



The following documentation is an electronically-submitted vendor response to an advertised solicitation from the *West Virginia Purchasing Bulletin* within the Vendor Self-Service portal at ***wvOASIS.gov***. As part of the State of West Virginia's procurement process, and to maintain the transparency of the bid-opening process, this documentation submitted online is publicly posted by the West Virginia Purchasing Division at ***WVPurchasing.gov*** with any other vendor responses to this solicitation submitted to the Purchasing Division in hard copy format.

Header

List View

General Information Contact Default Values Discount DocumentInformation

Procurement Folder: 136612

SO Doc Code: CRFQ

Procurement Type: Central Purchase Order

SO Dept: 1400

Vendor ID: 000000187888 

SO Doc ID: AGR1600000004

Legal Name: WORLDWIDE EQUIPMENT OF WV INC


Published Date: 1/11/16

Alias/DBA:

Close Date: 1/19/16

Total Bid: \$103,799.00

Close Time: 13:30

Response Date: 01/19/2016 

Status: Closed

Response Time: 13:14

Solicitation Description: Addendum 1 - Day Cab Tandem Tractor for Donated Foods

Total of Header Attachments: 0

Total of All Attachments: 0



Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Solicitation Response

Proc Folder : 136612

Solicitation Description : Addendum 1 - Day Cab Tandem Tractor for Donated Foods

Proc Type : Central Purchase Order

Date issued	Solicitation Closes	Solicitation No	Version
	2016-01-19 13:30:00	SR 1400 ESR01191600000003055	1

VENDOR

000000187888

WORLDWIDE EQUIPMENT OF WV INC

FOR INFORMATION CONTACT THE BUYER

Linda Harper
(304) 558-0468
linda.b.harper@wv.gov

Signature X

FEIN #

DATE

All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	2016 class 8 day cab tandem truck	1.00000	EA	\$103,799.000000	\$103,799.00

Comm Code	Manufacturer	Specification	Model #
25102100			

Extended Description :	2016 (or newer) Class 8 Day Cab Tandem Truck



Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Request for Quotation
01 — Agricultural

Proc Folder: 136612

Doc Description: Day Cab Tandem Tractor for Donated Foods

Proc Type: Central Purchase Order

Date Issued	Solicitation Closes	Solicitation No	Version
2015-12-21	2016-01-19 13:30:00	CRFQ 1400 AGR1600000004	1

FOR INFORMATION CONTACT THE BUYER

Linda Harper
(304) 558-0468
linda.b.harper@wv.gov

Signature X

FEIN #

00000187888

DATE

1/19/16

All offers subject to all terms and conditions contained in this solicitation

ADDITIONAL INFORMATION:

The West Virginia Purchasing Division for the Agency, The West Virginia Department of Agriculture is soliciting bids from qualified vendors to establish a "One-Time" contract for the purchase of 2016 or newer Class 8 Day Cab Tandem Tractor per the Specifications, Terms & Conditions and bid requirements as attached.

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER 304-558-2221		AUTHORIZED RECEIVER 304-558-0573	
AGRICULTURE DEPARTMENT OF		AGRICULTURE DEPARTMENT OF	
ADMINISTRATIVE SERVICES		FOOD DISTRIBUTION PROGRAM	
1900 KANAWHA BLVD E		4496 CEDAR LAKES RD	
CHARLESTON	WV25305-0173	RIPLEY	WV 25271
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	2016 class 8 day cab tandem truck	1.00000	EA	\$103,799	\$103,799

Comm Code	Manufacturer	Specification	Model #
25102100	Mack Trucks Inc		CXU613

Extended Description :

2016 (or newer) Class 8 Day Cab Tandem Truck

SCHEDULE OF EVENTS

Line	Event	Event Date
1	Question Deadline 5:00 PM	2016-01-05

CERTIFICATION AND SIGNATURE PAGE

By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

Worldwide Equipment of West Virginia Inc.
(Company)

Scott J. Pekar, Director of Government & Municipal Sales
(Authorized Signature) (Representative Name, Title)

304-744-1321 fax 304-744-7852
(Phone Number) (Fax Number) (Date)

1/19/16

(Cell) 859-333-8602

State of West Virginia

VENDOR PREFERENCE CERTIFICATE

Certification and application is hereby made for Preference in accordance with **West Virginia Code**, §5A-3-37. (Does not apply to construction contracts). **West Virginia Code**, §5A-3-37, provides an opportunity for qualifying vendors to request (at the time of bid) preference for their residency status. Such preference is an evaluation method only and will be applied only to the cost bid in accordance with the **West Virginia Code**. This certificate for application is to be used to request such preference. The Purchasing Division will make the determination of the Vendor Preference, if applicable.

1. ☐ **Application is made for 2.5% vendor preference for the reason checked:**
☐ Bidder is an individual resident vendor and has resided continuously in West Virginia for four (4) years immediately preceding the date of this certification; or,
☐ Bidder is a partnership, association or corporation resident vendor and has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or 80% of the ownership interest of Bidder is held by another individual, partnership, association or corporation resident vendor who has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or,
☒ Bidder is a nonresident vendor which has an affiliate or subsidiary which employs a minimum of one hundred state residents and which has maintained its headquarters or principal place of business within West Virginia continuously for the four (4) years immediately preceding the date of this certification; or,
2. ☐ **Application is made for 2.5% vendor preference for the reason checked:**
☐ Bidder is a resident vendor who certifies that, during the life of the contract, on average at least 75% of the employees working on the project being bid are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; or,
3. ☒ **Application is made for 2.5% vendor preference for the reason checked:**
☒ Bidder is a nonresident vendor employing a minimum of one hundred state residents or is a nonresident vendor with an affiliate or subsidiary which maintains its headquarters or principal place of business within West Virginia employing a minimum of one hundred state residents who certifies that, during the life of the contract, on average at least 75% of the employees or Bidder's affiliate's or subsidiary's employees are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; or,
4. ☒ **Application is made for 5% vendor preference for the reason checked:**
☒ Bidder meets either the requirement of both subdivisions (1) and (2) or subdivision (1) and (3) as stated above; or,
5. ☐ **Application is made for 3.5% vendor preference who is a veteran for the reason checked:**
☐ Bidder is an individual resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard and has resided in West Virginia continuously for the four years immediately preceding the date on which the bid is submitted; or,
6. ☐ **Application is made for 3.5% vendor preference who is a veteran for the reason checked:**
☐ Bidder is a resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard, if, for purposes of producing or distributing the commodities or completing the project which is the subject of the vendor's bid and continuously over the entire term of the project, on average at least seventy-five percent of the vendor's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years.
7. ☐ **Application is made for preference as a non-resident small, women- and minority-owned business, in accordance with West Virginia Code §5A-3-59 and West Virginia Code of State Rules.**
☐ Bidder has been or expects to be approved prior to contract award by the Purchasing Division as a certified small, women- and minority-owned business.

Bidder understands if the Secretary of Revenue determines that a Bidder receiving preference has failed to continue to meet the requirements for such preference, the Secretary may order the Director of Purchasing to: (a) reject the bid; or (b) assess a penalty against such Bidder in an amount not to exceed 5% of the bid amount and that such penalty will be paid to the contracting agency or deducted from any unpaid balance on the contract or purchase order.

By submission of this certificate, Bidder agrees to disclose any reasonably requested information to the Purchasing Division and authorizes the Department of Revenue to disclose to the Director of Purchasing appropriate information verifying that Bidder has paid the required business taxes, provided that such information does not contain the amounts of taxes paid nor any other information deemed by the Tax Commissioner to be confidential.

Under penalty of law for false swearing (West Virginia Code, §61-5-3), Bidder hereby certifies that this certificate is true and accurate in all respects; and that if a contract is issued to Bidder and if anything contained within this certificate changes during the term of the contract, Bidder will notify the Purchasing Division in writing immediately.

Bidder: Worldwide Equipment of WV Inc

Signed: [Signature]

Date: 1/19/16

Title: Director of Government & Municipal Sales

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

MANDATE: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: Worldwide Equipment of West Virginia Inc

Authorized Signature: [Signature] Date: 1/19/16

State of Kentucky

County of Fayette, to-wit:

Taken, subscribed, and sworn to before me this 19th day of Jan., 2016

My Commission expires 4/26, 2017

AFFIX SEAL HERE

NOTARY PUBLIC

[Signature]
Purchasing Affidavit (Revised 08/01/2015)



STANDARD TRUCK WARRANTY CERTIFICATE



Mack Trucks, warrants certain individual components of the new Mack truck to be free from defects in material and workmanship under normal use and service up to the periods as specified, provided all Mack Trucks, maintenance and inspection requirements found in the Operator's Manuals and service manuals/instructions are followed. All warranty periods are calculated from date in service. All coverage is 100% for parts and labor except as noted.

**LIMITATIONS AND EXCLUSIONS TO THIS WARRANTY APPEAR ON THE REVERSE SIDE OF THIS CERTIFICATE.
THESE LIMITATIONS AND EXCLUSIONS ARE IMPORTANT AND MUST BE READ AND UNDERSTOOD.**

This warranty applies to **Model Year 2016** and newer CHU, CXU, GU, LEU, LR, MRU and TD models manufactured by Mack Trucks, with **EPA2014 (and newer) Engine Emissions** operated in the United States and Canada. Specific coverage is based on the application and weight class as described in the following chart:

	Standard NORMAL DUTY	Standard HEAVY DUTY	Standard SEVERE DUTY
Typical Vocations	Line / Long Haul, Short Haul, or Pickup & Delivery	Heavy Line Haul, Construction, Refuse, Fire or Rescue Service	Heavy Construction, Heavy Refuse, Off- Road, Heavy Haul, Mining, Logging, or Oil Field
Weight Class Qualifications	<i>Vehicle must have</i> GVWR ≤ 63,000 lbs. (≤ 28 metric tons) or GCWR ≤ 110,000 lbs. (≤ 50 mt.)	<i>Vehicle must have</i> GVWR ≤ 80,000 lbs. (≤ 36 mt.) or GCWR ≤ 143,000 lbs. (≤ 65 mt.)	<i>Vehicle must have</i> GAWR > 46,000 lbs. (> 21 mt.) or GVWR > 80,000 lbs. (> 36 mt.) or GCWR > 143,000 lbs. (> 65 mt.)
Basic Coverage	12 months or 100,000 miles (161,000 km)	12 months or 100,000 miles (161,000 km)	12 months or 100,000 miles (161,000 km)
Chassis Towing	Towing/Road Service coverage is limited to 90 days or 5,000 miles, whichever occurs first		Not Applicable
Air Conditioning	Air conditioning (sealed system only) is covered for 12 months with no mileage limitation.		
Engine / Emission	Not covered under this warranty certificate. See respective engine manufacturer's warranty certificate and paragraph 14 on the reverse side.		
Transmission, Driveline, Rear Axle, Front Non-Drive Steer Axle	36 months or 350,000 miles (563,000 kilometers) Covered Components are as follows: • Manual Transmission—Transmission assembly • Driveline—Bearings, hangers & shafts • Rear Axle—Differential carrier assembly & axle housing • Front Non-Drive Steer Axle—Axle beam, steering knuckle, & tie rod Allison Automatic Transmissions are not covered under this warranty certificate. See paragraph 14 on the reverse side.		12 months or 100,000 miles (161,000 km)
Mack Carrier & Axle Housing	60 months or 500,000 miles (805,000 km)	36 months or 300,000 miles (483,000 km)	12 months or 100,000 miles (161,000 km)
Mack T300 Transmission	60 months or 750,000 miles (1,207,000 km)	36 months or 400,000 miles (644,000 km)	12 months or 100,000 miles (161,000 km)
mDRIVE Transmission	Engine Torque ≤ 1760 ft/lb: 60 months or 750,000 miles (1,207,000 km) Engine Torque > 1760 ft/lb: 36 months or 500,000 miles (805,000 km)	36 months or 250,000 miles (402,000 km) mDRIVE and mDRIVE HD	12 months or 100,000 miles (161,000 km) mDRIVE HD: 24 months or 250,000 miles (402,000 km)
mDRIVE Clutch	36 months or 300,000 miles (480,000 km)	36 months or 250,000 miles (402,000 km) mDRIVE and mDRIVE HD	mDRIVE: 12 months or 100,000 miles (161,000 km) mDRIVE HD: 24 months or 250,000 miles (402,000 km)
mDRIVE & T300 Towing	Towing and Roadside Assistance on warrantable failures are covered for 24 months or 250,000 miles whichever occurs first		Not Applicable
Trunnion Bracket	36 months or 300,000 miles (483,000 km) Limited to Trunnion Bracket & Spindle, Suspension Trunnion (Except Bushings)		12 months or 100,000 miles (161,000 km) (same restrictions as Normal & Heavy)
Cab Structure	60 months or 500,000 miles (805,000 km)	24 months or 200,000 miles (322,000 km)	12 months or 100,000 miles (161,000 km)
Internal Cab Corrosion	60 months or 500,000 miles (805,000 km)	60 months or 500,000 miles (805,000 km)	60 months or 500,000 miles (805,000 km)
	Covered only where metal is perforated from the inside to the outside. See paragraph 14 on the reverse side.		
Frame Rail / Crossmembers	60 months or 500,000 miles (805,000 km) CHU/CXU Models Only: 72 months or 750,000 miles (1,207,000 km)	36 months or 300,000 miles (483,000 km) GU Model only: 60 months or 500,000 miles (805,000 km)	12 months or 100,000 miles (161,000 km)
Noise Emission	LIFE OF VEHICLE: Mack Trucks, warrants to the first purchaser of this vehicle for purposes other than resale, and to each subsequent purchaser, that this vehicle was designed, built and equipped to conform, at the time of sale to such first purchaser, with all applicable U.S. EPA noise control regulations. This warranty is not limited to any vehicle particular part, component, or system of the vehicle. Defects in the design, assembly or any part, component or system of the vehicle which at the time of sale to such first purchaser, caused noise emission levels to exceed Federal standards are covered by this warranty for the life of the vehicle. EXCLUSIONS: Failures which arise as a result of tampering rather than from defects in the design, assembly, or any part, components, or system of the vehicle are not covered by this warranty.		

Mack Trucks, reserves the right to make any changes in design or to make additions to or upon its products without incurring any obligations to install the same on vehicles previously built.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES AND REPRESENTATIONS OR CONDITIONS, STATUTORY OR OTHERWISE, EXPRESSED OR IMPLIED INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

THESE LIMITATIONS AND EXCLUSIONS ARE IMPORTANT AND MUST BE READ AND UNDERSTOOD.

LIMITATIONS – Mack Trucks, obligation is limited to, at its sole option, repair or replacement of parts which are acknowledged by it to be defective. In the case of acknowledged defective assemblies, exchange with factory rebuilt units may occur. The defective parts or assemblies replaced shall become the property of Mack Trucks. Warranty repairs performed by an authorized Mack dealer in accordance with the terms of the warranty set forth herein are free of charge. Warranty repairs do not constitute an extension of the original warranty period for the vehicle or any part thereof. Warranty consideration can only be given if the deficiency is brought to the attention of an authorized Mack dealer upon discovery and the vehicle must be made available, in a timely fashion during the coverage period, for repair.

NO PAYMENT OR OTHER COMPENSATION WILL BE MADE FOR CONSEQUENTIAL, INDIRECT OR INCIDENTAL EXPENSES OR DAMAGES OF ANY KIND.

EXCLUSIONS:

1. **REPAIR:** Warranty consideration can only be given if the deficiency is brought to the attention of an authorized Mack dealer upon discovery and the truck must be made available, in a timely fashion during the warranty period, for repair. Failures resulting from the user's unreasonable delay in making the truck available, after being notified of a potential product problem, are not covered.
2. **DAMAGES:** Damages due to accidents, misuse, negligence, improper operations, alterations, storage or transport, operation at excessive speeds, loading beyond the factory rated load capacity, and improper or insufficient maintenance services are not covered. Damages due to failure to follow Mack Trucks, recommended service procedures are considered damages due to improper maintenance services.
3. **APPLICATION:** The selling dealer is responsible for the correct application and/or specification for a vehicle sold to a customer. Vehicle application problems, including but not limited to, replacement of incorrect axle or transmission gear ratios, failures of component parts of vehicles being operated in excess of factory rated load capacities, or the use of a vehicle for a purpose of which it was not intended are not covered.
4. **ENVIRONMENTAL DAMAGE:** Parts made out of cloth, leather, wood, rubber, synthetics, paint or chrome which have been effected by exposure to the elements or chemical influence including, but not limited to road salts/chemicals, industrial fall-out or the use of improper cleaners, polishes, and or waxes are not covered.
5. **GLASS:** Glass breakage and scratches are not covered unless positive physical proof of manufacturing responsibility is established.
6. **SUSPENSION PARTS:** Suspension parts, including but not limited to rubber bushings, torque rod bushings, spring pins and bushings, and all greased lubrication points that fail due to improper maintenance, abnormally severe service or abuse are not covered.
7. **ALTERATIONS:** Any vehicle or vehicle system repaired, altered, or inspected in any way, so as to adversely affect, in Mack Trucks, sole judgment, its stability, durability, or reliability, is not covered.
8. **OPTIONAL EQUIPMENT:** Any part of the truck that fails, malfunctions or does not perform as a result of improper conversion or installation of special bodies or equipment by other manufacturers or suppliers is not covered.
9. **MAINTENANCE AND PARTS CONSUMED** ("Consumables"): Normal maintenance services including, but not limited to, replacement of oil filters, adjustments of the engine injection pump / transmission / brakes / linkages, as well as diagnosis, test time and all other adjustments, are not covered. Parts which are normally consumed or worn out during the vehicle's usual service life and customarily replaced during usual maintenance service are not covered or have limited coverage. These parts include, but are not limited to, the following:
NOT COVERED - Brake linings, clutch brake, clutch linings, mud flaps and brackets.
COVERED FOR 30 DAYS - Fluorescent lights or ballast, light bulbs, fuses, wiper blades and all filters (oil, fuel, air, etc.).
COVERED FOR 90 DAYS - Loose fasteners, leaking fittings or hose clamps.
COVERED FOR 12 MONTHS, OR 100,000 MILES (161,000 KM), WHICHEVER OCCURS FIRST - Cab suspension on models used in heavy duty applications, batteries, frame paint, sealed light assemblies, exhaust flex pipe, hose clamps, all rubber/nylon bushings or mounts, flexible hoses, all belts, shock absorbers (leakage only), wheel seals, and all grease lubricated points (including non-serviceable tie rods ends, king-pins, u-joints, spring pins, drag links, and the like.)
10. **ALIGNMENT:** Alignment of axle(s) and balancing of tires, including changing of axle camber, caster, toe and thrust angle settings are not covered.
11. **NON-GENUINE PARTS:** Any vehicle which has been repaired by use of parts and accessories, as well as major assemblies and exchange units, which do not meet factory standards and which cause a vehicle component or system to fail are not covered.
12. **TIRES:** Tires are covered by separate warranties given by their respective manufacturers.
13. **CAB STRUCTURE AND CORROSION:** Cab structural defects or cab corrosion that occurs in areas of the cab that have been previously damaged, repaired, altered or modified are not covered. Cab corrosion where metal is perforated from the outside to the inside is not covered.
14. **VENDOR ENGINES AND AUTOMATIC TRANSMISSIONS:** The vendor engines and Allison automatic transmissions used in Mack trucks are warranted by their respective manufacturers and not by Mack Trucks, Inc. Refer to the engine and transmission manufacturers' warranty statements.
15. **ODOMETER READING:** Any vehicle in which the odometer has been disconnected or the mileage reading has been altered and/or the actual mileage cannot be readily determined is not covered.
16. **ACCESS TO INFORMATION:** The user must allow Mack Trucks, full access to all data stored in all Electronic Control Modules; failure to do so may result in the loss of warranty coverage.
17. **PREMIUM LABOR:** Labor for overtime and/or shift differential is not covered.
18. **EXCESSIVE LABOR:** Excessive labor for a warrantable repair due to the prior installation of equipment or body is not covered.
19. **MISC. EXPENSE:** Meals, lodging, electronic messaging equipment, travel time and expense, loss of cargo, downtime, loss of profit/revenue, rental vehicles, or driver's wages and other miscellaneous expenses are not covered. Shop supplies, lube oil, lubricants, sealers, anti-freeze, filter elements and labor performed by a non-approved location are not covered.
20. **ADDITIONAL COMPONENTS:** Components or parts that are not installed by Mack Trucks, are not covered. During a warrantable repair, additional time to remove any customer installed bodies, components, and accessories will not be covered under warranty. Mack Trucks, factory manufacturing records will be determinative as to factory installed components.
21. **APPLICATION CHANGE OR CHANGE OF OWNERSHIP:** If at any time during the term of the original warranty there is a change in the application of the vehicle or a change in ownership, the owner must notify Mack Trucks, Post Office Box 26259, Greensboro, NC 27409 in writing and within 30 days of date of the change. Failure to provide such timely notice may result in the warranty becoming null and void. If the change in ownership is accepted by Mack Trucks, and/or the change in application does not affect coverage, Mack Trucks, will transfer any remaining applicable portion of the warranty to the new owner or for the new application.

MACK®

Mack Trucks, Inc.
Post Office Box 26259
7825 National Service Road
Greensboro, North Carolina 27409



CXU613



**WE ENGINEER
THE HEROES
OF THE HIGHWAY**

STANDARD POWERTRAIN SPECIFICATIONS

ENGINE: MACK MP7-325E

- Peak Horsepower – 325HP at 1400-1800 RPM
- Horsepower – 325 HP at 1800 Gov. RPM
- Max. Torque – 1260 lb/ft at 1100-1300 RPM
- V-MAC IV – Total Vehicle Electronics
- Air Compressor – 318 (18.7 cfm)
- Air Cleaner – 11" Single Element
- Alternator – Delco 12V 130A (24SI)
- Batteries, (3) Mack 12V 650/1950 CCA Threaded Stub Type
- Coolant Protection, -34°F (-37°C)
- Mack Coolant Conditioner
- Diesel Particulate Filter – RH Side Under Cab
- Exhaust After Treatment System – Ceramic
- Mack PowerLeash™ Engine Brake for MP7
- Silicone Engine Hoses and Tubing
- Poly-V Fan Belt w/ Automatic Tensioner
- Fan Drive, Electronically Modulated Multi-Speed Viscous
- Flywheel Housing – Aluminum (Lightweight)
- Fuel Water Separator w/ Manual Drain
- Mack EPDM Radiator & Heater Hoses
- Radiator – Aluminum Core
- Starter – Delco 12V 39MT
- Electronic Starter Interlock

TRANSMISSION: MACK *m*DRIVE PREMIUM W/ OVERDRIVE, INCLUDES GRADE GRIPPER AND MACKCELLERATOR

- 12-Speed, Ratios: 11.73 Low – 0.78 High
- Clutch – Meritor/Sachs, Single Plate 17" Organic Material
- Transmission Bell Housing – Aluminum
- Transmission Oil Cooler – *m*DRIVE Gear Box Mounted LH Side Water to Oil Cooler
- Main Driveline – Spicer Extended Lube Series

REAR AXLE: MERITOR MT-40-14X (AMBOID TYPE GEARING)

- 40,000 lb Capacity
- Suspension – Maxlite 40EZ Air Suspension 40,000 lb Rating
- Tires – 295/75R 22.5 (Low Profile)
- Carrier – Malleable Housing
- Wheels – Aluminum Disc (8) 22.5" x 8.25" 10-Hole Hub Piloted
- Hub Material – Aluminum Preset w/ Integrated Spindle Nut
- Brakes – Bendix ES165-07L 16.5" x 7" Stamped Spider
- Brake Drums – Cast Outboard Mounted
- Rear Brake Lining
- Premium Rear Wheel Seals – Hub Oil
- Shock Absorbers – (4) Mounted on Forward and Rear Axles each side
- Slack Adjusters – Automatic
- Spring Brake Chambers – (2) 30/30 Double Diaphragm Type/Mechanical Spring Release

FRONT AXLE: MACK FXL12

- 12,000 lb. Capacity
- Tires – 295/75R 22.5 (Low Profile)
- Wheels – Aluminum Disc (2) 22.5" x 8.25" 10-Hole Hub Piloted
- Hub Material – Aluminum
- Brakes – Bendix ES165-05D 15" x 5" Cast Spider
- Brake Drums – Cast Outboard Mounted
- Front Brake Lining
- Front Wheel Seals – Integrated
- Shock Absorbers – Double Acting Type
- Slack Adjusters – Automatic
- Suspension – Mack Taperleaf 12,000 lb. Ground Load Rating (2 Leaf Spring)
- Steering – TAS65 TRW Integral Power Steering

STANDARD CAB INTERIOR/EXTERIOR SPECIFICATIONS

CAB: CA68 CONVENTIONAL

- Air Conditioner w/ Integral Heater – 2 R134a Refrigerant
- Ash Tray
- Cab Mounting – Four Point System w/2 Air Bags and Shocks at Rear
- Cigar Lighter
- Coat Hook
- Co-Pilot Enhanced Driver Display with Button and Stalk Control and GuardDog Maintenance System
- Cup Holders, Driver's & Rider's Side
- Dome Lights – 2 Lamps LH/ 2 Lamps RH
- Galvanized Steel Visibility Doors
- Door Trim – Molded Upper Door Panel & Padded Lower Panel
- Engine Shutoff – Key Type
- Floor Mats – Mack Signature Polyurethane
- Digital Voltmeter – Digital Ambient Air Temp
- Gauges – Air Pressure, Engine Coolant Temperature, Engine Oil Pressure, Engine Oil Temperature, Speedometer, Tachometer, Fuel Level
- Gauge Cluster – Exhaust Pyrometer & Transmission Oil Temperature Gauges
- Grab Handles – Black Finish RH & LH Behind Door
- Grille – Bright Finish Bars w/ Bright Finish Surround
- Hood – One Piece Insulated Fiberglass with Forward tilt 75°
- Fenders – Fiberglass w/ Wheel Splash Aprons and Black Polyarmor Mud Flaps
- Horn – Mack Rectangular Single Trumpet Air Horn, Single Tone w/ Snow Shield
- Identification and Clearance Lights (5)
- Instrument Panel – Charcoal Gray
- Interior Trim: Genuine – Slate Gray
- Keys – (2) Keyed at Random
- Low Air Pressure Indicator Light and Buzzer
- Body Colored Aero Exterior Mirrors
- Overhead Console – 3 Storage Compartments w/ Nets
- Parking Brake On Indicator Light
- AM/FM Premium Stereo, CD, MP3, Weatherband, Handsfree Interface, Bluetooth
- CB – 5 way Binding Post
- Driver Seat – Bostrom Talladega 915 Mid-Back Air Suspension
- Rider Seat – Mack Fixed Mid-Back Non-suspension
- Seat Belts – Lap and Shoulder w/ Cab Mounted Shoulder Belt
- Side Markers – Lamps and Reflectors
- Key Type Starter Switch
- Steering Column – Adjustable Tilt Telescope
- Steering Wheel – Two Spoke Urethane Grip Painted Spokes & Bulldog Horn Cap
- Rear Storage Pouch
- Interior Sun Visor Both Sides w/ Ticket Holder
- Turn Signals – Front Integral w/ Fender
- RH Door Peep Window
- Window Control – Hand Crank Operation
- Windshield – Safety Tinted 2 Piece
- Side and Rear Windows – Safety Tinted
- Windshield Washers – Electric Wiper Mounted w/ Reservoir Mounted under Hood
- Windshield Wipers – 2 Speed Electric Motor w/ Intermittent Feature
- Paint Color – Mack White (Cab, Hood & Fenders), Mack Black (Chassis Running Gear)

ADDITIONAL STANDARD SPECIFICATIONS

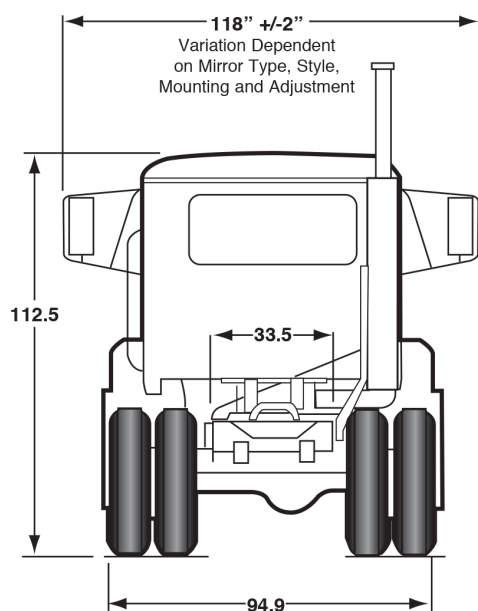
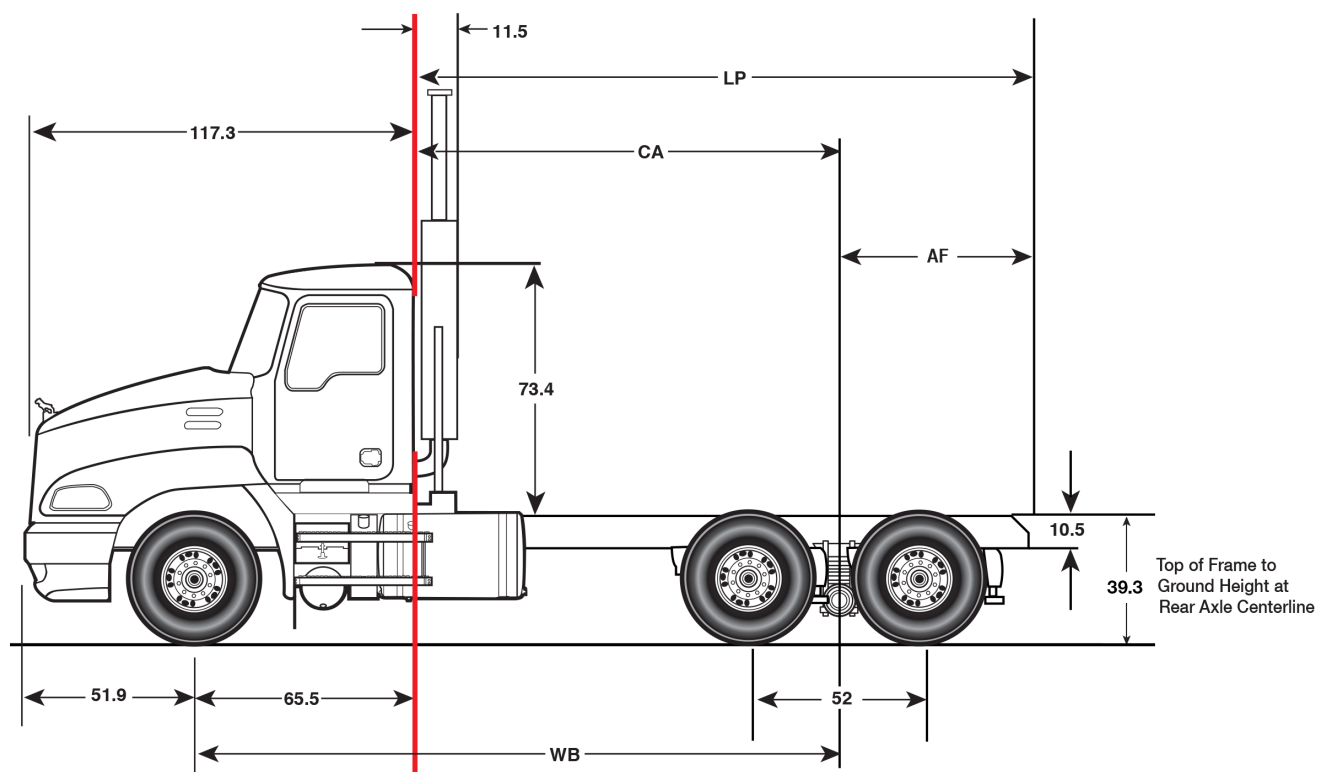
AIR/BRAKE

- Dual Air Brake System
- Air Dryer – 1200P w/ Coalescing Filter
- Air Reservoirs – Steel 5961 in³ Capacity
- Mack Road Stability Advantage System
- Parking Brake Control – 2 Valve System, Trailer Supply and Tractor-Trailer Park
- Electrical Plug Holder (Includes Glad Hand Storage)
- Hand Control Valve for Trailer Brakes
- Hose Tender – Pogo Stick, Chassis Mounted
- Manual Drain Valve – Lanyard Control on Supply Tank
- Trailer Connection Package – Semi
- Trailer Air Hoses & Electrical Cord – 12' Non-coiled Type
- Trailer Receptacle – (7) Wire Mounted on Back of Cab

ELECTRICAL

- 12 Volt Electrical System
- Battery Box – Steel w/ Molded Plastic Cover Mounted LH Side
- Courtesy Light Switch – Headlamp and Clearance
- GuardDog Connect Diagnostics
- Daytime Running Lights
- Triples Trailer Electrical Package with 30amp Breaker
- Electric Circuit Protection Package
- Waterproof Electrical Connections
- Headlights – Single Flush Mtd. Rectangular Halogen Lamps
- Rear Lighting – (2) Combination Stop, Tail Directional and Back-Up Lights
- Solid State Turn Signal Flasher

STANDARD CHASSIS DIMENSIONS



FRAME EQUIPMENT/FUEL TANKS

- Frame Rail w/out Liner – 10.47" x 3.54" x .24" Steel
- Section Modulus – 11.6 in³
- RBM (per rail) – 1,390,000 lb. in.
- Front Bumper – Flush Non-Metallic Aero Argent w/ Charcoal Accent
- Bumper to Back of Cab (BBC) – 117"
- Crossmembers – Steel/Rear Crossmembers – Boxed and Tapered
- Fifth Wheel – Air Slide LH Release Outboard Bolted to Mtg. Angles
- Tapered and Flanged Rail Ends – 28°
- Front Tow Device – (2) Clevis
- Fuel Tanks – 72 Gallon LH & RH, 26" dia. Aluminum
- Fuel Lines – Dual Draw & Return, Material – Nylon Tube
- Diesel Exhaust Fluid (DEF) Tank - 18.4 Gallon, 26" Diameter Frame Mounted on Left Side with Painted Cover

STANDARD WHEELBASE/LOAD PLATFORM

- For standard wheelbase and load platform information refer to your current version of MACKTRAQ

CXU613



AVAILABLE DRIVELINE COMPONENTS

MACK TRANSMISSIONS

MODEL	SPEEDS	RATIOS (LOW/HIGH)
T309	9	11.40 / 0.71
T309LR	9	13.93 / 0.71
T310	10	13.81 / 0.73
T310M	10	17.35 / 0.73
T310ME	10	17.35 / 0.73
T310ME21	10	17.35 / 0.73
T313LR	13	16.42 / 0.71
T313	13	13.44 / 0.71
T31321	13	13.44 / 0.71
T313LR21	13	16.42 / 0.71
T318LR	18	16.42 / 0.71
T318	18	13.44 / 0.71
T31821	18	13.44 / 0.71
T318LR21	18	16.42 / 0.71

MACK *m*DRIVE TRANSMISSIONS

MODEL	SPEEDS	RATIOS (LOW/HIGH)
TmD12AD	12	14.94 / 1.00
TmD12AO	12	11.73 / 0.78

ALLISON TRANSMISSIONS

MODEL	SPEEDS	RATIOS (LOW/HIGH)
4000-HS	5	3.51 / 0.74
4500-HS	5	4.70 / 0.76
3000-RDS	5	3.49 / 0.75
4000-RDS	5	3.51 / 0.74
4500-RDS	5	4.70 / 0.76
4000-HS	6	3.51 / 0.64
4500-HS	6	4.70 / 0.67
3000-RDS	6	3.49 / 0.75
4000-RDS	6	3.51 / 0.64
4500-RDS	6	4.70 / 0.64

EATON FULLER TRANSMISSIONS

MODEL	SPEEDS	RATIOS (LOW/HIGH)
RTX-13609B	9	12.57/0.73
RTX-14609B	9	12.57/0.73
RTX-16709B	9	12.46/0.76
FRO-13210B	10	11.06/0.75
FRO-13210C	10	12.69/0.74
FRO-14210B	10	11.06/0.75
FRO-14210C	10	12.69/0.74
FRO-15210B	10	11.06/0.75
FRO-15210C	10	12.69/0.74
FRO-16210B	10	11.06/0.75
FRO-16210C	10	12.69/0.74
FRO-17210C	10	12.94/0.74
FRO-18210C	10	12.94/0.74
RTO-14908LL	10	14.56/0.74
RTO-16908LL	10	14.56/0.74
FR-13210B	10	14.80/1.00
FR-14210B	10	14.80/1.00
RTLO-14913A	13	12.31/0.73
RTLO-16913A	13	12.31/0.73
RTLO-18913A	13	12.31/0.73
RTLO-20913A	13	12.31/0.73
RT-14915	15	16.94/1.00
RTO-14915	15	13.31/0.79
RTO-16915	15	13.31/0.79
RTLO-14918B	18	14.40/0.73
RTLO-16918B	18	14.40/0.73
RTLO-18918B	18	14.40/0.73
RTLO-20918B	18	14.40/0.73

AVAILABLE DRIVELINE COMPONENTS CONTINUED

FRONT AXLES		
CAPACITY	MAKE	MODEL
12,000 lb. [5443 kg]	MACK	FXL12
	DANA SPICER	E12021
	MERITOR	MFS131
	HENDRICKSON	STEERTEX
12,500 lb. [5681 kg]	MACK	FXL12.5
	DANA SPICER	E12021
	HENDRICKSON	STEERTEX
13,200 lb. [6000 kg]	MACK	FXL13.2
	DANA SPICER	E13221
	MERITOR	MPS-131
	HENDRICKSON	STEERTEX
14,600 lb. [6486 kg]	MACK	FXL14.6
	HENDRICKSON	STEERTEK
	MERITOR	MFS-141

REAR AXLES		
CAPACITY	MAKE	MODEL
38,000 lb. [17237 kg]	MACK	S38R
40,000 lb. [18144 kg]	MACK	S40
	DANA SPICER	DS405(P)/DST41(P)
	MERITOR	MT40-14X4C
	MERITOR	MT40-14X4D
44,000 lb. [19958 kg]	MERITOR	RT40-145A
	MACK	S440
46,000 lb. [20866 kg]	MACK	S440-46*/462/462R
	DANA SPICER	RT46-160
	MERITOR	RT46-164EH
	MERITOR	D46-170P

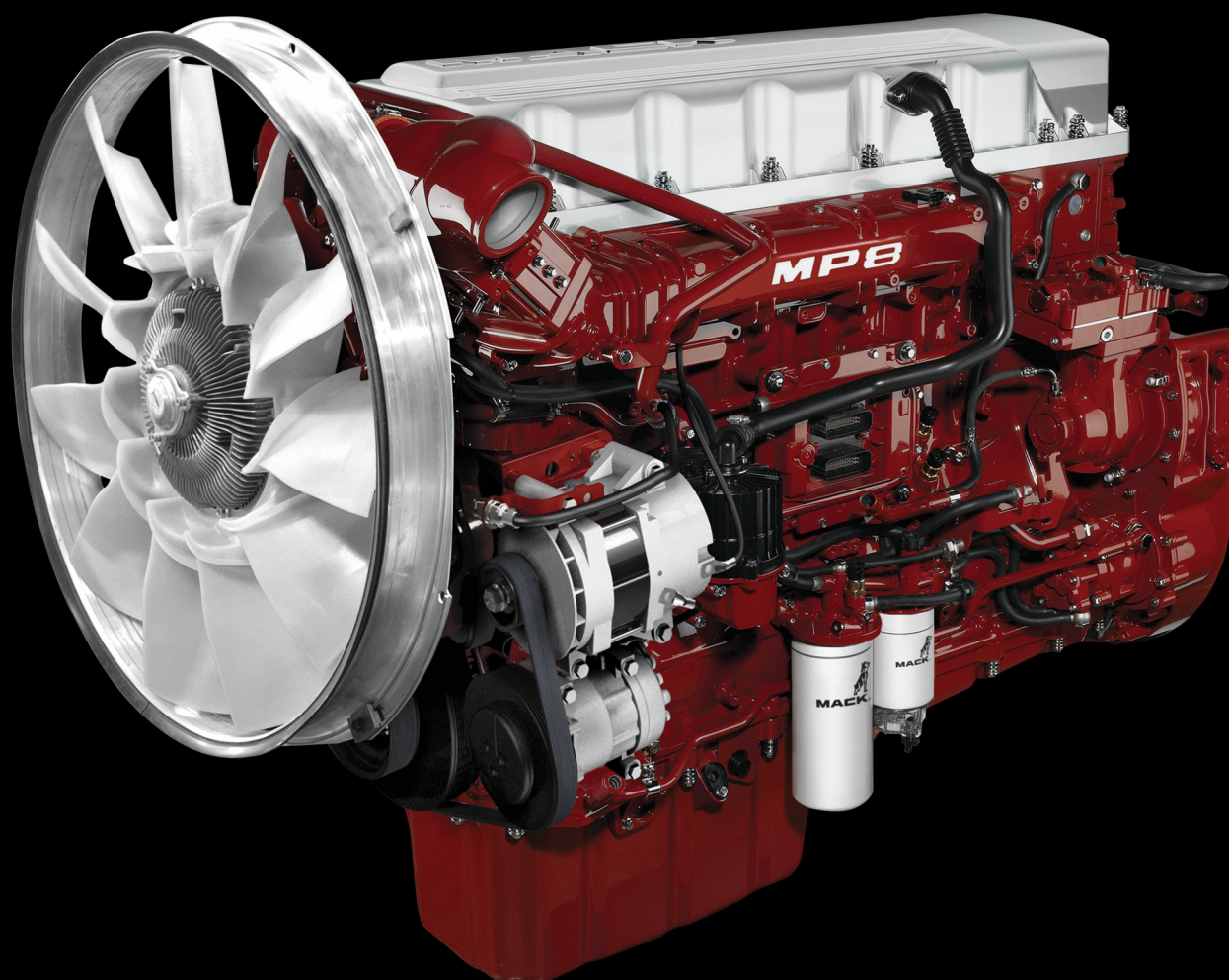
* Available For Municipal Service Only

MP7 ENGINES	
MODEL	HORSEPOWER
MP7-345A	345 HP [257 kW] @ 1500-1700 RPM
	320 HP [239 kW] @ 1950
MP7-325E	325 HP [242 kW] @ 1500-1800 RPM
	325 HP [242 kW] @ 1800
MP7-355E	355 HP [265 kW] @ 1500-1800 RPM
	355 HP [265 kW] @ 1800
MP7-405E	405 HP [302 kW] @ 1450-1900 RPM
	405 HP [302 kW] @ 2100
MP7-405SE	405 HP [302 kW] @ 1450-1900 RPM
	370 HP [276 kW] @ 2100
MP7-345C	345 HP [257 kW] @ 1500-1700 RPM
	320 HP [239 kW] @ 1950
MP7-365C	365 HP [272 kW] @ 1500-1700 RPM
	340 HP [254 kW] @ 1950
MP7-395C	395 HP [295 kW] @ 1500-1700 RPM
	370 HP [276 kW] @ 1950

MP8 ENGINES	
MODEL	HORSEPOWER
MP8-415E	415 HP [310 kW] @ 1500-1700 RPM
	375 HP [280 kW] @ 1800
MP8-445E	445 HP [329 kW] @ 1500-1700 RPM
	400 HP [296 kW] @ 1800
MP8-445SE	445 HP [329 kW] @ 1400-1700 RPM
	430 HP [320 kW] @ 1800
MP8-505E	505 HP [377 kW] @ 1500-1700 RPM
	430 HP [318 kW] @ 1800
MP8-505C+	505 HP [377 kW] @ 1500-1700 RPM
	430 HP [320 kW] @ 1950
MP8-415C	415 HP [309 kW] @ 1500-1700 RPM
	390 HP [291 kW] @ 1950
MP8-445C	445 HP [332 kW] @ 1500-1700 RPM
	420 HP [314 kW] @ 1950
MP8-505C	505 HP [377 kW] @ 1500-1700 RPM
	430 HP [321 kW] @ 1950



MP8 445C ENGINE



**WE ENGINEER
THE HEROES
OF THE HIGHWAY**

MP8 445C ENGINE

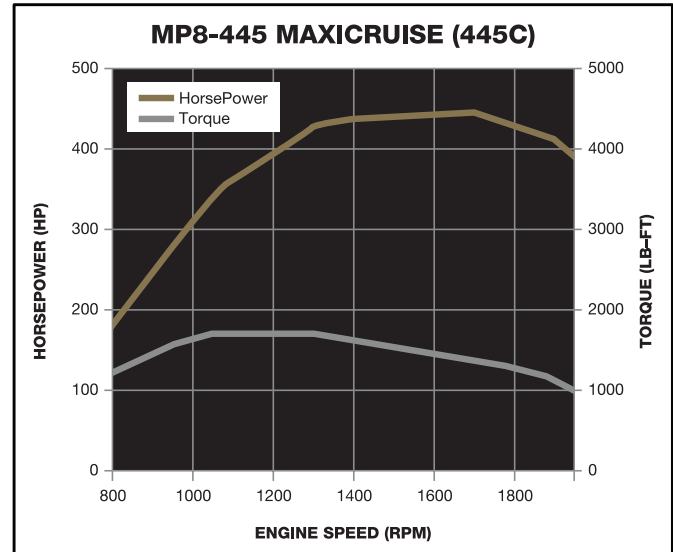


FEATURES

- Greenhouse Gas 2014 Certified, OBD 2013 Certified
- High Torque MaxiCruise™ Diesel Engine
- Cooled Exhaust Gas Recirculation (CEGR)
- Maximum Horsepower 445 HP [332 kW]
- Electronic Unit Fuel Injection with Rate Shaping
- V-MAC IV® Total Vehicle Electronics System
- Wide Operating Range 1100-1950 RPM
- Chassis Mounted Charge Air Cooled
- Variable Geometry Turbocharger
- Extended Service Intervals
- MACK PowerLeash™ Engine Brake



ENGINE PERFORMANCE



ENGINE SPECIFICATIONS

PEAK POWER	445 HP [332 kW] @ 1400-1700 RPM
POWER @ GOVERNED RPM	420 HP [314 kW] @ 1950 RPM
MAX. TORQUE	1760 lb-ft [2387 N•m] @ 1100-1300 RPM
TYPE	Direct Injection Diesel
NUMBER OF CYLINDERS	6, In-Line
BORE & STROKE	5.16" x 6.22" [131mm x 158mm]
DISPLACEMENT	780 [13]
COMPRESSION RATIO	16:1
FIRING ORDER	1-5-3-6-2-4
TORQUE RISE	67%
CLUTCH ENGAGEMENT	825 lb-ft [1119 N•m] @ 800 RPM
IDLE SPEEDS	Low: 600 RPM Adjustable – High: 1950 RPM
ENGINE BRAKE RETARDING POWER	500 HP [372 kW] @ 2100 RPM
DRY WEIGHT (APPROX)	2676 lbs [1217 kg]

MP8 445C ENGINE



COMPONENT SPECIFICATIONS

FLYWHEEL HOUSING	Die Cast Aluminum
CYLINDER BLOCK	Alloyed Cast Iron, Ladder Frame Reinforcement
CYLINDER LINERS	Full Wet Design Surface Finish – Plateau Honed
CYLINDER HEAD ASSEMBLY	Cast Iron Slab Head with Intermediate Deck Single Overhead Cam Configuration – 4 Valves/Cylinder, OHV Valve Type – Poppet Valve/Insert Material – Super Alloy (Serviceable)
PISTONS & RINGS	Monotherm™ Single Piece Steel with Closed Cooling Gallery Pin Diameter – 2.125" [54mm] Rings – 2 Compression, 1 Oil Control
CRANKSHAFT	Forged, Carbon Steel Heat Treatment – Induction-Hardened Journals/Fillet Main Bearing Diameter – 4.5" [114mm]
CHARGE AIR COOLING	Chassis Mounted, Air-To-Air
FUEL SYSTEM	Delphi™ E3 Electronic Unit Injectors with 2 Solenoid Valve Technology and Rate Shaping Fuel Supply Pump – ZF Meritor™ Filter – Spin On, Disposable
LUBRICATION SYSTEM	Full Pressure, Wet Sump Oil Filters – 2 Spin-On Full Flow Disposable, 1 By-Pass Oil Cooler – Stainless Steel Plate Axle Forward Total Oil Capacity – 34.8 qts [33L] (includes filters) Axle Back Total Oil Capacity – 39.1 qts [38L] (includes filters) Drain Plug – Magnetic
COOLING SYSTEM	Total Circuit Capacity – 17 qts [16L] Thermostats – 180°F [82°C] Hose Material – Silicone
AIR COMPRESSOR	Meritor/WABCO CHU, CXU, GU7, GU8 Standard Capacity – 18.7 cfm [8.9L/s] MRU, LEU Standard Capacity – 37.4 cfm [17.8L/s]
TURBOCHARGER	Holset, Sliding Nozzle Ring Variable Geometry with Water Cooled Actuator Bearings and Electronic Controls
ACCESSORY BELT	Poly-V with Automatic Tensioners
EGR SYSTEM	Single Valve Assembly – Modulated Cast Stainless Steel Cooler – Stainless Steel Tube and Insert, Gas to Coolant

MP8 445C ENGINE



V-MAC IV® FEATURES

4th Generation **V**ehicle **M**anagement **A**nd **C**ontrol System

PRODUCTIVITY

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

DRIVER CONVENIENCE

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

FUEL ECONOMY

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

RELIABILITY

- Engine Protection
- Starter Protection
- Differential Lock Auto Control

FLEET MANAGEMENT

- DataMax™ Comprehensive On-Board Data Logger

SAFETY AND SECURITY

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

SERVICEABILITY

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

† Optional

NOTE: Refer to the latest version of Mack Maintenance & Lubrication Manual TS494 for oil/filter service intervals.

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 be selected to meet the following criteria:

STARTABILITY	Highway Applications $\geq 10\%$ On-Off Highway Applications $\geq 16\%$
GRADEABILITY	@ Cruise Max. MPH $\geq 0.5\%$ @ Peak Torque, Top Gear $\geq 1.5\%$
CRUISE RPM	1350-1450 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.

OPTIONAL EQUIPMENT**

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

** Availability may be chassis model dependent

MAC K

T-313

MAXITORQUE[®]
ES

THIRTEEN SPEED TRANSMISSION

- **Aluminum Case**
- **Triple Countershaft**
- **Reliable and Durable**
- **On/Off Highway Applications**
- **Versatile Power Take-Off Capabilities**

The T-313 is an excellent choice for high performance and heavy haul applications. The lower gears have easily shiftable 40% steps while the upper gears can be split at 18% steps to maximize highway control. A 18.93:1 overall ratio gives it the versatility to handle a wide variety of tasks on or on/off highway. The low forward ratio is 13.44:1 and top gear is .71:1 overdrive for highway cruising.



PTOs can be driven from both fixed and speed dependent mounts on all models. (For applications which require backing control, the LR model features a slow 28.98:1 reverse ratio.)

FEATURES

• **Gearing**

All the T300 gearing uses a spur type design for maximum efficiency and minimum friction. Gear blanks are designed with the aid of computers to optimize the balance between weight and strength. Teeth are cut to a precise geometry to insure quiet, uniform rotating motion and then carburized to assure the intended loads can be carried without breaking or wearing. In top gears, dovetail clutch teeth maintain engagement under varying loads.

Top gear in all T300 transmissions is an overdrive. The overdrive allows required highway speeds to be met at the recommended engine speed with lower driveline torques. Because driveline torques are lower, lighter, less expensive shafts and slower, more durable rear axles carriers can be spec'd.

• **Lubrication**

Splash lubrication is standard for the T300. Gears and bearings receive lubrication from the lower countershaft dipping and spinning in oil. For extreme operating conditions or unusually high loads, a pump can be spec'd to assure lubricant flow to critical areas. Magnetic drain plugs are also standard as is a main case magnetic chip trap to remove metallic contaminants from circulation.

• **Case**

The T300 case is a permanent mold, high strength, aluminum alloy casting. An SAE #1 bell housing is cast integral with the case to form a one-piece, light weight component with maximum rigidity and no misalignment. Within the case, iron bearing retainers support countershaft and mainshaft bearings to provide rigidity and fit integrity throughout the life of the transmission.

Because of the excellent heat transfer properties of aluminum, T300s naturally run cool and have less requirement for auxiliary transmission oil coolers. For those applications which do require additional cooling, oil-to-air and oil-to-water systems are available.

• **Countershafts**

The hallmark of the T300 is its triple countershaft design. Spreading the load over three shafts rather than just two lowers the stress on components and increases life. The layout of the three shafts gives the T300 a compact design and results in shorter transmission which improves driveline angularity.

The countershafts are forged alloy steel with both integral and pressed-on gears. Tapered roller bearings, which have the highest load carrying capacity in the smallest envelope, insure a smooth, long operating life.

• **Improved Shift Quality**

All of the T300 transmissions are based on an 'H' shift pattern and feature improvements to make the operation easier and more comfortable. The shift rail profile and springs have been redesigned to smooth transitions in and out of neutral with each up and down shift. Additionally, fine pitch sliding clutches permit quicker, smoother shifts as well as improved durability. Shift levers have also been revised for a tighter, more ergonomic shift pattern and isolated to reduce vibration.

Range shifts are executed after toggling a selector on the front of the shift knob and 'splits' via a thumb rocker switch.

• **Power Take-Off Capabilities**

As the leader in vocational applications, all the T300 transmissions offer as standard main case, speed dependent SAE 6 and 8 bolt PTO mounts on the right and left sides, respectively. Rear mounts on any of the three countershafts are also available.

Additionally, the T-313 offers gear dependent 6 and 8 bolt mounts on the right and left side of the compound case respectively. An optional, neutralizing range air cylinder permits operation of these multi-speed PTOs while the vehicle is stationary.



Mack Trucks, Inc., Allentown, Pennsylvania

www.macktrucks.com

• TYPE	13 SPEED OVERDRIVE, TRIPLE COUNTERSHAFT
• LENGTH*	36.44" [925 mm]
• WEIGHT (DRY)	789 LB [359 kg]
• OIL CAPACITY	30 PINTS [14.20 l]
• TORQUE RATING	1800 LB. FT. [2 440 N•m]
• NUMBER OF SPEEDS	
FORWARD	THIRTEEN
REVERSE	TWO
OVERALL TRANSMISSION RANGE	18.93:1
• CASE, BELL HOUSING	
MATERIAL	ONE-PIECE HEAT-TREATED ALUMINUM
BELL HOUSING TYPE	SAE#1
• TYPE OF GEARS	SPUR
• CONTROL	SHIFT LEVER WITH AIR SHIFT RANGE SELECTOR
• LUBRICATION	SPLASH
• DRAIN PLUG	MAGNETIC
• POWER TAKE-OFF OPENINGS	
LEFT SIDE-STANDARD SAE 8 BOLT	70% OF ENGINE RPM
RIGHT SIDE-STANDARD SAE 6 BOLT	70% OF ENGINE RPM
REAR PTO DRIVE	70% OF ENGINE RPM

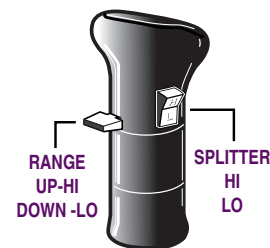
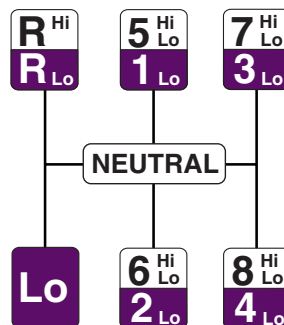
* From Bell Housing mounting flange to forward seating surface of companion flange or yoke.

Power Take-Off Compound Case

Left Side — Standard SAE 8 Bolt
Right Side — Standard SAE 6 Bolt

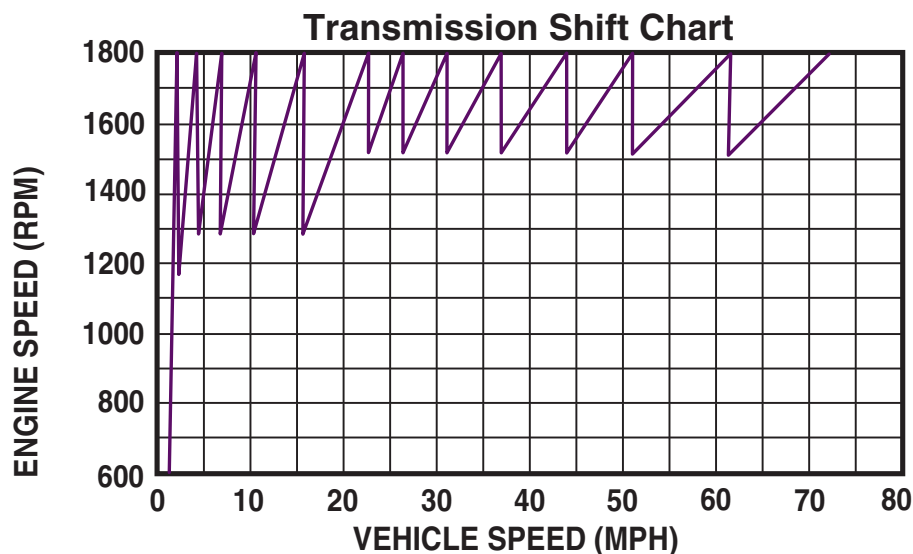
SPEED, % OF ENGINE (RPM) (Gear Dependent Selection) T313	
Lo	-17.5%
1st	-26.7%
2nd	-37.4%
3rd	-51.9%
4th	-72.9%
Rev	14.8%

Shift Pattern and Shift Lever



Gear Ratios

GEAR	RANGE SELECTOR	SPLITTER SELECTOR	LEVER POSITION	RATIO	% STEP
1st	Lo	Lo	Lo	13.44	
2nd	Lo	Lo	1st	8.78	53
3rd	Lo	Lo	2nd	6.28	40
4th	Lo	Lo	3rd	4.52	39
5th	Lo	Lo	4th	3.22	40
6th	Hi	Lo	5th	2.29	41
7th	Hi	Hi	5th	1.94	18
8th	Hi	Lo	6th	1.64	18
9th	Hi	Hi	6th	1.39	18
10th	Hi	Lo	7th	1.18	18
11th	Hi	Hi	7th	1.00	18
12th	Hi	Lo	8th	.84	19
13th	Hi	Hi	8th	.71	18
Rev 1	Lo	Lo	Rev	15.91	
Rev 2	Hi	Hi	Rev	3.52	



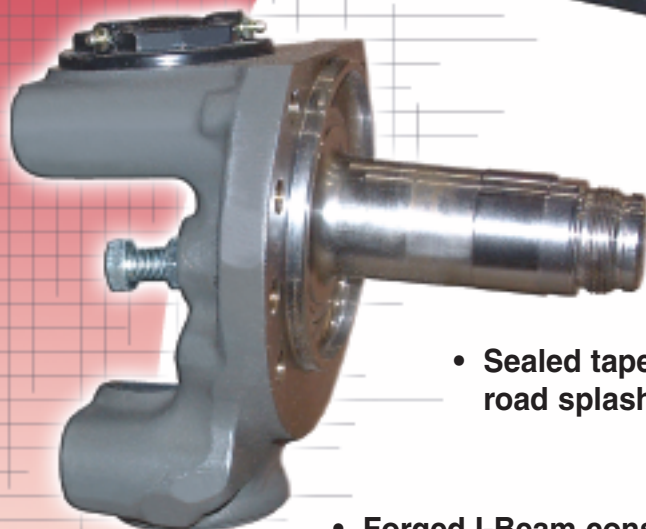
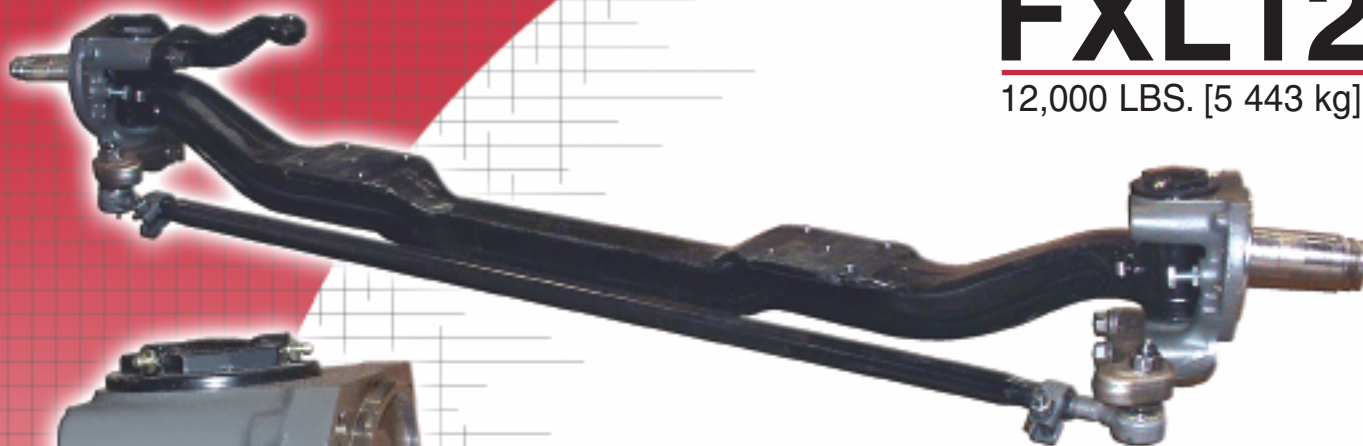
T-313 w/1800 RPM ENGINE, REAR RATIO 4.17 AND 11R22.5 TIRES (BASED ON 504 TIRE REVS PER MILE)

FRONT AXLE

MAEK[®]

FXL12

12,000 LBS. [5 443 kg]



- Unitized wheel hubs—requires no maintenance—permanently sealed with grease.
- Sealed tapered kingpins and bearings keep out road splash, extend axle life and lower maintenance.
- Forged I-Beam construction, strong and lightweight.

DETAIL SPECIFICATIONS

MAKE: MACK

Type	Reverse Elliot, Drop-Forged & Heat Treated I-Beam
Size (Beam Center Height)	3.74" [95 mm]
Flange Width, Top	3.35" [85 mm]
Flange Width, Bottom	3.35" [85 mm]
Web Thickness	0.394" [10 mm]
Section Modulus	5.82" in ³ [95 cm ³]

STEERING KNUCKLE:

Material	Chromium Molybdenum Alloy Steel, Heat Treated
Spindle Diameter	
Inner Bearing	2.28" [58 mm]
Outer Bearing	2.28" [58 mm]
Steering Knuckle Pin:	
Material	Modified Carbon Steel, Heat Treated & Induction Hardened
Type	Tapered
Diameter	
Top	1.57" [40 mm]
Bottom	2.36" [60 mm]

STEERING KNUCKLE: (Continued)

Inclination	6°
Knuckle Pin Support	
Upper	Tapered Roller Bearing
Lower	Grooved Bushing
Thrust Bearing	
Type	Tapered Roller Bearing
Location	Top of Knuckle Pin Hub
Hub	Aluminum
Bearings	Tapered Roller (Unitized)
Lubrication	Permanently lubed with Synthetic Grease
Pivot Centers:	
FXL12	69.92" [1 776 mm]
Spring Centers	33.5" [851 mm] MRU
	32.5" [826 mm] CHU, CXU, GU

NOTE: FXL used with wide base type tires will exceed 96" [2 438 mm] overall width.

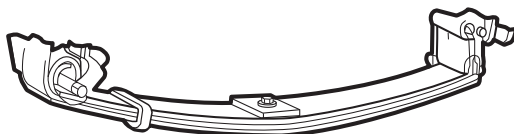


BRAKES

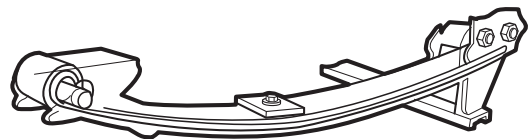
TYPE	CAM	CAM
SIZE DIAMETER WIDTH	16.5" [419 mm] 5" [127 mm]	15" [381 mm] 4" [102 mm]
MAKE	Arvin Meritor	Arvin Meritor
ACTUATION	Air	Air
LINING THICKNESS	0.85" [22 mm] Tapered	0.75" [19 mm] Tapered
LINING AREA, TOTAL	376 in ² [2 439 cm ²]	115 in ² [2 026 cm ²]
CHAMBER SIZE— Sq. In. Per Wheel	1 @ 24 [155 cm ²]	Type 20
SLACK ADJUSTER LENGTH	5.5" [140 mm]	5.5" [140 mm]
BRAKE ADJUSTMENT	Self-Adjusting	Self-Adjusting
DUST SHIELDS	Optional	Optional

SUSPENSION

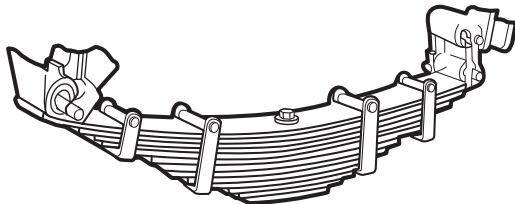
SPRING CAPACITY (GRD. LOAD RATING)	SPRING SIZE	SPRING SIZE		CHASSIS MODEL APPLICATION
		LENGTH	WIDTH	
12,000 lb. [5 443 kg] STD.	Taperleaf - Shackle	52.52" [1 334 mm]	4" [102 mm]	CHU, GU
	Taperleaf - Shackle	58.85" [1 495 mm]	4" [102 mm]	CXU
	Multileaf - Shackle	52.52" [1 334 mm]	4" [102 mm]	GU
	Multileaf - Shackle	50.25" [1 276 mm]	3.5" [89 mm]	MRU
12,000 lb. [5 443 kg] HEAVY DUTY	Taperleaf - Shackle	52.52" [1 334 mm]	4" [102 mm]	CHU, GU
	Taperleaf - Shackle	58.85" [1 495 mm]	4" [102 mm]	CXU
	Multileaf - Slipper	50.25" [1 276 mm]	3.5" [89 mm]	MRU



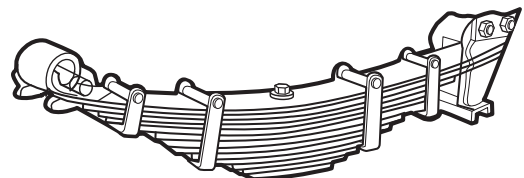
TAPERLEAF SHACKLE



TAPERLEAF EYE & SLIPPER



MULTILEAF SHACKLE



MULTILEAF EYE & SLIPPER



SED

PRODUCT INFORMATION

PID Code/Condition: 268-2113

Description: Meritor MT40-14-14X4C Amboid – High Entry

Models: CHU & CXU

Date: October 30, 2015

Performance Advantages:

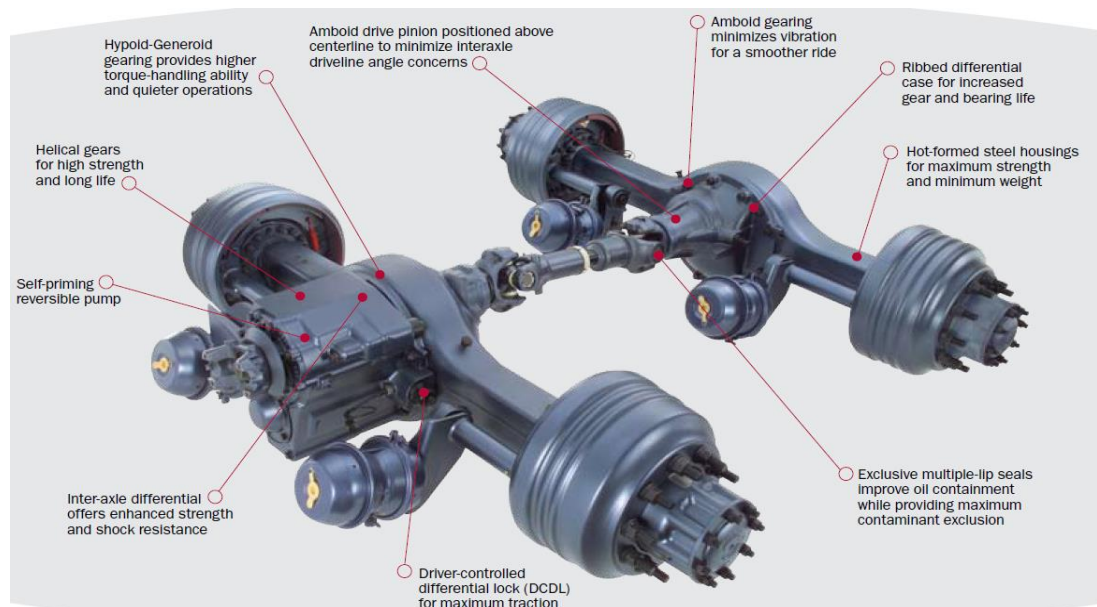
- Minimizes vibration and damage to drivetrains
- Fast ratios to maximize fuel economy
- Lightweight design to haul more payload
- Proven in linehaul truck and tractor applications

Sales Engineering

Mack Trucks, Inc.
Allentown, PA 18103
United States

Phone: 800 868 6225
Fax: 610 351 8791

MackTrucks.com



The information in this document was accurate as of the date of release and pertains to the current version of Mack's Sales Tool. Mack Trucks, Inc. reserves the right to make changes in specifications, equipment or design, or to discontinue models or options without notice.



SED

PRODUCT INFORMATION

Features and Benefits:

- Rear-Rear Amboid drive pinion is positioned above centerline, minimizing vibration and damage to all drivetrain components
- Meritor's original driver-controlled differential lock (DCDL) lets drivers select engagement to generate equal power at each wheel, as needed
- Meritor's exclusive pump design maintains system lubrication in both forward and reverse directions for enhanced reliability
- Extremely rugged Meritor® steel housings available in a wide range to match your vocational preferences
- For weight-sensitive applications, aluminum front carrier castings are optional, saving up to 50 pounds
- Maintenance-extending features include fully unitized pinion seals, spin-on filters, and self-lubrication for inter-axle differential surfaces

Available Ratios:

2.47, 2.64, 3.08, 3.25, 3.36, 3.55, 3.70, 3.90, 4.11

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Purchasing Division
2019 Washington Street East
Charleston, WV 25305

January 19, 2016
17A 1.0
AKGZ000617A

PERFORMANCE DATA

Engine MACK MP8-445C
Max HP 445
Max Torque 1760
Transmission T313
Rear Axle MT-40-14X4C
Ratio 3.55
Rear Tire Size 11R22.5
Revolutions per mile. . . . 505
GVW Rating 52,000#
GCW Rating 80,000#
Road Surface MACADAM/ASPHALT
Altitude 1000 ft
Frontal Height. 13.0 ft
Frontal Width 96.0 in
Required Grade 3%
Measurement English

UPPER GEAR DATA

Gear	Ratio	% Grade	MPH	RPM
11	1.00	3.5%	40.2	1200
11	1.00	0.9%	65.3	1950
12	0.84	2.6%	47.8	1200
12	0.84	0.0%	77.7	1950
13	0.71	1.7%	56.6	1200
13	0.71	-1.0%	91.9	1950

Level Road	0.0	77.8	1650
Cruise Control	0.6%	70.0	1485

Starting Grade @ 1st Gear: 20.0%+
@ 2nd Gear: 20.0%+

Minimum 1.5% grade recommended
in top gear at peak torque RPM.

Calculated @ 3.55 Rear Axle Ratio

Gear #	Transmission Ratios Reverse Forward	Gear Reduction	% Split	Gradeability Start	RPM After Shift	Operating Range	MPH
1	15.91 13.44	47.71		38.2%			4.9
2	3.52 8.78	31.17	53.1	24.7%	1274	4.9	7.4
3	6.28	22.29	39.8	17.4%	1395	7.4	10.4
4	4.52	16.05	38.9	12.3%	1404	10.4	14.4
5	3.22	11.43	40.4	8.4%	1389	14.4	20.3
6	2.29	8.13	40.6	5.6%	1387	20.3	28.5
7	1.94	6.89	18.0	4.5%	1652	28.5	33.6
8	1.64	5.82	18.3	3.5%	1648	33.6	39.8
9	1.39	4.93	18.0	2.6%	1653	39.8	47.0
10	1.18	4.19	17.8	1.8%	1655	47.0	55.3
11	1.00	3.55	18.0	0.9%	1653	55.3	65.3
12	0.84	2.98	19.0	0.0%	1638	65.3	77.7
13	0.71	2.52	18.3	-1.0%	1648	77.7	91.9
14							
15							
16							
17							
18							

PERFORMANCE DATA IS FOR COMPARATIVE ANALYSIS
AND MAY NOT REPRESENT ACTUAL PERFORMANCE.



Prepared For:
Purchasing Division
2019 Washington Street East
Charleston, WV 25305

Presented By:
Worldwide Equipment of WV Inc.
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South Charleston, WV 25303
304-744-1321
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www.THETRUCKPEOPLE.COM

January 19, 2016
17A 1.0
Ref #: AKGZ000617A

GVW RATING - 52,000#

Max Front GAWR	12,000#	Max Rear GAWR	40,000#
Front Axle	12,000#	Rear Axle	40,000#
Front Springs	12,000#	Rear Suspension	40,000#
Front Tires	13,220#	Rear Tires	48,040#
Front Wheels/Rims	14,600#	Rear Wheels/Rims	58,400#

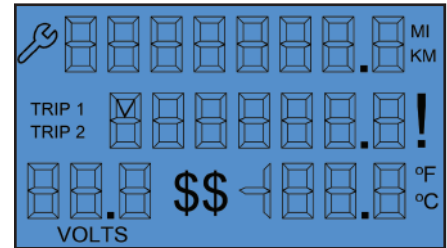
V-MAC^{IV} DRIVER DISPLAY

DRIVER DISPLAYS

Standard Display Basics:

Mack offers a selection of two driver display units to the customer including the standard dash unit and the optional cutting edge Co-Pilot Driver Information Display. The standard Mack display is a center cluster mounted LCD display unit with CoolBlue™ backlighting using three segmented display lines to communicate information to the operator. Navigating the screen is achieved by using the reset button located near the display. Features on the base level display also include a wrench symbol that denotes when Maintenance Monitor items are due, and a Sweet Spot indicator showing when the engine is operating in its optimum fuel efficiency zone.

The base display includes a standard 8 digit odometer, 2 resettable trip odometers, and a 7 digit engine hourmeter. A voltmeter indicates system voltage, and a fault indicator notifies and allows the operator to view all faults (press and hold the reset button). An ambient temperature indicator is also included on the standard display if the sensor has been specified.



Note: Certain optional hardware or software features are not available using the standard display (see below).

Co-Pilot Display:

Co-Pilot is an optional Driver Information Display that is offered on all Mack Pinnacle and Granite vehicles. Co-Pilot uses a nearly 5" diagonal LCD display screen that is integrated directly into the Mack instrument cluster in a central and high location for easy viewing. Co-Pilot includes Mack's unique CoolBlue™ lighting on the screen that is easily read in the daylight, and even has special settings for nighttime use. There are over 50 different Co-Pilot display screens that keep the operator well informed of vehicle activity and promote efficient operation. Some display screens are only viewable when the vehicle is stationary, while other areas are available at all times, promoting safety and ease of use.



Co-Pilot has been designed for extremely simple operation, and requires only 3 right side steering column stalk mounted buttons. The operator uses the toggle switch at the end of the stalk to cursor up or down to select a menu item. The arrow button is used to enter or select an item, and the ESC button is used to escape and return to the previous screen. All Co-Pilot items can easily be accessed by the driver from a Main Menu screen.

Moving Co-Pilot screens include Indicator Set bars at the top and bottom of each screen showing frequently used information. Indicator Set information includes time, odometer reading, and ambient temperature at the top for the screen. At the bottom of the screen is displayed the Sweet Spot indicator, vehicle system voltage, DataMax Vehicle Overspeed status and Qualified Idle timer status (see DataMax section). If equipped with an automated manual transmission, the current gear is also displayed. If a message is received via an onboard wireless communication system, a message indicator envelope is also displayed.

CO-PILOT

Features:

Theft Deterrence Features: If enabled, a Co-Pilot security feature allows the fleet owner to require a 3 digit password be entered by the driver before operating the vehicle. Passwords can be set up for full performance access, limited power access (technician), or a special theft mode, which allows the vehicle to travel only a limited time or distance. Theft Deterrence parameters must be activated by the customer or dealer using VCADS.



Fuel Economy Features: View instantaneous and trip fuel economy for all available trips on an easy to read bar-graph type display. For those customers using the Fuel Economy Incentive program, Co-Pilot displays both reward and penalty targets, VSL bonus status, and current look-back MPG.

Digital Gauge Features: Digital instrumentation includes a large, easy to read speedometer, load and throttle indicators, plus digital versions of most of the cluster analog gauges. Many customers choose to use the digital speedometer while driving for precise vehicle speed control.

Trip Information: Co-Pilot displays trip information on the LOV, Driver Trips A & B, all 12 Fleet Trips, as well as Periodic Trips (upcoming release). Typical information includes total trip hours, miles, or fuel consumed, or time/percent of time spent in various operating modes, such as driving, cruising, idling or in PTO.



Fleet Management Features: For customers using Fleet Trips (see DataMax section), provisions for managing the 12 individual trips is included. The driver may assign his/her ID to each trip, move to the next Fleet Trip, or assign a Bill-Of-Lading (BOL) number. This data is intended to be uploaded at a later time through wired or wireless methods for use by InfoMax Fleet Management software.

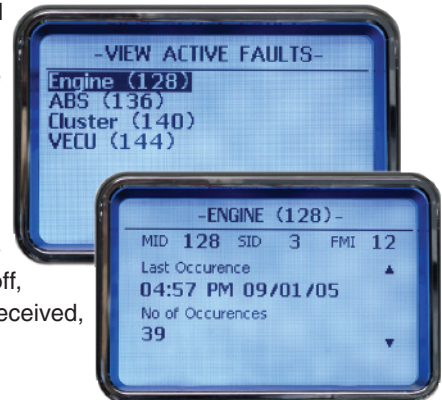
Fleet Management via Driver Display, allows the driver to perform the Fleet Management Features, such as advancing to the next Fleet Trip, adding a driver ID or Bill of Material (BOM).



Maintenance Features: Included with every Co-Pilot, GuardDog alerts the driver when routine maintenance items are due. This includes engine oil and wiper fluid levels, air and fuel filter restriction, or Water-In-Fuel (WIF) status. Co-Pilot can also be used to view and reset Maintenance Monitor items, with nearly 17 maintenance items tracked, such as oil, oil filter, valve adjustment, belt checks or chassis lubrication intervals.

Diagnostic (Fault) Features: View active and logged faults in an easy to read format, including fault source, description, occurrence, and frequency. Full instrument cluster diagnostics are accessed through Co-Pilot, including gauge and indicator lamp tests.

Display Set-up Features: Co-Pilot is fully adaptable to customer selectable language (English, French, Spanish) and display value units. Use the set-up menu to change time and date, or to modify screen brightness and contrast. A special feature allows the screen image to be reversed for night driving or to suit individual driver preferences. A blank screen feature allows Co-Pilot to be turned off, even while driving, if found distracting by the operator. When a Co-Pilot alert is received, the unit will automatically reactivate.



Programming:

Mack makes it easy to set Co-Pilot up to meet individual customer needs. The **Co-Pilot Programming Access** parameter means Co-Pilot can either be ordered with Fleet or Owner-Operator Access. Owner-Operator Access settings essentially provide full access to all Co-Pilot features, while Fleet Access is designed with a typical fleet in mind.

Fleet Level Programming: If selected, the vehicle operator is able to view, but not reset any electronic faults. The operator is also not able to view or reset Maintenance Monitor. If so equipped, the operator will be permitted to view, but not change any iTAS settings.

Owner-Operator Level Programming: If selected, the vehicle operator can both view and reset any electronic faults. The operator can also view and reset any Maintenance Monitor items. If so equipped, the operator can view and change all iTAS settings.

DEL Messages via Driver Display Activation allows the driver to view and select up to 8 in the Driver Event Log.



CO-PILOT (CONTINUED)

These messages will then be time and date stamped and used as required by fleet managers to review driver performance or vehicle trip history status.

Alerts:

Mack believes an informed driver is a better driver, so Co-Pilot instantly alerts the driver when important engine or vehicle events occur. These include pop-up notifications of engine protection events, when GuardDog routine maintenance items are due, or when Starter Protection is activated. For driver convenience, Co-Pilot also assists in setting the Cruise Control Set Speed, or if Idle Shutdown or Cooldown are activated.

Products Requiring Co-Pilot:

In addition to the items mentioned above, such as Theft Deterrence, GuardDog, or the Fuel Economy Incentive program, several other available Mack products require the additional display, processing and memory capabilities of Co-Pilot. This includes the Mack integrated sleeper Low Voltage Disconnect (LVD) system, the Mack onboard wireless communication system (if driver-to-web messaging is required), and iTAS (Integrated Temp-A-Start).

PARAMETERS:

PID	VCADS ID	NAME	DESCRIPTION	RANGE	DEFAULT
C42	N/A	Co-Pilot Programming Access	Choosing either Fleet or Owner-Operator access levels will change the amount of control that the operator has over certain Co-Pilot functions. For specific details, see fleet/owner-operator sections above.	Fleet Level/ Owner Operator	Fleet
D0E	HQC	Fleet Management via Driver Display	Furnishing this parameter will grant the operator access to the Fleet Management section of Co-Pilot which includes 12 Fleet Trips with assignable driver IDs, the ability to move to the next Fleet Trip, and assign a Bill of Lading.	Furnish/ Omit	Omit
D0B	N/A	DEL Messages via Driver Display Activation	Furnishing this parameter will delete the ability to send Driver Event log messages via Co-Pilot.	Furnish/ Omit	Omit

Benefits:

Ergonomics have been taken into careful consideration with Co-Pilot. Its highly visible display screen keeps the driver's eyes on the road, and the unique CoolBlue lighting looks great with the rest of the dash and is easy on the eyes, both day and night. Co-Pilot is designed to give you exactly the information that you need, when you need it. The smart system knows when the vehicle is moving or stopped, and provides exactly the right information in both instances.

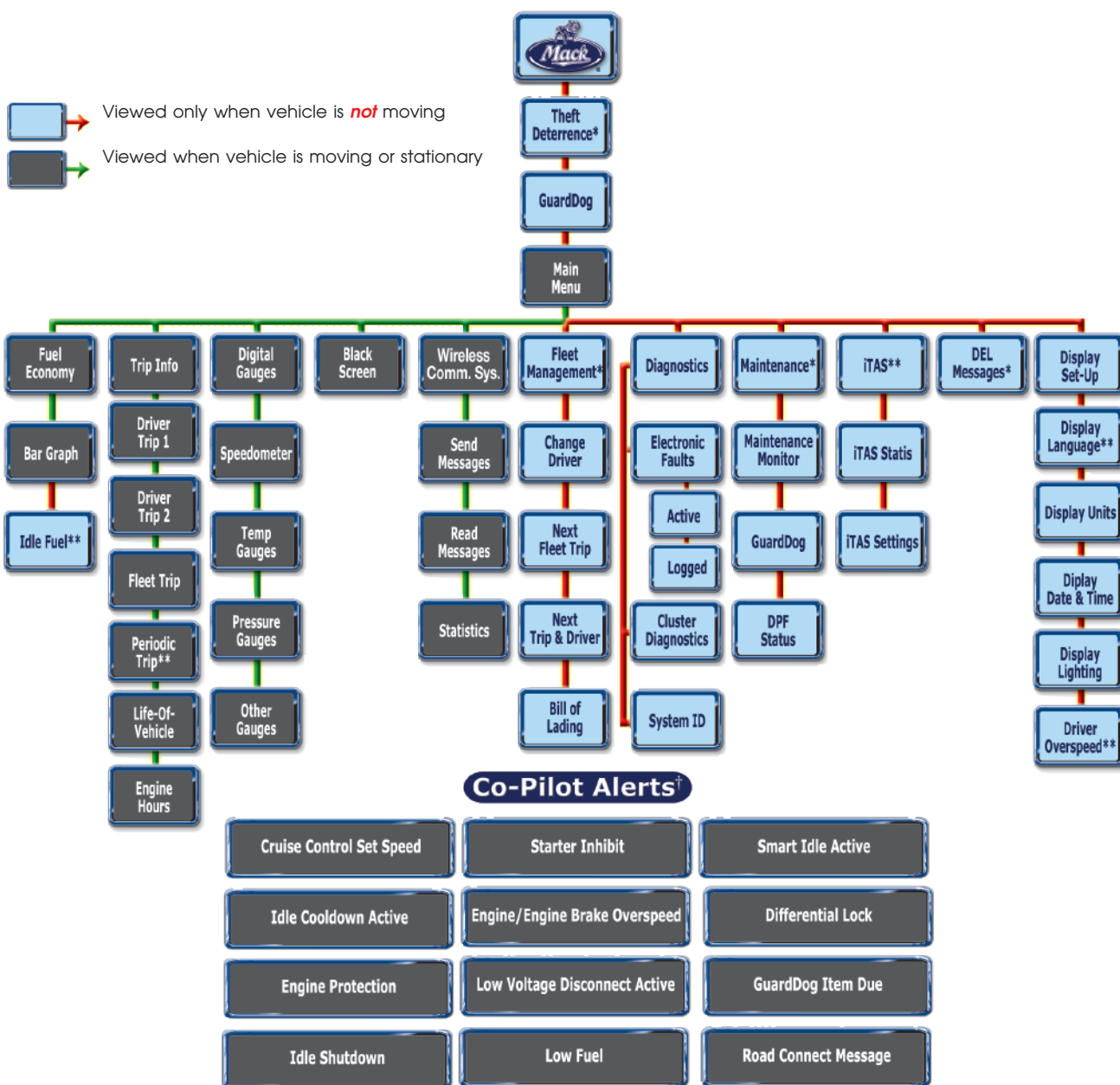
Two great reasons for Co-Pilot include an unbeatable fault reading system and real-time fuel economy monitoring. Faults are displayed in plain English, making them easy to diagnose and truly taking the mystery out of electronic faults. With the instantaneous fuel economy screen a driver can check their MPG on the fly and make changes in driving style to save fuel, helping a driver to constantly better him/herself behind the wheel. Additionally, the precision of a digital speedometer has become a very popular feature among many Co-Pilot users.

WANT TO KNOW MORE?

Additional information on Co-Pilot is available using VCADS PC Service Support Software. Consult your dealer's certified V-MAC technician for additional details. All Co-Pilot settings can easily be changed at a later date using VCADS if customer needs to change, or for the purpose of resale. As new Co-Pilot features are added in the future, the Co-Pilot is reprogrammable and upgradeable.



Mack V-MAC IV Co-Pilot Menu Structure



* Feature available if selected via MackTrac or VCADS

** Planned feature (not available for initial production release)

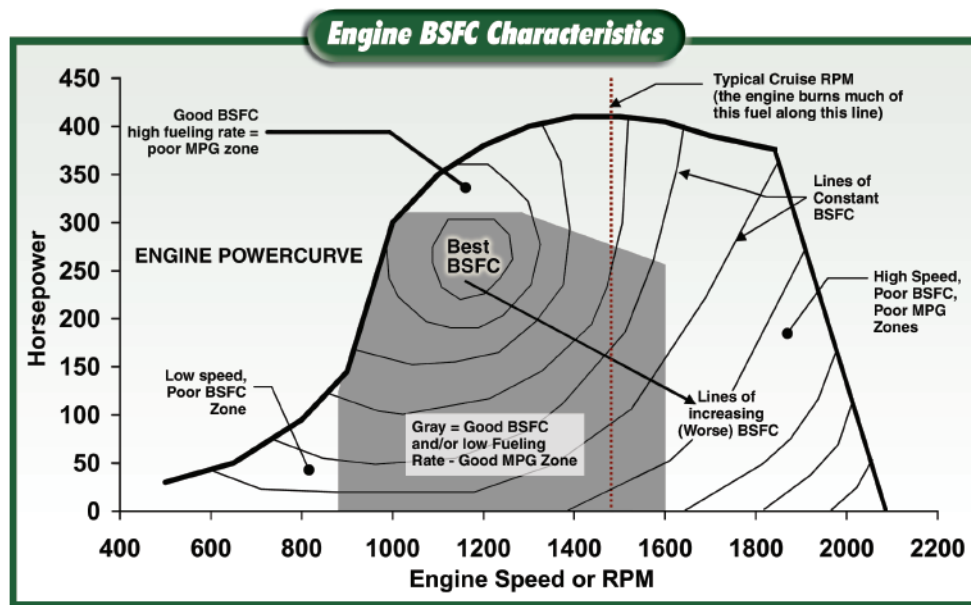
† Pop-up screen to alert the driver of selected events

DISPLAY SWEET SPOT BASICS

All diesel engines have operating regions (certain speeds & loads) where they achieve their best fuel efficiency. Fuel efficiency is generally expressed as BSFC, or brake specific fuel consumption. BSFC is the amount of fuel used to make 1 HP for 1 hour (lbs/bhp-hr), so a lower value is better. An engine's BSFC characteristics are typically mapped as shown below.

The Best BSFC area shown in gray is what is commonly referred to as the engine's Sweet Spot. The location and size of this area is engine brand and model specific. As much as possible, engineers try to design the Sweet Spot into an area of the map where the vehicle is frequently operated, such as near the recommended Cruise RPM line.

The gray area on the map shown below is the designated Sweet Spot for the V-MAC IV indicator lamp and DataMax data logger. This zone represents an optimum combination of low BHP/low fueling rates (i.e. downhill or level grades) and a good BSFC. When driven in this zone, the vehicle typically gets its best overall MPG. The Sweet Spot is tailored for each Mack MP engine model, based on recommended Cruise RPM and the engine's unique BSFC characteristics.



The Sweet Spot indicator lamp is included on vehicles equipped with both the standard or basic segmented driver display, as well as the optional Co-Pilot Display. This lamp automatically activates when the engine is operated in the gray area shown above. The designated icon is \$\$\$. The Sweet Spot indicator lamp can be disabled using VCADS PC Service Support Software. Monitoring Sweet Spot can help the operator develop more fuel efficient driving habits.

Sweet Spot operating time, distance, and fuel used are automatically logged in DataMax for each trip type (LOV, Periodic, Fleet, Service, and Driver). This data can be used to assess driver performance. For example, a company might provide the driver with an incentive bonus if he/she can keep the Fleet Trip % Sweet Spot (% of the total trip that the engine was running in the Sweet Spot area) time above a designated level.



BENEFITS OF ENGINE SWEET SPOT

The Engine Sweet Spot indicator lamp has been carefully engineered into all Mack vehicles, and comes standard with both the standard segmented display, and optional Co-Pilot driver information display. The Engine Sweet Spot indicator lamp is an easy and effective way to inform the driver when they are operating their vehicle at peak efficiency. At-a-glance performance can be assessed, and driving style can be altered (if needed) to increase fuel mileage. Over time, this can become a valuable tool in establishing good driving habits, or in training an inexperienced driver. This feature can even help the operator earn extra recognition or rewards from his/her company if they link time in Engine Sweet Spot to driver off-board incentives.

WANT TO KNOW MORE?

The ability to disable the Engine Sweet Spot indicator lamp is available using VCADS PC Service Support software. Turning off this feature is not generally recommended, and will likely result in reduced fuel economy. Consult your dealer's certified V-MAC technician for additional details.

