CYLINDER SPEED AND FORCE CHART

Push Force and Displacement

Cyl. Bore Size (Inches)	Piston Area (Sq. In.)	Cylinder Push Stroke Force in Pounds at Various Pressures										Cu. Ft. Free Air at 80 Lbs. Pressure, Required to move Max. Load 1 Inch	Displace. Per Inch of Stroke (Gallons)
		25	50	65	80	100	250	500	1000	2000	3000		
1	0.785	20	39	51	63	79	196	392	785	1570	2355	.00293	.00340
1 1/2	1.767	44	88	115	142	177	443	885	1770	3540	5310	.00659	.00765
2	3.14	79	157	204	251	314	785	1570	3140	6280	9420	.01171	.0136
2 1/2	4.91	123	245	319	393	491	1228	2455	4910	9820	14730	.01830	.0213
3 1/4	8.30	208	415	540	664	830	2072	4150	8300	16600	24900	.03093	.0359
4	12.57	314	628	817	1006	1257	3143	6285	12570	25140	37710	.04685	.0544
5	19.64	491	982	1277	1571	1964	4910	9820	19640	39280	58920	.07320	.0850
6	28.27	707	1414	1838	2262	2827	7068	14135	28270	56540	84810	.10540	.1224
7	38.49	962	1924	2502	3079	3849	9623	19245	38490	76980	115470	.14347	.1666
8	50.27	1257	2513	3265	4022	5027	12568	25135	50270	100540	150810	.18740	.2176
10	78.54	1964	3927	5105	6283	7854	19635	39270	78540	157080	235620	.29280	.3400
12	113.10	2828	5655	7352	9048	11310	28275	56550	113100	226200	339300	.42164	.4896
14	153.94	3849	7697	10006	12315	15394	38485	76970	153940	307880	461820	.57389	.6664

Deductions for Pull Force and Displacement

Piston Rod Dia. (Inches)	Piston Rod Area (Sq. In.)	Piston Rod Diameter Force in Pounds at Various Pressures To determine Cylinder Pull Force or Displacement, deduct the following Force or Displacement corresponding to Rod Size, from selected Push Stroke Force or Displacement corresponding to Bore Size in the table above										Cu. Ft. Free Air at 80 Lbs. Pressure, Required to move Max. Load 1 Inch	Displace. Per Inch of Stroke (Gallons)
		25	50	65	80	100	250	500	1000	2000	3000		
1/2	0.196	5	10	13	16	20	49	98	196	392	588	.00073	.0009
5/8	0.307	8	15	20	25	31	77	154	307	614	921	.00114	.0013
1	0.785	20	39	51	63	79	196	392	785	1570	2355	.00293	.0034
1 3/8	1.49	37	75	97	119	149	373	745	1490	2980	4470	.00554	.0065
1 3/4	2.41	60	121	157	193	241	603	1205	2410	4820	7230	.00897	.0104
2	3.14	79	157	204	251	314	785	1570	3140	6280	9420	.01171	.0136
2 1/2	4.91	123	245	319	393	491	1228	2455	4910	9820	14730	.01830	.0213
3	7.07	177	354	460	566	707	1767	3535	7070	14140	21210	.02635	.0306
3 1/2	9.62	241	481	625	770	962	2405	4810	9620	19240	28860	.03587	.0416
4	12.57	314	628	817	1006	1257	3143	6285	12570	25140	37710	.04685	.0544
4 1/2	15.90	398	795	1033	1272	1590	3975	7950	15900	31800	47708	.05929	.0689
5	19.64	491	982	1277	1571	1964	4910	9820	19640	39280	58920	.07320	.0850
5 1/2	23.76	594	1188	1544	1901	2376	5940	11880	23760	47520	71280	.08857	.1029
7	38.49	962	1924	2502	3079	3849	9623	19245	38490	76980	115470	.14347	.1666
8 1/2	56.75	1419	2838	3689	4540	5675	14187	28375	56750	113500	170250	.21157	.2456

HYDRAULIC CYLINDER SPEEDS (inches per minute)

PISTON DIA	ROD DIA	1 GPM	3 GPM	5 GPM	8 GPM	12 GPM	15 GPM	20 GPM	25 GPM	30 GPM	40 GPM	50 GPM	75 GPM
1½	none	130	392	654	1034								
	⅝	158	476	792	1265								
	1	235	706	1176	1880								
2	none	73	221	368	588	883	1120						
	1	97	294	490	782	1175	1465						
	1⅜	139	416	697	1115	1673	2090						
2½	none	47	131	235	376	565	675	940	1175				
	1	56	168	280	448	672	840	1120	1400				
	1⅜	67	203	339	542	813	1015	1355	1695				
	1¾	92	277	463	740	1110	1385	1850	2310				
3¼	none	28	83	139	223	334	417	557	696	836	1115		
	1⅜	34	102	170	271	407	510	680	850	1020	1360		
	1¾	39	118	196	313	472	588	784	980	1176	1568		
	2	44	134	224	358	537	672	896	1120	1344	1792		
4	none	18	55	92	147	220	276	368	460	552	736	920	
	1¾	22	68	113	182	273	339	452	565	678	904	1130	
	2	24	73	122	196	294	366	488	610	732	976	1220	
	2½	30	90	150	241	362	450	600	750	900	1200	1500	
5	none	12	35	58	94	141	174	232	290	348	464	580	870
	2	14	42	70	112	168	210	280	350	420	560	700	1050
	2½	16	47	78	125	188	235	315	390	470	630	780	1170
	3	18	55	92	147	220	275	365	460	550	730	920	1380
	3½	22	66	111	178	266	333	444	555	665	888	1110	1665