

Want to feel confident when moving your multimillion dollar aircraft?

Your Tronair towbar is engineered, built, and tested to the highest standards of quality and workmanship. Under normal usage and with proper maintenance this towbar will provide exceptional service.

## WARNING!

**A Damaged Or Bent Towbar Or Towbar Head Shall Not Be Used, It Shall Be Repaired Or Replaced.** Using a damaged or bent towbar or towbar head can result in aircraft or equipment damage and possible personal injury.

### Use Of Towbar With Tug:

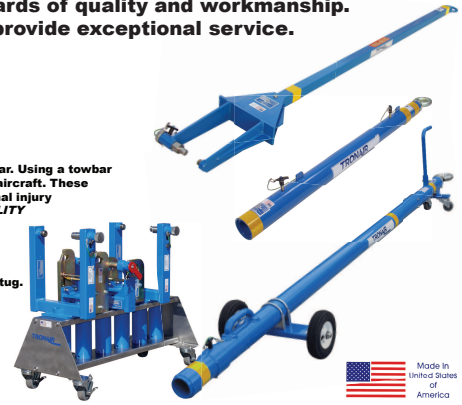
Tronair recommends the use of a towbar and tug with aircraft not exceeding the maximum gross weight specification for the particular towbar. Using a towbar with aircraft weighing in excess of this specific limitation may result in excessive loads and stresses being applied to the towbar and/or the aircraft. These excessive loads may cause failure of the towbar which could cause damage (INCLUDING WITHOUT LIMITATION to the aircraft) and/or personal injury OR DEATH. TRONAIR MAKES NO REPRESENTATION, WARRANTY OR GUARANTEE AS TO SUCH MISUSE AND DISCLAIMS ANY AND ALL LIABILITY FOR INJURY, LOSS OR DAMAGE ARISING FROM OR RELATING TO SUCH MISUSE. For further information on the towbar specifications, see the Tronair Operation and Service Manual for the specific towbar.

### Towbars With Hydraulic Lifting Mechanism:

The hydraulic lift mechanism (on those towbars so equipped) shall only be used to raise the towbar to facilitate connection to the aircraft or tug. A towbar shall never be used to lift the nose gear of the aircraft. Release any hydraulic pressure when towing aircraft. Retract landing gear of towbar while towing aircraft.

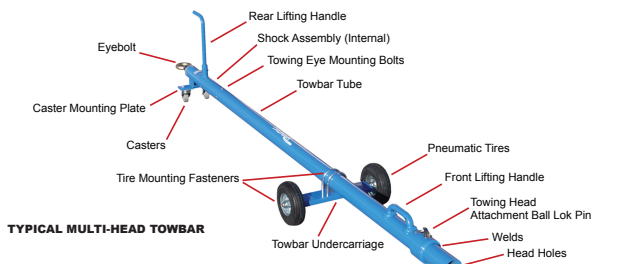
### Towbars With Shear Pin:

Towing an aircraft using a towbar with a broken, missing, or non Tronair specified shear pin may cause damage to the aircraft. Follow all Aircraft Manufacturers guidelines when using a towbar.

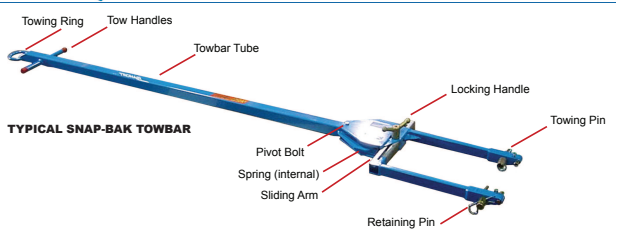
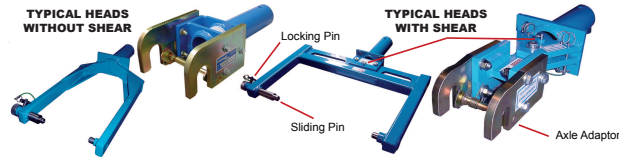


## BEFORE USING A TOWBAR, COMPLETE THE FOLLOWING CHECKLISTS:

NOTE: Typical towbars. Your towbar and/or head may not have all of the features shown.



TYPICAL MULTI-HEAD TOWBAR



TYPICAL SNAP-BAK TOWBAR

ALWAYS refer to Operation & Service Manual for complete operating instructions

TOWBAR:	Area of Towbar:	Checks: (DO NOT USE UNTIL REPAIRED OR REPLACED)
	Shock Assembly:	1. Weld between eye and tube (Are there cracks?) 2. Bolts attaching shock to towbar (Loose, missing, stripped, etc.) 3. Eyebolt (Is it bent, worn down, or deformed?)
	Towbar Weldment:	1. Towbar Tube (Is it bent, dented, bowed, and/or have cracks?) 2. Weld at head end (Are there any cracks in the welds?) 3. Head hole (Is it elongated? Is the ball lok pin attached to the towbar?) 4. Ball Lok Pin (Is it attached? Is it rusted? Is it missing?) 5. On custom towbars head is attached with grade 5 or 8 bolts and nuts.
	Caster/Skid Plate:	1. Casters (Are they missing or bent?) 2. Handles (Are they broken, bent, or missing?) 3. Bolts (Are they missing or loose?)
	Wheel Assembly:	1. Wheels (Are they flat? Is the rim bent? Is there any unusual wear?) 2. Axle (Is it bent?) 3. Are wheels secured to the axle? 4. Are bearings greased?
HEAD:	Area of Head:	Checks: (DO NOT USE UNTIL REPAIRED OR REPLACED)
	Bolts & Lanyards:	1. Are they loose, missing, or stripped? Are they attached to the head?
	Weldment:	1. Welds (Are there any cracks?) 2. Shear Plates (Are there cracks in welds? Are the plates bent?)
	Shear Pin Mechanism:	1. Shear Pin (Is it bent or deformed? Are there spares?) 2. Bushings (Are they cracked, chipped, and secure?) 3. Pivot Bolt (Are the nuts tight? Are there washers present?) 4. Shear Plates (No clamping force should be present thru the shoulder screws) 5. With shear pin removed does head pivot freely?
	Aircraft Attach Point:	1. Sliding Pin(s) (Are they bent, cracked? Do they slide freely?) 2. Locking Pin (Are they loose? Do they hold the sliding pins securely?) 3. Wear sleeves (Are the welds cracked?) 4. Roll Pin(s) (Are they missing? Are they loose?) 5. Axle Adapter (Is it bent? Is the slot deformed? Are bolts tight?)
SNAP-BAK AND UNIVERSAL TOWBARS:	Area of Towbar:	Checks: (DO NOT USE UNTIL REPAIRED OR REPLACED)
	Towbar:	1. Spring (Has it taken a permanent set? Loose in the assembly?) 2. Towing Ring (Is it bent, worn down, or deformed?) 3. Towbar Tube (Is it bent, dented, bowed, or cracked? Is it rusted?) 4. Welds (Are there any cracks in the welds?)
	Function:	1. Does it snap back in straight alignment?
	Head:	1. Pivot Bolt (Is it present along with washers? Is the nut tight? Is it rusted?) 2. Roll Pin(s) (Are they missing? Are they loose?) 3. Weldment (Is it deformed, bent, or rusted beyond reasonable use?) 4. Lanyard (Is it attached to weldment?) 5. Towing Pin(s) (Are they bent or cracked?)

## USAGE PROCEDURE

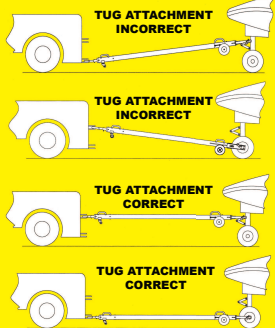
### Aircraft Attachment:

The towbar shall be attached to the aircraft first, and then connected to the tug to avoid possible aircraft damage.

Ensure aircraft attachment is locked in place before towing aircraft.

### Tug Attachment:

Damage to the towbar or aircraft can result from an excessive towbar angle during towing operations (reference illustrations below). If an aircraft or tug with both high and low tow points is encountered, use the pintle hooks, as shown in bottom two illustrations, so that the towbar is as level as possible during towing. The pintle hook height should prevent contact of towbar wheels with the ground during towing. Operate the tug to prevent sudden starts and stops. Maximum angle between ground and towbar is 5°.

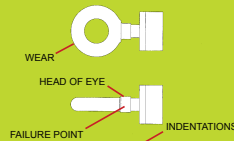


### Type Of Coupler:

Damage to the towbar or aircraft can result while towing with the following type of couplers:

- Lift Head
- Vertical Side Swing Latch
- Swivel Hook
- Standard Duty Latch

These types of couplers are known to cause binding and failure in the eyebolt. Indicators of eyebolt binding are: wear on the outside diameter of the eye and indentations on the inside diameter. The failure will begin at the head of the eye.



The pintle hook arrangement below is known to eliminate eyebolt binding. Tronair recommends using this type of pintle on your tug.



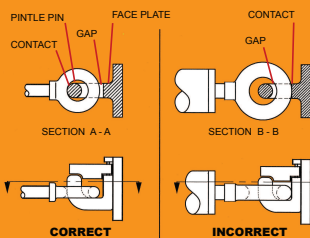
### Shear Pin:

Only use Tronair approved shear pins.

### Eyebolt and Pintle Pin Size:

Damage to the towbar 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. (Section 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 Tronair for information to obtain a new coupler.



### Towbar to Tug Towing Angle:

Damage to the towbar or aircraft can result from towing or pushing an aircraft while maintaining too sharp of an angle between the tug and the towbar. Contact between the towbar weldment and tug must be avoided. It is recommended that the angle between the tug and towbar not exceed 45°. When making turns use a large sweeping radius.

