

Invitation to Bid  
Heavy Equipment

Heavy Dump Truck Chassis- Option A



**NEXTRAN**<sup>®</sup>  
TRUCK CENTERS

**BID SUBMITTAL FORM**  
**Alabama County Joint Bid Program**  
**BID ITEM – HEAVY DUTY DUMP TRUCK CHASSIS - OPTION A**

Company Name: Nextran Truck Centers

Address: 1801 Fulton Road  
Fultondale, AL 35068

Bid Submitted by: Bruce Graham  
(Name of company representative)

Title: Mack Sales Manager E-mail address: bgraham@nextranusa.com

Phone: 205-841-4450 Fax: 205-841-4430


By submitting this bid, we agree:	Initials
That the equipment model number identified below meets the bid specs for this bid item	<u>BG</u>
That the bid price will be honored for all counties for the period from January 1, 2023 to December 31, 2023.	<u>BG</u>
That the equipment will be delivered at the bid price to all counties participating in the joint bid program	<u>BG</u>
That the company representative listed above will be the contact person for purchasing this bid item under the joint bid program	<u>BG</u>
That the bid is accompanied by a current catalog or model specification document for the model number identified below	<u>BG</u>
That the bid is accompanied by a copy of the manufacturer's standard warranty as required in the bid specifications	<u>BG</u>
That the bid includes the e-verify documentation required by Alabama law	<u>BG</u>
That, if awarded the bid, a performance bond will be provided upon request	<u>BG</u>
That an option sheet with individual pricing is attached	<u>BG</u>

Total Bid Price including options: \$ 172,586.00

Equipment Model #: Mack Granite 64FR

Description: 2025 Mack Granite

Only One-Hundred (100) are available on this bid to ACCA members and will be sold either on a first-come, first-serve basis; or however the ACCA and its members deem appropriate. Neither Mack Trucks and/or Nextran Truck Centers will be obligated to deliver more than one-hundred (100) units if we are awarded this contract. By awarding this contract to Nextran Truck Centers, the ACCA and all its members acknowledge and accept this limitation to our bid. This quantity limitation shall supersede any other obligation under this contract relative to quantities.

Signature of company representative submitting bid: 

Title: Sales Manager

## OPTION COST SHEET FOR HEAVY DUTY DUMP TRUCK CHASSIS - OPTION A

Option

Option Price


Furnish, as an alternate transmission from the base bid, an Allison 4500-RDS-6 six speed automatic over drive Rugged Duty Series Gen 4 with transmission cooler, external oil cooler, internal filter, oil level sensor, temperature gauge and aluminum bell housing. Allison transmission to be factory filled with TRANSYND synthetic lubricant. Allison transmission low gear ratio = 4.70 and transmission high gear ratio = .67 over drive.

\$ 8,500.00

**NOTE:** Award will be made on the basis of the total cost of the machine with all options included. However, a county may, at its discretion, deduct one or more of the above-referenced options from the machine, and in such event, the cost of the option as stated on the bid shall be deducted from the total cost of the machine. There shall be no other deductions and no additions made to the machine by the purchasing county or by the vendor.

Equipment Model #: Granite 64FR

Description: 2025 Mack Granite FR

Signature of company representative submitting bid: 

Title: Sales Manager

# INVITATION TO BID HEAVY EQUIPMENT

## NOTICE OF BID OPENING

**NOTICE IS HEREBY GIVEN** that the Association of County Commissions of Alabama, which administers the Alabama County Joint Bid Program on behalf of Alabama's county governing bodies, shall receive and open bids for the purchase of zero (0) or more items of heavy road equipment at its office located at 2 North Jackson Street, Montgomery, Alabama, at **10:00 a.m. on Friday, October 7, 2022**. Bid specifications are available at <http://www.alabamacounties.org/heavy-equipment/> for each of the following items:

Backhoes	Skid Steer Attachments
Tractors	Ride-on Industrial Boom Mowers
Track Mount Excavators	Asphalt Distributor Truck
Compact Track Mount Excavators	Chip Spreader
Mini Track Excavator	Rubber Tire Roller
Wheeled Excavators	7.5 Ton Single Drum Vibratory Roller
Highway Speed Truck Excavators	One-man Pothole Patchers
Motor Graders	Trailer Mounted Patchers
Heavy Duty Hydrostatic Bulldozers	Trailer Mount Mastic Patcher/Crack Sealer
Mulching Dozer	Half Round End Dump Trailer
Wheel Loaders	Lowboy Trailers
Heavy Duty Dump Chassis	Road Wideners and Attachments
Lowboy Tractors	16' Steel Dump Bodies (Automatic and Manual)
Skid Steer Loader w/no Attachments	

**Time is of the essence in submitting bids and only bids received in the Association office by 10:00 a.m. Central Time on Friday, October 7, 2022 will be opened and considered.** Bidders and any other interested individuals are invited to attend the bid opening.

## NOTICE OF BID OPENING PROCEDURES

All bids for **Heavy Equipment** will be opened and the name(s) of the bidders read aloud on the morning of the bid opening on Friday, **October 7, 2022 at 10:00 a.m.** at 2 North Jackson Street, Montgomery, AL. The specifics of each bid submitted will be compiled by the Association staff thereafter and will be available, **upon written or emailed request**, one week after the bid opening. Requests should be emailed to [jointbid@alabamacounties.org](mailto:jointbid@alabamacounties.org).

## THE INVITATION PACKAGE

The invitation package for each item to be bid includes: this invitation to bid, the written bid specifications for the particular item of heavy road equipment, and a Bid Submittal Form to be used in submitting a bid for that particular item. Bidders should verify that they have received all pages of the invitation package. If there are any omissions, the bidder should contact Kenya Howard in the Association office by mail, fax, or e-mail ([jointbid@alabamacounties.org](mailto:jointbid@alabamacounties.org)) to request missing pages. It is the responsibility of the bidder to make this request in sufficient time to prepare and submit the bid in time for the bid opening. Bidders should carefully read and comply with all parts of the invitation package, including all attachments and/or any addendum.

## **PREPARING AND SUBMITTING BIDS**

All bids must be typed or hand written in ink on the attached Bid Submittal Form. **The completed Bid Submittal Form shall be placed in front of and separated from all other documents included in the bid packet, such that it will be the first document viewed upon opening the bid packet.**

Bids submitted in pencil and bids not submitted on the Bid Submittal Form will *not* be considered. All bids shall include a current catalog or model specification document for the equipment model number being offered for consideration. Bids submitted without such documentation will *not* be considered. Only information contained on the attached Bid Submittal Form and in the model specification document will be considered in evaluating bids.

Each separate requirement in the bid specification includes a block for indicating whether or not the item bid meets the specification. The bidder shall indicate compliance with each requirement by checking "Yes" or "No" in the block to the right of each bid specification. In addition, the bidder shall indicate the page number in the supplied manufacturer's equipment literature on which compliance with the specification can be verified. Failure to complete this portion of the bid form may result in the subject bid not being considered. Additionally, all bidders are required to submit a factory build/order sheet showing all of the standard and option items for each piece of equipment bid in order to assist the bid review committee in assuring that each bid is in conformance with the required bid specifications.

Each bid for one of the heavy equipment items included in the bid package must be submitted on the Bid Submittal Form for that item and forwarded in a separate envelope with the bid item and item number clearly identified on the outside of the envelope. Envelopes containing a "no bid" shall also include the words "NO BID" on the outside of the envelope. Facsimiles and e-mails will not be accepted. Bids submitted by "Express/Overnight" services must be in a separate inner envelope or package sealed and identified as stated above. All bids must be received in the Association office prior to the bid opening. Bids received after the deadline will be returned unopened.

The County Joint Bid Program reserves the right to require a performance bond from successful bidders as permitted under Alabama law. However, **no bid bond is required for this bid offering.**

All bids should be mailed or hand-delivered to:

**ATTN: Joint Bid Program**  
**Association of County Commissions of Alabama**  
**2 North Jackson Street, FL 7, Montgomery, Alabama 36104 (Physical Address)**  
**P.O. Box 5040, Montgomery, Alabama 36103 (Mailing Address)**

## **BID SPECIFICATIONS**

Please note that each piece of heavy equipment available for bid may include several different sizes and categories of machines. You should read each set of specifications very carefully as the differences vary depending upon the piece and size of equipment.

Where applicable, each bid submission shall include the separate cost of each item listed in the "Options" section of the bid specifications. However, all bids will be awarded on the basis of the **total cost of the machine with all options included**. Therefore, the "Bid Price" stated on the Bid Submittal Form must be the total cost, including the cost of all options.

Once the bids have been awarded, any county participant purchasing under this program may, at its discretion, deduct one or more of the options set out in the bid specifications, and in such event, the cost of the option as stated on the bid shall be deducted from the total cost of the machine. There shall be no other deductions and no additions made to the machine by the purchasing county or by the vendor.

Any use of specific names and/or model numbers in the attached specifications is not intended to restrict the bidder or any seller or manufacturer, but is included solely for the purpose of indicating the type, size, and quality of materials, product services, or equipment considered best adapted to the use of the counties participating in the joint bid program.

## **BIDDER QUALIFICATIONS**

All bidders and all program participants must be in compliance with any applicable federal, state, county and municipal laws, regulations, resolutions and ordinances, including but not limited to, licensing, permitting, and taxation requirements. All bidders should be prepared to submit evidence or documentation as proof that they are properly licensed and permitted under any applicable laws upon request. Such evidence or documentation may be submitted with the bid. Additionally, all bidders shall provide proof that they are in compliance with the e-verify requirements of Alabama's Immigration Law (Ala. Code § 31-13-1 et seq., as amended by Act No. 2012-491).

## **BID AWARD**

The Houston County Commission will serve as the awarding authority for all bids and will award all contracts at a regular meeting of the Houston County Commission. Any and all bids submitted in compliance with this invitation to bid shall be considered, and award will be made to the lowest responsible bidder meeting bid specifications as determined by the awarding authority in compliance with Alabama law. All bids will be reviewed and evaluated by a committee created for that purpose, which committee will make comments and recommendations to the awarding authority regarding the award. All factors contained in each invitation package will be evaluated in determining the successful bidder, and any omissions of the stated requirements may be cause for rejection of the bid submitted. The awarding authority reserves the right to reject any and all bids, to waive any informality in bids, and to accept in whole or in part such bid or bids solely at its discretion.

The contract period will be one year with an option to renew for a second and third year under identical price, terms, and conditions upon the mutual consent of the vendor and the awarding authority. Any renewal contract shall be approved in writing by the vendor and the awarding authority no later than 90 days prior to the expiration of the existing contract.

## **CONTACT REGARDING BIDS AND INVITATION**

Contact initiated by a potential bidder with any county official, county employee, or member of the Association staff shall only be as specifically set out in this Invitation to Bid. Any questions related to the bid or the County Joint Bid Program shall be directed to Association staff in writing under the procedures set out in this Invitation to Bid. Additionally, a bidder may contact the Association in writing to request an appointment to review bid specifications following the bid opening. **However, there shall be no communication with any county official or county employee regarding this bid between the date of this invitation and the date of bid award.** Any contact other than as set out here shall be deemed as an attempt to unduly influence the bid award, and shall be grounds for rejection of the bid submitted by the bidder initiating such other contact.

Any questions or problems related to downloading or obtaining copies of this Invitation to Bid should be directed to **Kenya Howard** at [jointbid@alabamacounties.org](mailto:jointbid@alabamacounties.org) or **334-263-7594**.

Any other questions or requests for additional information regarding this invitation or the bid specifications shall be submitted **in writing** no later than five (5) days prior to bid opening to:

**ATTN: Patrick McDougald**  
**Association of County Commissions of Alabama**  
**P.O. Box 5040**  
**Montgomery, Alabama 36104**

**OR**

**Patrick McDougald**  
**E-mail: [barbeng@bellsouth.net](mailto:barbeng@bellsouth.net)**

# **BID SPECIFICATIONS FOR HEAVY DUTY DUMP TRUCK CHASSIS - OPTION A**

## **GENERAL**

These specifications shall be construed as the minimum acceptable standards for a heavy-duty dump truck chassis. Should the manufacturer's current published data or specifications exceed these standards, the manufacturer's standards shall be considered minimum and shall be furnished. All integral parts not specifically mentioned in the scope of these specifications that are necessary to provide a complete working unit shall be furnished. Additionally, the machine offered for bid shall include all standard manufacturers' equipment.

The use of specific names or numbers in the specifications is not intended to restrict the bidder or any seller or manufacturer, but is intended solely for the purpose of indicating the type, size, and quality of equipment considered best adapted to the uses of counties participating in this joint bid.

Note all units offered for bid must be of manufacturer's current production model and must be fully compliant with EPA standard US GHG21. Chassis should be equipped with the appropriate diesel particulate filter and SCR after treatment system.

## **BID SUBMITTAL FORM**

Each bidder must submit his or her bid on the Bid Submittal Form included in the invitation to bid package. All written warranties to be submitted shall be attached to the Bid Submittal Form.

## **BID PRICE**

The price bid shall include all destination charges, delivery charges, title fees, rebates and all other applicable costs and refunds.

## **REPLACEMENT PARTS AVAILABILITY**

Parts must be available for 5 years or 500,000 miles of use for the piece of equipment bid.

## **WARRANTY**

Bidders shall submit a copy of the manufacturer's standard warranty along with a complete explanation of the warranty with their bid. Warranty must be transferable. Warranty must include the following minimum coverage:

Basic Vehicle: 1 Year or 100,000 miles **Standard Warranty Certificate and Page 10**

Diesel Engine: 2 year or 250,000 miles. However, counties will have the option to purchase additional coverage (an extended warranty) if negotiated between the purchasing county and successful bidder within the first 9 months of truck purchase. **Standard Engine Certificate and Page 10**

Transmission: 3 Year or 300,000 miles **Page 10 and Warranty certificate**

Rear Carriers: 3 Year or 300,000 miles **60 months/500,000 miles. Warranty Certificate Page 10**



Yes  No \_\_\_  
Page # 10  
or  
Attachment Warranty  
Certificates

**ASSEMBLY AND DELIVERY**

The truck chassis will be purchased for use with a 16' dump body and optional body equipment that is to be bid separate and apart from the truck chassis. The dump body company will be responsible for assembly and installation of the dump body and related optional equipment, including the cost of the same. The selling truck chassis dealer will be responsible for delivery of the chassis to the dump Body Company for installation and for delivery of the complete dump truck unit to the county following installation and assembly of the dump body and related options onto the truck chassis. Freight to and from the Dump Body Company will be included in the truck bidder's proposal. Dump body installation and assembly costs will be included in the dump body bidder's proposal.

**DOT INSPECTION AND SAFETY EQUIPMENT** Page 11

Prior to delivery each unit shall be DOT inspected and include the appropriate documentation and decal. In addition each unit shall be equipped with the required fire extinguisher and reflective triangle kit.

Page 6 Page 6

**ENGINE AND RELATED COMPONENTS**

Shall be an in line 6 design 13 liter, overhead cam, turbo charged diesel engine capable of developing 455HP with a torque rating of 1650FT# (Standard Transmission) or 1750 FT# with optional Automatic Transmission.

Yes  No \_\_\_  
Page # 2 and Engine Spec  
Sheet

Engine shall have full wet replaceable cylinder liners, fuel injection system to be electronic common rail injection.

Yes  No \_\_\_  
Page # Engine Spec Sheet

Restriction Indicator in Co-Pilot Screen

Air intake system shall have a single dry element with a restriction indicator.

Yes  No \_\_\_  
Page # 3 and Co- Pilot Sheet

Turbo air shall flow through a chassis mounted charge air cooler, engine cooling system to have a minimum 1,000 square inches of frontal area, aluminum core radiator with silicone hoses throughout and coolant protection to -34 degrees F.

Page 3 Page 3

Yes  No \_\_\_  
Page # 3 and Base Vehicle  
Sheet (BSV)

Fan drive to be electronically modulated multi-speed viscous type with a poly V Belt with automatic tension control. Auto Tension in BSV

Yes  No \_\_\_  
Page # 3 and BSV

Single vertical Exhaust, Cab Mounted for clear back of cab with bright finish heat shield and stack.

Yes  No \_\_\_  
Page # 2

DPF element/SCR catalyst combined in a single unit mounted on passenger side frame rail under passenger door.

Yes  No   
Page # 2 and Clear Tech Sheet

Factory installed integral Engine Brake.

Yes  No   
Page # 3

Engine electronics to have:

Full diagnostic capability

Yes  No   
Page # 8 and engine spec sheet

Road Speed limiting and Cruise control feature

Factor Limits Default to 65mp and can be adjusted to customer preferences

Yes  No   
Page # 8

Shutdown capabilities for critical engine functions

Yes  No   
Page # 8

**STARTING AND ELECTRICAL SYSTEM**

12-Volt system fuse/circuit breaker protected

Yes  No   
Page # BSV

12V gear reduction starter, 12V 160 Amp alternator (28si)

Yes  No   
Page # 3

(3) 12V maintenance free group 31 batteries with 650 cold cranking amps each, batteries to be mounted in a single steel box with polished aluminum cover.

Yes  No   
Page # 3

**TRANSMISSION AND DRIVELINE**

A manual ten (10) speed Fuller RT-16989LL or equivalent over drive design with a minimum first gear ratio of 14.6 to1

Yes  No   
Page # See Manual Transmission Addendum

Transmission should have oil cooler with dash mounted temperature gauge, left and RH side PTO access gears with appropriate clearance

Yes  No   
Page # See Manual Transmission Addendum

Eaton advantage easy pedal manually adjusting 15.5" two plate ceramic clutch 9 spring, 6 paddle design with AIR assist feature and remote lube fittings for clutch release bearing and both crosses mounted on LH side under cab or hood

Yes  No   
Page # See Manual Transmission Addendum

Main drivelines Spicer 1810HD or equivalent with coated splines/ inter axle 1810 with coated splines.

Yes  No   
Page # See Manual  
Transmission  
Addendum

**CAB EXTERIOR**

Cab to be Class 8 design welded Galvanized steel cab shell for construction and vocational applications. BSV

Yes  No   
Page # BSV

Page 7 Cab doors should also be of Galvanized steel and have high visibility windows with a Peep window in the passenger side. In additions both doors should have power window Controls and door locks. BSV

Yes  No   
Page # 7 and BSV

Cab mounting should be air suspended at rear on dual air bags mounted outside the frame rails.

Yes  No   
Page # BSV

Cab should feature:

Dual air horns in addition to the standard electric signal horn

Yes  No   
Page # 7

Chrome bullet style marker lights

Yes  No   
Page # 5

Bright finish heated West Coast mirrors with 8" convex mirrors mounted below the West Coast mirrors. Mirrors to be mounted on break away brackets to protect door skin.

Yes  No   
Page # 7

Stainless Steel Exterior sun visor

Yes  No   
Page # 7

Cab glass to be safety tinted

Yes  No   
Page # 7

Cab to have grab handles of both sides of cab

Yes  No   
Page # 7

Cab exterior and chassis to have all required DOT and ICC lighting (turn signal indicators, emergency flashers, rear stop, tail, turn and backup lighting.)  
Standard Required Equipment

Yes  No   
Page # BSV

Hood is to be a full tilting fiberglass design with safety latch to include bright finished grill, bright finish air intakes, and bright finish full hood surround.

Yes  No   
Page # 7 and BSV

Cab and hood paint color to be selected from manufacturer's standard non-metallic paint chart.

Yes  No   
Page # 9

**CAB INTERIOR**

Cab interior to include the following:

Storage tray on back wall of cab and in overhead console

Yes  No   
Page # 6 and BSV

Cab interior is to be PREMIUM level fully groomed with headliner, back wall and windshield pillar post and door panels covered

Yes  No   
Page # 6 and Interior Brochure

Cab should have interior sun visors on both sides of cab.

Yes  No   
Page # BSV

Cab floor should be covered with black polyurethane mat.

Yes  No   
Page # 6

Dash features to include:

Brushed Nickel appearance

Yes  No   
Page # Interior Brochure

Center mount console with cup holders

Yes  No   
Page # Interior Brochure

Full adjusting tilt and telescopic steering column

Yes  No   
Page # Interior Brochure

Full instrumentation with all standard gauges and a secondary gauge package with: (Engine Oil Temp, Trans Oil Temp, Exhaust Pyrometer, Boost Pressure)

Yes  No   
Page # 6

Cab seats should be:

PREMIUM High Back air ride design with arm rest

Yes  No   
Page # 6

Passenger seat to be fixed design with arm rest

Yes  No   
Page # 6

Both seats to have fabric covering with required lap and shoulder belts.

Yes  No   
Page # 6/7

Factory installed integral air conditioning with R134A refrigerant and rotary type air conditioner compressor.

Yes  No   
Page # 6 and BSV

AM/FM/CD radio with clock, weather band and Blue Tooth capability, two- way radio power leads with mounting plate installed in overhead console with mirror mounted antenna LH side

Yes  No   
Page # 6

Two additional dash mounted power outlets to be furnished.

Yes  No   
Page # BSV

Windshield wipers to be two (2) speed electric with washer and intermittent feature.

Yes  No   
Page # 7

#### **AIR BRAKES**

Brake system to be full dual antilock air design with heated air dryer.

Yes  No   
Page # 3/4

Air compressor should have 37.4 CFM capacity and increased air reservoir capacity for the local installation of a pusher style third axle.

Yes  No   
Page # 3

System to include an in cab control valve for rear service brakes.

Yes  No   
Page # 5

#### **FRAME/BUMPER/FUEL TANKS**

Steel 120,000 PSI steel frame rails 11.81" x 4.13" x 0.44" with a section modulus of 26.3 and a RBM per rail of 3,160,000.

Yes  No   
Page # 4 and Frame Spec Sheet

222"-226" wheelbase with a 135"-139" cab to axle and a 197"-201" load platform.

Yes  No   
Page # 4

Heavy-duty back to back channel cross members with huck bolt fasteners throughout.

Yes  No   
Page # 5

Front bumper Bright Finish steel swept back channel design with Bright Finish plate type radiator guard and right and left hand bumper recessed tow hooks.

Yes  No   
Page # 5

Fuel tank(s) to be aluminum with a minimum of 100-gallon capacity.

Yes  No   
Page # 5

**FRONT AXLE**

20,000 Reverse Elliot design steel I beam axle with 20,000# multi leaf suspension and shock absorbers

Yes  No   
Page # 3, 4, and Front Axle Sheet

20,000# integral power steering (Master/Slave assist design)

Yes  No   
Page # 4

Maximum of 34.5" spring centers

Yes  No   
Page # Front Axle Spec Sheet

**SET FORWARD** front axle position only. **Model GR64FR**  
"F" Designates Front Axle Forward Position

Yes  No   
Page # BSV

Unitized sealed (maintenance free) front wheel hubs.

Yes  No   
Page # Front Axle Spec Sheet

Sealed tapered kingpins and bearings.

Yes  No   
Page # Front Axle Spec Sheet

Meritor "S" cam design 16.5" x 6" Q+ brakes with:  
Outboard mounted drums and Dust Shields

Yes  No   
Page # 4

Automatic slack adjusters

Yes  No   
Page # 4

Front wheels to be Aluminum ten (10) hole bud style, hub piloted 22.5" x 12.25".

Yes  No   
Page # 7

Front tires to be 425/65R22.5 radials Bridgestone, Goodyear, Michelin, Firestone, Continental, General, or Yokohama.

Yes  No   
Page # 7

**REAR AXLE**

46,000# capacity (4.19-4.30) ratio double reduction design tandem rear axle with top loaded carriers and 46,000# multi leaf rear suspension with Heavy Duty Anti Sway spring package. Rear spring insulators to be Urethane Heavy Duty shock insulators. transverse torque rod and bronze center bushings. Leaf over walking beam design with bronze center bushings will be accepted as a substitute, however no REYCO, AIR RIDE or T RIDE suspensions will be accepted.

Yes  No   
Page # 4 and Rear Axle and Rear Axle Carrier Sheets  
Yes  No   
Page # 4

Driver controlled inner wheel power divider and differential lock in both rear axles with manual air valve and warning light.

Meritor "S" cam design 16.5" x 7" Q+ brakes with:  
Outboard drums and dust shields

Yes  No   
Page # 4

Automatic slack adjusters

Yes  No   
Page # 4

Brake chambers shall be (4) 30/30 style chambers with raised chambers on rear axle.

Yes  No   
Page # 4

Rear wheels to be Alum Disc (10) hole bud style, hub piloted 24.5x 8.25 inside and out.

Yes  No   
Page # 7

Rear tires to be 14 ply minimum traction tread 11R24.5 Bridgestone, Michelin, Goodyear Continental, General, Firestone, or Yokohama

Yes  No   
Page # 7

**Options**

In addition to the above options related to the tri-axle or heavy duty dump truck chassis, the bid must also include the cost for each of the following options, itemized separately on the bid:

Allison 4500-RDS-6 six speed automatic over drive Rugged Duty Series Gen 4 with transmission cooler, external oil cooler, internal filter, oil level sensor, temperature gauge and aluminum bell housing. Allison transmission to be factory filled with *TRANSYND* synthetic lubricant. Allison transmission low gear ratio = 4.70 and transmission high gear ratio = .67 over drive.

Yes  No   
Page# 2 and 3

# CUSTOMER PROPOSAL



PREPARED FOR

DATE

10/3/2022

PREPARED BY

NEXTRAN CORPORATION

1801 FULTON ROAD

FULTONDALE

AL 350681605

QUOTE INFORMATION

NEXT2022000186C614

GRANITE 64FR

Qty: 1





# TECHNICAL SPECIFICATION

## GRANITE 64FR



APPLICATION PACKAGES	DESCRIPTION	WEIGHT (LB)	
		FRONT	REAR
CHASSIS CONFIGURATION PACKAGE	ONEBOX EATS, LH BATTERY BOX, 6.6 GALLON (25L) SLEEVED DEF, 22" SLEEVED LH FUEL TANK	0	0

CUSTOMER/VEHICLE INFO	DESCRIPTION	WEIGHT (LB)	
		FRONT	REAR
S CHASSIS (BASE MODEL)	GRANITE 64FR	4,853	1,764
S ASSEMBLY PLANT	Made in Macungie, PA USA	0	0
CUSTOMER FLEET SIZE	DEALER FLEET WITH LESS THAN 25 VEHICLES IN OWN FLEET OF ANY VEHICLE BRAND	0	0
TYPE OF SERVICE	MUNICIPAL	0	0
S WARRANTY REGISTRATION LOCATION	USA - WARRANTY REGISTRATION LOCATION	0	0
EMISSION WARRANTY CERTIFICATION	EPA (only) for Mack MP7 / MP8 Diesel	0	0
S INITIAL REGISTRATION LOCATION	USA REGISTRATION	0	0
S LANGUAGE-PUBS/DECAL/SIGNS	ENGLISH	0	0
S ROAD CONDITION	WELL MAINTAINED SURFACED ROADS >95% DRIVING DISTANCE	0	0
VEHICLE USE & BODY/TRAILER TYPE	DUMP TRUCK	0	0
TRAILER TYPE	WITHOUT TRAILER TYPE	0	0
S GROSS COMBINATION WEIGHT (CA in PC29 only)	TRUCK ONLY - NO TRAILER TOWING PROVISIONS PROVIDED	0	0
S BRAKE REGULATION	BRAKE REGULATION, STOPPING DISTANCE 94M (310FT)	0	0
TOPOGRAPHY	GRADES <6% GREATER THAN 98% OF DRIVING DISTANCE MAX GRADE 16%	0	0
S AMBIENT TEMP UPPER LIMIT (GTA)	AMBIENT TEMPERATURE HOT. WARMER THAN 104 F (40 C) ALLOWED UP TO 25 HOURS PER YEAR	0	0
S TERRAIN GRADE	ON-OFF HIGHWAY, STARTING GRADES<18%	0	0
S LOADING SURFACE	CONCRETE LOADING AND / OR UNLOADING SURFACE	0	0
VEHICLE VOCATION	CONSTRUCTION SERVICE	0	0

ENGINE/TRANSMISSIONS	DESCRIPTION	WEIGHT (LB)	
		FRONT	REAR
ENGINE PACKAGE, COMBUSTION	MP8-455C MACK 455HP @ 1400-1700 RPM (PEAK) 2100 RPM (GOV) 1750 LB-FT, US'21	2,108	530
S GHG APPLICATION, VEHICLE	GREEN HOUSE GAS VOCATIONAL APPLICATION	0	0
TRANSMISSION	4500 RDS 6 SPEED ALLISON GEN 6 W/PROGNOSTICS, WITH PTO PROVISION	732	245
S GEARBOX 12TH GEAR LOCK-OUT	WITHOUT 12TH GEARBOX GEAR LOCK-OUT	0	0

EXHAUST/EMISSIONS	DESCRIPTION	WEIGHT (LB)	
		FRONT	REAR
CARB 2008 IDLE REGULATION	IDLE EMISSION CERTIFICATION, BASIC	0	0
S DPF DIESEL PARTICULATE FILTER	CLEARTECH ONE BOX E.A.T.S. RH SIDE UNDER CAB US17 / US21	0	0
S CHASSIS MOUNTED EMISSIONS FINISH	W/O DEF COVER & PAINTED DPF COVER	0	0
S DIESEL EXHAUST FLUID TANK	6.6 GALLON (25 L) 22" LEFT SIDE FUEL TANK MTD	89	31
EXHAUST	SINGLE VERTICAL RIGHT SIDE CAB MOUNTED, LOWER VENTURI DIFFUSER, TURNED END	-35	-17
EXHAUST STACK HEIGHT	9' 6" FROM GROUND	0	0
EXHAUST SYSTEM MATERIAL FINISH	SINGLE, BRIGHT FINISH HEAT SHIELD, STACK AND SCR COVER (IF EQUIPPED)	0	0

**PRICELIST DATE**  
20220523

**QUOTATION**  
NEXT2022000186C614

**DATE**  
10/3/2022

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# TECHNICAL SPECIFICATION (cont.)



ENGINE EQUIPMENT	DESCRIPTION	WEIGHT (LB)	
		FRONT	REAR
S	AIR CLEANER	0	0
S	BUG SCREEN	0	0
S	AIR COMPRESSOR/DRYER	0	0
S	AIR DRYER POSITION (CA)	0	0
S	ALTERNATOR	16	0
S	BATTERIES	0	0
S	BATTERY BOX - MOUNTING (x)	-8	-4
	BATTERY BOX COVER	5	0
S	STARTER MOTOR	31	0
	ENGINE BRAKE	0	0
S	ENGINE BRAKE LIGHTING (CA)	0	0
S	FAN DRIVE	0	0
S	COOLANT PROTECTION	0	0
	HOSES - RADIATOR/HEATER	0	0
S	FUEL-WATER SEPARATOR	0	0
S	PRIMARY FUEL FILTER POSITION (CA)	0	0
S	ENGINE HEATERS	0	0
	ENGINE BLOCK HEATER	5	0
	OIL SUMP	0	0
S	ENGINE STOP, EMERGENCY (CA in PC29 only)	0	0

CLUTCH/TRANS EQUIPMENT	DESCRIPTION	WEIGHT (LB)	
		FRONT	REAR
	GEAR SHIFTER	0	0
S	CLUTCH ACTUATION SYSTEM & PEDAL PAD	0	0
	DRIVELINE - MAIN	18	18
	DRIVELINE - INTERAXLE	0	31
	PROPELLR SHAFT MAIN, UNVSL JNT	0	0
S	PROP SHAFT INTERAXL UNIV JOINT	0	0
S	TRANSMISSION OUTPUT TORQUE	0	0
S	BELL HOUSING	0	0
	LUBRICANTS, TRANSMISSION	0	0
	TRANSMISSION OIL COOLER	0	0

FRONT AXLE EQUIPMENT	DESCRIPTION	WEIGHT (LB)	
		FRONT	REAR
	FRONT AXLE	428	0
	SPRINGS - FRONT	155	0
	FRONT AXLE BRAKES	29	0
S	BRAKE, FRONT	0	0

# TECHNICAL SPECIFICATION (cont.)



		WEIGHT (LB)	
FRONT AXLE EQUIPMENT	DESCRIPTION	FRONT	REAR
	<b>FRONT AXLE BRAKE DUST SHIELD</b> DUST SHIELDS FOR FRONT AXLE	5	0
	FRONT BRAKE ADJ. MANUFACTURE MERITOR - AUTOMATIC	3	0
	FRONT BRAKE CHAMBER MFG. FRONT BRAKE CHAMBER MANUFACTURER, HALDEX	0	0
S	HUB MATERIAL, FRONT FERROUS	157	0
S	<b>SHOCK ABSORBER, FRONT</b> DOUBLE ACTING TYPE	0	0
	<b>STEERING</b> SHEPPARD SD110 + HD94	206	0
S	FRONT AXLE LUBRICANT FRONT AXLE LUBE, FAG NLGI2 GREASE	0	0

		WEIGHT (LB)	
REAR AXLE EQUIPMENT	DESCRIPTION	FRONT	REAR
	<b>REAR AXLE</b> 46000# (20900kg) MACK S462R CAST DUCTILE HOUSING	0	1,614
S	REAR AXLE CASING WIDTH W/O WIDE TRACK AXLE	0	0
S	<b>CARRIER - REAR AXLE</b> CRDP150/151 AVAILABLE WITH OPTIONAL DRIVER CONTROLLED INTERWHEEL DIFFERENTIAL LOCKS, SEE 254 SYMBOL	0	0
	<b>REAR AXLE RATIO</b> 4.19 RATIO	0	0
	<b>REAR SUSPENSION</b> SS46 MACK CAMELBACK MULTILEAF 46,000 lb, HEAVY DUTY	0	1,930
	<b>SPRINGS - ANTI-SWAY</b> SPRINGS, ANTI-SWAY	0	104
	REAR SUSP. BEAM BUSHINGS BRONZE	0	36
S	BOGIE SPREAD, REAR 50" AXLE SPACING (BOGIE WHEELBASE)	0	9
	REAR SPRING INSULATOR MAT'L URETHANE SHOCK INSULATORS, HEAVY DUTY, HIGHLY RECOMMENDED W/SS582 & SS652 REAR SUSP	0	5
	<b>TRANSVERSE TORQUE RODS, R SUSP</b> TRANSVERSE TORQUE ROD (REAR AXLE ONLY)	0	0
S	AUX.SPRING BRAKE QTY AUX SPRING BRAKE QTY, 4 CHAMBERS	0	20
S	<b>BRAKES - REAR</b> MERITOR "S" CAM 16.5"x7" Q+ (Total for QTY = 2)	0	-35
S	BRAKE, DRIVE, REAR CAST IRON	0	0
	<b>REAR BRAKE ADJ MANUFACTURE</b> MERITOR - AUTOMATIC (Total for QTY = 2)	0	0
	<b>DRIVE AXLE BRAKE DUST SHIELD</b> DUST SHIELDS FOR REAR AXLE	0	12
	<b>REAR BRAKE CHAMBER SIZE</b> REAR SPRING BRAKE CHAMBERS 30/30 TYPE	0	0
	<b>BRAKE ORI REAR-MOST DRIVE AXLE</b> DRUM BRAKE CHAMBER ORIENTATION: High Mount - Rear of Axle - Chamber Down	0	0
	PARKING BRAKE CHAMBER HALDEX "LIFE SEAL PLUS" (3" STROKE) BRAKE CHAMBERS (Total for QTY = 2)	0	0
S	HUB MATERIAL, DRIVE IRON PRESET REAR HUB W/INTEGRATED SPINDLE NUT	0	318
S	<b>POWER DIVIDER LOCKOUT</b> POWER DIVIDER LOCKOUT, W/BUZZER & LIGHT	0	40
	DRIVE AXLE LUBRICANT DRIVE AXLE LUBE, SHELL 80W90 MINERAL OIL	0	0
	<b>TRACTION DIFFERENTIAL</b> DRIVER CONTROLLED INTER WHEEL DIFFERENTIAL LOCK ALL RR AXLES, MANUAL AIR VALVE W/WARNING LIGHT.	0	18
S	<b>ANTILOCK BRAKE SYSTEM</b> BENDIX WITH TRACTION CONTROL 4S4M	0	0
S	BRAKE VALVE VERSION BENDIX SWITCHES AND VALVES WHERE POSSIBLE	0	0
S	SPRING BRAKE INVERSION VALVE TRACTOR SPRING BRAKE INVERSION VALVE	5	0

		WEIGHT (LB)	
FRAME EQUIPMENT/FUEL TANKS	DESCRIPTION	FRONT	REAR
	<b>WHEELBASE</b> 226"	183	183
	AF (OVERHANG) 63"	-19	258
	<b>FRAME RAILS &amp; LINERS</b> 11.1 x 105 x 300mm - (0.437" x 4.13" x 11.81"); RBM 3,160,000 LB-IN	0	0

# TECHNICAL SPECIFICATION (cont.)



FRAME EQUIPMENT/FUEL TANKS	DESCRIPTION	WEIGHT (LB)	
		FRONT	REAR
S	FRONT FRAME EXT. (BOLTED ON) 6" BOLT ON FRAME EXTENSION	155	-2
S	FRONT FRAME LENGTH FRONT FRAME LENGTH 725MM	45	-2
S	<b>CROSSMEMBERS</b> <b>BOC AND INTERMEDIATE(S) STEEL HD BACK-TO-BACK CHANNEL</b>	0	0
S	REAR CROSSMEMBER OPTIONS STEEL CLOSING REAR CROSSMEMBER	-8	49
S	REAR FRAME TREATMENT WITHOUT TAPERED FRAME RAIL ENDS	0	0
	<b>FRONT BUMPER</b> <b>EXTENDED-SWEPT BACK-STEEL BRIGHT FINISH</b>	0	0
	<b>CAB GUARD, FRONT</b> <b>PLATE TYPE BRIGHT FINISH</b>	45	-11
S	CROSSMEMBER, BOGIE TYPE BASIC SOLUTION TRUNNION BRACKET, STD HEIGHT	0	0
S	<b>TOWING DEVICE, FRONT</b> <b>HOOKS</b>	0	0
S	FUEL LEVEL SENDER UNIT, LIQUID BASIC FUEL LEVEL SENDER MOUNTED ON L.H TANK	0	0
	<b>FUEL TANK - LH</b> <b>111 GALLON (420 L) 22" ALUMINUM, SLEEVED D-SHAPED</b>	223	100
S	FUEL TANK - RH W/O RH FUEL TANK	0	0
S	FUEL HOSES, LIQUID BRAIDED HOSE	5	3
S	FUEL FILLER NECK OPTIONS WITHOUT FILLER NECK SCREEN, WITH NON-LOCKABLE FUEL TANK CAP	0	0
	FUEL LINE OPTIONS, LIQUID W/O FUEL LINE OPTION	0	0
S	CAB INSTEP VERSION STANDARD 2 STEP CAB ACCESS	0	0

AIR/BRAKE	DESCRIPTION	WEIGHT (LB)	
		FRONT	REAR
	AIRTANK DRAIN VALVE MANUAL (PETCOCK) DRAIN VALVES ON ALL TANKS	0	0
S	AIRTANK MATERIAL STEEL AIR TANK PAINTED CHASSIS COLOR	0	0
	RELOCATE AIR RESERVOIRS UNDER BATTERY BOX, REMAINING BETWEEN FRAME RAILS	0	0
	<b>AUXILLIARY AIRTANK</b> <b>AUXILIARY AIR TANK CAPACITY FOR (1) EXTRA LIFT AXLE</b>	20	16
S	PARKING BRAKE VALVE SINGLE VALVE SYSTEM	0	0

ELECTRICAL	DESCRIPTION	WEIGHT (LB)	
		FRONT	REAR
S	<b>ROOF &amp; SIDE MARKER LIGHTS</b> <b>(5) TRUCKLITE CHROME BULLET ROOF MARKER &amp; STANDARD MARKER / DIRECTIONAL SIGNAL</b>	0	0
S	DAYTIME RUNNING LIGHTS W/OVERRIDE SWITCH, PARK BRAKE & ENGINE RUNNING ACTIVATED	0	0
S	DRL OVERRIDE SPEED THRESHOLD DRL OVERRIDE SPEED THRESHOLD 8 KMPH (5 MPH)	0	0
S	TAIL LAMPS INCANDESCENT TAIL LAMPS	0	7

TRAILER CONNECTIONS	DESCRIPTION	WEIGHT (LB)	
		FRONT	REAR
	<b>TRAILER BRAKE VALVE</b> <b>HAND CONTROL VALVE FOR TRAILER BRAKES W/ AIR CONNECTIONS OR SERVICE BRAKES W/O AIR CONNECTIONS</b>	0	0
S	TRAILER CONNECTORS HOLDER OMIT TRAILER CONNECTORS HOLDER	3	0

PTO	DESCRIPTION	WEIGHT (LB)	
		FRONT	REAR
	POWER TAKE OFF CONTROL TRANSMISSION PTO SWITCH AND LIGHT WITH WIRING AND PIPING FOR LOCAL INSTALLATION	3	0
	BODY BUILDER INTERFACE BODY LINK III W/O CAB PASS-THRU	5	5

# TECHNICAL SPECIFICATION (cont.)



			WEIGHT (LB)		
SPECIALTY EQUIPMENT	DESCRIPTION	FRONT	REAR		
S	LANE SUPPORT SYSTEM (LSS)	WITHOUT LANE SUPPORT SYSTEM	0	0	
S	DATA CAPTURE	WITHOUT DATA CAPTURE	0	0	
S	CAMERA, SURVEILLANCE	WITHOUT CAMERA	0	0	

			WEIGHT (LB)		
CAB INTERIOR (A THRU G)	DESCRIPTION	FRONT	REAR		
S	SPEEDOMETER -&- GAUGES - UNIT(S) OF MEASURE	U.S. UNITS (PREDOMINANT)	0	0	
	GAUGE - PACKAGE, SECONDARY	2ND GA PKG W/ENG OIL TEMP, TRANS OIL TEMP, PYRO, BOOST PRESS	0	0	
	GAUGE OIL TEMP-REAR AXLE	REAR AXLE OIL TEMP GAUGE IN DID (DRIVER INFORMATION DISPLAY)	0	0	
S	AIR CONDITIONING/HEATER	BLEND AIR HVAC W/"ATC" TEMP REGULATION	0	0	
S	CUPHOLDER	CUPHOLDER	0	0	
S	DOME LAMP, INTERIOR	(4) DOME LAMPS - DOOR AND SWITCH ACTIVATED	0	0	
S	DASH INDICATOR - LAMP BODY OUT OF POS	DASH MTD, INDICATOR BODY/HOIST UP "BODYBUILDER LAMP"	0	0	
	FIRE EXTINGUISHER	5LB (ABC RATED) MOUNTED BETWEEN DRIVER SEAT BASE AND DOOR VALVE AIMED REARWARD	9	0	
S	CARBON MONOXIDE DETECTION SYS	WITHOUT CARBON MONOXIDE DETECTION SYSTEM	0	0	
	FLOOR COVERING	POLYURETHANE FLOOR MAT W/ REMOVABLE INSERTS	16	0	

			WEIGHT (LB)		
CAB INTERIOR (H THRU R)	DESCRIPTION	FRONT	REAR		
S	INSTMNT CLUSTER LANGUAGE	DEFAULT: ENGLISH, SPANISH, FRENCH	0	0	
S	KEY TYPES FOR DOORS	ALL CHASSIS KEYED AT RANDOM	0	0	
S	DOOR OPENING OPTIONS	W/O ELECTRONIC KEYLESS ENTRY	0	0	
S	FORWARD OVERHEAD STORAGE	(2) STORAGE COMPARTMENTS AND NET RETAINERS W/CENTER MOUNTING FOR CB PROVISIONS	0	0	
S	AUDIO ACCOMMODATION	PREMIUM STEREO, AM/FM, MP3, WEATHER BAND, BLUETOOTH	0	0	
S	ANTENNA - RADIO	RADIO ANTENNA, CAB MOUNTED BEHIND LH DOOR	0	0	
	ANTENNA - CB RADIO	48" ANTENNA LEFT SIDE MIRROR MOUNTED	0	0	
S	POWER LEADS	POWER LEADS (5-WAY BINDING POSTS FOR CB RADIO) IN HEADER CONSOLE	0	0	
S	AUDIO SPEAKER LOCATION	SPEAKER LOCATION, IN DOORS, MIDDLE HIGH SIDE PANEL	0	0	
S	COM.RADIO PREP KIT (CB)	CB RADIO MOUNTING REINFORCEMENT IN HEADER CONSOLE	0	0	
S	REAR WALL STORAGE COMPARTMENT	STORAGE POUCH REAR	5	0	
	REFLECTOR KIT	W/O SLEEPER BOX FURNISH KIT PARALLEL TO INSIDE SURFACE OF RIDER'S SEAT BASE	12	3	

			WEIGHT (LB)		
CAB INTERIOR (S THRU Z)	DESCRIPTION	FRONT	REAR		
	INTERIOR TRIM LEVELS	PREMIUM PACKAGE, STEEL GRAY (Package 12A)	0	0	
	SEAT - DRIVER'S	MACK-AIR, HIGH BACK, 4 CHAMBER AIR LUMBAR, BOLSTER, EXTENSION	67	16	
	SEAT COVERING - DRIVER'S	DRIVER'S SEAT - STEEL GREY VINYL / CLOTH MIX	0	0	
S	SEAT - PASSENGER'S	MACK-FIXED, HIGH BACK	40	9	
	SEAT COVERING - PASSENGER'S	PASSENGER'S SEAT - STEEL GREY VINYL / CLOTH MIX	0	0	
	SEAT ARMREST	INBOARD MOUNTED ARM REST, DRIVER'S & RIDER'S SEAT	5	3	

# TECHNICAL SPECIFICATION (cont.)



		WEIGHT (LB)	
CAB INTERIOR (S THRU Z)	DESCRIPTION	FRONT	REAR
	<b>SEAT BELT(S)</b>		
	LAP & SHOULDER (BOTH SEATS) (NOT AVAILABLE WITH EXTENDED RIDER SEAT)	0	0
S	SEAT BELT REMINDER	0	0
S	IGNITION TYPE	0	0
	KEY TYPE		
	2 SPOKE LEATHER GRIP, SATIN ALUMINUM SPOKES, WITH SWITCHES	0	0
	<b>WINDSHIELD TYPE</b>		
	ONE PIECE WINDSHIELD	0	0
S	<b>CAB GLASS</b>		
	TINTED WINDSHIELD & SIDE WINDOWS & REAR WINDOW (IF EQUIPPED)	0	0
S	WASHER RESERVOIR POSITION	0	0
	W/O WINDSHIELD WASHER OPTION		
S	<b>WINDSHIELD WIPERS</b>		
	2 SPEED ELECTRIC MOTOR W/INTERMITTENT FEATURE	0	0

		WEIGHT (LB)	
CAB EXTERIOR	DESCRIPTION	FRONT	REAR
S	HOOD LATCH TYPE & FINISH	0	0
	STRAP TYPE HOOD LATCH WITH BLACK FINISH		
S	<b>EXTERIOR TRIM FINISH AND PACKAGES</b>		
	<b>GRILLE</b>		
	GRANITE BRIGHT AIR INTAKE	0	0
	BRIGHT FINISH BARS W/BRIGHT FINISH SURROUND GRILLE MOUNTED	0	0
S	<b>PASSENGER SIDE VISIBILITY OPTIONS</b>		
	AUXILIARY WINDOW IN RH DOOR	3	0
S	FRONT WHEEL OPENING	5	0
	FENDER EXTENSIONS		
	<b>GRAB HANDLES</b>		
	BF EXTERIOR CAB GRAB HANDLES, BLACK GRAB HANDLE RH INTERIOR WINDSHIELD POST	0	0
	<b>HORN - AIR</b>		
	(2) MACK RECTANGULAR SINGLE TRUMPET (ONE EACH SIDE OF CAB ROOF)	7	0
S	<b>HORN - ELECTRICAL</b>		
	DUAL TONE	5	0
	<b>MIRRORS - EXTERIOR</b>		
	FLAT MIRROR - POLISHED ALUMINUM FINISH, HEATED, W/O LAMPS	0	0
S	<b>MIRRORS - CONVEX TYPE CAB DOORS</b>		
	BRIGHT FINISH, LH & RH, 8" DIAMETER CONVEX	0	0
	<b>SUN VISOR - EXTERIOR</b>		
	SUN VISOR, EXTERIOR, STAINLESS STEEL (UNPAINTED)	9	0

		WEIGHT (LB)	
AERODYNAMIC DEVICES	DESCRIPTION	FRONT	REAR
S	CAB AERODYNAMIC PACKAGES	0	0
	WITHOUT CAB AERODYNAMIC DEVICES		
S	FRONT CHASSIS AERODYNAMIC PACKAGE	0	0
	WITHOUT FRONT AERODYNAMIC FAIRINGS		

		WEIGHT (LB)	
WHEELS & TIRES	DESCRIPTION	FRONT	REAR
	<b>TIRES BRAND/TYPE - FRONT</b>		
	425/65R22.5 L CONTINENTAL HAC 3 (22800 lbs) (Total for QTY = 2)	371	0
	<b>WHEELS - FRONT</b>		
	22.5x12.25 ACCURIDE POLISHED ALUMINUM, 5.88" OFFSET, 10 HAND HOLE (Total for QTY = 2)	133	0
	<b>TIRES BRAND/TYPE - REAR</b>		
	11R24.5 G BRIDGESTONE M760 ECOPIA (24020 lbs) (DRIVE ONLY) (Total for QTY = 8)	0	1,112
	<b>WHEELS - REAR</b>		
	24.5x8.25 ACCURIDE ACCU-LITE POLISHED ALUMINUM, 6.59" OFFSET, 10 HAND HOLE (Total for QTY = 8)	0	441
S	DRIVE WHEEL STUDS	0	0
	DRIVE WHEEL STUDS LONGER LENGTH		
S	TIRE INFLATION VALVE	0	0
	STANDARD VALVE STEMS AND CAPS		
S	FRONT HUB/WHEEL TRIM	0	0
	WITHOUT FRONT HUB/WHEEL TRIM		
	<b>REAR HUB/WHEEL TRIM</b>		
	WITHOUT REAR HUB/WHEEL TRIM (Total for QTY = 2)	0	0
S	WHEEL NUT & FINISH, FRONT	0	0
	WHEEL NUT BASIC FINISH, FRONT		
S	WHEEL NUT FINISH, REAR (CA)	0	0
	WHEEL NUT BASIC FINISH, REAR		

# TECHNICAL SPECIFICATION (cont.)



		WEIGHT (LB)	
COMMUNICATION SYSTEMS	DESCRIPTION	FRONT	REAR
	CO-PILOT - DISPLAY FEATURES ACCESS LEVEL	0	0
	FLEET TRIP MANAGEMENT	0	0
S	TELEMATIC GATEWAY	0	0
	TELEMATICS GATEWAY, 4G/LTE AND WLAN SYSTEM WITH DIAGNOSTIC SERVICES		

		WEIGHT (LB)	
ENGINE ELECTRONICS	DESCRIPTION	FRONT	REAR
S	OIL PRESSURE, ENGINE SHUTDOWN	0	0
S	COOLANT TEMP, ENGINE SHUTDOWN	0	0
S	ENGINE PROTECTION SYSTEM	0	0
	ENGINE PROTECTION (SHUTDOWN)		
	ENGINE IDLE CONTROL	0	0
S	SMART IDLE ELEVATED IDLE RPM TIME	0	0
	INCREASE 10 MINUTE MAXIMUM TIME		
S	IDLE S/D ABS TAMPER CHECK	0	0
	IDLE SHUTDOWN ABS TAMPER CHECK, ENABLED		
S	IDLE S/D WARNING TIME	0	0
	30 SEC IDLE S/D WARNING TIME		
S	IDLE S/D IF WARM-UP TEMP	0	0
	38C DEG (100F), WARM UP TEMP DELAY		
S	IDLE S/D WARM-UP TIMER	0	0
	5 MIN. WARM UP TIME DELAY		
S	IDLE S/D IF PTO ACTIVE	0	0
	ENGINE IDLE SHUTDOWN TIME OVERRIDDEN IF PTO ACTIVE		
S	IDLE SHUTDOWN IF POWER > LIMIT	0	0
	ENG IDLE SHUTDOWN TIME OVERRIDDEN IF TORQUE > THAN LIMIT		
S	IDLE S/D OVERRIDE %ENGINE LOAD	0	0
	IDLE SHUTDOWN OVERRIDE UPTO 20% ENGINE LOAD THRESHOLD		
S	AMBIENT TEMP MIN TRESHOLD	0	0
	AMBIENT TEMP MIN TRESHOLD, 16 DEG C, (60 DEG F)		
S	AMBIENT TEMP MAX TRESHOLD	0	0
	AMBIENT TEMP MAX TRESHOLD, 27 DEG C, (80 DEG F)		
S	EL HD THROTTLE,MAX ROAD SPEED	0	0
	ELECTRONIC HAND THROTTLE, MAX ROAD SPEED, 16 KMH (10 MPH)		
S	EL HAND THROTTLE,MAX ENG SPEED	0	0
	ELECTRONIC HAND THROTTLE, MAX ENGINE SPEED, 2100 RPM		
S	EL HAND THROTTLE,MIN ENG SPEED	0	0
	ELECTRONIC HAND THROTTLE, MIN ENGINE SPEED, 700 RPM		
S	EL HD THROTTLE,SPEED RAMP RATE	0	0
	ELECTRONIC HAND THROTTLE, SPEED RAMP RATE, 100 RPM/SEC		

		WEIGHT (LB)	
TRANSMISSION ELECTRONICS	DESCRIPTION	FRONT	REAR
	TRANSMISSION ELECTRONICS PACKAGE	0	0
	DUMP/VOCATIONAL(223) - ALLOWS TRUCK TO BE PUT IN GEAR WITHOUT SERVICE BRAKE (FOR PAVING)		
	TRANSM AUTO NEUTRAL ON P-BRAKE	0	0
	ALLISON PARK BRAKE AUTO NEUTRAL-REQUIRES PARK BRAKE TO BE DISENGAGED PRIOR TO SELECTING A GEAR TO DR		
	TRANSMISSION ELECTRONIC SHIFTING PROPERTIES	0	0
	FUELSENSE, FULL NEUTRAL AT STOP		

		WEIGHT (LB)	
VEHICLE ELECTRONICS	DESCRIPTION	FRONT	REAR
S	ROAD SPEED LIMITER SETTING	0	0
	105 KM/H ROAD SPEED LIMITER(65 MPH)		
	PEDAL RSL SETTING	0	0
	105 KM/H PEDAL ROAD SPEED LIMITER (65MPH)		
S	CRUISE CONTROL	0	0
S	CRUISE CONTROL, MAX SPEED	0	0
	MAX CRUISE, 105 KPH (65 MPH)		
S	CRUISE CONTROL MIN SPEED	0	0
	MIN CRUISE, 32 KPH (20 MPH)		
	ENG BRK ENGAGE IN CRUISE	0	0
	ENG BRK ENGAGE IN CRUISE, 3 MPH, ABOVE SET SPEED		
	PDLO ENGAGED VLS	0	0
	POWER DIVIDER LOCK OUT (PDLO) ROAD SPEED LIMIT 24KMH (15MPH)		

# TECHNICAL SPECIFICATION (cont.)



		WEIGHT (LB)	
VEHICLE ELECTRONICS	DESCRIPTION	FRONT	REAR
S	DETECTION SPEED SENSR TMPRNG	0	0
S	ENG TORQUE LIMIT,SPEED SENSOR	0	0
S	DRIVER ID FUNCTION	0	0
S	DR PERFORMANCE PARAMETERS	0	0
S	ENGINE OVERSPEED,ALL COND, LOG	0	0
S	ENGINE OVERSPEED,FUELED, LOG	0	0
S	VEHICLE OVERSPEED,ALL COND,LOG	0	0
S	VEHICLE OVERSPEED, FUELED, LOG	0	0
S	ENGINE IDLE DELAY TO LOG	0	0
S	PERIODIC TRIP LOG DAY OF MONTH	0	0

		WEIGHT (LB)	
PTO ELECTRONICS	DESCRIPTION	FRONT	REAR
S	PTO1 SINGLE SPEED CONTROL RPM.	0	0
S	PTO 1ST, MAX ROAD SPEED	0	0
S	PTO 1ST, SPEED RAMP RATE	0	0
S	PTO 1ST, MAX ENGINE SPEED	0	0
S	PTO 1ST, ROAD SPEED LIMIT	0	0
S	PTO 1ST, MINIMUM ENGINE SPEED	0	0
S	PTO 2ND, SINGLE SPEED SETTING	0	0
S	PTO 2ND, MAX ROAD SPEED	0	0
S	PTO 2ND, SPEED RAMP RATE	0	0
S	PTO 2ND, MAX ENGINE SPEED	0	0
S	PTO 2ND, ROAD SPEED LIMIT	0	0
S	PTO 2ND, MINIMUM ENGINE SPEED	0	0

		WEIGHT (LB)	
PAINT	DESCRIPTION	FRONT	REAR
S	<b>PAINT DESIGN</b>	0	0
S	<b>PAINT TYPE</b>	0	0
S	PAINT COLOR - FIRST COLOR	0	0
S	PAINT COLOR - SECOND COLOR	0	0
S	PAINT COLOR - THIRD COLOR	0	0
S	PAINT - CAB PAINT SYSTEM	0	0
S	CAB COLOR	0	0
S	HOOD COLOR	0	0
S	SLEEPER ROOF COLOR	0	0
S	ROOF FAIRING COLOR	0	0
S	CHASSIS RUNNING GEAR	0	0
S	BUMPER	0	0
S	FUEL TANK - ***NO INVENTED VARIANTS ALLOWED in the FUEL TANK PAINT FAMILY***	0	0



# TECHNICAL SPECIFICATION (cont.)



PAINT	DESCRIPTION	WEIGHT (LB)	
		FRONT	REAR
S	HUBS & DRUMS-FRONT SAME AS CHASSIS RUNNING GEAR	0	0
S	HUBS & DRUMS-REAR SAME AS CHASSIS RUNNING GEAR	0	0

CALCULATED CODES - KAX	DESCRIPTION	WEIGHT (LB)	
		FRONT	REAR
S	PROPCALC SELECTION YES, THE ORDER MUST BE CALCULATED	0	0

BASE WARRANTY & PURCHASED COVERAGES	DESCRIPTION	WEIGHT (LB)	
		FRONT	REAR
S	VEHICLE WARRANTY TYPE HEAVY DUTY WARRANTY CLASSIFICATION	0	0
S	BASIC CHASSIS COVERAGE HEAVY DUTY STANDARD BASE COVERAGE 12 MONTHS/100,000 MILES (161,000 KM)	0	0
	EMISSION - SURCHARGE EPA (only) for Mack MP7 / MP8 Diesel	0	0
S	ENGINE WARRANTY MACK MP7/MP8 BASE ENGINE COVERAGE 24 MONTHS / 250,000 MILES (402,000KM)	0	0
S	EMISSION COMPONENT COVERAGE US and CANADA EQUIPPED VEHICLE EMISSION COMPONENTS COVERAGE 60 MONTHS/100,000 MILES (161,000 KM)	0	0
	TRANSMISSION WARRANTY ALLISON TRANSMISSIONS (Contact Allison Transmission for standard warranty and extended coverage data)	0	0
S	CARRIER & AXLE HOUSING WARRANTY STANDARD MACK HEAVY DUTY COVERAGE 60 MONTHS / 500,000 (804,672 KM)	0	0
S	AIR CONDITIONING WARRANTY AIR CONDITIONING STANDARD COVERAGE (Sealed System Only) 12 MONTHS UNLIMITED MILEAGE	0	0
	CHASSIS TOWING WARRANTY STANDARD NORMAL / HEAVY DUTY CHASSIS TOWING 90 DAYS OR 5,000 MILES	0	0
S	ENGINE TOWING WARRANTY STANDARD MACK ENGINE TOWING COVERAGE 24 MONTHS/250,000 MILES (402,000 KM)	0	0
S	GUARDDOG CONNECT BUNDLE 24 MONTH - GUARDDOG CONNECT WITH MACK OTA (with ASIST and Mack OneCall))	0	0
S	PREPAID API WITHOUT PREPAID API	0	0
S	PREMIUM MAINTENANCE - CHASSIS LUBE AND INSPECTION W/O PREMIUM MAINTENANCE - CHASSIS LUBE AND INSPECTION COVERAGE	0	0

<b>FRONT / REAR AXLE WEIGHTS (LB)</b>	10124	8843
<b>TOTAL WEIGHT (LB)</b>		18967

Prior to delivery each unit will be DOT Inspected and will include the appropriate documentation and deca64 an 7



Mack Trucks  
[www.macktrucks.com](http://www.macktrucks.com)

# TECHNICAL SPECIFICATION

## GRANITE 64FR

Transmission Addendum



		WEIGHT (LB)	
APPLICATION PACKAGES	DESCRIPTION	FRONT	REAR
	CHASSIS CONFIGURATION PACKAGE	0	0
	ONEBOX EATS, LH BATTERY BOX, 6.6 GALLON (25L) SLEEVED DEF, 22" SLEEVED LH FUEL TANK		

		WEIGHT (LB)	
CUSTOMER/VEHICLE INFO	DESCRIPTION	FRONT	REAR
S	CHASSIS (BASE MODEL)	4,853	1,764
S	ASSEMBLY PLANT	0	0
	CUSTOMER FLEET SIZE	0	0
	TYPE OF SERVICE	0	0
S	WARRANTY REGISTRATION LOCATION	0	0
	EMISSION WARRANTY CERTIFICATION	0	0
S	INITIAL REGISTRATION LOCATION	0	0
S	LANGUAGE-PUBS/DECAL/SIGNS	0	0
S	ROAD CONDITION	0	0
	VEHICLE USE & BODY/TRAILER TYPE	0	0
	TRAILER TYPE	0	0
S	GROSS COMBINATION WEIGHT (CA in PC29 only)	0	0
S	BRAKE REGULATION	0	0
	TOPOGRAPHY	0	0
S	AMBIENT TEMP UPPER LIMIT (GTA)	0	0
S	TERRAIN GRADE	0	0
S	LOADING SURFACE	0	0
	VEHICLE VOCATION	0	0

		WEIGHT (LB)	
ENGINE/TRANSMISSIONS	DESCRIPTION	FRONT	REAR
	ENGINE PACKAGE, COMBUSTION	2,108	530
S	GHG APPLICATION, VEHICLE	0	0
	<b>TRANSMISSION</b>	605	201
S	GEARBOX 12TH GEAR LOCK-OUT	0	0

		WEIGHT (LB)	
EXHAUST/EMISSIONS	DESCRIPTION	FRONT	REAR
	CARB 2008 IDLE REGULATION	0	0
S	DPF DIESEL PARTICULATE FILTER	0	0
S	CHASSIS MOUNTED EMISSIONS FINISH	0	0
S	DIESEL EXHAUST FLUID TANK	89	31
	EXHAUST	-35	-17
	EXHAUST STACK HEIGHT	0	0
	EXHAUST SYSTEM MATERIAL FINISH	0	0

**PRICELIST DATE**  
20220523

**QUOTATION**  
NEXT2022000186C614

**DATE**  
10/3/2022

**PAGE**  
2 of 10

# TECHNICAL SPECIFICATION (cont.)



ENGINE EQUIPMENT	DESCRIPTION	WEIGHT (LB)	
		FRONT	REAR
S	AIR CLEANER	0	0
S	BUG SCREEN	0	0
S	AIR COMPRESSOR/DRYER	0	0
S	AIR DRYER POSITION (CA)	0	0
S	ALTERNATOR	16	0
S	BATTERIES	0	0
S	BATTERY BOX - MOUNTING (x)	-8	-4
	BATTERY BOX COVER	5	0
S	STARTER MOTOR	31	0
	ENGINE BRAKE	0	0
S	ENGINE BRAKE LIGHTING (CA)	0	0
S	FAN DRIVE	0	0
S	COOLANT PROTECTION	0	0
	HOSES - RADIATOR/HEATER	0	0
S	FUEL-WATER SEPARATOR	0	0
S	PRIMARY FUEL FILTER POSITION (CA)	0	0
S	ENGINE HEATERS	0	0
	ENGINE BLOCK HEATER	5	0
	OIL SUMP	0	0
S	ENGINE STOP, EMERGENCY (CA in PC29 only)	0	0

CLUTCH/TRANS EQUIPMENT	DESCRIPTION	WEIGHT (LB)	
		FRONT	REAR
	GEAR SHIFTER	0	0
	<b>CLUTCH</b>	0	0
	<b>CLUTCH ACTUATION SYSTEM &amp; PEDAL PAD</b>	0	0
	CLUTCH PEDAL PAD	3	0
	<b>CLUTCH ACTUATION SYSTEM</b>	-2	0
	ENGINE START CONDITION	0	0
	<b>DRIVELINE - MAIN</b>	18	18
	<b>DRIVELINE - INTERAXLE</b>	0	31
	PROPELLR SHAFT MAIN, UNVSL JNT	0	0
S	PROP SHAFT INTERAXL UNIV JOINT	0	0
S	TRANSMISSION OUTPUT TORQUE	0	0
S	BELL HOUSING	0	0
	LUBRICANTS, TRANSMISSION	0	0
	TRANSMISSION OIL COOLER	45	3



**MACK**

**GR64F**



**BUILT  
FOR THE JOB**

# GR64F



## STANDARD POWERTRAIN SPECIFICATIONS

### ENGINE: MACK MP7-345C

Peak Horsepower - 345 HP at 1400-1700 RPM  
Horsepower - 295 HP at 2000 Gov. RPM  
Max. Torque - 1360 lb. ft. at 1000-1300 RPM  
V-MAC IV - Total Vehicle Electronics  
Air Compressor - Meritor/Wabco 318 (18.7 CFM)  
Air Cleaner - 11" Single Element  
Alternator - Delco 12V 130A (24SI)  
Batteries - (3) Mack 12V 650/1950 CCA Threaded Stud Type  
Coolant Protection: -34 degrees F (-37 C)  
Mack Coolant Conditioner  
ClearTech One DPF/SCR Emission System  
Mack PowerLeash Engine Brake  
Silicone Engine Hoses and Tubing  
Poly-V Fan Belt with Automatic Tensioner  
Fan Drive: Electronically Modulated Multi-Speed Viscous  
Flywheel Housing - Aluminum (Lightweight)  
Mack Fuel/Water Separator with Manual Drain Valve  
Radiator - Aluminum Core  
Starter - Delco 12V 39MT-MTX  
Electronic Starter Interlock

### TRANSMISSION: MACK mDRIVE TMD13AFD-HD

13-Speed, Ratios: 17.54 Low - 0.78 High  
Overdrive  
Clutch - Single Plate 17" Organic Material  
Transmission Bell Housing - Aluminum  
Transmission Oil Cooler - mDRIVE Gear Box Mounted,  
Water to Oil Cooler  
Grade Gripper  
Mackcellerator  
Main Driveline - Meritor RPL25 Series with Permalube U-Joints

### REAR AXLE: MACK S38R

38,000 Pound Capacity  
Suspension - Multileaf (Mack Camelback)  
38,000 Pound Capacity  
Tires - 11R22.5  
Carrier - Malleable Housing  
Wheels - Aluminum Disc, 22.5" x 8.25",  
10-Hole, Hub Piloted  
Hub Material - Iron Preset w/ Integrated  
Spindle Nut  
Brakes - Bendix 16.5" x 7"  
Brake Drums - Cast Outboard Mounted  
Premium Rear Wheel Seals  
Slack Adjusters - Automatic  
Spring Brake Chambers - 30/30 Double  
Diaphragm Type, Mechanical  
Spring Release  
Shock Absorbers - (4) Mounted on Forward  
and Rear Axles Each Side

### FRONT AXLE: MACK FXL12

12,000 Pound Capacity  
Suspension - Mack Taperleaf Springs,  
12,000 Pound Rating, (2 Springs)  
Tires - 295/75R22.5 (Low Profile)  
Wheels - Aluminum Disc, 22.5" x 8.25",  
10-Hole, Hub Piloted  
Hub Material - Iron  
Integrated Front Wheel Seals  
Brakes - Bendix 16.5" x 5"  
Brake Drums - Cast Outboard Mounted  
Shock Absorbers - Double Acting Type  
Slack Adjusters - Automatic  
Steering - Sheppard SD110 Power Steering

# GR64F



## STANDARD CAB INTERIOR/EXTERIOR SPECIFICATIONS

### CAB: CONVENTIONAL

Air Conditioning with Integral Heater  
Cab Mounting - 4 Point, Air Bags  
and Shocks at Rear  
12 Volt and USB Outlets  
Coat Hook  
Co-Pilot Driver Display with  
GuardDog Maintenance, Stalk Controls  
Cup Holders  
Dome Lamps - 2RH / 2LH  
Galvanized Steel Visibility Doors  
Door Trim - Padded Armrests and Map Pockets  
Floor Mats - Polyurethane  
Gauges - Air Pressure (Primary and Secondary)  
Engine Coolant Temperature, Engine Oil  
Pressure, Speedometer, Tachometer,  
Fuel Level, DEF Level  
Optional Gauges - Exhaust Pyrometer, Boost  
Pressure, Transmission Oil Temperature,  
Engine Oil Temperature, Air Application  
Grab Handles, Exterior - RH & LH Behind Door  
Hood - DCPD Material, Insulated  
Horn - Electric, Single Tone  
Identification and Clearance Lights (5)  
Instrument Panel - Gunmetal Trim  
Interior Trim: Standard - Steel Gray

Keys - (2) Keyed at Random  
Key Type Starter Switch  
Low Pressure Indicator Light and Buzzer  
Exterior Mirrors - RH & LH Aerodynamic  
Overhead Console with Storage Compartments  
Parking Brake "On" Indicator Light  
AM/FM Premium Stereo, CD Player, MP3  
Weather Band, Bluetooth  
CB Connections - 5 way Binding Posts  
Driver Seat - High Back, 1 Chamber Lumbar,  
Air Suspension  
Rider Seat - High Back, Non-Suspension  
Seat Belts - Lap and Shoulder  
Steering Column - Tilt and Telescopic  
Steering Wheel - Urethane Foam Grip,  
Gunmetal Spokes  
Rear Storage Pouch  
Right Hand Door Peep Window  
Sunvisors - Interior, RH & LH  
Window Controls - Power  
Windshield - Tinted, 2 Piece  
Cab Glass - Tinted  
Windshield Wipers - 2 Speed Electric Motor  
with Intermittent Feature  
Paint Color - Mack White (Cab, Hood, and  
Fenders), Mack Black (Chassis and  
Running Gear)

## ADDITIONAL STANDARD SPECIFICATIONS

### AIR/BRAKE

Dual Air Brake System  
Air Dryer - 1200UP w/ Coalescing Filter  
Air Reservoirs - Steel  
Manual Drain Valves

### ELECTRICAL

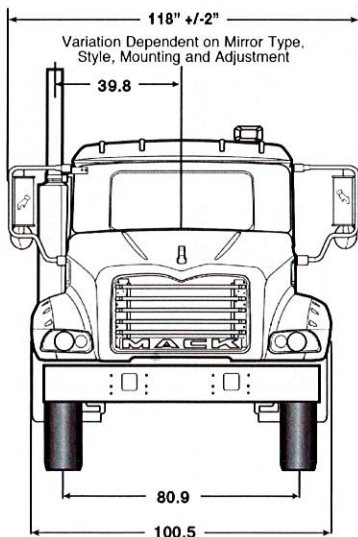
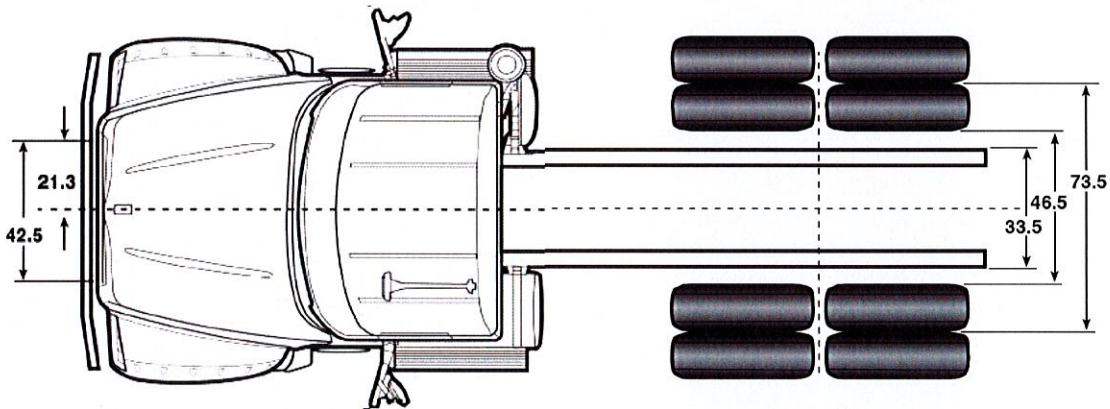
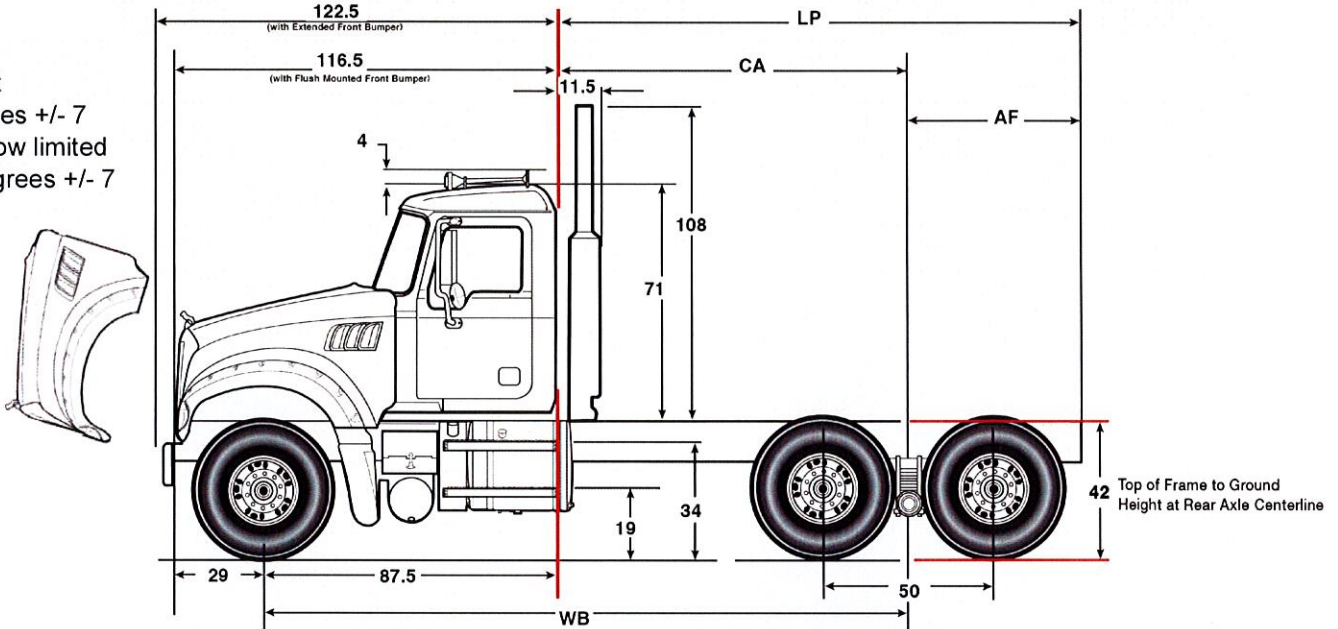
12 Volt Electrical System  
Battery Box - Steel with Molded Plastic Cover  
Courtesy Light Switch - Headlamp and Clearance  
GuardDog connect Services  
Daytime Running Lights  
Electric Circuit Protection Package  
Waterproof Electrical Connections  
Headlights - Flush Mounted Halogen Lights  
Rear Lighting - (2) Combination Stop, Tail,  
Directional, and Back-Up Lights  
Solid State Turn Signal Flasher

# GR64F



## STANDARD CHASSIS DIMENSIONS

Hood Tilt  
73 degrees +/- 7  
Snow Plow limited  
to 35 degrees +/- 7



### FRAME EQUIPMENT/FUEL TANKS

- Frame Rail w/out Liner – 11.81" x 3.54" x .32" Steel
- Section Modulus – 17.7 in<sup>3</sup>
- RBM (per rail) – 2,120,000 lb. in.
- Front Bumper – Extended Swept Back Steel Channel
- Bumper to Back of Cab (BBC) – 122.5"
- Crossmembers – BOC & Intermediate(s) Steel HD Back-to-Back Channel
- Front Frame Extension
- Front Tow Hooks
- Fuel Tanks – 50 Gallon LH Steel 22" dia.
- Diesel Exhaust Fluid (DEF) Tank - 11.8 Gallon, 22" 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 MSS



## AVAILABLE DRIVELINE COMPONENTS

### MP7 ENGINES

MODEL	HORSEPOWER / TORQUE
MP7-355A	355 HP [265kW] @ 1500-1800 RPM 1360 lb. ft. [1843 nM] @ 1000-1300 RPM
MP7-345C	345 HP [257kW] @ 1400-1700 RPM 1360 lb. ft. [1843 nM] @ 1000-1300 RPM
MP7-365C	365 HP [272kW] @ 1400-1700 RPM 1460 lb. ft. [1980nM] @ 1000-1300 RPM
MP7-395C	395 HP [295kW] @ 1450-1700 RPM 1560 lb. ft. [2115 Nm] @ 1050-1300
MP7-325M	325 HP [242kW] @ 1400-1900 RPM 1230 lb. ft. [1662 nM] @ 1000-1350 RPM
MP7-375M	375 HP [280kW] @ 1450-1900 RPM 1360 lb. ft. [1843 nM] @ 1000-1400 RPM
MP7-425M	425 HP [317kW] @ 1500-1800 RPM 1560 lb. ft [2115nM] @ 1050-1200 RPM

### MP8 ENGINES

MODEL	HORSEPOWER / TORQUE
MP8-415C	415 HP [309kW] @ 1400-1700 RPM 1660 lb. ft. [2251 Nm] @ 1050-1300 RPM
MP8-445C	445 HP [332kW] @ 1300-1800 RPM 1815 lb. ft. [2460 nM] @ 1150-1300 RPM
MP8-505C	505 HP [377 kW] @ 1500-1700 RPM 1860 lb. ft. [2508nM] @ 1100-1400 RPM
MP8-425M	425 HP [317kW] @ 1500-1800 RPM 1560 lb. ft. [2115 nM] @ 1050-1400 RPM
MP8-455M	455 HP [339kW] @ 1400-1700 RPM 1760 lb. ft. [2359 nM] @ 1050-1300 RPM
MP8-505M	505 HP [377kW] @ 1500-1700 RPM 1860 lb. ft. [2508nM] @ 1150-1400 RPM

### MACK TRANSMISSIONS

MODEL	SPEEDS	RATIOS	LOW/HIGH
T309	9	11.40 / 0.71	
T310	10	13.81 / 0.73	
T310M	10	17.35 / 0.73	
T310MLR	10	27.31 / 0.71	
T313	13	13.44 / 0.74	
T313LR	13	16.42 / 0.71	
T318	18	13.44 / 0.71	
T318LR	18	16.42 / 0.71	
T318LR21	18	16.42 / 0.71	

### MACK *m* DRIVE TRANSMISSIONS

MODEL	SPEEDS	F. RATIOS	R. RATIOS
TmD12AFD-HD	12	14.94 / 1.00	17.49 / 13.73
TmD12AFO-HD	12	11.73 / 0.785	13.73 / 10.78
TmD13AFD-HD	13	19.34 / 1.00	37.49 / 8.62
TmD13AFO-HD	13	17.54 / 0.785	20.53 / 10.78
TmD14AFO-HD	14	32.04 / 0.785	37.49 / 8.62

### ALLISON TRANSMISSIONS

MODEL	SPEEDS	RATIOS	LOW/HIGH
3000-RDS	5	3.49 / 0.75	
3000-RDS[R]	5	3.49 / 0.75	
3000-RDS	6	3.49 / 0.65	
3000-RDS [R]	6	3.49 / 0.65	
4000-RDS	6	3.51 / 0.64	
4000-RDS [R]	6	3.51 / 0.64	
4500 RDS	5	4.70 / .076	
4500 RDS [R]	5	4.70 / .076	
4500 RDS	6	4.70 / .067	
4500 RDS [R]	6	4.70 / .067	

### FRONT AXLES

MODEL	MAKE	CAPACITY
FXL12	MACK	12,000 lb. [5443 kg.]
FXL 14.6	MACK	14,600 lb. [6600 kg.]
FXL 16.5	MACK	16,500 lb. [7484 kg.]
FXL18	MACK	18,000 lb. [8165 kg.]
FXL20	MACK	20,000 lb. [9072 kg.]
FXL23	MACK	23,000 lb. [14,433 kg.]

### REAR AXLES - TANDEM

MODEL	MAKE	CAPACITY
S38R	MACK	38,000 lb. [17,237 kg.]
S40	MACK	40,000 lb. [18,100 kg.]
S402R	MACK	
MT-40-14X4D	MERITOR	
S440	MACK	44,000 lb. [19,958 kg.]
S460	MACK	46,000 lb. [20,886 kg.]
S462	MACK	
S462R	MACK	
RT46-160	MERITOR	
RT46-164EH	MERITOR	
S522	MACK	52,000 lb. [23,600 kg.]
S522R	MACK	
S582	MACK	58,000 lb. [26,309 kg.]
S652	MACK	65,000 lb. [29,484 kg.]

August 1, 2017

# Product Information

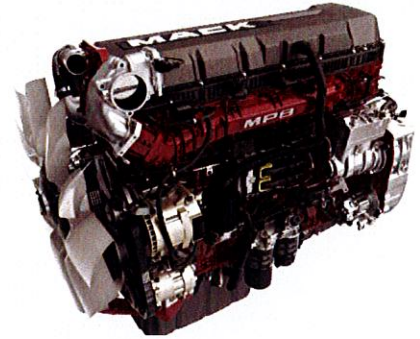


1001840 MP8-455C, MAXICRUISE DIESEL ENGINE – US '21

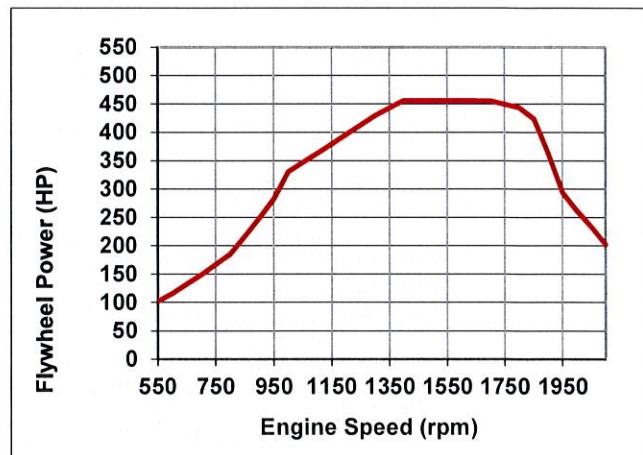
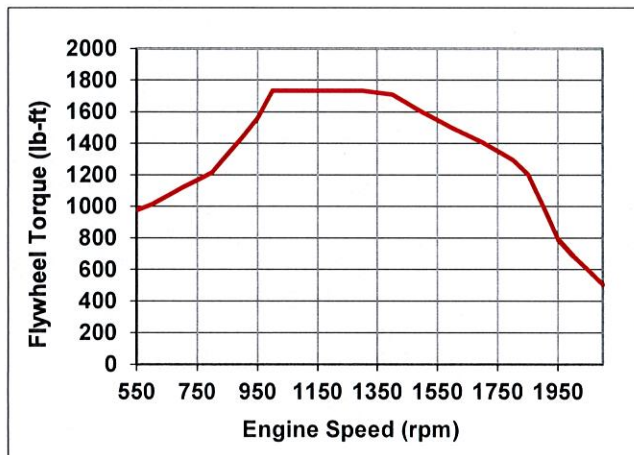
Updated: August 5, 2021

## Performance summary

Peak HP [kW]	455 [339] @ 1400-1700 RPM
HP [kW] at governed RPM	206 [154] @ 2100 RPM
Peak torque lb. ft. [Nm],	1750 [2373] @ 1000-1300 RPM
Clutch engagement lb. ft. [Nm]	860 [1165] @ 800 RPM
Operating range	550 – 2100 RPM



## Torque and Power Curves:



## Gearing Recommendations / Recommended Cruise RPM

Proper gearing is essential to achieve optimum vehicle performance and economy. Vehicle specifications including engine, transmission, axle ratio, and tires should be selected to meet minimum startability and gradeability recommendations while balancing performance and economy with customer requirements. Dealers should refer to the **PAWS Performance Predictor** to gauge compliance to vehicle-specific minimum recommendations.

**Recommended Cruise RPM: 1100 – 1300**

# Product Information



**1001840 MP8-455C, MAXICRUISE DIESEL ENGINE – US '21**

**Updated:** August 5, 2021

## Features and benefits

### **18:1 CR wave piston, 220 bar peak cylinder pressure**

Our patented Wave piston delivers improved combustion and lower friction, resulting in cleaner emissions and better fuel economy. Six steel waves forged into the piston crown optimize fuel injection for increased combustion efficiency.

### **Electronic common rail fuel injection**

The simplicity of Mack's electronic common fuel rail system eliminates external high-pressure lines as can be common with "one pump" common rail systems. This direct injection system delivers ultra-precise control over fuel injection pressure, timing and volume. The result is more power and efficiency, with less engine noise.

### **Intake throttle**

MP Series engines are equipped with intake throttles that improve heat management, helping to increase the exhaust gas temperature at idle and low load, increasing the efficiency of the exhaust aftertreatment.

### **Dual-butterfly EGR valve**

The MP8 Dual-butterfly EGR Valve reduces fuel consumption through higher EGR flow rates compared to other systems that incorporate single-poppet style EGR valves.

### **CLEARTECH™ ONE aftertreatment**

Mack's re-engineered exhaust aftertreatment system is designed for MP series engines and features a sophisticated new design that delivers near-zero emissions and low maintenance in a lighter, more compact unit

# Product Information



1001840 MP8-455C, MAXICRUISE DIESEL ENGINE – US '21

Updated: August 5, 2021

**Base engine specifications:** All engine specifications are listed for the base engine model and do not include specifications found in optional engine equipment.

<b>Number of cylinders &amp; firing order</b>	6, In-Line: 1 – 5 – 3 – 6 – 2 – 4
<b>Bore and stroke, inches [mm]</b>	5.16 X 6.22 [131 X 158]
<b>Displacement, cubic inches [L]</b>	780 [13]
<b>Compression ratio</b>	18:1
<b>Torque rise</b>	34.0%
<b>Idle speeds:</b>	
Low	Adjustable, 650 RPM
High	2100 RPM
<b>Engine brake retarding power</b>	475 HP [355 kW] @ 2250 RPM
<b>Weight, dry [approximate] lbs. [kg]</b>	2711 [1230]
<b>Fuel filter</b>	Spin-on, disposable
<b>Fuel system</b>	High pressure F2 common rail
<b>Fuel supply pump</b>	Eccentric-style pump (no lifters or tappets)
<b>Lubrication system:</b>	
Type	Full pressure, wet sump
Oil filters	2 Spin-on full flow, disposable
Oil cooler	Stainless steel plate
Total oil capacity, includes filters	37 quarts [35 liters]
Drain plug	Magnetic
<b>Turbocharger</b>	Variable geometry turbocharger with journal bearings

# Product Information

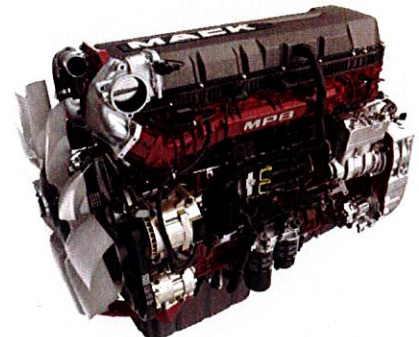


**1001839 MP8-455C (LT), MAXICRUISE DIESEL ENGINE – US '21  
LIMITED TORQUE VARIANT FOR EATON TRANSMISSIONS**

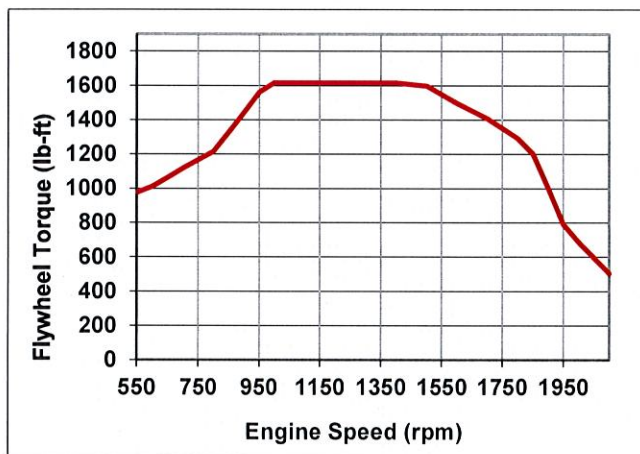
Updated: August 5, 2021

## Performance summary

Peak HP [kW]	455 [339] @ 1500-1700 RPM
HP [kW] at governed RPM	206 [154] @ 2100 RPM
Peak torque lb. ft. [Nm],	1650 [2237] @ 1000-1400 RPM
Clutch engagement lb. ft. [Nm]	860 [1165] @ 800 RPM
Operating range	550 – 2100 RPM



## Torque and Power Curves:



## Gearing Recommendations / Recommended Cruise RPM

Proper gearing is essential to achieve optimum vehicle performance and economy. Vehicle specifications including engine, transmission, axle ratio, and tires should be selected to meet minimum startability and gradeability recommendations while balancing performance and economy with customer requirements. Dealers should refer to the **PAWS Performance Predictor** to gauge compliance to vehicle-specific minimum recommendations.

**Recommended Cruise RPM: 1100 – 1300**

# Product Information



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## 1001839 MP8-455C (LT), MAXICRUISE DIESEL ENGINE – US '21 LIMITED TORQUE VARIANT FOR EATON TRANSMISSIONS

Updated: August 5, 2021

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### Features and benefits

<b>18:1 CR wave piston, 220 bar peak cylinder pressure</b>	Our patented Wave piston delivers improved combustion and lower friction, resulting in cleaner emissions and better fuel economy. Six steel waves forged into the piston crown optimize fuel injection for increased combustion efficiency.
<b>Electronic common rail fuel injection</b>	The simplicity of Mack's electronic common fuel rail system eliminates external high-pressure lines as can be common with "one pump" common rail systems. This direct injection system delivers ultra-precise control over fuel injection pressure, timing and volume. The result is more power and efficiency, with less engine noise.
<b>Intake throttle</b>	MP Series engines are equipped with intake throttles that improve heat management, helping to increase the exhaust gas temperature at idle and low load, increasing the efficiency of the exhaust aftertreatment.
<b>Dual-butterfly EGR valve</b>	The MP8 Dual-butterfly EGR Valve reduces fuel consumption through higher EGR flow rates compared to other systems that incorporate single-poppet style EGR valves.
<b>CLEARTECH™ ONE aftertreatment</b>	Mack's re-engineered exhaust aftertreatment system is designed for MP series engines and features a sophisticated new design that delivers near-zero emissions and low maintenance in a lighter, more compact unit

# Product Information



## 1001839 MP8-455C (LT), MAXICRUISE DIESEL ENGINE – US '21 LIMITED TORQUE VARIANT FOR EATON TRANSMISSIONS

Updated: August 5, 2021

**Base engine specifications:** All engine specifications are listed for the base engine model and do not include Specifications found in optional engine equipment.

<b>Number of cylinders &amp; firing order</b>	6, In-Line: 1 – 5 – 3 – 6 – 2 – 4
<b>Bore and stroke, inches [mm]</b>	5.16 X 6.22 [131 X 158]
<b>Displacement, cubic inches [L]</b>	780 [13]
<b>Compression ratio</b>	18:1
<b>Torque rise</b>	25.0%
<b>Idle speeds:</b>	
Low	Adjustable, 650 RPM
High	2100 RPM
<b>Engine brake retarding power</b>	475 HP [355 kW] @ 2250 RPM
<b>Weight, dry [approximate] lbs. [kg]</b>	2711 [1230]
<b>Fuel filter</b>	Spin-on, disposable
<b>Fuel system</b>	High pressure F2 common rail
<b>Fuel supply pump</b>	Eccentric-style pump (no lifters or tappets)
<b>Lubrication system:</b>	
Type	Full pressure, wet sump
Oil filters	2 Spin-on full flow, disposable
Oil cooler	Stainless steel plate
Total oil capacity, includes filters	37 quarts [35 liters]
Drain plug	Magnetic
<b>Turbocharger</b>	Variable geometry turbocharger with journal bearings

# Product Information



## 1362135 Transmission, Eaton RTO-16908LL

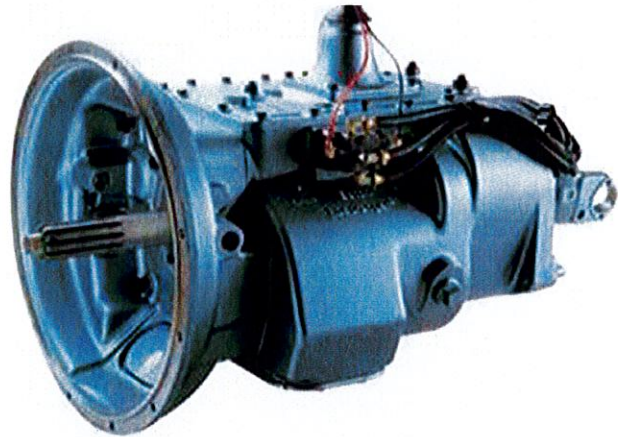
**Related:** Transmission (136), Driveline (195), Rear Axle (268)

**Updated:** July 2, 2020

8 plus 2 versatility for on/ off-highway applications and demanding on-highway duty.

The 8LL transmissions provide drivers with the versatility they need for a mix of on- and off-highway applications.

These transmissions offer eight road-speed gears and two additional deep-reduction ratios in low and reverse.



- Eight road speed gears and two additional deep reduction ratios in low and reverse for on/off-highway versatility.
- Improved tolerance to driver abuse due to new mainshaft washer design.
- High capacity tapered roller bearings on both auxiliary countershafts for increased bearing life.
- Improved output seal system increases seal life and eliminates potential for seal damage during yoke service.
- Easy range shifting and long life due to proven heavy-duty synchronizer technology.
- Binocular-type range and deep reduction shift cylinder assembly for greater serviceability and fewer parts.
- Increased lubrication protection with optional integral oil pump.
- Standard SAE 6-bolt and 8-bolt PTO openings and optional thru-shaft PTO provision at rear.

### Applications at a Glance

Linehaul	Heavy Haul	Severe Duty						Constr.	P&D
		Logging	Mining	Oil Field	Refuse	Agriculture	Off-Hwy		
No	No	No	No	✓	✓	✓	✓	✓	✓



# Product Information



## 1362135 Transmission, Eaton RTO-16908LL

Related: Transmission (136), Driveline (195), Rear Axle (268)

Updated: July 2, 2020

### Clutch Housing Type, Material and Weight

SAE No. 1			SAE No. 2		
Material	Aluminum [kg]	Iron [kg]	Material	Aluminum [kg]	Iron [kg]
Standard	23 lbs. [10]	76 lbs. [34]	Standard	21 lbs. [10]	68 lbs. [31]
Nodal	36 lbs. [16]	92 lbs. [42]	Nodal	N/A	88 lbs. [40]

### Quick Specs

Lbs.-Ft. Max TQ [Nm]	Integral Oil Pump	Thru-Shaft PTO	Integral Oil Cooler	External Oil-to-Water Cooler	External Oil Filter	Oil Capacity Pints [liters]	Length Inches [mm]	Weight (*) Lbs. [kg]	PTO Speed (% of engine)	Combined PTO Torque (Lbs.-ft.)
1650 [2237]	Yes	Optional	No	Optional	Optional	28 [13]	33.1 [841]	690 [313]	94%	500

(\*) Less clutch housing, lubricant and end yoke

#### PTO Openings:

- Two SAE standard openings.
- **Right side:** Regular duty, 6-bolt, short length.
- **Bottom:** Heavy duty, 8-bolt.

#### PTO Drive Gears:

- **Right side:** A 45-tooth, 6/8 pitch gear.
- **Left side:** A 47-tooth, 6/8 pitch gear.
- Both gears turn at 0.94 engine speed.

#### Gear Ratios

Overall Ratio	Reverse Gear Ratios		
19.58	1	2	3
	15.22	9.95	2.89

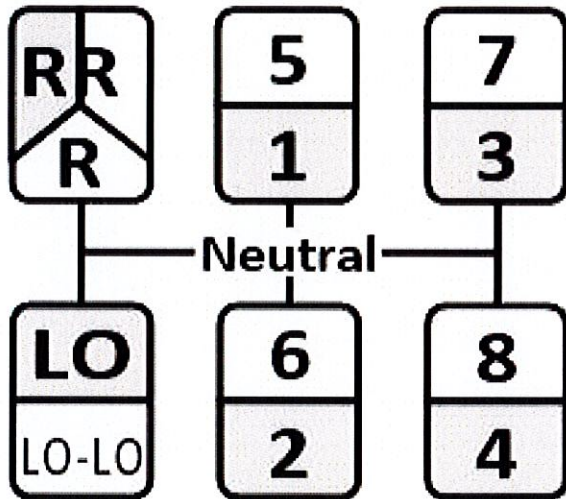
LL	L	1	2	3	4	5	6	7	8
14.56	9.42	6.24	4.63	3.40	2.53	1.83	1.36	1.00	0.74
55%	51%	35%	36%	34%	38%	35%	36%	34%	Final

# Product Information

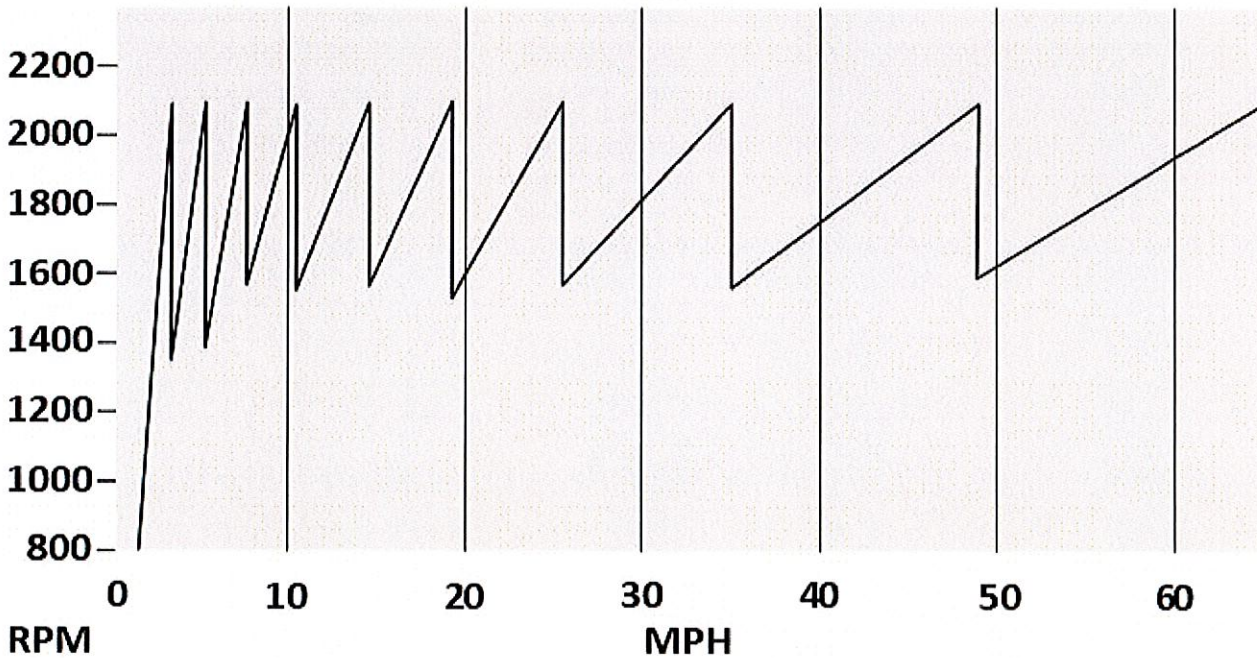


**1362135**    **Transmission, Eaton RTO-16908LL**  
Related:    Transmission (136), Driveline (195), Rear Axle (268)  
Updated:    July 2, 2020

## Shift Pattern



Performance Chart (based on engine operating at 2100 RPM and top speed of 65 MPH)



# Product Information



## 136- ALLISON RUGGED DUTY SERIES (RDS) TRANSMISSIONS

Updated: November 11, 2020

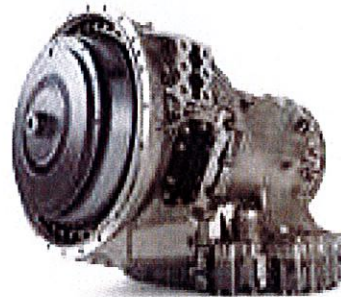
**Application Note: Allison RDS Transmissions not approved for Oil Field Service on Pumps, Winches or Augers**



3000 RDS, 3500 RDS



4000 RDS, 4500 RDS, 4700 RDS



### RDS Features

**FuelSense® 2.0** presents new and upgraded FuelSense® features to provide even more precise balancing of fuel economy and performance:

**DynActive™ Shifting:** This new innovative shift scheduling uses an algorithm to choose the most efficient shift point, based on your specifications, vehicle and environmental parameters. Older shifting technologies use shift schedules with fixed shift points.

**Neutral at Stop:** This feature trims fuel consumption and emissions by reducing or eliminating the load on the engine when the vehicle is stopped. There are two versions of Neutral at Stop:

- Standard – Provides partial (first-level) neutral at stop.
- Premium – Provides full neutral at stop and a new, low-speed coasting capability.

Both versions lock the output while stopped to prevent rollback.

**Acceleration Rate Management:** A feature that mitigates aggressive driving by automatically controlling engine torque. Newly updated, in addition to five levels of control, it provides more precision by limiting vehicle acceleration to a customized calibrated rate.

# Product Information



## 136- ALLISON RUGGED DUTY SERIES (RDS) TRANSMISSIONS

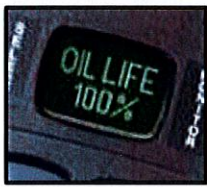
Updated: November 11, 2020

### 5th Generation Electronic Controls

This next generation of Allison electronic controls offers a variety of features to further improve fuel economy and maximize transmission protection with advanced prognostics.

### Prognostics

Calibrated to the vehicle's particular operating requirements, Allison's advanced prognostics monitor various operating parameters to determine and alert when service is due. This eliminates unnecessary oil and filter changes and provides maximum transmission protection.



#### Oil Life Monitor

Based on the vehicle's duty cycle, this feature determines fluid life and alerts you when a fluid change is required. Not only does it help you get maximum oil life while providing the maximum protection for the transmission, the Oil Life Monitor also saves you money by preventing unnecessary fluid changes.



#### Filter Life Monitor

This provides an alert when the transmission's fluid filter(s) need to be replaced. It helps extend filter change intervals to reduce routine maintenance downtime and saves you money in the long run, all the while providing maximum protection for the transmission.



#### Transmission Health Monitor

This prognostic feature determines the condition of the transmission's clutches and alerts you when clutch maintenance is required. It helps avoid costly repairs and downtime by taking the guesswork out of scheduling routine transmission maintenance. And, it ensures your transmission is operating at its maximum performance level.

# Product Information



## 136- ALLISON RUGGED DUTY SERIES (RDS) TRANSMISSIONS

Updated: November 11, 2020

### Ratings and Specifications

MODEL	RATIO	PARK PAWL	MAX INPUT POWER hp (kW)	MAX INPUT TORQUE lb-ft (N•m)	MAX INPUT TORQUE w/SEM TORQUE LIMITING	MAX TURBINE TORQUE	MAX GVW	MAX GCW
<b>3000 RDS</b>								
On / Off-Highway	Close Ratio	N/A	370 (276)	1100 (1491)	1250 (1695)	1600 (2169)	80,000 (36,288)	80,000 (36,288)
Mixer	Close Ratio	N/A	370 (276)	1100 (1491)	1250 (1695)	1600 (2169)	62,000 (28,123)	—
Refuse	Close Ratio	N/A	370 (276)	1100 (1491)	1250 (1695)	1600 (2169)	62,000 (28,123)	—
Specialty PTO / HET	Close Ratio	N/A	370 (276)	1250 (1695)	N/A	1700 (2305)	—	—
<b>3500 RDS</b>								
On / Off-Highway	Wide Ratio	N/A	330 (246)	860 (1166)	1050 (1424)	1450 (1966)	80,000 (36,288)	80,000 (36,288)
Mixer / Refuse	Wide Ratio	N/A	330 (246)	860 (1166)	N/A	1420 (1925)	60,000 (27,216)	—
Specialty PTO	Wide Ratio	N/A	330 (246)	950 (1288)	1050 (1424)	1450 (1966)	—	—
HET	Wide Ratio	N/A	330 (246)	985 (1335)	1050 (1424)	1450 (1966)	—	—
<b>4000 RDS</b>								
On / Off-Highway	Close Ratio	N/A	565 (421)	1770 (2400)	1850 (2508)	2600 (3525)	—	—
Refuse	Close Ratio	N/A	500 (373)	1550 (2102)	N/A	2450 (3322)	—	—
Specialty PTO	Close Ratio	N/A	565 (421)	1770 (2400)	N/A	2600 (3525)	—	—
HET	Close Ratio	N/A	600 (447)	1850 (2508)	N/A	2600 (3525)	—	—
<b>4500 RDS</b>								
On / Off-Highway	Wide Ratio	N/A	565 (421)	1650 (2237)	1850 (2508)	2450 (3322)	—	—
Refuse	Wide Ratio	N/A	500 (373)	1550 (2102)	N/A	2450 (3322)	—	—
Specialty PTO	Wide Ratio	N/A	565 (421)	1650 (2237)	1770 (2400)	2600 (3525)	—	—
HET	Wide Ratio	N/A	600 (447)	1650 (2237)	1850 (2508)	2600 (3525)	—	—
<b>4700 RDS</b>								
On / Off-Highway	Widest Ratio	N/A	565 (421)	1770 (2400)	1850 (2508)	2600 (3525)	—	—
Refuse	Widest Ratio	N/A	500 (373)	1550 (2102)	N/A	2450 (3322)	—	—
HET	Widest Ratio	N/A	600 (447)	1850 (2508)	N/A	2600 (3525)	—	—

# Product Information



## 136- ALLISON RUGGED DUTY SERIES (RDS) TRANSMISSIONS

Updated: November 11, 2020

### Standard PTO Provisions

Model	PTO Mounting	Drive Gear Rating w/ One PTO	Drive Gear Rating w/ Two PTOs
3000 RDS	side/side 4 and 8 o'clock	485 (660)	685 (930)
	top/side 1 and 8 o'clock	485 (660)	685 (930)
4000 RDS	1 and 8 o'clock	685 (930)	1175 (1595)

### Gear Ratios: Torque Converter Multiplication Not Included

Model	1st	2nd	3rd	4th	5th	6th	7th	Reverse	Reverse 2
3000 RDS	3.49:1	1.86:1	1.41:1	1.00:1	0.75:1	0.65:1	—	-5.03:1	—
3500 RDS	4.59:1	2.25:1	1.54:1	1.00:1	0.75:1	0.65:1	—	-5.00:1	—
4000 RDS	3.51:1	1.91:1	1.43:1	1.00:1	0.74:1	0.64:1	—	-4.80:1	—
4500 RDS	4.70:1	2.21:1	1.53:1	1.00:1	0.76:1	0.67:1	—	-5.55:1	—
4700 RDS	7.63:1*	3.51:1	1.91:1	1.43:1	1.00:1	0.74:1	0.64:1	-4.80:1	-17.12:12

# Product Information



## EBR-VEB Mack MP8 PowerLeash™ (110-AA6)

**Affects:** Anthem, Pinnacle, Granite  
**Related:** Interior Trim (004)  
**Updated:** Jan 30, 2019



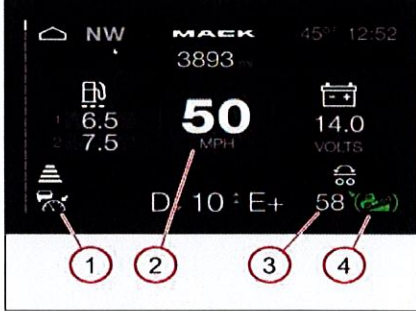
### MACK PowerLeash™ Engine Brake

The Mack PowerLeash engine brake available on the MP8 engine, controls vehicle speed by using engine compression in conjunction with internal engine exhaust braking functions. Engine braking reduces wear on the foundation brakes and helps a driver maintain control of the vehicle. The Mack engine braking can also be ordered to work in unison with the vehicle's cruise control system, to maintain the vehicle set speed in downhill terrain.

The Anthem, Pinnacle and GU system integrates the PowerLeash switch in a stalk switch mounted on the right hand side of the steering column. The stalk is used to activate, deactivate or change setting of the PowerLeash system. This system can be used in conjunction with the cruise control to adjust for over speed on downhill grades to maintain a target speed.

The system uses a five position control switch along with a set switch to adjust settings. The first four positions of the control switch stop at detents, with the fifth position being a momentary type switch. See outline below for more information on the switches.

With the control switch in any on position, the set switch can be used to adjust maximum target speed to maintain the set target speed on downhill grades. When the brake engages to maintain a target speed, the engine braking can vary from 0%-100% to maintain the set speed.

Control Switch	Set Switch	Set Speed in Instrument Panel Display
		
<p>To activate the engine brake, move the stalk switch, to the LOW, MED or HIGH position (1). The last stalk switch position B+, is for maximum engine braking and is controlled by a momentary switch.</p>	<p>The cruise control braking set target speed can be adjusted up to 9 mph higher than the current cruise control set speed (1)..</p>	<p>When the cruise control and engine brake are activated the following icons display in the Driver Information Display (DID).</p> <ul style="list-style-type: none"> <li>1 – Cruise Control Icon</li> <li>2 – Current Speed</li> <li>3 – Current Cruise Control Braking Set Speed</li> <li>4 – Cruise Control Braking Icon</li> </ul>

**Note:** If equipped with a Mack Active Cruise Control, the engine brake may engage even if the engine brake is switched off. This is performed in order to help maintain a safe following distance between vehicles.

**Note:** For mDRIVE users, when the Mack engine brake is activated and the transmission is shifting gears, there will be a momentary interruption of the braking torque.

# Product Information



**1321236 DELCO ALTERNATOR, 28SI 12v 160-AMP, BRUSH TYPE**

**Updated:** June 4, 2021

The Delco Remy 28SI alternator is designed to address vehicle applications that require higher electrical output, with lower weight, improved temperature capability, and fuel savings. The 28SI brush style alternator is designed with dual internal fans which provide maximum cooling technology, improving the operating efficiency and durability of the unit.

Mack offers this as an improved, cost-effective replacement for the previously offered 24SI models rated 100A, 130A, 145A, and 160A. As such, a remote sense signal wire is not provided with this offering.

## Features and Benefits:

- Dual Internal Fans create cool environment for bearings and electronics
- Multi-function regulator features auto-start and remote sense capability
- The rear cover protects electronics while managing airflow
- Easy installation with one-wire connection
- Advanced design "Avalanche" press fit diodes provide long life, protection from electrical system spikes

## Specifications:

**Performance Output:** 160 Amps – 14.2 Volts (12V nominal) 125 Amps at Idle

**Construction:** Brush

**Stator Diameter:** 5.67" (144mm)

**Typical Weight:** 18.7lbs (8.5 kg)

**Speed Capability:** Continuous - 10,000 rpm  
Intermittent 12,000 rpm

**Inlet Temperature Limits:** Low: -40°C / -40°F  
High: 125°C / 257°F

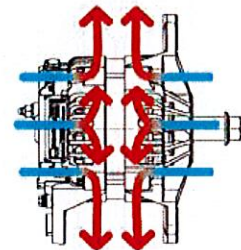
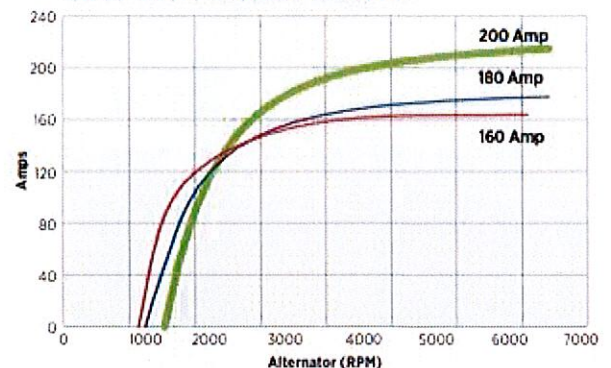
**Polarity:** Negative Ground

**Rotation:** Clockwise

**Alternator RPM:** 3.5 x Engine RPM



28SI 12V POWER CURVE



**28SI Air Flow** Draws air from drive end and terminal end over electronics and internal components and out frame air vents for cooler internal alternator temperature



# Product Information



## 1180027 BEHR FAN AND ELECTRONIC MODULATING VISCOUS FAN DRIVE (118AB8)

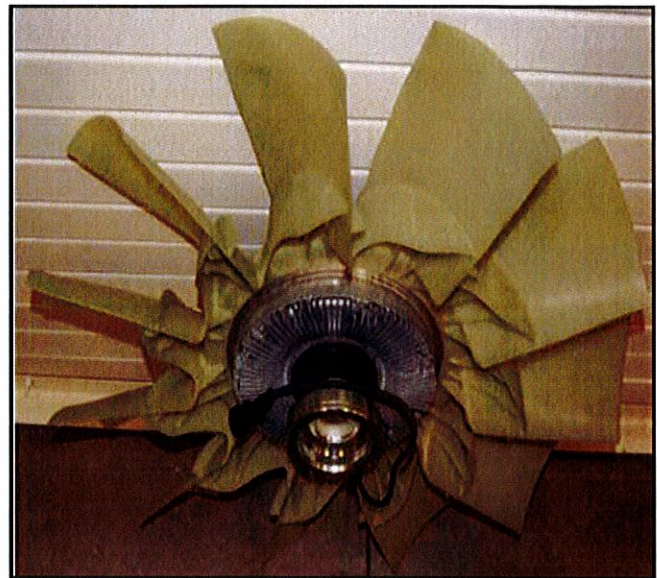
**Related:**

**Updated:** October 31, 2019

The Behr Cold Start Improved (CSI) electronically-controlled viscous (E-Visco®) fan and clutch implements an aerodynamically improved blade design, driving more air flow with less fan power consumption. This is a maintenance-free system that reduces noise (due to low engagement rates) and lowers fuel consumption. This system uses a solenoid, rather than the bi-metal strip used on a conventional Visco® clutch.

The CSI E-Visco® fan clutch provides improved controls to minimize fan on-time, better management of engine cooling and fuel efficiency. This fan clutch provides a cold start feature to trigger quicker and extended disengagement for easier starting in cold climates. Lower disengagement speeds have also been developed to better manage engine cooling needs.

The electrically drive E-Visco® clutch directly controls the coolant requirements by means of electrical sensors. A regulator processes the values (for coolant, oil and charge-air temperatures, engine speed, retarder, HVAC system, etc.) and a clocked control current forwards them to the integrated electromagnet. The discrete-operated magnetic field has an armature via which it operates the valve controlling the internal oil flow and the control circuit is closed by an additional sensor for the fan speed. This increases the dynamic response of the engagement and disengagement of the fan. Adjustment of the cooling as required improves the coolant temperature level while minimizing noise and fuel consumption.



### **System Features:**

- Low Noise Operation
- Low idle speed
- Quick engagement
- Fan speed adjusts to cooling requirements
- Low oscillations of coolant temperature
- Increased performance life (slip-heat protection\*)
- Increased torque capacity (comparable to On/Off clutches)
- Soft engagements (no torque-peaks at engagement)

### **\*Slip-heat Protection**

This prevents intermediate fan speeds at high input speed. Without this protection, the clutch may overheat at high input speed.

### **Limits of Slip-heat Protection**

- No limitations below drive input speed of 2400 rpm (approx. 1800rpm engine speed)
- Function similar to On/Off fan at drive input speed of 2400-3060 rpm (approx. 2300 rpm engine speed)

# Product Information



## DPF- ClearTech™ One US17 Emission Systems

**Affects:** All Models  
**Related:** Chassis Configuration  
**Updated:** November 13, 2017

US'17 emission standards still require the use of a DPF and an SCR. ClearTech One™ is the name for Mack's new frame mounted single unit – Sales Code DPF0111. Other emission configurations have also been upgraded to US'17 standards and are depicted below.

DPF-0111 Shown on a Granite Axle Forward:



ClearTech One – DPF-0111 replaces the previous two component systems: DPF-0103, DPF-0104, and DPF-0105. On Granite Models with Mack engines, DPF-0111 will be in the forwardmost position behind the right front fender. If a Twin Steer package is ordered with the new frame mounted ClearTech One system, please refer to the Packaging Data Sheets for relocated position on the right hand frame rail.

Shown on a Pinnacle with Dual Battery Boxes:



# Product Information

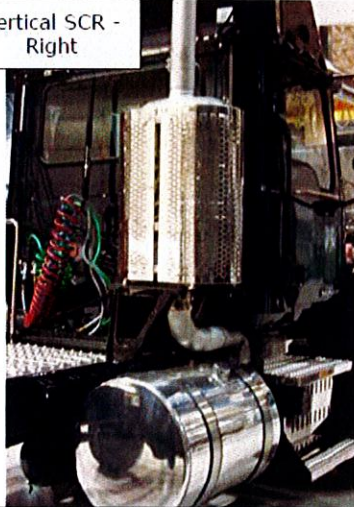


## DPF- ClearTech™ One US17 Emission Systems

**Affects:** All Models  
**Related:** Chassis Configuration  
**Updated:** November 13, 2017

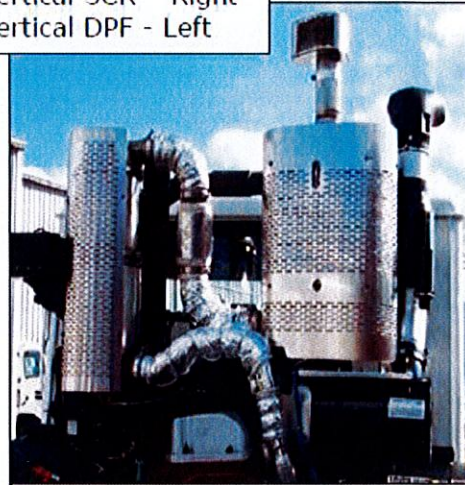
Other systems that are available on the models listed in the description:

Vertical SCR - Right



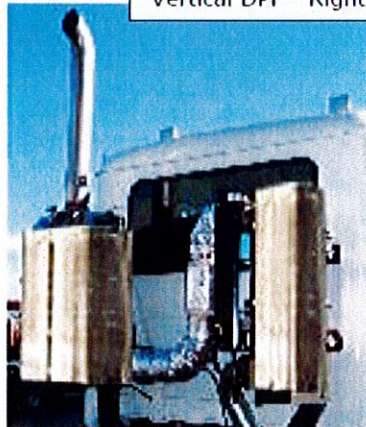
**CLEARTECH HV – DPF0101**  
Available on Anthem and GRB  
Twin Steer Mixers with 92" FA  
Spacing

Vertical SCR – Right  
Vertical DPF – Left



**CLEARTECH VV – DPF0102**  
Standard on LR and TE Cab Over  
Models

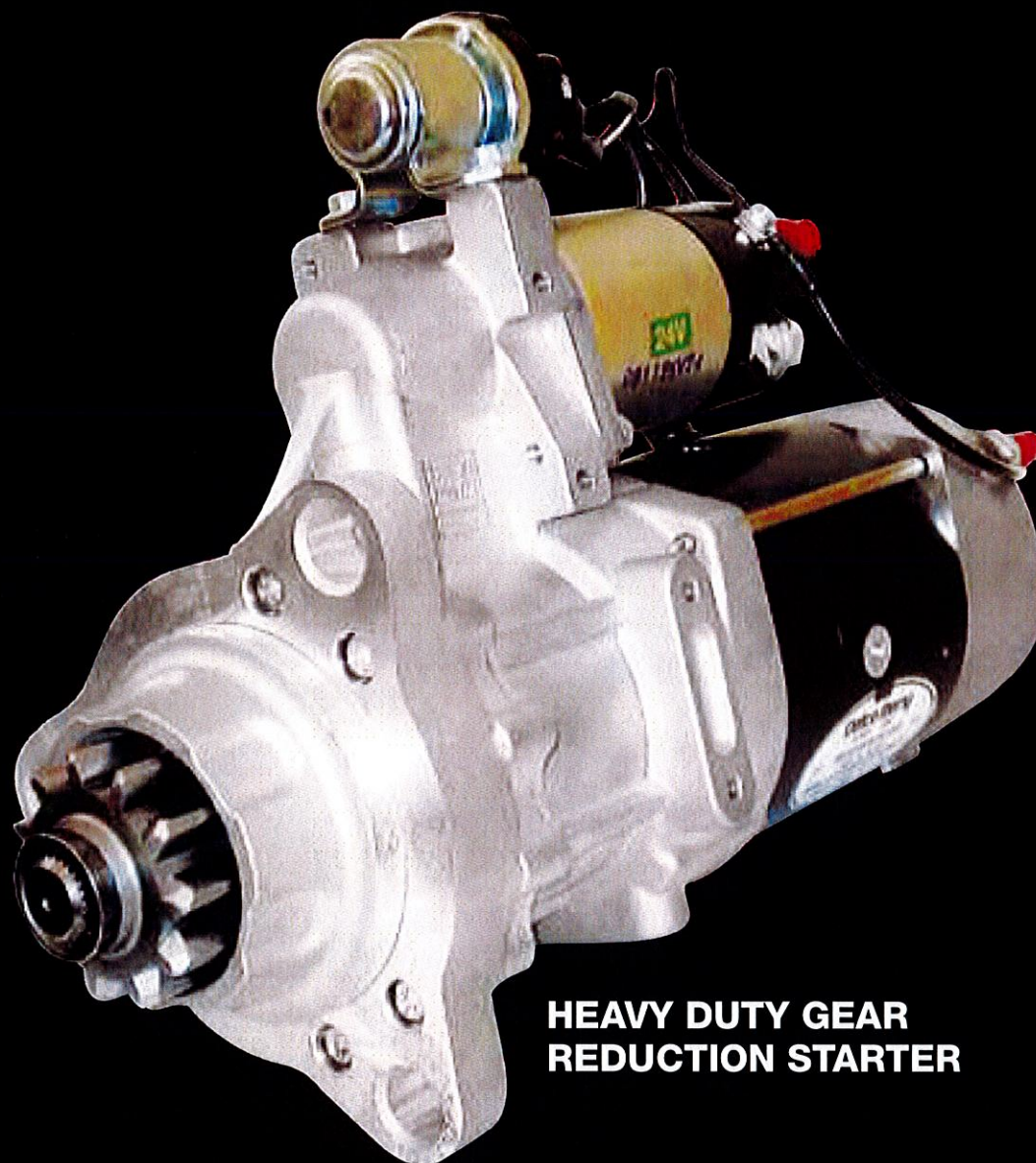
Vertical SCR – Left  
Vertical DPF – Right



**CLEARTECH VV – DPF0106**  
Twin Steer Conventional Mixers



# DELCO REMY 39MT



HEAVY DUTY GEAR  
REDUCTION STARTER

**HEAVY IN FEATURES  
LIGHT IN WEIGHT**

# DELCO REMY 39MT



The Delco Remy 39MT Heavy Duty Starter Motor offers engineering enhancements and features that put it in a class of it's own, with 15% more power and greater durability.

## LONG LIFE BRUSHES

The 39MT features new long life brushes, engineered for maximum service life. Start after start, day after day, year after year, these unique brushes allow us to back the 39MT starters with a 3-year unlimited mileage warranty.

## IMPROVED DRIVER SYSTEM

Durability is also a benefit of the new and improved drive system that provides up to 40% increase in strength. It's more resistant to high-impact loads that can sometimes occur as a result of rapid re-engagement, engine rock-back or engine hydro-lock.

## FEATURES

### STANDARD INTEGRAL MAGNETIC SWITCH

Reduces voltage drop and ensures that the solenoid receives the maximum available voltage in any starting condition

### MAXIMUM TORQUE TECHNOLOGY

For exceptional torque and starting power

### LIGHT WEIGHT

Cast-aluminum body helps to keep the weight down without sacrificing strength or durability

### SEALED NOSELESS CONFIGURATION

Eliminates accumulation of debris and reduces contamination for the life of the starter

### ELECTRICAL SOFT START

Design rotates the pinion to allow for proper pinion-to-ring gear alignment and full engagement before cranking at full power

### SOLID LINK SOLENOID

Prolongs service life by eliminating contact welding in low-voltage situations

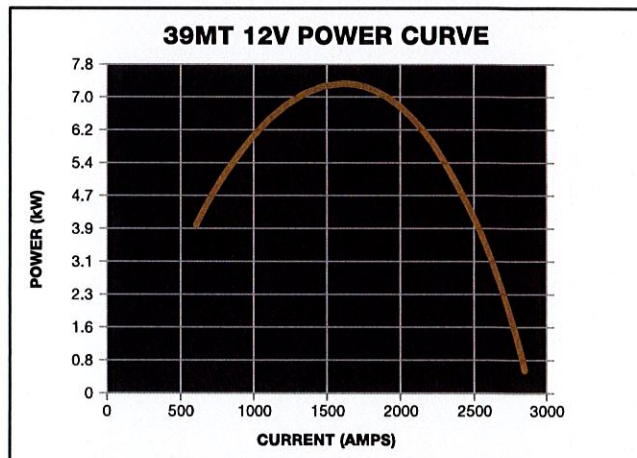
### HEAVY DUTY BEARING AND BUSHING SYSTEM

Increases reliability and service life

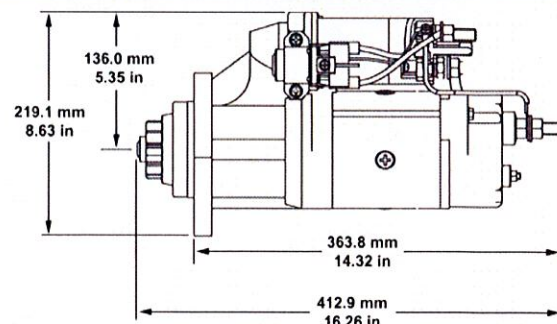
## SPECIFICATIONS

<b>ENGINE SIZE</b>	12V up to 16 Liters 24V up to 16 Liters
<b>ROTATION</b>	Clockwise
<b>MOUNTING</b>	12V: SAE #1, SAE #3 24V: SAE #3
<b>PINION DATA</b>	11 Tooth, 6-8 Pitch 12 Tooth, 8-10 Pitch 12 Tooth, Mod 3-metric
<b>OUTPUT</b>	12V Peak at 7.3 kW 24V Peak at 9.0 kW
<b>WEIGHT</b>	14 kg/30.8 lbs.
<b>DIAMETER</b>	114 mm/4.5 inches
<b>HEAVY DUTY DRIVE</b>	Electrical Soft-Start Engagement System Overrunning Clutch

## PERFORMANCE



## DIMENSIONS



# Product Information



## 130-5101 Single Cab Mounted Exhaust, Turned End (130AD7)

**Affects:** Conventional Models  
**Related:** DPF/SCR (DPF), Exhaust Finish (EXMF-)  
**Updated:** May 1, 2018

Cab mounted exhaust, saves 50 pounds over single back of cab stanchion mounted exhaust.

**NOTE:** Ground to top of exhaust height is 9' 6" on a Granite Day Cab. Ground to top of exhaust height is 11' 6" with a 36" HOS Sleeper. Order EXSTH355 if you would like a day cab with the extra 11' 6" height.



# Product Information

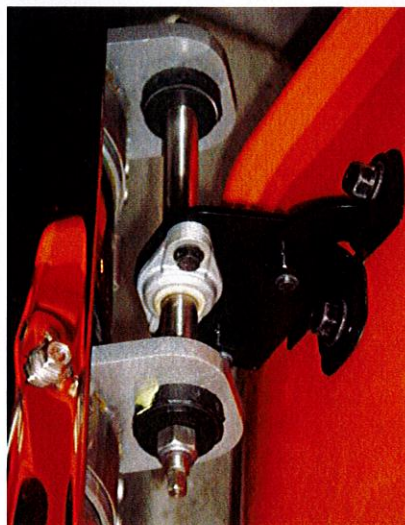


## 130-5101 Single Cab Mounted Exhaust, Turned End (130AD7)

**Affects:** Conventional Models  
**Related:** DPF/SCR (DPF), Exhaust Finish (EXMF-)  
**Updated:** May 1, 2018



Cab Mounted Pivot at  
Top of Exhaust System:



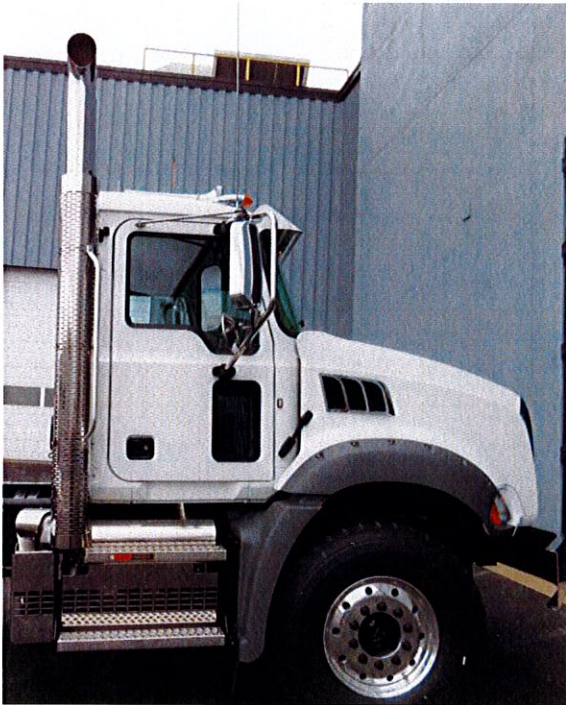
# Product Information



## 130-5101 Single Cab Mounted Exhaust, Turned End (130AD7)

**Affects:** Conventional Models  
**Related:** DPF/SCR (DPF), Exhaust Finish (EXMF-)  
**Updated:** May 1, 2018

Cab Mounted Exhaust shown on Day Cab with 11" 6" Height:





# FRONT AXLE

# MACK®

## **FXL20**

20,000 LBS. [9 072 kg]



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

### DETAIL SPECIFICATIONS

#### MAKE: MACK

Type . . . . . Reverse Elliot, Drop-Forged & Heat Treated I-Beam  
Size (Beam Center Height) . . . . . 4.75" [121 mm]  
Flange Width . . . . . 3.50" [89 mm] Top & Bottom  
Web Thickness . . . . . 0.75" [19 mm]  
Section Modulus . . . . . 9.90" in<sup>3</sup> [172 cm<sup>3</sup>]

#### STEERING KNUCKLE:

Material . . . . . Chromium Molybdenum Alloy Steel, Heat Treated  
Spindle Diameter  
Inner Bearing . . . . . 2.68" [68 mm]  
Outer Bearing . . . . . 2.68" [68 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 . . . . . Ductile Iron  
Bearings . . . . . Tapered Roller (Unitized)  
Lubrication . . . . . Permanently lubed with Synthetic Grease  
Pivot Centers:  
FXL20 . . . . . .69.92" [1 776 mm]  
Spring Centers . . . . . 33.5" [851 mm] MRU, LEU  
32.5" [826 mm] GU

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

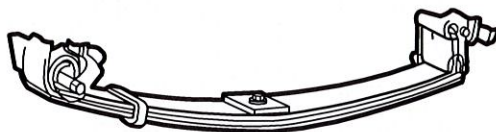


**BRAKES**

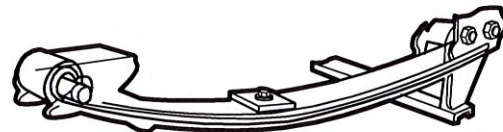
TYPE		CAM
SIZE	DIAMETER WIDTH	16.5" [419 mm] 6" [152 mm]
MAKE		Arvin Meritor
ACTUATION		Air
LINING THICKNESS		0.85" [22 mm] Tapered
LINING AREA, TOTAL		378 in <sup>2</sup> [2 439 cm <sup>2</sup> ]
CHAMBER SIZE— Sq. In. Per Wheel		1 @ 24 [155 cm <sup>2</sup> ]
SLACK ADJUSTER LENGTH		5.5" [140 mm]
BRAKE ADJUSTMENT		Self-Adjusting
DUST SHIELDS		Optional

**SUSPENSION**

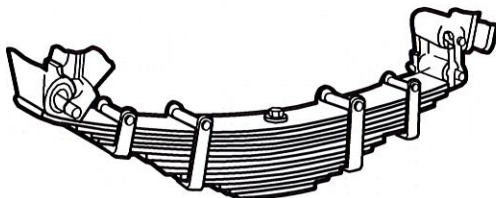
SPRING CAPACITY (GRD. LOAD RATING)	SPRING SIZE	SPRING SIZE		CHASSIS MODEL APPLICATION
		LENGTH	WIDTH	
<b>20,000 LB.</b> [9 072 KG] <b>STD.</b>	Taperleaf - Shackle	52.52" [1 334 mm]	4" [102 mm]	GU
	Taperleaf - Slipper	50.25" [1 276 mm]	3.5" [89 mm]	MRU/LEU
	Multileaf - Shackle	52.52" [1 334 mm]	4" [102 mm]	GU (OPT.)
	Multileaf - Slipper	50.25" [1 276 mm]	3.5" [89 mm]	MRU
<b>18,000 lb.</b> [8 165 kg]	Multileaf - Shackle	52.52" [1 334 mm]	4" [102 mm]	GU
	Multileaf - Slipper	50.25" [1 276 mm]	3.5" [89 mm]	MRU
<b>20,000 lb.</b> [9 072 kg] <b>HD</b>	Multileaf - Shackle	52.52" [1 334 mm]	4" [102 mm]	GU
	Multileaf - Slipper	50.25" [1 276 mm]	3.5" [89 mm]	MRU/LEU



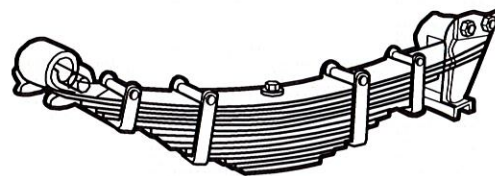
**TAPERLEAF SHACKLE**



**TAPERLEAF EYE & SLIPPER**



**MULTILEAF SHACKLE**



**MULTILEAF EYE & SLIPPER**

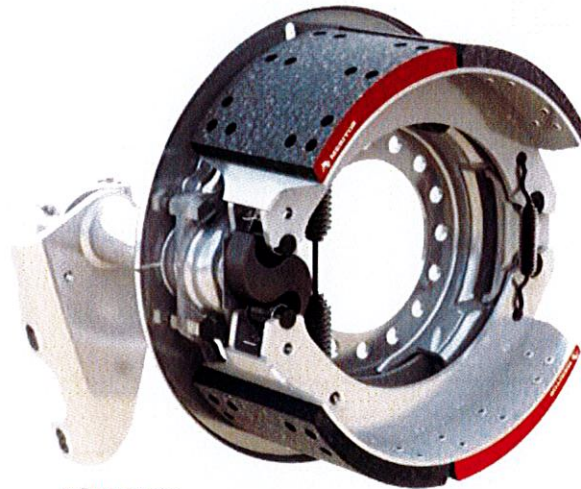
The information in this brochure was accurate as known as of the date of the publication. Illustrations may not be representative of current product. Mack Trucks, Inc. reserves the right to make changes in specifications, equipment or design, or to discontinue models or options without notice at any time.

# Product Information



## 241- Meritor Q+ Front Drum Brakes (241)

**Affects:** All Models  
**Related:** Front Axle (240)  
**Updated:** February 12, 2018



Q+™ Drum Brakes

### Premium Stopping Performance

Engineered to assist vehicle manufacturers in meeting FMVSS-121 stopping distance requirements, the Meritor Q+™ drum brake system remains the industry standard. Q+ brakes offer exceptional durability comparable to disc brakes.

### Performance advantages:

- Versatility to perform in a variety of applications, including linehaul, regional haul and vocational
- Thicker lining blocks increase service life and mileage between relines
- Specially designed S-cam and heavy-duty shoe return spring delivers additional brake shoe travel for full wear
- Improved camshaft bushing contributes to longer service life

# Product Information



## **241- Meritor Q+ Front Drum Brakes (241)**

**Affects:** All Models  
**Related:** Front Axle (240)  
**Updated:** February 12, 2018

---

### **Meritor Q+ Cam Brakes**

Performance, serviceability, dependability, simple operation and proven design have made the Meritor Q+ the top choice for drum brake systems.

### **Features and Benefits**

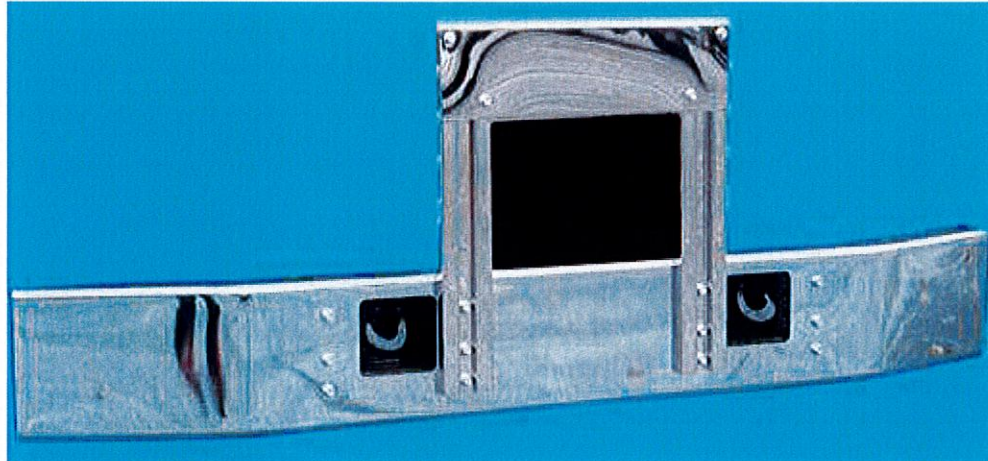
- Optimized lining geometry for uniform wear and consistent performance, enhanced camshaft bushing material, double anchor pin design, and extended lube option minimize maintenance and downtime
- Advanced friction material helps meet revised stopping distance regulation without the use of air disc brakes
- Best-in-class e-coat corrosion protection standard on all Q+ brake shoes
- PlatinumShield™ coating technology is an available option for highly corrosive environments and duty cycles, delivering premium protection against rust-jacking
- Stamped Steel Spider Q+ drum brake option offers weight savings of 6.5 lbs. per brake without sacrificing durability or performance, which improves fuel efficiency and maximizes payload
- Patented quick-change shoe also minimizes downtime
- Most widely used drum brake in the industry means superior support in the aftermarket for parts availability, core return values and service accessibility
- Wider brake shoe packages for improved stopping performance and improves lining life

# Product Information



**BUMP-SCE EXTENDED-SWEPT BACK-STEEL BRIGHT FINISH (4DXN6X)**

Updated: September 1, 2017

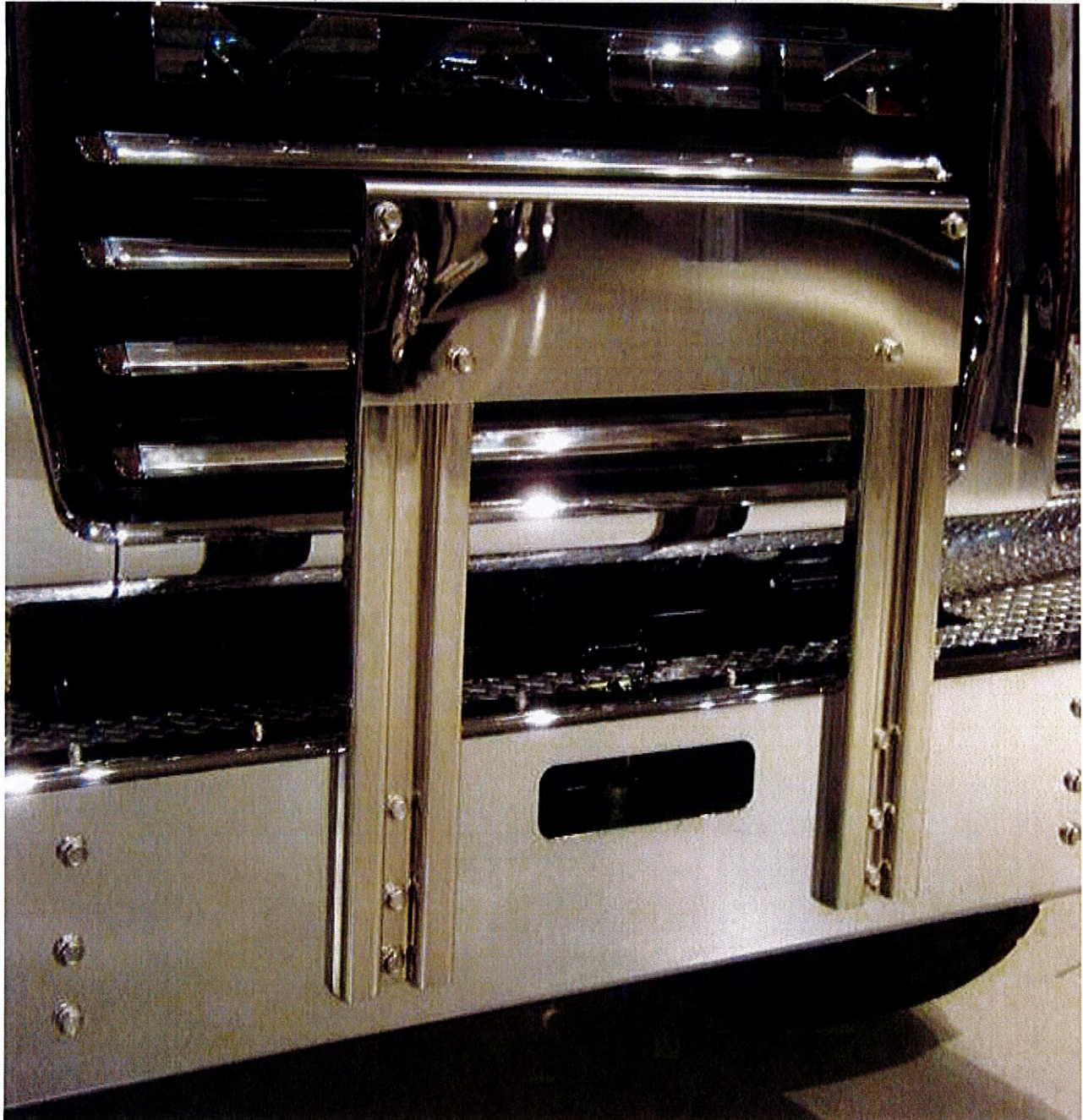


# Product Information



**GUARD-GB Radiator Guard – Bright Finish (5FXA2X)**

Updated: September 1, 2017





**MACK TRUCKS, INC.**



**Learn More About Sheppard Steering Gear Components**  
*Information and Support for Mack Trucks*

R. H. Sheppard Co., Inc. is the premium supplier for power steering gears on Mack Trucks with 12,000 lbs. front axle weights and above. This includes the entire Mack Truck family comprised of the Pinnacle Axle Forward **CHU**, Pinnacle Axle Back **CXU**, Granite Axle Forward **GU4 and GU7**, Granite Axle Back **GU5 and GU8**, Titan **TD**, TerraPro Low Entry **LEU**, and TerraPro Cab Over **MRU**.

**Who is R.H. Sheppard?**

R. H. Sheppard is a privately held company with about 950 employees located in Hanover, Pennsylvania and Wytheville, Virginia. Sheppard offers unique capability: its products are designed, developed, and manufactured completely in house. They have their own cast iron foundries, machining, heat treatment, assembly, paint, and test located within their facilities in Pennsylvania and Virginia. **This is an American company making American components for America's transportation industry.** This unique capability offers its customers quick responses to any critical demands within the market.

**Sheppard Power Steering Offerings for Mack Trucks**

Sheppard offers two complete families of power steering gears; the M Series and the D Series. From the M Series family, Mack uses the M90 booster, M100, and M110 steering gears. From the D Series family, Mack currently uses the HD94, SD110, and XD120 power steering gears.

The M Series gears have been the industry design standard since 1986, using the highest quality key materials and components, manufactured to extremely tight tolerances, and produced in the USA. Steering gear housings are made from compacted graphite iron. The rack & sector designs are fully ground for smooth operation with no backlash. M-Series gears (as do all Sheppard Gears) employ a tapered spline on the sector output for problem free operation.

The newest steering product, the D Series, is also offered on Mack Trucks. The D Series gears offer improved handling, with a more car like feel, on center stiffness for less wandering, and reduced noise. The patented 8-slot valve provides the best road feel in the industry, with zero noise. They have the quickest steering ratio at 16.9:1, providing industry leading performance with less hand wheel turns and less driver fatigue. The design also provides improved durability, improved seal designs, and less maintenance, resulting in lower costs over the life cycle of the vehicle. Be sure to specify Sheppard power steering gears on all your future Mack Truck orders.

**Sheppard Steering Gear Service and Field Support**

Sheppard also provides the best service and support for their products. Sheppard employs an active, regional field team that calls on fleets and dealers nationwide for sales, service, and training support. Factory direct assistance is also readily available for technical support from 8am to 6pm EST through its customer service hotline (1-800-2RH-SHEP).

Sheppard's maintenance philosophy is focused on reduced life cycle cost. Our designs allow for easy seal replacements over costly gear replacements. To support these efforts, we have made a series of 12 training videos available through our company website ([www.rhsheppard.com](http://www.rhsheppard.com)). The videos will guide a service tech through the various seal replacement instructions. Other videos cover basic gear operation, troubleshooting, and pressure flow testing. After access to our company website, click on the "Service" tab, then "Videos" to see options, then begin online training.

**Sheppard's power steering offerings by Mack truck model are shown below:**

Truck Model	Power Steering Gears	Front Axle Weight	PID Code
Pinnacle CHU	HD94	12K and 14.6K	2452215
Pinnacle CXU	M100P	12K and 14.6K	2452206
Granite Axle Forward GU4 and GU7	SD110	12K, 14.6k, 16.5k and 18K	2452213
Granite Axle Forward GU4 and GU7	SD110 w/ HD94 booster	20K and 23K	2452214
Granite Axle Back GU5 and GU8	M100P	12K thru 14.6K	2452206
Granite Axle Back GU5	M100P+M90 booster	16.5K	2452211
Granite Axle Back GU8	M100P+M90 booster	18K 20K and 23K	2452211
Titan TD7	M100P	12K and 14.6K	2452206
Titan TD7	M100P+M90 booster	18K and 20	2452211
Terra Pro Low Entry LEU	M100P with cylinder assist	20K	2452209
Terra Pro Cab Over MRU	M100P	12K and 14.6K	2452206
Terra Pro Cab Over MRU	XD120	18K, 20K and 23K	2452217

*For current pricing and application edits, consult the latest version of MACKTRAQ*



For additional information on the R.H. Sheppard company, sales and/or service, go to the company website [www.rhsheppard.com](http://www.rhsheppard.com).



For additional information on MACK TRUCKS, INC. go to our website at [www.macktrucks.com](http://www.macktrucks.com) or log on to the Trucks Dealer Portal.

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# SHEPPARD

*Quality Engineered Products. Unlimited Capabilities.*

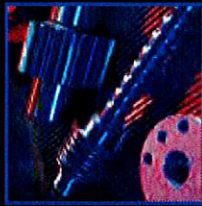
*"Creativity, innovation and dedication to quality engineered power steering gears has given R.H. Sheppard Company a global reputation as one of the best in the industry."*

*Peter H. Sheppard  
President*

**Power Steering Gears**



# Sheppard M-Series Power Steering Gears



*"Our company was built on a commitment to produce the best engineered products possible. We work closely with our customers to provide innovative solutions for their product needs no matter how intricate or highly tolerated."*

*Peter H. Sheppard  
President*

**R.H. Sheppard Company, Inc.**  
101 Philadelphia St.  
P.O. Box 877  
Hanover, PA 17331-0877  
tel: 717.637.3751  
fax: 717.633.4125  
[www.rhsheppard.com](http://www.rhsheppard.com)

## Compacted Graphite Housing

Sheppard's proprietary design reduces wear on the cylinder, improves the heat displacement, and extends the life of the steering gear.

## Automatic or Manual Plungers

Both types of plungers provide an unlimited range of adjustments for more or less wheel cut to suit your maneuverability needs. Once set, our plungers maintain their performance for the life of the vehicle.

## Fully Ground Rack & Pinion

Sheppard's precision fit reduces steering wheel freeplay and eliminates the need for external adjustments or special tools.

## Tapered Splines

Sheppard's pitman arm attachment is self-locking for improved performance over the life of the vehicle and eliminates any need for retorquing.

## Torsion Bar Options

Sheppard Power Steering Gears can be modified to provide heavy, medium or light steering minimizing driver fatigue.

## Maintenance-Free Seal Package

All seals are protected by environmental barriers for maintenance-free performance.

## Custom Valving

European and US valve curves are available to enhance road feel, driver ergonomics and to reduce fatigue.

## Quality Engineered Into Every Gear

Sheppard M-Series Power Steering Gears incorporate the latest technology in engineering design, materials and manufacturing to produce unmatched performance, reliability and efficient maintenance for superior road safety and handling. Sheppard Power Steering Gears are engineered to meet the demands of international medium and heavy-duty truck, bus, vocational and military applications.

## Endurance Testing

The Sheppard Research and Development Center provides endurance testing for every single component that goes into our products. Every part is tested to failure in our various test labs. We are also continually researching new materials, processes and verification techniques to ensure that our products possess the optimum design for their intended function.

## The Sheppard Advantage

R.H. Sheppard Company's reputation for quality engineered power steering gears is well established in the international transportation industry. From competitive pricing to on-time delivery, from full-function testing prior to delivery to unique aftermarket programs, and a sales and service team that works closely with fleets and dealers, customers around the world know they can rely on the R.H. Sheppard Company to provide the very best in power steering gear performance.

## Innovative Support Services

The Sheppard Program for Education & Communication (SPEC) provides a network of Sheppard Master Dealers and Service Technicians for customer on-site fleet training and field service support. Our telephone hotline and worldwide web support provide expert technical assistance, and all Sheppard products are backed by one of the best warranty programs in the industry.



**SHEPPARD**  
Quality Engineered Products. Unlimited Capabilities.

## M-Series Power Steering Gears



**M83**

Front Axle Rating: 4,000-6,000 lbs.  
For light duty truck applications.



**M80**

Front Axle Rating: 6,000-9,000 lbs.  
For light to medium duty applications.



**M90**

Front Axle Rating: 9,000-12,000 lbs.  
For medium duty truck and bus applications.



**M100**

Front Axle Rating: 10,000-14,000 lbs.  
For heavy duty line-haul trucks and heavy bus applications.



**M110**

Front Axle Rating: 16,000-20,000 lbs.  
For heavy duty vocational applications and transit buses.

# M-Series Specifications

■ US Standard Units   ■ Metric

		M83	M80	M90	M100	M110
Front Axle Range	lbs	4,000-8,500	6,000-9,000	8,000-12,000	10,000-14,000	16,000-20,000
	kg	1,818-3,864	2,727-4,090	3,636-5,454	4,545-6,363	7,272-9,090

Output Torque @ Rated Pressure 90% Efficiency	in lbs	23,925	28,090	37,925	46,345	59,300
	Nm	2,703	3,173	4,283	5,236	6,700

Rated Pressure	psi	2,350*	2,350*	2,350*	2,350*	2,175
	bar	162	162	162	162	150

Minimum Pump Flow @ 1.5 H.W.T.	gpm	2.1	2.1	2.5	3.0	3.5
	lpm	8.1	8.1	9.6	11.3	13.2

Pump Flow Range Single	gpm	2.1-3.5	2.1-3.5	2.5-4.0	3.0-4.5	3.5-5.0
	lpm	8.1-13.2	8.1-13.2	9.6-15	11.3-17	13.2-18.9

Ratio	18.3:1	16.8:1	18.9:1	18.9:1	23.0:1
-------	--------	--------	--------	--------	--------

Gear Travel	90°	100°	95°	95°	100°
-------------	-----	------	-----	-----	------

Maximum Operating Temperature	°F	250°	250°	250°	250°	250°
	°C	121.1°	121.1°	121.1°	121.1°	121.1°

Output Shaft Diameter	in	1.75	1.75	2.0	2.0	2.25
	mm	44.5	44.5	50.8	50.8	57.2

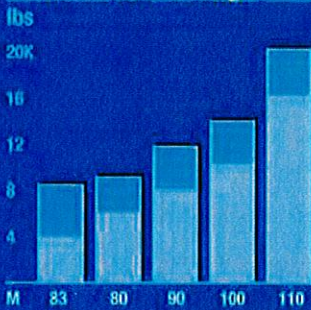
Approximate Dry Weight	lbs	47	50	65	75	110
	kg	21	23	30	34	50

Pump Flow Range Dual						
w/ M80 Slave	gpm	n/a	n/a	4.6-6.0	5.1-6.0	5.6-6.0
w/ M90 Slave					5.5-6.5	6.0-6.5
w/ M100 Slave						6.0-6.5
w/ M110 Slave						6.0-7.0
w/ M80 Slave	lpm	n/a	n/a	17.4-22.7	19.3-22.7	21.2-22.7
w/ M90 Slave					20.8-24.6	22.7-24.6
w/ M100 Slave						22.7-24.6
w/ M110 Slave						22.7-26.0

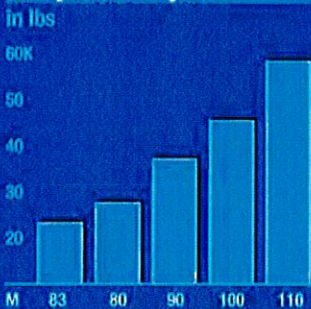
Output Torque Pressure @ 2350 psi 90% efficiency except M110 @ 2175 psi 90% efficiency						
w/ M80 Slave	in lbs	n/a	n/a	66,015	74,435	85,300
w/ M90 Slave					84,270	94,400
w/ M100 Slave						102,200
w/ M110 Slave						118,600
w/ M80 Slave	Nm	n/a	n/a	7,456	8,410	9,637
w/ M90 Slave					9,521	10,665
w/ M100 Slave						11,547
w/ M110 Slave						13,400

\* Only on snap ring style lightweight gears

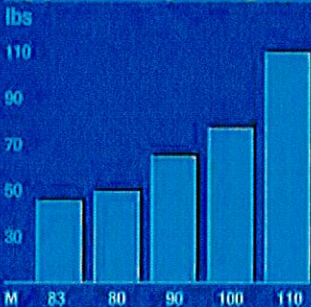
## Front Axle Range



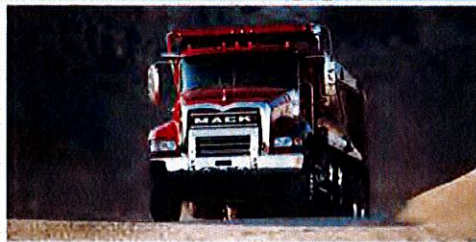
## Output Torque



## Approx. Dry Weight



## Contact Sheppard Today!



Contact us today for more information about R.H. Sheppard Company M-Series Power Steering Gears or any other Sheppard product.



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Quality Engineered Products. Unlimited Capabilities.

101 Philadelphia Street, P.O. Box 877  
Hanover, PA 17331-0877  
tel: 717.637.3751 fax: 717.633.4125  
[www.rhsheppard.com](http://www.rhsheppard.com)



**Sales Code:** 268-1026/ 268AA9  
**Description:** Mack S462R Tandem Rear Axle  
**Date:** August 31, 2016

# SED

PRODUCT INFORMATION

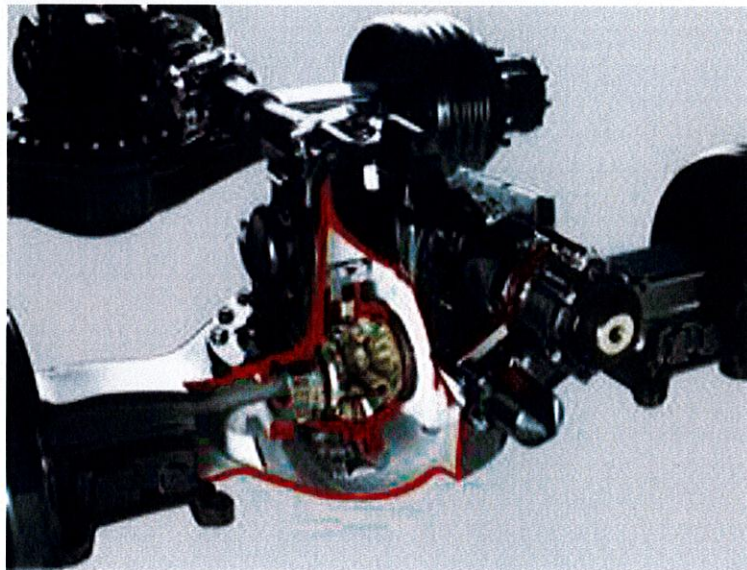
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## Sales Engineering

Mack Trucks Inc.  
2402 Lehigh Parkway South  
Allentown, PA 18103

Phone: 800-868-6225  
Fax: 610-351-8791  
Email: [sales.engineering@macktrucks.com](mailto:sales.engineering@macktrucks.com)

---



**Mack Axle Model:** ..... S462R  
**Capacity** ..... 46,000 lbs. [20,900 kg]  
**Axle Creep Rating\*** ..... 70,000 lbs. [31,800 kg]

\* Axle creep rating does not take into account the suspension creep rating which may be different. Check with the suspension supplier to be sure the suspension creep rating meets your application needs.



# SED

PRODUCT INFORMATION

## Gross Combination Weight Rating:

CRDP125/126 up to: . . . . . 125,000 lbs. [56,818 kg]

CRDP150/151 up to: . . . . . 150,000 lbs. [68,182 kg]

CRDP180/181 up to: . . . . . 180,000 lbs. [81,818 kg]

Refer to the Mack Carrier Application Guideline. Failure to follow these Guidelines may void the Mack Carrier Warranty.

## Carriers:

**Standard:** Dual Reduction Top Mounted with Inter-Axle Power Divider, Air Assisted Inter-Axle Power Divider Lockout and 4 Pinion Closed Differential.

**Optional:** Mechanical Interwheel Power Divider only available on CRDP1501/1511 & CRDP1801/1811.

**Optional:** Driver Controlled, Air Assisted Interwheel Differential Lock, available on Front Rear, Rear Rear, or Both Rear Axles. Available on CRDP125/126, CRDP150/151, and CRDP180/181.

## Ratios Available:

**CRDP125/126:** 2.54; 2.66; 2.83

**CRDP150/151:** 3.11; 3.25; 3.40; 3.56; 3.79; 3.98; 4.19; 4.50; 4.80; 5.04; 5.31; 5.66; 5.81; 6.12; 6.53

**CRDP180/181:** 3.79; 3.98; 4.19; 4.45; 4.68; 5.00; 5.31; 5.66; 6.12; 6.53; 7.08



# SED

PRODUCT INFORMATION

## Oil Capacity:

Carrier Bowl (each carrier) . . . . . 26 pints [12.3L]

### Bevel Gear Compartment (each carrier):

CRDP125/126, CRDP150/151, CRDP1501/1511  
8 pints [3.8L]

CRDP180/181, CRDP1801/1811 . . 8.5 pints [4.0L]

### Inter-Axle Power Divider:

CRDP125/126, CRDP150/151 . . . . 1.0 pints [0.5L]

CRDP180/181 . . . . . 1.5 pints [0.7L]

Drain Plugs . . . . . Magnetic

Axle Housing . . . Cast Ductile Iron with Forged "R" Series  
Spindle Ends Welded to Housing Shell  
Inner Journal

Spindle . . . . . Induction Hardened Inner Journal

### Dimensions:

Inner Bearing 3.75" [95mm]

Outer Bearing 3.25" [83mm]

Spindle Bore 2.67" [68mm]



# SED

PRODUCT INFORMATION

## Axle Shafts:

Type: ..... Integral Flange

Material: Induction Hardened Chromium Molybdenum Steel

Body Diameter: ..... 1.890" [48mm]

Diameter Over Splines: ..... 2.200" [56mm]

Splines, No. & Type: ..... 43 – Involute

## Brakes:

Type: ..... "S" Cam or Disc

Actuation: ..... Air

Brake Adjustment: ..... Self Adjusting

Parking Emergency Brake: .... Spring Loaded Chamber

## Auxiliary Spring Brake:

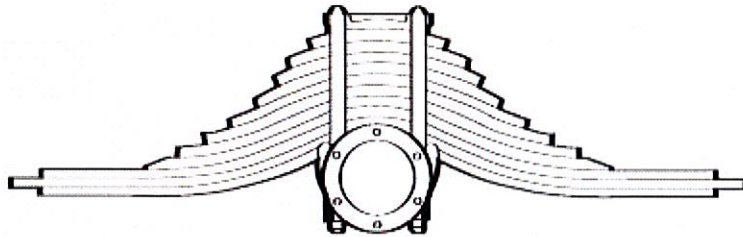
Type: . . Spring Loaded Chambers [Double Diaphragm Type]

Spring Release: ..... Mechanical



# SED

PRODUCT INFORMATION



## Mack Multileaf Camel-Back Spring Suspension

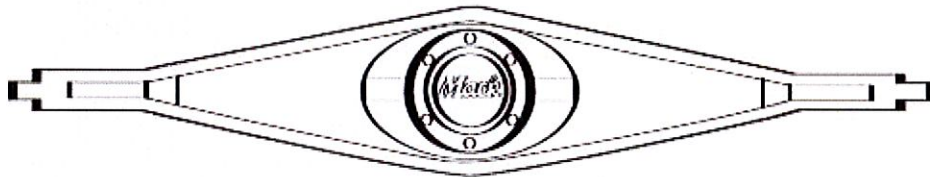
Mack Suspension Model:	.....SS462
Capacity	..... 46,000 lbs. [20,900 kg]
Creep Rating	..... 62,000 lbs. [28,125 kg]
Load Centers	..... 50" [1270mm] Standard 55" [1397mm] Optional
Spring Centers (Chassis Width)	..... 39" [991mm]
Spring Width	..... 4" [102mm]
Number of Leaves and Thickness:	
50" Spacing: Standard Spring:	..... 10 @ .788"
50" Spacing: Anti-Sway:	..... 3 @ .788" & 7 @ .999"
55" Spacing: Standard Spring:	..... N/A
55" Spacing: Anti-Sway	..... 3 @ .788" & 8 @ .999"
Axle Retention:	Upper and Lower Rubber Shock Insulators, Optional Urethane Insulators, Cast Steel Spring Brackets, Cast Iron Caps
Trunnion Bracket & Crossmember:	One Piece Fabricated Steel with Integral Spindle and Collar Assembly
Spindle:	.....Solid
Bushing:	..... Standard – Bronze, Optional Urethane
Transverse Torque Rods:	..... Standard





# SED

PRODUCT INFORMATION



## Mack Walking Beam Suspension

<b>Mack Suspension Model</b> .....	<b>SW462</b>
<b>Capacity</b> .....	<b>46,000 lbs. [20,900kg]</b>
<b>Creep Rating</b> .....	<b>62,000 lbs. [28,125kg]</b>
<b>Load Centers</b> .....	<b>50" [1270mm] Standard</b> <b>55" [1397mm] Optional</b>
<b>Beam Centers (Chassis Width)</b> .....	<b>39" [991mm]</b>
<b>Beam Type</b> .....	<b>I-Section</b>
<b>Material</b> .....	<b>Fabricated Steel</b>
<b>Width at Ends</b> .....	<b>4" [102mm]</b>
<b>Axle Retention:</b>	<b>Upper and Lower Rubber Shock Insulators,</b> <b>Optional Urethane Insulators, Cast Steel</b> <b>Spring Brackets, Cast Iron Caps</b>
<b>Trunnion Bracket &amp; Crossmember:</b>	<b>One Piece Fabricated</b> <b>Steel with Integral Spindle and Collar Assembly</b>
<b>Spindle:</b> .....	<b>Solid</b>
<b>Bushing:</b> .....	<b>Bronze</b>
<b>Transverse Torque Rods:</b> .....	<b>Optional</b>

## Mack mRIDE 46

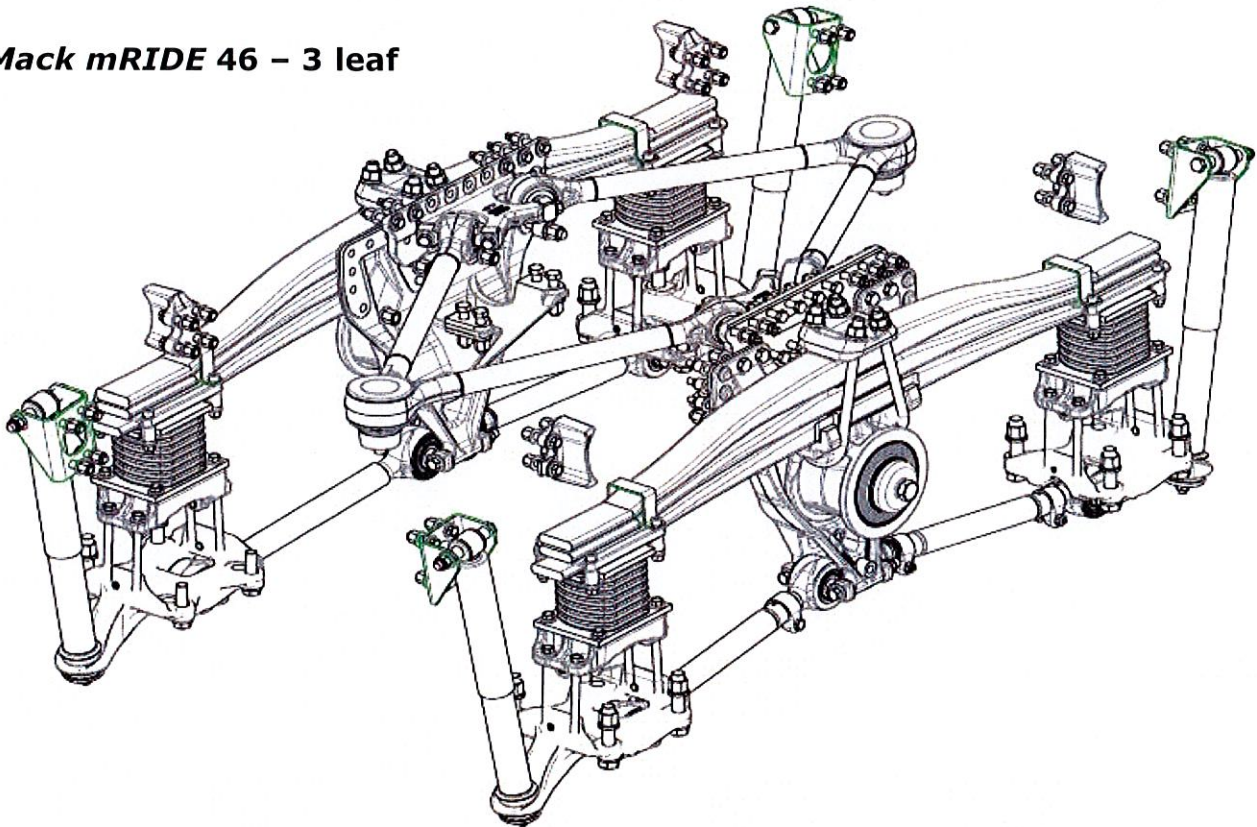
Product Specifications	
<b>Weight Rating</b>	46,000 Pounds
<b>Load Distribution</b>	50 / 50
<b>Spring type</b>	Parabolic
<b>Width of Spring</b>	2.95 in. (75mm)
<b>Number of Leaves</b>	3 Normal Ride
<b>Leaf Thickness</b>	2 @ 1.61 in. (41mm) 1 @ 2.17 in. (55mm)
<b>PID Code</b>	1861610
<b>Deflection Rate (lbs./in)</b>	21,700
<b>Weight – Conventional Cab and Cabover <sup>1</sup></b>	1441 <sup>1</sup>
<b>Creep Rating</b>	60,000 Pounds
<b>Spring height</b>	5.63 in. (143mm)
<b>Rear Shock Absorber</b>	4 standard
<b>Available Mack Axles</b>	S462R (PID code 2681026)
<b>V-Rod Tube (OD x Wall thickness)</b>	1.89 in. (48mm) x 0.20 in. (5mm)
<b>Lower Torque Rod Tube (OD x Wall thickness)</b>	1.89 in. (48mm) x 0.20 in. (5mm) –Left - Adjustable
	1.89 in. (48mm) x 0.20 in. (5mm) –Right - Fixed
<b>Axle Spacing</b>	54 in.
<b>Suspension Jounce (metal to metal)</b>	3.94 in. 100mm)
<b>Available Truck Models</b>	CHU, GU7 & GU8, TD, MRU, LEU
1. Includes torque rods, brackets but no crossmembers	

# Mack mRIDE 46

Suspension Ride Heights		
	CHU, GU7, GU8 & TD *	MRU & LEU **
# Of Leaves	3 Tractor/Truck Normal Ride	3 Truck Normal Ride
Weight Ratings (Lbs.)	46,000	46,000
Ride Height Chassis Only***	11.1"	11.5"
Ride Height Full Load***	9.9"	10.3"

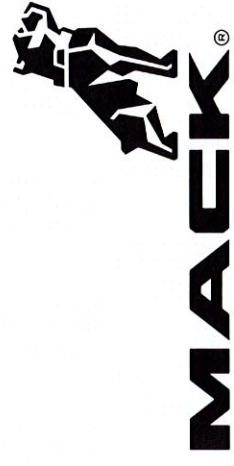
\* CHU, GU7, GU8 & TD Ride Heights Based on 11.8in (300mm) frame height  
 \*\* MRU & LEU Ride Heights Based on 13.37in (340mm) frame height  
 \*\*\* Centerline of Rear Axle to Bottom of Frame

**Mack mRIDE 46 – 3 leaf**

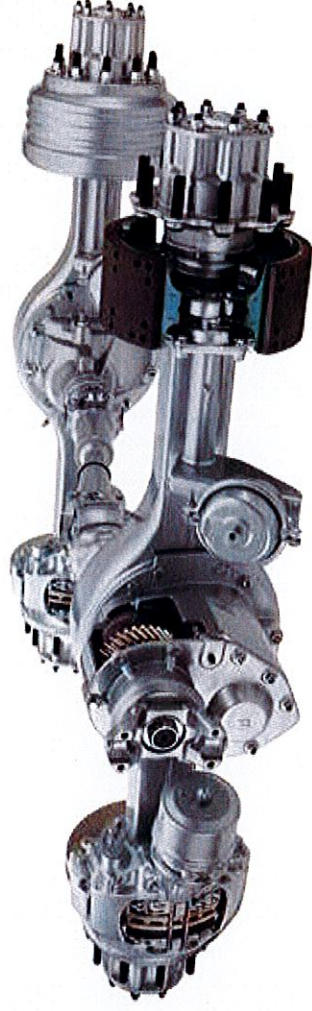


# Mack Proprietary Axle

Driveline Engineering – Hagerstown, MD



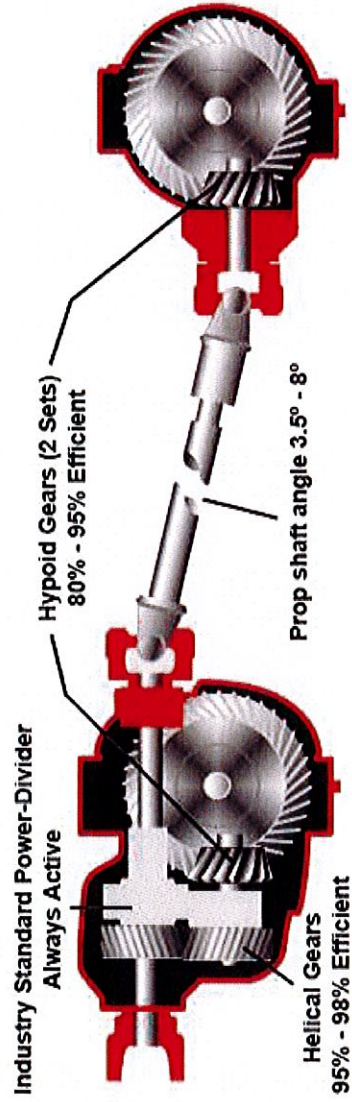
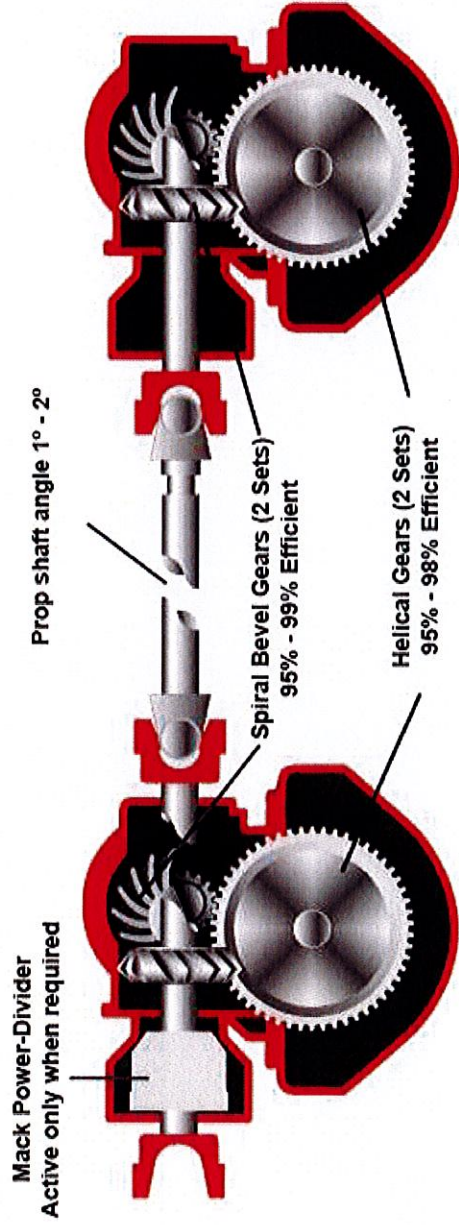
# Top Mounted Carrier = More Ground Clearance



Top Mounted Drivehead provides more ground clearance compared to a competitor face-mounted Drivehead.

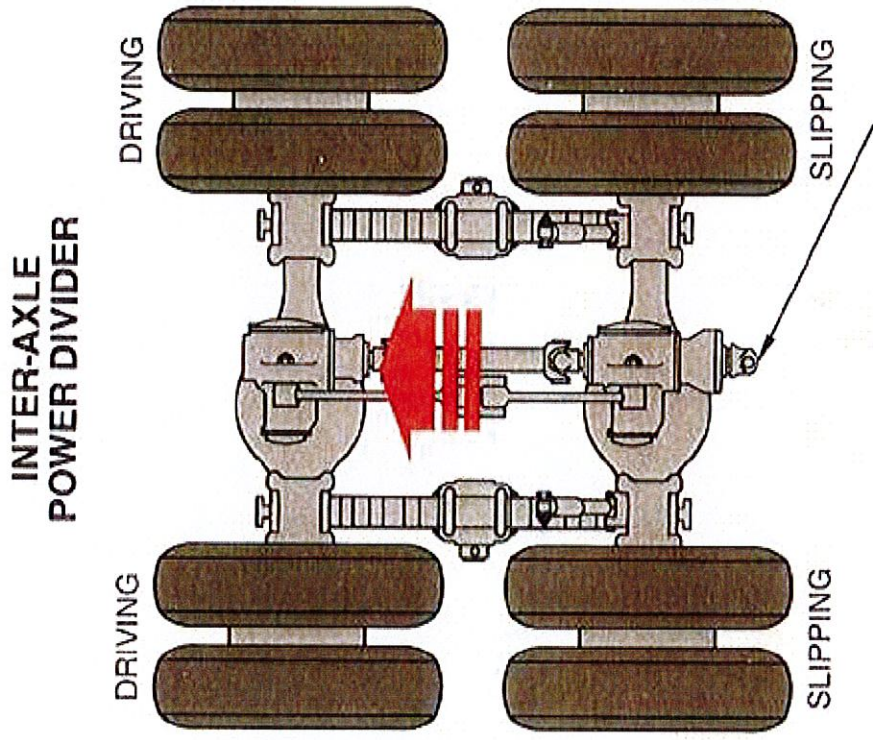


# Mack Axle (Bevel/Helical Gear) Efficiency > Industry Std. (Hypoid/Amboid Gear) Efficiency



# Mack Proprietary Standard Power Divider = Better Vehicle Traction

Mack  
power dividers  
mean traction

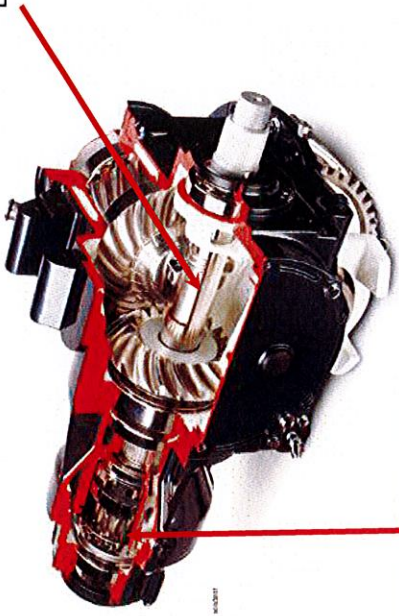


Under minimum traction conditions, the resisting force on the slipping axle is multiplied three fold and applied to the axle that has retained traction, without locking.

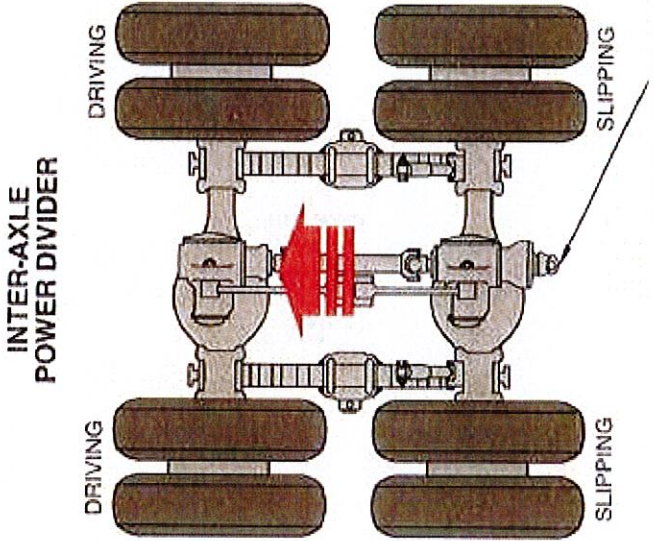


What is Power-Divider and Why do you need it?

Thru-shaft

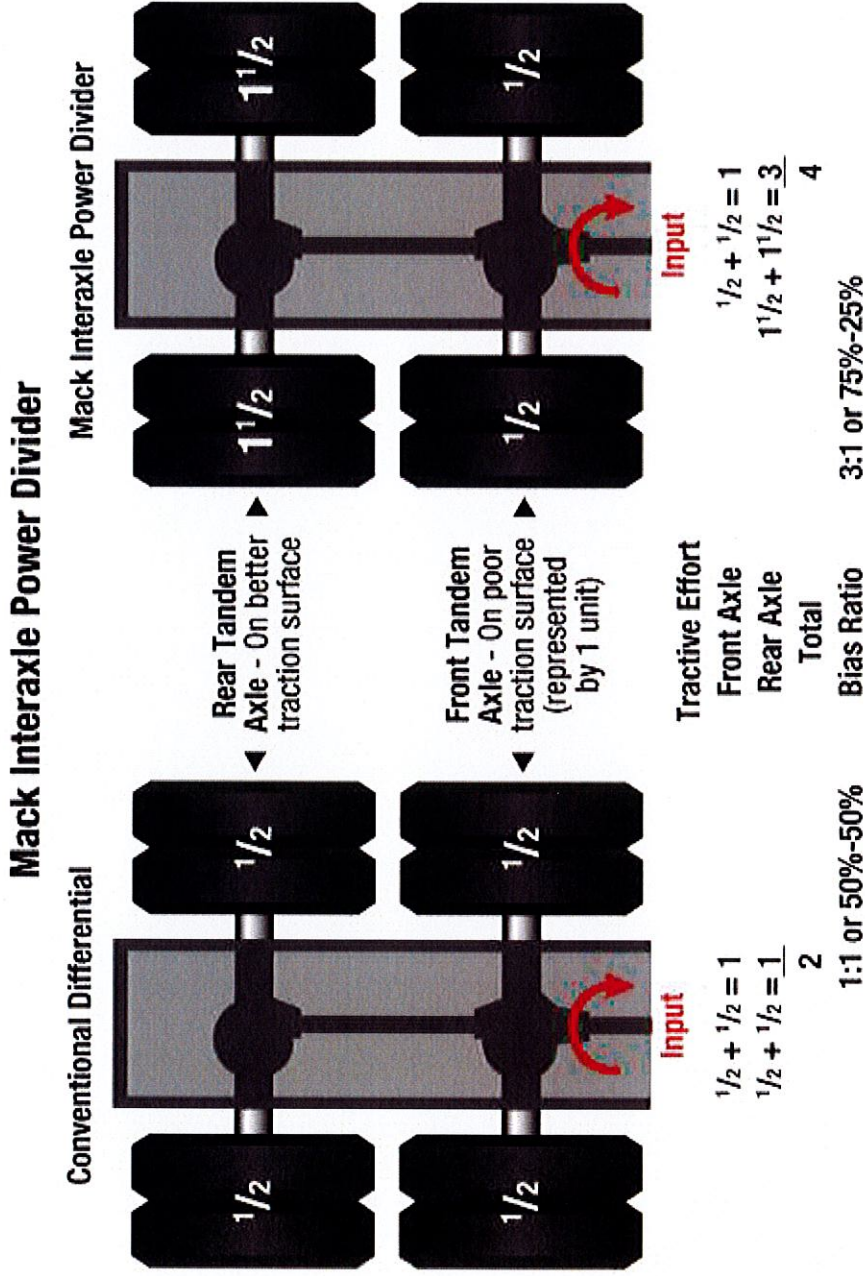


Power-Divider Cage distributes torque between outer-cam & inner-cam using 2-rows of wedges. Outer-cam drives front-axle while inner-cam drives through-shaft which drives power to rear axle





# Mack Axle & Carrier Features – Interaxle Power Divider

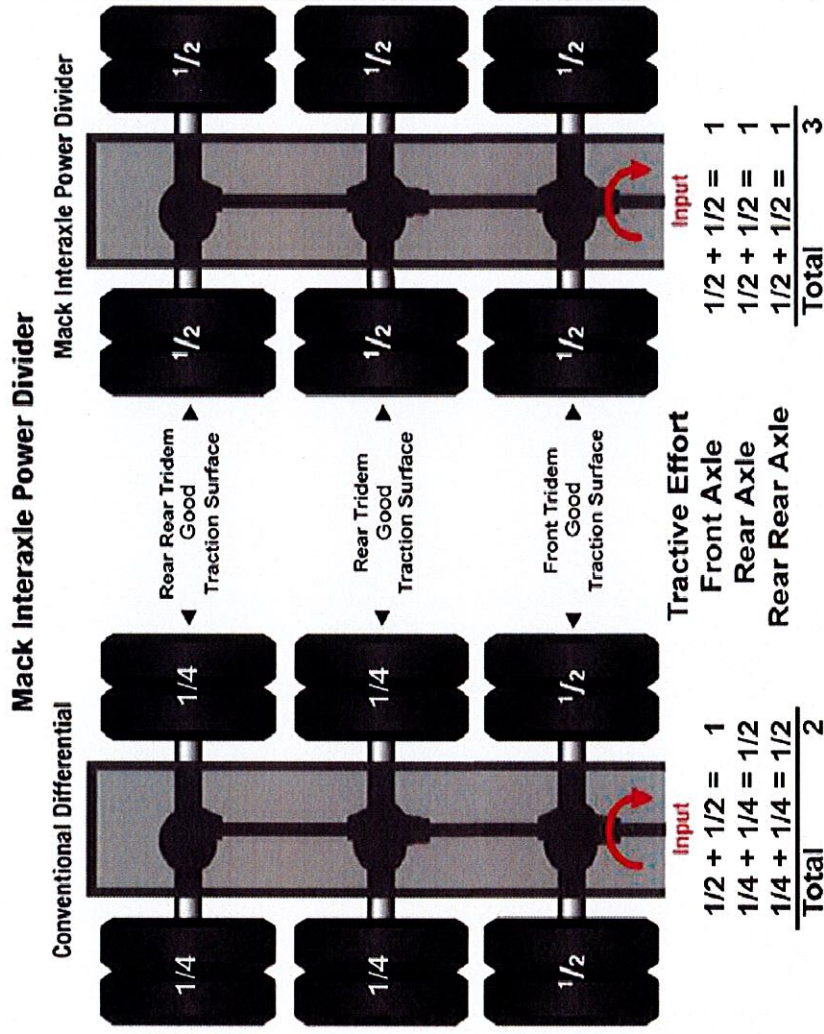


## The Mack Advantage

- Mack power-divider uses a CAM mechanism which automatically distributes the torque between slipping and non-slipping axle.
- Competitor axle power-divider uses gear-differential which always splits torque in 50:50 ratio between front and rear axle.



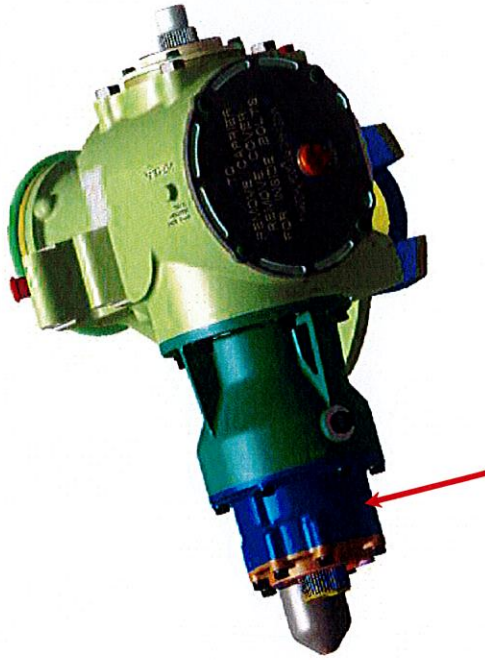
# Mack Axle & Carrier Features – Interaxle Power Divider



- The Mack Power Divider provides the only tridem capable of a true 1/3rd, 1/3rd, 1/3rd torque split between driven axles (This reduces the tire and road wear on the first drive axle).
- Competitor axle power divider splits torque in 50:25:25 ratio between three drive axles (first axle transfers more torque to the first set of drive wheels causing excessive tire wear and tearing up the road surface).

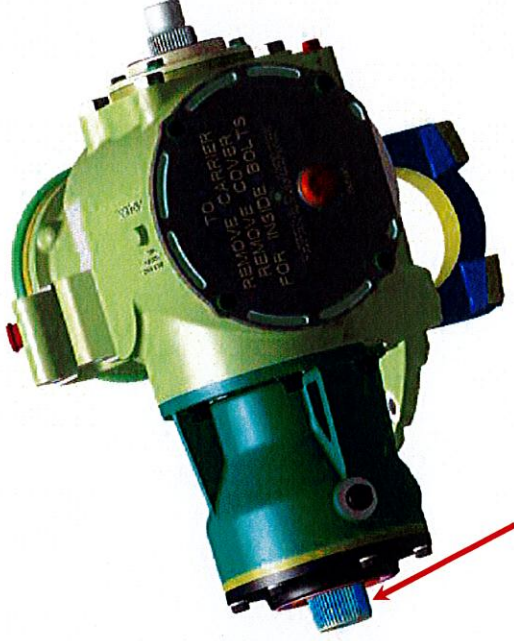


# Mack Inter-Axle Power Divider Lock-out (PDLO)



PDLO is an **option** (85% of customers order this) on Mack axles but **std. feature** on competitor axles

Front Carrier with PDLO (Power Divider Lock-Out) – Available on all Mack front carriers (i.e CRD125, 150, 200 & 95 carriers)

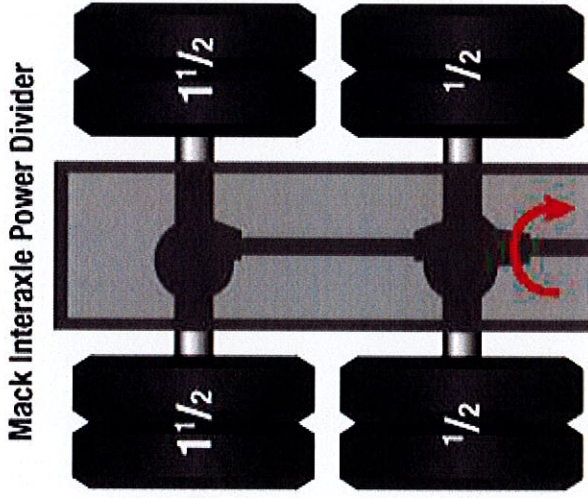


No PDLO is **STD** (15% of customers order this) on Mack

Front Carrier with **OUT PDLO** (Power Divider Lock-Out) – Standard on all Mack front carriers



# What is Power-Divider Lock-out (PDLO) and Why do you need it?



Rear Tandem Axle - On better traction surface

Front Tandem Axle - On poor traction surface (represented by 1 unit)

### Tractive Effort

Front Axle

Rear Axle

Total

Bias Ratio

$$\frac{1}{2} + \frac{1}{2} = 1$$

$$\frac{1 \frac{1}{2} + 1 \frac{1}{2} = 3}{4}$$

3:1 or 75%-25%

### Mack Advantage

If front-tandem has zero traction, the CAM mechanism (and/or conventional IAD gear differential in power-divider) distributes 3 x Zero torque (1 x zero torque) to rear axle.

In the process the Power-Divider will burn-out due to excessive differential action.

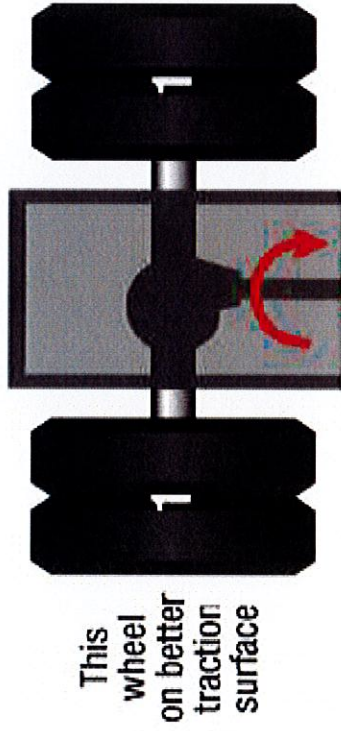
PDLO locks the inner & outer-cam preventing differential action and will propel the truck with the help of axle that is on better traction surface.



# Mack Axle & Carrier Features – Inter-Wheel Power Divider (optional feature)

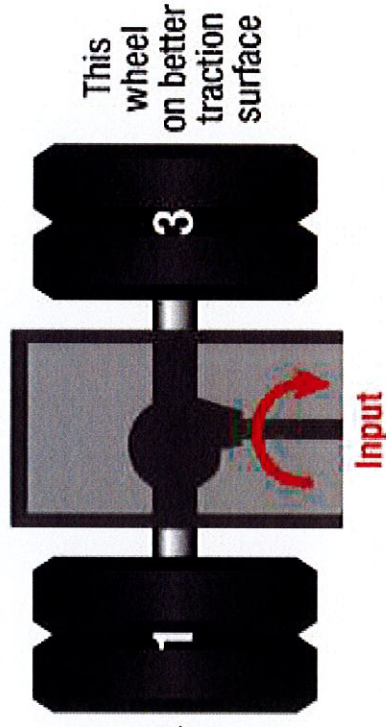
## Mack Interwheel Power Divider

### Conventional Differential



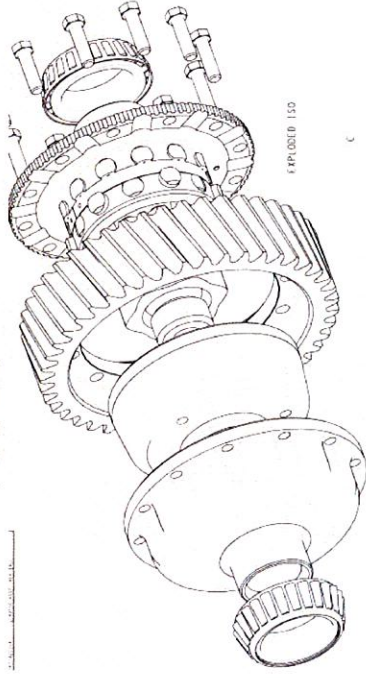
$1 + 1 = 2$   
1:1 or 50%-50%

### Mack Interwheel Power Divider



Tractive Effort Bias Ratio  
 $1 + 3 = 4$

## The Mack Advantage



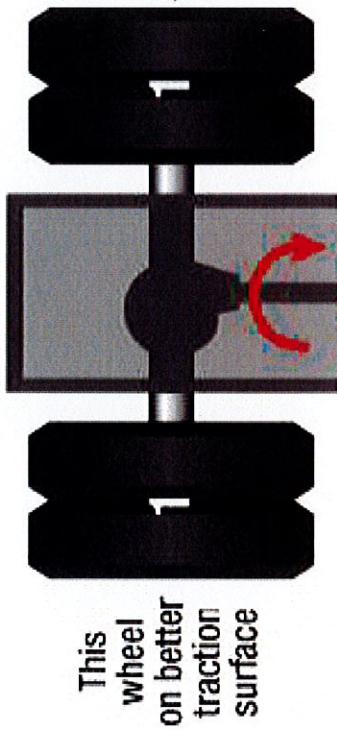
- Mack Unique/Proprietary Inter-Wheel power-divider uses a CAM mechanism which automatically (no in-cab switch will need to be engaged as in case with diff. lock option) distributes the torque between slipping and non-slipping wheel.



# What is Inter-Wheel Power Divider and who uses it

## Mack Interwheel Power Divider

### Conventional Differential



$1 + 1 = 2$   
1:1 or 50%-50%

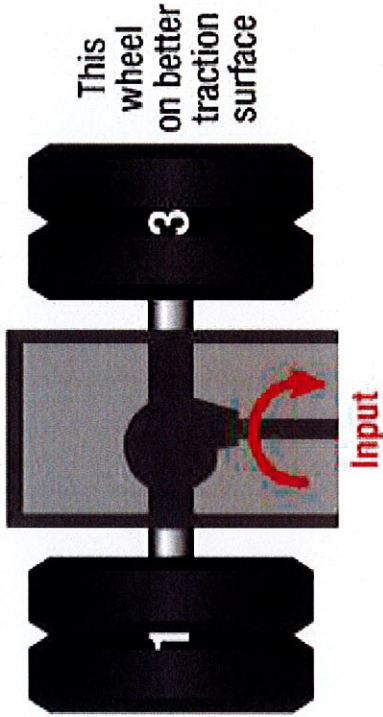
Tractive Effort  
Bias Ratio

$1 + 3 = 4$   
3:1 or 75%-25%

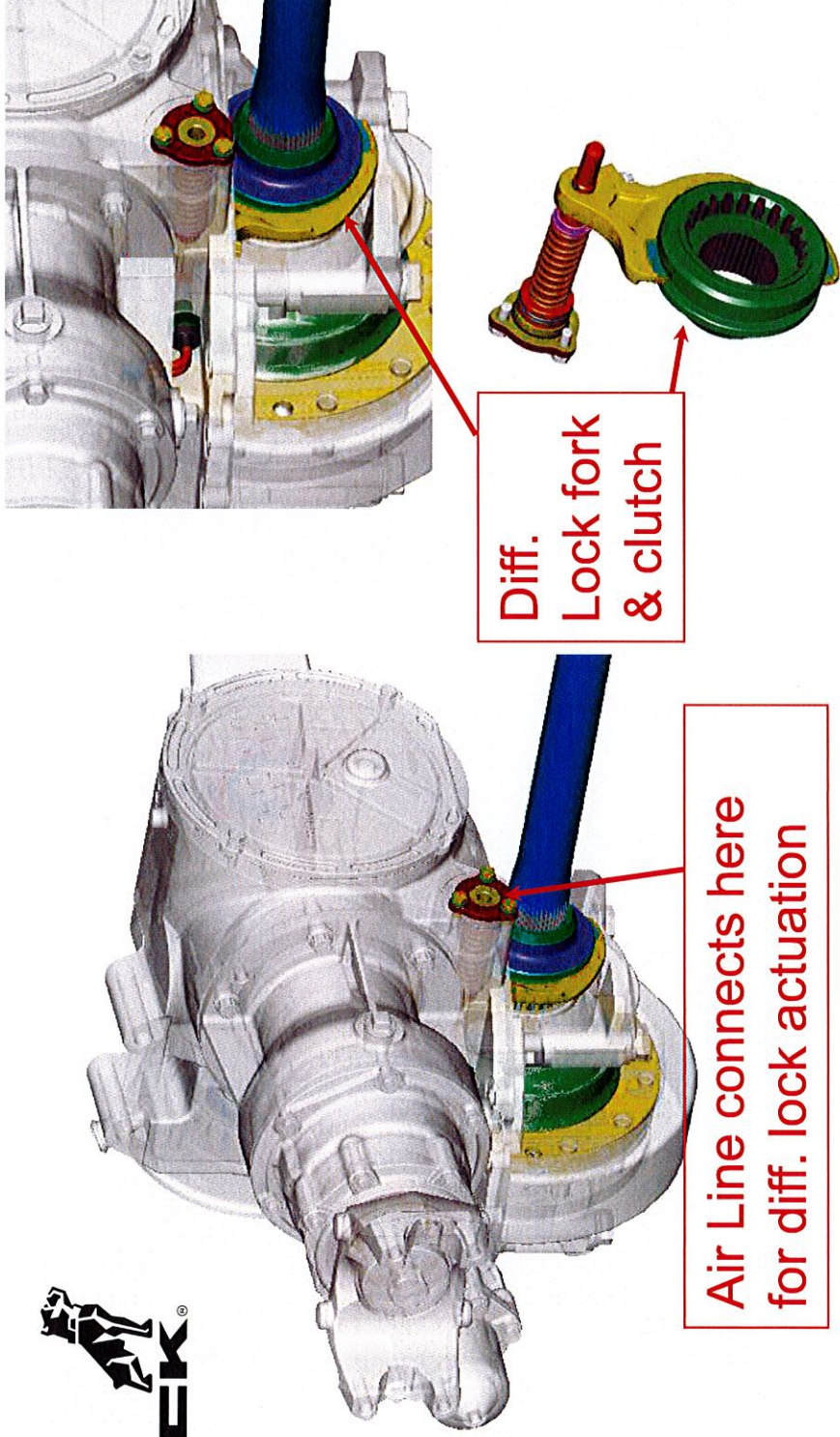
### The Mack Advantage

- IWPD automatically distributes torque between slipping and non-slipping wheel.
- Diff. Lock needs to be disengaged once vehicle is on good surface. IWPD eliminates the hassle (some customers like this option).
- IWPD can still work over 25MPH unlike Inter-Wheel Differential Lock (VECU disengages Inter-axle and Inter-wheel diff. lock for safety reasons).
- IWPD Dis-advantage: If one wheel has zero traction then other wheel will see 3 x Zero torque.

### Mack Interwheel Power Divider



# Mack Carrier Front & Rear – Diff. Lock (optional feature)



Diff. Lock feature is an option available with CRD 125/126, 150/151, and 180/181 carriers.

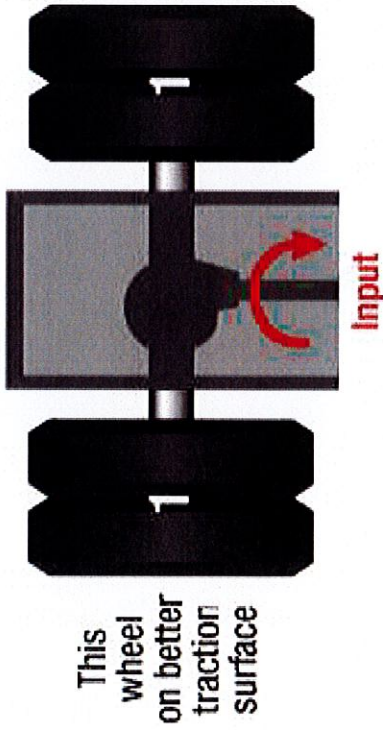
- Diff. Lock can be chosen on front carrier only, rear carrier only or both front & rear carrier.



## What is Diff. Lock and Why do you need it?



Conventional Differential



This wheel on better traction surface

If one of the wheel starts slipping the differential gears will start spinning and excessive differential action will cause burn-out

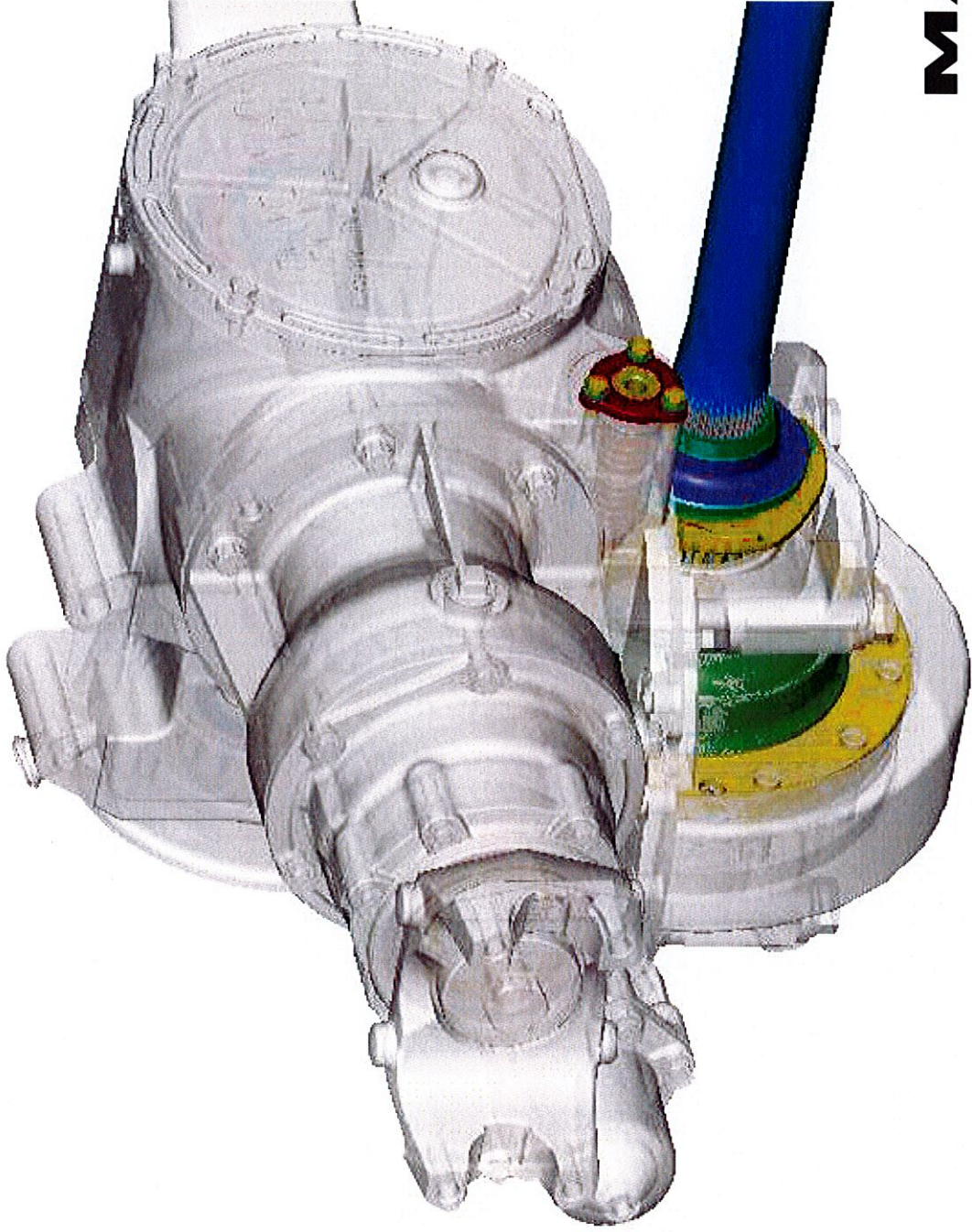
This wheel on poor traction surface (represented by 1 unit)

- Diff. Lock is optional feature on Mack and Competitor axles.
- Diff. Lock is engaged by actuating a switch inside the cab.
- Diff. Lock locks left & right diff. halves preventing differential action and will propel the truck with the help of the wheel that is on better traction surface.
- Diff. Lock should be dis-engaged while on concrete surface or driving over 25MPH. The axle shafts can lock-up if vehicle turns a corner with Diff. Lock engaged.

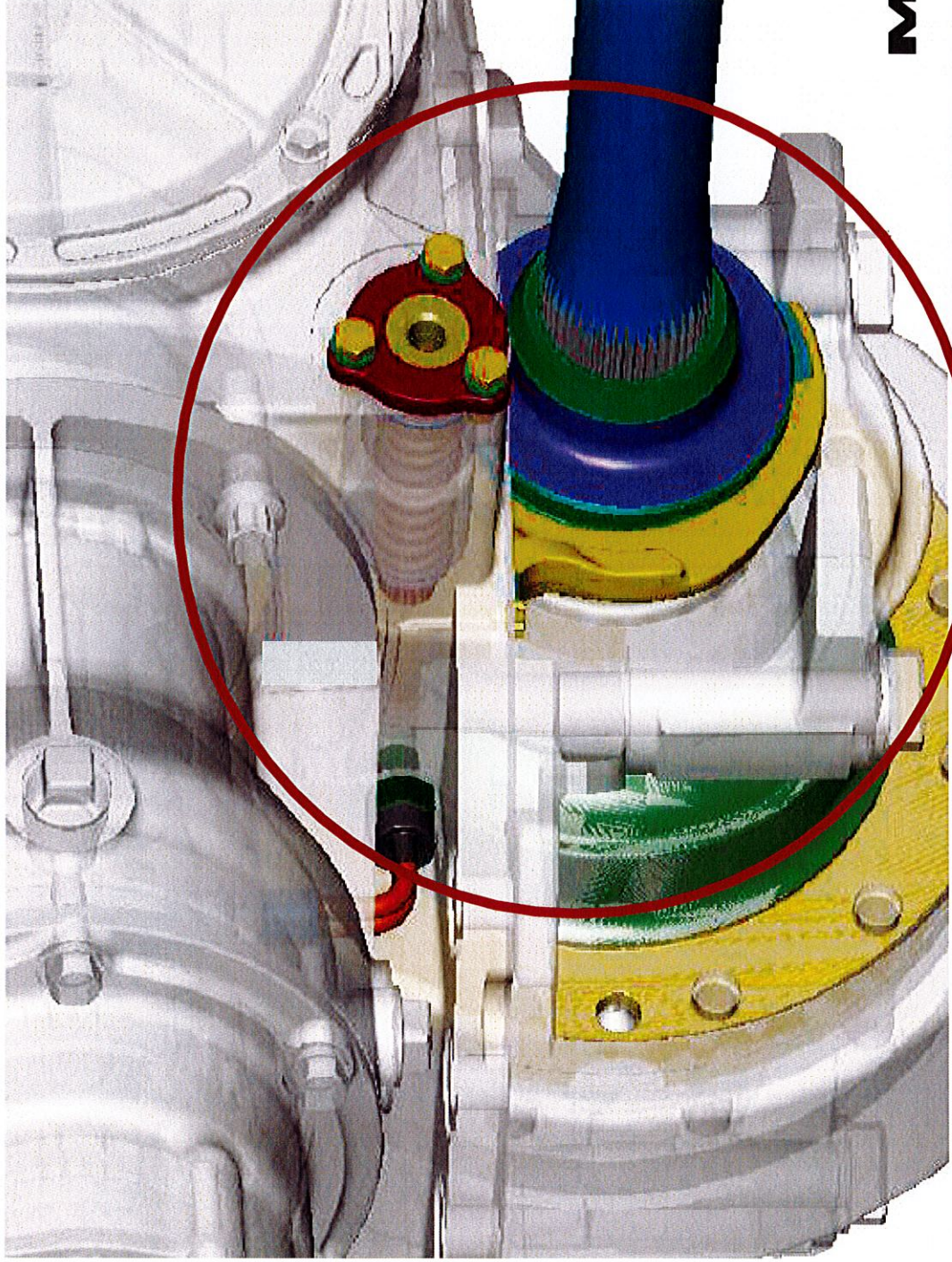




# CRD150-151 INTER-WHEEL DIFFERENTIAL LOCK



THE CRD150-151 INTER-WHEEL DIFFERENTIAL LOCK (DIFF LOCK) FEATURE HAS BEEN INTEGRATED INTO THE MAIN CARRIER HOUSING. THUS, MAINTAINING THE SAME EXTERNAL ENVELOPE AS THE STANDARD CRD150-151 AXLES AND MINIMIZING ANY ADDITIONAL WEIGHT.

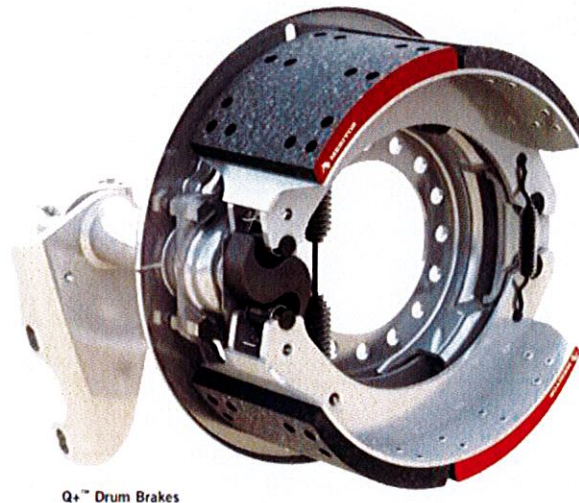


# Product Information



## 253- Meritor Q+ Rear Dum Brakes (253)

**Affects:** All Models  
**Related:** Rear Axle (268), Rear Suspension (186)  
**Updated:** February 12, 2018



### Premium Stopping Performance

Engineered to assist vehicle manufacturers in meeting FMVSS-121 stopping distance requirements, the Meritor Q+™ drum brake system remains the industry standard. Q+ brakes offer exceptional durability comparable to disc brakes.

### Performance advantages:

- Versatility to perform in a variety of applications, including linehaul, regional haul and vocational
- Thicker lining blocks increase service life and mileage between relines
- Specially designed S-cam and heavy-duty shoe return spring delivers additional brake shoe travel for full wear
- Improved camshaft bushing contributes to longer service life

# Product Information



## 253- Meritor Q+ Rear Drum Brakes (253)

**Affects:** All Models  
**Related:** Rear Axle (268), Rear Suspension (186)  
**Updated:** February 12, 2018

### Meritor Q+ Cam Brakes

Performance, serviceability, dependability, simple operation and proven design have made the Meritor Q+ the top choice for drum brake systems.

### Features and Benefits

- Optimized lining geometry for uniform wear and consistent performance, enhanced camshaft bushing material, double anchor pin design, and extended lube option minimize maintenance and downtime
- Advanced friction material helps meet revised stopping distance regulation without the use of air disc brakes
- Best-in-class e-coat corrosion protection standard on all Q+ brake shoes
- PlatinumShield™ coating technology is an available option for highly corrosive environments and duty cycles, delivering premium protection against rust-jacking
- Stamped Steel Spider Q+ drum brake option offers weight savings of 6.5 lbs. per brake without sacrificing durability or performance, which improves fuel efficiency and maximizes payload
- Patented quick-change shoe also minimizes downtime
- Most widely used drum brake in the industry means superior support in the aftermarket for parts availability, core return values and service accessibility
- Wider brake shoe packages for improved stopping performance and improves lining life

# Product Information



## RBADJ-AM Slack Adjuster, Automatic, Meritor, Rear

**Affects:** Anthem, Granite, Pinnacle  
**Related:** Rear Axle (268), Rear Brakes (253)  
**Updated:** May 18, 2020

Meritor's unique design keeps brakes in constant adjustment while eliminating the need for frequent under-the-truck brake adjustments. This reduces brake maintenance costs and vehicle safety inspection citations while also optimizing brake performance.



### Performance advantages:

- Maximum reliability and robustness
- Lowest cost and lightest weight ASA on the market
- Only ASA that adjusts on chamber stroke
- 25,000 in-lbs. torque capacity
- Pawl design simplifies service

### Features and Benefits

- Pull pawl design requires fewer moving parts, enhancing durability and reliability
- Fully sealed to resist internal contamination for longer life
- Industry's lightest weight ASA, which increases payload and camshaft bracket life
- Self-contained design doesn't require special grounding straps, simplifies installations
- Keeps brakes properly adjusted for shorter stopping distances and longer lining life
- Grease purge to camshaft resists binding
- Ratchet type adjuster minimizes internal wear which results in robust design and maximizes reliability
- Simple to manually adjust with no anti-reverse springs to overcome
- Stroke sensing design

Automatic Slack Adjuster Specifications	
<b>Slack Length (inches)</b>	5.0, 5.5, 6.0, 6.5, 7.0
<b>Arm Configuration</b>	Straight
<b>Camshaft Spline Size and No.</b>	1.50" - 10 1.50" - 28 1.625" - 37
<b>Clevis Thread</b>	0.625"-18 for type 20,24,30,36 chambers

# Product Information



## FBADJ-AM Slack Adjuster, Automatic, Meritor, Front

**Affects:** Anthem, Granite, Pinnacle  
**Related:** Front Axle (240), Front Brakes (U3X)  
**Updated:** May 18, 2020

Meritor's unique design keeps brakes in constant adjustment while eliminating the need for frequent under-the-truck brake adjustments. This reduces brake maintenance costs and vehicle safety inspection citations while also optimizing brake performance.



### Performance advantages:

- Maximum reliability and robustness
- Lowest cost and lightest weight ASA on the market
- Only ASA that adjusts on chamber stroke
- 25,000 in-lbs. torque capacity
- Pawl design simplifies service

### Features and Benefits

- Pull pawl design requires fewer moving parts, enhancing durability and reliability
- Fully sealed to resist internal contamination for longer life
- Industry's lightest weight ASA, which increases payload and camshaft bracket life
- Self-contained design doesn't require special grounding straps, simplifies installations
- Keeps brakes properly adjusted for shorter stopping distances and longer lining life
- Grease purge to camshaft resists binding
- Ratchet type adjuster minimizes internal wear which results in robust design and maximizes reliability
- Simple to manually adjust with no anti-reverse springs to overcome
- Stroke sensing design

Automatic Slack Adjuster Specifications	
Slack Length (inches)	5.0, 5.5
Arm Configuration	Straight 0.625" offset clevis
Camshaft Spline Size and No.	1.25" - 24 1.25" - 10 1.50" - 10 1.50" - 28
Clevis Thread	0.50" - 20 for chamber type 9,12,16 0.625" - 18 for 20, and larger chambers

# Product Information

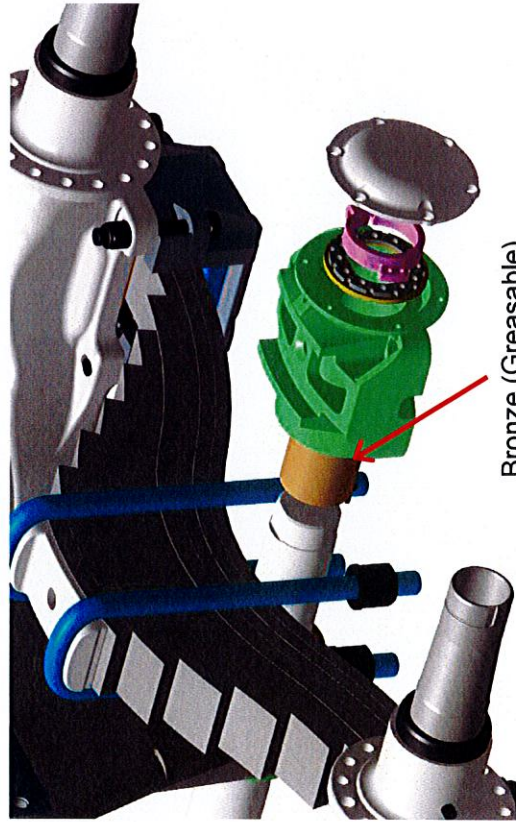
## 186- Mack Camelback Suspensions

Updated: July 26, 2021

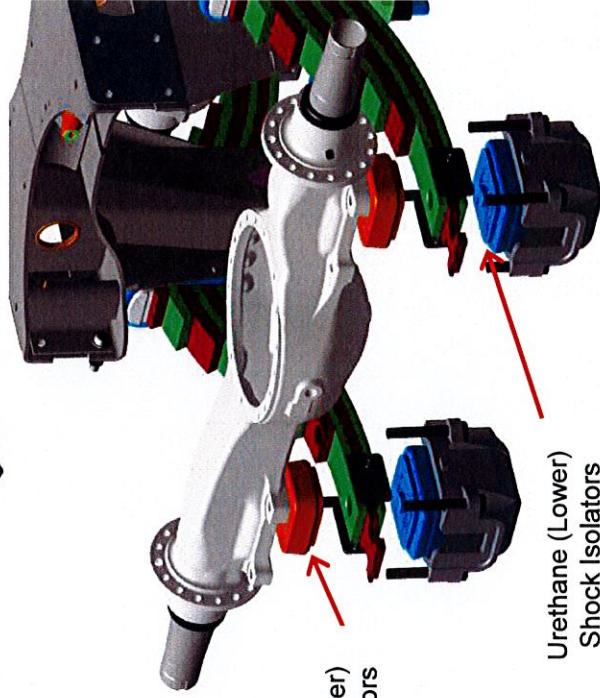
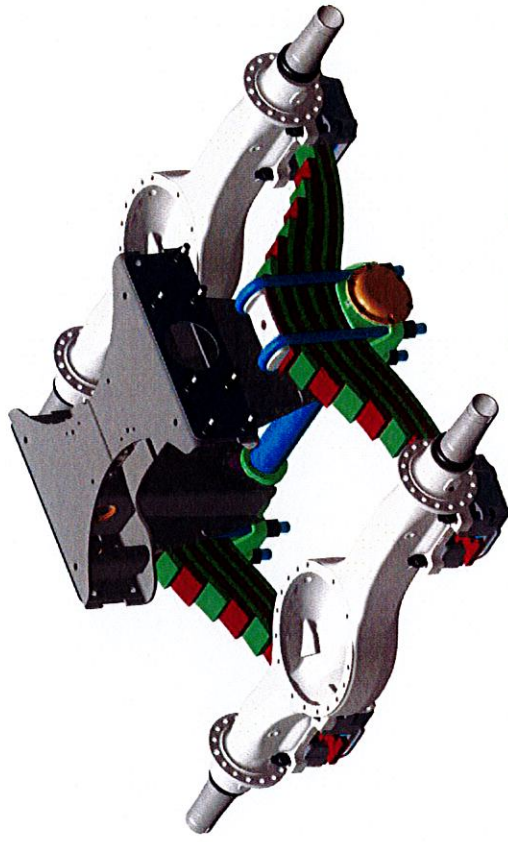
The Mack Camelback Tandem suspension is a heavy-duty rear suspension for demanding applications such as construction and refuse service. It's long service life and low maintenance features make it an ideal choice where durability and simplicity are at the front of a customers needs.

Available in ratings from 38,000 lbs up to 65,000 lbs, this suspension will never fail when the job demands it.

This suspension features two camel hump spring packs mounted to a pivoting trunnion. HD Versions of each suspension feature springs that are ~25% thicker for additional support and anti-sway control.



**Bronze (Greaseable)  
Trunnion Bushing**



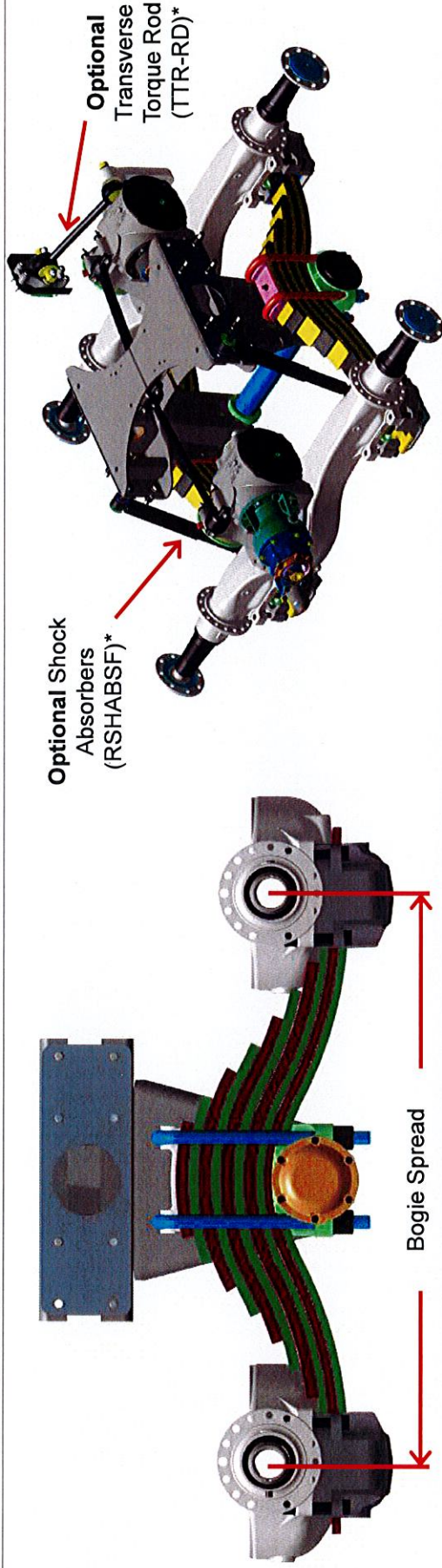
**Rubber (Upper)  
Shock Isolators**

**Urethane (Lower)  
Shock Isolators**

# Product Information

## 186- Mack Camelback Suspensions

Updated: July 26, 2021



Suspension	Rating	Creep Rating*	# of Spring Leaves and Thickness	Available Bogie Spreads	Transverse Torque Rod	Shock Absorbers
SS38 SD	38,000 LBS [17,200 KG]	57,300 LBS [26,045 KG]	4 @ 4.00" X .788" 6 @ 4.00" X .625"	50"	Opt on 2 <sup>nd</sup> Drive	Opt on 1 <sup>st</sup> Drive
SS38 HD	38,000 LBS [17,200 KG]	57,300 LBS [26,045 KG]	10 @ 4.00" X .788"	50"	Opt on 2 <sup>nd</sup> Drive	Opt on 1 <sup>st</sup> Drive
SS44 SD	44,000 LBS [18,100 KG]	62,000 LBS [28,125 KG]	10 @ 4.00" X .788"	50"/55"	Opt on 2 <sup>nd</sup> Drive	N/A
SS44 HD	44,000 LBS [17,200 KG]	62,000 LBS [28,125 KG]	3 @ 4.00" X .788" 7 @ 4.00" X .999"	50"/55"	Opt on 2 <sup>nd</sup> Drive	N/A
SS46 SD	46,000 LBS [20,900 KG]	62,000 LBS [28,125 KG]	10 @ 4.00" X .788"	50"/55"	Opt on 2 <sup>nd</sup> Drive	N/A
SS46 HD	46,000 LBS [20,900 KG]	62,000 LBS [28,125 KG]	3 @ 4.00" X .788" 7 @ 4.00" X .999"	50"/55"	Opt on 2 <sup>nd</sup> Drive	N/A
SS52 HD	52,000 LBS [25,587 KG]	102,000 LBS [46,364 KG]	3 @ 4.00" X .999" 6 @ 4.00" X 1.25"	55"	Opt on 2 <sup>nd</sup> Drive	N/A
SS58 HD	58,000 LBS [26,300 KG]	113,200 LBS [51,455 KG]	10 @ 5.00" X 1.00"	54"	N/A	N/A
SS65 HD	65,000 LBS [29,500 KG]	133,800 LBS [60,818 KG]	8 @ 5.00" X 1.25"	58"	N/A	N/A

Page 2

\*Creep ratings are under 5 mph with aux axles lifted to improve job site maneuverability

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# Product Information



## 274014D Reference Material GR64F Frames (2740E4)

Updated: September 1, 2017

### Frame Key:

Pid Condition	mm thickness	Frame Section (mm)	SM (in <sup>3</sup> )	RBM 10 <sup>3</sup> (lbs-in)	Weight (lbs/in)	Thickness (in.)
274-1025	7	7 x 90 x 300	17.7	2,120	1.56	0.32
274-1026	8	8 x 90 x 300	17.7	2,120	1.56	0.32
274-1027	9.5	9.5 x 90 x 300	20.6	2,470	1.84	0.37
274-1028	11	11 x 90 x 300	23.5	2,820	2.12	0.437
274-1029	11#	11 x 105 x 300	26.3	3,160	2.27	0.44
	8FL	8 x 90 x 300 w/ 5mm liner	26.9	3,230	2.45	0.51
	9.5PL 3.53	9.5 x 90 x 300 w/ 5mm liner	29.8	3,580	2.73	0.57
	11PL	11 x 90 x 300 w/ 5mm liner	32.7	3,920	3.01	0.63
	11#PL	11 x 105 x 300 w/ 5mm liner	35.5	4,260	3.16	0.63
	19.5FL	9.5 x 90 x 300 w/ 5mm FL + 8mm OC	47.4	5,688	4.41	0.88
n/a = combination not available			"PL" = partial liner 273-1006			
ER = Engineering Required (Option Request Required)			"FL" = full liner 273-1007			
19.5FL			Triple Frame Rail, 375-0010 Outer Reinforcement, 274-1027, & 273-1007			

The following charts are the minimum frame requirements determined by wheel base, after frame, front axle rating, and rear axle rating. A chassis can always be ordered with a frame rail system that is heavier than the published minimum. A chassis cannot be ordered with a frame system that is lighter than the published minimum, unless an approved Option Request exists.

8mm and 8mm with a partial liner are **not** allowed with >20K front axle due to frame stresses.

8mm, 8mm with a partial liner, 9.5mm, and 9.5mm with a partial liner are **not** allowed with >23K front axle due to frame stresses.





# Product Information



## 274014D Reference Material GR64F Frames (2740E4)

Updated: September 1, 2017

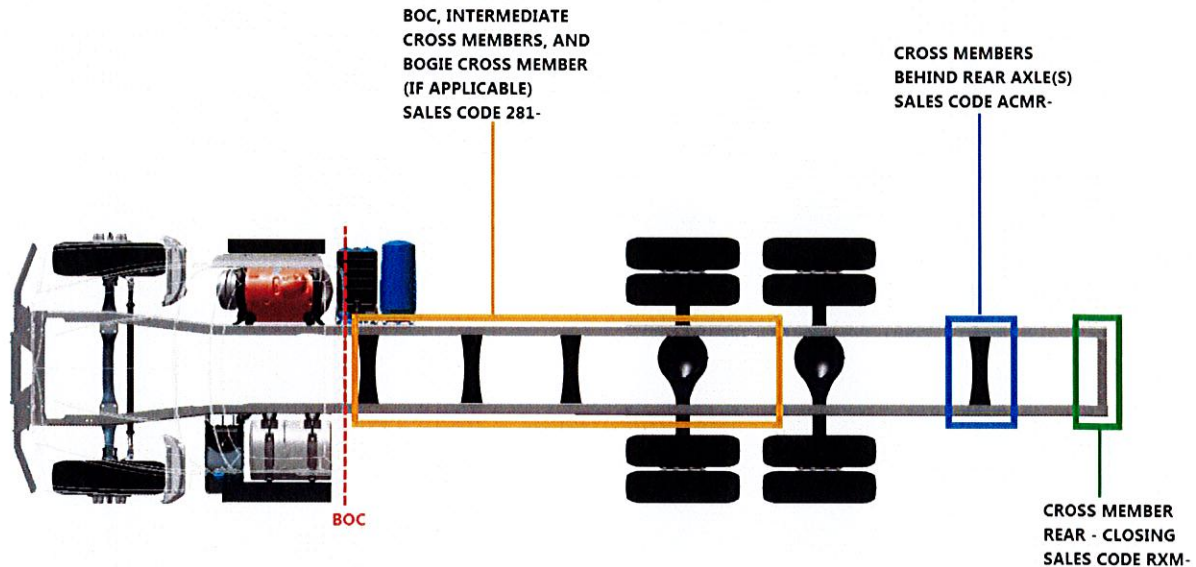
		Minimum Frame Section Requirements - Uniform Platform Loading - Dump Truck, Roll-Off, Platform Truck																											
WB Range (in)	AF Range (in)	12K Front Axle				14K Front Axle				18K Front Axle					20K Front Axle				23K Front Axle										
		Rear Axle				Rear Axle				Rear Axle					Rear Axle				Rear Axle										
		6x4				6x4				6x4		8x6			6x4				8x6										
		38K	40K	44K	46K	38K	40K	44K	45K	38K	40K	44K	46K	52K	63K	40K	44K	46K	52K	59K	65K	65K	40K	44K	46K	52K	59K	65K	69K
255 - 299	56 - 82	8	8	9.5	11	11	11	11	11	TFL	TFL	1PL	TPL	1PL	TPL	EP	EP	EP	EP	EP	EP	TPL	EP	EP	EP	EP	EP	EP	EP
255 - 299	86 - 113	8	8	9.5	11	11	11	11	11	TFL	TFL	1PL	TPL	1PL	TPL	EP	EP	EP	EP	EP	EP	TPL	EP	EP	EP	EP	EP	EP	EP
255 - 299	117 - 129	9.5	9.5	11	11	11	11	11	11	TFL	TFL	1PL	TPL	1PL	TPL	EP	EP	EP	EP	EP	EP	TPL	EP	EP	EP	EP	EP	EP	EP
299 - 302	56 - 82	8	8	9.5	11	11	11	11	11	TFL	TFL	1PL	TPL	1PL	TPL	EP	EP	EP	EP	EP	EP	TPL	EP	EP	EP	EP	EP	EP	EP
299 - 302	86 - 113	8	8	9.5	11	11	11	11	11	1FL	TFL	1PL	TPL	1PL	TPL	EP	EP	EP	EP	EP	EP	TPL	EP	EP	EP	EP	EP	EP	EP
299 - 302	117 - 129	9.5	9.5	11	11	11	11	11	11	TFL	TFL	1PL	TPL	1PL	TPL	EP	EP	EP	EP	EP	EP	TPL	EP	EP	EP	EP	EP	EP	EP
303 - 306	56 - 82	8	8	9.5	11	11	11	11	11	TFL	TFL	1PL	TPL	1PL	TPL	EP	EP	EP	EP	EP	EP	TPL	EP	EP	EP	EP	EP	EP	EP
303 - 306	86 - 113	8	8	9.5	11	11	11	11	11	TFL	TFL	1PL	TPL	1PL	TPL	EP	EP	EP	EP	EP	EP	TPL	EP	EP	EP	EP	EP	EP	EP
303 - 306	117 - 129	9.5	9.5	11	11	11	11	11	11	TFL	TFL	1PL	TPL	1PL	TPL	EP	EP	EP	EP	EP	EP	TPL	EP	EP	EP	EP	EP	EP	EP
307 - 310	56 - 82	8	8	9.5	11	11	11	11	11	TFL	TFL	1PL	TPL	1PL	TPL	EP	EP	EP	EP	EP	EP	TPL	EP	EP	EP	EP	EP	EP	EP
307 - 310	86 - 113	8	8	9.5	11	11	11	11	11	TFL	TFL	1PL	TPL	1PL	TPL	EP	EP	EP	EP	EP	EP	TPL	EP	EP	EP	EP	EP	EP	EP
307 - 310	117 - 129	9.5	9.5	11	11	11	11	11	11	TFL	TFL	1PL	TPL	1PL	TPL	EP	EP	EP	EP	EP	EP	TPL	EP	EP	EP	EP	EP	EP	EP
311 - 314	56 - 82	8	8	9.5	11	11	11	11	11	1FL	TFL	1PL	TPL	1PL	TPL	EP	EP	EP	EP	EP	EP	TPL	EP	EP	EP	EP	EP	EP	EP
311 - 314	86 - 113	8	8	9.5	11	11	11	11	11	TFL	TFL	1PL	TPL	1PL	TPL	EP	EP	EP	EP	EP	EP	TPL	EP	EP	EP	EP	EP	EP	EP
311 - 314	117 - 129	9.5	9.5	11	11	11	11	11	11	TFL	TFL	1PL	TPL	1PL	TPL	EP	EP	EP	EP	EP	EP	TPL	EP	EP	EP	EP	EP	EP	EP
315 - 318	56 - 82	8	8	9.5	11	11	11	11	11	TFL	TFL	1PL	TPL	1PL	TPL	EP	EP	EP	EP	EP	EP	TPL	EP	EP	EP	EP	EP	EP	EP
315 - 318	86 - 113	8	8	9.5	11	11	11	11	11	TFL	TFL	1PL	TPL	1PL	TPL	EP	EP	EP	EP	EP	EP	TPL	EP	EP	EP	EP	EP	EP	EP
315 - 318	117 - 129	9.5	9.5	11	11	11	11	11	11	TFL	TFL	1PL	TPL	1PL	TPL	EP	EP	EP	EP	EP	EP	TPL	EP	EP	EP	EP	EP	EP	EP
319 - 321	56 - 82	8	8	9.5	11	11	11	11	11	TFL	TFL	1PL	TPL	1PL	TPL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL
319 - 321	86 - 113	8	8	9.5	11	11	11	11	11	TFL	TFL	1PL	TPL	1PL	TPL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL
319 - 321	117 - 129	9.5	9.5	11	11	11	11	11	11	TFL	TFL	1PL	TPL	1PL	TPL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL
322 - 325	56 - 82	8	8	9.5	11	11	11	11	11	TFL	TFL	1PL	TPL	1PL	TPL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL
322 - 325	86 - 113	8	8	9.5	11	11	11	11	11	TFL	TFL	1PL	TPL	1PL	TPL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL
322 - 325	117 - 129	9.5	9.5	11	11	11	11	11	11	TFL	TFL	1PL	TPL	1PL	TPL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL	T3.5FL

# Product Information



## 281-1055 Cross Members, BOC and Intermediate(s), Steel, HD Back to Back Channel Type (281AA5)

**Affects:** Conventional Models  
**Related:** Frame Rails (274), Inner Liner (LINER), Wheel Base (271)  
**Updated:** May 3, 2018



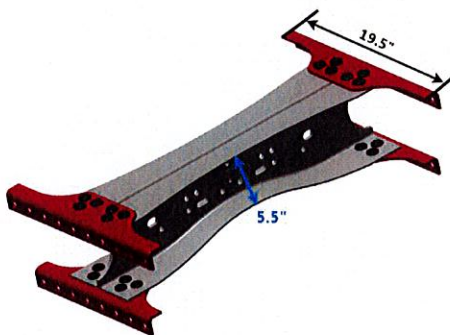
Cross members are broken down into three areas.

BOC and Intermediate cross members are ordered under the 281- sales code. The BOC cross member is in a static location, while the intermediate cross members are free to move and change quantity depending on other equipment ordered.

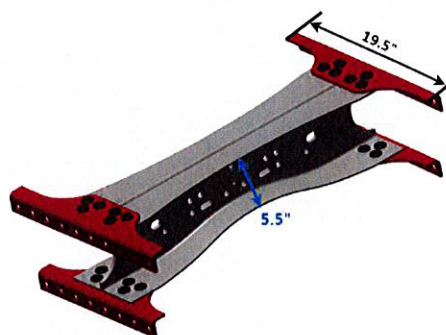
Cross members behind the rear axle are not always necessary. They are usually not required until the after frame dimension is greater than 70". If the after frame dimension is roughly 129" or longer, it may require (2) cross members.

The rear closing cross member comes in a variety of configurations especially when comparing a tractor to a truck. On tractors it is general practice to use a tapered closing cross member to facilitate trailer connecting. On trucks with short after frame dimensions that are going to be used as a dump truck, the closing cross member can be deleted if the body builder requests its removal for the dump body hinge assembly.

BOC Cross Member:



Intermediate Cross Member:



# Product Information



## 004-2110 Premium Trim Steel Grey (004034)

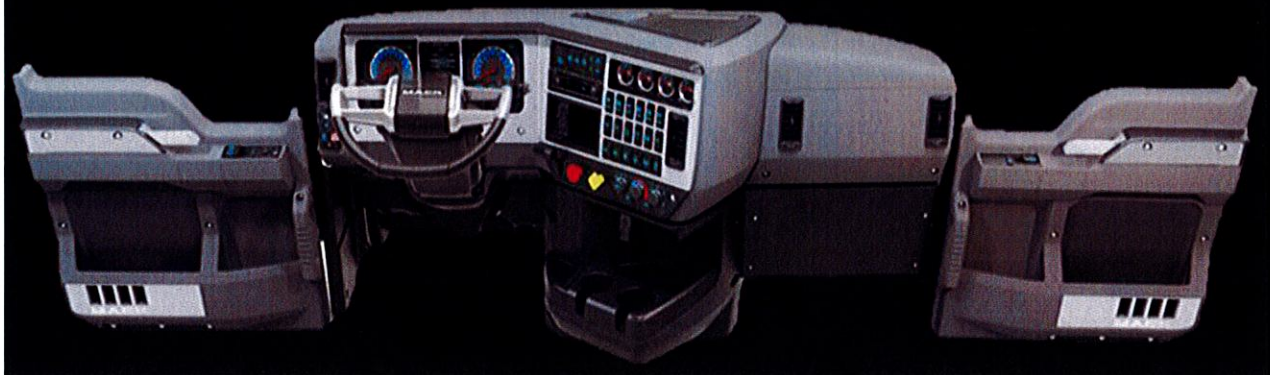
**Affects:** Anthem, Pinnacle, Granite

**Related:** Seats (196/197), Seat Covering (MAP/MAQ)

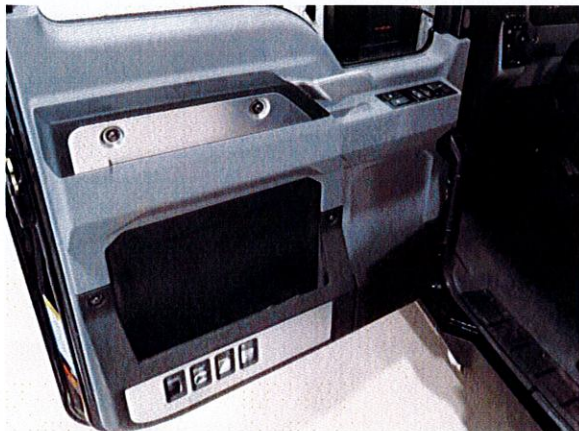
**Updated:** November 16, 2017

## PREMIUM TRIM - GREY

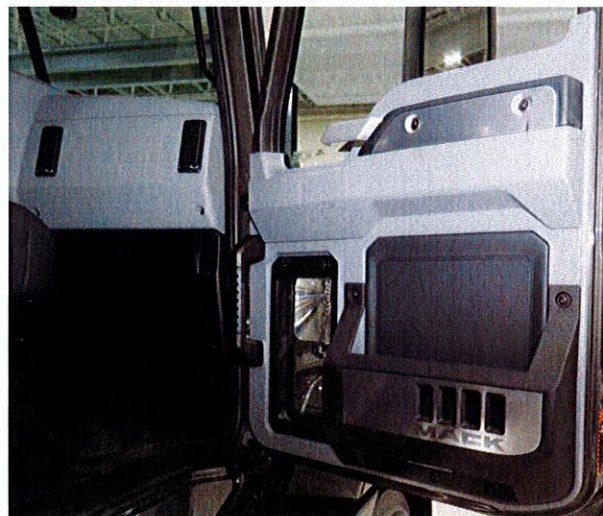
Grey interior; available on all models - day cabs and sleeper cabs



Left Door:



Right Door:



Both door panels have a black grab handle as a standard feature.

# Product Information



## 004-2110 Premium Trim Steel Grey (004034)

**Affects:** Anthem, Pinnacle, Granite  
**Related:** Seats (196/197), Seat Covering (MAP/MAQ)  
**Updated:** November 16, 2017



INTERIOR TRIM LEVELS						
TRIM LEVEL	DASH & DOOR TRIM	SEAT COVERING	STEERING WHEEL	DOOR INSERT	SLEEPER	HEADLINER
STANDARD	GUN METAL	VINYL, VINYL & CLOTH	STANDARD WHEEL W/O CONTROLS	NONE	STEEL GRAY	VINYL
STANDARD PLUS	GUN METAL	VINYL, VINYL & CLOTH	STANDARD WHEEL W/ CONTROLS	NONE	STEEL GRAY	VINYL
PREMIUM	BRUSHED ALUMINUM	VINYL & CLOTH, ULTRA LEATHER	LEATHER WRAPPED WHEEL WITH CONTROLS	STITCHED FABRIC	STEEL GRAY	VINYL
ULTRA	WOOD GRAIN	ULTRA LEATHER	LEATHER WRAPPED WHEEL WITH CONTROLS	EMBOSSSED LEATHER	STEEL GRAY WITH LEATHER	DIAMOND EMBOSSSED

INTERIOR COLORS	DAY CAB	48" SLEEPER	70" SLEEPER	STANDARD TRIM	STD. PLUS TRIM	PREMIUM TRIM	ULTRA TRIM
STEEL GRAY / BLACK	X	X	X	X	X	X	
SIERRA TAN	X			X	X	X	
GRAY/BLACK/UMBER			X				X

# Product Information



## 1746111 Heavy Duty AM/FM/WB Stereo Receiver with Front-panel USB Port and Integrated Bluetooth®

**Affects:** Anthem, Granite, Pinnacle  
**Related:** Audio Accommodation (174)  
**Updated:** May 20, 2020



- **Heavy-duty design:** Made for a commercial vehicle driver by having larger buttons and a heavy-duty construction for tougher environments.
- **Weather band (WB):** Offers National Weather Radio Broadcasts from over 1,025 locations throughout the United States on seven VHF/FM frequencies to provide continuous weather information 24-hours a day.
- **Built-in Bluetooth®:** Selectable between audio streaming and / or hands-free phone operation - up to 10 devices can be easily stored in the radio memory for fast pairing.
- **Front-panel USB port:** Gives a direct-connect location for memory devices with USB interface to play stored music and / or charge the device and have iPod® control through the radio.
- **Range:** 162 .400 MHz - 162 .550 MHz
- **Front auxiliary input:** Easy access to plug in a smart device and enjoy your digital music library through the vehicle's speakers
- **Rear Auxiliary input:** Provides an auxiliary terminal for permanent hard wire to the rear of the radio.
- **Quartz alarm clock:** Built-in quartz alarm clock with one-hour timer.
- **Output power:** 18 W x 4 Channels.
- **Sound quality (EQ):** Select the sound type (Pop, Rock, Country, News, Jazz, Classical or Manual) to improve the dynamic range.
- **Mechless:** No compact disc (CD) player.
- **VF dot matrix display:** Three-line display that maximizes the viewing area on the front of the radios allowing for more information on the screen and minimizes the need to scroll.
- Separate bass, mid, treble, balance and fader controls.
- 6 AM and 12 FM radio preset buttons.
- Auto-store memory.
- Back-lit display lighting (blue)
- PA function



# Product Information



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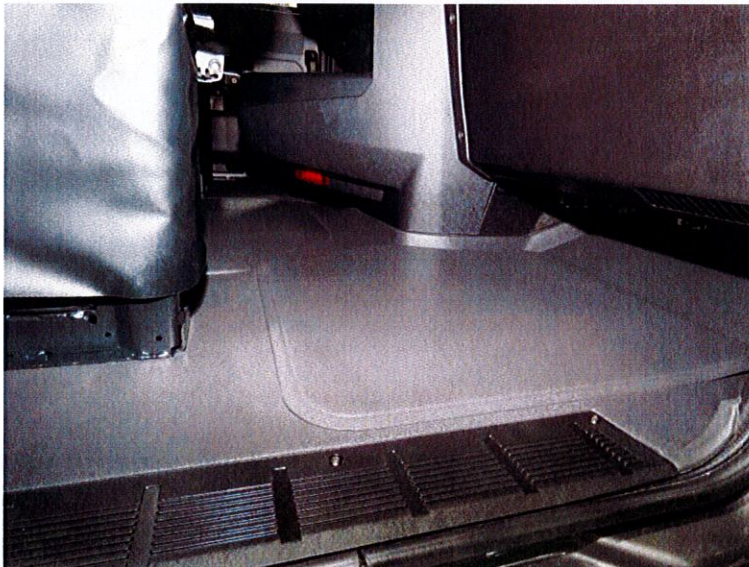
**184-0008**      **Polyurethane Floor Mat with Polyurethane Inserts (184AA3)**  
**Affects:**      Conventional Models  
**Related:**      Interior Trim Package  
**Updated:**     September 13, 2017

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Driver Side:



Passenger Side:





**Sales Code:** 312-0010 / 312AA6

**Description:** (5) Trucklite LED Chrome Bullet Type ID/  
Clearance Lights

**Date:** June 17, 2016

**SED**  
PRODUCT INFORMATION

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## Sales Engineering

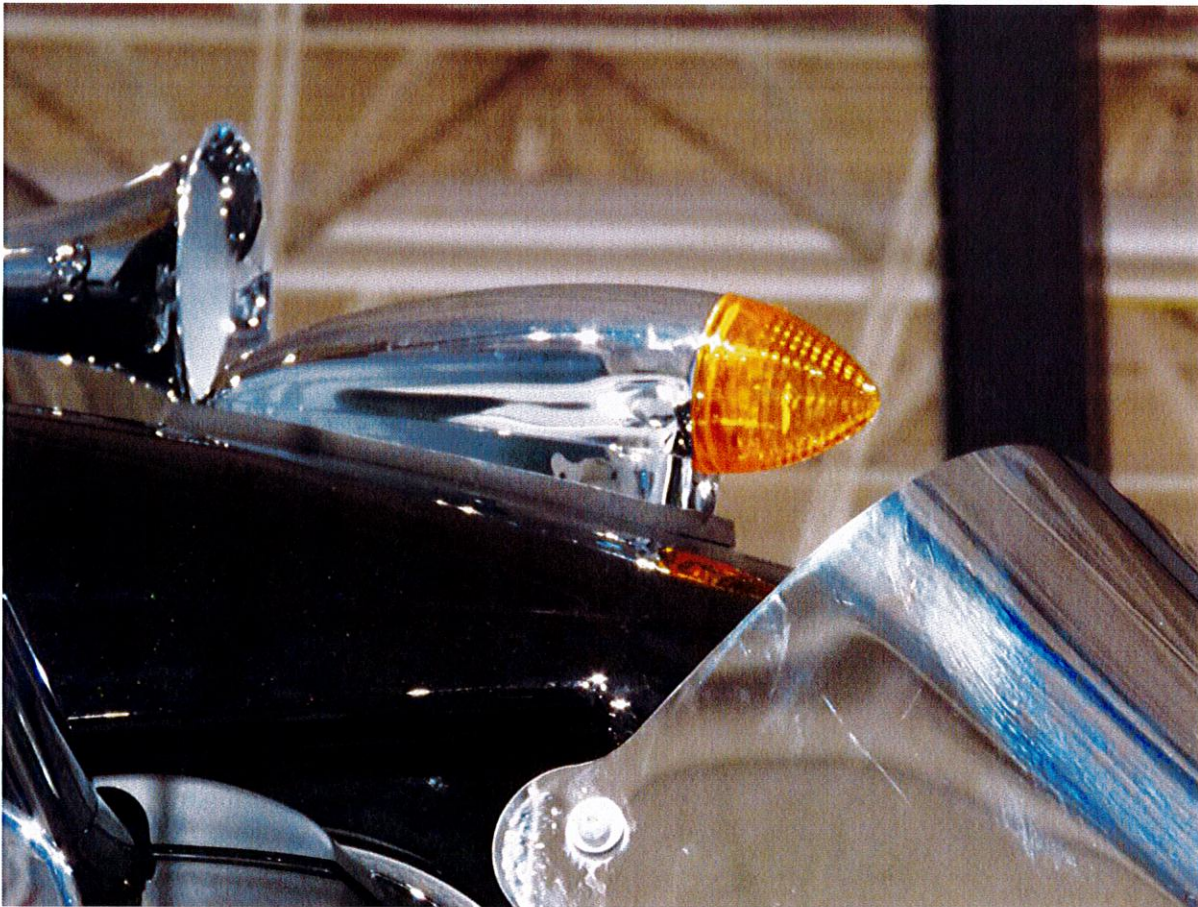
Mack Trucks Inc.  
2402 Lehigh Parkway South  
Allentown, PA 18103

Phone: 800-868-6225

Fax: 610-351-8791

Email: [sales.engineering@macktrucks.com](mailto:sales.engineering@macktrucks.com)

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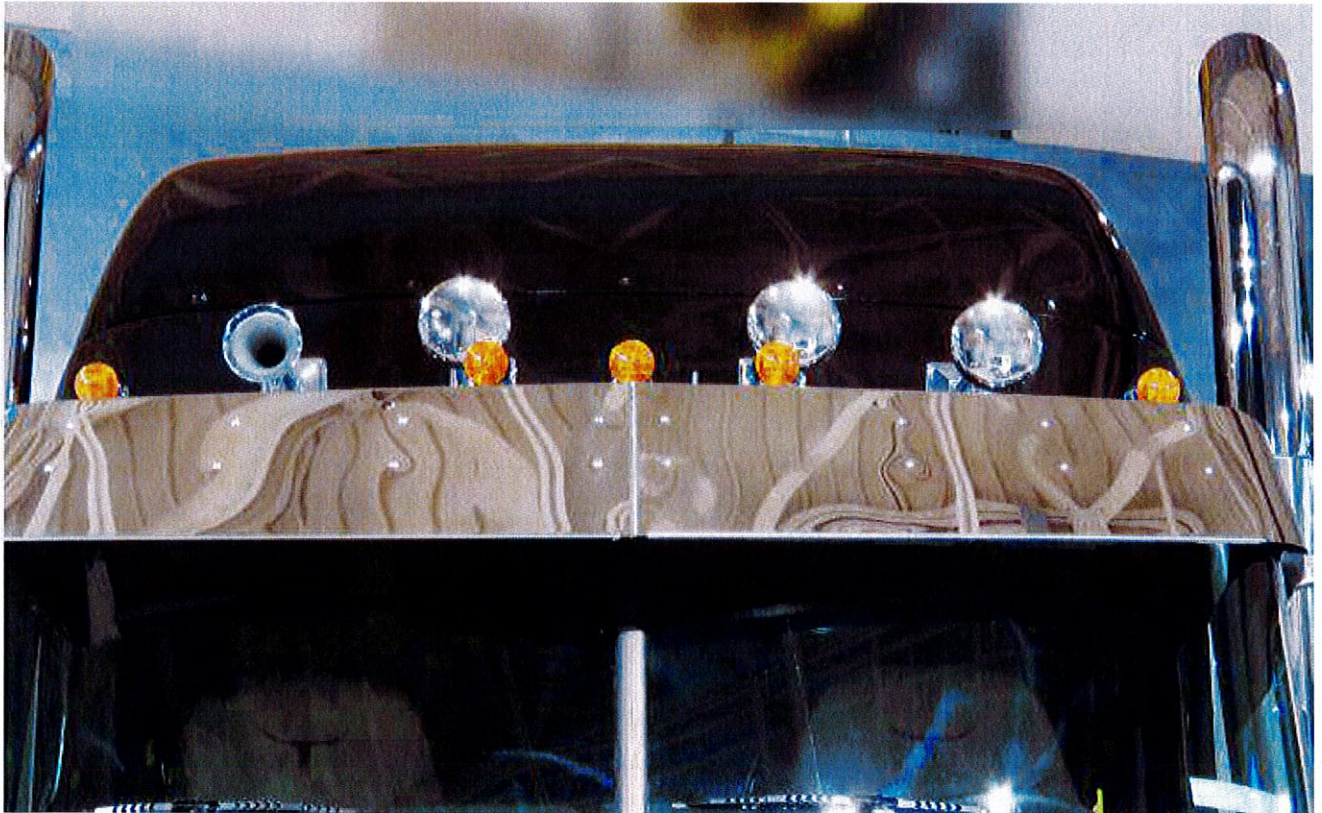


The information in this document was accurate as of the date of release and pertains to the current version of Mack's Sales Tool. Mack Trucks, Inc. reserves the right to make changes in specifications, equipment or design, or to discontinue models or options without notice.



# SED

PRODUCT INFORMATION



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# Product Information



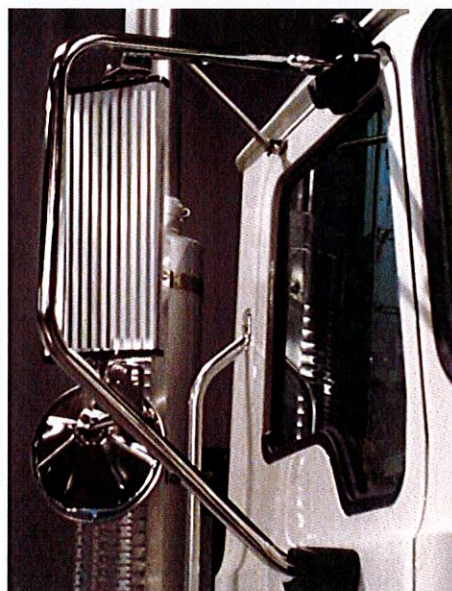
## 152-2401 Flat Mirror, Polished Aluminum, Heated, No Illumination (1520C2)

**Affects:** Vocational Models

**Related:** Cab (144)

**Updated:** November 2, 2017

Shown on Granite:





# SED

PRODUCT INFORMATION

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## Sales Engineering

Mack Trucks, Inc.  
Allentown, PA 18103  
United States

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Phone: 800 868 6225  
Fax: 610 351 8791

MackTrucks.com

**PID Code/Condition: 153-2002**

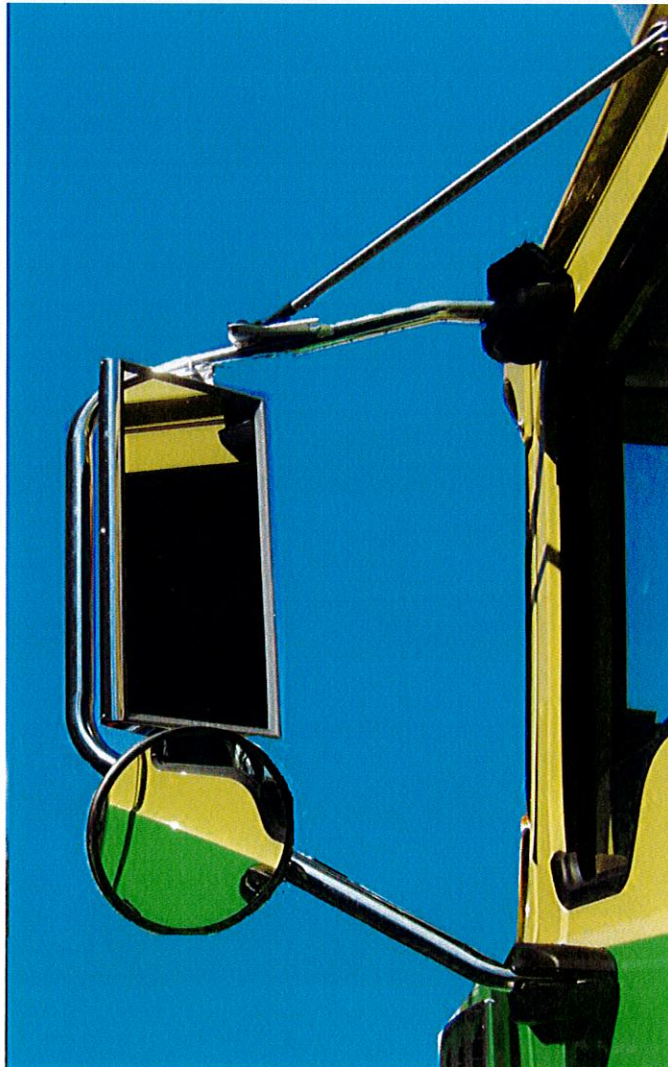
**MSS Sales Code: 153AA2**

**Description: Convex Type Exterior Mirrors**

**Models: All Conventional Models**

**Date: May 29, 2015**

Convex type, bright finish, left and right 8" diameter mirrors. Pictured with Aerodynamic Moto Mirrors, 152-2113 (152AA7).



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# SED

PRODUCT INFORMATION



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# Product Information



## 157-9001 Exterior Sunvisor, Stainless Steel (157037)

**Affects:** Conventional Models  
**Related:** Sleeper Box (016), Roof Fairing (159)  
**Updated:** April 24, 2018

Stainless Steel Exterior Sun Visor shown on Anthem Day Cab





# SED

PRODUCT INFORMATION

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## Sales Engineering

Mack Trucks, Inc.  
Allentown, PA 18103  
United States

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Phone: 800 868 6225  
Fax: 610 351 8791

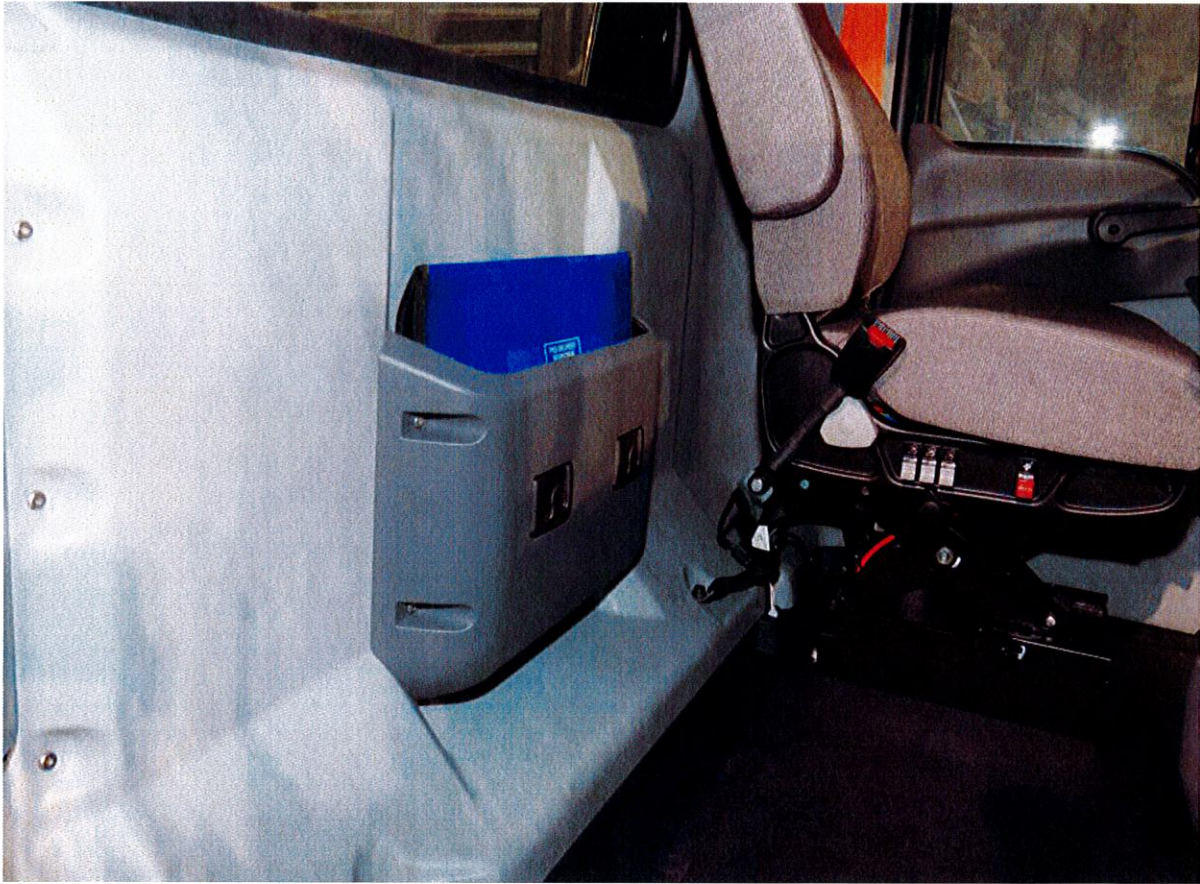
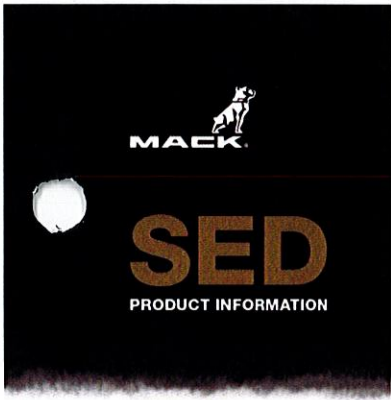
MackTrucks.com

**PID Code/Condition:** D0C-0001  
**Description:** Rear Wall Storage Pouch  
**Models:** Conventionals  
**Date:** January 22, 2016



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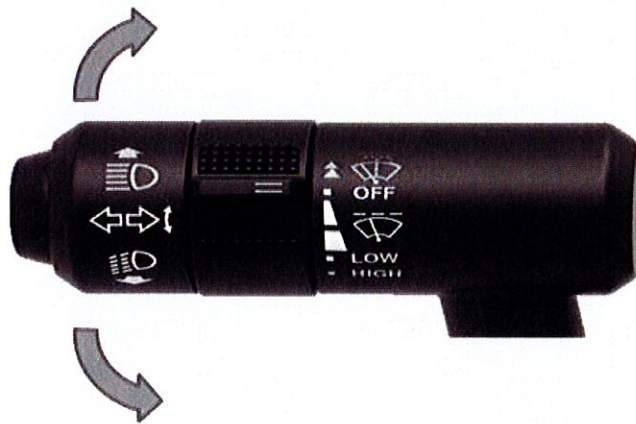
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# Product Information



**148-0011**     **Wiper Controls (148AA3)**  
**Affects:** Anthem, Pinnacle, Granite  
**Related:** Interior Trim (004)  
**Updated:** May 30, 2017

## STALK CONTROLS



### Left Stalk Functions

- **Self-canceling turn signals:** Stalk Up/Down
- **Hi-beam control:**
  - Back (aft): Hi beam flash (momentary)
  - Forward = Hi beam lock
- **Marker Interrupt:** End button
- **Wipers:** Rotating/scroll ring
  - ↑ • Wash (momentary)
  - OFF
  - ↓ • Wipers Intermittent 1 (10-12 sec)\*
  - Wipers Intermittent 2 (5-6 sec)\*
  - Wipers intermittent 3 (2-3 sec)\*
  - LO
  - HI

\* Any intermittent position starts with an immediate swipe.

# STANDARD CHASSIS 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 are followed. See your local authorized Mack dealer for recommended maintenance and inspection procedures. All warranty periods are calculated from date in service of the vehicle. All coverage is 100% for parts and labor subject to the qualifications, limitations, and exclusions 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 2023 trucks, AN, GR, LR, PI, TE models, manufactured by Mack Trucks, operated in the United States and Canada with EPA 17 and newer engines. Specific coverage is based on the application and weight class as described in the following chart:

	<b>Standard NORMAL DUTY</b>	<b>Standard HEAVY DUTY</b>	<b>Standard SEVERE DUTY</b>
<b>Typical Vocations</b>	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
<b>Weight Class Qualifications</b>	<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 > 52,000 lbs. (> 23.5 mt.) or GVWR > 80,000 lbs. (> 36 mt.) or GCWR > 143,000 lbs. (> 65 mt.)
<b>Basic Coverage *</b>	12 months or 100,000 miles (160,934 km)	12 months or 100,000 miles (160,934 km)	12 months or 100,000 miles (160,934 km)
<b>Chassis Towing</b>	Towing/Road Service coverage is limited to 90 days or 5,000 miles (8047 km), whichever occurs first, limited to the truck (less trailer) and to a single tow per incident to the nearest authorized Mack Trucks service center. Charges in excess of \$1,000 are not covered unless Mack OneCall™ service is contacted and approves additional amounts prior to tow.		Not Applicable
<b>Air Conditioning</b>	Air conditioning (sealed system only) is covered for 12 months with no mileage limitation.		
<b>Engine / Emission</b>	Not covered under this warranty certificate. See respective engine manufacturer's warranty certificate. See paragraph 19 on reverse side.		
<b>Transmission, Driveline, Rear Axle, Front Non-Drive Steer Axle</b>	36 months or 350,000 miles (563,270 km) 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 19 on reverse side.		12 months or 100,000 miles (160,934 km)
<b>Mack Carrier &amp; Axle Housing</b>	60 months or 750,000 miles (1,207,008 km)	60 months or 500,000 miles (804,672 km)	24 months or 100,000 miles (160,934 km)
<b>mDRIVE™ Transmission</b>	60 months or 750,000 miles (1,207,008 km) mDRIVE™ and mDRIVE™ HD	mDRIVE™: 36 months or 250,000 miles (402,336 km); mDRIVE™ HD: 36 months with no mileage limitation	12 months or 100,000 miles (160,934 km); mDRIVE™ HD: 24 months with no mileage limitation
<b>mDRIVE™ Clutch</b>	36 months or 350,000 miles (563,270 km) mDRIVE™ and mDRIVE™ HD	36 months or 250,000 miles (402,336 km) mDRIVE™ and mDRIVE™ HD	mDRIVE™: 12 months or 100,000 miles (160,934 km); mDRIVE™ HD: 24 months or 250,000 miles (402,336 km)
<b>mDRIVE™ Transmission Towing</b>	Towing/Road Service on warrantable transmission failures is covered to 24 months or 250,000 miles (402,336 km) whichever occurs first, limited to the truck (less trailer), and to a single tow per incident to the nearest authorized Mack Trucks service center. Charges in excess of \$1,000 are not covered unless Mack OneCall™ service is contacted and approves additional amounts prior to tow.		Not Applicable
<b>Trunnion Bracket</b>	36 months or 300,000 miles (482,803 km) Limited to Trunnion Bracket & Spindle, Suspension Trunnion (Except Bushings)		12 months or 100,000 miles (160,934 km) (same restrictions as Normal & Heavy)
<b>Cab Structure</b>	60 months or 500,000 miles (804,672 km)	24 months or 200,000 miles (321,869 km)	12 months or 100,000 miles (160,934 km)
<b>Internal Cab Corrosion</b>	60 months or 500,000 miles (804,672 km)	60 months or 500,000 miles (804,672 km)	60 months or 500,000 miles (804,672 km)
Covered only where metal is perforated from the inside to the outside. See paragraph 18 on the reverse side.			
<b>Frame Rail / Crossmembers</b>	60 months or 500,000 miles (804,672 km) Anthem/Pinnacle Models Only: 72 months or 750,000 miles (1,207,008 km)	36 months or 300,000 miles (482,803 km) Granite Model only: 60 months or 500,000 miles (804,672 km)	12 months or 100,000 miles (160,934 km)
<b>Noise Emission</b>	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.		

\*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 Loose Hose Clamps.

## 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. 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 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.

### EXCLUSIONS:

- REPAIR:** In the case of acknowledged defective Covered Parts, exchange with factory remanufactured parts may occur. Warranty repairs do not constitute an extension of any warranty period for any vehicle, component or part.
- DAMAGES:** Damages due to misapplication, misuse, accidents, negligence, improper operations, alterations, storage or transport, operation at excessive speeds, loading beyond the factory rated load capacity, failure to follow Mack Trucks' recommended inspection, maintenance, and service procedures, and improper or insufficient maintenance services are not covered.
- PROGRESSIVE DAMAGE:** Damages due to failure of operator to take reasonable precautions to mitigate damage are not covered. Damages to a Covered Part due to failure of non-covered part are not covered. Coverage is limited to failure of a Covered Part directly causing failure of a non-covered part, where reasonable precautions were taken to mitigate damages.
- APPLICATION:** The selling dealer is responsible for designating the correct application and/or specification for a vehicle sold to a customer. Damages due to misapplication, including but not limited to, failures of component parts of vehicles being operated in excess of factory rated load capacities, or the use of a vehicle, component or part for a purpose for which it was not intended are not covered.
- ALTERATIONS:** Any vehicle, component or part 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.
- NON-ORIGINAL EQUIPMENT:** Any part of the vehicle that fails, malfunctions, or does not perform as a result of improper conversion or installation of bodies or equipment by other manufacturers or suppliers is not covered.
- MAINTENANCE AND PARTS CONSUMED:** Maintenance and inspection requirements found in the Operator's Manuals and service manuals/instructions, including, but not limited to, engine tune-up, fuel system cleaning, replacement of lubricants and filter elements, adjustments of the engine injection pump/transmission/brakes/linkages, as well as diagnosis, test time and all other adjustments must be followed and are not covered. Parts which are normally consumed or worn out during the vehicle's normal service life and customarily replaced during usual maintenance service, including, but not limited to, mud flaps and brackets, brake linings, clutch brake, and clutch linings, are not covered.
- PERFORMANCE COMPLAINTS:** Performance complaints are not covered (including, but not limited to, low power and/or poor fuel economy). Coverage is limited to defects in material and workmanship of a Covered Part directly causing the performance issue.
- WEAROUT:** Mack Trucks does not cover normal wear of Covered Parts. Failures attributable to wear are excluded. For example and without limitation, the wear rate of parts in any engine or transmission, and especially those parts within the combustion area and clutch housing area, will vary depending upon operating conditions and environment. Conditions, such as load, trailer configuration, road speed and road conditions, as well as the quality of fuel, lubrication oil, and all filters bear a direct relationship to the wear rate and resulting life of parts. Depending upon the severity of these various conditions, parts wear and resulting failure could occur within the time limit of the coverage.
- NON-GENUINE PARTS:** Any failure of any vehicle, component or part caused by the use of parts and accessories, or major assemblies and exchange units, which do not meet factory standards is not covered.
- ODOMETER READING:** Any vehicle on which the actual mileage or hours cannot readily be determined, or on which the odometer, hour meter, or Electronic Control Unit has been disconnected, disabled, or altered, may not be covered by this warranty.
- ACCESS TO INFORMATION:** Owner 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.
- LABOR:** Labor to remove and install a Covered Part is included only if a Mack Trucks authorized dealer originally installed the Covered Part. Labor for overtime and/or shift differential is not covered. Excessive labor for a warrantable repair due to the prior installation of equipment or body is not covered.  
**MISC. EXPENSE:** Meals, lodging, communications charges, travel time and expense, loss of cargo, downtime, loss of profit/revenue, rental vehicles, 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.
- ADDITIONAL COMPONENTS:** Components or parts that are not installed by Mack Trucks, including winches, power take-offs, dumper, mixer and refuse assemblies, hoists and bodies or other special equipment are not covered. During a warrantable repair, additional time to remove any customer installed components will not be covered under warranty. Mack Trucks' factory manufacturing records will be determinative as to factory installed components.
- TOWING:** Unless expressly provided in this Warranty Certificate, expenses for towing or road service are not covered. Failures caused by improper towing technique are not covered.
- SUSPENSION PARTS:** Suspension parts, including but not limited to rubber bushings, torque rod bushings, spring pins and bushings, and greased lubrication points that fail due to improper maintenance, abnormally severe service or abuse are not covered.
- CAB STRUCTURE AND CORROSION:** Cab structural defects or cab corrosion that occurs in areas of the cab that previously were damaged, repaired, altered or modified are not covered. Cab corrosion where metal is perforated from the outside to the inside is not covered.
- VENDOR ENGINES, ALLISON AUTOMATIC TRANSMISSIONS and ALTERNATE FUEL STORAGE AND DELIVERY SYSTEMS:** Vendor engines, Allison automatic transmissions and alternate fuel (CNG/LNG/DME) fuel storage/delivery components used in Mack trucks are warranted by their respective manufacturers and not by Mack Trucks, Inc. Refer to the manufacturers' warranty statements.
- OIL CONSUMPTION:** Before a claim based upon excessive oil consumption will be considered, the owner must provide proof that all recommended maintenance has been performed and submit adequate documentation to show that oil consumption exceeds Mack Trucks' published standards. Under no circumstances will warranty pay for repairs related to excessive oil consumption after the earlier of 24 months, 250,000 miles, or 402,000 kilometers.
- ENVIRONMENTAL DAMAGE:** Parts made out of cloth, leather, wood, rubber, synthetics, paint or chrome which have been affected by exposure to the elements or chemical influence including, but not limited to, road salt/chemicals, industrial fall-out or the use of improper cleaners, polishes and/or waxes are not covered.
- ALIGNMENT:** Alignment of axle(s), balance of tires, changing of axle camber, caster, toe and thrust angle are not covered.
- GLASS:** Glass breakage and scratches are not covered unless physical proof of manufacturing responsibility is established.
- TIRES:** Except as expressly provided in warranty certificates covering Green House Gas (GHG) components, tires are covered only under warranties provided by the tire manufacturer.
- CHANGES:** Mack Trucks reserves the right to make any changes in design, or make additions to or upon its products, without incurring any obligations to install the same changes on vehicles previously built.

**THIS WARRANTY IS MADE EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, REPRESENTATIONS OR CONDITIONS, STATUTORY OR OTHERWISE EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND OF ANY OTHER OBLIGATION OR LIABILITY ON THE PART OF THE MANUFACTURER INCLUDING, WITHOUT LIMITATION OF THE FOREGOING, CONSEQUENTIAL, INDIRECT, AND INCIDENTAL DAMAGES. MANUFACTURER NEITHER ASSUMES NOR AUTHORIZES ANY PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF VEHICLES, COMPONENTS OR PARTS.**

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Mack Trucks, Inc.  
Post Office Box 26259  
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Greensboro, North Carolina 27409

# STANDARD ENGINE WARRANTY CERTIFICATE

(EPA 17 and Newer, Model Year 2023)



Mack Trucks warrants certain individual components of each new Mack MP®7 and MP8 EPA 17 and newer emission engine in a new Mack truck to be free from defects in material and workmanship under normal use and service up to the periods specified, provided all Mack Trucks' maintenance and inspection requirements are followed. See your local authorized Mack dealer for recommended maintenance and inspection procedures. All warranty periods are calculated from the date in service of the vehicle. All coverage is 100% for parts and labor subject to the qualifications, limitations and exclusions as noted.

LIMITATIONS AND EXCLUSIONS TO THIS WARRANTY APPEAR ON THE FOLLOWING PAGES OF THIS CERTIFICATE. THESE LIMITATIONS AND EXCLUSIONS ARE IMPORTANT AND MUST BE READ AND UNDERSTOOD.

This warranty applies to only new Mack MP®7 and MP8 engines meeting EPA 17 and newer emission requirements in new Mack trucks operated in the United States and Canada installed in Model Year 2023 trucks.

**Standard Mack Engine Components Coverage:** 24 months or 250,000 miles (402,336 km), whichever occurs first, unless otherwise noted.

**Major Components Coverage:** 60 months or 500,000 miles (804,672 km), whichever occurs first.

USE OF IMPROPER OR UNAPPROVED FUEL OR ENGINE OIL WILL VOID THE ENGINE AND AFTERTREATMENT SYSTEM (DIESEL PARTICULATE FILTER) WARRANTIES. EPA 17 AND NEWER EMISSION MACK ENGINES REQUIRE THE USE OF MACK SPECIFICATION EOS 4.5 HIGH PERFORMANCE DIESEL ENGINE OIL AND ULTRA LOW SULFUR DIESEL (ULSD) FUEL.

USE OF FLUIDS OTHER THAN API CERTIFIED DIESEL EXHAUST FLUID (DEF) WILL COMPROMISE AFTERTREATMENT SYSTEM PERFORMANCE, INCREASE EMISSIONS, AND MAY IMPACT THIS TRUCK'S PRODUCT WARRANTIES.

## SEE FOLLOWING TABLE FOR SPECIFIC COVERAGES:

Covered Standard Components List: 24 Months or 250,000 miles (402,336 km)	Qualifications and Limitations
Air Compressor	Includes: Sprocket and Mounting Bolts
Bearings	All internally lubricated bearings and bushings only.
Camshaft, Caps, and Bolts	Failures resulting from the valve and injector adjustments not being maintained properly are <b>NOT</b> covered. Normal maintenance adjustments are <b>NOT</b> covered.
Connecting Rods, Caps, and Bolts	
Coolant Duct Cover	
Crankcase Ventilation Assembly	
Crankshaft	
Crankshaft Hub	
Cylinder Block	Includes: Casting, Main Caps, and Bolts
Cylinder Block Heater	
Cylinder Head	Includes: Assembly, Casting, Bolts, Plugs, and Sleeves
Diesel Particulate Filter Assembly (DPF) / Diesel Oxidation Catalyst (DOC) / Selective Catalytic Reduction (SCR)	Includes: Aftertreatment Hydrocarbon Injector (AHI), Aftertreatment Wiring Harness, Aftertreatment Control Module, Diffuser Pipe (AHI Mounting), Fuel Lines to AHI Injector, AHI Shutoff Valve, AHI Fuel Pressure Sensor, Pre-Catalyst Temperature Sensor, Post-Catalyst Temperature Sensor, Downstream DPF Temperature Sensor, DPF Differential Pressure Sensor, Particulate Matter (PM) Sensor, SCR Assembly, DEF Pump Assembly (Pump Reverting Valve, Pump Pressure Sensor), DEF Injector, DEF Tank Heating Control Valve, NOx (SCR Inlet and Outlet) Sensor, Downstream SCR Temperature Sensor (T4)
EGR (Exhaust Gas Recirculation) Components	All components including Clamps, Control Valve, Controller Area Network (CAN) EGR Valve, Cooler, Fittings, Gaskets, Mixer, Pipes, Charge Air Cooler Temperature Out (CAC Out) Sensor, EGR Venturi Differential Pressure Sensor, EGR Wiring Harness.
Electrical EA Harness Supplied with Engine	From EECU to sensors and injectors and actuators
Engine Electronic Control Unit (EECU)	
Engine Brake Mechanism - PowerLeash™	Factory installed only. Includes: PowerLeash™ Control Valve and PowerLeash™ Rocker Arms. Turbo Compound (TC) engine: Closed Loop Butterfly (CLB)

Continued on Page 2...

<b>Covered Standard Engine Components List: 24 Months or 250,000 miles (402,336 km)</b>	<b>Qualifications and Limitations</b>
Exhaust Manifold	Includes: Casting, Joint Seals, Rings, and Wraps
Fan Belt Tensioner Assemblies and Bracket	Excludes: Fan Belts
Flywheel	Includes: Housing and Ring Gear
Fuel Filter Housing	Excludes: Filters
Fuel Injection System	Includes: Injectors and Common Rail Assembly (Electronic Fuel Pressure Regulator and Pressure Sensor)
Fuel Transfer Pump	
Gaskets, Seals, O Rings, and Silicon Sealant	
Gears	All internally lubricated gears only (Timing and Idler gears)
Hoses and Lines Supplied with Engine	Fluid carrying: Engine to engine mounted
Idler Pulleys	
Intake Manifold and Throttle Assembly	
Ladder Frame	
Oil Cooler	Engine Oil Cooler only
Oil Fill Tube and Cap	
Oil Filter Housing	Excludes: Oil Filters. Includes: All control valves and sensors contained in the Oil Filter Housing.
Oil Pan	
Oil Pump	
Piston Assembly	Includes: Cooler Nozzles, Liners, Pistons, and Rings
Pneumatic Control System	TC Engine: Air Valve Unit, Buffer Valve Unit, and Check Valve
Power Steering Pump	
Pre-Heater	Factory installed only. Includes: Preheat Relay, Terminals, and Power Cables
PTO Drive / REPTO (Rear Engine Mounted PTO Drive)	Factory installed only. Excludes: All Pumps or Driven Gears
Rocker Arm Assembly and Shafts	Includes: PowerLeash™ Rockers and Non-PowerLeash™ Rockers. Failures resulting from the valve and injector adjustments not being maintained properly are <u>NOT</u> covered. Normal maintenance adjustments are <u>NOT</u> covered.
Sensors (On Engine)	Includes: Temperature-Coolant, Crankcase Pressure, EGR Temperature, Engine Oil Level/Temperature, Engine Oil Pressure, Engine Timing/Speed (Flywheel), Temperature & Pressure – Inlet Manifold Air Sensor; Piston Cooling Jet Pressure
Starter Motor	
Telematics Gateway	TGW Unit and Associated Hardware (Antenna, Cab Overlay Harness, Antenna Cables)
Thermostat (Coolant)	Includes: Thermostat Side Cover
Timing Gear Cover and Plate	
Towing	Towing/Road Service on warrantable engine failures is covered to 24 months or 250,000 miles (402 336 km) whichever occurs first, limited to the truck (less trailer) and to a single tow per incident to the nearest authorized Mack service center. Charges in excess of \$1,000.00 are not covered unless Mack OneCall™ service is contacted and approves additional amounts prior to tow.
Turbocharger Assembly	Includes: VGT Actuator Module and Turbo Compound (TC) Assembly, if included
Valve Assembly	Includes: Guides, Keepers, Rotators, Seats, Springs, and Valves. Failures resulting from the valve adjustments not being maintained properly are <u>NOT</u> covered. Normal maintenance adjustments are <u>NOT</u> covered.
Valve Cover	
Valve Yokes (Bridge) and Pins	Failures resulting from the valve adjustments not being maintained properly are <u>NOT</u> covered. Normal maintenance adjustments are <u>NOT</u> covered.
Vibration Dampers and Bolts	
Water Pump Assembly	
<b>Covered Major Engine Components List: 60 Months or 500,000 miles (804,672 km)</b>	<b>Qualifications and Limitations</b>
Camshaft, Caps, and Bolts	Failures resulting from the valve & injector adjustments not being maintained properly are <u>NOT</u> covered. Normal maintenance adjustments are <u>NOT</u> covered.
Connecting Rods, Caps, and Bolts	
Crankshaft Forging	
Cylinder Block Casting, Main Caps, and Bolts	
Cylinder Head Casting and Bolts	
Exhaust Manifold Casting	
Flywheel Housing	
Gears	All internally lubricated gears only (Timing and Idler Gears)
Intake Manifold Housing	
Ladder Frame	
Thermostat Housing	
Timing Gear Mounting Plate	Excludes: Timing Gear Cover

Continued on Page 3...

## 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. 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 warranty set forth herein are free of charge. Warranty consideration can only be given if the deficiency is brought to the attention of an authorized Mack dealer on discovery and the vehicle must be made available, in a timely fashion during the coverage period, for repair.

### EXCLUSIONS:

- REPAIR:** In the case of acknowledged defective Covered Parts, exchange with factory remanufactured parts may occur. Warranty repairs do not constitute an extension of any warranty period for any vehicle, component or part.
- DAMAGES:** Damages due to misapplication, misuse, accidents, negligence, improper operations, alterations, storage or transport, operation at excessive speeds, loading beyond the factory rated load capacity, failure to follow Mack Trucks' recommended inspection, maintenance, and service procedures, and improper or insufficient maintenance services are not covered.
- PROGRESSIVE DAMAGE:** Damages due to failure of operator to take reasonable precautions to mitigate damage are not covered. Damages to a Covered Part due to failure of non-covered part are not covered. Coverage is limited to failure of a Covered Part directly causing failure of a non-covered part, where reasonable precautions were taken to mitigate damages.
- APPLICATION:** The selling dealer is responsible for designating the correct application and/or specification for a vehicle sold to a customer. Damages due to misapplication, including but not limited to, failures of component parts of vehicles being operated in excess of factory rated load capacities, or the use of a vehicle, component or part for a purpose for which it was not intended are not covered.
- ALTERATIONS:** Any vehicle, component or part 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.
- NON-ORIGINAL EQUIPMENT:** Any part of the vehicle that fails, malfunctions, or does not perform as a result of improper conversion or installation of bodies or equipment by other manufacturers or suppliers is not covered.
- MAINTENANCE AND PARTS CONSUMED:** Maintenance and inspection requirements found in the Operator's Manuals and service manuals/instructions, including, but not limited to, engine tune-up, fuel system cleaning, replacement of lubricants and filter elements, adjustments of the engine injection pump/transmission/brakes/linkages, as well as diagnosis, test time and all other adjustments must be followed and are not covered. Parts which are normally consumed or worn out during the vehicle's normal service life and customarily replaced during usual maintenance service, including, but not limited to, mud flaps and brackets, brake linings, clutch brake, and clutch linings, are not covered.
- PERFORMANCE COMPLAINTS:** Performance complaints are not covered (including, but not limited to, low power and/or poor fuel economy). Coverage is limited to defects in material and workmanship of a Covered Part directly causing the performance issue.
- WEAROUT:** Mack Trucks does not cover normal wear of Covered Parts. Failures attributable to wear are excluded. For example and without limitation, the wear rate of parts in any engine or transmission, and especially those parts within the combustion area and clutch housing area, will vary depending upon operating conditions and environment. Conditions, such as load, trailer configuration, road speed and road conditions, as well as the quality of fuel, lubrication oil, and all filters bear a direct relationship to the wear rate and resulting life of parts. Depending upon the severity of these various conditions, parts wear and resulting failure could occur within the time limit of the coverage.
- NON-GENUINE PARTS:** Any failure of any vehicle, component or part caused by the use of parts and accessories, or major assemblies and exchange units, which do not meet factory standards is not covered.
- ODOMETER READING:** Any vehicle on which the actual mileage or hours cannot readily be determined, or on which the odometer, hour meter, or Electronic Control Unit has been disconnected, disabled, or altered, may not be covered by this warranty.
- ACCESS TO INFORMATION:** Owner 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.
- LABOR:** Labor to remove and install a Covered Part is included only if a Mack Trucks authorized dealer originally installed the Covered Part. Labor for overtime and/or shift differential is not covered. Excessive labor for a warrantable repair due to the prior installation of equipment or body is not covered.
- MISC. EXPENSE:** Meals, lodging, communications charges, travel time and expense, loss of cargo, downtime, loss of profit/revenue, rental vehicles, 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.  
**ADDITIONAL COMPONENTS:** Components or parts that are not installed by Mack Trucks, including winches, power take-offs, dumper, mixer and refuse assemblies, hoists and bodies or other special equipment are not covered. During a warrantable repair, additional time to remove any customer installed components will not be covered under warranty. Mack Trucks' factory manufacturing records will be determinative as to factory installed components.
- TOWING:** Unless expressly provided in this Warranty Certificate, expenses for towing or road service are not covered. Failures caused by improper towing technique are not covered.
- SUSPENSION PARTS:** Suspension parts, including but not limited to rubber bushings, torque rod bushings, spring pins and bushings, and greased lubrication points that fail due to improper maintenance, abnormally severe service or abuse are not covered.
- CAB STRUCTURE AND CORROSION:** Cab structural defects or cab corrosion that occurs in areas of the cab that previously were damaged, repaired, altered or modified are not covered. Cab corrosion where metal is perforated from the outside to the inside is not covered.
- VENDOR ENGINES, ALLISON AUTOMATIC TRANSMISSIONS and ALTERNATE FUEL STORAGE AND DELIVERY SYSTEMS:** Vendor engines, Allison automatic transmissions and alternate fuel (CNG/LNG/DME) fuel storage/delivery components used in Mack trucks are warranted by their respective manufacturers and not by Mack Trucks, Inc. Refer to the manufacturers' warranty statements.
- OIL CONSUMPTION:** Before a claim based upon excessive oil consumption will be considered, the owner must provide proof that all recommended maintenance has been performed and submit adequate documentation to show that oil consumption exceeds Mack Trucks' published standards. Under no circumstances will warranty pay for repairs related to excessive oil consumption after the earlier of 24 months, 250,000 miles, or 402,000 kilometers.
- ENVIRONMENTAL DAMAGE:** Parts made out of cloth, leather, wood, rubber, synthetics, paint or chrome, which have been affected by exposure to the elements or chemical influence including, but not limited to, road salt/chemicals, industrial fall-out or the use of improper cleaners, polishes and/or waxes are not covered.
- ALIGNMENT:** Alignment of axle(s), balance of tires, changing of axle camber, caster, toe and thrust angle are not covered.
- GLASS:** Glass breakage and scratches are not covered unless physical proof of manufacturing responsibility is established.
- TIRES:** Except as expressly provided in warranty certificates covering Green House Gas (GHG) components, tires are covered only under warranties provided by the tire manufacturer.
- CHANGES:** Mack Trucks reserves the right to make any changes in design, or make additions to or upon its products, without incurring any obligations to install the same changes on vehicles previously built.

**THIS WARRANTY IS MADE EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, REPRESENTATIONS OR CONDITIONS, STATUTORY OR OTHERWISE, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND OF ANY OTHER OBLIGATION OR LIABILITY ON THE PART OF THE MANUFACTURER INCLUDING, WITHOUT LIMITATION OF THE FOREGOING, CONSEQUENTIAL, INDIRECT, AND INCIDENTAL DAMAGES. MANUFACTURER NEITHER ASSUMES NOR AUTHORIZES ANY PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF VEHICLES, COMPONENTS OR PARTS.**

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## MACK REAR CARRIER PROTECTION PLAN CERTIFICATE

Mack Trucks, Inc. ("Mack Trucks"), warrants certain individual components of each new Mack truck to be free from defects in material and workmanship under normal use and service up to the periods specified, provided all Mack Trucks maintenance and inspection requirements are followed. This extended coverage plan ("Protection Plan") provides additional coverage from failures of specified components or parts ("Covered Parts") that may occur after the Mack Standard Truck Warranty has expired and until the expiration of this Protection Plan. All warranty periods are calculated from date in service. This Protection Plan applies only to Mack trucks operated exclusively in the United States and Canada.

Mack Trucks' obligation under this Protection Plan is limited to, at its sole option, repair or replacement at a Mack Trucks authorized dealer of Covered Parts that are returned within the coverage period and acknowledged by Mack Trucks to be defective. Covered repairs must be performed by a Mack Trucks authorized dealer. All coverage is 100% for parts and labor except as noted. All parts replaced shall become the property of Mack Trucks.

This Protection Plan provides coverage for the following Covered Parts until the earliest to occur of the time/mileage/hours purchased, subject to the following Qualifications and Limitations.

### Rear Carrier Protection Plan Covered Parts List

Covered Parts	Qualifications and Limitations
Bearings	Excluded: External Lines (air or oil)
Bearing Covers	Excluded: Fittings
Bolts and Nuts	Excluded: Gasket and Seals after Standard Warranty Period
Bull Gear	Excluded: Rotating Shaft Lip Seal
Carrier Housing	Excluded: Sensor
Clamp Plates	
Differential Gear and Housing	
Mating Gear Set	
Thrust Washers	
Interaxle Driveshaft	
Power Divider and Pinion Housings	
Power Divider Cam	
Wedges and Shift Fork	
Spacer and Shims	

**THIS WARRANTY IS MADE EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES OR CONDITIONS, STATUTORY OR OTHERWISE, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND OF ANY OTHER OBLIGATION OR LIABILITY ON THE PART OF THE MANUFACTURER INCLUDING, WITHOUT LIMITATION OF THE FOREGOING, CONSEQUENTIAL AND INCIDENTAL DAMAGES. MACK TRUCKS, INC. NEITHER ASSUMES NOR AUTHORIZES ANY PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF VEHICLES, COMPONENTS OR PARTS.**

**LIMITATIONS AND EXCLUSIONS ARE LISTED ON THE FOLLOWING PAGE**





**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. 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 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.

**EXCLUSIONS:**

1. **REPAIR:** In the case of acknowledged defective Covered Parts, exchange with factory remanufactured parts may occur. Warranty repairs do not constitute an extension of any warranty period for any vehicle, component or part.
2. **DAMAGES:** Damages due to misapplication, misuse, accidents, negligence, improper operations, alterations, storage or transport, operation at excessive speeds, loading beyond the factory rated load capacity, failure to follow Mack Trucks' recommended inspection, maintenance, and service procedures, and improper or insufficient maintenance services are not covered.
3. **PROGRESSIVE DAMAGE:** Damages due to failure of operator to take reasonable precautions to mitigate damage are not covered. Damages to a Covered Part due to failure of non-covered part are not covered. Coverage is limited to failure of a Covered Part directly causing failure of a non-covered part, where reasonable precautions were taken to mitigate damages.
4. **APPLICATION:** The selling dealer is responsible for designating the correct application and/or specification for a vehicle sold to a customer. Damages due to misapplication, including but not limited to, failures of component parts of vehicles being operated in excess of factory rated load capacities, or the use of a vehicle, component or part for a purpose for which it was not intended are not covered.
5. **ALTERATIONS:** Any vehicle, component or part 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.
6. **NON-ORIGINAL EQUIPMENT:** Any part of the vehicle that fails, malfunctions, or does not perform as a result of improper conversion or installation of bodies or equipment by other manufacturers or suppliers is not covered.
7. **MAINTENANCE AND PARTS CONSUMED:** Maintenance and inspection requirements found in the Operator's Manuals and service manuals/instructions, including, but not limited to, engine tune-up, fuel system cleaning, replacement of lubricants and filter elements, adjustments of the engine injection pump/transmission/brakes/linkages, as well as diagnosis, test time and all other adjustments must be followed and are not covered. Parts which are normally consumed or worn out during the vehicle's normal service life and customarily replaced during usual maintenance service, including, but not limited to, mud flaps and brackets, brake linings, clutch brake, and clutch linings, are not covered.
8. **PERFORMANCE COMPLAINTS:** Performance complaints are not covered (including, but not limited to, low power and/or poor fuel economy). Coverage is limited to defects in material and workmanship of a Covered Part directly causing the performance issue.
9. **WEAROUT:** Mack Trucks does not cover normal wear of Covered Parts. Failures attributable to wear are excluded. For example and without limitation, the wear rate of parts in any engine or transmission, and especially those parts within the combustion area and clutch housing area, will vary depending upon operating conditions and environment. Conditions, such as load, trailer configuration, road speed and road conditions, as well as the quality of fuel, lubrication oil, and all filters bear a direct relationship to the wear rate and resulting life of parts. Depending upon the severity of these various conditions, parts wear and resulting failure could occur within the time limit of the coverage.
10. **NON-GENUINE PARTS:** Any failure of any vehicle, component or part caused by the use of parts and accessories, or major assemblies and exchange units, which do not meet factory standards is not covered.
11. **ODOMETER READING:** Any vehicle on which the actual mileage or hours cannot readily be determined, or on which the odometer, hour meter, or Electronic Control Unit has been disconnected, disabled, or altered, may not be covered by this warranty.
12. **ACCESS TO INFORMATION:** Owner 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.
13. **LABOR:** Labor to remove and install a Covered Part is included only if a Mack Trucks authorized dealer originally installed the Covered Part. Labor for overtime and/or shift differential is not covered. Excessive labor for a warrantable repair due to the prior installation of equipment or body is not covered.
14. **MISC. EXPENSE:** Meals, lodging, communications charges, travel time and expense, loss of cargo, downtime, loss of profit/revenue, rental vehicles, 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.
15. **ADDITIONAL COMPONENTS:** Components or parts that are not installed by Mack Trucks, including winches, power take-offs, dumper, mixer and refuse assemblies, hoists and bodies or other special equipment are not covered. During a warrantable repair, additional time to remove any customer installed components will not be covered under warranty. Mack Trucks' factory manufacturing records will be determinative as to factory installed components.
16. **TOWING:** Unless expressly provided in this Warranty Certificate, expenses for towing or road service are not covered. Failures caused by improper towing technique are not covered.
17. **SUSPENSION PARTS:** Suspension parts, including but not limited to rubber bushings, torque rod bushings, spring pins and bushings, and greased lubrication points that fail due to improper maintenance, abnormally severe service or abuse are not covered.
18. **CAB STRUCTURE AND CORROSION:** Cab structural defects or cab corrosion that occurs in areas of the cab that previously were damaged, repaired, altered or modified are not covered. Cab corrosion where metal is perforated from the outside to the inside is not covered.
19. **VENDOR ENGINES, ALLISON AUTOMATIC TRANSMISSIONS and ALTERNATE FUEL STORAGE AND DELIVERY SYSTEMS:** Vendor engines, Allison automatic transmissions and alternate fuel (CNG/LNG/DME) fuel storage/delivery components used in Mack trucks are warranted by their respective manufacturers and not by Mack Trucks, Inc. Refer to the manufacturers' warranty statements.
20. **OIL CONSUMPTION:** Before a claim based upon excessive oil consumption will be considered, the owner must provide proof that all recommended maintenance has been performed and submit adequate documentation to show that oil consumption exceeds Mack Trucks' published standards. Under no circumstances will warranty pay for repairs related to excessive oil consumption after the earlier of 24 months, 250,000 miles, or 402,000 kilometers.
21. **ENVIRONMENTAL DAMAGE:** Parts made out of cloth, leather, wood, rubber, synthetics, paint or chrome, which have been affected by exposure to the elements or chemical influence including, but not limited to, road salt/chemicals, industrial fall-out or the use of improper cleaners, polishes and/or waxes are not covered.
22. **ALIGNMENT:** Alignment of axle(s), balance of tires, changing of axle camber, caster, toe and thrust angle are not covered.
23. **GLASS:** Glass breakage and scratches are not covered unless physical proof of manufacturing responsibility is established.
24. **TIRES:** Except as expressly provided in warranty certificates covering Green House Gas (GHG) components, tires are covered only under warranties provided by the tire manufacturer.
25. **CHANGES:** Mack Trucks reserves the right to make any changes in design, or make additions to or upon its products, without incurring any obligations to install the same changes on vehicles previously built.



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## NEW PRODUCT WARRANTY



### DISTRIBUTOR SALES

### LIMITED WARRANTY ON NEW ALLISON AUTOMATIC TRANSMISSIONS USED IN ON-HIGHWAY TRUCK APPLICATIONS OTHER THAN AUTOMOTIVE FIRE APPARATUS APPLICATIONS

Allison Transmission, Inc. will provide for repairs or replacement, at its option, during the warranty period of each new Allison transmission listed below that is installed in an On-Highway Truck other than Automotive Fire Apparatus in accordance with the following terms, conditions, and limitations.

#### WHAT IS COVERED

- **WARRANTY APPLIES** — This warranty is for new Allison transmission models listed below installed in an On-Highway Truck other than Line Haul and Automotive Fire Apparatus and is provided to the original and any subsequent owner(s) of the vehicle during the warranty period.
- **REPAIRS COVERED** — The warranty covers repairs or replacement, at Allison Transmission’s option, to correct any transmission malfunction resulting from defects in material or workmanship occurring during the warranty period. Needed repairs or replacements will be performed using the method Allison Transmission determines most appropriate under the circumstances.
- **TOWING** — Towing is covered to the nearest Allison Transmission Distributor or authorized Dealer only when necessary to prevent further damage to your transmission.
- **PAYMENT TERMS** — Warranty repairs, including parts and labor, will be covered per the schedule shown in the chart contained in section “APPLICABLE MODELS, WARRANTY LIMITATIONS, AND ADJUSTMENT SCHEDULE.”
- **OBTAINING REPAIRS** — To obtain warranty repairs, take the vehicle to any Allison Transmission Distributor or authorized Dealer within a reasonable amount of time and request the needed repairs. A reasonable amount of time must be allowed for the Distributor or Dealer to perform necessary repairs.
- **TRANSMISSION REMOVAL AND REINSTALLATION** — Labor costs for the removal and re-installation of the transmission, when necessary to make a warranty repair, are covered by this warranty.
- **WARRANTY PERIOD** — The warranty period for all coverages shall begin on the date the transmission is delivered to the first retail purchaser, with the following exception:  
**Demonstration Service** - A transmission in a new truck or bus may be demonstrated to a total of 5000 miles (8000 kilometers). If the vehicle is within this limit when sold to a retail purchaser, the warranty start date is the date of purchase. Normal warranty services are applicable to the demonstrating Dealer. Should the truck or bus be sold to a retail purchaser after these limits are reached, the warranty period will begin on the date the vehicle was first placed in demonstration service and the purchaser will be entitled to the remaining warranty.

The warranty period for all coverages shall end at the expiration of the coverage set forth below:

#### APPLICABLE MODELS, WARRANTY LIMITATIONS, AND ADJUSTMENT SCHEDULE

APPLICABLE MODELS	WARRANTY LIMITATIONS (Whichever occurs first)		ADJUSTMENT CHARGE TO BE PAID BY THE CUSTOMER	
	Months	Transmission Miles Or Kilometers	Parts	Labor
<b>MD, HD, 1000 RDS, 1000 RDS xFETM, 1350 RDS, 1350 RDS xFETM, 2100 RDS, 2100 RDS xFETM, 2200 RDS, 2200 RDS xFETM, 2300 RDS, 2350 RDS, 2350 RDS xFETM, 2500 RDS, 2500 RDS xFETM, 2550 RDS, 2550 RDS xFETM, 3000, 3000 RDS, 3000 RDS R, 3200, 3500, 3500 RDS, 3500 RDS R, 4000, 4000 RDS, 4000 RDS R, 4500, 4500 RDS, 4500 RDS R, 4700, 4700 RDS, 4700 RDS R, 4800</b>	0-36*	No Limit	No Charge	No Charge
<b>1000 SeriesTM, 1000 HS, 1000 HS xFETM, 1350 HS, 1350 HS xFETM, 2000 SeriesTM, 2100, 2100 HS, 2100 HS xFETM, 2200, 2200 HS, 2200 HS xFETM, 2300 HS, 2350 HS, 2350 HS xFETM, 2400 SeriesTM, 2500, 2500 HS, 2500 HS xFETM, 2550 HS, 2550 HS xFETM, 3000 HS, 3000 HS R, 3000 V, 3000 VR, 4000 HS, 4000 HS R, 4500 HS, 4500 HS R</b>	0-48*	No Limit	No Charge	No Charge

\* Effective on units shipped July 2006 through December 31, 2019, the Allison transmission in your vehicle may be covered by additional extended coverage, dependent on the Original Equipment Manufacturer (OEM) which manufactured your vehicle. **This additional coverage requires continued use of an Allison Approved TES 295 automatic transmission fluid and genuine Allison filters.** Please consult your OEM Dealer or authorized Allison Transmission Distributor or Dealer for specific information.

## WHAT IS NOT COVERED

### • DAMAGE DUE TO ACCIDENT, MISUSE, or ALTERATION

Defects and damage caused as the result of any of the following are not covered:

- Flood, collision, fire, theft, freezing, vandalism, riot, explosion, or objects striking the vehicle;
- Misuse of the vehicle;
- Installation into unapproved applications and installations;
- Alterations or modification of the transmission or the vehicle, and
- Damage resulting from improper storage (refer to long-term storage procedure outlined in the applicable Allison Service Manual)
- Anything other than defects in Allison Transmission material or workmanship

**NOTE:** This warranty is void on transmissions used in vehicles currently or previously titled as salvaged, scrapped, junked, or totaled.

- **CHASSIS, BODY, and COMPONENTS** — The chassis and body company (assemblers) and other component and equipment manufacturers are solely responsible for warranties on the chassis, body, component(s), and equipment they provide. Any transmission repair caused by an alteration(s) made to the Allison transmission or the vehicle which allows the transmission to be installed or operated outside of the limits defined in the appropriate Allison Installation Guideline is solely the responsibility of the entity making the alteration(s).
- **DAMAGE CAUSED by LACK of MAINTENANCE or by the USE of TRANSMISSION FLUIDS NOT RECOMMENDED in the OPERATOR'S MANUAL** — Defects and damage caused by any of the following are not covered:
  - Failure to follow the recommendations of the maintenance schedule intervals applicable to the transmission;
  - Failure to use transmission fluids or maintain transmission fluid levels recommended in the Operator's Manual.
- **MAINTENANCE** — Normal maintenance (such as replacement of filters, screens, and transmission fluid) is not covered and is the owner's responsibility.
- **REPAIRS by UNAUTHORIZED DEALERS** — Defects and damage caused by a service outlet that is not an authorized Allison Transmission Distributor or Dealer are not covered.
- **USE of OTHER THAN GENUINE ALLISON TRANSMISSION PARTS** — Defects and damage caused by the use of parts that are not genuine Allison Transmission parts are not covered.
- **EXTRA EXPENSES** — Economic loss and extra expenses are not covered. Examples include but are not limited to: loss of vehicle use; inconvenience; storage; payment for loss of time or pay; vehicle rental expense; lodging; meals; or other travel costs.
- **"DENIED PARTY" OWNERSHIP** — Warranty repair parts and labor costs are not reimbursed to any participating or non-participating OEMs, dealers or distributors who perform warranty work for, or on behalf of, end users identified by the United States as being a "denied party" or who are citizens of sanctioned or embargoed countries as defined by the U.S. Department of Treasury Office of Foreign Assets Control. Furthermore, warranty reimbursements are not guaranteed if the reimbursement would be contrary to any United States export control laws or regulations as defined by the U.S. Department of Commerce, the U.S. Department of State, or the U.S. Department of Treasury.

### OTHER TERMS APPLICABLE TO CONSUMERS AS DEFINED by the MAGNUSON-MOSS WARRANTY ACT

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Allison Transmission does not authorize any person to create for it any other obligation or liability in connection with these transmissions. **ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE APPLICABLE TO THESE TRANSMISSIONS IS LIMITED IN DURATION TO THE DURATION OF THIS WRITTEN WARRANTY. PERFORMANCE OF REPAIRS AND NEEDED ADJUSTMENTS IS THE EXCLUSIVE REMEDY UNDER THIS WRITTEN WARRANTY OR ANY IMPLIED WARRANTY. ALLISON TRANSMISSION SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES (SUCH AS, BUT NOT LIMITED TO, LOST WAGES OR VEHICLE RENTAL EXPENSES) RESULTING FROM BREACH OF THIS WRITTEN WARRANTY OR ANY IMPLIED WARRANTY.\*\***

\*\* Some states do not allow limitations on how long an implied warranty will last or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

### OTHER TERMS APPLICABLE TO OTHER END-USERS

**THIS WARRANTY IS THE ONLY WARRANTY APPLICABLE TO THE ALLISON TRANSMISSION MODELS LISTED ABOVE AND IS EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ALLISON TRANSMISSION DOES NOT AUTHORIZE ANY PERSON TO CREATE FOR IT ANY OTHER OBLIGATION OR LIABILITY IN CONNECTION WITH SUCH TRANSMISSIONS. ALLISON TRANSMISSION SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM BREACH OF THIS WARRANTY OR ANY IMPLIED WARRANTY.**

### QUESTIONS

If you have any questions regarding this warranty or the performance of warranty obligations, you may contact any Allison Transmission Distributor or Dealer or write to:

Allison Transmission, Inc.  
P.O. Box 894  
Indianapolis, IN 46206-0894  
Attention: Warranty Administration PF-9

Form SE0617EN (201912)

**THE E-VERIFY  
MEMORANDUM OF UNDERSTANDING  
FOR EMPLOYERS**

**ARTICLE I  
PURPOSE AND AUTHORITY**

The parties to this agreement are the Department of Homeland Security (DHS) and the Nextran Corporation (Employer). The purpose of this agreement is to set forth terms and conditions which the Employer will follow while participating in E-Verify.

E-Verify is a program that electronically confirms an employee's eligibility to work in the United States after completion of Form I-9, Employment Eligibility Verification (Form I-9). This Memorandum of Understanding (MOU) explains certain features of the E-Verify program and describes specific responsibilities of the Employer, the Social Security Administration (SSA), and DHS.

Authority for the E-Verify program is found in Title IV, Subtitle A, of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (IIRIRA), Pub. L. 104-208, 110 Stat. 3009, as amended (8 U.S.C. § 1324a note). The Federal Acquisition Regulation (FAR) Subpart 22.18, "Employment Eligibility Verification" and Executive Order 12989, as amended, provide authority for Federal contractors and subcontractors (Federal contractor) to use E-Verify to verify the employment eligibility of certain employees working on Federal contracts.

**ARTICLE II  
RESPONSIBILITIES**

**A. RESPONSIBILITIES OF THE EMPLOYER**

1. The Employer agrees to display the following notices supplied by DHS in a prominent place that is clearly visible to prospective employees and all employees who are to be verified through the system:
  - a. Notice of E-Verify Participation
  - b. Notice of Right to Work
2. The Employer agrees to provide to the SSA and DHS the names, titles, addresses, and telephone numbers of the Employer representatives to be contacted about E-Verify. The Employer also agrees to keep such information current by providing updated information to SSA and DHS whenever the representatives' contact information changes.
3. The Employer agrees to grant E-Verify access only to current employees who need E-Verify access. Employers must promptly terminate an employee's E-Verify access if the employer is separated from the company or no longer needs access to E-Verify.

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4. The Employer agrees to become familiar with and comply with the most recent version of the E-Verify User Manual.
  5. The Employer agrees that any Employer Representative who will create E-Verify cases will complete the E-Verify Tutorial before that individual creates any cases.
    - a. The Employer agrees that all Employer representatives will take the refresher tutorials when prompted by E-Verify in order to continue using E-Verify. Failure to complete a refresher tutorial will prevent the Employer Representative from continued use of E-Verify.
  6. The Employer agrees to comply with current Form I-9 procedures, with two exceptions:
    - a. If an employee presents a "List B" identity document, the Employer agrees to only accept "List B" documents that contain a photo. (List B documents identified in 8 C.F.R. § 274a.2(b)(1)(B)) can be presented during the Form I-9 process to establish identity.) If an employee objects to the photo requirement for religious reasons, the Employer should contact E-Verify at 888-464-4218.
    - b. If an employee presents a DHS Form I-551 (Permanent Resident Card), Form I-766 (Employment Authorization Document), or U.S. Passport or Passport Card to complete Form I-9, the Employer agrees to make a photocopy of the document and to retain the photocopy with the employee's Form I-9. The Employer will use the photocopy to verify the photo and to assist DHS with its review of photo mismatches that employees contest. DHS may in the future designate other documents that activate the photo screening tool.
- Note: Subject only to the exceptions noted previously in this paragraph, employees still retain the right to present any List A, or List B and List C, document(s) to complete the Form I-9.
7. The Employer agrees to record the case verification number on the employee's Form I-9 or to print the screen containing the case verification number and attach it to the employee's Form I-9.
  8. The Employer agrees that, although it participates in E-Verify, the Employer has a responsibility to complete, retain, and make available for inspection Forms I-9 that relate to its employees, or from other requirements of applicable regulations or laws, including the obligation to comply with the antidiscrimination requirements of section 274B of the INA with respect to Form I-9 procedures.
    - a. The following modified requirements are the only exceptions to an Employer's obligation to not employ unauthorized workers and comply with the anti-discrimination provision of the INA: (1) List B identity documents must have photos, as described in paragraph 6 above; (2) When an Employer confirms the identity and employment eligibility of newly hired employee using E-Verify procedures, the Employer establishes a rebuttable presumption that it has not violated section 274A(a)(1)(A) of the Immigration and Nationality Act (INA) with respect to the hiring of that employee; (3) If the Employer receives a final nonconfirmation for an employee, but continues to employ that person, the Employer must notify DHS and the Employer is subject to a civil money penalty between \$550 and \$1,100 for each failure to notify DHS of continued employment following a final nonconfirmation; (4) If the Employer continues to employ an employee after receiving a final nonconfirmation, then the Employer is subject to a rebuttable presumption that it has knowingly

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employed an unauthorized alien in violation of section 274A(a)(1)(A); and (5) no E-Verify participant is civilly or criminally liable under any law for any action taken in good faith based on information provided through the E-Verify.

b. DHS reserves the right to conduct Form I-9 compliance inspections, as well as any other enforcement or compliance activity authorized by law, including site visits, to ensure proper use of E-Verify.

9. The Employer is strictly prohibited from creating an E-Verify case before the employee has been hired, meaning that a firm offer of employment was extended and accepted and Form I-9 was completed. The Employer agrees to create an E-Verify case for new employees within three Employer business days after each employee has been hired (after both Sections 1 and 2 of Form I-9 have been completed), and to complete as many steps of the E-Verify process as are necessary according to the E-Verify User Manual. If E-Verify is temporarily unavailable, the three-day time period will be extended until it is again operational in order to accommodate the Employer's attempting, in good faith, to make inquiries during the period of unavailability.

10. The Employer agrees not to use E-Verify for pre-employment screening of job applicants, in support of any unlawful employment practice, or for any other use that this MOU or the E-Verify User Manual does not authorize.

11. The Employer must use E-Verify for all new employees. The Employer will not verify selectively and will not verify employees hired before the effective date of this MOU. Employers who are Federal contractors may qualify for exceptions to this requirement as described in Article II.B of this MOU.

12. The Employer agrees to follow appropriate procedures (see Article III below) regarding tentative nonconfirmations. The Employer must promptly notify employees in private of the finding and provide them with the notice and letter containing information specific to the employee's E-Verify case. The Employer agrees to provide both the English and the translated notice and letter for employees with limited English proficiency to employees. The Employer agrees to provide written referral instructions to employees and instruct affected employees to bring the English copy of the letter to the SSA. The Employer must allow employees to contest the finding, and not take adverse action against employees if they choose to contest the finding, while their case is still pending. Further, when employees contest a tentative nonconfirmation based upon a photo mismatch, the Employer must take additional steps (see Article III.B. below) to contact DHS with information necessary to resolve the challenge.

13. The Employer agrees not to take any adverse action against an employee based upon the employee's perceived employment eligibility status while SSA or DHS is processing the verification request unless the Employer obtains knowledge (as defined in 8 C.F.R. § 274a.1(l)) that the employee is not work authorized. The Employer understands that an initial inability of the SSA or DHS automated verification system to verify work authorization, a tentative nonconfirmation, a case in continuance (indicating the need for additional time for the government to resolve a case), or the finding of a photo mismatch, does not establish, and should not be interpreted as, evidence that the employee is not work authorized. In any of such cases, the employee must be provided a full and fair opportunity to contest the finding, and if he or she does so, the employee may not be terminated or suffer any adverse employment consequences based upon the employee's perceived employment eligibility status

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(including denying, reducing, or extending work hours, delaying or preventing training, requiring an employee to work in poorer conditions, withholding pay, refusing to assign the employee to a Federal contract or other assignment, or otherwise assuming that he or she is unauthorized to work) until and unless secondary verification by SSA or DHS has been completed and a final nonconfirmation has been issued. If the employee does not choose to contest a tentative nonconfirmation or a photo mismatch or if a secondary verification is completed and a final nonconfirmation is issued, then the Employer can find the employee is not work authorized and terminate the employee's employment. Employers or employees with questions about a final nonconfirmation may call E-Verify at 1-888-464-4218 (customer service) or 1-888-897-7781 (worker hotline).

14. The Employer agrees to comply with Title VII of the Civil Rights Act of 1964 and section 274B of the INA as applicable by not discriminating unlawfully against any individual in hiring, firing, employment eligibility verification, or recruitment or referral practices because of his or her national origin or citizenship status, or by committing discriminatory documentary practices. The Employer understands that such illegal practices can include selective verification or use of E-Verify except as provided in part D below, or discharging or refusing to hire employees because they appear or sound "foreign" or have received tentative nonconfirmations. The Employer further understands that any violation of the immigration-related unfair employment practices provisions in section 274B of the INA could subject the Employer to civil penalties, back pay awards, and other sanctions, and violations of Title VII could subject the Employer to back pay awards, compensatory and punitive damages. Violations of either section 274B of the INA or Title VII may also lead to the termination of its participation in E-Verify. If the Employer has any questions relating to the anti-discrimination provision, it should contact OSC at 1-800-255-8155 or 1-800-237-2515 (TDD).

15. The Employer agrees that it will use the information it receives from E-Verify only to confirm the employment eligibility of employees as authorized by this MOU. The Employer agrees that it will safeguard this information, and means of access to it (such as PINS and passwords), to ensure that it is not used for any other purpose and as necessary to protect its confidentiality, including ensuring that it is not disseminated to any person other than employees of the Employer who are authorized to perform the Employer's responsibilities under this MOU, except for such dissemination as may be authorized in advance by SSA or DHS for legitimate purposes.

16. The Employer agrees to notify DHS immediately in the event of a breach of personal information. Breaches are defined as loss of control or unauthorized access to E-Verify personal data. All suspected or confirmed breaches should be reported by calling 1-888-464-4218 or via email at [E-Verify@dhs.gov](mailto:E-Verify@dhs.gov). Please use "Privacy Incident – Password" in the subject line of your email when sending a breach report to E-Verify.

17. The Employer acknowledges that the information it receives from SSA is governed by the Privacy Act (5 U.S.C. § 552a(i)(1) and (3)) and the Social Security Act (42 U.S.C. 1306(a)). Any person who obtains this information under false pretenses or uses it for any purpose other than as provided for in this MOU may be subject to criminal penalties.

18. The Employer agrees to cooperate with DHS and SSA in their compliance monitoring and evaluation of E-Verify, which includes permitting DHS, SSA, their contractors and other agents, upon

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reasonable notice, to review Forms I-9 and other employment records and to interview it and its employees regarding the Employer's use of E-Verify, and to respond in a prompt and accurate manner to DHS requests for information relating to their participation in E-Verify.

19. The Employer shall not make any false or unauthorized claims or references about its participation in E-Verify on its website, in advertising materials, or other media. The Employer shall not describe its services as federally-approved, federally-certified, or federally-recognized, or use language with a similar intent on its website or other materials provided to the public. Entering into this MOU does not mean that E-Verify endorses or authorizes your E-Verify services and any claim to that effect is false.

20. The Employer shall not state in its website or other public documents that any language used therein has been provided or approved by DHS, USCIS or the Verification Division, without first obtaining the prior written consent of DHS.

21. The Employer agrees that E-Verify trademarks and logos may be used only under license by DHS/USCIS (see [M-795 \(Web\)](#)) and, other than pursuant to the specific terms of such license, may not be used in any manner that might imply that the Employer's services, products, websites, or publications are sponsored by, endorsed by, licensed by, or affiliated with DHS, USCIS, or E-Verify.

22. The Employer understands that if it uses E-Verify procedures for any purpose other than as authorized by this MOU, the Employer may be subject to appropriate legal action and termination of its participation in E-Verify according to this MOU.

## **B. RESPONSIBILITIES OF FEDERAL CONTRACTORS**

1. If the Employer is a Federal contractor with the FAR E-Verify clause subject to the employment verification terms in Subpart 22.18 of the FAR, it will become familiar with and comply with the most current version of the E-Verify User Manual for Federal Contractors as well as the E-Verify Supplemental Guide for Federal Contractors.

2. In addition to the responsibilities of every employer outlined in this MOU, the Employer understands that if it is a Federal contractor subject to the employment verification terms in Subpart 22.18 of the FAR it must verify the employment eligibility of any "employee assigned to the contract" (as defined in FAR 22.1801). Once an employee has been verified through E-Verify by the Employer, the Employer may not create a second case for the employee through E-Verify.

a. An Employer that is not enrolled in E-Verify as a Federal contractor at the time of a contract award must enroll as a Federal contractor in the E-Verify program within 30 calendar days of contract award and, within 90 days of enrollment, begin to verify employment eligibility of new hires using E-Verify. The Employer must verify those employees who are working in the United States, whether or not they are assigned to the contract. Once the Employer begins verifying new hires, such verification of new hires must be initiated within three business days after the hire date. Once enrolled in E-Verify as a Federal contractor, the Employer must begin verification of employees assigned to the contract within 90 calendar days after the date of enrollment or within 30 days of an employee's assignment to the contract, whichever date is later.



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- b. Employers enrolled in E-Verify as a Federal contractor for 90 days or more at the time of a contract award must use E-Verify to begin verification of employment eligibility for new hires of the Employer who are working in the United States, whether or not assigned to the contract, within three business days after the date of hire. If the Employer is enrolled in E-Verify as a Federal contractor for 90 calendar days or less at the time of contract award, the Employer must, within 90 days of enrollment, begin to use E-Verify to initiate verification of new hires of the contractor who are working in the United States, whether or not assigned to the contract. Such verification of new hires must be initiated within three business days after the date of hire. An Employer enrolled as a Federal contractor in E-Verify must begin verification of each employee assigned to the contract within 90 calendar days after date of contract award or within 30 days after assignment to the contract, whichever is later.
- c. Federal contractors that are institutions of higher education (as defined at 20 U.S.C. 1001(a)), state or local governments, governments of Federally recognized Indian tribes, or sureties performing under a takeover agreement entered into with a Federal agency under a performance bond may choose to only verify new and existing employees assigned to the Federal contract. Such Federal contractors may, however, elect to verify all new hires, and/or all existing employees hired after November 6, 1986. Employers in this category must begin verification of employees assigned to the contract within 90 calendar days after the date of enrollment or within 30 days of an employee's assignment to the contract, whichever date is later.
- d. Upon enrollment, Employers who are Federal contractors may elect to verify employment eligibility of all existing employees working in the United States who were hired after November 6, 1986, instead of verifying only those employees assigned to a covered Federal contract. After enrollment, Employers must elect to verify existing staff following DHS procedures and begin E-Verify verification of all existing employees within 180 days after the election.
- e. The Employer may use a previously completed Form I-9 as the basis for creating an E-Verify case for an employee assigned to a contract as long as:
- i. That Form I-9 is complete (including the SSN) and complies with Article II.A.6,
  - ii. The employee's work authorization has not expired, and
  - iii. The Employer has reviewed the Form I-9 information either in person or in communications with the employee to ensure that the employee's Section 1, Form I-9 attestation has not changed (including, but not limited to, a lawful permanent resident alien having become a naturalized U.S. citizen).
- f. The Employer shall complete a new Form I-9 consistent with Article II.A.6 or update the previous Form I-9 to provide the necessary information if:
- i. The Employer cannot determine that Form I-9 complies with Article II.A.6,
  - ii. The employee's basis for work authorization as attested in Section 1 has expired or changed, or
  - iii. The Form I-9 contains no SSN or is otherwise incomplete.

Note: If Section 1 of Form I-9 is otherwise valid and up-to-date and the form otherwise complies with

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Article II.C.5, but reflects documentation (such as a U.S. passport or Form I-551) that expired after completing Form I-9, the Employer shall not require the production of additional documentation, or use the photo screening tool described in Article II.A.5, subject to any additional or superseding instructions that may be provided on this subject in the E-Verify User Manual.

g. The Employer agrees not to require a second verification using E-Verify of any assigned employee who has previously been verified as a newly hired employee under this MOU or to authorize verification of any existing employee by any Employer that is not a Federal contractor based on this Article.

3. The Employer understands that if it is a Federal contractor, its compliance with this MOU is a performance requirement under the terms of the Federal contract or subcontract, and the Employer consents to the release of information relating to compliance with its verification responsibilities under this MOU to contracting officers or other officials authorized to review the Employer's compliance with Federal contracting requirements.

### **C. RESPONSIBILITIES OF SSA**

1. SSA agrees to allow DHS to compare data provided by the Employer against SSA's database. SSA sends DHS confirmation that the data sent either matches or does not match the information in SSA's database.

2. SSA agrees to safeguard the information the Employer provides through E-Verify procedures. SSA also agrees to limit access to such information, as is appropriate by law, to individuals responsible for the verification of Social Security numbers or responsible for evaluation of E-Verify or such other persons or entities who may be authorized by SSA as governed by the Privacy Act (5 U.S.C. § 552a), the Social Security Act (42 U.S.C. 1306(a)), and SSA regulations (20 CFR Part 401).

3. SSA agrees to provide case results from its database within three Federal Government work days of the initial inquiry. E-Verify provides the information to the Employer.

4. SSA agrees to update SSA records as necessary if the employee who contests the SSA tentative nonconfirmation visits an SSA field office and provides the required evidence. If the employee visits an SSA field office within the eight Federal Government work days from the date of referral to SSA, SSA agrees to update SSA records, if appropriate, within the eight-day period unless SSA determines that more than eight days may be necessary. In such cases, SSA will provide additional instructions to the employee. If the employee does not visit SSA in the time allowed, E-Verify may provide a final nonconfirmation to the employer.

Note: If an Employer experiences technical problems, or has a policy question, the employer should contact E-Verify at 1-888-464-4218.

### **D. RESPONSIBILITIES OF DHS**

1. DHS agrees to provide the Employer with selected data from DHS databases to enable the Employer to conduct, to the extent authorized by this MOU:

a. Automated verification checks on alien employees by electronic means, and

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- b. Photo verification checks (when available) on employees.
2. DHS agrees to assist the Employer with operational problems associated with the Employer's participation in E-Verify. DHS agrees to provide the Employer names, titles, addresses, and telephone numbers of DHS representatives to be contacted during the E-Verify process.
3. DHS agrees to provide to the Employer with access to E-Verify training materials as well as an E-Verify User Manual that contain instructions on E-Verify policies, procedures, and requirements for both SSA and DHS, including restrictions on the use of E-Verify.
4. DHS agrees to train Employers on all important changes made to E-Verify through the use of mandatory refresher tutorials and updates to the E-Verify User Manual. Even without changes to E-Verify, DHS reserves the right to require employers to take mandatory refresher tutorials.
5. DHS agrees to provide to the Employer a notice, which indicates the Employer's participation in E-Verify. DHS also agrees to provide to the Employer anti-discrimination notices issued by the Office of Special Counsel for Immigration-Related Unfair Employment Practices (OSC), Civil Rights Division, U.S. Department of Justice.
6. DHS agrees to issue each of the Employer's E-Verify users a unique user identification number and password that permits them to log in to E-Verify.
7. DHS agrees to safeguard the information the Employer provides, and to limit access to such information to individuals responsible for the verification process, for evaluation of E-Verify, or to such other persons or entities as may be authorized by applicable law. Information will be used only to verify the accuracy of Social Security numbers and employment eligibility, to enforce the INA and Federal criminal laws, and to administer Federal contracting requirements.
8. DHS agrees to provide a means of automated verification that provides (in conjunction with SSA verification procedures) confirmation or tentative nonconfirmation of employees' employment eligibility within three Federal Government work days of the initial inquiry.
9. DHS agrees to provide a means of secondary verification (including updating DHS records) for employees who contest DHS tentative nonconfirmations and photo mismatch tentative nonconfirmations. This provides final confirmation or nonconfirmation of the employees' employment eligibility within 10 Federal Government work days of the date of referral to DHS, unless DHS determines that more than 10 days may be necessary. In such cases, DHS will provide additional verification instructions.

### ARTICLE III

#### REFERRAL OF INDIVIDUALS TO SSA AND DHS

##### A. REFERRAL TO SSA

1. If the Employer receives a tentative nonconfirmation issued by SSA, the Employer must print the notice as directed by E-Verify. The Employer must promptly notify employees in private of the finding and provide them with the notice and letter containing information specific to the employee's E-Verify

case. The Employer also agrees to provide both the English and the translated notice and letter for employees with limited English proficiency to employees. The Employer agrees to provide written referral instructions to employees and instruct affected employees to bring the English copy of the letter to the SSA. The Employer must allow employees to contest the finding, and not take adverse action against employees if they choose to contest the finding, while their case is still pending.

2. The Employer agrees to obtain the employee's response about whether he or she will contest the tentative nonconfirmation as soon as possible after the Employer receives the tentative nonconfirmation. Only the employee may determine whether he or she will contest the tentative nonconfirmation.
3. After a tentative nonconfirmation, the Employer will refer employees to SSA field offices only as directed by E-Verify. The Employer must record the case verification number, review the employee information submitted to E-Verify to identify any errors, and find out whether the employee contests the tentative nonconfirmation. The Employer will transmit the Social Security number, or any other corrected employee information that SSA requests, to SSA for verification again if this review indicates a need to do so.
4. The Employer will instruct the employee to visit an SSA office within eight Federal Government work days. SSA will electronically transmit the result of the referral to the Employer within 10 Federal Government work days of the referral unless it determines that more than 10 days is necessary.
5. While waiting for case results, the Employer agrees to check the E-Verify system regularly for case updates.
6. The Employer agrees not to ask the employee to obtain a printout from the Social Security Administration number database (the Numident) or other written verification of the SSN from the SSA.

## **B. REFERRAL TO DHS**

1. If the Employer receives a tentative nonconfirmation issued by DHS, the Employer must promptly notify employees in private of the finding and provide them with the notice and letter containing information specific to the employee's E-Verify case. The Employer also agrees to provide both the English and the translated notice and letter for employees with limited English proficiency to employees. The Employer must allow employees to contest the finding, and not take adverse action against employees if they choose to contest the finding, while their case is still pending.
2. The Employer agrees to obtain the employee's response about whether he or she will contest the tentative nonconfirmation as soon as possible after the Employer receives the tentative nonconfirmation. Only the employee may determine whether he or she will contest the tentative nonconfirmation.
3. The Employer agrees to refer individuals to DHS only when the employee chooses to contest a tentative nonconfirmation.
4. If the employee contests a tentative nonconfirmation issued by DHS, the Employer will instruct the

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employee to contact DHS through its toll-free hotline (as found on the referral letter) within eight Federal Government work days.

5. If the Employer finds a photo mismatch, the Employer must provide the photo mismatch tentative nonconfirmation notice and follow the instructions outlined in paragraph 1 of this section for tentative nonconfirmations, generally.

6. The Employer agrees that if an employee contests a tentative nonconfirmation based upon a photo mismatch, the Employer will send a copy of the employee's Form I-551, Form I-766, U.S. Passport, or passport card to DHS for review by:

- a. Scanning and uploading the document, or
- b. Sending a photocopy of the document by express mail (furnished and paid for by the employer).

7. The Employer understands that if it cannot determine whether there is a photo match/mismatch, the Employer must forward the employee's documentation to DHS as described in the preceding paragraph. The Employer agrees to resolve the case as specified by the DHS representative who will determine the photo match or mismatch.

8. DHS will electronically transmit the result of the referral to the Employer within 10 Federal Government work days of the referral unless it determines that more than 10 days is necessary.

9. While waiting for case results, the Employer agrees to check the E-Verify system regularly for case updates.

#### **ARTICLE IV SERVICE PROVISIONS**

##### **A. NO SERVICE FEES**

1. SSA and DHS will not charge the Employer for verification services performed under this MOU. The Employer is responsible for providing equipment needed to make inquiries. To access E-Verify, an Employer will need a personal computer with Internet access.

#### **ARTICLE V MODIFICATION AND TERMINATION**

##### **A. MODIFICATION**

1. This MOU is effective upon the signature of all parties and shall continue in effect for as long as the SSA and DHS operates the E-Verify program unless modified in writing by the mutual consent of all parties.

2. Any and all E-Verify system enhancements by DHS or SSA, including but not limited to E-Verify checking against additional data sources and instituting new verification policies or procedures, will be covered under this MOU and will not cause the need for a supplemental MOU that outlines these changes.

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## B. TERMINATION

1. The Employer may terminate this MOU and its participation in E-Verify at any time upon 30 days prior written notice to the other parties.
2. Notwithstanding Article V, part A of this MOU, DHS may terminate this MOU, and thereby the Employer's participation in E-Verify, with or without notice at any time if deemed necessary because of the requirements of law or policy, or upon a determination by SSA or DHS that there has been a breach of system integrity or security by the Employer, or a failure on the part of the Employer to comply with established E-Verify procedures and/or legal requirements. The Employer understands that if it is a Federal contractor, termination of this MOU by any party for any reason may negatively affect the performance of its contractual responsibilities. Similarly, the Employer understands that if it is in a state where E-Verify is mandatory, termination of this by any party MOU may negatively affect the Employer's business.
3. An Employer that is a Federal contractor may terminate this MOU when the Federal contract that requires its participation in E-Verify is terminated or completed. In such cases, the Federal contractor must provide written notice to DHS. If an Employer that is a Federal contractor fails to provide such notice, then that Employer will remain an E-Verify participant, will remain bound by the terms of this MOU that apply to non-Federal contractor participants, and will be required to use the E-Verify procedures to verify the employment eligibility of all newly hired employees.
4. The Employer agrees that E-Verify is not liable for any losses, financial or otherwise, if the Employer is terminated from E-Verify.

## ARTICLE VI PARTIES

- A. Some or all SSA and DHS responsibilities under this MOU may be performed by contractor(s), and SSA and DHS may adjust verification responsibilities between each other as necessary. By separate agreement with DHS, SSA has agreed to perform its responsibilities as described in this MOU.
- B. Nothing in this MOU is intended, or should be construed, to create any right or benefit, substantive or procedural, enforceable at law by any third party against the United States, its agencies, officers, or employees, or against the Employer, its agents, officers, or employees.
- C. The Employer may not assign, directly or indirectly, whether by operation of law, change of control or merger, all or any part of its rights or obligations under this MOU without the prior written consent of DHS, which consent shall not be unreasonably withheld or delayed. Any attempt to sublicense, assign, or transfer any of the rights, duties, or obligations herein is void.
- D. Each party shall be solely responsible for defending any claim or action against it arising out of or related to E-Verify or this MOU, whether civil or criminal, and for any liability wherefrom, including (but not limited to) any dispute between the Employer and any other person or entity regarding the applicability of Section 403(d) of IIRIRA to any action taken or allegedly taken by the Employer.
- E. The Employer understands that its participation in E-Verify is not confidential information and may be disclosed as authorized or required by law and DHS or SSA policy, including but not limited to,

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Congressional oversight, E-Verify publicity and media inquiries, determinations of compliance with Federal contractual requirements, and responses to inquiries under the Freedom of Information Act (FOIA).

F. The individuals whose signatures appear below represent that they are authorized to enter into this MOU on behalf of the Employer and DHS respectively. The Employer understands that any inaccurate statement, representation, data or other information provided to DHS may subject the Employer, its subcontractors, its employees, or its representatives to: (1) prosecution for false statements pursuant to 18 U.S.C. 1001 and/or; (2) immediate termination of its MOU and/or; (3) possible debarment or suspension.

G. The foregoing constitutes the full agreement on this subject between DHS and the Employer.

**To be accepted as an E-Verify participant, you should only sign the Employer's Section of the signature page. If you have any questions, contact E-Verify at 1-888-464-4218.**

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**Approved by:**

<b>Employer</b> Nexttran Corporation	
<b>Name (Please Type or Print)</b> Vickie M Coy	<b>Title</b>
<b>Signature</b> Electronically Signed	<b>Date</b> 04/08/2009
<b>Department of Homeland Security – Verification Division</b>	
<b>Name (Please Type or Print)</b> USCIS Verification Division	<b>Title</b>
<b>Signature</b> Electronically Signed	<b>Date</b> 04/08/2009



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**Information Required for the E-Verify Program****Information relating to your Company:**

Company Name	Nextran Corporation
Company Facility Address	1986 West Beaver St Jacksonville, FL 32209
Company Alternate Address	1986 West Beaver St Jacksonville, FL 32209
County or Parish	DUVAL
Employer Identification Number	593139839
North American Industry Classification Systems Code	488
Parent Company	Nextran Corporation
Number of Employees	500 to 999
Number of Sites Verified for	14

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**Are you verifying for more than 1 site? If yes, please provide the number of sites verified for in each State:**

ALABAMA	3 site(s)
FLORIDA	8 site(s)
GEORGIA	3 site(s)

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**Information relating to the Program Administrator(s) for your Company on policy questions or operational problems:**

Name Lorie Flaris  
Phone Number (904) 354 - 3721  
Fax Number (904) 354 - 0365  
Email Address lflaris@nextrancorp.com

Name Vickie M Coy  
Phone Number (404) 577 - 5230 ext. 2316  
Fax Number (678) 420 - 2316  
Email Address vcoy@nextrancorp.com

Name Eddie Woods  
Phone Number (205) 322 - 2534  
Fax Number (205) 322 - 1085  
Email Address ewoods@nextrancorp.com

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THIS  
LICENSE  
EXPIRES

12/31/2022

NOTICE

License issued subject to  
compliance with all  
pertinent city codes.

THIS LICENSE MUST BE PUBLICLY DISPLAYED

# CITY OF FULTONDALE

P O BOX 699

FULTONDALE, AL 350680000

# LICENSE

No. **36579**

LICENSE VALID ONLY AT  
LOCATION INDICATED.  
NON TRANSFERABLE

Mailing Name and Address

JOE KING  
NEXTRAN CORPORATION  
P. O. BOX 820

Fultondale AL 35068

Local Trade Name and Physical Location

JOE KING  
NEXTRAN CORPORATION  
1801 FULTON ROAD

Fultondale AL 35068

THE FIRM, CORPORATION, ORGANIZATION, BUSINESS OR PERSON, WHOSE NAME APPEARS ABOVE, HAS PAID  
THE REQUIRED LICENSE FEES AND IS AUTHORIZED TO ENGAGE IN BUSINESS IN THIS CITY AS INDICATED BELOW.

Account Number

008767

License Number

36579

Receipt /Document

36579 / 002216

**Code**                      **Description**

532210	RENTAL & LEASING, AUTO, TRUCK
453999	MERCHANT/RETAIL
811212	SERVICE

Date Issued: 1/27/2022

FULTONDALE

AL

License Clerk:

Alicia Germany