



DASH-8 /Q-SERIES TOWBAR

Towbar Specifications, Usage, Preventive Maintenance, and Parts

MANUAL

(Includes Optional Hydraulic Lift & Repairable Soft Start)



For ordering New Towbars or Replacement Parts Please Contact:

Towbar Parts @ 724-752-2000
Or Fax @ 724-758-1558
Or Email @ service@hallindustries.com

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

July 20, 2013
Revision 03



07-20-13 REV03 Update Manual with new part numbers, add SS part info, general corrections BJE

0. Index

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1. Specifications

1.1. Physical Specifications

Part Number	Description	Weight	Length
Q400			
TB-D8Q-400	Full Assembly (24" Height x 20" Wide) With Fixed Wheel Carriage	190 lb	13'
TB-D8Q-Q4H	Towbar Head	40 lb	21"
TB-D8Q-400-HL	Full Assembly (24" Height x 20" Wide) With Hydraulic Lift Wheel Carriage	275 lb	13'
TB-D8Q-400-SS	Full Assembly with Repairable Soft Start	200lb	13'
TB-D8Q-400-HL-SS	Full Assembly with Repairable Soft Start & With Hydraulic Lift Wheel Carriage	285 lb	13'
Q200			
TB-D8Q-200	Full Assembly (24" Height x 20" Wide) With Fixed Wheel Carriage	190 lb	13'
TB-D8Q-Q2H	Towbar Head	40 lb	21"
TB-D8Q-200-HL	Full Assembly (24" Height x 20" Wide) With Hydraulic Lift Wheel Carriage	275 lb	13'
TB-D8Q-200-SS	Full Assembly with Repairable Soft Start	200lb	13'
TB-D8Q-200-HL-SS	Full Assembly with Repairable Soft Start & With Hydraulic Lift Wheel Carriage	285 lb	13'
Universal Dash-8 / Q Series			
TB-D8Q-U	Full Assembly (24" Height x 20" Wide) With Fixed Wheel Carriage	190 lb	13'
TB-D8Q-HEAD	Towbar Head	40 lb	21"
TB-D8Q-U-HL	Full Assembly (24" Height x 20" Wide) With Hydraulic Lift Wheel Carriage	275 lb	13'
TB-D8Q-U-SS	Full Assembly with Repairable Soft Start	200lb	13'
TB-D8Q-U-HL-SS	Full Assembly with Repairable Soft Start & With Hydraulic Lift Wheel Carriage	285 lb	13'



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

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 slide head over the nose pin.

2.4.3. Release the latch forward and over the nose pin 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

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 Part Kits / Assemblies

Table with 3 columns: Part Number, QTY (in Kit), and Description. It lists four different push bar assemblies (4.1-4.4) with their respective part numbers and descriptions.



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

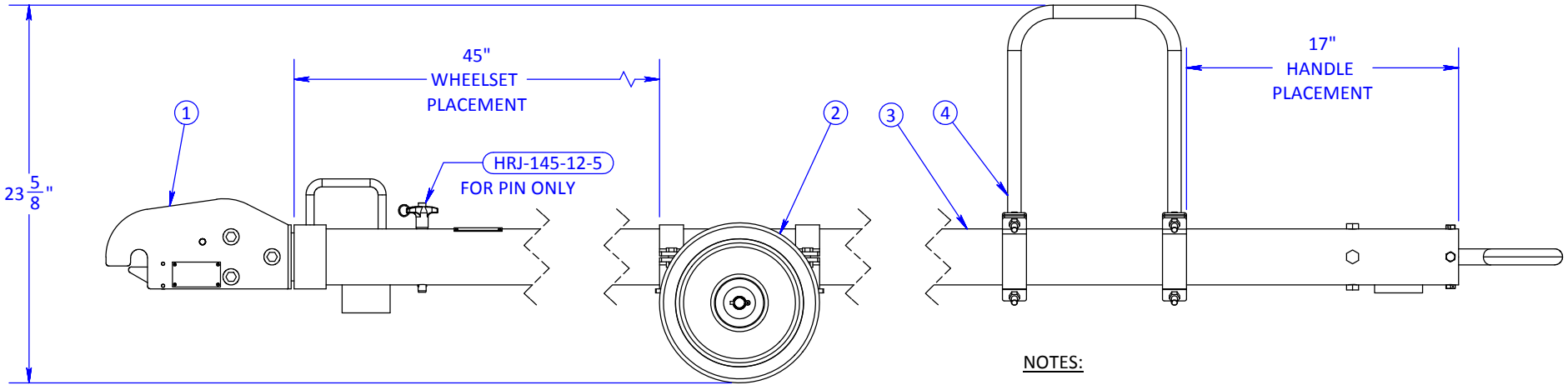
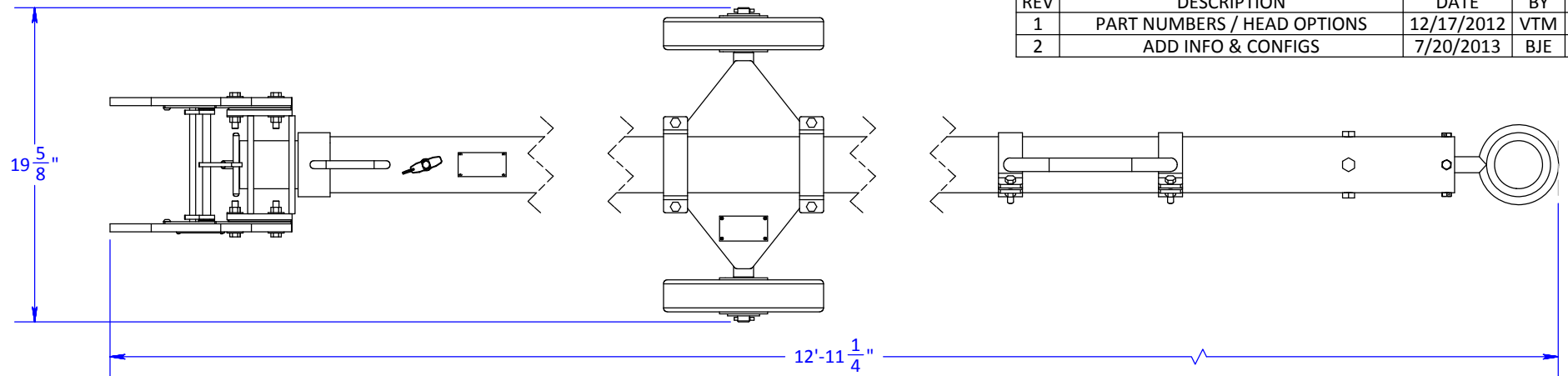
- 6.1. What towbar head do I need? There are three options:
 - 6.1.1. Q400
 - 6.1.2. Q200
 - 6.1.3. D8Q Universal Head (can be used on Q200, Q400, & Dash-8 Airplanes)
- 6.2. What pushbar do I need?
 - 6.2.1. Soft Start Eyelet Repairable or Soft Start Eyelet Standard (user preference)
- 6.3. What wheel carriage do I need?
 - 6.3.1. Fixed or Hydraulic lift (user preference)



7. Attachment List

- | | |
|--|--|
| 7.1. TB-D8Q-U | Full Universal Assembly with Subcomponent Callouts |
| 7.2. TB-D8Q-HEAD | Dash-8 / Q Universal Head |
| 7.3. TB-D8Q-Q4H | Q400 Head Assembly |
| 7.4. TB-D8Q-TE | Towbar Tube & Eye ~ Standard |
| 7.5. TB-D8Q-TE-SS | Towbar Tube & Eye ~ Repairable |
| 7.6. TB-SS3.5-D8Q | Repairable Soft Start Assembly |
| 7.7. ATR-400 | Fixed Wheel Carriage |
| 7.8. REG-LIFT | Regional Towbar Lift ~ Hydraulic 3 ½" |
| 7.9. HRJ-145-12-2ASY | Handle Assembly |
| 7.10. AV1009-0002 | Drag Plate 3.5" Bolted |
| 7.11. Soft Start Brochure | |
| 7.12. Order Form | |
| 7.13. Other Products and Custom Design Services | |

REVISIONS				
REV	DESCRIPTION	DATE	BY	CHK
1	PART NUMBERS / HEAD OPTIONS	12/17/2012	VTM	DC
2	ADD INFO & CONFIGS	7/20/2013	BJE	VTM



NOTES:

1. FOR MORE INFORMATION SEE SUB-ASSEMBLY DRAWINGS.
2. TAGS MUST BE INSTALLED.
3. ANTI-SIEZE ALL THREADS & WIRE TIE BOLTS.

Q400 CONFIG'S	WITH FIXED WHEELSET	W/ HYDRAULIC WHEELSET
STANDARD SS EYELET	TB-D8Q-400	TB-D8Q-400-HL
REPAIRABLE SS EYELET	TB-D8Q-400-SS	TB-D8Q-400-HL-SS
Q200 CONFIG'S		
STANDARD SS EYELET	TB-D8Q-200	TB-D8Q-200-HL
REPAIRABLE SS EYELET	TB-D8Q-200-SS	TB-D8Q-200-HL-SS
D8Q CONFIG'S		
STANDARD SS EYELET	TB-D8Q-U	TB-D8Q-HL
REPAIRABLE SS EYELET	TB-D8Q-U-SS	TB-D8Q-U-HL-SS

TOWBAR HEADS ONLY
TB-D8Q-400
TB-D8Q-200
TB-D8Q-HEAD (UNIVERSAL)

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	TB-D8Q-HEAD	D8Q UNIVERSAL HEAD
2	1	ATR-400	FIXED WHEEL CARRIAGE
3	1	TB-D8Q-TE	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

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

THIRD ANGLE PROJECTION	PROJECT	DASH-8/Q SERIES TOWBAR
PROJECT ID	FILE NAME	TB-D8Q-U UNIVERSAL TOWBAR COMPLETE
TM	DESCRIPTION	UNIVERSAL TOWBAR COMPLETE
CHECK	DATE	SIZE DWG/PART NO.
DC	1/20/2011	A TB-D8Q-U-SS
DRAWN	DATE	REV
BJE	1/20/2011	2
SCALE 1:10		WEIGHT: 167.73 LBS
		SHEET 1 OF 1

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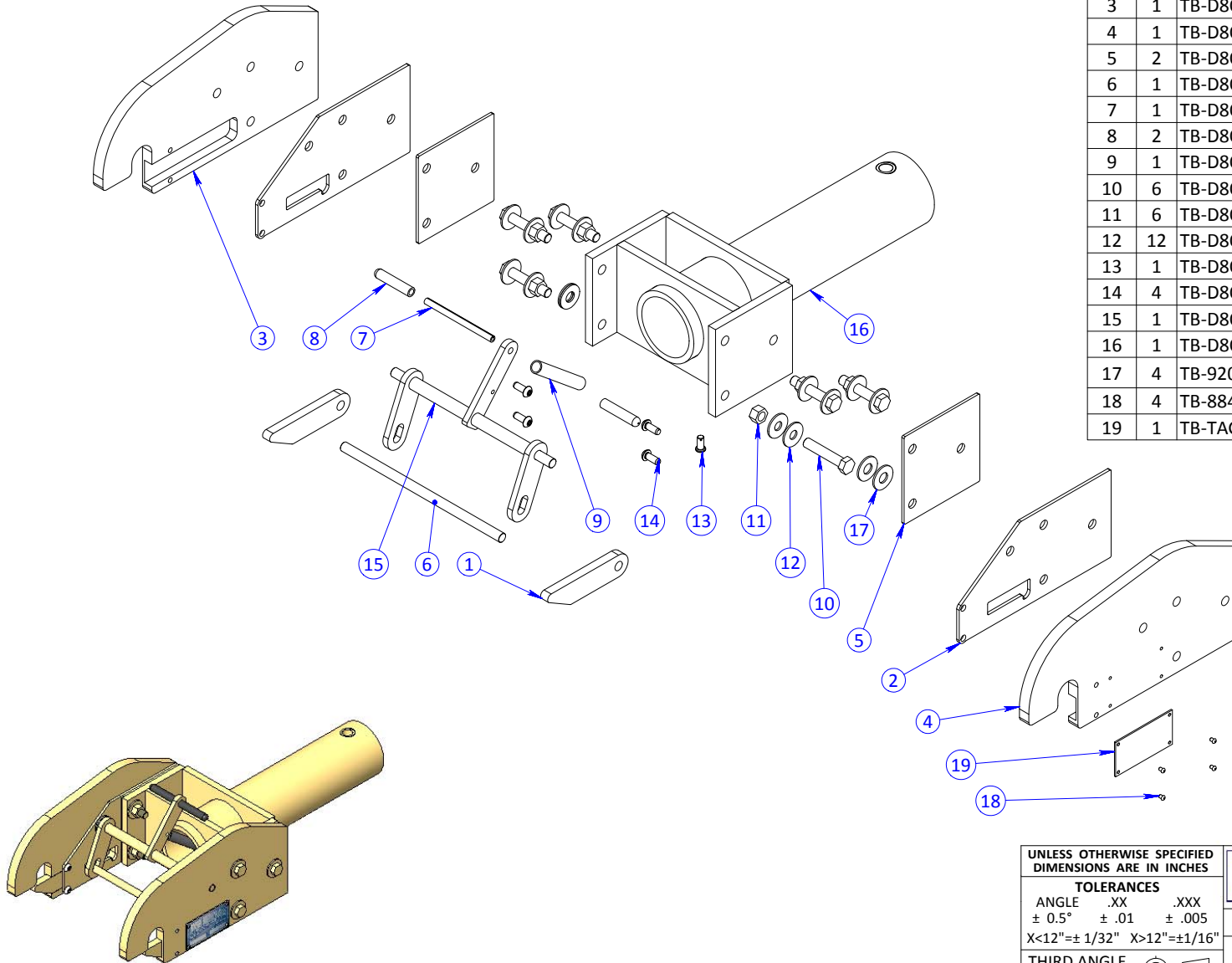
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NOTES:

1. USE BLUE LOCTITE WHEN INSTALLING ITEMS ⑭.
2. STAMP TAG WITH MODEL: D8Q-HEAD

REVISIONS				
REV	DESCRIPTION	DATE	BY	CHK

ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	TB-D8Q-1005	SLIDE KEEPER BARS
2	2	TB-D8Q-1013	KEEPER
3	1	TB-D8Q-1014	SIDE PLATE RIGHT
4	1	TB-D8Q-1015	SIDE PLATE LEFT
5	2	TB-D8Q-1016	SHIM
6	1	TB-D8Q-1017	KEEPER SHAFT
7	1	TB-D8Q-2000	HANDLE PIN ON LEVER ASSY
8	2	TB-D8Q-2001	HANDLE PIN COVER ON LEVER ASSY
9	1	TB-D8Q-2002	RETURN SPRING
10	6	TB-D8Q-2003	BOLT
11	6	TB-D8Q-2004	NYLOCK NUT
12	12	TB-D8Q-2005	WASHER
13	1	TB-D8Q-2006	CLEVIS PIN
14	4	TB-D8Q-2007	BHSCS 1/4"-20 x 5/8" LG ZP
15	1	TB-D8Q-3000	LEVER ASSY
16	1	TB-D8Q-3001	MAIN BODY ASSY
17	4	TB-9205-1C	WASHER
18	4	TB-8849-14	DRIVE RIVET
19	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 / VTM	DATE 6/3/2013
DRAWN BJE	DATE 6/3/2013

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

PROJECT	AV
FOLDER / FILE NAME	AV0806/ TB-D8Q-HEAD D8Q UNIVERSAL HEAD
DESCRIPTION	D8Q UNIVERSAL HEAD

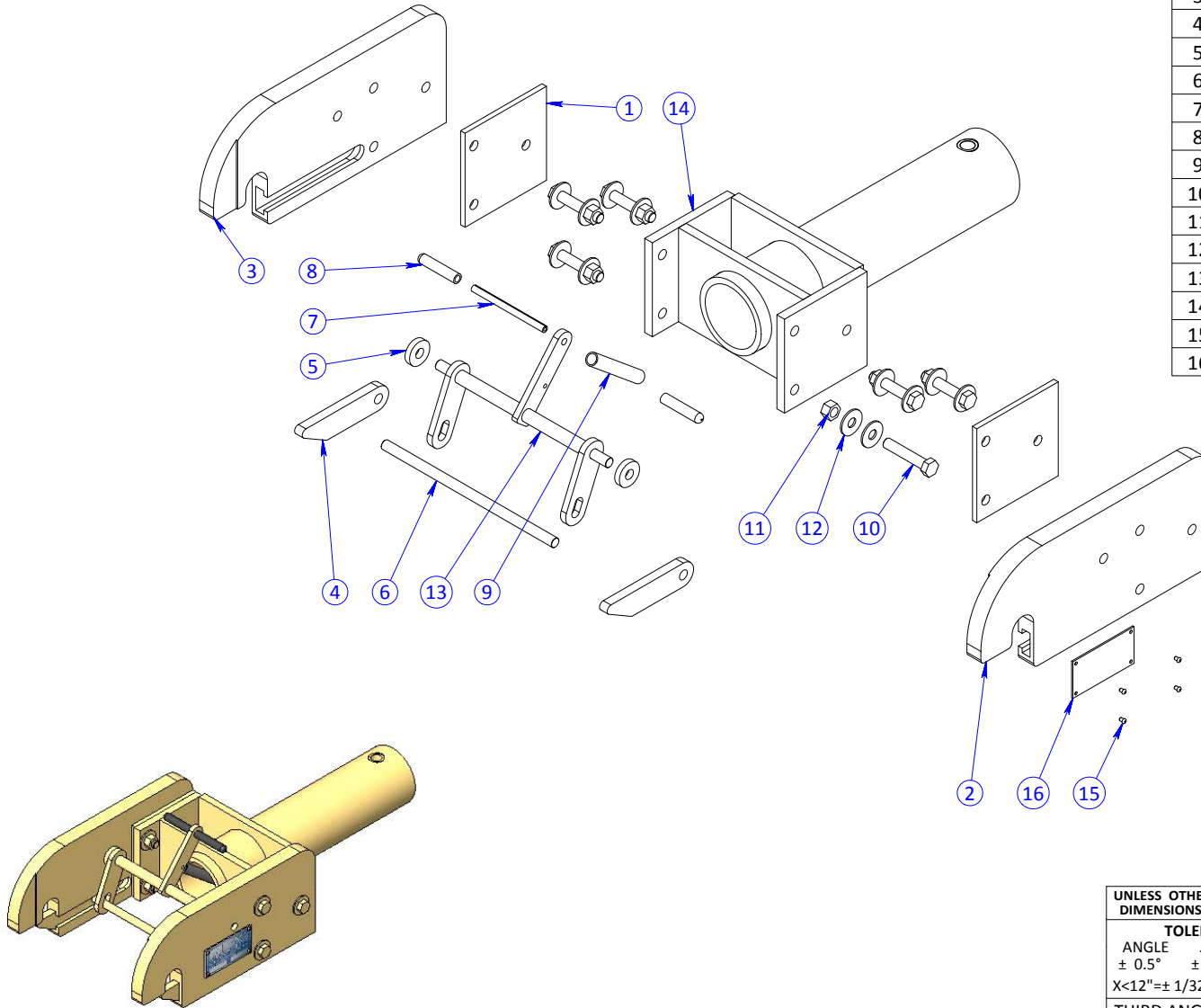
SIZE A	DWG/PART NO. TB-D8Q-HEAD	REV 0
SCALE 1:6	WEIGHT: 28.70 LBS	SHEET 1 OF 1

NOTES:

1. REMOVE SIDE PLATE SHIM (ITEM ①) TO MAKE A TB-D8Q-Q2H (FOR DASH-8/Q200 APPLICATION).

REVISIONS				
REV	DESCRIPTION	DATE	BY	CHK
1	PART NUMBER CORRECTION	2/6/2013	BJE	PS
2	UPDATE DRAWING	6/28/2013	BJE	VTM

ITEM	QTY.	PART NUMBER	DESCRIPTION
1	2	TB-D8Q-1000	SIDE PLATE SHIM
2	1	TB-D8Q-1001	SIDE PLATE RIGHT
3	1	TB-D8Q-1002	SIDE PLATE LEFT
4	2	TB-D8Q-1005	SLIDE KEEPER BARS
5	2	TB-D8Q-1012	WASHER SPACER
6	1	TB-D8Q-1006	KEEPER ENGAGING SHAFT
7	1	TB-D8Q-2000	HANDLE PIN ON LEVER ASSY
8	2	TB-D8Q-2001	HANDLE PIN COVER ON LEVER ASSY
9	1	TB-D8Q-2002	RETURN SPRING
10	6	TB-D8Q-2003	BOLT
11	6	TB-D8Q-2004	NYLOCK NUT
12	12	TB-D8Q-2005	WASHER
13	1	TB-D8Q-3000	LEVER ASSY
14	1	TB-D8Q-3001	MAIN BODY ASSY
15	4	TB-8849-14	DRIVE RIVET
16	1	TB-TAG-METAL	HALL INDUSTRIES TAG



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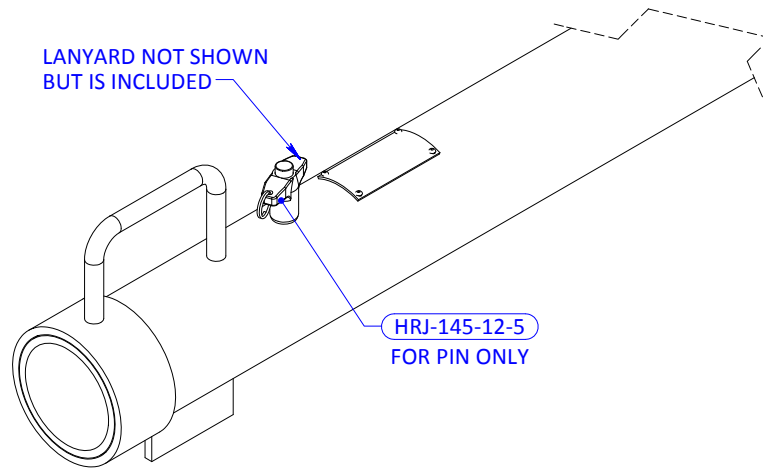
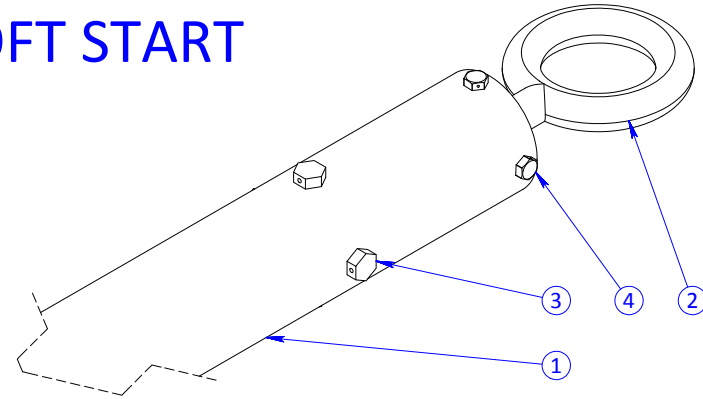
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		hi 514 Mecklem In Ellwood City, PA 16117 Hall Industries, Inc.	
TOLERANCES ANGLE .XX .XXX ± 0.5° ± .01 ± .005 X<12"=± 1/32" X>12"=±1/16"		PROJECT	DASH-8/Q SERIES TOWBAR
THIRD ANGLE PROJECTION		FILE NAME	TB-D8Q-Q4H TOWBAR HEAD ASSEMBLY
CHECK VTM	DATE 1/20/2011	DESCRIPTION	TOWBAR HEAD ASSEMBLY
DRAWN BJE	DATE 1/20/2011	SIZE	DWG/PART NO.
		A	TB-D8Q-Q4H
		SCALE 1:6	WEIGHT: 39.51 LBS
		SHEET 1 OF 1	

NOTES:

1. ANTI-SIEZE ALL THREADS & WIRE TIE BOLTS.

REVISIONS				
REV	DESCRIPTION	DATE	BY	CHK

STANDARD SOFT START



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	TB-D8Q-TUBE	3.5" TUBE WITH TAG AND DECAL
2	1	TB-D8Q-SS	SOFT START TOW EYE ASSY
3	4	H508C0032ZP0018	DRILLED HEAD BOLT
4	4	TB-SS3.5-11	HH BOLT 3/8"-16 x 3/4" LG ZP GR5 DRILLED HEAD

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

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

PROJECT AV
FILE NAME TB-D8Q-TE TUBE AND EYE
DESCRIPTION TUBE AND EYE

SIZE DWG/PART NO. REV
A TB-D8Q-TE 0
SCALE 1:5 WEIGHT: 106.81 LBS SHEET 1 OF 1

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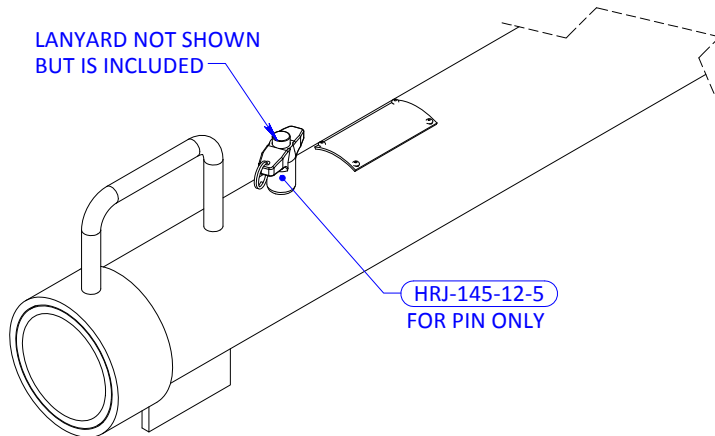
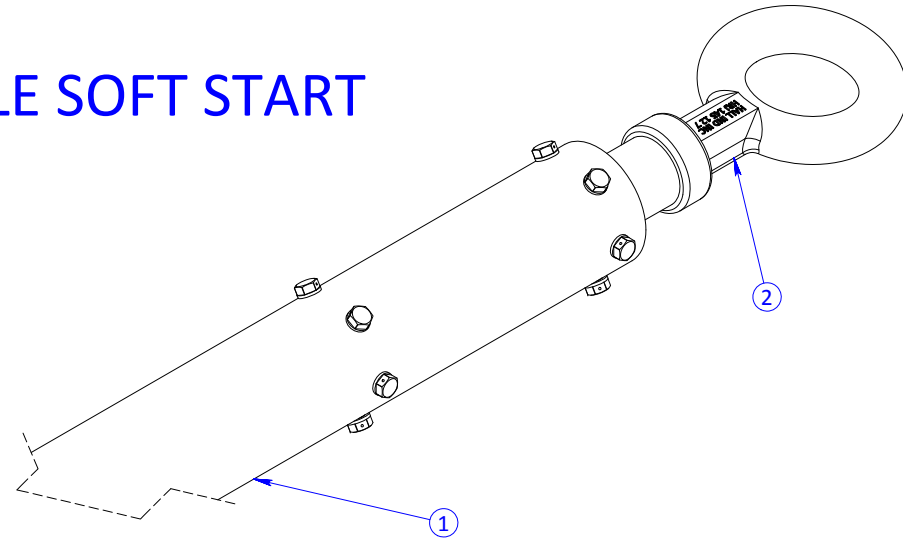
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NOTES:

1. ANTI-SIEZE ALL THREADS & WIRE TIE BOLTS.

REVISIONS				
REV	DESCRIPTION	DATE	BY	CHK

REPAIRABLE SOFT START



ITEM	QTY.	PART NUMBER	DESCRIPTION
1	1	TB-D8Q-TUBE-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	DATE
VTM	6/29/2013
DRAWN	DATE
BJE	6/29/2013

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

PROJECT	AV	SIZE	DWG/PART NO.	REV
FILE NAME	TB-D8Q-TE-SS TUBE AND EYE	A	TB-D8Q-TE-SS	0
DESCRIPTION	TUBE AND EYE	SCALE 1:5	WEIGHT: 113.28 LBS	SHEET 1 OF 1

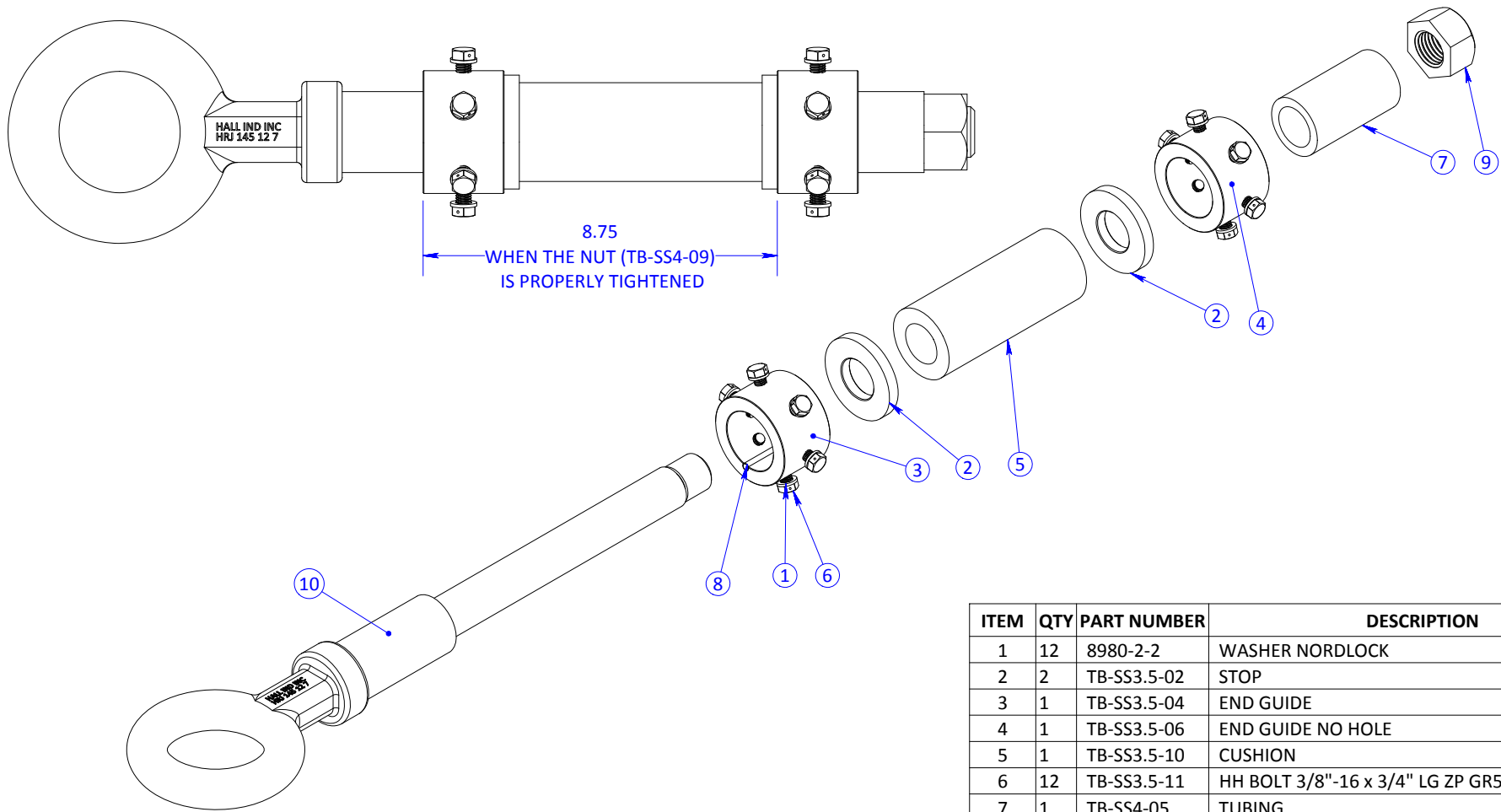
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NOTES:

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	DATE
VTM	6/29/2013
DRAWN	DATE
BJE	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

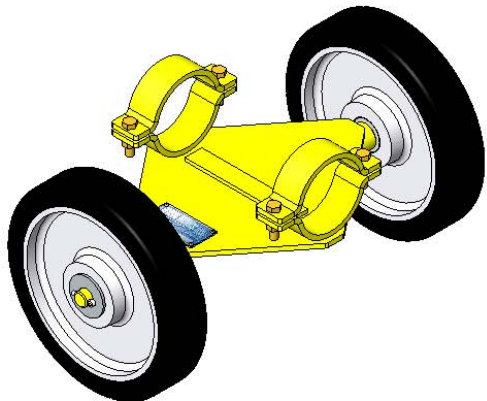
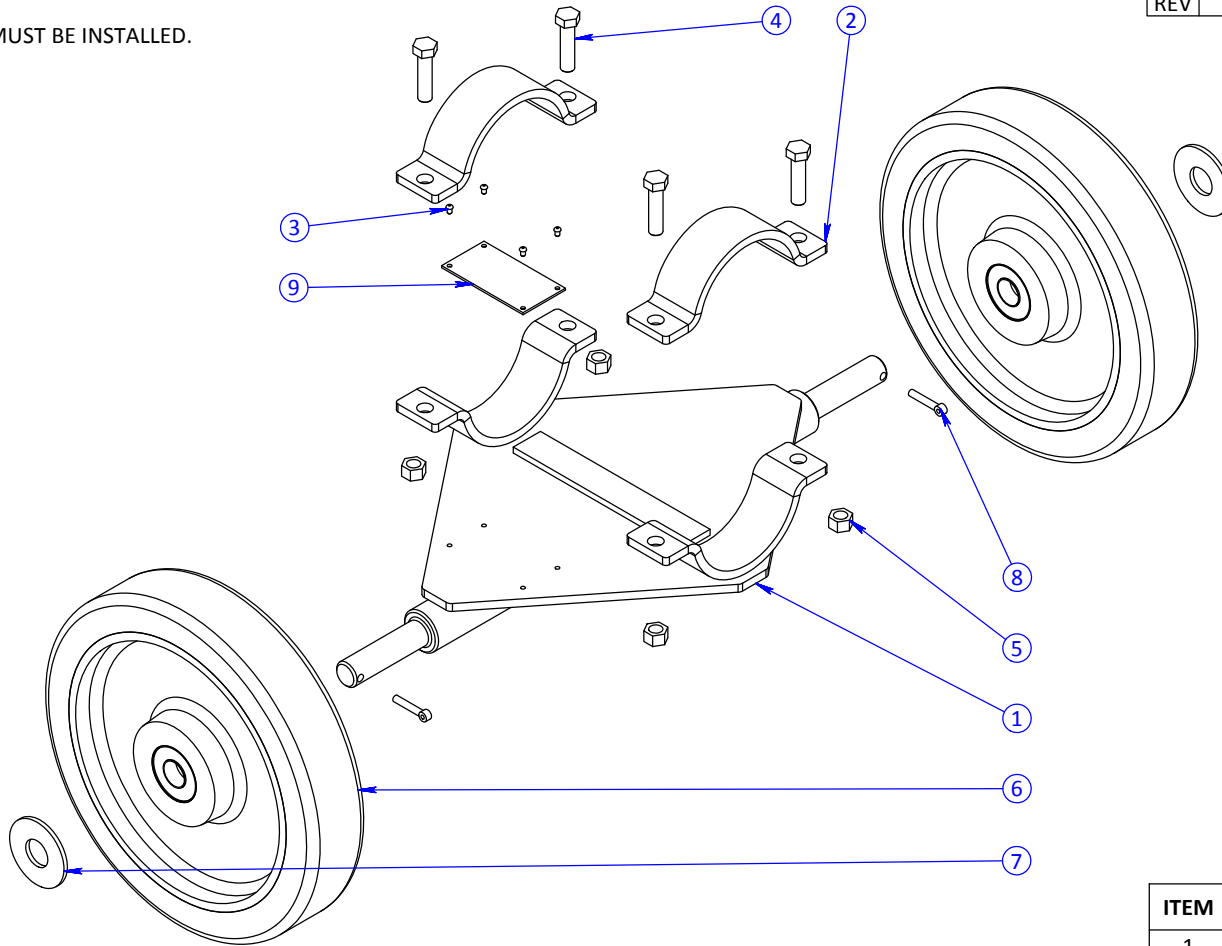
SIZE	DWG/PART NO.	REV
A	TB-SS3.5-D8Q	0
SCALE 1:5	WEIGHT: 24.17 LBS	SHEET 1 OF 1

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NOTES:

1. TAGS MUST BE INSTALLED.



REVISIONS				
REV	DESCRIPTION	DATE	BY	CHK

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	ATR-400-1	WHEEL CARRIAGE
2	2	HRJ-145-12-3	CLAMP
3	4	TB-8849-14	DRIVE RIVET
4	4	TB-8898-5	CLAMP BOLT
5	4	TB-8898-6	CLAMP NUT
6	2	TB-8898-7	WHEEL
7	2	TB-8898-8	WASHER
8	2	TB-8898-9	PIN COTTER
9	1	TB-TAG-METAL	HALL INDUSTRIES TAG

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES

TOLERANCES

ANGLE	.XX	.XXX
± 0.5°	± .01	± .005

THIRD ANGLE PROJECTION

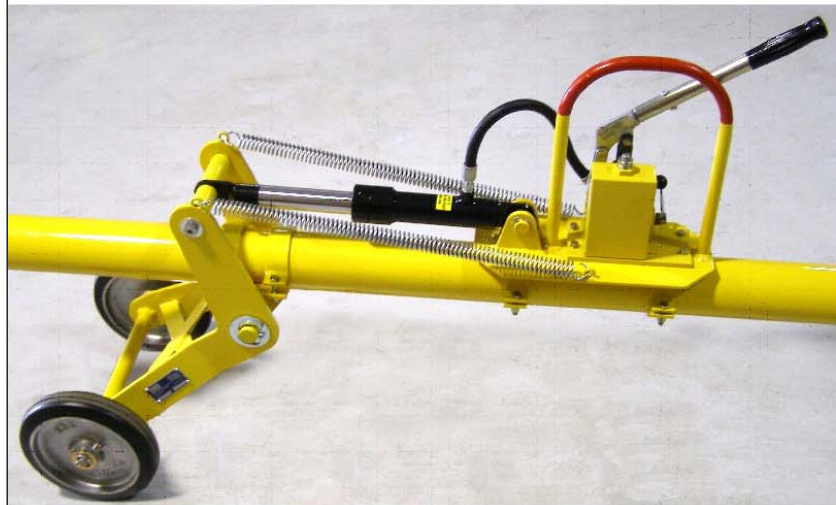
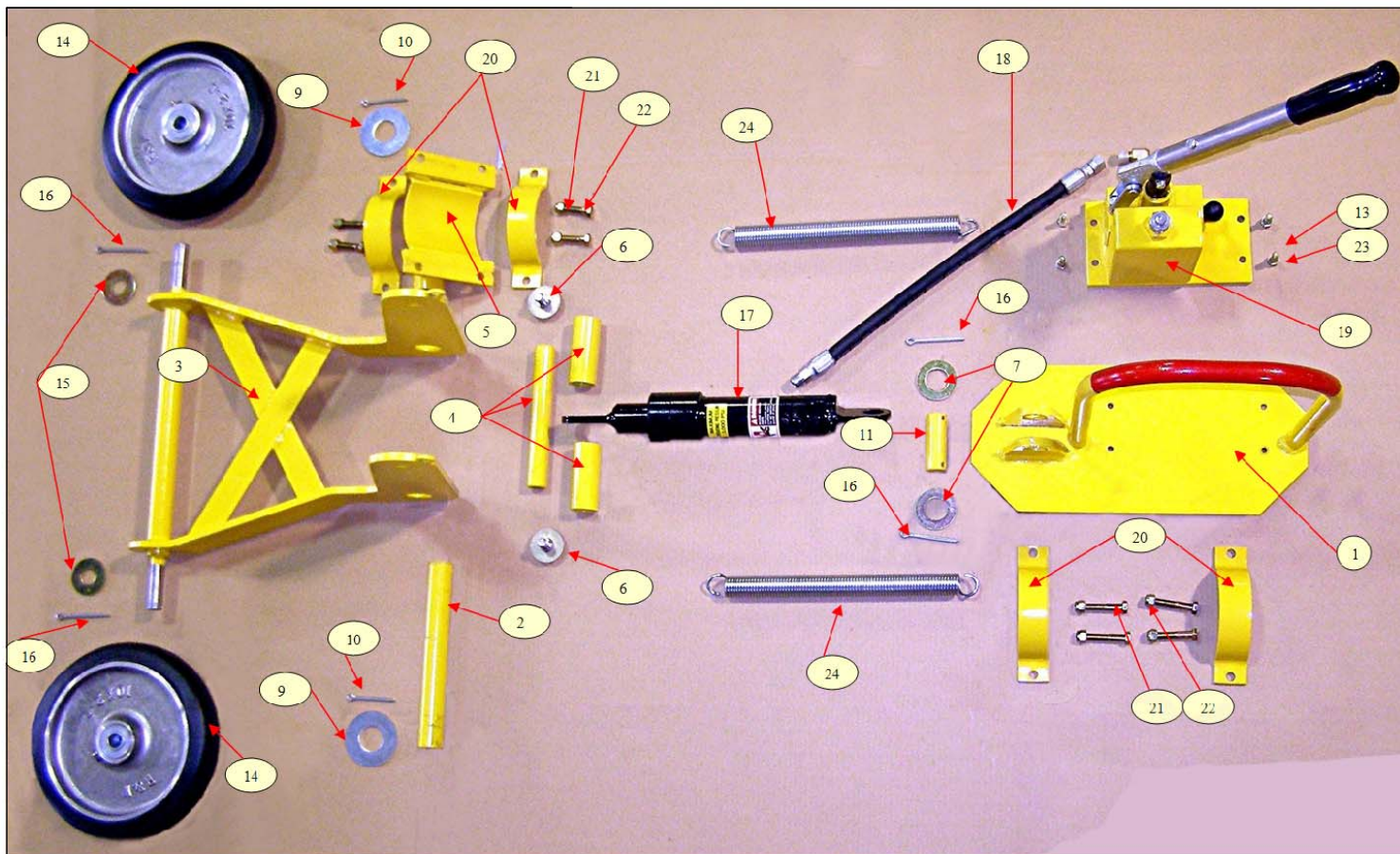
PROJECT ID: AV1000

CHECK DC	DATE 1/20/2011
DRAWN BJE	DATE 1/20/2011

514 Mecklem In Ellwood City, PA 16117	
Hall Industries, Inc.	
PROJECT	AV
FILE NAME	ATR-400 FIXED WHEEL CARRIAGE
DESCRIPTION	FIXED WHEEL CARRIAGE
SIZE DWG/PART NO.	A ATR-400
SCALE 1:5	WEIGHT: 28.44 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	DATE	
DC	11/20/2010	
DRAWN	DATE	
BJE	11/20/2010	

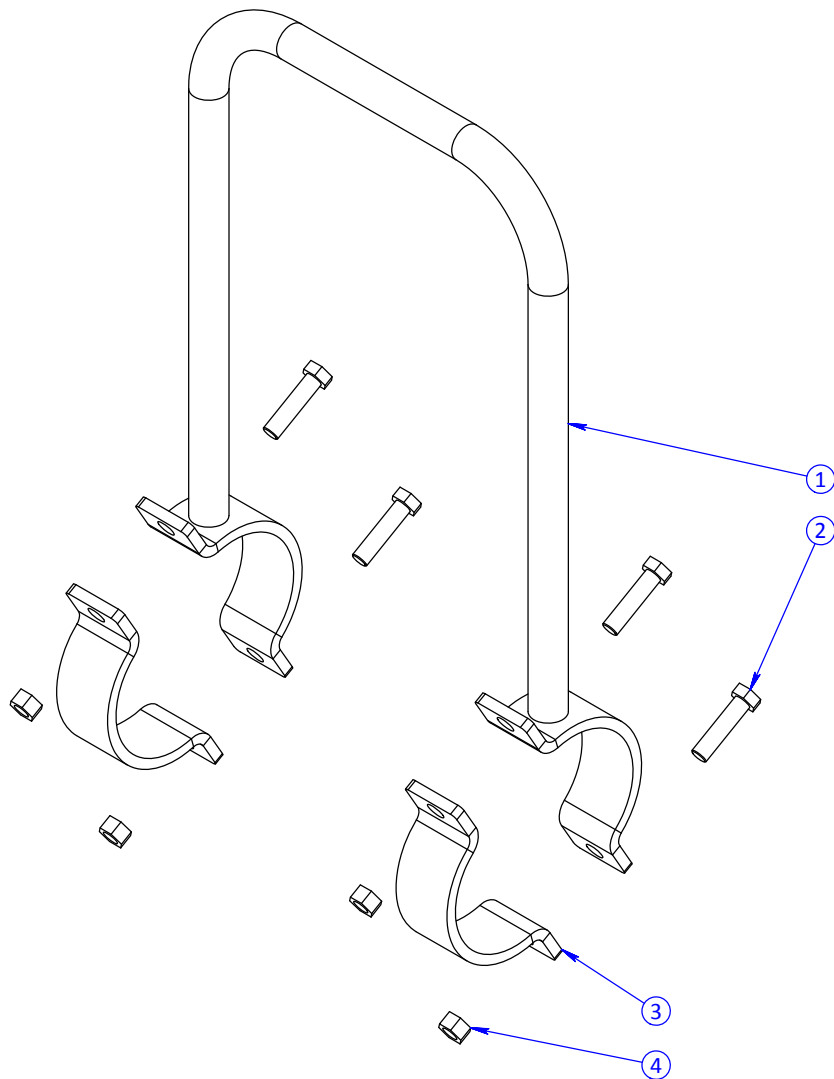
hi 514 Mecklem In Ellwood City, PA 16117
Hall Industries, Inc.

PROJECT			
FILE NAME	REG-LIFT REGIONAL TOWBAR LIFT		
DESCRIPTION	REGIONAL TOWBAR LIFT		
SIZE	DWG/PART NO.	REV	
A	REG-LIFT	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

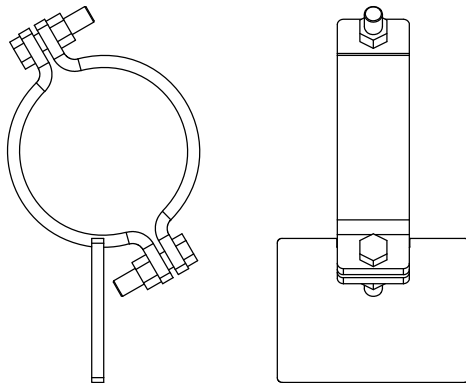
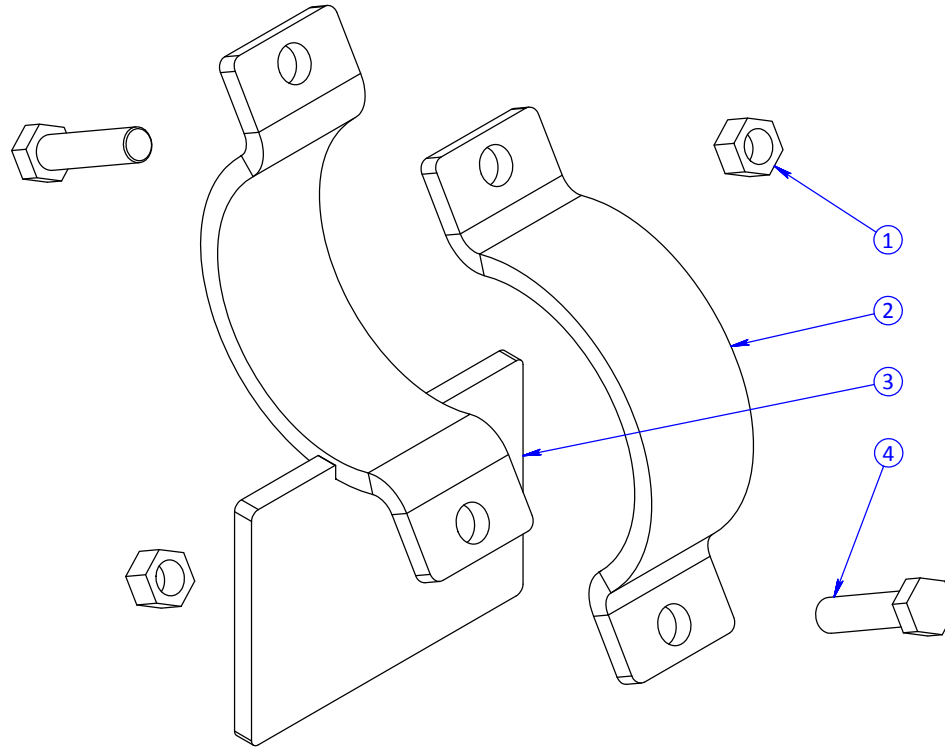
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		514 Mecklem In Ellwood City, PA 16117	
TOLERANCES		hi Hall Industries, Inc.	
ANGLE	.XX .XXX	PROJECT	AV
± 0.5°	± .01 ± .005	FILE NAME	HRJ-145-12-2ASY HANDLE ASSEMBLY
THIRD ANGLE PROJECTION		DESCRIPTION	HANDLE ASSEMBLY
PROJECT ID	AV1000	SIZE	DWG/PART 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

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

CHECK	DATE
BJE	6/27/2012
DRAWN	DATE
BJE	6/27/2012

PROJECT	AV
FILE NAME	AV1009-0002 TOWBAR DRAG PLATE 3.5 INCH BOLTED
DESCRIPTION	TOWBAR DRAG PLATE 3.5 INCH BOLTED
SIZE	DWG/PART NO.
A	AV1009-0002
SCALE 1:2	WEIGHT: 2.57 LBS
SHEET 1 OF 1	

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AIRCRAFT TOWBARS - SOFT START

"The GSE Problem Solvers"

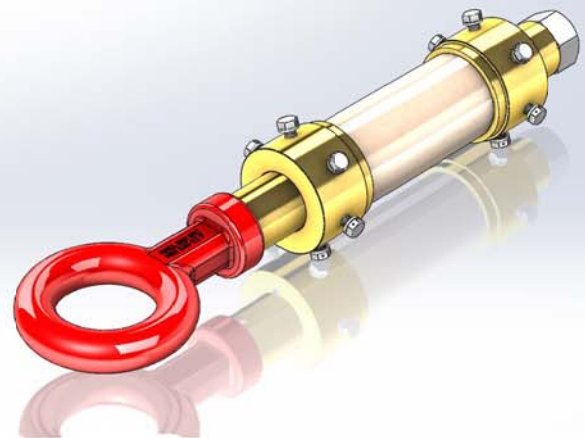
BENEFITS

- 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, call us at 724.824.7100, or email us at 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".