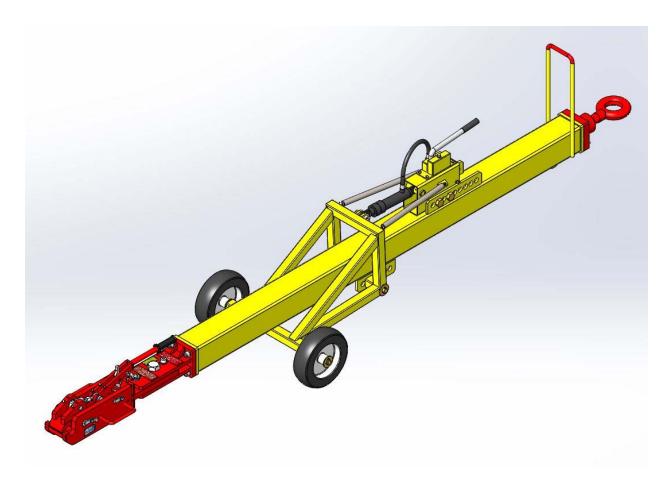


## 757 TOWBAR

Towbar Specifications, Usage, Preventive Maintenance, and Parts

### MANUAL



For ordering New Towbars or Replacement Parts Please Contact:

Phone @ 724-752-2000 Fax @ 724-758-1558

Email @ service@hallindustries.com View Manuals Online @ hallindustries.com/manuals

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

November 10, 2014 Revision 00



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#### 1. Specifications

#### 1.1. Physical Specifications

Part Number	Description	Weight	Length
TB-8714-757 TB-8714-757-L	Complete Towbar Complete Towbar	540 lbs 600 lbs	13'-3"x33"x33" 17'-3"x33"x33"
TB-8649	Complete Adapter & Head	200 lbs	35-7/8"

#### 1.2. Shear Pin Info

Shear Pin TB-8849-11 ~757 Shear Value: 28,000 lbs

NOTE: Shear pins are produced in controlled batches; only use Hall Industries replacement shear pins. Shear pin testing and manufacturing records are permanently kept on file for reference.

#### 1.3. 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

# ALWAYS FOLLOW AIRCRAFT MANUFACTURERS PROCEDURES FOR PUSHBACK AND TOWING OPERATIONS

#### 2.1. Responsibility:

- 2.1.1. Operator of the tug must understand that it is his/her responsibility to move the aircraft safely in accordance with the aircraft manufacturer's operational procedures.
- 2.1.2. Employer of tug operator is responsible for providing sufficient operator training to ensure safe operation of towbar for pushback and towing operations

NOTE: No speeding during push and pull.

The following are recommendations.

#### 2.2. Inspect the Towbar prior to each use:

- 2.2.1. Check that you have the correct towbar.
- 2.2.2. Visually inspect towbar tube for cracks at welded joints.
- 2.2.3. Visually inspect lunette eye assembly for damage and loose or missing hardware.
- 2.2.4. Visually inspect wheel carriage for damage and loose or missing components.
- 2.2.5. Visually inspect adapter to tube flange bolts.
- 2.2.6. Check head latch mechanism for proper travel and locking action in both forward and back positions. Inspect for damage and loose or missing components.
- 2.2.7. Visually inspect shear pin for damage and that it is the correct shear pin.
- 2.2.8. Visually inspect that Pivot and Capture bolt nuts are present on underside of adapter.
- 2.2.9. Check the tires have the correct air pressure.
- 2.2.10. Inspect the hydraulic system for leaks and repair as needed.
- 2.2.11. If any bolts appear to be loose, read the preventive maintenance section and tighten or adjust as necessary.

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

#### 2.3. Use the correct size Aircraft Tow Tractor:

An important consideration for safe movement of an aircraft is using the correct category of tug for pushback and towing operations. Incidents are more likely to occur when using a tug that is either too large or too small for a particular aircraft. Consult the Aircraft Manufacturers Ground



Towing Requirements chart to obtain tug draw bar pull and total wheel traction requirements based on aircraft and environmental conditions.

Category	Aircraft Maximum Takeoff Weight	Tug Draw Bar Pull	
1	Up to 50,000 kg (110,000 lbs.)	14,000 kg (8,800 lbs.)	
2	Up to 150,000 kg (330,690 lbs.)	212,000 kg (26,455 lbs.)	
3	Up to 260,000 kg (573,196 lbs.)	318,000 kg (39,683 lbs.)	
4 More than 260,000 kg (573,196 lbs.) 440,000 kg (88,184 lbs.)			
Source: IATA "Airport Handling Ground Support Equipment" Specification AHM 955: "Functional Specification for an Aircraft Tractor"			

- 2.4. Attach towbar to aircraft first, then to tug.
- 2.5. Towbar should be horizontal to ground or up to 2" (5cm) higher at the aircraft end.
- 2.6. Do not exceed a 90 degree angle between towbar and pushback tractor. Damage to towbar or aircraft can occur.
- 2.7. Always start a pushback with the tug in-line with the towbar.
- 2.8. Hooking Up to the Plane ~ Checks:
  - 2.8.1. You are using the proper tug and towbar for the size aircraft being moved.
  - 2.8.2. The eye end of the towbar must move freely on the tug hitch.

#### 2.9. Attach the Towbar to the Aircraft

- 2.9.1.Line up towbar to nose pin of aircraft and slide the head under the nose pin.
- 2.9.2.Lift the head and clamp the jaw on the nose-pin of the plane. Due to the over-center arrangement of the clamping mechanism, the jaw should remain closed until the handle is released by the operator. As an added safety precaution, the clamping handle is secured by a spring-loaded latch. The head can only be disengaged through simultaneous operation of the latch and handle.
- 2.9.3. Make sure that the spring loaded latch is engaged and is keeping the handle in the down / locked position.

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

- 2.10.1. Close the valve on the tow bar's hydraulic pump. Pump the handle to raise the tow eye to the level of the push back's hitch.
- 2.10.2. Position the push back tractor and install the hitch pin.



- 2.10.3. Open the valve on the hydraulic pump; springs will retract the wheel carriage tires off the ground.
- 2.10.4. Tow or push the aircraft only if the tow bar tires are not touching the ground.

#### 2.11. Push the Aircraft

# ALWAYS FOLLOW AIRCRAFT MANUFACTURERS PROCEDURES FOR PUSHBACK AND TOWING OPERATIONS

NOTE: If at any time the shear pin yields or breaks, carefully bring the aircraft to a stop. Follow aircraft manufacturers and/or airline nose landing gear inspection procedures prior to installing a new shear pin to continue the operation. Use only Hall Industries shear pin (see specifications section or attachments).

#### The following information is provided as general guidance only:

- 2.11.1. Prior to moving, make sure that the hydraulic steering bypass pin is engaged (if applicable).
- 2.11.2. Check that all the tie downs and chocks are removed
- 2.11.3. Check that aircraft brakes are released.

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

- 2.11.4. Tow/Push Slow; max speed is a brisk walk (Approximately 5 MPH). This will help to minimize the chance of a jack-knife.
- 2.11.5. 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.
- 2.11.6. If you are driving make sure that you have plenty of help; "wing walkers" are helpful and may be required per airline or aircraft manufacturer procedures.
- 2.11.7. 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. Most incidents are due to operator negligence / error. Accidents can be fatal.

#### 2.12. Disconnect the Towbar from the Tug

Pump hydraulic wheel carriage down to support weight of towabar then pull hitch pin on tug and have the tug operator back up slowly.

#### 2.13. Disconnect the Towbar from the Aircraft

Release the spring-loaded latch and lift the tow bar head handle. This will release the tow bar head from the nose-pin on the aircraft. Carefully lower the tow bar to the ground using the hydraulic lift, 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.

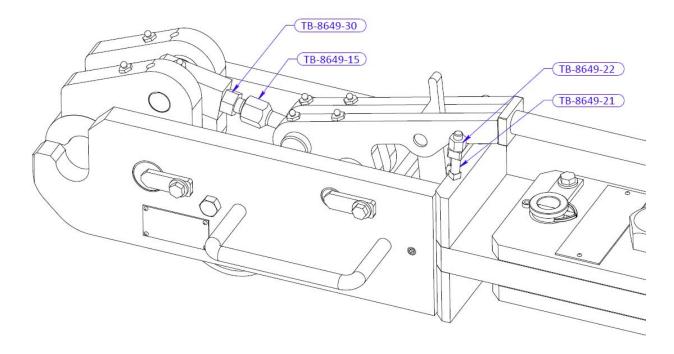
**3.1.** Check Pivot and Capture bolts (Part numbers TB-8849-3, TB-8849-7); they should be snug but not tight. They should not spin freely, but should be able to spin with the aid of a wrench. Overtightening will clamp the adapter to the head, and the shear pin will not provide adequate safety protection. With the shear bolt removed, the head must be able to slide within the adapter plates.

NOTE: Do not over-tighten adapter bolts.

- **3.2.** We recommend replacing the shear pin when doing the preventive maintenance.
- **3.3.** Check wheels and wheel carriage for bent, broken, or worn parts and security. Lubricate pivot points using Hall dry lubricant (Part number TB-LUBE). Check for proper tire pressure, 30 psi. Lubricate wheels with grease.
- **3.4.** Check head assembly for operation of lock mechanism; look for bending, security, etc. Lubricate pivot points using Hall dry lubricant (Part number TB-LUBE) or if joint has a fitting; grease.
- **3.5.** Inspect jaw assembly for worn, damaged, or loose parts. Replace worn or damaged items and tighten anything loose.



**3.6.** Check head jaw latch adjustment. The closing force on the handle set at the factory is 30-40#. We recommend checking this value monthly. Insert the Test Pin (Hall P/N SS-8220) in the jaws, and measure the force to close the jaws. If the force is out of the allowable range a small adjustment is necessary. Usually less than 1/8 of a turn of the turnbuckle (TB-8649-15) is sufficient to adjust the closing force (after adjustment make sure to tighten the jam nut TB-8649-30). Once the jaw is closed it should allow the Test Pin (Hall P/N SS-8220) to rotate between the closed jaws when turned by hand. The slippage can be set by altering the length of the bolts located on both sides of the handle (TB-8649-21). The adjuster bolts must then be secured by tightening the jamb nuts (TB-8649-22).



- **3.7.** Check tow eye and hardware (tug attachment) for condition and security.
- **3.8.** Check main body tube for bending or cracking.
- **3.9.** Check all welds, loose paint or rust near welds might be signs of failure.
- **3.10.** Check shear pin and for breakage and check shear pin bushings for wear and loosing.

NOTE: If bushings are to be replaced, replace them as a set. Never replace only one bushing.

- **3.11.** Clean, repaint or touch-up paint as required.
- **3.12.** Inspect tags and labels if damaged or missing replace (see the drawings in the attachment section for labels and placements).



**3.13.** 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). Check operation of lift. Fix any leaks that are present.

#### 4. Replacement Part Kits / Assemblies

Part Number	Description
<b>4.1.</b> TB-8649-0	Head Only
<b>4.2.</b> TB-8849	Adapter Only

#### 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.

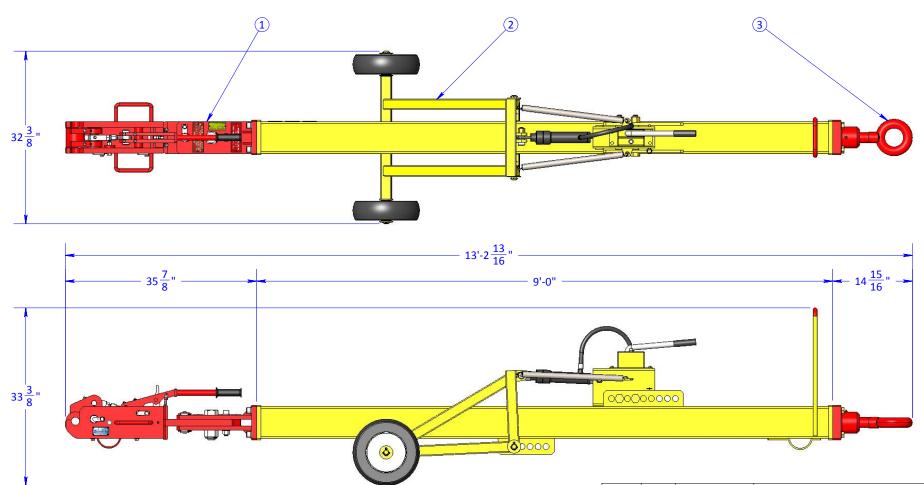
#### 6. Attachment List

<b>6.1.</b> TB-8714-757	Complete Towbar Assembly
<b>6.2.</b> TB-8649	Head and Adapter Complete
<b>6.3.</b> TB-8714	Towbar Tube and Wheelset Complete (9' Tube)
<b>6.4.</b> TB-8714-L	Towbar Tube and Wheelset Complete Long (13' Tube)
<b>6.5.</b> TB-8714-800	Swivel Eye Complete
<b>6.6.</b> Order Form	

**6.7.** Other Products and Custom Design Services

REVISIONS
REV DESCRIPTION DATE BY CHK

- 1. FOR MORE INFORMATION SEE SUB-ASSEMBLY DRAWINGS.
- 2. TAGS MUST BE INSTALLED.
- 3. TO ORDER THIS TOWBAR WITH A LONGER TUBE ORDER PART NUMBER: TB-8714-757-L (13' TUBE VERSION)



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	TB-8649	HEAD AND ADAPTER COMPLETE
2	1	TB-8714	COMPLETE LESS HEAD
3	1	TB-8714-800	SWIVEL EYE ASSEMBLY

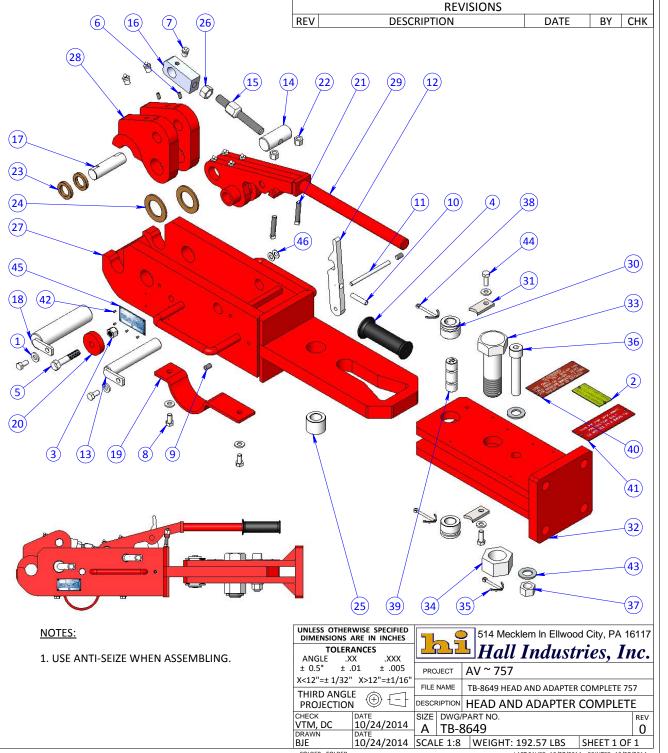
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES 514 Mecklem In Ellwood City, PA 16117 Hall Industries, Inc. **TOLERANCES** ANGLE .XX  $\pm$  0.5°  $\pm$  .01  $\pm$  .005 AV ~ 757 PROJECT X<12"=± 1/32" X>12"=±1/16' TB-8714-757 TOWBAR COMPLETE FILE NAME THIRD ANGLE DESCRIPTION TOWBAR COMPLETE PROJECTION SIZE DWG/PART NO. CHECK REV VTM, DC 10/28/2014 A TB-8714-757 0 DRAWN 10/28/2014 | SCALE 1:18 | WEIGHT: 540.58 LBS | SHEET 1 OF 1 BJE

FOLDER - AV1103

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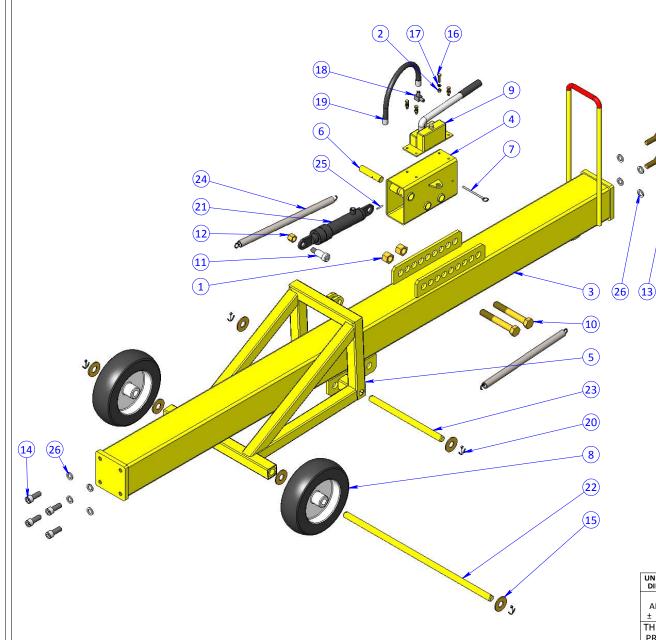
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ITEM	QTY	PART NUMBER	DESCRIPTION
1	6	8980-2-2	LOCK WASHER 3/8"
2	1	TB-8312-BA-TAG	YELLOW TORQUE TAG
3	1	TB-8312-H7	NYLOC NUT 1/2"-13
4	1	TB-8312-HA-GRP	GRIP, BLACK
5	1	TB-8312-J4	HH BOLT 1/2"-13 x 2.5" LG
6	2	TB-8649-1	SET SCREW 1/4"-20 x 1/2" LG
7	7	TB-8649-2	GREASE FITTING
8	4	TB-8649-3	HHCS 3/8"-16 x 3/4" LG ZP GR5
9	2	TB-8649-5	SET SCREW 3/8"-16 x 5/8" LG
10	1	TB-8649-6	COMPRESSION SPRING
11	1	TB-8649-10	LATCH SHAFT
12	1	TB-8649-11	LATCH
13	1	TB-8649-13	CLAMP SHAFT WITH KEEPER PLATE
14	1	TB-8649-14	CLAMP ARM THREADED SHAFT
15	1	TB-8649-15	ADJUSTABLE CONNECTING ROD
16	1	TB-8649-16	CLAMP CLEVIS
17	1	TB-8649-17	CLAMP CLEVIS SHAFT
18	1	TB-8649-18	CLAMP SHAFT WITH KEEPER PLATE
19	1	TB-8649-19	FOOT PLATE
20	1	TB-8649-20	JAW STOP
21	2	TB-8649-21	SET SCREW SQ HEAD 3/8"-16 x 2" SS
22	2	TB-8649-22	NYLOC NUT 3/8"-16 SS
23	2	TB-8649-23	THRUST BEARING
24	2	TB-8649-24	THRUST BEARING
25	1	TB-8649-29	SHEAR PIN BUSHING
26	1	TB-8649-30	NUT 5/8"-11 ZP GR8
27	1	TB-8649-100	MAIN BODY 757 HEAD WELDMENT
28	1	TB-8649-200	CLAMP
29	1	TB-8649-300	ARM ASSEMBLY
30	2	TB-8849-1	SHEAR PIN BUSHING ADAPTER
31	2	TB-8849-1KP	ADAPTER KEEPER TAB
32	1	TB-8849-2	ADAPTER WELDMENT
33	1	TB-8849-3	HEAD ADAPTER BOLT
34	1	TB-8849-4	NUT 1.5"-6 ZP GR8
35	1	TB-8849-6	COTTER PIN
36	1	TB-8849-7	SHCS; 3/4"-16 x 4" LG ZP
37	1	TB-8849-8	HEX NUT 3/4"-16 GR8 ZP
38	2	TB-8849-10	COTTER PIN
39	1	TB-8849-11	SHEAR PIN
40	1	TB-8849-12	PLAQUE SHEAR PIN 757
41	1	TB-8849-13	PLAQUE JACK KNIFE
42	10	TB-8849-14	DRIVE RIVET
	2	TB-8898-8	WASHER
43			
43 44	2	TB-9205-10A	HHCS 3/8"-16 x 1" LG ZP GR5
	2	TB-9205-10A TB-TAG-METAL	HALL INDUSTRIES TAG



REVISIONS
REV DESCRIPTION DATE BY CHK

1. LANYARD FOR LIFT BOX PIN NOT SHOWN.



		I	
ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	TB-8714-21-N	NYLOC NUT 1"-8
2	4	TB-8714-25-N	NYLOC NUT 5/16"-18
3	1	TB-8714-100	MAIN TOWBAR WELDMENT
4	1	TB-8714-400	HYD PLATFORM AND BOX
5	1	TB-8714-200	WHEEL FRAME WELDMENT
6	1	TB-8714-400-A3	PIN
7	1	TB-8714-400-C	LIFT BOX PIN
8	2	TB-8714-40	WHEEL
9	1	TB-8714-24	HYD HAND PUMP
10	2	TB-8714-21	HH BOLT 1"-8 x 7"
11	1	TB-8714-29	SHOULDER BOLT 1" x 1.75"
12	1	TB-8714-31	NYLOC NUT 3/4"-10
13	4	TB-8714-11	HH BOLT 3/4"-10 x 2.5"
14	4	TB-8714-12	SHCS 3/4"-10 x 2"
15	6	TB-8714-35	FLAT WASHER 1"
16	4	TB-8714-25	HH BOLT 5/16"-18 x 1.25"
17	4	TB-8714-2	LOCK WASHER 5/16"
18	1	TB-8714-43	ELBOW HYD
19	1	TB-8714-23	HOSE HYD
20	4	TB-8714-28	COTTER PIN
21	1	TB-8714-20	LIFT CYLINDER
22	1	TB-8714-33	LONG AXLE
23	1	TB-8714-32	LOWER SHAFT
24	2	TB-8714-10	PLATED SPRING
25	1	P44320048BX0000	SPRING PIN
26	8	NL 3/4"	LOCK WASHER

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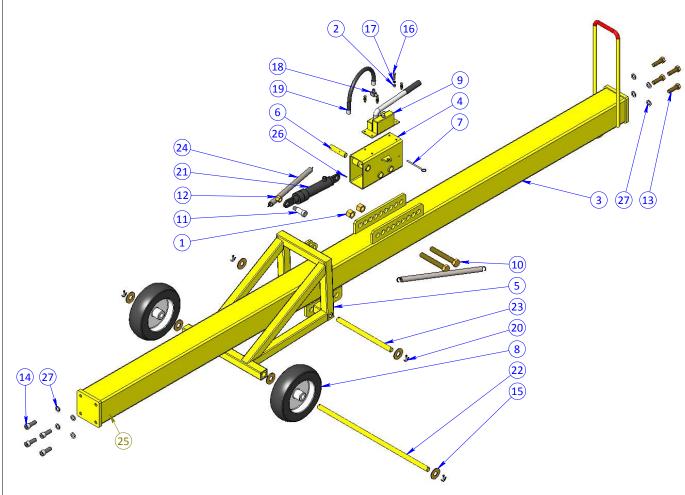
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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES 514 Mecklem In Ellwood City, PA 16117 Hall Industries, Inc. TOLERANCES ANGLE .XX .XXX ± 0.5° ± .01 ± .005 PROJECT ΑV THIRD ANGLE FILE NAME TB-8714 TOWBAR COMPLETE LESS HEAD PROJECTION PROJECT ID AV1103 CHECK DC DESCRIPTION COMPLETE LESS HEAD SIZE DWG/PART NO. REV 8/31/2012 A TB-8714 0 DRAWN 8/31/2012 SCALE 1:15 WEIGHT: 306.35 LBS SHEET 1 OF 1

**REVISIONS** REV DESCRIPTION DATE

BY CHK

1. LANYARD FOR LIFT BOX PIN NOT SHOWN.



		I	
ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	TB-8714-21-N	NYLOC NUT 1"-8
2	4	TB-8714-25-N	NYLOC NUT 5/16"-18
3	1	TB-8714-100-L	MAIN TOWBAR WELDMENT
4	1	TB-8714-400-A	HYD PLATFORM AND BOX
5	1	TB-8714-200	WHEEL FRAME WELDMENT
6	1	TB-8714-400-A3	PIN
7	1	TB-8714-400-C	LIFT BOX PIN
8	2	TB-8714-40	WHEEL
9	1	TB-8714-24	HYD HAND PUMP
10	2	TB-8714-21	HH BOLT 1"-8 x 7"
11	1	TB-8714-29	SHOULDER BOLT 1" x 1.75"
12	1	TB-8714-31	NYLOC NUT 3/4"-10
13	4	TB-8714-11	HH BOLT 3/4"-10 x 2.5"
14	4	TB-8714-12	SHCS 3/4"-10 x 2"
15	6	TB-8714-35	FLAT WASHER 1"
16	4	TB-8714-25	HH BOLT 5/16"-18 x 1.25"
17	4	TB-8714-2	LOCK WASHER 5/16"
18	1	TB-8714-43	ELBOW HYD
19	1	TB-8714-23	HOSE HYD
20	4	TB-8714-28	COTTER PIN
21	1	TB-8714-20	LIFT CYLINDER
22	1	TB-8714-33	LONG AXLE
23	1	TB-8714-32	LOWER SHAFT
24	2	TB-8714-10	PLATED SPRING
25	2	TB-787-STICKER-R	STICKER RED
26	1	P44320048BX0000	SPRING PIN
27	8	NL 3/4"	LOCK WASHER

	ANGLE .XX .XXX				≝Hall Industries, In	c.
	± 0.5° ± .		PRO	JECT	AV	
	THIRD ANGL PROJECTION	4(+)++-+	FILE I	NAME	TB-8714-L TOWBAR COMPLETE LESS HEAD LONG ~ NO STICE	KER
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8/31/2012

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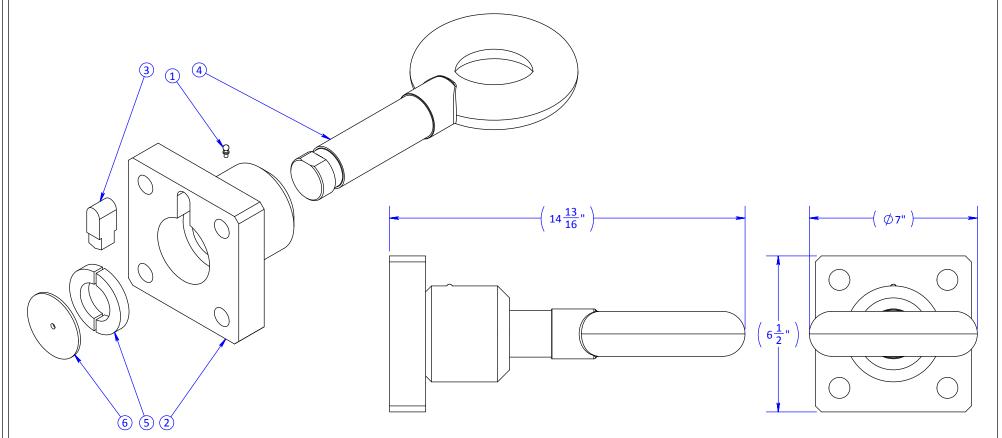
SCALE 1:20 WEIGHT: 363.96 LBS SHEET 1 OF 1 LAST SAVED: 10/28/2014 PRINTED: 10/28/2014

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514 Mecklem In Ellwood City, PA 16117

- USE NEVERSIEZE WHEN PUTTING ASSEMBLY TOGETHER. 1.
- 2. USE TAPE TO HOLD BRONZE SPACER ON THE END OF THE ASSEMBLY.

REVISIONS						
REV	DESCRIPTION	DATE	BY	CHK		
0	ORIGINAL	8/9/1996	KK	-		
1	UPDATE	5/3/2011	BJE	DC		



ITEN	QTY.	PART NUMBER	DESCRIPTION
1	1	TB-8649-2	GREASE FITTING
2	1	TB-8714-800-WLD	HUB WELDMENT
3	1	TB-8714-802K	SWIVEL KEY
4	1	TB-8714-810	EYE SWIVEL
5	2	TB-8714-811	SPLIT COLLAR RETAINING RING
6	1	TB-8714-812	BRONZE THRUST DISK

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TOLERANCES ANGLE .XX .XXX											In	ıc.		
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THIRD ANGLE PROJECTION			FILE	NAME	TB-8714-800 SWIVEL EYE ASSEMBLY									
PROJECT ID AV1103				DESC	RIPTION	S۷	VIVI	EL E	YE A	SSEM	BL	Υ		
CHECK	DA			SIZE	DWG/F	ART	NO.							REV
DC	5/	3/2011		Α	A TB-8714-800						1			
BJE		3/2011		SCA	LE 1:4	V	NEIG	GHT:	43.04	LBS		SHEET 1	OF.	1

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#### Hall Industries Equipment Division ~ AIRLINE ORDERS

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

ORDER DATE:	TAKEN BY:	TIME: _	AIRLINE	AIRLINE CODE: FAX:				
PERSON CALLING:		PHONE#:		FAX:				
E-MAIL ADDRESS:		CUSTOMER P.	O.#					
MASTER CARD#								
EXP. DATE:	_ CVC#							
SHIP DATE:	HOW TO	O SHIP: UPS: GRD	RED	OTHER				
SHIP DATE:O/N	O/N P1	OTHER	Acct. #					
TRUCKING COMPANY:								
HUB :		EMPLOYEE #						
HUB: EMPLOYEE # BILLING ADDRESS: SHIP TO ADDRESS:								
2 10 /18 8 /12 00								
PART NUMBER:	DESC	RIPTION:		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)

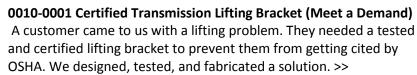
<< This project involved designing and manufacturing a custom towbar to be used in the Nuclear Industry. This towbar shipped complete with custom shear pins calibrated to the application.



### 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.>>









<<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".