

Engineering Information

1½"									
US GPM	IRON/STEEL Schedule 40			PLASTIC Schedule 40			COPPER Type M		
	Vel. Ft./ Sec.	Vel. Hd. Ft.	Head Loss Ft./ 100'	Vel. Ft./ Sec.	Vel. Hd. Ft.	Head Loss Ft./ 100'	Vel. Ft./ Sec.	Vel. Hd. Ft.	Head Loss Ft./ 100'
10	1.6	---	0.8	1.6	---	0.7	1.8	0.1	1.2
12	1.9	0.1	1.2	1.9	0.1	0.9	2.1	0.1	1.6
14	2.2	0.1	1.5	2.2	0.1	1.3	2.5	0.1	2.2
16	2.5	0.1	2.0	2.5	0.1	1.6	2.8	0.1	2.8
18	2.8	0.1	2.4	2.8	0.1	2.0	3.1	0.2	3.5
20	3.2	0.2	2.9	3.2	0.2	2.4	3.5	0.2	4.2
22	3.5	0.2	3.5	3.5	0.2	2.8	3.9	0.2	5.0
24	3.8	0.2	4.1	3.8	0.2	3.2	4.2	0.3	5.8
26	4.1	0.3	4.8	4.1	0.3	3.8	4.6	0.3	6.7
28	4.4	0.3	5.5	4.4	0.3	4.5	4.9	0.4	7.8
30	4.7	0.3	6.3	4.7	0.4	5.2	5.3	0.4	8.8
32	5.0	0.4	7.1	5.0	0.4	5.8	5.6	0.5	10.0
34	5.4	0.4	7.9	5.4	0.5	6.6	6.0	0.6	11.2
36	5.7	0.5	8.8	5.7	0.5	7.3	6.3	0.6	12.5
38	6.0	0.6	9.8	6.0	0.6	8.1	6.7	0.7	13.7
40	6.3	0.6	10.8	6.3	0.6	8.8	7.0	0.8	15.0
42	6.6	0.7	11.8	6.6	0.7	9.7	7.4	0.8	16.5
44	6.9	0.7	12.9	7.0	0.8	10.6	7.7	0.9	18.0
46	7.3	0.8	14.0	7.3	0.8	11.4	8.1	1.0	19.5
48	7.6	0.9	15.2	7.5	0.9	12.4	8.4	1.1	21.1
50	7.9	1.0	16.4	7.9	1.0	13.3	8.8	1.2	22.7
55	8.7	1.2	19.7	8.7	1.2	16.0	9.6	1.4	27.2
60	9.5	1.4	23.2	9.4	1.4	18.6	10.5	1.7	31.8
65	10.2	1.6	27.1	10.2	1.6	21.6	11.4	2.0	36.8
70	11.0	1.9	31.3	11.0	1.9	24.9	12.3	2.4	42.4
75	11.8	2.2	35.8	11.8	2.2	28.2	13.1	2.7	48.1
80	12.6	2.5	40.5	12.7	2.5	32.0	14.0	3.0	54.2
85	13.4	2.8	45.6	13.4	2.8	35.3	14.9	3.5	60.5
90	14.2	3.1	51.0	14.2	3.1	39.5	15.8	3.9	67.3
95	15.0	3.5	56.5	15.0	3.5	43.7	16.6	4.3	74.3
100	15.8	3.9	62.2	15.7	3.9	47.9	17.5	4.8	82.0
110	17.3	4.7	74.5	17.3	4.7	57.3	19.3	5.8	97.5
120	18.9	5.6	88.3	18.9	5.5	67.2	21.0	6.9	115.0
130	20.5	6.5	103.0	20.5	6.5	78.0	22.8	8.1	133.0
140	22.1	7.6	119.0	22.0	7.5	89.3			
150	23.6	8.7	137.0						
160	25.2	9.9	156.0						
170	26.8	11.2	175.0						
180	28.4	12.5	196.0						
190	29.9	13.9	218.0						

2"									
US GPM	IRON/STEEL Schedule 40			PLASTIC Schedule 40			COPPER Type M		
	Vel. Ft./ Sec.	Vel. Hd. Ft.	Head Loss Ft./ 100'	Vel. Ft./ Sec.	Vel. Hd. Ft.	Head Loss Ft./ 100'	Vel. Ft./ Sec.	Vel. Hd. Ft.	Head Loss Ft./ 100'
20	1.9	0.1	0.9	1.9	0.1	0.9	2.0	0.1	1.1
22	2.1	0.1	1.0	2.1	0.1	1.1	2.2	0.1	1.3
24	2.3	0.1	1.2	2.3	0.1	1.2	2.4	0.1	1.5
26	2.5	0.1	1.4	2.5	0.1	1.4	2.6	0.1	1.8
28	2.7	0.1	1.6	2.7	0.1	1.6	2.8	0.1	2.0
30	2.9	0.1	1.8	2.9	0.1	1.8	3.0	0.1	2.3
35	3.4	0.2	2.4	3.4	0.2	2.4	3.5	0.2	3.1
40	3.8	0.2	3.1	3.8	0.2	3.1	4.1	0.3	4.0
45	4.3	0.3	3.9	4.3	0.3	3.9	4.6	0.3	5.0
50	4.8	0.4	4.7	4.8	0.4	4.7	5.1	0.4	6.0
55	5.3	0.4	5.6	5.3	0.4	5.6	5.6	0.5	7.1
60	5.7	0.5	6.6	5.7	0.5	6.5	6.1	0.6	8.4
65	6.2	0.6	7.7	6.2	0.6	7.6	6.6	0.7	9.7
70	6.7	0.7	8.9	6.7	0.7	8.6	7.1	0.8	11.2
75	7.2	0.8	10.1	7.2	0.8	9.8	7.6	0.9	12.6
80	7.7	0.9	11.4	7.7	0.9	11.1	8.1	1.0	14.3
85	8.1	1.0	12.8	8.1	1.0	12.5	8.6	1.2	16.0
90	8.6	1.2	14.2	8.6	1.2	13.8	9.1	1.3	17.8
95	9.1	1.3	15.8	9.1	1.3	15.3	9.6	1.4	19.6
100	9.6	1.4	17.4	9.6	1.4	16.8	10.1	1.6	21.6
110	10.5	1.7	20.9	10.5	1.7	20.2	11.1	1.9	25.8
120	11.5	2.1	24.7	11.5	2.1	23.5	12.1	2.3	30.4
130	12.4	2.4	28.8	12.4	2.4	27.3	13.1	2.7	35.1
140	13.4	2.8	33.2	13.4	2.8	31.5	14.2	3.2	40.3
150	14.3	3.2	38.0	14.3	3.2	35.7	15.2	3.6	45.8
160	15.3	3.6	43.0	15.3	3.6	40.4	16.2	4.1	51.5
170	16.3	4.1	48.4	16.3	4.1	45.1	17.2	4.6	57.7
180	17.2	4.6	54.1	17.2	4.6	50.3	18.2	5.1	64.1
190	18.2	5.1	60.1	18.2	5.1	55.5	19.2	5.7	70.7
200	19.1	5.7	66.3	19.1	5.7	60.6	20.2	6.3	77.9
220	21.0	6.9	80.0	21.0	6.9	72.4	22.2	7.7	93.1
240	22.9	8.2	95.0	22.9	8.2	85.5	24.3	9.2	110.0
260	24.9	9.6	111.0	24.9	9.6	99.2	26.3	10.7	127.0
280	26.8	11.1	128.0				28.3	12.4	145.0
300	28.7	12.8	146.0				30.4	14.4	165.0
320	30.6	14.5	166.0						
340	32.5	16.4	187.0						
360	34.4	18.4	209.0						
380	36.3	20.5	233.0						
400	38.2	22.7	258.0						

Engineering Information

2½"									
US GPM	IRON/STEEL Schedule 40			PLASTIC Schedule 40			COPPER Type M		
	Vel. Ft./ Sec.	Vel. Hd. Ft.	Head Loss Ft./ 100'	Vel. Ft./ Sec.	Vel. Hd. Ft.	Head Loss Ft./ 100'	Vel. Ft./ Sec.	Vel. Hd. Ft.	Head Loss Ft./ 100'
20	1.3	---	0.4	1.3	---	0.3	1.3	---	0.4
22	1.5	---	0.4	1.5	---	0.4	1.5	---	0.4
24	1.6	---	0.5	1.6	---	0.4	1.6	---	0.5
26	1.7	---	0.6	1.7	---	0.5	1.7	---	0.6
28	1.9	0.1	0.7	1.9	0.1	0.5	1.9	0.1	0.7
30	2.0	0.1	0.8	2.0	0.1	0.6	2.0	0.1	0.8
35	2.4	0.1	1.0	2.4	0.1	0.8	2.3	0.1	1.1
40	2.7	0.1	1.3	2.7	0.1	1.0	2.6	0.1	1.4
45	3.0	0.1	1.6	3.0	0.1	1.3	3.0	0.1	1.7
50	3.4	0.2	1.9	3.4	0.2	1.6	3.3	0.2	2.1
55	3.7	0.2	2.3	3.7	0.2	1.9	3.6	0.2	2.5
60	4.0	0.3	2.7	4.0	0.3	2.2	3.9	0.3	2.9
65	4.4	0.3	3.2	4.4	0.3	2.5	4.3	0.3	3.5
70	4.7	0.3	3.6	4.7	0.3	2.9	4.6	0.3	3.9
75	5.0	0.4	4.1	5.0	0.4	3.3	4.9	0.4	4.4
80	5.4	0.4	4.7	5.4	0.4	3.7	5.3	0.4	5.0
85	5.7	0.5	5.2	5.7	0.5	4.2	5.6	0.5	5.6
90	6.0	0.6	5.8	6.0	0.6	4.6	5.9	0.6	6.2
95	6.4	0.6	6.5	6.4	0.6	5.1	6.3	0.6	6.9
100	6.7	0.7	7.1	6.7	0.7	5.6	6.6	0.7	7.5
110	7.4	0.8	8.5	7.4	0.8	6.8	7.2	0.8	8.9
120	8.0	1.0	10.0	8.0	1.0	7.9	7.9	1.0	10.5
130	8.7	1.2	11.7	8.7	1.2	8.8	8.5	1.1	12.1
140	9.4	1.4	13.5	9.4	1.4	10.5	9.2	1.3	13.9
150	10.1	1.6	15.4	10.1	1.6	12.0	9.8	1.5	15.8
160	10.7	1.8	17.4	10.7	1.8	13.6	10.5	1.7	17.8
170	11.4	2.0	19.6	11.4	2.0	16.0	11.1	1.9	20.0
180	12.1	2.3	21.9	12.1	2.3	16.8	11.8	2.2	22.2
190	12.7	2.5	24.2	12.7	2.5	18.6	12.5	2.4	24.5
200	13.4	2.8	26.7	13.4	2.8	20.3	13.1	2.7	27.0
220	14.7	3.4	32.2	14.7	3.4	24.9	14.4	3.2	32.2
240	16.1	4.0	38.1	16.1	4.0	28.7	15.7	3.8	37.9
260	17.4	4.7	44.5	17.4	4.7	33.0	17.1	4.5	43.9
280	18.8	5.5	51.3	18.8	5.5	38.1	18.4	5.3	50.2
300	20.1	6.3	58.5	20.1	6.3	43.2	19.7	6.0	57.6
350	23.5	8.6	79.2	23.5	8.6	56.0	23.0	8.2	76.0
400	26.8	11.2	103.0	26.8	11.2	73.3	26.2	10.7	97.0
450	30.2	14.1	130.0				29.5	13.5	120.0
500	33.5	17.4	160.0				32.8	16.7	147.0
550	36.9	21.1	193.0						

3"									
US GPM	IRON/STEEL Schedule 40			PLASTIC Schedule 40			COPPER Type M		
	Vel. Ft./ Sec.	Vel. Hd. Ft.	Head Loss Ft./ 100'	Vel. Ft./ Sec.	Vel. Hd. Ft.	Head Loss Ft./ 100'	Vel. Ft./ Sec.	Vel. Hd. Ft.	Head Loss Ft./ 100'
50	2.2	0.1	0.7	2.2	0.1	0.7	2.3	0.1	0.9
60	2.6	0.1	0.9	2.6	0.1	0.9	2.8	0.1	1.2
70	3.0	0.1	1.2	3.0	0.1	1.2	3.2	0.2	1.6
80	3.5	0.2	1.6	3.5	0.2	1.5	3.7	0.2	2.1
90	3.9	0.2	2.0	3.9	0.2	1.9	4.1	0.3	2.6
100	4.3	0.3	2.4	4.3	0.3	2.3	4.6	0.3	3.2
110	4.8	0.4	2.9	4.8	0.4	2.8	5.1	0.4	3.8
120	5.2	0.4	3.4	5.2	0.4	3.3	5.5	0.5	4.4
130	5.6	0.5	3.9	5.6	0.5	3.8	6.0	0.6	5.1
140	6.1	0.6	4.5	6.1	0.6	4.3	6.4	0.6	5.9
150	6.5	0.7	5.1	6.5	0.7	4.9	6.9	0.7	6.7
160	6.9	0.7	5.8	6.9	0.7	5.5	7.3	0.8	7.6
170	7.4	0.8	6.5	7.4	0.8	6.3	7.8	0.9	8.3
180	7.8	0.9	7.3	7.8	0.9	6.6	8.3	1.1	9.4
190	8.3	1.1	8.1	8.3	1.1	7.3	8.7	1.2	10.4
200	8.7	1.2	8.9	8.7	1.2	8.4	9.2	1.3	11.4
220	9.6	1.4	10.7	9.6	1.4	10.0	10.1	1.6	13.6
240	10.4	1.7	12.6	10.4	1.7	11.8	11.0	1.9	16.0
260	11.3	2.0	14.7	11.3	2.0	13.7	11.9	2.2	18.5
280	12.2	2.3	16.9	12.2	2.3	15.7	12.8	2.5	21.3
300	13.0	2.6	19.2	13.0	2.6	17.9	13.7	2.9	24.2
320	13.9	3.0	22.0	13.9	3.0	20.1	14.7	3.4	27.2
340	14.8	3.4	24.8	14.8	3.4	22.5	15.6	3.8	30.4
360	15.6	3.8	27.7	15.6	3.8	24.9	16.5	4.2	33.8
380	16.5	4.2	30.7	16.5	4.2	27.7	17.4	4.7	37.4
400	17.4	4.7	33.9	17.4	4.7	30.6	18.3	5.2	41.2
420	18.2	5.2	37.3	18.2	5.2	33.2	19.2	5.7	45.0
440	19.1	5.7	40.9	19.1	5.7	36.3	20.1	6.3	49.1
460	20.0	6.2	44.6	20.0	6.2	39.5	21.1	6.9	53.4
480	20.8	6.7	48.5	20.8	6.7	42.8	22.0	7.5	57.9
500	21.7	7.3	52.5	21.7	7.3	46.1	22.9	8.1	62.1
550	23.9	8.9	63.2	23.9	8.9	55	25.2	9.9	74.1
600	26.0	10.5	74.8	26.0	10.5	64.4	27.5	11.7	87.0
650	28.2	12.4	87.5				29.8	13.8	101.0
700	30.4	14.3	101.0				32.1	16.0	116.0
750	32.5	16.5	116.0				34.4	18.4	132.0
800	34.7	18.7	131.0				36.6	20.8	148.0
850	36.9	21.1	148.0						
900	39.1	23.7	165.0						
950	41.2	26.4	184.0						

Engineering Information

4"									
US GPM	IRON/STEEL Schedule 40			PLASTIC Schedule 40			COPPER Type M		
	Vel. Ft./ Sec.	Vel. Hd. Ft.	Head Loss Ft./ 100'	Vel. Ft./ Sec.	Vel. Hd. Ft.	Head Loss Ft./ 100'	Vel. Ft./ Sec.	Vel. Hd. Ft.	Head Loss Ft./ 100'
100	2.5	0.1	0.6	2.5	0.1	0.6	2.6	0.1	0.8
110	2.8	0.1	0.7	2.8	0.1	0.7	2.9	0.1	1.0
120	3.0	0.1	0.9	3.0	0.1	0.8	3.2	0.1	1.2
130	3.3	0.2	1.0	3.3	0.2	0.9	3.4	0.2	1.3
140	3.5	0.2	1.2	3.5	0.2	1.1	3.7	0.2	1.5
150	3.8	0.2	1.3	3.8	0.2	1.2	4.0	0.3	1.7
160	4.0	0.3	1.5	4.0	0.3	1.4	4.2	0.3	1.9
170	4.3	0.3	1.7	4.3	0.3	1.5	4.5	0.3	2.2
180	4.5	0.3	1.9	4.5	0.3	1.7	4.7	0.4	2.4
190	4.8	0.4	2.1	4.8	0.4	1.9	5.0	0.4	2.7
200	5.0	0.4	2.3	5.0	0.4	2.1	5.3	0.4	2.9
220	5.5	0.5	2.7	5.5	0.5	2.4	5.8	0.5	3.5
240	6.1	0.6	3.2	6.1	0.6	2.9	6.3	0.6	4.1
260	6.6	0.7	3.7	6.6	0.7	3.3	6.9	0.7	4.8
280	7.1	0.8	4.3	7.1	0.8	3.9	7.4	0.9	5.5
300	7.6	0.9	4.9	7.6	0.9	4.4	7.9	1.0	6.2
320	8.1	1.0	5.5	8.1	1.0	4.9	8.4	1.1	7.0
340	8.6	1.1	6.2	8.6	1.1	5.5	9.0	1.3	7.8
360	9.1	1.3	6.9	9.1	1.3	6.2	9.5	1.4	8.7
380	9.6	1.4	7.7	9.6	1.4	6.6	10.0	1.6	9.7
400	10.1	1.6	8.5	10.1	1.6	7.5	10.5	1.7	10.6
420	10.6	1.7	9.3	10.6	1.7	8.3	11.1	1.9	11.6
440	11.1	1.9	10.2	11.1	1.9	9.0	11.6	2.1	12.6
460	11.6	2.1	11.1	11.6	2.1	9.8	12.1	2.3	13.7
480	12.1	2.3	12.0	12.1	2.3	10.6	12.6	2.5	14.8
500	12.6	2.5	13.0	12.6	2.5	11.3	13.2	2.7	15.9
550	13.9	3.0	15.7	13.9	3.0	13.5	14.5	3.3	19.1
600	15.1	3.6	18.6	15.1	3.6	15.8	15.8	3.9	22.4
650	16.4	4.2	21.7	16.4	4.2	18.3	17.1	4.5	26.0
700	17.6	4.8	25.0	17.6	4.8	21.1	18.4	5.3	29.9
750	18.9	5.6	28.6	18.9	5.6	24.0	19.8	6.1	33.8
800	20.2	6.3	32.4	20.2	6.3	26.8	21.1	6.9	38.1
850	21.4	7.1	36.5	21.4	7.1	30.1	22.4	7.8	42.6
900	22.7	8.0	40.8	22.7	8.0	33.4	23.7	8.7	47.3
950	23.9	8.9	45.3				25.0	9.7	52.3
1000	25.2	9.9	50.2				26.4	10.8	57.6
1100	27.7	11.9	60.2				29.0	13.1	68.7
1200	30.2	14.2	72.0				31.6	15.5	81.0
1300	32.8	16.7	84.3				34.2	18.2	93.5
1400	35.3	19.3	97.6				36.9	21.1	108.0

5"									
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	Vel. Ft./ Sec.	Vel. Hd. Ft.	Head Loss Ft./ 100'	Vel. Ft./ Sec.	Vel. Hd. Ft.	Head Loss Ft./ 100'	Vel. Ft./ Sec.	Vel. Hd. Ft.	Head Loss Ft./ 100'
200	3.2	0.2	0.7				3.4	0.2	1.0
220	3.5	0.2	0.9				3.7	0.2	1.2
240	3.9	0.2	1.0				4.1	0.3	1.4
260	4.2	0.3	1.2				4.4	0.3	1.6
280	4.5	0.3	1.4				4.7	0.3	1.9
300	4.8	0.4	1.6				5.1	0.4	2.1
320	5.2	0.4	1.8				5.4	0.5	2.5
340	5.5	0.5	2.0				5.7	0.5	2.8
360	5.8	0.5	2.2				6.1	0.6	3.1
380	6.0	0.6	2.5				6.4	0.6	3.3
400	6.4	0.6	2.7				6.8	0.7	3.6
420	6.8	0.7	3.0				7.1	0.8	4.0
440	7.0	0.8	3.3				7.4	0.9	4.5
460	7.4	0.9	3.6				7.8	0.9	4.8
480	7.7	0.9	3.9				8.1	1.0	5.2
500	8.0	1.0	4.2				8.5	1.1	5.5
550	8.8	1.2	5.0				9.3	1.3	6.6
600	9.6	1.4	5.9				10.1	1.6	7.7
650	10.4	1.7	6.9				11.0	1.9	8.9
700	11.2	2.0	7.9				11.8	2.2	10.2
750	12.0	2.3	9.0				12.7	2.5	11.6
800	12.8	2.6	10.3				13.5	2.8	13.1
850	13.6	2.9	11.5				14.4	3.2	14.7
900	14.4	3.3	12.9				15.2	3.6	16.3
950	15.2	3.6	14.3				16.1	4.0	18.0
1000	16.0	4.0	15.8				16.9	4.4	19.8
1100	17.6	4.8	19.0				18.6	5.4	23.6
1200	19.2	5.8	22.5				20.3	6.4	27.7
1300	20.8	6.8	26.3				22.0	7.5	32.1
1400	22.5	7.8	30.4				23.7	8.7	36.8
1500	24.1	9.0	34.8				25.4	10.1	41.8
1600	25.7	10.2	39.5				27.0	11.3	47.2
1700	27.3	11.6	44.5				28.7	12.8	53.0
1800	28.8	12.9	49.7				30.4	14.4	58.7
1900	30.5	14.4	55.2				32.1	16.0	64.9
2000	32.1	16.0	61.0				33.8	17.7	71.2
2100	33.7	17.6	67.1				35.5	19.6	78.1
2200	35.3	19.3	73.5				37.2	21.5	85.0
2300	36.9	21.1	80.1				38.8	23.4	92.4
2400	38.5	23.0	87.0				40.5	25.5	99.8