	14	17.5	20.3	23.2	26.7	32.4	44.2	55.3	67	78	84.8	95.8	106.8	117.7	139.7	172.6	
375	9.7	12	13.5	15.3	19.1	22.2	25.3	29.2	35.3	48.3	60.3	73.1	85.1	92.6	104.6	116.5	128.5	152.4	188.3	
400	10.5	13	14.6	16.6	20.8	24.1	27.5	31.7	38.4	52.4	65.5	79.4	92.4	100.5	113.6	126.6	139.6	165.6	204.5	
25	0.4	0.5	0.6	0.6	0.8	0.9	1	1.2	1.4	1.9	2.4	2.8	3.3	3.6	4	4.5	4.9	5.8	7.1	
50	0.9	1.1	1.2	1.3	1.6	1.9	2.1	2.4	2.9	3.9	4.8	5.8	6.7	7.3	8.2	9.1	10.1	11.9	14.6	
75	1.3	1.6	1.8	2	2.5	2.9	3.3	3.7	4.4	6	7.4	8.9	10.3	11.2	12.6	14	15.5	18.3	22.5	
100	1.8	2.2	2.5	2.8	3.4	2.9	4.4	5.1	6.1	8.2	10.1	12.2	14.1	15.3	17.2	19.2	21.1	24.9	30.7	
125	2.3	2.8	3.2	3.6	4.4	5	5.7	6.5	7.8	10.4	12.9	15.6	18	19.6	22.1	24.5	27	31.9	39.3	
150	2.9	3.5	3.9	4.4	5.4	6.2	7	8	9.5	12.8	15.9	19.1	22.1	24	27.1	30.1	33.1	39.2	48.2	
175	3.4	4.1	4.6	5.2	6.4	7.3	8.3	9.5	11.4	15.3	18.9	22.8	26.4	28.7	32.3	35.9	39.5	46.7	57.5	
200	4	4.8	5.4	6.1	7.5	8.6	9.7	11.1	13.3	17.9	22.1	26.6	30.8	33.5	37.7	41.9	46.1	54.5	67.1	
225	4.6	5.6	6.2	7	8.6	9.9	11.2	12.7	15.2	20.5	25.4	30.6	35.4	38.5	43.3	48.1	53	62.6	77.1	2 IN.
250	5.2	6.3	7	7.9	9.7	11.2	12.6	14.4	17.3	23.3	28.8	34.7	40.2	43.6	49.1	54.6	60.1	71.1	87.5	
275	5.8	7.1	7.9	8.9	10.9	12.5	14.2	16.2	19.4	26.1	32.3	38.9	45.1	49	55.1	61.3	67.4	79.7	98.2	
300	6.5	7.9	8.8	9.9	12.2	14	15.8	18	21.6	29.1	36	43.3	50.2	54.5	61.3	68.2	75	88.7	109.2	
325	7.2	8.7	9.7	10.9	13.4	15.4	17.5	19.9	23.9	32.1	39.8	47.8	55.4	60.2	67.7	75.3	82.9	98	120.7	
350	7.9	9.6	10.7	12	14.7	16.9	19.2	21.9	26.2	35.2	43.6	52.5	60.8	66	74.4	82.7	91	107.6	132.4	
375	8.6	10.4	11.6	13.1	16.1	18.5	20.9	23.9	28.6	38.5	47.6	57.3	66.4	72.1	81.2	90.2	99.3	117.4	144.5	
400	9.3	11.3	12.6	14.2	17.5	20.1	22.7	25.9	31	41.8	51.7	62.2	72.1	78.3	88.2	98	107.8	127.5	157	

ΔT	Heat Loss Chart for Pipes by Size:																		INSL THK	
	0.25	0.5	0.75	1	1.5	2	2.5	3	4	6	8	10	12	14	16	18	20	24		30
25	0.4	0.5	0.5	0.6	0.7	0.8	0.9	1	1.2	1.6	2	2.4	2.7	2.9	3.3	3.7	4	4.7	5.8	2.5 IN.
50	0.8	1	1.1	1.2	1.4	1.6	1.8	2.1	2.5	3.3	4	4.8	5.6	6	6.8	7.5	8.2	9.7	11.9	
75	1.2	1.5	1.6	1.8	2.2	2.5	2.8	3.2	3.8	5	6.2	7.4	8.5	9.2	10.4	11.5	12.6	14.9	18.3	
100	1.7	2	2.2	2.5	3	3.4	3.8	4.4	5.2	6.9	8.4	10.1	11.6	12.6	14.2	15.7	17.3	20.3	25	
125	2.1	2.6	2.8	3.2	3.8	4.4	4.9	5.6	6.6	8.8	10.8	12.9	14.9	16.1	18.1	20.1	22.1	26	31.9	
150	2.6	3.1	3.5	3.9	4.7	5.4	6	6.8	8.1	10.8	13.2	15.8	18.3	19.8	22.2	24.6	27.1	31.9	39.2	
175	3.1	3.7	4.1	4.6	5.6	6.4	7.2	8.1	9.7	12.8	15.8	18.9	21.8	23.6	26.5	29.4	32.3	38	46.7	
200	3.6	4.4	4.8	5.4	6.6	7.5	8.4	9.5	11.3	15	18.4	22	25.4	27.5	30.9	34.3	37.7	44.4	54.5	
225	4.2	5	5.6	6.2	7.5	8.6	9.6	10.9	13	17.2	21.1	25.3	29.2	21.6	35.5	39.4	43.2	51	62.6	
250	4.7	5.7	6.3	7	8.5	9.7	10.9	12.4	14.7	19.5	24	28.7	33.1	35.8	40.2	44.6	49	57.8	70.9	
275	5.3	6.4	7.1	7.9	9.6	10.9	12.3	13.9	16.5	21.9	26.9	32.2	37.1	40.2	45.2	50.1	55	64.9	79.6	
300	5.9	7.1	7.9	8.8	10.7	12.1	13.6	15.5	18.3	24.4	29.9	35.8	41.3	44.7	50.2	55.7	61.2	72.1	88.5	
325	6.5	7.8	8.7	9.7	11.8	13.4	15.1	17.1	20.2	26.9	33	39.5	45.6	49.4	55.5	61.5	67.6	79.6	97.7	
350	7.2	8.6	9.5	10.6	12.9	14.7	16.5	18.7	22.2	29.5	36.3	43.4	50	54.2	60.9	67.5	74.1	87.4	107.2	
375	7.8	9.4	10.4	11.6	14.1	16	18	20.4	24.2	32.2	39.6	47.3	45.6	59.1	66.4	73.6	80.9	95.4	117	
400	8.5	10.2	11.3	12.6	15.3	17.4	19.6	22.2	26.3	35	43	51.4	59.3	64.2	72.1	80	87.8	103.5	127.1	
25	0.4	0.4	0.5	0.5	0.6	0.7	0.8	0.9	1.1	1.4	1.7	2	2.3	2.5	2.8	3.1	3.4	4	4.9	3 IN.
50	0.7	0.9	1	1.1	1.3	1.5	1.6	1.9	2.2	2.9	3.5	4.2	4.8	5.2	5.8	6.4	7	8.3	10.1	
75	1.1	1.4	1.5	1.7	2	2.3	2.5	2.8	3.3	4.4	5.4	6.4	7.3	7.9	8.9	9.8	10.8	12.7	15.5	
100	1.6	1.9	2	2.3	2.7	3.1	3.4	3.9	4.6	6	7.3	8.7	10	10.8	12.1	13.4	14.7	17.3	21.2	
125	2	2.4	2.6	2.9	3.5	3.9	4.4	5	5.8	7.7	9.4	11.1	12.8	13.8	15.5	17.2	18.8	22.1	27.1	
150	2.4	2.9	3.2	3.6	4.3	4.8	5.4	6.1	7.2	9.4	11.5	13.7	15.7	17	19	21.1	23.1	27.1	33.2	
175	2.9	3.5	3.8	4.2	5.1	5.8	6.4	7.3	8.5	11.2	13.7	16.3	18.7	20.2	22.7	25.1	27.5	32.3	39.6	
200	3.4	4	4.5	4.9	5.9	6.7	7.5	8.5	10	13.1	16	19	21.9	23.6	26.5	29.3	32.1	37.8	46.2	
225	3.9	4.6	5.1	5.7	6.8	7.7	8.6	9.7	11.5	15	18.4	21.8	25.1	27.1	30.4	33.6	36.9	43.4	53.1	
250	4.4	5.3	5.8	6.4	7.7	8.8	9.8	11	13	17.1	20.8	24.8	28.5	30.8	34.5	38.1	41.8	49.2	60.2	
275	5	5.9	6.5	7.2	8.7	9.8	11	12.4	14.6	19.1	23.4	27.8	31.9	34.5	38.7	42.8	46.9	55.2	67.5	
300	5.5	6.6	7.2	8	9.7	10.9	12.2	13.8	16.2	21.3	26	30.9	35.5	38.4	43	47.6	52.2	61.4	75.1	
325	6.1	7.3	8	8.9	10.7	12.1	13.5	15.2	17.9	23.5	28.7	34.1	39.2	42.4	47.5	52.6	57.6	67.7	82.9	
350	6.7	8	8.8	9.7	11.7	13.2	14.8	16.7	19.6	25.8	31.5	37.5	43.1	46.5	52.1	57.7	63.2	74.3	91	
375	7.3	8.7	9.6	10.6	12.8	14.5	16.2	18.2	21.4	28.2	34.4	40.9	47	50.8	56.9	62.9	69	81.1	99.3	
400	7.9	9.4	10.4	11.6	13.9	15.7	17.5	19.8	23.3	30.6	37.3	44.4	51	55.2	61.8	68.4	74.9	88.1	107.8	

Chart 2: Insulation Factor

INSULATION	TEMPERATURE TO BE MAINTAINED (°F)								
	50	100	150	200	250	300	400	500	600
Fiberglass	1	1	1	1	1	1	1	1	1
Cellular glass	1.53	1.5	1.48	1.44	1.42	1.4	1.36	1.34	1.32
Calcium silicate	1.47	1.47	1.45	1.44	1.41	1.39	1.34	1.32	1.3
Polyurethane	0.6	0.6	0.58	0.57	Temperature exceeds recommended				

Chart 3: Heat Loss Multiplication Factors for Valves

	NPS Pipe Size																		
	0.5	0.75	1	1.25	1.5	2	2.5	3	3.5	4	6	8	10	12	14	16	18	20	24
Gate Valve	0.52	0.78	1	1.33	1.7	1.92	2	2.4	2.62	2.92	3.84	4.66	5.51	6.25	7.07	7.91	8.84	9.57	11.1
Globe Valve	0.49	0.74	0.95	1.26	1.62	1.82	1.9	2.28	2.49	2.77	3.65	4.43	5.23	5.94	6.72	7.51	8.4	9.09	10.5
Ball Valve	0.36	0.55	0.7	0.93	1.19	1.34	1.4	1.68	1.83	2.04	2.69	3.26	3.86	4.38	4.95	5.54	6.19	6.7	7.76
Butterfly Valve	0.31	0.47	0.6	0.8	1.02	1.15	1.2	1.44	1.57	1.75	2.3	2.8	3.31	3.75	4.24	4.75	5.3	5.74	6.65
Pipe Supports	0.26	0.39	0.5	0.67	0.85	0.96	1	1.2	1.31	1.46	1.92	2.33	2.76	3.13	3.54	3.96	4.42	4.79	5.55

Chart 4: Wrap Factor – Feet of Cable per Foot of Pipe

Pitch (In.)	NPS Pipe Size																	
	0.5	0.8	1	1.5	2	2.5	3	4	6	8	10	12	14	16	18	20	24	30
2	1.98	2.27	2.66	3.52	4.25	5.01	5.97	7.52	10.85	13.98	17.3	20.43	22.39	25.53	28.67	31.81	38.09	47.5
3	1.52	1.69	1.92	2.46	2.93	3.43	4.05	5.07	7.27	9.35	11.56	13.64	14.95	17.04	19.13	21.22	25.4	31.68
4	1.32	1.43	1.59	1.96	2.29	2.65	3.11	3.86	5.49	7.04	8.69	10.25	11.23	12.8	14.36	15.93	19.06	23.77
5	1.21	1.29	1.4	1.68	1.93	2.21	2.56	3.15	4.43	5.67	6.98	8.23	9	10.25	11.5	12.76	15.26	19.02
6	1.15	1.21	1.29	1.51	1.7	1.92	2.2	2.68	3.74	4.75	5.84	6.88	7.52	8.56	9.6	10.64	12.73	15.86
7	1.11	1.16	1.22	1.39	1.55	1.72	1.96	2.35	3.24	4.11	5.03	5.92	6.47	7.36	8.25	9.14	10.92	13.61
8	1.09	1.12	1.17	1.31	1.44	1.58	1.78	2.12	2.88	3.63	4.43	5.2	5.68	6.46	7.23	8.01	9.57	11.92
9	1.07	1.1	1.14	1.25	1.36	1.48	1.65	1.94	2.6	3.26	3.97	4.64	5.07	5.76	6.45	7.14	8.52	10.6
10	1.06	1.08	1.11	1.21	1.3	1.4	1.54	1.8	2.38	2.96	3.6	4.2	4.58	5.2	5.82	6.44	7.68	9.55
11	1.05	1.07	1.1	1.17	1.25	1.34	1.46	1.68	2.2	2.72	3.3	3.84	4.19	4.75	5.3	5.87	6.99	8.69
12	SR	1.06	1.08	1.15	1.21	1.29	1.4	1.6	2.06	2.53	3.05	3.55	3.86	4.37	4.88	5.39	6.42	7.98
14	SR	SR	1.06	1.11	1.16	1.22	1.31	1.46	1.84	2.23	2.66	3.08	3.35	3.78	4.21	4.65	5.53	6.86
16	SR	SR	1.05	1.09	1.13	1.17	1.24	1.37	1.68	2.01	2.38	2.74	2.97	3.34	3.72	4.1	4.86	6.02
18	SR	SR	SR	1.07	1.1	1.14	1.19	1.3	1.56	1.84	2.16	2.48	2.68	3.01	3.34	3.67	4.35	5.37
24	SR	SR	SR	SR	1.06	1.08	1.11	1.18	1.35	1.53	1.75	1.97	2.12	2.35	2.59	2.83	3.33	4.08
30	SR	SR	SR	SR	SR	1.05	1.07	1.12	1.23	1.37	1.52	1.69	1.8	1.97	2.16	2.34	2.73	3.32
36	SR	SR	SR	SR	SR	SR	1.05	1.08	1.17	1.26	1.39	1.51	1.6	1.73	1.88	2.03	2.34	2.82
42	SR	SR	SR	SR	SR	SR	SR	1.06	1.12	1.2	1.29	1.39	1.46	1.57	1.69	1.81	2.07	2.47
48	SR	SR	SR	SR	SR	SR	SR	1.05	1.1	1.16	1.23	1.31	1.37	1.46	1.56	1.66	1.88	2.22
60	SR	SR	SR	SR	SR	SR	SR	SR	1.05	1.1	1.15	1.21	1.25	1.31	1.38	1.46	1.62	1.87
72	SR	SR	SR	SR	SR	SR	SR	SR	SR	1.07	1.11	1.15	1.18	1.23	1.28	1.33	1.46	1.66