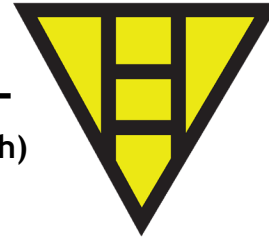


BERMINGHAMMER

FOUNDATION EQUIPMENT



Maximum Impact Force (F_{max}) at Refusal (> 10 blows/inch)
from Measured Stroke, Velocity and Acceleration

English Units

Time	Hammer			B-9	B-21	B-32	B-5505	B-64	B-6505	B-6505HD
	4.3 ms	Ram Weight (lbs)			2000	4630	7050	9200	14110	17640
	Rated Energy (ft-lbs)			21000	53200	81080	105900	162260	202900	220500
	Kinetic Energy (ft-lbs)			13400	33940	51730	67560	103520	129450	140680
BPM	Stroke (ft)	Velocity (ft/s)	Acceleration (ft/s ²)	Maximum Impact Force, F_{max} (tons) [ULS Values Shown]						
36	11.2	22.0	5116	79	184	280	366	561	701	876
37	10.6	21.5	5000	77	180	274	358	548	685	857
38	10.0	21.0	4884	75	176	268	350	535	669	837
39	9.5	20.5	4767	73	171	261	341	523	653	817
40	9.1	20.0	4651	72	167	255	333	510	637	797
41	8.6	19.5	4535	70	163	249	325	497	621	777
42	8.2	19.0	4419	68	159	242	316	484	606	757
43	7.8	18.5	4302	66	155	236	308	472	590	737
44	7.5	18.0	4186	65	151	229	300	459	574	717
45	7.2	17.5	4070	63	146	223	291	446	558	697
46	6.9	17.0	3953	61	142	217	283	433	542	677
47	6.6	16.5	3837	59	138	210	275	421	526	657
48	6.3	16.0	3721	57	134	204	266	408	510	637
49	6.0	15.5	3605	56	130	198	258	395	494	617
50	5.8	15.0	3488	54	125	191	250	382	478	598
51	5.6	14.6	3395	52	122	186	243	372	465	582
52	5.4	14.2	3302	51	119	181	236	362	453	566
53	5.2	13.8	3209	49	115	176	230	352	440	550
54	5.0	13.4	3116	48	112	171	223	342	427	534
55	4.8	13.0	3023	47	109	166	216	331	414	518

SI Units

Time	Hammer			B-9	B-21	B-32	B-5505	B-64	B-6505	B-6505HD
	4.3 ms	Ram Weight (kg)			900	2100	3200	4180	64000	8000
	Rated Energy (kJ)			28	72	110	146	220	275	300
	Kinetic Energy (kJ)			17.9	45.9	70.2	93.1	140.4	175.5	191.4
BPM	Stroke (m)	Velocity (m/s)	Acceleration (m/s ²)	Maximum Impact Force, F_{max} (kN) [ULS Values Shown]						
36	3.40	6.7	1559	702	1637	2495	3259	4990	6238	7797
37	3.22	6.6	1524	686	1600	2438	3185	4877	6096	7620
38	3.05	6.4	1489	670	1563	2382	3111	4763	5954	7443
39	2.90	6.2	1453	654	1526	2325	3037	4650	5812	7266
40	2.76	6.1	1418	638	1489	2268	2963	4537	5671	7088
41	2.62	5.9	1382	622	1451	2212	2889	4423	5529	6911
42	2.50	5.8	1347	606	1414	2155	2815	4310	5387	6734
43	2.39	5.6	1311	590	1377	2098	2741	4196	5245	6557
44	2.28	5.5	1276	574	1340	2041	2667	4083	5104	6380
45	2.18	5.3	1240	558	1302	1985	2593	3969	4962	6202
46	2.08	5.2	1205	542	1265	1928	2518	3856	4820	6025
47	2.00	5.0	1170	526	1228	1871	2444	3743	4678	5848
48	1.91	4.9	1134	510	1191	1815	2370	3629	4537	5671
49	1.84	4.7	1099	494	1154	1758	2296	3516	4395	5493
50	1.76	4.6	1063	478	1116	1701	2222	3402	4253	5316
51	1.70	4.5	1035	466	1087	1656	2163	3312	4140	5175
52	1.63	4.3	1007	453	1057	1610	2104	3221	4026	5033
53	1.57	4.2	978	440	1027	1565	2044	3130	3913	4891
54	1.51	4.1	950	427	997	1520	1985	3039	3799	4749
55	1.46	4.0	921	415	968	1474	1926	2949	3686	4607

Assumptions: Ram Weight and Rated Energy are from sales data of each hammer. Kinetic Energy is 63.8% of Potential. Strokes are based off of BPM and free falling kinematics. Velocities from sales data. Acceleration is constant over impact time. Time interval is the same for all hammers. F_{max} is the product of mass and acceleration. ULS is 1/2 of F_{max} .

See E07-45 project folder for details.