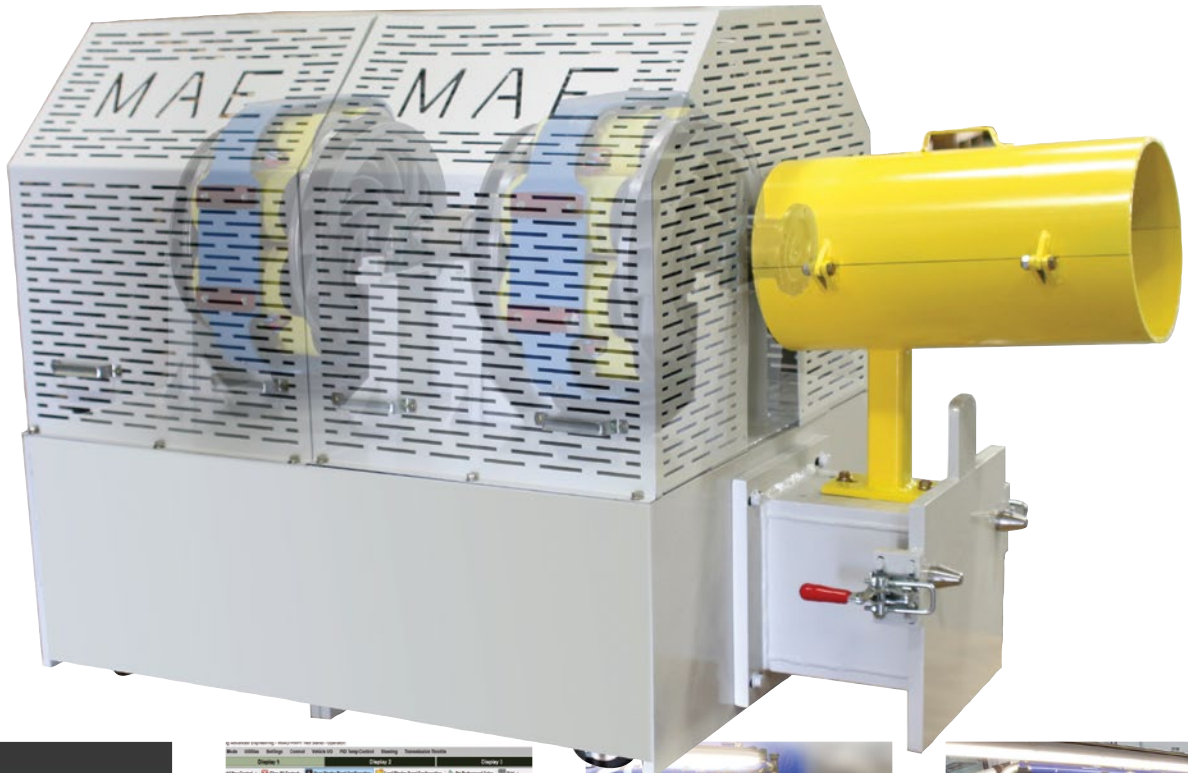


Air-Cooled Eddy Current Engine Dynamometers

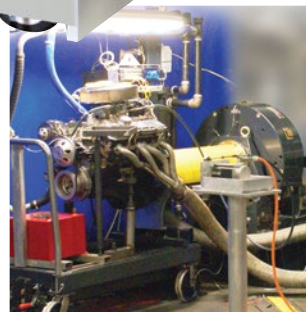
MAETM
MUSTANG
ADVANCED ENGINEERING
*Fearless Innovation*TM



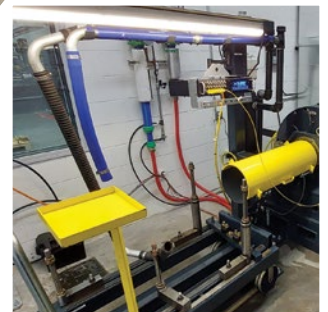
Data Acquisition Systems



Production Software



Engine Testing



Testing Accoutrements

TESTCellTM
AUTOMATION & DATA ACQUISITION SYSTEM

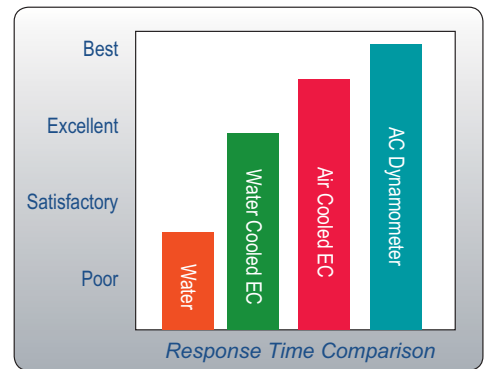
Testing Solutions

Mustang's ED Series Air-Cooled Engine Dynamometers are the answer for most engine testing applications due to their excellent stability, accuracy and testing range.

Unlike similarly priced water brake systems, the ED Series offers reliable, steady state control from near zero speed to maximum RPM. The system is also air-cooled, which eliminates water from the test cell and greatly reduces the maintenance burdens that are typically associated with water brakes and water cooled dynamometers. The ED Series Dynamometers are available in four ranges – the 40 Range for high speed small displacement engine testing (internal combustion engines), the 70 Range for standard automotive engines and high speed four and six cylinder racing engines, the 140 Range for standard 6-cylinder and 8-cylinder automotive applications and light and medium duty diesel engines, and the 400 Range for testing large diesel engines. The 70 and 140 Ranges each have three separate products to handle a wide range of power requirements. The 40 Range is available with two products and the 400 Range is available with three. Additionally, each system is available with optional mechanical equipment upgrades to augment the testing needs for each client – including electric starter systems, electric motors for measuring engine parasitic losses, and gear reducers for testing very high RPM engines common in motorcycles, ATVs, and snowmobiles.

Fast, Accurate, and Maintenance Free

The air cooled eddy current dynamometer delivers an exceptional response time compared to alternative types of dynamometers. For instance, the ED40-10 has a response time of approximately 150 ms. Compared to an equally sized AC Dynamometer with a 100 ms response time at over twice the price, the ED40-10 is an excellent choice. Compared to the water cooled Eddy Current with > 500 ms response time and the water brake with a > 1 second response time, the air-cooled eddy current is by far the best choice.



Software Screens



Electromagnetic Absorption Module

The ED Series Engine Dynamometers utilize Electromagnetic Absorption Modules (i.e. Eddy Current Brakes) to apply a load to the engine under test. The Eddy Current Brake is ideal for engine testing due to its frictionless operation and relatively easy to maintain design. Each absorber is equipped with a series of coils, which, when energized with power from the system controller, will create a magnetic attraction between the stator assembly and the rotor assemblies which are connected to the test system shaft. This creates a braking, or loading action against the engine. A load cell measures the reaction torque while a highly accurate hall-effect speed sensor measures shaft speed.

Another excellent attribute of the Eddy Current Brake is the absence of water as a cooling medium. The Eddy Current Brake is air-cooled and uses specially design rotor fins to aid in the cooling process as the brake rotors spins at high speeds. Each system is also available with optional cooling fans to keep the system at a lower temperature during long term testing procedures, such as with durability testing.

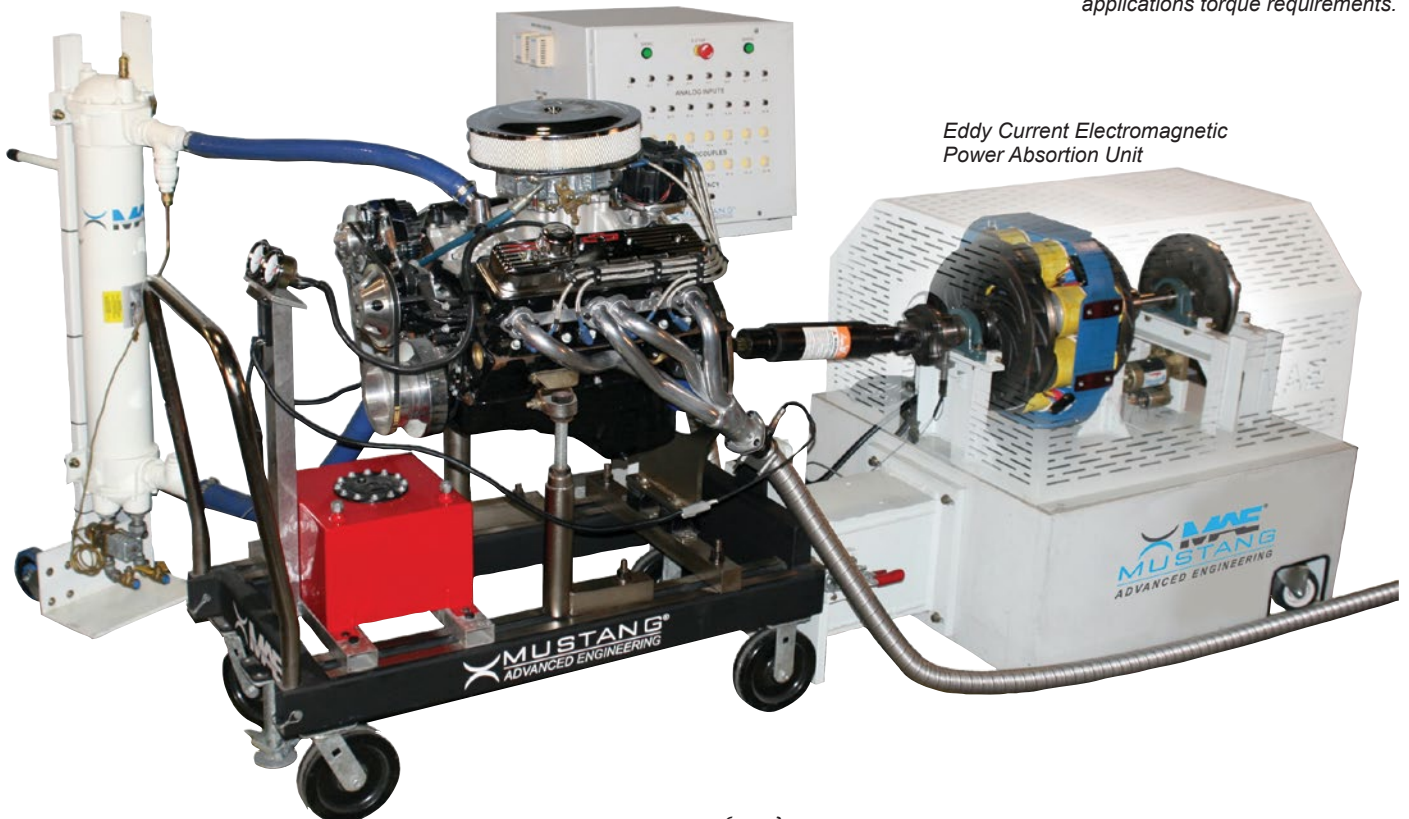
When referring to a system specification please note that the standard power and torque ratings are for tests that last five minutes or less at full load. For each additional time increment at full load past five minutes the system capacity will be reduced by a % to account for rotor temperature. For testing at full load for 20-minutes the Hot Testing Capacity should be used. For testing at full load past 60 minutes the Continuous Testing Capacity should be used.



Mustang's Engine Coolant Heat Exchanger has a manual temperature control that allows the operator to control and adjust the temperature of the engines output coolant.



Mustang offers both the Direct-Connect SERVO System and the versatile Gearhead System, in different actuator sizes to meet your applications torque requirements.



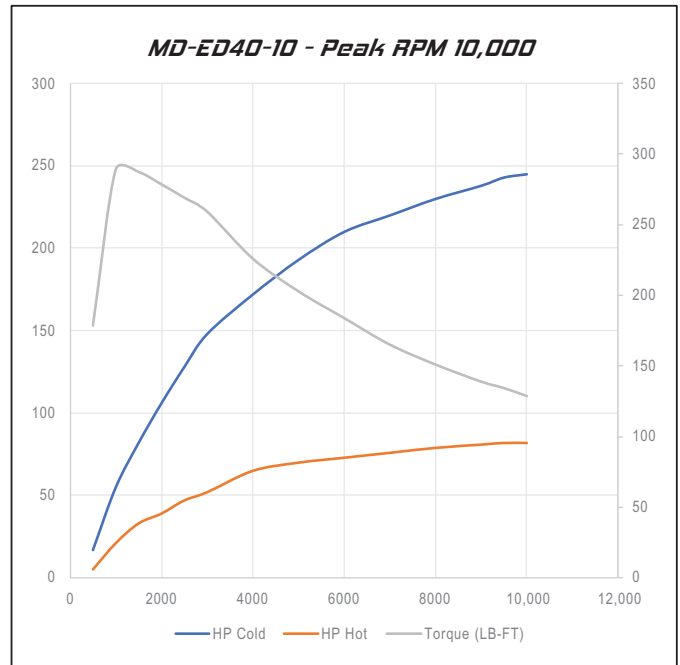
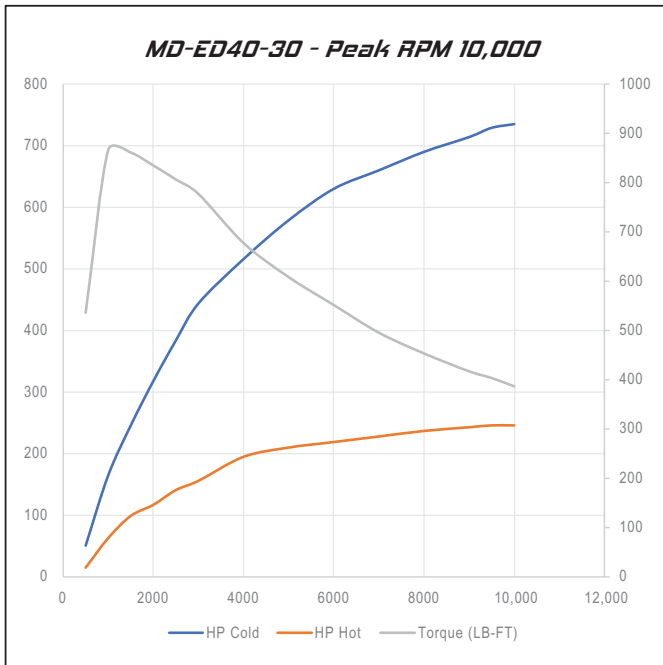
Eddy Current Electromagnetic Power Absorption Unit



ED40 High Speed Range

The ED40 Series Dynamometer is designed to handle primarily high speed engines up to 8,000-RPM. The 40 series utilizes one or two model MDK-40 Series Electromagnetic Absorption Modules depending on the model chosen. The chart below includes the specifications for each of the models available in the 40 range.

RPM	HP Cold	HP Hot	Torque (LB-FT)	RPM	HP Cold	HP Hot	Torque (LB-FT)
500	17	5	179	500	51	15	536
1000	55	21	289	1000	165	63	867
1500	82	33	287	1500	246	99	861
2000	106	39	278	2000	318	117	835
2500	128	47	269	2500	384	141	807
3000	148	52	259	3000	444	156	777
4000	172	65	226	4000	516	195	678
5000	193	70	203	5000	579	210	608
6000	210	73	184	6000	630	219	551
7000	220	76	165	7000	660	228	495
8000	230	79	151	8000	690	237	453
9000	238	81	139	9000	714	243	417
9500	243	82	134	9500	729	246	403
10000	245	82	129	10000	735	246	386

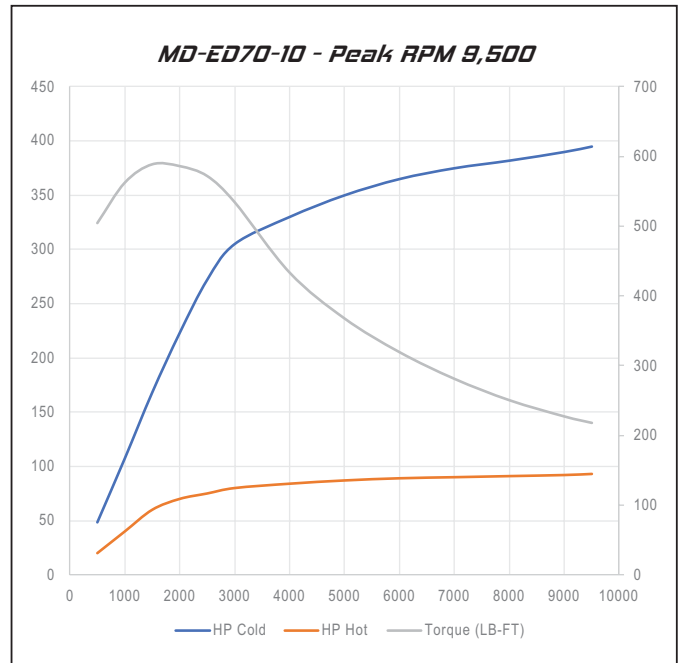
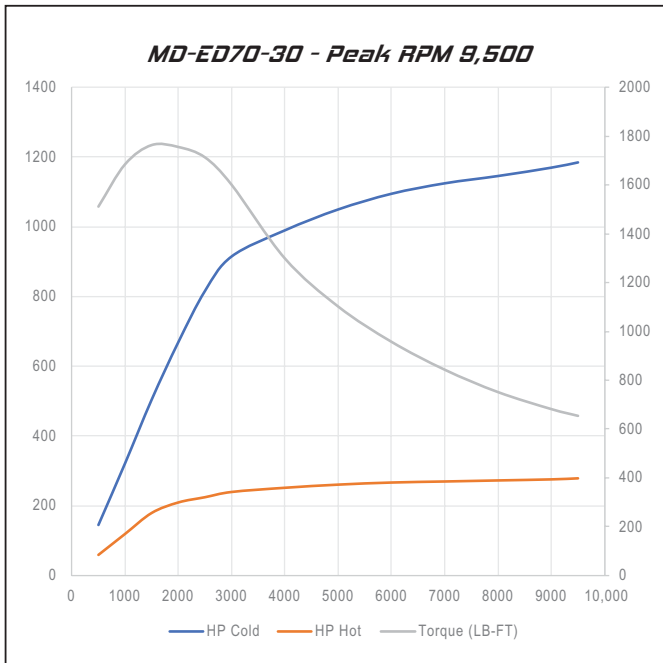


ED70 Automotive Range

The ED70 Series Dynamometer is designed to handle primarily standard automotive engines and high performance engines up to 7,000-RPM. The 70 series utilizes up to three model MDK-70 Series Electromagnetic Absorption Modules depending on the model chosen. The chart below includes the specifications for each of the models available in the 70 range.



RPM	HP Cold	HP Hot	Torque (LB-FT)	RPM	HP Cold	HP Hot	Torque (LB-FT)
500	48	20	504	500	144	60	1513
1000	107	40	562	1000	321	120	1686
1500	168	60	588	1500	504	180	1765
2000	223	70	586	2000	669	210	1757
2500	272	75	571	2500	816	225	1714
3000	305	80	534	3000	915	240	1602
4000	330	84	433	4000	990	252	1300
5000	350	87	368	5000	1050	261	1103
6000	365	89	319	6000	1095	267	958
7000	375	90	281	7000	1125	270	844
8000	382	91	251	8000	1146	273	752
9000	390	92	228	9000	1170	276	683
9500	395	93	218	9500	1185	279	655

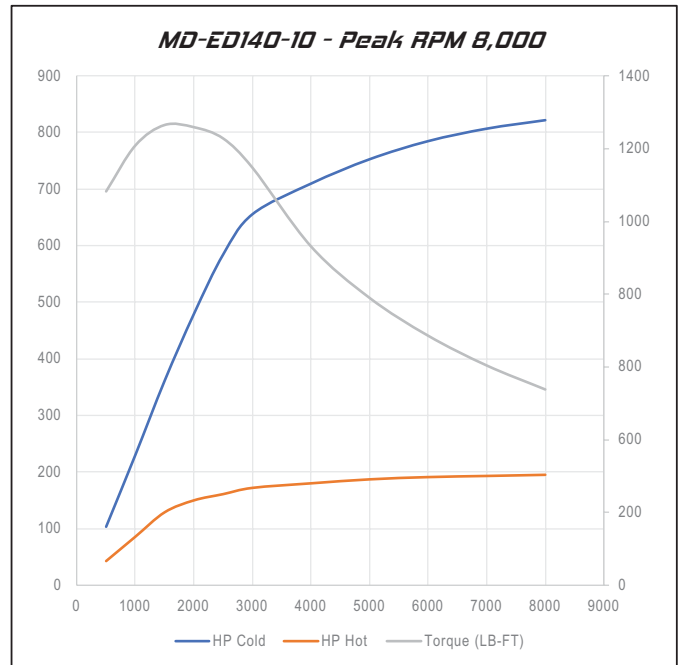


ED140 High Performance Range

The ED140 Series Dynamometer is designed to handle primarily standard automotive engines and high performance engines up to 6,000-RPM as well as diesel engines up to and including large diesel engines with up to 5,100 lb-ft of torque. The 140 series utilizes up to three model MDK-140 Series Electromagnetic Absorption Modules depending on the model chosen. The chart below includes the specifications for each of the models available in the 140 range.



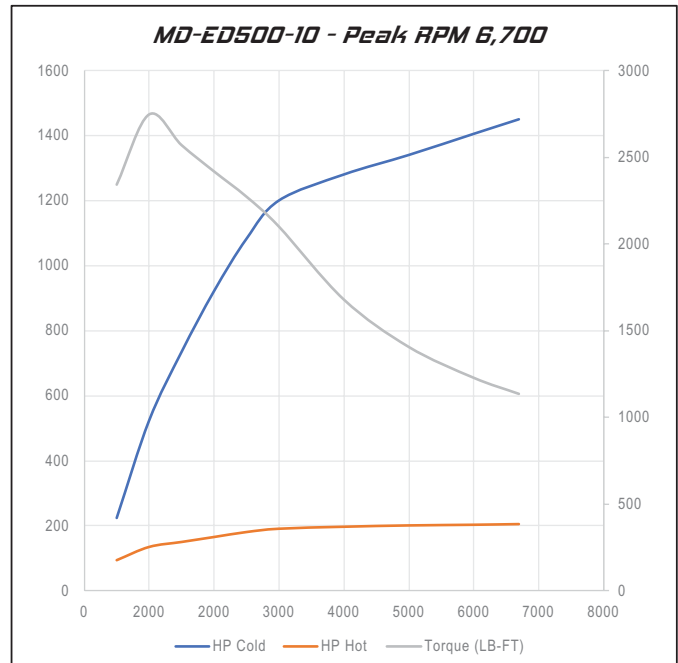
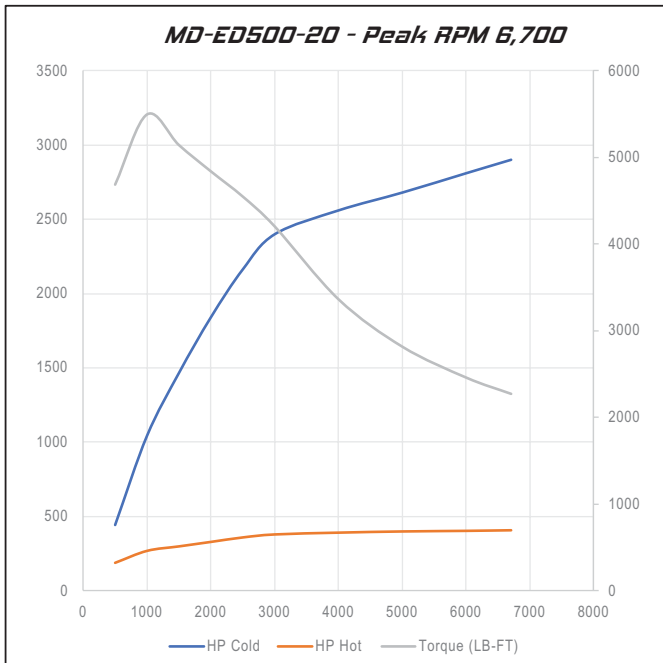
RPM	HP Cold	HP Hot	Torque (LB-FT)	RPM	HP Cold	HP Hot	Torque (LB-FT)
500	103	43	1082	500	206	86	2164
1000	230	86	1208	1000	460	172	2416
1500	361	129	1264	1500	722	258	2528
2000	479	150	1258	2000	958	300	2516
2500	584	161	1227	2500	1168	322	2454
3000	655	172	1147	3000	1310	344	2293
4000	709	180	931	4000	1418	360	1862
5000	752	187	790	5000	1504	374	1580
6000	784	191	686	6000	1568	382	1373
7000	806	193	605	7000	1612	386	1209
8000	821	195	539	8000	1642	390	1078



ED500 Heavy Duty Range

The ED400 Series Dynamometer is designed to handle diesel engines of all types including large diesel engines with up to 3,400-hp and 8,400 lb-ft of torque. The 400 series utilizes up to four model MDK-400 Series Electromagnetic Absorption Modules depending on the model chosen. The chart below includes the specifications for each of the models available in the 400 range.

RPM	HP Cold	HP Hot	Torque (LB-FT)	RPM	HP Cold	HP Hot	Torque (LB-FT)
500	223	95	2342	500	446	190	4685
1000	523	135	2747	1000	1046	270	5494
1500	734	150	2570	1500	1468	300	5140
2000	921	165	2419	2000	1842	330	4837
2500	1082	180	2273	2500	2164	360	4546
3000	1200	190	2101	3000	2400	380	4202
4000	1280	196	1681	4000	2560	392	3361
5000	1340	200	1408	5000	2680	400	2815
6000	1405	202	1230	6000	2810	404	2460
6700	1450	204	1137	6700	2900	408	2273



Software and Test Cell Accoutrements

Proprietary Software

Mustang's TESTCell™ software provides the user interface to control every aspect of your engine test cell and comes complete with all of the tools you need to completely customize the system to meet your needs. Standard Windows drop-down menus allow you to select from a host of options to configure your software and run your engine dynamometer.

TESTCell software includes a complete library of gauges, charts, digital displays, bar graphs to allow the user to configure, save and recall custom display screens. Gauges,

displays, filters, and units of measure are completely configurable to display any channel desired. New channels

such as calculated channels can be developed using the equation editor. Input channel configuration and calibration is easily handled through the channel editor. The channel editor also allow the user to set alarms and shutdown triggers, apply filters to smooth data, and apply Min and Max channel values for display.

TESTCell software can be configured to run virtually any test procedure via the profile builder, which allows the user to create a customized test that runs from start to finish without any required input from the operator. A number of standard, pre-defined tests also come included.

Test Cell Accessories

The From custom to standard accessories, Mustang has it. If you need a replacement engine cart or any part, call today!

Items such as:

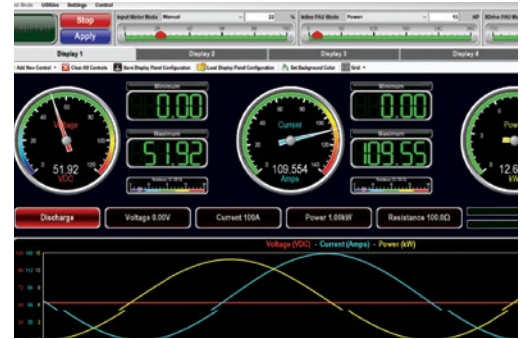
- Engine carts
- Coolant carts
- Fly wheel adapters
- Engine block adapters
- Throttle actuators
- Brake actuators
- Compliant drive shafts
- Engine mount adapters
- Exhaust extractors
- Exhaust extractors
- Cooling fans
- Elephant feet
- Heat exchangers

Mustang is your one-stop shop for all things related to test station technology. Contact us with any requests or questions.



Mustang Advanced Engineering

2300 Pinnacle Parkway
Twinsburg, OH 44087
Phone: (330) 963-5400
Fax: (330) 425-3310
Email: Sales@MustangAE.com
MustangAE.com



TESTCell™ Automation & DAC System



About MAE

Mustang Advanced Engineering is a leading supplier of advanced, custom engineered testing and measurement systems. Located in Twinsburg, Ohio since 1986, MAE delivers world-class testing solutions, custom design support, technical assistance, backed by a dedicated factory service team, making them a trusted source of expertise for the global industrial market. Visit MustangAE.com for more information. Follow them on Facebook, Twitter, LinkedIn, and Instagram.

