

# DIVERSIFIED METAL FABRICATORS



## Installation and Parts & Service Manual RW-1015



August 2019

### NOTE:

Please refer to the serial numbers when ordering parts or  
inquiring about warranty items.

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## DMF Limited Warranty Policy

### RW-1015 Railgear

**Diversified Metal Fabricators (DMF)** products are designed to provide the utmost service and reliability. Competent workmen, guided by stringent quality standards, manufacture the products from high-grade material. **DMF** warrants products of its manufacturer to be free of defects in material and workmanship, under normal use and service, for a period of **TWO CALENDAR YEARS**. **DMF's obligation** under this warranty is limited to repairing or replacing at its factory, or other location designated by us, any part or parts there-of which shall, within 30 DAYS of the date of failure or notice of defect, be returned, and which upon examination shall appear to **DMF's** satisfaction to have been defective. Such repair or replacement does not include the cost of installing the new part or any other expenses incident thereto; however, the outbound direct ground freight on the part will be prepaid to locations within the continental United States and Canada. **DMF** shall not be liable for other loss, damage, or expense directly or indirectly arising from the use of its products.

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Equipment or parts not manufactured by this company, but which are furnished in connection with **DMF** products are covered directly and solely by the warranty of the manufacturer supplying them.

This warranty is in lieu of other warranties, expressed or implied, including any implied warranties of merchantability or fitness for a particular purpose and any liability for special or consequential damages.



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# 1.0 GENERAL INFORMATION

## 1.0 General Information

- 1.1 General Description
- 1.2 Currently Approved Chassis
  - 1.2.1 Chevy/GM
  - 1.2.2 Ford
  - 1.2.3 Ram
- 1.3 Specification Considerations
  - 1.3.1 Rail Gage / Wheel Track
  - 1.3.2 Body Requirements
  - 1.3.3 Rail Clearance
  - 1.3.4 Equipment
  - 1.3.5 Railgear Weight
  - 1.3.6 Railgear Options
- 1.4 Questions Installers Should Ask
- 1.5 Chassis Spec Sheets

## 1.1 General Description

DMF RW-1015 Railgear is designed for vehicles in the 8,000 to 12,000 GVWR range. It is applicable to many Pick-up Trucks, Cab & Chassis, and SUV's in this range. It is not intended for vehicles with dual rear wheels.

RW-1015 Railgear does not provide braking or drive power. Unlike most of our larger models, RW-1015 does not lift the steering axle. All vehicle tires are in contact with the rail. Many vehicles require alternate wheels and tires to properly track the rail. DMF provides Wheel Modification Kits for use on standard gage rail where necessary for supported chassis. These kits can include rims, wheel adapters, wheel spacers, steering stops, steering wheel locks and wheel hardware.

The Railgear is hydraulically actuated and is over-center when in the rail position. This prevents a hydraulic leak from allowing the gear to collapse. In the highway position, the Railgear prevented from falling from the highway position as a result of a hydraulic leak by hydraulic locking valves. The system includes a hand pump to allow the gear to be put in highway position in the case of hydraulic failure.

RW-1015 Railgear incorporates rubber suspensions to provide a smooth ride and rail guidance over uneven track surfaces. We offer both steel and rubber treaded guide wheels.



**Figure 1.1.A '09 FORD F350 SRW w/ RW-1015 Installed**

## **1.2 Currently Approved Chassis**

### **1.2.1 Chevy/GM**

'08-'13	C2500HD Pick-up (preferred to C2500)
'08-'13	C2500HD box delete
'08-'13	C3500 (Single Rear Wheel Models only)
'08-'12	C2500 Suburban

### **1.2.2 Ford**

'08-'12	F2/350 Pick-up (Single Rear Wheel Models only)
'08-'12	F350 Box Delete (Single Rear Wheel Models only)

### **1.2.3 Ram**

'11-'12	2500/3500 4x4 Pick-up (Single Rear Wheel Models only)
'11-'12	2500/3500 4x4 Box Delete (Single Rear Wheel Models only)



## 1.3 Specification Considerations

There are many things to consider when specifying a vehicle for use with Railgear. Attention to these factors during specification will prevent confusion, delay and expense during the install. It also will often result in a better truck for the operator.

### 1.3.1 Rail Gage / Wheel Track

Probably the biggest factor determining the suitability of a chassis for use on the rail is the vehicle's track relative to the rail gage. Wheel track is defined as the center-to-center distance between the tires on the same axle on steering and single wheel rear axles. Full-sized Pickups and SUVs nearly always require a Wheel Modification Kit to narrow the vehicle track to fit on the rail. We provide Wheel Modification Kits as required for approved chassis for standard gage (56.5"). If you require a wide gage (or other) solution, please contact us.

### 1.3.2 Body Requirements

Most chassis require replacement or modification of the factory front bumper. Occasionally modifications to the rear wheelhouse are required. See section 4.0 for more information.

### 1.3.3 Rail Clearance

Any special clearance requirements such as third rail clearance, catenary clearance, and platform clearance should be investigated before ordering the chassis or Railgear. Obtain a static and dynamic clearance envelope drawing for your rail. You need to know the limiting curvature for your rail.

### 1.3.4 Equipment

The weight, stability requirements and location of any additional truck equipment must be accounted for. This allows the suspension settings and alignment to be done more accurately. If equipment is to be added later, provide the installer with the weight and location to allow for proper set up. After any change in equipment or operating payload the vehicle should have the rail wheel load checked and re-set prior to use.

### 1.3.5 Railgear Weight

The installed weight of the Railgear must be considered.

Typical installed weights are:

Front: 293 lbs      Rear: 354 lbs      (RW-1015)

### 1.3.6 Railgear Options

You need to know what options you require such as:

Rail Sweeps (typical)

In-Cab controls (typical)

Steel vs. Rubber Rail Wheels

## 1.4 Questions Installers Should Ask

- What is this vehicle to be used for?
- What types of tires are required? Highway fronts, Mud & Snow on rear?
- Does the customer specify a particular brand of tires?
- Is any equipment to be added to the truck after Railgear installation?
  - Where is it going and how much does it weigh?
  - Where will customer prefer pump installation? (bumper, body?)
- Are there any restrictions on the location of the switchbox in the cab?
- Is the installer responsible for exhaust modifications?
- Is the installer responsible for a spare tire carrier?

## 1.5 Chassis Spec Sheets

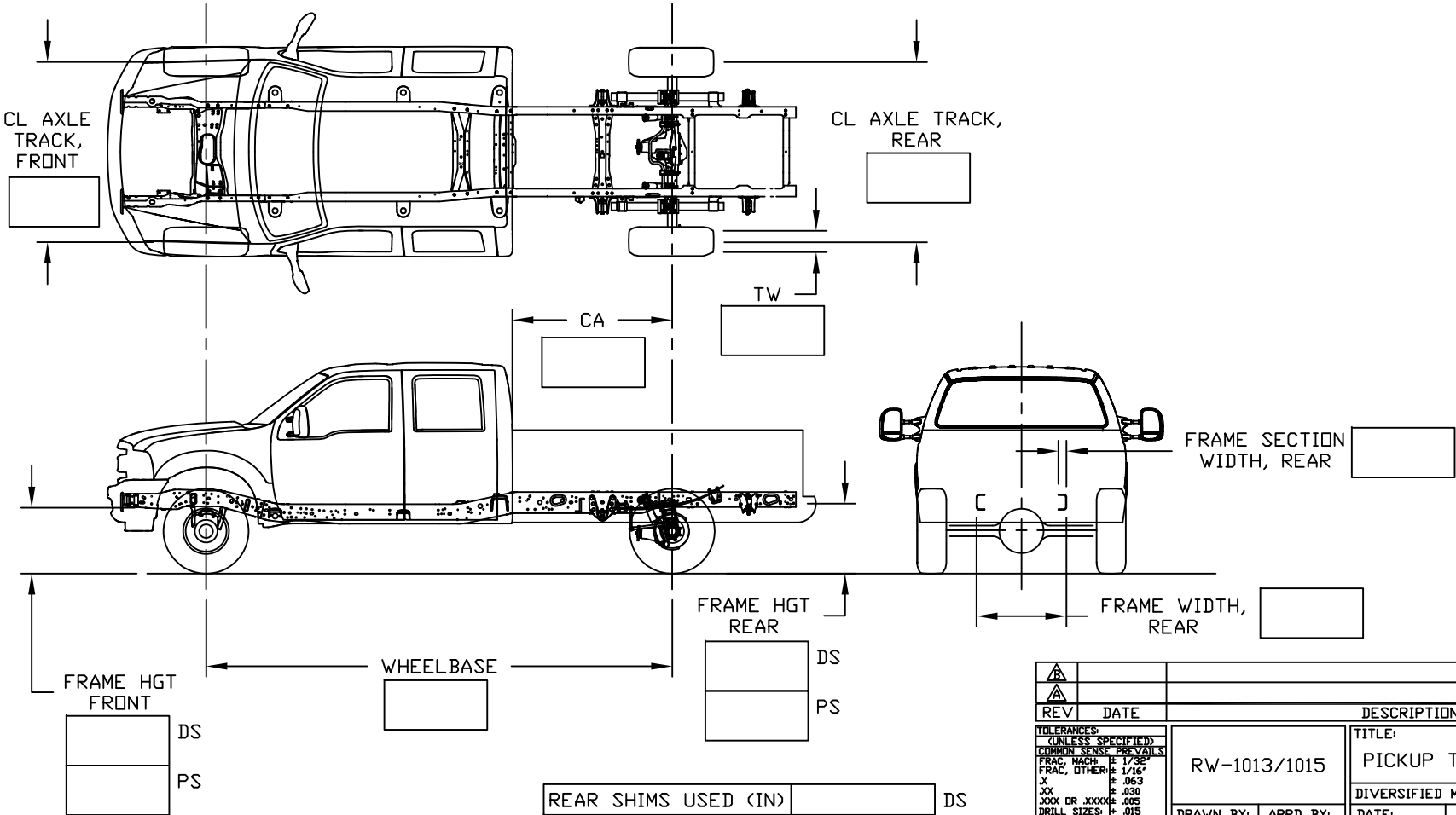
Please complete the following Chassis Spec Sheet and include with any orders.

CHASSIS MAKE	
CHASSIS MODEL	
MODEL YEAR	
ENGINE	
TRANSMISSION	
CAB STYLE	
VIN NUMBER	
GVWR	
GAWR-F	
GAWR-R	
4X4 OR 4X2	
SHORT OR LONG BED	
OTHER OPTIONS	

TIRE MAKE	
TIRE MODEL	
TIRE SIZE	
WHEEL SIZE	
WHEEL OFFSET	
WHEEL & TIRE NOTES	
FRONT SUSPENSION	
MODIFICATIONS	
REAR SUSPENSION	
MODIFICATIONS	
STOCK OR 19.5"	
WHEELS & TIRES	
RAILGEAR INSTALLED	
(YES/NO)	

CURB WEIGHT FRONT	
CURB WEIGHT REAR	
APPLICATION / BODY INFO	
INVOICE	
CUSTOMER	
FRONT SERIAL #	
REAR SERIAL #	
SUBMITTED BY	
SUBMITTED DATE	

NOTES:



REV		DATE	DESCRIPTION	BY	APP
TOLERANCES: (UNLESS SPECIFIED) CURRENT STANDARD PREVAILS FRACTIONAL: 1/32" FRACTIONAL, OTHER: 1/16" X .003 XXX OR .0000 .005 DRILL SIZES: .015 ANGULAR: 1° SURF FINISH: 125 MICRO THREADS: 2A AND 2B BREAK SHARP CORNERS (1/8" DIA X 45° MAX)		RW-1013/1015		TITLE: PICKUP TRUCK MEASUREMENT SHEET DIVERSIFIED METAL FABRICATORS, INC. (404) 875-1512	
DRAWN BY:		APPD BY:	DATE:	DRAWING NUMBER:	REV:
BJF			9/22/11	800955	#

## 2.0 OPERATIONS

### 2.0 OPERATIONS

- 2.1 Familiarize yourself with the Railgear
- 2.2 Operation on the Road
  - 2.2.1 Highway Locking System
  - 2.2.2 Reduced Turning Radius
  - 2.2.3 Clearances & Approach Angles
  - 2.2.4 Highway Speeds
- 2.3 Operation on the Rail
  - 2.3.1 Getting on the Rail
  - 2.3.2 On the Track
  - 2.3.3 Getting off the Rail
- 2.4 Emergency Pump Operations
  - 2.4.1 To Stow Railgear with Emergency Hand Pump

### 2.1 Familiarize yourself with the Railgear

You should read the entire Operation section. You should know where the following item/parts are:

- Emergency Pump
- Emergency Pump Selector Switch
- Cab Switches
- Exterior/Bumper Switches
- Hydraulic Reservoir
- Emergency Pump Handle

## 2.2 Operation on the Road

If you operate a vehicle modified for on-track use, you need to keep in mind several factors:

### 2.2.1 Highway Locking System

DMF now offers a pilot-operated check valve locking system to restrain the Railgear in the highway position. This system will reduce maintenance and improve reliability.

The original pin-off system is still offered to those who require it. The pin-off system prevents hydraulic leak-down or a leaky connection or hose from allowing your gear to move from the highway position. The operator should verify that the Railgear is pinned off properly before driving on the road.

If you have a problem with your locking valves or pin-off system, chain or strap the gear in the highway position in order to move the vehicle on the road. You should have the vehicle serviced as soon as possible.

### 2.2.2 Reduced Turning Radius

Vehicles with Wheel Modification Kits typically have reduced steering angles. Operators should familiarize themselves with the turning limitations of their vehicle. Any noise occurring when the wheel is turned to the limit may indicate a problem with your steering stops. Have them checked as soon as possible.

### 2.2.3 Clearances & Approach Angles

The installation of Railgear typically reduces the ground clearance & approach angle in the front and back. In some installations, the guide-wheels extend slightly beyond the corners of the front bumper. The operator should familiarize themselves with the modified clearance & approach angles.

### 2.2.4 Highway Speeds

Vehicles with Wheel Modification Kits should not exceed the wheel or tire ratings. Current wheel kits provided by DMF are rated for 70 or 65 mph. The operator is responsible for maintaining lug nut torque. Lug nut torque must be checked according to section 3.3 (Wheel Modification Kit – Inspection & Maintenance). Operators should have or have access to a torque wrench.

## 2.3 Operation on the Rail

### 2.3.1 Getting on the Rail

1. At the track crossing, drive past the track and then back the vehicle onto the rails, centering rear tires on the track.
2. Enable "Guidewheel Power Switch" in cab.
3. Engage the truck's parking brake to prevent the truck from rolling.
4. Retract and lock front and rear manual pin-offs. (If equipped with pins.)

#### Lower Rear Guidewheels first:

(Note: Front/Rear Guidewheels cannot be actuated simultaneously)

5. Raise or "top-out" rear Railgear to free pins (if equipped with pins).
6. Using electric switch at rear bumper, lower Guidewheels within 2-3 inches of railhead.
7. Verify alignment with rail, move truck to adjust if necessary.
8. Using electric switch at rear bumper, deploy rear wheels fully and properly engage the rail. The Guidewheels are an over center design and do not require pin-offs in the rail position.

#### Lower Front Guidewheels:

(Note: Front/Rear Guidewheels cannot be actuated simultaneously)

9. Raise or "top-out" front Railgear to free pins (if equipped with pins).
10. Using electric switch at front bumper, lower Guidewheels within 2-3 inches of railhead.
11. Verify alignment with rail, move truck to adjust if necessary.
12. Using electric switch at front bumper, deploy front wheels fully and properly engage the rail. The Guidewheels are an over-center design and do not require pin-offs in the rail position.
13. Double check all flanges to assure that they are properly engaged with the rail.
14. Engage steering wheel lock and verify its proper function.
15. Turn off "Guidewheel Power" switch in cab.
16. Drive back and forth to assure flange engagement.

### 2.3.2 On the Track

1. Recommendations given here are for welded rail in good condition. Jointed rail or rail in poor condition, require further reductions in speed and additional caution.
2. All railroad speed rules should be observed but in no case should you exceed 40 MPH while on the track.
3. Operator is responsible for determining Safe speed.
4. Be aware that RW-1015 Railgear is typically insulated, and may not operate the crossing gate circuits unless it is equipped with a shunt kit.
5. Reduce speed at all crossings, curves, switches and frogs.
6. Spring frogs should be taken at walking speed or less. If a passenger is available, it is advisable to have someone monitor progress of guide-wheel through the spring frog.
7. Tight curves (>18deg or <320' R) should be taken at less than 15 mph.
8. Extremely tight curves should be taken at walking speed with a person monitoring guide-wheel progress and vehicle tire coverage.
9. Braking distance is increased on the track. Do not slide tires or guide-wheels on the tracks. Braking distance is further reduced in wet or icy conditions.
10. Monitor track condition and look for obstacles on, above and near the track. Even small obstacles should be removed before proceeding.
11. Monitor the engine temperature gauge when reversing for long distances. Extended operation in reverse may cause overheating.

12. Do not exceed the maximum rated capacity of the equipment.
13. Do not attach tow straps or other equipment to the Railgear.

### **2.3.3 Getting off the Rail**

1. Drive vehicle to road crossing.
2. Enable "Guidewheel Power Switch" in cab.
3. Either front or rear wheels may be actuated first. (Note: Front/Rear Guide wheels cannot be actuated simultaneously)
4. Front Guidewheels:
  - a. Retract front rail wheels completely using switch in cab or at front bumper.
  - b. Once retracted, engage & lock manual pin-offs if equipped.
5. Rear Guidewheels:
  - a. Retract rear rail wheels completely using switch in cab or at rear bumper.
  - b. Once retracted, engage & lock manual pin-offs if equipped.
6. Disengage Steering Wheel Lock.
7. Drive vehicle off of crossing onto road surface.
8. Verify proper Pin-off operation.

## 2.4 Emergency Pump Operations

The emergency pump is provided to allow a malfunctioning vehicle to be removed from the rail in the event of an electrical fault or pump failure. The emergency pump switch (located near the hand pump) must be held while pumping to position the valves. The Emergency Pump Switch is held up to enable flow to the front Railgear & down for the rear Railgear.

**Note:** The emergency pump is only intended to stow the Railgear. It is not designed or intended to deploy the Railgear.

### 2.4.1 To Stow Railgear with Emergency Hand Pump

1. Ensure that Railgear is clear
2. Remove rail position pins (if equipped)
3. Hold Emergency Pump Switch UP to select the front Railgear
4. Pump Emergency Hand Pump until Front Railgear is in highway position
5. Insert Front Highway Position Pins (if equipped)
6. Hold Emergency Hand Pump Switch Down to select the rear Railgear
7. Pump Emergency Hand Pump until Rear Railgear is in highway position
8. Insert Rear Highway Position Pins (if equipped)

Refer to Section 5.3.1 for the hydraulic system diagram. See Section 4.6.3 for hand pump priming instructions if needed.

#### Safety Notes

- When raising gear and holding the pins, careful of pinch points!
- Do not drive vehicle at normal highway speeds if Railgear is not restrained by the safety pins or chained up!
- If Railgear is chained up, and not fully in highway position, be aware of your ground clearance!



## **3.0 MAINTENANCE & INSPECTION**

### **3.0 Maintenance & Inspection**

- 3.1 Recommended Maintenance & Inspection Frequency
  - 3.1.1 Daily Maintenance
  - 3.1.2 Weekly Maintenance
  - 3.1.3 Bi-Annual Maintenance or as required
  - 3.1.4 Annual Maintenance or as required
- 3.2 Lubricant & Fluids Specs
- 3.3 Wheel Modification Kit – Inspection & Maintenance
  - 3.3.1 Wheel Mod Kits
- 3.4 Rail Wheel Load
  - 3.4.1 Warnings
  - 3.4.2 When to check Rail Wheel Load
  - 3.4.3 How to check Rail Wheel Load
  - 3.4.4 Target Rail Wheel Loads
  - 3.4.5 Adjusting Rail Wheel Load
  - 3.4.6 After Setting Rail Wheel Loads
- 3.5 Alignment
  - 3.5.1 Alignment Overview
  - 3.5.2 Alignment Adjustments
  - 3.5.3 Alignment Method #1
  - 3.5.4 Alignment Method #2
  - 3.5.5 After Setting Alignment
  - 3.5.6 Rail Test after Alignment
  - 3.5.7 Alignment Diagram Method #1
  - 3.5.8 Alignment Diagram Method #2
  - 3.5.9 Alignment Troubleshooting
- 3.6 Derailment
  - 3.6.1 Troubleshooting On-track Problems
- 3.7 Rail Wheel Wear Gauge

### 3.1 Recommended Maintenance & Inspection Frequency

The following are instructions for routine inspections recommended by Diversified Metal Fabricators. If your Railgear vehicle is used heavily or under extreme conditions such as operation in mountainous regions or extreme temperatures, the inspections listed below may need to be performed more frequently than stated. Additionally, government or corporate regulations may require that additional inspections be performed. Please ensure that you are aware of any inspection requirements that pertain to your Railgear and that you abide by all local and national laws regarding Railgear maintenance and safety.

#### 3.1.1 Daily Maintenance

- Visually inspect for hydraulic leaks.
- Verify that Railgear has not leaked down from highway position.
- Check hydraulic fluid level at pump.
- Verify that all threaded fasteners are secure, paying special attention to axle bolts and end play nut.
- Spin all four guide-wheels, noting any bearing noise, resistance, or end play. See section 5.2 for end play information.
- Inspect the general condition of guide-wheels.
- Inspect the condition of tires and rims. Pay special attention to inside tread to assure nothing is rubbing against tires.
- Check air pressure in tires and correct if necessary (refer to section 5.5)
- Visually inspect all Railgear components for any damage and/or cracks.

#### 3.1.2 Weekly Maintenance

In addition to the items listed in 3.1.1 Daily Maintenance perform the following:

- Lubricate front & rear pin-off assemblies (if equipped) with a light lubricant (WD-40, Tri-Flow etc.).
- Inspect guide-wheel flange wear. Uneven or excessive wear may indicate alignment or rail wheel load problem. (See section 3.5 or 3.4)

Inspect condition of rubber or steel guide-wheel treads.

- Visually inspect wheels & tires. (See Section 3.3 - Wheel Modification Kit – Inspection & Maintenance)
- Verify that ABS sensor wires and brake lines are restrained and not contacting the rims.
- Inspect rubber suspension
- Grease and lubricate all grease fittings on front and rear Railgear and guide wheel assemblies.

**NOTE:**

There are six (6) locations on front assembly and ten (10) locations on rear assembly.

#### 3.1.3 Bi-Annual Maintenance or as required

In addition to the items listed in 3.1.1 Daily Maintenance and 3.1.2 Weekly Maintenance perform the following:

- Disassemble, inspect, repack, and reassemble rail wheel bearings as shown in Section 5.2.
- Check torque on wheel adapters and wheels as described in section 5.5.

#### 3.1.4 Annual Maintenance or as required

In addition to the items listed in 3.1.1 Daily Maintenance, 3.1.2 Weekly Maintenance and 3.1.3 Bi-annual Maintenance perform the following:

- Disassemble, inspect, repack and reassemble rail wheel bearings as shown in Section 5.2.

- Check rail wheel loads as described in section 3.4.
- Verify the operation of the emergency hand pump. If pump does not operate, check that the pump is primed as described in section 4.6.

**IF TOUCHING UP PAINTED RAILGEAR: RUBBER SUSPENSIONS SHOULD NEVER BE COMPLETELY PAINTED BUT MINOR OVERSPRAY IS ACCEPTABLE.**

## 3.2 Lubricant & Fluids Specs

Hydraulic oil:

- Unax RX-46 hydraulic oil (or equal)

Wheel bearings / Grease Fittings:

- **Factory Standard:** Citgo Syndurance Premium Synthetic 460 #2
- **Warm Climates:** Mystik JT-6 Hi-Temp Multi-Purpose Grease #2 (or equivalent)

## 3.3 Wheel Modification Kit – Inspection & Maintenance

### 3.3.1 Wheel Mod Kits

DMF offers wheel kits match to specific vehicles. See section 5.5 for inspection and maintenance information.

### 3.4 Rail Wheel Load

Rail wheel load is the amount of weight carried by each rail wheel while on rail. It is important that the rail wheel loads are set within the limits of safe operation as defined in section 3.4.4. Too little rail wheel load can lead to derailment. Too much rail wheel load can cause premature wear or failure of the Railgear components. It will also reduce traction and decrease braking performance.

#### 3.4.1 Warnings

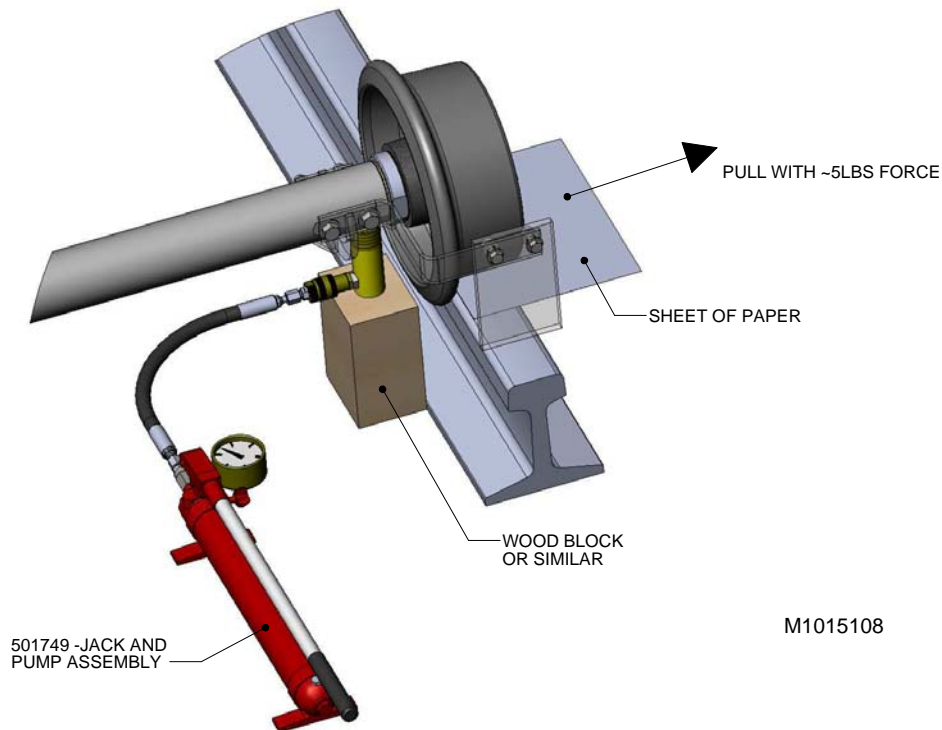
- **NEVER OPERATE A VEHICLE ON RAIL WITH RAIL WHEEL LOADS OUTSIDE OF THE LIMITS AS DESCRIBED IN TABLE 3.4.4.A.**
- **CHECK FOR PROPER TIRE INFLATION BEFORE ADJUSTING RAIL WHEEL LOADS OR OPERATING VEHICLE ON RAIL.**
- **ADDING OR REMOVING EQUIPMENT WILL CHANGE RAIL WHEEL LOADS.**
- **ALWAYS CHECK RAIL WHEEL LOADS BEFORE OPERATING THE VEHICLE ON RAIL.**

#### 3.4.2 When to check Rail Wheel Load

- Once per year, or more frequently as conditions dictate.
- If you have changed the empty weight of your truck by adding or subtracting fixed equipment or tools.
- If you suspect low rail wheel load.
- If you are experiencing premature tread wear.
- If the Railgear fails to deploy fully due to overloading.
- If poor traction or braking performance on rail is experienced.

### 3.4.3 How to check Rail Wheel Load

Rail wheel loads can be determined by use of a bottle jack with an attached pressure gauge. DMF recommends the use of a DMF 501749 Jack and Pump Assembly (Fig. 3.4.3.A). Using this model will allow the gauge to display force directly (PSI gauge = pounds force). If another jack is used you will need to determine the conversion factor to relate gauge pressure to force.



M1015108

**Figure 3.4.3.A** Checking rail wheel load

**Procedure:**

1. Confirm that the truck is at its operational weight, the chassis and rail wheels are in alignment, and that all 4 tires are inflated to 85 psi.
2. Place truck on rail or simulated rail (refer to 2.3.1), apply parking brake and shut off engine. If using simulated rail, verify that the rail wheel flange is not touching the ground. DMF recommends using 2"x3" thick wall tubing. Ensure that none of the rail wheel flanges are riding right up against the rail, as this may affect weight settings.
3. Place the jack under the Railgear axle tube as close as possible to the rail wheel.
4. Support jack as necessary with wooden blocks so that the distance from the jack to the axle tube is less than  $\frac{1}{2}$ " with the jack in the retracted position.
5. Jack up slightly and place a piece of paper between the rail wheel and track.
6. Lower the rail wheel back onto the track.
7. Jack the rail wheel up very slowly while pulling on the paper (Figure 3.4.3.A)
8. When the paper begins to slip out from under the wheel note the gauge pressure
9. If using the DMF 501749 jack, the reading on the gauge in PSI is equivalent to the rail wheel load on the adjacent wheel.
10. Repeat this procedure for the remaining rail wheels and note the measured loads.
11. After any adjustments are made repeat this procedure for each wheel.

**NOTE: WHEN CHECKING AND/OR ADJUSTING RAIL WHEEL LOADS, BOTH FRONT AND REAR RAILGEAR MUST BE IN THE RAIL POSITION.**

### 3.4.4 Target Rail Wheel Loads

Rail wheel loads should be set with the vehicle in an operational configuration. If rail wheel loads are set on a bare truck, and later equipment is added, rail wheel loads may exceed allowable limits. Likewise, if rail wheel weights are set for a heavily loaded truck, and equipment is later removed, the rail wheel weights may fall below allowable limits. Rail wheel loads should be maintained at the target rail wheel loads listed in table 3.4.3.A. Minimum and maximum values are given as limits on individual rail wheel loads when the vehicle is carrying a non-fixed payload, and are not ranges within which to set rail wheel loads on an empty vehicle.

	Min. rail wheel load (each)	Target rail wheel load (each)	Max. rail wheel load (each)
Front Railgear	500	625±25	900
Rear Railgear	500	525±25	900

**Table 3.4.4.A.** Target rail wheel loads

### 3.4.5 Adjusting Rail Wheel Load

**NOTE: DO NOT CHANGE SUSPENSION PRELOAD FROM FACTORY SETTINGS IN ORDER TO SET INITIAL RAIL WHEEL LOADS. RAIL WHEEL LOAD ADJUSTMENTS SHOULD BE PERFORMED BY INSERTING/REMOVING SPACERS BETWEEN THE MOUNTING BRACKET AND TRUCK FRAME.**

Rail wheel loads can be adjusted by changing the position of the Railgear mounting plates, using the provided slots, and by adding or removing spacers from between the truck frame and the Railgear. Once those adjustments are as close as possible to the desired rail wheel load, small adjustments (less than 50lbs.) can also be made by adjusting the preload on the rubber suspension bushings. Do not use preload adjustment to compensate for large deviations in rail wheel loads. Over compression of the suspension bushings eliminates the suspension function provided by this system, places greater stress on the Railgear and creates a rough ride when on rail. The suspension bushings are factory preloaded to a 2" height, when in highway position. Keep adjustments to within +/-1/8" of the factory setting for each suspension bushing.

#### Front Adjustments:

1. Adjust mounting plates up or down as required, using the provided slots. If the provided adjustment is not sufficient to achieve the target rail wheel load, spacers can be added between Railgear and frame.
2. Adjust the preload of the suspension bushings.

#### Rear Adjustments:

1. Add or remove spacers between Railgear and frame.
2. Adjust the preload of the suspension bushings.

When adjusting suspension bushing:

- Tighten nut to decrease rail wheel load
- Loosen nut to increase rail wheel load

**Refer to section 5.1 for the mounting details of your specific chassis.**

There will be interaction between wheel loads when any adjustments are made. Typically increasing or decreasing the load on one rail wheel will cause a similar change in load on the diagonal rail wheel and have the opposite effect on the loads of the remaining two rail wheels. Make small adjustments and re-check rail wheel loads after each adjustment.

**RAIL WHEEL LOADS MUST REMAIN WITHIN 500-900lbs. UNDER ANY LOADING CONDITION (EMPTY OR FULLY LOADED).**

**RAIL WHEEL LOADS MUST REMAIN WITHIN 50lbs LEFT-TO-RIGHT ON AN AXLE. IMPROPER RAIL WHEEL LOADING CAN CAUSE DERAILMENT.**

#### **3.4.6 After Setting Rail Wheel Loads**

After making any changes to rail wheel loads, during initial installation or maintenance, continue to section 3.5 to check your Railgear alignment and adjust as needed. After any alignment changes, return to 3.4 to re-verify rail wheel loads.

## 3.5 Alignment

Over time your Railgear may require adjustment to ensure safe operation and to prevent excessive wear. If your Railgear is running on the flanges excessively or derailing, the alignment should be checked. Refer to Section 3.5.6.

There are two methods of alignment, **Alignment Method #1** is known as “string lining” and is preferred where possible. **Alignment Method #2** may be more suitable for checking in the field but produces good results when done carefully.

### 3.5.1 Alignment Overview

RW-1015 Railgear is aligned in the following order:

- Rear Railgear to Rear Vehicle Axle
- Front Railgear to rear Railgear

### 3.5.2 Alignment Adjustments

#### Rear bracket

The rear bracket must be aligned prior to drilling the frame. There is some play in the slots that allows for minor adjustments.

#### Front Bracket

The front Railgear is bolted to the frame. The slots allow for minor adjustments.

#### Axle Tubes

The front and rear axles must be centered and aligned prior to welding to the axle brackets. The welds can be ground and re-welded if later adjustment is required.

### 3.5.3 Alignment Method #1

This method is preferred and requires a string and stands. Set up a string line on an actual or simulated rail. It is critical that the lines be aligned to the vehicle and parallel. Refer to Figure 3.5.6 – Alignment Method #1

### 3.5.4 Alignment Method #2

This method is easier to perform in the field and only require a tape measure and two persons. Refer to Figure 3.5.7 – Alignment Method #2.

### 3.5.5 After Setting Alignment

After making any changes to alignment, during initial installation or maintenance, return to section 3.4 to check your rail wheel loads and adjust as needed. After any changes to rail wheel loads, return to 3.5 to re-verify alignment. Once alignment and rail wheel loads are set correctly, put Railgear into rail position, then tack weld Railgear (including axle brackets, spacers, and mounting brackets and plates). Final weld-out (see Section 4.11) will not be performed until after vehicle has been rail tested (see Section 3.5.6).

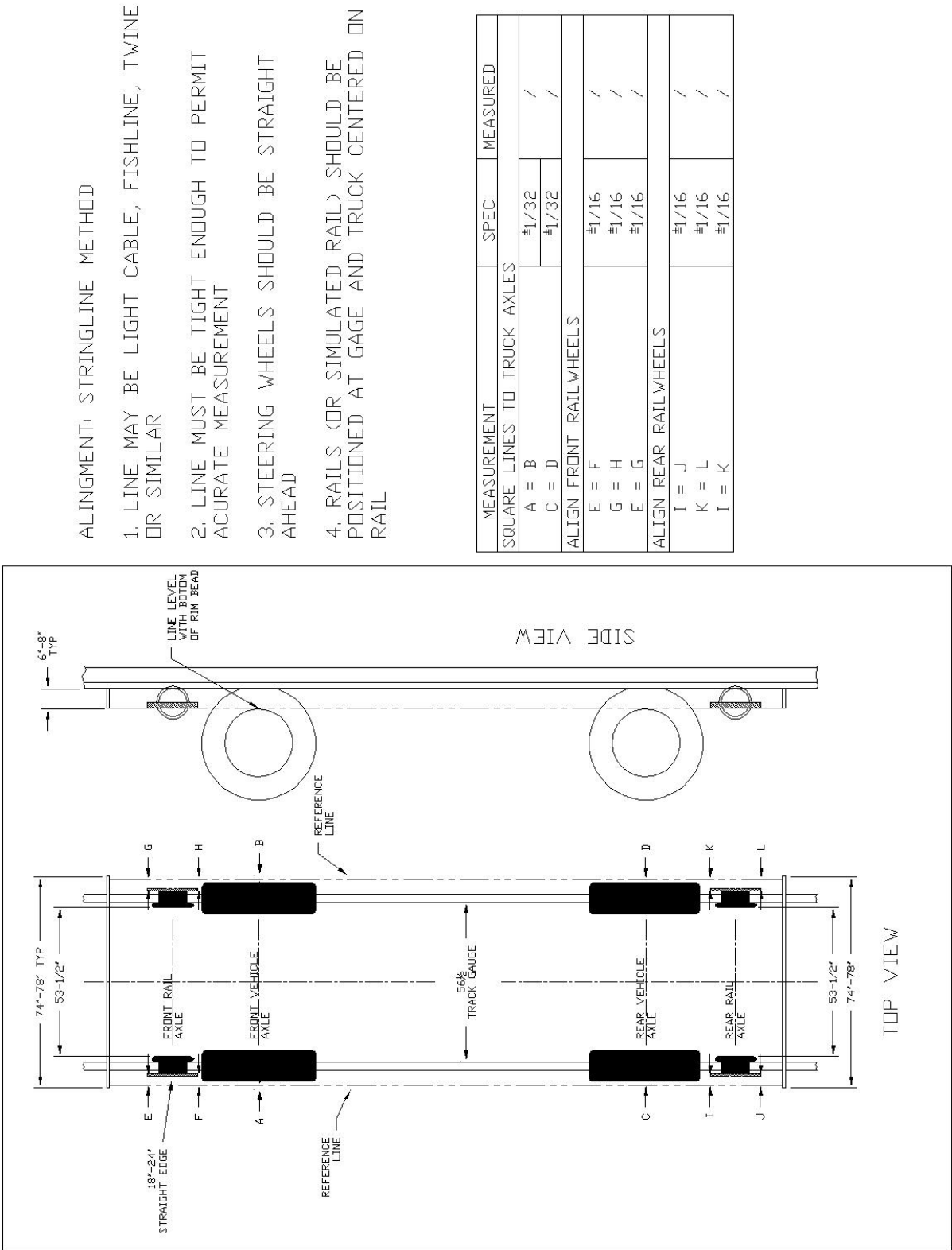
### 3.5.6 Rail Test after Alignment

After rail wheel loads and alignment have been set and verified, paint wheels, then perform track test on straight rail. Things to consider during track test:

- Only go forward while on rail, before checking wheel wear. Changing directions while performing the test does not provide accurate results.
- Observe marking on wheel is even on all 4 wheels. If wear isn't even, adjust alignment as necessary.



3.5.7 Alignment Diagram Method #1



MEASUREMENT	SPEC	MEASURED
SQUARE LINES TO TRUCK AXLES		
A = B	±1/32	/
C = D	±1/32	/
ALIGN FRONT RAILWHEELS		
E = F	±1/16	/
G = H	±1/16	/
E = G	±1/16	/
ALIGN REAR RAILWHEELS		
I = J	±1/16	/
K = L	±1/16	/
I = K	±1/16	/

## 3.5.8 Alignment Diagram Method #2

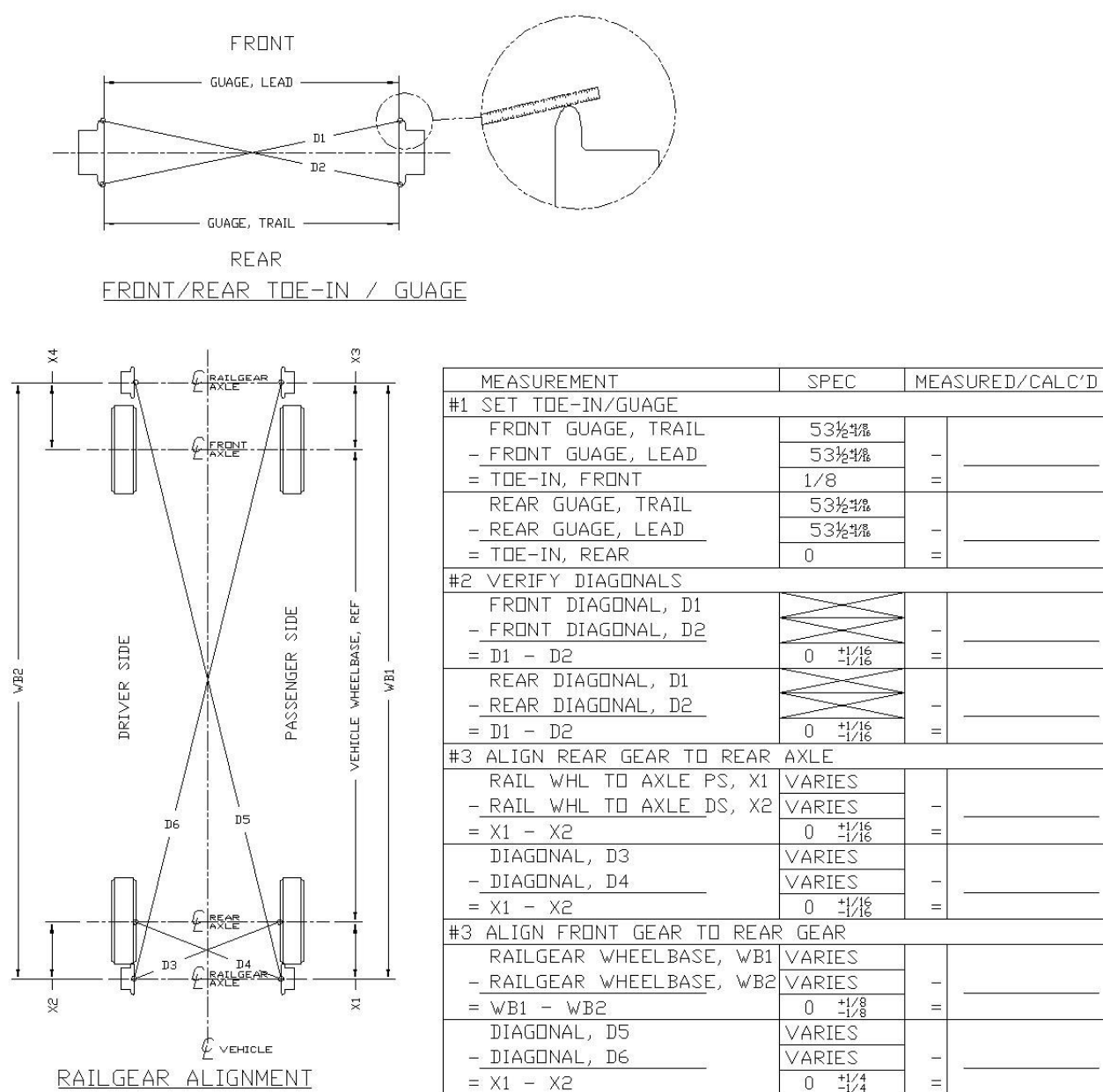


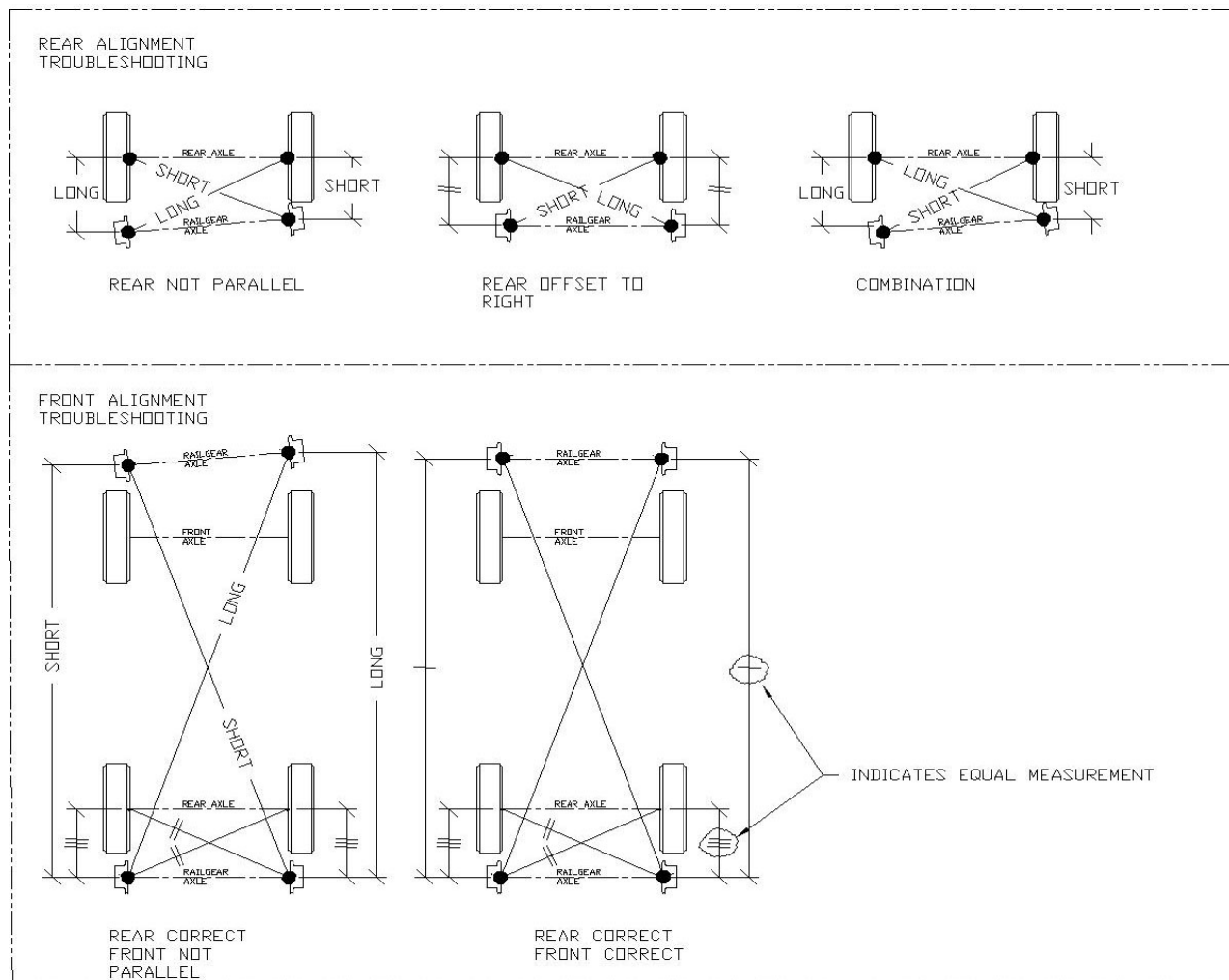
Figure 3.5.8.A Alignment Diagram Method #2

### 3.5.9 Alignment Troubleshooting

Sometimes alignment problems will be combinations of angle and offset. It is often helpful to draw a sketch similar to the examples shown in below.

#### Tips for Alignment

- If a truck's chassis is out of alignment it can make it difficult and sometime impossible to align the Railgear. Inquire about the vehicles behavior on the highway. Occasionally new trucks have to be sent back for alignment to get the rear axle square with the chassis.
- It is very important to get the rear alignment correct before attempting to align the front.



**Figure 3.5.9.A Alignment Troubleshooting**

### 3.6 Derailment

In the case of a minor derailment, the cause of the derailment should be determined and corrective steps taken. The vehicle should be inspected to determine if repairs or adjustments are required. This inspection should include, but should not be limited to, the following:

- Visually inspect Railgear for hydraulic leaks
- Ensure all lines and hoses are still secured and out of the way of any moving parts
- Ensure all hydraulic hose connections and fittings are securely in place and not broken
- Verify that all threaded fasteners are secure, and that cotter pins are not broken
- Visually inspect wheels to ensure that tread and flange are not severely damaged
- Spin all 4 railwheels, noting any bearing noise, resistance, and end play

Any items noted should be repaired using Section 4.0 and 5.0, to ensure they are repaired to initial install standards.

In case of a major derailment, a complete inspection should be performed, including but not limited to the following:

- Perform all inspection items as listed above in the Minor Derailment section
- Inspect all pivot arms and frame brackets to ensure they are not bent, cracked, or broken
- Ensure all welds are intact and show no signs of cracking or breaking
- Ensure all mounting hardware and brackets are securely fastened, and are not bent, cracked, or damaged in any way
- A full alignment should be performed. See section 3.5.
- Wheels should be removed and the bore, bearing, races, and insulation (if applicable) should be inspected for any damage. For further wheel details, see section 5.2 for appropriate wheel & axle assembly drawings.
- Ensure axle threads are not stripped or damaged

Any items noted should be repaired using Section 4.0 and 5.0, to ensure they are repaired to initial install standards.

If there is no apparent cause for derailment, the vehicle may have an alignment problem or rail wheel load problem. (See Section 3.4 – Rail wheel load and Section 3.5 - Alignment)

Please contact DMF for any assistance you may require.

**3.6.1 Troubleshooting On-track Problems**

Symptom	Possible Cause	Diagnostic Step	Corrective Action
Rail wheel vibration/ noise	Damaged Tread Patterned Wear on Tread Loose Wheel	Inspect treads Inspect Bearings & Suspension Inspect Suspension, Bearing and Spindle	Tighten, adjust or replace Tighten, adjust or replace
Vehicle tracking to one side, wandering	Misalignment  Overload or load imbalance Un-Even Rail Load/ Vehicle Load	Check Alignment  Visually inspect, scale vehicle Weigh Vehicle and Check Rail Loads	Adjust Alignment  Unload and/or redistribute load Adjust Load Distribution and Re-set Rail Loads
Insufficient Traction or Braking	Rail Load set too high  Tires worn	  Inspect Tires	Set Rail Loads  Replace tires

**Table 3.6.1.A Troubleshooting On-track Problems****3.7 Rail Wheel Wear Gauge**

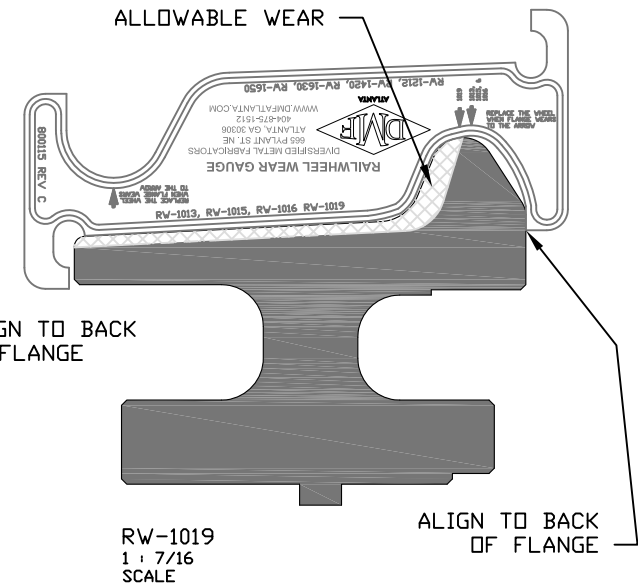
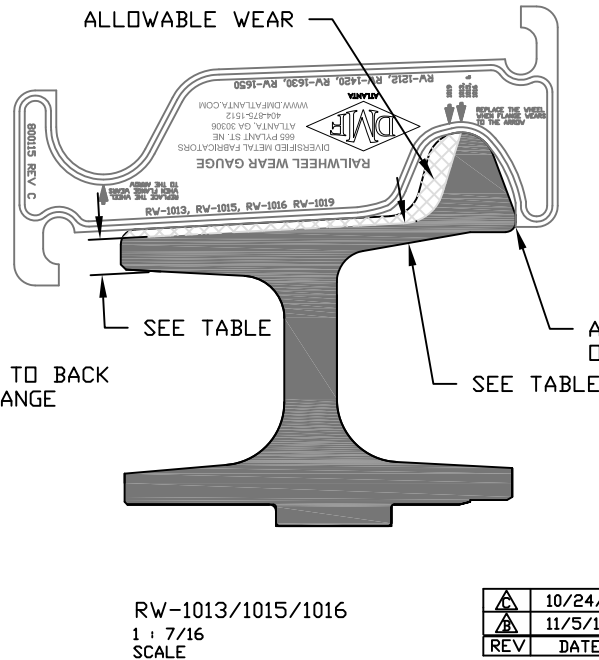
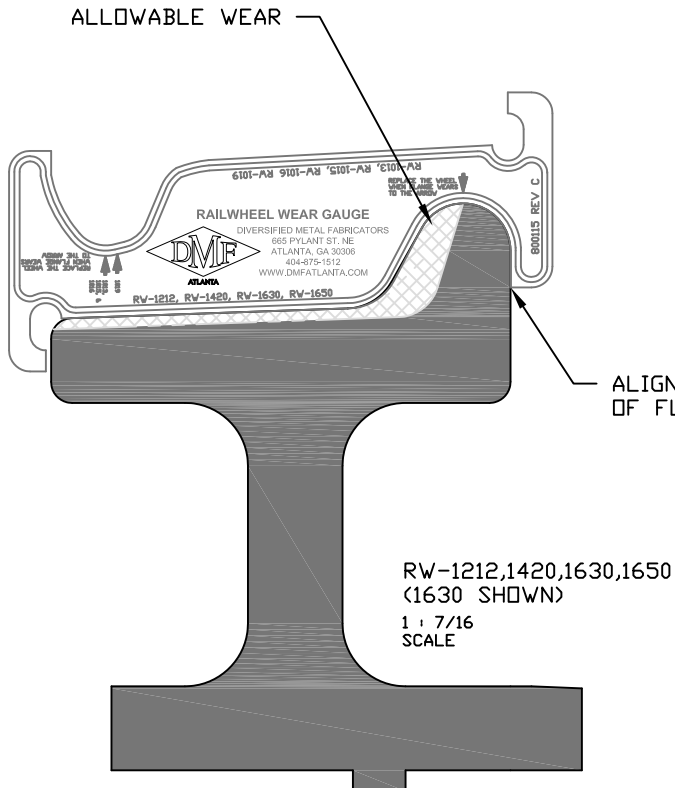
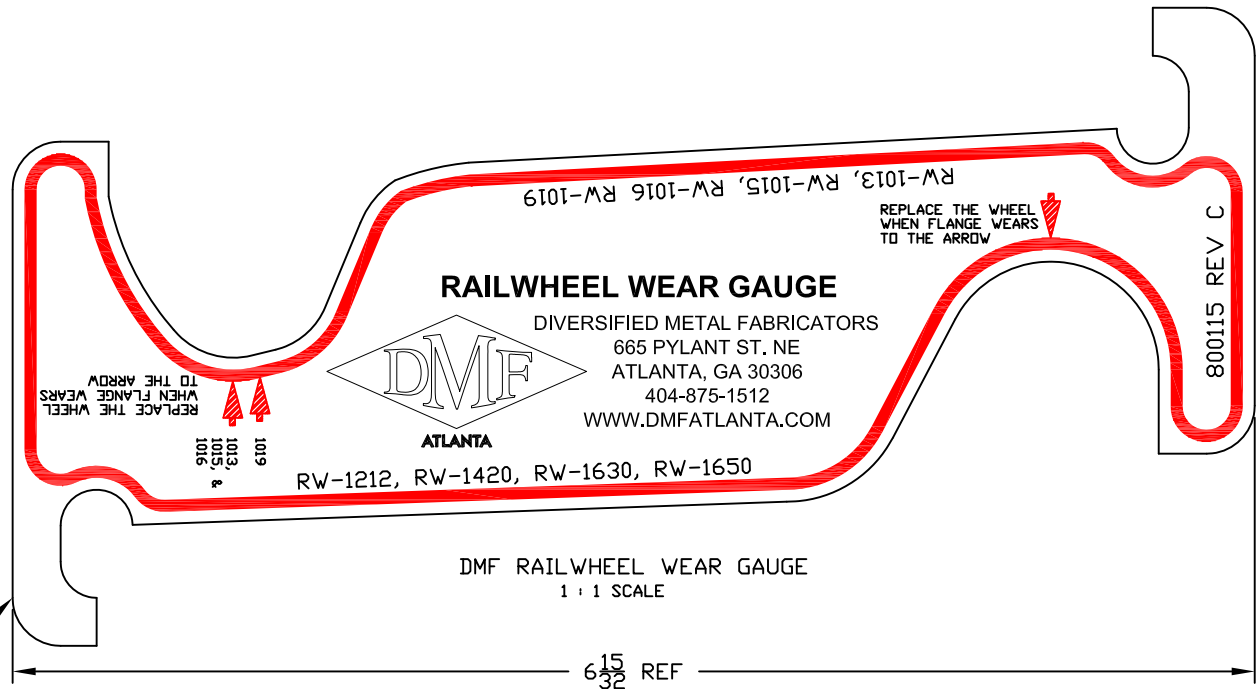
A metal wheel wear gauge (DMF part number 800115) is available to aid in inspecting worn wheels. The drawing on the next page illustrates how to use the gauge and also lists specifications for minimum wall thickness on the wheel tread as well as tolerance on wheel back-to-back spacing.

NOTE:  
THIS GAGE IS USED TO DETERMINE FLANGE WEAR.  
FLANGE IS TYPICALLY THE MOST SIGNIFICANT  
WHEEL WEAR AND THE CAUSE OF MOST WHEEL  
REPLACEMENT. WHEELS MAY ALSO BE CONDEMED  
FOR TREAD CONDITIONS SUCH AS HOLLOW GROUND  
TREADS OR CORRUGATION IF IT AFFECTS TRACKING  
ON RAIL, OR INSUFFICIENT TREAD WALL  
THICKNESS.

△ TREAD WALL THICKNESS & WHEEL BACK-TO-BACK:

WHEEL SIZE	MINIMUM WALL (IN)	WHEEL FLANGE BACK-TO-BACK (IN) +/- 1/8
RW-1630/50	3/4	52 7/8
RW-1212/1420	1/2	52 15/16
RW-1019	3/8	53 1/4
RW-1013/1015/1016	1/4	

0.063 ALUMINUM



△	10/24/16	ADDED BACK-TO-BACK DATA & 1016 WHEELS	BJF	
△	11/5/14	ADDED TREAD WEAR LIMITS, REVISED PROFILE FOR 500066	BJF	
REV	DATE	DESCRIPTION	BY	APP
TOLERANCES: UNLESS SPECIFIED COMMON SENSE PREVAILS				
FRAC. MACH. ± 1/32"				
FRAC. OTHER ± 1/16"				
X ± .003				
XX ± .030				
XXX OR XXXXX ± .005				
DRILL SIZES ± .015				
ANGULAR ± 1°				
SURF FINISH: .125 MICRO				
THREADS: RA AND 2B				
SMALL SHARP EDGES & R CORN & RPS (SEE 2)				
DMF		TITLE: DET, GAUGE, WHEEL WEAR		
DRAWN BY: WAK		APPD BY:		
		DATE: 2/2/10		
		DRAWING NUMBER: 800115		
		REV: C		

# 4.0 INSTALLATION

## 4.0 Installation

- 4.1 Pre-Install
  - 4.1.1 Safety Statements
  - 4.1.2 Installation Order
  - 4.1.3 Installation Sheets
  - 4.1.4 Receiving
  - 4.1.5 Required Tools & Materials
- 4.2 Chassis Prep
  - 4.2.1 Vehicle Condition
  - 4.2.2 Alignment
  - 4.2.3 Mount and Balance Tires
  - 4.2.4 Tire Pressure Monitoring (TPMS)
  - 4.2.5 Speedometer Recalibration
  - 4.2.6 Re-Springing
  - 4.2.7 Exhaust Modifications
  - 4.2.8 Tire Carrier
- 4.3 Install Wheel Modification Kit
  - 4.3.1 Safety Statement
  - 4.3.2 Wheel Adapters
  - 4.3.3 Spacers
  - 4.3.4 Studs
  - 4.3.5 Install Steering Stops
  - 4.3.6 Wheelhouse/Body Modifications
- 4.4 Steering Wheel Lock Installation
- 4.5 Install Electrical System
  - 4.5.1 Locate Components
  - 4.5.2 Route Wires
  - 4.5.3 Electrical Insulation
- 4.6 Install Hydraulic System
  - 4.6.1 Route Hydraulic Hoses
  - 4.6.2 Install Emergency Hand Pump
  - 4.6.3 Prime Emergency Hand Pump
- 4.7 Install Rear Railgear
  - 4.7.1 Install and Align Rear Gear
  - 4.7.2 Set Initial Rail Wheel Load & Rear Bracket Height
  - 4.7.3 Install Hydraulic Lines
  - 4.7.4 Align Rear Gear
  - 4.7.5 Set Rail Wheel Load
  - 4.7.6 Set Rail Sweeps
  - 4.7.7 Exhaust Modifications
- 4.8 Install Front Railgear
  - 4.8.1 Remove Front Bumper
  - 4.8.2 Install Front Gear
  - 4.8.3 Hook up Hydraulics
  - 4.8.4 Align Front Railgear to Rear Railgear
  - 4.8.5 Set Rail Wheel Load
  - 4.8.6 Bumper Installation / Modification
  - 4.8.7 Set Rail Sweeps
- 4.9 Verify & Adjust Rail Wheel Load & Alignment
- 4.10 Rail Test
- 4.11 Final Weld-out
- 4.12 Install Decals
- 4.13 Inspection & Function Test
  - 4.13.1 General Inspection
  - 4.13.2 Function Test
- 4.14 Road Test
- 4.15 Final Inspection

## 4.1 Pre-Install

### 4.1.1 Safety Statements

- Always block up gear before getting underneath
- Always use jack stands when jacking up vehicle
- Use personal protective equipment and clothing

### 4.1.2 Installation Order

We have presented the installation information in the order that we have found work best. Your shop, tools, personnel or other factors may dictate a different order of operations. This is acceptable as long as the Inspection, Rail Test, Road Test and Final Inspection are performed at the end. You should pay attention to the warnings in the Chassis Modifications and Wheel Modification Kits sections.

### 4.1.3 Installation Sheets

Refer to the installation sheet for your specific chassis located in 5.1 Installation Guides. Study this sheet before proceeding through the general instructions.

### 4.1.4 Receiving

#### General Supplied Parts Checklist

PARTS	QTY
Manual	1
Front RW-1015 Unit	1
Rear RW-1015 Unit	1
Hydraulic Power Unit and Bracket	1
Wiring Harness Assembly	1
In-Cab Switch Box	1
Wheel Modification Kit: (if required, see appendix for details)	Varies
Wheels	
Adapters/Spacers	
Lug nuts	
Steering Wheel Stops Assembly	
Steering Wheel Lock Assembly	



#### **4.1.5 Required Tools & Materials**

Aside from general shop tools and safety equipment the following tools will be required:

- Arc or MIG Welder
- Surge Protector (Protects ECM from damage while welding)
- Cutting Torch
- Hand Grinder
- Frame Drill
- Air Saw
- Test Rail ((4) Steel Tubing 3x2x36" or actual rail)
- ATF Fluid - DEXRON III
- Electrical Terminal Insulation (Spray-on or Brush-on)
- Wire ties, wire loom, and electrical tape

Additionally the following tools are recommended:

- Transmission Jack, Motorcycle Lift, Pallet Jack or Forklift
- Overhead Crane
- Work Lights
- Work Area
- Wheel Dolly

## 4.2 Chassis Prep

### 4.2.1 Vehicle Condition

The vehicle's suspension and frame should be in good condition. If the vehicle's stock wheels and tires are to be used, they should be inspected and properly inflated.

### 4.2.2 Alignment

It is important for rail wheel alignment that the rear axle of the vehicle is square to the truck frame. It is recommended that all (even new vehicles) be laser aligned before Railgear installation. Some alignment equipment can't accept a truck after the installation of Railgear. The vehicle should be aligned for a zero thrust angle. Factory alignment specifications are set to account for the crown of the road and can affect rail tracking.

### 4.2.3 Mount and Balance Tires

If your vehicle requires a wheel modification kit (refer to 5.5) you should have the tires mounted before installation. The early stages of install can be done without the modified wheels but they must be installed before Rail Wheel Loads are set. Tire should be properly inflated. Rims should be mounted using a torque wrench and not air tools.

### 4.2.4 Tire Pressure Monitoring (TPMS)

The TREAD act has made TPMS mandatory on passenger vehicles under 10k GVWR. Typically this is done with an RF transmitter located in the tire or the valve stem. If the wheels are replaced as a part of the upfit, these systems must be installed and calibrated to the higher pressure appropriate for these tires (typically 225/70R19.5 or 245/70R19.5 at 85psi). The re-calibration is usually performed by a dealer. Please refer to the TPMS & Wheel Modification information in section 5.5 for your specific chassis. Provide this information to the dealer when having the re-calibration done.

### 4.2.5 Speedometer Recalibration

If your truck requires a wheel modification kit, it is typically going from a 16 or 17-inch rims and tires to 19.5-inch rims and tires. This changes the rolling radius of the tires significantly, requiring the speedometer to be recalibrated. Dealerships are able to perform this work at a moderate cost. There are tools available to allow an installer to perform the calibration but they are expensive and often model-specific. Speedometer re-calibration is usually done at the same time as the TPMS re-calibration. See section 5.5 for information specific to your chassis.

### 4.2.6 Exhaust Modifications

Some vehicles require the exhaust to be modified to clear the Railgear. Usually, the installer cuts the exhaust and has a muffler shop complete the work after the gear is installed. If multiple identical vehicles are being worked on, you may want to have the exhaust modification done before the Railgear installation. Flexible exhaust pipes can be used temporarily during the install but are not recommended as a permanent exhaust pipe.

In general, EPA'07 diesel exhausts should only be modified aft of the after-treatment device. Every attempt should be made to preserve the back pressure so that the required pressure sensors are not affected. This can be done using an equivalent length method. Many systems use a diffuser tip to lower the exhaust temperature to safe levels. Diffusers should be retained if modifications are necessary. Please refer to the chassis vendor's body builder's information on exhaust modifications.

**4.2.7 Tire Carrier**

Often the vehicle's spare is located in the area to be occupied by the rear Railgear. Installers are typically expected to provide a tire carrier in the bed for pickups or on the lift gate or in the cargo area for SUV's.

## 4.3 Install Wheel Modification Kit

In order for the tires to rest on the rail, many vehicles will require replacement wheels with a greater inset (negative offset). These wheels are usually very heavy and a wheel dolly is recommended. Some vehicles will also require spacers to get both the wheels over the rail. These can be on one or both axles. Some vehicles will also require stud replacement to allow for an unusually thick set of spacers. As with spacers, this can be on one or both axles.

### 4.3.1 Safety Statement

Brake lines and ABS Sensor Wires usually need to be tied back in order to clear the new wheels. Zip-ties and springs are useful for this purpose. Ensure that Brake/ABS wires and lines do not come in contact with the wheel/tire or suspension in any position. Make sure there is sufficient slack to allow the line to reach in any suspension position. Refer to Section 5.5 Chassis/Wheel Modifications to determine which of the following applies to your installation:

### 4.3.2 Wheel Adapters

Some vehicles will use wheel adapters to allow the use of a stock 19.5 rim. These adapters will bolt to the vehicle hub and the rim will then bolt to the adapter.

### 4.3.3 Spacers

If required, spacers are easily installed by slipping them on the studs before installing a wheel/tire. Care should be taken to prevent thin spacers from binding and being bent or crushed. Refer to 5.5 Chassis/Wheel Modifications to determine if and where spacers are required. IF YOUR KIT CAME WITH WHEEL **SPACERS, USE THEM!** If you don't, you can damage brake lines, ABS Sensor wires, tires and/or suspension parts.

### 4.3.4 Studs

Current DMF kits use factory studs.

### 4.3.5 Install Steering Stops

#### Cautions

- STEERING WHEEL STOPS MUST BE VERIFIED BEFORE A VEHICLE IS OPERATED ON THE HIGHWAY! CHECK THIS ON EVERY VEHICLE! Incorrectly installed Steering Stops can cause serious tire damage and create a hazard for anyone operating the vehicle.
- INSTALL STEERING STOPS BEFORE MOVING THE VEHICLE! If you don't, you can cause serious tire damage and create a hazard for anyone operating the vehicle.

#### Installation

- Install Stops. Refer to 5.5 Chassis/Wheel Modifications for the details on your specific steering stops.
- Verify that the steering stops limit the wheels or tires from any contact with frame, sway bar, wheelhouse, suspension etc. DMF recommends at least 1/8" clearance from any fixed obstruction to the wheel or tire in any suspension position.
- To check clearance in the normal suspension position, jack the vehicle under the axle, suspension or upright until the tire clears the ground.
- To check clearance in the drooped position, jack the vehicle under the frame, cross-member or body jack point until the tire clears the ground.
- Check the steering clearance on both sides. Many suspensions are not entirely symmetrical. (Ford Twin I-beam)

**4.3.6 Wheelhouse/Body Modifications**

Occasionally a vehicle will require modification to the wheelhouse. If your vehicle requires wheelhouse modifications they will be explained in 5.5 chassis and wheel modifications.

## 4.4 Steering Wheel Lock Installation

### DMF Velcro Steering Wheel Lock Operation

The DMF Velcro steering wheel lock consists of two 2" wide adhesive backed "hook" strips and a 4" wide piece of "loop" fabric. A piece of adhesive backed hook is placed on the steering wheel column and a second piece placed on the top flat of the steering wheel hub. The 4" wide piece of loop fabric can then be applied to bridge the gap between column and wheel preventing the front tires from accidentally being turned while on the rail. However, in the event of an emergency, the steering wheel can be forcibly turned and the Velcro fasteners will separate allowing the driver to steer the vehicle.

### DMF Velcro Steering Wheel Lock Installation

1. Clean the areas where the self-adhesive 2" wide "hook" strips will be applied on the steering column and wheel with rubbing alcohol and a clean cloth.
2. Allow the column and wheel to dry.
3. Remove the adhesive backing from the "hook" strips and apply them to the top of the steering wheel hub and the column as close to the wheel-column gap as possible.  
NOTE: Trim the strips to fit around obstructions such as hazard light switches.



**Figure 4.4.A** Steering Wheel Lock Installation



**Figure 4.4.B** Steering Wheel Lock In Use

4. Allow the adhesive to cure for 24 hours prior to attaching the 4" loop fabric.
5. When putting the truck on the rail, position the 4" loop fabric to bridge the gap between the hooks on both the column and wheel as shown below and press firmly.
6. To remove the lock simply pull on the D-ring and store the piece of Velcro

## 4.5 Install Electrical System

Refer to 5.4 Electrical System

### 4.5.1 Locate Components

- Determine location under the hood for the circuit breakers and terminal strip. It should be accessible and protected from road spray. High on the firewall, along the inside of the fender and attached to the battery box are typical locations.
- Determine the location of the pump. DMF recommends locating them in following locations in order of preference:
  - Behind Bumper
  - Inside tool cabinet or cross body tool box.
  - Under cross body tool box.
  - Underbody and attached to front of rear Railgear.

If placed in a toolbox or cabinet, covers should be made to protect pumps and solenoids. Covers must be easily removed for service.

- Determine switchbox location. Consider safety and convenience when selecting the position for the switch box. Pickup trucks usually provide several options but SUV's can be more difficult. When in doubt, check with your customer for their preferences.
- Determine the bumper switch locations.

### 4.5.2 Route Wires

- Route the electrical harness according to 5.4 Electrical Schematics. Observe the following guidelines:
  - We recommend running the wires in split loom.
  - Route wires away from the drive train, exhaust, and any moving parts.
  - Ensure that wires do not interfere with Railgear motion.
  - Wires can be routed inside the frame.
  - Support and restrain wires with wire ties or wire clips
  - Tie up bumper switches until they are mounted.
- **All electrical terminations should be protected with liquid electrical tape or other means.**
- **Heat shrink terminals are provided and should be used wherever possible.**
- Pay attention to Bumper switch route and orientation
- Run wires from chassis locations (bumpers, cab, pumps, pin-offs) to the terminal strip under the hood.
- All bulkhead or firewall penetrations must be protected with grommets.
- Attach wires to the terminal strip as shown in 5.4 Electrical System
- Attach the (2) Battery Source leads and the (1) Ignition Source Lead. The ignition source is made using the provided mini-ATO fuse tap.
- Where possible attach grounds to the battery posts or remote ground provided.

### 4.5.3 Electrical Insulation

All Electrical terminations should be protected with a spray or brush-on electrical insulation product. This includes the bumper switches, the pin-off grounds, pump grounds, solenoid connections, terminal strip connections and the terminal strip ground. Failure to adequately protect the electrical components can lead to corrosion and system malfunction. The manufacturer does not warranty the installation of a third party installer. This is the installer's responsibility.

## 4.6 Install Hydraulic System

Refer to 5.3 Hydraulic System

### 4.6.1 Route Hydraulic Hoses

Use supplied hydraulic hoses. Take care to use the indicated lengths where shown. Route all hydraulic hoses according to the Hydraulic Schematic. Observe the following guidelines:

- Route all hoses away from the drive train, exhaust, and any moving parts.
- Ensure that hoses do not interfere with the Railgear.
- Hoses can be routed inside the frame.
- Support and restrain hoses with wire ties or wire clips
- Hoses should be marked and capped before routing through the frame to prevent collecting debris.

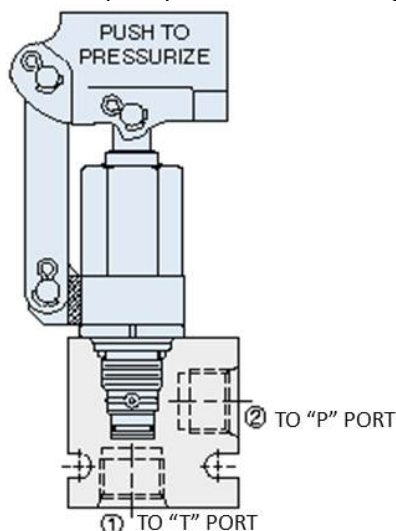
### 4.6.2 Install Emergency Hand Pump

- Install pump behind bumper or in truck bed, tool box, or cargo area. Be careful to allow easy access to the Emergency Pump.
- Ensure hand pump selector switch can be easily reached while operating hand pump.
- Mount the hand pump physically lower than the hydraulic tank to facilitate priming.

### 4.6.3 Prime Emergency Hand Pump

The emergency hand pump must be primed and tested after initial installation. It must be re-primed and tested after any components of the hydraulic system are removed or replaced. Failure to do so may render the hand pump inoperable. The following procedure is one method of priming that DMF has found to be quick and effective.

Loosen the hose connected to emergency hand pump inlet port (port 1 as shown in figure 4.6.3.A) slightly, such that air can bleed from the line. Activate the hydraulic pump and cycle the Railgear cylinders. There is sufficient back pressure in the tank return line to force air out of the hand pump inlet line. When oil begins to escape from the connection stop activation of the cylinders, and re-tighten. Check operation of the emergency hand pump. You may have to cycle the hand pump several times before the pump will work throughout its full range.



Emergency hand pump assembly.  
Figure 4.6.3.A



## 4.7 Install Rear Railgear

### Safety Statements

If the gear is in the highway position and not pinned off (you haven't installed the pin-offs yet!) it can drop if any of the fittings are opened or leaky. The gear is heavy enough to hurt you badly! Block up the gear before you crawl under it!

Refer to 5.1 Installation Guides

### 4.7.1 Install and Align Rear Gear

The rear Railgear may be installed as a unit if suitable lifting equipment is available. Using a forklift, pallet jack or floor jack, position the rear Railgear under the rear bracket and attach with the provided hardware and plate washers. (See section 5.1) Clamp Railgear position and align to rear vehicle axle.

### 4.7.2 Set Initial Rail Wheel Load & Rear Bracket Height

Using slide plate provided, drill required holes in frame. Drill holes to place Railgear at the SET UP HEIGHT and to allow use of slots for Rail Wheel Load adjustment. See 5.1 Installation Guides for details for your specific chassis. Draw the gear up snug but not tight to allow later alignment. If spacers are required, they must be solid steel pieces because they will experience the full structural load seen by the rear frame.

### 4.7.3 Install Hydraulic Lines

Attach hydraulic lines to locking valves and rear cylinders as shown in 5.3 Hydraulic System.

### 4.7.4 Align Rear Gear

Check and adjust rear Railgear axle to the rear vehicle axle. Tack weld axle brackets to axle. Be sure to set the spindle bolts horizontally. Axle brackets will be fully welded during the Final Alignment step.

### 4.7.5 Set Rail Wheel Load

Set Rail Wheel Load using procedure in section 3.4

### 4.7.6 Set Rail Sweeps

The rail sweeps should be set to allow the sweep rubber to contact the rail when adjusted to the top of the slots. This allows adjustment when the rubber wears.

### 4.7.7 Exhaust Modifications

See Section 4.2.7.

## 4.8 Install Front Railgear

### Safety Statements

If the gear is in the highway position and not pinned off (you haven't installed the pin-offs yet!) it can drop if any of the fittings are opened or leaky. The gear is heavy enough to hurt you badly! Block up the gear before you crawl under it!

Refer to 5.1 Installation Guides

### 4.8.1 Remove Front Bumper

See manufacturers manual for instructions on how to remove trucks bumper. Be careful to retain all hardware. Unless your Installation Sheet directs otherwise, you can discard any underbody plastic parts. Protect the radiator to prevent damage with cardboard.

### 4.8.2 Install Front Gear

The front Railgear may be installed as a unit if suitable lifting equipment is available. Using a forklift, pallet jack or floor jack, position the front Railgear under the frame and attach with the provided hardware as shown in 5.1 Installation Guides. Draw the gear up snug but not tight to allow later alignment. Refer to 5.1 Installation Guides.

If lifting equipment is not available, the gear can be partially disassembled and installed in parts. Refer to the exploded diagrams in Section 5.1.

### 4.8.3 Hook up Hydraulics

Attach hydraulic lines to the locking valves and front cylinders per as shown in 5.3 Hydraulic System.

### 4.8.4 Align Front Railgear to Rear Railgear

Refer to 3.5 Alignment. Align the front Railgear to the rear Railgear per the Alignment sheet. Tack weld axle brackets to axle. Be sure to set the spindle bolts horizontally. Axle brackets will be fully welded during the Final Alignment step.

### 4.8.5 Set Rail Wheel Load

Set Rail Wheel Load per 3.4 Rail Wheel Load.

**4.8.6 Bumper Installation / Modification**

Refer to 5.1 Installation guides on modifying and installing the bumper. Pickups and Suburban's typically only require modification to the front bumper and mounting forward to clear the Railgear.

**4.8.7 Set Rail Sweeps**

The angle of the rail sweeps should be set to allow the sweep rubber to contact the rail when adjusted to the top of the slots. This allows adjustment when the rubber wears.

## 4.9 Verify & Adjust Rail Wheel Load & Alignment

- Verify and adjust the Rail Wheel Load. Refer to Sections 3.4 & 3.5. Verify and adjust the alignment.

## 4.10 Rail Test

- Run vehicle forwards and backwards on rail.
- If available run the vehicle through curves and switches.
- Verify alignment by observing the wear pattern on the wheel and the behavior of the vehicle. If adjustment is required refer to 3.5 Alignment.

## 4.11 Final Weld-out

See drawings in Section 5.1 for additional details and welding locations.

- Fully weld each leg of each axle bracket to the axle tube. See Section 5.1 for inboard/outboard locations.
- Weld the plate washers on the slotted frame mounting plates on the front and rear to fix the alignment of the unit.
- On the rear, weld the 3-hole mounting plate on the top and bottom to secure rear bracket in place.
- Weld the bottom of rear bracket side plate to the rear bracket along front- and rear-facing edges to secure side plates from sliding in and out.
- Ensure all shims are fully welded on both the front and rear Railgear.

## 4.12 Install Decals

- Label the reservoir "RAILGEAR RESERVIOR DEXRON ATF III ONLY".
- Label the vehicles according to the diagram on the back of the decal sheet. See decal drawings in section 5.1.

## 4.13 Inspection & Function Test

### 4.13.1 General Inspection

- Check that all fasteners are tight.
- Check that all hoses and wire are routed properly.
- Verify that the area is clear.
- Verify that all electrical terminations are insulated and protected.

### 4.13.2 Function Test

- Verify the battery is charged and hydraulic fluid is full.
- Verify the power indication on the power switch in the cab.
- Verify the function of the front and rear pin-offs.
- Verify rear switches (bumper & in-cab) actuate the rear Railgear, and front switches (bumper & in-cab) actuate front Railgear, and that the switches are oriented properly.
- Verify that the Railgear does not operate with the power switch in the off position.
- Follow Section 2.4 to verify emergency pump function.
- Load test vehicle to GVWR and verify Railgear function.

**Note:** If there is any cross functionality (such as front controls operating rear), a wiring error should be suspected. Typically this is at the terminal strip or the solenoids.

## 4.14 Road Test

- Before road testing inspect steering stops, wheel and tires. Verify that the lug nuts have been torqued to the value in section 5.5.
- Verify that all bodywork is replaced and secure.
- In a parking lot or open area, verify that the steering stops prevent the tire or rim from contacting the frame, suspension or other items.
- Inspect brake lines and ABS sensor lines to verify clearance from rim.
- Check for any rattles and vibration.
- Verify speedometer calibration by timing a distance, GPS or from another vehicle. (This may not be necessary for every install.)

## 4.15 Final Inspection

- Verify that the hydraulic fluid is full.
- Verify that the reservoir is labeled.
- Touch up paint as necessary.
- Lubricate Pin-off pins (if equipped) with a light lubricant.
- Verify decals are installed on wheels.
- Verify that the decals are installed at bumper switches.
- Verify that the decals are installed in cab.
- Verify that the manual is in the cab.
- Verify that the emergency pump handle is stowed.
- Check the tire inflation.
- Verify that all bodywork is replaced and secure.
- Verify lug nut torque.
- Verify grease fittings have been lubricated.
- Verify final weld out has been performed as per section 4.11 – Final Weld Out

## 5.0 TECHNICAL DETAILS

### 5.1 Application/Installation Drawings

5.1.1	M1015109	Install Front, '11 GM/Chevrolet 25HD/3500SRW
5.1.2	M1015107	Install Rear, '11 GM/Chevrolet 25HD/3500SRW
5.1.3	M1015100	Install Front, '09 GM/Chevrolet 25HD/Suburban/3500SRW
5.1.4	M1015101	Install Rear, '09 GM/Chevrolet 25HD/Suburban/3500SRW
5.1.5	M1015102	Install Front, '09 Ford F250/F350 SRW
5.1.6	M1015103	Install Rear, '09 Ford F250/F350 SRW
5.1.7	600716	Assembly, Front Pin-Off Option
5.1.8	600717	Assembly, Rear Pin-Off Option
5.1.9	600719	Assembly, 4x4 Rear Pin-Off Option
5.1.10	800192	Instruction and Safety Decals
5.1.11	PP006	Purchased Fastener Torque Specifications

### 5.2 Railgear Assemblies

5.2.1	600165	Front Assy, '11 GM/Chevrolet 25HD/ 3500SRW
5.2.2	600161	Rear Assy, '11 GM/Chevrolet 25HD/ 3500SRW
5.2.3	600101	Front Assy, '09 GM/Chevrolet 25HD/Suburban/3500SRW
5.2.4	600102	Rear Assy, '09 GM/Chevrolet 25HD/Suburban/3500SRW
5.2.5	600107	Front Assy, '09 Ford F250/F350 SRW
5.2.6	600109	Rear Assy, '09 Ford F250/F350 SRW
5.2.7	M1015110	RW-1015 Ford Pivot Arms and Brackets
5.2.8	M1015104	RW-1015 Axle/Spindle/Wheel Assembly
5.2.9	M1015106	RW-1015 Wheel Assembly
5.2.10	600237	Wide Gage Railsweep Adapter
5.2.11	M1015105	Front/Rear Grease Guard Sets

**5.3 Hydraulic System**

5.3.1	600550	RW-1015 Hydraulic System
5.3.2	600501/503	RW-1015 Hydraulic Cylinders
5.3.3	600611	RW-1015 Locking Valve w/Orifice & Fittings
5.3.4	PP003	SAE O-Ring Fitting Installation
5.3.5	PP004	National Pipe Thread (NPT) Fitting Installation
5.3.6	PP005	SAE (JIC) 37 Degree Fitting Installation
5.3.7	PP008	Cylinder Assembly

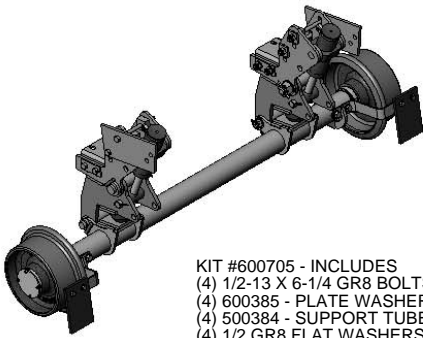
**5.4 Electrical System**

5.4.1	600601	RW-1015 Electrical Schematic
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**5.5 Chassis/Wheel Modifications**

5.5.1	509029	GM Suburban ('07 to '12) and GM C/K2500/3500 ('07 to '10) Wheel Adapter Kit
5.5.2	509033	GM C/K2500/3500 ('11 to present) Wheel Adapter Kit
5.5.3	509048	Ford F-2/350 4x2 Wheel Adapter Kit ('10 to present)
5.5.4	509049	Ford F-2/350 4x4 Wheel Adapter Kit ('10 to present)

**NOTE: FOR INDIVIDUAL PART #'S AND AN EXPLODED DIAGRAM, REFERENCE DRAWING 600165**

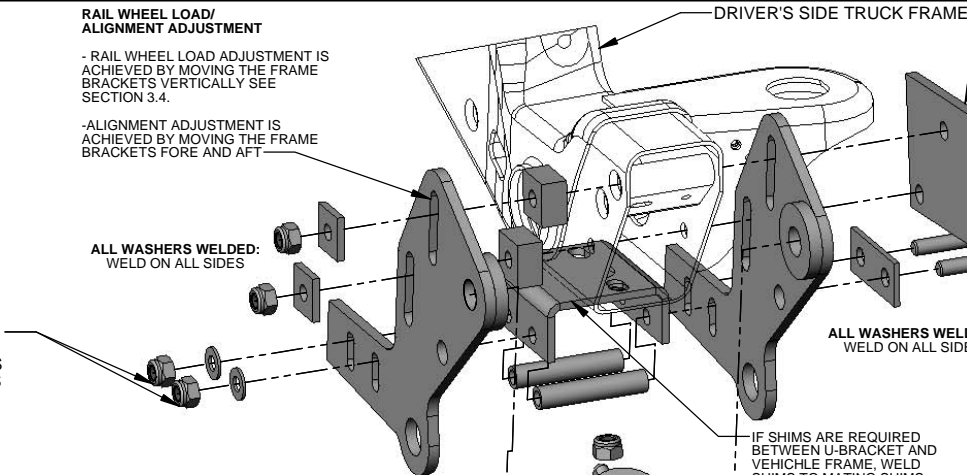


**KIT #600705 - INCLUDES**  
(4) 1/2-13 X 6-1/4 GR8 BOLTS  
(4) 600385 - PLATE WASHERS  
(4) 500384 - SUPPORT TUBES  
(4) 1/2 GR8 FLAT WASHERS  
(4) 1/2-13 GR8 NYLOCK NUTS

**RAIL WHEEL LOAD/  
ALIGNMENT ADJUSTMENT**

- RAIL WHEEL LOAD ADJUSTMENT IS  
ACHIEVED BY MOVING THE FRAME  
BRACKETS VERTICALLY SEE  
SECTION 3.4.  
- ALIGNMENT ADJUSTMENT IS  
ACHIEVED BY MOVING THE FRAME  
BRACKETS FORE AND AFT

**ALL WASHERS WELDED:**  
WELD ON ALL SIDES



**ALL WASHERS WELDED:**  
WELD ON ALL SIDES

**FULLY WELD BUMPER EXTENSION  
PLATE TO FRAME BRACKET ON BOTH  
DRIVER AND PASSENGER SIDES.**

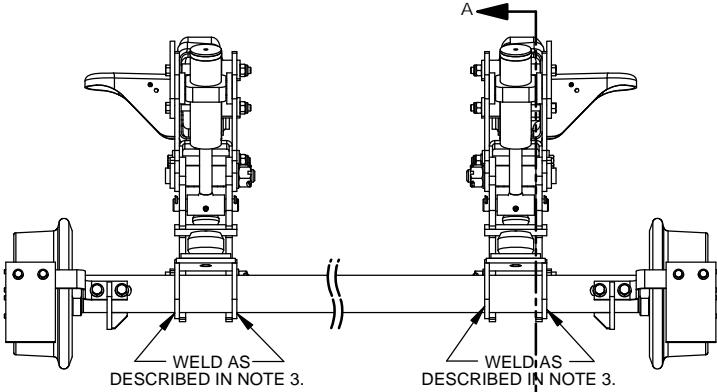
**KIT #600706 - INCLUDES**  
(4) 1/2-13 X 6-1/2 GR8 BOLTS  
(4) 600356 - SPACERS  
(4) 600318 - SQUARE WASHERS  
(4) 1/2-13 GR8 NYLOCK NUTS

**NOTE #1: GRADE 8 BOLTS MUST BE USED WHEN MOUNTING GEAR TO TRUCK FRAME.**

**NOTE #2: AT FINAL INSTALLATION: (AFTER OVERALL FRONT TO BACK RAILGEAR ALIGNMENT & RAIL WHEEL  
LOAD SETTINGS HAVE BEEN COMPLETED) FOR ALL STRUCTURAL WELDS, EITHER LOW HYDROGEN ROD OR  
DUAL SHIELD MIG WIRE SHOULD BE USED.**

**WARNING: DO NOT ATTACH THE WELDING MACHINE GROUND CLAMP ONTO THE RAIL WHEELS. THIS WILL  
CAUSE ARCING ACROSS THE BEARINGS INSIDE THE WHEELS & LEAD TO PRE-MATURE BEARING FAILURE.**

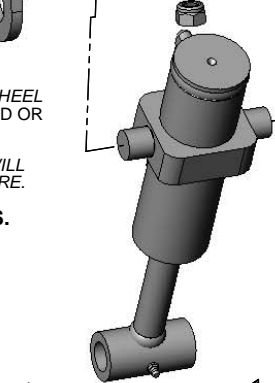
**WELD ALL SHIMS, BRACKETS AND WASHERS IN PLACE AS DESCRIBED IN CALL OUTS.**



**WELD AS  
DESCRIBED IN NOTE 3.**

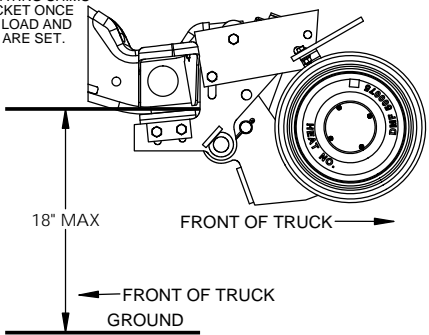
**WELD AS  
DESCRIBED IN NOTE 3.**

**NOTE #3: SET AND VERIFY RAIL WHEEL LOADS AND RAILGEAR ALIGNMENT.  
BEGINNING WITH GEAR IN RAIL POSITION, FULLY WELD AROUND THE  
OUTBOARD SIDE OF EACH LEG OF EACH AXLE BRACKET. YOU MAY HAVE  
TO MOVE THE GEAR TO HIGHWAY POSITION IN ORDER TO COMPLETE  
THE WELD.**

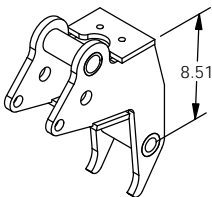


IF SHIMS ARE REQUIRED  
BETWEEN U-BRACKET AND  
VEHICLE FRAME, WELD  
SHIMS TO MATING SHIMS  
AND U-BRACKET ONCE  
RAILWHEEL LOAD AND  
ALIGNMENT ARE SET.

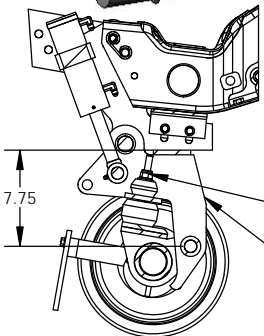
**OPTIONAL "LONG" PIVOT ARM - P/N 600320  
(FOR FRAME HEIGHTS BETWEEN 17" AND 18")**



18" MAX  
FRONT OF TRUCK  
FRONT OF TRUCK  
GROUND



**NOTE: OPTIONAL "LONG" PIVOT ARM 600320 AVAILABLE FOR VEHICLES  
WITH FRONT FRAME HEIGHT MODIFIED HIGHER THAN STOCK. FRAME  
HEIGHT (AFTER RIDE HEIGHT MODIFICATION & INSTALLATION OF 19.5"  
TIRES) MUST NOT EXCEED 18" WHEN RAILGEAR IS IN HIGHWAY POSITION.**



ONLY ADJUST WITHIN GUIDELINES  
GIVEN IN SECTION 3.4

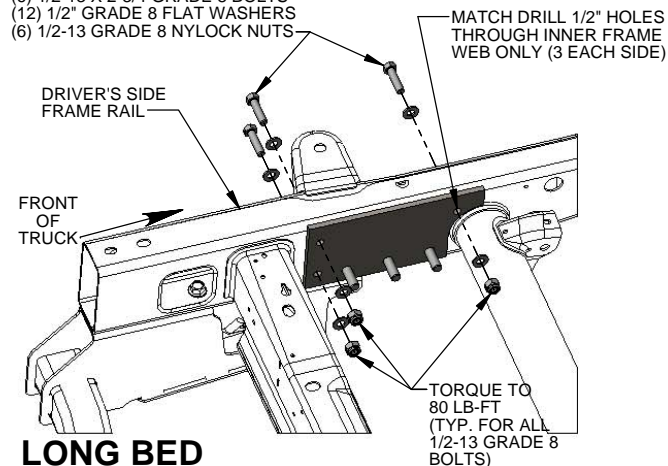
**"MID-LENGTH" PIVOT ARM - P/N 601420  
(FOR FRAME HEIGHTS BETWEEN 15.5"  
AND 17")**

**SECTION A-A  
SCALE 1 : 10**

2/28/2012	600706 WAS 600705	B/JF
10-7-2011	UPDATED WELD NOTES FOR CLARITY AND ADDED FRAME HEIGHT INFO	ARJ
REV	DATE	DESCRIPTION
1		
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KIT #600172 - INCLUDES:  
(6) 1/2-13 X 2-3/4 GRADE 8 BOLTS  
(12) 1/2" GRADE 8 FLAT WASHERS  
(6) 1/2-13 GRADE 8 NYLOCK NUTS



## LONG BED

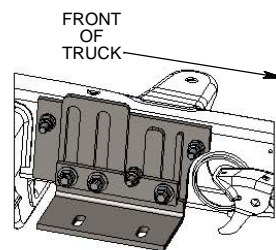
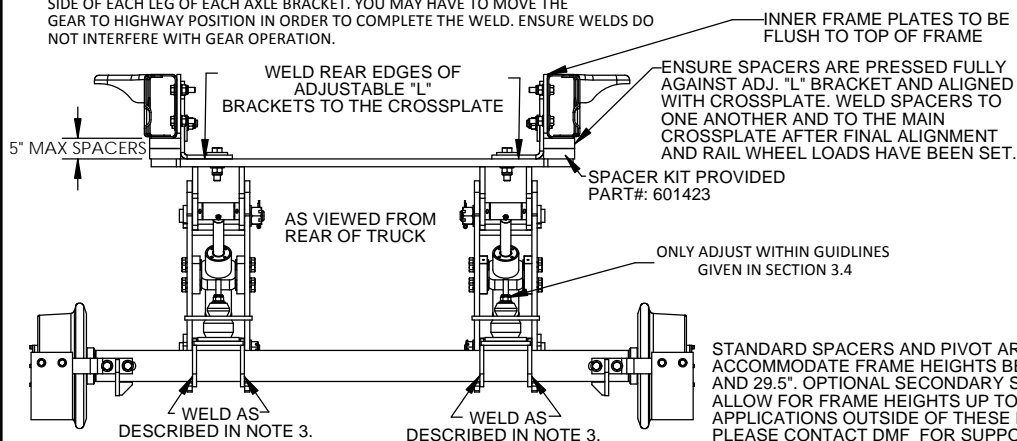
**NOTE #1:** GRADE 8 BOLTS MUST BE USED WHEN MOUNTING GEAR TO TRUCK FRAME.

**NOTE #2:** AT FINAL INSTALLATION: (AFTER OVERALL FRONT TO BACK RAILGEAR ALIGNMENT & RAIL WHEEL LOAD SETTINGS HAVE BEEN COMPLETED) FOR ALL STRUCTURAL WELDS, EITHER LOW HYDROGEN ROD OR DUAL SHIELD MIG WIRE SHOULD BE USED.

**WARNING:** DO NOT ATTACH THE WELDING MACHINE GROUND CLAMP ONTO THE RAIL WHEELS. THIS WILL CAUSE ARCING ACROSS THE BEARINGS INSIDE THE WHEELS & LEAD TO PRE-MATURE BEARING FAILURE.

**WELD ALL SPACERS, PLATES, BRACKETS, AND WASHERS AS DESCRIBED IN CALL OUTS.**

**NOTE 3:** SET AND VERIFY RAIL WHEEL LOADS AND RAILGEAR ALIGNMENT. BEGINNING WITH GEAR IN RAIL POSITION, FULLY WELD AROUND OUTBOARD SIDE OF EACH LEG OF EACH AXLE BRACKET. YOU MAY HAVE TO MOVE THE GEAR TO HIGHWAY POSITION IN ORDER TO COMPLETE THE WELD. ENSURE WELDS DO NOT INTERFERE WITH GEAR OPERATION.



## SHORT BED

NOTE: SHOWN FOR VISUAL REFERENCE;  
INSTALLATION PROCEDURE IS COMPARABLE

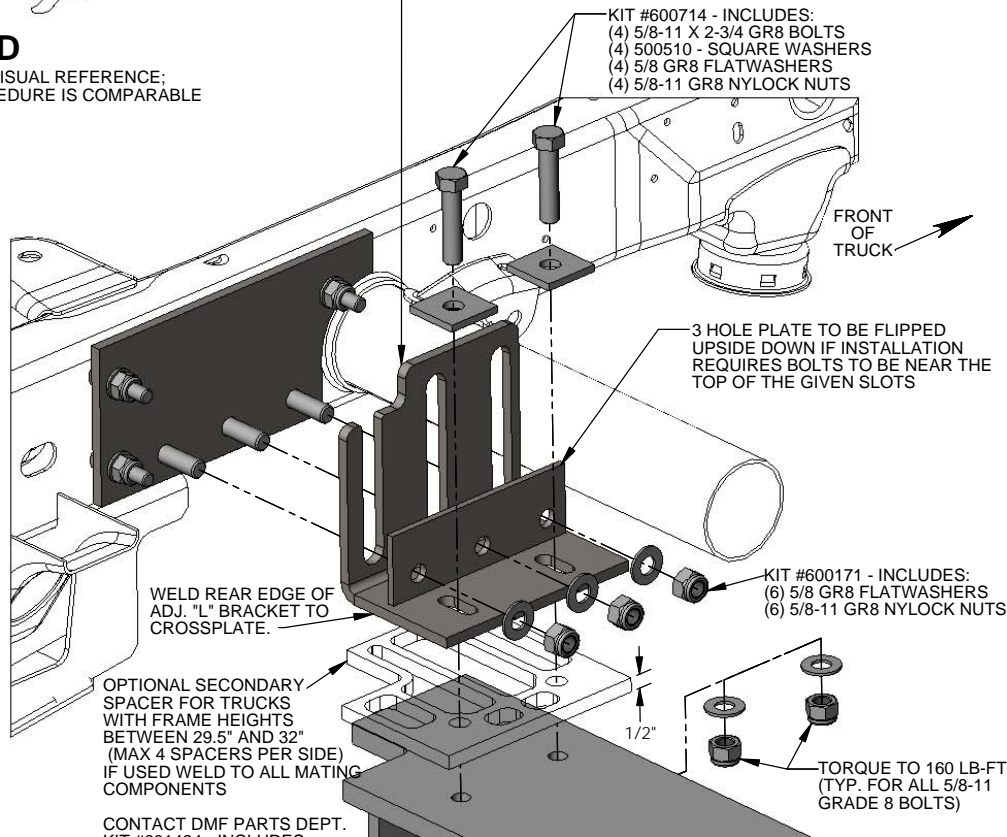
## RAIL WHEEL LOAD/ ALIGNMENT ADJUSTMENT

- RAIL WHEEL LOAD ADJUSTMENT IS ACHIEVED BY MOVING THE "L" BRACKETS VERTICALLY. SEE SECTION 3.4.

- ALIGNMENT ADJUSTMENT IS ACHIEVED BY WAY OF MOVING THE "L" BRACKETS FORE AND AFT

ONCE THESE PROCEDURES HAVE BEEN COMPLETED AND VERIFIED, WELD WASHERS AND 3-HOLE PLATE TO THE ADJ. "L" BRACKET ALONG FULL LENGTH OF TOP AND BOTTOM EDGES.

KIT #600714 - INCLUDES:  
(4) 5/8-11 X 2-3/4 GR8 BOLTS  
(4) 500510 - SQUARE WASHERS  
(4) 5/8 GR8 FLATWASHERS  
(4) 5/8-11 GR8 NYLOCK NUTS



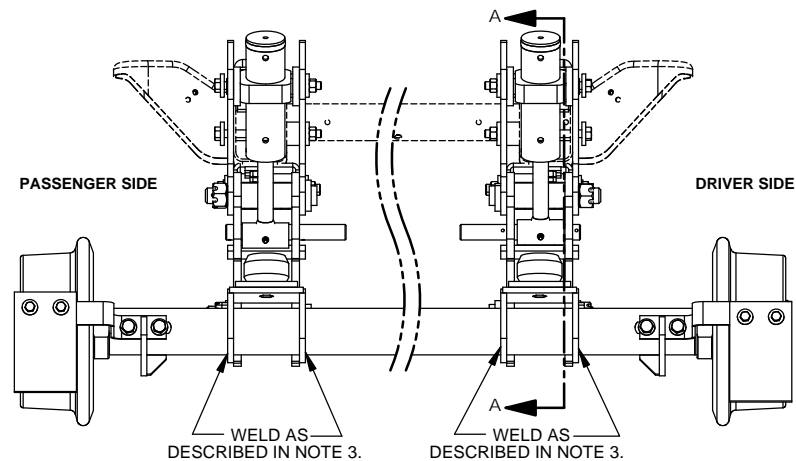
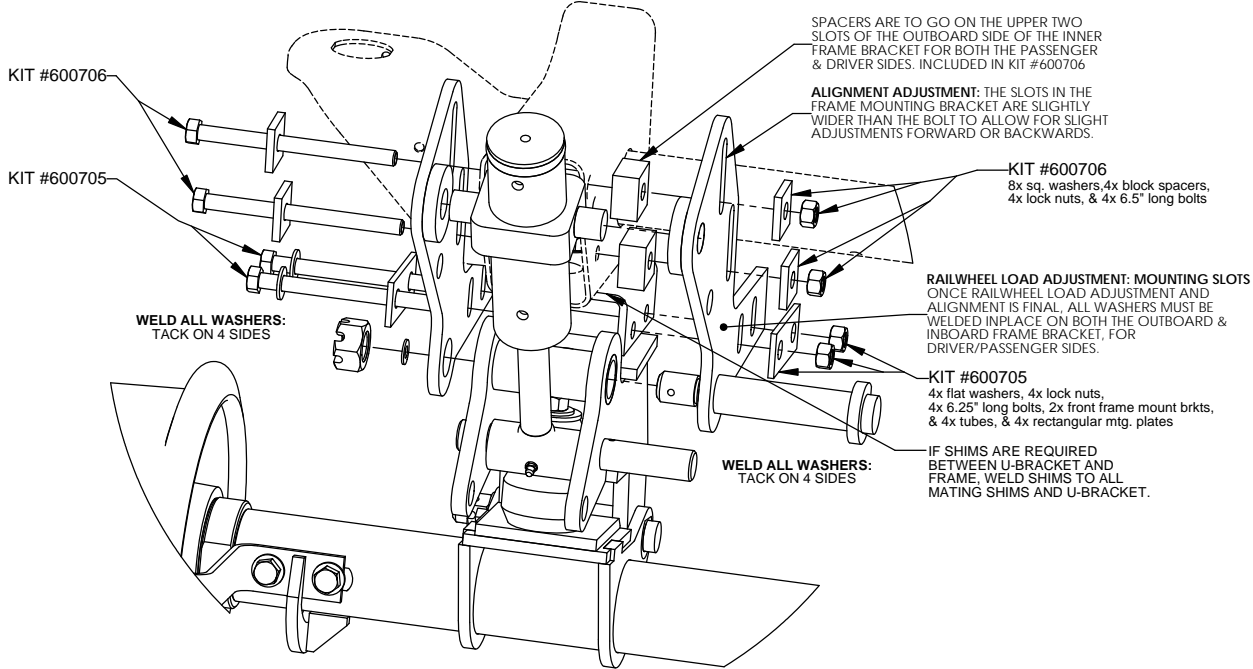
CONTACT DMF PARTS DEPT.  
KIT #601424 - INCLUDES:  
(8) SECONDARY SPACERS  
(5/8-11 X 4-1/2 GR8 BOLTS

NOTE: LONG BED (8' BOX) VERSION SHOWN

**NOTE: FOR INDIVIDUAL PART #'S AND AN EXPLODED  
DIAGRAM, REFERENCE DRAWING 600161**

REV	DATE	DESCRIPTION	BY	APP
1	10-7-2011	UPDATED WELD NOTES FOR CLARITY, REVISED WEIGHT SETTING INSTRUCTIONS	ARJ	
TITLE: MANUAL, '11 GM C25/3500HD REAR ASSY - INSTALL				
DIVERSIFIED METAL FABRICATORS, INC. (404)875-1512				
REV	DATE	DESCRIPTION	BY	APP
1	10-7-2011	10-7-2011	ARJ	
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97	10-7-2011	10-7-2011	ARJ	
98	10-7-2011	10-7-2011	ARJ	
99	10-7-2011	10-7-2011	ARJ	
100	10-7-2011	10-7-2011	ARJ	

FOR INDIVIDUAL PARTS LIST OR PARTS ORDERING, REFER TO DRAWING #600101



VIEWING FRONT OF VEHICLE

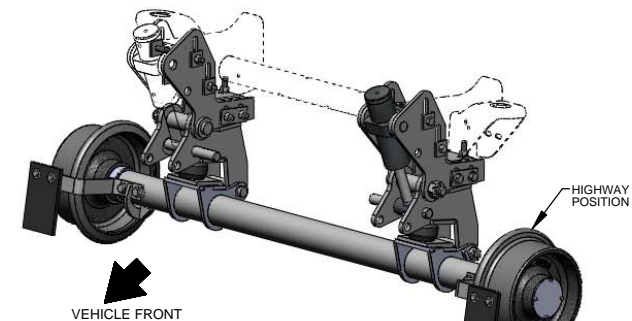
**NOTE 3:** SET AND VERIFY RAIL WHEEL LOADS AND RAILGEAR ALIGNMENT. BEGINNING WITH GEAR IN RAIL POSITION, FULLY WELD AROUND OUTBOARD SIDE OF EACH LEG OF EACH AXLE BRACKET. YOU MAY HAVE TO MOVE THE GEAR TO HIGHWAY POSITION IN ORDER TO COMPLETE THE WELD.

**NOTE #1:** GRADE 8 BOLTS MUST BE USED WHEN MOUNTING GEAR TO TRUCK FRAME.

**NOTE #2:** AT FINAL INSTALLATION: (AFTER OVERALL FRONT TO BACK RAILGEAR ALIGNMENT & RAIL WHEEL LOAD SETTINGS HAVE BEEN COMPLETED) FOR ALL STRUCTURAL WELDS, EITHER LOW HYDROGEN ROD OR DUAL SHIELD MIG WIRE SHOULD BE USED.

**WARNING:** DO NOT ATTACH THE WELDING MACHINE GROUND CLAMP ONTO THE RAIL WHEELS. THIS WILL CAUSE ARCING ACROSS THE BEARINGS INSIDE THE WHEELS & LEAD TO PRE-MATURE BEARING FAILURE.

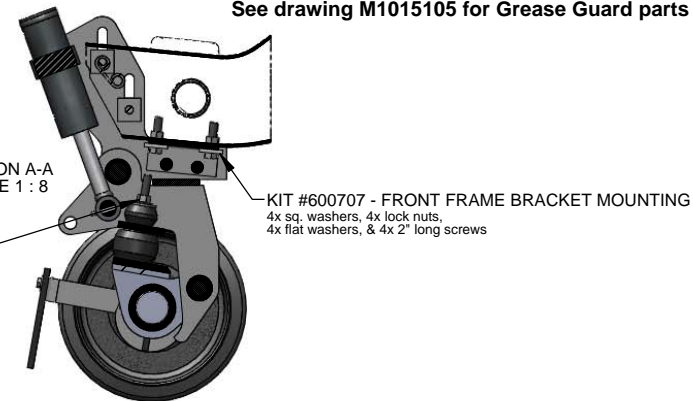
**WELD ALL SHIMS, BRACKETS AND WASHERS AS DESCRIBED IN CALL OUTS.**



See drawing M1015105 for Grease Guard parts

SECTION A-A  
SCALE 1 : 8

ONLY ADJUST WITHIN GUIDELINES  
GIVEN IN SECTION 3.4



REV	DATE	DESCRIPTION	BY	APP
1	10-7-2011	UPDATED WELD NOTES FOR CLARITY, REVISED WEIGHT SETTING INSTRUCTIONS	ARJ	
REVISIONS				
REVISION PROCEDURE				
1	10-7-2011	10-7-2011		
2	10-7-2011	10-7-2011		
3	10-7-2011	10-7-2011		
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98	10-7-2011	10-7-2011		
99	10-7-2011	10-7-2011		
100	10-7-2011	10-7-2011		

FOR INDIVIDUAL PARTS LIST OR PARTS ORDERING,  
REFER TO DRAWING #600102

RAIL WHEELLOAD/ ALIGNMENT ADJUSTMENT

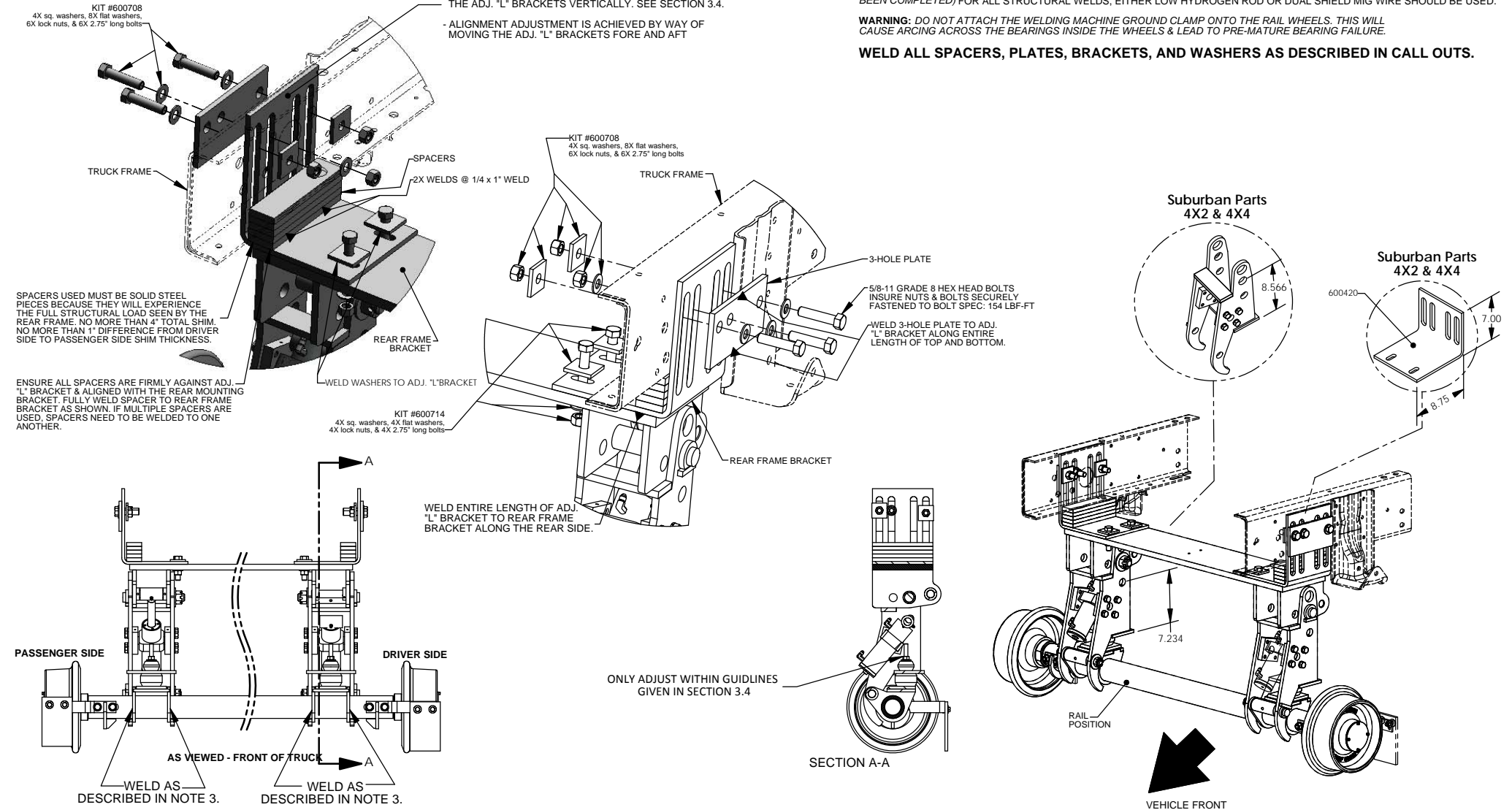
- RAIL WHEEL LOAD ADJUSTMENT IS ACHIEVED BY MOVING THE ADJ. "L" BRACKETS VERTICALLY. SEE SECTION 3.4.
- ALIGNMENT ADJUSTMENT IS ACHIEVED BY WAY OF MOVING THE ADJ. "L" BRACKETS FORE AND AFT

**NOTE #1: GRADE 8 BOLTS MUST BE USED WHEN MOUNTING GEAR TO TRUCK FRAME.**


**NOTE #2: AT FINAL INSTALLATION: (AFTER OVERALL FRONT TO BACK RAILGEAR ALIGNMENT & RAIL WHEEL LOAD SETTINGS HAVE BEEN COMPLETED) FOR ALL STRUCTURAL WELDS, EITHER LOW HYDROGEN ROD OR DUAL SHIELD MIG WIRE SHOULD BE USED.**

**WARNING: DO NOT ATTACH THE WELDING MACHINE GROUND CLAMP ONTO THE RAIL WHEELS. THIS WILL CAUSE ARCING ACROSS THE BEARINGS INSIDE THE WHEELS & LEAD TO PRE-MATURE BEARING FAILURE.**

**WELD ALL SPACERS, PLATES, BRACKETS, AND WASHERS AS DESCRIBED IN CALL OUTS.**



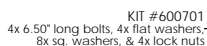
**NOTE 3: SET AND VERIFY RAIL WHEEL LOADS AND RAILGEAR ALIGNMENT. BEGINNING WITH GEAR IN RAIL POSITION, FULLY WELD AROUND OUTBOARD SIDE OF EACH LEG OF EACH AXLE BRACKET. YOU MAY HAVE TO MOVE THE GEAR TO HIGHWAY POSITION IN ORDER TO COMPLETE THE WELD. ENSURE THAT WELDS DO NOT INTERFERE WITH OPERATION OF THE RAILGEAR**

																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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**ALIGNMENT ADJUSTMENT:** THE SLOTS IN THE FRAME MOUNTING BRACKET ARE SLIGHTLY WIDER THAN THE BOLT TO ALLOW FOR SLIGHT ADJUSTMENTS FORWARD OR BACKWARDS.

**RAILWHEEL LOAD ADJUSTMENT: MOUNTING SLOTS**  
ONCE RAILWHEEL LOAD ADJUSTMENT  
IS FINAL (SECTION 3.4), ALL WASHERS MUST BE WELDED IN  
PLACE ON BOTH THE OUTBOARD & INBOARD  
FRAME BRACKET FOR DRIVER/PASSENGER SIDES

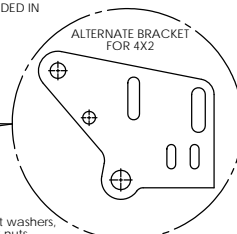


**ALL WASHERS WELDED:  
WELD ON EACH SIDE**

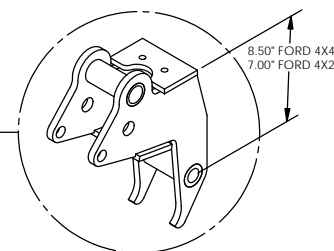
KIT #600701  
4x 6.50" long bolts, 4x flat washers,  
8x sq. washers, & 4x lock nuts

**ALL WASHERS WELDED:  
WELD ON EACH SIDE**

IF SHIMS ARE REQUIRED — BETWEEN U-BRACKET AND VEHICLE FRAME, WELD SHIMS TO MATING SHIMS AND U-BRACKET ONCE RAILWHEEL LOAD AND ALIGNMENT ARE SET.



SEE M1015110 FOR  
ALTERNATE BRACKET PART #



SEE M1015110 FOR ALTERNATE  
PIVOT ARM PART #

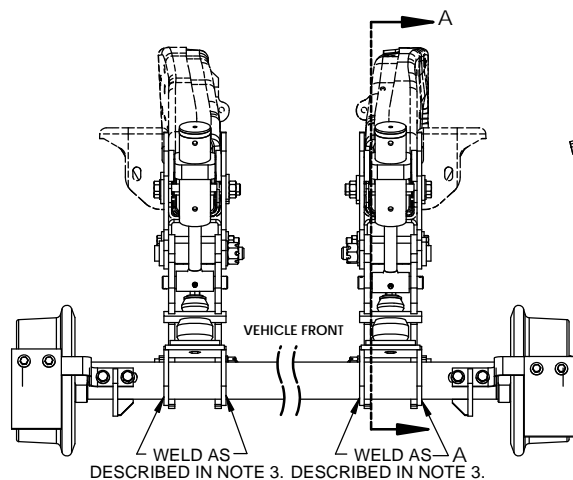
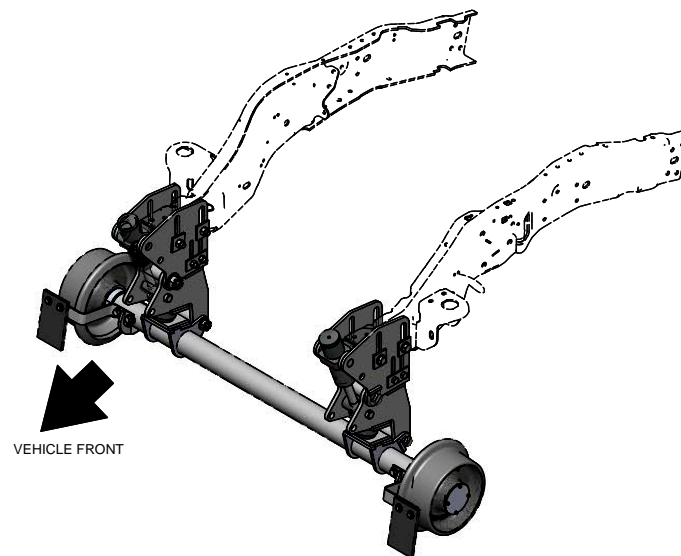
See drawing M1015105 for Grease Guard parts

**NOTE #1: GRADE 8 BOLTS MUST BE USED WHEN MOUNTING GEAR TO TRUCK FRAME.**

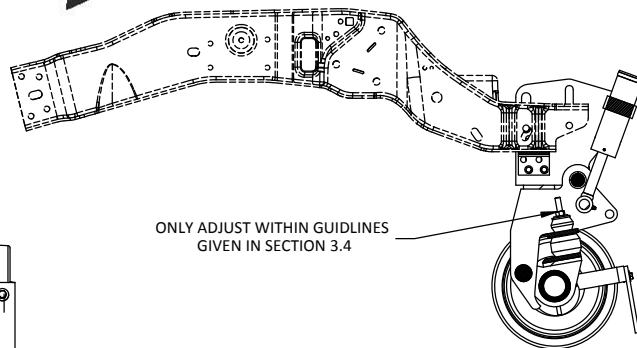
**NOTE #2: AT FINAL INSTALLATION: (AFTER OVERALL FRONT TO BACK RAILGEAR ALIGNMENT & RAIL WHEEL LOAD SETTINGS HAVE BEEN COMPLETED) FOR ALL STRUCTURAL WELDS, EITHER LOW HYDROGEN ROD OR DUAL SHIELD MIG WIRE SHOULD BE USED.**

**WARNING:** DO NOT ATTACH THE WELDING MACHINE GROUND CLAMP ONTO THE RAIL WHEELS. THIS WILL CAUSE ARCING ACROSS THE BEARINGS INSIDE THE WHEELS & LEAD TO PRE-MATURE BEARING FAILURE.

**WELD ALL SHIMS, BRACKETS AND WASHERS AS DESCRIBED IN CALL OUTS.**



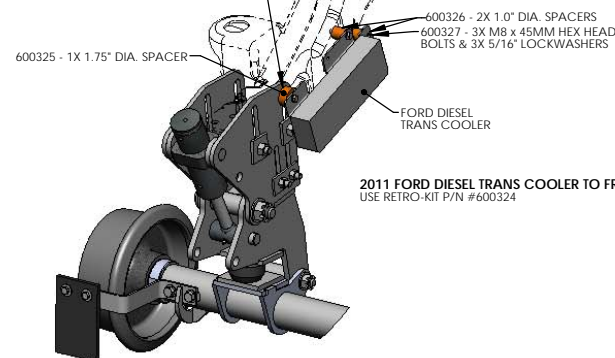
**NOTE 3:** SET AND VERIFY RAIL WHEEL LOADS AND RAILGEAR ALIGNMENT. BEGINNING WITH GEAR IN RAIL POSITION, FULLY WELD AROUND OUTBOARD SIDE OF EACH LEG OF EACH AXLE BRACKET. YOU MAY HAVE TO MOVE THE GEAR TO HIGHWAY POSITION IN ORDER TO COMPLETE THE WELD.



ONLY ADJUST WITHIN GUIDELINES  
GIVEN IN SECTION 3.4

SECTION A-A  
SCALE 1 : 12

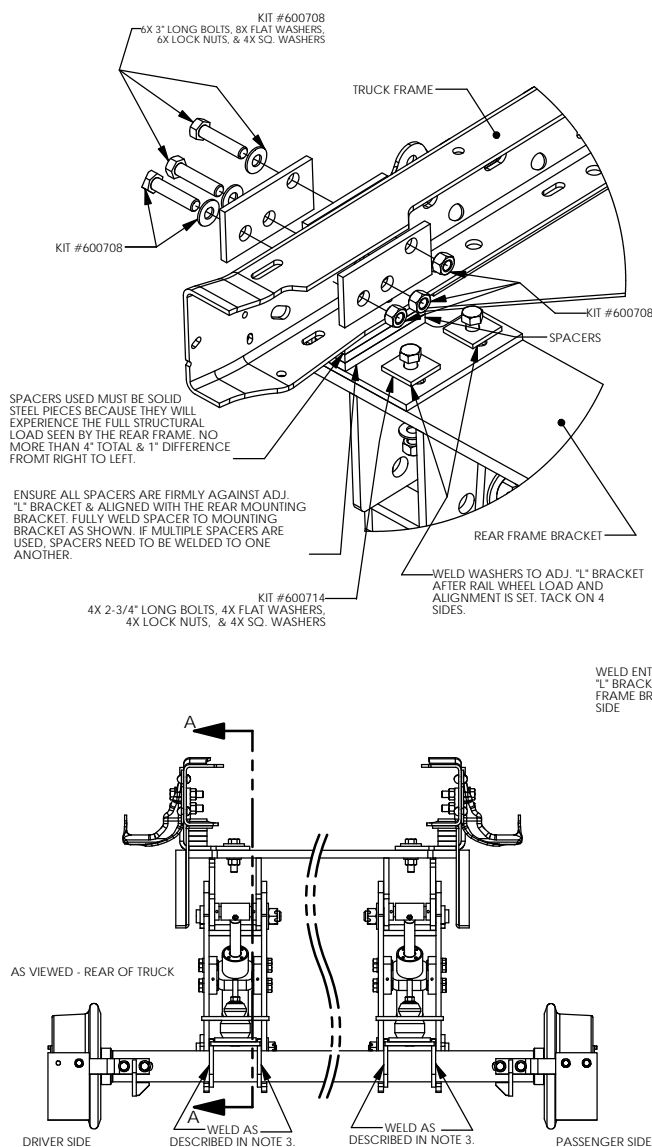
NOTE: INSTALL COOLER AFTER FINAL WEIGHT IS SET.  
SPOT A HOLE THROUGH THE FRAME BRACKET IF  
ORIGINAL FRAME BRACKET HOLE IS COVERED UP.



**2011 FORD DIESEL TRANS COOLER TO FRAME**  
USE RETRO-KIT P/N #600324

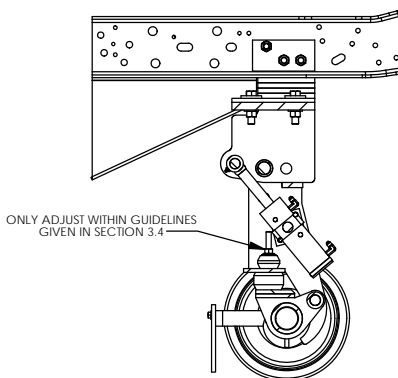
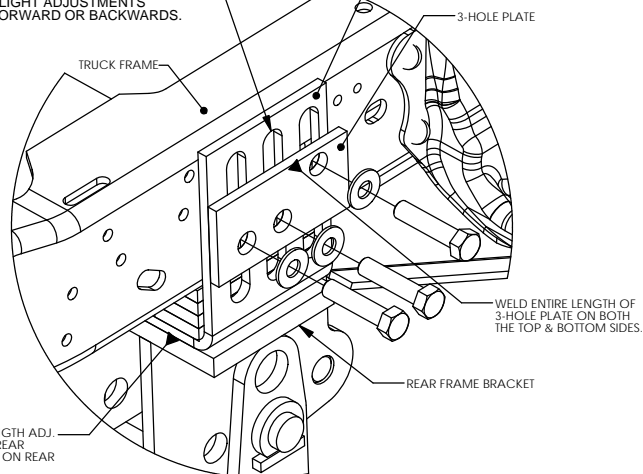
	10-7-2011	UPDATED WELD NOTES FOR CLARITY, REVISED WEIGHT SETTING INSTRUCTIONS		ARI
REV	DATE	DESCRIPTION		BY
		AP		
<b>REVISIONS</b>		<b>TITLE:</b>		
1 FRAC. MACH. FRAC. CRACK JIG DRILL MARKS DIMENSIONS REWORKED 10-6-2011		<b>RW-1015</b>  '08/09 F2/350 FORD FRONT ASSY - INSTALL  DIVERSIFIED METAL FABRICATORS INC. (404)875-1512		
DRAWN BY:	JBG	APPD BY:	DATE:	3/08/10
				DRAWING NUMBER: M1015102
				REV: A

FOR INDIVIDUAL PARTS LIST OR PARTS ORDERING, REFER TO DRAWING #600109



**RAIL WHEEL LOAD ADJUSTMENT: MOUNTING SLOTS**  
ONCE RAILWHEEL LOAD ADJUSTMENT IS FINAL (SEE SECTION 3.4) AND ALIGNMENT IS COMPLETE, WELD 3 HOLE MOUNTING PLATE TO ADJUSTABLE "L" BRACKET. WELD SPACERS IN PLACE & WELD ADJUSTABLE "L" BRACKET TO THE REAR FRAME BRACKET ALONG THE LENGTH OF EACH SIDE - SEE FIGURE BELOW FOR EXACT LOCATIONS & REFERENCE NOTE #2 FOR WELDING INFO.

**ALIGNMENT ADJUSTMENT:**  
THE SLOTS IN THE ADJ. "L"  
BRACKET ARE SLIGHTLY WIDER  
THAN THE BOLT TO ALLOW FOR  
SLIGHT ADJUSTMENTS  
FORWARD OR BACKWARDS.



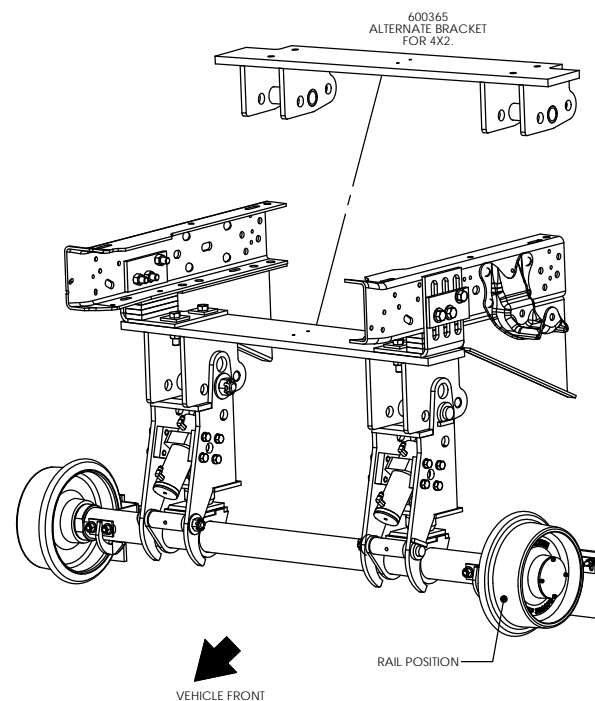
SECTION A-A

**NOTE #1: GRADE 8 BOLTS MUST BE USED WHEN MOUNTING GEAR TO TRUCK FRAME.**

**NOTE #2: AT FINAL INSTALLATION: (AFTER OVERALL FRONT TO BACK RAILGEAR ALIGNMENT & RAIL WHEEL LOAD SETTINGS HAVE BEEN COMPLETED) FOR ALL STRUCTURAL WELDS, EITHER LOW HYDROGEN ROD OR DUAL SHIELD MIG WIRE SHOULD BE USED.**





**WARNING: DO NOT ATTACH THE WELDING MACHINE GROUND CLAMP ONTO THE RAIL WHEELS. THIS WILL CAUSE ARCING ACROSS THE BEARINGS INSIDE THE WHEELS & LEAD TO PRE-MATURE BEARING FAILURE.**

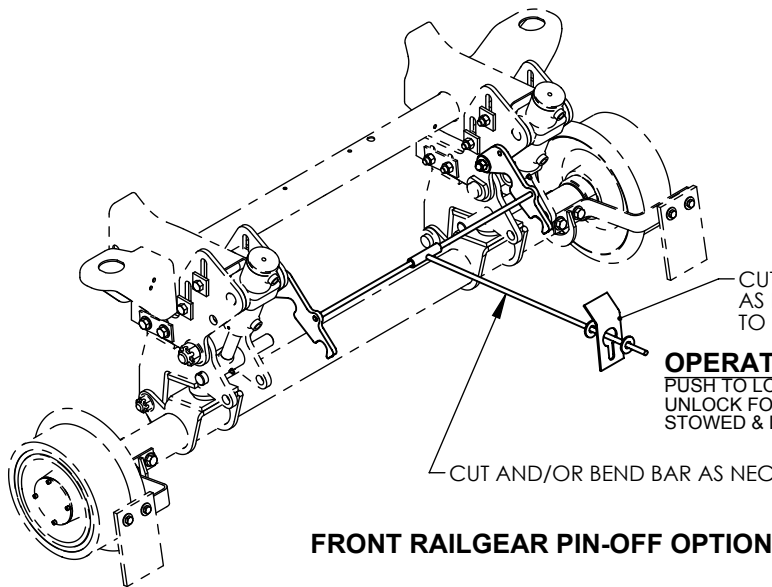
**WELD ALL SPACERS, PLATES, BRACKETS AND WASHERS AS DESCRIBED IN CALL OUTS.**



SEE DRAWING M1015105 FOR GREASE GUARD PARTS

**NOTE 3:** SET AND VERIFY RAIL WHEEL LOADS AND RAILGEAR ALIGNMENT. BEGINNING WITH GEAR IN RAIL POSITION, FULLY WELD AROUND OUTBOARD SIDE OF EACH LEG OF EACH AXLE BRACKET. YOU MAY HAVE TO MOVE THE GEAR TO HIGHWAY POSITION IN ORDER TO COMPLETE THE WELD. ENSURE WELDS DO NOT INTERFERE WITH OPERATION OF GEAR.

	12-10-2012	UPDATED DRAWING VIEWS TO SHOW NEW PARTS: 600345 WAS 600331	JDI
	12-10-2011	UPDATED WELD NOTES FOR CLARITY. REVISED WEIGHT SETTING INSTRUCTIONS	ARJ
REV	DATE	DESCRIPTION	BY AP
		TITLE:	
ITEM NO. 100-100-0000 ITEM NAME: 100-100-0000 ITEM CODE: 100-100-0000 ITEM QTY: 100-100-0000 ITEM UNIT: 100-100-0000 ITEM PRICE: 100-100-0000 ITEM TOTAL: 100-100-0000 ITEM STATUS: 100-100-0000 ITEM COMMENTS: 100-100-0000		RW-1015 '08/09 FORD F250 3.5L REAR ASSY - INSTALL DIVERSIFIED METAL FABRICATORS, INC. (404)975-1512	
DRAWN BY:		DATE:	DRAWING NUMBER:
JBG		3/09/10	M1015103
APPD BY:		REV:	B
			

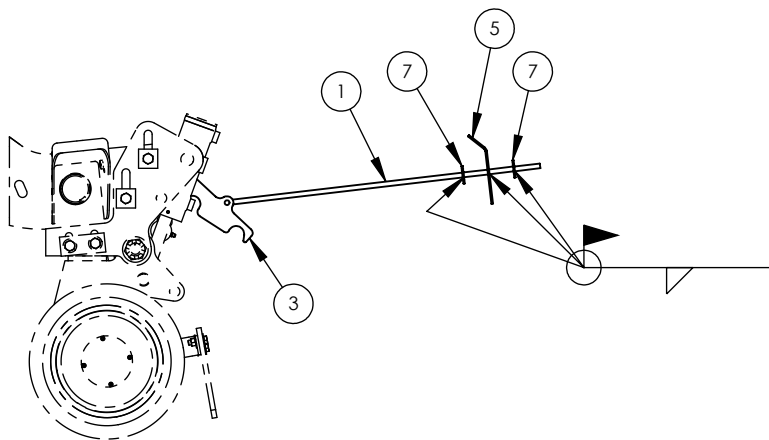


CUT AND/OR BEND PLATE  
AS NECESSARY, ATTACH  
TO BUMPER OR BODY

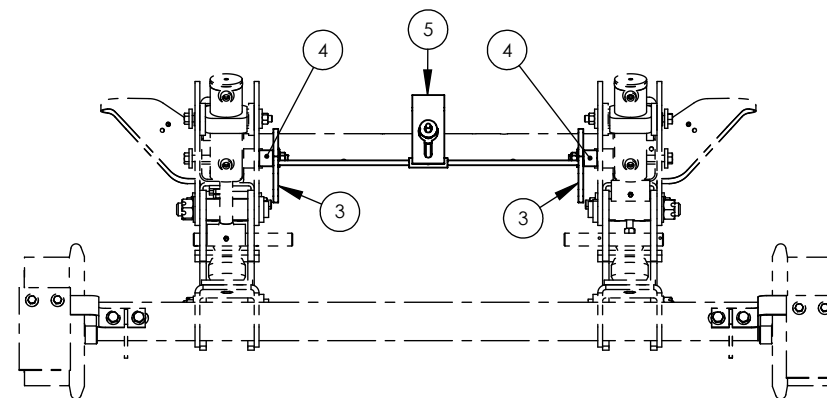
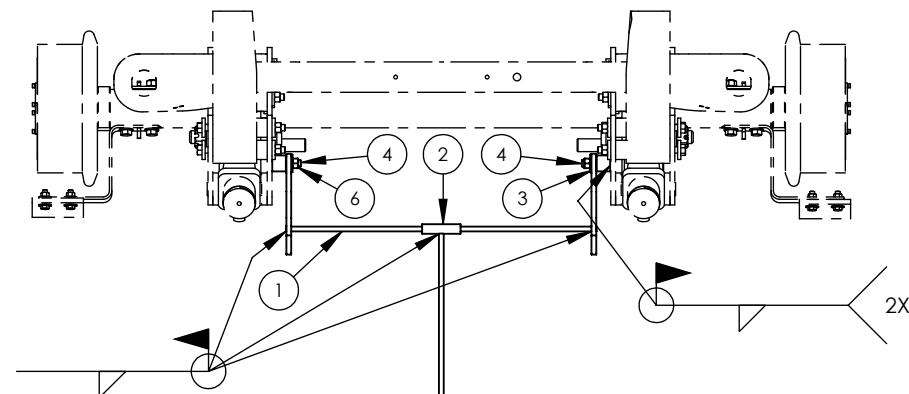
**OPERATION**  
PUSH TO LOCK & PULL TO  
UNLOCK FOR BOTH THE  
STOWED & DEPLOYED POSITIONS

CUT AND/OR BEND BAR AS NECESSARY

### FRONT RAILGEAR PIN-OFF OPTION



ITEM NO.	PART NUMBER	QTY.	DESCRIPTION
1	600417	2	PIN-OFF, CROSS BAR DETAIL, RW-1015
2	600419	1	PIN-OFF, SLIDE MOUNTING TUBE DETAIL, RW-1015
3	600453	2	BO, PIN OFF, PLATE, RW-1015
4	600455	2	DET, PIVOT PIN, PO, 1015, FT
5	600456	1	BO, PLATE, KEYHOLE, PO, RW-1015
6	ESNA1/2-13	2	ESNA LOCK NUT 1/2-13
7	FW1/2GR8	4	FLAT WASHER 1/2" GRADE 8

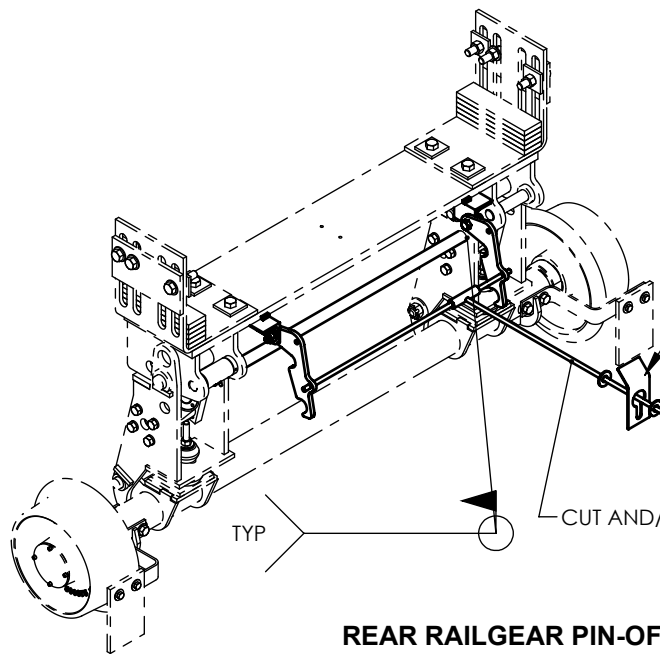


IF MANUAL PIN-OFF'S ORDERED WITH RAILGEAR, THE ABOVE COMPONENTS WILL BE ASSEMBLED & WELDED TO YOUR RAILGEAR.

INSTALLER TO LOCATE AND MODIFY HANDLE & RETENTION PLATE TO SUIT APPLICATION

ATTACH RETENTION PLATE (ITEM 7). DETERMINE THE POSITION FOR THE STOP WASHERS (ITEM 9) TO LOCK BOTH STOWED AND DEPLOYED POSITIONS. WELD WASHERS (ITEMS 9) ONTO HANDLE.

REV	DATE	DESCRIPTION	BY	APP
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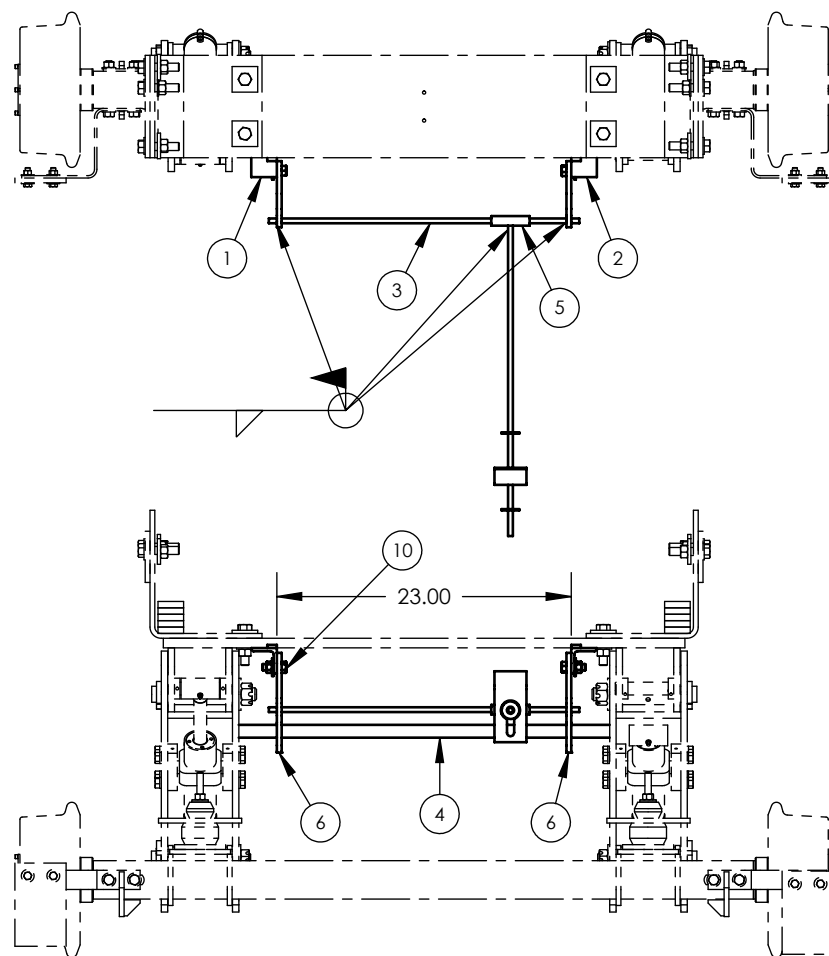
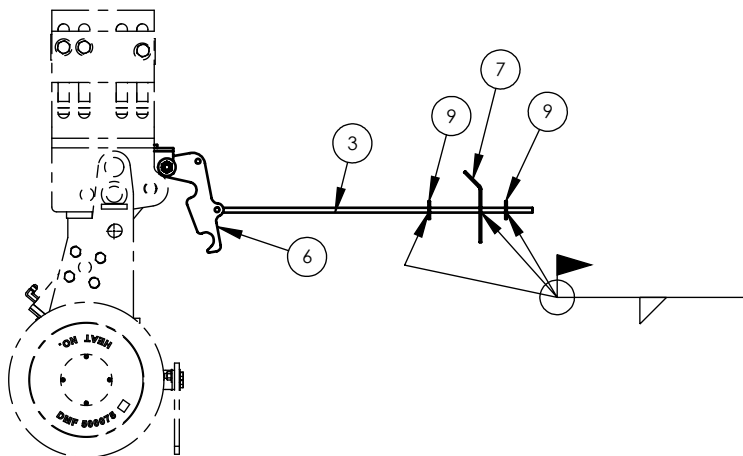
CUT AND/OR BEND PLATE  
AS NECESSARY, ATTACH  
TO BUMPER OR BODY

**OPERATION**  
PUSH TO LOCK & PULL TO  
UNLOCK FOR BOTH THE  
STOWED & DEPLOYED POSITIONS

CUT AND/OR BEND BAR AS NECESSARY

TYP

### REAR RAILGEAR PIN-OFF OPTION



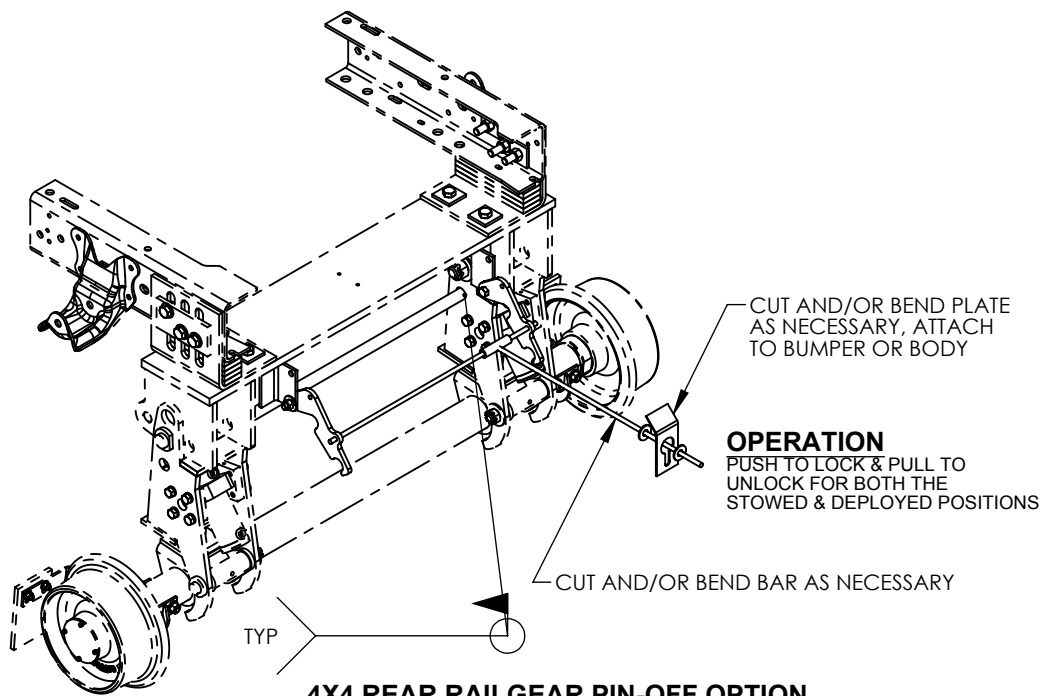
ITEM NO.	PART NUMBER	QTY.	DESCRIPTION
1	600408	1	WELDMENT, BRACKET, PO, DSR, 1015
2	600409	1	WELDMENT, BRACKET, PO, PSR, 1015
3	600417	2	PIN-OFF, CROSS BAR DETAIL, RW-1015
4	600418	1	PIN-OFF, LOCKING BAR DETAIL, RW-1015
5	600419	1	PIN-OFF, SLIDE MOUNTING TUBE DETAIL, RW-1015
6	600453	2	BO, PIN OFF, PLATE, RW-1015
7	600456	1	BO, PLATE, KEYHOLE, PO, RW-1015
8	ESNA1/2-13	2	ESNA 1/2-13 LOCK NUT
9	FW1/2GR8	4	FLAT WASHER 1/2" GRADE 8
10	HHCS1/2-13X1-1/2GR8	2	HEX HEAD GRADE 8 1/2-13 X 1-1/2" LONG

IF MANUAL PIN-OFF'S ORDERED WITH RAILGEAR, THE ABOVE COMPONENTS WILL BE ASSEMBLED & WELDED TO YOUR RAILGEAR.

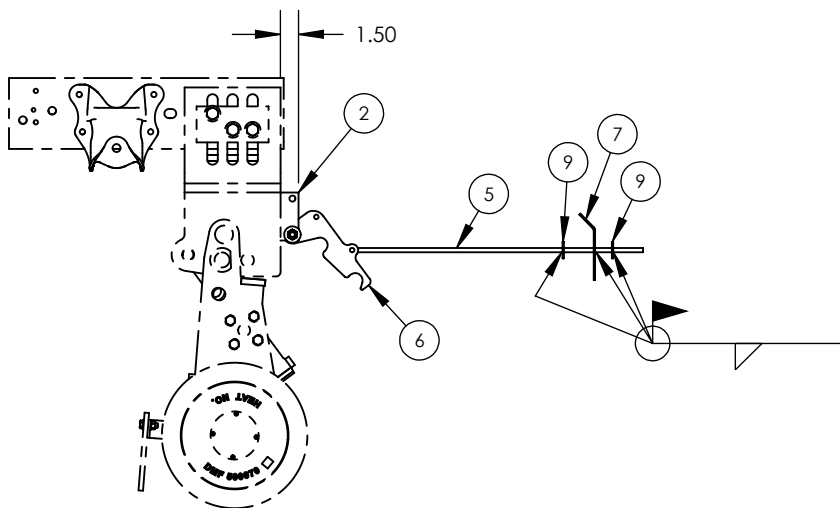
INSTALLER TO LOCATED AND MODIFY HANDLE & RETENTION PLATE TO SUIT APPLICATION

ATTACH RETENTION PLATE (ITEM 7). DETERMINE THE POSTION FOR THE STOP WASHERS (ITEM 9) TO LOCK BOTH STOWED AND DEPLOYED POSITIONS. WELD WASHERS (ITEMS 9) ONTO HANDLE.

REV	DATE	DESCRIPTION	BY	APP
1				
<div> <div> TOLERANCES: (UNLESS SPECIFIED)  FRAC, MACH: ± 1/32"  FRAC, OTHER: ± 1/16"  .XX ± .063  .XXX ± .030  .XXX ± .005  DRILL SIZES: ± .015  ANGULAR: ± 1°  SURF FINISH: 125 MICRO  THREADS: 2A AND 2B </div> <div> RW-1015  DRAWN BY: JBG  APPD BY: </div> <div> TITLE:  ASSEMBLY, REAR PIN-OFF OPTION  DIVERSIFIED METAL FABRICATORS, INC. (404) 875-1512  DATE: 4/19/2012  DRAWING NUMBER: 600717  REV: # </div> </div>				



**4X4 REAR RAILGEAR PIN-OFF OPTION**

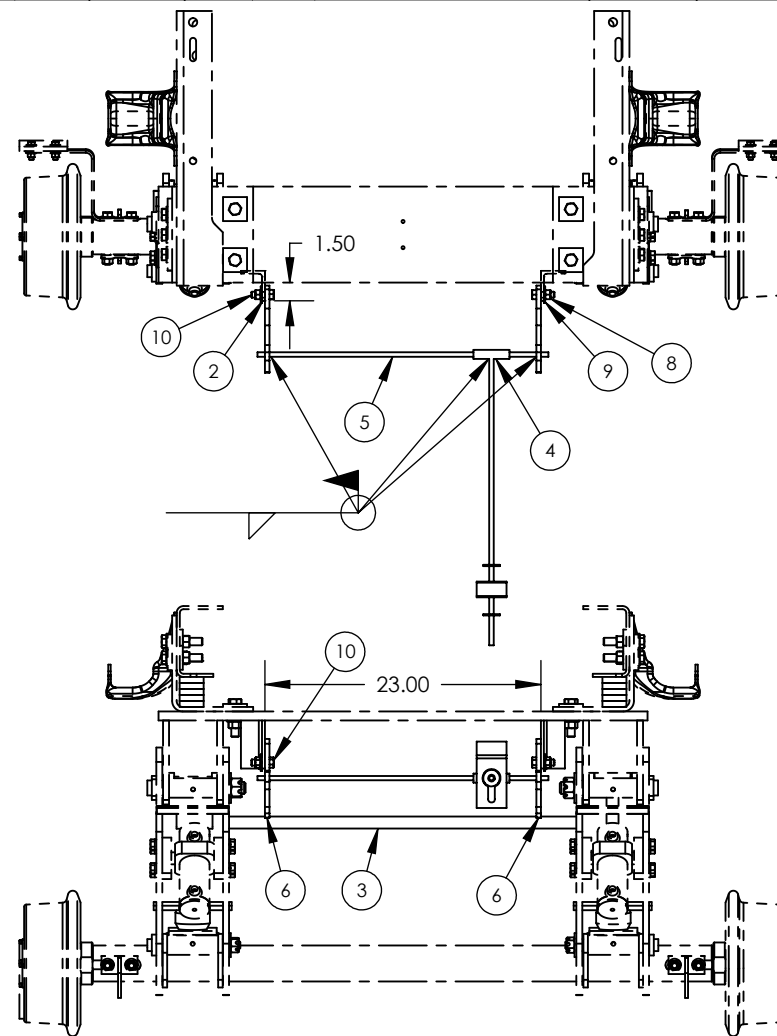


IF MANUAL PIN-OFF'S ORDERED WITH RAILGEAR, THE ABOVE COMPONENTS WILL BE ASSEMBLED & WELDED TO YOUR RAILGEAR.

INSTALLER TO LOCATED AND MODIFY HANDLE & RETENTION PLATE TO SUIT APPLICATION

ATTACH RETENTION PLATE (ITEM 7). DETERMINE THE POSTION FOR THE STOP WASHERS (ITEM 9) TO LOCK BOTH STOWED AND DEPLOYED POSITIONS. WELD WASHERS (ITEMS 9) ONTO HANDLE.

ITEM NO.	PART NUMBER	QTY.	DESCRIPTION
1	600109	1	ASSY, REAR, 08/09 F2/350 FORD 4X4 RW-1015, STW
2	600410	2	DETAIL, BRACKET, 4X4 PIN-OFF, DSR/PSR, 1015
3	600418	1	PIN-OFF, LOCKING BAR DETAIL, RW-1015
4	600419	1	PIN-OFF, SLIDE MOUNTING TUBE DETAIL, RW-1015
5	600417	2	PIN-OFF, CROSS BAR DETAIL, RW-1015
6	600453	2	BO, PIN OFF, PLATE, RW-1015
7	600456	2	BO, PLATE, KEYHOLE, PO, RW-1015
8	ESNA 1/2-13	2	ESNA 1/2-13 LOCK NUT
9	FW 1/2GR8	4	FLAT WASHER 1/2" GRADE 8
10	HHCS 1/2-13X1-1/2GR8	2	HEX HEAD GRADE 8 1/2-13 X 1-1/2" LONG



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REV	DATE	DESCRIPTION				BY	APP
TOLERANCES: (UNLESS SPECIFIED)		<div><div><div><div>RW-1015</div></div></div><div><div><div>DRAWN BY:</div><div>JBG</div></div><div><div>APPD BY:</div><div></div></div></div><div><div><div>TITLE:</div><div>ASSEMBLY, 4X4 REAR PIN-OFF OPTION</div><div>DIVERSIFIED METAL FABRICATORS, INC. (404) 875-1512</div></div><div><div><div>DATE:</div><div>10/20/2010</div></div><div><div><div><div></div></div></div></div><div><div><div>DRAWING NUMBER:</div><div>600719</div></div><div><div><div>REV:</div><div>#</div></div></div></div></div></div></div>					
FRAC. MACH: ± 1/32"							
FRAC. OTHER: ± 1/16"							
.X ± .063							
.XX ± .030							
.XXX ± .015							
DRILL SIZES: ± .015							
ANGULAR: ± 1°							
SURF FINISH: 125 MICRO							
THREADS: 2A AND 2B							
REWORK STAMP FINISH (10/15/10) (10/14/10)							



## OPERATION OF D.M.F. GUIDE WHEEL SYSTEM

### DAILY CHECKS

1. Refer to Inspection and Maintenance legend prior to operating this equipment.
2. See Parts and Service manual for detailed operation and adjustment guidelines.

### TO PLACE VEHICLE ON RAIL

1. Drive vehicle onto crossing, centering rear tires on tracks.
2. Retract and lock front and rear manual pin-offs. Electric pin-offs retract automatically.
3. Lower rear wheels first: (Note: Front/Rear Rail wheels cannot be actuated simultaneously)
  - A. Enable "Guidewheel Power" switch in vehicle cab with engine running.
  - B. Using electric switch in cab or at rear bumper: Deploy rear wheels fully and properly engage with rail. Guide wheels are over center and do not require rail-mode pin-offs.
4. Engage front wheels:
  - A. Maneuver truck so front is centered over rail.
  - B. Align front vehicle tires straight ahead.
  - C. Using electric switch in cab or at front bumper: Deploy front wheels fully and properly engage with rail. Guide wheels are over center and do not require rail-mode pin-offs.
5. Double check all flanges to assure they are engaged properly with rail.
6. Engage steering wheel lock and verify its proper function. Turn off "Guide wheel Power" switch.
7. Drive back and forth one truck length to test braking, tracking and engagement.
8. Max speed on-rail: 40MPH. Operator is responsible for determining SAFE speed.

### TO REMOVE VEHICLE FROM RAIL

1. Drive vehicle onto road crossing.
2. Either front or rear wheels may be activated first.
3. Front rail wheels (Note: Front/Rear Railwheels cannot be actuated simultaneously)
  - A. Enable "Guidewheel Power" switch in vehicle cab with engine running.
  - B. Retract front rail wheels completely using switch in cab or at front bumper.
  - C. Once retracted, engage and lock manual pin-offs. Electric pin-offs engage automatically.
4. Rear rail wheels
  - A. Retract rear rail wheels completely using switch in cab or at rear bumper.
  - B. Once retracted, engage and lock manual pin-offs. Electric pin-offs engage automatically.
  - C. Disengage steering wheel lock. Turn off "Guidewheel Power" switch.
6. Drive vehicle off of crossing onto road surface.

**DIVERSIFIED METAL FABRICATORS, INC. ATLANTA, GA (404) 875-1512 800160**

### INSTRUCTIONS:

1. SEE DETAILED INSTRUCTIONS IN MANUAL OR IN-CAB DECALS
2. POSITION ON CROSSING
3. LOWER REAR RAILGEAR WITH BUMPER SWITCH
4. VERIFY FLANGE ENGAGEMENT
  - ADJUST POSITION IF NECESSARY
5. LOWER FRONT RAILGEAR
6. VERIFY FLANGE ENGAGEMENT
  - ADJUST POSITION IF NECESSARY

800166



### INSTRUCTIONS:

1. SEE DETAILED INSTRUCTIONS IN MANUAL OR IN-CAB DECALS
2. POSITION ON CROSSING
3. LOWER REAR RAILGEAR WITH BUMPER SWITCH
4. VERIFY FLANGE ENGAGEMENT
  - ADJUST POSITION IF NECESSARY
5. LOWER FRONT RAILGEAR
6. VERIFY FLANGE ENGAGEMENT
  - ADJUST POSITION IF NECESSARY

800166

## ⚠ WARNING ⚠

DO NOT OPERATE THIS MACHINE BEFORE READING THE OPERATING INSTRUCTIONS AND PARTS AND SERVICE MANUAL. FAILURE TO DO SO MAY RESULT IN SEVERE PERSONAL INJURY.

BEFORE RAIL OPERATION CHECK THAT THE STEERING TIRES ARE STRAIGHT AHEAD AND STEERING LOCK IS ENGAGED.

MAXIMUM SPEED IS 40 MPH OR RAILROAD SPEED LIMIT. REDUCE SPEED ON LESSER TRACK, AT CROSSINGS, THROUGH TURNOUTS AND IN AREAS OF POOR TRACTION OR VISIBILITY. BRAKING DISTANCES INCREASE WITH REDUCED TRACTION.

800164

## ⚠ WARNING ⚠

BEFORE ROAD OPERATION CHECK THAT THE HI-RAIL SYSTEM IS STOWED/SECURED IN STOWED POSITION BY PIN-OFF PINS. FAILURE TO DO SO MAY RESULT IN SEVERE PERSONAL INJURY.

BEFORE ROAD OPERATION BECOME FAMILIAR WITH THE HANDLING CHARACTERISTICS OF THIS MODIFIED VEHICLE. FAILURE TO DO SO MAY RESULT IN SEVERE PERSONAL INJURY.

BEFORE ROAD OPERATION ENSURE THAT VEHICLE STEERING LOCK IS DISENGAGED/SECURED IN DISENGAGED POSITION. FAILURE TO DO SO MAY RESULT IN SEVERE PERSONAL INJURY.

800165

## INSPECTION AND MAINTENANCE OF D.M.F. GUIDE WHEEL SYSTEM

DAILY: (refer to Parts and Service manual for details)

Visually inspect rail gear for hydraulic leaks, loose fasteners, and excessive wear.

Spin all four rail wheels noting any bearing noise or resistance.

Compare left and right wheels for wear (particularly diagonal flanges).

Check for correct tire pressure. Inspect tires and rims for damage.

Check level of hydraulic oil.

Maintain guide wheel loads, during operation, within 350 to 700 pounds each.

WEEKLY:

Grease pin-off fitting:

One (1) on front assembly.

One (1) on rear assembly.

BI-ANNUALLY OR 2000 MILES:

Inspect the bearing grease every 2,000 miles or 6 months (whichever comes first).

Inspect bearings and grease cavity by removing hubcaps. Unless bearing problem is

suspected, the bearings do not need to be removed or repacked. If repacking is

required, the grease cavity should be only 80% filled with suitable grease. Replace

hubcaps using a bead of Form-A-Gasket (or equal).

Check road wheel lug nut torques. Refer to Wheel Nut Torque sticker.

ANNUALLY:

Clean hydraulic oil pump strainers.

**DIVERSIFIED METAL FABRICATORS, INC**

**ATLANTA, GA**

**(404) 875-1512**

**800161**

HI-RAIL VEHICLE COMPLETED BY: \_\_\_\_\_

WITH APPLICATION OF HI-RAIL AND FINISHED BODY, THIS VEHICLE HAS \_\_\_\_\_ POUNDS OF AVAILABLE PAYLOAD.

DATE OF COMPLETION OF HI-RAIL EQUIPPED VEHICLE: mo \_\_\_\_\_ yr \_\_\_\_\_

**CAUTION:** THIS MULTIPURPOSE VEHICLE HAS SPECIAL DESIGN AND EQUIPMENT FEATURES FOR OFF-ROAD USE. IT HANDLES DIFFERENTLY FROM THE ORIGINAL VEHICLE IN DRIVING CONDITIONS WHICH MAY OCCUR ON STREETS, HIGHWAYS, AND OFF-ROAD.

WEIGHT AND LOCATIONS OF AVAILABLE PAYLOAD MAY ALSO AFFECT THE HANDLING OF THIS VEHICLE. DRIVE WITH CARE AND WEAR SAFETY BELTS AT ALL TIMES.

EACH OPERATOR MUST BE FAMILIAR WITH THE HANDLING CHARACTERISTICS BEFORE OPERATING THIS VEHICLE EITHER ON OR OFF-ROAD.

BEFORE OPERATING THIS VEHICLE EITHER ON OR OFF-ROAD. OPERATORS SERVICE AND PARTS MANUAL.

800162

TRUCK GVWR: \_\_\_\_\_

EMPTY WT (FULL FUEL): \_\_\_\_\_

MAX PAYLOAD: \_\_\_\_\_

800169

GUIDEWHEEL  
RELAY/BREAKER  
BOX

800170

## SAFETY INSTRUCTIONS

VISUALLY INSPECT DAILY FOR TIRE AND WHEEL DAMAGE  
CHECK WHEEL NUT TORQUE AT 50 MI, THEN 6 MOS/2000 MI.  
CHECK TIRE PRESSURE DAILY.

800168

## SAFETY INSTRUCTIONS

VISUALLY INSPECT DAILY FOR TIRE AND WHEEL DAMAGE  
CHECK WHEEL NUT TORQUE AT 50 MI, THEN 6 MOS/2000 MI.  
CHECK TIRE PRESSURE DAILY.

800168

## SAFETY INSTRUCTIONS

VISUALLY INSPECT DAILY FOR TIRE AND WHEEL DAMAGE  
CHECK WHEEL NUT TORQUE AT 50 MI, THEN 6 MOS/2000 MI.  
CHECK TIRE PRESSURE DAILY.

800168

## SAFETY INSTRUCTIONS

VISUALLY INSPECT DAILY FOR TIRE AND WHEEL DAMAGE  
CHECK WHEEL NUT TORQUE AT 50 MI, THEN 6 MOS/2000 MI.  
CHECK TIRE PRESSURE DAILY.

800168

## SAFETY INSTRUCTIONS

VISUALLY INSPECT DAILY FOR TIRE AND WHEEL DAMAGE  
CHECK WHEEL NUT TORQUE AT 50 MI, THEN 6 MOS/2000 MI.  
CHECK TIRE PRESSURE DAILY.

800168

## SAFETY INSTRUCTIONS

DO NOT OVERLOAD THE HI-RAIL VEHICLE. DO NOT EXCEED:

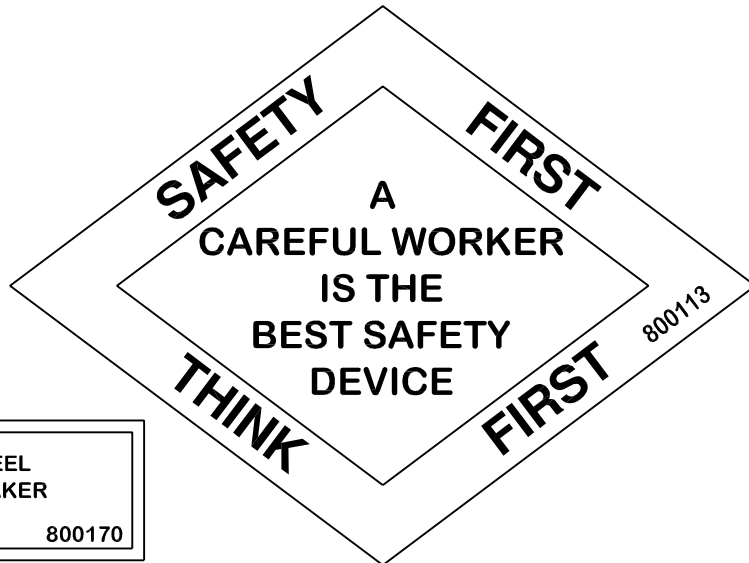
- A. GROSS AXLE WEIGHT RATINGS (GAWRs) OF VEHICLE
- B. GROSS VEHICLE WEIGHT RATING (GVWR) OF VEHICLE
- C. LOWER RATING OF TIRE OF WHEEL MAX CAPACITY
- D. 700 POUND MAXIMUM GUIDE WHEEL RATING (EACH RAILWHEEL)

READ OPERATING INSTRUCTIONS PRIOR TO USE.

BE AWARE OF REQUIRED STOPPING DISTANCES.  
KEEP HANDS, FEET AND LOOSE CLOTHING CLEAR OF EQUIPMENT WHILE IN OPERATION.

FOLLOW ESTABLISHED SAFETY PROCEDURES AT ALL TIMES.

800163



## SAFETY INSTRUCTIONS

VISUALLY INSPECT DAILY FOR TIRE AND WHEEL DAMAGE

INSPECT DAILY FOR THE CORRECT TIRE PRESSURE. INFLATE ACCORDING TO TIRE MANUFACTURERS INSTRUCTIONS BASED ON AXLE LOAD. DO NOT EXCEED MAX RATING OF TIRE OR RIM.

TORQUE WHEEL NUTS

- A. AFTER FIRST 50 MILES
- B. EVERY 6 MONTHS OR 2000 MILES

### WHEEL NUT TORQUE

APPLICATION: '00-'09 GM C25HD/SUBURBAN

RIM: ACCURIDE 28680 19.5x6.75

ADAPTER: 10822

LUGNUTS: (8) STOCK M14 60°, (8) M20 2-PC

LUGTORQUE: 140 FT-LBF (ADAPTER/HUB) 250+(ADAPTER/RIM)

SPACERS: 0.19 REAR ONLY

APPLICATION: '00-'09 FORD F2/350

RIM: ACCURIDE 28680 19.5x6.75

ADAPTER: 10821

LUGNUTS: (8) STOCK M14 2-PC, (8) M20 2-PC

LUGTORQUE: 165 FT-LBF (ADAPTER/HUB) 250+(ADAPTER/RIM)

SPACERS: NONE

APPLICATION: '99-'04 FORD F2/350

RIM: 10808 OTR RIM 19.5x6.0

LUGNUTS: STOCK M14 2-PC FLANGED

LUG TORQUE: 165 FT-LBF

SPACERS: .135 THK FRONT ONLY

APPLICATION: '99-'04 GM 25HD/SUBURBAN

RIM: 10813 OTR RIM 19.5x6.0

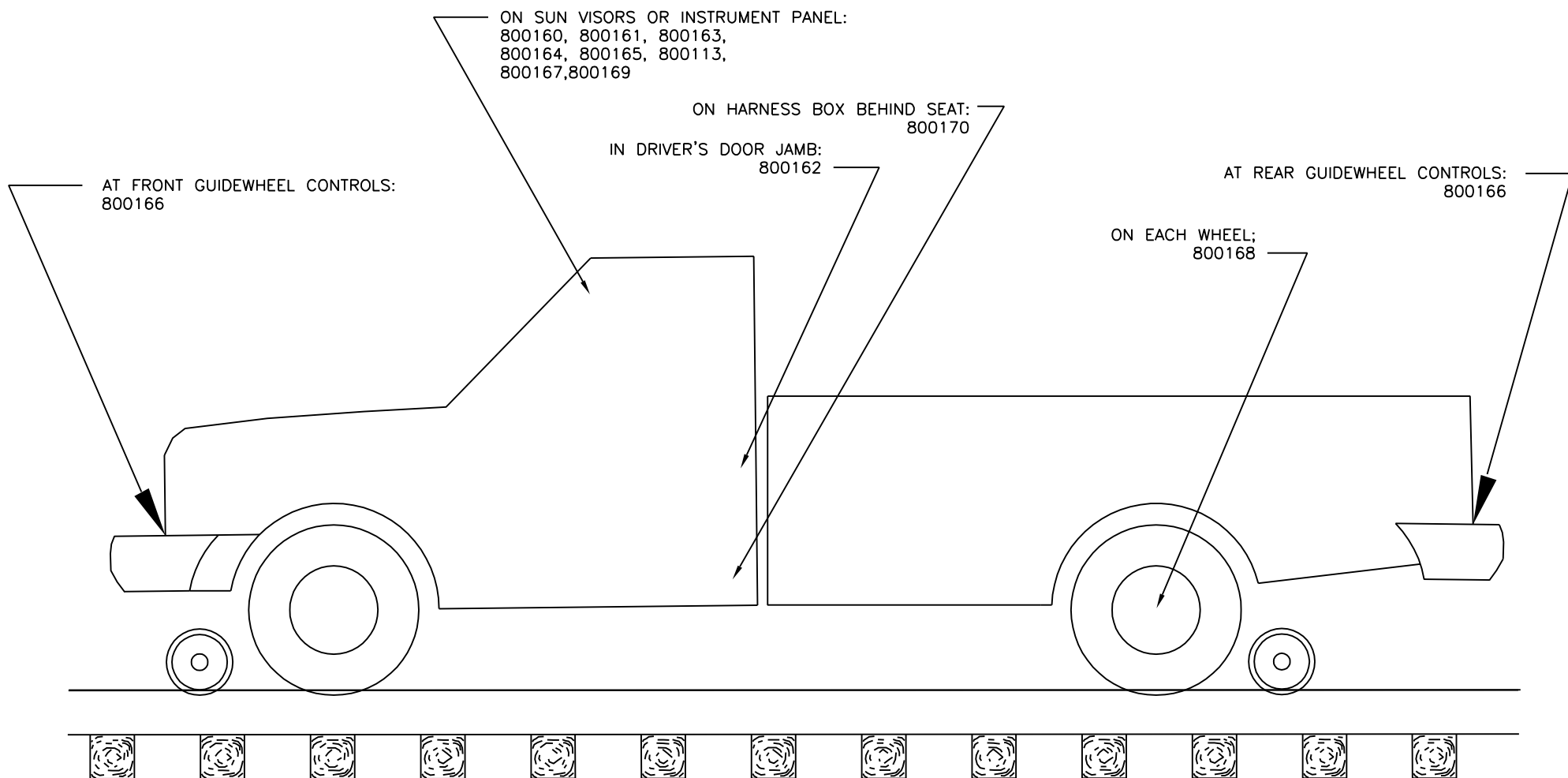
LUGNUTS: STOCK 60° M14 LUGNUTS

LUG TORQUE: 140 FT-LBF

SPACERS: .109 THK FRONT ONLY



800167



RW-1013 DECALS  
800192

**TITLE:** Purchased Fastener Torque Specifications

**PURPOSE:** To establish production methods for the installation of commonly purchased threaded fasteners.

**COMMON USAGE:** Most areas of multiple part assembly and retention.

**PARTS GENERALLY ENCOMPASSED BY THIS PROCEDURE:** Most common sizes of SAE J429 Grade 5 and 8 and of ASTM A574 socket head cap screws.

**PROCEDURE:**

A) Identify the fastener as either fine or coarse thread, select the appropriate chart below.

B) Identify the fastener size (diameter and threads per inch), select the appropriate row in the chart selected.

C) Identify grade of the bolt.

D) Read across the size row and down the grade column. The intersection of row and column gives torque.

#### FINE THREAD BOLTS

SIZE (DIA-TPI)	SAE J429 GRADE 5 (3 MARKS) PLATED (FTLB)	SAE J429 GRADE 8 (6 MARKS) PLATED (FTLB)	ASTM A574 SOCKET HEAD CAP SCREW (FTLB)
1/4-28	6	8	12
5/16-24	12	15	24
3/8-24	21	27	43
7/16-20	33	43	68
1/2-20	51	66	105
9/16-18	72	96	-
5/8-18	100	135	202
3/4-16	180	223	354
7/8-14	260	350	564
1-12	390	530	860
1 1/8-12	540	750	-
1 1/4-12	745	1050	1697
1 3/8-12	-	-	2288
1 1/2-12	1320	1850	3001

#### COARSE THREAD BOLTS (MATCHING HEX NUTS)

SIZE (DIA-TPI)	SAE J429 GRADE 5 (3 MARKS) PLATED (FTLB)	SAE J429 GRADE 8 (6 MARKS) PLATED (FTLB)	ASTM A574 SOCKET HEAD CAP SCREW (FTLB)
1/4-20	5	7	10
5/16-18	19	14	22
3/8-16	19	24	38
7/16-14	30	38	61
1/2-13	45	59	93
9/16-12	66	84	-
5/8-11	90	120	179
3/4-10	160	200	317
7/8-9	240	320	511
1-8	360	480	767
1 1/8-7	480	670	1087
1 1/4-7	670	930	1533
1 3/8-6	-	-	2010
1 1/2-6	1170	1650	2668

#### COMMENTS:

A) Torque values specified are for bolts with residual oils or no special lubricants applied. If special lubricants of high stress capacity (such as Never-Seez, graphite and oil, molybdenum disulphide, colloidal copper or white lead) are applied, multiply the torque values in charts by 0.90. The use of Loctite does not affect the torque values in charts.




B) All values are in Foot-Pounds (FTLB). Multiply by 12 for Inch-Pounds.

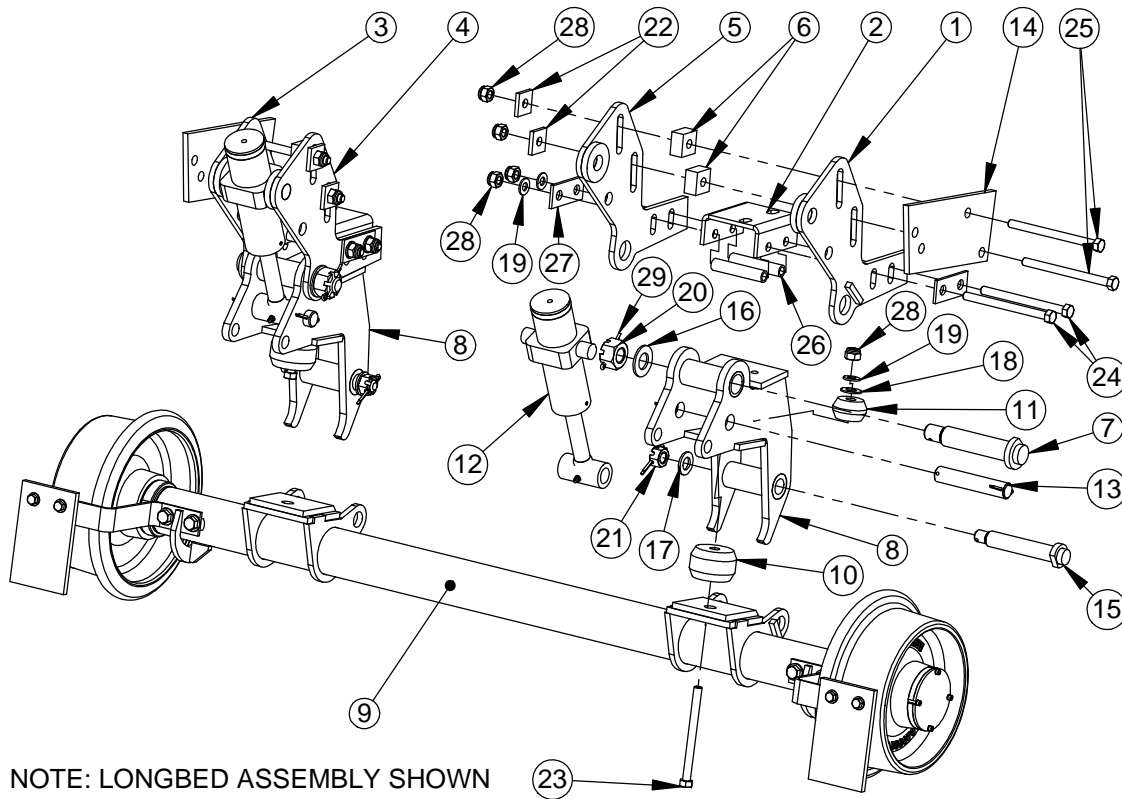
C) Flat washers of equal strength must be used.

D) Bolt manufacturer's specs should be used when available.

E) Values shown are for Nylock nuts or Grade C prevailing torque nuts.

F) Never re-use a highly stressed, torque fastener: IT MAY FAIL!

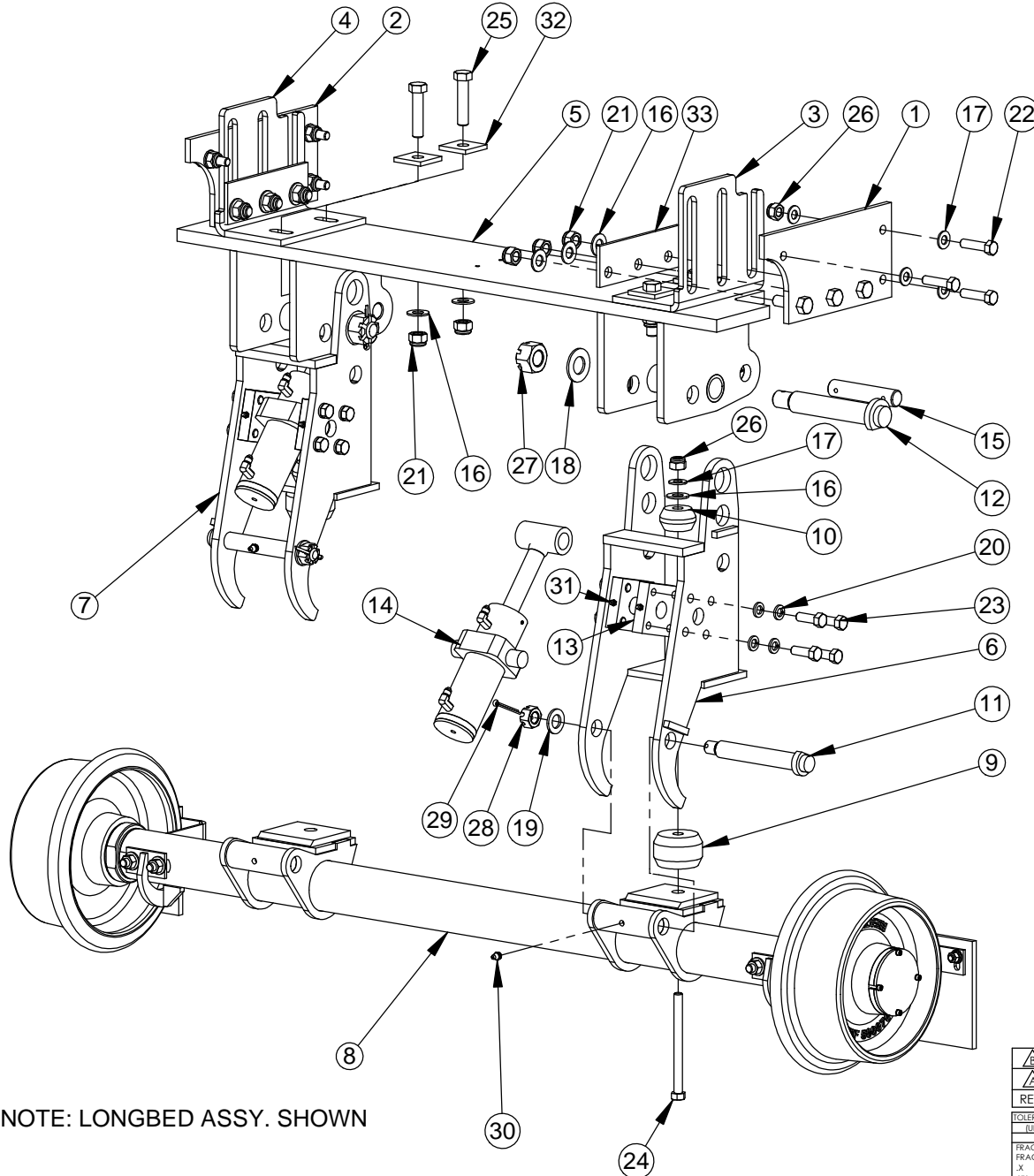
	07/15/15	UPDATED ALL TORQUE VALUES, REMOVED PLAIN TORQUE SPECS		DJJ	
	12/29/99	ADDED RECOMMENDED TORQUE CHART		LOR	
REV	DATE	DESCRIPTION			BY APP
TOLERANCES: (UNLESS SPECIFIED) COMMON SENSE PREVAILS FRACTIONAL: ± 1/32" FRACTIONAL, OTHER: ± 1/16" X ± .063 XX ± .030 XXX OR .XXX ± .005 DRILL SIZES: ± .005 ANGULAR: ± 1° SURF FINISH: 125 MICRO THREADS: 2A AND 2B BREAK SHARP EDGES		DRAWN BY: TSH		APPD BY:	
		TITLE: PRODUCTION PROCEDURE 006 FASTENER TORQUE SPECIFICATION			
		DIVERSIFIED METAL FABRICATORS, INC. (404) 875-1512			
		DATE: 06/02/94		DRAWING NUMBER: PP006	REV: B



ITEM	PART #	DESCRIPTION	QTY.	IN KIT #
1	600358	WLDMT, FT FRAME BRACKET, DS OUTER, RW-1015	1	
2	600382	DET,FORMED, FRAME BRACKET, ADJ, RW1015, '08GM	2	
3	600357	WLDMT, FT FRAME BRACKET, PS OUTER, RW-1015	1	
4	600354	WLDMT, FT FRAME BRACKET, PS INNER, RW-1015	1	
5	600355	WLDMT, FT FRAME BRACKET, DS INNER, RW-1015	1	
6	600356	DETAIL, FRM SPACER, RW-1015, '08 GM	4	600706
7	600360	WELDMT, PIVOT PIN, FT,RW-1015	2	
8	601420/ 600320	WLDMT, MID-LENGTH PIVOT ARM, FRONT, RW-1015	2	
9	600273/ 600272	ASSY, WHEEL & AXLE - STEEL WHEEL/RUBBER TREAD WHEEL	1	
10	600220	DETAIL, SUSP, PRIMARY, RW-1015	2	
11	600221	DETAIL, SUSPENSION, PRELOAD, RW-1015	2	
12	600501	ASS'Y, CYLINDER, 2", FT, RW-1015	2	
13	600507	DET, PIN, CYL ROD, RW-1015, FT	2	
14	600421	DETAIL, BUMPER BRACKET, RW-1015, '08 GM	2	
15	600215	WLDMT, PIN, AXLE PIVOT, RW-1015	2	
16	238112	FLAT WASHER, 1", GR5	2	
17	900495	FLAT WASHER, 3/4", GR5	2	
18	20716	FLAT WASHER, 5/8", GR8	2	
19	500691	FLAT WASHER, 1/2", GR8	6	600705
20	818127	SLOTTED HEX NUT, 1-8, GR5	2	
21	605005	SLOTTED HEX NUT, 3/4-10, GR5	2	
22	600318	DET, SLOT FLAT BAR, 1/2"	4	600706
23	605004	HEX HEAD TAP BOLT, 1/2-13 X 6, GR8	2	
24	605007	HEX HEAD CAP SCREW, 1/2-13 X 6-1/4, GR8	4	600705
25	605008	HEX HEAD CAP SCREW, 1/2-13 X 6-1/2, GR8	4	600706
26	500384	RW-1015 DETAIL, SUPPORT TUBE	4	600705
27	600385	DETAIL, PLATE SLOT ADJ. 1-1/2"	4	600705
28	113014	LOCKNUT, 1/2-13, ESNA, GR8	10	600705/ 600706
29	108078	COTTER: 3/16" X 2"	8	

FOR INSTALLATION SEE DRAWING #M1015109

REV	DATE	DESCRIPTION			BY APP
TOLERANCES: (UNLESS SPECIFIED) FRAC, MACH: ± 1/32" FRAC, OTHER: ± 1/16" .X ± .003 .XX ± .030 .XXX ± .005 DRILL SIZES: + .015 ANGULAR: ± 1° SURF FINISH: 125 MICRO THREADS: 2A AND 2B					
RW-1015		TITLE: ASSY,FRONT,'11C25/3500HD, RW-1015, STW DIVERSIFIED METAL FABRICATORS,INC.(404)875-1512			
DRAWN BY:	APPD BY:	DATE:		DRAWING NUMBER:	REV:
NEH		10/5/11		600165	#



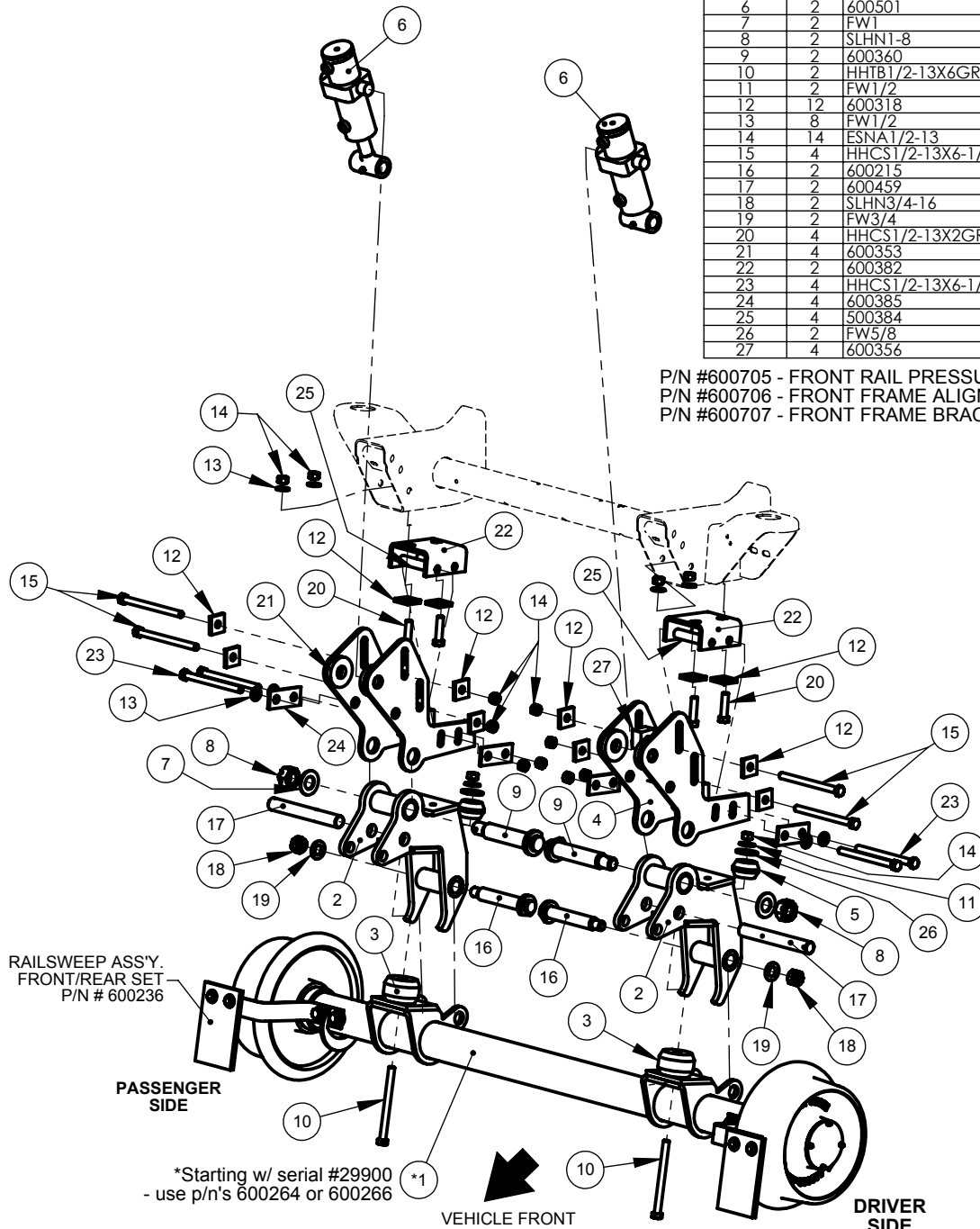
NOTE: LONGBED ASSY. SHOWN

FOR INSTALLATION SEE DRAWING #M1015107

ITEM	PART #	DESCRIPTION	QTY.	IN KIT #
1	601414/ 601417	INNER FRAME PLATE, DRIVER'S SIDE - LONGBED/SHORTBED	1	
2	601415/ 601418	INNER FRAME PLATE, PASSENGER'S SIDE - LONGBED/SHORTBED	1	
3	601405/ 601411	ADJ. L BRACKET, DRIVER'S SIDE - LONGBED/SHORTBED	1	
4	601406/ 601412	ADJ. L BRACKET, PASSENGER'S SIDE - LONGBED/SHORTBED	1	
5	601401	WLDMT, BRACKET, REAR, 11GM 25/3500, RW-1015	1	
6	600340	PIVOT ARM, REAR, DS, RW-1015	1	
7	600349	PIVOT ARM, REAR, PS, RW-1015	1	
8	600274/ 600270	WHEEL & AXLE ASSY. - STEEL WHEEL/ RUBBER TREAD WHEEL	1	
9	600220	DETAIL, SUSP, PRIMARY, RW-1015	2	
10	600221	DETAIL, SUSPENSION, PRELOAD, RW-1015	2	
11	600218	WLDMT, PIN, AXLE PIVOT, RW-1015	2	
12	600362	WELDMT, PIVOT PIN, RR, RW-1015	2	
13	600344	BO, PIVOT BOSS, PIVOT ARM, REAR, RW- 1015	4	
14	600503	ASSY, CYLINDER 2", RR, RE-1015	2	
15	600509	DET, PIN, CYL ROD, RW-1015, RR	2	
16	300612	FLAT WASHER, 5/8", GR8	12	600171/ 600714
17	500691	FLAT WASHER, 1/2", GR8	14	600172
18	238112	FLAT WASHER, 1", GR5	2	
19	900495	FLAT WASHER, 3/4", GR5	2	
20	76317	LOCK WASHER, 1/2", SPRING, GR5	16	
21	18551	LOCKNUT, 5/8-11, ESNA, GR8	10	600171/ 600714
22	605006	HEX HEAD CAP SCREW, 1/2-13 X 2, GR8	6	600172/ 600714
23	818367	HEX HEAD CAP SCREW, 1/2-13 X 1-1/2, GR5	16	
24	605004	HEX HEAD TAP BOLT, 1/2-13 X 6, GR8	2	
25	605003	HEX HEAD CAP SCREW, 5/8-11 X 2-3/4, GR8	4	600714
26	113014	LOCKNUT, 1/2-13, ESNA, GR8	8	600172
27	818127	SLOTTED HEX NUT, 1-8, GR5	2	
28	605005	SLOTTED HEX NUT, 3/4-10, GR5	2	
29	108078	COTTER: 3/16" X 2"	8	
30	818105	GREASE FITTING (1/4"-28)(1641-B)	6	
31	818235	GREASE FITTING, 1/8"NPT, STRAIGHT	4	
32	500510	DET, SLOT FLAT BAR, 5/8	4	
33	601407	DETAIL, WASHER PLATE, LB, REAR FRAME BRACKET, 11GM 25/3500, RW-1015	2	

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REV	DATE	DESCRIPTION			BY APP
TOLERANCES: (UNLESS SPECIFIED)		TITLE:			
FRAC. MACH: FRAC. OTHER: X XX XXX DRELL SIZES: ANGULAR: SURF FINISH: THREADS:		RW-1015  ASSY, REAR, '11C25/3500HD,RW-1015, STW			
		DIVERSIFIED METAL FABRICATORS,INC.(404)875-1512			
DRAWN BY:		APPD BY:	DATE:	<div><div></div></div>	DRAWING NUMBER:
NEH			10-4-11		600161
					REV:
					#

**\*IF YOU ORDERED MANUAL PIN-OFFS, SEE SECTION 5.2 FOR DRAWINGS & INSTALL INFORMATION.**



ITEM NO.	QTY.	PART NUMBER	DESCRIPTION	SW-Comments(Comments)
*1	1	600201 (ref. note)	ASSY, RAILWHEEL STW (WHEEL,SPINDLE,TREAD)	600264/266 has spindle w/ nut
2	2	600311	WLDMT, PIVOT ARM, FT, RW-1015	
3	2	600220	DETAIL, SUSP. PRIMARY, RW-1015	
4	4	600350	BO, FT FRAME BRACKET, RW-1015, C25HD	
5	2	600221	DETAIL, SUSPENSION, PRELOAD, RW-1015	
6	2	600501	ASSY, CYLINDER, 2", FT, RW-1015	
7	2	FW1	FLAT WASHER 1" STD	
8	2	SLHN1-8	SLOTTED HEX NUT 1"-8	
9	2	600360	WELDMT, PIVOT PIN, FT, RW-1015	
10	2	HHTB1/2-13X6GR8	1/2-13 X 6" LONG GR8 HX HD CAP SCREW FULL THD	
11	2	FW1/2	FLAT WASHER 1/2"	
12	12	600318	DET, SLOT FLAT BAR, 1/2"	SOLD IN KIT ALSO - SEE NOTES
13	8	FW1/2	1/2" FLAT WASHER	SOLD IN KIT ALSO - SEE NOTES
14	14	ESNA1/2-13	ESNA LOCK NUT 1/2-13	SOLD IN KIT ALSO - SEE NOTES
15	4	HHCS1/2-13X6-1/2GR8	1/2-13 X 6.50" LG GR8 HX HD CAP SCREW	SOLD IN KIT ALSO - SEE NOTES
16	2	600215	WLDMT, PIN, AXLE PIVOT, RW-1015	
17	2	600459	DET, PIN, CYL ROD, RW-1015, FT	
18	2	SLHN3/4-16	SLOTTED HEX NUT 3/4-16	
19	2	FW3/4	3/4" FLAT WASHER	
20	4	HHCS1/2-13X2GR8	1/2-13 X 2" LONG GR8 HX HD CAP SCREW	SOLD IN KIT ALSO - SEE NOTES
21	4	600353	BO, CYL BOSS, BRACKET, RW-1015, 08C25HD	
22	2	600382	DET, FORMED, FRAME BRACKET, ADJ, RW1015, 08GM	SOLD IN KIT ALSO - SEE NOTES
23	4	HHCS1/2-13X6-1/4GR8	1/2-13 X 6.25" LONG GR8 HX HD CAP SCREW	SOLD IN KIT ALSO - SEE NOTES
24	4	600385	DETAIL, PLATE SLOT ADJ. 1-1/2"	SOLD IN KIT ALSO - SEE NOTES
25	4	600384	RW-1015 DETAIL, SUPPORT TUBE	SOLD IN KIT ALSO - SEE NOTES
26	2	FW5/8	5/8" WIDE FLAT WASHER	
27	4	600356	DETAIL, FRM SPACER, RW-1015, 08 GM	SOLD IN KIT ALSO - SEE NOTES

P/N #600705 - FRONT RAIL PRESSURE ADJ. KIT: includes #13 qty. 4, #14 qty. 4, #22 qty. 2, #23 qty. 4, #24 qty. 4 & #25 qty. 4

P/N #600706 - FRONT FRAME ALIGNMENT ADJ. KIT: includes #12 qty. 8, #14 qty. 4, #15 qty. 4, & #27 qty. 4

P/N #600707 - FRONT FRAME BRACKET MOUNTING KIT: includes #12 qty. 4, #13 qty. 4, #14 qty. 4, & #20 qty. 4

**FOR ASSEMBLY & INSTALL, USE DWG # M1015100**

**IF ANY WORK IS PERFORMED:**

**NOTE #1:** GRADE 8 BOLTS MUST BE USED WHEN MOUNTING GEAR TO TRUCK FRAME.

**NOTE #2:** FOR ALL STRUCTURAL WELDS, EITHER LOW HYDROGEN ROD OR DUAL SHIELD MIG WIRE SHOULD BE USED.

**WARNING:** DO NOT ATTACH THE WELDING MACHINE GROUND CLAMP ONTO THE RAIL WHEELS. THIS WILL CAUSE ARCING ACROSS THE BEARINGS INSIDE THE WHEELS & LEAD TO PRE-MATURE BEARING FAILURE.

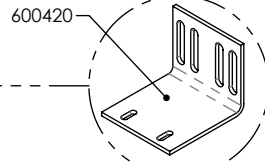
- ONCE ALIGNED, FULLY WELD (COMPLETE STRUCTURAL WELD) ALL THE WAY AROUND THE INBOARD SIDE OF THE AXLE BRACKET ON BOTH DRIVER & PASSENGER SIDES
- ALL FLAT WASHERS MUST BE WELDED IN PLACE TO THE FRAME BRACKET ON BOTH THE INBOARD & OUTBOARD FRAME BRACKETS FOR BOTH THE DRIVER & PASSENGER SIDES. (TACK WELD ON ALL 4 SIDES OF EACH WASHER)
- IF SHIMS REQUIRED, FULLY WELD ALL SHIMS IN ALL LOCATIONS, IN PLACE, ONCE ALIGNMENT IS ACHIEVED (IF MORE THAN ONE SHIM PER LOCATION, THEN ALL SHIMS USED AT LOCATION SHOULD BE WELDED TO ONE ANOTHER.) SEE ALSO # M1015100

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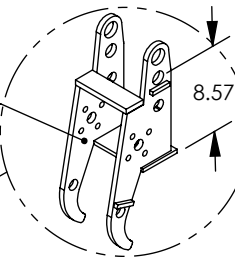
TOLERANCES: (UNLESS SPECIFIED)		TITLE:	
FRAC. MACH:	± 1/32"	RW-1015	
FRAC. OTHER:	± 1/16"	ASSY, RW-1015, 09GM 25HD FRONT	
.XX	± .063	DIVERSIFIED METAL FABRICATORS, INC. (404) 875-1512	
.XXX	± .030	DRAWN BY: WAK	
.XXX	± .005	APPD BY:	
DRILL SIZES:	± .015	DATE: 1/10/09	
ANGULAR:	± 1"	DRAWING NUMBER: 600101	
SURF FINISH:	125 MICRO	REV: A	
THREADS:	2A AND 2B		



**SUBURBAN PARTS  
4X2 & 4X4**








**SUBURBAN PARTS 4X2 & 4X4**



ITEM	PART NUMBER	QTY.	DESCRIPTION	NOTES
1	600331	1	WLDMT, BRACKET, REAR, RW-1015	
2	600274 / 600270(RTW)	1	ASSY, WHL/AXLE, REAR, DBL INSUL, GEN 3 SPDL RW-1015, STW	
3	600340	1	WELDMNT, PIVOT ARM, REAR, RW-1015	
4	600349	1	WELDMNT, PIVOT ARM, REAR, RW-1015	
5	600220	2	DETAIL, SUSP, PRIMARY, RW-1015	
6	600221	2	DETAIL, SUSPENSION, PRELOAD, RW-1015	
7	600218	2	WLDMT, PIN, AXLE PIVOT, RW-1015	
8	600362	2	WELDMT, PIVOT PIN, RR, RW-1015	
9	600344	4	BO, PIVOT BOSS, PIVOT ARM, REAR, RW-1015	
10	600503	2	ASSY, CYLINDER 2", RR, RE-1015	
11	600509	2	DET, PIN, CYL ROD, RW-1015, RR	
12	76317	16	1/2" LOCK WASHER GR5	
13	605012	16	HEX HEAD CAP SCREW, 1/2-13 X 1-1/2 GR8	
14	605004	2	HEX HEAD TAP BOLET, 1/2-13 X 6, GR8	
15	605003	10	HEX HEAD CAP SCREW, 5/8-11 X 2-3/4, GR8	IN KIT 600714 / 600708
16	238112	2	1" FLAT WASHER	
17	900495	2	3/4" FLAT WASHER GR5	
18	300612	2	5/8" FLAT WASHER GR8	
19	500691	2	1/2" FLAT WASHER GR8	
20	300612	12	5/8" FLAT WASHER GR8	IN KIT 600714 / 600708
21	818127	2	RW-1630 FRONT HEX NUT, SLOTTED (SLHN; 1"-8)	
22	605005	2	SLOTTED HEX NUT 3/4-10	
23	108078	8	COTTER: 3/16 X 2	
24	818105	6	GREASE FITTING (1/4"-28) (1641-B)	
25	818235	4	GREASE FITTING FOR REAR LINKS 1/8" NPT 1610-BL	
26	113014	2	LOCKNUT, 1/2-13, ESNA, GR8	
27	600411	2	DETAIL, REAR BRACKET, 08GM, RW-1015	
28	600413	2	DETSIDE PLATE, RR BKT, 08GM25HD, RW-1015	
29	500510	8	DET, SLOT FLAT BAR, 5/8	IN KIT 600714 / 600708
30	18551	10	5/8"-11 NYLON LOCK NUT	IN KIT 600714 / 600708

**FOR INSTALLATION, USE DWG #M1015101**

**KIT #600708: VERTICAL PLATE TO TRUCK FRAME HARDWARE**  
**KIT #600714: VERTICAL PLATE TO RAIL GEAR BRKT HARDWARE**

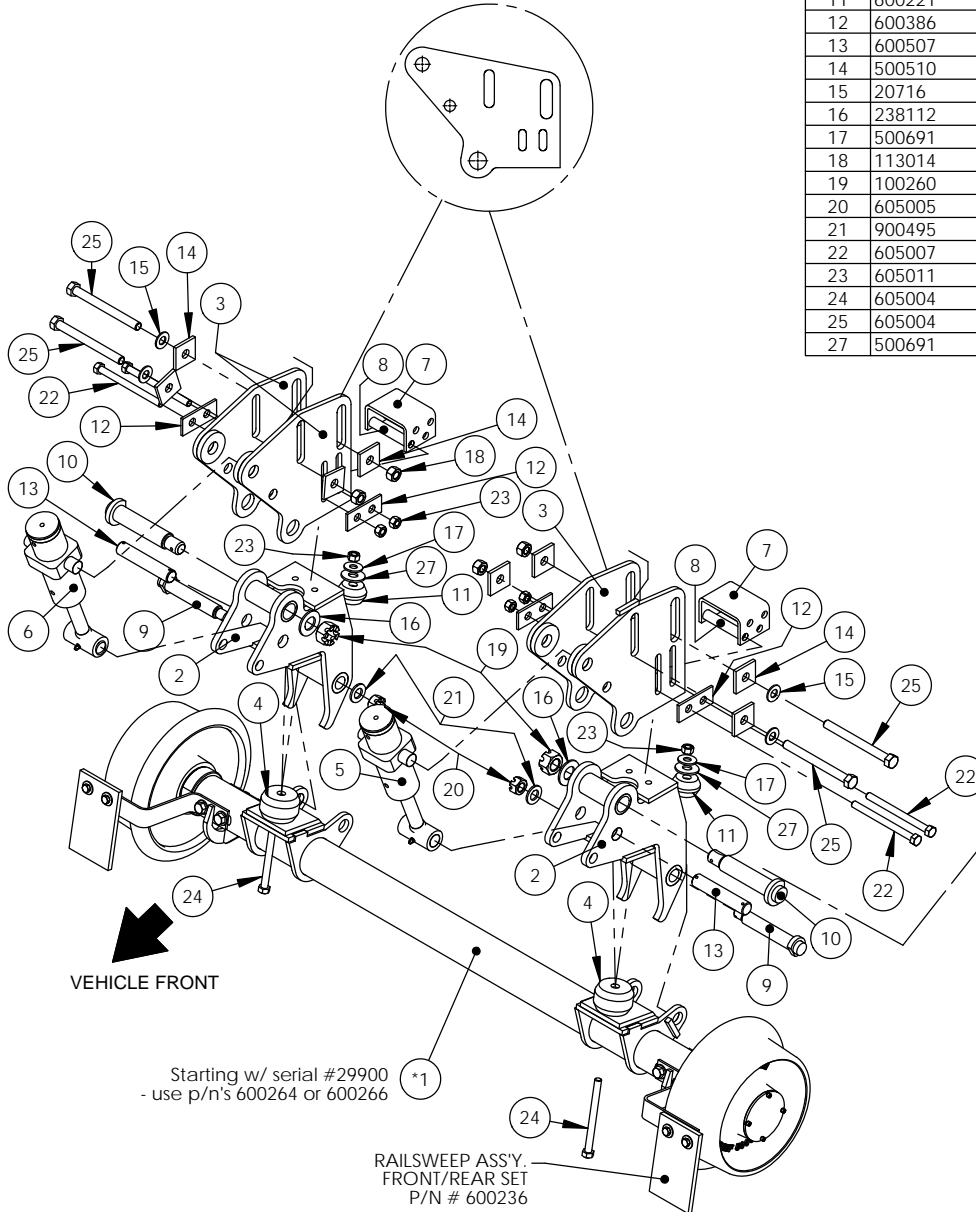
	9/1/2011	ADDED 600344 (2) TO BOM, AND CHANGED PIVOT ARMS TO LH / RH		ARJ																			
	1/18/10	ADDED 600411 & 600413 - MODIFIED HARDWARE & BOM ACCORDINGLY		JBG																			
REV	DATE	DESCRIPTION			BY	APP																	
TOLERANCES: (UNLESS SPECIFIED):		<table><tr><td colspan="2" rowspan="2">RW-1015</td><td colspan="2">TITLE:  ASSY, REAR, '08 C25HD, RW-1015, RTW</td></tr><tr><td colspan="2">DIVERSIFIED METAL FABRICATORS, INC. (404) 875-1512</td></tr><tr><td>DRAWN BY:</td><td>APPD BY:</td><td>DATE:</td><td></td><td>DRAWING NUMBER:</td><td>REV:</td></tr><tr><td>WAK</td><td></td><td>11/07/08</td><td></td><td>600102</td><td>B</td></tr></table>				RW-1015		TITLE:  ASSY, REAR, '08 C25HD, RW-1015, RTW		DIVERSIFIED METAL FABRICATORS, INC. (404) 875-1512		DRAWN BY:	APPD BY:	DATE:		DRAWING NUMBER:	REV:	WAK		11/07/08		600102	B
RW-1015								TITLE:  ASSY, REAR, '08 C25HD, RW-1015, RTW															
						DIVERSIFIED METAL FABRICATORS, INC. (404) 875-1512																	
DRAWN BY:	APPD BY:					DATE:		DRAWING NUMBER:	REV:														
WAK						11/07/08		600102	B														
FRAC. MACH: ± 1/32"																							
FRAC. OTHER: ± 1/16"																							
X ± .063																							
XX ± .030																							
XXX ± .005																							
DRILL SIZES: + .015																							
ANGULAR: ± 1°																							
SURF FINISH: 125 MICRO																							
THREADS: 2A AND 2B																							



\*IF YOU ORDERED MANUAL PIN-OFFS, SEE SECTION 5.2 FOR DRAWINGS  
& INSTALL INFORMATION.

**4X4 CONFIGURATION SHOWN.**  
USE ALTERNATE BRACKET AND  
PIVOT ARMS FOR 4X2

FORD PART 4X2

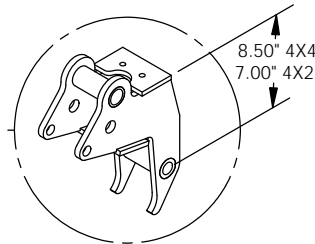


ITEM NO.	PART NUMBER	QTY.	DESCRIPTION	COMMENTS/NOTES
*1	600201 (SEE REF. NOTE)	1	ASSY, RAILWHEEL RTW (WHEEL,SPINDLE,TREAD)	600264/266HAS SPINDLE W. NUT
2	REFER TO DWG. M1015110	2	PIVOT ARM	
3	REFER TO DWG. M1015110	4	FRONT FRAME BRACKET	
4	600220	2	DETAIL, SUSP, PRIMARY, RW-1015	
5	600501	1	ASSY, CYLINDER, 2", FT, RW-1015	
6	600501	1	ASSY, CYLINDER, 2", FT, RW-1015	
7	600381	2	DET,FORMED, FRAME BRACKET, ADJ, RW1015, 09F2/350	
8	500384	4	RW-1015 DETAIL, SUPPORT TUBE	
9	600215	2	WLDMT, PIN, AXLE PIVOT, RW-1015	
10	600360	2	WELDMT, PIVOT PIN, FT,RW-1015	
11	600221	2	DETAIL, SUSPENSION, PRELOAD, RW-1015	
12	600386	4	DETAIL, FORD PLATE SLOT ADJ. 1-1/2"	
13	600507	2	DET, PIN, CYL ROD, RW-1015, FT	
14	500510	8	DET, SLOT FLAT BAR, 5/8	IN HARDWARE KIT #600701
15	20716	4	5/8" FLAT WASHER	
16	238112	2	FLAT WASHER, 1", GR5	
17	500691	2	FLAT WASHER, 1/2", GR8	
18	113014	4	LOCKNUT, 1/2-13, ESNA, GR8	
19	100260	2	HEX SLOTTED NUT 1"-8	
20	605005	2	HEX SLOTTED NUT 3/4"-10	
21	900495	2	FLAT WASHER, 3/4", GR8	
22	605007	4	HEX HEAD CAP SCREW, 1/2-13 X 6-1/4, GR8	
23	605011	6	HEX NUT 1/2-13, GR8	
24	605004	2	HEX HEAD TAP BOLT, 1/2-13 X 6, GR8	
25	605004	4	HEX HEAD TAP BOLT 1/2-13X6, GR8	
27	500691	2	FLAT WASHER , 1/2", GR8	

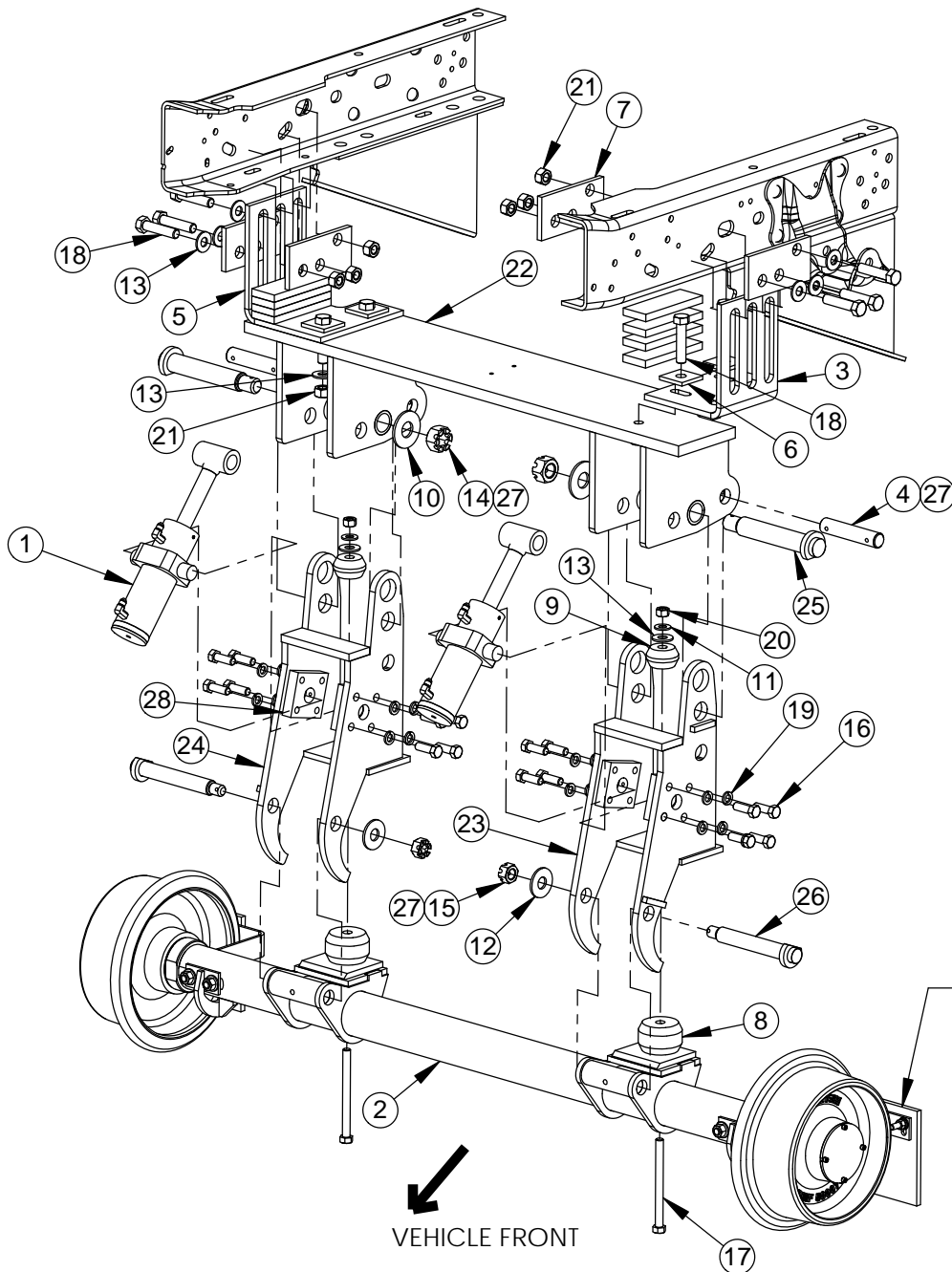
KIT #600701: #13 QTY. 4, #14 QTY. 4, #15 QTY. 8, & #17 QTY. 4

See drawing M1015105 for Grease Guard parts

FOR ASSEMBLY & INSTALL, USE DWG # M1015102



REV	DATE	DESCRIPTION	BY	APP
1	10/10/11	ADDED 4X2 FRONT BRACKET	ARJ	
TOLERANCES: (UNLESS SPECIFIED)				
FRAC. MACH. ± 1/32"				
FRAC. OTHER: ± 1/16"				
XX ± .063				
.XX ± .030				
.XXX ± .005				
DRILL SIZES: ± .015				
ANGULAR: ± 1"				
SURF FINISH: 125 MICRO				
THREADS: 2A AND 2B				
RW-1015		TITLE: ASSY, FORD 4X4 FRONT RAILGEAR '09		
DRAWN BY: JBG		APPD BY:		DATE: 5/22/09
		DIVERSIFIED METAL FABRICATORS, INC. (404) 875-1512		DRAWING NUMBER: 600107
		REV: A		



B

B  
A


ITEM NO.	PART NUMBER	QTY.	DESCRIPTION	COMMENTS/NOTES
1	600503	2	ASSY, CYLINDER 2", RR, RE-1015	
2	600225	1	ASSY, RAILWHEEL RTW (WHEEL, SPINGLE, TREAD)	
3	600412	1	DET, DS, REAR BRACKET, 08F2/3 PU, RW1015	
4	600509	2	DET, PIN, C'YL ROD, RW-1015, RR	
5	600429	1	DET, PS, REAR BRACKET, 08F2/3 PU, RW1015	
6	500510	4	DET, SLOT FLAT BAR, 5/8	IN KIT #600714
7	600422	4	DETAIL, SLIDE PLATE, REAR BRACKET, RW-1015 '08 FORD	
8	600220	2	DETAIL, SUSP, PRIMARY, RW-1015	
9	600221	2	DETAIL, SUSPENSION, PRELOAD, RW-1015	
10	238112	2	FLAT WASHER, 1", GR5	
11	500691	2	FLAT WASHER, 1/2", GR8	
12	900495	2	FLAT WASHER, 3/4", GR5	
13	20716	12	FLAT WASHER, 5/8", GR8	IN KIT #600708 & 600714
14	818127	2	HEX SLOTTED NUT, 1"-8	
15	605005	2	HEX SLOTTED NUT, 3/4"-10	
16	818367	16	HHCS, 1/2-13 X 1-1/2, GR5	
17	605004	2	HHCS, 1/2-13 X 6, FULLY THREADED	
18	605003	10	HHCS, 5/8-11 X 2-3/4, GR8	IN KIT #600708 & 600714
19	76317	17	LOCK WASHER, 1/2", GR5	
20	113014	2	LOCKNUT, 1/2-13, GR8	
21	18551	10	LOCKNUT, 5/8-11, GR8	IN KIT #600708 & 600714
22	600364/600365	1	REAR BRACKET WELDMNT, '08 FORD F2/350 4X4/4X2	
23	600340	1	WELDMNT, PIVOT ARM, REAR, DS, RW-1015	
24	600349	1	WELDMNT, PIVOT ARM, REAR, PS, RW-1015	
25	600362	2	WELDMT, PIVOT PIN, RR, RW-1015	
26	600218	2	WELDMT, PIN, AXLE PIVOT, RW-1015	
27	108078	8	COTTER PIN, 3/16 X 2	
28	600344	4	BO, PIVOT BOSS, PIVOT ARM, REAR, RW-1015	

FOR INSTALLATION, USE DWG #M1015103

RAILSWEEP ASS'Y  
FRONT/REAR SET  
P/N # 600236

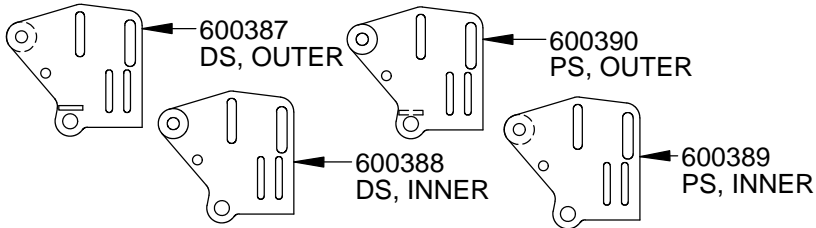
VEHICLE FRONT

KIT #600708: VERTICAL PLATE TO TRUCK FRAME AND HARDWARE  
KIT #600714: VERTICAL PLATE TO RAILGEAR BRKT AND HARDWARE

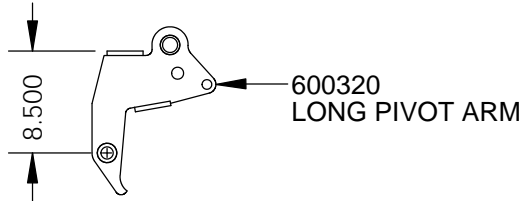
B	10/19/12	REDRAWN, 600412 QTY 2 CHANGED TO 600412 DS AND 600429 PS, 600364 WAS 600336	JDI	
A	8/29/11	600340 QTY 2 CHANGED TO 600340 DS AND 600349 PS	ARJ	
REV	DATE	DESCRIPTION	BY	APP
TOLERANCES: (UNLESS SPECIFIED)		TITLE:		
FRAC. MACH: ± 1/32"		RW-1015		
FRAC. OTHER: ± 1/16"				
X ± .063		ASSY, REAR, 08/09 F2/350 FORD, STW		
XX ± .030		DIVERSIFIED METAL FABRICATORS, INC. (404)875-1512		
XXX ± .005		DATE:		
DRILL SIZES: ± .015		DRAWING NUMBER:		
ANGULAR: ± 1"		REV:		
SURF FINISH: 125 MICRO				
THREADS: 2A AND 2B				
DRAWN BY:		APPD BY:		
JBG		-		
		10/06/09		
			600109	B

# FORD F250/350 4WD

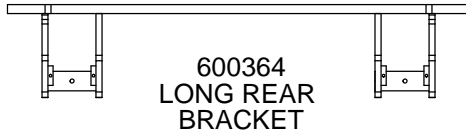
## FRONT FRAME MOUNT BRACKET



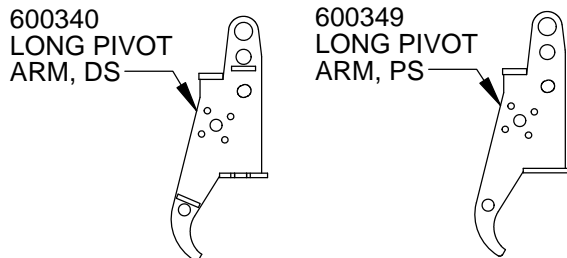
## FRONT PIVOT ARM



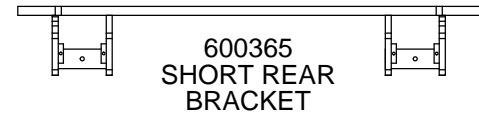
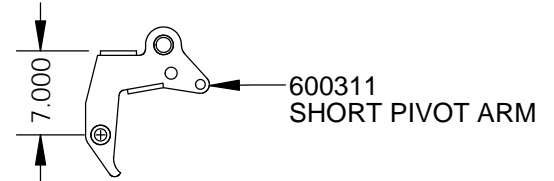
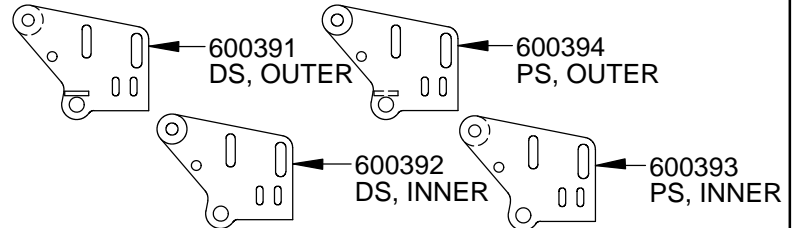
## REAR BRACKET



## REAR PIVOT ARM



# FORD F250/350 2WD



SAME AS 4WD

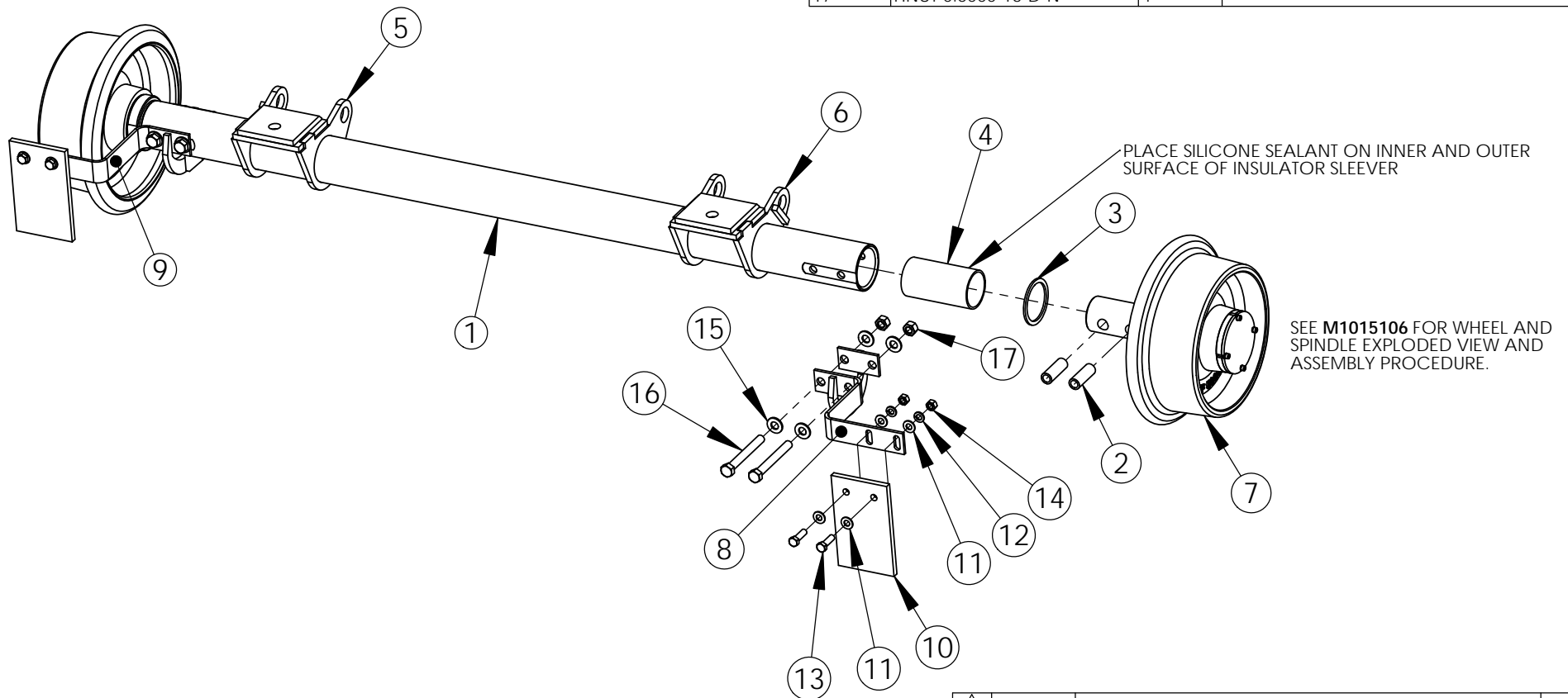
		10/19/12		600364 WAS 600336, 600365 WAS 600331				JDI	
REV		DATE		DESCRIPTION				BY APP	
TOLERANCES: (UNLESS SPECIFIED):		RW-1015		TITLE:					
FRAC. MACH. ± 1/32"				FORD 4X4 / 4X2 PARTS TABLE					
FRAC. OTHER: ± 1/16"									
X .063				DIVERSIFIED METAL FABRICATORS, INC. (404)875-1512					
.XX .030									
.XXX .005									
DIM. SIZES: ± .015		DRAWN BY:		APPD BY:		DATE:		DRAWING NUMBER:	
ANGULAR: ± 1°		ARJ				10-10-11		M1015110	
SURF FINISH: 125 MICRO								REV: A	
THREADS: 7-8 AND 28									
WE ARE DIVERSIFIED, UNDER THE NAME:									

FRONT AXLE ASSEMBLY: 600273(STW) / 600272(RTW)

REAR AXLE ASSEMBLY: 600274(STW) / 600270(RTW)

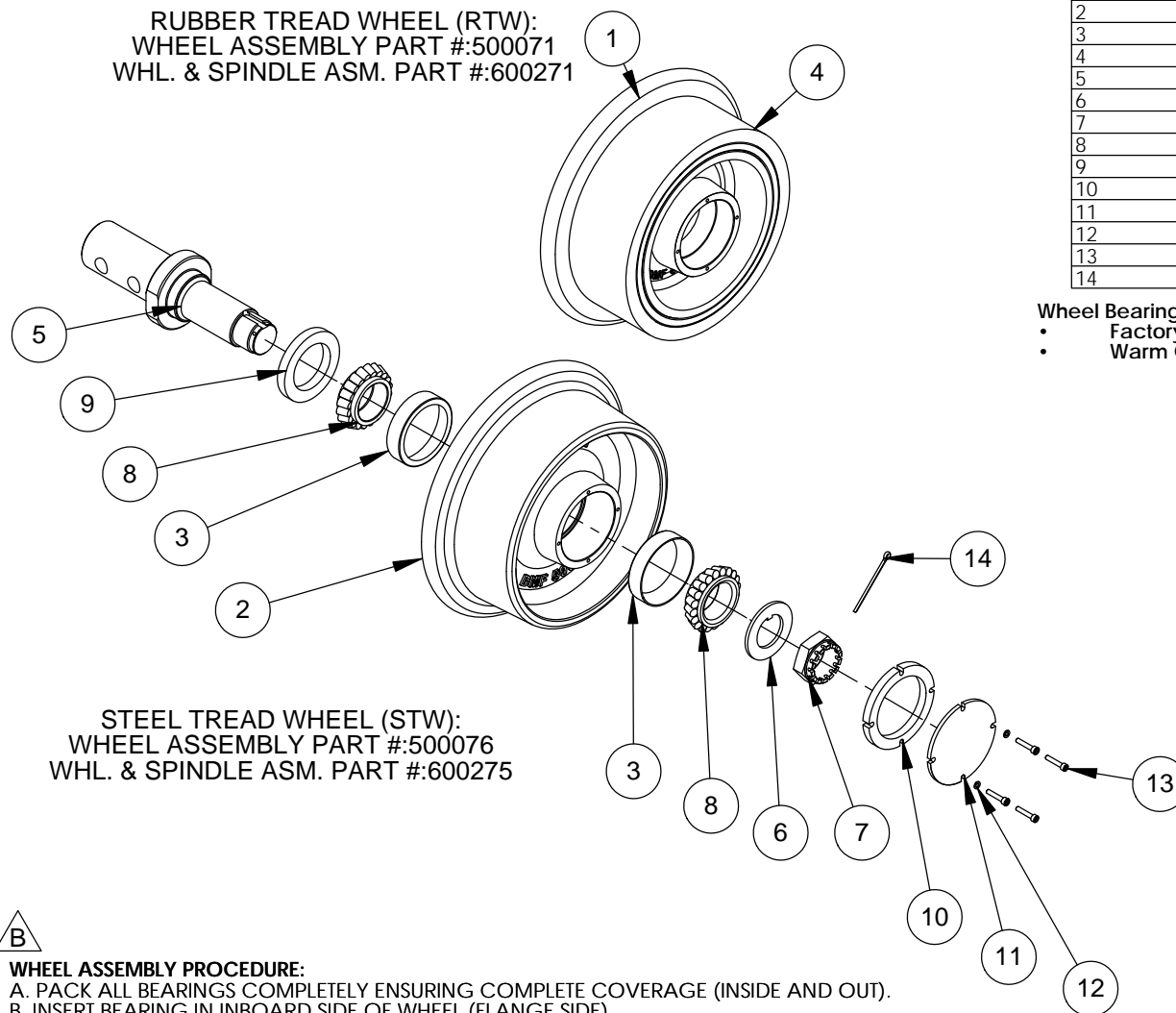


ITEM NO.	PART NUMBER	QTY.	DESCRIPTION
1	600222	1	DETAIL, DOUBLE INSULATED AXLE TUBE, RW-1015
2	600205	4	DET, INSULATOR, SPINDLE BOLTS, RW-1015
3	600206	2	DET, INSULATOR, AXLE END, RW-1015
4	600207	2	DET, INSULATOR, SPINDLE, RW-1015
5	600210FRONT / 600214 REAR	1	WLDM'T, AXLE BRACKET, PS, RW-1015
6	600286FRONT / 600214REAR	1	WLDM'T, AXLE BRACKET, DS, RW-1015
7	600275 STW / 600271RTW	2	ASSY,WHEEL & GEN3 SPINDLE, 1015, STW / RTW
8	600231	1	WELDMENT , RAILSWEET, DS, RW-1015
9	600232	1	WELDMENT, RAILSWEET, PS, RW-1015
10	818503	2	RAILSWEEP RUBBER BELTING DETAIL
11	Preferred Narrow FW 0.375	8	FLAT WASHER
12	12566	4	3/8" LOCKWASHER GR8
13	HBOLT 0.3750-16x1.25x1-N	4	
14	HNUT 0.3750-16-D-N	4	
15	Preferred Narrow FW 0.5	8	FLAT WASHER
16	HBOLT 0.5000-13x4.25x1.25-N	4	
17	HNUT 0.5000-13-D-N	4	



9/4/12	P/N 600214 WAS 600211	JDI	
9-6-2011	SPINDLE ASM. EXPLOSION AND BOM MOVED TO M1015106	ARJ	
REV	DATE	DESCRIPTION	BY APP
TOLERANCES (UNLESS SPECIFIED)			
FRAC. MACH: ± 1/32"			
FRAC. OTHER: ± 1/16"			
X .063			
XX .030			
XXX .015			
DRILL SIZES: ± .015			
ANGULAR: ± 1°			
SURF FINISH: 125 MICRO			
THREADS: 1A AND 2B			
(BREAK SHARP CORNERS & CHAMFERS TO .005 & .015 MAX)			
RW-1015		TITLE: MANUAL, GEN3 AXLE/SPINDLE/WHEEL ASSY & PARTS DIAGRAM, RW-1015	
DIVERSIFIED METAL FABRICATORS, INC. (404)875-1512			
DRAWN BY: NEH	APPD BY:	DATE: 7/1/11	DRAWING NUMBER: M1015104
			REV: B

RUBBER TREAD WHEEL (RTW):  
WHEEL ASSEMBLY PART #:500071  
WHL. & SPINDLE ASM. PART #:600271



STEEL TREAD WHEEL (STW):  
WHEEL ASSEMBLY PART #:500076  
WHL. & SPINDLE ASM. PART #:600275

ITEM NO.	PART NUMBER	QTY.	DESCRIPTION
1	500070	1	DETAIL, RAILWHEEL, 1013HD
2	500075	1	DETAIL, RAILWHEEL, RW-1013/15HD, STW
3	500100	4	BEARING RACE, (TIMKEN 25520)
4	500144	1	TREAD, RUBBER
5	600199	1	DETAIL, SPINDLE, HD, GEN3
6	10596	1	WASHER, TONGUE (TIMKEN K-91508)
7	10599	1	DET, SLHN 1-9/16-18 AFBMAX14SL
8	500102	2	BEARING CONE
9	500108	1	SEAL, N412920/CR22532
10	500073	1	BO, HUBCAP SPACER, 1015HD, LOCKING
11	500078	1	BO, HUBCAP
12	818425	4	LW #10
13	605009	4	SOCKET HEAD CAP SCREW, 10-24 X 1
14	100263	1	COTTER PIN 1/8 X 2-1/2




#### Wheel Bearing Grease:

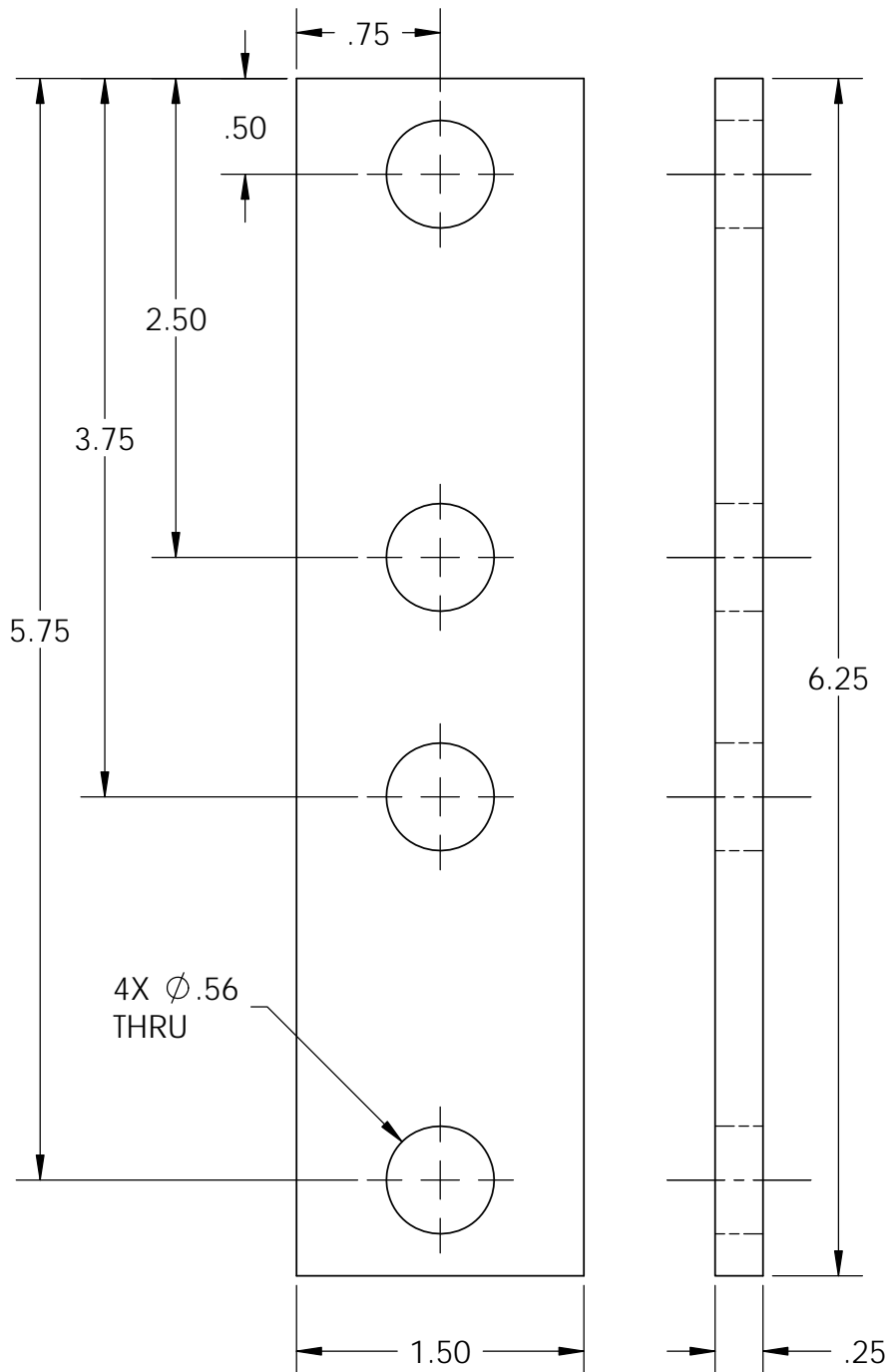
- **Factory Standard:** Citgo Syndurance Premium Synthetic 460 #2
- **Warm Climates:** Mystik JT-6 Hi-Temp Multi-Purpose Grease #2 (or equivalent)

**B**

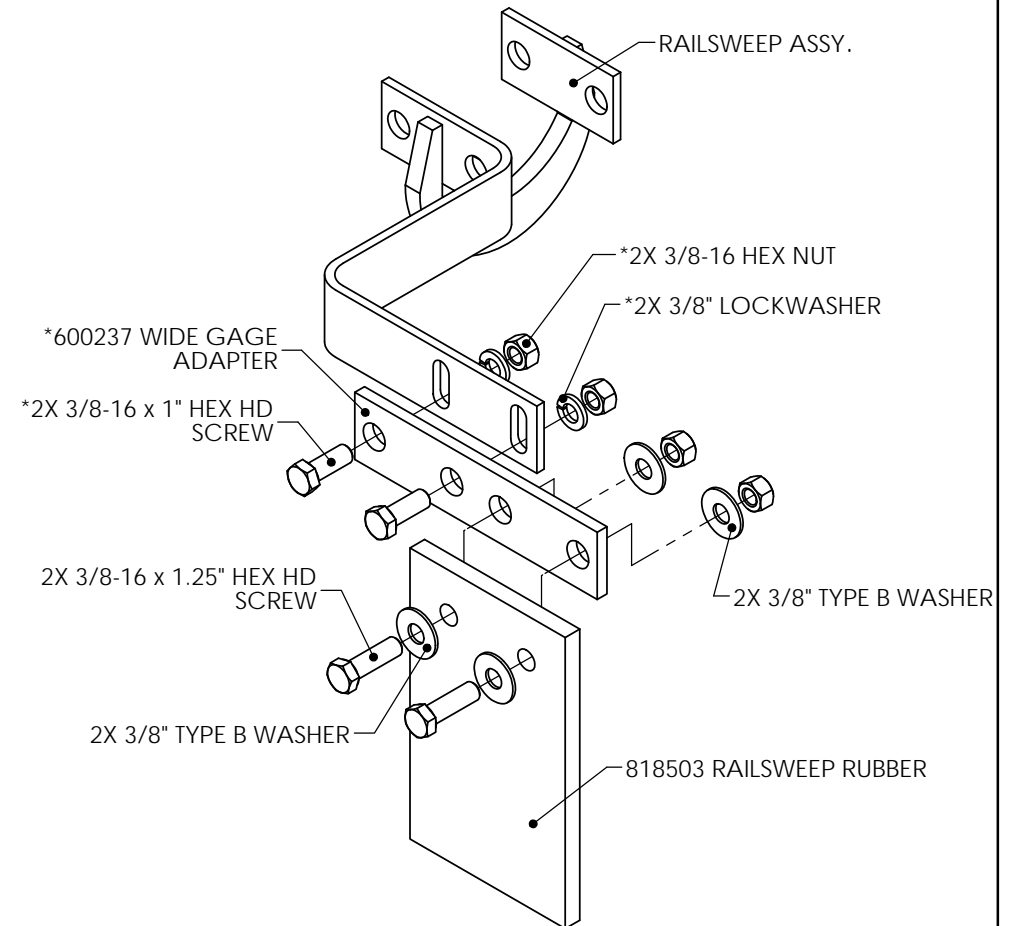
#### WHEEL ASSEMBLY PROCEDURE:

- PACK ALL BEARINGS COMPLETELY ENSURING COMPLETE COVERAGE (INSIDE AND OUT).
- INSERT BEARING IN INBOARD SIDE OF WHEEL (FLANGE SIDE).
- PACK GREASE ON INBOARD SIDE OF BEARING, COVERING BACK SIDE OF BEARING.
- INSTALL A NEW SEAL BY GENTLY TAPPING WITH HAMMER UNTIL FLUSH WITH WHEEL HUB.
- PLACE WHEEL ON AXLE.
- FILL CAVITY BETWEEN BEARINGS AND AROUND AXLE UNTIL FLUSH WITH OUTBOARD RACE.
- INSERT BEARING IN OUTBOARD SIDE OF WHEEL.
- INSTALL TONGUE WASHER (ITEM 6), LINE THE TAB UP WITH KEYWAY IN SPINDLE.
- INSTALL CASTLE NUT (ITEM 7).
- ADJUST BEARING END-PLAY:
  - TIGHTEN CASTLE NUT TO 200 FT-LBS WHILE ROTATING WHEEL.
  - BACK OFF CASTLE NUT ONE FULL TURN.
  - TIGHTEN CASTLE NUT TO 50 FT-LBS WHILE ROTATING WHEEL.
  - BACK OFF CASTLE NUT BY ONE NOTCH.
- INSTALL COTTER PIN.
- VERIFY BEARING END-PLAY IS 0.001"-0.005" WITH A DIAL INDICATOR.
- FILL OUTBOARD CAVITY WITH GREASE.
- RUN A BEAD OF SILICONE ON BOTH MOUNTING SURFACES OF THE SPACER.
- INSTALL HUBCAP WITH PROVIDED SCREWS.

	9/11/17	REVISED WHEEL BEARING SETTING PROCEDURE	BJF			
	5/20/15	CHANGED GREASE STANDARD	JDI			
REV	DATE	DESCRIPTION	BY	APP		
TOLERANCES: (UNLESS SPECIFIED)		RW-1015	TITLE:  ASSY,WHEEL & GEN3 SPINDLE, 1015, STW			
FRAC. MACH: ± 1/32" FRAC. OTHER: ± 1/16" X .063 XX .030 XXX .005 DRILL SIZES: ± .015 ANGULAR: ± 1° SURF FINISH: 125 MICRO THREADS: 2A AND 2B			DIVERSIFIED METAL FABRICATORS, INC. (404) 875-1512			
DRAWN BY: ARJ			APPD BY:	DATE: 10/16/12		DRAWING NUMBER: M1015106
REV: B						
RECAL SHARP TOOLS (DIE & TAPS)						



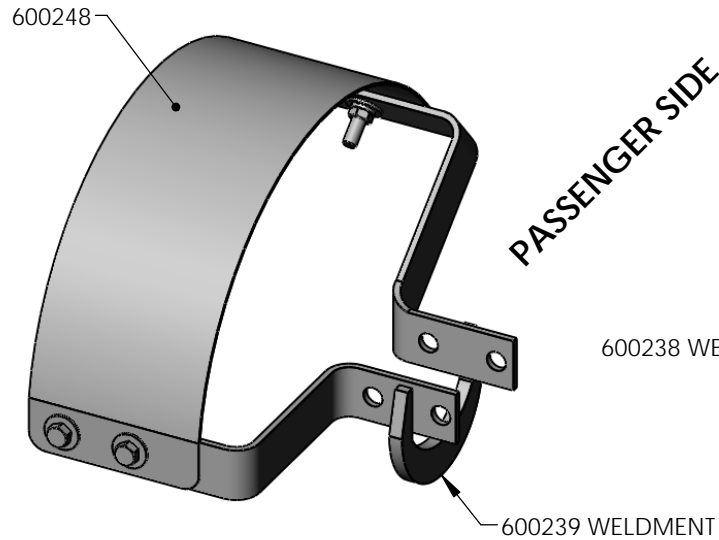
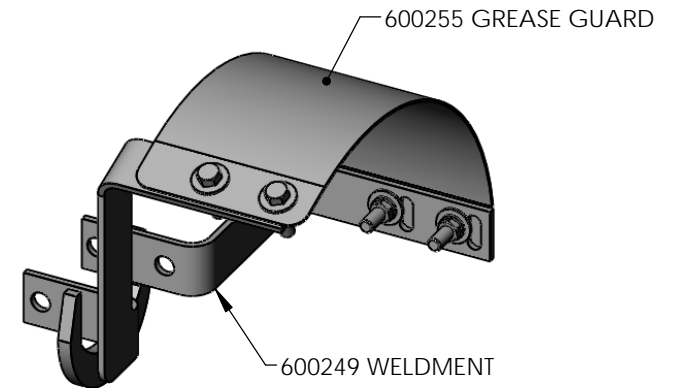
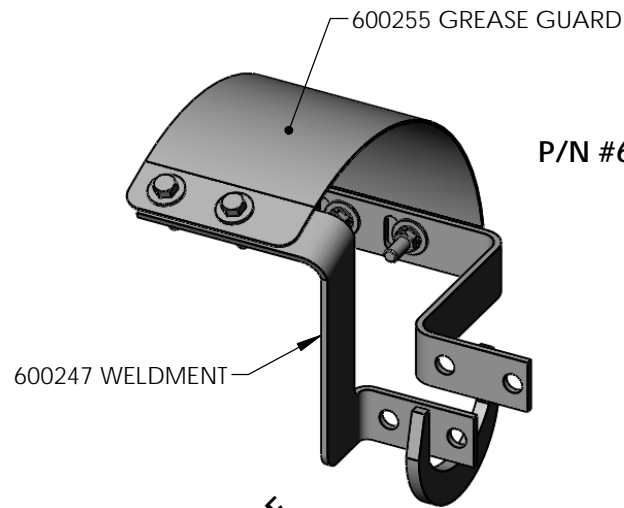
ITEM	PART NO.	QTY	DESCRIPTION
1	HRFL1/4X1-1/2	EA	HR FLAT 1/4" THICK x 1-1/2" WIDE
2	-	-	-
3	-	-	-
4	-	-	-
5	-	-	-
6	-	-	-



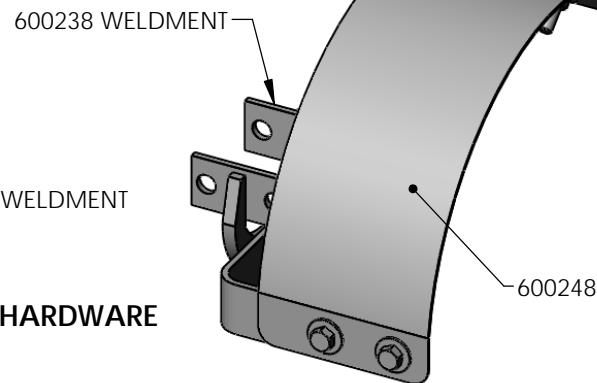
# **\*REF. 600712 WIDE GAGE SWP ADAPT HDWRE KIT**

	-	-	-	-
	-	-	-	-
REV	DATE	DESCRIPTION	BY	APP
TOLERANCES: (UNLESS SPECIFIED)		TITLE: WIDE GAGE RAILSWEEP ADAPTER		
FRAC. MACH: ± 1/32"		DIVERSIFIED METAL FABRICATORS, INC. (404) 875-1512		
FRAC. OTHER: ± 1/16"		DATE: 8/28/2009		
.XX ± .063				
.XXX ± .005		DRAWING NUMBER: 600237		
DRILL SIZES: ± .015		REV: #		
ANGULAR: ± 1"				
SURF FINISH: 125 MICRO				
THREADS: 2A AND 2B				
RW-1015				
DRAWN BY: JBG				
APPD BY:				

# P/N #600259 - REAR TRUCK SET W/ HARDWARE



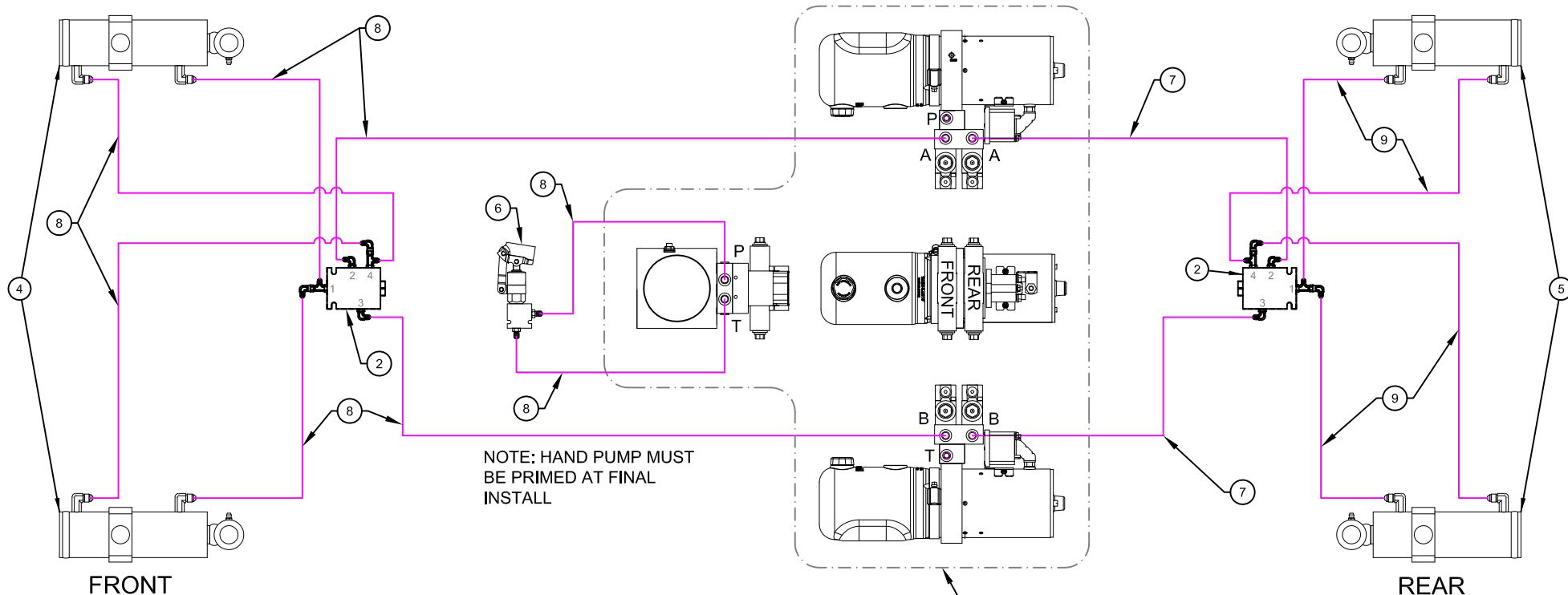
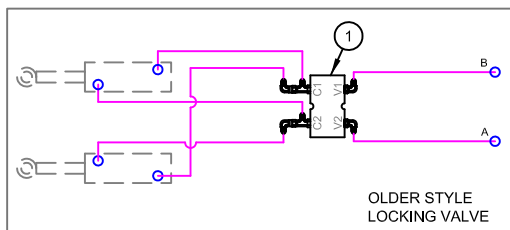
PASSENGER SIDE



DRIVER SIDE

## P/N #600250 - FRONT TRUCK SET W/ HARDWARE






<div> <div></div> <div></div> </div>	-	-	-
REV	DATE	DESCRIPTION	BY APP
TOLERANCES: (UNLESS SPECIFIED)			
<div> <div>FRAC. MACH: ± 1/32"</div> <div>FRAC. OTHER: ± 1/16"</div> <div>.X ± .063</div> <div>.XX ± .030</div> <div>.XXX ± .005</div> <div>DRILL SIZES: ± .015</div> <div>ANGULAR: ± 1°</div> <div>SURF FINISH: 125 MICRO</div> <div>THREADS: 2A AND 2B</div> </div>			
RW-1015		<div>TITLE:</div> <div>MANUAL, FRONT/REAR GREASE GUARD SETS</div> <div>DIVERSIFIED METAL FABRICATORS, INC. (404) 875-1512</div>	
DRAWN BY: JBG	APPD BY:	DATE: 11/1/2010	<div> <div>DRAWING NUMBER: M1015105</div> <div>REV: #</div> </div>



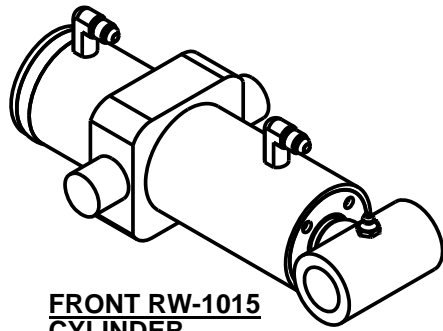
NOTE: FOR ELECTRICAL  
DIAGRAM SEE DRAWING  
#:600601

NOTE: ALL HOSES SUPPLIED ARE FOR FRONT-OF-TRUCK MOUNTED PUMP

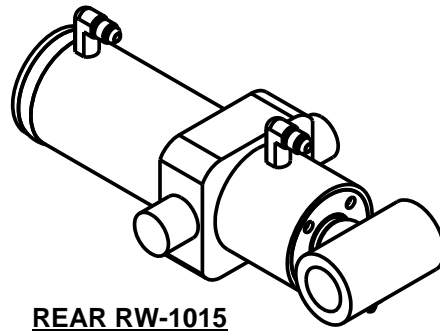
ITEM	PART NO.	QTY	DESCRIPTION	KIT #
1	600603		LOCKING VALVE w/ ORIFICE & FITTINGS RW-1015 (PRE JUNE 2010)	-
2	600611	2	LOCKING VALVE w/ ORIFICE & FITTINGS RW-1015 (POST JUNE 2010)	-
3	600620	1	HYD. PUMP W/ #10 CAVITY HAND PM (M3528-MAS-10-2-HP)	-
4	600501	REF.	ASSY, CYLINDER, 2", FT, RW-1015	-
5	600503	REF.	ASSY, CYLINDER, 2", RR, RW-1015	-
6	600625	REF.	EMERGENCY HAND PUMP W/ HANDLE	-
7	600602	2	6.4MM (1/4") RHINOHIDE HYD. HOSE - 22' SECTIONS	-
8	810622	8	6.4MM (1/4") RHINOHIDE HYD. HOSE - 38" SECTIONS	-
9	810642	4	6.4MM (1/4") RHINOHIDE HYD. HOSE - 62" SECTIONS	-
10	82626	2	6801-04-06 (04 JIC X 06 O'RING 90 FTG.)	600711
11	600510	6	6500-04-04 (#4MJIC X #4FJIC SWIVEL 90 DEG FTG)	600711
12	600511	6	6400-04-06 (#4JIX X 06 O'RING STRAIGHT FTG)	600711

	10/18/11	REDRAWN TO SHOW PICTORIAL VIEWS, ADDED KIT# COLUMN IN BOM		NEH	
	10/6/11	ADDED PRIMING REFERENCE, SWITCHED PORTS A&B WHERE SHOWN		NEH	
	8/19/10	ADDED LOCKING VALVE W/ ORIFICE & FTGS #600611		JBG	
	10/01/09	CHG'D LOCKING VALVE DETAIL & REMOVED ITEM #2 FTGS		JBG	
	9/16/09	ADDED DIRECTIONAL VALVE PORT REFERENCES		JBG	
REV	DATE	DESCRIPTION		BY	APP
TOLERANCES: (UNLESS SPECIFIED)		TITLE: ASSY, RW-1015 HYDRAULIC SYSTEM,			
FRACTIONAL: DECIMAL: 1/32"		RW-1015			
FRACTIONAL: OTHER: 1/16"					
X: .063		DIVERSIFIED METAL FABRICATORS, INC.(404)875-1512			
XX: .030					
XXX: .015		DATE: 6/01/09			
DRILL SIZES: .1"					
ANGULAR: .25 MICRO		DRAWING NUMBER: 600550			
SURF FINISH: 32 AND 25					
THREADS: 2A AND 2B		REV: F			
TOLERANCES: (UNLESS SPECIFIED)					
FRACTIONAL: DECIMAL: 1/32"		DRAWN BY: JBG			
FRACTIONAL: OTHER: 1/16"					
X: .063		APPD BY:			
XX: .030					
XXX: .015		DATE: 6/01/09			
DRILL SIZES: .1"					
ANGULAR: .25 MICRO		DRAWING NUMBER: 600550			
SURF FINISH: 32 AND 25					
THREADS: 2A AND 2B		REV: F			
TOLERANCES: (UNLESS SPECIFIED)					
FRACTIONAL: DECIMAL: 1/32"		DRAWN BY: JBG			
FRACTIONAL: OTHER: 1/16"					
X: .063		APPD BY:			
XX: .030					
XXX: .015		DATE: 6/01/09			
DRILL SIZES: .1"					
ANGULAR: .25 MICRO		DRAWING NUMBER: 600550			
SURF FINISH: 32 AND 25					
THREADS: 2A AND 2B		REV: F			
TOLERANCES: (UNLESS SPECIFIED)					
FRACTIONAL: DECIMAL: 1/32"		DRAWN BY: JBG			
FRACTIONAL: OTHER: 1/16"					
X: .063		APPD BY:			
XX: .030					
XXX: .015		DATE: 6/01/09			
DRILL SIZES: .1"					
ANGULAR: .25 MICRO		DRAWING NUMBER: 600550			
SURF FINISH: 32 AND 25					
THREADS: 2A AND 2B		REV: F			
TOLERANCES: (UNLESS SPECIFIED)					
FRACTIONAL: DECIMAL: 1/32"		DRAWN BY: JBG			
FRACTIONAL: OTHER: 1/16"					
X: .063		APPD BY:			
XX: .030					
XXX: .015		DATE: 6/01/09			
DRILL SIZES: .1"					
ANGULAR: .25 MICRO		DRAWING NUMBER: 600550			
SURF FINISH: 32 AND 25					
THREADS: 2A AND 2B		REV: F			
TOLERANCES: (UNLESS SPECIFIED)					
FRACTIONAL: DECIMAL: 1/32"		DRAWN BY: JBG			
FRACTIONAL: OTHER: 1/16"					
X: .063		APPD BY:			
XX: .030					
XXX: .015		DATE: 6/01/09			
DRILL SIZES: .1"					
ANGULAR: .25 MICRO		DRAWING NUMBER: 600550			
SURF FINISH: 32 AND 25					
THREADS: 2A AND 2B		REV: F			
TOLERANCES: (UNLESS SPECIFIED)					
FRACTIONAL: DECIMAL: 1/32"		DRAWN BY: JBG			
FRACTIONAL: OTHER: 1/16"					
X: .063		APPD BY:			
XX: .030					
XXX: .015		DATE: 6/01/09			
DRILL SIZES: .1"					
ANGULAR: .25 MICRO		DRAWING NUMBER: 600550			
SURF FINISH: 32 AND 25					
THREADS: 2A AND 2B		REV: F			
TOLERANCES: (UNLESS SPECIFIED)					
FRACTIONAL: DECIMAL: 1/32"		DRAWN BY: JBG			
FRACTIONAL: OTHER: 1/16"					
X: .063		APPD BY:			
XX: .030					
XXX: .015		DATE: 6/01/09			
DRILL SIZES: .1"					
ANGULAR: .25 MICRO		DRAWING NUMBER: 600550			
SURF FINISH: 32 AND 25					
THREADS: 2A AND 2B		REV: F			
TOLERANCES: (UNLESS SPECIFIED)					
FRACTIONAL: DECIMAL: 1/32"		DRAWN BY: JBG			
FRACTIONAL: OTHER: 1/16"					
X: .063		APPD BY:			
XX: .030					
XXX: .015		DATE: 6/01/09			
DRILL SIZES: .1"					
ANGULAR: .25 MICRO		DRAWING NUMBER: 600550			
SURF FINISH: 32 AND 25					
THREADS: 2A AND 2B		REV: F			
TOLERANCES: (UNLESS SPECIFIED)					
FRACTIONAL: DECIMAL: 1/32"		DRAWN BY: JBG			
FRACTIONAL: OTHER: 1/16"					
X: .063		APPD BY:			
XX: .030					
XXX: .015		DATE: 6/01/09			
DRILL SIZES: .1"					
ANGULAR: .25 MICRO		DRAWING NUMBER: 600550			
SURF FINISH: 32 AND 25					
THREADS: 2A AND 2B		REV: F			
TOLERANCES: (UNLESS SPECIFIED)					
FRACTIONAL: DECIMAL: 1/32"		DRAWN BY: JBG			
FRACTIONAL: OTHER: 1/16"					
X: .063		APPD BY:			
XX: .030					
XXX: .015		DATE: 6/01/09			
DRILL SIZES: .1"					
ANGULAR: .25 MICRO		DRAWING NUMBER: 600550			
SURF FINISH: 32 AND 25					
THREADS: 2A AND 2B		REV: F			
TOLERANCES: (UNLESS SPECIFIED)					
FRACTIONAL: DECIMAL: 1/32"		DRAWN BY: JBG			
FRACTIONAL: OTHER: 1/16"					
X: .063		APPD BY:			
XX: .030					
XXX: .015		DATE: 6/01/09			
DRILL SIZES: .1"					
ANGULAR: .25 MICRO		DRAWING NUMBER: 600550			
SURF FINISH: 32 AND 25					
THREADS: 2A AND 2B		REV: F			
TOLERANCES: (UNLESS SPECIFIED)					
FRACTIONAL: DECIMAL: 1/32"		DRAWN BY: JBG			
FRACTIONAL: OTHER: 1/16"					
X: .063		APPD BY:			
XX: .030					
XXX: .015		DATE: 6/01/09			
DRILL SIZES: .1"					
ANGULAR: .25 MICRO		DRAWING NUMBER: 600550			
SURF FINISH: 32 AND 25					
THREADS: 2A AND 2B		REV: F			
TOLERANCES: (UNLESS SPECIFIED)					
FRACTIONAL: DECIMAL: 1/32"		DRAWN BY: JBG			
FRACTIONAL: OTHER: 1/16"					
X: .063		APPD BY:			
XX: .030					
XXX: .015		DATE: 6/01/09			
DRILL SIZES: .1"					
ANGULAR: .25 MICRO		DRAWING NUMBER: 600550			
SURF FINISH: 32 AND 25					
THREADS: 2A AND 2B		REV: F			
TOLERANCES: (UNLESS SPECIFIED)					
FRACTIONAL: DECIMAL: 1/32"		DRAWN BY: JBG			
FRACTIONAL: OTHER: 1/16"					
X: .063		APPD BY:			
XX: .030					
XXX: .015		DATE: 6/01/09			
DRILL SIZES: .1"					
ANGULAR: .25 MICRO		DRAWING NUMBER: 600550			
SURF FINISH: 32 AND 25					
THREADS: 2A AND 2B		REV: F			
TOLERANCES: (UNLESS SPECIFIED)					
FRACTIONAL: DECIMAL: 1/32"		DRAWN BY: JBG			
FRACTIONAL: OTHER: 1/16"					
X: .063		APPD BY:			
XX: .030					
XXX: .015		DATE: 6/01/09			
DRILL SIZES: .1"					
ANGULAR: .25 MICRO		DRAWING NUMBER: 600550			
SURF FINISH: 32 AND 25					
THREADS: 2A AND 2B		REV: F			
TOLERANCES: (UNLESS SPECIFIED)					
FRACTIONAL: DECIMAL: 1/32"		DRAWN BY: JBG			
FRACTIONAL: OTHER: 1/16"					
X: .063		APPD BY:			
XX: .030					
XXX: .015		DATE: 6/01/09			
DRILL SIZES: .1"					
ANGULAR: .25 MICRO		DRAWING NUMBER: 600550			
SURF FINISH: 32 AND 25					
THREADS: 2A AND 2B		REV: F			
TOLERANCES: (UNLESS SPECIFIED)					
FRACTIONAL: DECIMAL: 1/32"		DRAWN BY: JBG			
FRACTIONAL: OTHER: 1/16"					
X: .063		APPD BY:			
XX: .030					
XXX: .015		DATE: 6/01/09			
DRILL SIZES: .1"					
ANGULAR: .25 MICRO		DRAWING NUMBER: 600550			
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ANGULAR: .25 MICRO		DRAWING NUMBER: 600550			
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XX: .030					
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THREADS: 2A AND 2B		REV: F			
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THREADS: 2A AND 2B		REV: F			
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THREADS: 2A AND 2B		REV: F			
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THREADS: 2A AND 2B		REV: F			
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THREADS: 2A AND 2B		REV: F			
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THREADS: 2A AND 2B		REV: F			
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THREADS: 2A AND 2B		REV: F			
TOLERANCES: (UNLESS SPECIFIED)					
FRACTIONAL: DECIMAL: 1/32"		DRAWN BY: JBG			
FRACTIONAL: OTHER: 1/16"					
X: .063		APPD BY:			
XX: .030					

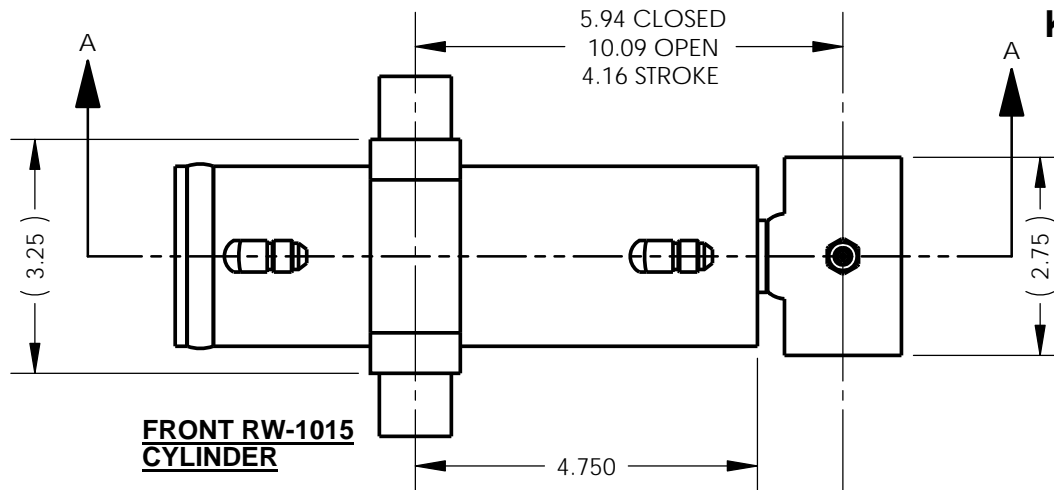




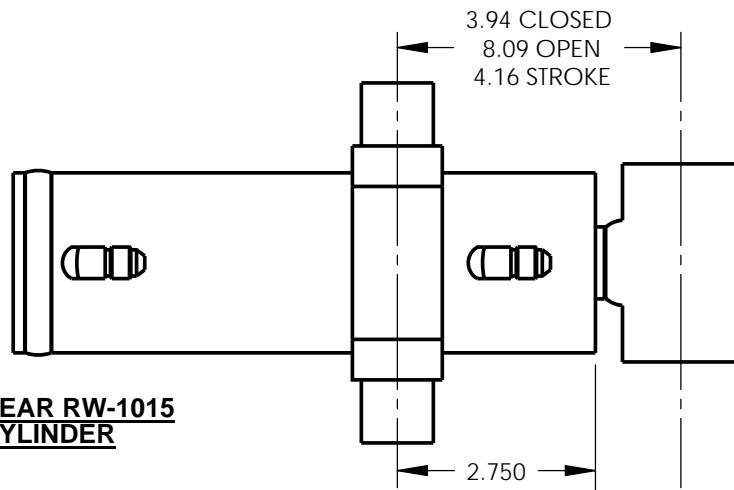
**FRONT RW-1015  
CYLINDER**



**REAR RW-1015  
CYLINDER**



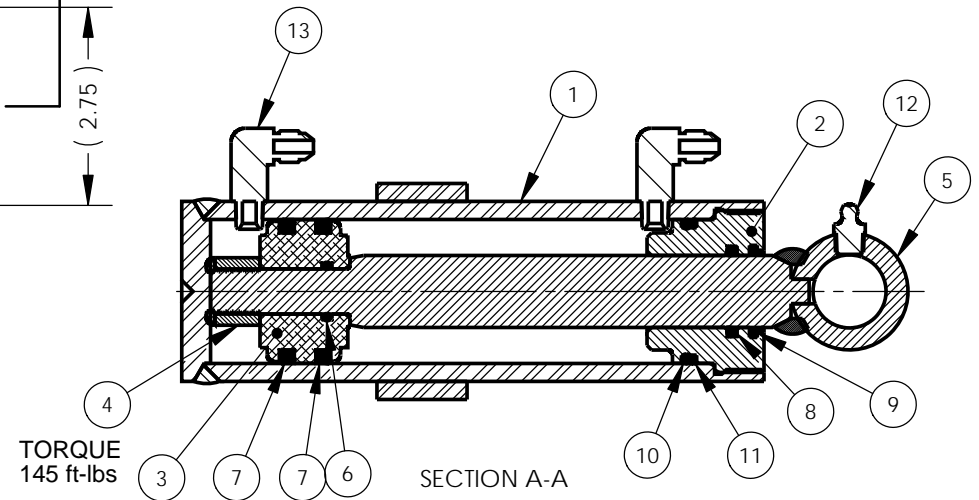
**FRONT RW-1015  
CYLINDER**



**REAR RW-1015  
CYLINDER**

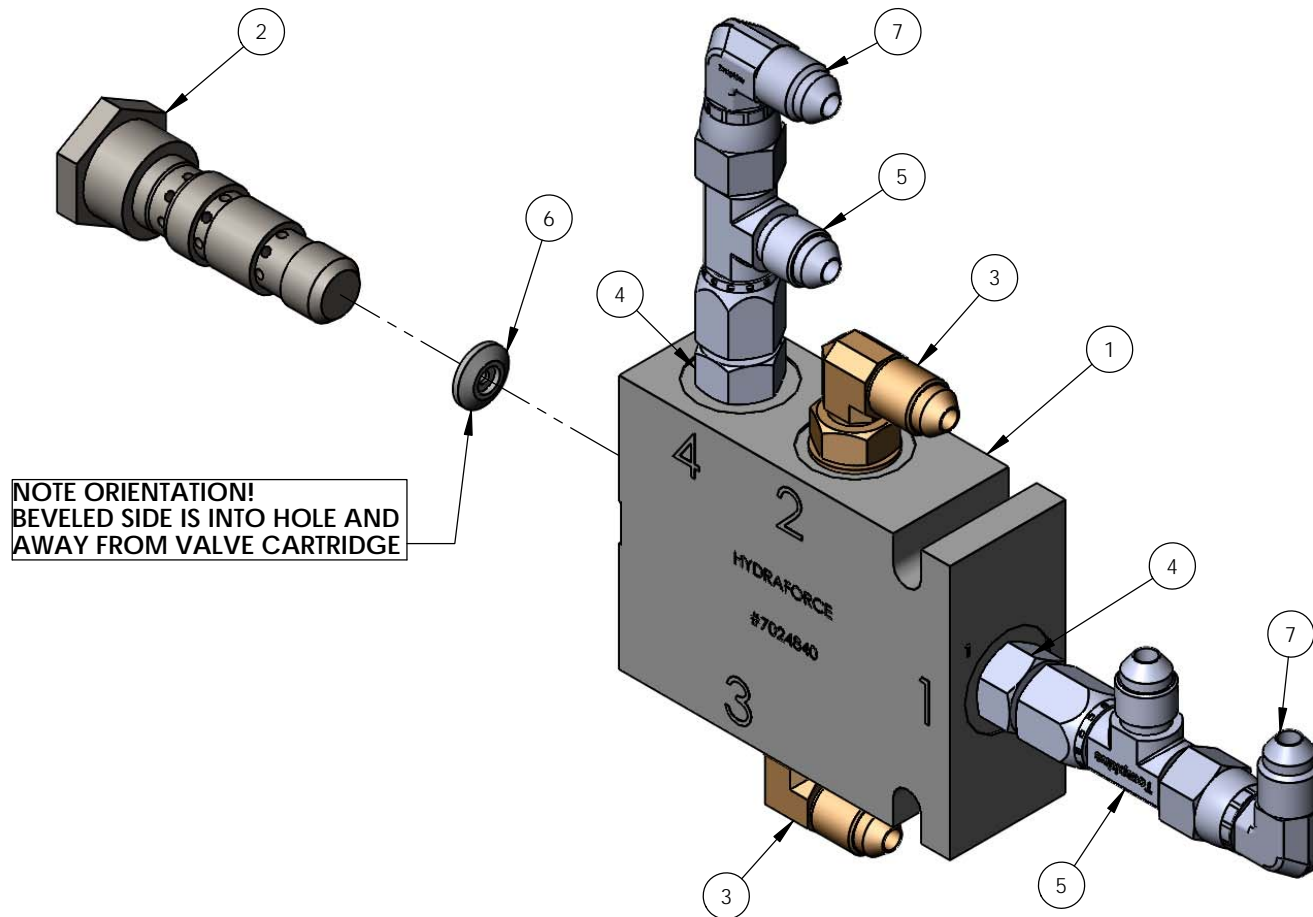
ITEM NO.	PART NUMBER	QTY.	DESCRIPTION
1	600502/600504	1	WELDMET, CYLINDER BARREL, FT/RR, RW-1015
2	501789	1	DETAIL, CYL GLAND, 2" BORE x 1" ROD, RW-1013
3	501786	1	DETAIL, PISTON 2" ID
4	605038	1	5/8"-18 NYLOCK NUT; GR8
5	600505	1	WELDMT, CYL ROD, FT, RW-1015
6	605039	1	O-RING, #114, N70
7	605040	2	PISTON SEAL, POLYPAK, 1.625" ID, 3/16"W, 2" BORE
8	605041	1	ROD SEAL, POLYPAK, 1" ID, 1/8"W
9	605042	1	ROD WIPER, AN 959/940, 1" ID, 1/8"
10	605043	1	O-RING; #224
11	605044	1	BACK UP RING, #224
12	818235	1	GREASE FITTING, 1/8" NPT, STRAIGHT
13	605047	2	1/8 MPT X 04 JIC 90 DEG LONG




**KIT #600710: INCLUDES ITEMS #6 THRU #11**



△	6/22/16	REMOVED SET SCREW 605045	BJF	
△	6/12/12	UPDATED PISTON O-RING LOCATION	TAM	
△	5/1/12	UPDATED STROKE, ADDED DRAWING NUMBERS	JDI	
△	10/26/10	VIEWS UPDATED TO REFLECT CURRENT WELDMET CYLINDER GEOMETRY	JBG	
△	6/30/09	ITEM 11 WAS 8-226	WAK	
△	6/5/09	ITEM 8 WAS 2500-1000-375	WAK	
REV	DATE	DESCRIPTION	BY	APP
TOLERANCES: (UNLESS SPECIFIED)				
FRAC. MACH: ± 1/32"				
FRAC. OTHER: ± 1/16"				
XX ± .063				
.XX ± .030				
.XXX ± .005				
DRILL SIZES: ± .015				
ANGULAR: ± 1°				
SURF FINISH: 125 MICRO				
THREADS: 2A AND 2B				
(SEE SHARP CORNERS UNLESS OTHERWISE NOTED)				
RW-1015		TITLE: ASSY, CYLINDERS, RW-1015		
DRAWN BY: WAK		DIVERSIFIED METAL FABRICATORS, INC. (404) 875-1512		
APPD BY:		DATE: 6/5/09	DRAWING NUMBER: 600501/503	REV: F

	ITEM NO.	PART NUMBER	QTY.	DESCRIPTION
A	1	600612	1	1015 LOCKING VLV BODY ONLY (7024840)
	2	241016	1	VALVE, LOCKING, CPD-084P, PARKER
	3	10457	2	#04 MJIC X #04 MAORB X 90 FITTING (6801-04-04)
	4	605324	2	04JIC MALE X 04 O-RING MALE
	5	605206	2	TEE, #04 MJIC X #04 FJIC SWIVEL X #04 MJIC
B	6	600613	1	ORIFICE .070" (7051-070)
	7	605048	2	#04 MJIC X #04 FJIC SWIVEL 90 DEG FITTING (6500-04-04)



	9/20/17	ADDED 605048 QTY 2		BJF	
	6/28/11	ADDED EXPLODED VIEW & ORIFICE ORIENTATION NOTES, CHANGED FROM DC08-40		WAK	
REV	DATE	DESCRIPTION		BY	APP
TOLERANCES: (UNLESS SPECIFIED)		RW-1015			
FRAC. MACH: ± 1/32" FRAC. OTHER: ± 1/16" X ± .063 XX ± .030 XXX ± .005 DRILL SIZES: ± .015 ANGULAR: ± 1° SURF FINISH: 125 MICRO THREADS: 2A AND 2B <small>(SEE SHARP CORNERS (LESSER &amp; GREATER))</small>					
		TITLE: LOCKING VALVE W/ ORIFICE & FITTINGS			
		DIVERSIFIED METAL FABRICATORS, INC. (404) 875-1512			
DRAWN BY:		APPD BY:		DATE:	
JBG				8/19/2010	DRAWING NUMBER: 600611
					REV: B

ITEM	PART NO.	QTY	DESCRIPTION
1			
2			

TITLE: SAE O-Ring Fitting Installation

PURPOSE: To Establish Production Methods For The Installation Of O-Ring Medium And High Pressure Hydraulic Fittings.

COMMON USAGE: Hydraulic Systems Operating With Petroleum-Based Fluids At Pressures Below 4000 PSI Or Minimum Component Rating.

PARTS GENERALLY ENCOMPASSED BY THIS PROCEDURE: Purchased Fittings With O-Ring Seals And SAE Straight Threads.

PROCEDURE:




- A) Inspect to ensure that both mating parts are free of burrs, nicks, scratches or any foreign particles.
- B) Lubricate O-Ring with light coat of system fluid or compatible oil.
- C) For adjustable fittings, back off lock nut as far as possible. Make sure back up washer is not loose and is pushed up to nut.
- D) Screw fitting into port until finger tight. Back up washer (adjustable) or hex face (non-adj.) should contact port face. Light wrenching may be necessary.
- E) To align an adjustable fitting, unscrew by desired amount but not more than one full turn. Use wrench to hold in position. Screw nut down to port face until finger tight.
- F) Tighten lock nut (adjustable) or fitting (non-adj.) the indicated Flats From Finger Tight (F.F.F.T.) in either the Adjustable chart or the Non-Adjustable chart below. One Flat on a hex is equal to 1/6th of a full turn. Tolerance on tightening is plus or minus 1/4 flat (1/24th of full turn).
- G) Inspect to ensure that O-Ring is not pinched and back up washer/hex seats flat on face of port.

#### ADJUSTABLE FITTINGS

Fitting Size	SAE Port Thread Size	F.F.F.T.
2	5/16-24	1.0
4	7/16-20	1.5
6	9/16-18	1.5
8	3/4-16	1.5
10	7/8-14	1.5
12	1 1/16-12	1.5
14	1 3/16-12	1.5
16	1 5/16-12	1.5
20	1 5/8-12	2.0
24	1 7/8-12	2.0

#### NON-ADJUSTABLE FITTINGS

Fitting Size	SAE Port Thread Size	F.F.F.T.
2	5/16-24	1.0
4	7/16-20	1.0
6	9/16-18	1.5
8	3/4-16	1.5
10	7/8-14	1.5
12	1 1/16-12	1.5
14	1 3/16-12	1.5
16	1 5/16-12	1.5
20	1 5/8-12	1.5
24	1 7/8-12	1.5

					
					
REV	DATE	DESCRIPTION			BY APP
<small>           TOLERANCES:            (UNLESS SPECIFIED)            COMMON SENSE PREVAILS            DEC. MACH. ± 1/32"            FRAC. OTHER: ± 1/16"            .X ± .063            .XX ± .030            .XXX OR .XXXX ± .005            DRILL SIZES: ± .005            ANGULAR: ± 1°            SURF FINISH: 125 MICRO            THREADS: 2A AND 2B            BREAK SHARP EDGES         </small>				<small>           TITLE: PRODUCTION PROCEDURE 003            O-RING FITTING INSTALLATION            DIVERSIFIED METAL FABRICATORS, INC. (404) 875-1512         </small>	
<small>DRAWN BY:</small> TSH		<small>APPD BY:</small>		<small>DATE:</small> 06/02/94	
				<small>DRAWING NUMBER:</small> PP003	<small>REV:</small> #

ITEM	PART NO.	QTY	DESCRIPTION
1			
2			

TITLE: National Pipe Thread (NPT) Fitting Installation.

PURPOSE: To Establish Production Methods For The Installation Of NPT Medium Pressure Hydraulic Fittings.

COMMON USAGE: Hydraulic Systems Operating With Petroleum-Based Fluids At Pressures Below 3000 PSI Or Minimum Component Rating.

PARTS GENERALLY ENCOMPASSED BY THIS PROCEDURE: Purchased Fittings With Tapered Pipe Threads.

PROCEDURE: A) Inspect port components to ensure that male and female threads are free of nicks, burrs, dirt etc.

B) Apply sealant/lubricant to male pipe threads. Use only Permatex #14D "Thread Sealant With Teflon" paste (or Engineering approved equal). The first few threads must be left uncovered to avoid system contamination.



C) Screw fitting into female pipe port to the finger tight position.

D) Wrench tighten the fitting to the appropriate Turns From Finger Tight (T.F.F.T.) shown in chart below. Make sure that tube end of shaped fitting is aligned to receive in coming tube or hose assembly.

### STEEL PIPE THREAD FITTINGS

Fitting Size	Pipe Thread Size, NPT	T.F.F.T.
2	1/8-27	2.0-2.5
4	1/8-27	2.0-2.5
6	1/4-18	1.5-2.0
8	3/8-18	2.0-2.5
10	1/2-14	2.0-2.5
12	3/4-14	1.5-2.0
14	3/4-14	1.5-2.0
16	1-11 1/2	1.5-2.0
20	1 1/4-11 1/2	1.5-2.0
24	1 1/2-11 1/2	1.5-2.0

COMMENTS: Teflon Tape May Be Used In Certain Situations With Engineering Approval. A Pipe Fitting Is Limited To One Or Two Re-Uses.

					
REV	DATE	DESCRIPTION			BY APP
<small>           TOLERANCES:            (UNLESS SPECIFIED)            COMMON SENSE PREVAILS            FRAC. MACH: ± 1/32"            FRAC. OTHER: ± 1/16"            .X ± .063            .XX ± .030            .XXX OR .000 ± .005            DRILL SIZES: ± .005            ANGULAR: ± 1°            SURF. FINISH: 125 MICRO            THREADS: 2A AND 2B            BREAK SHARP EDGES         </small>				TITLE: PRODUCTION PROCEDURE 004 PIPE FITTING INSTALLATION DIVERSIFIED METAL FABRICATORS, INC. (404) 875-1512	
DRAWN BY: TSH		APPD BY:		DATE: 06/02/94	
				DRAWING NUMBER: PP004	REV: #

ITEM	PART NO.	QTY	DESCRIPTION
1			
2			

TITLE: SAE (JIC) 37 Degree Fitting Installation.

PURPOSE: To Establish Production Methods For The Installation Of SAE (JIC) Medium Pressure Hydraulic Fittings.

COMMON USAGE: Hydraulic Systems Operating With Petroleum-Based Fluids At Pressures Below 4000 PSI Or Minimum Component Rating.

PARTS GENERALLY ENCOMPASSED BY THIS PROCEDURE: Purchased Fittings With SAE (JIC) 37 Degree Flared Ends.




PROCEDURE: A) Inspect fitting components to ensure that mating parts are free of burrs, nicks, scratches or any foreign material.

B) Align tube flare against nose of fitting body and screw on the nut, finger tight, clamping the tube flare between the fitting nose and the nut.

C) Tighten the nut the indicated Flats From Finger Tight (F.F.F.T.) listed in the chart below. Use a second wrench to hold the hose in proper alignment while tightening to avoid twisting the lay line. One flat on a hex is equal to 1/6th of a full turn. Tolerance on tightening is plus or minus 1/4 flat ( 1/24th of full turn).

SAE (JIC) 37° Flare Fittings

Size	Thread Size	Tube Connection F.F.F.T.	Swivel Nut or Hose Connection F.F.F.T.
-4	7/16-20	2	2
-6	9/16-18	1.5	1.25
-8	3/4-16	1.5	1
-12	1 1/16-12	1.25	1
-16	1 5/16-12	1	1
-20	1 5/8-12	1	1
-24	1 7/8-12	1	1

					
					
REV	DATE	DESCRIPTION			BY APP
TOLERANCES: UNLESS SPECIFIED COMMON SENSE PREVAILS FRAC. MACH: ± 1/32" FRAC. OTHER: ± 1/16" .X ± .063 .XX ± .030 .XXX OR .XXXX ± .005 DRILL SIZES: ± .005 ANGULAR: ± 1° SURF FINISH: 125 MICRO THREADS: 2A AND 2B BREAK SHARP EDGES		DRAWN BY: TSH APPD BY:		TITLE: PRODUCTION PROCEDURE 005 JIC FITTING INSTALLATION DIVERSIFIED METAL FABRICATORS, INC. (404) 875-1512 DATE: 06/02/94  DRAWING NUMBER: PP005 REV: #	

TITLE: Cylinder Assembly

PURPOSE: To Establish Production Methods For The Assembly Of Cylinders

COMMON USAGE: All Models

PARTS GENERALLY ENCOMPASSED BY THIS PROCEDURE: D.M.F. Manufactured Hydraulic Cylinders With "PolyPack" Piston Seals

#### ASSEMBLY PROCEDURE:

PISTON: A) Inspect for sharp edges. Deburr as necessary.

B) Clean and blow off with shop air.

C) Use Blue Assemblee Goo (19260) to aid in assembly.

D) Install two (2) seals with each lip (o'ring insert side) facing the closer piston face.

GLAND: A) Inspect OD and bore for sharp edges. Deburr as necessary.

B) Clean and blow off with shop air.

C) Use Blue Assemblee Goo (19260) to aid in assembly.

D) Install wiper ring in bore with lip facing outboard.

E) Install seal in bore with lip (o'ring insert side) facing inboard.

F) Inspect for seal damage. Any shaved seal material requires replacement.

G) Install backing ring in O'ring groove on OD with concave surface facing inboard.

H) Install O'ring on inboard side of groove in Step G.

I) Inspect O'ring for damage.

#### ROD ASSEMBLY:

A) Clean and inspect shaft surface for scratches and dings.

B) Install grease fitting in rod end per PP001.

C) Use Blue Assemblee Goo (19260) to aid in assembly.

D) Install gland assembly onto rod with the outboard side facing the rod end.

E) Install rod O'ring onto threaded end of rod.

F) Inspect O'ring for damage.

G) Install piston assembly onto rod with the O'ring counterbore facing O'ring in Step E. Be certain that O'ring seats in counterbore.

H) Install self locking rod nut on rod. Tighten to 200 to 300 foot-pounds torque (Torque will vary based on rod & nut size).

#### CYLINDER ASSEMBLY:

A) Inspect cylinder ports for minimum three (3) threads and no burrs. Deburr as necessary.

B) Clean tube ID threads and bore and blow out with shop air.

C) Inspect threads for debris.

D) Support cylinder barrel assembly with gland end facing up.

E) Maintain rod assembly in vertical position, align piston with tube bore, engage piston in tube bore, strike rod end with hammer until piston is below first cylinder port.

F) Slide gland down on rod, engage gland threads into barrel by hand.

G) Screw gland into barrel with spanner wrench until gland face contacts barrel tube-end.

H) Install two (2) hydraulic fittings into cylinder ports per PP003.

#### PRESSURE TESTING:

A) Connect hydraulic power unit to cylinder.

B) Operate cylinder through complete cycle to purge air and fill with clean hydraulic oil.

C) Operate cylinder to full extension and retraction and maintain at 3300 PSI for 15 seconds at each extent. While maintaining pressure at each extent, visually inspect ports, rod seal, gland OD seal, and cylinder bottom areas for leakage.

D) Disconnect hydraulic power unit and install caps on port fittings.



COMMENTS: Specific assembly instructions on prints are performed with preference over this procedure.

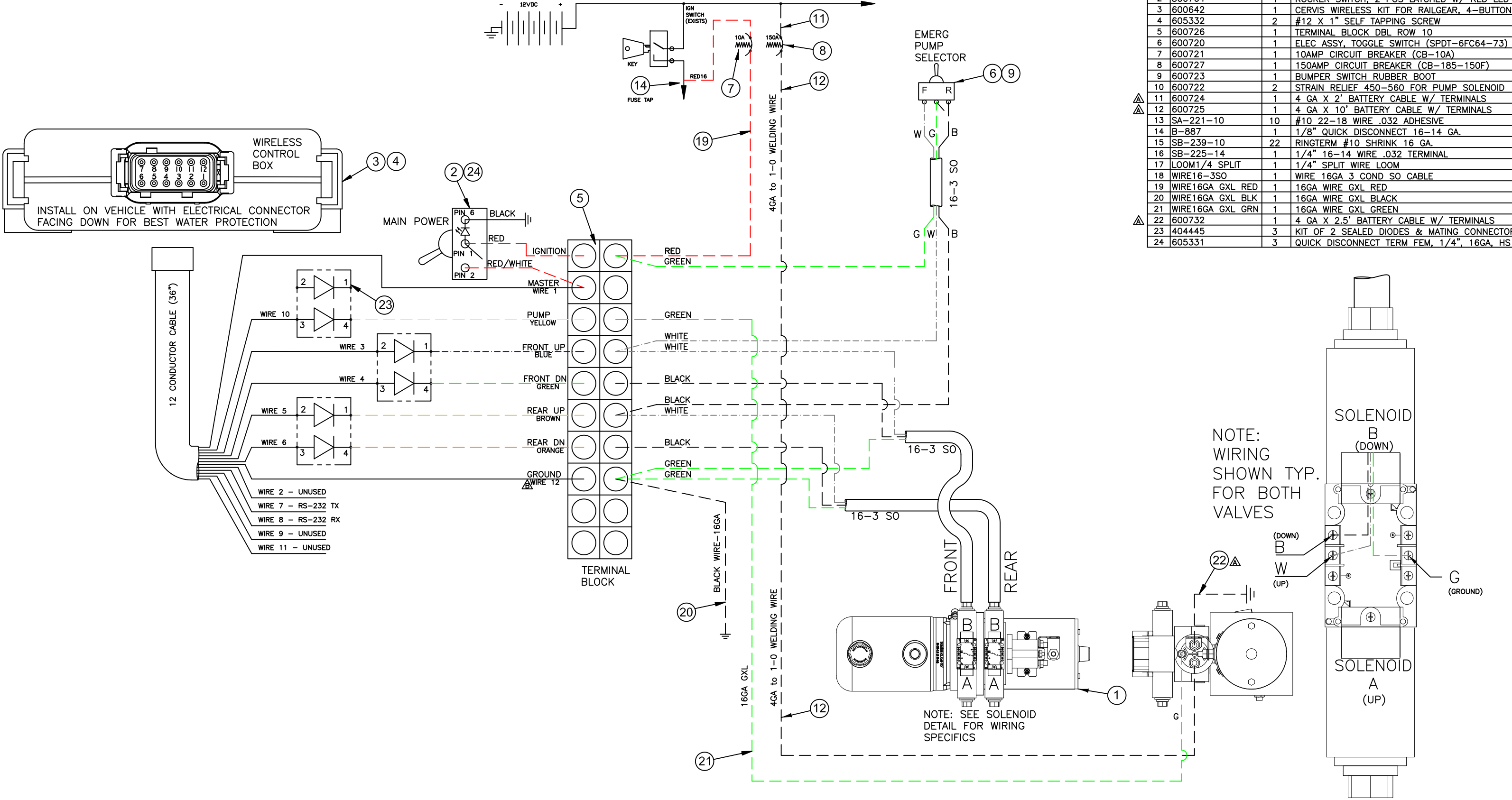
**FOR CYLINDERS GREATER THAN Ø4.5", DO NOT ALLOW CYLINDER TO BOTTOM DURING TESTING. BLOCK ROD AGAINST GLAND WITH PIN AND 1" BLOCKS.**

	11/7/14	REMOVED STEP E	JDI	
	5/25/12	USE 19260 INSTEAD OF HYDRAULIC OIL	JDI	
	7/16/11	REMOVED CYLINDER PART #'S	NEH	
	9/27/07	ADDED CYLINDER TESTING WARNING	WAK	
REV	DATE	DESCRIPTION	BY	APP
<b>TOLERANCES:</b> (UNLESS SPECIFIED) COMMON SENSE PREVAILS FRAC. MACH: ± 1/32" FRAC. OTHER: ± 1/16" .X ± .063 .XX ± .030 .XXX OR .XXXX ± .005 DRILL SIZES: + .015 ANGULAR: ± 1° SURF FINISH: 125 MICRO THREADS: 2A AND 2B <small>BREAK SHARP EDGES (R.000 X .001 MAX.)</small>		TITLE: PRODUCTION PROCEDURE 008 CYLINDER ASSEMBLY  DIVERSIFIED METAL FABRICATORS, INC. (404) 875-1512		
DRAWN BY:		APPD BY:	DATE:	DRAWING NUMBER:
WAK			6/24/94	PP008
				REV: D



KIT #600709: INCLUDES ITEMS #5 THRU #22


ITEM	PART NO.	QTY	DESCRIPTION
1	600620	REF	PUMP, M3528 W/ EMERGENCY PUMP
2	500764	1	ROCKER SWITCH, 2 POS LATCHED W/ RED LED
3	600642	1	CERVIS WIRELESS KIT FOR RAILGEAR, 4-BUTTON
4	605332	2	#12 X 1" SELF TAPPING SCREW
5	600726	1	TERMINAL BLOCK DBL ROW 10
6	600720	1	ELEC ASSY, TOGGLE SWITCH (SPDT-6FC64-73)
7	600721	1	10AMP CIRCUIT BREAKER (CB-10A)
8	600727	1	150AMP CIRCUIT BREAKER (CB-185-150F)
9	600723	1	BUMPER SWITCH RUBBER BOOT
10	600722	2	STRAIN RELIEF 450-560 FOR PUMP SOLENOID
11	600724	1	4 GA X 2' BATTERY CABLE W/ TERMINALS
12	600725	1	4 GA X 10' BATTERY CABLE W/ TERMINALS
13	SA-221-10	10	#10 22-18 WIRE .032 ADHESIVE
14	B-887	1	1/8" QUICK DISCONNECT 16-14 GA.
15	SB-239-10	22	RINGTERM #10 SHRINK 16 GA.
16	SB-225-14	1	1/4" 16-14 WIRE .032 TERMINAL
17	LOOM1/4 SPLIT	1	1/4" SPLIT WIRE LOOM
18	WIRE16-3SO	1	WIRE 16GA 3 COND SO CABLE
19	WIRE16GA GXL RED	1	16GA WIRE GXL RED
20	WIRE16GA GXL BLK	1	16GA WIRE GXL BLACK
21	WIRE16GA GXL GRN	1	16GA WIRE GXL GREEN
22	600732	1	4 GA X 2.5' BATTERY CABLE W/ TERMINALS
23	404445	3	KIT OF 2 SEALED DIODES & MATING CONNECTOR
24	605331	3	QUICK DISCONNECT TERM FEM, 1/4", 16GA, HS



NOTE: FOR HYDRAULIC DIAGRAM SEE DRAWING #:600550

△	-	-	-	-
△	-	-	-	-
△	2/29/16	WIRE 12 WAS GREEN/YELLOW	BJF	
△	2/5/16	ADDED 600732; CORRECTED DESCRIPTION FOR 600724, 600725	BJF	
REV	DATE	DESCRIPTION	BY	APP
TOLERANCES: (UNLESS SPECIFIED)				
FRAC. MACH: ± 1/32"				
FRAC. OTHER: ± 1/16"				
.X ± .063				
.XX ± .030				
.XXX OR .XXXX ± .005				
DRILL SIZES: + .015				
ANGULAR: ± 1°				
SURF. FINISH: 125 MICRO				
THREADS: 2A AND 2B				
BREAK SHARP EDGES (0.030 X 45° MAX.)				
TITLE: ASSY, RW-1015 ELECTRICAL W/ WIRELESS		DIVERSIFIED METAL FABRICATORS, INC. (404) 875-1512		
RW-1015		DATE: 6/2215	DRAWING NUMBER: 600647	REV: B
DRAWN BY: BJF		APPD BY: B		



	WHEEL MOD KIT,'07-10 GM HD PICKUP / '07-12 SUBURBANS, W/RIMS & TPMS							
	TITLE:							
	DRAWING #:	509029	BY:	BJF	DATE:	3-22-12	REV:	#
RW-1013/15	DIVERSIFIED METAL FABRICATORS, INC. (404) 875-1512							
REV:	DATE:	DESCRIPTION:					BY:	
-	-	-					-	
-	-	-					-	

## 2007-2010 GM Pickup & 2007-2012 Suburban Wheel Adapter Kit

### Description

Diversified Metal Fabricator's 509050 Wheel Adapter Kit allows for the use of aftermarket 19.5" rims on 2007-2010 GM 2500HD and 3500HD SRW pickups and 2007-2012 GM Suburbans for use on rail.

### Kit Contents

PART #	DESCRIPTION	QTY.
509029	WHEEL MOD KIT,'07-10 GM HD PICKUP / '07-12 SUBURBANS, W/RIMS & TPMS	EA.
10833	TPMS SENSOR KIT,'07-12 GM (Truck Set)	1
600617	WIRING ENCLOSURE BOX, 4.7" X 2.2" X 3.3"	1
10836	TPMS SENSOR KIT, '07-12 GM (per wheel)	5
10838	TPMS ADAPTER WASHER-GM	1
10839	TPMS ADAPTER GROMETT-GM	1
10837	TPMS SENSOR,GM '07-12, 20158	1
10859	WHEEL, ACCURIDE 28680/50180, W/DECAL	5
10827	WHEEL, ACCURIDE 28680/50180	1
10831	DECAL, '05 GM WHEEL ADAPTER	1
509014	WHEEL ADPT, '00-10 GM C25/3500 W/STEERING STOPS	1
10824	WHEEL ADAPTER, STL, 05 GM	4
10822	SPCR,WHEEL ADAPTER,05 C2500	1
10825	LUGNUT, SPLIT-FLANGE, M20	8
10826	STUD, WHEEL, 20MM, E-11706	8
500913	STEERING STOP KIT, TRUCK SET, '00-'10 GM HD PICKUP	1
500912	STEERING STOP, '00-'10 GM HD PICKUP	2
20716	FLAT WASHER, 5/8", GR8	2
605017	LOCKNUT, M16, TYPE C	2
551002	WHEEL SPACER, 05-11GM ADAPTER, 3/16"	2

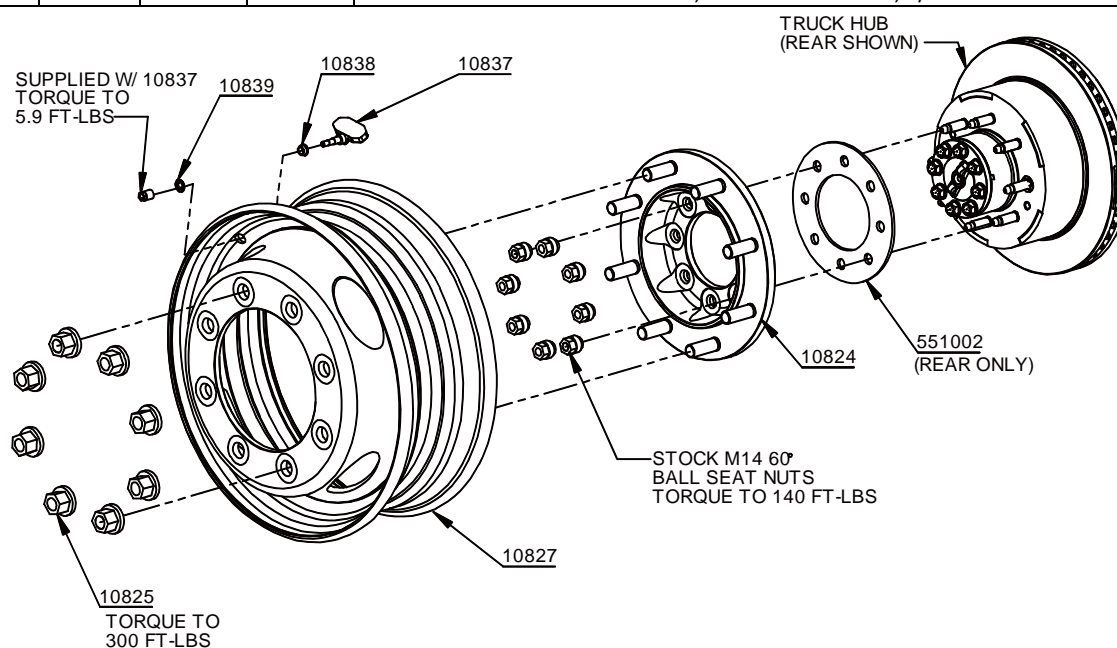


Figure 1 – Installation/Exploded Parts Diagram

## Recommended Tires

### Mud/Snow/All position

Goodyear G622 245/70R19.5

Michelin XDS2 245/70R19.5

### Steer/Highway

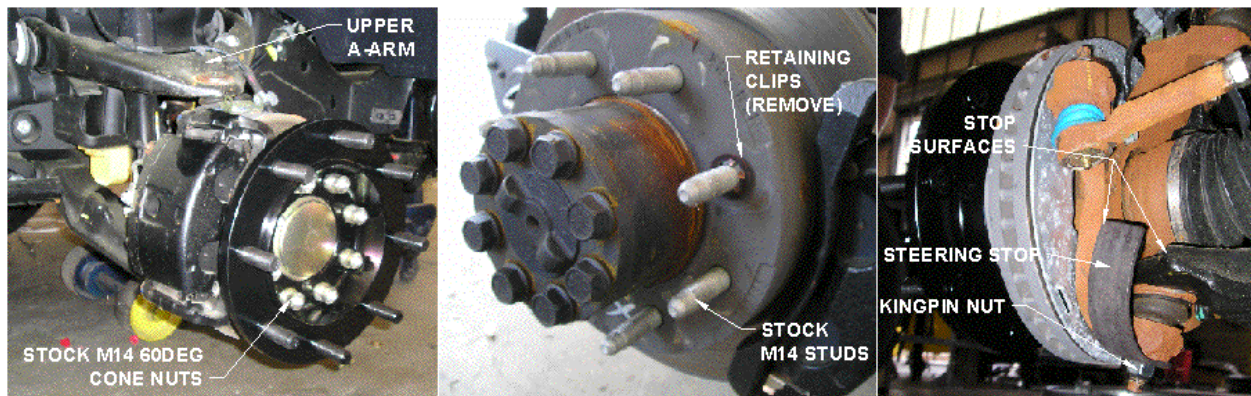
Goodyear G647 245/70R19.5

## Installation

### Warning!

- Never use anti-seize on studs or lug nuts.
- Hand torque all fasteners to the provided specifications using a torque wrench.
- Improper installation or failure to perform a thorough check for clearances once this unit is installed may lead to damage to the chassis, wheels/tires, Railgear or personnel.

1. Install TPMS sensors into 19.5" rims as shown in Figure 1
2. Install and Inflate 19.5" Tires
  - a. Mount and balance tires.
  - b. Inflate tires to a cold pressure of 85 psi.
3. Remove Stock Wheels & Tires
  - a. Lift the vehicle and properly support using jack-stands.
  - b. Remove the stock wheels and tires, retaining the stock lug nuts for reuse.
4. Install Steering Stops as shown in Figure 2
  - a. Remove "Lower Kingpin Nut" from each side
  - b. Install Steering Stop on each side using provided M16 Type C nut.
  - c. Actuate steering to its extents in both directions and verify that the Steering Stops are contacting stop surfaces.
5. Install Adapters, 19.5" Wheels & Tires as shown in Figure 2
  - a. Remove and discard the factory lug retaining clips.
  - b. Mount the Wheel Adapters using the stock lug nuts. Torque as specified in Figure 1.
  - c. Mount the 19.5" rims with 19.5" tires to the Wheel Adapter using the provided M20 Split Flange Nuts. Torque as specified in Figure 1.



**Figure 2 - Wheel Adapter Details**

6. Clearance Check(s)
  - a. Verify that neither the rims nor tires contact any frame or suspension components in any combination of steering positions and axle droop/jounce conditions.
  - b. Verify that all brake, ABS sensor and other wires or hoses are clear in all steering and suspension positions. Restrain if necessary.
7. Relocate TPMS Receiver Module
  - a. Remove nuts from the main rear seat mounting studs. (If applicable)
  - b. Carefully lift and remove the rear seat. (If applicable)
  - c. Remove the trim panel on the driver's side B-Pillar (C-Pillar on crew cab models).
  - d. The TPMS Receiver Module will be located as shown in Figure 3.



**Figure 3 – Original TPMS Receiver Location**

- e. Detach the wiring connectors from the TPMS Receiver and carefully remove it.
- f. Carefully pull back the insulation along the rearmost cab wall.
- g. Reroute the TPMS Receiver wiring through the lowest portion of the driver's side rear vent as shown in Figure 4.
- h. Drill a small hole in the side of the provided enclosure and securely mount it to the underside of the bed on the driver's side just behind the cab as shown in Figure 4.
- i. Reconnect the appropriate wires and seal the enclosure using a bead of silicone and the provided hardware.
- j. Replace interior insulation and trim ensuring that no wires are pinched or routed in a manner that might cause them to be damaged.
- k. Replace the rear seat and tighten the lower mounting bolts. (If applicable)



**Figure 4 – Mounting Location**

NOTE: The following steps must be performed at a dealer as modification of these settings requires a software update specific to your vehicle that must come directly from GM.

8. Re-calibrating Speedometer
  - a. The speedometer calibration is limited to stock tire sizes.
  - b. As the tires we recommend are not a stock size for this vehicle, the stock LT265/60R20 tire setting should be selected as it is the most comparable in size.
9. Program Tire Pressure Monitoring System
  - a. The TPMS system must be reprogrammed to correspond with the correct pressure settings for use with these wheel modifications.
  - b. Ensure that the dealer sets the TPMS for a nominal pressure of 85 psi.
10. Re-establish sensor positions
  - a. Ensure that the dealer has re-established the sensor locations.
  - b. This step may also be performed by referring to the vehicle's owner's manual.


### **Testing**

1. It is the responsibility of the installer to certify that the truck complies with all applicable State and Federal regulations.
2. In particular, the regulations and test procedures outlined in FMVSS Standard 138 must be performed in order to ensure compliance.

### **Inspection & Maintenance**

1. Visually inspect wheels & tires both prior to and after use on rail (look for damage, loose hardware, etc.)
2. Check the fastener torque 50 miles after wheel/tire change and every 2000 miles or 6 months.



	TITLE: WHEEL MOD KIT, '11GM HD PICKUP W/ RIMS & TPMS			
	DRAWING #:	509033	BY: WAK	DATE: 3-15-11
RW-1013/15	DIVERSIFIED METAL FABRICATORS, INC. (404) 875-1512			
REV:	DATE:	DESCRIPTION:		BY:
A	3-22-12	Reformatted/Corrected		BJF
-	-	-		-

## 2011+ GM HD Pickup Wheel Adapter Kit

### Description

Diversified Metal Fabricator's 509033 Wheel Adapter Kit allows for the use of aftermarket 19.5" rims on 2011+ GM 2500HD and 3500HD SRW trucks for use on rail. This kit is not compatible with 2011 Suburban/Yukon's which continue to use DMF Wheel Adapter kit # 509029.

### Kit Contents

PART #	DESCRIPTION	QTY.
509033	WHEEL MOD KIT, '11 GM HD PICKUP W/ RIMS & TPMS	EA.
10833	TPMS SENSOR KIT, 07-12 GM (Truck Set)	1
600617	WIRING ENCLOSURE BOX, 4.7" X 2.2" X 3.3"	1
10836	TPMS SENSOR KIT, 07-12 GM (per wheel)	5
10838	TPMS ADAPTER WASHER-GM	1
10839	TPMS ADAPTER GROMETT-GM	1
10837	TPMS SENSOR, GM 07-12, 20158	1
10859	WHEEL, ACCURIDE 28680/50180, W/DECAL	5
10827	WHEEL, ACCURIDE 28680/50180	1
10831	DECAL, '05 GM WHEEL ADAPTER	1
509034	WHEEL ADPT, 11C25/3500, W/STEERING STOPS	1
10818	WHEEL ADAPTER, STL, '11 GM C/K 25/3500	4
10819	DETAIL, WHEEL ADAPTER, '11 GM C/K25/3500	1
10825	LUGNUT, SPLIT-FLANGE, M20	8
10826	STUD, WHEEL, 20MM, E-11706	8
500915	'11 GM HD PICKUP, 1013/15 STEERING STOP KIT, TRUCK SET	1
500937	STEERING STOP, 11GM25HD, DS	1
500938	STEERING STOP, 11GM25HD, PS	1
20716	FLAT WASHER, 5/8", GR8	2
605017	LOCKNUT, M16, TYPE C	2

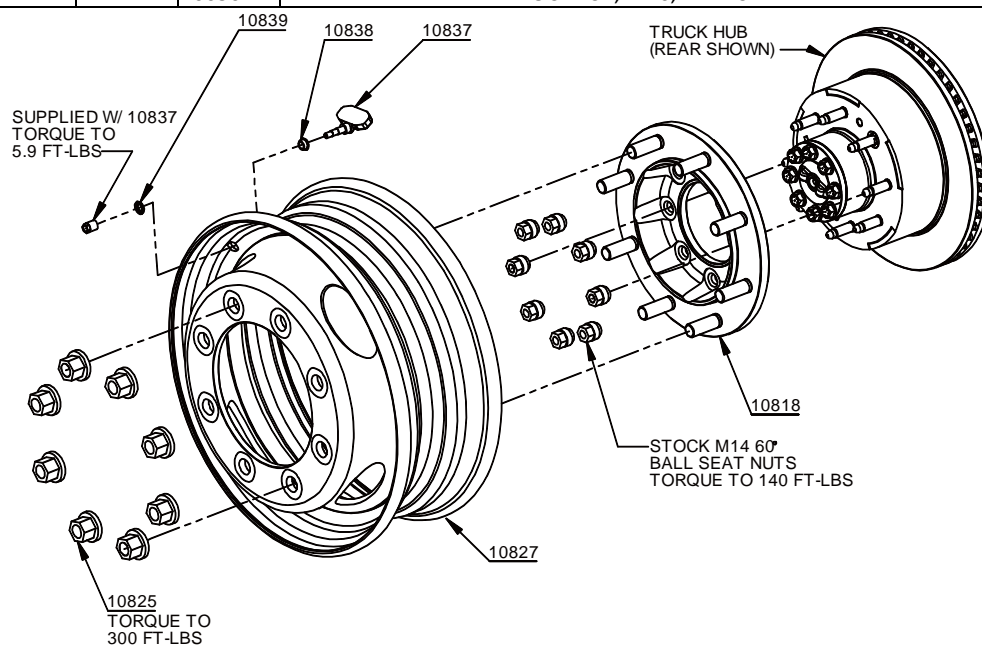


Figure 1 – Installation/Exploded Parts Diagram

## Recommended Tires

### Mud/Snow/All position

Goodyear G622 245/70R19.5

Michelin XDS2 245/70R19.5

### Steer/Highway

Goodyear G647 245/70R19.5

## Installation

### Warning!

- Never use anti-seize on studs or lug nuts.
- Hand torque all fasteners to the provided specifications using a torque wrench.
- Improper installation or failure to perform a thorough check for clearances once this unit is installed may lead to damage to the chassis, wheels/tires, Railgear or personnel.

1. Install TPMS sensors into 19.5" rims as shown in Figure 1
2. Install and Inflate 19.5" Tires
  - a. Mount and balance tires.
  - b. Inflate tires to a cold pressure of 85 psi.
3. Remove Stock Wheels & Tires
  - a. Lift the vehicle and properly support using jack-stands.
  - b. Remove the stock wheels and tires, retaining the stock lug nuts for reuse.
4. Install Steering Stops as shown in Figure 2
  - a. Remove "Lower Kingpin Nut" from each side
  - b. Install Steering Stop on each side using provided M16 Type C nut.
  - c. Actuate steering to its extents in both directions and verify that the Steering Stops are contacting stop surfaces.
5. Install Adapters, 19.5" Wheels & Tires as shown in Figure 2
  - a. Remove and discard the factory lug retaining clips.
  - b. Mount the Wheel Adapters using the stock lug nuts. Torque as specified in Figure 1.
  - c. Mount the 19.5" rims with 19.5" tires to the Wheel Adapter using the provided M20 Split Flange Nuts. Torque as specified in Figure 1.



Figure 2 – Wheel Adapter Details

6. Clearance Check(s)
  - a. Verify that neither the rims nor tires contact any frame or suspension components in any combination of steering positions and axle droop/jounce conditions.
  - b. Verify that all brake, ABS sensor and other wires or hoses are clear in all steering and suspension positions. Restrain if necessary.
7. Relocate TPMS Receiver Module
  - a. Remove nuts from the main rear seat mounting studs. (If applicable)
  - b. Carefully lift and remove the rear seat. (If applicable)
  - c. Remove the trim panel on the driver's side B-Pillar (C-Pillar on crew cab models).
  - d. The TPMS Receiver Module will be located as shown in Figure 3.



**Figure 3 – Original TPMS Receiver Location**

- e. Detach the wiring connectors from the TPMS Receiver and carefully remove it.
- f. Carefully pull back the insulation along the rearmost cab wall.
- g. Reroute the TPMS Receiver wiring through the lowest portion of the driver's side rear vent as shown in Figure 4.
- h. Drill a small hole in the side of the provided enclosure and securely mount it to the underside of the bed on the driver's side just behind the cab as shown in Figure 4.
- i. Reconnect the appropriate wires and seal the enclosure using a bead of silicone and the provided hardware.
- j. Replace interior insulation and trim ensuring that no wires are pinched or routed in a manner that might cause them to be damaged.
- k. Replace the rear seat and tighten the lower mounting bolts. (If applicable)



**Figure 4 – Mounting Location**

NOTE: The following steps must be performed at a dealer as modification of these settings requires a software update specific to your vehicle that must come directly from GM.

8. Re-calibrate Speedometer
  - a. The speedometer calibration is limited to stock tire sizes.
  - b. As the tires we recommend are not a stock size for this vehicle, the stock LT265/60R20 tire setting should be selected as it is the most comparable in size.
9. Program Tire Pressure Monitoring System
  - a. The TPMS system must be reprogrammed to correspond with the correct pressure settings for use with these wheel modifications.
  - b. Ensure that the dealer sets the TPMS for a nominal pressure of 85 psi.
10. Re-establish sensor positions
  - a. Ensure that the dealer has re-established the sensor locations.
  - b. This step may also be performed by referring to the vehicle's owner's manual.


### **Testing**

1. It is the responsibility of the installer to certify that the truck complies with all applicable State and Federal regulations.
2. In particular, the regulations and test procedures outlined in FMVSS Standard 138 must be performed in order to ensure compliance.

### **Inspection & Maintenance**

1. Visually inspect wheels & tires both prior to and after use on rail (look for damage, loose hardware, etc.)
2. Check the fastener torque 50 miles after wheel/tire change and every 2000 miles or 6 months.



	TITLE: WHEEL MOD KIT, 2010+ F-2/350 4X2, W/RIMS				
	DRAWING #:	509048	BY:	BJF	DATE: 3-23-12 REV: #
RW-1013/15	DIVERSIFIED METAL FABRICATORS, INC. (404) 875-1512				
REV:	DATE:	DESCRIPTION:			BY:
-	-	-			-
-	-	-			-

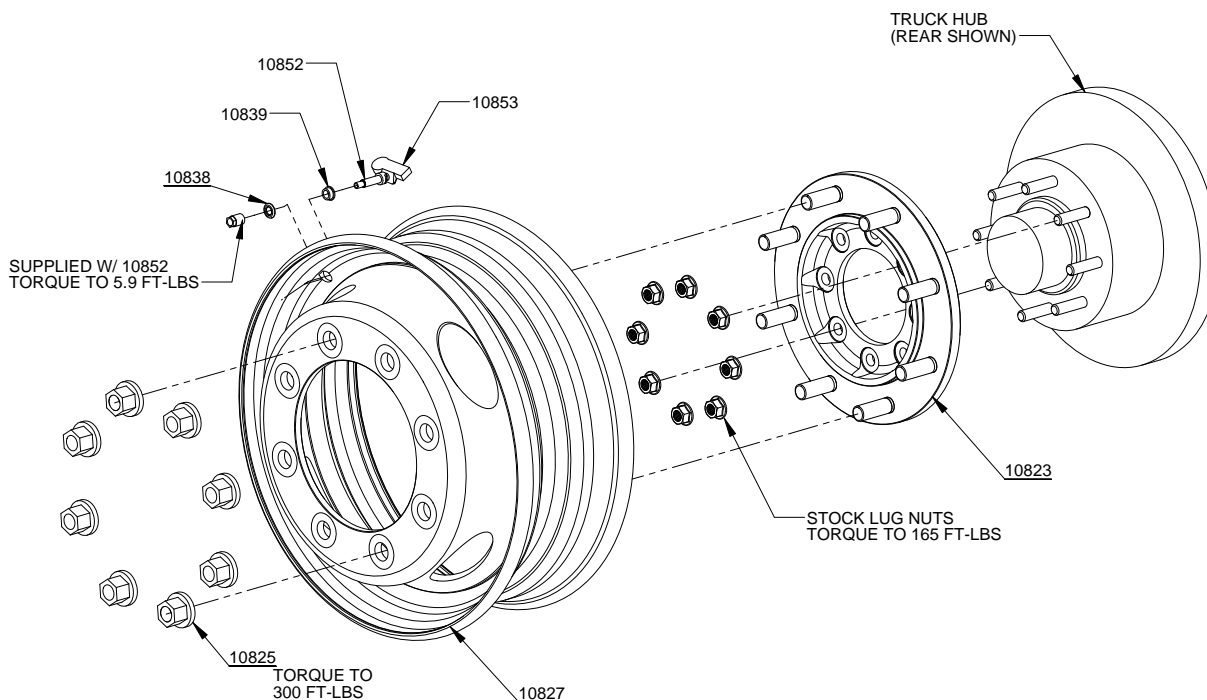
## 2010+ Ford F-2/350 4x2 Wheel Adapter Kit

### Description

Diversified Metal Fabricator's 509048 Wheel Adapter Kit allows for the use of aftermarket 19.5" rims on 2010+ Ford F-2/350 4x2 vehicles for use on rail.

### Kit Contents

PART #				DESCRIPTION	QTY.
509048				WHEEL MOD KIT, 2010+ F-2/350 4X2, W/RIMS & TPMS	EA.
	10851			TPMS SENSOR KIT, '10-12 F-2/350 (Truck Set)	1
		10857		TPMS SENSOR KIT, '10-12 F-2/350 (PER WHEEL)	5
			10838	TPMS ADAPTER WASHER-GM	1
			10839	TPMS ADAPTER GROMET-GM	1
			10852	DILL VALVE STEM VS-925A	1
			10853	TPMS SENSOR, '10-12 FORD	1
	10861			WHEEL, ACCURIDE 28680/50180, W/DECAL, F-2/350 00-12	5
		10827		WHEEL, ACCURIDE 28680/50180	1
		10832		DECAL, '05-'12 FORD WHEEL ADAPTER	1
	509040			WHEEL ADPT, '05-12 FORD F-2/350 4X2, W/STEERING STOPS	1
		10823		WHEEL ADAPTER, STL, 05-12 F-2/350	4
			10821	SPCR, WHEEL ADAPTER, 05-12 F2/350	1
			10825	LUGNUT, SPLIT-FLANGE, M20	8
			10826	STUD, WHEEL, 20MM, E-11706	8
		515060		STEERING STOP KIT, '00-'12 FORD F-2/350 4X2, RW-1013/15	1
			515025	STEERING STOP, DS, '00-12 F-2/350 4X2	1
			515027	STEERING STOP, PS, '00-12 F-2/350 4X2	1



**Figure 1 – Installation/Exploded Parts Diagram**

## Recommended Tires

### Mud/Snow/All position

Goodyear G622	225/70R19.5
Michelin XDS2	225/70R19.5

### Steer/Highway

Goodyear G647	225/70R19.5
---------------	-------------

## Installation

### Warning!

- Never use anti-seize on studs or lug nuts.
- Hand-torque all fasteners to the provided specifications using a torque wrench.
- Improper installation or failure to perform a thorough check for clearances once this unit is installed may lead to damage to the chassis, wheels/tires, or personnel.

1. Install TPMS sensor into 19.5" rims as shown in Figure 1
2. Install and Inflate 19.5" Tires
  - a. Mount and balance tires.
  - b. Inflate tires to a cold pressure of 85 psi.
3. Remove Stock Wheels & Tires
  - a. Lift the vehicle and properly support using jack-stands.
  - b. Remove the stock wheels and tires, retaining the stock lug nuts for reuse.
4. Install Steering Stops
  - a. Install Steering Stops.
  - b. Actuate steering to its extents in both directions and verify that the Steering Stops are contacting stop surfaces.
5. Install Adapters, 19.5" Wheels & Tires as shown in Figure 2
  - a. Remove and discard the factory lug retaining clips.
  - b. Mount the Wheel Adapters using the stock lug nuts. Torque as specified in Figure 1.
  - c. Mount the 19.5" rims with 19.5" tires to the Wheel Adapter using the provided M20 Split Flange Nuts. Torque as specified in Figure 1.



**Figure 2 – Wheel Adapter Details**

6. Clearance Check(s)
  - a. Verify that neither the rims nor tires contact any frame or suspension components in any combination of steering positions and axle droop/jounce conditions.
  - b. Verify that all brake, ABS sensor and other wires or hoses are clear in all steering and suspension positions. Restrain if necessary.

NOTE: The following steps must be performed at a dealer as modification of these settings requires a software update specific to your vehicle.

7. Re-calibrating Speedometer
  - a. The speedometer calibration is limited to stock tire sizes.
  - b. As the tires we recommend are not a stock size for this vehicle, the stock LT265/60R20 tire setting should be selected as it is the most comparable in size.
8. Program Tire Pressure Monitoring System
  - a. The TPMS system must be reprogrammed to correspond with the correct pressure settings for use with these wheel modifications.
  - b. Ensure that the dealer sets the TPMS for a nominal pressure of 85 psi.
9. Re-establish sensor positions
  - a. Ensure that the dealer has re-established the sensor locations.
  - b. This step may also be performed by referring to the vehicle's owner's manual.


### **Testing**

1. It is the responsibility of the installer to certify that the truck complies with all applicable State and Federal regulations.
2. In particular, the regulations and test procedures outlined in FMVSS Standard 138 must be performed in order to ensure compliance.

### **Inspection & Maintenance**

1. Visually inspect wheels & tires both prior to and after use on rail (look for damage, loose hardware, etc.)
2. Check the fastener torque 50 miles after wheel/tire change and every 2000 miles or 6 months.

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	TITLE: WHEEL MOD KIT, '10-12 F-2/350 4X4, W/RIMS & TPMS			
	DRAWING #:	509049	BY: BJB	DATE: 3-23-12
RW-1013/15	DIVERSIFIED METAL FABRICATORS, INC. (404) 875-1512			
REV:	DATE:	DESCRIPTION:		BY:
-	-	-		-
-	-	-		-

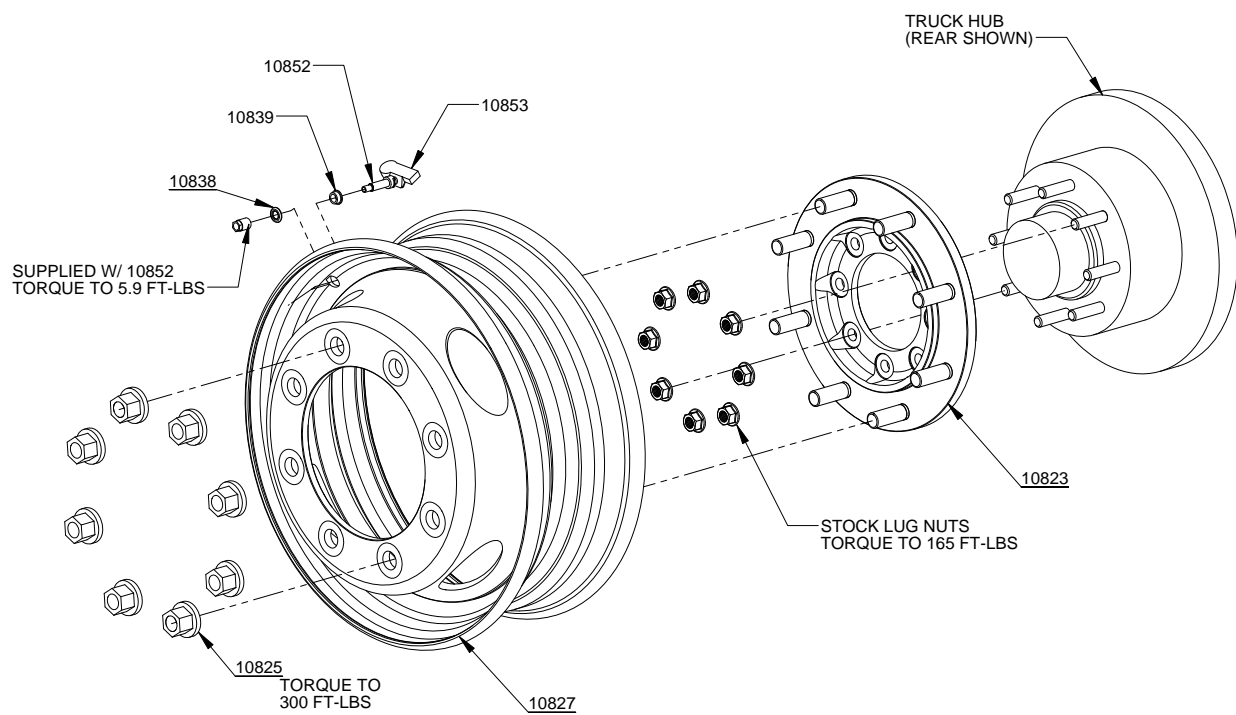
## 2010+ Ford F-2/350 4x4 Wheel Adapter Kit

### Description

Diversified Metal Fabricator's 509049 Wheel Adapter Kit allows for the use of aftermarket 19.5" rims on 2010+ Ford F-2/350 4x4 vehicles for use on rail.

### Kit Contents

PART #				DESCRIPTION	QTY.
509049				WHEEL MOD KIT, 2010+ F-2/350 4X4, W/RIMS & TPMS	EA.
	10851			TPMS SENSOR KIT, '10-12 F-2/350 (Truck Set)	1
		10857		TPMS SENSOR KIT, '10-12 F-2/350 (PER WHEEL)	5
			10838	TPMS ADAPTER WASHER-GM	1
			10839	TPMS ADAPTER GROMET-GM	1
			10852	DILL VALVE STEM VS-925A	1
			10853	TPMS SENSOR, '10-12 FORD	1
	10861			WHEEL, ACCURIDE 28680/50180, W/DECAL, F-2/350 00-12	5
		10827		WHEEL, ACCURIDE 28680/50180	1
		10832		DECAL, '05-'12 FORD WHEEL ADAPTER	1
	509041			WHEEL ADPT, '05-12 FORD F-2/350 4X4, W/STEERING STOPS	1
		10823		WHEEL ADAPTER, STL, 05-12 F-2/350	4
			10821	SPCR, WHEEL ADAPTER, 05-12 F2/350	1
			10825	LUGNUT, SPLIT-FLANGE, M20	8
			10826	STUD, WHEEL, 20MM, E-11706	8
		515062		STEERING STOP KIT, '05-'12 FORD F-2/350 4X4, RW-1013/15	1
			515021	STEERING STOP, '05-'12 F-2/350 4X4	2



**Figure 1 – Installation/Exploded Parts Diagram**

## Recommended Tires

### Mud/Snow/All position

Goodyear G622	225/70R19.5
Michelin XDS2	225/70R19.5

### Steer/Highway

Goodyear G647	225/70R19.5
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## Installation

### Warning!

- Never use anti-seize on studs or lug nuts.
- Hand-torque all fasteners to the provided specifications using a torque wrench.
- Improper installation or failure to perform a thorough check for clearances once this unit is installed may lead to damage to the chassis, wheels/tires, or personnel.

1. Install TPMS sensor into 19.5" rims as shown in Figure 1
2. Install and Inflate 19.5" Tires
  - a. Mount and balance tires.
  - b. Inflate tires to a cold pressure of 85 psi.
3. Remove Stock Wheels & Tires
  - a. Lift the vehicle and properly support using jack-stands.
  - b. Remove the stock wheels and tires, retaining the stock lug nuts for reuse.
4. Install Steering Stops as shown in Figure 2
  - a. Remove "Lower Brake Housing Bolt" from each side
  - b. Install Steering Stops as shown, re-using the stock bolt.
  - c. Actuate steering to its extents in both directions and verify that the Steering Stops are contacting stop surfaces.

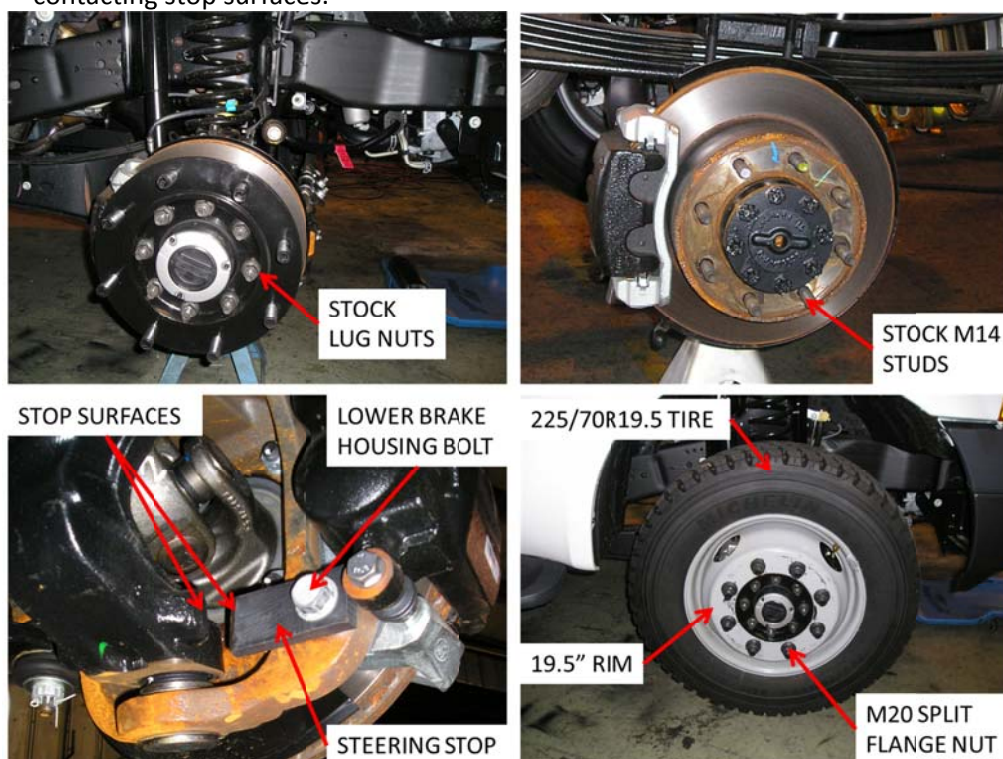


Figure 2 – Wheel Adapter Details

5. Install Adapters, 19.5" Wheels & Tires as shown in Figure 2
  - a. Remove and discard the factory lug retaining clips.
  - b. Mount the Wheel Adapters using the stock lug nuts. Torque as specified in Figure 1.
  - c. Mount the 19.5" rims with 19.5" tires to the Wheel Adapter using the provided M20 Split Flange Nuts. Torque as specified in Figure 1.
6. Clearance Check(s)
  - a. Verify that neither the rims nor tires contact any frame or suspension components in any combination of steering positions and axle droop/jounce conditions.
  - b. Verify that all brake, ABS sensor and other wires or hoses are clear in all steering and suspension positions. Restrain if necessary.

<p><b>NOTE:</b> The following steps must be performed at a dealer as modification of these settings requires a software update specific to your vehicle.</p>
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7. Re-calibrating Speedometer
  - a. The speedometer calibration is limited to stock tire sizes.
  - b. As the tires we recommend are not a stock size for this vehicle, the stock LT265/60R20 tire setting should be selected as it is the most comparable in size.
8. Program Tire Pressure Monitoring System
  - a. The TPMS system must be reprogrammed to correspond with the correct pressure settings for use with these wheel modifications.
  - b. Ensure that the dealer sets the TPMS for a nominal pressure of 85 psi.
9. Re-establish sensor positions
  - a. Ensure that the dealer has re-established the sensor locations.
  - b. This step may also be performed by referring to the vehicle's owner's manual.

## **Testing**

1. It is the responsibility of the installer to certify that the truck complies with all applicable State and Federal regulations.
2. In particular, the regulations and test procedures outlined in FMVSS Standard 138 must be performed in order to ensure compliance.

## **Inspection & Maintenance**

1. Visually inspect wheels & tires both prior to and after use on rail (look for damage, loose hardware, etc.)
2. Check the fastener torque 50 miles after wheel/tire change and every 2000 miles or 6 months.

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## DMF Limited Warranty Policy

### RW-1015 Railgear

**Diversified Metal Fabricators (DMF)** products are designed to provide the utmost service and reliability. Competent workmen, guided by stringent quality standards, manufacture the products from high-grade material. **DMF** warrants products of its manufacturer to be free of defects in material and workmanship, under normal use and service, for a period of **TWO CALENDAR YEARS**. **DMF's obligation** under this warranty is limited to repairing or replacing at its factory, or other location designated by us, any part or parts there-of which shall, within 30 DAYS of the date of failure or notice of defect, be returned, and which upon examination shall appear to **DMF's** satisfaction to have been defective. Such repair or replacement does not include the cost of installing the new part or any other expenses incident thereto; however, the outbound direct ground freight on the part will be prepaid to locations within the continental United States and Canada. **DMF** shall not be liable for other loss, damage, or expense directly or indirectly arising from the use of its products.

Ordinary wear and tear, abuse, misuse, neglect, or alteration is not covered by this warranty. **DMF** assumes no liability for expenses or repairs made outside its factory except by written consent. Warranty is null and void if instructions and operating procedures specifically referring to warranty coverage are not followed.

Equipment or parts not manufactured by this company, but which are furnished in connection with **DMF** products are covered directly and solely by the warranty of the manufacturer supplying them.

This warranty is in lieu of other warranties, expressed or implied, including any implied warranties of merchantability or fitness for a particular purpose and any liability for special or consequential damages.



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