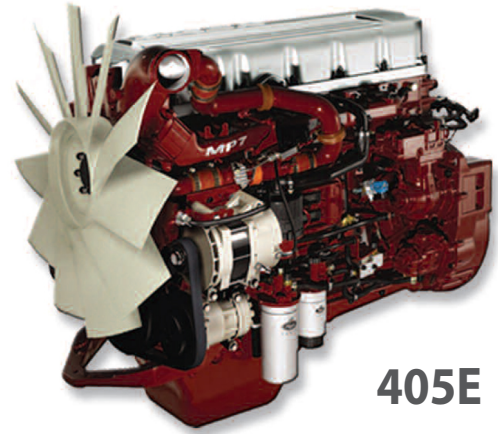


## BOOST POWER AND FUEL EFFICIENCY

The Econodyne engines use an intelligent torque management strategy called Econoboost to give drivers the extra boost needed to keep vehicle speed constant when under full engine loads. This helps drivers to minimize downshifting.

Econoboost decides whether the engine will be in the “Standard” or “Econoboost” torque curve range.

With Econoboost, the truck accelerates normally through all but the top two gears. In the top two gears, the engine defaults to the standard torque curve. The Econoboost torque (up to an additional 200 lb. ft.) is available on demand, but only under certain conditions like ascending a steep grade or passing another vehicle. The engine will revert to the standard curve when the torque demand is reduced and cruise conditions are resumed.



**405E**

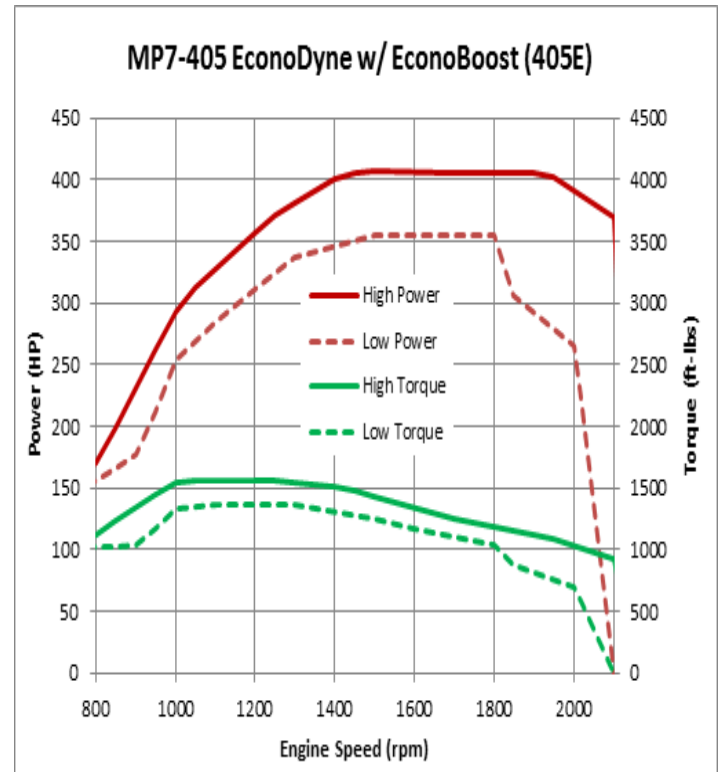
## FEATURES

- High Torque ECONODYNE™ Diesel Engine
- Cooled Exhaust Gas Recirculation (CEGR)
- Maximum Horsepower 405 BHP [310 kW]
- Electronic Unit Fuel Injection with Rate Shaping
- V-MAC IV Total Vehicle Electronics System
- Wide Operating Range 1200-2100 RPM
- Chassis Mounted Charge Air Cooled
- Variable Geometry Turbocharger
- Extended Service Intervals
- MACK PowerLeash Engine Brake

## SPECIFICATIONS

Peak HP (kW) @ RPM	405 [302] @ 1450-1900
HP [kW] @ Governed RPM	405[302]@2100
Max. Torque lb. ft. [N·m] @ RPM	1560 [2114] @ 1050 -1250
Type	Direct Injection Diesel
Number of Cylinders	6 In-Line
Bore & Stroke, in. [mm]	4.84 x 5.98 [123 x 152]
Displacement	659 [11]
Compression Ratio	16:1
Firing Order	1-5-3-6-2-4
Torque Rise	24%
Clutch Engagement	1120 lb. ft. [1519 N·m] @ 800 RPM
Idle Speeds:	
Low	Adjustable; 600 RPM
High	2100 RPM
Engine Brake Retarding Power (If Applicable)	420 HP [313 kW] @ 2100 RPM
Weight, Dry: (Approx.)	2,286 lbs. [1037 kg]
Greenhouse Gas 2014 Certified, OBD 2013 Certified	

## ENGINE PERFORMANCE



## ENGINE SPECIFICATIONS

Flywheel Housing .....	Die cast Aluminum
Cylinder Block:	
Material .....	Alloyed Grey Cast Iron
	Ladder Frame Reinforcement
Cylinder Liners:	
Type .....	Full Wet Design
Surface Finish .....	Plateau Honed
Cylinder Head Assembly:	
Type .....	Grey Cast Iron Slab Head With Intermediate Deck Single Overhead Cam
Configuration .....	4 Valves/Cyl., OHV
Valve Type .....	Poppet
Valve/Insert Material .....	Super Alloy (Serviceable)
Pistons & Rings:	
Piston Type .....	Monotherm™ Single Piece Steel w/Closed Cooling Gallery
Pin Diameter .....	2.125" [54 mm]
Rings .....	2 Compression, 1 Oil Control
Crankshaft:	
Material .....	Forged, Carbon Steel
Heat Treatment .....	Induction-Hardened Journals/Fillet
Main Bearing Diameter .....	4.5" [114 mm]
Charge Air Cooling .....	Chassis Mounted, Air-To-Air
Fuel System .....	Delphi E3 Electronic Unit Injectors w/2 Solenoid Valve Technology and Rate Shaping
Fuel Supply Pump .....	ZF Meritor
Filter .....	Spin On, Disposable
Lubrication System:	
Type .....	Full Pressure, Wet Sump
Oil Filters .....	2 Spin-On Full Flow Disposable, 1 By-pass
Oil Cooler .....	Stainless Steel Plate
Total Oil Capacity .....	Highway 29 qts. (Incl's. Filters) Vocational 33 qts. (Incl's. Filters)
Drain Plug .....	Magnetic
Cooling System:	
Capacity .....	17 qts. [16 L]
Thermostats .....	180°F [82°C]
Hose Material .....	Silicone
Air Compressor:	
Type .....	
Meritor/WABCO	
Standard Capacity:	
CHU, CXU, GU7 and GU8 .....	18.7 cfm [8.9L/s]
MRU, LEU .....	37.4 cfm [17.8L/s]
Turbocharger .....	Holset, Sliding Nozzle Ring Variable Geometry w/Water Cooled Actuator and Bearings and Electronic Controls
Accessory Belt .....	Poly-V w/Automatic Tensioners
EGR System	
Single EGR Valve Assembly .....	Modulated Cast Stainless Steel
EGR Cooler .....	Stainless Steel Tube and Insert, Gas to Coolantz

## GEARING RECOMMENDATIONS

Proper gearing is necessary to achieve optimum vehicle performance and fuel economy. Vehicle specifications, including engine, transmission, axle ratio, and tire selection, should generally be selected to meet the following criteria:

<b>Startability</b>	Highway Applications .....	≥ 10%
	On-Off Highway Applications .....	≥ 16%
<b>Gradeability</b>	@ Cruise Max. MPH .....	≥ 0.5%
	@ Peak Torque, Top Gear .....	≥ 1.5%
<b>Cruise RPM</b>		1400 ±50 RPM*

\*Cruise RPM = Engine speed in top gear @ Desired Cruise Speed

Refer to the MACKTRAQ® electronic sales tool to obtain startability, gradeability and cruise RPM results for specific vehicle specifications. Special service applications, road surfaces, high GCW's or other factors may require different gearing considerations.

## V-MAC IV® FUNCTIONS

4th Generation Vehicle Management And Control System

### V-MAC IV PRODUCTIVITY FEATURES:

- PTO (4) and Electronic Hand Throttle Control
- Engine "Smart Fan Control"
- Integrated Sleeper Low Voltage Disconnect †
- "Smart Idle" Speed Regulator
- GuardDog Routine Maintenance Monitoring †

### V-MAC IV DRIVER CONVENIENCE FEATURES:

- Full Featured Cruise Control
- Cruise 'n Brake Engine Brake Control
- Programmable Engine Governor Type
- Idle Cooldown
- Daytime Running Light (DRL) Override †

### V-MAC IV FUEL ECONOMY FEATURES:

- Vehicle Speed Limiting
- Engine "Sweet Spot Indicator"
- Fuel Economy Incentive Program
- Idle Shutdown

### V-MAC IV RELIABILITY FEATURES:

- Engine Protection
- Starter Protection
- Differential Lock Auto Control

### V-MAC IV FLEET MANAGEMENT FEATURES:

- DataMax Comprehensive On-Board Data Logger

### V-MAC IV SAFETY AND SECURITY FEATURES:

- Speed Sensor Tamper Resistance
- Theft Deterrence
- 5th Wheel Slide Unlocked Vehicle Speed Limiting
- Air Suspension Deflated Vehicle Speed Limiting

### V-MAC IV SERVICEABILITY FEATURES:

- SAE J1587 and J1939 Diagnostic Port
- Electronic Fault Logging with Fault Reporter
- VCADS PC Based Service Software

† Denotes an available option.

## OIL/FILTER SERVICE INTERVALS

Refer to the latest version of Mack Maintenance & Lubrication Manual TS494.

## OPTIONAL EQUIPMENT\*

- High Capacity Air Compressor
- 120 and 240 Volt Engine Block Heaters
- High Capacity Alternator

\*\* Availability may be chassis model dependent.

