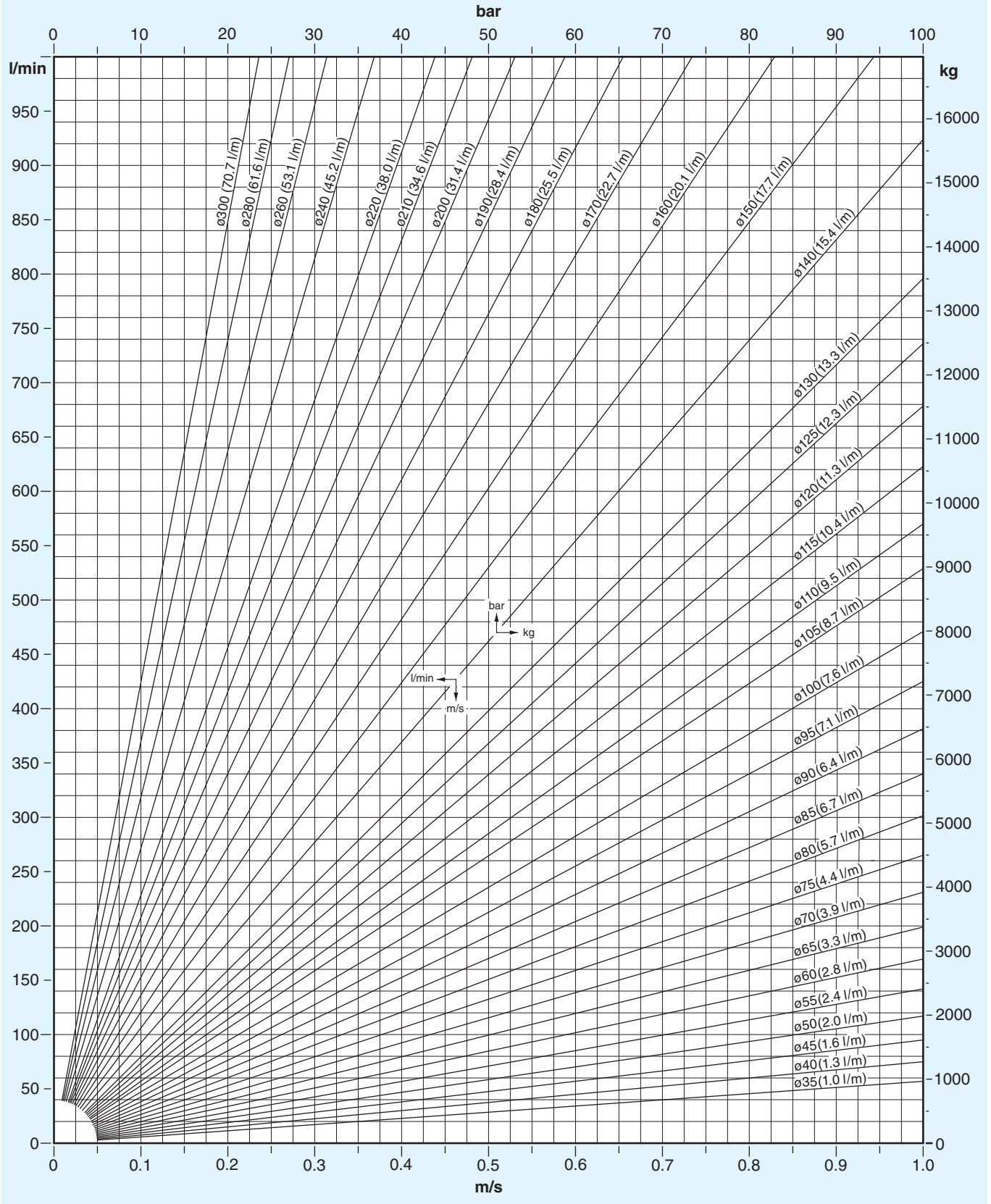
Cylinder-Pump Selection Chart

EN ISO 9001



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Designer and Manufacturer of the highest quality control valves & safety components for hydraulic elevators

Flow - Pressure Tables

EN ISO 9001

Ram Ø • Area • Speed • Flow
Piston Ø • Aire • Vitesse • Débit
Kolben Ø • Fläche • Geschwindigkeit • Durchfluss
Pistón Ø • Area • Velocidad • Caudal

m/s		0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.70	0.80	0.90	1.00
Ø mm	cm²	l/min															
35	9.6	2.9	5.8	8.7	11.5	14	17	20	23	26	29	32	35	40	46	52	58
40	12.6	3.8	7.5	11.3	15.1	19	23	26	30	34	38	41	45	53	60	68	75
45	15.9	4.8	9.5	14.3	19.1	24	29	33	38	43	48	52	57	67	76	86	95
50	19.6	5.9	11.8	17.7	23.6	29	35	41	47	53	59	65	71	82	94	106	118
55	23.8	7.1	14.3	21.4	28.5	36	43	50	57	64	71	78	86	100	114	128	143
60	28.3	8.5	17.0	25.4	33.9	42	51	59	68	76	85	93	102	119	136	153	170
65	33.2	10.0	19.9	29.9	39.8	50	60	70	80	90	100	110	119	139	159	179	199
70	38.5	11.5	23.1	34.6	46.2	58	69	81	92	104	115	127	139	162	185	208	231
75	44.2	13.3	26.5	39.8	53.0	66	80	93	106	119	133	146	159	186	212	239	265
80	50.3	15.1	30.2	45.2	60.3	75	90	106	121	136	151	166	181	211	241	271	302
85	56.7	17.0	34.0	51.1	68.1	85	102	119	136	153	170	187	204	238	272	306	340
90	63.6	19.1	38.2	57.3	76.3	95	115	134	153	172	191	210	229	267	305	344	382
95	70.9	21.3	42.5	63.8	85.1	106	128	149	170	191	213	234	255	298	340	383	425
100	78.5	23.6	47.1	70.7	94.2	118	141	165	188	212	236	259	283	330	377	424	471
105	86.6	26.0	52.0	77.9	103.9	130	156	182	208	234	260	286	312	364	416	468	520
110	95.0	28.5	57.0	85.5	114.0	143	171	200	228	257	285	314	342	399	456	513	570
115	103.9	31.2	62.3	93.5	124.6	156	187	218	249	280	312	343	374	436	499	561	623
120	113.1	33.9	67.9	101.8	135.7	170	204	238	271	305	339	373	407	475	543	611	679
125	122.7	36.8	73.6	110.4	147.3	184	221	258	295	331	368	405	442	515	589	663	736
130	132.7	39.8	79.6	119.5	159.3	199	239	279	319	358	398	438	478	557	637	717	796
140	153.9	46.2	92.4	138.5	184.7	231	277	323	369	416	462	508	554	647	739	831	924
150	176.7	53.0	106.0	159.0	212.1	265	318	371	424	477	530	583	636	742	848	954	1060
160	201.1	60.3	120.6	181.0	241.3	302	362	422	483	543	603	664	724	844	965	1086	1206
170	227.0	68.1	136.2	204.3	272.4	340	409	477	545	613	681	749	817	953	1090	1226	1362
180	254.5	76.3	152.7	229.0	305.4	382	458	534	611	687	763	840	916	1069	1221	1374	1527
190	283.5	85.1	170.1	255.2	340.2	425	510	595	680	766	851	936	1021	1191	1361	1531	1701
200	314.2	94.2	188.5	282.7	377.0	471	565	660	754	848	942	1037	1131	1319	1508	1696	1885
210	346.4	103.9	207.8	311.7	415.6	520	623	727	831	935	1039	1143	1247	1455	1663	1870	2078
220	380.1	114.0	228.1	342.1	456.2	570	684	798	912	1026	1140	1254	1368	1597	1825	2053	2281
240	452.4	135.7	271.4	407.2	542.9	679	814	950	1086	1221	1357	1493	1629	1900	2171	2443	2714
260	530.9	159.3	318.6	477.8	637.1	796	956	1115	1274	1434	1593	1752	1911	2230	2548	2867	3186
280	615.8	184.7	369.5	554.2	738.9	924	1108	1293	1478	1663	1847	2032	2217	2586	2956	3325	3695
300	706.9	212.1	424.1	636.2	848.2	1060	1272	1484	1696	1909	2121	2333	2545	2969	3393	3817	4241

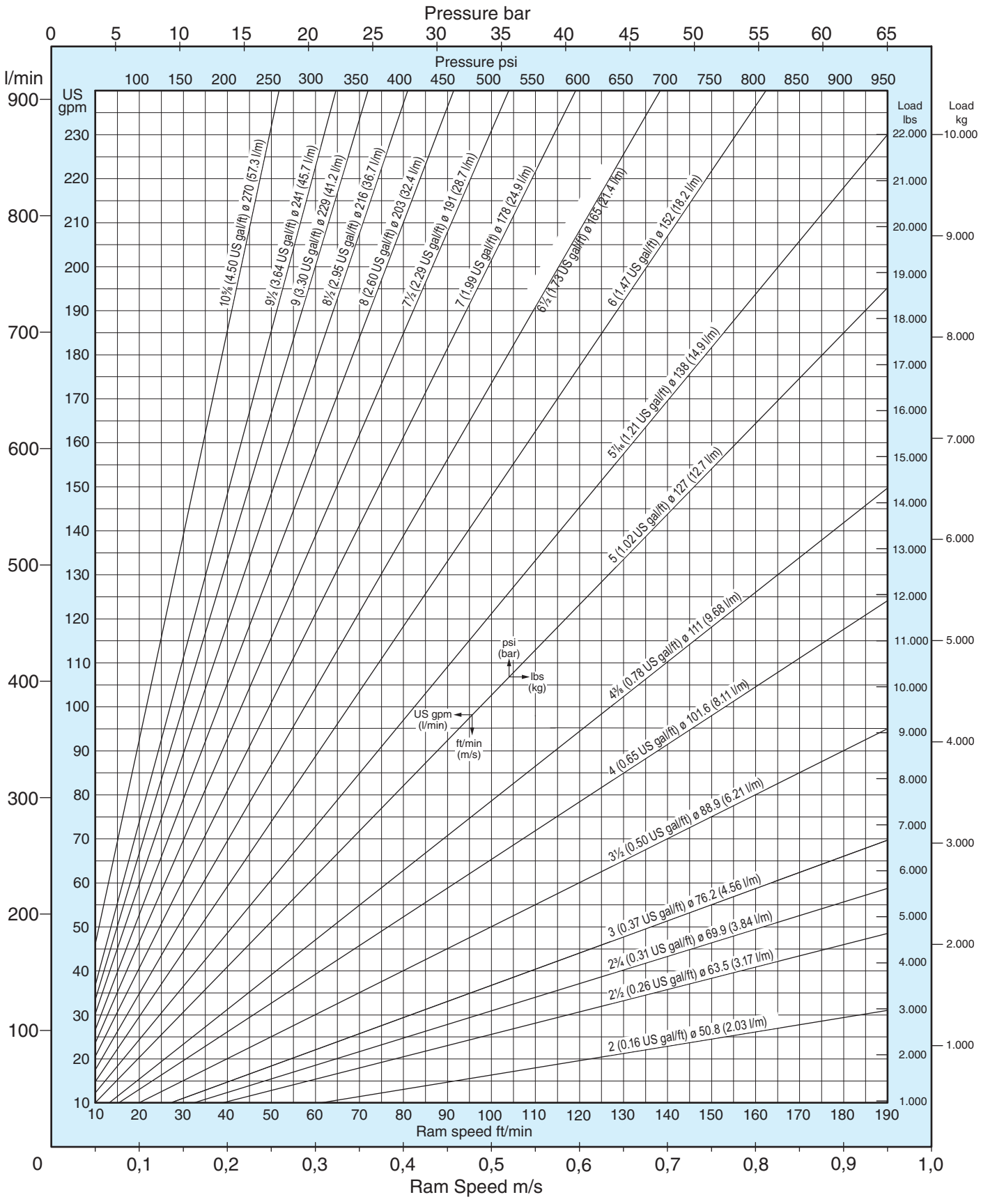
Ram Ø • Area • Load • Pressure
Piston Ø • Aire • Cargaision • Pression
Kolben Ø • Fläche • Gewicht • Druck
Pistón Ø • Area • Carga • Presión

kg		500	750	1000	1500	2000	2500	3000	3500	4000	4500	5000	6000	7000	8000	9000	10000
Ø mm	cm²	bar															
35	9.6	51	76	102	153	204	255	306	357	408	459	510	612	714	816	918	1020
40	12.6	39	59	78	117	156	195	234	273	312	351	390	468	546	625	703	781
45	15.9	31	46	62	93	123	154	185	216	247	278	308	370	432	493	555	617
50	19.6	25	38	50	75	100	125	150	175	200	225	250	300	350	400	450	500
55	23.8	21	31	41	62	83	103	124	145	165	186	206	248	289	330	372	413
60	28.3	17	26	35	52	69	87	104	121	139	156	173	208	243	278	312	347
65	33.2	15	22	30	44	59	74	89	103	118	133	148	177	207	237	266	296
70	38.5	13	19	26	38	51	64	76	89	102	115	127	153	178	204	229	255
75	44.2	11	17	22	33	44	56	67	78	89	100	111	133	155	178	200	222
80	50.3	9.8	15	20	29	39	49	59	68	78	88	98	117	137	156	176	195
85	56.7	8.6	13	17	26	35	43	52	61	69	78	86	104	121	138	156	173
90	63.6	7.7	12	15	23	31	39	46	54	62	69	77	93	108	123	139	154
95	70.9	6.9	10	14	21	28	35	42	48	55	62	69	83	97	111	125	138
100	78.5	6.2	9.4	13	19	25	31	38	44	50	56	62	75	87	100	112	125
105	86.6	5.7	8.5	11	17	23	28	34	40	45	51	57	68	79	91	102	113
110	95.0	5.2	7.7	10	16	21	26	31	36	41	47	52	62	72	83	93	103
115	103.9	4.7	7.1	9.4	14	19	24	28	33	38	43	47	57	66	76	85	94
120	113.1	4.3	6.5	8.7	13	17	22	26	30	35	39	43	52	61	69	78	87
125	122.7	4.0	6.0	8.0	12	16	20	24	28	32	36	40	48	56	64	72	80
130	132.7	3.7	5.5	7.4	11	15	19	22	26	30	33	37	44	52	59	67	74
140	153.9	3.2	4.8	6.4	9.6	13	16	19	22	26	29	32	38	45	51	57	64
150	176.7	2.8	4.2	5.6	8.3	11	14	17	19	22	25	28	33	39	44	50	56
160	201.1	2.4	3.7	4.9	7.3	9.8	12	15	17	20	22	24	29	34	39	44	49
170	227.0	2.2	3.2	4.3	6.5	8.6	11	13	15	17	19	22	26	30	35	39	43
180	254.5	1.9	2.9	3.9	5.8	7.7	9.6	12	14	15	17	19	23	27	31	35	39
190	283.5	1.7	2.6	3.5	5.2	6.9	8.6	10	12	14	16	17	21	24	28	31	35
200	314.2	1.6	2.3	3.1	4.7	6.2	7.8	9.4	11	13	14	16	19	22	25	28	31
210	346.4	1.4	2.1	2.8	4.2	5.7	7.1	8.5	9.9	11	13	14	17	20	23	26	28
220	380.1	1.3	1.9	2.6	3.9	5.2	6.5	7.7	9.0	10.3	12	13	16	18	21	23	26
240	452.4	1.1	1.6	2.2	3.3	4.3	5.4	6.5	7.6	8.7	9.8	11	13	15	17	20	22
260	530.9	0.9	1.4	1.8	2.8	3.7	4.6	5.5	6.5	7.4	8.3	9.2	11	13	15	17	19
280	615.8	0.8	1.2	1.6	2.4	3.2	4.0	4.8	5.6	6.4	7.2	8.0	9.6	11	13	14	16
300	706.9	0.7	1.0	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.2	6.9	8.3	9.7	11	13	14

$\frac{cm^2}{6.45} = in^2$ m/s x 197 = ft/min l/min x 0.22 = Imp. gals $\frac{mm}{25.4}$ = inches l/min x 0.26 = US. gals kg x 2.2 = lbs bar x 14.7 = psi

Flow- Pressure Chart
US and metric

EN ISO 9001



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Ram Ø • Area • Speed • Flow

ft/min		10	20	30	40	50	60	70	80	90	100	110	120	140	160	180	200
Ø inch	in²	US gpm															
1.4	1.5	0.8	1.6	2.4	3.2	4.0	4.8	5.6	6.4	7.2	8.0	8.8	9.6	11.2	12.8	14.4	16.0
1.6	2.0	1.0	2.1	3.1	4.2	5.2	6.3	7.3	8.4	9.4	10.5	11.5	12.5	14.6	16.7	18.8	20.9
1.8	2.5	1.3	2.6	4.0	5.3	6.6	7.9	9.3	10.6	11.9	13.2	14.6	15.9	18.5	21.2	23.8	26.5
2.0	3.1	1.6	3.3	4.9	6.5	8.2	9.8	11.4	13.1	14.7	16.3	18.0	19.6	22.9	26.1	29.4	32.7
2.2	3.8	2.0	4.0	5.9	7.9	9.9	11.9	13.8	15.8	17.8	19.8	21.7	23.7	27.7	31.6	35.6	39.5
2½	4.9	2.6	5.1	7.7	10.2	12.8	15.3	17.9	20.4	23.0	25.5	28.1	30.6	35.7	40.8	45.9	51.0
2.6	5.3	2.8	5.5	8.3	11.0	13.8	16.6	19.3	22.1	24.8	27.6	30.4	33.1	38.6	44.2	49.7	55.2
2¾	5.9	3.1	6.2	9.3	12.4	15.4	18.5	21.6	24.7	27.8	30.9	34.0	37.1	43.2	49.4	55.6	61.8
3.0	7.1	3.7	7.3	11.0	14.7	18.4	22.0	25.7	29.4	33.1	36.7	40.4	44.1	51.4	58.8	66.1	73.5
3.2	8.0	4.2	8.4	12.5	16.7	20.9	25.1	29.3	33.4	37.6	41.8	46.0	50.2	58.5	66.9	75.3	83.6
3½	9.6	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	55.0	60.0	70.0	80.0	90.0	100.0
3.6	10.2	5.3	10.6	15.9	21.2	26.5	31.7	37.0	42.3	47.6	52.9	58.2	63.5	74.1	84.7	95.2	105.8
3.8	11.3	5.9	11.8	17.7	23.6	29.5	35.4	41.3	47.2	53.1	59.0	64.9	70.7	82.5	94.3	106.1	117.9
4.0	12.6	6.5	13.1	19.6	26.1	32.7	39.2	45.7	52.3	58.8	65.3	71.9	78.4	91.5	104.5	117.6	130.7
4.2	13.9	7.2	14.4	21.6	28.8	36.0	43.2	50.4	57.6	64.8	72.0	79.2	86.4	100.8	115.2	129.6	144.0
4⅜	15.0	7.8	15.6	23.4	31.3	39.1	46.9	54.7	62.5	70.3	78.1	86.0	93.8	109.4	125.0	140.7	156.3
4½	15.9	8.3	16.5	24.8	33.1	41.3	49.6	57.9	66.1	74.4	82.7	90.9	99.2	115.8	132.3	148.8	165.4
4.8	18.1	9.4	18.8	28.2	37.6	47.0	56.4	65.8	75.3	84.7	94.1	103.5	112.9	131.7	150.5	169.3	188.1
5.0	19.6	10.2	20.4	30.6	40.8	51.0	61.2	71.5	81.7	91.9	102.1	112.3	122.5	142.9	163.3	183.7	204.1
5 7/16	23.2	12.1	24.1	36.2	48.3	60.4	72.4	84.5	96.6	108.6	120.7	132.8	144.9	169.0	193.1	217.3	241.4
5½	23.8	12.4	24.7	37.1	49.4	61.8	74.1	86.5	98.8	111.2	123.5	135.9	148.2	172.9	197.6	222.3	247.0
6.0	28.3	14.7	29.4	44.1	58.8	73.5	88.2	102.9	117.6	132.3	147.0	161.7	176.4	205.8	235.2	264.6	294.0
6½	33.2	17.3	34.5	51.8	69.0	86.3	103.5	120.8	138.0	155.3	172.5	189.8	207.0	241.5	276.0	310.5	345.0
6.8	36.3	18.9	37.8	56.6	75.5	94.4	113.3	132.2	151.0	169.9	188.8	207.7	226.6	264.3	302.1	339.8	377.6
7.0	38.5	20.0	40.0	60.0	80.0	100.0	120.0	140.0	160.1	180.1	200.1	220.1	240.1	280.1	320.1	360.1	400.1
7½	44.2	23.0	45.9	68.9	91.9	114.8	137.8	160.8	183.7	206.7	229.7	252.6	275.6	331.5	367.5	413.4	459.3
8.0	50.3	26.1	52.3	78.4	104.5	130.7	156.8	182.9	209.0	235.2	261.3	287.4	313.6	365.8	418.1	470.4	522.6
8½	56.7	29.5	59.0	88.5	118.0	147.5	177.0	206.5	236.0	265.5	295.0	324.5	354.0	413.0	472.0	531.0	590.0
8.8	60.8	31.6	63.2	94.9	126.5	158.1	189.7	221.3	252.9	284.6	316.2	347.8	379.4	442.7	505.9	569.1	632.4
9½	70.9	36.8	73.7	110.5	147.4	184.2	221.1	257.9	294.8	331.6	368.5	405.3	442.2	515.9	589.6	663.3	737.0
10⅝	88.7	46.1	92.2	138.3	184.4	230.5	276.6	322.6	368.7	414.8	460.9	507.0	553.1	645.3	737.5	829.7	921.9
11.2	98.5	51.2	102.4	153.6	204.9	256.1	307.3	358.5	409.7	460.9	512.2	563.4	614.6	717.0	819.5	921.9	1024.3
12.0	113.1	58.8	117.6	176.4	235.2	294.0	352.8	411.6	470.4	529.1	587.9	646.7	705.5	823.1	940.7	1058.3	1175.9

Ram Ø • Area • Load • Pressure

lbs		1100	1650	2200	3300	4400	5500	6600	7700	8800	10000	11000	13200	15400	17600	19800	22000
Ø inch	in²	psi															
1.4	1.5	714.6	1071.9	1429.1	2143.7	2858.3	3572.9	4287.4	5002.0	5716.6	6496.1	7145.7	8574.9	10004.0	11433.2	12862.3	14291.5
1.6	2.0	547.1	820.6	1094.2	1641.3	2188.4	2735.5	3282.6	3829.7	4376.8	4973.6	5471.0	6565.1	7659.3	8753.5	9847.7	10941.9
1.8	2.5	432.3	648.4	864.5	1296.8	1729.1	2161.4	2593.6	3025.9	3458.2	3929.8	4322.7	5187.3	6051.8	6916.4	7780.9	8645.5
2.0	3.1	350.1	525.2	700.3	1050.4	1400.6	1750.7	2100.8	2451.0	2801.1	3183.1	3501.4	4201.7	4902.0	5602.3	6302.5	7002.8
2.2	3.8	289.4	434.1	578.7	868.1	1157.5	1446.9	1736.2	2025.6	2315.0	2630.7	2893.7	3472.5	4051.2	4630.0	5208.7	5787.5
2½	4.9	224.1	336.1	448.2	672.3	896.4	1020.5	1344.5	1568.6	1792.7	2037.2	2240.9	2689.1	3137.3	3585.4	4033.6	4481.8
2.6	5.3	207.2	310.8	414.4	621.6	828.7	1035.9	1243.1	1450.3	1657.5	1883.5	2071.8	2486.2	2900.6	3314.9	3729.3	4143.7
2¾	5.9	185.2	277.8	370.4	555.6	740.8	926.0	1111.2	1296.4	1481.6	1683.6	1852.0	2222.4	2592.8	2963.2	3333.6	3704.0
3.0	7.1	155.6	233.4	311.2	466.9	622.5	778.1	933.7	1089.3	1244.9	1414.7	1556.2	1867.4	2178.7	2489.9	2801.1	3112.4
3.2	8.0	136.8	205.2	273.5	410.3	547.1	683.9	820.6	957.4	1094.2	1243.4	1367.7	1641.3	1914.8	2188.4	2461.9	2735.5
3½	9.6	114.3	171.5	228.7	343.0	457.3	571.7	686.0	800.3	914.7	1039.4	1143.3	1372.0	1600.6	1829.3	2058.0	2286.6
3.6	10.2	108.1	162.1	216.1	324.2	432.3	540.3	648.4	756.5	864.5	982.4	1080.7	1296.8	1513.0	1729.1	1945.2	2161.4
3.8	11.3	97.0	145.5	194.0	291.0	388.0	485.0	582.0	678.9	775.9	881.7	969.9	1163.9	1357.9	1551.9	1745.9	1939.8
4.0	12.6	87.5	131.3	175.1	262.6	350.1	437.7	525.2	612.7	700.3	795.8	875.4	1050.4	1225.5	1400.6	1575.6	1750.7
4.2	13.9	79.4	119.1	158.8	238.2	317.6	397.0	476.4	555.8	635.2	721.8	794.0	952.8	1111.6	1270.4	1429.1	1587.9
4⅜	15.0	73.2	109.8	146.3	219.5	292.7	365.9	439.0	512.2	585.4	665.2	731.7	878.1	1024.4	1170.8	1317.1	1463.4
4½	15.9	69.2	103.7	138.3	207.5	276.7	345.8	415.0	484.1	553.3	628.8	691.6	830.0	968.3	1106.6	1244.9	1383.3
4.8	18.1	60.8	91.2	121.6	182.4	243.2	303.9	364.7	425.5	486.3	552.6	607.9	729.5	851.0	972.6	1094.2	1215.8
5.0	19.6	56.0	84.0	112.0	168.1	224.1	280.1	336.1	392.2	448.2	509.3	560.2	672.3	784.3	896.4	1008.4	1120.5
5 7/16	23.2	47.4	71.1	94.7	142.1	189.5	236.9	284.2	331.6	379.0	430.6	473.7	568.4	663.2	757.9	852.7	947.4
5½	23.8	46.3	69.4	92.6	138.9	185.2	231.5	277.8	324.1	370.4	420.9	463.0	555.6	648.2	740.8	833.4	926.0
6.0	28.3	38.9	58.4	77.8	116.7	155.6	194.5	233.4	272.3	311.2	353.7	389.0	466.9	544.7	622.5	700.3	778.1
6½	33.2	33.1	49.7	66.3	99.4	132.6	165.7	198.9	232.0	265.2	301.4	331.5	397.8	464.1	530.4	596.7	663.0
6.8	36.3	30.3	45.4	60.6	90.9	121.2	151.4	181.7	212.0	242.3	275.4	302.9	363.5	424.0	484.6	545.2	605.8
7.0	38.5	28.6	42.9	57.2	85.7	114.3	142.9	171.5	200.1	228.7	259.8	285.8	343.0	400.2	457.3	514.5	571.7
7½	44.2	24.9	37.3	49.8	74.7	99.6	124.5	149.4	174.3	199.2	226.4	249.0	298.8	348.6	398.4	448.2	498.0
8.0	50.3	21.9	32.8	43.8	65.7	87.5	109.4	131.3	153.2	175.1	198.9	218.8	262.6	306.4	350.1	393.9	437.7
8½	56.7	19.4	29.1	38.8	58.2	77.5	96.9	116.3	135.7	155.1	176.2	193.8	232.6	271.4	310.2	348.9	387.7
8.8	60.8	18.1	27.1	36.2	54.3	72.3	90.4	108.5	126.6	144.7	164.4	180.9	217.0	253.2	289.4	325.5	361.7
9½	70.9	15.5	23.3	31.0	46.6	62.1	77.6	93.1	108.6	124.1	141.1	155.2	186.2	217.3	248.3	279.3	310.4
10⅝	88.7	12.4	18.6	24.8	37.2	49.6	62.0	74.4	86.8	99.3	112.8	124.1	148.9	173.7	198.5	223.3	248.1
11.2	98.5	11.2	16.7	22.3	33.5	44.7	55.8	67.0	78.2	89.3	101.5	111.7	134.0	156.3	178.6	201.0	223.3
12.0	113.1	9.7	14.6	19.5	29.2	38.9	48.6	58.4	68.1	77.8	88.4	97.3	116.7	136.2	155.6	175.1	194.5

in² = 6,45 cm² | 1 in = 25,4 mm | 1 m/s = 197 ft/min | 1 Imp. gpm = 4,55 l/min | 1 US gmp = 3,79 l/min | 1 kg = 2,2 lbs | 1 bar = 14,7 psi