CENTURY®

LEGENDARY LEADERSHIP

OWNER'S MANUAL

5130 / 5230

INSTALLATION, OPERATION, MAINTENANCE & PARTS

NOTE: MANUAL including SPECIFICATIONS, subject to change without notice
All ratings specified are based on structural factors only,
not vehicle capacities or capabilities.

CENTURY®

Miller Industries Towing Equipment Inc.
8503 Hilltop Drive
Ooltewah, Tennessee 37363

Phone (423) 238-4171 • FAX (423) 238-5371

FORM NO. 0501140
08 / 01
PRICE $25.00

LIMITED WARRANTY

MILLER INDUSTRIES TOWING EQUIPMENT INC., hereinafter referred to as MILLER, warrants to the original purchaser that each new MILLER wrecker or other MILLER products will be free from defects in material and workmanship for a period of twelve (12) months from date placed in service, but in no event shall such warranty period exceed twenty-four (24) months from date of manufacture by MILLER. The purchaser must promptly notify MILLER in writing of any failure in material or workmanship. In no event shall MILLER accept such notification later than twenty-four (24) months from date of delivery or twelve (12) months from date placed in service, whichever is earlier.

MILLER's obligation under this warranty, statutory or otherwise, is limited to the repair or replacement at the MILLER factory, or at a point designated by MILLER, of such part or parts as shall appear upon inspection by MILLER to be defective in material or workmanship. New or remanufactured parts will be used for any replacement at MILLER's option. This warranty is not transferable. This warranty does not obligate MILLER to bear the cost of labor or transportation charges in connection with the repair or replacement of any parts found to be defective, nor shall it apply to a product upon which repairs or alterations have been made unless authorized by MILLER.

EXCEPT AS EXPRESSLY SET FORTH IN THIS WARRANTY, MILLER MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND HEREBY DISCLAIMS ALL OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. MILLER shall in no event be liable for claimed downtime, claimed loss of profits or goodwill, or any other special, incidental, indirect, or consequential damages concerning or relating to any product or parts, whether based on negligence, strict liability, breach of contract, breach of warranty, misrepresentation or any other legal theory, regardless of whether the loss resulted from any general or particular requirement which MILLER knew or had reason to know about at the time of sale.

MILLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE FINISHED PRODUCTS MANUFACTURED OR SUPPLIED BY ANOTHER MANUFACTURER AND SUPPLIED BY MILLER TO PURCHASER, including, but not limited to, any vehicle to which a MILLER product may be affixed or any accessories or wire rope, and MILLER EXPRESSLY DISCLAIMS ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AS TO SUCH EQUIPMENT OR PRODUCTS. This language shall in no way affect or diminish the rights of the purchaser to rely on such warranties as are extended by such manufacturers or suppliers. MILLER shall, to the extent permitted under applicable law, pass on to the purchaser such manufacturer's or seller's warranty.

MILLER, whose policy is one of continuous improvement, reserves the right to improve its products through changes in design or materials as it may deem desirable without being obligated to incorporate such changes in products previously sold. This warranty is not intended to cover or include the following items, which are set forth by way of example and not limitation:

A. Normal deterioration of trim, paint, lettering, and appearance items due to wear or exposure to weather, road conditions, road treatments, etc.
B. Any damage or defect due to accident, misuse, abuse, improper or unauthorized repairs, failure to provide reasonable and necessary maintenance, or uses for which the equipment was not designed or intended.
C. Alterations or modifications that affect performance, operation or reliability.
D. Normal maintenance parts including, but not limited to, wear pads, bushings, wire rope, mud flaps, fenderettes, light bulbs, hydraulic oil, filters, and tow sling belts.

IT IS EXPRESSLY UNDERSTOOD THAT MILLER MAKES NO IMPLIED WARRANTY THAT MILLER PRODUCTS SHALL BE FIT FOR THE PURPOSE OF LIFTING OR MOVING PEOPLE OR FOR ANY OTHER IMPROPER USE.

Miller INDUSTRIES
Miller Industries Towing Equipment Inc.
8503 Hilltop Drive
Ooltewah, Tennessee 37363

Telephone (423) 238-4171

SERIAL NUMBER

OWNER, USER AND OPERATOR:

Century appreciates your choice of our towing and recovery unit for your application. Our number one priority is user safety which is best achieved by our joint efforts. We feel that you can make a major contribution to safety if you, as the equipment owner and operator:

1. **Comply with Federal, State, and Local Regulations.**

2. **Read, Understand, and Follow the Instructions in this Manual.**

3. **Use Good, Safe Work Practices in a Common Sense Way.**

4. **Only have Authorized and Trained Operators running the Towing and Recovery Unit.**

Also contained in this manual is a Parts Section for your Recovery Unit. Use of other than Factory or Factory Authorized Parts will render the Warranty void.

TABLE OF CONTENTS

WARNING

The operator must read and understand all instructions in this manual before operating the recovery unit.

It is assumed by CENTURY that the Owner/Operator has a thorough knowledge of the accepted and lawful retrieval and towing methods as dictated by his city, county or state. CENTURY rejects any liability claim that may result from the incorrect or unlawful application of its equipment.

TABLE OF CONTENTS (cont'd)

Section VI - PARTS (cont'd)

NOTES

Section I - SAFETY PRECAUTIONS

Presented in the interest of safety for all towing and recovery unit operators.

NOTICE

You are obligated to operate your towing and recovery unit safely.

You can be held legally responsible for injuries or damages resulting from unsafe operating practices.

The manufacturer's recommendations for operating this towing and recovery unit can help you avoid unsafe practices and their bad consequences. These recommendations are contained in this manual.

Century is not responsible for the results of any unsafe practice of towing and recovery unit operators.

Furthermore, the division is not responsible for the failure of the towing and recovery unit or its accessories resulting from improper maintenance.

The danger from an vehicle does not cease when it is disabled or wrecked. Recovering and towing vehicles can be dangerous, too! The danger threatens towing and recovery unit operators and everyone close at hand. As a towing and recovery unit operator you must develop an awareness of the hazards involved. You must use every safeguard within reason to prevent injuries.

For each step in operating your towing and recovery unit develop the habit of asking yourself if it is safe to proceed. Carefully check all rigging (especially snatch blocks) before starting a heavy lift or pull.

We cannot warn you of all the possible dangers you will encounter. But we will tell you of the most common hazards we know about. Learn them well.

Section I - SAFETY PRECAUTIONS (cont'd)

1.1 Improper use of this equipment can be dangerous! Incorrect operation can result in bodily injury to the operator and bystanders. Therefore, a thorough understanding of the "operating principles" and "operating instructions" as found in this manual is essential.

1.2 Study each job to be done. Apply common sense judgment to assure safety to yourself and bystanders.

1.3 Plan ahead. Work safely. Avoid accidental damage and injury. If an accident or fire does occur, react quickly with the tools and skills at hand. Know how to use a first aid kit and a fire extinguisher - and where to get assistance.

1.4 Read and understand the following instructions.

⚠ WARNING

1. READ THE MOUNTING / OPERATING / MAINTENANCE MANUAL FOR WARNINGS AND PRECAUTIONS.

2. NEVER TAKE ANYTHING FOR GRANTED. DON'T ASSUME THAT EVERYTHING IS ALL RIGHT AT THE START OF WORK TODAY JUST BECAUSE EVERYTHING SEEMED ALL RIGHT AT THE END OF WORK YESTERDAY. BEFORE BEGINNING OPERATION, THOROUGHLY INSPECT THE ENTIRE UNIT TO BE SURE IT IS IN GOOD OPERATING CONDITION.

3. VISUALLY INSPECT THE UNIT FOR EVIDENCE OF PHYSICAL DAMAGE, SUCH AS CRACKING, BENDING, OR DEFORMATION OF PLATES OR WELDS. INSPECT CAREFULLY FOR CRACKING OR FLAKING OF PAINT, WHICH MAY INDICATE A DANGEROUS CRACK IN THE STRUCTURE BENEATH. DO NOT OPERATE UNTIL REPAIRS ARE MADE.

4. LOOSE OR MISSING HARDWARE, BOLTS, NUTS, AND PINS SHOULD BE PROPERLY TIGHTENED OR REPLACED WITH MANUFACTURER'S SPECIFIED HARDWARE.

5. CHECK FOR FLUID LEAKS. HYDRAULIC SYSTEM LEAKS MUST BE CORRECTED BEFORE THE UNIT IS OPERATED. INSPECT ALL HYDRAULIC HOSES, ESPECIALLY THOSE WHICH FLEX OR

MOVE IN SERVICE, AND REPLACE IF NECESSARY. SECURE ALL CAPS AND FILLER PLUGS FOR ALL SYSTEMS.

6. YOUR CLOTHING SHOULD BE RELATIVELY CLOSEFITTING.

7. ALWAYS WEAR PROTECTIVE ITEMS SUCH AS SAFETY GLASSES, GLOVES, REFLECTIVE CLOTHING AND SAFETY SHOES.

8. BEFORE OPERATING THE BOOM, REFER TO THE BOOM CAPACITY LABELS ON THE BOOM AND INSIDE OF THE DOOR OF THE CAB AND IN THE SPECIFICATION SECTION OF YOUR OPERATING MANUAL. FOR CHASSIS CAPACITY CONSULT YOUR TRUCK DEALER. NEVER EXCEED MANUFACTURER'S LOAD RATING. THE STIPULATIONS PERTINENT TO THESE RATINGS SHALL ALWAYS BE CAREFULLY OBSERVED.

RATINGS SHOWN ARE BASED ON THE HYDRAULIC, MECHANICAL, OR STRUCTURAL DESIGN OF THE UNIT RATHER THAN STABILITY. IT IS ALWAYS UNSAFE TO APPLY ANY LOAD WHICH IS GREATER THAN RATED LOAD SHOWN ON THE DATA PLATE.

9. DO NOT USE THIS EQUIPMENT EXCEPT ON SOLID, LEVEL SURFACE WITH STABILIZERS PROPERLY EXTENDED AND TRUCK BRAKES LOCKED.

10. OPERATE ALL CONTROLS SLOWLY AND SMOOTHLY TO AVOID DAMAGE TO UNIT OR INJURY TO PERSONNEL.

11. DO NOT OPERATE, WALK OR STAND BENEATH BOOM OR A SUSPENDED LOAD.

12. NEVER LIFT LOAD OVER ANYONE.

13. DO NOT USE BOOM TO LIFT PEOPLE.

14. KEEP LOAD WITHIN ONE FOOT OF THE GROUND WHENEVER POSSIBLE.

15. FOR TRAVEL, BOOM MUST BE IN STOWED POSITION AND P.T.O. DISENGAGED.

WARNING

ONLY AUTHORIZED AND TRAINED PERSONNEL SHOULD BE PERMITTED TO OPERATE THIS UNIT UNSUPERVISED.

TRAINED PERSONNEL ARE THOSE WHO HAVE WORKED UNDER EXPERIENCED SUPERVISION AND HAVE PERFORMED ALL TOWING AND RECOVERY MANEUVERS, HAVE READ THE MOUNTING, OPERATING AND MAINTENANCE MANUAL, WARNINGS AND PRECAUTIONS, AND UNDERSTAND AND HAVE HAD EXPLAINED TO THEM BY THEIR EMPLOYER THE HAZARDS OF OPERATING THE UNIT. THEY MUST BE FAMILIAR WITH THE HAZARDS OF OPERATING AT A SITE WHERE ELECTRIC POWER LINES, IRREGULAR GROUND CONTOUR, WATER, ICE, MUD, OR OTHER CONDITIONS CAN INTERFERE WITH ORDINARY CAREFUL OPERATION OF THIS UNIT.

AN UNTRAINED OPERATOR SUBJECTS HIMSELF AND OTHERS TO DEATH OR SERIOUS INJURY.

CAUTION

STAND CLEAR
WHILE OPERATING REAR SPADES!

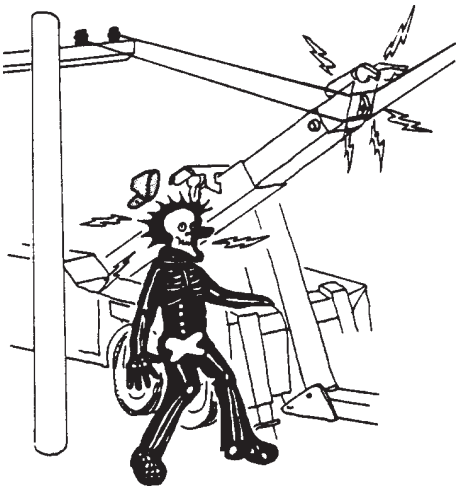
WARNING

USE SAFETY CHAINS ON ALL TOWING AND LIFTING APPLICATIONS!

SAFETY TIPS

DANGER

Death or serious injury can occur when working near power lines.
Learn - beforehand - as much about your working area as possible. Be sure that exact locations of overhead power lines, and other obstructions or hazards are known.



Don't use winch cables with hooks attached by means of cable clips. Use only cables with hooks attached by means of thimbles and machine swaged terminals.

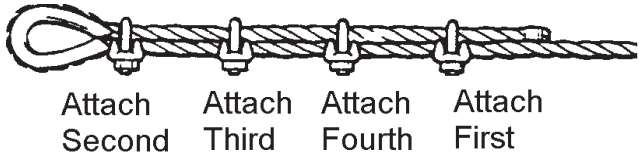
USE CABLE CLIPS ONLY IN THE EVENT OF AN EMERGENCY FIELD TEMPORARY REPAIR.

Use at least three clips spaced 3-4 inches apart and reduce the cable working limit by 20%. U-bolt of the clip should never be around the live or long end of the cable. Replace clips as soon as possible with swaged cable termination.

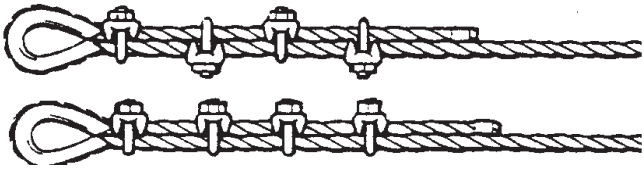
Section I - SAFETY PRECAUTIONS (cont'd)
SAFETY TIPS

Proper technique for using wire rope clips.
USE CABLE CLIPS ONLY IN THE EVENT OF AN EMERGENCY FIELD TEMPORARY REPAIR.

RIGHT WAY



WRONG WAY



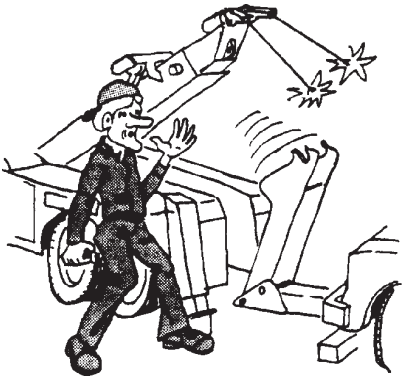
1. Turn back rope length specified in the chart. Apply first clip so U-bolt is no less than the saddle width from the dead end. Tighten nuts evenly and torque as specified.
2. Apply next clip as near loop as thimble will permit. Turn nuts on firm, but do not tighten.
3. Space additional clips as indicated so distance between clips is equal. Tighten all nuts evenly and torque as specified.
4. Apply the initial load and retighten all nuts to recommended torque. Inspect periodically and retighten as needed to the recommended torque.

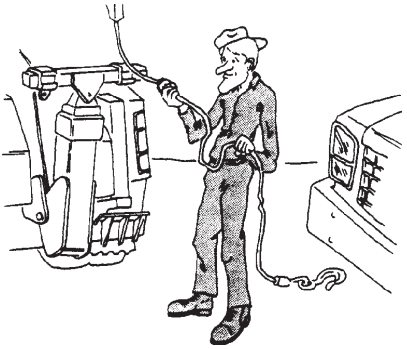
CLIP SIZE (INCHES)	MINIMUM NUMBER OF CLIPS	AMOUNT OF ROPE TO TURN BACK IN INCHES	TORQUE IN FT.LBS.
3/8	2	6 1/2	45
7/16	2	7	65
1/2	3	11 1/2	65
9/16	3	12	95
5/8	3	12	95
3/4	4	18	130

This table is based on Crosby-Laughlin.

SAFETY TIPS

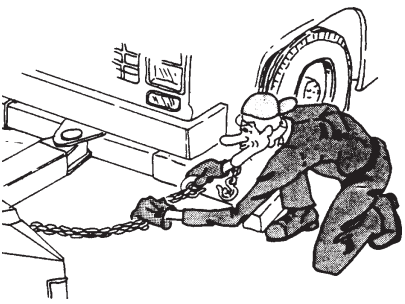
Don't use a towing and recovery unit that has not been properly maintained. Pay special attention to mounting bolts, cable condition, and lubrication of moving parts.

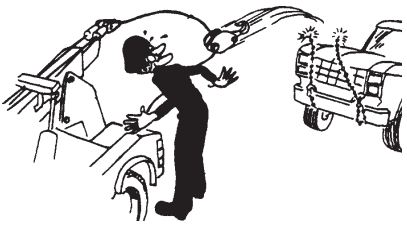




Don't use damaged cables on the unit. Become familiar with the various types of cable damage and carefully inspect all cables being used in a recovery operation before starting to pull.

Always use two safety chains when towing all vehicles, regardless of distance.

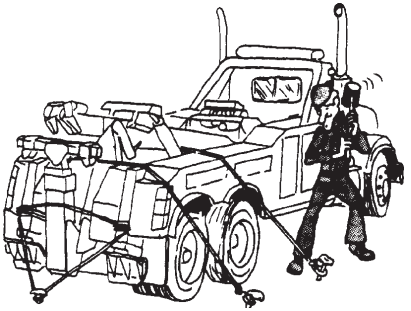


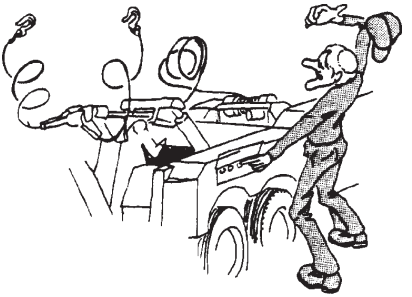


After rigging cables, don't begin pulling without rechecking connections. Make sure that all cables and snatch blocks are securely attached and cannot accidentally pull loose.

SAFETY TIPS

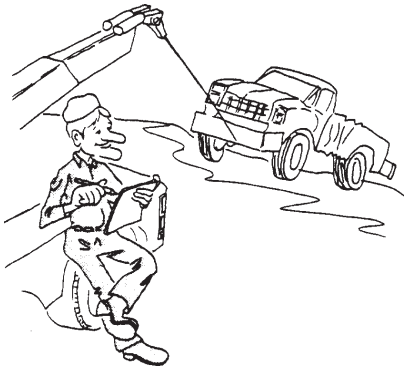
Don't expect the unit to tow loads equal to the boom rating. Ratings apply to loads imposed during recovery, with the unit properly stabilized.

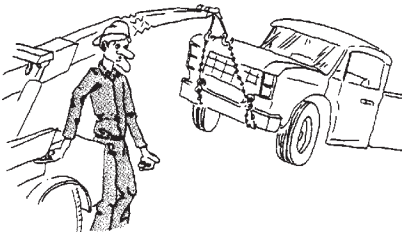




Don't pull a load with the unit without making absolutely sure that the winch drum clutch is FULLY engaged.

Don't attempt to recover heavy loads without first estimating the amount of pull that will be required. Rig to keep the estimated amount of pull well within equipment ratings.

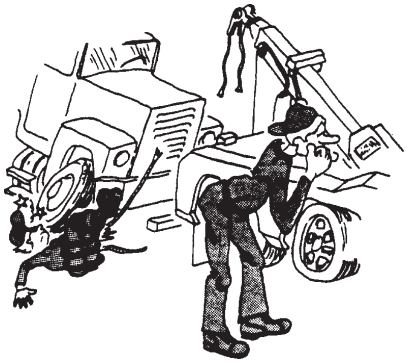




Don't exceed ratings of booms, cables, snatch blocks, or winches. Stay within data plate ratings. Note that boom ratings decrease significantly as a boom is extended.

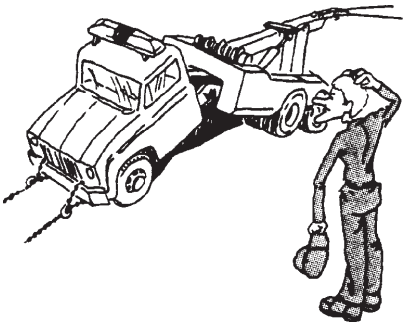
Section I - SAFETY PRECAUTIONS (cont'd)
SAFETY TIPS

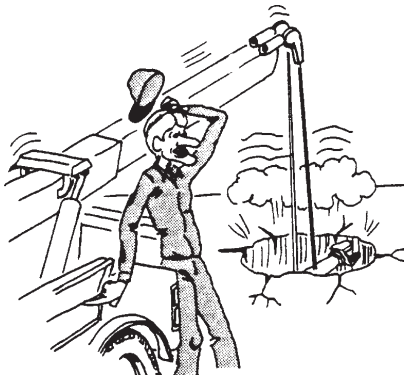
Don't get under a raised vehicle or load unless it has adequate safety blocks in place.



Don't exceed WORKING LIMIT ratings of cable. Use breaking strength ratings only for selecting replacement cable.

Don't tie down the front end of the unit for recovery work or heavy lifts. You are apt to damage the truck frame if you do.

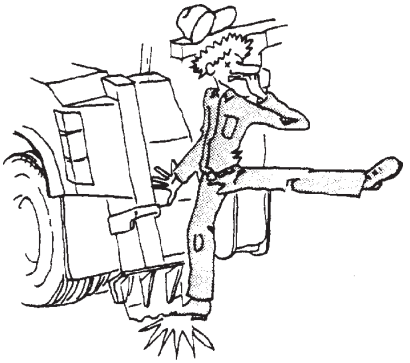


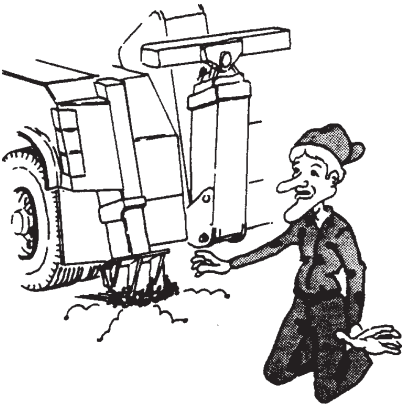


Don't disengage the winch drum clutch while the winch cable is loaded.

SAFETY TIPS

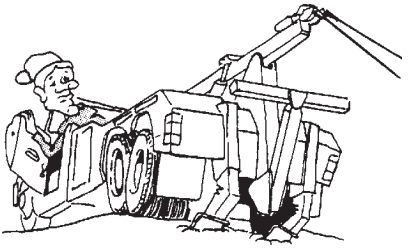
Don't lower outboard legs or rear spades unless area under them is clear. Pay particular attention to keeping this area clear.





Don't use rear spades on paved surfaces unless you are willing to accept responsibility for possible damage to such surfaces.

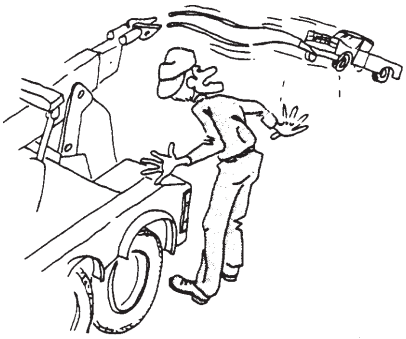
Don't permit bystanders in the area while performing recovery work.



Don't move the unit while outboard legs or rear spades are extended.

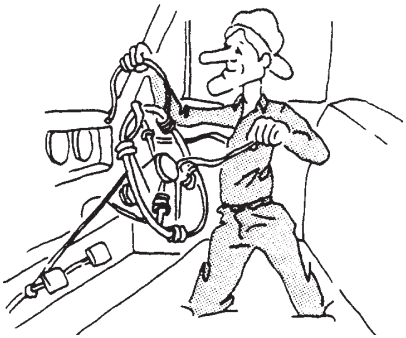
SAFETY TIPS

Don't completely unwind all cable from a winch while loaded. Keep AT LEAST five wraps on the drum.



Don't operate the unit's engine faster than recommended. Excessive speeds can damage PTO shafts, hydraulic pumps and winches.

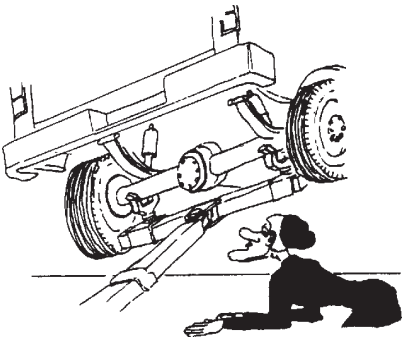
Don't rely on anti-theft steering locks. Use special steering wheel clamping device. Rope is commonly used to secure steering wheels, but that is not as reliable as devices designed for this purpose.



Don't tow a vehicle that reduces the weight on the front wheels of the unit more than 50 percent.

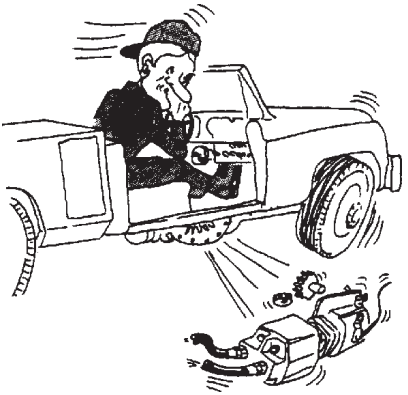
SAFETY TIPS

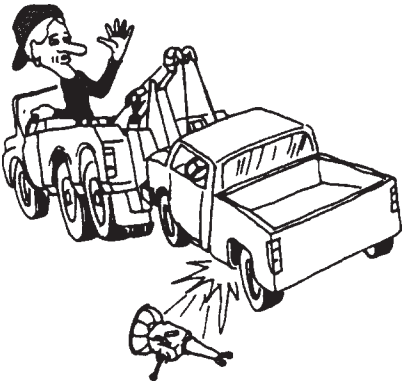
Don't use towing forks that are not of proper size for pick-up requirements.



After you have hooked up a vehicle for towing, don't start the tow until you have double checked the hook-up, installed safety chains and released the parking brakes on the towed vehicle.

Don't travel with the PTO engaged. Engage it only while operating the unit controls.

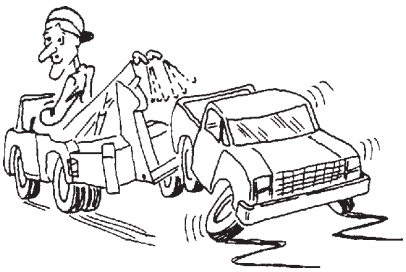




Don't tow a vehicle on its drive wheels unless steps have been taken to protect its transmission and differential. Follow the recommendations of the vehicle manufacturer. As an alternative, use a towing dolly.

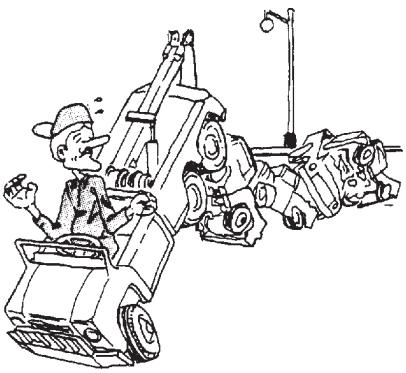
SAFETY TIPS

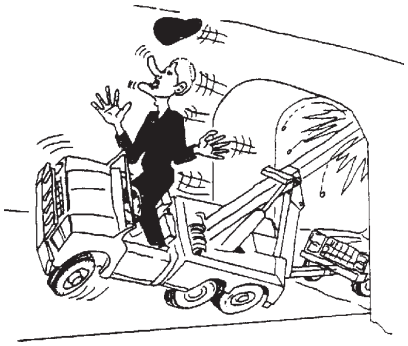
Don't tow a vehicle on its front wheels if they are damaged.



Don't tow a vehicle on its front wheels unless the steering wheel is secured with the front wheels straight ahead.

Don't tow a vehicle at night without proper signal lights on the towed vehicle and the towing unit.

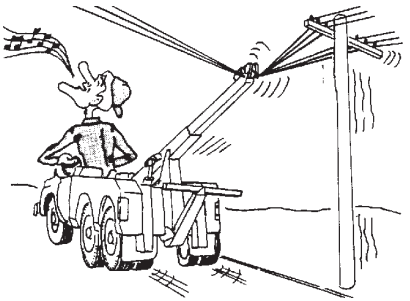


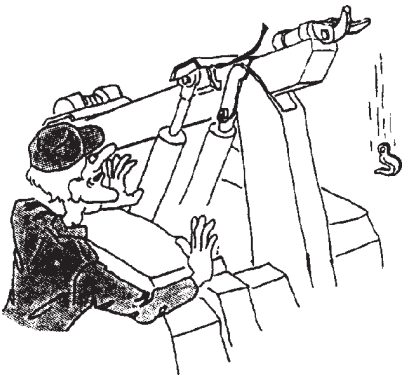


After rigging cables, don't begin pulling without rechecking connections. Make sure that all cables and snatch blocks are securely attached and cannot accidentally pull loose.

SAFETY TIPS

Don’t move unit or extend boom where overhead power lines may be encountered.





Don’t continue to wind in winch cable after the hook is against the boom end.

SAFE TOWING

There are two key factors in safe towing:

1. Have enough front axle weight for safe steering.
2. Avoid excess rear axle weight.

The issue here is safety. Unsafe steering may cause a serious accident. It is recommended that a safe steering formula that maintains at least 50 percent of the UNLADEN (unloaded) front axle weight, for towing, be used.

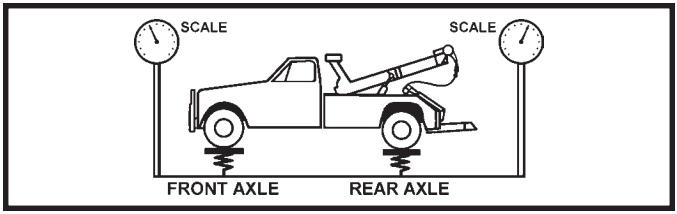
The formula is expressed as follows: ML = .5FAW x WB/OH
where:

ML = maximum lifted load for safe steering.
FAW = unladen (unloaded) weight at front axle.
WB = wheel base or distance between the center of the front axle to the center of the rear axle(s).
OH = overhang or distance from the center of the rear axle(s) to the lift point of the towing device.

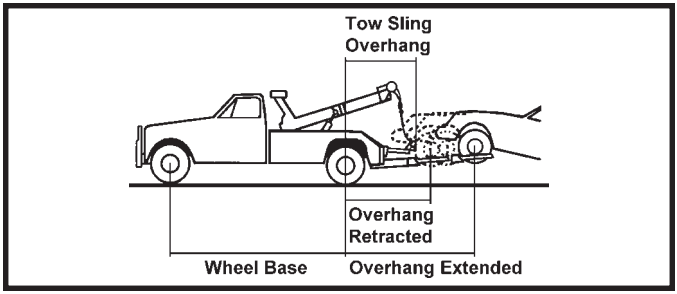
Section I - SAFETY PRECAUTIONS (cont'd)
SAFE TOWING

To use the formula, multiply the unladen weight at the front axle by .5. Multiply the result by the wheel bases. Then, divide that result by the overhang. So, you should calculate the maximum lifted load for each tow truck, using this formula, post those limits in the truck and instruct each driver to strictly observe those limits.

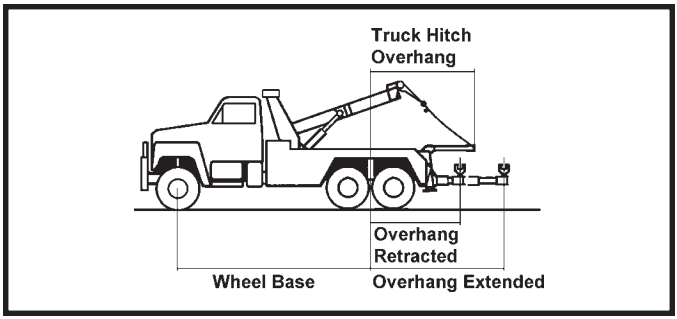
You should also observe gross vehicle weight ratings (GVWR), gross axle weight ratings (GAWR), and the towing equipment ratings.



Unladen weights at front and rear axles.



Wheel base and overhang distances for tow slings and wheel lifts.

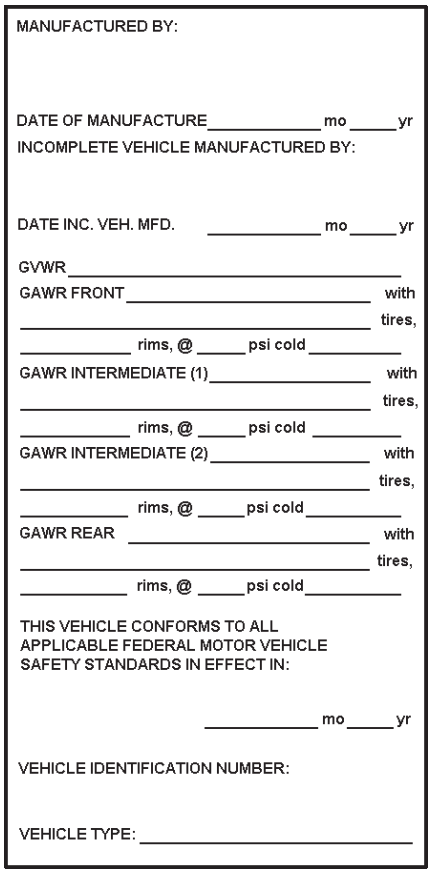


Wheel base and overhang distances for truck hitches and underlifts.

NOTES

Section II - SPECIFICATIONS

2.1 Federal law requires that the final stage manufacturer, i.e., that person or company installing new equipment on a new chassis, must certify the completed vehicle by obtaining, completing and affixing to the door post on the drivers side of the vehicle, a Certification Label similar to the one shown. See Figure 2.1.


MANUFACTURED BY:

DATE OF MANUFACTURE_____ mo _____yr
INCOMPLETE VEHICLE MANUFACTURED BY:

DATE INC. VEH. MFD. _____ mo _____yr

GVWR_____
GAWR FRONT_____ with
_____ tires,
_____ rims, @ _____ psi cold _____
GAWR INTERMEDIATE (1)_____ with
_____ tires,
_____ rims, @ _____ psi cold _____
GAWR INTERMEDIATE (2)_____ with
_____ tires,
_____ rims, @ _____psi cold_____
GAWR REAR _____ with
_____ tires,
_____ rims, @ _____psi cold_____

THIS VEHICLE CONFORMS TO ALL
APPLICABLE FEDERAL MOTOR VEHICLE
SAFETY STANDARDS IN EFFECT IN:

_____ mo _____yr

VEHICLE IDENTIFICATION NUMBER:

VEHICLE TYPE: _____

FIGURE 2.1

Section II - SPECIFICATIONS (cont'd)

2.2 SERIAL NUMBERS/SPECIFICATION LABELS

Each Century 5130 and 5230 will have a Serial Number/Specification Label mounted on the outer recovery boom. The label will display the Model Number, Serial Number, Lift and Cable Ratings. See Figures 2.2 and 2.3.

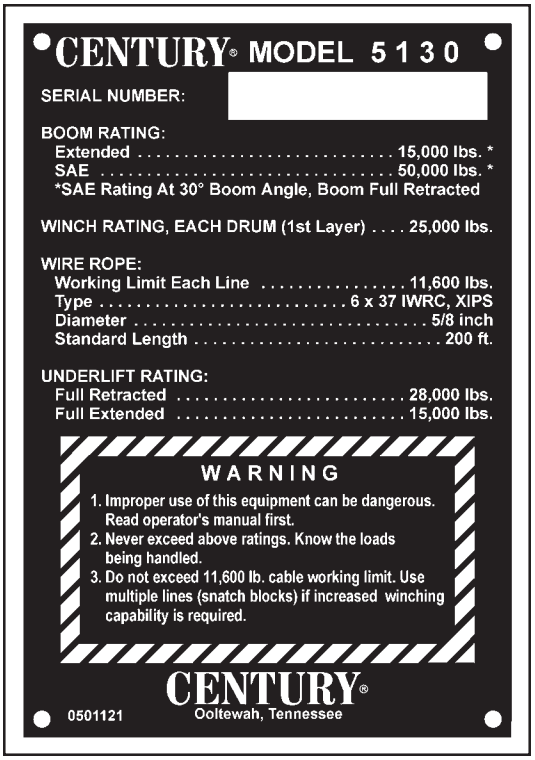


FIGURE 2.2

Section II - SPECIFICATIONS (cont'd)

2.2 SERIAL NUMBERS/SPECIFICATION LABELS (cont'd)

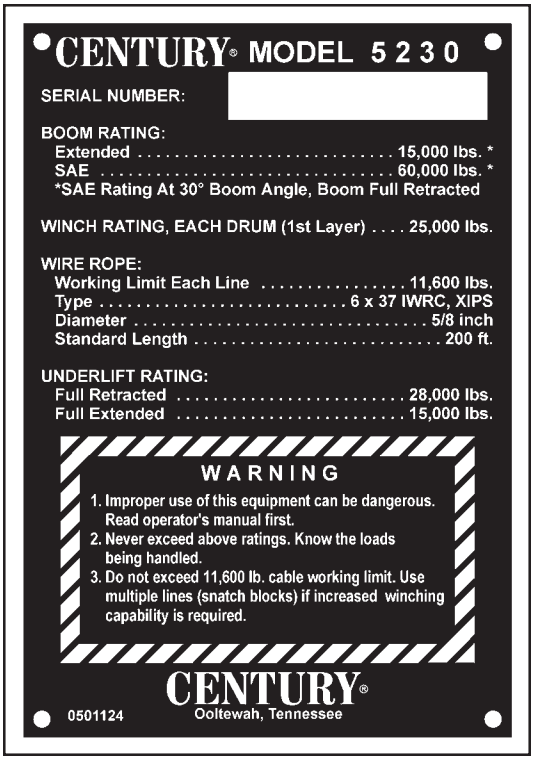


FIGURE 2.3

2.3 SPECIFICATIONS - MODEL 5130

(a) Planetary Winches . . . . . 25,000 lbs.

(b) Cable

Diameter and Length (Each Drum) . . . . . 5/8" dia. x 200 ft.
Type . . . . . 6 x 37 IWRC, XIPS
Working Limit, Each Line . . . . . 11,600 lbs.

Section II - SPECIFICATIONS (cont'd)

2.3 SPECIFICATIONS - MODEL 5130 (cont'd)

(c) Recovery Boom Specifications

Boom Rating:
- Retracted at 30° (SAE) . . . . . 50,000 lbs.
- Extended at 30° (SAE) . . . . . 16,000 lbs.

Maximum Boom Extension . . . . . 120"
Maximum Boom Angle . . . . . 39°
Maximum Hook Height, Spades Up . . . . . 211"
Reach Past Tailgate at Maximum Boom Angle . . . . . 45"

(d) Underlift Specifications

Structural Rating:
- Fully Retracted . . . . . 35,000 lbs.
- Fully Extended at Third Stage . . . . . 16,000 lbs.

Reach:
- Fully Retracted . . . . . 40"
- Fully Extended . . . . . 113"

2.4 SPECIFICATIONS - MODEL 5230

(a) Planetary Winches . . . . . 25,000 lbs.

(b) Cable

Diameter and Length (Each Drum) . . . . . 5/8" dia. x 200 ft.
Type . . . . . 6 x 37 IWRC, XIPS
Working Limit, Each Line . . . . . 11,600 lbs.

(c) Recovery Boom Specifications

Boom Rating:
- Retracted at 30° (SAE) . . . . . 60,000 lbs.
- Extended at 30° (SAE) . . . . . 16,000 lbs.

Maximum Boom Extension . . . . . 120"
Maximum Boom Angle . . . . . 39°
Maximum Hook Height, Spades Up . . . . . 211"
Reach Past Tailgate at Maximum Boom Angle . . . . . 45"

Section II - SPECIFICATIONS (cont'd)

2.4 SPECIFICATIONS - MODEL 5230 (cont'd)

(d) Underlift Specifications

Structural Rating:
- Fully Retracted . . . . . 35,000 lbs.
- Fully Extended at Third Stage . . . . . 16,000 lbs.

Reach:
- Fully Retracted . . . . . 40"
- Fully Extended . . . . . 113"

2.5 CHASSIS REQUIREMENTS (MINIMUM)

5130 - Minimum GVW . . . . . 33,000 lbs.
5230 - Minimum GVW . . . . . 52,000 lbs.
5130 - C.A. (Cab to Axle) Dimension . . . . . 156"
5230 - C.B. (Cab to Bogie) Dimension . . . . . 156" C.T.
Frame Length (Behind Centerline of Axle) . . . . . 40"
RBM Each Frame Rail . . . . . 2,250,000 in.-lbs.

The outside frame rails of chassis extending behind cab must be free of fuel tanks, air tanks, battery boxes, exhaust stacks, etc.

2.6 STANDARD EQUIPMENT & FEATURES

- 5130 - 156" C.A. Steel Modular Body
- 5230 - 156" C.B. Aluminum Modular Body
- 96" Wide Body with Fenderettes and 4 Forward Tool Compartments Per Side
- Lumber Box under Tool Compartments (Left & Right Side)
- 2 Storage Compartments over Wheelwell
- Tool Compartment Lights, Shelves and Chain Racks
- Lift Fork Storage Racks (Left & Right Side)
- Manual Controls (All Functions) Driver's Side
- Manual Boom Controls Passenger Side
- Mud Flaps
- Dual Hydraulic Pump
- Air Free Spool & Air Cable Tensioners
- Pressure Gauges
- Light Pylon with Full Running Lights

Section II - SPECIFICATIONS (cont'd)

2.6 STANDARD EQUIPMENT & FEATURES (cont'd)

- Diagonal Rear Spades with Dual Position Pads
- Recessed Air and Electrical Hookups
- 1 Set of 1/2" x 14' Safety Chains in Rear Pockets
- 1 Set of 5/8" Hook Adapters
- 7 Sets of Lift Forks
- Federal Standard #108 Lighting
- Remote Hand Held Lanyard (8 Function)
- Dual Side by Side Elevation Cylinders with Counterbalance Valve
- Switch Panel (9 Function)

2.7 OPTIONAL EQUIPMENT & FEATURES

- 5130 - 182" C.A. Steel or 156" or 182" C.A. Aluminum Modular Body
- 5230 - 180" or 204" C.B. Aluminum Modular Body
- 24" Tunnel Box (requires minimum 182" C.A. or 180" or 204" C.B.)
- Air Shift PTO
- Tailgate Underlift Control Panel
- 2 Rectangular Work Lights (Upper)
- Convenience Group (Rails & Steps)
- Aluminum Dress Up Kit
- Light Bar
- Whelen Turn Signal Strobe Kits
- Composite Aerodynamic Light Pylon with Marker Lights
- Composite Pylon Wings
- Grater Blade Attachment
- Offset Fork Holder
- Chain Hook Slide Adapter
- Fork Riser Bracket
- Pintle Hook Attachment
- Fifth Wheel Plate (requires Pintle Hook Attachment)
- Engine Data Information Center
- Snatch Block (8" Sheave)
- Heavy Duty Truck Wheel Lift
- Wide Load Light Bar
- Power Network Electrical System, 8-Function Wired and Wireless Controller, and 2 Twelve Function Panels
- Winch and Boom Controls on Remote
- Rear Vision Camera
- Installation

Section III - OPERATIONAL FUNCTIONS RECOVERY BOOM

3.1 Your new CENTURY towing and recovery unit is fully hydraulic. It receives its power by means of a Power Take-Off/Pump combination mounted to the truck transmission. Since the pump is attached to the PTO, no drive line or universal joints are required. See Figure 3.1.

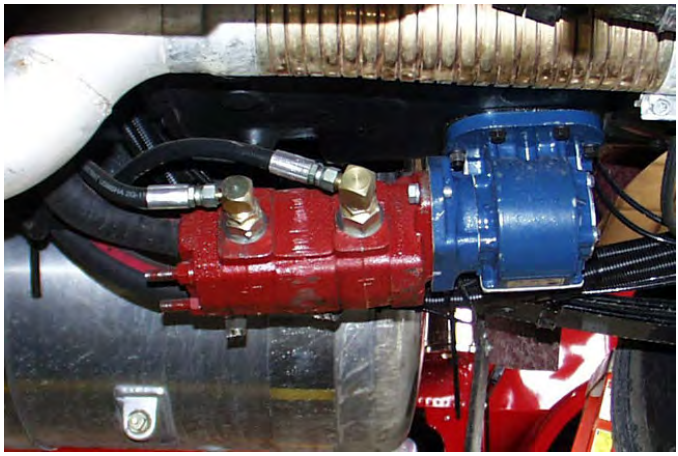


FIGURE 3.1

3.2 The Switch Panel is located in the overhead console or beside the drivers seat and controls the light bar, flood lights, auxiliary lights, control station lights and lower work lights. See Figure 3.2.

FIGURE 3.2

Section III - OPERATIONAL FUNCTIONS
RECOVERY BOOM (cont'd)

3.3 Each function of the Recovery Boom can be controlled from the Control Station located in the left rear compartment of the body, and the Optional Control Station located in the right rear compartment of the body (when installed). See Figure3.3.

FIGURE 3.3

3.4 The Control Handles are clearly marked as to their functions and directions. Movement of the control handles meters the flow of oil through valves to control the speed of each function. Each valve is equipped with a pressure gauge to monitor the hydraulic pressure during the operation.

3.5 The Recovery Boom is elevated and extended by means of double-acting cylinders. The boom can be elevated or extended under either "LOAD" or "NO-LOAD" conditions.

3.6 The self-locking winches are powered by hydraulic motors attached directly to the winch drum shafts. See Figure 3.4.

Section III - OPERATIONAL FUNCTIONS
RECOVERY BOOM (cont'd)

NOTE
CHECK OIL LEVEL IN WINCHES BEFORE ANY OPERATION. FILL TO PROPER LEVEL WITH REQUIRED GEAR LUBRICANT. REFER TO SECTION V - MAINTENANCE AND WINCH MANUAL FOR PROPER PROCEDURES.

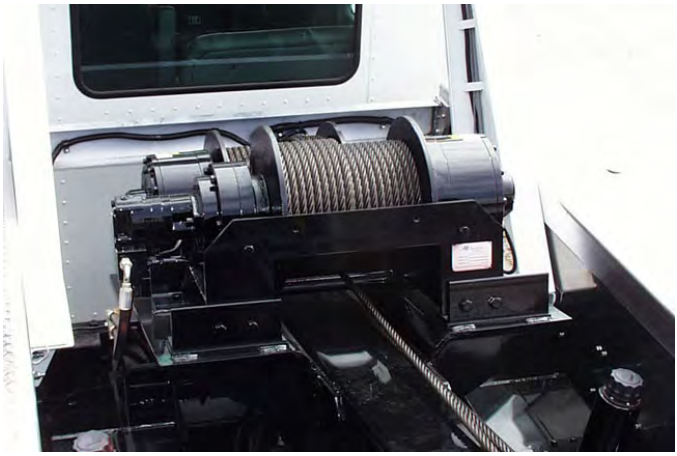


FIGURE 3.4

3.7 The Winch Air Free Spool Switches are located at the left rear Control Station located in the left rear compartment. When activated, the winch clutch is disengaged and the drum will free spool. Refer to Figure 3.3.

NOTE
THE CONTROL SWITCH ON THE SWITCH PANEL IN THE TRUCK CAB MUST BE ON FOR THE FREE SPOOL SWITCHES TO OPERATE.

3.8 The Rear Spades with dual position pads are for use when lifting heavy loads and are controlled by activating control handles located at the Control Station located in the left rear compartment of the body. See Figure 3.5.

FIGURE 3.5

3.10 Safety Chains are located at the tailboard of the subframe. See Figure 3.6.

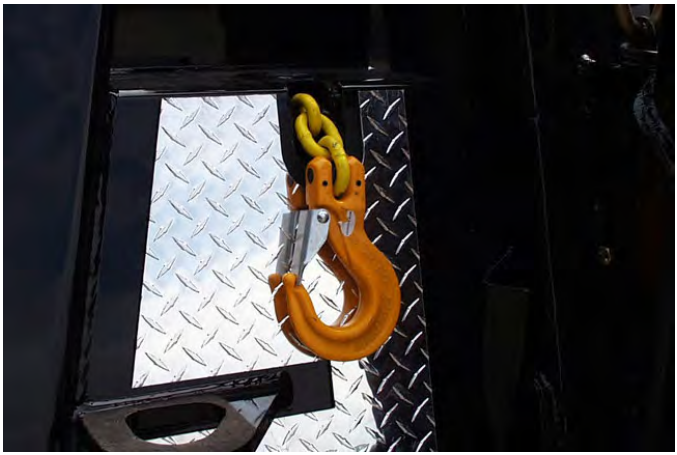


FIGURE 3.6

Section III - OPERATIONAL FUNCTIONS
RECOVERY BOOM (cont'd)

WARNING

USE SAFETY CHAINS ON ALL TOWING AND LIFTING APPLICATIONS!

NOTES

Section IIIA - OPERATIONAL FUNCTIONS UNDERLIFT

3A.1 Your new Underlift is totally hydraulic. It receives its power by means of a Power Take-Off/Pump combination attached to the vehicle transmission. Since the pump is attached directly to the PTO, no drive line or universal joints are required. Refer to Figure 3.1.

3A.2 Each function of the underlift can be controlled from the Control Station located in the left rear compartment of the body, or from the Hand Held Remote Control Unit. See Figures 3A.1 and 3A.2.

FIGURE 3A.1

FIGURE 3A.2

Section IIIA - OPERATIONAL FUNCTIONS UNDERLIFT (cont'd)

3A.3 The control handles are clearly identified as to functions and directons. Movement of the control handles meters the flow of oil through valves to control the speed of each function. Each valve is equipped with a pressure gauge to monitor the hydraulic pressure during the operations.

3A.4 The underlift is elevated, lowered, extended and retracted by means of double-acting cylinders. The boom can be elevated or extended under either "LOAD" or "NO-LOAD" conditions.

3A.5 REMOTE CONTROL UNIT

(a) The remote control unit (Power Pal) is located and plugged into the power receptacle in the rear body compartment. See Figure 3A.2.

(b) The 8-position Power Pal controls the in and out function, tilt up and down function, and the fold up and down function of the underlift. It also controls the up and down function of the recovery boom which raises and lowers the complete underlift.

(c) The Optional 15-position Power Pal also controls the in and out function, the tilt up and down function, and the fold up and down function of the underlift and the up and down function of the recovery boom which raises and lowers the complete underlift, plus the wrecker boom in and out function, and left & right winch in and out functions.

NOTE
THE CONTROL SWITCH ON THE SWITCH PANEL IN THE TRUCK CAB MUST BE ON FOR THE REMOTE CONTROL UNIT TO OPERATE.

3A.6 Lifting forks and other underlift towing and lifting accessories are located in the tool compartments on either side of the body. See Figures 3A.3 & 3A.4.

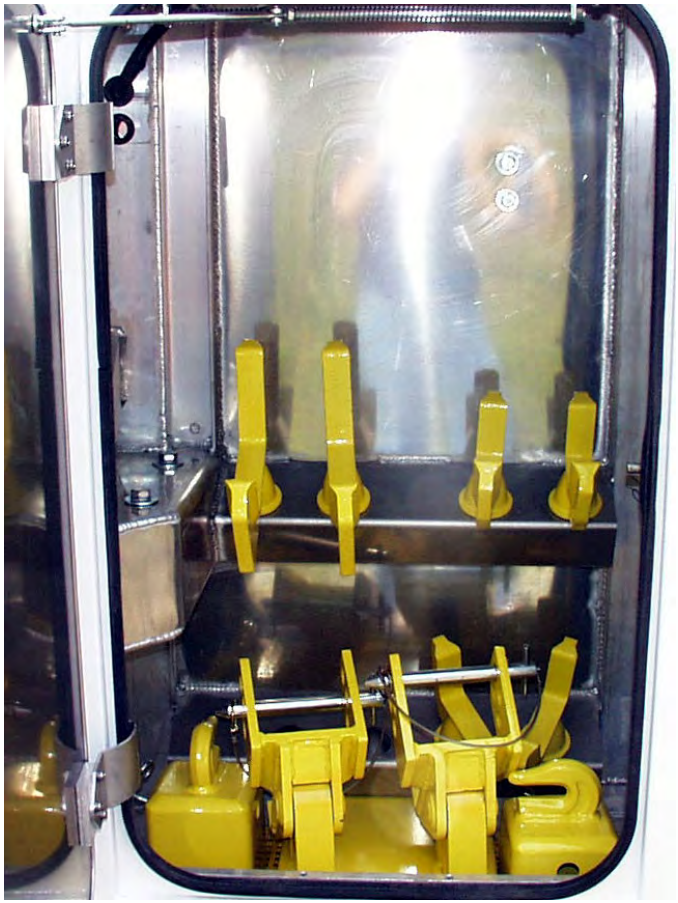


FIGURE 3A.3

FIGURE 3A.4

Section IV - OPERATING INSTRUCTIONS RECOVERY BOOM

4.1 For reasons of safety, it is important that the Owner(s) and Operator(s) become thoroughly familiar with the controls and functions of the recovery unit before attempting any operation.

4.2 HYDRAULIC WINCHES

(a) **DO NOT** fasten the winch hook directly to any vehicle.
(b) **DO NOT** wrap the winch cable around any object.
(c) **DO NOT** exceed the working limit of the cable.
(d) **DO NOT** use the winches or cable for the lifting of people.

4.3 PREPARING FOR RECOVERY

(a) Position unit for recovery.

(b) Reduce truck's engine to idle and apply parking brake. Depress clutch, place transmission in neutral and engage PTO by activating rocker switch located on switch panel in cab.

⚠ CAUTION

NEVER DRIVE TRUCK ON STREET WITH PTO ENGAGED, THIS CAN CAUSE PUMP FAILURE DUE TO OVER-SPEED AND OVERHEATING!

4.4 CABLE PAYOUT

Before operating any control handles, observe the winch cables to make sure they are free and have sufficient slack to allow the boom to extend. If not, pay out cable by using the Cable "IN/OUT" Controls. Maintain tension on cable during payout to avoid fouling line. If manually paying out cable, switch on the Air Free Spool switch and pull cables out to sufficient length for boom extension.

4.5 BOOM ELEVATION & EXTENSION

(a) Elevate boom to the desired height and angle by use of the Boom "UP/DOWN" Control. Refer to Figure 3.1.

Section IV - OPERATING INSTRUCTIONS
RECOVERY BOOM (cont'd)

4.5 BOOM ELEVATION & EXTENSION (cont'd)

NOTE
IN THE EVENT OF HYDRAULIC PRESSURE LOSS, THE BOOM WILL REMAIN AT THE DESIRED ELEVATION DUE TO THE HOLDING VALVES LOCATED AT THE LIFT CYLINDERS.

(b) Extend boom to the desired length by use of the Boom "IN/OUT" Control. Refer to Figure 3.1.

⚠ CAUTION

TO AVOID DAMAGE TO WINCHES, CABLES, OR BOOM, MAKE CERTAIN WINCH CABLES ARE FREE AND HAVE SUFFICIENT SLACK TO ALLOW BOOM TO EXTEND!

4.6 REAR SPADES

(a) The Rear Spades with dual position pads are for use when lifting heavy loads. See Figures 4.1 & 4.2.

FIGURE 4.1

Section IV - OPERATING INSTRUCTIONS
RECOVERY BOOM (cont'd)

4.6 REAR SPADES (cont'd)

FIGURE 4.2

(b) The Rear Spades are raised and lowered by activating control handles located at the control station. Refer to Figure 3.1.

CAUTION

STAND CLEAR
WHILE OPERATING REAR SPADES!

WARNING

USE SAFETY CHAINS ON ALL TOWING
AND LIFTING APPLICATIONS!

NOTES

Section IVA - OPERATING INSTRUCTIONS UNDERLIFT

4A.1 For reasons of safety, it is important that the Owners and Operator(s) become thoroughly familiar with its controls, components and load requirements before attempting any operation.

4A.2 PREPARING TO LOAD VEHICLE

(a) Align unit with vehicle to be towed.

(b) Reduce truck's engine to an idle, and apply parking brake. Depress clutch, place transmission in neutral and engage PTO by activating toggle switch located on dash panel in cab.

⚠ CAUTION

NEVER DRIVE TRUCK ON STREET WITH PTO ENGAGED, THIS CAN CAUSE PUMP FAILURE DUE TO OVER-SPEED AND OVERHEATING!

4A.3 UNDERLIFT OPERATION

(a) Each function of the underlift can be controlled using the Hand Held Remote Control Unit or by the control handles at the left control station. Refer to Figures 3A.1 and 3A.2.

(b) Press "FOLD DOWN" button until Underlift Boom is all the way down. See Figure 4A.1.

Section IVA - OPERATING INSTRUCTIONS UNDERLIFT (cont'd)

4A.3 UNDERLIFT OPERATION (cont'd)

FIGURE 4A.1

(c) At this point, you must determine which type lift you are going to use for towing: FORK LIFT; SPRING LIFT; AXLE LIFT; TRUCK WHEEL LIFT; etc. The following text covers the methods of operation for each of the above mentioned lifts. Towing attachments are located in the storage compartments on the left hand side of the body. See Figure 4A.2.

Section IVA - OPERATING INSTRUCTIONS
UNDERLIFT (cont'd)

4A.3 UNDERLIFT OPERATION (cont'd)

FIGURE 4A.2

Section IVA - OPERATING INSTRUCTIONS UNDERLIFT (cont'd)

4A.4 AXLE LIFT (USING FORKS)

NOTE
STEPS A THRU D ARE NOT REQUIRED IF AXLE IS HIGH ENOUGH TO PERMIT EXTENSION OF CROSSBAR UNDER AXLE WITH FORKS INSTALLED.

(a) Press "OUT" button and extend the Underlift Boom (without forks attached) until crossbar is centered with front axle of disabled vehicle.

(b) Press "UP" button and lift truck by front axle until the wheels are high enough to be blocked up.

(c) Insert blocks under wheels.

NOTE
WHEELS MUST BE BLOCKED HIGH ENOUGH FOR AXLE TO CLEAR FORKS AFTER THEY ARE INSTALLED ON CROSSBAR.

(d) Press "DOWN" button and lower boom completely.

(e) Press "IN" button to retract boom until fork adapters can be installed on crossbar.

(f) Loosen "T" handles on fork adapters and slide adapters onto crossbar.

(g) Position fork adapters in desired position on crossbar. (Fork adapters may be placed in any of four (4) positions). Place retaining pins in holes in crossbar and secure with lynch pins. See Figures 4A.3 and 4A.4.

Section IVA - OPERATING INSTRUCTIONS
UNDERLIFT (cont'd)

4A.4 AXLE LIFT (USING FORKS) (cont'd)

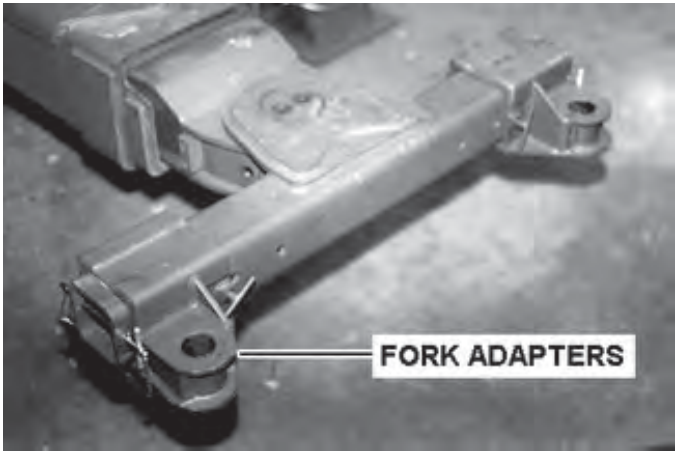


FIGURE 4A.3

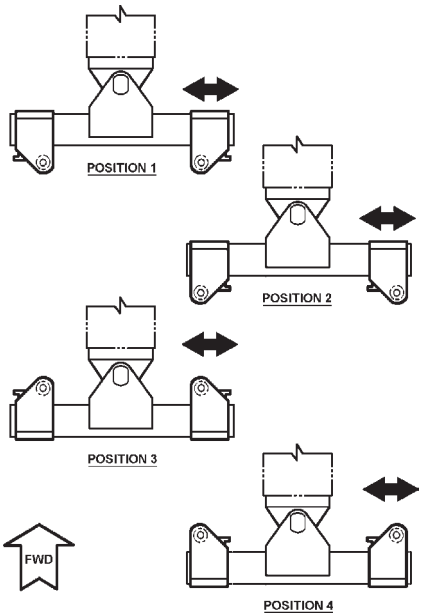


FIGURE 4A.4

4A.4 AXLE LIFT (USING FORKS) (cont'd)

(h) Select forks suited for job and install in fork adapters on crossbar. See Figure 4A.5.

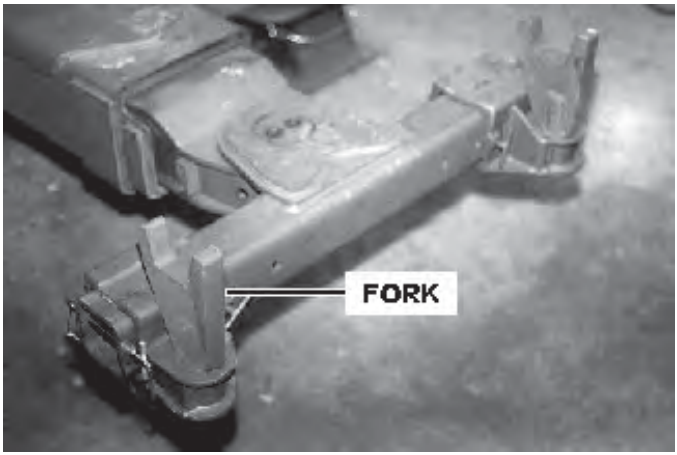


FIGURE 4A.5

(i) Press "OUT" button to extend boom until forks are under axle.

NOTE
TILT BOOM DOWN, AS REQUIRED, USING "TILT DOWN" BUTTON UNTIL FORKS WILL CLEAR AXLE.

(j) Manually adjust fork adapters on crossbar to a point where the forks will contact the axle at the position desired for towing.

(k) Tighten "T" handles on adapters. Make sure retaining pins at ends of crossbar are secure. See Figure 4A.6.

Section IVA - OPERATING INSTRUCTIONS
UNDERLIFT (cont'd)

4A.4 AXLE LIFT (USING FORKS) (cont'd)

NOTE
RETAINING PINS MUST BE IN PLACE DURING ALL TOWING APPLICATIONS.

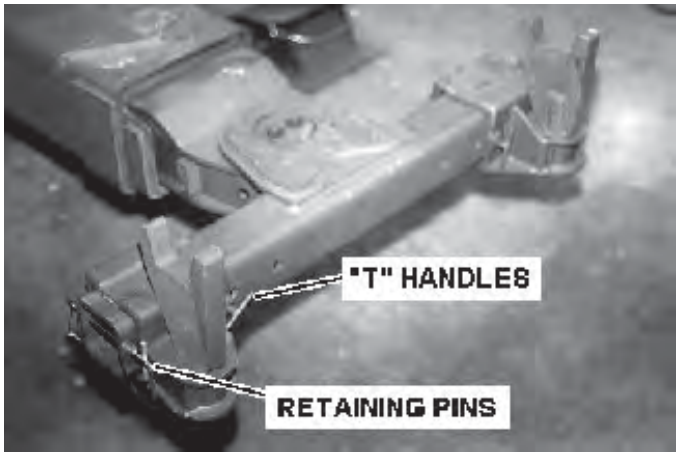


FIGURE 4A.6

(l) Press "TILT UP" button and bring forks into contact with axle. If necessary, press "UP" button to raise boom.

(m) Attach safety chains around axle, crossbar tube and forks as shown in Figure 4A.7.

4A.4 AXLE LIFT (USING FORKS) (cont'd)

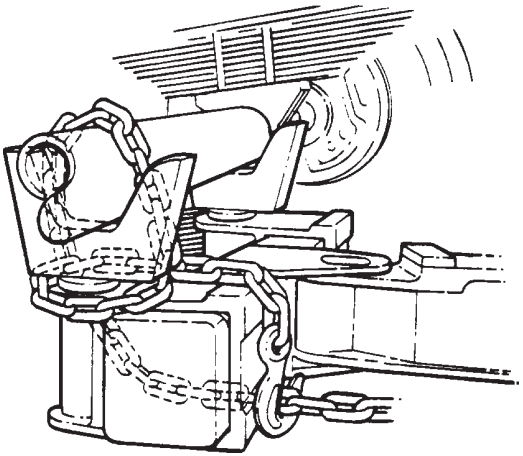


FIGURE 4A.7

WARNING

USE SAFETY CHAINS ON ALL TOWING AND LIFTING APPLICATIONS!

(n) Press "UP" button to raise vehicle to desired height for towing.

(o) Remove blocks if previously placed under front wheels.

CAUTION

MAKE NO ATTEMPT TO USE THE FOLD FEATURE OF THE UNDERLIFT BOOM TO RAISE OR PICK UP A LOAD. THE UNDERLIFT FOLD CYLINDER WILL NOT HOLD, BUT WILL LEAK DOWN.

Section IVA - OPERATING INSTRUCTIONS UNDERLIFT (cont'd)

4A.4 AXLE LIFT (USING FORKS) (cont'd)

(p) Press "IN" button and pull vehicle in as far as possible while still maintaining a safe turning radius.

NOTE
MAKE SURE THERE IS ENOUGH SLACK IN SAFETY CHAINS TO PERMIT TURNING.

(q) Stow remote control unit and give hookup a final check before commencing towing operation.

4A.5 SPRING LIFT

(a) Press "DOWN" button and lower boom completely.

(b) Loosen "T" handles on fork adapters and slide adapters onto crossbar.

(c) Position fork adapters in desired position on crossbar. (Fork adapters may be placed in any of four (4) positions). Place retaining pins in holes in crossbar and secure with lynch pins. Refer to Figures 4A.3 and 4A.4.

(d) Retrieve spring lift brackets from storage and install on fork adapters on crossbar. See Figure 4A.8.

Section IVA - OPERATING INSTRUCTIONS UNDERLIFT (cont'd)

4A.5 SPRING LIFT (cont'd)

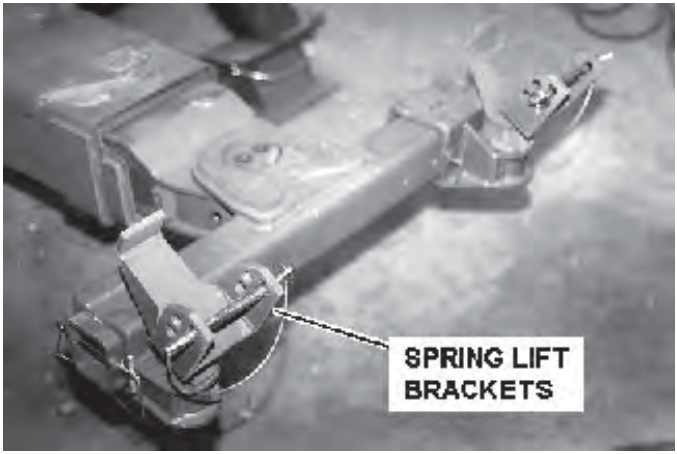


FIGURE 4A.8

(e) Press "OUT" button and extend boom until spring lift brackets are under front hangers (on some vehicles, the spring brackets may need to be inserted into adapters after extending crossbar behind bumper).

(f) Manually adjust spring lift brackets on crossbar to a point where the brackets will engage the springs at the front hanger brackets. See Figure 4A.9.

Section IVA - OPERATING INSTRUCTIONS UNDERLIFT (cont'd)

4A.5 SPRING LIFT (cont'd)

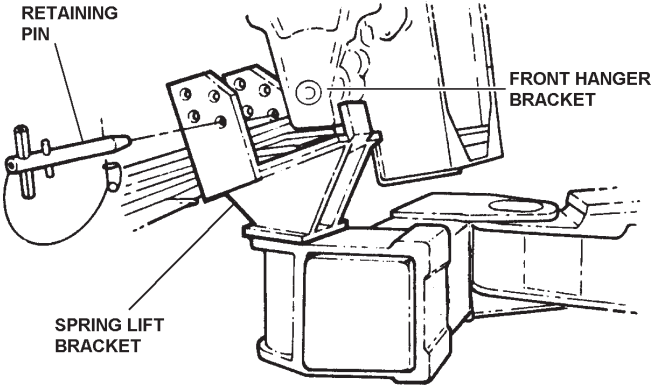


FIGURE 4A.9

(g) Tighten "T" handles on adapters. Make sure retaining pins at ends of crossbar are secure.

(h) Press "UP" button and raise boom until brackets are properly seated under springs at front spring hanger brackets.

(i) Insert retaining pin through lowest unobstructed hole of spring lift bracket and secure with safety pin. Refer to Figure 4A.9.

(j) Attach safety chains around springs, spring lift brackets and crossbar tube in such a manner as to prevent any movement to front or rear.

WARNING

USE SAFETY CHAINS ON ALL TOWING AND LIFTING APPLICATIONS!

Section IVA - OPERATING INSTRUCTIONS UNDERLIFT (cont'd)

4A.5 SPRING LIFT (cont'd)

NOTE
MAKE SURE THERE IS ENOUGH SLACK IN SAFETY CHAINS TO PERMIT TURNING.

(k) Press "UP" button and raise vehicle to desired height for towing.

(l) Using "IN" button, pull vehicle in as far as possible while still maintaining a safe turning radius.

(m) Stow remote control unit and give hookup a final check before commencing towing operation.

4A.6 TRUCK WHEEL LIFT (OPTIONAL)

(a) Press "DOWN" button and lower boom until crossbar just clears ground level.

(b) Slide outer crosstubes onto underlift crossbar. Place crosstube retaining pins in holes in crossbar and secure with lynch pin.

(c) Extend boom to maximum stroke and then retract approximately 3".

(d) Disengage PTO and back wrecker until crosstubes are firmly against tires of truck to be towed. Take wrecker out of gear, apply parking brake and re-engage PTO.

(e) Insert adjustment tubes into outer crosstubes. Insert retainer pins into keyhole slots on outer crosstube and rotate 180° to lock in place.

Section IVA - OPERATING INSTRUCTIONS UNDERLIFT (cont'd)

4A.6 TRUCK WHEEL LIFT (cont'd)

(f) Install tire supports onto adjustment tubes and slide in until firmly against back of tire. Insert retainer pins into keyhole slots on tire supports and rotate 180° to lock in place. See Figures 4A.10 and 4A.11.

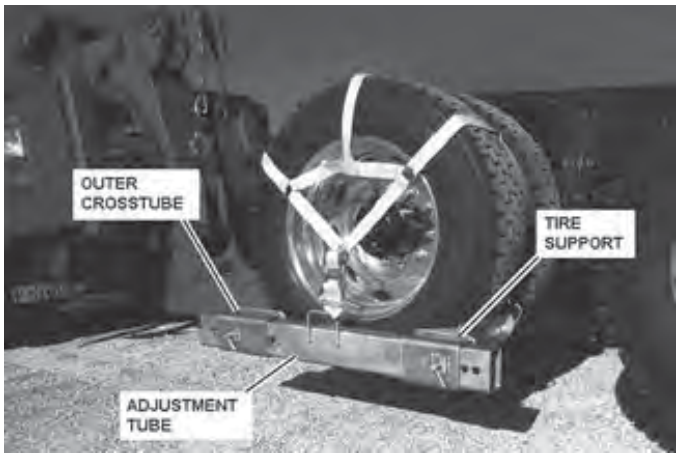


FIGURE 4A.10

FIGURE 4A.11

Section IVA - OPERATING INSTRUCTIONS UNDERLIFT (cont'd)

4A.6 TRUCK WHEEL LIFT (cont'd)

(g) Before lifting dual axle vehicles from the rear, install 5/16" high test tow chains on both sides of vehicle to be towed. Attach one end of chain around forward axle, over frame rail and back around axle. Secure hook into chain, removing as much slack as possible.

(h) Take vehicle out of gear and make sure parking brake is "OFF".

(i) Raise vehicle to desired height for towing.

(j) Attach tiedown strap hooks to outer crosstube and tire support and place strap over tire as shown in Figure 4A.12.

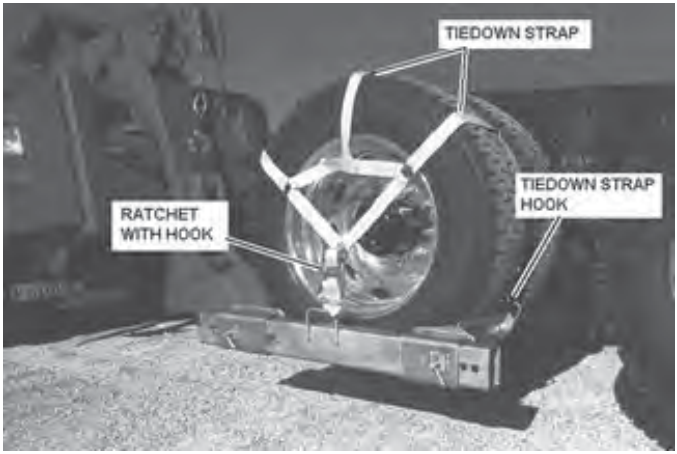


FIGURE 4A.12

(k) Release tie down strap ratchet and pull out sufficient length of strap to insert ratchet hook into hole in the adjustment tube. Refer to Figure 4A.12.

(l) Tighten tiedown strap around tire securely with ratchet.

(m) Repeat tiedown strap procedures on opposite side of vehicle to be towed.

Section IVA - OPERATING INSTRUCTIONS UNDERLIFT (cont'd)

4A.6 TRUCK WHEEL LIFT (cont'd)

WARNING

USE SAFETY CHAINS ON ALL TOWING AND LIFTING APPLICATIONS!

(n) Press "IN" button and pull vehicle in as far as possible while still maintaining a safe turning radius.

NOTE
MAKE SURE THERE IS ENOUGH SLACK IN SAFETY CHAINS TO PERMIT TURNING.

(o) Stow remote control unit and give hookup a final check before commencing towing operation.

4A.7 KINGPIN ADAPTER (OPTIONAL)

(a) Install Fork Adapters on crossbar as shown in Figure 4A.13.

Section IVA - OPERATING INSTRUCTIONS UNDERLIFT (cont'd)

4A.7 KINGPIN ADAPTER (cont'd)

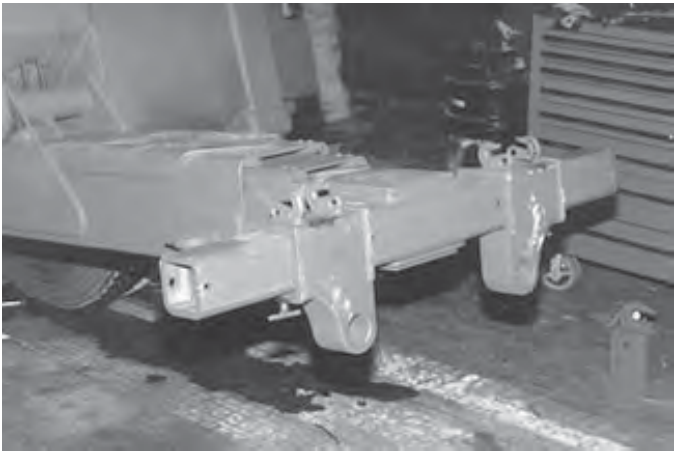


FIGURE 4A.13

(b) Attach Pintle Hook Bracket to fork adapters. Install the two (2) pintle hook bracket retaining pins and tighten "T" handles on fork adapters. See Figure 4A.14

NOTE
PINTLE HOOK MUST BE REMOVED FROM PINTLE HOOK BRACKET FOR KINGPIN ADAPTER APPLICATIONS.

4A.7 KINGPIN ADAPTER (cont'd)

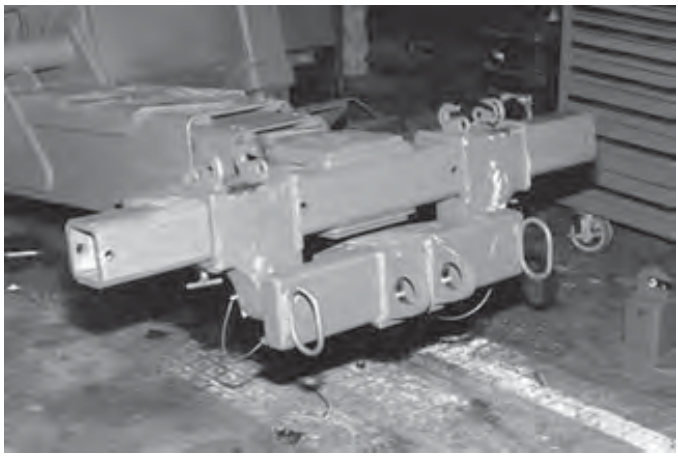


FIGURE 4A.14

(c) Attach Kingpin Adapter to pintle hook bracket with attaching pin and lock pin. See Figures 4A.15 and 4A.16.

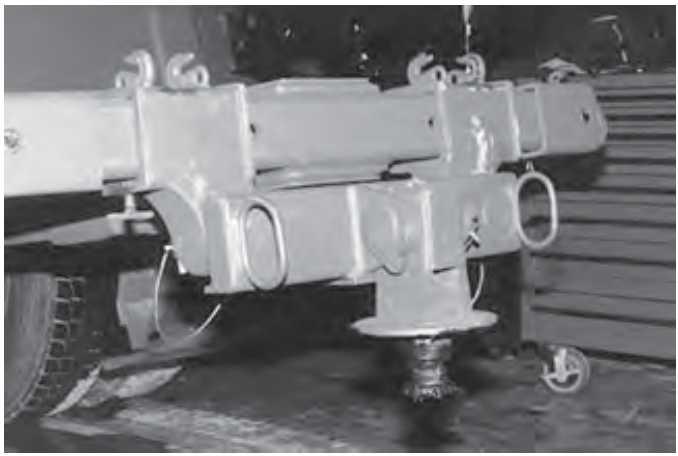


FIGURE 4A.15

Section IVA - OPERATING INSTRUCTIONS UNDERLIFT (cont'd)

4A.7 KINGPIN ADAPTER (cont'd)

FIGURE 4A.16

(d) Position and align kingpin adapter at proper elevation and extend underlift until adapter engages and locks into fifth wheel on the tractor. Refer to Figure 4A.16.

NOTE
INSPECT FIFTH WHEEL PLATE FOR FATIGUE AND/OR DAMAGE FROM IMPROPER USE PRIOR TO USING THIS ATTACHMENT.

(e) Before lifting vehicle, install two (2) 3/8" GR70 tow chains (MINIMUM REQUIRED). Route chain around frame rails and over crossbar, placing chain between hooks on fork adapters, removing as much slack as possible. As the vehicle is lifted, the load should transfer to the tow chains. See Figure 4A.17.

4A.7 KINGPIN ADAPTER (cont'd)

FIGURE 4A.17

(f) On tractors with air bag suspensions, you must secure each axle with minimum 5/16" GR70 tow chain to prevent damage to air bags. Route chain around axle on one side, across frame rails and around axle on other side. Refer to Figure 4A.17.

(g) Secure vehicle with safety chains and inspect for transport.

4A.8 5TH WHEEL ADAPTER (OPTIONAL)

(a) Install fork adapters on crossbar as shown in Figure 4A.18.

4A.8 5TH WHEEL ADAPTER (cont'd)

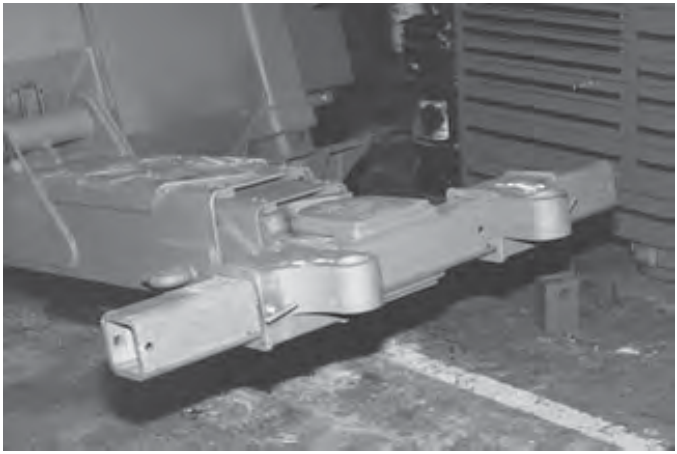


FIGURE 4A.18

(b) Attach pintle hook bracket to fork adapters. Install the two (2) pintle hook bracket retaining pins and tighten "T" handles on fork adapters. See Figure 4A.19.

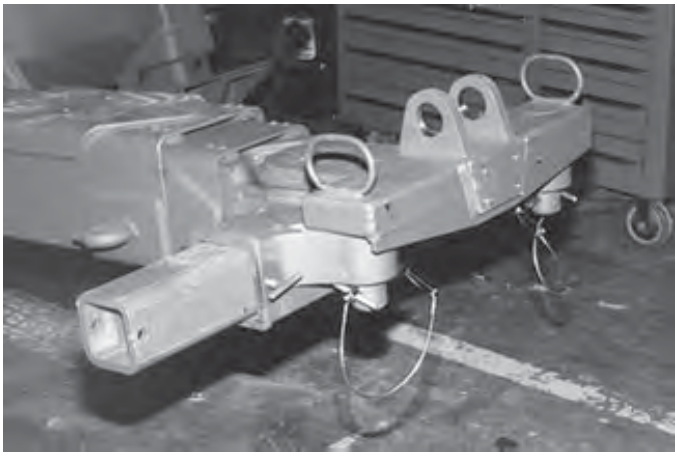


FIGURE 4A.19

4A.8 5TH WHEEL ADAPTER (cont'd)

(c) Attach 5TH Wheel Adapter to pintle hook bracket with attaching pin and lock pin. See Figure 4A.20.

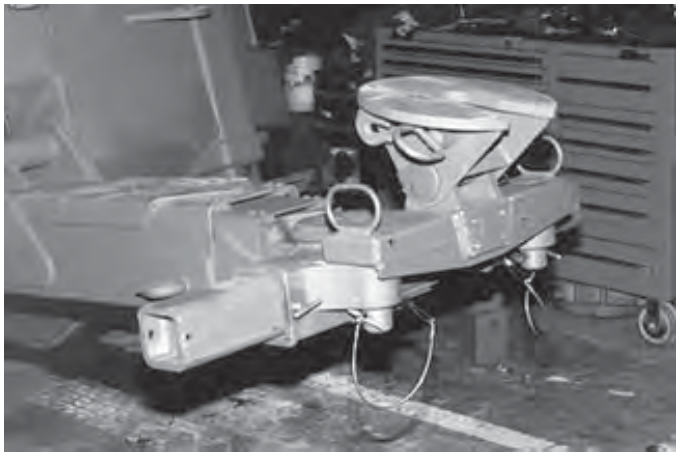


FIGURE 4A.20

(d) Install left and right Chain Hook Adapters on crossbar and secure with two (2) retaining bolts and safety pins. Remove pull pin from fifth wheel adapter. Position and align fifth wheel adapter with trailer kingpin at proper elevation and extend underlift until adapter engages trailer kingpin. Replace pull pin and secure with safety pin. Attach two 1/2" high test tow chains (MINIMUM REQUIRED) to hooks on both sides of underlift outer boom and left & right chain hook adapters. Extend underlift until chains are tight to prevent crossbar from pivoting. See Figure 4A.21.

4A.8 5TH WHEEL ADAPTER (cont'd)

FIGURE 4A.21

(e) Secure trailer with safety chains and inspect for transport.

WARNING

USE SAFETY CHAINS ON ALL TOWING AND LIFTING APPLICATIONS!

Section V - MAINTENANCE

5.1 The continued operation of your CENTURY towing and recovery unit is largely dependent upon strict adherence to a properly scheduled preventive maintenance program. To help you in this program, CENTURY has provided the following information regarding lubrication, preventive maintenance, hydraulic system and safety devices care.

5.2 HYDRAULIC SYSTEM

The importance of absolute cleanliness of the hydraulic system cannot be over stressed. The smallest amount of grit, metal flake or other foreign material in the system can cause extensive damage to pumps, motors and valves. CENTURY has taken every measure to assure that each component and fitting was thoroughly cleaned before your unit was shipped to you. Therefore, servicing of the system should be done with extreme care.

(a) Before checking oil level in reservoir, wipe away all dirt, grease and grime around filter cap before removing it. Make certain that all containers, funnels and pouring spouts are absolutely clean before filling reservoir.

(b) When replacing hoses, fittings or other components, clean thoroughly, dismantle and reassemble carefully.

(c) Failure to observe these precautions, and failure to change the filter element at regular intervals could result in loss of your warranty in the event of failure to certain components.

5.3 LUBRICATION & PREVENTIVE MAINTENANCE

The following general lubrication and preventive maintenance should be performed at least once per month for moderate usage, or more often as required, for heavy usage.

(a) Inspect, repair or replace any worn, cracked, leaking, otherwise damaged components including, but not limited to, the following:

1. **Hydraulic Hoses and Fittings**
2. **Cables and Fittings**
3. **Cylinders**
4. **Boom End Fittings**

5.3 LUBRICATION & PREVENTIVE MAINTENANCE (cont'd)

5. **Controls**
6. **Hydraulic Oil Filters**
7. **Oil Reservior**
8. **Lights and Wiring**
9. **Winches**
10. **Pivot Bearing Surfaces and Pins**

(See Lubrication Charts, page V-9 thru V-11.)

(b) Check hydraulic oil level in reservoir and fill to center of sight gauge. Refer to 5.4, part (a), SUMMARY OF REQUIRED LUBRICANTS for recommended oils to use.

(c) Replace hydraulic oil filters after first week of operation, then every three (3) months thereafter.

(d) Inspect all bolts for tightness and re-tighten as necessary. Vibration and stress may loosen even properly torqued bolts.

(e) Lubricate all grease fittings on the Recovery Boom and Underlift weekly including:

1. **Spade Cylinder Pivots**
2. **Sheaves (fittings in sheave shafts)**
3. **Boom End Swivels (fitting top side of boom swivel)**
4. **Winch Clutches**
5. **Boom Elevation and Extension Cylinder Pivots**
6. **Boom Pivot**
7. **Underlift Pivot**
8. **Tower Pivot**
9. **Underlift Tilt Cylinders (each end)**

(f) All bearing surfaces not equipped with grease fittings should be oiled using SAE 30 oil in a pump can.

(g) Grease boom slide pads with grease with grease fittings located on top of outer boom at heel end second stage only.

Section V - MAINTENANCE (cont'd)

5.3 LUBRICATION & PREVENTIVE MAINTENANCE (cont'd)

(h) Check oil level of winches and fill to level of oil plug located in side plate of gear housing Use SAE 140 general purpose gear oil. Lubrcate grease fittings on clutches.

(i) Lubricate winch cables using an oily rag while respooling onto drum. Other special cable lubricants are available which have better penetrating qualities. Consult your local oil company for a list of these.

5.4 SUMMARY OF REQUIRED LUBRICANTS

(a) **Hydraulic Oil**

Examples:
1. **Texaco Rando HD 46**
2. **Shell Tellus Oil 46**
3. **Mobil Nuto H46**
4. **Exxon Nuto H46** or Equal

(b) **Winch Worm Gear Oil** - SAE 140 general purpose gear oil.

Examples:
1. **Humble - Pen-O-Led EP #5**
2. **Phillips - Phillips Worm Gear Oil 140**
3. **Shell - Macona #978**
4. **Sinclair - Pennant EP #6**
5. **Standard - Stanogear #5**
6. **Texaco - Maropa #5**

(c) **Grease** - Synthetic Fortified such as Drydene SFG.

(d) **Oil for miscellaneous bearing surfaces** - SAE 30.

(e) **Cable Oil** - SAE 30 or special cable lubricant.

NOTE
THERE IS NO PRACTICAL WAY TO DETERMINE THE LIFE EXPECTANCY OF HYDRAULIC HOSES AND OTHER RUBBER COMPONENTS.

WHILE APPEARING TO BE IN EXCELLENT CONDITION, THESE COMPONENTS MAY BE ADVERSELY AFFECTED BY USAGE, WEATHER OR THE PASSING OF TIME.

THEREFORE, IT IS RECOMMENDED THAT ALL RUBBER COMPONENTS, ESPECIALLY HOSES, BE REPLACED EVERY FIVE (5) YEARS REGARDLESS OF APPEARANCE.

5.5 CARE OF HYDRAULICS IN COLD CLIMATE

When the CENTURY towing and recovery unit are used in seasonal cold climate regions (+20° F and below), the viscosity of the normally recommended 10W40 oil may increase to the point where it adversely affects hydraulic functions during starting and warm-up.

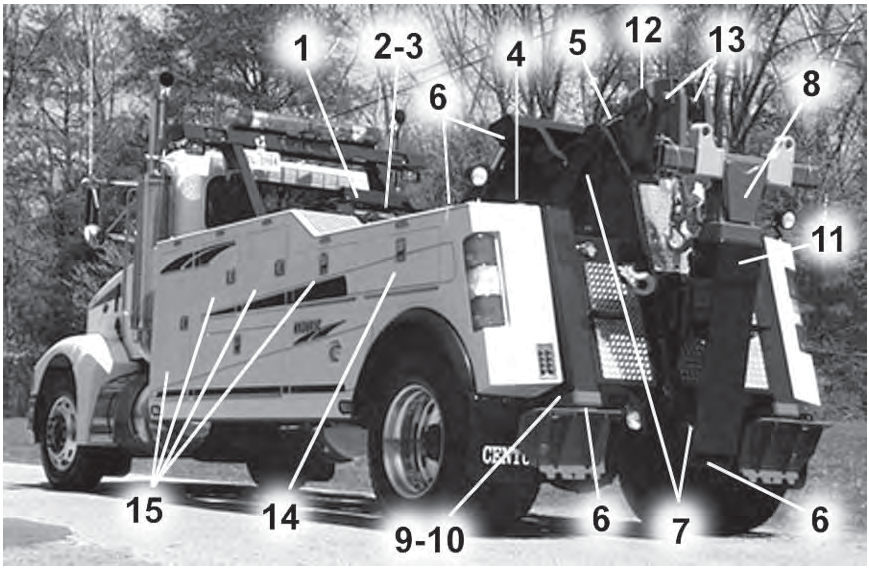
If this is the case, it will be necessary to change fluids seasonally to maintain maximum system efficiency and life.

Regions subject to continuous sub-zero or arctic climates require special hydraulic fluids. Contact CENTURY or your local supplier for information regarding specific temperature requirements.

NOTE
THE FOLLOWING LUBRICATION REQUIREMENTS SHOULD BE SERVICED MONTHLY.

SERVICE MORE OFTEN IF THE EQUIPMENT IS USED FREQUENTLY.

Section V - MAINTENANCE (cont'd)



LUBRICATION CHART

5.6 LUBRICATION

1. Winch Oil Level - Fill to oil plug level with SAE 140 general purpose gear oil.
2. Hydraulic Reservoir - Fill to center of sight gauge with recommended hydraulic fluid.
3. Hydraulic Filters - Replace after first week of operation then every three (3) months.
4. Hydraulic Filter (In-line) - Replace after first week of operation then every three (3) months.
5. Cable - Use oil or approved cable lubricant.
6. Cylinder Pivot Bearings - use GP Grease.
7. Underlift and Tower Pivot - Drydene SFG or equivalent.
8. Crossbar Pivot Pin - Drydene SFG or equivalent.
9. Rear Spade Cylinders - GP Grease.
10. Rear Spade Tubes - coat with GP Grease.
11. Slide Pads (Top and Bottom) - GP Grease.
12. Boom End Swivels - GP Grease.
13. Sheaves - GP Grease.
14. Control Handle Shafts - GP Grease.
15. Compartment Door Pivots - Use SAE 30 Oil.

Section V - MAINTENANCE (cont'd)

5.7 FILTER/REGULATOR OPERATION AND SERVICE

(a) The miniature filter/regulator and miniature lubricator are installed on the aft bulkhead of the left rear Control Station so that air flows in the direction of the arrow on body. See Figure 5.1.

FIGURE 5.1

(b) The filter/regulator and lubricator are installed upstream from the device(s) they are to protect and lubricate.

(c) Both free moisture and solids are removed automatically by the filter/regulator.

(d) Drain whenever water level in sump reaches the lower baffle.

(e) The filter element should be removed and replaced whenever the pressure differential across the filter is 10 PSIG.

(f) To remove the filter element: SHUT AIR LINE DOWN and exhaust the primary and secondary pressure.

1. Unscrew threaded bowl.
2. Unscrew element and remove.
3. Clean bowl and internal parts before reassembling.
4. Attach clean element assembly and tighten firmly.

5.7 FILTER/REGULATOR OPERATION AND SERVICE (cont'd)

5. Replace bowl gasket; lubricate gasket to assist in retaining it in position. Use only mineral base oils or grease. Do NOT use synthetic oils such as esters, and do NOT use silicones.

6. Screw bowl into body and tighten firmly.

(g) The regulator may be serviced without removing it from the line. Before disassembling filter/regulator, SHUT OFF AIR SUPPLY AND EXHAUST PRIMARY AND SECONDARY PRESSURE. Disengage the adjusting knob by pulling upward. Turn the adjusting knob counterclockwise until compression is released from pressure control spring. For servicing diaphragm, unscrew bonnet from body. For servicing poppet, remove threaded bowl and filter element assembly.

(h) BEFORE TURNING ON AIR SUPPLY, TURN THE ADJUSTING KNOB COUNTERCLOCKWISE UNTIL COMPRESSION IS RELEASED FROM PRESSURE CONTROL SPRING. Turn on air pressure. Then proceed to adjust the desired downstream pressure by turning adjusting knob clockwise. This permits pressure to build up slowly in the downstream line.

(i) To decrease regulated pressure settings, always reset from a pressure lower than the final setting required. For example, lowering the secondary pressure from 80 PSI to 60 PSI is best accomplished by dropping the secondary pressure to 50 PSI, then adjusting upward to 60 PSI.

(j) When desired secondary pressure settings have been reached, push the adjusting knob down to lock.

Section V - MAINTENANCE (cont'd)

5.8 LUBRICATOR OPERATION AND SERVICE

(a) FILLING - Inlet pressure must be eliminated before the fill plug or bowl is removed. Fill to fill line on the bowl (DO NOT OVERFILL) with oil of 100 to 200 SSU viscosity at 100° F and an aniline point greater than 200° F - same as SAE No. 10 (petroleum base hydraulic oils are good examples). DO NOT USE OILS WITH ADHESIVES OR TACKY ADDITIVES. COMPOUNDED OILS CONTAINING SOLVENTS, GRAPHITE, SOAPS OR DETERGENTS (automotive oils generally contain detergent) ARE NOT RECOMMENDED.

(b) Replace the fill plug and/or bowl assembly firmly - excessive torque is not necessary. The lubricator is now ready for setting. Repressurize the lubricator.

(c) OIL DELIVERY ADJUSTMENT - To adjust oil delivery, turn adjustment knob on the top of the lubricator.

Leaner - Clockwise
Richer - Counterclockwise

By counting the number of drops per minute in the sight dome, you can adjust to your requirements. 25 drops per minute equal one ounce per hour - volume of oil passing through sight dome.

NOTE: This is a constant density type lubricator which delivers a constant ratio of oil air flow. Therefore, if air flow increases or decreases, oil delivery will be adjusted proportionally. ONLY IF A DIFFERENT RATIO IS DESIRED SHOULD YOUR ADJUSTMENT KNOB SETTING BE CHANGED AFTER YOUR INITIAL SETTING.

(d) MAXIMUM PRESSURE AND TEMPERATURE - 90 PSIG @ 125° F.

(e) TO CLEAN POLYCARBONATE BOWLS, USE MILD SOAP AND WATER ONLY! DO NOT use detergents or cleansing agents, such as acetone, alcohol, benzene, carbon tetrachloride, gasoline, toluene, etc., which are damaging to this plastic.

Section V - MAINTENANCE (cont'd)

MAINTENANCE RECORD

DATE	MECHANIC	WEEKLY*	MONTHLY	QUARTERLY	SERVICE PERFORMED

*IMPORTANT: HYDRAULIC HOSES AND CABLES SHOULD BE INSPECTED WEEKLY FOR SIGNS OF ABRASION.

Section V - MAINTENANCE (cont'd)
MAINTENANCE RECORD

DATE	MECHANIC	WEEKLY*	MONTHLY	QUARTERLY	SERVICE PERFORMED

*IMPORTANT: HYDRAULIC HOSES AND CABLES SHOULD BE INSPECTED WEEKLY FOR SIGNS OF ABRASION.

Section V - MAINTENANCE (cont'd)

MAINTENANCE RECORD

DATE	MECHANIC	WEEKLY*	MONTHLY	QUARTERLY	SERVICE PERFORMED

*IMPORTANT: HYDRAULIC HOSES AND CABLES SHOULD BE INSPECTED WEEKLY FOR SIGNS OF ABRASION.

Section V - MAINTENANCE (cont'd)
MAINTENANCE RECORD

DATE	MECHANIC	WEEKLY*	MONTHLY	QUARTERLY	SERVICE PERFORMED

*IMPORTANT: HYDRAULIC HOSES AND CABLES SHOULD BE INSPECTED WEEKLY FOR SIGNS OF ABRASION.

Section V - MAINTENANCE (cont'd)

MAINTENANCE RECORD

DATE	MECHANIC	WEEKLY*	MONTHLY	QUARTERLY	SERVICE PERFORMED

*IMPORTANT: HYDRAULIC HOSES AND CABLES SHOULD BE INSPECTED WEEKLY FOR SIGNS OF ABRASION.

NOTES

Section VI - PARTS

This Section is provided by the manufacturer for the purpose of ordering any component part of the **CENTURY 5130** or **5230** that may be required when part replacement is necessary. Be certain to use only original equipment replacement parts for warranty purposes as well as for keeping your **CENTURY 5130** or **5230** in its original state and optimum operating capacities. When ordering replacement or spare parts be sure to provide the following information to the manufacturer's **Parts Department**.

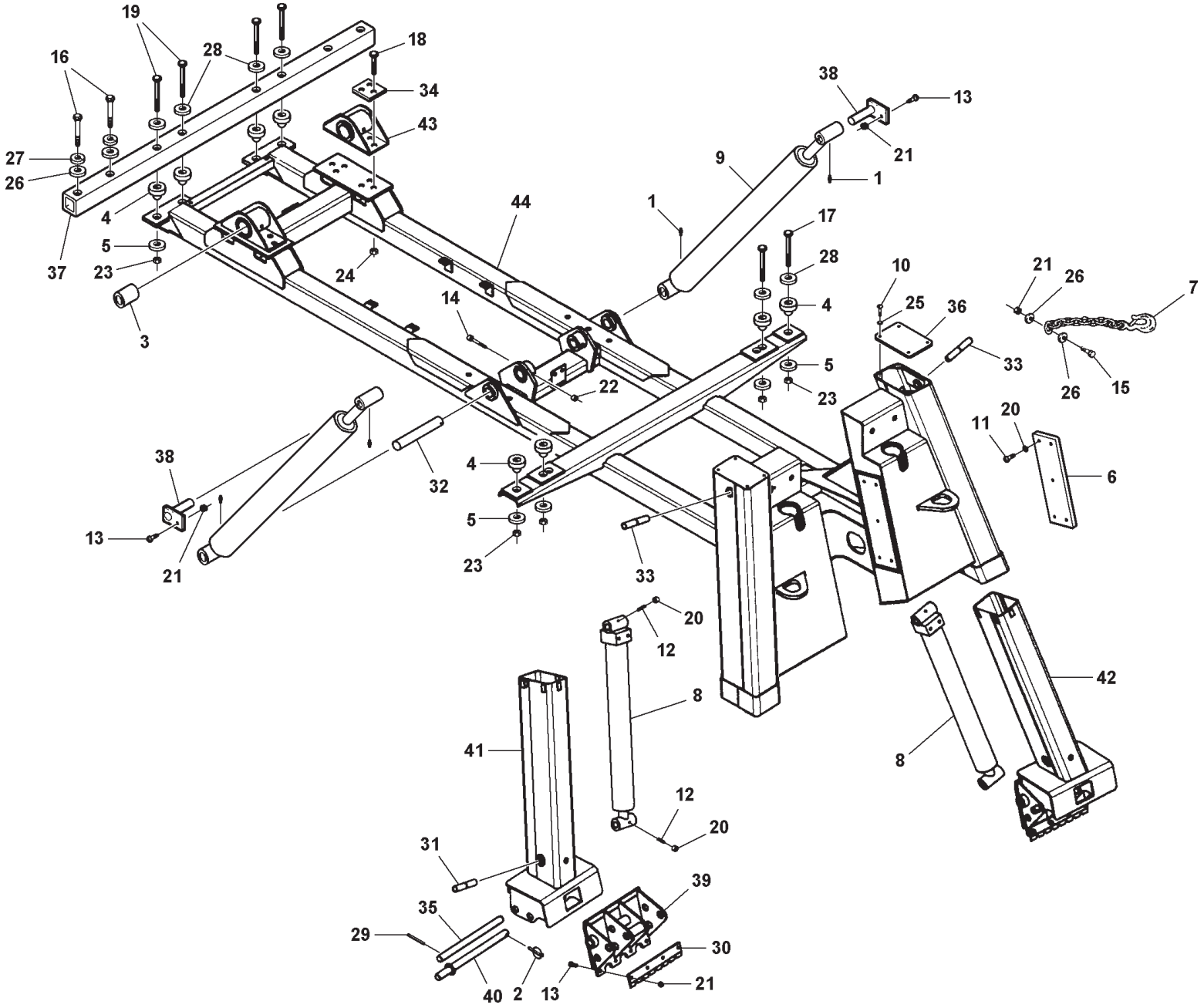
1. **Manual Number & Date of Publication**
2. **Manual Page Number**
3. **Page Title**
4. **Reference Number of Part Desired**
5. **Part Number**
6. **Part Description**
7. **Quantity of Part Desired**

Providing this information will help ensure that the correct parts will be delivered to you in an expedient manner. Should additional information be required for repair or replacement of certain components, contact your Manufacturer Authorized Representative.

The Manufacturer reserves the right, without notice or obligation, to improve or modify their products, which may change the specifications, models and feature availability.

Section VI - PARTS (cont'd)

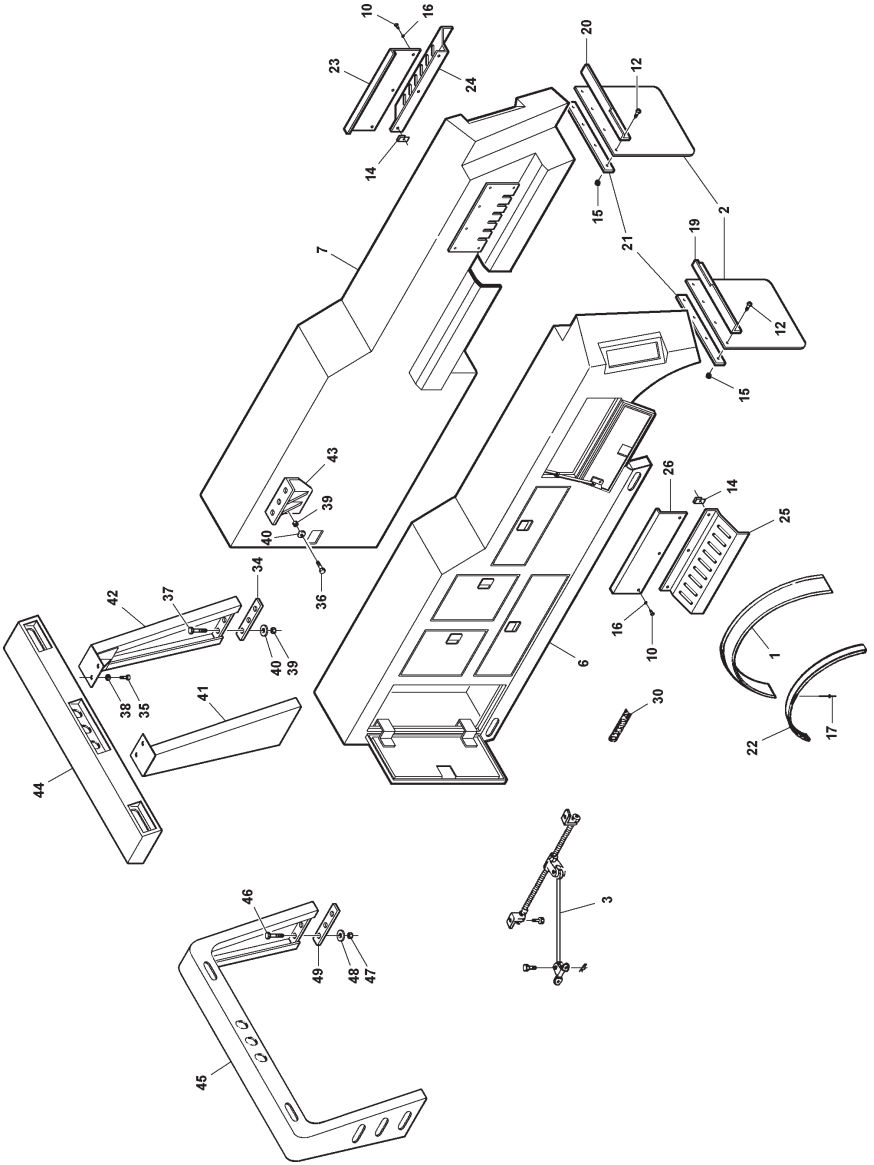
SUBFRAME ASSEMBLY



Section VI - PARTS (cont'd)
SUBFRAME ASSEMBLY

REF. NO.	NO. REQ'D	PART NUMBER	DESCRIPTION
1	6	0300113	GREASE FITTING
2	2	0301861	QUICK PIN
3	2	0302538	BUSHING, 3-1/2" X 2-1/2" INTERNAL
4	8	0302540	CENTER BONDED MOUNT
5	12	0302541	SPECIAL WASHER
6	2	0303140	RAMP PAD
7	2	0303445	SAFETY CHAIN, SYSTEM 10
8	REF.	0306647	SPADE CYLINDER
9	REF.	0307012	LIFT CYLINDER
10	8	0400066	SCREW, 1/4"-20 X 3/4" HEX HD CAP
11	10	0400128	SCREW, 3/8"-16 X 1-1/4" FL HD SKT
12	4	0400139	SCREW, 3/8"-16 X 1-1/2" HEX SKT SET
13	10	0400181	SCREW, 1/2"-13 X 1-1/2" HEX HD CAP
14	2	0400219	SCREW, 1/2"-13 X 4-1/2" HEX HD CAP
15	2	0400260	SCREW, 5/8"-11 X 2" HEX HD CAP
16	4	0400276	SCREW, 5/8"-11 X 4-1/2" HEX HD CAP
17	4	0400281	SCREW, 3/4"-10 X 3-1/2" HEX HD CAP
18	12	0400288	SCREW, 3/4"-10 X 2-1/2" HEX HD CAP
19	4	0400294	SCREW, 3/4"-10 X 6-1/2" HEX HD CAP
20	23	0400392	NUT, 3/8"-16 NYLOK HEX
21	2	0400408	NUT, 1/2"-13 NYLOK HEX
22	2	0400421	NUT, 5/8"-11 NYLOK HEX
23	4	0400430	NUT, 3/4"-10 NYLOK HEX
24	12	0400431	NUT, 3/4"-10 NYLOK HEX
25	8	0400452	LOCKWASHER, 1/4" HELICAL
26	10	0400506	WASHER, 5/8" FLAT
27	4	0400508	LOCKWASHER, 5/8" HELICAL
28	8	0400510	WASHER, 3/4" FLAT (5230)
29	2	9046354	SPRING PIN, 1/4" X 2-1/2"
30	2	0705485	SPADE BLADE
31	2	0705500	SHAFT, LOWER SPADE
32	2	0707118	PIN, LIFT CYLINDER
33	2	0707394	SHAFT, UPPER SPADE
34	4	0714581	BOLTING PLATE
35	2	0715694	PIN, SPADE PIVOT
36	2	0715796	COVER PLATE, SPADE
37	1	0802211	FRONT BODY MTG TUBE (5130)
--	1	0802868	FRONT BODY MTG TUBE WELDMENT (5230)
38	2	0802219	PIVOT PIN, LIFT CYLINDER
39	2	0804286	LOWER SPADE PAD WELDMENT
40	2	0804334	PIN, MULTI-POSITION
41	1	0804360	LEFT INNER SPADE WELDMENT
42	1	0804361	RIGHT INNER SPADE WELDMENT
43	2	0804405	BRACKET, BOOM PIVOT
44	1	0805899	SUBFRAME WELDMENT

Section VI - PARTS (cont'd)
STANDARD BODY ASSEMBLY - 5130

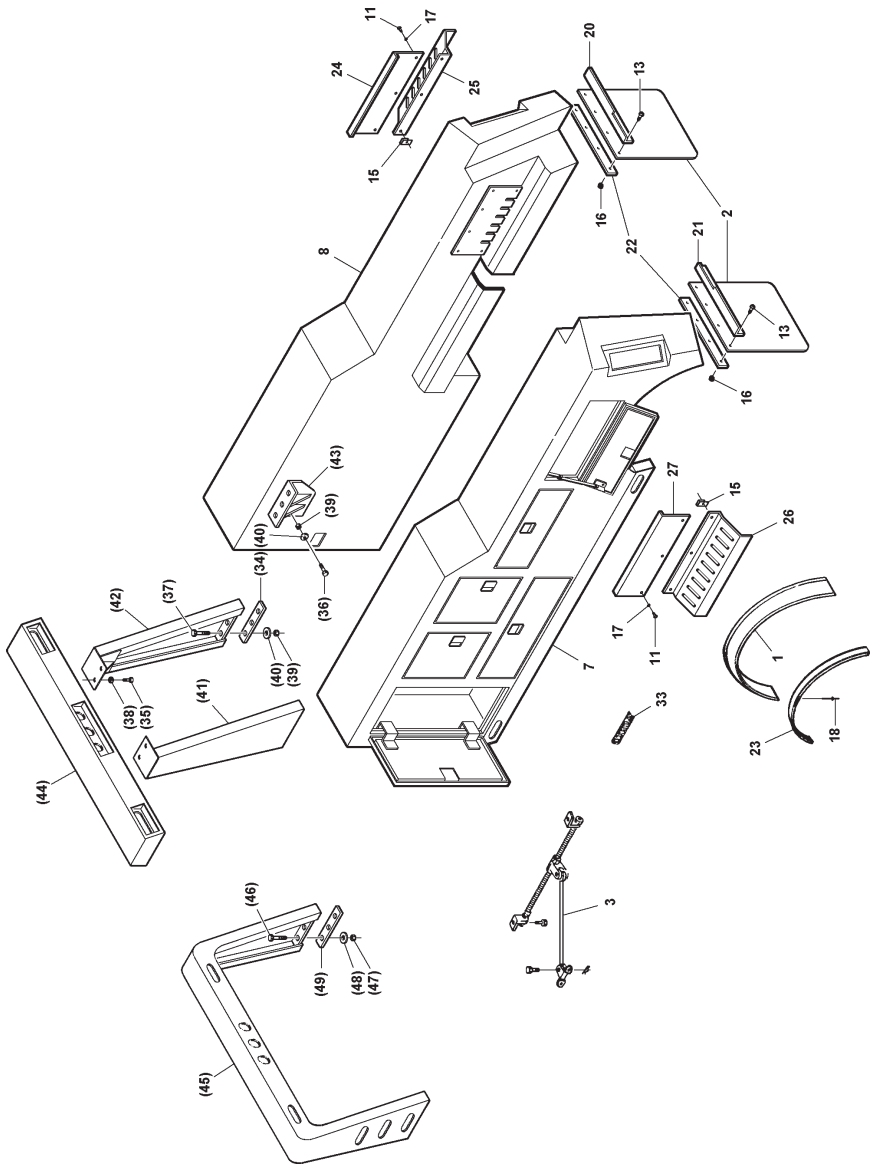


Section VI - PARTS (cont'd)
STANDARD BODY ASSEMBLY - 5130

REF. NO.	NO. REQ'D	PART NUMBER	DESCRIPTION
1	14 FT.	0300345	RUBBER FENDER
2	2	0301223	MUDFLAP
3	6	0301912	DOOR CHECK, 11"
4	7 FT.	0303056	"D" GASKET (NOT SHOWN)
5	1	0303061	BACKUP ALARM (NOT SHOWN)
6	1	0306834	TOOL BOX, 156" C.A. LT STEEL SINGLE
7	1	0306835	TOOL BOX, 156" C.A. RT STEEL SINGLE
8	6	0400005	SCREW, #6-32 X 1/2" RD HD PH
9	6	0400061	SCREW, 1/4"-20 X 3/4" MACH
10	6	0400066	SCREW, 1/4"-20 X 3/4" HEX HD CAP
11	8	0400101	SCREW, 5/16"-18 X 1" RD HD MACH
12	8	0400122	SCREW, 3/8"-16 X 1-1/4" HEX HD CAP
13	3	0400367	NUT, 1/4"-20 NYLOK HEX
14	6	0400369	CLIP, 1/4" TINNERMAN
15	8	0400392	NUT, 3/8"-16 NYLOK HEX
16	6	0400451	WASHER, 1/4" FLAT
17	40	0400566	RIVET, 1/4"
18	6	0402094	NUT, #6-32 HEX
19	1	0705090	MUDFLAP MTG ANGLE, LEFT
20	1	0705091	MUDFLAP MTG ANGLE, RIGHT
21	2	0705092	BAR, MUDFLAP
22	2	0706609	RETAINING STRIP, RUBBER FENDER
23	1	0711289	PANEL, SWITCH
24	1	0711290	PANEL, CONTROL
25	1	0711292	PANEL, CONTROL
26	1	0711344	PANEL, GAUGE
27	4	0713171	SPACER PLATE, STEEL (NOT SHOWN)
28	2	0714176	GASKET, BASE ANGLE (NOT SHOWN)
29	2	0714177	GASKET (NOT SHOWN)
30	1	0901496	CENTURY NAMEPLATE KIT
--	6	0400035	SCREW, #10-24 X 1/2" OVAL HD SS
--	2	0500406	CENTURY NAMEPLATE
31	--	0902328	BODY MOUNTING KIT (NOT SHOWN)
--	2	0707174	ANGLE, TAILGATE MOUNTING
--	2	0707175	MOUNTING PLATE
--	2	0711256	MOUNTING PLATE
--	2	0711286	SPACER, REAR FRAME BRACKET

REF. NO.	NO. REQ'D	PART NUMBER	DESCRIPTION
32	--	0904217	BODY MOUNTING HARDWARE (NOT SHOWN)
--	34	0400288	SCREW, 3/4"-10 X 2-1/2" HEX HD CAP
--	4	0400303	SCREW, 7/8"-9 X 2-1/2" HEX HD CAP
--	34	0400431	NUT, 3/4"-10 NYLOK HEX
--	4	0400436	NUT, 7/8"-9 NYLOK HEX
33	--	0907043	KIT, TOOL BOX HOLE PLUG (NOT SHOWN)
--	8	0307052	RUBBER WASHER
--	4	0400201	SCREW, 1/2"-13 X 1-1/2" CRGBLT
--	4	0400407	NUT, 1/2"-13 HEX
--	4	0400491	LOCKWASHER, 1/2" HELICAL
--	4	0400492	WASHER, 1/2" FLAT
--	4	0400506	WASHER, 5/8" FLAT
--	--	124001720	LIGHT BAR, STANDARD
34	2	0301706	GASKET, LIGHT BAR
35	4	0400126	SCREW, 3/8"-16 X 1" HEX HD CAP
36	12	0400177	SCREW, 1/2"-13 X 1-1/4" HEX HD CAP
37	6	0400181	SCREW, 1/2"-13 X 1-1/2" HEX HD CAP
38	4	0400392	NUT, 3/8"-16 NYLOK HEX
39	18	0400408	NUT, 1/2"-13 NYLOK HEX
40	12	0400492	WASHER, 1/2" FLAT
41	1	0802224	SUPPORT, L.H. VERTICAL
42	1	0802225	SUPPORT, R.H. VERTICAL
43	2	0802226	MOUNTING BRACKET
44	1	0802260	TOP CHANNEL
--	--	124001708	AERODYNAMIC LIGHT PYLON
45	1	0302562	LIGHT RACK
46	6	0400157	SCREW, 3/8"-16 X 1-3/4" HEX HD CAP
47	6	0400392	NUT, 3/8"-16 NYLOK HEX
48	6	0400480	WASHER, 3/8" FLAT
49	2	0706972	LIGHT PYLON, MOUNTING RUBBER

Section VI - PARTS (cont'd)
STANDARD BODY ASSEMBLY - 5230

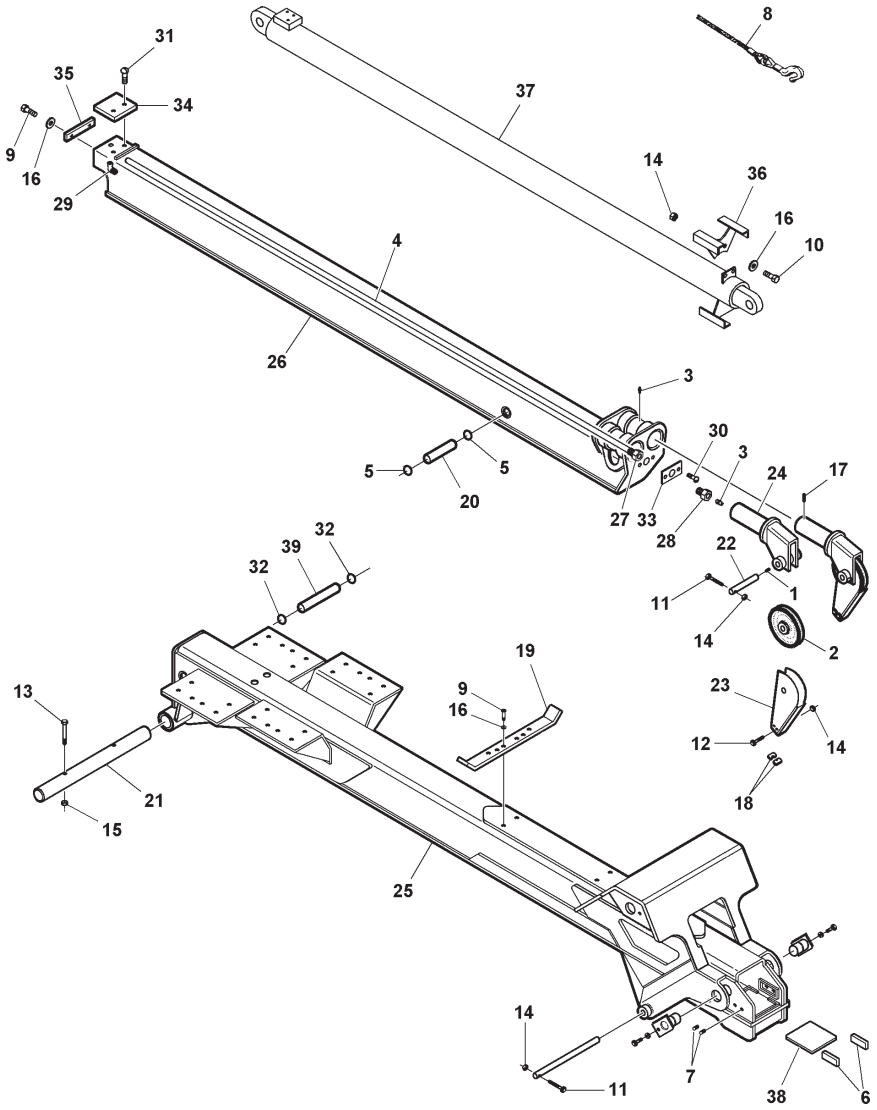


Section VI - PARTS (cont'd)
STANDARD BODY ASSEMBLY - 5230

REF. NO.	NO. REQ'D	PART NUMBER	DESCRIPTION
1	28 FT.	0300345	RUBBER FENDER
2	2	0301223	MUDFLAP
3	6	0301912	DOOR CHECK, 11"
4	7 FT.	0303056	"D" GASKET (NOT SHOWN)
5	1	0303061	BACKUP ALARM (NOT SHOWN)
6	113 FT.	0306553	DOOR SEAL (NOT SHOWN)
7	1	0306790	TOOL BOX, 156" C.B. LT ALUM TANDEM
8	1	0306791	TOOL BOX, 156" C.B. RT ALUM TANDEM
9	6	0400005	SCREW, #6-32 X 1/2" RD HD PH
10	6	0400061	SCREW, 1/4"-20 X 3/4" MACH
11	6	0400066	SCREW, 1/4"-20 X 3/4" HEX HD CAP
12	8	0400101	SCREW, 5/16"-18 X 1" RD HD MACH
13	8	0400122	SCREW, 3/8"-16 X 1-1/4" HEX HD CAP
14	3	0400367	NUT, 1/4"-20 NYLOK HEX
15	6	0400369	CLIP, 1/4" TINNERMAN
16	8	0400392	NUT, 3/8"-16 NYLOK HEX
17	6	0400451	WASHER, 1/4" FLAT
18	76	0400566	RIVET, 1/4"
19	6	0402094	NUT, #6-32 HEX
20	1	0708809	MUDFLAP MTG ANGLE, RT
21	1	0708810	MUDFLAP MTG ANGLE, LT
22	2	0705092	BAR, MUDFLAP
23	4	0706609	RETAINING STRIP, RUBBER FENDER
24	1	0711289	PANEL, SWITCH
25	1	0711290	PANEL, CONTROL
26	1	0711292	PANEL, CONTROL
27	1	0711344	PANEL, GAUGE
28	2	0710502	MOUNTING PLATE (NOT SHOWN)
29	4	0713170	SPACER PLATE, ALUMINUM (NOT SHOWN)
30	2	0714176	GASKET, BASE ANGLE (NOT SHOWN)
31	2	0714177	GASKET (NOT SHOWN)
32	1	0803036	CROSSMEMBER, ALUMINUM BODY (NOT SHOWN)
33	1	0901496	CENTURY NAMEPLATE KIT
--	6	0400035	SCREW, #10-24 X 1/2" OVAL HD SS
--	2	0500406	CENTURY NAMEPLATE

REF. NO.	NO. REQ'D	PART NUMBER	DESCRIPTION
34	--	0902328	BODY MOUNTING KIT (NOT SHOWN)
--	2	0707174	ANGLE, TAILGATE MOUNTING
--	2	0707175	MOUNTING PLATE
--	2	0711256	MOUNTING PLATE
--	2	0711286	SPACER, REAR FRAME BRACKET
35	--	0904217	BODY MOUNTING HARDWARE (NOT SHOWN)
--	34	0400288	SCREW, 3/4"-10 X 2-1/2" HEX HD CAP
--	4	0400303	SCREW, 7/8"-9 X 2-1/2" HEX HD CAP
--	34	0400431	NUT, 3/4"-10 NYLOK HEX
--	4	0400436	NUT, 7/8"-9 NYLOK HEX
36	--	0904353	CHAIN RACK, ALUMINUM BODY (NOT SHOWN)
--	3	0400133	SCREW, 3/8"-16 X 3" HEX HD CAP
--	3	0400392	NUT, 3/8"-16 NYLOK HEX
--	1	0803768	CHAIN HANGER WELDMENT
37	--	0906256	TRAY KIT (NOT SHOWN)
--	3	0400105	SCREW, 5/16"-18 X 1-1/4" SELF TAP
--	2	0400133	SCREW, 3/8"-16 X 3" HEX HD CAP
--	2	0400392	NUT, 3/8"-16 NYLOK HEX
--	2	0400480	WASHER, 3/8" FLAT
--	1	0804229	TRAY WELDMENT
38	--	0907043	KIT, TOOL BOX HOLE PLUG (NOT SHOWN)
--	8	0307052	RUBBER WASHER
--	4	0400201	SCREW, 1/2"-13 X 1-1/2" CRGBLT
--	4	0400407	NUT, 1/2"-13 HEX
--	4	0400491	LOCKWASHER, 1/2" HELICAL
--	4	0400492	WASHER, 1/2" FLAT
--	4	0400506	WASHER, 5/8" FLAT
39	--	124001720	LIGHT BAR, STANDARD (REFER TO PAGE VI-4 & VI-5)
40	--	124001708	AERODYNAMIC LIGHT PYLON (REFER TO PAGE VI-4 & VI-5)

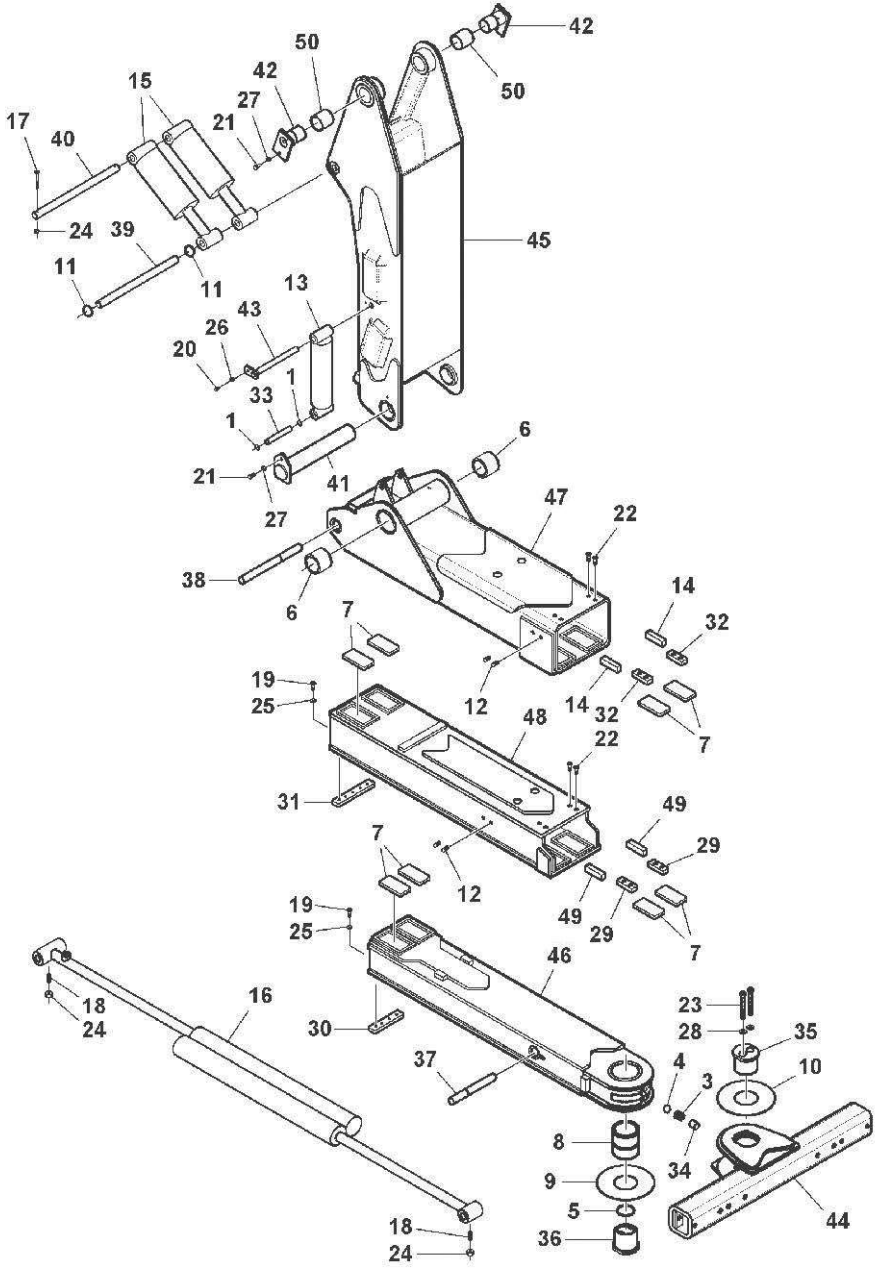
Section VI - PARTS (cont'd)
RECOVERY BOOM ASSEMBLY



Section VI - PARTS (cont'd)
RECOVERY BOOM ASSEMBLY

REF. NO.	NO. REQ'D	PART NUMBER	DESCRIPTION
1	4	0300113	GREASE FITTING
2	2	0300626	SHEAVE, 8"
3	3	0301895	GREASE FITTING, STR 1/8"
4	14 FT.	0301949	SYNFLEX HOSE, 3/8"
5	2	0301959	SNAP RING, 1-1/2" INTERNAL
6	2	0303490	WEAR PAD
7	8	0306585	PIPE PLUG, 4 AL PLUG
8	2	0306899	WIRE ROPE, 5/8" X 200' 6x37 IWRC XIPS
9	5	0400121	SCREW, 3/8"-16 X 3/4" HEX HD CAP
10	2	0400132	SCREW, 3/8"-16 X 1-1/2" HEX HD CAP
11	2	0400133	SCREW, 3/8"-16 X 3" HEX HD CAP
12	4	0400150	SCREW, 3/8"-16 X 2-1/2" HEX HD CAP
13	1	0400220	SCREW, 1/2"-13 X 5-1/2" HEX HD CAP
14	10	0400392	NUT, 3/8"-16 NYLOK HEX
15	1	0400408	NUT, 1/2"-13 NYLOK HEX
16	12	0400482	LOCKWASHER, 3/8" HELICAL
17	6	0400554	ROLL PIN, 3/8" X 1"
18	4	0700801	CABLE GUIDE, BOTTOM
19	1	0705104	PLATE, WINCH CABLE SUPPORT
20	1	0707580	PIN
21	1	0715953	PIVOT PIN, BOOM
22	2	0716134	SHAFT, SHEAVE
23	2	0800286	CABLE GUIDE
24	2	0804448	SWIVEL WELDMENT
25	1	0805876	OUTER BOOM WELDMENT
26	1	0805878	INNER BOOM WELDMENT
27	1	9012549	CONNECTOR, 3/8" TUBE X 1/8" NPT
28	1	9012552	BULKHEAD COUPLING, 1/8"
29	1	9012584	ELBOW, 1/4" NPT X 3/8" TUBE 90
30	2	9043827	SCREW, #10-32 X 5/8" PAN HD PH HD
31	2	9044434	SCREW, 3/8"-16 X 1" FL SKT HD
32	2	9056150	RETAINING RING, 1-1/2"
33	1	9403411	LUBRICATOR MOUNTING PLATE
34	1	915030004	WEAR PAD, UPPER
35	1	915040001	PAD RETAINING PLATE, UPPER PAD
36	1	915040400	SPIDER CLAMP WELDMENT, TOP
37	REF.	915715000	EXTEND CYLINDER
38	1	916040004	WEAR PAD, LOWER
39	1	916350001	PIN, EXTEND CYLINDER
40	2	DE1381	1/2 WASHER

Section VI - PARTS (cont'd)
UNDERLIFT & TOWER ASSEMBLY

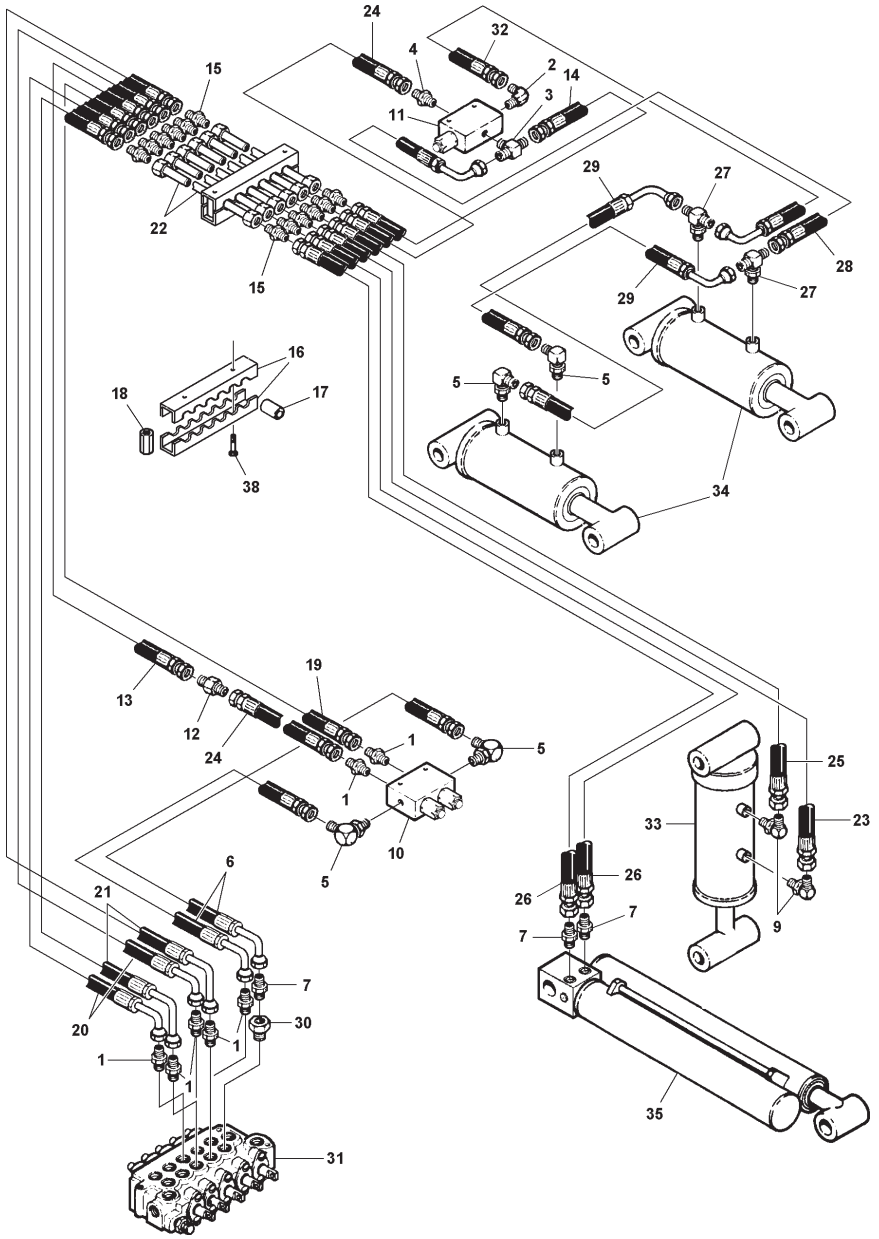


Section VI - PARTS (cont'd)
UNDERLIFT & TOWER ASSEMBLY

REF. NO.	NO. REQ'D	PART NUMBER	DESCRIPTION
1	2	0300110	SNAP RING 1"
2	14	0300113	GREASE FITTING
3	1	0301197	COMPRESSION SPRING, CROSS BAR
4	1	0301398	DETENT BALL, 1-3/16"
5	1	0301822	"O" RING, PIVOT PIN
6	2	0302538	SPRING BUSHING
7	8	0302561	SLIDE PAD
8	1	0303088	BUSHING, PIVOT PIN
9	1	0303097	THRUST WASHER, 1/8"
10	1	0303098	THRUST WASHER, 1/16"
11	2	0303827	SNAP RING 1-1/4"
12	8	0306585	PIPE PLUG, 4 AL PLUG
13	1	0306746	FOLD CYLINDER
14	2	0307013	WEAR PAD
15	2	0307040	TILT CYLINDER
16	1	0307041	EXTEND CYLINDER
17	4	0400133	SCREW, 3/8"-16 X 3" HEX HD CAP
18	2	0400139	SCREW, 3/8"-16 X 1-1/2" HEX SKT SET
19	4	0400147	SCREW, 3/8"-24 X 5/8" HEX HD CAP
20	6	0400151	SCREW, 3/8"-24 X 3/4" HEX HD CAP
21	2	0400176	SCREW, 1/2"-13 X 1" HEX HD CAP
22	8	0400228	SCREW, 3/8"-24 X 5/8" BUTTON HD SKT
23	2	0400271	SCREW, 5/8"-11 X 4-1/2" SKT HD CAP
24	8	0400392	NUT, 3/8"-16 NYLOK HEX
25	10	0400481	LOCKWASHER, 3/8" EXTERNAL TOOTH
26	1	0400482	LOCKWASHER, 3/8" HELICAL
27	2	0400491	LOCKWASHER, 1/2" HELICAL
28	2	0400508	LOCKWASHER, 5/8" HELICAL

REF. NO.	NO. REQ'D	PART NUMBER	DESCRIPTION
29	2	0706995	BOLT-ON SPACER PAD
30	1	0706996	SPACER PAD
31	1	0707028	BOLT-ON BEARING PAD
32	4	0707034	STOP PLATE
33	1	0707179	PIN, FOLD CYLINDER ROD END
34	1	0708470	SPACER, DETENT BALL SPRING
35	1	0710051	PIVOT PIN, TOP HALF
36	1	0710052	PIVOT PIN, BOTTOM HALF
37	1	0716745	SHAFT, EXTEND CYLINDER (ROD)
38	1	0716746	SHAFT, EXTEND CYLINDER (BASE)
39	1	0716763	SHAFT, TILT CYLINDER
40	1	0716870	SHAFT, TILT CYLINDER
41	1	0802214	PIN, UNDERLIFT PIVOT
42	2	0802365	TOWER PIVOT PIN WELDMENT
43	1	0802459	PIN, FOLD CYLINDER BASE
44	1	0802914	CROSSBAR WELDMENT
45	1	0805884	TOWER WELDMENT
46	1	0805885	3RD STAGE BOOM WELDMENT
47	1	0805894	OUTER BOOM WELDMENT
48	1	0805895	2ND STAGE BOOM WELDMENT
49	2	BK2003	WEAR PAD
50	2	RB0205	SPLIT, BUSHING
--	--	0906572	KIT, WINCH CABLE STOW (NOT SHOWN)
51	2	0400265	SCREW, 5/8"-11 X 4" HEX HD CAP
52	2	0400421	NUT, 5/8"-11 NYLOK HEX
53	2	9048800	WELDLESS CHAIN LINK, 5/8"
54	2	945030007	CABLE TIE-BACK SPRING

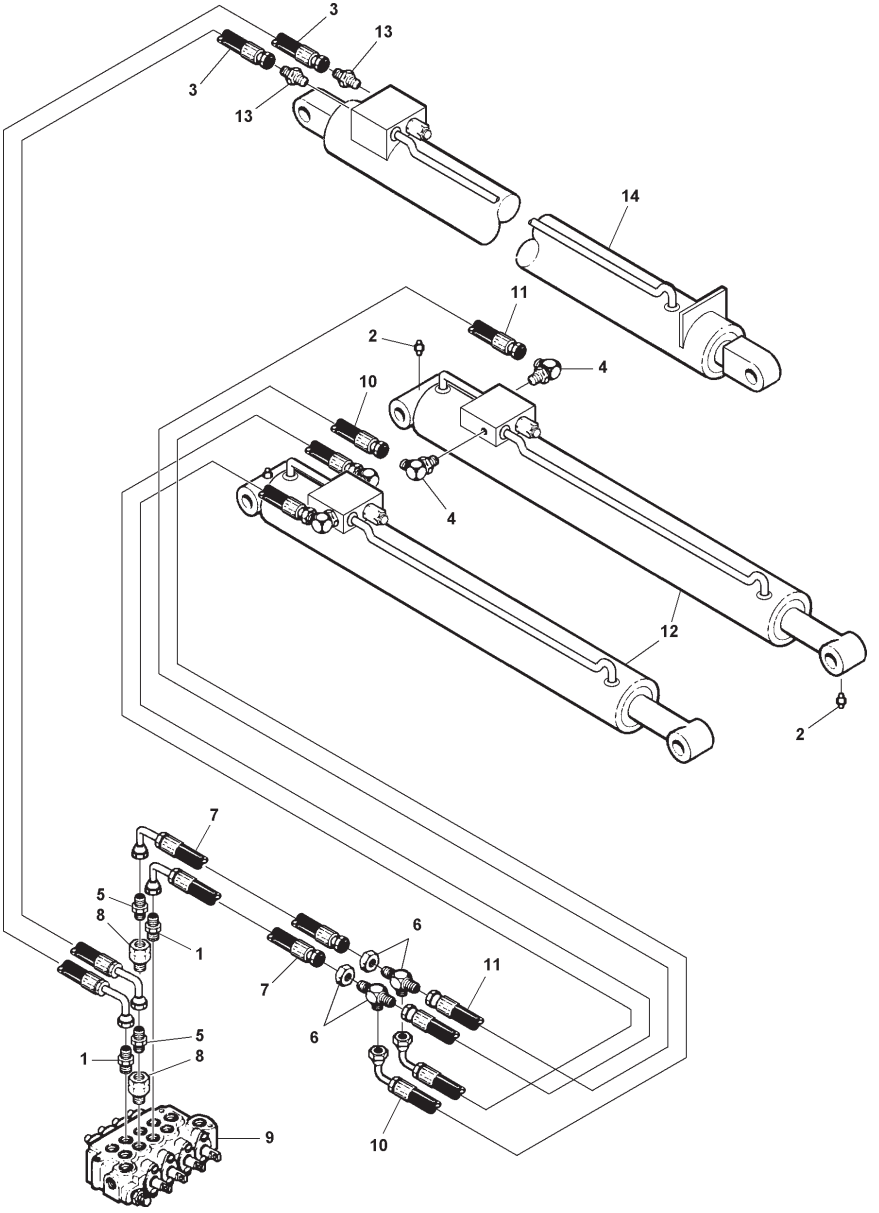
UNDERLIFT HYDRAULICS



Section VI - PARTS (cont'd)
UNDERLIFT HYDRAULICS

REF. NO.	NO. REQ'D	PART NUMBER	DESCRIPTION
1	7	0300044	CONNECTOR, 6MJ-8MB
2	1	0300142	ELBOW, 6MJ-4MP90
3	1	0300206	BRANCH TEE, 6MJ-6MJ-4MP
4	1	0301425	CONNECTOR, 6MJ-6MP
5	4	0301470	ELBOW, 6MJ-8MP90
6	2	0301473	HOSE ASSEMBLY, 18"
7	3	0301522	CONNECTOR, 6MJ-6MB
8	4	0301601	HOSE CLAMP, INSULATED 5/8"
9	2	0301620	ELBOW, 6MJ-6MB90
10	1	0301730	DOUBLE HOLDING VALVE
11	1	0301731	HOLDING VALVE
12	1	0301837	IN-LINE ORIFICE
13	1	0302000	HOSE ASSEMBLY, 24"
14	1	0302035	HOSE ASSEMBLY, 18"
15	12	0302514	ADAPTER, 8MJ-6MJ
16	6	0302548	CLAMPING UNIT
17	18	0302549	SPLIT BUSHING, 1/2"
18	6	0302551	STACKING NUT, SKT HD
19	1	0302596	HOSE ASSEMBLY, 34"
20	2	0302604	HOSE ASSEMBLY, 44"
21	2	0302605	HOSE ASSEMBLY, 44"
22	6	0302624	TUBE ASSEMBLY
23	1	0302637	HOSE ASSEMBLY, 72"
24	2	0302805	HOSE ASSEMBLY, 10"
25	1	0302812	HOSE ASSEMBLY, 108"
26	2	0302813	HOSE ASSEMBLY, 108"
27	2	0302842	TEE, 8MJ-8MJ-8MB
28	1	0302914	HOSE ASSEMBLY, 32"
29	2	0302915	HOSE ASSEMBLY, 18"
30	1	0303017	CONNECTOR, 8MB-6FB
31	1	0303094	CONTROL VALVE, VDP11CDDDC53
32	1	0303561	HOSE ASSEMBLY, 18"
33	1	0306746	FOLD CYLINDER
34	2	0307040	TILT CYLINDER
35	1	0307041	EXTEND CYLINDER
36	4	0400078	SCREW, 1/4"-20 X 2" HEX HD CAP
37	4	0400367	NUT, 1/4"-20 NYLOK HEX
38	6	0400078	SCREW, 5/16"-18 X 3/4" HEX HD CAP
39	4	0402110	WASHER, 1/4" FLAT
40	1	0703001	BRACKET, CHECK VALVE MOUNTING

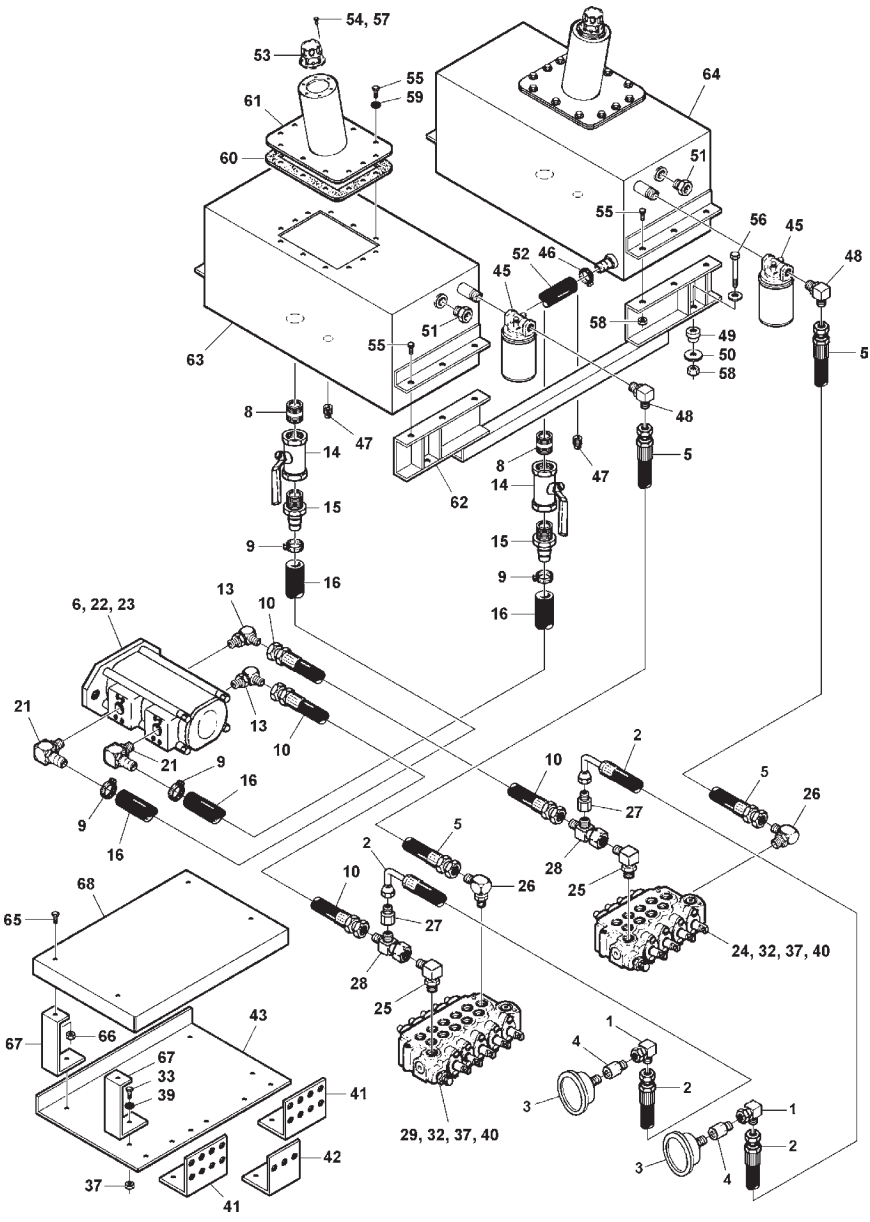
Section VI - PARTS (cont'd)
RECOVERY BOOM HYDRAULICS



Section VI - PARTS (cont'd)
RECOVERY BOOM HYDRAULICS

REF. NO.	NO. REQ'D	PART NUMBER	DESCRIPTION
1	2	0300044	CONNECTOR, 6MJ-8MB
2	4	0300113	GREASE FITTING
3	2	0301207	HOSE ASSEMBLY, 72"
4	4	0301470	ELBOW, 6MJ-8MB90
5	2	0301522	CONNECTOR, 6MJ-6MB
6	2	0302575	BULKHEAD RUN TEE W/NUT
7	2	0302585	HOSE ASSEMBLY, 54"
8	2	0303017	CONNECTOR, 8MB-6FB
9	1	0303093	CONTROL VALVE, VDP11DDDC110
10	2	0303389	HOSE ASSEMBLY, 46"
11	2	0303394	HOSE ASSEMBLY, 46"
12	2	0307012	CYLINDER, BOOM LIFT
13	2	9013020	CONNECTOR, 8MJ-6MB
14	1	915715000	CYLINDER, EXTEND

Section VI - PARTS (cont'd)
PUMP, VALVE & FILTER HYDRAULICS

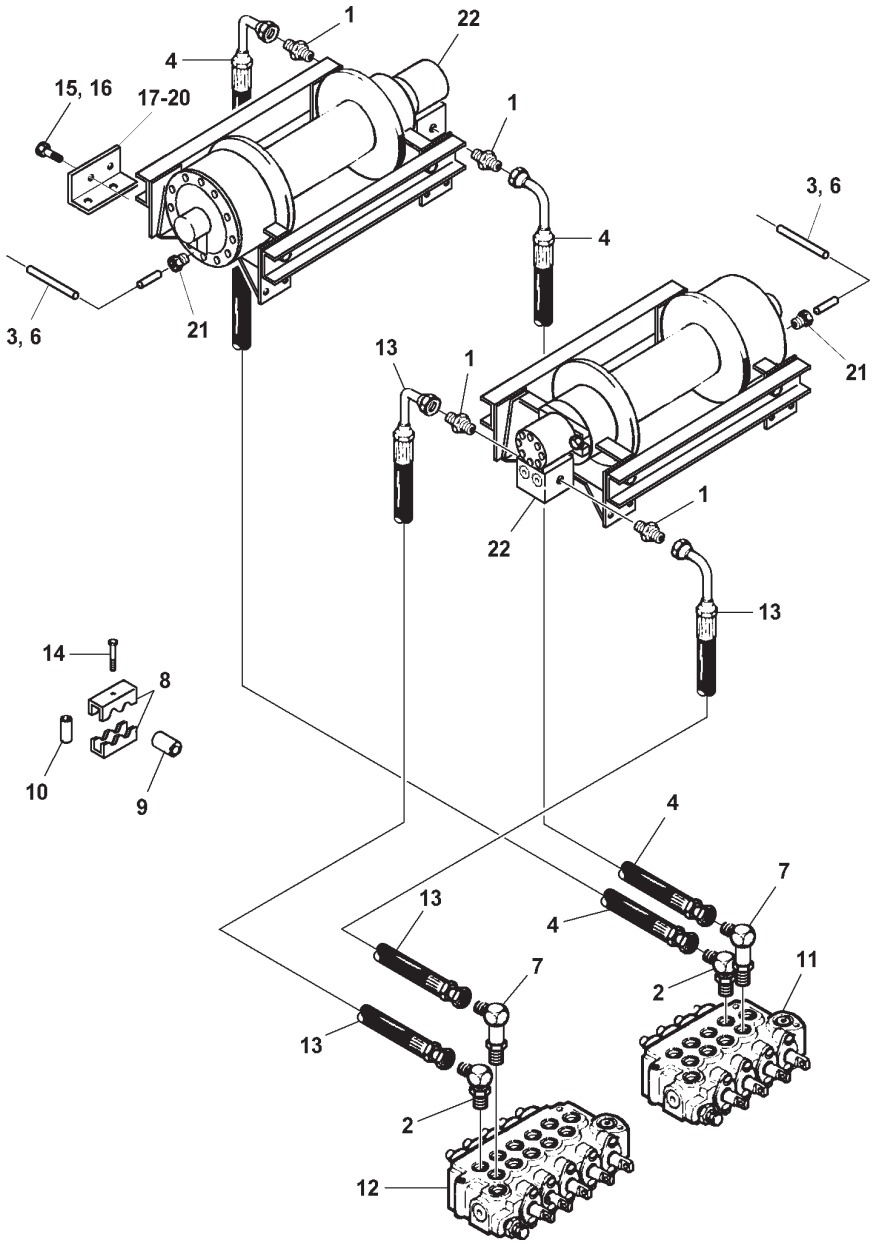


Section VI - PARTS (cont'd)
PUMP, VALVE & FILTER HYDRAULICS

REF. NO.	NO. REQ'D	PART NUMBER	DESCRIPTION
1	2	0301696	ELBOW, 6MJ-6FJX90
2	2	0301965	HOSE ASSEMBLY, 131"
3	2	0302205	GAUGE, FLUSH MOUNT 6000 PSI
4	2	0302577	CONNECTOR, 6MJ-4FP
5	2	0303392	HOSE ASSEMBLY, 73"
6	1	0303867	PUMP, BI-ROTATIONAL
7	6	0711438	HOSE BRACKET (NOT SHOWN)
--	--	0904548	PUMP KIT
8	2	0300348	PIPE NIPPLE, 1-1/2" X 5"
9	6	0300364	CLAMP HOSE, 1" - 2-1/4"
10	2	0300660	HOSE ASSEMBLY, 120"
11	2	0300865	CONNECTOR, 8MJ-8MJ (NOT SHOWN)
12	2	0301529	HOSE ASSEMBLY, 58" (NOT SHOWN)
13	2	0301547	ELBOW, 8MJ-12MB90
14	2	0302088	BALL VALVE, BRONZE
15	2	0302698	HOSE BARB, 20HOSE-20MP
16	24 FT.	0302756	SUCTION HOSE, 1-1/4"
17	2	0302906	ADAPTER, 16MB-12FB (NOT SHOWN)
18	2	0302983	STREET ELBOW, 45° 1-1/2" (NOT SHOWN)
19	12	0303290	CLAMP, 2-1/2" INSULATED (NOT SHOWN)
20	2	0303463	BUSHING, 24MP-20FP (NOT SHOWN)
21	2	0306539	HOSE BARB, 20HOSE-16MB90
22	4	0400181	SCREW, 1/2"-13 X 1-1/2" HEX HD CAP
23	4	0400491	LOCKWASHER, 1/2" HELICAL
--	--	0903536	VALVE PAN ASSEMBLY
24	1	0303093	CONTROL VALVE, VDP11DDDC110
25	2	0300052	ELBOW, 8MJ-10MB90
26	2	0301545	ELBOW, 12MJ-12MB90
27	2	0301995	STRAIGHT ADAPTER, 8FJ-6MJ
28	2	0302052	RUN TEE, 8MJ-8FJX-8MJ
29	1	0303094	CONTROL VALVE, VDP11CDDDC53
30	2	0400078	SCREW, 1/4"-20 X 2" HEX HD CAP
31	9	0400109	SCREW, 5/16"-18 X 1" HEX HD CAP
32	6	0400135	SCREW, 3/8"-16 X 4-1/2" HEX HD CAP
33	8	0400157	SCREW, 3/8"-16 X 1-3/4" HEX HD CAP
34	2	0400367	NUT, 1/4"-20 NYLOK HEX

REF. NO.	NO. REQ'D	PART NUMBER	DESCRIPTION
35	2	0400382	NUT, 5/16"-18 NYLOK HEX
36	2	0400384	NUT, 5/16"-24 NYLOK HEX
37	12	0400392	NUT, 3/8"-16 NYLOK HEX
38	2	0400451	WASHER, 1/4" FLAT
39	4	0400480	WASHER, 3/8" FLAT
40	6	0704045	SPACER, CONTROL VALVE
41	2	0711249	PLATE, CONTROL BULKHEAD
42	1	0711250	PLATE, CONTROL BULKHEAD
43	1	0711561	PLATE VALVE MOUNTING
44	1	0711696	PLATE VALVE MOUNTING
--	--	0904199	RESERVOIR ASSEMBLY
45	2	0300136	RETURN LINE FILTER ASSEMBLY
46	2	0300364	CLAMP HOSE, 1" - 2-1/4"
47	2	0300446	PIPE PLUG, 3/4" NPT MALE
48	2	0300615	ELBOW, 12MJ-12MP90
49	4	0302227	CENTER BONDED MOUNT
50	4	0302228	SPECIAL WASHER
51	2	0302570	SIGHT GAUGE
52	2.25 FT.	0302756	SUCTION HOSE, 1-1/4"
53	2	0305006	FILLER CAP
54	12	0400036	SCREW, #10-32 X 1" RD HD MACH
55	32	0400122	SCREW, 3/8"-16 X 1-1/4" HEX HD CAP
56	4	0400150	SCREW, 3/8"-16 X 2-1/2" HEX HD CAP
57	12	0400357	NUT, #10-32 NYLOK HEX
58	12	0400392	NUT, 3/8"-16 NYLOK HEX
59	24	0400482	LOCKWASHER, 3/8"HELICAL
60	2	0706114	GASKET, CLEAN OUT & FILLER COVER
61	2	0802747	FILLER PIPE WELDMENT
62	2	0803193	RESERVOIR SUPPORT WELDMENT
63	1	0803662	RESERVOIR WELDMENT, LEFT
64	1	0804109	RESERVOIR WELDMENT, RIGHT
--	--	0903547	COVER KIT
65	4	0400121	SCREW, 3/8"-16 X 3/4" HEX HD CAP
66	4	0400392	NUT, 3/8"-16 NYLOK HEX
67	4	0711321	SUPPORT, COVER
68	1	0711322	COVER, VALVE

WINCH HYDRAULICS & AIR FREE SPOOL

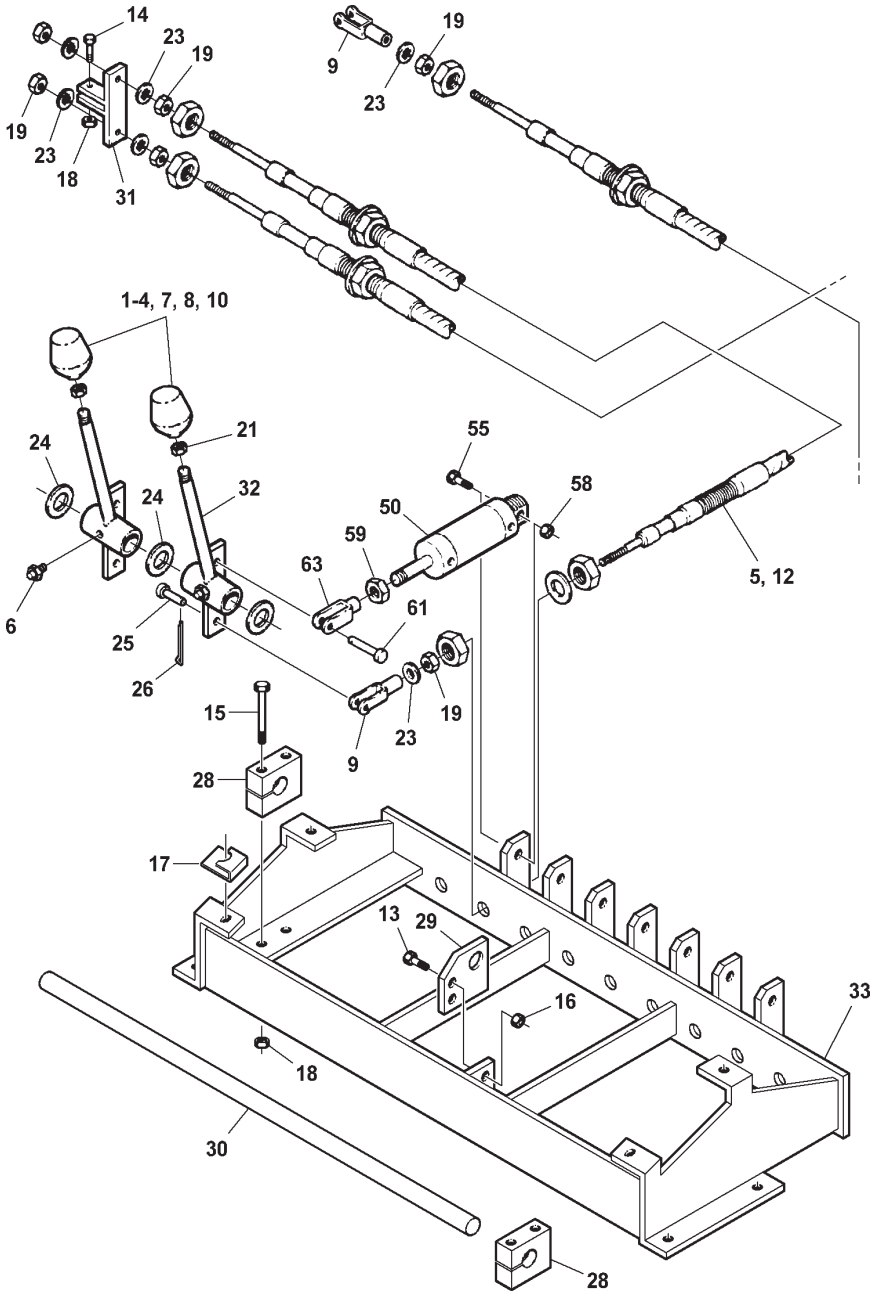


Section VI - PARTS (cont'd)
WINCH HYDRAULICS & AIR FREE SPOOL

REF. NO.	NO. REQ'D	PART NUMBER	DESCRIPTION
1	4	0300041	CONNECTOR, 8MJ-8MB
2	2	0301388	ELBOW, 8MJ-8MB90
3	40 FT.	0301577	AIR HOSE, 1/4" O.D.
4	2	0301893	HOSE ASSEMBLY, 84"
5	35	0302434	CABLE TIE, 4" (NOT SHOWN)
6	40 FT.	0302495	CONVOLUTED LOOM, 1/4"
7	2	0302508	ELBOW, 8MJ-8MB90LL
8	4	0302546	CLAMPING UNIT
9	4	0302550	SPLIT BUSHING, 3/4"
10	2	0302551	STACKING NUT, SKT HD
11	1	0303093	CONTROL VALVE, VDP11DDDC110
12	1	0303094	CONTROL VALVE, VDP11CDDDC53
13	2	0303391	HOSE ASSEMBLY, 110"
14	2	0400118	SCREW, 5/16"-18 x 3/4" HEX HD CAP
15	16	0400262	SCREW, 5/8"-11 x 2-1/2" HEX HD CAP
16	16	0400426	NUT, 5/8"-11 HEX NYLOK
17	2	0715947	ANGLE, WINCH MOUNTING
18	2	0715948	ANGLE, WINCH MOUNTING
19	2	0715949	ANGLE, WINCH MOUNTING
20	2	0715950	ANGLE, WINCH MOUNTING
21	2	9010520	ELBOW, 4TB-4MP90
22	2	9048241	WINCH, 25K DP

Section VI - PARTS (cont'd)

LEFT CONTROL ASSEMBLY



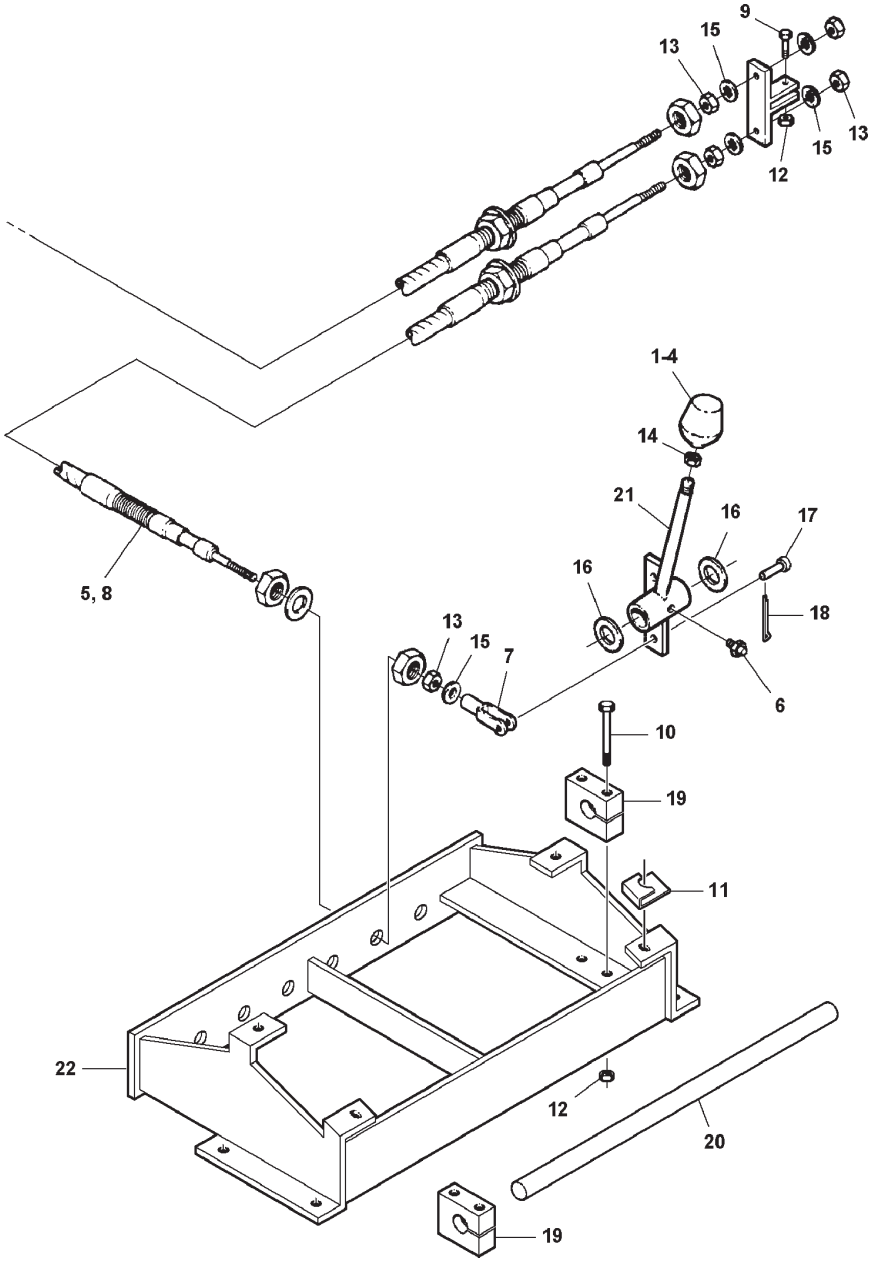
LEFT CONTROL ASSEMBLY

REF. NO.	NO. REQ'D	PART NUMBER	DESCRIPTION
1	2	0300834	CONTROL KNOB, (IN/OUT)
2	1	0300835	CONTROL KNOB, BOOM (UP/DOWN)
3	2	0300836	CONTROL KNOB, JACK (UP/DOWN)
4	1	0300837	CONTROL KNOB, BOOM (IN/OUT)
5	3	0302457	CONTROL CABLE, 104"
6	9	0302726	GREASE FITTING, 1/4"-28 X 45°
7	1	0302856	CONTROL KNOB, TILT (UP/DOWN)
8	1	0302917	CONTROL KNOB, W/L EXTEND (IN/OUT)
9	12	0303008	ADJUSTABLE CLEVIS
10	1	0303382	CONTROL KNOB, FOLD (UP/DOWN)
11	6	0303427	CONTROL CABLE, 114"
12	6	0400005	SCREW, #6-32 X 1/2" RD HD PH
13	2	0400066	SCREW, 1/4"-20 X 3/4" HEX HD CAP
14	9	0400112	SCREW, 5/16"-24 X 1-1/4" HEX HD CAP
15	4	0400107	SCREW, 5/16"-18 X 2-1/2" HEX HD CAP
16	2	0400367	NUT, 1/4"-20 HEX NYLOK
17	4	0400379	NUT, 5/16"-18 "J" TINNERMAN
18	9	0400382	NUT, 5/16"-18 HEX NYLOK
19	34	0400383	NUT, 5/16"-24 HEX
20	6	0400392	NUT, 3/8"-16 HEX NYLOK
21	9	0400393	NUT, 3/8"-16 HEX JAM
22	7	0400451	WASHER, 1/4" FLAT
23	24	0400466	WASHER, 5/16" INTERNAL TOOTH
24	9	0400512	WASHER, 3/4" FLAT (SPECIAL)
25	9	0400532	CLEVIS PIN, 5/16" X 1"
26	9	0400540	COTTER PIN, 3/32" X 1"
27	6	0402094	NUT, #6-32 HEX
28	2	0711235	CLAMP, SHAFT CONTROL BOX
29	1	0711245	PLATE, SHAFT SUPPORT
30	1	0711246	PIN, CONTROL BOX
31	6	0801054	CONTROL CABLE CONNECTOR
32	9	0803294	CONTROL HANDLE WELDMENT
33	1	0804060	LEFT CONTROL FRAME WELDMENT

REMOTE CONTROL ASSEMBLY

REF. NO.	NO. REQ'D	PART NUMBER	DESCRIPTION
--	--	--	REMOTE CONTROL ASSEMBLY
34	10 / 16	0300166	WIRE CONNECTOR, SPADE
35	1	0301574	ELBOW, 4TB-4MP90
36	15 / 25	0301577	AIR HOSE, 1/4" O.D. (FT.)
37	2 / 4	0301610	CONNECTOR, 4TB-4MP
38	2 / 3	0301618	BRASS PLUG, 4MP
39	2	0302048	CABLE SEALING GRIP
40	2	0302340	HEX PIPE BUSHING
41	1	0302431	CONVOLUTED LOOM, 3/8" X 8"
42	35 / 65	0302434	CABLE TIE, 4" 18 LB.
43	1 / 2	0302677	BREATHER VENT, 2MP
44	16 / 28	0302678	ELBOW, 4TB-2MP
45	1	0302844	AIR SOLENOID VALVE (8)
--	1	0303479	AIR SOLENOID VALVE (14)
46	1	0303226	CIRCUIT BREAKER, HI-AMP WATERPROOF
47	1 / 2	0303235	TERMINAL BLOCK
--	1	0303250	POWER PAL, 15 POSITION
48	1	0303251	POWER PAL, 8 POSITION
49	8 / 20	0303322	ELECTRICAL CABLE, 16/10 SO (FT.)
50	4 / 7	0303335	AIR CYLINDER
51	1	0303363	AIR FILTER/REGULATOR
52	1	0303364	AIR LUBRICATOR
53	1	0303365	MOUNTING BRACKET
54	2 / 4	0400025	SCREW, #8-32 X 3/4" RD HD SLOTTED
55	4 / 7	0400057	SCREW, 1/4"-20 X 1-1/4" HEX HD CAP
56	2 / 4	0400078	SCREW, 1/4"-20 X 2" HEX HD CAP
57	2 / 4	0400351	HEX NUT & STAR WASHER, #8-32
58	6 / 11	0400367	NUT, 1/4"-20 HEX NYLOK
59	4 / 7	0400401	NUT, 7/16"-20 HEX JAM
60	2 / 4	0400451	WASHER, 1/4" FLAT
61	4 / 7	0400527	CLEVIS PIN, 5/16" X 5/8" COTTERLESS
62	1	0711277	SUPPORT, SOLENOID VALVE (8)
--	1	0711836	SUPPORT, SOLENOID VALVE (14)
63	4 / 7	0803181	CLEVIS WELDMENT
64	1	HA0132	GAUGE, 0-160 PSI

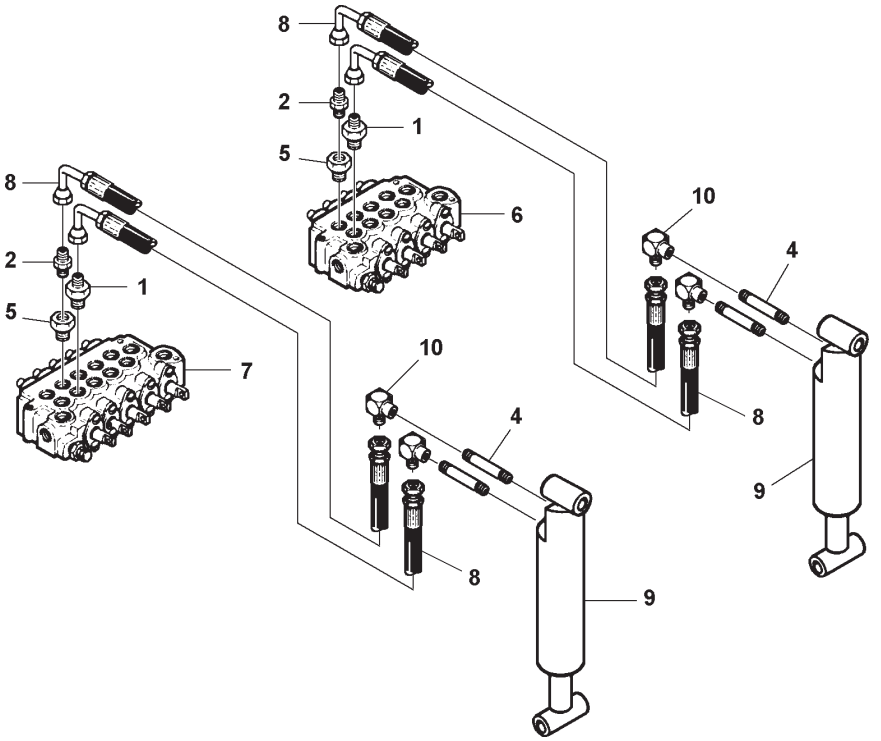
RIGHT CONTROL ASSEMBLY



Section VI - PARTS (cont'd)
RIGHT CONTROL ASSEMBLY

REF. NO.	NO. REQ'D	PART NUMBER	DESCRIPTION
1	2	0300834	CONTROL KNOB, (IN/OUT)
2	1	0300835	CONTROL KNOB, BOOM (UP/DOWN)
3	2	0300836	CONTROL KNOB, JACK (UP/DOWN)
4	1	0300837	CONTROL KNOB, BOOM (IN/OUT)
5	2	0302457	CONTROL CABLE, 104"
6	6	0302726	GREASE FITTING, 1/4"-28 X 45°
7	6	0303008	ADJUSTABLE CLEVIS
8	4	0303427	CONTROL CABLE, 114"
9	6	0400103	SCREW, 5/16"-18 X 1-1/4" HEX HD CAP
10	4	0400107	SCREW, 5/16"-18 X 2-1/2" HEX HD CAP
11	4	0400379	NUT, 5/16"-18 "J" TINNERMAN
12	10	0400382	NUT, 5/16"-18 HEX NYLOK
13	18	0400383	NUT, 5/16"-24 HEX
14	6	0400393	NUT, 3/8"-16 HEX JAM
15	18	0400466	WASHER, 5/16" INTERNAL TOOTH
16	7	0400512	WASHER, 3/4" FLAT (SPECIAL)
17	6	0400532	CLEVIS PIN, 5/16" X 1"
18	6	0400540	COTTER PIN, 3/32" X 1"
19	2	0711235	CLAMP, SHAFT CONTROL BOX
20	1	0711247	PIN, CONTROL BOX
21	6	0803294	CONTROL HANDLE WELDMENT
22	1	0804061	RIGHT CONTROL FRAME WELDMENT

Section VI - PARTS (cont'd)
REAR SPADE HYDRAULICS

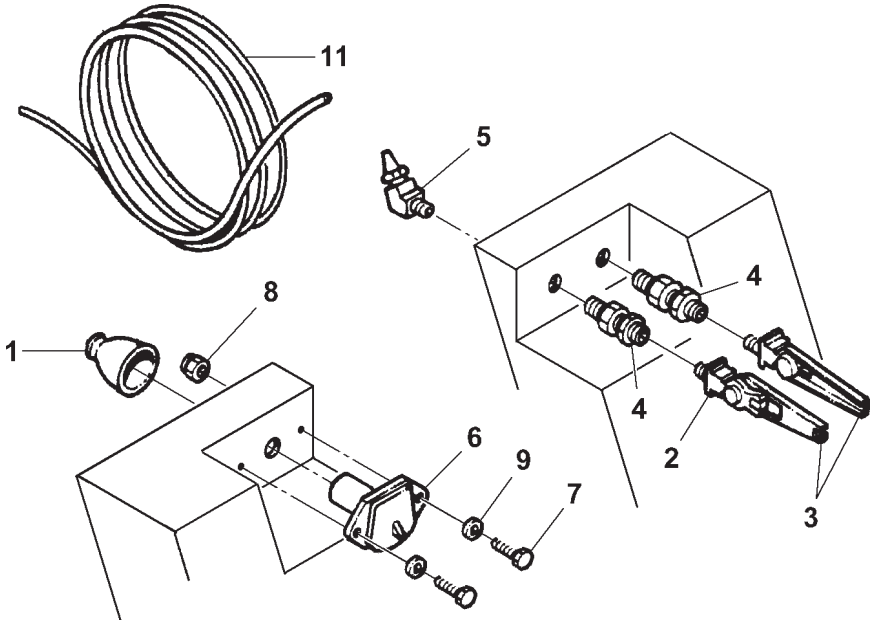


REF. NO.	NO. REQ'D	PART NUMBER	DESCRIPTION
1	2	0300044	CONNECTOR, 6MJ-8MB
2	4	0300134	HOSE CLAMP, 1" INSULATED
3	2	0301522	CONNECTOR, 6MJ-6MB
4	2	0301819	NIPPLE, BLACK PIPE, 1/2" X 4-1/2"
5	2	0303017	CONNECTOR, 8MB-6FB
6	REF.	0303093	CONTROL VALVE, VDP11DDDC110
7	REF.	0303094	CONTROL VALVE, VDP11CDDDC53
8	4	0303748	HOSE ASSEMBLY, 136"
9	2	0306647	SPADE CYLINDER
10	4	0307045	ELBOW, 6MJ-8FP90

Section VI - PARTS (cont'd)
HYDRAULIC CYLINDERS

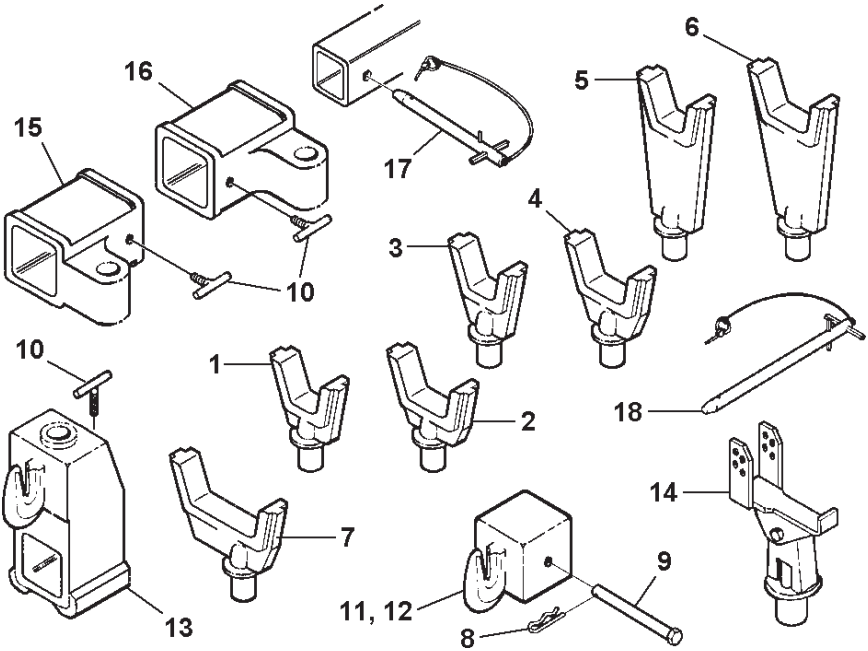
REF. NO.	NO. REQ'D	PART NUMBER	DESCRIPTION
1	2	0306747	BOOM LIFT CYLINDER (COMPLETE)
		--	SEAL KIT, BOOM LIFT CYLINDER
2	1	0306743	BOOM EXTEND CYLINDER (COMPLETE)
		--	SEAL KIT, BOOM EXTEND CYLINDER
3	2	0306745	UNDERLIFT TILT CYLINDER (COMPLETE)
		--	SEAL KIT, UNDERLIFT TILT CYLINDER
4	1	0306744	UNDERLIFT EXTEND CYLINDER (COMPLETE)
		--	SEAL KIT, UNDERIFT EXTEND CYLINDER
5	1	0306746	UNDERLIFT FOLD CYLINDER (COMPLETE)
		--	SEAL KIT, UNDERLIFT FOLD CYLINDER
6	2	0303691	REAR SPADE CYLINDER (COMPLETE)
		--	SEAL KIT, REAR SPADE CYLINDER

Section VI - PARTS (cont'd)
GLAD HAND KIT



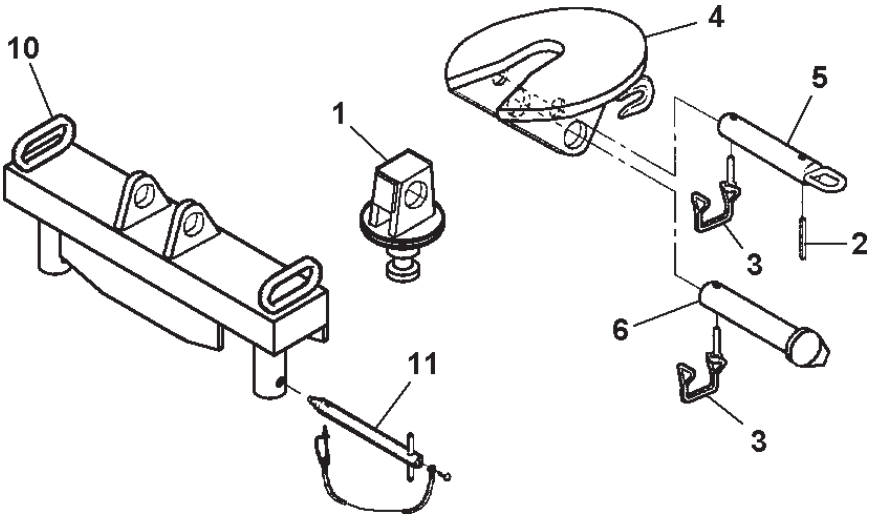
REF. NO.	NO. REQ'D	PART NUMBER	DESCRIPTION
1	1	0301909	RECEPTACLE BOOT
2	2	0301944	GLAD HAND COUPLING
3	2	0301945	GLAD HAND PLUG
4	2	0301946	BULKHEAD CONNECTOR
5	2	0301947	ADAPTER, 1/4" NPM X 3/8" SYN. HOSE
6	1	0301948	HD 7-WAY TRAILER CONNECTOR
7	2	0400070	SCREW, 1/4"-20 X 1" HEX HD CAP
8	2	0400367	NUT, 1/4"-20 HEX NYLOK
9	2	0400451	WASHER, 1/4" FLAT
10	2	0400463	WASHER, 5/16" FLAT
11	2	0703795	AIR HOSE, 3/8" X 48" SYNFLEX

Section VI - PARTS (cont'd)
LIFT ADAPTERS



REF. NO.	NO. REQ'D	PART NUMBER	DESCRIPTION
1	2	0200018	FORK, SHORT (3" OPENING)
2	2	0200019	FORK, SHORT (4-1/2" OPENING)
3	2	0200020	FORK, MEDIUM (3" OPENING)
4	2	0200021	FORK, MEDIUM (4-1/2" OPENING)
5	2	0200022	FORK, LONG (3" OPENING)
6	2	0200023	FORK, LONG (4-1/2" OPENING)
7	2	0200024	FORK, OFFSET REAR AXLE
8	2	0306564	TEE HANDLE, ALUMINUM 5/8" X 1-1/4"
9	2	0400585	HAIR PIN COTTER, 1-1/4"
10	2	0711002	BOLT, MODIFIED 5/8"-11 X 6" WITH HOLE
11	2	0800590	TEE HANDLE, FORK ADAPTER
12	1	0801186	CHAIN HOOK ADAPTER, RT
13	1	0801187	CHAIN HOOK ADAPTER, LT
14	2	0802810	PIVOT PIN LIFT BRACKET
15	1	0803591	FORK ADAPTER, LT
16	1	0803592	FORK ADAPTER, RT
17	2	0900900	RETAINER PIN ASSEMBLY
18	2	0902321	RETAINING PIN, SPRING LIFT BRACKET

Section VI - PARTS (cont'd)
KING PIN ADAPTER



REF. NO.	NO. REQ'D	PART NUMBER	DESCRIPTION
1	1	0803605	KING PIN ADAPTER WELDMENT
	--	0902782	FIFTH WHEEL ADAPTER (COMPLETE)
2	1	0400555	ROLL PIN, 3/8" X 1-1/2"
3	2	HD1259	SNAPPER PIN
4	1	VA0660	FIFTH WHEEL PIVOT PLATE WELDMENT
5	1	VA0661	PULL PIN WELDMENT
6	1	VA0662	PIVOT PIN WELDMENT
	--	124002211	PINTLE HOOK KIT (COMPLETE)
7	1	0302198	PINTLE HOOK (NOT SHOWN)
8	4	0400176	SCREW, 1/2"-13 X 1" HEX HD CAP
9	4	0400491	LOCKWASHER, 1/2" HELICAL
10	1	0803604	5TH WHEEL, KING PIN ADAPTER & PINTLE HOOK BRACKET WELDMENT
11	2	0902378	RETAINING PIN ASSEMBLY

Section VI - PARTS (cont'd)
MODULAR WIRING KIT

REF. NO.	NO. REQ'D	PART NUMBER	DESCRIPTION
1	50	0300153	CONNECTOR,WIRE (BLUE 7520)
2	12	0300154	CONNECTOR,WIRE (YELL 7530)
3	35	0301503	10 RING CONN.
4	1	0301812	HEAT SHRINK TUBE-IN.MELT (BLACK)
5	75	0302433	CABLE TIE, 7-50 LB
6	50	0302664	ADHESIVE BACK TIE MOUNT
7	1	0302853	WIRING HARNESS LT 5030T
8	1	0302854	WIRING HARNESS RT 5030T
9	9	0302872	FEMALE TERMINAL
10	1	0302874	CONNECTOR, 6 WAY MALE
11	1	0302875	CONNECTOR, 6 WAY FEMALE
12	3	0303385	JUNCTION BOX, 10 POLE
13	6	0303584	GROUND WIRE
14	1	0303586	3 POS. TOWER (FEMALE)
15	1	0303587	3 POS. SHROUD (MALE)
16	9	0303770	CABLE SEAL, BLUE
17	12	0400070	SCREW, 1/4"-20 X 1" HEX HD CAP
18	12	0400367	NUT, 1/4"-20 NYLOK HEX
19	1	0903069	KIT, BACK UP ALARM
20	10	GV57	RUBBER GROMMET

Section VI - PARTS (cont'd)
MODULAR LIGHT KIT

REF. NO.	NO. REQ'D	PART NUMBER	DESCRIPTION
1	1	0300076	BRACKET, LICENSE PLATE
2	10	0300117	RUBBER GROMMET
3	1	0300273	LICENSE PLATE ILLUMINATOR
4	1	0300442	3-LIGHT BAR ASSEMBLY
5	16 FT.	0300844	CLOSED CELL SPONGE, 3/4" X 1/8"
6	24	0301503	10 RING CONN.
7	1-1/2	0301812	HEAT SHRINK TUBE-IN.MELT (BLACK)
8	4	0302201	BACK-UP LIGHT
9	18	0302544	DOME LIGHT, M 390S
10	2	0302611	MARKER LIGHT, AMBER
11	2	0306778	TAIL LIGHT, LEFT
12	2	0306779	TAIL LIGHT, RIGHT
13	24	0400014	SCREW, #8-32 X 1" RD HD PHL MCH
14	54	0400043	SCREW, #10-24 X 1" OVAL HD PHL MCH
15	66	0400045	SCREW, #10-24 X 1/2" THRD CUT RD HD SS

Section VII - INSTALLATION

7.1 SWITCH PANEL & PTO SHIFTER INSTALLATION

The Switch Panel (0302690) is generally located beside the driver's seat or in the overhead console, and controls the light bar, flood lights, auxiliary lights, control station lights, and lower work lights. Refer to Figure 3.2. The air shift PTO control knob and indicator light are generally located on dash panel in cab. Refer to Figure 4.1.

(a) Attach switch panel wiring harness (0302746). Refer to electrical schematic & switch panel wiring, pages VIII-1 & VIII-2.

(b) Install fittings from PTO kit to PTO shifter valve. Install nylon tubing to fittings on valve. See Figure 7.1.

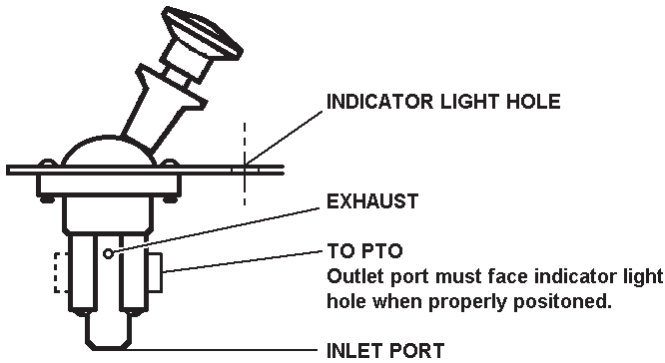


FIGURE 7.1

(c) Install PTO shifter valve in dash panel.

(d) Thread electrical harness and nylon tubing through holes drilled in cab floor and mount switch panel to floor using six (6) 1/4"-20 x 2-1/4" slotted head screws and nylon lock nuts from switch panel kit.

(e) Install pressure protection valve at air supply point (air tank). See PTO instructions. Install tee fitting (furnished by customer) in outlet port of pressure protection valve.

Section VII - INSTALLATION (cont'd)

7.1 SWITCH PANEL & PTO SHIFTER INSTALLATION (cont'd)

(f) Install nylon tubing from inlet port on PTO shifter to tee fitting at pressure protection valve. (NOTE: Other side of tee fitting is connected to wrecker winch air shifter cylinders.)

(g) Connect outlet line from PTO shifter valve to PTO after PTO is installed.

7.2 PTO INSTALLATION

(a) Drain transmission oil.

(b) Disengage PTO (gears should turn freely).

(c) Install PTO to truck transmission with supplied gasket and stud kit. Refer to PTO Owner's Manual for proper installation procedures. (Ideally, PTO should be mounted to transmission so that pump, when mounted to PTO, is rear of truck cab.

7.3 PUMP INSTALLATION

Mount pump to PTO in a position which allows pump fittings to be horizontal (parallel with ground). Secure with hardware furnished in PTO kit.

7.4 PREPARATION OF TRUCK FRAME

Before installing body mounting angles, check the area from the cab rearward for any obstructions that would interfere with the installation of the body.

Section VII - INSTALLATION (cont'd)

7.4 PREPARATION OF TRUCK FRAME (cont'd)

CAUTION

RELOCATING EXHAUST SYSTEM COMPONENTS, ELECTRICAL COMPONENTS, BRAKING SYSTEM COMPONENTS, AND/OR FUEL SYSTEM COMPONENTS MUST BE PERFORMED BY QUALIFIED PERSONS ONLY!

ALL MODIFICATIONS COVERED BY FEDERAL AND STATE SAFETY CODES MUST BE CERTIFIED AFTER THE MODIFICATION IS COMPLETED.

(a) Cut chassis frame rails as shown in Figure 7.2.

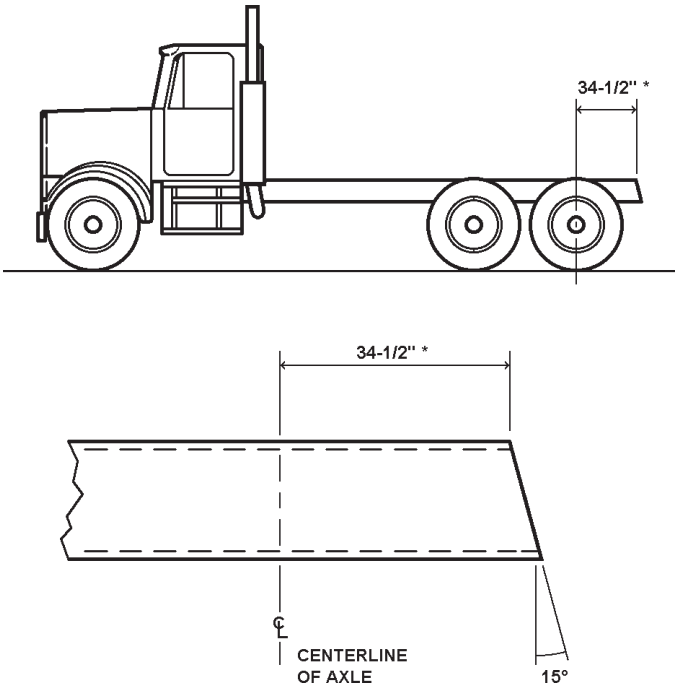


FIGURE 7.2

Section VII - INSTALLATION (cont'd)

7.4 PREPARATION OF TRUCK FRAME (cont'd)

(b) Notch frame rails as shown in Figure 7.3.

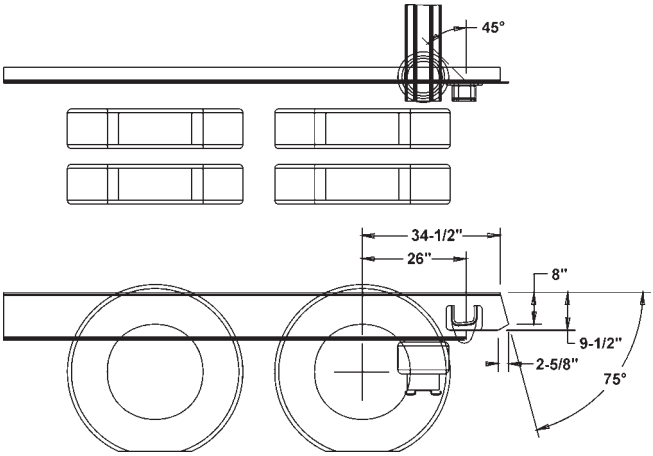


FIGURE 7.3

7.5 MOUNTING PLATE INSTALLATION

(a) Clamp mounting plates to chassis frame as shown in Figure 7.4.

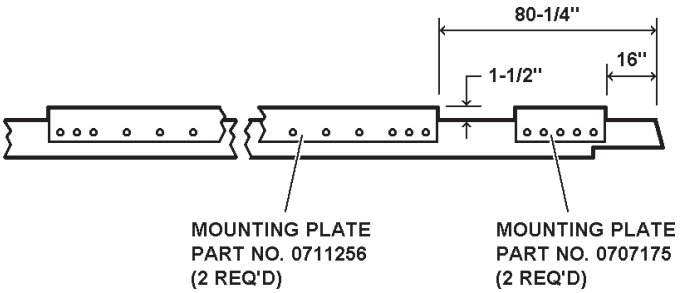


FIGURE 7.4

(b) Using holes in the mounting plates as a guide, drill the chassis frame for 3/4" mounting bolts.

Section VII - INSTALLATION (cont'd)

7.5 MOUNTING PLATE INSTALLATION

NOTE
ALL EXISTING CROSSMEMBER BOLTS MUST BE REPLACED IN THEIR ORIGINAL LOCATIONS.

⚠ CAUTION

DO NOT WELD PLATES TO CHASSIS FRAME RAILS! D.O.T. REGULATIONS PROHIBIT ANY WELDING TO CHASSIS FRAME.

NOTE
IT MAY BE NECESSARY TO NOTCH MOUNTING PLATES TO CLEAR SPRING HANGERS AND OTHER UNMOVABLE OBJECTS.

(c) Attach mounting plates to frame using 3/4"-10 x 2-1/2" Grade 8 mounting bolts and nylon lock nuts from body mounting hardware kit.

7.6 TAILGATE MOUNTING ANGLE INSTALLATION

(a) Securely clamp tailgate mounting angles to the outside of each chassis frame rail. Make sure the horizontal leg of each angle is facing out. See Figure 7.5.

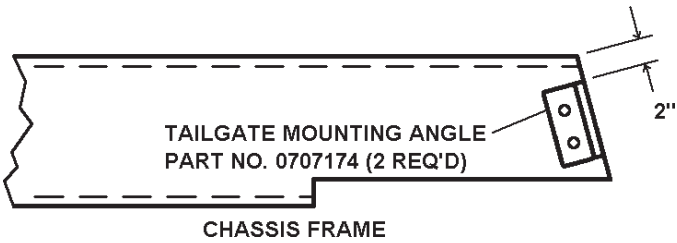


FIGURE 7.5

Section VII - INSTALLATION (cont'd)

7.6 TAILGATE MOUNTING ANGLE INSTALLATION (cont'd)

(b) Using holes in tailgate mounting angles as a guide, drill chassis frame for 3/4" mounting bolts.

CAUTION

DO NOT WELD ANGLES TO CHASSIS FRAME RAILS!
D.O.T. REGULATIONS PROHIBIT ANY WELDING TO CHASSIS FRAME.

(c) Attach tailgate mounting angles to frame using 3/4"-10 x 2-1/2" Grade 8 mounting bolts and nylon lock nuts from body mounting hardware kit.

7.7 WRECKER ASSEMBLY INSTALLATION

(a) Identify the following wires in the truck cab wiring harness:

1. Running Lights
2. Back-Up Lights
3. Right Turn & Stop Light
4. Left Turn & Stop Light

If possible, cut the wires long enough to connect directly to the junction box in left tool compartment.

(b) Using a suitable lifting device, position the wrecker assembly on the chassis frame. Lift front of sub-frame sufficiently to ensure that sub-frame is flat on chassis frame at rear, and that tailgate mounting angles are against tailgate. Weld tailgate mounting angles to the tailgate with a continuous weld.

(c) Lower front of sub-frame until it rests flat on chassis frame between mounting plates. If sub-frame is not flat on chassis frame, proceed as follows:

Section VII - INSTALLATION (cont'd)

7.7 WRECKER ASSEMBLY INSTALLATION (cont'd)

1. Take a hydraulic jack and weld a U-shaped piece of steel to the pad on the ram. This may be removed from jack after installation, if desired.

2. Place the jack on top of sub-frame at the center of the mounting plate and secure in place with a chain that completely encircles the sub-frame and chassis frame. Fasten securely. See Figure 7.6. Extend jack until the wrecker sub-frame rests completely on the chassis frame. Weld the wrecker sub-frame to the mounting plate with a continuous weld. Repeat this procedure on the opposite side of chassis. NOTE: If the chassis width is wider than the wrecker sub-frame, shims may be added between the mounting plates and sub-frame. Add symmetrically to both sides.

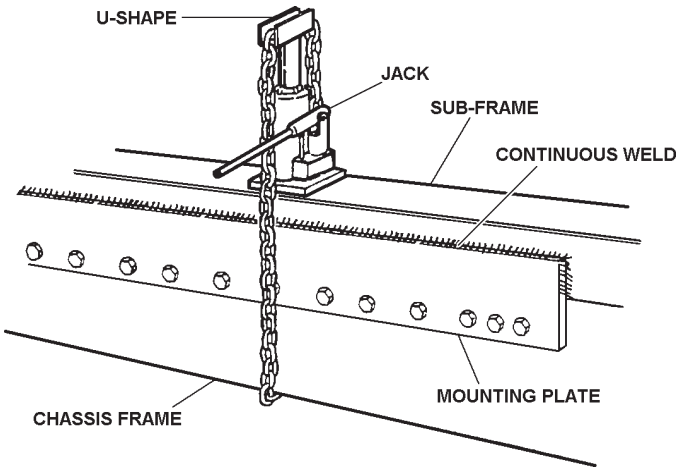


FIGURE 7.6

(d) Using holes in sub-frame as a guide, drill two holes through each side of chassis at rear in front of tailgate mounting angles. Attach tailgate with 3/4"-10 x 2-1/2" Grade 8 mounting bolts and nylon lock nuts. See Figure 7.7.

Section VII - INSTALLATION (cont'd)

7.7 WRECKER ASSEMBLY INSTALLATION (cont'd)

FIGURE 7.7

7.8 HYDRAULIC HOSE HOOK-UP

Refer to Pump, Valve, and Filter Hydraulics, page VI-16 and Hydraulic Schematic, page VIII-4.

(a) Install hydraulic fittings from pump kit to hydraulic pump. Flanged fittings and hose barbs attach to suction side of pump. Threaded elbows attach to pressure or output side. Fittings should be installed so they are horizontal or parallel to the ground. Fittings must be tight to prevent oil leakage.

(b) Attach 1-1/2" suction hoses from hose barbs on bottom of oil reservoir to barbed fittings on the pump. Use hose clamps supplied in pump kit.

(c) Attach two pressure hose assemblies from control valves to the threaded fittings on pressure side of pump. Fittings must be tight to prevent oil leakage.

(d) Fill the hydraulic reservoir with hydraulic oil selected from Section 5.4 (a), Summary Of Required Lubricants, page V-3, until the oil level is in the center of the sight gauge on the reservoir.

Section VII - INSTALLATION (cont'd)

7.9 WINCH AIR SHIFTER

Connect nylon line from winch air shifter cylinders to tee fitting at pressure protection valve at air supply point.

7.10 AIR CONTROL MANIFOLD

Connect nylon line from air regulator, located in left rear control compartment, to tee fitting at pressure protection valve at the air supply point. Set air pressure at the regulator to 50-60 pounds. Refer to Section 5.7, Filter / Regulator Operation And Service, pages V-6 and V-7.

NOTE
SECURE ALL LINES AND HOSES TO FRAME WITH CLAMPS AND NYLON TIES.

7.11 WIRING HOOK-UP

(a) Complete wiring hook-ups between truck cab and wrecker body. Holes are provided in the left front of the wrecker body for the wiring harness to pass through. Wires are then attached to the proper locations in the junction boxes located in the left front tool compartment. Refer to Electrical Schematic, page VIII-1.

(b) Mount light bar assembly, if applicable. It may be necessary to add another hole in body to accommodate light bar wiring harness.

7.12 GLAD HAND HOOK-UP

The wrecker assembly is furnished with glad hand and electrical receptacles installed in the tailgate. It is the customers responsibility to attach these units to the truck air and electrical systems.

7.13 INSTALLATION CHECK

Check all installation points for completeness and correct assembly.

(a) Mounting plates to chassis frame and wrecker sub-frame.
(b) Hydraulic and air line hook-ups. Oil in reservoir.
(c) Wiring harness hook-up. Check light operation.

Section VII - INSTALLATION (cont'd)

7.14 WINCH CABLE INSTALLATION

Installation is now complete except for winch cable installation.

CAUTION

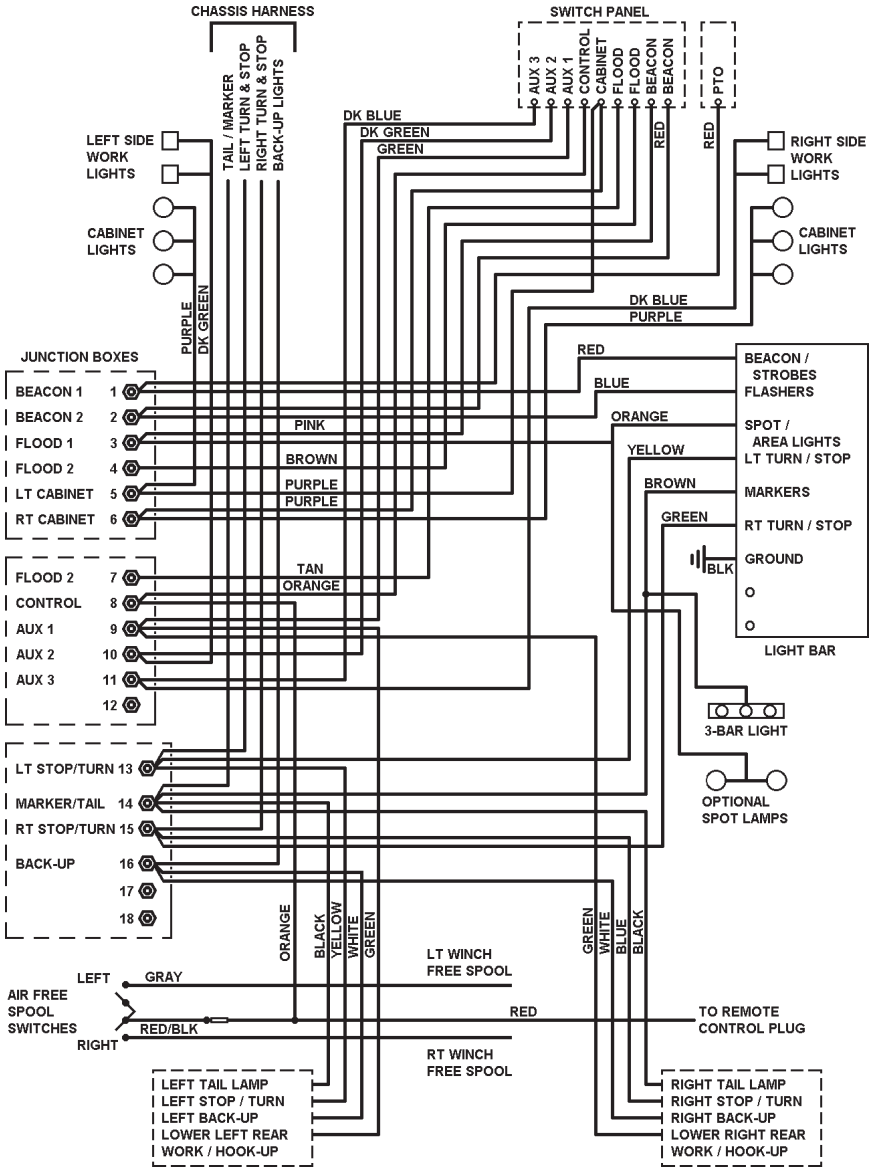
DO NOT COMPLETE THIS STEP UNTIL YOU STUDY SECTION III - OPERATIONAL FUNCTIONS AND SECTION IV - OPERATING INSTRUCTIONS.

AFTER BECOMING THOROUGHLY FAMILIAR WITH ALL OPERATIONS, PROCEED WITH WINCH CABLE INSTALLATION.

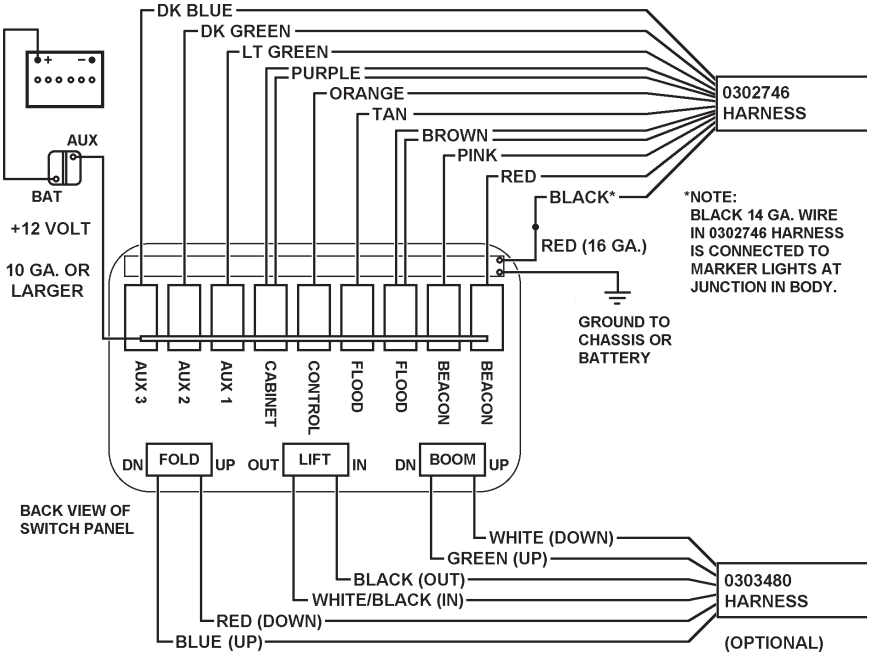
(a) Thread ends of wire rope through boom end swivels and attach to winch drums with fasteners provided. Left wire rope to rear winch and right wire rope to front winch. NOTE: Wire rope winds in on bottom side of winch drums and should be wound on drums under load so cable will be tight on drums. Operate winches from controls at left rear control station.

(b) Attach cable hooks to spring loaded loops on tower when not in use.

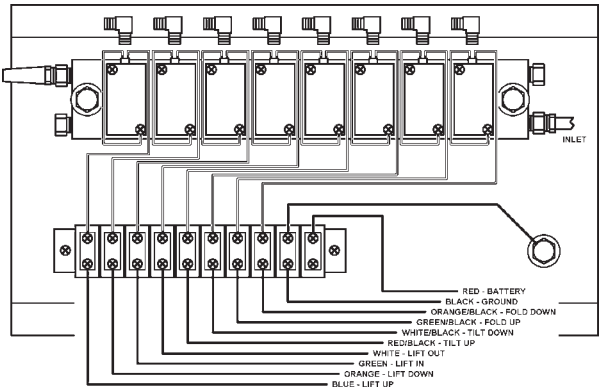
Section VIII - SCHEMATICS
ELECTRICAL



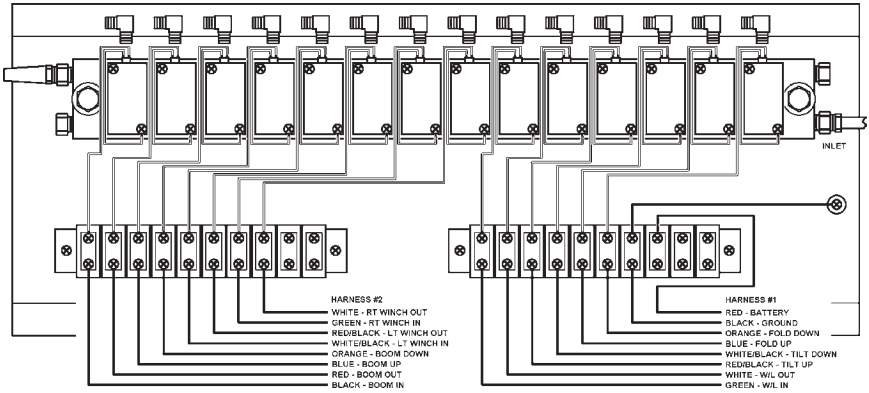
Section VIII - SCHEMATICS (cont'd)
SWITCH PANEL WIRING



Section VIII - SCHEMATICS (cont'd)
REMOTE CONTROL ELECTRICAL

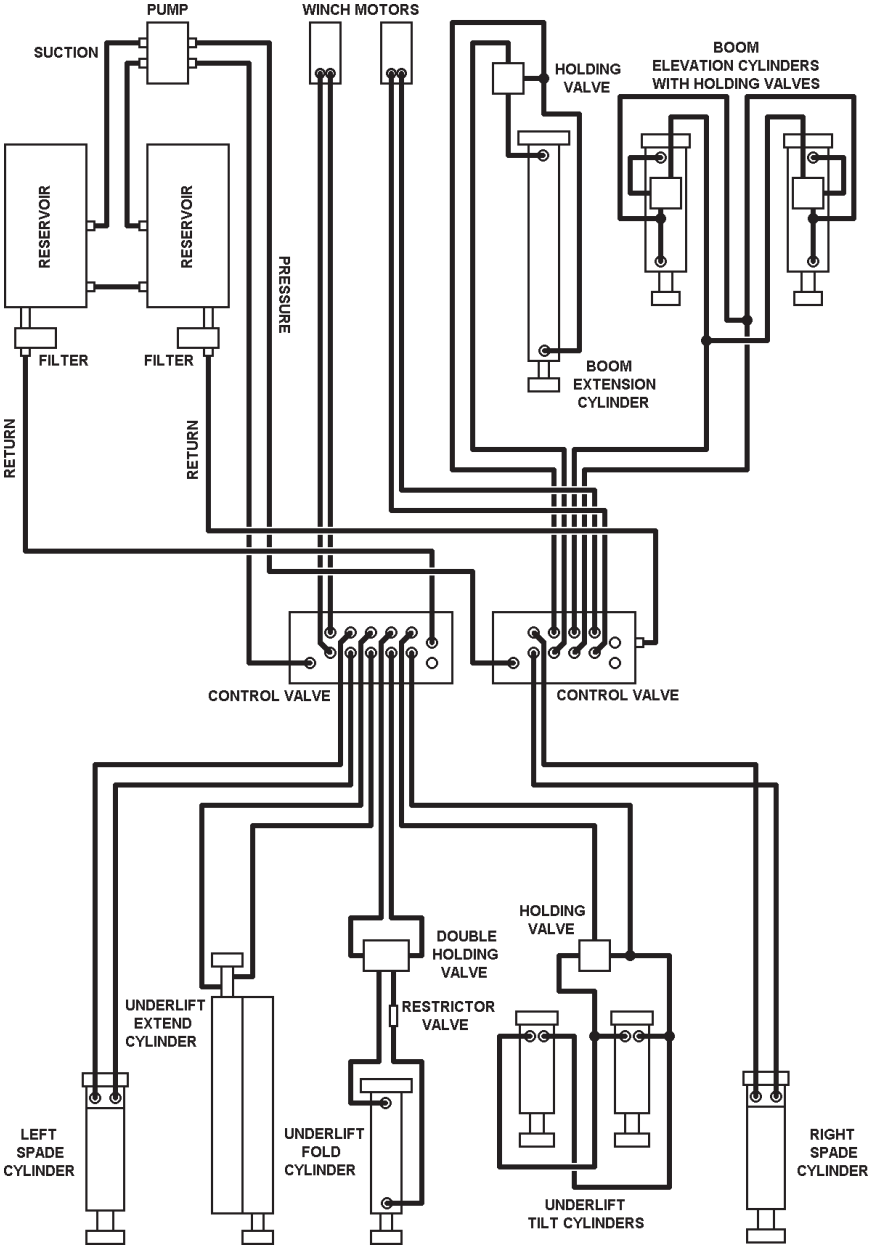


8-POSITION POWER PAL



15-POSITION POWER PAL

Section VIII - SCHEMATICS (cont'd)
HYDRAULIC



NOTES

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