



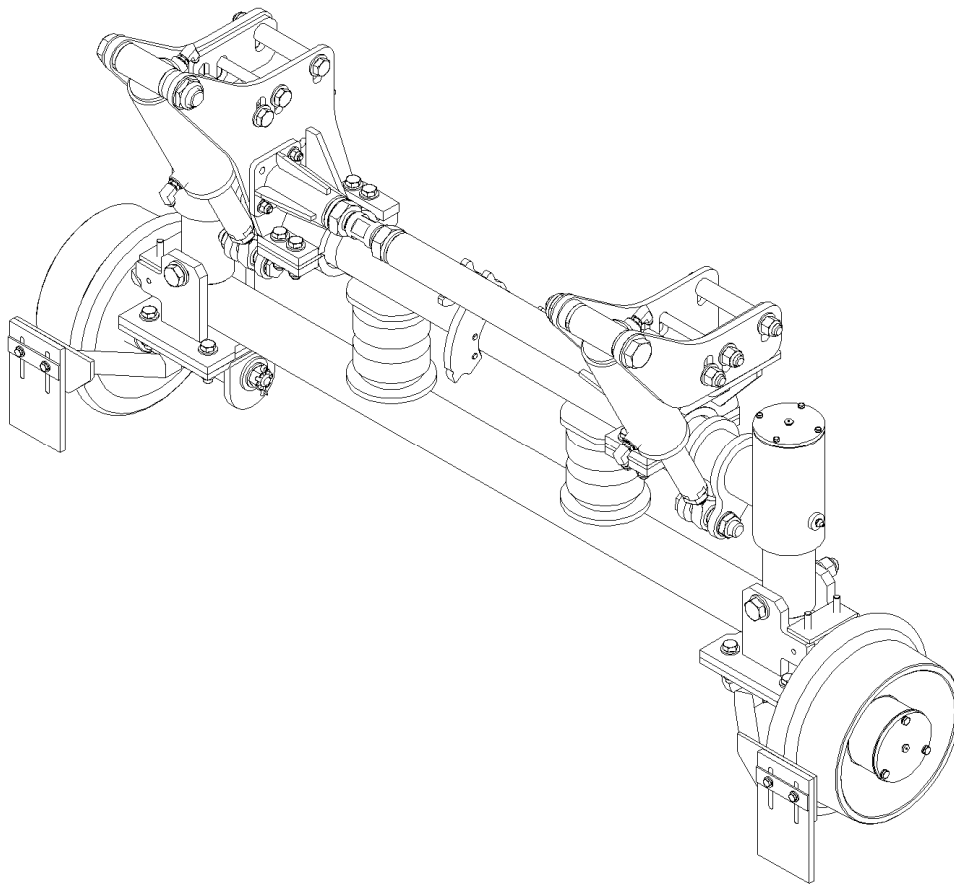
**G&B Specialties, Inc.**  
A Global Railway Industries Company



MIO-R46RXF20070 (Rev D) OCT 1, 2011

## **INSTALLATION, OPERATIONS, SERVICE AND PARTS**

### **ROTARY FRONT R-460 RAILGEAR 2008 FORD F-450/550 4X2/4X4**



G&B Specialties Inc. 535 West 3<sup>rd</sup> Street, Berwick, PA, USA Tel: (570) 752-5901 Fax: (570) 752-6397



## SAFETY PRECAUTIONS

**If any installation problems are encountered, please call G&B Specialties for technical assistance before continuing with the installation process.**



- Failure to heed to any of the following warnings could result in severe bodily injury and/or equipment damage.
- Read and understand this manual completely before attempting installation of the equipment.
- Installation instructions provided below only address the Rafna Industries railgear equipment. Applicable railway company procedures and policies must be adhered to.
- Before performing any work under the vehicle or railgear, ensure the engine is turned off and the parking brake is set.
- Do not start the vehicle with the power steering hoses disconnected. Reconnect all hoses, and secure the power steering cooler if the vehicle is started.
- Ensure all removed components are given to the vehicle owner after the installation of the railgear. These components must be re-installed if the railgear is removed from the vehicle.
- Always disconnect the vehicle's battery when welding on the vehicle or railgear in order to protect the vehicle's electrical system.



**1.0 INSTALLATION**

**FRAME MODIFICATION**

The following procedure details the frame modification required prior to installation of the Rotating Front Railgear. The hardware required for this modification is listed in table 1.1.

Table 1.1: Front Railgear Kit Installation Parts

<b>Part Number</b>	<b>Description</b>	<b>Qty</b>
R-14529D-A	Hole Template, Drivers Side	1
R-14529P-A	Hole Template, Passengers Side	1
R-11113	Tow Hook Spacer, 1"	2

1. Remove the front bumper and front tow hooks if so equipped. Remove the coolant line retaining clips from the inside passenger frame rail. The coolant line retaining clip will need to be relocated in an appropriate place by the installer.
2. Remove the front air radiator. (Diesel Only)
3. Retain the front bumper and tow hooks for re-installation.
4. Drill the (3) existing holes in the top of each frame rail to 9/16" diameter.
5. On the out-board side of the drivers side frame rail, drill out the first existing hole to 11/16" diameter.
6. On the out-board side of the passengers side frame rail, drill out the first existing hole to 11/16" diameter.
7. On the in-board side of the drivers side frame rail, drill out the first two existing holes to 11/16" diameter. Repeat for the in-board side of the passengers side frame rail.
8. Attach the drivers side hole template to the out-board side of the drivers side frame rail and attach as shown with the supplied hardware.
9. Mark the frame as shown using the hole template as a guide. Remove the hole template from the frame. At the first marked point, drill an 11/16" diameter hole thru



the outboard frame rail. At the second marked point, drill an 11/16" diameter thru both frame rails.

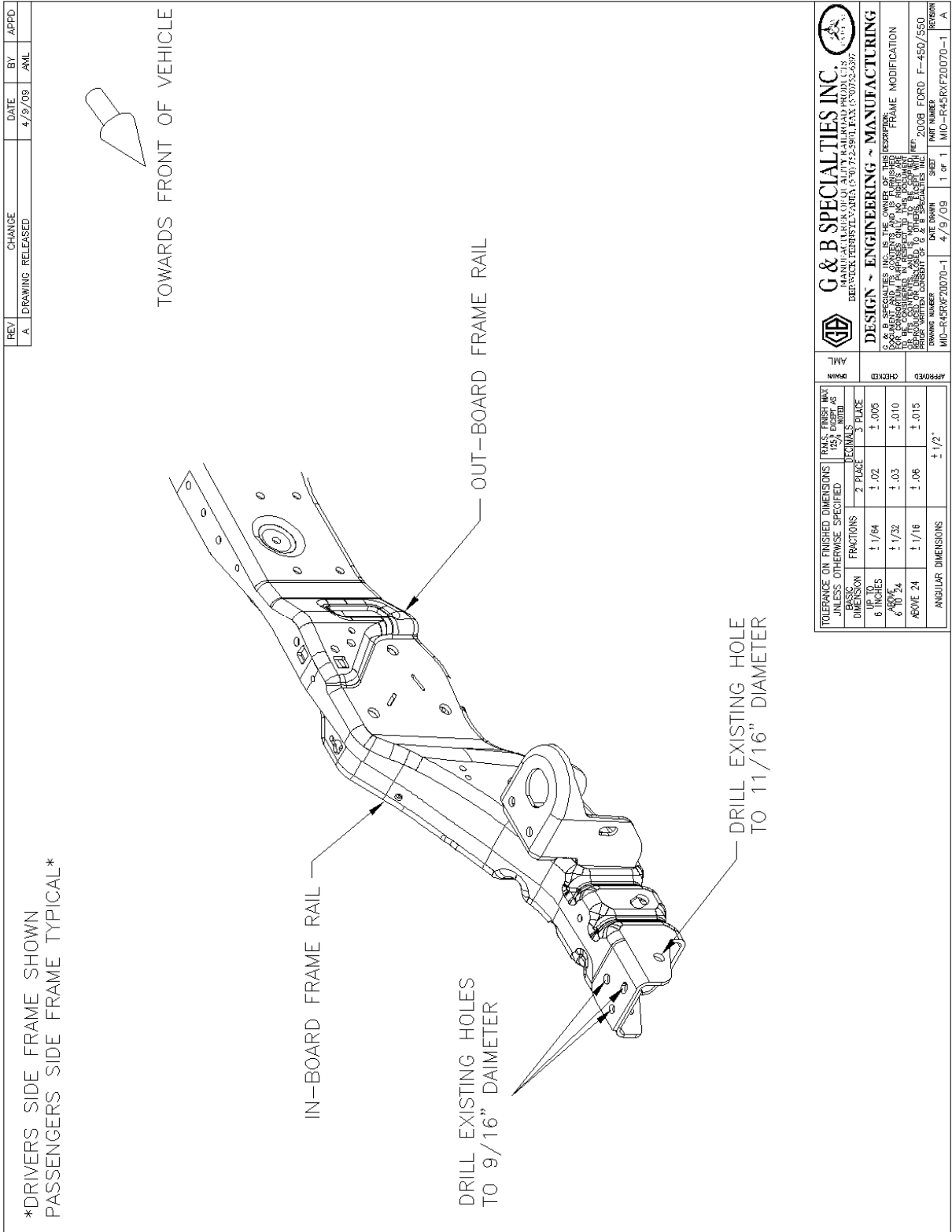
10. Attach the passengers side hole template to the out-board side of the passengers side frame rail and attach as shown with the supplied hardware.
11. Mark the frame as shown using the hole template as a guide. Remove the hole template from the frame. At the first marked point, drill an 11/16" diameter hole thru the outboard frame rail. At the second marked point, drill an 11/16" diameter thru both frame rails.
12. Modify tow hook/bumper bracket by removing the tow hook loop from the bracket assembly as shown.
13. Drill the (3) existing holes to 9/16" diameter.
14. Re-install modified tow hook/bumper bracket using the supplied spacer and 1/2" hardware (**included in the R-990KIT-277**) as shown. Torque 1/2" bolts to 100 ft-lbs dry.



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TOLERANCE ON FINISHED DIMENSIONS	FRAC	FINISH	MAX	MIN	PLACES	FRAC	FINISH	MAX	MIN	PLACES
UNLESS OTHERWISE SPECIFIED										
	FRACTIONS									
UP TO 6 INCHES	1/64				1					
6 TO 24	1/32				1					
ABOVE 24	1/16				1					
ANGULAR DIMENSIONS										± 1/2°

APPROVED	CHECKED	FRAM	AML

<b>G &amp; B SPECIALTIES INC.</b> MANUFACTURER OF QUALITY RAILROAD PRODUCTS BERWICK, PENNSYLVANIA (570) 752-5901 FAX: (570) 752-6397	
<b>DESIGN ~ ENGINEERING ~ MANUFACTURING</b> G & B SPECIALTIES INC. 535 WEST 3RD STREET, BERWICK, PA 17004 2008 FORD F-450/550 REF: 2008 FORD F-450/550 FRAME MODIFICATION	DRAWING NUMBER: MIO-R46RXF20070-1 DATE DRAWN: 4/9/09 SHEET: 1 of 1 PART NUMBER: MIO-R46RXF20070-1 REVISION: A



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TOWARDS FRONT OF VEHICLE

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DRAWING NUMBER	DATE DRAWN
MIO-R46RXF20070-2	4/9/09
SHEET	1 OF 1
PART NUMBER	MIO-R46RXF20070-2
REVISION	A

\*PASSENGERS SIDE FRAME SHOWN  
DRIVERS SIDE FRAME TYPICAL\*

TOLERANCE ON FINISHED DIMENSIONS UNLESS OTHERWISE SPECIFIED	DECIMALS		FRACTIONS	
	UP TO 6 INCHES	6 TO 24	UP TO 1/8	1/8 TO 1/2
2 TUBE	± .02	± .005	± 1/64	± 1/32
3 TUBE	± .02	± .010	± 1/32	± .015
4 TUBE	± .02	± .015	± 1/16	± .015
ANGULAR DIMENSIONS	± 1/2°			



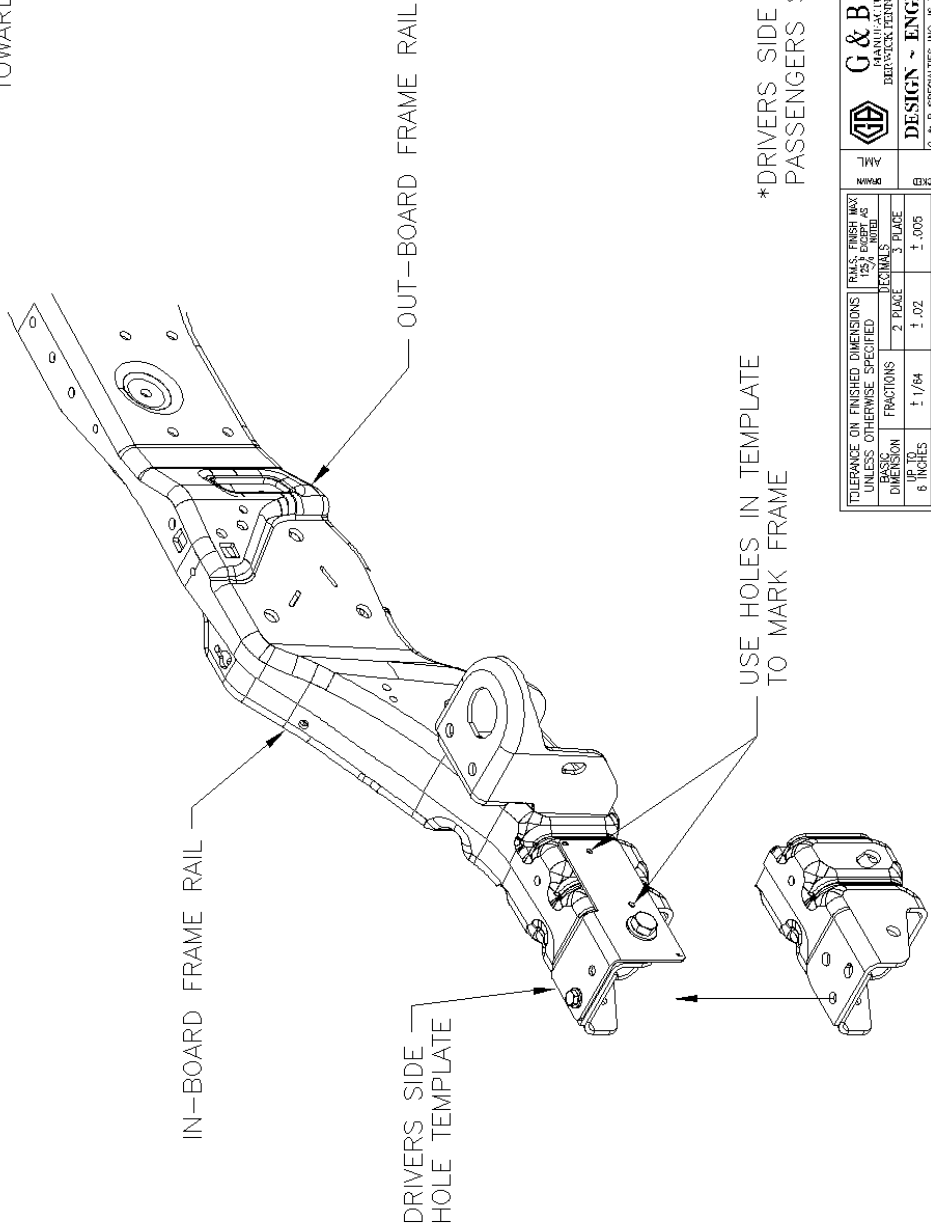
MIO-R46RXF20070 (Rev D) OCT 1, 2011

REV	CHANGE	DATE	BY	APPD

ITEM	PART No.	DESCRIPTION OF ITEM(PART)	QTY.
1	R-14529D	HOLE TEMPLATE, DRIVERS SIDE	1
2	R-14529F	HOLE TEMPLATE, PASSENGERS SIDE	1
3	H.H.C.S.	3/8" UNC x 1-1/4" Lg.	1
4	F*WASHER	3/8"	2
5	HEX NUT	3/8" UNC	1
6	H.H.C.S.	5/8" UNC x 1-1/2" Lg.	1
7	F*WASHER	5/8"	2
8	HEX NUT	5/8" UNC	1
10	-	VEHICLE FRAME	REF



TOWARDS FRONT OF VEHICLE



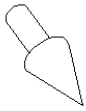
\*DRIVERS SIDE FRAME SHOWN  
PASSENGERS SIDE FRAME TYPICAL\*

		<b>G &amp; B SPECIALTIES INC.</b> MANUFACTURING DIVISION 10000 W. LAKESHORE BLVD. SUITE 1000 BERWICK, PENNSYLVANIA 15015-2900, USA TEL: (717) 752-5900 FAX: (717) 752-5397	
<b>DESIGN ~ ENGINEERING ~ MANUFACTURING</b>		<b>FRONT MOUNTING KIT</b> REF: 2008_FORD_F-450/550 REF: 2008_FORD_F-450/550 REF: 2008_FORD_F-450/550	
TOLERANCE ON FINISHED DIMENSIONS UNLESS OTHERWISE SPECIFIED	FRACTIONS UP TO 6 INCHES ABOVE 6 INCHES	DECIMALS 2 PLACE ± .02 ± .03 ± .06	INCHES 3 PLACE ± .005 ± .010 ± .015
ANGLE DIMENSIONS ± 1/2°		APPROVED: _____ DATE: 4/9/09 DRAWN: _____ MTL: _____	



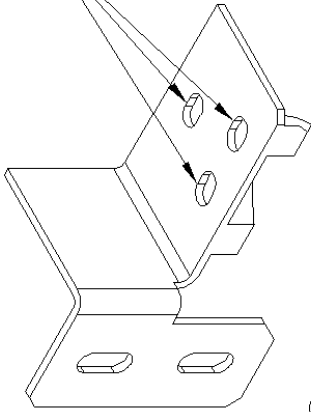
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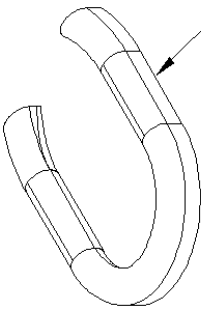


TOWARDS FRONT OF VEHICLE

DRILL EXISTING THREADED HOLES  
TO 9/16" DIAMETER



REMOVE LOOP FROM BRACKET  
(DISCARD)



\*PASSENGERS SIDE FRAME SHOWN  
DRIVERS SIDE FRAME TYPICAL \*

		<b>G &amp; B SPECIALTIES INC.</b> 1000 W. MARKET ST. SUITE 100 BERWICK, PENNSYLVANIA 15701-2901 FAX: (717) 323-6397	
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DRAWING NUMBER: MIO-R46RXF20070-5 DATE DRAWN: 4/9/09 SHEET: 1 OF 1 PART NUMBER: 2008 FORD F-450/550		REVISION: A	

TOLERANCE ON FINISHED DIMENSIONS UNLESS OTHERWISE SPECIFIED	FRACTIONS	DECIMALS	PLACES	FINISH
6 INCHES & ABOVE	± 1/64	± .02	± .005	12.5 μm
6" TO 24"	± 1/32	± .03	± .010	
ABOVE 24"	± 1/16	± .06	± .015	
ANGULAR DIMENSIONS				± 1/2°

APPROVED	CHECKED	DRAWN	DATE





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\*DRIVERS SIDE SHOWN  
PASSENGERS SIDE TYPICAL\*

ITEM	PART No.	DESCRIPTION OF ITEM (PART)	QTY	REF
1	—	VEHICLE FRAME	2	
2	R-11113	TOW HOOK SPACER	2	
3	H.H.C.S.	1/2" UNC GR.8 x 3.50"	6	
4	F-WASHER	1/2" TYPE-A GR.8	12	
5	NYLOCK NUT	1/2" UNC GR.8	6	
6	—	MODIFIED TOW HOOK/BUMPER BRACKET		REF

TOLERANCE ON FINISHED DIMENSIONS UNLESS OTHERWISE SPECIFIED		FRACTIONS		DECIMALS	
UP TO	6 INCHES	± 1/64	± .02	± .005	± .010
6 TO 24		± 1/32	± .03	± .010	± .015
ABOVE 24		± 1/16	± .06	± .015	± .020
ANGULAR DIMENSIONS		± 1/2°			

APPROVED	CHECKED	DESIGN	DATE	BY	APPD
			12/14/09	AML	

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ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED. DIMENSIONS ARE TO BE TAKEN FROM THE UNFINISHED SURFACE UNLESS OTHERWISE SPECIFIED. DIMENSIONS ARE TO BE TAKEN FROM THE UNFINISHED SURFACE UNLESS OTHERWISE SPECIFIED. DIMENSIONS ARE TO BE TAKEN FROM THE UNFINISHED SURFACE UNLESS OTHERWISE SPECIFIED. DIMENSIONS ARE TO BE TAKEN FROM THE UNFINISHED SURFACE UNLESS OTHERWISE SPECIFIED.		
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**FRONT RAILGEAR INSTALLATION**

Table 1.2: Front Railgear Kit Installation Parts (Cable Lock)

<b>Part Number</b>	<b>Description</b>	<b>Qty</b>
R-20070B	R-460 Rotary Front Upper Assembly	1
R-001LW	10" Steel Wheel Assembly	2
R-20120D	Rail Sweep, Drivers Side	1
R-20120P	Rail Sweep, Passengers Side	1
K-R45RXFCAM001	Lock Cam Kit, Standard	1
R-990KIT-204C	Wheel Mounting Hardware	2
R-11109	Frame Spacer	4
R-20235	Bumper Spacer	4
R-990KIT-277	Bumper Install Hardware Kit	1

Table 1.3: Front Railgear Kit Installation Parts (Rod Lock)

<b>Part Number</b>	<b>Description</b>	<b>Qty</b>
R-20070D	R-460 Rotary Front Upper Assembly	1
R-001LW	10" Steel Wheel Assembly	2
R-20120D	Rail Sweep, Drivers Side	1
R-20120P	Rail Sweep, Passengers Side	1
K-R45RXFCAM001	Lock Cam Kit, Standard	1
R-990KIT-204C	Wheel Mounting Hardware	2
R-11109	Frame Spacer	4
R-20235	Bumper Spacer	4
R-990KIT-277	Bumper Install Hardware Kit	1
K-R45ARRXR450R	Pull Rod Kit	1

Table 1.3.1: Rod Lock Kit Installation Parts

<b>Part Number</b>	<b>Description</b>	<b>Qty</b>
P-00032	Pull Rod	1
P-00034	Support Plate	1
P-00024A	Tie Plate	1
R-5652A	Pull Knob	1
R-990KIT-296	Installation Hardware Kit	1
	Jam Nut, 1/4" UNC Gr.5	1
	Flat Washer, 1/4" Gr.5	1
	Flat Washer, 3/8" Gr.5	1
	Flat Washer, 1/2" Gr.5	1
	Jam Nut, 3/8" UNC Gr.5	1
	Nylock Jam Nut, 3/8" UNC Gr.5	1



**Railgear installation procedure is the same for either the cable or rod lockup.**

1. Be sure to modify the vehicle frame as outlined in the Frame Modification section of this manual before attempting to install the railgear unit.
2. Remove the Lock Cam from the upper cross frame assembly by removing the (3) 3/8" bolts securing the lock cam to the cam base.
3. Loosen, but do not remove the (6) 3/8" bolts securing the front support beam assembly. Loosen the jam nuts and turn the adjusting rod to shorten the support beam until there is approximately 1/8"-1/4" gap between the support beam mounting plates and each railgear mounting bracket.
4. Loosen, but do not remove, the (8) 1/2" bolts securing the railgear bearing caps to the upper cross frame assembly.
5. Remove the (6) shipping spacers securing the outer support plates to the railgear mounting brackets. Retain the 5/8" hardware securing the shipping spacers, these will be used to mount the front railgear unit. **Use caution as the outer support plates will swing downward and free once the shipping spacers are removed.**
6. Slide the railgear under the front frame horns and raise the unit into place. The railgear mounting brackets should sit flush with the bottom of the vehicle frame and flush to the inside of the vehicle frame.
7. The slots in the railgear mounting brackets should line up with the holes drilled in the frame during the frame modification.
8. Swing the outer support plates up into place and align the slots with the holes in the frame.
9. Ensure that the top surface of the outer support plate is level with the top surface of the railgear mounting bracket. These surfaces may protrude above the top surface of the frame and may not be level with the top surface of the frame.
10. Secure the mounting brackets to the vehicle frame with the included 5/8" hardware and frame spacers. Torque to 200 ft-lbs dry.
11. Prep area for welding.
12. Field weld the railgear mounting brackets, both drivers side and passengers side, to the vehicle frame per drawing, MFR-R460FIELD001



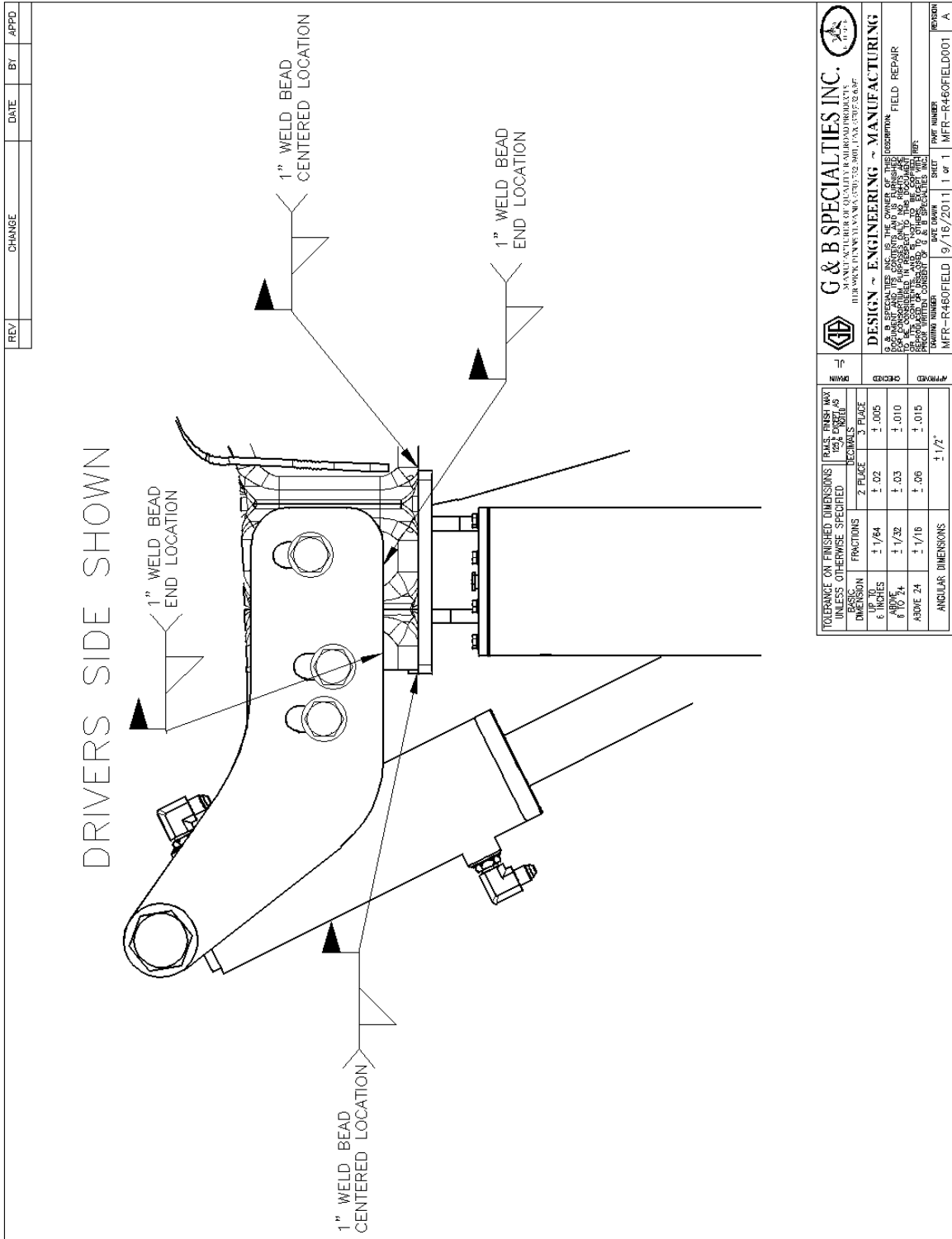
13. Undercoat welded areas..
14. Center the upper cross frame assembly to the railgear mounting brackets and tighten the (8) 1/2" bolts securing the railgear bearing caps to the upper cross frame assembly, do not torque at this time.
15. Turn the adjusting rod to lengthen the support beam until there is no gap between the support beam mounting plates and both railgear mounting brackets. Adjust until just tight. Do not over tighten as this will force the front frame rails to spread apart. Tighten jam nuts.
16. Tighten 3/8" support beam fasteners to 40 ft-lbs dry.

Proceed to install the railgear hydraulic system as per the Hydraulic Kit Installation manual before continuing with the following steps.

1. Follow the Railgear Lock System Installation and adjustment Procedure detailed in the Installation section of this manual.
2. Follow the Railgear Alignment procedure detailed in the Service section of this manual.
3. Follow the Vehicle Axle Lockup Kit installation procedure detailed in the Axle Lockup Kit Installation and Operation manual.
4. Follow the Rail Sweep Adjustment procedure detailed in the Service section of this manual.
5. Torque all fasteners as detailed in the Service section of this manual.
6. Grease the railgear at all lubrication points as detailed in the Service section of this manual.
7. Modify front bumper as required. Re-install front bumper as shown.



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TOLERANCE ON FINISHED DIMENSIONS UNLESS OTHERWISE SPECIFIED		FRAC. FINISH MAX 1/32 DECIMALS	
BASIC DIMENSION	FRACTIONS	Z PLACE	3 PLACE
6 INCHES ABOVE	± 1/64	± .02	± .005
6 TO 24	± 1/32	± .03	± .010
ABOVE 24	± 1/16	± .06	± .015
ANGULAR DIMENSIONS	± .12°		

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DRAWING NUMBER: MFR-R460FIELD 9/16/2011 1 of 1  
 PAGE NUMBER: MFR-R460FIELD001 A

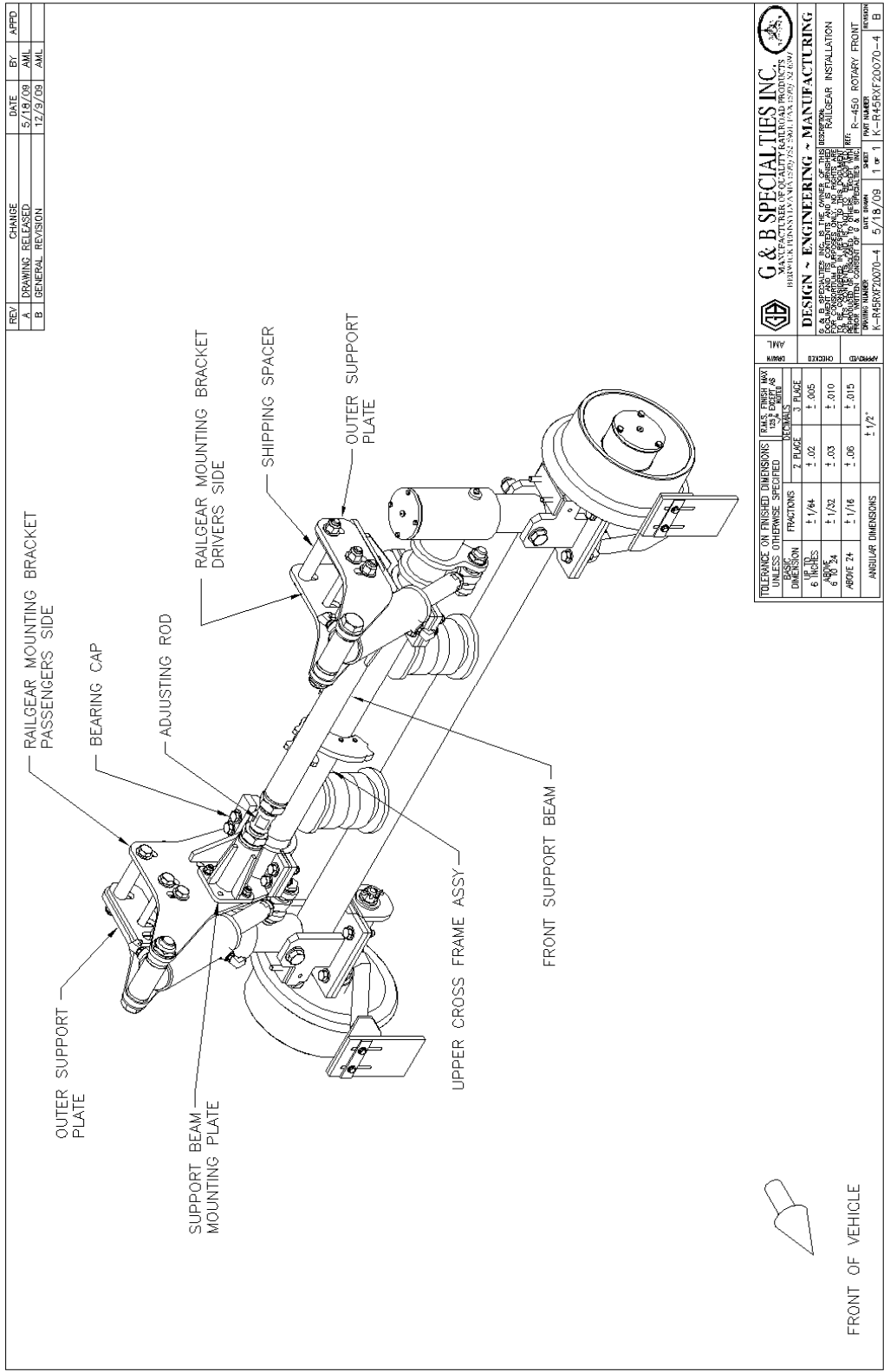


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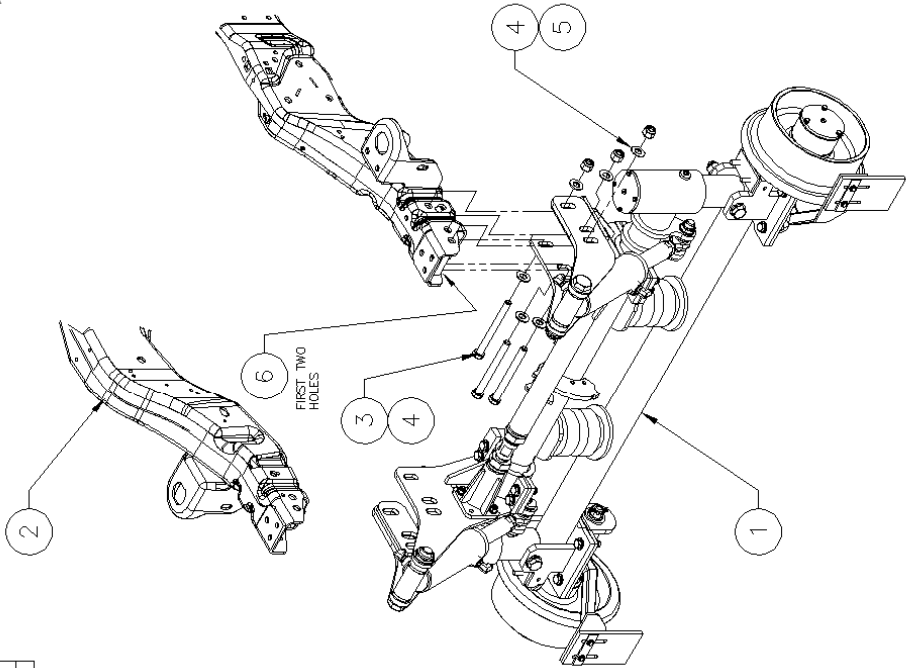
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\*DRIVERS SIDE SHOWN  
PASSENGERS SIDE TYPICAL\*



ITEM	PART No.	DESCRIPTION OF ITEM(PART)	QTY.
1	R-20070	ROTARY FRONT RAILGEAR	REF
2		VEHICLE FRAME 3	REF
3	H.L.C.S.	5/8" UNC GR. 8 x 6.50"	6
4	F WASHER	5/8" TYPE-A GR. 8	12
5	INTLOCK NUT	5/8" UNC GR. 8	6
6	R-11109	FRAME SPACER	4

<b>G &amp; B SPECIALTIES INC.</b> 3140 W. STATE ST. P.O. BOX 10000, PLYMOUTH, PA 15002 BERKSHIRE, PA 15311-0010 USA (510) 932-5901 FAX: (510) 932-6897																					
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<table border="1"> <tr> <th colspan="2">TOLERANCE ON FINISHED DIMENSIONS UNLESS OTHERWISE SPECIFIED</th> </tr> <tr> <td>BASIC DIMENSION</td> <td>FRACTIONS</td> </tr> <tr> <td>6 INCHES AND BELOW</td> <td>± 1/64</td> </tr> <tr> <td>ABOVE 6 TO 24</td> <td>± 1/32</td> </tr> <tr> <td>ABOVE 24</td> <td>± 1/16</td> </tr> </table>	TOLERANCE ON FINISHED DIMENSIONS UNLESS OTHERWISE SPECIFIED		BASIC DIMENSION	FRACTIONS	6 INCHES AND BELOW	± 1/64	ABOVE 6 TO 24	± 1/32	ABOVE 24	± 1/16	<table border="1"> <tr> <th colspan="2">RAILS, FINISH MAX 125° &amp; 100°</th> </tr> <tr> <td>2 PLACE DECIMALS</td> <td>3 PLACE DECIMALS</td> </tr> <tr> <td>± .02</td> <td>± .005</td> </tr> <tr> <td>± .03</td> <td>± .010</td> </tr> <tr> <td>± .06</td> <td>± .015</td> </tr> </table>	RAILS, FINISH MAX 125° & 100°		2 PLACE DECIMALS	3 PLACE DECIMALS	± .02	± .005	± .03	± .010	± .06	± .015
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<table border="1"> <tr> <td>APPROVED</td> <td>CHECKED</td> <td>DATE DRAWN</td> <td>PART NUMBER</td> <td>SIZE</td> <td>VERSION</td> </tr> <tr> <td></td> <td></td> <td>12/14/09</td> <td>MIO-R46RXF20070-6</td> <td>1 of 1</td> <td>A</td> </tr> </table>		APPROVED	CHECKED	DATE DRAWN	PART NUMBER	SIZE	VERSION			12/14/09	MIO-R46RXF20070-6	1 of 1	A								
APPROVED	CHECKED	DATE DRAWN	PART NUMBER	SIZE	VERSION																
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REV/	CHANGE	DATE	BY																							
A	DRAWINGS RELEASED	12/14/09	AML																							
APPD																										
<p>OUTER SUPPORT PLATE</p> <p>LEVEL</p> <p>RAILGEAR MOUNTING BRACKET</p> <p>CORRECT</p>	<p>UNEVEN</p> <p>INCORRECT</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">TOLERANCE ON FINISHED DIMENSIONS UNLESS OTHERWISE SPECIFIED</td> <td colspan="2">R.M.S. FINISH MAX 175% DATED</td> </tr> <tr> <td>BASIC DIMENSION</td> <td>FRACTIONS</td> <td>DECIMALS</td> <td>3 PLACES</td> </tr> <tr> <td>6 INCHES</td> <td>± 1/64</td> <td>± .02</td> <td>± .005</td> </tr> <tr> <td>ABOVE 6 TO 24</td> <td>± 1/32</td> <td>± .03</td> <td>± .010</td> </tr> <tr> <td>ABOVE 24</td> <td>± 1/16</td> <td>± .06</td> <td>± .015</td> </tr> <tr> <td>ANGULAR DIMENSIONS</td> <td colspan="3">± 1/2°</td> </tr> </table> <p>*DRIVERS SIDE SHOWN PASSENGERS SIDE TYPICAL*</p>	TOLERANCE ON FINISHED DIMENSIONS UNLESS OTHERWISE SPECIFIED		R.M.S. FINISH MAX 175% DATED		BASIC DIMENSION	FRACTIONS	DECIMALS	3 PLACES	6 INCHES	± 1/64	± .02	± .005	ABOVE 6 TO 24	± 1/32	± .03	± .010	ABOVE 24	± 1/16	± .06	± .015	ANGULAR DIMENSIONS	± 1/2°		
TOLERANCE ON FINISHED DIMENSIONS UNLESS OTHERWISE SPECIFIED		R.M.S. FINISH MAX 175% DATED																								
BASIC DIMENSION	FRACTIONS	DECIMALS	3 PLACES																							
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ABOVE 24	± 1/16	± .06	± .015																							
ANGULAR DIMENSIONS	± 1/2°																									



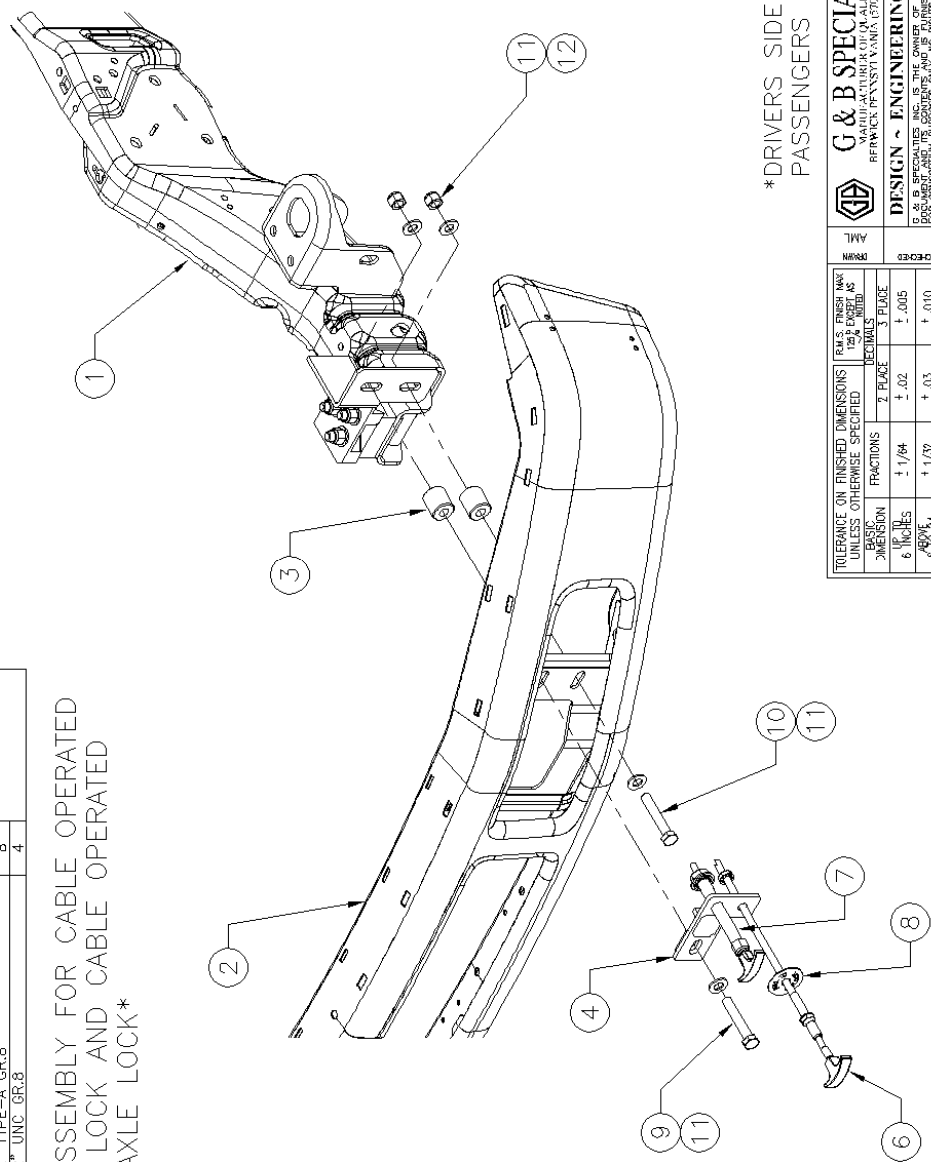
ITEM	PART No.	DESCRIPTION OF ITEM(PART)	QTY.
1	-	VEHICLE FRAME	REF
2	-	VEHICLE FRONT BUMPER	REF
3	R-20235	BUMPER SPACER	4
4	P-00018D	MTG BRKT.- PULL CABLE, DRIVERS SIDE	1
5	P-00018P	MTG BRKT.- PULL CABLE, PASSENGERS SIDE	1
6	-	PULL CABLE, RAILGEAR AXLE LOCK	REF
7	-	PULL CABLE, VEHICLE AXLE LOCK	REF
8	-	"PULL TO UNLOCK" PLACARD	REF
9	H.H.C.S.	1/2" UNC GR.8 x 3.50"	2
10	H.H.C.S.	1/2" UNC GR.8 x 3.25"	2
11	F.WASHER	1/2" TYPE-A GR.8	B
12	INTLOCK NUT	1/2" UNC GR.8	4

**NOTES:**

- ITEMS 4, 5, 7 & 8 INCLUDED IN KIT K-R45AVXFX04A
- ITEM 6 INCLUDED WITH FRONT RAILGEAR UNIT

R-990KIT-277

\*TYPICAL ASSEMBLY FOR CABLE OPERATED RAILGEAR LOCK AND CABLE OPERATED VEHICLE AXLE LOCK\*



\*DRIVERS SIDE SHOWN  
PASSENGERS SIDE TYPICAL\*

REV	CHANGE	DATE	BY
A	DRAWING RELEASED	12/15/03	AML
B		10/18/10	AML

APPROVED	DATE	BY
DRN	12/15/03	AML
CHG		

1	2	3	4
±.005	±.005	±.005	±.005
±.010	±.010	±.010	±.010
±.015	±.015	±.015	±.015

**G & B SPECIALTIES INC.**  
1000 JEFFERSON AVE. SUITE 100  
BERWICK, PENNSYLVANIA 17004-2801, FAX: 717-353-6397

**DESIGN ~ ENGINEERING ~ MANUFACTURING**

FOR THE FRONT BUMPER INSTALLATION ON R-460 ROTARY FRONT RAILGEAR UNITS, THIS DRAWING IS TO BE CONSIDERED IN CONJUNCTION WITH THE DRAWING R-460 ROTARY FRONT BUMPER INSTALLATION. THIS DRAWING IS NOT TO BE USED FOR OTHER RAILGEAR FRONT BUMPER INSTALLATIONS WITHOUT THE WRITTEN CONSENT OF G&B SPECIALTIES INC.

DATE: 2008 EOPD F-450/550  
PART NUMBER: MIO-R45RXF20070-9  
REV: 1 of 1  
MIO-R45RXF20070-9 B



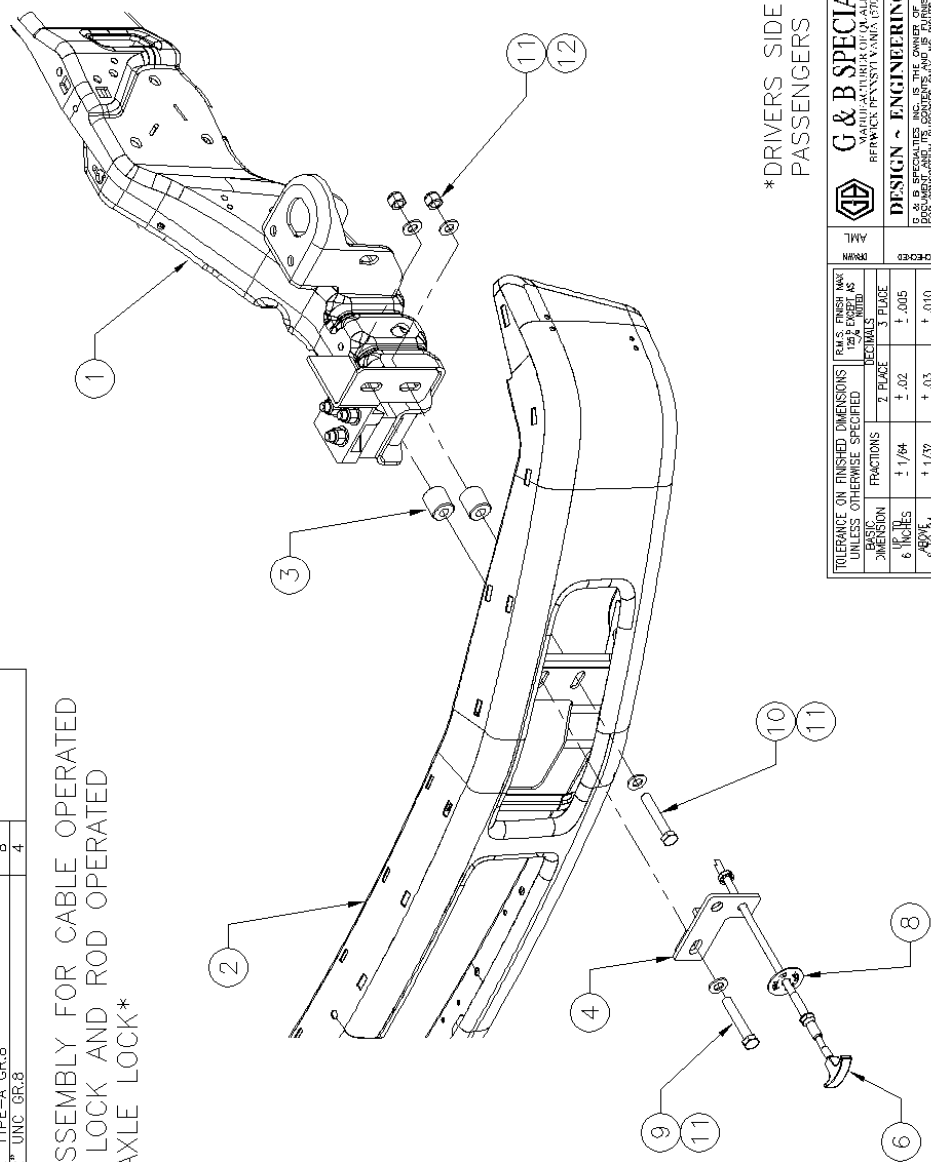
ITEM	PART No.	DESCRIPTION OF ITEM(PART)	QTY.
1	-	VEHICLE FRAME	REF
2	-	VEHICLE FRONT BUMPER	REF
3	R-20235	BUMPER SPACER	4
4	P-00018D	MTG BRKT.- PULL CABLE, DRIVERS SIDE	1
5	P-00018P	MTG BRKT.- PULL CABLE, PASSENGERS SIDE	1
6	-	PULL CABLE, RAILGEAR AXLE LOCK	REF
7	-	*PULL TO UNLOCK* FILACARD	REF
8	H.H.C.S.	1/2" UNC GR.8 x 3.50"	2
9	H.H.C.S.	1/2" UNC GR.8 x 3.25"	2
10	H.H.C.S.	1/2" UNC GR.8 x 3.25"	2
11	F.WASHER	1/2" TYPE-A GR.8	B
12	INTLOCK NUT	1/2" UNC GR.8	4

**NOTES:**

- ITEMS 4, 5, 7 & 8 INCLUDED IN KIT K-R45AVXFX04A
- ITEM 6 INCLUDED WITH FRONT RAILGEAR UNIT

R-990KIT-277

\*TYPICAL ASSEMBLY FOR CABLE OPERATED RAILGEAR LOCK AND ROD OPERATED VEHICLE AXLE LOCK\*



\*DRIVERS SIDE SHOWN  
PASSENGERS SIDE TYPICAL\*

<p><b>G &amp; B SPECIALTIES INC.</b> 1000 JEFFERSON PIKE, SUITE 100 BERWICK, PENNSYLVANIA 17004-2801, FAX: 717-353-6397</p>	<p>DESIGN ~ ENGINEERING ~ MANUFACTURING</p> <p>FOR FRONT BUMPER INSTALLATION R-460 ROTARY FRONT BUMPER INSTALLATION REF: 2008 EPD F-450/560 FOR PASSENGER SIDE FRONT BUMPER INSTALLATION REF: 2008 EPD F-450/560</p>
<p>AML</p>	<p>12/15/09 1 of 1 MIO-R45RXF20070-9A</p>

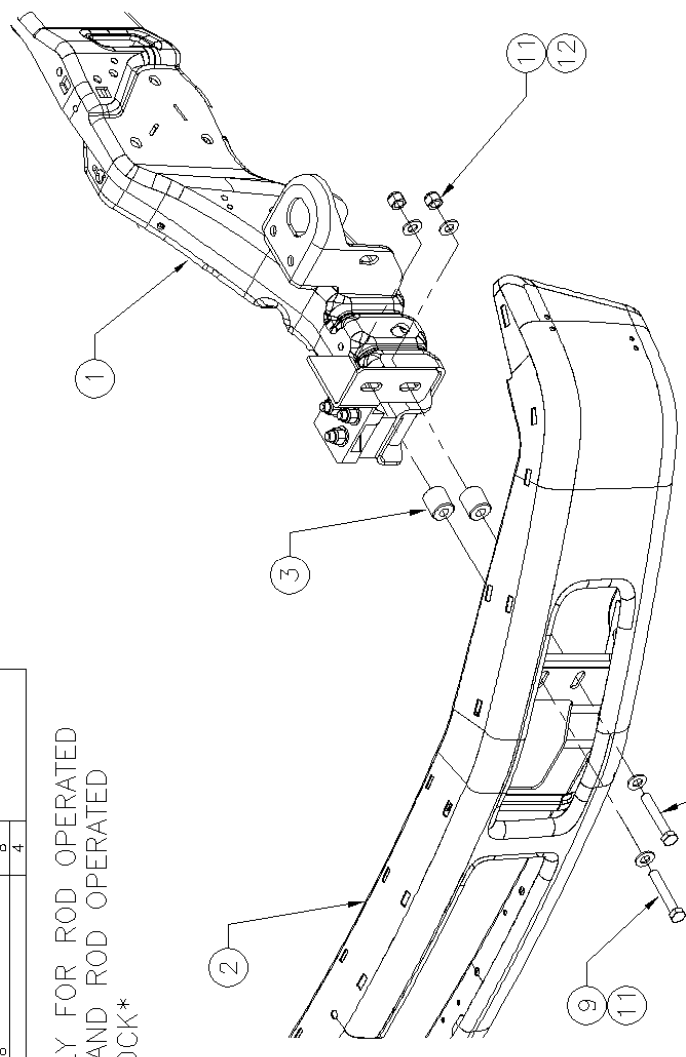


REV	CHANGE	DATE	BY
A	DRAWING RELEASED	10/18/10	AML

NOTES:  
 1. ITEMS 4, 5, 7 & 8 INCLUDED IN KIT K-R45AVXFX04A  
 2. ITEM 6 INCLUDED WITH FRONT RAILGEAR UNIT

ITEM	PART No.	DESCRIPTION OF ITEM(PART)	QTY.
1	-	VEHICLE FRAME	2
2	-	VEHICLE FRONT BUMPER	2
3	R-20235	BUMPER SPACER	4
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	H.H.C.S.	1/2" UNC GR.8 x 3.50"	2
10	H.H.C.S.	1/2" UNC GR.8 x 3.25"	2
11	F.WASHER	1/2" TYPE-A GR.8	8
12	INTLOCK NUT	1/2" UNC GR.8	4

\*TYPICAL ASSEMBLY FOR ROD OPERATED RAILGEAR LOCK AND ROD OPERATED VEHICLE AXLE LOCK\*



\*DRIVERS SIDE SHOWN  
 PASSENGERS SIDE TYPICAL\*

		<b>G &amp; B SPECIALTIES INC.</b> 1000 JEFFERSON PIKE, SUITE 100, BERWICK, PA, USA 17004 BERWICK, PENNSYLVANIA (717) 752-5800, FAX: (717) 752-6397	
<b>DESIGN ~ ENGINEERING ~ MANUFACTURING</b>		<b>FRONT BUMPER INSTALLATION</b> R-460 ROTARY FRONT BUMPER	
TOLERANCE ON FINISHED DIMENSIONS UNLESS OTHERWISE SPECIFIED		DIMENSION RANGE 6" TO 24"	
FRACTIONS		DECIMALS	
± 1/64		± .005	
± 1/32		± .010	
± 1/16		± .015	
ANGULAR DIMENSIONS		± 1/2°	
APPROVED		DATE	
AML		12/15/09	
MIO-R45RXF20070-9B		1 of 1	



## **RAILGEAR LOCK SYSTEM INSTALLATION**

The railgear lock system provides an automatic mechanical pin lock for the road and rail position plus an additional over-center hydraulic lock in the rail position.

**The lock cam should not be installed until the railgear unit is installed on the vehicle and the over center adjustment has been made.**

### **Installation** (Cable Lock)

1. The front railgear unit is shipped with the cable actuated lock system and lock cable installed.
2. Raise/Lower the railgear to either the fully locked rail or road position.
3. Place the lock cam against the cam base as shown, with the cam ID mark facing down towards the railgear axle.
4. Loosely attach the lock cam to the cam base with the supplied 3/8" hardware.

### **Installation** (Rod Lock)

1. The front railgear unit is shipped with the rod actuated lock system partially installed.
2. Install the tie plate to lower pull rod as show using the supplied 3/8" hardware.
3. Install the upper pull rod to the tie plate as shown, cut to length or modify as required.
4. The pull rod will need a support plate attached to the body and/or bumper to support the knob end of the pull rod. A support plate is shipped with the kit. If this support plate is not suited for the particular application, one will need to supplied by the installer.
5. Assemble pull knob to upper pull rod as shown. Once the pull rod assembly is properly assembled, installed and adjusted, the upper pull rod will need to be welded to the tie plate.
6. Raise/Lower the railgear to either the fully locked rail or road position.
7. Place the lock cam against the cam base as shown, with the cam ID mark facing down towards the railgear axle.
8. Loosely attach the lock cam to the cam base with the supplied 3/8" hardware.



### Adjustment

1. The lock cam base is slotted to allow for easier adjustment of the lock pin/lock cam engagement.
2. With the railgear in the fully locked rail or road position, and the lock pin engaged, adjust the cam towards the lock pin. The cam should not be touching the lock pin. There should be approximately 1/8" clearance between the lock pin and the lock cam.
3. Tighten but do not torque the 3/8" fasteners.
4. Disengage the railgear mechanical locking pin by pulling on the locking cable handle or pull rod.
5. Proceed to rotate the railgear to the fully locked rail or road position. Once the gear is past the locked position, release the locking pin handle. The lock pin should ride against the side of the cam.
6. Once the gear reaches the full locked position, the pin should automatically engage the cam.
7. If the lock pin does not engage automatically, adjust the cam as necessary to allow for automatic engagement in both the road and rail position. It may be necessary to grind the cam slightly to allow for proper engagement of the lock pin.
8. Once the proper adjustment has been made, torque the 3/8" fasteners to 40 ft-lbs dry then weld the cam to the cam base as shown.



***G&B Specialties, Inc.***  
*A Global Railway Industries Company*



MIO-R46RXF20070 (Rev D) OCT 1, 2011



# G&B Specialties, Inc.

A Global Railway Industries Company



MIO-R46RXF20070 (Rev D) OCT 1, 2011

REV	CHANGE	DATE	BY	APPD
A	DRAWING RELEASED	10/13/10	AML	

ITEM	PART No.	DESCRIPTION OF ITEM(PART)	QTY.
1	P-00032	PULL ROD	1
2	P-00034	SUPPORT PLATE	1
3	P-00024A	TIE PLATE	1
4	R-5652A	PULL KNOB	1
5	F-WASHER	3/8" GR.5	1
6	JAM NUT	3/8" UNC GR.5	1
7	NYLOCK NUT	3/8" UNC GR.5, JAM	1

TOLERANCE ON FINISHED DIMENSIONS UNLESS OTHERWISE SPECIFIED		FRACCTIONS		DECIMALS	
BASIC DIMENSION	1	2	3	4	5
0 TO .125	± .005	± .005	± .005	± .005	± .005
.125 TO .250	± .005	± .005	± .005	± .005	± .005
.250 TO .500	± .005	± .005	± .005	± .005	± .005
.500 TO 1.000	± .005	± .005	± .005	± .005	± .005
1.000 TO 2.000	± .005	± .005	± .005	± .005	± .005
2.000 TO 4.000	± .005	± .005	± .005	± .005	± .005
4.000 TO 6.000	± .005	± .005	± .005	± .005	± .005
6.000 TO 8.000	± .005	± .005	± .005	± .005	± .005
8.000 TO 10.000	± .005	± .005	± .005	± .005	± .005
10.000 TO 12.000	± .005	± .005	± .005	± .005	± .005
12.000 TO 14.000	± .005	± .005	± .005	± .005	± .005
14.000 TO 16.000	± .005	± .005	± .005	± .005	± .005
16.000 TO 18.000	± .005	± .005	± .005	± .005	± .005
18.000 TO 20.000	± .005	± .005	± .005	± .005	± .005
20.000 TO 22.000	± .005	± .005	± .005	± .005	± .005
22.000 TO 24.000	± .005	± .005	± .005	± .005	± .005
24.000 TO 26.000	± .005	± .005	± .005	± .005	± .005
26.000 TO 28.000	± .005	± .005	± .005	± .005	± .005
28.000 TO 30.000	± .005	± .005	± .005	± .005	± .005
30.000 TO 32.000	± .005	± .005	± .005	± .005	± .005
32.000 TO 34.000	± .005	± .005	± .005	± .005	± .005
34.000 TO 36.000	± .005	± .005	± .005	± .005	± .005
36.000 TO 38.000	± .005	± .005	± .005	± .005	± .005
38.000 TO 40.000	± .005	± .005	± .005	± .005	± .005
40.000 TO 42.000	± .005	± .005	± .005	± .005	± .005
42.000 TO 44.000	± .005	± .005	± .005	± .005	± .005
44.000 TO 46.000	± .005	± .005	± .005	± .005	± .005
46.000 TO 48.000	± .005	± .005	± .005	± .005	± .005
48.000 TO 50.000	± .005	± .005	± .005	± .005	± .005
50.000 TO 52.000	± .005	± .005	± .005	± .005	± .005
52.000 TO 54.000	± .005	± .005	± .005	± .005	± .005
54.000 TO 56.000	± .005	± .005	± .005	± .005	± .005
56.000 TO 58.000	± .005	± .005	± .005	± .005	± .005
58.000 TO 60.000	± .005	± .005	± .005	± .005	± .005
60.000 TO 62.000	± .005	± .005	± .005	± .005	± .005
62.000 TO 64.000	± .005	± .005	± .005	± .005	± .005
64.000 TO 66.000	± .005	± .005	± .005	± .005	± .005
66.000 TO 68.000	± .005	± .005	± .005	± .005	± .005
68.000 TO 70.000	± .005	± .005	± .005	± .005	± .005
70.000 TO 72.000	± .005	± .005	± .005	± .005	± .005
72.000 TO 74.000	± .005	± .005	± .005	± .005	± .005
74.000 TO 76.000	± .005	± .005	± .005	± .005	± .005
76.000 TO 78.000	± .005	± .005	± .005	± .005	± .005
78.000 TO 80.000	± .005	± .005	± .005	± .005	± .005
80.000 TO 82.000	± .005	± .005	± .005	± .005	± .005
82.000 TO 84.000	± .005	± .005	± .005	± .005	± .005
84.000 TO 86.000	± .005	± .005	± .005	± .005	± .005
86.000 TO 88.000	± .005	± .005	± .005	± .005	± .005
88.000 TO 90.000	± .005	± .005	± .005	± .005	± .005
90.000 TO 92.000	± .005	± .005	± .005	± .005	± .005
92.000 TO 94.000	± .005	± .005	± .005	± .005	± .005
94.000 TO 96.000	± .005	± .005	± .005	± .005	± .005
96.000 TO 98.000	± .005	± .005	± .005	± .005	± .005
98.000 TO 100.000	± .005	± .005	± .005	± .005	± .005
ANGULAR DIMENSIONS	± 1/2°				

DRAWN	CHECKED	DATE DRAWN	SHEET	PART NUMBER	REVISION
AML		10/13/10	1	K-46RXF20070R00	A

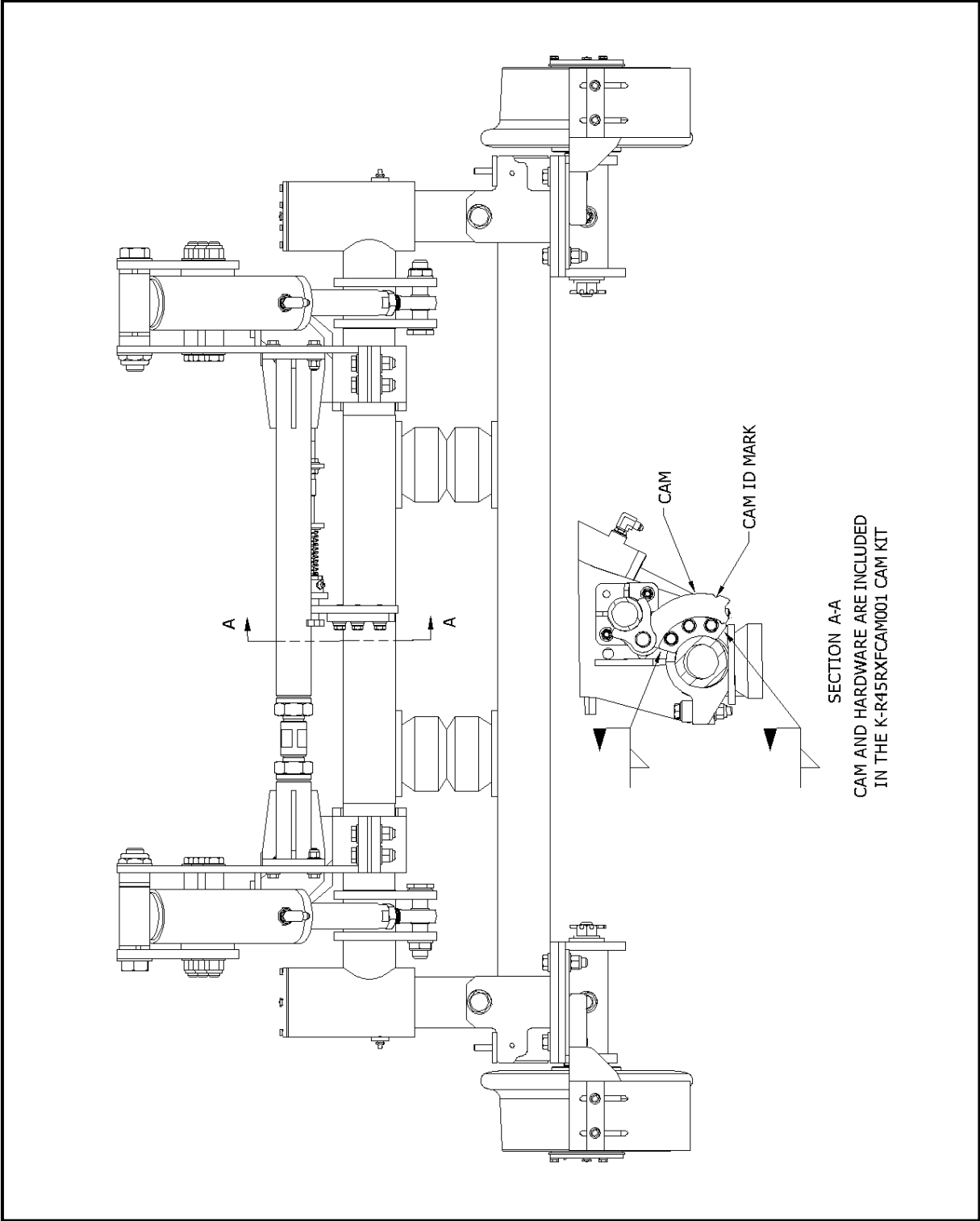
**G & B SPECIALTIES INC.**  
 MANUFACTURER OF QUALITY RAILROAD PRODUCTS  
 535 WEST 3<sup>RD</sup> STREET, BERWICK, PA, USA 17004  
 TEL: (570) 752-5901 FAX: (570) 752-6397

**DESIGN ~ ENGINEERING ~ MANUFACTURING**  
 G & B SPECIALTIES INC. IS THE OWNER OF THE PATENT RIGHTS FOR THE PULL ROD INSTALLATION FOR THE RAILROAD INDUSTRY. ALL RIGHTS ARE RESERVED. NO PART OF THIS DOCUMENT IS TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN CONSENT OF G & B SPECIALTIES INC.





**Rod Lock Installation**





## **Lock Cam Installation/Adjustment**

### **2.0**

### **OPERATIONS**

With the railgear kit installed on this vehicle, it may be operated as normal, however the vehicle has decreased ground clearance and angles of approach and departure due to the railgear. Caution must be used when operating the vehicle.

**Never operate the vehicle if the Gross Vehicle Weight Rating (GVWR), Gross Axle Weight Rating Front or Rear (GAWR), or the wheel or tire load ratings are exceeded.**

Refer to the Hydraulic Kit Operation, Service, and Parts manual for information on the location and operation of the railgear hydraulic system controls.

### **Placing The Vehicle On Rail – To Lower The Railgear:**

1. Engage the vehicle front axle lock. Follow the Axle Lockup Kit Operation procedure detailed in the Axle Lockup Kit Installation and Operation and Service manual.
2. Disengage the railgear mechanical locking pin by pulling on the locking cable handle. Do not force the locking cable. If the lock pins cannot be disengaged, raise or lower the railgear slightly.
3. Hold the locking cable handle in the disengaged position.
4. Lower the railgear and release the locking cable handle once the railgear has rotated past the road locked position.
5. As the railgear is being deployed, it will start taking some of the vehicle's load. The railgears spring suspension should be observed compressing at least 1" under this load.
6. Continue lowering the railgear until the hydraulic cylinders are fully extended. In this position, the railgear should be about 3°-5 ° over center and the vehicle front tires should be approximately 2"-3" above the rail.
7. Ensure that the vehicle front axle lock is fully engaged.



**Removing The Vehicle From Rail – To Raise The Railgear:**

1. Disengage the railgear mechanical locking pin by pulling on the locking cable handle. Do not force the locking cable. If the lock pins cannot be disengaged, raise or lower the railgear slightly.
2. Hold the locking cable handle in the disengaged position.
3. Raise the railgear and release the locking cable handle once the railgear has rotated past the rail locked position.
4. Raise the railgear fully. The railgear lock pin should engage automatically.
5. Disengage the vehicle front axle lock as per the Axle Lockup Kit Operation procedure detailed in the Axle Lockup Kit Installation and Operation and Service manual.



### 3.0

### SERVICE

The railgear kit must be serviced regularly to avoid damage to the equipment. Table 1 below provides the Recommended Service Schedule and the detailed service procedures follow.

Figure 1 provides the Non-Standard Fastener Torque Values. Table 2 provides Standard Fastener Torque Values for all other fasteners.

Grease fittings are provided at all railgear lubrication points as shown in Figure 2. The recommended lubricant for all lubrication points on this railgear is ESSO LONAX EP2 grease or equivalent. In cold weather areas/seasons, SHELL DARINA XL102 or equivalent may be used.



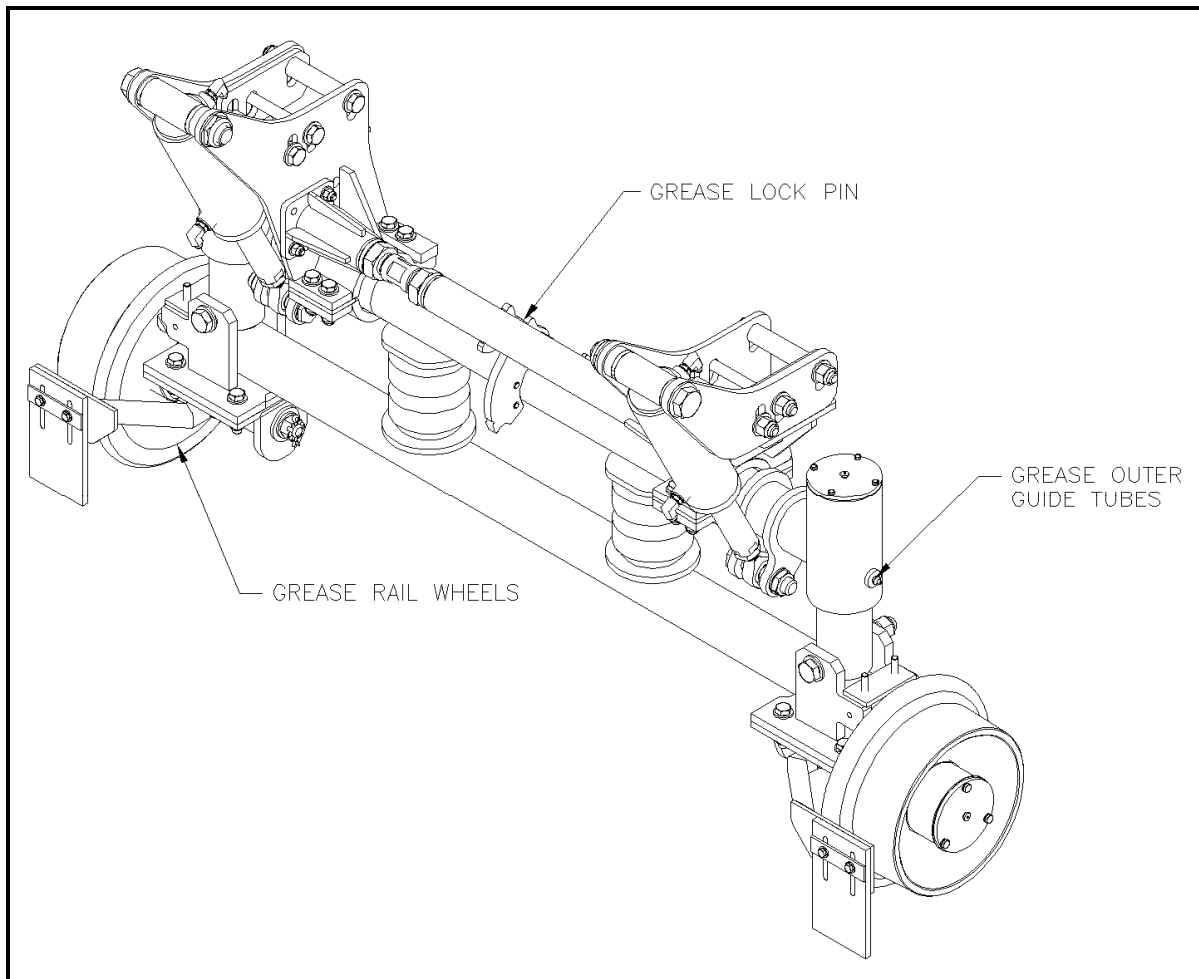
**Table 1: Recommended Service Schedule**

DESCRIPTION		Daily	1 <sup>st</sup> 8 hours of Operation	Weekly	Monthly	Every 3 Months	Every 6 Months
1	Visually inspect the railgear prior to use for damaged or worn parts	✓					
2	Check for loose wheels and fasteners	✓					
3	Ensure the rail gear locking mechanism is functioning properly in both the road and rail positions	✓					
4	Check and adjust truck tire pressure as per requirements				✓		
5	Ensure the vehicle is in good operating condition based on the vehicle operating and maintenance instructions	✓					
6	Check and adjust rail wheel end play ( 0.005" max.)						✓
7	Inspect railgear wheel flanges for wear. Use the "Rafna Wheel Flange Indicator" for measurement						✓
8	Inspect all hydraulic fittings and hoses for leaks or wear				✓		
9	Inspect rail sweeps for close proximity to rail head	✓					
10	Grease inner tubes						✓
11	Lubricate locking mechanism						✓
12	Check level on hydraulic reservoir. Top off with appropriate filtered fluid			✓			
13	Inspect and grease railgear wheel bearings						✓
14	Check and correct rail wheel alignment, if gear is removed or damaged, or every 12 months	Yearly					

Note: For continuous service at ambient temperatures above 40°C ( 105°F), more frequent lubrication is required.

**Standard Fastener Torque Values**

Fastener Size	Fastener Torque Value (ft-lbs) Dry
1" UNC Gr. 8 Fasteners	250
¾" UNC Gr. 8 Fasteners	175
⅝" UNC Gr. 8 Fasteners	150
½" UNC Gr. 8 Fasteners	100
⅜" UNC Gr. 8 Fasteners	40
¼" UNC Gr. 8 Fasteners	12



### **Railgear Lubrication Points**

#### **Railgear Over-Center Adjustment**

The railgear is designed to rotate slightly past vertical into the rail position in order to provide a secondary safety feature in the event of a hydraulic and / or lock pin failure. This additional rotation past vertical is called the over-center angle and is adjustable via a threaded rod end on the end of the hydraulic cylinder. The location of the railgear in the road position is also a function of the over-center adjustment, however, **DO NOT** use the over-center adjustment to adjust the road position of the railgear. This will have adverse effects on the over-center safety feature.



The over-center angle is defined as the angle between the vertical edge of the outer guide tubes and the vertical. It can be measured with the vehicle on a level section of rail with the railgear in the rail position using an angle meter. The over-center angle must be between 3°-5° past vertical. If this is not the case, adjust as follows:

1. Unload the railgear hydraulic cylinder by raising the railgear just off rail.
2. Loosen the jam nut on the hydraulic cylinder rod end and adjust the rod end out to increase the over-center angle or in to decrease the over-center angle. Note that the cylinder rod can be turned instead of turning the rod end.
3. Re-deploy the railgear to the rail position and re-check the over-center angle. Re-adjust as necessary.
4. Tighten the jam nut on the hydraulic cylinder rod end.
5. Repeat process for other cylinder.
6. Both cylinders should be adjusted so that both cylinders have the same amount of stroke over center. This will help to eliminate any binding or twisting of the railgear when deployed to the rail position.
7. Following the over-center angle adjustment, the railgear may contact the vehicle if not enough clearance was left during installation. Check the railgear clearance to all vehicle components throughout the full range of railgear and railgear suspension movement. If there is interference with the vehicle bumper, it can be trimmed and reinforced as required.
8. With the railgear fully raised to the road position, ensure that the railgear lock pin properly engages the lock cam. It may be necessary to adjust and/or grind the lock cam slightly to ensure proper fit.

### **Rail Wheel Bearing Adjustment**

The rail wheel bearings require periodic adjustment in order to keep the endplay within specification. If the rail wheel bearings are not correctly adjusted, failure may occur and will not be covered under the railgear warranty. Check and adjust the bearing endplay with the railgear in the road position and with the rail wheels free to turn.



Use a magnetic base dial gauge to measure the endplay of each rail wheel bearing. The bearing endplay must be between 0.001" and 0.005". If this is not the case, adjust as follows:

1. Remove the rail wheel hubcap and gasket by removing the three 1/4" bolts and 1/4" lock washers. Remove and discard the cotter pin from the 3/4" slotted spindle nut.
2. Ensure the wheel-bearing cavity is full of grease.
3. While rotating the rail wheel forward, torque the spindle nut to 20 ft-lbs. Then loosen the spindle nut and re-torque it to 6 ft-lbs. Re-check and re-adjust the bearing endplay if required. If no torque wrench is available, tighten the spindle nut until the rail wheel is difficult to turn by hand. Then loosen the spindle nut and retighten it just until no loose can be felt in the bearings. Re-adjust the bearing endplay with a torque wrench as soon as possible.
4. Install a new 3/16" x 2" long cotter pin through the spindle nut. Tighten the spindle nut slightly if needed to insert the cotter pin.
5. Re-install the hubcap and gasket using the 1/4" bolts and new 1/4" split lock washers. Blue Loctite can be used on the bolts as an added safety measure. Tighten and torque the 1/4" fasteners to 12 ft-lbs dry. Do not over torque.

### **Rail Sweep Adjustment**

The distance between the rail sweep rubber and the rail is adjustable and should be maintained at approximately 1/8". To adjust the rail sweep rubber, with the railgear in the rail position, loosen the two 1/4" fasteners that secure the rail sweep rubber to the rail sweep bracket. Slide the rail sweep rubber up or down for the correct clearance. Tighten and torque the 1/4" fasteners to 12 ft-lbs dry. Do not over torque.

### **RAILGEAR ALIGNMENT**

The railgear must be correctly aligned in order to perform properly, safely, and avoid excessive wear and derailment. The rail wheels can be independently aligned for toe-in/toe-out and the railgear can be adjusted side to side (laterally) on the vehicle. A





parallel line system and the following procedure should be used to perform the railgear alignment.

The rail wheel loads should be checked and adjusted, the vehicle should have had a four-wheel alignment (with the complete railgear package installed on the vehicle and any suspension modifications done) and the tires should be properly inflated prior to performing the railgear alignment.

The railgear alignment is done with the vehicle on a straight and level section of rail with the railgear in the rail position and the vehicle wheels pointing straight ahead. The individual rail wheel alignment should be done first, followed by the lateral alignment of the railgear.

Each rail wheel is aligned by loosening the four 1/2" fasteners that secure it to the railgear axle. The rail wheel is then turned into alignment. The four 1/2" fasteners should then be tightened and torqued to 100 ft-lbs dry. Do not over torque.

Lateral alignment is achieved by sliding the lower half of the railgear unit in the pivot bearings. It may be necessary to loosen the bearing caps slightly to ease the adjustment process. Once the railgear is in alignment, tighten the bearing caps to 40 ft-lbs dry. Do not over torque.

**Ensure that the railgear over-center adjustment has been made before continuing**

Once the alignment is complete, it will be necessary to install the rotation stops. The rotation stops also act as a type of shaft collar to keep the railgear from losing lateral alignment. Rotate the railgear down to the rail position, place the rotation stops on the upper axle as shown and weld in place.

Following the railgear alignment, the railgear may contact the vehicle if not enough clearance was left during installation. Check the railgear clearance to all vehicle components throughout the full range of railgear and railgear suspension movement. If there is interference with the vehicle bumper, it can be trimmed and reinforced as required. If there is interference with the vehicle exhaust system, it can be modified to fit, ensuring any exhaust system modifications conform to applicable laws and regulations. If there is interference with any other vehicle components, please call G&B Specialties, Inc. for technical assistance.



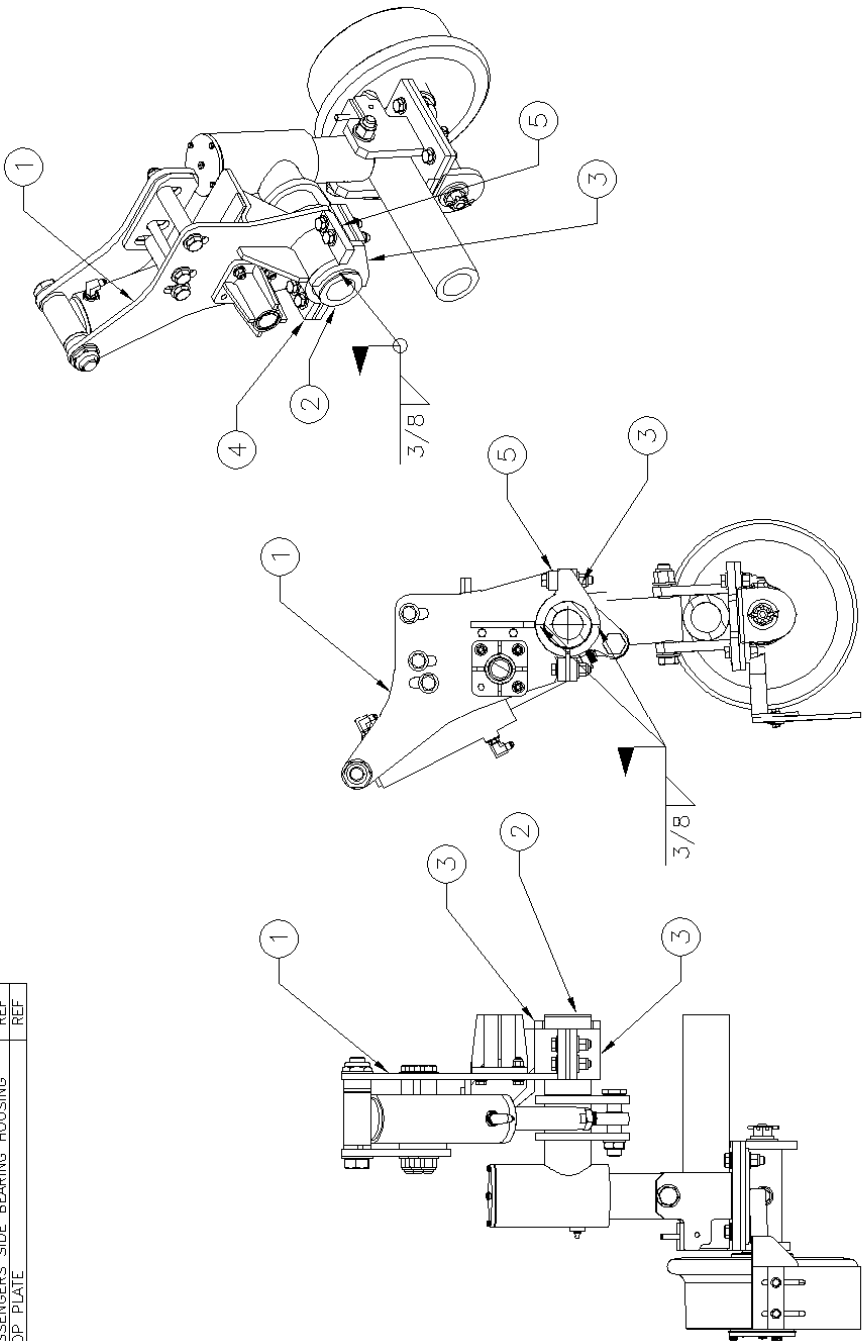
# G&B Specialties, Inc.

A Global Railway Industries Company



MIO-R46RXF20070 (Rev D) OCT 1, 2011

ITEM	PART No.	DESCRIPTION OF ITEM(PART)	QTY.	REV.	CHANGE	DATE	BY	APPD
1	-	PASSENGERS SIDE MOUNTING BRACKET	REF	A.	DRAWING RELEASED	12/17/09	AML	
2	-	UPPER AXLE	REF					
3	R-20101	ROTATION STOP	2					
4	-	PASSENGERS SIDE BEARING HOUSING	REF					
5	-	STOP PLATE	REF					



\*PASSENGERS SIDE SHOWN  
DRIVERS SIDE TYPICAL\*

- NOTES:
1. RAILGEAR SHOULD BE IN THE LOCKED RAIL POSITION AND 3'-5" OVER CENTER.
  2. ROTATION STOP SHOULD BE FLUSH AGAINST BEARING HOUSING AND THE STOP PLATE.
  3. WELD ROTATION STOP TO UPPER AXLE.

TOLERANCE ON FINISHED DIMENSIONS UNLESS OTHERWISE SPECIFIED		PLAS. FINISH MAT. 12% EXCEPT AS NOTED	
BASIC DIMENSION	FRACTIONS	DECIMALS	DECIMALS
UP TO 6 INCHES	± 1/64	± .02	± .005
6 TO 24	± 1/32	± .03	± .010
ABOVE 24	± 1/16	± .06	± .015
ANGULAR DIMENSIONS	± 1/2°		

APPROVED	CHECKED	DRAWN	APPD

<b>G &amp; B SPECIALTIES INC.</b> MANUFACTURER OF QUALITY RAILROAD PROGRAM CTS 1000 W. STATE ST. SUITE 1000 BERWICK, PA 17504-1101 FAX: (717) 352-5699	<b>RAFNA</b> <b>RAILGEAR</b>
---	---------------------------------

<b>DESIGN ~ ENGINEERING ~ MANUFACTURING</b>	
G & B SPECIALTIES INC. IS THE OWNER OF THE PATENT RIGHTS FOR THE ROTATION STOP INSTALLATION FOR PASSENGER SIDE BEARING HOUSING AND STOP PLATE. THE COMPANY HAS APPLIED FOR PATENT RIGHTS FOR THE ROTATION STOP INSTALLATION FOR PASSENGER SIDE BEARING HOUSING AND STOP PLATE. THE COMPANY HAS APPLIED FOR PATENT RIGHTS FOR THE ROTATION STOP INSTALLATION FOR PASSENGER SIDE BEARING HOUSING AND STOP PLATE. THE COMPANY HAS APPLIED FOR PATENT RIGHTS FOR THE ROTATION STOP INSTALLATION FOR PASSENGER SIDE BEARING HOUSING AND STOP PLATE.	SHEET 1 OF 1 PART NUMBER MIO-R46RXF20070-10 REVISION A



<p>VEHICLE MODEL: _____</p> <p>RAILGEAR S/N: _____</p>	<p>VEHICLE UNIT #: _____</p>
<p>SET UP PARALLEL STRING LINES A &amp; B MUST BE EQUAL WITHIN 1/32" C &amp; D MUST BE EQUAL WITHIN 1/32"</p> <p>ADJUST STRING LINES AROUND VEHICLE E, F, G, &amp; H MUST BE EQUAL WITHIN 1/16" I, J, K, &amp; L MUST BE EQUAL WITHIN 1/16" (E, F, G, &amp; H MAY NOT EQUAL I, J, K, &amp; L)</p> <p>ADJUST RAIL WHEEL ALIGNMENT M &amp; O MUST BE EQUAL WITHIN 1/16" N &amp; P MUST BE EQUAL WITHIN 1/16" Q &amp; S MUST BE EQUAL WITHIN 1/16" R &amp; T MUST BE EQUAL WITHIN 1/16"</p> <p>ADJUST RAILGEAR LATERAL ALIGNMENT M &amp; O MUST EQUAL N &amp; P WITHIN 1/8" Q &amp; S MUST EQUAL R &amp; T WITHIN 1/8"</p> <p>ENSURE THAT U &amp; V ARE BETWEEN 53 - 7/16" AND 53 - 9/16"</p> <p>OVER-CENTER ANGLE (DEG): FRONT _____ REAR _____</p>	
<p>RAIL WHEEL LOAD (LBS):</p> <p>LEFT FRONT _____</p> <p>RIGHT FRONT _____</p> <p>LEFT REAR _____</p> <p>RIGHT REAR _____</p>	<p>RAIL WHEEL FLANGE TO GROUND CLEARANCE:</p> <p>LEFT FRONT _____</p> <p>RIGHT FRONT _____</p> <p>LEFT REAR _____</p> <p>RIGHT REAR _____</p>



**G&B Specialties, Inc.**  
*A Global Railway Industries Company*



MIO-R46RXF20070 (Rev D) OCT 1, 2011

4.0

**PARTS**

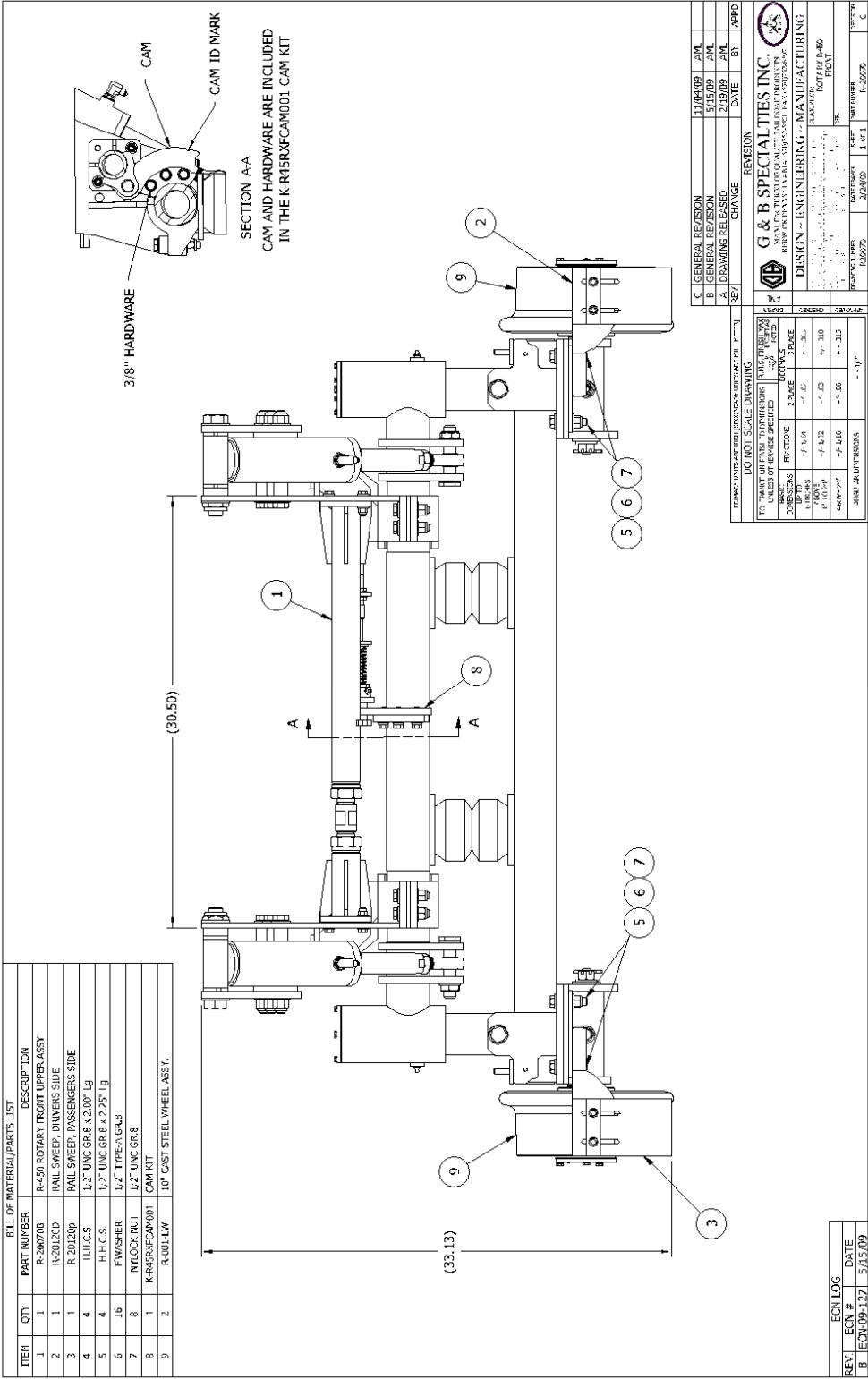


# G&B Specialties, Inc.

A Global Railway Industries Company



MIO-R46RXF20070 (Rev D) OCT 1, 2011



BILL OF MATERIAL/PARTS LIST		
ITEM	QTY	PART NUMBER DESCRIPTION
1	1	R-20070B R-450 ROTARY FRONT UPPER ASSY
2	1	14-20120D RAIL SWEEP, DIVER'S SIDE
3	1	R 20120P RAIL SWEEP, PASSENGER'S SIDE
4	4	1111G.S 1/2" UNC GR 8 X 2.00" Lg
5	4	H.H.C.S 1/2" UNC GR 8 X 2.25" Lg
6	16	FWASHER 1/2" TYPE-A GR 8
7	8	W/LOCK INU 1/2" UNC GR 8
8	1	K-R46RXFCAM001 CAM KIT
9	2	R-0014W 10" CAST STEEL WHEEL ASSY.

REV	ECN #	DATE	BY	APPD
C		11/04/09	ZML	
B		5/15/09	ZML	
A		2/10/09	ZML	
		DATE	BY	APPD

REVISION	REVISION
1	DESIGN
2	ENGINEERING
3	MANUFACTURING

G & B SPECIALTIES INC.	
MANUFACTURER OF QUALITY RAILROAD PRODUCTS	
WWW.GANDBSPECIALTIES.COM TEL: 717-535-2600 FAX: 717-535-2609	
DESIGN	MANUFACTURING
DATE: 11/04/09	DATE: 11/04/09
BY: ZML	BY: ZML
APPD: ZML	APPD: ZML

ITEMS	3
PROBLEMS	0
CHANGES	0
REVISIONS	3
DATE	11/04/09
BY	ZML
APPD	ZML

FORM: DATE: 06/20/07	UNITS: INCHES	SCALE: 1:1
DO NOT SCALE DRAWING		
TO: RAILROADS	UNLESS OTHERWISE SPECIFIED	FINISH: UNLESS OTHERWISE SPECIFIED
UP TO 30	30	30
30 TO 48	48	48
48 TO 72	72	72
72 TO 96	96	96
96 TO 120	120	120
120 TO 144	144	144
144 TO 168	168	168
168 TO 192	192	192
192 TO 216	216	216
216 TO 240	240	240
240 TO 264	264	264
264 TO 288	288	288
288 TO 312	312	312
312 TO 336	336	336
336 TO 360	360	360
360 TO 384	384	384
384 TO 408	408	408
408 TO 432	432	432
432 TO 456	456	456
456 TO 480	480	480
480 TO 504	504	504
504 TO 528	528	528
528 TO 552	552	552
552 TO 576	576	576
576 TO 600	600	600
600 TO 624	624	624
624 TO 648	648	648
648 TO 672	672	672
672 TO 696	696	696
696 TO 720	720	720
720 TO 744	744	744
744 TO 768	768	768
768 TO 792	792	792
792 TO 816	816	816
816 TO 840	840	840
840 TO 864	864	864
864 TO 888	888	888
888 TO 912	912	912
912 TO 936	936	936
936 TO 960	960	960
960 TO 984	984	984
984 TO 1008	1008	1008
1008 TO 1032	1032	1032
1032 TO 1056	1056	1056
1056 TO 1080	1080	1080
1080 TO 1104	1104	1104
1104 TO 1128	1128	1128
1128 TO 1152	1152	1152
1152 TO 1176	1176	1176
1176 TO 1200	1200	1200
1200 TO 1224	1224	1224
1224 TO 1248	1248	1248
1248 TO 1272	1272	1272
1272 TO 1296	1296	1296
1296 TO 1320	1320	1320
1320 TO 1344	1344	1344
1344 TO 1368	1368	1368
1368 TO 1392	1392	1392
1392 TO 1416	1416	1416
1416 TO 1440	1440	1440
1440 TO 1464	1464	1464
1464 TO 1488	1488	1488
1488 TO 1512	1512	1512
1512 TO 1536	1536	1536
1536 TO 1560	1560	1560
1560 TO 1584	1584	1584
1584 TO 1608	1608	1608
1608 TO 1632	1632	1632
1632 TO 1656	1656	1656
1656 TO 1680	1680	1680
1680 TO 1704	1704	1704
1704 TO 1728	1728	1728
1728 TO 1752	1752	1752
1752 TO 1776	1776	1776
1776 TO 1800	1800	1800
1800 TO 1824	1824	1824
1824 TO 1848	1848	1848
1848 TO 1872	1872	1872
1872 TO 1896	1896	1896
1896 TO 1920	1920	1920
1920 TO 1944	1944	1944
1944 TO 1968	1968	1968
1968 TO 1992	1992	1992
1992 TO 2016	2016	2016
2016 TO 2040	2040	2040
2040 TO 2064	2064	2064
2064 TO 2088	2088	2088
2088 TO 2112	2112	2112
2112 TO 2136	2136	2136
2136 TO 2160	2160	2160
2160 TO 2184	2184	2184
2184 TO 2208	2208	2208
2208 TO 2232	2232	2232
2232 TO 2256	2256	2256
2256 TO 2280	2280	2280
2280 TO 2304	2304	2304
2304 TO 2328	2328	2328
2328 TO 2352	2352	2352
2352 TO 2376	2376	2376
2376 TO 2400	2400	2400
2400 TO 2424	2424	2424
2424 TO 2448	2448	2448
2448 TO 2472	2472	2472
2472 TO 2496	2496	2496
2496 TO 2520	2520	2520
2520 TO 2544	2544	2544
2544 TO 2568	2568	2568
2568 TO 2592	2592	2592
2592 TO 2616	2616	2616
2616 TO 2640	2640	2640
2640 TO 2664	2664	2664
2664 TO 2688	2688	2688
2688 TO 2712	2712	2712
2712 TO 2736	2736	2736
2736 TO 2760	2760	2760
2760 TO 2784	2784	2784
2784 TO 2808	2808	2808
2808 TO 2832	2832	2832
2832 TO 2856	2856	2856
2856 TO 2880	2880	2880
2880 TO 2904	2904	2904
2904 TO 2928	2928	2928
2928 TO 2952	2952	2952
2952 TO 2976	2976	2976
2976 TO 3000	3000	3000



# G&B Specialties, Inc.

A Global Railway Industries Company



MIO-R46RXF20070 (Rev D) OCT 1, 2011

**NOTES:**

- ASSEMBLE AS SHOWN
- TORQUE BEARING CAPS TO 45 FT-LBS
- SEE SHEET #2 FOR FASTENERS

**BILL OF MATERIAL/PARTS LIST**

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	R-20021E	FRONT SUPPORT BEAM ASSY
2	1	R-20029B	OUTER SUPPORT PLATE, DRIVERS SIDE
3	1	R-20073C	OUTER SUPPORT PLATE, PASSENGERS SIDE
4	1	R-20014	UPPER CROSS HAIR
5	1	R-20079D	MOUNTING BRACKET, DRIVERS SIDE
6	1	R-20079P	MOUNTING BRACKET, PASSENGERS SIDE
7	2	R-20083A	INNER GUIDE
8	2	R-20084	CAP, OUTER GUIDE TUBE
9	2	R-20085	GAGNET, OUTER GUIDE TUBE CAP
10	2	R-20087	HYDRAULIC CYLINDER
11	2	R-20061	ROTATION STOP
12	2	R-20101A	STOP PLATE
13	8	R-20105	MACHINE SCREW
14	1	R-20107	LOCKING PIN
15	1	R-20110	FRONT AXLE
16	1	R-20106	SPRING
17	4	R-20117	SPACER, 1/4"
18	4	R-20122	SHIPPING SPACER
19	2	R-5708	SPLIT BEARING
20	4	R-5709	SHIM
21	2	R-5710	BEARING CAP
22	2	Grease Zerk	3/8 NPT STRAIGHT RELIEF
23	3	Grease Zerk	1/8 NPT STRAIGHT
24	8	L WASHER	#10, GKS
25	2	R-20167	LOWER PIVOT BOLT
27	7	R-5683	TIMBEREN 440/75 SPRING
28	1	R-6860	Z PUSH-PULL CABLE
29	2	R-6523	BELLOWS
30	2	R-604	CLAMP, BELLOWS

**ESTIMATED WEIGHT: 270lbs**

**REVISION HISTORY**

REV	DATE	BY	APPD	DESCRIPTION
D	11/9/09	JML		REVISED BOM
C	11/9/09	JML		GENERAL REVISION
B	5/12/09	JML		GENERAL REVISION
A	3/2/09	JML		DRAWING RELEASED

**COMPANY INFORMATION**

**G & B SPECIALTIES INC.**  
 555 WEST 5 STREET, BERWICK, PA, USA  
 TEL: (717) 352-5901 FAX: (717) 352-0597

**DESIGN & MANUFACTURING**

DESIGN - ENGINEERING - MANUFACTURING

**SCALE**

DO NOT SCALE DRAWING

**ESTIMATED WEIGHT: 270lbs**



# G&B Specialties, Inc.

A Global Railway Industries Company



MIO-R46RXF20070 (Rev D) OCT 1, 2011

BILL OF MATERIAL / PARTS LIST		
ITEM	QTY	PART NUMBER / DESCRIPTION
31	2	H.H.C.S. 1" UNC GR. 8 x 6.50"
32	4	F.WASHER 1" GR. 8 TYPE-A
33	2	JAM NUT 1" UNC NYLON INSERT
34	4	F.WASHER 3/4" GR. 8 TYPE-A
35	4	F.WASHER 7/8" GR. 8 TYPE-B
36	2	NUT LOCK NUT 3/4" UNC GR. 8
37	2	JAM NUT 7/8" UNC NYLON INSERT
38	2	H.H.C.S. 3/4" UNC GR. 8 x 6.00"
39	12	F.WASHER 5/8" UNC GR. 8
40	6	NUT LOCK NUT 5/8" UNC GR. 8
41	6	H.H.C.S. 5/8" UNC GR. 8 x 6.50"
42	17	F.WASHER 1/2" GR. 8 TYPE-A
43	8	NUT LOCK NUT 1/2" UNC GR. 8
44	4	H.H.C.S. 1/2" UNC GR. 8 x 2.25"
45	4	H.H.C.S. 1/2" UNC GR. 8 x 3.00"
46	8	F.WASHER #10 GR. 5
47	12	F.WASHER 3/8" GR. 8 TYPE-A
48	6	NUT LOCK NUT 3/8" UNC GR. 8
49	6	H.H.C.S. 3/8" UNC GR. 8 x 1.50"

DO NOT SCALE DRAWING	
DIMENSIONS	TOLERANCES
INCHES	FRACTIONS
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.0995	.0995
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REV	DATE	BY	APPD
D	11/9/09	JML	JML
C	11/9/09	JML	JML
B	5/12/09	JML	JML
A	3/2/09	JML	JML

REV	DATE	BY	APPD
D	11/9/09	JML	JML
C	11/9/09	JML	JML
B	5/12/09	JML	JML
A	3/2/09	JML	JML

REV	DATE	BY	APPD
D	11/9/09	JML	JML
C	11/9/09	JML	JML
B	5/12/09	JML	JML
A	3/2/09	JML	JML

G&B specialties inc. 555 West 5 Street, Berwick, PA, USA Tel: (717) 324-5901 Fax: (717) 324-5997

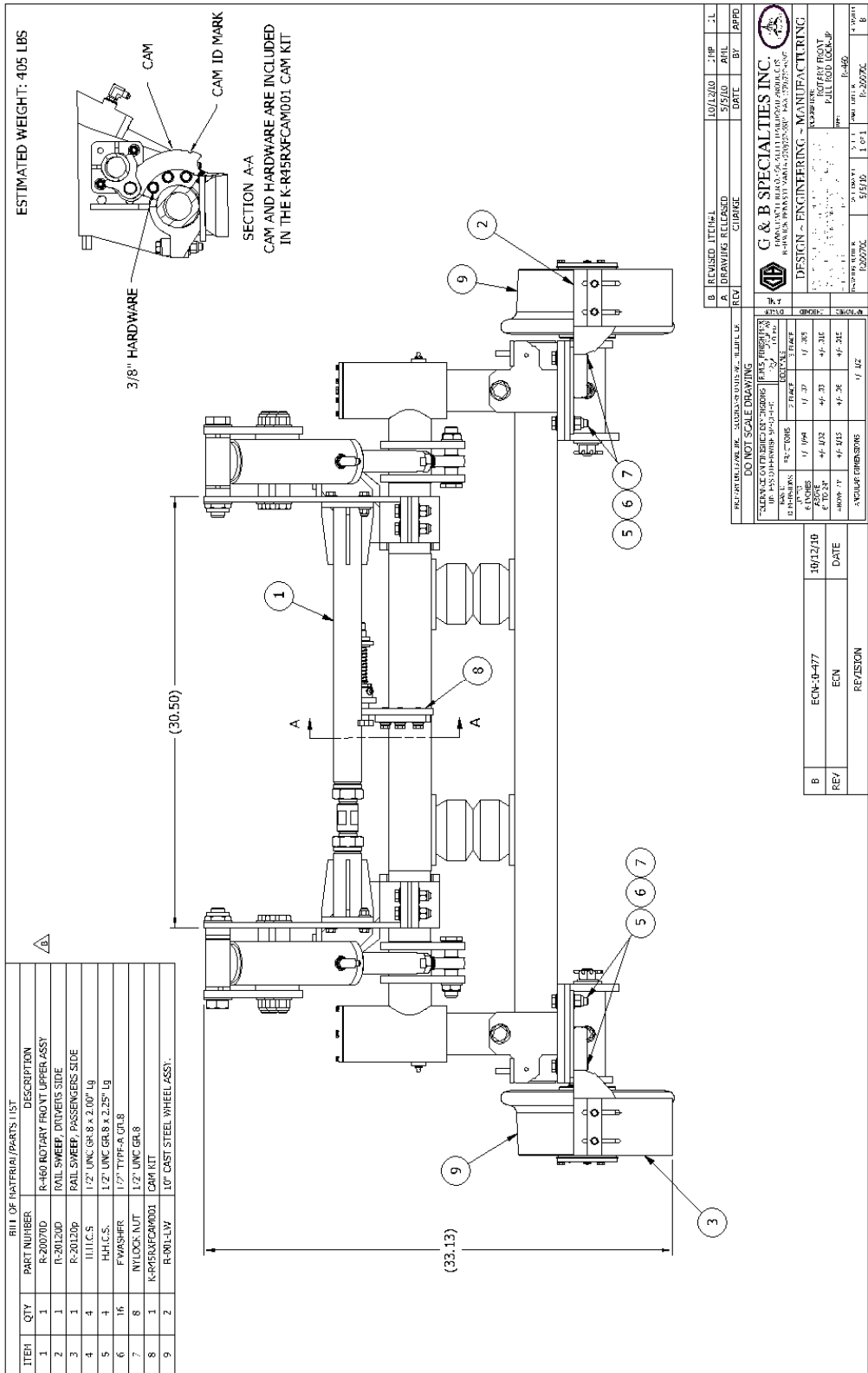


# G&B Specialties, Inc.

A Global Railway Industries Company



MIO-R46RXF20070 (Rev D) OCT 1, 2011



G&B specialties inc. 555 West 5 Street, Berwick, PA, USA Tel: (717) 752-5901 Fax: (717) 752-0397





# G&B Specialties, Inc.

A Global Railway Industries Company



MIO-R46RXF20070 (Rev D) OCT 1, 2011

**NOTES:**

- ASSEMBLE AS SHOWN
- TORQUE BEARING CAPS TO 45 FT-LBS
- SEE SHEET #2 FOR FASTENERS
- ITEM 50 & 51 ARE PART OF KIT #R-990KIT-296

REV	DATE	BY	APPD	CHKD	REV
B	5/5/10	AVIL			-1
A	5/5/10	AVIL			

**ITEM**    **QTY**    **BILL OF MATERIAL/PARTS LIST**

1	1	R-2007A1G	HORN SUPPORT BEAM ASSY
2	1	R-2007AB	OUTER SUPPORT PLATE, DRIVERS SIDE
3	1	R-2007AC	OUTER SUPPORT PLATE, PASSENGERS SIDE
4	1	R-2007A	UPPER CROSS FRAME
5	1	R-2007B	MOUNTING BRACKET, DRIVERS SIDE
6	1	R-2007C	MOUNTING BRACKET, PASSENGERS SIDE
7	2	R-2008A	INNER GUIDE
8	2	R-2008B	GASKET, OUTER GUIDE TUBE CAP
9	2	R-2008C	HYDRAULIC CYLINDER
10	2	R-2008D	ROTATION STOP
11	2	R-20101	STOP PLATE
12	2	R-20101A	MACHINE SCREW
13	8	R-20105	LOCKING PIN
14	1	R-20107A	FRONT ANGLE
15	1	R-20110	SPRING, 1/4"
16	1	R-20117	SHIPPING SPACER
17	4	R-20122	SPLIT BENDING
18	2	R-5708	SHIM
19	2	R-5709	SHIM
20	4	R-5710	SPACER, 1/4"
21	7	Grease Zerk	1/8 INPT STRAIGHT RELIEF
22	3	Grease Zerk	1/8 INPT STRAIGHTCHT #10, GR.5
23	4	1" WASHER	LOWER PIVOT BOLT
24	8	1" WASHER	LOWER PIVOT BOLT
25	2	R-5683	TIMBERON 540/75 SPRING
26	1	R-20169	LOWER PUSH ROD
27	2	R-6523	BELLOWS
28	2	R-601	CLAMP, BELLOWS
29	2		
30	2		

**ESTIMATED WEIGHT: 2.70lbs**

REV	DATE	BY	APPD	CHKD	REV
3	5/5/10	AVIL			
2	5/5/10	AVIL			
1	5/5/10	AVIL			

**DO NOT SCALE DRAWING**

DATE	BY	APPD	CHKD	REV	REV
5/5/10	AVIL				

**G & B SPECIALTIES, INC.**  
 535 WEST 3<sup>RD</sup> STREET, BERWICK, PA, USA  
 TEL: (570) 752-5901 FAX: (570) 752-6397

**DESIGN - ENGINEERING - MANUFACTURING**

DATE	BY	APPD	CHKD	REV	REV
5/5/10	AVIL				



# G&B Specialties, Inc.

A Global Railway Industries Company



MIO-R46RXF20070 (Rev D) OCT 1, 2011

BILL OF MATERIALS/PARTS LIST	
ITEM	DESCRIPTION
31	7 H.H.C.S. 1" UNC GR. 8 X 6.50"
32	4 FWASHER 1" GR. 8 TYPE A
33	2 JAN NUT 1" UNC NYLON INSERT
34	1 FWASHER 3/4" GR. 8 TYPE-A
35	1 FWASHER 7/8" GR. 8 TYPE-B
36	2 NYLOCK NUT 3/4" UNC GR. 8
37	2 JAN NUT 7/8" UNC NYLON INSERT
38	2 H.H.C.S. 3/4" UNC GR. 8 X 6.00"
39	12 FWASHER 5/8" GR. 8 TYPE-A
40	6 NYLOCK NUT 5/8" UNC GR. 8
41	6 H.H.C.S. 5/8" UNC GR. 8 X 6.50"
42	17 FWASHER 1/2" GR. 8 TYPE-A
43	8 NYLOCK NUT 1/2" UNC GR. 8
44	4 H.H.C.S. 1/2" UNC GR. 8 X 2.25"
45	4 H.H.C.S. 1/2" UNC GR. 8 X 3.00"
46	8 FWASHER #10 GR. 5
47	12 FWASHER 3/8" GR. 8 TYPE-A
48	6 NYLOCK NUT 3/8" UNC GR. 8
49	6 H.H.C.S. 3/8" UNC GR. 8 X 1.50"
50	1 FWASHER 1/4" GR. 8 WIDE
51	1 JAN NUT 1/4" UNC GR. 8

**NOTES:**

- ASSEMBLE AS SHOWN
- TORQUE BEARING CAPS TO 45 FT-LBS
- ITEM 50 & 51 ARE PART OF KIT #R-990KIT-296

TORQUE BEARING CAPS TO 45 FT-LBS

REV	DATE	BY	APPD
3	02/14/06		
REV			

REV	DATE	BY	APPD
3	02/14/06		
REV			

REV	DATE	BY	APPD
3	02/14/06		
REV			

REV	DATE	BY	APPD
3	02/14/06		
REV			

REV	DATE	BY	APPD
3	02/14/06		
REV			

REV	DATE	BY	APPD
3	02/14/06		
REV			

REV	DATE	BY	APPD
3	02/14/06		
REV			



***G&B Specialties, Inc.***  
*A Global Railway Industries Company*



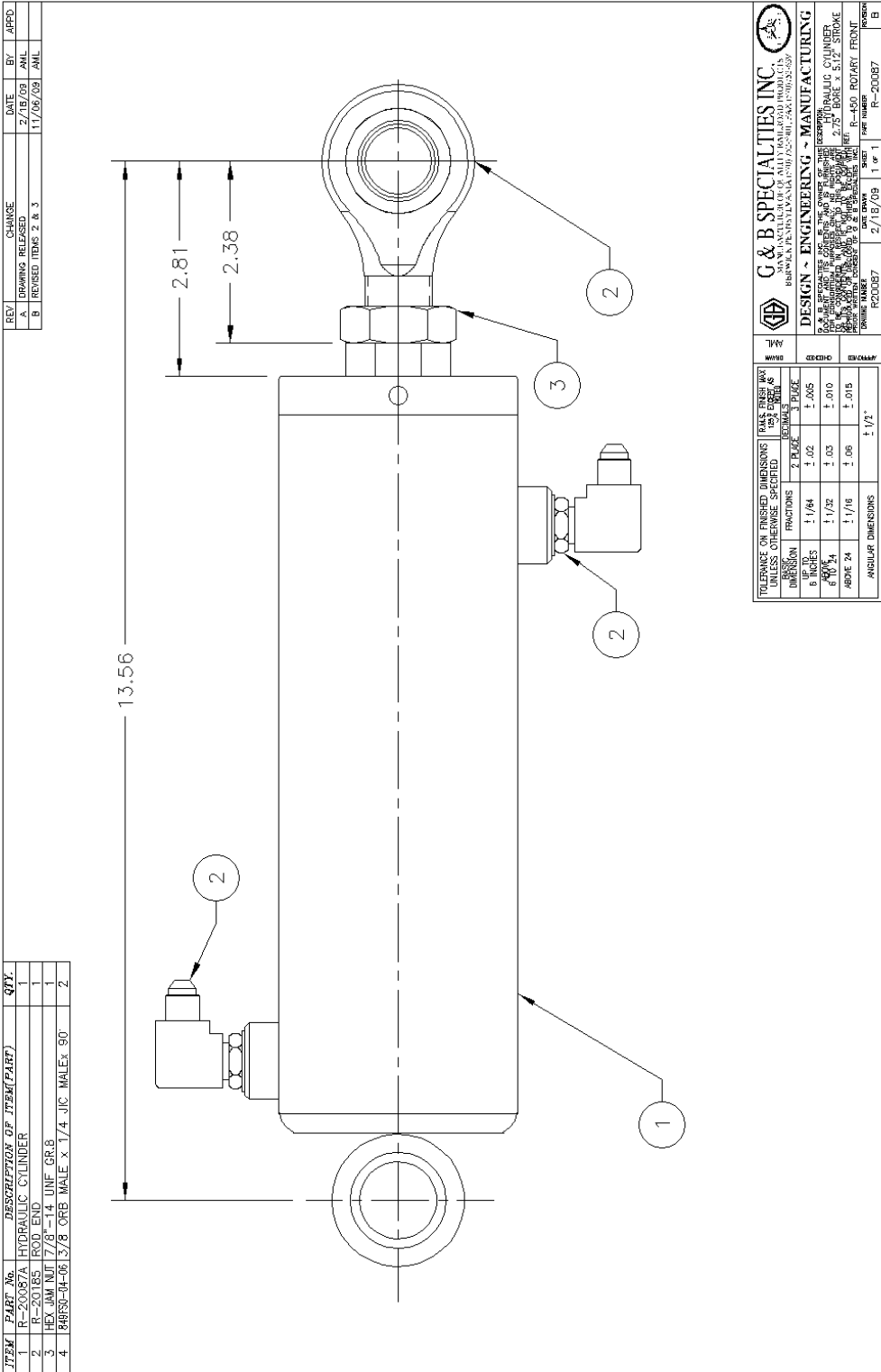
MIO-R46RXF20070 (Rev D) OCT 1, 2011



**G&B Specialties, Inc.**  
A Global Railway Industries Company



MIO-R46RXF20070 (Rev D) OCT 1, 2011



REV	CHANGE	DATE	BY	APPD
A	DRAWING RELEASED	2/18/09	AML	
B	REVISED ITEMS 2 & 3	11/06/09	AML	

ITEM	PART No.	DESCRIPTION OF ITEM(PART)	QTY.
1	R-20087A	HYDRAULIC CYLINDER	1
2	45-20180	ROD END	1
3	45-20181	HEAD END	1
4	66933-04-06	1 3/8 CRB MALE X 1/4 JIC MALEx 90	2

TOLERANCE ON FINISHED DIMENSIONS UNLESS OTHERWISE SPECIFIED	FRAC TIONS	DECIMAL PLACES	ANGLE	ANGULAR DIMENSIONS
8 UP TO 1/4	1/64	1.02	± .005	± .010
1/4 TO 1	1/32	1.03	± .010	± .015
1 TO 2 1/2	1/16	1.06	± .015	± .020

**G & B SPECIALTIES INC.**  
MAY MANUFACTURER OF ALLY VALVE ROAD PRODUCTS  
BERWICK, PENNSYLVANIA 17505-9801, USA (717) 752-5901

**DESIGN - ENGINEERING - MANUFACTURING**

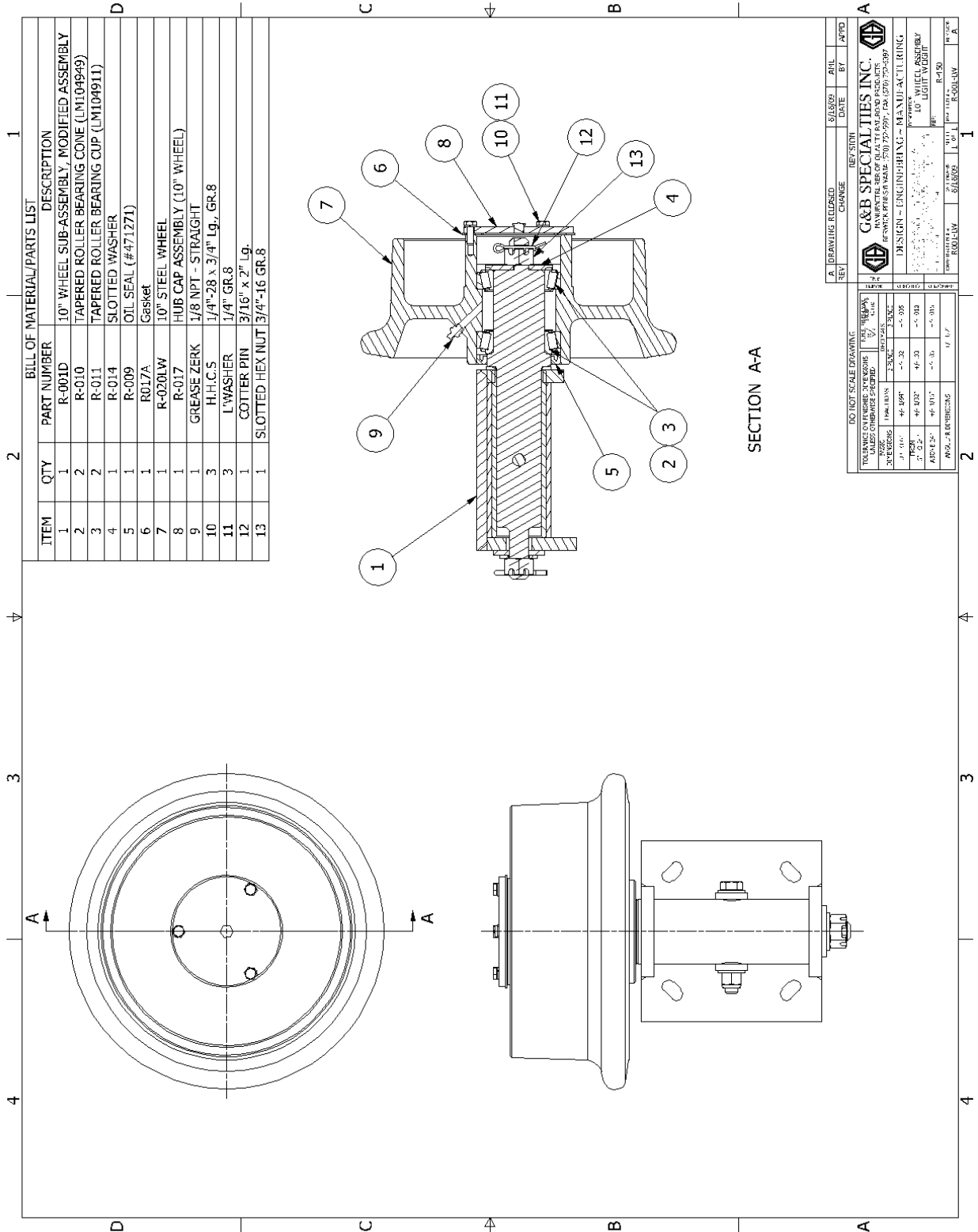
ALL DIMENSIONS ARE UNLESS OTHERWISE SPECIFIED  
ALL DIMENSIONS ARE UNLESS OTHERWISE SPECIFIED  
ALL DIMENSIONS ARE UNLESS OTHERWISE SPECIFIED  
ALL DIMENSIONS ARE UNLESS OTHERWISE SPECIFIED

DATE DRAWN: 2/18/09  
DATE CHECKED: 2/18/09  
DATE APPROVED: 2/18/09

DRAWING NUMBER: R-20087  
SHEET: 1 of 1  
PART NUMBER: R-20087



MIO-R46RXF20070 (Rev D) OCT 1, 2011



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	R-001D	10" WHEEL SUB-ASSEMBLY, MODIFIED ASSEMBLY
2	2	R-010	TAPERED ROLLER BEARING CONE (LM104949)
3	2	R-011	TAPERED ROLLER BEARING CUP (LM104911)
4	1	R-014	SLOTTED WASHER
5	1	R-009	OIL SEAL (#471271)
6	1	R017A	Gasket
7	1	R-020W	10" STEEL WHEEL
8	1	R-017	HUB CAP ASSEMBLY (10" WHEEL)
9	1	GREASE ZERK	1/8 NPT - STRAIGHT
10	3	H.H.C.S	1/4"-28 x 3/4" Lg., GR.8
11	3	L'WASHER	1/4" GR.8
12	1	COTTER PIN	3/16" x 2" Lg.
13	1	SLOTTED HEX NUT	3/4"-16 GR.8

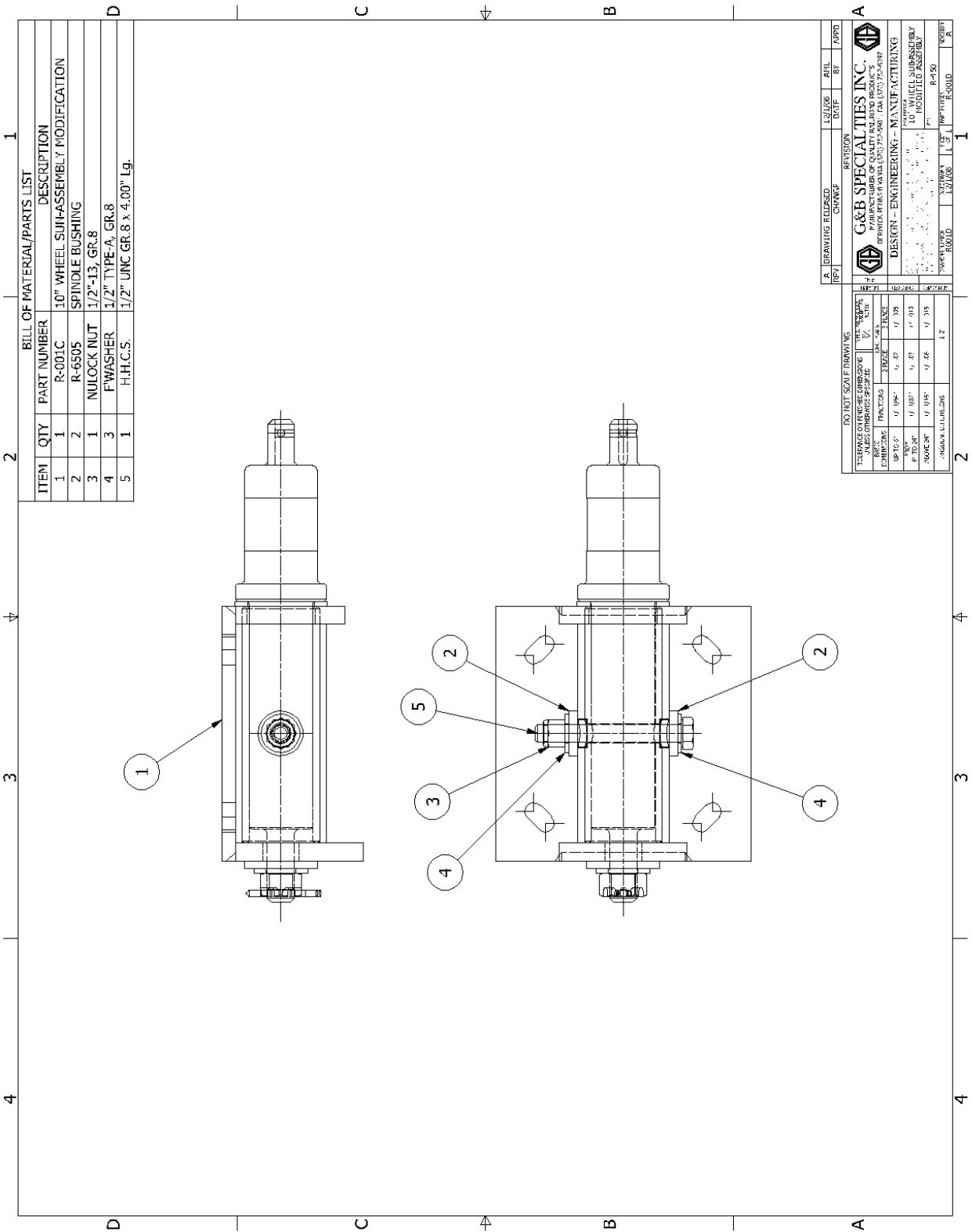
DO NOT SCALE DRAWING		REVISION		DATE		BY		APP'D	
TOLERANCE DIMENSIONS	UNLESS OTHERWISE SPECIFIED	1	1	10/1/11	10/1/11	10/1/11	10/1/11	10/1/11	10/1/11
FINISH	UNLESS OTHERWISE SPECIFIED	2	2	10/1/11	10/1/11	10/1/11	10/1/11	10/1/11	10/1/11
THREADS	UNLESS OTHERWISE SPECIFIED	3	3	10/1/11	10/1/11	10/1/11	10/1/11	10/1/11	10/1/11
ANGLE	UNLESS OTHERWISE SPECIFIED	4	4	10/1/11	10/1/11	10/1/11	10/1/11	10/1/11	10/1/11
WELDING	UNLESS OTHERWISE SPECIFIED	5	5	10/1/11	10/1/11	10/1/11	10/1/11	10/1/11	10/1/11
ASSEMBLY	UNLESS OTHERWISE SPECIFIED	6	6	10/1/11	10/1/11	10/1/11	10/1/11	10/1/11	10/1/11
WEIGHT	UNLESS OTHERWISE SPECIFIED	7	7	10/1/11	10/1/11	10/1/11	10/1/11	10/1/11	10/1/11



**G&B Specialties, Inc.**  
A Global Railway Industries Company



MIO-R46RXF20070 (Rev D) OCT 1, 2011



BILL OF MATERIAL/PARTS LIST	
ITEM	DESCRIPTION
1	10" WHEEL SUB-ASSEMBLY MODIFICATION
2	SPINDLE BUSHING
3	1/2"-13, GR.8
4	1/2" TYPE-A, GR.8
5	1/2" UNC GR.8 x 4.00" Lg.

REV	DATE	BY	APPD

REV	DATE	BY	APPD

REV	DATE	BY	APPD

REV	DATE	BY	APPD

REV	DATE	BY	APPD



# G&B Specialties, Inc.

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MIO-R46RXF20070 (Rev D) OCT 1, 2011

**NOTES:**  
1. ASSEMBLE AS SHOWN

BILL OF MATERIAL/PARTS LIST		
ITEM	QTY	PART NUMBER DESCRIPTION
1	1	R-2411 RUBBER SWEEP
2	1	R-5561 SWEEPER PLATE
3	2	H.H.C.S. 1/4" UNC GR. 8 X 1.25" LG
4	2	Nylock Nut 1/4" UNC GR. 8
5	4	F'WASHER 1/4" TYPE-A GR. 8
6	1	R-20121D-A MOUNTING BRACKET, DRIVERS SIDE

DO NOT SCALE DRAWING		TOLERANCES UNLESS OTHERWISE SPECIFIED	
DIMENSIONS	FRACTIONS	DECIMALS	ANGULAR DIMENSIONS
UP TO 6"	1/32"	.02	±.010
6" TO 24"	1/16"	.03	±.015
ANGULAR DIMENSIONS			±.1°

REVISED ITEM #6	12/10/09	AML	DATE	BY	APPD
REVISION					
A. DRAWING RELEASED					
CHANGE					

**G&B SPECIALTIES INC.**  
1000 W. QUINCY STREET, BERWICK, PA 17601-1501  
 BERWICK PENNSYLVANIA (301) 752-5901 FAX (301) 752-6397

DESIGN ~ ENGINEERING ~ MANUFACTURING

DRIVERS SIDE  
RUBBER SWEEP ASSEMBLY



# G&B Specialties, Inc.

A Global Railway Industries Company



MIO-R46RXF20070 (Rev D) OCT 1, 2011

**NOTES:**  
1. ASSEMBLE AS SHOWN

BILL OF MATERIAL/PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	R-2411	RUBBER SWEEP
2	1	R-5561	SWEEPER PLATE
3	2	H.H.C.S.	1/4" UNC GR. 8 X 1.25" LG
4	4	F'WASHER	1/4" TYPE GR. 8
5	2	Nylock Nut	1/4" UNC GR. 8
6	1	R-2012IP-A	MOUNTING BRACKET, PASSENGERS SIDE

REV	CHANGE	DATE	BY	APPD
B	REVISED ITEM #6	12/10/09	AML	
A	DRAWING RELEASED	2/19/09	JL	

REV	CHANGE	DATE	BY	APPD
1				

REV	CHANGE	DATE	BY	APPD
1				

PRIMARY UNITS: ARE IN INCHES, TO DIMENSIONS ARE IN MILLIMETERS

**DO NOT SCALE DRAWING**

TOLERANCE ON FINISHED DIMENSIONS UNLESS OTHERWISE SPECIFIED	DECIMALS	FRACTIONS	ANGLES	HOLE FINISHES
BASIC	±.005	±.005	±.005	±.005
UP TO .4"	±.004	±.004	±.004	±.004
FROM .4" TO .2"	±.003	±.003	±.003	±.003
ABOVE .2"	±.002	±.002	±.002	±.002

G&B SPECIALTIES INC.  
1000 W. MAIN ST. SUITE 100, BERWICK, PA 17604  
BERWICK, PENNSYLVANIA (570) 752-5901 FAX (570) 752-6397

DESIGN ~ ENGINEERING ~ MANUFACTURING

PASSENGERS SIDE  
RAIL SWEEP ASSEMBLY

FORM NO. R-2012IP 1 of 1 INC. MFG. NO. R-2012IP