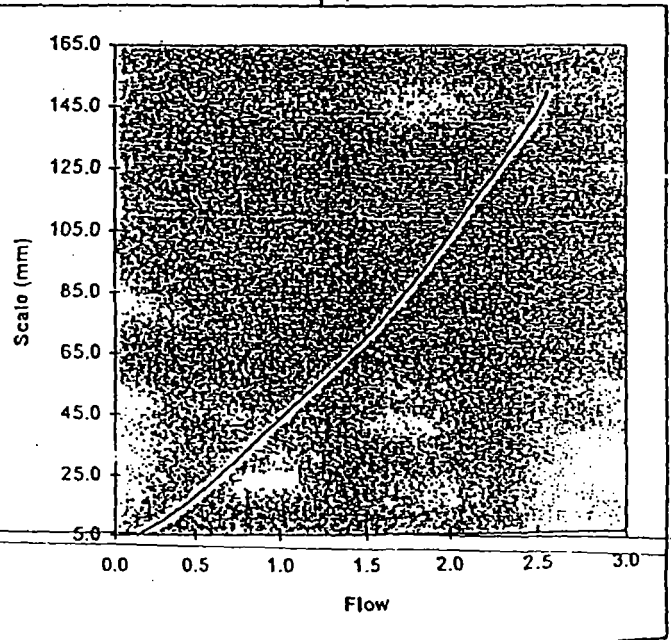



**allison**  
 Gas Products  
 GAS EQUIPMENT TECHNOLOGY GROUP

UNITS:	SLPM AIR	DATE:	2/27/97
TUBE NUMBER:	E501	STD CONDITIONS:	1 ATMOS. & 70 DEG F
SERIAL NUMBER:	TYPICAL	GAS TEMPERATURE:	70 DEG F
FLOAT MATERIAL:	GLASS	PRESSURE IN TUBE:	0 PSIG
CERT FILE #:	E500G		

SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE
150.0	2.56	104.0	2.01	58.0	1.28	31.0	0.77
149.0	2.55	103.0	2.00	57.0	1.26	30.0	0.75
148.0	2.55	102.0	1.99	56.0	1.24	29.0	0.73
147.0	2.54	101.0	1.97	55.0	1.22	28.0	0.71
146.0	2.53	100.0	1.96	54.0	1.21	27.0	0.69
145.0	2.52	99.0	1.95	53.0	1.19	26.0	0.67
144.0	2.51	98.0	1.93	52.0	1.17	25.0	0.65
143.0	2.51	97.0	1.92	51.0	1.15	24.0	0.63
142.0	2.49	96.0	1.91	50.0	1.13	23.0	0.61
141.0	2.48	95.0	1.89	49.0	1.11	22.0	0.59
140.0	2.47	94.0	1.88	48.0	1.09	21.0	0.57
139.0	2.46	93.0	1.86	47.0	1.07	20.0	0.55
138.0	2.45	92.0	1.85	46.0	1.05	19.0	0.53
137.0	2.44	91.0	1.83	45.0	1.03	18.0	0.50
136.0	2.43	90.0	1.82	44.0	1.02	17.0	0.48
135.0	2.41	89.0	1.81	43.0	1.00	16.0	0.46
134.0	2.40	88.0	1.79	42.0	0.98	15.0	0.43
133.0	2.39	87.0	1.78	41.0	0.96	14.0	0.41
132.0	2.38	86.0	1.76	40.0	0.94	13.0	0.38
131.0	2.36	85.0	1.75	39.0	0.92	12.0	0.36
130.0	2.35	84.0	1.73	38.0	0.90	11.0	0.33
129.0	2.34	83.0	1.72	37.0	0.88	10.0	0.30
128.0	2.32	82.0	1.70	36.0	0.86	9.0	0.27
127.0	2.31	81.0	1.68	35.0	0.85	8.0	0.24
126.0	2.30	80.0	1.67	34.0	0.83	7.0	0.21
125.0	2.28	79.0	1.65	33.0	0.81	6.0	0.17
124.0	2.27	78.0	1.64	32.0	0.79	5.0	0.14
123.0	2.26	77.0	1.62				
122.0	2.25	76.0	1.60				
121.0	2.23	75.0	1.59				
120.0	2.22	74.0	1.57				
119.0	2.21	73.0	1.55				
118.0	2.19	72.0	1.53				
117.0	2.18	71.0	1.52				
116.0	2.17	70.0	1.50				
115.0	2.15	69.0	1.48				
114.0	2.14	68.0	1.46				
113.0	2.13	67.0	1.45				
112.0	2.12	66.0	1.43				
111.0	2.10	65.0	1.41				
110.0	2.09	64.0	1.39				
109.0	2.08	63.0	1.37				
108.0	2.06	62.0	1.36				
107.0	2.05	61.0	1.34				
106.0	2.04	60.0	1.32				
105.0	2.03	59.0	1.30				

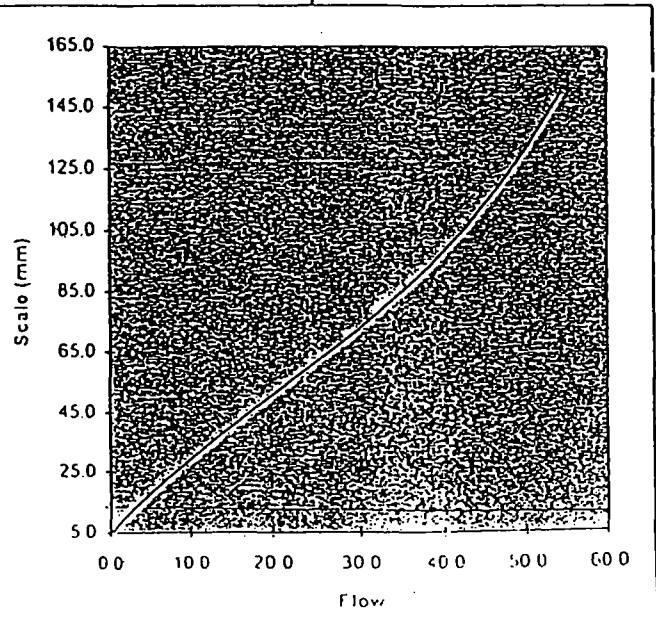




GAS EQUIPMENT TECHNOLOGY GROUP

UNITS:	SCCM WATER	DATE:	3/12/97
TUBE NUMBER:	E501	STD CONDITIONS:	1 ATMOS. & 70 DEG F
SERIAL NUMBER:	TYPICAL	GAS TEMPERATURE:	70 DEG F
FLOAT MATERIAL:	GLASS	PRESSURE IN TUBE:	0 PSIG
CERT FILE #:	E500WG		

SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE
150.0	54.36	104.0	42.15	58.0	23.46	31.0	10.88
149.0	54.14	103.0	41.81	57.0	23.00	30.0	10.43
148.0	53.93	102.0	41.47	56.0	22.53	29.0	9.98
147.0	53.71	101.0	41.13	55.0	22.07	28.0	9.53
146.0	53.49	100.0	40.78	54.0	21.60	27.0	9.08
145.0	53.27	99.0	40.43	53.0	21.14	26.0	8.64
144.0	53.04	98.0	40.08	52.0	20.67	25.0	8.20
143.0	52.82	97.0	39.72	51.0	20.20	24.0	7.76
142.0	52.59	96.0	39.36	50.0	19.73	23.0	7.33
141.0	52.37	95.0	39.00	49.0	19.26	22.0	6.90
140.0	52.14	94.0	38.63	48.0	18.79	21.0	6.47
139.0	51.91	93.0	38.26	47.0	18.32	20.0	6.05
138.0	51.67	92.0	37.88	46.0	17.85	19.0	5.63
137.0	51.44	91.0	37.51	45.0	17.38	18.0	5.22
136.0	51.20	90.0	37.13	44.0	16.92	17.0	4.81
135.0	50.96	89.0	36.74	43.0	16.45	16.0	4.40
134.0	50.72	88.0	36.36	42.0	15.98	15.0	4.00
133.0	50.48	87.0	35.97	41.0	15.51	14.0	3.61
132.0	50.23	86.0	35.57	40.0	15.04	13.0	3.22
131.0	49.98	85.0	35.18	39.0	14.57	12.0	2.83
130.0	49.73	84.0	34.78	38.0	14.11	11.0	2.45
129.0	49.48	83.0	34.37	37.0	13.64	10.0	2.08
128.0	49.22	82.0	33.97	36.0	13.18	9.0	1.71
127.0	48.96	81.0	33.56	35.0	12.72	8.0	1.35
126.0	48.70	80.0	33.15	34.0	12.25	7.0	1.00
125.0	48.43	79.0	32.73	33.0	11.79	6.0	0.65
124.0	48.17	78.0	32.32	32.0	11.34	5.0	0.31
123.0	47.89	77.0	31.90				
122.0	47.62	76.0	31.47				
121.0	47.34	75.0	31.05				
120.0	47.06	74.0	30.62				
119.0	46.78	73.0	30.19				
118.0	46.50	72.0	29.75				
117.0	46.21	71.0	29.32				
116.0	45.91	70.0	28.88				
115.0	45.62	69.0	28.44				
114.0	45.32	68.0	28.00				
113.0	45.02	67.0	27.55				
112.0	44.71	66.0	27.10				
111.0	44.40	65.0	26.65				
110.0	44.09	64.0	26.20				
109.0	43.77	63.0	25.75				
108.0	43.46	62.0	25.30				
107.0	43.13	61.0	24.84				
106.0	42.81	60.0	24.38				
105.0	42.48	59.0	23.92				

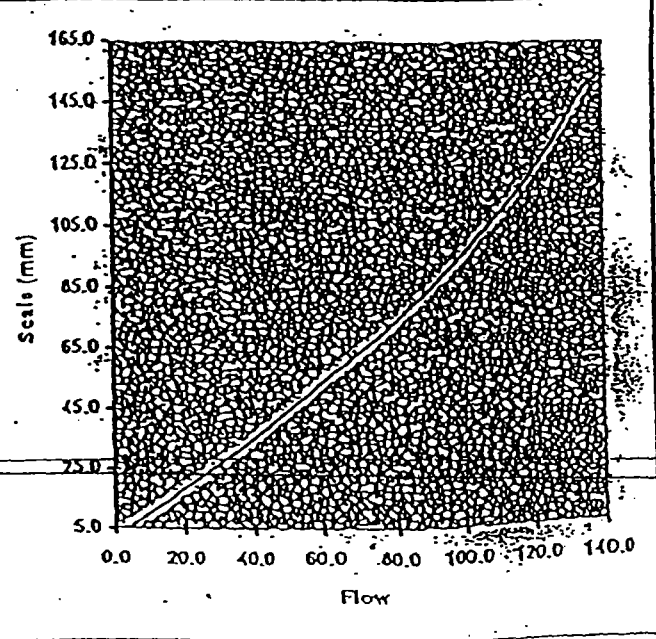




GAS EQUIPMENT TECHNOLOGY GROUP

UNITS:	SCCM WATER	DATE:	3/12/97
TUBE NUMBER:	E503	STD CONDITIONS:	1 ATMOS. & 70 DEG F
SERIAL NUMBER:	TYPICAL	GAS TEMPERATURE:	70 DEG F
FLOAT MATERIAL:	ST.ST.	PRESSURE IN TUBE:	0 PSIG
CERT FILE #:	E500WS		

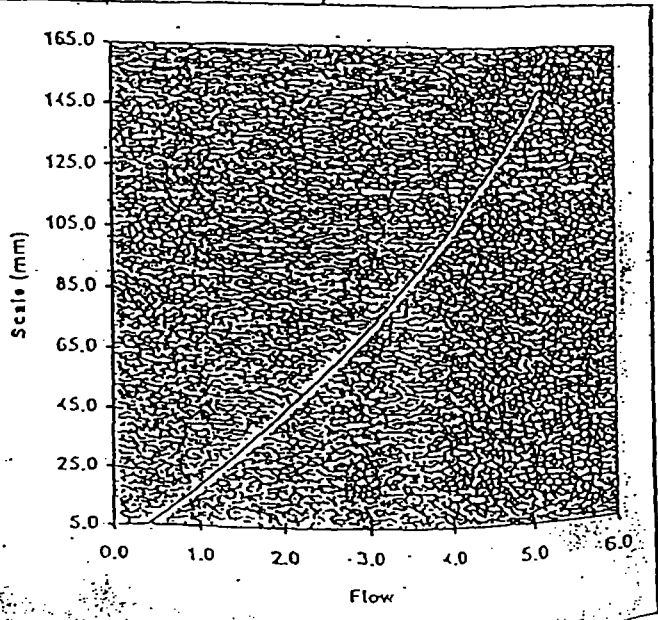
SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE
150.0	134.99	104.0	105.96	58.0	64.36	31.0	34.97
149.0	134.52	103.0	105.18	57.0	63.34	30.0	33.81
148.0	134.04	102.0	104.39	56.0	62.31	29.0	32.65
147.0	133.55	101.0	103.59	55.0	61.28	28.0	31.48
146.0	133.06	100.0	102.79	54.0	60.24	27.0	30.31
145.0	132.56	99.0	101.99	53.0	59.19	26.0	29.13
144.0	132.05	98.0	101.18	52.0	58.14	25.0	27.95
143.0	131.53	97.0	100.36	51.0	57.09	24.0	26.76
142.0	131.00	96.0	99.54	50.0	56.03	23.0	25.56
141.0	130.47	95.0	98.71	49.0	54.97	22.0	24.36
140.0	129.93	94.0	97.88	48.0	53.90	21.0	23.16
139.0	129.38	93.0	97.04	47.0	52.82	20.0	21.95
138.0	128.83	92.0	96.19	46.0	51.75	19.0	20.74
137.0	128.27	91.0	95.34	45.0	50.66	18.0	19.52
136.0	127.70	90.0	94.49	44.0	49.57	17.0	18.29
135.0	127.12	89.0	93.63	43.0	48.48	16.0	17.06
134.0	126.54	88.0	92.76	42.0	47.38	15.0	15.83
133.0	125.95	87.0	91.89	41.0	46.28	14.0	14.58
132.0	125.35	86.0	91.01	40.0	45.17	13.0	13.34
131.0	124.75	85.0	90.13	39.0	44.06	12.0	12.09
130.0	124.14	84.0	89.24	38.0	42.94	11.0	10.83
129.0	123.52	83.0	88.35	37.0	41.82	10.0	9.57
128.0	122.90	82.0	87.45	36.0	40.69	9.0	8.30
127.0	122.27	81.0	86.55	35.0	39.55	8.0	7.03
126.0	121.63	80.0	85.64	34.0	38.42	7.0	5.75
125.0	120.98	79.0	84.72	33.0	37.27	6.0	4.47
124.0	120.33	78.0	83.81	32.0	36.12	5.0	3.18
123.0	119.67	77.0	82.88				
122.0	119.01	76.0	81.95				
121.0	118.34	75.0	81.02				
120.0	117.66	74.0	80.08				
119.0	116.97	73.0	79.13				
118.0	116.28	72.0	78.18				
117.0	115.59	71.0	77.23				
116.0	114.88	70.0	76.27				
115.0	114.17	69.0	75.31				
114.0	113.46	68.0	74.34				
113.0	112.73	67.0	73.36				
112.0	112.01	66.0	72.38				
111.0	111.27	65.0	71.40				
110.0	110.53	64.0	70.41				
109.0	109.78	63.0	69.41				
108.0	109.03	62.0	68.41				
107.0	108.27	61.0	67.41				
106.0	107.51	60.0	66.40				
105.0	106.74	59.0	65.38				




**Matheson<sup>®</sup>**  
 Gas Products  
 GAS EQUIPMENT TECHNOLOGY GROUP

UNITS:	SLPM AIR	DATE:	2/27/97
TUBE NUMBER:	E503 (603)	STD CONDITIONS:	1 ATMOS. & 70 DEG F
SERIAL NUMBER:	TYPICAL	GAS TEMPERATURE:	70 DEG F
FLOAT MATERIAL:	ST.ST	PRESSURE IN TUBE:	0 PSIG
CERT FILE #:	E500S		

SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE
150.0	5.08	104.0	3.96	58.0	2.50	31.0	1.50
149.0	5.07	103.0	3.93	57.0	2.46	30.0	1.46
148.0	5.05	102.0	3.90	56.0	2.43	29.0	1.42
147.0	5.03	101.0	3.87	55.0	2.39	28.0	1.38
146.0	5.01	100.0	3.84	54.0	2.36	27.0	1.34
145.0	5.00	99.0	3.82	53.0	2.32	26.0	1.31
144.0	4.98	98.0	3.79	52.0	2.28	25.0	1.27
143.0	4.96	97.0	3.76	51.0	2.25	24.0	1.23
142.0	4.94	96.0	3.73	50.0	2.21	23.0	1.19
141.0	4.91	95.0	3.70	49.0	2.17	22.0	1.15
140.0	4.89	94.0	3.67	48.0	2.14	21.0	1.11
139.0	4.87	93.0	3.64	47.0	2.10	20.0	1.07
138.0	4.85	92.0	3.61	46.0	2.06	19.0	1.03
137.0	4.82	91.0	3.58	45.0	2.03	18.0	0.98
136.0	4.80	90.0	3.56	44.0	1.99	17.0	0.94
135.0	4.77	89.0	3.53	43.0	1.95	16.0	0.90
134.0	4.75	88.0	3.50	42.0	1.91	15.0	0.86
133.0	4.73	87.0	3.47	41.0	1.88	14.0	0.81
132.0	4.70	86.0	3.43	40.0	1.84	13.0	0.77
131.0	4.68	85.0	3.40	39.0	1.80	12.0	0.72
130.0	4.65	84.0	3.37	38.0	1.76	11.0	0.68
129.0	4.62	83.0	3.34	37.0	1.73	10.0	0.63
128.0	4.60	82.0	3.31	36.0	1.69	9.0	0.58
127.0	4.57	81.0	3.28	35.0	1.65	8.0	0.53
126.0	4.55	80.0	3.25	34.0	1.61	7.0	0.48
125.0	4.52	79.0	3.22	33.0	1.57	6.0	0.43
124.0	4.49	78.0	3.18	32.0	1.54	5.0	0.38
123.0	4.47	77.0	3.15				
122.0	4.44	76.0	3.12				
121.0	4.42	75.0	3.09				
120.0	4.39	74.0	3.05				
119.0	4.36	73.0	3.02				
118.0	4.34	72.0	2.99				
117.0	4.31	71.0	2.95				
116.0	4.28	70.0	2.92				
115.0	4.26	69.0	2.89				
114.0	4.23	68.0	2.85				
113.0	4.20	67.0	2.82				
112.0	4.17	66.0	2.78				
111.0	4.15	65.0	2.75				
110.0	4.12	64.0	2.71				
109.0	4.09	63.0	2.68				
108.0	4.07	62.0	2.64				
107.0	4.04	61.0	2.61				
106.0	4.01	60.0	2.57				
105.0	3.98	59.0	2.54				





## GAS EQUIPMENT TECHNOLOGY GROUP

Lee Shroder  
 U of Ca - San Diego  
 Fax: 858-534-7697

UNITS : SCCM AIR  
 TUBE NUMBER : E01(E200) TYPICAL  
 FLOAT NUMBER : 002  
 FLOAT MATERIAL: 316 ST. STL.

DATE : 07-18-1991  
 STD CONDITIONS : 1 ATMOS. & 70 DEG F  
 GAS TEMPERATURE : 70 DEG F  
 DELIVERY PRESSURE : 0 PSIG

SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE
150.0	271.520	110.0	150.492	70.0	69.388	30.0	23.225
149.0	267.962	109.0	148.001	69.0	67.827	29.0	22.481
148.0	264.433	108.0	145.534	68.0	66.288	28.0	21.757
147.0	260.932	107.0	143.092	67.0	64.770	27.0	21.052
146.0	257.460	106.0	140.675	66.0	63.274	26.0	20.365
145.0	254.016	105.0	138.282	65.0	61.799	25.0	19.698
144.0	250.599	104.0	135.914	64.0	60.346	24.0	19.050
143.0	247.211	103.0	133.570	63.0	58.914	23.0	18.421
142.0	243.851	102.0	131.250	62.0	57.503	22.0	17.811
141.0	240.518	101.0	128.955	61.0	56.114	21.0	17.219
140.0	237.214	100.0	126.684	60.0	54.746	20.0	16.646
139.0	233.936	99.0	124.437	59.0	53.399	19.0	16.092
138.0	230.687	98.0	122.214	58.0	52.073	18.0	15.557
137.0	227.465	97.0	120.014	57.0	50.768	17.0	15.040
136.0	224.270	96.0	117.839	56.0	49.484	16.0	14.542
135.0	221.102	95.0	115.687	55.0	48.221	15.0	14.062
134.0	217.962	94.0	113.559	54.0	46.978	14.0	13.600
133.0	214.848	93.0	111.455	53.0	45.756	13.0	13.157
132.0	211.762	92.0	109.374	52.0	44.555	12.0	12.733
131.0	208.702	91.0	107.317	51.0	43.375	11.0	12.326
130.0	205.669	90.0	105.283	50.0	42.214	10.0	11.938
129.0	202.663	89.0	103.272	49.0	41.075	9.0	11.568
128.0	199.683	88.0	101.284	48.0	39.956	8.0	11.217
127.0	196.730	87.0	99.320	47.0	38.857	7.0	10.883
126.0	193.803	86.0	97.378	46.0	37.778	6.0	10.567
125.0	190.903	85.0	95.460	45.0	36.720	5.0	10.270
124.0	188.028	84.0	93.564	44.0	35.681		
123.0	185.180	83.0	91.692	43.0	34.663		
122.0	182.358	82.0	89.842	42.0	33.665		
121.0	179.562	81.0	88.014	41.0	32.686		
120.0	176.792	80.0	86.209	40.0	31.728		
119.0	174.047	79.0	84.427	39.0	30.789		
118.0	171.329	78.0	82.667	38.0	29.871		
117.0	168.636	77.0	80.930	37.0	28.971		
116.0	165.968	76.0	79.215	36.0	28.092		
115.0	163.326	75.0	77.522	35.0	27.232		
114.0	160.709	74.0	75.851	34.0	26.392		
113.0	158.117	73.0	74.202	33.0	25.571		
112.0	155.550	72.0	72.576	32.0	24.770		
111.0	153.009	71.0	70.971	31.0	23.987		



## GAS EQUIPMENT TECHNOLOGY GROUP

UNITS : SCCM AIR DATE : 08-30-1991  
 TUBE NUMBER : 601(E200) TYPICAL STD CONDITIONS : 1 ATMOS. & 70 DEG F  
 FLOAT NUMBER : 002 GAS TEMPERATURE : 70 DEG F  
 FLOAT MATERIAL: 316 ST. STL. PRESSURE IN TUBE : 20 PSIG

SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE
150.0	500.293	110.0	312.381	70.0	152.045	30.0	44.508
149.0	495.684	109.0	307.855	69.0	148.686	29.0	42.472
148.0	491.055	108.0	303.349	68.0	145.362	28.0	40.462
147.0	486.410	107.0	298.864	67.0	142.074	27.0	38.479
146.0	481.748	106.0	294.399	66.0	138.821	26.0	36.521
145.0	477.071	105.0	289.957	65.0	135.603	25.0	34.589
144.0	472.381	104.0	285.536	64.0	132.420	24.0	32.683
143.0	467.678	103.0	281.139	63.0	129.272	23.0	30.800
142.0	462.964	102.0	276.766	62.0	126.160	22.0	28.941
141.0	458.240	101.0	272.416	61.0	123.083	21.0	27.106
140.0	453.506	100.0	268.092	60.0	120.042	20.0	25.293
139.0	448.765	99.0	263.792	59.0	117.035	19.0	23.502
138.0	444.017	98.0	259.519	58.0	114.064	18.0	21.732
137.0	439.264	97.0	255.271	57.0	111.128	17.0	19.983
136.0	434.505	96.0	251.051	56.0	108.227	16.0	18.254
135.0	429.743	95.0	246.858	55.0	105.361	15.0	16.545
134.0	424.979	94.0	242.693	54.0	102.530	14.0	14.854
133.0	420.214	93.0	238.556	53.0	99.733	13.0	13.181
132.0	415.447	92.0	234.447	52.0	96.972	12.0	11.526
131.0	410.682	91.0	230.368	51.0	94.244	11.0	9.887
130.0	405.918	90.0	226.319	50.0	91.551	10.0	8.264
129.0	401.157	89.0	222.299	49.0	88.892	9.0	6.656
128.0	396.399	88.0	218.310	48.0	86.267	8.0	5.062
127.0	391.646	87.0	214.351	47.0	83.676	7.0	3.482
126.0	386.898	86.0	210.424	46.0	81.118	6.0	1.914
125.0	382.156	85.0	206.528	45.0	78.593	5.0	0.358
124.0	377.422	84.0	202.663	44.0	76.102		
123.0	372.696	83.0	198.831	43.0	73.643		
122.0	367.979	82.0	195.031	42.0	71.216		
121.0	363.272	81.0	191.264	41.0	68.822		
120.0	358.576	80.0	187.529	40.0	66.460		
119.0	353.891	79.0	183.828	39.0	64.129		
118.0	349.219	78.0	180.160	38.0	61.829		
117.0	344.559	77.0	176.526	37.0	59.560		
116.0	339.914	76.0	172.926	36.0	57.322		
115.0	335.284	75.0	169.359	35.0	55.113		
114.0	330.669	74.0	165.827	34.0	52.935		
113.0	326.071	73.0	162.330	33.0	50.785		
112.0	321.490	72.0	158.867	32.0	48.665		
111.0	316.926	71.0	155.438	31.0	46.572		



## GAS EQUIPMENT TECHNOLOGY GROUP

UNITS : SCCM AIR                      DATE : 10-08-1991  
 TUBE NUMBER : 601(E200) TYPICAL      STD CONDITIONS : 1 ATMOS. @70 DEG F  
 FLOAT NUMBER : 002                      GAS TEMPERATURE : 70 DEG F  
 FLOAT MATERIAL: 316 ST. STL.            PRESSURE IN TUBE : 50 PSIG

SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE
150.0	569.645	110.0	315.713	70.0	145.569	30.0	48.687
149.0	562.178	109.0	310.487	69.0	142.293	29.0	47.127
148.0	554.771	108.0	305.313	68.0	139.063	28.0	45.607
147.0	547.423	107.0	300.190	67.0	135.878	27.0	44.127
146.0	540.136	106.0	295.119	66.0	132.739	26.0	42.688
145.0	532.908	105.0	290.100	65.0	129.644	25.0	41.289
144.0	525.738	104.0	285.132	64.0	126.595	24.0	39.929
143.0	518.628	103.0	280.216	63.0	123.590	23.0	38.610
142.0	511.577	102.0	275.350	62.0	120.630	22.0	37.330
141.0	504.584	101.0	270.535	61.0	117.714	21.0	36.090
140.0	497.649	100.0	265.771	60.0	114.843	20.0	34.889
139.0	490.772	99.0	261.057	59.0	112.016	19.0	33.727
138.0	483.953	98.0	256.394	58.0	109.233	18.0	32.605
137.0	477.192	97.0	251.781	57.0	106.495	17.0	31.522
136.0	470.489	96.0	247.217	56.0	103.800	16.0	30.478
135.0	463.842	95.0	242.704	55.0	101.148	15.0	29.473
134.0	457.253	94.0	238.240	54.0	98.541	14.0	28.507
133.0	450.720	93.0	233.825	53.0	95.976	13.0	27.580
132.0	444.245	92.0	229.460	52.0	93.455	12.0	26.691
131.0	437.825	91.0	225.144	51.0	90.977	11.0	25.841
130.0	431.462	90.0	220.877	50.0	88.542	10.0	25.029
129.0	425.155	89.0	216.659	49.0	86.150	9.0	24.256
128.0	418.904	88.0	212.489	48.0	83.801	8.0	23.521
127.0	412.708	87.0	208.368	47.0	81.495	7.0	22.824
126.0	406.568	86.0	204.295	46.0	79.231	6.0	22.166
125.0	400.484	85.0	200.270	45.0	77.009	5.0	21.545
124.0	394.454	84.0	196.294	44.0	74.830		
123.0	388.479	83.0	192.365	43.0	72.692		
122.0	382.559	82.0	188.483	42.0	70.597		
121.0	376.693	81.0	184.650	41.0	68.544		
120.0	370.882	80.0	180.863	40.0	66.532		
119.0	365.125	79.0	177.124	39.0	64.562		
118.0	359.421	78.0	173.432	38.0	62.634		
117.0	353.772	77.0	169.787	37.0	60.747		
116.0	348.176	76.0	166.188	36.0	58.901		
115.0	342.633	75.0	162.636	35.0	57.096		
114.0	337.143	74.0	159.130	34.0	55.333		
113.0	331.707	73.0	155.671	33.0	53.610		
112.0	326.323	72.0	152.258	32.0	51.928		
111.0	320.992	71.0	148.891	31.0	50.287		



## GAS EQUIPMENT TECHNOLOGY GROUP

UNITS : SCCM AIR DATE : 08-30-1991  
 TUBE NUMBER : 601(E200) TYPICAL STD CONDITIONS : 1 ATMOS. & 70 DEG F  
 FLOAT NUMBER : 002 GAS TEMPERATURE : 70 DEG F  
 FLOAT MATERIAL: GLASS PRESSURE IN TUBE : 20 PSIG

SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE
150.0	225.042	110.0	123.107	70.0	56.747	30.0	17.925
149.0	221.955	109.0	121.062	69.0	55.460	29.0	17.282
148.0	218.898	108.0	119.039	68.0	54.189	28.0	16.656
147.0	215.872	107.0	117.037	67.0	52.936	27.0	16.046
146.0	212.877	106.0	115.056	66.0	51.699	26.0	15.453
145.0	209.911	105.0	113.097	65.0	50.478	25.0	14.875
144.0	206.975	104.0	111.159	64.0	49.274	24.0	14.314
143.0	204.069	103.0	109.242	63.0	48.087	23.0	13.770
142.0	201.192	102.0	107.345	62.0	46.916	22.0	13.242
141.0	198.344	101.0	105.469	61.0	45.761	21.0	12.730
140.0	195.525	100.0	103.613	60.0	44.623	20.0	12.235
139.0	192.734	99.0	101.778	59.0	43.500	19.0	11.756
138.0	189.972	98.0	99.962	58.0	42.395	18.0	11.295
137.0	187.237	97.0	98.167	57.0	41.305	17.0	10.849
136.0	184.530	96.0	96.391	56.0	40.231	16.0	10.421
135.0	181.851	95.0	94.635	55.0	39.174	15.0	10.010
134.0	179.198	94.0	92.898	54.0	38.132	14.0	9.616
133.0	176.573	93.0	91.181	53.0	37.107	13.0	9.238
132.0	173.974	92.0	89.483	52.0	36.098	12.0	8.878
131.0	171.402	91.0	87.804	51.0	35.105	11.0	8.535
130.0	168.856	90.0	86.144	50.0	34.127	10.0	8.209
129.0	166.337	89.0	84.502	49.0	33.166	9.0	7.901
128.0	163.842	88.0	82.880	48.0	32.220	8.0	7.610
127.0	161.374	87.0	81.276	47.0	31.291	7.0	7.337
126.0	158.931	86.0	79.690	46.0	30.377	6.0	7.081
125.0	156.512	85.0	78.123	45.0	29.480	5.0	6.843
124.0	154.119	84.0	76.574	44.0	28.598		
123.0	151.751	83.0	75.044	43.0	27.732		
122.0	149.406	82.0	73.531	42.0	26.882		
121.0	147.086	81.0	72.036	41.0	26.048		
120.0	144.790	80.0	70.559	40.0	25.229		
119.0	142.518	79.0	69.099	39.0	24.427		
118.0	140.270	78.0	67.658	38.0	23.641		
117.0	138.044	77.0	66.234	37.0	22.870		
116.0	135.842	76.0	64.827	36.0	22.116		
115.0	133.663	75.0	63.437	35.0	21.377		
114.0	131.507	74.0	62.065	34.0	20.655		
113.0	129.374	73.0	60.710	33.0	19.948		
112.0	127.263	72.0	59.372	32.0	19.257		
111.0	125.174	71.0	58.051	31.0	18.583		





GAS EQUIPMENT TECHNOLOGY GROUP

UNITS : SCCM AIR DATE : 07-19-1991
TUBE NUMBER : 602(E300) TYPICAL STD CONDITIONS : 1 ATMOS. &70 DEG F
FLOAT NUMBER : 002 GAS TEMPERATURE : 70 DEG F
FLOAT MATERIAL: 316 ST. STL. DELIVERY PRESSURE : 0 PSIG

Table with 8 columns: SCALE READING, FLOW RATE, SCALE READING, FLOW RATE, SCALE READING, FLOW RATE, SCALE READING, FLOW RATE. It contains 30 rows of data points.



GAS EQUIPMENT TECHNOLOGY GROUP

UNITS : SLPM OXYGEN DATE : 08-07-1991
TUBE NUMBER : 603(E500) TYPICAL STD CONDITIONS : 1 ATMOS. & 70 DEG F
FLOAT NUMBER : 002 GAS TEMPERATURE : 70 DEG F
FLOAT MATERIAL: 316 ST. STL. DELIVERY PRESSURE : 0 PSIG

Table with 8 columns: SCALE READING, FLOW RATE, SCALE READING, FLOW RATE, SCALE READING, FLOW RATE, SCALE READING, FLOW RATE. It contains 20 rows of data points ranging from 150.0 to 111.0 on the left and 70.0 to 31.0 on the right.



GAS EQUIPMENT TECHNOLOGY GROUP

UNITS : SLPM OXYGEN  
TUBE NUMBER : 603(E500) TYPICAL  
FLOAT NUMBER : 002  
FLOAT MATERIAL: GLASS

DATE : 08-08-1991  
STD CONDITIONS : 1 ATMOS. & 70 DEG F  
GAS TEMPERATURE : 70 DEG F  
DELIVERY PRESSURE : 0 PSIG

SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE
150.0	2.3413	110.0	1.9125	70.0	1.3293	30.0	0.6049
149.0	2.3328	109.0	1.8997	69.0	1.3129	29.0	0.5849
148.0	2.3241	108.0	1.8868	68.0	1.2964	28.0	0.5648
147.0	2.3153	107.0	1.8738	67.0	1.2799	27.0	0.5446
146.0	2.3064	106.0	1.8607	66.0	1.2632	26.0	0.5243
145.0	2.2973	105.0	1.8475	65.0	1.2465	25.0	0.5039
144.0	2.2882	104.0	1.8342	64.0	1.2297	24.0	0.4834
143.0	2.2789	103.0	1.8208	63.0	1.2128	23.0	0.4628
142.0	2.2695	102.0	1.8074	62.0	1.1958	22.0	0.4421
141.0	2.2601	101.0	1.7938	61.0	1.1787	21.0	0.4213
140.0	2.2504	100.0	1.7802	60.0	1.1616	20.0	0.4004
139.0	2.2407	99.0	1.7664	59.0	1.1443	19.0	0.3794
138.0	2.2309	98.0	1.7526	58.0	1.1270	18.0	0.3583
137.0	2.2209	97.0	1.7387	57.0	1.1095	17.0	0.3371
136.0	2.2109	96.0	1.7246	56.0	1.0920	16.0	0.3158
135.0	2.2007	95.0	1.7105	55.0	1.0744	15.0	0.2944
134.0	2.1904	94.0	1.6963	54.0	1.0567	14.0	0.2729
133.0	2.1800	93.0	1.6821	53.0	1.0389	13.0	0.2513
132.0	2.1695	92.0	1.6677	52.0	1.0211	12.0	0.2295
131.0	2.1589	91.0	1.6532	51.0	1.0031	11.0	0.2077
130.0	2.1482	90.0	1.6387	50.0	0.9851	10.0	0.1857
129.0	2.1374	89.0	1.6240	49.0	0.9669	9.0	0.1637
128.0	2.1265	88.0	1.6093	48.0	0.9487	8.0	0.1415
127.0	2.1154	87.0	1.5945	47.0	0.9304	7.0	0.1192
126.0	2.1043	86.0	1.5796	46.0	0.9120	6.0	0.0968
125.0	2.0931	85.0	1.5646	45.0	0.8935	5.0	0.0743
124.0	2.0817	84.0	1.5495	44.0	0.8749		
123.0	2.0703	83.0	1.5344	43.0	0.8562		
122.0	2.0588	82.0	1.5191	42.0	0.8374		
121.0	2.0471	81.0	1.5038	41.0	0.8186		
120.0	2.0354	80.0	1.4883	40.0	0.7996		
119.0	2.0235	79.0	1.4728	39.0	0.7806		
118.0	2.0116	78.0	1.4572	38.0	0.7614		
117.0	1.9995	77.0	1.4415	37.0	0.7422		
116.0	1.9874	76.0	1.4257	36.0	0.7229		
115.0	1.9752	75.0	1.4099	35.0	0.7034		
114.0	1.9628	74.0	1.3939	34.0	0.6839		
113.0	1.9504	73.0	1.3779	33.0	0.6643		
112.0	1.9379	72.0	1.3618	32.0	0.6446		
111.0	1.9252	71.0	1.3456	31.0	0.6248		



GAS EQUIPMENT TECHNOLOGY GROUP

UNITS : SLPM NITROUS OXIDE DATE : 12-04-1992  
TUBE NUMBER : 603 (E500) STD CONDITIONS : 1 ATMOS. & 70 DEG F  
SERIAL NUMBER : TYPICAL GAS TEMPERATURE : 70 DEG F  
FLOAT MATERIAL: 316 ST. STL. PRESSURE IN TUBE : 0 PSIG

SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE
150.0	4.0239	110.0	3.3065	70.0	2.2826	30.0	1.0677
149.0	4.0130	109.0	3.2833	69.0	2.2550	29.0	1.0333
148.0	4.0016	108.0	3.2600	68.0	2.2272	28.0	0.9986
147.0	3.9898	107.0	3.2365	67.0	2.1993	27.0	0.9635
146.0	3.9775	106.0	3.2129	66.0	2.1713	26.0	0.9282
145.0	3.9648	105.0	3.1891	65.0	2.1432	25.0	0.8926
144.0	3.9516	104.0	3.1651	64.0	2.1150	24.0	0.8566
143.0	3.9380	103.0	3.1410	63.0	2.0867	23.0	0.8203
142.0	3.9240	102.0	3.1168	62.0	2.0583	22.0	0.7837
141.0	3.9095	101.0	3.0924	61.0	2.0298	21.0	0.7468
140.0	3.8947	100.0	3.0679	60.0	2.0011	20.0	0.7095
139.0	3.8795	99.0	3.0433	59.0	1.9724	19.0	0.6718
138.0	3.8638	98.0	3.0185	58.0	1.9435	18.0	0.6338
137.0	3.8479	97.0	2.9936	57.0	1.9145	17.0	0.5953
136.0	3.8315	96.0	2.9686	56.0	1.8853	16.0	0.5565
135.0	3.8148	95.0	2.9435	55.0	1.8560	15.0	0.5173
134.0	3.7978	94.0	2.9183	54.0	1.8266	14.0	0.4777
133.0	3.7804	93.0	2.8929	53.0	1.7971	13.0	0.4377
132.0	3.7627	92.0	2.8675	52.0	1.7674	12.0	0.3972
131.0	3.7447	91.0	2.8419	51.0	1.7375	11.0	0.3563
130.0	3.7264	90.0	2.8163	50.0	1.7075	10.0	0.3150
129.0	3.7078	89.0	2.7905	49.0	1.6774	9.0	0.2731
128.0	3.6889	88.0	2.7646	48.0	1.6471	8.0	0.2309
127.0	3.6697	87.0	2.7387	47.0	1.6166	7.0	0.1881
126.0	3.6502	86.0	2.7126	46.0	1.5859	6.0	0.1448
125.0	3.6305	85.0	2.6864	45.0	1.5551	5.0	0.1011
124.0	3.6104	84.0	2.6602	44.0	1.5241		
123.0	3.5902	83.0	2.6338	43.0	1.4929		
122.0	3.5697	82.0	2.6074	42.0	1.4615		
121.0	3.5489	81.0	2.5808	41.0	1.4299		
120.0	3.5279	80.0	2.5542	40.0	1.3981		
119.0	3.5067	79.0	2.5274	39.0	1.3662		
118.0	3.4853	78.0	2.5006	38.0	1.3339		
117.0	3.4636	77.0	2.4737	37.0	1.3015		
116.0	3.4418	76.0	2.4467	36.0	1.2689		
115.0	3.4197	75.0	2.4196	35.0	1.2360		
114.0	3.3974	74.0	2.3924	34.0	1.2028		
113.0	3.3750	73.0	2.3651	33.0	1.1694		
112.0	3.3523	72.0	2.3377	32.0	1.1358		
111.0	3.3295	71.0	2.3102	31.0	1.1019		



GAS EQUIPMENT TECHNOLOGY GROUP

UNITS : SLPM NITROUS OXIDE DATE : 08-01-71  
TUBE NUMBER : 603 (E500) STD CONDITIONS : 1 ATMOS. & 70 DEG F  
SERIAL NUMBER : TYPICAL GAS TEMPERATURE : 70 DEG F  
FLOAT MATERIAL: GLASS PRESSURE IN TUBE : 0 PSIG

E501N1OX.DAT

SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE
150.0	2.1203	110.0	1.6600	70.0	1.1205	30.0	0.4913
149.0	2.1096	109.0	1.6476	69.0	1.1059	29.0	0.4743
148.0	2.0989	108.0	1.6350	68.0	1.0913	28.0	0.4573
147.0	2.0882	107.0	1.6225	67.0	1.0766	27.0	0.4403
146.0	2.0774	106.0	1.6099	66.0	1.0618	26.0	0.4231
145.0	2.0666	105.0	1.5972	65.0	1.0470	25.0	0.4060
144.0	2.0558	104.0	1.5845	64.0	1.0321	24.0	0.3887
143.0	2.0449	103.0	1.5717	63.0	1.0171	23.0	0.3714
142.0	2.0339	102.0	1.5589	62.0	1.0021	22.0	0.3540
141.0	2.0230	101.0	1.5460	61.0	0.9871	21.0	0.3366
140.0	2.0119	100.0	1.5331	60.0	0.9720	20.0	0.3191
139.0	2.0009	99.0	1.5201	59.0	0.9568	19.0	0.3015
138.0	1.9898	98.0	1.5071	58.0	0.9416	18.0	0.2839
137.0	1.9786	97.0	1.4940	57.0	0.9263	17.0	0.2662
136.0	1.9674	96.0	1.4808	56.0	0.9109	16.0	0.2485
135.0	1.9562	95.0	1.4677	55.0	0.8955	15.0	0.2307
134.0	1.9449	94.0	1.4544	54.0	0.8801	14.0	0.2128
133.0	1.9335	93.0	1.4411	53.0	0.8645	13.0	0.1949
132.0	1.9222	92.0	1.4278	52.0	0.8490	12.0	0.1769
131.0	1.9107	91.0	1.4144	51.0	0.8333	11.0	0.1589
130.0	1.8993	90.0	1.4009	50.0	0.8176	10.0	0.1408
129.0	1.8878	89.0	1.3874	49.0	0.8019	9.0	0.1226
128.0	1.8762	88.0	1.3739	48.0	0.7861	8.0	0.1044
127.0	1.8646	87.0	1.3603	47.0	0.7702	7.0	0.0861
126.0	1.8529	86.0	1.3466	46.0	0.7543	6.0	0.0677
125.0	1.8412	85.0	1.3329	45.0	0.7383	5.0	0.0493
124.0	1.8295	84.0	1.3191	44.0	0.7222		
123.0	1.8177	83.0	1.3053	43.0	0.7061		
122.0	1.8059	82.0	1.2914	42.0	0.6900		
121.0	1.7940	81.0	1.2775	41.0	0.6737		
120.0	1.7820	80.0	1.2635	40.0	0.6574		
119.0	1.7701	79.0	1.2494	39.0	0.6411		
118.0	1.7580	78.0	1.2353	38.0	0.6247		
117.0	1.7459	77.0	1.2212	37.0	0.6082		
116.0	1.7338	76.0	1.2070	36.0	0.5917		
115.0	1.7216	75.0	1.1927	35.0	0.5751		
114.0	1.7094	74.0	1.1784	34.0	0.5585		
113.0	1.6972	73.0	1.1640	33.0	0.5418		
112.0	1.6848	72.0	1.1496	32.0	0.5250		
111.0	1.6725	71.0	1.1351	31.0	0.5082		



GAS EQUIPMENT TECHNOLOGY GROUP

*2.2 pm → 2000 cc/m*

UNITS : SLPM AIR DATE : 07-25-1991  
TUBE NUMBER : 603(E500) TYPICAL STD CONDITIONS : 1 ATMOS. & 70 DEG F  
FLOAT NUMBER : 002 GAS TEMPERATURE : 70 DEG F  
FLOAT MATERIAL: GLASS DELIVERY PRESSURE : 0 PSIG

SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE	SCALE READING	FLOW RATE
150.0	2.4109	110.0	1.9193	70.0	1.3104	30.0	0.6018
149.0	2.4012	109.0	1.9051	69.0	1.2942	29.0	0.5818
148.0	2.3914	108.0	1.8908	68.0	1.2779	28.0	0.5617
147.0	2.3814	107.0	1.8765	67.0	1.2616	27.0	0.5413
146.0	2.3712	106.0	1.8620	66.0	1.2452	26.0	0.5209
145.0	2.3609	105.0	1.8476	65.0	1.2288	25.0	0.5002
144.0	2.3504	104.0	1.8330	64.0	1.2123	24.0	0.4794
143.0	2.3397	103.0	1.8184	63.0	1.1958	23.0	0.4583
142.0	2.3288	102.0	1.8038	62.0	1.1792	22.0	0.4371
141.0	2.3179	101.0	1.7891	61.0	1.1625	21.0	0.4158
140.0	2.3067	100.0	1.7743	60.0	1.1458	20.0	0.3942
139.0	2.2954	99.0	1.7595	59.0	1.1290	19.0	0.3724
138.0	2.2840	98.0	1.7447	58.0	1.1121	18.0	0.3505
137.0	2.2724	97.0	1.7298	57.0	1.0952	17.0	0.3283
136.0	2.2607	96.0	1.7149	56.0	1.0782	16.0	0.3059
135.0	2.2489	95.0	1.6999	55.0	1.0611	15.0	0.2833
134.0	2.2370	94.0	1.6848	54.0	1.0439	14.0	0.2605
133.0	2.2249	93.0	1.6697	53.0	1.0267	13.0	0.2374
132.0	2.2127	92.0	1.6546	52.0	1.0093	12.0	0.2141
131.0	2.2003	91.0	1.6394	51.0	0.9919	11.0	0.1906
130.0	2.1879	90.0	1.6242	50.0	0.9744	10.0	0.1669
129.0	2.1754	89.0	1.6089	49.0	0.9568	9.0	0.1429
128.0	2.1627	88.0	1.5936	48.0	0.9391	8.0	0.1186
127.0	2.1499	87.0	1.5783	47.0	0.9214	7.0	0.0941
126.0	2.1371	86.0	1.5629	46.0	0.9035	6.0	0.0693
125.0	2.1241	85.0	1.5474	45.0	0.8855	5.0	0.0443
124.0	2.1110	84.0	1.5320	44.0	0.8674		
123.0	2.0979	83.0	1.5164	43.0	0.8493		
122.0	2.0846	82.0	1.5009	42.0	0.8310		
121.0	2.0713	81.0	1.4852	41.0	0.8126		
120.0	2.0579	80.0	1.4696	40.0	0.7940		
119.0	2.0444	79.0	1.4539	39.0	0.7754		
118.0	2.0308	78.0	1.4381	38.0	0.7567		
117.0	2.0171	77.0	1.4223	37.0	0.7378		
116.0	2.0034	76.0	1.4065	36.0	0.7188		
115.0	1.9895	75.0	1.3906	35.0	0.6996		
114.0	1.9756	74.0	1.3746	34.0	0.6804		
113.0	1.9617	73.0	1.3586	33.0	0.6609		
112.0	1.9476	72.0	1.3426	32.0	0.6414		
111.0	1.9335	71.0	1.3265	31.0	0.6217		



GAS EQUIPMENT TECHNOLOGY GROUP

UNITS : SLPM AIR DATE : 07-25-1991
TUBE NUMBER : 603(E500) TYPICAL STD CONDITIONS : 1 ATMOS. & 70 DEG F
FLOAT NUMBER : 002 GAS TEMPERATURE : 70 DEG F
FLOAT MATERIAL: 316 ST. STL. DELIVERY PRESSURE : 0 PSIG

Table with 8 columns: SCALE READING, FLOW RATE, SCALE READING, FLOW RATE, SCALE READING, FLOW RATE, SCALE READING, FLOW RATE. Rows range from 150.0 to 111.0.



GAS EQUIPMENT TECHNOLOGY GROUP

UNITS : SCCM WATER DATE : 07-25-1991
TUBE NUMBER : 603(ES00) TYPICAL STD CONDITIONS : 1 ATMOS. & 70 DEG F
FLOAT NUMBER : 002 GAS TEMPERATURE : 70 DEG F
FLOAT MATERIAL: 315 ST. STL. DELIVERY PRESSURE : 0 PSIG

Table with 8 columns: SCALE READING, FLOW RATE, SCALE READING, FLOW RATE, SCALE READING, FLOW RATE, SCALE READING, FLOW RATE. It contains 40 rows of data points.



1546

31.00

#2

0500

#1

2200





GAS EQUIPMENT TECHNOLOGY GROUP

UNITS : SCCM WATER DATE : 07-25-1991
TUBE NUMBER : 603(ESCO) TYPICAL STD CONDITIONS : 1 ATMOS. & 70 DEG F
FLOAT NUMBER : 002 GAS TEMPERATURE : 70 DEG F
FLOAT MATERIAL: GLASS DELIVERY PRESSEURE : 0 PSIG

Table with 10 columns: SCALE READING, FLOW RATE, SCALE READING, FLOW RATE, SCALE READING, FLOW RATE, SCALE READING, FLOW RATE. Contains 30 rows of data points.

## RECOMMENDED TORQUE SCREWDRIVER

Utica Model TS-35 with a 5/32" shallow groove hex bit. Range of 0-36 in-lb.

## HOW TO OPERATE (APPLIES TO TS-35 MODEL ONLY)

To set any torque pull the lock collar toward the handle and turn the adjusting knob to the desired setting. Torque setting is the sum of readings of the major scale and the minor scale. Release the lock collar.

The 5/32" hex bit fits the compression screw located at one end of the meter. Turn torque screwdriver clockwise until it clicks. This will indicate that the desired torque setting has been attained.

## NOTE:

Do not overtighten compression screw. Damage to seals and glass tube could occur. Leaks could develop due to undertightening the compression screw. If this occurs, follow correct procedure and use the proper setting given in torque specification table.

## TORQUE SPECIFICATION TABLE

<u>SEAL TYPE</u>	<u>TUBE TYPE</u>	<u>TORQUE (IN-LB)</u>	<u>MAXIMUM (IN-LB)</u>	<u>MINIMUM (IN-LB)</u>
Viton	ALL	18	20	16
Buna	ALL	16	18	14
EPR	ALL	10	12	8
Teflon	ALL	24	26	22

After flowmeter has been set to proper torque specifications, follow Matheson Instruments installation and start up instructions for FM1000 and FM1050.

## WARNING:

Failure to follow these instructions will void the warranty.

**GENERAL**

MATHESON FLOWMETERS COMBINE CONSTRUCTION AND PERFORMANCE FEATURES ESSENTIAL TO ACCURATE LOW FLOW MEASUREMENT. THIS INFORMATION IS INTENDED AS A GUIDE TO EFFICIENT USE; CAREFUL COMPLIANCE SHOULD RESULT IN LONG AND USEFUL SERVICE.

**INSTALLATION**

1. Immediately after unpacking, inspect unit for any damage incurred during shipment. Follow instructions on "Damage or Shortage" slip in packing container.
2. Before installation, remove dust caps from connection fittings; if unit is supplied with an integral valve be sure valve is open.
3. **CHECK FOR FREE MOVEMENT OF FLOAT.** Place meter horizontally on a flat surface with ball float(s) at maximum flow end of tube (outlet). Incline this end of meter approximately 10°. The float(s) should descend at a constant rate. As the float(s) approach the zero reference mark, they may slow down or hesitate. This is due to the close fit between the float and the tube. Occasionally, foreign particles prevent the continuous motion of the float. Repeat the above operation several times. If float sticks, see "TUBE CLEANING PROCEDURE" below.
4. A 25 micron filter is recommended immediately upstream of meters where dirt can interfere with operation.

**MOUNTING**

1. The meter is mounted in a vertical position, the inlet (lowest end of scale reading) at the bottom. Attitude of more than 5 degrees from vertical will affect the accuracy of the meter. Panel mounted meters should be installed in position prior to connection to process piping. General good piping practice should be observed to prevent trapped fluid up or down stream of the meters. Connectors (referred herein as adapters) on the meter are supplied with wrench flats which must be held firmly when threading mating connections. Paste sealants are generally preferred. However, applications which are sensitive to contamination and require inert sealants, Teflon tape is recommended.  
NOTE: Care must be taken to avoid shredding of Teflon tape which can foul meter operation.
2. Leak test final joints prior to operation. Leaks are often cause of misleading flow indication.

**OPERATION**

1. **START-UP CAUTION.** Avoid sudden pressure surges. The impact of the float at the top of the tube can damage the meter if exposed directly to full line pressure. Avoid shock by closing inlet valve before start-up. Introduce pressure by slowly opening valve.
2. **FLOW READING** Flow indication is read at the center of ball floats. Units of flow (SCCM, SCFH et cetera) are noted on the side of tube. Tubes with millimeter, percent of maximum flow or linear scales require a corresponding calibration curve to apply to the fluid metered.

**1. DISASSEMBLY**

- A. A 5/32" hex wrench fits the recess in seal screw located at one end of the meter. Turn the hex wrench counter-clockwise until the compression plug is flush with the inside surface of the end fitting.  
NOTE: If meter has no tube enclosure, tube must be held to prevent it from falling from meter frame.
- B. Remove Tube Cube from frame by sliding it forward.
- C. Remove tube from cube.
  1. Remove center seals from Tube Cube and inspect for damage. Flowmeter tube can be easily removed from Tube Cube.

NOTE: UNDER NORMAL CONDITIONS, NO FURTHER DISASSEMBLY SHOULD BE NECESSARY FOR MAINTENANCE.

2. Clean tube assembly (see cleaning of parts) and reassemble into Tube Cube as above in reverse.
- D. If complete disassembly is necessary, continue as follows.
  1. Remove the retaining ring from the compression plug jack screw. (Do not over stretch the ring.)
  2. Push jack screw and compression plug through the end fitting.
  3. Complete disassembly of "O" rings and parts.
  4. Remove piping connectors (adapters).
  5. Clean all parts thoroughly.

6. Lubricate left hand thread on jack screw and reassemble.
7. Examine "O" rings for damage, lubricate and reassemble.
8. Replace connector into seal fitting.
9. Replace compression plug assembly so that the milled flat is toward the piping connector.
10. Replace retaining ring.  
NOTE: Occasionally it is necessary to turn jack screw clockwise to lift retaining ring groove sufficiently to insert retaining ring. Spread retaining ring only enough to fit over the jack screw.
11. Replace the Tube Cube into frame until the rear of the Tube Cube is flush with the rear surface of end fittings and tab stops.
12. Tighten compression plug.  
CAUTION: DO NOT OVER TIGHTEN.
13. Check meter for leaks.

**2. CLEANING PROCEDURE**

General cleanliness conditions are noted here. If oxygen cleaning procedure is required, contact the factory.

**A. TUBE AND FLOAT CLEANING**

1. Remove float stops; take care to avoid chipping inside edges of tube.
2. Flush inside of tube with solvent (without wax or inhibitors, i.e. Glycols). Isopropyl alcohol 90% is recommended. All parts should be ultrasonically cleaned if possible.

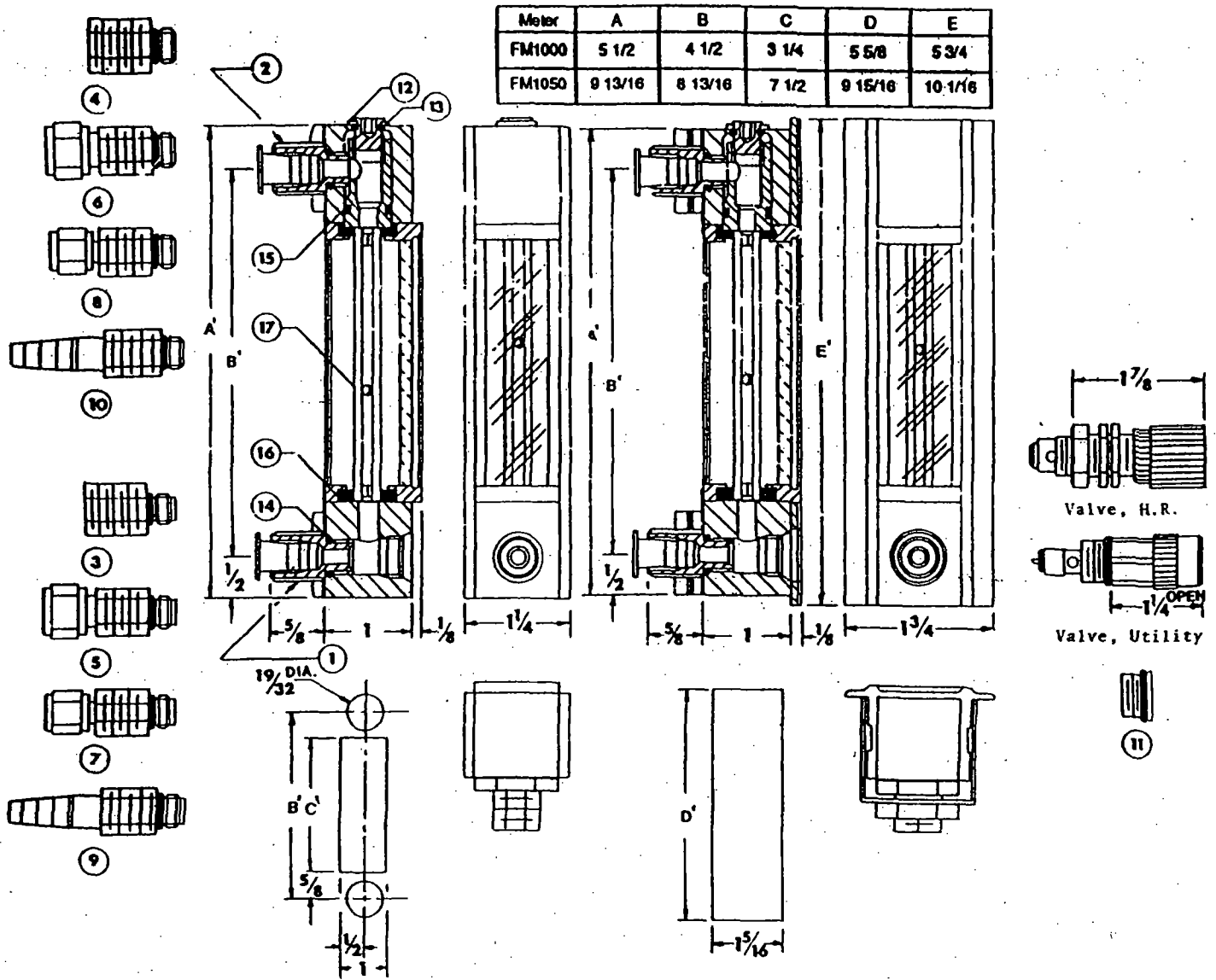
3. Blow dry and with a lint-free tissue, clean the inside of tube.
4. Clean float in the same manner. Floats should always be handled using tweezers with soft holding surfaces.
5. Clean and replace inlet float stop. Be sure it is firm in tube. Crimp fins of "Y" section if necessary.
6. Replace float with clean tweezers.
7. Replace outlet float stop.
8. Invert tube as described under installation #3.
9. If float sticks in tube, repeat cleaning procedure.
10. Reassemble Tube Cube in reverse to disassembly step taking care to position scale behind lens of Tube Cube.

**B. METAL PARTS CLEANING**

1. Ultrasonic immersion cleaning in trichloroethane 1,1,1 is preferred, however, any industrial solvent which does not attack the metal or influence the process performance is acceptable.

**C. O' RINGS AND SEALS**

1. Wash thoroughly with detergent.
2. Rinse and sponge with Trichloroethane 1,1,1. Sponge dry.
3. Lubricate and reapply to metal parts. Halocarbon grease is recommended.



The below listed parts are applicable to Matheson Instruments FM-1000 and FM-1050 meters described in the current catalog. Recommended spare parts are indicated by \*.

SYMBOL	PART NUMBER	QTY.	DESCRIPTION	LD. MARK	65 MM TUBES	150 MM TUBES
1	AAT-0202-___	1	1/8" NPT Valve Adapter	A	J750-J799	E100-E199
2	AAT-0201-___	1	1/8" NPT Seal Adapter			E200-E299
3	AAT-0204-___	1	1/4" NPT Valve Adapter			E300-E399
4	AAT-0203-___	1	1/4" NPT Seal Adapter	B	J000-J099	E500-E599
5	ATT-0202-___	1	1/4" Tubing Valve Adapter		J100-J199	E600-E699
6	ATT-0201-___	1	1/4" Tubing Seal Adapter		J200-J299	
7	ATT-0204-___	1	1/8" Tubing Valve Adapter		J700-J749	
8	ATT-0203-___	1	1/8" Tubing Seal Adapter	C	J400-J499	E400-E499
9	AHA-0202-___	1	Hose Valve Adapter		J800-J849	
10	AHA-0201-___	1	Hose Seal Adapter			
11	PLU-0101-___	1	Valve Plug with 'O' Ring			
12*	RNS-0905-SD	1	Retaining Ring			
13*	RNS-0009-___	1	'O' Ring Seal	*	J850-J899	PAC-0014-
14*	RNS-0011-___	2	'O' Ring Seal	**		
15*	RNS-0013-___	1	'O' Ring Seal			
16*	PAC-0010-___	2	Centering Seals I.D. Mark A	**	PAC-0013-	PAC-0013-
	PAC-0011-___	2	Centering Seals I.D. Mark B			
	PAC-0012-___	2	Centering Seals I.D. Mark C			
	PAC-0013-___	2	Centering Seals I.D. Mark *			
	PAC-0014-___	2	Centering Seals I.D. Mark **			
17	HCL-OXXX-XX	1	65MM Tube Assy w/Tube Cube			
	HCE-OXXX-XX	1	150MM Tube Assy w/Tube Cube			

\_\_\_ = Material Codes AA=Aluminum BA=Brass SA=316SS BU=Buna N VA=Viton EB=EPR  
 \*\* Includes PAL Nut and O ring  
 \*\*\* Specify Flow Rate Required