INSTALLATION OF R-460 WIRE ROPE SHUNT KIT ALL MODELS

SAFETY PRECAUTIONS

<u>If any installation problems are encountered, please call G&B Specialties, Inc. for technical assistance before continuing with the installation process.</u>

- 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 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.
- Beware of all pinch points on the railgear and keep all parts of the body clear.
- When routing hydraulic hoses, ensure that the hoses do not contact any sharp edges or hot surfaces.
- When routing electrical wires, ensure that the wires do not contact any sharp edges or hot surfaces.
- All wire connections should be soldered and heat shrink sealed to prevent future corrosion-related problems.
- All wires must be covered with protective cable loom.
- Always disconnect the vehicle's battery when welding on the vehicle or railgear in order to protect the vehicle's electrical system.
- Do not use regular brake fluid in the front hydraulic brake system, as it will damage the hydraulic brake pump and the brake cylinders.

INSTALLATION OF WIRE ROPE SHUNT KIT

Option 1.
Single Axle Shunt Kit
This Style Shunt Kit maybe used on either front or rear axles.

1. Find an ignition activated power supply and install the provided fuse holder, fuse, and pilot lighted switch.

2. Mount provided relay in a suitable location.

3. Connect power wire from switch to terminal #85, or the black wire on the provided connector assembly and solder and heat shrink.

4. Secure the green wire or terminal #86 to a suitable ground.

5. Using a 12 gauge THHN stranded jumper wire, connect the Shunt/Sweep Assembly, using #10 stud welded on shunt/sweep assembly to the rail wheel as per WRP Shunt Connection Wiring Diagram, (R-10420F), provided in this manual. Front wheels only, or rear wheels only.

6. Run white wire or terminal #87 to the right side rail wheel and attach as per the wheel shunt connection drawing provided in this manual.

7. Run the red wire or terminal #30 to the left side rail wheel and attach as per the wheel shunt connection drawing provided in this manual.

8. The yellow wire on the other #87 terminal will not be used on this application. Wire nut or heat shrink the end of the wire to prevent it from contacting vehicle or railgear.

9. This completes the installation of a single axle shunt kit. When the interior switch is turned on it will pull in the relay and make continuity between the two rail wheels.

Option 2.

Dual Axle Shunt Kit

This style shunt kit will be used on both front and rear axle. This style will provide continuity between the front right and left rail wheels and the rear right and left rail wheels only. There will not be any continuity between the front and rear rail gear.

1. Find a ignition activated power supply and install the provided fuse holder, fuse, and pilot lighted switch.

2. Mount provided relay in a suitable location.

3. Connect power wire from switch to terminal #85, or the black wire on the provided connector assembly and solder and heat shrink.

4. Secure the green wire or terminal #86 to a suitable ground.

5. Using a 12 gauge THHN stranded jumper wire, connect the Shunt/Sweep Assembly, using #10 stud welded on shunt/sweep assembly to the rail wheel as per WRP Shunt Connection Wiring Diagram, (R-10420F), provided in this manual. All four wheels.

6. Run the white wire or terminal #87 from the front relay to the front right rail wheel and attach as per the wheel shunt connection drawing provided. Solder and heat shrink all connections.

7. Run the red wire or terminal #30 to the front left side rail wheel and attach as per the wheel shunt connection drawing provided. Solder and heat shrink all connections.

8. The yellow wire or the other #87 terminal will not be used on this application. Wire nut or heat shrink the end of the wire to prevent it from contacting vehicle or railgear.

9. Connect the yellow wire or terminal #87 to the left rear rail wheel and attach as per the wheel shunt connection drawing provided. Solder and heat shrink all connections.

10. Connect the red wire or terminal #30 to the right rear rail wheel and attach as per the wheel shunt connection drawing provided. Solder and heat shrink all connections.

11. The white wire on the other #87 terminal will not be used on this application. Wire nut or heat shrink the end of the wire to prevent it from contacting vehicle or railgear.

12. This completes the installation of the dual axle shunt kit. When the interior switch is turned on it will pull in the relays and provide continuity between the front two rail wheels and the two rear rail wheels. It will not provide continuity between the front and rear rail wheels.

Option 3.

Dual Axle and Cross over Shunt Kit.

This style shunt kit will be used on both front and rear axle. This style will provide continuity between the front right and left rail wheels and the rear right and left rail wheels. It will also provide continuity between the front rail wheels and the rear rail wheels.

1. Find a ignition activated power supply and install the provided fuse holder, fuse, and pilot lighted switch.

2. Mount provided relay in a suitable location.

3. Connect power wire from switch to terminal #85, or the black wire on the provided connector assembly and solder and heat shrink.

4. Secure the green wire or terminal #86 to a suitable ground.

5. Using a 12 gauge THHN stranded jumper wire, connect the Shunt/Sweep Assembly, using #10 stud welded to shunt/sweep assembly to the rail wheel as per WRP Shunt Connection Wiring Diagram, (R-10420F), provided in this manual. All four wheels.

6. Run the white wire or terminal #87 from the front relay to the front right rail wheel and attach as per the wheel shunt connection drawing provided. Solder and heat shrink all connections.

7. Run the red wire or terminal #30 to the front left side rail wheel and attach as per the wheel shunt connection drawing provided. Solder and heat shrink all connections.

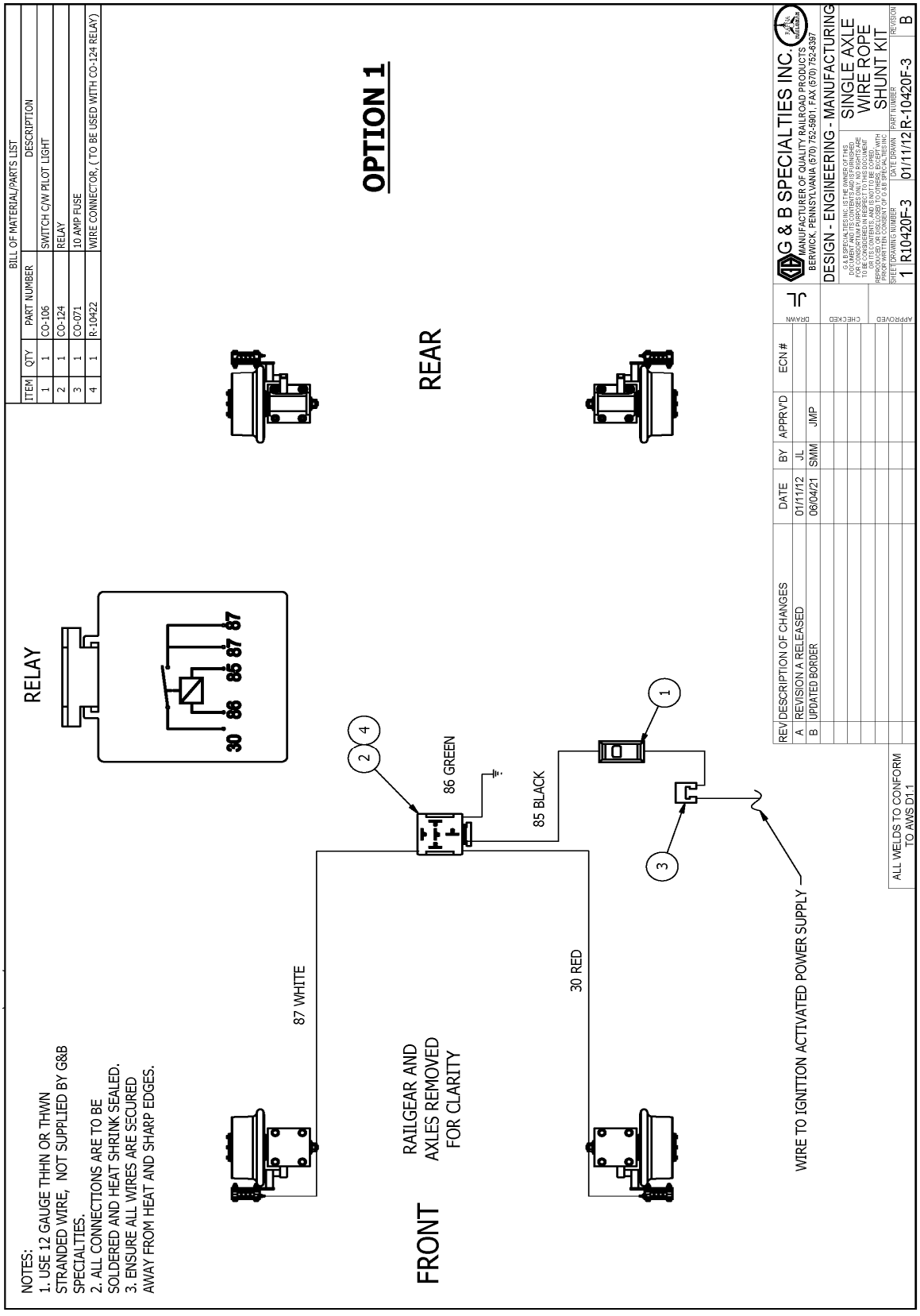
8. The yellow wire or the other #87 terminal will not be used on this application. Wire nut or heat shrink the end of the wire to prevent it from contacting vehicle or railgear.

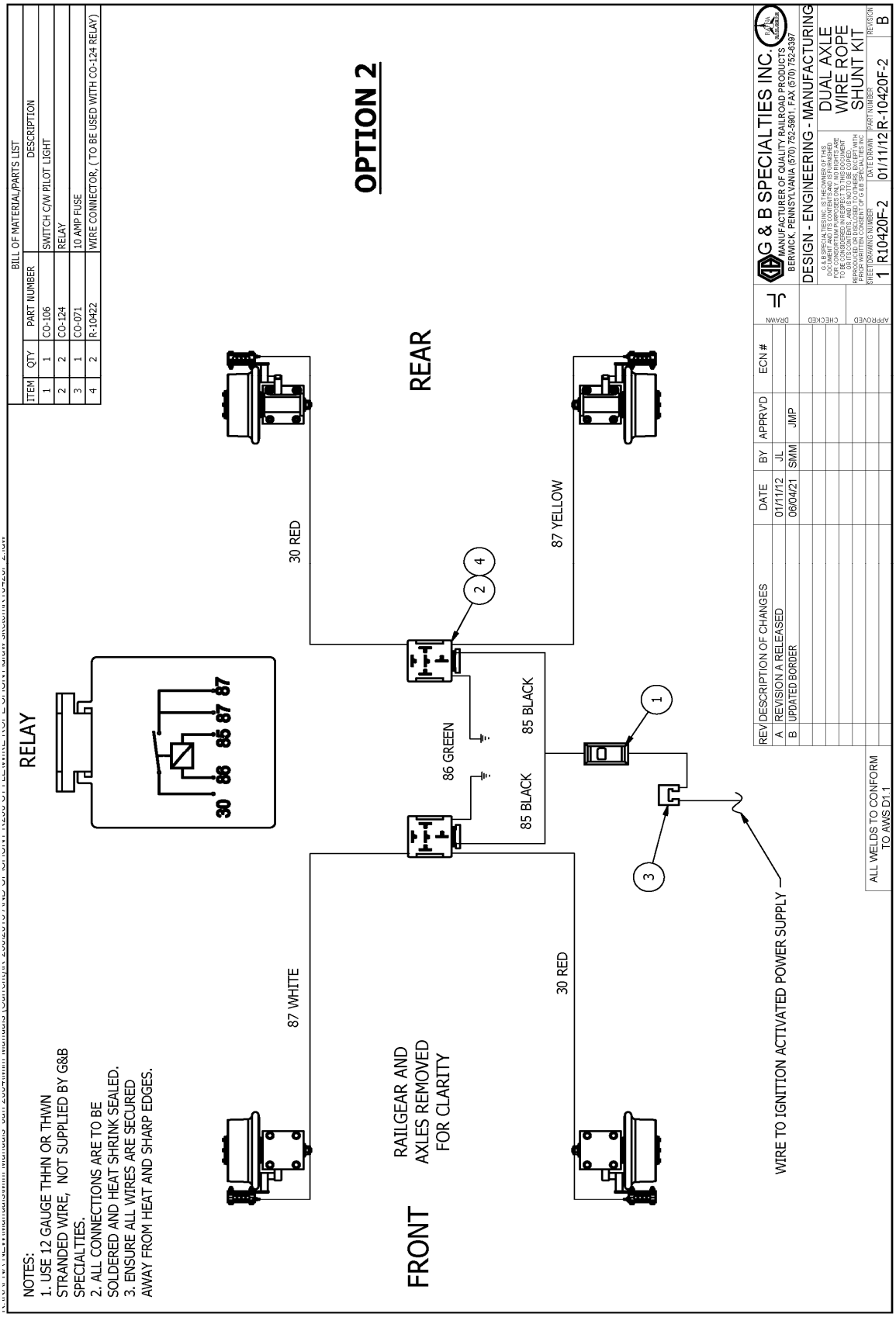
9. Connect the yellow wire or terminal #87 to the left rear rail wheel and attach as per the wheel shunt connection drawing provided. Solder and heat shrink all connections.

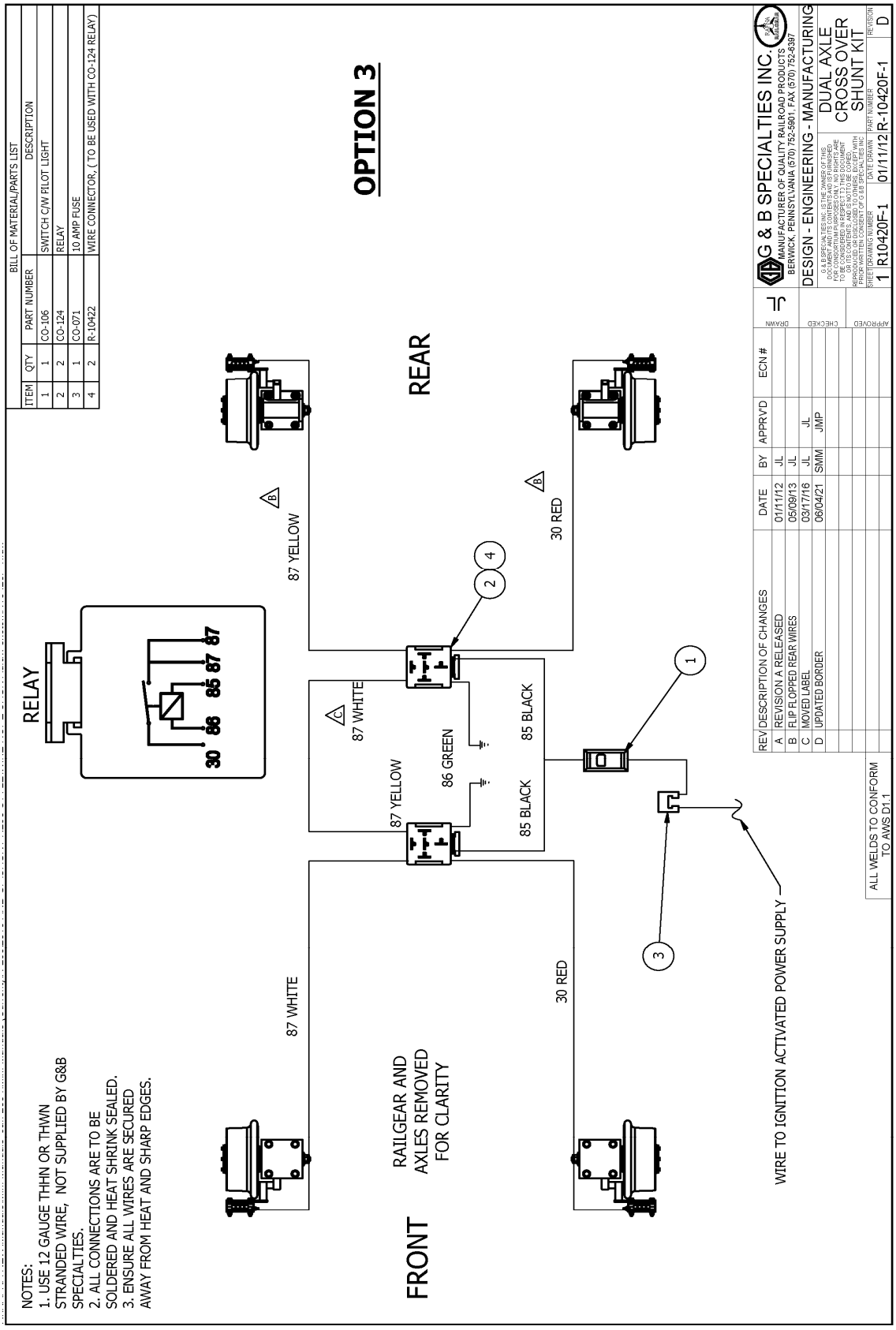
10. Connect the red wire or terminal #30 to the right rear rail wheel and attach as per the wheel shunt connection drawing provided. Solder and heat shrink all connections.

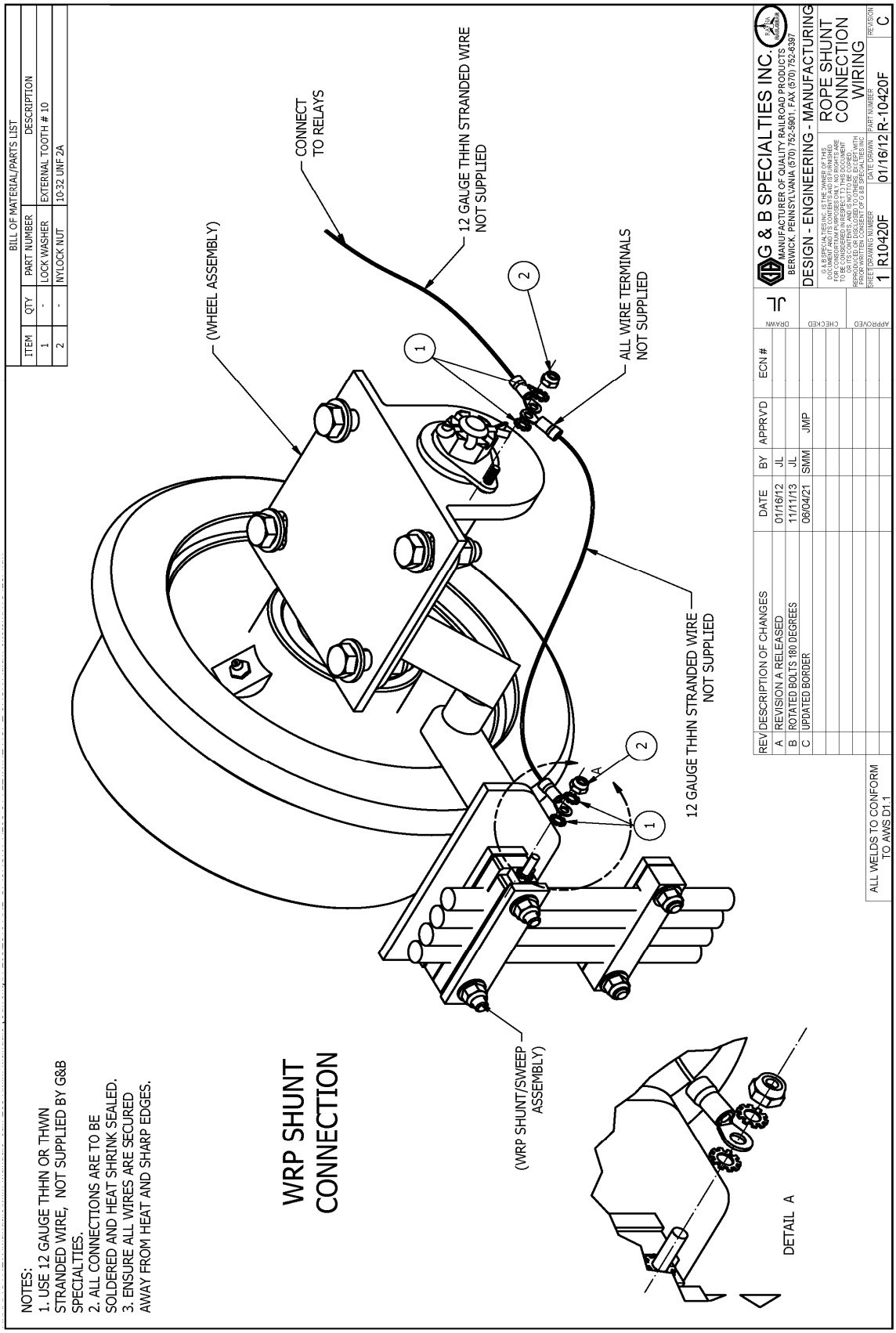
11. Install a wire between the white wire on terminal #87 on the front relay and the yellow wire on terminal #87 on the rear relay.

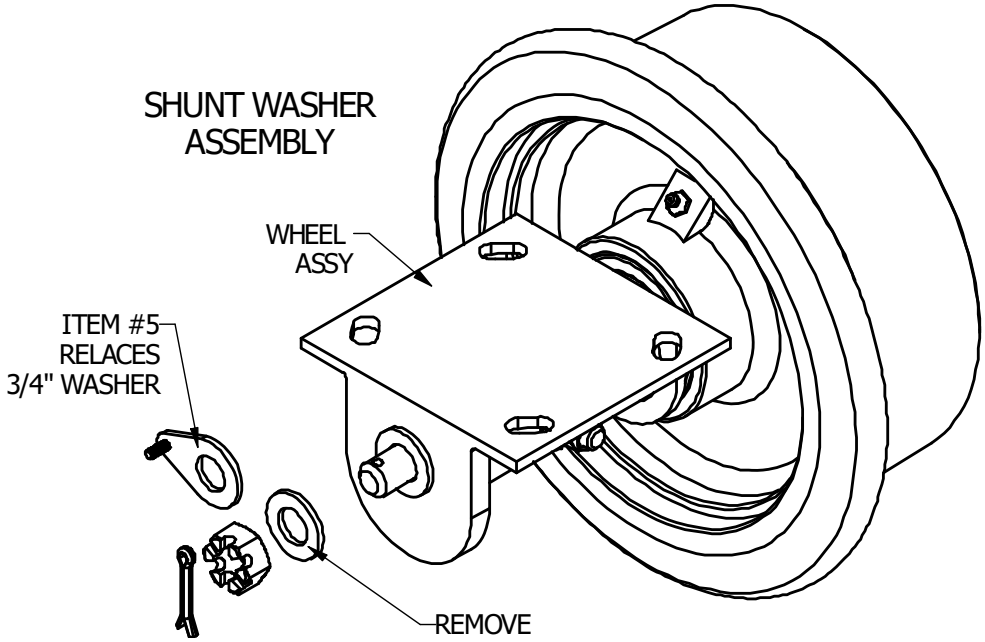
12. This completes the installation of the Dual Axle and Cross Over Shunt Kit. When the interior switch is turned on it will pull in the relays and provide continuity between the front rail wheels and the rear rail wheels.


OPTION 1
REAR
FRONT
RAILGEAR AND AXLES REMOVED FOR CLARITY
RELAY
30
86
85
87
87
86 GREEN
85 BLACK
87 WHITE
30 RED
WIRE TO IGNITION ACTIVATED POWER SUPPLY
NOTES:
1. USE 12 GAUGE THHN OR THWN STRANDED WIRE, NOT SUPPLIED BY G&B SPECIALTIES.
2. ALL CONNECTIONS ARE TO BE SOLDERED AND HEAT SHRINK SEALED.
3. ENSURE ALL WIRES ARE SECURED AWAY FROM HEAT AND SHARP EDGES.
BILL OF MATERIAL/PARTS LIST
ITEM QTY PART NUMBER DESCRIPTION
1 1 CO-106 SWITCH C/W PILOT LIGHT
2 1 CO-124 RELAY
3 1 CO-071 10 AMP FUSE
4 1 R-10422 WIRE CONNECTOR, (TO BE USED WITH CO-124 RELAY)
REV DESCRIPTION OF CHANGES DATE BY APPR'VD ECN #
A REVISION A RELEASED 01/11/12 JL
B UPDATED BORDER 06/04/21 SMM JMP
DRAWN CHECKED APPROVED
ALL WELDS TO CONFORM TO AWS D1.1
G & B SPECIALTIES INC.
MANUFACTURER OF QUALITY RAILROAD PRODUCTS
BERWICK, PENNSYLVANIA (570) 752-5901, FAX (570) 752-6397
DESIGN - ENGINEERING - MANUFACTURING
SINGLE AXLE WIRE ROPE SHUNT KIT
SHEET DRAWING NUMBER DATE DRAWN PART NUMBER REVISION
1 R10420F-3 01/11/12 R-10420F-3 B


OPTION 2
REAR
FRONT
RELAY
30 RED
87 YELLOW
86 GREEN
85 BLACK
85 BLACK
87 WHITE
30 RED
RAILGEAR AND AXLES REMOVED FOR CLARITY
WIRE TO IGNITION ACTIVATED POWER SUPPLY
NOTES:
1. USE 12 GAUGE THHN OR THWN STRANDED WIRE, NOT SUPPLIED BY G&B SPECIALTIES.
2. ALL CONNECTIONS ARE TO BE SOLDERED AND HEAT SHRINK SEALED.
3. ENSURE ALL WIRES ARE SECURED AWAY FROM HEAT AND SHARP EDGES.
BILL OF MATERIAL/PARTS LIST
ITEM QTY PART NUMBER DESCRIPTION
1 1 CO-106 SWITCH C/W PILOT LIGHT
2 2 CO-124 RELAY
3 1 CO-071 10 AMP FUSE
4 2 R-10422 WIRE CONNECTOR, (TO BE USED WITH CO-124 RELAY)
REV DESCRIPTION OF CHANGES DATE BY APPRVD ECN #
A REVISION A RELEASED 01/11/12 JL
B UPDATED BORDER 06/04/21 SMM JMP
ALL WELDS TO CONFORM TO AWS D1.1
G & B SPECIALTIES INC.
MANUFACTURER OF QUALITY RAILROAD PRODUCTS
BERWICK, PENNSYLVANIA (570) 752-5901, FAX (570) 752-6397
DESIGN - ENGINEERING - MANUFACTURING
DUAL AXLE WIRE ROPE SHUNT KIT
SHEET 1 DRAWING NUMBER R10420F-2 DATE DRAWN 01/11/12 PART NUMBER R-10420F-2 REVISION B


OPTION 3
REAR
FRONT
RAILGEAR AND AXLES REMOVED FOR CLARITY
RELAY
30 86 85 87 87
87 YELLOW
87 WHITE
86 GREEN
85 BLACK
30 RED
WIRE TO IGNITION ACTIVATED POWER SUPPLY
NOTES:
1. USE 12 GAUGE THHN OR THWN STRANDED WIRE, NOT SUPPLIED BY G&B SPECIALTIES.
2. ALL CONNECTIONS ARE TO BE SOLDERED AND HEAT SHRINK SEALED.
3. ENSURE ALL WIRES ARE SECURED AWAY FROM HEAT AND SHARP EDGES.
ALL WELDS TO CONFORM TO AWS D1.1
BILL OF MATERIAL/PARTS LIST
ITEM | QTY | PART NUMBER | DESCRIPTION
1 | 1 | CO-106 | SWITCH C/W PILOT LIGHT
2 | 2 | CO-124 | RELAY
3 | 1 | CO-071 | 10 AMP FUSE
4 | 2 | R-10422 | WIRE CONNECTOR, (TO BE USED WITH CO-124 RELAY)
REV | DESCRIPTION OF CHANGES | DATE | BY | APPR'D | ECN #
A | REVISION A RELEASED | 01/11/12 | JL
B | FLIP FLOPPED REAR WIRES | 05/09/13 | JL
C | MOVED LABEL | 03/17/16 | JL | JL
D | UPDATED BORDER | 06/04/21 | SMM | JMP
DRAWN
CHECKED
APPROVED
G & B SPECIALTIES INC.
MANUFACTURER OF QUALITY RAILROAD PRODUCTS
BERWICK, PENNSYLVANIA (570) 752-5901, FAX (570) 752-6397
DESIGN - ENGINEERING - MANUFACTURING
DUAL AXLE CROSS OVER SHUNT KIT
SHEET 1 | DRAWING NUMBER R10420F-1 | DATE DRAWN 01/11/12 | PART NUMBER R-10420F-1 | REVISION D


BILL OF MATERIAL/PARTS LIST
ITEM | QTY | PART NUMBER | DESCRIPTION
1 | - | LOCK WASHER | EXTERNAL TOOTH # 10
2 | - | NYLOCK NUT | 10-32 UNF 2A
(WHEEL ASSEMBLY)
CONNECT TO RELAYS
12 GAUGE THHN STRANDED WIRE NOT SUPPLIED
ALL WIRE TERMINALS NOT SUPPLIED
12 GAUGE THHN STRANDED WIRE NOT SUPPLIED
(WRP SHUNT/SWEEP ASSEMBLY)
WRP SHUNT CONNECTION
DETAIL A
NOTES:
1. USE 12 GAUGE THHN OR THWN STRANDED WIRE, NOT SUPPLIED BY G&B SPECIALTIES.
2. ALL CONNECTIONS ARE TO BE SOLDERED AND HEAT SHRINK SEALED.
3. ENSURE ALL WIRES ARE SECURED AWAY FROM HEAT AND SHARP EDGES.
REV | DESCRIPTION OF CHANGES | DATE | BY | APPR'D | ECN #
A | REVISION A RELEASED | 01/16/12 | JL
B | ROTATED BOLTS 180 DEGREES | 11/11/13 | JL
C | UPDATED BORDER | 06/04/21 | SMM | JMP
DRAWN
CHECKED
APPROVED
G & B SPECIALTIES INC.
MANUFACTURER OF QUALITY RAILROAD PRODUCTS
BERWICK, PENNSYLVANIA (570) 752-5901, FAX (570) 752-6397
DESIGN - ENGINEERING - MANUFACTURING
ROPE SHUNT CONNECTION WIRING
SHEET | DRAWING NUMBER | DATE DRAWN | PART NUMBER | REVISION
1 | R10420F | 01/16/12 | R-10420F | C
ALL WELDS TO CONFORM TO AWS D1.1


SHUNT WASHER
ASSEMBLY
WHEEL
ASSY
ITEM #5
RELACES
3/4" WASHER
REMOVE

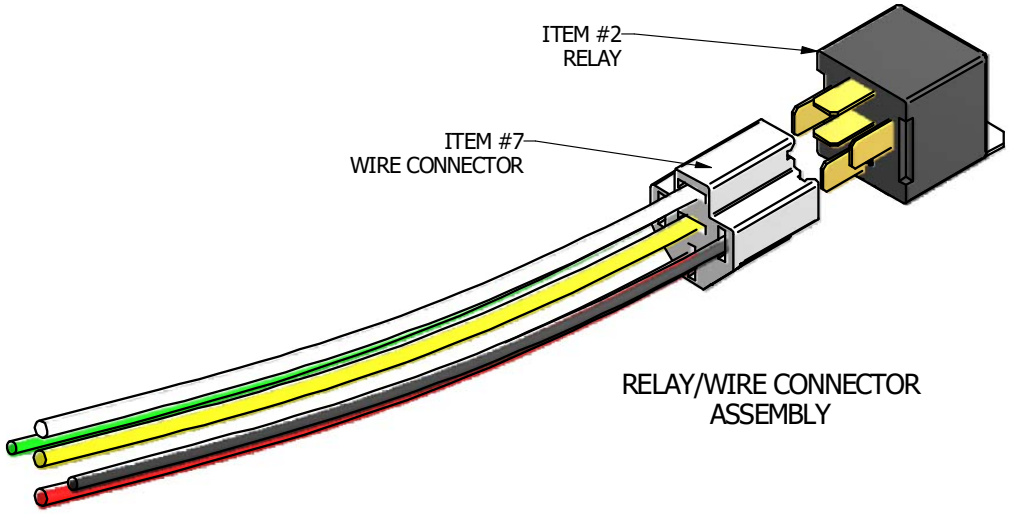
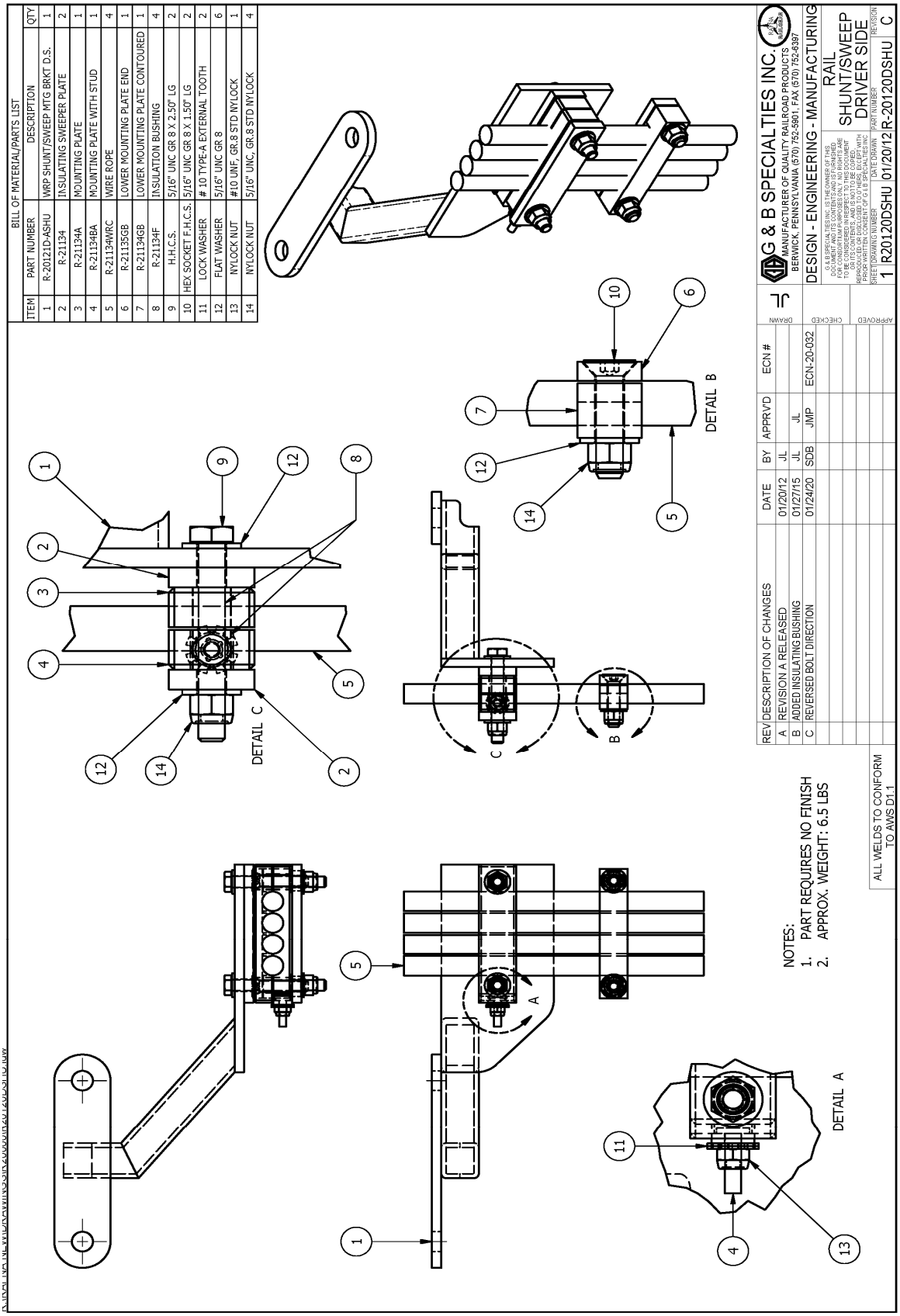
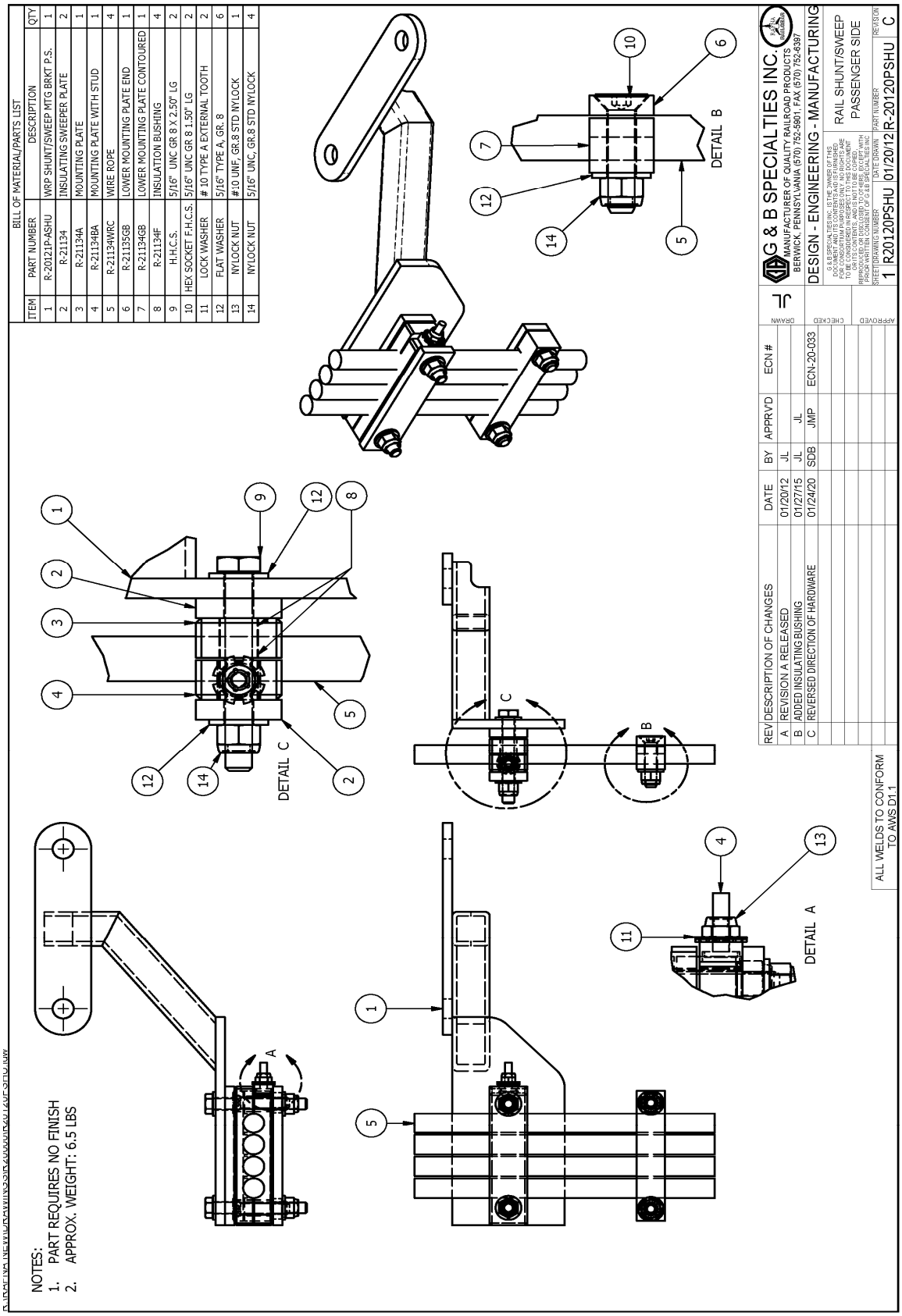

ITEM #2
RELAY
ITEM #7
WIRE CONNECTOR
RELAY/WIRE CONNECTOR
ASSEMBLY

Photo on the left shows the Shunt/Sweep set too extreme. This is not acceptable and should be avoided.

Photo to the right shows a more acceptable setting of Shunt/Sweep. Contact should be set with just enough pressure that rust and debris are removed from track while maintaining a slight angle of contact.


BILL OF MATERIAL/PARTS LIST
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | R-20121D-ASHU | WRP SHUNT/SWEEP MTG BRKT D.S. | 1
2 | R-21134 | INSULATING SWEEPER PLATE | 2
3 | R-21134A | MOUNTING PLATE | 1
4 | R-21134BA | MOUNTING PLATE WITH STUD | 1
5 | R-21134WRC | WIRE ROPE | 4
6 | R-21135GB | LOWER MOUNTING PLATE END | 1
7 | R-21134GB | LOWER MOUNTING PLATE CONTOURED | 1
8 | R-21134F | INSULATION BUSHING | 4
9 | H.H.C.S. | 5/16" UNC GR 8 X 2.50" LG | 2
10 | HEX SOCKET F.H.C.S. | 5/16" UNC GR 8 X 1.50" LG | 2
11 | LOCK WASHER | # 10 TYPE-A EXTERNAL TOOTH | 2
12 | FLAT WASHER | 5/16" UNC GR 8 | 6
13 | NYLOCK NUT | #10 UNF, GR.8 STD NYLOCK | 1
14 | NYLOCK NUT | 5/16" UNC, GR.8 STD NYLOCK | 4
DETAIL C
DETAIL B
DETAIL A
NOTES:
1. PART REQUIRES NO FINISH
2. APPROX. WEIGHT: 6.5 LBS
ALL WELDS TO CONFORM TO AWS D1.1
REV | DESCRIPTION OF CHANGES | DATE | BY | APPRVD | ECN #
A | REVISION A RELEASED | 01/20/12 | JL | | |
B | ADDED INSULATING BUSHING | 01/27/15 | JL | JL | |
C | REVERSED BOLT DIRECTION | 01/24/20 | SDB | JMP | ECN-20-032
DRAWN | CHECKED | APPROVED
G & B SPECIALTIES INC.
MANUFACTURER OF QUALITY RAILROAD PRODUCTS
BERWICK, PENNSYLVANIA (570) 752-5901, FAX (570) 752-6397
DESIGN - ENGINEERING - MANUFACTURING
RAIL
SHUNT/SWEEP
DRIVER SIDE
SHEET | DRAWING NUMBER | DATE DRAWN | PART NUMBER | REVISION
1 | R20120DSHU | 01/20/12 | R-20120DSHU | C


BILL OF MATERIAL/PARTS LIST
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | R-20121P-ASHU | WRP SHUNT/SWEEP MTG BRKT P.S. | 1
2 | R-21134 | INSULATING SWEEPER PLATE | 2
3 | R-21134A | MOUNTING PLATE | 1
4 | R-211348A | MOUNTING PLATE WITH STUD | 1
5 | R-21134WRC | WIRE ROPE | 4
6 | R-21135GB | LOWER MOUNTING PLATE END | 1
7 | R-211340B | LOWER MOUNTING PLATE CONTOURED | 1
8 | R-21134F | INSULATION BUSHING | 4
9 | H.H.C.S. | 5/16" UNC GR 8 X 2.50" LG | 2
10 | HEX SOCKET F.H.C.S. | 5/16" UNC GR 8 1.50" LG | 2
11 | LOCK WASHER | # 10 TYPE A EXTERNAL TOOTH | 2
12 | FLAT WASHER | 5/16" TYPE A, GR. 8 | 6
13 | NYLOCK NUT | #10 UNF, GR.8 STD NYLOCK | 1
14 | NYLOCK NUT | 5/16" UNC, GR.8 STD NYLOCK | 4
DETAIL B
DETAIL C
DETAIL A
NOTES:
1. PART REQUIRES NO FINISH
2. APPROX. WEIGHT: 6.5 LBS
ALL WELDS TO CONFORM TO AWS D1.1
REV | DESCRIPTION OF CHANGES | DATE | BY | APPRVD | ECN #
A | REVISION A RELEASED | 01/20/12 | JL | |
B | ADDED INSULATING BUSHING | 01/27/15 | JL | JL |
C | REVERSED DIRECTION OF HARDWARE | 01/24/20 | SDB | JMP | ECN-20-033
DRAWN
CHECKED
APPROVED
G & B SPECIALTIES INC.
MANUFACTURER OF QUALITY RAILROAD PRODUCTS
BERWICK, PENNSYLVANIA (570) 752-5901, FAX (570) 752-6397
DESIGN - ENGINEERING - MANUFACTURING
RAIL SHUNT/SWEEP
PASSENGER SIDE
SHEET | DRAWING NUMBER | DATE DRAWN | PART NUMBER | REVISION
1 | R2012OPSHU | 01/20/12 | R-20120PSHU | C