



TRANSPORTATION

Columbus McKinnon and our Tennessee-based Dixie Industries are leaders in innovation for the towing and transportation industries. We are the premier manufacturer of American-made chain and forged attachments for the towing industry. We are proud to not only offer towing products, but a full line of chain and hardware for the heavy-duty trucking industry.

LOAD BINDER USE, INSPECTION & CARE

USE

1. Always follow safe work practices and take precautions in use of binders. Particular attention is called to the following sections of D.O.T. Federal Motor Carrier Safety Regulations: S392.9 (relating to safe loading); S393.100 (relating to protection against shifting or falling cargo); and S393.102 (relating to securement systems).
2. Never exceed working load limit shown on the binder. Hand effort will tighten binder to working load limit.
3. Always inspect the load binder before use. See the load binder inspection section below.
4. Always position the load binder so the handle goes downward when securing or tightening the load.
5. Operate only by hand from a firm standing position.
6. Do not operate load binder while anyone is on the load.
7. Do not use a cheater bar or handle extension. Extensions can dangerously overload the binder system and may result in serious injury. Use a ratchet-type binder if sufficient leverage is difficult to develop.
8. Make certain that the lever of the lever-type binder is over center and locked. Always secure the handle in the locked position with a positive retaining method. The handle must be secured since there is a possibility of relaxation of the load, which may result in the lever moving from the locked-over-center position to relaxed mode, resulting in loss of tension in the system.
9. Release handle/load with extreme care. Make sure everyone is clear. Lever binder handle can snap back over center. Use open palm under handle and push up.
10. Tighten binders before moving and frequently recheck and retighten.

CARE

Care should be exercised during use so that the binder is not abused or damaged.

1. The binder or hooks should not be subjected to bending or sharp objects. Loading should be in a straight line.
2. Avoid exposure to corrosive mediums. Lubricate periodically.

INSPECTION

Inspect binder prior to each use for damage, distortion, cracks, nicks, or wear.

1. Bending of any feature in any plane of more than 10 degrees is cause for removal of the unit from service. Any distortion indicates overloading or misuse.
2. Distorted or elongated connecting links indicate overloading or misuse and is also cause for removal of the unit from service.
3. If wear of connecting link ends is more than 10% of the original stock, remove unit from service.
4. On lever-type binders inspect yoke periodically for distortion and make certain it is seated on the pins.
5. Deep nicks and gouges should be smoothed out to relief stress concentrations providing that the material removed does not exceed 10% of the total material.
6. If distortion, cracks, nicks, or wear affect more than 10% of the stock, discard the unit.



TIE-DOWN BINDER CHAIN USE

Depending on the type of cargo you are securing, there are a variety of different factors that can affect the way you secure the load.

WHEN SECURING CARGO, IT IS IMPORTANT TO CONSIDER THE FOLLOWING:

- What is the gross weight of the load?
- What is the physical size of the load?
- Is the weight uniformly distributed?
- Is the cargo size uniform?

THE EFFECT OF ANGLE ON INDIRECT TIEDOWNS

You also need to consider the effect that angles will have on indirect tie downs. The chart below demonstrates how the effectiveness of the tie down is impacted by the angle at which it is used.

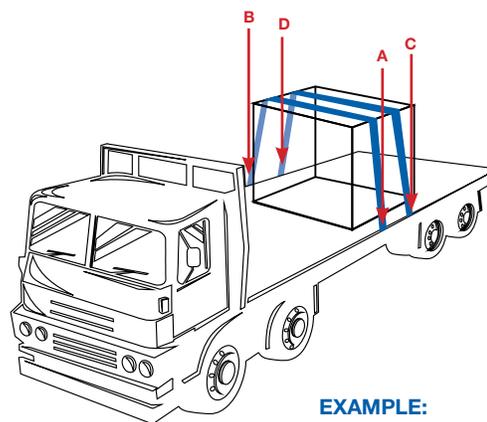
TIEDOWN TIGHTENED TO 1,000 LBS. OF TENSION

Angle	Effectiveness	Downward or Clamping Force	
90	100%	1,000 lbs	
60	85%	850 lbs.	
45	70%	700 lbs.	
30	50%	500 lbs.	
15	25%	250 lbs.	

THE ANGLE OF AN INDIRECT TIEDOWN SHOULD NEVER BE LESS THAN 30°

DETERMINING THE AGGREGATE WORKING LOAD LIMIT

When using multiple tie downs, you also need to determine the aggregate working load limit. **The aggregate working load limit of any securement system must be at least 50% of the weight of the cargo being secured with a length of less than 10 ft. (3 meters) & blocked from forward motion.** The diagram below illustrates how you would determine the aggregate working load limit when using multiple tie downs.



EXAMPLE:

- 50% of A
- + 50% of B
- + 50% of C
- + 50% of D

= Aggregate Working Load Limit

For full details on regulations and requirements for securing cargo, refer to FMCSA – Federal Motor Carrier Safety Administration Section(s) 393.100 through 393.136 of the FMCSA regulation handbook. Information is also available online at: <http://www.fmcsa.dot.gov>.