

Advanced Engineering

Testing Solutions

Transmission/Transaxle Dynamometers



Smarter By
Design

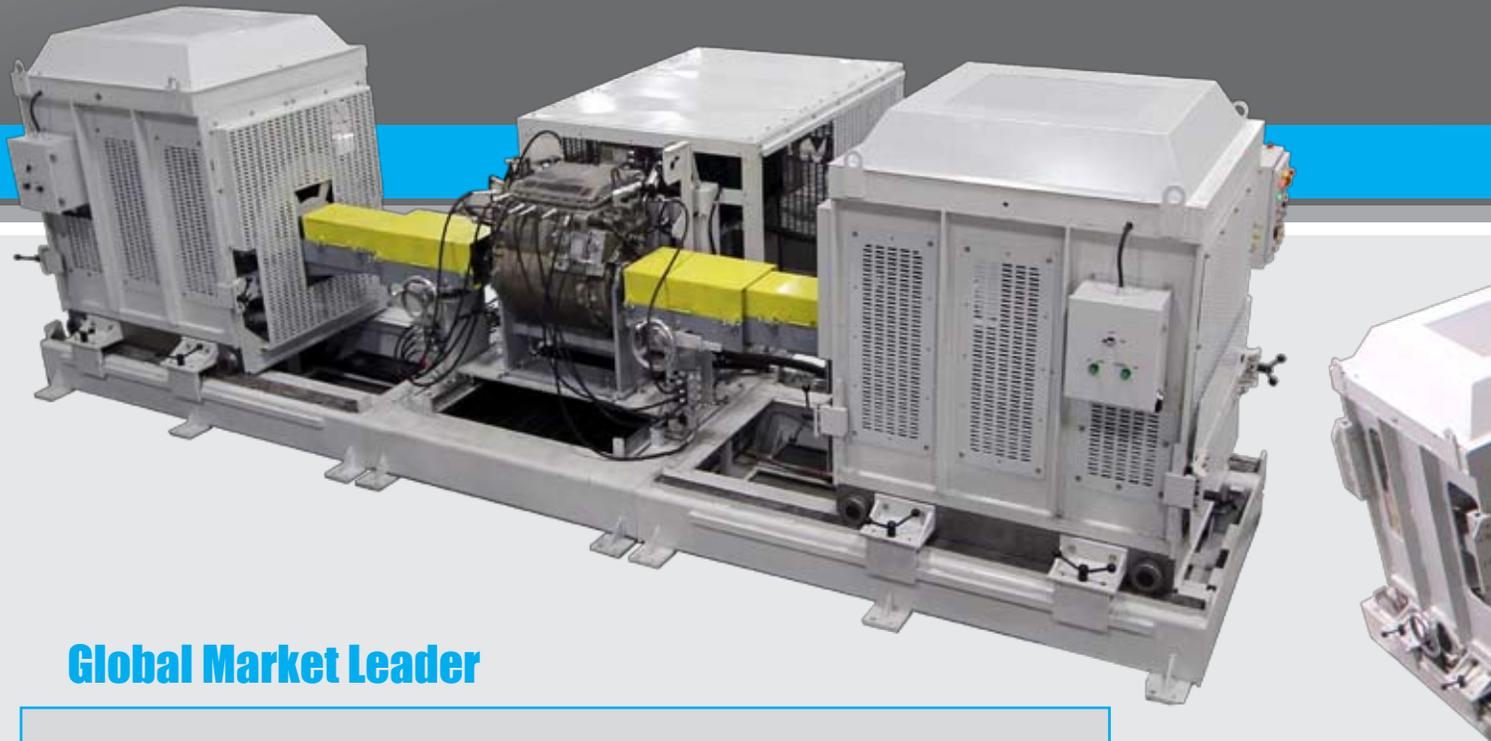

MUSTANG
ADVANCED ENGINEERING

Mustang Advanced Engineering is far and away the industry leader for transmission test stands and transmission test cell components.

MAE offers the industry's most complete and comprehensive line up of products for testing light-duty automotive, medium and heavy-duty truck and bus, and extreme-duty military and off-road vehicle transmissions, transaxles and transfer cases. MAE test products and dynamometers are used around the world in advanced R&D labs, universities, prototype labs, production rebuild environments, military depots and repair and remanufacturing facilities.

MAE's transmission test stands utilize today's most sophisticated and advanced dynamometer technologies, combining a variety of AC, DC, Servo, PM, EC and hydraulic power absorbers and motors to precisely control transmission input speeds and output loading. MAE's advanced dynamometer control systems give you the ability to accurately simulate virtually any operating condition you can imagine, including engine pulsation simulation and other advanced inertia simulations.

Mustang's engineering team possesses vast knowledge and decades of experience in designing, manufacturing, installing and commissioning countless transmission test cells. Let us put our experience to work for you and your team.



Global Market Leader

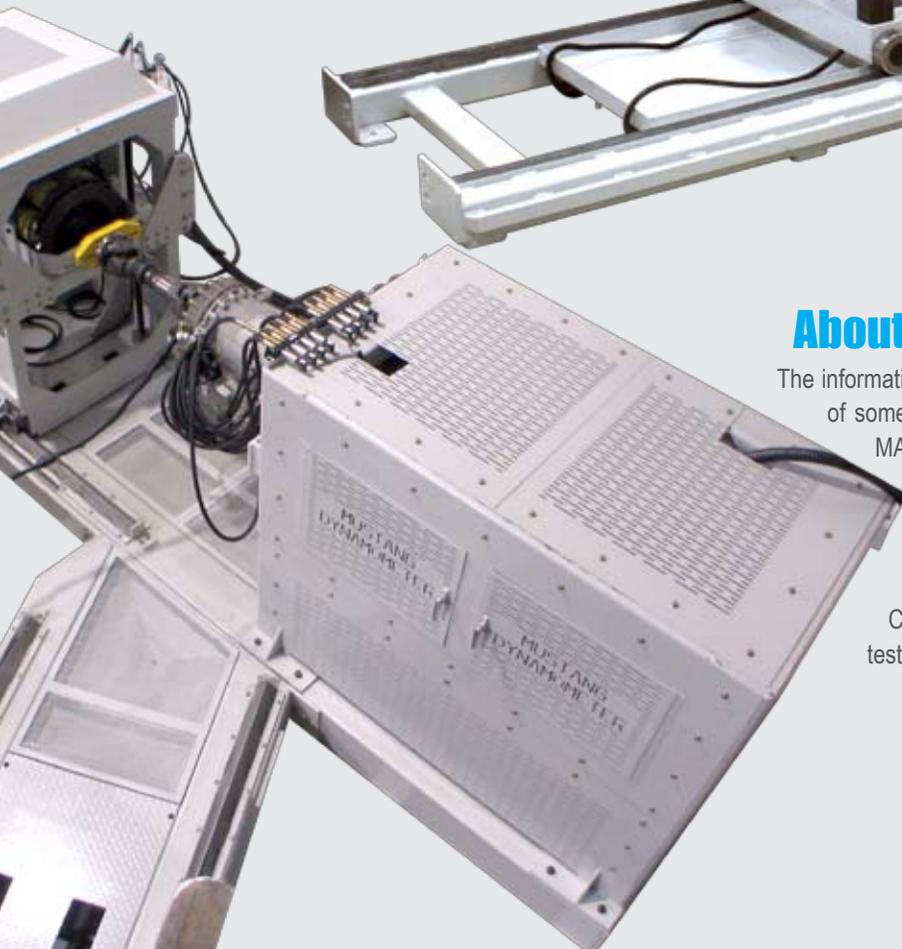
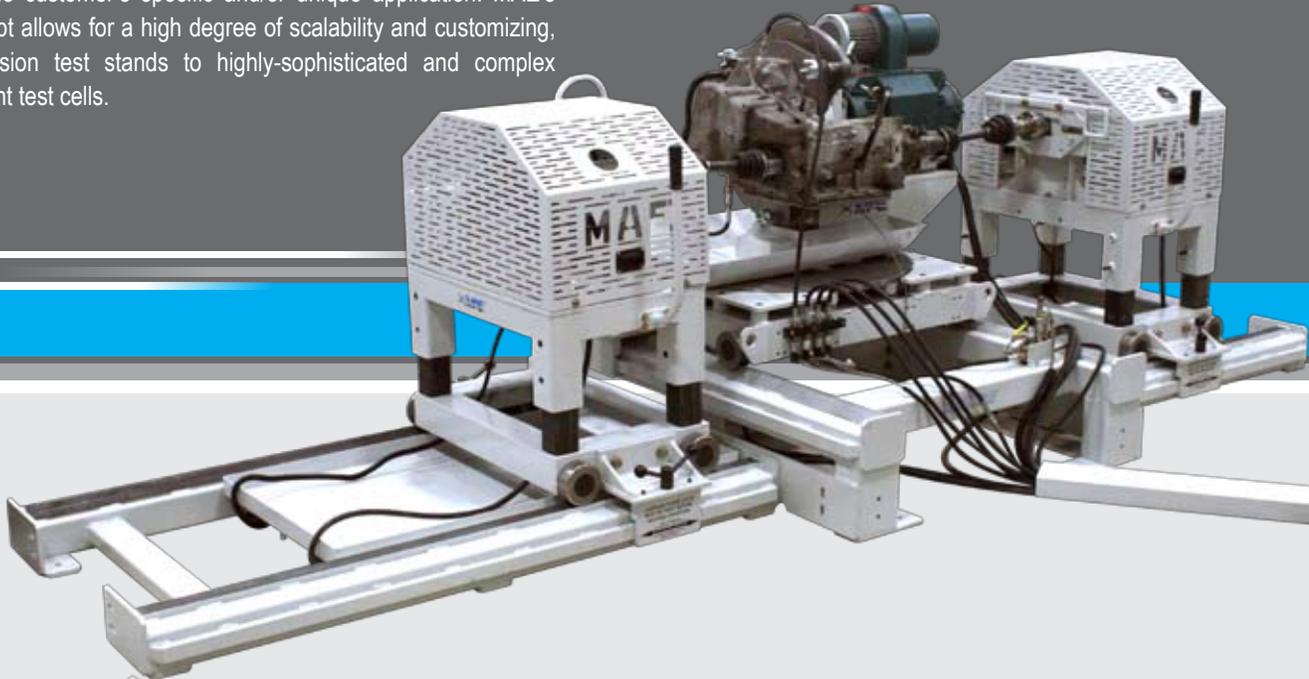
As a global leader in the design, manufacturing, and integration of advanced transmission dynamometers, Mustang's standard systems test all of the world's largest OEM transmissions such as Chrysler, GM, Ford, Toyota, Nissan and Allison. MAE has delivered and continually supports transmission test systems in virtually every corner of the globe.



“Custom Solutions” Approach

MAE’s “custom solutions” approach focuses all of our product, application and automation experience on your specific measurement and testing requirements. Our goal is to provide tailored solutions that optimize our customers’ testing and development operations by providing intelligent system designs coupled with outstanding technical expertise and world-class customer support.

MAE provides a host of specialized transmission testing solutions, all designed specifically to meet the customer’s specific and/or unique application. MAE’s modular design concept allows for a high degree of scalability and customizing, from simple transmission test stands to highly-sophisticated and complex powertrain development test cells.



About this brochure

The information contained in this brochure is meant to provide an overview of some of the standard systems and prior test system designs that MAE has been involved with in the past. The engineers at MAE thoroughly evaluate each customer application and will propose the ideal test stand design to fit your application based on your unique testing requirements.

Contact one of our transmission testing experts to discuss your test cell requirements by calling 888-468-7826.

Toll Free: 1-888-468-7826

MAE-LDU-40 Universal Transmission Dynamometer

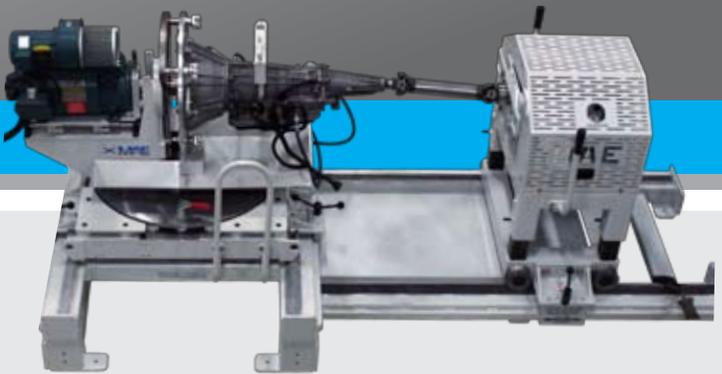
Light-Duty Automotive Transmissions

Mustang's latest product innovation for automotive transmission repair and remanufacturing professionals is the MAE-LDU-40, a universal automotive transmission dynamometer that represents the most advanced, next-generation dynamometer for testing automatic passenger car and light truck in-line and transverse transmissions.

Mustang designed the LDU-40 to specifically address the short-comings of the standard transmission dynos found in the market today. The result is a transmission dynamometer that is more easily adaptable, more accurate, more user friendly, with a more flexible software and data acquisition package, and most importantly, is more sensible from an economic standpoint.

The LDU-40 Universal Transmission Dynamometer is a quantum leap forward from the outdated systems that once upon a time were considered state-of-the-art. Take your transmission testing to an unprecedented level of accuracy, efficiency and usability.

Forget the hassles of using custom mounting plates and spacers to get a torque converter fitted just right. Mount and test transmissions faster and easier than ever before with a universal system so flexible, you can change setup configurations in a matter of minutes, with a single operator.



Universal Hardware

The MAE-LDU-40 dynamometer is by far the most easily adaptable test system on the market. Test a wide variety of domestic and foreign rear-wheel transmissions without the need to purchase countless custom mounting plates.

Our patented Universal Adapter Plate virtually eliminates the need to have expensive custom plates for each transmission you need to test – saving you both time and money and simplifying your testing operations.

Mustang's system easily adjusts to fit any torque converter without the need for complicated spacers and bushing combinations, making it easier to center and mount more transmissions faster.

Our rotating head stock also allows you to easily adapt and configure the test stand to test front wheel drive transverse transmissions, including Honda and Mitsubishi, and longitudinal 42LE transmissions such as the Chrysler A606. Our use of U-joint drive shafts simplifies set up and dramatically minimizes the chance of damaging rear seals due to misalignment issues.

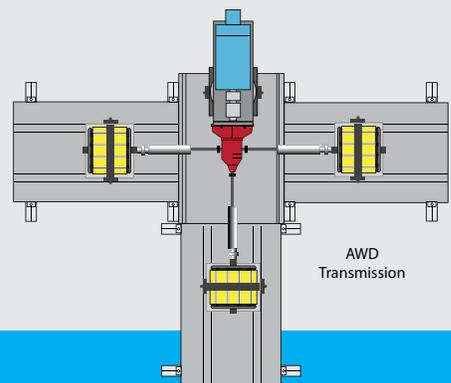
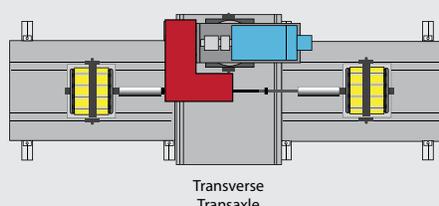
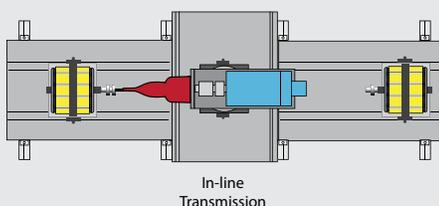
More Accurate Test Results

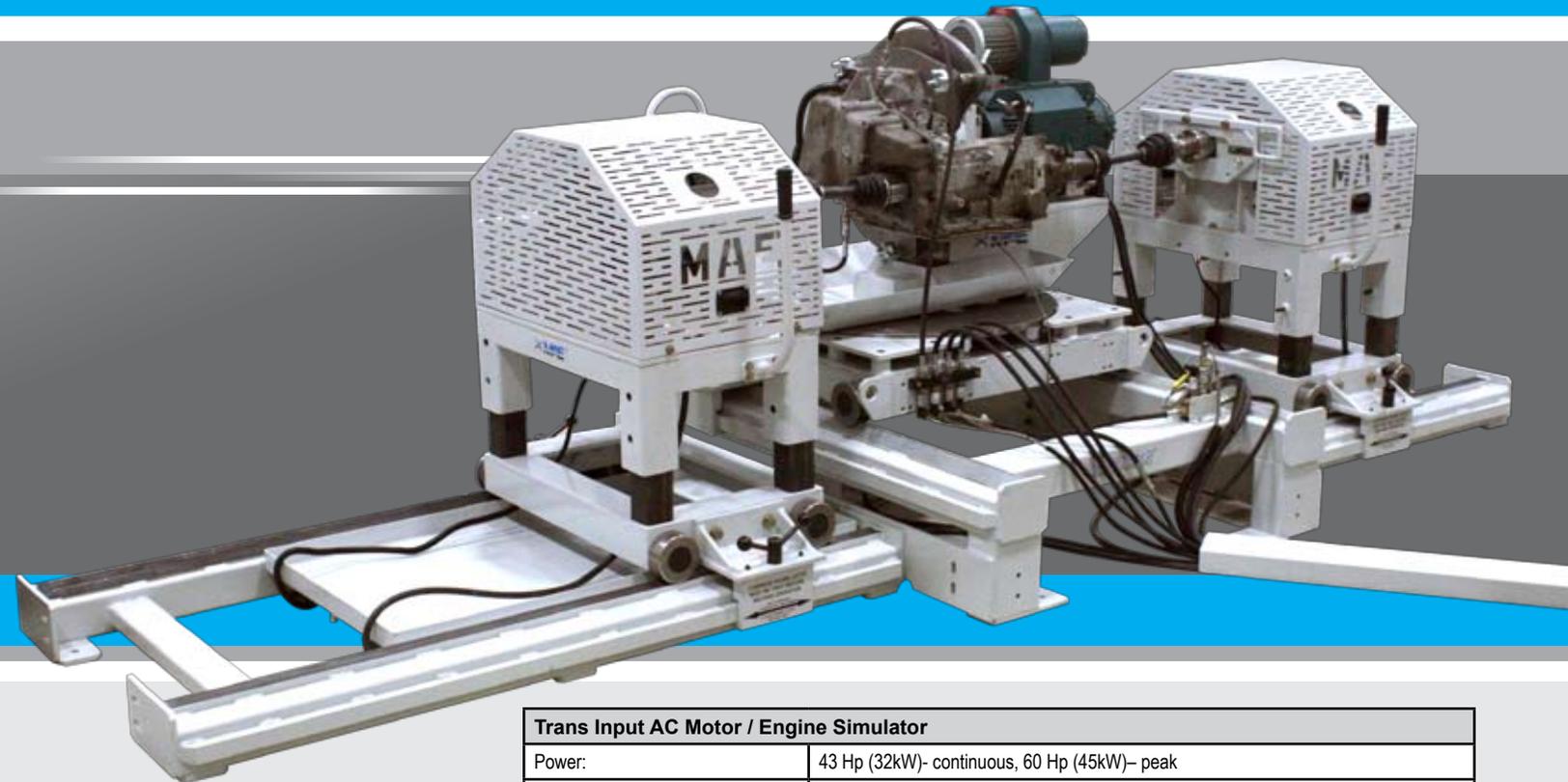
The LDU-40 achieves the highest level of accuracy in the industry thanks to its high quality electronics package. Cradle-mounted PAUs and precision strain-gauge-type load cells on each output PAU provide continuous feedback to the control loop, allowing for more precise load control and more accurate testing results. A 30-tooth speed encoder ensures a higher resolution speed signal, and therefore a more accurate gear ratio calculation.

The LDU-40 also includes Mustang's Transmission Control Module, The MAE-TCM, standard with every unit. The MAE-TCM gives you the ability to test a transmission using the correct frequency and duty cycle, which ensures that the transmissions are being tested exactly as they perform in a vehicle.

All this results in a more accurate dynamometer so you can test with more confidence.

Universal Dynamometer Testing Configurations





The MAE-TCM gives you the ability to test a transmission using the correct frequency and duty cycle, which ensures that the transmissions are being tested exactly as they perform in a vehicle.

Trans Input AC Motor / Engine Simulator	
Power:	43 Hp (32kW)- continuous, 60 Hp (45kW)- peak
Torque:	90 lb-ft (120 N-m)-continuous, 125 lb-ft (170 N-m) – peak
Speed:	4,000 rpm
Inertia:	Low inertia for proper engine simulation
Torque Measurement:	Electronic, direct torque control
Torque Calibration:	NIST load cell transfer
Type:	AC motor, variable speed low inertia
Cooling:	Blower-cooled for continuous operation
Mounting:	Variable linear movement with respect to the trans mounting face plate for easy transmission mounting adjustment without shimming or spacers
Transmission Mounting	
Bell Housing Mounting:	Universal mounting plate, independent mounting plate, no mounting plate shim spacers required
Tail Support:	Foot mount jack stand
Torque Converter Adapter:	Universal TC adapter, Independent TC flex plate, TC pilot centering bushing set
Output Adapter:	Balanced u-joint based for smooth high speed operation with transmission output adapter hubs
Transmission Output Loading	
Type:	Air-cooled eddy current with electronic torque feedback
Output Loading:	95-hp @ 1,800 rpm (cold), 45-hp @ 1,800 rpm (hot) 135-hp @ 6,000 rpm (cold), 65-hp @ 6,000 rpm (hot)
Max Speed Deceleration / Rate:	6,000 rpm / 13,000 rpm/sec
Base Inertia:	6.3 lb-ft ² (0.63 Kg-m ²)
Vehicle Simulated Inertia Range:	1,000 - 5,000 lb. vehicle (trans dependent)
Output Torque Response Rate:	≤ 95 ms
Torque Calibration:	NIST dead weight
Mounting:	Cradle mount with electronic load cell, measure both dynamic and stall torque.
Stall Lock:	With electronic torque feedback readings

MAE-AC/EC/EC-100/250/250 Universal Transmission Dynamometer

Medium-Duty In-line and Transverse Truck/Bus Transmissions

Mustang's MAE-AC/EC/EC-100/250/250 Universal Series Dynamometer is an advanced universal transmission dynamometer for testing light to medium duty in-line and transverse truck and bus transmissions. The latest motor/drive technologies are utilized by MAE to provide the ultimate AC motor control performance for input speed and torque control. Output loading is handled by utilizing dual eddy current PAU modules with closed-loop torque feedback for precise load control.

MAE's Universal Series feature a turntable-mounted AC Motor that allows the dynamometer to be easily configured to test both in-line and transverse transmissions on a single test stand. The dual PAU modules are adjustable in both in/out and up/down directions to provide the ultimate alignment flexibility. MAE's use of u-joint drive shafts further simplifies set up and dramatically minimizes the chance of damaging rear seals due to misalignment issues.

Mustang's Universal Transmission Dynamometers are designed to maximize your return on investment by providing a highly flexible test stand that is capable of testing all of your inline and transverse transmissions while minimizing extra cost associated with mounting plates and alignment hardware. Our rotating head stock and universal mounting plates will reduce both your material and labor costs associated with setting up a wide range of inline and transverse transmissions.

The MAE-AC/EC/EC Universal Series is available with a number of different power packages that allow you to size the input AC motor and output PAUs to fit your particular testing requirements.

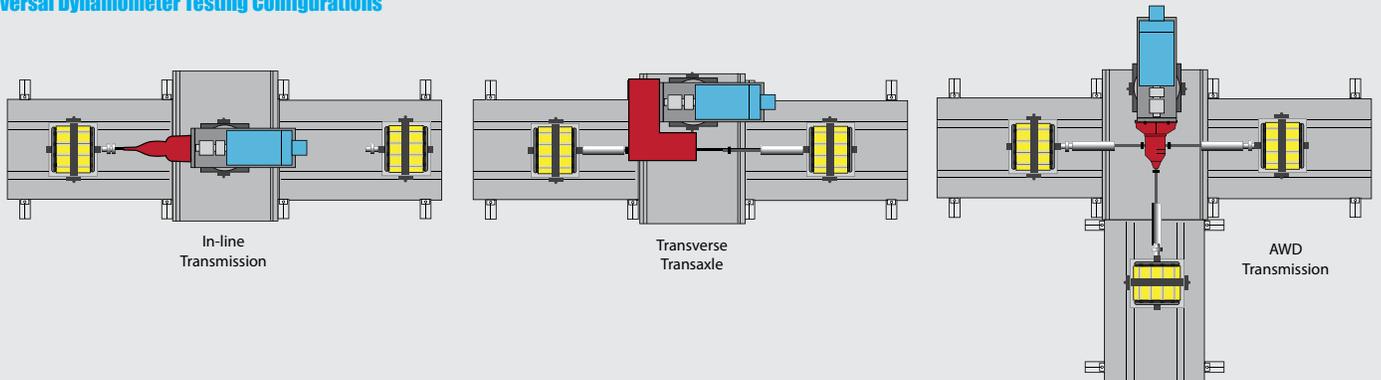


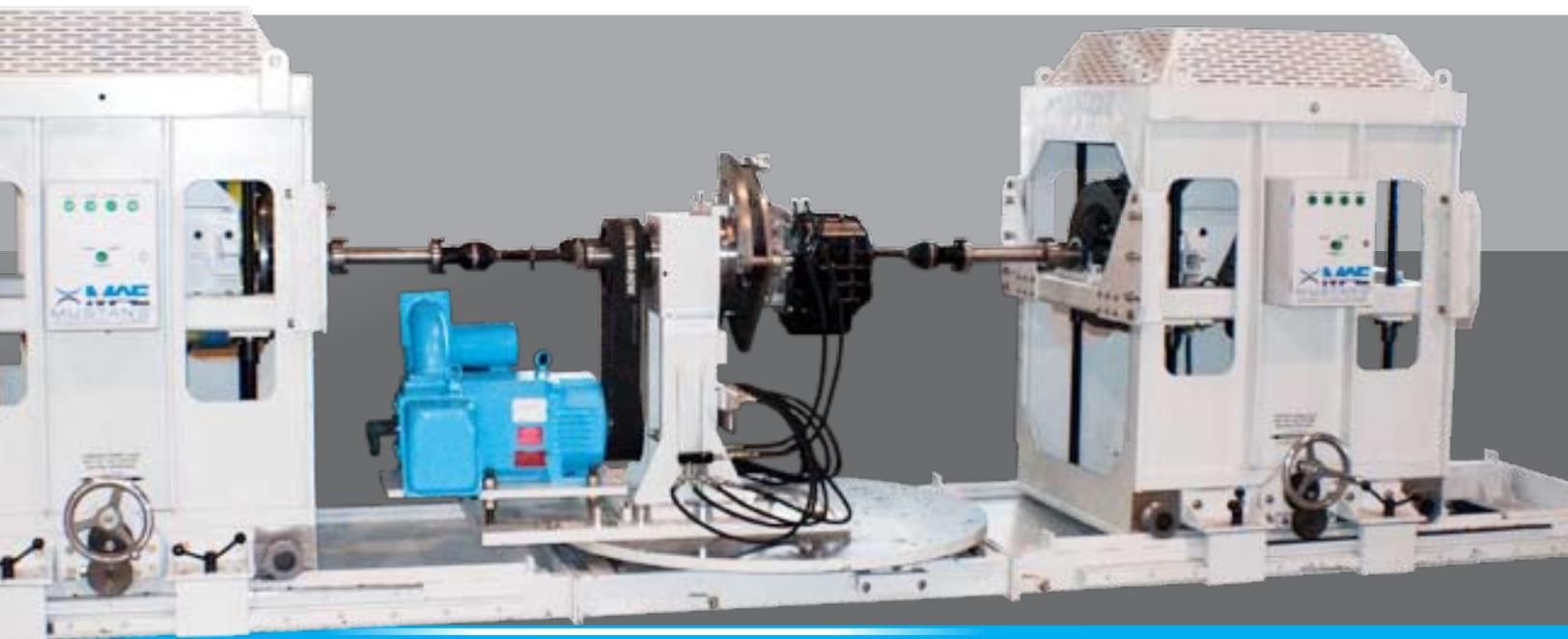
AC/EC/EC Universal Series - General Size Table

Input AC Motor					Output Eddy Current PAU				
Power	Torque	Speed Range			Eddy Current Type	Power/Torque Range		Speed Range	
		Base rpm	Standard Top Speed	Optional Top Speed		Intermittent Power (Hp@rpm)	Intermittent Torque (lb-ft@rpm)	Continuous Top Speed (rpm)	Intermittent Top Speed (rpm)
50	150	1750	4000	8000	K-70	200 @ 7000	440 @ 750	6000	7000
75	225	1750	4000	8000	K-100	275 @ 7000	510 @ 750	6000	7000
100	300	1750	4000	6000	K-140	400 @ 7000	730 @ 750	5500	6000
150	450	1750	4000	6000	K-250	635 @ 7000	1650 @ 600	4800	5300
200	600	1750	3600	6000	K-250	635 @ 7000	1650 @ 600	4800	5300

Other power ranges available.

Universal Dynamometer Testing Configurations





MAE-AC/EC/EC-100/250/250 Universal Transmission Dynamometer	
Input AC Motor / Engine Simulator	
Power:	100-hp
Torque:	300 lb.ft.
Base Speed / Top Speed:	1,750 / 4,000 rpm
Inertia:	Low inertia for proper engine simulation
Torque Measurement:	Electronic, direct torque control
Torque Calibration:	NIST load cell transfer
Type:	AC motor, variable speed low inertia
Cooling:	Blower -cooled for continuous operation
Mounting:	Variable linear movement with respect to the trans mounting face plate for easy transmission mounting adjustment without shimming or spacers
Transmission Mounting	
Bell Housing Mounting:	Universal mounting plate, independent mounting plate, no mounting plate shim spacers required
Tail Support:	Foot mount jack stand
Torque Converter Adapter:	Universal TC adapter, Independent TC flex plate, TC pilot centering bushing set
Output Adapter:	Balanced u-joint based for smooth high speed operation with transmission output adapter hubs
Transmission Output Loading	
PAU Type:	Air-cooled eddy current with electronic torque feedback
PAU Output Loading:	635-hp @ 7,000 rpm
Max Speed Deceleration / Rate:	6,000 rpm / 13,000 rpm/sec
Output Torque Response Rate:	≤ 95 ms
Torque Calibration:	NIST dead weight
Mounting:	Cradle mount with electronic load cell, measure both dynamic and stall torque.
Stall Lock:	With electronic torque feedback readings

Medium-Duty Series

In-line and Cross-Drive Transmission Dynamometers

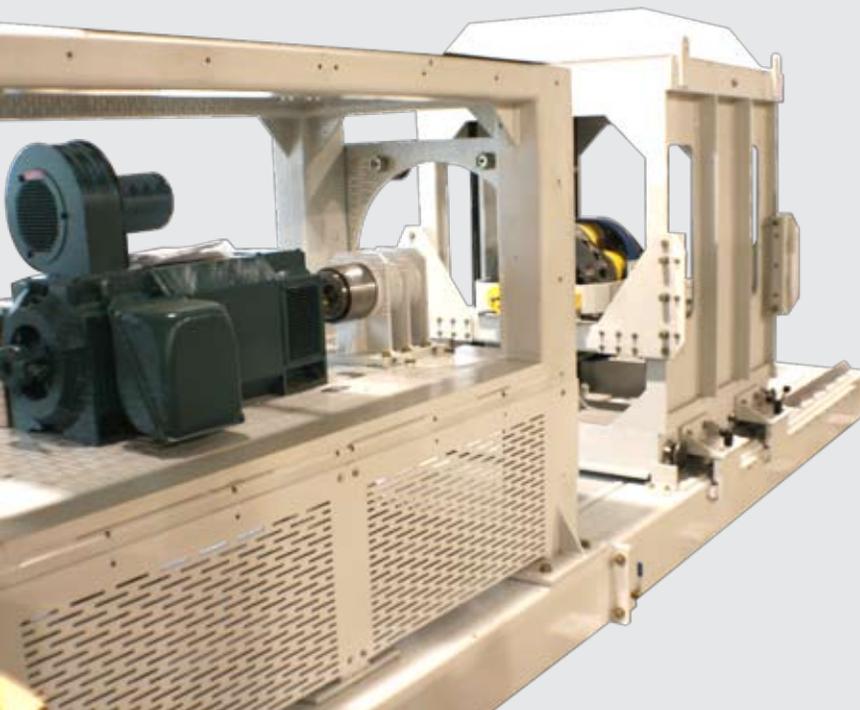
MAE's Medium-Duty Series Transmission Dynamometers are designed to test applications ranging from passenger vehicles, light and medium trucks, marine, industrial vehicles, tow motors and forklifts, ATV, agricultural vehicles and racing. The Medium-Duty Series incorporates the latest motor/drive technologies to provide the ultimate AC motor control performance for input speed and torque control, while output loading is handled by utilizing eddy current PAUs. Many options and custom design configurations are available to meet your specific performance criteria.

System Capabilities Include:

- **Advanced engine simulation w/ input AC motor**
- **Air-cooled eddy current loading**
- **Oil reservoir w/ filter system**
- **Power indexing**
- **Trans mount w/ plates**
- **Trans direct solenoid control**
- **Production auto-loading / auto-clamping**
- **Advanced control and data acquisition**
- **Automatic mechanical throttle control system**



This In-line MD Series system was custom built for Axiom Technologies to test remanufactured transmissions in an end-of-line production environment. The system incorporates many quick-change features to facilitate efficient production testing requirements.



Applications & Environments

Mustang's MD Series Medium Duty Transmission Dynamometers can be custom designed and specifically tailored to fit virtually any application or testing environment including remanufacturing, repair validation, laboratory, production, component validation, vibration analysis, durability, destruction, and performance application.

Contact one of our transmission testing experts to discuss your test cell requirements by calling 888-468-7826.



This in-line system was custom built for AER Transmission Exchange to perform final testing of remanufactured transmissions. The system has a variable speed AC dyne motor and a dual eddy current PAU output loading dyne.

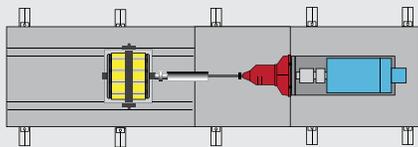


Medium Duty Series - General Size Table

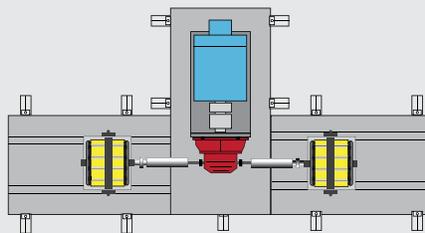
Model*	Input AC Motor						Output Eddy Current					
	Type	Power		Torque		Speed Range	Type	Power		Max Torque Range		Speed Range
		HP	(kW)	lb-ft	(N-m)	rpm		HP	(kW)	lb-ft	(N-m)	rpm
MD-AC/EC-40/250	AC	40	29.8	120	163	0 to 5,000	EC	250	186.5	1094 to 2188	1483 to 2967	250 to 5,000
MD-AC/EC-67/250	AC	67	50.0	201	273	0 to 5,000	EC	250	186.5	1094 to 2188	1483 to 2967	0 to 5,000
MD-AC/EC-86/250	AC	86	64.2	258	350	0 to 4,000	EC	250	186.5	1094 to 2188	1483 to 2967	1,000 to 5,000
MD-AC/EC-110/250	AC	110	82.1	330	448	0 to 4,000	EC	250	186.5	1094 to 2188	1483 to 2967	0 to 5,000
MD-AC/EC-125/250	AC	125	93.3	375	509	0 to 4,000	EC	250	186.5	1094 to 2188	1483 to 2967	1,000 to 5,000

*Other power ranges are available

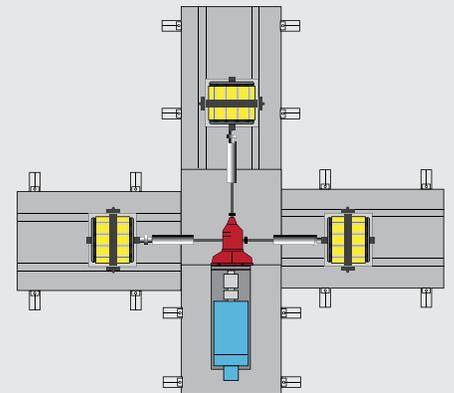
Medium-Duty Series Dynamometer Testing Configurations



In-line Transmission



Cross-Drive Transmission



AWD Transmission

Toll Free: 1-888-468-7826

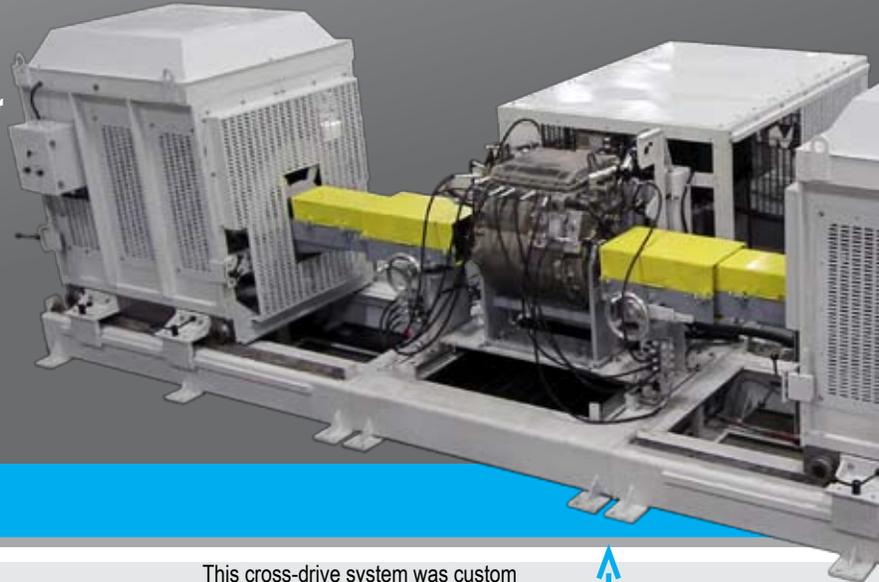
Heavy-Duty Series

In-line and Cross-Drive Transmission Dynamometers

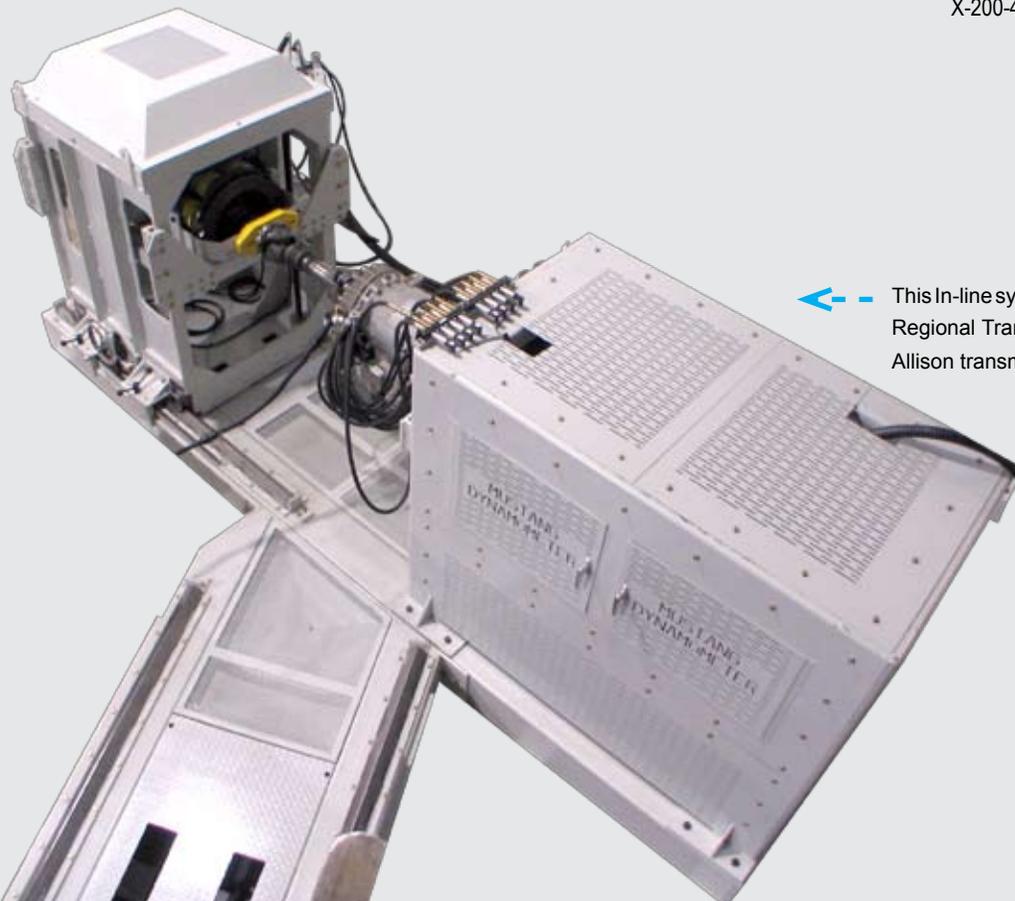
MAE's Heavy-Duty Series Transmission Dynamometers are designed to test applications ranging from heavy-duty commercial trucks and buses, to military and off-road vehicles. The HD Series incorporates the latest motor/drive technologies to provide the ultimate AC motor control performance for input speed and torque control, while output loading is handled by utilizing eddy current PAUs. A host of options and custom design configurations are available to meet your specific performance criteria.

System Capabilities Include:

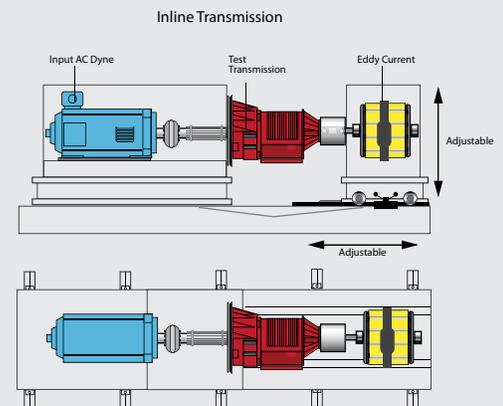
- Advanced engine simulation w/ input AC motor
- Air-cooled eddy current loading
- Oil reservoir w/ filter system
- Power indexing
- Trans mount w/ plates
- Trans direct solenoid control
- Production auto-loading / auto-clamping
- Advanced control and data acquisition
- Automatic mechanical throttle control system



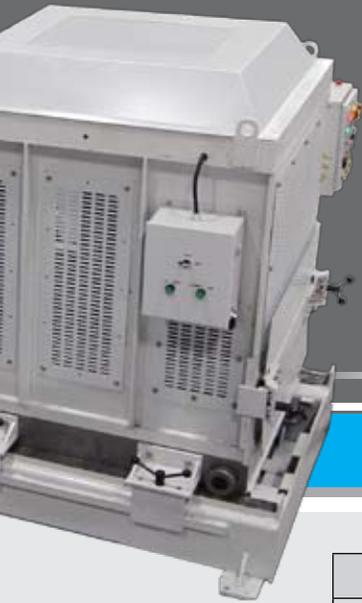
This cross-drive system was custom built for Anniston Army Depot to test X-200-4A tank transmissions.



This In-line system was custom built for Cleveland's Regional Transit Authority to test remanufactured Allison transmissions prior to installation.



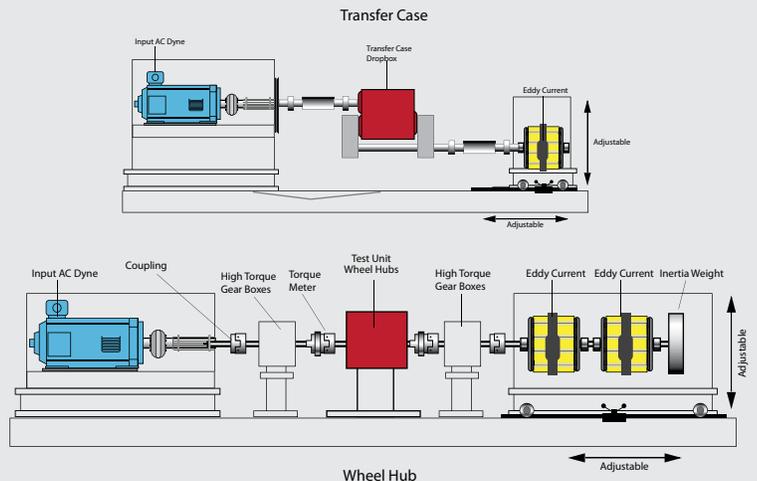
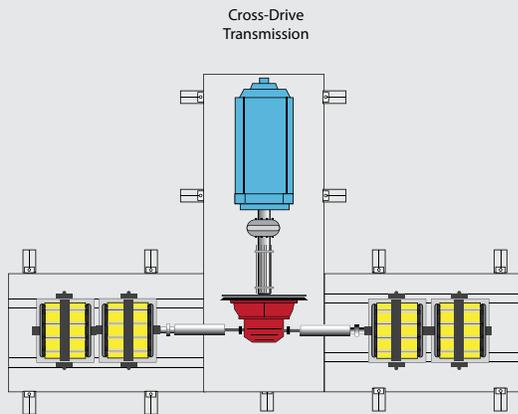
This cross-drive system was custom built for Anniston Army Depot to test remanufactured tank transmissions.



Heavy Duty Series - General Size Table

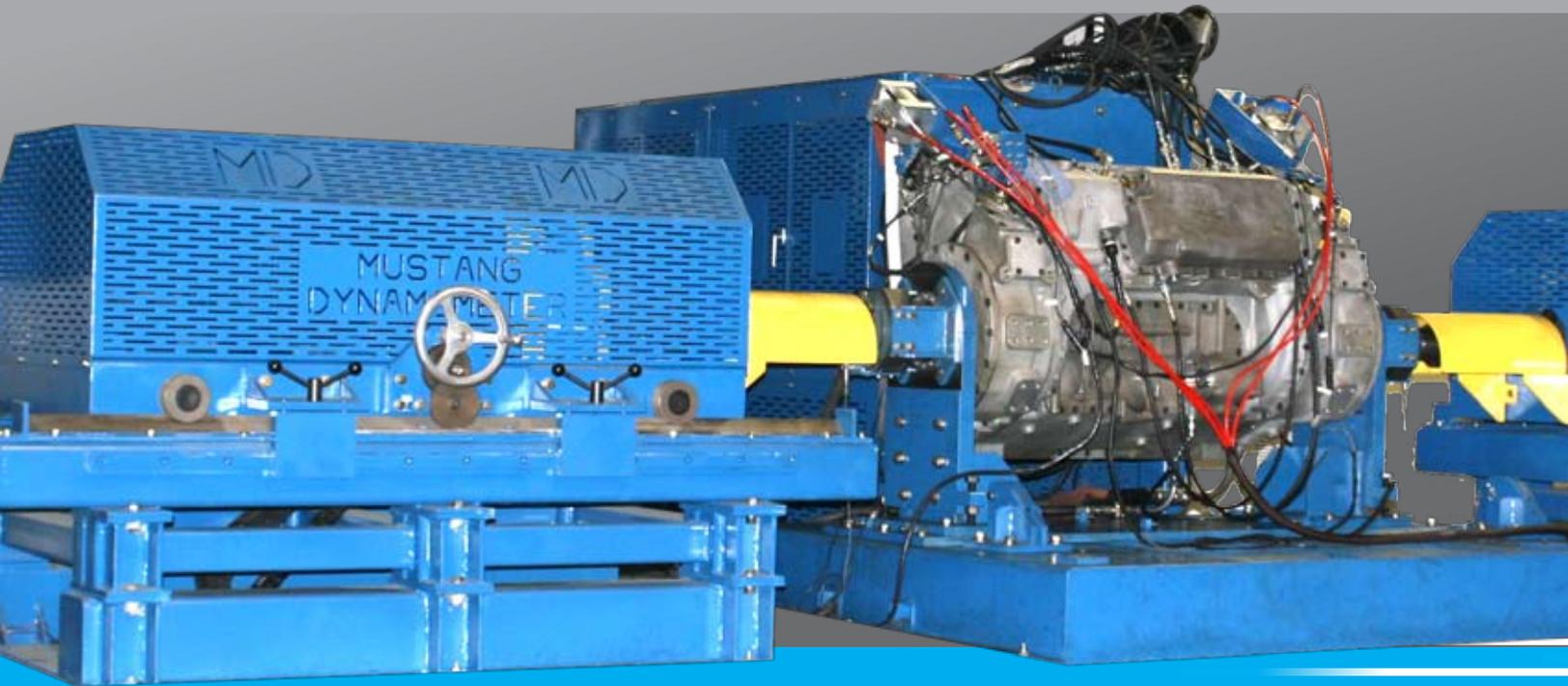
Model*	Input AC Motor						Output Eddy Current PAU					
	Type	Power		Torque		Speed Range	Type	Power		Max Torque Range		Speed Range
		HP	(kW)	lb-ft	(N-m)	rpm		HP	(kW)	lb-ft	(N-m)	rpm
HD-AC/EC-100/250	AC	150	112	450	610	0 to 6,000	EC	250	186.5	1094 to 1641	1483 to 2967	250 to 5,000
HD-AC/EC-150/250	AC	150	112	450	610	0 to 6,000	EC	250	186.5	1094 to 1641	1483 to 2967	250 to 5,000
HD-AC/EC-200/250	AC	200	149	600	814	0 to 6,000	EC	250	186.5	1094 to 1641	1483 to 2967	250 to 5,000
HD-AC/EC-300/400	AC	300	224	900	1221	0 to 5,000	EC	400	298.4	1751 to 2626	2374 to 4747	200 to 5,000
HD-AC/EC-400/800	AC	400	298	1200	1628	0 to 4,200	EC	800	596.8	3501 to 5252	4747 to 9494	150 to 5,000
HD-AC/EC-500/800	AC	500	373	1501	2034	0 to 3,600	EC	800	596.8	3501 to 5252	4747 to 9494	150 to 5,000
HD-AC/EC-750/1200	AC	750	560	2251	3054	0 to 3,000	EC	1200	895.2	5252 to 7878	7121 to 14241	125 to 5,000

*Other power ranges are available



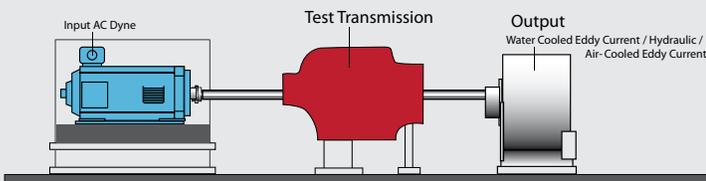
Toll Free: 1-888-468-7826

Extreme-Duty Series In-line and Cross-Drive Transmission Dynamometers

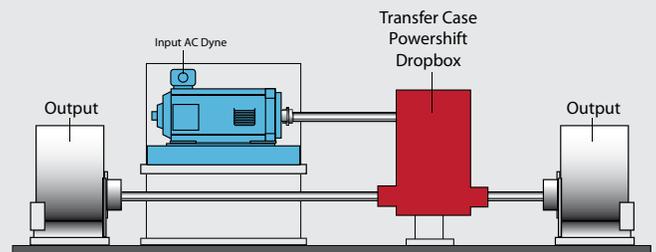


↑ MAE designed, built and delivered this state-of-the-art ED Series cross-drive transmission test bench for Powertrain Plus to test the Abrams M1A1 & M1A2 battle tank's Allison X1100-3B hydraulic steer transmissions. Similar systems have been supplied directly to the US Military to provide state-of-the-art, high throughput final testing various extreme duty battle tank and armored vehicle transmissions.

← MAE has extensive experience in the design and installation of wide variety of transmission control systems. MAE designed this custom mechanical and hydraulic brake actuator system for controlling Allison X1100-3B Transmissions.



In-line



Transfer Case

Research & Development Series Transmission Dynamometers



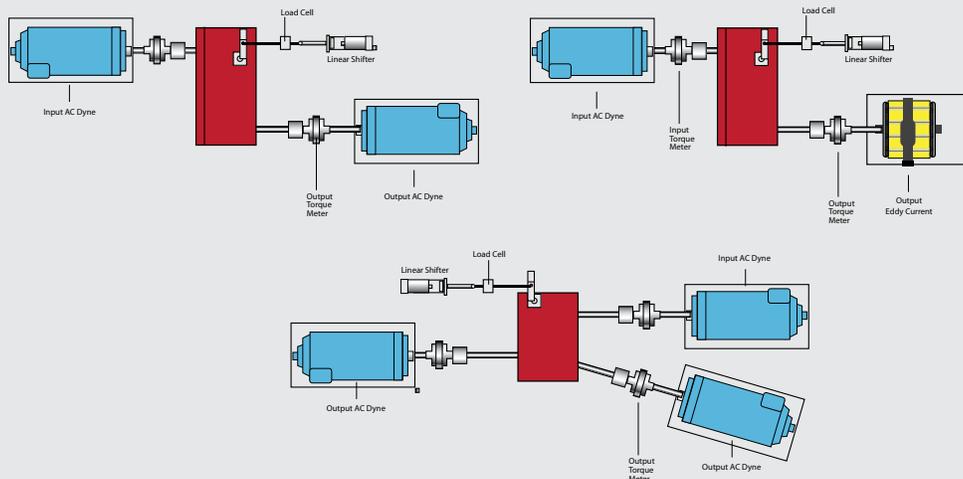
MAE supplied Allison Transmission with two custom R&D Series dynamometers for the development of hybrid transmissions and standard transmission testing. The systems have a 315-hp input motors capable of 12,000 rpm and a 635-hp variable speed AC dyne motor capable of 4,000 rpm to deliver 1,100 lb-ft of torque. The motors are both liquid-cooled motors with integrate oil reservoirs in the base and incorporate cooling columns and pumps to cool the high-speed motors. The systems are used to calibrate and test virtually all of the currently available Allison Transmissions as well as to develop future production models and are capable of road-load and engine emulation simulation.

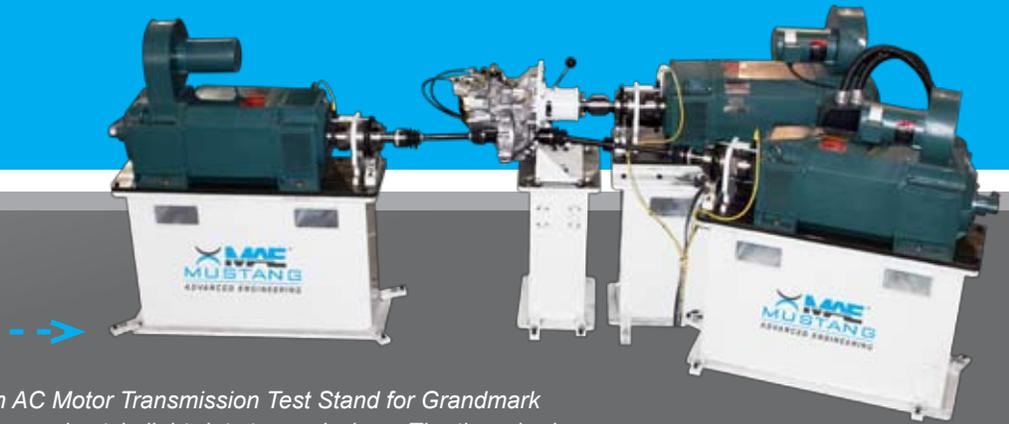


Light-Duty R&D Series- General Size Table

		Input AC Motor					Output Loading						
		Power		Torque		Speed Range			Power		Max Torque Range		Speed Range
Model*	Type	HP	(kW)	lb-ft	(N-m)	rpm	Type	HP	(kW)	lb-ft	(N-m)	rpm	
LT-AC/EC-5/10	AC	5	3.7	15	20	0 to 30,000	EC	5	3.7	45 to 90	61 to 122	1,500 to 13,000	
LT-AC/AC-5/5	AC	5	3.7	15	20	0 to 30,000	AC	5	3.7	45 to 90	61 to 122	0 to 30,000	
LT-AC/EC-10/40	AC	10	7.5	30	41	0 to 30,000	EC	40	29.8	175 to 350	237 to 475	1,000 to 8,000	
LT-AC/AC-10/10	AC	10	7.5	30	41	0 to 30,000	AC	10	7.5	90 to 180	122 to 244	0 to 30,000	
LT-AC/EC-25/40	AC	25	18.7	75	102	0 to 24,000	EC	40	29.8	175 to 350	237 to 475	1,000 to 8,000	
LT-AC/AC-25/25	AC	25	19	75	102	0 to 24,000	AC	25	19	225 to 450	305 to 610	0 to 24,000	
LT-AC/EC-50/70	AC	50	37	150	203	0 to 20,000	EC	100	75	900 to 1801	1221 to 2441	750 to 7,000	
LT-AC/AC-50/50	AC	50	37	150	203	0 to 20,000	AC	100	75	900 to 1801	1221 to 2441	0 to 20,000	

*Other power ranges are available



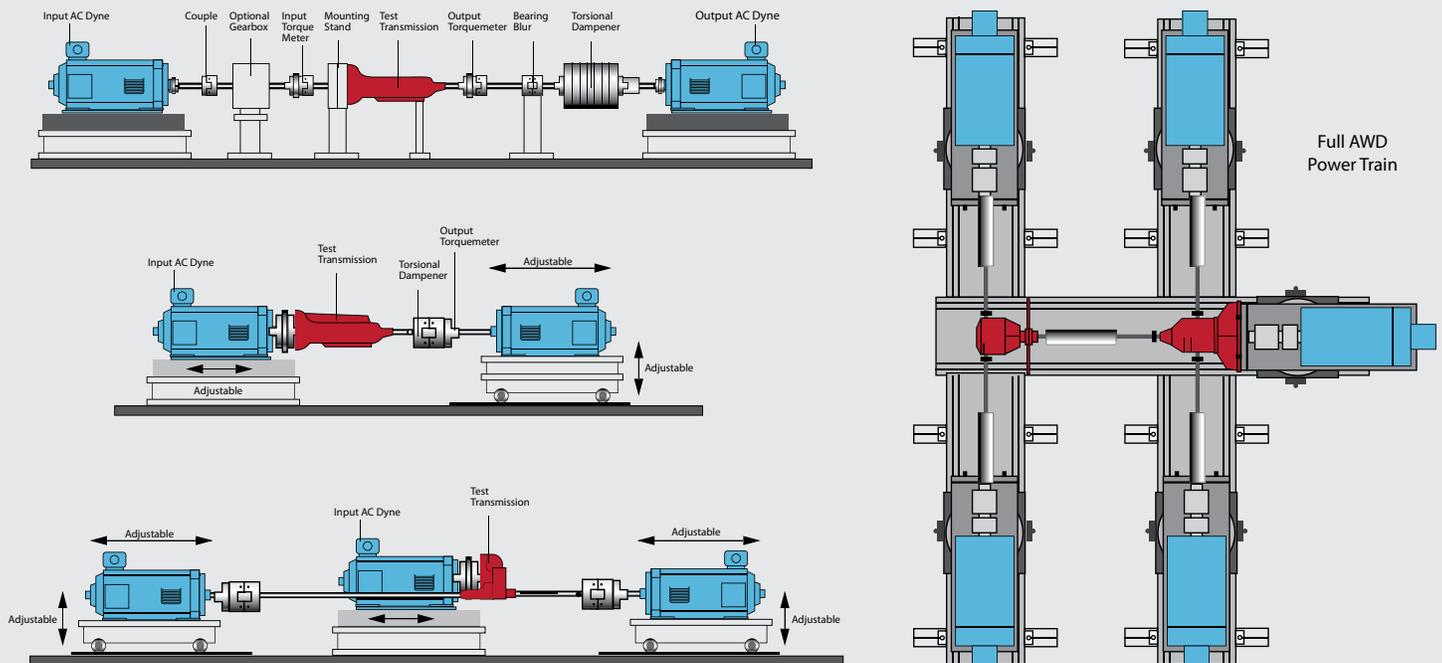


MAE designed and manufactured this custom AC Motor Transmission Test Stand for Grandmark Industrial for testing a range of in-line and trans-axle style light-duty transmissions. The three bed plate mounted AC dyne motors can be move and configured in a number of ways to allow this single test stand to test an amazing variety of transmission designs. Equipped with three 200-hp AC dyne motors capable of peak speeds of 6,000 rpm, the system can apply both absorbing torque and output motoring tot the output end of the test article.

R&D Laboratory Series - General Size Table

Model*	Input AC Motor						Output AC Motor					
	Type	Power		Torque		Speed Range	Type	Power		Torque		Speed Range
		HP	(kW)	lb-ft	(N-m)	rpm		HP	(kW)	lb-ft	(N-m)	rpm
R&D-AC/EC-5/5	AC	5	3.7	15	20	0 to 30,000	AC	5	3.7	45 to 90	61 to 122	0 to 30,000
R&D-AC/EC-10/10	AC	10	7.5	30	41	0 to 30,000	AC	10	7.5	90 to 180	122 to 244	0 to 30,000
R&D-AC/EC-25/25	AC	25	18.7	75	102	0 to 24,000	AC	25	18.7	225 to 450	305 to 610	0 to 24,000
R&D-AC/EC-50/50	AC	50	37.3	150	203	0 to 20,000	AC	50	37.3	45 to 900	610 to 1221	0 to 20,000
R&D-AC/EC-100/100	AC	100	74.6	300	407	0 to 16,000	AC	100	74.6	900 to 1801	1221 to 2441	0 to 16,000
R&D-AC/EC-250/250	AC	250	187	750	1017	0 to 11,000	AC	250	187	2251 to 4502	3052 to 6103	0 to 11,000
R&D-AC/EC-500/500	AC	500	373	1501	2034	0 to 10,000	AC	500	373	4502 to 9003	6103 to 12207	0 to 10,000
R&D-AC/EC-750/750	AC	750	560	2251	3052	0 to 9,000	AC	750	560	6753 to 13505	9155 to 18310	0 to 9,000
R&D-AC/EC-1000/1000	AC	1000	746	3001	4069	0 to 6,000	AC	1000	746	9003 to 18007	12207 to 24414	0 to 6,000

*Other power, torque, speed ranges are available

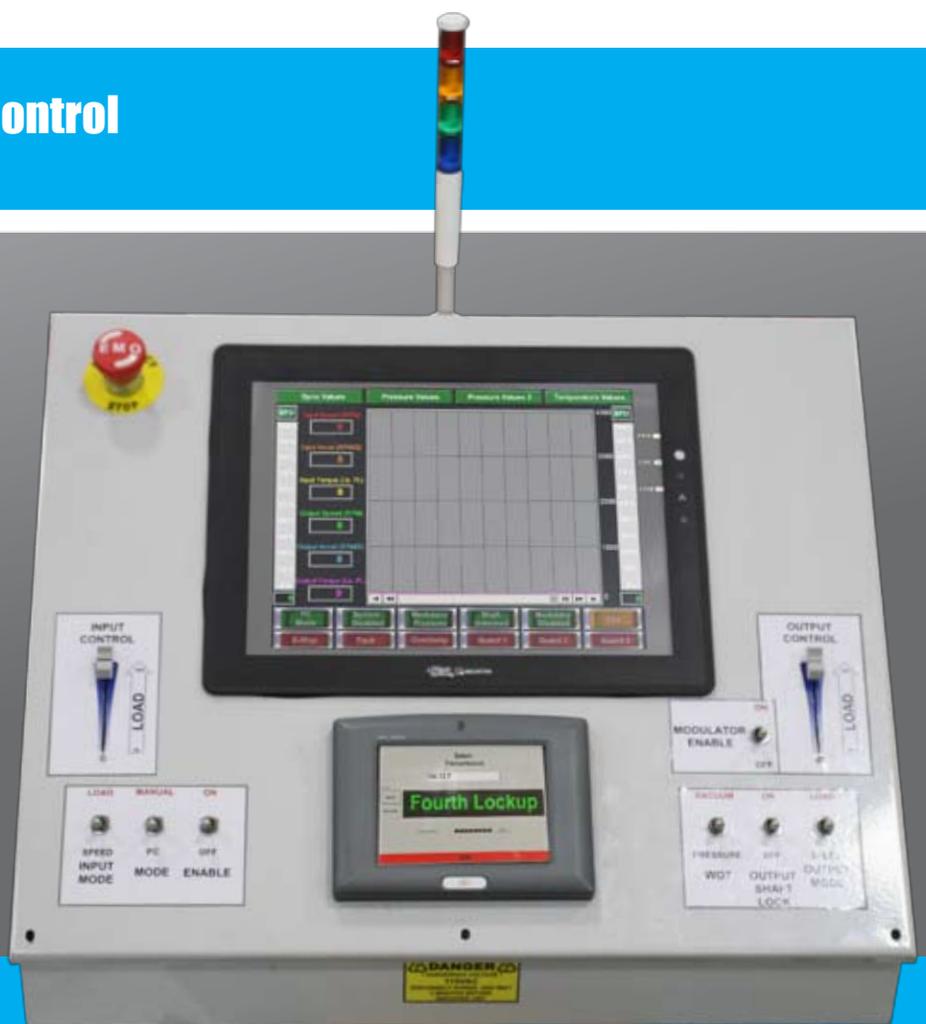
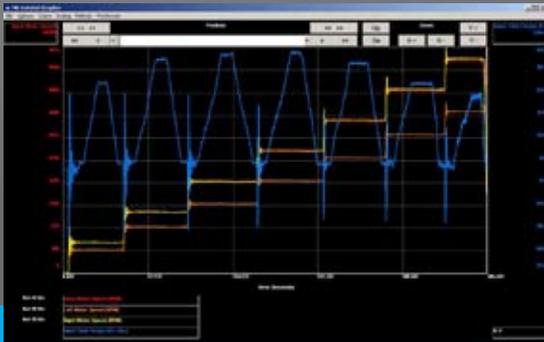


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TransTester Dynamometer Control & Data Acquisition Software

TransTester Software Offers:

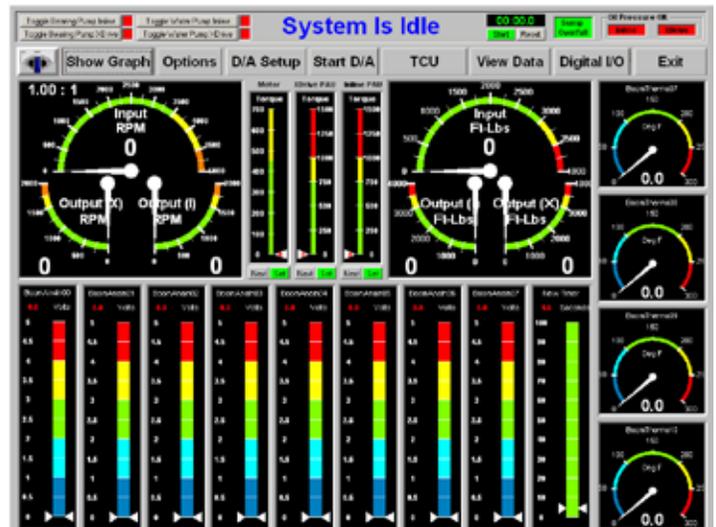
- Windows-based software
- Touch screen user interfaces
- User configurable displays
- Flexible Script Builder Utility
- Shift Table Editor
- Powerful data analysis packages



Powerful & Flexible Software

The most important feature of any transmission dynamometer is the power and flexibility of the control software and data acquisition system, the true heart of the dynamometer system. With MAE's TransTester Control Software, you have a software package that easily adapts and reconfigures to keep up with your changing needs.

Some of the significant advantages that TransTester offers include a Script Builder Utility, a Shift Table Editor, and a powerful graphing and data analysis utility. The Script Builder Utility gives you an unlimited ability to add new or modify existing scripted test procedures. With the Script Builder, you can define an unlimited number of test steps, each of which include fully customizable testing parameters. For the input and output parameters, you can choose between speed, torque, power or manual mode and establish mode-specific setpoints and ramp rates. The gear select control allows you to specify a gear range for this step. The step prompt allows you to enter custom text to be displayed on the test screen during this step in the test sequence. The "Break on Channel Value" feature can command the software to skip to a user-defined step once a user-defined condition is met. For example, *once a sump temperature of 180° is reached, skip to step 6*. Reported channels allows the user to define channels to record as well as minimum and maximum pass/fail criteria for each defined channel. Additional steps can be easily created by copying, pasting and editing existing steps.



Transmission data and dynamometer functions displayed via the operator interface during testing are fully configurable and include some of the following:

- Cooler-in
- Cooler-out
- Cooler Flow
- Lock-up
- Governor
- Main
- Input RPM
- Input Torque
- Output 1 RPM
- Output 2 RPM
- Output 1 Torque
- Output 2 Torque
- Lube
- Temperature

Open Architecture Hardware

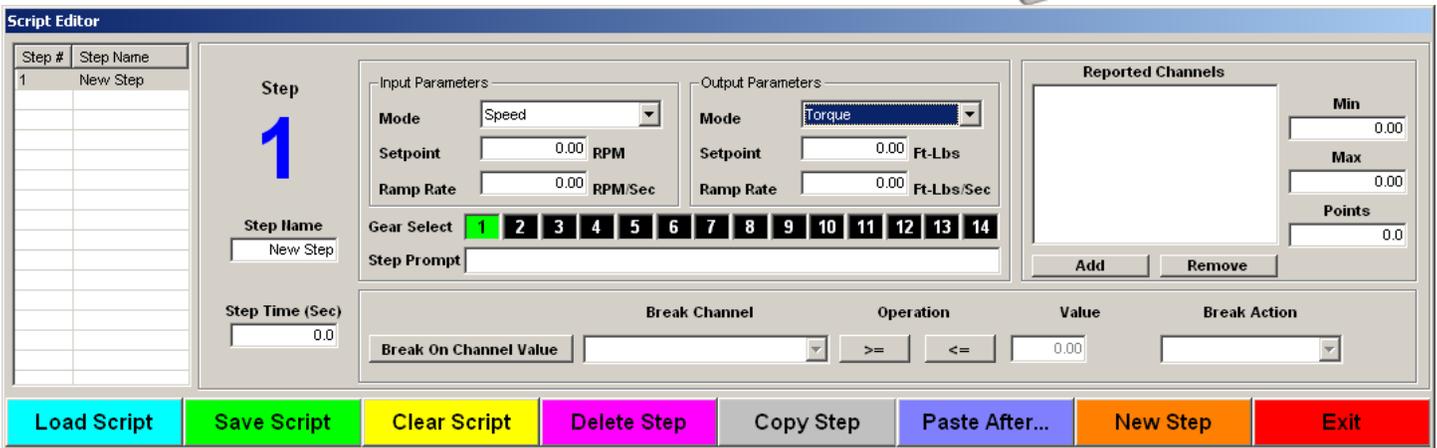
MAE's data acquisition and control system is an easy-to-use, compact package that consists of a Windows-based computer system, MAE's TransTester Data Acquisition and Transmission Control Software Package, dyno controller system, MAE-TCM transmission shifter, and a complete data acquisition system. The package includes all control systems, software and instrumentation required to operate the test system as well as to control the transmissions being tested.

MAE's data acquisition package is based on the industry standard data acquisition modules. MAE feels strongly that the customer is best served by using 'off-the-shelf' data acquisition hardware, ensuring ease of expansion, service and repair. Our customers benefit by possessing the highest technology while not being married to out-of-date or proprietary hardware.

MAE's standard systems provide comprehensive data acquisition of all pertinent transmission functions including recording of shift points (in automatic transmissions), pressures, flows and test rpm. Each system is supplied with a host of transducers which connect to the transmissions as well as all of the necessary cables and the data acquisition cabinet shown here.



Script Builder Utility



MAE's Script Builder Utility, shown above, gives you the ability to define an unlimited number of test steps. In each step you create, you can easily customize every aspect of the test parameter.



TransTester's Shift Table Editor ensures that you have the flexibility you need to set up a new transmission when the need arises. Using the Shift Table Editor, you have the ability to customize the software to shift any new transmission that may come through your door.

TransTester's powerful graphing utility allows you to graph, analyze and export all data in an Excel-friendly format.

MAE-VBT Valve Body Tester

MAE's Valve Body Tester is the most advanced valve body tester in the industry. With a host of features, this unit will simulate operating conditions more accurately and precisely than any other system in the marketplace. The MAE-VBT can reduce rebuilding labor time for mechanical valve bodies by helping adjust shift points prior to installing the valve body. Accurate adjustments can be made to full throttle upshifts, downshifts and closed throttle upshifts and downshifts. MAE's software allows precise adjustments to the shift pattern or schedules.

The MAE-VBT can be equipped with electronic controls to test Allison Generation 4 1000/2000 series and 3000/4000 series valve bodies.

MAE offers a complete selection of valve body test fixtures.



MAE-TCM Transmission Control Module

The MAE-TCM Transmission Control Module is a transmission shifter that allows you to program and store control setups for every type of electronic automatic transmission including Ford, Nissan, GM, Toyota, Chrysler, and many other manufacturers. MAE's unique approach to engineering allows our Transmission Control Module to control all types of electronic automatic transmission by the use of the proper frequency and duty cycle and is fully programmable via a user-friendly PC-based Shift Table Editor.



The MAE-TCM gives you the ability to test a transmission using the correct frequency and duty cycle, which ensures that the transmissions are being tested exactly as they perform in a vehicle.

MAE-ST1000 Solenoid Tester

Mustang designed the ST1000 to be a universal solenoid tester, meaning you can use your existing wiring harnesses and solenoid test fixtures from other solenoid testers that you may already own. A user-friendly software interface allows you to easily establish test limits for new solenoids. In "LEARN MODE", a known good OEM solenoid is used to automatically set and record new upper and lower limits for that solenoid, an exclusive feature that is not available on other solenoid testers

The ST1000 pays for itself quickly in savings. You'll find that you can save up to 80% of the solenoids that you would have otherwise thrown away. With a wide range of frequencies, the ST1000 gives you the ability to test solenoids exactly as they perform in a vehicle's transmission.

Mustang developed the ST1000 Solenoid Tester to provide an easy and cost-effective way to test transmission solenoids. For years, the transmission industry lacked a quality solenoid tester that could test solenoids accurately and with minimal false rejections. Mustang's solution was to create a tester with more powerful software capabilities, a more flexible user interface, the most advanced 10-bit resolution electronics and data acquisition, and a larger cabinet space for easier access. All of these improvements result in a tester that gives you more accurate test results and greater efficiencies through the ability to save, analyze, edit and customize your testing procedures.



Oil & Fluid Conditioning & Fill Systems

Mustang offers a number of oil and fluid conditioning, fill and reservoir systems to accommodate your test cell fluid management requirements. The engineers at MAE can recommend one of our standard systems or work with you to design a customized system to meet your application needs.

- **Heated systems**
- **Regulated fill amount**
- **Variable capacity amounts**
- **Fill pump**
- **Scavenge pump**
- **PLC controlled or manual**
- **Hydraulic motor tester**
- **Hydraulic pump tester**
- **Cylinder tester**
- **Low fluid level alarm**
- **Manual sight glass**
- **Reservoir clean out**
- **Replaceable filter**
- **Skid mount**



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Research & Development

Variable Input Control
Engine Model Simulation
Engine Pulsation
Variable Torque
Variable Speed
Manual Control
Variable Output Control
Vehicle Inertia Simulation
Roadload Simulation
Polynomial Loading
Variable Torque
Variable Speed

Pre Script Testing
Variable based
Time based
Distance based
Configurable Operator Screens
Calculated Channels
PID Loops
Alarms & Limits on Data Channels
Data Base
Full Data Acquisition
Com Support

Production / End-of-Line

Heated ATF Fill
Warm-up
Solenoid Test
Stall Test
Manual Gears
Up-Shift Testing
Down Shift Testing (loaded)
Park Pawl
Shift Timing
Torque Converter K-Factor
Gear Ratio Validation
PRND Validation Test

Coolant Flow Validation
Internal Pressure Switch Test
Speed Sensor Test
PC Control
Manual Control
Software Prompted Testing Scripts
Shift Validation Logic
Direct Solenoid Shifting Control
Transmission Data Base
Material Handling Automation
Robotic Shifting

Repair & Validation

Warm-up
Solenoid Test
Manual Gears
Up-Shift Testing
Down Shift Testing (loaded)
Park Pawl
Stall Testing
Shift Testing
Gear Ratio Validation
PRND Validation Test
Internal Pressure Switch Test

Speed Sensor Test
PC Control
Manual Control
Software Prompted Testing Scripts
Shift Validation Logic
Direct Solenoid Shifting Control
Transmission Data Base
Automatic Kickdown
Automatic Mechanical Throttle
Control System

Smarter By Design



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Twinsburg, OH 44087
Phone: (330) 963-5400
Fax: (330) 425-3310
Email: sales@mustangae.com

www.mustangae.com

Custom System Options

- Input power options include AC, DC, hydraulic, engine
- Output loading options include AC, DC, hydraulic, air-cooled eddy current, water-cooled eddy current,
- Robotic Shifting
- Modulation Control
- Variable Vacuum Source
- Torsional Output Couplings
- Extended Inertia Weights
- Manual Trans Mounting Control
- Power Indexing
- High Speed / High Torque Gearboxes
- Production Material Handling
- Park Pawl
- Hydraulic Actuated
- 90° Rotation
- End Stop Limit Switches
- Actuator distance measurement
- TCM Interface
- Simulated Engine Functions for Eaton®/Fuller® Automated Trans
- Engine Throttle Interface
- DOC® Allison® Transmission Interface
- Electronic PC Direct Solenoid Control for Transmission
- 12 Solenoid Drivers
- PRND Switch Tester
- Oil Cooling
- Air to Oil
- Water to Oil

