AT&TCo Standard

"TRUCO" CABLE REEL TRAILER

DESCRIPTION AND USE

PAGE

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1. GENERAL

1.01 The TRUCO Model TCR and Model CT conversion cable reel trailers, which are identical except for frame width, are used to transport cable reels and to support the reels during cable placing operations using either the moving reel method or the stationary reel method. This section covers the description and use of the trailers and also outlines necessary maintenance routines. A TRUCO Model TCR trailer is illustrated in Fig. 1.

1.02 In addition to the standard and optional equipment such as a cable reel brake, available from the trailer manufacturer, the TRUCO trailers may be equipped to utilize the AT-8490 cable take-up drive, Section 640-210-133.

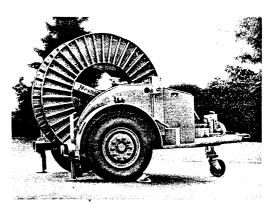


Fig. 1—TRUCO Model TCR Cable Reel Trailer

Pursuant to Judge Greene's Order of August 5, 1983, beginning on January 1, 1994, ATAT will cease to use "Beil" and the Beil symbol, with the exceptions as sat forth in that Order. Pursuant thereto, any reference to "BELL" and/or the BELL symbol in this document is hereby deleted and "expunged".

2. DESCRIPTION

2.01 The TRUCO cable reel trailer (Fig. 2) consists of a tubular steel, U-shaped frame with tongue of the same material equipped with a heavy duty towing eye. Mounted on the frame is a leaf spring-type reel suspension system on which the

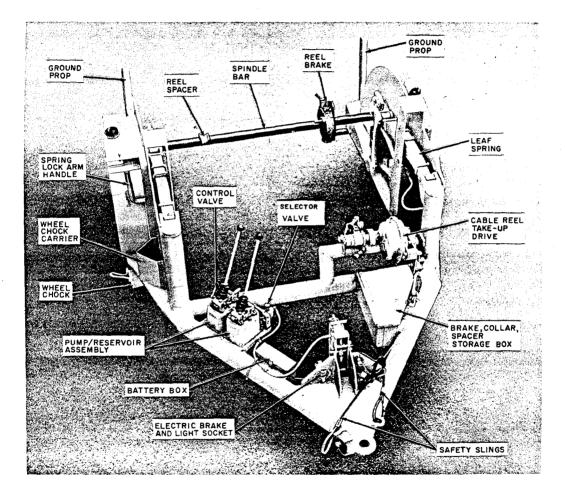


Fig. 2-TRUCO Trailer-View Showing Equipment

right and left spindle bar carrying brackets (Fig. 3) are independently raised and lowered hydraulically with double acting hand pumps (Fig. 4). One of the hand pumps is equipped with a valve to permit use of the pump for hydraulically extending and retracting the front caster wheel to adjust the height of the towing eye when coupling and uncoupling the trailer. The ground props mounted on the rear of the trailer frame are adjustable with pin-type safety locks. The TCR trailer can handle reels up to 96 inches in diameter and 59 inches in width without the cable reel brake or 54 inches in width with the cable reel brake. The trailer is 96 inches wide, 62 inches high, 12 feet 6 inches long, and it weighs a maximum of 3300 pounds.

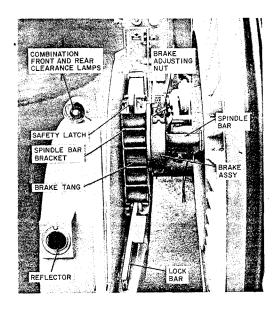


Fig. 3—TRUCO Trailer—View Showing Spindle Bar Carrying Bracket and Associated Equipment

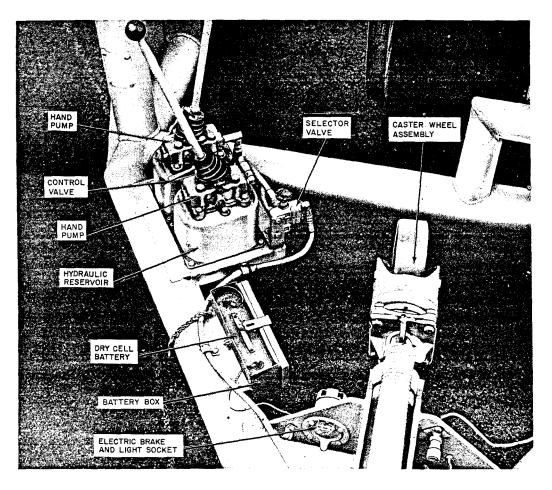


Fig. 4—TRUCO Trailer—View Showing Hand Pumps

2.02 Accessory items include the reel brake assembly, reel collars, reel spacers, and spindle bar shown in Fig. 5 and 6. A spindle bar adapter assembly (Fig. 7) is available for handling small reels. The assembly consists of adapters with studs that fit into the regular spindle bar carrying brackets and includes a spindle bar for use with the adapters. The adapters position the spindle bar several inches lower than the normal spindle bar height to permit loading and carrying small diameter reels.

Note: When ordering the spindle bar adapter assembly, specify for Model TCR or Model

CT and note inside width of frame to obtain correct spindle bar length.

2.03 The TCR trailer is equipped with stoplight/tail lights, turn signals, clearance lights, and reflectors. The trailer brakes may be either electric or hydraulic surge. If fitted with electric brakes, a breakaway system and battery are provided.

2.04 The load carrying capacity of the TCR trailer is specified by the trailer designation. This capacity is actually limited by the size of tires with which the trailer is equipped, as is shown in Table A, since all of the TCR trailers listed in

the table utilize identical frames.

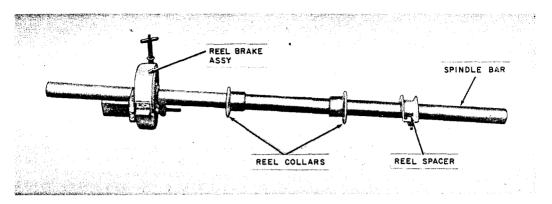
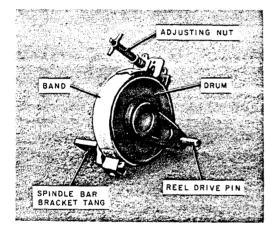


Fig. 5—Spindle Bar and Accessories



RIGHT LIFTING BRACKET

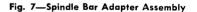


Fig. 6-Cable Reel Brake

TABLE A

TRAILER CAPACITIES

TRAILER	MAXIMUM REEL	TIRE
DESIGNATION	WEIGHT (POUNDS)	SIZE
TCR-8 TCR-10 TCR-12 TCR-14	$\begin{array}{c} 8,000 \\ 10,000 \\ 12,000 \\ 14,000 \end{array}$	9.00-20 E 10.00-20 F 11.00-20 F 10.00-20 G 20X (Note) 10.00-20 H D20X (Note)

Note: Michelin steel belted

2.05 The TRUCO trailer Model CT conversion is supplied by the manufacturer without running gear, which must be provided by the purchaser. The CT trailer frame is capable of handling loads up to 14,000 pounds if it is equipped with wheels and tires of the correct size (See Table A).

2.06 The Model CT trailer is identical in all respects to the TCR trailer except that the CT trailer frame is not as wide. The CT trailer will handle reels up to 96 inches in diameter and 54 inches in width without the cable reel brake or 48 inches in width with the cable reel brake. Since the 487 cable reel is 53 inches in width, the cable reel brake cannot be used if a 487 reel is carried on the CT trailer.

3. PRECAUTIONS

3.01 The truck selected to tow the TRUCO cable reel trailers must have the capacity, considering GVW and GCW, to handle the load. Do not overload the trailer or the towing vehicle.

3.02 Place wheel chocks at both trailer wheels before coupling or uncoupling the trailer.

3.03 Use the towing vehicle to maneuver the trailer into position for loading and unloading and to position the trailer for work operations. Always check to be sure the ground props are raised and locked and the caster wheel is locked in the travel position before moving the trailer with the truck.

3.04 Close and lock the latch on the towing hook as soon as the towing eye is engaged in the hook. Check to be sure the latch is locked and secure before moving the trailer.

3.05 Before moving a loaded trailer, be sure the lock arms are in the upright position and engaged under the spring bracket saddles, check through the peepholes in the sides of the trailer (see note), and the lock bars on both sides are engaged under the safety latches with the pins locked in place. Recheck before paying out or taking up cable.

Note: New models do not have peepholes because the side panels have been lowered.

3.06 When setting up to pay out or take up cable with the trailer uncoupled from the truck,

release hydraulic pressure on the caster so the wheel cylinder will be fully retracted. Lower the ground props to the ground and lock them in position. If when fully lowered the ground props do not contact the ground, raise the front of the trailer by operating the hand pump until the ground props are in contact with the ground. Do not apply an excessive load on the ground props.

3.07 Each time the trailer is used, make a visual inspection of the tires, the safety chains and attachments, and the breakaway switch, battery, and chain if equipped with electric brakes. Do not use a trailer that has damaged or inoperative safety equipment.

4. SAFETY CHAINS AND SLINGS

4.01 Although some State Motor Vehicle regulations require the use of only one safety chain or wire rope sling, trailers used in the Bell System should use two chains or wire ropes for added safety in the event that one chain or wire rope should become disengaged or fail. Also, two chains or wire ropes will keep the trailer tongue from dropping to the ground if the hitch fails or accidental uncoupling occurs. Each safety chain or wire rope and the associated attachments must have an ultimate strength equal to no less than the maximum laden weight of the trailer. Ultimate strength is generally four to five times the manufacturer's catalog rating, which is usually the working load. Ultimate strengths of various safety chains and wire ropes are listed in S.A.E. recommended practice J697 and are shown in Table B.

TABLE B

BREAKING STRENGTHS OF SAFETY CHAINS AND WIRE ROPES

	BREAKING STRENGTH (POUNDS)		
DIAMETER (INCHES)	ALLOY STEEL CHAIN	6 X 19 WIRE ROPE EXTRA IMPROVED PLOW STEEL	
9/32	14,200	-	
3/8	23,000	-	
7/16		22,800	
1/2	32,500	26,600	

4.02 , Installation of the chains or slings should be permanent on the trailer with the coupling done on the towing vehicle. Points of attachment of the safety chains or wire ropes to the towing vehicle must be located equidistant from and on opposite sides of the vehicle centerline and must be on the frame or frame extension of the vehicle. The safety rope shackle on the BU towing hook shall not be used for attaching safety chains or ropes of cable reel trailers.

4.03 The method used to secure the safety chains or wire ropes to the towing vehicle depends upon the attachment device on the vehicle. Chains fitted with grab hooks (a hook that hooks back on a chain link) are suitable but must be used with care since the hook can disengage when under no load and subjected to road vibration. These hooks should be taped in place during use. Chains with large throat hooks with safety latches may be used but often the safety latches will not function properly. Hooks with malfunctioning latches should not be used. The preferred attachment device, the "cruciform", is shown in Fig. 8. This device permits easy attachment of a safety chain with no hook required. Cable reel trailers utilizing this method of attachment should be equipped with safety chains of chain alloy steel with 3/8-inch links. Use Hammerlock chain coupling links available from Columbus-McKinnon Company, or equivalent, to couple the chains to the trailer.

4.04 To use the "cruciform" attachment device, attach the safety chains to the towing vehicle by taking the chain that is secured to the left side of the trailer tongue and coupling it to the attachment on the right of the towing hook. Take the chain secured to the right side of the trailer tongue and couple it to the attachment on the left side of the towing hook (See Fig. 9). The chains must be long enough to allow the trailer to be negotiated through turns but short enough to prevent the trailer tongue from contacting the ground if unintentional uncoupling occurs.

Caution: Do not use any truck or trailer with hitching or safety components missing or in improper working order.

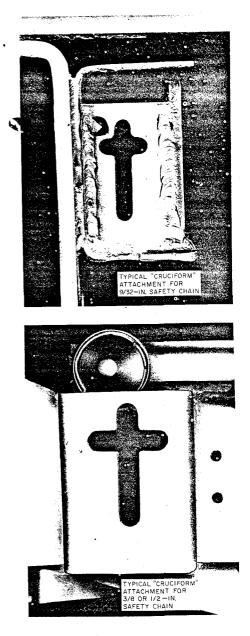


Fig. 8—Chain Attachment Device—"Cruciform"

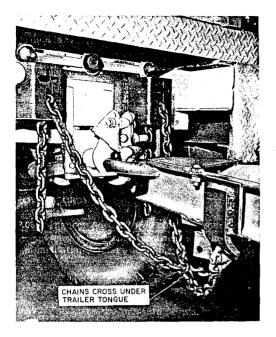


Fig. 9—Method of Coupling Safety Chains to Towing Vehicle

5. COUPLING AND UNCOUPLING THE TRAILER

5.01 When the trailer is parked, the caster wheel should support the trailer tongue with the caster wheel hydraulic cylinder fully retracted and the trailer wheels should be chocked.

5.02 To couple the track of the truck, open the latch on the truck towing hook and back the truck to the trailer to position the towing hook in line with the towing eye. Stop the truck when the towing hook is a few inches from the towing eye.

5.03 Raise the ground props and lock them in place. Pull the selector valve handle up.

The selector value is near the front hand pump on the trailer. Close the control value on the front hand pump, and operate the pump handle. This will extend the caster wheel hydraulic cylinder and raise the towing eye. Continue to operate the pump handle until the towing eye is slightly higher than the towing hook.

5.04 Back the truck to position the towing hook under the towing eye (Fig. 10). Open the control valve on the front hand pump to lower the towing eye until it engages the towing hook.

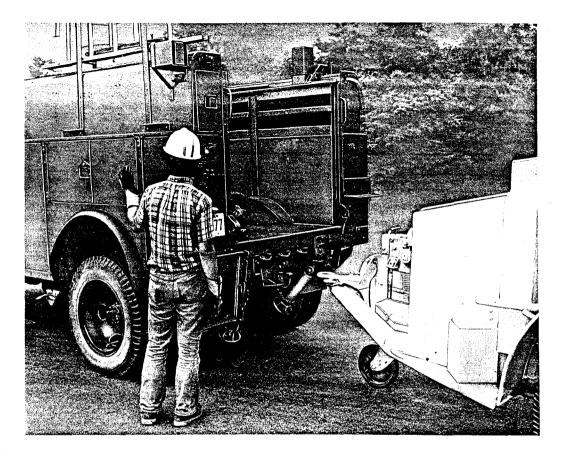
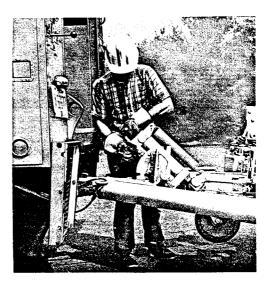


Fig. 10—Backing the Truck to Engage Towing Hook with Towing Eye

Close and lock the towing hook latch. Leave the control valve open to fully retract the caster wheel hydraulic cylinder. Attach the safety chains or slings to the towing vehicle (Fig. 11).

5.05 Place the caster wheel in the travel position by lifting the lock cam on the left side of the assembly and pulling the handle up and forward and rotating the entire assembly to the horizontal position (Fig. 12). Be sure that the lugs on the handle engage the slots at the front of the support to lock the assembly in place.

5.06 Attach the breakaway chain, and connect the electrical jumper cable (Fig. 13). Remove the wheel chocks from under the wheels and place them in the holders.



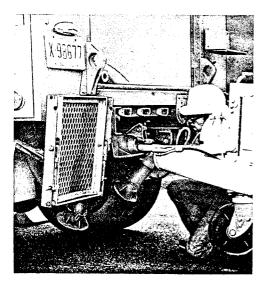


Fig. 11—Attaching Safety Slings to Rear of Truck

Fig. 12—Rotating Caster Wheel Assembly to Travel Position

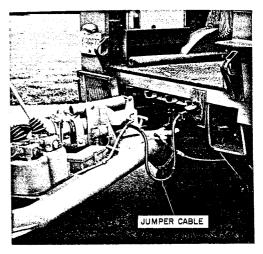


Fig. 13—Electrical Jumper Cable Connected to Truck and Trailer

5.07 To uncouple the trailer, chock the wheels and disconnect the jumper cable, safety slings or chains, and breakaway chain. Lower the caster wheel by pulling the handle forward and lifting up. Be sure the lugs engage the slots at the rear of the support.

5.08 Open the towing hook latch. Pull the selector valve handle up, close the control valve on the front pump, and operate the pump to raise the towing eye in the towing hook. Move the truck forward to clear the towing eye.

5.09 Open the control valve on the front pump to lower the trailer tongue as far as it will go.

6. LOADING AND UNLOADING REELS

6.01 Couple the trailer to the towing vehicle and maneuver the trailer into position to load

the cable reel. Push the selector valve down, close the control valves on both hand pumps, and operate the pumps to raise the spindle bar brackets to their highest position.

- 6.02 Move the spring lock arm handles (both sides of the trailer) to their vertical position to unseat the spring lock arms. Open the control valves on both hand pumps to lower the spindle bar carrying brackets to their lowest position. On both carrying brackets, remove the pin from the lock bar, release the safety latch, and rotate the lock bar toward the rear of the trailer to allow the spindle bar to be removed.
- 6.03 Remove the spindle bar, and place it through the spindle holes in the reel to be loaded.Install reel collars on the spindle bar, if necessary, and the reel brake and reel spacer(s) as required (Fig. 14).

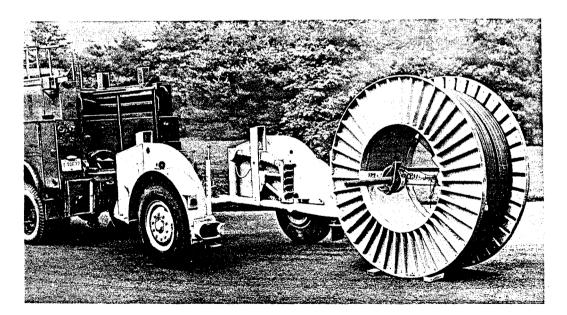


Fig. 14-Cable Reel Positioned for Loading

6.04 Back the truck and trailer so the trailer is astride the reel and spindle bar is seated in one pair of pockets in the spindle bar carrying bracket. If the spindle bar carrying bracket, close the control valves and raise the spindle bar carrying brackets to achieve alignment. Use the highest pockets possible to provide maximum road clearance when traveling. The spindle bar must be in corresponding pockets in the spindle bar carrying brackets so the reel will be level when transported.

With the spindle bar seated in the spindle 6.05 bar carrying bracket, engage the lock bar under the safety latch, and replace and lock the pin (both ends of the spindle bar) as shown in Fig. 15. Operate both hand pumps to raise the spindle bar carrying brackets to the highest position (Fig. 16). Move the spring lock arm handles (both sides of trailer) to their horizontal position (Fig. 17) to engage the spring lock arms under the spring saddles. Check through the peep holes in the sides of the trailer, if they are provided. Insert the pins in the bracket to lock the lock arm handle in position (See note). Open the control valves on both hand pumps to allow the reel to settle so the weight of the reel will be carried by the spring support arms. Do not transport a reel with the load on the hydraulic system. Road shock may cause damage. The loaded trailer coupled to the truck is shown in Fig. 18.

Note: The newer model trailers utilize a pin to secure the lock arm handle in the horizontal position. Older model trailers utilize a spring instead of the pin to hold the handle in position.

6.06 With the reel loaded on the trailer as described in the preceding paragraphs, a reel of cable can be transported to the job site and, utilizing the trailer, the cable may be placed using either the moving reel or stationary reel method.

6.07 To unload a reel, operate both pumps to raise the spindle bar carrying brackets to their highest position, move the spring lock arm handles to the vertical position, and open the control valves on each pump to allow the spindle bar carrying brackets to settle and the reel to come in contact with ground. Chock the reel to prevent movement when the lock bars are released. Remove the pins from the lock bars, release the safety latches, and rotate the lock bars to clear the ends of the spindle bar. Move the trailer

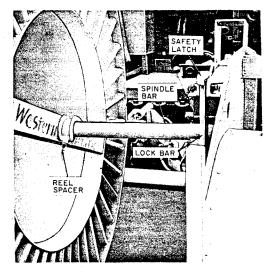


Fig. 15—Spindle Bar Locked in Place

clear of the reel. Remove the spindle bar from the reel, replace it in the spindle bar carrying brackets, and lock it in place. Store the brake assembly, reel collars, and spacers in the storage box on the trailer.

7. PLACING CABLE FROM A TRAILER MOUNTED REEL

7.01 When placing cable from a stationary

reel, the trailer may or may not be coupled to a truck. If coupled to a truck, set the truck brakes and chock both trailer wheels and the truck, wheels. If the trailer is uncoupled from the truck, chock both trailer wheels front and rear, and lower the trailer tongue as far as it will go. Lower the rear ground props to the ground and lock them in place. Use the front hand pump to raise the trailer tongue just enough to place the ground props in firm contact with the ground. Do not raise the tongue to the point where substantial weight is supported by the rear ground props and the caster wheel.

7.02 If the trailer must be located where the

ground slopes, the reel may be leveled by closing the control valve on the pump that serves the spindle bar carrying bracket on the high side, raising the high side to clear the spring support

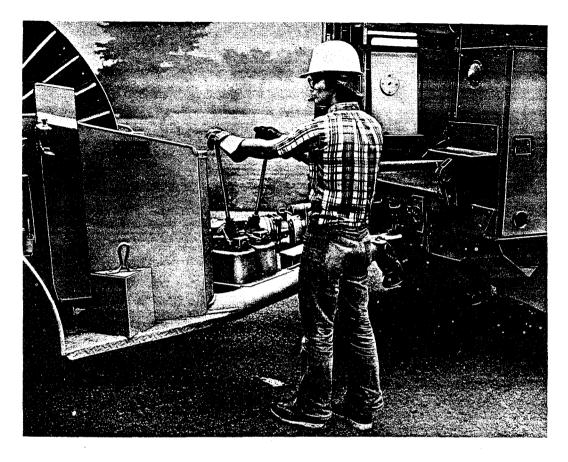


Fig. 16—Operating Hand Pumps to Raise Spindle Bar Carrying Brackets

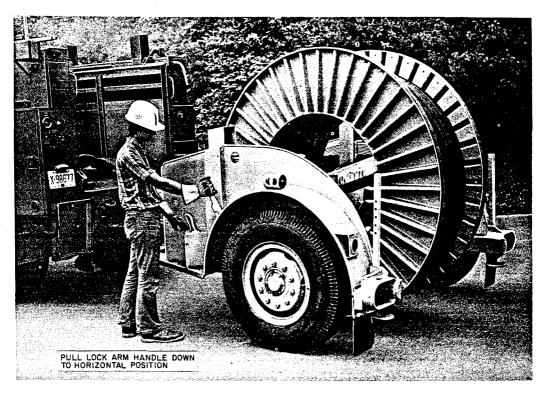


Fig. 17—Positioning Spring Lock Arm Handle

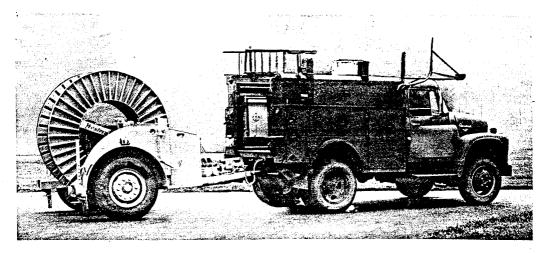


Fig. 18—TRUCO Trailer Coupled to Towing Vehicle

arm, moving the lock arm handle on that side to the vertical position, and using the control valve to lower the high side until the reel is level. Close the control valve to hold the reel level. After the placing operation has been completed, return the spindle bar to its original position and reposition the spring support arm.

7.03 To place cable from a moving reel, load the reel as covered in Part 5 and proceed with the placing operation. Be sure the reel is properly loaded and is supported by the spring lock arms. Use the cable reel brake to prevent free-running and surging.

8. TESTING THE BRAKES

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8.01 Test the breakaway emergency braking

system by pulling the breakaway switch chain by hand. With the brake operated, the wheels of an empty trailer should lock and slide when the trailer is pulled by the truck. The wheels of a loaded trailer may not lock and slide but the trailer should be difficult to move forward.

8.02 Immediately after completing the test, release the brakes and replace the chain. The switch should not be on for more than 4 or 5 seconds to keep from running down the "hot-shot" emergency brake battery.

8.03 Test the battery periodically with a voltmeter. If the voltage drop is more than 15 percent, replace the battery.

8.04 Test the truck and trailer service brakes, both electric and surge brakes, by determining whether the truck and loaded trailer can be stopped within a distance of 10 feet from a speed of 10 mph. On a hard, paved, level, dry surface that is free of loose material, mark off a distance of 10 feet. Approach the marks at a speed of 10 mph, and apply the brakes at the first of the marks. The brakes must be applied so the stopping distance if measured from the point at which movement of the brake pedal or control begins. To be used on the public highway, the truck and trailer must be able to stop within the 10-foot distance.

9. INSPECTING THE TRAILER

•STRUCTURAL

9.01 Inspect the towing eye for excessive wear and replace as required. Do not attempt to build up worn eyes with weld. The eyes are hardened and welding would decrease the hardness. Inspect the tongue attachment for loose bolts, rivets, etc. Repair or replace as required.

9.02 Inspect the frame, fasteners, springs, spring shackles, U bolts, and axles for cracks and damage. Magnetic particle and dye penetrants are ideally suited to this type of examination, and the equipment is relatively inexpensive and simple to use. Many private companies are available to perform this type of inspection service.

Inspect welds for overall quality as well as: 9.03 for cracks and signs of failure. Pay particular attention to repairs since experience has shown that most weld problems are associated with welds made in local repair shops. The magnetic particle and dye penetrant tests will show surface cracks not visible to the naked eve; however, these tests do not show degree of penetration, porosity, or inclusions. Radiographs do show subsurface conditions: however, this method is generally not suitable for examining fillet welds and structural welds are often not accessible. Also, radiographs should be examined only by experienced personnel. The best method of inspecting welds on equipment trailers is visual examination by a knowledgeable person. Amount of weld deposit, undercut, overlap, and convexity may be seen, and they are good indications of overall weld quality.

9.04 Persons inspecting welds and those doing the welding should obtain and become familiar with the following standards available for a nominal fee from the American Welding Society, 2501 N.W.
7th, Miami, Florida 33125.

- "Specification for Welding Industrial Mill Cranes" D14.1-70
- "Structural Welding Code" AWS D1.1-72

9.05 Inspect the spindle bar carrying bracket for excessive wear and for cracks in the pockets. The lock bar and safety latch should operate freely and engage properly. Be sure the proper pins are used in the lock bars. Do not use pole hardware for this application. Occasionally applying a few drops of oil on pivot points and pins will help to reduce wear and assure ease of operation.

9.06 Inspect the towing eye for signs of excessive wear. Replace as required. Do not attempt to build up a towing eye with weld as the eyes are hardened. Inspect the caster wheel assembly and ground props. Worn or damaged components must be replaced. Inspect the frame, fasteners, springs, spring shackles, U bolts, and axles for damage and cracks. Inspect the main structural welds for signs of cracks. If cracks or other damage is detected, report the condition to the motor vehicle forces so a detailed analysis can be made and repairs performed as required.

LIGHTING

9.07 Check the operation of all lamps. Replace cracked or broken lenses. Inspect terminals for signs of corrosion. Inspect wiring for wear or fraying. Wires should be protected by fabric loom. Crimp-type terminals, where exposed to the elements, should be taped or otherwise protected to prevent salt and water from entering the joint and causing corrosion.

POWER CORDS

9.08 Inspect power cords used to connect the truck and trailer electrical systems. Look for insulation damage and damaged or corroded contacts. Replace as necessary.

TIRES AND WHEELS

 9.09 Measure tire pressure regularly. Refer to Section 720-305-300 for detailed tire service procedures. Keep tires inflated to pressures shown in Table C. Refer to Section 720-305-310 for proper wheel and rim maintenance. Inspect and repack wheel bearings at regular intervals.

HYDRAULIC SYSTEMS

9.10 Inspect the hand pumped hydraulic system, which is used for control of the tongue support jack and the reel lift mechanism, for leaks

TABLE C

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TRAILER DESIGNATION	TIRE SIZE AND LOAD RATING	INFLATION PRESSURE (PSI)
TCR-8	9.00-20 E	80
TCR-10	10.00-20 F	95
TCR-12	11.00-20 F	85
TCR-14	10.00-20 G Micheline 20X Steel Belt	95
TCR-14	10.00-20 H Michelin D20X	115

TIRE INFLATION PRESSURES

at all fittings and for abrasions on all hoses. Badly abraded hose should be replaced. A vented plug is used in the hydraulic oil reservoir. Do not replace the vented plug with a solid pipe plug. To do so would create a vacuum lock. The oil level must be kept above the end of the suction pipe in the reservoir, and the suction pipe must be tight to prevent air from entering the pump.

Steel Belt

9.11 Inspect the hand operated hydraulic pumps and the rubber boots located at the bottom of the pump handles. These boots will deteriorate with age and lead to water contamination of the hydraulic oil. Pack the inside of the boots with heavy wheel bearing grease to help keep water from entering the system. Check for the presence of water in the hydraulic oil. This is indicated by a milky color of the oil and the tendency to foam in the reservoir. Replace with clean oil. An automatic transmission fluid with a pour point of -50 to -55 degrees F is satisfactory for most climates. For colder climates, use aircraft hydraulic oil meeting MIL-H-5606A with a pour point of -75degrees F. NEVER USE HYDRAULIC BRAKE FLUID IN THIS SYSTEM.

BREAKAWAY SYSTEM

9.12 The breakaway system is an essential safety device required by law and, therefore, must be functional. The "light duty" mobile home type of breakaway switch is vulnerable to damage and corrosion and should be replaced with a heavy duty switch. The Warner emergency brake switch #1300-831-002 is a suitable replacement. Makeshift

devices such as ropes, wire, marline, etc, must not be used to activate the switch. Remove these devices and replace with a suitable chain assembly, such as the Warner chain assembly #1300-100-002.

9.13 Test brake operation by pulling the chain by hand. The most common problem associated with breakaway systems is the battery. Neglect will result in a discharged battery that will not perform when required. When replacing a battery, be sure to use a suitable replacement. Six volt batteries are not suitable for use on trailers with twelve volt systems, but twelve volt batteries may be used on trailers with six volt systems. The following batteries are suitable for use in electric brake systems.

Eveready #1461-6 volt

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Eveready #1463-12 volt (preferred)

Ray-O-Vac #641-6 volt

Ray-O-Vac #922-12 volt (preferred)

10. INSPECTION AND MAINTENANCE INTERVALS

10.01 DRIVER RESPONSIBILITY—Daily

Be certain the towing truck has proper towing capacity.

Be certain that reel weight does not exceed trailer capacity.

Check towing hook, latch, safety chains, and breakaway switch.

Check reel security.

Check trailer brakes.

Check all lights.

Visually examine tires for signs of under inflation.

Visually examine wheels for missing or loose wheel nuts.

10.02 DRIVER OR MOTOR VEHICLE DEPARTMENT—*Weekly*

Check tire pressure and inspect tires. Inspect for wheel and rim damage.

10.03 MOTOR VEHICLE DEPARTMENT—Monthly

Inspect truck towing hook and mounting. Lubricate moving parts of towing hook. Inspect condition of power cable receptacle on truck.

Inspect safety chain brackets on truck. Inspect trailer safety chains and points of attachment.

Inspect power cable and receptacle on trailer.

Inspect condition of emergency brake switch. Inspect and lubricate trailer caster wheel.

Replace trailer battery if necessary.

Lubricate trailer as required.

Inspect reflectors, lights, and turn signals.

10.04 MOTOR VEHICLE DEPARTMENT—Semiannually

Check all critical welds. Inspect running gear (wheels, rims, tires, springs, etc.) Inspect condition of all wiring. Inspect, brake linings and drums. Repack wheel bearings as required. Inspect for proper pins. Check oil level in reservoir. Check hydraulic system components.