

## HP, ET, SPEED CALCULATOR

This data is intended to assist our customers in understanding the relationship between vehicle HP and weight vs. 1/4 mile speed and ET. Change your HP and/or vehicle weight numbers and check the results.

Our data is based on engine HP with manual transmission. Dynojet chassis rear wheel HP (RWHP) will be less - up to 15%. And an automatic trans is lower RWHP than a manual even though the engine makes the SAME HP.

It is not the intent of this paper to micro analyze the HP/parasitic losses in automatic transmissions, rear end types, gear ratios and lock up vs. non lock up converters. Just know there are variables that may affect the actual RWHP of your car. Engine HP is the same. Less HP reaches the rear wheels. Here are a few examples. These are actual dyno tests we have conducted over the years.

- +100 Supercharger type WITH SAME BOOST (see BOOST-A-PUMP® "Fuel Pump Tech).
- 30-40 Automatic vs. manual trans. Example: T5 (97% efficient). R470W (91%).
- +30 Non lock up vs. lock up "slipping" converters - like a slipping clutch - lose HP and 1/4 mile speed and ET.
- +18 Electric vs. manual water pump.
- +15 Underdrive pulleys.
- 10 9 Ford rear end (89% efficiency). 12 bolt GM (93%).
- +18 3.7 vs. 3.3 gears. Shelby GT500. More with 4.1's.

Again, remember that the engine itself is developing the same HP. It is the exterior components (supercharger, trans, pulleys etc.) that consume engine HP.

### SUPERCHARGER EFFICIENCY

For example: Upgrading to a supercharger with less POWER CONSUMPTION/PARASITIC LOSS, with the exact same boost, can increase engine output and RWHP by 25-100HP and more depending on HP level. Add 75HP to your engine output and see what it does for your 1/4 mile times. That's why Kenne Bell has spent so much engineering time on supercharger power consumption. And let there be no doubt that a 4x6 rotor lobe configuration is HP superior to 4x4 and 3x5 designs - at least according to all our supercharger dyno testing. Any of the above examples improve 1/4 mile performance because your engine uses LESS HP to drive them.

### ENGINE HP vs. CHASSIS DYNO HP

We have tested and compared the same Shelby engine on the engine dyno and in a car on the chassis dyno which registered 15% less HP. This test as well as others show the same relative HP loss. So, Kenne Bell uses .85 to convert engine to chassis HP. Tests were made with a manual trans in 1:1 4th gear.

### AUTOMATIC TRANSMISSIONS

Yes, there is additional HP loss with an automatic trans - up to 100HP or more with a "loose" racing converter. An automatic trans consumes approx. 30 more HP than a manual because of it's complexity and big oil pump it must drive. A non lock up converter is another 25-40HP depending on stall speed/slippage. For that reason, Kenne Bell is not a big promoter of non lock up converters.

### WHY & HOW IT WORKS

In the '60's, Chrysler drag racing engineers developed formulas for determining the relationship between 1/4 mile speed and ET, vehicle weight and HP. We have used these formulas since the '60's - as do many others. The formulas work. Kenne Bell even offered our own speed calculator slide rule based on these formulas which we use to this day in our drag racing programs.

- ❶ ET is BEST possible ET for the speed, unless trap speed is skewed by a factor detrimental to acceleration (excessively "loose" converter, wrong gears, etc.).
- ❷ HP can be calculated if speed (forget ET) and vehicle weight is known. ET is not the best HP indicator as it's a function of traction etc. whereas speed is like a 1/4 mile dyno run. For a vehicle to attain a particular speed, X amount of HP is required. Fact. For example: A car can launch in either first or second gear and turn the same 1/4 mile trap speed while ET's vary a couple of seconds. Try it. So, want to know if your engine made more power with a change or mod? Look at the trap speed.
- ❸ Look at amount of HP or vehicle weight and how it affects ET or speed (best indicator). Beats guessing at it or relying on opinions.

### 1/8 TO 1/4 MILE CONVERSION

- Divide 1/8 mile ET by .64
- Divide 1/8 mile speed by .81

VEHICLE WEIGHT>	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700	3800	3900	4000	4100	4200	4300	4400	4500	4600	4700	4800	
HORSEPOWER																						
500	10.34	10.47	10.58	10.70	10.81	10.93	11.04	11.14	11.25	11.35	11.45	11.55	11.65	11.75	11.84	11.93	12.03	12.12	12.21	12.29	11.75	
550	10.02	10.14	10.25	10.37	10.48	10.58	10.69	10.79	10.90	11.00	11.09	11.19	11.29	11.38	11.47	11.56	11.65	11.74	11.82	11.91	11.38	
600	9.73	9.85	9.96	10.07	10.18	10.28	10.38	10.49	10.58	10.68	10.78	10.87	10.96	11.05	11.14	11.23	11.32	11.40	11.49	11.57	11.05	
650	9.48	9.59	9.70	9.80	9.91	10.01	10.11	10.21	10.31	10.40	10.49	10.58	10.67	10.76	10.85	10.93	11.02	11.10	11.18	11.26	10.76	
700	9.25	9.36	9.46	9.57	9.67	9.77	9.86	9.96	10.05	10.15	10.24	10.33	10.41	10.50	10.58	10.67	10.75	10.83	10.91	10.99	10.50	
750	9.04	9.14	9.25	9.35	9.45	9.55	9.64	9.73	9.83	9.92	10.00	10.09	10.18	10.26	10.34	10.43	10.51	10.58	10.66	10.74	10.26	
800	8.84	8.95	9.05	9.15	9.25	9.34	9.44	9.53	9.62	9.71	9.79	9.88	9.96	10.04	10.12	10.20	10.28	10.36	10.44	10.51	10.04	
850	8.67	8.77	8.87	8.97	9.06	9.16	9.25	9.34	9.42	9.51	9.60	9.68	9.76	9.84	9.92	10.00	10.08	10.15	10.23	10.30	9.84	
900	8.50	8.60	8.70	8.80	8.89	8.98	9.07	9.16	9.25	9.33	9.41	9.50	9.58	9.66	9.73	9.81	9.89	9.96	10.03	10.11	9.66	
950	8.35	8.45	8.55	8.64	8.73	8.82	8.91	9.00	9.08	9.16	9.25	9.33	9.41	9.48	9.56	9.64	9.71	9.78	9.85	9.93	9.48	
1000	8.21	8.31	8.40	8.49	8.58	8.67	8.76	8.84	8.93	9.01	9.09	9.17	9.25	9.32	9.40	9.47	9.55	9.62	9.69	9.76	9.32	
1050	8.08	8.17	8.27	8.36	8.45	8.53	8.62	8.70	8.78	8.86	8.94	9.02	9.10	9.17	9.25	9.32	9.39	9.46	9.53	9.60	9.17	
1100	7.95	8.05	8.14	8.23	8.32	8.40	8.49	8.57	8.65	8.73	8.81	8.88	8.96	9.03	9.10	9.18	9.25	9.32	9.38	9.45	9.03	
1150	7.84	7.93	8.02	8.11	8.19	8.28	8.36	8.44	8.52	8.60	8.68	8.75	8.83	8.90	8.97	9.04	9.11	9.18	9.25	9.31	8.90	
1200	7.73	7.82	7.91	7.99	8.08	8.16	8.24	8.32	8.40	8.48	8.55	8.63	8.70	8.77	8.84	8.91	8.98	9.05	9.12	9.18	8.77	
1250	7.62	7.71	7.80	7.88	7.97	8.05	8.13	8.21	8.29	8.36	8.44	8.51	8.58	8.65	8.72	8.79	8.86	8.93	8.99	9.06	8.65	
1300	7.52	7.61	7.70	7.78	7.86	7.95	8.03	8.10	8.18	8.25	8.33	8.40	8.47	8.54	8.61	8.68	8.75	8.81	8.88	8.94	8.54	
1350	7.43	7.52	7.60	7.68	7.77	7.85	7.93	8.00	8.08	8.15	8.22	8.30	8.37	8.44	8.50	8.57	8.64	8.70	8.77	8.83	8.44	
1400	7.34	7.43	7.51	7.59	7.67	7.75	7.83	7.91	7.98	8.05	8.13	8.20	8.27	8.33	8.40	8.47	8.53	8.60	8.66	8.72	8.33	
1450	7.25	7.34	7.42	7.50	7.58	7.66	7.74	7.81	7.89	7.96	8.03	8.10	8.17	8.24	8.30	8.37	8.43	8.50	8.56	8.62	8.24	
1500	7.17	7.26	7.34	7.42	7.50	7.58	7.65	7.73	7.80	7.87	7.94	8.01	8.08	8.14	8.21	8.27	8.34	8.40	8.46	8.52	8.14	
1550	7.09	7.18	7.26	7.34	7.42	7.49	7.57	7.64	7.71	7.78	7.85	7.92	7.99	8.06	8.12	8.18	8.25	8.31	8.37	8.43	8.06	
1600	7.02	7.10	7.18	7.26	7.34	7.41	7.49	7.56	7.63	7.70	7.77	7.84	7.91	7.97	8.04	8.10	8.16	8.22	8.28	8.34	7.97	
1650	6.95	7.03	7.11	7.19	7.26	7.34	7.41	7.48	7.56	7.62	7.69	7.76	7.83	7.89	7.95	8.02	8.08	8.14	8.20	8.26	7.89	
1700	6.88	6.96	7.04	7.12	7.19	7.27	7.34	7.41	7.48	7.55	7.62	7.68	7.75	7.81	7.87	7.94	8.00	8.06	8.12	8.18	7.81	
1750	6.81	6.89	6.97	7.05	7.12	7.20	7.27	7.34	7.41	7.48	7.54	7.61	7.67	7.74	7.80	7.86	7.92	7.98	8.04	8.10	7.74	
1800	6.75	6.83	6.91	6.98	7.06	7.13	7.20	7.27	7.34	7.41	7.47	7.54	7.60	7.66	7.73	7.79	7.85	7.91	7.96	8.02	7.66	
1850	6.69	6.77	6.84	6.92	6.99	7.06	7.14	7.20	7.27	7.34	7.40	7.47	7.53	7.59	7.66	7.72	7.78	7.83	7.89	7.95	7.59	
1900	6.63	6.71	6.78	6.86	6.93	7.00	7.07	7.14	7.21	7.27	7.34	7.40	7.47	7.53	7.59	7.65	7.71	7.76	7.82	7.88	7.53	
1950	6.57	6.65	6.72	6.80	6.87	6.94	7.01	7.08	7.15	7.21	7.28	7.34	7.40	7.46	7.52	7.58	7.64	7.70	7.75	7.81	7.46	
2000	6.52	6.59	6.67	6.74	6.81	6.88	6.95	7.02	7.09	7.15	7.21	7.28	7.34	7.40	7.46	7.52	7.58	7.63	7.69	7.74	7.40	

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VEHICLE WEIGHT>	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700	3800	3900	4000	4100	4200	4300	4400	4500	4600	4700	4800
<b>HORSEPOWER</b>																					
<b>500</b>	131.77	130.24	128.78	127.38	126.03	124.75	123.51	122.33	121.18	120.08	119.02	117.99	117.00	116.04	115.11	114.21	113.34	112.50	111.67	110.88	110.10
<b>550</b>	136.02	134.44	132.93	131.49	130.10	128.78	127.50	126.27	125.09	123.96	122.86	121.80	120.78	119.79	118.83	117.90	117.00	116.13	115.28	114.46	113.66
<b>600</b>	140.03	138.40	136.84	135.36	133.93	132.56	131.25	129.99	128.78	127.60	126.48	125.38	124.33	123.31	122.33	121.37	120.44	119.54	118.67	117.82	117.00
<b>650</b>	143.81	142.14	140.54	139.02	137.55	136.15	134.80	133.51	132.26	131.05	129.90	128.78	127.69	126.65	125.63	124.65	123.70	122.78	121.88	121.01	120.16
<b>700</b>	147.41	145.70	144.06	142.49	140.99	139.55	138.17	136.84	135.57	134.33	133.14	132.00	130.89	129.81	128.78	127.77	126.79	125.85	124.93	124.04	123.17
<b>750</b>	150.84	149.09	147.41	145.81	144.27	142.80	141.39	140.03	138.72	137.46	136.24	135.07	133.93	132.83	131.77	130.74	129.74	128.78	127.84	126.92	126.03
<b>800</b>	154.12	152.33	150.62	148.98	147.41	145.91	144.46	143.07	141.74	140.45	139.20	138.00	136.84	135.72	134.64	133.58	132.56	131.58	130.62	129.68	128.78
<b>850</b>	157.27	155.44	153.69	152.02	150.42	148.88	147.41	145.99	144.63	143.31	142.05	140.82	139.64	138.49	137.38	136.31	135.27	134.26	133.28	132.33	131.40
<b>900</b>	160.29	158.43	156.65	154.94	153.31	151.75	150.25	148.80	147.41	146.07	144.78	143.53	142.32	141.16	140.03	138.93	137.87	136.84	135.85	134.87	133.93
<b>950</b>	163.21	161.31	159.50	157.76	156.10	154.51	152.98	151.51	150.09	148.73	147.41	146.14	144.91	143.72	142.57	141.46	140.38	139.33	138.32	137.33	136.37
<b>1000</b>	166.02	164.09	162.25	160.48	158.79	157.17	155.62	154.12	152.68	151.29	149.95	148.66	147.41	146.20	145.03	143.90	142.80	141.74	140.70	139.70	138.72
<b>1050</b>	168.74	166.78	164.91	163.11	161.40	159.75	158.17	156.65	155.18	153.77	152.41	151.10	149.83	148.60	147.41	146.26	145.14	144.06	143.01	141.99	140.99
<b>1100</b>	171.38	169.39	167.48	165.66	163.92	162.25	160.64	159.10	157.61	156.18	154.79	153.46	152.17	150.92	149.71	148.54	147.41	146.31	145.24	144.21	143.20
<b>1150</b>	173.94	171.92	169.98	168.14	166.37	164.67	163.04	161.47	159.96	158.51	157.10	155.75	154.44	153.17	151.95	150.76	149.61	148.49	147.41	146.36	145.33
<b>1200</b>	176.42	174.37	172.41	170.54	168.74	167.02	165.37	163.78	162.25	160.77	159.35	157.97	156.65	155.36	154.12	152.92	151.75	150.62	149.52	148.45	147.41
<b>1250</b>	178.84	176.76	174.77	172.87	171.06	169.31	167.63	166.02	164.47	162.97	161.53	160.14	158.79	157.49	156.23	155.01	153.83	152.68	151.57	150.48	149.43
<b>1300</b>	181.19	179.09	177.07	175.15	173.31	171.54	169.84	168.21	166.63	165.12	163.66	162.25	160.88	159.56	158.29	157.05	155.85	154.69	153.56	152.46	151.40
<b>1350</b>	183.49	181.35	179.32	177.37	175.50	173.71	171.99	170.34	168.74	167.21	165.73	164.30	162.92	161.58	160.29	159.04	157.83	156.65	155.50	154.39	153.31
<b>1400</b>	185.73	183.57	181.50	179.53	177.64	175.83	174.09	172.41	170.80	169.25	167.75	166.30	164.91	163.56	162.25	160.98	159.75	158.56	157.40	156.28	155.18
<b>1450</b>	187.91	185.73	183.64	181.64	179.73	177.90	176.13	174.44	172.81	171.24	169.72	168.26	166.85	165.48	164.16	162.87	161.63	160.42	159.25	158.11	157.01
<b>1500</b>	190.05	187.84	185.73	183.71	181.77	179.92	178.14	176.42	174.77	173.19	171.65	170.17	168.74	167.36	166.02	164.72	163.47	162.25	161.06	159.91	158.79
<b>1550</b>	192.14	189.90	187.77	185.73	183.77	181.90	180.09	178.36	176.70	175.09	173.54	172.04	170.60	169.20	167.85	166.53	165.26	164.03	162.83	161.67	160.54
<b>1600</b>	194.18	191.92	189.76	187.70	185.73	183.83	182.01	180.26	178.58	176.95	175.39	173.87	172.41	171.00	169.63	168.31	167.02	165.77	164.56	163.39	162.25
<b>1650</b>	196.18	193.90	191.72	189.64	187.64	185.73	183.89	182.12	180.42	178.78	177.19	175.67	174.19	172.76	171.38	170.04	168.74	167.48	166.26	165.07	163.92
<b>1700</b>	198.14	195.84	193.64	191.53	189.52	187.58	185.73	183.94	182.22	180.56	178.97	177.42	175.93	174.49	173.09	171.74	170.43	169.16	167.92	166.72	165.56
<b>1750</b>	200.07	197.74	195.52	193.39	191.36	189.40	187.53	185.73	183.99	182.32	180.70	179.15	177.64	176.18	174.77	173.41	172.09	170.80	169.55	168.34	167.17
<b>1800</b>	201.95	199.61	197.36	195.22	193.16	191.19	189.30	187.48	185.73	184.04	182.41	180.84	179.32	177.85	176.42	175.05	173.71	172.41	171.15	169.93	168.74
<b>1850</b>	203.81	201.44	199.17	197.01	194.93	192.95	191.04	189.20	187.43	185.73	184.08	182.50	180.96	179.48	178.04	176.65	175.30	173.99	172.72	171.49	170.29
<b>1900</b>	205.63	203.24	200.95	198.77	196.68	194.67	192.74	190.89	189.10	187.38	185.73	184.12	182.58	181.08	179.63	178.23	176.87	175.55	174.27	173.02	171.81
<b>1950</b>	207.42	205.00	202.70	200.50	198.39	196.36	194.42	192.55	190.75	189.01	187.34	185.73	184.17	182.66	181.19	179.78	178.41	177.07	175.78	174.53	173.31
<b>2000</b>	209.17	206.74	204.42	202.20	200.07	198.03	196.06	194.18	192.36	190.62	188.93	187.30	185.73	184.20	182.73	181.30	179.92	178.58	177.27	176.01	174.77

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