Advanced Engineering

Testing Solutions

MDT Series Tow Dynamometers

Smarter By Design

MAE™
MUSTANG
ADVANCED ENGINEERING

Mustang Advanced Engineering - Industry Leaders In Tow Dynamometer Technology.

MAE offers the largest and most complete lineup of tow dynamometers available for test engineers in the industry. Using advanced controls and air-cooled eddy current power absorbers, tow dynamometers are capable of testing vehicles and simulating road profiles taken from pre-recorded data of road grades, hills and mountains without ever having to leave the safe and controlled confines of the flat test track. MAE's advanced control system allows for grade control, speed control, drawbar control, manual control, polynomial drawbar control as a function of velocity, Mountain Climbing Test as a function of distance, Cycle Testing as function of distance or time and Engine Speed Control - to name a few.

As the industry leader in tow dynamometer technology, MAE was the first company to offer a heavy-duty, Class 8, 5th wheel style tow dynamometer with Auto-Shift capability. MAE's Auto-Shift technology allows you to "Shift on the Fly"! No need to stop and change gear ranges. Thus, during heavy draw bar testing at low speeds, to medium drawbar loading at medium speeds, and light drawbar loading at high speeds, the operator does not have to stop the tow dynamometer and shift gears to allow the tow dynamometers to achieve the next speed range.

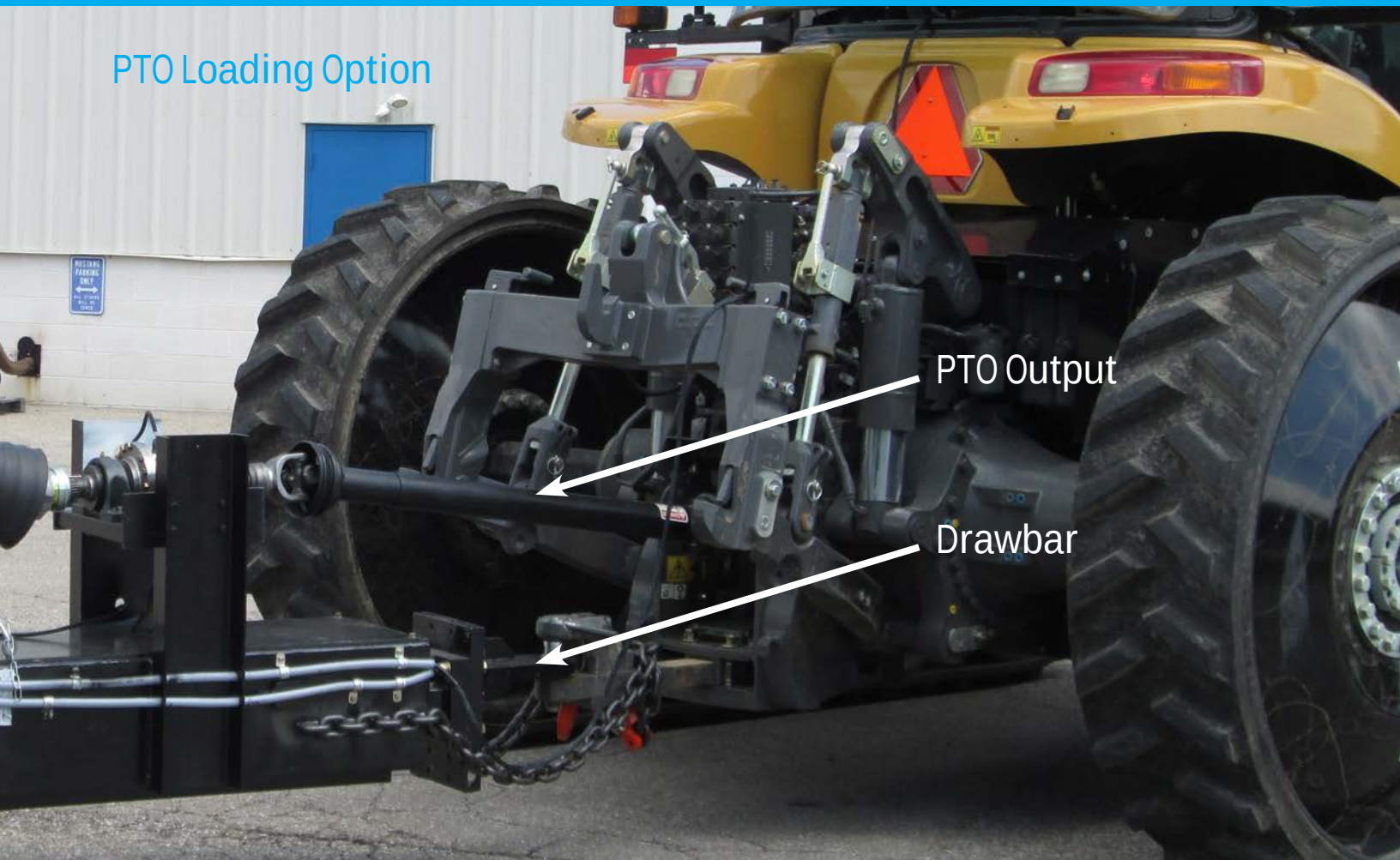
Mobile Style

The Mobile Style is a self propelled towing dynamometer. Designed from an existing motorized vehicle chassis or a custom designed chassis. This unique mobile configuration allows the tow dynamometer to be self powered with an engine for use in transportation between the garage and test site. Additionally the engine can be used for load biasing if required. In many cases, we convert existing vehicles (customer-supplied, new or used). Mustang also designs and fabricates custom mobile dynamometer vehicles for extreme applications or to customer specifications.

Trailer Style

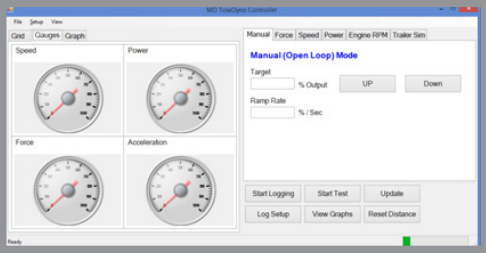
The trailer style is the traditional style of tow dynamometer. The trailer style tow dynamometer is configured to be towed behind a vehicle with a rigid connection via a ball, clevis, pinto hook or 5th wheel between the test towing vehicle and the trailer tow dynamometer. The trailer tow dynamometer is more economical in price and only requires a single operator. The disadvantage is that a separate vehicle is required to move the unit from garage to site or site to site.

PTO Loading Option



Controls and Software

"Load Control" and "Speed Control". When the Tow Dyne is in "Load Control" mode, the driver of the test vehicle controls the speed. Conversely, when the Tow Dyne is in "Speed Control" mode, the driver controls the load. The DAC/PC based tow dynamometer control system is a member of Mustang's latest generation of embedded micro-controller based electronic systems. All control and monitoring functions are performed by an embedded 16 bit digital micro-controllers. All calibrations can be performed using the on-board LED or enclosure mounted LCD display and keyboard, with calibration values stored in on-board non-volatile FLASH memory. Testing values such as load or speed set points can be entered by the operator in exact unit values. In keeping with our previous system design features, the new control system is configured to supply analog output signals proportional to system speed and loading force, using operator supplied output scaling values. Mustang's new control system provides faster and more stable load control than previous analog control systems and can be interfaced to a laptop computer via wireless connection or RS-232 serial cable to provide data logging and advanced control functionality.



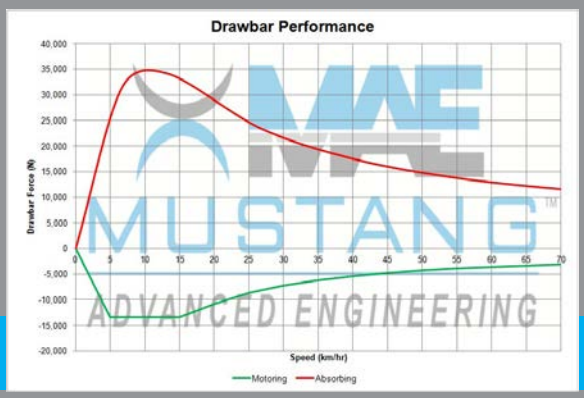
Standard Features

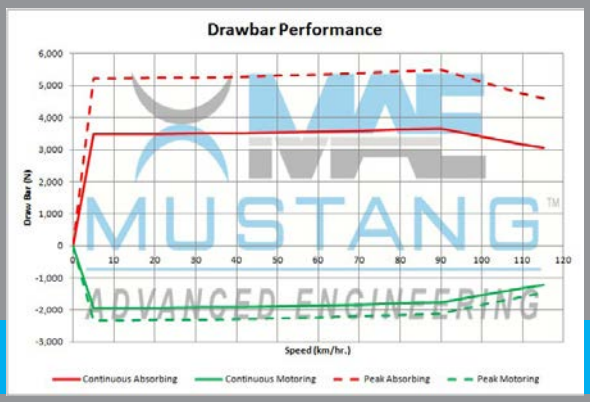
- Manual, Constant Torque, Constant Speed, Constant Power, Vehicle Simulation, Grade Simulation, and Trailer Weight Simulation modes
- Easy to use data acquisition and graphing capabilities
- Metric or Imperial units
- Time or distance based scripting
- One click script execution
- OBDII, J1708, and J1939 support
- Convenient wireless operation
- Seamless capability to control multiple tow dynamometers (allows daisy chaining dynamometers)
- Easy to use script builder
- Simple 'one click' calibration procedure
- Driver's aid
- Open loop scripting for testing cruise control systems
- Real time grade compensation available
- Full compliance with Nebraska Tractor Test Procedures
- Full compliance with Chinese National Testing Standard GBT 12537-1990
- Full compliance with Bureau of Indian Standards IS 5994:1998, 12036:1995, and 12226:1995
- Excel compatible import & export
- 'Plug & Play' controller support for fleets allows any controller to be used with any tow dyne
- 16 bit, 1 MHz commercial data acquisition module
- 16 analog inputs with thermocouple support (easily expandable to 64 analog inputs)
- Four (4) 16 bit, 1 MHz analog outputs
- 24 high speed digital I/O channels
- Four (4) 32 bit counter input channels with quadrature encoder capability
- Overspeed and overtemp protection standard

New Product Release

E-Series Push/Pull

Mustang's E-Series tow dynamometers provide the ability to not only accurately simulate uphill grades, but to also simulate downhill grades and to provide zero drawbar force. Mustang offers E-Series tow dynamometer models designed for testing a wide range of vehicles; from compact cars to off-road trucks. The Mustang E-Series tow dynamometers offer performance benefits not found on competitor's machines; absorbing time (uphill simulation) only limited by generator fuel supply, motoring (downhill and zero drawbar simulation) only limited by fuel supply.





Options

While Mustang can design a tow dynamometer to meet virtually any application, there are several standard options available with all Mustang tow dynamometer systems including:

- CAN and/or OBDII interfaces
- Additional analog and digital inputs/outputs
- Engine RPM System (OBDII, J1708, J1939, or analog)
- Automated adjustable hitch
- Fifth wheel adapter
- Rear towing hitch
- Fuel consumption measurement system (OBDII, J1708, J1939, or analog)
- PLC based control system
- VBOX (gps system) integration provides accurate grade simulation, ground speed, and extremely easy profile generation
- Winch testing provision
- Touchscreen display

MUSTANG ADVANCED ENGINEERING

MDT Series Tow Dynamometers

Tow Dynamometers	Model #	Trailer Tow	Mobile Engine Powered	Cont. Drawbar	Max Speed	Unloaded Wheel Weight	Full Load Wheel Weight	# of Loading Axles
Car/SUV								
	MDT-1.8KN	-T	NA	1,800N (400 lb)	130 km/hr (80 mph)	320 Kg (700 lb)	420 Kg (925 lb)	1
	MDT-3.6KN	-T	-M	3,600N(800 lb)	130 km/hr (80 mph)	450 Kg (1,000 lb)	550 Kg (1,200 lb)	1
	MDT-5.4KN	-T	-M	5,400N (1,200 lb)	130 km/hr (80 mph)	680 Kg (1,500 lb)	8,00 Kg (1,760 lb)	1
	MDT-8KN	-T	-M	8,000N (1,800 lb)	130 km/hr (80 mph)	1,100 Kg (2,425 lb)	1,300 Kg (2,860 lb)	1
Light Truck								
	MDT-10KN	-T	-M	10,000N (2,250 lb)	130 km/hr (80 mph)	1,400 Kg (3,080 lb.)	1,600 Kg (3,520 lb.)	1
	MDT-12KN	-T	-M	12,000N (2,700 lb)	130 km/hr (80 mph)	1,820 Kg (4,000 lb.)	2,020 Kg (4,445 lb.)	1
	MDT-20KN	-T	-M	20,000N (4,500 lb)	130 km/hr (80 mph)	2,725 Kg (6,000 lb.)	3,000 Kg (6,600 lb.)	2
Medium Truck								
	MDT-30KN	-T	-M	30,000N (6,745 lb)	112 km/hr (70 mph)	4,775 Kg (10,500 lb.)	7,500 Kg (16,500 lb.)	2
	MDT-40KN	-T	-M	40,000N (9,000 lb)	112 km/hr (70 mph)	5,450 Kg (12,000 lb.)	8,180 Kg (18,000 lb.)	2
	MDT-60KN	-T	-M	60,000N (13,500 lb)	112 km/hr (70 mph)	7,938 Kg (17,500 lb.)	8,866 Kg (19,500 lb.)	2
Heavy Truck								
	MDT-90KN	-T	-M	90,000N (20,250 lb)	135 km/hr (81 mph)	12,500 Kg (27,500 lb.)	15,225 Kg (33,500 lb.)	2
	MDT-100KN	-T	-M	100,000N (22,500 lb)	120 km/hr (75 mph)	12,500 Kg (27,500 lb.)	15,225 Kg (33,500 lb.)	2
	MDT-135KN	-T	-M	135,000N (30,350 lb)	120 km/hr (75 mph)	15,225 Kg (33,500 lb.)	17,950 Kg (39,500 lb.)	2
	MDT-170KN	-T	-M	170,000N (38,215 lb)	120 km/hr (75 mph)	20,000 Kg (44,000 lb.)	22,725 Kg (50,000 lb.)	2
Tractor/Off-Road								
	MDT-80KN	-T	-M	80,000N (17,985 lb)	32.2 km/hr (20 mph)	9,100 Kg (20,000 lb.)	11,820 Kg (26,000 lb.)	2
	MDT-100KN	-T	-M	100,000N (22,480 lb)	32.2 km/hr (20 mph)	11,360 Kg (25,000 lb.)	14,100 Kg (31,000 lb.)	2
	MDT-125KN	-T	-M	125,000N (28,100 lb)	32.2 km/hr (20 mph)	14,550 Kg (32,000 lb.)	17,275 Kg (38,000 lb.)	2
	MDT-200KN	-T	-M	200,000N (44,960 lb)	32.2 km/hr (20 mph)	22,725 Kg (50,000 lb.)	25,450 Kg (56,000 lb.)	1 or 2
	MDT-250KN	-T	-M	250,000N (56,200 lb)	32.2 km/hr (20 mph)	29,550 Kg (65,000 lb.)	32,270 Kg (71,000 lb.)	1 or 2
	MDT-300KN	-T	-M	300,000N (67,440 lb)	32.2 km/hr (20 mph)	366,360 Kg (80,000 lb.)	39,100 Kg (86,000 lb.)	1 or 2
	*The above models are Mustang's standard products. If higher or different speed or power ranges are required then custom design is available.							

Mustang tow dynamometers are recommended to be operated on the safe and controlled confines of a test track. Although all Mustang tow dynamometers are road worthy, Mustang does not advocate testing on public roads due the fact a tow dynamometer is a piece of test equipment operating in a dynamic environment **dependent upon operator input, road conditions, as well as external variables. If the customer desires to perform testing on public roads then all activities are at the customer's risk, the customer agrees to hold Mustang harmless, and it is the customer's responsibility to obtain any and all required approvals/licenses.**

MUSTANG ADVANCED ENGINEERING

About MAE

Mustang Advanced Engineering is a leading provider of comprehensive testing solutions for the development and testing of engines, powertrain systems and complete vehicles. Founded in 1975, Mustang has long been a trusted source of expertise in measurement and testing technologies for the global industrial market. World-class product offerings, custom design support and technical assistance, backed by a dedicated factory service team, has positioned MAE among the global leaders in providing advanced testing solutions.

As a full service supplier/partner, MAE offers a wide array of services to customers all over the world. Working with your staff, our experienced team of engineers uses the latest solid modeling CAD and CAE software and offers a comprehensive resource for your testing design and development needs. Our engineers specialize in finding the most practical and economical solutions for new or unusual testing applications. Whether your application is fully conceived or you need a design partner, the engineers at Mustang Advanced Engineering invite you to tap into their decades of experience in testing and measurement systems development.

Our mission is to achieve the highest possible level of customer satisfaction by providing innovative technical solutions and product designs and by striving to achieve perfection in product quality, delivery and service. At MAE, our customers are our highest priority - we do everything in our power to satisfy our customers. Our entire organization understands that the customer comes first and nothing else is more important.

U.S. Corporate Headquarters
Mustang Advanced Engineering
2300 Pinnacle Parkway
Twinsburg, OH 44087
Phone: (330) 963-5400
Fax: (330) 425-3310
Email: sales@mustangae.com

www.mustangae.com

ISO 9001 REGISTERED FIRM

Rev 201701