



# HRJ-145 TOWBAR

## Towbar Specifications, Usage, Preventive Maintenance, and Parts MANUAL

For use with the Embraer 145 Reginal Jet  
(Includes Optional Hydraulic Lift)



For ordering New Towbars or Replacement Parts Please Contact:

Towbar Parts @ 724-752-2000  
Or Fax @ 724-758-1558  
Or Email @ [service@hallindustries.com](mailto:service@hallindustries.com)

Hall Industries, Inc.  
514 Mecklem Lane  
Ellwood City, PA 16117  
724-752-2000

August 5, 2013  
Revision 02



07-20-13 REV01 Update Manual
08-05-13 REV02 Correct SS Bar Part # & Add Decal

0. Index

Table with 3 columns: Section, Description, Page. Rows include One (Specifications, 2), Two (Operating Procedures, 3), Three (Preventive Maintenance, 4), Four (Replacement Part Kits / Assemblies, 5), Five (Ordering Info, 5), Six (How to find the part you need, 6), and Seven (Attachment List, 6).

1. Specifications

1.1. Physical Specifications

Table with 5 columns: Part Number, Description, Weight, Length. Rows include HRJ-145 (Full Assembly, 175 lb, 12' 1"), HRJ-145-HL-SS (Full Assembly, 200 lb, 12' 1"), HRJ-145-SS (Full Assembly, 190 lb, 12' 1"), HRJ-145-HL (Full Assembly, 190 lb, 12' 1"), and HRJ-145-5 (Towbar Head, 40 lb, 21").

1.2. Warranty:

All parts are guaranteed against defects for one year. If at any time this manual is not followed it will void the warranty (preventive maintenance logs are required for all warranty replacement parts). All replacement parts must be genuine Hall Industries parts.



## 2. Operating Procedures

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**NOTE:** This must be done in accordance with the aircraft manual.

### 2.1. Inspect the Towbar (Prior to hooking up the towbar to the tug visually inspect):

- 2.1.1. Check for a bent or damaged frame and for worn or missing parts.
- 2.1.2. Check tires for damage.
- 2.1.3. Check that you have the proper towbar.

**NOTE:** DO NOT attempt to tow any aircraft with a damaged or improper towbar.

### 2.2. Responsibility

Operator of the tug must understand that it is his/her responsibility to move the aircraft safely the entire time that they are connected to the plane.

**NOTE:** No speeding during push and pull.

### 2.3. Hooking Up to the Plane ~ Checks:

- 2.3.1. You are using the proper tug and towbar for the size aircraft being moved.
- 2.3.2. The towbar you are using is approximately level between the aircraft and the tug.
- 2.3.3. The eye end of the towbar must move freely on the hitch mounted on the tug.

### 2.4. Attach the Towbar to the Aircraft

- 2.4.1. First check that the towbar head latch is pulled back in the open position.
- 2.4.2. Line up towbar to nose pin of aircraft and close nose pin.
- 2.4.3. Release the latch into the nose pin and turn until the latch is in the closed position.

### 2.5. Attach the Towbar to the Tow Tractor

- 2.5.1. Lift to the level of the push back's hitch.
- 2.5.2. Position the push back tractor and install the hitch pin.
- 2.5.3. Tow or push the aircraft only if the tow bars tires are not touching the ground.



## 2.6. Push the Aircraft

**NOTE:** This must be done in accordance with the aircraft manual.

### Basic Rules:

2.6.1. Prior to moving, make sure that full swivel release pins are released (if applicable). Also double check that all the tie downs and chocks are removed and aircraft brakes are released.

**NOTE:** This must be done in accordance with the aircraft manual.

2.6.2. Tow Slow, max speed is a brisk walk (Approximately 5 MPH). This will help to minimize the chance of a jack-knife.

2.6.3. Do not exceed Aircraft nose wheel angle of towing limits. If not marked or not known, do not exceed 30° from center. Be extra cautious on snow and ice.

2.6.4. If you are driving make sure that you have plenty of help; “wing walkers” are helpful.

2.6.5. Make sure the operator / driver has direct contact with the pilot at all times while moving the aircraft.

**NOTE:** Thousand of dollars in damage can occur in a few seconds while towing. It is estimated that 90% of towing damage is due to operator negligence / error. Accidents can be fatal.

## 2.7. Disconnect the Towbar from the Tug

## 2.8. Disconnect the Towbar from the Aircraft

Rotate & pull back on the towbar head latch handle to move the latch into the open position. Carefully lower the tow bar to the ground (use hydraulic lift if installed), and then move push back tractor and towbar clear of the aircraft.

## 3. Preventive Maintenance

**NOTE:** Hall Industries recommends using this maintenance procedure monthly (or as required in your airlines maintenance procedure if sooner). Replace worn or damaged parts as needed.

3.1. Check the head retention pin and the soft start eye retaining bolts for wear.



- 3.2. Check wheels and wheel carriage for bent, broken, or worn parts and security. Lubricate pivot points using Hall lubricant (Part number TB-LUBE).
- 3.3. Check head assembly for operation of latch mechanism; look for bending, security, etc. Lubricate pivot points using Hall lubricant (Part number TB-LUBE).
- 3.4. Inspect jaw assembly for worn or damaged parts and security.
- 3.5. Check latch mechanism to ensure proper travel back and forth. Lubricate pivot points.
- 3.6. Check tow eye and hardware (tug attachment) for condition and security.
- 3.7. Check main body tube for bending or cracking.
- 3.8. Clean, repaint or touch-up paint as required.
- 3.9. Inspect tags and labels if damaged or missing replace (see the drawings in the attachment section for labels and placements).
- 3.10. If the towbar is equipped with a hydraulic lift, check the fluid reservoir (in the down / collapsed position). Add fluid if necessary (Part number TB-LUBE-L).

## 4. Replacement Parts, Kits, & Assemblies

Part Number	QTY (in Kit)	Description
4.1. HRJ-145-11-2-KIT	SHEAR PIN KIT	
4.1.1. HRJ-11-2	2	Shear Pin
4.1.2. HRJ-145-11-2A	2	Locknut
4.1.3. HRJ-145-7-1-E	1	Head Bushing
4.1.4. HRJ-145-11-3	2	Adapter Bushing

## 5. Ordering Info

- 5.1. Accepted Payments Include (but not limited to):
  - 5.1.1. Visa
  - 5.1.2. MasterCard
  - 5.1.3. American Express
  - 5.1.4. Company Check Wire Transfer



- 5.2. Standard terms ~ NET 30 with approved credit
- 5.3. Minimum Orders ~ \$50
- 5.4. The Order Form is listed in the attachments of this document.

## 6. How to find the part you need

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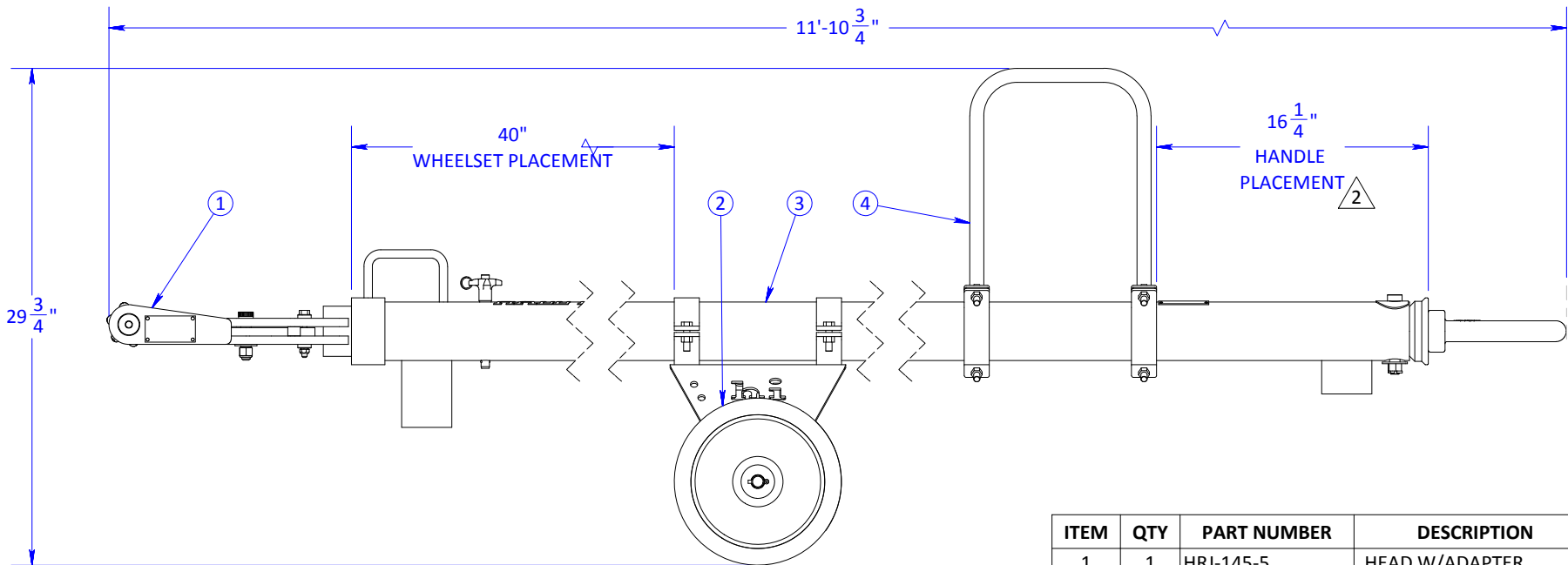
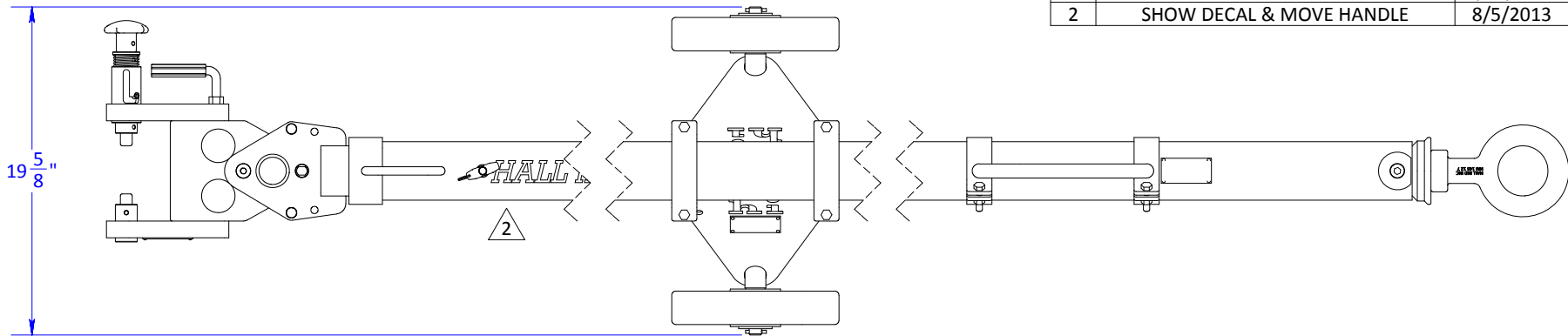
- 6.1. What pushbar do I need?
  - 6.1.1. Soft Start Eyelet or Standard Eyelet (user preference)
- 6.2. What wheel carriage do I need?
  - 6.2.1. Fixed or Hydraulic lift (user preference)

## 7. Attachment List

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- |   |   |
|---|---|
| 7.1. HRJ-145                                    | HRJ Towbar Complete                         |
| 7.2. HRJ-145-5                                  | HRJ Towbar Head Complete                    |
| 7.3. HRJ-145-12-1-TE-SS                         | Towbar Tube with Soft Start Toweye Assembly |
| 7.4. TB-SS3.5-D8Q                               | Repairable Soft Start Assembly              |
| 7.5. HRJ-145-12-1-TE                            | Towbar Tube with Standard Toweye Assembly   |
| 7.6. HRJ-145-12-10                              | Fixed Wheel Carriage                        |
| 7.7. REG-LIFT                                   | Regional Towbar Lift ~ Hydraulic 3 ½"       |
| 7.8. HRJ-145-12-2ASY                            | Handle Assembly                             |
| 7.9. AV1009-0002                                | Drag Plate 3.5" Bolted                      |
| 7.10. Soft Start Brochure                       |   |
| 7.11. Order Form                                |   |
| 7.12. Other Products and Custom Design Services |   |

REVISIONS				
REV	DESCRIPTION	DATE	BY	CHK
1	UPDATE DRAWING	7/18/2013	BJE	DC
2	SHOW DECAL & MOVE HANDLE	8/5/2013	BJE	DC



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	HRJ-145-5	HEAD W/ADAPTER
2	1	HRJ-145-12-10	FIXED WHEEL CARRIAGE
3	1	HRJ-145-12-1-TE	TOWBAR TUBE AND EYE
4	1	HRJ-145-12-2ASY	HANDLE ASSEMBLY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES		
ANGLE	.XX	.XXX
± 0.5°	± .01	± .005
X<12"	± 1/32"	X>12" ± 1/16"

THIRD ANGLE PROJECTION

CHECK DC	DATE 7/18/2013
DRAWN BJE	DATE 7/18/2013

**hi** 514 Mecklem In Ellwood City, PA 16117  
**Hall Industries, Inc.**

PROJECT	AV
FILE NAME	HRJ-145 HRJ TOWBAR COMPLETE
DESCRIPTION	TOWBAR COMPLETE
SIZE	DWG/PART NO.
A	HRJ-145
SCALE 1:10	WEIGHT: 153.75 LBS
SHEET 1 OF 1	REV 2

CONFIGURATIONS	WITH FIXED WHEELSET	W/ HYDRAULIC WHEELSET
STANDARD EYELET	HRJ-145	HRJ-145-HL
SOFT START EYELET	HRJ-145-SS	HRJ-145-HL-SS

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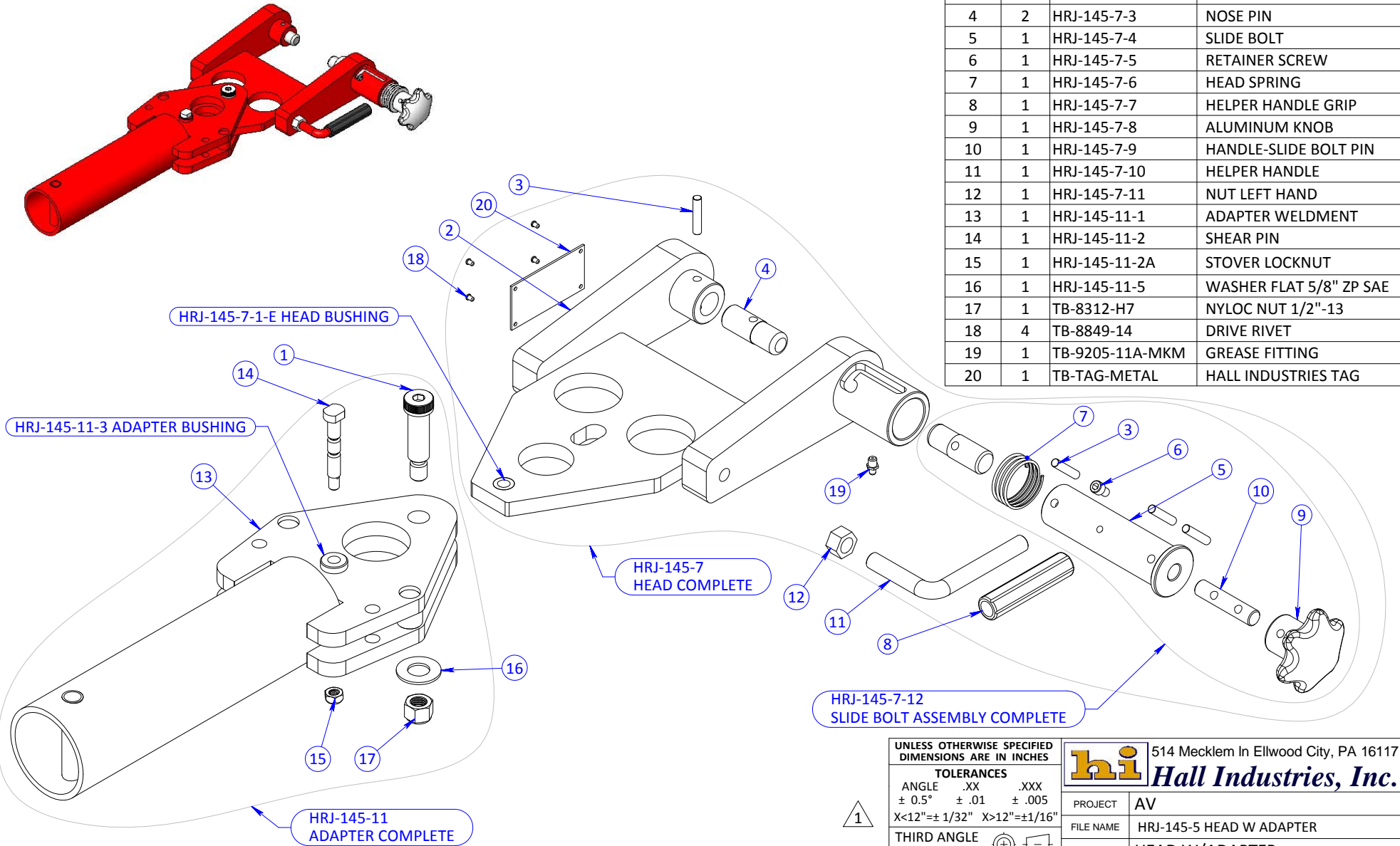
**NOTES:**

1. USE ANTISEIZE ON ALL THREADS.

REVISIONS				
REV	DESCRIPTION	DATE	BY	CHK
1	UPDATE DRAWING	7/18/2013	BJE	DC

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CRJ-100-11-4	SHOULDER BOLT
2	1	HRJ-145-7-1	HRJ-145 HEAD W BUSHING
3	4	HRJ-145-7-2	ROLL PIN
4	2	HRJ-145-7-3	NOSE PIN
5	1	HRJ-145-7-4	SLIDE BOLT
6	1	HRJ-145-7-5	RETAINER SCREW
7	1	HRJ-145-7-6	HEAD SPRING
8	1	HRJ-145-7-7	HELPER HANDLE GRIP
9	1	HRJ-145-7-8	ALUMINUM KNOB
10	1	HRJ-145-7-9	HANDLE-SLIDE BOLT PIN
11	1	HRJ-145-7-10	HELPER HANDLE
12	1	HRJ-145-7-11	NUT LEFT HAND
13	1	HRJ-145-11-1	ADAPTER WELDMENT
14	1	HRJ-145-11-2	SHEAR PIN
15	1	HRJ-145-11-2A	STOVER LOCKNUT
16	1	HRJ-145-11-5	WASHER FLAT 5/8" ZP SAE
17	1	TB-8312-H7	NYLOC NUT 1/2"-13
18	4	TB-8849-14	DRIVE RIVET
19	1	TB-9205-11A-MKM	GREASE FITTING
20	1	TB-TAG-METAL	HALL INDUSTRIES TAG



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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
TOLERANCES	
ANGLE	.XX .XXX
± 0.5°	± .01 ± .005
X<12"=± 1/32"	X>12"=±1/16"
THIRD ANGLE PROJECTION	
CHECK DC	DATE 7/12/2013
DRAWN BJE	DATE 7/12/2013

514 Mecklem In Ellwood City, PA 16117	
Hall Industries, Inc.	
PROJECT	AV
FILE NAME	HRJ-145-5 HEAD W ADAPTER
DESCRIPTION	HEAD W/ADAPTER
SIZE	DWG/PART NO.
A	HRJ-145-5
SCALE 1:4	WEIGHT: 29.20 LBS
SHEET 1 OF 1	

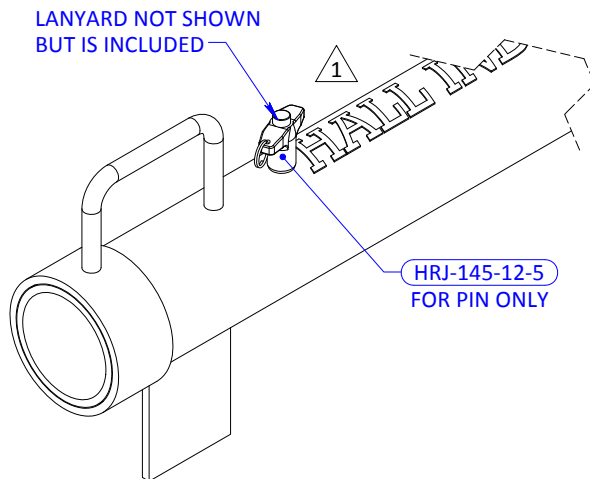
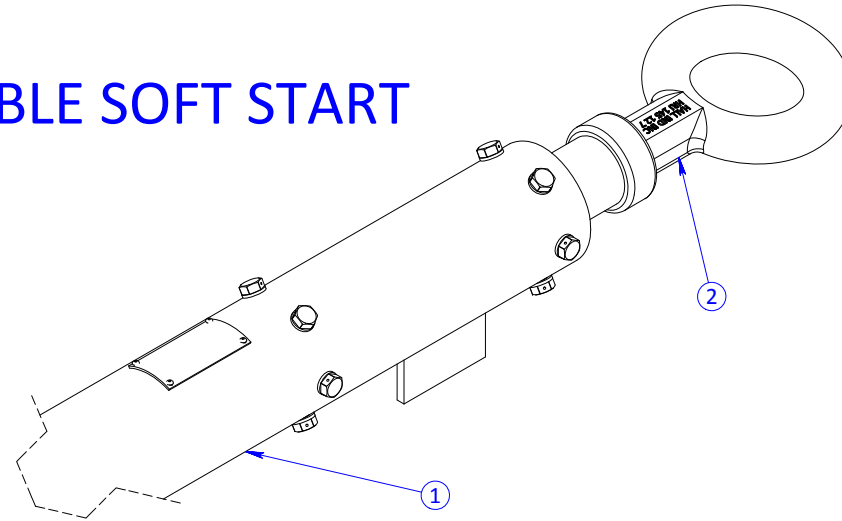


**NOTES:**

1. ANTI-SIEZE ALL THREADS & WIRE TIE BOLTS.
2. TAGS MUST BE INSTALLED.

REVISIONS				
REV	DESCRIPTION	DATE	BY	CHK
1	ADD DECAL	8/5/2013	BJE	DC

# REPAIRABLE SOFT START



ITEM	QTY.	PART NUMBER	DESCRIPTION
1	1	HRJ-145-12-1-SS	3.5" TUBE WITH TAG AND DECAL
2	1	TB-SS3.5-D8Q	SOFT START 3.5 INCH

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN INCHES

TOLERANCES		
ANGLE	.XX	.XXX
± 0.5°	± .01	± .005
X<12"=± 1/32"	X>12"=±1/16"	

THIRD ANGLE  
PROJECTION

CHECK VTM	DATE 6/29/2013
DRAWN BJE	DATE 6/29/2013

**hi** 514 Mecklem In Ellwood City, PA 16117  
**Hall Industries, Inc.**

PROJECT	AV
FILE NAME	HRI-145-12-1-TE-SS TUBE AND SOFT START TOWEYE
DESCRIPTION	TUBE AND SOFT START TOWEYE
SIZE	DWG/PART NO.
A	HRJ-145-12-1-TE-SS
SCALE 1:5	WEIGHT: 103.25 LBS
SHEET 1 OF 1	

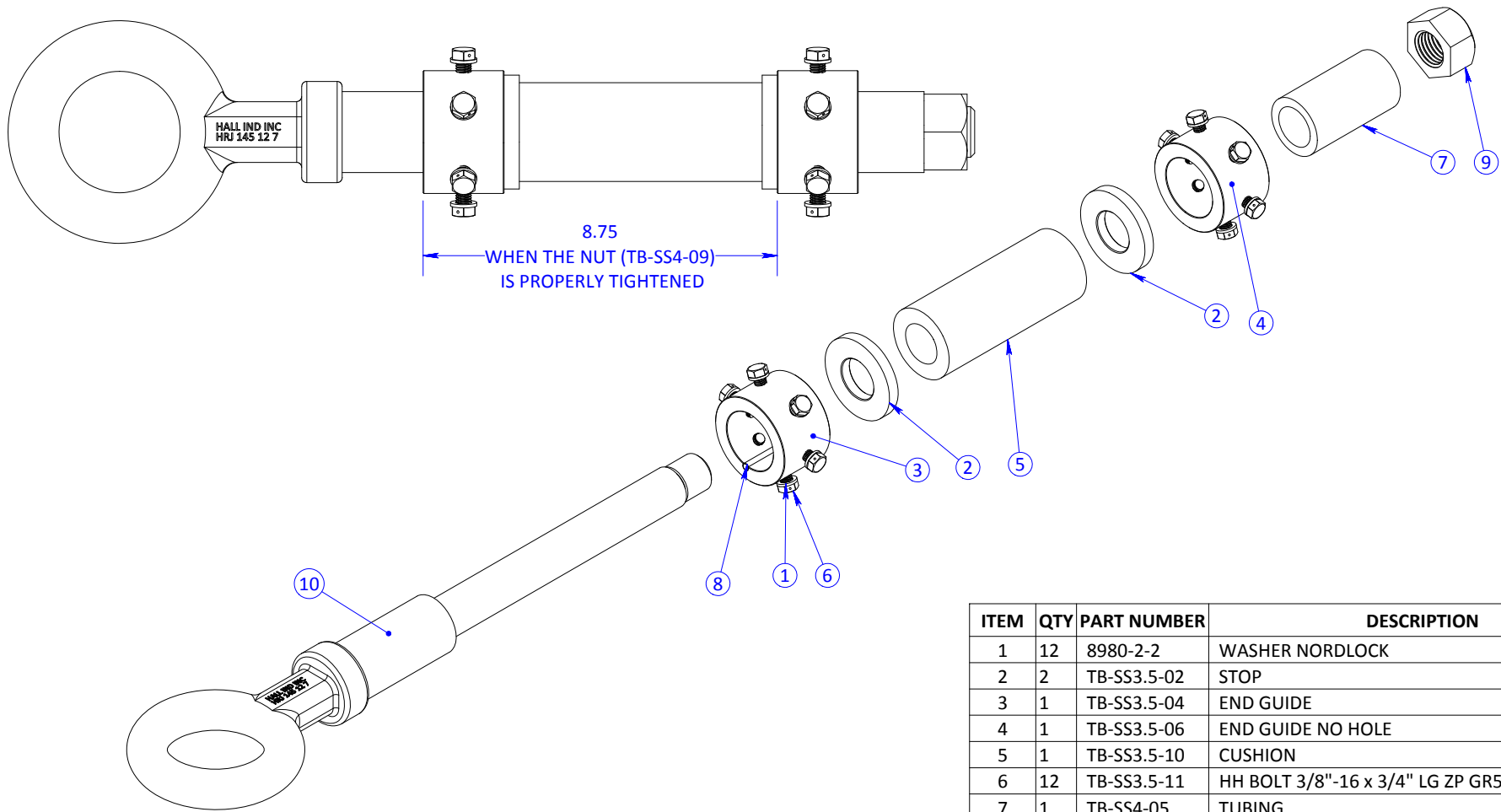
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**NOTES:**

1. USE ANTI-SEIZE ON ALL THREADED HARDWARE.

REVISIONS				
REV	DESCRIPTION	DATE	BY	CHK



ITEM	QTY	PART NUMBER	DESCRIPTION
1	12	8980-2-2	WASHER NORDLOCK
2	2	TB-SS3.5-02	STOP
3	1	TB-SS3.5-04	END GUIDE
4	1	TB-SS3.5-06	END GUIDE NO HOLE
5	1	TB-SS3.5-10	CUSHION
6	12	TB-SS3.5-11	HH BOLT 3/8"-16 x 3/4" LG ZP GR5 DRILLED HEAD
7	1	TB-SS4-05	TUBING
8	1	TB-SS4-07	DOWEL PIN 1/4" DIA. x 2" LONG SS
9	1	TB-SS4-09	NUT 1-1/4"-7 THREAD GR5 ZP
10	1	TB-SS4-11	EYE & SHAFT

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES		
ANGLE	.XX	.XXX
± 0.5°	± .01	± .005
X<12"=± 1/32"	X>12"=±1/16"	

THIRD ANGLE PROJECTION

CHECK VTM	DATE 6/29/2013
DRAWN BJE	DATE 06/29/2013

**hi** 514 Mecklem In Ellwood City, PA 16117  
**Hall Industries, Inc.**

PROJECT	AV ~ SS EYE D8Q, HRJ	
FOLDER / FILE NAME	AV0801/ TB-SS3.5-D8Q SOFT START 3.5 INCH ~ FOR MANUAL	
DESCRIPTION	SOFT START 3.5 INCH	
SIZE	DWG/PART NO.	REV
A	TB-SS3.5-D8Q	0
SCALE 1:5	WEIGHT: 24.17 LBS	SHEET 1 OF 1

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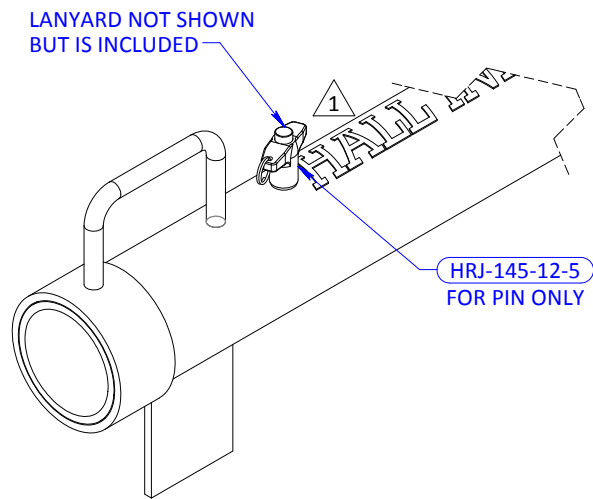
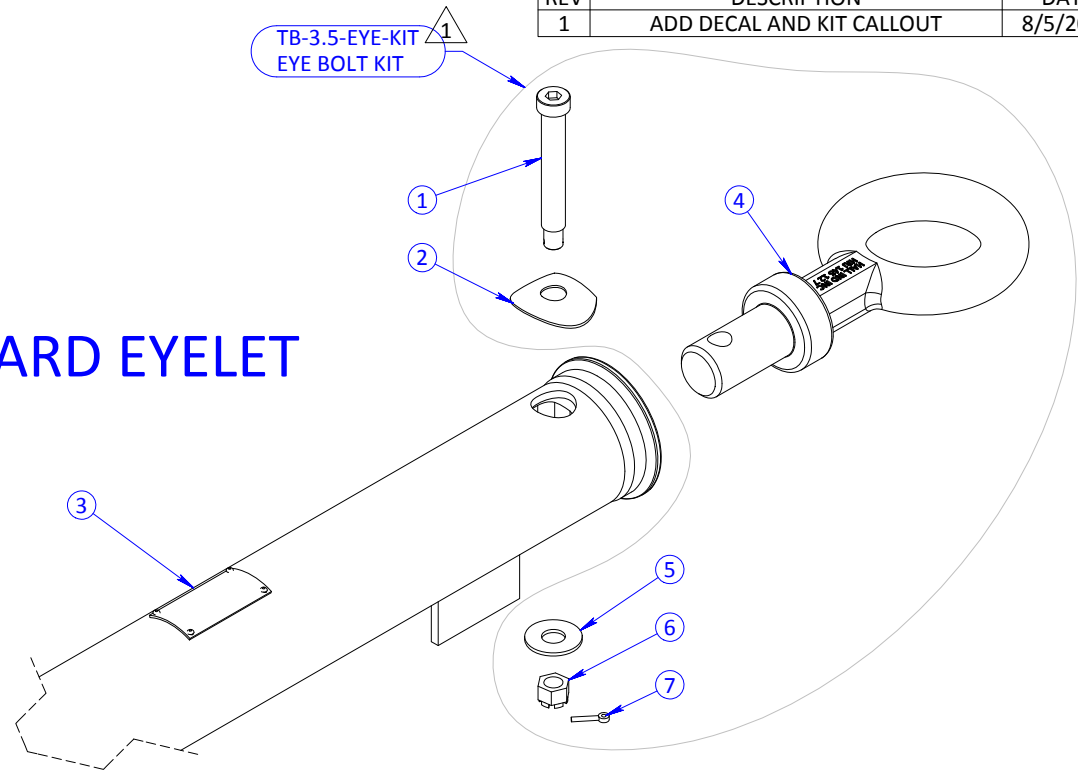
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**NOTES:**

1. TAGS MUST BE INSTALLED.

REVISIONS				
REV	DESCRIPTION	DATE	BY	CHK
1	ADD DECAL AND KIT CALLOUT	8/5/2013	BJE	DC

# STANDARD EYELET



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	HRJ-145-12-13	SHOULDER BOLT
2	1	HRJ-145-12-14	CURVED WASHER
3	1	HRJ-145-12-1	3.5" TUBE WITH TAG AND DECAL
4	1	HRJ-145-12-7	EYEBOLT
5	1	WH0110000SS0000	WASHER SS
6	1	CN08C0000SS0000	CASTLE NUT SS
7	1	CP4280048SS0000	PIN COTTER

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

**TOLERANCES**

ANGLE	.XX	.XXX
± 0.5°	± .01	± .005
X<12"=± 1/32"	X>12"=±1/16"	

**hi** 514 Mecklem In Ellwood City, PA 16117  
**Hall Industries, Inc.**

THIRD ANGLE PROJECTION

CHECK DC	DATE 7/15/2013
DRAWN BJE	DATE 7/15/2013

PROJECT AV	FILE NAME HRJ-145-12-1-TE TOWBAR TUBE AND EYE
DESCRIPTION TOWBAR TUBE AND EYE	SIZE DWG/PART NO. A HRJ-145-12-1-TE
SCALE 1:5	WEIGHT: 91.31 LBS
SHEET 1 OF 1	REV 1

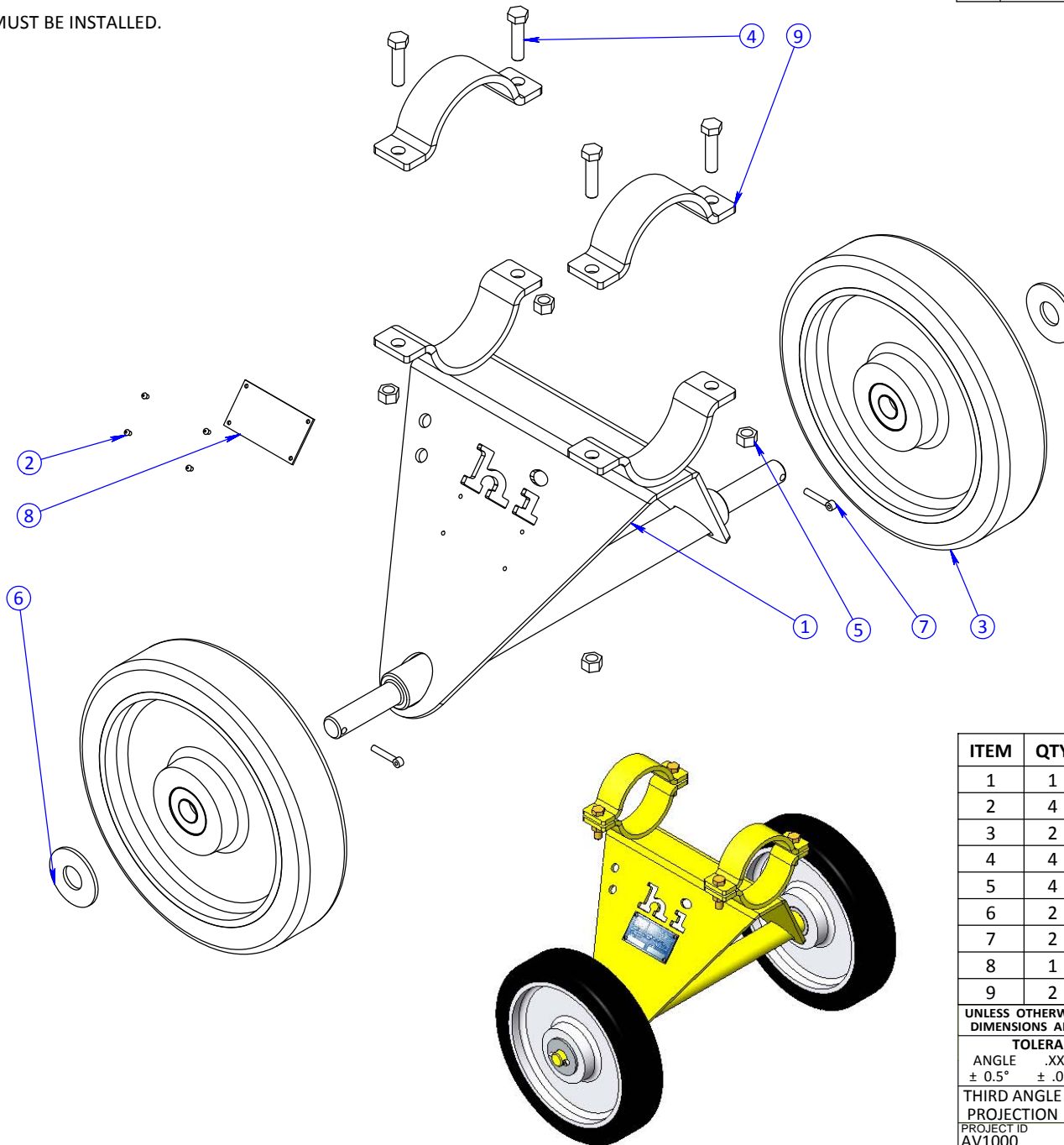
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**NOTES:**

1. TAGS MUST BE INSTALLED.

REVISIONS				
REV	DESCRIPTION	DATE	BY	CHK



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	HRJ-145-12-4	FIXED WHEEL CARRIAGE
2	4	TB-8849-14	DRIVE RIVET
3	2	TB-8898-7	WHEEL
4	4	TB-8898-5	CLAMP BOLT
5	4	TB-8898-6	CLAMP NUT
6	2	TB-8898-8	WASHER
7	2	TB-8898-9	PIN COTTER
8	1	TB-TAG-METAL	HALL INDUSTRIES TAG
9	2	HRJ-145-12-3	CLAMP

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES		
ANGLE	.XX	.XXX
	± 0.5°	± .01 ± .005

THIRD ANGLE PROJECTION

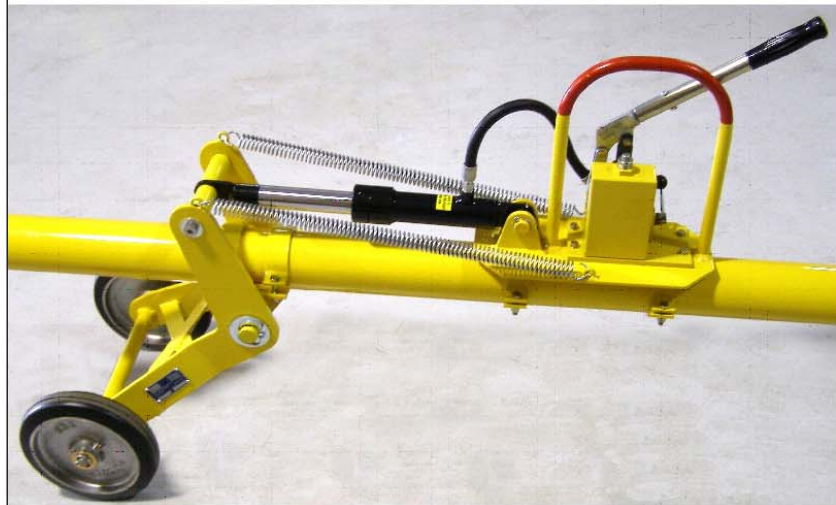
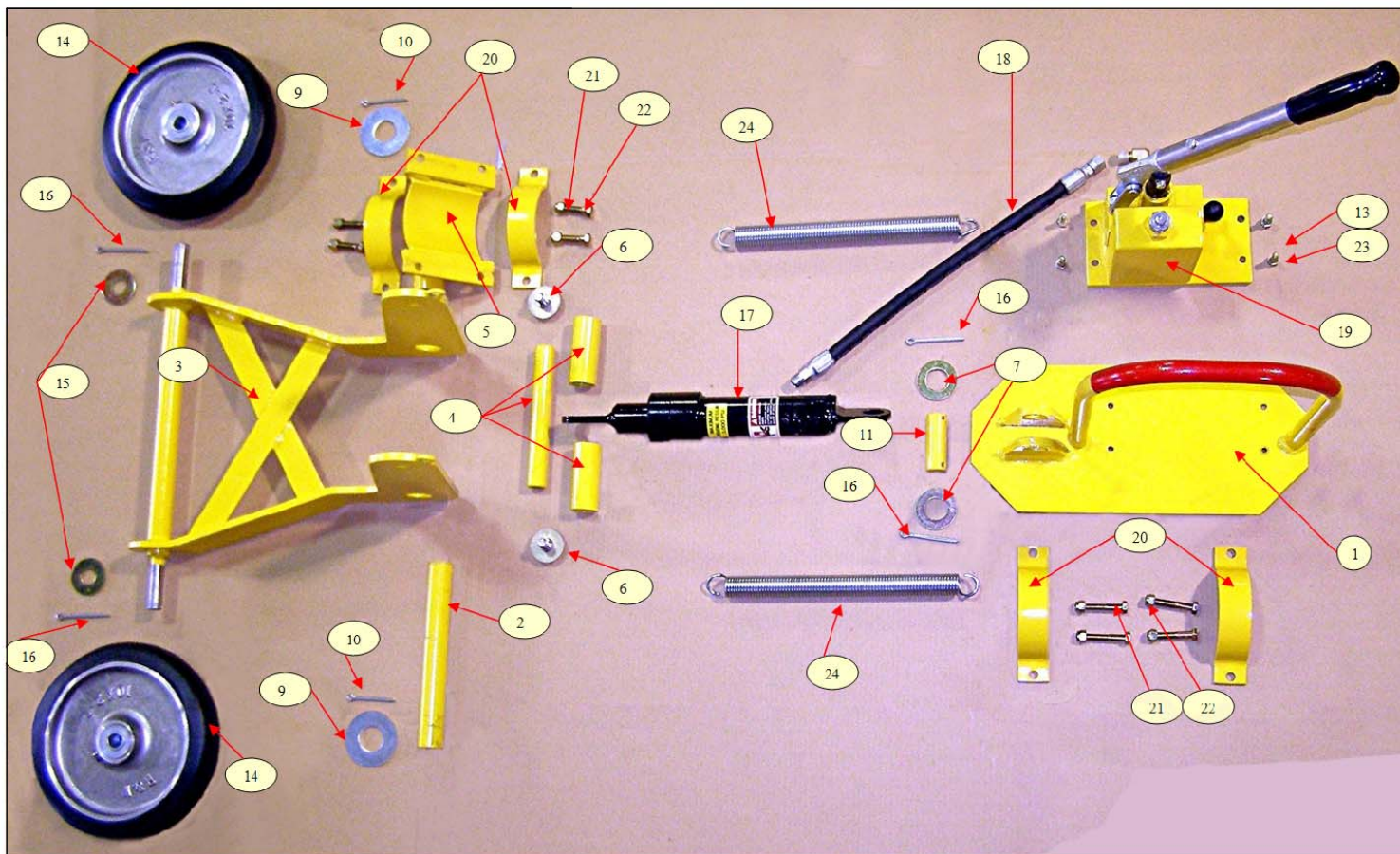
PROJECT ID AV1000  
 CHECK DC  
 DRAWN BJE  
 DATE 11/18/2010

514 Mecklem In Ellwood City, PA 16117  
**Hall Industries, Inc.**

PROJECT	AV
FILE NAME	HRJ-145-12-10 FIXED WHEEL CARRIAGE
DESCRIPTION	FIXED WHEEL CARRIAGE
SIZE	DWG/PART NO.
A	HRJ-145-12-10
SCALE 1:5	WEIGHT: 29.46 LBS
	SHEET 1 OF 1

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ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	LIFT-1	PUMP MOUNTING BRACKET
2	1	LIFT-4	LOWER PIVOT SHAFT
3	1	LIFT-3	WHEEL ARM WELDMENT
4	1	LIFT-2R	WHEEL ARM PIVOT SHAFT/ W 2 COLLARS
5	1	LIFT-6	WHEEL ARM PIVOT WELDMENT
6	2	LIFT-8	HEX SOCKET SHOULDER BOLT
7	2	TB-8986-9	FLAT WASHER ZP
9	4	LIFT-11	FLAT WASHER SAE ZP
10	2	LIFT-12	COTTER PIN, PIVOT SHAFT
11	1	LIFT-14	CLEVIS PIN
13	4	TB-8714-1	HEX BOLT GR5 ZP
14	2	TB-8898-7	WHEEL 10"
15	2	TB-8898-8	FLAT WASHER USS ZP
16	4	TB-8898-9	COTTER PIN, AXLE
17	1	TB-8714-20	HYD CYLINDER W/QUICK DISC, CPLG
18	1	TB-8714-23	HYDRAULIC HOSE
19	1	TB-8714-24	HYDRAULIC PUMP ASSEMBLY
20	4	HRJ-145-12-3	HANDLE/WHEEL ASSY CLAMP
21	8	TB-8898-5	HEX BOLT GR5 ZP
22	8	TB-8898-6	HEX NUT NYLOCK ZP
23	4	TB-8714-2	LOCK WASHER ZP
24	2	TB-8714-10	EXTENSION SPRING
25	1	TB-TAG-METAL	IDENTIFICATION TAG (NOT SHOWN)
26	4	TB-8849-14	DRIVE RIVET FOR TAG (NOT SHOWN)

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN INCHES

**TOLERANCES**

ANGLE	.XX	.XXX
± 0.5°	± .01	± .005

THIRD ANGLE PROJECTION

PROJECT ID AV1000

CHECK DC	DATE 11/20/2010
DRAWN BJE	DATE 11/20/2010

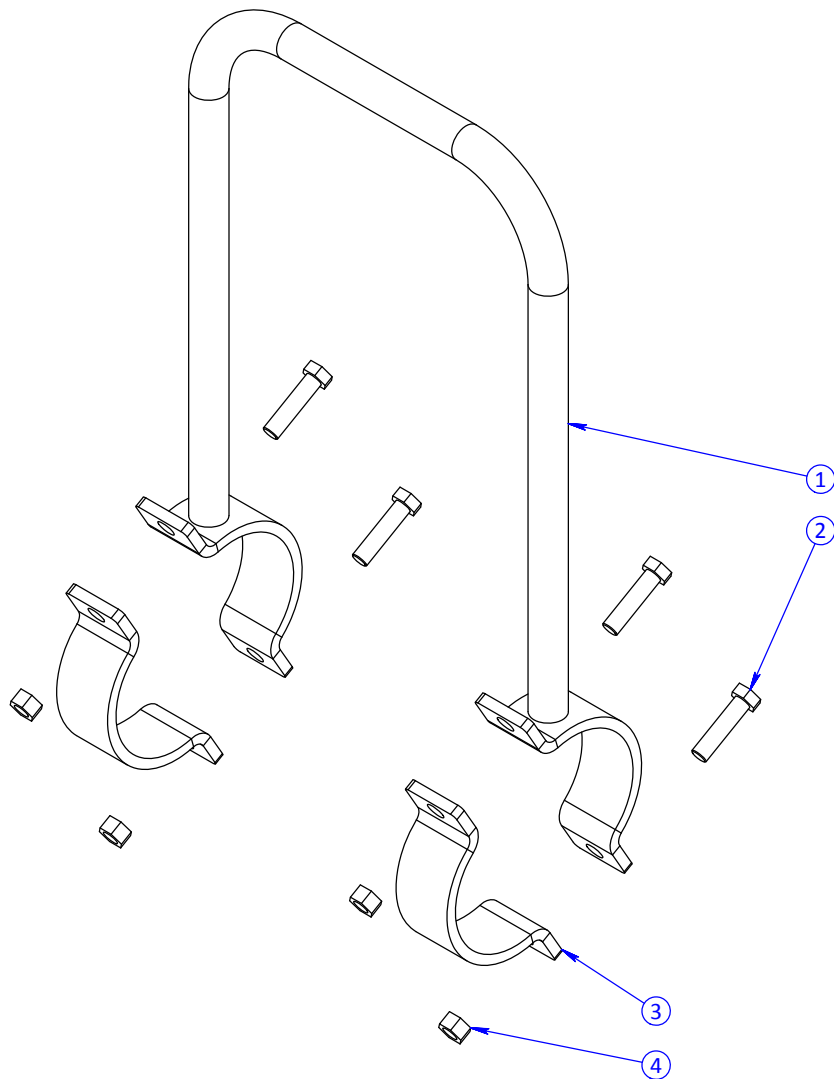
514 Mecklem In Ellwood City, PA 16117  
**Hall Industries, Inc.**

PROJECT	
FILE NAME	REG-LIFT REGIONAL TOWBAR LIFT
DESCRIPTION	REGIONAL TOWBAR LIFT
SIZE DWG/PART NO.	A REG-LIFT
REVISION	0
SCALE 1:1	WEIGHT: 50 LBS
SHEET 1 OF 1	

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REVISIONS				
REV	DESCRIPTION	DATE	BY	CHK
1	CLAMP ANGLE	12/17/2012	BJE	VTM



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	HRJ-145-12-2	HANDLE
2	4	TB-8898-5	CLAMP BOLT
3	2	HRJ-145-12-3	CLAMP
4	4	TB-8898-6	CLAMP NUT

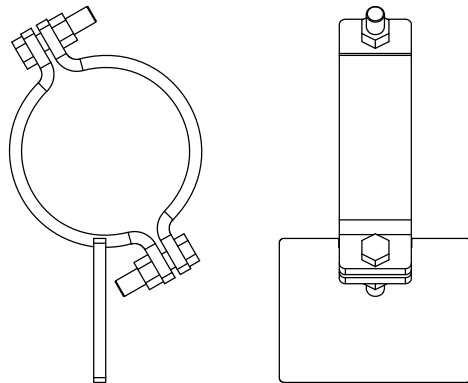
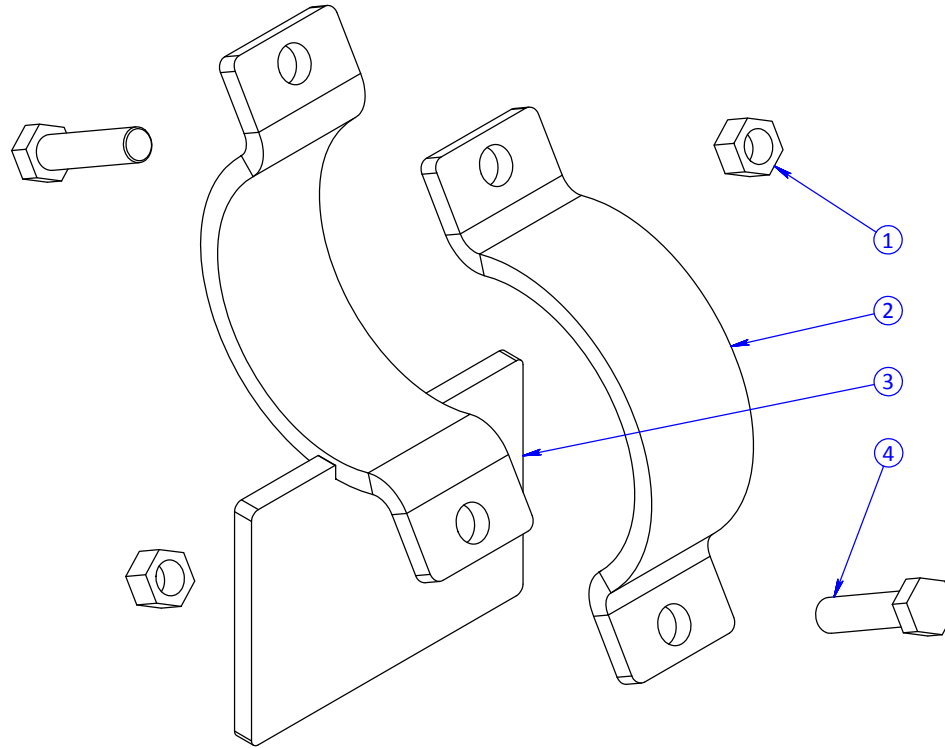
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		514 Mecklem In Ellwood City, PA 16117	
TOLERANCES		<b>hi</b> Hall Industries, Inc.	
ANGLE	.XX .XXX	PROJECT	AV
± 0.5°	± .01 ± .005	FILE NAME	HRJ-145-12-2ASY HANDLE ASSEMBLY
THIRD ANGLE PROJECTION		DESCRIPTION	HANDLE ASSEMBLY
PROJECT ID	AV1000	SIZE	DWG/PART NO.
CHECK	DATE	A	HRJ-145-12-2ASY
DC	1/20/2011	SCALE	1:4
DRAWN	DATE	WEIGHT	3.78 LBS
BJE	1/20/2011	SHEET	1 OF 1

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**NOTES:**

- USE WHEN FACTORY INSTALLED DRAG PLATES HAVE BEEN WORN DOWN.

REVISIONS				
REV	DESCRIPTION	DATE	BY	CHK



ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	TB-8898-6	CLAMP NUT
2	1	HRJ-145-12-3	CLAMP
3	1	AV1009-3001	DRAG PLATE WELDMENT
4	2	TB-8898-5	CLAMP BOLT

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES		
ANGLE	.XX	.XXX
± 0.5°	± .01	± .005

THIRD ANGLE PROJECTION

PROJECT ID  
AV1009

**hi** 514 Mecklem In Ellwood City, PA 16117  
**Hall Industries, Inc.**

CHECK BJE	DATE 6/27/2012	SIZE A	DWG/PART NO. AV1009-0002	REV 0
DRAWN BJE	DATE 6/27/2012	SCALE 1:2	WEIGHT: 2.57 LBS	SHEET 1 OF 1

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## AIRCRAFT TOWBARS - SOFT START

"The GSE Problem Solvers"

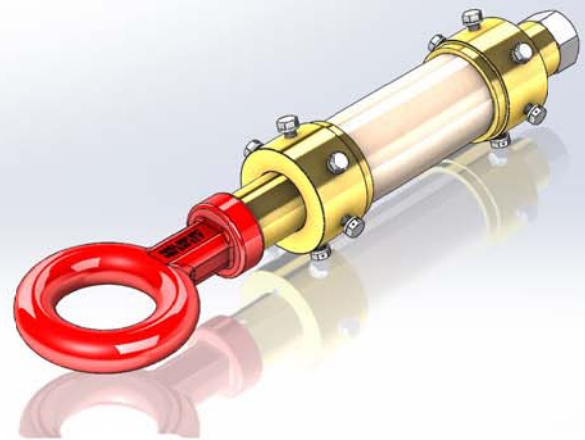
### BENEFITS

- Decreases shear pin failure resulting in lower more reliable pushback times
- Less shock into the nose gear of the plane



### FEATURES

- Replaceable spring elements
- Towbar rollover protection
- Approximately one inch of travel during pushing or pulling (2" overall travel)



For more information please visit us online at [www.halltechservices.com](http://www.halltechservices.com), call us at 724.824.7100, or email us at [info@halltechservices.com](mailto:info@halltechservices.com)



Hall Industries Equipment Division ~ AIRLINE ORDERS

FAX#: 724 758-1558 PHONE # : 724 752-2000

ORDER DATE: \_\_\_\_\_ TAKEN BY: \_\_\_\_\_ TIME: \_\_\_\_\_ AIRLINE CODE: \_\_\_\_\_  
 PERSON CALLING: \_\_\_\_\_ PHONE#: \_\_\_\_\_ FAX: \_\_\_\_\_  
 E-MAIL ADDRESS: \_\_\_\_\_ CUSTOMER P.O.# \_\_\_\_\_  
 MASTER CARD# \_\_\_\_\_  
 EXP. DATE: \_\_\_\_\_ CVC# \_\_\_\_\_  
 SHIP DATE: \_\_\_\_\_ HOW TO SHIP: UPS: GRD \_\_\_\_\_ RED \_\_\_\_\_ OTHER \_\_\_\_\_  
 FED EX: GRD \_\_\_\_\_ O/N \_\_\_\_\_ O/N P1 \_\_\_\_\_ OTHER \_\_\_\_\_ Acct. # \_\_\_\_\_  
 TRUCKING COMPANY: \_\_\_\_\_  
 HUB : \_\_\_\_\_ EMPLOYEE # \_\_\_\_\_  
 BILLING ADDRESS: \_\_\_\_\_ SHIP TO ADDRESS: \_\_\_\_\_


PART NUMBER:	DESCRIPTION:	QTY:	PRICE:

NOTES: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Other Products and Custom Design Services:**

Hall Industries provides a number of additional products beyond our towbar line. Some of the custom projects that we have done are shown below. We have our own engineering staff along with machine, fabrication, and GSE maintenance shops. We can design and build your ideas to increase safety, productivity, and profits.



**0017-0001 Custom Towbar (Solve a Problem)**

<<This project involved designing and manufacturing a custom towbar to be used in the Nuclear Industry. This towbar shipped complete with custom shear pins calibrated to the application.



**IA-8980 Preconditioned Air Inlet (PCA) Adapters**

<< Our PCA Inlet Adapters are part of our GSE product line. We inventory all of the parts and can ship usually the same day as ordered.>>



**0010-0001 Certified Transmission Lifting Bracket (Meet a Demand)**

A customer came to us with a lifting problem. They needed a tested and certified lifting bracket to prevent them from getting cited by OSHA. We designed, tested, and fabricated a solution. >>



**<<1000-3002 Adapter 8312 to Tronair 1000-0001 Hydro Adapter Assembly>>**

Hall Industries offers adapters for nearly every towbar (even competitors) that allow you to use our towbar tubes / heads with your existing equipment.



Besides the products listed above some of the other things that we sell include PCA ducting, Solid PBB tires, and baggage cart tires.

**Feel free to contact us about your GSE problems; after all we are “The Problem Solvers”.**