

Vehicle Practice

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TRAILER SAFETY CHAINS AND BREAK-AWAY SYSTEM

Practice:

1.0 INTRODUCTION

This vehicle practice specifies hardware and procedures in the selection, installation, and use of trailer safety chains and break-away systems. The hardware was selected as per SAE J697 MAY88: Safety Chain of Full Trailers or Converter Dollies.

2.0 SAFETY CHAIN APPARATUS

2.1 Safety Chain

Safety chain must be carbon steel transport chain with a minimum Grade 7. Sizes and grades for various trailer gross weight ratings are listed in Table 2.1. Two chains are required for each trailer. They should be long enough to cross over below the reach pole and attach to the hook eyes, but short enough to support the trailer reach if the trailer was suddenly disconnected from the truck.

2.2 Hooks and Links

Grade 8 clevis sling hooks with latches and Grade 8 connector links must be used. Typical sizes and models are listed in Table 2.1 and are shown in Figures 2.1 and 2.2. The links are used to attach the chains to the trailer and can also be used as replacement links within the chain. Two hooks and two links are required for each trailer.

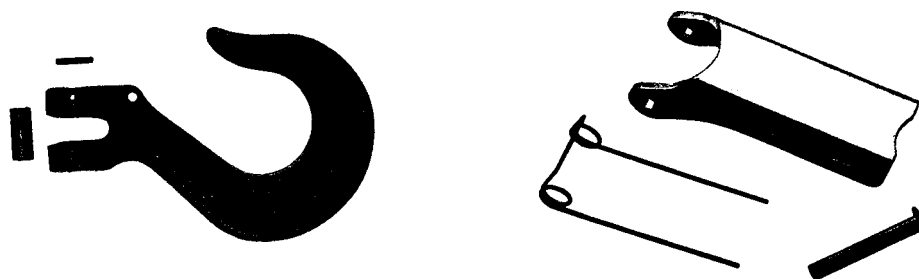


Figure 2.1: Clevis Sling Hook & Alloy Hook Latch Kit

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Fleet Services



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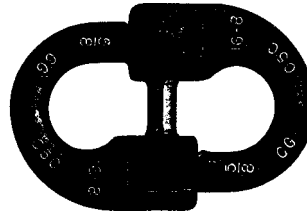


Figure 2.2: Connecting Link

Table 2.1: Standard Safety Chain Hardware

Trailer GWR	Chain	Connecting Links	Hooks
0-3500 lbs Working Load Unit*	1/4", Grade 6	1/4" Galvanized	
3,500 lbs - 15,000 lbs Working Load Limit*	3/8", Grade 7 transport chain ~ 6,600 lbs	3/8" Grade 8 Connecting Link (Crosby A-337 Lok-A- Loy 8 or equivalent) ~ 7,100 lbs	3/8" Grade 8 Clevis Sling Hook c/w Latch (Crosby A-339 with S-4088 latch kit, or equivalent) ~ 8,150 lbs
15,001 lbs - 30,000 lbs Working Load Limit*	1/2", Grade 7 transport chain ~ 11,300 lbs	1/2" Grade 8 Connecting Link (Crosby A-337 Lok-A-Loy 8 or equivalent) ~ 12,000 lbs	1/2" Grade 8 Clevis Sling Hook c/w Latch (Crosby A-339 with S-4088 latch kit, or equivalent) ~ 13,125 lbs

*Note Ultimate Load is 4 times the Working Load Limit. As per SAE J697 MAY88: "The safety chain and the means of attaching to the towed and towing vehicles may have an ultimate strength of not less than the TVW (towed vehicle weight) of vehicle or vehicles being towed....safety chain capacity should be the published break test load or the ultimate strength by actual test."

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2.3 Attachment of Safety Chains to Trailer

Connecting links (Figure 2.2) are attached on one end to the safety chain and linked on the other end through weldments on the neutral axis of the trailer frame (one on each side of the frame). Two recommended designs of the weldments are (1) a ½" thick plate of high tensile weldable steel (50W) with 1" diameter holes drilled at least ½" from the outside edge and (2) a bent rod of 1018 cold rolled steel with a minimum diameter of ¾". These designs are shown in the attached drawing D-001R-5-300-00-183.

2.4 Attachment of Safety Chain to Truck

Two 7/8" (minimum) x 2 1/4" forged steel shouldered eye bolts must be used for hooking the safety chains to the back bumper of the truck. The eyes must be Crosby S-279 as shown in Figure 2.3, or equivalent. The two eyes are mounted vertically on the truck bumper, one on each side of the pintle hook. They must be installed using Bowmalloy compression type locknuts and two washers.

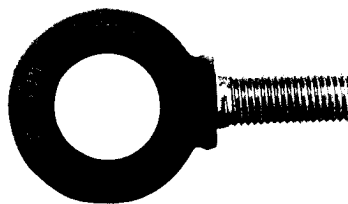


Figure 2.3: Shouldered Eye Bolt

3.0 BREAK-AWAY SYSTEM

3.1 Break-Away Cable and Switch

A Tekonsha model #2028 break-away switch complete with a 12 Volt rechargeable battery and battery charger must be used to ensure that the trailer brakes will activate if the safety chains fail. The break-away switch sits inside an aluminum case which is bolted to the neutral axis of the trailer frame. The switch must be positioned further back on the trailer frame than the location of the chain attachment. The break-away cable is 1/16" stainless steel wire rope, looped on both ends using brass crimp fittings. It is attached on one end to the break-away switch and hooked to the truck as described in Section 3.2.

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3.2 **Hook for Cable Attachment**

A simple snap hook must be used to attach the free end of the break-away cable to the truck. A typical snap hook is Crosby G-3315 (7/16") as shown in Figure 3.1. The eye of the hook is welded to the truck bumper and the base of the hook is welded to the ledge on the bottom of the bumper, and therefore brass hooks cannot be used.

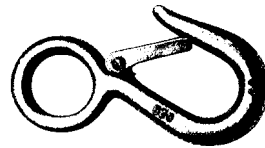


Figure 3.1: Snap Hook

4.0 **TRAILER ATTACHMENT TO TRUCK**

See drawing D-001R-5-300-00-183 attached.

4.1 **Trailer Tow Eye**

The trailer is lifted and the tow eye is placed in the pintle hook mounted on the back bumper of the truck.

4.2 **Safety Chains**

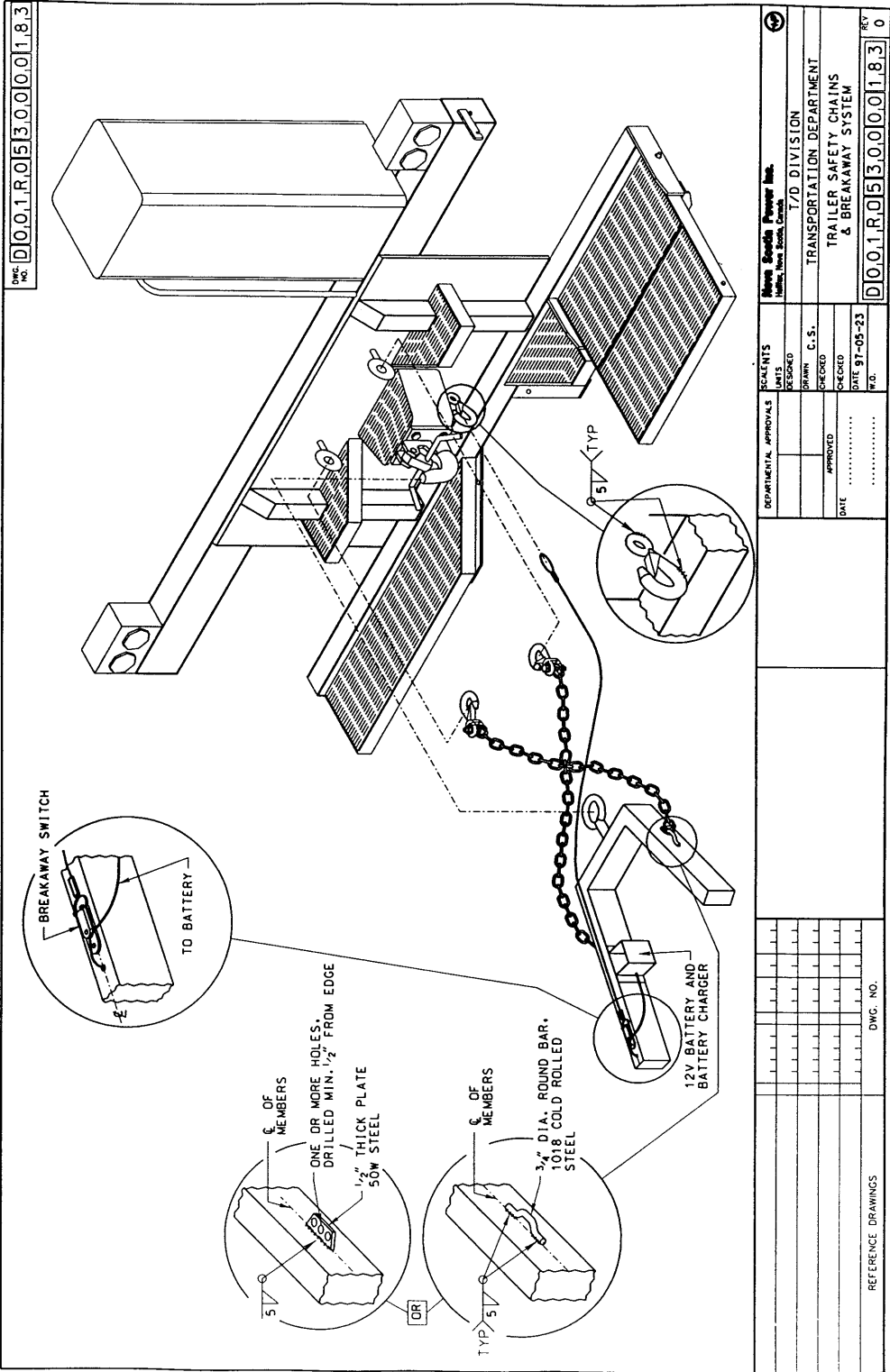
The chains are crossed below the trailer reach and hooked in the hook eyes mounted on the back bumper of the truck.

4.3 **Break-Away Cable**

The free, looped end of the break-away cable is inserted in the snap hook mounted on the back bumper of the truck.

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