



OMG SERIES ORIFICE METERS

AIR & NATURAL GAS FLOW CAPACITY (SCFH)

100 – 200 Series Threaded / Weld-In
3/8" Through 1 1/2" Pipe Size

Pipe Size	OMG Model Number	Orifice Bore Size	Air				Natural Gas			
			0.5" w.c.ΔP	1" w.c.ΔP	3" w.c.ΔP	5" w.c.ΔP	0.5" w.c.ΔP	1" w.c.ΔP	3" w.c.ΔP	5" w.c.ΔP
3/8"	103	0.197	24	33	57	73	30	43	73	94
		0.232	33	46	80	103	42	60	103	132
		0.266	44	62	107	137	57	80	137	177
		0.307	61	85	147	189	78	110	189	244
		0.350	84	118	203	261	108	152	262	336
1/2"	105	0.232	32	45	78	100	41	58	100	129
		0.266	42	60	103	133	55	77	133	171
		0.317	61	86	149	191	79	111	192	247
		0.368	85	120	206	265	109	154	266	342
		0.423	118	166	286	368	152	214	369	475
3/4"	107/207	0.273	44	62	107	137	57	80	137	177
		0.324	62	87	151	194	80	113	194	250
		0.379	86	121	208	268	110	156	269	346
		0.437	116	163	282	363	149	211	363	468
		0.508	162	228	394	507	208	294	508	654
		0.585	221	322	555	714	294	415	716	921
1"	110/210	0.324	61	86	149	192	79	111	192	247
		0.384	86	122	210	270	111	157	271	349
		0.452	120	170	293	378	155	219	378	487
		0.523	163	230	398	513	211	297	513	661
		0.613	231	326	562	724	297	420	725	935
1 1/4"	112/212	0.715	331	467	806	1039	427	602	1040	1340
		0.456	120	170	294	379	155	219	379	488
		0.533	165	233	403	520	213	301	520	671
		0.630	233	330	570	734	301	425	735	947
		0.735	324	457	790	1018	418	590	1020	1314
		0.850	447	632	1092	1407	577	815	1409	1816
1 1/2"	115/215	0.986	641	905	1564	2015	827	1168	2018	2600
		0.533	164	232	400	516	212	299	517	666
		0.635	234	331	572	737	302	427	738	951
		0.744	325	459	794	1023	419	593	1024	1320
		0.867	450	636	1100	1417	581	821	1419	1829
		1.005	626	885	1530	1972	808	1142	1974	2544
		1.156	881	1245	2151	2771	1137	1607	2776	3576

Notes:

1. Orifice Bore Size Equals the Orifice Plate Inside Diameter. All Bore Sizes In Inches. Pipe Size Equals Schedule 40 Pipe.
2. Capacity Based On 60°F @ 1 psig Upstream Pressure. Natural Gas Specific Gravity At 0.60; Air Specific Gravity At 1.0.
3. 1__ Model Number Designates NPT Threaded Connection. 2__ Model Number Designates Weld-In Connection.
4. All Flow Rates At Standard Barometric Pressure: 29.92" Hg (Sea Level)
5. Design Capacity Is Based On 3" W.C.ΔP.

(OVER)

In accordance with Hauck's commitment to Total Quality Improvement, Hauck reserves the right to change the specifications of products without prior notice.

OMG SERIES ORIFICE METERS

AIR & NATURAL GAS FLOW CAPACITY (SCFH)

100 – 200 Series Threaded / Weld-In
2" Through 6" Pipe Size

Pipe Size	OMG Model Number	Orifice Bore Size	Air				Natural Gas			
			0.5" w.c.ΔP	1" w.c.ΔP	3" w.c.ΔP	5" w.c.ΔP	0.5" w.c.ΔP	1" w.c.ΔP	3" w.c.ΔP	5" w.c.ΔP
2"	120/220	0.640	238	335	577	743	307	432	744	958
		0.754	334	470	808	1039	430	605	1041	1339
		0.875	455	640	1100	1415	586	824	1417	1823
		1.034	650	914	1568	2016	836	1175	2019	2597
		1.203	911	1278	2192	2817	1170	1644	2822	3629
		1.375	1250	1753	3003	3858	1605	2253	3865	4967
2 ½"	125/225	0.754	330	465	800	1030	425	599	1031	1328
		0.890	464	652	1123	1445	597	840	1447	1863
		1.048	651	916	1576	2027	838	1180	2030	2613
		1.236	926	1302	2237	2877	1191	1676	2881	3707
		1.423	1266	1778	3053	3925	1628	2288	3932	5056
		1.625	1730	2428	4164	5353	2223	3123	5362	6894
3"	130/230	0.894	462	651	1122	1444	595	839	1446	1863
		1.056	649	914	1575	2027	836	1178	2030	2614
		1.252	923	1300	2237	2879	1188	1674	2884	3712
		1.452	1262	1776	3056	3932	1625	2287	2938	5068
		1.688	1753	2466	4238	5452	2256	3174	5460	7026
		1.963	2483	3489	5993	7706	3193	4491	7719	9929
4"	140/240	1.261	919	1295	2234	2877	1184	1670	2881	3710
		1.470	1258	1773	3056	3935	1621	2285	3941	5075
		1.722	1748	2462	4242	5461	2251	3173	5468	7041
		2.029	2479	3491	6009	7734	3192	4497	7746	9971
		2.345	3418	4810	8275	10648	4400	6195	10665	13725
		2.691	4731	6655	11440	14716	6088	8568	14741	18966
6"	160/260	1.735	1729	2439	4211	5425	2229	3146	5432	6998
		2.067	2470	3484	6011	7743	3184	4493	7754	9988
		2.437	3468	4890	8434	10863	4469	6305	10878	14011
		2.879	4924	6941	11965	15408	6344	8947	15429	19870
		3.314	6685	9420	16231	20897	8611	12140	20928	26946
		3.850	9423	13272	22856	29419	12135	17101	29466	37931
		4.388	13055	18381	31638	40712	16809	23679	40781	52484

Notes:

1. Orifice Bore Size Equals the Orifice Plate Inside Diameter. All Bore Sizes In Inches. Pipe Size Equals Schedule 40 Pipe.
2. Capacity Based On 60°F @ 1 psig Upstream Pressure. Natural Gas Specific Gravity At 0.60; Air Specific Gravity At 1.0.
3. 1__ Model Number Designates NPT Threaded Connection. 2__ Model Number Designates Weld-In Connection.
4. All Flow Rates At Standard Barometric Pressure: 29.92" Hg (Sea Level)
5. Design Capacity Is Based On 3" W.C.ΔP.



OMG SERIES ORIFICE METERS

AIR FLOW CAPACITY (SCFH)

2000 Series Weld – In
8" Through 16" Pipe Size

Pipe Size	OMG Model No.	Orifice Bore Size	Air Flow						
			0.5" w.c.ΔP	1" w.c.ΔP	3" w.c.ΔP	5" w.c.ΔP	6" w.c.ΔP	8" w.c.ΔP	10" w.c.ΔP
8"	2080	3.272	6247	8814	15209	19591	22441	24715	27586
		3.874	8921	12582	21702	27951	30588	35255	39348
		4.562	12772	18006	31044	39975	43744	50412	56260
		5.268	17891	25215	43452	55942	61210	70530	78701
		5.788	22737	32038	55193	71044	77729	89552	99915
10"	2100	4.095	9773	13791	23806	30670	33567	38695	43193
		4.944	14550	20527	35418	45623	49929	57551	64235
		5.770	20453	28846	49754	64078	70122	80817	90195
		6.514	27159	38295	66030	85025	93038	107215	119644
		7.241	35497	50041	86255	111049	121505	139999	156208
12"	2120	4.90	13975	19727	34061	43886	48033	55372	61810
		5.80	19934	28131	48557	62555	68462	78916	88087
		6.90	29179	41166	71029	91489	100122	115398	128795
		7.80	38839	54781	94492	121692	133166	153166	171265
		8.70	51176	72168	124444	160237	175332	202031	225432
14"	2140	5.70	18893	26673	46064	59354	64964	74892	83602
		6.80	27396	38668	66258	86009	94133	108511	121123
		8.00	39120	55202	95273	122728	134313	154813	172791
		9.10	52796	74486	128517	165526	181139	208761	232980
		10.10	68642	96825	167015	215075	235345	271197	302621
16"	2160	6.50	24550	34665	59874	77153	84446	97354	108678
		7.80	36040	50876	87849	113188	123881	142807	159408
		9.20	51776	73073	126139	162499	177841	204990	228799
		10.50	70505	99487	171686	221141	242004	278914	311276
		11.60	90725	127999	220835	284403	311213	358633	400196

Notes:

1. Orifice Bore Size Equals The Orifice Plate Inside Diameter. All Bore Sizes In Inches. Pipe Size Is A Nominal Pipe ID.
2. Capacity Based On 60°F @ 1 psig Upstream Pressure. Air Specific Gravity 1.0.
3. All Flow Rates At Standard Barometric Pressure 29.92" Hg (Sea Level)
4. Design Capacity Is Based On 3" W.C.ΔP.

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OMG SERIES ORIFICE METERS

AIR FLOW CAPACITY (SCFH)

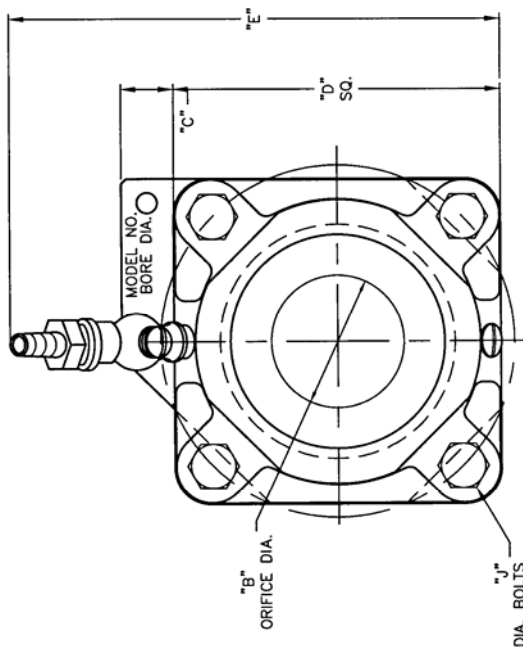
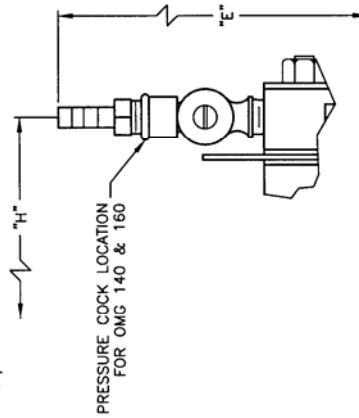
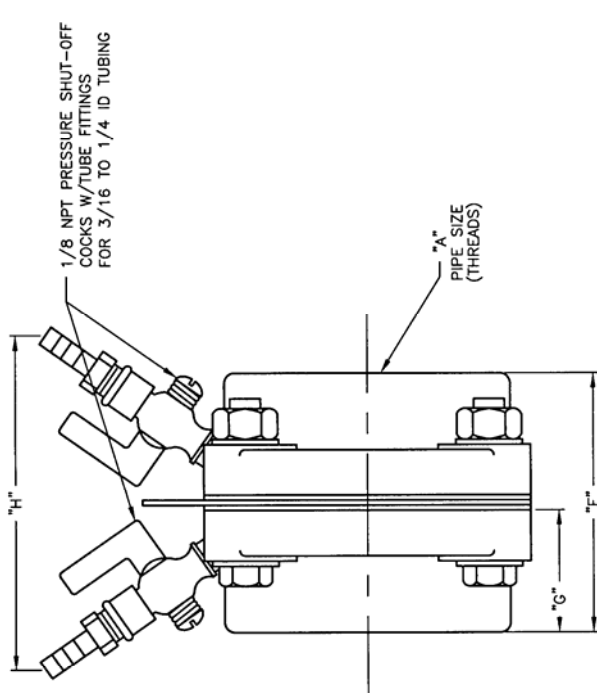
2000 Series Weld – In
18" Through 28" Pipe Size

Pipe Size	OMG Model No.	Orifice Bore Size	Air Flow						
			0.5" w.c.ΔP	1" w.c.ΔP	3" w.c.ΔP	5" w.c.ΔP	6" w.c.ΔP	8" w.c.ΔP	10" w.c.ΔP
18"	2180	7.3	30947	43701	75491	97282	106479	122757	137037
		8.7	44758	63191	109131	140616	153903	177420	198048
		10.3	64773	91430	157854	203368	222573	256557	286362
		11.8	88932	125508	216631	279049	305381	351967	392813
		13.0	113553	160233	276502	356120	389700	449095	501154
20"	2200	8.2	39066	55170	95311	122826	134439	154993	173025
		9.7	55639	78562	135691	174845	191370	220615	246268
		11.5	80801	114066	196959	253758	277725	320137	357332
		13.1	109495	154548	266793	343682	376119	433507	483823
		14.4	138946	196092	338437	435913	477025	549746	613486
22"	2220	9.0	47037	66433	114778	147916	161903	186659	208377
		10.7	67703	95604	165141	212800	232913	268510	299736
		12.6	96855	136743	236144	304256	332997	383856	428461
		14.3	129987	183492	316802	408124	446651	514815	574580
		15.9	169696	239514	413428	532523	582754	671602	749477
24"	2240	9.8	55748	78740	136051	175337	191918	221266	247012
		11.6	79477	112238	193892	249856	273475	315276	351944
		13.8	116254	164144	283487	365266	399773	460837	514391
		15.7	157028	221682	382772	493124	539680	622046	694264
		17.4	203519	287280	495930	638812	699076	805668	899096
28"	2280	11.4	75388	106490	184022	237168	259599	299302	334134
		13.6	109262	154318	266618	343589	376073	433565	483996
		16.0	155929	220195	380353	490102	536413	6183645	690239
		18.2	210302	296938	512805	660689	723079	833464	930249
		20.2	273180	385674	665913	857829	938775	1081954	1207453

Notes:

1. Orifice Bore Size Equals The Orifice Plate Inside Diameter. All Bore Sizes In Inches. Pipe Size Is A Nominal Pipe ID.
2. Capacity Based On 60°F @ 1 psig Upstream Pressure Air Specific Gravity 1.0.
3. All Flow Rates At Standard Barometric Pressure: 29.92" Hg (Sea Level).
4. Design Capacity Is Based On 3" W.C.ΔP.

**OMG SERIES ORIFICE METERS
100 SERIES THREADED DESIGN**



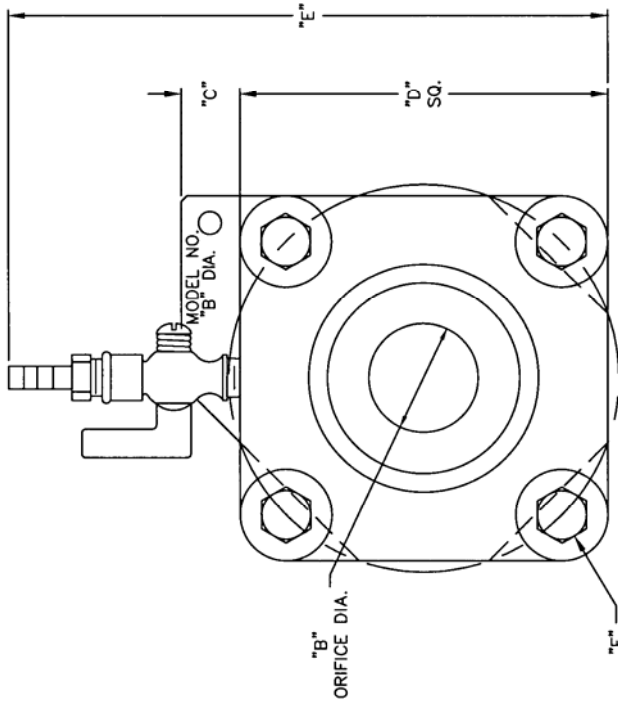
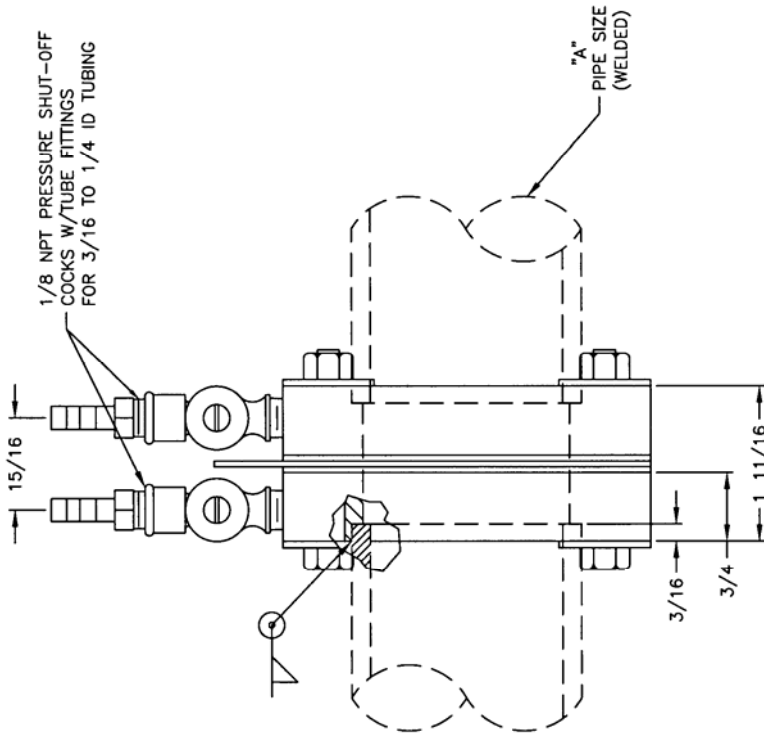
NOTE: 1. MIN. AND MAX. ORIFICE DIA. BASED ON BETA RATIO (ORIFICE DIA./SCH. 40 PIPE I.D.) RANGE OF 0.2-0.75; BETA RATIO OUTSIDE THIS RANGE IS NOT RECOMMENDED (CONSULT ENGINEERING).
2. USE ASME MFC-3M-1989 CORNER TAP EQUATIONS TO CALCULATE FLOW CAPACITIES.

MODEL NUMBER	PIPE SIZE "A" NPT	ORIFICE "B" DIA.		"C"	"D"	"E"	"F"	"G"	"H"	"J"
		MIN.	MAX.							
OMG 103	3/8	0.099	0.370	9/16	2 7/16	4	2 7/16	1 1/8	5	5/16
OMG 105	1/2	0.124	0.467	9/16	2 7/16	4	2 7/16	1 1/8	5	5/16
OMG 107	3/4	0.165	0.618	9/16	2 7/16	3 15/16	2 7/16	1 1/8	5	5/16
OMG 110	1	0.210	0.787	9/16	2 7/16	4	2 7/16	1 1/8	4 7/8	5/16
OMG 112	1 1/4	0.276	1.035	5/8	3 1/8	4 11/16	2 13/16	1 5/16	5 3/16	3/8
OMG 115	1 1/2	0.322	1.208	5/8	3 1/8	4 3/4	2 13/16	1 5/16	5 1/16	3/8
OMG 120	2	0.413	1.550	3/4	4	5 9/16	2 15/16	1 3/8	5 5/16	3/8
OMG 125	2 1/2	0.494	1.852	3/4	4	5 15/16	3 3/16	1 1/2	4 1/16	3/8
OMG 130	3	0.614	2.301	7/8	5 1/2	7 1/16	4 3/16	2	5 11/16	3/8
OMG 140	4	0.805	3.020	7/8	5 1/2	8	4 7/16	2 1/8	15/16	3/8
OMG 160	6	1.213	4.548	1	8	10 1/2	4 3/16	2	1 11/16	1/2

X1497
(NOT TO SCALE)

DIMENSIONS

OMG 200 SERIES WELD-IN DESIGN



- NOTES: 1. MIN. AND MAX. ORIFICE DIA. BASED ON BETA RATIO (ORIFICE DIA./SCH. 40 PIPE I.D.) RANGE OF 0.2-0.75.; BETA RATIO OUTSIDE THIS RANGE IS NOT RECOMMENDED (CONSULT ENGINEERING).
 2. USE ASME MFC-3M-1989 CORNER TAP EQUATIONS TO CALCULATE FLOW CAPACITIES.

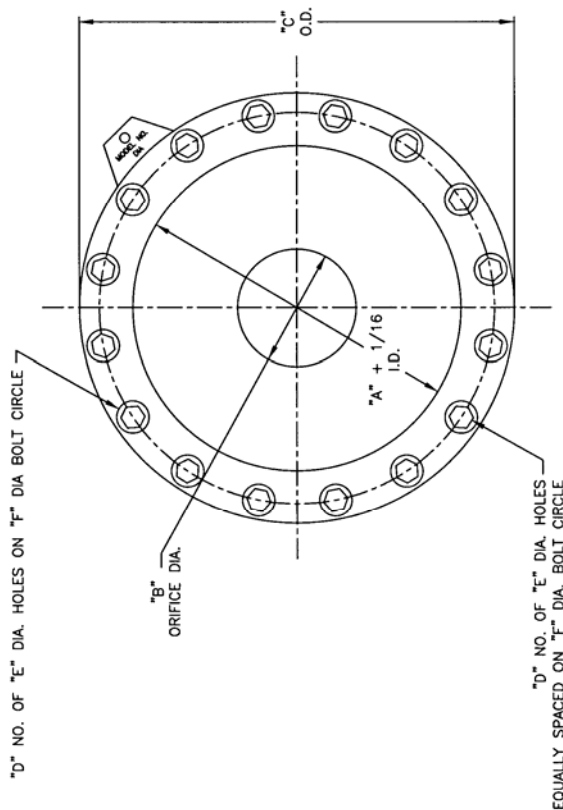
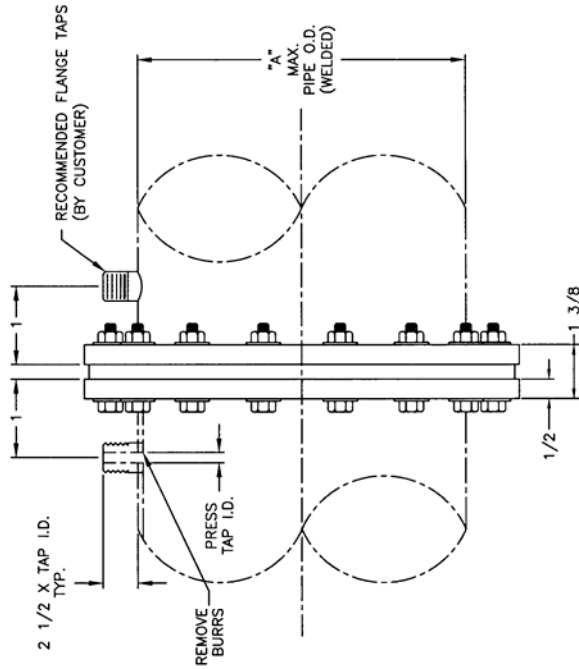
MODEL NUMBER	PIPE SIZE "A"	ORIFICE "B" DIA.		"C"	"D"	"E"	"F"
		MIN.	MAX.				
OMG 207	3/4	0.165	0.618	9/16	2 7/16	4 15/16	5/16
OMG 210	1	0.210	0.787	9/16	2 7/16	4 15/16	5/16
OMG 212	1 1/4	0.276	1.035	5/8	3 1/8	5 5/8	3/8
OMG 215	1 1/2	0.322	1.208	5/8	3 1/8	5 5/8	3/8
OMG 220	2	0.413	1.550	3/4	4	6 1/2	3/8
OMG 225	2 1/2	0.494	1.852	3/4	4	6 1/2	3/8
OMG 230	3	0.614	2.301	7/8	5 1/2	8	3/8
OMG 240	4	0.805	3.020	7/8	5 1/2	8	3/8
OMG 260	6	1.213	4.549	1	8	10 1/2	1/2

X1499
(NOT TO SCALE)



OMG SERIES ORIFICE METERS

2000 SERIES AIR ONLY WELD-IN DESIGN



- NOTES: 1. OMG 2000 SERIES DESIGNED FOR LOW PRESSURE AIR SERVICE ONLY.
 2. MIN. AND MAX. ORIFICE DIA. BASED ON BETA RATIO (ORIFICE DIA./NOMINAL PIPE I.D.) RANGE OF 0.2-0.75; BETA RATIO OUTSIDE THIS RANGE IS NOT RECOMMENDED (CONSULT ENGINEERING).
 3. USE ASME MFC-3M-1989 FLANGE TAP EQUATIONS TO CALCULATE FLOW CAPACITIES

X3305
(NOT TO SCALE)

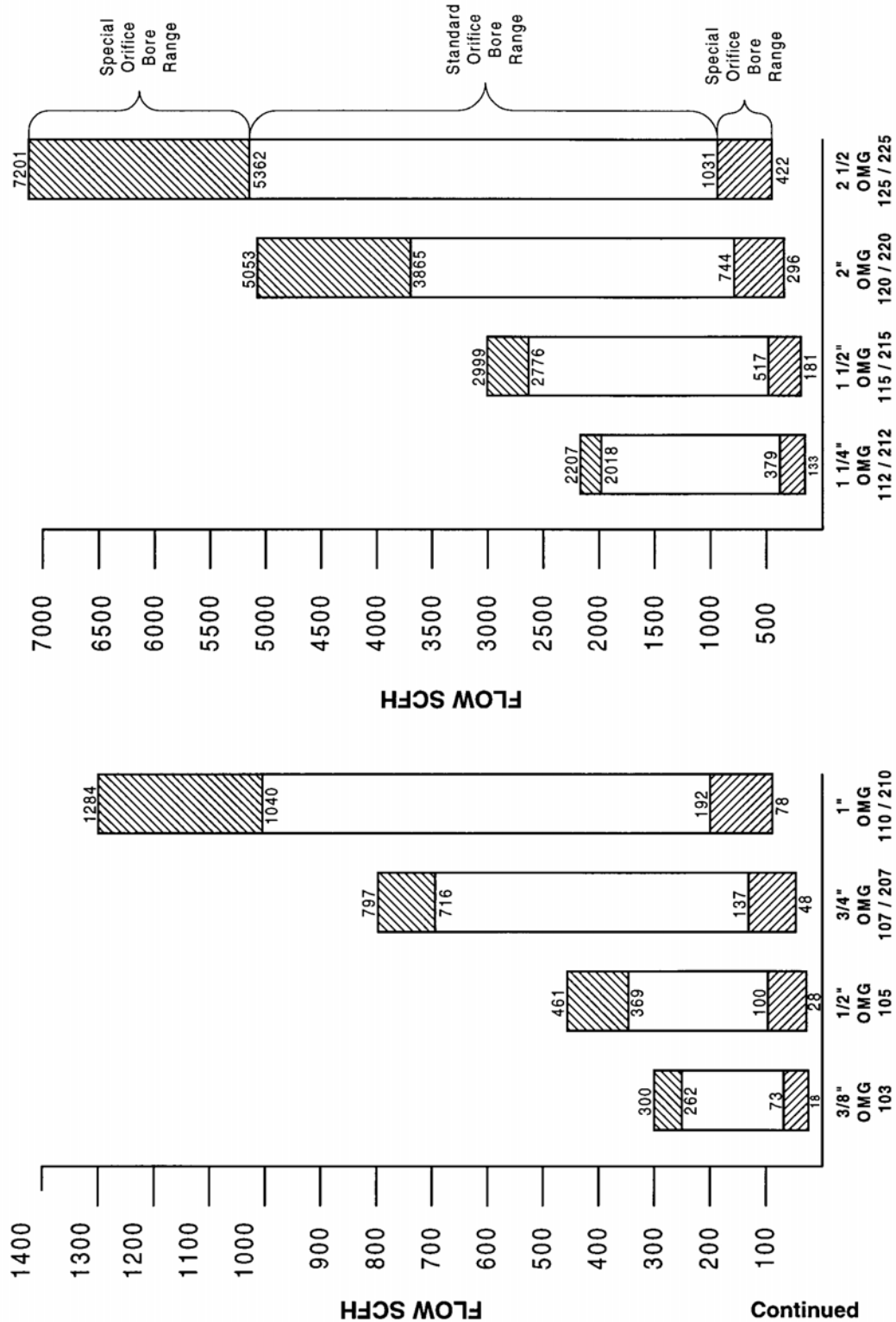
MODEL NUMBER	NOMINAL PIPE I.D.	MAX. PIPE O.D. "A"	ORIFICE "B" DIA.		"C"	"D"	"E"	"F"
			MIN.	MAX.				
OMA 2080	8	8 1/4	1.600	6.000	11	8	19/32	10
OMA 2100	10	10 1/4	2.000	7.500	14	12	3/4	12 1/4
OMA 2120	12	12 1/4	2.400	9.000	16	12	3/4	14 1/4
OMA 2140	14	14 1/4	2.800	10.50	18	12	3/4	16 1/4
OMA 2160	16	16 1/4	3.200	12.00	21 1/4	16	3/4	19 1/4
OMA 2180	18	18 1/4	3.600	13.50	23 1/4	16	3/4	21 1/4
OMA 2200	20	20 1/4	4.000	15.00	25 1/4	20	3/4	23 3/8
OMA 2220	22	22 1/4	4.400	16.50	28 1/4	20	3/4	26
OMA 2240	24	24 1/4	4.800	18.00	30	20	3/4	27 3/4
OMA 2280	28	28 1/4	5.600	21.00	34	28	7/8	31 3/4

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SUPPLEMENTAL DATA

OMG SELECTION CHART NATURAL GAS (SCFH) @ 3" W.C. ΔP



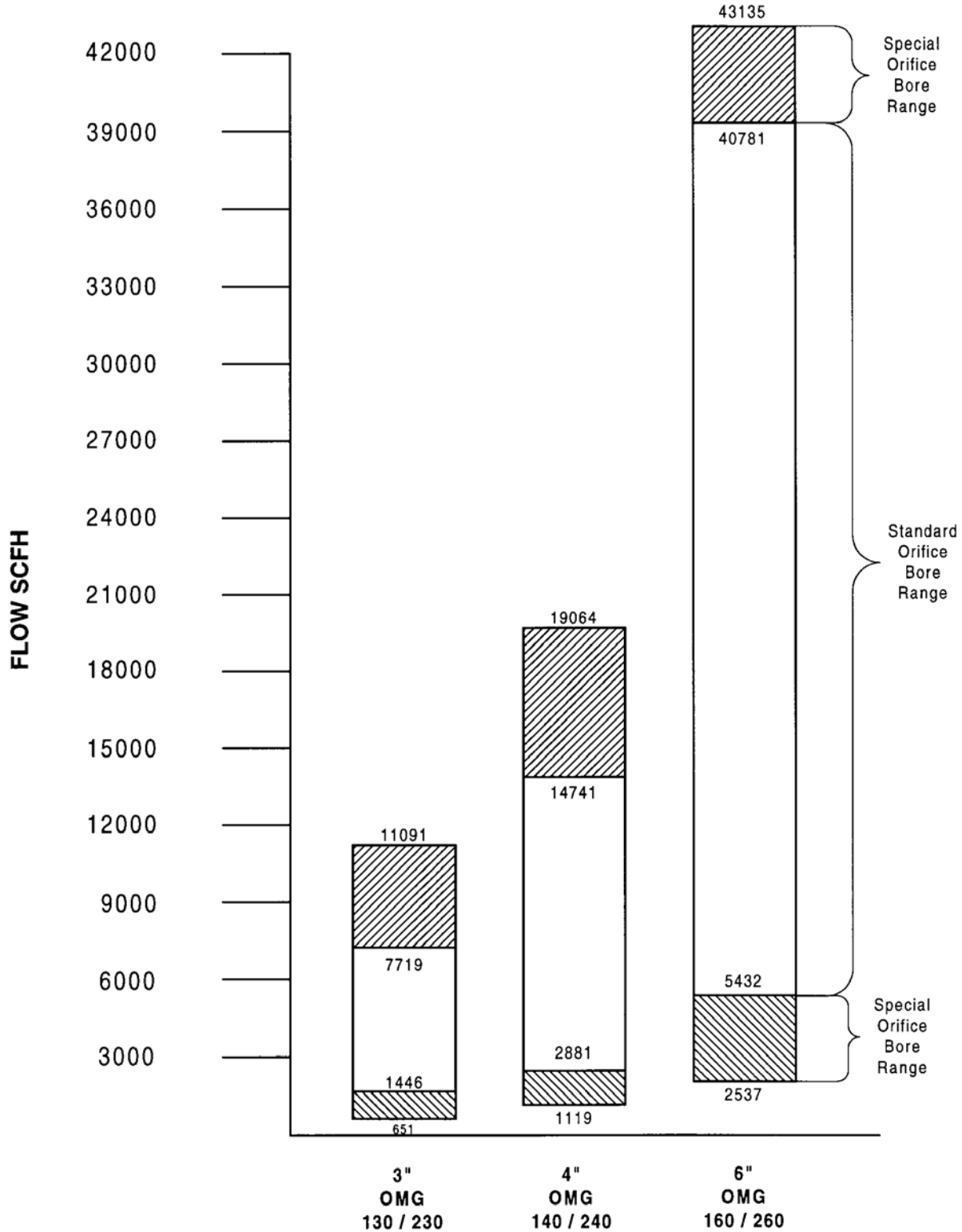
Capacities based on ASME MFC-3M-1989 Corner Tap Equations using schedule 40 pipe ID, Natural Gas @ 0.60 S.G., 60°F and 1 psig upstream pressure. Each bar represents the acceptable capacity range of a given OMG. For flows within the standard orifice bore range, several orifice plate sizes are available. For flows outside of the standard range, a special orifice plate can be special ordered at an additional charge. Consult OMG capacity tables for specific orifice bore sizes. For flows at conditions not stated above, or other gases, contact Hauck for free selection and sizing software. 100 series designates a NPT threaded connection. 200 series designates a weld-in connection.

Continued

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OMG SELECTION CHART

NATURAL GAS (SCFH) @ 3" W.C. ΔP

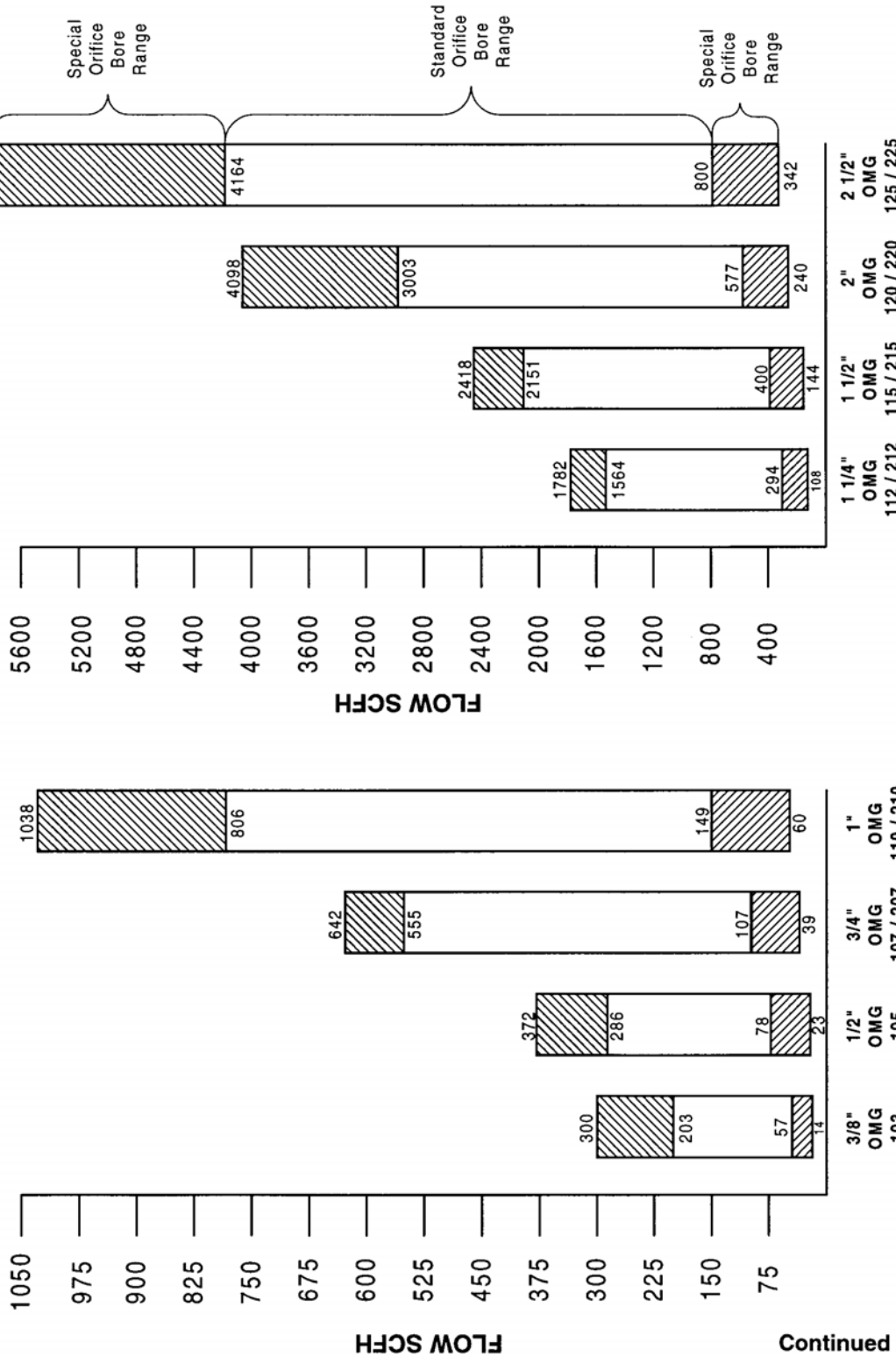


Capacities based on ASME MFC-3M-1989 Corner Tap Equations using schedule 40 pipe ID, Natural Gas @ 0.6 S.G., 60°F and 1 psig upstream pressure. Each bar represents the acceptable capacity range of a given OMG. For flows within the standard orifice bore range, several orifice plates are available. For flows outside of the standard range, a special orifice plate can be special ordered at an additional charge. Consult OMG capacity tables for specific orifice bore sizes. For flows at conditions not stated above, or other gases, contact Hauck for free selection and sizing software. 100 series designates a NPT threaded connection. 200 series designates a weld-in connection.



SUPPLEMENTAL DATA

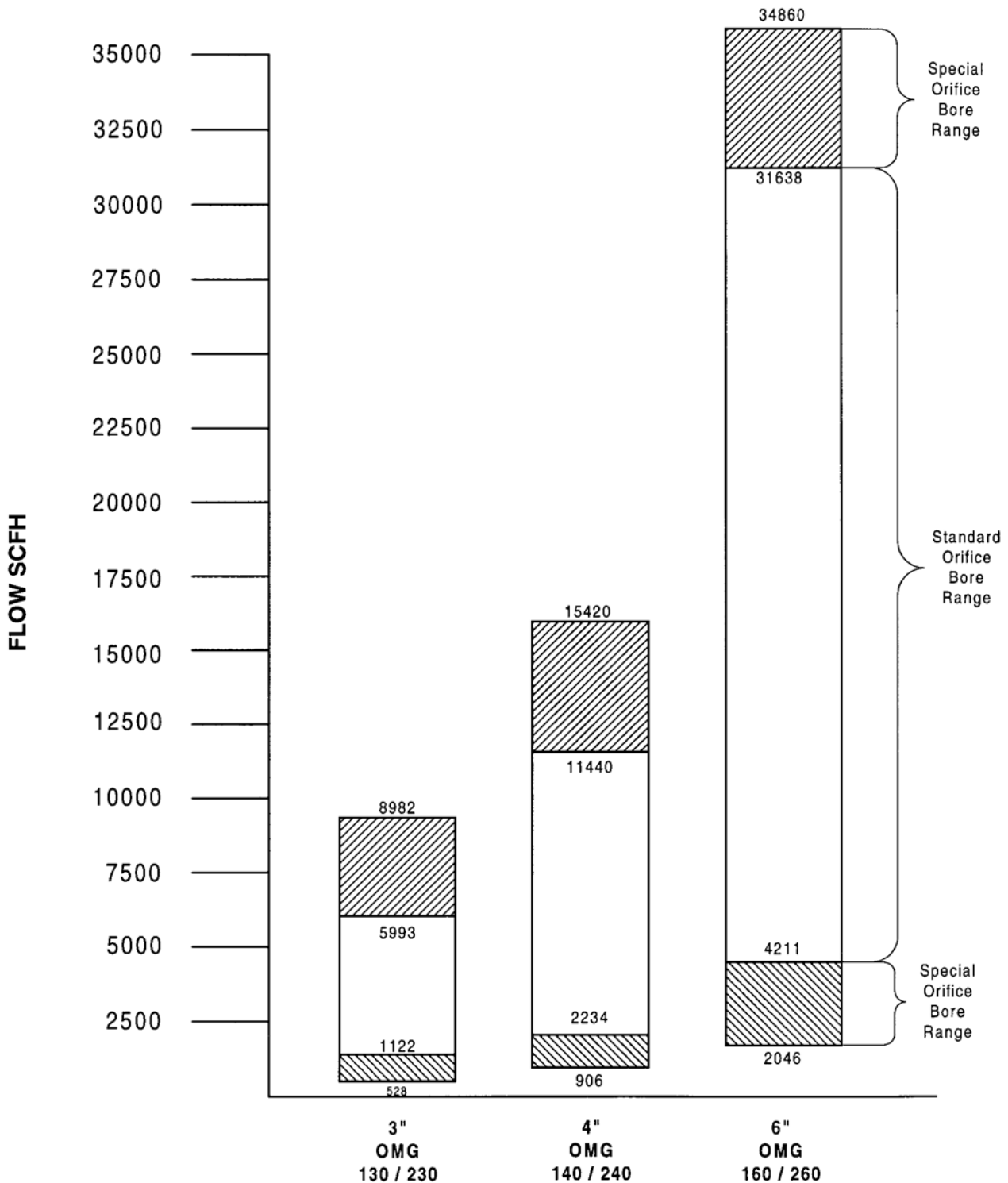
OMG SELECTION CHART AIR (SCFH) @ 3" W.C. ΔP



Capacities based on ASME MFC-3M-1989 Corner Tap Equations using schedule 40 pipe ID, Air @ 1.0 S.G., 60°F and 1 psig upstream pressure. Each bar represents the acceptable capacity range of a given OMG. For flows within the standard orifice bore range, several orifice plates are available. For flows outside of the standard range, a special orifice plate can be special ordered at an additional charge. Consult OMG capacity tables for specific orifice bore sizes. For flows at conditions not stated above, or other gases, contact Hauck for free selection and sizing software. 100 series designates a NPT threaded connection. 200 series designates a weld-in connection.

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OMG SELECTION - AIR (SCFH) @ 3" W.C. ΔP



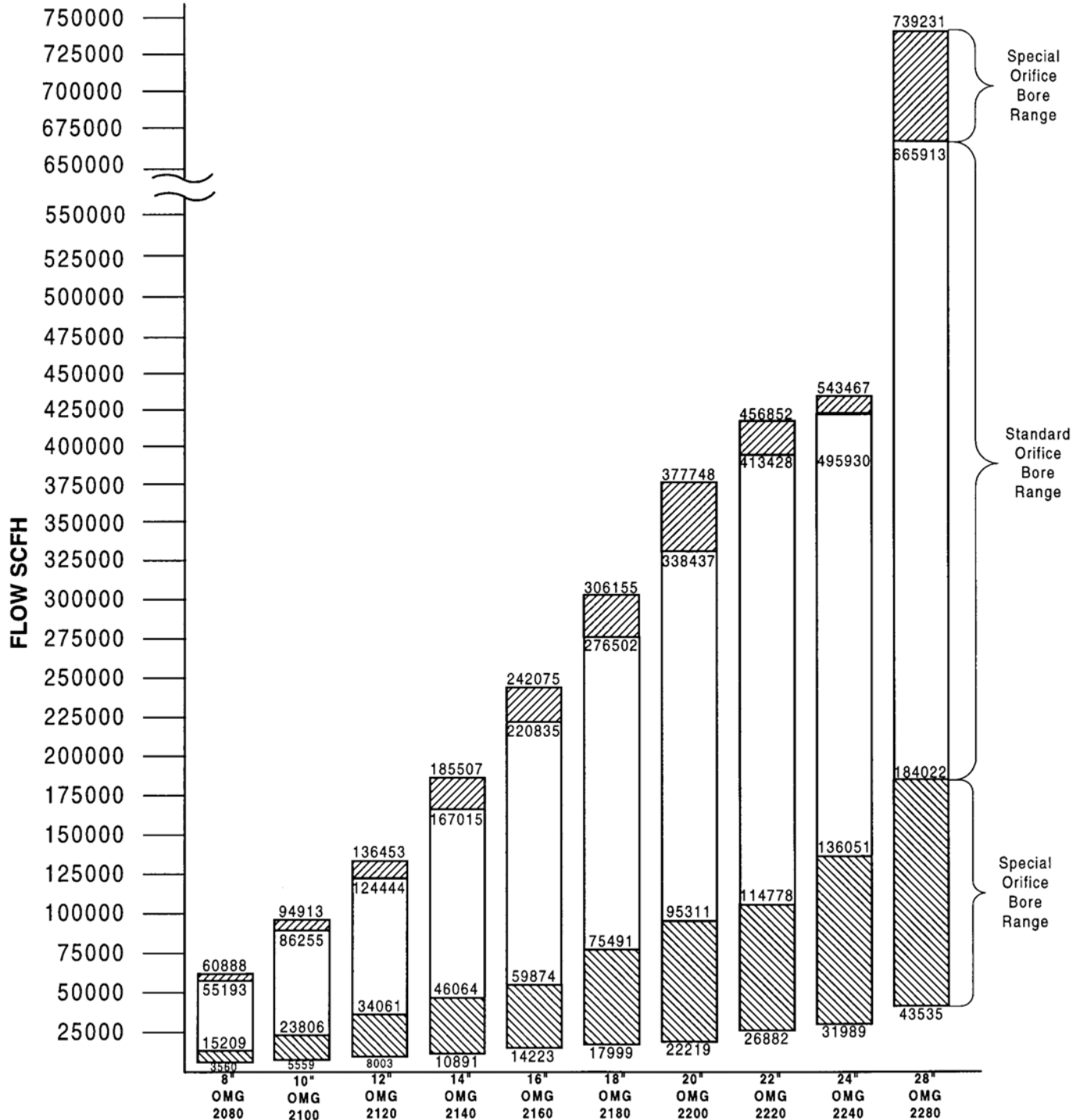
Capacities based on ASME MFC-3M-1989 Corner Tap Equations using schedule 40 pipe ID, Air @ 1.0 S.G., 60°F and 1 psig upstream pressure. Each bar represents the acceptable capacity range of a given OMG. For flows within the standard orifice bore range, several orifice plates are available. For flows outside of the standard range, a special orifice plate can be special ordered at an additional charge. Consult OMG capacity tables for specific orifice bore sizes. For flows at conditions not stated above, or other gases, contact Hauck for free selection and sizing software. 100 series designates a NPT threaded connection. 200 series designates a weld-in connection.

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OMG SELECTION CHART

2000 SERIES – AIR SERVICE (SCFH) @ 3" W.C. ΔP



Capacities based on ASME MFC-3M-1989 Flange Tap Equations using schedule 40 pipe ID, Air @ 1.0 S.G., 60°F and 1 psig upstream pressure. Each bar represents the acceptable capacity range of a given OMG. For flows within the standard orifice bore range, several orifice plates are available. For flows outside of the standard range, a special orifice plate can be special ordered at an additional charge. Consult OMG capacity tables for specific orifice bore sizes. For flows at conditions not stated above, or other gases, contact Hauck for free selection and sizing software.

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OMG SERIES ORIFICE METERS

CORRECTING FOR CONDITIONS OUTSIDE CATALOG PARAMETERS

The capacities listed in OMG-2 and OMG-2.1 are cataloged at 60°F and 1 psig upstream pressure (specific gravity for air at 1.0, natural gas 0.60). When these conditions are not present, corrections must be applied to the catalog flow rate.

Upstream Pressure

For an upstream pressure other than 1 psig, obtain the appropriate correction factor for upstream pressure, then determine the corrected flow as shown.

$$(1) \quad C_{press} = \sqrt{\frac{p_2 + 14.7}{p_1 + 14.7}}$$

C_{press} = Upstream Pressure Correction Factor
 p_1 = Cataloged Upstream Pressure (1 psig)
 p_2 = Actual Upstream Pressure (psig)
 (Note: 1psig = 27.7" W.C.)

Table 1

p_2 (psig)	0.5	1.0	1.5	2.0	3.0	4.0	5.0	10.0
C_{press}	.98	1.0	1.01	1.03	1.06	1.09	1.12	1.25

Multiply the pressure correction factor, C_{press} , by the flow determined from the OMG capacity table to obtain the corrected flow. For example, an OMG 115 with a .744" orifice has a capacity of 1024 SCFH natural gas at 3" ΔP. For a 2 psig upstream pressure, the corrected flow will be 1024 SCFH X 1.03 = 1055 SCFH.

Specific Gravity

For a specific gravity other than 0.60 (natural gas) or 1.0 (air), use FORMULA 2 or TABLE 2 to obtain the appropriate specific gravity correction factor, then determine the corrected flow as shown.

$$(2) \quad C_{s.g.} = \sqrt{\frac{s.g._1}{s.g._2}}$$

$C_{s.g.}$ = Specific Gravity Correction Factor
 $s.g._1$ = Specific Gravity - Natural Gas (0.60)
 $s.g._2$ = Specific Gravity - Actual Gas

Table 2

Gas	Coke Oven	Natural	Air	Propane	Butane
s.g.	0.40	0.60	1.0	1.52	2.01
$C_{s.g.}$	1.22	1.0	.77	.63	.55

Multiply the s.g. correction factor, $C_{s.g.}$, by the flow determined from the OMG capacity table to obtain the corrected flow. For example, an OMG 115 with a .744" orifice has a capacity of 1024 SCFH natural gas at 3" ΔP. For propane, the corrected flow will be 1024 SCFH X 0.63 = 645 SCFH.

Temperature

For a gas temperature other than 60°F, use FORMULA 3 or TABLE 3 to obtain the appropriate temperature correction factor, then determine the correct flow as shown.

$$(3) \quad C_{temp} = \sqrt{\frac{Abs\ Temp_1}{Abs\ Temp_2}}$$

C_{temp} = Temperature Correction Factor
 $Abs\ Temp_1 = t_1 + 460$
 $Abs\ Temp_2 = t_2 + 460$
 t_1 = Catalog Temperature (60°F)
 t_2 = Actual Temperature (°F)

Table 3

Temp., °F	50	60	80	100	150	200	250
C_{temp}	1.01	1.0	.98	.96	.92	.88	.85

Multiply the temp. correction factor, C_{temp} , by the flow determined from the OMG capacity table to obtain the corrected flow. For example, an OMG 115 with a .744" orifice has a capacity of 1024 SCFH natural gas at 3" ΔP. For a natural gas temperature at 100°F, the corrected flow is 1024 SCFH X .96 = 983 SCFH.

Note: If more than one correction factor is necessary, simply multiply the cataloged flow by each of the correction factors. For all the correction factors shown above, the corrected flow will be 1024 SCFH X 1.03 X 0.63 X 0.96 = 638 SCFH.

Non Cataloged Differential Pressure And/Or Flow

To calculate differential pressure and/or flow not listed in the OMG Capacity Tables, use the Square Root Law, Formula 4 and 5 as shown below.

$$(4) \quad Q_2 = Q_1 \sqrt{\frac{p_2}{p_1}}$$

Q_2 = Unknown Flow (SCFH) @ p
 Q_1 = Catalog Flow (SCFH) @ p_1
 p_2 = Actual Pressure Δp @ Q_2
 p_1 = Catalog Pressure Δp @ Q_1

For example, an OMG 115 with a .744" orifice has a flow capacity of 1024 SCFH natural gas at 3" w.c. Δp , 1 psig upstream pressure and 60°F. To determine the flow at 4.3" w.c. Δp , plug the known variables listed below into formula 4.

Q_2 = unknown
 Q_1 = 1024 SCFH
 p_2 = 4.3" w.c. Δp
 p_1 = 3.0" w.c. Δp

Solving Formula 4, for Q_2 , the natural gas flow is 1226 SCFH.

$$(5) \quad p_2 = p_1 \left(\frac{Q_2}{Q_1} \right)^2$$

p_2 = Δp @ Q_2 ("w.c.)
 p_1 = Catalog Δp @ Q_1 ("w.c.)
 Q_2 = Desired Flow @ p_2 (SCFH)
 Q_1 = Catalog Flow @ p_1 (SCFH)

For example, an OMG 115 with a .744" orifice has a flow capacity of 1024 SCFH natural gas at 3" w.c. Δp , 1 psig upstream pressure and 60°F. To determine the Δp for a flow of 775 SCFH, plug the known variables listed below into formula 5.

p_2 = unknown
 p_1 = 3" w.c. Δp
 Q_2 = 775 SCFH
 Q_1 = 1024 SCFH

Solving Formula 5 for p_2 , the natural gas Δp is 1.71" w.c.

SAMPLE OMG SELECTION PROBLEM

Select an orifice meter to measure 925 cubic feet per hour natural gas at 3" w.c. pressure drop across the orifice meter. The meter shall be installed in 1 ½" threaded, scheduled 40 pipe. The specific gravity of the gas is 0.60 with an upstream pressure of 1 psig and temperature of 60°F.

Using the capacity table OMG-2, select natural gas and 1 ½" pipe size. Next, select the 115 model number for threaded connections. Then, look in the 3" w.c. Δp column and find the flow that is closest to 925 cubic feet per hour. In this case, the closest available orifice bore is 0.744" which has a natural gas flow capacity of 1024 SCFH.

Select an OMG-115 with a 0.744" orifice.

To calculate the actual Δp at 925 SCFH, use formula 5.

$$p_2 = 3" \text{ w.c.} \left(\frac{925 \text{ SCFH}}{1024 \text{ SCFH}} \right)^2$$

$$p_2 = 2.45" \text{ w.c.}$$