



MODEL 316/317

OPERATOR/SERVICE MANUAL

PURCHASED FROM: _____

ADDRESS: _____


PHONE: _____ DATE: ___/___/___

SERIAL NUMBER: _____



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 THE WARRANTY SHEET IS LOCATED AT THE BACK OF THIS MANUAL. THE WARRANTY SHEET MUST BE FILLED OUT AND RETURNED WITHIN 15 DAYS OF THE PURCHASE DATE OF THE SEMI-TRAILER.

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 BEGINNING THAT OPERATION. BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY OR DEATH.

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

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 ITS LOAD. FAILURE TO TAKE ADEQUATE SAFETY MEASURES DURING THESE OPERATIONS MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

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

WHEN LEAVING THE SEMITRAILER UNATTENDED, POSITION ALL HYDRAULIC CONTROLS TO THE NEUTRAL POSITION AND SHUT OFF THE HYDRAULIC PUMP.

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

WHEN SERVICING THE BRAKES, ALWAYS CHOCK WHEELS BEFORE RELEASING BRAKES. FAILURE TO CHOCK WHEELS BEFORE RELEASING BRAKES MAY ALLOW THE SEMITRAILER TO ROLL RESULTING IN SERIOUS PERSONNEL INJURY OR DEATH.

SAFETY PRECAUTIONS, CONTINUED

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

THE WINCH IS NOT DESIGNED OR INTENDED FOR USE IN THE LIFTING OR MOVING OF PERSONS! USING THE WINCH TO LIFT OR MOVE ANY PERSON MAY RESULT IN THE SERIOUS INJURY OR DEATH OF THAT PERSON.

NEVER ATTEMPT TO DISENGAGE THE WINCH CABLE SPOOL WHEN THE CABLE IS UNDER TENSION. THE LOAD MAY ROLL AWAY AT WILL. SERIOUS INJURY OR DEATH MAY RESULT TO PERSONS IN THE PATH OF THE ROLLING LOAD.

DO NOT HANDLE THE WINCH CABLE WHEN THE WINCH IS IN THE ENGAGE POSITION. HANDS, OR CLOTHING COULD GET CAUGHT IN THE CABLE AND BE PULLED INTO THE SPOOL CAUSING SERIOUS PERSONAL INJURY.

FAILURE TO LEAVE AT LEAST FIVE WINCH CABLE WRAPS ON THE WINCH CABLE SPOOL COULD ALLOW THE CABLE TO COME OFF THE SPOOL. THIS COULD RESULT IN SERIOUS PERSONAL INJURY OR DEATH TO ANYONE IN THE PATH OF THE LOOSE WINCH CABLE.

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

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



SAFETY HOT LINE

If you believe that a vehicle or item of motor vehicle equipment (such as tires, lamps, etc.) has a potential safety-related defect, you may notify the National Highway Traffic Safety Administration (NHTSA). You may either call TOLL FREE at 800-424-9393 (OR 366-0123 IN WASHINGTON, D.C.) or write: ADMINISTRATOR, NHTSA, 400 SEVENTH STREET, S.W., WASHINGTON, D.C., 20590. NHTSA investigates alleged safety-related defects and may order a recall and remedy campaign. However, NHTSA does not become directly involved in the dealings between a particular consumer and a vehicle manufacturer regarding a defect in the consumer's vehicle.

In the event of a defect or problem with your LANDOLL equipment, please notify LANDOLL CORPORATION:

**LANDOLL CORPORATION
SALES & SERVICE
1700 MAY STREET
MARYSVILLE, KANSAS 66508**

OR PHONE:

1-800-HAULLOLL

(1-800-428-5655)

FAX NO.: (913) 562-3240

FOR REPLACEMENT PARTS:

(913)562-2056

1-800-423-4320

FAX NO.: (913) 562-2099

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**

**913-562-5381
OR
1-800-HAULLOLL
(1-800-428-5655)
FAX NO. 913-562-3240**

**PARTS DISTRIBUTION CENTER
(FOR REPLACEMENT PARTS)
913-562-2056
1-800-423-4320
FAX NO. 913-562-2099**

THE LANDOLL MODEL 316 AND 317 SEMITRAILERS ARE QUALITY PRODUCTS DESIGNED TO GIVE YEARS OF TROUBLE-FREE PERFORMANCE. IF YOU WILL UTILIZE THE INFORMATION CONTAINED IN EACH SECTION OF THIS MANUAL, YOUR EQUIPMENT WILL PERFORM AS DESIGNED FOR YOU AND YOUR BUSINESS.

NOTES:

2 TERMINOLOGY

The figures in this section list terms which are used for the Model 316 and 317 Semi-trailers throughout this manual. Knowledge of these terms will make the study of this manual easier.

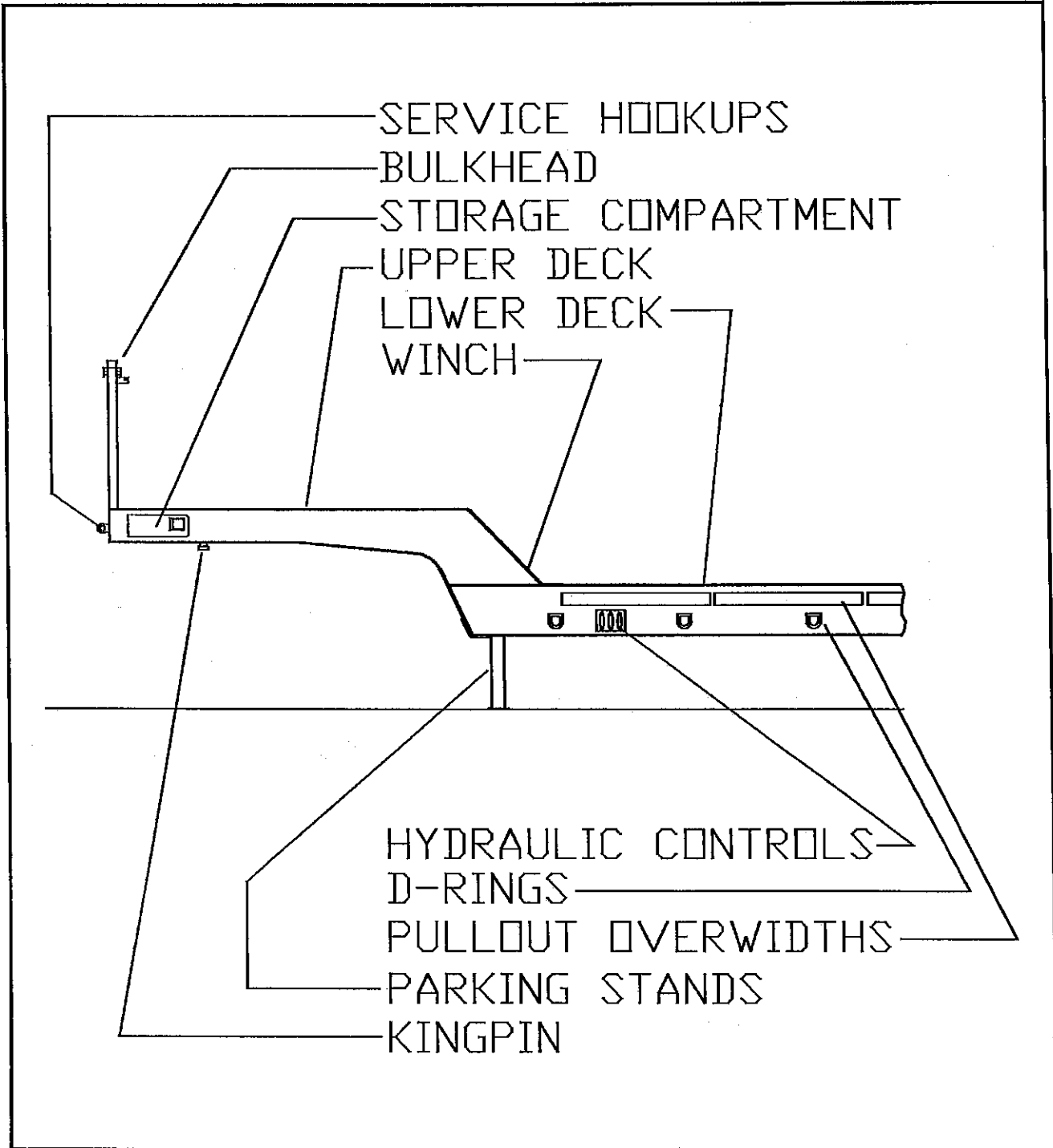


FIG. 2-1 FRONT OF TRAILER TERMINOLOGY

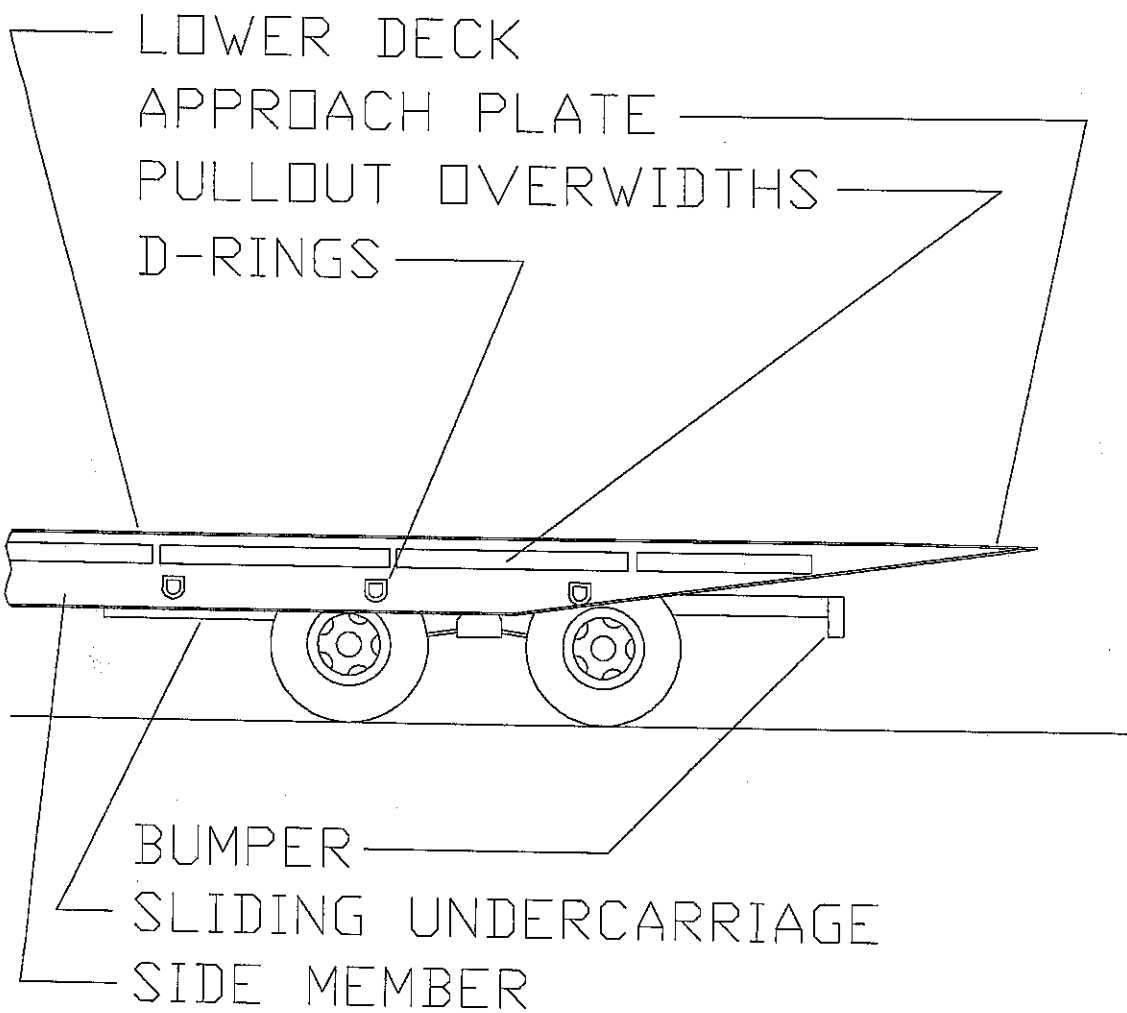


FIG. 2-2 TRUNNION TERMINOLOGY

3 STANDARD SPECIFICATIONS

***CAPACITY:**

MODEL 316:	60,000 LB. DISTRIBUTED, 30,000 CONCENTRATED IN 10'
MODEL 317:	60,000 LB. DISTRIBUTED, 40,000 CONCENTRATED IN 10'
MODEL 317FL:	60,000 LB. DISTRIBUTED, 50,000 CONCENTRATED IN 10'
MODEL 317-3-80:	80,000 LB. DISTRIBUTED, 70,000 CONCENTRATED IN 10'

*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 (317/316): HYDRAULIC TILT

KING PIN SETTING (316/317): 30"

HYDRAULIC TRAVELING AXLE:

MODEL 317:	10'-6"
MODEL 317FL:	14'-0"
MODEL 317-3-80:	14'-0"
MODEL 316:	10'-6"
MODEL 316 (LOW-LOAD)	14'-0"

GROUND LOAD ANGLE:

MODEL 317:	11 DEGREE
MODEL 317FL:	8-1/2 DEGREE
MODEL 317-3-80:	8-1/2 DEGREE
MODEL 316:	11 DEGREE

SPECIFIC BOLT TORQUES - 316/317

AIR RIDE SUSPENSION:

EQUALIZER BEAM PIVOT BOLT:	600 FT.-LBS.
SHOCK ABSORBER MOUNTING	150 FT.-LBS.
AXLE CLAMP U-BOLTS**	680 FT.-LBS.
AIR SPRING MOUNTING: 1/2"	25 FT.-LBS.
3/4"	50 FT.-LBS.

FOUR SPRING SUSPENSION:

AXLE CLAMP U-BOLTS**	300 FT.-LBS.
EQUALIZER BEAM PIVOT BOLT	480-500 FT.-LBS.
TORQUE ARM BOLT	250 FT.-LBS.
TORQUE ARM CLAMP NUTS	60 FT.-LBS.

ALL MODELS - WHEEL FASTENERS:

OUTER SPINDLE NUTS	250-400 FT.-LBS.
INNER WHEEL NUTS	450-500 FT.-LBS.
OUTER WHEEL NUTS	450-500 FT.-LBS.

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

GENERAL TORQUE SPECIFICATION TABLE (REVISED 9-87)

USE THE FOLLOWING TORQUES WHEN SPECIAL TORQUES ARE NOT GIVEN.

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

Inches	Bolt Size	SAE Grade No. Bolt head identification marks as per grade NOTE: Manufacturing Marks will vary.	2		5		8*	
			Torque		Torque		Torque	
			Foot Pounds	Newton-Meters	Foot Pounds	Newton-Meters	Foot Pounds	Newton-Meters
			Min. Max.	Min. Max.	Min. Max.	Min. Max.	Min. Max.	Min. Max.
1/4	6.35	5 6	7 9	9 11	12 15	15 20		
5/16	7.94	10 12	14 16	17 20	23 28	32 39		
3/8	9.53	20 23	27 31	35 42	48 57	61 73		
7/16	11.11	30 35	41 47	54 64	73 87	95 114		
1/2	12.70	45 52	61 70	80 96	108 130	149 179		
9/16	14.29	65 75	88 102	110 132	149 179	217 260		
5/8	15.88	95 105	129 142	150 180	203 244	298 358		
3/4	19.05	150 165	203 250	270 324	366 439	516 618		
7/8	22.23	160 200	217 271	400 480	542 651	814 976		
1	25.40	250 300	339 406	580 696	786 944	1080 1464		
1-1/8	25.58			800 880	1085 1193	1280 1440	1736 1953	
1-1/4	31.75			1120 1240	1519 1681	1820 2000	2468 2712	
1-3/8	34.93			1460 1680	1980 2278	2380 2720	3227 3688	
1-1/2	38.10			1940 2200	2631 2983	3160 3560	4285 4827	

* Thick nuts must be used with Grade 8 bolts

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

TABLE 3-1 STANDARD BOLT TORQUES

4 CONTROLS

This section describes the controls used to operate the Model 316 and 317 Semitrailers. Controls are conveniently located and easy to use. A hydraulic pump must be coupled to the trailer hydraulic system, or the optional hydraulic engine package started, before any hydraulic controls will become functional. The towing vehicle's air system must be coupled to the semitrailer and charged to 90 psi minimum before the brakes will become functional.



WARNING

1. 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.

2. WHEN LEAVING THE SEMITRAILER UNATTENDED, POSITION ALL HYDRAULIC CONTROLS TO THE NEUTRAL OR "OFF" POSITION AND SHUT OFF THE HYDRAULIC ENGINE POWER SUPPLY, OR DIS-CONNECT THE TRACTOR HYDRAULIC HOOK-UP.

4-1 5th WHEEL UP/DOWN

The **5th WHEEL** lever (See Figures 2-1 and 4-1) is located on the front, lower deck drivers side frame member. It is the front-most lever and has three positions:

UP: This position lowers the fifth wheel weldment, raising the trailer front to the load position.

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

DOWN: This position raises the fifth wheel weldment, lowering the trailer to the hook-up or transport position.

4-2 WINCH IN/OUT

The **WINCH IN/OUT** lever (See Figures 2-1 and 4-1) is located on the front, lower deck drivers side frame member. It is the center lever and has three positions:

UP: This position will cause the winch to reel cable onto the winch spool when the winch is engaged.

CENTERED: This is a neutral position. This position will not operate the winch.

DOWN: This position will cause the winch to reel cable off of the winch spool when the winch clutch handle is engaged.

4-3 AXLE RETRACT/EXTEND

The **AXLE** lever (See Figures 2-1 and 4-2) is located on the front, lower deck drivers side frame member. It is the rear-most lever and has three positions.

UP: This position slides the undercarriage forward, allowing the semitrailer to be tilted for loading purposes.

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

DOWN: This position slides the undercarriage to the rear-most position, allowing the semitrailer to be transported or parked.

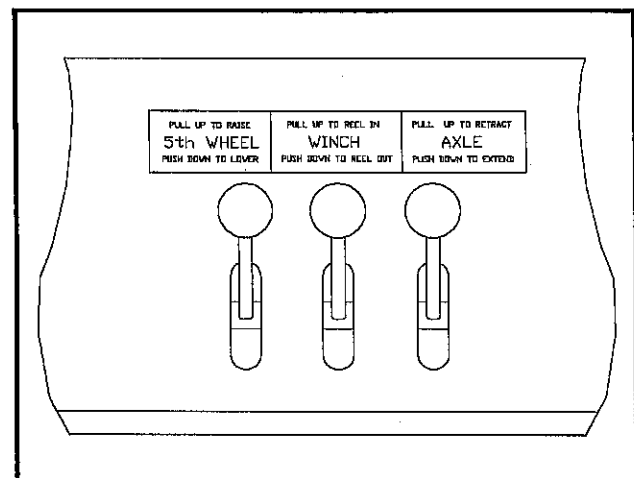


FIG. 4-1 HYDRAULIC CONTROLS

SAFETY FIRST!

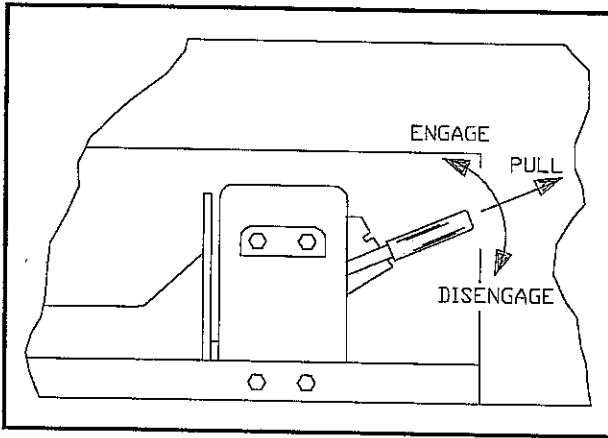


FIG. 4-2 12,000# WINCH CLUTCH HANDLE

4-4 12,000# WINCH CLUTCH

The **WINCH CLUTCH** handle (See Figure 4-2) is located on the right or curb-side end of the winch assembly. The function of the **WINCH CLUTCH** handle is to engage or disengage the winch, allowing it to respond to the Winch In/Out lever.

The **WINCH CLUTCH** handle has four positions:

- OUT:** The handle of the winch must be pulled out to adjust the handle to the up or down position.
- IN:** This position locks the winch handle in the engaged or disengaged position.
- DOWN:** When the handle is placed in this position, the winch is disengaged. This allows the spool to "free-wheel" and the winch is not affected by use of the Winch In/Out lever.
- UP:** When the handle is placed in this position, the winch is engaged and cable may be spooled on or off the winch spool. The winch can now be controlled through the use of the Winch In/Out lever.

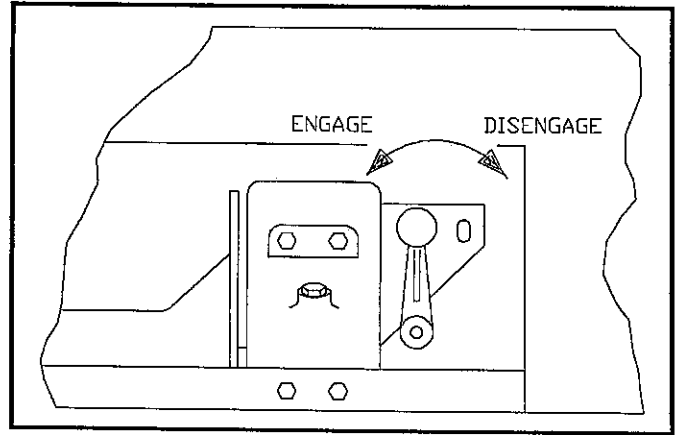


FIG. 4-3 20,000# WINCH CLUTCH HANDLE

4-5 20,000# WINCH CLUTCH

The **WINCH CLUTCH** handle (See Figure 4-3) is located on the right or curb-side end of the winch assembly. The function of the **WINCH CLUTCH** handle is to engage or disengage the winch, allowing it to respond to the Winch In/Out lever.

The **WINCH CLUTCH** handle has only two positions:

- RIGHT:** When the handle is placed in this position, the winch is disengaged. This allows the spool to "free-wheel" and the winch is not affected by use of the Winch In/Out lever.
- LEFT:** When the handle is placed in this position, the winch is engaged and cable may be spooled on or off the winch spool. The winch can now be controlled through the use of the Winch In/Out lever.

4-6 AUXILIARY WINCH CONTROL

If your trailer is equipped with a secondary winch, the standard **WINCH IN/OUT CONTROL** operates the upper deck winch. An auxiliary **WINCH IN/OUT CONTROL** (See Figure 4-4) is located just to the right of the standard controls to operate the lower deck winch. This control has three positions:

- UP:** This position allows the winch to reel cable onto the winch spool when the winch is engaged.
- CENTERED:** This is a neutral position. This position will not operate the winch.
- DOWN:** This position allows the winch to reel cable off of the winch spool when the winch is engaged.

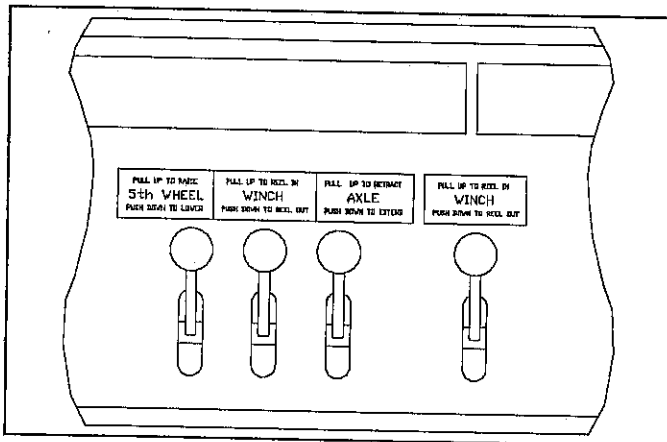


FIG. 4-4 AUXILIARY WINCH CONTROL

4-7 HYDRAULIC POWER SUPPLY ENGINE KEY SWITCH

The **HYDRAULIC POWER SUPPLY ENGINE KEY SWITCH** (See Figure 4-5) is located just to the rear of the hydraulic controls on the drivers side of the semitrailer. The function of the key switch is to start and stop the hydraulic power supply engine. This switch has three positions:

OFF: When the key is placed in this position the engine of the power package will not run.

START: When the key is placed in this position, it causes the starter to crank the engine of the power package, allowing it to start. After the engine is started the key should be released to the "RUN" position.

RUN: After the engine of the power package is started, the the key is placed in this position allowing the engine to continue running without assistance from the starter.

4-8 HYDRAULIC POWER SUPPLY ENGINE CHOKE

The **HYDRAULIC POWER SUPPLY ENGINE CHOKE** (See Figure 4-5) is located just to the rear of the key switch on the drivers side of the semitrailer. The purpose of the **CHOKE** is to restrict the access of air to the engine, aiding in the starting procedure. The **CHOKE** has two positions:

IN: When the choke cable is in this position, the engine in the power supply has normal access to air. The choke should be in this position during normal operation of the hydraulic engine power supply.

OUT: When the choke cable is in this position, the engine has restricted access to air. The choke should be placed in this position to aid in the starting of the engine. Once the engine is started, the choke should be returned to full in.

4-9 HYDRAULIC POWER SUPPLY ENGINE THROTTLE

The **ENGINE THROTTLE** (See Figure 4-5) located just to the rear of the **CHOKE** on the drivers side of the trailer. The **ENGINE THROTTLE** controls the speed at which the engine operates and is a variable position control:

FULL OUT: This position opens the throttle of the engine, allowing it to run at full speed.

FULL IN: When adjusted to this position, the throttle of the engine is completely closed allowing the engine to run at idle.

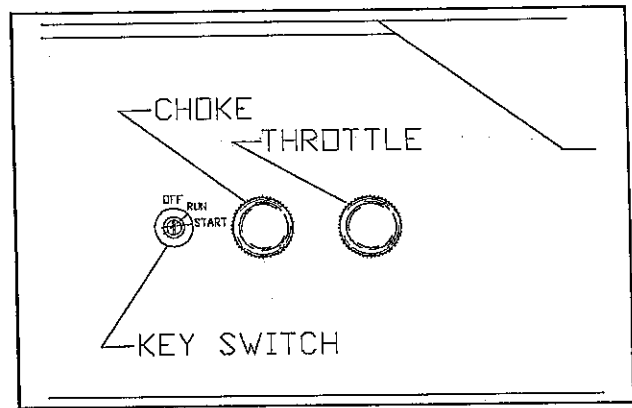


FIG. 4-5 HYDRAULIC POWER SUPPLY ENGINE

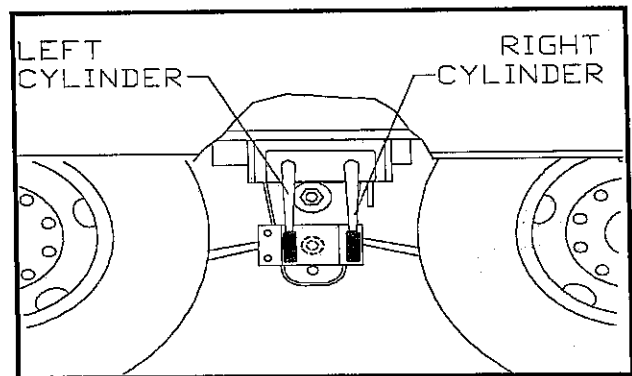


FIG.4-6 DOCK LEVELER CONTROLS

4-10 DOCK LEVELER CONTROLS

The **DOCK LEVELER CONTROLS** are located under the deck, on the drivers's side, between the axles (See Figure 4-6). There are two controls which adjust the height of the dock leveler cylinders. The front-most control adjusts the cylinder on the driver's or street side of the trailer. The rear-most control adjusts the cylinder on the curb-side of the trailer. Both controls have three positions.

IN: When the control for either cylinder is pushed in, toward the center of the trailer, the corresponding dock leveler cylinder is lowered.

CENTER: This position is neutral for either control. When either control is in this position, there is no effect on either cylinder.

OUT: When the control for either cylinder is pulled out, away from the center of the trailer, the corresponding dock leveler cylinder is raised.

4-11 WINCH ELECTRIC REMOTE

The optional electric remote control for the winch is a push button operated control box that plugs into an electrical receptacle just forward of the hydraulic controls (See Figure 4-7). Which winch the remote controls is designated by the owner before the trailer is built. The top button of the remote reels cable in or onto the winch reel when depressed. The lower, or bottom, button reels cable out or off of the winch reel when depressed.

4-12 WINCH SELECTOR VALVE

Some trailers, by owners option, allow both winches to be controlled by the electric remote. This is accomplished through utilization of the **SELECTOR VALVE**. The **SELECTOR VALVE** is located just below the receptacle for the electric remote plug (See Figure 4-7) and has two positions: IN and OUT. One position allows the remote to operate one winch, while the other position allows the remote to operate the other winch. The **SELECTOR VALVE** must be tested before placing either winch under load, to determine which winch is operated in which position.

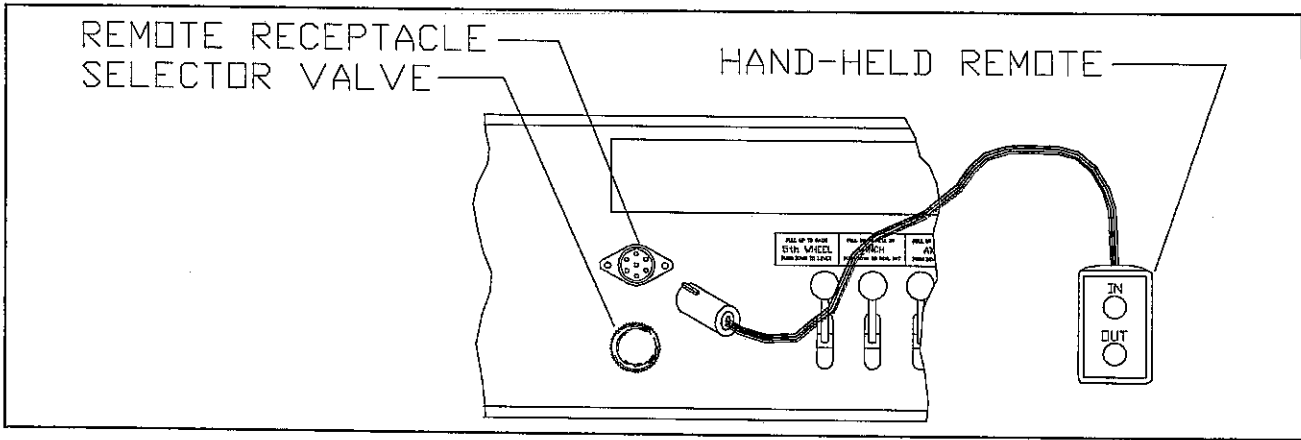



FIG. 4-7 WINCH ELECTRIC REMOTE CONTROLS

5 OPERATION


This section describes the proper operating procedures for the 316 and 317 Semitrailers. It should be read completely before operating your semitrailer.

PARAGRAPH	TITLE	PAGE NO.
5-1	PRE-COUPLING OF SEMITRAILER AND TRACTOR	5-2
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5-3	CONNECTING TRACTOR SERVICES TO THE TRAILER	5-3
5-4	TRACTOR & TRAILER CHECK-OUT	5-3
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5-6	PARKING THE SEMITRAILER	5-3
5-7	UNCOUPLING TRACTOR FROM SEMITRAILER	5-4
5-8	COLD WEATHER OPERATION	5-4
5-9	HOT WEATHER OPERATION	5-4
5-10	PREPARATION FOR UNLOADING	5-4
5-11	PREPARATION FOR LOADING	5-5
5-12	USE OF DOCK LEVELERS	5-6
5-13	HYDRAULIC POWER SUPPLY ENGINE SYSTEM	5-6
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DANGER

1. 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.
2. 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.
3. OPERATING THE TRACTOR OR SEMITRAILER WITH DEFECTIVE, BROKEN, OR MISSING PARTS MAY RESULT IN SERIOUS INJURY OR DEATH OF PERSONNEL, DAMAGE TO THE TRACTOR OR SEMITRAILER OR ITS CARGO, AND PROPERTY IN ITS PATH.
4. THE WINCH IS NOT DESIGNED OR INTENDED FOR USE IN THE LIFTING OR MOVING OF PERSONS! USING THE WINCH TO LIFT OR MOVE ANY PERSON MAY RESULT IN THE SERIOUS INJURY OR DEATH OF THAT PERSON.
5. NEVER ATTEMPT TO DISENGAGE THE WINCH CABLE SPOOL WHEN THE CABLE IS UNDER TENSION. THE LOAD MAY ROLL AWAY AT WILL. SERIOUS INJURY OR DEATH MAY RESULT TO PERSONS IN THE PATH OF THE ROLLING LOAD.
6. FAILURE TO LEAVE AT LEAST FIVE WINCH CABLE WRAPS ON THE WINCH CABLE SPOOL COULD ALLOW THE CABLE TO COME OFF THE SPOOL. THIS COULD RESULT IN SERIOUS PERSONAL INJURY OR DEATH TO ANYONE IN THE PATH OF THE LOOSE WINCH CABLE.



WARNING

1. WHEN LEAVING THE SEMITRAILER UNATTENDED, POSITION ALL HYDRAULIC CONTROLS TO THE NEUTRAL POSITION AND SHUT OFF THE HYDRAULIC PUMP.
2. DO NOT EXCEED THE GROSS AXLE WEIGHT RATINGS FOR ANY AXLE ON YOUR VEHICLE.
3. THE COMBINED WEIGHT OF THE TRACTOR, TRAILER, AND CARGO MUST NOT EXCEED THE GROSS VEHICLE WEIGHT RATING (GVWR) OF THE TRACTOR.
4. DO NOT HANDLE THE WINCH CABLE WHEN THE WINCH IS IN THE ENGAGE POSITION. HANDS OR CLOTHING COULD GET CAUGHT IN THE CABLE AND BE PULLED INTO THE SPOOL CAUSING SERIOUS PERSONAL INJURY.

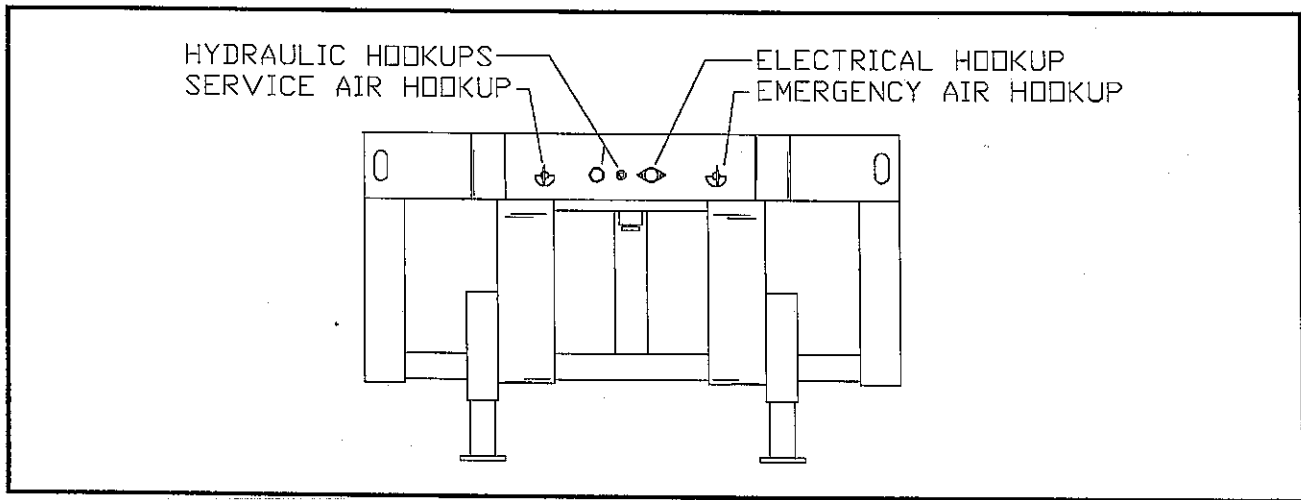


FIG. 5-1 SERVICE HOOKUPS

5-1 PRE-COUPLING OF SEMITRAILER AND TRACTOR

NOTE: 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) up to the front end of the semi-trailer so the king pin of the semitrailer is centered between the tractor fifth wheel jaws. Stop the towing vehicle just inches ahead of the semitrailer. Set tractor parking brake.

5-1.2 Check the semitrailer king pin plate height. The king pin plate should be the same height, to slightly lower, than the latch area of the fifth wheel plate of the towing vehicle. If necessary, connect the tractor hydraulic lines, or start the trailer hydraulic power engine, and use the Trailer Tilt Lever to raise or lower the kingpin plate sufficiently to allow proper coupling. Drain all air and moisture from the towing vehicle air brake system in accordance with the towing vehicle manufacturer's instructions.

5-1.3 Allow full air build-up in the towing vehicle's air system.

5-1.4 Connect the service and emergency air hoses of the towing vehicle to their respective gladhand on the front of the semitrailer; red emergency line to the gladhand with the "**EMERGENCY**" tag, and the blue service line to the gladhand with the "**SERVICE**" tag (See Figure 5-1). Chock the trailer wheels before activating the semitrailer air supply valve in the towing vehicle. Set the parking brakes.

5-1.5 Check the air brake operations of the semitrailer as follows:

5-1.6 Apply brakes and inspect brake action on all wheels for prompt application.

a. Release brakes. All brakes should release immediately. Air pressure should discharge quickly from the relay emergency valve.

b. Disconnect the emergency air line from the semitrailer gladhand. Trailer brakes should promptly set.

c. Re-connect the emergency air line to the trailer and activate the trailer air supply valve. The parking brakes should set.

5-2 COUPLING OF THE TRACTOR TO THE SEMITRAILER

NOTE: READ PARAGRAPH 5.1 "PRE-COUPLING OF SEMITRAILER AND TRACTOR" BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

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

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



5-2.4 Verify the vehicle coupling is secure by attempting to pull the tractor forward a few inches. If the tractor disconnects from the trailer, locate source of coupling failure; repair before continuing; and repeat steps 5-2.3 and 5-2.4.

5-2.5 Check that the towing vehicle couples securely to the semitrailer before setting towing vehicle and trailer parking brakes.

NOTE: *Keep brakes engaged for remainder of Hookup, Checkout Procedures and for parking.*

5-3 CONNECTING TRACTOR SERVICES TO THE TRAILER

NOTE: 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 Figure 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 If you have not already done so, connect the tractor hydraulic lines to the semitrailer unless your trailer is equipped with the self-contained hydraulic power engine package.

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

5-4 TRACTOR & TRAILER CHECK-OUT

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

5-4.1 With hydraulic power operating, raise front end of trailer by activating the 5th wheel up until weight is off the park stands. Raise parking stands. Secure each parking stand with park stand retaining pin in the full "up" position before transporting. Check the operation of all lights and signals on the semitrailer for proper response to switch positions (stop, right turn, left turn and clearance).

5-4.2 Determine that the traveling undercarriage is completely slid back to transport position.

5-4.3 Check tire inflation, adjust as needed to the pressure listed on the trailer VIN plate, located on the front of the semitrailer.

5-4.4 Check tractor/trailer rig for air leaks. If air leakage is found, repair the defect before transporting.

5-4.5 Check the oil in each hub for proper level and freedom from contamination. If hubs are con-

taminated with water, dirt, or some other foreign material, clean before transporting.

5-4.6 Check tractor air pressure. Pressure must not fall below 80 psi, even after activating brakes a couple of times. Set parking brake and carefully remove all wheel chocks. Set emergency brake and try pulling forward. The trailer wheels must not rotate. If trailer brakes do not apply, **DO NOT** transport until defect, or defects, are repaired.

5-5 TOWING THE SEMITRAILER

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

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

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

5-5.4 To stop, use a gradual and smooth application of brakes. If grabbing occurs, apply less pressure - grabbing brakes are not efficient.

5-5.5 Backing should be done with care. Tail overhang, trailer length, and allowable space must be taken into consideration when backing the semitrailer.



5-6 PARKING THE SEMITRAILER

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

5-6.1 Position tractor/trailer rig on a level, solid surface.

5-6.2 Set the *PARKING BRAKE*, not the 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 TRACTOR FROM SEMITRAILER

NOTE: 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 **Paragraph 5-6**.

5-7.2 Lower the park stands to the ground. Hydraulically raise front end of trailer until next hole in park stand is available. Pin through both inner and outer legs of stand. Hydraulically lower trailer onto legs.

5-7.3 Disconnect emergency and service air lines and attach them to the tractor gladhand holders.

5-7.4 Disconnect the 7-pole cable and hydraulic lines from the trailer and store with the tractor.

5-7.5 Pull the tractor fifth wheel plate latch release lever.

5-7.6 Attempt to pull the tractor forward. If the tractor uncouples, verify all service lines are disconnected and trailer wheels are chocked. If tractor does not disconnect, repeat Steps **5-7.5** and **5-7.6**.

5-7.7 Pull the tractor away from the trailer.

5-8 COLD WEATHER OPERATION

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

Cold weather causes lubricants to congeal, insulation and rubber parts to become hard, and fabricated parts to become somewhat brittle. These trends may lead to problems found in bearings, electrical systems, air systems, and weldments. Moisture attracted by warm parts due to usage can condense, collect and freeze to immobilize equip-

ment. The tractor/trailer operator must always be alert for indicators of cold weather malfunctions.

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

5-8.2 Check all structural fastenings, air system fittings, gaskets, seals and bearings for looseness that can develop due to contraction with cold. Do not over-tighten.

5-8.3 Check tire inflation. Tire inflation decreases with the temperature.

5-8.4 Periodically check drain holes in the bottom of the relay valve and storage compartments. They must be open at all times to avoid moisture entrapment.

5-9 HOT WEATHER OPERATION

NOTE: 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 result in tightening of bearings, fasteners, and moving parts. Gaskets or seals failure can 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 (i.e., tires, light and hose grommets, hoses, etc.) and paint life.

5-9.2 Check tire pressure early in the day *before beginning operations* while the tire is cool. Replace all valve stem caps after checking.

5-9.3 If the area is extremely humid, protect electrical terminals with ignition insulation spray. Coat paint and bare metal surfaces with an appropriate protective sealer.

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

5-10 PREPARATION FOR UNLOADING

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

5-10.1 Lock trailer brakes in *park*.

5-10.2 Engage the tractor P.T.O. system or start the trailer hydraulic power engine.

5-10.3 Using the *WINCH IN/OUT LEVER*, attach the winch cable to a rolling load and remove all slack from the winch cable. Remove wheel chocks and load securing devices from behind the load.

5-10.4 Using the 5th WHEEL LEVER, raise the front of the trailer 1 to 2 feet.

5-10.5 Use the AXLE SLIDE LEVER to pull the axles forward until they are just behind the center of gravity of the loaded trailer.

5-10.6 Raise the trailer to an appropriate unloading height and pull the undercarriage fully forward.

5-10.7 Adjust the unloading height and the position of the undercarriage until the rear of the trailer is on the ground and the rear axle is supporting part of the weight of the intended load.

5-10.8 Remove the load from the trailer, lower the trailer, and slide the undercarriage fully back.

5-10.9 Disengage the P.T.O. system of the tractor or shut off the hydraulic power engine.

5-11 PREPARATION FOR LOADING

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

5-11.1 The procedure for loading the semitrailer is similar to the procedure for unloading the trailer.

NOTE: When winching or driving a load onto the trailer be sure that the center of gravity of the loaded trailer is just ahead of gravity of the undercarriage in the forward loading position. The load should never place more weight on the kingpin than on the rear axles during loading or unloading.

5-11.2 Secure the load using approved standard tie-down methods. D-rings or goochas are supplied on each side for tie-down purposes.

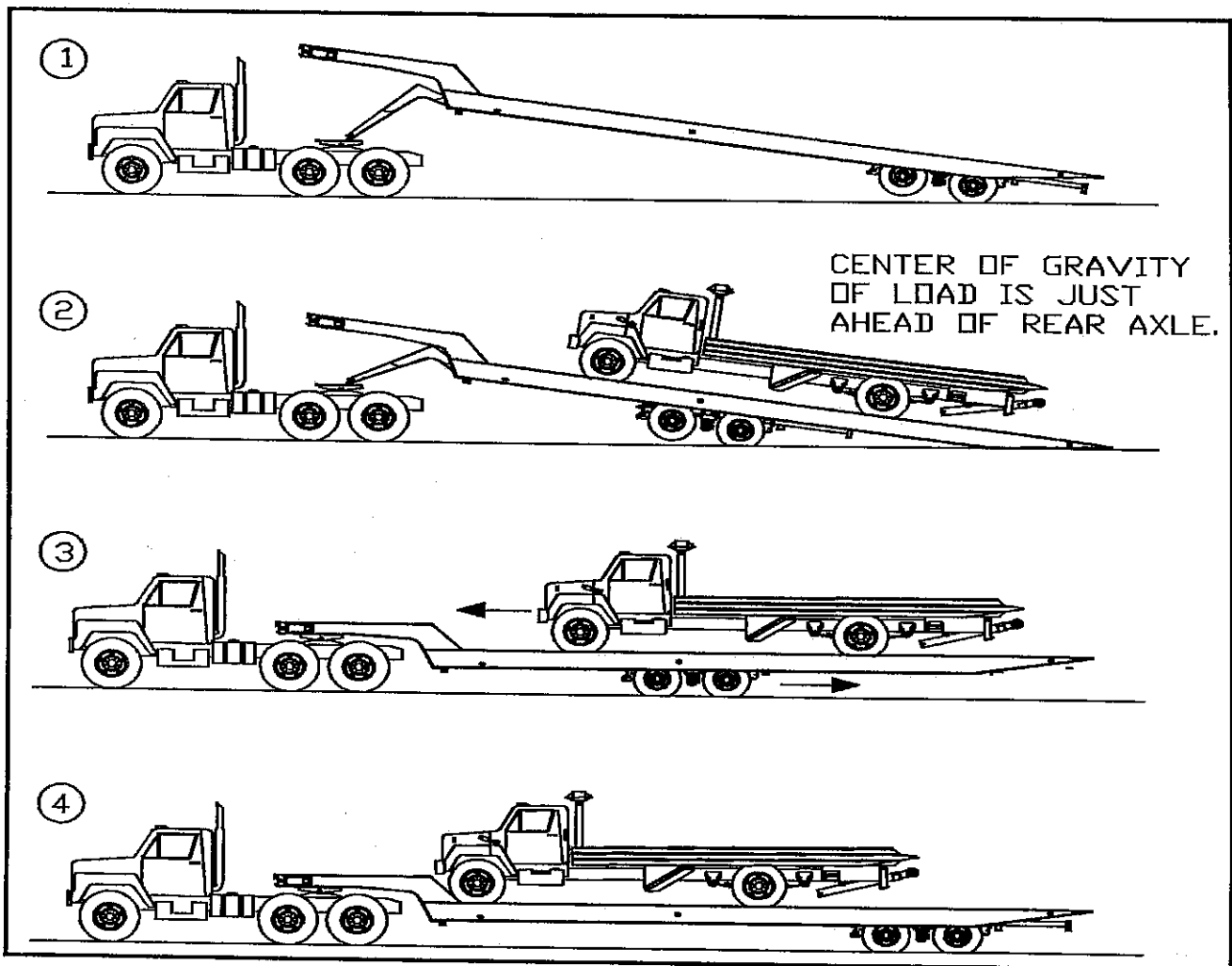
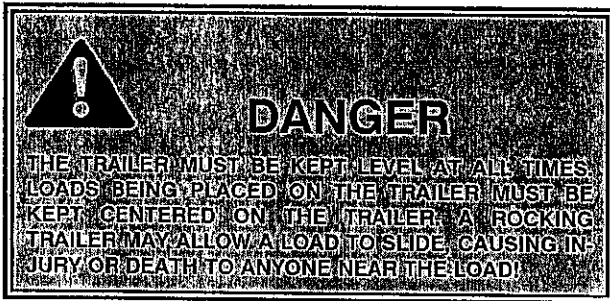


FIG. 5-2 STEPS FOR LOADING AND UNLOADING

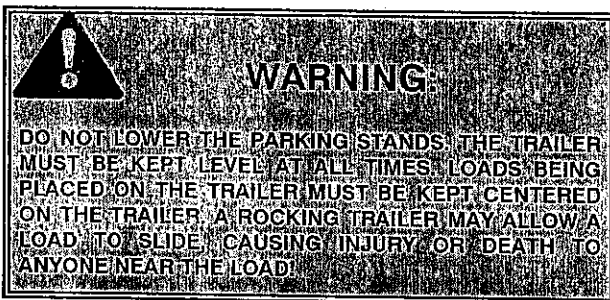
5-12 USE OF DOCK LEVELERS



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

If your semitrailer is equipped with optional dock leveler hydraulics, these may be used to level the rear of the semitrailer to a loading dock.

5-12.1 Park the semitrailer in front of the dock according to instructions in Paragraph 5-6 "PARKING THE SEMITRAILER".



5-12.2 Use the controls located between the axles on the drivers side of the trailer to independently raise either rear corner of the trailer as necessary to raise the trailer deck to the dock height.

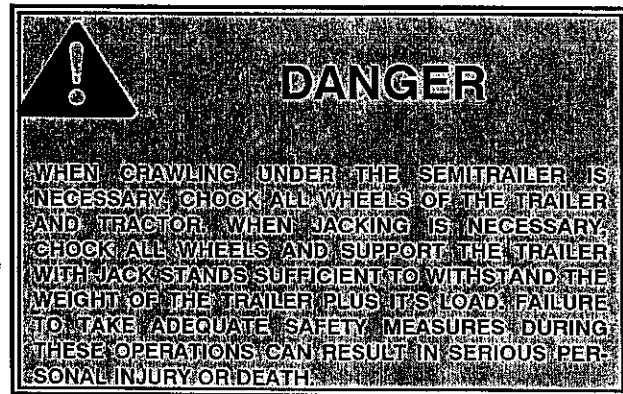
5-13 HYDRAULIC POWER SUPPLY ENGINE SYSTEM

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

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:

5-13.1 Locate the throttle, choke, and key switch on the side frame member. (See Figure 4-5)

5-13.2 Pull the choke completely out.



5-13.3 Turn the key to the "START" position. The engine should crank and then start. If the engine does not start, refer to Section 7 "TROUBLESHOOTING".

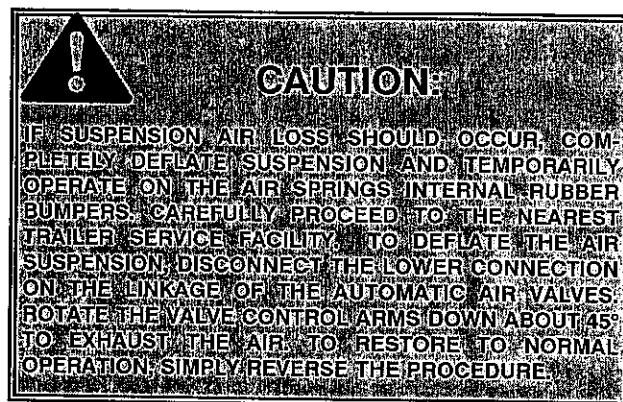
5-13.4 When the engine starts, release the key to the "ON" position. After engine warm up, push the choke completely in.

5-13.5 Adjust the speed by turning the throttle control in or out, as necessary, until the engine is running smoothly and at a speed capable of withstanding usage of the hydraulic controls. The hydraulic controls should now be functional. To shut the engine off, turn or push the throttle control completely in and turn the key to the "OFF" position. - ALLOW ENGINE TO COOL DOWN.

5-14 AIR RIDE OPERATION

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

Trailer air pressure must be maintained above 65 PSI before operating. This enables the "PROTECTION VALVE" to maintain safe air brake pressure during suspension system air loss.



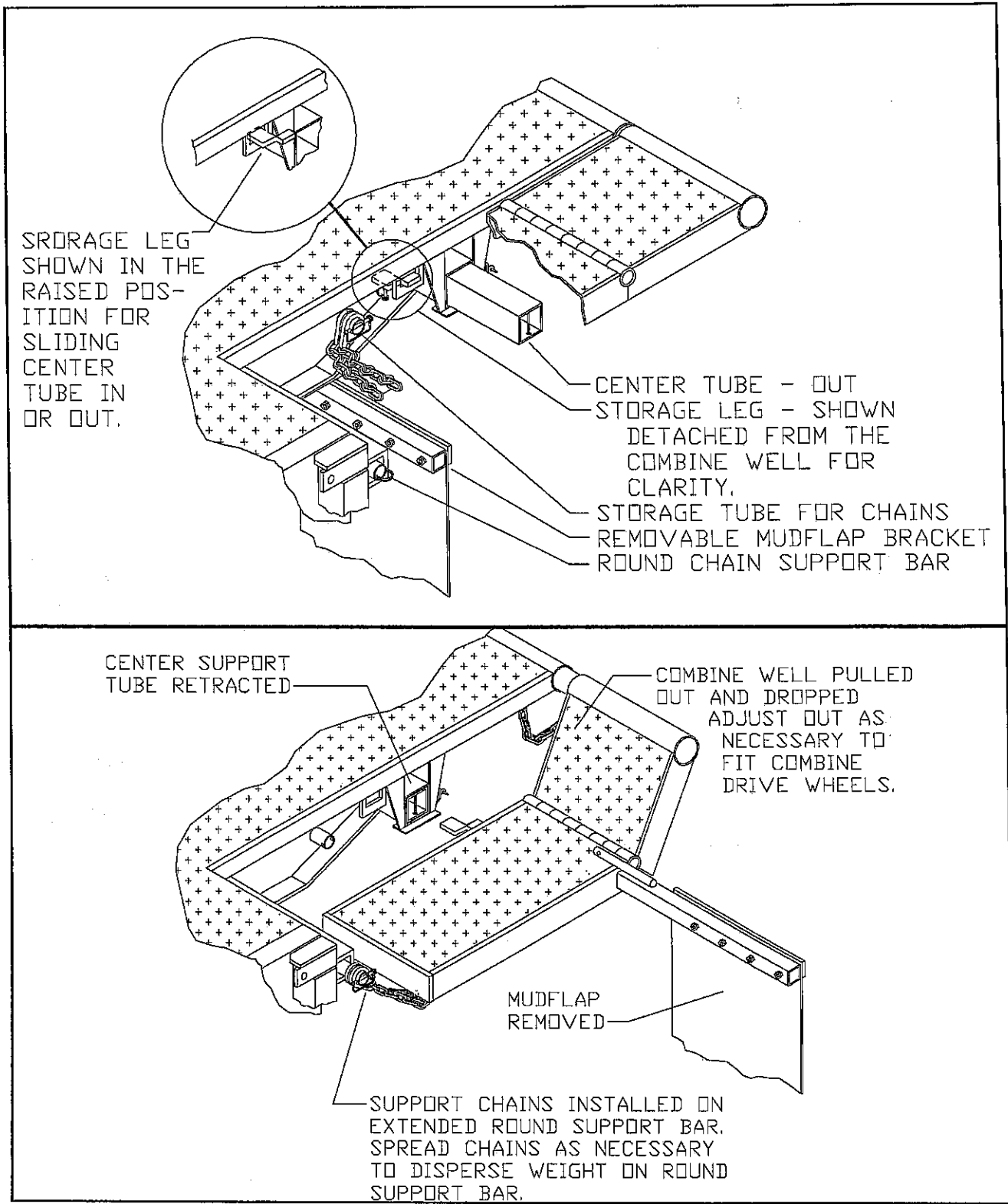
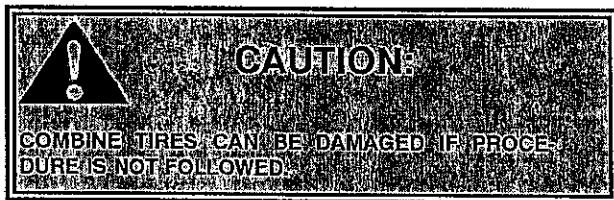


FIG. 5-3 COMBINE WELL OPERATION

5-15 REAR COMBINE WELLS



NOTE: READ ALL SAFETY PRECAUTIONS LOCATED AT THE FRONT OF THIS SECTION BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES: See Figure 5-3 for parts identification and location.

COMBINE WELL SETUP:

5-15.1 Remove the quick pins retaining the hinge pin for the rear overwidth panels. Next, remove the triangular rear overwidth panels from the trailer.

5-15.2 Remove the overwidth support tubes with the double flange and exchange them with the front support tubes with one flange. *Do not turn the tubes over to exchange them.* Place the support tube from the front, curb side, of the trailer into the rear, street side, of the trailer. Place the support tube from the street side of the trailer into the curb side of the trailer.

5-15.3 Remove the safety pin retaining the mud flap brackets and remove the entire mud flap assembly from both sides of the semitrailer.

5-15.4 Remove the retaining pin from both short combine well storage legs and pull the wells up and out simultaneously until the wells just rest on the short storage leg.

5-15.5 Pull the pin on the combine well center support tubes and push the tubes into the storage tubes until they lock in place.

5-15.6 Reach beneath the trailer and remove the pins holding the support chains to their respective storage tubes.

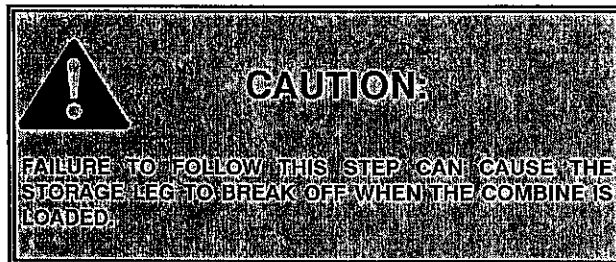
5-15.7 Pull the lock pins on the round support bars at the rear of the remaining overwidths and pull the support bars out until the lock pins snap into place. (The support bars can rotate in their storage wells.)

5-15.8 Place the loops on the ends of the chains over the support bars and place the pin previously removed from their storage tubes in place on the support bars.

5-15.9 Tilt the trailer to the loading position as detailed in Paragraph 5-10 "PREPARATION FOR UNLOADING".

5-15.10 Pull the combine wells out until the short storage leg completely clears the storage bracket.

5-15.11 Back the combine onto the trailer until the steering wheels completely clear the combine wells and are resting on the trailer deck.



5-15.12 Raise the rear of the trailer until the front edge of the combine wells drop to the ground. Lower the trailer to the ground again.

5-15.13 Position the combine wells so they match the width of the large combine wheels as nearly as possible.

5-15.14 Back the combine onto the trailer until the large combine wheels are centered on the large section of each combine well.

5-15.15 Return the trailer to the transport position and secure the combine for transport, using standard, safe tie-down methods.

STOWAGE OF COMBINE WELLS:

5-15.16 Remove the combine from the trailer.

5-15.17 Lift each combine well up and slide in slightly until the front edge of the well rests on the support and the short storage leg engages it's bracket.

5-15.18 Return the chains to their storage tubes and replace the retaining pins.

5-15.19 Pull the retaining pins on the combine well center support tubes and pull the tubes out until they lock into place.

5-15.20 Slide each combine well completely in.

5-15.21 Pull the retaining pins on the round support tubes and push the tubes in until they lock into place.

5-15.22 Replace the mudflap assemblies and secure with their retaining pins.

5-15.23 Return the double flange and single flange overwidth support tubes to their original positions.

5-15.24 Replace the overwidth panels and secure with the retaining pins.

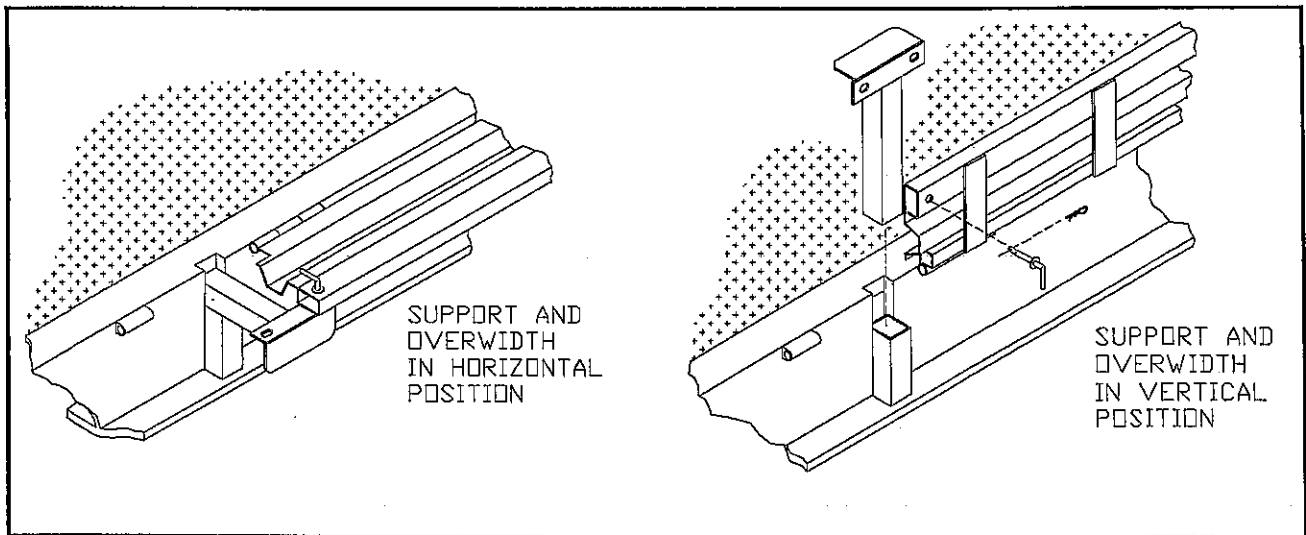


FIG. 5-4 OVERWIDTH/SIDERAILS

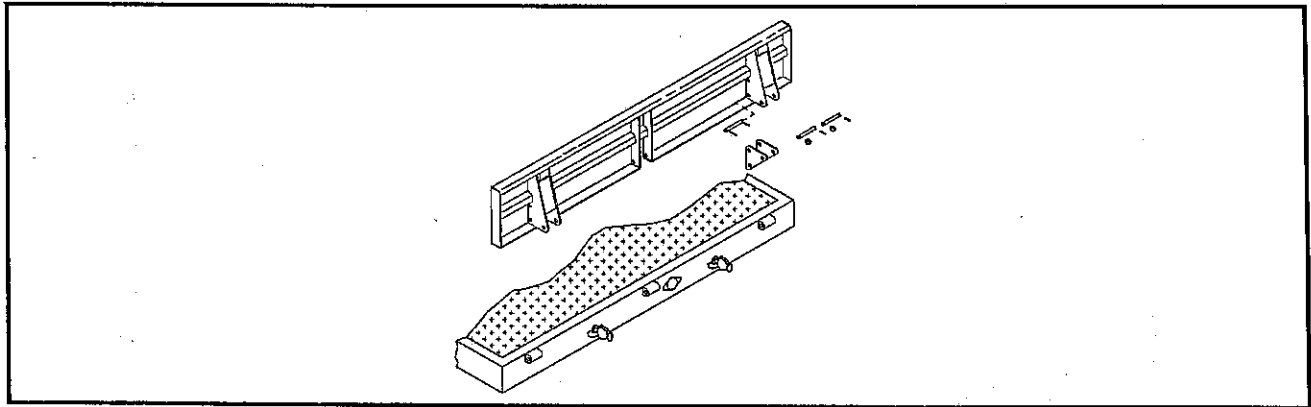


FIG. 5-5 FRONT EXTENSION

5-16 OVERWIDTH/SIDERAIL OPERATION

5-16.1 To use the overwidth extensions as overwidths, remove the retaining pins from the support tubes. Raise the overwidth panels until you can pull the support tubes out.

5-16.2 (*MODEL 317 only*) Pull the support tubes out until the outer tube of the overwidths can rest on the plate of the tubes. DO NOT turn the support tubes over.

NOTE: On Model 316's, pull support tubes out and turn over. Then slide tubes in until outer tube of extension rests on recessed plate of support tube.

5-16.3 Place a retaining pin in each overwidth.

5-16.4 To use the overwidths as siderails, raise the overwidth panels to a vertical position and pull the support tubes completely out of the trailer.

5-16.5 With the overwidth panels in an upright, vertical position, slide the support tubes into the tubes provided on the side of the trailer with the plate of the support tube toward the outside of the trailer. The plate should slip completely over the outer tubes of the overwidth panels.

NOTE: When using overwidths upright it will be necessary to swap positions on the trailer between the front support bars.

5-16.6 Secure the overwidth panels in this position with one retaining pin per panel.

5-17 FRONT EXTENSION/BULKHEADS

5-17.1 Optional bulkheads may come with or without chain racks. To remove a bulkhead, simply remove the bolts and nuts holding the bulkhead into the pockets on the trailer front and lift the bulkhead off.

5-17.2 To use the front extension as an extension, Remove the front-most pin and the lower pin from the trailer bracket. Lower the extension to a horizontal position. Replace the front-most pin in it's

original position. Replace the lower pin in it's original position with the exception that it will now pass thru the brackets on the extension as well as the bracket on the trailer. To use the extension as a bulkhead, simply return the extension to it's original position.

5-17.3 In all cases, be sure to secure the pins with the lynch pins provided.

NOTES:

6 MAINTENANCE AND LUBRICATION

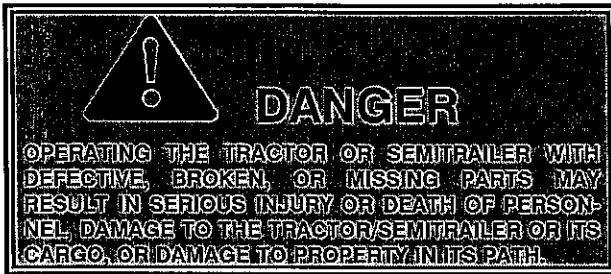
The Model 316 and 317 Semitrailers are designed for years of service with minimal maintenance. The following maintenance, however, is very important for durability and for safe operation of your semitrailer. Maintenance is an owner/user responsibility.

PARAGRAPH	TITLE	PAGE NO.
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6-4	ELECTRICAL SYSTEM	6-2
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6-7	AIR BRAKE CHAMBERS	6-4
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FIGURE NO.	TITLE	PAGE NO.
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TABLE NO.	TITLE	PAGE NO.
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6-1 INSPECTION



6-1.1 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

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 planks or missing hardware attachments. Replace any defective parts immediately.

6-3 HYDRAULIC SYSTEM

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.

6-3.2 Overfilling may result in overflow of hydraulic fluid during component operations.

6-3.3 Dock level regulator, bypass only (item 7, Fig 8-29), must provide 2.2 to 2.8 gallons per minute to dock leveler valve. If more oil than specified is sent to dock leveler valve, damage to dock levelers and personal injury can occur. If less oil than specified is sent to dock leveler they will not operate or operation will be erratic.

6-4 ELECTRICAL SYSTEM

6-4.1 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.

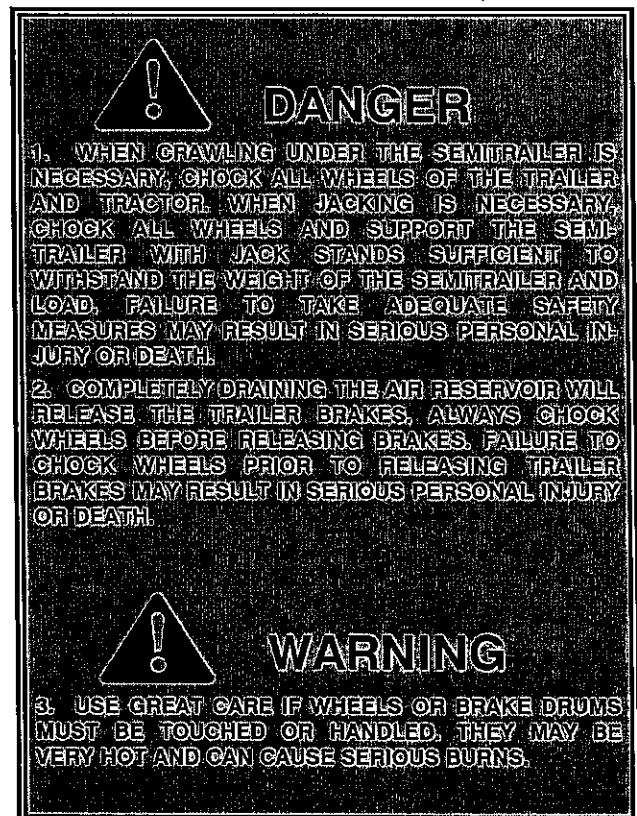
6-4.2 Frayed or unraveling wire must have the defective section removed and replaced with wire of the same color and gauge. Seal all connections and insulate.

6-4.3 Corroded terminals must have the corrosion removed, source of corrosion neutralized and the terminals resealed, protected and insulated.

6-4.4 Fuse or circuit breaker burn-out or "blow-out" usually indicates an electrical short-circuit, although a fuse can 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.

6-4.5 Lights with a repeated lamp burn-out usually indicates a loose connection, either at the lamp socket, the system ground, or a malfunctioning voltage regulator. Locate the source of the problem and repair. System grounds must be grounded to bare metal surfaces. Paint, grease, wax, and other coatings act as insulators. Replacement lamps must be equivalent to the factory installed lamp.

6-5 SPRING BRAKE SYSTEM



6-5.1 A daily general inspection will reveal the most common problems found in the spring brake system. This inspection should include:

- a. Checking air lines for cracking or kinks.

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

c. Check brake linings for excessive wear or distortion.

6-5.2 Drain air reservoir of all moisture daily using the hand pull drain valve.

6-6 SPRING BRAKE CHAMBERS

NOTE: READ THE SAFETY PRECAUTIONS AT THE BEGINNING OF SECTION 6.5 BEFORE PERFORMING ANY OF THE FOLLOWING PROCEDURES.

Check the condensation holes on the underside of the brake chambers to make sure they are open. The brake chambers should be disassembled and cleaned at 50,000 miles or yearly. Repair or replace faulty units. When replacing the diaphragm or hardware, replace the corresponding parts for the other chamber on the same axle. This will aid in even brake application and releasing. Examine yoke pin for wear and replace if necessary. For parts identification see **Section 8 "Illustrated Parts Listing."**

6-6.1 MANUAL RELEASE AND SET BRAKES.

a. Chock the trailer wheels.

b. Remove dust cap from spring brake chamber.

c. Remove the release bolt from its holding brackets and insert it into the spring brake chamber. **DO NOT USE AN IMPACT WRENCH TO CAGE THE SPRING BRAKE!**

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

e. The brakes should now be totally released. Do not operate loaded trailer with brake manually released.

f. To reset the spring brake, turn the release bolt until the spring is released. Remove the release bolt and store it in its brackets.

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

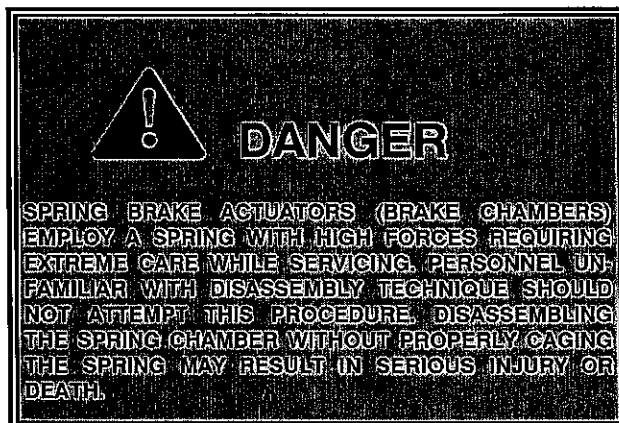
6-6.2 REMOVAL:

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

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

c. **CAGE THE POWER SPRING** following the steps outlined in **Section 6-6.1 (c.) and (d.)**.

d. Disconnect the slack adjuster from the connecting rod by removing the clevis pin (**See FIG. 6-3 on next page**).



e. Mark all air service lines for proper re-installation and disconnect from the brake chamber.

f. Remove the brake chamber from the axle brackets.

6-6.3 INSTALLATION:

a. **CAGE THE POWER SPRING** following the steps outlined in **Section 6-6.1 (c.) and (d.)**.

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


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

d. Remount the brake chamber on the axle brackets and reconnect the air service hoses and the slack adjuster connecting rod (**See FIG. 6-1**).

NOTE: Be sure the service line is on the service chamber port and the emergency line is on the spring brake port.

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






DANGER

1. 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 SEMITRAILER WITH JACK STANDS SUFFICIENT TO WITHSTAND THE WEIGHT OF THE SEMITRAILER AND LOAD. FAILURE TO TAKE ADEQUATE SAFETY MEASURES CAN RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

2. COMPLETELY DRAINING THE AIR RESERVOIR WILL RELEASE THE TRAILER BRAKES. ALWAYS CHOCK WHEELS BEFORE RELEASING BRAKES. FAILURE TO CHOCK WHEELS PRIOR TO RELEASING TRAILER BRAKES CAN RESULT IN SERIOUS PERSONAL INJURY OR DEATH.



WARNING

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

6-6.4 DIAPHRAGM SERVICING

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

1. Mark unit for proper alignment when re-assembling.
2. Remove the spring brake caging bolt from its brackets and insert it into the spring brake chamber.

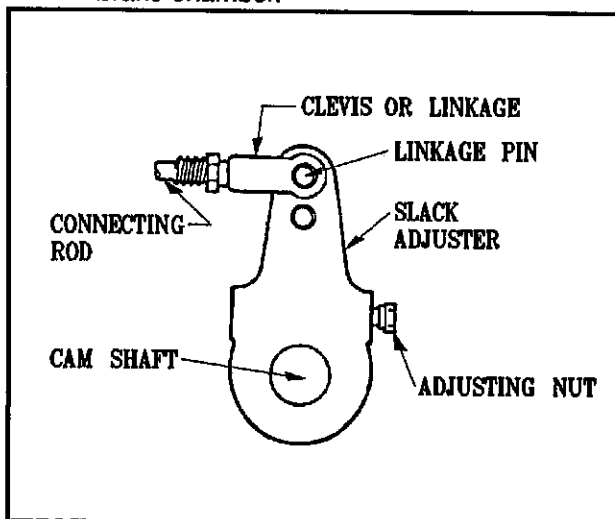


FIG. 6-1 SLACK ADJUSTER TERMINOLOGY

3. 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.
4. Remove the bands from the chamber to be serviced and disassemble the unit. Replace the diaphragm and re-assemble the chamber.
5. Follow steps (d.) and (e.) in Section 6-6.3.

6-7 AIR BRAKE CHAMBERS

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

6-7.1 Chock trailer wheels.

6-7.2 Drain the semitrailer air system of all air and moisture (See FIG. 6-1).

NOTE: Draining the air system will allow the trailer to roll if the wheels are not properly chocked.

6-7.3 Mark the chamber for proper reassembly alignment, loosen the clamp bands around the chamber, and remove the chamber head.

6-7.4 Remove and replace diaphragm. Check all fasteners for defects. If defects are found, the defective part must be replaced.

6-7.5 Replace the chamber head and tighten the clamp band.

6-7.6 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.

6-8 RELAY/EMERGENCY VALVE

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

6-8.1 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.

6-8.2 TESTING:

- a. Drain all air from the tractor and trailer air systems at the reservoirs.
- b. Start the tractor and allow pressure to build up to full charge. Make several full service brake

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 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 inch bubble in five 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 the tractor engine off. Apply and hold a full service brake application for two minutes. *A maximum of 8 psi drop is allowed in two minutes.* If more than 8 psi drop in two 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 inch bubble in three 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 the tractor engine off. Disconnect the emergency line at the trailer. The 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 the tractor's emergency and service line to the semitrailer. Start the tractor engine and allow air pressure to build up. Activate the tractor air supply valve to charge the trailer brake air supply as soon as possible. Trailer brakes should release at a maximum of 65 psi trailer emergency line pressure.

DANGER

1. 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 SEMITRAILER WITH JACK STANDS SUFFICIENT TO WITHSTAND THE WEIGHT OF THE SEMITRAILER AND LOAD. FAILURE TO TAKE ADEQUATE SAFETY MEASURES MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

2. COMPLETELY DRAINING THE AIR RESERVOIR WILL RELEASE THE TRAILER BRAKES. ALWAYS CHOCK WHEELS BEFORE RELEASING BRAKES. FAILURE TO CHOCK WHEELS PRIOR TO RELEASING TRAILER BRAKES MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

WARNING

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

A Careful Operator

**IS THE BEST INSURANCE
AGAINST AN ACCIDENT**

-National Safety Council-

BE ALERT

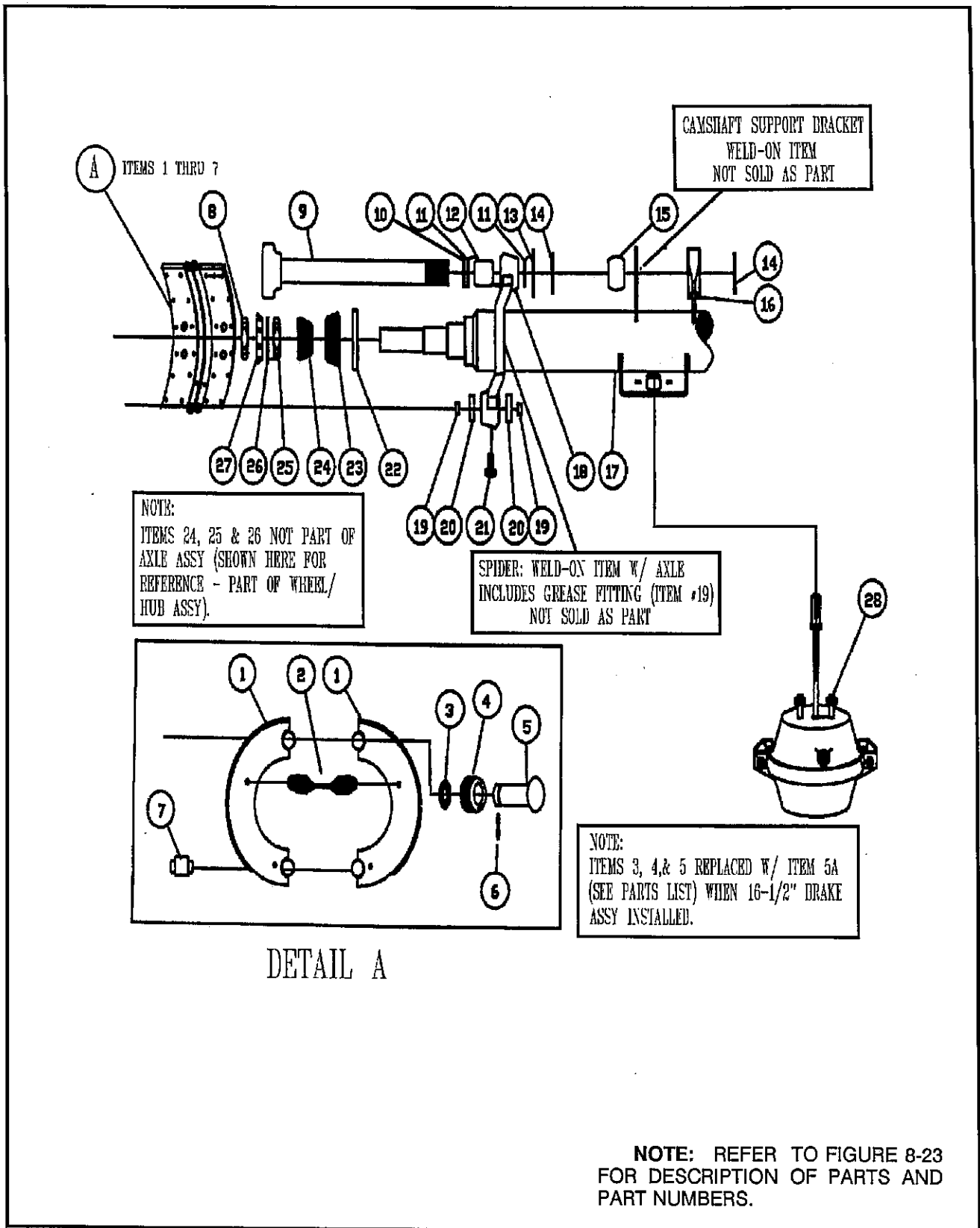




FIG. 6-2 BRAKE/AXLE TERMINOLOGY



DANGER

1. 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 SEMITRAILER WITH JACK STANDS SUFFICIENT TO WITHSTAND THE WEIGHT OF THE SEMITRAILER AND LOAD. FAILURE TO TAKE ADEQUATE SAFETY MEASURES MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

2. COMPLETELY DRAINING THE AIR RESERVOIR WILL RELEASE THE TRAILER BRAKES. ALWAYS CHOCK WHEELS BEFORE RELEASING BRAKES. FAILURE TO CHOCK WHEELS PRIOR TO RELEASING TRAILER BRAKES MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.



WARNING

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

6-9 BRAKE MAINTENANCE

6-9.1 BRAKE INSPECTION/LUBRICATION

Lubricate brake assembly per **Figure 6-11, "LUBRICATION POINTS"** 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 **Figure 6-2** for brake assembly parts identification. The recommended procedure for brake disassembly is **Paragraph 6-9.2**. The recommended procedure for brake assembly is **Paragraph 6-9.3**.

6-9.2 DISASSEMBLY

- a. Jack up the trailer wheel which needs brake lining service.
- b. Remove trailer wheel/tire assembly and set aside.
- c. Adjust the slack adjuster (16) to completely release the brake. Remove hub cap, spindle nuts (3, 24), and lock washer (25, 26), hub and brake drum assembly. Be careful to protect the bearings (22, 23) from dirt and other foreign material.

- d. Remove brake retract springs (29).
- e. Remove retainer springs (30) from anchor pins. Remove anchor pins (27) and brake shoe assemblies (28).
- f. Remove slack adjuster lock ring (9) and washers (15).
- g. Remove slack adjuster (16).
- h. Remove cam shaft lock ring (9) and spacer washer (8), located toward inside of spider boss.
- i. Remove camshaft (4).
- j. Remove camshaft washer (5), located under camshaft head.
- k. Remove roller retainer springs (not shown), rollers (1), anchor pin bushings (20) from spider, spider camshaft bushing (7), and camshaft grease seals (6).
- l. Remove bolts from bushing retainer plates (12) and remove camshaft bushing (13).
- m. 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.

6-9.3 ASSEMBLY

- a. Install new anchor pin bushings (20), spider camshaft grease seals (6) and bushing (7).
- b. Install cam roller pins (1) and retainer springs (not shown).
- c. Place camshaft washer (5) under cam head, position cam (4) through spider, install spacer washer (8) and lock ring (9), position camshaft (4) through camshaft bracket, and install slack adjuster washers (15) and locking ring (9).
- d. Set new brake shoes (28) into position and insert anchor pins (27) in the anchor pin holes.
- e. Secure anchor pins with retainer springs (30).
- f. Install brake shoe retract spring (29) on retaining pins (2).
- g. Install slack adjuster (16) and connect to brake chamber (17) push rod. The angle between the slack adjuster and connecting rod should be approximately 95° when the brake is not applied.
- h. Clean and inspect bearings (22, 23). Replace hub oil seal.
- i. Install hub and adjust wheel bearings as outlined in **Paragraph 6-13, "Wheel Bearing Lubrication And Adjustment"**.

SAFETY FIRST!

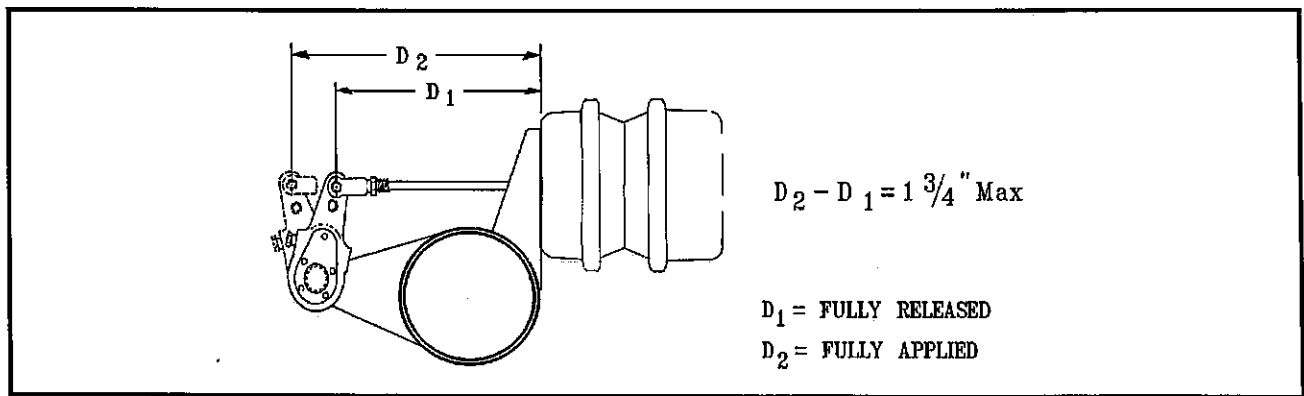


FIG. 6-3 CHECKING BRAKE ADJUSTMENT

6-10 BRAKE ADJUSTMENT

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 Figure 6-3).
- c. Apply brakes.
- d. Repeat step b. (Distance is now D_2).
- e. Subtract the two distances to find the air chamber push rod travel. The total travel of the brake push rod must be less than 1-3/4" to meet Federal "IN-SERVICE" criteria. It is advisable to adjust all brakes on the same axle to within 1/2" of each other to prevent unbalanced braking.

6-10.2 ADJUSTING

- a. Release brakes.
- b. Place a 9/16" box end or socket wrench on the slack adjuster adjusting nut (See FIG. 6-1), and push in on the locking sleeve.
- c. Adjust by rotating the adjusting nut counterclockwise to loosen the brake and clockwise to tighten the brake.

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

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

6-11 TIRE INFLATION

Tire inflation will produce the tire to ground contact characteristics (See FIG. 6-4). Tire inflation should be checked daily while the tire is cold, and during road stops. Checking the tire pressures while tires are hot will give a faulty increased pressure reading. Adjusting tire air pressure to the specified amount while tires are hot will produce improper tire to road contact and thus abnormal wear. Do not exceed cold inflation pressure listed on the trailer VIN plate located on the front of the semi-trailer. Exceeding cold inflation pressure will result in damaged tire bodies, rims, and wheels. Replace all valve stem caps when pressure checking/adjusting has been completed. remove any foreign objects from between duals.

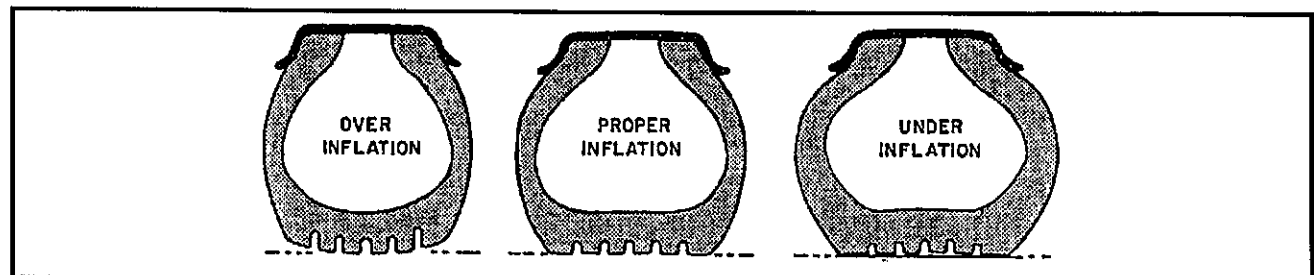


FIG. 6-4 TIRE INFLATION EXAMPLES

6-12 TIRE MATCHING

Both tires on the same spindle must be the same size in order to properly distribute the load and braking forces between them. Tire size can be checked by two methods; measuring tape, or with a straight edge or string the same length or longer than the trailer tracking width. The straight edge or string method can not be used if tire 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 dif-

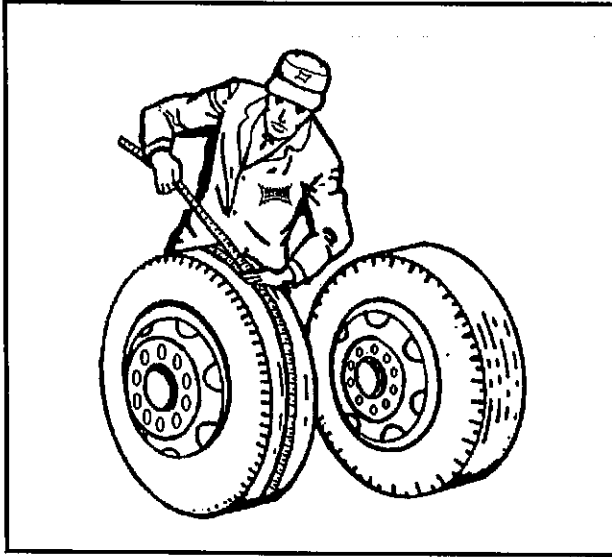


FIG. 6-5 CHECKING TIRE SIZE WITH MEASURING TAPE

ference, the smaller tire should be mounted to the inside position of the duals.

6-12.1 TAPE MEASURING METHOD

a. Measure around each tire on the tread surface. A maximum difference of $3/4$ " in the measurements is allowed between the two mating tires of a dual (See FIG. 6-5).

6-12.2 STRAIGHT EDGE OR STRING METHOD:

a. 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 $1/8$ " gap is allowed (See FIG. 6-6).

6-13 WHEEL BEARING LUBRICATION AND ADJUSTMENT

Oil level must be checked daily and maintained between the "ADD" and "FULL" lines on the hub cap window. Check for cracked windows, missing filler plugs and 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

- With a drain pan under the hub cap, remove the hub cap assembly allowing oil to drain.
- Lift the wheel off of the ground.
- Adjust slack adjuster to eliminate brake drag during tire/wheel rotation.
- Remove the outside spindle nut and locking washer.

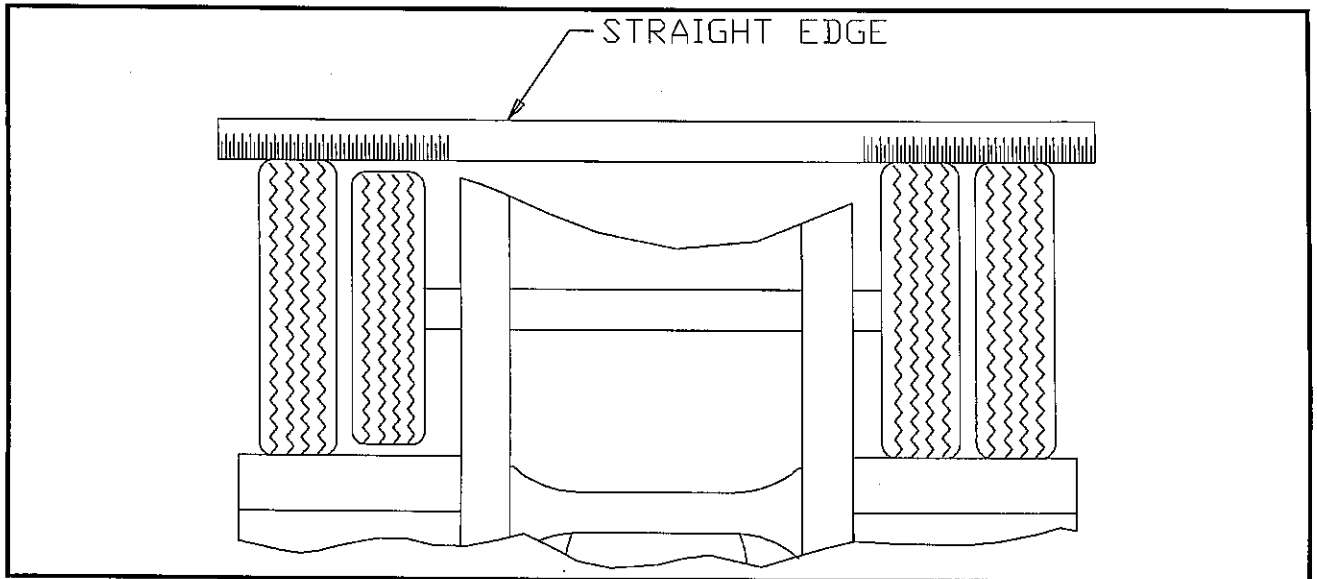


FIG. 6-6 STRAIGHT EDGE METHOD

e. Rotate the tire by hand and tighten the inner nut until there is a slight bind. Back off the inner spindle nut one-third 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 tighten to 250 (min.) - 400 (max.) ft-lb.

h. Install hub cap with new gasket and fill with oil to the full mark. Use 90 weight gear oil.

i. Adjust brakes according to **Paragraph 6-10, "BRAKE ADJUSTMENT"**.


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

6-14 SUSPENSION MAINTENANCE

**DANGER**

1. 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 SEMITRAILER WITH JACK STANDS SUFFICIENT TO WITHSTAND THE WEIGHT OF THE SEMITRAILER AND LOAD. FAILURE TO TAKE ADEQUATE SAFETY MEASURES MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

2. COMPLETELY DRAINING THE AIR RESERVOIR WILL RELEASE THE TRAILER BRAKES. ALWAYS CHOCK WHEELS BEFORE RELEASING BRAKES. FAILURE TO CHOCK WHEELS PRIOR TO RELEASING TRAILER BRAKES MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

**WARNING**

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

This paragraph covers the maintenance of the air ride and four-spring 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.

6-14.1 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.

6-14.2 AIR RIDE HEIGHT ADJUSTMENT

The following is the procedure for adjusting the air ride height (**See Figure 6-7** for parts identification).

a. Before adjusting, vehicle must be empty with the gooseneck kingpin at operating height and air supplied 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" wood block between the axle caps and trailer frame.

d. Lower the trailer by exhausting all air from the system. Recheck the ride height.

e. Move the control arms to the down position (about 45°) for 10-15 seconds. 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" lock nut located on the nylon blocks, allowing the control arm move approximately 1 inch.

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

h. Repeat this procedure for the other valve.

i. Remove the wood locator pins, pressurize the trailer air system, and raise the trailer. The height control valves may be used as an improvised jack by disconnecting the control arms at the lower bracket and pushing the control arms to an "up" position.

j. Remove the spacers and reconnect the linkage. This allows 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.

6-14.3 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.

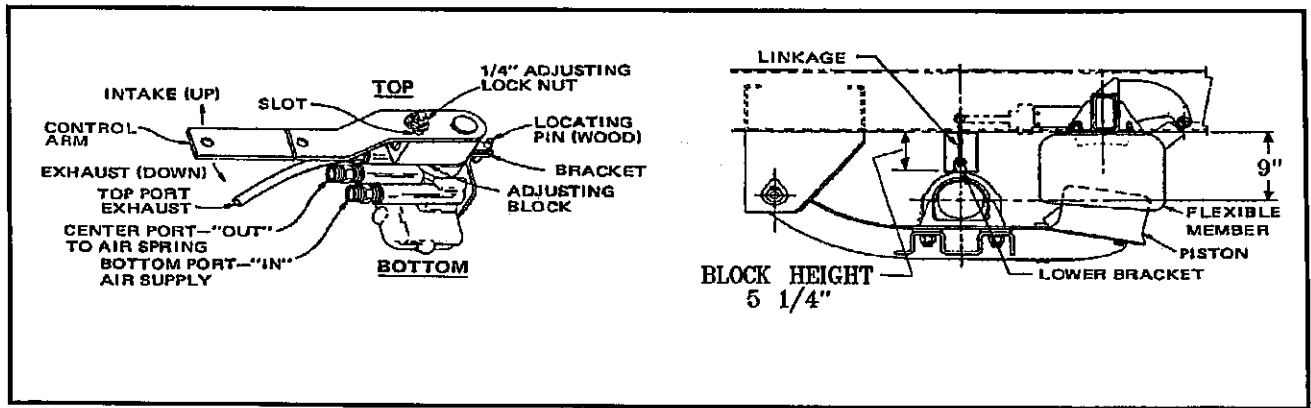


FIG. 6-7 AIR RIDE ADJUSTMENT

6-15 WHEEL ALIGNMENT

When trailer tires show signs of scuffing, feather-edging or uneven wear, examine the semi-trailer 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:

6-15.1 Jack trailer up so that the tires are off of the ground.

6-15.2 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.

6-15.3 Remove wheel, hub and bearing assemblies.

6-15.4 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 Figure 6-8).

6-15.5 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" or more is considered excessive tire "toe" and the axle must be replaced (See Fig. 6-8).

6-15.6 Follow the same procedures as in Paragraph 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. 6-9 for examples of camber).

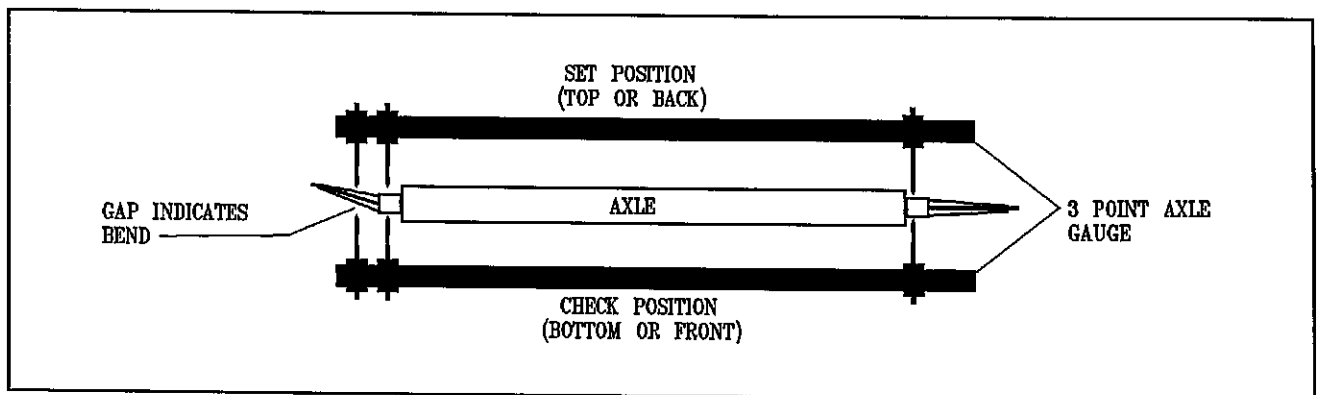


FIG. 6-8 BENT AXLE CHECK

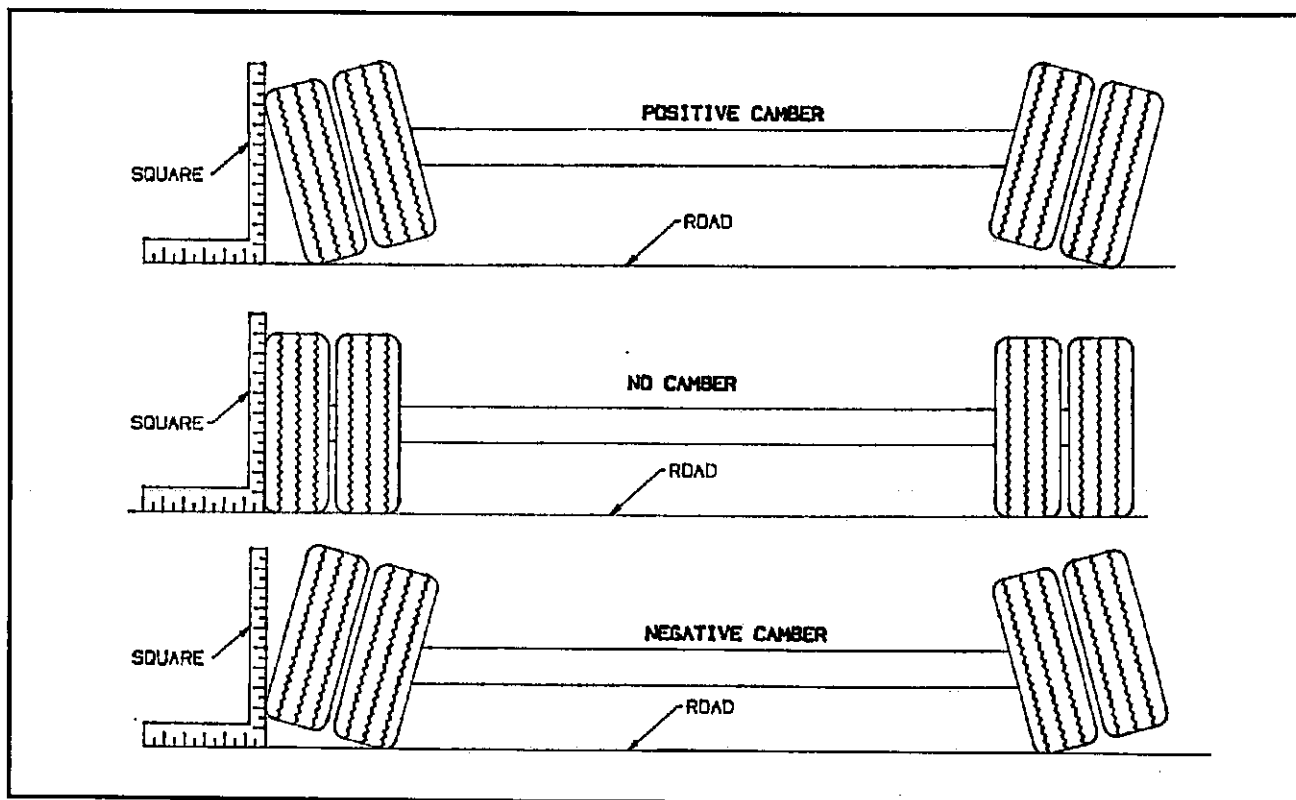


FIG. 6-9 EXAMPLES OF CAMBER

6-16 AXLE ALIGNMENT

Proper axle to king pin alignment is necessary to obtain straight tracking. If axle alignment is off, "dog-tracking" occurs. 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.

6-16.1 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.

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 Figure 6-10).

e. Measure (D1) to the other end of the axle in the same manner as in Step d. Record this measurement (See FIG. 6-10).

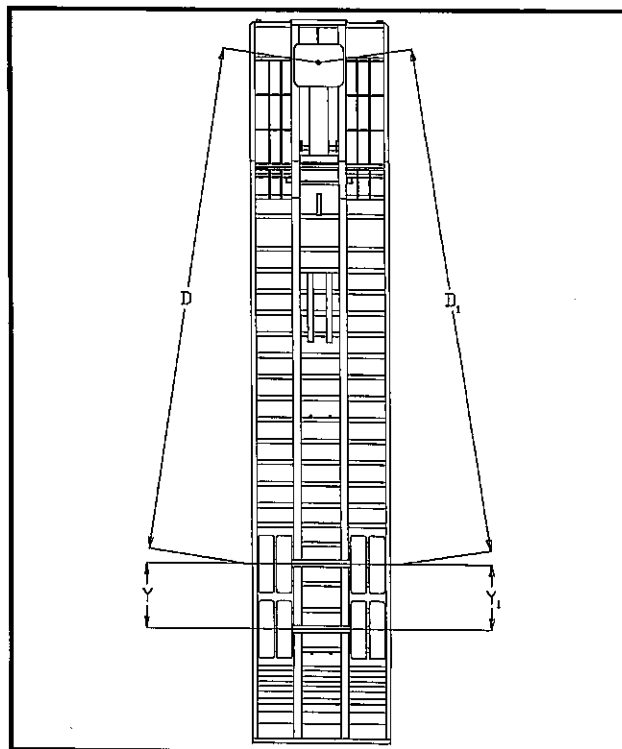


FIG. 6-10 CHECKING AXLE ALIGNMENT

f. It is usually necessary to set D1 about 1/8" shorter than D to insure 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.

6-16.2 AIR RIDE SUSPENSION AXLES

a. 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 in Steps b through f.

b. 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.

c. Align the front axle using the method outlined in **Paragraph 6-16.1**.

d. After proper alignment has been obtained, tighten the suspension pivot bolt nut to the torque listed in **SECTION 3, "STANDARD SPECIFICATIONS"**, and reweld the washer.

e. 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 should be the same.

f. Tighten the suspension pivot bolt nut to the torque listed in **SECTION 3, "STANDARD SPECIFICATIONS"** and reweld the washer.

6-16.3 SPRING SUSPENSION AXLES

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

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

c. Tighten the axle u-bolts to the torques listed in **SECTION 3, "STANDARD SPECIFICATIONS"**.

d. Tighten the front axle torque arm clamp bolts to the torque listed in **SECTION 3, "STANDARD 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 **Figure 6-10** should be the same.

f. Tighten the rear axle u-bolts to the torque values listed in **SECTION 3, "STANDARD SPECIFICATIONS"**.

g. Tighten the rear axle torque arm clamp bolts to the torque listed in **SECTION 3, "STANDARD SPECIFICATIONS"**.

6-17 HYDRAULIC ENGINE PACKAGE

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

a. 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 the hydraulic fluid reservoir may result in hydraulic fluid overflow during component operation.

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

c. 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.

d. Replace hydraulic filter with new filter at least *every 6 months* or more often under adverse conditions.

6-18 WINCHES

Inspect the winch cable before and after every usage. If frayed wires, nicks, kinks, worn spots, breaks or any other sign of deterioration of damage is found, immediate replacement is mandatory before further usage. If the trailer is going to be out in the weather for any length of time, it is advisable to oil the winch cable to prevent untimely rusting and deterioration of the cable.

Inspect the winch mechanism thoroughly each week to insure safe, efficient operation.

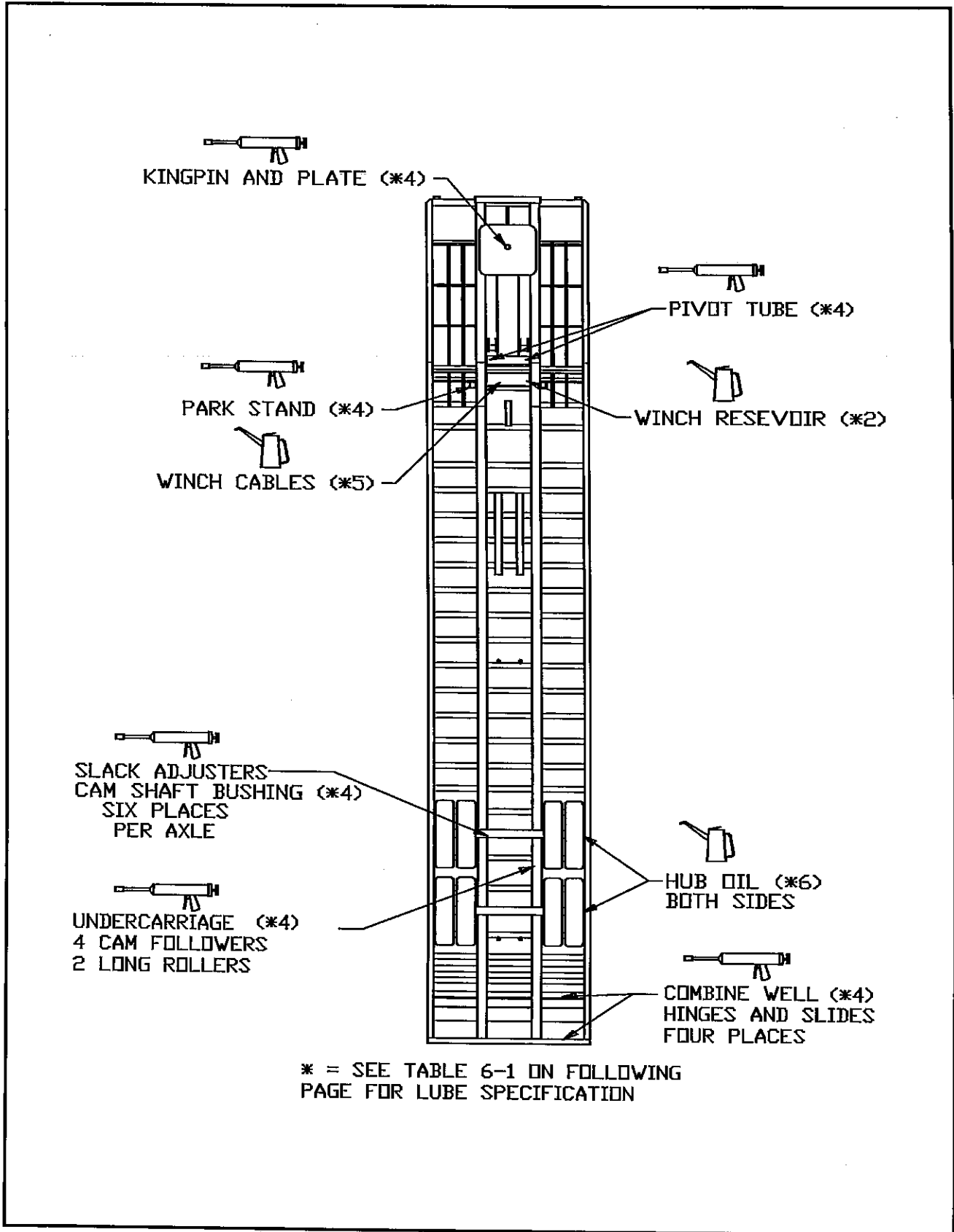


FIG. 6-11 LUBRICATION POINTS

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 T-TIGHTEN/TORQUE ADJ. L-LUBRICATE C-CLEAN

NORMAL OPERATING SERVICE INTERVALS - PERFORM AT THE TIME SHOWN SHORTEN SERVICE INTERVALS WHEN OPERATING IN SEVERE OR DIRTY CONDITIONS								
SERVICE INTERVAL ITEM:	TIMES	1st 5 HRS	WEEKLY	MONTHLY	6 MONTH	YEARLY	LUBE#	NOTES
	MILES	50	500	2,000	12,000	25,000		
ELECTRICAL								
LIGHTS		I	I					
WIRING AND CONNECTIONS		I		I				
MISCELLANEOUS								
FASTENERS		I,T		I				a
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,T				c
SLACK ADJUSTERS		I	I			L	4*	
CAM SHAFT ASSEMBLIES		I	I			L	4*	
HUB OIL		I	I,L			R*	6*	
WHEEL BEARINGS		I			I,T		6*	d
TIRE INFLATION AND WEAR		I	I					e
WHEEL LUG-NUTS		I,T	I	I,T				a
SUSPENSION ALIGNMENT		I		I				
UNDERCARRIAGE ROLLERS				L			4*	
HYDRAULICS								
OIL		I	I			R	1*	
FILTER		R			R			
HOSES (Inspect & Replace as needed)		I		I		I,R		
WINCH GEAR CASE		I		I			2*	

TABLE 6-2 MAINTENANCE SCHEDULE

* FOR RECOMMENDED LUBRICANT, SEE LUBE SPECIFICATION CHART

(a) SEE BOLT TORQUE SHART IN SECTION 3 'SPECIFICATIONS' FOR CORRECT TORQUE.

(b) NOT APPLICABLE

(c) SEE SECTION 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.

TABLE 6-2 MAINTENANCE SCHEDULE

7 TROUBLESHOOTING

PARAGRAPH	TITLE	PAGE NO.
7-1	ELECTRICAL	7-1
7-2	TIRES - WHEELS - SUSPENSION	7-2
7-3	BRAKES	7-3
7-4	BRAKE DRUMS	7-5
7-5	HYDRAULIC SYSTEM	7-5

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 cannot be located, see an automotive electrical specialist. For maintenance procedures see **Paragraph 6-4**.

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: tractor supply wire or circuit components too low capacity - enlarge wire or component, match bulbs with tractor voltage.

LIGHTS BRIGHT & BURN OUT

Voltage difference between trailer & tractor: tractor supply wire or circuit components too low capacity - enlarge wire or component, 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 **Paragraphs 6-11 thru 6-16.**

SYMPTOM	PROBLEM:	REMEDY
VIBRATIONS WHILE DRIVING	Improper tire inflation: inflate to proper pressure. Tires cupped or have flat spots: replace tires. Wheels bent or loose: replace or tighten. Tires incorrectly mounted: remount. Mud in wheels: clean wheels. Tire(s) out of balance: balance tires. Brakes dragging: locate cause and repair. Object(s) stuck between duals: 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	Undercarriage bushings worn: replace bushings. Worn or loose wheel bearings: adjust or replace as needed. Out of balance wheels and tires: balance wheels and tires.	
RIM FAILURE*:		
CRACKING	Overinflated tires: deflate tire to proper psi. High speeds: adjust speed according to road and load conditions. High speed cornering: adjust cornering practices. Over loading: check rim load rating.	

***IN ALL INSTANCES OF RIM FAILURE, 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: re-align axle.

TRACKS TO EITHER SIDE

Broken or bent springs or equalizers: replace defective parts.

AIR RIDE HEIGHT PROBLEMS:

TOO HIGH

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

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 **Paragraphs 6-5 thru 6-10.**

SYMPTOM

PROBLEM: REMEDY

NO BRAKES OR BRAKES ARE INTERMITTENT

Brake air system improperly connected: reconnect hand valves properly.
Relay/Emergency valve plugged: clean valve.
Defective tractor protection valve: repair or replace.
Restricted tubing or hose line: locate and eliminate restriction.
Broken line: locate break and repair.
Tractor air system failure: troubleshoot tractor air system and repair.

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 per Figure 6-12. Worn brake shoe bushing: replace bushing. Brake drum distortion: replace drum. Broken brake chamber spring: replace spring. Brake chamber pushrod binding: re-align 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 emergency valve in emergency position: check line pressure and check valve. Restricted tubing or line: locate restriction and remove. Defective tractor protection valve: troubleshoot tractor air system. Parking brakes locked: troubleshoot air system.
INSUFFICIENT BRAKES	Brakes need adjusting: adjust brakes. Brakes need lubricating: lubricate brakes. Brakes need relining: reline brakes. Low air pressure: troubleshoot air system. Defective relay emergency valve: repair or replace. Brakes overheated: stop and allow brakes to cool, locate cause of overheating.
BRAKES GRABBING	Grease on brake linings: reline brakes. Brake rigging binding: align brakes or replace bent parts. Defective brake valve on tractor: repair or replace valve. Defective relay emergency valve: repair or replace valve.

BRAKES, CONTINUED

SYMPTOM

PROBLEM: REMEDY

EXCESSIVE LEAKAGE WITH BRAKES RELEASED	Relay emergency valve leaking: repair or replace valve. Leaking tubing or hose: replace defective part.
EXCESSIVE LEAKAGE WITH BRAKES APPLIED	Relay emergency valve leaking: repair or replace valve. Leaking brake chamber diaphragm: replace diaphragm. Leaking tubing or hose: replace defective part.
EXCESSIVE LEAKAGE WITH EMERGENCY SYSTEM ONLY APPLIED - NO LEAKAGE WITH NORMAL BRAKING	Defective relay emergency valve: repair or replace valve.
EXCESSIVE WATER PRESENT IN BRAKE SYSTEM	Reservoir not drained often enough: drain reservoir daily.
EXCESSIVE OIL PRESENT IN BRAKE SYSTEM	Compressor on tractor passing excessive oil: repair compressor.
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 **See Paragraphs 6-5 thru 6-10.**

SYMPTOM

PROBLEM: REMEDY

EXCESSIVE LOSS OF BRAKES OR FADING	Overheated brake drums: check for defective or misadjusted brake linings, distorted or over-machined drums. Also check for operating conditions or loads that create severe or excessive brake applications.
BRAKES PULL TO EITHER SIDE	Drums of different diameters: replace with drums of same diameter. Foreign matter in drums: clean drums out.
ROUGH OR NOISY BRAKING ACTION	Defective drums: pull drums and inspect for any of the following; Heat spotted drums, grease spotting, blue drums, scored drums, excessive wear at rivet holes or edges, polished drums, out of round drums, unbalanced drums, worn/damaged brake components, foreign matter in drums. Correct situation or replace defective part(s).
VIBRATION IN RIDE	Defective drums or out-of-round: replace drums. Out-of-balance drums: balance drums.

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.

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.

SYSTEM INOPERATIVE, CONTINUED

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.

SYSTEM OPERATES TOO FAST

Wrong size or incorrectly adjusted restrictor: replace or adjust as necessary.
Engine running too fast: reduce engine speed.

HYDRAULIC SYSTEM , CONTINUED

SYMPTOM

PROBLEM: REMEDY

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 LIST

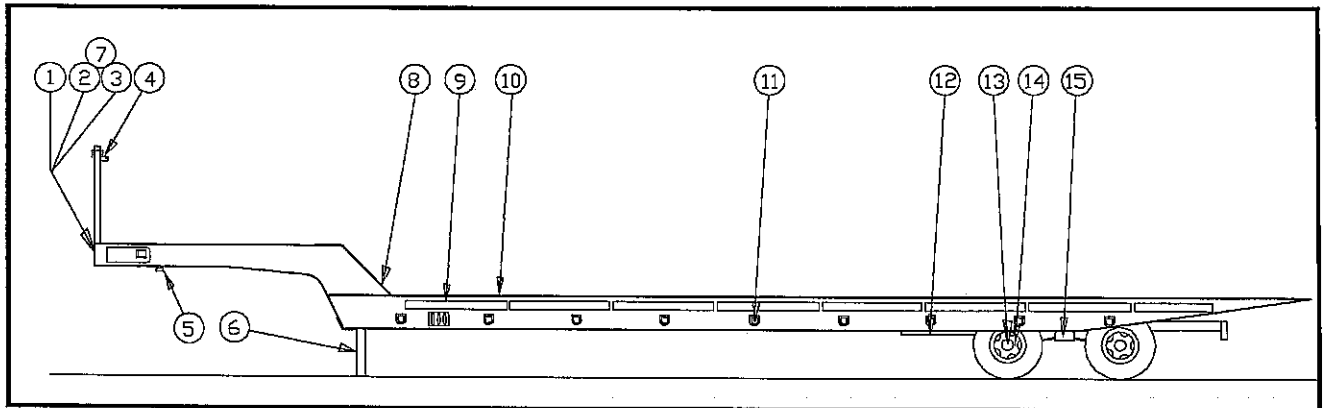


FIG. 8-1 SEMITRAILER MAIN COMPONENTS

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	REFERENCE	AIR SYSTEM (SEE FIG. 8-2, 8-3, 8-4, 8-5)	REF.
2	REFERENCE	ELECTRICAL SYSTEM (SEE FIG. 8-6 [317], FIG. 8-7 [316])	REF.
3	REFERENCE	MAIN HYDRAULIC SYSTEM (SEE FIG. 8-8, 8-9)	REF.
4	REFERENCE	BULKHEAD WELDMENT (SEE FIG. 8-16)	1
5	REFERENCE	GOOSENECK ASSEMBLY (SEE FIG. 8-17) (2 AXLE 60,000 LB.)	REF. 1
6	3-311-0101145	PARKING STANDS	2
	.346SL	PIN, LOCKING HITCH	2
7	REFERENCE	DECALS (SEE FIG. 8-40)	1
8	REFERENCE	WINCH (SEE FIG. 8-23, 8-25, 8-26, 8-27, 8-33)	1
9	REFERENCE	OVERWIDTH EXTENSIONS (SEE FIG. 8-19, 8-20)	REF.
10	REFERENCE	FRAME, MAIN TRAILER	1
	.1-DSL LATCH	LATCH, TOOL COMPARTMENT	2
	..BSL-6-4	RIVET, TOOL COMPARTMENT LATCH	8
	.1-822-010002	TRIM-LOCK	A/R
11	3-793-010002	D-RING	18
	.3-311-010182	HOLD-DOWN, D-RING	18
12	REFERENCE	UNDERCARRIAGE (SEE FIG. 8-14, 8-15)	1
13	REFERENCE	AXLE ASSEMBLY (SEE FIG. 8-21)	2,3*
14	B7-870-019	HUB/DRUM ASSEMBLY (SEE FIG. 8-22, 8-24)	2,3*
	.3-406-010044	HUB/DRUM, LEFT-HAND	2,3*
	.3-406-010045	HUB/DRUM, RIGHT-HAND	2,3*
	.3-870-010012	WHEEL, DISC	8,12*
	..TR500	STEM, STRAIGHT VALVE	4,6*
	..TR573	STEM, VALVE	4,6*
	..7381	EXTENSION, VALVE STEM	4,6*
	.10RX17.5 GY	TIRE, TUBELESS TRAILER 14 PR.	8,12*
15	B3-870-028	TIRE ASSEMBLY, SPARE	1
	.10RX17.5 GY	TIRE, TUBELESS	1
	.3-870-010012	WHEEL, DISC	1
	..TR573	STEM, VALVE	1
16	REFERENCE	SUSPENSION SYSTEM (SEE FIG. 8-28, 8-29, 8-30 [AIR], 8-39 [SPRING])	1

* TRI-AXLE QUANTITY

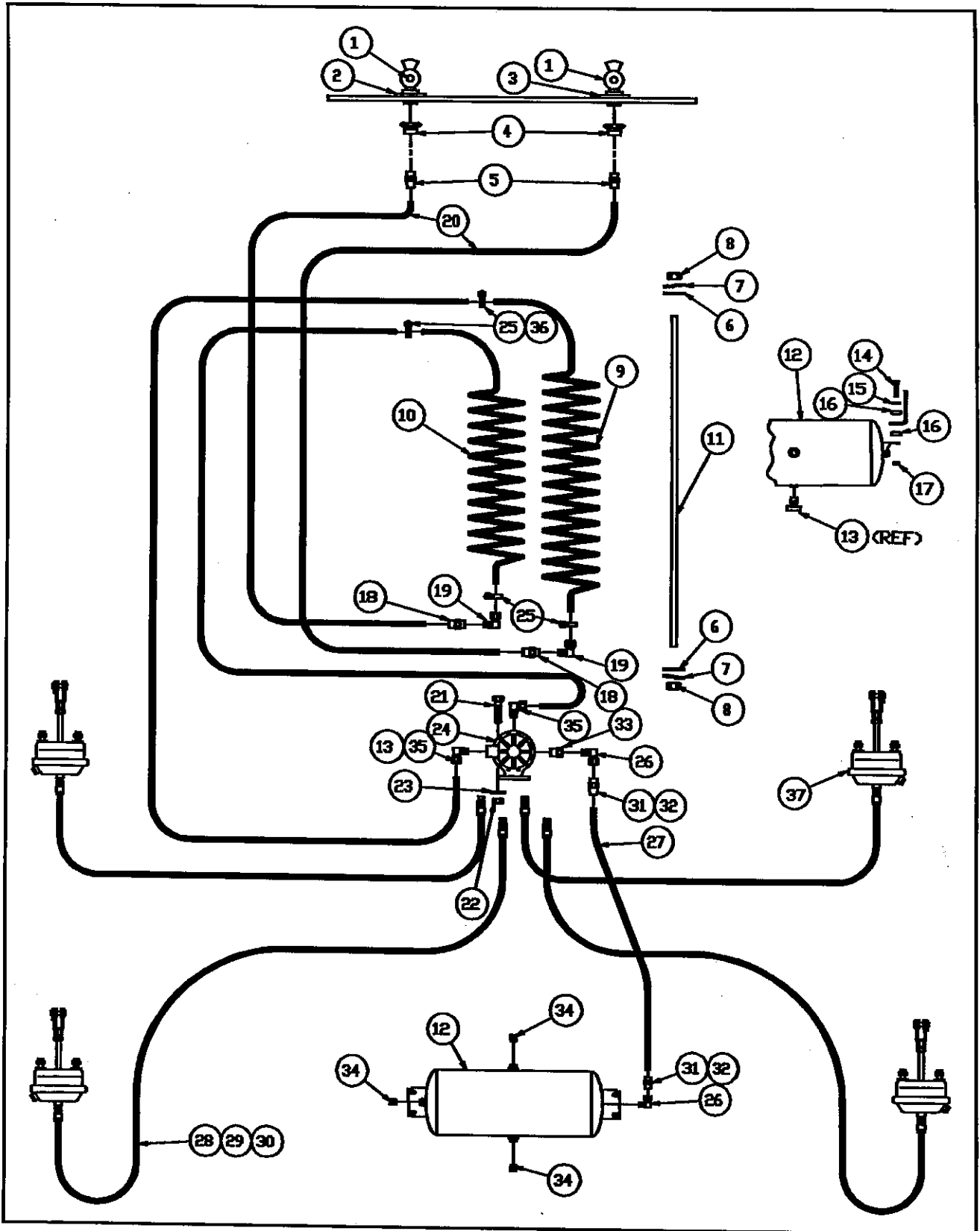


FIG. 8-2 TANDEM AIR BRAKE SCHEMATIC

SCHEMATIC, TANDEM W/AIR BRAKE AIR SYSTEM

ITEM NO.	PART NO.	DESCRIPTION	QTY
1	55B11	GLADHAND	2
2	55B61-6	TAG, EMERGENCY LINE	1
3	55B61-7	TAG, SERVICE LINE	1
4	55B61	UNION, FRAME	2
5	1-297-010007-11	CONNECTOR	2
6	5/8FW	WASHER, FLAT	2
7	5/8SLW	WASHER, SPLIT LOCK	2
8	5/8-11HFN	NUT, HEX	2
9	3-384-010002	AIRLINE, COILED SERVICE (STANDARD LOAD ANGLE) BLUE	1
	3-384-010003	AIRLINE, COILED SERVICE (WITH LOW LOAD ANGLE) BLUE	1
10	3-384-010001	AIRLINE, COILED EMERGENCY (STANDARD LOAD ANGLE) RED	1
	3-384-010004	AIRLINE, COILED EMERGENCY (WITH LOW LOAD ANGLE) RED	1
11	3-642-010007	ROD, HOSE SUPPORT (STANDARD LOAD ANGLE)	1
	3-642-010033	ROD, HOSE SUPPORT (WITH LOW LOAD ANGLE)	1
12	3-780-010002	RESERVOIR, AIR	1
14	3/8-16X1-1/2CS	CAP SCREW, HEX HEAD	4
15	3/8FW	WASHER, FLAT	4
16	805-2	BUSHINGS, STEP	8
17	3/8-16HFLN	NUT, LOCKING HEX	4
18	1-297-010012-12	FITTING	2
19	2047-8X6S	FITTING, AIRLINE	2
20	62P6	TUBING, AIRLINE	A/R
21	3/8-16X1-1/4CS	CAP SCREW, HEX HEAD	3
22	3/8-16HFLN	NUT, LOCKING HEX	3
23	3/8SLW	WASHER, SPLIT LOCK	3
24	90W101	VALVE, RELAY	1
25	6828	CLAMP, HOSE	4
26	2047-8X8S	ELBOW	2
27	62P8	TUBING, NYLON AIR	A/R
28	55C21	FITTING, HOSE	4
29	54A6X2505	HOSE, AIR	A/R
30	55C31	FITTING, AIR	4
31	1-297-010007-16	FITTING, TUBE	2
33	2045-8-8S	FITTING, SWIVEL	1
34	1/2 PIPE PLUG	PLUG, PIPE	3
35	2047-6-6S	FITTING, SWIVEL	2
36	6812	CLAMP, HOSE	2
37	034-058-01	CHAMBER, AIR BRAKE	4

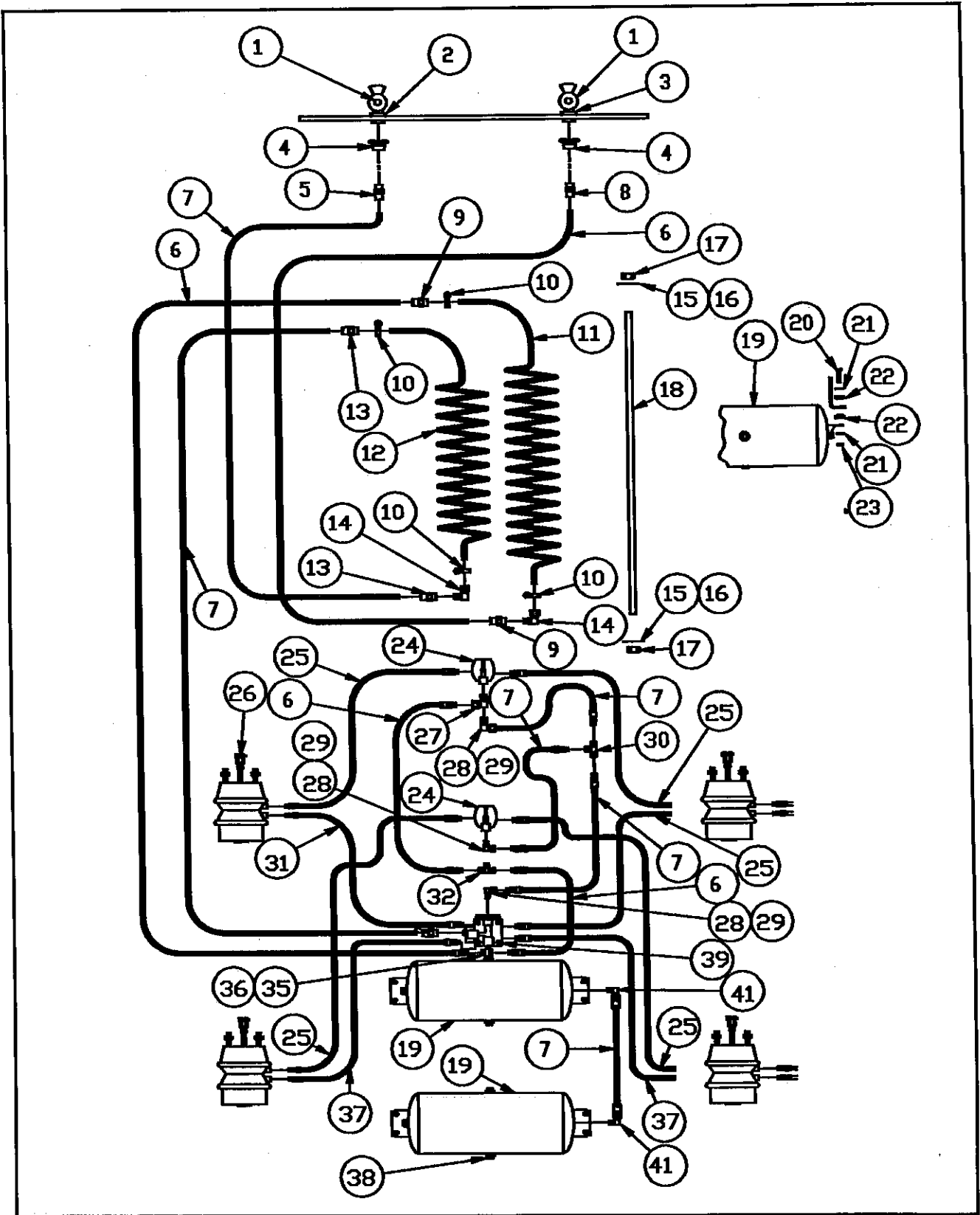


FIG. 8-3 TANDEM SPRING BRAKE SCHEMATIC

SCHEMATIC, TANDEM W/SPRING BRAKE AIR SYSTEM

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	55B11	GLADHAND	2
2	55B61-6	TAG, EMERGENCY LINE	1
3	55B61-7	TAG, SERVICE LINE	1
4	55B61	UNION, FRAME	2
5	1-297-010007-16	CONNECTOR	1
6	62P6	TUBING, AIR LINE	A/R
7	62P8	TUBING, AIR LINE	A/R
8	1-297-010008-18	CONNECTOR	1
9	1-297-010012-12	FITTING	2
10	239-9076-1	CLAMP, SUPPORT	4
11	3-384-010002	AIR LINE, COILED SERVICE (STANDARD LOAD ANGLE) BLUE	1
	3-384-010003	AIR LINE, COILED SERVICE (WITH LOW LOAD ANGLE) BLUE	1
12	3-384-010001	AIR LINE, COILED EMERGENCY (STANDARD LOAD ANGLE) RED	1
	3-384-010004	AIR LINE, EMERGENCY (WITH LOW LOAD ANGLE) RED	1
13	1-297-010007-13	FITTING	2
14	2047-8X6S	FITTING, AIR LINE	2
15	5/8FW	WASHER, FLAT	2
16	5/8SLW	WASHER, SPLIT LOCK	2
17	5/8-11HFN	NUT, HEX	2
18	3-642-010007	ROD, HOSE SUPPORT (STANDARD LOAD ANGLE)	1
	3-642-010033	ROD, HOSE SUPPORT (WITH LOW LOAD ANGLE)	1
19	3-780-010002	RESERVOIR, AIR	2
20	3/8-16X1-1/2CS	CAP SCREW, HEX HEAD	8
21	3/8FW	WASHER, FLAT	16
22	805-2	BUSHINGS, STEP	16
23	3/8-16HFLN	NUT, LOCKING HEX	8
24	758-182	VALVE, BRAKE SERVICE	2
25	3-384-010019	AIR HOSE	2
26	3-128-010002	CHAMBER, SPRING BRAKE	
	(SEE FIGURE 8-21 FOR REPLACEMENT PARTS)	4
27	1-297-010008-18	FITTING, AIR	1
28	2047-8X6	ELBOW	3
29	1-297-010007-15	FITTING, AIR	4
30	1-297-010010-06	FITTING, TEE	1
31	3-384-010014	AIR HOSE	4
32	1-297-010015-07	TEE, BRASS WEATHER	1
35	1-297-010015-06	FITTING, AIR	1
36	2083-8-8S	FITTING	1
37	3-384-010024	AIR HOSE	2
38	1/2-PIPE PLUG	PLUG, PIPE	4
39	758-181	VALVE, FOUR PORT TASK	1
41	1-297-010008-24	FITTING	2

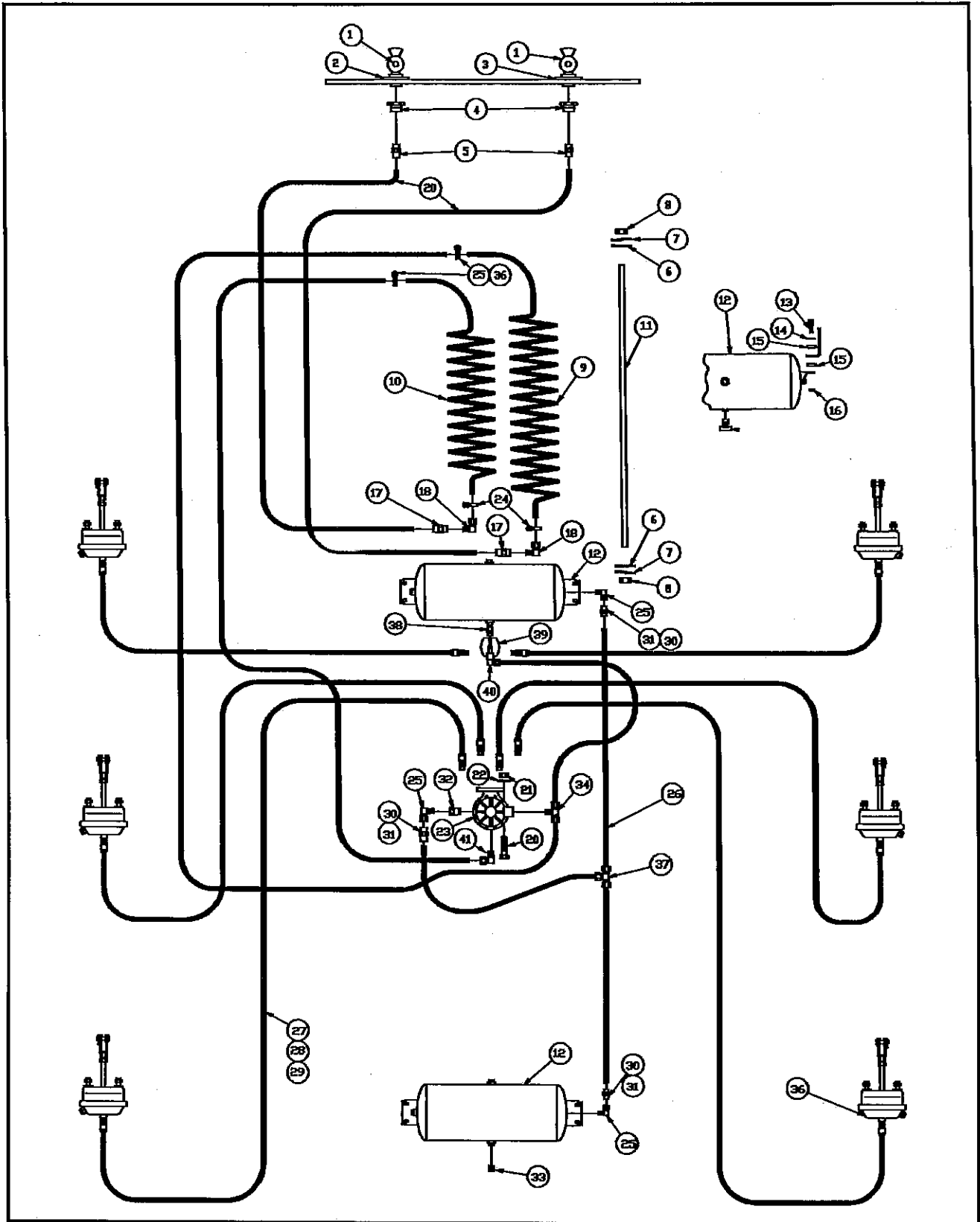


FIG. 8-4 TRI-AXLE AIR BRAKE SCHEMATIC

SCHEMATIC, TRI-AXLE AIR BRAKE SYSTEM

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	55B11	GLADHAND	2
2	55B61-6	TAG, EMERGENCY LINE	1
3	55B61-7	TAG, SERVICE LINE	1
4	55B61	UNION, FRAME	2
5	1-297-010012-11	CONNECTOR, FEMALE	2
6	5/8FW	WASHER, FLAT	2
7	5/8SLW	WASHER, SPLIT LOCK	2
8	5/8-11HFN	NUT, HEX	2
9	3-384-010002	AIRLINE, COILED SERVICE (STANDARD LOAD ANGLE) BLUE	1
	3-384-010003	AIRLINE, COILED SERVICE (WITH LOW LOAD ANGLE) BLUE	1
10	3-384-010001	AIRLINE, COILED EMERGENCY (STANDARD LOAD ANGLE) RED	1
	3-384-010004	AIRLINE, COILED EMERGENCY (WITH LOW LOAD ANGLE) RED	1
11	3-642-010007	ROD, HOSE SUPPORT (STANDARD LOAD ANGLE)	1
	3-642-010033	ROD, HOSE SUPPORT (WITH LOW LOAD ANGLE)	1
12	3-780-010002	RESERVOIR, AIR	2
13	3/8-16X1-1/2CS	CAP SCREW, HEX HEAD	8
14	3/8FW	WASHER, FLAT	16
15	805-2	BUSHINGS, STEP	16
16	3/8-16HFLN	NUT, LOCKING HEX	8
17	1-297-010012-12	FITTING	2
18	2047-8X6S	FITTING, AIR LINE	2
19	62P6	TUBING, AIR LINE	A/R
20	3/8-16X1-1/4CS	CAP SCREW, HEX HEAD	3
21	3/8-16HFLN	NUT, LOCKING HEX	3
22	3/8SLW	WASHER, SPLIT LOCK	3
23	90W101	VALVE, RELAY	1
24	6828	CLAMP, HOSE	8
25	2047-8X8S	ELBOW	3
26	62P8	TUBING, NYLON AIR	A/R
27	55C21	FITTING, HOSE	8
28	54A6X2505	HOSE, AIR	A/R
29	55C31	FITTING, AIR	4
30	1-297-010007-16	FITTING, TUBE	3
32	2045-8-8S	FITTING, SWIVEL	1
33	1/2 PIPE PLUG	PLUG, PIPE	3
34	2047-6-6S	FITTING, SWIVEL	1
35	6812	CLAMP, HOSE	2
36	034-058-01	CHAMBER, AIR BRAKE	6
37	1-297-010010-04	TEE, BRASS UNION	1
38	2083-8-8S	NIPPLE	1
39	1-297-010008-18	ELBOW, MALE	1
40	3-843-010005	VALVE, RELAY	1
41	2047-6X6	FITTING, SWIVEL	1

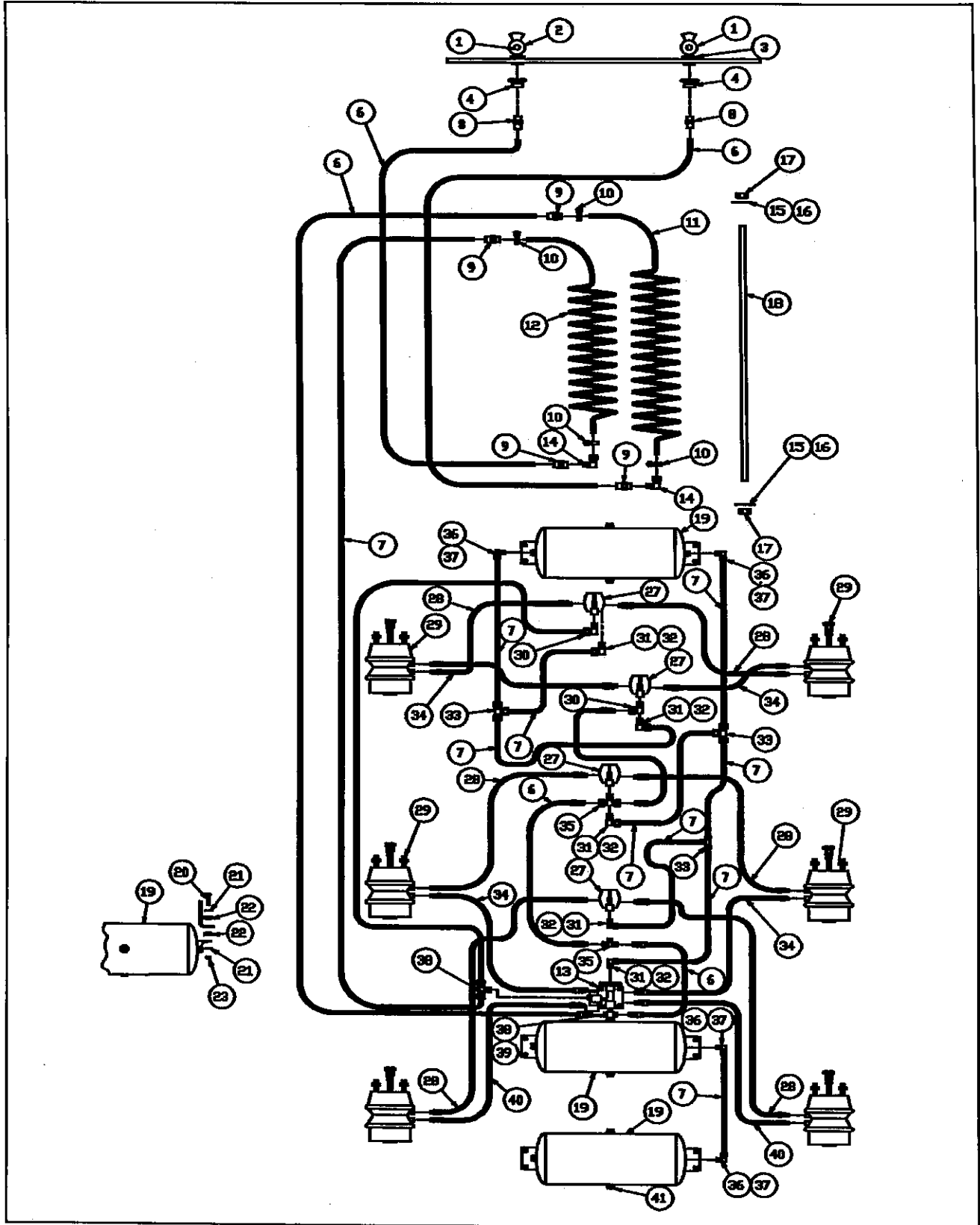


FIG. 8-5 TRI-AXLE SPRING BRAKE SCHEMATIC

SCHEMATIC, TRI-AXLE SPRING BRAKE SYSTEM

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	55B11	GLADHAND	2
2	55B61-6	TAG, EMERGENCY LINE	1
3	55B61-7	TAG, SERVICE LINE	1
4	55B61	UNION, FRAME	2
5	1-297-010007-16	INSERT 1/2" X 1/2"	4
6	62P6	TUBING, AIRLINE	A/R
7	62P8	TUBING, AIRLINE	A/R
8	1-297-010008-18	ELBOW, MALE	2
9	1-297-010012-12'	FITTING	4
10	239-9076-1	CLAMP, SUPPORT	4
11	3-384-010002	AIR LINE, COILED SERVICE (STANDARD LOAD ANGLE)	1
	3-384-010003	AIR LINE, COILED SERVICE (WITH LOW LOAD ANGLE)	1
12	3-384-010001	AIR LINE, COILED EMERGENCY (STANDARD LOAD ANGLE)	1
	3-384-010004	AIR LINE, COILED EMERGENCY (WITH LOW LOAD ANGLE)	1
13	1-297-010007-13	VALVE, FOUR PORT TASK	1
14	2047-8X6S	FITTING, AIR LINE	2
15	5/8FW	WASHER, FLAT	2
16	5/8SLW	WASHER, SPLIT LOCK	2
17	5/8-11HFN	NUT, HEX	2
18	3-642-010007	ROD, HOSE SUPPORT (STANDARD LOAD ANGLE)	1
	3-642-010033	ROD, HOSE SUPPORT (WITH LOW LOAD ANGLE)	1
19	3-780-010002	RESERVOIR, AIR	3
20	3/8-16X1-1/2CS	CAP SCREW, HEX HEAD	12
21	3/8FW	WASHER, FLAT	24
22	805-2	BUSHING, STEP	24
23	3/8-16HFLN	NUT, LOCKING HEX	12
27	758-182	VALVE, BRAKE SERVICE	2
28	3-384-010019	HOSE, AIR	6
29	3-128-010002	CHAMBER, SPRING BRAKE	6
		(SEE FIG. 8-21 FOR REPLACEMENT PARTS)	4
30	1-297-010008-18	ELBOW, MALE	3
31	2047-8X6	ELBOW	5
32	1-297-010007-15	CONNECTOR, MALE	5
33	1464X8X8X8	FITTING, TEE	3
34	3-384-010014	HOSE, AIR	4
35	1-297-010015-07	TEE, BRASS WEATHER	2
37	2047-8X8	FITTING	4
38	1-297-010015-06	FITTING	2
39	2083-8-8S	FITTING	1
40	3-384-010024	HOSE, AIR	2
41	1/2PIPE PLUG	PLUG, PIPE	7

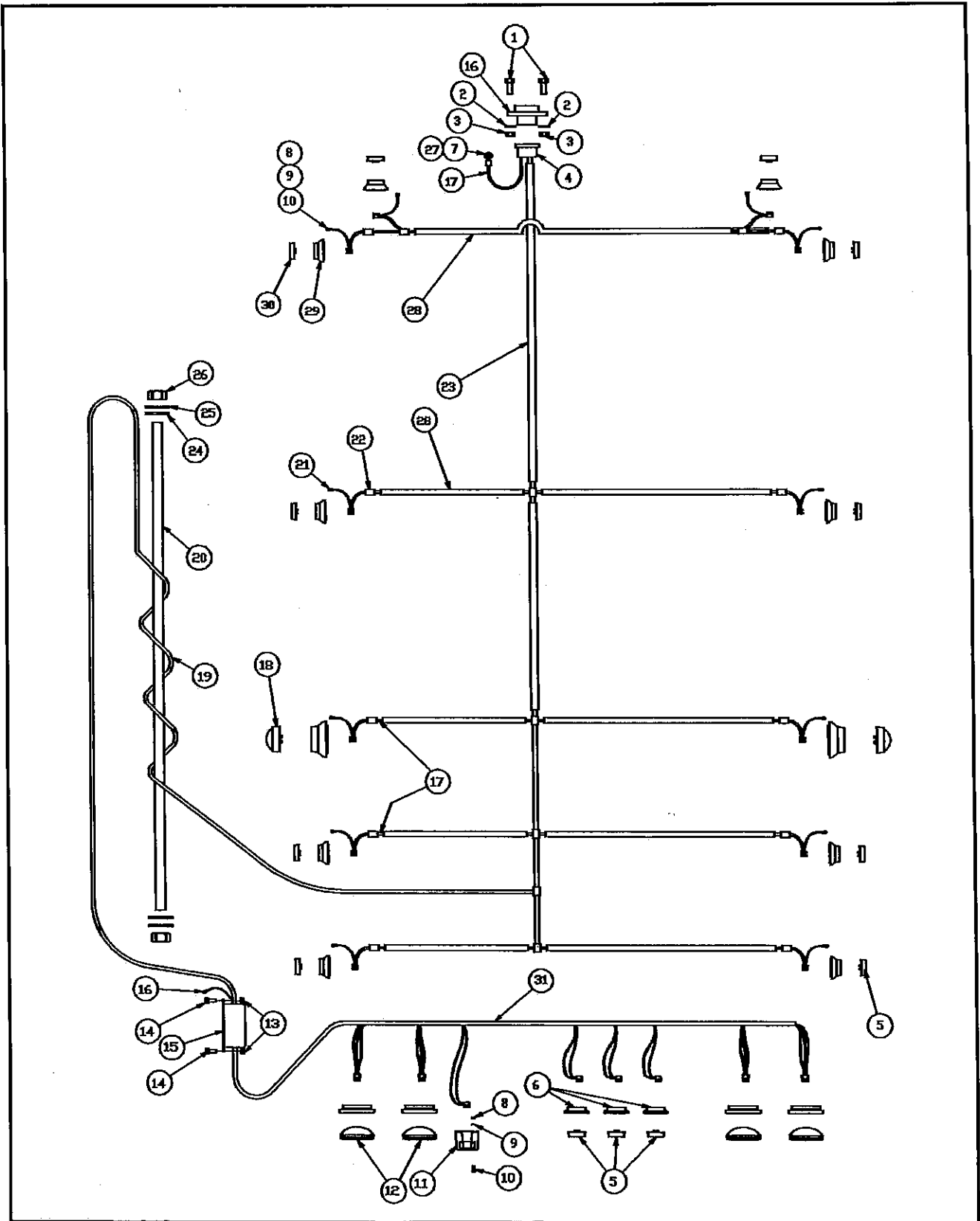


FIG. 8-6 317 ELECTRICAL SYSTEM SCHEMATIC

SCHEMATIC, 317 ELECTRICAL SYSTEM

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	5/16-18X1-1/4CS	CAP SCREW, HEX HEAD	2
2	5/16SLW	WASHER, SPLIT LOCK	2
3	5/16-18HFN	NUT, HEX	2
4	59W-2-3	BOOT, RUBBER	1
5	10205R	LAMP, RED REFLECTOR	5
6	10404	MOUNT, GROMMET 3 IN.	3
7	DO1-412	TERMINAL, RING	1
8	3/16-24HFN	NUT, HEX	14
9	3/16SLW	WASHER, SPLIT LOCK	14
10	3/16-3/4RHD STV	STOVE BOLT, ROUND HEAD	14
11	15009	LAMP, LICENSE	1
12	40015R	LIGHT, STOP/TURN/TAIL	4
13	1/4-20HFLN	NUT, LOCKING HEX	2
14	1/4-20X3/4HHCS	CAP SCREW, HEX HEAD	2
15	750-029	JUNCTION BOX	1
16	59S-7	RECEPTACLE, 7-PIN	1
17	1-879-010005	CONDUIT, 14 AWG BROWN	A/R
18	60015Y	LAMP, HI-VISIBILITY YELLOW TURN AND CLEARANCE	2
19	3-156-010001	CABLE, COILED ELECTRICAL (STANDARD LOAD ANGLE)	1
	3-156-010002	CABLE, COILED ELECTRICAL (WITH LOW LOAD ANGLE)	1
20	3-156-010001	SUPPORT, HOSE ROD (STANDARD LOAD ANGLE)	1
	3-642-010033	SUPPORT, HOSE ROD (WITH LOW LOAD ANGLE)	1
21	3-203-010001	TERMINAL, RING	14
22	3-272-010021	SPLICE, ELECTRICAL BUTT	35
23	3-156-010009	CABLE, MULTI CONDUCTOR	A/R
24	5/8FW	WASHER, FLAT	2
25	5/8SLW	WASHER, SPLIT LOCK	2
26	5/8-11HFN	NUT, HEX	2
27	3-272-010022	SPLICE, ELECTRICAL BUTT	1
28	3-201-010002	CONDUIT PLASTIC FLEX	A/R
29	10403	GROMMET	10
30	10205Y	LAMP, YELLOW REFLECTOR	8
31	3-368-010024	WIRING HARNESS FOR REAR TRAILER	1

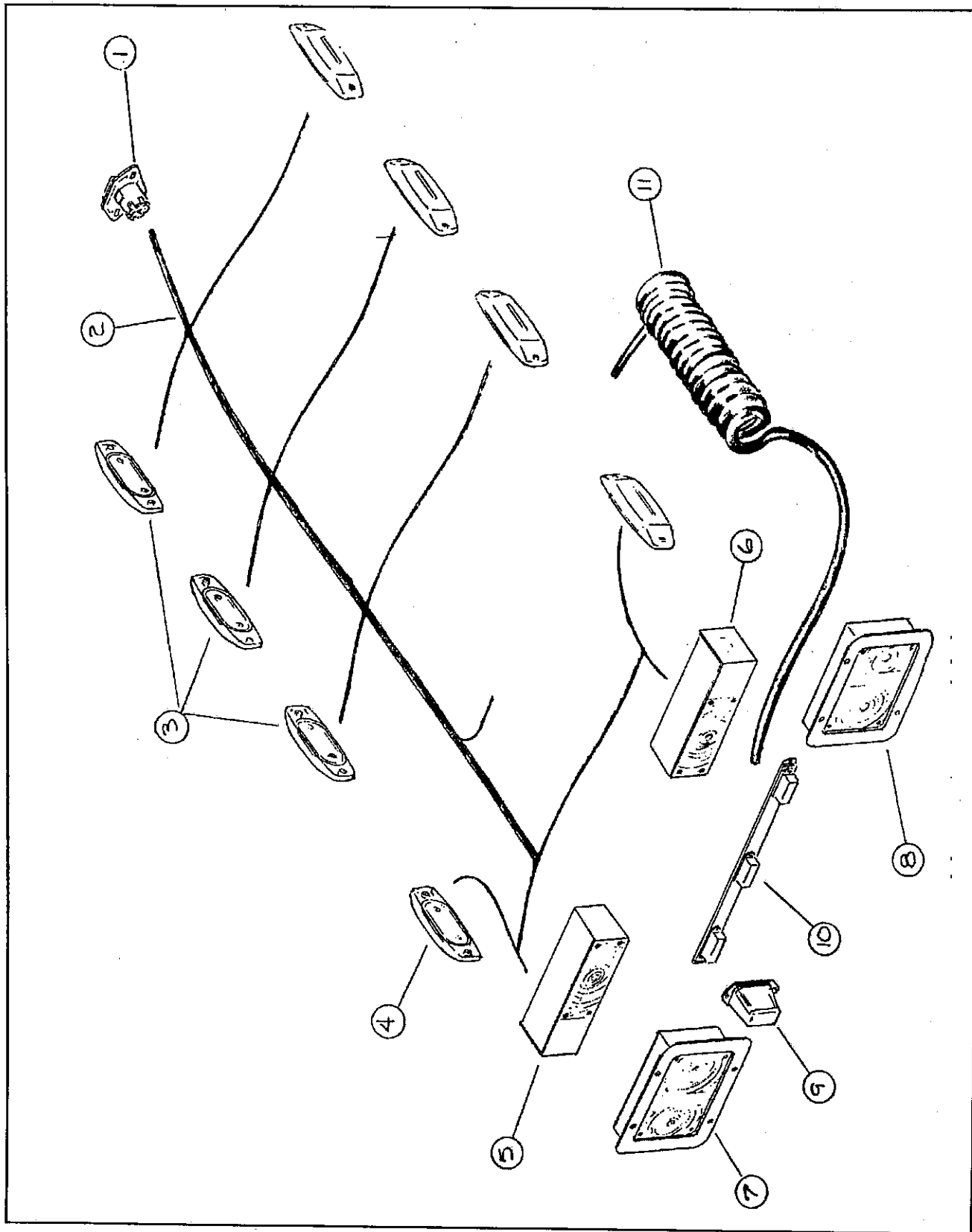


FIG. 8-7 316 ELECTRICAL SYSTEM SCHEMATIC

SCHEMATIC, 316 ELECTRICAL SYSTEM

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	59S-7	ELECTRICAL SOCKET, SEVEN POLE	1
2	3-368-010003	WIRING HARNESS (INCLUDING ITEM 1)	1
3	M-130A	CLEARANCE LIGHT, AMBER	6
	130-25A	LENS, AMBER	
	194	BULB	
4	M-130R	CLEARANCE LIGHT, RED	2
	130-25R	LENS, RED	
	194	BULB	
5	5236-23	TAIL LIGHT, LEFT	1
	9090-23	LENS, LONG	
	9091-23	LENS, SHORT	
	1157	BULB, DOUBLE ELEMENT	
	1895	BULB, SINGLE ELEMENT	
6	5237-23	TAIL LIGHT, RIGHT	1
	9090-23	LENS, LONG	
	9091-23	LENS, SHORT	
	1157	BULB, DOUBLE ELEMENT	
	1895	BULB, SINGLE ELEMENT	
7	430L	STOP AND TAIL LIGHT, LEFT	1
	430-15	LENS	
	1157	BULB	
8	430R	STOP AND TAIL LIGHT, RIGHT	1
	430-15	LENS	
	1157	BULB	
9	M436-12	LIGHT, LICENSE PLATE	1
	436-01	HOOD	
	436-25	LENS	
	194	BULB	
10	M107-3R-12	LIGHT, IDENTIFICATION	
	107-15R	LENS, RED	
	1895	BULB	
11	3-156-010001	CABLE, COILED ELECTRICAL (STANDARD LOAD ANGLE)	1
	3-156-010002	CABLE COILED ELECTRICAL (WITH LOW LOAD ANGLE)	

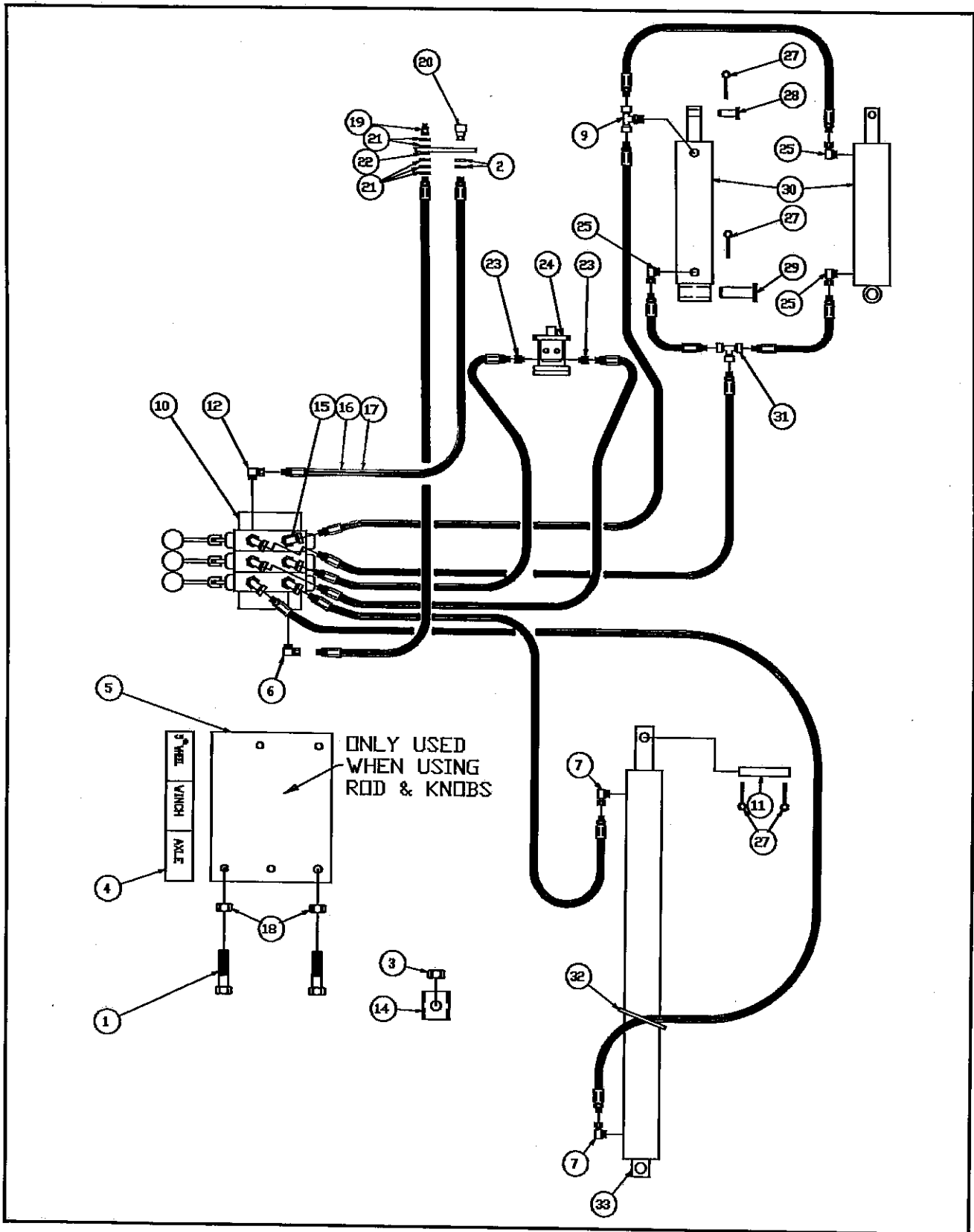


FIG. 8-8 STANDARD HYDRAULIC SYSTEM SCHEMATIC

SCHEMATIC, HYDRAULIC SYSTEM

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3/8-16X2CSGR5	BOLT	3
2	1FW	WASHER, FLAT	2
3	3/8-16	NUT, HEX	8
4	3-573-010009	DECAL, INSTRUCTION	1
5	3-311-111558	PLATE, VALVE MOUNTING	1
6	1-007-010024	ADAPTER	1
7	2047-8-8S	ADAPTER	2
8	1/2-13HFN	NUT, HEX	6
9	FF1469-080808S	ADAPTER	1
10	3-846-010008	VALVE, THREE SPOOL (SEE FIG. 8-10)	1
11	3-557-010120	PIN, UNDERCARRIAGE CYLINDER	1
12	2068-12-12S	ADAPTER, O-RING	1
13	3-557-010032	PIN, CYLINDER ROD END	2
14	2-181-010001	CLAMP, HOSE	8
15	1-007-010023	ADAPTER	6
16	1-397-010044	HOSE, HYDRAULIC	A/R
17	1-299-010002	HOSE END	2
18	3/8-16HFLN	NUT, HEX	3
19	8010-4	TIP, MALE (1/2 INCH)	1
20	S25F-6	COUPLER, FEMALE HALF (3/4 INCH)	1
21	7/8 MACH BUSH	BUSHING, MACHINERY	2
22	1/2 HOSE WASHER	WASHER, GARDEN HOSE	1
23	2066-8-10S	ADAPTER, O-RING	2
24	104-1003	MOTOR, 12,000# WINCH (SEE FIG. 8-27)	1
	109-1117	MOTOR, 20,000# WINCH (SEE FIG. 8-25)	1
25	1-007-010007	ELBOW, 90°	4
26	2254-8-8S	ADAPTER	4
27	3/16X2-14	PIN, COTTER	10
28	3-557-010059	PIN, ROD END	2
29	3-557-010033	PIN, BUTT END	2
30	3-242-010099	CYLINDER, TRAILER TILT (SEE FIG. 8-11)	2
31	2255-8-8S	TEE, PIPE SWIVEL	1
32	T120R	STRAP, TYTON	20
33	3-242-010103	CYLINDER, UNDERCARRIAGE (SEE FIG. 8-12)	1
34	1-397-010010	HOSE, HYDRAULIC	A/R
35	1-299-010001	HOSE END	16

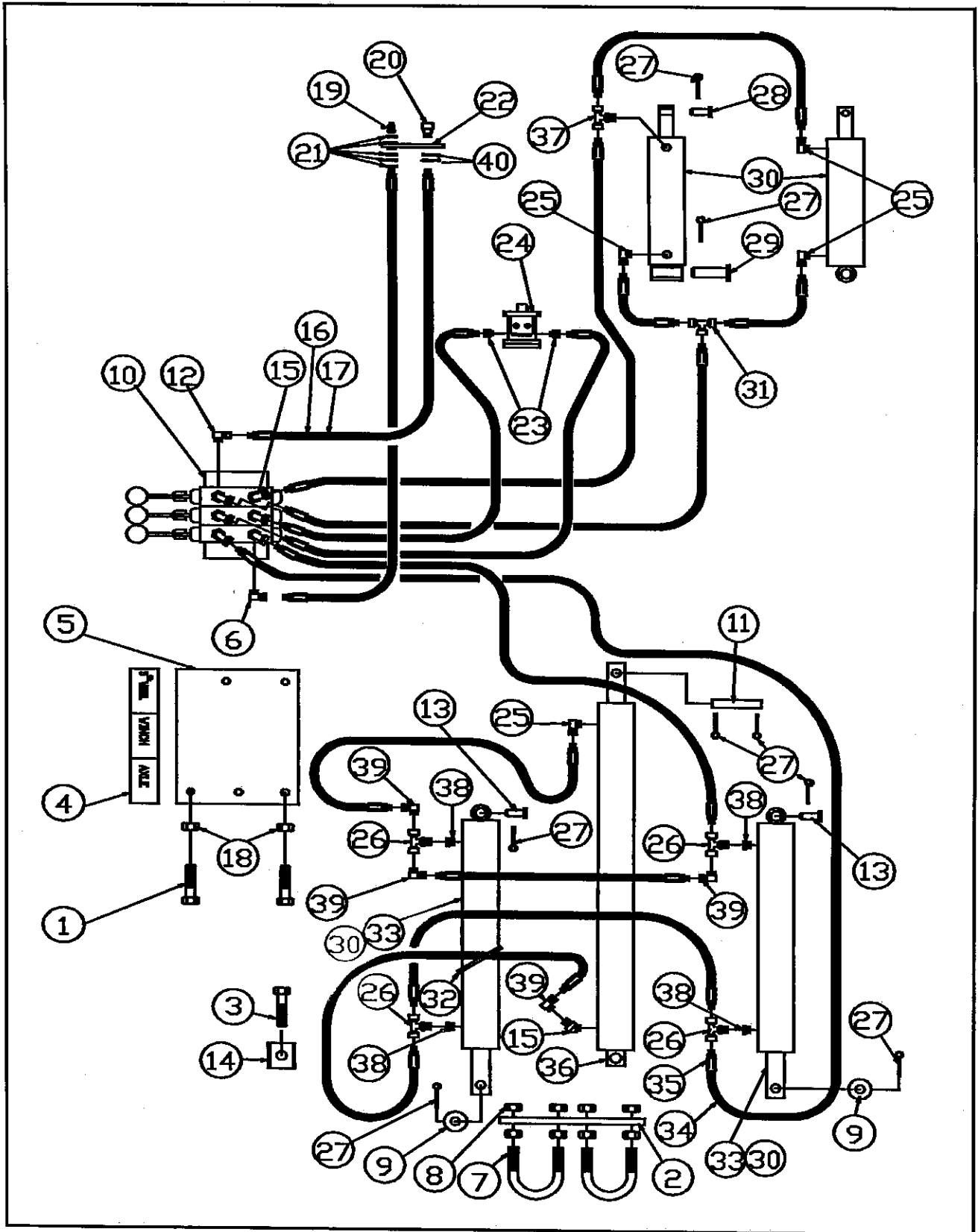


FIG. 8-9 LOW LOAD ANGLE HYDRAULIC SCHEMATIC

SCHEMATIC, LOW LOAD ANGLE HYDRAULIC SYSTEM

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3/8-16X2CSGR5	CAP SCREW, HEX HEAD	3
2	3-146-010001	BUMPER, RUBBER CYLINDER	1
3	3/8-16 HFN	NUT, HEX HEAD	8
4	3-573-010009	DECAL, INSTRUCTION	1
5	3-120-010079	PLATE, VALVE MOUNTING	1
6	1-007-010024	ADAPTER	1
7	3-102-010022	U-BOLT, CYLINDER SUPPORT	2
8	1/2-13HFN	NUT, HEX HEAD	8
9	RRT146X.25	TUBE, ROUND	2
10	3-846-010008	VALVE, THREE SPOOL (SEE FIG. 8-10)	2
11	3-557-010120	PIN, UNDERCARRIAGE CYLINDER	1
12	2068-12-12S	ADAPTER	1
13	3-557-010031	PIN, CYLINDER BUTT END	2
14	2-181-010001	CLAMP, HOSE	8
15	1-007-010023	ADAPTER	7
16	1-397-010044	HOSE, HYDRAULIC	A/R
17	1-299-010002	HOSE END	2
18	3/8-16HFN	NUT, HEX HEAD	3
19	8010-4	TIP, MALE (1/2 INCH)	1
20	S25F-6	COUPLER (3/4 INCH)	1
21	7/8 MACH BUSH	BUSHING, MACHINERY	5
22	1/2 HOSE WASHER	WASHER, HOSE	1
23	2066-8-10S	ADAPTER, O-RING	2
24	104-1003	MOTOR, 12,000# WINCH (SEE FIG. 8-27)	1
	109-1117	MOTOR, 20,000# WINCH (SEE FIG. 8-25)	1
25	1-007-010007	ELBOW, PIPE	4
26	2254-8-8S	ADAPTER, SWIVEL	4
27	3/16X2-1/4	PIN, COTTER	10
28	3-557-010059	PIN, ROD END	2
29	3-557-010033	PIN, BUTT END	2
30	3-242-010099	CYLINDER, TRAILER TILT (45' TRAILERS)(SEE FIG. 8-11)	2
		CYLINDER, TRAILER TILT AND LOW LOAD (48' TRAILERS)	4
31	2255-8-8S	TEE, SWIVEL	1
32	T120R	TYTON STRAP	25
33	3-242-010118	CYLINDER, LOW LOAD (45' TRAILERS)(SEE FIG. 8-13)	2
34	1-397-010010	HOSE, HYDRAULIC	A/R
35	1-299-010001	HOSE END	28
36	3-242-010103	CYLINDER, UNDERCARRIAGE SLIDE (SEE FIG. 8-12)	1
37	FF1469-8-8-8S	ADAPTER, TEE	1
38	2066-8-8S	ADAPTER, O-RING	4
39	2047-8-8S	ADAPTER	4
40	1FW	WASHER, FLAT	2

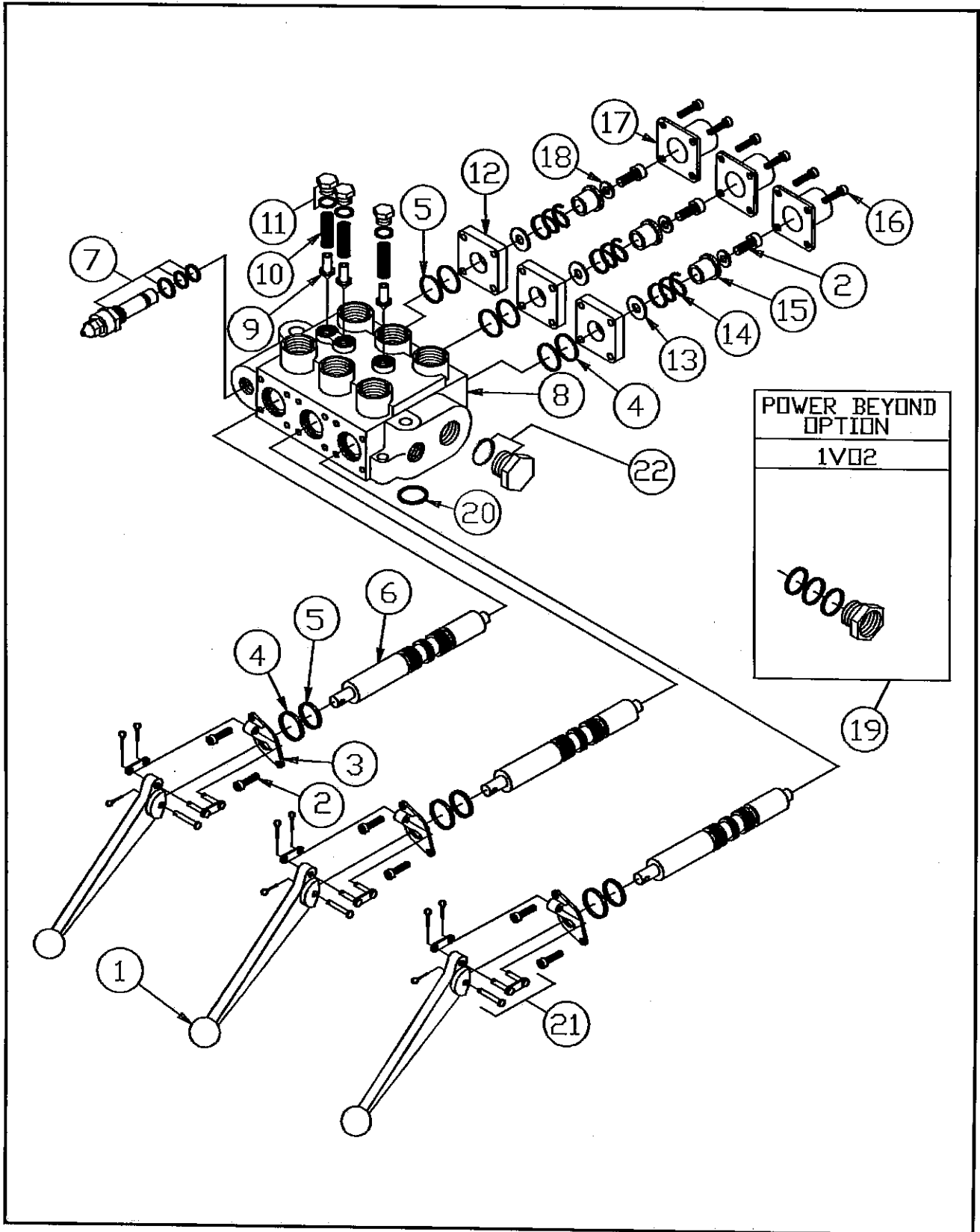


FIG. 8-10 THREE SPOOL VALVE

VALVE, THREE SPOOL

ITEM NO.	PART NO.	DESCRIPTION	QTY.
	3-846-010008	VALVE ASSEMBLY, COMPLETE THREE SPOOL (MODEL 317)	1
	3-846-010007	VALVE ASSEMBLY, COMPLETE THREE SPOOL (MODELS 316 & 317S)	1
1	1V1703	VALVE, HANDLE (MODEL 317)	3
	3-360-010008	VALVE, HANDLE (MODELS 316 & 317S- NOT SHOWN)	3
2	2A0079-404	CAP SCREW (TIGHTEN TO 7 - 11 FT.-LBS.)	9
3	4Z4306	BRACKET, HANDLE	3
4	1A0711	WASHER, O-RING SPOOL	6
5	2A0283-7214	SEAL, SPOOL	6
6*	1V0090	SPOOL, 4-WAY	3
7	1R0017	RELIEF ASSEMBLY (1500 - 3000 PSI)(PRESET @ 2500 PSI)	1
8	1V0360	HOUSING, VALVE	1
9	1V0081	POPPET, LOAD CHECK	3
10	1A0757	SPRING, LOAD CHECK	3
11	1V1725	PLUG, LOAD CHECK	3
12	1A0709	SPACER, END	3
13	1A0291	WASHER, STOP	3
14	1A0744	SPRING, CENTERING	3
15	1A0292	COLLAR, STOP	3
16	2A0079-406	CAP SCREW (TIGHTEN TO 7 - 11 FT.-LBS.)	12
17	1A0294	CAP, END	3
18	1A0290	WASHER, CENTERING SPRING	3
19	1V0208	ADAPTER ASSEMBLY, REMOTE POWER BEYOND (Contains all necessary O-rings)	1
20	2A0283-7214	GROMMET, RUBBER (BOTTOM OUTLET)	1
21	1V1701	PIN KIT	3
22	2A0354-121	PLUG, CONVERSION	1

* SOLD AS MATCHED SET ONLY

CYLINDER, TRAILER TILT

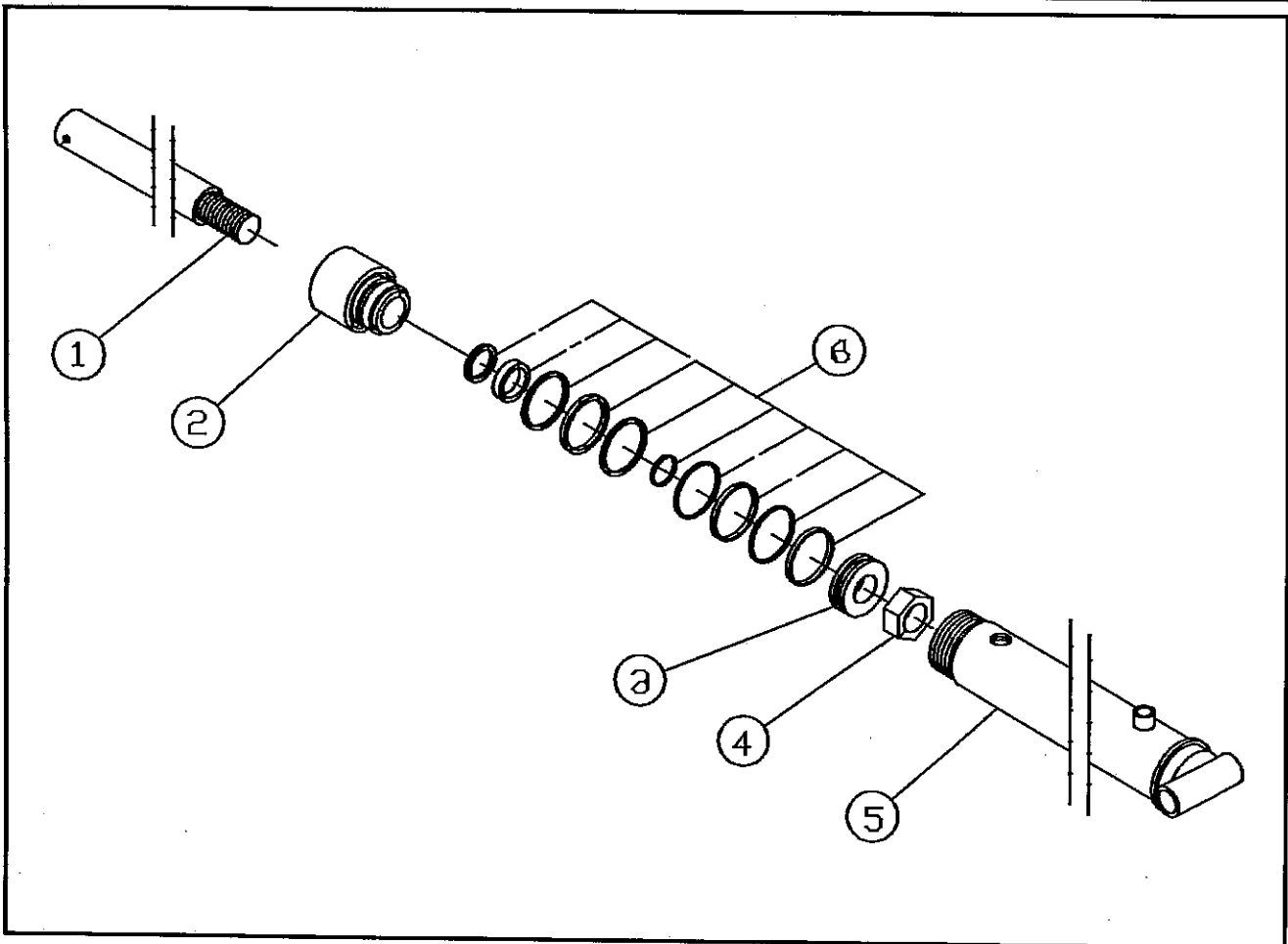


FIG. 8-11 TRAILER TILT CYLINDER

ITEM NO.	PART NO.	DESCRIPTION	QTY.
	3-242-010099	CYLINDER ASSEMBLY, TRAILER TILT (4" X 42")	2
1	011100550	PISTON ROD	1
2	081900295	GLAND	1
	. 230007400	RETAINER, SQUARE WIRE	1
3	071901048	PISTON	1
4	220000212	NUT, LOCKING HEX	1
5	NO NUMBER	TUBE ASSEMBLY, BUTT AND	1
6	PMCK-AD-460	PACKING KIT	A/R
		(Contains all necessary seals and O-rings)	

CYLINDER, UNDERCARRIAGE SLIDE

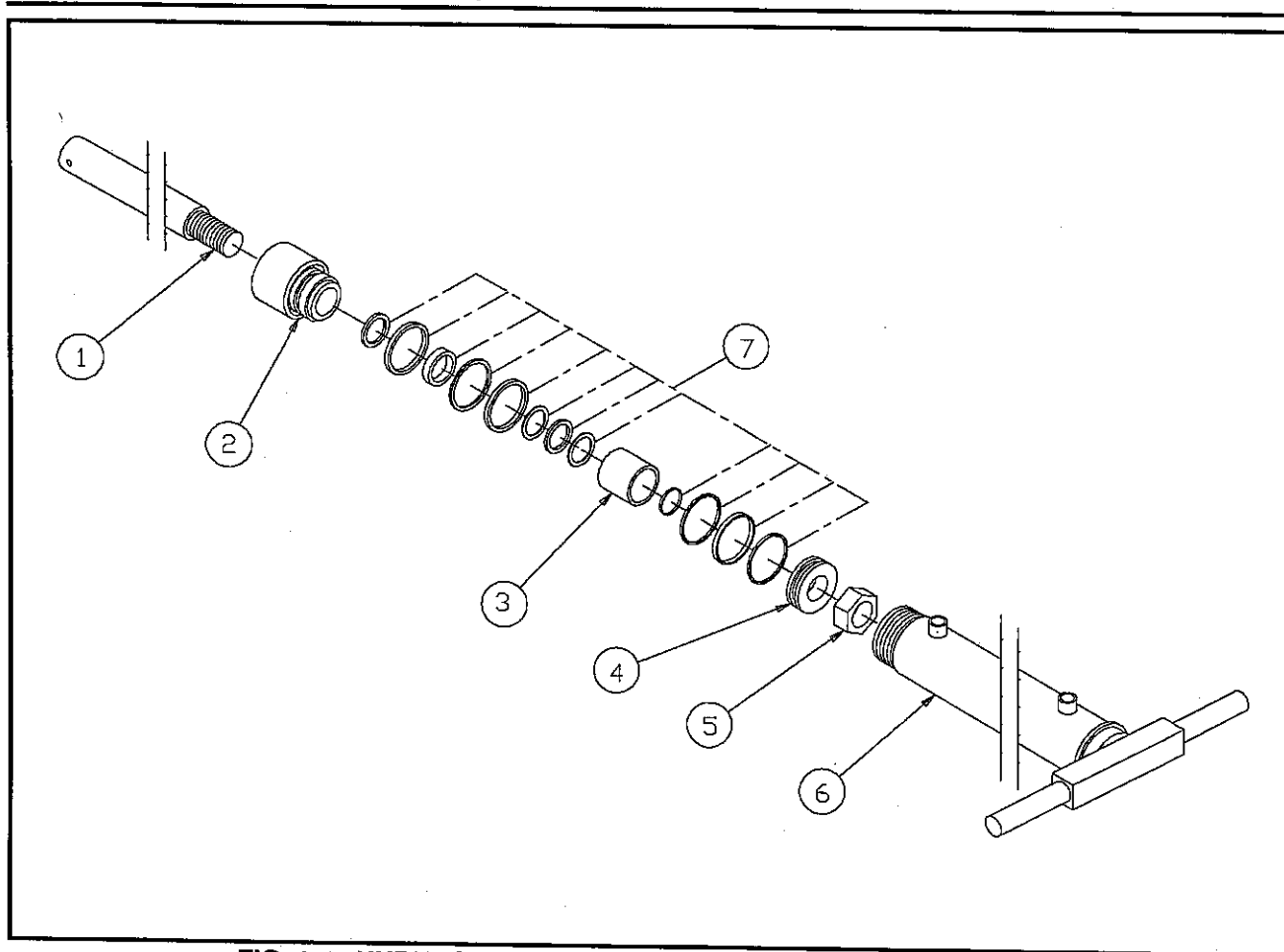


FIG. 8-12 UNDERCARRIAGE SLIDE CYLINDER (LOW LOAD ANGLE)

ITEM NO.	PART NO.	DESCRIPTION	QTY.
	3-242-010103	CYLINDER ASSEMBLY, UNDERCARRIAGE SLIDE (4" X 126")	1
1	011300179	PISTON ROD	1
2	081900277	GLAND	1
	. 230007400	RING, SQUARE RETAINING	1
3	211300024	SPACER	1
4	079100195	PISTON	1
5	220000212	LOCKNUT	1
6	NO NUMBER	TUBE ASSEMBLY, BUTT AND	1
7	PMCK-AD-461	PACKING KIT (Contains all necessary seals and O-rings)	A/R

CYLINDER, LOW LOAD ANGLE

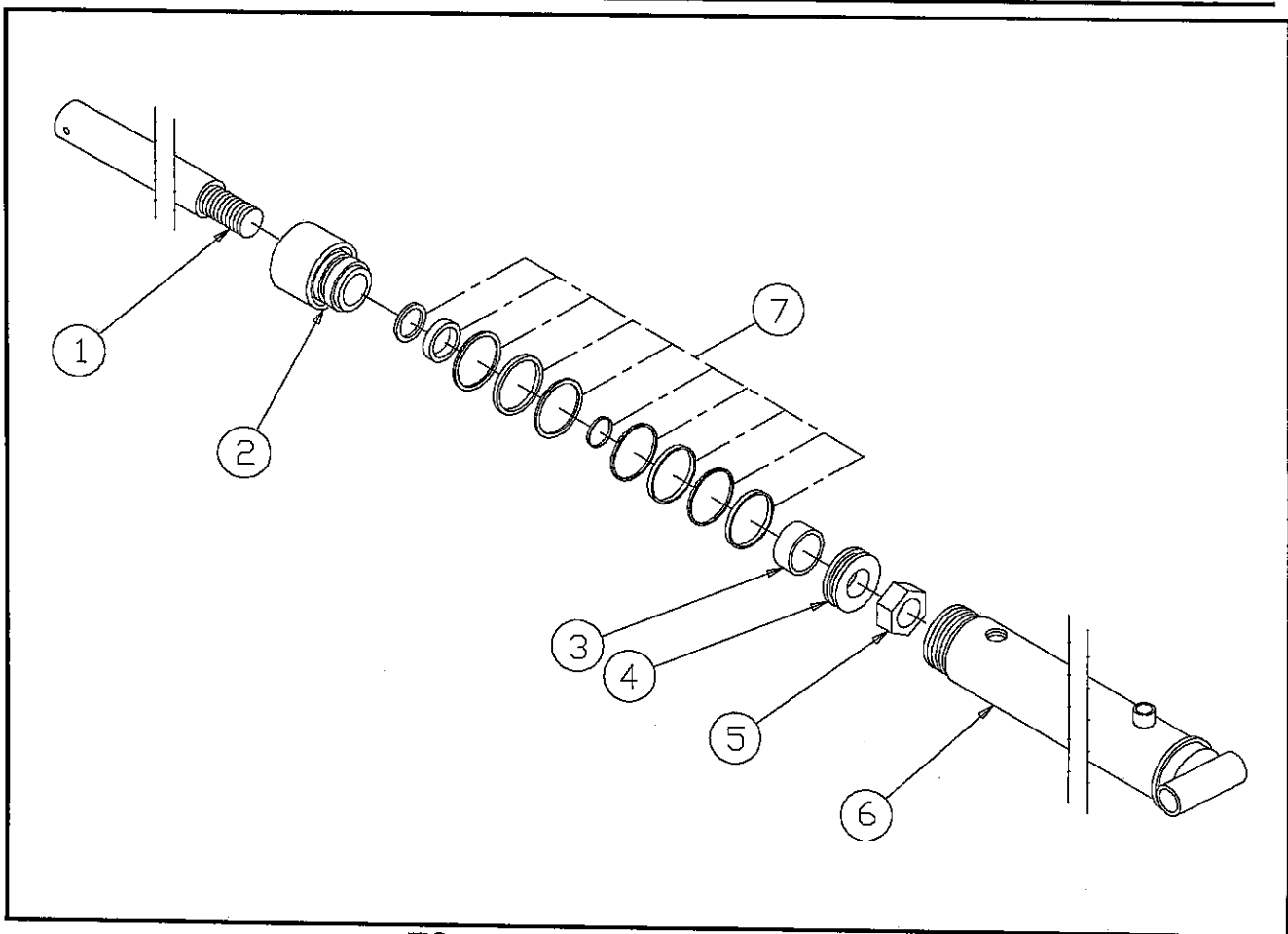


FIG. 8-13 LOW LOAD ANGLE CYLINDER

ITEM NO.	PART NO.	DESCRIPTION	QTY.
	3-242-010118	CYLINDER ASSEMBLY, LOW LOAD ANGLE (4" X 42")	2
1	011100550	PISTON ROD	1
2	081900295	GLAND	1
	230007400	RETAINER, SQUARE WIRE	1
3	211100247	SPACER	1
4	071900048	PISTON	1
5	220000212	LOCKNUT	1
6	061900567	TUBE ASSEMBLY, BUTT AND	1
7	PMCK-AD-460	PACKING KIT	A/R
	(Contains all necessary seals and O-rings)		

UNDERCARRIAGE, AIR SUSPENSION

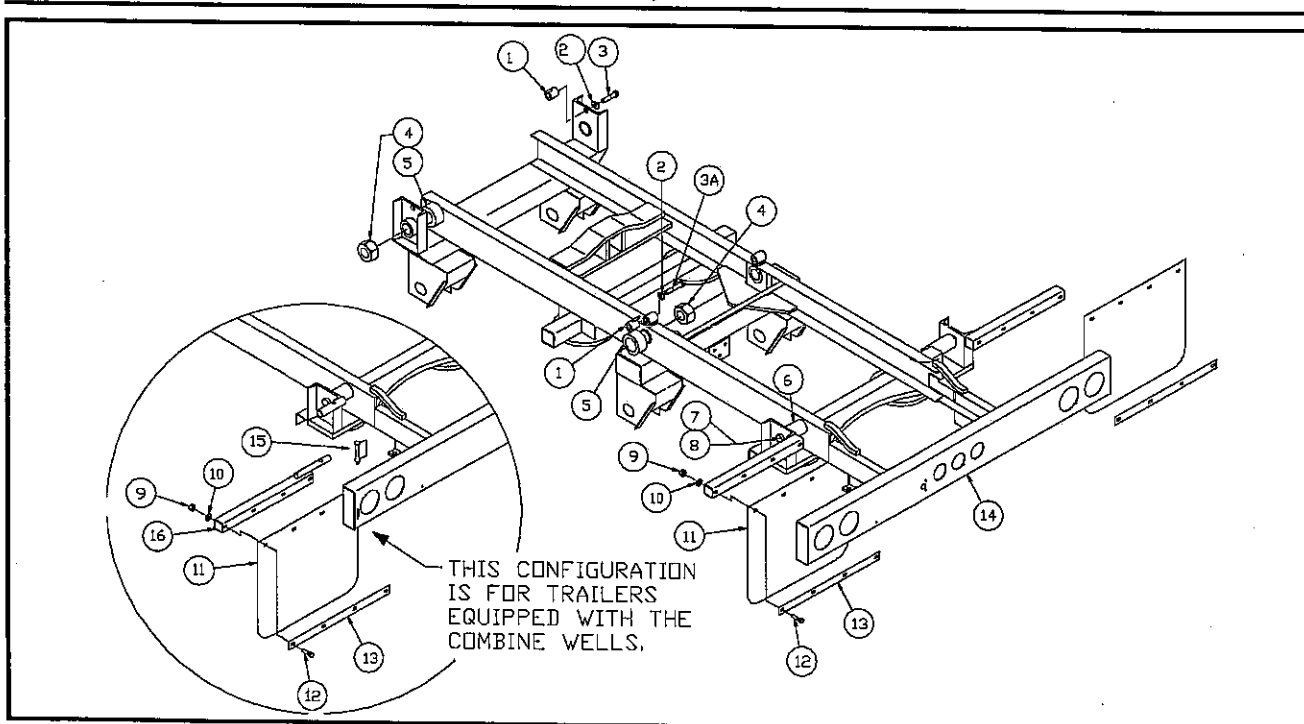


FIG. 8-14 AIRRIDE UNDERCARRIAGE (TANDEM SHOWN)

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3-762-010016	HOLD-DOWN, UNDERCARRIAGE	4
2	3/4SLW	WASHER, SPLIT LOCK	4
3	3/4-10X2-1/2CS	CAP SCREW, HEX HEAD	2
3A	3/4-10X3HHCS	CAP SCREW, HEX HEAD	2
4	2-12HFN	NUT	4
5	3-076-010005	BEARING 4" DIA.	4,2*
	3-076-010015	BEARING 5" DIA.	2*
	5029	ZERK, GREASE	4
6	RRT114X6	ROLLER	2
7	3-762-010012	PIN, ROLLER	2
8	5010	ZERK, GREASE	2
9	3/8-16HFN	NUT, HEX	8
10	3/8SLW	WASHER, SPLIT LOCK	8
11	3-485-010001	MUD FLAP	2
12	3/8-16X1-1/2CS	CAP SCREW, HEX HEAD	2
	3/8-16X3HHCS	CAP SCREW, HEX HEAD	6
13	3-762-010017	CLAMP, MUD FLAP	2
14	3-762-010248	WELDMENT, TANDEM UNDERCARRIAGE (W/DOCK LEVELERS)	1
	3-762-010223	WELDMENT, TANDEM UNDERCARRIAGE (W/O DOCK LEVELERS)	1
	3-762-010237	WELDMENT, TANDEM UNDERCARRIAGE (W/COMBINE WELLS)	1
	3-762-010383	WELDMENT, TRI-AXLE UNDERCARRIAGE (W/DOCK LEVELERS)	1
	3-762-010406	WELDMENT, TRI-AXLE UNDERCARRIAGE (W/O DOCK LEVELERS)	1
15	516-22PTL	PIN, RETAINING (FOR COMBINE WELLS ONLY)	2
16	3-762-010027	BRACKET, MUDFLAP (FOR COMBINE WELLS ONLY)	2

* TRI-AXLE QUANTITY

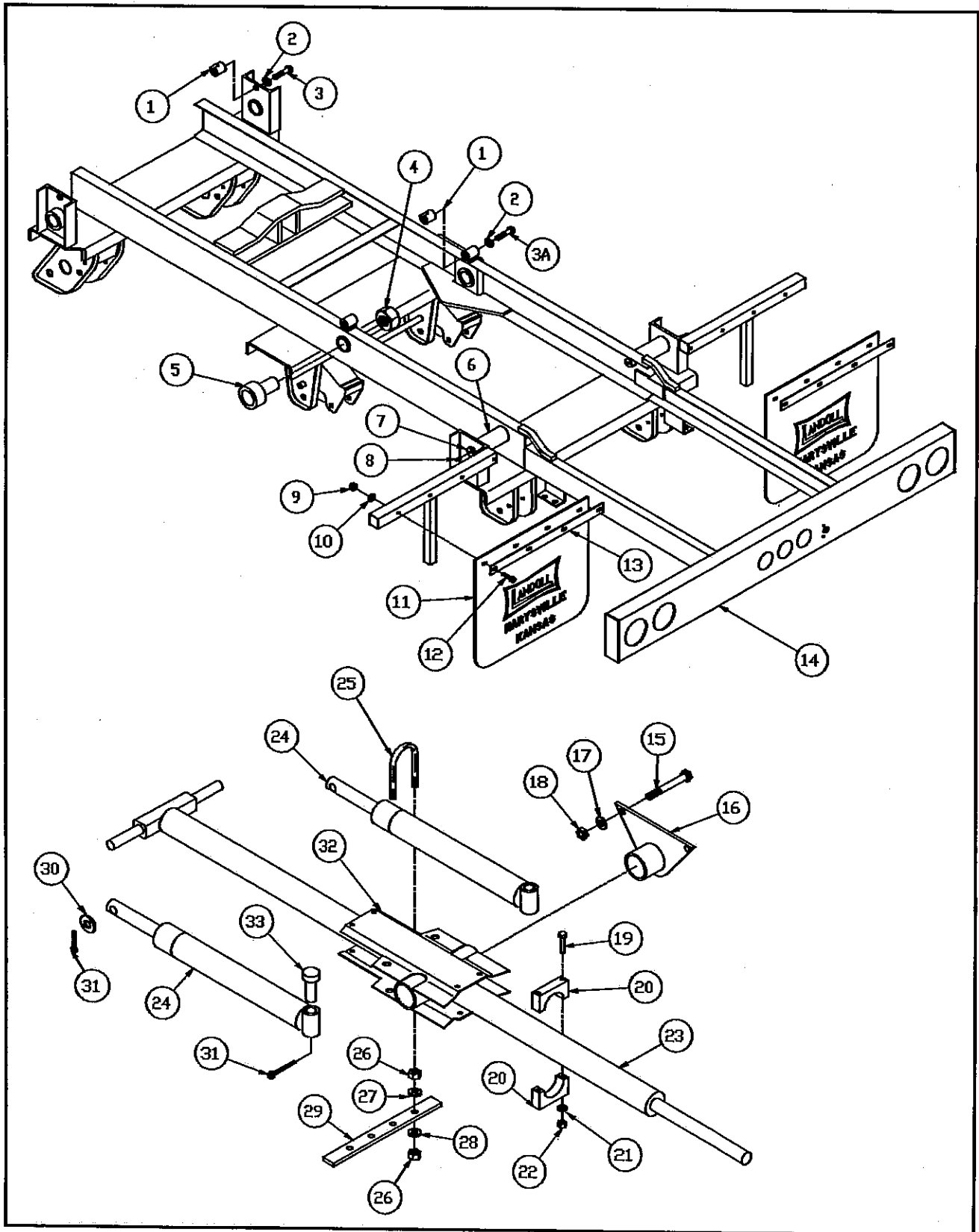


FIG. 8-15 SPRING SUSPENSION UNDERCARRIAGE AND LOW LOAD ANGLE COMPONENTS

UNDERCARRIAGE, SPRING SUSPENSION

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3-762-010016	HOLD-DOWN, UNDERCARRIAGE	4
2	3/4SLW	WASHER, SPLIT LOCK	4
3	3/4-10X2-1/2CS	CAP SCREW, HEX HEAD	2
3A	3/4-10X3HHCS	CAP SCREW, HEX HEAD	2
4	2-12HFN	NUT	4
5	3-076-010005	BEARING 4" DIA.	4,2*
	3-076-010015	BEARING 5" DIA.	2*
	5029	ZERK, GREASE	4
6	RRT114X6	ROLLER	2
7	3-762-010012	PIN, ROLLER	2
8	5010	ZERK, GREASE	2
9	3/8-16HFN	NUT, HEX	8
10	3/8SLW	WASHER, SPLIT LOCK	8
11	3-485-010001	MUD FLAP	2
	3-762-010027	MUD FLAP BRACKET	2
12	3/8-16X1-1/2CS	CAP SCREW, HEX HEAD	2
	3/8-16X3HHCS	CAP SCREW, HEX HEAD	6
13	3/762-010017	CLAMP, MUD FLAP	2
14	3-762-010294	WELDMENT, TANDEM UNDERCARRIAGE (W/DOCK LEVELERS)	1
	3-762-010249	WELDMENT, TANDEM UNDERCARRIAGE (W/O DOCK LEVELERS)	1
	3-762-010085	WELDMENT, TANDEM UNDERCARRIAGE (W/COMBINE WELLS)	1
15	3/4-10X6HHCS	CAP SCREW, HEX HEAD	4
16	3-120-010128	MOUNTING ASSEMBLY, CYLINDER TRUNNION	1
17	3/4SLW	WASHER, SPLIT LOCK	4
18	3/4-10HFN	NUT, HEX	4
19	5/8-11X8HHCS	CAP SCREW, HEX HEAD	4
20	3-120-010117	BEARING, NYLATRON	4
21	5/8SLW	WASHER, SPLIT LOCK	4
22	5/8-11HFN	NUT, HEX	4
23	REFERENCE	CYLINDER, UNDERCARRIAGE SLIDE (SEE FIG. 8-12)	1
24	REFERENCE	CYLINDER, LOW LOAD ANGLE (SEE FIG. 8-13)	2
25	3-102-010022	U-BOLT, CYLINDER SUPPORT	2
26	1/2X13HFN	NUT, HEX	4
27	1/2FW	WASHER, FLAT	2
28	1/2SLW	WASHER, SPLIT LOCK	2
29	3-146-010001	BUMPER, RUBBER CYLINDER	1
30	7/8MACH BUSH	BUSHING, MACHINE	2
31	3/16X2-1/4	PIN, COTTER	4
32	3-120-010125	TRUNNION ASSEMBLY, CYLINDER	1
33	3-557-010031	PIN, CYLINDER	2
34	N/A	PIN	1
35	N/A	PIN, COTTER	2

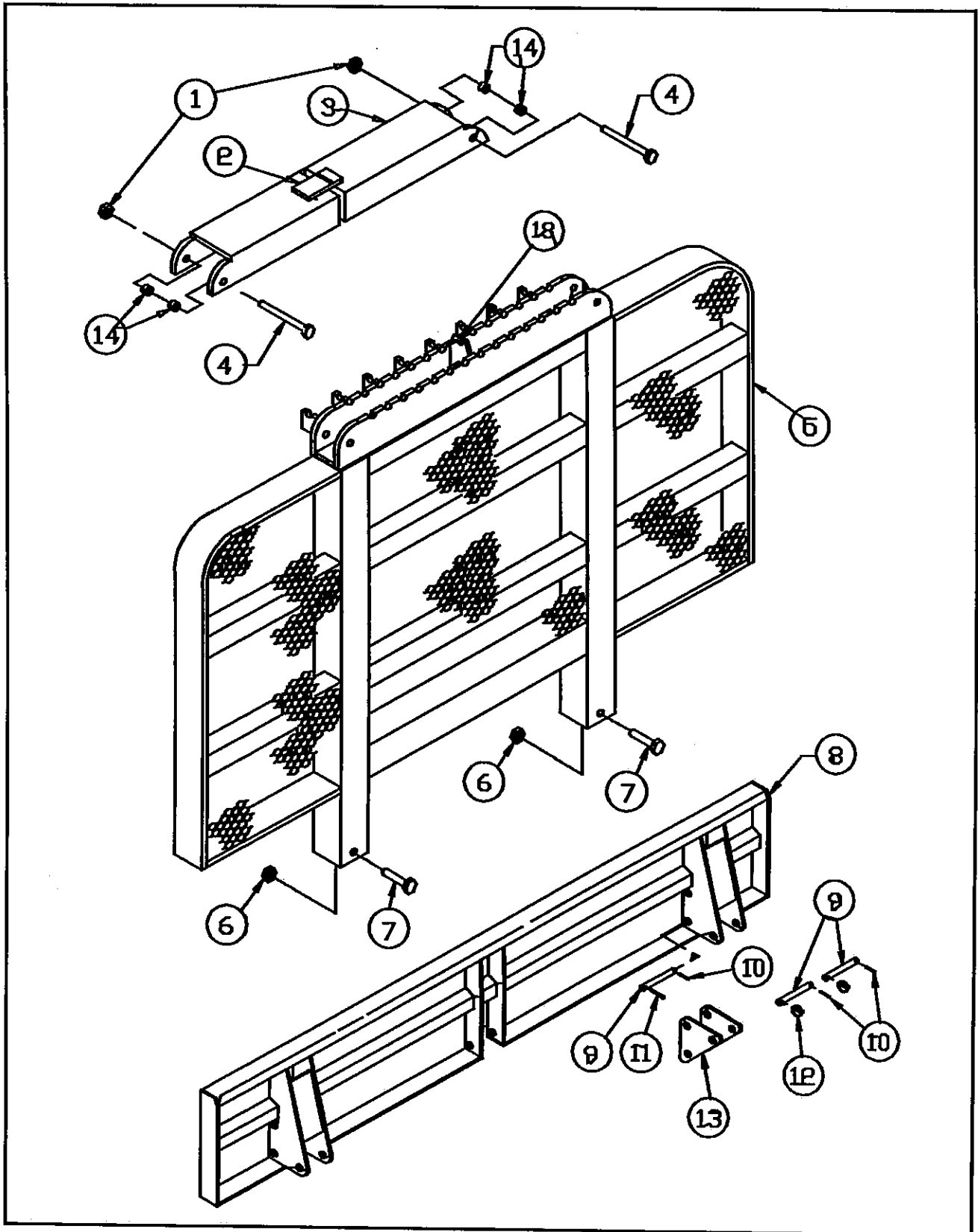


FIG. 8-16 FRONT EXTENSION/BULKHEAD ITEMS

FRONT EXTENSION/BULKHEAD ITEMS

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1*	1/2-13HFN	NUT, HEX	2
2*	3-141-010012	NOTCHED PLATE, LOCKING	1**
3*	3-141-010013	CHANNEL, COVER	2
4*	1/2-13X6HHCS	CAP SCREW, HEX HEAD	2
5	3-141-010102	WELDMENT, 102" X 48" BULKHEAD	1
	3-141-010103	WELDMENT, 96" X 48" BULKHEAD	1
6	3/8-16 HFLN	NUT	2
7	3/8-16X1 HHCS	BOLT	2
8	3-276-010309	WELDMENT, 96" FRONT EXTENSION	1
	3-276-010513	WELDMENT, 102" FRONT EXTENSION	1
9	3-557-010052	PIN	7
10	0600-250-01000	PIN, ROLL	7
11	3/16X1-1/4	PIN, COTTER	2
12	7637	PIN, LYNCH	4
13	3-276-010311	SUPPORTS, FRONT EXTENSION	2
14*	RRT128 X 1	BUSHING, SPACER	4
15*	3/8-16X1HHCS	CAP SCREW, HEX HEAD	2
16*	3-141-010014	RACK, CHAIN	1
17*	3/8SLW	WASHER, SPLIT LOCK	2
18*	3-141-010011	PLATE, LOCK	1***

* ITEMS CAN BE ORDERED AS ONE ASSEMBLY:

3-141-010008 CHAIN HANGER LOCKING CHANNEL ASS'Y

** ITEM 2 SOLD AS PART OF WELDMENT FOR LEFT HALF OF ITEM 3.

*** ITEM 18 SOLD AS PART OF WELDMENT FOR ITEM 16.

LIFT ASSEMBLY, GOOSENECK

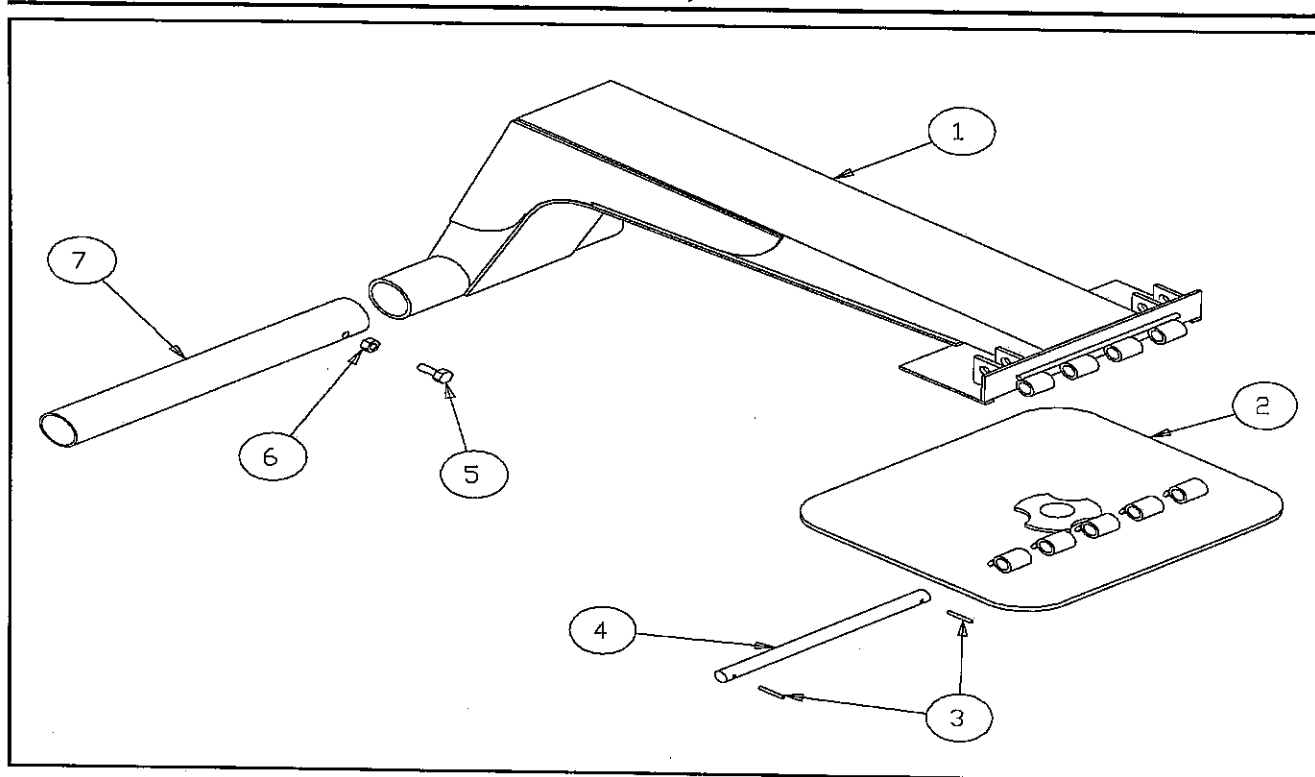


FIG. 8-17 GOOSENECK LIFT ASSEMBLY

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3-375-010222 5010	WELDMENT, FIFTH WHEEL GOOSENECK	1
		ZERK, GREASE	1
2	3-375-010250	PLATE, KING PIN	1
3	0600-375-02000	ROLLPIN	2
4	3-557-010030	PIN, KINGPIN PLATE HINGE	1
5	3/4-10X2-1/2CS	CAP SCREW, HEX HEAD	2
6	3/4-10HFN	NUT, HEX	2
7	3-311-010578	TUBE, HINGE	1

EXTENSIONS, PULL-OUT OVERWIDTH

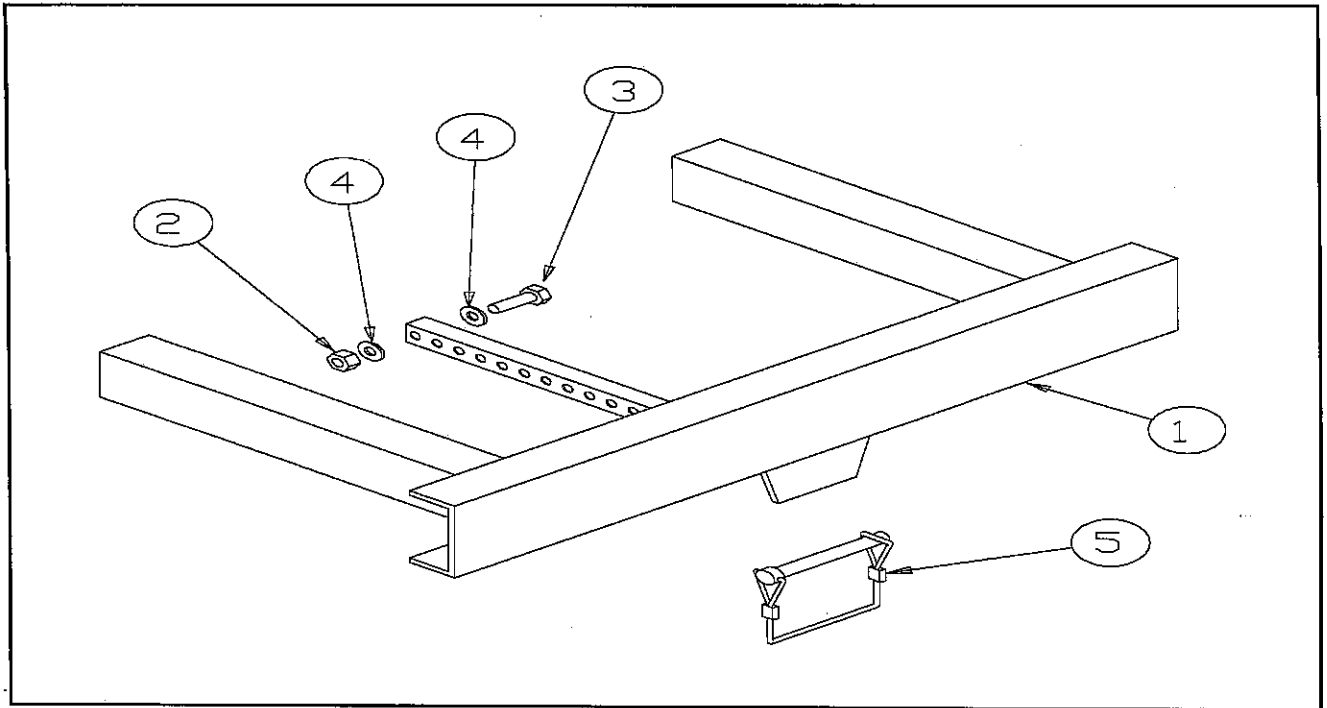


FIG. 8-18 PULLOUT OVERWIDTH EXTENSION ITEMS

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3-276-010378	EXTENSION, 36-1/2" SIDE RAIL	10
	3-276-010383	EXTENSION, 19-1/2" SIDE RAIL	2
	3-276-010598	EXTENSION, 21" SIDE RAIL	4
2	3/8-16HFN	NUT, HEX	16
3	3/8-16X2CS GR5	CAP SCREW, HEX HEAD	16
4	3/8FW	WASHER, FLAT	32
5	516-22PTL	PIN, RETAINING	16

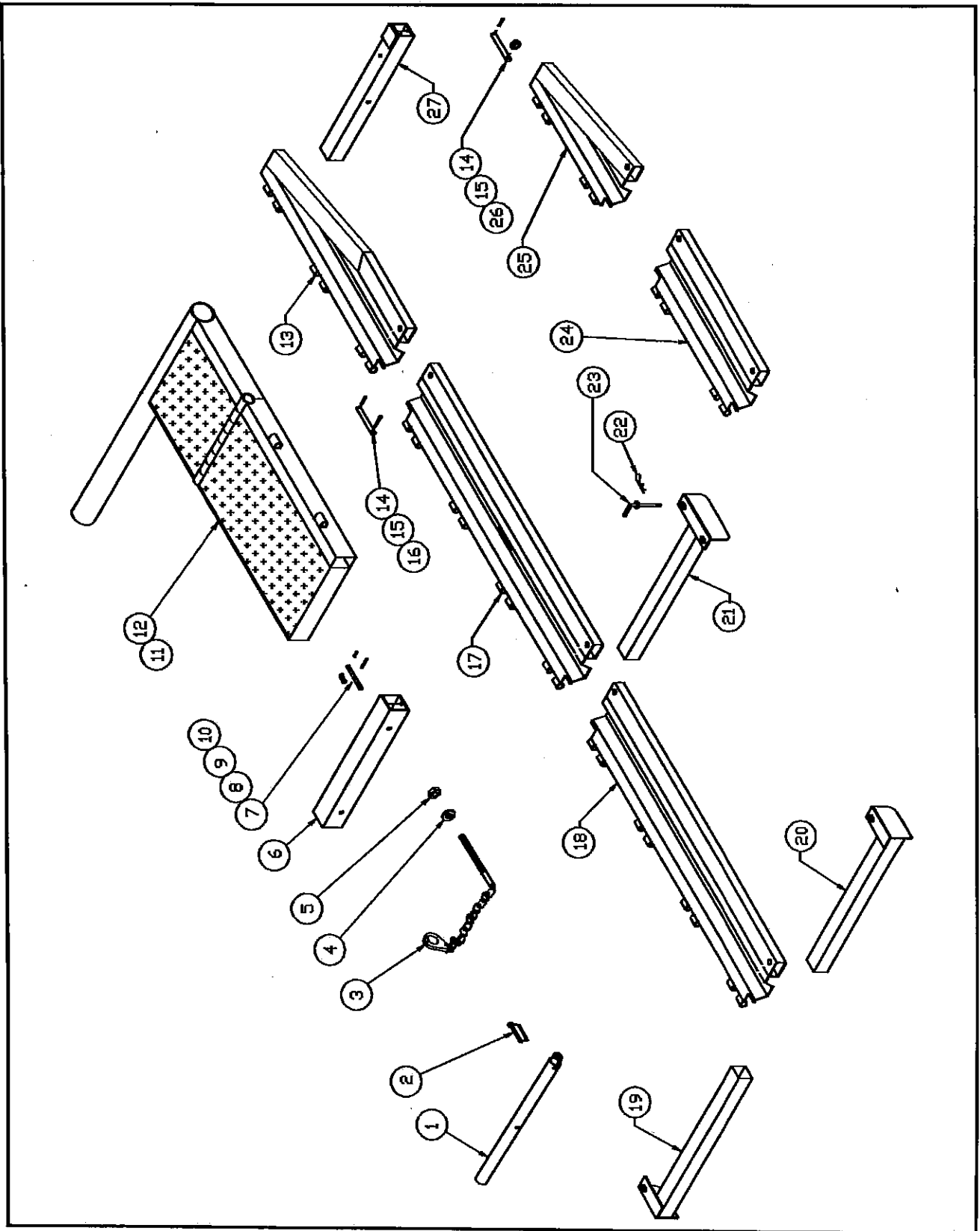


FIG. 8-19 317 SWING-UP OVERWIDTHS, SIDERAILS, ETC.

317-COMBINE WELLS, SWING-UP OVERWIDTHS, SIDERAILS

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3-869-010007	BAR, ROUND SUPPORT	2
2	516-22PTL	PIN SPRING CLIP	2
3	3-174-010001	CHAIN, COMBINE WELL	4
4	7/8FW	WASHER, FLAT	4
5	7/8HFN	NUT, HEX	4
6	3-869-010008	TUBE, CENTER COMBINE WELL SUPPORT	2
7	3-557-010086	PIN, RETAINING	4
8	CO-975-74-2000	SPRING, PIN	4
9	0600-250-010000	PIN, ROLL	4
10	0600-250-030000	PIN, ROLL	4
11	3-869-010004	COMBINE WELL, RIGHT REAR	1
12	3-869-010005	COMBINE WELL, LEFT REAR	1
13	3-276-010146	OVERWIDTH, LEFT REAR W/NO WELLS	1
	3-276-010152	OVERWIDTH, RIGHT REAR W/NO WELLS	1
14	3-557-010029	PIN, HINGE	A/R
15	0600-250-010000	PIN, ROLL	A/R
16	3/16 X 1-1/4	PIN, COTTER	A/R
17	3-276-010098	OVERWIDTH, 71" WITH LIGHT HOLE	2
18	3-276-010136	OVERWIDTH, 71" STANDARD	A/R
19	3-276-010188	EXTENSION SUPPORT, FRONT RIGHT	1
20	3-276-010189	EXTENSION SUPPORT, FRONT LEFT	1
21	3-276-010190	EXTENSION, OVERWIDTH STANDARD	A/R
22	#14	CLIP, HAIRPIN	A/R
23	3-557-010089	PIN, RETAINING	A/R
24	SEE CHART		
25	3-276-010102	OVERWIDTH, LEFT REAR WITH WELLS	1
	3-276-010135	OVERWIDTH, RIGHT REAR WITH WELLS	1
26	7637	PIN, LYNCH	A/R
27	3-276-010235	EXTENSION SUPPORT, REAR OVERWIDTH	2

MISC. OVERWIDTH TABLE

PART NO. DESCRIPTION

3-276-01013747" EXTENSION
 *3-276-01003932" EXTENSION
 3-276-01014135" EXTENSION
 3-276-01015459" EXTENSION
 3-276-01015539-1/4" EXTENSION
 3-276-01015641" EXTENSION
 3-276-01015745-1/4" EXTENSION
 *3-276-01020057" EXTENSION
 *3-276-01022843-1/2" EXTENSION
 *3-276-01026559" EXTENSION
 *3-276-01026659" EXTENSION

*SPECIAL APPLICATION ONLY

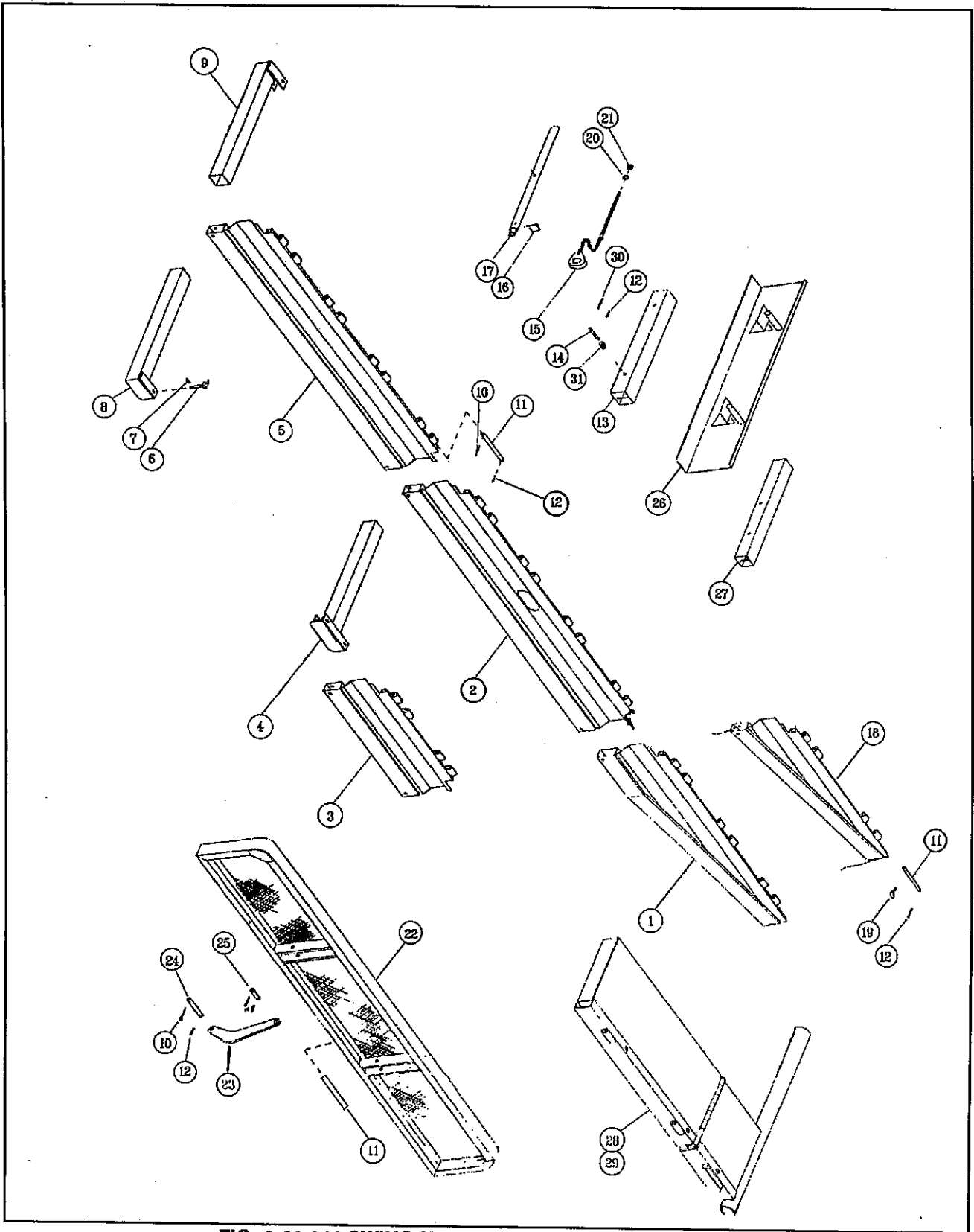


FIG. 8-20 316 SWING-UP, OVERWIDTHS, SIDERAILS, ETC.

316 - COMBINE WELLS, SWING-UP OVERWIDTHS, SIDERAILS

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3-276-010146	LEFT REAR OVERWIDTH - NO WELLS	1
	3-276-010152	RIGHT REAR OVERWIDTH - NO WELLS	1
2	3-276-010098	OVERWIDTH - 71" W/LIGHT	2
3	SEE LIST AT BOTTOM OF PAGE		
4	3-276-010051	EXTENSION SUPPORT	A/R
5	3-276-010136	OVERWIDTH - 71"	A/R
6	3-557-010042	SUPPORT TUBE PIN	2
7	#14	HAIRPIN	A/R
8	3-276-010053	FRONT EXTENSION SUPPORT, LEFT	1
9	3-276-010054	FRONT EXTENSION SUPPORT, RIGHT	1
10	3/16X1-1/4	COTTER PIN	A/R
11	3-557-010029	HINGE PIN	3
12	0600-250-01000	1/4X1 ROLL PIN	4
13	3-869-010008	SUPPORT TUBE COMB. WELL	2
14	3-557-010086	PIN SLIDE LOCK	4
15	3-174-010007	SUPPORT BAR	2
16	516-22PTL	RETAINING PIN	2
17	3-869-010007	SUPPORT BAR	2
18	3-276-010102	LEFT REAR OVERWIDTH W/WELLS	1
	3-276-010135	RIGHT REAR OVERWIDTH W/WELLS	1
19	7637	LYNCH PIN	A/R
20	7/8FW	7/8" FLAT WASHER	4
21	7/8-9HFN	7/8" NUT	4
22	3-276-010077	FRONT EXTENSION	1
23	3-276-010075	SUPPORT, FRONT EXTENSION	2
24	3-557-010052	LOWER PIN, FRONT EXTENSION SPT	2
25	3-557-010051	PIN, FRONT EXTENSION SUPPORT	2
26	3-276-010022	EXTENSION OVERWIDTH	A/R
	3-276-010066	OVERWIDTH EXTENSION, SLOPE	A/R
27	3-276-010052	REAR OVERWIDTH, SUPPORT SLIDE	2
28	3-869-010004	RIGHT COMBINE WELL, REAR	1
29	3-869-010005	LEFT COMBINE WELL, REAR	1
30	0600-250-03000	1/4X3 ROLL PIN	4
31	CO-975-74-2000	SPRING	4

PART NO. DESCRIPTION.

3-276-010137 47" EXTENSION
 3-276-010139 32" EXTENSION
 3-276-010141 35" EXTENSION
 3-276-010154 59" EXTENSION
 3-276-010155 39-1/4" EXTENSION
 3-276-010156 41" EXTENSION
 3-276-010157 45-1/4" EXTENSION

3-276-010200 57" EXTENSION
 3-276-010228 43-1/2" EXTENSION
 3-276-010265 59" EXTENSION
 3-276-010266 59" EXTENSION
 W: REAR COMBINE WELLS
 * - SPECIAL APPLICATIONS ONLY

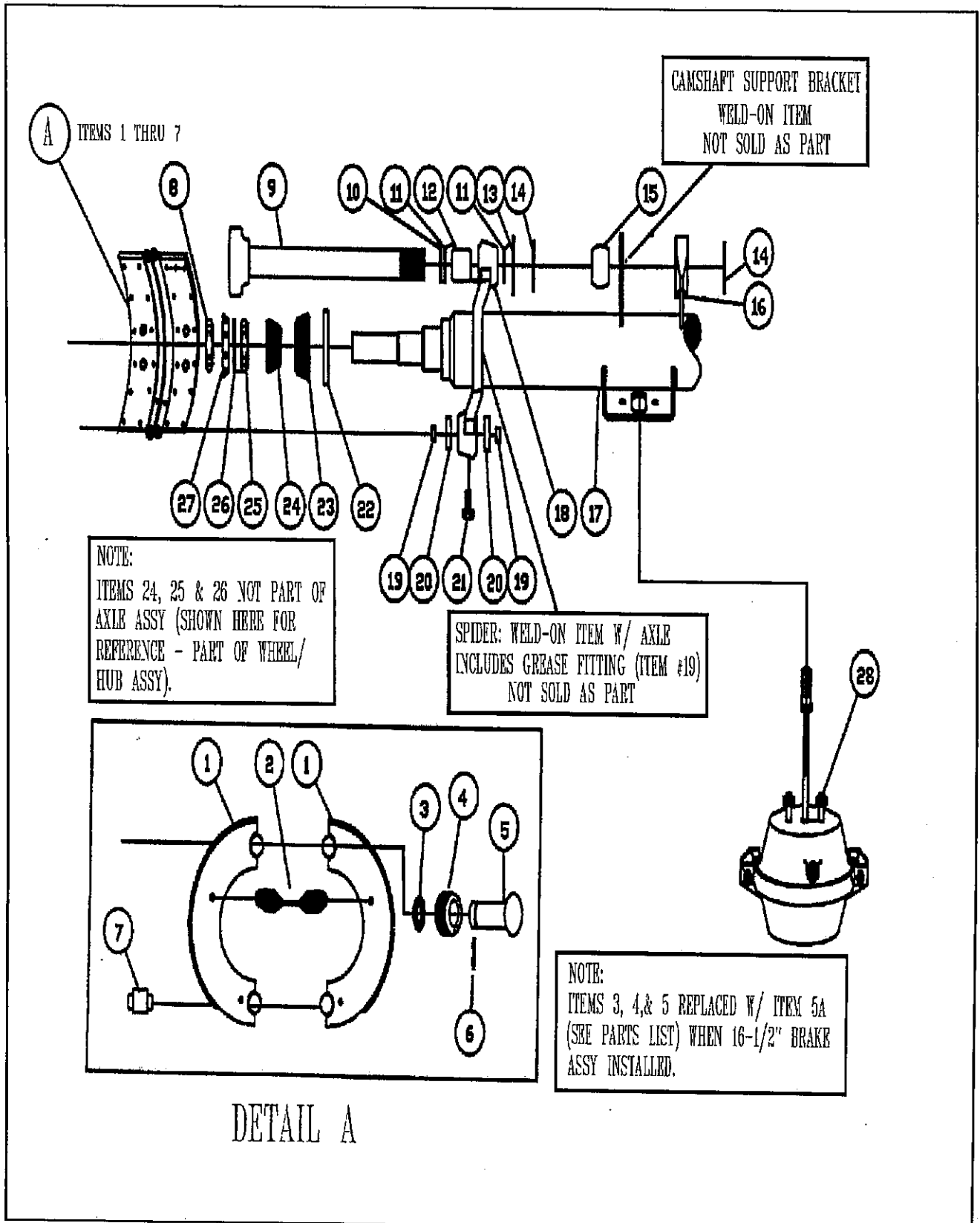


FIG. 8-21 SEMITRAILER AXLE COMPONENTS

AXLE AND BRAKE ITEMS

ITEM NO.	PART NO.	DESCRIPTION	QTY.
NOTE: PART NUMBERS LISTED ARE APPLICABLE TO DEXTER AXLES			
	3-042-010039	ASSEMBLY, COMPLETE 102" WIDE TRAILER AXLE	A/R
	3-042-010040	ASSEMBLY, COMPLETE 96" WIDE TRAILER AXLE	A/R
1	040-175-01	BRAKE SHOE AND LINING (REQUIRE 4 PER AXLE)	4
	040-175-02	L.H. BRAKE SHOE AND ROLLER ASSEMBLY	2
	040-175-03	R.H. BRAKE SHOE AND ROLLER ASSEMBLY	2
	071-133-00	BRAKE LINERS WITH RIVETS ONLY (REQ. 2 PER AXLE)	4
1A	040-180-00	BRAKE SHOE AND LINING (SEE NOTE 1)	4
	071-138-00	BRAKE LINERS WITH RIVETS ONLY (16-1/2") (REQ. 2 PER AXLE)	4
	071-136-00	BRAKE SHOE HARDWARE (16-1/2")	2
2	046-092-00	SPRING, SHOE RETURN	2
2A	046-096-00	SPRING, SHOE	2
	046-097-00	SPRING, SHOE KEEPER (NOT SHOWN)	2
3	069-018-00	RETAINER, ROLLER PIN	4
4	014-057-00	ROLLER, KNURLED	4
4A	014-065-00	PIN, KNURLED	4
5	056-010-00	PIN, SHOE ROLLER	4
5A	071-122-00	ROLLER, RETAINER	4
6	056-012-00	RETAINER, PIN SHOE RETURN SPRING	4
6A	056-018-00	RETAINER, PIN SHOE RETURN SPRING	4
7	056-011-00	PIN, ANCHOR	4
7A	056-017-00	PIN, ANCHOR	4
8	06-115-00	NUT, OUTER SPINDLE	2
9	034-014-00	CAMSHAFT, LEFT HALF	1
	034-015-00	CAMSHAFT, RIGHT HALF	1
9A	034-051-00	CAMSHAFT, LEFT HALF	1
	034-052-00	CAMSHAFT, RIGHT HALF	1
10	005-074-00	"D" WASHER	2
10A	005-096-00	WASHER, CAMSHAFT	2
11	010-052-00	SEAL, GREASE	4
12	014-056-00	BUSHING, CAMSHAFT SPIDER	2
13	005-075-00	WASHER, CAMSHAFT	4
13A	005-097-00	WASHER, CAMSHAFT	4
14	069-020-00	RETAINER, CAMSHAFT	2
15	014-058-00	BUSHING, CAMSHAFT SUPPORT	2
	034-032-00	RETAINER, CAMSHAFT BUSHING	4
16	055-010-00	SLACK ADJUSTER, MANUAL	2
	055-011-00	SLACK ADJUSTER, AUTOMATIC	2
17	D-2012	AXLE (1/2" WALL/20,000 LB. CAP)	1
17A	D-2016	AXLE (1/2" WALL/20,000 LB. CAP)	1
18	061-003-00	FITTING, GREASE (45 DEGREE)	2
19	069-019-00	RETAINER, ANCHOR PIN	8
20	005-073-00	WASHER, ANCHOR PIN	8

AXLE AND BRAKE ITEMS (CONT.)

ITEM NO.	PART NO.	DESCRIPTION	QTY.
21	007-137-00	BOLT, ANTI-ROTATION	2
21A	014-068-00	BUSHING, SPIDER ANCHOR PIN (NOT SHOWN)	4
22	010-055-00	SEAL, GREASE (SEE NOTE 2)	2
23	HM218248	CONE, INNER BEARING (SEE NOTE 2)	2
24	HM212049	CONE, OUTER BEARING (SEE NOTE 2)	2
25	006-114-00	NUT, INNER SPINDLE	2
26	005-098-00	WASHER, SPINDLE LOCK	2
27	005-099-00	WASHER, TABBED SPINDLE LOCK	2
28	006-115-00	NUT, OUTER SPINDLE	2
29	034-057-01	CHAMBER, AIR BRAKE	2
	034-058-01	CHAMBER, SPRING BRAKE (NOT SHOWN)	2

NOTES:

1. PART NUMBERS ARE FOR 12-1/4" X 7-1/2" BRAKE AND AXLE ASSEMBLY. ANY SUFFIX TO A PART NUMBER (E.G., 5A) DESIGNATES ALTERNATE PART NUMBER FOR 16-1/2" X 7" BRAKE AND AXLE ASSEMBLY. IF NO ALTERNATE PART NUMBER IS SHOWN, PART IS SAME FOR BOTH ASSEMBLIES OR PART IS NOT USED FOR 16-1/2" ASSEMBLY.

2. ITEMS 22, 23, & 24 ARE NOT PART OF BRAKE AND AXLE ASSEMBLY. THEY ARE PART OF THE HUB ASSEMBLY AND ARE SHOWN WITH THIS ASSEMBLY FOR REFERENCE.

DRUM ITEMS, HUB AND

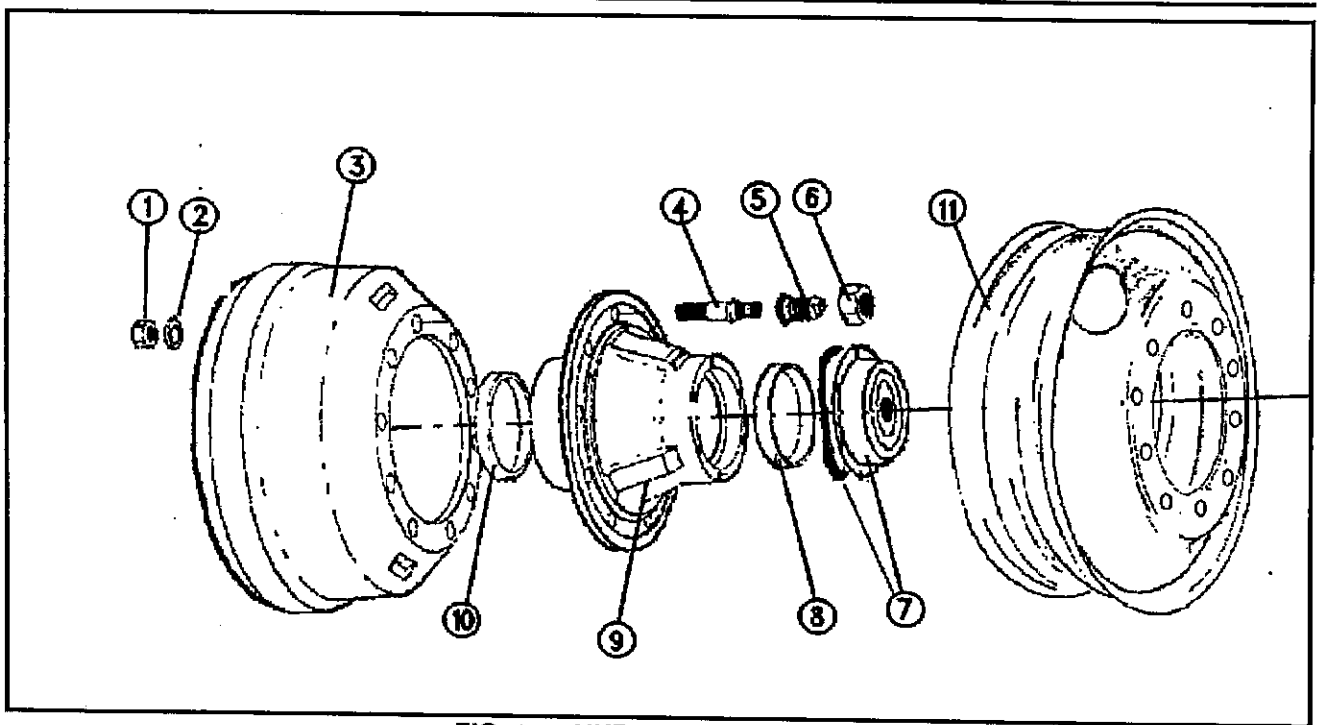


FIG. 8-22 HUB AND DRUM ITEMS

ITEM NO.	PART NO.	DESCRIPTION	QTY.
	3-406-010044	HUB AND DRUM ASSEMBLY, L.H.	2
	3-406-010045	HUB AND DRUM ASSEMBLY, R.H.	2
1	75716	NUT, LOCKING HEX.	6
2	257	WASHER.	6
3	63635	DRUM, BRAKE.	1
4	139913	STUD, L.H.	6
	139902	STUD, R.H.	6
5	107091	CAP NUT, INNER L.H.	6
	107080	CAP NUT, INNER R.H.	6
6	178921	CAP NUT, OUTER L.H.	6
	178910	CAP NUT, OUTER R.H.	6
7	021-038-02	HUB CAP, OIL LEVEL INDICATOR.	1
	071-124-00	GASKET.	1
	3-659-010012	SEAL.	1
	5/16-18X3/4HHCS	CAP SCREW, HEX HEAD.	6
	5/16SLW	WASHER, SPLIT LOCK.	6
8	HM212011	CUP, OUTER BEARING.	1
9	1056	HUB.	1
10	HM218210	CUP, INNER BEARING.	1
11	3-870-010012	WHEEL.	1

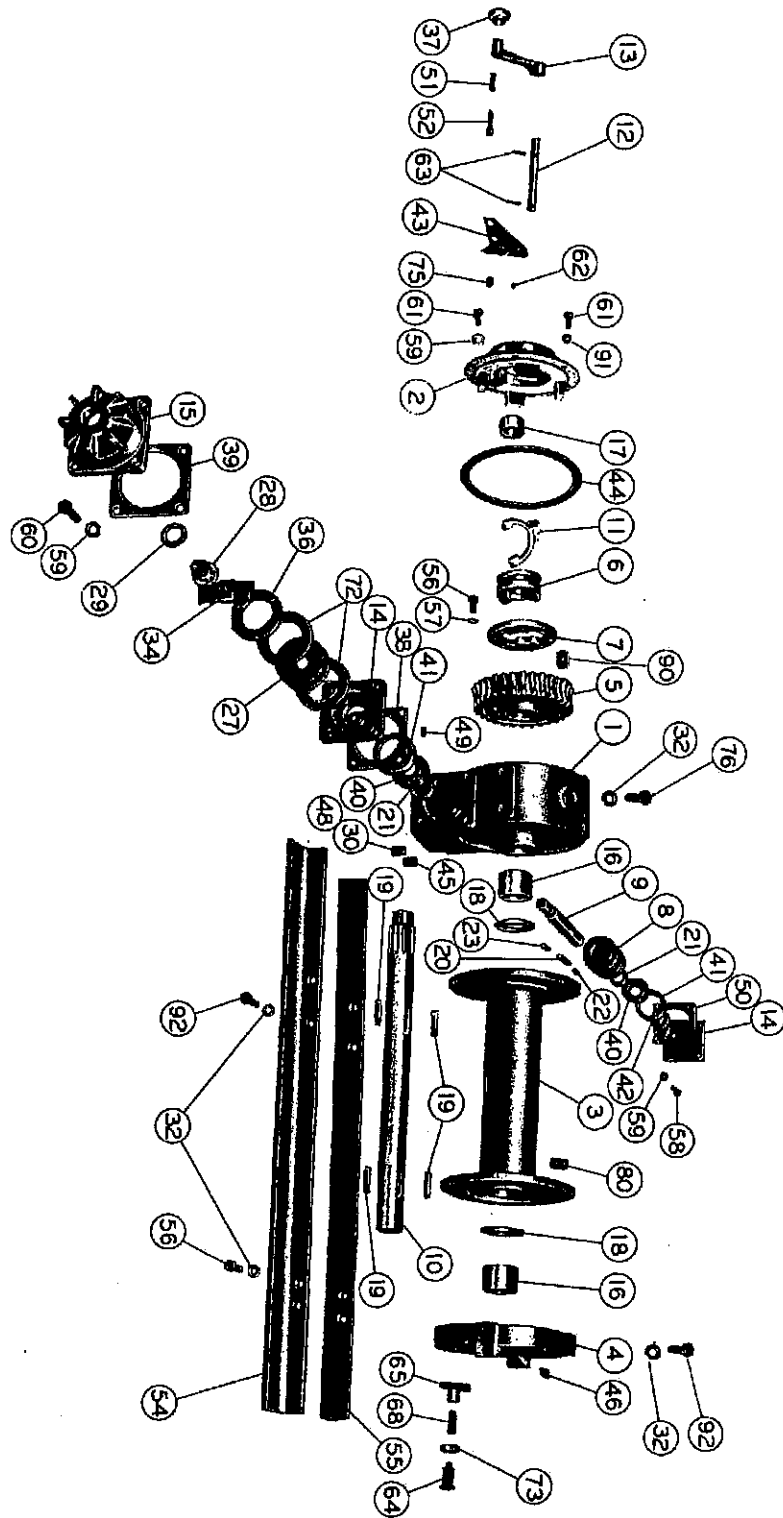


FIG. 8-23 20,000# WINCH COMPONENTS

20,000# WINCH ITEMS

ITEM NO.	PART NO.	DESCRIPTION	QTY.
	3-873-010037	WINCH, 20,000 #	
1	81078	WORM HOUSING ASSEMBLY	1
2	81082	COVER ASSEMBLY, WORM HOUSING	1
3	11449	DRUM, CABLE	1
4	81077	LEG ASSEMBLY, BEARING	1
5	11434	WORM GEAR, RIGHT	1
6	11421	CLUTCH, SLIDING	1
7	11419	DRIVE, CLUTCH	1
8	11404	WORM, RIGHT	1
9	11405	SHAFT, WORM	1
10	11414	SHAFT, CABLE DRUM	1
11	11440	FORK, SHIFTER	1
12	11441	SHAFT, SHIFTER	1
13	11442	HANDLE, SHIFTER	1
14	11427	CONTAINER, BEARING	2
15	11445	COVER, WORM BRAKE	1
16	18035	BUSHING	2
17	11425	BUSHING	1
18	11420	RING, RETAINING	2
19	22055	DRUM KET, CABLE	4
20	11402	KEY, WORM	1
21	11407	SPACER, WORM	2
22	23367	KEY, SPROCKET	1
23	10078	KEY, ROTOR	1
27	81080	ROTOR ASSEMBLY, BRAKE	1
28	11599	ADJUSTING NUT, WORM BRAKE	1
29	12465	O-RING	1
30	19014	PLUG, FILLER	1
32	11026	WASHER, LOCK	10
34	81081	SPRING ASSEMBLY, SAFETY BRAKE	1
36	11431	PLATE, PRESSURE	1
37	18022	KNOB, SHIFTER	1
38	11429	GASKET	4
39	11446	GASKET	2
40	18033	BEARING CONE	2
41	18034	BEARING CUP	2
42	12073	SEAL, GREASE	1
43	12783	BRACKET, SHIFTER	1
44	11411	COVER GASKET, HOUSING	1
45	19045	PLUG, DRAIN	1
46	18047	FITTING, GREASE	1

20,000# WINCH ITEMS (CONT.)

ITEM NO.	PART NO.	DESCRIPTION	QTY.
48	22775	PLUG, VENT	1
49	18009	PLUG, LEVEL	1
50	11430	GASKET	4
51	11310	SPRING, SHIFTER KNOB	1
52	11309	STEM, SHIFTER KNOB	1
54	28942	ANGLE, FRONT BASE	1
55	28943	ANGLE, REAR BASE	1
56	13938	CAPSCREW	16
57	12781	WASHER, LOCK	8
59	11025	WASHER, LOCK	3
60	22695	CAPSCREW	4
61	21964	CAPSCREW	6
62	12146	PLUG, EXPANSION	A/R
63	13028	ROLLPIN	A/R
64	11398	SCREW, ADJUSTING	1
65	88005	SHOE ASSEMBLY, DRAG BRAKE	1
68	18002	SHOE ASSEMBLY, DRAG BRAKE	1
72	11426	DISC, FRICTION	2
73	11791	NUT, JAM	1
75	12767	PLUG, EXPANSION	A/R
76	22729	CAPSCREW	2
77	23245	SAE PLATE - AMU7-16F	1
78*	23310	PLATE, WARNING	1
79*	11842	SCREW, DRIVE	4
80	12228	SCREW, SET	1
90	11435	INSERT, THREAD	8
91	11014	LOCKWASHER (7/8" EXTERNAL TOOTH)1	
92	22697	CAPSCREW (1/2-13NC X 1 G5)	5

NOTE: ITEMS 1 AND 4 INCLUDE BUSHING (ITEM 16); ITEM 2 INCLUDES BUSHING (ITEM 17).

DRUM ITEMS, THREE SPOKE HUB AND

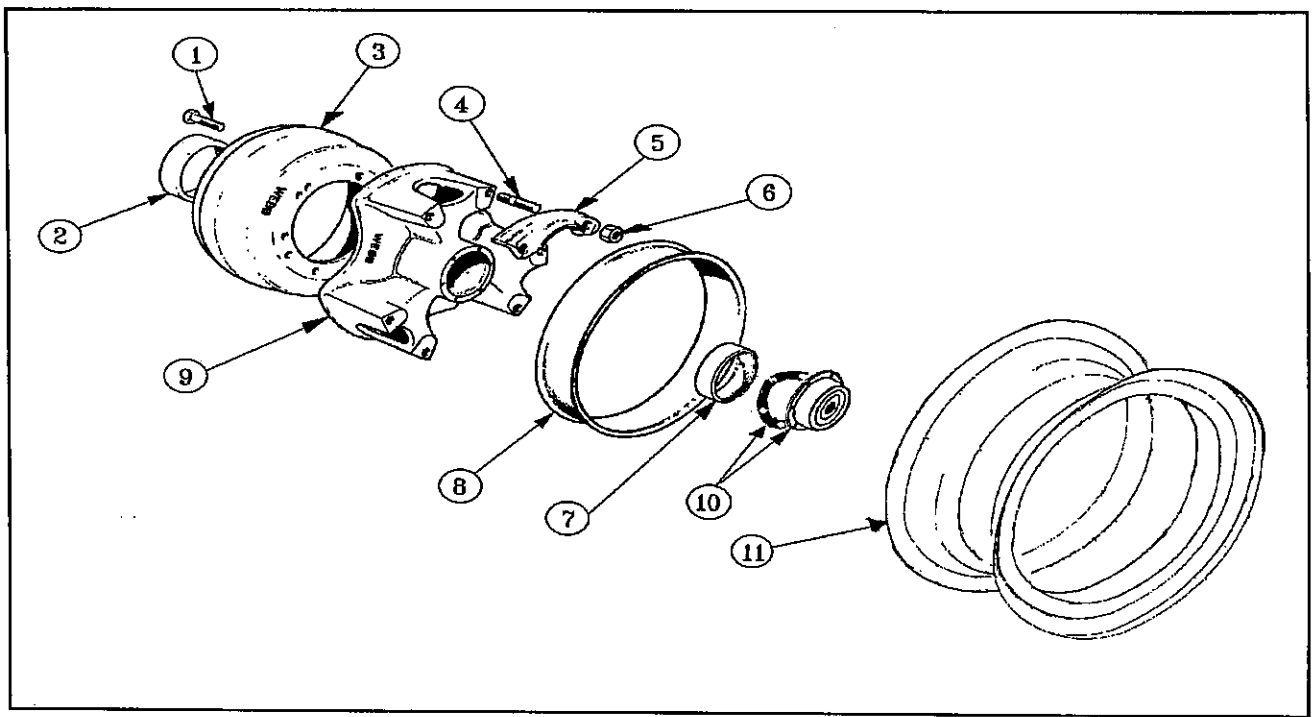


FIG. 8-24 THREE SPOKE HUB AND DRUM ITEMS

ITEM NO.	PART NO..	DESCRIPTION	QTY.
1	86222	CAP SCREW, HEX HEAD	6
2	HM218210	CUP, INNER	1
3	67518	DRUM, BRAKE	1
4	17027	STUD, 3/4"-10	10
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	021-038-02	HUB CAP, OIL LEVEL INDICATOR	1
	071-124-00	GASKET	1
	3-659-010012	SEAL	1
	5/16-18X3/4HHCS	CAP SCREW, HEX HEAD	6
	5/16SLW	WASHER, SPLIT LOCK	6
11	675175RTD	WHEEL	1

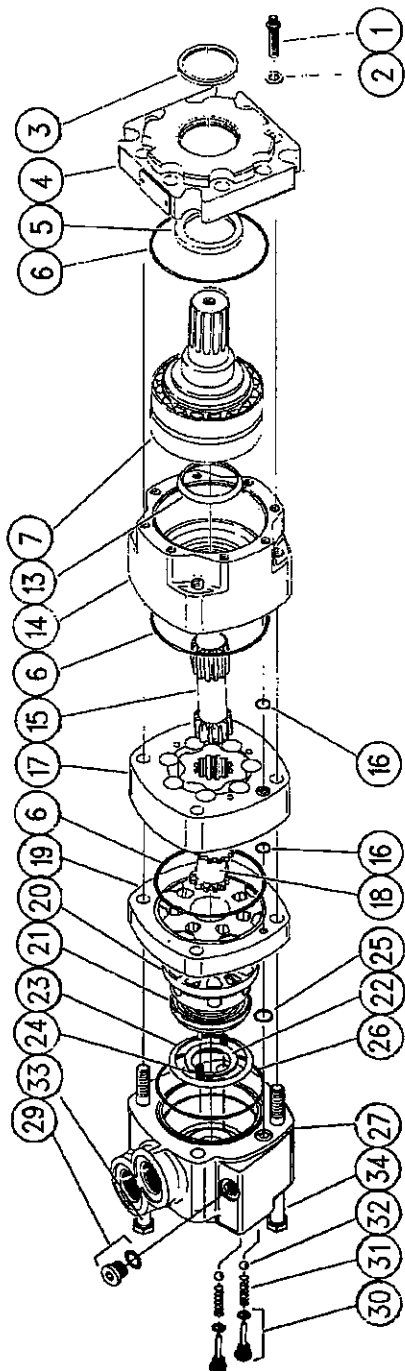


FIG. 8-25 109-1117 20,000# WINCH MOTOR ITEMS

109-1117 WINCH MOTOR (for 20,000 # WINCH)

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	5389-27	SCREW, CAP	8
2*	6049	WASHER	8
3*	9031-1	SEAL, DUST	1
4	8559	RETAINER, FRONT	1
5*	9068-2	SEAL, SHAFT	1
6*,**	9022-8	SEAL	3
7	8709-1	BEARING KIT, SHAFT AND (STRAIGHT)	1
8	8709-2	BEARING KIT, SHAFT AND (TAPERED)	1
9	8709-3	BEARING KIT, SHAFT AND (SPLINED) INCLUDES FOLLOWING:	1
	NSS	SHAFT	1
	NSS	CONE, BEARING	2
	NSS	CUP, BEARING	2
	NSS	SPACER, BEARING	1
	NSS	RETAINER, RING	1
10	14392-11	KEY (STRAIGHT SHAFT)	1
11	14230	NUT, HEX	1
12	14232	KEY (TAPERED SHAFT)	1
13*	9070-1	SEAL, SHAFT FACE	1
14	8487	HOUSING, BEARING	1
15	6947	DRIVE	1
16**	9022-3	SEAL	2
17	7960-2	GEROLER	1
18	8510	DRIVE, VALVE	1
19	8504	PLATE, VALVE	1
20	8500	VALVE	1
21	6942	PLATE, BALANCE ASSEMBLY	1
22**	6961	SEAL, INNER FACE	1
23**	6962	SEAL, OUTER FACE	1
24	6203	SPRING	2
25**	15006	SEAL	1
26**	9022-7	SEAL	1
27	8501-3	HOUSING, VALVE	1
29	9072-3	PLUG ASSEMBLY	1
	NSS	PLUG	1
**	250003-904	O-RING	1
30	8350	CHECK PLUG ASSEMBLY	2
	NSS	PLUG	2
**	250003-903	O-RING	2
31	6464	SPRING	2
32	18026	BALL, STEEL	2
33	14247	BOLT	2
34	14243	BOLT	2
* = 61236 SEAL KIT, SHAFT, CONTAINS PARTS INDICATED BY *			
** = 61234 SEAL KIT, MOTOR, REAR CONTAINS PARTS INDICATED BY **			
NSS = NOT SOLD SEPARATELY.			

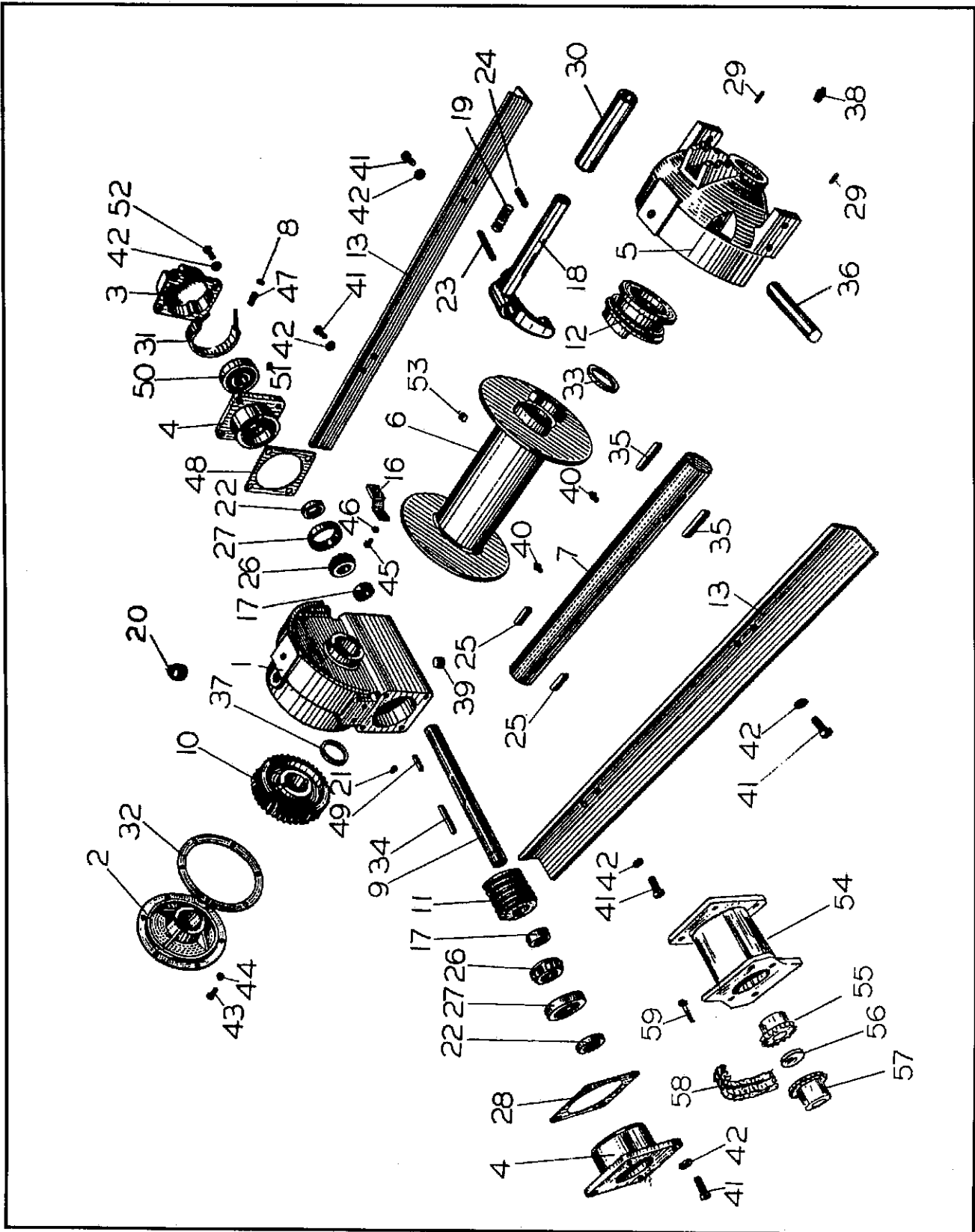


FIG. 8-26 12,000# WINCH COMPONENTS

12,000# WINCH ITEMS

ITEM NO.	PART NO.	DESCRIPTION	QTY.
	3-873-010026	WINCH, 12,000#	1
1	81006	HOUSING ASSEMBLY, WORM	1
2	81009	HOUSING COVER, WORM	1
3	18032	HOUSING, SAFETY BRAKE	1
4	23303	CONTAINER, BEARING	2
5	81530	LEG ASSEMBLY, BEARING	1
6	11128	DRUM, CABLE	1
7	11129	DRUM SHAFT, CABLE	1
8	13468	NUT, JAM	4
9	23470	SHAFT, WORM	1
10	11144	GEAR, WORM	1
11	11142	WORM	1
12	18039	CLUTCH	1
13	22752	ANGLE, BASE	2
16	81025	BRAKE, DRAG	1
17	11308	SPACER, WORM	2
18	13839	FORK, SHIFTER	1
19	18002	SPRING	1
20	22775	PLUG, PIPE	1
21	18009	PLUG, PIPE	1
22	18026	SEAL, GREASE	2
23	13028	PIN, ROLL	1
24	18058	PIN, ROLL	1
25	11117	KEY, WORM GEAR	2
26	18015	CONE, BEARING	2
27	18016	CUP, BEARING	2
28	18027	GASKET	3
29	11837	PIN, ROLL	2
30	12817	SHIFTER HANDLE	1
31	21925	BAND, BRAKE	1
32	11133	GASKET	3
33	18019	PIN, RETAINER	1
34	18030	KEY, WORM	1
35	18020	KEY, CLUTCH	2
36	11130	FORK, PIN	1
37	11240	RING, THRUST	1
38	18047	FITTING, GREASE	1
39	19045	PLUG, PIPE	1
40	11799	FITTING, GREASE	2
41	21961	CAPSCREW	8
42	18003	WASHER, LOCK	16
43	11767	CAPSCREW	6
44	11011	WASHER, LOCK	6
45	13005	CAPSCREW	2
46	12780	WASHER, LOCK	2
47	18029	SPRING	1
48	18024	GASKET	3
49	18044	KEY	2
50	18028	DRUM, BRAKE	1
51	12075	SCREW, SET	1
52	22694	CAPSCREW	4
53	24032	SCREW, SET	1
54	23079	ADAPTER, MOTOR	1
55	23081	COUPLER HALF WINCH	1
56	23078	SPACER, CONSTANT	1
57	23083	COUPLING HALF, MOTOR	1
58	13424	CHAIN	1
59	13413	CAPSCREW	2

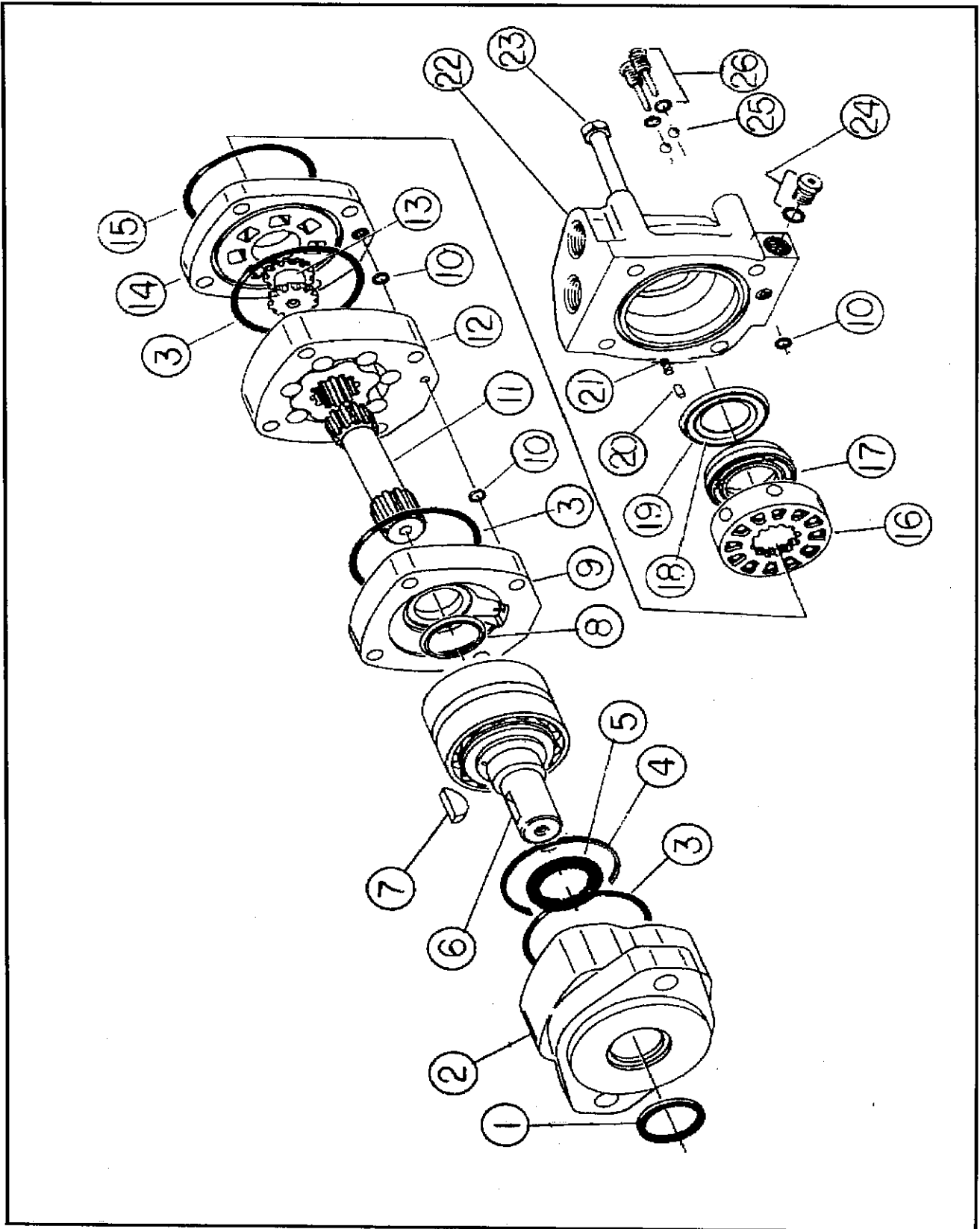


FIG. 8-27 104-1003 12,000# WINCH MOTOR ITEMS

104-1003 WINCH MOTOR

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1*	9044-1	SEAL, DUST	1
2+	7385	HOUSING, BEARING	1
3	9022-6	SEAL, O-RING	3
4*,**	61203	SPACER, BEARING KIT	1
5*	9075-1	SEAL, SHAFT	1
6	61204	SHAFT AND BEARING KIT	1
7	14193	KEY	1
8*	9050	SEAL, SHAFT FACE	1
9+	7390	PLATE, WEAR	1
10**	9022-12	SEAL, O-RING	3
11	8434-3	DRIVE	1
12	7403-3	GEROLER	1
13	8433	DRIVE, VALVE	1
14	8432	PLATE, VALVE	1
15**	9022-2	SEAL	1
16	8435	VALVE	1
17	7379	PLATE, BALANCE	1
18**	9049-1	SEAL, INNER FACE	1
19**	9048-1	SEAL, OUTER FACE	1
20	14351	PIN	2
21	7383	SPRING	2
22	8356-1	HOUSING, VALVE	1
23	14300	BOLT	4
24	9072-3	PLUG ASSEMBLY	1
	9071-3	PLUG	1
**	250003-904	O-RING	1
25	18026	BALL, STEEL	2
26	8350	CHECK PLUG ASSEMBLY	2
	8349	PLUG	1
	250003-903	O-RING	2

* 61200 SEAL, SHAFT: CONTAINS PARTS INDICATED BY "**".

** 61258 SEAL, MOTOR REAR: CONTAINS PARTS INDICATED BY "***".

+ ORDER 61203: *BEARING SPACER KIT*, WHENEVER YOU REPLACE THE BEARING HOUSING, SHAFT AND BEARING KIT OR WEAR PLATE.

TORQUE CHART		MIN. TORQUE CLEAN-OILED
ITEM NO.	SIZE	
5	1 1/8"	600 FT. LBS.
19	3/4"	150 FT. LBS.
20	1/2"	35 FT. LBS.
21, 23	3/4"	35 FT. LBS.
24	1"	680 FT. LBS.

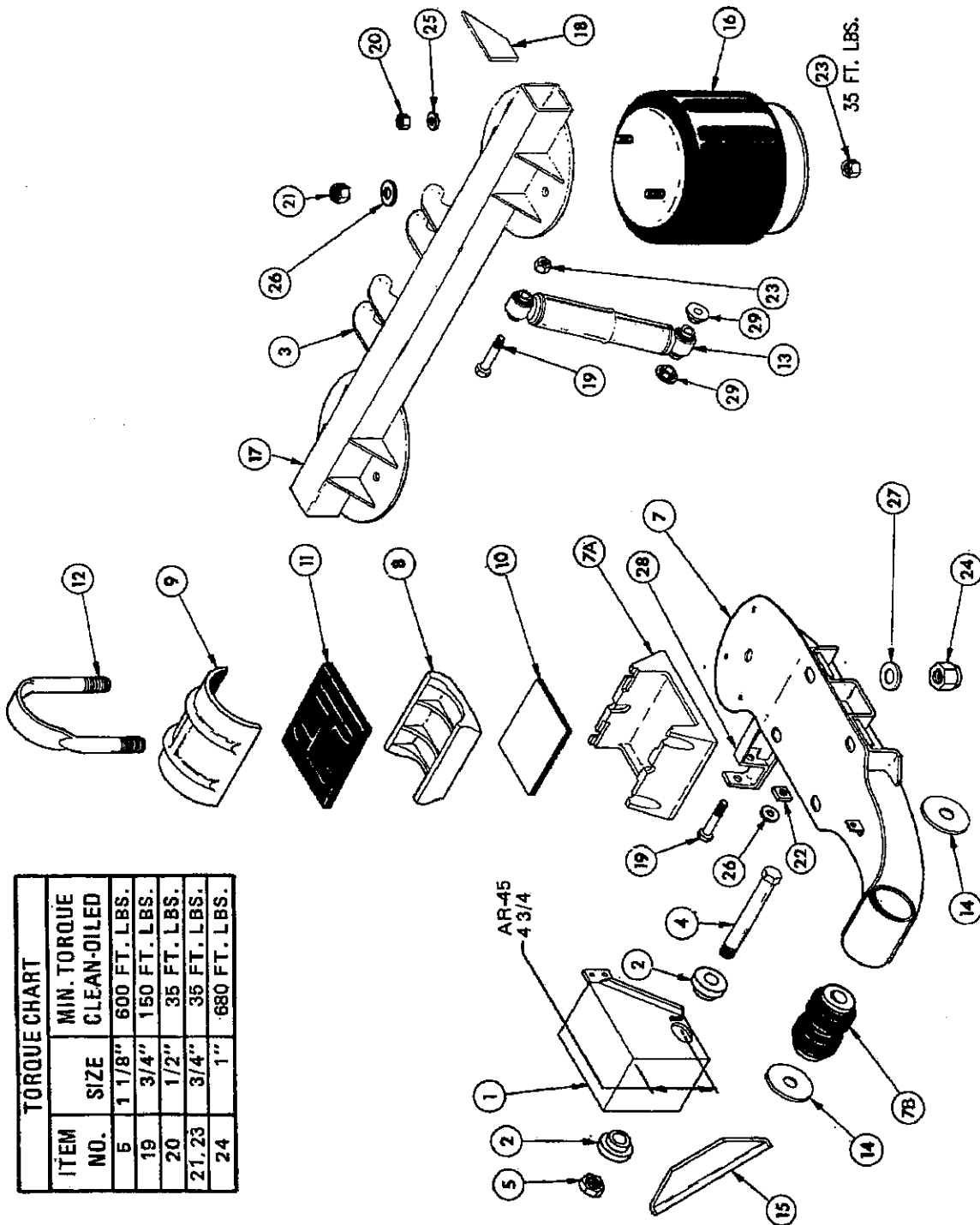


FIG. 8-28 AIR RIDE SUSPENSION ITEMS

SUSPENSION ITEMS, AR-45 AIR RIDE

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	905-19-361	FRAME, BRACKET, L.H. ADJUSTABLE	1
	905-19-362	FRAME BRACKET, R.H. FIXED	1
2	900-08-141	BUSHING, ALIGNMENT	4
3	900-32-561	MOUNTING BRACKET, UPPER SHOCK	4
4	932-01-046	CAP SCREW	2
5	939-00-165	NUT, SMART	2
5A	939-00-164	RING (USED WITH ITEM 5)	2
7	905-15-857	BEAM ASSEMBLY, L.H. EQUALIZING (INCLUDES 7A & 7B)	1
	905-15-858	BEAM ASSEMBLY, R.H. EQUALIZING (INCLUDES 7A & 7B)	1
7A	900-01-006	SEAT, BEAM	2
7B	900-08-139	BUSHING	2
8	900-01-082	ADAPTER, AXLE	2
9	900-10-032	AXLE CAP	2
10	900-28-075	PAD, STEEL/RUBBER	2
11	900-28-047	WRAPPER, RUBBER	2
12	900-41-878	U-BOLT	2
13	3-687-010001	SHOCK ABSORBER	2
14	900-36-140	WASHER, SPACER	4
15	900-23-002	BRACE, ANGLE	2
16	905-57-023	SPRING ASSEMBLY, AIR	2
17	905-44-573	CROSS-MEMBER	1
18	900-31-443	GUSSET	2
19	930-03-599	CAP SCREW	4
20	934-00-136	NUT, HEX	2
21	934-00-149	NUT, HEX	2
22	934-00-367	NUT, SQUARE	2
23	934-00-492	NUT, LOCK	4
24	934-00-502	NUT, LOCK	8
25	936-00-072	WASHER, LOCK	2
26	936-00-077	WASHER, LOCK	4
27	939-00-027	WASHER, FLAT	8
28	905-19-425	BRACKET, LOWER SHOCK	2
29	905-08-004	BUSHINGS	8

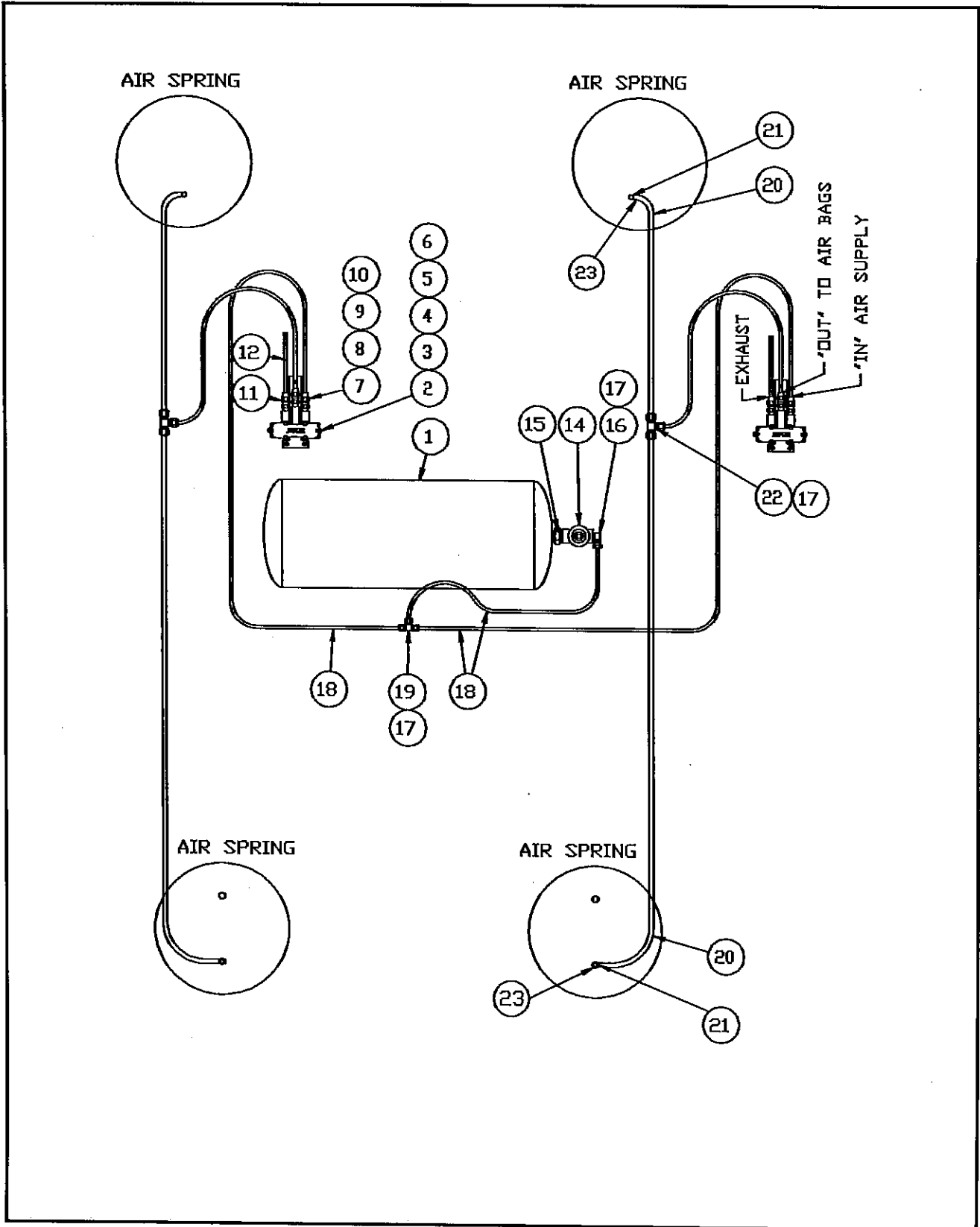


FIG.8-29 TANDEM AIR SUSPENSION PLUMBING

SUSPENSION ITEMS, TANDEM AIR

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3-780-010004	RESERVOIR, AIR	1
2	900-54-007	VALVE, HEIGHT CONTROL	2
3	900-54-442	LINKAGE	2
4	934-00-060	NUT, LOCKING	8
5	930-02-361	CAP SCREW	4
6	930-02-349	CAP SCREW	4
7	938-00-014	INSERT	4
8	938-00-140	NUT, BRASS	4
9	938-00-062	SLEEVE, DELRIN	4
10	905-54-059	FILTER	4
11	938-00-139	FITTING, EXHAUST	2
12	900-54-276	HOSE, EXHAUST	2
13	941-00-119	DECAL, OPERATING (NOT SHOWN)	1
14	905-54-107	VALVE AND FILTER, BRAKE PROTECTION	1
	481-00-200	FILTER ONLY	1
15	2083-8-4S	NIPPLE, PIPE	1
16	1-297-010008-07	ELBOW, 90°	1
17		SERVICE REPAIR ONLY	6
18	62P4	NYLON TUBING	12
19	1-2997-010010-01	TEE, END TUBE	1
20	62P6	TUBING	A/R
21	1-297-010013-11	ELBOW, 45°	4
22	1-297-010010-04	TEE, UNION	2

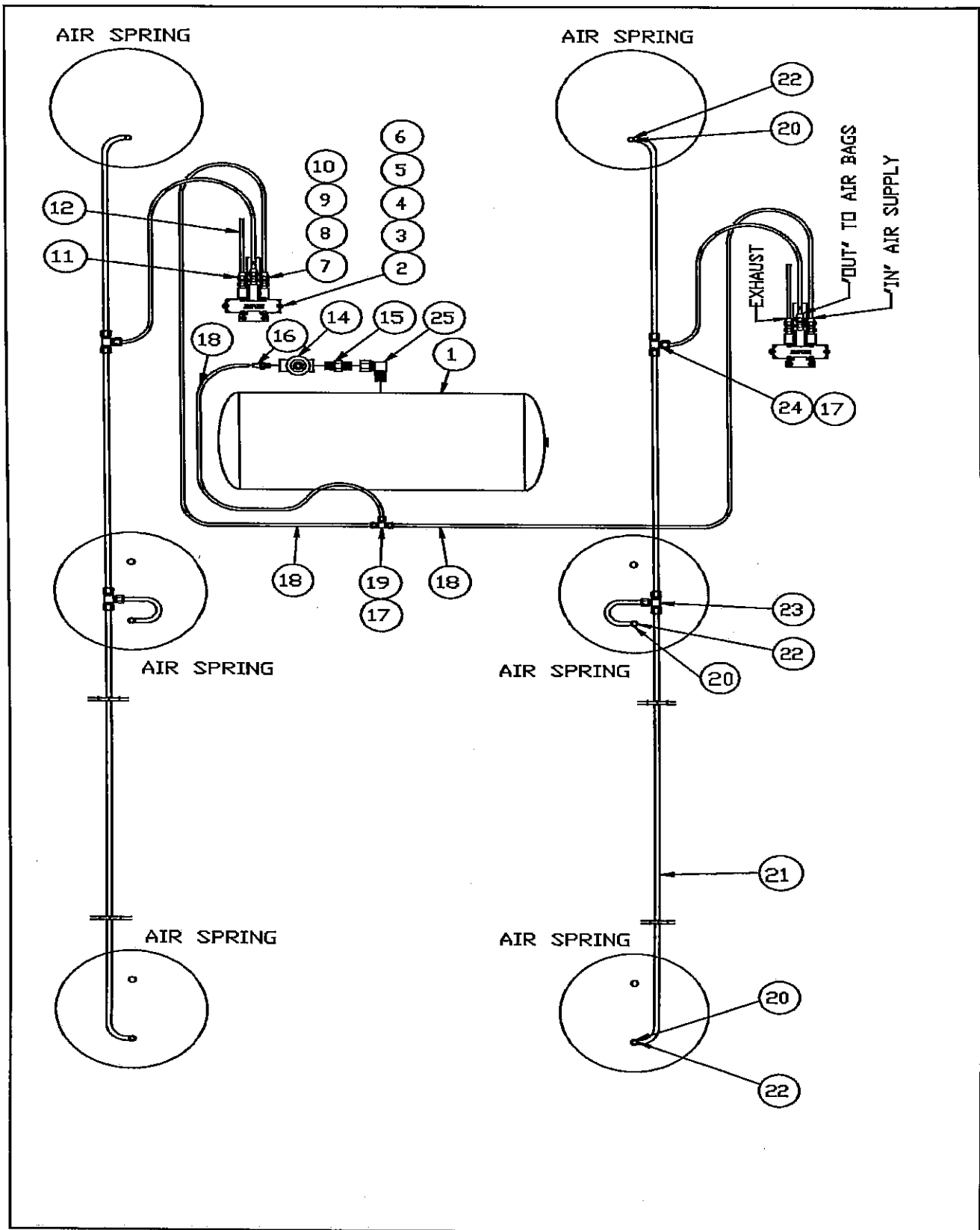


FIG.8-30 TRI-AXLE SUSPENSION PLUMBING

SUSPENSION ITEMS, TRI AXLE AIR

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3-780-010004	RESERVOIR, AIR	2
2	900-54-007	VALVE, HEIGHT CONTROL	2
3	900-54-442	LINKAGE	2
4	934-00-060	NUT, LOCKING	8
5	930-02-361	CAP, SCREW	4
6	930-02-349	CAP SCREW	4
7	938-00-014	INSERT	4
8	938-00-140	NUT, BRASS	4
9	938-00-062	SLEEVE, DELRIN	4
10	905-54-059	FILTER	4
11	938-00-139	FITTING, EXHAUSET	2
12	900-54-276	HOSE, EXHAUST	2
13	941-00-119	DECAL, OPERATING (NOT SHOWN)	1
14	905-541-07	VALVE AND FILTER, BRAKE PROTECTION	1
	481-00-200	FILTER ONLY	1
15	2083-8-4S	NIPPLE, PIPE	1
16	1-297-010008-07	ELBOW, 90 DEGREE	6
18	62P4	NYLON TUBING	12
19	1-297-010010-01	TEE, END TUBE	1
21	62P6	NYLON TUBING	A/R
22	1469X6	ELBOW, 90 DEGREE	6
23	1-297-010010-03	TEE, UNION	2
24	1-297-010010-04	TEE, UNION	2
25	2047-8X8S	ADAPTER	1

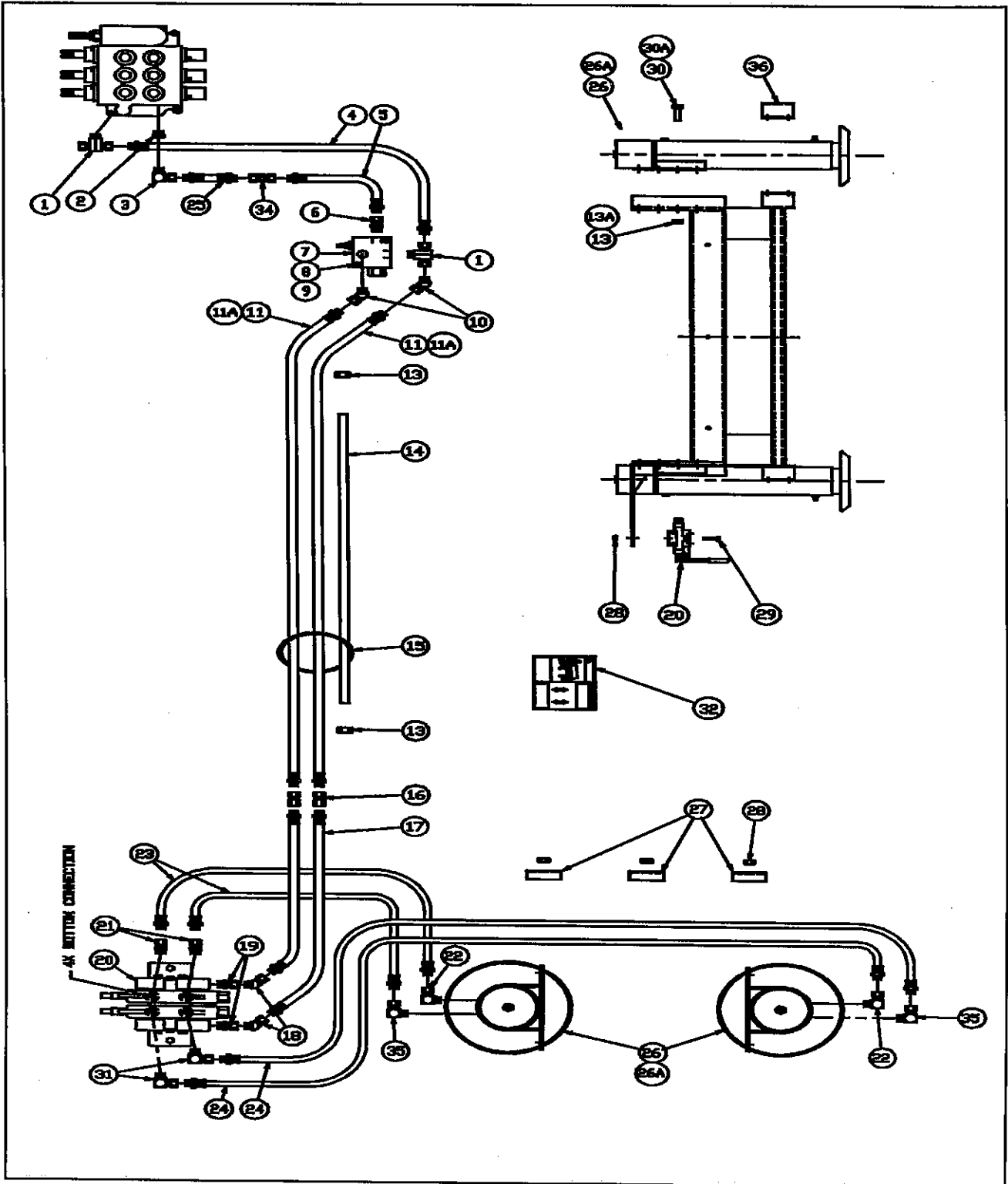


FIG. 8-31 DOCK LEVELER HYDRAULIC SYSTEM

HYDRAULIC SYSTEM, DOCK LEVELER

ITEM NO.	PART NO.	DESCRIPTION	QTY*.
1	2254-8-8S	TEE ADAPTER	2
2	1V0208	REMOTE, POWER BEYOND	1
3	1-007-010013	SWIVEL, 90 °	1
4	3-397-010154	HOSE ASSEMBLY (45 FT. TRAILERS)	1
	3-397-010272	HOSE ASSEMBLY (48 FT. TRAILERS)	1
	3-397-010232	HOSE ASSEMBLY (50 FT. TRAILERS)	1
	3-397-010021	HOSE ASSEMBLY (53 FT. TRAILERS)	1
5	1-397-010029	HOSE ASSEMBLY (45 FT. TRAILERS)	1
	2-397-010007	HOSE ASSEMBLY (48 FT. TRAILERS)	1
	1-397-010139	HOSE ASSEMBLY (50 FT. TRAILERS)	1
	3-397-010020	HOSE ASSEMBLY (53 FT. TRAILERS)	1
6	2045-8-8S	ADAPTER, SWIVEL	1
7	2F85-P444-15S	REGULATOR, BYPASS ONLY FLOW	1
8	5/16-18HFLN	NUT LOCKING	2
9	5/16-18X2HHCS	CAP SCREW, HEX HEAD	2
10	2049-6-8S	SWIVEL 45 °	2
11	3-397-010266	HOSE ASSEMBLY (45 FT. TRAILERS)	2
	3-397-010239	HOSE ASSEMBLY (48 FT., 50 FT., 53. FT. TRAILERS)	2
13	5/8-11HFLN	NUT, LOCKING	22,26
14	3-642-010033	SUPPORT, ROD HOSE	1
15	3-462-010001	HOSE, LOOP	6
16	2046-6-6S	CONNECTOR	1
17	3-397-010279-1	HOSE, HYDRDAULIC	2
18	2049-6-6S	SWIVEL, 45 °	2
19	2066-6-6S	ADAPTER	2
20	3-846-010056**	VALVE, DOUBLE SPOOL	1
	6009251	SEAL KIT, PER SECTION	1
	MV3-10	SECTION WITH 5" RINGS	1
	6405000	HANDLE KIT AND HARDWARE	1
21	2066-4-6S	ADAPTER, SWIVEL	4
22	2047-6X6S	SWIVEL	2
23	3-397-010278-1	HOSE, HYDRAULIC	2
24	3-397-010278-2	HOSE, HYDRAULIC	2
25	3-397-010155	HOSE ASSEMBLY	1
26	3-242-010147	CYLINDER, HYDRAULIC (FOR 40,000 LB. LEGS) (SEE FIG. 8-32)	2
26A	3-242-010148	CYLINDER, HYDRAULIC (FOR 60,000 LB. LEGS) (SEE FIG. 8-32)	2
27	2-181-010001	CLAMP, HOSE	5
28	3/8-16HFLN	NUT, LOCKING	7
29	3/8-16X1-1/2CS	CAP SCREW, HEX HEAD	2
30	5/8-11XCS	CAP SCREW, HEX HEAD	20,24
31	2068-4-6S	ADAPTER, 90 °	2
32	3-573-010202	DECAL, WARNING/OPERATION DOCK LEVEL	2
33	3-311-010839	MOUNTING TUBE, SUPPORT ROD (NOT SHOWN)	2
34	2046-8-8S	CONNECTOR	1
35	1-007-010005	SWIVEL, 90 °	2
36	100346	CLAMP, MOUNTING (Comes with fastening hardware)	2
*	WHERE TWO QUANTITIES ARE LISTED WITH A COMMA BETWEEN THEM, THE FIRST QUANTITY IS FOR A TRAILER WITH 40,000 LB. LEGS AND THE SECOND QUANTITY IS FOR A TRAILER WITH 60,000 LB.LEGS.		
**	6009251	SEAL KIT	1
	MV3-10	SECTION W/5 " O" RINGS	
	6405000	HANDLE KIT AND HUB	

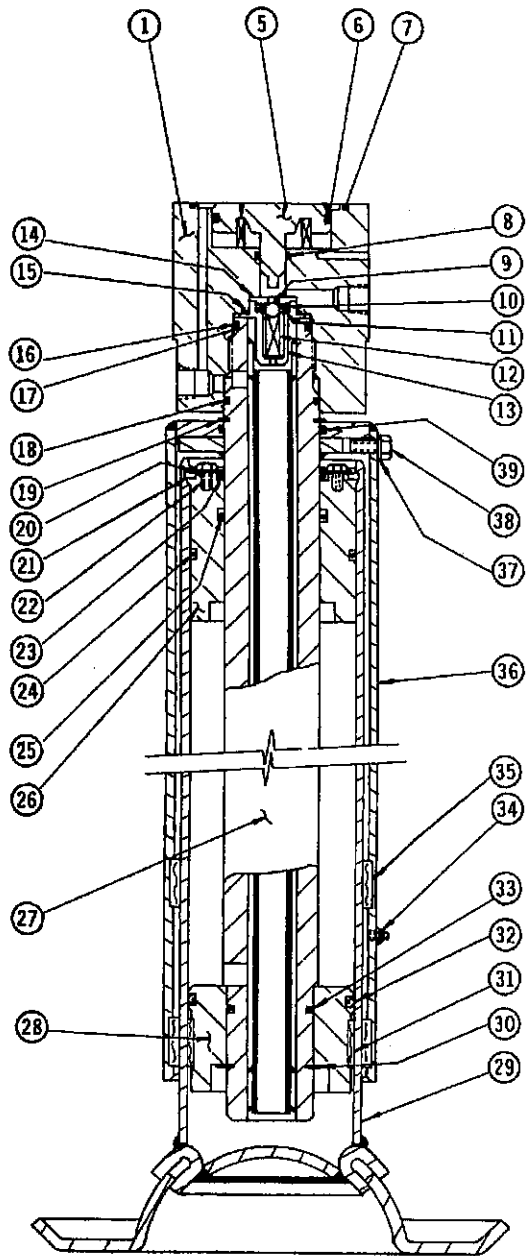


FIG. 8-32 DOCK LEVELER LEG ITEMS

LEG ITEMS, DOCK LEVELER

ITEM NO.	PART NO.	DESCRIPTION	QTY.
	3-242-010147	COMPLETE ASSEMBLY, LEG CYLINDER (40,000# CAP)	2
	3-242-010148	COMPLETE ASSEMBLY, LEG CYLINDER (60,000# CAP)	2
	101225	COMPLETE ASSEMBLY, CHECK VALVE (ITEMS 1-18)	1
4	15-1011	CAP SCREW, HEX HEAD	6
5	N/A	PISTON, CHECK VALVE	1
6	NSS	O-RING	1*
7	NSS	O-RING	1*
8	NSS	QUAD-RING	1*
9	19-10001	BALL, STEEL	1*
10	NSS	O-RING	1*
11	100532	O-RING, CHECK INSERT	1*
12	100212	SPRING	1*
13	100213	BODY, CHECK INSERT	1
14	100533	TOP, CHECK INSERT	1
15	NSS	O-RING	1*
16	NSS	O-RING	1**,**
17	NSS	WASHER, BACKUP	1**,**
18	NSS	O-RING	1**,**
19	17-1002	SNAP RING	1**,**
20	100278	RETAINER ASS'Y, CYLINDER HEAD (3-242-010147)	1
	100279	RETAINER ASS'Y, CYLINDER HEAD (3-242-010148)	1
21	17-1004	RING, RETAINER (3-242-010147)	1**,**
	17-1005	RING, RETAINER (3-242-010148)	1**,**
22	15-1012	CAP SCREW, HEX HEAD	4
23	NSS	SEAL, OIL	1
24	NSS	O-RING	1**,**
25	NSS	O-RING	1**,**
26	100216	HEAD, CYLINDER (3-242-010147)	1
	100276	HEAD, CYLINDER (3-242-010148)	1
27	100593	ROD, PISTON	1
28	100217	PISTON (3-242-010147)	1
	100277	PISTON (3-242-010148)	1
29	100542	TUBE, CYLINDER (3-242-010147)	1
	100926	TUBE, CYLINDER (3-242-010148)	1
30	17-1003	RING, SNAP	1**,**
31	NSS	RING, WEAR	1**,**
32	NSS	SEAL, PISTON	1**,**
33	NSS	O-RING	1**,**
34	10-1001	FITTING, GREASE	1
35	NSS	RING, WEAR	2**,**
36	100574	TUBE, WELL (3-242-010147)	1
	100926	TUBE, WELL (3-242-010148)	1
37	16-1002	WASHER, LOCK	1
38	15-1004	CAP SCREW, HEX HEAD (3-242-010147)	1
	15-1021	CAP SCREW, HEX HEAD (3-242-010148)	1
39	NSS	O-RING	1**,**

* - ITEMS ARE CONTAINED IN THE CHECK VALVE REPAIR KIT 100221 (NOT SOLD SEPARATELY).
 ** - ITEMS ARE CONTAINED IN THE LEG REPAIR KIT 100223 (FOR 3-242-010147) OR IN THE LEG REPAIR KIT 100422 (FOR 3-242-010148).

NSS: NOT SOLD SEPARATELY

N/A: NOT AVAILABLE

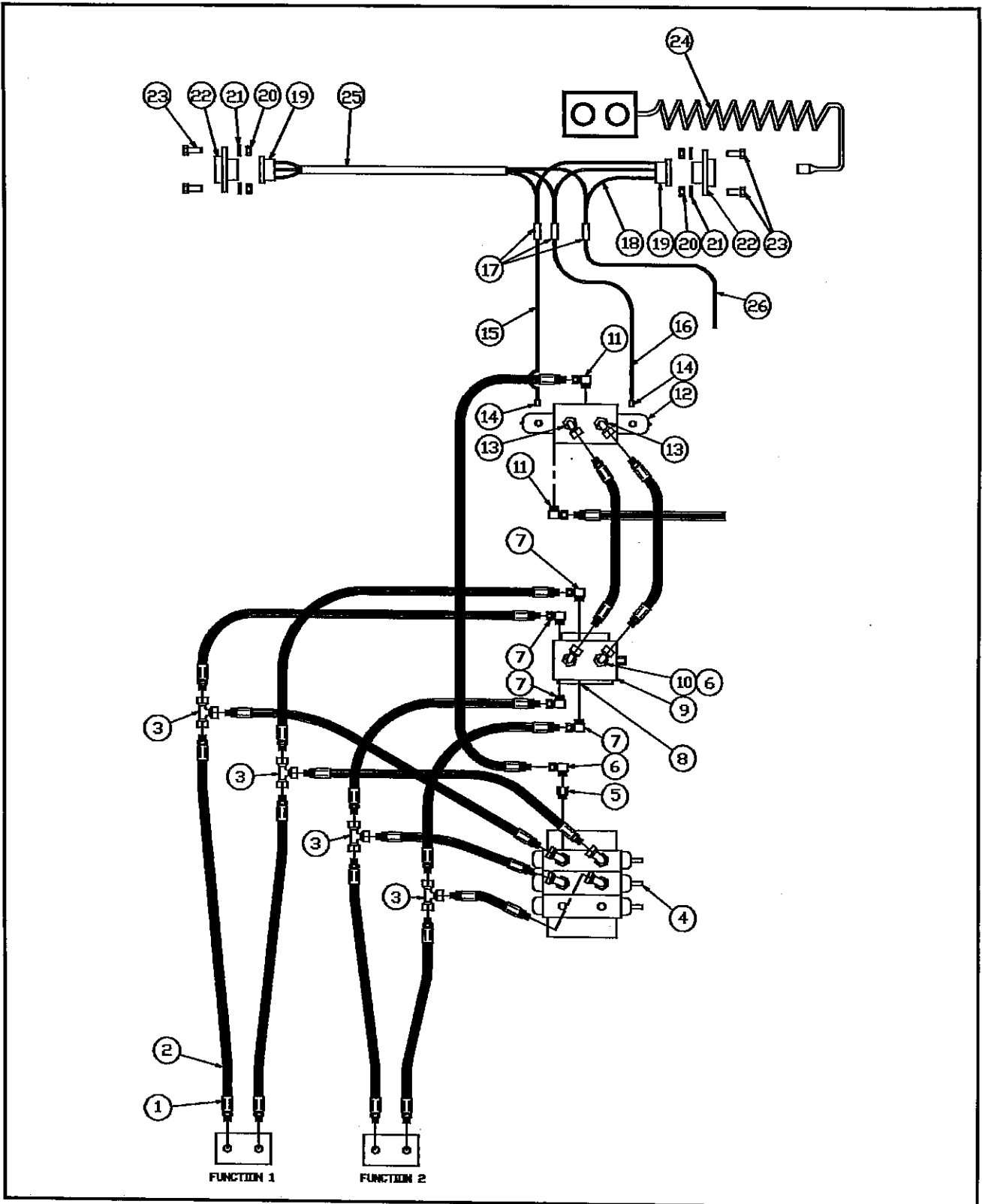


FIG. 8-33 AUXILIARY WINCH CONTROLS

CONTROL ITEMS, WINCH AUXILIARY

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	1-299-010001	HOSE ENDS	30
2	1-397-010010	HOSE, HYDRAULIC	A/R
3	2255-8-8S	TEE, SWIVEL	4
4	REFERENCE	VALVE, THREE SPOOL (SEE FIG. 8-10)	1
5	IV0208	REMOTE, POWER BEYOND	1
6	2047-8-8S	ADAPTER	3
7	1-007-010013	ADAPTER, SWIVEL	4
8	3-311-013512	PLATE, MOUNTING	1
	3/8-16HFN	NUT, HEX	4
	3/8SLW	WASHER, SPLIT	4
	3/8-16X2CS	CAP SCREW, HEX HEAD	4
9	3-846-010004	VALVE, HYDRAULIC SELECTOR PUSH-PULL	1
	1A0768	KNOB	1
	2A0736-206P	LOCKWASHER	1
10	3/4X1/2 BUSH	BUSHING	2
11	1-007-010007	ELBOW, 90°	2
12	3-846-010009	VALVE, MULTIPAK SOLINOID	1
	6002790	SOLINOID	2
13	2066-8-8S	ADAPTER, O-RING	2
14	C29-1104X	CONNECTOR, FEMALE ELECTRICAL	2
15	1-879-010006	WIRE, 14 AWG GREEN	A/R
16	1-879-010010	WIRE, 14 AWG WHITE	A/R
17	3-272-010021	SPLICE, BUTT	3
18	1-879-010011	WIRE, 14 AWG BLACK	A/R
19	59W-2-3	BOOT, RUBBER	2
20	5/16-18HFN	NUT, HEX	4
21	5/16SLW	WASHER, SPLIT LOCK	4
22	59S-7	RECEPTACLE, ELECTRICAL	2
23	5/16-18X1-1/4CS	CAP SCREW, HEX HEAD	4
24	3-765-010001	SWITCH ASSEMBLY, REMOTE CONTROL	1
	3-209-010003	ASSEMBLY, SWITCH BOX	1
	9001-B1Y	SWITCH (ONLY)	1
25	3-156-010007180	CABLE, THREE CONDUCTOR	1
26	3-879-010008	WIRE, 14 AWG BLUE	A/R

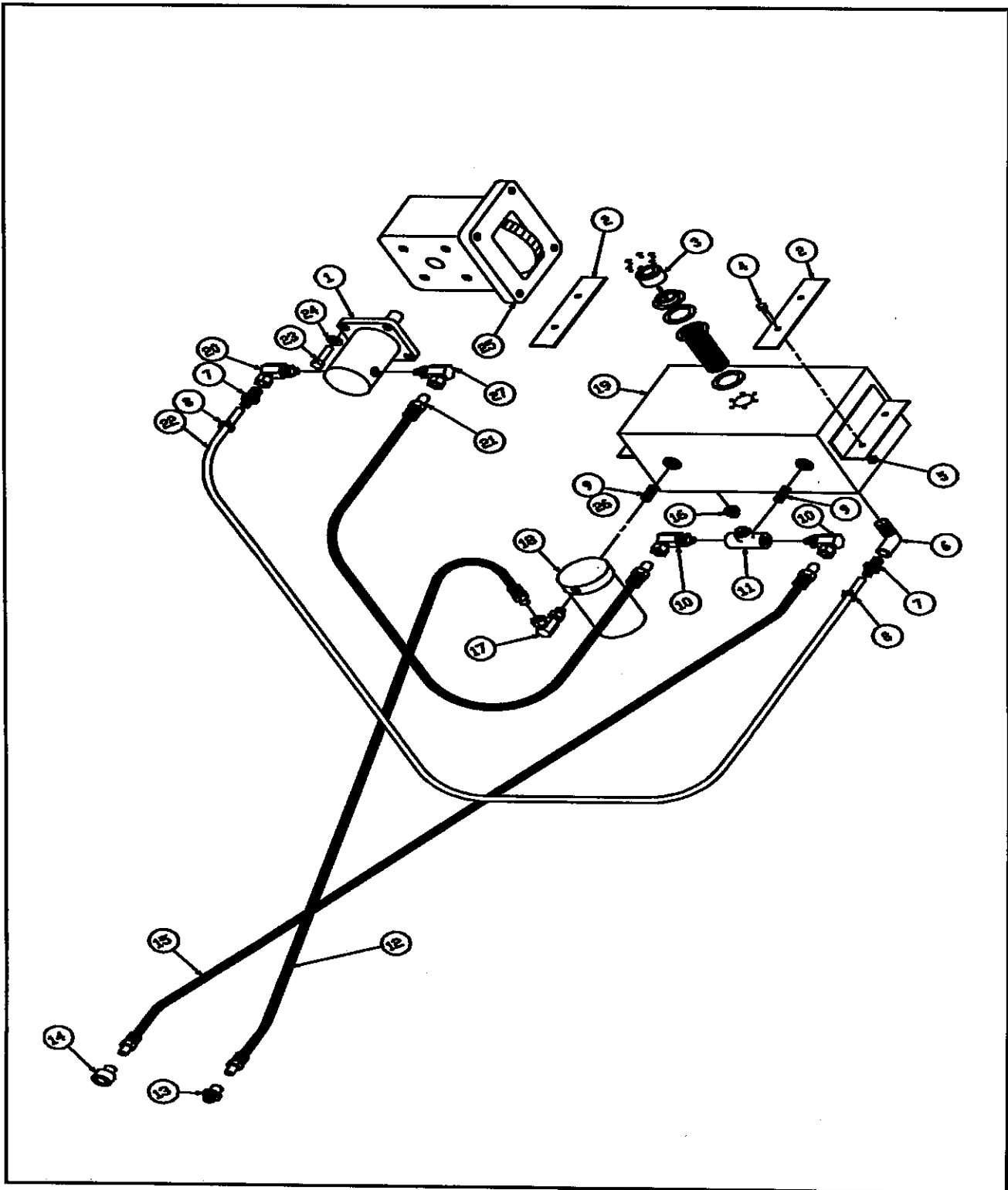


FIG. 8-34 TRANSMISSION MOUNTED WET KIT ITEMS

TRANSMISSION MOUNTED WET KIT ITEMS

ITEM NO.	PART NO.	DESCRIPTION	QTY.
	3-410-010839	KIT, COMPLETE WET	1
1	3-591-010001	PUMP, HYDRAULIC GEAR	1
2	3-120-010103	CLAMP, HYDRAULIC TANK	2
3	3-162-010001	FILLER, BREATHER STRAINER	1
4	3/8-16X1-1/4CS	CAP SCREW, HEX HEAD	4
5	3/8-16HFLN	NUT, LOCKING HEX	4
6	1-1/4ST ELL	ELBOW, 90 DEGREE	1
7	3-561-010001	HOSE, BARB	2
8	6828	CLAMP, HOSE	2
9	3/4NIPPLE	NIPPLE, ALL THREAD	2
10	1-007-010013	SWIVEL, 90 DEGREE	2
11	125130	BYPASS, HYDRAULIC	1
12	1-397-010075	HOSE, ASSEMBLY	1
13	S21F-6	COUPLER, MALE HALF 3/4"	1
14	4050-4	COUPLER, BODY HALF 1/2"	1
15	3-397-010011	HOSE ASSEMBLY	1
16	1-1/4 PIPE PLUG	PLUG, BLACK PIPE	1
17	2047-12-12S	SWIVEL, 90 DEGREE	1
18	1-295-010001	FILTER, RETURN	1
	1-295-010002	FILTER ELEMENT	1
19	3-786-010005	TANK, HYDRAULIC	1
20	1-007-010006	O-RING FITTING	2
21	6-397-010005	HOSE ASSEMBLY	1
22	3-399-010001048	HOSE, SUCTION	1
23	1/2-13X1-1/2CS	CAP SCREW, HEX HEAD	4
24	1/2SLW	WASHER, SPLIT LOCK	4
25	PTO*	POWER TAKEOFF	1
26	3/4ST ELL	ELBOW PIPE	1
27	1-007-010009'	O-RING FITTING	1

* IF IT BECOMES NECESSARY TO ORDER A NEW POWER TAKEOFF, HAVE READY THE TRANSMISSION MODEL NUMBER AND SERIAL NUMBER BEFORE CALLING THE PARTS DISTRIBUTION CENTER.

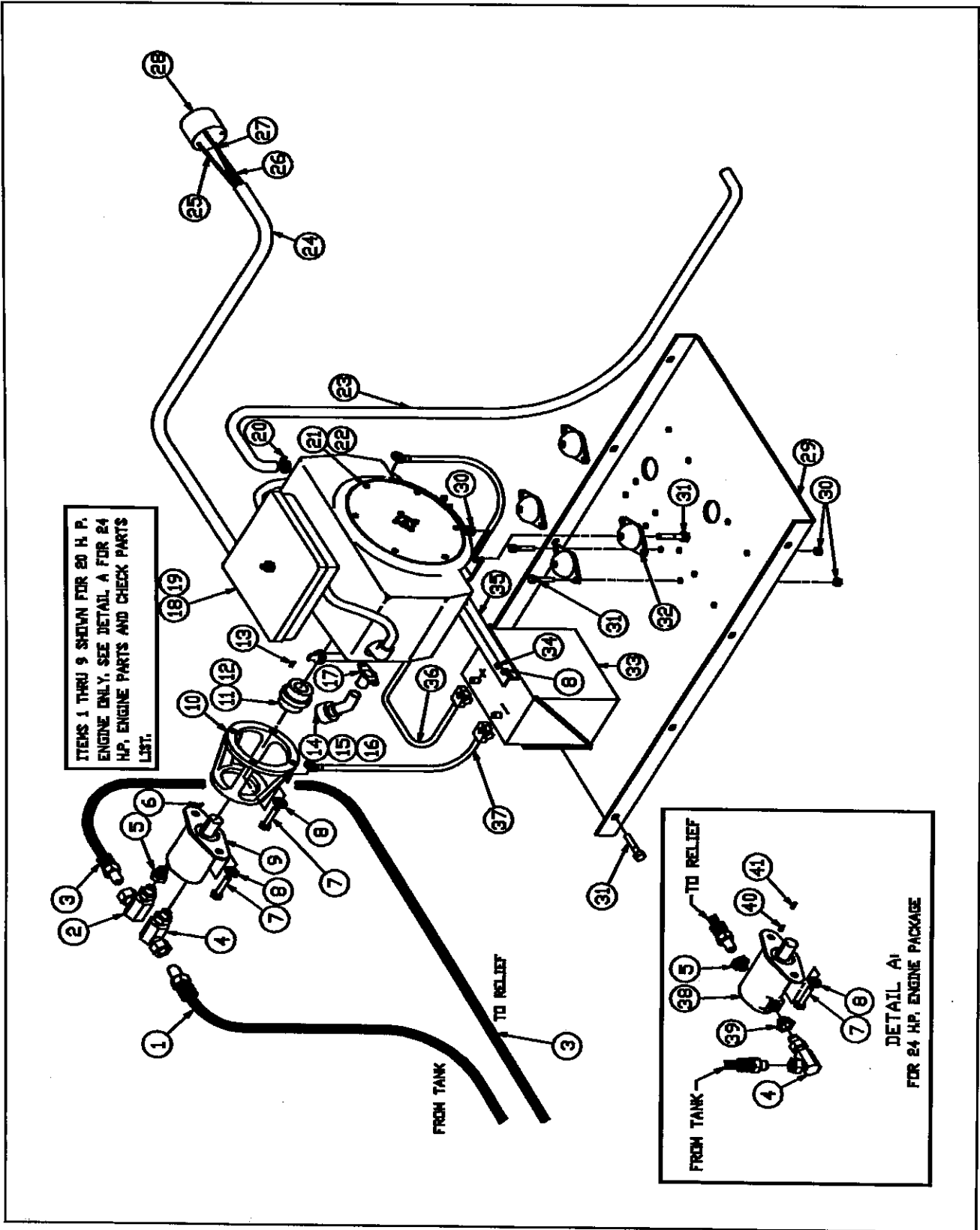


FIG. 8-35 HYDRAULIC POWER AUXILIARY ENGINE ITEMS

AUXILIARY ENGINE ITEMS, HYDRAULIC POWER

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3-397-010231	HOSE ASSEMBLY (UNDERSLUNG)	1
	3-397-010261	HOSE ASSEMBLY (UPPER DECK)	1
2	2047-8-8S	ADAPTER (20 H.P. ENGINE ONLY)	1
3	3-397-010146	HOSE ASSEMBLY (UNDERSLING)	1
	1-397-010028	HOSE ASSEMBLY (UPPER DECK)	1
4	2047-12-16S	ELBOW, 90° SWIVEL	1
5	2081-16-8S	REDUCER	1
6	3-427-010003	KEY, WOODRUFF (20 H.P. ENGINE ONLY)	1
7	3/8-16X1-1/4CS	CAP SCREW, HEX HEAD	6
8	3/8FW	WASHER, FLAT	18
9	3-591-010005	PUMP, GEAR HYDRAULIC (20 H.P. ENGINE ONLY)	1
10	3-482-010003	MOUNT, HYDRAULIC PUMP	1
11	3-220-010003	COUPLING, FLEXIBLE (20 H.P. ENGINE ONLY)	1
12	3-220-010002	COUPLING, FLEXIBLE (24 H.P. ENGINE ONLY)	1
13	110-4338	KEY, SQUARE (20 H.P. ENGINE ONLY)	1
14	542-7205	MUFFLER KIT, ENGINE (20 H.P. ENGINE ONLY)	1
15	155-1217	MUFFLER, ENGINE (24 H.P. ENGINE ONLY)	1
16	3-182-0100028	CLAMP, MUFFLER (24 H.P. ENGINE ONLY)	1
17	541-0203	ADAPTER, EXHAUST	1
18	3-273-010006	ENGINE, 20 H.P.	1
19	3-273-010013	ENGINE, 24 H.P.	1
20	105-0105	CLAMP, IDEAL HOSE	1
21	134-4560	GUARD, ENGINE	1
22	3/16X3/4CS SELF	SCREW, SELF-TAPPING	4
23	104-0505	FUEL LINE	1
24	3-201-010002120	CONDUIT, FLEX	1
25	1-879-010004120	WIRE, RED 14 AWG (UNDERSLUNG)	A/R
26	1-879-010006120	WIRE, GREEN 14 AWG (UNDERSLUNG)	A/R
27	1-879-010010120	WIRE, WHITE 14 AWG (UNDERSLUNG)	A/R
28	3-765-010005	SWITCH, IGNITION (UNDERSLUNG)	1
29	3-055-010005	BASE WELDMENT, POWER SUPPLY (UNDERSLUNG)	1
	3-311-013082	BASE WELDMENT, POWER SUPPLY (UPPER DECK)	1
30	1/2-13HFLN	NUT, LOCKING HEX	20
31	1/2-13X1-1/2CS	CAP SCREW, HEX HEAD	20
32	CA-1595	MOUNT, MACHINE	4
33	2481X	BATTERY, 12 VOLT	1
34	3/8-16HFLN	NUT, LOCKING HEX	2
35	3-120-010124	CLAMP, BATTERY	1
36	239-8113-36	CABLE, NEG. BATTERY (UNDERSLUNG)	1
	239-8113-40	CABLE, NEG. BATTERY (UPPER DECK)	1
37	514-9045-36	CABLE, POS. BATTERY (UNDERSLUNG)	1
	514-9045-26	CABLE, POS. BATTERY (UPPER DECK)	1
38	3-591-010003	PUMP, GEAR HYDRAULIC (24 H.P. ENGINE ONLY)	1
39	1-1/4X3/4BUSH	BUSHING, PIPE (24 H.P. ENGINE ONLY)	1
40	110-4334	KEY, SQUARE (24 H.P. ENGINE ONLY)	1
41	110-4348	KEY, SQUARE (24 H.P. ENGINE ONLY)	1

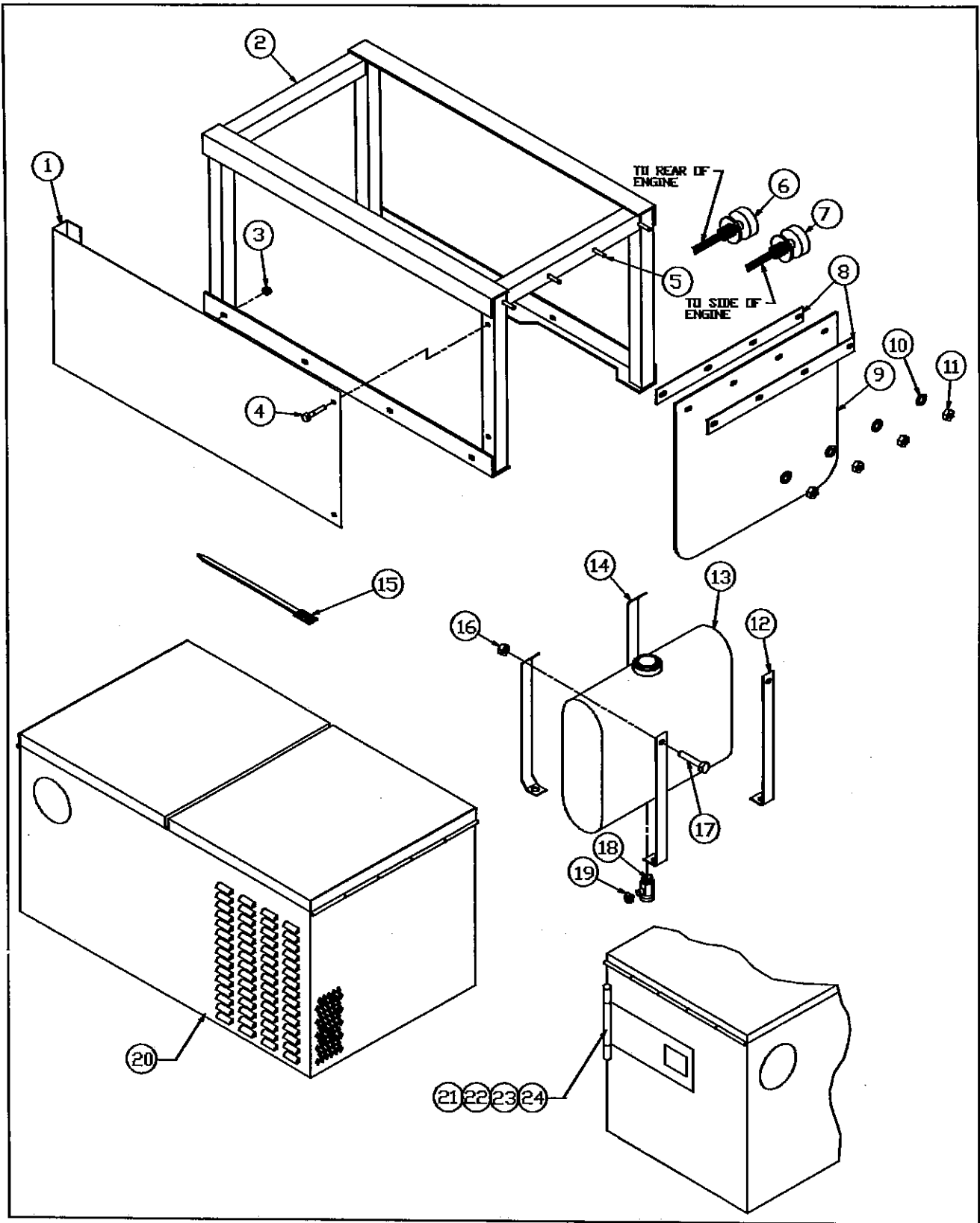


FIG. 8-36 HYDRAULIC POWER SUPPLY SUPPORT ITEMS

SUPPORT ITEMS, HYDRAULIC POWER

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3-311-015013	SHIELD (UNDERSLUNG)	1
2	3-311-014260	WELDMENT, FRAME (UNDERSLUNG)	1
3	1/2-13HFLN	NUT, LOCKING HEX	20
4	3/8-16X3-1/2CS	CAP SCREW, HEX HEAD	2
5	101-017-186	STUD	4
6	3-153-010001	CABLE, CHOKE (UNDERSLUNG)	1
7	3-155-010012	CABLE, THROTTLE (UNDERSLUNG)	1
	150-1716	PANEL, CONTROL (UPPERDECK - CONTAINS THE FOLLOWING LISTED ITEMS WHEN THIS NUMBER IS ORDERED)	1
	.3/16X3/4SELF	SCREW, SELF TAPPING	7
	.	GAUGE	1
	.	CABLE, THROTTLE	1
	.	CABLE, CHOKE	1
	.	HARNESS, IGNITION	1
8	3-762-010017	CLAMP, MUDFLAP (UNDERSLUNG)	2
9	3-485-010002	MUDFLAP, (UNDERSLUNG)	1
10	3/8FW	WASHER, FLAT	4
11	3/8-16HFLN	NUT, LOCKING HEX	4
12	3-311-014059	STRAP, FUEL TANK (UNDERSLUNG)	2
13	3-783-010006	TANK, FUEL (UNDERSLUNG)	1
	159-1597	TANK, FUEL (UPPER DECK - INCLUDES STRAPS)	1
14	3-311-014058	STRAP, FUEL TANK (UNDERSLUNG)	2
15	T120R	STRAP, TYTON	30
16	5/16-18HFLN	NUT, LOCKING HEX	4
17	5/16-18X1-1/4CS	CAP SCREW, HEX HEAD	2
18	6600	VALVE, GAS SHUT OFF	1
19	105-0105	CLAMP, HOSE	1
20	3-274-010010	COMPLETE ASSEMBLY, ENGINE SHROUD (UPPERDECK)	1
21	RRRCF504X9	ROD HINGE (UPPERDECK)	1
22	3-274-010011	DOOR WELDMENT, SHROUD (UPPERDECK)	1
23	1-DSL LATCH	LATCH, SHROUD DOOR	1
24	BSL-6-4	RIVET, SHROUD DOOR LATCH	4

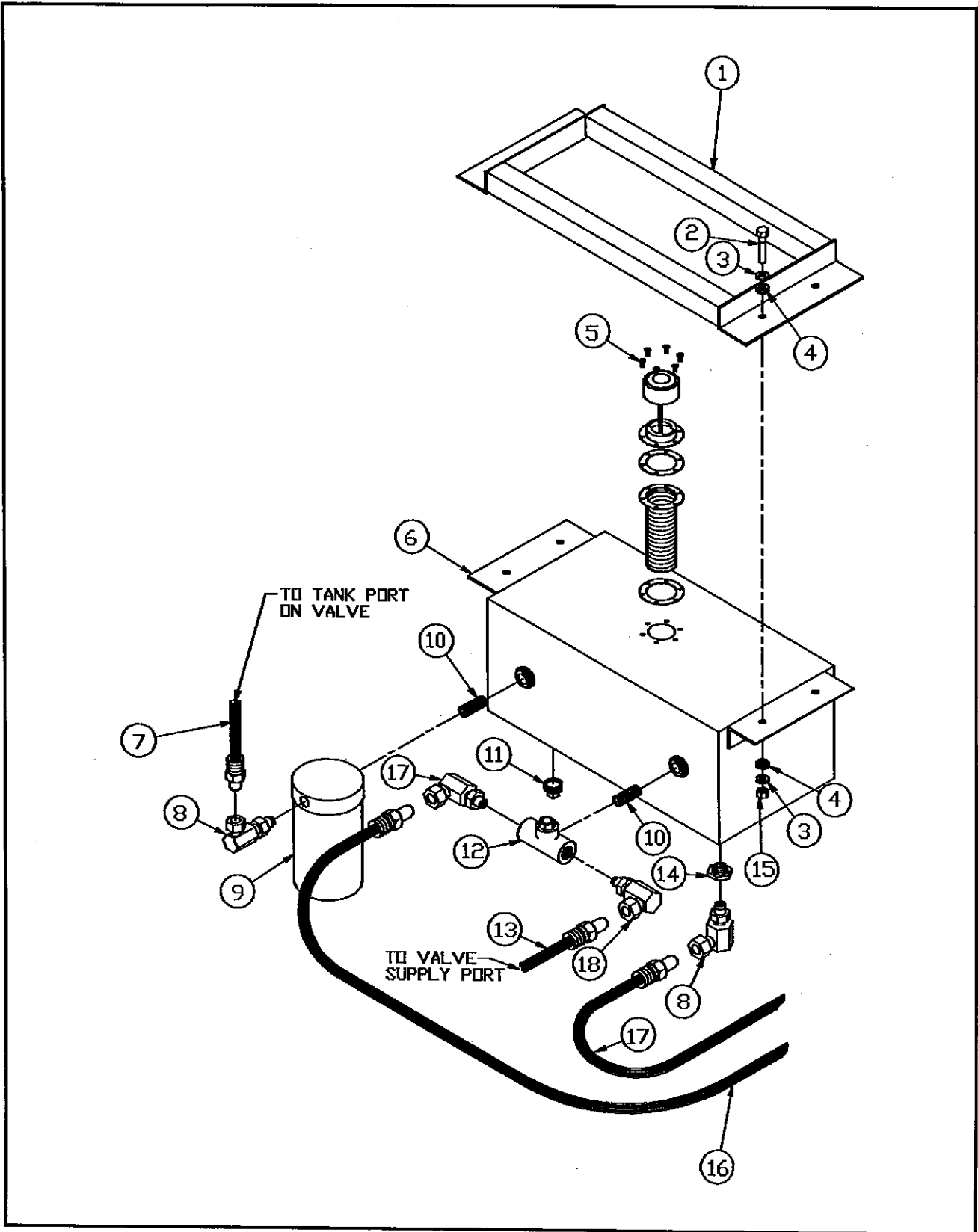


FIG. 8-37 HYDRAULIC POWER SUPPLY TANK ITEMS

TANK ITEMS, HYDRAULIC POWER

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3-311-014262	MOUNT, HYDRAULIC TANK (UNDERSLUNG)	1
2	3/8-16X1-3/4CS	CAP SCREW, HEX HEAD	4
3	3/8FW	WASHER, FLAT	4
4	805-2	BUSHING, STEP	8
5	3-162-010001	STRAINER ASSEMBLY, FILLER BREATHER	1
6	3-786-010015	TANK WELDMENT, HYDRAULIC (UNDERSLUNG)	1
	3-786-010005	TANK WELDMENT, HYDRAULIC (UPPER DECK)	1
7	3-397-010230	HOSE ASSEMBLY (UNDERSLUNG)	1
	2-397-010007	HOSE ASSEMBLY (UPPER DECK)	1
8	2047-12-12S	SWIVEL, PIPE	2,3
9	1-295-010001	FILTER, RETURN LINE	1
10	3/4NIPPLE	NIPPLE	2
11	1-1/4PIPE PLUG	PLUG, BLACK PIPE	1
12	125130	BYPASS, HYDRAULIC	1
13	3-397-010019	HOSE ASSEMBLY (UNDERSLUNG)	1
	3-397-010004	HOSE ASSEMBLY (UPPER DECK)	1
14	1-1/4X3/4BUSH	BUSHING, PIPE	1,2
15	3/8-16HFLN	NUT, LOCKING HEX	4
16	3-397-010146	HOSE ASSEMBLY (UNDERSLUNG)	1
	1-397-010028	HOSE ASSEMBLY (UPPER DECK)	1
17	3-397-010231	HOSE ASSEMBLY (UNDERSLUNG)	1
	3-397-010261	HOSE ASSEMBLY (UPPER DECK)	1
18	1-007-010013	SWIVEL, 90°	2

* WHERE TWO QUANTITIES ARE LISTED WITH A COMMA SEPARATING THEM, THE FIRST QUANTITY IS FOR THE 20 H.P. ENGINE PACKAGE AND THE SECOND QUANTITY IS FOR THE 24 H.P. ENGINE PACKAGE.

PUMP, WET KIT HYDRAULIC

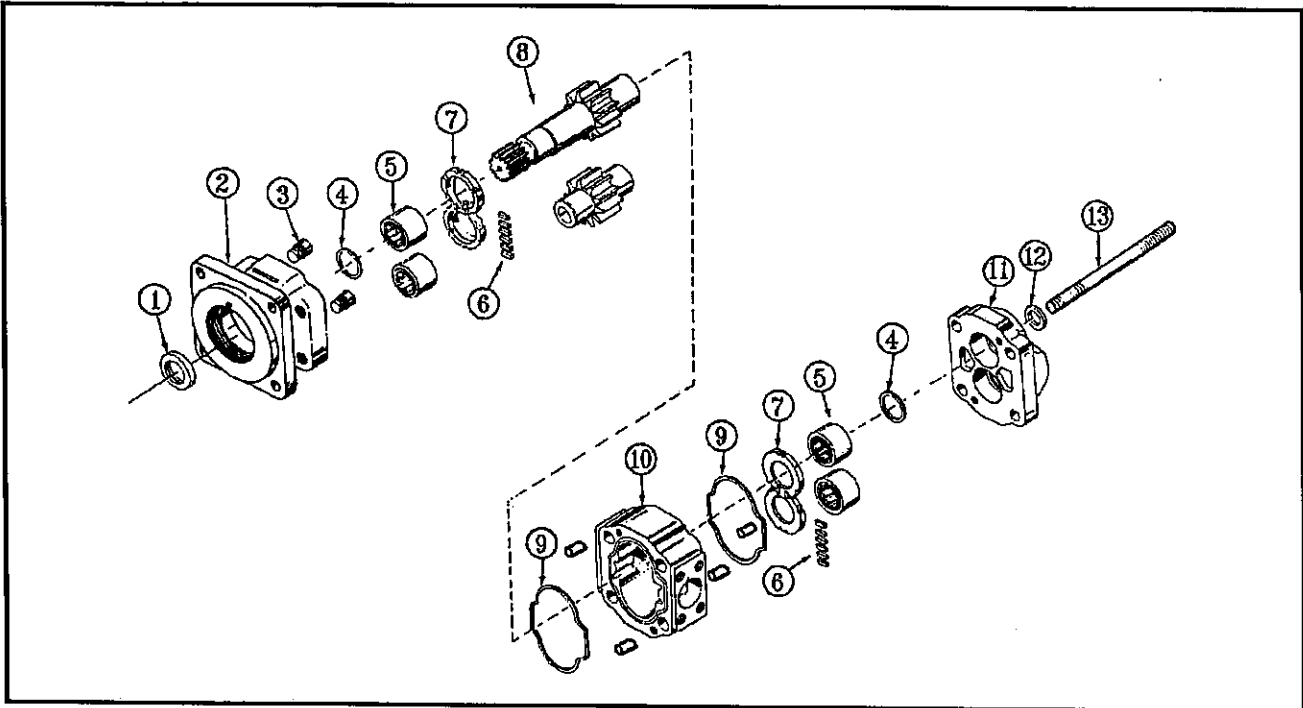


FIG. 8-38 WET KIT PUMP ITEMS

ITEM NO.	PART NO.	DESCRIPTION	QTY.
	3-591-010001	ASSEMBLY, COMPLETE WET KIT PUMP	1
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

SUSPENSION, SINGLE LEAF SPRING

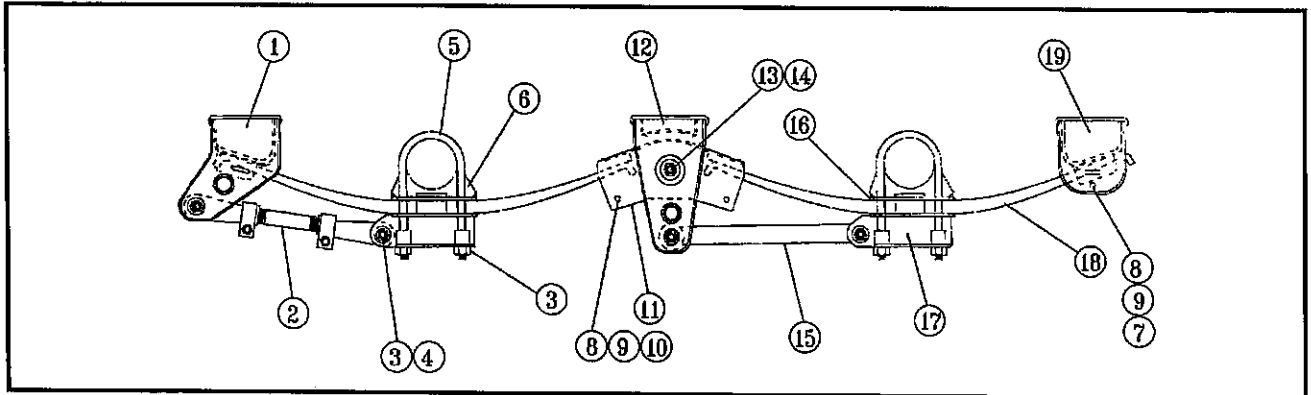


FIG. 8-39 SINGLE LEAF SPRING SUSPENSION

ITEM NO.	PART NO.	DESCRIPTION	QTY.
	HW-UM-2-5R-1-U-1H	SUSPENSION ASSEMBLY	1
1	0049-00	HANGER, FRONT	2
2	1035-20	TORQUE ARM, ADJUSTABLE (INCLUDES FOLLOWING ITEMS)	2
	. 0032-01	EYE END, L.H. ADJUSTABLE TORQUE ARM	2
	. 0032-02	EYE END, R.H. ADJUSTABLE TORQUE ARM	2
	. 0029-20	ADJUSTABLE SCREW	2
	. 0022-00	BUSHING, TORQUE ARM	2
	. 000-19	BOLT	4
	. 0002-10	NUT	4
3	0002-12	NUT, LOCKING	24
4	0001-08	BOLT	8
5	0102-12	U-BOLT	4
6	0647-01	AXLE SEAT	4
7	0001-02	BOLT, HEX	2
8	0741-01	ROLLER, SPRING	6
9	0002-07	NUT, HEX	6
10	0001-04	BOLT, HEX	4
11	0650-00	BEAM ASSEMBLY, EQUALIZER (INCLUDES INDENTED ITEMS)	2
	. 0649-02	EQUALIZER BUSHING	2
	. 0001-14	EQUALIZER SHAFT	1
12	0065-00	HANGER, EQUALIZER	2
13	0001-14	SHAFT, EQUALIZER	2
14	0274-01	NUT, LOCKING	2
15	0075-20	TORQUE ARM, RIGID	2
16	0375-00	SPRING LINER, DELRIN	4
17	0508-00	BOTTOM PLATE, UNDERSLUNG	4
18	3-720-010030	SPRING, ONE LEAF, HIGH ARCH	4
19	0053-00	REAR HANGER, UNDERMOUNT	2

DECAL INSTALLATION

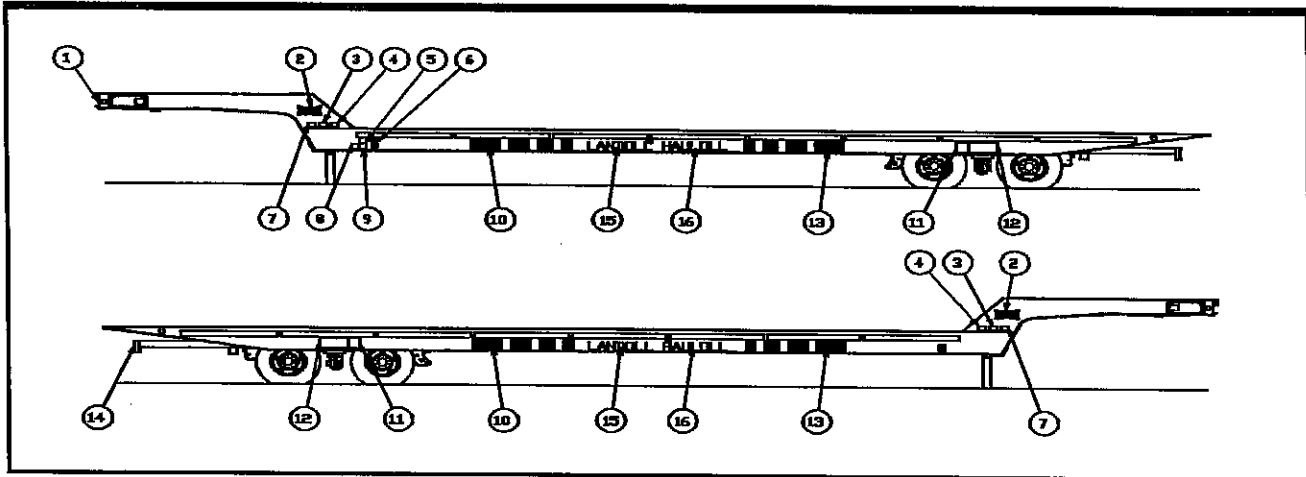


FIG. 8-40 DECAL PLACEMENT

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3-573-010020	PLATE, IDENTIFICATION	1
2	1-573-010001	DECAL, LANDOLL BLACK	2
	1-573-010013	DECAL, LANDOLL WHITE	2
3	1-573-010082	DECAL, PATENT	2
4	3-573-010035	DECAL, 40000 LBS CONCENTRATED LOAD	2
5	3-573-010038	DECAL, FEDERAL TRAVEL REGULATION	1
6	3-573-010057	DECAL, INSTRUCTION (street side)	1
7	3-573-010060	DECAL, TOLL-FREE NUMBER	2
8	3-573-010039	DECAL, TRAILER OPERATION	1
9	3-573-010025	DECAL, WINCH WARNING	1
10	3-573-010042	DECAL, FRONT STRIPE (LEFT, WHITE)	2
	3-573-010040	DECAL, FRONT STRIPE (LEFT, BLACK)	2
11	3-573-010080	DECAL, TORQUE SPECIFICATIONS	2
12	3-573-010189	DECAL, TIRE CHANGING PROCEDURE	2
13	3-573-010043	DECAL, FRONT STRIPE (RIGHT, WHITE)	2
	3-573-010042	DECAL, FRONT STRIPE (RIGHT, BLACK)	2
14	3-573-010031	DECAL, TRAILER BUMPER	1
15	3-573-010049	DECAL, LANDOLL WHITE	2
	3-573-010048	DECAL, LANDOLL BLACK	2
16	3-573-010051	DECAL, HAULLOLL WHITE	2
	3-573-010050	DECAL, HAULLOLL BLACK	2

NOT SHOWN:

1-573-010014	DECAL, "L" WHITE	A/R
1-573-010002	DECAL, "L" BLACK	A/R

* If trailer is repainted or if decals become non-legible, order new ones from the factory and replace.

MISCELLANEOUS OPTIONS

ITEM NO.	PART NO.	DESCRIPTION	QTY
1	B3-619-015	RAMP, ALUMINUM SLOPE - 79-3/4"	2
	.1/2-13HFLN	NUT, LOCKING HEX	12
	.1/2-13X1-3/4CB	BOLT, CARRIAGE	12
	.3-014-010051	WELDMENT, RAMP ANCHOR	2
	.3-619-010073	WELDMENT, ALUMINUM RAMP	2
	.3/4-10HFN	NUT, HEX	4
	.3/4SLW	WASHER, SPLIT LOCK	4
2	B3-619-007	RAMP, ALUMINUM SLOPE - 60"	2
	.1/2-13HFN	NUT, HEX	6
	.1/2-13X1-3/4CB	BOLT, CARRIAGE	6
	.1/2SLW	WASHER, SPLIT	6
	.3-014-010061	WELDMENT, RAMP ANCHOR	2
	.3-619-010059	WELDMENT, ALUMINUM RAMP	2
	.3/4-10HFN	NUT, HEX	4
.3/4SLW	WASHER, SPLIT LOCK	4	
3	B3-619-011	RAMP, WOOD TOP - 30 °	2
	.RWD6999	WOOD, APITONG	A/R
	.3-619-010083	WELDMENT, RAMP FRAME	2
	.3-654-010013	SCREW	48
	.5/8-11HFLN	NUT, LOCKING HEX	16
	.5/8-11X1-1/2CS	CAP SCREW, HEX HEAD	8
	.5/8-11X2-1/2CS	CAP SCREW, HEX HEAD	8
.5/8FW	WASHER, FLAT	32	
4	B3-619-010	RAMP, WOOD TOP 30°	2
	.RWD6999	WOOD, APITONG	A/R
	.3-619-010082	WELDMENT, RAMP FRAME	2
	.3-654-010013	SCREW	36
	.5/8-11HFLN	NUT, LOCKING HEX	16
	.5/8-11X1-1/2CS	CAP SCREW, HEX HEAD	8
	.5/8-11X2-1/2CS	CAP SCREW, HEX HEAD	8
.5/8FW	WASHER, FLAT	32	

