



MACK TRUCKS, INC.  
WORLD HEADQUARTERS  
2100 MACK BOULEVARD  
P.O. BOX M  
ALLENTOWN, PA 18105-5000  
PHONE: 810.709.8011

November 21, 2000

Mr. Kenneth Weinstein, Associate Administrator  
Safety Assurance NSA-11  
National Highway Traffic Safety Administration  
400 Seventh Street, S.W., Room 5319  
Washington, DC 20590

SUBJECT: Vehicle Recall Campaign - SC0282  
TRW Tie Rod Ends (00E-048.004) *00V-246.103*

Dear Mr. Weinstein:

Below are changes (in bold print) and additional information on the above campaign.

Mack Trucks, Inc., acting under applicable provisions of the National Traffic and Motor Vehicle Safety Act of 1966 and 49 CFR Part 573.5, will recall certain of its "CH, CL, CX and RD" models built between July 1, 1999 and **December 10, 1999**.

2. Identification of Involved Vehicles:

The vehicles affected are certain Mack class 8, CH, CL, CX and RD models manufactured between July 1, 1999 and **December 10, 1999**. Using a computer program we searched for chassis built between the two dates with Meritor Axles (FF981, FF981, FG941, FG943), Dana/Spicer Axles (E12001), and Mack Axles through Dana Heavy Axle (FAWL12). We used Product Identification Codes (PID) 2401017, 2402001, 2402009, 2402014, 2402016, 2407005, 2407008 for this search.

3. Total Number of Vehicles Potentially Involved:

We have identified **8,244** chassis built between July 1, 1999 and **December 10, 1999** using the above PID codes.

8. Remedy Program:

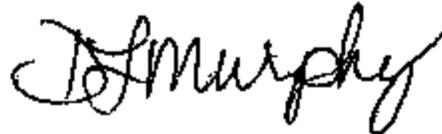
Parts are now available in our parts distribution centers. We anticipate that recall instructions will be mailed to our dealers November 27, 2000, with customer notification beginning on December 11, 2000. We already provided Ryder Truck Rental a list of their 1,725 chassis involved in the recall. Parts are being shipped directly from TRW to Ryder for this recall.

9. Notices, Bulletins and Communications:

Copies of the owner and dealer notifications and dealer repair instructions are attached.

Sincerely yours,

**MACK TRUCKS, INC.**

A handwritten signature in black ink, appearing to read "D.L. Murphy". The signature is written in a cursive style with a large, prominent "M".

**D.L. Murphy**  
**Campaign Administrator**



# VEHICLE RECALL

DATE: 11/27/00

SC262

TO: ALL MACK DISTRIBUTORS AND SUBSIDIARIES

SUBJECT: TRW TYPE 20 EDL BALL SOCKETS — FRONT STEER AXLES

## INFORMATION:

It has been determined that certain CX, CH, CL and RD model chassis manufactured between July 1, 1999 through December 10, 1999 and equipped with either an ArvinMeritor (FF961, FF961, FG941, FG943), Dana/Spicer (E12001) or MACK (FAWL12) front steer axle may have ball sockets (TRW Type 20 EDL) that were not manufactured to proper case depth and/or hardness specifications. This defect could cause premature wear of the ball socket to the point where the ball stud could separate from the socket and possibly result in a loss of vehicle control.

Approximately 6,244 vehicles are involved in this campaign. A list of affected vehicles has been sent to all applicable dealers.

## PROCEDURES:

The ball sockets on all affected vehicles must be inspected to determine if they are involved in this campaign. To determine if the ball socket is involved, check the date code stamped in the ball socket end cover and measure the outside swage to determine the ball socket size. Any size 20 ball socket (a size 20 ball socket measures 1-7/8" across the outside swage) with the date code 9G1, 9G2, 9G3, 9G4, 9H1, 9H2, 9H3, 9H4, 9H5, 9J1, 9J2, 9J3 or 9J4 is involved in this campaign. If the date code begins with any number other than "9", the date code letter is either "A-F" or "K-M", and the outside swage of the ball socket measures 2-1/8", then the socket is not part of this campaign.



Figure 1 — Ball Socket Identification

**NOTE**

Only size 20 ball sockets are involved in this campaign. Make sure the correct socket is being serviced.

**NOTE**

Any socket with the letters "DL" stamped in the end cover are of a different design and NOT part of this campaign.

If the ball socket meets all the conditions as outlined above, both sockets must be replaced with kit part No. 8228-L20KP0008 for ArvinMeritor and MACK front axles, or 8228-L20KP0012 for Dana/Spicer front axles as outlined in the attached TRW Automotive Service Bulletin #LNK-112, *EDL Socket Replacement (Tie-Rods)*, dated September 2000.

**PARTS REQUIRED:**

Order vehicle recall parts on a separate stock order and process through the parts distribution center normally serving your area. Do not include parts on this requisition that are not required for this recall campaign.

International orders are to be prefixed — V.O.R.

**Required Part Numbers:**

Qty.	Part No.	Description
1	8228-L20KP0008	Ball socket replacement kit, ArvinMeritor and MACK front axles
1	8228-L20KP0012	Ball socket replacement kit, Dana/Spicer front axles

**REMOVED PARTS:**

Removed ball sockets may be scrapped locally.

**REIMBURSEMENT:**

All expenses incurred as a result of this campaign are to be recovered through normal warranty claim procedures. Enter the following information on the warranty claim:

**UNDER**

**ENTER**

Failed Part Number .....

SC0282

Labor Code/Allowance .....

422 4A VA 95 — 0.3 hr.

Take charge time and time to inspect ball socket to determine if involved in this campaign.

422 4B VA 95 — 1.0 hr.

Add time to remove existing ball sockets, install ball socket replacement kits and check and adjust toe-in.

**TRW Automotive**  
Steering & Suspension Systems

## Service Bulletin #LNK-112

### EDL Socket Replacement (Tie Rods)

Released September, 2000

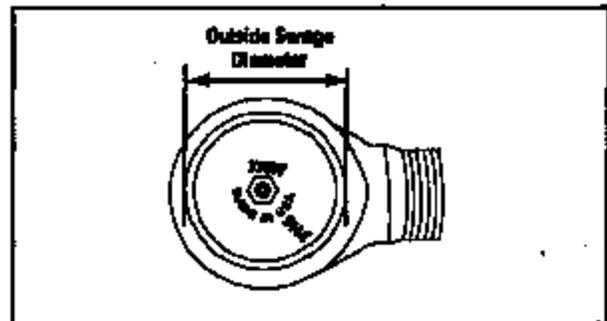
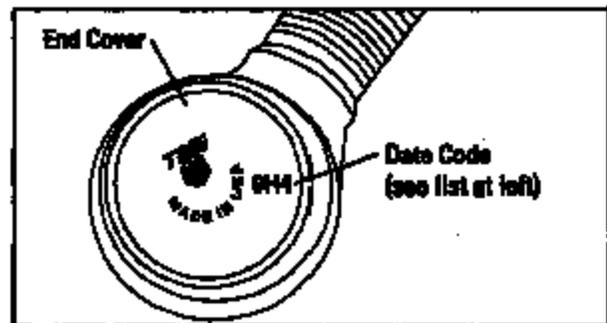


**IF** ..... The chassis number of the truck is on the list identified by the OE manufacturer. Any chassis number not on the list is not part of the campaign.

**AND** ..... The date code on either socket end is any of the following: 9G1, 9G2, 9G3, 9G4, 9H1, 9H2, 9H3, 9H4, 9H5, 9J1, 9J2, 9J3 OR 9J4. If the date code begins with any number other than "9", it is not part of the campaign. If the letter is "A-F" or "K-M", it is not part of the campaign.

**AND** ..... The sockets are "20 size" sockets. To identify the size: Measure the outside swage diameter. A 20 size socket will measure approx. 1 7/8". Any socket measuring 2 1/8" is a "24 size" socket, and is not part of the campaign.

**THEN** ..... Both socket ends need to be replaced using this kit.



**NOTE:** Only 20 size sockets are subject to this campaign. Make sure you are servicing the correct size socket.

**NOTE:** Any socket with "DL" stamped into the end cover is a different design, and IS NOT part of this campaign.

Please continue to page 2 if ALL of the above conditions are met.

**NOTE:** Any socket with "DL" stamped into the end cover is a different design, and IS NOT part of this campaign.

## Remove the Tie Rod Assembly

**WARNING** To prevent serious eye injury, always wear safe eye protection when you perform vehicle maintenance or service.

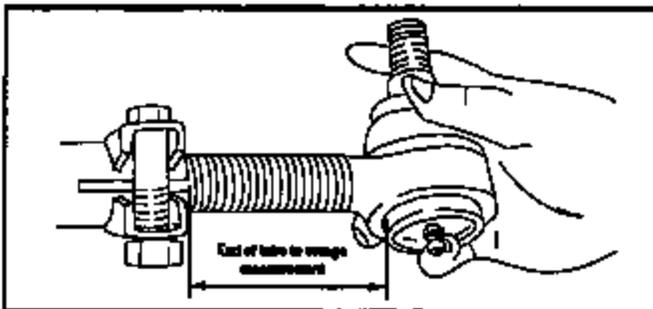
1. Remove the cotter pins and the nuts on both sides of the axle that fasten each tie rod end to the tie rod arms.
2. Disconnect the cross tube assembly from the tie rod arms using a ball joint separator (pickle fork).

**WARNING** Do not heat the arms to remove the tie rod assembly. Doing so will soften and damage the parts.

**WARNING** Always support the tie rod assembly so that it does not fall and become damaged or cause personal injury when separated from the steering knuckles.

## Remove and Replace the Tie Rod Ends

1. Note the position of the bolt and nut in the clamp, and the position of the clamp relative to the ground.
2. On one end, measure from the end of the tube to the nearest outside swage diameter as shown below. Record the measurement.



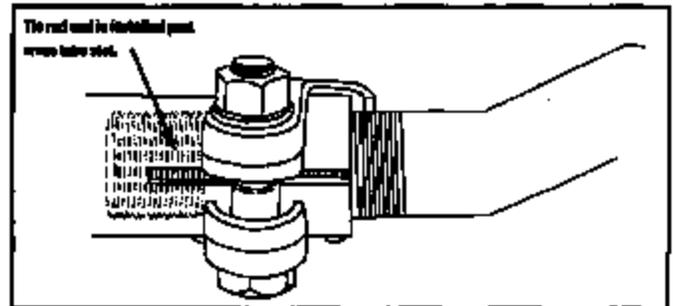
3. Measure the length of the tie rod from the outside of the swage diameter on one socket end to the outside of the swage diameter on the other socket end, as shown below. Record the measurement.



4. Loosen the clamp bolts on the cross tube.

**WARNING** If the clamp is tack-welded, do not remove the tack weld. If the tack weld is removed, clamping force will not be enough to keep the socket threads stationary. Loss of steering control will result. If welds are broken, the cross tube must be replaced.

5. Remove one threaded tie rod end from the cross tube.
6. Install the new socket end. Thread the new socket end into the tube until the measurement from the end of the tube to the nearest outside swage diameter is the same as you measured in step 2.
7. Repeat steps 5 & 6 for the other socket end.
8. Make sure both ends are threaded into the tube deeper than the cross tube slot as shown below.



9. Measure the length of the tie rod again, and make sure it is the same as you measured in step 3. Sight down the tie rod and make sure socket ends are aligned.
10. If the clamp is not tack-welded, seat the tabs on the clamps against the end of the cross tube. Position the bolts as noted earlier. Tighten the clamps and torque to manufacturer's specifications.

## Install the Tie Rod Assembly onto the Axle

1. Clean and dry the tie rod end taper and the tie rod arm taper hole. Connect the tie rod ends into the tie rod arms.
2. Install both tie rod end nuts to secure the tie rod end and cross tube assembly linkage to the tie rod arm. Torque the nuts to the vehicle manufacturer's specifications.
3. Install the cotter pins. If necessary, tighten the castle nut until the holes are aligned. Do not loosen the nut to install the cotter pin.
4. Sight down the tie rod again, to make sure the sockets are aligned with one-another. Also make sure the clamps are positioned relative to the ground as earlier noted.

## Check Vehicle Toe-In

1. Check the toe-in measurements. Adjust as appropriate according to the manufacturer's guidelines.



MACK TRUCKS, INC.  
WORLD HEADQUARTERS  
2100 MACK BOULEVARD  
P.O. BOX M  
ALLENTOWN, PA 18106-5000  
PHONE: 610.709.3011

**DEAR MACK TRUCK OWNER:**

This notice is sent to you in accordance with the requirements of the National Traffic and Motor Vehicle Safety Act.

Mack Trucks, Inc. has determined that a defect which relates to motor vehicle safety exists in the TRW Type 20 EDL ball sockets, used in front steer axles manufactured by Arvin Meritor (FF961, FF981, FG941, FG943), Dana/Spicer (E12001), or MACK (FAWL12), and installed on class 8, CH, CL, CX, RD model vehicles. The recall includes chassis built between July 1, 1998 and December 10, 1998.

**SAFETY DEFECT:** The tie rod end ball socket assemblies were not manufactured to the proper case depth and/or hardness.

**POTENTIAL RISK:** This defect can cause premature wear to the point where the ball stud can separate from the socket assembly. If a tie rod end separates, under normal driving conditions, without warning, you could lose steering control and your vehicle could be involved in an accident which could result in property damage or personal injury.

**REPAIR:** A Mack truck dealer will inspect your vehicle for suspect date codes, at no charge to you, regardless of your vehicle's age or mileage. If the chassis has a suspect date code, both sockets will be replaced at no charge to you.

**TIME REQUIRED FOR THE REPAIR:** The inspection should take approximately 0.3 hour and in most cases the ball socket replacement can be made in 1.0 hour.

**WHAT YOU SHOULD DO:** To prevent an in-service failure, we urge you to call the nearest Mack Parts and Service Center and make an appointment to have your tie rod end ball sockets inspected, and if necessary repaired, at no charge (free). All Mack Parts and Service Centers have been sent a bulletin covering all the details required to perform the campaign.

**NOTICE REGARDING LEASED VEHICLES:** If you are a Lessor of vehicles subject to this Notice, you have an obligation under Federal Law to provide a copy of this Notice to all Lessees within 10 days of your receipt of this Notice. Further, you must maintain a record which identifies the Lessee(s) to whom you send a copy of this letter, the date you send this letter, and the Vehicle Identification Number(s) of the vehicle(s) that you have leased to that lessee. For purposes of this Notice, the term Lessor means: a person or entity that is the owner, as reflected on the vehicle's title, of any five or more leased vehicles (as defined in CFR Section 577.4), as of the date of notification by the manufacturer of the existence of a safety-related defect

or non-compliance with a Federal Motor Vehicle Safety Standard in one or more of the leased motor vehicles.

**OWNER RECALL  
RESPONSE CARD:**

The enclosed "Notice of Vehicle Recall" identifies your vehicle. If you no longer own the truck, please help us update our records. Complete the "Vehicle Disposition Record" portion of the enclosed postage-free Notice of Mandatory Safety Campaign card and mail it to us.

**ASSISTANCE:**

If you experience any difficulty in obtaining the corrective service, you should contact the Mack Regional Service Office in your area (listed under "Regional Offices" in the Mack Sales, Parts & Service Center Directory) for assistance. The Regional Office will take the necessary action to ensure prompt correction of your vehicle.

If Mack Trucks, Inc. has not fixed your truck free within a reasonable time, you may submit a complaint to: Administrator, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, DC 20590, or call the toll-free Auto Safety Hotline at (888) 327-4236.

We regret any inconvenience this may cause to your operation, but hope you will appreciate our sincere efforts to demonstrate Mack's commitment to provide our customers with the best possible product.

**MACK TRUCKS, INC.  
WARRANTY DEPARTMENT**



MACK TRUCKS, INC.  
WORLD HEADQUARTERS  
2100 MACK BOULEVARD  
P.O. BOX M  
ALLENTOWN, PA 18105-5000  
PHONE: 610.709.3011

November 2000

**TO: SUBSIDIARY MANAGERS  
DISTRIBUTOR PRINCIPALS**

**SUBJECT: Vehicle Recall Campaign - SC0262  
TRW Tie Rod End Ball Sockets**

Mack Trucks, Inc. is conducting a voluntary recall of Class 8 CH, CL, CX, RD model vehicles to inspect the TRW Type 20 EDL ball sockets per campaign instructions and replace accordingly. The recall includes chassis built between July 1, 1999 and December 10, 1999. The tie rod end ball socket assemblies were not manufactured to the proper case depth and/or hardness. This defect can cause premature wear to the point where the ball stud can separate from the socket assembly and result in loss of vehicle control.

A copy of the service bulletin covering campaign procedures is enclosed.

It is important that preparation be made immediately to assure prompt inspection and/or correction of all vehicles involved. The National Traffic and Motor Vehicle Safety Act requires dealers to insure that all new and used vehicles are free of safety defects and comply with all Federal Motor Vehicle Safety Standards at the time of delivery to the consumer. All vehicle recalls which affect new or used inventory must be performed before it is sold or leased. Please refer to Service Operations Service Letter #SL-004-001 dated 11/19/92 regarding the aforementioned amendment.

Please use the enclosed Notice of Mandatory Safety Campaign card(s) to report sold or transferred trucks. Make sure these cards are returned to us and not directly to the customer or to another dealer. A notice to campaign will be mailed to all identified registrants of affected vehicles. To avoid warranty denial of your claim for reimbursement of expenses connected with this campaign, first, make sure the truck presented for campaign work is on your list. If not, check for campaign authorization on the MACKnet chassis inquiry. Also check that the campaign was not completed previously by another Mack dealer.

Mack Trucks, Inc., recommends a follow-up by telephone or a personal visit, of all owners of vehicles subject to recall who fail to bring the vehicle(s) in for this correction. Your District Service Manager will be contacting you to assure that this campaign attains the visibility we feel is necessary to ensure 100% completion of this campaign. Please be prepared to review your progress and/or any problems associated with the campaign.

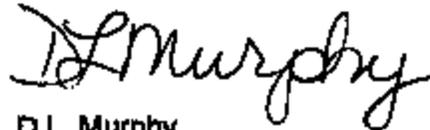
**Safety Recall Campaign (SC0262)**

November 2000

If you have any questions about this campaign which may not have been covered in this letter or enclosures, please contact the Campaign Administrator in Allentown, (610) 709-3337.

Very truly yours,

MACK TRUCKS, INC.

A handwritten signature in black ink, appearing to read "D.L. Murphy". The signature is written in a cursive, flowing style.

D.L. Murphy  
Campaign Administrator

202DIST.doc

Enclosures: Customer Notice  
Service Bulletin  
Notification Cards

cc: Regional Vice Presidents, District Managers, Regional Service Managers, District Service Managers, District Parts Sales Managers, Subsidiary/Distributor Service Managers, Subsidiary/Distributor Parts Managers.



00V-246.103

# VEHICLE RECALL

**DATE:** 12/19/00 (Supersedes SC262 dated 11/27/00) SC262

**TO:** ALL MACK DISTRIBUTORS AND SUBSIDIARIES

**SUBJECT:** TRW TYPE 20 EDL BALL SOCKETS — FRONT STEER AXLES

## INFORMATION:

It has been determined that certain CX, CH, CL and RD model chassis manufactured between July 1, 1999 through December 10, 1999 and equipped with either an ArvinMeritor (FF981, FF981, FG941, FG943), Dana/Spicer (E1200) or MACK (FAWL12) front steer axle may have ball sockets (TRW Type 20 EDL) that were not manufactured to proper case depth and/or hardness specifications. This defect could cause premature wear of the ball socket to the point where the ball stud could separate from the socket and possibly result in a loss of vehicle control.

Approximately 6,244 vehicles are involved in this campaign. A list of affected vehicles has been sent to all applicable dealers.

## PROCEDURES:

The ball sockets on all affected vehicles must be inspected to determine if they are involved in this campaign. To determine if the ball socket is involved, check the date code stamped in the ball socket end cover and measure the outside swage to determine the ball socket size. Any size 20 ball socket (a size 20 ball socket measures 1-7/8" across the outside swage) with the date code 9G1, 9G2, 9G3, 9G4, 9H1, 9H2, 9H3, 9H4, 9H5, 9J1, 9J2, 9J3 or 9J4 is involved in this campaign. If the date code begins with any number other than "9", the date code letter is either "A-F" or "K-M", and the outside swage of the ball socket measures 2-1/8", then the socket is not part of this campaign.



Figure 1 — Ball Socket Identification

**NOTE**

Only size 20 ball sockets are involved in this campaign. Make sure the correct socket is being serviced.

**NOTE**

Any socket with the letters "DL" stamped in the end cover are of a different design and NOT part of this campaign.

If the ball socket meets all the conditions as outlined above, both sockets must be replaced with kit part No. 8228-L20KP0008 for ArvinMeritor and MACK front axles, or 8228-L20KP0012 for Dana/Spicer front axles as outlined in the attached TRW Automotive Service Bulletin #LNK-112, *EDL Socket Replacement (Tie-Rods)*, dated September 2000.

**PARTS REQUIRED:**

Order vehicle recall parts on a separate stock order and process through the parts distribution center normally serving your area. Do not include parts on this regulation that are not required for this recall campaign.

International orders are to be prefixed — V.O.R.

**Required Part Numbers:**

Qty.	Part No.	Description
1	8228-L20KP0008	Ball socket replacement kit, ArvinMeritor and MACK front axles
1	8228-L20KP0012	Ball socket replacement kit, Dana/Spicer front axles

**REMOVED PARTS:**

Removed ball sockets may be scrapped locally.

**REIMBURSEMENT:**

All expenses incurred as a result of this campaign are to be recovered through normal warranty claim procedures. Enter the following information on the warranty claim:

<u>UNDER</u>	<u>ENTER</u>	
Failed Part Number .....	3C0262	
▶ Labor Code/Allowance .....	422 4A VA 95 — 0.2 hr.	Time to inspect ball socket to determine if involved in this campaign. Does not include "take-charge" time.
▶	422 4B VA 95 — 1.8 hr.	Add time to remove existing ball sockets, install ball socket replacement kits and check and adjust toe-in.

**TRW Automotive**  
Steering & Suspension Systems

## Service Bulletin #LNK-112

### EDL Socket Replacement (Tie Rods)

Released September, 2000

**IF** ..... The chassis number of the truck is on the list identified by the OE manufacturer. Any chassis number not on the list is not part of the campaign.

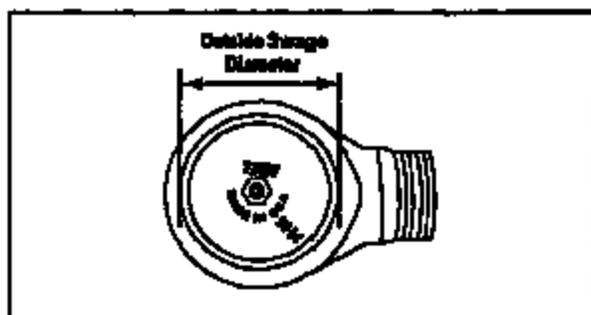
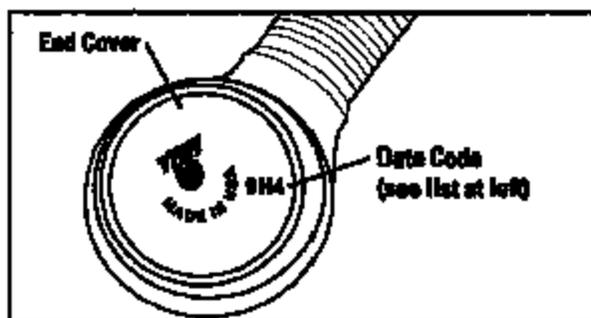
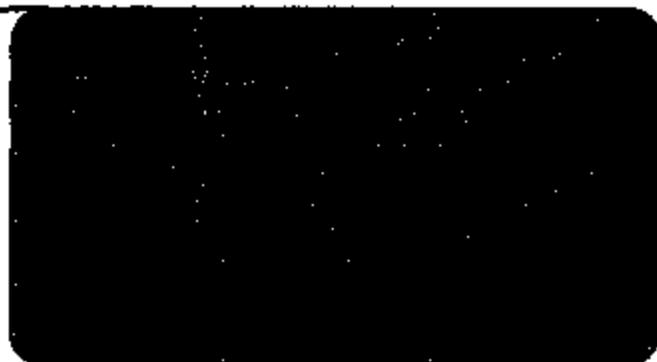
**AND** ..... The date code on either socket end is any of the following: 9G1, 9G2, 9G3, 9G4, 9H1, 9H2, 9H3, 9H4, 9H5, 9J1, 9J2, 9J3 OR 9J4. If the date code begins with any number other than "9", it is not part of the campaign. If the letter is "A-F" or "K-M", it is not part of the campaign.

**AND** ..... The sockets are "20 size" sockets. To identify the size: Measure the outside swage diameter. A 20 size socket will measure approx. 1 7/8". Any socket measuring 2 1/8" is a "24 size" socket, and is not part of the campaign.

**THEN** .... Both socket ends need to be replaced using this kit.

Please continue to page 2 if ALL of the above conditions are met.

**NOTE:** Any socket with "DL" stamped into the end cover is a different design, and IS NOT part of this campaign.



**NOTE:** Only 20 size sockets are subject to this campaign. Make sure you are servicing the correct size socket.

**NOTE:** Any socket with "DL" stamped into the end cover is a different design, and IS NOT part of this campaign.

## Remove the Tie Rod Assembly

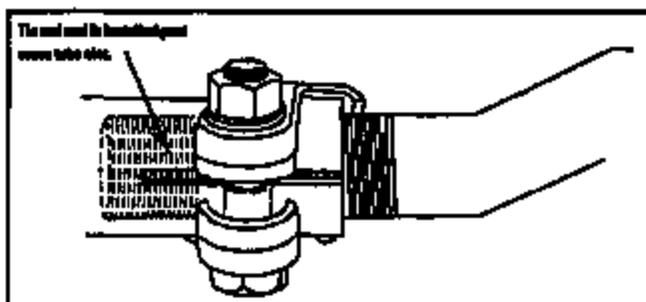
**WARNING** To prevent serious eye injury, always wear safe eye protection when you perform vehicle maintenance or service.

1. Remove the cotter pins and the nuts on both sides of the axle that fasten each tie rod end to the tie rod arms.
2. Disconnect the cross tube assembly from the tie rod arms using a ball joint separator (pickle fork).

**WARNING** Do not heat the arm to remove the tie rod assembly. Doing so will soften and damage the parts.

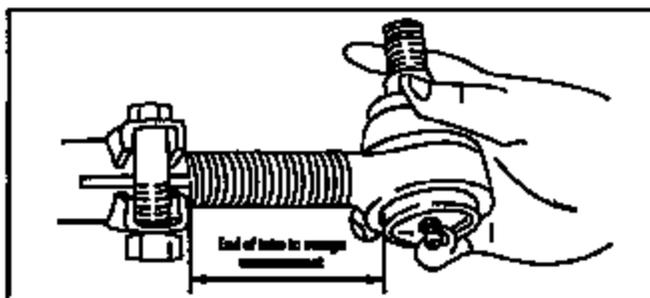
**WARNING** Always support the tie rod assembly so that it does not fall and become damaged or cause personal injury when separated from the steering knuckles.

5. Remove one threaded tie rod end from the cross tube.
6. Install the new socket end. Thread the new socket end into the tube until the measurement from the end of the tube to the nearest outside swage diameter is the same as you measured in step 2.
7. Repeat steps 5 & 6 for the other socket end.
8. Make sure both ends are threaded into the tube deeper than the cross tube slot as shown below.

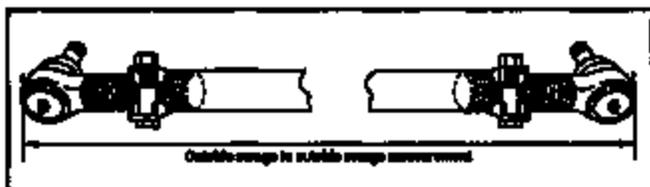


## Remove and Replace the Tie Rod Ends

1. Note the position of the bolt and nut in the clamp, and the position of the clamp relative to the ground.
2. On one end, measure from the end of the tube to the nearest outside swage diameter as shown below. Record the measurement.



3. Measure the length of the tie rod from the outside of the swage diameter on one socket end to the outside of the swage diameter on the other socket end, as shown below. Record the measurement.



4. Loosen the clamp bolts on the cross tube.

**WARNING** If the clamp is tack-welded, do not remove the tack weld. If the tack weld is removed, clamping force will not be enough to keep the socket threads stationary. Loss of steering control will result. If welds are broken, the cross tube must be replaced.

9. Measure the length of the tie rod again, and make sure it is the same as you measured in step 3. Slight down the tie rod and make sure socket ends are aligned.
10. If the clamp is not tack-welded, seat the tabs on the clamps against the end of the cross tube. Position the bolts as noted earlier. Tighten the clamps and torque to manufacturer's specifications.

## Install the Tie Rod Assembly onto the Axle

1. Clean and dry the tie rod end taper and the tie rod arm taper hole. Connect the tie rod ends into the tie rod arms.
2. Install both tie rod end nuts to secure the tie rod end and cross tube assembly linkage to the tie rod arm. Torque the nuts to the vehicle manufacturer's specifications.
3. Install the cotter pins. If necessary, tighten the castle nut until the holes are aligned. Do not loosen the nut to install the cotter pin.
4. Slight down the tie rod again, to make sure the sockets are aligned with one-another. Also make sure the clamps are positioned relative to the ground as earlier noted.

## Check Vehicle Toe-In

1. Check the toe-in measurements. Adjust as appropriate according to the manufacturer's guidelines.



MACK TRUCKS, INC.  
WORLD HEADQUARTERS  
P.O. BOX M  
ALLENTOWN, PA 18105-5000  
TELEPHONE: 610.708.3011  
TELECOPIER: 610.708. 2188

February 7, 2001

Mr. Kenneth Weinstein, Associate Administrator  
Safety Assurance NSA-11  
National Highway Traffic Safety Administration  
400 Seventh Street, S.W., Room 5319  
Washington, DC 20590

SUBJECT: Vehicle Recall Campaign - SC0262  
TRW Tie Rod Ends (00E-246.004)  
/03

Dear Mr. Weinstein:

8. Remedy Program:

Recall instructions were mailed to our dealers November 30, 2000, with customer notification beginning on December 13, 2000. Parts were NOT shipped directly to Ryder Truck Rental as indicated on my previous correspondence. Ryder chassis will be handled like any other owner.

9. Notices, Bulletins and Communications:

A copy of the updated dealer repair instructions is attached.

Sincerely yours,

**MACK TRUCKS, INC.**

D.L. Lamarche  
Campaign Administrator



# VEHICLE RECALL

**DATE:** 1/5/01 (Supersedes SC262 dated 12/18/00)

**SC262**

**TO:** ALL MACK DISTRIBUTORS AND SUBSIDIARIES

**SUBJECT:** TRW TYPE 20 EDL BALL SOCKETS — FRONT STEER AXLES

## INFORMATION:

- ▶ It has been determined that certain CX, CH, CL, RD and LE model chassis manufactured between July 1, 1999 through December 10, 1999 and equipped with either an ArvinMeritor (FF981, FF981, FG941, FG943), Dana/Spicer (E1200) or MACK (FAWL12) front steer axle may have ball sockets (TRW Type 20 EDL) that were not manufactured to proper case depth and/or hardness specifications. This defect could cause premature wear of the ball socket to the point where the ball stud could separate from the socket and possibly result in a loss of vehicle control.
- ▶ Approximately 6,282 vehicles are involved in this campaign. A list of affected vehicles has been sent to all applicable dealers.

## PROCEDURES:

The ball sockets on all affected vehicles must be inspected to determine if they are involved in this campaign. To determine if the ball socket is involved, check the date code stamped in the ball socket end cover and measure the outside swage to determine the ball socket size. Any size 20 ball socket (a size 20 ball socket measures 1-7/8" across the outside swage) with the date code 9G1, 9G2, 9G3, 9G4, 9H1, 9H2, 9H3, 9H4, 9H5, 9J1, 9J2, 9J3 or 9J4 is involved in this campaign.

- ▶ If the date code begins with any number other than "9", then the socket is not part of the campaign.
- ▶ If the date code letter is either "A-F" or "K-M", then the socket is not part of the campaign.
- ▶ If the outside swage of the ball socket measures 2-1/8", then the socket is not part of the campaign.



406004

Figure 1 — Ball Socket Identification

**NOTE**

Only size 20 ball sockets are involved in this campaign. Make sure the correct socket is being serviced.

**NOTE**

Any socket with the letters "DL" stamped in the end cover are of a different design and NOT part of this campaign.

If the ball socket meets all the conditions as outlined above, both sockets must be replaced with kit part No. 8226-L20KP0008 for ArvinMeritor and MACK front axles, or 8226-L20KP0012 for Dana/Spicer front axles as outlined in the attached TRW Automotive Service Bulletin #LNK-112, *EDL Socket Replacement (Tie-Rods)*, dated September 2000.

**PARTS REQUIRED:**

Order vehicle recall parts on a separate stock order and process through the parts distribution center normally serving your area. Do not include parts on this requisition that are not required for this recall campaign.

International orders are to be prefixed — V.O.R.

**Required Part Numbers:**

Qty.	Part No.	Description
1	8226-L20KP0008	Ball socket replacement kit, ArvinMeritor and MACK front axles
1	8226-L20KP0012	Ball socket replacement kit, Dana/Spicer front axles

**REMOVED PARTS:**

Removed ball sockets may be scrapped locally.

**REIMBURSEMENT:**

All expenses incurred as a result of this campaign are to be recovered through normal warranty claim procedures. Enter the following information on the warranty claim:

<b>UNDER</b>	<b>ENTER</b>	
Failed Part Number .....	8C0262	
Labor Code/Allowance .....	422 4A VA 95 — 0.2 hr.	Time to inspect ball socket to determine if involved in this campaign. Does not include "take-charge" time.
	422 4B VA 95 — 1.5 hr.	Add time to remove existing ball sockets, install ball socket replacement kits and check and adjust toe-in.

**TRW Automotive**  
Steering & Suspension Systems

## Service Bulletin #LNK-112

### EDL Socket Replacement (Tie Rods)

Released September, 2000

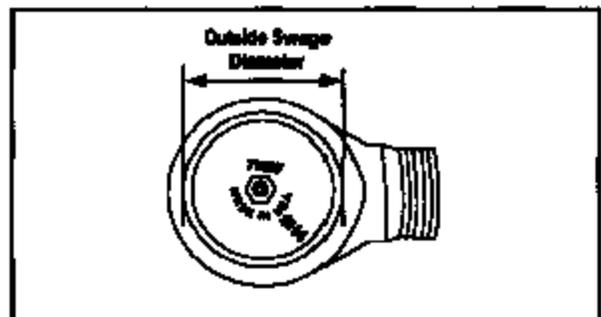
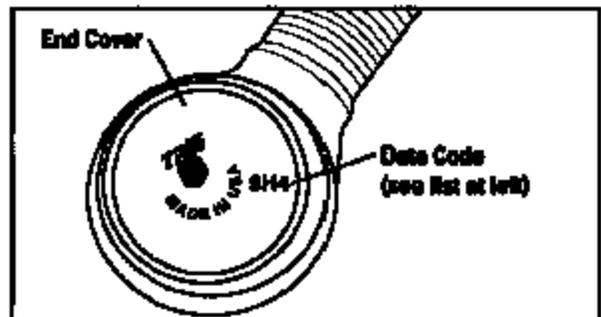


**IF** ..... The chassis number of the truck is on the list identified by the OE manufacturer. Any chassis number not on the list is not part of the campaign.

**AND** ..... The date code on either socket end is any of the following: 9G1, 9G2, 9G3, 9G4, 9H1, 9H2, 9H3, 9H4, 9H5, 9J1, 9J2, 9J3 OR 9J4. If the date code begins with any number other than "9", it is not part of the campaign. If the letter is "A-F" or "K-M", it is not part of the campaign.

**AND** ..... The sockets are "20 size" sockets. To identify the size: Measure the outside swage diameter. A 20 size socket will measure approx. 1 7/8". Any socket measuring 2 1/8" is a "24 size" socket, and is not part of the campaign.

**THEN** ..... Both socket ends need to be replaced using this kit.



**NOTE:** Only 20 size sockets are subject to this campaign. Make sure you are servicing the correct size socket.

**NOTE:** Any socket with "DL" stamped into the end cover is a different design, and IS NOT part of this campaign.

Please continue to page 2 if ALL of the above conditions are met.

**NOTE:** Any socket with "DL" stamped into the end cover is a different design, and IS NOT part of this campaign.

## Remove the Tie Rod Assembly

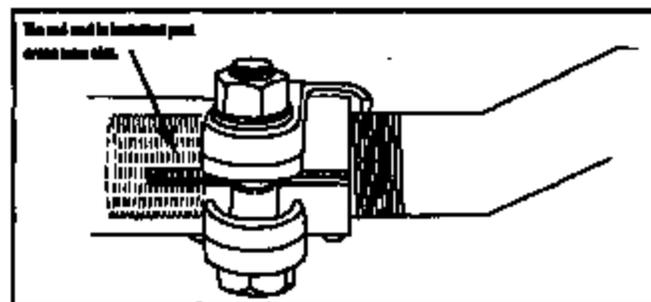
**WARNING** To prevent serious eye injury, always wear safe eye protection when you perform vehicle maintenance or service.

1. Remove the cotter pins and the nuts on both sides of the axle that fasten each tie rod end to the tie rod arms.
2. Disconnect the cross tube assembly from the tie rod arms using a ball joint separator (pickle fork).

**WARNING** Do not heat the arm to remove the tie rod assembly. Doing so will soften and damage the parts.

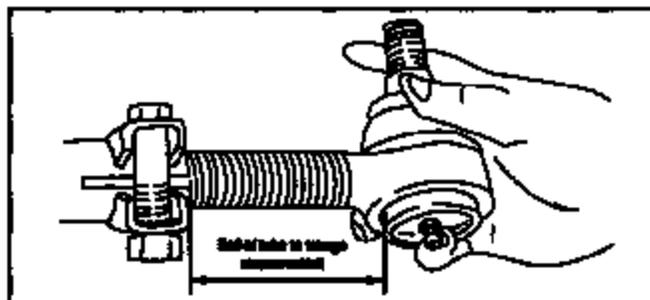
**WARNING** Always support the tie rod assembly so that it does not fall and become damaged or cause personal injury when separated from the steering knuckles.

5. Remove one threaded tie rod end from the cross tube.
6. Install the new socket end. Thread the new socket end into the tube until the measurement from the end of the tube to the nearest outside swage diameter is the same as you measured in step 2.
7. Repeat steps 5 & 6 for the other socket end.
8. Make sure both ends are threaded into the tube deeper than the cross tube slot as shown below.

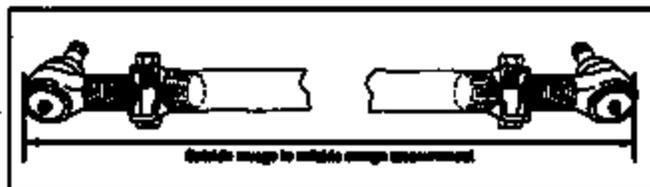


## Remove and Replace the Tie Rod Ends

1. Note the position of the bolt and nut in the clamp, and the position of the clamp relative to the ground.
2. On one end, measure from the end of the tube to the nearest outside swage diameter as shown below. Record the measurement.



3. Measure the length of the tie rod from the outside of the swage diameter on one socket end to the outside of the swage diameter on the other socket end, as shown below. Record the measurement.



4. Loosen the clamp bolts on the cross tube.

**WARNING** If the clamp is tack-welded, do not remove the tack weld. If the tack weld is removed, clamping force will not be enough to keep the socket threads stationary. Loss of steering control will result. If welds are broken, the cross tube must be replaced.

9. Measure the length of the tie rod again, and make sure it is the same as you measured in step 3. Sight down the tie rod and make sure socket ends are aligned.
10. If the clamp is not tack-welded, seat the tabs on the clamps against the end of the cross tube. Position the bolts as noted earlier. Tighten the clamps and torque to manufacturer's specifications.

## Install the Tie Rod Assembly onto the Axle

1. Clean and dry the tie rod end taper and the tie rod arm taper hole. Connect the tie rod ends into the tie rod arms.
2. Install both tie rod end nuts to secure the tie rod and cross tube assembly linkage to the tie rod arm. Torque the nuts to the vehicle manufacturer's specifications.
3. Install the cotter pins. If necessary, tighten the castle nut until the holes are aligned. Do not loosen the nut to install the cotter pin.
4. Sight down the tie rod again, to make sure the sockets are aligned with one-another. Also make sure the clamps are positioned relative to the ground as earlier noted.

## Check Vehicle Toe-In

1. Check the toe-in measurements. Adjust as appropriate according to the manufacturer's guidelines.