

# OPERATION & MAINTENANCE INSTRUCTION MANUAL HT-47S



**BRACKETT AIRCRAFT CO., INC.**

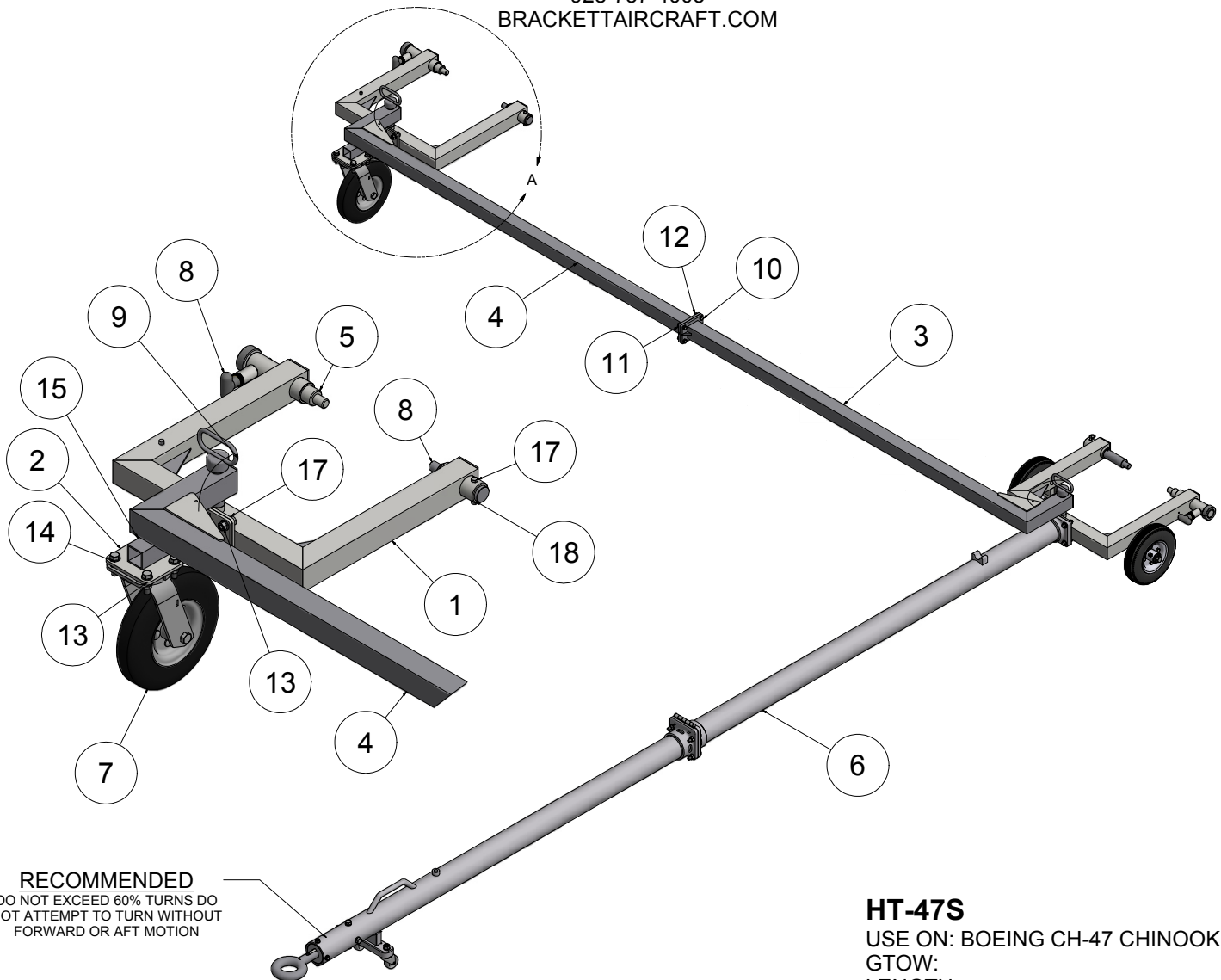
7045 FLIGHTLINE DRIVE  
KINGMAN, AZ 86401

PH: 928-757-4005 | FAX: 928-757-1948

WEBSITE: [WWW.BRACKETTAIRCRAFT.COM](http://WWW.BRACKETTAIRCRAFT.COM)

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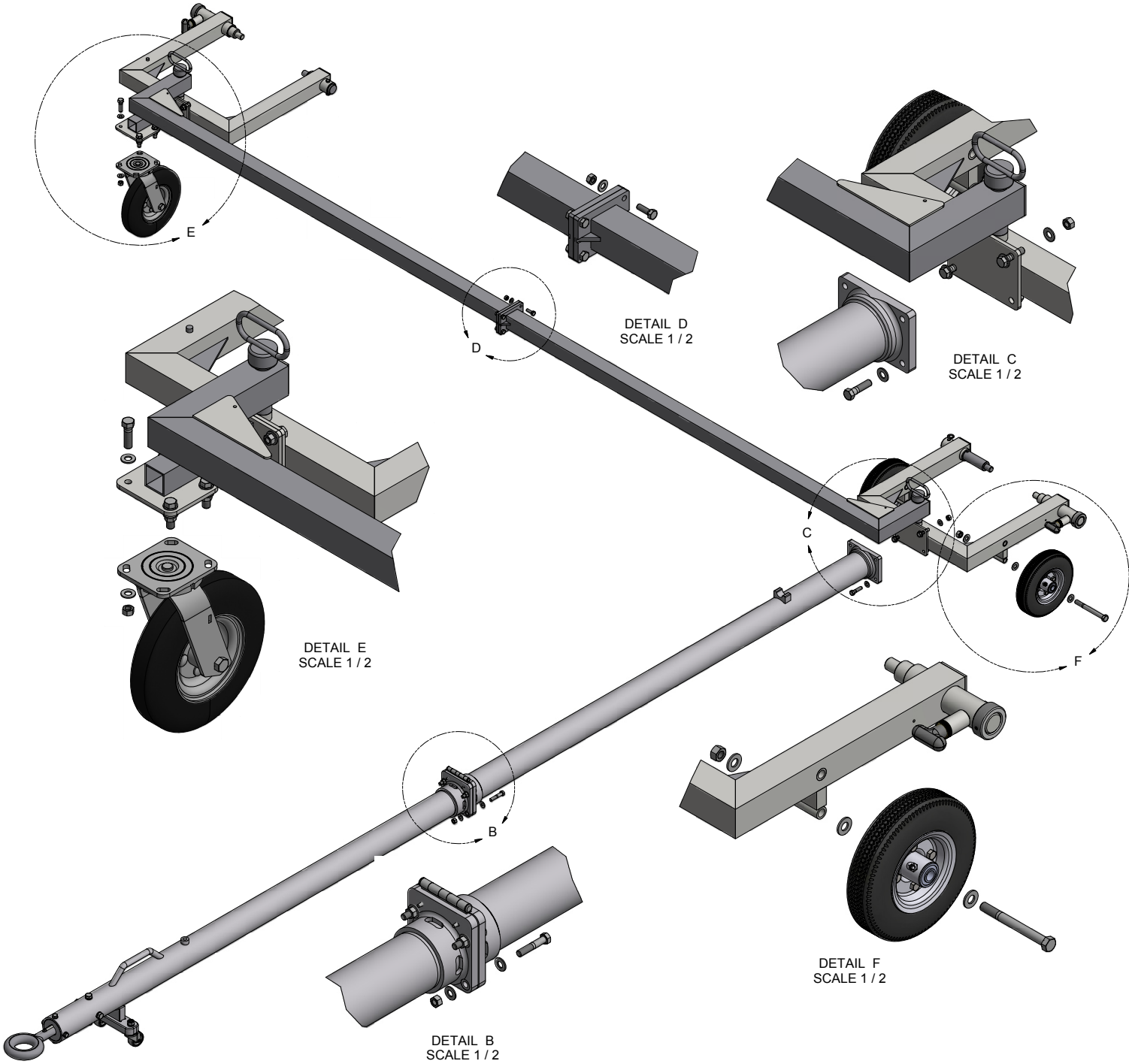


**RECOMMENDED**  
 DO NOT EXCEED 60% TURNS DO  
 NOT ATTEMPT TO TURN WITHOUT  
 FORWARD OR AFT MOTION

## HT-47S

USE ON: BOEING CH-47 CHINOOK  
 GTOW:  
 LENGTH:  
 COLOR: YELLOW  
 SHIPPING: 86" X 29" X 7" @ 211 LBS.

HT-47S				
ITEM	QTY	PART NUMBER	DESCRIPTION	
1	1	HT47-01-00A	LEFT TOW HEAD ASSEMBLY	
2	1	HT47-03-00	ARM ASSEMBLY	
3	1	HT47-04-00	LEG ASSEMBLY	
4	1	HT47-05-00	LEG ASSEMBLY	
5	1	HT47-02-00	PIN ASSEMBLY	
6	1	HT-647A	TOW BAR ASSEMBLY	
7	1	1080-520	NON-LOCKING CASTER WHEEL	
8	1	HT47-02-15	PIN	
9	2	HITCH PIN 3/4	HITCH PIN	
10	4	647-B-.313-24-1.00	Hex Bolt - UNC (Regular Thread - Inch)	
11	8	647-W-.313-SAE	THIN Washer A	
12	4	647-LN-313-24	Hex Nut	
13	8	647-LN-.375-24	Hex Nut	
14	16	647-W-.375-SAE	Washer A	
15	4	647-B-.375-24-1.25	Hex Bolt - UNC (Regular Thread - Inch)	
16	2	90170A650	LYNCH PIN	
17	1	647-B-.250-20-2.00	Hex Bolt - UNC (Regular Thread - Inch)	
18	1	647-LN-.250-20	Hex Nut	



DETAIL D  
SCALE 1/2

DETAIL C  
SCALE 1/2

DETAIL E  
SCALE 1/2

DETAIL B  
SCALE 1/2

DETAIL F  
SCALE 1/2



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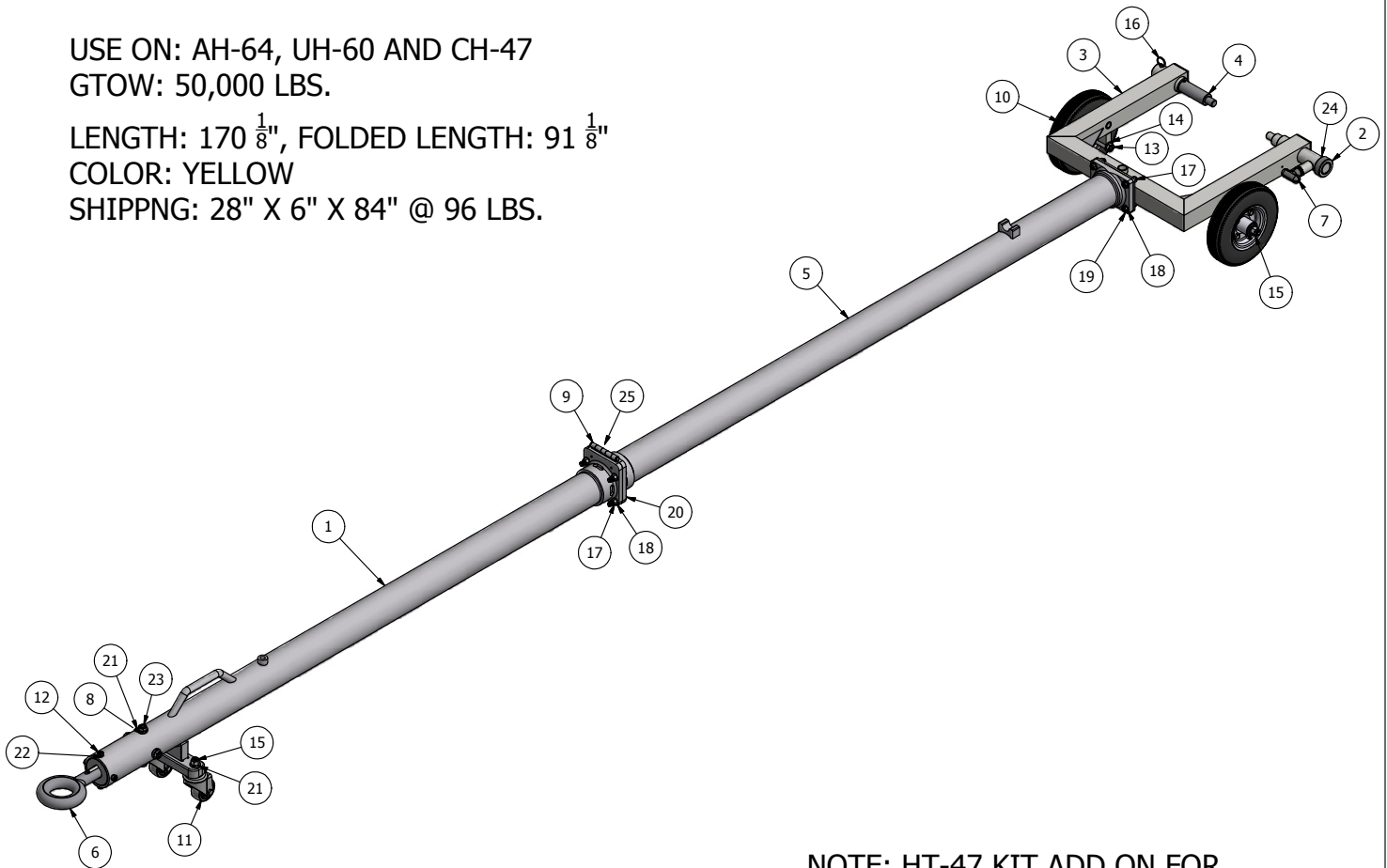
## HT-647A TOW BAR

USE ON: AH-64, UH-60 AND CH-47  
GTOW: 50,000 LBS.

LENGTH: 170  $\frac{1}{8}$ ", FOLDED LENGTH: 91  $\frac{1}{8}$ "

COLOR: YELLOW

SHIPPING: 28" X 6" X 84" @ 96 LBS.



NOTE: HT-47 KIT ADD ON FOR  
DUAL WHEEL STEERING FOR CH-47 AVAILABLE

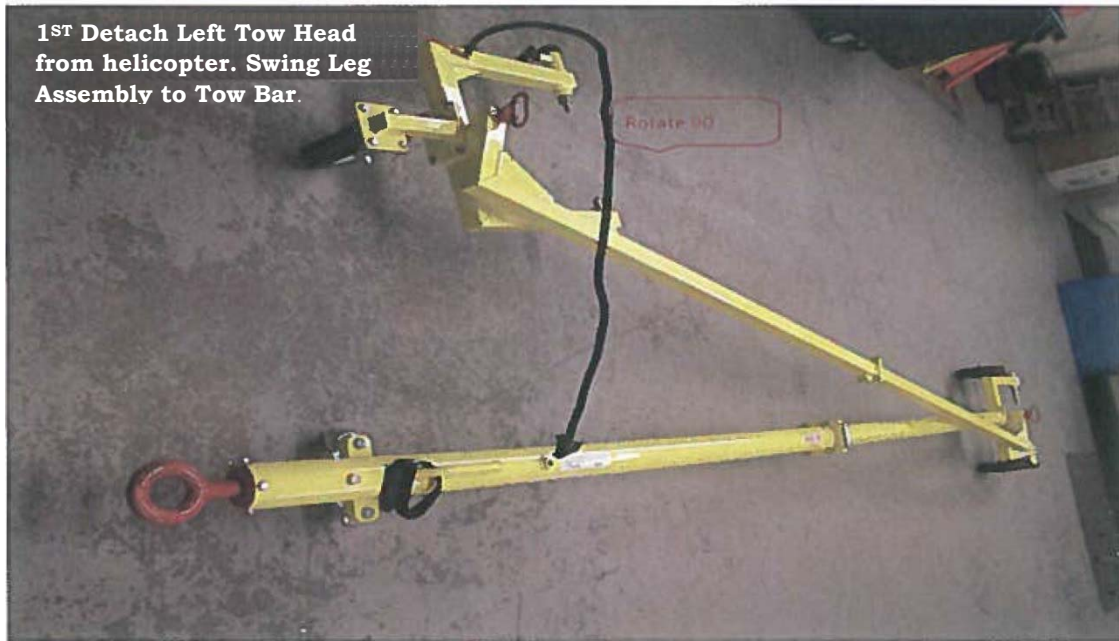
11-3-11 S/N 266 AND UP

### PARTS LIST

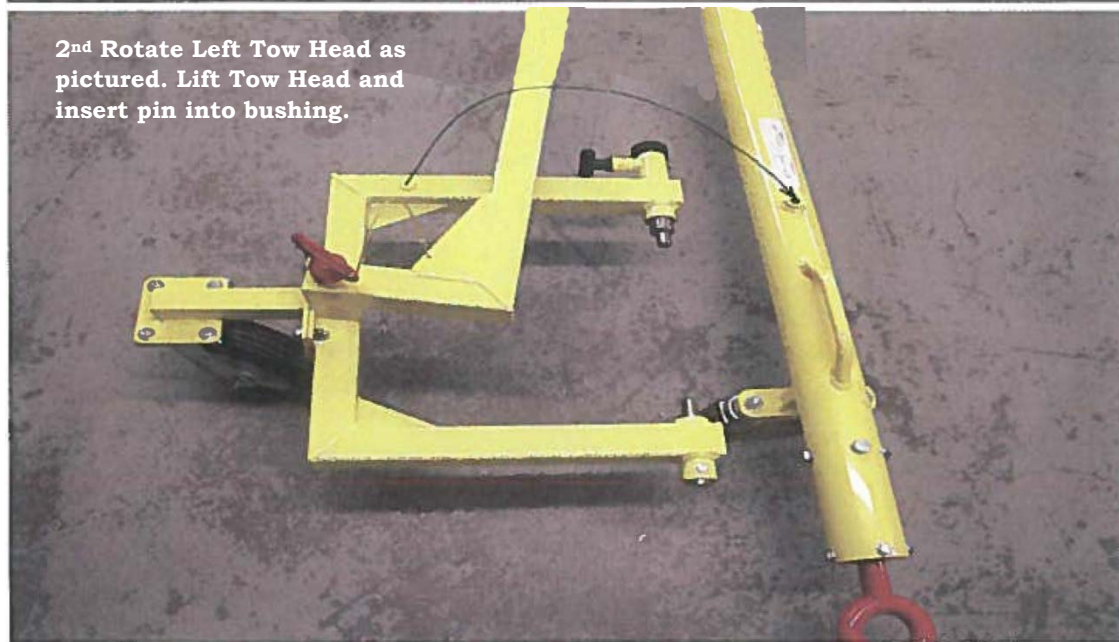
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	HT47-10-01A	TONGUE
2	1	HT47-02-00	PIN ASSEMBLY
3	1	HT47-01-00B	FRAME ASSEMBLY
4	1	HT47-02-10	PIN
5	1	HT47-11-00A	TUBE ASSEMBLY
6	1	TY-TB-75-07-00A	SHOCK RING ASM.
7	1	90222A112	LOCKING PIN ASSEMBLY
8	4	7815K28	1/2 SHAFT DIA. 5/8 O.D., 3/8 LENGTH
9	1	647-H-3.50	HINGE
10	2	647-TW-2.80-4	W-2.80/2.50-4 TIRE/WHEEL ASM.
11	2	647-C-.375-16-2.50	2-1/2 X 1-1/4 1/2-13 STEM URETHANE CASTER
12	4	647-B-.375-16-1.00	3/8-16 X 1 BOLT
13	2	647-B-.500-13-6.00	1/2-13 X 6 BOLT
14	6	647-W-.500-SAE	1/2 SAE WASHER
15	4	647-LN-.500-13	1/2-13 LOCKNUT
16	1	647-P-.250-1.7	1/4 X 1.7 QUICK RELEASE PIN W/ LANYARD S.S.
17	8	647-LN-.375-24	3/8-24 LOCK NUT
18	16	647-W-.375-SAE	3/8" SAE WASHER
19	4	647-B-.375-24-1.50	3/8-24 X 1 1/2 BOLT
20	4	647-B-.375-24-2.00	3/8-24 X 2 BOLT
21	6	647-LW-.500	1/2 LOCK WASHER
22	4	647-LW-.375	3/8 LOCK WASHER
23	4	647-B-.500-13-1.00	1/2-13 X 1 BOLT
24	1	647-B-.250-20-.375	1/4-20 X 3/8 BOLT
25	4	647-FS-.250-28-.50	1/4-28 X 1/2 FLAT HEAD SCREW
26	1	647-B-.250-28-4.00	BOLT
N.S.	1	647-B-.250-28	LOCKNUT

## STACKING THE TOW BAR FOR MOVING

1<sup>ST</sup> Detach Left Tow Head from helicopter. Swing Leg Assembly to Tow Bar.



2<sup>nd</sup> Rotate Left Tow Head as pictured. Lift Tow Head and insert pin into bushing.



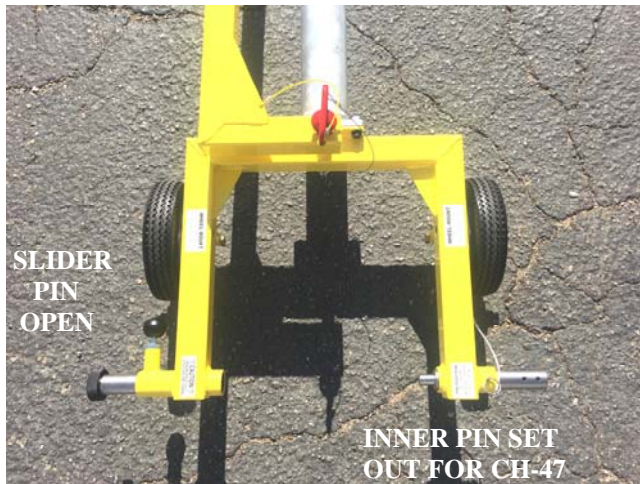
3<sup>rd</sup>. Done & Ready to hitch on the Tug.



# INSTALLATION ON CH-47

1. After stacking Tow Bar (see page #5), drive out to aircraft Right Tail Wheel. Remove from Tug and roll Tow Bar up to the Tail Wheel. Set the slider pin open before rolling up to the wheel.

RIGHT REAR WHEEL



LEFT REAR WHEEL



2. Now lift the Tow Head up and slide the inner pin into wheel axle. Push the outside pin into the axle until spring pin locks.
3. Now remove left Tow Head from the Tow Bar by lifting and swing out to Left Tail Wheel. Check slider pin is set open, then lift Tow Head and slide inner pin into wheel. Push the outer slider pin until spring pin locks.
4. Once both wheels are attached, connect Tug to Tow Bar. Safely move forward before turning to prevent over stressing the landing gear and Tow Bar. Forward motion helps the Tow Bar in turning.

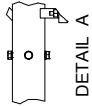
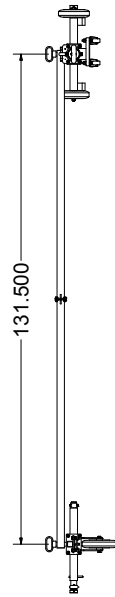
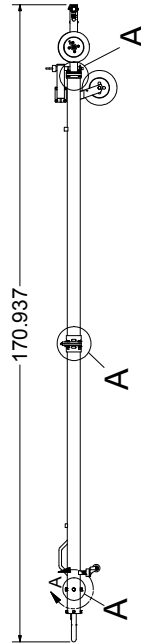
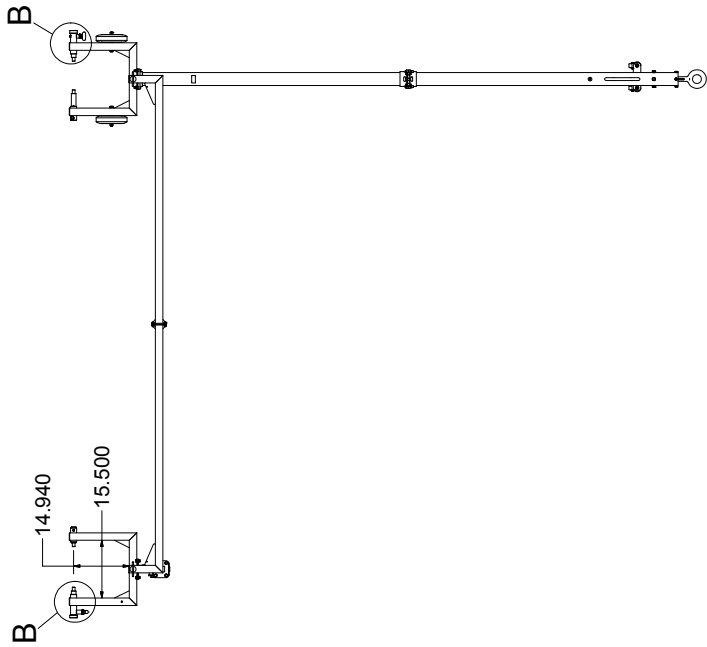
INSPECTION AREA A: VISUALLY CHECK FOR STRESS, CRACKS, DEFORMATION, LOOSE HARDWARE AND DAMAGE BEFORE USE. REPLACE ONLY, NO REPAIRS ALLOWED FOR THESE AREAS.

INSPECTION AREA B: FOLLOW PREVIOUS INPECTION PROCEDURE AND ALSO CHECK FOR PROPER FUNCTION OF MECHANISM SEMI-ANNUALLY.

ALL OTHER AREAS CALL FOR REPAIR PROCEDURES

TREATMENT AND PAINTING OF MATERIAL

- 1.1 CLEANING
- 1.11 CLEANING FERROUS METAL SURFACES. SURFACES TO BE PAINTED CAN BE BLASTED CLEAN OR SANDED CLEAN TO REMOVE MILL SCALE PRODUCTS OF CORROSION, DIRT, SLAG AND OTHER FOREIGN SUBSTANCES.
- 1.12 CLEANING NON-FERROUS METAL SURFACES. SURFACES TO BE PAINTED CAN BE BLASTED CLEAN OR SANDED CLEAN TO REMOVE MILL SCALE PRODUCTS OF CORROSION, DIRT, SLAG AND OTHER FOREIGN SUBSTANCES.
- 2.1 PAINTING: APPLY ONE COAT OF ZINC-CHROMATE PRIMER (OR EQUIVALENT) ON BARE METAL SURFACES.
- 2.11 APPLY YL01 GLOSS YELLOW ACRYLIC ENAMEL PAINT (OR EQUIVALENT) ON AFFECTED AREA UNTIL COVERED.



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<b>BAC</b>		<b>BRACKETT AIRCRAFT CO., INC.</b>	
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DRAWN BY	7/5/2007	DESCRIPTION	SIZE
APPROVED BY	7/5/2007	TOW SYSTEM	D
RCS		DWG NUMBER	CAGE CODE
		HT-47S INSPECTION	56838
This drawing is the property of Brackett Aircraft Co., Inc. and is to be used only for the purpose for which it was created. All other rights reserved. © Brackett Aircraft Company Incorporated.		SCALE: NONE/TOLERANCE: ± .010 SHEET 1 OF 1	

## PRE-INSTALL CHECKLIST

### FRAME

- LOOK FOR DAMAGED TOW BAR TUBES – REPLACE IF NECESSARY.
- CHECK BOLTS AND NUTS FOR WEAR OR LOOSENESS.
- CHECK WELDS FOR CRACKS.
- MAKE SURE TOW HEAD PINS SLIDE AND LOCK BEFORE TOWING AIRCRAFT.

## MAINTENANCE

### TIRES

- REPLACE TIRES WHEN 25% WORN OR 3/32” TREAD DEPTH, FLAT SPOT, NOISY.
  - TIRES ARE SOLID RUBBER MOUNTED ON WHEELS WITH SEALED BEARINGS. IF TIRE HAVE FLAT SPOTS OR LESS THAN 3/32” TREAD DEPTH, REPLACE. IF BEARINGS ARE NOISY OR DO NOT ROTATE SMOOTHLY, REPLACE. THEY REQUIRE VERY LITTLE MAINTENANCE.

### CASTERS

- THE WHEELS COME WITH SEALED BEARING. TO CHECK, LIFT OFF THE GROUND AND ROTATE BY HAND. NEEDS TO SPIN FREELY OR REPLACE ITEM.

### MISCELLANEOUS

- CHECK AND SECURE ALL BOLTS.
- PAINT AREAS OF LOOSE OR MISSING PAINT TO PREVENT RUSTING – SEE FRAME INSPECTION SHEET.
- OIL SLIDING PINS 1 TO 2 TIMES A YEAR WITH A 30 WT OIL OR A LUBRICATING GREASE.
- LUBRICATE MOVING PARTS LIKE THE HITCH PIN (10), SLIDING PIN (5) AND (2).

**FAILURE TO FOLLOW ANY OF THE ABOVE PROCEDURES MAY CAUSE FAILURE OF THE UNIT, CREATE HAZARDOUS TOWING CONDITIONS RESULTING IN DAMAGE TO THE AIRCRAFT, AND CAN INJURY PERSONNEL AROUND THE AIRCRAFT.**

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## CASTER, WHEEL, AND BEARINGS PREVENTATIVE MAINTENANCE

Simple preventative maintenance for your casters will greatly extend caster and wheel life. The following steps will help assure that your casters live up to your expectations and application requirements.

### **COMMON CAUSES FOR POOR PERFORMANCE OR QUICK WEAR DOWN**

In many cases, caster and wheel products wear quickly by subjection to abusive or unreasonable demands. The most important factor in making your caster and wheel products last is choosing the correct caster for your needs.

### **PERIODICALLY EXAMINE EQUIPMENT**

- **Frame and Fasteners**
  - Tighten loose bolts and nuts and look for broken welds or deck boards.
  - Look for frame distortion due to overloads or impact loads. A distorted frame can cause premature wheel failure because of abnormal loads on one or two casters.
- **Lubrication**
  - All caster bearings need to be lubricated with a high-quality multi-purpose grease that has good extreme pressure and anti-wear characteristics, as well as withstands temperature range that fits the application requirements. Wheel and swivel bearings last longer if lubricated regularly.
  - Normal conditions may warrant lubrication every six months, but once a month may be necessary in extreme applications, such as corrosive or exceptionally dirty environments
- **Wheels**
  - Check for visible points of tread wear. Flat spots may indicate foreign material, such as string, thread, metal, etc., causing wheels to bind. Thread guards will delay build-up of such materials.
  - Loose casters or frozen wheels may also produce flat spotting.
  - Replace wheel and/or caster to avoid erratic rolling. After inspecting and making corrections, be sure axle nut is properly tightened.
- **Proper Equipment Usage**
  - Overloading or dropping loads (shock loading) on carts, trucks, or bins may cause sudden wheel or equipment failure.
  - High speeds on rough floors can quickly create severe damage to tread and wheels.

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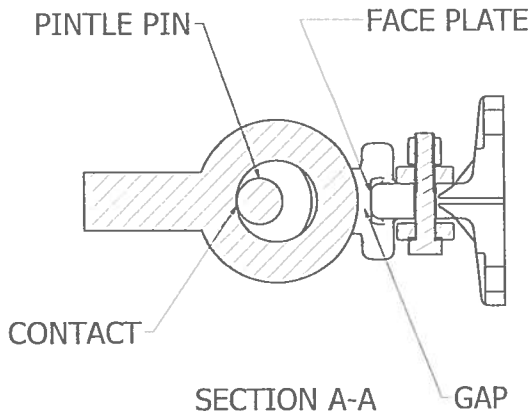


**EYEBOLT AND PINTLE PIN SIZE:**

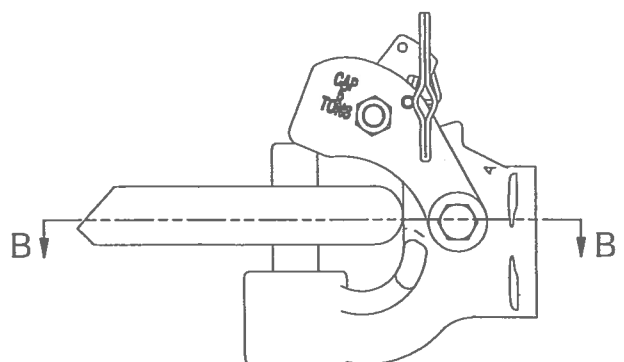
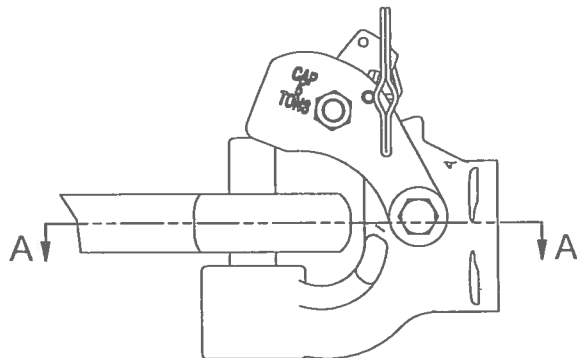
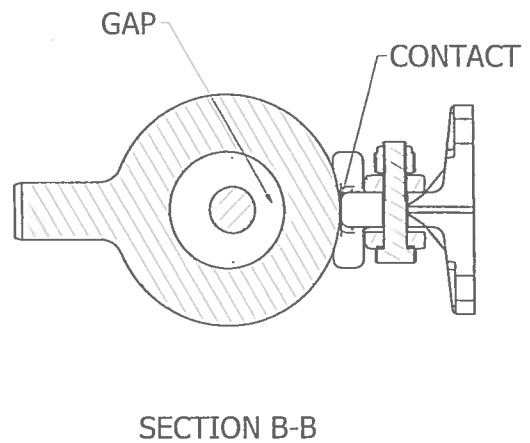
Damage to the tow bar or aircraft can result by towing or pushing an aircraft with an incorrect size eyebolt or pintle pin. A correct size eyebolt will make contact with the pintle pin. A gap between the eyebolt outside diameter and the coupler face plate should be easily seen. An eyebolt that is too large will cause the eyebolt to make contact with the face plate of the coupler. When the eyebolt is too large for the coupler, a gap between the inside diameter of the eyebolt and the pintle pin plate will be seen. (Detail B-B).

To ensure proper towing and pushing, check that the pintle pin diameter is not too large for the eyebolt's inside diameter. Approximately a one-half inch (1/2") gap between the pin diameter and the eyebolt I.D. should be seen. If any of these conditions are not met, please contact Brackett Aircraft for information to obtain a new coupler.

**CORRECT**



**INCORRECT**



A

B

# ***ROBERT'S RULES FOR TOWING***

## **1. INSPECTION**

Prior to hooking up the towbar to the tug, make a quick visual inspection of the towbar. Check for a bent or damaged frame and for worn or missing parts. Check tire pressure. Check that you have the proper head installed. DO NOT attempt to tow any aircraft with a damaged or improper towbar.

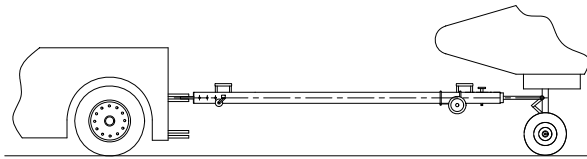
## **2. RESPONSIBILITY**

Operator of the tug must understand that it is his/her responsibility to move the aircraft safely from "Point A" to "Point B". NO HOT RODDERS.

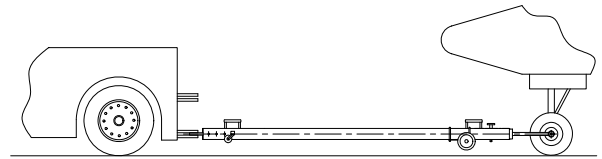
## **3. HOOK UP**

When hooking the towbar to the tug, three things are necessary:

1. The proper tug and towbar for the size aircraft being moved.
2. The towbar must be approximately level between the aircraft and the tug.
3. The hitch on the towbar must move freely on the hitch mounted on the tug.



CORRECT



CORRECT

## ***BASIC TOWING RULES***

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.
2. TOW SLOW, max speed, a brisk walk.
3. NOSE WHEEL TOWING LIMITS: Do not exceed towing limits. If not marked or not known, do not exceed 30° from center. Be extra cautious on snow and ice.
4. To prevent hangar rash when squeezing the birds together an extra set of eyes helps.
5. Push at a creep to minimize chance of jack-knife" Think Safety" and use common sense.

**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. We all know when it's raining or -10° below zero and you're on an open tug it's tough to go at a walking speed.

**Thanks for reading the rules.  
Roy Brackett, Brackett Aircraft Co., Inc.**