

HALL INDUSTRIES, Inc.

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ATR Tow Bar Equipment Manual



Use This Manual for

- 1. Operating Procedures**
- 2. Maintenance Procedures**
- 3. Tow Bar and Parts Ordering**

For ordering new Tow Bars or Renewable Parts

Please contact:

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“The Problem Solvers”

ATR TOW BAR EQUIPMENT MANUAL

Section I Description – Dimensions & Weights

Section II Operating Procedures

Section III Maintenance Procedures

Section IV Renewal Parts

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Section I
Description – Dimensions & Weights
ATR Aircraft Tow Bar Assembly
ATR-1000

Weight:

Push bar body	133#
Head	33#
Tow Bar, Complete	166#

Length:

Body with Tow Eye	123”
Head	12”
Total Length	135”

Width:

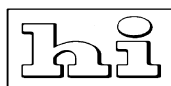
Wheel Carriage	20”
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Height:

Centerline Body (level position):	7 13/16”
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Connection:

Pin Diameter:	63/64” diameter
Centerline Jaw Height (minimum):	9 11/16”
Centerline Jaw Height (maximum):	16”



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Section II- Operating Procedure

ATR Aircraft Tow Bar Assembly

ATR

A. ATTACHING TOW BAR TO AIRCRAFT

ATR aircraft can be towed forward or pushed aft on hard surfaces using the ATR-1000 Tow Bar. The tow bar attaches to the nose landing gear by positioning the open top jaw over the horizontal connecting pin of the landing gear. To facilitate easy connection, *the tow bar must be aligned with the nose gear* (not necessarily the aircraft). Once the top jaw (both sides) has been seated onto the nose pin, the tow bar head can be clamped in place by pushing the lever handle forward, thus locking the bottom jaw onto the nose pin. Due to the over-center arrangement of the clamping mechanism, the bottom jaw will remain closed until the handle is released by the operator. As an added safety precaution, the handle should be locked in the closed position by securing the quick release pin into the lever handle retainer (item 1.19).

B. ATTACHING TOW BAR TO TRACTOR

Once the tow bar is securely attached to the nose landing gear, the tow-tractor can be moved into position along the centerline of the tow bar and front landing gear. The operator must manually lift the tow bar to engage with the tractor hitch and then install the hitch pin following tow-tractor manufacturer recommendations. Tow bar wheels should be clear of the runway surface if attachment to tractor and nose gear has been carried out properly.

C. TOWING THE AIRCRAFT

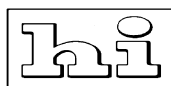
This must be done in accordance with the instructions included with the appropriate aircraft Facility and Equipment Planning Manual.

- Avoid pushing or pulling at greater than recommended angles.
- Avoid sudden starts and stops.
- Do not push or pull the aircraft without adequate tow bar wheel-to-ground clearance.

D. DISCONNECTING TOW BAR FROM AIRCRAFT

Be sure the tow bar is aligned with the nose gear (not necessarily the aircraft) before attempting to disconnect. Remove the quick release pin from the lever handle retainer. The lever handle can now be disengaged (pulled back), unlocking the bottom jaw from the nose gear pin. The tow bar is most efficiently removed from the aircraft by first disconnecting the unit from the tow tractor. Once disconnected, leverage can be obtained by pushing down on the tow bar handle (using the wheels as a fulcrum) to lift the head off the nose gear pin. *To avoid back injury, do not lift the head itself off the pin.* Once the tow bar is disconnected from the aircraft, re-attach unit to the tractor (refer to paragraph B) and carefully move the tow bar and tow tractor clear of the aircraft.

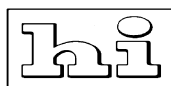
If the tow bar head is difficult to remove, check alignment with nose gear. Due to the tight tolerance between the jaws and the nose gear pin, proper alignment is critical. If adjusting alignment does not solve the problem, remove the quick release pin (item 2.2) to disengage the head from the push bar tube to aid in removal.



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Section III- Maintenance Procedures
ATR Aircraft Tow Bar Assembly
ATR

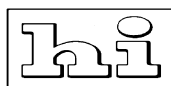
- A. Check wheels and axle for bent, broken or worn parts and for security. Lubricate axles with a general purpose multi-lube grease.
- B. Check head assembly for operation of lever handle, jaw closure, spring wear and overall free movement of the complete assembly.
- Verify the lever handle retainer is installed properly and the quick release pin is attached and functional
 - Inspect all pivot bolts and bushings for wear.
 - Check torque on all bolts.
 - The jaw pivot bolt 1.21 should be wrench tight--do not over-torque. Excessive torque will have a clamping effect between the side-bars and lower jaw, restricting movement.
- C. Apply general purpose multi-lube grease to the grease fittings on the adjustment link and the lower jaw (items 1.15 and 1.16). Do not over-grease.
- D. Check lower jaw clamping adjustment. The closing force on the handle is factory set to 20-30 lbs. (measured at handle grip). Jaw and nose pin wear will effect this value. We recommend checking the closing force monthly by closing the jaw over a 3/64" diameter test pin (Hall part no. ATR-000-TPIN). If the closing force is not within the above range, the adjustment link nuts (items 1.13 and 1.14) should be turned in or out accordingly:
- Loosen nut 1.14 and tighten 1.13 to increase closing force.
 - Tighten nut 1.14 and loosen 1.13 to reduce closing force.
 - A 1/16 to 1/8 turn on these nuts is usually adequate to make fine adjustments.
 - Be sure all nuts are tight against the spacer blocks 1.6 after adjustments are complete.
 - When adjusted properly, the test pin will turn by hand with jaws in the locked position.
- E. Inspect upper and lower jaws for stress marks, cracks or deformation. Inspect the welds attaching the tow bar head side-bars to the adapter tube mounting plate for cracks. Remove tow bar head from service if any of the above are found.
- F. Check tow eye assembly on tow bar for condition and security.
- Verify free rotation of eye +/- 15 degrees from horizontal.
 - Apply general purpose multi-lube grease as required. Do not over-grease.
- G. Clean, repaint or touch-up paint as required.



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Section IV-Renewal Parts
ATR Aircraft Tow Bar Assembly
ATR

MK. #	QTY/UNIT	DESCRIPTION	PART NUMBER
-	1	ATR TOW BAR ASSEMBLY, COMPLETE	ATR
1	1	TOW BAR HEAD, COMPLETE	ATR-000
1.1	1	BOTTOM JAW WELDMENT	ATR-100
1.2	4	JAW BUSHING	ATR-100B1
1.3	1	MAIN BODY WELDMENT	ATR-200
1.4	1	LEVER ARM WELDMENT	ATR-300
1.5	1	ADJUSTMENT LINK w/BUSHING	TB-7924-C
1.6	2	ADJUSTMENT SPACER BLOCKS	TB-7924-C5
1.7	1	TOGGLE HINGE PIN	TB-7924-D7
1.8	1	SPRING HOOK	TB-8312-H5
1.9	1	SPRING	ATR-H8
1.10	1	HANDLE PIVOT BOLT	ATR-H9
1.11	1	ADJUSTMENT LINK BOLT	ATR-H1
1.12	2	NYLOCK NUT (ADJ. LINK)	TB-8312-H7
1.13	2	JAM NUT (ADJ. LINK)	ATR-H2
1.14	1	NYLOCK JAM NUT (ADJ. LINK)	ATR-H3
1.15	1	GREASE FITTING (BOTTOM JAW)	TB-8649-2
1.16	1	GREASE FITTING (ADJ. LINK)	ATR-H5
1.17	2	BEARING	TB-7924-D5
1.18	1	HANDLE GRIP, BLACK	TB-8312-HA-GRP
1.19	1	LEVER HANDLE RETAINER ASSEMBLY	ATR-302
1.20	1	JAM NUT (JAW PIVOT BOLT)	ATR-H6
1.21	1	JAW PIVOT BOLT	ATR-H7
1.22	1	HALL TEST PIN	ATR-000-TPIN
2	1	MAIN PUSHBAR BODY, COMPLETE	ATR-12
2.1	1	MAIN PUSHBAR BODY WELDMENT	HRJ-145-12-1
2.2	1	ADAPTER QUICK RELEASE PIN w/LANYARD	HRJ-145-12-5
2.3	1	TOW BAR HANDLE	HRJ-12-2
3	1	3" SWIVEL EYE ASSEMBLY	HRJ-145-12-11
3.1	1	EYEBOLT, 3" ID	HRJ-145-12-7
3.2	1	TUG EYE RETAINER BAR	HRJ-145-12-8
3.3	1	TUG EYE COLLAR	HRJ-145-12-9
3.4	4	LOCK WASHER	TB-8649-4
3.5	4	HEX HEAD CAP SCREW	37C100HC5Z
4	1	ATR WHEEL CARRIAGE ASSEMBLY	ATR-400
4.1	1	ATR WHEEL CARRIAGE WELDMENT	ATR-400-1
4.2	2	WHEEL	TB-8898-7
4.3	4	FLAT WASHER	TB-8898-8
4.4	2	COTTER PIN	TB-8898-9
5	4	HANDLE/WHEEL ASSEMBLY CLAMP	HRJ-145-12-3
6	8	CLAMP BOLT	TB-8898-5
7	8	CLAMP NUT	TB-8898-6



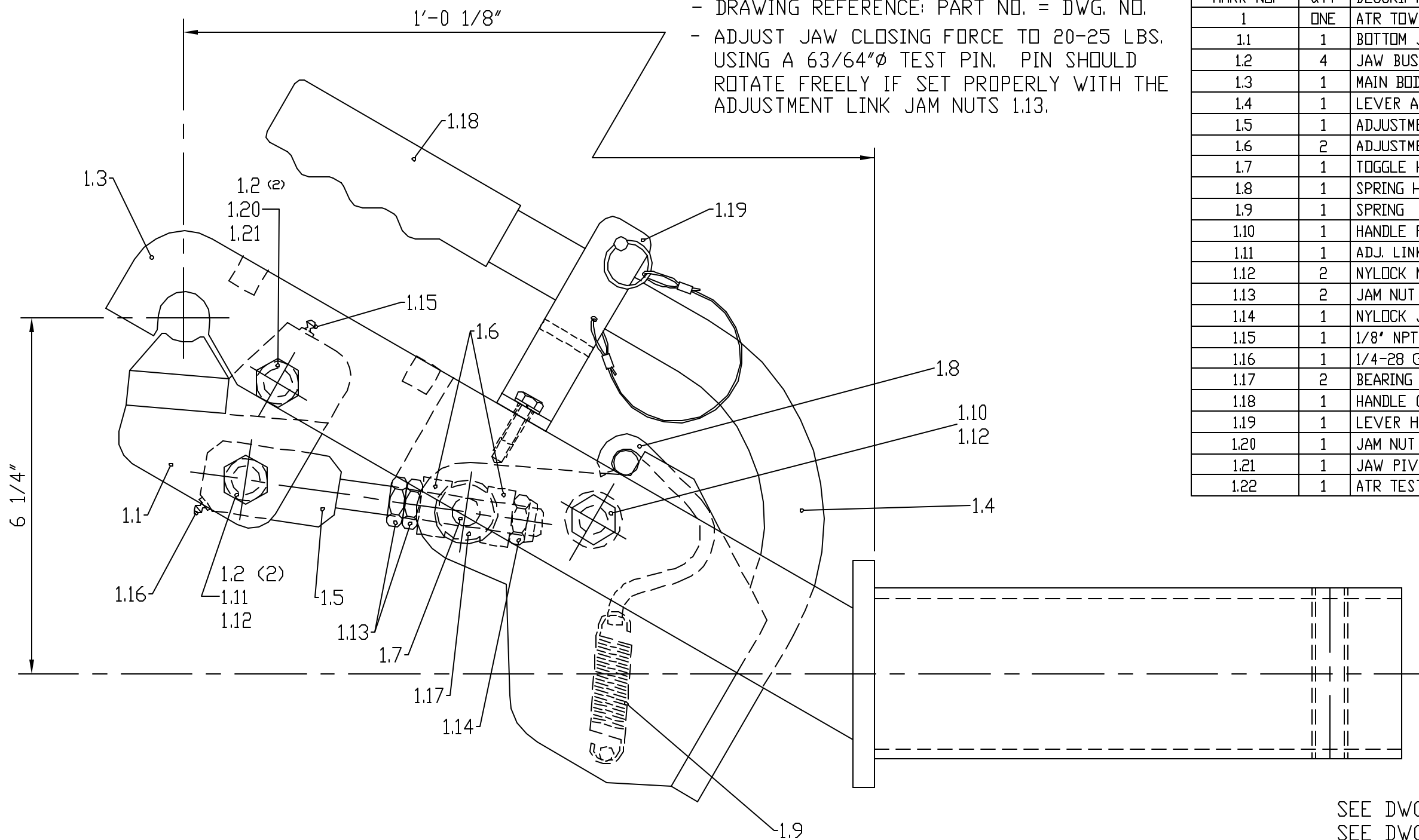
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NOTE:

- DRAWING REFERENCE: PART NO. = DWG. NO.
- ADJUST JAW CLOSING FORCE TO 20-25 LBS. USING A 63/64"Ø TEST PIN. PIN SHOULD ROTATE FREELY IF SET PROPERLY WITH THE ADJUSTMENT LINK JAM NUTS 1.13.



BILL OF MATERIALS

MARK NO.	QTY	DESCRIPTION	PART NO.	WT.
1	ONE	ATR TOWBAR HEAD, COMPLETE	ATR-000	33
1.1	1	BOTTOM JAW WELDMENT	ATR-100	
1.2	4	JAW BUSHING	ATR-100B1	
1.3	1	MAIN BODY WELDMENT	ATR-200	
1.4	1	LEVER ARM WELDMENT	ATR-300	
1.5	1	ADJUSTMENT LINK w/BUSHING	TB-7924-C	
1.6	2	ADJUSTMENT SPACER BLOCKS	TB-7924-C5	
1.7	1	TOGGLE HINGE PIN	TB-7924-D7	
1.8	1	SPRING HOOK	TB-8312-H5	
1.9	1	SPRING	ATR-H8	
1.10	1	HANDLE PIVOT BOLT	ATR-H9	
1.11	1	ADJ. LINK BOLT	ATR-H1	
1.12	2	NYLOCK NUT (ADJ. LINK)	TB-8312-H7	
1.13	2	JAM NUT (ADJ. LINK)	ATR-H2	
1.14	1	NYLOCK JAM NUT	ATR-H3	
1.15	1	1/8" NPT GREASE FITTING (1610BL)	TB-8649-2	
1.16	1	1/4-28 GREASE FITTING (1641B)	ATR-H5	
1.17	2	BEARING	TB-7924-D5	
1.18	1	HANDLE GRIP, BLACK	TB-8312-HA-GRP	
1.19	1	LEVER HANDLE RETAINER ASSEMBLY	ATR-302	
1.20	1	JAM NUT (JAW PIVOT BOLT)	ATR-H6	
1.21	1	JAW PIVOT BOLT	ATR-H7	
1.22	1	ATR TEST PIN	ATR-000-TPIN	

SEE DWG. ATR-100 FOR COMPLETE TOWBAR ASS'Y
SEE DWG. ATR-12 FOR PUSHBAR ASSEMBLY

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		SUBJECT GENERAL ARRANGEMENT	REV A																				
<table border="1"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION</th> <th>BY</th> <th>CHK</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>11/22</td> <td>PART NO'S & GREASE FTG. QTY.</td> <td></td> <td></td> </tr> <tr> <td>A</td> <td>10/22</td> <td>SHORTENED SPRINGS</td> <td></td> <td></td> </tr> <tr> <td>A</td> <td>10/12</td> <td>HANDLE RETAINER & NEW HOVE</td> <td></td> <td></td> </tr> </tbody> </table>		REV	DATE	DESCRIPTION	BY	CHK	A	11/22	PART NO'S & GREASE FTG. QTY.			A	10/22	SHORTENED SPRINGS			A	10/12	HANDLE RETAINER & NEW HOVE			hi HALL INDUSTRIES EQUIPMENT DIVISION 1000 INDUSTRIAL PARK, ELLWOOD CITY, PA 16117 DATE 9/30/99 CHECK IATR-000	
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A	11/22	PART NO'S & GREASE FTG. QTY.																					
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NOTE:

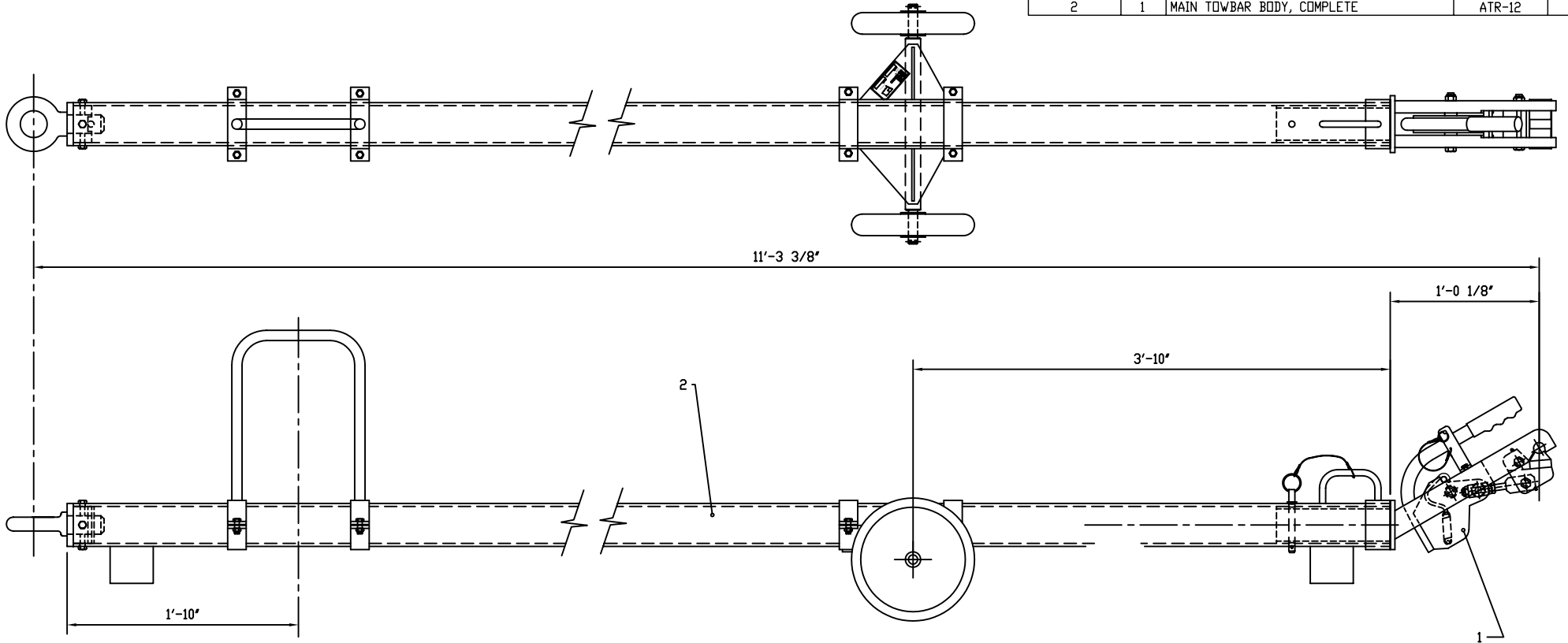
SHOWN, STANDARD EYE WITH 3" ID (P/N HRJ-145-12-7)
 OPTIONS: 1) 2.19" ID TOW EYE (P/N HRJ-145-12-6)

REFERENCE DRAWINGS:

ATR-000 ATR TOWBAR HEAD ASSEMBLY
 ATR-12 ATR MAIN TOW BAR ASSEMBLY
 ATR-400 ATR WHEEL CARRIAGE ASSEMBLY
 ATR-12 SWIVEL EYE ARRANGEMENT

BILL OF MATERIALS

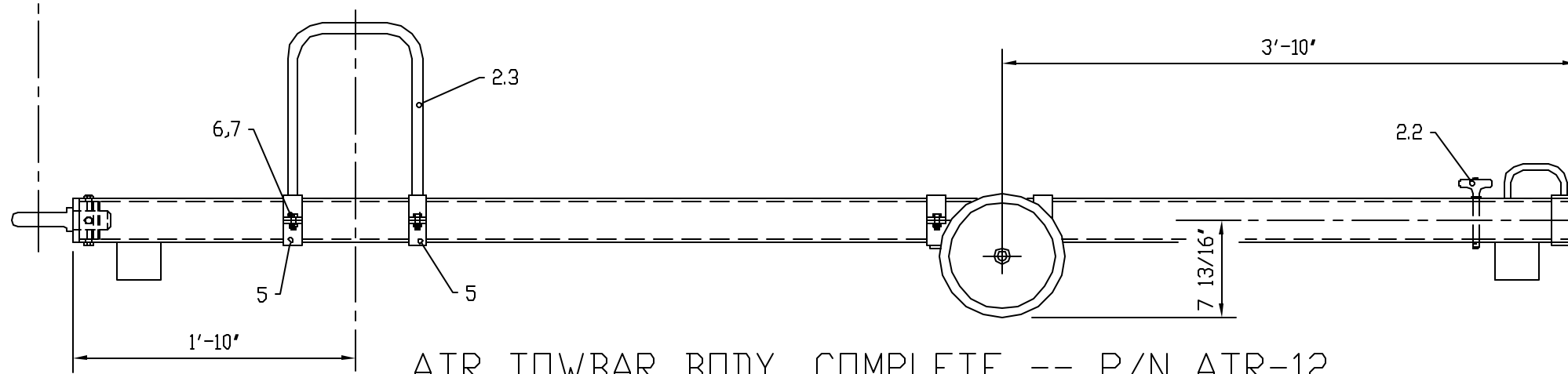
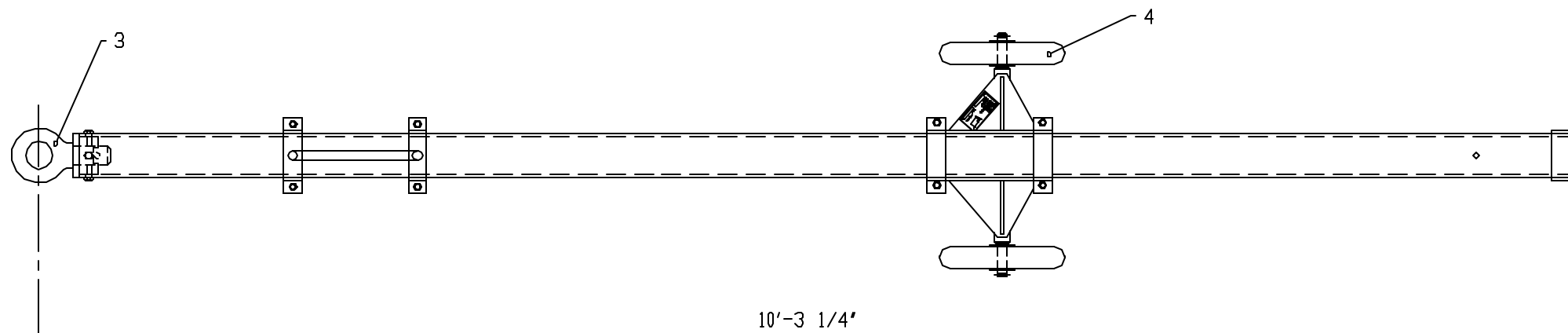
MARK NO.	QTY	DESCRIPTION	PART NO.	WT.
--	ONE	ATR TOWBAR ASSEMBLY COMPLETE	ATR-1000	166
1	1	ATR TOWBAR HEAD, COMPLETE	ATR-000	33
2	1	MAIN TOWBAR BODY, COMPLETE	ATR-12	133



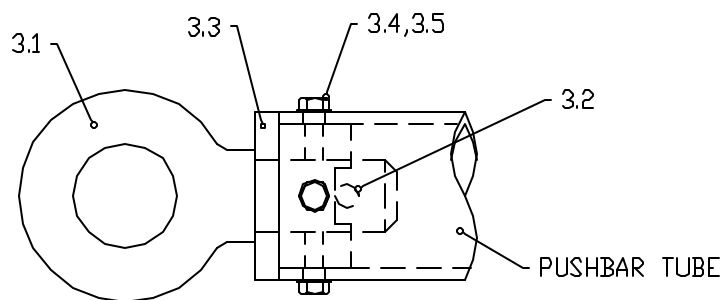
ATR TOWBAR, COMPLETE -- P/N ATR-1000

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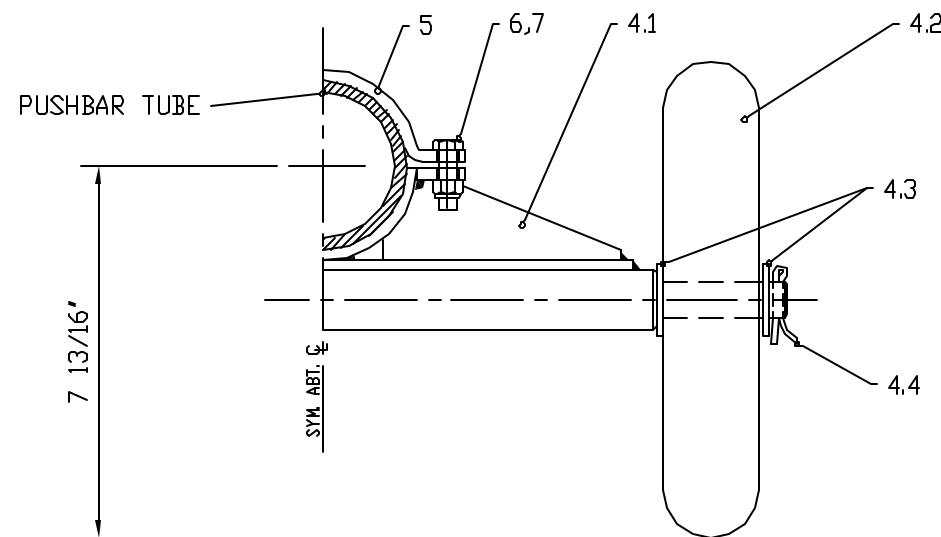
REVISIONS REV. NO. DATE BY DESCRIPTION		PART NAME ATR TOWBAR ASSEMBLY, COMPLETE	DRAWN BY CJS 1.5"=1'
HALL INDUSTRIES EQUIPMENT DIVISION 1 USS INDUSTRIAL PARK, ELLWOOD CITY, PA 16117		DATE 1/20/00 P/N ATR-1000	



ATR TOWBAR BODY, COMPLETE -- P/N ATR-12



3\"/>



WHEEL CARRIAGE ASS'Y -- P/N ATR-400

BILL OF MATERIALS

MARK NO.	QTY	DESCRIPTION	PART NO.
		ATR	ATR
2	ONE	MAIN TOW BAR BODY, COMPLETE (3\"/>	

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PROJECT/CUSTOMER: ATR TOWBAR BODY
 SCALE: 1\"/>

DATE: 1/20/00
 CHECK: ATR-12