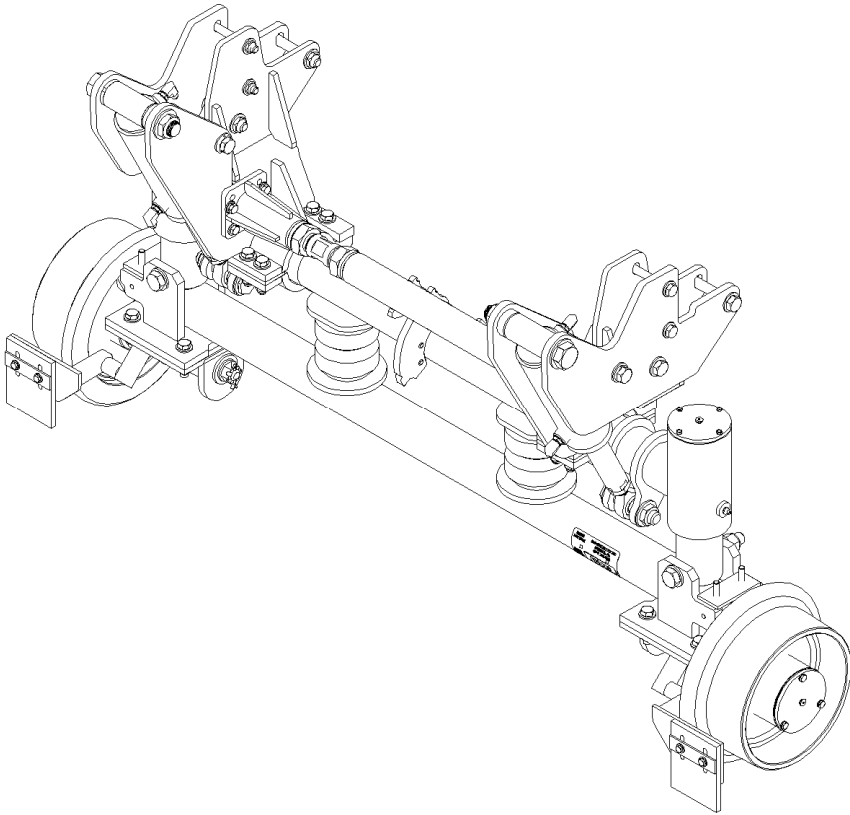




MIO-R46RXD21150 (Rev A)

INSTALLATION, OPERATIONS, SERVICE AND PARTS

**ROTARY FRONT R-460 RAILGEAR
2011 DODGE 4500/5500**



FT RAILGEAR SERIAL # _____
RR RAILGEAR SERIAL# _____
IN-SERVICE DATE _____

G&B Specialties Inc. 535 West 3rd 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

Table 1.2: Front Railgear Kit (R-21150) Installation Parts (Cable Lock)

Part Number	Description	Qty
R-21150A	R-460 Rotary Front Upper Assembly	1
R-001	10" Steel Wheel Assembly	2
R-20120D	Rail Sweep, Drivers Side	1
R-20120P	Rail Sweep, Passengers Side	1
K-R45RXFCAM002A	Lock Cam Kit, Standard	1
R-990KIT-204C	Wheel Mounting Hardware	2

RAILGEAR INSTALLATION

1. Remove the front bumper and front tow hooks if so equipped.
2. Retain the front bumper for re-installation. The front bumper will need to be modified as required.
3. 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.
4. Loosen, but do not remove the 3/8" bolts securing the front support beam assembly to the railgear mounting brackets. 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.
5. Loosen, but do not remove, the (8) 1/2" bolts securing the railgear bearing caps to the upper cross frame assembly.
6. Remove the 1/2" and 5/8" bolts securing the outer support plates to the railgear mounting brackets. Do not remove the 1" bolt securing the cylinder.. **Use caution as the outer support plates will swing downward and free once the 1/2" and 5/8" hardware is removed.**
7. 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.
8. The slots/holes in the railgear mounting brackets should line up with the holes in the frame.



9. Swing the outer support plates up into place and align the slots with the holes in the frame.
10. Secure the mounting brackets to the vehicle frame with the included 1/2" and 5/8" hardware. Torque to the 1/2" bolts 100 ft-lbs dry and the 5/8" bolts 150 ft-lbs dry
11. 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.
12. 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.
13. Tighten 3/8" support beam fasteners to 40 ft-lbs dry.
14. Weld the railgear mounting brackets and outer support plates to the vehicle frame as shown.

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

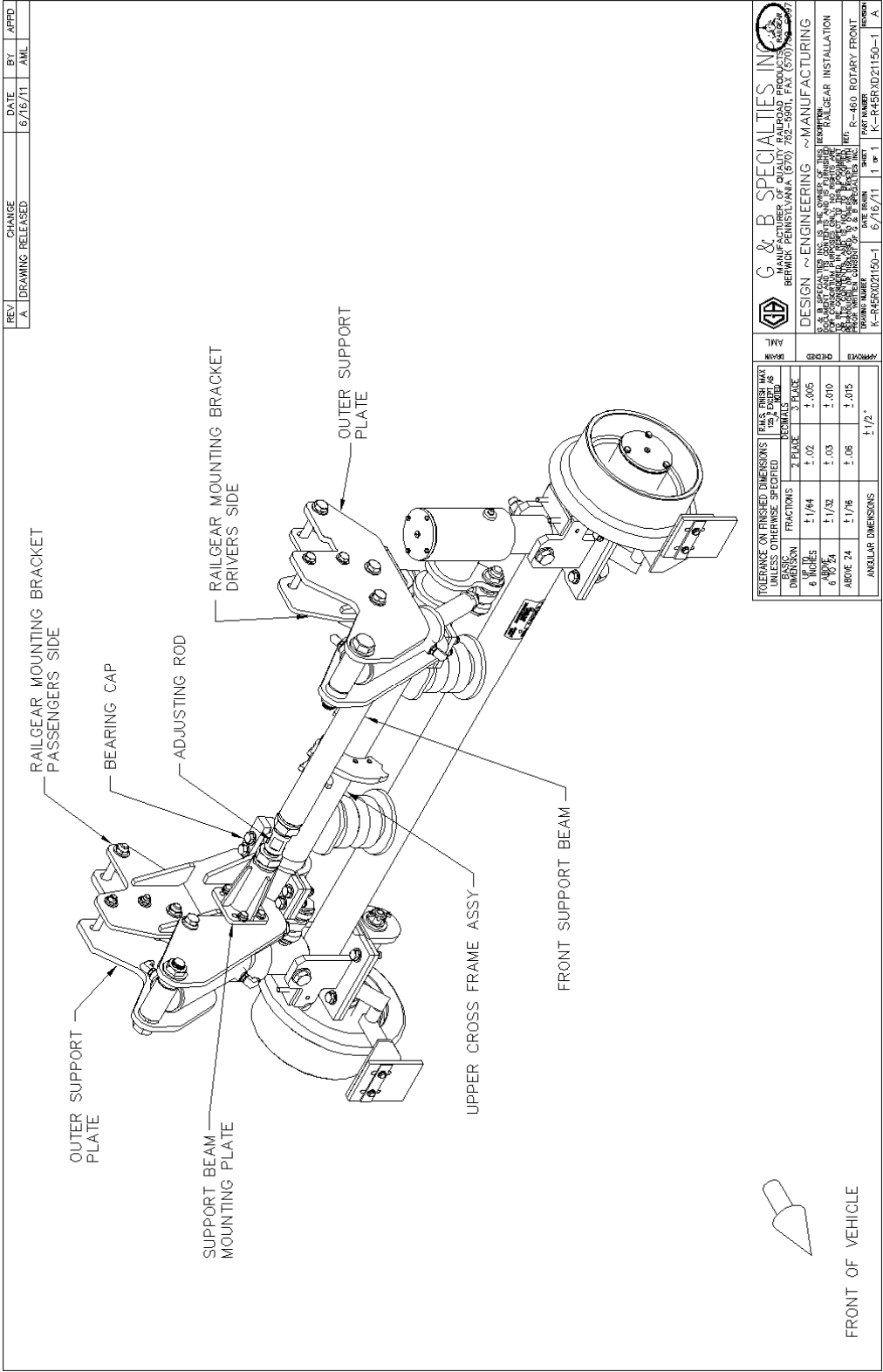
1. Follow the Railgear Lock System Installation and adjustment Procedure detailed in the Installation section of this manual.
2. Follow the Railgear Alignment procedure detailed in the Service section of this manual.
3. Follow the Vehicle Axle Lockup Kit installation procedure detailed in the Axle Lockup 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.



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MIO-R46RXD21150 (Rev A)



REV	CHANGE	DATE	BY	APPD
A	DRAWING RELEASED	6/16/11	AML	

G & B SPECIALTIES INC. MANUFACTURER OF QUALITY RAILROAD PRODUCTS BERWICK, PENNSYLVANIA (570) 752-5901, FAX (570) 752-6397	
DESIGN ~ ENGINEERING ~ MANUFACTURING	
G&B IS NOT TO BE HELD RESPONSIBLE FOR THE DESIGN OR INSTALLATION OF RAILGEAR UNLESS IT IS SPECIFICALLY IDENTIFIED AS SUCH IN THE DRAWING.	
DRAWING NUMBER: MIO-R46RXD21150-1 DATE DRAWN: 6/16/11 SHEET: 1 of 1 PART NUMBER: R-460 ROTARY FRONT RAILGEAR INSTALLATION	
APPROVED: [Signature] DATE: 6/16/11 SHEET: 1 of 1 PART NUMBER: R-460 ROTARY FRONT RAILGEAR INSTALLATION	

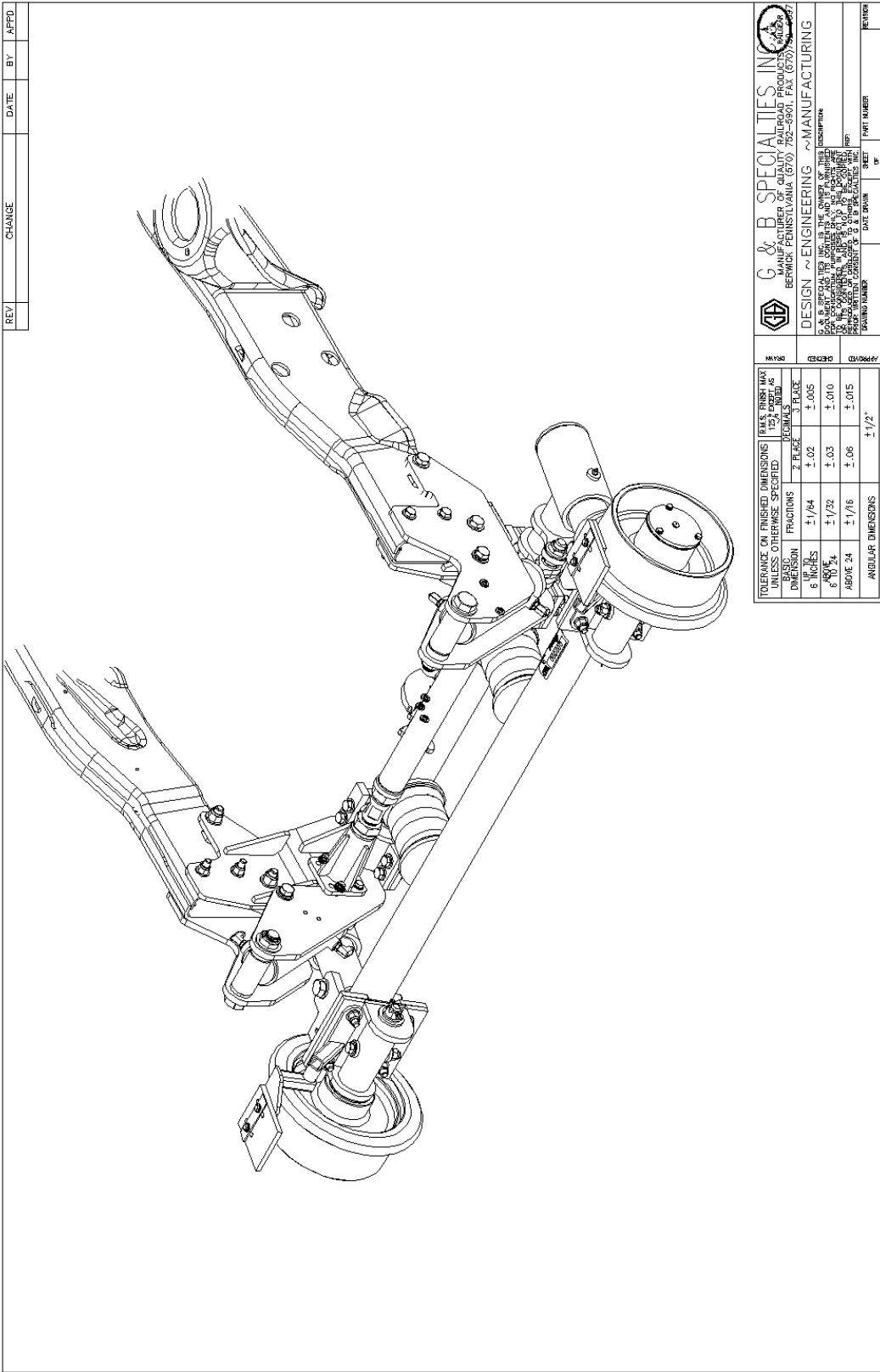
TOLERANCE ON DIMENSIONS UNLESS OTHERWISE SPECIFIED	FRACTIONS	DECIMALS	ANGLES
BASIC DIMENSIONS	± 1/64	± 0.02	± 0.005
6 FIGURES	± 1/32	± 0.03	± 0.010
ANGULAR DIMENSIONS	± 1/8	± 0.06	± 0.015



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MIO-R46RXD21150 (Rev A)

<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">REV</td> <td style="width: 20%;">CHANGE</td> <td style="width: 20%;">DATE</td> <td style="width: 20%;">BY</td> <td style="width: 20%;">APPD</td> </tr> <tr> <td>A</td> <td>DRAWING RELEASED</td> <td>12/14/09</td> <td>AML</td> <td></td> </tr> </table>	REV	CHANGE	DATE	BY	APPD	A	DRAWING RELEASED	12/14/09	AML		<p align="center">LEVEL AT THESE POINTS</p>	<p align="center">MAY NOT BE EVEN WITH TOP OF FRAME</p>
REV	CHANGE	DATE	BY	APPD								
A	DRAWING RELEASED	12/14/09	AML									
<p align="center">CORRECT</p>	<p align="center">UNEVEN</p>	<p align="center">OUTER SUPPORT PLATE</p>										
<p>RAILGEAR MOUNTING BRACKET</p> <p>LEVEL</p> <p>OUTER SUPPORT PLATE</p>	<p>OUTER SUPPORT PLATE</p>	<p>OUTER SUPPORT PLATE</p>										

TOLERANCE ON FINISHED DIMENSIONS UNLESS OTHERWISE SPECIFIED	FRACTIONS	2 PLACE	DECIMALS	3 PLACE	R&S, FINISH MAX 1752 DOWD
6 INCHES	± 1/64	± .02		± .005	
ABOVE 6 TO 24	± 1/32	± .03		± .010	
ABOVE 24	± 1/16	± .06		± .015	
ANGULAR DIMENSIONS					± 1/2°

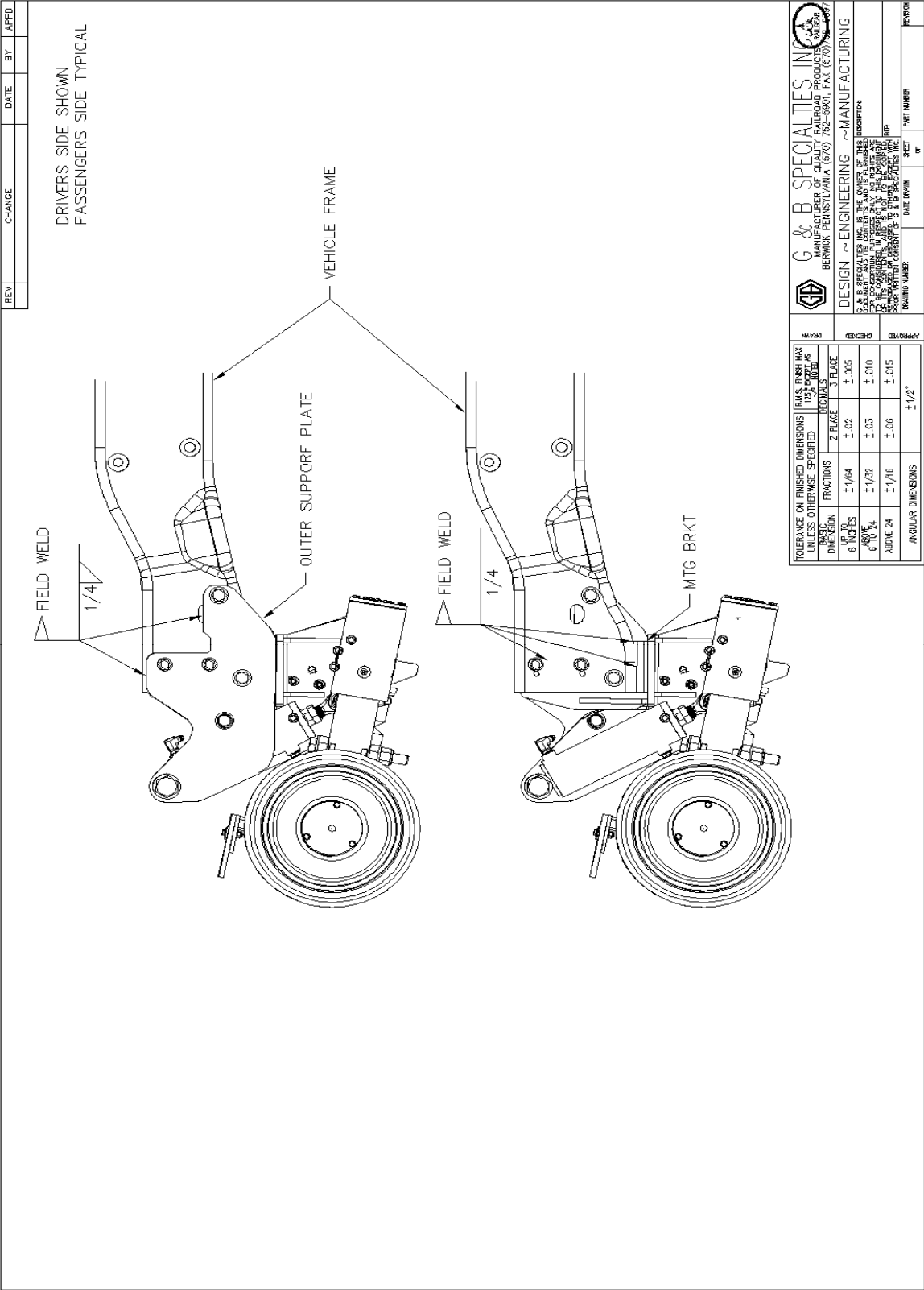
*DRIVERS SIDE SHOWN
PASSENGERS SIDE TYPICAL*



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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.

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.

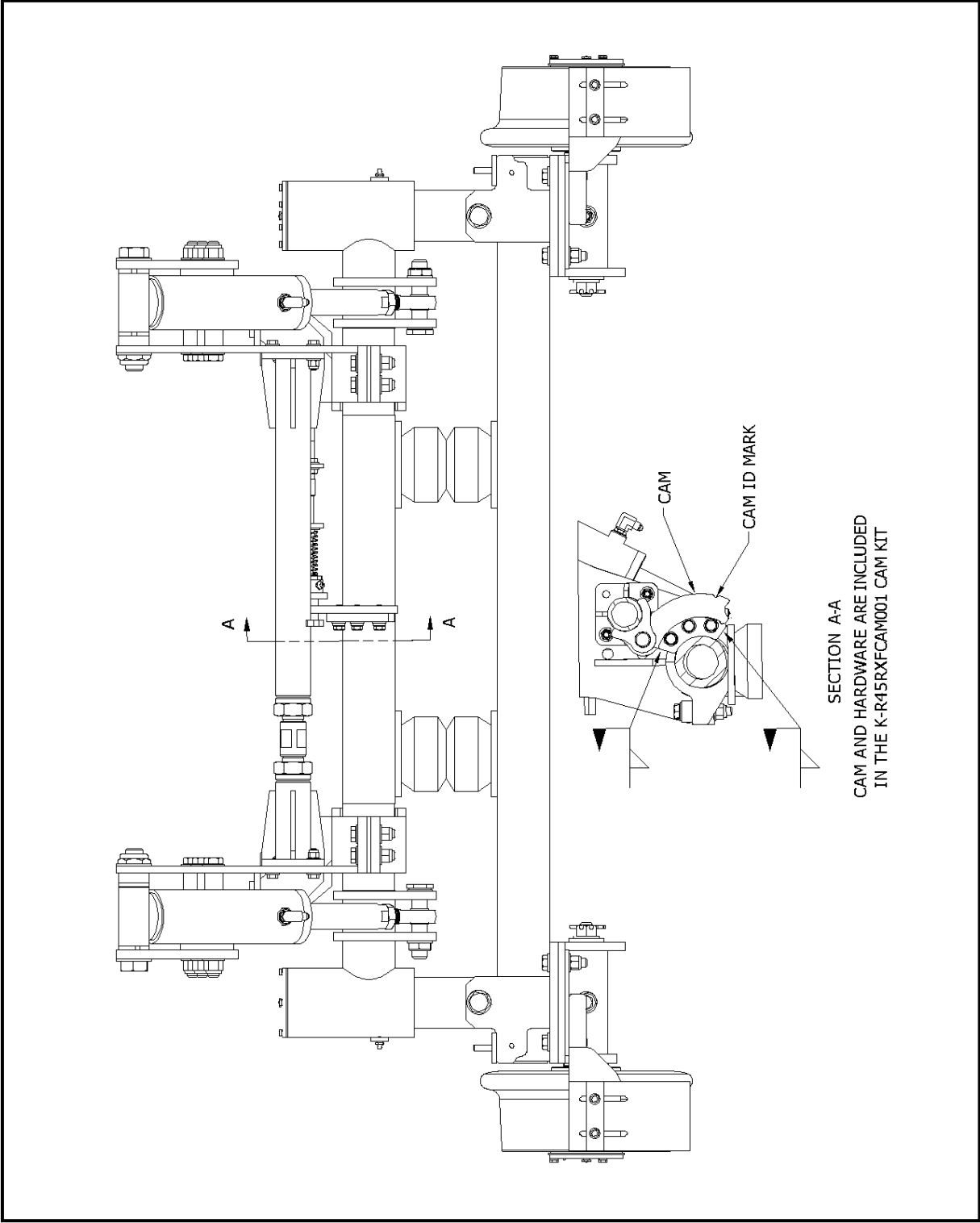


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MIO-R46RXD21150 (Rev A)

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.



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. Visually check that the vehicle front axle lock is fully engaged.
3. Disengage the railgear mechanical locking pin by pulling on the locking cable handle. Do not force the locking cable. If the lock pin cannot be disengaged, raise or lower the railgear slightly.
4. Hold the locking cable handle in the disengaged position.
5. Lower the railgear and release the locking cable handle once the railgear has rotated past the road locked position.
6. 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.
7. Continue lowering the railgear until the hydraulic cylinders are fully extended and the railgear lock pin is fully engaged. 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.
8. Visually check 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 pin 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

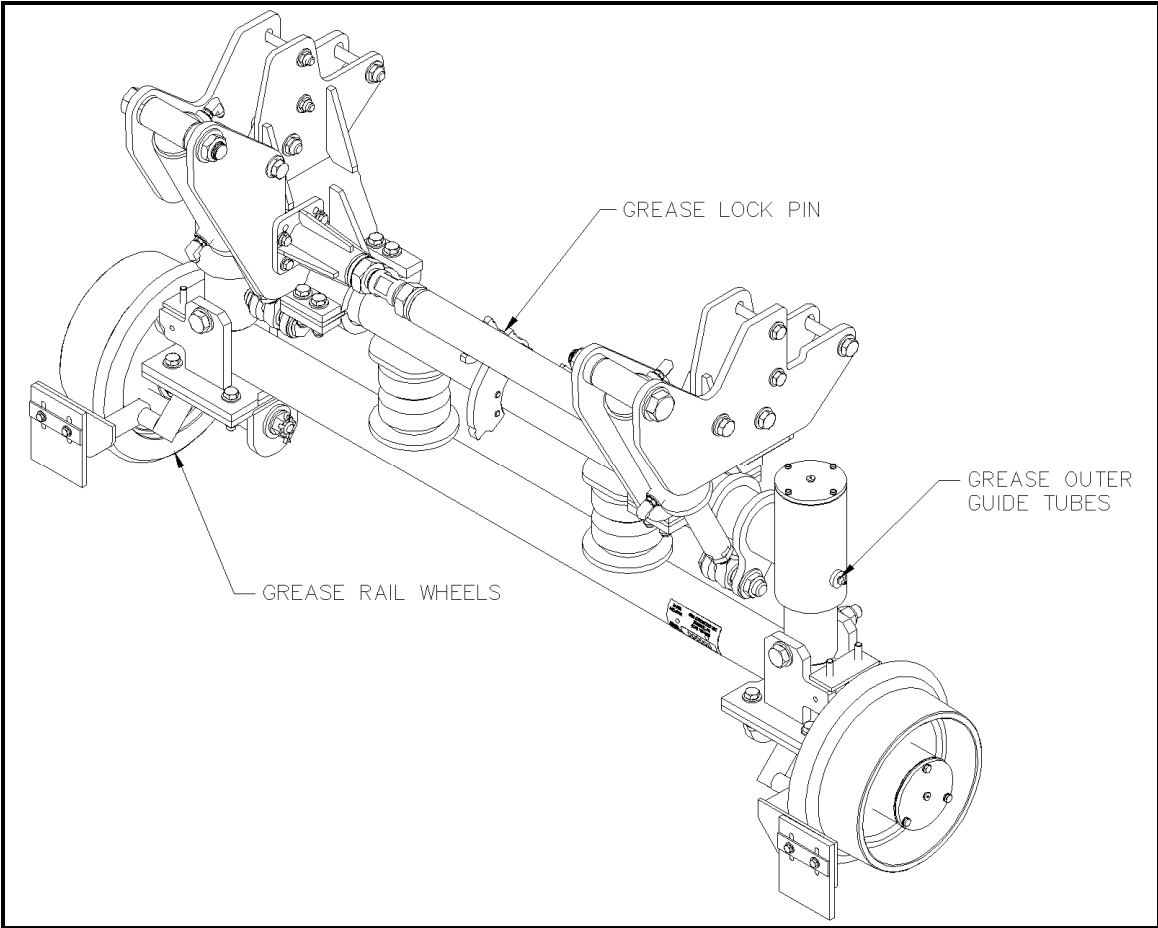
DESCRIPTION		Daily	1 st 8 hours of Operation	Weekly	Monthly	Every 3 Months	Every 6 Months
1	Visually inspect the railgear prior to use for damaged or worn parts	✓					
2	Check for loose wheels and fasteners	✓					
3	Ensure the rail gear locking mechanism is functioning properly in both the road and rail 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
3/4" UNC Gr. 8 Fasteners	175
5/8" UNC Gr. 8 Fasteners	150
1/2" UNC Gr. 8 Fasteners	100
3/8" UNC Gr. 8 Fasteners	40
1/4" 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.

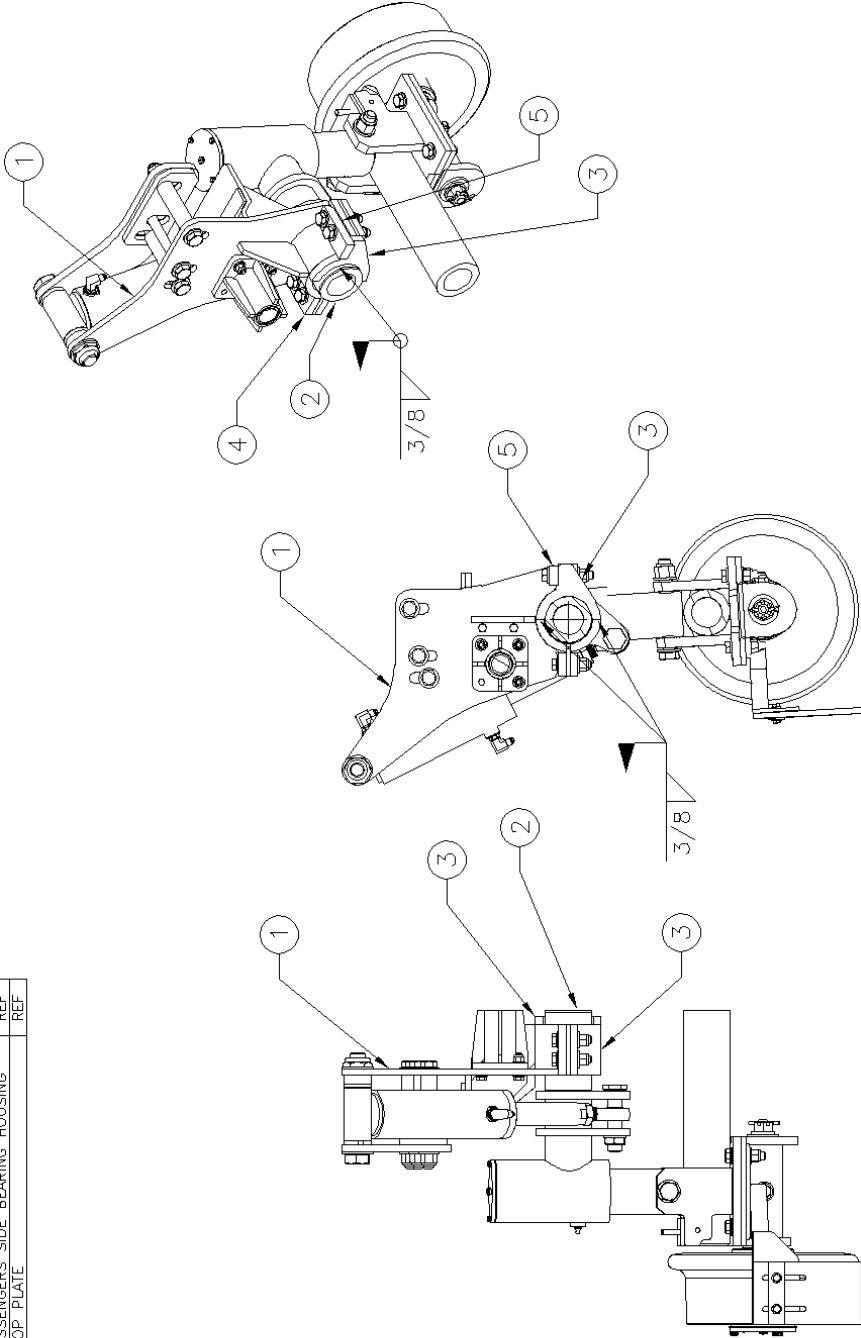
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MIO-R46RXD21150 (Rev A)

REV	CHANGE	DATE	BY	APPD
A	DRAWING RELEASED	12/17/09	AML	

ITEM	PART No.	DESCRIPTION OF ITEM(PART)	QTY.
1	-	PASSENGERS SIDE MOUNTING BRACKET	REF
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		PLAS. FINISH MAT.	
UNLESS OTHERWISE SPECIFIED		12% EXCEPT AS	
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	DATE DRAWN	SHEET
		12/17/09	1 of 1

DRAWN	DATE	REVISION
		MIO-R46RXD20070-10

APPROVED	DATE	REVISION
		MIO-R46RXD20070-10 A

G & B SPECIALTIES INC.
 MANUFACTURER OF QUALITY RAILROAD FRODO CUS
 BERWICK PENNSYLVANIA (501) 525-8811 FAX (501) 525-6597

DESIGN ~ ENGINEERING ~ MANUFACTURING

G & B SPECIALTIES INC. IS THE OWNER OF THE DESIGN:
 FOR PASSENGERS SIDE BEARING HOUSING ROTATION STOP INSTALLATION
 ON PASSENGER TRAINS. THIS DESIGN IS THE PROPERTY OF G & B SPECIALTIES INC.
 THE CONTENTS HEREIN ARE NOT 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.
 DRAWING NUMBER: MIO-R46RXD20070-10 SHEET: 1 OF 1



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VEHICLE MODEL: _____

VEHICLE UNIT #: _____

RAILGEAR S/N: _____

SET UP PARALLEL STRING LINES
A & B MUST BE EQUAL WITHIN 1/32"
C & D MUST BE EQUAL WITHIN 1/32"

ADJUST STRING LINES AROUND VEHICLE
E, F, G, & H MUST BE EQUAL WITHIN 1/16"
I, J, K, & L MUST BE EQUAL WITHIN 1/16"
(E, F, G, & H MAY NOT EQUAL I, J, K, & L)

ADJUST RAIL WHEEL ALIGNMENT
M & O MUST BE EQUAL WITHIN 1/16"
N & P MUST BE EQUAL WITHIN 1/16"
Q & S MUST BE EQUAL WITHIN 1/16"
R & T MUST BE EQUAL WITHIN 1/16"

ADJUST RAILGEAR LATERAL ALIGNMENT
M & O MUST EQUAL N & P WITHIN 1/8"
Q & S MUST EQUAL R & T WITHIN 1/8"

ENSURE THAT U & V ARE BETWEEN
53 - 7/16" AND 53 - 9/16"

OVER-CENTER ANGLE (DEG):

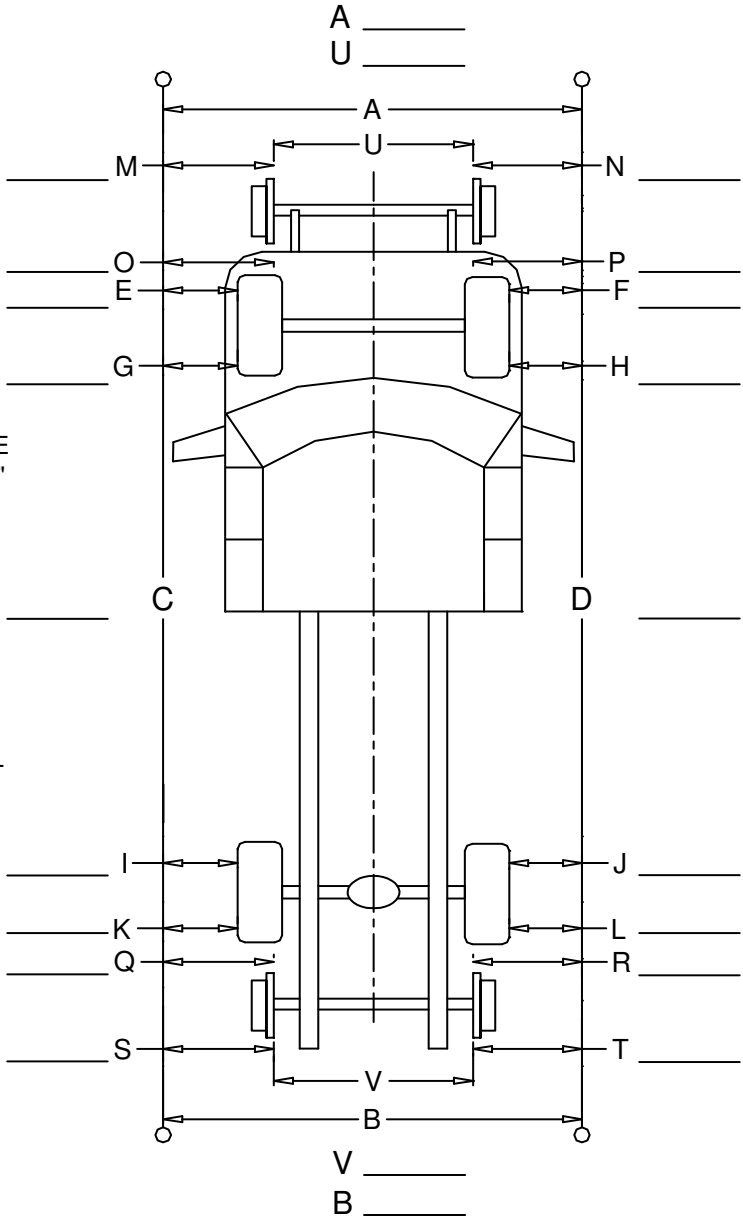
FRONT _____
REAR _____

RAIL WHEEL LOAD (LBS):

LEFT FRONT _____
RIGHT FRONT _____
LEFT REAR _____
RIGHT REAR _____

RAIL WHEEL FLANGE TO GROUND CLEARANCE:

LEFT FRONT _____
RIGHT FRONT _____
LEFT REAR _____
RIGHT REAR _____





MIO-R46RXD21150 (Rev A)

4.0

PARTS

BILL OF MATERIAL/PARTS LIST		
ITEM	QTY	DESCRIPTION
1	1	R-21150A UPPER UNIT ASSY
2	1	K-R46RXFCAM002A CAM KIT
3	2	R-201-NEW 10 STEEL WHEEL
4	1	R-21201D RAIL SWEEP
5	1	R-21201P RAIL SWEEP
6	16	FRASHER 1/2" TYP-E GR.8
7	9	NUTLOCK NUT 1/2" UNC GR.8
8	4	HH.C.S.
9	1	R-LABEL001 PULL-TO-UNLOCK PLACARD

**ESTIMATED INSTALL WEIGHT: 480 lbs
WITH BRAKES: 525 lbs**

CAM AND HARDWARE ARE INCLUDED
IN THE K-R15RXFCAM002A CAM KIT

REV	CHANGE	REVISION	DATE	BY	APPD
D	REVISED ITEMS #1 & #2		10/14/11	AML	
C	REDESIGN		9/23/11	AML	
B	REVISED ITEM #1, #3		9/19/11	AML	
A	DRAWING RELEASED		4/11/11	AML	

G & B SPECIALTIES INC.	
BERWICK, PENNSYLVANIA 17702-5502, PA, USA (717) 752-6397	
DESIGN ~ ENGINEERING ~ MANUFACTURING	
<small>ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED ARE IN INCHES AND DECIMALS THEREOF. DIMENSIONS IN PARENTHESES ARE IN MILLIMETERS. DIMENSIONS IN PARENTHESES TAKE PRECEDENCE OVER DIMENSIONS IN INCHES. DIMENSIONS IN PARENTHESES ARE FOR INFORMATION ONLY AND ARE NOT TO BE USED FOR MANUFACTURING PURPOSES.</small>	
FORM NUMBER	FORM 4500/US500 CHASSIS CAB
DATE DRAWN	4/14/2011
DATE REVISION	10/14/2011
REVISED BY	AML
APPROVED BY	AML

ALL WELDS TO CONFORM TO AWS D1.1



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MIO-R46RXD21150 (Rev A)

ECN-11-142, REV. B, 5/16/11 BZK

NOTES:

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

COAT THREADS WITH ANTI-SEIZE

NOTE #2

ESTIMATED WEIGHT: 330lbs

G & B SPECIALTIES INC.
 MANUFACTURER OF QUALITY RAILROAD PRODUCTS
 DESIGN & ENGINEERING ~ MANUFACTURING
 R-460 ROTARY FRONT UPPER ASSEMBLY, CABLE

TOLERANCE ON FINISHED DIMENSIONS UNLESS OTHERWISE SPECIFIED (DIMENSIONS IN INCH) (DIMENSIONS IN MILLIMETERS)	
DIMENSIONS	TOLERANCE
BASIC DIMENSIONS	±.005
ANGLES	±.005
CHANGES	±.005
DRILLING	±.005
FINISHES	±.005
FUNCTIONS	±.005
REWORKS	±.005
THREADS	±.005

REV	CHANGE	DATE	BY	APPD	REVISION
D	REVISED ITEM #1, 5, 6	10/27/11	AML		
E	REVISED ITEM #1, 5, 6	5/22/11	AML		
G	CHANGED ITEM 17A	5/22/11	BZK		
A	DRAWING RELEASED	4/4/11	AML		

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	R-22171	FRONT SUPPORT BEAM ASSY
2	1	R-22066	OUTER SUPPORT PLATE
3	1	R-22066	OUTER SUPPORT PLATE
4	1	R-20074	UPPER CROSS FRAME
5	1	R-22060D	MOUNTING BRACKET, DRIVERS SIDE
6	1	R-22089P	MOUNTING BRACKET, PASSENGERS SIDE
7	2	R-20083A	INNER GUIDE
8	2	R-20084	CAP, OUTER GUIDE TUBE
9	2	R-20085	GASKET, OUTER GUIDE TUBE CAP
10	2	R-22065	HYDRAULIC CYLINDER
11	2	R-20101	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	2	R-20117	SPACER, 1/4"
17A	2	990603-100-002	WASHER, 1.00" TYPE B NARROW ZY
18	4	R-21210	SPACER
19	2	R-5708	SPLIT BEARING
20	4	R-5709	SHIM
21	2	R-5710	BEARING CAP
22	2	Grease Zerk	1/8 IPT STRAIGHT RELIEF
23	3	Grease Zerk	1/8 IPT STRAIGHT
24	8	L WASHER	#10, GRS
25	2	R-20167	LOWER PIVOT BOLT
27	2	R-5683	TIMBERN 5407'S SPRING
28	1	R-6860	2" PUSH-PULL CABLE
29	2	R-6523	BELLOWS
30	2	R-604	CLAMP, BELLOWS
55	2	R-20190	SPACER, SPRING, 1/4"
56	2	R-20190A	SPACER, SPRING, 1/4"



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MIO-R46RXD21150 (Rev A)

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	FWASHER	1" GR.8 TYPE-A
33	2	JAM 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	JAM NUT	7/8" UNC NYLON INSERT
38	2	H.H.C.S.	3/4" UNC GR. 8 x 6.50"
39	12	FWASHER	5/8" GR.8 TYPE-A
40	4	NYLOCK NUT	5/8" UNC GR.8
41	4	H.H.C.S.	5/8" UNC GR.8 x 4.50"
42	2	FWASHER	1/2" GR.8 TYPE-A
43	1	NYLOCK NUT	1/2" UNC GR.8
44	4	H.H.C.S.	1/2" UNC GR.8 x 2.50"
45	4	H.H.C.S.	1/2" UNC GR.8 x 3.00"
46	8	LWASHER	#10 GR.5
47	8	FWASHER	3/8" GR.8 TYPE-A
48	4	NYLOCK NUT	3/8" UNC GR.8
49	4	H.H.C.S.	3/8" UNC GR.8 x 1.25"
50	4	H.H.C.S.	5/8" UNC GR.8 x 1.75"
51	4	LWASHER	5/8" REGULAR GR.8
52	4	H.H.C.S.	1/2" UNC GR.8 x 1.50"
53	4	H.H.C.S.	3/8" UNC GR.8 x 1.75"
54	4	LWASHER	3/8" GR.8

TORQUE BEARING CAPS
TO 45 FT-LBS

DO NOT SCALE DRAWING

DIMENSIONS IN INCH (DECIMALS) UNITS (SEE MILLIMETER)

TOLERANCES UNLESS OTHERWISE SPECIFIED		FINISHES UNLESS OTHERWISE SPECIFIED	
DIAMETERS	HOLE DIA.	PLACES	PLACES
0.0005	0.0010	1	1
0.0010	0.0015	2	2
0.0015	0.0020	3	3
0.0020	0.0025	4	4
0.0025	0.0030	5	5
0.0030	0.0035	6	6
0.0035	0.0040	7	7
0.0040	0.0045	8	8
0.0045	0.0050	9	9
0.0050	0.0055	10	10
0.0055	0.0060	11	11
0.0060	0.0065	12	12
0.0065	0.0070	13	13
0.0070	0.0075	14	14
0.0075	0.0080	15	15
0.0080	0.0085	16	16
0.0085	0.0090	17	17
0.0090	0.0095	18	18
0.0095	0.0100	19	19
0.0100	0.0105	20	20
0.0105	0.0110	21	21
0.0110	0.0115	22	22
0.0115	0.0120	23	23
0.0120	0.0125	24	24
0.0125	0.0130	25	25
0.0130	0.0135	26	26
0.0135	0.0140	27	27
0.0140	0.0145	28	28
0.0145	0.0150	29	29
0.0150	0.0155	30	30
0.0155	0.0160	31	31
0.0160	0.0165	32	32
0.0165	0.0170	33	33
0.0170	0.0175	34	34
0.0175	0.0180	35	35
0.0180	0.0185	36	36
0.0185	0.0190	37	37
0.0190	0.0195	38	38
0.0195	0.0200	39	39
0.0200	0.0205	40	40
0.0205	0.0210	41	41
0.0210	0.0215	42	42
0.0215	0.0220	43	43
0.0220	0.0225	44	44
0.0225	0.0230	45	45
0.0230	0.0235	46	46
0.0235	0.0240	47	47
0.0240	0.0245	48	48
0.0245	0.0250	49	49
0.0250	0.0255	50	50
0.0255	0.0260	51	51
0.0260	0.0265	52	52
0.0265	0.0270	53	53
0.0270	0.0275	54	54

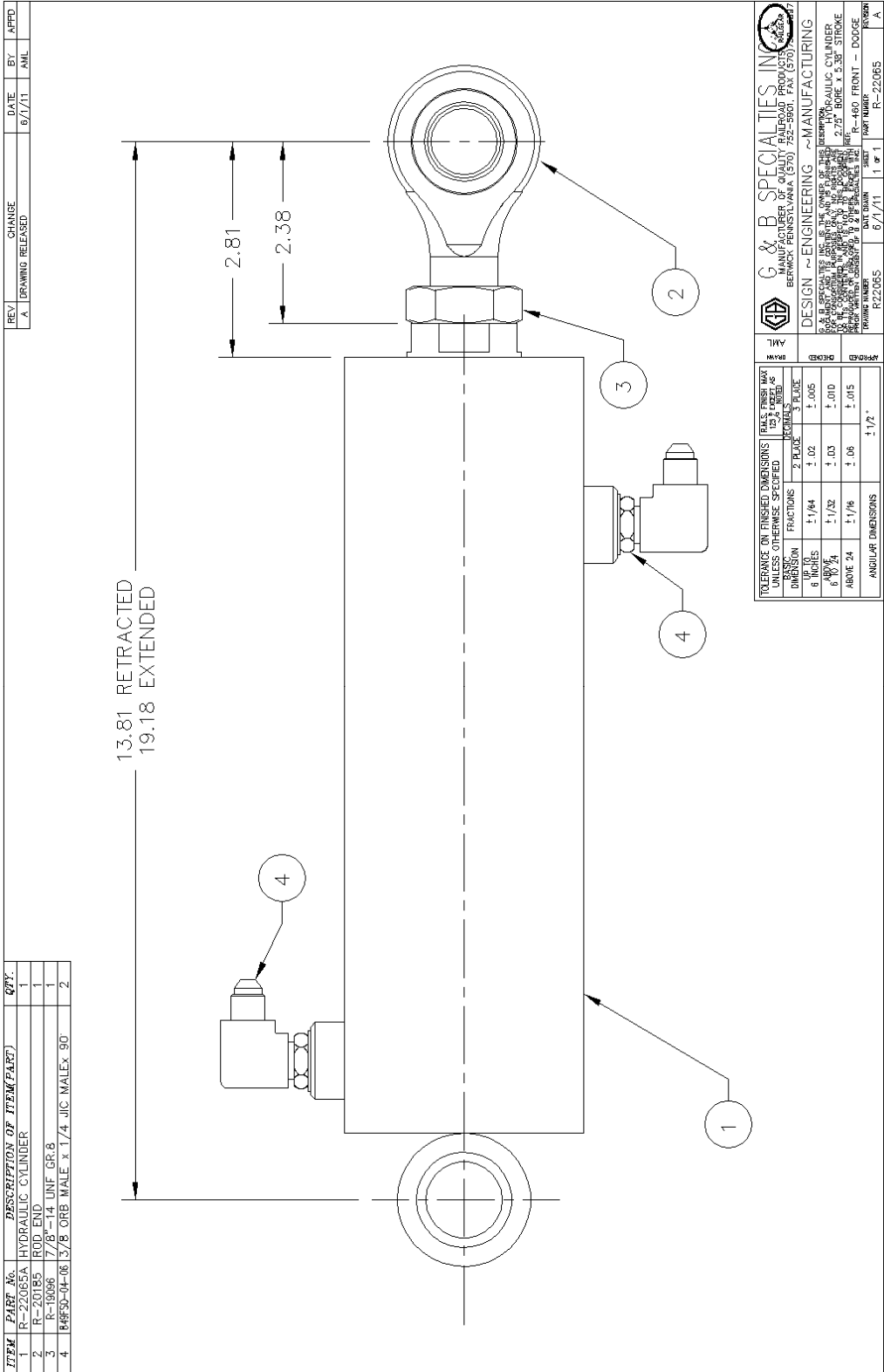


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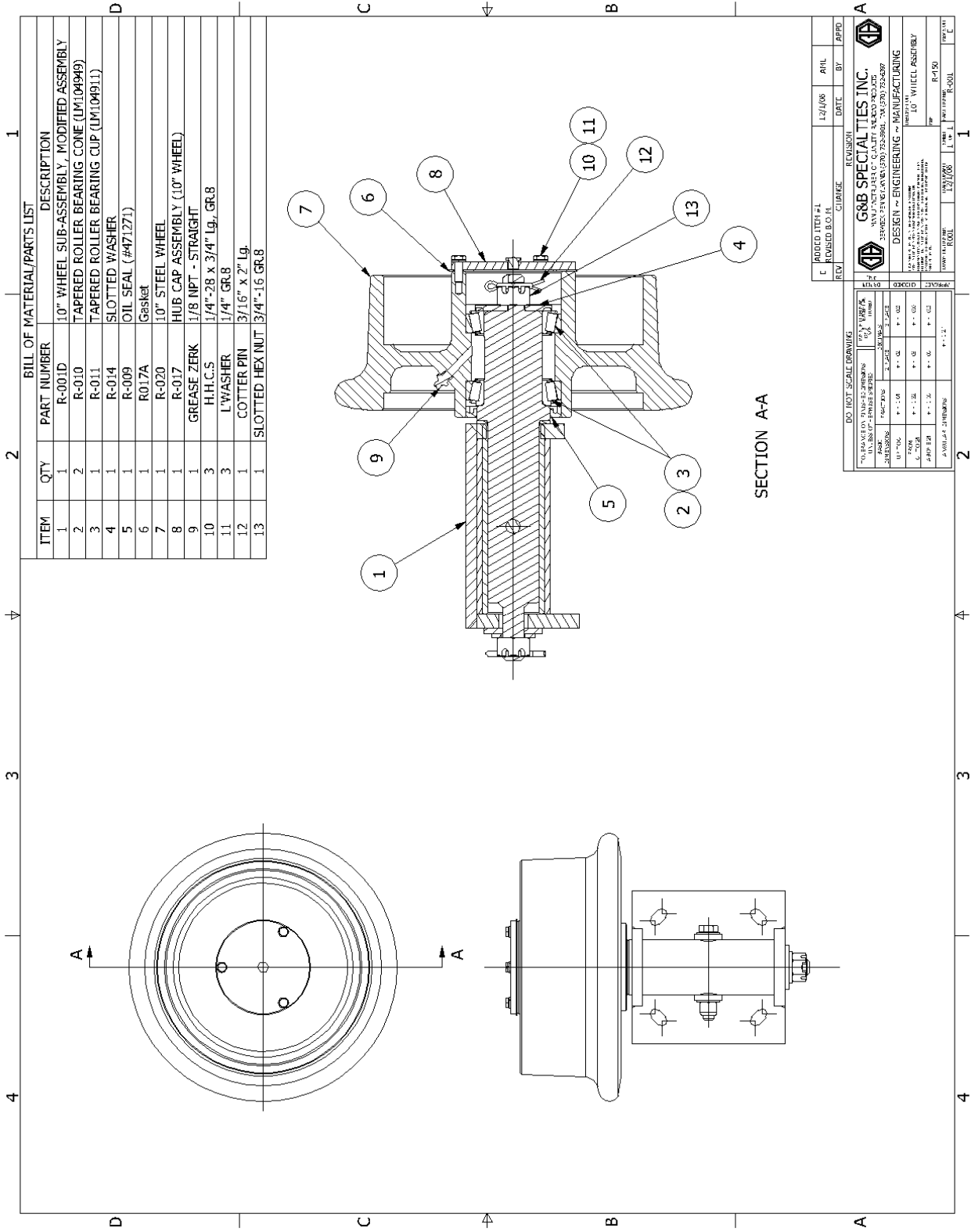
MIO-R46RXD21150 (Rev A)



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



MIO-R46RXD21150 (Rev A)



BILL OF MATERIAL / PARTS LIST		
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	1	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-020 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

REV	DESCRIPTION	DATE	BY	APPD
C	ADDDO ITEM #1	12/1/06	AHL	
B	REVISED B.O.H.			
A				

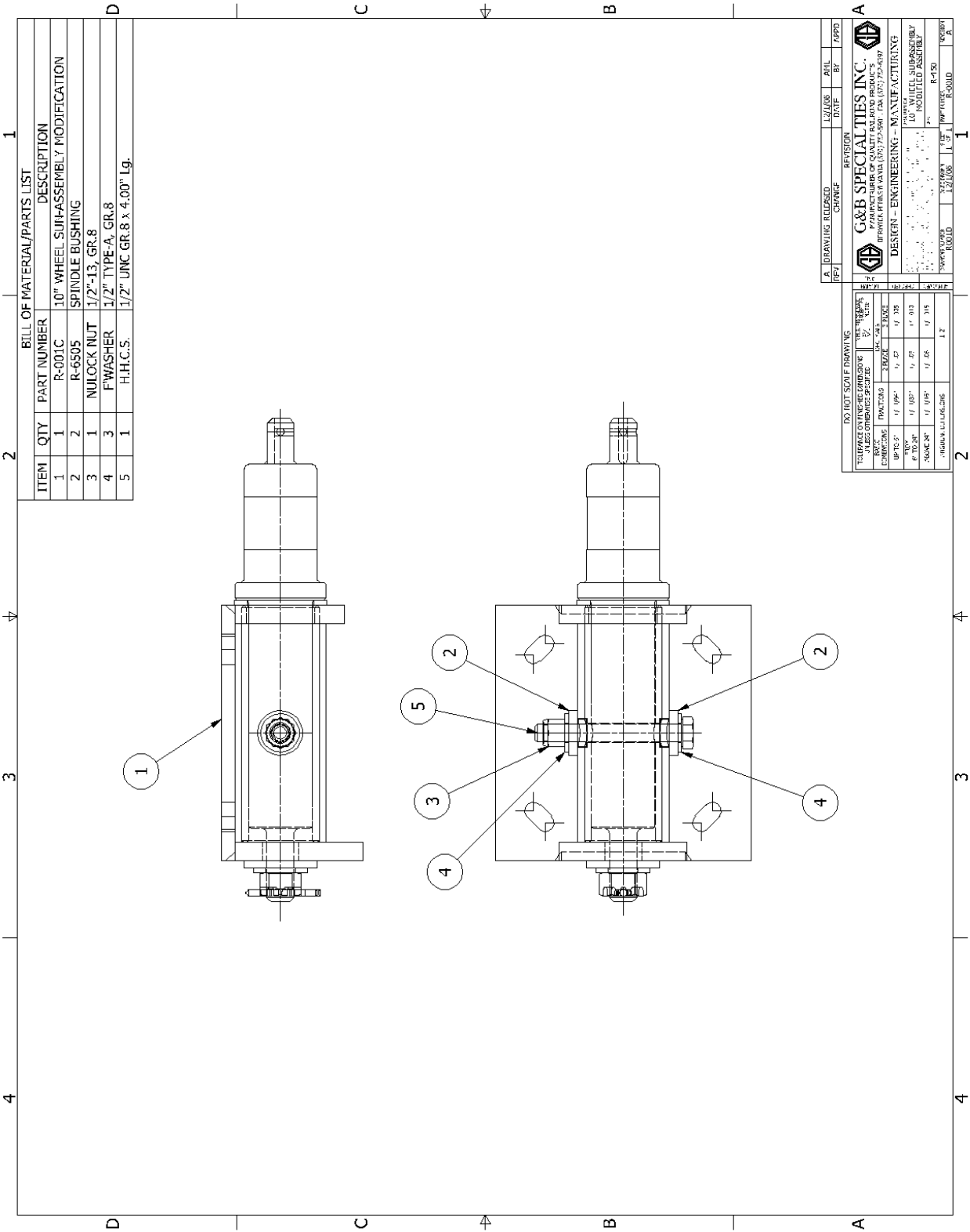
G&B SPECIALTIES INC. 535 WEST 3RD STREET, BERWICK, PA 17004 TEL: (570) 752-5901 FAX: (570) 752-6397	
DESIGN	DESIGN - ENGINEERING - MANUFACTURING
MANUFACTURE	10" WHEEL ASSEMBLY
DATE	12/1/06
REV	R-150
REV	R-001



G&B Specialties, Inc.
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MIO-R46RXD21150 (Rev A)



BILL OF MATERIAL/PARTS LIST		DESCRIPTION
ITEM	QTY	PART NUMBER
1	1	R-001C
2	2	R-6505
3	1	NULOCK NUT
4	3	F'WASHER 1/2" TYPE-A, GR.8
5	1	H.H.C.S. 1/2" UNC GR.8 x 4.00" Lg.

REV.	DATE	BY	APPD.
1			

REV.	DATE	BY	APPD.
1			

REV.	DATE	BY	APPD.
1			

REV.	DATE	BY	APPD.
1			

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



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MIO-R46RXD21150 (Rev A)

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	FWASHER	1/4" TYPE-A GR. 8
6	1	R-20121D-A	MOUNTING BRACKET, DRIVERS SIDE

DO NOT SCALE DRAWING	
TOLERANCE UNLESS OTHERWISE SPECIFIED: UNLESS OTHERWISE SPECIFIED:	DECIMALS 3 PLACE
FRACTIONS 1/16"	1/32"
UP TO 6"	+/- .005
FROM 6" TO 24"	+/- .010
ABOVE 24"	+/- .015
ANGULAR DIMENSIONS	+/- 1/16"

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

REVISION	
G&B SPECIALTIES INC. 535 WEST 3RD STREET BERWICK PENNSYLVANIA 17501 PA (570) 752-6397	DESIGN ~ ENGINEERING ~ MANUFACTURING
FROM: R-201200 1 OF 1	TO: R-201200 1 OF 1



G&B Specialties, Inc.

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MIO-R46RXD21150 (Rev A)

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	AHL	
A	DRAWING RELEASED	2/19/09	JL	

DO NOT SCALE DRAWING	
TOLERANCE ON FINISHED DIMENSIONS UNLESS OTHERWISE SPECIFIED	DIMENSIONS
FRACTIONS	DECIMALS
UP TO 6"	1/1000
6" TO 24"	1/500
ABOVE 24"	1/250
ANGULAR DIMENSIONS	1/16"

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

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