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11V-509  
(7 pages)

## **PART 573 Defect and Noncompliance Report**

On October 12, 2011, PJ Trailers began the process of determining if a defect which relates to motor vehicle safety exists in the item of motor vehicle equipment below, and is furnishing notification to the National Highway Traffic Safety Administration in accordance with 49 CFR Part 573 Defect and Noncompliance Reports.

This report was prepared on 10/17/2011

By: PJ Trailers  
1807 FM 2352  
Sumner, TX 75486

Recall will be handled by:

Jeremy Cook  
Warranty & Customer Service  
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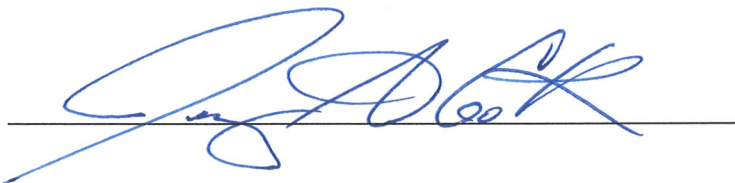
Or

Doug Clark  
CEO  
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Report Prepared by:

Jeremy Cook  
Warranty & Customer Service

Signed:



A handwritten signature in blue ink, appearing to read 'Jeremy Cook', is written over a horizontal line.

## **2) Recalled Items of Equipment**

15 ¾" Equalizer for 10K/12K Spring Axles manufactured by Rockwell American

21 ¾" Equalizer for 10/12K Spring Axles manufactured by Rockwell American

### PJ Production Part Numbers

ax4113-2 – 15 ¾" Equalizer

ax4113-2L – 21 ¾" Equalizer

ax10KE – 10K Electric Brake Rockwell American Axle 74x46

ax10kess – 10K Electric Brake Rockwell American Axle 4.75" Pilot

ax10KHDIS – 10K Hydraulic Disc Brake Rockwell American Axle 74x46

ax10Khdis – 10K Hydraulic Disc Brake Rockwell American Axle 4.75" Pilot

ax12kEQ – 12K Electric Brake Rockwell American Axle 74x46

ax12keqss – 12K Electric Brake Rockwell American Axle 4.75" Pilot

### PJ Retail Part Numbers

120214 – 15 ¾" Equalizer

120215 – 21 ¾" Equalizer

110340 – 10K Electric Brake Rockwell American Axle 74x46

110347 – 10K Electric Brake Rockwell American Axle 4.75" Pilot

110343 – 10K Hydraulic Disc Brake Rockwell American 74x46

110348 – 10K Hydraulic Disc Brake Rockwell American Axle 4.75" Pilot

110354 – 12K Electric Brake Rockwell American Axle 74x46

110349 – 12K Electric Brake Rockwell American Axle 4.75" Pilot

### Rockwell American Part Numbers

5000GD – 15 ¾" Equalizer

6000 GD – 21 ¾" Equalizer

PJ10KELKIT-46ADJ – 10K Electric Brake Rockwell American Axle 74x46

PJ10KELKIT-475 – 10K Electric Brake Rockwell American Axle 4.75" Pilot

PJ10KDISC-46ADJ – 10K Hydraulic Disc Brake Rockwell American 74x46

PJ10KDISC-46-475 – 10K Hydraulic Disc Brake Rockwell American Axle 4.75" Pilot

PJ12KELKIT-46ADJ – 12K Electric Brake Rockwell American Axle 74x46

PJ12KELKIT-4.75 – 12K Electric Brake Rockwell American Axle 4.75" Pilot

These equalizers were manufactured by:

Phoenix Stamping Group, LLC  
6100 Emmanuel Drive, SW  
Atlanta, GA 30336  
(404) 699-2882

These equalizers were distributed by:

Quality Trailer Products  
Rockwell American  
1012 Industrial Drive  
Royse City, TX 75189  
(800) 334-3655

These axles were manufactured and distributed by:

Quality Trailer Products  
Rockwell American  
1012 Industrial Drive  
Royse City, TX 75189  
(800) 334-3655

### **3) Total Number of Items Potentially Containing the Defect**

The following models of trailers are affected that were built this year:

FD – Classic Flatdeck with Duals – 1,496 Units  
LD – Low-Pro Flatdeck with Duals – 169 Units  
FY – Flatdeck with Hydraulic Dove – 61 Units  
LY – Low-Pro with Hydraulic Dove – 92 Units  
TD – Tandem Dual Tilt – 19 Units  
DD – Tandem Dual Dump – 80 Units

Total – 1,917 Units

### **4) Percentage of Items Estimated to Contain Defect**

At this point, the estimated number of units affected by this defect is believed to be less than .25%.

We have one failure on a unit that was built in May and another on a unit built in August. The units we have included in our count are the total units built this calendar year.

## 5) Description of Defect

The design of the equalizer is more than sufficient when properly welded. However, the failure of this piece of equipment appears to result from welds that do not penetrate into the metal. The welds of concern occur on the top of the equalizer and hold the bushing where the equalizer bolts to the trailer. It is believed that the problem equalizers were built at the beginning of a lot, before the welding equipment was set properly.

The failure of this weld can result with little to no warning, depending on the amount of penetration that is present. This failure will cause the equalizer to separate from the trailer, and in extreme circumstances, could cause one or more axles to detach from the trailer. A separate illustration is provided, showing the area of concern on the equalizer.

Distributor of Equalizer:

Quality Trailer Products  
Rockwell American  
1012 Industrial Drive  
Royse City, TX 75189  
(800) 334-3655  
Contact: Cecil Fugate (ext. 106)

Manufacturer of Equalizer:

Phoenix Stamping Group, LLC  
6100 Emmanuel Drive, SW  
Atlanta, GA 30336  
(404) 699-2882  
Contact: Royce D. Baker

## 6) Events on Which Determination was Based

On 10/3/11, a warranty claim was received by PJ Trailers Warranty Department where two equalizers failed on trailer vin : . One equalizer had broken loose and that stress caused the other equalizer to fail. The axle turned up under the trailer, and in the process, bent the frame of the trailer. The driver was able to get the trailer off of the highway without any injuries. Both equalizers were received by PJ Trailers for evaluation of the welds. One equalizer had almost zero penetration into the tube and the other had very little.

On 10/12/11, a warranty claim was received by PJ Trailers Warranty Department where and equalizer failed on trailer vin . Only one equalizer broke on this trailer. It allowed one side of the axle to move back approximately one foot. The driver was able to maintain control of the trailer and move it from the road without any further damage to

the trailer and without any injuries. Two replacement equalizers were sent to the customer so that both could be replaced in case there was any unseen damage to the one that was still intact. These equalizers are being returned, but have not been received for evaluation.

**7) No noncompliance has been identified.**

**8) Remedy**

Even though the existing design has been sufficient and been in operation for 20+ years, several ideas have already been implemented to fix the current problem as well as prevent future problems from arising.

Dealers are currently being contacted who have sold trailers that were built within a day of the two trailers affected. We are looking first at trailers that are still on dealer's lots to examine the quality of the weld present on those units. We will bring as many of those units as possible back for testing to determine the strength of the weld. On any unit where a poor weld is found, the equalizer will be replaced.

On all current stock, additional welding is being done to increase the size of the weld as well as wrap it around the bottom of the tube  $\frac{3}{4}$ " on each side. Every trailer that goes out after 10/17/11 will have the increased weld size.

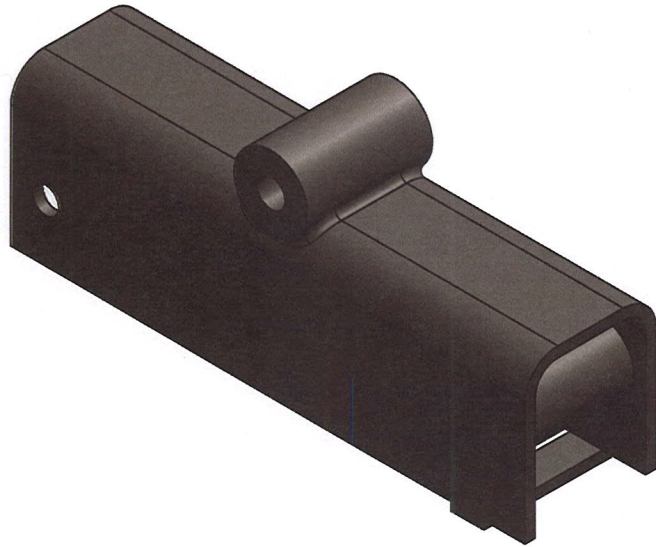
Through proper settings, parameters and quality testing during the manufacturing process, the welding can be controlled and appropriate. As a part of this process, on all future manufacturing, the weld size will be increased 67% and the overall length of the weld will be increased  $\sim\frac{3}{4}$ " on each side of the tube and wrapped over the radius of the part. This will increase the factor of safety by 3.5 times.



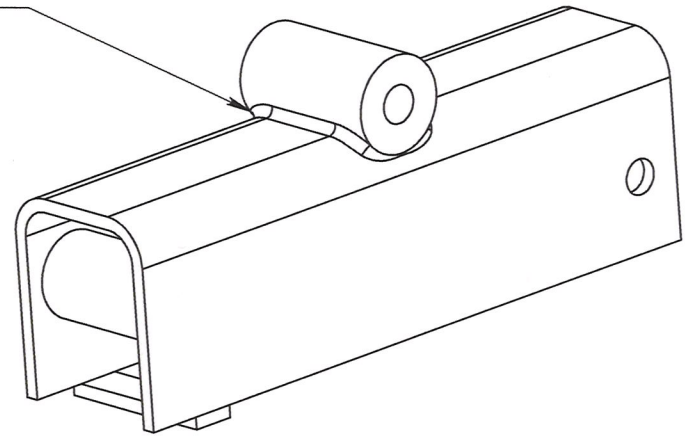
THIS DRAWING, INCLUDING THE PRINCIPLE OF DESIGN, IS THE PROPERTY OF PJ TRAILERS MFG. AND MUST NOT BE USED FOR ANY PURPOSE DETRIMENTAL TO OUR INTEREST.

PJTRAILERS.COM PHONE: 903-785-6879 FAX: 903-785-6898

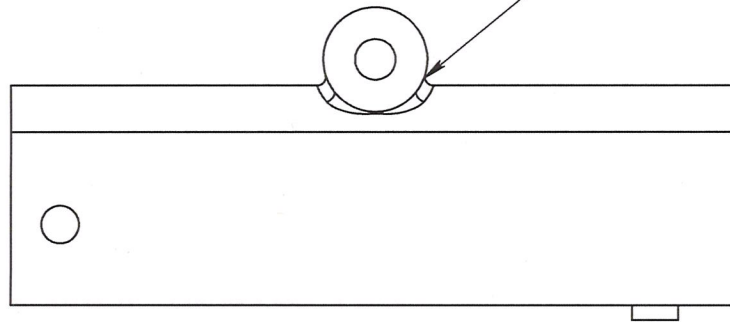
DRAWN: JVN	Model: ax4113-10H equalizer
DATE: 10/14/2011	Desc: Center equalizer for axle hanger
Prod. Line: ax	
GVWR: /bs	DIMENSIONS IN FEET / INCHES (UNLESS OTHER-WISE NOTED)
SHEET: 1 OF 1	10 and 12k equalizer weld failure



Weld failure area

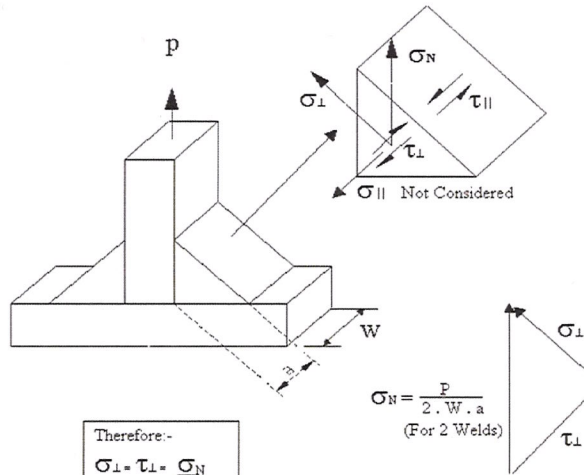


This is the area of concern



Inputs for N = 1.5X and Main Weld Leg Length = 3/16" ±1/32", No weld on EQ Shoulder Radius				
Description	Variable	Value	Units	Notes
Loading on Equalizer	P =	10,000	Pounds	Total load for 2 Equalizers would be 20,000 lbs
Multiple of Rating	N =	1.5	Unitless	
Minimum Weld Leg Length	a =	0.156	Inches	3/16" minus 1/32" tolerance
Number of Sides on Joint	x =	2	Qty	One weld on each side of spacer
Width of Weld	W =	2.13	Inches	Across flat top of Equalizer
Yield Strength of Deposited Metal	Y =	70,068	PSI	Based on min value from Kiswell Mill Cert.
Calculated Values for N = 1.5X and Main Weld Leg Length = 3/16" ±1/32", No weld on EQ Shoulder Radius				
Description	Variable	Value	Units	Notes
Applied Load to Equalizer	P =	15,000	Pounds	P x N from above
Normal Stress	S <sub>n</sub> =	22,535	PSI	P / (X x W x a)
Tensile Stress	S <sub>p</sub> =	15,935	PSI	S <sub>n</sub> /2^(1/2)
Shear Stress	S <sub>s</sub> =	15,935	PSI	Same as Tensile Stress
Maximum Stress: 3/16" Main Weld	S <sub>m</sub> =	25,783	PSI	1/2(S <sub>p</sub> + ((S <sub>p</sub> ^2)+4*(S <sub>s</sub> ^2))^(1/2)) [Based on using Mohr's circle for combined stresses] Deposited metal is ~2.7X stronger than combined stress
Factor of Safety	F <sub>s</sub> =	2.72	Unitless	on the weld

Inputs for N = 1.5X and Main Weld Leg Length = 3/16" ±1/32", 1.125" Additional Weld on EQ Shoulder Radius				
Description	Variable	Value	Units	Notes
Loading on Equalizer	P =	10,000	Pounds	Total load for 2 Equalizers would be 20,000 lbs
Multiple of Rating	N =	1.5	Unitless	
Minimum Weld Leg Length	a =	0.156	Inches	3/16" minus 1/32" tolerance
Number of Sides on Joint	x =	2	Qty	One weld on each side of spacer
Width of Weld	W =	4.38	Inches	Across flat top of Equalizer and onto Shoulder Radius
Yield Strength of Deposited Metal	Y =	70,068	PSI	Based on min value from Kiswell Mill Cert.
Calculated Values for Main Weld Leg N = 1.5X and Leg Length = 3/16" ±1/32", Additional Weld on EQ Shoulder Radius				
Description	Variable	Value	Units	Notes
Applied Load to Equalizer	P =	15,000	Pounds	P x N from above
Normal Stress	S <sub>n</sub> =	10,959	PSI	P / (X x W x a)
Tensile Stress	S <sub>p</sub> =	7,749	PSI	S <sub>n</sub> /2^(1/2)
Shear Stress	S <sub>s</sub> =	7,749	PSI	Same as Tensile Stress
Maximum Stress: 3/16" Main & Shoulder Weld	S <sub>m</sub> =	12,538	PSI	1/2(S <sub>p</sub> + ((S <sub>p</sub> ^2)+4*(S <sub>s</sub> ^2))^(1/2)) [Based on using Mohr's circle for combined stresses] Deposited metal is ~5.6X stronger than combined stress
Factor of Safety	F <sub>s</sub> =	5.59	Unitless	on the weld



$$\sigma_{Max} := \frac{1}{2} \left( \sigma_1 + \sqrt{\sigma_1^2 + 4\tau_{\perp}^2} \right)$$

