



Reliability Driven™

Service Bulletin No. 414

<i>MODEL</i>	D Series	<i>TYPE</i>	Field Change Program	<i>SECTION/GROUP</i>	3-Body	<i>DATE</i>	
<i>SUBJECT</i>	DRIVESHAFT CONTAINMENT						
<i>CONDITIONS</i>							

Ref. NHTSA Recall No.:14V-335

Ref. Transport Canada Recall No.:2014-238

Customer Complaint:

On certain MCI 102DL3 and D4505 series coaches equipped with a driveshaft with a compressed length of thirty (30) inches or less, a steerable trailing axle with caster change, and no electronic stability control, in the event of a driveshaft decoupling from the transmission due to a universal joint failure while the coach is in operation, the potential exists for the driveshaft to escape its containment.

If this occurs, the flailing driveshaft may strike the trailing axle tie rod and components of the trailing axle locking system, potentially causing the trailing axle steering and caster locking mechanisms to unlock. If this occurs and the driver makes a hard braking application resulting in the drive axle brakes locking up, the driver may experience loss of steering control of the vehicle.

Cause:

A flailing driveshaft that decouples from the transmission, escapes its containment, and strikes the trailing axle tie rod and steering and caster locking mechanisms.

Corrective Action:

MCI strongly encourages owners of the coaches listed on Pages 3 and 4 to install the driveshaft containment hoop as soon as possible.



Parts

Qty.	New P/N	Description
1	03-33-2712	Kit, Drive Shaft Hoop, Secondary <i>Kit contents are:</i>
1	03-33-2711	Hoop Assembly, Drive Shaft
2	03-56-1642	Plate, Tapped, Drive Shaft Protection
8	19-01-1535	Capscrew, 1/2-13 x 1.00, GR 8
1	03-33-2834	Plate
1	19-1-17	Capscrew, 5/16-18 x 1.00
1	19-1-260	Capscrew, 5/16-18 x 3.00
1	19-1-736	Capscrew, 5/16-18 x 3.50
2	19-2-8	Washer, Flat, 5/16
3	19-03-0498	Nut, Lock, 5/16-18
1	19-11-258	Tyrap
a/r		Never Seez, Paste
a/r		Undercoating, Tectyl, 127CG, Grey
4	14-01-1028	Kit, Strap/Bolt (qty of 2 per kit)

DRAFT



44978 to 44991	44999 to 45000	45004 to 45005	45023 to 45024	45055 to 45058
45064 to 45067	45072 to 45075	45082	45085	45091
45094	45097	45100	45103	45106
45109	45115	45121	45124	45127
45130	45133	45152	45156	45159
45162	45165	45168	45171	45174
45177	45183	45186	45192	45195
45198	45201	45204	45211	45220
45222	45224	45226	45228	45232
45243	45245	45251	45253	45255
45257	45274	45276	45278	45280
45282	45289	45292	45295	45298
45305	45308	45314	45319	45322
45325	45336	45340	45354	45360
45363	45366	45370	45372	45375
45381	45387	45393	45396	45399
45401	45403	45406	45412	45415
45418	45439	45442	45451	45456
45459	45462	45465	45468	45470
45473	45476	45479	45482	45485
45492	45495	45498	45501	45504
45507	45510	45513	45516	45519
45522	45525	45528	45531	45534
45536	45539	45542	45545	45548
45551	45576	45579	45585	45591
45594	45599	45602	45610	45644
45692	45695	45713	45736	45771
45790	45793	45796	45799	45819
45822	45825	45828	45831	45834
45849	45852	45855	45858	45861
45864,	45867	45877	45892	45901
45905	45918	45921	45937	45940
45950	45953	45959	45976	45991
46089	46091	46093	46095	46097
46106	46109	46112	46115	46118
46121	46124	46140	46143	46146
46148	46154	46156	46158	46160
46162	46164	46166	46169	46171
46173	46175	46177	46183	46185
46187	46189	46191	46193	46195
46197	46199	46201	46203	46205
46207	46209	46211	46214	46216
46218	46220	46222	46234	46236



46238	46240	46242	46244	46247
46250	46253	46256	46259	46262
46264	46267	46270	46284	46294
46296	46298	46300	46302	46306
46308	46310	46312	46316	46318
46320	46322	46326	46328	46330
46332	46348	46374	46380	46382
46422	46424	46428	46430	46432
46434	46436	46438	46474	46500
46502	46504	46506	46569	46571
46573	46667	46689	46690	46724 to 46728
46789	46878	46879	46914	46915
46917	46918	46921	46954	46955
46973	47039	47040	47042	47138
47139	47141	47142	47144	47145
47147	47148	47150	47151	56773 to 56775
57203	57204	58311 to 58313	58337 to 58338	58582 to 58583

Service Procedure:



**Read this entire procedure before beginning work.
Use Safe Shop Practices At All Times.**



Welding may only be done by an experienced and qualified person. All welding must conform to AWS D1.1 Structural Welding Code-Steel. All applicable instructions and prohibitions must be followed.

Prior to any welding on the coach, perform the correct weld disconnect procedure.



Refer to the MCI D Series Maintenance Manual, for information regarding the weld disconnect procedure as applicable by VIN.

The following procedure can be performed using either welding method listed below:

1. SHIELDED METAL ARC WELDING (SMAW)
 - a. 1/8 rod - 7018, 100A-115A
2. GAS METAL ARC WELDING (GMAW)
 - a. 0.045 diameter - 70S3, 25V-26V or 300-320 1PM

REFER TO MANUAL

Refer to Section 3 / Exterior Maintenance /Corrosion Prevention, in the MCI D Series Maintenance Manual, for information about corrosion protection on repaired coaches.

REFER TO MANUAL

Refer to Section 3 / Body, in the MCI D Series Maintenance Manual, in conjunction with this procedure for jackstand support placement information.

1. Turn the main battery disconnect switch to the OFF position.
2. Using wheel lifts, lift the coach to the desired work height.
3. Position jack stand supports under the coach frame support points.
4. Locate the driveshaft, installed between the transmission and the drive axle (refer to Figure 1).
5. Remove and retain the mounting hardware on the driveshaft guard (refer to arrows in Figure 1). Remove and retain the driveshaft guard to be re-installed at a later step in this procedure.

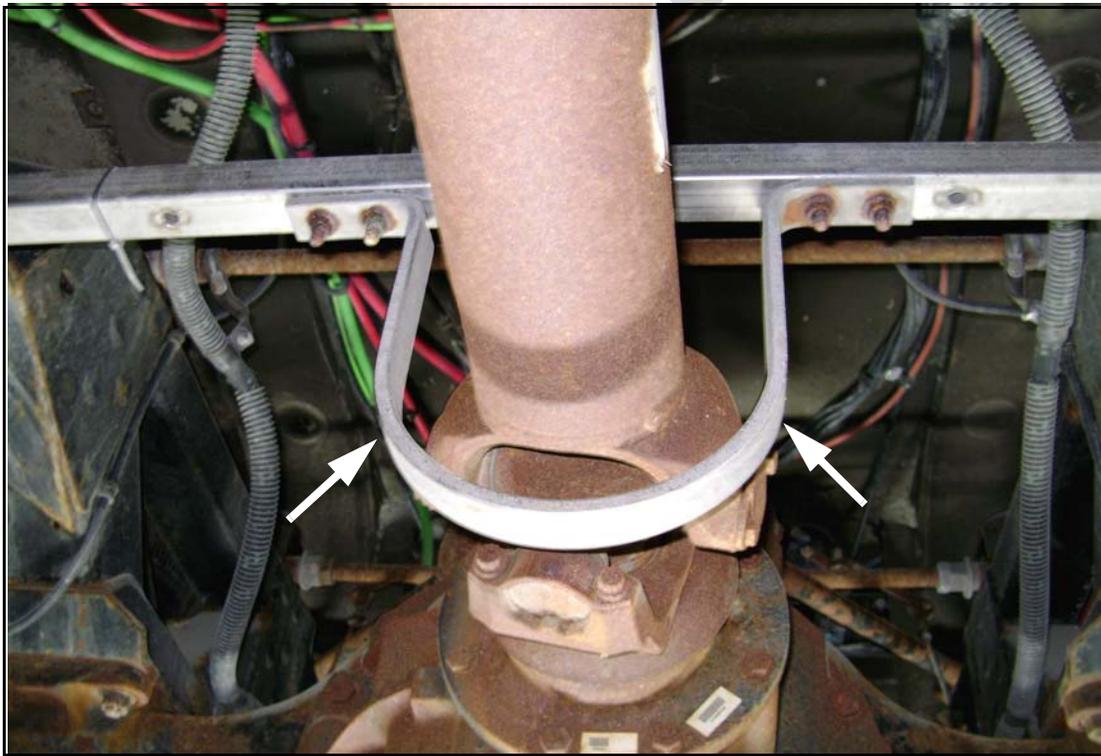


Figure 1.

⚠ WARNING

The driveshaft is heavy and may cause injury if it is not properly supported during the removal process. Secure the weight of the driveshaft prior to removing the straps and bolts.

⚠ REFER TO MANUAL

Refer to Section 14 / Driveshaft, in the MCI D Series Maintenance Manual, in conjunction with this procedure.

6. Using a marker, label the front and rear orientation of the driveshaft.
7. Secure the weight of the driveshaft. Remove and discard the four (4) rear yoke driveshaft straps and bolts (refer to Figure 2). Remove and discard the four (4) front yoke driveshaft straps and bolts (refer to Figure 2). Remove and retain the driveshaft to be re-installed at a later step in this procedure.



Figure 2.

8. Locate the bracket, shown as Item 1 in Figures 3 and 4, positioned approximately one (1) foot away from the crossmember assembly that the driveshaft guard (Figure 1) was mounted to. The vertical face of this bracket will be the reference point utilized to position the tapped plates in Figure 7.

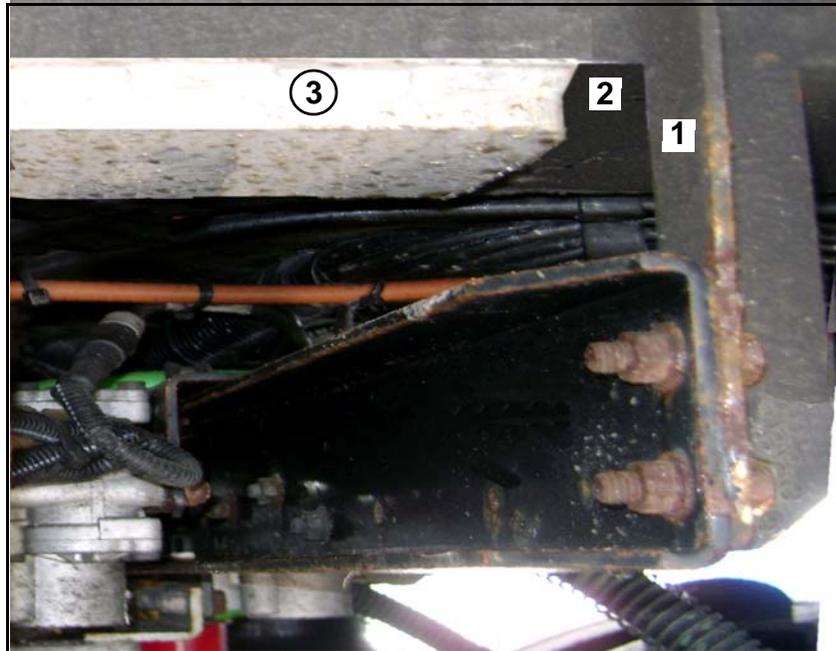


Figure 3.

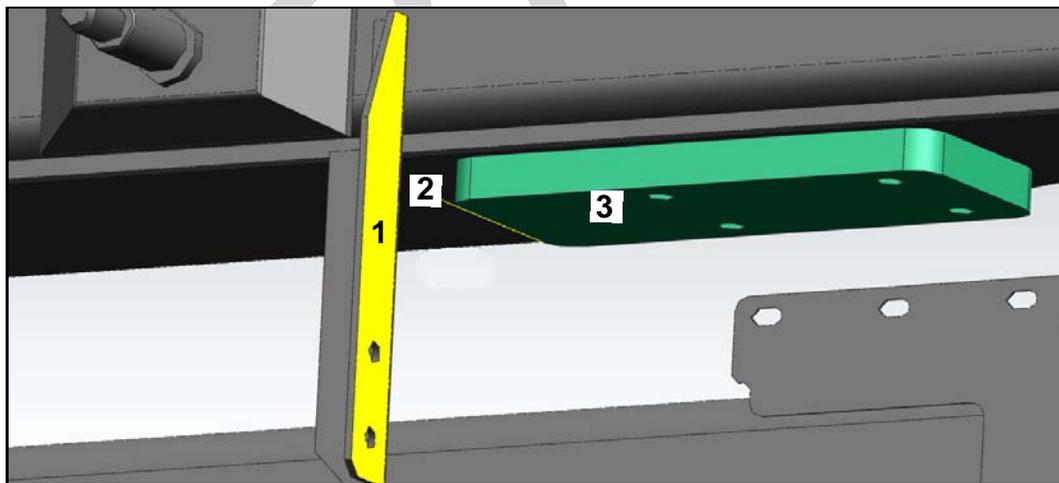


Figure 4.

Item	Description
1	Reference bracket
2	0.50 inch dimension between the bracket vertical face and the edge of the tapped plate
3	Tapped plate, p/n 03-56-1642

NOTICE

If the coach is equipped with gladhands, perform Steps 9 to 12.

If the coach is not equipped with gladhands, proceed to Step 13.

9. Locate and remove the protection valve (refer to Figure 5).

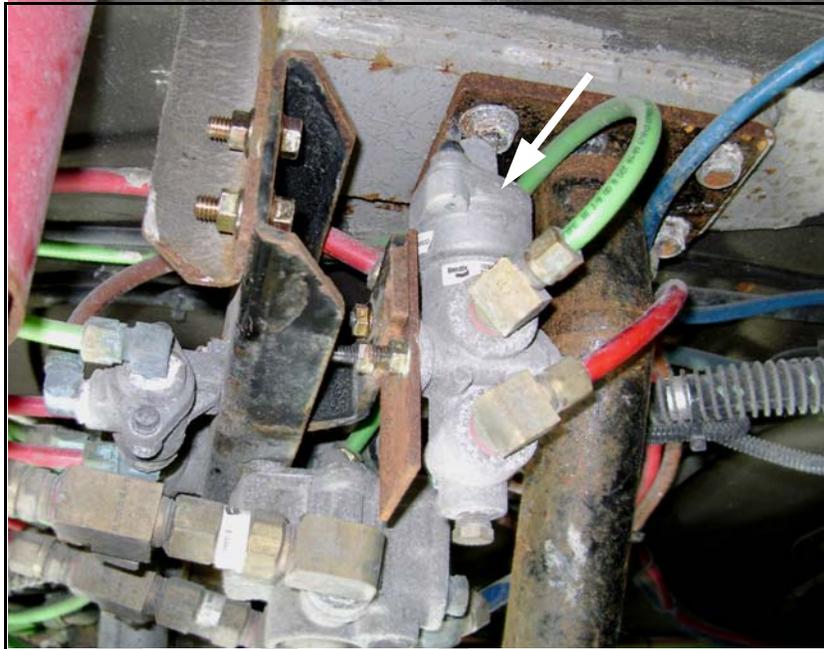


Figure 5. Protection valve (gladhands equipped).

10. Align the indicated hole (Item 3 in Figure 6) in plate, p/n 03-33-2834, with the existing hole in the welded bracket. Secure with hardware.
11. Using a 0.343 drill bit and the plate as a template, drill a hole through the welded bracket (Item 2 in Figure 6).
12. Re-install the protection valve using the hardware provided in the Parts list. Re-orient fitting and airlines and secure with a tyrap, p/n 19-11-258.

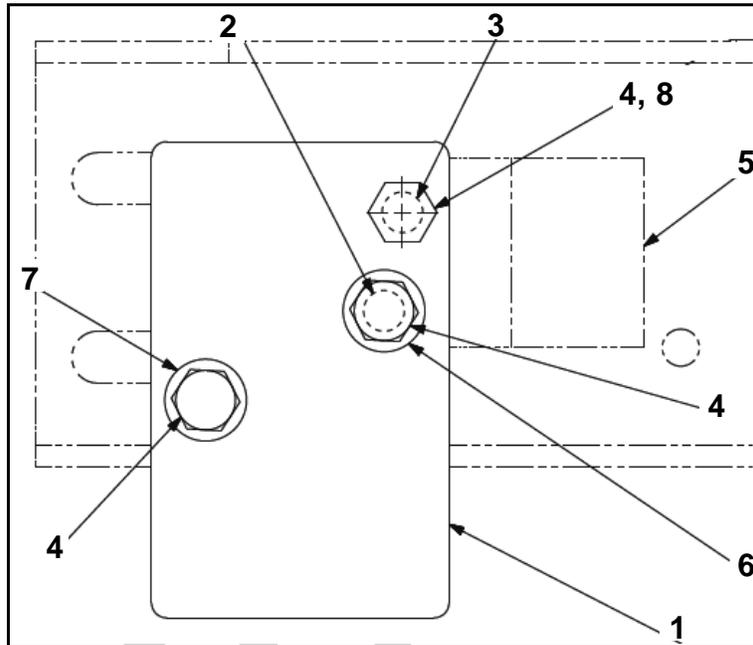


Figure 6.

Item	Description
1	Plate
2	Drill a 0.343 inch hole at this location
3	Hole for alignment
4	Lock nut, p/n 19-03-0498
5	Welded bracket reference
6	Capscrew, p/n 19-1-736
7	Capscrew, p/n 19-1-260
8	Capscrew, p/n 19-1-17



13. Position the tapped plate, p/n 03-56-1642, on the bogie structure as outlined in Figures 7 and 8. Mark a chalk outline around the entire plate. Remove plate. Repeat step to opposite side of the coach.
14. Using a wire brush, thoroughly clean the surface area of dirt and grease from the location(s) where the tapped plate(s) will be welded.

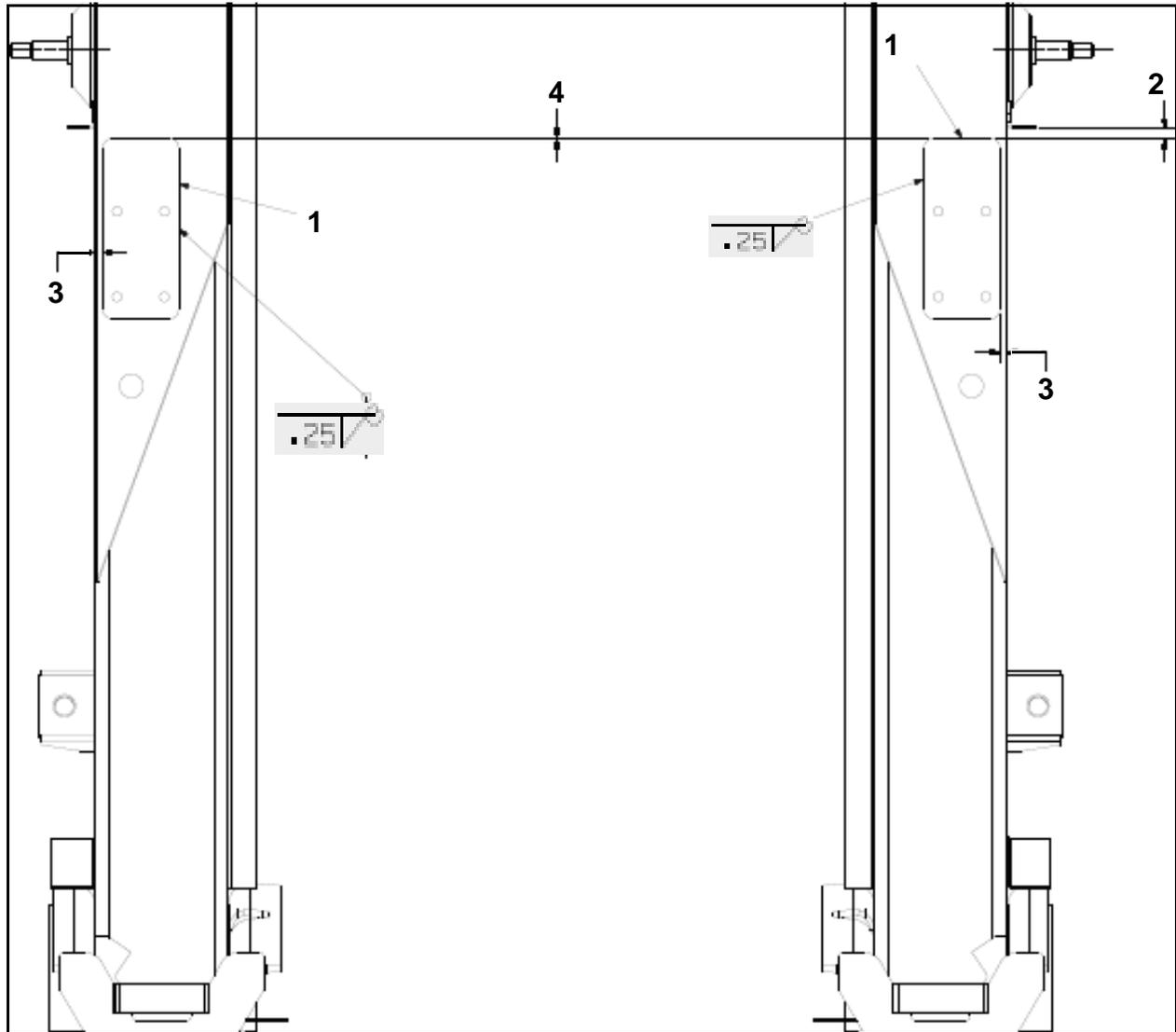
NOTICE

Ensure full surface contact between the tapped plate and the bogie structure.

15. Tack weld the tapped plate on both sides of the coach. Orient the driveshaft hoop assembly, p/n 03-33-2711, with the holes in the tapped plates to ensure correct installation. Place the driveshaft hoop assembly aside to be re-installed at a later step in this procedure.
16. Weld the plate according to the welding symbol in Figure 7, using the following method,
 1. SHIELDED METAL ARC WELDING (SMAW)
 - a. 1/8 rod - 7018, 100A-115A
 - or,
 2. GAS METAL ARC WELDING (GMAW)
 - a. 0.045 diameter - 70S3, 25V-26V or 300-320 1PM
17. Repeat Step 16 to opposite side of coach.

WARNING

Allow sufficient time for weld to cool off.



Item	Description
1	Plate, tapped
2	0.50 inch
3	0.38 inch
4	0.00 inch

Figure 7. Plate installation.

18. Orient the driveshaft hoop assembly, p/n 03-33-2711, as shown per the views and dimensions provided in Figure 8.
19. Apply Never Seez to the threads of the capscrews, p/n 19-01-1535. Using the capscrews, secure the hoop assembly to the tapped plates welded in Step 16. Torque capscrews to 75-80 ft-lbs.

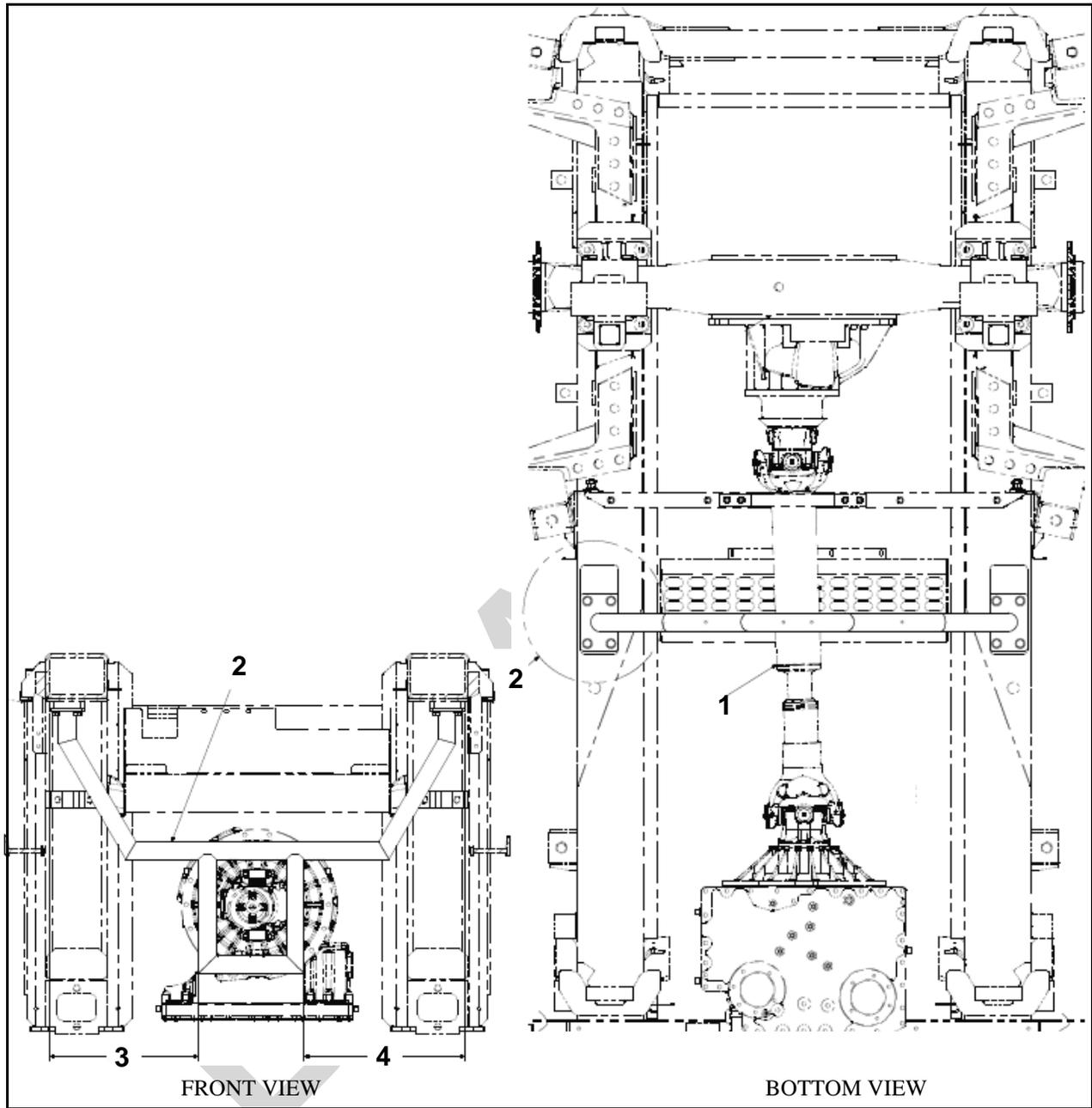


Figure 8. Hoop assembly installation.

Item	Description
1	Driveshaft
2	Hoop Assembly, Driveshaft
3	16.93 inch
4	18.30 inch

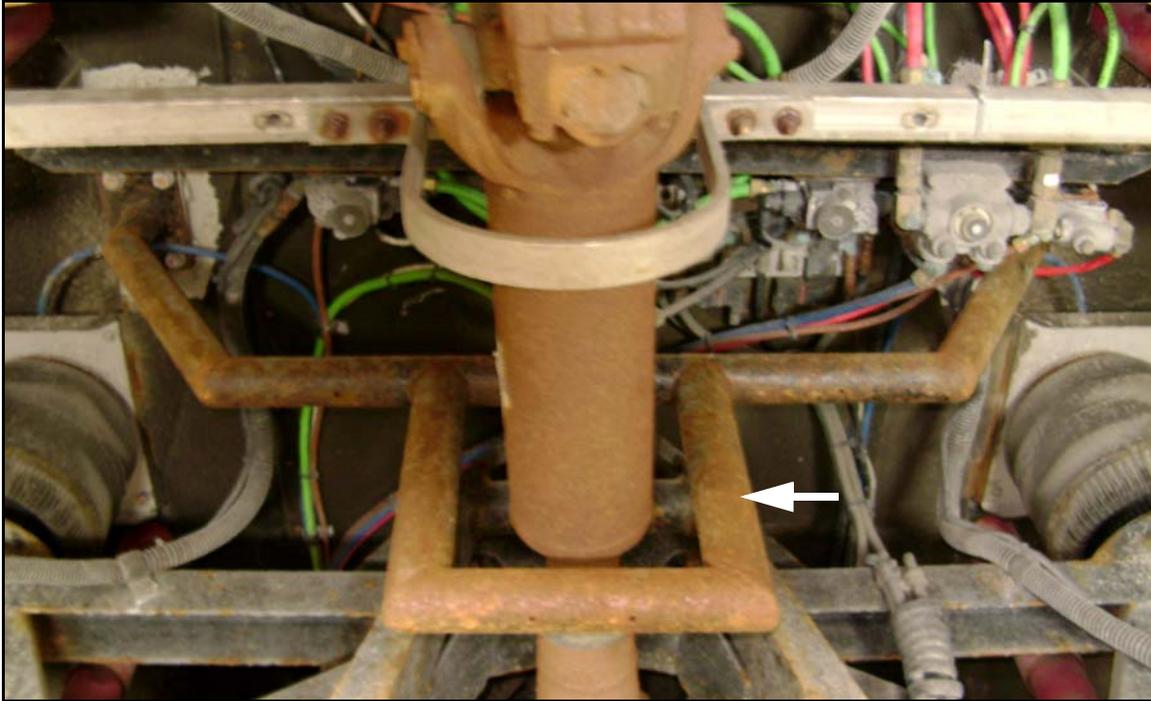


Figure 9. Driveshaft hoop assembly installation.

WARNING

The driveshaft is heavy and may cause injury if it is not properly supported during the reinstallation process. Secure the weight of the driveshaft until it has been fully installed.

20. Orient the driveshaft per the labeling earlier in this procedure. Insert the driveshaft through the lower opening of the hoop assembly as shown in Figure 9. Using two (2) strap / bolt kits, p/n 14-01-1028, attach the driveshaft to the yoke flange on the transmission (refer to Figure 10). Torque to 115-125 ft-lbs.
21. Using two (2) strap / bolt kits, p/n 14-01-1028, attach the opposite end of the driveshaft to the yoke flange on the drive axle (refer to Figure 10). Torque to 115-125 ft-lbs.

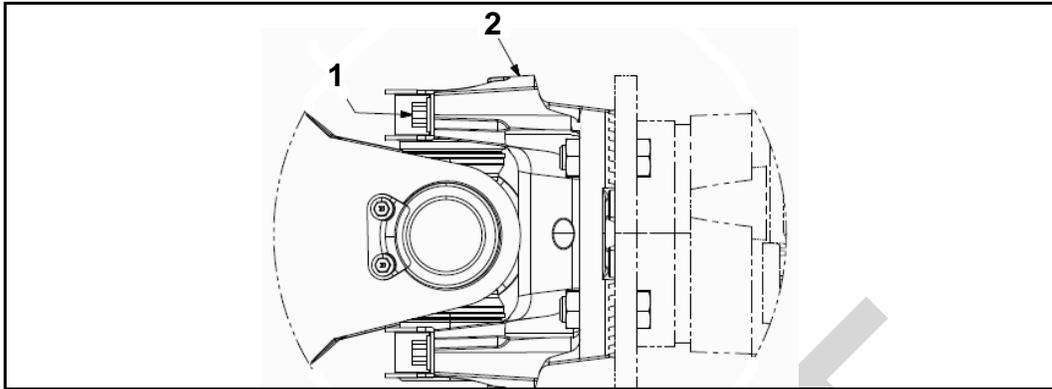


Figure 10. Yoke flange connection.

Item	Description
1	Strap / bolt kit
2	Yoke flange

22. Grease the u-joints and shaft.

23. Using the existing mounting hardware, re-install the driveshaft guard (refer to arrows in Figure 1). Torque hex nut to 15-25 ft-lbs. Tighten jam nut to secure.

24. Using a brush and tectyl, apply a coat on the top surface of the reworked area.

Procedure Complete.



Mail or fax the completed limited warranty claim form and verification form to MCI's warranty department, or photocopy and mail to:

MCI Fleet Support
Attn: Warranty Department
7001 Universal Coach Drive
Louisville, KY 40258
Fax Number 1-800-360-8886

to receive credit for the hours used to complete this task. Contact the MCI Fleet Support Technical Center at 1-800-241-2947 for any further information.

Field Change Program Conditions:

The parts required for this change will be supplied without charge.

A labor allowance of 2.0 hours will be granted for the procedure of installing the specified part(s) in this bulletin on applicable D Series coaches.

This labor allowance will be credited to your MCI Fleet Support Parts Account on receipt of the attached "MCI Field Change Program Verification Form" and a "Warranty Claim Form" as detailed in your Owner Warranty manual to MCI's Warranty department. A "MCI Field Change Program Verification Form" needs to be submitted for each VIN affected. Photocopy the attached "MCI Field Change Program Verification Form" as required for the number of affected coaches in your fleet.

Motor Coach apologizes for any inconvenience resulting from this campaign, but urges you to implement this change as soon as possible.

Sincerely,

Motor Coach Industries