

# Safety Chains and Pins for Agricultural Transport

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# Laws governing hitch pins

- Indiana Administrative Code: Hitch pins used for the transportation and application of ammonia shall be of adequate size and hardness to withstand dynamic stresses of the nurse tank unit and its contents at full capacity. Reliable keepers for the hitch pin shall be used to prevent its loss.
- Illinois Administrative Code: All farm wagons shall be securely attached to the vehicle drawing them ...by suitable hitch pins with clips and safety chains permanently attached to the farm wagon



# Suitable Hitch Pins?









# Hitch Pin Engineering 101

- Reputable pin manufacturers grade their pins with grades that match up to SAE standard bolt grades
- Grade 2 pins are softer and have less tensile strength and shear strength than grade 5 which is less than grade 8
- Unlike bolts, there is no standard marking for hitch pin grades
- You have to rely on the manufacturer's information – you cannot look at a hitch pin and tell what grade it is

# Determining the Correct Pin

- Shear Capacity (SC) of a pin equals 60% of its Tensile Strength (TS)
- $SC = (TS \times 0.6) \times \pi r^2$
- SC of a  $\frac{3}{4}$ " grade 2 pin with a tensile strength of 60 ksi would be 15,904 lbs
- $\frac{3}{4}$ " grade 5 pin = 31,809 lbs
- $\frac{3}{4}$ " grade 8 pin = 39,761 lbs.





SPEEDO 70053200  
3/4 X 6.5 GRS HITCHPIN  
SKU # 02-69052  
SEQ. # 67



871967053212





# Use The Right Pin

1. Know the weight of your load
2. Select a hitch pin with adequate shear strength based on diameter and grade
3. Always secure the hitch pin with an appropriate keeper





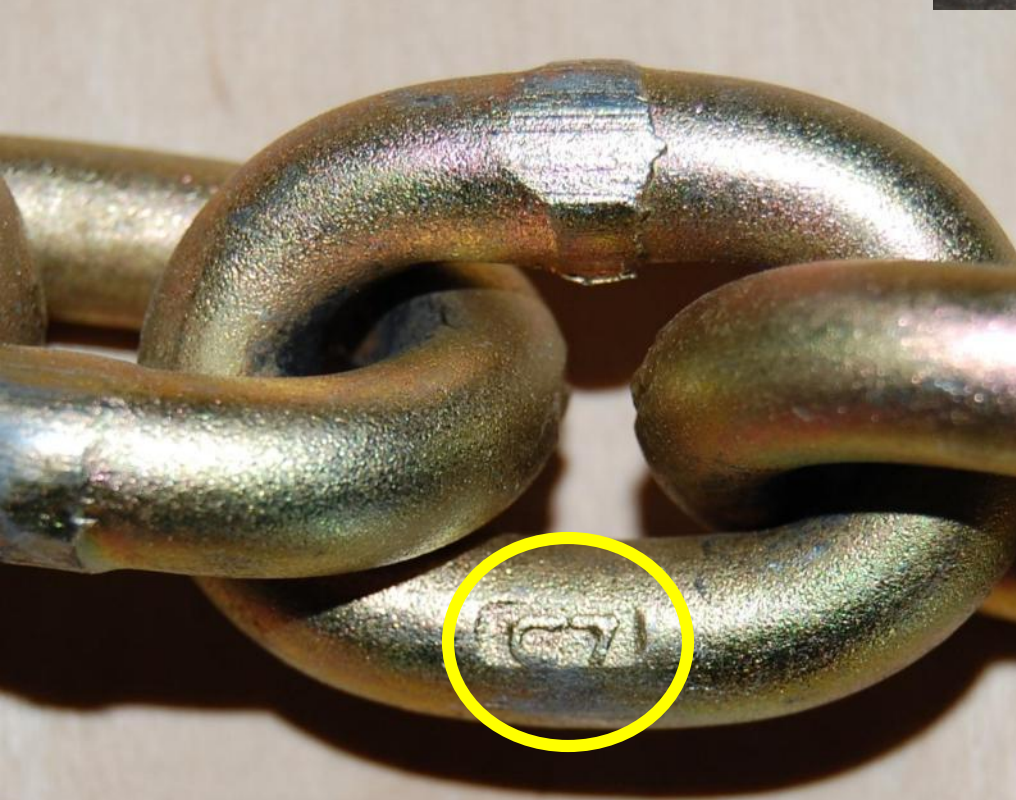
# How Strong Should Safety Chains Be?

- Illinois Administrative Code: Farm wagons require safety chains with a combined breaking strength of at least the weight of the laden nurse tank
- Indiana Code: Each chain used must be of sufficient strength to haul the trailer when loaded
- ANSI/ASAE S338.5: Safety chains including hooks...shall have a minimum strength sufficient to support the gross weight of the towed machine
- Federal Motor Carrier Safety Regulations: The safety device [chain] must have an ultimate strength of not less than the gross weight of the vehicle or vehicles being towed

# Transport Safety Chain Specifications

Size	Breaking Strength
Grade 30 Proof Chain	
• 5/16"	7,600 lb
• 3/8"	10,600 lb
• 1/2"	18,000 lb
Grade 70 Transport Chain	
• 5/16"	18,800 lb
• 3/8"	26,400 lb
• 1/2"	45,200 lb

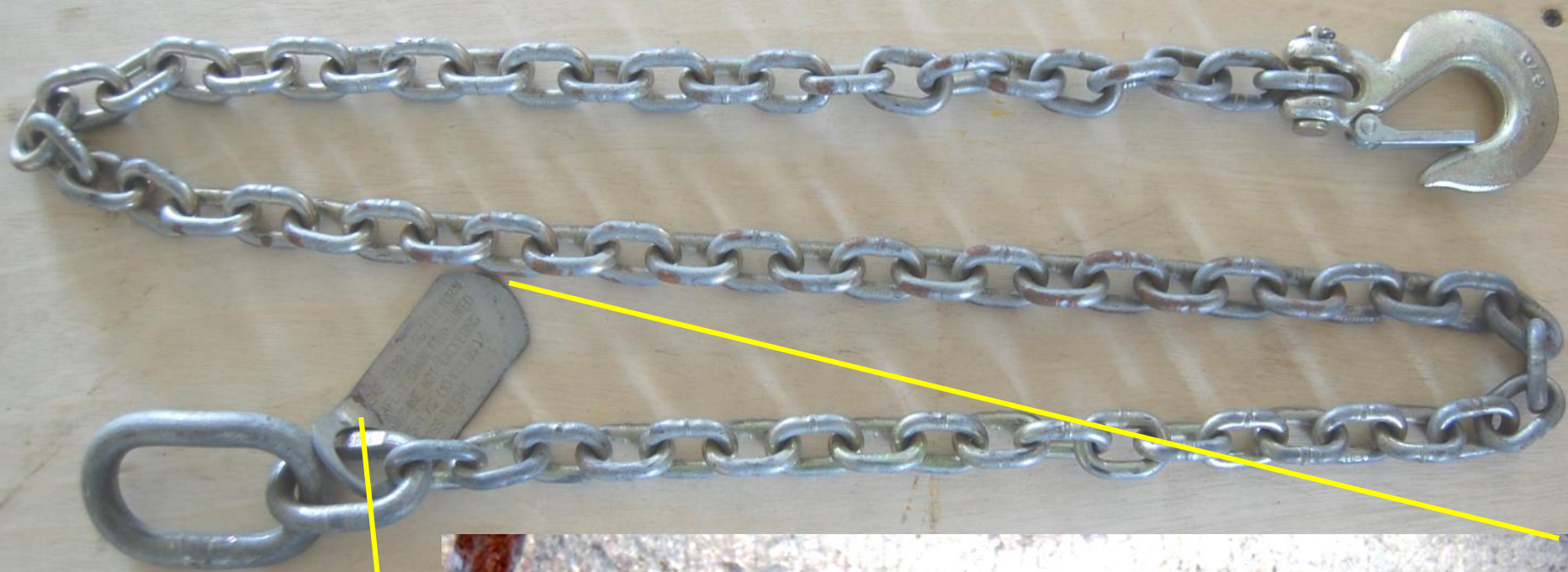












SAE S888 4 AGRICULTURAL  
SAFETY CHAIN FOR TOWED  
MACHINE NOT EXCEEDING  
4581 KG (10 100 LBS)  
GROSS WEIGHT

# FARM-FLEET<sup>INC.</sup>

## AGRICULTURAL SAFETY CHAINS

Meets ASAE S338 & MTO489  
Regulations. Latch type grab  
hook facilities positive attachment  
to chain.

#6510027WR  
1/4" x 5' reach  
10,000 lb. . . . .

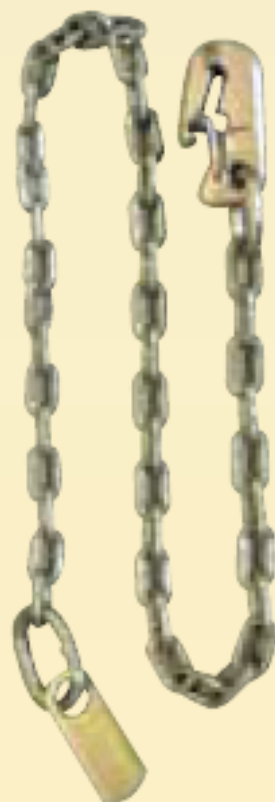
**\$56<sup>90</sup>**

#6510025WR  
5/16" x 5' reach  
10,000 lb. . . . .

**\$56<sup>90</sup>**

#6510028WR  
3/8" x 5' reach  
20,000 lb. . . . .

**\$95<sup>75</sup>**















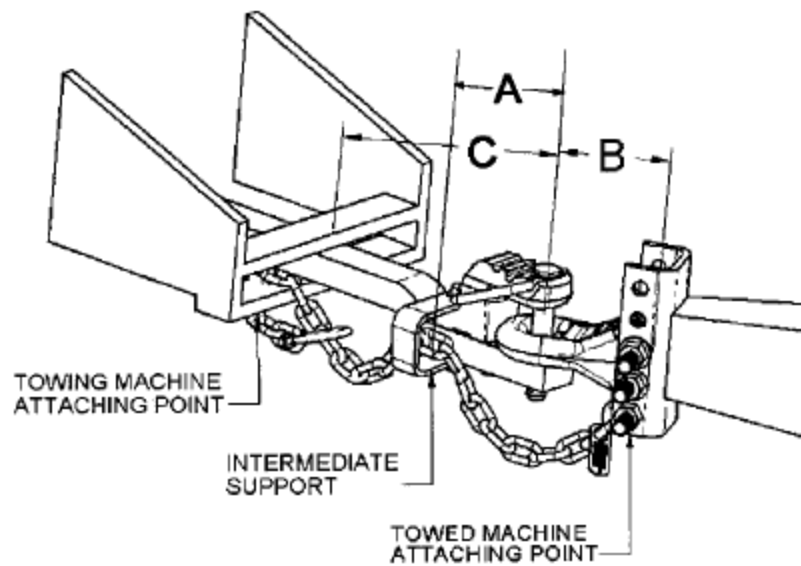
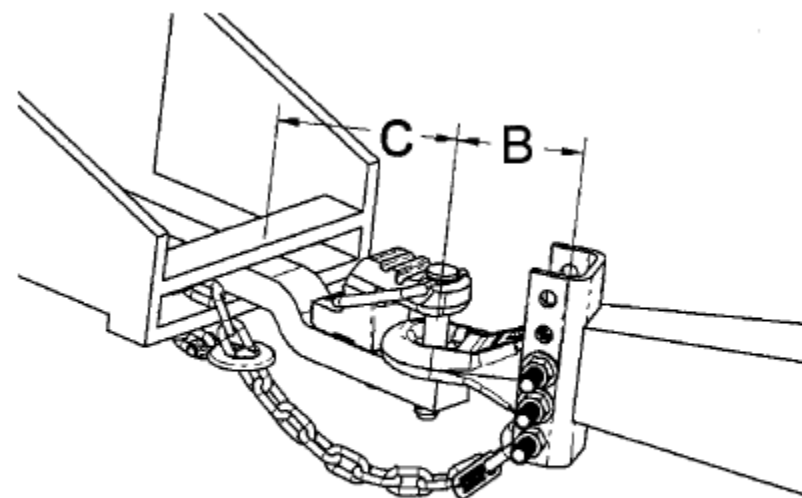


Figure 1 – Example auxiliary attaching system with intermediate support



EXTRA INTERMEDIATE SUPPORTS ARE NOT  
REQUIRED WHEN DIMENSIONS B AND C  
ARE LESS THAN SHOWN IN TABLE 1

Figure 2 – Example auxiliary attaching system





ACAD

NOT FOR

DO NOT USE

FOR RENT

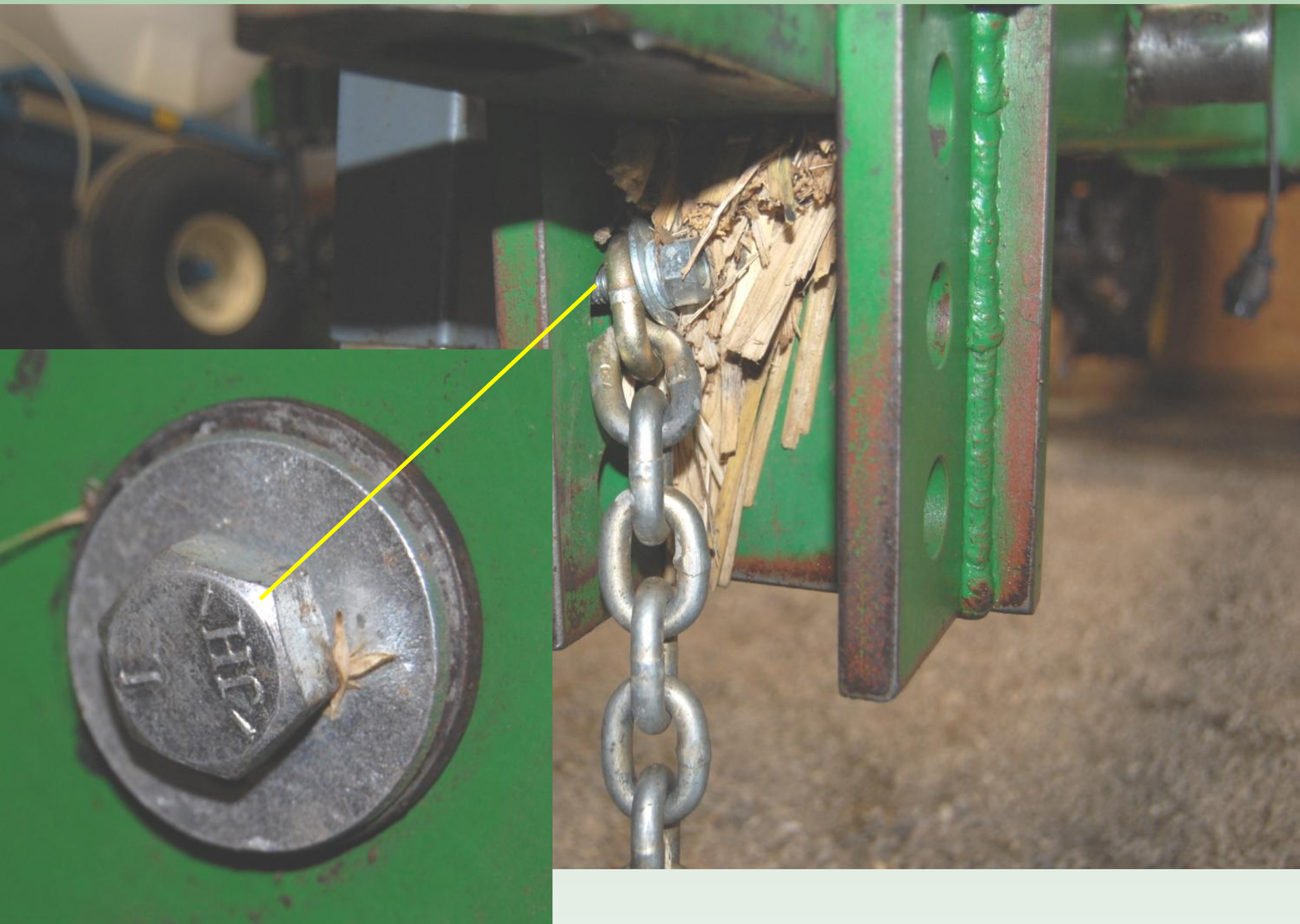
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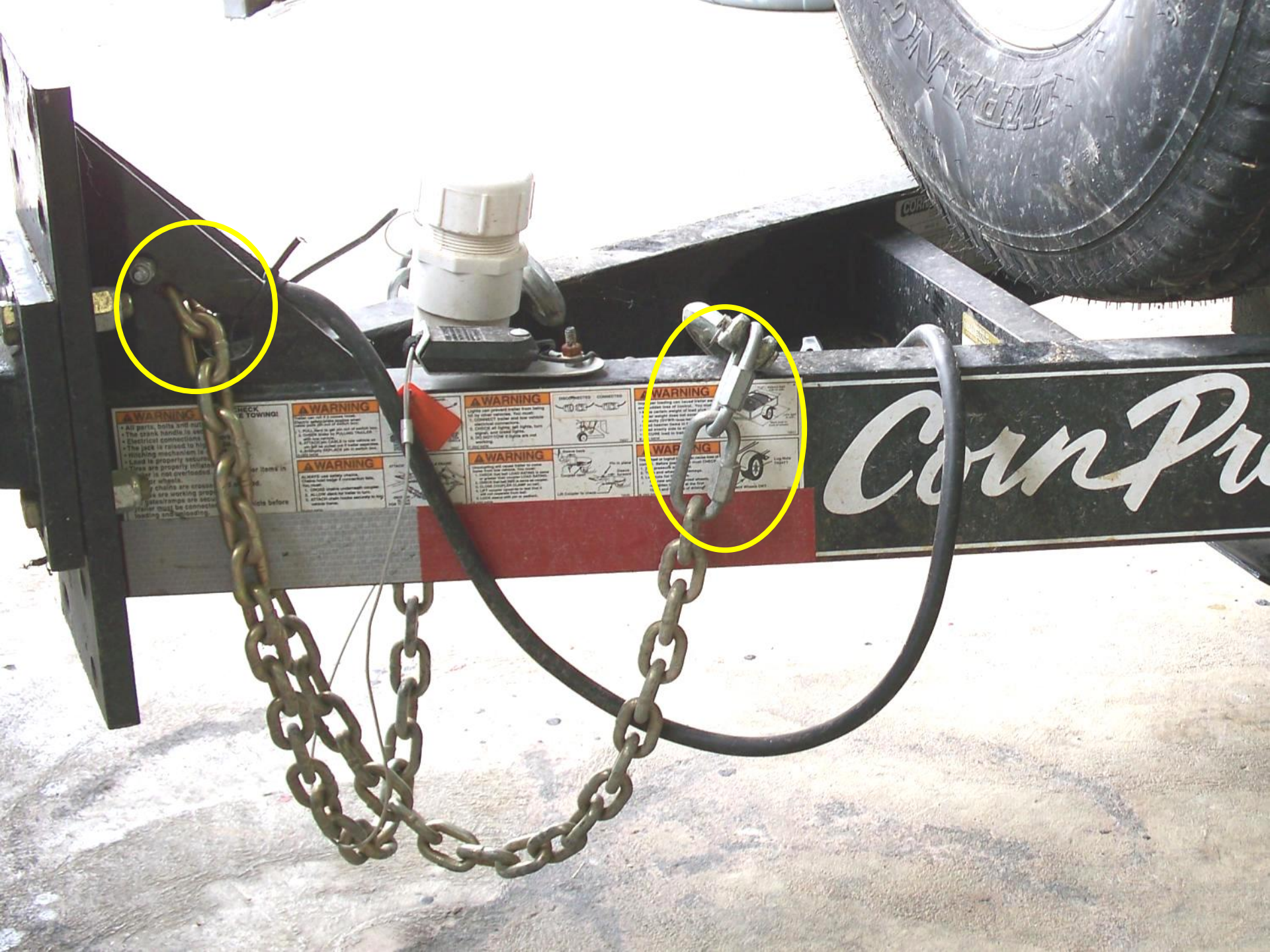












**WARNING**

- All parts, bolts and nuts must be properly tightened.
- The crank handle is not to be used as a lever.
- The jack is raised to the correct height.
- The lifting mechanism is not to be overloaded.
- Load is properly secured.
- The vehicle is not to be driven while the jack is raised.
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**WARNING**

- Do not use the jack to lift a vehicle.
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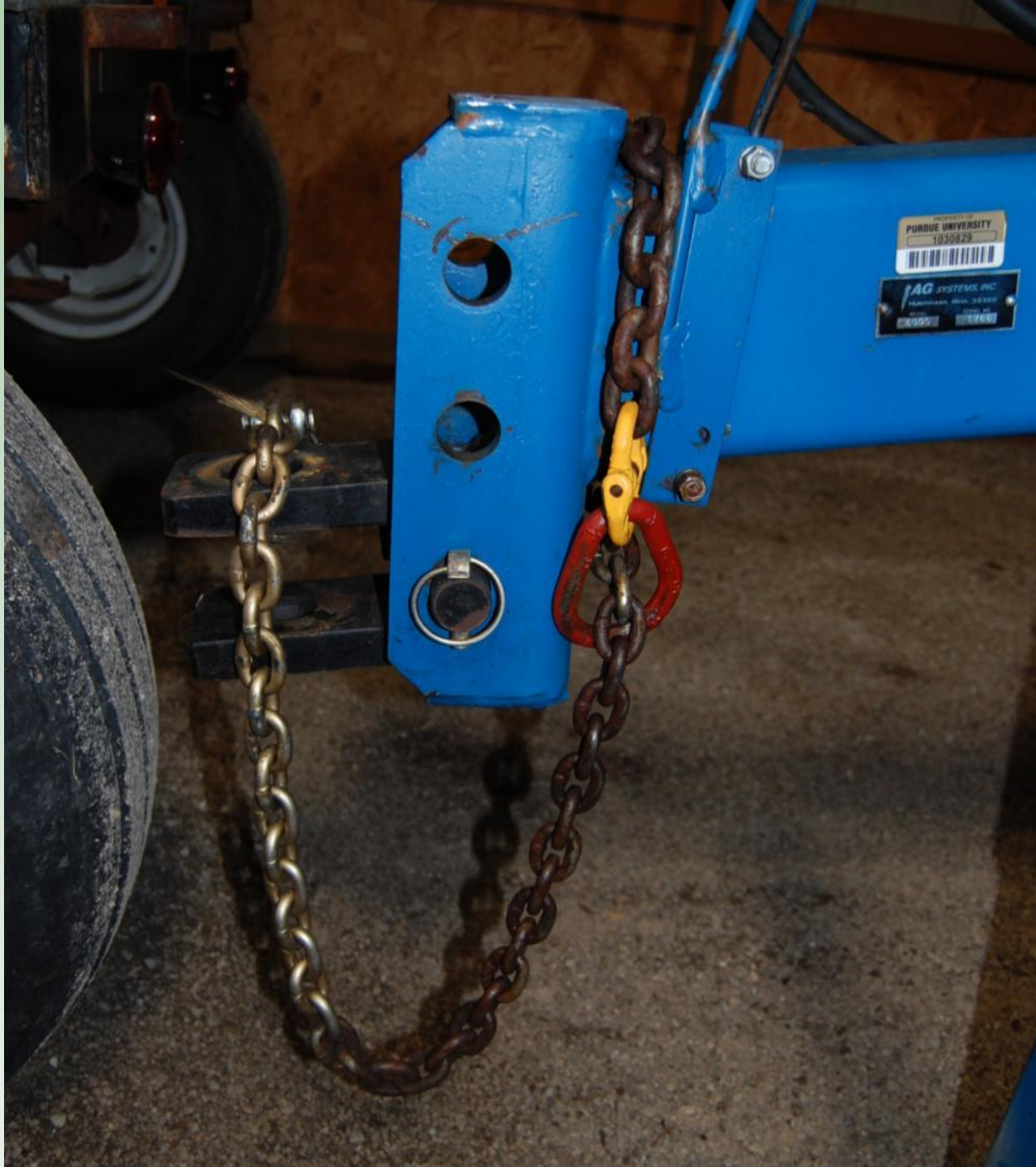
CornPro





















# Safety Chains

It's best to install chains that are correctly sized and rated

1. Know the weight of your load
2. Select a chain with a minimum breaking strength greater than your expected maximum load
3. Be aware of the weakest link

# ASAE Standard S318 *“Safety for Agricultural Field Equipment”*

## **Part 13 Travel on highways**

- 13.1 Lighting and marking for agricultural field equipment shall conform to ANSI/ASAE S279 whenever such equipment is intended to operate or travel on public roads or highways





# Rear-View Cameras

[www.RearviewCamera.net](http://www.RearviewCamera.net)

Winsted Group Inc.

Alliston, ON, Canada

Phone: 1-866-542-1343  
[sales@rearviewcamera.net](mailto:sales@rearviewcamera.net)



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Class	Part	Image	Description	Price USD	Price CAD	Order
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**7" COLOR TFT LCD High Res. System w/ Motorized Infra-Red Camera & 60' D.I.N. (3 Input)**





## **7" Monitor 1 Camera Kit**

**\$1,029.99**

7" Monitor, single camera kit w/ remote, 20' & 60' cables, A/C, 12v & hardwire power adaptors (power adaptors not shown) DMAC-7M-C1



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Shipping Weight: 8lbs

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# Wagon and trailer safety

1. Imagine the consequences
2. Plan for the unexpected
3. Make sure others can see you
4. On a public thoroughfare, your actions can affect many others.



# Four Attitudes Toward Safety

1.) “There ought to be a law!”

2.) “CYA”

3.) “Just do it right”

4.) Clueless

# The National Highway Traffic Safety Institute

## 2004 data

- **>65,000 accidents** involving passenger vehicles towing trailers
- **422 deaths**
- **27,232 injuries**
- 46,737 involved only property damage

### Online survey with people who tow

- 71 percent admitted they are not knowledgeable about proper towing practices and safety
- **About a third of respondents said they had no knowledge at all**
- Few said they had training or instruction
- Three of four learned through trial and error
- Only one in 10 were given towing information from their trailer dealer





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# Who is Responsible For Transport Safety?

- Legally, the operator of the towed vehicle is responsible
- Ethically, his supervisor and employer have the responsibility to see that the operator has been trained

# Do a Walk-Around Before You Get Rolling

- Always check the condition and capacity of the trailer and towing vehicle
- Always check the condition of lights and reflectors
- Always check the condition and operation of electric brakes
- Always check the condition of the trailer hitch and safety chains



# Do a Walk-Around Before You Get Rolling

- Check the condition of electrical connections
- Verify the security of the load
- Check the distribution of the load (60-65% of gross trailer weight should be forward of the mid-point of the trailer)
- Check suitability of tie-downs (weight rating and number of tie-downs required for the secured item's weight and size)
- Make sure tie-down straps are not threatened by sharp edges

# Be Aware

- Vehicle size and length when turning
- Allow more time to brake, change lanes and enter a highway
- Don't push the speed limit
- Keep a safe distance from the vehicle in front
- Know your loaded trailer height
- Avoid sudden maneuvers



