

MODEL 324/325

**DETACHABLE GOOSENECK LOWBED SEMITRAILER
OWNERS MANUAL**

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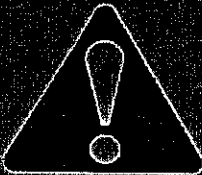
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SAFETY PRECAUTIONS



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.



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 MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.



DANGER

BE SURE TO KEEP FEET CLEAR OF THE BOTTOM OF THE SEMITRAILER DURING LOWERING OPERATION. FAILURE TO KEEP FEET CLEAR MAY RESULT IN SERIOUS PERSONAL INJURY.



DANGER

WELDING AND CUTTING OPERATIONS PRODUCE HEAT, TOXIC FUMES, RADIATION, METAL SLAG, AND CARBON PARTICLES. WELDING AND CUTTING GOGGLES WITH THE PROPER TINTED LENSES, GLOVES, APRON OR JACKET, AND WELDERS BOOTS ARE REQUIRED. FAILURE TO USE PROPER SAFETY EQUIPMENT MAY RESULT IN SERIOUS PERSONAL INJURY.



CAUTION

DO NOT OPERATE THE SEMITRAILER UNTIL YOU COMPLETELY UNDERSTAND THE PROPER USAGE AND FUNCTION OF ALL CONTROLS. IMPROPER USAGE MAY CAUSE PERSONAL INJURY, DAMAGE TO YOUR SEMITRAILER AND CARGO, AND TIME-CONSUMING BREAK-DOWNS.



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



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



FAILURE TO SUPPORT THE SEMITRAILER LOAD FULLY ON THE LOAD BLOCKS MAY RESULT IN DAMAGE TO THE LOAD, THE SEMITRAILER, AND POSSIBLE SERIOUS INJURY OR DEATH TO INDIVIDUALS NEAR THE SEMITRAILER.



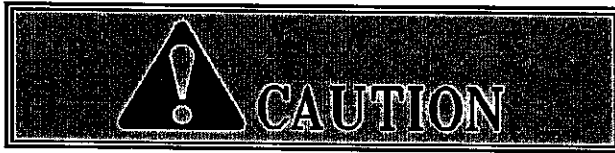
WHEN LEAVING THE SEMITRAILER UNATTENDED, POSITION ALL CONTROL SWITCHES TO THE CENTER/NEUTRAL POSITION AND SHUT OFF THE HYDRAULIC PUMP.



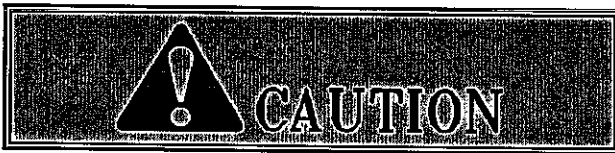
USING THE HAND BRAKE INSTEAD OF THE PARKING BRAKE WHEN PARKING THE SEMITRAILER MAY ALLOW THE SEMITRAILER TO ROLL CAUSING DAMAGE TO PROPERTY, AND POSSIBLE INJURY OR DEATH TO PERSONS IN THE PATH OF THE SEMITRAILER.



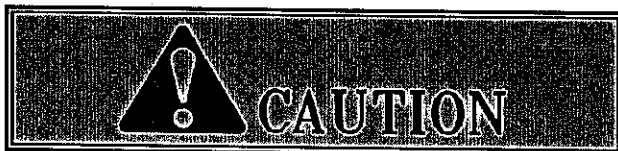
OPERATING THE TRACTOR OR SEMITRAILER WITH DEFECTIVE, BROKEN, OR MISSING PARTS MAY RESULT IN SERIOUS INJURY OR DEATH OF PERSONNEL, DAMAGE TO THE TRACTOR/SEMITRAILER OR IT'S CARGO, OR DAMAGE TO PROPERTY IN IT'S PATH.



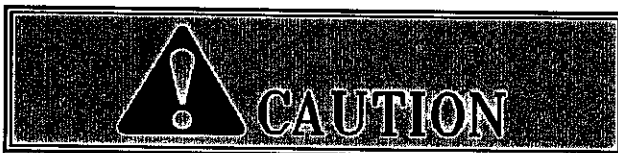
FAILURE TO PROPERLY SET AND CHECK PARKING BRAKE, AND CHOCK WHEELS WHEN PARKING AND DURING STORAGE, MAY ALLOW MOVEMENT OF THE TRACTOR/SEMITRAILER RESULTING IN SERIOUS INJURY OR DEATH TO INDIVIDUAL(S), OR DAMAGE TO PROPERTY IN IT'S PATH.



ALWAYS CHECK BEHIND AND UNDER THE TRACTOR AND SEMITRAILER FOR PERSONS OR OBJECTS BEFORE BACKING. FAILURE TO DO SO MAY 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 IT'S LOAD. FAILURE TO TAKE ADEQUATE SAFETY MEASURES MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.



LIFTING OPERATIONS CAN BE DANGEROUS. ONLY A CRANE, HOIST, OR SIMILAR LIFTING EQUIPMENT SHOULD BE USED TO LIFT THE DETACHED SEMITRAILER BED OR TRUNNION. THIS DEVICE MUST ONLY BE OPERATED BY A TRAINED, QUALIFIED PERSON USING STANDARD, SAFE LIFTING PROCEDURES. FAILURE TO FOLLOW SAFE LIFTING PRACTICES MAY RESULT IN SERIOUS INJURY OR DEATH TO PERSONNEL, OR DAMAGE TO THE TRAILER OR EQUIPMENT.



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



WHEN SERVICING THE BRAKES, ALWAYS CHOCK WHEELS BEFORE RELEASING BRAKES. 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. MANUALLY CAGE POWER SPRING (PARKING BRAKE) BEFORE REMOVAL OR SERVICE. FAILURE TO PROPERLY CAGE THE SPRING BRAKE MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.



ALL GOOSENECK LATCH MECHANISM MAINTENANCE, ADJUSTMENTS, AND REBUILDING MUST BE DONE BY A QUALIFIED PERSON USING PROPER TOOLS AND PROCEDURES. CONTACT THE LANDOLL FACTORY FOR SERVICING AND REPAIR OF THE GOOSENECK LATCH. USING AN IMPROPERLY REPAIRED OR REBUILT LATCH MAY RESULT IN SERIOUS INJURY OR DEATH TO PERSONNEL, DAMAGE TO THE TRACTOR/SEMITRAILER AND IT'S CARGO, AND DAMAGE TO PROPERTY IN IT'S PATH.



DO NOT ALLOW SLACK IN TIE-DOWNS. A SHIFTING LOAD MAY CREATE ENOUGH MOMENTUM TO BREAK HIGHEST 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.



DO NOT EXCEED THE GROSS AXLE WEIGHT RATINGS FOR ANY AXLE ON YOUR VEHICLE.



THE COMBINED WEIGHT OF THE TRACTOR, TRAILER, AND CARGO MUST NOT EXCEED THE GROSS VEHICLE WEIGHT RATING (GVWR) OF THE TRACTOR

A Careful Operator

IS THE BEST INSURANCE
AGAINST AN ACCIDENT



-National Safety Council-

NOTES:

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**

OR PHONE:

(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 MODELS 324 AND 325 DETACHABLE GOOSENECK LOWBED SEMITRAILERS ARE 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.



Remember. . .
Quality is
always a bargain!

2 TERMINOLOGY

The figure below of the 324/325 Lowbed Semitrailer lists terms which are used throughout this manual. A good knowledge of the following terms will make the study of this manual easier.

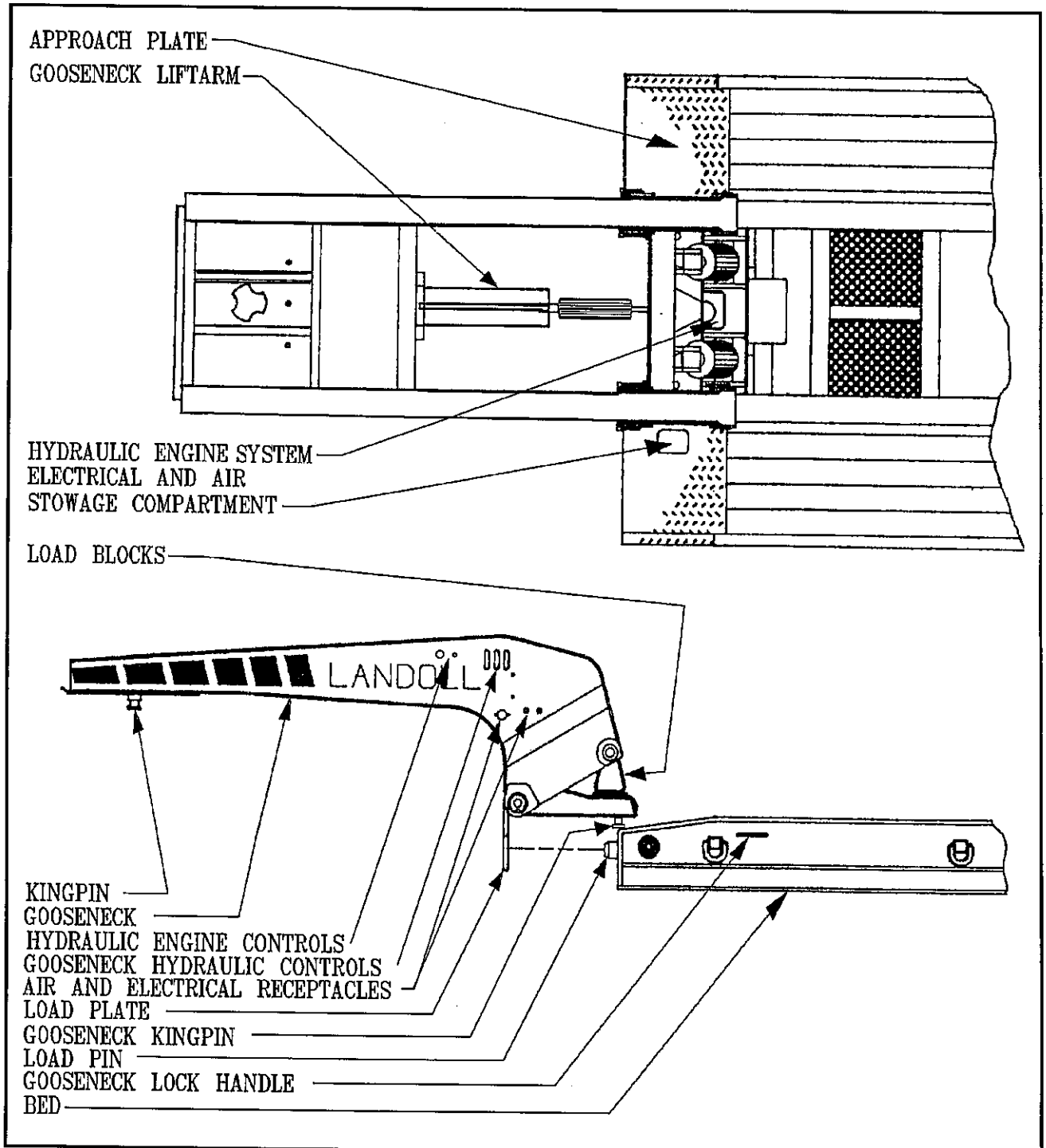


FIG. 2-1 GOOSENECK TERMINOLOGY

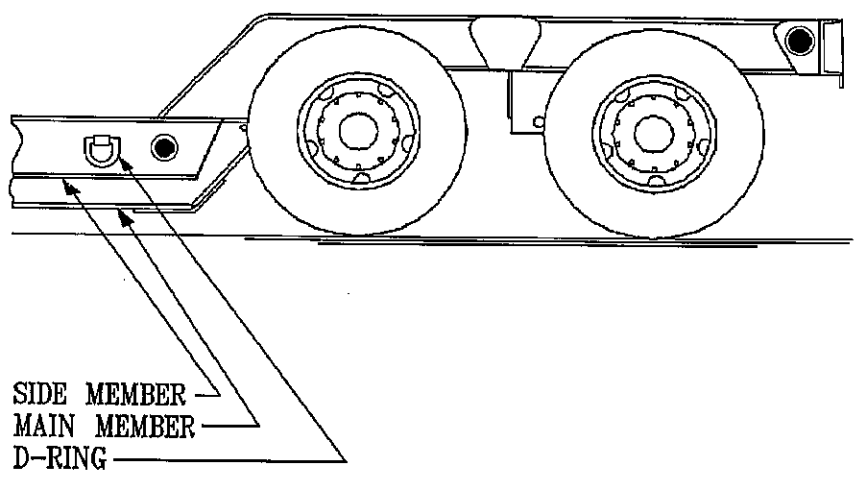
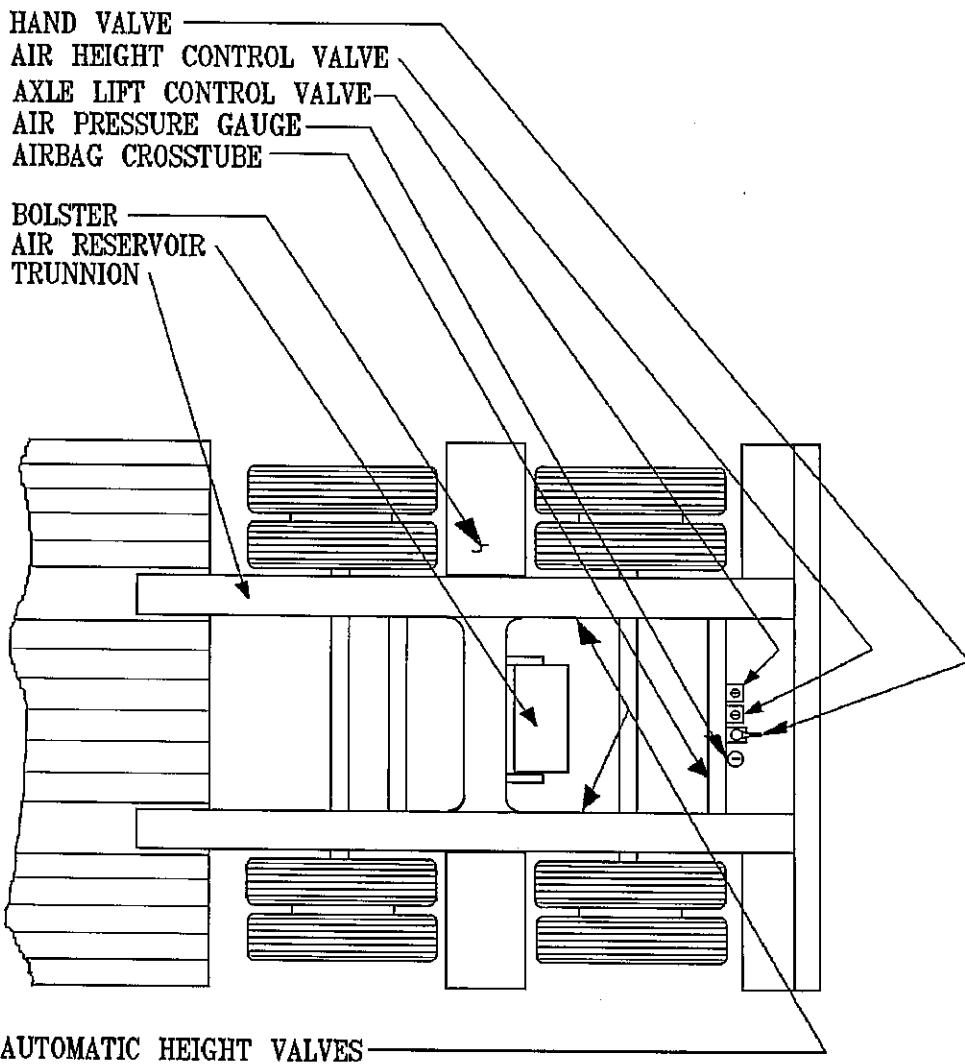


FIG. 2-2 TRUNNION TERMINOLOGY

3 STANDARD SPECIFICATIONS

THE SPECIFICATIONS LISTED IN THIS SECTION ARE FOR THE STANDARD MODEL 324 AND 325 LOWBED SEMITRAILER. OPTIONS ADDED MAY CHANGE THE STANDARD SPECIFICATIONS OF YOUR PARTICULAR SEMITRAILER. SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

CAPACITY:

325/50 TON: 100,000 LBS CONCENTRATED IN 10'-0.
324/40 TON: 80,000 LBS. CONCENTRATED IN 10'-0.
324/35 TON: 70,000 LBS. CONCENTRATED IN 10'-0.

* INDIVIDUAL TRAILER LOAD CAPACITIES ARE RATED FOR THE SPECIFIC TIRE AND WHEEL LISTED ON THE VEHICLE IDENTIFICATION PLATE LOCATED ON THE FRONT OF THE SEMITRAILER. USING A TIRE OR WHEEL OTHER THAN THE ONE LISTED MAY RESULT IN A LOWER TRAILER LOAD CAPACITY.

GOOSENECK:

ALL MODELS: HYDRAULIC CONTROLLED DETACHABLE.

FRAME:

ALL MODELS: 16" DEPTH - FABRICATED I-BEAM, 100,000 YIELD MATERIAL (T-1), 80,000 YIELD MATERIAL, AND 50,000 YIELD MATERIAL. FRAME HAS 8 IN. ROAD CLEARANCE IN TRANSPORT POSITION.

DECKING:

ALL MODELS: 2" APITONG PLANKING WITH A DECK HEIGHT OF 24 IN. IN TRANSPORT POSITION.
LENGTH: VARIES WITH OVERALL LENGTH OF SEMITRAILER AND WHETHER IT IS A TANDEM OR A TRI-AXLE SUSPENSION.

LASHING RINGS:

ALL MODELS: 4 HEAVY DUTY D-RINGS PER SIDE OF BED.
2 HEAVY DUTY D-RINGS PER SIDE OF TRUNNION FOR TRI-AXLES.
1 HEAVY DUTY D-RING PER SIDE OF TRUNNION FOR TANDEM AXLES.

SPECIFIC BOLT TORQUES








	FT. LBS.
AIR RIDE SUSPENSION:	
EQUALIZER BEAM PIVOT BOLT	600
SHOCK ABSORBER MOUNTING	150
AXLE U-BOLTS*	680
AIR SPRING MOUNTING: 1/2"	25
3/4"	50
SINGLE POINT SUSPENSION:	
TRUNNION CLAMP U-BOLTS*	600
TRUNNION CLAMP MOUNTING BOLTS	150
AXLE CLAMP U-BOLTS*	300
ALIGNMENT CAP SCREWS	600
FOUR SPRING SUSPENSION	
AXLE U-BOLTS*	300
EQUALIZER BEAM PIVOT BOLT	480-500
TORQUE ARM BOLTS	250
TORQUE ARM CLAMP NUTS	60
TRI-AXLE SUSPENSION	
AXLE CAP NUTS	480
TRUNNION CAP NUTS	200
RADIUS ROD ADJUSTINGNUTS	75
RADIUS ROD LINKAGE BOLTS	600
TRUNNION CLAMP CASTING BOLTS	100
SPRING CLAMP U-BOLTS*	300
OUTER SPINDLE NUT	250-400
WHEEL LUG NUTS:	
CAP NUTS	450-500
OUTER NUTS	450-500

* 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.

SAE Grade No.		2		5		8 *					
Bolt head identification marks as per grade				  		  					
NOTE: Manufacturing Marks will vary.											
Inches	Millimeters	Torque		Torque		Torque					
		Foot Pounds	Newton-Meters	Foot Pounds	Newton-Meters	Foot Pounds	Newton-Meters				
		Min.	Max.	Min.	Max.	Min.	Max.				
1/4	6.35	5	6	7	9	9	11	12	15	16	20
5/16	7.94	10	12	14	16	17	20	23	28	29	39
3/8	9.53	20	23	27	31	35	42	48	57	54	73
7/16	11.11	30	35	41	47	54	64	73	87	70	114
1/2	12.70	45	52	61	70	80	96	108	130	110	179
9/16	14.29	65	75	88	102	110	132	149	179	160	260
5/8	15.88	95	105	129	142	150	180	203	244	220	358
3/4	19.05	150	185	203	250	270	324	366	439	380	618
7/8	22.23	160	200	217	271	400	480	542	651	600	976
1	25.40	250	300	339	406	580	696	786	944	900	1464
1-1/8	25.58					800	880	1085	1193	1280	1953
1-1/4	31.75					1120	1240	1519	1661	1820	2712
1-3/8	34.93					1460	1680	1980	2278	2380	3688
1-1/2	38.10					1940	2200	2631	2983	3160	4827

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

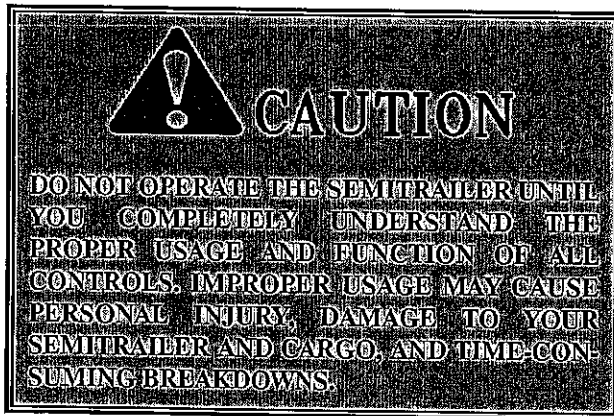
TABLE 3-1 STANDARD BOLT TORQUES

NOTES:

4 CONTROLS

PREFACE

This section describes the controls used to operate the 324/325 Lowbed Semitrailer. Controls are conveniently located and easy to use. A hydraulic pump must be coupled to the trailer hydraulic system before any hydraulic controls will become functional, unless the semitrailer is equipped with the optional hydraulic engine package. The towing vehicle's air system must be coupled to the semitrailer and charged to 90 PSI minimum before the air controls will become functional.



4-1 GOOSENECK LIFTARM

The GOOSENECK LIFTARM lever (See FIG. 2-1 and FIG. 4-1) is located on the drivers side of the gooseneck assembly. It is the left or front-most lever. The lever has three positions:

UP: This position raises the gooseneck lift arm, to the transport or hook-up position.

CENTERED: This is a neutral position. This position will not operate any of the semitrailer components.

DOWN: This position lowers the gooseneck lift arm, permitting the transport of the detached gooseneck.

4-2 LOAD BLOCKS

The LOAD BLOCKS lever (See FIG. 2-1 and FIG. 4-1) is located on the drivers side of the gooseneck assembly. It is the center lever. The lever has three positions:

UP: This position raises the load blocks into the gooseneck, permitting the lowering and detaching/attaching of the semitrailer deck.

CENTERED: This is a neutral position. This position will not operate any of the semitrailer components.

DOWN: This position lowers the load blocks, permitting the safe transportation of the attached semitrailer.

4-3 TRAILER LIFT

The TRAILER LIFT lever (See FIG. 2-1 and FIG. 4-1) is located on the drivers side of the gooseneck assembly. It is the right or rear-most lever. The lever has three positions:

UP: This position raises the semitrailer deck, allowing the load blocks to be lowered into transport position.

CENTERED: This is a neutral position. This position will not operate any of the semitrailer components.

DOWN: This position lowers the semitrailer deck to the ground, allowing the detachment of the gooseneck or allowing the weight of the semitrailer deck and load to rest on the load blocks.

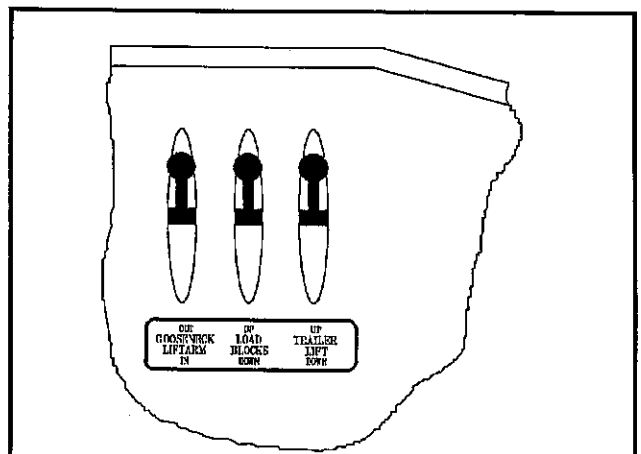


FIG. 4-1 HYDRAULIC CONTROLS

4-4 GOOSENECK LOCK HANDLE:

The GOOSENECK LOCK HANDLE (See FIG. 2-1 and FIG. 4-2) is located at the front of the drivers side bed frame member and is easily seen from the drivers seat. This handle has two positions.

IN: When the handle is in this position, it indicates that the gooseneck locking mechanism is closed.

OUT: When the handle is out, it indicates that the gooseneck locking mechanism is opened.

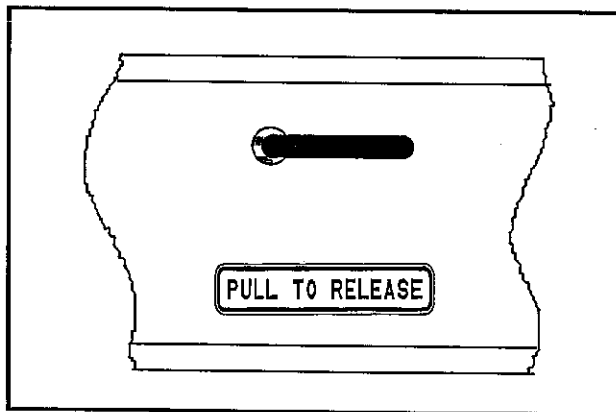


FIG. 4-2 GOOSENECK LOCK HANDLE

4-5 AIR HEIGHT CONTROL VALVE:

The AIR HEIGHT CONTROL VALVE (See FIG. 2-2 and FIG. 4-3) is located on the rear-most airbag crosstube in the semitrailer trunnion. It has two positions.

ON: Placing the valve in this position allows manual adjustment of the air ride height.

OFF: Placing the valve in this position returns the air ride height adjustment to the automatic mode.

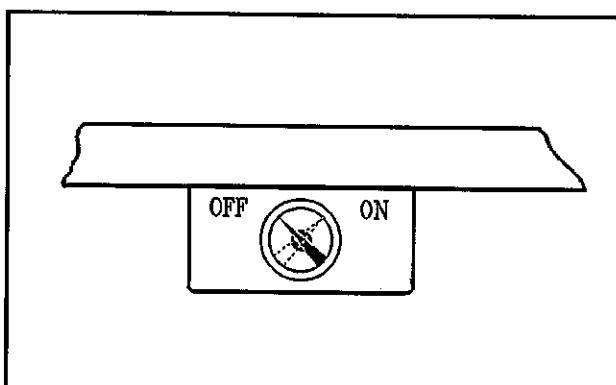


FIG. 4-3 AIR HEIGHT CONTROL VALVE

4-6 HAND VALVE:

The HAND VALVE (See FIG. 2-2 and FIG. 4-4) is located on the rear-most airbag crosstube beside the AIR HEIGHT CONTROL VALVE. It has two positions.

RIGHT: Placing the valve in this position will exhaust the air from the air ride system, lowering the trailer deck when the AIR HEIGHT CONTROL VALVE is in the "ON" position.

LEFT: Placing the valve in this position will increase the air pressure in the airride system, raising the trailer deck when the AIR HEIGHT CONTROL VALVE is in the "ON" position.

4-7 PRESSURE GAUGE

The PRESSURE GAUGE (See FIG. 2-2 and FIG. 4-4) is located near the HAND VALVE. This gauge provides air pressure information for adjusting the air ride system manually.

4-7.1 Minimum air pressure should be at least three (3) PSI. Loosen the minimum adjustment nut (See Fig. 4-4), set the air pressure at three (3) PSI and tighten the nut again.

4-7.2 Maximum air pressure should be no more than eighty-five (85) PSI. Loosen the maximum adjusting nut (See FIG. 4-4), set the air pressure at eighty-five (85) PSI and tighten the nut again.

NOTE: The TRAILER LIFT lever (See Sec. 4-3) and the HAND VALVE (See Sec. 4-6) may be utilized to raise or lower their respective end of the semitrailer to clear obstacles during transport (i.e., low bridges, curbs, etc.) by following the directions for use of controls.

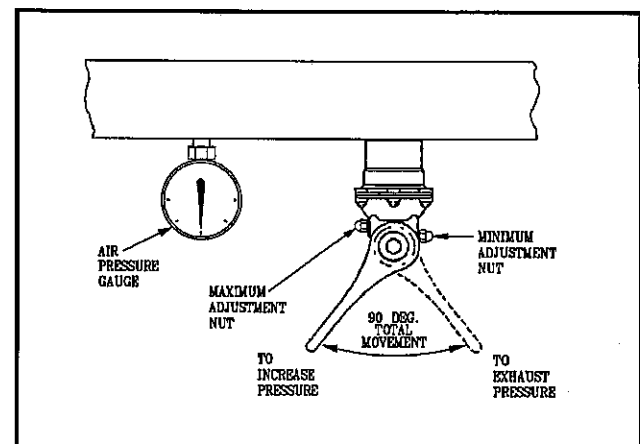


FIG. 4-4 HAND VALVE

4-8 AUTOMATIC HEIGHT VALVES

The AUTOMATIC VALVES (See FIG. 2-2) are located inside each main member of the trunnion. The function of this valve is to automatically control the air pressure to the air bags of the air ride system, maintaining the preset ride height. The AIR HEIGHT CONTROL VALVE must be in the "OFF" position for the AUTOMATIC HEIGHT VALVES to function.

POSITION:The AUTOMATIC HEIGHT VALVES have no particular position, but are adjusted constantly by the suspension as the semitrailer is pulled.

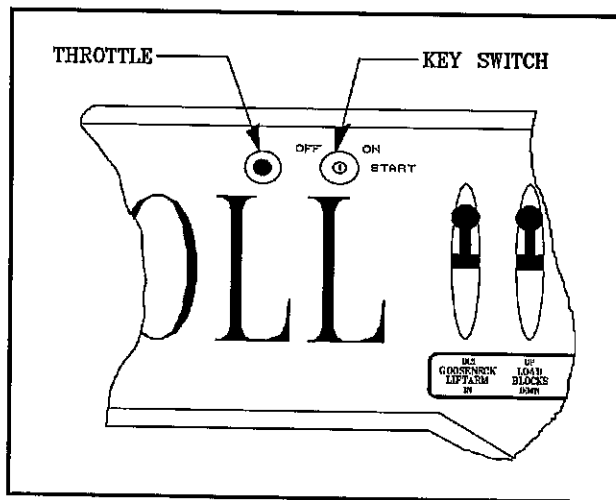


FIG. 4-5 POWER SUPPLY ENGINE CONTROLS

4-9 HYDRAULIC POWER SUPPLY ENGINE THROTTLE

The HYDRAULIC POWER SUPPLY ENGINE THROTTLE (See FIG. 2-1 and 4-5) is located on the drivers side of the gooseneck. The function of the throttle is to control the speed at which the engine powering the hydraulic system is running. This control will only be present on semitrailers containing the optional self-contained hydraulic engine package.

The HYDRAULIC POWER SUPPLY ENGINE THROTTLE is a variable control with adjustable settings.

PULLED COMPLETELY OUT:When the throttle is in this position, the engine is fully choked. This position is used for starting the engine.

ADJUSTED IN:The throttle should be turned clockwise to decrease engine speed and counter clockwise to increase engine speed.

PUSHED COMPLETELY IN:When the throttle is in this position, the engine is at low idle speed. The throttle should be placed in this position just prior to shutting off the engine.

4-10 HYDRAULIC POWER SUPPLY ENGINE KEY SWITCH

The HYDRAULIC POWER SUPPLY ENGINE KEY SWITCH (See FIG. 2-1 AND 4-5) is located on the drivers side of the gooseneck. The function of the key switch is to start and stop the hydraulic power supply engine. This control will only be present on semitrailers containing the hydraulic engine package. The HYDRAULIC POWER SUPPLY ENGINE KEY SWITCH has three positions.

START:Placing the key switch in this position causes the starter to crank the engine. It should be released to the "ON" position as soon as the engine is running.

ON: Placing the key switch in this position allows the engine to run after it has been started.

OFF: Placing the key switch in this position causes the engine to stop running.

4-11 AXLE LIFT CONTROL VALVE

The AXLE LIFT CONTROL VALVE (See FIG. 2-2 and 4-6) is located on the rear airbag crossstube. It is used to control the axle lift system and has two positions.

UP: Placing the control valve in this position raised the associated axle up off the surface of the ground.

DOWN:Placing the control valve in this position lowers the associated axle to the ground to assist in load carrying.

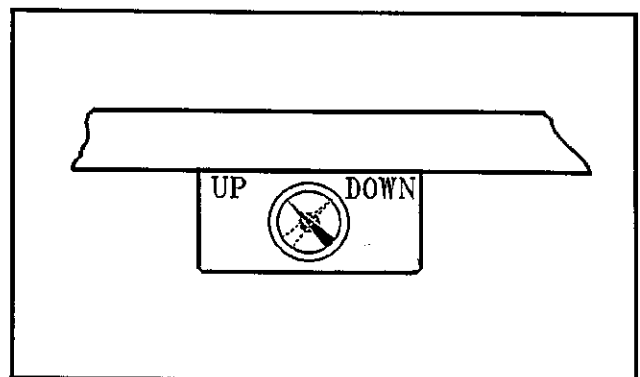


FIG. 4-6 AXLE LIFT CONTROL VALVE

NOTES:

5 OPERATION

PREFACE

This section describes the proper operating procedures for the 324/325 Lowbed Semi-trailers. A hydraulic pump must be coupled to the semitrailer hydraulic system and running before any controls will become functional unless the semitrailer is equipped with the optional hydraulic engine package. The towing vehicle's air system must be coupled to the semitrailer and pressurized to 90 PSI minimum before air ride controls will become functional.

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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 MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.



DANGER

BE SURE TO KEEP FEET CLEAR OF THE BOTTOM OF THE SEMITRAILER DURING LOWERING OPERATIONS. FAILURE TO KEEP FEET CLEAR MAY RESULT IN SERIOUS PERSONAL INJURY.



CAUTION

DO NOT OPERATE THE SEMITRAILER UNTIL YOU COMPLETELY UNDERSTAND THE PROPER USAGE AND FUNCTION OF ALL CONTROLS. IMPROPER USAGE MAY CAUSE PERSONAL INJURY, DAMAGE TO YOUR SEMITRAILER AND CARGO, AND TIME-CONSUMING BREAKDOWNS.



CAUTION

WHEN LEAVING THE SEMITRAILER UNATTENDED, POSITION ALL CONTROL SWITCHES TO THE CENTER/NEUTRAL POSITION AND SHUT OFF THE HYDRAULIC PUMP.



CAUTION

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



CAUTION

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



CAUTION

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



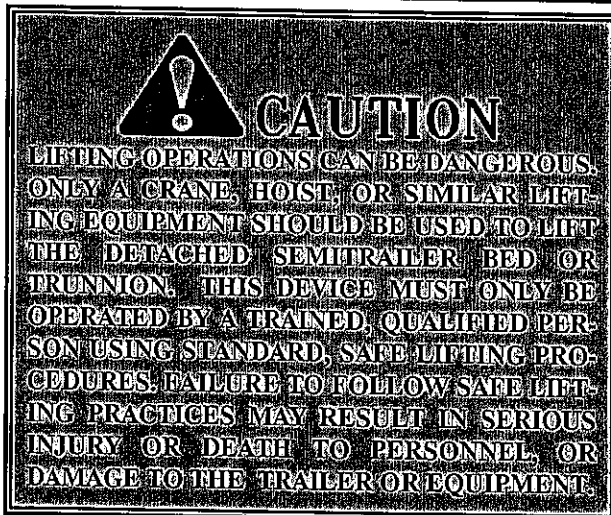
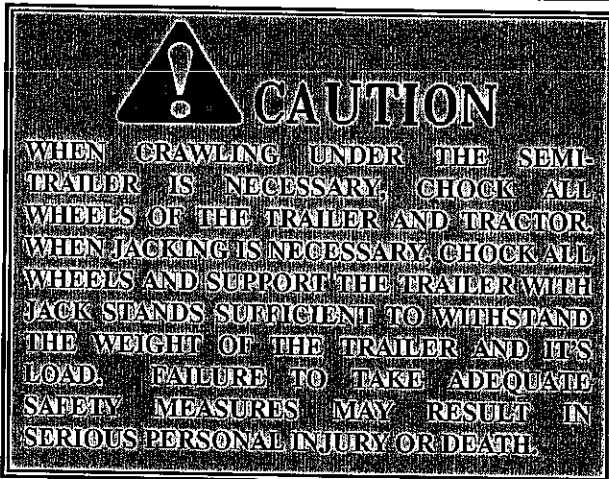
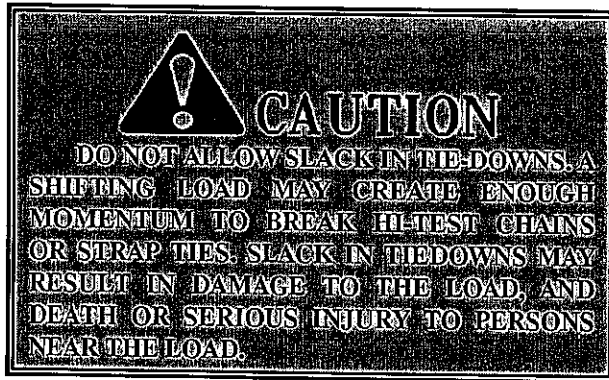
CAUTION

FAILURE TO SUPPORT THE SEMITRAILER LOAD FULLY ON THE LOAD BLOCKS MAY RESULT IN DAMAGE TO THE LOAD, THE SEMITRAILER, AND POSSIBLE INJURY OR DEATH TO INDIVIDUALS NEAR THE SEMITRAILER.



CAUTION

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



5-1 PRE-COUPLING OF THE TRACTOR AND SEMITRAILER

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

5-1.1 Slowly back the tractor/truck (towing vehicle) to the front end of the semitrailer so the kingpin of the

gooseneck is centered between the tractor fifth wheel jaws. Stop the towing vehicle just inches ahead of the gooseneck. Set the tractor parking brake.

5-1.2 Check the gooseneck kingpin plate height. The kingpin plate should be the same height, to slightly lower than the latch area of the fifth wheel platform of the towing vehicle. If the kingpin plate needs to be adjusted, connect the hydraulic service hoses or start the hydraulic power supply engine, and raise or lower the kingpin plate using the **TRAILER LIFT** lever as detailed in SECTION 4 "CONTROLS".

5-1.3 Before pre-coupling the tractor to the semitrailer, drain all air from the air brake system by opening the drain cocks on the reservoirs. Watch for excessive oil or water buildup. Allow full air build-up in towing vehicle's air system.

5-1.4 Connect the service and emergency air hoses of the towing vehicle to the respective gladhand on the front of the gooseneck; red emergency line to the gladhand with the "EMERGENCY" tag, and the blue service line to the gladhand with the "SERVICE" tag. (See Fig. 5-1) Set the parking brakes and chock the trailer wheels. Activate the semitrailer air supply valve.

5-1.5 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. Set the parking brake.

5-2 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. BEFORE COUPLING THE TRACTOR TO THE SEMITRAILER, READ THE SECTION 5-1 "PRECOUPLING OF THE TRACTOR AND SEMITRAILER."

5-2.1 Verify that the trailer wheels are chocked and brakes function.

5-2.2 Make certain the coupler of the towing vehicle's fifth wheel is open by pulling the latch handle.

5-2.3 Slowly back the towing vehicle so it's fifth

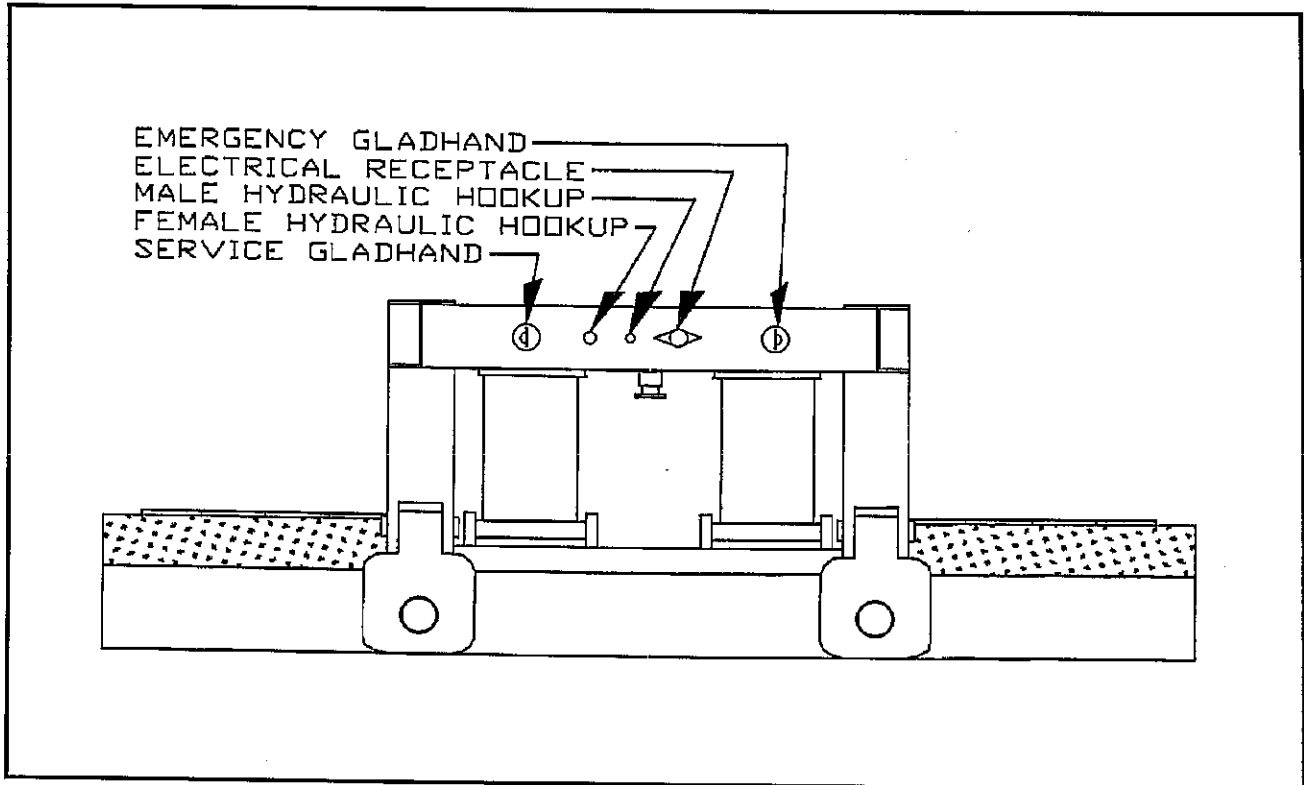


FIG. 5-1 SERVICE HOOKUPS

wheel contacts the front of the kingpin plate on the gooseneck and slips under it. Continue backing until the fifth wheel coupler locks onto the gooseneck kingpin.

5-2.4 Verify the vehicle coupling is secure by setting the trailer emergency brakes and attempting to pull the tractor forward. If the tractor disconnects from the trailer, locate source of coupling failure and repair before continuing.

5-2.5 Set towing vehicle and trailer parking brakes.

5-3 CONNECTING THE TRACTOR SERVICES TO THE TRAILER

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

5-3.1 Connect the towing vehicle 7 pole electrical plug to the electrical receptacle on the front of the semitrailer. (See Fig. 5-1)

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

5-3.2 Connect the 2 hydraulic hoses from the trac-

tor to the semitrailer's hydraulic couplers (See Fig. 5-1) or start the self contained hydraulic power supply engine.

5-3.3 Air Lines: See Section 5-1.4.

5-4 TRACTOR AND SEMITRAILER CHECK-OUT

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

5-4.1 Activate the hydraulic power source.

5-4.2 Be sure the GOOSENECK LIFTARM is in the "UP" position.

5-4.3 Using the TRAILER LIFT lever, lift the trailer up until the load blocks can be lowered into position.

5-4.4 Using the LOAD BLOCKS lever, lower the load blocks to the transport position.

5-4.5 Using the TRAILER LIFT lever, lower the semitrailer until the semitrailer weight rests completely on the load blocks.

5-4.6 Check the operation of all lights and signals on the semitrailer for proper response to switch posi-

tions (stop, right turn, left turn, and taillights).

5-4.7 Check tire inflation, adjust as needed to maintain pressure listed on each tire.

5-4.8 Check tractor/semitrailer for air leaks. If air leakage is found, repair defect before transporting.

5-4.9 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.

5-4.10 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 the semitrailer forward. The trailer wheels must not rotate. If trailer brakes do not apply **DO NOT** transport until the defect(s) are repaired.

5-4.11 Set parking brake and carefully remove all wheel chocks. **IF BRAKES ARE NOT PROPERLY SET, THE TRACTOR/SEMITRAILER MAY ROLL WHEN REMOVING WHEEL CHOCKS.**

5-5 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 semitrailer, load, and weight affect performance. Turning, passing, acceleration, braking, stopping, and backing up require special considerations.

5-5.1 Make a moving test of the semitrailer brakes at low, and medium speeds before traveling at full speed.

5-5.2 Monitor the air pressure gauge on the dash of the towing vehicle. Pressure should not fall below 80 PSI at any time.

5-5.3 Backing should be done with care. Tail overhang, semitrailer length, and allowable space must be taken into consideration when backing the semitrailer.

5-5.4 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.

5-5.5 When driving on steep grades or turning tight curves, the semitrailer must not be allowed to push the towing vehicle, or "jack-knifing" of the semitrailer with the towing vehicle may result. Application of the semitrailer brakes to keep the semitrailer in tow will help

prevent this pushing. Braking should begin before descending a hill or attempting a curve, to assure control.

5-5.6 Stopping should be done with a gradual and smooth application of brakes. If grabbing occurs, ease off of the brakes. Grabbing brakes are not efficient.

5-6 PARKING THE SEMITRAILER

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

5-6.1 Position the tractor/semitrailer on a level, solid surface.

5-6.2 Set the **PARKING** brake, **NOT TRAILER HAND BRAKE**, and check for proper brake holding.

5-6.3 Chock wheels.

5-6.4 Check for any air leaks in lines, relay valve, brake pods, or any other air system component.

5-7 UNCOUPLING THE TRACTOR FROM THE SEMITRAILER

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

5-7.1 Park the semitrailer according to instructions in Section 5-6 "PARKING THE SEMITRAILER".

5-7.2 Using the **TRAILER LIFT** lever, raise the semitrailer until the load blocks can be raised.

5-7.3 Using the **LOAD BLOCK** lever, raise the load blocks up into the gooseneck.

5-7.4 Using the **TRAILER LIFT** lever lower the semitrailer until the semitrailer rests on the ground.

5-7.5 Shut off the hydraulic pump.

5-7.6 Disconnect the emergency and service air lines and attach them to the tractor gladhand holders.

5-7.7 Disconnect the 7 pole electrical connector from the receptacle and store with the tractor.

5-7.8 Disconnect the 2 hydraulic lines from the trailer and store with the tractor.

5-7.9 Pull the tractor fifth wheel plate latch release lever.

5-7.10 Attempt to pull the tractor forward. If the tractor uncouples, verify that all connecting service lines have been disconnected and trailer wheels are chocked. If tractor does not disconnect repeat steps **5-7.9** and **5-7.10**.

5-7.11 Pull the tractor away from the trailer.

5-8 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, hydraulic systems, and weldments. Moisture attracted by warm parts due to usage can condense, collect and freeze to immobilize equipment. The operator of the tractor/semitrailer rig must constantly be alert for indications of the effect of cold weather.

5-8.1 During any stop of an extended period, neither the service nor the parking brake should be used as they may freeze up. Use wheel chocks to secure the vehicle from moving.

5-8.2 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.

5-8.3 Check tire inflation. Tire inflation will decrease with temperature drop.

5-8.4 Allow hydraulic systems to warm-up before putting systems into operation.

5-8.5 Periodically check drain holes in the bottom of the relay valves and storage compartments. They must be open at all times to avoid moisture entrapment.

5-9 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.

5-9.1 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.

5-9.2 Check tire pressure early in the day before beginning operations.

5-9.3 If the area is extremely humid, protect

electrical terminals with ignition insulation spray. Coat painted exteriors and bare metal surfaces with an appropriate protective sealer.

5-9.4 The use of a filter-lubricator in the towing vehicle's air delivery system is recommended.

5-10 PREPARATION FOR LOADING AND UNLOADING

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

5-10.1 Locate the tractor/semitrailer in an open, level, smooth area. The tractor/semitrailer must be in a straight line.

5-10.2 Set the tractor parking brakes without setting the trailer brakes.

5-10.3 Engage the hydraulic pump.

5-10.4 Pull the gooseneck lock handle out to the release position.

5-10.5 Move **TRAILER LIFT** lever to the up position, raising the semitrailer until a clearance of 1 inch is obtained between the load blocks and the semitrailer.

5-10.6 Move **LOAD BLOCK** lever to the up position, raising the load blocks up into the gooseneck.

5-10.7 Move **TRAILER LIFT** lever to the down position, lowering the semitrailer to the ground and until a clearance of 1/4 inch has been obtained between the load plate eyes and the load pins.

5-10.8 Disconnect the air and electrical service lines from the semitrailer to the gooseneck and store in the storage compartment provided in the drivers side approach plate..

5-10.9 Move the **GOOSENECK LIFTARM** lever to the down position until the gooseneck liftarm rests on the tractor frames rearmost crossmember. Do not lift the gooseneck.

5-10.10 Pull the tractor forward a few inches and determine that the gooseneck has detached from the semitrailer. If the gooseneck does not detach from the semitrailer repeat steps 5-10.4 and 5-10.10. If the gooseneck does detach from trailer, proceed to pull the tractor away from the semitrailer.

5-11 LOADING THE SEMITRAILER

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

5-11.1 Set the semitrailer up for loading as

outlined in Section 5-10.

5-11.2 Release the strap securing the load ramps to the deck.

5-11.3 Fold the load ramps down onto the ground.

5-11.4 Drive the load onto the semitrailer or load a stationary load by means of a fork lift, crane, or other means satisfactory to the constitution of the load. Position the load for proper weight distribution accordingly.

5-11.5 Chain the load down in accordance with instructions in Section 5-12 "SECURING THE LOAD".

5-12 SECURING THE LOAD

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

5-12.1 All items of the semitrailer load must be securely tied to the deck, front and rear, using the D-rings located on the side members of the semitrailer frame. The load must be tied with chain or tie straps sufficient to withstand the weight of the load using standard approved tie-down methods..

5-12.2 No slack is allowed in the tie down chains or straps. Use binders with chains or a ratchet type buckle on straps to eliminate any slack in the tie-downs.

5-13 PREPARATION FOR TRANSPORT

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

5-13.1 After securing the load, following the steps as outlined in Section 5-12 "SECURING THE LOAD", back the tractor until the gooseneck is within a few inches of the front of the semitrailer.

5-13.2 Using the **GOOSENECK LIFTARM** lever, lower or raise the gooseneck as necessary until the load plate holes are aligned with the load pins.

5-13.3 Slowly back the gooseneck into the semitrailer until the gooseneck lock handle snaps into place indicating the gooseneck is locked into position.

5-13.4 Slowly try to pull the semitrailer forward a few inches to be sure that the gooseneck is locked into place. If the gooseneck is not locked into place on the semitrailer, pull the gooseneck lock handle out again and repeat step 5-13.3. If the gooseneck is locked into place, continue the preparation for transport.

5-13.5 Reconnect the electrical and air service lines from the semitrailer to the gooseneck. The 7 pole

electrical connector to the receptacle in the side of the gooseneck, the male air line to the female receptacle in the side of the gooseneck, and the female air line to the male receptacle in the side of the gooseneck.

5-13.6 Using the **GOOSENECK LIFTARM** lever, raise the gooseneck liftarm to the "UP" position.

5-13.7 Using the **TRAILER LIFT** lever, raise the semitrailer until enough clearance is obtained to lower the load blocks.

5-13.8 Using the **LOAD BLOCK** lever, lower the load blocks completely. Be sure that both load blocks are lowered the full extent of the cylinder travel.

5-13.9 Using the **TRAILER LIFT** lever, lower the semitrailer until the semitrailer rests fully on the load blocks.

NOTE: THE GOOSENECK MAY BE USED IN THE LOWERED OR RAISED POSITIONS TO AVOID LOW-CLEARANCE OBSTACLES OR HIGH-CENTERING. NEVER EXCEED 2 MILES AN HOUR WHEN TRANSPORTING THE SEMITRAILER IN THIS MANNER!

5-14 UNLOADING THE SEMITRAILER

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

5-14.1 Prepare to unload the semitrailer by following the steps outlined in Section 5-10 "PREPARATION FOR LOADING AND UNLOADING".

5-14.2 Remove the chains and binders or the tie-straps from the load.

5-14.3 Fold down the load ramps and drive the load off the front of the trailer or remove a stationary load by means of a fork lift, crane, or other means satisfactory to the constitution of the load.

5-14.4 Re-attach the gooseneck to the semitrailer following the steps as outlined in Section 5-13 "PREPARATION FOR TRANSPORT".

5-15 AIR RIDE OPERATION

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

5-15.1 Trailer air pressure must be maintained above 65 PSI before operating. This enables the "PROTECTION VALVE" to maintain safe air brake

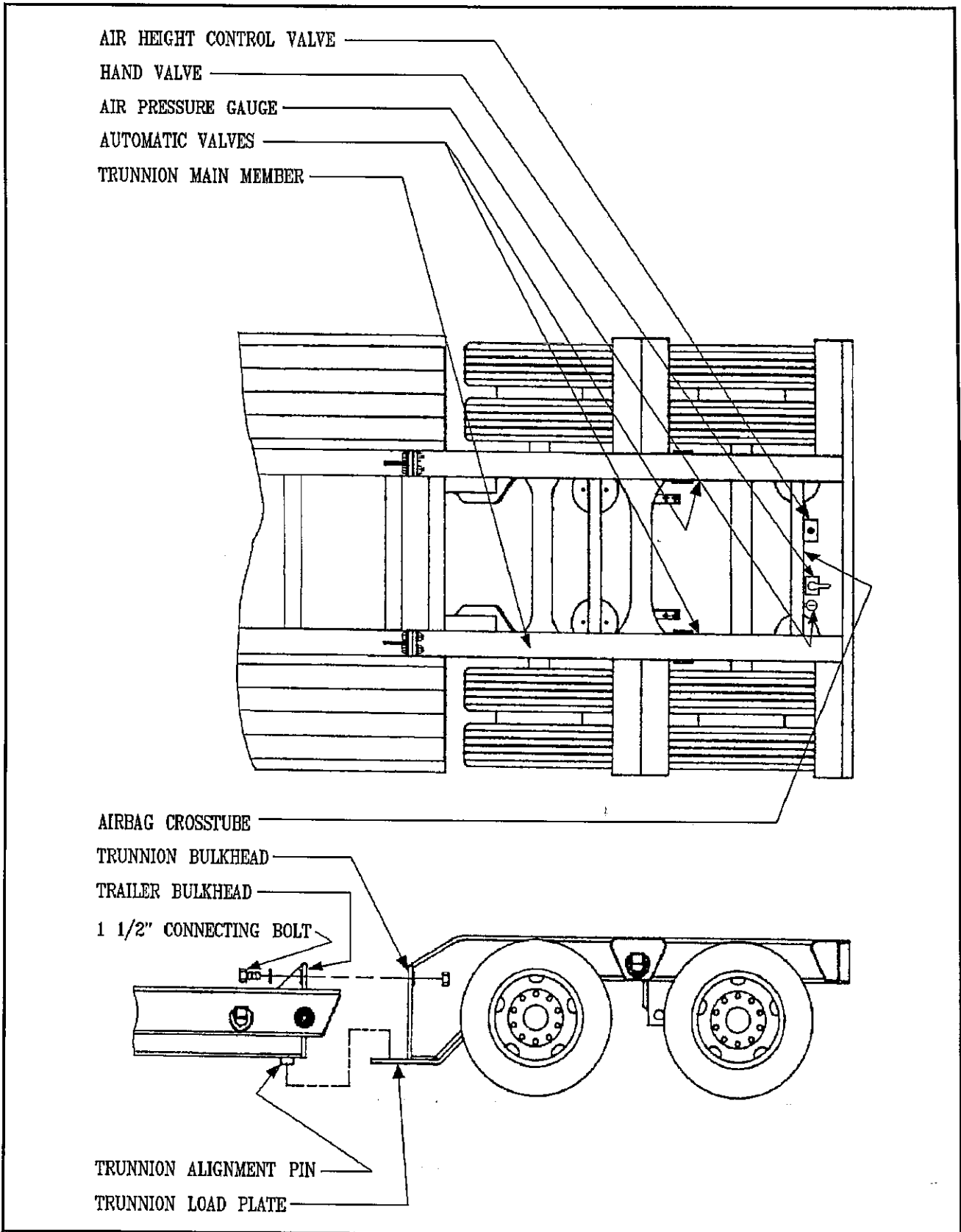


FIG. 5-2 DETACHABLE TRUNNION

pressure during suspension system air loss. If suspension air loss should occur, completely deflate suspension and temporarily operate on the air springs internal rubber bumpers. Carefully proceed to the NEAREST trailer service facility. To deflate the air suspension, Turn the Air Height Control Valve to the "ON" position. Push the Hand Valve to the right until all air is exhausted from the air system.

5-16 DETACHABLE TRUNNION

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

5-16.1 DETACHING THE TRUNNION:

- a. Park the semitrailer in a straight line on a smooth, firm, level surface, in an open area.
- b. Set the tractor and the semitrailer brakes.
- c. Place a 4" high block under the front of each main member of the detachable trunnion.
- d. Turn the AIR HEIGHT CONTROL VALVE to the "ON" position.
- e. Use the HAND VALVE to exhaust enough air from the air ride system to allow the front of the main members to rest solidly on the blocks.
- f. Disconnect the trunnion electrical and air lines from the semitrailer bed and store inside the trunnion frame.
- g. Remove the four connecting bolts from the semitrailer and trunnion bulkheads. (See FIG. 5-2) Use a crane, hoist, or other suitable lifting device to slightly lift the back of the semitrailer bed if necessary, to provide relief on the bolts, allowing them to be removed.
- h. Using a suitable lifting device, lift the semitrailer bed off of the trunnion loadplates.

5-16.2 RE-ATTACHING THE TRUNNION

- a. Using a crane, hoist, or other suitable lifting device, position the semitrailer bed in front of the trunnion.
- b. Lower the semitrailer bed until the trunnion alignment pins are inserted into the trunnion load plates. (See FIG. 5-2)
- c. Using a suitable lifting device, raise the front of the semitrailer bed until the semitrailer bulkheads contact the trunnion bulkheads.
- d. Insert and tighten the four attaching bolts.

NOTE: IT MAY BE NECESSARY TO LIFT OR LOWER THE FRONT OF THE TRAILER SLIGHTLY TO PROVIDE AMPLE SLACK TO INSERT THE FOUR CONNECTING BOLTS.

e. Re-connect the air and electrical supply lines and pressurize the towing vehicle's air system to a minimum of 90 PSI.

f. Turn the AIR HEIGHT CONTROL VALVE to the "OFF" position to return the air ride suspension to automatic control.

5-17 TRAILER AXLE LIFT

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

The trailer axle lift is used to raise an axle off the surface when it is not needed. If your semitrailer is equipped with this option, the procedure to operate the lift axle is as follows:

NOTE: THE AXLE MUST BE DOWN WHEN THE SEMITRAILER IS LOADED TO MAINTAIN PROPER LOAD WEIGHT DISTRIBUTION.

5-17.1 Locate the AXLE LIFT CONTROL VALVE (See FIG. 2-2 and FIG. 4-5).

5-17.2 Turn the valve to the "UP" position to raise the axle.

5-17.3 Turn the valve to the "DOWN" position to lower the axle for transporting a load.

5-18 ADJUSTABLE KINGPIN

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

The adjustable kingpin is used to transfer load weight. If your semitrailer is equipped with the adjustable kingpin option, the procedure to change the kingpin is as follows (See FIG. 5-3 for parts identification.):

5-18.1 Remove the hairpin clip from the castle nut on top of the kingpin.

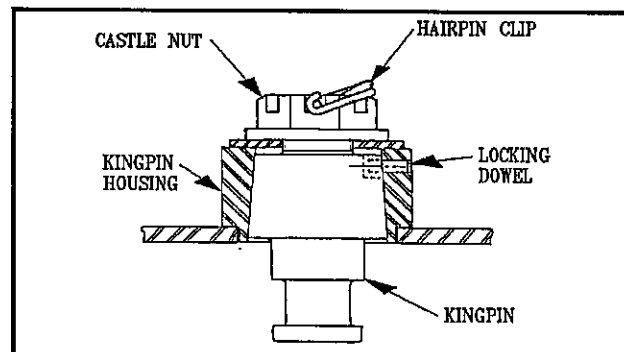


FIG. 5-3 ADJUSTABLE KINGPIN

5-18.2 Loosen and remove the castle nut and washer.

5-18.3 Twist the kingpin counter-clockwise to loosen it from the locking dowel and remove it from the kingpin housing.

5-18.4 Insert the kingpin in the other kingpin housing and twist it clockwise to lock it with the locking dowel pin.

5-18.5 Install the washer and the castle nut and tighten securely.

5-18.6 Put the hairpin clip through the hole in the kingpin end and the slots in the castle nut and clip it shut.

NOTES:

5-19 HYDRAULIC POWER SUPPLY ENGINE SYSTEM

The hydraulic power supply engine system is used to power the hydraulic controls in the event the towing vehicle is not equipped with hydraulic hookups. The procedure for operating the hydraulic power supply engine system is as follows:

5-19.1 Locate the throttle and key switch on the gooseneck. (See FIG. 2-1 and 4-6)

5-19.2 Pull the throttle completely out. This closes the choke on the engine.

5-19.3 Turn the key to the "START" position. The engine should crank and then start. If the engine does not start, refer to Section 7 "TROUBLE SHOOTING"

5-19.4 When the engine starts, release the key to the "ON" position and adjust the speed by turning the throttle in or out as necessary until the engine is running smoothly. The hydraulic controls should now be functional.

5-19.5 To shut the engine off, turn or push the throttle all the way in.

5-19.6 Turn the key to the "OFF" position.

6 MAINTENANCE AND LUBRICATION

PREFACE

The Landoll 324 and 325 Series Lowbed Semitrailers are designed for years of service with minimal maintenance. The following maintenance, however, is very important for durability and for safe operation of your semitrailer. Maintenance is an owner/user responsibility.

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DANGER

WELDING OPERATIONS PRODUCE HEAT, TOXIC FUMES, RADIATION, METAL SLAG, AND CARBON PARTICLES. WELDING GOGGLES WITH THE PROPER TINTED LENSES, GLOVES, APRON OR JACKET, AND WELDERS BOOTS ARE REQUIRED. FAILURE TO USE PROPER SAFETY EQUIPMENT MAY RESULT IN SERIOUS PERSONAL INJURY.



CAUTION

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.



CAUTION

ALWAYS CHOCK WHEELS BEFORE RELEASING BRAKES. MANUALLY CAGE POWER SPRING (PARKING BRAKE) BEFORE REMOVAL OR SERVICE. FAILURE TO PROPERLY CAGE THE SPRING BRAKE MAY RESULT IN SERIOUS 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 WEIGHT OF THE TRAILER AND LOAD. FAILURE TO TAKE ADEQUATE SAFETY MEASURES MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.



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

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



CAUTION

ALL FIFTH WHEEL MAINTENANCE, ADJUSTMENTS, AND REBUILDING MUST BE DONE BY A QUALIFIED PERSON USING PROPER TOOLS AND PROCEDURES. CONTACT THE LANDOLL FACTORY FOR SERVICING AND REPAIR OF THE FIFTH WHEEL. USING AN IMPROPERLY REPAIRED OR REBUILT FIFTH WHEEL MAY RESULT IN SERIOUS INJURY OR DEATH TO PERSONNEL, DAMAGE TO THE TRACTOR/SEMI-TRAILER AND ITS CARGO, AND DAMAGE TO PROPERTY IN ITS PATH.



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/SEMI-TRAILER OR ITS CARGO, OR DAMAGE TO PROPERTY IN ITS PATH.

6-1 INSPECTION

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

Inspect the towing vehicle, the trailer, and trailer components periodically for damage or evidence of pending failure. Damaged or broken parts must be repaired or replaced immediately. The cause of any binding or hydraulic leakage should be determined immediately and the problem corrected before using the tractor or semitrailer.

6-2 GOOSENECK, FRAME, AND DECK

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

The semitrailer and gooseneck should be checked daily for cracks or material fatigue. Cracks will normally appear best under loaded conditions. If any cracks or breaks are found, return the trailer immediately to the Landoll factory for repairs. The deck should be examined daily for broken or missing planking or missing attaching hardware. Replace any defective parts immediately.

6-3 HYDRAULIC SYSTEM

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

6-3.1 Check the hydraulic oil level weekly, or after any leakage. See TABLE 6-1 for proper hydraulic oil. Check the hydraulic oil level with all hydraulic cylinders in the retracted position. Disengage the hydraulic pump. Overfilling may result in overflow during component operation.

6-3.2 If a cylinder or valve leaks, disassemble the component and determine the cause of the leak. Any time a cylinder or valve is opened for inspection or repair, it is advisable to clean all components and replace all seals. Seal kits are available from your Landoll dealer.

6-3.3 Check all hydraulic hoses weekly for cracks or leakage. A cracked or leaking hydraulic hose should be replaced immediately.

6-4 FIFTH WHEEL

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

6-4.1 CHECKING FIFTH WHEEL OPERATION

a. Close the locks using a lock tester. Verify that the locking mechanism is operating correctly.

6-4.2 PERIODIC MAINTENANCE OF FIFTH WHEEL

a. The fifth wheel should be inspected and adjusted as necessary or every 30,000 miles. The inspection should include a check for cracks in the top plate, elongated attachment holes, and excessive wear or failure of component parts. Any defective parts must be replaced before the fifth wheel is used.

b. Close the locks and insert a 2 inch + or - .005 inch plug in the locks.

c. Check for a tight fit. The plug should be snug, but you should be able to rotate it by applying some force.

d. If the plug fits loosely, tighten by rotating the nut on the shank counter-clockwise. It may be necessary to tap the end of the yoke shank lightly to allow the nut to seat against the top plate. (See FIG. 6-1)

e. Repeat this procedure until the plug fits snug but can still be rotated.

f. Use a lock tester to verify the proper operation of the locking mechanism.

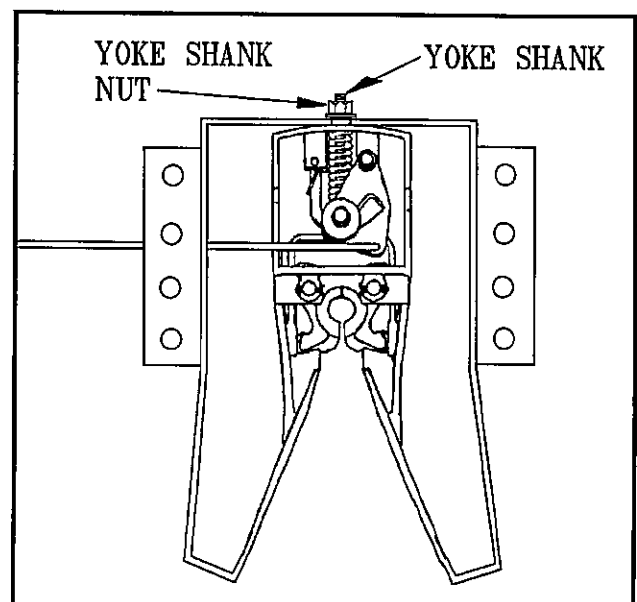


FIG. 6-1 FIFTH WHEEL ADJUSTMENT

6-5 ELECTRICAL SYSTEM

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

6-5.1 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 repaired or replaced.

6-5.2 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.

6-5.3 Corroded terminals must have the corrosion removed, source of corrosion neutralized, terminal resealed, protected, and insulated.

a. 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.

6-5.4 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 the factory installed lamp.

6-6 AIR BRAKE SYSTEM

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

6-6.1 A daily general inspection will reveal the most common problems found in the air brake system. This inspection should include:

a. Checking air lines for cracking or kinks.

b. Linkage pins, keepers and other fastening hardware for excessive wear, corrosion, and for being secure.

c. Brake linings.

d. Air reservoir for moisture.

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

6-7 AIR AND SPRING BRAKE CHAMBERS

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

Instructions are given in this section for the repair or replacement of standard air brake chambers and the optional spring brake chambers. Before starting any of these procedures, be certain of which type of brake chamber your trailer is equipped with. Repair or replace faulty units. 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. The diaphragm(s) and any marginal parts must be replaced. When replacing the diaphragm(s) or hardware, replace the corresponding parts for the other chamber on the same axle. This will aid in even brake application and releasing. Examine linkage pin for wear and replace if necessary. For parts identification see **Section 8 Illustrated Parts Listing**.

6-7.1 SERVICING THE AIR BRAKE CHAMBER.

a. The air brake chamber may be serviced while still on the semitrailer. The following steps describe the procedure for servicing the air brake chamber.

b. Chock trailer wheels.

c. Drain the semitrailer air system of all air and moisture.

NOTE; DRAINING THE AIR SYSTEM WILL ALLOW THE TRAILER TO ROLL IF THE WHEELS ARE NOT PROPERLY CHOCKED.

d. Mark the chamber for proper reassembly alignment, loosen the clamp bands around the chamber, and remove the chamber head.

e. Remove and replace diaphragm. Check all fasteners for defects. If defects are found, the defective part must be replaced.

f. Replace the chamber head and tighten the clamp band.

g. Recharge the semitrailer air system and check the air chamber for leaks by applying soap suds to the chamber. A growing bubble or suds being blown away indicates a leak. Locate the source of the leak and repair before using the semitrailer.

6-7.2 MANUAL BRAKE RELEASE AND SET FOR OPTIONAL SPRING BRAKE.

a. Chock trailer wheels.

b. Remove dust cap from spring brake chamber.

c. To release the spring brakes, remove the release bolt from its holding brackets and insert it into the spring brake chamber. Turn the bolt until the spring brake is caged. This should be 2-1/4 to 2-1/2 in. of release bolt extension. The spring brake should now be released. **DO NOT USE AN IMPACT WRENCH TO CAGE THE SPRING BRAKE!**

d. To reset the brakes, turn the spring brake release bolt until the spring brake is again uncaged. Remove the release bolt from the chamber and return it to its holding brackets.

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

6-7.3 REMOVAL

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

b. **CAGE THE POWER SPRING** following the steps outlined above.

c. Disconnect the slack adjuster from the connecting rod by removing the linkage pin (See FIG. 6-2).

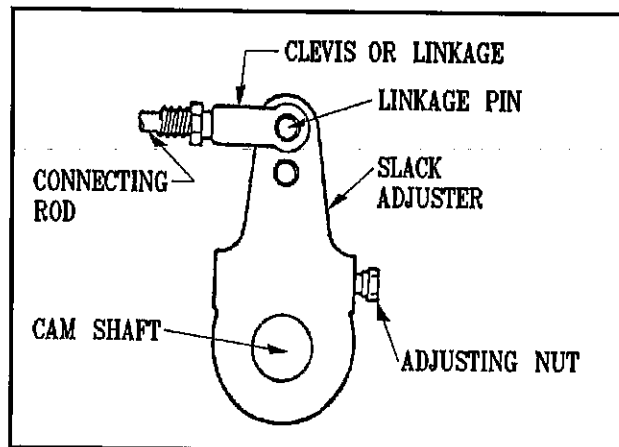


FIG. 6-2 SLACK ADJUSTER TERMINOLOGY

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

e. Remove the brake chamber from the axle brackets.

6-7.4 INSTALLATION

THE BRAKE CHAMBER MUST BE IN THE CAGED POSITION FOR INSTALLATION.

a. Position the inlet ports by loosening the service chamber clamp bands and rotating center housing such that ports are properly located, then re-tighten the clamp bands.

b. 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. Retighten the clamp bands.

c. Remount the brake chamber on the axle brackets and reconnect 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.

d. Check for leakage by charging the air system to minimum of 90 PSI and apply soap suds to the brake chamber and connections. If leakage is detected, further tightening of the clamp bands and connections is necessary.

6-7.5 DIAPHRAGM SERVICING FOR THE SPRING BRAKE CHAMBER.

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:

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

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

c. 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.

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

e. Follow steps c. and d. in Section 6-7.4 above.

6-8 RELAY/EMERGENCY VALVES

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

6-8.1 Every 3600 operating hours or 100,000 miles or yearly, the Relay and Emergency Valves should be disassembled, cleaned, and lubricated with DOW CORNING 33 GREASE, or equivalent. Worn, damaged, and all rubber parts must be replaced. Listed below is the procedure for testing the valves.

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.

6-9 BRAKE MAINTENANCE

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

Lubricate brake assembly per FIG 6-14. LUBRICATION POINTS-REAR OF SEMITRAILER, and TABLE 6-2 MAINTENANCE SCHEDULE. Inspect and adjust brake assembly every 2,000 miles or

monthly, whichever 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. 6-3 for brake assembly parts identification. The following is the recommended procedure for brake disassembly.

6-9.1 DISASSEMBLY:

a. Jack up the trailer wheel which needs brake lining service and install jack stands sufficient to withstand the weight of the trailer and load.

b. Remove trailer wheel and 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 links.

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, bushings, and camshaft seals.

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

6-9.2 ASSEMBLY:

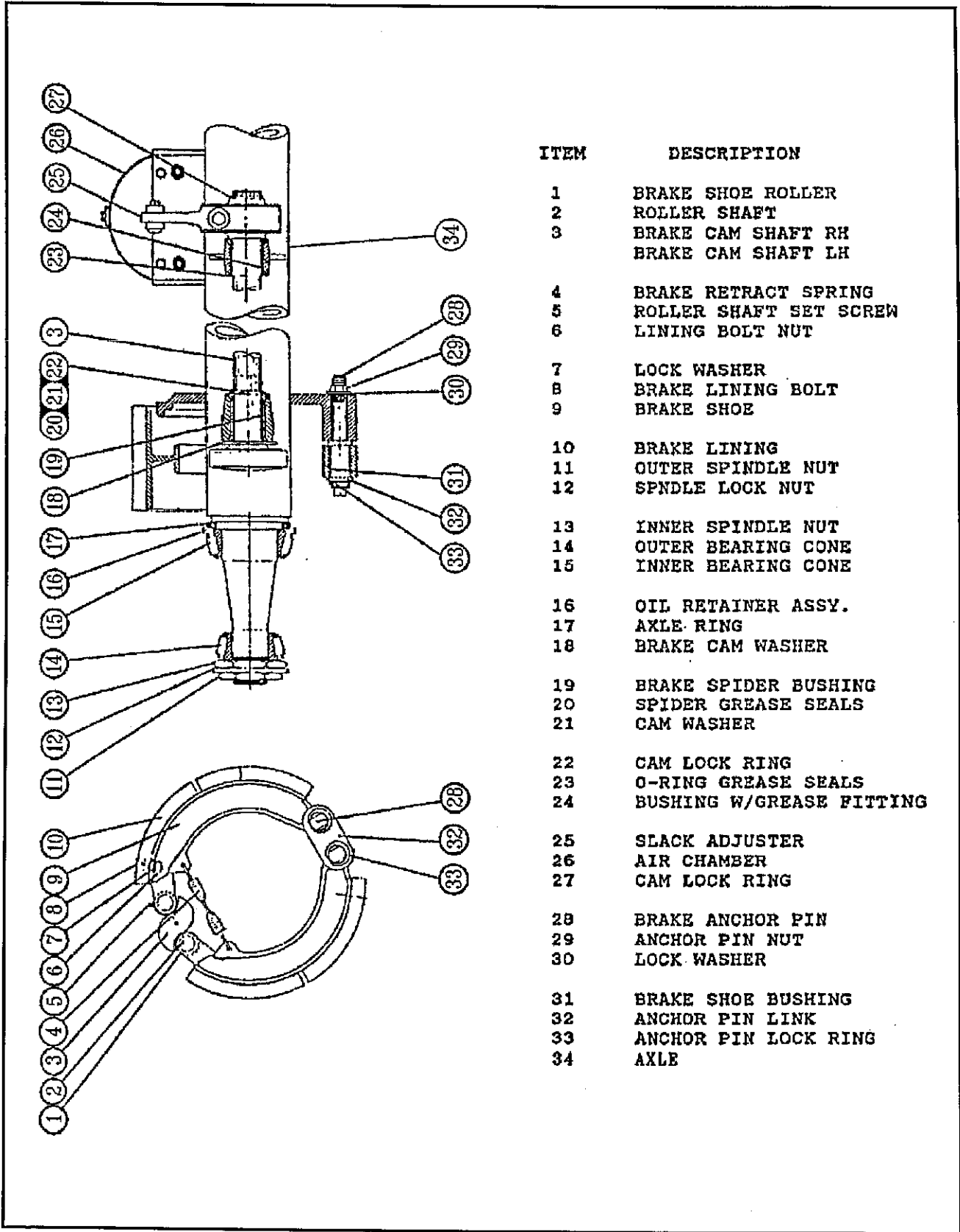
a. Install new anchor pin bushings, spider and camshaft seals and bushings if necessary.

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 shoes into position and insert anchor pins with recessed slot in line with anchor pin lock hole.

e. Secure anchor pins with locking pins.



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. 6-3 BRAKE TERMINOLOGY

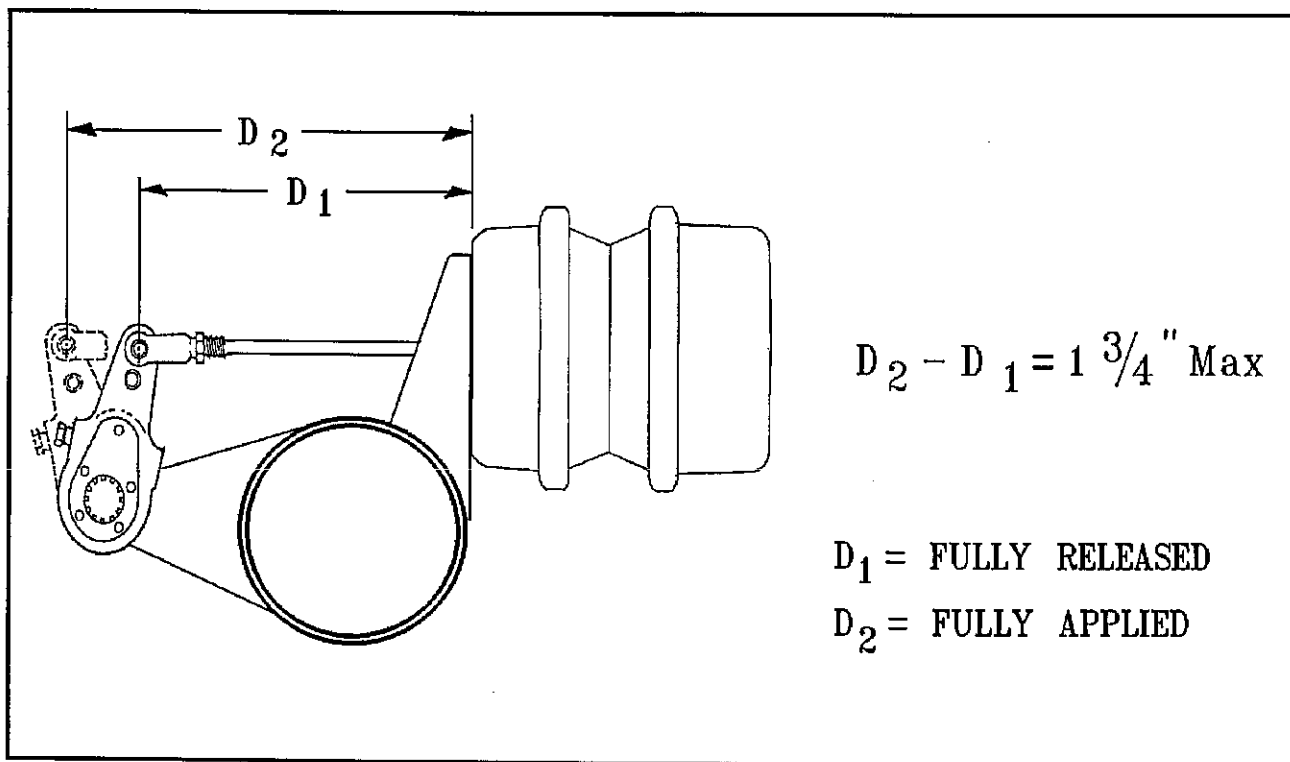


FIG. 6-4 CHECKING BRAKE ADJUSTMENT

- 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 incident angle at rest between the slack adjuster and push rod should be approximately 95°.
- i. Clean and inspect bearings.
- j. Replace hub oil seal.
- k. Install hub and adjust wheel bearings as outlined in Section 6-13 "WHEEL BEARING LUBRICATION and ADJUSTMENT".

6-10 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.

6-10.1 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. 6-4).

c. Apply brakes.

d. Repeat step b (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.

6-10.2 ADJUSTING:

a. Release brakes.

b. Place a 9/16 in. wrench on the slack adjuster adjusting nut (See FIG. 6-2), and push in on the locking sleeve.

c. Adjust by rotating the adjusting nut counterclockwise to allow more rod travel and clockwise to allow less rod travel.

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.

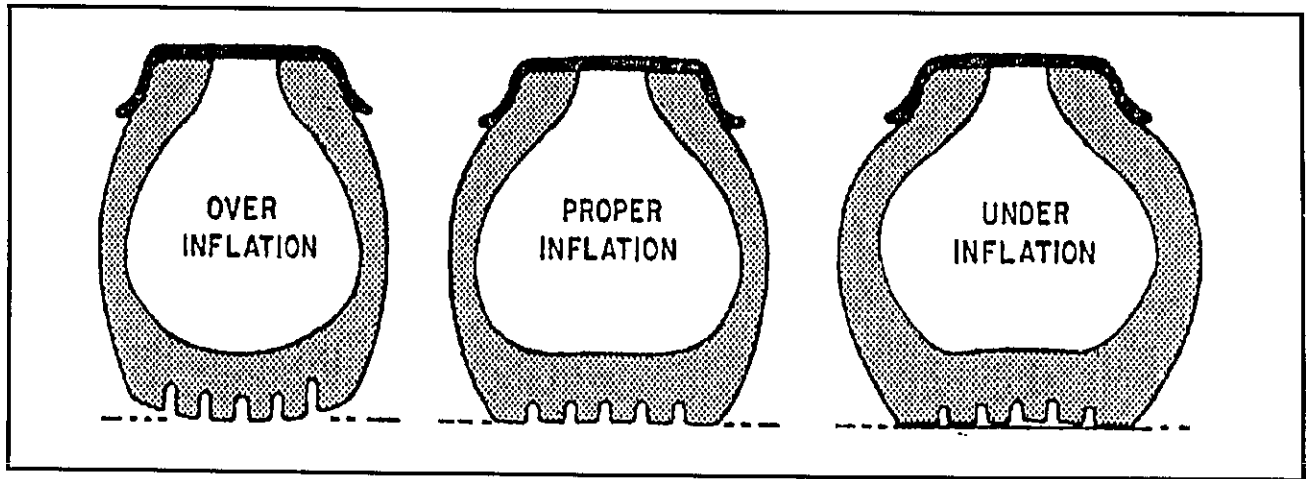


FIG. 6-5 TIRE INFLATION EXAMPLES

6-11 TIRE INFLATION

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

6-11.1 Tire inflation produces the tire to ground contact characteristics. Examples of tire inflation profiles are given in FIG. 6-5.

6-11.2 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 pressure reading. Adjusting tire air pressure to the specified amount while tires are hot will produce abnormal wear due to improper tire to road contact. Do not exceed cold inflation pressure listed on the Vehicle Identification Plate located on the front of the semi-trailer. Exceeding cold inflation pressures will result in damaged tire bodies, rims, and wheels.

6-11.3 Replace all valve stem caps when pressure checking and adjusting has been completed. Remove any foreign objects from between dual tires.

6-12 TIRE MATCHING

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

ALWAYS REPLACE TIRES AND WHEELS WITH ITEMS OF THE SAME SIZE AND RATING. ALTERING EITHER THE TIRE OR WHEEL MAY LOWER THE LOAD CAPACITY OF THE TRAILER! 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 method, 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.

6-12.1 Measuring tape method: Measure around each tire on the tread surface (See FIG. 6-6). Maximum allowable difference between the two mating tires of a dual is 3/4 of an inch.

6-12.2 Straight edge or string method: 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 allowable (See FIG. 6-7).

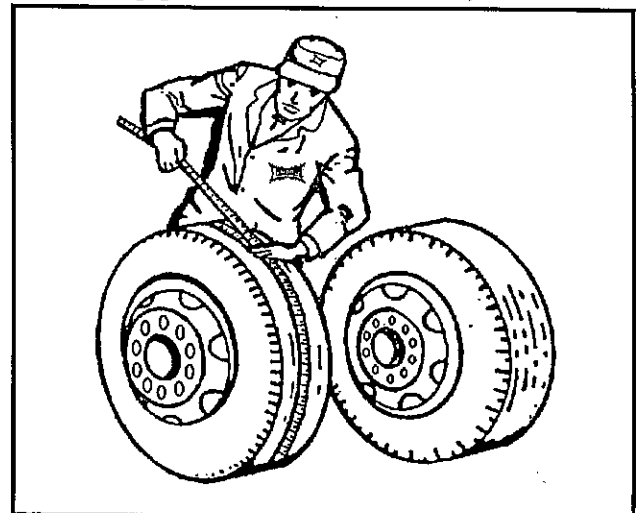


FIG. 6-6 MEASURING TAPE METHOD

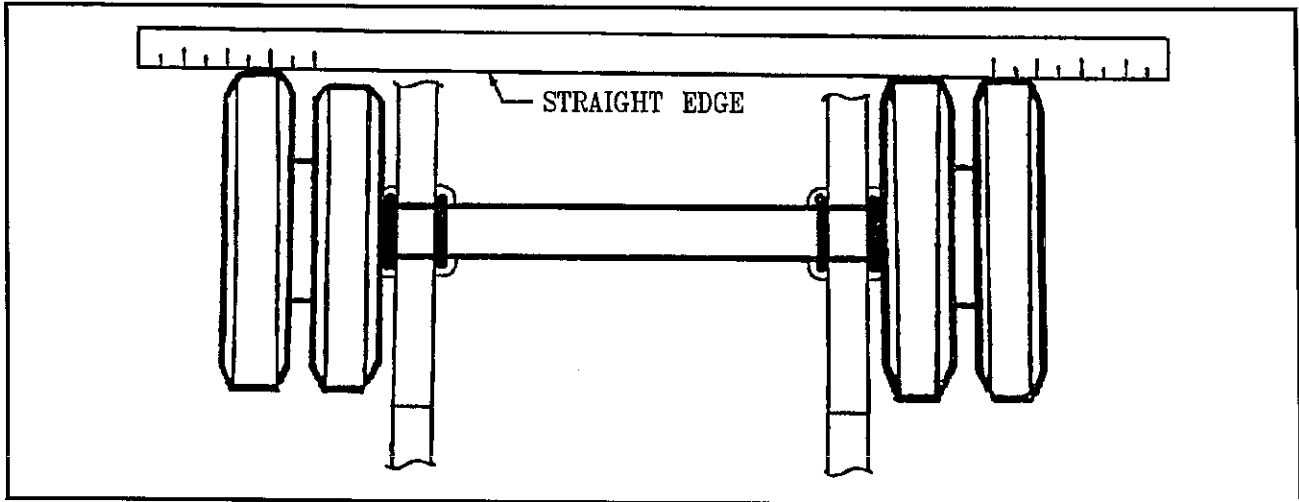


FIG. 6-7 STRAIGHT EDGE METHOD

6-13 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 windows (See FIG. 6-8). 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.

6-13.1 ADJUSTMENT:

- a. With a drain pan under the hub cap, remove the hub cap drain plug and rotate the hub so the drain hole is down, allowing oil to drain.
- b. Lift the wheel off of the ground.
- c. Adjust slack adjuster to eliminate brake drag during tire and 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 ft./lbs.
- h. Install hub cap with new gasket and fill with oil

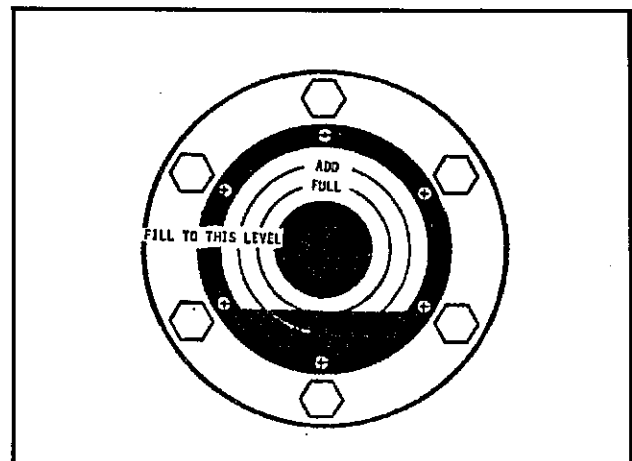


FIG. 6-8 HUB OIL LEVELS

to the full mark. Use 90 weight gear oil.

i. Adjust brakes according to Section 6-10 "BRAKE ADJUSTMENT".

6-13.2 Check hub oil level after the wheel has set in one position for a few minutes to allow oil to work into bearings.

6-14 WHEEL INSPECTION

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

ALWAYS REPLACE TIRES AND WHEELS WITH ITEMS OF THE SAME SIZE AND RATING. ALTERING EITHER THE TIRE OR WHEEL MAY LOWER THE LOAD CAPACITY OF THE TRAILER!

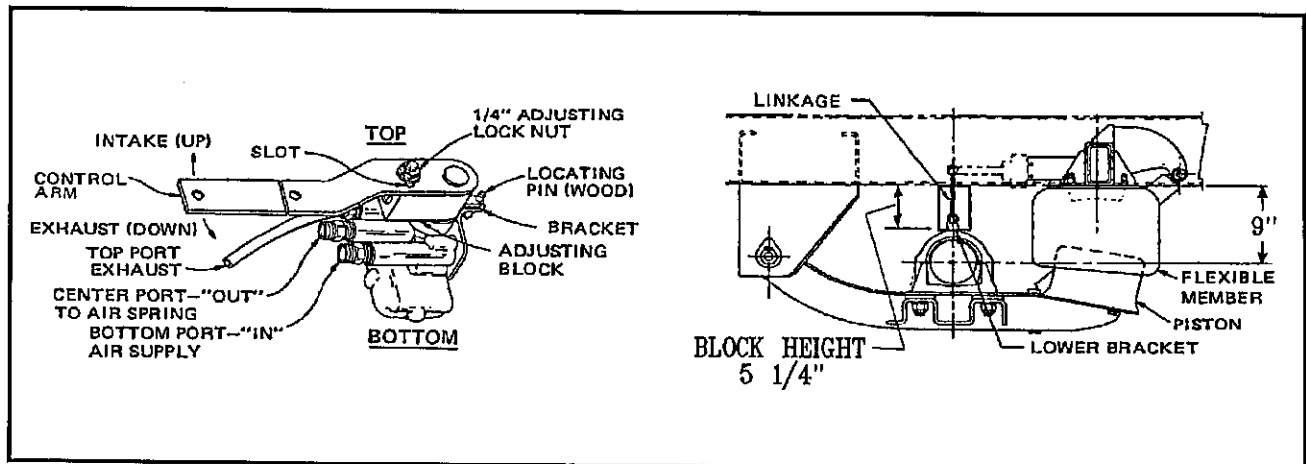


FIG. 6-9 AIR RIDE ADJUSTMENT

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.

6-15 SUSPENSION MAINTENANCE

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

This section will cover the maintenance of the air ride, four-spring, tri-axle, and single point suspensions offered for the semitrailer. Not all the procedures listed here pertain to all four suspensions. Use the procedures that apply to the suspension on your semitrailer. Visually examine the suspension for broken or missing parts. Replace all defective parts. See Section 8 "Illustrated Parts Listing" for suspension parts identification.

6-15.1 Make certain that all springs (spring suspensions only) are properly located on the wear pads. Twisted springs or cocked hangers will cause uneven spring contact with wear pad and will result in excessive wear on the spring suspension. Check the shocks for excessive wear and the air bags (air suspension only) for excessive wear and proper inflation.

6-15.2 AIR RIDE HEIGHT ADJUSTMENT

The following is the procedure for adjusting the air ride height (See FIG. 6-9 for parts identification.):

a. Before adjusting, vehicle must be empty with the gooseneck kingpin at operating height and the air system coupled to the semitrailer.

b. Disconnect linkage at the control arms and

raise control arms to the up position, raising the trailer the full extent of suspension travel.

c. Position a 5-1/4 in. wood block between the axle caps and trailer frame.

d. Lower the control arm allowing the trailer frame to rest on the wood block, exhausting all air from the suspension system.

e. Slowly return the control arms to the center position and insert wood locating pins into the nylon block and bracket on the automatic height control valves.

f. Loosen the 1/4 in. lock nut located on the nylon blocks, allowing the control arm move approximately 1 inch.

g. Reconnect the linkage to the control arm and re-tighten the 1/4 in. lock nut.

h. Repeat this procedure for the other valve.

i. Remove the wood locator pins and raise the trailer by turning the Air Height Control Valve to the "ON" position and pushing the Hand Valve to the left.

j. Remove the spacers and return the Air Height Control Valve to the "OFF" position. This will allow the Automatic Height Control Valves to resume normal operation.

k. Check the air ride height. If necessary, go through the adjustment procedure again until the proper air ride height is achieved.

l. Check the air ride height periodically and adjust as needed.

6-15.3 FOUR SPRING SUSPENSION BUSHINGS

Replacing the equalizer bushings and the torque arm bushings on the four spring suspension is a complex operation and should be left to trained service personnel. If the bushings in your four spring suspension need to be replaced contact a Landoll authorized

service center or the Landoll factory for servicing.

6-15.4 TRUNNION SHAFT BUSHING AND AXLE WRAPPERS

Check the trunnion shaft bushing and axle wrappers for excessive wear (single point and tri-axle suspensions). Check all suspension brackets and frame members for wear and signs of metal fatigue. The following is the proper procedure for replacing the trunnion shaft bushing and the axle wrappers:

- a. Chock all wheels of the semitrailer.
- b. Remove the trunnion saddle cap and the trunnion shaft clamp.
- c. Remove the axle caps.
- d. Jack the semitrailer up enough to permit lifting the trunnion shaft and axles.
- e. Remove the trunnion shaft bushings and the axle wrappers and replace with new parts.
- f. Lower the semitrailer on to the shaft and replace the trunnion saddle cap, the trunnion shaft clamp, and the axle caps. Be sure to torque all fasteners and u-bolts to the torques listed in Section 3 "Specifications".
- g. Check the axle alignment following the procedures listed in Section 6-17 "Axle Alignment".

6-15.5 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.

6-16 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, feathering 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:

6-16.1 Jack trailer up so that the tires are off of the ground.

6-16.2 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.

6-16.3 Remove wheel, hub, and bearing assemblies.

6-16.4 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. 6-10).

6-16.5 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. 6-10).

6-16.6 Follow the same procedures as in steps 6-16.4 and 6-16.5 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. 6-11 for examples of camber).

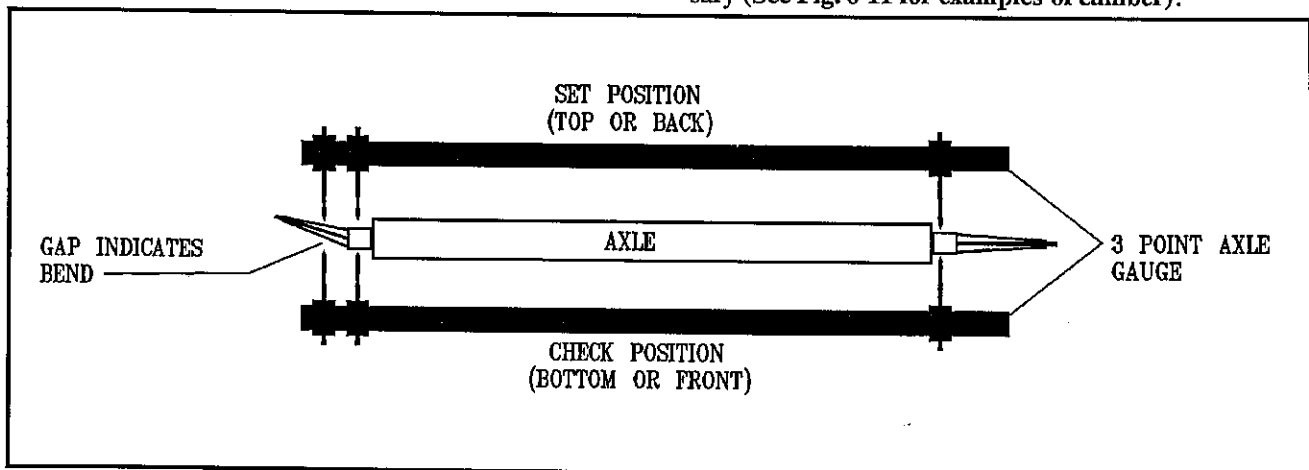


FIG. 6-10 BENT AXLE CHECK

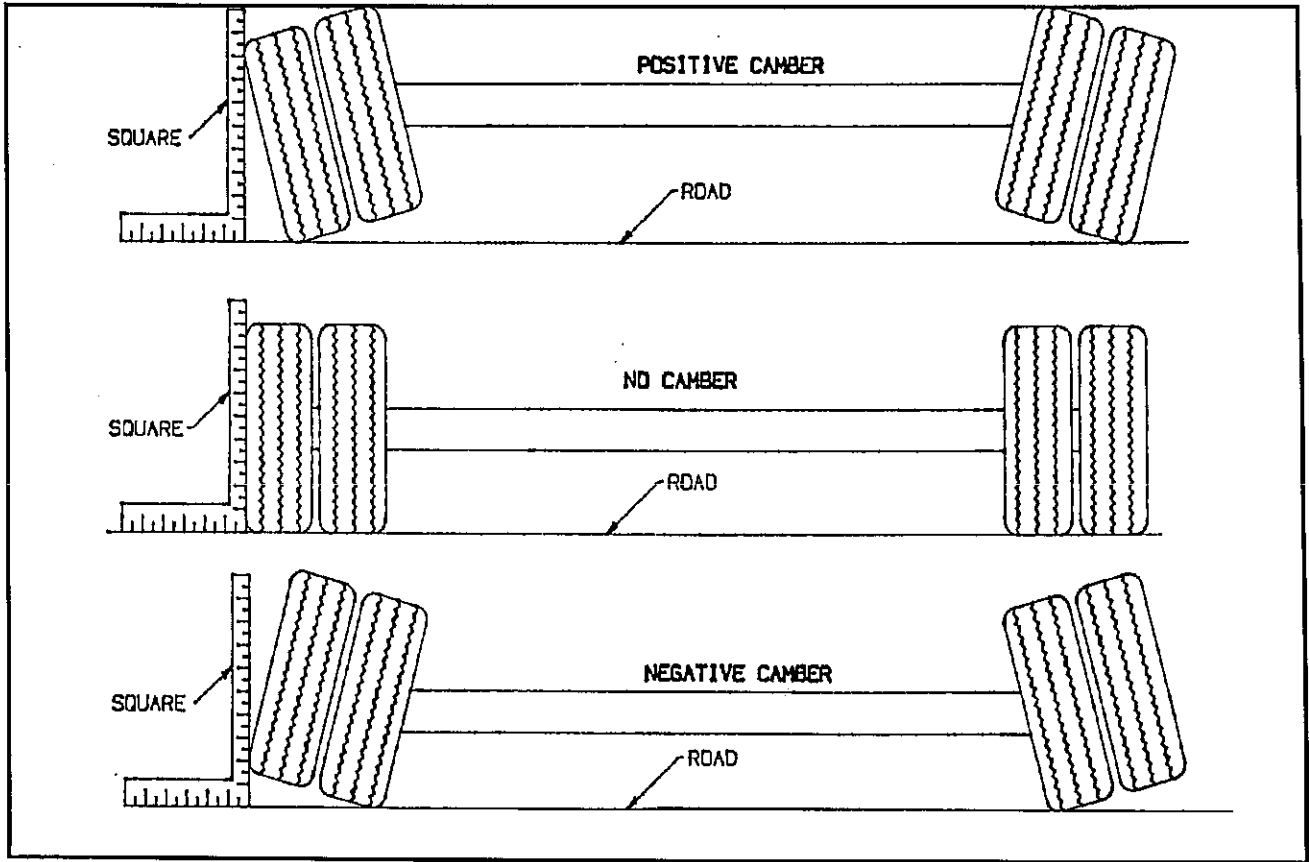


FIG. 6-11 EXAMPLES OF CAMBER

6-17 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.

6-17.1 MANUAL ALIGNMENT PROCEDURES:

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

b. Detach tractor from the trailer and jack the trailer up sufficiently to permit measuring from the underside of the trailer.

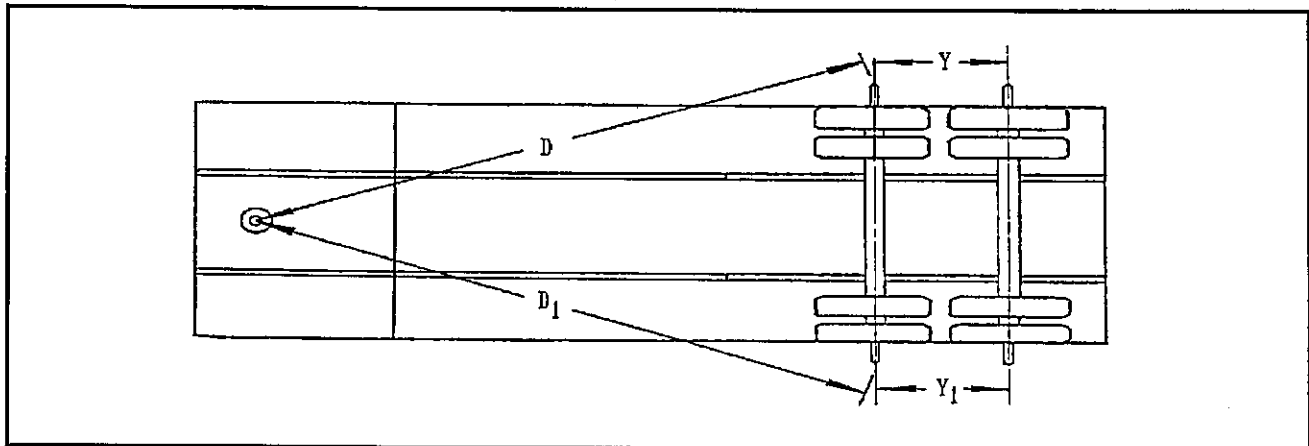


FIG. 6-12 AXLE ALIGNMENT CHECK

c. Suspend a plumb bob at 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 axle. Record this measurement. (See FIG. 6-12)

e. Measure (D₁) to the other end of the axle in the same manner as in step d. Record this measurement. (See FIG. 6-12)

f. The two measurements must be within 1/16 inch of each other for proper axle alignment.

g. In all cases, all suspensions must be in good repair with no binding or other restrictions before the alignment process can be undertaken properly. All defective parts of the suspension or axles must be replaced immediately.

h. The following procedure is for aligning the axles on a single point suspension. Procedures for aligning axles on the four-spring suspension, the tri-axle suspension, and the air ride suspension will follow in consecutive order.

6-17.2 SINGLE POINT SUSPENSION AXLES

a. Loosen the U-bolts on both axles.

b. Turn the axle alignment cap screws on the front axle the proper direction to achieve proper axle alignment to the kingpin.

c. 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.

d. 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 (See FIG. 6-12)

e. Torque the alignment cap screws and U-bolts in the same manner as the front axle.

6-17.3 FOUR SPRING SUSPENSION AXLES

a. Loosen the torque arm clamp bolts on the adjustable torque arms and loosen the axle u-bolts.

b. Adjust the adjustable torque arm on the front axle until the proper alignment has been achieved using the procedure outlined in Section 6-17.1.

c. Tighten the axle u-bolts down to the torque values listed in Section 3 "Specifications".

d. Tighten the front axle torque arm clamp bolts to the torque listed in Section 3 "Specifications".

e. Now align the rear axle to the front axle in the same manner using the torque arm for adjusting. The rear axle should be exactly parallel to the front axle. In other words, dimensions Y and Y₁ in Fig. 6-12 should be the same.

f. Tighten the rear axle u-bolts to the torque listed in Section 3 "Specifications".

g. Tighten the rear axle torque arm clamp bolts to

the torque listed in Section 3 "Specifications".

6-17.4 TRI-AXLE SUSPENSION AXLES

The tri-axle suspension comes from the factory with the front and rear axles set and aligned in the suspension frame. As the trunnion brackets are welded to the trailer frame, any necessary alignment must be made at a qualified semitrailer service center. However, it is possible to align the center axle to the front and rear axles. The procedure to align the center axle is as follows:

a. Loosen the center axle u-bolts.

b. Loosen the adjustable torque arm clamp bolts.

c. Using the adjustable torque arm, align the center axle to the front axle so that dimensions Y and Y₁ (See FIG.6-12) are equal.

d. Tighten the axle u-bolts to the torques listed in Section 3 "Specifications".

e. Tighten the torque arm clamp bolts to the torques listed in Section 3 "Specifications".

6-17.5 AIR RIDE SUSPENSION AXLES

The air ride suspension is aligned and welded at the factory and it should not be necessary to align the axles. If, however, it does become necessary to align the axles, the procedure is as follows:

a. To align air ride suspension axles, locate the welded washer for the front axle in front of the drivers side equalizer beam. Cut this washer loose and loosen the suspension pivot bolt.

b. Align the front axle using the method outlined in Section 6-17.1.

c. After proper alignment has been obtained, torque the suspension pivot bolt nut to the torque listed in Section 3 "Specifications" and reweld the washer.

d. Align the rear axle to the front axle using the same procedure. The rear axle should be exactly parallel with the front axle. In other words, the dimensions Y and Y₁ in FIG. 6-12 should be the same.

e. Torque the axle pivot bolt nut to the torque listed in Section 3 "Specifications" and reweld the washer.

6-18 TRAILER AXLE LIFT

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

The trailer axle lift assembly should be inspected daily. This inspection should include:

6-18.1 Checking air lines for cracking or kinks.

6-18.2 Checking linkage, fasteners, and other related hardware for excessive wear, corrosion, and for being secure.

6-18.3 Checking the air reservoir for moisture.
NOTE: COMPLETELY DRAINING THE AIR RESERVOIR WILL RELEASE THE TRAILER BRAKES.

6-19 HYDRAULIC ENGINE PACKAGE

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

The hydraulic engine package should be inspected weekly to insure continued proper operation. The inspection should include:

6-19.1 Check the hydraulic oil level weekly, or after any leakage. See TABLE 6-1 for proper hydraulic oil. Check the hydraulic oil level with all hydraulic cylinders in the retracted position. Disengage the hydraulic pump. Overfilling may result in overflow during component operation.

6-19.2 Check hoses weekly for cracks or leaks. If a valve or line leaks, it should be replaced immediately.

6-19.3 Check the engine oil each time before using. Oil level should be maintained between the "ADD" and "FULL" marks on the oil dip stick. For further maintenance procedures and proper lubrication specifications, please refer to the engine owners manual that was supplied with the hydraulic engine package.

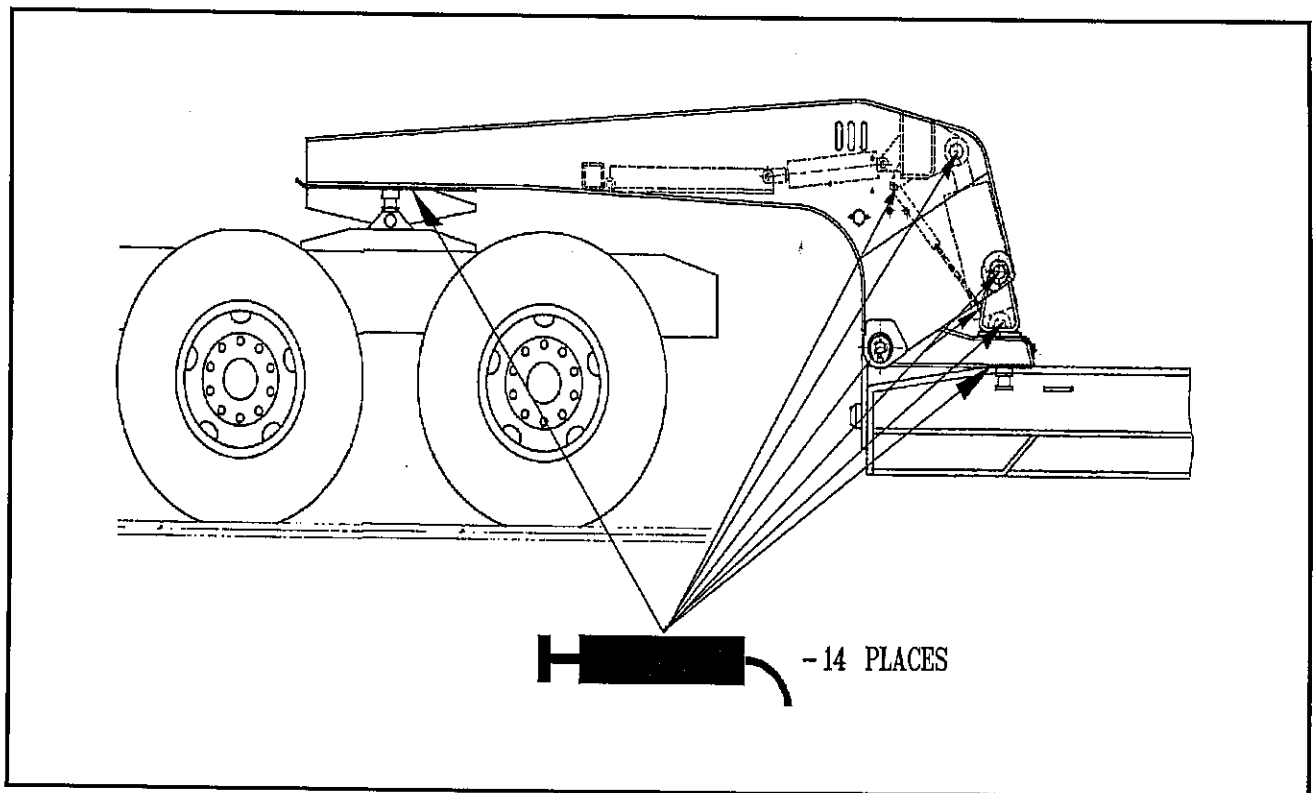


FIG. 6-13 LUBRICATION POINTS-FRONT OF SEMITRAILER

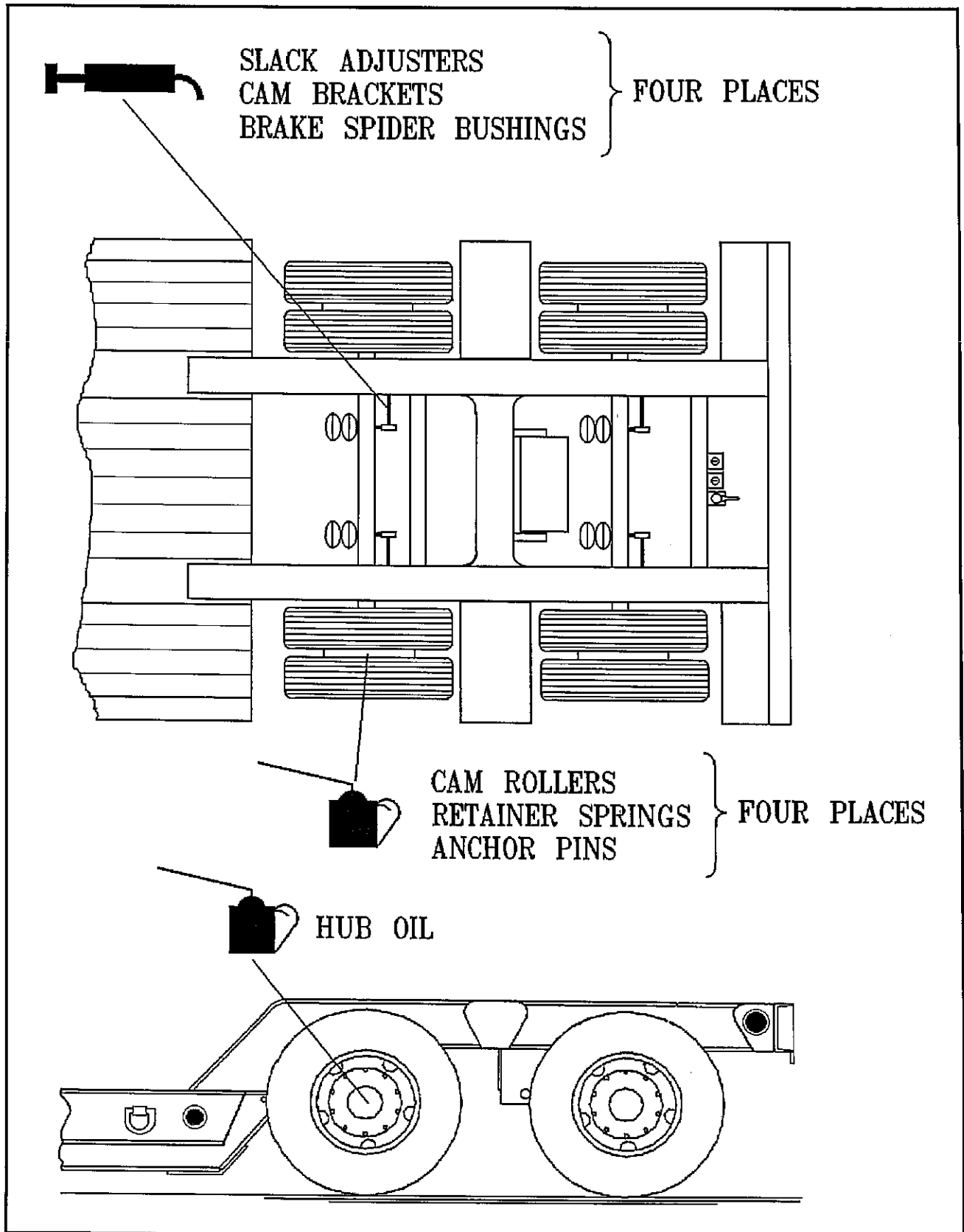


FIG. 6-14 LUBRICATION POINTS-REAR OF SEMITRAILER

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 6-1 LUBRICATION SPECIFICATIONS

I-INSPECT R-REPLACE I-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,I		I				a
TRUNNION SHAFT BUSHINGS			I		I				b
KING PIN AND PLATE			I		C,I,L			4*	
BRAKE AIR SYSTEM			I	I	I				
RELAY VALVES							I,C		
BRAKE ADJUSTMENT AND WEAR			I		I,I				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,I		6*	d
TIRE INFLATION AND WEAR			I	I					e
WHEEL LUG-NUTS			I,I	I	I,I				a
SUSPENSION ALIGNMENT			I		I				
HYDRAULICS									
OIL			I	I			R	1*	
FILTER			R			R			
HOSES (Inspect & Replace as needed)			I		I		I, R	2*	
WINCH GEAR CASE			I		I				

TABLE 6-2 MAINTENANCE SCHEDULE

- * FOR RECOMMENDED LUBRICANT, SEE LUBE SPECIFICATION CHART
- (a) SEE BOLT TORQUE CHART IN SECTION 3 "SPECIFICATIONS" FOR CORRECT TORQUE
- (b) REPLACE AS NEEDED, SEE SECTION 6-15.2 FOR PROCEDURES
- (c) SEE SECTIONS 6-9 AND 6-10 FOR PROCEDURES
- (d) SEE SECTION 6-13 FOR PROCEDURES
- (e) SEE SERIAL NUMBER PLATE ON THE FRONT OF THE SEMITRAILER FOR PROPER INFLATION

7 TROUBLE SHOOTING

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7-1 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 6-5.

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.

7-2 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 6-11 thru 6-16.

<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 and between dual tires. Tire(s) out of balance: balance tires. Brakes dragging: locate cause and repair. Object(s) stuck between dual tires: remove object(s).
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	Suspension 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 FOLLOWING CASES, 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.

*** REPLACE BROKEN STUDS BEFORE USING THE SEMITRAILER.**

TRAILER TRACKING PROBLEMS:

TRACKS TO ONE SIDE Axle alignment: realign axle.

TRACKS TO EITHER SIDE Broken or bent springs or equalizers: replace defective parts.

RIDE HEIGHT PROBLEMS:

TOO HIGH Axle to control valve linkage: readjust linkage.
 Height Control Valve internal leak: repair or replace Height Control Valve.

TOO LOW Axle to control valve linkage: readjust linkage.
 Height control valve filter plugged: clean or replace valve.
 Pressure protection valve filter plugged: clean or replace valve.
 System air pressure low (65 psi minimum required): troubleshoot air supply.
 Air supply lines restricted or plugged: clean or replace lines.

UNEVEN FROM SIDE TO SIDE Linkage adjustment: readjust linkage.
 Exhaust port plugged: clean or replace valve(s).
 Height control valve internal leak: repair or replace valve.
 Supply line to one height control valve pinched, restricted, or plugged: repair or replace line.

7-3 BRAKES

For maintenance procedures see Sections 6-6 thru 6-10.

SYMPTOM

PROBLEM: REMEDY

NO BRAKES OR BRAKES ARE INTERMITTENT Brake air system improperly connected: reconnect hand valves properly.
 Relay or 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.

BRAKES CONTINUED

SYMPTOM

PROBLEM; REMEDY

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 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 or 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 or emergency valve: repair or replace.
Brakes overheated: stop and allow brakes to cool, determine cause of overheating.

BRAKES CONTINUED

<u>SYMPTOM</u>	<u>PROBLEM; REMEDY</u>
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 or emergency valve: repair or replace valve.
EXCESSIVE LEAKAGE WITH BRAKES RELEASED	Relay or emergency valve leaking: repair or replace valve. Leaking tubing or hose: replace defective part.
EXCESSIVE LEAKAGE WITH BRAKES APPLIED	Relay or emergency valve leaking: repair or replace valve. Leaking brake chamber diaphragm: replace diaphragm. Leaking tubing or hose: replace defective part.
EXCESSIVE LEAKAGE WITH EMERGENCY SYSTEM ONLY APPLIED - NO LEAKAGE WITH NORMAL BRAKING	Defective relay or 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.
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.

7-4 BRAKE DRUMS:

For maintenance procedures see Section 6-13 and 6-14.

<u>SYMPTOM</u>	<u>PROBLEM; REMEDY</u>
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.

BRAKE DRUMS, CONTINUED

SYMPTOM

PROBLEM: REMEDY

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.

7-5 HYDRAULIC SYSTEM

Most hydraulic system failures follow the same pattern: a gradual or sudden loss of pressure or flow with a resulting loss of cylinder or motor power. Any one of the system's components may be at fault. By following step-by-step procedures, the trouble can be located in a short time. For maintenance procedures see Section 6-3.

SYMPTOM

PROBLEM: REMEDY

SYSTEM INOPERATIVE

Not enough oil in system: fill, check for leaks.
Wrong oil in system: change oil, see specifications.
Filter dirty or clogged: drain oil and replace filter.
Oil lines dirty or collapsed: clean or replace as necessary.
Air leaks in pump suction line: repair or replace as necessary.
Worn or dirty pump: clean, repair or replace. Check for contaminated oil. Drain and flush.
Badly worn components: examine for internal leakage. Replace faulty components. Check for cause of wear.
Leakage: check all components, and relief valve for proper settings.
Excessive load: check unit specifications for load limits.
Slipping or broken pump drive: repair or replace couplings. Check for alignment.

SYSTEM OPERATES ERRATICALLY

Air in the system: check suction side of system for leaks. Repair leaks.
Cold oil: allow ample warm-up time. Use proper weight oil for operating temperature.
Dirty or damaged components: clean or repair as needed.
Restriction in filters or lines: clean and/or replace filter or lines.

SYSTEM OPERATES SLOWLY

Oil viscosity too high, or "cold oil": allow oil to warm up before operating.
Low pump drive speed: increase engine speed (check pump owners manual for specifications).
Low oil level: check reservoir and add oil as necessary.
Air in system: check suction side for leaks. repair leaks.
Badly worn pump, valves, cylinders, etc.: repair or replace faulty component(s) as necessary.
Restrictions in lines or filter: clean and/or replace filter or lines.
Improper adjustments: check orifices, relief valves, etc. Adjust as necessary.
Oil leaks: tighten fittings. Replace seals, gaskets and damaged lines.

HYDRAULIC SYSTEM, CONTINUED

SYMPTOM

PROBLEM: REMEDY

SYSTEM OPERATES TOO FAST	Wrong size or incorrectly adjusted restrictor: replace or adjust as necessary. Engine running too fast: reduce engine speed.
OVER HEATING OF OIL IN SYSTEM	Oil passing thru relief valve for excessive time: return control valve to neutral when not in use. Incorrect, low, dirty oil: use recommended oil. Fill reservoir with clean oil. Replace filter. Engine running too fast: reduce engine speed. Excessive component internal leakage: repair or replace component as necessary. Restriction in filters or lines: clean and/or replace filter or lines. Insufficient heat radiation: clean dirt and mud from reservoir and components. Malfunctioning component: repair or replace.
FOAMING OF OIL	Incorrect, low, dirty oil: replace, clean or add oil as needed. Air leaks: check suction line and component seals for suction leaks. Replace defective parts.
NOISY PUMP	Low, incorrect, foamy oil: replace, clean, or add oil as needed. Suction line plugged: clean out obstruction or replace line. Flush system, replace filter.
LEAKY PUMP	Damaged or worn shaft seal: replace seal and check for misalignment. Loose or broken parts: Tighten or replace.
CYLINDERS MOVE WITH CONTROL VALVE IN NEUTRAL POSITION	Leaking cylinder seals or fittings: replace worn seals or fittings. Control valve not centering when released: check linkage for binding and repair. Valve damaged: repair or replace.
CONTROL VALVE LEAKS	Seals damaged or worn: replace.
CYLINDER LEAKS	Seals worn or damaged: replace. Rod damaged: replace. Barrel damaged: replace.
CYLINDERS DO NOT FUNCTION, OR CREEP WITH PTO DISENGAGED	Leaking fittings or cylinder seals: tighten loose fittings. Replace worn seals or fittings. Piloted check valve or O-ring leak: replace defective component.

7-6 HYDRAULIC POWER SUPPLY ENGINE PACKAGE

To troubleshoot the engine in the hydraulic engine package, please refer to the owners manual that was provided with the engine package.

NOTES:

8 ILLUSTRATED PARTS

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8-15	HUB AND DRUM ASSEMBLY	8-24
8-16	THREE SPOKE HUB AND DRUM ASSEMBLY	8-25
8-17	SINGLE POINT SUSPENSION ITEMS	8-26
8-18	FOUR SPRING SUSPENSION ITEMS	8-27
8-19	TRI-AXLE SUSPENSION ITEMS (3-762-010458)	8-28
8-20	TRI-AXLE SUSPENSION ITEMS (3-762-010459)	8-30
8-21	AXLE LIFT ASSEMBLY ITEMS	8-32
8-22	AIR SUSPENSION PLUMBING AND CONTROLS	8-34
8-23	AIR RIDE SUSPENSION ITEMS	8-36
8-24	DECAL PLACEMENT	8-39
8-25	K-21 AXLE ASSEMBLY	8-40
8-26	K-22 AXLE ASSEMBLY	8-41
8-27	3-SPOOL VALVE ITEMS	8-42
8-28	LIFT ARM CYLINDER ITEMS	8-44
8-29	LOAD BLOCKS CYLINDER ITEMS	8-45
8-30	TRAILER LIFT CYLINDER ITEMS	8-46
8-31	WET KIT ITEMS	8-47
8-32	HYDRAULIC PUMP ITEMS (3-591-010001)	8-48

SEMITRAILER ITEMS

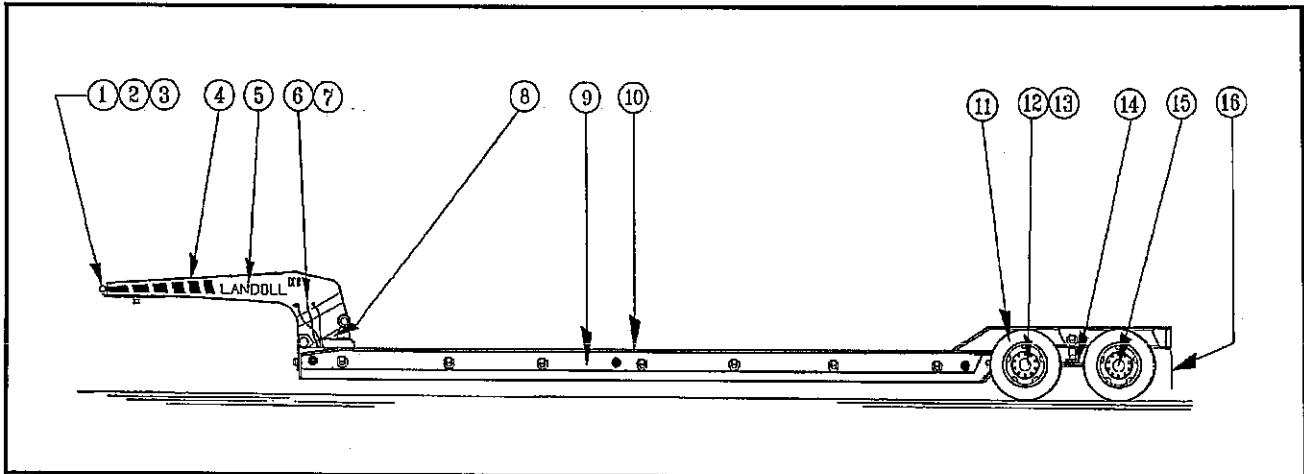


FIG. 8-1 SEMITRAILER ITEMS

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	REF	AIR SYSTEM, GOOSENECK (SEE FIG. 8-2)	REF.
2	REF.	HYDRAULIC SYSTEM, GOOSENECK (SEE FIG. 8-3, 8-3A, AND 8-3B)	REF.
3	REF.	ELECTRICAL SYSTEM, GOOSENECK (SEE FIG. 8-4)	REF.
4	REF.	GOOSENECK ASSEMBLY (SEE FIG. 8-5 AND 8-6)	REF.
5	REF.	DECALS (SEE FIG. 8-24)	REF.
6	REF.	AIR BRAKE SYSTEM, TRAILER FRAME (SEE FIG. 8-7 THRU 8-10)	REF.
7	REF.	ELECTRICAL SYSTEM, TRAILER FRAME (SEE FIG. 8-11)	REF.
8	B3-273-021	POWER SUPPLY PACKAGE, HYDRAULIC (SEE FIG. 8-12)	OPT.
9	NO NUMBER	FRAME	REF.
	3-458-010001	FIFTH WHEEL, REBUILD KIT	1
10	B3-304-106	PLANKING, APITONG WOOD	A/R
	1/4-20X2-1/2FH	SCREW, SELF TAPPING	440
11	3-870-010014	WHEEL, DISC (FOR 324 MODEL)	A/R
	TR500	STEM, VALVE	A/R
	255/70R22.5	TIRE, TUBELESS	A/R
11	3-870-010035	WHEEL, DISC (FOR 325 MODEL)	A/R
	295/75R22.5	TIRE, TUBELESS	A/R
	TR573	STEM, VALVE	A/R
11*	3-870-010045	WHEEL, DAYTON (FOR 3-406-010033 ONLY)	A/R
	295/75R22.5	TIRE, TUBELESS	A/R
	TR573	STEM, VALVE	A/R
12	3-406-010021	HUB AND DRUM ASSEMBLY, L.H. (SEE FIG. 8-15)	A/R
13	3-406-010022	HUB AND DRUM ASSEMBLY, R.H. (SEE FIG. 8-15)	A/R
12	3-406-010031	HUB AND DRUM ASSEMBLY, R.H. (SEE FIG. 8-15)	A/R
13	3-406-010032	HUB AND DRUM ASSEMBLY, L.H. (SEE FIG. 8-15)	A/R
12*	3-406-010033	HUB AND DRUM ASSEMBLY, TRI-SPOKE (SEE FIG. 8-16)	A/R
14	REF.	SUSPENSION (SEE FIG. 8-17 THRU 8-23)	REF.
15	REF.	AXLE (SEE FIG. 8-25 AND 8-26)	REF.
16	3-485-010001	FLAP, MUD	2
	3-762-010017	CLAMP, MUD FLAP	2

* DESIGNATES AN OPTIONAL ITEM

GOOSENECK AIR SYSTEM

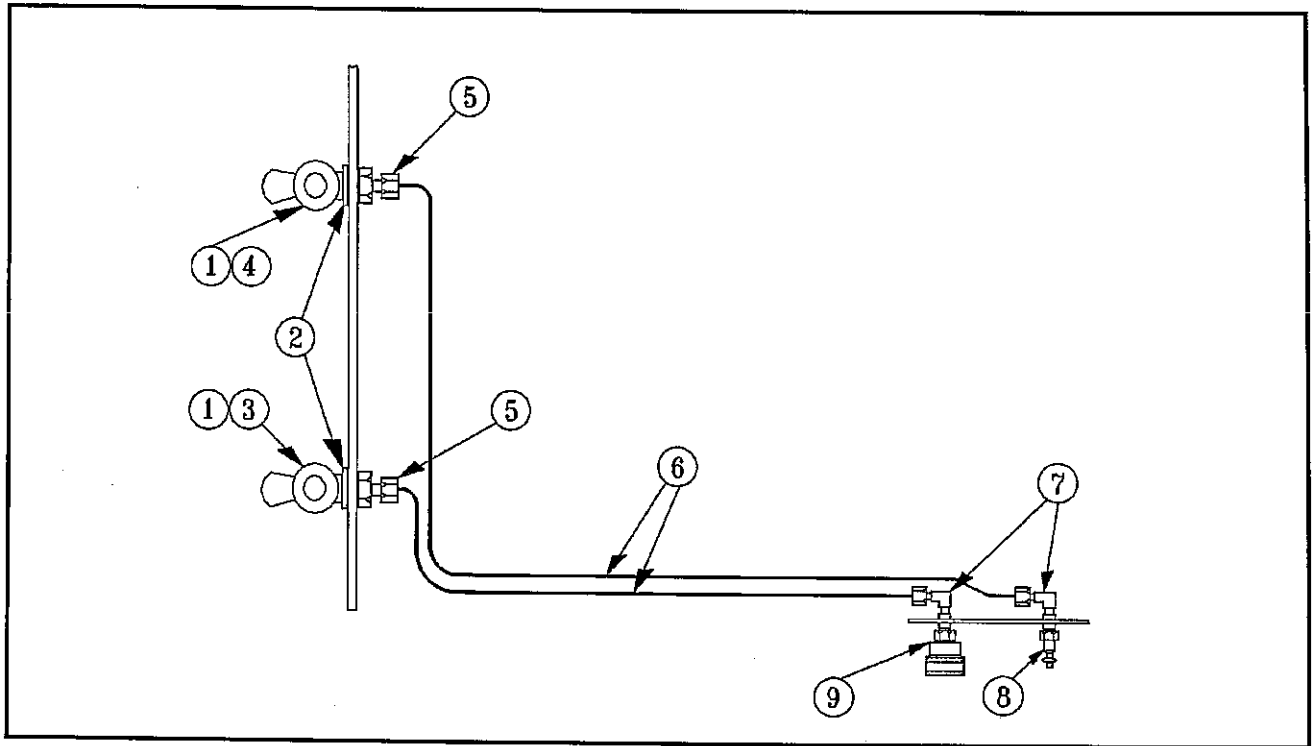


FIG. 8-2 GOOSENECK AIR SYSTEM

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	55B11	GLADHAND	2
2	55B61	UNION, FRAME	2
3	55B61-6	TAG, EMERGENCY LINE	1
4	55B61-7	TAG, SERVICE LINE	1
5	HO168-4X6	CONNECTOR, MALE	2
6	54A6X250S	HOSE, 3/8" AIR	A/R
7	10169-6-6	ELBOW, MALE	2
8	3-220-010004	COUPLER, MALE	1
9	3-220-010005	COUPLER, FEMALE	1

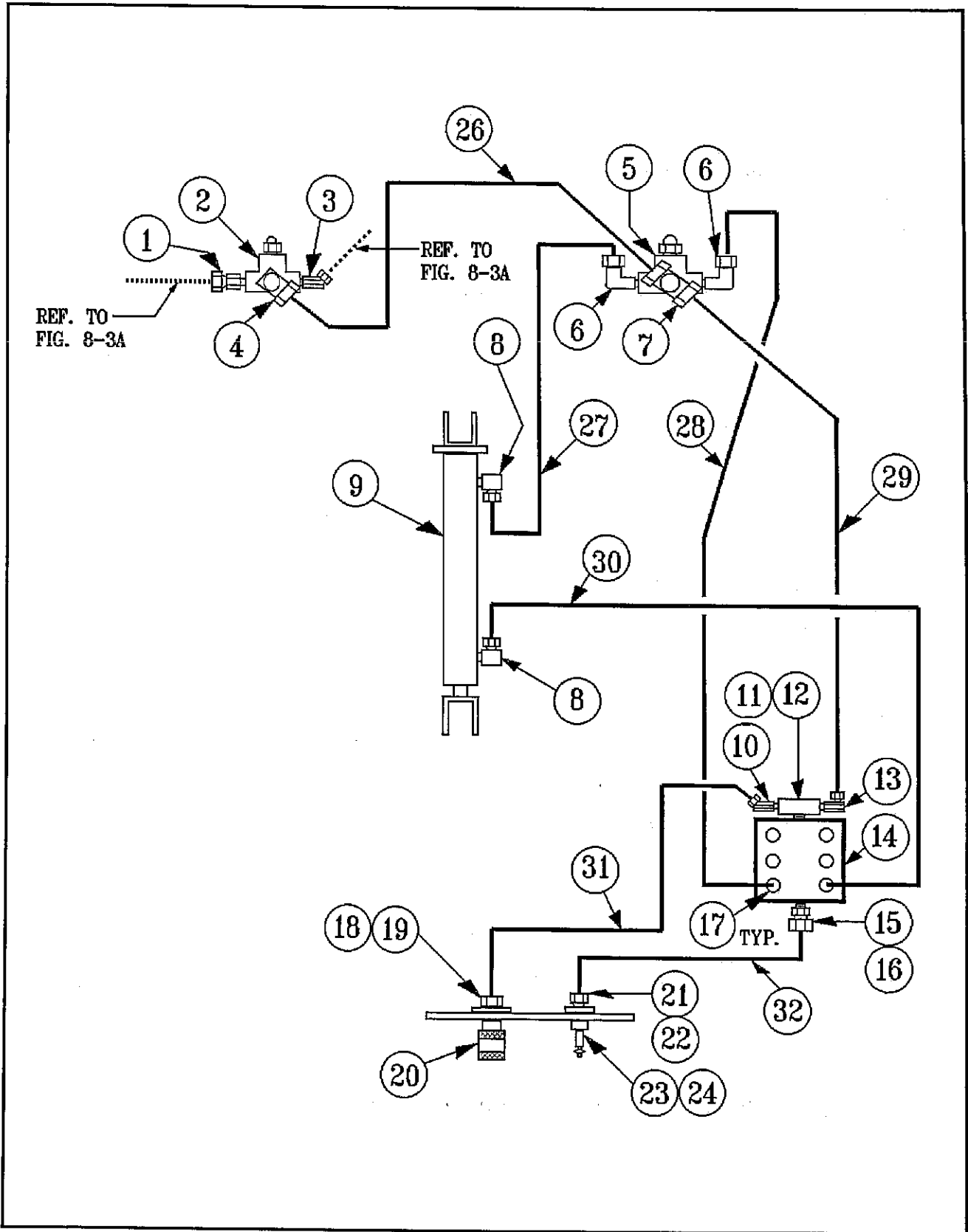


FIG. 8-3 LIFT ARM CYLINDER HYDRAULICS

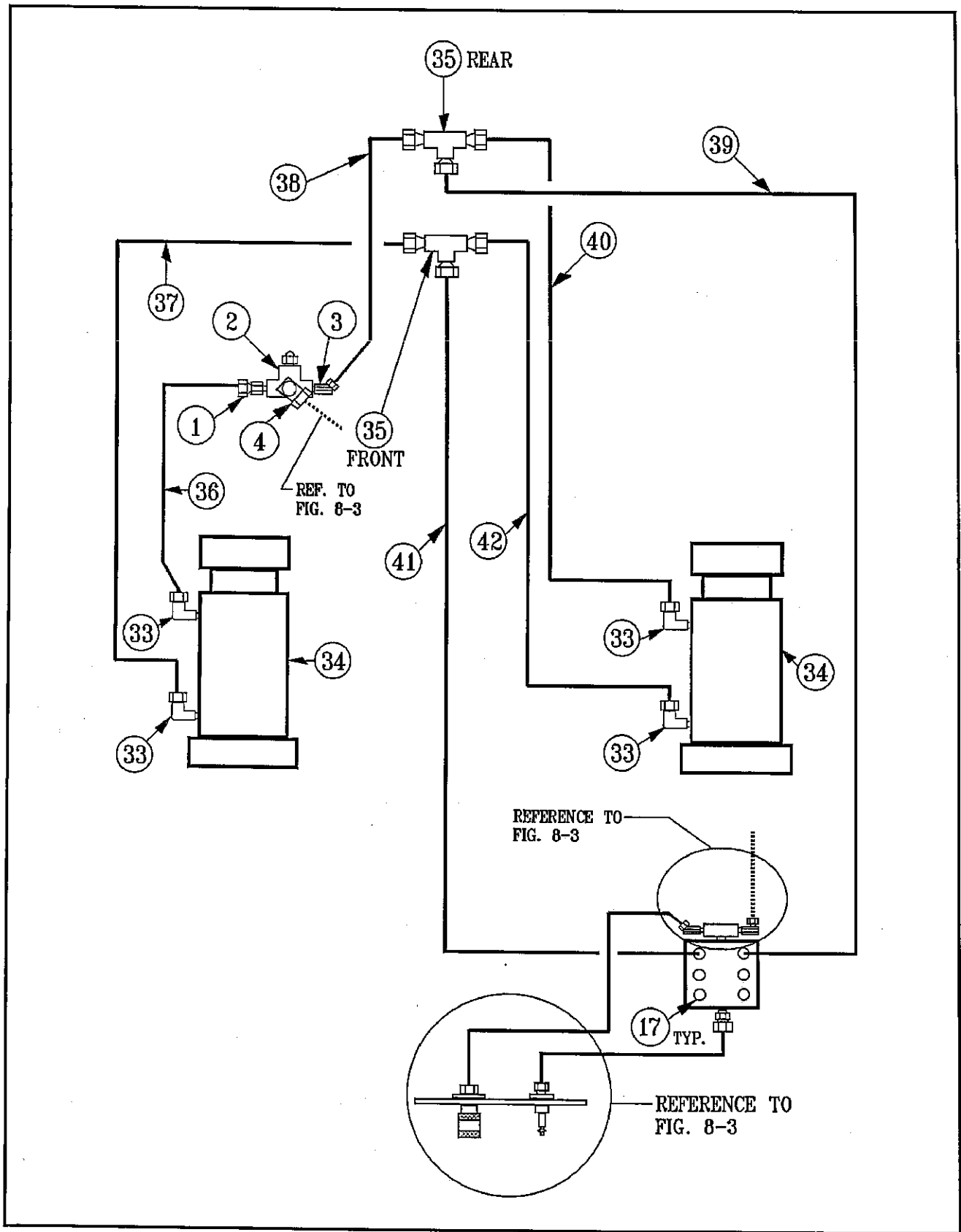


FIG. 8-3A TRAILER LIFT CYLINDER HYDRAULICS

GOOSENECK HYDRAULIC SYSTEM

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	2045-8-8S	FITTING	1
2	3-846-010017	VALVE, RELIEF	1
	1R0021	CARTRIDGE, 500 PSI REPLACEMENT	1
3	2049-8-8S	FITTING, 45°	1
4	2047-8-8S	ELBOW, 90°	1
5	3-846-010018	VALVE, RELIEF	1
	1R0037	CARTRIDGE, 1500 PSI REPLACEMENT	1
6	2047-8-8S	ELBOW, 90°	2
7	2254-8-8S	TEE	1
8	1-007-010007	ELBOW, 90°	2
9	1-242-010048	CYLINDER, LIFT ARM	1
10	2049-12-12S	FITTING, 45°	1
11	2091-12-12S	FITTING	1
12	2216-12-12S	FITTING	1
13	1-007-010013	FITTING, 90°	1
14	3-846-010008	VALVE, 3 SPOOL	1
15	2045-8-8S	FITTING	1
16	2216-8-12S	FITTING	1
17	1-007-010023	ADAPTER, 45o	6
18	2045-12-12S	FITTING	1
19	1FW	WASHER, FLAT	1
20	S25F-6	COUPLER, FEMALE	1
21	2045-8-8S	FITTING	1
22	7/8MACH BUSH	BUSHING	1
23	8010-4	COUPLER, MALE	1
24	1/2HOSE WASHER	WASHER	1
25	NOT USED		
26	3-397-010152	HOSE ASSEMBLY, HYDRAULIC	1
27	3-397-010151	HOSE ASSEMBLY, HYDRAULIC	1
28	3-397-010214	HOSE ASSEMBLY, HYDRAULIC	1
29	3-397-010145	HOSE ASSEMBLY, HYDRAULIC	1
30	2-397-010006	HOSE ASSEMBLY, HYDRAULIC	1
31	REFERENCE	HOSE ASSEMBLY, HYDRAULIC (MEASUREMENT REQUIRED)	1
32	REFERENCE	HOSE ASSEMBLY, HYDRAULIC (MEASUREMENT REQUIRED)	1
33	1-00007-010007	FITTING, 90°	4
34	2-242-010084	CYLINDER, 8" TRAILER LIFT (MODEL 324)	2
	3-242-010096	CYLINDER, 9" TRAILER LIFT (MODEL 325)	2
	3-242-010097	CYLINDER, 10" TRAILER LIFT (OPTIONAL)	2
35	2255-8-8S	TEE	2
36	2-397-010006	HOSE ASSEMBLY, HYDRAULIC	1
37	3-397-010169	HOSE ASSEMBLY, HYDRAULIC	1
38	3-397-010120	HOSE ASSEMBLY, HYDRAULIC	1
39	3-397-010153	HOSE ASSEMBLY, HYDRAULIC	1
40	3-397-010158	HOSE ASSEMBLY, HYDRAULIC	1
41	3-397-010153	HOSE ASSEMBLY, HYDRAULIC	1
42	3-397-010146	HOSE ASSEMBLY, HYDRAULIC	1
43	238-2526	CYLINDER, LOAD BLOCK	2
44	2255-6-6S	TEE	2
45	3-397-010213	HOSE ASSEMBLY, HYDRAULIC	1
46	3-397-010212	HOSE ASSEMBLY, HYDRAULIC	1
47	3-397-010203	HOSE ASSEMBLY, HYDRAULIC	1
48	3-397-010149	HOSE ASSEMBLY, HYDRAULIC	1
49	3-397-010160	HOSE ASSEMBLY, HYDRAULIC	1
50	3-397-010160	HOSE ASSEMBLY, HYDRAULIC	1
51	1/4NIPPLE	NIPPLE	4
52	3/8ELL	FITTING, 90°	4
53	3/8X1/4BUSH	BUSHING	4

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GOOSENECK ELECTRICAL SYSTEM

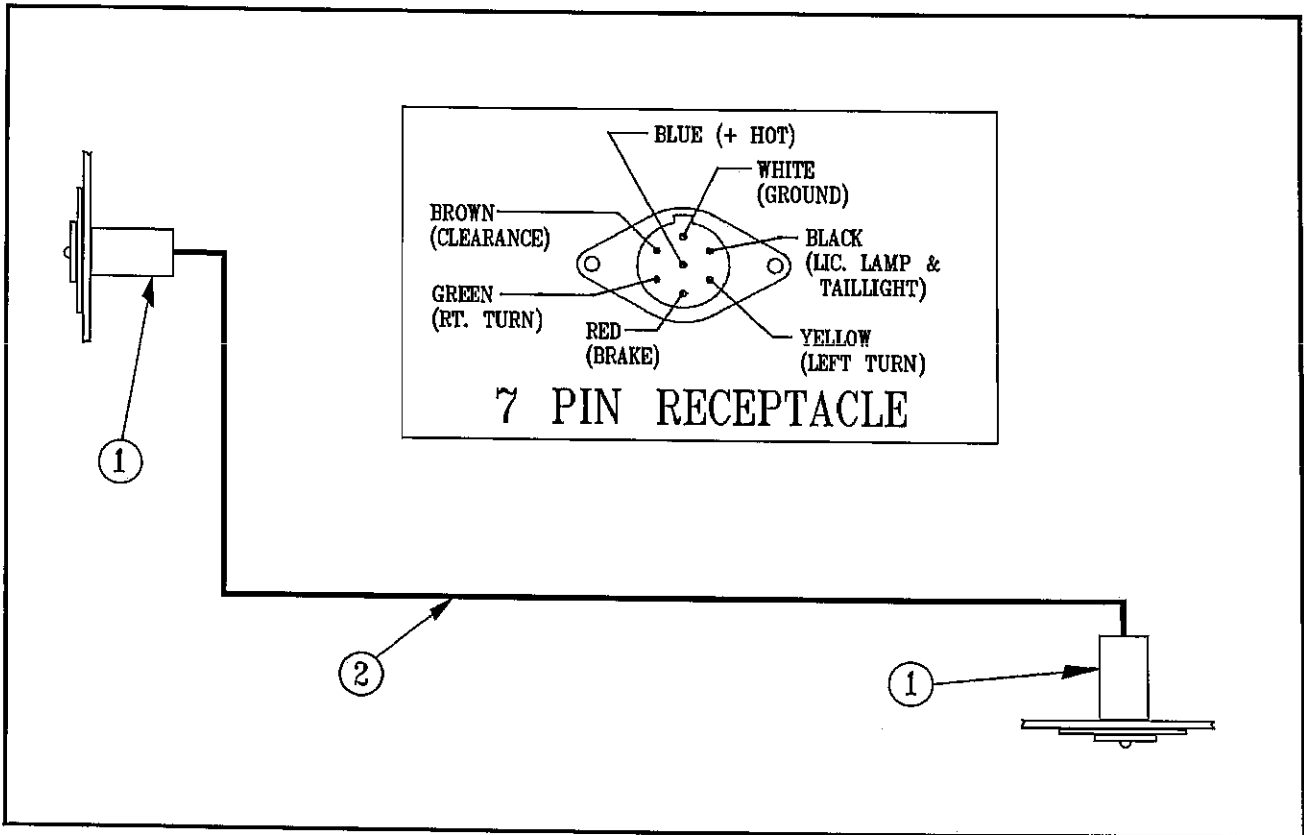


FIG. 8-4 GOOSENECK ELECTRICAL SYSTEM

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	59S7	RECEPTACLE, ELECTRICAL 7-POLE	2
2	3-156-010009	CONDUCTOR, MULTI-CABLE	A/R

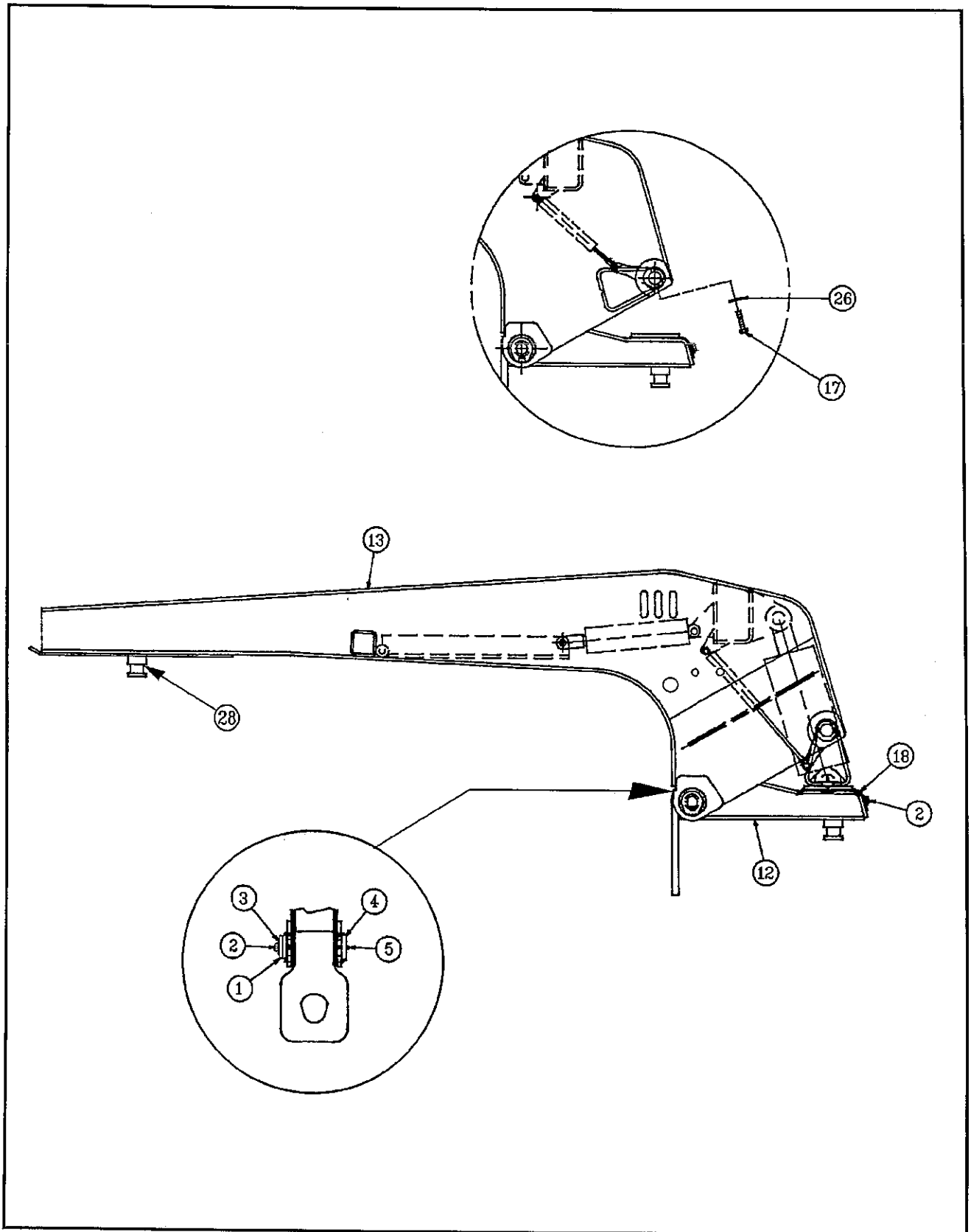


FIG. 8-5 DETACHABLE GOOSENECK ITEMS

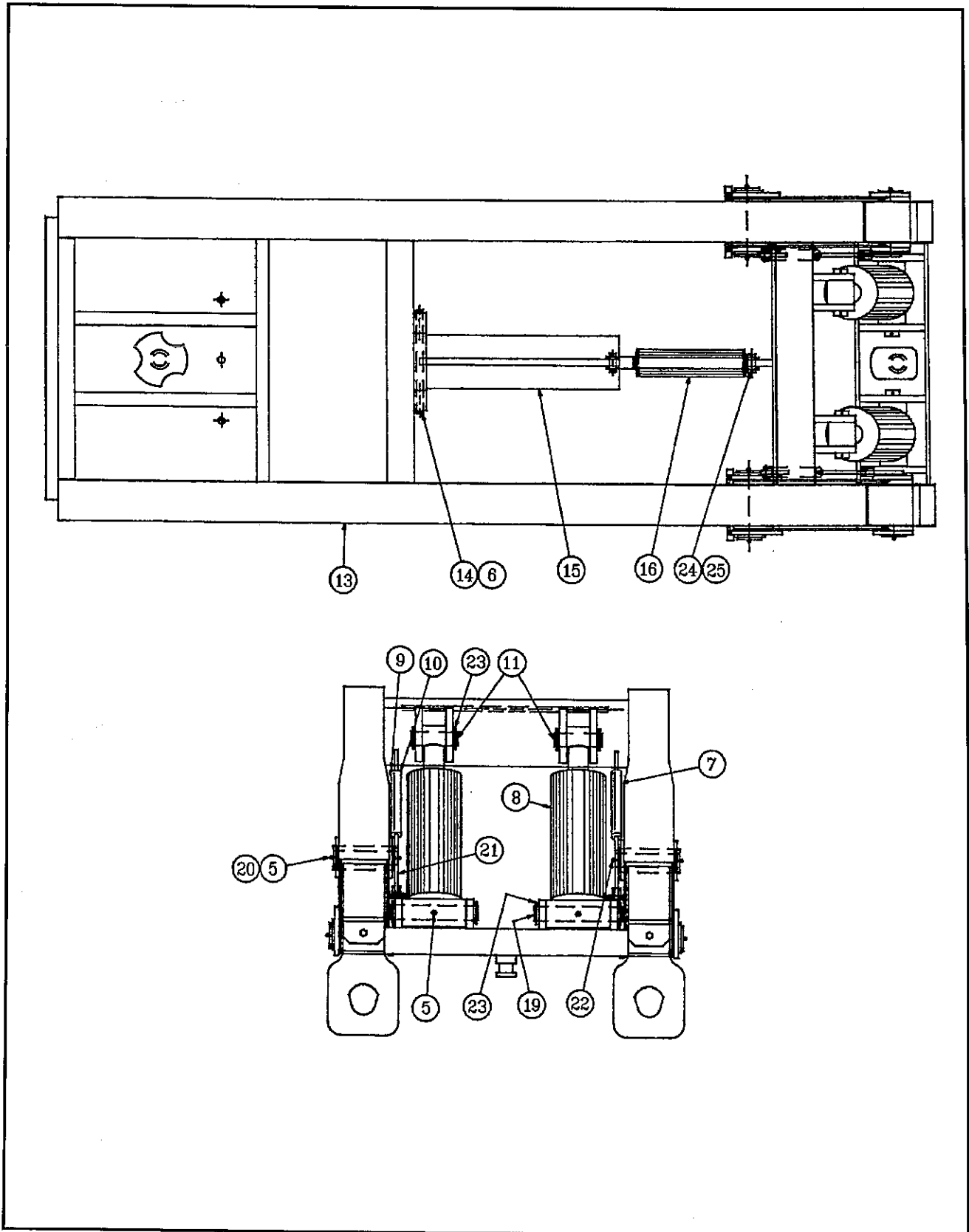


FIG. 8-6 DETACHABLE GOOSENECK ITEMS, CONTINUED

DETACHABLE GOOSENECK ITEMS

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3-311-013452	PLATE, PIN CAP	2
2	1/2-13X1HHCS	CAP SCREW, HEX HEAD	4
3	1/2SLW	WASHER, SPLIT LOCKING	2
4	3-311-013451	PIN, END	2
5	5010	ZIRT, GREASE	8
6	1/4X2	PIN, COTTER	1
7	238-2526	CYLINDER, HYDRAULIC #WFC-1508-S7	2
8	2-242-010084	CYLINDER, HYDRAULIC 8"	2
8*	3-242-010096	CYLINDER, HYDRAULIC 9" (FOR 325)	2
8*	3-242-010097	CYLINDER, HYDRAULIC 10" (FOR 325)	2
9	1/8X1	PIN, COTTER	4
10	238-2526-25	PIN, PIVOT	4
11	3-557-010169	PIN, TOP CYLINDER MOUNT	2
12	3-164-010002	WELDMENT, LOAD CARRIER (324, 38"B/C, 8" CYL.)	1
12	3-164-010003	WELDMENT, LOAD CARRIER (324, 42"B/C, 8" CYL.)	1
12	3-164-010004	WELDMENT, LOAD CARRIER (325, 38"B/C, 9" CYL.)	1
12	3-164-010005	WELDMENT, LOAD CARRIER (325, 42"B/C, 9" CYL.)	1
12	3-164-010006	WELDMENT, LOAD CARRIER (325, 42"B/C, 10" CYL., 13'-0 LG)	1
13	3-336-010001	WELDMENT, GOOSENECK (324, 38"B/C, 8" CYL.)	1
13	3-336-010002	WELDMENT, GOOSENECK (324, FULL WIDTH, 8" CYL.)	1
13	3-336-010003	WELDMENT, GOOSENECK (324, 42"B/C, 8" CYL.)	1
13	3-336-010004	WELDMENT, GOOSENECK (324, FULL WIDTH, 8" CYL.)	1
13	3-336-010005	WELDMENT, GOOSENECK (325, 38"B/C, 9" CYL.)	1
13	3-336-010006	WELDMENT, GOOSENECK (325, FULL WIDTH, 9" CYL.)	1
13	3-336-010007	WELDMENT, GOOSENECK (325, 42"B/C, 9" CYL.)	1
13	3-336-010008	WELDMENT, GOOSENECK (325, 42"B/C, 10" CYL., 13'-0 LG. TWO POSITION KINGPIN)	1
14	3-557-010171	PIN, LIFT ARM PIVOT	1
15	3-311-013428	LIFT ARM ASSEMBLY, NECK	1
16	1-242-010048	TIE ROD, CYLINDER	2
17	5/8-11X3HHCS	CAP SCREW, HEX HEAD	2
18	3-711-010006	SPACER, LOAD BLOCK	2
19	3-557-010170	PIN, BOTTOM CYLINDER MOUNT	2
20	3-557-010168	PIN, LOAD BLOCK MOUNT	2
21	3-311-013479	ARM, LOAD BLOCK PILOT	2
22	5210	ZERT, GREASE	2
23	1/4X3	PIN, COTTER	8
24	190400002	CLIP, HAIR PIN	2
25	190400004	PIN, CLEVIS	2
26	5/8SLW	WASHER, SPLIT LOCKING	2
27	3-311-013432	LOAD BLOCK ASSEMBLY	2
	REF.	AIR SYSTEM, GOOSENECK	REF.
	REF.	HYDRAULIC SYSTEM, GOOSENECK	REF.
	REF.	ELECTRICAL SYSTEM, GOOSENECK	REF.

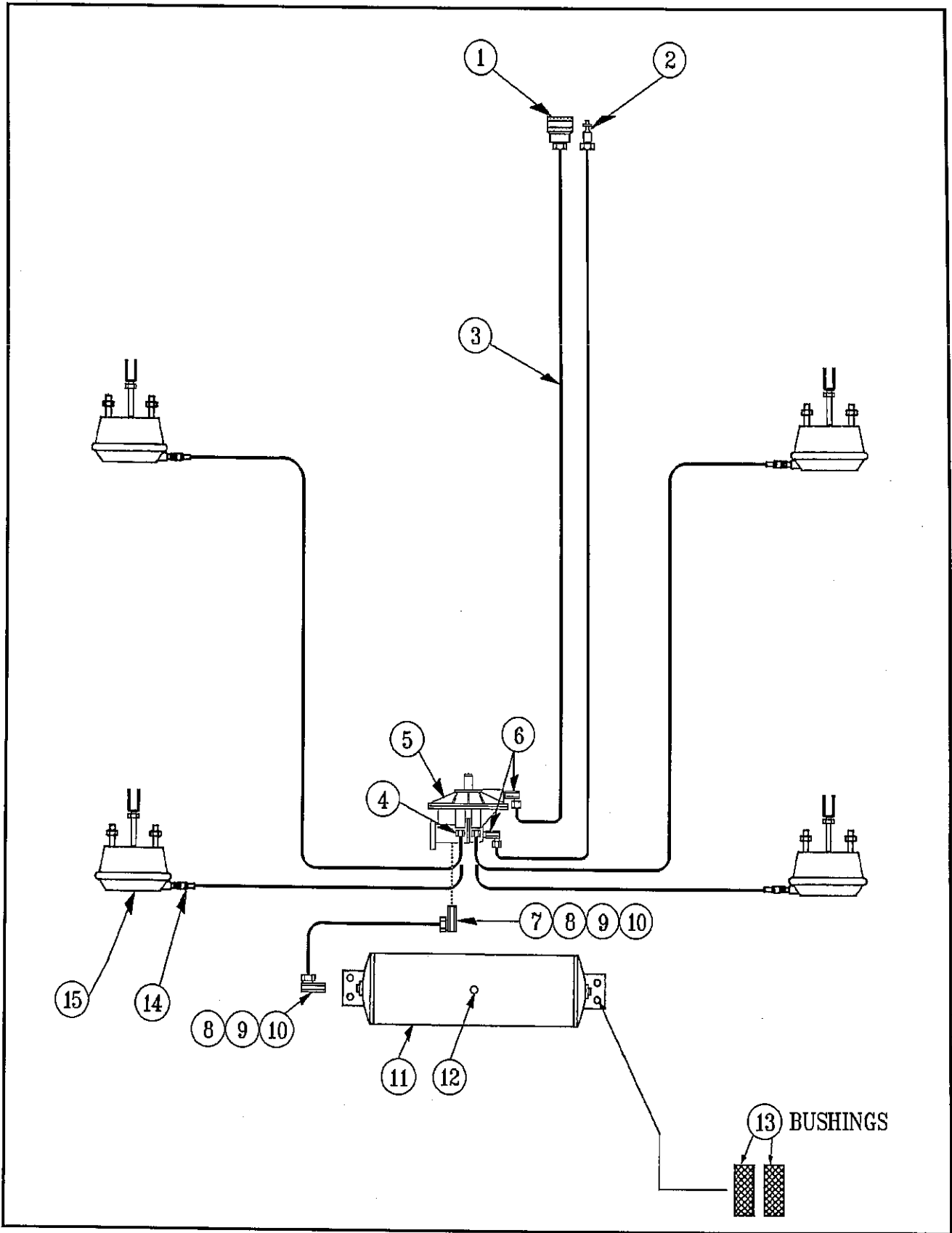


FIG. 8-7 TANDEM AIR BRAKE SYSTEM

TANDEM AIR BRAKE SYSTEM

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3-220-010004	COUPLER, FEMALE	1
2	3-220-010005	COUPLER, MALE	1
3	54A6X2505	HOSE, BRAKE	A/R
4	55C31	ADAPTER	4
5	90W101	VALVE, RELAY	1
6	2047-6-6S	ELBOW	2
7	2045-8-8S	ADAPTER	1
8	2047-8-8S	ELBOW	2
9	HO168-8X8	ADAPTER	2
10	HO159-8BP	INSERT	2
11	3-780-010002	RESERVOIR, AIR	1
12	56D4	DRAIN COCK	1
13	805-2	BUSHING, STEP	8
14	55C21	ADAPTER	4
15	3-128-010009	AIR CHAMBER	4

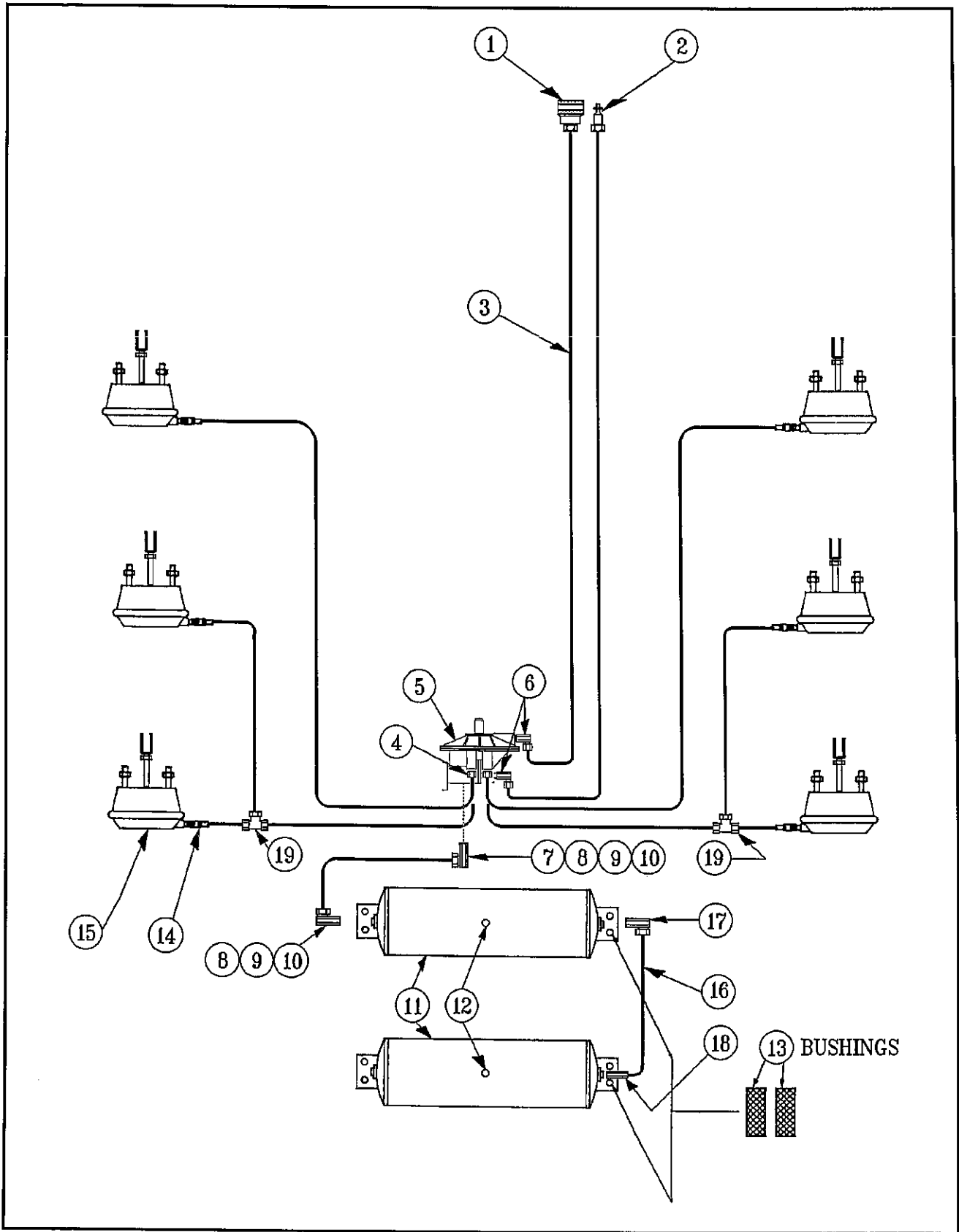


FIG. 8-8 TRI-AXLE AIR BRAKE SYSTEM

TRI-AXLE AIR BRAKE SYSTEM

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3-220-010004	COUPLER, FEMALE	1
2	3-220-010005	COUPLER, MALE	1
3	54A6X2505	HOSE, BRAKE	A/R
4	55C31	ADAPTER	4
5	90W101	VALVE, RELAY	1
6	2047-6-6S	ELBOW	2
7	2045-8-8S	ADAPTER	1
8	2047-8-8S	ELBOW	2
9	HO168-8X8	ADAPTER	2
10	HO159-8BP	INSERT	2
11	3-780-010002	RESERVOIR, AIR	2
12	56D4	DRAIN COCK	2
13	805-2	BUSHING, STEP	16
14	55C21	ADAPTER	6
15	3-128-010009	AIR CHAMBER	6
16	62P8	TUBING, 1/2 IN. AIR	A/R
17	1469X8X8	ELBOW, 90°	1
18	H0168 8X8	FITTING, STRAIGHT	1
19	1464X4	TEE	2

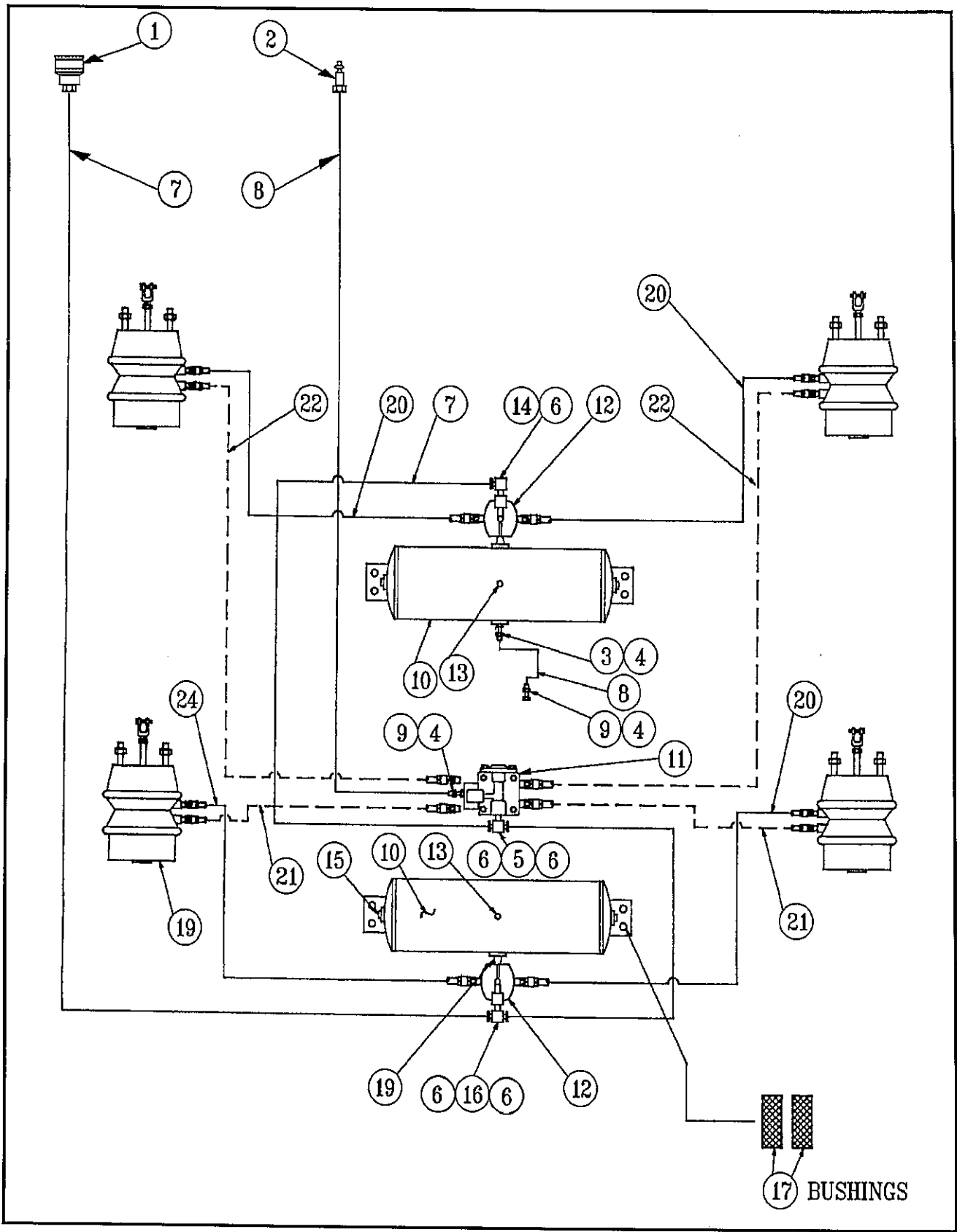


FIG. 8-9 TANDEM SPRING BRAKE SYSTEM

TANDEM SPRING BRAKE SYSTEM

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3-220-010004	COUPLER, FEMALE	1
2	3-220-010005	COUPLER, MALE	1
3	HO-168-8X8	FITTING	1
4	HO-159-8BP	INSERT	3
5	1472X6X6X6	TEE, MALE BRANCH	1
6	HO-159-6BP	INSERT	5
7	62P6	TUBE	A/R
8	62P8	TUBE	A/R
9	HO-168-8X6	CONNECTOR, MALE	2
10	3-780-010002	RESERVOIR	2
11	758-181 RN10HR	VALVE, TASK	1
		KIT, VALVE REBUILD	A/R
12	758-182 RN10HM	VALVE, BRAKE RELAY	2
		KIT, VALVE REBUILD	A/R
13	56D4	PETCOCK, DRAIN	2
15	1/2PIPE PLUG	PLUG, BLACK PIPE	4
16	HO-168-8X4	CONNECTOR, MALE	1
17	1472X6	TEE, MALE	1
18	805-2	BUSHING, STEP	16
19	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
20	1/2NIPPLE	NIPPLE	3
21	3-384-010018	HOSE,AIR	4
22	3-384-010020	HOSE,AIR	2
23	3-384-010024	HOSE,AIR	2

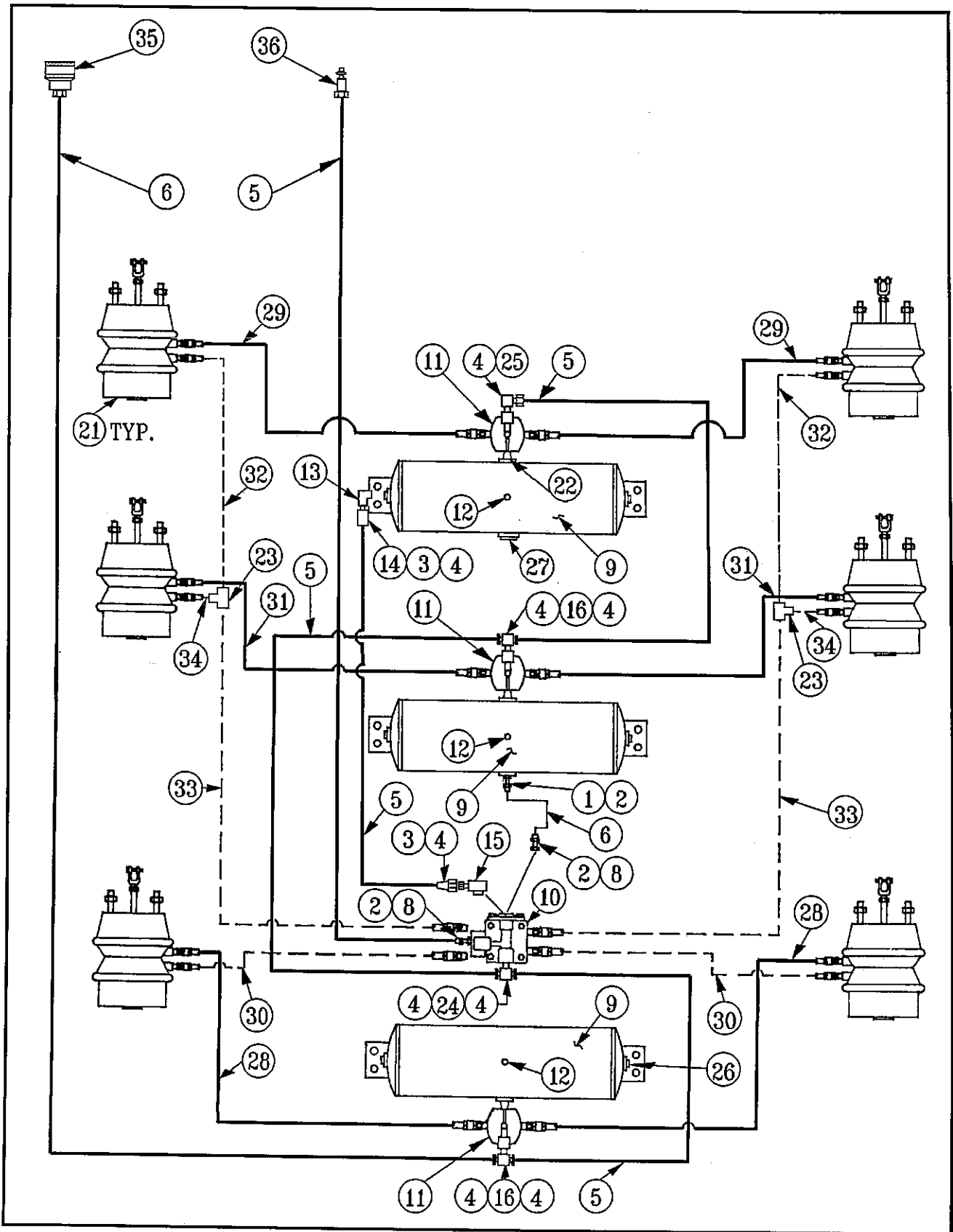


FIG. 8-10 TRI-AXLE SPRING BRAKE SYSTEM

TRI-AXLE SPRING BRAKE SYSTEM

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	HO-168 8X8	FITTING	1
2	HO-159-8BP	INSERT	3
3	HO-168-6X6	FITTING	2
4	HO-159-6BP	INSERT	9
5	62P6	TUBING, 3/8 IN. AIR	A/R
6	62P8	TUBING, 1/2 IN. AIR	A/R
7	239-9008-3	CONDUIT, FLEX (NOT SHOWN)	A/R
8	HO-168-8X6	CONNECTOR	2
9	758-165	RESERVOIR	3
10	758-181	VALVE, TASK	1
	RN10HR	KIT, VALVE REBUILD	1
11	758-182	VALVE, BRAKE RELAY	3
	RN10HM	KIT, VALVE REBUILD	A/R
12	56D4	PETCOCK, DRAIN	3
13	2047-8-6S	ADAPTER, 90° SWIVEL	1
14	758-186	VALVE, PRESSURE PROTECTION	1
15	3600X6	TEE	1
16	1472X6	TEE	1
17	805-2	BUSHING, STEP (NOT SHOWN)	24
18,19,20		NOT USED	
21	3-128-010002	CHAMBER, SPRING BRAKE	6
22	1/2NIPPLE	NIPPLE	4
23	3700X6	TEE	2
24	1472X6X6X6	TEE	1
25	1469X6	ELBOW, 90°	1
26	3/8-16 PLUG	PLUG, PIPE	5
27	1/2PIPE PLUG	PLUG, PIPE	1
28	3-384-010018	HOSE, AIR	2
29	3-384-010019	HOSE, AIR	2
30	3-384-010020	HOSE, AIR	2
31	3-384-010021	HOSE, AIR	2
32	3-384-010022	HOSE, AIR	2
33	3-384-010023	HOSE, AIR	2
34	3-384-010027	HOSE, AIR	2
35	3-220-010004	COUPLER, FEMALE	1
36	3-220-010005	COUPLER, MALE	1

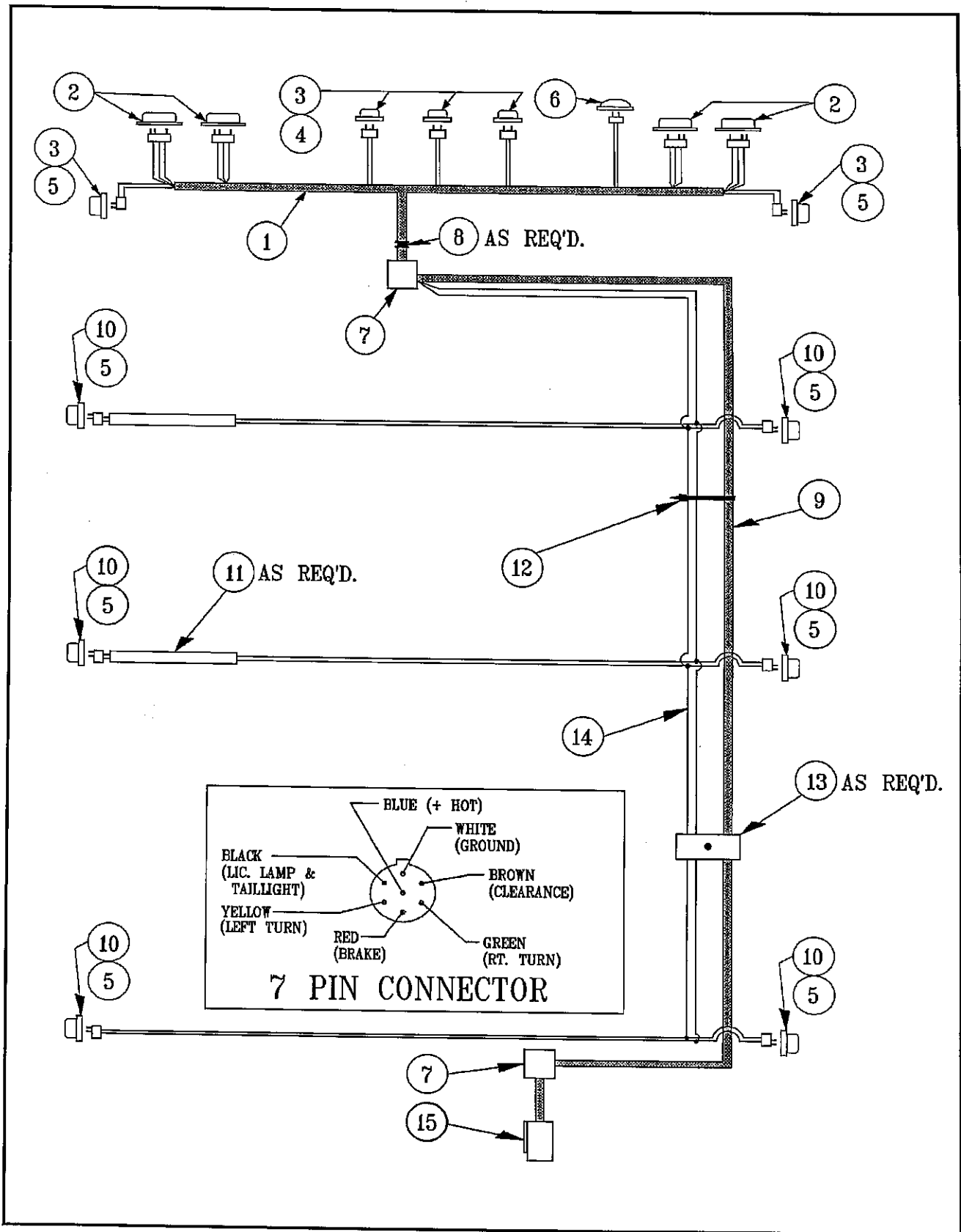


FIG. 8-11 SEMITRAILER ELECTRICAL SYSTEM

SEMITRAILER ELECTRICAL SYSTEM

ITEM NO.	PART NO.	DESCRIPTION	QTY.
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

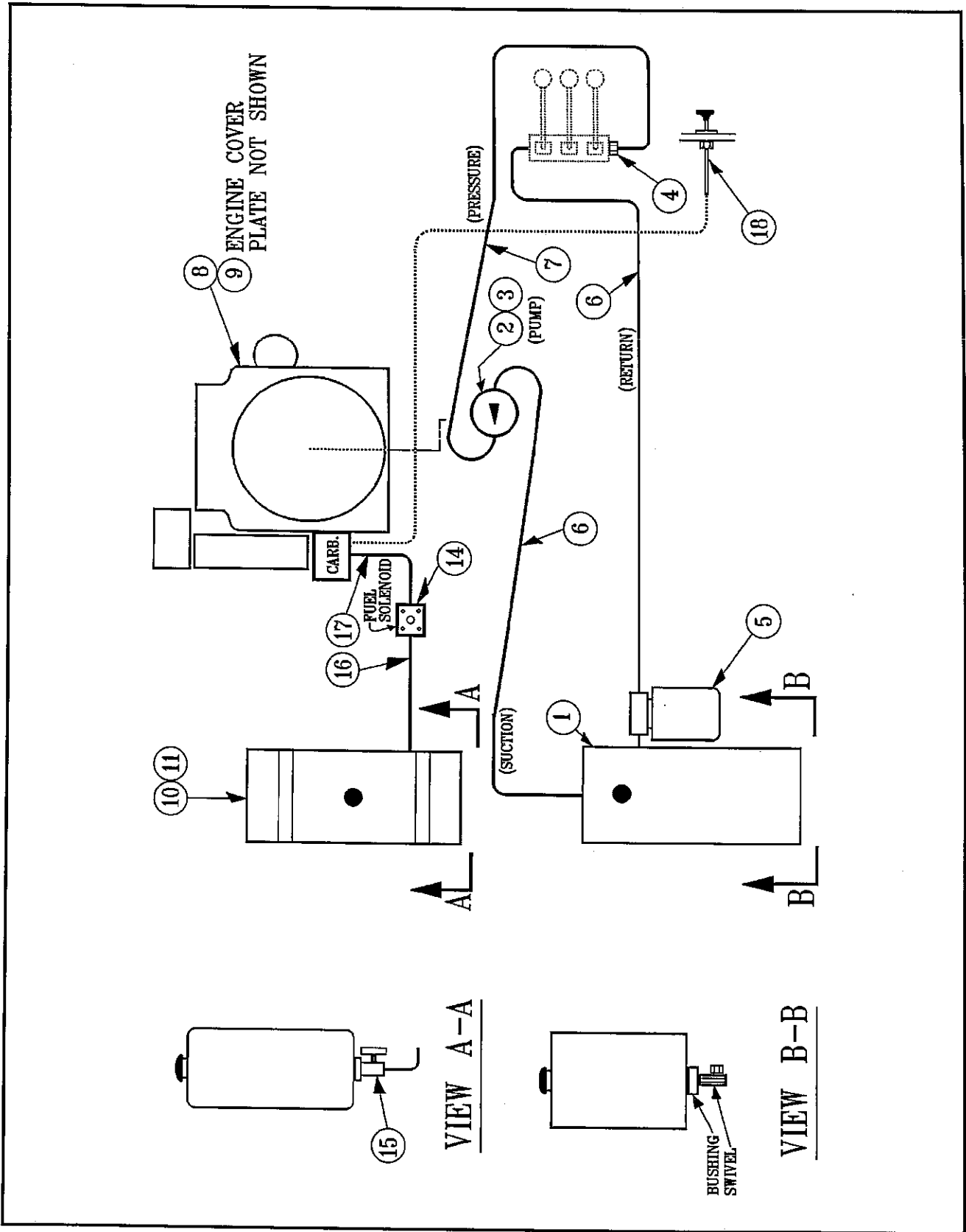


FIG. 8-12 HYDRAULIC POWER SUPPLY-ITEMS AND HYDRAULICS



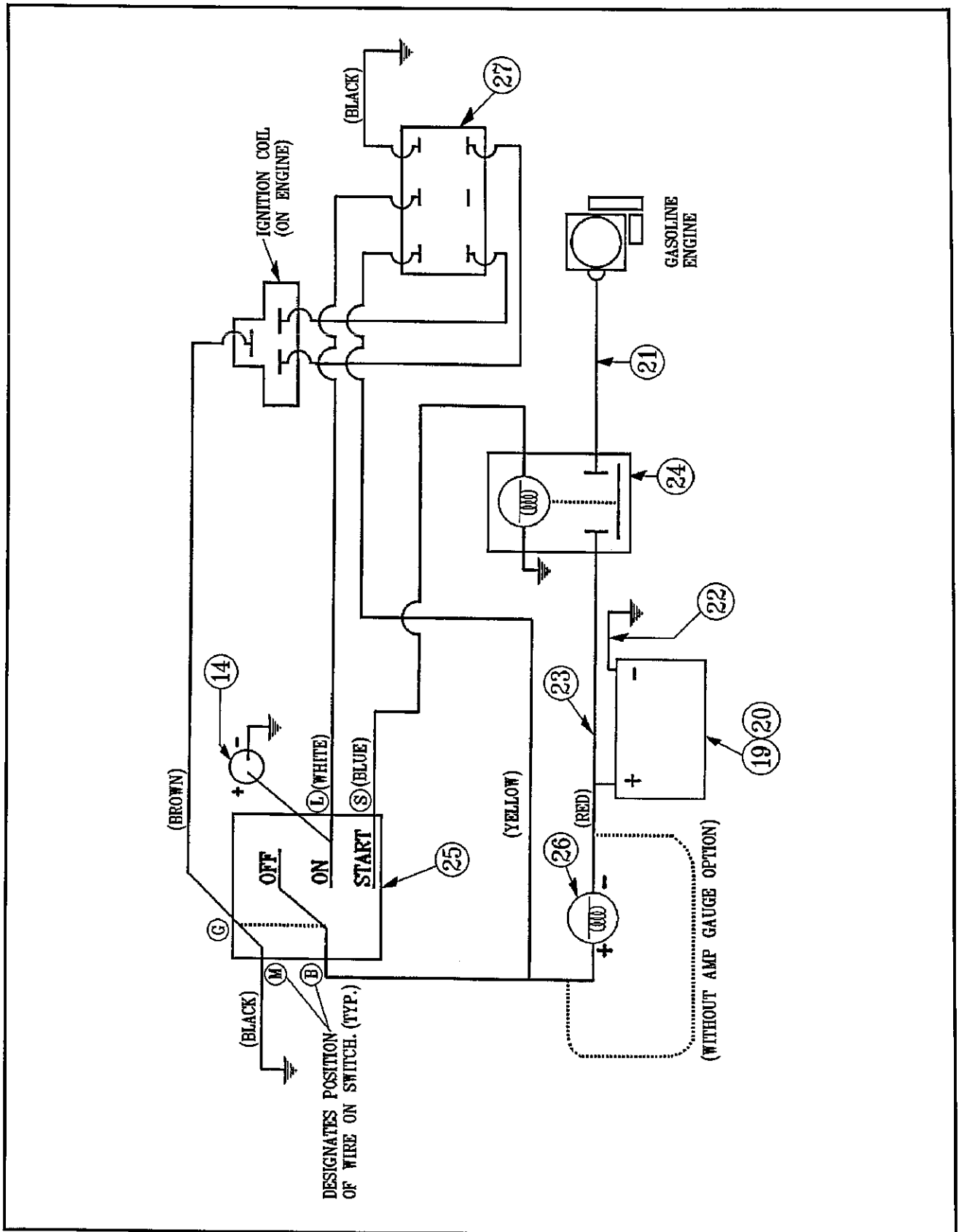


FIG. 8-13 HYDRAULIC POWER SUPPLY ELECTRICAL SCHEMATIC

HYDRAULIC POWER SUPPLY ENGINE PACKAGE

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3-786-010005	TANK, HYDRAULIC FLUID	1
	3-162-010001	FILLER ASSEMBLY, STRAINER AND	1
	1-1/4PIPE PLUG	PLUG, PIPE	1
	1-1/4X3/4BUSH	BUSHING	1
	3/4NIPPLE	NIPPLE	2
	2047-12-12S	SWIVEL, MALE PIPE	1
	805-2	BUSHINGS, STEP	8
2	3-220-010010	COUPLING ASSEMBLY, HYDRAULIC PUMP	1
3	24203-R-Z-C	PUMP, HYDRAULIC	1
	2068-12-10S	ELBOW, 90°	1
	1-007-010007	ELBOW, 90°	1
4	2047-8-8S	ADAPTER	1
5	1-295-010001	FILTER, HYDRAULIC INLINE	1
6	3-397-010211	HOSE, 3/4 IN. HYDRAULIC	2
7	3-397-010184	HOSE, 1/2 IN. HYDRAULIC	1
8	3-273-010005	ENGINE, GASOLINE	1
	99910-2121	OWNERS MANUAL, (FOR BALANCE OF ENGINE PARTS)	1
9	3-311-014070	COVER, ENGINE PLATE	1
10	3-783-010006	TANK, FUEL	1
11	3-311-014059	STRAP, FUEL TANK HOLD DOWN	1
14	3-846--10031	VALVE, FUEL SOLENOID	1
15	6600	VALVE, SHUT OFF GAS	1
16	1-316-010001024	HOSE, 24 IN. FUEL	1
17	1-316-010001020	HOSE, 20 IN. FUEL HOSE	1
	105-0105	CLAMP, HOSE	4
18	3-155-010001	CABLE, THROTTLE	1
19	2481X	BATTERY, 12 VOLT	1
20	3-120-010124	BRACKET, BATTERY CLAMP	1
21	239-8116-30	CABLE, STARTER	1
22	514-9073-30	CABLE, NEGATIVE BATTERY	1
23	514-9074-36	CABLE, POSITIVE BATTERY	1
24	307-1031	SOLENOID, RELAY STARTER	1
25	3-765-010004	SWITCH, STARTER	1
27*	1-323-010005	AMMETER	1
28	21066-2004	REGULATOR, VOLTAGE	1

* DESIGNATES AN OPTIONAL ITEM.

** ALL WIRES ARE TO BE 14 AWG UNLESS GIVEN A SPECIFIC PART NUMBER. COLORS ARE NOTED IN FIG. 8-13. QUANTITY IS AS REQUIRED.

HYDRAULIC POWER SUPPLY PUMP (24203-R-Z-C)

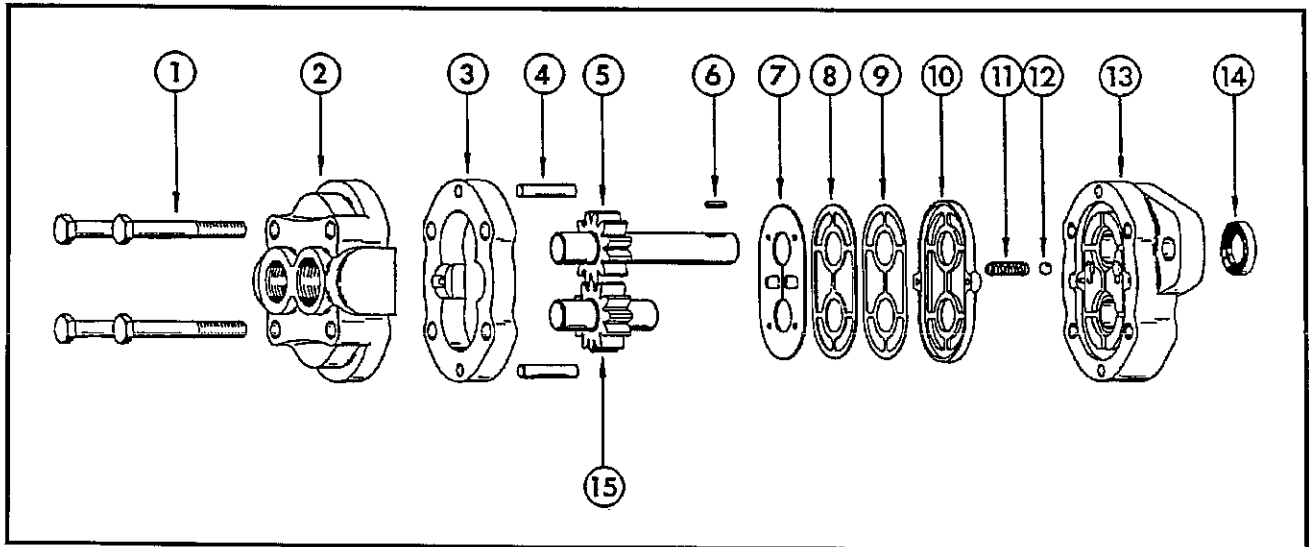


FIG. 8-14 HYDRAULIC POWER SUPPLY PUMP (24203-R-Z-C)

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	16119-520	SCREW, CAP	4
2	20200-81	PLATE, BACK	1
3	20208-2**	BODY	1
4	16028-410**	PIN, DOWEL	2
5	24306-316	GEAR ASSEMBLY, DRIVE	1
6	24200-624	KEY	1
7	20200-2*	DIAPHRAGM	1
8	24200-602*	GASKET, BACK-UP	1
9	24200-623*	GASKET, PROTECTOR	1
10	24200-600*	SEAL, DIAPHRAGM	1
11	15147-112*	SPRING	2
12	16006-7*	BALL, STEEL	2
13	24200-616	PLATE ASSEMBLY, FRONT	1
14	20200-154*	SEAL, SHAFT	1
15	24203-302	GEAR ASSEMBLY, IDLER	1
	24200-903	REPAIR KIT, SEAL	1
	20208-8	REPAIR KIT, BODY AND DOWEL	1

* ITEMS ARE INCLUDED IN THE SEAL REPAIR KIT.

** ITEMS ARE INCLUDED IN THE BODY AND DOWEL REPAIR KIT.

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HUB AND DRUM ASSEMBLY

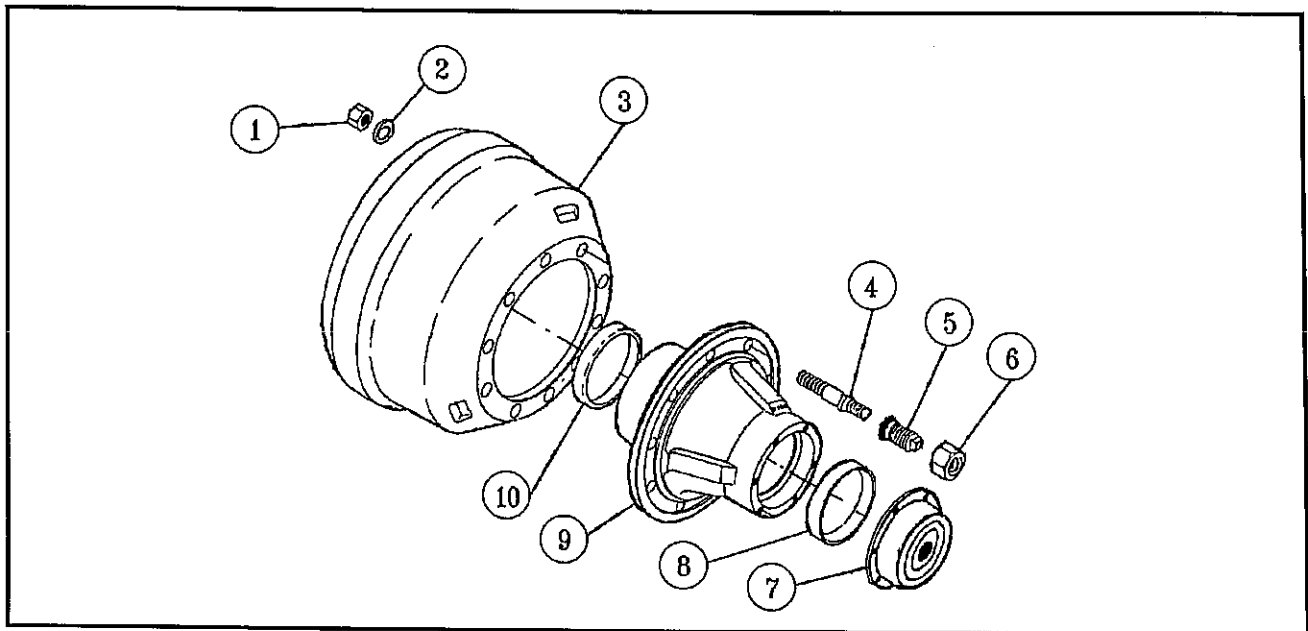


FIG. 8-15 HUB AND DRUM ASSEMBLY

ITEM NO.	PART NO.	DESCRIPTION	QTY.
	3-406-010021	HUB AND DRUM ASSEMBLY, L.H. (FOR 3-042-010015 & 017 AXLE) REF.	
	3-406-010022	HUB AND DRUM ASSEMBLY, R.H. (FOR 3-042-010015 & 017 AXLE) REF.	
	3-406-010031	HUB AND DRUM ASSEMBLY, R.H. (FOR 3-042-010029 & 031 AXLE) REF.	
	3-406-010032	HUB AND DRUM ASSEMBLY, L.H. (FOR 3-042-010029 & 031 AXLE) 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	1221	HUB FOR 021 & 022 HUB/DRUM ASSEMBLY	1
9	1001	HUB FOR 031 & 032 HUB/DRUM ASSEMBLY	1
10	653	CUP, INNER BEARING FOR 021 & 022 HUB/DRUM ASSEMBLY	1
10	HM218210	CUP, INNER BEARING FOR 031 & 032 HUB/DRUM ASSEMBLY	1

THREE SPOKE HUB AND DRUM ASSEMBLY

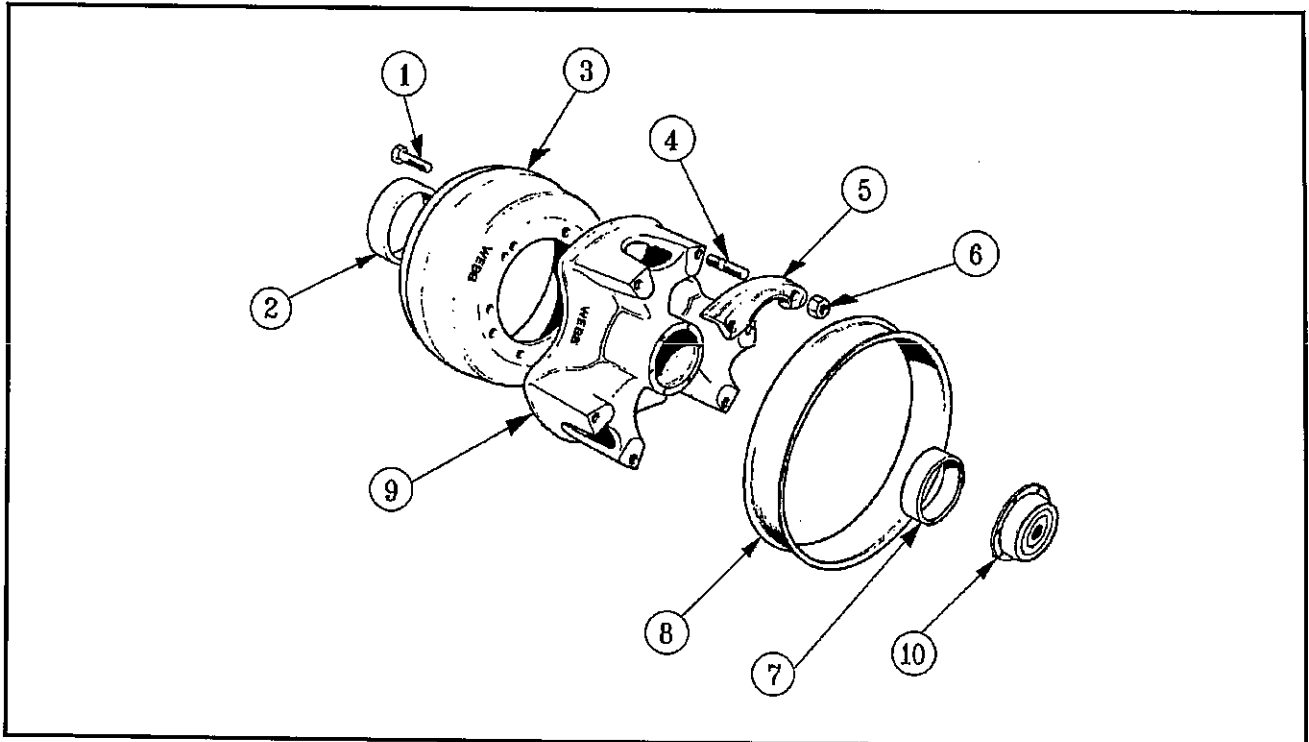


FIG. 8-16 THREE SPOKE HUB AND DRUM ASSEMBLY

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	86222	CAP SCREW, HEX HEAD	6
2	HM218210	CUP, INNER	1
3	67518	DRUM, BRAKE	1
4	171027	STUD, 3/4"-10	6
5	3321	CLAMP, RIM	3
6	74710	NUT, HEX	6
7	HM212011	CUP, OUTER	1
8	42040	SPACER, RIM	1
9	7320	HUB	1
10	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

SINGLE POINT SUSPENSION (3-762-010487)

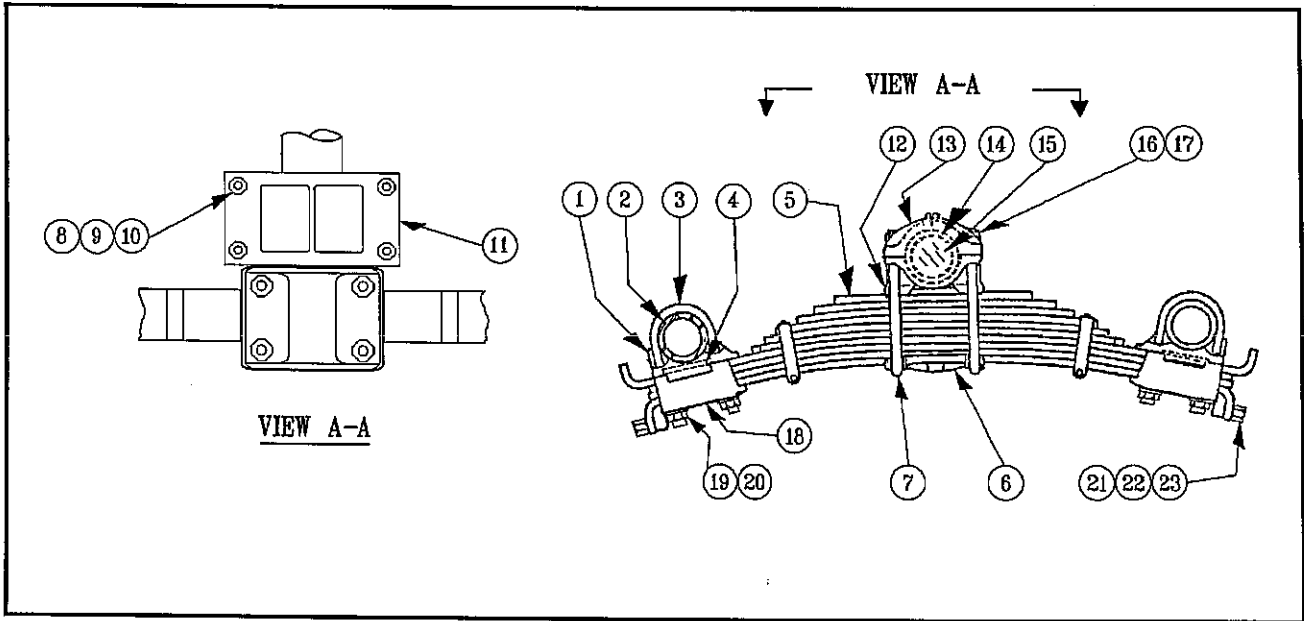


FIG. 8-17 SINGLE POINT SUSPENSION ITEMS

ITEM NO.	PART NO.	DESCRIPTION	QTY.
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

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FOUR SPRING SUSPENSION

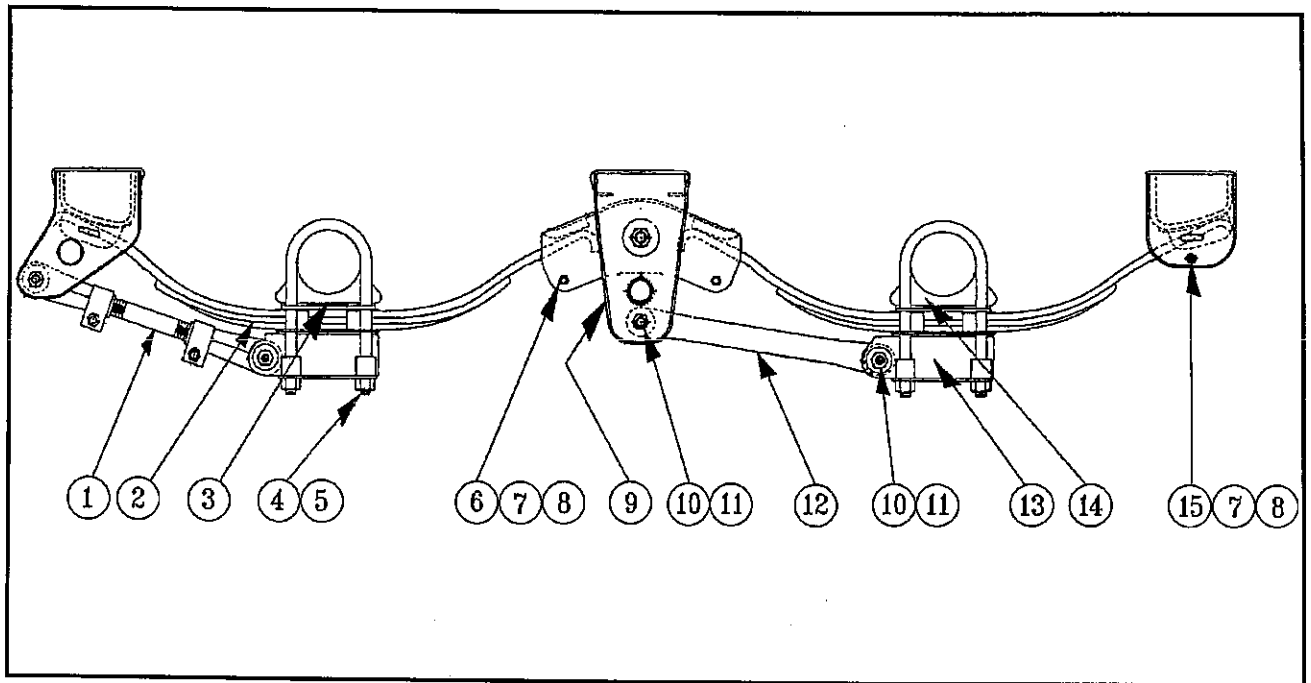


FIG. 8-18 FOUR SPRING SUSPENSION ITEMS

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	0030-20	TORQUE ARM, ADJUSTABLE	2
2	1TP13-0079-01	SPRING, THREE LEAF	4
3	0375	LINER, DELRIN SPRING	4
4	0002-09	NUT, LOCKING HEX	24
5	0102-14	U-BOLT	8
6	0378	ROLLER, SPRING	4
7	0001-10	BOLT	6
8	0002-05	NUT, LOCKING HEX	6
9	0308	EQUALIZER ASSEMBLY	2
	010601	SHAFT, EQUALIZER	2
	010606	BUSHING, EQUALIZER SHAFT	2
10	0001-08	BOLT, TORQUE ARM	8
11	0002-09	NUT, LOCKING HEX	8
12	0575	TORQUE ARM, RIGID	2
13	0338	PLATE, BOTTOM	4
14	T3329	SEAT, AXLE	4
15	0379	ROLLER, SPRING	2

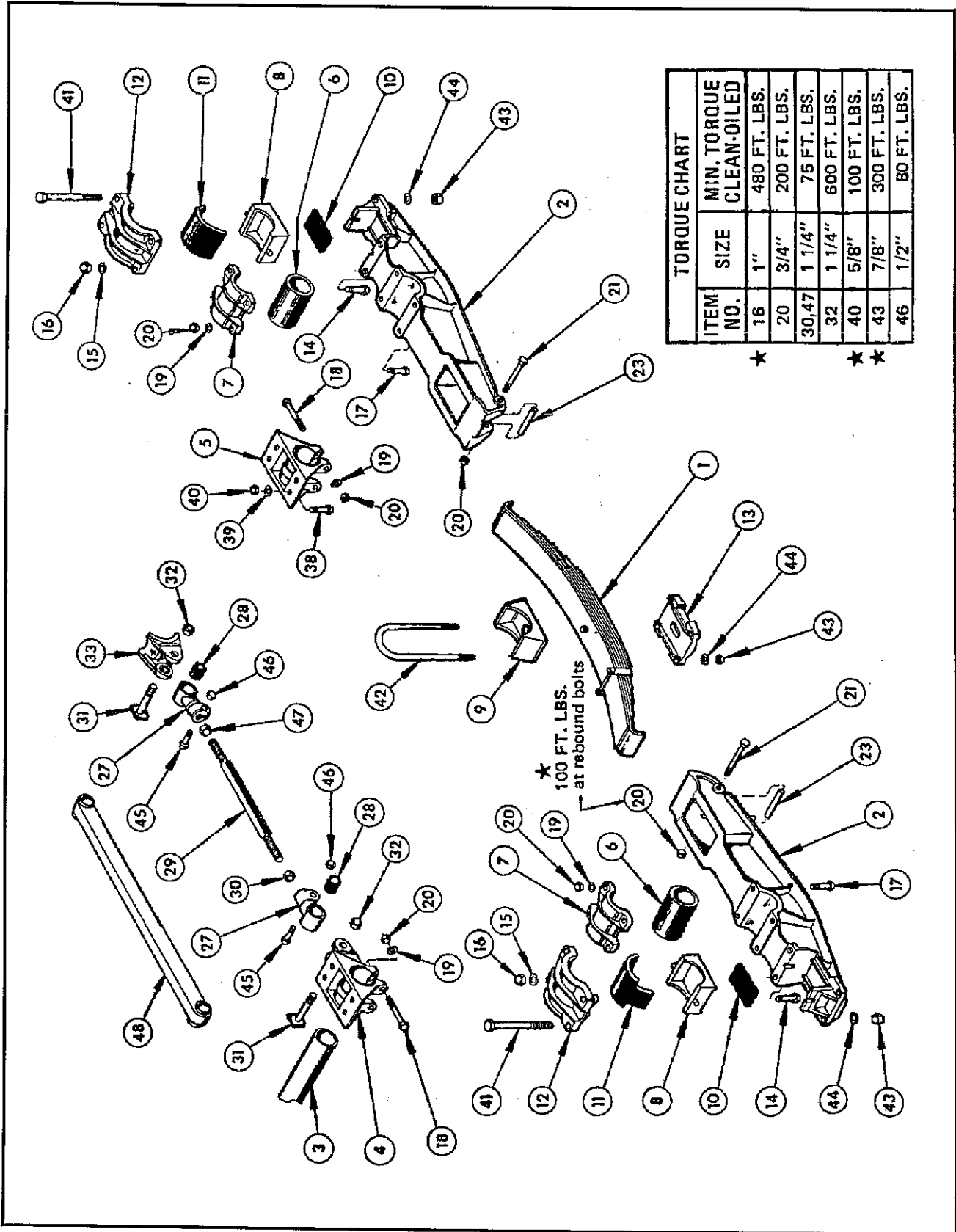


FIG. 8-19 TRI-AXLE SUSPENSION ITEMS (3-762-010458)

TRI-AXLE SUSPENSION (3-762-010458)

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	915 57 172	SPRING ASSEMBLY (8600 ONLY)	2
2	910 15 015	EQUALIZER	4
3	910 38 344	TUBE, TRUNNION (8600 ONLY)	2
4	910 01 088	CLAMP, TRUNNION (FRONT, 8600 ONLY)	2
5	910 01 066	CLAMP, TRUNNION (REAR, 8600 ONLY)	2
6	900 08 011	BUSHING, RUBBER TRUNNION	4
7	910 10 157	CAP, TRUNNION	4
8	910 01 089	ADAPTER, AXLE	4
9	910 01 075	SEAT, AXLE SPRING	2
10	910 28 089	PAD, LOWER AXLE	4
11	910 28 051	WRAPPER, RUBBER AXLE END	4
12	910 10 060	CAP, AXLE	4
13	910 10 108	CLAMP, SPRING	2
14	930 04 239	CAP SCREW, 1" X 3 1/2"	8
15	936 00 168	WASHER, FLAT	8
16	934 00 500	NUT, LOCKING	8
17	930 03 573	CAP SCREW, 3/4" X 2 1/2"	16
18	930 03 633	CAP SCREW, 3/4" X 5"	8
19	936 00 156	WASHER, FLAT	32
20	934 00 492	NUT, LOCKING	28
21	930 03 657	CAP SCREW, 3/4" X 6"	4
23	910 36 078	SPACER, PIPE	4
27	915 44 003	ROD END, RIGHT RADIUS	1
	915 44 002	ROD END, LEFT RADIUS	1
28	910 08 007	BUSHING, RUBBER	4
29	915 06 003	SCREW, RADIUS ROD	1
30	934 00 284	NUT, JAM	1
31	939 00 009	BOLT, RADIUS ROD	4
32	934 00 569	NUT, LOCKING	4
33	910 18 005	BRACKET, RADIUS ROD AXLE	2
38	930 03 345	CAP SCREW, 5/8" X 2"	16
39	939 00 025	WASHER, FLAT	16
40	934 00 488	NUT, LOCKING	16
41	930 03 935	CAP SCREW, 7/8" X 8 3/4"	8
42	900 41 169	U-BOLT, 7/8" X 11"	4
43	934 00 498	NUT, LOCKING	16
44	936 00 162	WASHER, FLAT	16
45	930 02 919	CAP SCREW, 1/2" X 2"	2
46	934 00 480	NUT, LOCKING	2
47	934 00 036	NUT, JAM	1
48	915 44 149	ROD, FIXED RADIUS	1

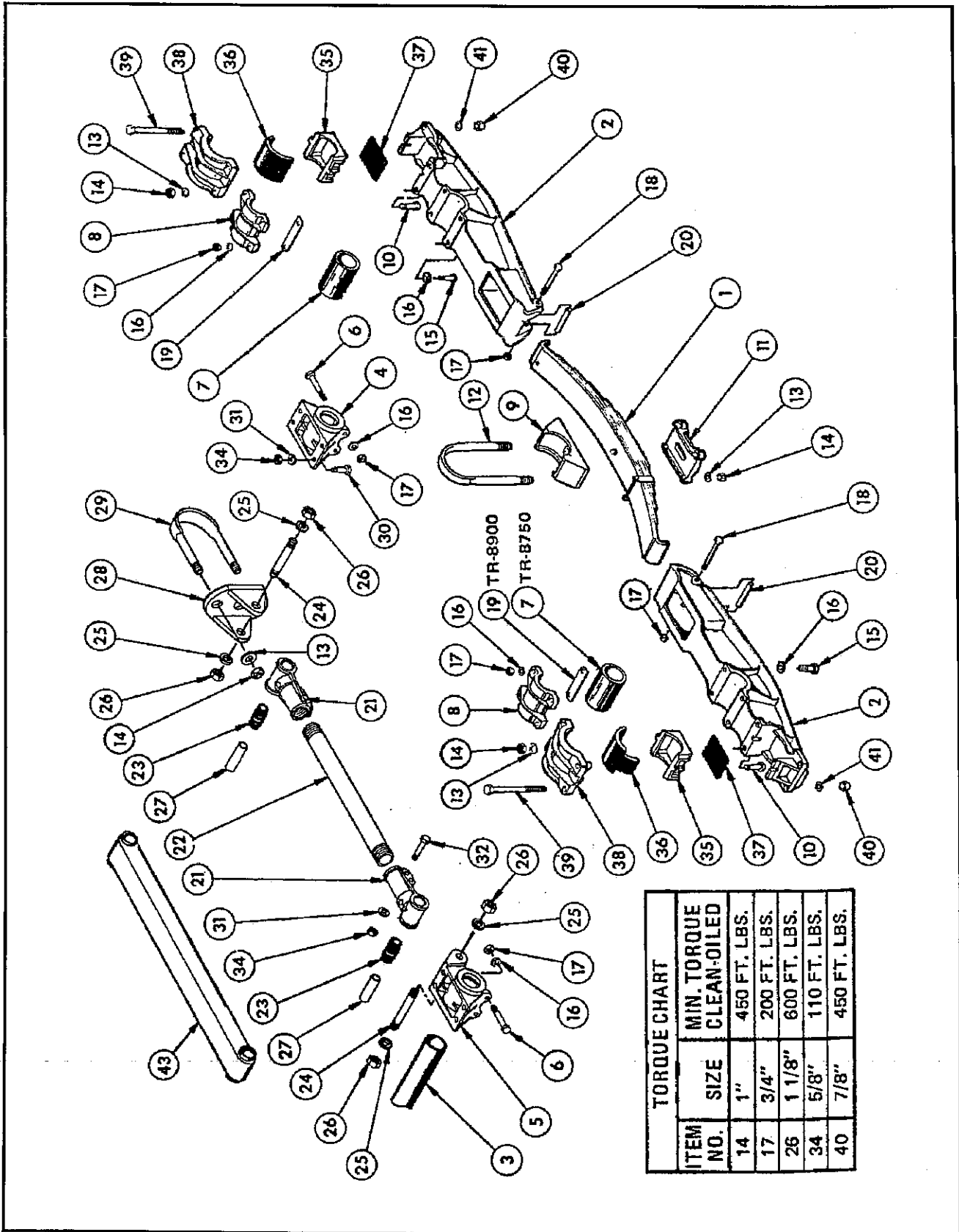


FIG. 8-20 TRI-AXLE SUSPENSION ITEMS (3-762-010459)

TRI-AXLE SUSPENSION (3-762-010459)

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	915 57 172	SPRING ASSEMBLY	2
2	910 15 015	EQUALIZER	4
3	910 38 290	TUBE, TRUNNION	2
4	915 01 011	CLAMP, TRUNNION (REAR)	2
5	915 18 040	CLAMP, TRUNNION (LEFT FRONT)	1
	915 18 041	CLAMP, TRUNNION (RIGHT FRONT)	1
6	930 03 633	CAP SCREW, 3/4" X 5"	8
7	900 08 011	BUSHING, TRUNNION	4
8	910 10 157	CAP, TRUNNION	4
9	910 01 075	SEAT, AXLE SPRING	2
10	930 04 239	CAP SCREW, 1" X 3 1/2"	8
11	910 10 108	PLATE, SPRING CLAMP	2
12	900 41 823	U-BOLT, 1"	4
13	936 00 168	WASHER, FLAT	20
14	934 00 500	NUT, LOCKING	20
15	930 03 579	CAP SCREW, 3/4" X 2 3/4"	16
16	936 00 156	WASHER, FLAT	32
17	934 00 492	NUT, LOCKING	28
18	930 03 657	CAP SCREW, 3/4" X 6"	4
20	910 36 078	SPACER, PIPE	4
21	915 44 138	ROD END, RADIUS (RIGHT HAND)	1
22	915 44 137	ROD END, RADIUS (LEFT HAND)	1
23	910 38 475	SCREW, RADIUS ROD	1
23	900 08 002	BUSHING, RUBBER	4
24	932 00 945	BOLT, ROD 1 1/8" X 9 1/4"	4
25	936 00 174	WASHER, FLAT	8
26	934 00 504	NUT, LOCKING	4
27	900 38 083	LINER, DELRIN	4
28	910 18 039	BRACKET, RADIUS ROD AXLE	2
29	900 41 807	U-BOLT, 1"	2
30	930 03 345	CAP SCREW, 5/8" X 2"	16
31	939 00 025	WASHER, FLAT	20
32	930 03 375	CAP SCREW, 5/8" X 3 1/4"	4
34	934 00 488	NUT, LOCKING	20
35	910 01 089	ADAPTER, AXLE	4
36	910 28 051	WRAPPER, RUBBER AXLE	4
37	910 28 089	PAD, RUBBER WEAR	4
38	910 10 060	CAP, AXLE	4
39	930 03 941	CAP SCREW, 7/8" X 8 3/4"	8
40	934 00 498	NUT, LOCKING	8
41	936 00 162	WASHER, FLAT	8
43	915 44 147	ROD, RADIUS FIXED	1

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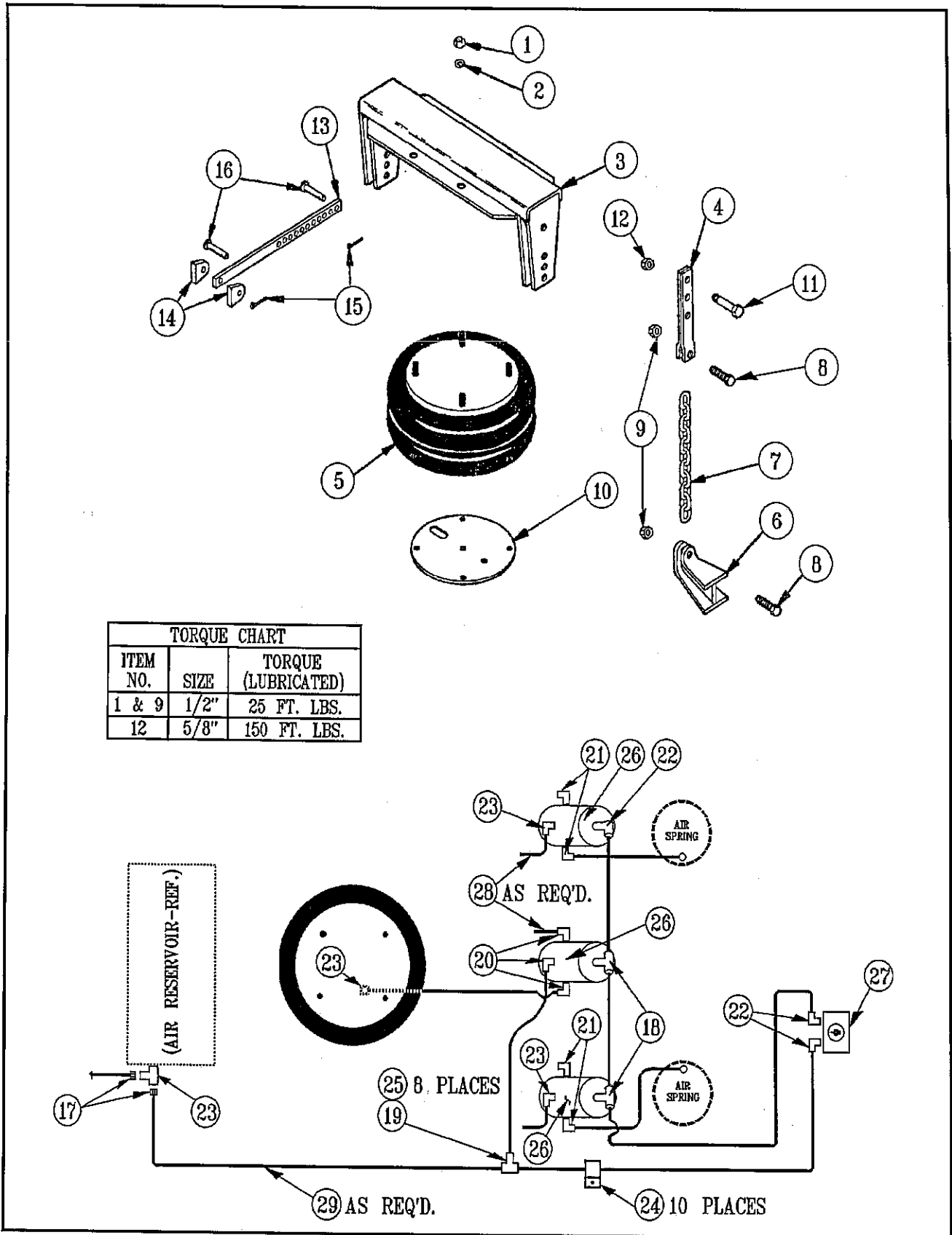


FIG. 8-21 AXLE LIFT ASSEMBLY ITEMS

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AXLE LIFT ASSEMBLY

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	934 00 136	NUT, HEX	8
2	936 00 072	WASHER, LOCKING	8
3	905 01 083	LIFT ASSEMBLY, AIR SPRING YOKE	1
4	900 18 218	HALF, YOKE	4
5	905 57 001	SPRING, AIR	1
6	905 18 201	BRACKET ASSEMBLY	2
7	900 44 111	CHAIN, HIGH TEST 3/8"	2
8	939 00 031	BOLT	4
9	934 00 543	NUT, LOCKING	4
10	900 31 027	PLATE, AIR SPRING MOUNTING	1
11	939 00 039	CAP SCREW, HEX HEAD	2
12	934 00 551	NUT, LOCKING	2
13	9090 06 283	LINK, CONTROL	2
14	900 31 007	BRACKET, STABILIZER END	4
15	938 00 001	PIN, COTTER	4
16	900 44 164	PIN, YOKE	4
17	61084	TEE, FEMALE	1
18	HO 172-4X2	TEE, THREADED	2
19	1464X4	TEE, UNION	1
20	1469-4X4	ELBOW, 90° MALE	3
21	1469X6	ELBOW, 90° MALE	4
22	HO-169-4X2	ELBOW, 90° MALE	2
23	HO-168-4X4	CONNECTOR, MALE	5
24	16-900	CLIP, CONDUIT	10
25	HO 159-4	INSERT	8
26	900 54 079	VALVE, PILOT	3
27	900 54 088	VALVE, MANUAL	1
28	62P4	TUBE, 1/4" AIR	A/R
29	62P6	TUBE, 3/8" AIR	A/R

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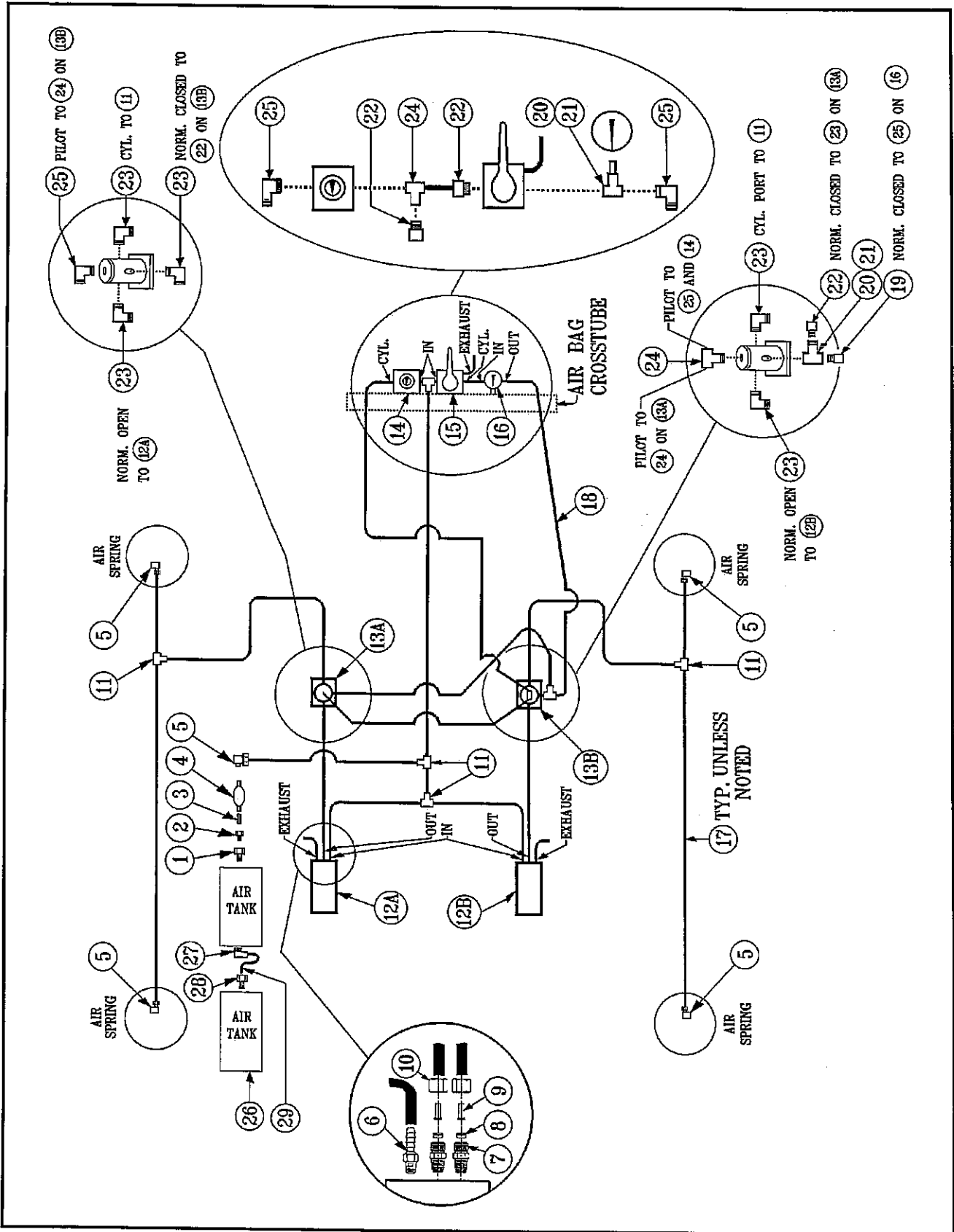


FIG.8-22 AIR SUSPENSION PLUMBING AND CONTROLS

AIR SUSPENSION PLUMBING AND CONTROLS

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	1/2X3/8BUSH	BUSHING	1
2	3/8X1/4BUSH	BUSHING	1
3	1/4NIPPLE	NIPPLE	1
4	90554107	VALVE, PRESSURE PROTECTION	1
	SRK-143	FILTER, PRESSURE PROTECTION	1
5	900154172	FITTING	5,7
6	93800139	FITTING, EXHAUST TUBE	2
7	90554059	FITTING	4
8	93800062	INSERT	4
9	93800014	NIPPLE	4
10	93800140	FITTING	4
11	1464X4	TEE, AIR LINE	4,6
12	900 54 113	VALVE, AUTOMATIC HEIGHT CONTROL	2
13	900 54 079	VALVE, PILOT	2
14	900 54 088	VALVE, MANUAL HEIGHT CONTROL	1
15	900 54 082	VALVE, HAND	1
16	900 54 280	GAUGE, AIR PRESSURE	1
17	62P4	TUBING, 1/4 IN. AIR	A/R
18	62P6	TUBING, 3/8 IN. AIR	A/R
19	HO168 6X4	CONNECTOR, MALE	1
20	61D-B-4	TEE	3
21	61F-B-4	NIPPLE	3
22	HO168 4X4	CONNECTOR, MALE	3
23	1469 4X4	ELBOW, 90° MALE	5
24	HO172-4X2	TEE, THREADED	2
25	1469X6	ELBOW, 90° MALE	1
26	3-780-010002	RESERVOIR, AIR	1,2
27	1469X8X8	ELBOW, 90° (FOR TRI-AXLE ONLY)	1
28	HO168 8X8	CONNECTOR, MALE (FOR TRI-AXLE ONLY)	1
29	62P8	TUBING, 1/2 IN. AIR (FOR TRI-AXLE ONLY)	A/R

*WHERE TWO QUANTITIES ARE LISTED WITH A COMMA, THE SECOND QUANTITY IS FOR A TRI-AXLE SYSTEM

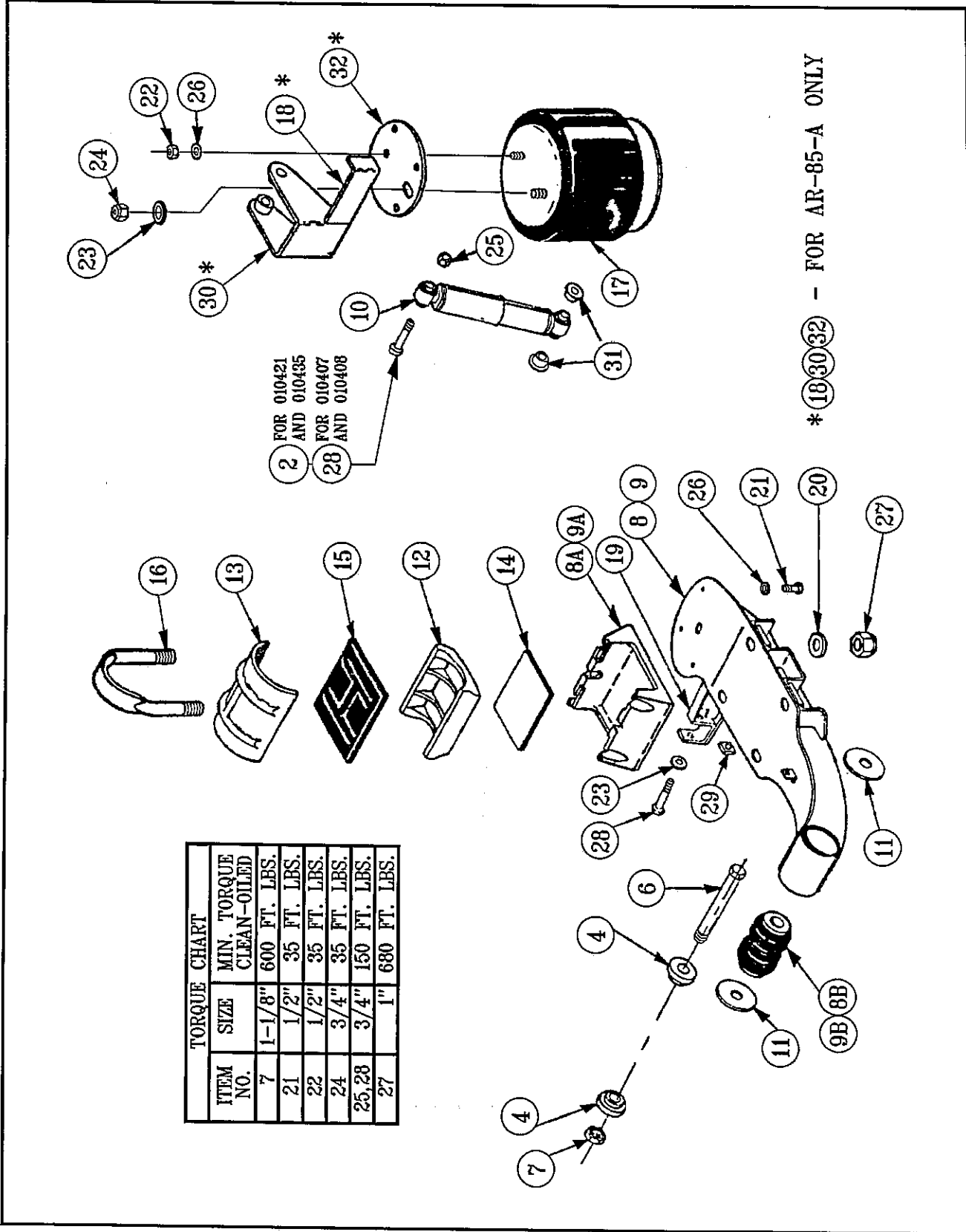


FIG. 8-23 AIR RIDE SUSPENSION ITEMS

AIR RIDE SUSPENSION (3-762-010407 & 3-762-010408)

ITEM NO.	PART NO.	DESCRIPTION	QTY.
4	900 08 141	BUSHING, ALIGNMENT	4
6	932 01 046	CAP SCREW, 1-1/8"	2
7	934 00 506	NUT, LOCKING	2
8	905 15 857	EQUALIZER, LEFT HAND	1
8A	900 08 141	SEAT, AXLE BEAM	1
8B	900 08 139	BUSHING, RUBBER	1
9	905 15 858	EQUALIZER, RIGHT HAND	1
9A	900 01 006	SEAT, AXLE BEAM	1
9B	900 08 139	BUSHING, RUBBER	1
10	900 44 626	SHOCK ABSORBER	2
11	900 36 140	WASHER, SPACER	4
12	900 01 082	ADAPTER, AXLE	2
13	900 10 032	CAP, AXLE	2
14	900 28 043	PAD, RUBBER WEAR	2
15	900 28 047	WRAPPER, RUBBER AXLE	2
16	900 41 878	U-BOLT, AXLE	4
17	905 57 075	SPRING ASSEMBLY, AIR	2
19	905 19 425	BRACKET, LOWER SHOCK MOUNT	2
20	939 00 027	WASHER, FLAT	8
21	930 02 893	CAP SCREW, 1/2" X 1"	6
22	934 00 136	NUT, HEX	2
23	936 00 077	WASHER, LOCKING	4
24	934 00 149	NUT, HEX	2
25	934 00 492	NUT, LOCKING	2
26	936 00 072	WASHER, LOCKING	8
27	934 00 502	NUT, LOCKING	8
28	930 03 597	CAP SCREW, 3/4" X 3-1/2"	4
29	934 00 367	NUT, SQUARE	2
31	905 08 004	BUSHING, REPLACEMENT	8

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AIR RIDE SUSPENSION (3-762-010421 & 010435)

ITEM NO.	PART NO.	DESCRIPTION	QTY.
2	930 03 633	CAP SCREW, 3/4" X 5"	2
4	900 08 147	BUSHING, ALIGNMENT	4
6	932 01 046	CAP SCREW, 1-1/16" X 9-1/4"	2
7	939 00 165	NUT, SMART ASSEMBLY	2
8	905 16 195	EQUALIZER, LEFT HAND	1
8A	900 01 006	SEAT, AXLE BEAM	1
8B	900 08 102	BUSHING, RUBBER	1
9	905 16 196	EQUALIZER, RIGHT HAND	1
9A	900 01 006	SEAT, AXLE BEAM	1
9B	900 08 102	BUSHING, RUBBER	1
10	900 44 625	SHOCK ABSORBER	2
11	900 36 140	WASHER, SPACER	4
12	900 01 082	ADAPTER, AXLE	2
13	900 10 032	CAP, AXLE	2
14	900 28 075	PAD, STEEL AND RUBBER WEAR	2
15	900 28 047	WRAPPER, RUBBER AXLE	2
16	900 41 878	U-BOLT, AXLE	4
17	905 57 019	SPRING ASSEMBLY, AIR	2
18	905 31 315	BRACKET, AIR SPRING AND SHOCK MOUNTING (LEFT HAND)	1
	905 31 316	BRACKET, AIR SPRING AND SHOCK MOUNTING (RIGHT HAND)	1
19	905 19 809	BRACKET, LOWER SHOCK MOUNTING	2
20	939 00 027	WASHER, FLAT	8
21	930 02 893	CAP SCREW, 1/2" X 1"	6
22	934 00 136	NUT, HEX	2
23	936 00 077	WASHER, LOCKING	4
24	934 00 149	NUT, HEX	2
25	934 00 492	NUT, LOCKING	2
26	936 00 072	WASHER, LOCKING	8
27	934 00 502	NUT, LOCKING	8
28	930 03 597	CAP SCREW, 3/4" X 3-1/2"	2
29	934 00 367	NUT, SQUARE	2
30	905 19 810	BRACKET, UPPER SHOCK MOUNTING	2
31	905 08 004	BUSHING, REPLACEMENT	8
32	900 31 027	PLATE, AIR SPRING MOUNTING	2

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DECALS

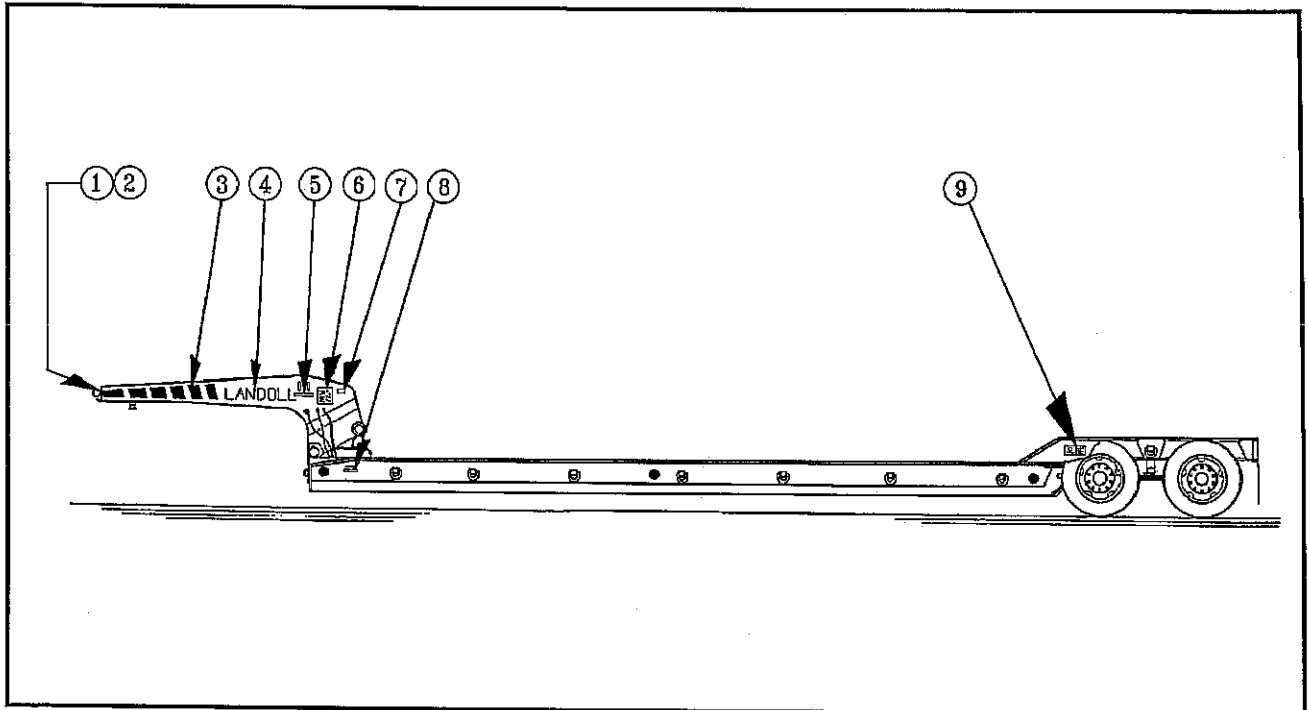


FIG. 8-24 DECAL PLACEMENT

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	1-573-010082	DECAL, PATENT PENDING	1
2	NONREPLACABLE	PLACARD, SERIAL NUMBER	1
3*	3-573-010044	DECAL, LEFT, BLACK STRIPE	1
	3-573-010045	DECAL, RIGHT, BLACK STRIPE	1
	3-573-010046	DECAL, LEFT, WHITE STRIPE	1
	3-573-010047	DECAL, RIGHT, WHITE STRIPE	1
4*	3-573-010048	DECAL, LANDOLL BLACK	2
	3-573-010049	DECAL, LANDOLL WHITE	2
5*	3-573-010122	DECAL, HYDRAULIC CONTROL, BLACK	1
	3-573-010125	DECAL, HYDRAULIC CONTROL, WHITE	1
6*	3-573-010121	DECAL, OPERATION, BLACK	1
	3-573-010126	DECAL, OPERATION, WHITE	1
7	3-573-010060	DECAL, PARTS AND SERVICE PHONE NUMBERS	1
8	3-573-010124	DECAL, GOOSENECK LATCH RELEASE	1
9	3-573-0F10080	DECAL, TORQUE REQUIREMENTS	1

* WHITE IS FOR DARK COLORED SEMITRAILERS, BLACK IS FOR LIGHT COLORED SEMITRAILERS.

K-21 AXLE (3-042-010015 & 010017)

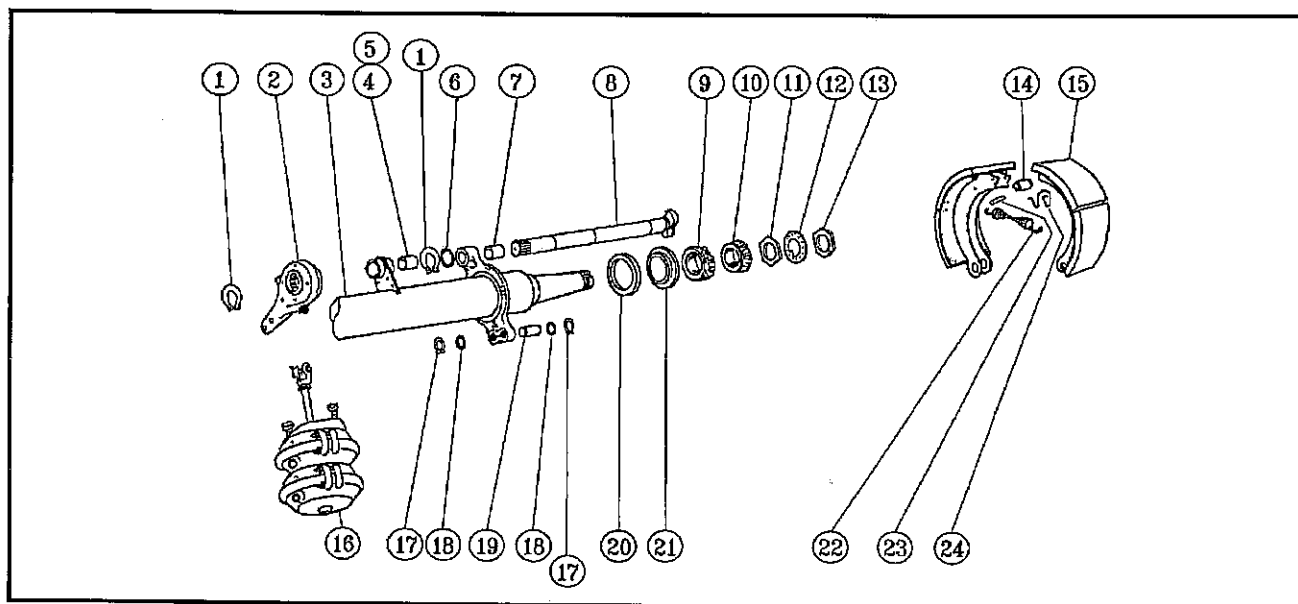


FIG. 8-25 K-21 AXLE ASSEMBLY (3-042-010015 & 010017)

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	38038	RING, SNAP	4
2	M12WR101	SLACK ADJUSTERS (FOR AIR BRAKES)	2
	3-762-010476	SLACK ADJUSTERS (FOR SPRING BRAKES)	2
3	K21TA100 27X	AXLE (72 -1/2" TRACK)	1
	K21TA100 33X	AXLE (76 TRACK)	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	M10HB104	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. 8-7 THRU 8-10)	REF.
17	31624	RING, SNAP	4
18	M10HN135	WASHER, FLAT	4
19	M10HP102	PIN, ANCHOR	4
20	M10HS102	RING, OIL	2
21	M10HH101	SEAL, OIL	2
22	M16WJ100	SPRING, BRAKE RETURN	2
23	M16WJ102	PIN, RETURN SPRING	4
24	M16WJ103	SPRING, BRAKE ROLLER	4

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K-22 AXLE (3-042-010029 & 010031)

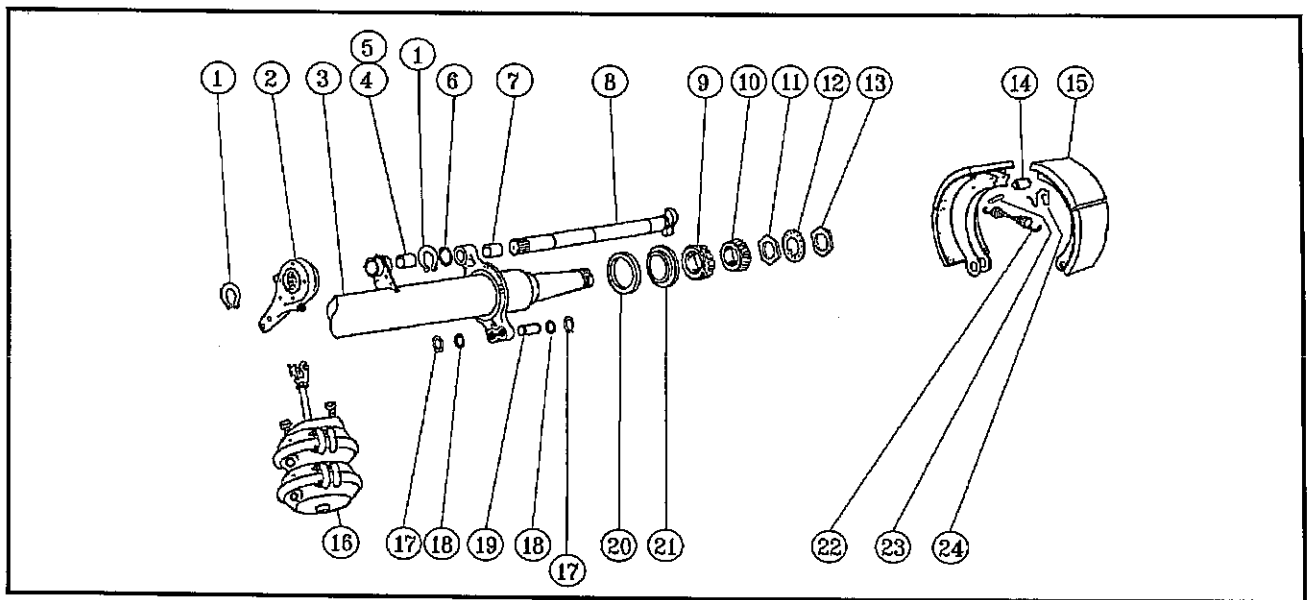


FIG. 8-26 K-22 AXLE ASSEMBLY (3-042-010029 & 010031)

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	38038	RING, SNAP	4
2	M12WR101	SLACK ADJUSTERS (FOR AIR BRAKES)	2
	3-762-010476	SLACK ADJUSTERS (FOR SPRING BRAKES)	2
3	K22TA112 53X	AXLE (72 -1/2" TRACK)	1
	K22TA100 37X	AXLE (76 TRACK)	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. 8-7 THRU 8-10)	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

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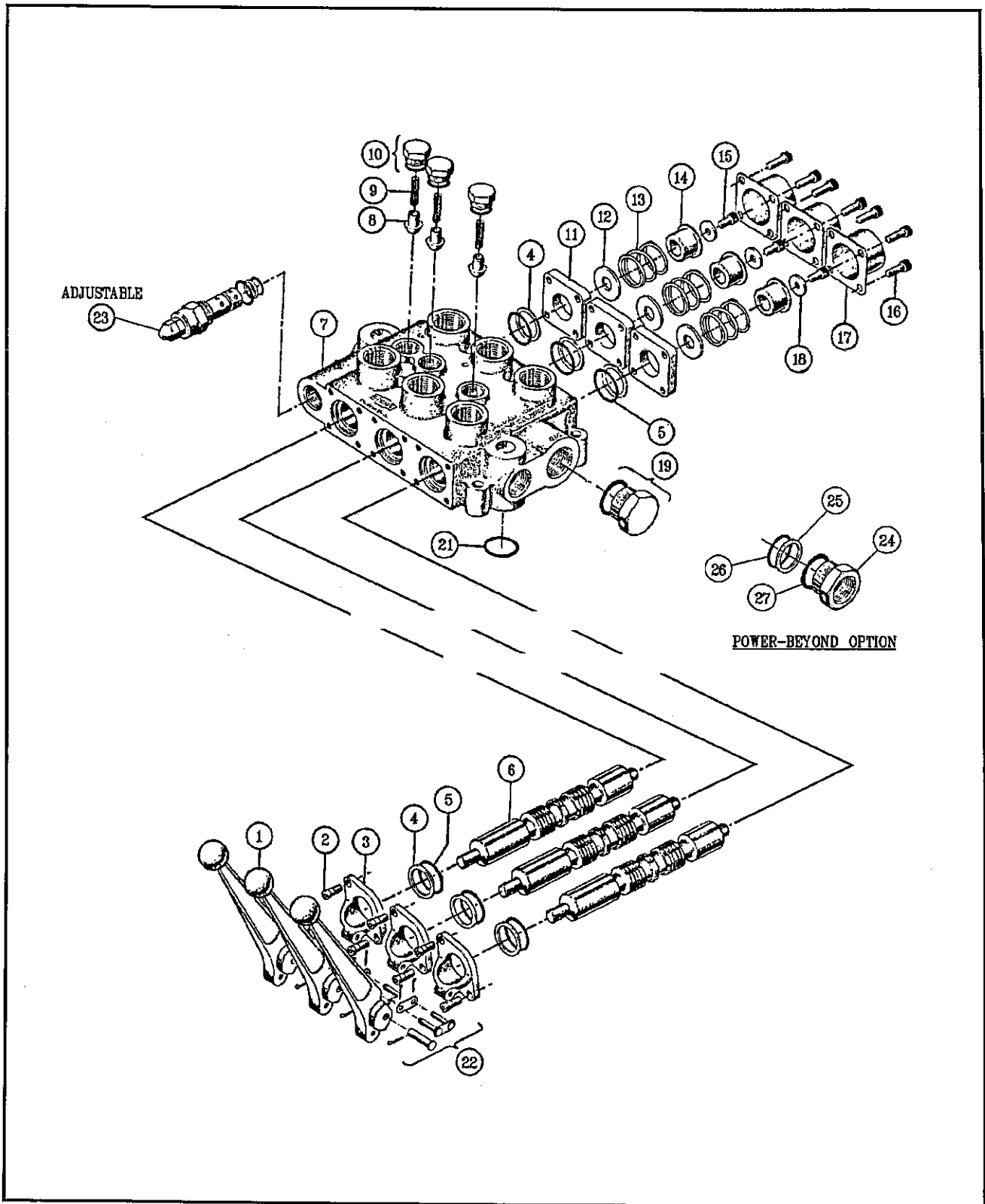


FIG. 8-27 3-SPOOL VALVE ITEMS

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3-SPOOL VALVE ITEMS (3-846-010008)

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3-360-010008	HANDLE	3
2	2A0079-404	SCREW, MACHINE	6
3	4Z4306	BRACKET, HANDLE	3
4	1A0711	WASHER, O-RING SPOOL	6
5	2A0283-7214	SEAL, SPOOL	6
6	1V0096	SPOOL, 3-WAY	3
7	1V0351	HOUSING, VALVE	1
8	1V0081	POPPET, LOAD CHECK	3
9	1A0757	SPRING, LOAD CHECK	3
10	1V1725	PLUG ASSEMBLY, LOAD CHECK	3
11	1A0709	SPACER, END	3
12	1A0291	WASHER, STOP	3
13	1A9008	SPRING, HEAVY CENTERING (OPT.)	3
	1A0744	SPRING, STANDARD CENTERING (OPT.)	3
	1A9332	SPRING, LIGHT CENTERING (OPT.)	3
14	1A0292	COLLAR, STOP	3
15	2A0079-404	SCREW, MACHINE	3
16	2A0079-406	SCREW, MACHINE	12
17	1A0294	CAP, END	3
18	1A0290	WASHER, CENTERING SPRING	3
19	2A0354-121	PLUG ASSEMBLY, CONVERSION	1
21	2A0283-7214	GROMMET, RUBBER OUTLET	1
22	1V1701	PIN KIT	3
23	1R0017	CARTRIDGE, RELIEF	1
24	1V0075	SLEEVE, POWER BEYOND	1
25	2A0007-022	O-RING, BACK-UP	1
26	2A0283-9022	O-RING	1
27	2A0283-9916	O-RING, PLUG	1

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LIFT ARM CYLINDER ITEMS (1-242-010048)

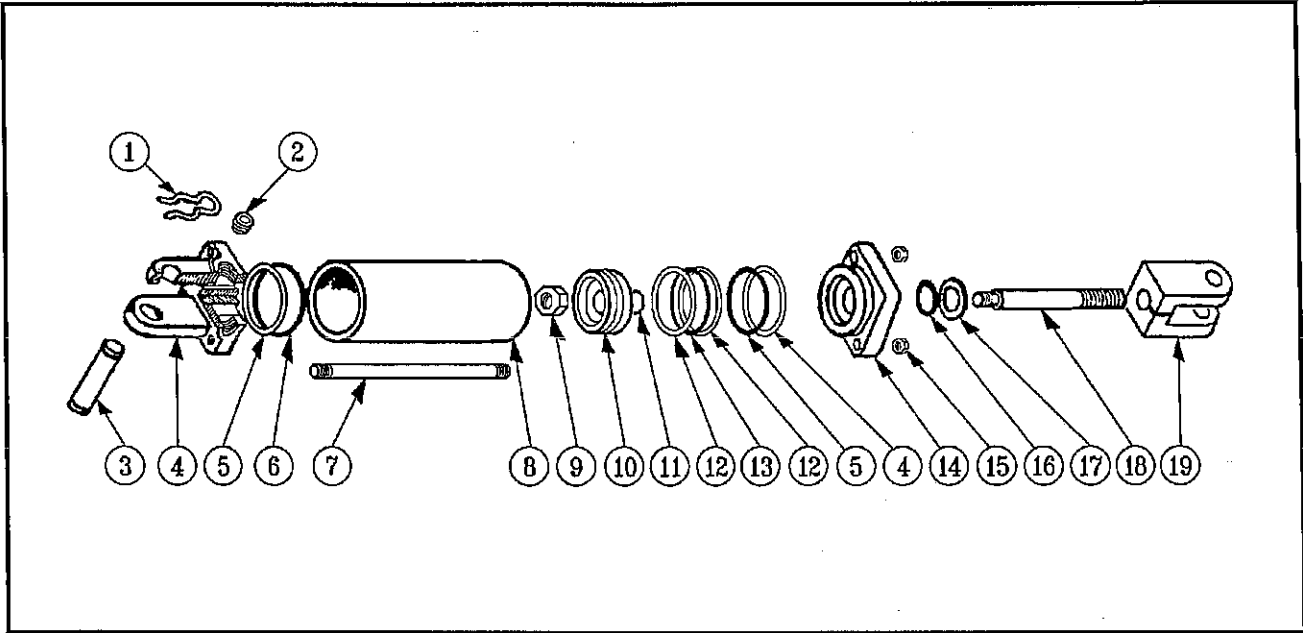


FIG. 8-28 LIFT ARM CYLINDER ITEMS

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	190400002	CLIP, HAIRPIN	2
2	200300040	PLUG, STEEL WITH O-RING	1
3	190400004	PIN, CLEVIS	1
4	141900037	GLAND, ANCHOR	1
5	240005240	WASHER, BACKUP	2
6	240000329	O-RING	2
7	170301153	ROD, TIE	4
8	051900009	TUBE	1
9	220000210	NUT, LOCKING PISTON ROD	1
10	071900006	PISTON	1
11	240000022	O-RING	1
12	240005342	WASHER, BACKUP	2
13	2400003342	O-RING	1
14	081900231	GLAND, ROD	1
15	9/16 UNSC	NUT, TIE ROD	8
16	240020059	SEAL, U-CUP	1
17	250001222	SEAL, WIPER	1
18	100000043	CLEVIS ASSEMBLY	1
	1-242-010004	SEAL KIT, REPLACEMENT	1

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LOAD BLOCKS CYLINDER (238-2526)

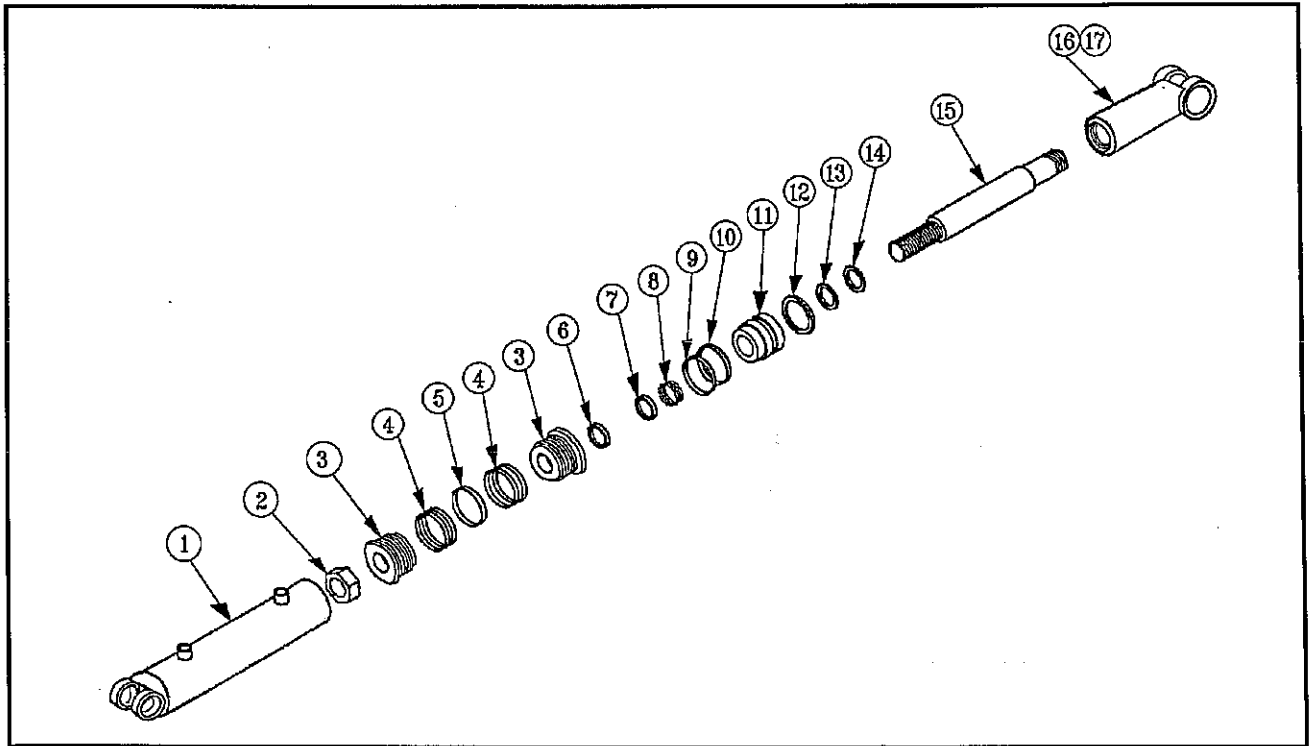


FIG. 8-29 LOAD BLOCKS CYLINDER ITEMS (238-2526)

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	1406029	BARREL ASSEMBLY, END CAP AND	1
2	5067005	NUT, LOCKING	1
3	1328060	PISTON	2
4	1327785	PACKING SET	2
5	1328062	RING, WEAR	1
6	5009112	O-RING	1
7	5082021	RING, SNAP	1
8	1327782	PACKING SET	1
9	5009218	O-RING	1
10	5037218	BACKUP	1
11	1405872	GLAND	1
12	5082225	RING, SNAP	1
13	1327815	WIPER, ROD	1
14	5082016	RING, SNAP	1
15	1407433	ROD, PISTON	1
16	1328061	CLEVIS	1
17	1327803	CLIP ASSEMBLY, PIN AND (NOT SHOWN)	1
	1407426	SERVICE KIT	1

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TRAILER LIFT CYLINDERS (2-242-010084, 3-242-010096, AND 3-242-010097

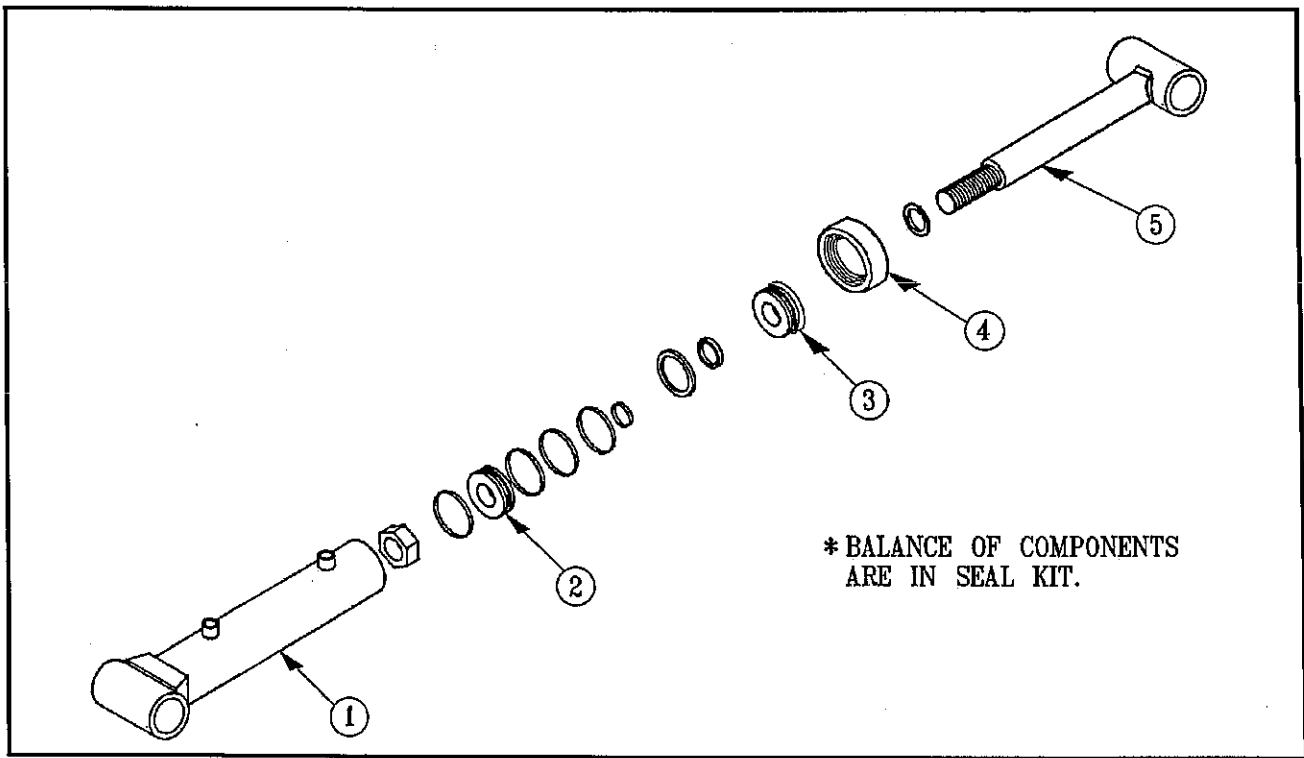


FIG. 8-30 TRAILER LIFT CYLINDER ITEMS

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	1897-A1	TUBE ASSEMBLY (2-242-010084)	1
	1789-A1	TUBE ASSEMBLY (3-242-010096)	1
	2331-A1	TUBE ASSEMBLY (3-242-010097)	1
2	1897-C1	PISTON (2-242-010084)	1
	1789-C1	PISTON (3-242-010096)	1
	2331-C1	PISTON (3-242-010097)	1
3	1897-D1	GLAND, ROD (2-242-010084)	1
	1789-D1	GLAND, ROD (3-242-010096)	1
	2331-D1	GLAND, ROD (3-242-010097)	1
4	1897-E1	CAP, HEAD (2-242-010084)	1
	1789-E1	CAP, HEAD (3-242-010096)	1
	2331-E1	CAP, HEAD (3-242-010097)	1
5	1897-A1	TUBE ASSEMBLY (2-242-010084)	1
	1789-A1	TUBE ASSEMBLY (3-242-010096)	1
	2331-A1	TUBE ASSEMBLY (3-242-010097)	1
	SK 1897	SEAL KIT (2-242-010084)	1
	SK 1789	SEAL KIT (3-242-010096)	1
	SK 2331	SEAL KIT (3-242-010097)	1

WET KIT ITEMS

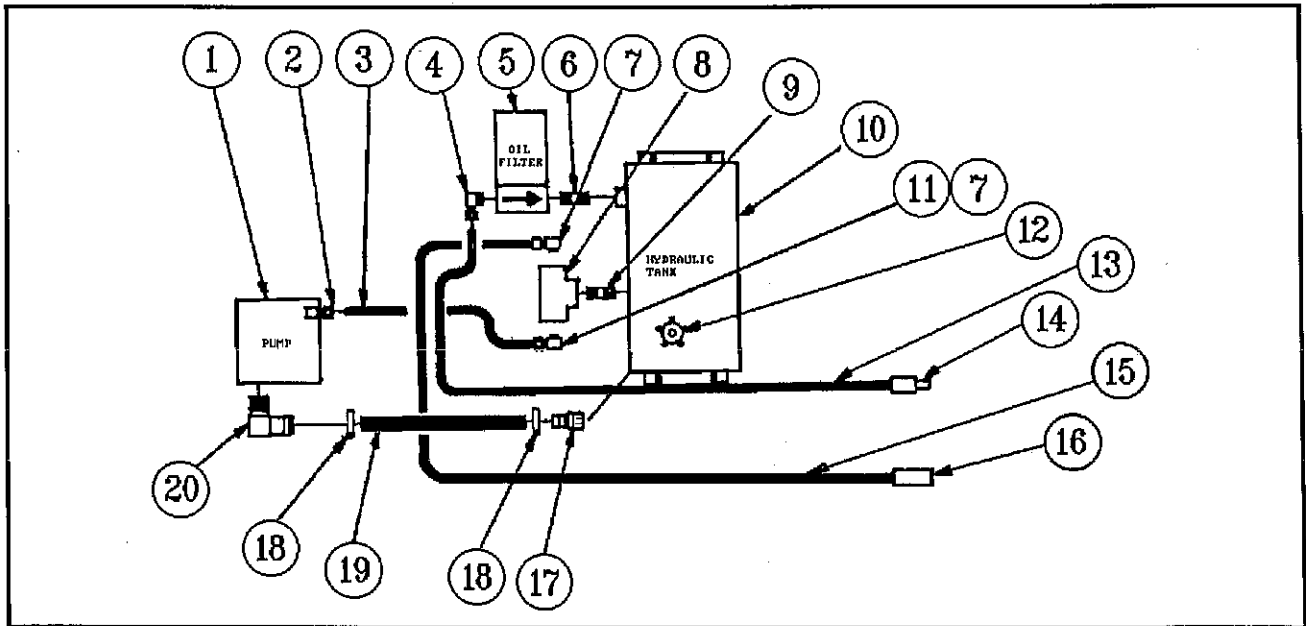


FIG. 8-31 WET KIT ITEMS

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3-591-010001	PUMP, HYDRAULIC	1
2	1-007-010009	FITTING	1
3	6-397-010005	HOSE ASSEMBLY	1
4	2047-12-12S	FITTING, 90°	1
5	1-295-010001	FILTER ASSEMBLY, AND BASE	1
	1-295-010002	FILTER, HYDRAULIC	1
6	1-1/4X2	NIPPLE	1
7	1-007-010013	FITTING, 90°	2
8	125130	VALVE, PRESSURE RELIEF	1
	1R0017-10200	CARTRIDGE, REPLACEMENT	1
9	3/4NIPPLE	NIPPLE	1
10	3-786-010005	RESERVOIR	1
	1-1/4 PIPE PLUG	PLUG	1
	805-2	MOUNTS, CUSHION	8
	3-120-010103	PLATE, CLAMP	2
11	2047-8-8S	FITTING, 90°	1
12	3-162-010001	FILLER ASSEMBLY, BREATHER, STRAINER AND	1
13	1-397-010075	HOSE ASSEMBLY	1
14	S21F-6	COUPLER, MALE	1
15	3-397-010011	HOSE ASSEMBLY	1
16	4050-4	COUPLER, FEMALE	1
17	3-561-010001	ADAPTER	1
18	6828	CLAMP, HOSE	2
19	3-399-010001048	HOSE, PUMP SUCTION	1
20	1-007-010006	FITTING, 90°	1

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WET KIT HYDRAULIC PUMP (3-591-010001)

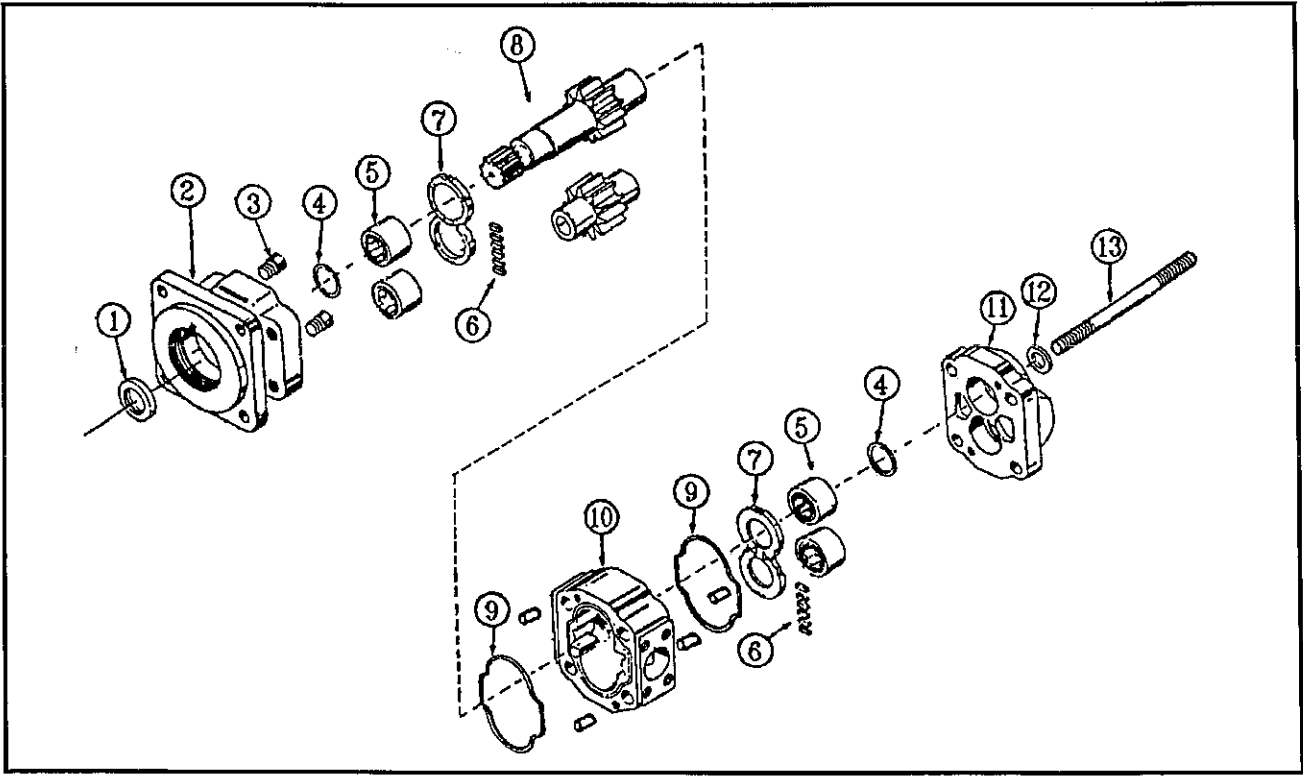


FIG. 8-32 HYDRAULIC PUMP ITEMS (3-591-010001)

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	X73-37-16	SEAL, SHAFT	1
2	EB 1685-3	COVER, SHAFT END	1
3	M 1391-K	CHECK	2
4	LB 1669-1	SEAL, RING	2
5	Y 1032	BEARING, ROLLER	4
6	BA 3026-2	STRIP, POCKET SEAL	1
7	AA 1058	PLATE, THRUST	2
8	BD 1135M-3-17	GEAR SET, SHAFT AND	1
9	UB 3006-242	GASKET, HOUSING	2
10	RA 1688-17-64	HOUSING	1
11	XA 1603	PORT END	1
12	X 144-3	WASHER	1
13	X2-25	STUD	1

MISCELLANEOUS OPTIONAL ITEMS

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	B3-619-026	RAMP, APPROACH	2
	3-619-010134	WELDMENT, APPROACH RAMP	2
	3-557-010172	PIN, RAMP TO MOUNT	1
	1/4X2-1/2	PIN, COTTER	2
	3-744-010009	STRAP, RUBBER TIE-DOWN	2
	5/16-18X1-1/2EB	BOLT, EYE	2
2	B3-311-360	AXLE, FLIP	REF.
	3-311-013998	WELDMENT, AXLE	1
	REFERENCE*	AXLE (SEE PARTS LISTING)	1
	REFERENCE*	SUSPENSION (SEE PARTS LISTING)	1
	REFERENCE*	WHEEL AND TIRE ASSEMBLY (SEE PARTS LISTING)	4
	REFERENCE*	HUB AND DRUM ASEMBLY (SEE PARTS LISTING)	2
	REFERENCE*	ELECTRICAL SYSTEM (SEE PARTS LISTING)	1
	REFERENCE*	AIR SYSTEM (SEE PARTS LISTING)	1
3	B3-292-001	FENDERS, GOOSENECK	2
4	B3-872-001	COVERS, WHEEL (FOR 324 MODELS)	A/R
5	B3-872-002	COVERS, WHEEL (FOR 325 MODELS)	A/R
6	B3-311-369	MOUNT, SPARE TIRE (DISC WHEEL)	1
7	167-0022	OUTRIGGERS, SWING-OUT	A/R
	3-187-010001	CLIP, OUTRIGGER STAY	A/R
	3-720-010024	SPRING, CLIP	A/R
8	B3-407-003	WET KIT (SEE FIG. 8-31)	1

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WARRANTY

324/325 DETACHABLE GOOSENECK SEMITRAILER

MANUFACTURER'S GUARANTEE POLICY

LANDOLL CORPORATION WARRANTY

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, MADE BY EITHER THE DEALER OR THE MANUFACTURER ON NEW LANDOLL EQUIPMENT, EXCEPT THE MANUFACTURER'S WARRANTY AGAINST DEFECTS, MATERIAL, AND WORKMANSHIP SET OUT BELOW:

NEW EQUIPMENT WARRANTY

LANDOLL CORPORATION WARRANTS EACH NEW PRODUCT MADE BY IT TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP FOR A PERIOD OF SIX (6) MONTHS, DATING FROM DELIVERY OF SAID PRODUCT TO THE INITIAL USER. IT'S OBLIGATION AND LIABILITY UNDER THIS WARRANTY BEING LIMITED TO REPLACING FREE OF CHARGE AT IT'S FACTORY AT MARYSVILLE, KANSAS, OR ANY SUCH OTHER POINT NEARER THE INITIAL USER AS MAY BE DESIGNATED BY IT, OF ALL PARTS PROVING DEFECTIVE UNDER NORMAL USE AND SERVICE. IF ANY MATERIAL IS FOUND TO BE DEFECTIVE WITHIN THE WARRANTY PERIOD SPECIFIED ABOVE, IMMEDIATE WRITTEN NOTIFICATION OF SAID DEFECTS MUST BE MADE TO THE DEALER FROM WHOM THE EQUIPMENT WAS PURCHASED OR TO THE COMPANY. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, AND THE OBLIGATION AND LIABILITY OF LANDOLL CORPORATION UNDER THIS WARRANTY SHALL NOT INCLUDE ANY TRANSPORTATION, INSTALLATION, LABOR EXPENSES, DOWN TIME OR DIRECT OR INDIRECT OR CONSEQUENT DAMAGE OR DELAY RESULTING FROM SAID DEFECT. ANY IMPROPER USE OR APPLICATION OF THE PRODUCT OR SUBSTITUTION UPON IT OF PARTS NOT APPROVED BY IT SHALL VOID THIS WARRANTY. THIS WARRANTY COVERS ONLY THE MANUFACTURE BY LANDOLL CORPORATION. THE PRODUCTS OF ANY OTHER MANUFACTURERS ARE COVERED ONLY BY SUCH WARRANTY AS IS MADE BY THEIR MANUFACTURERS.

NO EMPLOYEE OR REPRESENTATIVE IS AUTHORIZED TO CHANGE THIS WARRANTY, VERBALLY OR IN WRITING, OR GRANT ANY OTHER WARRANTY.

LANDOLL CORPORATION, WHO'S POLICY IS ONE OF CONTINUOUS IMPROVEMENT, RESERVES THE RIGHT TO MAKE CHANGES WITHOUT OBLIGATION TO MODIFY PREVIOUSLY PRODUCED EQUIPMENT.

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