

360 DOUBLE DROP DECK SEMITRAILER

SERIAL NUMBER: _____

PURCHASE DATE: _____

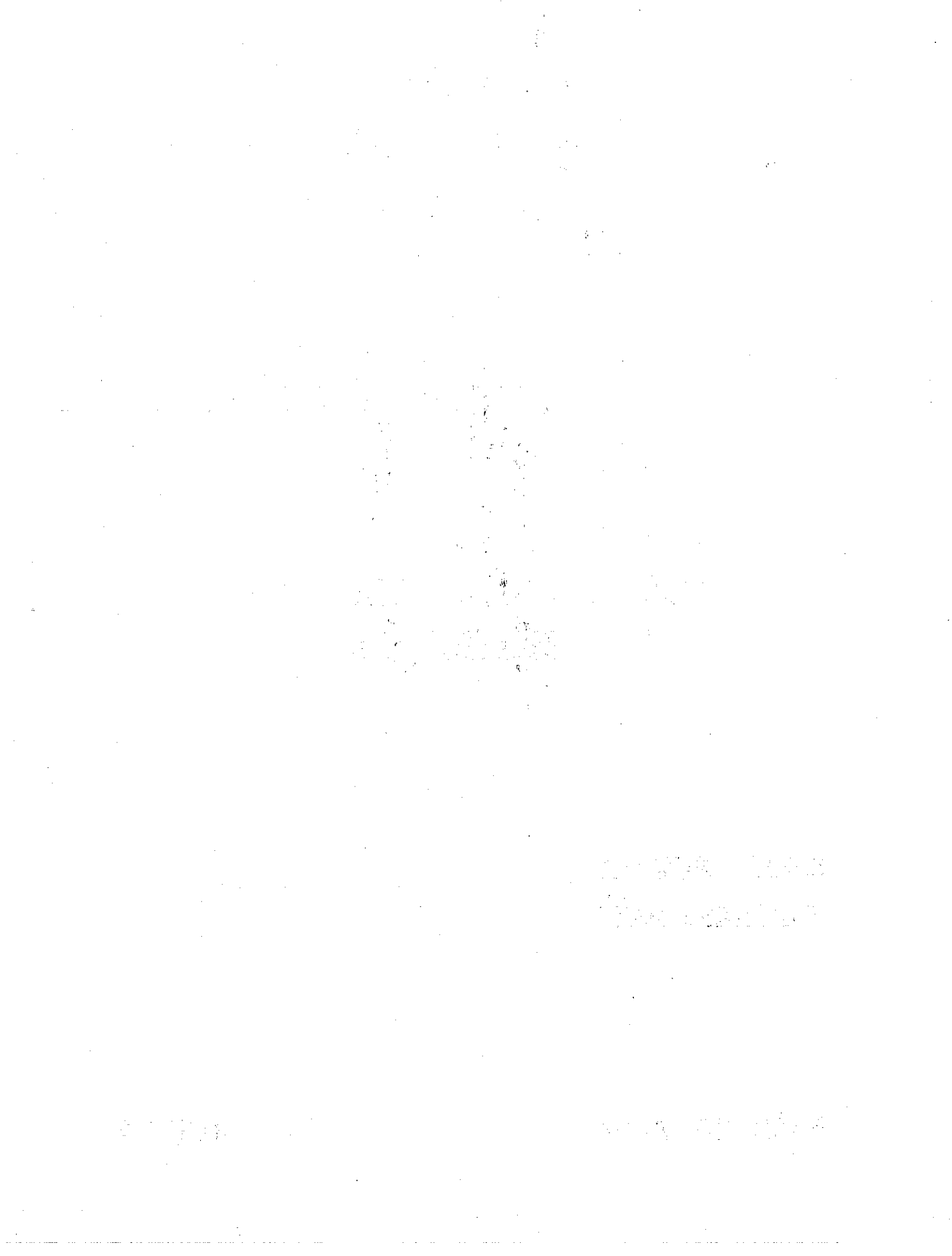


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SAFETY PRECAUTIONS



THIS SAFETY ALERT SYMBOL INDICATES IMPORTANT SAFETY MESSAGES IN THIS MANUAL. WHEN YOU SEE THIS SYMBOL, CAREFULLY READ AND STUDY THE MESSAGE THAT FOLLOWS BEFORE OPERATION. BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY OR DEATH.



KEEP ALL PERSONNEL CLEAR OF FRONT, REAR, AND SIDES OF TOWING VEHICLE AND SEMITRAILER DURING COUPLING, COMPONENT OPERATIONS, AND UNCOUPLING. FAILURE TO STAY CLEAR WILL RESULT IN SERIOUS PERSONAL INJURY OR DEATH.



SPRING BRAKE ACTUATORS (BRAKE CHAMBERS) EMPLOY A SPRING WITH HIGH FORCES REQUIRING EXTREME CARE WHILE SERVICING. PERSONNEL UNFAMILIAR WITH DISASSEMBLY TECHNIQUE SHOULD NOT ATTEMPT THIS PROCEDURE. DISASSEMBLING THE SPRING CHAMBER WITHOUT PROPERLY CAGING THE SPRING MAY RESULT IN SERIOUS INJURY OR DEATH.



DO NOT OPERATE THE SEMITRAILER UNTIL A COMPLETE INSPECTION HAS BEEN PERFORMED. A DEFECT MAY CAUSE PERSONAL INJURY TO YOURSELF OR OTHERS. TRACTOR/TRAILER OPERATIONS SHOULD BE UNDERTAKEN ONLY BY AN OPERATOR TRAINED FOR SAFE HOOK-UP AND OPERATION OR BY A COMPETENT STUDENT ACTING UNDER THE DIRECT SUPERVISION OF AN INSTRUCTOR.



FAILURE TO PROPERLY SET AND CHECK PARKING BRAKE, AND CHOCK WHEELS WHEN PARKING AND DURING STORAGE, COULD ALLOW MOVEMENT OF THE SEMITRAILER RESULTING IN SERIOUS PERSONAL INJURY, DEATH TO INDIVIDUAL(S), OR DAMAGE TO PROPERTY IN IT'S PATH.



ALWAYS CHECK BEHIND AND UNDER THE TRACTOR AND SEMITRAILER FOR PERSONS OR OBJECTS BEFORE BACKING. FAILURE TO DO SO COULD RESULT IN SERIOUS PERSONAL INJURY OR DEATH TO OTHERS, OR DAMAGE TO PROPERTY.



WHEN CRAWLING UNDER THE SEMITRAILER IS NECESSARY, CHOCK ALL WHEELS OF THE TRAILER AND TRACTOR. WHEN JACKING IS NECESSARY, CHOCK ALL WHEELS AND SUPPORT THE TRAILER WITH JACK STANDS SUFFICIENT TO WITHSTAND THE WEIGHT OF THE TRAILER AND ITS LOAD. FAILURE TO TAKE ADEQUATE SAFETY MEASURES COULD RESULT IN SERIOUS PERSONAL INJURY OR DEATH.



DO NOT ALLOW SLACK IN TIE-DOWNS. A SHIFTING LOAD MAY CREATE ENOUGH MOMENTUM TO BREAK HI-TEST CHAIN OR STRAP TIES. SLACK IN TIE-DOWNS MAY RESULT IN DAMAGE TO THE LOAD, AND DEATH OR SERIOUS PERSONAL INJURY TO PERSONS NEAR THE LOAD.



OPERATING THE SEMITRAILER WITH DEFECTIVE OR NON-OPERATING BRAKES MAY RESULT IN SERIOUS INJURY OR DEATH TO YOURSELF OR OTHERS, AND DAMAGE TO THE TRUCK/SEMITRAILER AND ITS CARGO, AND PROPERTY IN ITS PATH.



USE GREAT CARE IF WHEELS OR BRAKE DRUMS MUST BE TOUCHED OR HANDLED. THEY MAY BE VERY HOT AND CAN CAUSE SERIOUS INJURY.



IF ANY OF THE TESTS IN THE FOLLOWING PROCEDURES FAIL, LOCATE THE SOURCE OF FAILURE AND REMEDY IT BEFORE TRANSPORTING OR USING THE TRAILER.



ALWAYS CHOCK WHEELS BEFORE RELEASING BRAKES. FAILURE TO CHOCK WHEELS MAY RESULT IN SEVERE PERSONAL INJURY OR DEATH.

1 INTRODUCTION

THIS MANUAL PROVIDES OPERATING PROCEDURES TO HELP YOU OBTAIN EFFICIENT AND DEPENDABLE USE FROM YOUR NEW EQUIPMENT. THIS MANUAL ALSO CONTAINS GENERAL INFORMATION, SPECIFICATIONS, SAFETY PRECAUTIONS, MAINTENANCE, PARTS LISTS AND ILLUSTRATIONS.

READ THIS MANUAL CAREFULLY BEFORE OPERATING THE EQUIPMENT. KEEP IT HANDY FOR FUTURE REFERENCE.

IF AT ANY TIME YOU HAVE ANY QUESTIONS, OR FOR LANDOLL REPLACEMENT PARTS AND SERVICE, CONTACT YOUR LANDOLL DEALER, OR CALL:

**LANDOLL CORPORATION
SALES & SERVICE
1700 MAY STREET
MARYSVILLE, KANSAS 66508
(785)562-5381
1-800-HAULLOLL
(1-800-428- 5655)
FAX NO.: (785) 562-4893
FOR REPLACEMENT PARTS:
1-800-423- 4320
FAX NO.: (785) 562-4892**

THE LANDOLL MODEL 360 DOUBLE DROP-DECK SEMITRAILER IS A QUALITY PRODUCT DESIGNED TO GIVE YEARS OF TROUBLE FREE PERFORMANCE. BY FOLLOWING EACH SECTION OF THIS MANUAL YOUR EQUIPMENT WILL PERFORM AS DESIGNED FOR YOU AND YOUR BUSINESS.

THE 360 DOUBLE DROP-DECK SEMITRAILER IS COMPRISED OF A DOUBLE DROP DECK, FLIP-OUT OUTRIGGERS, TANDEM AXLE, SPRING SUSPENSION, DUAL TIRES, AIR SYSTEM, AND A 12 VOLT ELECTRICAL SYSTEMS.

THE SEMITRAILER IS DESIGNED TO BE TOWED BY A TRUCK/TRACTOR VEHICLE EQUIPPED WITH A FIFTH WHEEL, AIR BRAKE, AND 12 VOLT LIGHTING SYSTEM HOOK-UPS.



Remember. . .
Quality is
always a bargain!

2 TERMINOLOGY

The figure below of the 360 Double Drop-Deck Semitrailer lists terms which are used throughout this manual. A good knowledge of the following terms will make the study of this manual easier.

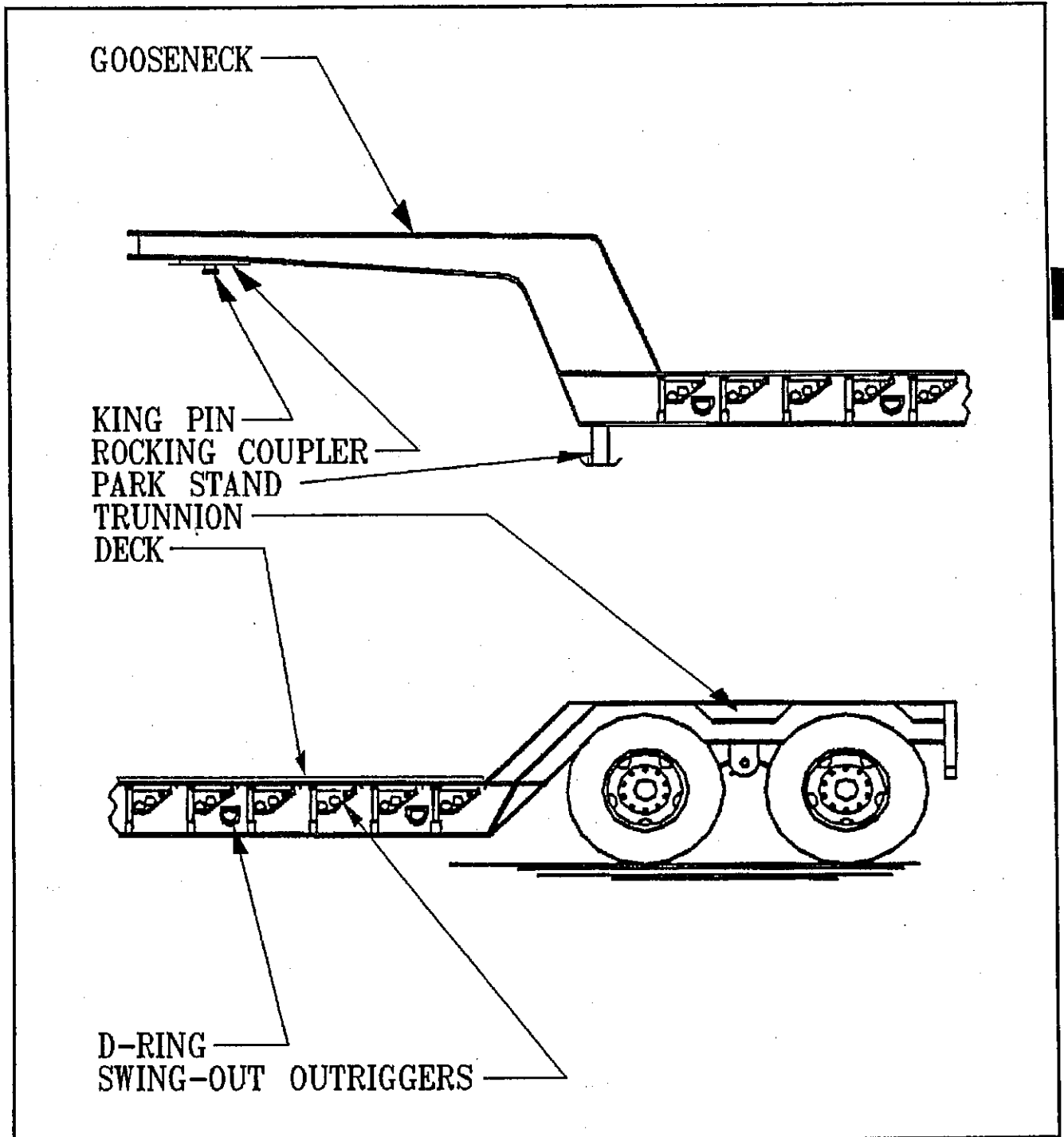


FIG. 2-1 SEMITRAILER TERMINOLOGY



NOTES:

3 STANDARD SPECIFICATIONS

OVERALL LENGTH	39'-6"
OVERALL WIDTH	8'-0"
WEIGHT	16,550#
GOOSENECK:	
LENGTH	9'-6"
WIDTH	8'-0"
LOWER DECK:	
LENGTH	19'-0"
WIDTH	8'-0"
UPPER REAR DECK:	
LENGTH	8'-0"
WIDTH	8'-0"
FIFTH WHEEL HEIGHT	54"
PIN SETTING	25"
SWING CLEARANCE	72"
CAPACITY:	
WEIGHT	100,000#
GAWR	23,200#
GVWR	116,550#
SPECIFIC BOLT TORQUE:	
OUTER SPINDLE NUT	250-400#
INNER WHEEL NUTS	450-500#
OUTER WHEEL NUTS	450-500#
TRUNNION CLAMP U-BOLTS*	600#
TRUNNION CLAMP MOUNTING BOLTS	150#
AXLE CLAMP U-BOLTS*	300#
ALIGNMENT CAP SCREWS	600#

*AXLE U-BOLTS MUST BE TIGHTENED EVENLY SO THAT EACH END HAS AN EQUAL AMOUNT OF THREADS SHOWING AFTER TIGHTENED TO TORQUE SPECIFICATIONS.

GENERAL TORQUE SPECIFICATION TABLE (REVISED 9-87)

USE THE FOLLOWING TORQUES WHEN SPECIAL TORQUES ARE NOT GIVEN.

NOTE: These values apply to fasteners as received from supplier, dry, or when lubricated with normal engine oil. They do not apply if special graphited or moly-disulphide greases or other extreme pressure lubricants are used. This applies to both UNF and UNC threads.

Inches	Millimeters	Bolt Size	SAE Grade No.	2			5			8*			
				Torque		Torque		Torque		Torque		Torque	
				Foot Pounds	Newton-Meters	Foot Pounds	Newton-Meters	Foot Pounds	Newton-Meters	Foot Pounds	Newton-Meters	Foot Pounds	Newton-Meters
1/4	6.35	5 6 7 9	5 6 7 9	5 6 7 9	9 9 11 12	9 9 11 12	15 15 15 16	12 12 15 16	12 12 15 16	15 15 16 20	15 15 16 20		
5/16	7.94	10 12 14 16	10 12 14 16	10 12 14 16	17 17 20 23	17 17 20 23	28 28 28 28	24 24 29 29	24 24 29 29	32 32 39 39	32 32 39 39		
3/8	9.53	20 23 27 31	20 23 27 31	20 23 27 31	35 35 42 48	35 35 42 48	57 57 57 57	45 45 54 54	45 45 54 54	61 61 73 73	61 61 73 73		
7/16	11.11	30 35 41 47	30 35 41 47	30 35 41 47	54 54 64 73	54 54 64 73	87 87 87 87	70 70 84 84	70 70 84 84	95 95 114 114	95 95 114 114		
1/2	12.70	45 52 61 70	45 52 61 70	45 52 61 70	80 80 96 108	80 80 96 108	130 130 130 130	110 110 132 132	110 110 132 132	149 149 179 179	149 149 179 179		
9/16	14.29	65 75 88 102	65 75 88 102	65 75 88 102	110 110 132 149	110 110 132 149	179 179 179 179	160 160 192 192	160 160 192 192	217 217 260 260	217 217 260 260		
5/8	15.88	95 105 129 142	95 105 129 142	95 105 129 142	150 150 180 203	150 150 180 203	244 244 244 244	220 220 264 264	220 220 264 264	358 358 427 427	358 358 427 427		
3/4	19.05	150 165 203 250	150 165 203 250	150 165 203 250	270 270 324 366	270 270 324 366	439 439 439 439	380 380 456 456	380 380 456 456	618 618 747 747	618 618 747 747		
7/8	22.23	160 200 217 271	160 200 217 271	160 200 217 271	400 400 480 542	400 400 480 542	651 651 651 651	600 600 720 720	600 600 720 720	976 976 1184 1184	976 976 1184 1184		
1	25.40	250 300 339 406	250 300 339 406	250 300 339 406	580 580 696 786	580 580 696 786	944 944 944 944	900 900 1080 1080	900 900 1080 1080	1464 1464 1776 1776	1464 1464 1776 1776		
1-1/8	25.58				800 800 800 800	800 800 800 800	1193 1193 1193 1193	1280 1280 1440 1440	1280 1280 1440 1440	1953 1953 2343 2343	1953 1953 2343 2343		
1-1/4	31.75				1120 1120 1120 1120	1120 1120 1120 1120	1681 1681 1681 1681	1820 1820 2000 2000	1820 1820 2000 2000	2712 2712 3254 3254	2712 2712 3254 3254		
1-3/8	34.93				1460 1460 1460 1460	1460 1460 1460 1460	2278 2278 2278 2278	2380 2380 2720 2720	2380 2380 2720 2720	3688 3688 4425 4425	3688 3688 4425 4425		
1-1/2	38.10				1940 1940 1940 1940	1940 1940 1940 1940	2963 2963 2963 2963	3160 3160 3560 3560	3160 3160 3560 3560	4827 4827 5811 5811	4827 4827 5811 5811		

NOTE: When hardware is plated, reduce torque values by 25%
 When locknuts are used, increase torque value by 25%
 When plated hardware is used w/locknuts, use torque value in chart

* Thick nuts must be used with Grade 8 bolts

TABLE 3-1 STANDARD BOLT TORQUES

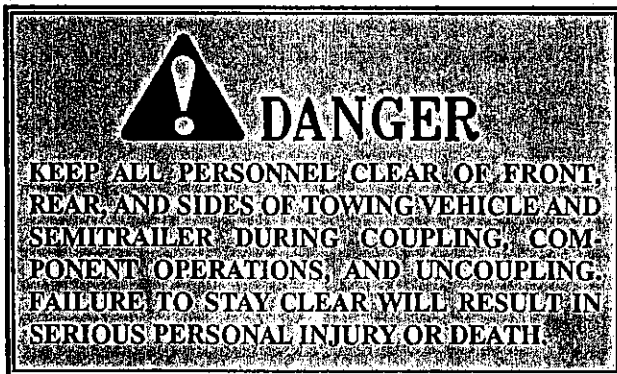
4 OPERATION

PREFACE

This section describes the proper operating procedures for the 360 Semitrailer and should be read completely before operating the semitrailer.

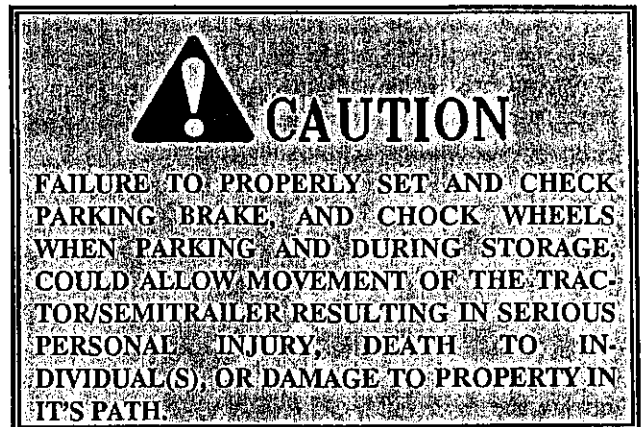
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DANGER

KEEP ALL PERSONNEL CLEAR OF FRONT, REAR, AND SIDES OF TOWING VEHICLE AND SEMITRAILER DURING COUPLING, COMPONENT OPERATIONS, AND UNCOUPLING. FAILURE TO STAY CLEAR WILL RESULT IN SERIOUS PERSONAL INJURY OR DEATH.



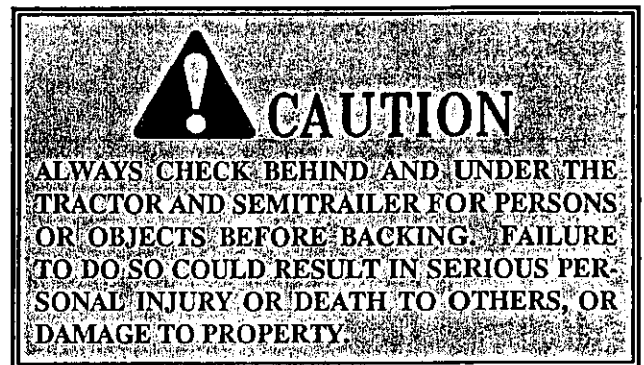
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FAILURE TO PROPERLY SET AND CHECK PARKING BRAKE, AND CHOCK WHEELS WHEN PARKING AND DURING STORAGE, COULD ALLOW MOVEMENT OF THE TRACTOR/SEMITRAILER RESULTING IN SERIOUS PERSONAL INJURY, DEATH TO INDIVIDUAL(S), OR DAMAGE TO PROPERTY IN ITS PATH.



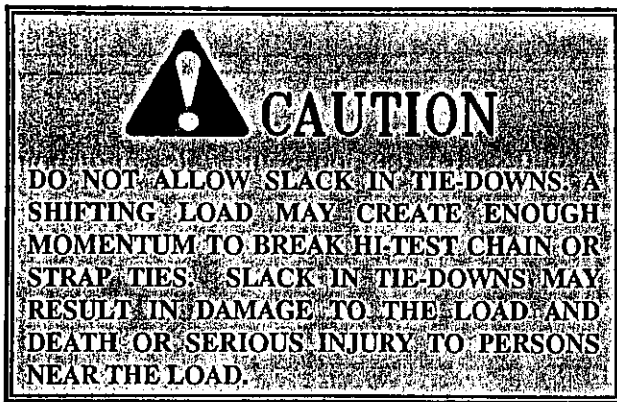
CAUTION

OPERATING THE TRACTOR OR SEMITRAILER WITH DEFECTIVE, BROKEN, OR MISSING PARTS MAY RESULT IN SERIOUS INJURY OR DEATH OF PERSONNEL, DAMAGE TO THE TRACTOR/SEMITRAILER OR ITS CARGO, OR DAMAGE TO PROPERTY IN ITS PATH.



CAUTION

ALWAYS CHECK BEHIND AND UNDER THE TRACTOR AND SEMITRAILER FOR PERSONS OR OBJECTS BEFORE BACKING. FAILURE TO DO SO COULD RESULT IN SERIOUS PERSONAL INJURY OR DEATH TO OTHERS, OR DAMAGE TO PROPERTY.



4-1 PRE-COUPLING OF TRAILER AND TRACTOR

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

4-1.1 Slowly back the tractor/truck (towing vehicle) up to the front end of the semi-trailer so the king pin of the semitrailer is centered between the tractor fifth wheel jaws. Stop the towing vehicle just inches ahead of the semitrailer. Set tractor parking brake.

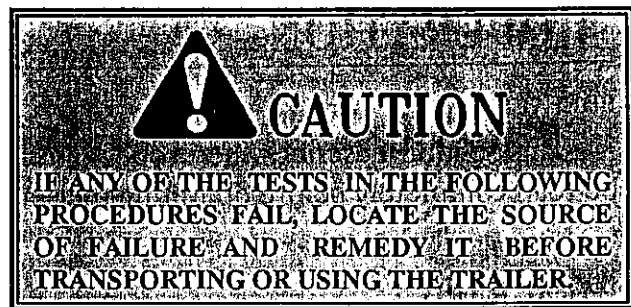
4-1.2 Check the semitrailer king pin plate height. The king pin plate should be the same height, to slightly lower, than the latch area of the fifth wheel plate of the towing vehicle. Drain all air and moisture from the towing vehicle air brake system in accordance with the towing vehicle manufacturer's instructions.

4-1.3 Allow full air build-up in the towing vehicle's air system.

4-1.4 Connect the service and emergency air hoses of the towing vehicle to their respective gladhand on the front of the semitrailer; red emergency line to the gladhand with the "EMERGENCY" tag, and the blue service line to the gladhand with the "SERVICE" tag. Activate the semitrailer air supply valve in the towing vehicle. Set the parking brakes and chock the trailer wheels.

4-1.5 Check the air brake operations of the semitrailer as follows:

- a. Apply brakes and inspect brake action on all wheels for prompt application.
- b. Release brakes. All brakes should release immediately. Air pressure should discharge quickly from the relay emergency valve.
- c. Disconnect the emergency air line from the semitrailer gladhand. Trailer brakes should promptly set.
- d. Re-connect the emergency air line to the trailer and activate the trailer air supply valve. The parking



brakes should set.

4-2 COUPLING OF THE TRACTOR TO THE SEMITRAILER

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

4-2.1 Verify that the trailer wheels are chocked and brakes function properly.

4-2.2 Make certain the coupler of the towing vehicle's fifth wheel is open by pulling the latch handle.

4-2.3 Slowly back the towing vehicle so its fifth wheel contacts the front of the king pin plate on the semitrailer and slips under it. Continue backing until the fifth wheel coupler locks onto the semitrailer kingpin.

4-2.4 Verify the vehicle coupling is secure by attempting to pull the tractor forward a few inches. If the tractor disconnects from the trailer, locate source of coupling failure and repair before continuing. Repeat steps 4-2.3 and 4-2.4.

4-2.5 If the towing vehicle couples securely to the semitrailer, set towing vehicle and trailer parking brakes for the remainder of the hookup and checkout procedures and for parking.

4-3 CONNECTING TRACTOR SERVICES TO THE TRAILER

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

4-3.1 Connect the towing vehicle 7 pole electrical plug to the electrical receptacle on the front of the semitrailer. (See FIG. 4-1)

NOTE: The key on the plug and the keyway in the

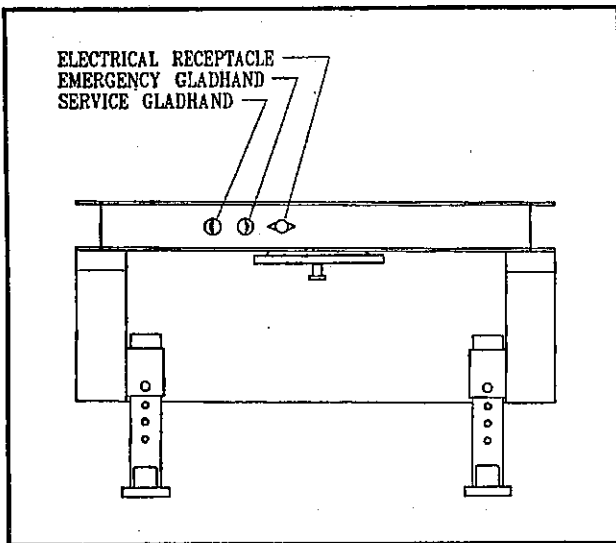


FIG. 4-1 SERVICE HOOKUPS

NOTE: The key on the plug and the keyway in the socket must be properly aligned before inserting the plug into the trailer socket.

4-3.2 Air Lines: See Section 4-1.4.

4-4 TRACTOR & TRAILER CHECK-OUT

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

4-4.1 Raise parking stands. Secure each parking stand in the full up position with park stand retaining pin before transporting. Check the operation of all lights and signals on the semitrailer for proper response to switch positions (stop, right turn, left turn and clearance).

4-4.2 Check tire inflation, adjust as needed to the pressure listed on the trailer VIN plate, located on the front of the semitrailer..

4-4.3 Check tractor/trailer rig for air leaks. If air leakage is found, repair the defect before transporting.

4-4.4 Check the oil in each hub for proper level and freedom from contamination. If hubs are contaminated with water, dirt, or some other foreign material, clean before transporting.

4-4.5 Check tractor air pressure. Pressure must not fall below 80 PSI, even after activating brakes a couple of times. Set emergency brake and try pulling forward. The trailer wheels must not rotate. If trailer brakes do not apply, **DO NOT** transport until defect, or defects, are repaired.

4-4.6 Set parking brake and carefully remove all

wheel chocks. If brakes are not properly set, the tractor/trailer may roll when removing wheel chocks.

4-5 TOWING THE SEMITRAILER

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

Driving the towing vehicle with the semitrailer coupled behind requires constant attention to the overall length of the combination. The "hinged-in-the-middle" configuration of the tractor and trailer, load, and weight affect performance. Turning, passing, acceleration, braking, stopping, and back-up require special considerations. When executing steep grades or turning tight curves, the semitrailer must not be allowed to push the towing vehicle, or "jackknifing" of the semitrailer with the towing vehicle may result. Application of the semitrailer brakes to keep the trailer in tow will help prevent this pushing. Braking should begin before descending a hill or attempting a curve, to assure control.

4-5.1 Make a moving test of the semitrailer brakes at low, and medium speeds before traveling at full speed.

4-5.2 Monitor the air pressure gauge on the dash of the towing vehicle. Pressure should not fall below 80 PSI at any time.

4-5.3 The semitrailer wheels track to the inside of the towing vehicle during turns. Thus, turning corners requires a wide swing to prevent "curb hopping", and to allow the semitrailer wheels to clear any obstacle on the inside of the corner.

4-5.4 Stopping should be done with a gradual and smooth application of brakes. If grabbing occurs, apply less pressure - grabbing brakes are not efficient.

4-5.5 Backing should be done with care. Tail over-hang, trailer length, and allowable space must be taken into consideration when backing the semitrailer.

4-6 PARKING THE SEMITRAILER

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

4-6.1 Position tractor/trailer rig on a level, solid surface.

4-6.2 Set the **PARKING** brake, **NOT TRAILER HAND BRAKE**, and check for proper brake holding.

- 4-6.3 Chock wheels.
- 4-6.4 Check for any air leaks in lines, relay valve, brake pods, or any other air system component.

4-7 UNCOUPLING TRACTOR FROM SEMITRAILER

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

- 4-7.1 Park the semitrailer according to instructions in Section 4-6.
- 4-7.2 Lower the park stands to the ground. Raise only enough to insert pin through both inner and outer legs of stand. Legs must be equal distance from the ground.
- 4-7.3 Disconnect emergency and service air lines and attach them to the tractor gladhand holders.
- 4-7.4 Disconnect the 7 pole cable from the trailer and store with the tractor.
- 4-7.5 Pull the tractor fifth wheel plate latch release lever.
- 4-7.6 Attempt to pull the tractor forward. If the tractor uncouples, verify all service lines are disconnected and trailer wheels are chocked. If tractor does not disconnect, repeat steps 4-7.5 and 4-7.6.
- 4-7.7 Pull the tractor away from the trailer.

4-8 COLD WEATHER OPERATION

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

Cold weather causes lubricants to congeal, insulation and rubber parts to become hard, and fabricated parts to become somewhat brittle. These trends may lead to problems found in bearings, electrical systems, air systems, and weldments. Moisture attracted by warm parts due to usage can condense, collect and freeze to immobilize equipment. The operator of the tractor/trailer rig must constantly be alert for indications of the effect of cold weather.

- 4-8.1 During any stop of an extended period, neither the service or parking brake should be used as they may freeze up. Use wheel chocks to secure the vehicle from moving.
- 4-8.2 Check all structural fastenings, air system fittings, gaskets or seals, and bearings for looseness that may develop due to contraction with cold. Do not over-tighten.
- 4-8.3 Check tire inflation. Tire inflation will

decrease with temperature drop.

- 4-8.4 Periodically check drain holes in the bottom of the relay valve and storage compartments. They must be open at all times to avoid moisture entrapment.

4-9 HOT WEATHER OPERATION

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

Hot weather operation can create certain problems which must be checked. Expansion of parts may result in tightening of bearings, fasteners, and moving parts. Failure of gaskets and seals may also occur.

- 4-9.1 The semitrailer should be parked in the shade if possible. Long exposure to the sun will shorten service life of rubber components (ie, tires, light and hose grommets, hoses, etc.) and paint life.
- 4-9.2 Check tire pressure early in the day before beginning operations while the tire is cool. Replace all valve stem caps after checking.
- 4-9.3 If the area is extremely humid, protect electrical terminals with ignition insulation spray. Coat paint and bare metal surfaces with an appropriate protective sealer.
- 4-9.4 The use of a filter-lubricator in the towing vehicle's air delivery system is recommended.

4-10 PREPARATION FOR LOADING / UNLOADING

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

- 4-10.1 Park the semitrailer in accordance with the instructions in Section 4-6 "PARKING THE SEMITRAILER".
- 4-10.2 The tractor/trailer should be in a straight line, located in an open area on a hard, smooth surface.
- 4-10.3 Position load on or remove load from the semitrailer.
- 4-10.4 Secure the load using approved standard tie-down methods. Four D-rings are supplied on each side for tie-down purposes.


5 MAINTENANCE AND LUBRICATION

PREFACE

The Landoll 360 Semitrailer is designed for years of service with minimal maintenance. The following maintenance, however, is very important for durability and for safe operation. Maintenance is an owner/user responsibility.


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DANGER

SPRING BRAKE ACTUATORS (BRAKE CHAMBERS) EMPLOY A SPRING WITH HIGH FORCES REQUIRING EXTREME CARE WHILE SERVICING. PERSONNEL UNFAMILIAR WITH DISASSEMBLY TECHNIQUE SHOULD NOT ATTEMPT THIS PROCEDURE. DISASSEMBLING THE SPRING CHAMBER WITHOUT PROPERLY CAGING THE SPRING MAY RESULT IN SERIOUS INJURY OR DEATH.



CAUTION

DO NOT OPERATE THE SEMITRAILER UNTIL A COMPLETE INSPECTION HAS BEEN PERFORMED. A DEFECT MAY CAUSE PERSONAL INJURY TO YOURSELF OR OTHERS. TRACTOR/TRAILER OPERATIONS SHOULD BE UNDERTAKEN ONLY BY AN OPERATOR TRAINED FOR SAFE HOOK-UP AND OPERATION OR BY A COMPETENT STUDENT ACTING UNDER THE DIRECT SUPERVISION OF AN INSTRUCTOR.



CAUTION

USE GREAT CARE IF WHEELS OR BRAKE DRUMS MUST BE TOUCHED OR HANDLED. THEY MAY BE VERY HOT AND CAN CAUSE SERIOUS INJURY.



CAUTION

ALWAYS CHOCK WHEELS BEFORE RELEASING BRAKES. FAILURE TO CHOCK WHEELS MAY RESULT IN SEVERE PERSONAL INJURY OR DEATH.



CAUTION

WHEN CRAWLING UNDER THE SEMI-TRAILER IS NECESSARY, CHOCK ALL WHEELS OF THE TRAILER AND TRACTOR. WHEN JACKING IS NECESSARY, CHOCK ALL WHEELS AND SUPPORT THE TRAILER WITH JACK STANDS SUFFICIENT TO WITHSTAND THE LOAD OF THE TRAILER AND IT'S LOAD. FAILURE TO TAKE ADEQUATE SAFETY MEASURES COULD RESULT IN SERIOUS PERSONAL INJURY OR DEATH.



CAUTION

OPERATING THE TRACTOR OR SEMI-TRAILER WITH DEFECTIVE, BROKEN, OR MISSING PARTS MAY RESULT IN SERIOUS INJURY OR DEATH OF PERSONNEL, DAMAGE TO THE TRACTOR/SEMITRAILER OR IT'S CARGO, OR DAMAGE TO PROPERTY IN IT'S PATH.

5-1 INSPECTION

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES

Inspect the towing vehicle and semitrailer periodically for damage or evidence of pending failure. Damaged or broken parts should be repaired or replaced immediately. Never operate a machine which is known to be defective or is operating improperly. The cause of any binding or leakage should be determined immediately and the problem promptly corrected.

5-2 ELECTRICAL SYSTEM

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

Maintenance of the electrical system consists of inspection, and minor servicing. Any wire, connection,

or electrical component showing signs of corrosion, wear, breakage, or unraveling must be serviced.

5-2.1 Frayed or unraveling wire must have the defective section removed and replaced with wire of the same color and gauge. Seal all connections and insulate.

5-2.2 Corroded terminals must have the corrosion removed, source of corrosion neutralized, terminal resealed, protected, and insulated.

5-2.3 Fuse or circuit breaker burn-out or "blow-out" usually indicates an electrical short-circuit, although a fuse may occasionally fail from vibration. Insert a second fuse or reset the breaker. If this fuse immediately burns out or the breaker trips, locate the cause of the electrical short and repair.

5-2.4 Lights with a repeated lamp burn-out usually indicates a loose connection, either at the lamp socket, the system ground, or a malfunctioning voltage regulator. Locate the source of the problem and repair. System grounds must be grounded to bare metal surfaces. Paint, grease, wax, and other coatings act as insulators. Replacement lamps must be equivalent to the factory installed lamp.

5-3 GENERAL AIR BRAKE SYSTEM MAINTENANCE

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

A daily general inspection will reveal the most common problems found in the air brake system. This inspection should include:

5-3.1 Checking air lines for cracking or kinks.

5-3.2 Check linkage pins, keepers and other fastening hardware for excessive wear, corrosion, and for being secure.

5-3.3 Check brake linings for excessive wear or distortion.

5-3.4 Drain air reservoir of all moisture daily using the hand pull drain valves (See Fig. 5-1).

NOTE: COMPLETELY DRAINING THE AIR RESERVOIR WILL RELEASE THE TRAILER BRAKES.

5-4 AIR BRAKE CHAMBERS

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

Check the condensation holes on the underside of the brake chambers to make sure they are open. The brake chambers should be disassembled and cleaned at 50,000 miles or yearly. Repair or replace faulty units. When replacing the diaphragm or hardware, replace the corresponding parts for the other chamber on the same axle. This will aid in even brake application and releasing. Examine yoke pin for wear and replace if necessary. For parts identification see Section 7 Illustrated Parts Listing.

5-4.1 MANUAL BRAKE RELEASE AND SET.

- a. Chock trailer wheels.
- b. Remove dust cap from spring brake chamber.
- c. Remove the release bolt from it's holding brackets and insert it into the spring brake chamber.

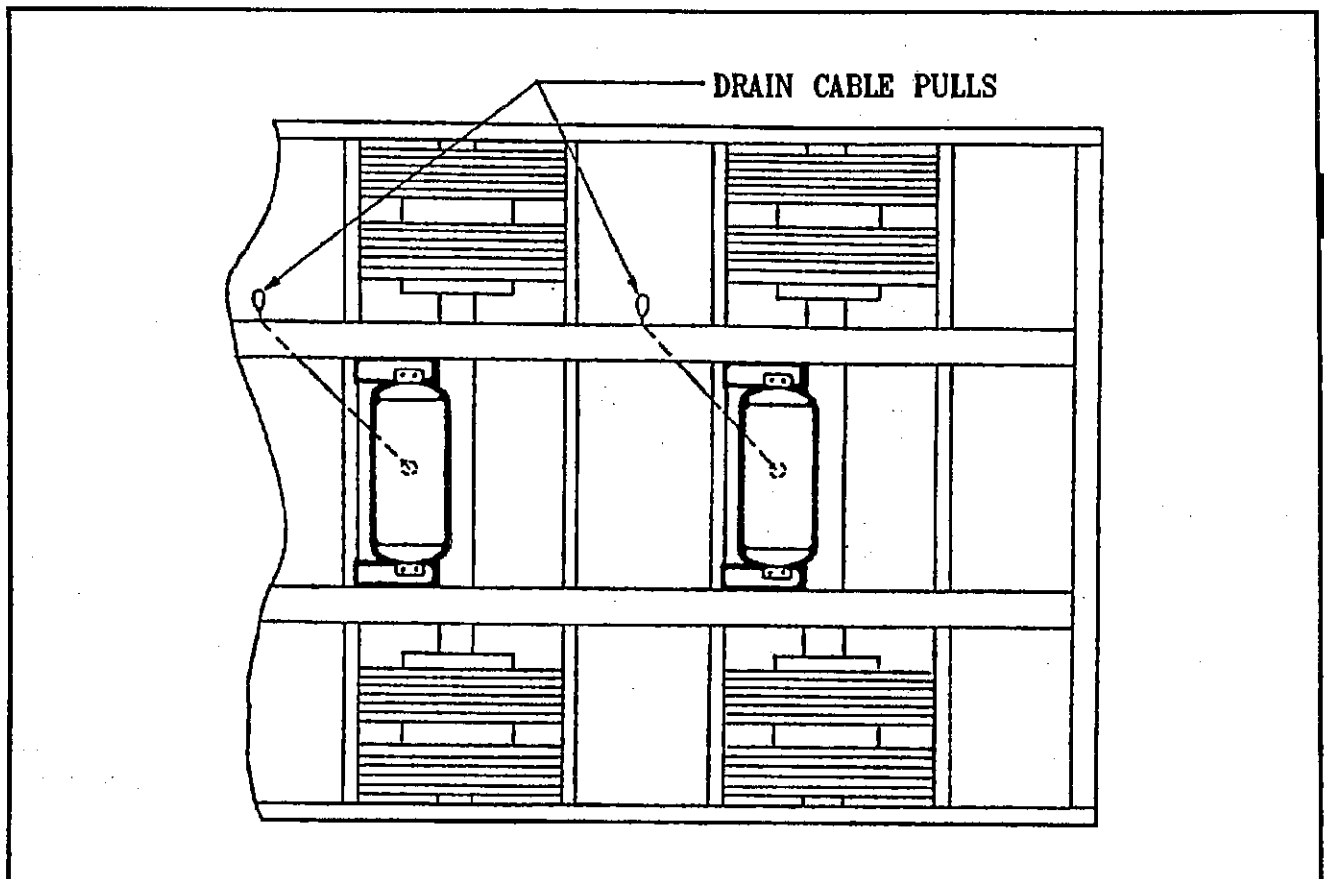


FIG. 5-1 HAND PULL LOCATIONS

Turn the bolt until the spring brake is caged. This should be 2-1/4 to 2-1/2 in. of release bolt extension

d. The brakes should now be totally released.

e. To reset the spring brake, turn the release bolt until the spring is released. Remove the release bolt and store it in its brackets. **DO NOT USE AN IMPACT WRENCH TO CAGE THE SPRING BRAKE!**

f. Snap the dust cap back in place on the chamber.

5-4.2 REMOVAL

a. Chock all tractor and trailer wheels and drain the air system.

b. Mark the brake chamber for proper air line port alignment during re-assembly.

c. **CAGE THE POWER SPRING** following the steps outlined in Section 5-4.1.

d. Disconnect the slack adjuster from the connecting rod by removing the clevis pin (See FIG. 5-4).

e. Mark all air service lines for proper reinstallation and disconnect from the brake chamber.

f. Remove the brake chamber from the axle brackets.

5-4.3 INSTALLATION

a. **CAGE THE POWER SPRING** following the steps outlined in Section 5-4.1.

b. Position the inlet ports by loosening the service chamber clamp bands and rotating center housing such that ports are located according to alignment marks made during disassembly, then re-tighten the clamp bands.

c. Position the breather hole in the downward facing position by loosening the clamp bands on the spring brake chamber and rotating the chamber housing until the breather hole faces downward. Re-tighten the clamp bands.

d. Remount the brake chamber on the axle brackets and re-connect the air service hoses.

NOTE: BE SURE THE SERVICE LINE IS ON THE SERVICE CHAMBER PORT AND THE EMERGENCY LINE IS ON THE SPRING BRAKE PORT.

e. Check for leakage by charging the air system to minimum of 90 PSI and apply soap suds to the brake chamber and connections. If a growing bubble is detected or bubbles are blown away, locate the source of the leak and repair.

5-4.4 DIAPHRAGM SERVICING

a. The spring brake chamber diaphragm should be replaced every two years and the service chamber diaphragm should be replaced every year. The following steps should be followed to replace the diaphragms:

b. Mark unit for proper alignment when re-assembling.

c. Remove the spring brake caging bolt from its brackets and insert it into the spring brake chamber.

d. Turn the caging bolt until the spring brake is completely caged. The caging bolt should extend 2 1/4 to 2 1/2 inches from the nut at this point.

e. Remove the bands from the chamber to be serviced and disassemble the unit. Replace the diaphragm and re-assemble the chamber.

f. Follow steps d. and e. in Section 5-4.3 above.

5-5 RELAY / EMERGENCY VALVE

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

5-5.1 Every 3600 operating hours or 100,000 miles or yearly, the Relay Emergency Valve should be disassembled, cleaned, and lubricated with DOW CORNING 33 GREASE, or equivalent. Worn, damaged, and rubber parts must be replaced. Listed below is the procedure for testing the relay valve.

SET-UP: Check the air pressure gauge in the tractor with a known-accurate test gauge before starting these tests. Connect tractor air lines to the trailer. Chock wheels of both tractor and trailer to prevent rolling.

TESTING:

a. Drain all air from the tractor and trailer air systems at the reservoirs.

b. Start tractor and allow pressure to build up to full charge. Make several full service brake applications. All semitrailer brakes should set and release promptly and evenly.

c. Allow air pressure to build up to 90 PSI with the brakes released. Shut off tractor engine and monitor air pressure for two (2) minutes. A maximum of 6 PSI drop is allowed in two minutes. If more than 6 PSI drop is experienced, apply soap suds to the exhaust port of the relay valve. A one (1) inch bubble in 5 seconds is maximum allowable leakage. NO leakage is allowed at pipe plugs or fittings.

d. Start the tractor and allow pressure to build up to full charge. Make several full service brake applications. All semitrailer brakes should set and release promptly and evenly. Allow pressure to stabilize at 90 PSI. Shut tractor engine off. Apply and hold a full service brake application for two (2) minutes. A maximum of eight (8) PSI drop is allowed in two (2) minutes. If more than 8 PSI drop in 2 minutes is experienced, allow pressure to stabilize at 90

PSI and apply soap suds to the relay valve cover and exhaust port with the service brake applied. This detects body O-ring and exhaust valve leakage. A maximum of a one (1) inch bubble in three (3) seconds is allowed. Release the service brake.

e. Start the tractor and allow pressure to build up to full charge. Make several full service brake applications. All semitrailer brakes should set and release promptly and evenly. Allow pressure to stabilize at 90 PSI. Shut tractor engine off. Disconnect the emergency line at the trailer. Trailer brakes should immediately set. Apply soap suds to the trailer emergency gladhand port. NO leakage is allowed. A leak at the emergency gladhand indicates a leaking check valve or piston O-rings in the relay valve. Disconnect the service line at the trailer and apply soap suds to the trailer service line gladhand. NO leakage is allowed. A leak indicates leaking relay valve piston O-rings.

f. Connect tractor emergency and service lines to the trailer. Start tractor engine and allow air pressure to build up. Activate tractor air supply valve to charge trailer brake air supply as soon as possible. Trailer brakes should release at a maximum of 65 PSI trailer emergency line pressure.

5-6 BRAKE MAINTENANCE

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

5-6.1 BRAKE INSPECTION/LUBRICATION

Lubricate brake assembly per FIG. 5-12 LUBRICATION POINTS and TABLE 5-1 MAINTENANCE SCHEDULE. Inspect and adjust brake assembly every 2,000 miles or monthly, whichever ever comes first. Examine brake linings visually to locate the lining showing the greatest amount of wear. If lining thickness is 3/8 inch or less, remove the wheel and drum and replace linings. DO NOT allow linings to wear thin enough so the lining rivets contact the drum. Refer to Fig. 5-2 for brake assembly parts identification. The following is the recommended procedure for brake disassembly.

5-6.2 DISASSEMBLY:

- a. Jack up the trailer wheel which needs brake lining service.
- b. Remove trailer wheel/tire assembly and set aside.
- c. Adjust the slack adjuster to completely release the brake.
- d. Remove hub cap, spindle nuts and lock washer,

hub and brake drum assembly. Be careful to protect the bearings from dirt and other foreign material.

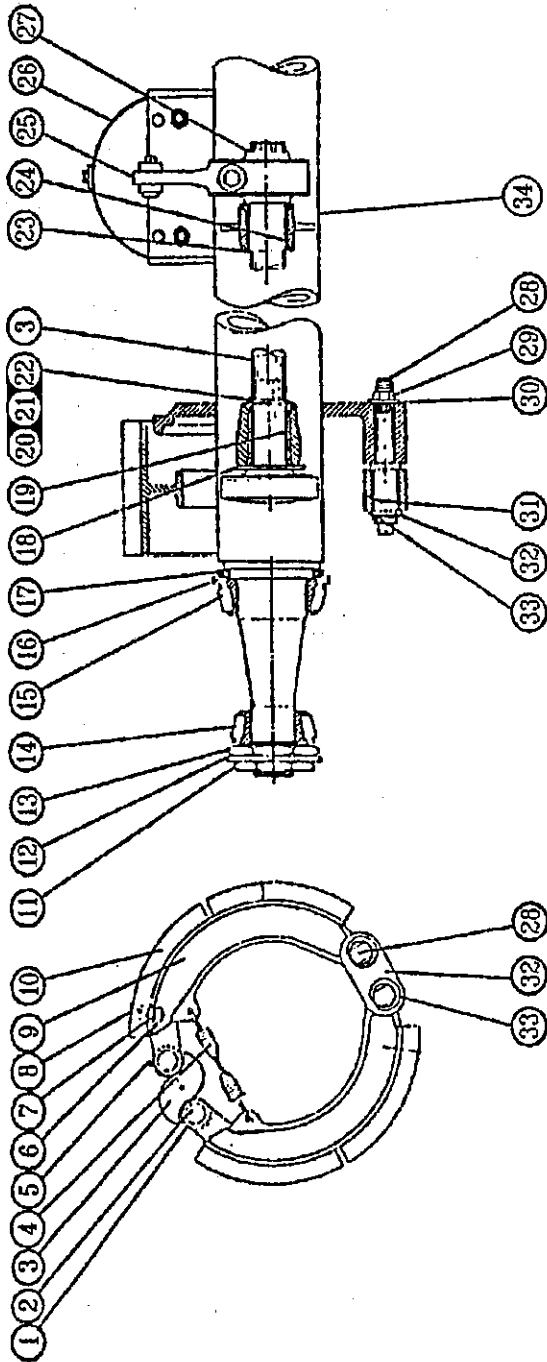
- e. Remove brake retract spring.
- f. Remove lock rings and washers from anchor pins.
- g. Remove anchor pin locks.
- h. Remove anchor pins and brake shoe assemblies.
- i. Remove slack adjuster lock ring and washer.
- j. Remove slack adjuster.
- k. Remove cam shaft lock ring and spacer washer, located toward inside of spider boss.
- l. Remove camshaft.
- m. Remove camshaft washer, located under camshaft head.
- n. Remove roller shaft lock ring (in case of the cast shoe, remove roller shaft set screw, and roller assembly), roller shaft, anchor pin bushings from shoes, spider seals and bushings and camshaft seals.

o. Clean all parts and spider with brake cleaner such as CRC brand "BRAKLEEN 05089" or it's equivalent.. Inspect all parts and replace any part which shows any sign of wear, fracture, distortion, or discoloration due to excessive heat.

5-6.3 ASSEMBLY:

- a. Install new anchor pin bushings, spider and camshaft seals and bushings if necessary.
- b. Install cam roller assemblies.
- c. Place camshaft washer under cam head, position cam through spider, install spacer washer and lock ring, position camshaft through camshaft bracket, and install slack adjuster washer and locking ring.
- d. Set new brake shoe into position and insert anchor pin with recessed slot in line with anchor pin lock hole.
- e. Secure anchor pin with locking pin.
- f. Install washers and lock ring where necessary.
- g. Install brake shoe retract spring.
- h. Install slack adjuster and connect to brake chamber push rod. The angle between the slack adjuster and connecting rod should be approximately 95° when the brake is NOT applied.
- i. Clean and inspect bearings.
- j. Replace hub oil seal.
- k. Install hub and adjust wheel bearings as outlined in Section 5-10 "WHEEL BEARING LUBRICATION and ADJUSTMENT".

SAFETY FIRST!



ITEM	DESCRIPTION
1	BRAKE SHOE ROLLER
2	ROLLER SHAFT
3	BRAKE CAM SHAFT RH BRAKE CAM SHAFT LH
4	BRAKE RETRACT SPRING
5	ROLLER SHAFT SET SCREW
6	LINING BOLT NUT
7	LOCK WASHER
8	BRAKE LINING BOLT
9	BRAKE SHOE
10	BRAKE LINING
11	OUTER SPINDLE NUT
12	SPNDLE LOCK NUT
13	INNER SPINDLE NUT
14	OUTER BEARING CONE
15	INNER BEARING CONE
16	OIL RETAINER ASSY.
17	AXLE RING
18	BRAKE CAM WASHER
19	BRAKE SPIDER BUSHING
20	SPIDER GREASE SEALS
21	CAM WASHER
22	CAM LOCK RING
23	O-RING GREASE SEALS
24	BUSHING W/GREASE FITTING
25	SLACK ADJUSTER
26	AIR CHAMBER
27	CAM LOCK RING
28	BRAKE ANCHOR PIN
29	ANCHOR PIN NUT
30	LOCK WASHER
31	BRAKE SHOE BUSHING
32	ANCHOR PIN LINK
33	ANCHOR PIN LOCK RING
34	AXLE

FIG. 5-2 BRAKE TERMINOLOGY

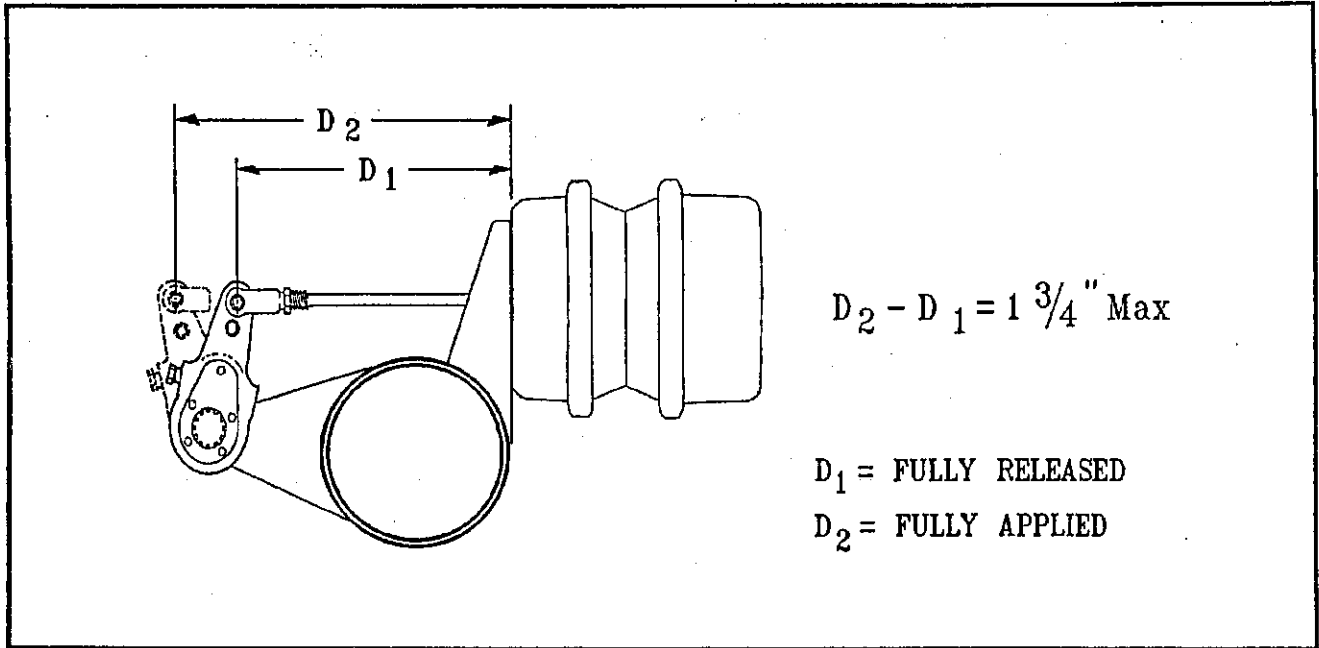


FIG. 5-3 CHECKING BRAKE ADJUSTMENT

5-7 BRAKE ADJUSTMENT

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

Slack adjusters provide the means for routine brake adjustment to compensate for lining wear. Inspect and adjust slack adjusters weekly or at 2,000 mile intervals.

5-7.1 CHECKING:

- a. Release brakes.
- b. Measure the distance (D_1) from the face of the brake air chamber to the center of the slack adjuster linkage pin (See Fig. 5-3).
- c. Apply brakes.
- d. Repeat step b. (Distance is now D_2).
- e. Subtract the two distances to find the air chamber push rod travel. The total travel of the brake push rod must be less than 1-3/4" (one and three fourths inches) to meet Federal "IN-SERVICE" criteria. It is advisable to adjust all brakes on the same axle to within 1/2" (one half inch) of each other to prevent unbalanced braking.

5-7.2 ADJUSTING:

- a. Release brakes.
- b. Place a 9/16 in. wrench on the slack adjuster adjusting nut (See Fig. 5-4), and push in on the locking

sleeve.

- c. Adjust by rotating the adjusting nut counterclockwise to loosen the brake and clockwise to tighten the brake.

- d. Remeasure air chamber push rod travel from release to full brake application. If the adjustment is not within the "IN-SERVICE" criteria, readjust. If the adjustment has brought the travel to within specifications, proceed to next step.

- e. Remove wrench from slack adjuster. Check locking sleeve to verify that it has sprung back out and is locking the adjusting nut. If it did not snap back out, the adjuster will have to be rotated slightly.

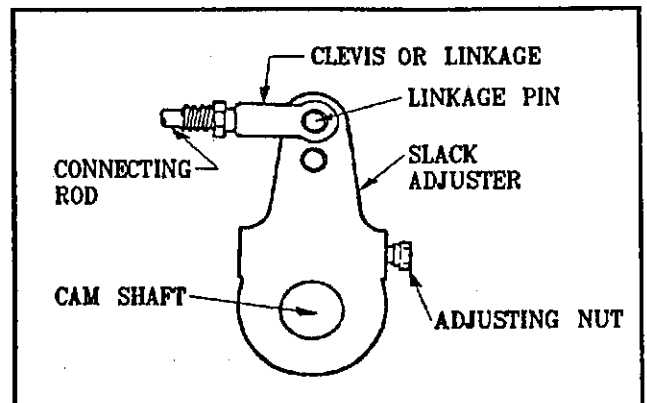


FIG. 5-4 SLACK ADJUSTER TERMINOLOGY

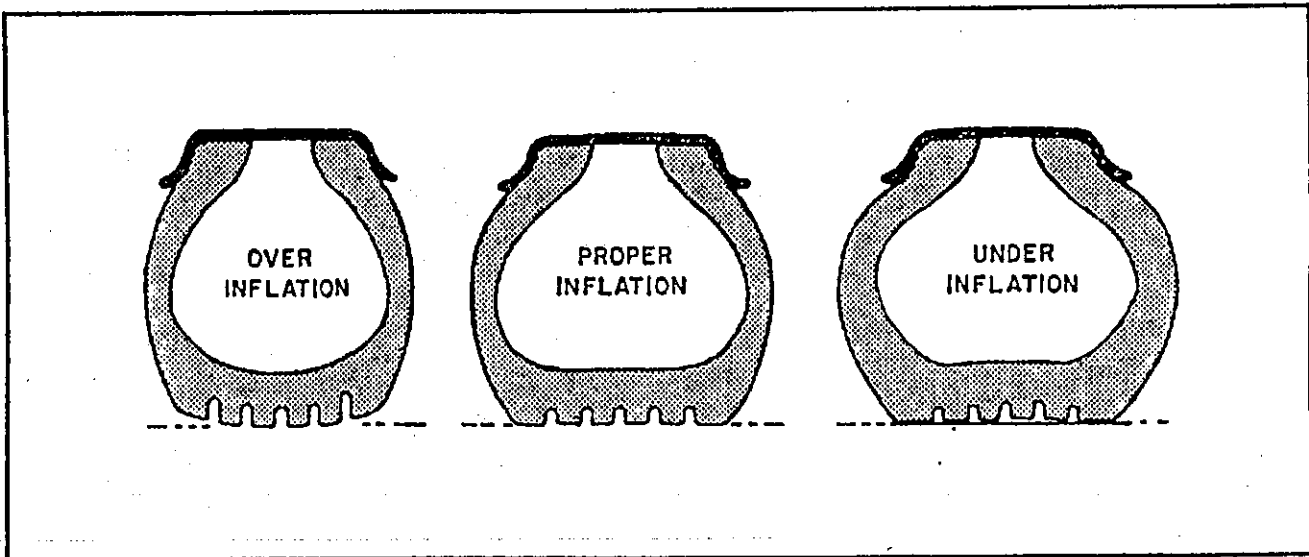


FIG. 5-5 TIRE INFLATION EXAMPLES

5-8 TIRE INFLATION

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

Tire inflation will produce the tire to ground contact characteristics (See Fig 5-5). Tire inflation should be checked daily while the tire is cold, and during road stops. Checking the tire pressures while tires are hot will give a faulty increased pressure reading. Adjusting tire air pressure to the specified amount while tires are hot will produce improper tire to road contact and thus abnormal wear. Do not exceed cold inflation pressure listed on the trailer VIN plate located on the front of the semitrailer. Exceeding cold inflation pressures will result in damaged tire bodies, rims and wheels. Replace all valve stem caps when pressure checking/adjusting has been completed. Remove any foreign objects from between duals.

5-9 TIRE MATCHING

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

Both tires on the same spindle must be the same size in order to properly distribute the load and braking forces between them. Tire size can be checked by two methods; measuring tape, or with a straight edge or string the same length or longer than the trailer

tracking width. The straight edge or string method can not be used if tires and wheel assemblies are not mounted on the axle. In both methods, the tire must be mounted on a rim and properly inflated. If there is a difference in size, and is within the allowable difference, the smaller tire should be mounted to the inside position of the duals.

5-9.1 Measuring tape method (See Fig.5-6): Measure around each tire on the tread surface. A maximum difference of 3/4 inch in the measurements is allowed between the two mating tires of a dual.

5-9.2 Straight edge or string method (See Fig.5-7): Jack trailer up until the wheels are off of the ground. Hold a straight edge against the tires of both ends of an axle. A gap at one tire indicates a smaller tire. A maximum of 1/8 inch gap is allowed.

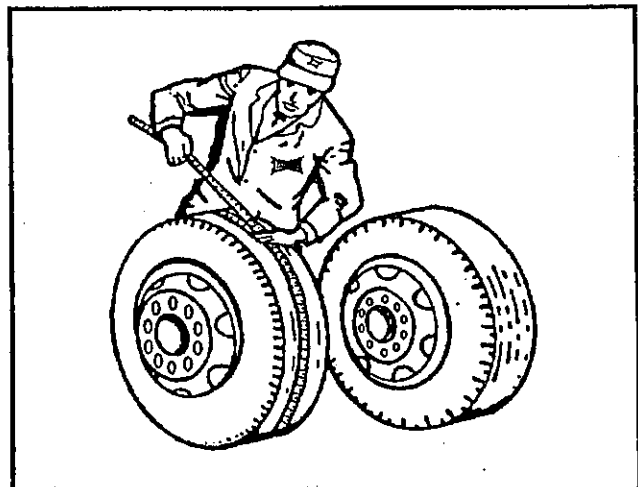


FIG. 5-6 MEASURING TAPE METHOD

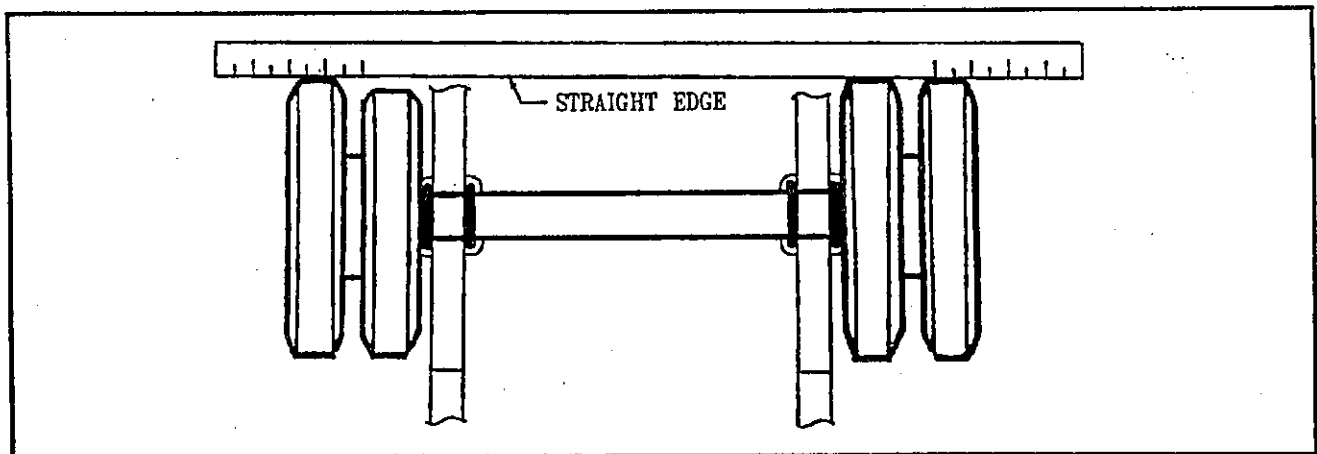


FIG. 5-7 STRAIGHT EDGE METHOD

5-10 WHEEL BEARING LUBRICATION AND ADJUSTMENT

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

Oil level must be checked daily and maintained between the "ADD" and "FULL" lines on the hub cap window (See Fig. 5-8). Check for cracked windows, missing filler plugs, and for oil leaks. Add hub oil through the "POP-IN" filler plug located in the center of the hub windows. Re-install the "POP-IN" plugs after filling each hub. Adjust wheel bearings and change oil every 50,000 miles or with each brake lining replacement, whichever occurs first.

5-10.1 ADJUSTMENT:

- a. With a drain pan under the hub cap, remove the hub cap assembly allowing oil to drain.
- b. Lift the wheel off of the ground.
- c. Adjust slack adjuster to eliminate brake drag during tire/wheel rotation.
- d. Remove the outside spindle nut and locking washer.
- e. Rotate the tire by hand and tighten the inner nut until there is a slight bind. Back off the inner spindle nut 1/3 turn to allow free rotation of wheel.
- f. Install spindle locking washer. Align inner nut locking peg with the nearest washer hole.
- g. Install outer spindle nut and torque to 250 min - 400 max lb/ft.
- h. Install hub cap with new gasket and fill with oil to the full mark. Use 90 weight gear oil.
- i. Adjust brakes according to Section 5-7 "BRAKE ADJUSTMENT".

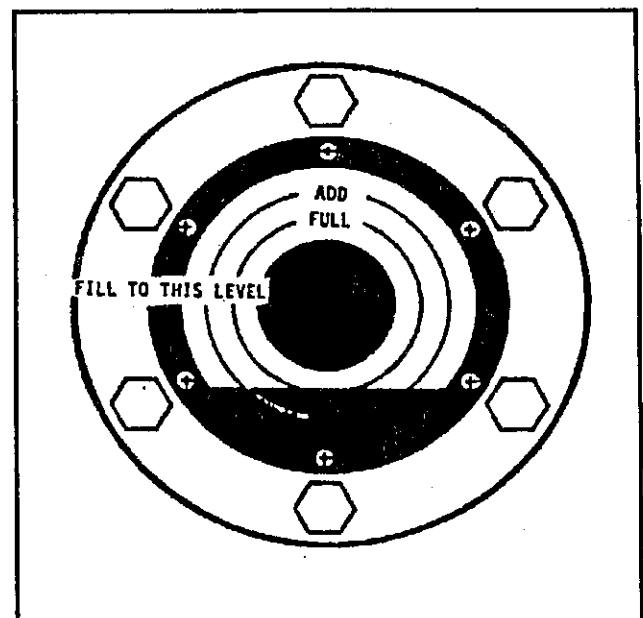


FIG. 5-8 HUB OIL LEVELS

- j. Check hub oil level after the wheel has set in one position for a few minutes to allow oil to work into bearings.

5-11 SUSPENSION AND WHEELS

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

Visually examine the suspension for broken or missing parts. Check brackets, equalizing beams, and frame members. Replace all defective parts. See Section 7 Illustrated Parts Listing for suspension parts identification.

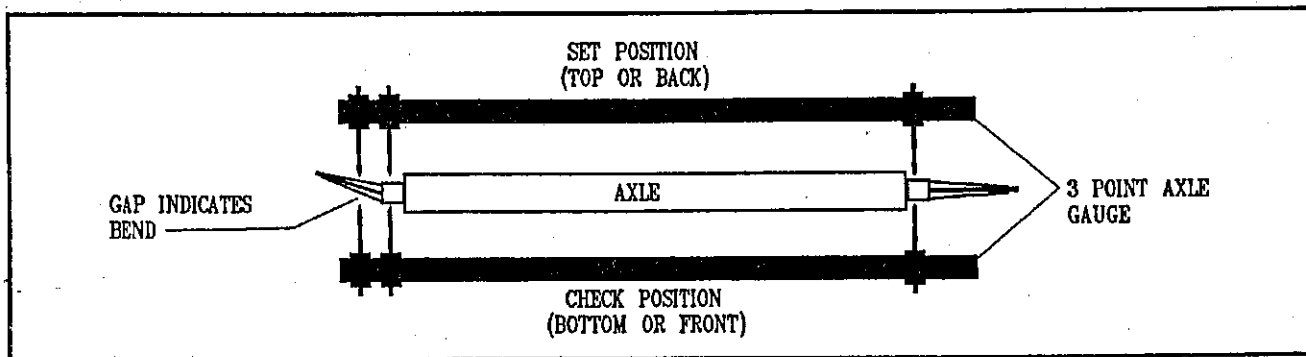


FIG. 5-9 BENT AXLE CHECK

5-11.1 SPRING INSPECTION

a. Make certain that all springs are properly located on the wear pad. Twisted springs or cocked hangers will cause uneven spring contact with wear pad and will result in excessive wear on the suspension.

b. Check all fasteners and U-bolts for proper torque and determine that no bolt holes have become elongated. Proper torques for suspension bolts are found in Section 3 Specifications and should be checked after first 100 miles.

c. Check the trunnion shaft bushing for excessive wear. The procedure for replacing the trunnion shaft bushing is as follows:

1. Chock all wheels of the semitrailer.
2. Remove the trunnion saddle cap and the trunnion shaft clamp.
3. Jack the semitrailer up enough to permit lifting the trunnion shaft.
4. Remove the trunnion shaft bushings and replace with new bushings.
5. Lower the semitrailer on to the shaft and replace the trunnion saddle cap and the trunnion shaft clamp. Be sure to torque all fasteners and u-bolts to the torques listed in Section 3 "Specifications".

5-11.2 WHEEL INSPECTION

a. Check wheel nut torque after the first 50 miles or 5 hours of service. Check torque periodically thereafter. Torque at same intervals after each change of tires or rims. The inner and outer wheel nut torque is 450 to 500 ft. lbs. Wheel and brake drums should be carefully inspected for cracks every 2000 miles.

5-12 WHEEL ALIGNMENT

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

When trailer tires show signs of scuffing, feather-edging or uneven wear, examine the semitrailer for damaged suspension (frame, shocks, linkage, etc), axle, wheel bearings, and wheels. Proper WHEEL alignment, and wheel bearing adjustment is essential for proper tire wear. The simplest form of checking wheel alignment "toe" is by running the trailer over a "SCUFF GAUGE". A scuff gauge reading of 16 feet or less per mile is considered satisfactory. If a scuff gauge is not readily available, or edge wear on one side of a tire is occurring signifying positive or negative camber, alignment can be checked as follows:

5-12.1 Jack trailer up so that the tires are off of the ground.

5-12.2 Support the trailer on jack stands with sufficient capacity to support the total weight of the trailer and any load which it may be carrying.

5-12.3 Remove wheel, hub, and bearing assemblies.

5-12.4 Place a 3 point axle gauge against the front side of the axle, and adjust each axle gauge point to the axle. (Double point end against the inner and outer wheel bearing surfaces of the spindle being checked and the other point on the inner bearing surface on the other spindle)(See Fig. 5-9).

5-12.5 Move the axle gauge and place against the back side of the axle. If either of the points of double point end fails to touch the axle surface, a bent spindle is evident. A point gap of .015 (15 thousandths) of an inch or more is considered excessive tire "toe" and the axle must be replaced (See Fig. 5-9).

5-12.6 Follow the same procedures as in steps 5-12.4 and 5-12.5 except place the axle gauge above and below the axle. If gauge point gap is found, the axle has positive or negative camber. The semitrailer axle has no camber from the factory, thus if it is found to have positive or negative camber, axle replacement is necessary (See Fig. 5-10 for examples of camber).

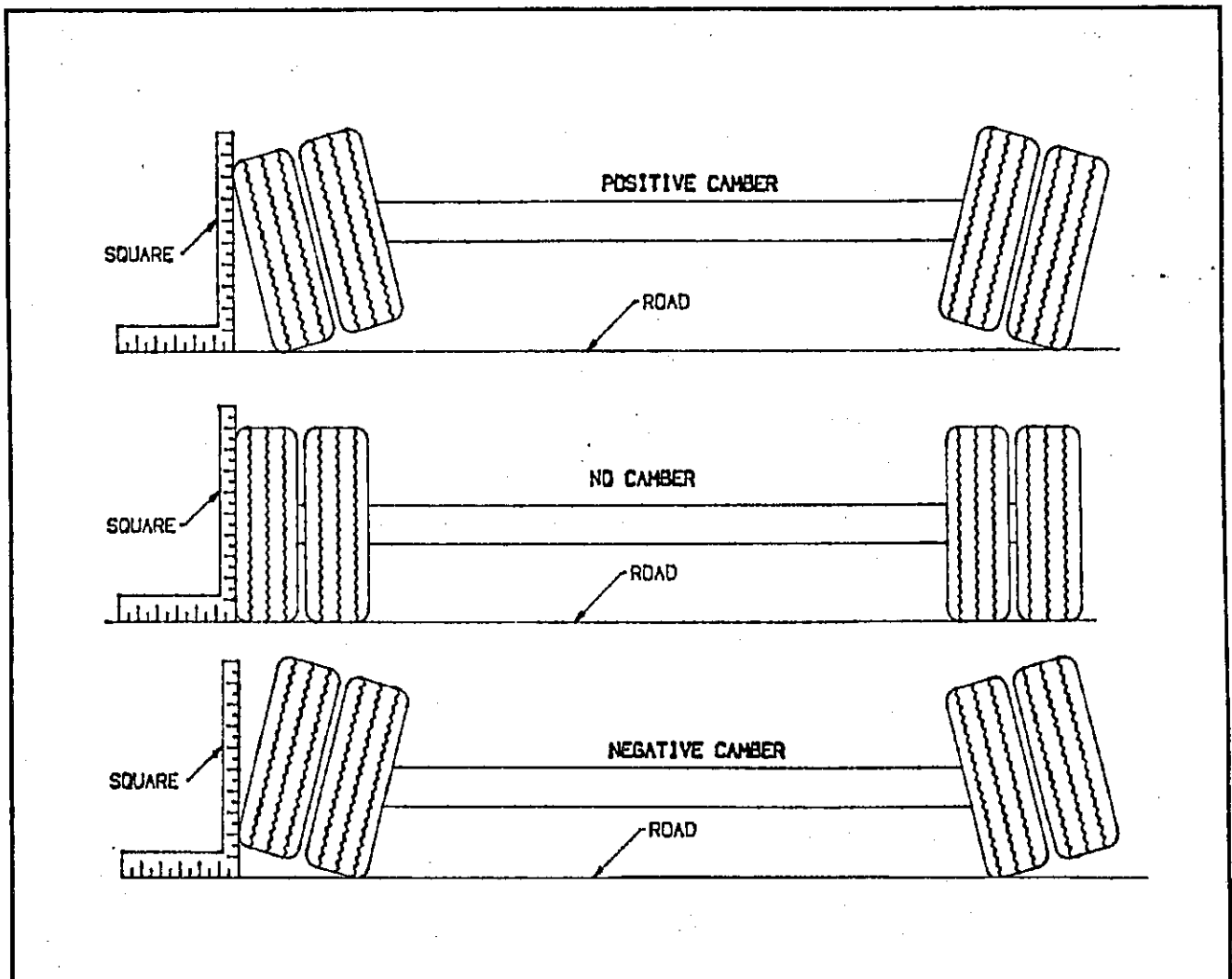


FIG. 5-10 CAMBER IDENTIFICATION

5-13 AXLE ALIGNMENT

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

Proper axle to king pin alignment is necessary to obtain straight tracking. If axle alignment is off, "dog-tracking" will occur. Check alignment manually or by using a trailer alignment machine. In either case, a thorough inspection of the complete suspension must be performed and all defects corrected before aligning.

5-13.1 MANUAL ALIGNMENT PROCEDURES:

a. Position trailer on a firm and level surface. Eliminate any suspension binding due to sharp turns or unusual maneuvers.

b. Lower park stands and detach tractor from the trailer.

c. Suspend a plumb bob to axle height from the center of the king pin.

d. Measure (D) from the plumb bob to the center point on one end of the front axle. Record this measurement. (See Fig. 5-11)

e. Measure (D₁) to the other end of the same axle in the same manner as in step d. Record this measurement. (See Fig. 5-11)

f. The two measurements must be within 1/16 inch of each other for proper axle alignment. (See Fig. 5-11) The procedure for aligning the axles is as follows:

1. Loosen the U-bolts on both axles.
2. Turn the axle alignment cap screws on the front axle the proper direction to achieve proper axle alignment to the kingpin.

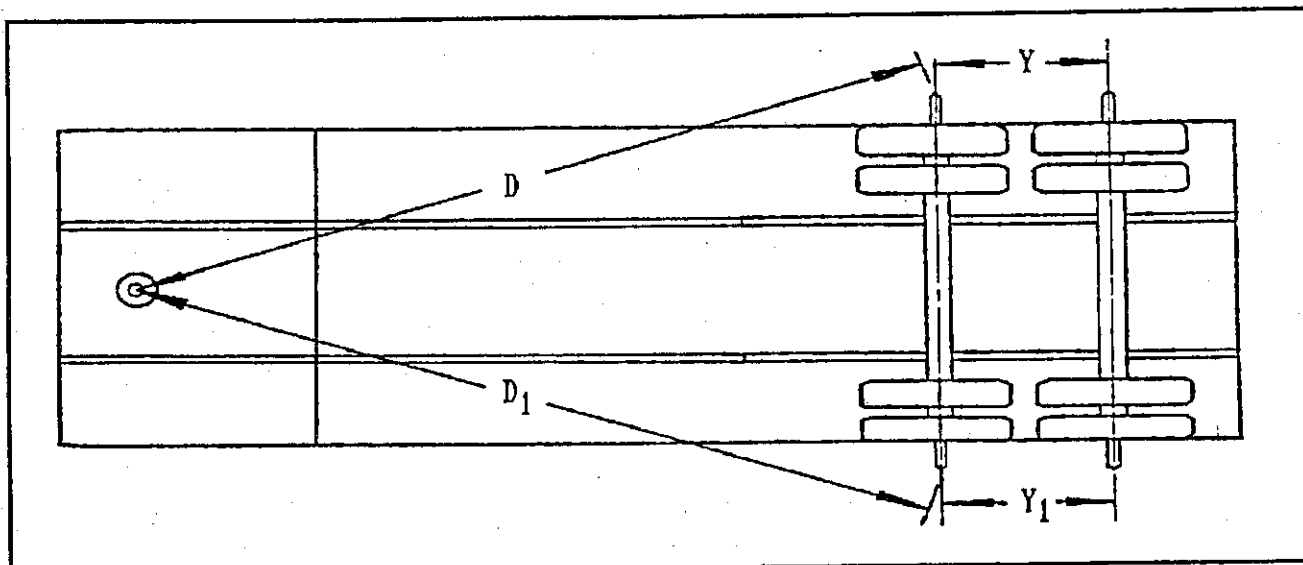


FIG. 5-11 CHECKING AXLE ALIGNMENT

3. Shim the alignment cap screws as necessary to maintain alignment and torque the alignment cap screws to the torque values listed in Section 3 Specifications.
4. Turn the axle alignment cap screws on the rear axle until the proper alignment to the front axle is obtained. When properly aligned, both ends of the rear axle should be an equal distance (Y and Y₁) from the front axle.
5. Torque the alignment cap screws and U-bolts in the same manner as the front axle.

5-14 FRAME AND DECKS

READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

The trailer should be thoroughly checked daily for cracks or material fatigue. Cracks will normally show best under loaded conditions. If any cracks or breaks are found, return the trailer immediately to the Landoll factory for repair.

The deck should be examined for broken or missing wood and missing or loose hardware. Any defective parts must be replaced immediately.



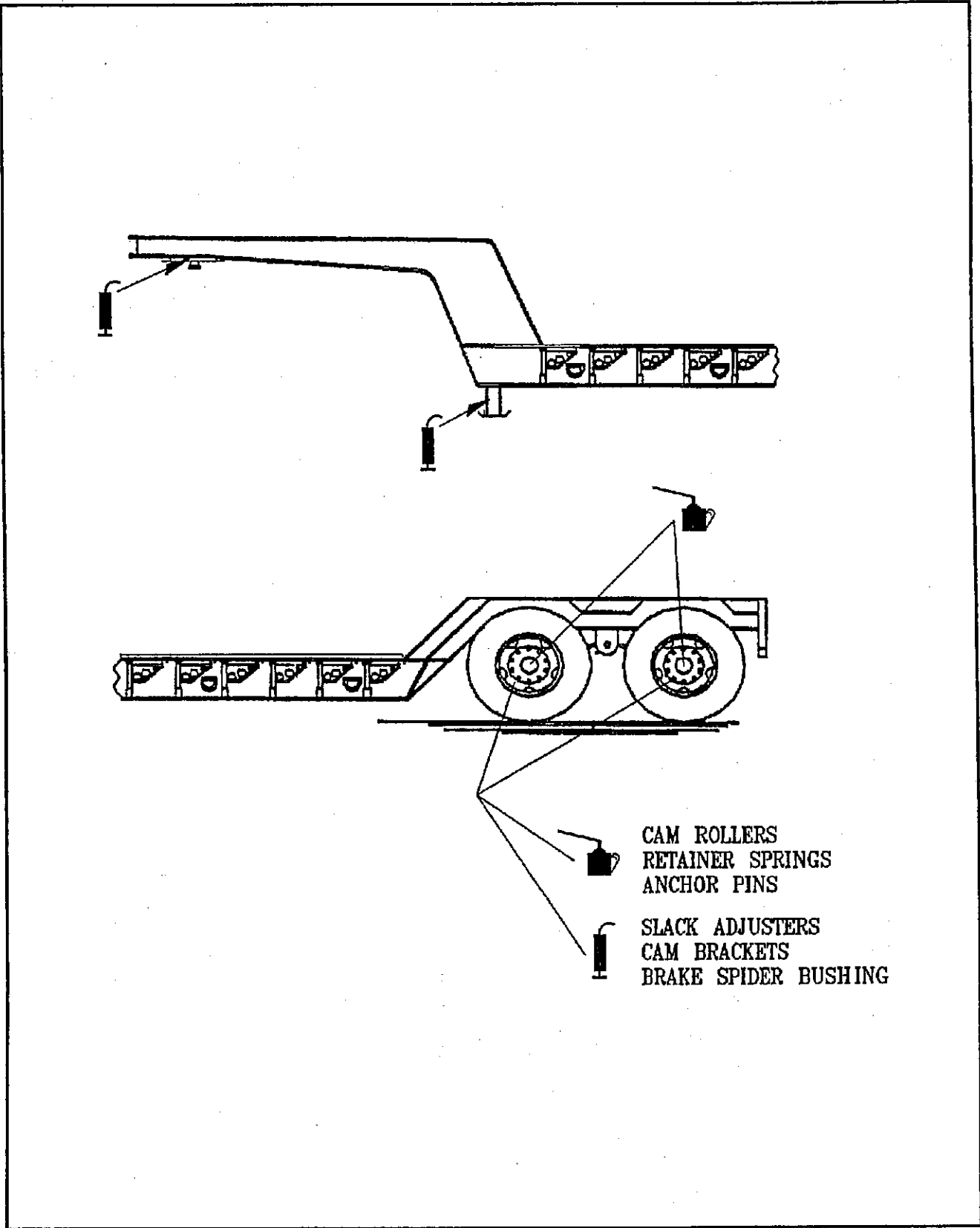


FIG. 5-12 LUBRICATION POINTS

I-INSPECT R-REPLACE T-TIGHTEN/TORQUE ADJ. L-LUBRICATE C-CLEAN

NORMAL OPERATING SERVICE INTERVALS - PERFORM AT THE TIME SHOWN SHORTEN SERVICE INTERVALS WHEN OPERATING IN SEVERE OR DIRTY CONDITIONS									
SERVICE ITEM:	INTERVAL	TIME	1st 5 HRS	WEEKLY	MONTHLY	6 MONTH	YEARLY	LUBE NO.	NOTES
		MILES	50	500	2,000	12,000	25,000		
ELECTRICAL									
LIGHTS			I	I					
WIRING AND CONNECTIONS			I		I				
MISCELLANEOUS									
FASTENERS			I,T		I				a
TRUNNION SHAFT BUSHINGS			I		I				b
KING PIN AND ROCKER PLATE			I		C,I,L			4*	
BRAKE AIR SYSTEM			I	I	I				
RELAY VALVES							I,C		
BRAKE ADJUSTMENT AND WEAR			I		I,T				c
SLACK ADJUSTERS			I	I			L	4*	
CAM SHAFT ASSEMBLIES			I	I			L	4*	
HUB OIL			I	I,L			R *	6*	
WHEEL BEARINGS			I			I,T		6*	d
TIRE INFLATION AND WEAR			I	I					e
WHEEL LUG-NUTS			I,T	I	I,T				a
SUSPENSION ALIGNMENT			I			I			

- * FOR RECOMMENDED LUBRICANT, SEE LUBE SPECIFICATION CHART
- (a) SEE BOLT TORQUE CHART IN THE SPECS. SECTION FOR CORRECT TORQUE
- (b) REPLACE AS NEEDED, SEE SECTION 5-11 FOR PROCEDURES
- (c) SEE SECTION 5-6 AND 5-7 FOR PROCEDURES
- (d) SEE SECTION 5-10 FOR PROCEDURES
- (e) SEE SERIAL NUMBER PLATE ON FRONT OF TRAILER FOR PROPER INFLATION

TABLE 5-1 MAINTENANCE SCHEDULE

LUBE #	SEASON	BRAND AND PRODUCT (weight and/or type)			
		AMOCO	EXXON	PHILLIPS	TEXACO
1	SUMMER	RYCON MV	HDX Plus 10W	Mangus Oil 150	Rando HD-AZ
	WINTER	RYCON MV	HDX Plus 10W	Mangus Oil 150	Rando HD-AZ
2	SUMMER	Multi-Purpose 140	Gear Oil GX 85-140	Worm Gear Oil SAE 90 #9332D1	Maropa SAE 90 #3
	WINTER	Multi-Purpose 90	Gear Oil GX 85-140	Worm Gear Oil SAE 90 #9332D1	Maropa SAE 90 #3
3	SUMMER & WINTER	USE DRY SILICONE SPRAY, ONLY IF ADDITIONAL LUBRICATION IS NECESSARY.			
4	SUMMER	Lit-Multi-Purpose Grease	Rondex Multi-Purpose Grease	Phil Lube M.W. Grease	MarFax All Purpose
	WINTER	Lit-Multi-Purpose Grease	Rondex Multi-Purpose Grease	Phil Lube M.W. Grease	MarFax All Purpose
5	SUMMER & WINTER	USE ANY CABLE LUBE OR CABLE GREASE			
6	SUMMER	Multi-Purpose 90	Gear Oil GTX 85-140	Phil Lube All Purp. Gear SAE 90 #90501	Multi-Gear EP 80W90
	WINTER	Multi-Purpose 90	Gear Oil GTX 85-140	Phil Lube All Purp. Gear SAE 90 #90501	Multi-Gear EP 80W90

TABLE 5-2 LUBRICATION SPECIFICATIONS

NOTES

6 TROUBLE SHOOTING

INDEX

PARAGRAPH	TITLE	PAGE NO.
6-1	ELECTRICAL	6-1
6-2	TIRES - WHEELS - SUSPENSION	6-2
6-3	BRAKES	6-3
6-4	BRAKE DRUMS	6-6

6-1 ELECTRICAL

Most electrical system problems show up as a burned out light or fuse, or inoperative electrical component. Wiring, grounds, or components may be at fault. Locate the symptom in this section that best identifies your electrical problem. Check out each possible problem under that symptom. If the problem can not be located, see an automotive electrical specialist. For maintenance procedures see Section 5-2.

SYMPTOM	PROBLEM: REMEDY
NO LIGHTS	Fuse blown: replace fuse. Connection at plug-in: tighten connection. Broken or corroded wires: replace wire. Ground wire loose: clean and tighten ground.
LIGHTS FLICKERING	Wires shorted or loose: locate, insulate, replace, or tighten.
LIGHTS DIM	Voltage difference between trailer & tractor: match bulbs with tractor voltage.
LIGHTS BRIGHT & BURN OUT	Voltage difference between trailer & tractor: match bulbs with tractor voltage.
FUSE BLOW-OUT OR CIRCUIT BREAKER TRIPPING	Vibration: locate source of vibration and repair. Short circuit: replace fuse and try all accessories. If fuse blows right away, locate short and repair.
LAMP BULB BURN OUT	Vibration: locate source of vibration and repair. Short circuit: replace fuse and try all accessories. If fuse blows right away, locate short and repair. Loose connection: check lamp sockets and ground connections. Intermittent short: locate short and repair. Improper voltage: check voltage regulator output.

6-2 TIRES - WHEELS - SUSPENSION

Most tire, wheel, and suspension related problems are due to excessive loads, extreme conditions, and improper maintenance. Tire, wheel, and suspension problems can be easily detected and solved by checking the following guide. For maintenance procedures see Sections 5-8, 5-9, 5-10, 5-11, and 5-12.

<u>SYMPTOM</u>	<u>PROBLEM: REMEDY</u>
VIBRATIONS WHILE DRIVING	Improper tire inflation: inflate to proper pressure. Tires cupped or have flat spots: replace tires. Wheels bent or loose: replace or tighten. Tires incorrectly mounted: remount. Mud in wheels: clean wheels. Tire(s) out of balance: balance tires. Brakes dragging: locate cause and repair.
RAPID TIRE WEAR/DETERIORATION:	
CENTER TREAD WEAR	Over inflation: deflate to correct inflation.
SHOULDER TREAD WEAR - BOTH SHOULDERS	Under inflation: increase inflation to correct PSI.
SHOULDER TREAD WEAR - ONE SHOULDER	Axle damage: straighten or replace axle.
OVERALL TREAD WEAR	Overloading: check tire load rating. High speeds: adjust speed according to road and load conditions. Incorrect dual matching: properly match dual tires.
TIRE FLAT SPOTS	Quick stops: adjust braking practices. Grabbing brakes: adjust brakes properly. Worn or loose wheel bearings: adjust or replace as needed. Out of balance wheels and tire: balance wheels and tires.
UNEVEN WEAR	Undercarriage bushings worn: replace bushings. Worn or loose wheel bearings: adjust or replace as needed. Out of balance wheels and tires: balance wheels and tires.
RIM FAILURE:	
CRACKING	Overinflated tires: deflate tire to proper PSI. High speeds: adjust speed according to road and load conditions. High speed cornering: adjust cornering practices. Over loading: check rim load rating.

***IN ALL OF THE ABOVE, REPLACE THE RIM IMMEDIATELY!**

TIRES - WHEELS - SUSPENSION

CONTINUED

SYMPTOMS

PROBLEM: REMEDY

BENDING OR WARPING	Curb-hopping or potholes: adjust turning practices and adjust speed accordingly with road conditions. Improper tightening sequence: follow proper tightening sequence.
BROKEN STUDS	Over tightening: use correct torque when mounting.

***IN ALL OF THE ABOVE, REPLACE RIM OR STUDS IMMEDIATELY!**

TRAILER TRACKING PROBLEMS:

TRACKS TO ONE SIDE	Axle alignment: realign axle.
TRACKS TO EITHER SIDE	Broken or bent springs or equalizers: replace defective parts.

6-3 BRAKES

For maintenance procedures See Sections 5-3, 5-4, 5-5, 5-6, and 5-7.

SYMPTOM

PROBLEM: REMEDY

NO BRAKES OR BRAKES ARE INTERMITTENT	Brake air system improperly connected: reconnect hand valves properly. Relay/Emergency valve plugged: clean valve. Defective tractor protection valve: repair or replace. Restricted tubing or hose line: locate and eliminate restriction. Broken line: locate break and repair. Tractor air system failure: troubleshoot tractor air system and repair.
SINGLE BRAKE DRAGGING OR LOCKED	Broken internal brake component: locate and replace broken part. Flat spot on cam roller or cam shaft: replace and lubricate. Improper adjustment: adjust slack adjusters. Spider bushing or cam bracket bushing binding: lubricate or replace bushing. Improper lubrication: lubricate. Worn brake shoe bushing: replace bushing. Brake drum distortion: replace drum. Broken brake chamber spring: replace spring. Brake chamber pushrod binding: realign brake chamber bracket. Air brake line loose or broken: tighten or repair.
UNEVEN BRAKES	See "SINGLE BRAKE DRAGGING OR LOCKED" Restriction in hose: locate restriction and remove. Worn brake linings: reline brakes. Grease on linings: reline brakes. Broken slack adjuster: replace slack adjuster. Leaking brake chamber diaphragm: replace diaphragm.

BRAKES CONTINUED

SYMPTOM

PROBLEM: REMEDY

BRAKES APPLY TOO SLOWLY

Brakes need adjusting or lubrication: adjust or lubricate as needed.
Low air pressure in brake system (below 80 PSI): check tractor air system.
Restricted tubing or hose: locate restriction and remove.
Defective relay valve: clean or replace.

BRAKES RELEASE TOO SLOWLY

Brakes need adjusting or lubrication: adjust or lubricate as needed.
Brake rigging binding: align brakes or replace bent parts.
Exhaust port of relay valve restricted or plugged: clean valve.

ALL BRAKES DO NOT RELEASE

Air system improperly connected to tractor: tighten or adjust connections.
Brake valve on tractor is applied: release brake.
Relay emergency valve in emergency position: check line pressure and check valve.
Restricted tubing or line: locate restriction and remove.
Defective tractor protection valve: troubleshoot tractor air system.
Parking brakes locked: troubleshoot air system.

INSUFFICIENT BRAKES

Brakes need adjusting: adjust brakes.
Brakes need lubricating: lubricate brakes.
Brakes need relining: reline brakes.
Low air pressure: troubleshoot air system.
Defective relay/emergency valve: repair or replace.
Brakes overheated: stop and allow brakes to cool, locate cause of overheating.

BRAKES GRABBING

Grease on brake linings: reline brakes.
Brake rigging binding: align brakes or replace bent parts.
Defective brake valve on tractor: repair or replace valve.
Defective relay/emergency valve: repair or replace valve.

EXCESSIVE LEAKAGE WITH BRAKES RELEASED

Relay/emergency valve leaking: repair or replace valve. Leaking tubing or hose: replace defective part.

EXCESSIVE LEAKAGE WITH BRAKES APPLIED

Relay/emergency valve leaking: repair or replace valve. Leaking brake chamber diaphragm: replace diaphragm.
Leaking tubing or hose: replace defective part.

EXCESSIVE LEAKAGE W/ EMERGENCY SYSTEM ONLY APPLIED - NO LEAKAGE W/NORMAL BRAKING

Defective relay/emergency valve: repair or replace valve.

EXCESSIVE WATER PRESENT IN BRAKE SYSTEM

Reservoir not drained often enough: drain reservoir daily.

EXCESSIVE OIL PRESENT IN BRAKE SYSTEM

Compressor on tractor passing excessive oil: repair compressor.

BRAKES CONTINUED

SYMPTOM

PROBLEM; REMEDY

BRAKE WILL NOT APPLY PROPERLY Flat spot on cam roller or camshaft: replace and lubricate.

BRAKES WILL NOT APPLY WHEN EMERGENCY LINE IS DISCONNECTED Initial air pressure too low: allow air system to build up to minimum 90 PSI and stabilize.
Defective relay valve: repair or replace valve.
Air line leak: locate leak and repair.
Brake chamber leak: locate leak and repair or replace.

6-4 BRAKE DRUMS:

For maintenance procedures see Section 5-3 and 5-6.

SYMPTOM

PROBLEM; REMEDY

EXCESSIVE LOSS OF BRAKES OR FADING Overheated brake drums: check for defective or misadjusted brake linings, distorted or over-machined drums. Operating conditions or loads that create severe or excessive brake applications.

BRAKES PULL TO EITHER SIDE Drums of different diameters: replace with drums of same diameter.
Foreign matter in drums: clean drums out.

ROUGH OR NOISY BRAKING ACTION Defective drums: pull drums and inspect for any of the following: Heat spotted drums, grease spotting, blue drums, scored drums, excessive wear at rivet holes or edges, polished drums, out of round drums, unbalanced drums, worn/damaged brake components, foreign matter in drums. Correct situation or replace defective part(s).

VIBRATION IN RIDE Defective drums or out-of-round: replace drums.
Out-of-balance drums: balance drums.

NOTES:

7 ILLUSTRATED PARTS - MODEL 360 SEMITRAILER

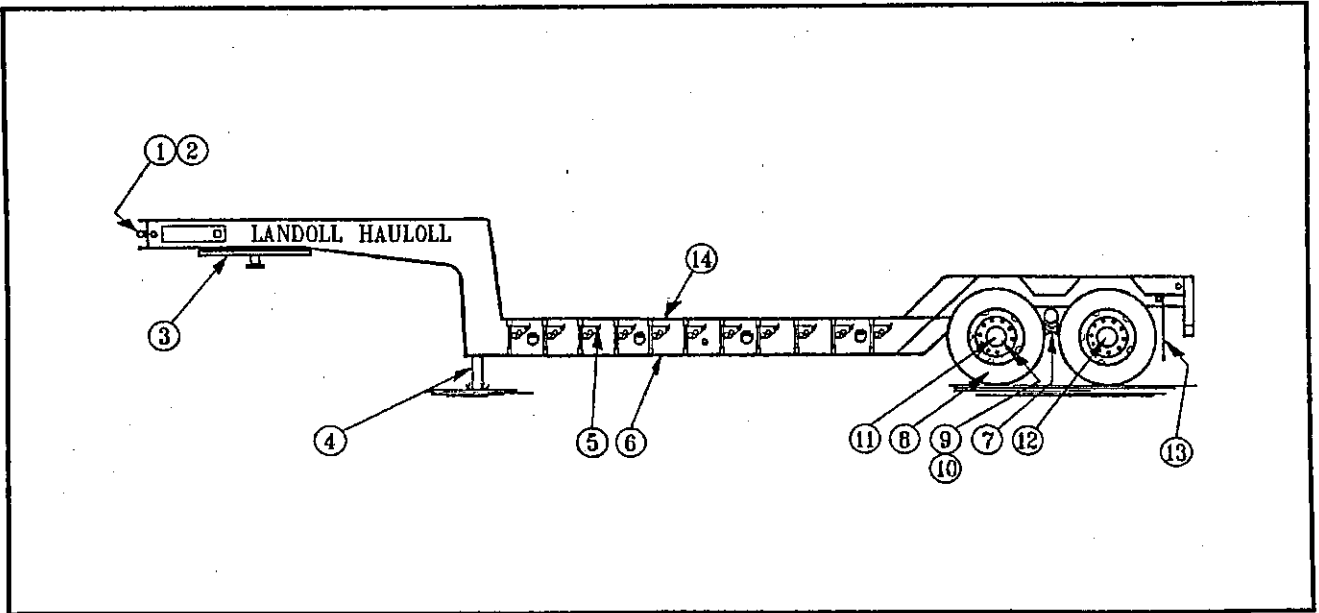


FIG. 7-1 360 DOUBLE DROP TRAILER

ITEM	PART NO.	DESCRIPTION	QUANTITY
1	NO NUMBER	AIR SYSTEM (See FIG. 7-2)	REF.
2	NO NUMBER	ELECTRICAL SYSTEM (See FIG. 7-3)	REF.
3	S-003-001	PLATE, ROCKING COUPLER (See FIG. 7-4)	1
4	3-311-010145	STANDS, PARKING	2
	346SL	PIN, LOCKING HITCH	2
5	3-187-010001	CLIP, OUTRIGGER STAY	22
	1/4FW	WASHER, FLAT	22
	1/8X1	PIN, COTTER	22
	3-270-010024	SPRING	22
6	3-311-014561	WELDMENT, FRAME	1
7	3-762-010487	SUSPENSION, 70A SINGLE POINT (See FIG. 7-5)	1
8	3-870-010035	WHEELS	9
	TR573	VALVE STEM	9
	11RX22.5-16P	TIRES	9
9	3-406-010031	HUB/DRUM ASSEMBLY, L.H. (See FIG. 7-7)	2
10	3-406-010032	HUB/DRUM ASSEMBLY, R.H. (See FIG. 7-7)	2
11	3-042-010029	AXLE, K22 (See FIG. 7-6)	2
12	3-406-010035	HUBODOMETER	1
13	3-485-010001	FLAP, MUD	2
	3-762-010017	CLAMP, MUD FLAP	2
14	RWD6999	PLANKING, APITONG	A/R

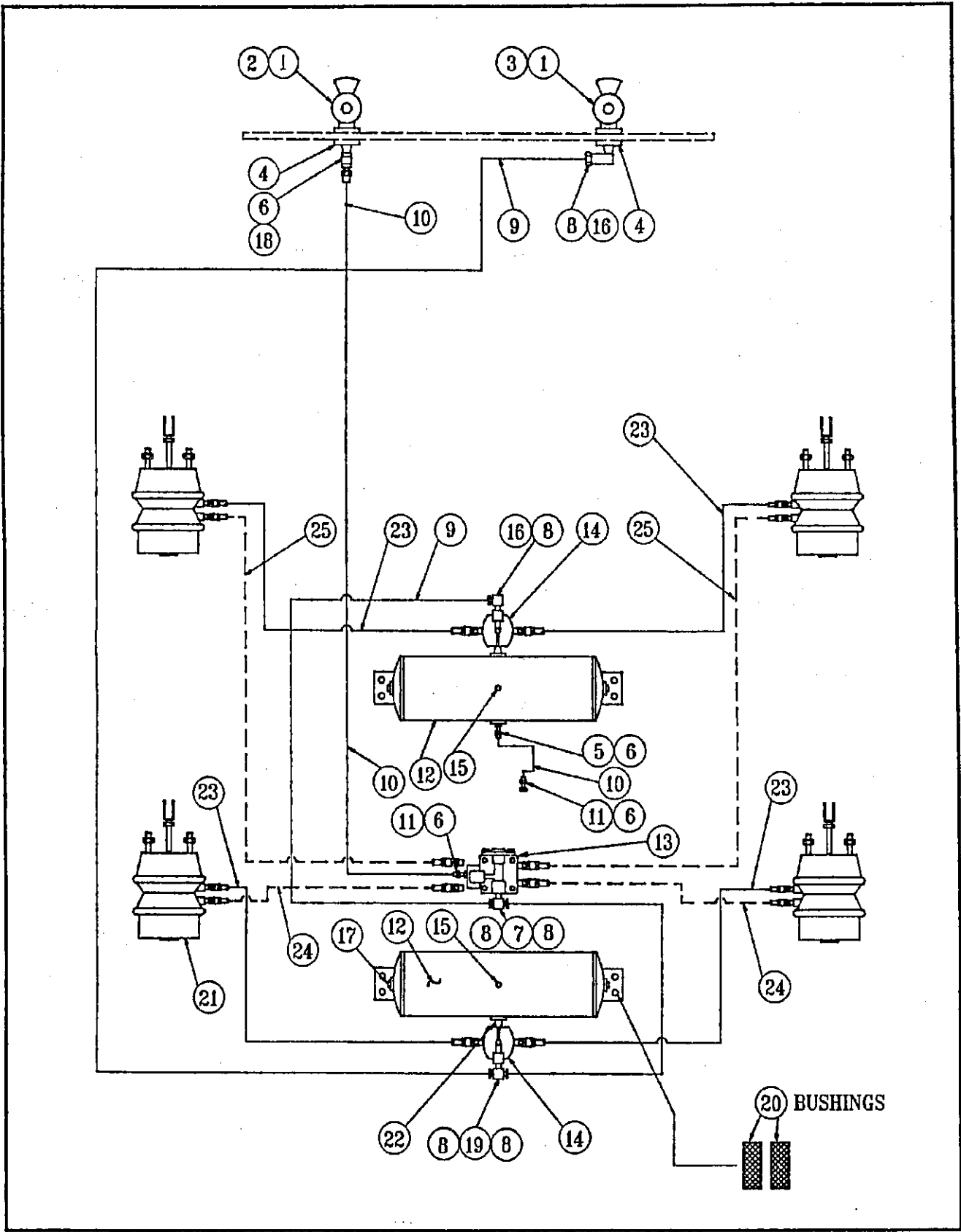


FIG. 7-2 AIR BRAKE SYSTEM

AIR BRAKE SYSTEM

ITEM	PART NO.	DESCRIPTION	QUANTITY
	B3-128-054	AIR SYSTEM	1
1	55B11	GLADHAND	2
2	55B61-6	TAG, EMERGENCY	1
3	55B61-7	TAG, SERVICE	1
4	55B61	UNION, FRAME	2
5	HO-168-8X8	FITTING	1
6	HO-159-8BP	INSERT	4
7	1472X6X6X6	TEE, MALE BRANCH	1
8	HO-159-6BP	INSERT	6
9	62P6	TUBE	1
10	62P8	TUBE	1
11	HO-168-8X6	CONNECTOR, MALE	2
12	3-780-010002	RESERVOIR	2
13	758-181	VALVE, TASK	1
14	758-182	VALVE, BRAKE RELAY	2
15	757-363	VALVE, CABLE PULL DRAIN	2
16	1469X6	ELBOW, MALE	2
17	1/2PIPE PLUG	PLUG, BLACK PIPE	4
18	HO-168-8X4	CONNECTOR, MALE	1
19	1472X6	TEE, MALE	1
20	805-2	BUSHING, STEP	16
21	3-128-010002	CHAMBER, SPRING BRAKE	4
	19305SERVICE	BODY, REPLACEMENT NON-PRESSURE	2
	19307SERVICE	SPRING, REPLACEMENT SERVICE CHAMBER RETURN	2
	19306SERVICE	PUSHROD ASSEMBLY, REPLACEMENT	2
	18300SERVICE	DIAPHRAGM, REPLACEMENT	4
	SN2100	KIT, REPLACEMENT CAGING BOLT AND BRACKET	2
22	1/2NIPPLE	NIPPLE	3
23	3-384-010018	HOSE, AIR	4
24	3-384-010020	HOSE, AIR	2
25	3-384-010024	HOSE, AIR	2

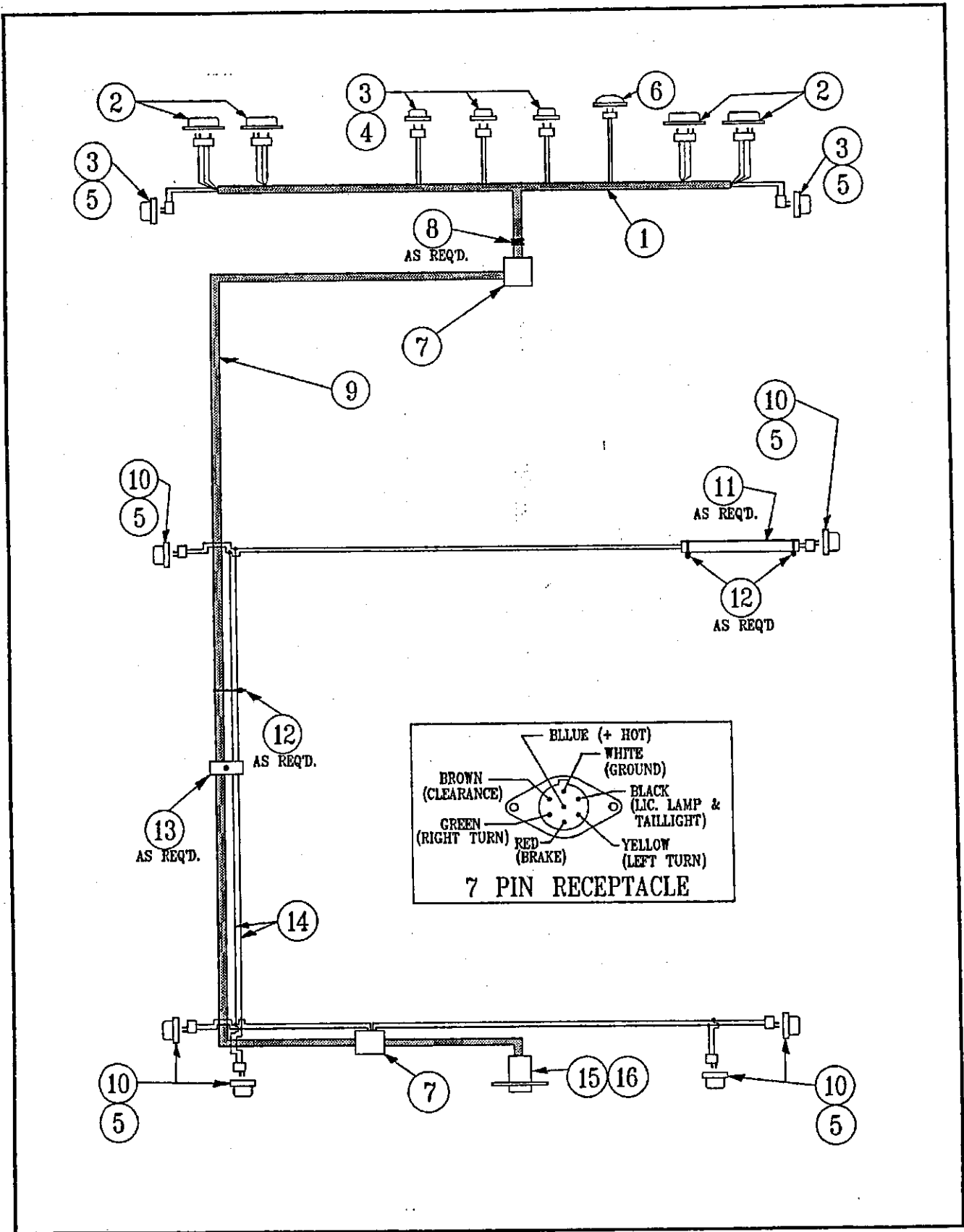


FIG. 7-3 ELECTRICAL SYSTEM

ELECTRICAL SYSTEM

ITEM	PART NO.	DESCRIPTION	QUANTITY
	B3-272-049	ELECTRICAL SYSTEM	1
1	3-368-010023	HARNESS, REAR WIRING	1
2	40015R	LAMP, 4 IN. TAIL W/REFLECTOR	4
3	10205R	LAMP, RED REFLECTOR	5
4	10404	MOUNT, 3 IN. GROMMET	3
5	10403	MOUNT, GROMMET	8
6	15009	LAMP, LICENSE	1
7	750-029	JUNCTION BOX, 7 STUD	2
8	2552	GROMMET	A/R
9	3-156-010009660	CABLE, MULTI-CONDUCTOR	A/R
10	10205Y	LAMP, YELLOW REFLECTOR	6
11	3-201-010002240	CONDUIT, PLASTIC FLEX	A/R
12	T120R	STRAP, TYTON	A/R
13	2-181-010001	CLAMP, HOSE	28
	3/8-16HFN	NUT, HEX	28
	3/8SLW	WASHER, LOCK	28
14	1-879-010006480	WIRE, 14 GA. BLUE	A/R
	CO1-412	TERMINAL, RING	A/R
	D01-412	TERMINAL, RING	A/R
	3-272-010021	SPLICE, ELECTRIC BUTT	A/R
	3-272-010022	SPLICE, ELECTRIC BUTT	A/R
15	59S-7	RECEPTACLE, 7 PIN	1
	5/16-18X1-1/4CS	CAP SCREW, HEX HEAD	2
	5/16-18HFN	NUT, HEX	2
	5/16SLW	WASHER, LOCK	2
16	59W-2-3	BOOT, RUBBER	1

ROCKING COUPLER PLATE

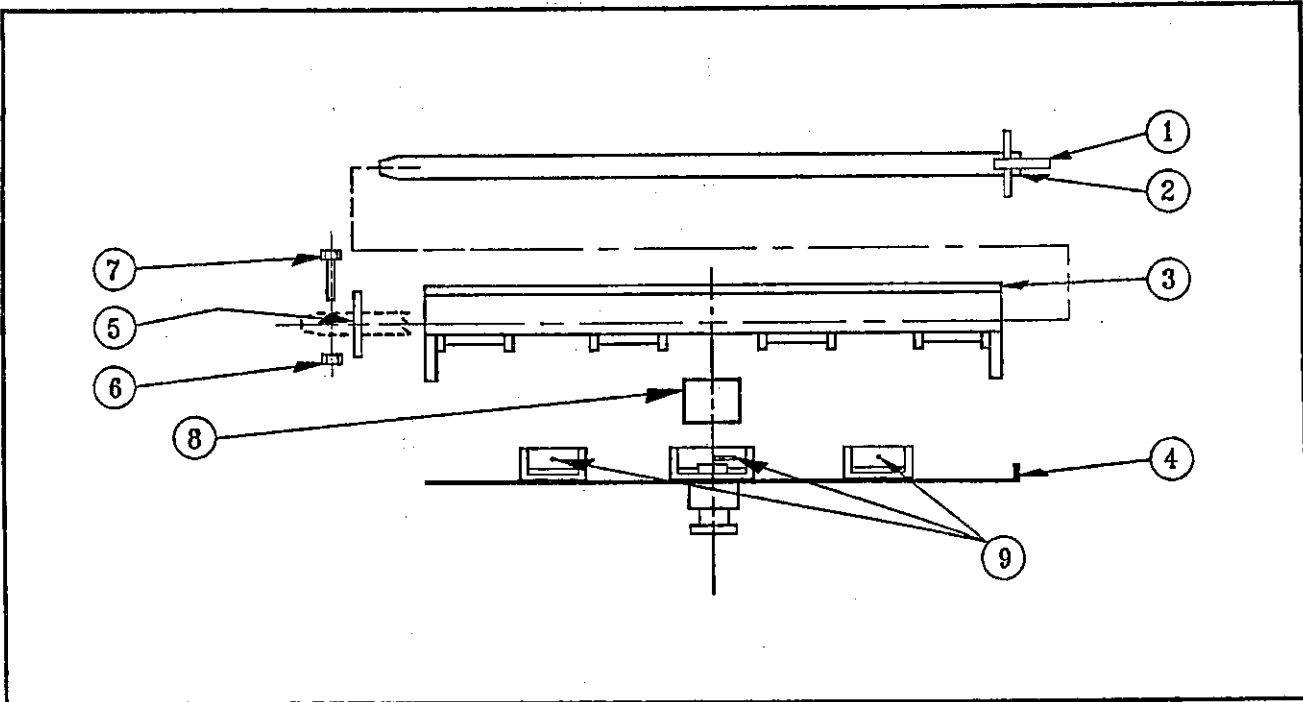


FIG. 7-4 ROCKING COUPLER PLATE

ITEM	PART NO.	DESCRIPTION	QUANTITY
	S-003-001	PLATE ASSEMBLY, ROCKING COUPLER	REF.
1	RSP989X1X2.5	PLATE	2
2	S-003-014	PIN, ROCKING COUPLER	1
3	S-003-015	PLATE, UPPER ROCKING	1
4	S-003-016	PLATE, LOWER ROCKING	1
5	1-3/8W-FW	WASHER, WIDE FLAT	1
6	103-0616	NUT, ESNA HEAVY	1
7	5/16-18X2HHCS	CAP SCREW, HEX HEAD	1
8	503-022	BUSHING, RUBBER	2
9	110-0759	FITTING, LUBE	3

SUSPENSION PARTS

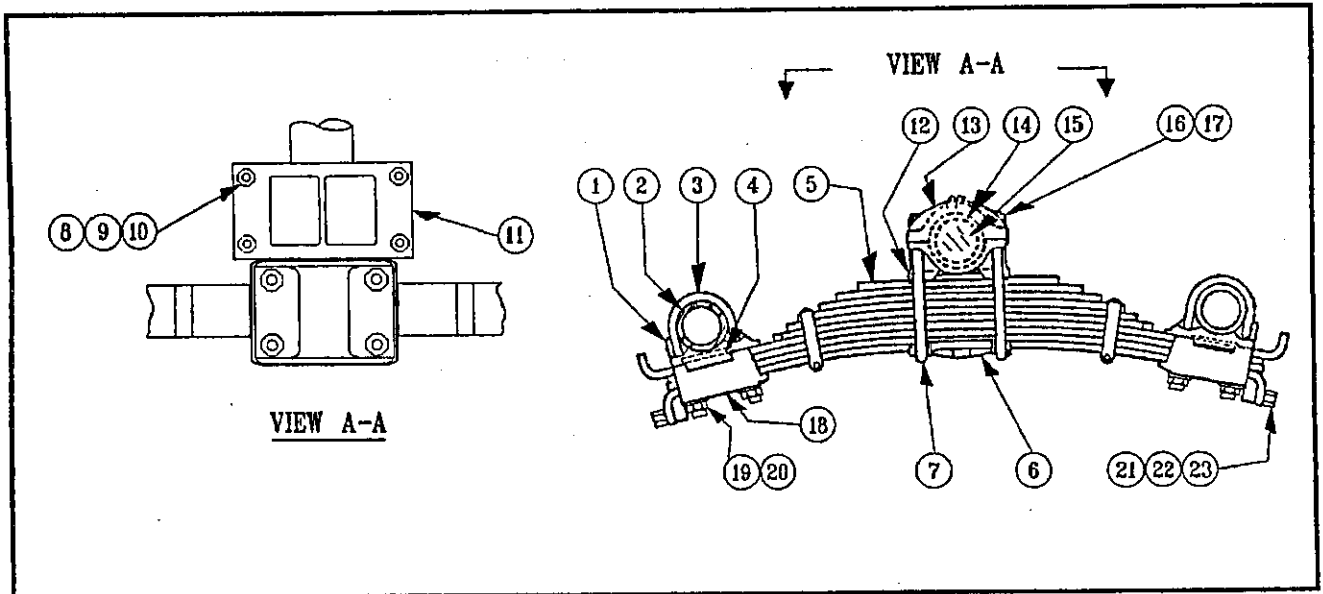


FIG.7-5 SUSPENSION ITEMS

ITEM	PART NO.	DESCRIPTION	QUANTITY
	3-762-010487	SUSPENSION ASSEMBLY	REF.
1	08603-01	SEAT, AXLE 5 IN.	4
2	REF.	AXLE	REF.
3	08509-01	U-BOLT, AXLE	8
4	08605-01	PAD, RUBBER AXLE CLAMP	4
5	12630-01	SPRING	2
6	12512-01	PLATE, BOTTOM	2
7	12199-01	U-BOLT, TRUNNION	4
8	08608-01	CAP SCREW, HEX HEAD	12
9	T-2131	WASHER, FLAT	12
10	T-2130	NUT, HEX	12
11	T-5728	CLAMP, TRUNNION SHAFT	2
12	12514-01	SEAT, TRUNNION SADDLE AND SPRING	2
13	112513-01	CAP, SADDLE	2
14	T-5711	BUSHING, TRUNNION	2
15	T-7340	SHAFT, TRUNNION	1
16	T-5770	WASHER, FLAT	8
17	12327-01	NUT, LOCKING	8
18	12658-01	CLAMP, PLATE	4
19	T-7292	WASHER, FLAT	16
20	09352-01	NUT, LOCKING	16
21	08607-01	CAP SCREW, HEX HEAD	8
22	T-5496	WASHER, FLAT	8
23	08606-01	SHIMS, ALIGNMENT	A/R

K-22 AXLE

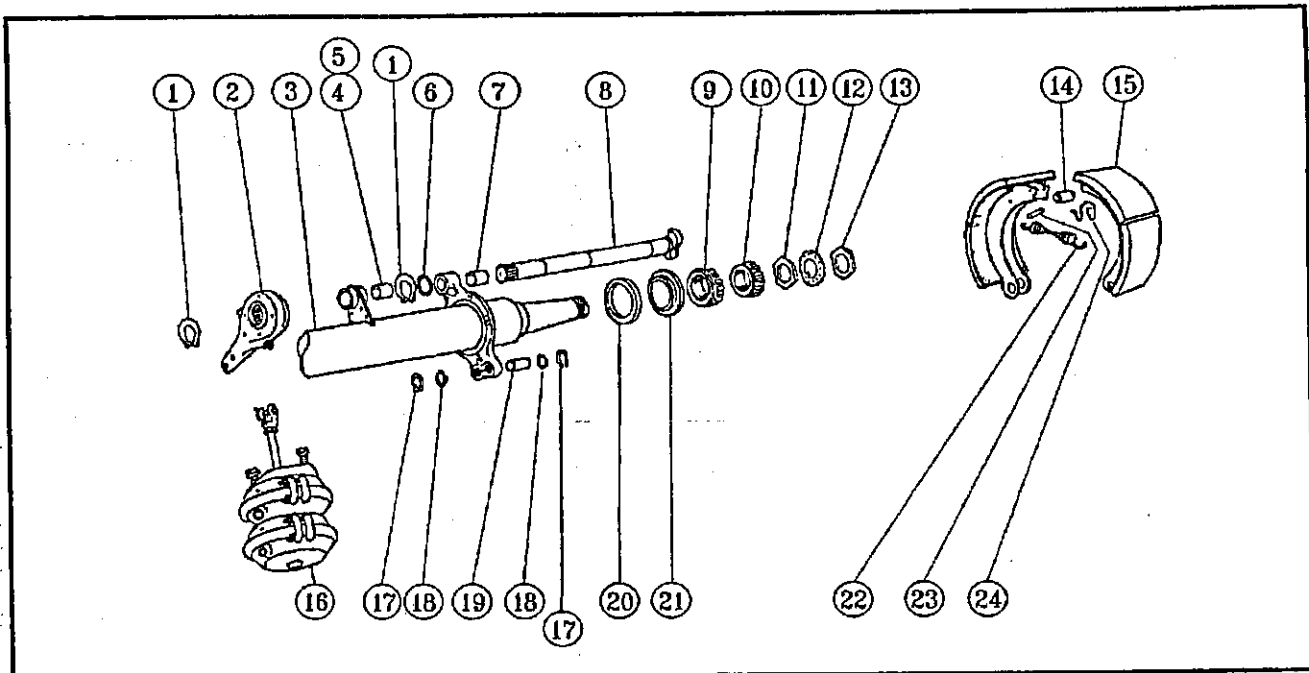


FIG. 7-6 K-22 AXLE

ITEM	PART NO.	DESCRIPTION	QUANTITY
	3-042-010029	K22 AXLE	REF.
1	38038	RING, SNAP	4
2	3-762-010496	SLACK ADJUSTERS	4
3	K22TA112 53X	AXLE	1
4	M10WJ107	BUSHING	2
5	M10HH131	O-RING	4
6	M10HS100	SPACER	2
7	M16HD100	BUSHING	2
8	M16WK103	CAM, R.H. BRAKE	1
	M16WK102	CAM, L.H. BRAKE	1
9	M10HB100	BEARING, INNER	2
10	M10HB101	BEARING, OUTER	2
11	M10HN101	NUT, INNER SPINDLE	2
12	M10HN100	WASHER, KEYED	2
13	M10HN102	NUT, OUTER SPINDLE	2
14	M16WJ104	ROLLER, CAM	4
15	M16WN121	ASSEMBLY, BRAKE SHOE AND LINING	4
16	REFERENCE	BRAKE CHAMBER (See FIG.7-)	REF.
17	31624	RING, SNAP	4
18	M10HN135	WASHER, FLAT	4
19	M10HP102	PIN, ANCHOR	4
20	M10HS101	RING, OIL	2
21	M10HH102	SEAL, OIL	2
22	M16WJ100	SPRING, BRAKE RETURN	2
23	M16WJ102	PIN, RETURN SPRING	4
24	M16WJ103	SPRING, BRAKE ROLLER	4

HUB/DRUM

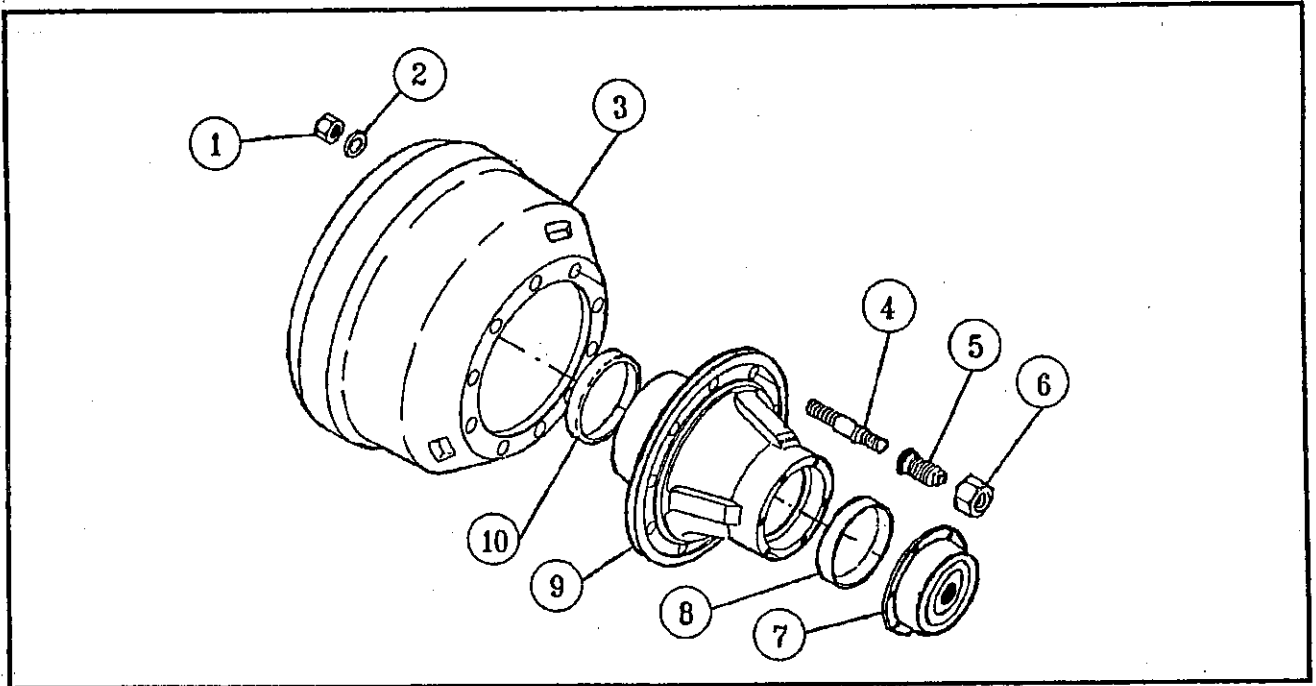


FIG. 7-7 HUB/DRUM

ITEM	PART NO.	DESCRIPTION	QUANTITY
	3-406-010031	HUB/DRUM ASSEMBLY R.H.	REF.
	3-406-010032	HUB/DRUM ASSEMBLY L.H.	REF.
1	75716	NUT, LOCKING	10
2	257	WASHER	10
3	62200	DRUM	1
4	139902	STUD, R.H.	10
	139913	STUD, L.H.	10
5	107080	CAP NUT, R.H. INNER	10
	107091	CAP NUT, L.H. INNER	10
6	178910	CAP NUT, R.H. OUTER	10
	178921	CAP NUT, L.H. OUTER	10
7	M10WK100	HUB CAP, OIL LEVEL INDICATOR	1
	M10WG108	SEAL	1
	5/16-18X3/4HHCS	CAP SCREW, HEX HEAD	6
	5/16SLW	WASHER, SPLIT LOCK	6
8	HM212011	CUP, OUTER BEARING	1
9	1001	HUB	1
10	HM218210	CUP, INNER BEARING	1

DECAL PLACEMENT

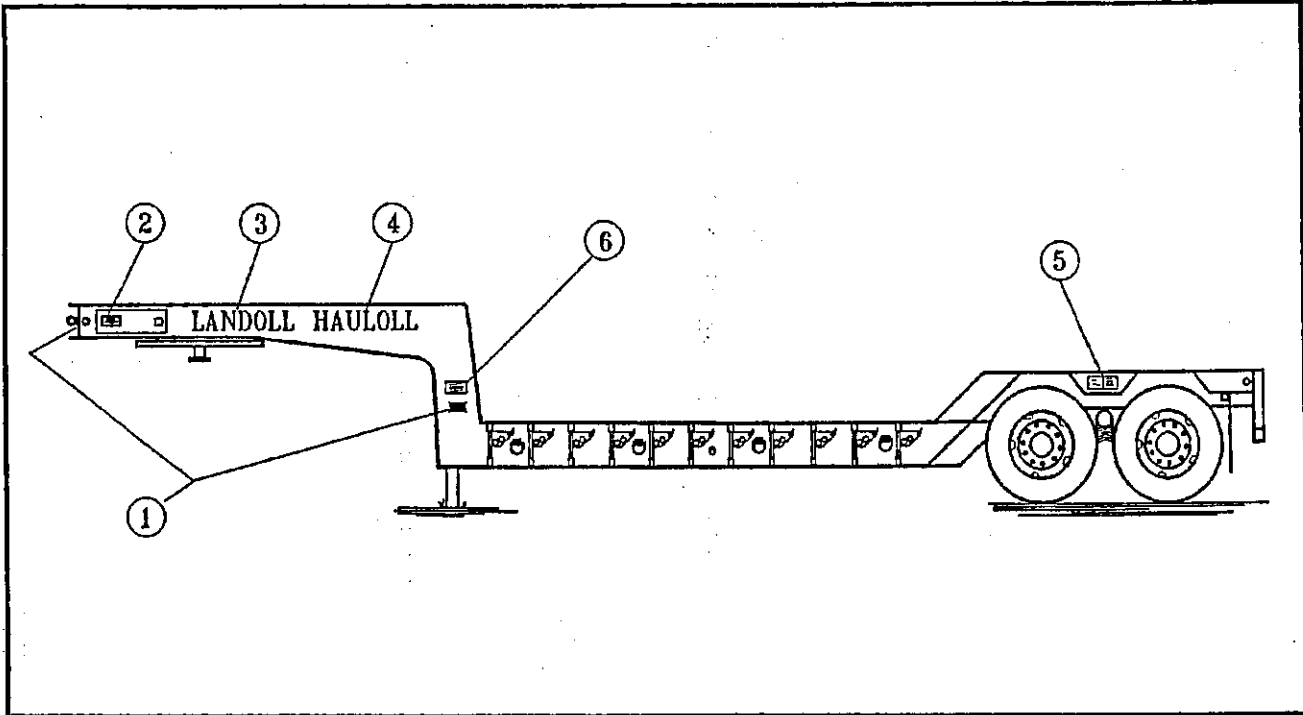


FIG. 7-8 DECAL PLACEMENT

ITEM	PART NO.	DESCRIPTION	QUANTITY
1	1-573-010001	DECAL, LANDOLL LOGO	3
2	NO REPLAC.	PLATE, IDENTIFICATION	1
3	3-573-010048	DECAL, LANDOLL NAME	2
4	3-573-010050	DECAL, HAULLOLL NAME	2
5	3-573-010080	DECAL, WHEEL TORQUE	1
6	1-573-010082	DECAL, PATENT	1

MISC. HARDWARE LISTING

ITEM	PART NO.	DESCRIPTION	QUANTITY
1	3/8-16X1-1/2CS	CAP SCREW, HEX HEAD	28
2	3/8-16HFLN	NUT, LOCKING HEX	36
3	1-3/8FW	WASHER, WIDE FLAT	2
4	1/4FW	WASHER, FLAT	22
5	3/8FW	WASHER, FLAT	24