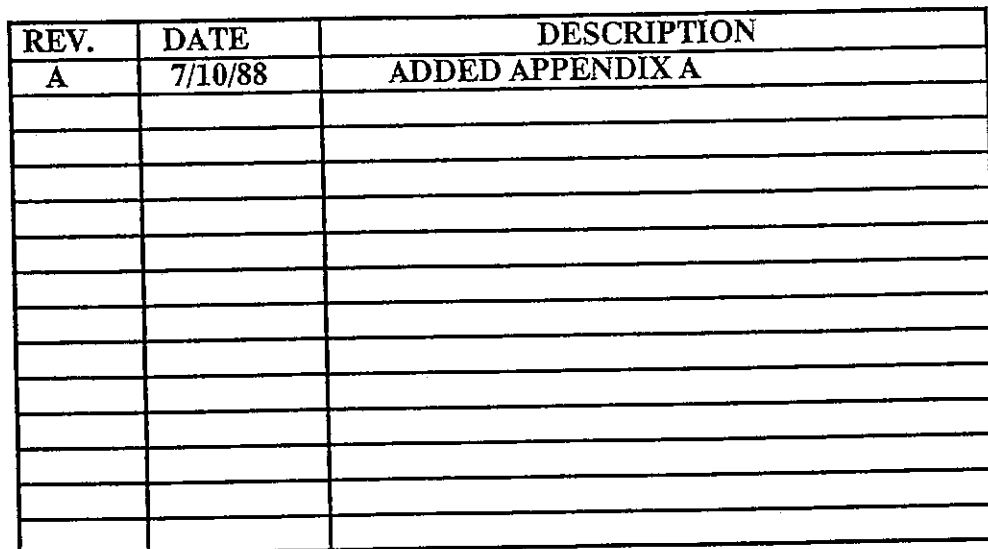


# INSTALLATION RECORDS

06/88





1. The first part of the document is a list of the names of the persons who have been appointed to the various offices of the city government. The names are listed in alphabetical order, and each name is followed by the name of the office to which the person has been appointed.

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THE WARRANTY CARD IS LOCATED AT THE BACK OF THIS MANUAL. THE WARRANTY CARD MUST BE FILLED OUT AND RETURNED WITHIN 15 DAYS OF THE PURCHASE DATE OF THE EQUIPMENT.





Remember. . .  
Quality is  
always a bargain!

# **1 INTRODUCTION**

---

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

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

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

LANDOLL CORPORATION  
SALES & SERVICE  
1700 MAY STREET  
MARYSVILLE, KS 66508

OR PHONE:  
(785)562-5381  
1-800-HAULOLL  
(1-800-428- 5655)  
FAX NO.: (785) 562-4893

THE LANDOLL SUPERDUTY LOADOLL IS A QUALITY PRODUCT DESIGNED TO GIVE YEARS OF TROUBLE-FREE PERFORMANCE. BY FOLLOWING EACH SECTION OF THIS MANUAL, YOUR UNIT WILL LOOK AND PERFORM AS DESIGNED FOR YOU AND YOUR BUSINESS.



## 2 SAFETY PRECAUTIONS

---



THIS SAFETY ALERT SYMBOL INDICATES IMPORTANT SAFETY MESSAGES IN THIS MANUAL. WHEN YOU SEE THIS SYMBOL, READ AND STUDY THE MESSAGE THAT FOLLOWS FOR YOUR PERSONAL SAFETY BEFORE BEGINNING TO INSTALL THE LOADOLL KIT, SAFETY INSPECT, FUNCTION TEST, OR OPERATE YOUR SUPERDUTY LOADOLL. BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY OR DEATH.

DIESEL AND GASOLINE FUELS ARE TOXIC AND FLAMMABLE. SKIN AND EYE PROTECTION IS REQUIRED. GOOD GENERAL VENTILATION IS NORMALLY ADEQUATE. CAP ALL OPEN FUEL CONTAINERS AND FUEL SYSTEMS. CATCH AND CONTAIN ALL SPILLAGE IN AN APPROVED FUEL CONTAINER. KEEP ALL FUELS AWAY FROM OPEN FLAME, SPARKS, FRICTION, AND OTHER IGNITION SOURCES. FAILURE TO PROPERLY HANDLE AND STORE FUEL MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

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

ENGINE EXHAUST PRODUCES HEAT, AND TOXIC FUMES. USE AN EXHAUST EVACUATION SYSTEM WHEN OPERATING INSIDE ENCLOSED AREAS. FAILURE TO PROVIDE ADEQUATE VENTILATION WILL CAUSE SERIOUS ILLNESS OR DEATH. DIRECT CONTACT WITH ANY EXHAUST SYSTEM MAY CAUSE SERIOUS PERSONAL INJURY.

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

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

SERIOUS INJURY OR DEATH MAY RESULT IF YOU ARE UNDER, IN FRONT OF, OR BEHIND: THE BED, SUB-FRAME, REAR BUMPER, OR CHASSIS AT ANY TIME DURING OPERATION OF THE LOADOLL. THE SUB FRAME CAN MOVE BACK 24 INCHES AND THE BED CAN TRAVEL BACK AN ADDITIONAL 90 INCHES. ANY OBJECT IN THE SAME AREAS MAY BE DAMAGED, OR CAUSE DAMAGE TO THE LOADOLL.

READ AND STUDY THE CONTROLS AND OPERATION SECTION OF THIS MANUAL BEFORE ATTEMPTING TO OPERATE THE LOADOLL. IMPROPER OPERATION OF THE LOADOLL COULD RESULT IN PERSONAL INJURY OR DEATH.

THE LOADOLL COULD ROLL DURING OPERATIONS. SECURE THE LOADOLL FROM ROLLING BY BLOCKING FRONT AND BACK OF EACH WHEEL TO PREVENT ROLLING.

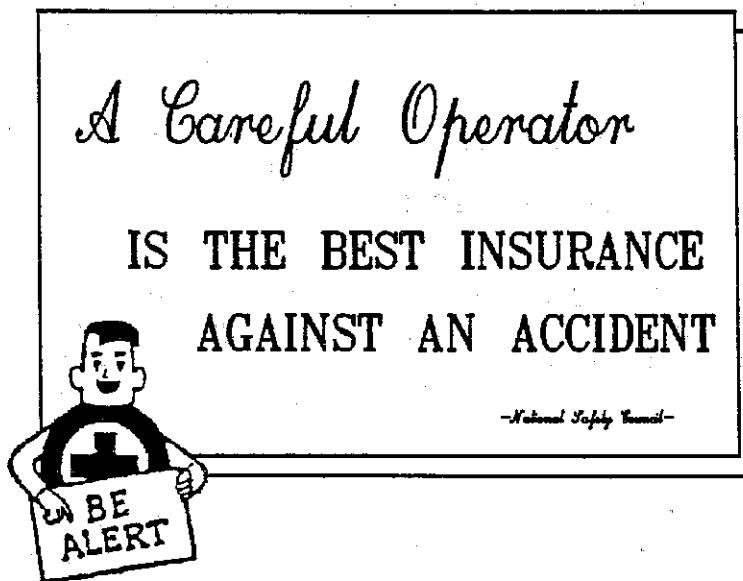
THE SUB-FRAME CAN ROLL BACK UNTIL THE BUMPER CONTACTS THE GROUND. ANYTHING UNDER THE BUMPER WILL BE PINNED IF THIS SHOULD HAPPEN. SECURE THE SUB-FRAME BY INSTALLING JACK STANDS UNDER THE REAR BUMPER UNTIL THE HYDRAULICS ARE FUNCTIONAL.

HIGH PRESSURE HYDRAULIC FLUID CAN PENETRATE CLOTHING, SKIN, MUSCLE, AND ENTER THE BLOOD STREAM, WHICH IS FATAL! HYDRAULIC PRESSURES OF 2,000 PSI OR MORE ARE DEVELOPED IN THIS SYSTEM.

FUEL VAPORS ARE COMBUSTIBLE BY SPARKS DUE TO FRICTION. WHEN SLIDING THE BED ON, WATCH ALL COMPONENTS UNDER THE BED FOR CLEARANCE PROBLEMS. THE BED SLIDE CHANNEL MUST CLEAR THE FUEL FILLER TUBES WITHOUT CONTACT. THE FRONT OF THE BED MUST CLEAR THE FUEL FILLER CAPS. FILLER NECK DISASSEMBLY MAY BE REQUIRED DURING BED INSTALLATION OR REMOVAL.

THE INSTRUCTIONS IN THIS MANUAL ARE FOR THE DRIVERS SIDE CONTROLS ONLY. CONTROLS FOR THE OPTIONAL CURB SIDE CONTROL WILL OPERATE THE LOADOLL FUNCTIONS IN THE OPPOSITE DIRECTION AS THE DRIVERS SIDE CONTROLS. READ THE CONTROL PLACARD CAREFULLY FOR FUNCTION AND DIRECTION BEFORE OPERATING.

THE TRUCK TRANSMISSION MUST BE IN NEUTRAL AND THE PARKING BRAKE APPLIED WHEN OPERATING THE PTO.



### **3 STANDARD SPECIFICATIONS**








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<b>SPECIFICATION:</b>	<b>17' BED</b>	<b>19' BED</b>
<b>CAB TO AXLE</b> .....	<b>.114"</b>	<b>.129"</b>
<b>BED LENGTH</b> .....	<b>.17'</b>	<b>.19'</b>
<b>HEIGHT (overall without emergency light bar)</b> .....	<b>.78"</b>	<b>.78"</b>
<b>LOAD HEIGHT</b> .....	<b>.41"</b>	<b>.41"</b>
<b>LOAD ANGLE</b> .....	<b>.11°</b>	<b>.11°</b>
<b>BED WIDTH</b> .....	<b>.7' 6"</b>	<b>.8'-0"</b>
<b>BED CAPACITY</b> .....	<b>.7,000#</b>	<b>.7,000#</b>
<b>TOW-BAR OPTION CAPACITY</b> .....	<b>.1,500#</b>	<b>.1,500#</b>
<b>WINCH, WORM GEAR CAPACITY</b> .....	<b>.8,000#</b>	<b>.8,000#</b>
<b>HYDRAULIC RESERVOIR CAPACITY</b> .....	<b>.8 GAL</b>	<b>.8 GAL</b>
<b>HYDRAULIC SYSTEM (reservoir, components, &amp; plumbing)</b> .....	<b>.10 GAL</b>	<b>.10 GAL</b>
<b>WEIGHT (of kit only, add your chassis weight for total)</b> .....	<b>.2,600#</b>	<b>.2,800#</b>

# GENERAL TORQUE SPECIFICATION TABLE (REVISED 9-87)

USE THE FOLLOWING TORQUES WHEN SPECIAL TORQUES ARE NOT GIVEN.

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

SAE Grade No.		2				5				8 *			
Bolt head identification marks as per grade NOTE: Manufacturing Marks will vary.						  				  			
		Torque				Torque				Torque			
Bolt Size		Foot Pounds		Newton-Meters		Foot Pounds		Newton-Meters		Foot Pounds		Newton-Meters	
Inches	Millimeters	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1/4	6.35	5	6	7	9	9	11	12	15	12	15	16	20
5/16	7.94	10	12	14	16	17	20	23	28	24	29	32	39
3/8	9.53	20	23	27	31	35	42	48	57	45	54	61	73
7/16	11.11	30	35	41	47	54	64	73	87	70	84	95	114
1/2	12.70	45	52	61	70	80	96	108	130	110	132	149	179
9/16	14.29	65	75	88	102	110	132	149	179	160	192	217	260
5/8	15.88	95	105	129	142	150	180	203	244	220	264	298	358
3/4	19.05	150	185	203	250	270	324	366	439	380	456	516	618
7/8	22.23	160	200	217	271	400	480	542	651	600	720	814	976
1	25.40	250	300	339	406	580	696	786	944	900	1080	1220	1464
1-1/8	25.58					800	880	1085	1193	1280	1440	1736	1953
1-1/4	31.75					1120	1240	1519	1681	1820	2000	2468	2712
1-3/8	34.93					1460	1680	1980	2278	2380	2720	3227	3688
1-1/2	38.10					1940	2200	2631	2983	3160	3560	4285	4827

• Thick nuts must be used with Grade 8 bolts

\* Thick nuts must be used with Grade 8 bolts

NOTE: When hardware is plated, reduce torque values by 25%

When locknuts are used, increase torque value by 25%

When plated hardware is used w/locknuts, use torque value in chart

FIG. 3-1 STANDARD BOLT TORQUES

## 4 KIT INSTALLATION

---

### PREFACE:

This manual has been written for the installation of a LOADOLL kit onto a Ford Super Duty truck. If the kit is being installed on an earlier model, minor adaptations may be necessary to accommodate your chassis. Any modification of the LOADOLL kit as designed by LANDOLL CORPORATION may affect performance, operation, AND SAFETY!

The LOADOLL kit is designed to be installed on an 84-inch cab to axle chassis. If you have a 60-inch cab to axle truck, the truck must be stretched to 84-inch cab to axle before proceeding. The LANDOLL LOADOLL stretch kit contains components to stretch your 84-inch cab- to-axle chassis to 114 inches cab-to-axle for the 17' bed, or 129" for the 19' bed. Landoll's stretch kit consists of: a welded frame assembly (containing the hydraulic oil reservoir), a drive shaft extension, brake line extensions, an emergency brake cable extension, and an exhaust extension. Also included is the necessary electrical wiring extensions.

The LANDOLL LOADOLL is a quality product designed to give years of trouble-free performance. By following each step of Section 4 in this manual, your unit will look and perform as designed for you and your business.

Section 4 is divided into the following sections:		PAGE NO.
4-1	CHASSIS INSPECTION .....	4-2
4-2	CHASSIS MODIFICATION .....	4-4
4-3	SUB-FRAME INSTALLATION .....	4-12
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4-21	INSPECTION AND TESTING .....	4-42

## TOOLS AND SUPPLIES REQUIRED FOR INSTALLATION:

1. TIRE PRESSURE GAUGE
2. BASIC SET OF HAND TOOLS
3. TAPE MEASURE
4. PLASTIC TARP
5. FIRE EXTINGUISHER (suitable to be used on fuels)
6. APPROVED, PROPERLY LABELED FUEL CONTAINER
7. FRAMING SQUARE
8. (6) ADJUSTABLE JACK STANDS
9. CUTTING TORCH
10. PORTABLE HAND GRINDER
11. WELDER AND SAFETY SUPPLIES FOR WELDING
12. E-7018 WELDING ROD OR EQUIVALENT WIRE
13. CLAMPS
14. BLACK PAINT
15. ELECTRICAL WIRING PLIERS/TERMINAL CRIMPER
16. TWIST DRILL AND BITS (1/8" through 3/4")
17. POP RIVET GUN
18. MEANS TO LIFT 670 LB. SUB-FRAME AND POSITION ON TRUCK FRAME
19. MEANS TO LIFT AND SLIDE THE 1050 LB. BED ONTO THE SUB-FRAME
20. 10 GALLON HYDRAULIC OIL (AMOCO RYCON MV or equivalent)

**\*\*\*NOTE: ALL WELDING MUST BE DONE IN ACCORDANCE WITH THE AMERICAN WELDING STANDARD (AWS) D1.1 USING E-7018 WELDING ROD OR EQUIVALENT WIRE.**

### 4-1 CHASSIS INSPECTION

4-1.1 Position chassis on a solid, level work area.

4-1.2 INSPECT THE CHASSIS TIRES FOR THE FOLLOWING CONDITIONS:

a. All tires on the same axle must be of the same size.

b. All tires are properly inflated to the recommended pressures. All tires of the same axle must have equal pressures.

4-1.3 INSPECT THE CHASSIS FRAME AS FOLLOWS:

a. Check both frame rails and all frame cross members for visible damages. Any frame damage must be corrected before modification begins.

b. Check the frame for being square. Measure frame diagonally from the front of one side to the back of the other side. Locate measurements off of cross member rivets. (See FIG. 4-1) Record both diagonal measurements below. Both measurements must be within 1/4" of each other.

Diagonal A \_\_\_\_\_ inches.

Diagonal B \_\_\_\_\_ inches.

c. Check the frame height (ride height). Measure the distance between the frame and the ground on each side of the chassis at 3 check points; (A) just in front of the front axle, (B) 12 inches behind the cab, and (C) just behind the back mounting bracket of the rear axle springs. The measurement of both frames at the same check point must be within 1/4" of each other. (See FIG. 4-1)

d. If any of the above frame checks fail, have the chassis checked and corrected by a qualified chassis technician before proceeding.



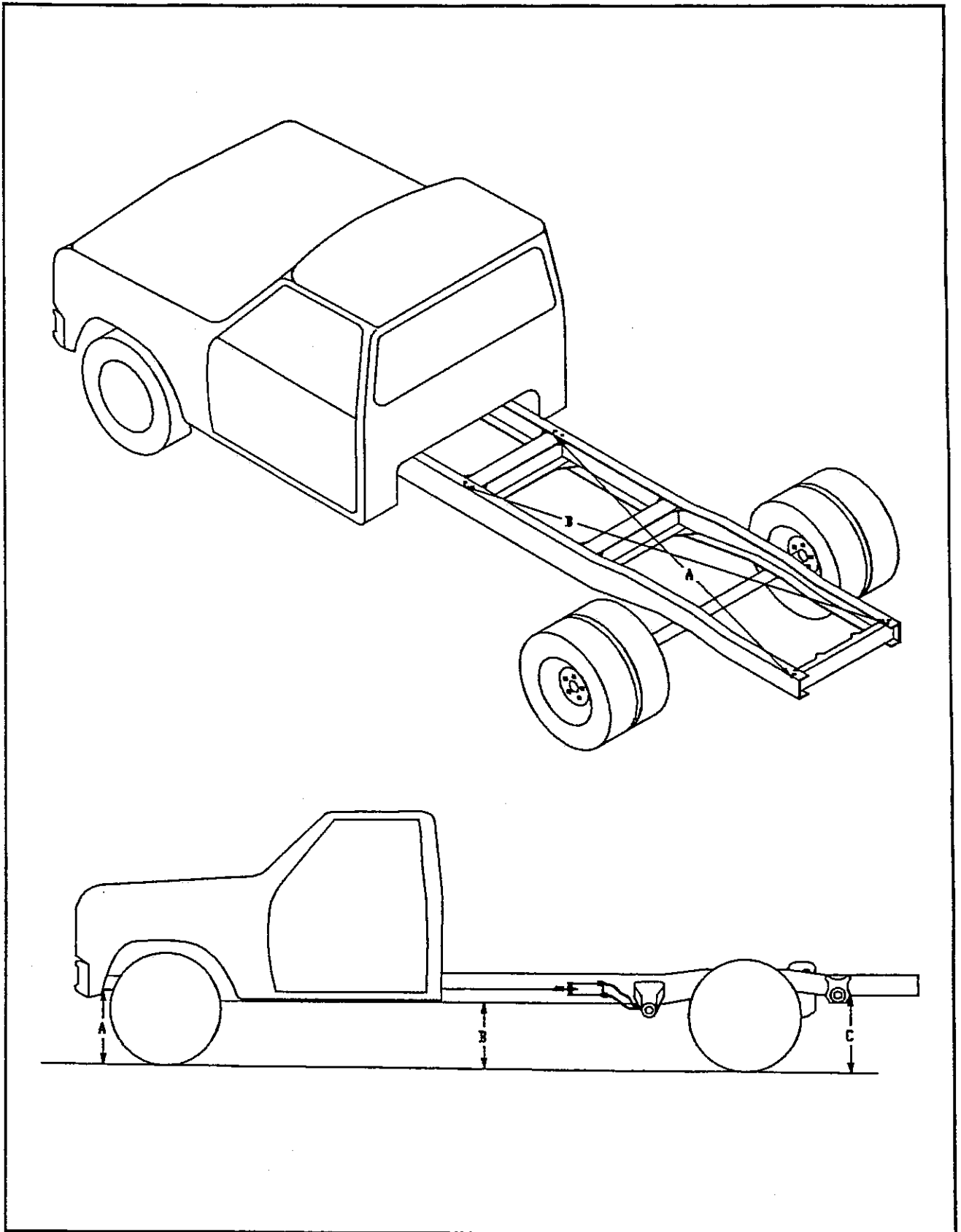
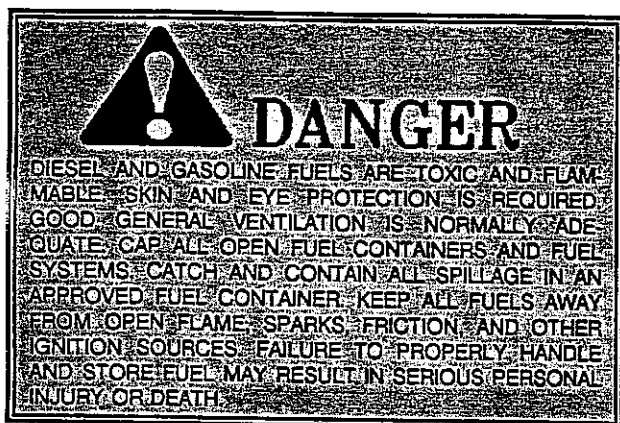


FIG. 4-1 CHECKING FRAME SQUARENESS AND RIDE HEIGHT

## 4-2 CHASSIS MODIFICATION



4-2.1 Disconnect fuel tank lines from the fuel switching unit. The fuel switching unit is underneath the cab on the driver's side frame. **PLUG OPEN FUEL LINES and SWITCH PORTS.**

4-2.2 Disconnect fuel lines from the fuel tank. Disconnect electrical plug at fuel tank and plug tank openings.

4-2.3 Remove the fuel line and discard them. The lines will be replaced with neoprene fuel hose later.

4-2.4 Remove fuel tanks and store in a safe place to prevent a chance of a fire or explosion.

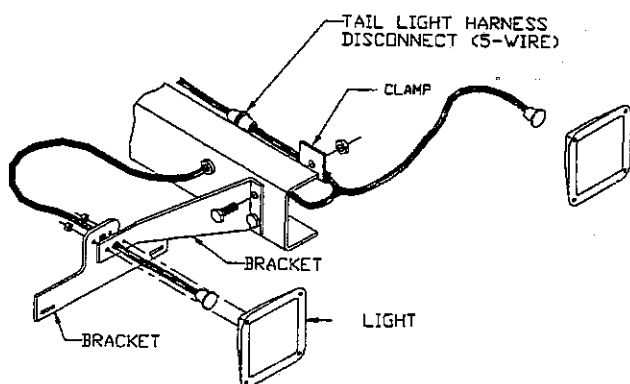


FIG. 4-2 TAIL LIGHT HARNESS DISCONNECT

4-2.5 Unplug the chassis wiring harness from the tail light harness at the 5 wire disconnect. The disconnect is located in the left hand frame at the rear cross member. (See FIG. 4-2)

4-2.6 Remove wiring harness from the rear of the frame up to the back of cab and tuck it under the cab to protect it.

4-2.7 Unplug the rear lighting harness from the tail lights. Unbolt tail lights from the brackets mounted on the truck frame. Store lights and wiring for use later. (See FIG. 4-2)

4-2.8 Unbolt exhaust pipe at flange located 11" behind cab. This flange is in front of the muffler. (See FIG. 4-3)

4-2.9 Unbolt the drive shaft at the differential.

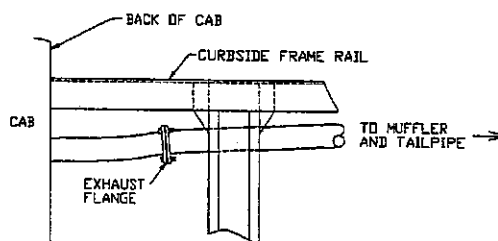


FIG. 4-3 EXHAUST FLANGE DISCONNECT

Place tape around U-joint to keep it clean and to keep the U-joint caps on. (See FIG. 4-4)

4-2.10 Loosen seal nut on end of slip yoke. Remove rear drive shaft by pulling it apart at the slip joint. Label as "rear drive shaft" and store for re-installation later. (See FIG. 4-4)

4-2.11 Unbolt drive line carrier bearing from frame member.

4-2.12 Unbolt the drive shaft U-joint from the transmission and tape this U-joint also. Label it to identify it as the front drive shaft. Store it for re-installation later. (See FIG. 4-4)

4-2.13 Unscrew brake line union behind back of cab. Cap open ends and bend front section of brake line around toward cab so that all of the brake line is 10" or closer to the cab. Be careful not to kink the line. (See FIG. 4-5)

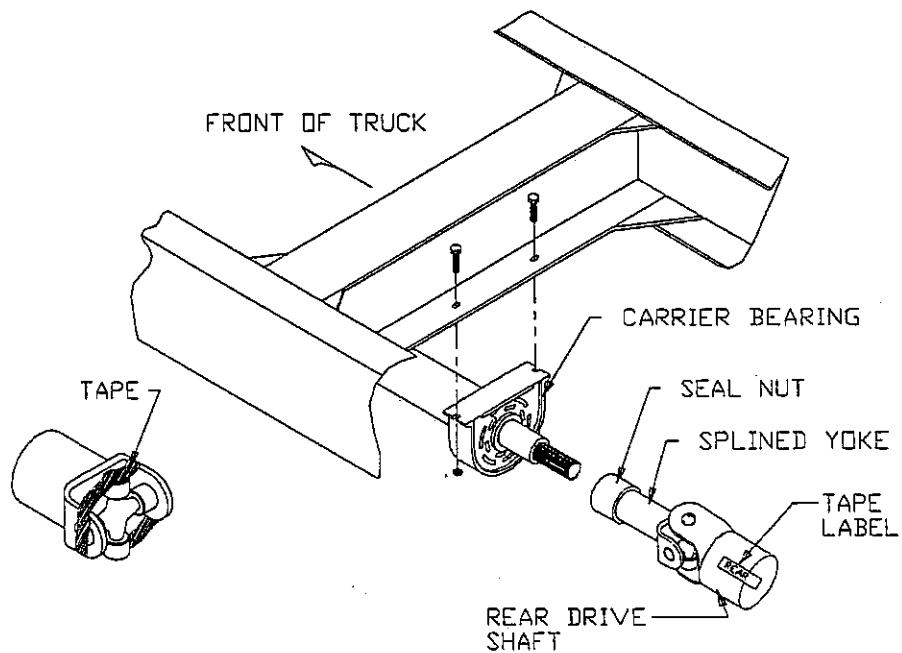
4-2.14 Place plastic over the top of cab covering back and sides to protect from welding sparks.

4-2.15 Place support stands underneath both frame members, 5" to 8" behind the back of the cab. Adjust until they support the frame without lifting the frame. (See FIG. 4-6)

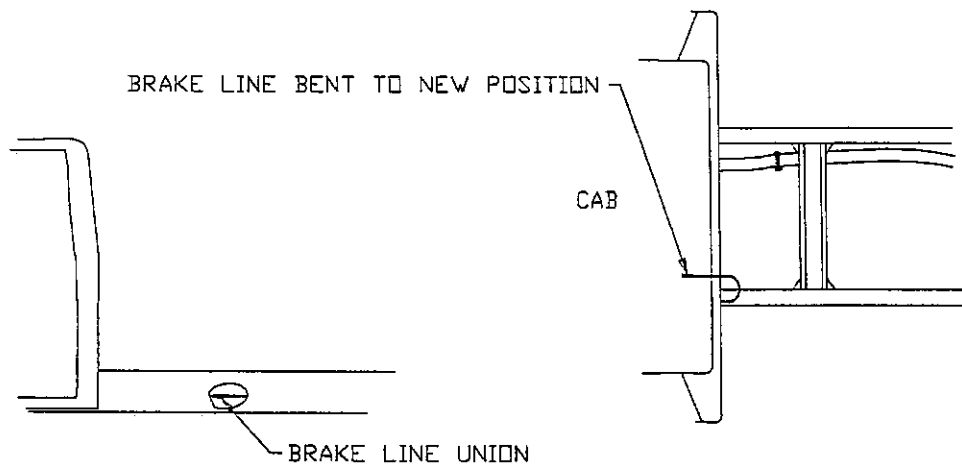
4-2.16 Place support stands under both frames four feet behind cab to support frame. Adjust stands until they support the frame without lifting the frame. (See FIG. 4-6)

4-2.17 Using a chisel, accurately mark both frame

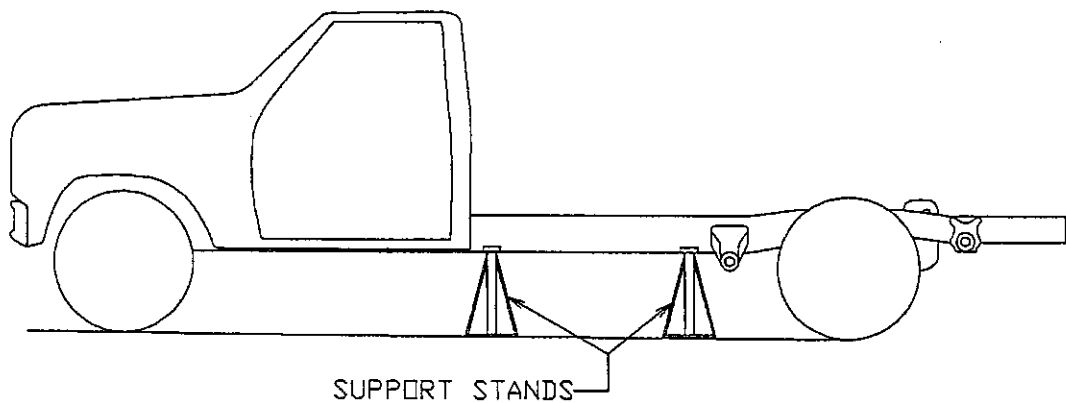




**FIG. 4-4 DISCONNECT DRIVE LINE CARRIER BEARING**



**FIG. 4-5 REPOSITIONING BRAKE LINE**



**FIG. 4-6 SUPPORTING PARK STAND LOCATIONS**

4-2.17 Using a chisel, accurately mark both frame rails at 10" and 14" behind the cab. These are reference points to use after stretching the frame. (See FIG. 4-7)

4-2.18 Remove paint and mark one frame rail 12" behind cab. Use a square to mark the other frame rail at the same point. The cab does not always set on the frame square. (See FIG. 4-8)

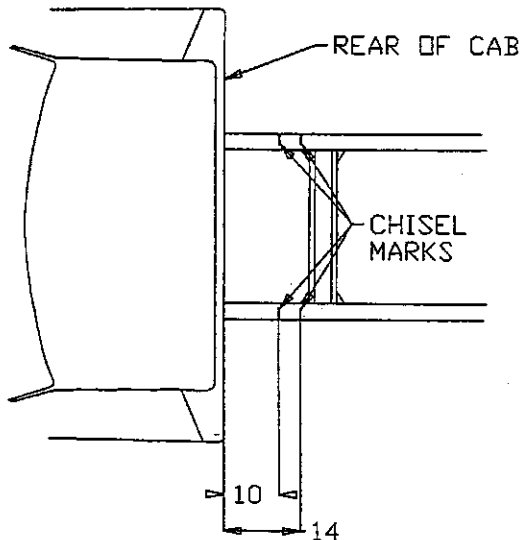
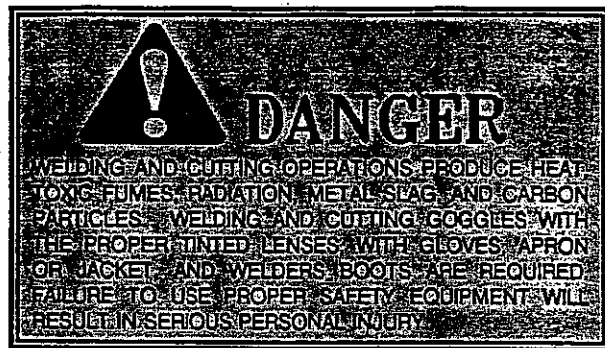


FIG. 4-7 FRAME REFERENCE POINTS



4-2.19 Measure the distance from the ground to the top of the frame at the 12" mark. Record this measurement for future reference. \_\_\_\_\_ inches. (See FIG. 4-8)

4-2.20 Cut the truck frame on the 12" mark behind the cab. Use a guide to make a straight square cut.

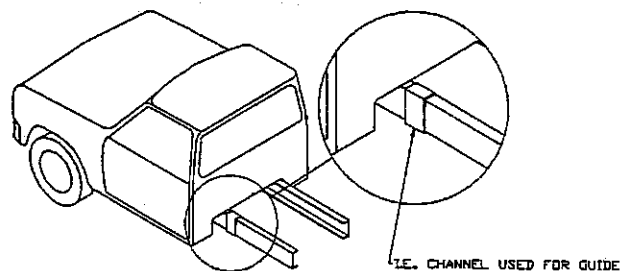


FIG. 4-9 USING A CUTTING GUIDE

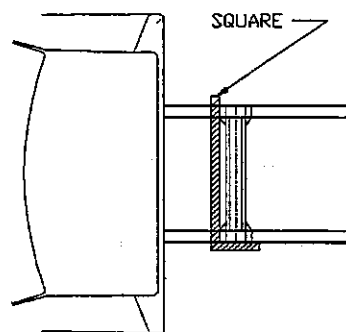
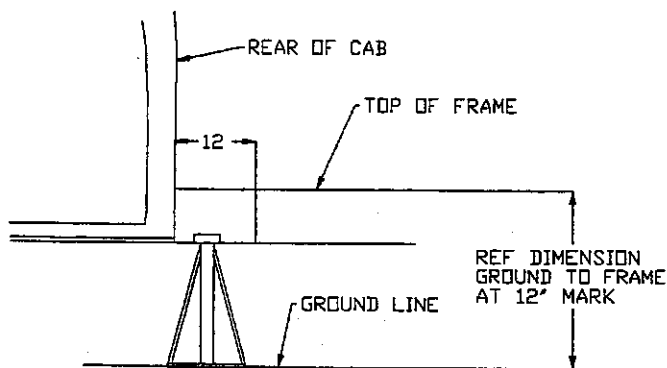
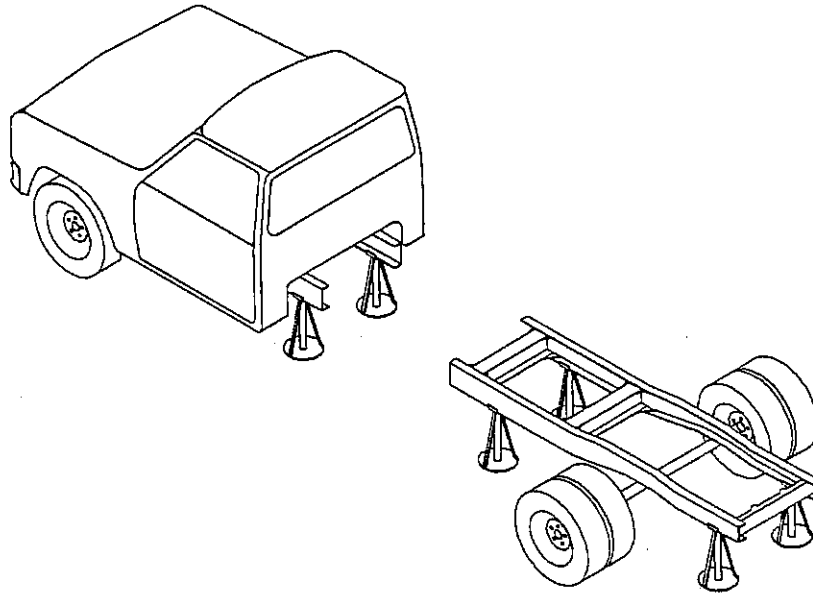


FIG. 4-8 MARKING FRAME FOR CUTTING

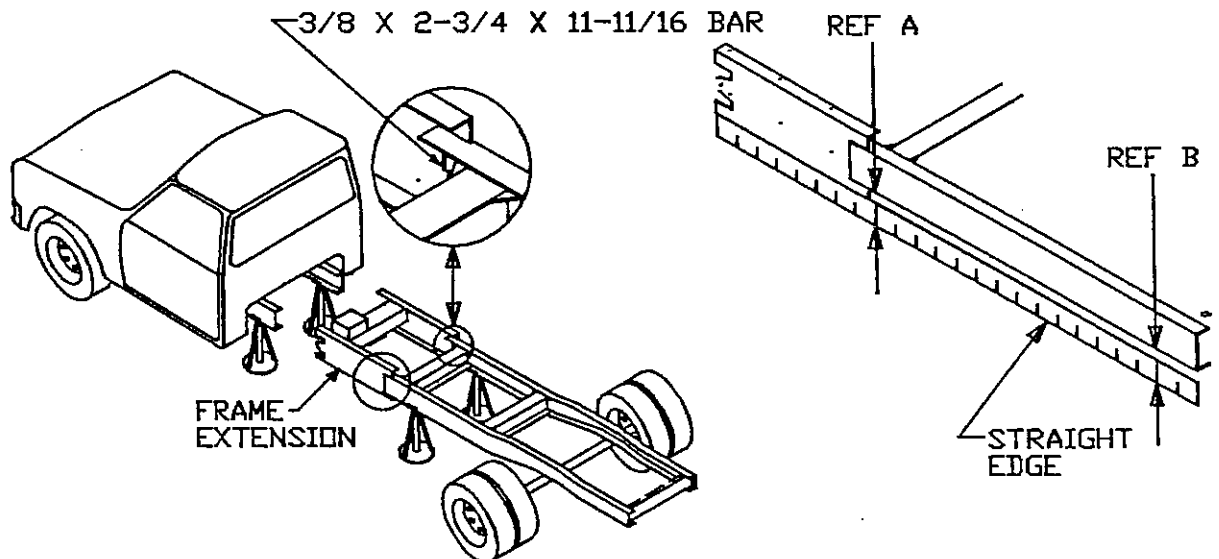


**FIG. 4-10 SUPPORTING TRUCK WITH JACK STANDS**

4-2.21 Move the back section of the truck away from the front part by hand. Support rear section at both ends with jack stands. Use a grinder to smooth the exposed ends of the frame. (See FIG. 4-10)

4-2.22 Place the frame extension onto the front of the rear section of the truck with the hydraulic tank closest to the front of truck. To make sure it is on straight, lay a straight edge on the bottom flange of the extension so it extends behind the extension three or four feet. Position the extension so the measure-

ment from the straight edge to the truck frame is the same at reference check points A and B on FIGURE 4-11. Tack weld in place. Recheck all measurements, and for squareness. If all measurements are correct and all components square, weld continuously using a 1/4" weld everywhere the extension touches the truck frame. Place the 3/8" X 2-3/4" X 11-11/16" bar against the end of the truck frame, inside the extension side plates, and weld. Follow AWS D1.1 using E-7018 welding electrode or equivalent. (See FIG. 4-11)



**FIG. 4-11 WELDING FRAME EXTENSION TO REAR FRAME**

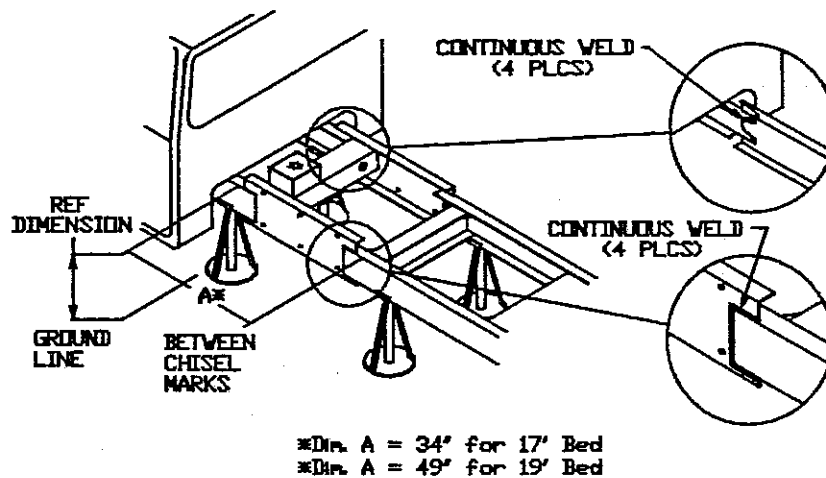


FIG. 4-12 WELDING REAR SECTION TO CAB SECTION

4-2.23 Slide the rear section of the truck frame to the cab section so the stretch kit extension fits into the front truck frames. (See FIG. 4-12)

4-2.24 Before welding the extension to the front truck frame, make sure the frame height measurement recorded in step 4-2.19 at 12" behind the cab is the same as was measured before cutting truck frame. It is important that the frame is level from one side to the other. Check the frame height on both sides. Check to make sure 30" for a 17" bed or 45" for a 19" bed has been added into both sides of frame by measuring between chisel or scribe marks made in the frame previously. The proper measurements will be 34" for a 17" bed or 49" for a 19" bed. Tack weld the extension to truck frame. Check all measurements again before welding the extension to truck frame with 1/4" welds using E-7018 welding electrode or equivalent. (See FIG. 4-12)

4-2.25 Cut the frame off 35-1/4" behind the centerline of the rear axle. This should be 1/4" behind the rearmost part of the rear spring shackle of the rear axle. Use a guide to make a straight cut. (See FIG. 4-13)

4-2.26 Grind the frame smooth and square where each cut was made.

4-2.27 Set the Z shaped plate (connecting the welded pivot pins) onto the back end of the truck frame. The Z plate cross member is to be set so the bottom of the Z plate top flange is 1/2" above the top flange of the truck frame and up tight against the end of frame. (See FIG. 4-14)

4-2.28 Clamp Z-plate to the frame, centered from side to side. Square the plate to the chassis top and side surfaces. Place 1/2" x 4" round bar at each end of the Z bar, between the top of the truck frame and the Z bar. Tack weld in several places.

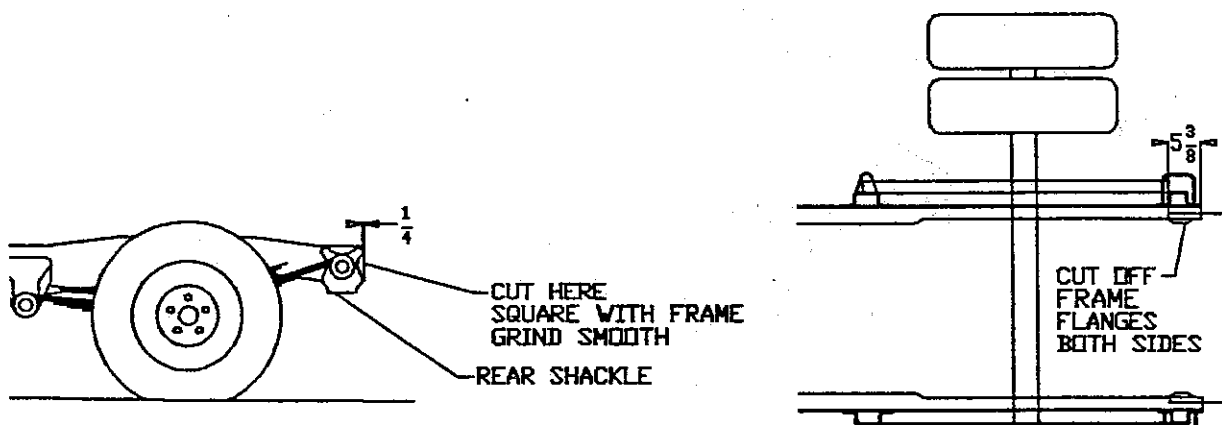


FIG. 4-13 CUTTING OFF THE REAR OF THE FRAME

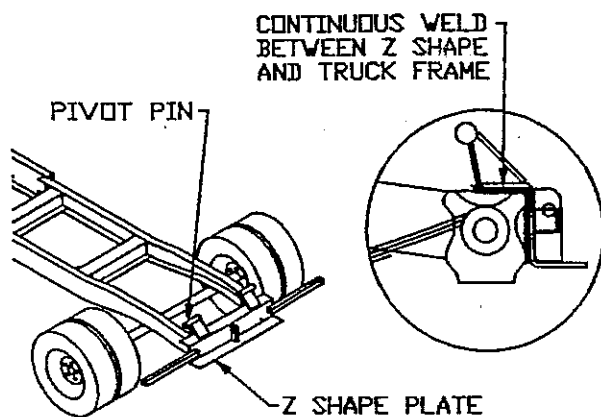


FIG. 4-14 Z-PLATE INSTALLATION

4-2.29 Recheck for centering and squareness. If plate is square and centered, weld the plate to the frame with 1/4" continuous welds any place the plate contacts the frame using E-7018 or equivalent welding wire. (See FIG. 4-2.14)

4-2.30 Set the cam roller support weldment on top of the truck frame so the 5/8" diameter holes in the end pieces are 1-1/8" above the truck frame and 66-1/8" directly from the center of the pivot pins. Tack weld to truck frame. (See FIG. 4-15)

4-2.31 Install the subframe onto the pivot pins (See FIG. 4-14). See Section 4-3 for subframe installation.

4-2.32 Insert the cam rod and cam followers through the cam supports and the slots in the sub-frame side plates. Both cams should contact the back of the subframe slot. If they do not, remove the tack welds from the cam support on the side of the sub-frame that the cam is not touching. Move the cam support until the cam contacts the back of the subframe

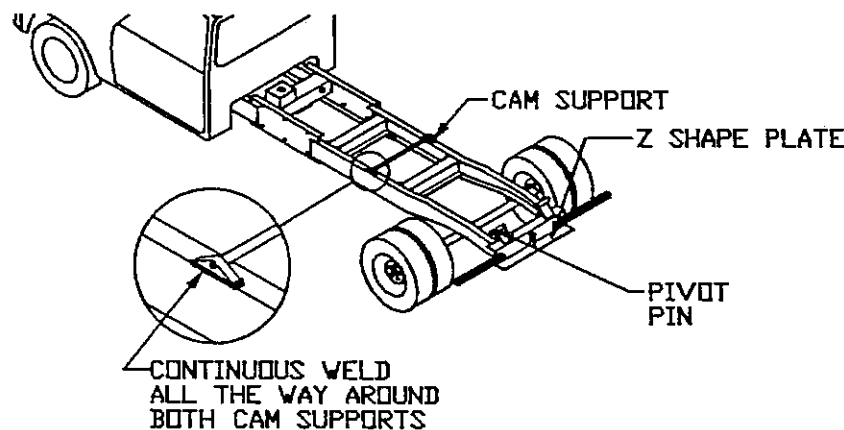


FIG. 4-15 CAM ROLLER SUPPORT INSTALLATION

slot.

**NOTE:** If you have to move the cam support more than 1/2", check all previous installation steps to be sure all components have been installed square.

4-2.33 Weld the cam supports to the truck frame with 3/8" welds using E-7018 welding electrode or equivalent. (See FIG. 4-15)

4-2.34 Position the front fuel tank filler support against the outside of the left truck frame rail. The bracket should be 1/2" below the top of the frame and directly above the front overload spring stop. Weld the bracket to the frame using E-7018 welding electrode or equivalent. (See FIG. 4-16)

4-2.35 Check all the weld locations for having complete and good quality welds. Remove all weld berries and weld slag. Remove any burned and/or peeling paint. Clean the metal surface. Paint the frame inside and out, especially where welding was done, and behind gussets.

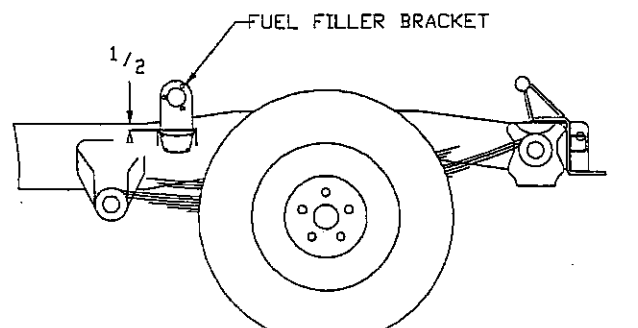
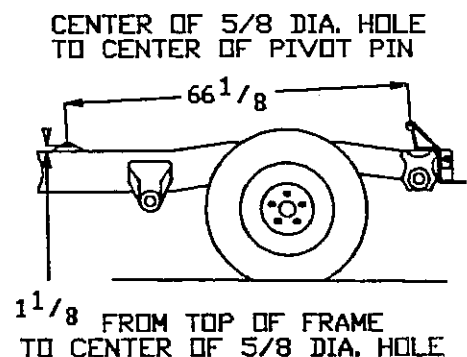
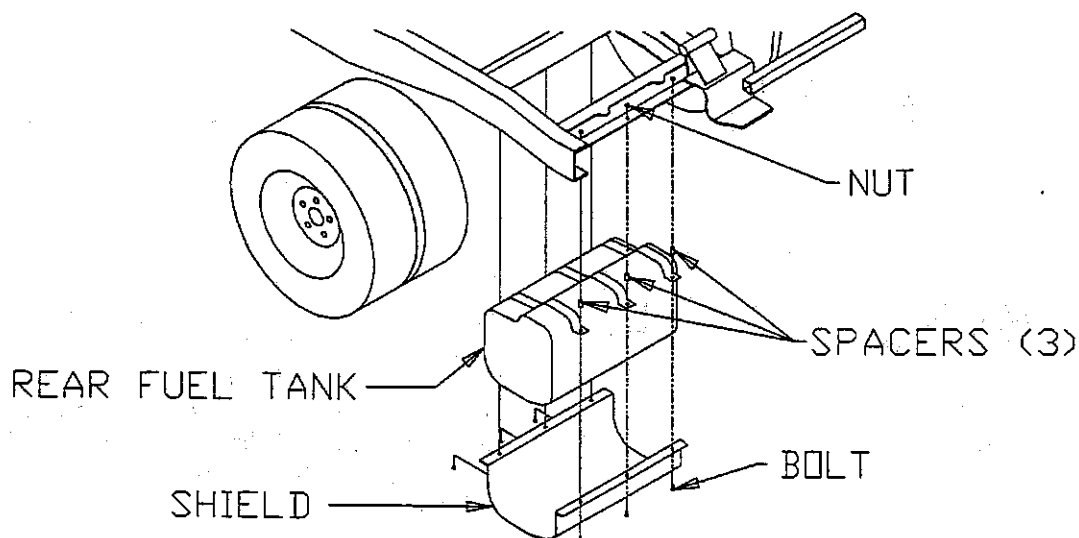


FIG. 4-16 FUEL FILLER BRACKET INSTALLATION





**FIG.4-17 FUEL TANK INSTALLATION**

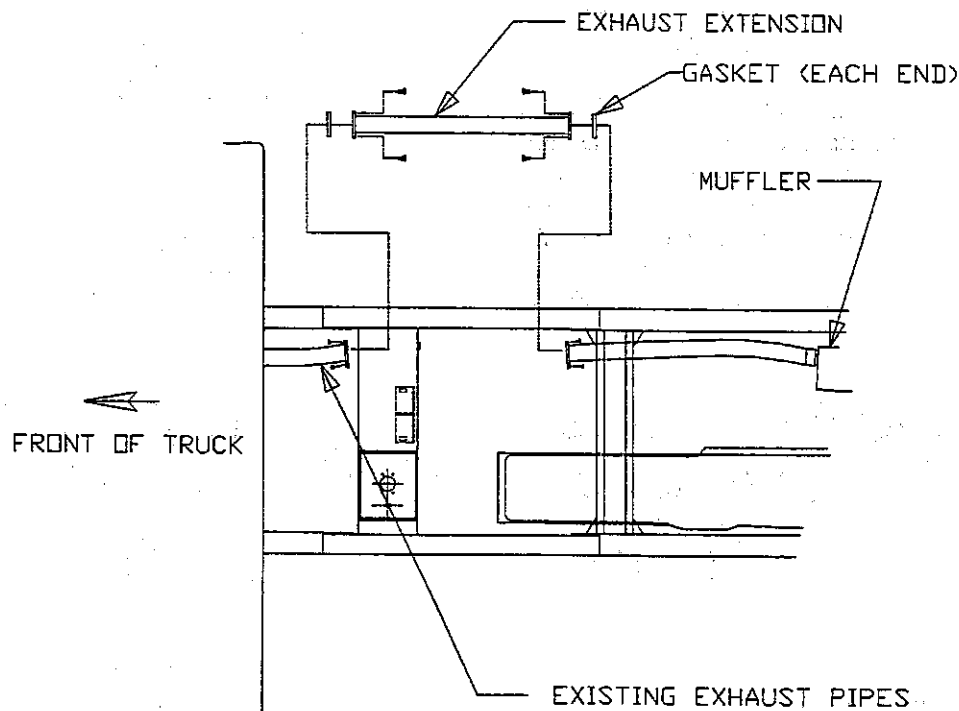
**4-234** Re-install the fuel tanks. Use 1-1/8" long spacer tubes and three 3/8" X 2-1/4" bolts, and 3/8" lock nuts to lower the back of the rear tank. This is important for filling ability. Check hanger locations to insure proper tank mounting without damage. Clamp securely. (See FIG. 4-17)

**4-235** Use Neoprene FUEL hose to connect the switching unit under the cab to the fuel tanks. Clamp

hose ends securely. A poor connection will affect engine performance, and may cause fuel leakage creating a potential fire hazard.

**4-236** Bolt the exhaust extension between muffler and existing exhaust pipe. Use a flange gasket on each end of the extension. (See FIG. 4-18)

**4-237** Re-assemble the front drive shaft onto the transmission.



**FIG. 4-18 EXHAUST EXTENSION INSTALLATION**

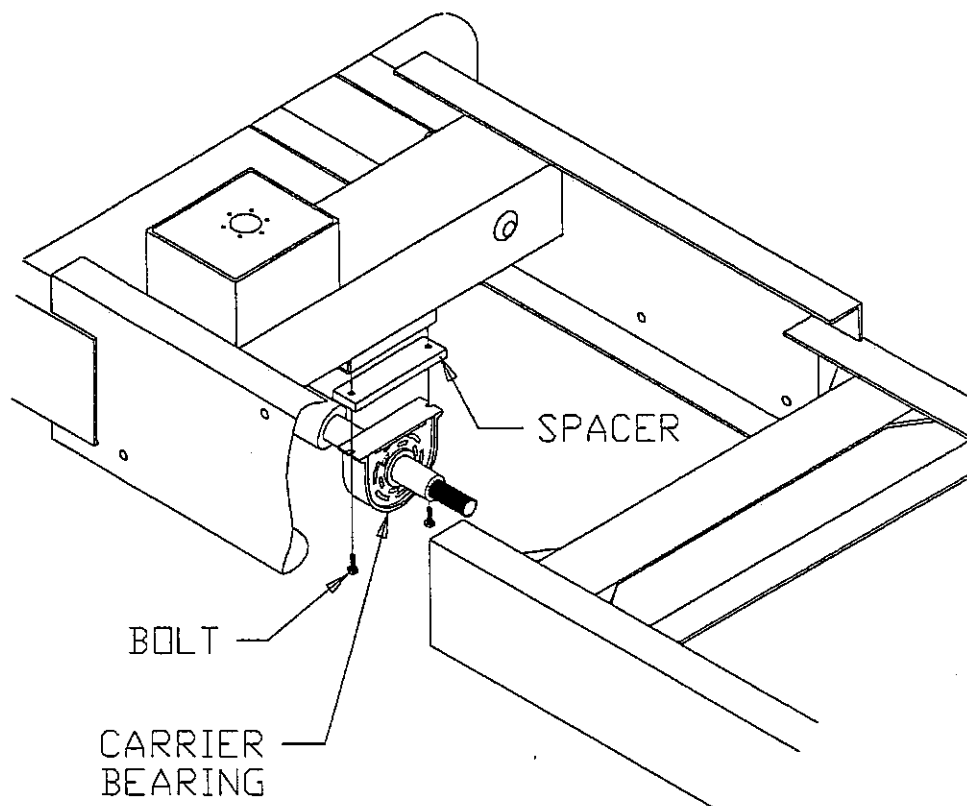


FIG. 4-19 CARRIER BEARING INSTALLATION

4-2.38 Check the carrier bearing on the front drive shaft for proper position on the shaft. Mount carrier bearing to the angle iron mount on the bottom of the hydraulic oil tank. Use a 1/2" spacer between the carrier bearing and the mounting bracket. (See FIG. 4-19)

4-2.39 Slide the drive shaft extension supplied with the Loadoll kit onto slip spline of the front drive shaft with U-joints properly aligned. (See FIG. 4-20)

**NOTE: THE DRIVE SHAFTS MUST BE IN PROPER ORIENTATION TO EACH OTHER!** Failure to properly align drive shafts may cause vibration and early failures to drive train components. On splined drive shafts, yokes of both sides of the splined joint must be in-line (not rotated) with each other.

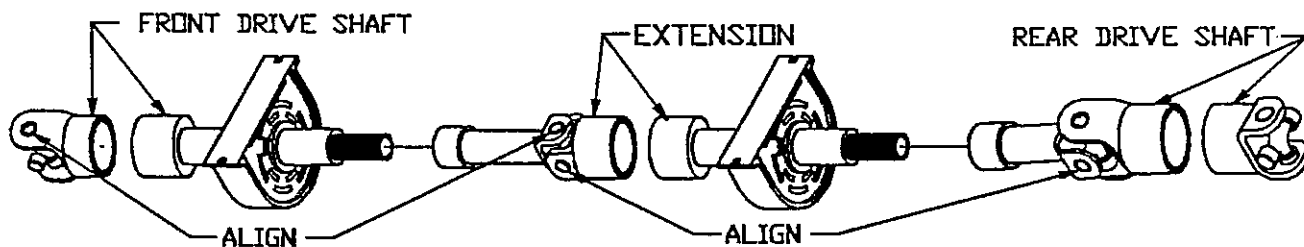


FIG. 4-20 DRIVE SHAFT EXTENSION INSTALLATION

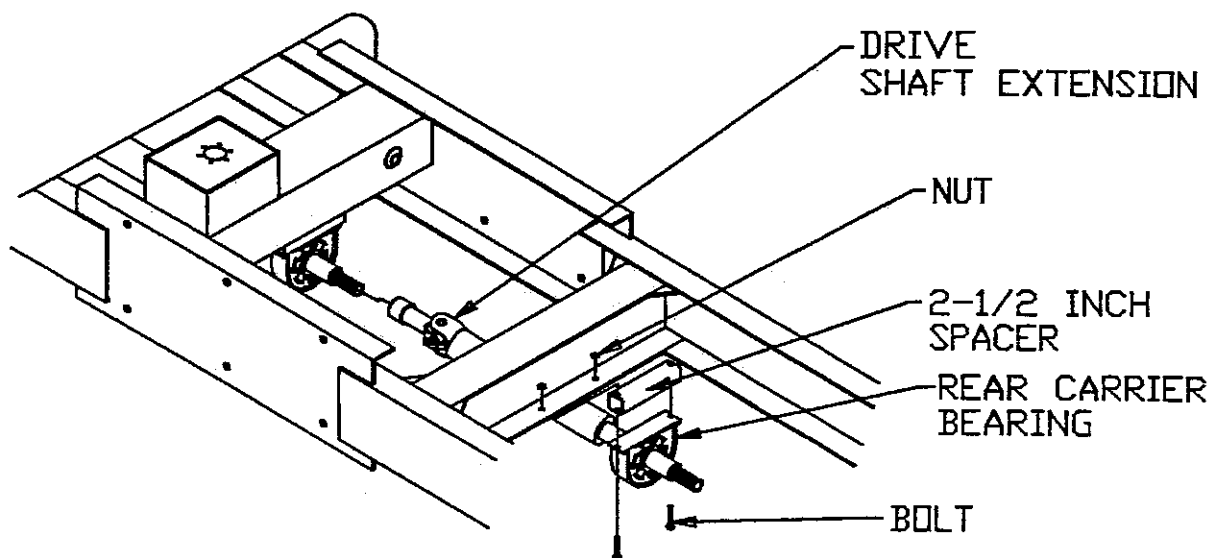


FIG. 4-21 REAR CARRIER BEARING INSTALLATION

4-2.42 Bolt the rear carrier bearing to the existing bearing support on the truck cross member. Be sure to install the 2-1/2" spacer tube in between the two. (See FIG. 4-21)

4-2.43 Slip the rear drive shaft onto the slip splines of the extension, noting the rotational alignment. Bolt the U-joint securely onto the differential. Tighten all drive shaft seal nuts.

4-2.46 Flush the brake line extension with clean brake fluid and install with additional brass union between existing brake lines.

4-2.47 Bleed the brake lines according to the instructions supplied by your truck manufacturer or dealer.

4-2.49 Set the parking brake securely for the remainder of the installation.

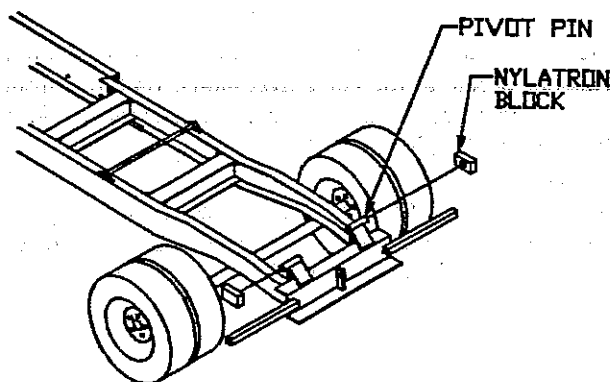


FIG. 4-22 NYLATRON BLOCK INSTALLATION

### 4-3 SUB-FRAME INSTALLATION

4-3.1 The majority of the subcomponents for the subframe are factory assembled to the subframe. Those parts requiring owner assembly are detailed in the continuation of this section.

4-3.2 Place a nylatron block on each of the two pivot pins welded to the rear Z-plate. (See FIG. 4-22)

**SAFETY IS. . .  
NO ACCIDENTS!**



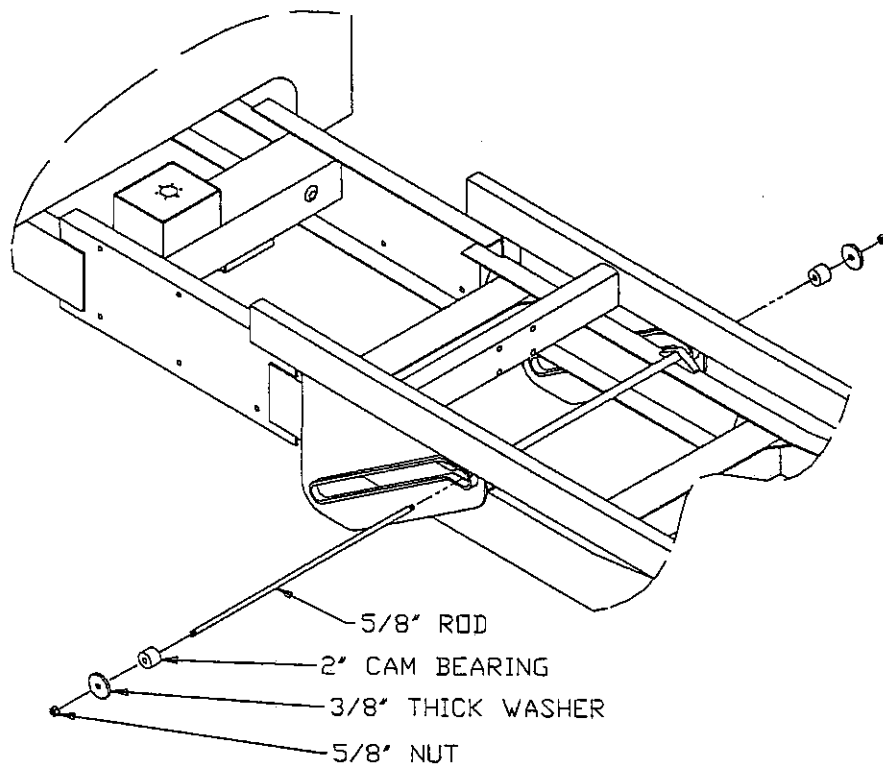
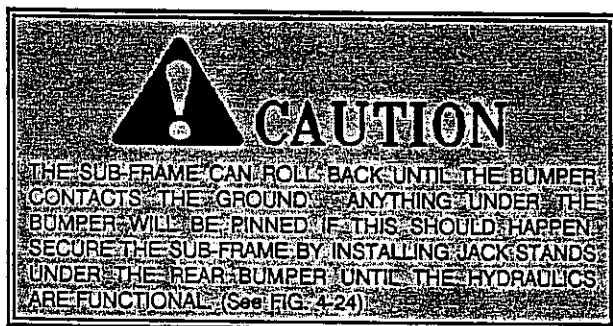


FIG. 4-23 CAM SHAFT INSTALLATION



4-3.3 Remove any weld berries or rough spots in the sub frame slide channels. Weld berries or rough spots will cause excessive wear to the nylatron bearing blocks.

4-3.4 Mount the sub-frame onto the truck chassis by sliding the channels of the sub-frame forward over the nylatron blocks. Slide sub-frame forward until the nylatron blocks contact the channel stops.

**NOTE:** The rear axle must be lifted off the ground a minimum of 6" before the subframe can be installed.

4-3.5 Install 5/8" diameter cam bearing shaft through roller track slots of sub frame and support weldment installed to the truck frame in step 4-2.32.

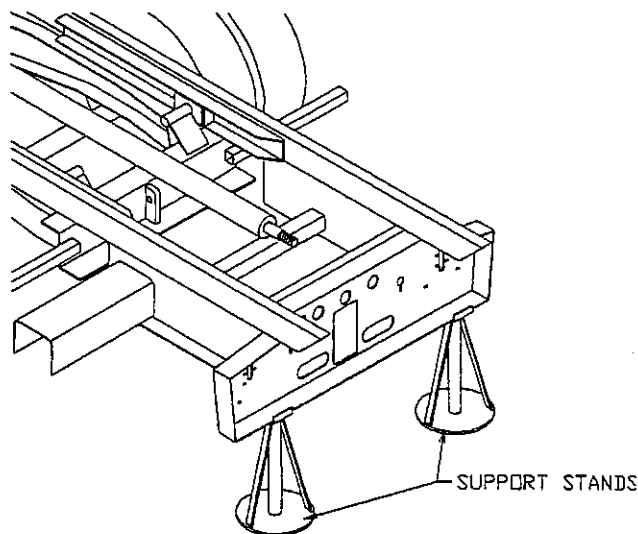


FIG. 4-24 SUPPORTING SUBFRAME WITH JACKSTANDS

(See FIG. 4-23)

4-3.6 Install 2-inch cam bearings on each end of the 5/8" shaft just installed. Install 3/8" thick washer and nut on both ends. (See FIG. 4-23) Tighten nuts until snug so the amount of exposed threads on each side are equal.

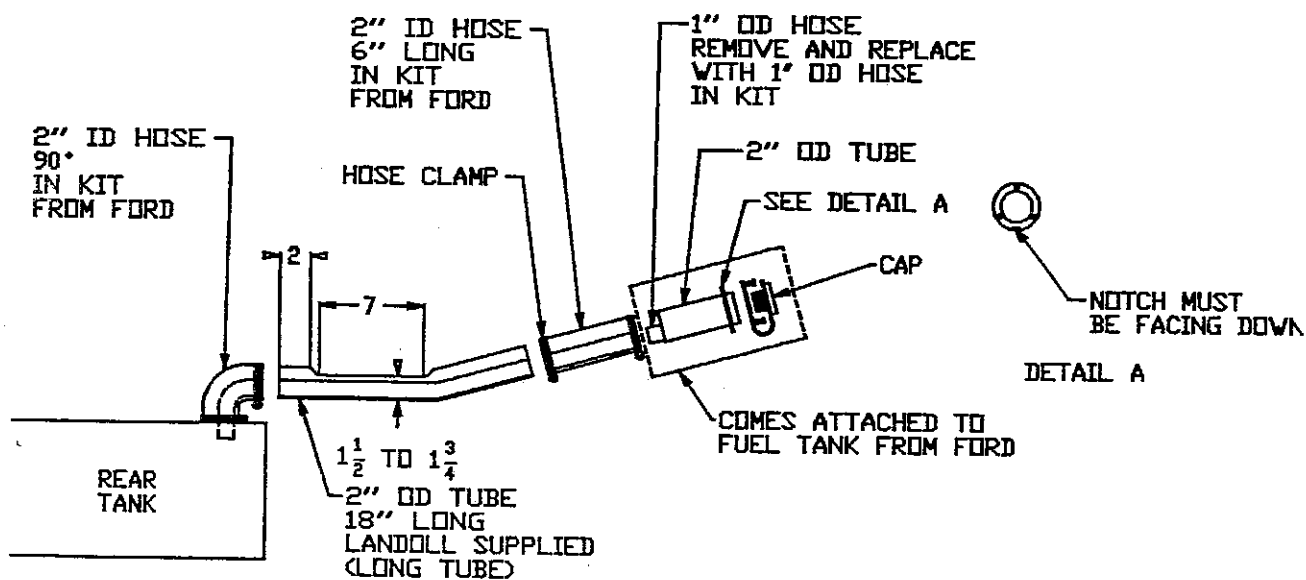
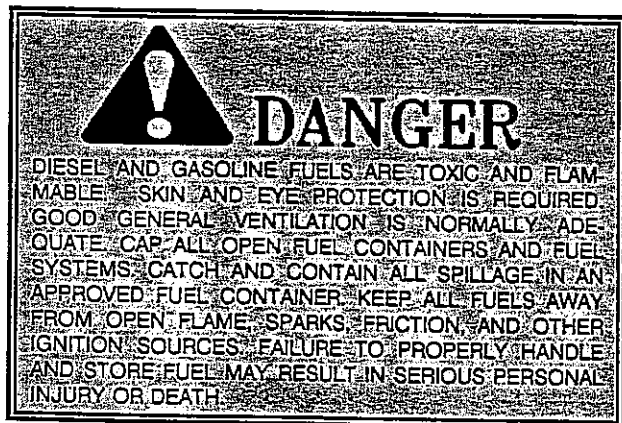


FIG. 4-25 REAR TANK FUEL FILLER INSTALLATION



#### 4-4 FUEL FILLER ASSEMBLY

4-4.1 Locate the Landoll supplied 2" diameter steel fuel filler tube for the rear fuel tank. The tube must have a portion flattened to allow the bed slide channel to clear the tubes. (See FIG. 4-25)

4-4.2 Locate the formed 2" I.D. rubber fuel filler hose in the kit supplied with the truck as it comes from Ford. From this hose, cut one 90 degree bend and one 45 degree bend just long enough to allow clamping of one end over the fuel tank filler neck, and the other end over the 2" steel tube. (See FIG. 4-25)

4-4.3 Remove existing filler neck/fuel cap assembly mounted to each tank and set aside for re-assembly later. (See FIG. 4-25 and 4-26)

4-4.4 Insert the flattened leg of the long steel tube between the truck frame and the Landoll sub-frame. Slip the 90 degree hose over the fuel tank end of the steel tube.

4-4.5 Locate both fuel cap/filler tube assemblies originally mounted to the fuel tanks. From each assembly, remove the 1" diameter vent tube and clamp which is attached to the steel nipple inside. Replace with the full length 1" tube supplied by Ford in the fuel filler kit. Clamp securely. Remove the fuel cap from each filler neck. Remove the 3 screws holding the cap retainer. Lay screws, retainer, and cap aside for use later.

4-4.6 Thread the 1" tube into each tank through the filler tubes. Couple the filler tubes together on each tank. (See FIG. 4-25 and 4-26)

4-4.7 Mount the filler neck short end into the back side of the brackets welded onto the frames of the Loadoll (one above the bracket). Rotate the filler neck mounting flange so that the notch in the edge of the flange is located at the bottom. Failure to properly rotate the filler neck flange will alter filling ability. Install the fuel cap plastic retainer and insert the mounting screws through the plastic retainer, mounting

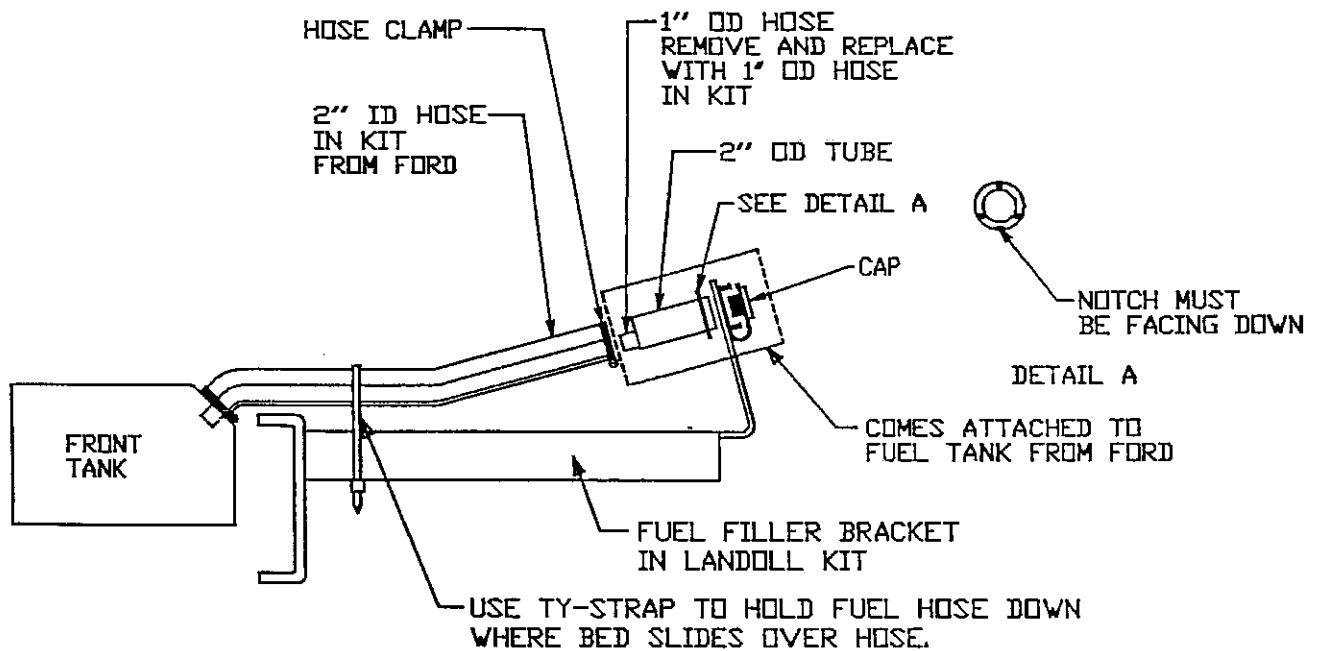
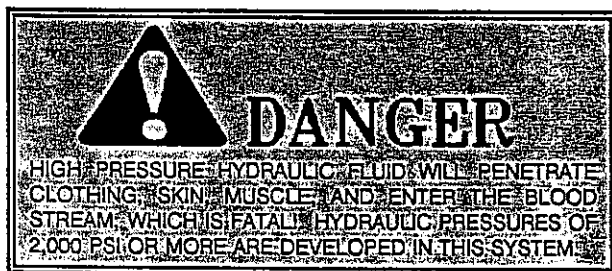


FIG. 4-26 FRONT TANK FUEL FILLER INSTALLATION

bracket, and into the filler neck flange. Tighten screws snug.

4-4.8 Slip the 45 degree and 90 degree filler neck hoses to the fuel tank. Adjust each section of the filler neck assemblies to lay closely to the chassis frame. Check to ensure that each connection of hose to steel tube is overlapped sufficiently to clamp. Clamp each joint of the filler assembly securely.

#### 4-5 HYDRAULIC INSTALLATION



##### PREFACE:

When installing hydraulic plumbing, install trim-lock on all sharp edges that hydraulic hoses contact. (See FIG. 4-27)

4-5.1 Ty-wrap hoses to non-moving parts to avoid contact with sharp, abrasive or moving objects.

4-5.2 Thread sealant paste (such as LOCTITE

59231 HIGH PERFORMANCE PIPE SEALANT with teflon thread lubricant and sealer) may be used to seal plumbing threads. **DO NOT USE TEFLON TAPE!**

##### PUMP DRIVE SECTION

4-5.3 The Landoll-supplied PTO is selected based on the data supplied on the sales order. Vehicles with automatic transmissions must have an under-hood belt-driven PTO unit with an electric clutch.

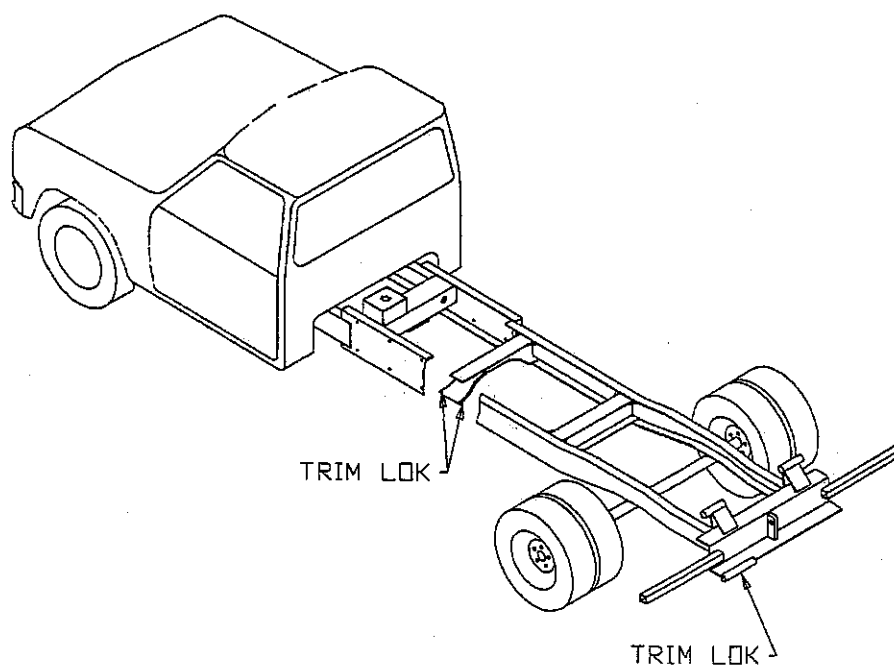
4-5.4 Kits ordered for vehicles with standard transmissions will have a PTO to be mounted directly on the transmission. The hydraulic pump is intended to be mounted directly on the PTO. The pump can be jack shaft mounted if necessary. If this is chosen, the jack shaft end which mates with the pump will have to be equipped with a spline.

4-5.5 Every Landoll supplied PTO is shipped with a PTO mounting booklet, which serves as an excellent guide for installation, even for the first time installer. Follow the PTO instructions exactly and you will be assured of proper installation.

##### TRANSMISSION MOUNTED PTO UNITS

4-5.6 Mount the PTO without the hydraulic pump attached. This will allow you to check the PTO for noise without operation of the pump.

**NOTE:** Do not operate the PTO if the pump is attached and dry. Operating the pump dry



**FIG. 4-27 TRIM LOCK INSTALLATION**

will cause permanent damage to the pump, affect hydraulic system performance, and cause possible damage to other hydraulic components.

**4-5.7** Refill the transmission with clean, approved lubricant after the PTO installation is complete.

**NOTE:** Many transmissions require special service oils, and some require special break-in oil. Refer to the truck owner's manual or contact your local dealer for the oil specified for your truck.

**4-5.8** Install the PTO control cable in the cab within easy reach of the operator. It is important to position the cable control in a location that will enable the operator to easily access the control, and allow the cable to be routed to the PTO staying clear of hot, abrasive, or moving parts, and with a minimum of bending. Sharp bends will cause stiff or impossible cable operation. A convenient mounting location is on the transmission access floor panel to the right of the driver.

**4-5.9** After mounting the cable in a 1/2" diameter hole in the floor or dash, pull the cable out 6 inches. Cut the inner and outer cable to a length that is even with the casing anchor bracket mounted on the PTO housing.

**4-5.10** Slip the steel cable into the anchor pin on

the PTO control lever. Attach the cable housing to the PTO clamp and tighten sufficiently to prevent slippage without crushing the housing.

**4-5.11** Check to ensure that the PTO lever is completely disengaged and the control cable is all the way in. Tighten the PTO cable anchor to the steel cable.

**4-5.12** Start the vehicle engine and operate the PTO to check for unusual noise.

**4-5.13** Check shifting functions in and out of gear; rotates when in gear, and stops when shifted to the neutral position. If everything checks out properly, continue. If noise or shifting problems exist, correct before installing pump.

**NOTE:** The PTO must rotate the pump in the same direction as the arrow on the pump. If it does not, see the hydraulic pump manual for changing pump direction.

**4-5.14** Mount the hydraulic pump to the PTO unit with the pressure port on top using two 3/8" X 1" bolts and lock washers.

**4-5.15** Install a 1-1/4" 90 degree street elbow in the suction port of the hydraulic pump. Insert a 1-1/4" king nipple into the elbow. Position to point to the rear, and slightly up.

**4-5.16** Thread a 90 degree, 3/4" male pipe X 1/2" female pipe swivel into the pressure port of the pump and position so that the fitting will point straight back.

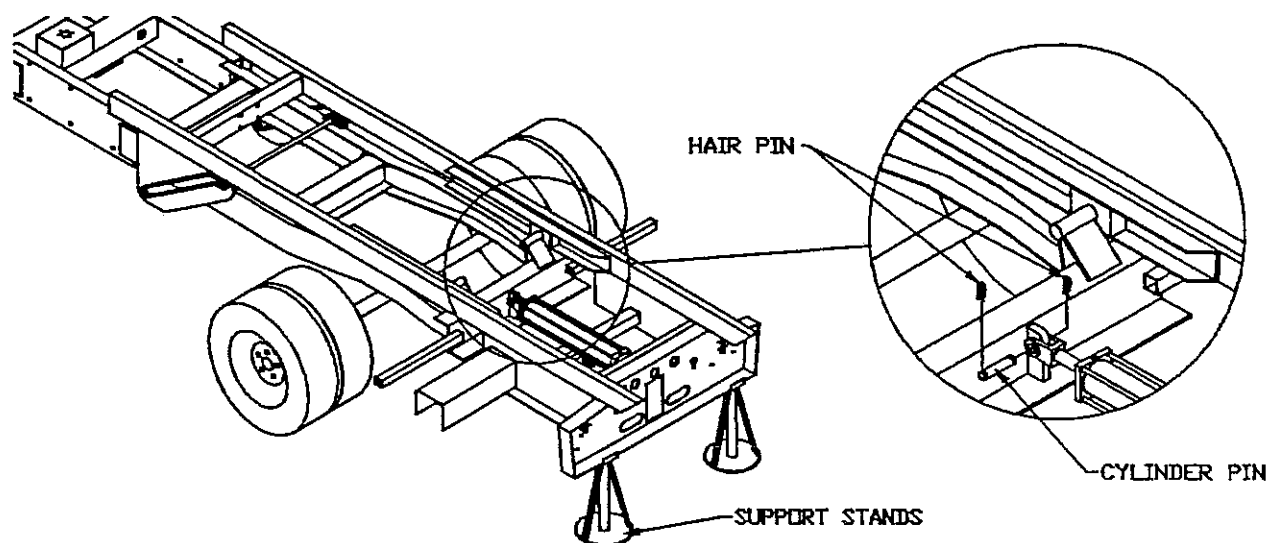


FIG.4-28 TILT CYLINDER INSTALLATION

## 4-6 UNDER HOOD HYDRAULICS

4-6.1 Mount the pump, brackets, electric clutch, switch and wiring according to the instructions supplied with the pump kit.

4-6.2 Install a 3/4" X 1/2" pipe bushing into the pump pressure port. Thread a 45 degree, 1/2" male pipe X 1/2" female pipe swivel into the reducer and point downward, and slightly to the right.

4-6.3 Install a 1" hose barb into the suction port of the pump.

## 4-7 UNDER HOOD AND TRANSMISSION MOUNTED HYDRAULIC PLUMBING

4-7.1 Mount the tilt cylinder shaft clevis to the Z-plate mounting lug using a 1" X 3-1/2" pin and 2 hair pins. The cylinder clevis is properly adjusted if there is a 1/16" to 1/4" gap between the cam roller and the back of the track when the cylinder is completely retracted. If the gap is not within the allowable range, disconnect the cylinder from the Z-plate anchor, loosen clevis set screw, and adjust the clevis to obtain the proper gap. Tighten set screw and re-attach the cylinder. Recheck gap and re-adjust as needed. (See FIG. 4-28)

4-7.2 The bed slide cylinder is normally mounted at Landoll Corporation. Check the 4 mounting bolts

for being secure. If the cylinder is not mounted, bolt to the sub-frame front cross member with the cylinder hydraulic ports on the driver's side. (See FIG. 4-29 on next page.) Make certain the long cylinder shaft is all the way in (retracted). Loosen hydraulic fittings to allow the cylinder piston to move. Re-tighten fittings when done.

4-7.3 Install a 1-1/4" street elbow into the bottom left end of the hydraulic reservoir. Thread a 1-1/4" king nipple into the elbow. Position the elbow to point toward the left hand end of the cross member at the back of the cab. (See FIG. 4-30, items 3 and 4, on next page.)

4-7.4 Landoll hydraulic tanks are cleaned and preserved before shipping. Contaminants can enter the tank during shipping and handling. Clean hydraulic tank out thoroughly by sweeping the inside with a magnet and flushing with clean hydraulic oil.

4-7.5 Install the 1-1/4" suction line routing from the pump king nipple to the left hand frame channel, through cross member, and to the tank king nipple. Align pump and tank king nipples with hose angle, slip hose over king nipples so that the hose covers all barbs. Secure each end with a #28 hose clamp. (See FIG. 4-30, item 5 on next page.)

4-7.6 Install the breather cap/strainer assembly by inserting strainer into the tank with a gasket between. Place the second gasket on the strainer flange and then the cap, securing flange on top. Align all 6 holes

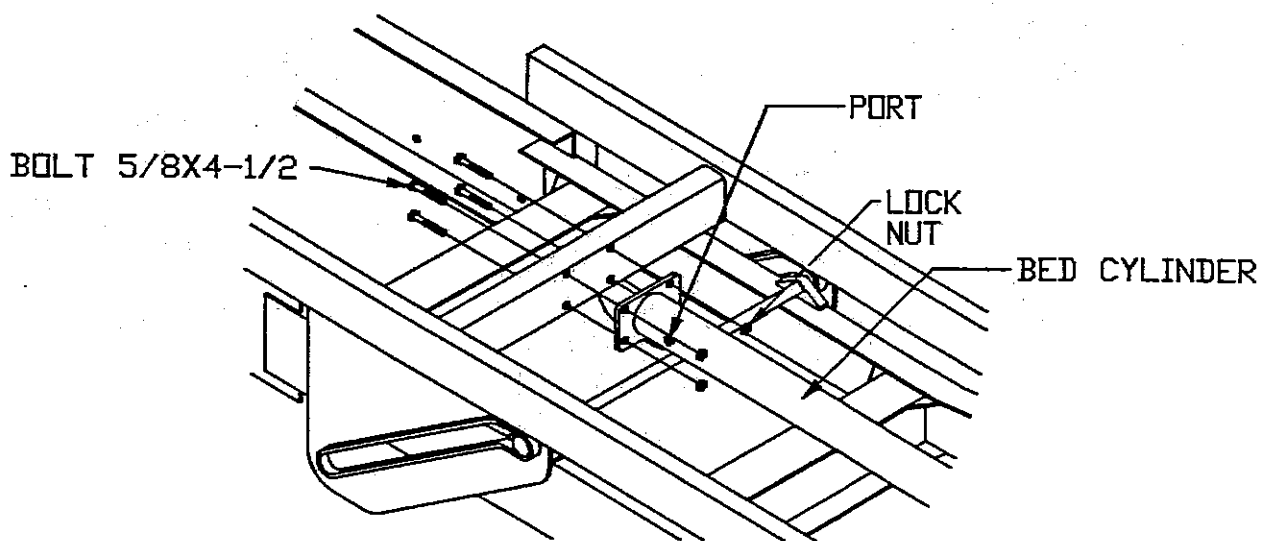


FIG. 4-29 BED SLIDE CYLINDER INSTALLATION

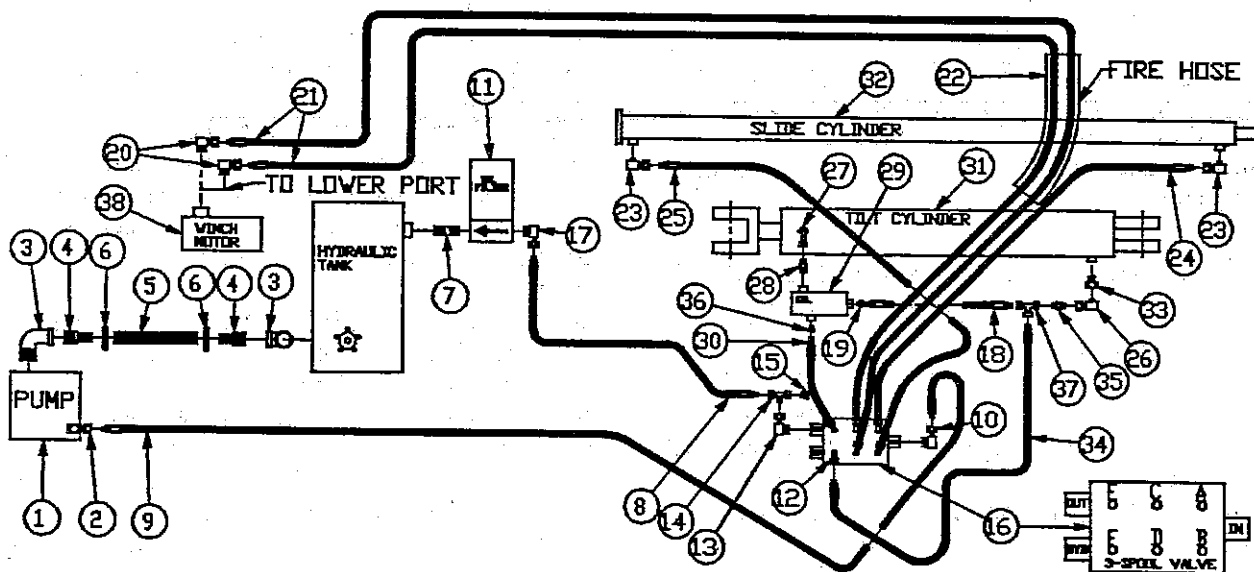
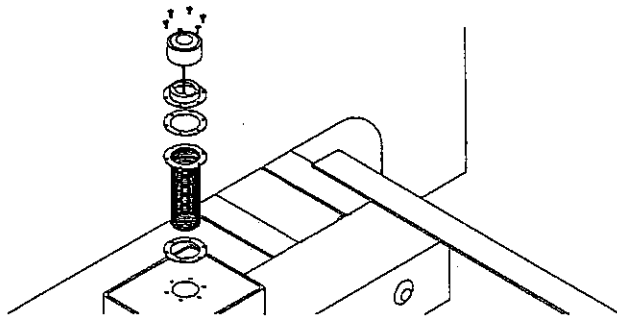


FIG. 4-30 BED OPERATION HYDRAULIC SYSTEM



**FIG. 4-31 HYDRAULIC TANK FILLER/STRAINER  
INSTALLATION**

holes and secure to the tank with 6 screws provided with the kit. (See FIG. 4-31)

4-7.7 Thread a 3/4" close nipple into the back of the hydraulic tank. (See item 7, FIG. 4-30)

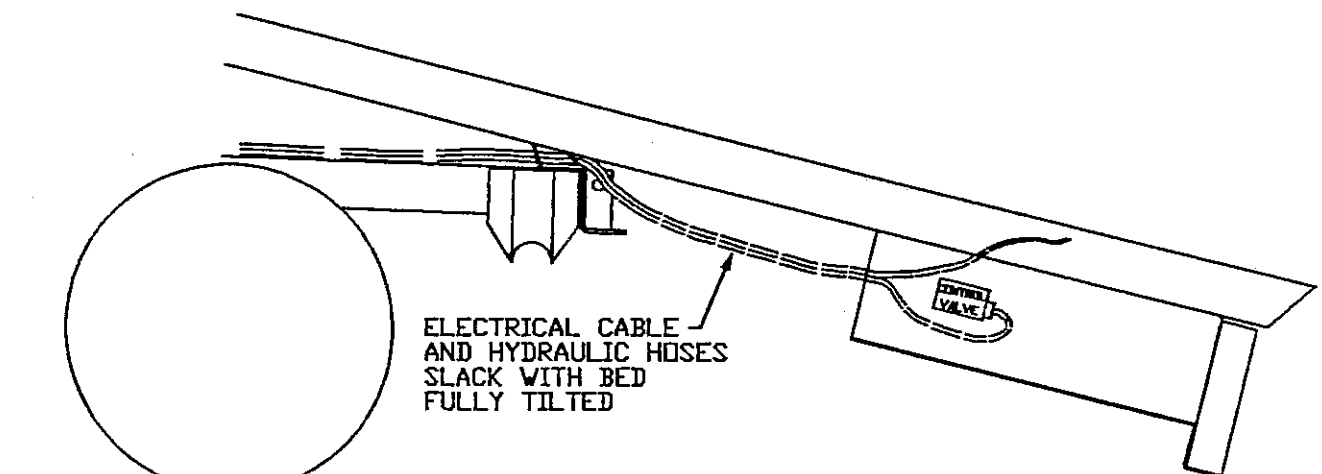
4-7.8 Thread hydraulic filter base onto the nipple with the arrow pointing to the tank. Position the filter base so that the filter points to the right hand truck frame. (See item 11, FIG. 4-30) Thread a 90 degree 3/4" male pipe X 1/2" female pipe swivel into open port of the filter base pointing to the left hand frame. (See item 17, FIG 4-30)

4-7.9 Attach pressure hose (See item 9, FIG. 4-30) to the pump pressure port.

4-7.10 Route along suction hose to the left hand frame. Route inside the frame to the back. Exit just behind the rear shock. Route the hose over the top of the remaining cross members.

4-7.11 Attach to the 3-spool valve "IN" port using a 90 degree O-ring X 1/2" female swivel pipe fitting (See item 10, FIG. 4-30). The 24" of excess hose must be located between the Z-plate and the 3-spool valve. This extra hose allows the sub-frame to slide back without pulling the hose apart. (See FIG. 4-32)

4-7.12 Attach the return hose (See item 8, FIG. 4-30) to the open port of the hydraulic filter. Route to the left hand frame and route with the pressure hose to the 3-spool valve. Assemble a 90 degree, 1-1/8" O-ring X 1/2" female pipe swivel fitting (See item 13, FIG. 4-30) into the valve "OUT" port pointing up. Assemble a "T" 1/2" male pipe X 1/2" female swivel X 1/2" female swivel (See item 14, FIG. 4-30) to the elbow with the head of the "T" parallel with the truck frame. Attach the loose end of the return hose to one side of the swivel "T". Plug the other side of the "T" unless a tow-bar installation is included. The tow-bar will be plumbed later. (See item 15, FIG. 4-30) This hose must be ty-wrapped with the pressure hose between the Z-plate and the 3-spool valve. This extra hose allows the sub-frame to slide back 24" without pulling the hose apart. (See FIG. 4-32)



**FIG. 4-32 EXAMPLE OF HOSE AND CABLE SLACK**

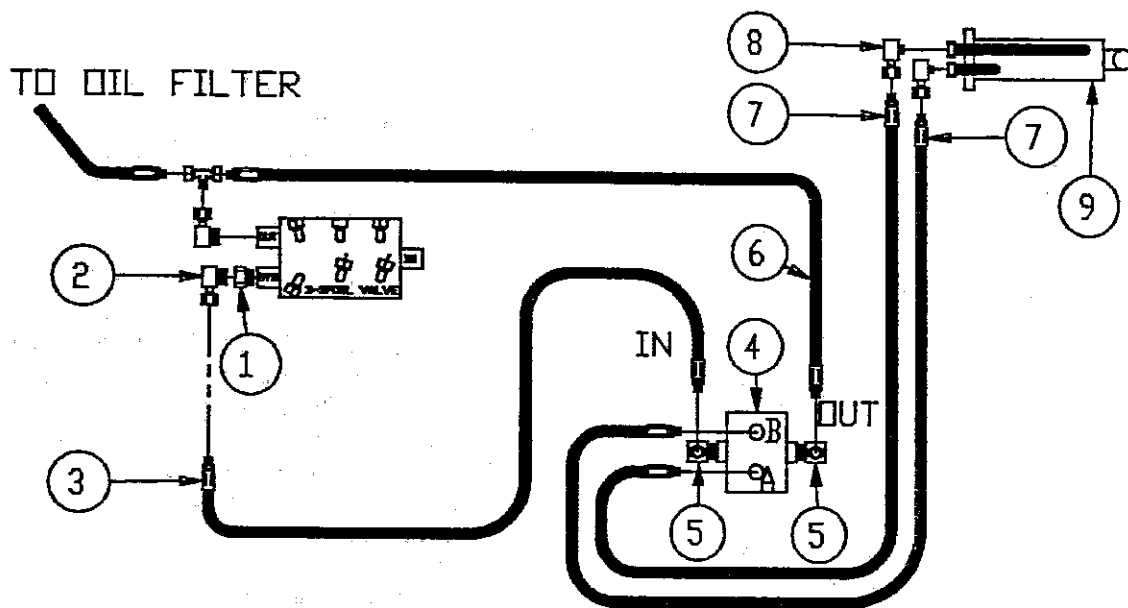


FIG. 4-33 TOWBAR PLUMBING

## 4-8 TOWBAR HYDRAULIC INSTALLATION

**NOTE:** FOR REMOTE CONTROLLED TOWBAR PLUMBING, SEE SECTION 4-14.

**4-8.1** Install (2) 90 degree 3/4" male pipe X 1/2" female swivel pipe fittings in the 3/4" ports on the single spool valve. Position these fittings to point away from the mounting base of the valve. (See FIG. 4-33, item 5)

**4-8.2** Mount the single spool valve to the driver's end of the rear bumper with the valve handle end pointing down.

**4-8.3** Locate the 3-spool valve port labeled "BYD" (power beyond port). Remove plug and install the 7/8" X 3/4" double O-ring reducing power beyond adapter. Thread a 3/4" X 1/2" pipe reducer into the special power beyond adapter. Add a 90 degree, 1/2" male pipe X 1/2" pipe female swivel pointing down (See FIG. 4-33, items 1 and 2).

**4-8.4** Install a 1/2" X 41" hydraulic hose, 1/2" ends (See FIG. 4-33, item 3) from the "BYD" port of the 3-spool valve to the bottom (in) port of the single spool valve.

**4-8.5** Install a hydraulic hose 1/2" X 48" with 1/2" ends (See FIG. 4-33, item 6) from the 3-spool valve "OUT" port "T", to the top (out) port of the single spool valve.

**4-8.6** Gather the two hoses connecting the 3-spool valve to the single spool valve. Use 2 conduit clamps to secure these hoses to the sub-frame side panel in provided hole just below the street side control panel.

**4-8.7** Ty-wrap all hoses (except the 24" of hose between the Z-plate and the 3-spool valve) (See FIG. 4-32) to non-moving parts avoiding contact with sharp, abrasive, or moving objects.

**4-8.8** Fill the hydraulic reservoir to the top. Normal oil level is at the bottom of the filler strainer. Initial filling is to the top to allow for air in the system.

## 4-9 TOW-BAR ASSEMBLY

**4-9.1** Assemble the inner and outer towbar tubes together as follows: (See FIG. 4-34)

**4-9.2** Lay the outer tube on the floor with the welded cross tube up.

**4-9.3** Lay the inner tube on the floor with the side not having a 3" X 3-1/2" welded plate down.

**4-9.4** Insert the inner tube (drilled hole end) into the outer tube (drilled hole end).

**4-9.5** Slide the hydraulic cylinder inside the inner and outer tube assembly, pinning the hydraulic fitting



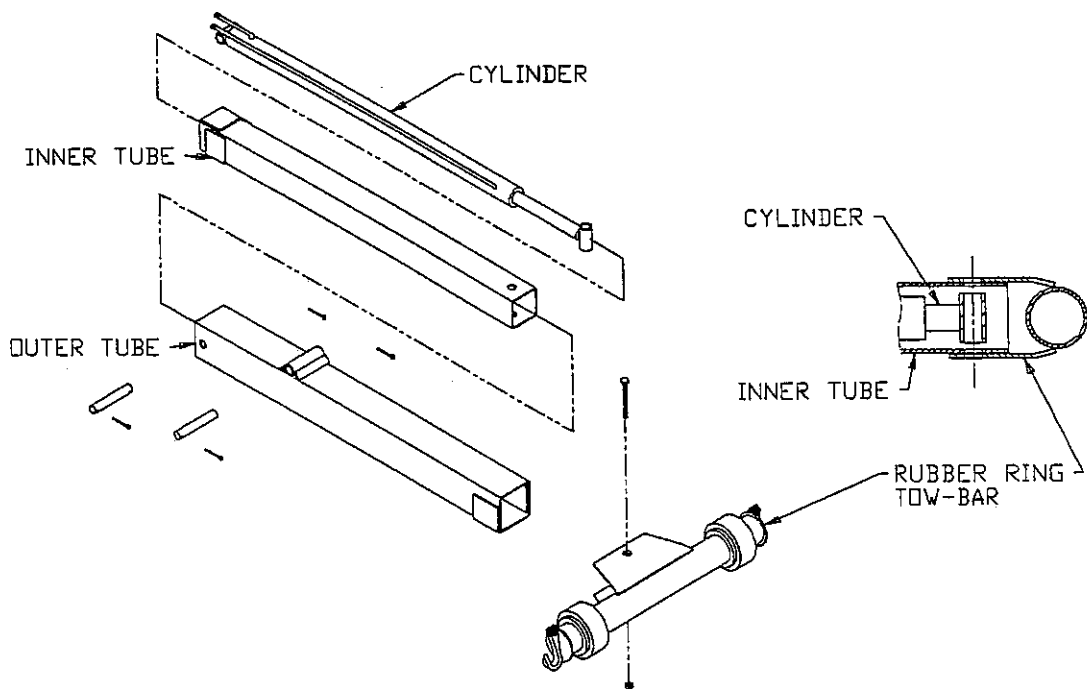


FIG. 4-34 TOWBAR INSTALLATION

end of the cylinder to the outer tube using a 1" X 6-1/2" inch pin. Secure mounting pin with 2 cotter pins. Do not spread cotter pin halves yet.

4-9.6 Mount the rubber ring towbar cross tube to the towbar inner tube and cylinder shaft using a 1" diameter bolt. Tighten the 1" lock nut so that the rubber ring towbar can swivel on this bolt, but with resistance when the towbar is extended. (See FIG. 4-34)

4-9.7 Remove the 1" X 6-1/2" pin mounting the fitting end of the hydraulic cylinder. Insert the towbar assembly through the rear bumper towbar opening. Pin the round 1-1/16" I.D. cross tube of the assembly to the towbar mounting angles located 24" ahead of the rear bumper using a 1" X 7" pin. Secure with 2 cotter pins, halves spread.

4-9.8 Re-pin the fitting end of the hydraulic cylinder to the outer towbar using the 1" X 6-1/2" pin and 2 cotter pins. Spread the cotter pin halves.

4-9.9 Plumb the single spool valve to the towbar cylinder using the two 3/8" X 52" hoses. Attach one end of each hose to the single spool valve. The outside (A) port of the valve plumbs to the longest steel line of the cylinder, and the inside (B) port of the valve plumbs to the cylinder port which has the shortest steel line. (See FIG. 4-33 of towbar hydraulic section)

4-9.10 Ty-wrap the two hydraulic hoses connecting the single spool valve to towbar cylinder to the two hoses plumbing the single spool valve to the 3-spool valve.

## 4-10 ELECTRICAL INSTALLATION

### PREFACE:

Protect all splice connections by covering with a shrink tube. (Some crimp connectors have the heat shrink tube already installed over the connector insulation. These connectors do not need additional heat shrink tubes.) Slowly heat the shrink tube with a propane torch or equivalent heat. This shrinks the tube to form a tight, rigid protection over the splice.

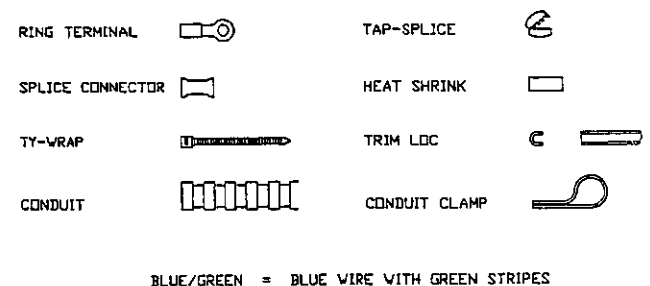


FIG. 4-35 ELECTRICAL COMPONENT LEGEND

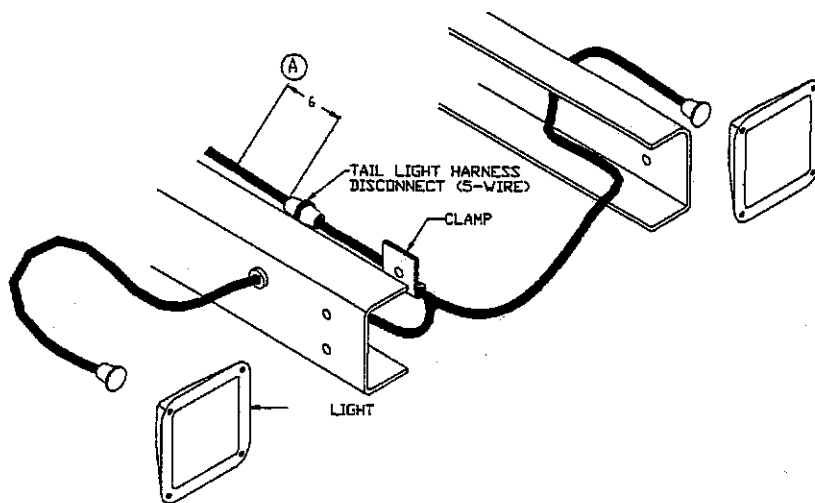


FIG. 4-36 RE-INSTALL REAR WIRING HARNESS

4-10.1 Install trim-lok over all sharp edges that hydraulic hoses or electrical wiring come in contact with.

4-10.2 Encase all electrical wiring in flexible conduit before attaching a free end of wiring. Tape conduit ends to wiring with electrical tape. DO NOT leave any electrical wiring exposed.

4-10.3 Ty-wrap all wiring to non-moving parts to avoid contact with sharp, abrasive, or moving objects.

4-10.4 **DISCONNECT ALL BATTERIES** whenever you are working with the chassis electrical wiring system.

4-10.5 Attach ground to bare metal. Paint and other coatings insulate, thus they must be removed at the grounding location.

## 4-11 HARNESS MODIFICATION

### NOTE:

Newer Superduty Loadoll Kits are supplied with a manufactured wiring harness to provide the necessary modifications to the Ford wiring harness. If your kit contains these harnesses, use them to modify your Ford Superduty truck. Each harness has a unique connector, so simply match connectors to obtain the correct harness. If your kit does not contain the manufactured harnesses, follow the directions contained in this section to modify your Superduty wiring harness.

4-11.1 Locate tail light wiring harness which was removed from the left hand frame and tucked under cab before modifying frame. Route the harness inside the left hand frame as it was originally.

4-11.2 Locate the front fuel tank sending unit harness and attach to fuel tank sending unit.

4-11.3 Locate sending unit harness for rear tank. Trucks with gas engines have three wires: orange, black, and blue/yellow. Trucks with diesel engines have two wires: red and black. Pull these wires out of the conduit about 1 foot. Cut these wires 6" from the wiring plug.

4-11.4 Splice connect the two 18" extensions, furnished in kit, between plug just cut off and the main harness it was cut from. Match colors of the extensions to the colors of the main harness and plug wires. Follow the same procedure for the third wire on gas models with 460 engine. Do the same for the anti-skid wiring on the rear end.

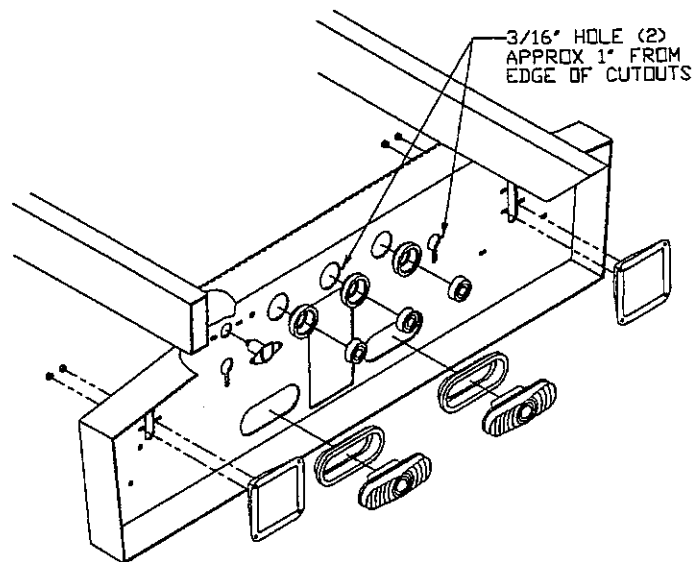
4-11.5 The end of the main wiring harness is too short also. Cut the wiring harness 6" from the male end plug located in the left hand frame just above the rear axle. (See FIG. 4-36, location A) Insert plug in the tail light wiring harness receptacle for wiring later.

4-11.6 Splice one end of each 8-foot extension to the main wiring harness matching as follows:

### MAIN HARNESS WIRE COLOR:

WIRE COLOR	LIGHTS/SIGNAL	EXTENSION WIRE COLOR
orange/blue	right turn	orange
green/orange	left turn	green
brown	clearance	brown
purple	reverse	purple
black	ground	white

4-11.7 Locate the 6" X 7" tail lights which were removed from the chassis and stored before frame



**FIG. 4-37 INSTALLATION OF REAR LIGHTS**

modification. One tail light has a clear license plate lens on the underside. Mount this light on the right hand side of the bumper, with the clear lens down. Use original mounting hex nuts. Mount the other tail light on the left hand side in the same manner. (See FIG. 4-36)

4-11.8 Locate two 3/16" holes for harness conduit clamps on the rear bumper as follows (See FIG. 4-37)

4-11.9 Locate the two 3" X 7" reverse lights with wiring pigtails. Splice a red 16" wire to the red wire of the right hand work light. Splice a white 16" wire to the white wire of the same light.

4-11.10 Join the opposite end of the red 16" extension wire with the toggle switch accessory wire and

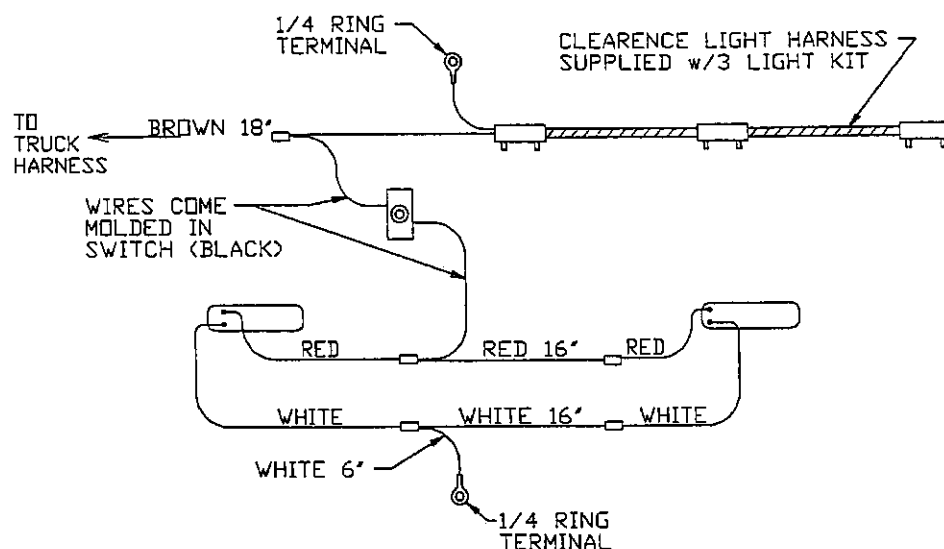
crimp the splice into one end of a splice connector. (See FIG. 4-38)

4-11.11 Join the free end of the white 16" extension wire with a 6" long white wire and crimp the splice into one end of a splice connector. Crimp a 1/4" ring terminal on the loose end of the white 6" wire just attached. (See FIG. 4-38)

4-11.12 Crimp the empty end of the red wire splice connector to the left hand work light red wire. (See FIG. 4-38)

4-11.13 The empty end of the white wire splice connector crimps to the left hand work light white wire. (See FIG. 4-38)

4-11.14 Locate the bundle containing 3 red



**FIG. 4-38 REAR WIRING HARNESS SCHEMATIC**

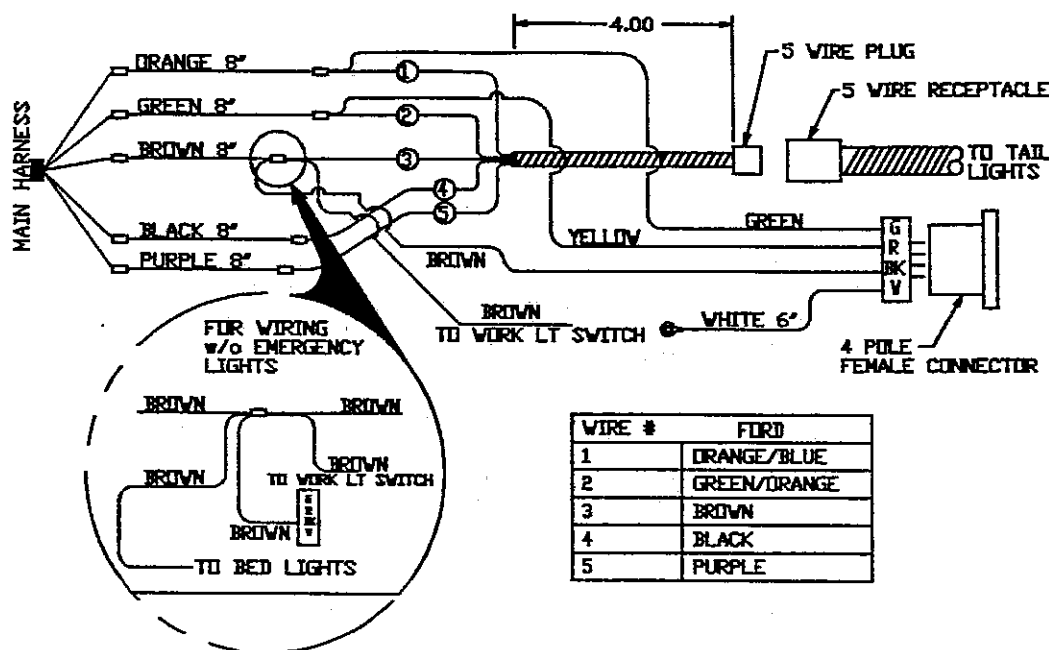


FIG. 4-39 FOUR POLE CONNECTOR WIRING SCHEMATIC

clearance lights and wiring harness.

4-11.15 Cut existing ring terminal off the white wire as close to the terminal as possible. Crimp new 1/4" ring terminal to the white wire.

4-11.16 Join the black clearance light wire with the toggle switch (battery side) of the work light harness just assembled and crimp into one end of a splice connector. Crimp an 18" brown wire to the other end of the splice connector. (See FIG. 4-38)

4-11.17 Locate 3 red clearance lights and two 3" X 7" white work lights with rubber grommets. The harness for each was just assembled. Seat three round and two oblong grommets in matching holes of rear bumper center section, with the larger diameter side of the grommet toward the rear. (See FIG. 4-37)

4-11.18 Snap the three round red clearance lights and the two white work lights into matching rubber grommets just installed in the bumper. Make certain all of the lights are seated into the grommets securely. (See FIG. 4-37)

4-11.19 Attach bumper lighting harness to the clearance and work lights. The work light plug with the 16" extension must plug into the right hand work light.

4-11.20 Install toggle switch of the wiring harness in hole located to the left of the left red clearance light. Position key way slot in the switch threads to the bottom. Thread the jam nut onto the switch and tighten securely to the bumper.

4-11.21 Using two 1/2" conduit clamps, secure the

bumper lighting harness to the front side of the bumper where the 3/16" holes were, beside the right hand chain anchor key hole and the center clearance light.

#### 4-11.22 FOR FOUR POLE PLUG IN BUMPER OPTION PROCEED AS FOLLOWS:

a. Remove securing screw in side of the 4 pole female plug and remove inner core. Save screw to re-install later.

b. Wire 4 pole plug female inner core with 18" wires, insulation stripped 3/8" on one end as follows: (See FIG. 4-39)

WIRE COLOR	SOCKET LETTER
green	G
yellow	Y
brown	B
(6") white	W

c. Secure each wire by tightening set screws securely against bare wires. Test connection by pulling each wire firmly. Wires must not pull loose.

d. Insert 4 pole connector back into housing, properly aligning threaded hole of insert with hole in side of housing. Re-install original securing screw.

e. Mount and ground the 4 pole connector from the rear of the bumper just below the left hand frame rail. Position so that the hinged cover spring is at the

top. Install the left hand mounting bolt and tighten securely. Install the right hand mounting bolt and ground 4 pole white wire, clearance light white wire, and the work light white wire. Install nut and tighten securely.

f. Combine one 4 pole wire (if an option) with one main harness male plug wire. Crimp into one end of a splice connector. Slide conduit over the extension wires. Crimp other end of connector to the main wiring harness extensions attached earlier. (See FIG. 4-39 for details)

g. There must be 24" of slack in wire behind the pivot pins so that the wires do not pull apart when tilting and sliding the sub-frame back. Ty-wrap electrical harness to the two hydraulic hoses every six inches.

**NOTE: ELECTRICAL OR HYDRAULIC LINES ROUTED FROM FORD CHASSIS TO SUB-FRAME MUST NOT BE TIED TO OR LOOPED AROUND ANY COMPONENT OR OBJECT!**

#### 4-11.23 OPTIONAL BED WIRING WITHOUT EMERGENCY LIGHT BAR KIT, or BED WITHOUT WIRING FOR EMERGENCY LIGHT BAR KIT INSTALLATION IS AS FOLLOWS:

a. Splice the bed clearance lights into the

clearance light wire in the main harness at the back of the hydraulic valve location. (See FIG. 4-39)

b. Crimp both ends of the wire that you just cut into the same end of a splice connector.

c. Crimp the other end of the splice connector to one end of the black wire of the 27-foot, 2-conductor cable. (See FIG. 4-39)

d. Attach a 1/4" ring terminal to the white wire. Attach the ring terminal and a conduit clamp, securing the cable, to the left hand side panel in the hole provided, 20" ahead of the rear bumper and 1-1/2" below the frame rail, with a 3/16" bolt, lock washer, and nut. The loose end of the 2-conductor wire will be attached to the bed wiring later. (See FIG. 4-39)

#### 4-11.24 OPTIONAL WIRING FOR EMERGENCY LIGHTING

a. Assemble three toggle switches in aluminum panel from the back side with the toggle switch key slots down, away from the mounting flange. Tighten jam nuts securely. (See FIG. 4-40)

b. Mount the caution placard on the panel using two 3/16" stove bolts with the top of the placard toward the mounting flange of the panel. Install a lock washer and nut on each stove bolt. Align large hole of placard with the largest hole of the panel. Tighten mounting bolts securely. (See FIG. 4-40)

c. Mount PTO warning light in largest hole of

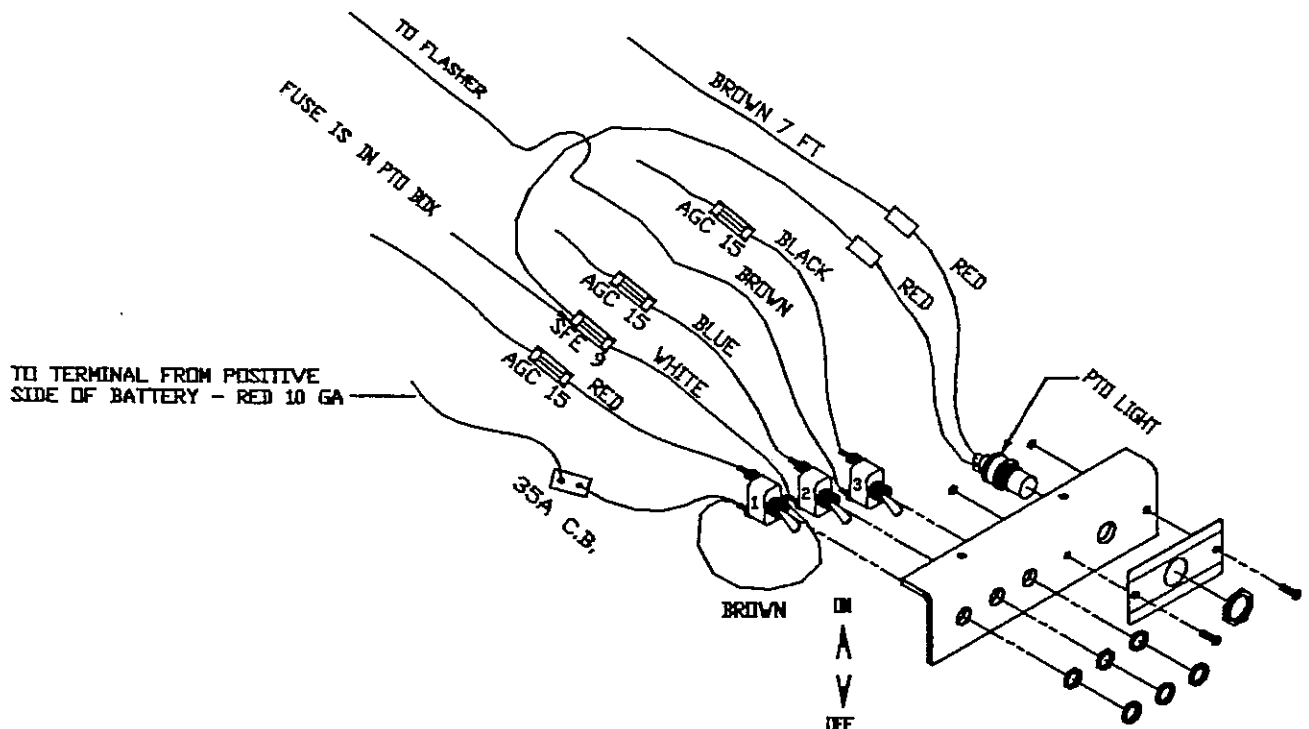


FIG. 4-40 DASH SWITCH PANEL INSTALLATION

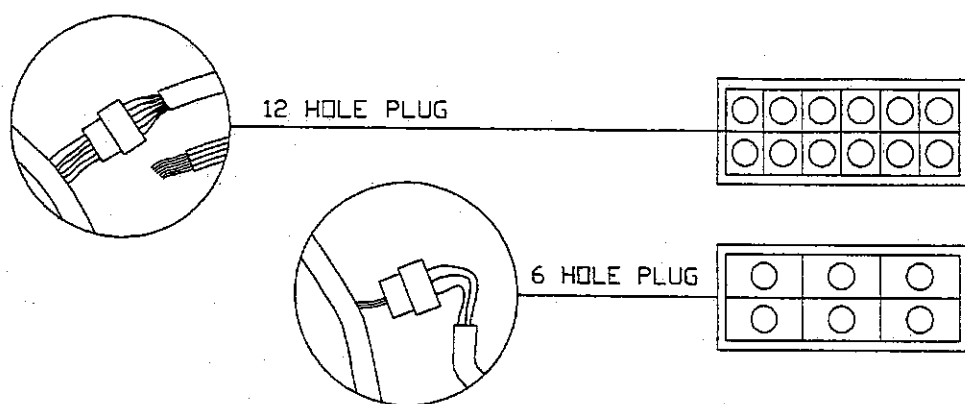


FIG. 4-41 WIRING CONNECTOR IDENTIFICATION

panel from the unpolished side. Install jam nut on front side and tighten securely against placard. (See FIG. 4-40)

**NOTE:** All Landoll supplied PTO units have a warning light. Units acquired from other sources may not have a warning switch and light.

**4-11.25** Switch panel assembly (See FIG. 4-40 for details) is wired as follows:

a. For SWITCH 1 the top post wire is red with a fuse holder and the bottom post wire is wired later.

b. For SWITCH 2 the top post wire is blue with a fuse holder and the bottom post wires are one brown wire, 4" long with a 1/8" ring, and one white wire with a fuse holder.

c. For SWITCH 3 the top post wire is black with a fuse holder and the bottom post wire is brown, 17" long.

d. For the PTO LIGHT the top post wire is red spliced to a 7 foot brown wire and the bottom post wire is spliced to SWITCH 2 white wire from fuse.

**4-11.26** Mount switch panel assembly under dash in an accessible location. The removable panel directly under the steering column works well for mounting and accessibility.

**4-11.27** Drill a 9/16" diameter hole in the fire wall 3" left and 1-1/2" down from the edge of the steering column at the fire wall. As the chassis comes from the Ford assembly plant, there is no wiring, lines, brackets, or any other obstruction in this area on either side of the fire wall.

**4-11.28** Locate and snap a 9/16" grommet, in the fire wall hole just drilled to protect wiring.

**4-11.29** Route switch panel wires containing in-line fuses (red, blue, and black) and long brown wire through grommet in fire wall.

**4-11.30** Route switch panel wires red, blue, and

black to main wiring harness located between brake power booster and the left hand fender. Do not hook up to the main harness.

**4-11.31** Locate the 12-hole electrical connection which forks off the main wiring harness located between brake master cylinder and left hand fender. (See FIG. 4-41)

**NOTE:** Within the same area of the same wiring harness there are several other plugs with one being a 6-hole plug looking very similar to the 12-hole plug. The 12 hole plug is the connection for the wiring harness for the fuel tanks and the tail lights.

**4-11.32** Connect 10" wires to the multi-conductor wiring harness using butt-splices as follows:

EXTENSION WIRE COLOR		MULTI CONDUCTOR WIRE COLOR
yellow		yellow
green	to	green
brown		brown

**4-11.33** Route the 35-foot 7-conductor cable as follows: Enter the left hand frame channel between the left upper shock absorber mount for the rear axle on the left hand frame. Pull cable forward routing along with the tail light wiring harness to the area between brake master cylinder and left hand fender. (See FIG. 4-42)

**4-11.34** TAP-SPLICE the 7-conductor cable 10" extensions to the chassis under hood wiring (See step 4-11.33). Also butt-splice to the toggle switch wiring under hood as detailed in TABLE 4-1, Page 4-28.

**4-11.35** Position the 30-amp circuit breaker on the right hand fender 3" back and 3" down from the

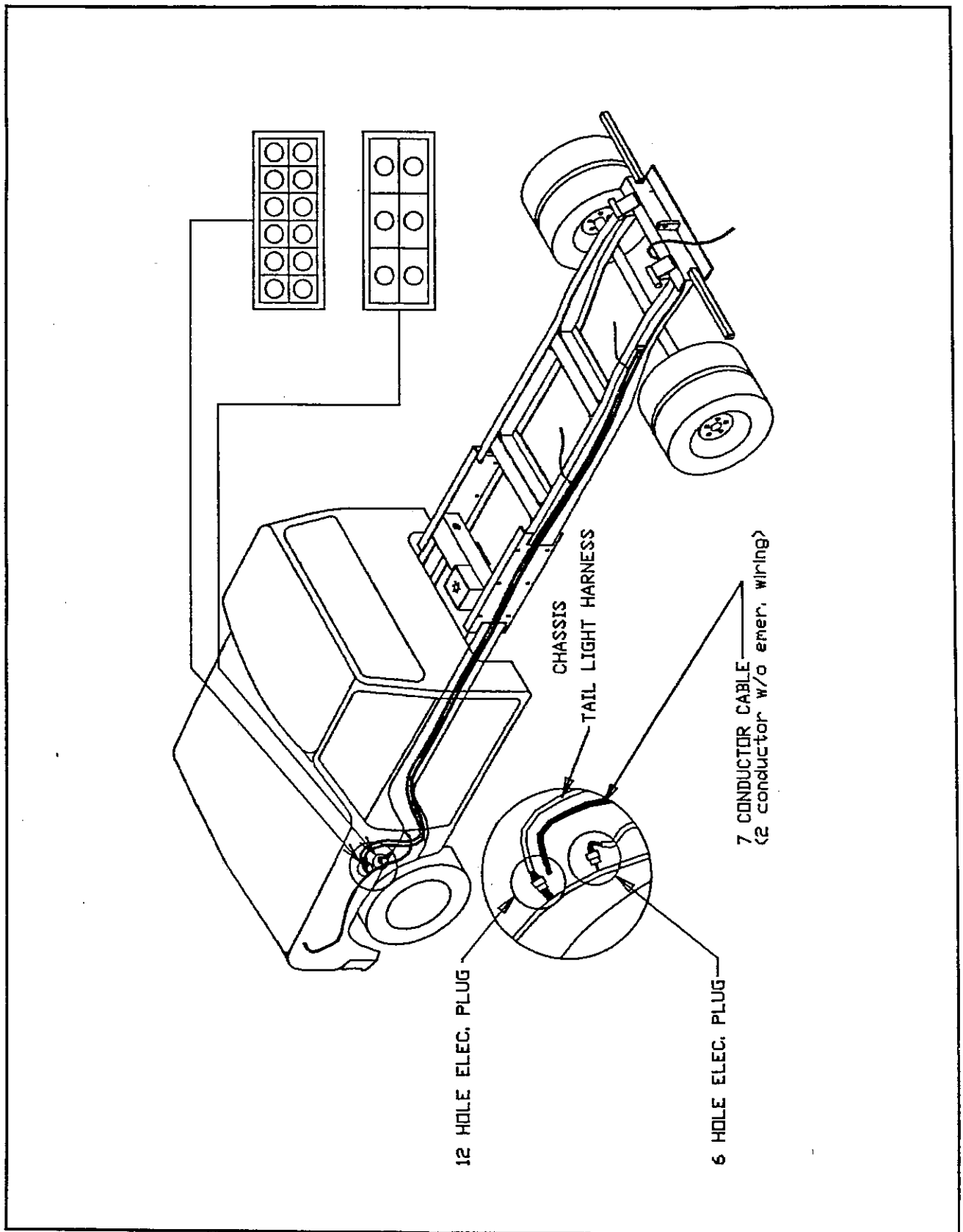


FIG. 4-42 CHASSIS HARNESS ROUTING

7-CONDUCTOR WIRE COLOR	FUNCTION	ATTACHES TO	WIRE COLOR
yellow	left hand turn	main harness extension	green/orange
green	right hand turn	main harness extension	orange/blue
brown	clearance lights	main harness extension	brown
white	ground	brake master cyl bolt w/ring term.	NONE
red	rotating lights	panel SWITCH 1	red
blue	work lights	panel SWITCH 2	blue
black	flasher lights	panel SWITCH 3	black

TABLE 4-1 SEVEN CONDUCTOR WIRING CONNECTIONS

starter solenoid. Check for possible interference of hood spring and linkage.

4-11.36 Mark the two 1/8" holes at marked locations. Mount circuit breaker using sheet metal screws. (See FIG. 4-43)

NOTE: If your kit gets an emergency light bar kit, the circuit breaker will be in the light bar package containing all the wiring necessary. If your kit is for emergency light bar wiring, but did not order the light bar, wiring will be in a package shipped with the Loadoll.

4-11.37 Using an 8" red, 10 gauge wire with a 3/16" ring terminal on one end and a 3/8" ring terminal on the other end, wire the "BAT" post of the circuit breaker to the starter solenoid, same post containing the positive battery cable from the battery.

4-11.38 Attach the 3/16" ring terminal of the 9-foot long, 10-gauge red wire to the accessory post of

the circuit breaker.

4-11.39 Route wire, staying clear of hood spring and linkage area, to the fire wall across the top of the fire wall with other wire harnesses.

4-11.40 Run the wire through the fire wall with the emergency light switch wiring to the switch panel. Attach the wire to the bottom of SWITCH 1 along with the loose end of the short brown wire of SWITCH 2. (See FIG. 4-40)

4-11.41 Remove existing emergency light flasher from the fuse box and replace with a heavy duty flasher.

4-11.42 Reconnect vehicle battery(ies) connecting the positive cable first then the ground cable. Check for any signs of a short in the wiring such as blown fuse(s) or hot wires.

4-11.43 The brown wire of switch 3 connects to the flasher. The flasher output wire is white with a red stripe. Tap-splice the brown wire to the white/red wire at the 11-hole plug on the top side of the steering

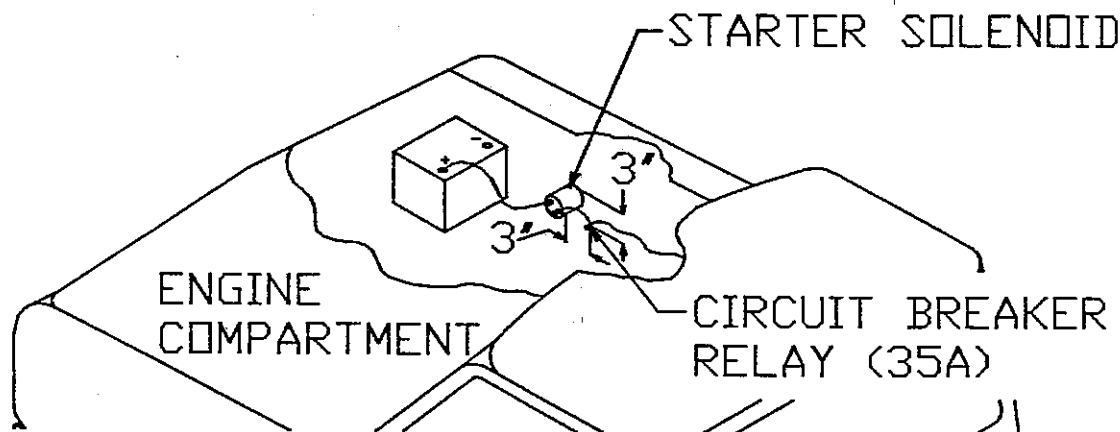


FIG. 4-43 UNDER HOOD CABLE ROUTING



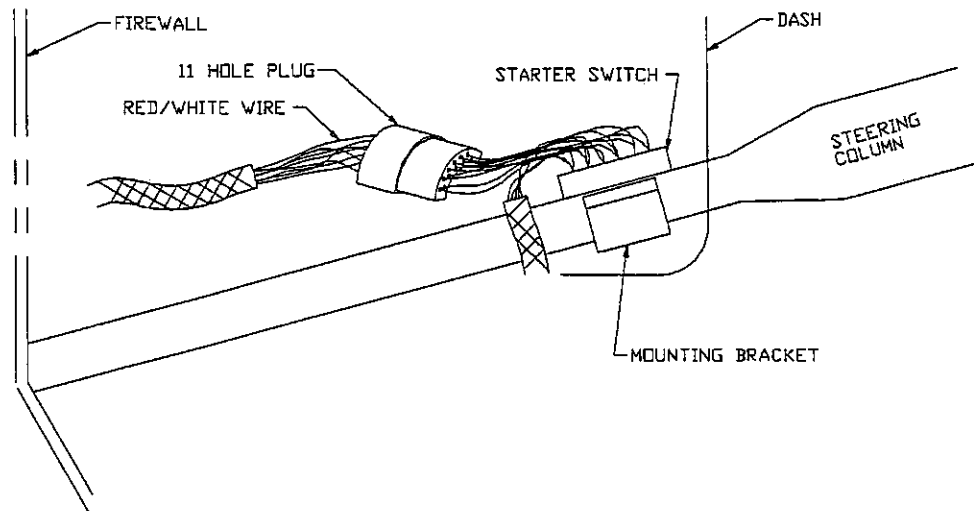


FIG. 4-44 FLASHER CONNECTION TO STEERING COLUMN HARNESS

column where the column mounts to the underside of the dash. (See FIG. 4-44)

## 4-12 BED INSTALLATION

**4-12.1** Locate the two loose-ended hydraulic hoses attached to the 3-spool valve, and the bed electrical cable (2 or 7-conductor) in the same area. Lay each together side by side over the long cylinder and under the right hand frame. Tape all three together every 6" for about the first 6 feet.

**4-12.2** Slip the 5-foot fire hose over the hydraulic and electrical lines until the first end positions directly over the long cylinders rear fitting.

**4-12.3** Punch a hole in the fire hose between the hydraulic and electrical lines about 4" from the end of the fire hose directly over the long cylinder.

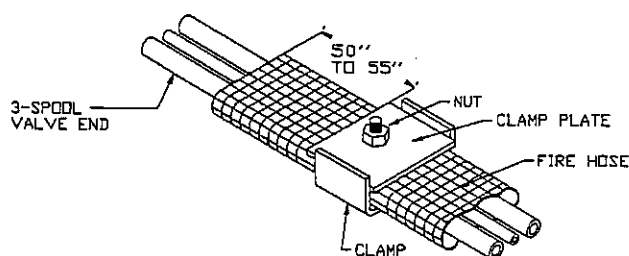


FIG. 4-45 FIRE HOSE INSTALLATION

**CAUTION:** Do not damage hydraulic hoses or electrical cable inside when punching a hole in fire hose.

**4-12.4** Secure fire hose to the long cylinder by inserting 2 long ty-wraps through the hole punched in the fire hose. Wrap the ty-wraps around the long cylinder on each side of the cylinders rear fitting. (See FIG. 4-46, next page) Two long ty-wraps may need to be connected end to end to make one long enough.

**4-12.5** Install a 2-piece clamp 50" to 55" from the anchor point of the fire hose with the flat plate above the hose, and the U-plate under the hose. All lines must be side by side without crossing over each other! (See FIG 4-45)

**4-12.6** Install the control handles and related linkage on the 3-spool valve with the handles pointing down. (See FIG. 4-47, next page) Install the handle and linkage on the single spool valve, if your unit has the tow-bar option, in the same manner as the 3-spool valve.

**4-12.7** Insert the driver's (street) side valve handle extensions (those with the 90 degree bend) through the control panel holes from the back side, threaded end first. Attach the front extension to the front valve handle, middle extension to the middle handle, and rear extension to the back handle. If your unit has the curb side control option, proceed to the next step. If you did not order the curb control option, cotter pin the controls securing them to the valve handles. (See FIG. 4-47, next page)

**4-12.8 FOR CURB SIDE CONTROL OPTION:** Attach the right side control panel to the right hand side of the sub-frame. Locate in the same position as the left panel is on the left side. Units built prior to February 1987 will have to be welded into place using

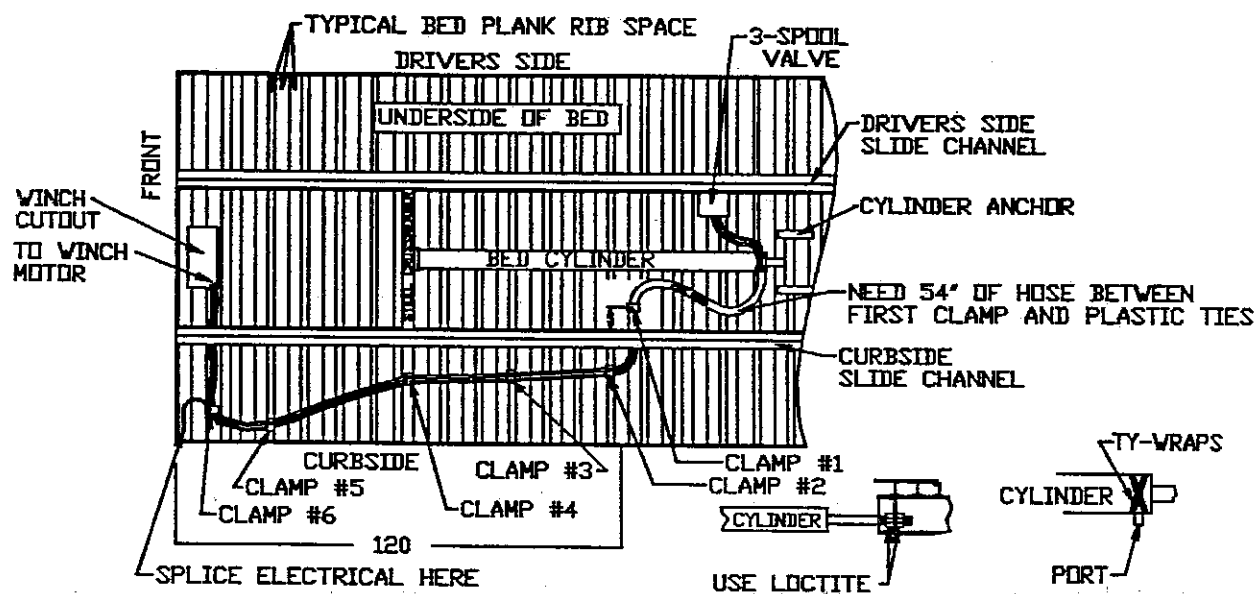


FIG. 4-46 FIRE HOSE INSTALLATION

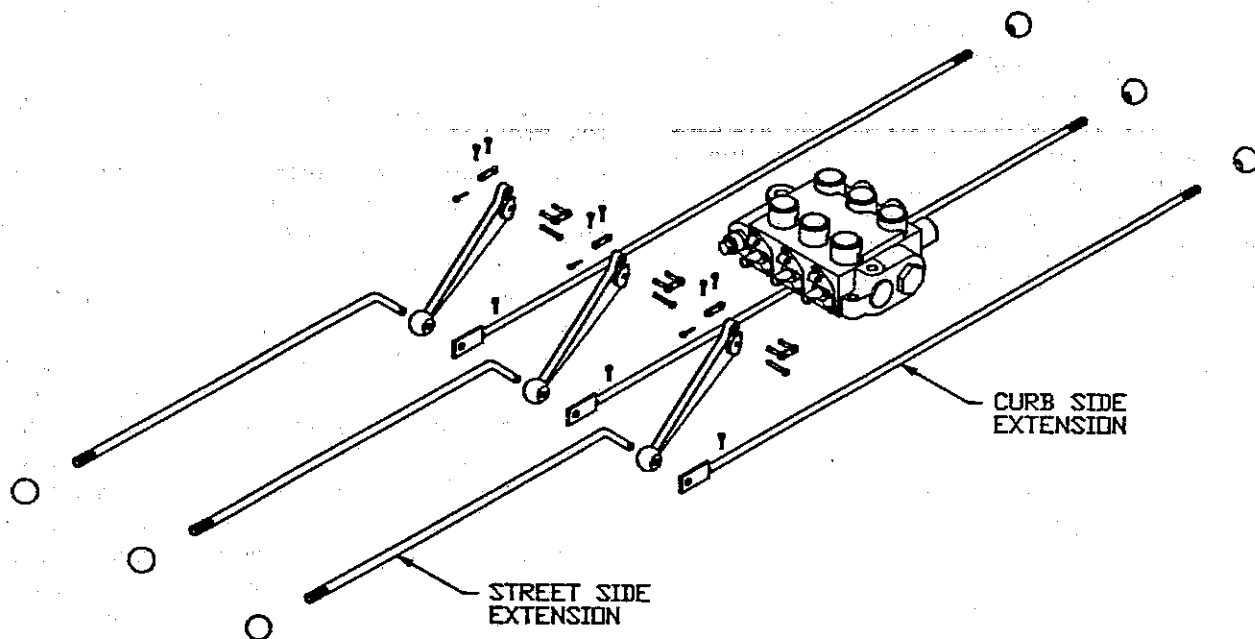


FIG. 4-47 HYDRAULIC CONTROLS INSTALLATION

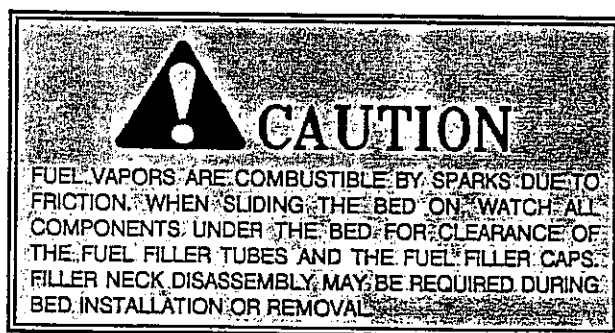
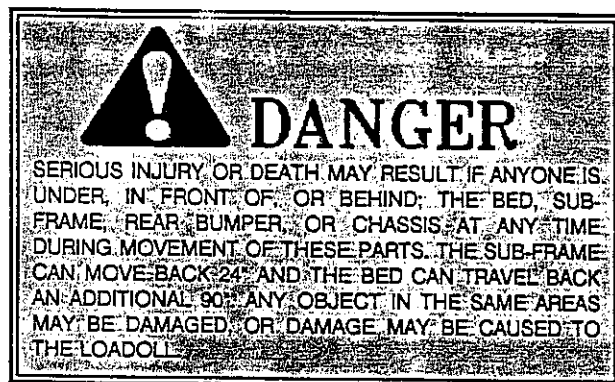
same welding procedure as for the fuel filler brackets. Units built after February 1987 will bolt onto the right side with 4 mounting bolts. Mounting holes may need to be drilled. Install handle extensions through the panel holes from the back side. The hole in the flat iron end slips over the end of the driver's side extension previously installed. Insert cotter pins and split halves to secure. (See FIG. 4-47)

4-12.9 Fill the hydraulic reservoir with a good grade of hydraulic oil. Landoll uses AMOCO RYCON MV. Use the same, or equivalent.

4-12.10 Check the plastic strips bolted to the top side of the bed slide channel. The plastic strips must be secured to the bed at the back, making certain that the bolt and washer are tight against the plastic strip.

4-12.11 Check the sub-frame guide rails for rough spots or sharp edges on all sides. Sharp edges or rough spots will greatly affect service life of the bearing surfaces. Properly prepared frame rails and plastic strip installation will ensure long service life. When properly installed, the guide rails will measure 37-3/16" (+ or - 1/8") from outside to outside of each rail. Also check each rail for bowing. More than 1/8" bow in any direction will require that the guide rail be straightened before using it.

4-12.12 Slide the bed slide channels onto the sub-frame guide rails until the front of the bed reaches the sub-frame cross member, which mounts long cylinder to the sub-frame.



4-12.13 Measure and mark a spot on the underside of the bed on the curb side. For 17 foot beds, measure 120" from the front of the bed. For 19 foot beds, measure 135" from the front.

4-12.14 Thread the hydraulic and electrical lines with fire hose, between floor ribs and over the bed slide channel at the mark located in the previous step. Pull through until the clamp on the fire hose is 5" from the slide channel. (See FIG. 4-46) Secure to the bed at this location. The flat plate of the clamp inserts between the floor ribs. Secure U-plate encasing the fire hose to the flat plate using clamp bolt and lock nut. (See FIG. 4-48) DO NOT pinch hydraulic hoses, or electrical cable between the mating surfaces of the clamp halves.

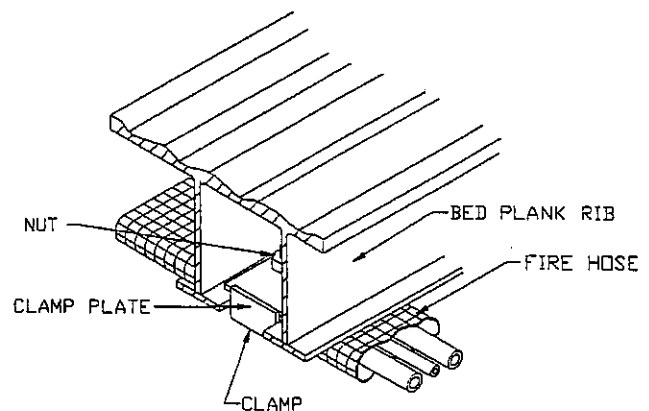


FIG. 4-48 SECURING THE HOSES AND LINES

4-12.15 Note that there will be slack in the fire hose causing the fire hose to be doubled. This slack must be present to allow the bed to slide back without pulling the hoses and electrical cords apart. Slack portion must not loop around any item such as the towbar, cross member anchor for the towbar, hydraulic hoses, electrical lines, or the valve control extensions.

4-12.16 Route the hoses and cord to the front right corner of the bed. (See FIG. 4-46) Use five clamps spaced evenly to secure the hoses and cable to the bed underside similar to FIG. 4-46.

4-12.17 Route the two hydraulic hoses back over the slide channel at an opening even with the front edge of the winch cut-out in the bed floor. (See FIG. 4-46)

4-12.18 Remove one nut from the long cylinder shaft. Run the remaining nut as far as possible onto the shaft without it getting tight.

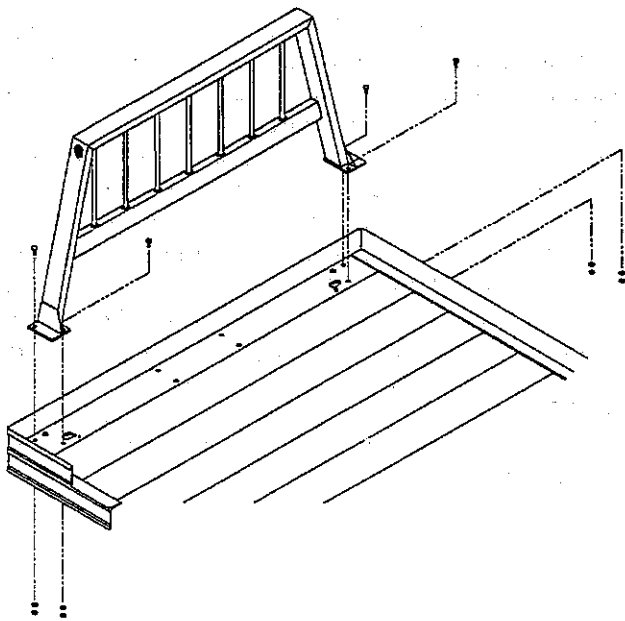


FIG. 4-49 HEAD RACK INSTALLATION

4-12.19 Start the truck and engage the PTO. Locate the Bed Slide Control Lever and extend the bed slide cylinder back to the bed cylinder anchor.

4-12.20 Position the cylinder shaft so that it aligns with the hole in the anchor and extend the cylinder until the nut on the cylinder shaft contacts the bed cylinder anchor.

**NOTE: WHEN MOVING THE BED FORWARD, DO NOT SLIDE ON SO FAR AS TO HIT THE CAB.**

4-12.21 Slide the bed forward to obtain a 1-1/4" to 3" gap between the bed and the cab. Dis-engage the PTO and shut off the truck engine.

4-12.22 With the bed located, having the proper distance from the cab, place Loctite on the long cylinder threads ahead and behind the bed anchor. Install and run the back nut forward until it contacts the bed anchor and tighten to approximately 970 ft. lbs.

4-12.23 Start the engine and engage PTO. Push in on the street side control panel front control to tilt the bed up enough to gain access to winch hydraulic hoses and mounting hardware. The bed may be slid back if necessary by using the Bed Slide Control Lever. Dis-engage the PTO and shut off the engine.

4-12.24 Attach the winch hydraulic hoses to the winch motor using 90 degree 1/2" O-ring X 3/8" swivel fittings. Hose labeled "C" on top, hose "D" on the bottom. Locate hoses to prevent rubbing on sharp edges.

Add gear lube to check plug level. The check plug is located on the opposite end of the winch from the drum engage handle.

4-12.25 Mount the hydraulic fitting guard onto the winch using two bolts (3/8"-16 X 1") and lock nuts.

4-12.26 Install the head rack aligning the holes in the base with holes in the floor of the bed at the front. Bolt securely. (See FIG. 4-49)

4-12.27 Your bed is shipped with clearance lights pre-installed, wired together, and grounded. The head rack is shipped in the same manner. The brown wire of the bed clearance lights is loose ended at the front right corner of the bed. The head rack brown clearance light wire exits out of the right side leg. Connect these wires to the brown wire of the cable routed with the winch hydraulic hoses. If your unit does not get emergency light wiring, the wire is a 2-conductor wire. A 7-conductor wire cable is used for emergency light wiring.

## 4-13 LIGHT BAR OPTION

4-13.1 Locate the 13/16" diameter hole in the head rack top tube, top side only and centered front to back, 8-3/4" from the left hand side. (See FIG. 4-50)

4-13.2 Mount the emergency light bar according to the instructions that are supplied with the light kit. (See FIG. 4-50)

4-13.3 Run electrical wires into the 13/16" diameter hole located in the top tube. Route to the passenger side of the head rack, down the side to exit through the floor.

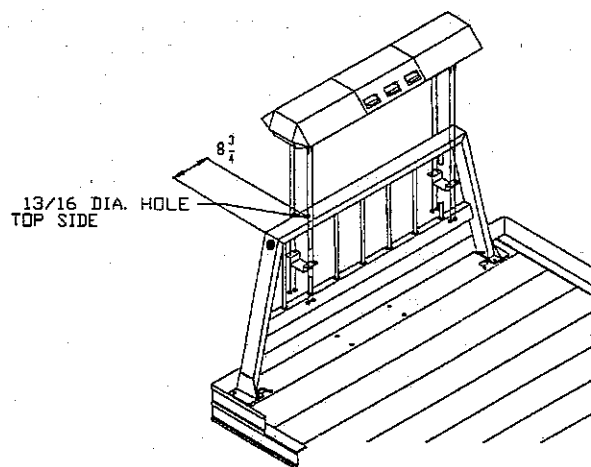


FIG. 4-50 LIGHT BAR INSTALLATION

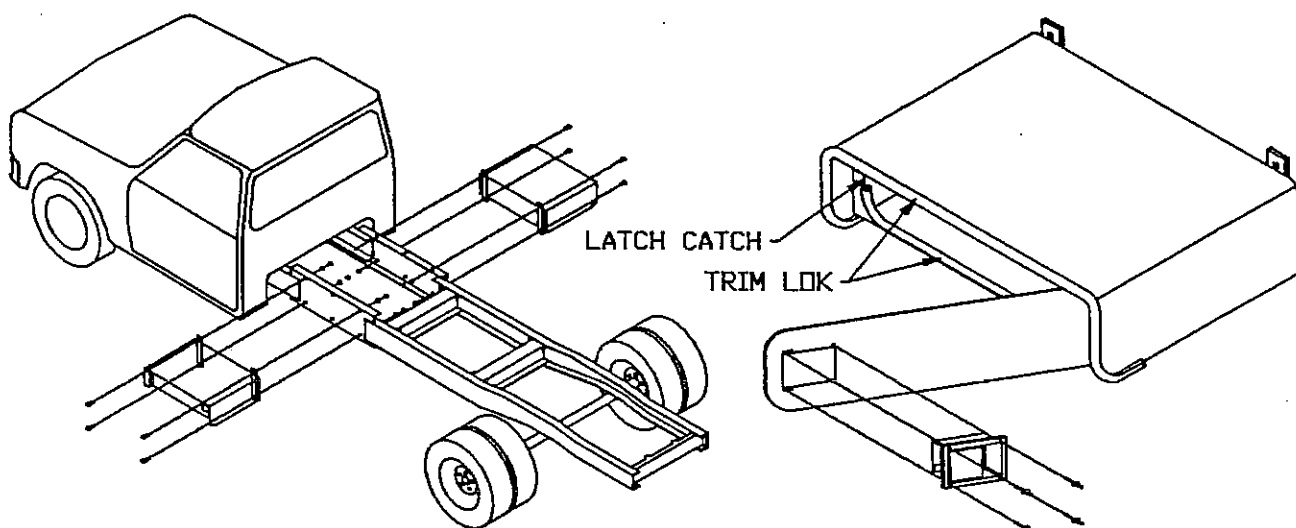


FIG. 4-52 TOOL BOX INSTALLATION

4-13.4 Wire the light bar to the 7-conductor cable according to the instructions supplied with the light bar. The 7-conductor cable wires are as follows:

WIRE COLOR	CIRCUIT
yellow	left hand turn
green	right hand turn
brown	clearance lights
white	ground
red	emergency SWITCH 1
blue	emergency SWITCH 2
black	emergency SWITCH 3

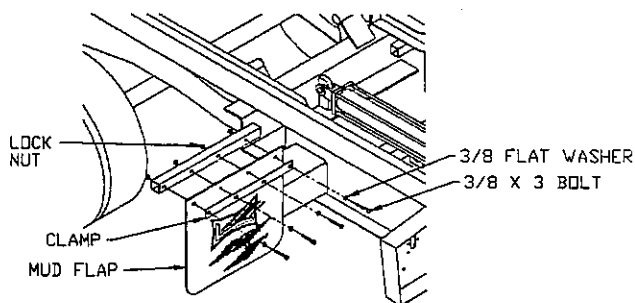


FIG. 4-51 MUD FLAP INSTALLATION

#### 4-14 MISCELLANEOUS INSTALLATIONS

4-14.1 Install a mud flap behind both rear dual wheels on the square tube provided. Use four 3/8" x 3" bolts to hold the mud flaps secure between the square tube mount and the flat metal clamp. (See FIG. 4-51)

4-14.2 Mount the tool box(es), if ordered, to the side of the chassis frame just behind the cab. Tool box mounting tabs match existing holes of the frame. Run Trim-lok around edge of tool box opening. Match drill and rivet latch in door. Close door. If door is loose, open door and bend catch tab to provide a secure rattle-free closure. (See FIG. 4-52)



## 4-15 D-RING INSTALLATION

4-15.1 Stiffener blocks are welded to the underside of the bed for the D-rings. (See FIG. 4-53) These pads are located approximately 23", 95", and 185" from the tail end of the bed on each side. The 23" and 95" locations are the standard option locations with the 185 location an additional option.

4-15.2 Mark and center punch the locations to be drilled at 1-1/4" from side rail and centered between deck ribs.

4-15.3 Drill an 11/16" diameter hole through the side rail flange, floor decking and D-ring support pad.

4-15.4 Slip D-rings in the clevis.

4-15.5 Slip spacer tube into the clevis aligning with the bolt hole.

4-15.6 Insert 5/8"-11 x 4" bolt through washer, clevis and bushing, and second flat washer. Mount assembly to the bed of the Loadoll. (See FIG. 4-53) Tighten lock-nut snug, but loose enough to swivel the D-rings forward and back by hand.

4-15.7 Swivel the D-rings forward and back. The clevis must not cut into the side of the bed.

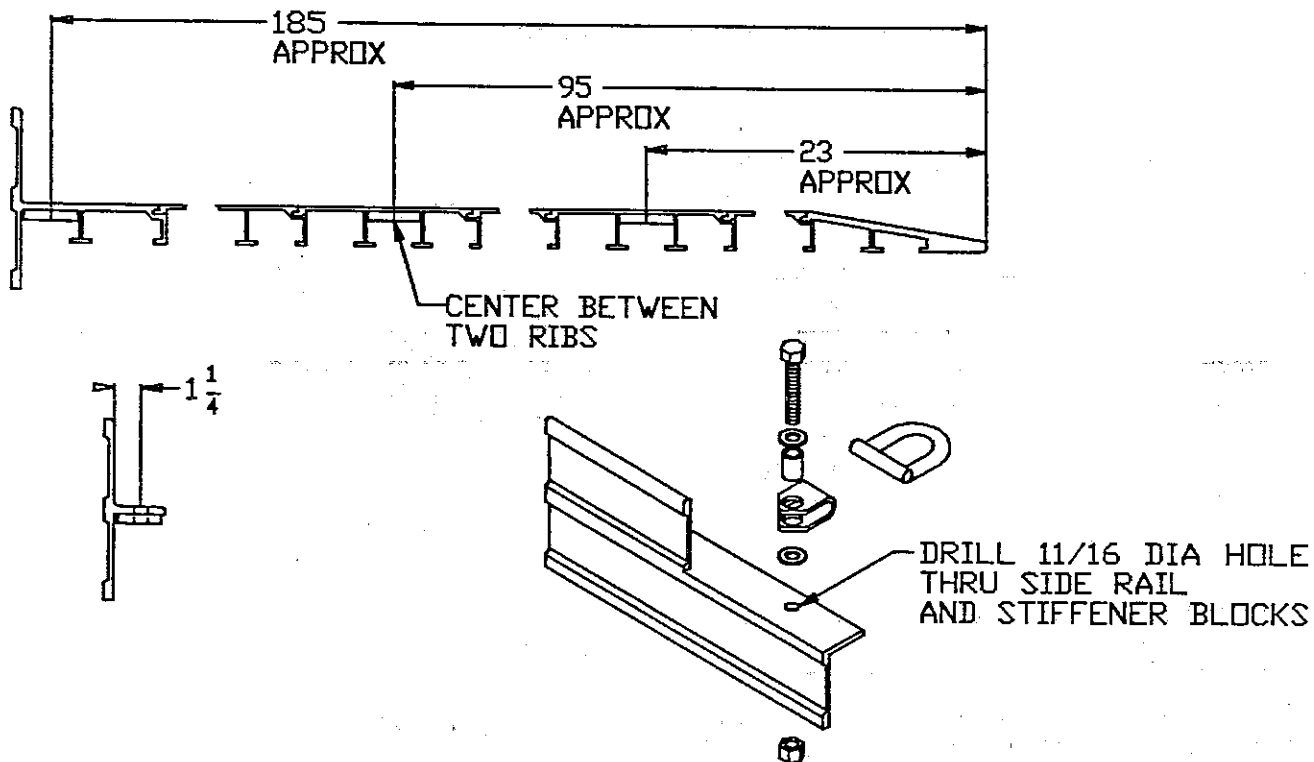


FIG. 4-53 D-RING INSTALLATION

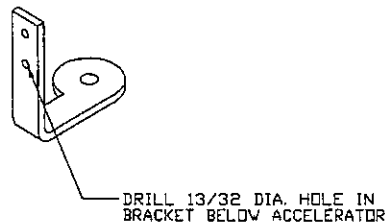


FIG. 4-54 ACCELERATOR ANCHOR BRACKET ADAPTATION

## 4-16 AUXILIARY THROTTLE CABLE

4-16.1 Remove the air cleaner housing from the carburetor or intake manifold, and set aside.

4-16.2 Cover the carburetor or intake manifold opening to prevent falling dust or parts from entering the engine.

4-16.3 Drill a 13/32" diameter hole in the accelerator anchor bracket (mounted to the intake manifold) just below the existing accelerator pedal cable. (See FIG. 4-54)

4-16.4 Select the location for the hand throttle mounting bracket under the dash. Make the following considerations while choosing a location:

4-16.5 Control must be convenient for operation.

4-16.6 Bracket must mount to a solid portion of the dash such as the metal frame work.

4-16.7 The cable will need to be routed through the fire wall at a location providing minimal bending of the cable to reach the carburetor or injection pump linkage. The sharper the bend, the stiffer the cable will function.

4-16.8 A hole in the fire wall will need to be drilled. Check both sides of the fire wall for brackets, wiring, or other obstruction that must be avoided, or which would interfere with the routing of the cable.

4-16.9 Hold the throttle mounting bracket in the selected location and mark the mounting holes onto the dash. Remove the mounting bracket and drill the holes where marked using the same size drill as the bracket holes. Bolt the bracket in place.

4-16.10 Drill a hole in the fire wall, slightly larger than the throttle cable housing, at a location free of brackets, wiring, or other obstruction from either side that must be avoided.

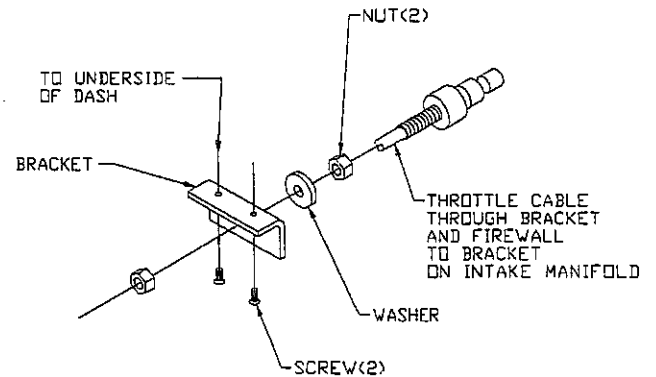


FIG. 4-55 MOUNTING CABLE TO DASH

4-16.11 Mount the throttle cable to the mounting bracket by threading one nut onto the hand throttle housing. Slip one flat washer over the housing. Insert the throttle cable through the mounting bracket under the dash. Slip the second nut onto the housing. Route the cable through the fire wall past the carburetor area. Thread and tighten the nut (slipped onto the cable before going through the fire wall) to secure the cable to the mounting bracket. (See FIG. 4-55)

4-16.12 Pull the inner cable 6" out of the outer housing. Route the outer cable to the accelerator cable anchor mounted on the intake manifold. Cut the outer housing and inner cable to a length even with the anchor. Push throttle cable back into the housing to the idle position.

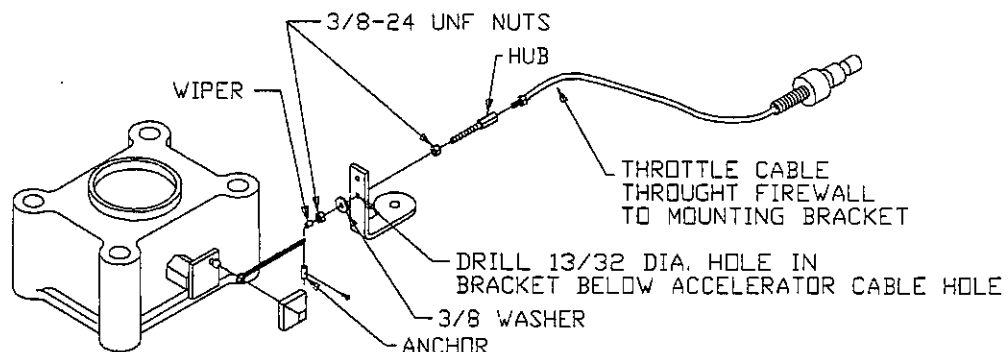


FIG. 4-56 MOUNTING CABLE TO CABLE ANCHOR

4-16.13 Trim sharp edges on the end of the outer housing. Thread one adjusting nut onto cable adjuster (hub) and mount in the hole just drilled with the hex portion of the hub on the back side. Add a 3/8" flat washer, then thread the remaining adjusting nut on and secure tightly. (See FIG. 4-56, previous page)

4-16.14 Insert the cable and housing into the adjuster hub then slide the wiper over the inner cable up to the hub. (See FIG. 4-56, previous page)

#### 4-17 THROTTLE LINKAGE - GAS MODELS ONLY

4-17.1 Remove the insulation from a 1/4" electrical ring terminal. Open the crimping barrel lengthwise. Insert one side of the opened barrel into the end loop of the chain. Fold this side of the terminal down and then fold the other side over this to secure the chain. (See FIG. 4-57) Snap the accelerator cable off of the carburetor linkage ball. Slip the ring of the chain over the linkage ball and snap accelerator cable socket back on.

#### 4-18 THROTTLE LINKAGE - DIESEL MODELS ONLY

4-18.1 Fasten the pull chain to the injector pump linkage top hole, drill if necessary, using a nut as a washer/spacer, and cotter pin assembled with the chain between the nut and carburetor linkage. Spread

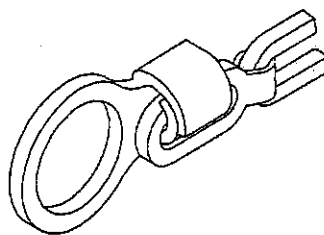


FIG. 4-57 ACCELERATOR CABLE ADAPTATION

the cotter pin and check full travel of throttle linkage. Cotter pin must not cause binding or catching of the throttle control. (See FIG. 4-58)

4-18.2 Slip the loose end of the pull chain over the throttle control inner cable. Set the "dead man" anchor over the end of the cable far enough to allow only a slight amount of chain slack with the control knob all the way in, and the carburetor linkage on hot idle. If carburetor choke is on when chain slack is set, the throttle may not return to hot idle without lengthening the throttle cable or pull chain.

4-18.3 Check travel of accelerator, choke, and throttle for proper operation with no binding or interference. The chain must not contact electrical components or catch on anything throughout the accelerator travel from idle to wide open. Replace any throttle return springs which may have been removed or which may have fallen off.

4-18.4 Replace the intake air cleaner.

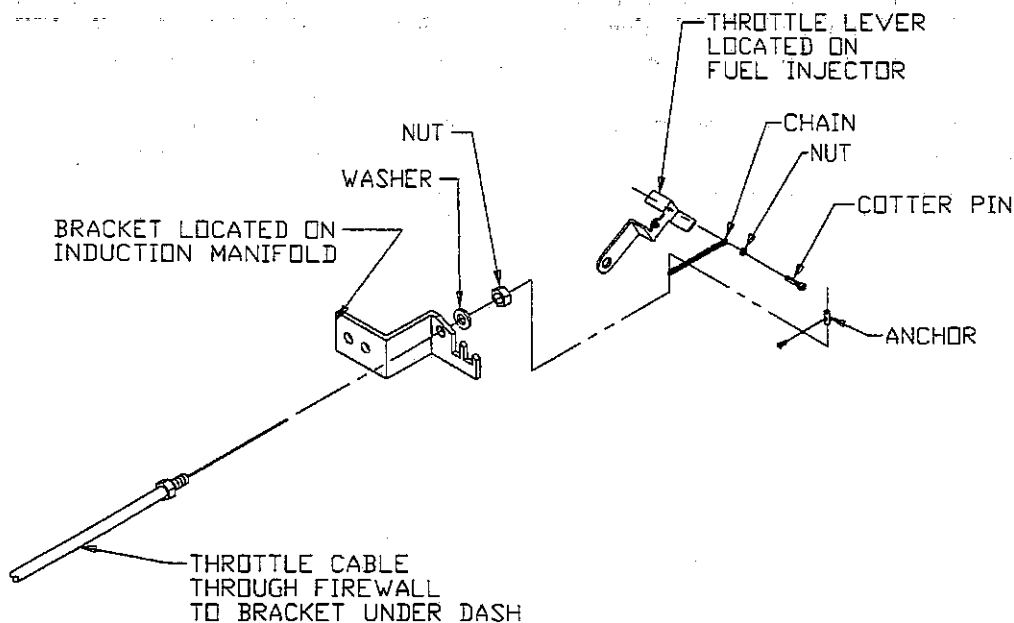


FIG. 4-58 DIESEL THROTTLE CABLE INSTALLATION



STREET SIDE: (See FIG. 4-59)			
ITEM #	DECAL DESCRIPTION	(*)	DECAL P/N
1	BLACK STRIPE	D	3-573-010066
2	LANDOLL	D	1-573-010100
3	SERIAL NUMBER	P	non-replaceable
4	IMPORTANT! 1500 LBS MAX...TOW BAR LOAD	D	3-573-010093
5	TOW BAR IN OUT	P	3-573-010067
6	IMPORTANT! BED MUST BE FULLY FORWARD...	D	3-573-010105
7	STREET SIDE CONTROL	P	3-573-010099
8	PATENT PENDING	D	3-573-010055
9	INCOMPLETE VEHICLE MFG BY:	D	See step 4-13.3
11	CHELSEA PTO CONTROL -NOT SHOWN-	P	WITH PTO KIT
BACK: (See FIG 4-60)			
1	BLACK STRIPE	D	3-573-010066
2	LANDOLL	P	1-573-010100
CURB SIDE: (See FIG 4-61)			
1	BLACK STRIPE	D	3-573-010066
2	LANDOLL	D	1-573-010100
6	IMPORTANT! BED MUST BE FULLY FORWARD...	D	3-573-010105
10	CURB SIDE CONTROL	P	3-573-010100

\* D = DECAL                      P = PLACARD

TABLE 4-2 DECAL IDENTIFICATION

#### 4-19 DECALS & TRIM-LOK

4-19.1 Install ALL decals, without bubbles or creases, and placards as listed in TABLE 4-2. (some decals are factory installed)

4-19.2 Check to verify that all the following Trim-lok has been installed:

- Trim-lok all frame cross member bottom

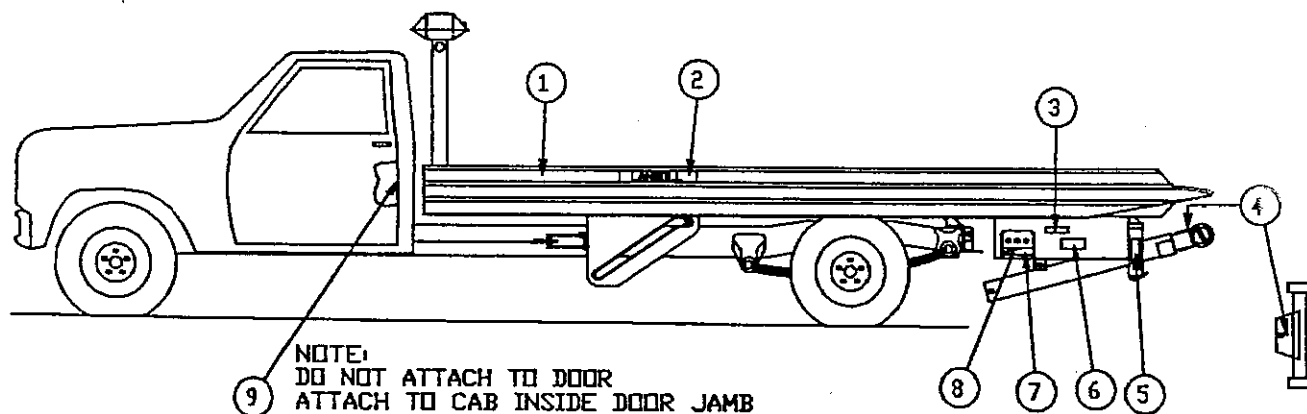


FIG. 4-59 DRIVERS SIDE DECAL LOCATIONS

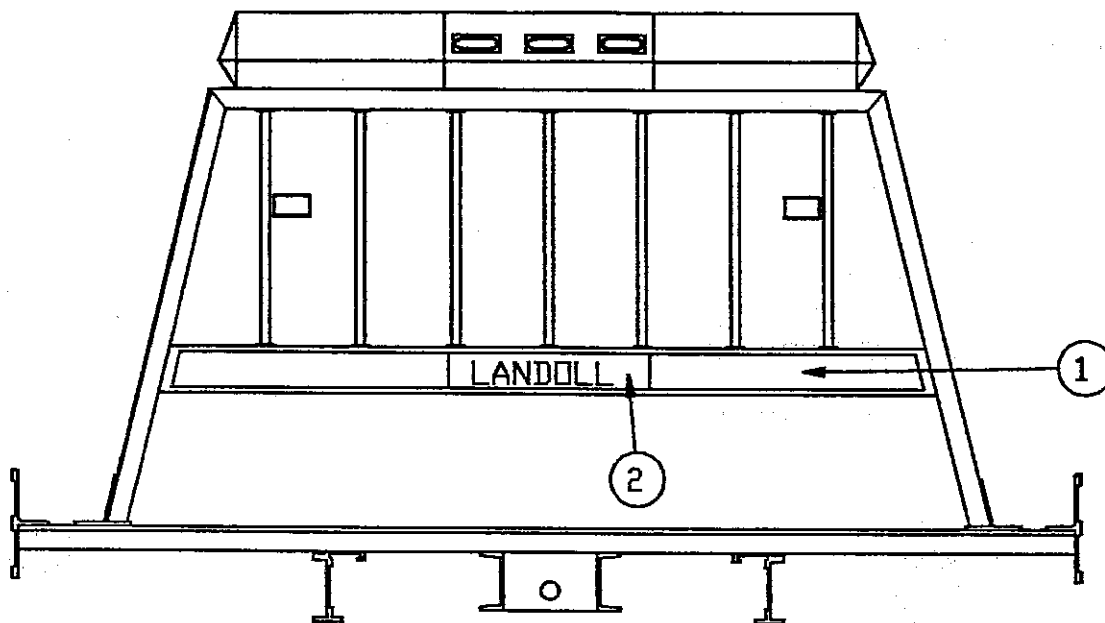


FIG. 4-60 HEAD RACK DECAL LOCATIONS

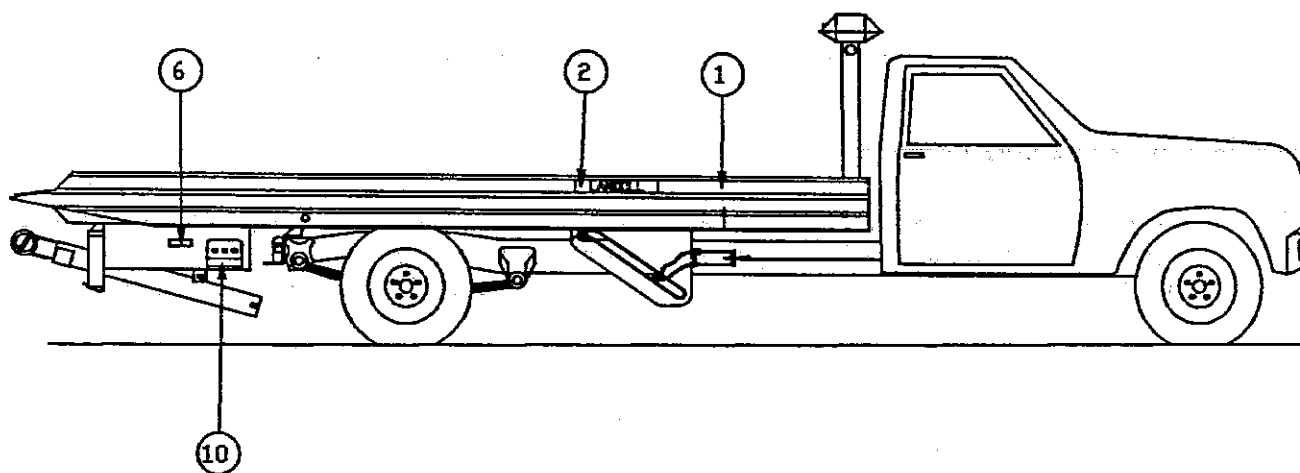


FIG. 4-61 CURB SIDE DECAL LOCATIONS

flanges on the left side to protect hydraulic hoses and electrical lines. (See FIG. 4-62, next page)

b. Z-plate, trailing edge on the street side half to protect hydraulic hoses and electrical lines. (See FIG. 4-62, next page)

c. Any other place hydraulic or electrical lines rub sharp edges.

d. Tool box(es) around the top and side edges, and around opening edge behind the door. (See FIG. 4-63, next page)

e. Control panel(s) located behind the rear axle on the sub-frame. Install trim-lok on all 4 leading edges. (See FIG. 4-64, next page)

4-19.3 AS REQUIRED BY FEDERAL MOTOR

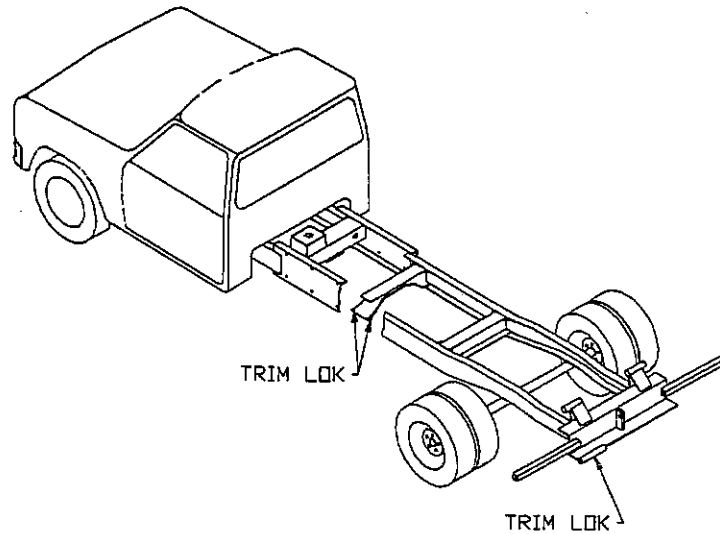


FIG. 4-62 CHASSIS TRIM-LOK

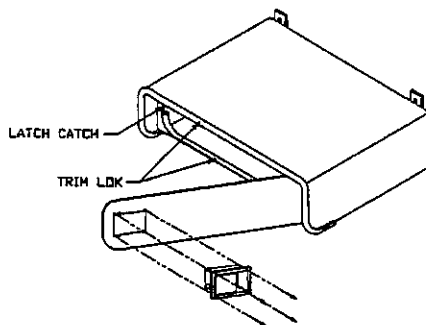


FIG. 4-63 TOOL BOX TRIM-LOK

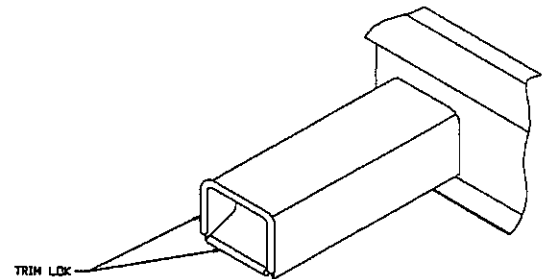


FIG. 4-64 CONTROL PANEL TRIM-LOK

MANUFACTURED BY:	
DATE OF MANUFACTURE	no yr
INCOMPLETE VEHICLE MANUFACTURED BY:	
DATE INC.VEH.MFD.	no yr
GVR	
GAVR FRONT	with
	tires,
rim,s	psi cold
GAVR INTERMEDIATE(1)	with
	tires
rim,s	psi cold
GAVR INTERMEDIATE(2)	with
	tires
rim,s	psi cold
GAVR REAR	with
	tires
rim,s	psi cold
THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT IN	
no yr	
VEHICLE IDENTIFICATION NUMBER:	
no	
VEHICLE TYPE:	

VEHICLE LAW, fill in the "INCOMPLETE VEHICLE MANUFACTURED BY:" decal, shown at left, as follows:

- COMPANY/INDIVIDUAL installing kit
- MONTH installation completed
- YEAR installation completed
- FORD MOTOR COMPANY
- MONTH truck was built @ FORD
- YEAR truck was built @ FORD
- thru 12.(copy from the INCOMPLETE VEHICLE CERTIFICATION LABEL on the truck door jam)
- thru 22.Leave blank
- thru 27.(copy from the INCOMPLETE VEHICLE CERTIFICATION LABEL on the truck door jam)
- MONTH of installation
- YEAR of installation
- (copy from the VEHICLE CERTIFICATION label)
- SERIAL NUMBER on LOADOLL KIT

## 4-20 REMOTE CONTROLLED WINCH

4-20.1 Remove the "BYD" (power beyond) plug or hose from the 3 spool valve. If your unit has a tow-bar installed, it will be a hose, if your unit does not have a tow-bar, it will just be plugged.

4-20.2 If your unit is not plumbed for the tow-bar, install a "BYD" adapter, a 3/4" x 1/2" pipe bushing, and 90° 1/2" male pipe x 1/2" female pipe swivel in the "BYD" port of the three spool valve. (See FIG. 4-65, items 7, 8 & 4)

4-20.3 Attach one end of a 1/2" hydraulic hose (FIG. 4-65, item 2) to the "BYD" fittings just installed. Attach one end of another 1/2" x 35" hydraulic hose (FIG. 4-65, item 2) to the bottom port of the single spool valve for the tow-bar.

4-20.4 Install a 3/4"-16 O-ring to 1/2" female pipe adapter into each of the top two ports of the solenoid valve. Install two more fittings, one in the top port on one side of the valve, and one in the bottom port of the opposite side.

4-20.5 Install two 90° 1/2" male pipe x 1/2" female pipe swivel fittings in the o-ring adapters just installed in the top ports of the solenoid valve. Position the elbows to point toward the side of the valve using the bottom port. (See FIG 4-65, item 4, 5)

4-20.6 Match drill and mount the solenoid valve (FIG. 4-65, item 6) to the sub-frame side panel between the valve control rods and the rear bumper with the 90° fittings pointing forward. The mounting location must allow connection of the hose (item 2) from the "BYD" port of the three spool valve and the hose (item 2) from the tow-bar single spool valve.

**NOTE: OVER TIGHTENING OF THE VALVE MOUNTING BOLTS MAY CAUSE THE SOLENOIDS TO STICK.**

4-20.7 Attach the three spool valve "BYD" hose to one side port of the solenoid valve and connect the tow-bar hydraulic hose (if applicable) to the other side port. (See FIG. 4-65, items 2) If your unit does not have a tow-bar, run the this hose to the "T" in the "OUT" port of the three spool valve.

4-20.8 Remove the two winch hydraulic hoses from the three spool valve. Install a "Tee" 1/2" male pipe x 1/2" female swivel x 1/2" female swivel in each of the 90° fittings on the three spool valve (See FIG. 4-65, item 3). Position the "Tee" to point forward and back. Reconnect each winch hydraulic hose to the back side of the "Tee" located in the three spool valve port each hose initially plumbed to. Install one 1/2" x

48" hydraulic hose (See FIG. 4-65, item 1), to each of the two remaining front ports of the "Tee" fittings. Route the hose of each "Tee" around to the opposite side of the three spool valve, and attach the open end of each hose to the 90° fittings on top of the solenoid valve. It does not matter which hose is connected to which of the two 90° fittings on top of the solenoid valve.

4-20.9 Connect the fuse end of the blue 14 gauge wire (See FIG. 4-65, item 11) from the battery terminal of the starter solenoid, or an ignition terminal of the fuse box to the rear drivers side control panel. Follow the same routing to the rear bumper as the hydraulic hoses and seven conductor cable in the left hand frame. Make sure there are 24" of slack between the chassis frame Z-plate and the sub-frame three spool valve. Anchor the wire to a hydraulic hose at the three spool valve.

4-20.10 Drill a 2" diameter hole in the back side of the drivers side control panel. Insert the female seven conductor plug into the hole, and match drill mounting holes from the plug to the control panel.

4-20.11 Remove the seven pole connector and remove the inner core from the connector housing. Run the blue wire through the control panel 2" hole and into the small end of the seven pole connector housing. Insert one end of a 14 gauge yellow and a 14 gauge green wire into the same connector. Connect the blue wire to the inner core terminal marked "BLK". Connect the yellow wire to the terminal marked "Y". Connect the green wire to the terminal marked "GRN". Check to insure each wire is secured by firmly pulling on each one. A secure wire will not pull out with moderate tension. **BARE WIRES MUST NOT TOUCH EACH OTHER.** Tape as needed. Slip outer housing over inner core and re-install the housing to inner core screw. Mount the connector to the control panel.

4-20.12 Route the yellow and green wires to the solenoid valve. Cut to length and crimp a female spade terminal on each. Connect the yellow wire to one valve solenoid and connect the green to the other solenoid. These two wires may be on the wrong solenoid. An actual test of the winch operation must be done to determine which wire goes on which solenoid. If the winch runs backwards according to remote button label, switch wires on the valve solenoids. This should correct the winch direction of rotation. Ty-wrap all electrical and hydraulic lines to non-moving parts to avoid contact with sharp, abrasive, or moving objects.

**NOTE:** Do not ty-wrap to the control panel extension rods, they are moving parts.

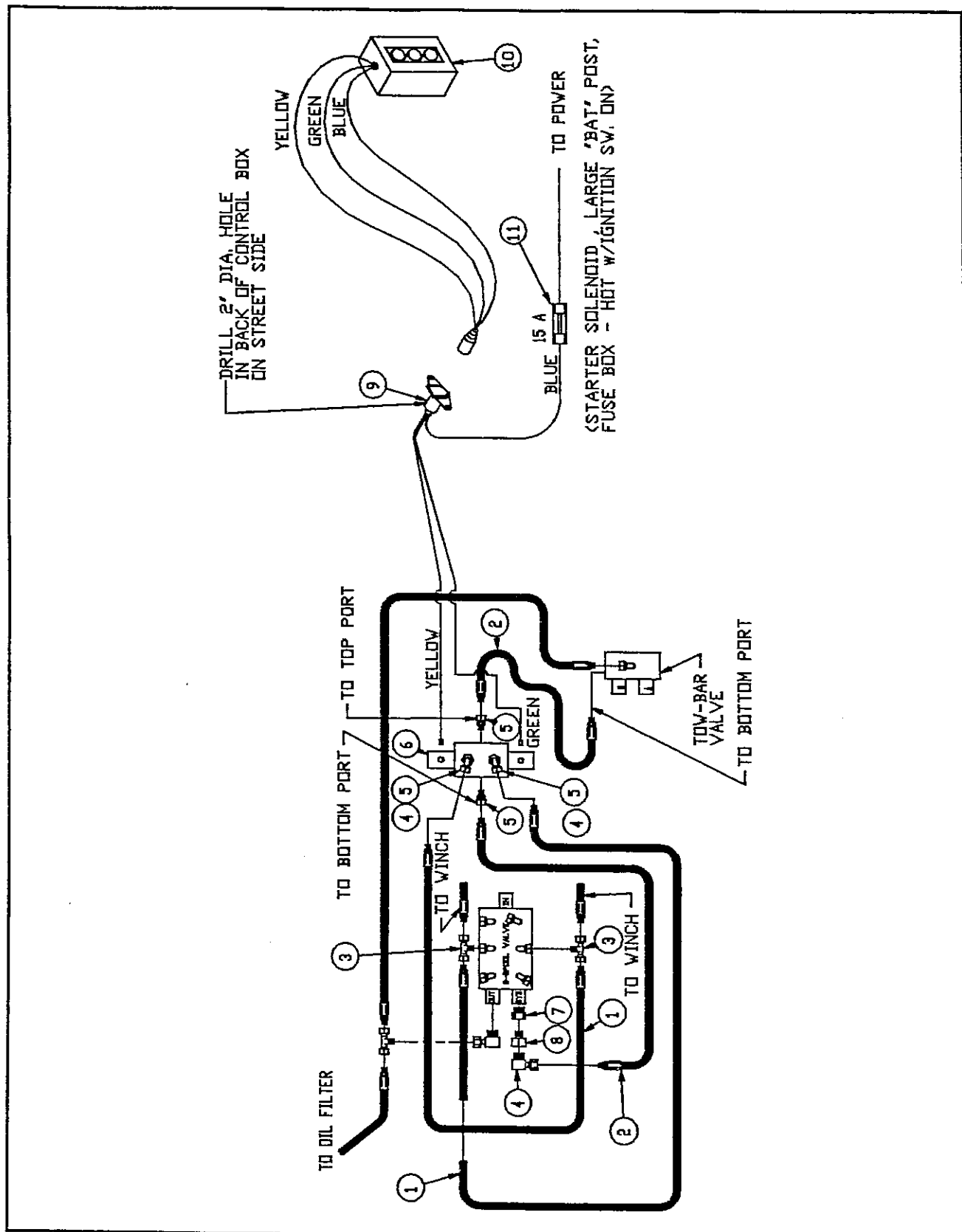


FIG. 4-65 REMOTE CONTROL WINCH INSTALLATION

## 4-21 INSPECTION AND TESTING

The following check sheet is a guide for checking the installation and function of your new Superduty Loadoll. Follow the guide in order. Place a check mark in the box provided if the test passes. If any test fails, correct the problem before proceeding to next step. Remember that this check list is only a guide and should be considered a minimal inspection.



# DANGER

READ AND STUDY THE CONTROLS AND OPERATION SECTION OF THIS MANUAL BEFORE ATTEMPTING TO OPERATE. IMPROPER OPERATION OF THE LOADOLL COULD RESULT IN PERSONAL INJURY OR DEATH.

### GENERAL

1. Under hood neat, no loose fittings/connections ☐
2. Throttle cable works freely, routing ok ☐
3. Accelerator cable works free, routing ok ☐
4. Emerg. brake cable routing ok, adjustment ok ☐
5. Drive shaft U-joints in phase ☐
6. All carrier bearings correct height, in line ☐
7. Drive shafts do not bottom out when compressing each shaft 1 to 2-1/4 inches ☐
8. All frame welds good quality, correct size ☐
9. Fuel tank fillers installed correctly ☐
10. Brake lines bled, no leaks, brakes firm ☐
11. Fuel line doesn't leak ☐
12. Cam roller 1/16-1/4" from end of guide in the transport position. ☐
13. Fire hose clamped properly, lays properly. ☐
14. Winch to motor drive key installed. ☐
15. Winch filled with oil to check plug level ☐

### ELECTRICAL

16. Lights on truck function properly ☐
17. Lights on bed proper color ☐
18. All bed clearance lights function ☐
19. Bumper work lights function properly ☐
20. Light bar switches mounted with off down ☐
21. Light bar lights function properly ☐

### HYDRAULIC

22. Standard transmission refilled to proper level ☐
23. PTO and transmission w/o leaks or loose bolts ☐
24. PTO cable functions smoothly, routed properly ☐
25. PTO warning light "ON" when PTO is engaged ☐
26. Belt driven PTO-mounted securely, belt aligns ☐
27. Hydraulic reservoir filled to proper level ☐
28. Suction/pressure lines away from exhaust heat ☐
29. All hoses/electrical lines tied up ☐

### HYDRAULIC, CONTINUED

30. Trim-lok installed to protect hoses ☐
31. No oil leaks at hydraulic connections ☐
32. Cylinder shafts without nicks or damage ☐
33. Cylinder serial numbers written down ☐

### OPERATION

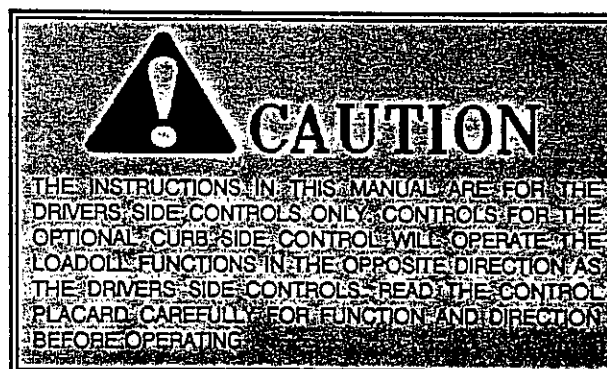
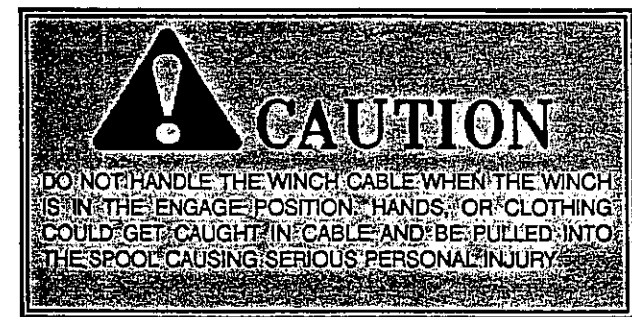
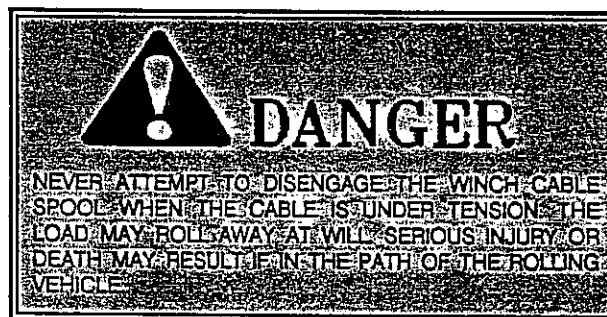
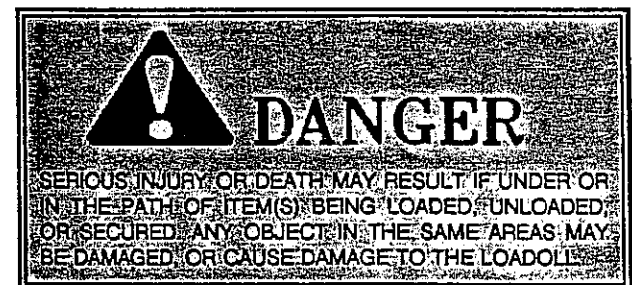
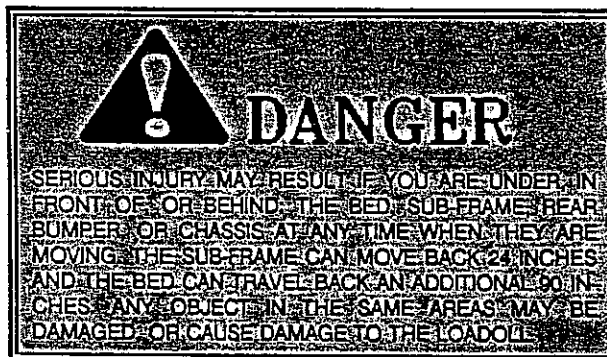
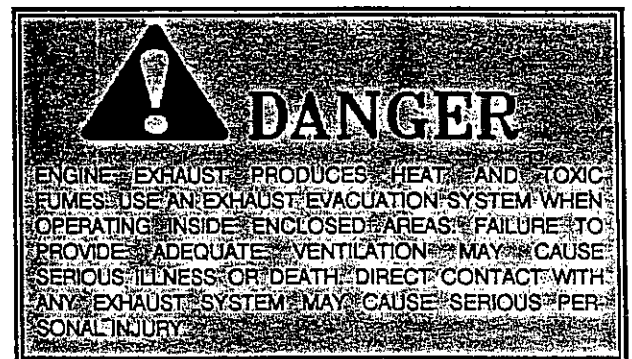
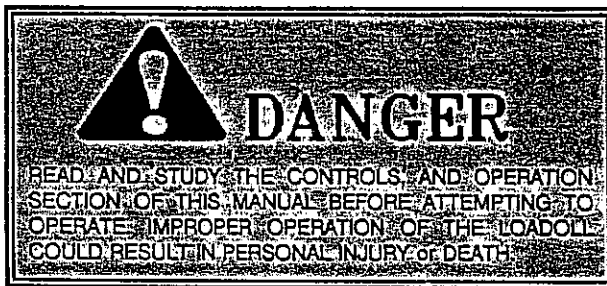
34. Tilts smoothly without binding or scraping ☐
35. Rear bumper touches ground when tilted ☐
36. Bed slides smooth w/o peeling-touches ground ☐
37. Lines & hoses have proper clearance under bed ☐
38. Lines & hoses have proper slack at rear bumper ☐
39. Bolt/washer tight on bed slide plastic strip ☐
40. Long cyl. to bed mounting nuts tight, locked ☐
41. Winch operates proper direction, mount secure ☐
42. Smooth Towbar function, cross tube sits level ☐
43. Tool box door latches, holds snug, locks ☐
44. D-rings snug but swivel with out cutting bed ☐
45. Bulkhead sits level and square, no rattles ☐
46. Bed sits level & cab and road, without twist ☐

### ROAD TEST

ROAD TEST ONLY AFTER ALL THE ABOVE INSPECTIONS CHECK OK FOLLOW THE FOLLOWING CHECKS IN ORDER IF A TEST FAILS, REPAIR BEFORE PROCEEDING

47. Chassis cab gauges function properly. ☐
48. Parking brake holds secure, releases w/o drag ☐
49. Service brakes solid not spongy ☐
50. All fuel tanks take fuel ☐
51. Service brakes don't fade during stops ☐
52. Chassis tracks straight ☐
53. All options have been installed ☐
54. All serial numbers are recorded at the front of this manual. ☐
55. OIL reservoir level topped off. ☐

## 5 LOADOLL CONTROLS



### PREFACE:

DO NOT OPERATE YOUR LOADOLL UNTIL A COMPLETE INSPECTION HAS BEEN PERFORMED. A DEFECT MAY CAUSE PERSONAL INJURY, DAMAGE TO YOUR LOADOLL, OR TIME CONSUMING DOWN-TIME. Operation of your new SUPERDUTY LOADOLL is easy, efficient and dependable if installation was done properly. The engine must be running and the PTO engaged before any controls will become functional.

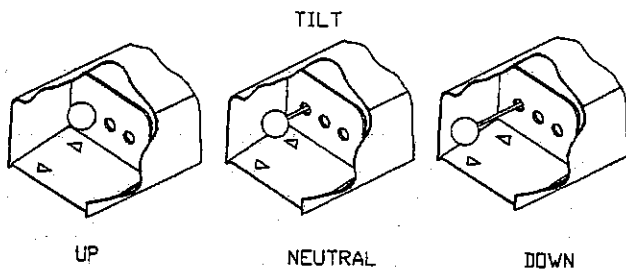


FIG. 5-1 BED TILT CONTROL

## 5-1 BED TILT CONTROL:

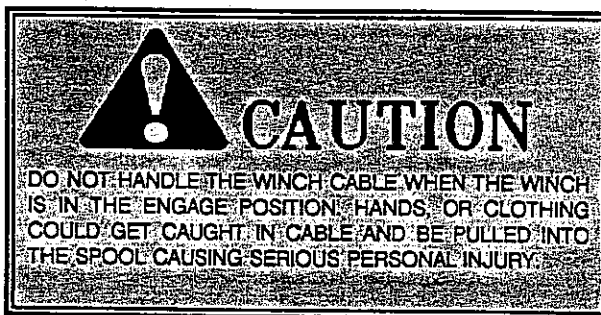
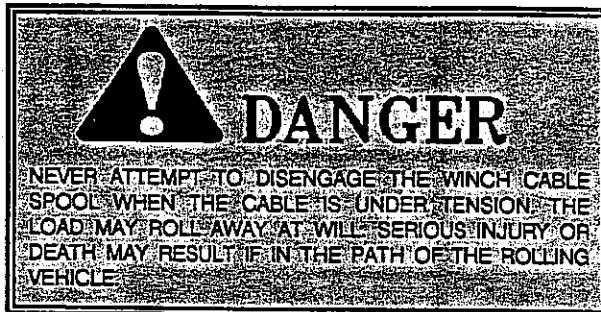
Pushing IN on the drivers side controls prepares the Loadoll for loading position. Pulling controls OUT causes the Loadoll to move from loading position to transport position. (See FIG. 5-1)

**IN POSITION:** Tilts the front of the bed up until the rear bumper rests on the ground to stabilize the LOADOLL for loading purposes.

**NEUTRAL:** No bed tilting will occur. The neutral position will hold the angle the bed is tilted to. The bed must be in the level, transport position before transporting.

**OUT POSITION:** Tilts the front of the bed down until the front of the bed and sub-frame assembly contacts the chassis frame for transport position.

## 5-2 WINCH CONTROLS



### 5-2.1 CABLE SPOOL ENGAGEMENT:

This control lever is on the street end of the winch. The winch is labeled "ENGAGE" and "DISENGAGE". (See FIG. 5-2)

**DISENGAGE POSITION:** The cable spool "free wheels". This allows the cable to play-out by hand.

**ENGAGE POSITION:** Allows the hydraulic system to control winch.

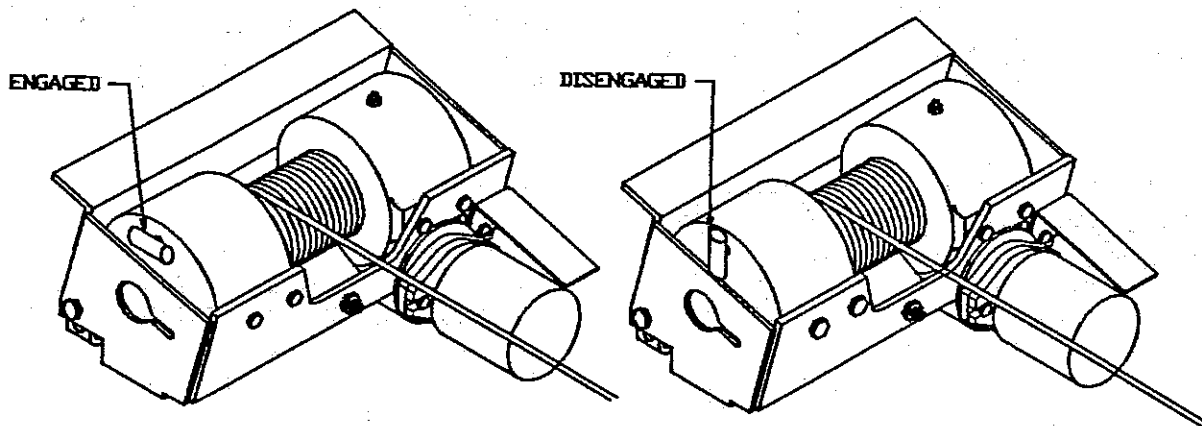
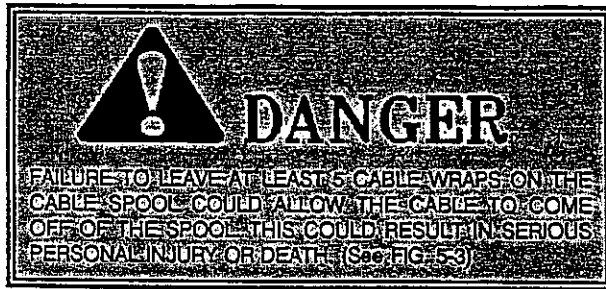


FIG. 5-2 WINCH CABLE SPOOL ENGAGEMENT





### 5-2.2 HYDRAULIC WINCH CONTROL:

This control (See FIG. 5-4) operates the winch when the winch engagement lever is in the "ENGAGE" position.

**IN POSITION:**Reels the cable OUT.

**NEUTRAL:**No winch action occurs. The winch holds it's existing position even under load.

**OUT POSITION:**Reels the cable IN.

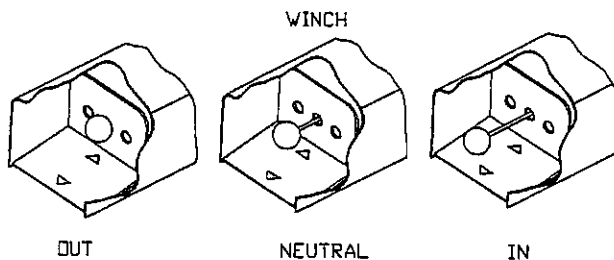


FIG. 5-3 WINCH IN/OUT CONTROL

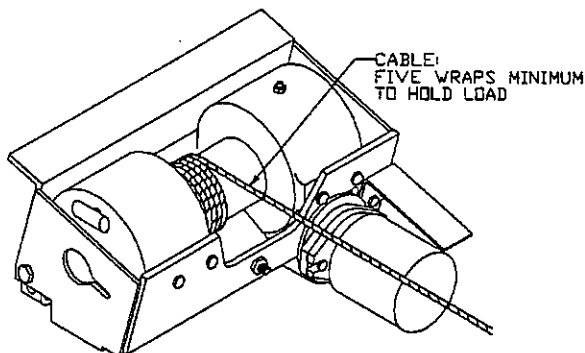
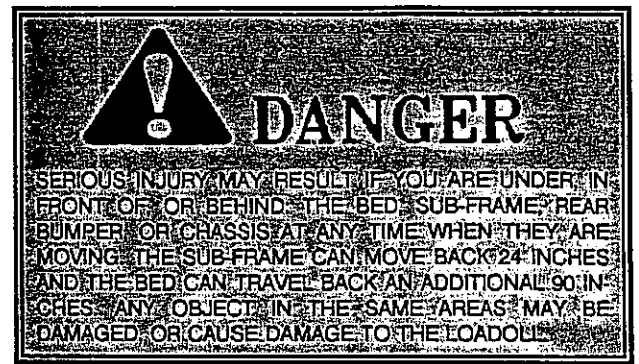


FIG. 5-4 LEAVE MINIMUM OF FIVE CABLE WRAPS ON SPOOL



### 5-3 BED SLIDE CONTROL

This control (See FIG. 5-5) operates the bed slide function of the Loadoll.

**IN POSITION:**Slides the bed back until the bed touches the ground in the full tilt position. Do not slide the bed back unless the bumper is on the ground to stabilize the LOADOLL.

**NEUTRAL:**No bed sliding will occur. The rest position will hold the bed in the current position.

**OUT POSITION:**Slides the bed forward until the bed is level and in the transport position. The bed must be in the forward position before transporting.

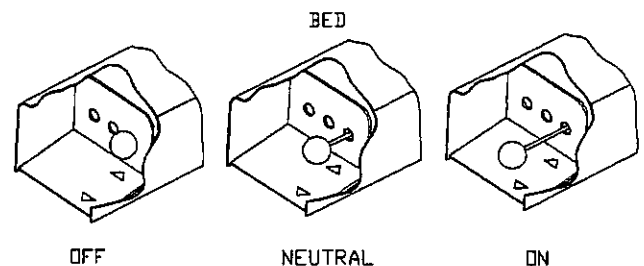
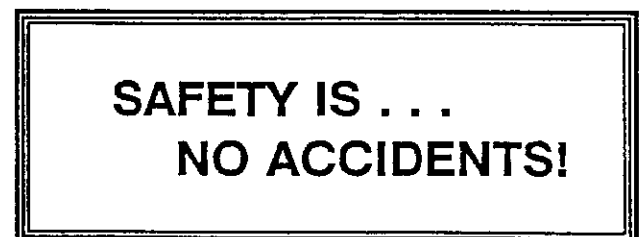


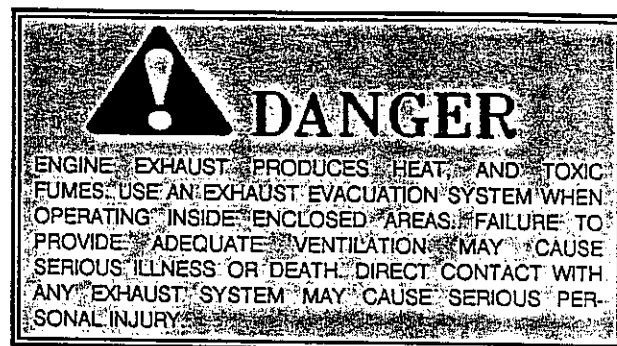
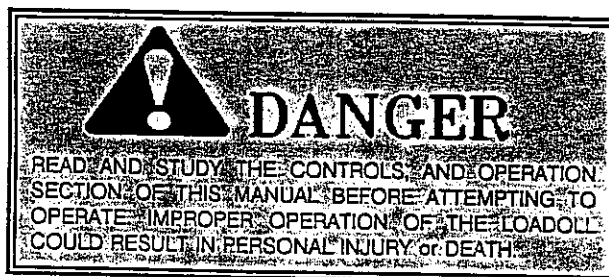
FIG. 5-5 BED SLIDE CONTROL



## NOTES:

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## 6 OPERATION



### PREFACE:

DO NOT OPERATE YOUR LOADOLL UNTIL A COMPLETE INSPECTION HAS BEEN PERFORMED. A DEFECT MAY CAUSE PERSONAL INJURY, DAMAGE TO YOUR LOADOLL, OR TIME CONSUMING DOWN-TIME. Operation of your LOADOLL is easy and efficient and dependable if installation was done properly. See FIGURE 6-2 for each step of the operation procedure.

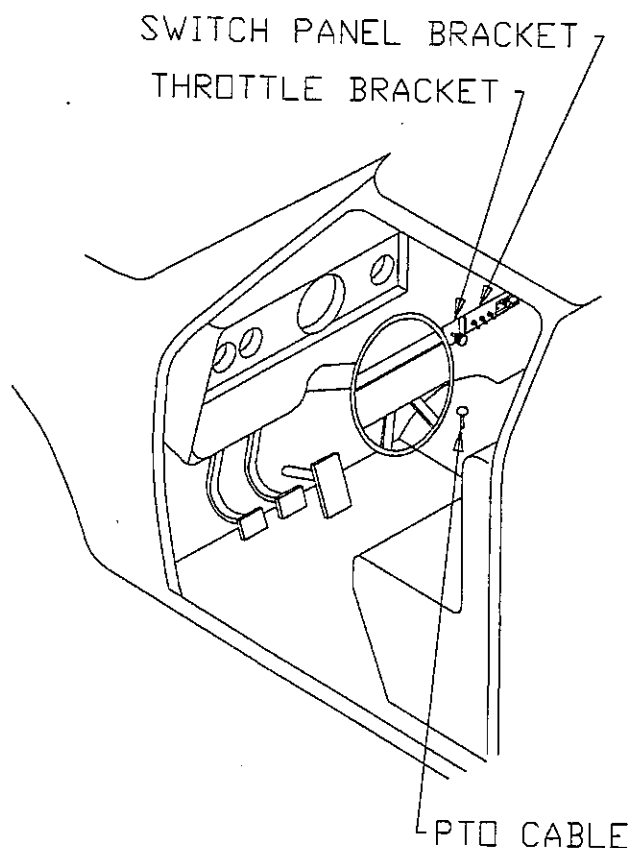


FIG. 6-1 TRUCK INTERIOR CONTROL LOCATIONS

### 6-1 POWER TAKE-OFF (PTO)

6-1.1 The PTO control is located in the chassis cab. If the LOADOLL was installed on the chassis at LANDOLL Corp., the PTO control will be located on the floor on the center hump. When the PTO is engaged, control pulled up, engine powers a high pressure hydraulic pump, thus providing power to the hydraulic controls.

6-1.2 THE TRUCK TRANSMISSION MUST BE IN NEUTRAL AND PARK BRAKE APPLIED WHEN OPERATING THE PTO.

NOTE: NEVER TRANSPORT WITH THE PTO CONTROL ENGAGED. EXTENSIVE DAMAGE MAY RESULT TO THE CHASSIS TRANSMISSION, PTO UNIT, HYDRAULIC PUMP, AND OTHER HYDRAULIC COMPONENTS.

### 6-2 BED LOADING:

6-2.1 Back your LOADOLL up to the item to be retrieved. Align your LOADOLL so that the bed is in-line with the item to be loaded. Do not back your unit any closer than 10 feet (120 inches) to the item being retrieved.

6-2.2 Shift the transmission to neutral and set parking brake securely.

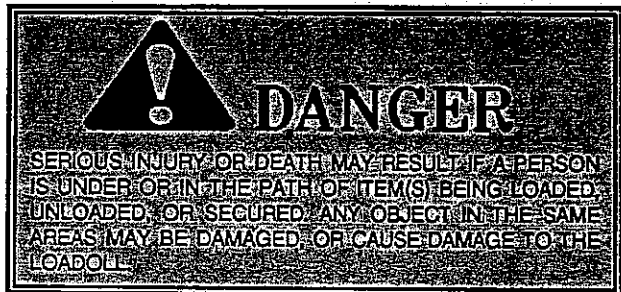
6-2.3 Shift the PTO into gear. (See FIG 6-1 for location)

6-2.4 Adjust the throttle control to achieve the en-

engine R.P.M. desired. (See FIG. 6-1 for location)

**NOTE: DO NOT EXCEED 1500 ENGINE R.P.M. WITH THE PTO ENGAGED. PUMP AND HYDRAULIC SYSTEM COMPONENTS WILL BE ADVERSELY AFFECTED BY HIGHER ENGINE RPM's.**

6-2.5 Tilt the bed up until the rear bumper firmly contacts the ground. (STEP 1, FIG. 6-2)



6-2.6 Slide the bed back until the bed touches the ground. (STEP 2, FIG. 6-2)

6-2.7 Load the bed. Use the winch to pull the load onto the bed. (STEP 3, FIG. 6-2)

6-2.8 Anchor the front and back of the load to the bed key hole slots, or D-rings. Use 5/16" "HI-TEST" chain. (STEP 4, FIG. 6-2)

**NOTE: NEVER RELY ON THE WINCH CABLE TO TIE DOWN A LOAD!**

6-2.9 Slide the bed to the full forward position. (STEP 5, FIG. 6-2) If the load is extremely heavy, slide the bed forward only until the load is centered over the rear axle.

6-2.10 Tilt the bed down to the level, transport position. If the bed is not all the way forward due to centering it because of an extremely heavy load (See paragraph 6-2.9), then slide the bed all the way forward now. (STEP 6, FIG. 6-2)

6-2.11 Set parking brake of vehicle being hauled.

6-2.12 Return the throttle control to idle, and disengage PTO.

6-2.13 Check all tie-downs securing the load, and attach safety chains before transporting.

### 6-3 BED UNLOADING

6-3.1 Locate your LOADOLL on a level, solid surface in an open area.

6-3.2 Shift the Loadoll transmission to neutral and set parking brake securely.

6-3.3 Shift the PTO into gear.

6-3.4 Adjust the throttle control to achieve the engine R.P.M. desired.

**NOTE: DO NOT EXCEED 1500 ENGINE R.P.M. WITH THE PTO ENGAGED. PUMP AND HYDRAULIC SYSTEM COMPONENTS WILL BE ADVERSELY AFFECTED BY HIGHER ENGINE RPM's.**

6-3.5 Tilt the bed up until the rear bumper firmly contacts the ground. (STEP 5, FIG. 6-2) If the load is extremely heavy, slide the bed backward only until the load is centered over the rear axle.

6-3.6 Slide the bed back until the bed touches the ground. (Step 4, FIG. 6-2)

6-3.7 Secure the winch cable to the load, and remove any cable slack.

6-3.8 Remove all securing chains.

6-3.9 If the load is a vehicle, shift the loaded vehicles' transmission to neutral, and release parking brake.

6-3.10 Operate the winch to allow the load to be removed from the bed of the LOADOLL. (Step 3, FIG. 6-2)

6-3.11 After load is off and clear of the bed, secure the unloaded item from moving by blocking it, setting parking brake, etc..

6-3.12 Remove winch line and secure in stowing position. This would be anchoring to any bed load anchor location and removing any slack in the cable.

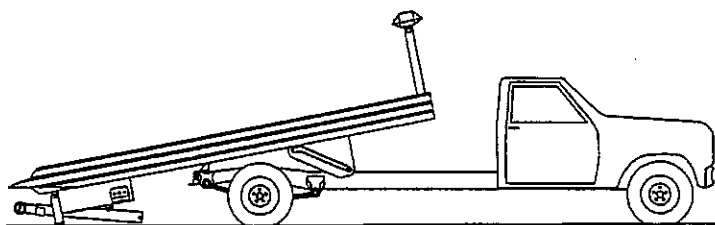
**NOTE: DO NOT ANCHOR THE WINCH CABLE TO THE REAR BUMPER OR THE TOW-BAR!**

6-3.13 Slide the bed to the full forward position. (Step 1, FIG. 6-2)

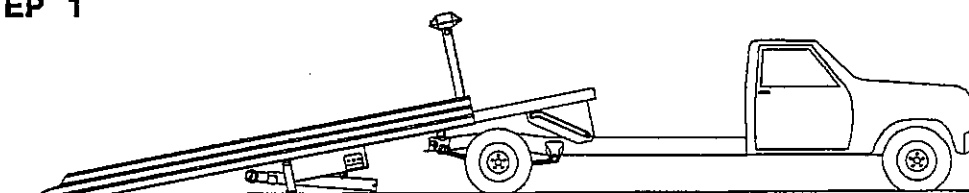
6-3.14 Tilt the bed fully up to the transport (level) position.

### 6-4 LOAD PLACEMENT

6-4.1 In most situations, the load is to be placed as far forward on the bed as possible. If your load is confined to a small area (ie; crated item at the weight limit), position so 10% of the load transfers to the front axle, and 90% of the load on the rear axle.



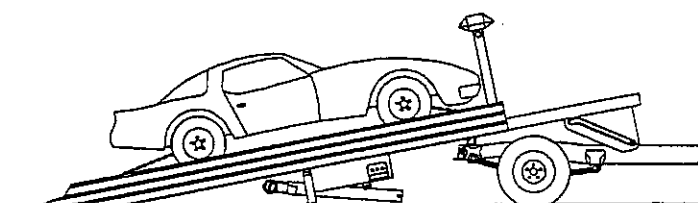
**STEP 1**



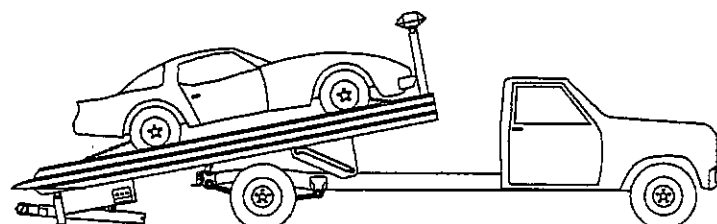
**STEP 2**



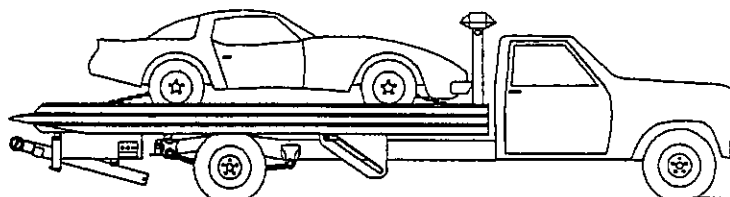
**STEP 3**



**STEP 4**



**STEP 5**



**STEP 6**

**FIG. 6-2 SUPERDUTY LOADOLL OPERATIONAL STEPS**

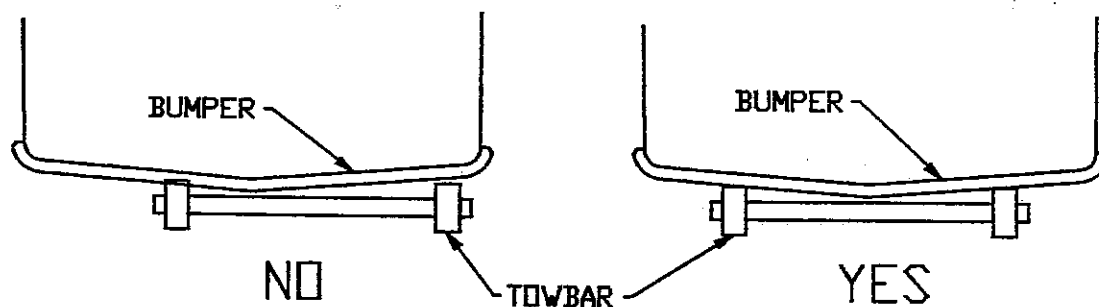


FIG. 6-3 TOWBAR CENTER EXAMPLES

## 6-5 TOWING ATTACHMENT

6-5.1 Block wheels or otherwise secure the vehicle to be towed from rolling.

6-5.2 Back your LOADOLL up in-line with the vehicle to be towed. Leave a 4 to 5 foot (48" - 60") gap between the towbar and the vehicle to be towed. Make certain the towbar is centered from side to side with the vehicle to be towed. (See FIG. 6-3)

6-5.3 Shift the transmission to neutral.

6-5.4 Set parking brake securely.

6-5.5 Engage the PTO and adjust throttle control to obtain desired engine RPM.

**NOTE:** DO NOT EXCEED 1500 ENGINE R.P.M. WITH THE PTO ENGAGED. PUMP AND HYDRAULIC SYSTEM COMPONENTS WILL BE ADVERSELY AFFECTED BY HIGHER ENGINE RPM's.

6-5.6 Tilt the bed up until the towbar is lower than the vehicles' bumper height.

6-5.7 Extend the tow-bar until it is slightly under the bumper of the vehicle being towed.

6-5.8 Attach "J" hook chains or other appropriate securing chains to the underside of the vehicle being towed. Attach the other end of the chain to the chain hooks at each end of the tow-bar cross tube. (See FIG. 6-4)

**NOTE:** DO NOT ATTACH CHAINS TO DRIVE LINES, OR STEERING COMPONENTS OF THE VEHICLE TO BE TOWED. ONLY ATTACH ANCHOR CHAINS TO LOCATIONS SPECIFIED BY THAT VEHICLES MANUFACTURER.

6-5.9 Remove blocks preventing towed vehicle from rolling. Shift towed vehicles' transmission to neutral. If attaching the tow-bar to the rear bumper of a vehicle, secure steering wheel to prevent turning.

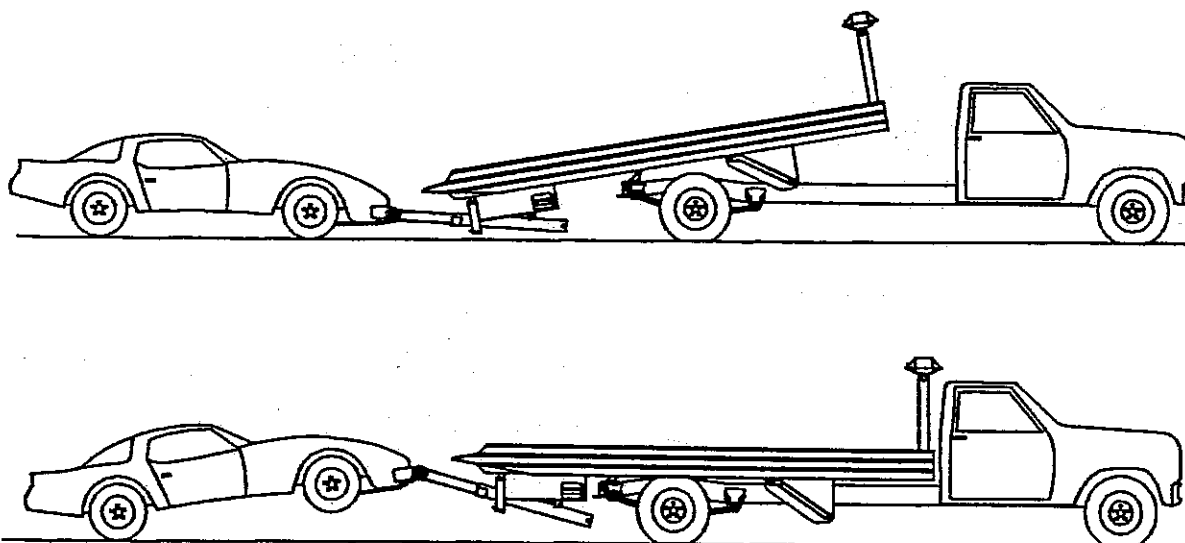


FIG. 6-5 PROPER TRANSPORT POSITION

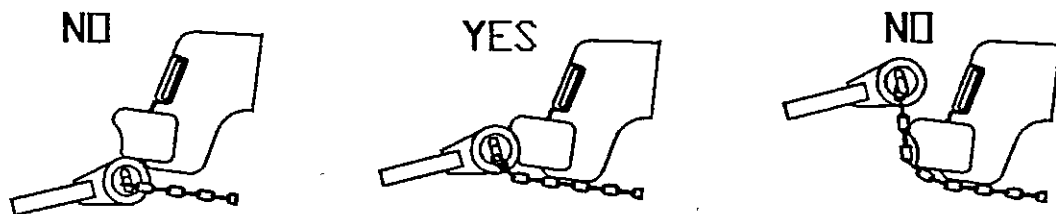


FIG. 6-6 EXAMPLES OF PROPER AND IMPROPER HOOKUP

The front wheels must be in the straight ahead position or the vehicle will dog-track.

6-5.10 Extend the towbar to the fully extended length.

6-5.11 Tilt the LOADOLL bed back to transport (level) position. (See FIG. 6-5) If chain hookup is proper, the chains will carry the weight, and pull the rubber rings on the towbar solidly against the front edge of the vehicles bumper without letting the rubber rings above or below the bumper. (See FIG. 6-6)

6-5.12 Return the throttle control to the idle position.

6-5.13 Disengage the PTO.

6-5.14 Recheck attachment of vehicle to the towbar for proper and secure attachment before transporting.

6-5.15 Attach applicable safety towing chains from the towed vehicle to the rear bumper key hole slots.

6-5.16 Check the wheels of the raised end of the towed vehicle. The raised wheels should be at least 4 to 5 inches off the ground. Check the opposite end of the towed vehicle for ground clearance such as bumper, fuel tank, etc..

6-5.17 Light the rear of the towed vehicle if

towing after dark.

6-5.18 Follow the recommended safe towing procedures, speeds, and distances established by the manufacturer of the vehicle being towed.

## 6-6 SECURING LOADS TO BED

6-6.1 All vehicles, machinery, crated goods, or loose parts must be securely tied down to the bed of your LOADOLL. (See FIG. 6-7) Key holes are provided in front and rear of the bed to anchor 5/16" chain. Optional D-rings along the side rails of the bed can also be used to secure loads.

6-6.2 The front and rear of the load must be secured to the front and to the rear of the bed. Do not rely on the winch to secure the load to the bed! (See FIG. 6-7)

6-6.3 Do not allow any slack in the hold down chains. Slack will allow load to shift. A shifting load will create sufficient momentum to break chains. Remove chain slack by using chain boomers, or other slack adjusters designed to be used for securing loads. Always attach additional safety chains.

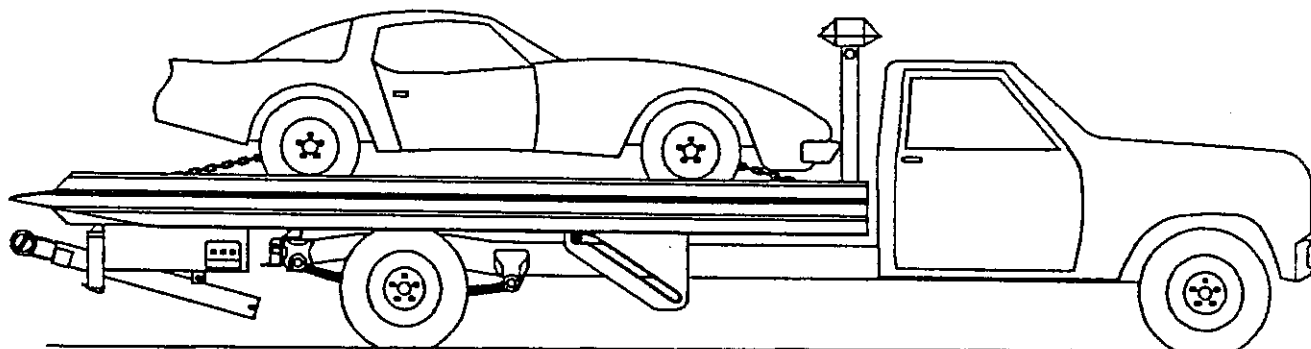


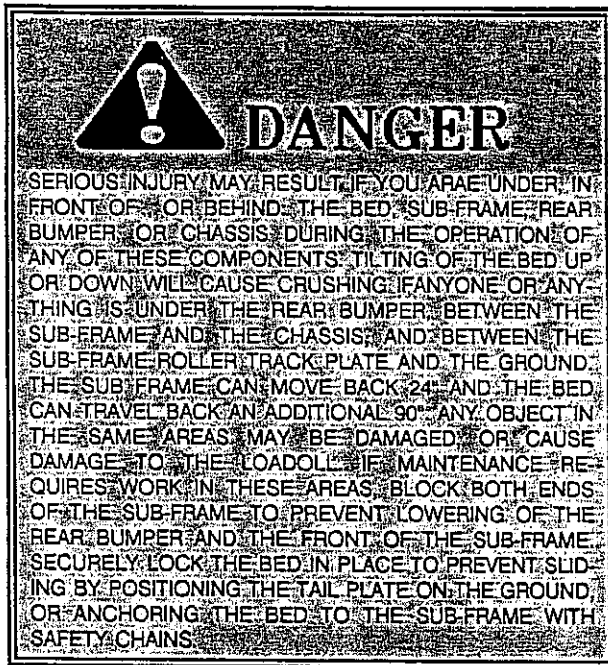
FIG. 6-7 LOAD SECURED AND READY FOR TRANSPORT

## NOTES:

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## 7 MAINTENANCE AND LUBRICATION



### PREFACE:

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

### 7-1 INSPECTION

**7-1.1** Inspect the vehicle and deck system periodically for damage or evidence of pending failure. Damaged or broken parts should be replaced immediately. Never operate a machine which is known to be defective or is operating improperly. The cause of any binding or hydraulic leakage should be determined immediately and the problem promptly corrected.

### 7-2 SLIDING SURFACES

**7-2.1** Sliding surfaces are to be cleaned periodically. Cleaning every 6 months is recommended for clean operating conditions. Severe working conditions will require maintenance more often. Sliding on dirty wear surfaces will cause shortened life of the slide wear strips or blocks.

### 7-3 HYDRAULIC SYSTEM

**7-3.1** Check the hydraulic oil level weekly, or after any leakage. Use AMOCO RYCON MV or equivalent hydraulic oil.

**7-3.2** Check the oil level by sliding the deck back enough to gain access to the reservoir cap. Have the bed level with the chassis frame, and the tow-bar fully retracted. Shut off the engine. Proper oil level is at the bottom of the filler tube strainer. Filling to the top will result in overflow when the bed is slid forward.

**7-3.3** If a cylinder seal leaks, disassemble the cylinder and ascertain the cause of the leak. Small scores caused by chips or contaminated fluid can usually be worked out with fine emery cloth to avoid re-occurring of the trouble. Any time a component is opened up, or whenever any seal replacement is necessary, it is advisable to thoroughly clean all components and replace all seals in that component. Seal kits are available from your Loadoll dealer.

### 7-4 ELECTRICAL SYSTEM

**7-4.1** Maintenance of the electrical system consists of inspection, and minor servicing. Any wire, connection, or electrical component showing signs of corrosion, wear, breakage or unraveling must be serviced.

**7-4.2** Frayed, or unraveling wire must have the defective section removed and replaced with wire of the same color and gauge. Seal all splice connections and insulate.

**7-4.3** Corroded terminals must have the corrosion removed, source of corrosion neutralized, terminal resealed, protected, and insulated.

**7-4.4** Fuse or circuit breaker burn-out or "blow-out" usually indicates an electrical short-circuit, although a fuse may occasionally fail from vibration. Insert a second fuse or reset the breaker. If this fuse immediately burns out or the breaker trips, locate the cause of the electrical short and repair.





**7-4.5** Lights with a repeated lamp burn-out usually indicates a loose connection, either at the lamp socket, the system ground or a malfunctioning voltage regulator. Locate the source of the problem and repair. System grounds must be grounded to bare metal surfaces. Paint, grease, wax, and other coatings act as insulators. Replacement lamps must be equivalent to the factory installed lamp.

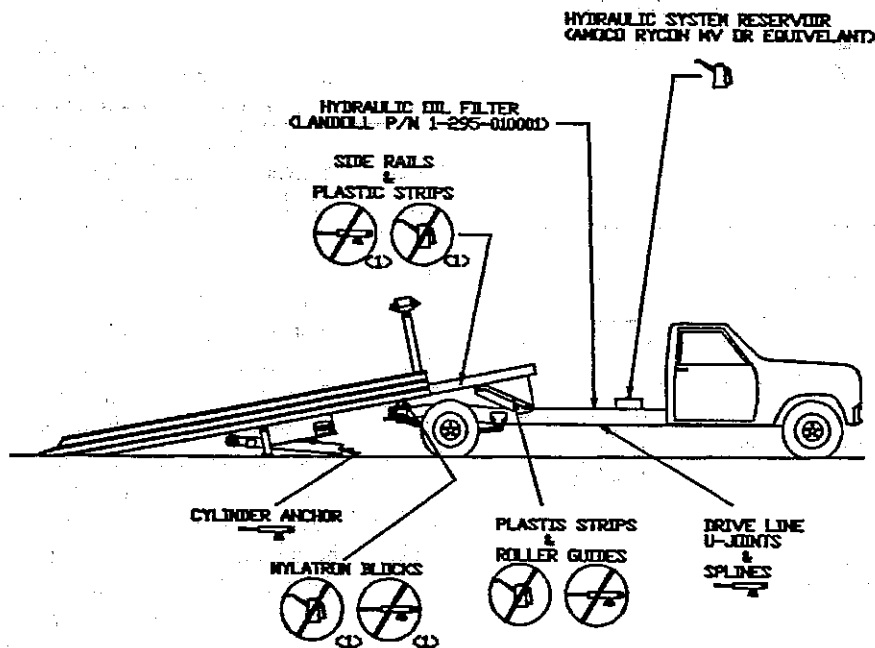
## 7-5 ALUMINUM - CARE AND CLEANING

7-5.1 To retain the original appearance of all types of aluminum finishes, it is important to keep the finish clean and free of any dirt accumulation. For periodic routine cleaning, we recommend washing with water containing any mild, non abrasive soap or detergent such as those recommended for automotive finishes, or any of the numerous non-etching, non abrasive aluminum cleaners which are available at grocery, department, hardware, and automotive stores. To apply these cleaners, use a soft cloth or sponge. Follow the cleaning by thoroughly rinsing the surface with clear water and drying with a chamois or cloth to prevent spotting or streaking. The surface must be

kept clean, to protect the finish from minor scratches or abrasions, and to facilitate later cleaning. A coat of non-abrasive liquid or paste wax, such as those recommended for the care of automotive finishes, should be applied to the clean dry surface.

7-5.2 Wax coatings should normally be replenished every three to six months. The exact life of the wax coating is dependent on the degree and severity of exposure to weather between waxing. To get the longest life from wax coatings, excessive grime and soil should not be allowed to accumulate, and the waxed surface should be washed as often as needed with clear, cool water and dried with a chamois or cloth. A protective wax coating is particularly important for preservation of the finish in seaboard localities and in industrial areas where the finish is exposed to industrial fall out.

LUBRICATION	
GREASE 	 DO NOT GREASE
OIL 	 DO NOT OIL



Ⓢ THE NYLATRON AND PLASTIC STRIPS ARE IMPREGNATED WITH A SPECIAL LUBRICANT - THUS THEY ARE SELF LUBRICATING. IF CHATTER OR SQUEEL OCCURS, USE SILICONE DRY SPRAY ONLY.

FIG. 7-1 LUBRICATION GUIDE CHART

# MAINTENANCE SCHEDULE

I=INSPECT

R=REPLACE

T=TIGHTEN / TORQUE

L=LUBRICATE

NORMAL OPERATING SERVICE INTERVALS - PERFORM AT THE TIME SHOWN						
SERVICE ITEM	INTERVAL- FIRST 5 HOURS	WEEKLY	MONTHLY	6 MONTHS	YEARLY	NOTES
HYDRAULICS						
OIL	I	I			R	(1)
FILTER	R			R		
WINCH GEAR CASE LUBE	I		I		R	(2)
HOSES	I		I			
ELECTRICAL						
LIGHTS	I	I				
WIRING	I		I			
CONNECTIONS	I		I			
MISCELLANEOUS						
FASTENERS	I,T		I			(3)
BED SLIDE PLASTIC STRIPS	I		I			
TILT FRAME WEAR STRIPS	I		I			
NYLATRON	I		I			
WINCH CABLE ASSY.	I	I	I,L			(4)
DRIVE SHAFT U-JOINTS	L	SEE TRUCK OWNERS MANUAL FOR SERVICE INTERVALS				
DRIVE SHAFT SLIP JOINTS	L					
TIRES / WHEELS						
INFLATION	I	I				(5)
LUG-NUTS	I,T		SEE TRUCK OWNERS MANUAL FOR TORQUE & SEQUENCE			

(1) USE AMOCO RYCON HV OR EQUIVALENT

(2) USE 140 wt. GEAR LUBE

(3) SEE BOLT TORQUE CHART IN THE SPECIFICATIONS SECTION OF THIS MANUAL FOR CORRECT TIGHTENING TORQUE

(4) LUBRICATE WITH CABLE LUBE OR CABLE GREASE

(5) SEE INCOMPLETE CERTIFICATION STICKER ON DRIVERS SIDE REAR JAWB FOR PROPER INFLATION

## NOTES:

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## 8 TROUBLE SHOOTING

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8-4	TIRES - WHEELS - SUSPENSION .....	8-5
8-5	MISCELLANEOUS PROBLEMS .....	8-6

### 8-1 HYDRAULIC SYSTEM

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

SYMPTOM	PROBLEM: REMEDY
SYSTEM INOPERATIVE	<p>Not enough oil in system: fill, check for leaks.</p> <p>Wrong oil in system: change oil, see specifications.</p> <p>Filter dirty or clogged: drain oil and replace filter.</p> <p>Oil lines dirty or collapsed: clean or replace as necessary.</p> <p>Air leaks in pump suction line: repair or replace as necessary.</p> <p>Worn or dirty pump: clean, repair or replace. Check for contaminated oil. Drain and flush.</p> <p>Badly worn components: examine for internal leakage. Replace faulty components. Check for cause of wear.</p> <p>Leakage: check all components, and relief valve for proper settings.</p> <p>Excessive load: check unit specifications for load limits.</p> <p>Slipping or broken pump drive: repair or replace couplings. Check for alignment.</p>
SYSTEM OPERATES ERRATICALLY	<p>Air in the system: check suction side of system for leaks. Repair leaks.</p> <p>Cold oil: allow ample warm-up time. Use proper weight oil for operating temperature.</p> <p>Dirty or damaged components: clean or repair as needed.</p> <p>Restriction in filters or lines: clean and/or replace filter or lines.</p>
SYSTEM OPERATES SLOWLY	<p>Oil viscosity too high, or "cold oil". Allow oil to warm up before operating.</p> <p>Low pump drive speed: Increase engine speed (check pump owners manual for specifications).</p> <p>Low oil level: Check reservoir and add oil as necessary.</p> <p>Air in system: Check suction side for leaks. Repair leaks.</p> <p>Badly worn pump, valves, cylinders, etc.: Repair or replace faulty component(s) as necessary.</p> <p>Restrictions in lines or filter: Clean and/or replace filter or lines.</p> <p>Improper adjustments: Check orifices, relief valves, etc. Adjust as necessary.</p> <p>Oil leaks: Tighten fittings. Replace seals, gaskets and damaged lines.</p>

## HYDRAULIC SYSTEM, CONTINUED

### SYMPTOM

### PROBLEM: REMEDY

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

## **8-2 HYDRAULIC PRESSURE TESTING**

**SET-UP:** With the Loadoll unloaded, install a 0 to 3000 PSI pressure gauge between the pump pressure hose and the three-spool valve "IN" port, using a "T" fitting and close pipe nipple.

**TEST 1:** Start the vehicle engine and operate the PTO. Check pressure without operating any function.

From 25 to 125 PSI:	NORMAL
Greater than 125 PSI:	Restriction in valve, filter, or plumbing.
Less than 25 PSI:	Weak pump or restriction in pressure line.

**NOTE:** If STEP 1 indicates normal pressures, proceed to STEP 2. STEP 1 pressures must be normal for the following tests!

**TEST 2:** Run the bed forward to the transport position. Hold the valve in the "BED ON" position to cause hydraulic oil to go through the pressure relief valve. Read pressure, then return the control valve to neutral. Do the same test on the tilt cylinder, checking it while the bed is in the transport position.

From 1800 to 2200 PSI:	NORMAL
Greater than 2200 PSI:	Pressure relief valve is set too high. Pressure relief valve is malfunctioning.
Less than 1800 PSI:	Internal cylinder leak. * Pressure relief valve set too low. ** Weak pump. **

\*This may be the problem if one cylinder is at the normal pressure and the other is at a lower pressure.

\*\*This may be the problem if both cylinders show the same pressure.

**TEST 3:** Run the tilt cylinder till the bumper almost touches the ground. Return the cylinder to the transport position. Check pressures while the bed is tilting.

From 1000 to 2200 PSI:	NORMAL
Greater than 2200 PSI:	Restriction in return hoses or cylinder. Binding cylinder. Binding tilt mechanism.
Less than 1000 PSI:	Weak pump. Pressure hose restriction. Internal cylinder leak.

**TEST 4:** Slide the bed cylinder back and then forward. Check pressures while the bed is moving out. The following pressures are with the bed installed.

From 300 to 700 PSI:	NORMAL (moving bed out, moving bed in = 800-1200)
Greater than 700 PSI:	Restriction in return hoses or cylinder. Binding cylinder. Binding slide mechanism.
Less than 200 PSI:	Weak pump. Pressure hose restriction. Internal cylinder leak.

**TEST 5:** Unhook the winch cable and lay it loosely on the bed. Operate the winch both directions. Check pressures while the winch is operating.

From 800 to 1200 PSI:	NORMAL
Greater than 1200 PSI:	Restriction in return hoses or winch motor. Binding winch motor. Binding winch gears or drum.
Less than 800 PSI:	Weak pump. Pressure hose restriction. Internal motor leak.

### 8-3 ELECTRICAL

---

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

#### SYMPTOM

#### PROBLEM: REMEDY

---

##### NO LIGHTS

Fuse blown: replace fuse.  
Connection at plug-in: tighten connection.  
Broken or corroded wires: replace wire.  
Ground wire loose: clean and tighten ground.

##### LIGHTS FLICKERING

Wires shorted or loose: locate, insulate, replace, or tighten.

##### LIGHTS DIM

Voltage difference between truck and bed: match bulbs with truck voltage.

##### LIGHTS BRIGHT & BURN OUT

Voltage difference between truck and bed: match bulbs with truck voltage.

##### FUSE BLOW-OUT OR CIRCUIT BREAKER TRIPPING

Vibration: locate source of vibration and repair.  
Short circuit: replace fuse and try all accessories. If fuse blows right away, locate short and repair.

##### LAMP BULB BURN OUT

Vibration: locate source of vibration and repair.  
Short circuit: replace fuse and try all accessories. If fuse blows right away, locate short and repair.  
Loose connection: check lamp sockets and ground connections.  
Intermittent short: locate short and repair.  
Improper voltage: check voltage regulator output.

##### REMOTE CONTROL WINCH:

##### DOES NOT OPERATE

Check for blown fuse, broken wire, bad switch, and bad ground. Repair or replace.

##### OPERATES ONE WAY ONLY

Confirm proper wiring (See Diagram). Check for bad wires or defective switch. Repair or replace.

##### OPERATES WRONG DIRECTION

Wires are reversed on solenoid. Reverse the wires on the solenoid.



## **8-4 TIRES - WHEELS - SUSPENSION**

Most tire, wheel, and suspension related problems are due to excessive loads, extreme conditions, and improper maintenance. Tire, wheel, and suspension problems can be easily detected and solved by checking the following guide.

### **SYMPTOM**

### **PROBLEM: REMEDY**

#### **VIBRATIONS WHILE DRIVING**

Improper tire inflation: inflate to proper pressure.  
Tires cupped or have flat spots: replace tires.  
Wheels bent or loose: replace or tighten.  
Tires incorrectly mounted: remount.  
Mud in wheels: clean wheels.  
Tire(s) out of balance: balance tires.  
Brakes dragging: locate cause and repair.

#### **RAPID TIRE WEAR/DETERIORATION:**

##### **CENTER TREAD WEAR**

Over inflation: deflate to correct inflation.

##### **SHOULDER TREAD WEAR - BOTH SHOULDERS**

Under inflation: increase inflation to correct PSI.

##### **SHOULDER TREAD WEAR - ONE SHOULDER**

Axle damage: straighten or replace axle.

##### **OVERALL TREAD WEAR**

Overloading: check tire load rating.  
High speeds: adjust speed according to road and load conditions.  
Incorrect dual matching: properly match dual tires.

##### **TIRE FLAT SPOTS**

Quick stops: adjust braking practices.  
Grabbing brakes: adjust brakes properly.  
Worn or loose wheel bearings: adjust or replace as needed.  
Out of balance wheels and tire: balance wheels and tires.

##### **UNEVEN WEAR**

Undercarriage bushings worn: replace bushings.  
Worn or loose wheel bearings: adjust or replace as needed.  
Out of balance wheels and tires: balance wheels and tires.

#### **RIM FAILURE:**

##### **CRACKING**

Overinflated tires: deflate tire to proper PSI.  
High speeds: adjust speed according to road and load conditions.  
High speed cornering: adjust cornering practices.  
Over loading: check rim load rating.

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

## **TIRES - WHEELS - SUSPENSION, CONT.**

### **SYMPTOMS**

### **PROBLEM: REMEDY**

BENDING OR WARPING

Curb-hopping or potholes: adjust turning practices and adjust speed accordingly with road conditions.

Improper tightening sequence: follow proper tightening sequence.

BROKEN STUDS

Over tightening: use correct torque when mounting.

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

## **8-5 MISCELLANEOUS PROBLEMS**

Your Loadoll is designed for minimal mechanical maintenance. Most mechanically related problems are due to excessive loads, extreme conditions, and improper maintenance.

### **SYMPTOMS**

### **PROBLEM: REMEDY**

BED CHATTERS OR SQUEALS  
WHEN SLIDING

Rough slide channels: file or sand smooth and lubricate with dry silicone only.

VIBRATIONS WHILE DRIVING

See Tires, Wheels, Suspension.

Driveshaft out of balance, mis-aligned, or out of phase: correct problem and confirm U-joints are aligned correctly.

PIVOT BLOCKS

EXCESSIVE WEAR

Lubricated with heavy grease: remove grease and use dry silicone only.  
Rough slide channels: smooth channels.

PREMATURE BREAKAGE

Over weight loads and/or rough road conditions: check weight limitations and adjust driving style to road conditions.

BED SLIDE STRIPS EXCESSIVE  
WEAR

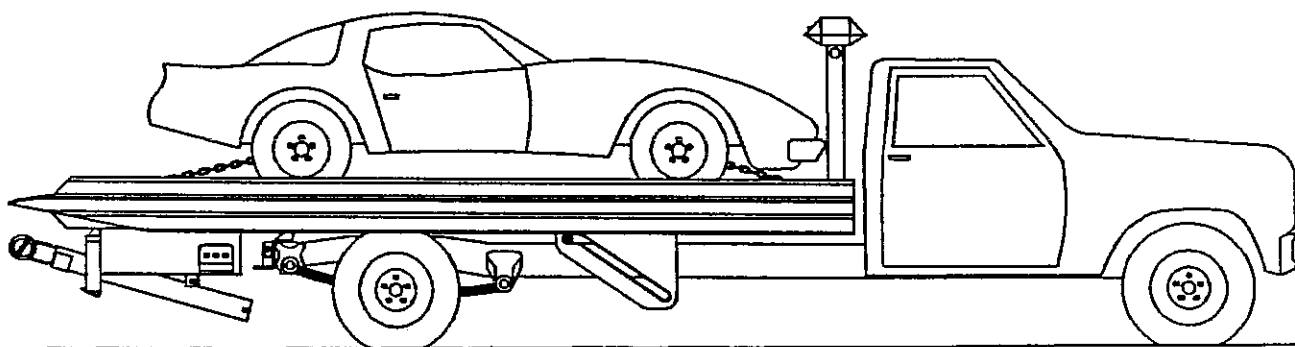
Lubricated with heavy grease: remove grease and use dry silicone only.  
Rough slide channels: smooth channels.

ROLLER TRACK STRIPS EXCES-  
SIVE WEAR

Lubricated with heavy grease: remove grease and use dry silicone only.  
Rough slide channels: smooth channels.

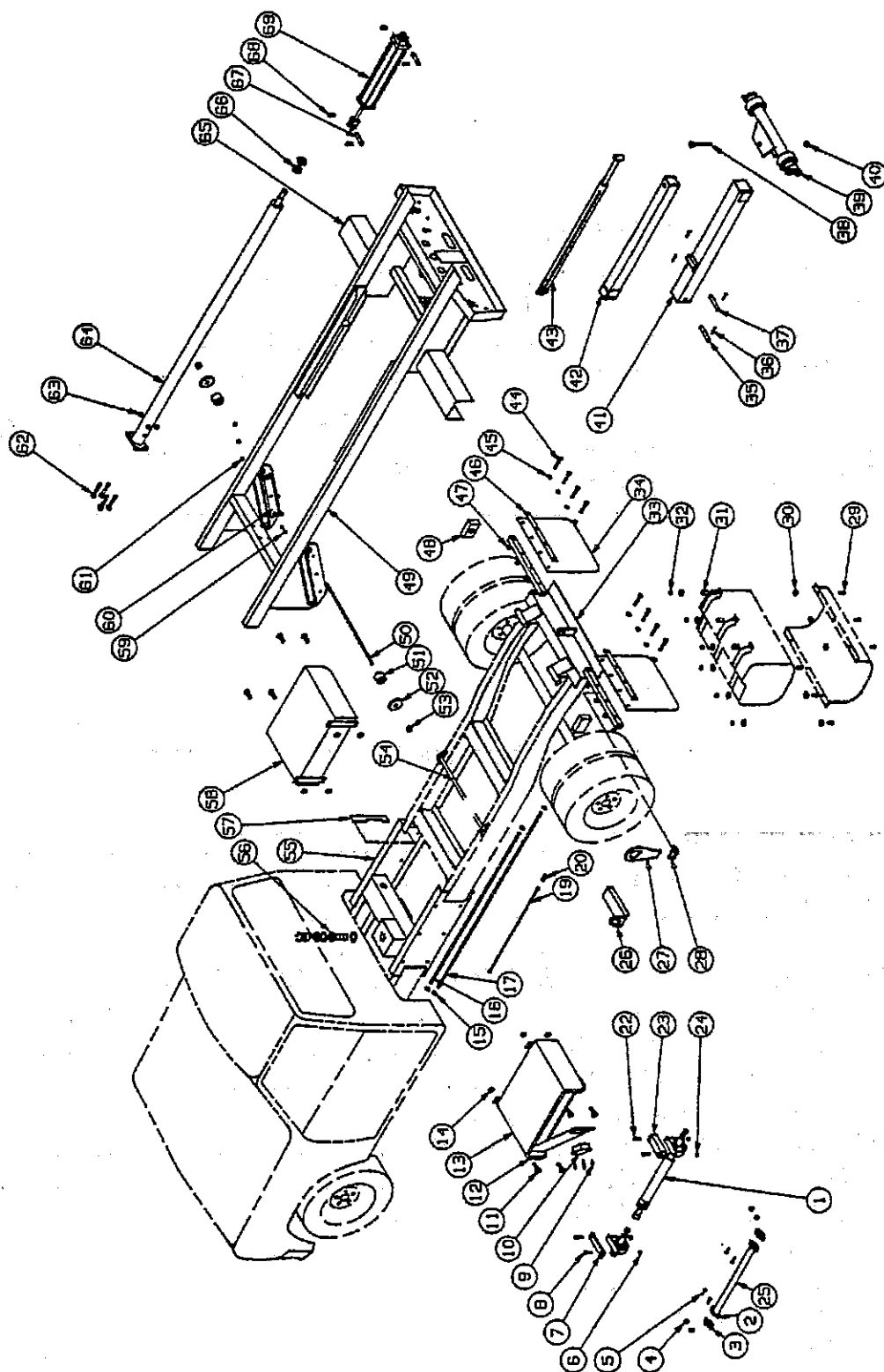
## 9 ILLUSTRATED PARTS

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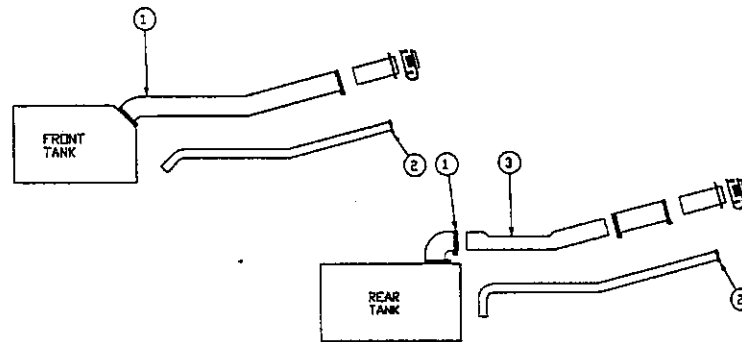
## CHASSIS AND FRAME

ITEM	PART NO.	DESCRIPTION	QTY
1	3-266-010024	EXTENSION, 17' DRIVE TRAIN .....	1
	3-266-010027	EXTENSION, 19' DRIVE TRAIN .....	1
2	3-302-010038	FLANGE, EXHAUST .....	2
3	3-320-010001	GASKET, EXHAUST .....	2
4	3/8-16HFLN	NUT, HEX LOCK .....	4
5	3/8-16X1-1/4CS	CAP SCREW, HEX HEAD .....	4
6	1/2-13HFLN	NUT, HEX LOCK .....	2
7	3-311-011821	SUPPORT, BEARING .....	1
8	1/2-13X1-1/2CS	CAP SCREW, HEX HEAD .....	2
9	BSL-6-4	LATCH, RIVET TOOL COMPARTMENT .....	4
10	1-DSL LATCH	LATCH .....	1
11	1/2-13X1-1/2CS	CAP SCREW, HEX HEAD .....	4
12	1-822-010002114	TRIM-LOK .....	1
13	3-115-010073	BOX, LEFT TOOL .....	1
14	1/2-13HFLN	NUT, HEX LOCK .....	4
15	105-0105	CLAMP, HOSE .....	8
16	1-316-010001252	HOSE, 5/16 FUEL (17' BED) .....	1
	1-316-010001288	HOSE, 5/16 FUEL (19' BED) .....	1
17	1-316-010002252	HOSE, 3/8 FUEL (17' BED) .....	1
	1-316-010002288	HOSE, 3/8 FUEL (19' BED) .....	1
18	NOT USED		
19	3-158-010015	BRAKE LINE .....	1
20	3-158-010004	UNION, BRAKE LINE .....	1
21	NOT USED		
22	1/2-13X3-1/2CS	CAP SCREW, HEX HEAD .....	1
23	3-311-013060	SPACER, REAR BEARING .....	1
24	1/2-13HFLN	NUT, HEX LOCK .....	2
25	RSST105X29.75	TUBE, 29-3/4" (17' BED) .....	1
	RSST105X44.75	TUBE, 44-3/4" (19' BED) .....	1
26	3-311-012903	BRACKET, FRONT FUEL FILLER MOUNTING .....	1
27	3-311-013590	BRACKET, REAR FUEL FILLER MOUNTING .....	1
28	77782MM94720X2	HINGE .....	1
29	3/8-16X2-1/2CS	CAP SCREW, HEX HEAD .....	3
30	3/8FW	WASHER, FLAT .....	6
31	RRT131X1.125	SPACER .....	3
32	3/8-16HFLN	NUT, HEX LOCK .....	3
33	3-311-014793	WELDMENT, FRAME END Z .....	1
34	3-485-010001	FLAP, MUD .....	2
35	2-557-010006	PIN, CYLINDER ANCHOR .....	1
36	1-557-010014	PIN, HAIR .....	2

## CHASSIS AND FRAME, CONTINUED

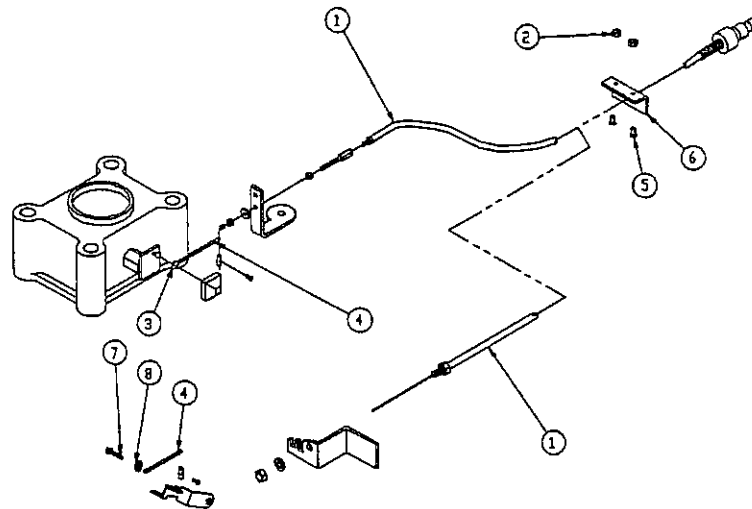
ITEM	PART NO.	DESCRIPTION	QTY
37	2-557-010097	PIN, TOW-BAR ASSEMBLY MOUNTING .....	2
38	1-8 X 6 C 5	CAP SCREW, HEX HEAD .....	1
39	3-375-010311	WELDMENT, RUBBER RING TOWBAR .....	1
40	1-8HFLN	NUT, HEX LOCK .....	1
41	3-375-010308	WELDMENT, OUTER TUBE TOWBAR .....	1
42	3-375-010309	WELDMENT, INNER TUBE TOWBAR .....	1
43	3-242-010063	CYLINDER ASSEMBLY .....	1
44	3/8-16X3HHCS	CAP SCREW, HEX HEAD .....	8
45	3/8FW	WASHER, FLAT .....	8
46	3-762-010017	CLAMP, MUD FLAP .....	2
47	3/8-16HFLN	NUT, HEX LOCK .....	8
48	3-311-013575	BLOCK, SLIDE/PIVOT .....	2
49	3-311-014794	WELDMENT, ALUMINUM BED MAIN FRAME .....	1
	3-311-014807	WELDMENT, STEEL BED MAIN FRAME .....	1
NYLATRON GUIDES FOR FRAMES WITH A STEEL BED			
	3-311-011774	7" LONG GUIDE FOR STEEL BED (back bottom) .....	1
	3-311-011775	24" GUIDE FOR STEEL BED (back top) .....	1
	3-311-011776	48" GUIDE FOR STL BED (front top & bottom) .....	4
	3-311-011777	8-1/2" GUIDE FOR STL BED (middle top & bottom) .....	4
	5/16-18X1-1/4	HEX SOCKET FLAT HEAD CAP SCREW .....	38
50	3-311-013579	CAM, ROD SUPPORT .....	1
51	3-076-010016	FOLLOWER, CAM .....	2
52	3-311-013580	WASHER, CAM FOLLOWING .....	2
53	5/8-11HFN	NUT, HEX .....	2
54	3-311-013597	WELDMENT, SUPPORT CAM FOLLOWER .....	1
55	3-311-013596	WELDMENT, FRAME STRETCH (17' BED) .....	1
	3-311-014845	WELDMENT, FRAME STRETCH (19' BED) .....	1
56	3-162-010001	STRAINER ASSEMBLY, FILLER BREATHER .....	1
57	3-311-013587	STOP FRAME, NOTCHED .....	2
58	3-115-010074	TOOL BOX, RIGHT BOLT-ON .....	1
59	5/16-18X1-1/4	SCREW, HEX SOCKET FLAT HEAD .....	6
60	3-311-013602	PROTECTOR, FRAME SLIDE .....	2
61	5/16-18HFN	NUT, HEX .....	6
62	5/8-11X4-1/2CS	CAP SCREW, HEX HEAD .....	4
63	5/8-11HFN	NUT, HEX .....	4
64	3-242-010044	CYLINDER, HYDRAULIC .....	1
65	3-311-013595	WELDMENT, VALVE COMPARTMENT .....	1
66	1-1/2-12 JN	NUT, JAM .....	2
67	190400004	PIN, CYLINDER .....	2
68	190400002	PIN, HAIR .....	2
69	3-242-010115	CYLINDER, HYDRAULIC .....	1

## FORD FUEL TANK FILLERS



ITEM	PART NO.	DESCRIPTION	QTY
1	105-0102	CLAMP, HOSE .....	6
2	6206	CLAMP, HOSE .....	2
3	3-316-010007	TUBE, TANK FILLER .....	2

## HAND THROTTLE



ITEM	PART NO.	DESCRIPTION	QTY
<b>GAS AND DIESEL MODELS:</b>			
1	3-155-010001	CABLE, THROTTLE .....	1
2	3/16-24HFN	NUT, HEX .....	2
4	3-174-010013004	CHAIN .....	1
5	3/16X3/4RHDSTV	BOLT, ROUND HEAD STOVE .....	2
6	3-272-010007	BRACKET, THROTTLE CABLE .....	1
<b>GAS MODELS ONLY:</b>			
3	32005	TERMINAL, ELECTRICAL RING .....	1
<b>DIESEL MODELS ONLY:</b>			
7	1/8X1	PIN, COTTER .....	1
8	1/8FW	WASHER, FLAT .....	1

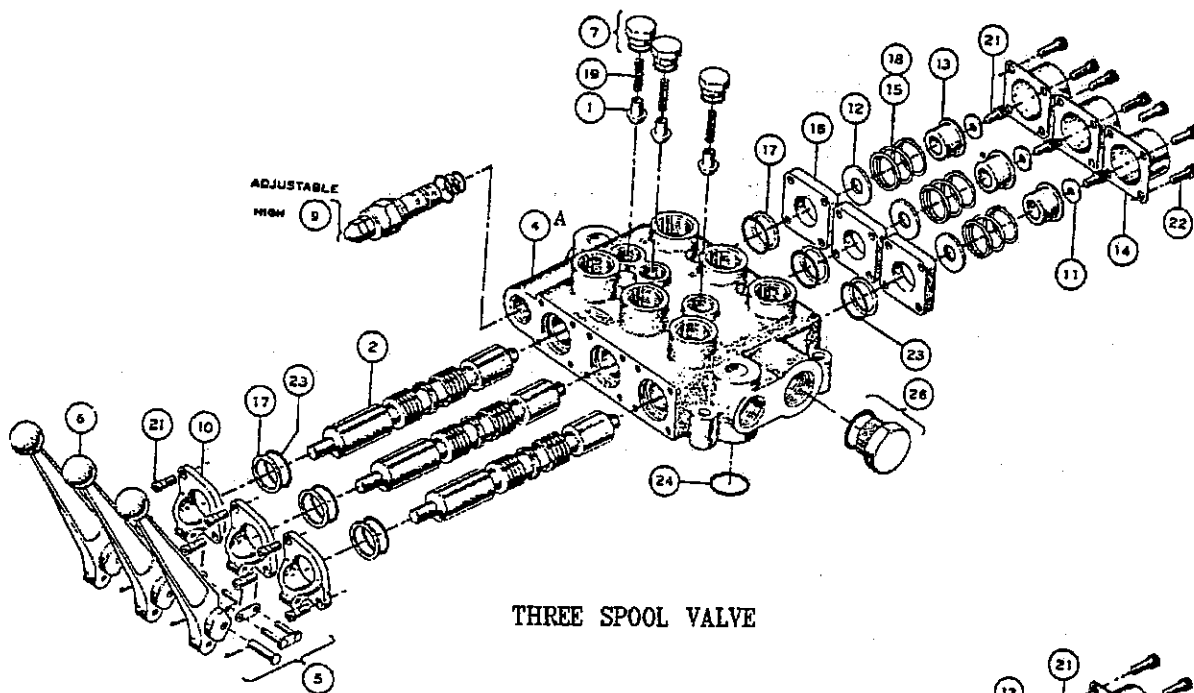
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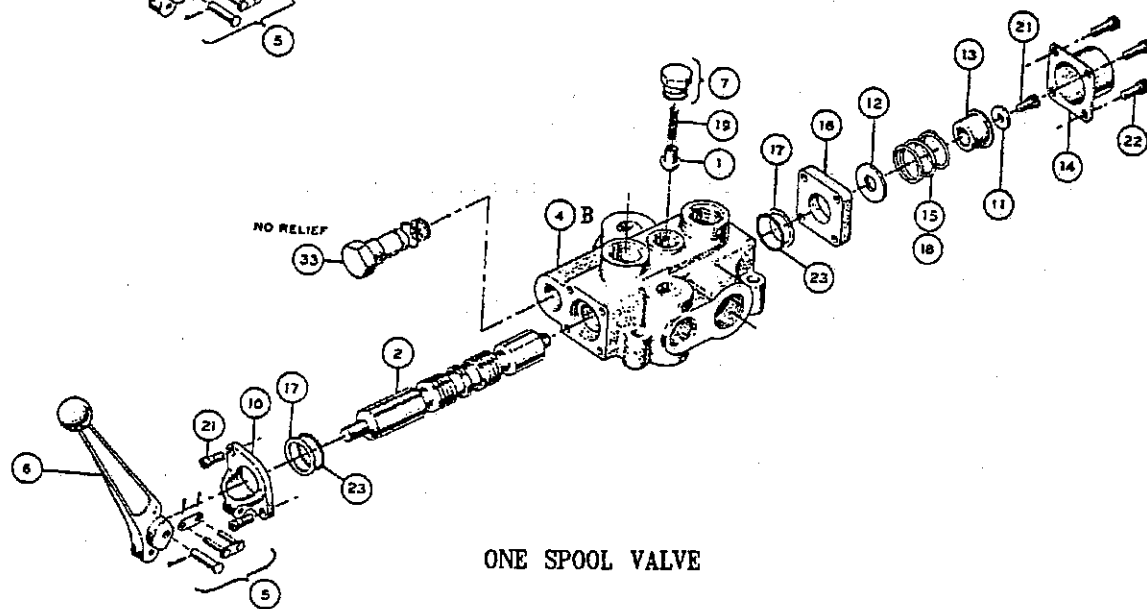


## HYDRAULICS, CONTINUED

ITEM	PART NO.	DESCRIPTION	QTY
14	2254-8-8S	TEE, ADAPTER .....	1
15	1/2 PIPE PLUG	PLUG .....	1
16	3-846-010007	VALVE, 3 SPOOL .....	1
17	3/4X1/2BUSH	BUSHING .....	1
18	3-397-010148	HOSE ASSEMBLY .....	1
19	2040-4-6S	REDUCER .....	1
20	1-007-010017	ADAPTER, 90° .....	2
21	3-397-010175	HOSE ASSEMBLY .....	2
22	3-395-010001072	HOSE, FIRE .....	1
23	2047-6-6S	ADAPTER, 90° .....	2
24	3-397-010130	HOSE ASSEMBLY .....	1
25	3-397-010216	HOSE ASSEMBLY .....	1
26	1-007-010005	ADAPTER, 90° .....	1
27	1-007-010008	ADAPTER, 90° .....	1
28	2083-8-8S	NIPPLE .....	1
29	3-846-010026	VALVE, CHECK .....	1
30	3-397-010172	HOSE ASSEMBLY .....	1
31	3-242-010085	HYDRAULIC CYLINDER, TILT .....	1
32	3-242-010044	HYDRAULIC CYLINDER, BED SLIDE .....	1
33	2216-6-8S	ADAPTER .....	1
34	3-397-010128	HOSE ASSEMBLY .....	1
35	3-007-010032	ADAPTER, HYDRAULIC NIPPLE .....	1
36	2045-6-8S	ADAPTER .....	1
37	2255-6-6S	TEE, ADAPTER .....	1
38	3-481-010002	MOTOR, HYDRAULIC WINCH .....	1



**THREE SPOOL VALVE**



**ONE SPOOL VALVE**

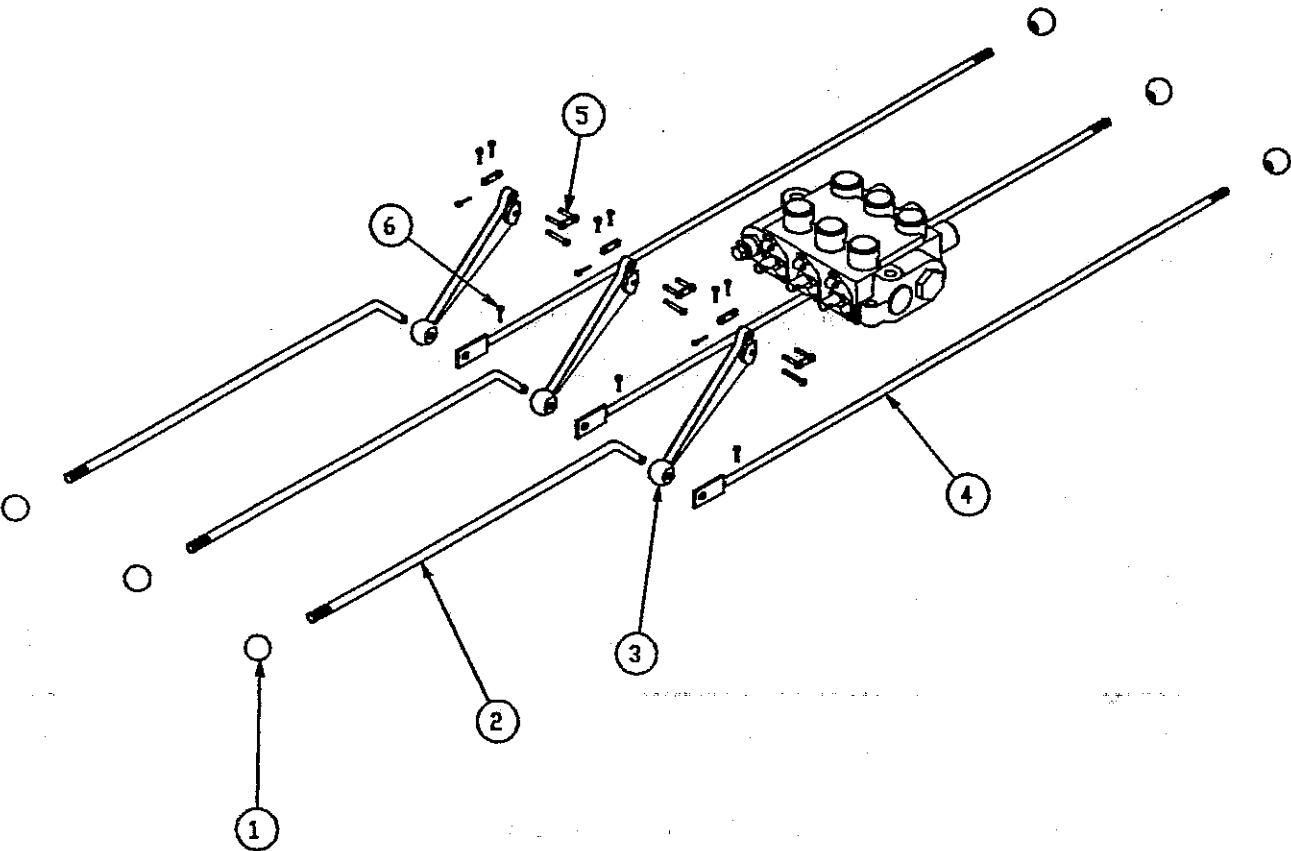
# SINGLE (BA11AD00A0) and THREE (3-846-010007) SPOOL VALVES

ITEM	PART NO.	DESCRIPTION	QTY**
1	1V0081	POPPET, LOAD CHECK .....	3,1
2*	IV0090	SPOOL, 4-WAY .....	3,1
3	NOT USED		
4A*	1V0360	HOUSING, VALVE .....	1,0
4B*	1V0101	HOUSING, VALVE .....	0,1
5	1V1701	PIN KIT .....	3,1
6	1V1703	HANDLE, UNMODIFIED .....	3,1
7	1V1725	PLUG, LOAD CHECK .....	3,1
8	NOT USED		
9	1R0017	RELIEF ASSEMBLY (1500 - 3000 PSI) .....	1,0
10	4Z4306	BRACKET, HANDLE .....	3,1
11	1A0290	WASHER, CENTERING SPRING .....	3,1
12	1A0291	WASHER, STOP .....	3,1
13	1A0292	COLLAR, STOP .....	3,1
14	1A0294	CAP, END .....	3,1
15	NOT USED		
16	1A0709	SPACER, END .....	3,1
17	1A0711	WASHER, O-RING SPOOL .....	6,2
18	1A0744	SPRING, CENTERING .....	3,1
19	1A0757	SPRING, LOAD CHECK .....	3,1
20	NOT USED		
21	2A0079-404	CAP SCREW (Torque to 7 - 11 ft. lbs.) .....	9,3
22	2A0079-406	CAP SCREW (Torque to 7 - 11 ft. lbs.) .....	12,4
23	2A0283-7214	SEAL, SPOOL .....	6,2
24	2A0283-7214	GROMMET, RUBBER (Bottom outlet) .....	1,0
25	NOT USED		
26	2A0354-121	PLUG ASSEMBLY, CONVERSION .....	1,1
33	1R0035	PLUG ASSEMBLY, NO-RELIEF .....	1,0
	2V0010	SEAL KIT, 3 SPOOL VALVE .....	1,0
	2V0008	SEAL KIT, 1 SPOOL VALVE .....	0,1

\*SOLD AS MATCHED SET ONLY

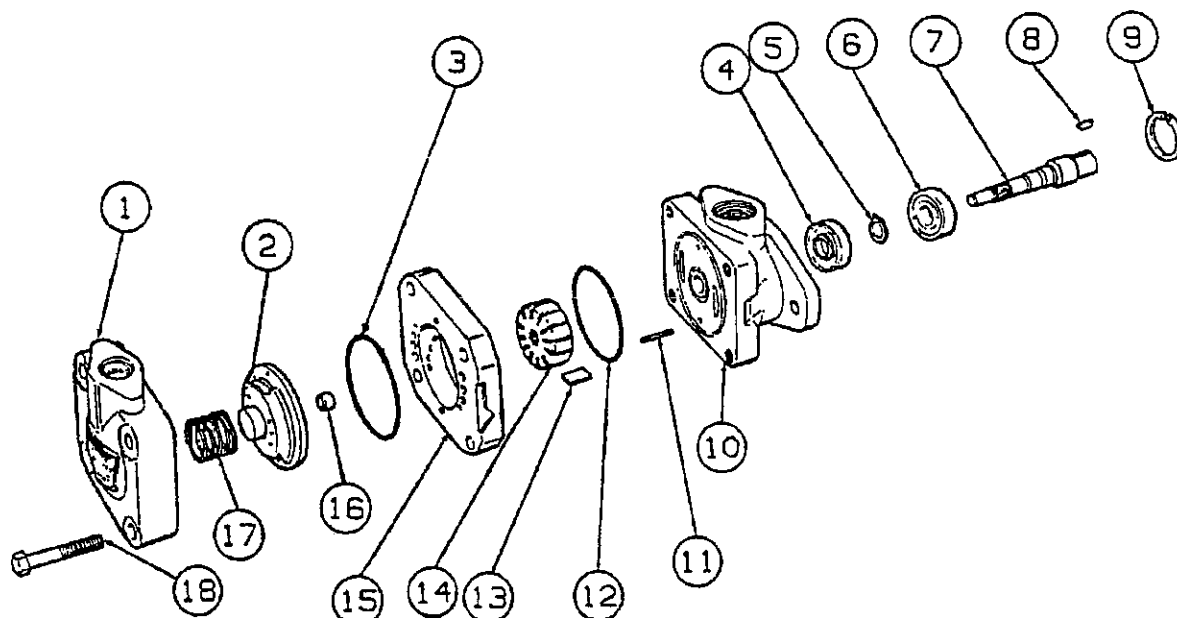
\*\*TWO QUANTITIES ARE LISTED WITH A COMMA BETWEEN THEM. THE FIRST QUANTITY IS FOR A THREE SPOOL VALVE AND THE SECOND QUANTITY IS FOR A ONE SPOOL VALVE.

# 3-SPOOL VALVE LINKAGE



ITEM	PART NO.	DESCRIPTION	QTY**
1	95	KNOB, BALL .....	6
2	3-311-013584	ROD, LEFT SIDE CONTROL .....	3
3	3-360-010008	HANDLE, MODIFIED VALVE .....	3
4	3-311-013591	ROD, RIGHT SIDE CONTROL .....	3
5	1V1701	PIN KIT .....	3
6	5/32X1-1/4	PIN, COTTER .....	18

# HYDRAULIC PUMP (3-595-010002)

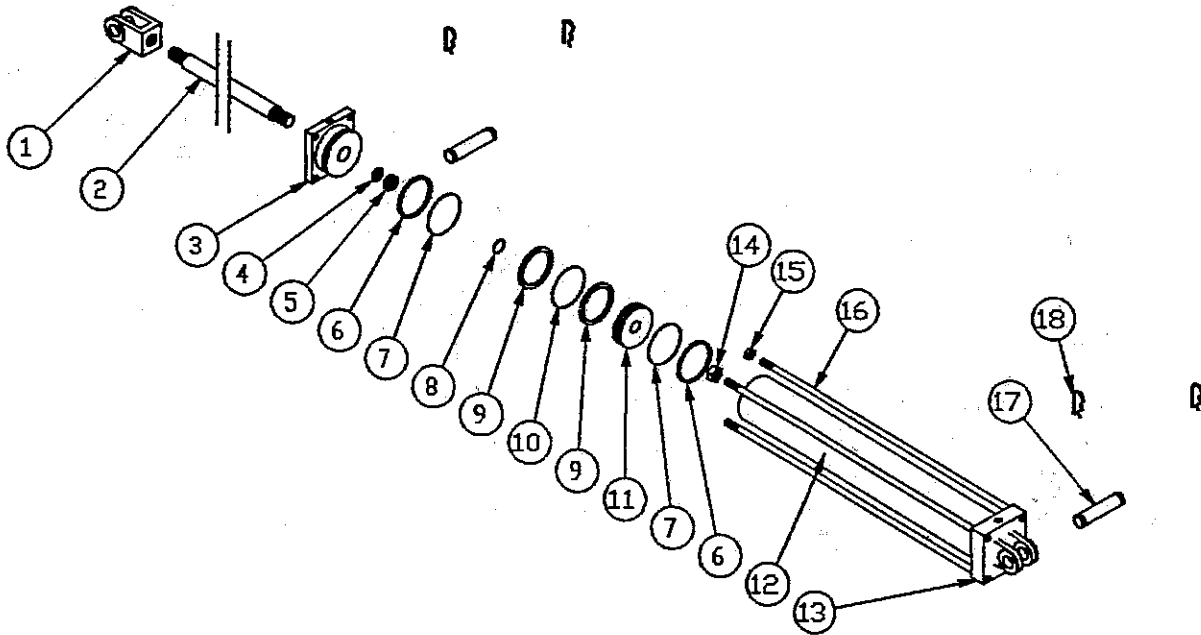


ITEM	PART NO.	DESCRIPTION	QTY**
1	31-2657	COVER .....	1
2	359287	PRESSURE PLATE S/A .....	1
3* +	154090	O-RING .....	1
4*	229235	SEAL .....	1
5	98653	RETAINING RING .....	1
6	98574	BEARING .....	1
7	280372	SHAFT, STRAIGHT .....	1
8	5881	KEY .....	1
9	109975	RETAINING RING .....	1
10	280689	BODY .....	1
11	9603	PIN .....	2
12* +	154090	O-RING .....	1
13 +	923479	VANE KIT (12 VANES) .....	1
14 +	358334	ROTOR .....	1
15	331807	RING .....	1
16	280267	BUSHING .....	1
17	28422	SPRING .....	1
18	1319	SCREW (Torque to 80 + 5 Ft. Lbs.) .....	4

\*9227331  
+ 9234871

SEAL KIT (Includes items marked with an \*)  
CARTRIDGE KIT (Includes items marked with a +)

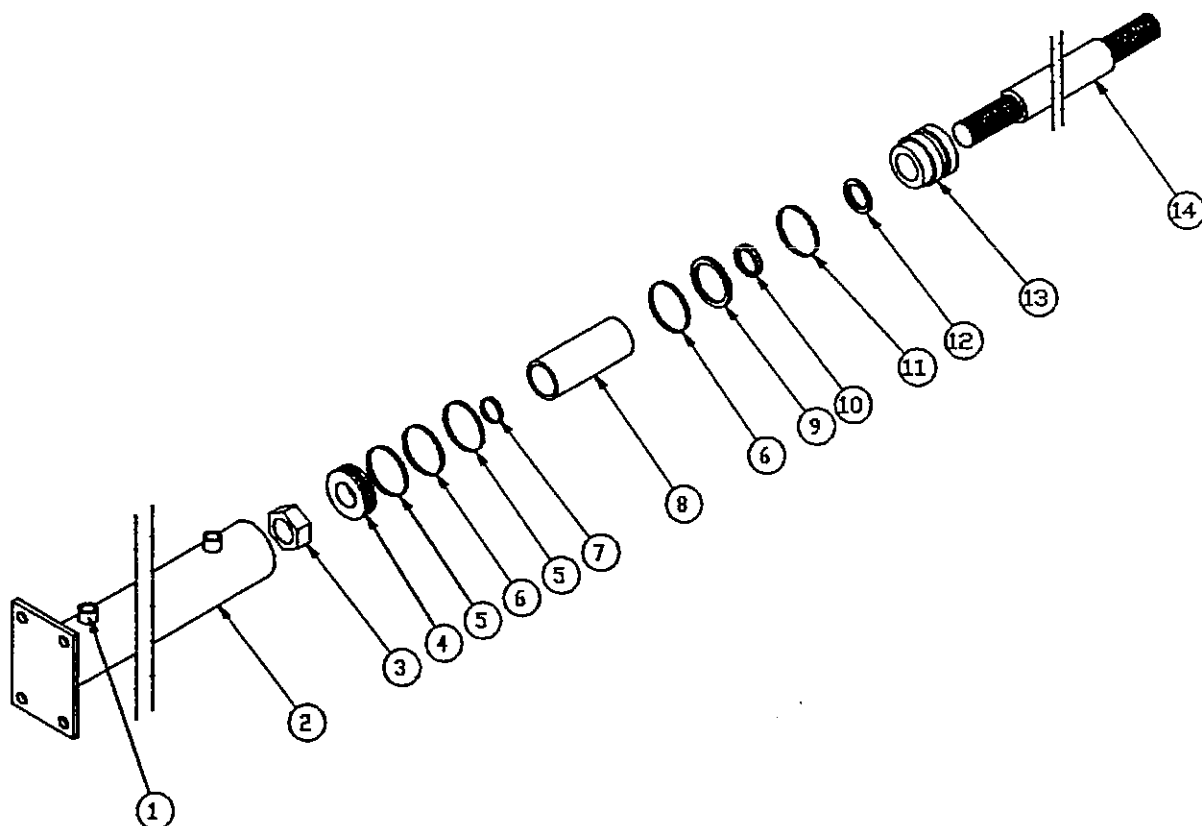
# BED TILT CYLINDER (3-242-010115)



ITEM	PART NO.	DESCRIPTION	QTY
1	3-242-010121	CLEVIS ASSEMBLY .....	1
2	011000013	PISTON ROD .....	1
3	081900230	GLAND .....	1
4 *	250001327	WIPER .....	1
5 *	240020007	U-CUP .....	1
6 *	240005342	BACK-UP WASHER .....	2
7 *	240001342	O-RING .....	2
8 *	240000026	O-RING .....	1
9 *	240005327	BACK-UP WASHER .....	2
10 *	240000327	O-RING .....	1
11	011000013	PISTON .....	1
12	051900016	TUBE .....	1
13	141900037	BUTT .....	1
14	220000212	HEX LOCK NU .....	1
15	220000105	HEX NUT .....	4
16	170301353	TIE ROD .....	1
17	190400004	CLEVIS PIN .....	2
18	190400002	HAIR PIN .....	4

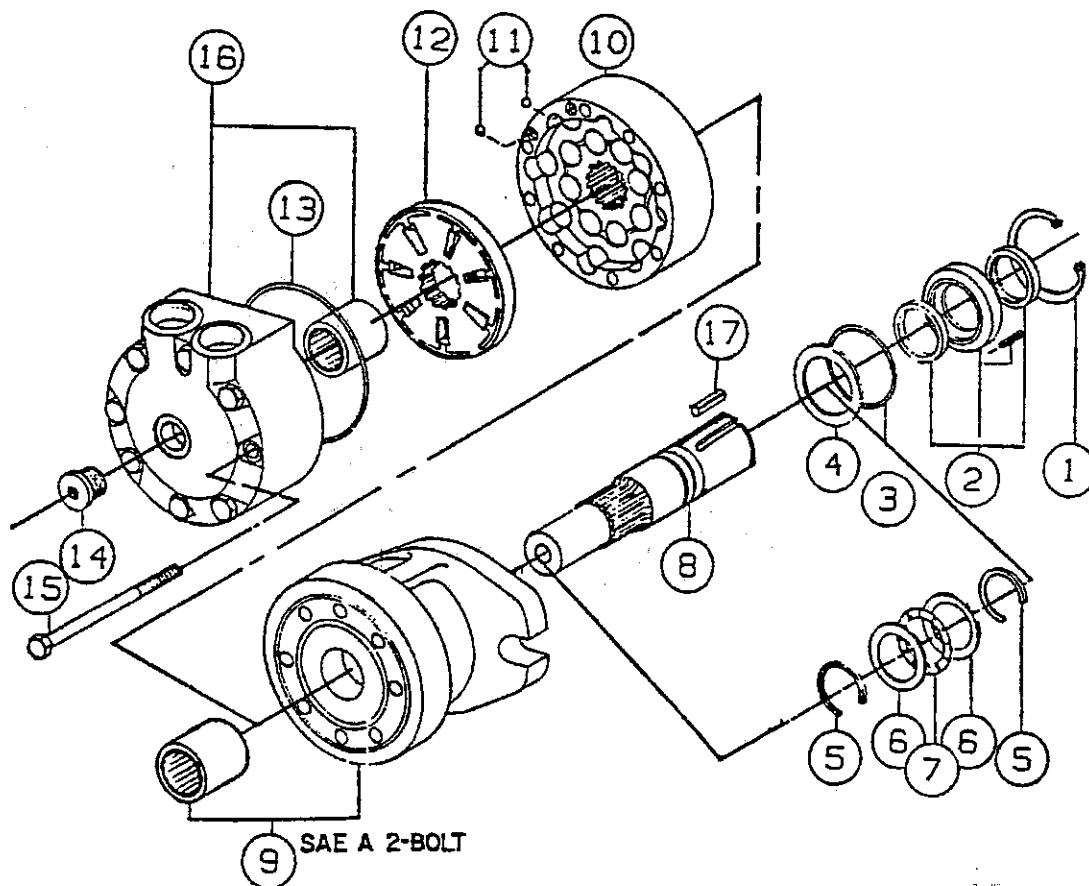
PMCK-9400 PACKING KIT (Includes items marked \*)

## BED SLIDE CYLINDER (3-242-010044)



ITEM	PART NO.	DESCRIPTION	QTY
1	061700305	BUTT & TUBE ASSEMBLY .....	1
2	220000213	LOCK NUT .....	1
3	071700130	PISTON .....	1
4 *	240005338	BACK-UP WASHER .....	3
5 *	240000338	O-RING .....	2
6 *	240000028	O-RING .....	1
7	211100200	SPACER .....	1
8	081700035	GLAND .....	1
9 *	230007350	SQUARE RETAINER RING .....	1
10 *	240020007	U-CUP .....	1
11 *	250001327	WIPER .....	1
12	011000256	PISTON ROD 3-242-0100461 PACKING KIT (Includes items marked *)	1

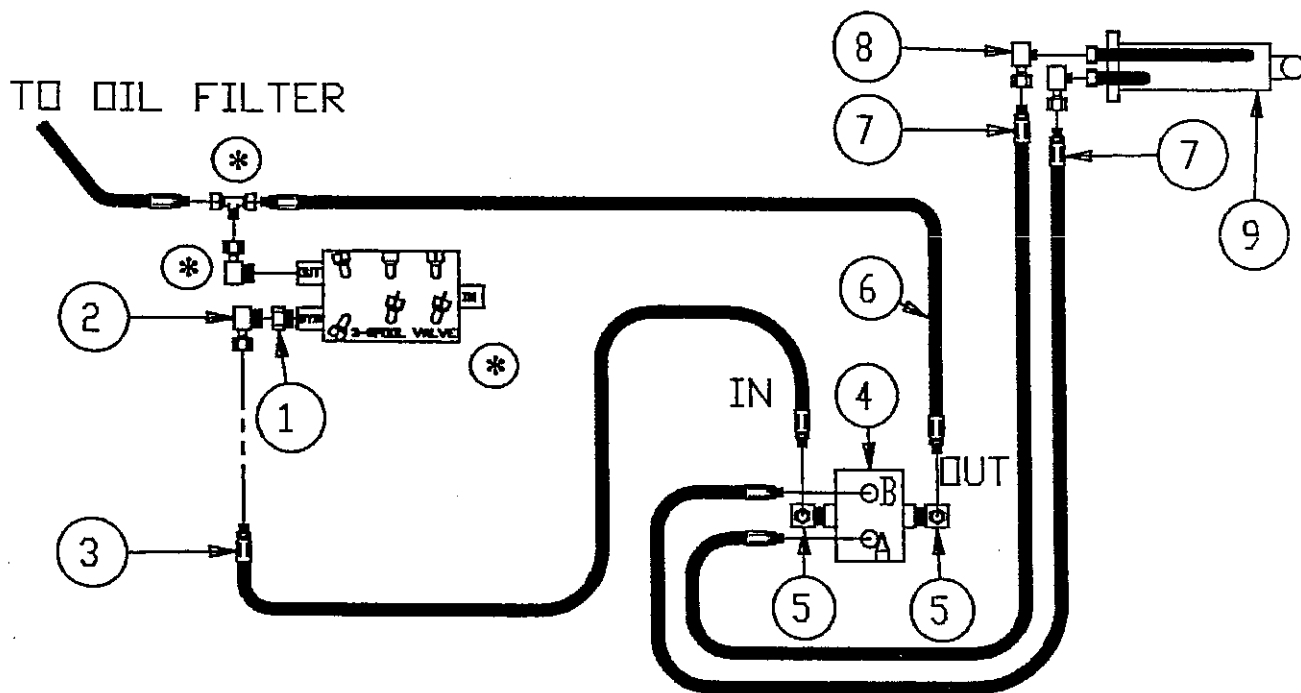
# WINCH HYDRAULIC MOTOR (3-481-010002)



ITEM	PART NO.	DESCRIPTION	QTY
1	1031	RING, SNAP .....	1
2	1460	RETAINER ASSEMBLY, SEAL .....	1
	1463	RETAINER ASSEMBLY, VITON SEAL .....	1
3	1060-29	SEAL, O-RING .....	1
4	1022	SPACER .....	1
5	1030	RING, SNAP .....	2
6	1058	WASHER, THRUST .....	2
7	1059	BEARING, THRUST .....	1
8	1001-X	SHAFT, KEYED .....	1
9	1188-1	BODY/BEARING ASSEMBLY, 2 BOLT .....	1
10	1004-1	IGR ASSEMBLY W/RING 7110 - 3.6 cu.in./REV .....	1
11	1021	CHECK BALL .....	2
12	1007	ROTARY VALVE 7110 .....	1
13	1046	SEAL, SQUARE RING 046 .....	2
14	1019-4	PLUG, VENT W/O O-RING, 7/16 .....	1
15	1014-X	BOLTS, HEX, 5/16-24 .....	8
16	1170-1	COVER/BEARING ASSEMBLY SAE .....	1
17	1020-1	KEY .....	1



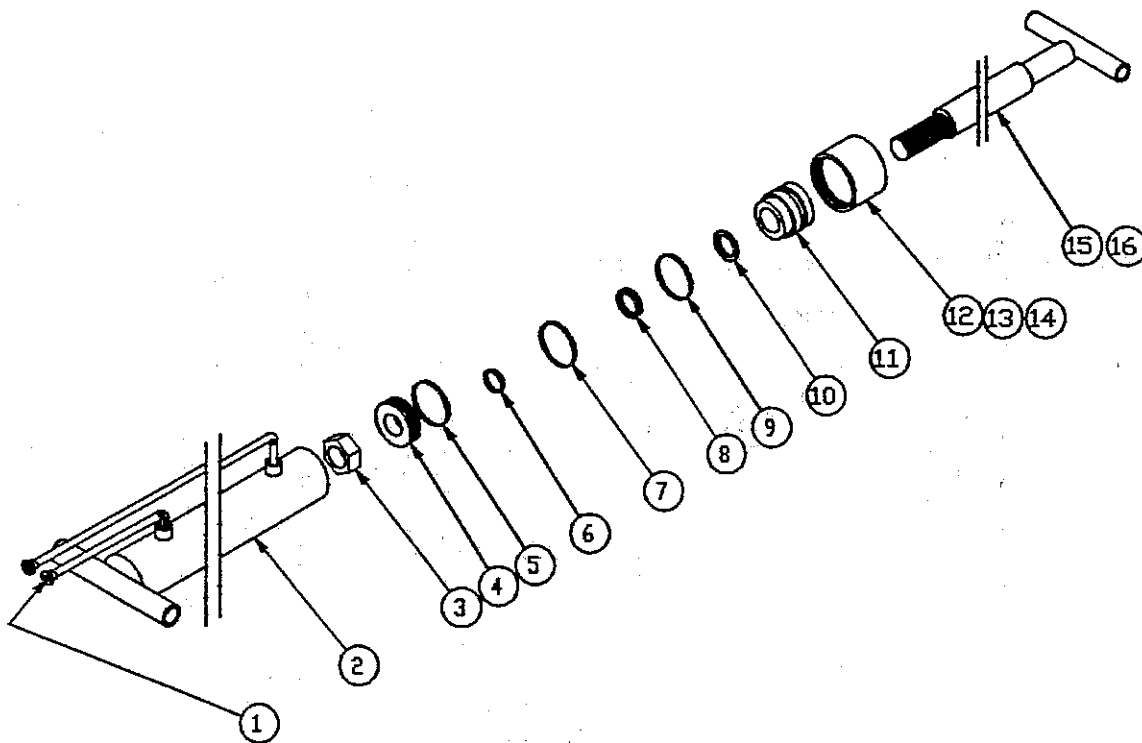
# TOWBAR HYDRAULIC PARTS LIST



ITEM	PART NO.	DESCRIPTION	QTY
1	1V0208	ADAPTER .....	1
2	2047-8-8S	ADAPTER, 90° .....	1
3	3-397-010012	HOSE ASSEMBLY .....	1
4	BA11AD00AO	VALVE, SINGLE SPOOL .....	1
5	1-007-010013	ADAPTER, 90° .....	2
6	3-397-010144	HOSE ASSEMBLY .....	1
7	1-397-010051	HOSE ASSEMBLY .....	2
8	2047-6-6S	ADAPTER, 90° .....	2
9	3-242-010063	CYLINDER, HYDRAULIC .....	1

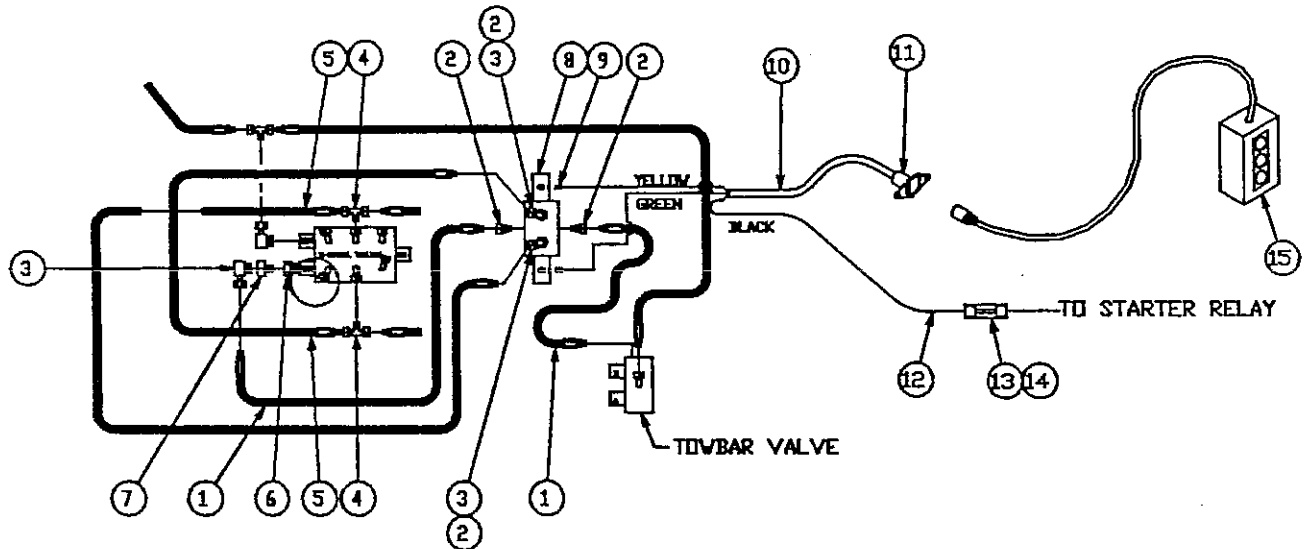
\* SEE PAGE 9-6 FOR IDENTIFICATION

# TOWBAR CYLINDER (3-242-010063)



ITEM	PART NO.	DESCRIPTION	QTY
1&2	061300375	TUBE ASSEMBLY, BUTT AND .....	1
3	220000208	NUT, LOCK .....	1
4	071300110	PISTON .....	1
5 *	240060330	SEAL, CROWN .....	1
6 *	240000018	O-RING .....	1
7 *	240000330	O-RING .....	1
8 *	240020148	U-CUP .....	1
9 *	240061330	WASHER, BACK-UP .....	1
10 *	250001222	WIPER .....	1
11	081300164	GLAND .....	1
12	261400002	CAP, GLAND .....	1
13	220000707	SCREW, SET .....	1
14	220000856	LOCK, NYLON .....	1
15	020800156	ROD ASSEMBLY, PISTON .....	1
16	270010016	ZERK, GREASE .....	2
	PMCK-AE-148	PACKING KIT (Includes items marked *) .....	1

# WINCH REMOTE SCHEMATIC



ITEM	PART NO.	DESCRIPTION	QTY
1	3-397-010144	HOSE ASSEMBLY .....	2
2	2066-8-8S	ADAPTER .....	4
3	2047-8-8S	ADAPTER, 90° .....	3
4	2254-8-8S	TEE .....	2
5	3-397-010144	HOSE ASSEMBLY .....	2
6	1VO208	REMOTE, POWER BEYOND .....	1
7	3/4X1/2BUSH	BUSHING .....	1
8	3-846-010009	VALVE, MULTI-PAK SOLENOID .....	1
9	C29-1104X	CONNECTOR .....	2
10	3-156-010007180	MULTI CONDUCTOR WIRE .....	1
11	59S7	SOCKET, TRAILER ELECTRICAL 7 POLE .....	1
12	1-879-010004420	WIRE, RED .....	1
13	3-318-0100011	FUSE, 12 VOLT 15 AMP AGL-15 .....	1
14	3-318-010002	HOLDER, FUSE .....	1
15	3-765-010002	CONTROL ASSEMBLY, SWITCH REMOTE .....	1
<b>15 CONSISTS OF:</b>			
	9001-BW73Y	STATION, PUSH BUTTON .....	1
	DB-10	STRAIN RELIEF, CORD CONNECTOR .....	1
	3-156-010007480	WIRE, MULTI CONDUCTOR .....	1
	59P8	PLUG, TRAILER CONNECTOR .....	1



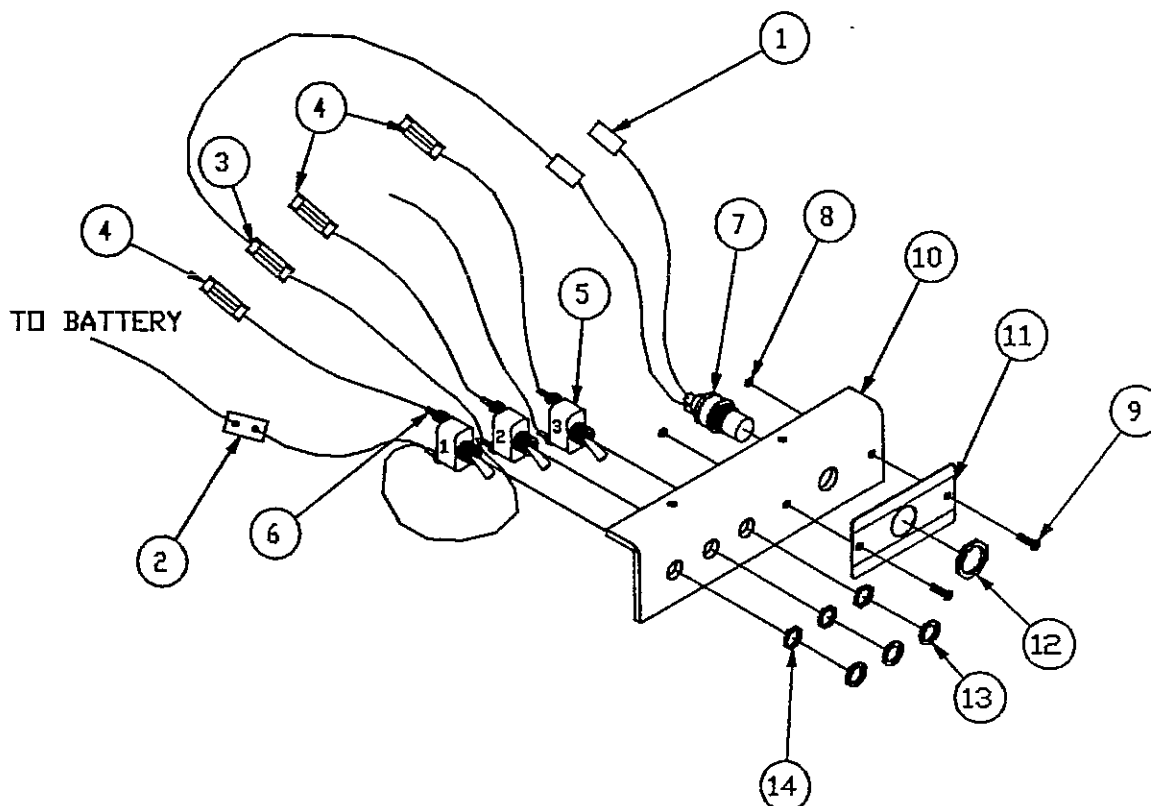
## BED ASSEMBLY

ITEM	PART NO.	DESCRIPTION	QTY
1	3-793-010020	D-RING ASSEMBLY .....	1
2	5/8-11HFLN	NUT, HEX LOCK .....	1
3	5/8FW	WASHER, FLAT .....	2
4	3-793-010018	SWIVEL, D-RING .....	1
5	RRT159X1.375	SPACER .....	1
6	5/8-11X4HHCS	CAP SCREW, HEX HEAD .....	1
7	3-080-010022	17 ft. ALUM BED W/SIDERAILS .....	1
	3-080-010021	17 ft. ALUM FLATBED .....	1
	3-080-010012	RT TOP SIDE RAIL (for flat bed) .....	1
	3-080-010013	LT TOP SIDE RAIL (for flat bed) .....	1
	3-080-010041	17 ft. STEEL BED W/PERMANENT BULKHEAD .....	1
	3-080-010267	19 ft. ALUM BED W/SIDERAILS .....	1
	3-080-010283	19 ft. STEEL BED FLATBED .....	1
8	5/8-11HFLN	NUT, HEX LOCK .....	4
9	5/8FW	WASHER, FLAT .....	4
10	5/8-11X2CS-5	CAP SCREW, HEX HEAD .....	4
11	3-141-010024	REMOVABLE BULKHEAD ASSEMBLY (for permanent side rails) ..	1
	3-141-010019	BULKHEAD ASSEMBLY (for removable side rail beds) .....	1
12	3-446-010001	HOOK UP KIT, EMERGENCY LIGHT BAR AND .....	1
13	3-120-010130	MOUNTING BRACKET, EMERGENCY LIGHT .....	2
14	NO NUMBER	NUT, CHROME ACORN (Supplied with Light Bar) .....	4
15	1/2-13X5-1/2HCS	CAP SCREW, HEX HEAD .....	1
16	1/2FW	WASHER .....	1
17	3-720-010010	SPRING, COMP LEVEL WIND .....	1
18	5/8FW	WASHER, FLAT .....	2
19	5/8-11HFLN	NUT, HEX LOCK .....	2
20	5/8-11X2-1/2CS	CAP SCREW, HEX HEAD .....	2
21	3-311-013068	ANCHOR, WORM WINCH .....	2
22	5/8-11X1-1/2CS	CAP SCREW, HEX HEAD .....	2
23	5/8-11HFLN	NUT, HEX LOCK .....	2
24	5/8FW	WASHER .....	2
25	5/8FW	WASHER, FLAT .....	2
26	5/8-11HFN	NUT, HEX .....	2
27	1/2-13HFN	NUT, HEX .....	1
28	NO NUMBER	SET SCREW, ALLEN SOCKET (Supplied with Worm Winch) .....	1
29	3-873-010073	WINCH .....	1

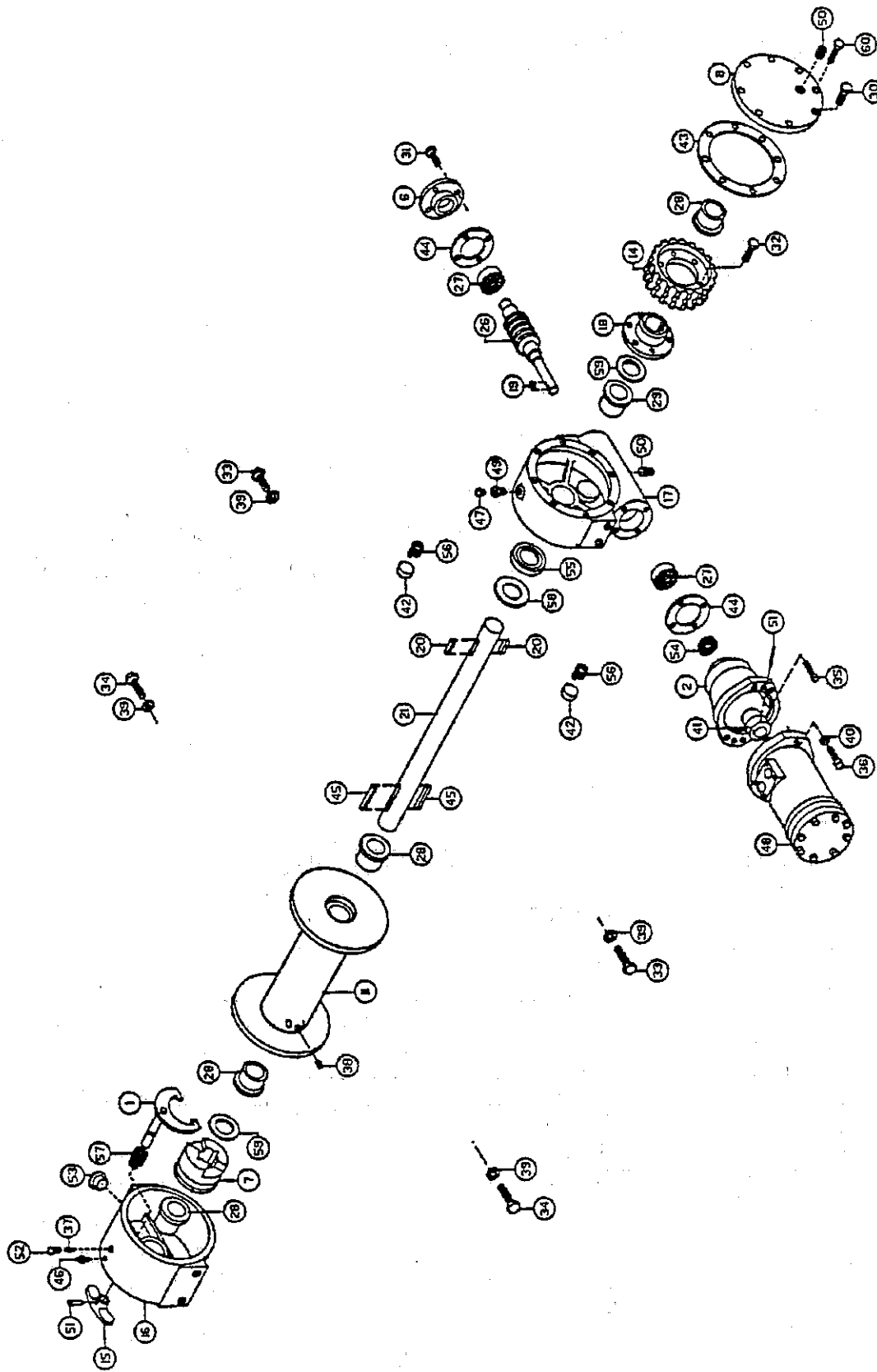
## BED ASSEMBLY, CONTINUED

ITEM	PART NO.	DESCRIPTION	QTY
30	NO NUMBER	KEY, SQUARE (Supplied with Worm Winch) .....	1
31	3-481-010002	MOTOR, WINCH .....	1
32	1/2SLW	WASHER, LOCK .....	2
33	NO NUMBER	CAP SCREW, HEX HEAD Supplied( with Worm Winch) .....	2
34	1/8X1	PIN .....	1
35	3-382-010005	HOOK, CABLE .....	1
36	NO NUMBER	PIN, WINCH HOOK (Supplied with Cable Hook) .....	1
37	3-155-010002	CABLE, WINCH .....	1
38	3/8/16X1HHCS	CAP SCREW, HEX HEAD .....	8
39	3/8SLW	WASHER, LOCK .....	8
40	5/8-11X2-1/2CS	CAP SCREW, HEX HEAD .....	2
41	3-311-013069	MOUNT ASSEMBLY, WORM WINCH .....	1
42	3/8-16HFLN	NUT, HEX LOCK .....	2
43	3-311-013079	SHIELD, WINCH HOSE .....	1
44	3/8-16X1HHCS	CAP SCREW, HEX HEAD .....	2
45	1/2-13X1-1/2CS	CAP SCREW, HEX HEAD .....	2
46	1/2FW	WASHER .....	2
47	1/2-13HFLN	NUT, HEX LOCK .....	2
48	RPRB3999X120	SLIDE BEARING FOR 17' & 19' BED .....	2
49	RPRB3999X59.875	SLIDE BEARING FOR 17' BED .....	2
	RPRB3999X96	SLIDE BEARING FOR 19' BED .....	2
50	3-174-010007	CHAIN ASSEMBLY, HOLD DOWN .....	2
51	3-375-010264	CONNECTOR, ADJUSTABLE CHAIN .....	1
52	SCREW#6X3/8	SCREW .....	8
53	98001R	REFLECTOR, RED .....	2
54	98001Y	REFLECTOR, YELLOW .....	2

## SWITCH PANEL PARTS LIST



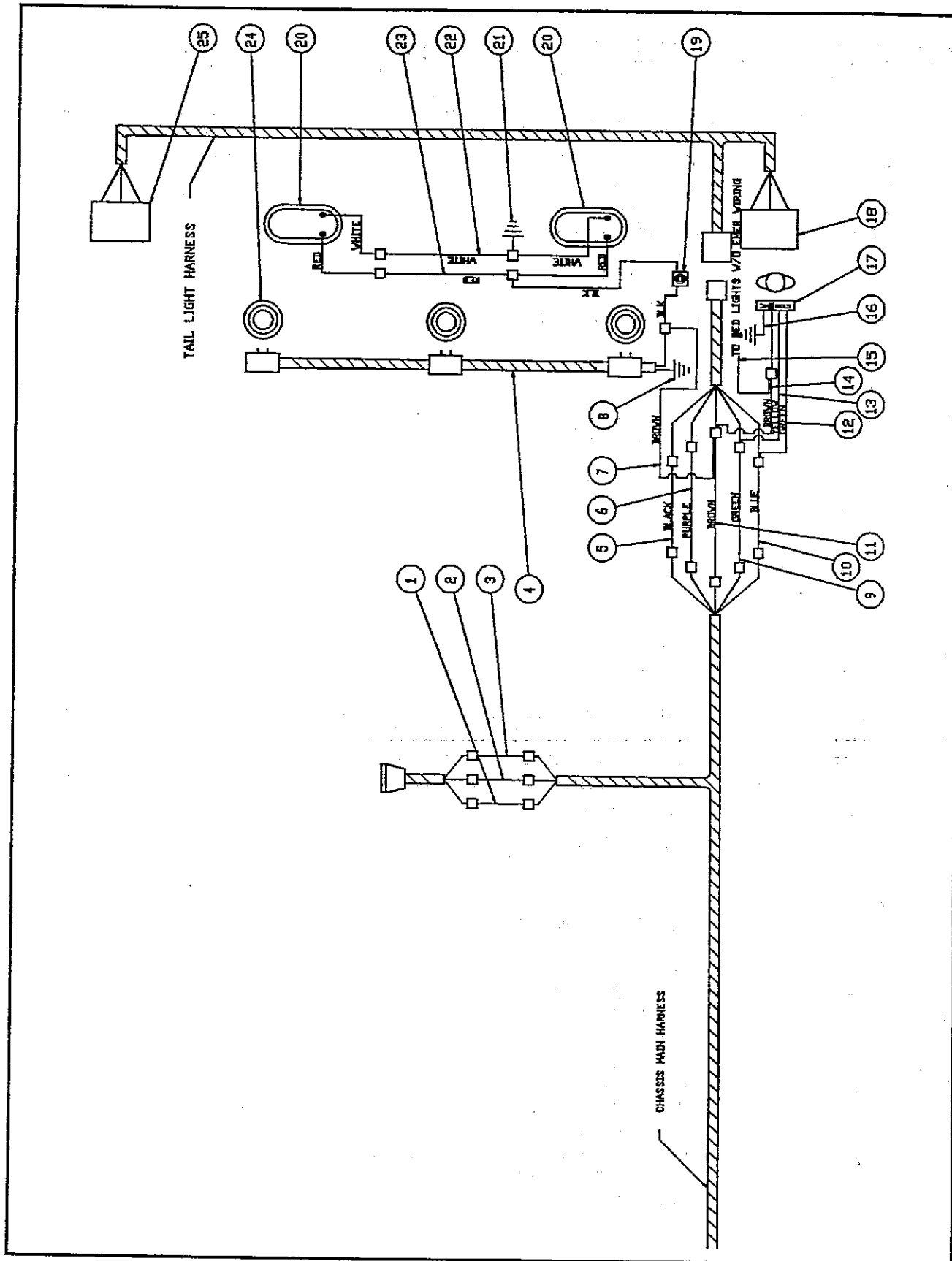
ITEM	PART NO.	DESCRIPTION	QTY
1	C42-4011	SPLICE, BUTT .....	2
2	3-318-010006	BREAKER, CIRCUIT .....	1
3	3-318-010002	HOLDER, FUSE .....	1
		FUSE, 12 VOLT SFE9 .....	1
4	3-318-010002	HOLDER, FUSE .....	3
	3-318-010001	FUSE, 12 VOLT 15 AMP AGL-15 .....	3
5	3-272-010004	SWITCH .....	3
6	3-203-010001	TERMINAL, RING .....	10
7		WARNING LIGHT, PTO (Supplied with PTO mounting kit.) .....	1
8	3/16FW	WASHER, PLATED FLAT .....	2
	3/16-24HFN	NUT, HEX .....	2
9	3/16X3/4RHD STV	BOLT .....	2
10	3-272-010005	SWITCH PLATE, CAB .....	1
11	NO NUMBER	PLACARD, PTO WARNING (Supplied with PTO mounting kit.) .....	1
12	NO NUMBER	NUT, PTO WARNING LIGHT (Supplied with PTO mounting kit.) .....	1
13	NO NUMBER	NUT, TOGGLE SWITCH (for front side of panel) .....	3
		(Supplied with toggle switch kits.)	
14	NO NUMBER	NUT, TOGGLE SWITCH (for back side of panel) .....	3
		(Supplied with toggle switch kits.)	





## WORM GEAR WINCH (3-873-010073)

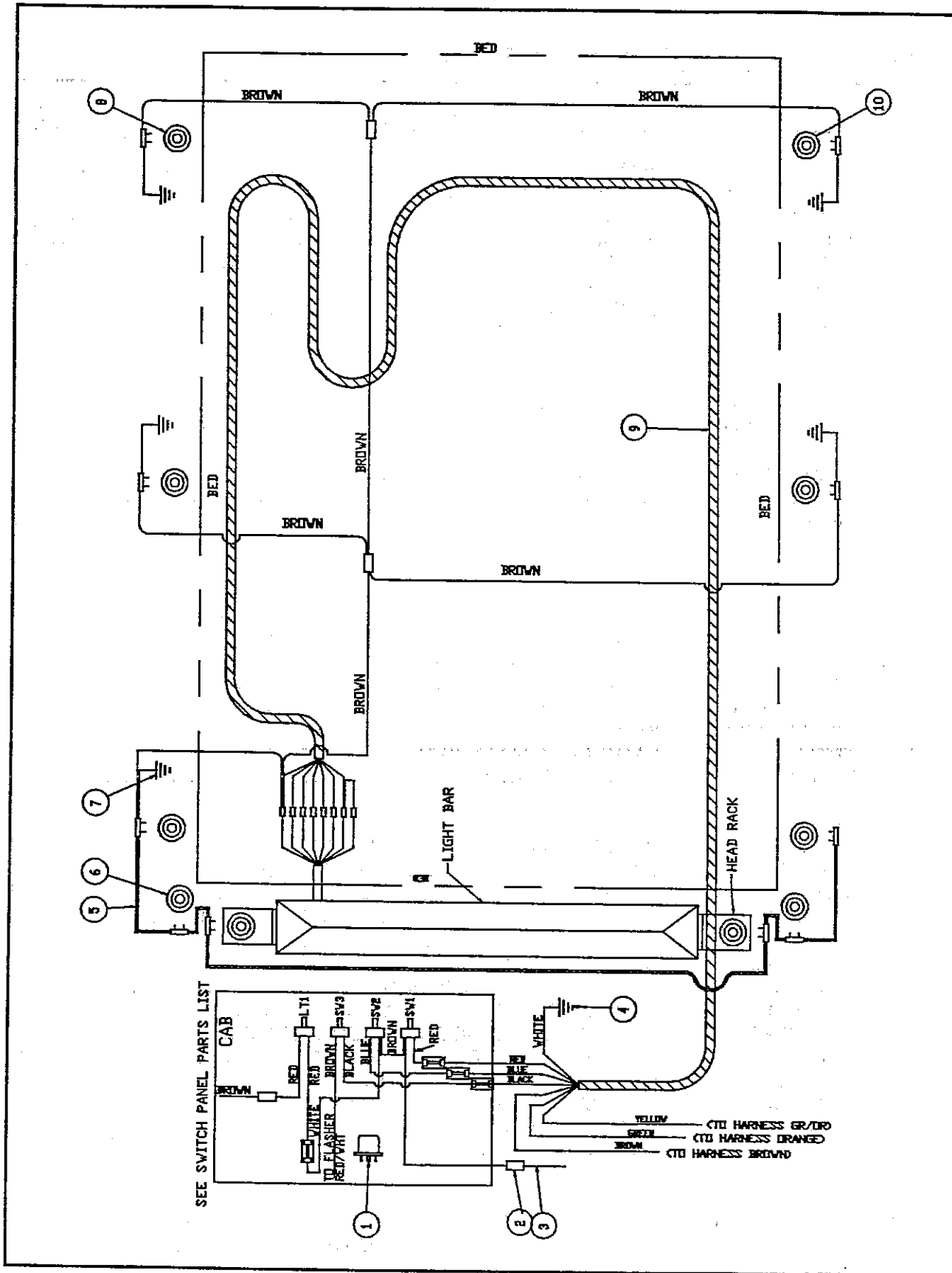
ITEM	PART NO.	DESCRIPTION	QTY
1	276028	SHIFTER ASSEMBLY .....	1
2	300039	ADAPTER .....	1
6	316083	BEARING, CAP .....	1
7	324137	JAW, CLUTCH .....	1
8	328105	COVER .....	1
11	332007	DRUM, "Y" .....	1
14	334005	GEAR, R.H .....	1
15	336010	HANDLE .....	1
16	338208	HOUSING, CLUTCH .....	1
17	338237	HOUSING, GEAR .....	1
18	340001	HUB, GEAR .....	1
19	342029	KEY .....	1
20	342075	KEY .....	2
21	357443	SHAFT, DRUM - Y .....	1
26	368017	WORM, R.H. ....	1
27	402002	BEARING, BALL .....	2
28	410002	BUSHING .....	4
29	412045	BUSHING .....	1
30	1/4-20UNCX3/4	CAPSCREW .....	8
31	414045	CAPSCREW, HEX HEAD .....	4
32	414889	CAPSCREW, HEX HEAD .....	6
33	3/8-16X1-3/4CS	CAPSCREW .....	2
34	3/8-16X1-3/4CS	CAPSCREW .....	2
35	414842	CAPSCREW, SOCKET HEAD .....	4
36	1/2-13X1HHCS	CAPSCREW .....	2
37	416030	SETSCREW, SOCKET HEADLESS .....	1
38	416057	SETSCREW, SOCKET HEADLESS .....	1
39	3/8SLW	LOCKWASHER .....	4
40	1/2SLW	LOCKWASHER .....	2
41	431007	COUPLING .....	1
42	438014	DISC-BRAKE .....	2
43	442001	GASKET, COVER .....	1
44	442002	GASKET, GEAR HOUSING .....	2
45	450006	KEY-BARTH .....	2
46	456001	FITTING, LUBE .....	1
47	456008	FITTING, RELIEF .....	1
49	468002	REDUCER .....	1
50	468011	PLUG, PIPE .....	2
51	470033	PIN, SPIRAL .....	2
52	472012	PLUG, RUBBER .....	1
53	472013	PLUG, PLASTIC .....	1
54	486009	OIL SEAL, WORM SHAFT .....	1
55	486017	OIL SEAL, DRUM SHAFT .....	1
56	494002	SPRING, DISC BRAKE .....	2
57	494053	SPRING, SHIFTER .....	1
58	518014	WASHER, THRUST .....	1
59	518015	WASHER, THRUST .....	2



## CHASSIS ELECTRICAL ITEMS

ITEM	PART NO.	DESCRIPTION	QTY
1	1-879-010005018	BROWN WIRE .....	1
2	1-879-010012018	ORANGE WIRE .....	1
3	1-879-010006018	GREEN WIRE .....	1
4	93906	HARNESS, M/C BAR LAMP .....	1
5	1-879-010011060	BLACK WIRE .....	1
6	1-879-010013060	PURPLE WIRE .....	1
7	1-879-010005	BROWN WIRE .....	A/R
8	31003	TERMINAL, RING .....	1
9	1-879-010006060	GREEN WIRE .....	1
10	1-879-010008060	BLUE WIRE .....	1
11	1-879-010005060	BROWN WIRE .....	1
12	1-879-010006018	GREEN WIRE .....	1
13	1-879-010007018	YELLOW WIRE .....	1
14	1-879-010005018	BROWN WIRE .....	1
15	1-879-010005	BROWN WIRE .....	A/R
16	1-879-010010018	WHITE WIRE .....	1
	31003	TERMINAL, RING .....	1
17	3-272-010003	CONNECTOR, FOUR POLE ELECTRICAL FM .....	1
18	3-446-01000	LAMP, STOP TURN TAIL .....	2
19	3-272-010017	SWITCH, TOGGLE .....	1
20	60004	LAMP, BACK UP WITH GROMMET .....	2
21	31003	TERMINAL, RING .....	1
22	1-879-010010018	WHITE WIRE .....	1
23	1-879-010004018	RED WIRE .....	1
24	30200R	LAMP, CLEARANCE RED .....	3
25	3-446-010005	LAMP, STOP TURN TAIL .....	2
NOT SHOWN:			
	3-368-010041	HARNESS, MAIN HARNESS 30" EXTENSION .....	1*
	3-368-010056	HARNESS, MAIN HARNESS 45" EXTENSION .....	1*
	3-368-010040	HARNESS, FOUR POLE CONNECTOR .....	1*
	3-368-010047	HARNESS, GROUND (FOUR POLE CONNECTOR) .....	1*
	3-368-010043	HARNESS, WORK LIGHTS .....	1*
	3-368-010045	HARNESS, LIGHT BAR .....	1*
	3-368-010046	HARNESS, CAB SWITCH PANEL .....	1*
	3-368-010047	HARNESS, LIGHT BAR GROUND .....	1*
	3-368-010048	HARNESS, UNDERHOOD CIRCUIT BREAKER .....	1*
	3-368-010044	HARNESS, BED CLEARANCE LIGHTS .....	1*
	3-272-010018	HEAT SHRINK WITH SEALANT	
	3-272-010020	HEAT SHRINK WITHOUT SEALANT	
	C42-401	BUTT SPLICE 16-14 GA	
	D42-401	BUTT SPLICE 12-10 GA	

\* HARNESSES ONLY COME ON LATER MODEL LOADOLL KITS AND SOME OF THE HARNESSES LISTED ARE ONLY FOR OPTIONAL ORDERED EQUIPMENT.



## BED ELECTRICAL ITEMS

ITEM	PART NO.	DESCRIPTION	QTY
1	3-272-010006	HD 12V SIGNAL FLASHER .....	1
2	D42-40	SPLICE CONNECTOR .....	1
3	1-879-010018	WIRE RED .....	A/R
4	32005	RING TERMINAL .....	1
5	3-368-010018	HARNESS WIRING FRONT BED .....	1
6	30200Y	SEALED CLEARANCE YELLOW .....	6
7	31003	RING TERMINAL .....	1
8	30200R	SEALED CLEARANCE RED .....	1
9	3-156-010009516	MULTI-CONDUCTOR CABLE .....	1
10	30200R	SEALED CLEARANCE RED .....	1

### NOT SHOWN:

3-272-010018	HEAT SHRINK WITH SEALANT
3-272-010020	HEAT SHRINK WITHOUT SEALANT
C42-401	BUTT SPLICE 16-14 GA
D42-401	BUTT SPLICE 12-10 GACAB

## NOTES:

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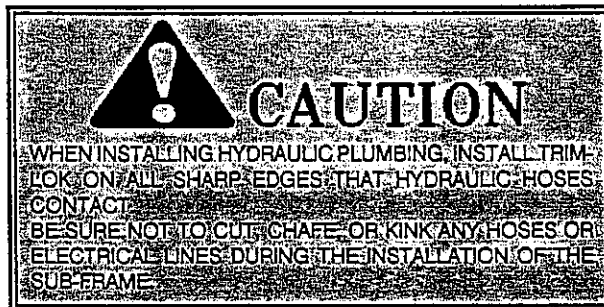
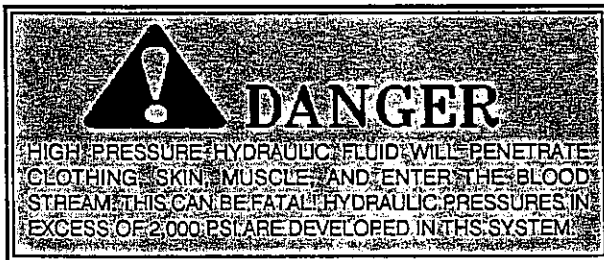
## APPENDIX A - SUPERDUTY WHEEL LIFT KIT

The optional wheel-lift is supplied completely assembled to the sub-frame, however, there are a few steps that need to be taken in order to make the wheel-lift functional. This appendix is intended to explain the execution of those steps, provide safe operating and maintenance instructions, and provide an illustrated parts breakdown of the sub-frame and wheel-lift assembly. Follow the directions carefully and refer to the illustrated parts breakdown for parts identification unless noted otherwise in the directions.

### A-1 INSTALLATION

**A-1.1** Set your truck up for installation of the sub-frame in the same manner as detailed in Section 4 "KIT INSTALLATION", paragraphs 4-1.1 thru 4-2.49.

**A-1.2** Now install the sub-frame (with the pre-assembled wheel lift) as described in Section 4-3 "SUB-FRAME INSTALLATION".



**A-1.3** For hydraulic hookup of the Loadoll bed and wheel lift see Section 4, Sub-sections 4-5, 4-6, and 4-7. Substitute the wheel lift for the tow bar in Sub-section 4-7 (Some parts of the hydraulic installation will have been performed at the factory.)

**A-1.4** If your kit was ordered with the optional ELECTRICAL REMOTE TILT, locate the heavy electrical battery cable coiled at the rear of the kit sub-frame. One end of the cable will be connected to one of the solenoid relays inside the left-rear member of the kit sub-frame. (See Fig. A-1)

**A-1.5** Install the cable inside the truck's left side frame member, up to just behind the cab and across to the battery box. Allow a minimum of 36" of slack cable between the truck frame and the kit frame.

**A-1.6** Connect the cable to the positive side of one battery or the positive side of the starter (whichever will provide the shortest cable).

**A-1.7** Locate the smaller, 14 AWG 2-conductor cable coiled with the battery cable. One end of this cable will be connected to each solenoid relay.

**A-1.8** Install this cable inside the truck's left side frame member and into the cab. Allow a minimum of 36" of slack cable between the truck frame and the kit sub-frame.

**A-1.9** Mount the interior tilt control switch bracket and switch in a convenient location where accidental activation of the switch CANNOT occur.

**A-1.10** Connect both leads of the smaller cable you just installed inside the cab to the switch. One lead to each side of the switch.

**A-1.11** Connect the pigtail wire on the switch to a 12DVC fused power supply.

**A-1.12** When installation of the Superduty Loadoll Kit is complete, test the cab mounted tilt switch. Pushing the switch up should raise the wheel lift, and pushing the switch down should lower the wheel lift. If the wheel lift operates the reverse of this, it will be necessary to remove the switch from it's mounting bracket, turn it upside-down, and re-install it in it's mounting bracket.

**A-1.13** Install the remainder of the Superduty Loadoll Kit as detailed in the balance of Section 4 "INSTALLATION".

**SAFETY FIRST!**

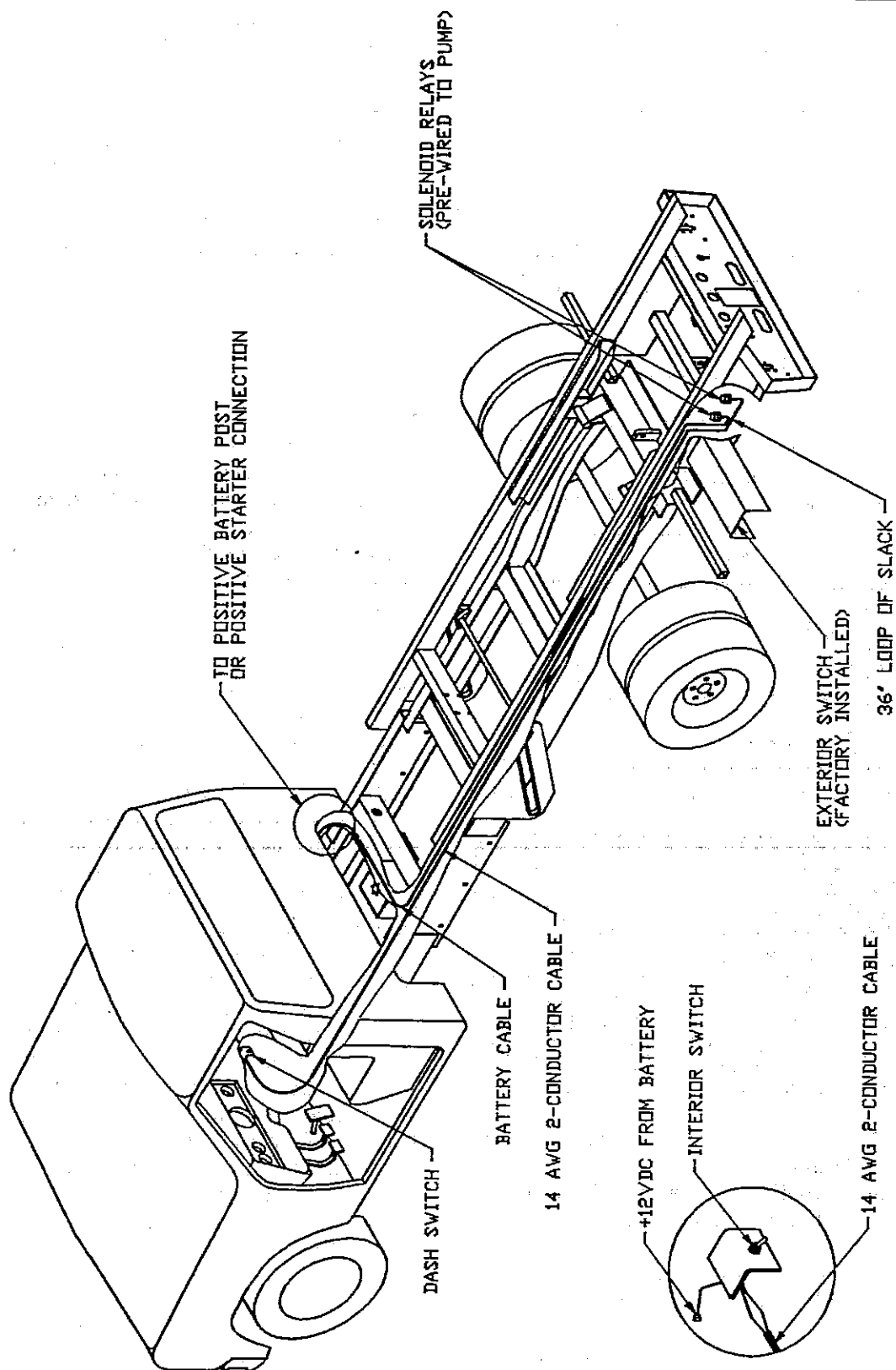


Fig. A-1 Remote Tilt Electrical Installation

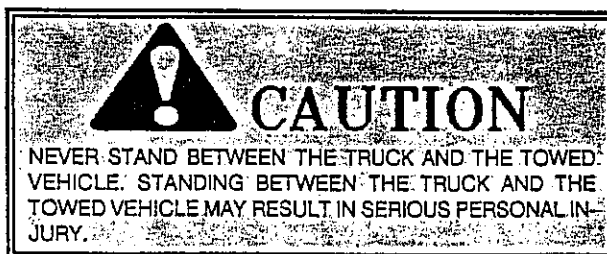
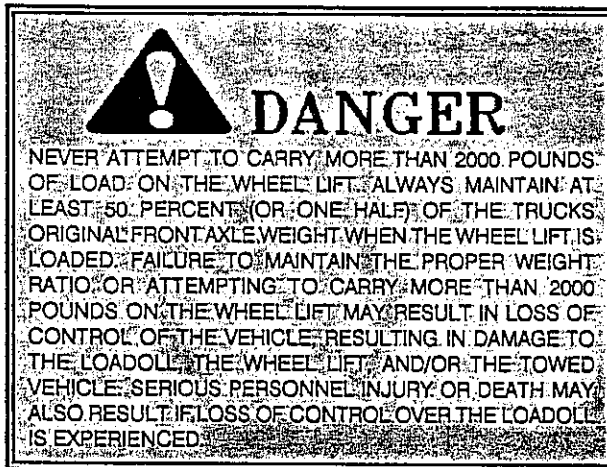
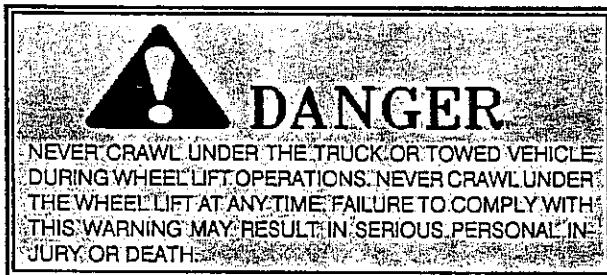


## A-2 MAINTENANCE

A-2.1 See Section 7 "MAINTENANCE AND LUBRICATION" for maintenance of the Loadoll. Maintenance for the wheel lift is the same as for the tow bar with the exception that the wheel lift has more grease zerks (See Fig. A-3).

## A-3 OPERATION

This section is intended to provide safe, efficient operating instructions for the Superduty Loadoll Wheel Lift. Read it carefully before attempting to operate the wheel lift. Safety Precautions are included to alert you to possibly hazardous conditions. Where ever you see one of these precautions, be certain to read and understand it completely before attempting to operate the wheel lift. Refer to Figure A-2 and Figure A-3 for references made in this Section.



## A-4 VEHICLE RETRIEVAL

A-4.1 Back the Loadoll to directly in front of the vehicle to be towed, leaving a minimum of 6 feet between the two vehicles. Set the parking brake on the truck.

**NOTE:** The Loadoll wheel lift is designed to be used at various angles from the truck; however, the wheel lift must be aligned with the wheels of the towed vehicle so that when the wheel lift is extended, the wheel lift crossbar will be centered between the tires of the towed vehicle. (See Fig. A-1)

A-4.2 Tilt the truck frame (See Section 5-1) while alternately keeping the wheel lift parallel with the ground; i.e., tilt the frame a small amount, then raise the wheel lift a small amount, tilt the frame some more, and raise the wheel lift some more, until the rear bumper of the truck contacts the ground. Wheel Lift height is controlled by the "Wheel Lift Up/Down control or the optional Electrical Remote Tilt. The fifth control in the control panel in either case.

**NOTE:** The truck bed should remain in the forward position for the entire wheel lift operation.

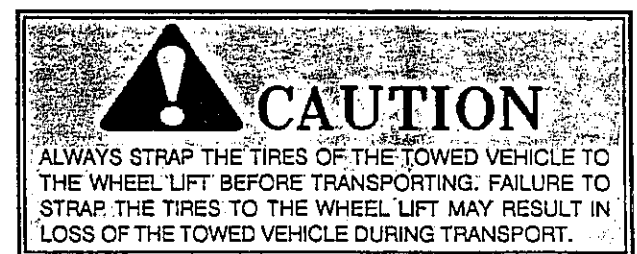
A-4.3 Determine that the wheel lift arms are in the retrieve position; i.e., pointing away from the truck. If the arms are not in the retrieve position, release them with the lock pin retracting lever (DO NOT DEPRESS PIN BY STICKING FINGER IN THE PIN HOLE!) and rotate them into retrieval position.

A-4.4 Be certain that the towed vehicle is unable to move by applying its parking brake or chocking the wheels of the towed vehicle opposite the end by which you intend to tow it.

A-4.5 The wheel lift arms should extend along both sides of both of the towed vehicles tires.

A-4.6 Install the wheel retaining rods in the slots of the wheel lift arms behind both tires. Use the tightest setting possible.

A-4.7 Raise the wheel lift just high enough for the tires of the towed vehicle to come off of the ground.



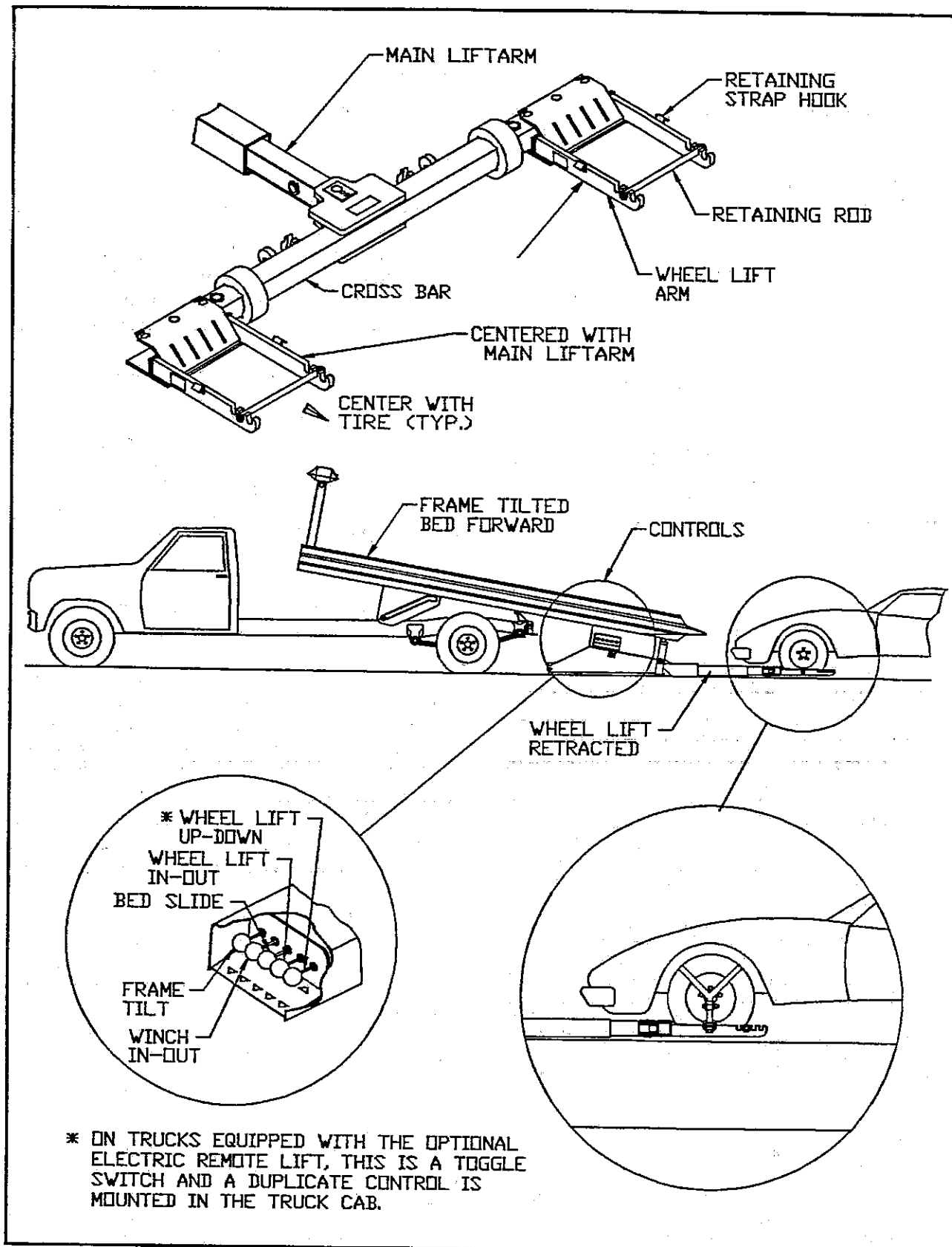
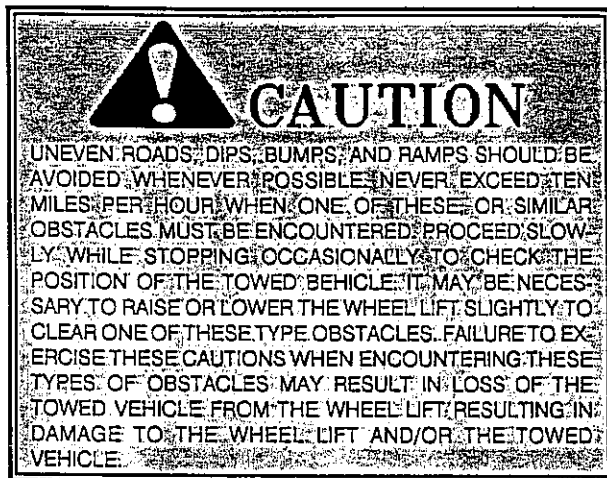
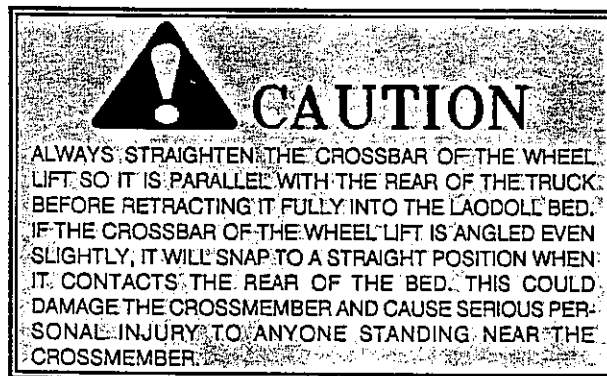


Fig. A-2 Wheel Lift Terminology



**A-4.8** Place the latches of the retaining straps on the hooks on the wheel lift arms and loop the retaining straps over each tire. Pull the straps down tight, release the brakes of the towed vehicle, and remove the wheel chocks.



**A-4.9** Retract the wheel lift leaving enough clearance between the truck and the towed vehicle that the towed vehicle will not interfere with the trucks cornering capabilities.

**A-4.10** Lower the Loadoll bed until it rests fully on the truck frame.

**A-4.11** Raise or lower the wheel lift as necessary to provide ample clearance between the ground and the rear of the towed vehicle.

## A-5 VEHICLE DISCONNECTION

**A-5.1** Locate the towed vehicle in an open, level area. Apply the Loadolls parking brakes.

**A-5.2** Tilt the Loadoll bed while alternately keeping the wheel lift parallel with the ground; i.e., tilt the bed a small amount, then raise the wheel lift a small amount, tilt the bed some more, and raise the wheel lift some more, until the rear bumper of the Loadoll contacts the ground.

**NOTE:** The bed of the Loadoll should remain in the fully forward position for the entire wheel lift operation.

**A-5.3** Extend the wheel lift, pushing the towed vehicle away from the Loadoll.

**A-5.4** Set the brakes of the towed vehicle and chock the wheels opposite the end the vehicle was towed from.

**A-5.5** Remove the retaining straps and the retaining bars from behind the towed vehicle's tires.

**A-5.6** Retract the wheel lift completely.

**A-5.7** Place the lift arms in the storage position by releasing them with the lock pin retracting lever (**DO NOT DEPRESS PIN BY STICKING FINGER IN THE PIN HOLE!**) and rotating them so they point toward the Loadoll.

**A-5.8** Lower the Loadoll bed until it rests fully on the truck frame.

**A-5.9** Raise the wheel lift to a horizontal position, making sure that the rear lights of the Loadoll are not obstructed from sight in any way before moving the Loadoll.



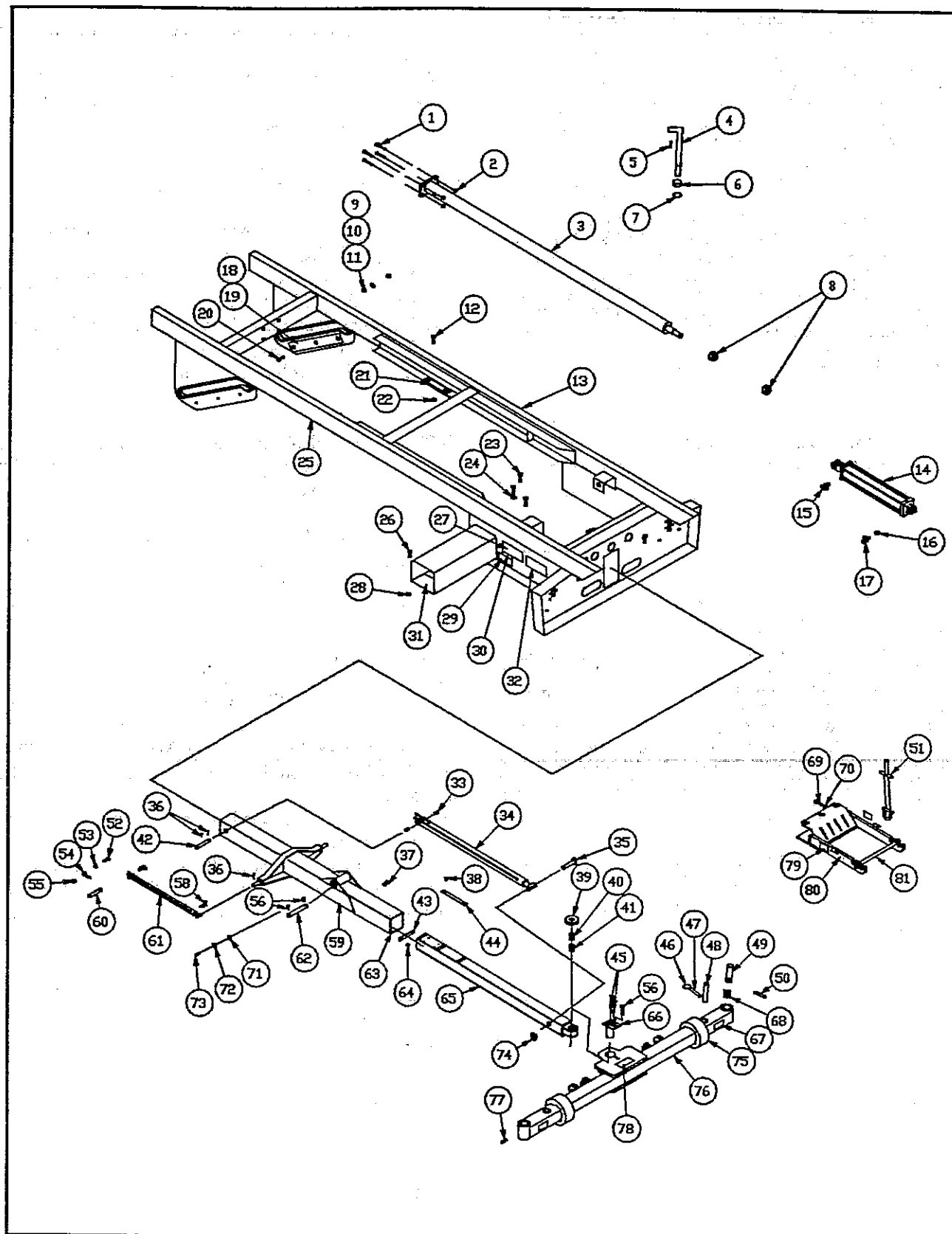


Fig. A-3 Wheel Lift Main Assembly

# WHEEL LIFT ILLUSTRATED PARTS

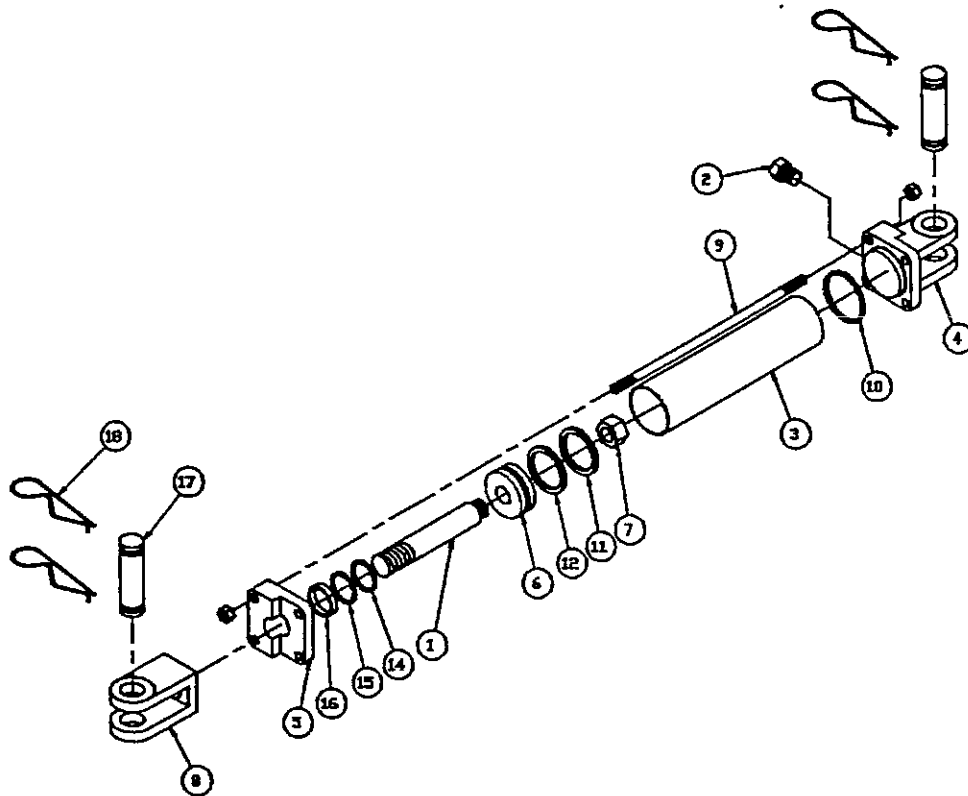
ITEM	PART NO.	DESCRIPTION	QTY.
1	5/8-11X4-1/2CS	CAP SCREW, HEX HEAD .....	4
2	5/8-11HFLN	NUT, LOCKING HEX .....	4
3	3-242-010044	CYLINDER, BED SLIDE (See Page 9-13) .....	1
4	3-642-010044	ROD CONTROL, WHEEL LIFT .....	5*
5	5/32X1-1/4	PIN, COTTER .....	5*
6	1-343-010001	GROMMET, RUBBER .....	5*
7	95	KNOB, BALL .....	5*
8	1-1/2-12JN	NUT, HEX JAM .....	2
9	5/16SLW	WASHER, SPLIT LOCK .....	6
10	5/16FW	WASHER, FLAT .....	6
11	5/16-18HFN	NUT, HEX .....	6
12	3/8-16X1-1/2CS	CAP SCREW, HEX HEAD .....	8
13	3-311-015122	WELDMENT, SUB-FRAME (FOR STEEL BEDS) .....	1
	3-311-015029	WELDMENT, SUB-FRAME (FOR ALUMINUM BED) .....	1
14	3-242-010115	CYLINDER, BED TILT (See Page 9-12) .....	1
15	1-007-010008	O-RING, 90 ELBOW .....	1
16	2216-6-85	ADAPTER .....	1
17	1-007-010005	90 SWIVEL .....	1
18	3-684-010015	SHIM .....	2
19	3-311-013602	PROTECTOR, FRAME SLIDE .....	2
20	5/16-18X1-1/4CS	CAP SCREW, HEX HEAD .....	6
21	3-311-014005	SUPPORT, FLANGE SLIDE .....	2
22	3/8-16HFLN	NUT, HEX LOCK .....	8
23	3/8-16X1HHCS	CAP SCREW, HEX HEAD .....	3
24	3/8SLW	WASHER, SPLIT LOCK .....	3
25	NOT USED		
26	3/16X3/4RHD STV	STOVE BOLT, ROUND HEAD .....	3
27	IRREPLACABLE	DECAL, SERIAL NO. ....	2
28	3/16-24HFN	NUT, HEX .....	3
29	3-573-010105	DECAL, IMPORTANT! BED FORWARD .....	1
30	10036	FASTNER, SERIAL NUMBER PLATE .....	2
31	3-573-010129	DECAL, LOADOLL/WHEEL LIFT OPERATION .....	1
32	3-573-010154	DECAL, STRAIGHTEN CROSSBAR .....	1
33	RRT119X1.125	TUBE .....	2
34	3-242-010063	CYLINDER, WHEEL-LIFT IN/OUT (See Page 9-16) .....	1
35	3-557-010215	PIN, ROD END .....	1
36	1/4X2	PIN, COTTER .....	4
37	5010	ZERK, GREASE .....	1
38	3-564-010015	CAP SCREW .....	4
39	3-150-010049	BUSHING .....	1

\* WHEEL LIFTS WITH ELECTRIC REMOTE TILT WILL ONLY CONTAIN FOUR OF THESE ITEMS.

## WHEEL LIFT ILLUSTRATED PARTS, Continued

ITEM	PART NO.	DESCRIPTION	QTY.
40	3-150-010047	BUSHING .....	1
41	3-150-010046	BUSHING .....	1
42	3-557-010207	PIN, CYLINDER .....	1
43	3-741-010029	STOP, NYLATRON .....	1
44	3-334-010010	GLIDE TUBES, WHEEL LIFT .....	2
45	5010	ZERK, GREASE .....	3
46	95	BALL, CONTROL KNOB .....	2
47	3-642-010053	CONTROL ROD, SWIVEL .....	2
48	3-577-010247	PIN, STOP .....	2
49	3-577-010246	PIN, END .....	2
50	0600-250-03000	PIN, ROLL .....	2
51	3-744-010011	STRAP, TIEDOWN .....	2
52	5/16-18X1-1/4CS	CAP SCREW, HEX HEAD .....	2
53	5/16SLW	WASHER, SPLIT LOCK .....	10
54	WM-5	END, ROD .....	4
55	5/16-18HFN	NUT, HEX .....	8
56	WM-5	ROD END .....	2
57	5/16-18X3/4CS	CAP SCREW, HEX HEAD .....	1
58	1-007-010007	O-RING, 90 ELBOW .....	4
59	3-827-010010	TUBE, OUTER .....	1
60	3-557-010243	PIN, TILT CYLINDER .....	2
61	3-242-010117	CYLINDER, WHEEL LIFT TILT .....	2
62	3-557-010255	PIN, BUMPER .....	1
63	3-334-010011	TUBE, GLIDE .....	1
64	3/8-16HFLN	NUT, HEX LOCKING .....	10
65	3-826-010011	TUBE, INNER .....	1
66	3-557-010257	PIN, PIVOT .....	1
67	1-573-010033	REFLECTOR, RED .....	2
68	CO-975-74-2000	SPRING, COMPRESSION .....	2
69	5/16-18X1-1/4CS	CAP SCREW, HEX HEAD .....	2
70	5/8-11HFN	NUT, HEX .....	4
71	5/16FW	WASHER, FLAT .....	10
72	5/16SLW	WASHER, SPLIT LOCK .....	10
73	5/16-18X1	CAP SCREW, HEX HEAD .....	10
74	3-630-010002	RING, RETAINING .....	2
75	3-375-010421	RING, RUBBER BUMPER .....	2
76	3-826-010009	END TUBE, WHEEL LIFT .....	1
77	5010	ZERK, GREASE .....	2
78	3-573-010152	DECAL, 2500 POUND MAX LIFT .....	1
79	1-573-010033	REFLECTOR, RED .....	4
80	3-027-010017	ARM, WHEEL LIFT SWIVEL .....	2
81	3-642-010051	ROD, WHEEL RETAINER .....	2

# WHEEL LIFT TILT CYLINDER - 3-242-010117



ITEM	PART NO.	DESCRIPTION	QTY.
1	011000013	ROD, PISTON .....	1
2	200200021	PLUG, PIPE .....	1
3	051900016	TUBE .....	1
4	141900037	BUTT .....	1
5	081900230	GLAND .....	1
6	071900003	PISTON .....	1
7	220000212	NUT, LOCK .....	1
8	100000043	CLEVIS .....	1
9	170301353	TIE ROD .....	1
10	240001342	O-RING .....	2*
11	240000342	O-RING .....	1*
12	240005342	WASHER, BACKUP .....	2*
13	240000026	O-RING .....	1*
14	240000327	O-RING .....	1*
15	240005327	WASHER, BACKUP .....	1*
16	250001327	WIPER .....	1*
17	190400004	PIN, CLEVIS .....	2
18	190400002	CLIP, HAIRPIN .....	4
	PMCK-9400	PACKING KIT (NOT SHOWN) .....	A/R

\* THESE ITEMS ARE INCLUDED IN THE PACKING KIT.

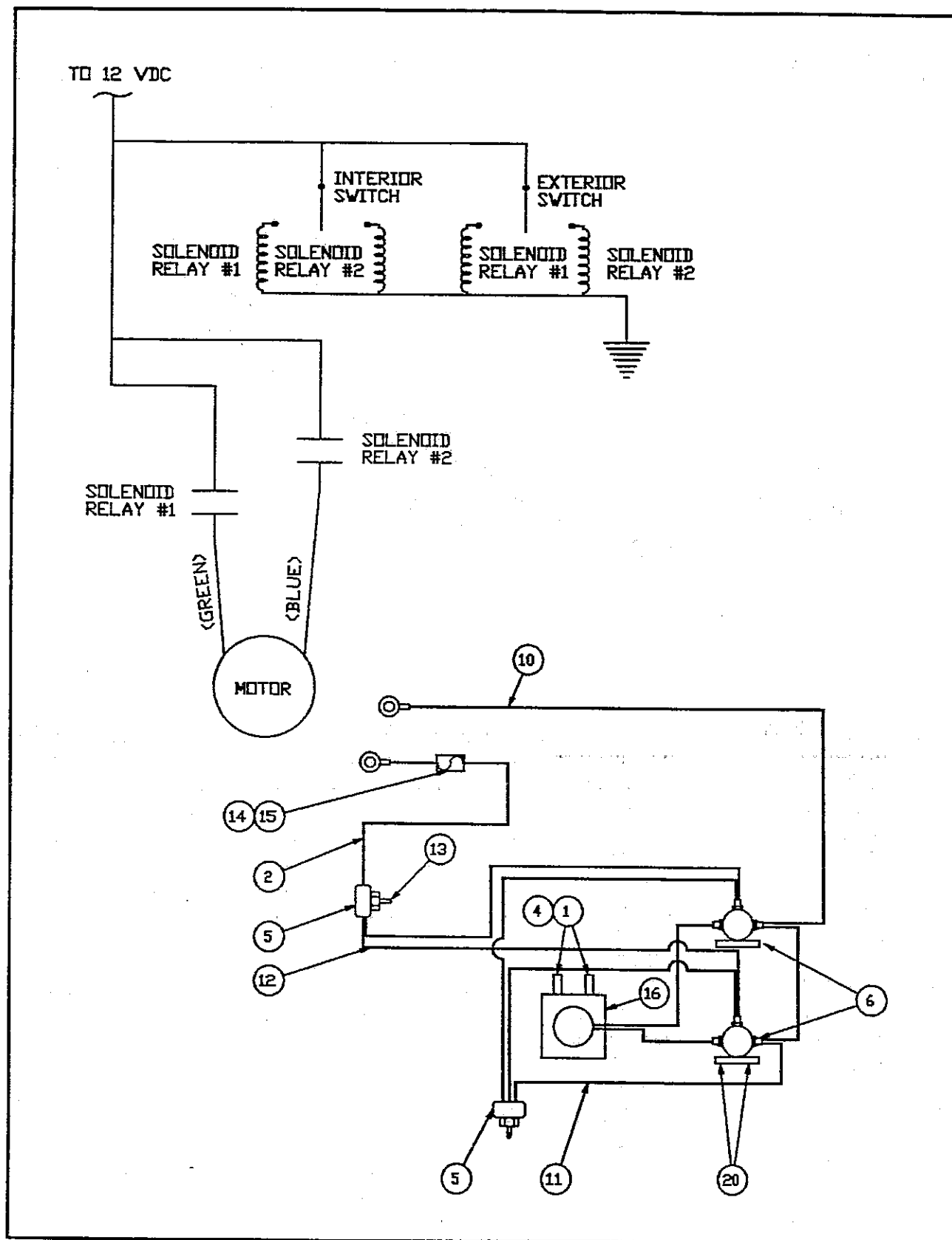


Fig. A-4 Remote Tilt Wiring Items



## ELECTRIC REMOTE TILT ITEMS

ITEM	PART NO.	DESCRIPTION	QTY.
1	1-007-010031	ADAPTER .....	2
2	1-879-010004132	WIRE, RED 14 GA. - 11 FT. ....	1
3	1-879-0011012	WIRE, BLACK 14 GA. - 1 FT. ....	1
4	2040-4-6S	REDUCER .....	2
5	238-1579	SWITCH, TOGGLE .....	1
6	238-8421	RELAY, SOLENOID .....	2
7	239-3646	TERMINAL, 14 GA. TO #8 RING (NOT SHOWN) .....	5
8	239-3646-3	TERMINAL, 14 GA. TO #10 RING (NOT SHOWN) .....	5
9	239-3647-10	TERMINAL, 2/0 GA. TO 3/8" RING (NOT SHOWN) .....	6
10	239-8102-0	CABLE, STARTER .....	1
11	3-156-010007036	CABLE, THREE CONDUCTOR - 3 FT. ....	1
12	3-156-010008360	CABLE, TWO CONDUCTOR - 30 FT. ....	1
13	3-272-010063	MOUNT, ELECTRIC SWITCH .....	1
14	3-318-010001	FUSE, 12 VOLT - 15 AMP .....	1
15	3-318-010002	HOLDER, FUSE .....	1
16	3-407-010019	PUMP, HYDRAULIC .....	1
17	3/8-16X3/4HHCS	CAP SCREW, HEX HEAD (FOR PUMP) .....	2
18	3/8SLW	WASHER, SPLIT LOCK (FOR PUMP) .....	2
19	32002	TERMINAL, 12-10 GA. W/#10 RING (NOT SHOWN) .....	2
20	5/16-18HFN	NUT, HEX (FOR SOLENOIDS, NOT SHOWN) .....	4
21	5/16-18X3/4HHCS	CAP SCREW, HEX HEAD (FOR SOLENOIDS, NOT SHOWN) .....	4
22	5/16SLW	WASHER, SPLIT LOCK (FOR SOLENOIDS, NOT SHOWN) .....	4

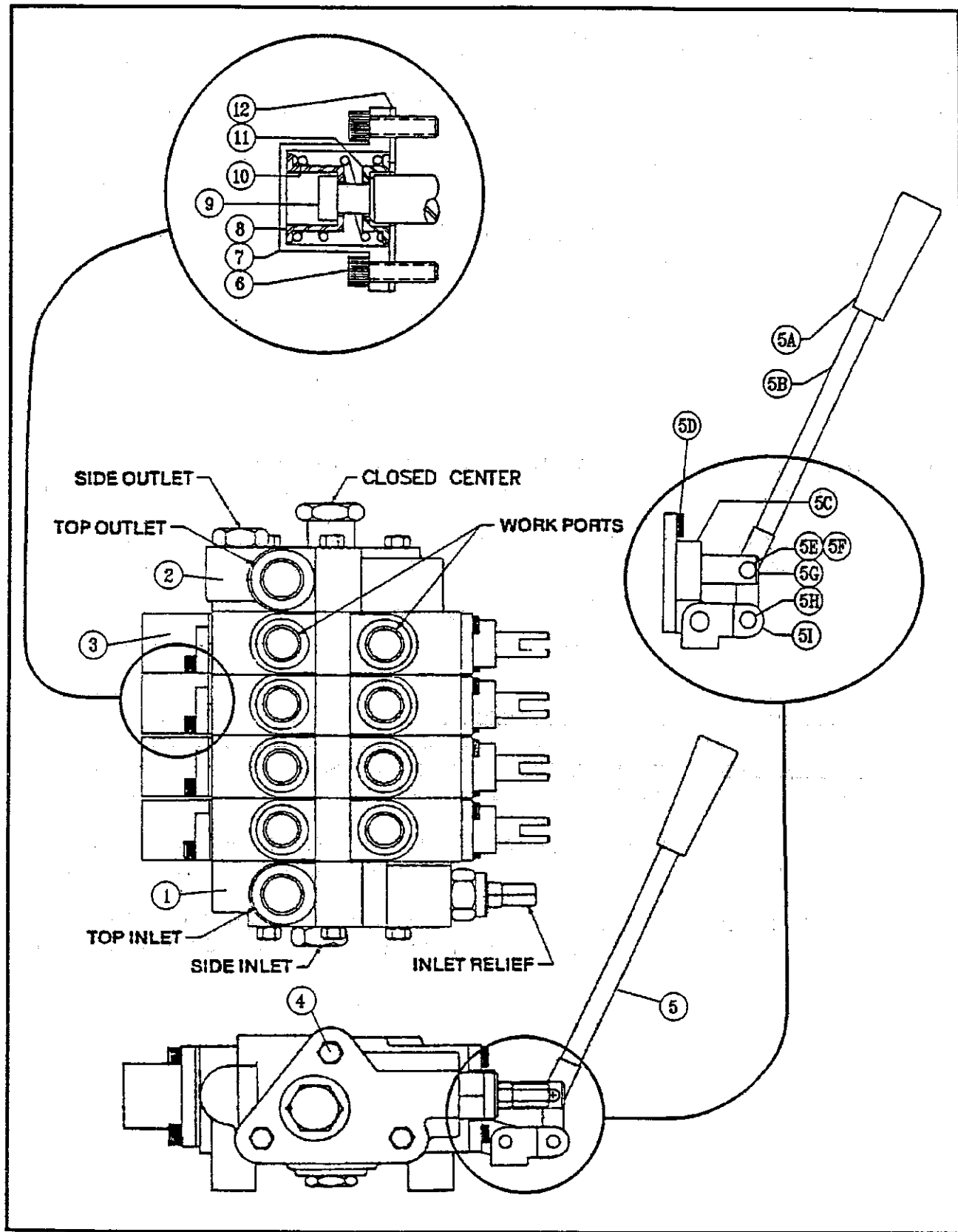


Fig. A-5 4 & 5 Spool Valve Items

## FOUR AND FIVE SPOOL VALVE ITEMS

ITEM	PART NO.	DESCRIPTION	QTY.
REF. 3-846-010045		VALVE, FOUR SPOOL (WITH REMOTE TILT) .....	1
REF. 3-846-010032		VALVE, FIVE SPOOL (WITHOUT REMOTE TILT) .....	1
1	SV125	SECTION, INLET (2000PSI FOR FOUR SPOOL VALVE) .....	1
	SV125	SECTION, INLET (2500 PSI FOR FIVE SPOOL VALVE) .....	1
2	SVE23	SECTION, OUTLET (CLOSED CENTER) .....	1
3	SVW1BA1	SECTION, WORK .....	4,5*
4	660401004	TIE ROD KIT (FOUR SPOOL VALVE) .....	1
	660401005	TIE ROD KIT (FIVE SPOOL VALVE) .....	1
5	670400012	HANDLE ASSEMBLY .....	4,5*
5A	670400020	HANDLE, PLASTIC .....	4,5*
5B	670400012	SHAFT, HANDLE .....	4,5*
5C	671400040	CLEVIS ASSEMBLY .....	4,5*
5D	671900013	CAP SCREW, HEX SLOT .....	8,10*
5E	220001512	PIN, COTTER .....	12,15*
5F	671700014	PIN, CLEVIS .....	8,10*
5G	671900011	BASE, HANDLE .....	4,5*
5H	671700012	PIN, SWIVEL CLEVIS .....	4,5*
5I	670500047	LINKAGE, CLEVIS SWIVEL .....	4,5*
6	170003008	CAP SCREW, HEX SLOT .....	8,10*
7	671400033	COVER, SPOOL END .....	4,5*
8	671400036	SEAL, SPOOL OUTER .....	4,5*
9	671900010	SPOOL .....	4,5*
10	670300030	SPRING .....	4,5*
11	671400037	SEAL, SPOOL INNER .....	4,5
12	670500044	GASKET, SPOOL END COVER .....	4,5*

\* WHERE TWO QUANTITIES ARE LISTED WITH A COMMA BETWEEN THEM, THE FIRST QUANTITY IS FOR A FOUR SPOOL VALVE AND THE SECOND QUANTITY IS FOR A FIVE SPOOL VALVE.

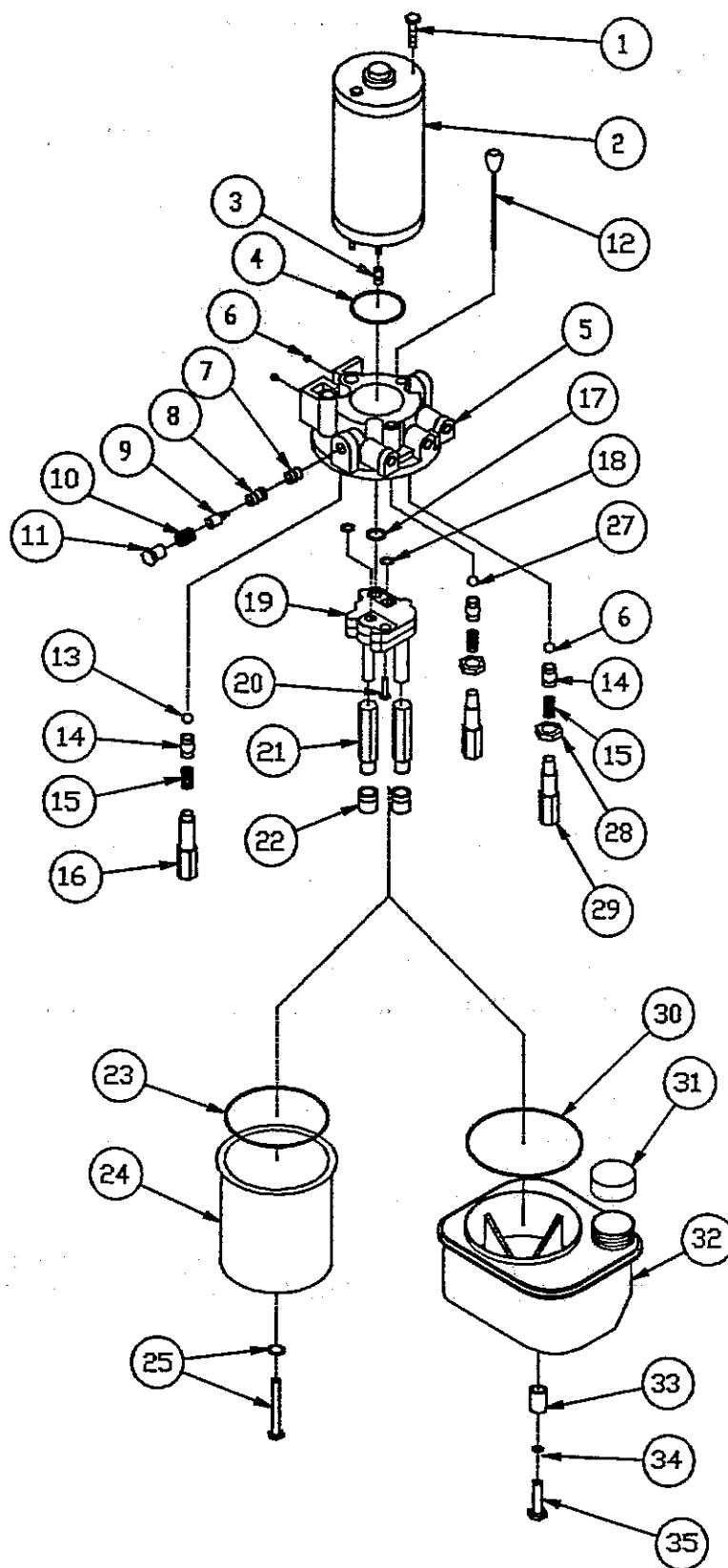


Fig. A-6 Remote Tilt Hydraulic Pump

## REMOTE TILT HYDRAULIC PUMP - 3-407-010019

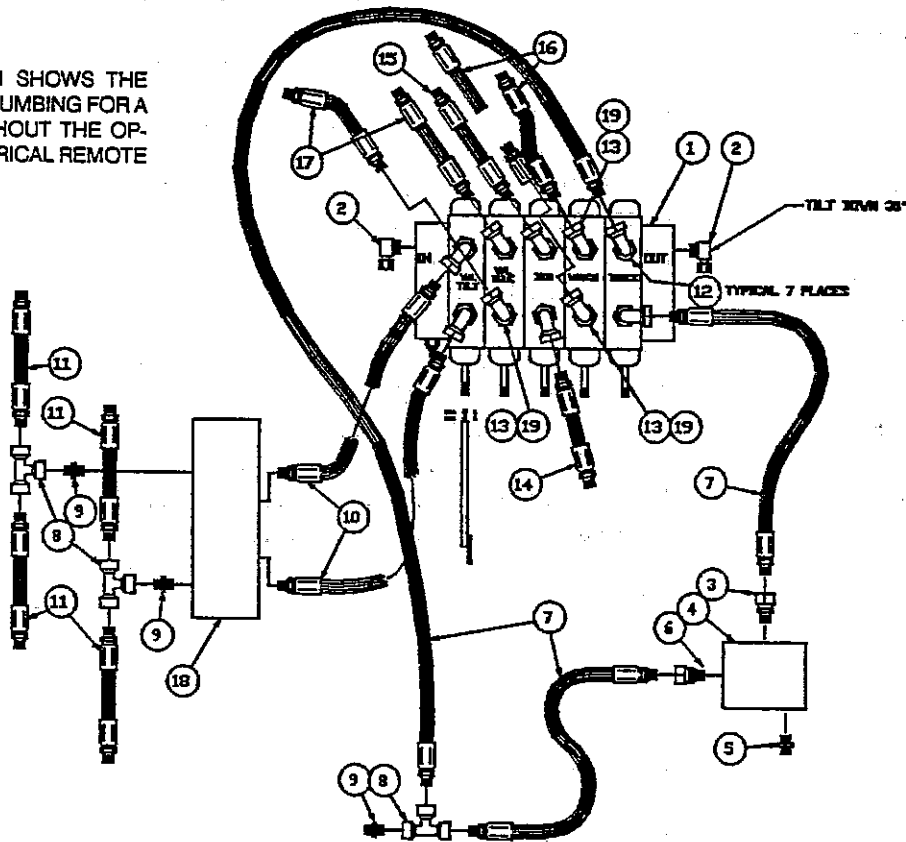
ITEM	PART NO.	DESCRIPTION	QTY.
1	*	STUD, MOUNTING .....	2
2	*	MOTOR, ELECTRIC .....	1
3	361185	COUPLING .....	1
4	405675	O-RING .....	1
5	*	ADAPTER .....	1
6	401065	BALL, STEEL .....	3
7	361181	SPOOL .....	1
8	773763	BODY, CHECK VALVE .....	2
9	773776	POPPET ASSEMBLY .....	2
10	410462	SPRING .....	2
11	773764	RETAINER, PLUG .....	2
12	776762	DIPSTICK .....	1
13	411167	BALL, VESPEL .....	1
14	411173	EYELET .....	3
15	411170	SPRING .....	3
16	**	SCREW, THERMAL RELIEF ADJUSTMENT .....	1
17	410512	SEAL, SHAFT .....	1
18	405378	O-RING .....	2
19	*	PUMP, BASIC .....	1
20	410601	CAP SCREW, TORX HEAD .....	2
21	362136	EXTENSION, SUCTION TUBE .....	2
22	410521	FILTER .....	2
23	410578	SEAL, RESERVOIR .....	1
24	410541	RESERVOIR .....	1
25	773714	BOLT, FLAT HEAD HEX .....	1
26	406170	SEAL, DYNA .....	1
27	401072	BALL, STEEL .....	1
28	410288	NUT, JAM .....	2
29	363119	SCREW, RELIEF VALVE ADJUSTMENT .....	2
30	411237	SEAL, O-RING .....	1
31	411175	CAP, RESERVOIR .....	1
32	363220	RESERVOIR .....	1
33	363237	SPACER .....	1
34	410245	O-RING .....	1
35	411215	SCREW, HEX HEAD SELF-TAPPING .....	1
	634412	SEAL KIT .....	A/R

\* SPECIFY CODE DESCRIPTION OF POWER UNIT WHEN ORDERING THESE ITEMS.

\*\* SPECIFY RELIEF VALVE SETTINGS WHEN ORDERING THIS ITEM.

# WHEEL LIFT HYDRAULIC PLUMBING

THIS DIAGRAM SHOWS THE WHEEL LIFT PLUMBING FOR A LOADROLL WITHOUT THE OPTIONAL ELECTRICAL REMOTE TILT.



ITEM	PART NO.	DESCRIPTION	QTY.
1	3-846-010033	VALVE (FIVE SPOOL - NO REMOTE TILT) .....	1
	3-846-010046	VALVE (FOUR SPOOL - WITH REMOTE TILT) .....	1
2	2068-8-10S	ADAPTER, SWIVEL .....	2
3	2045-6-8S	ADAPTER, SWIVEL .....	1
4	3-846-010026	VALVE, PILOT OPERATED CHECK .....	1
5	2083-8-8S	ADAPTER, PIPE .....	1
6	2040-4-6S	ADAPTER, PIPE .....	1
7	3-397-010148	HOSE ASSEMBLY, 33" .....	3
8	2255-6-6S	ADAPTER, SWIVEL TEE .....	3
9	3-007-010032	ADAPTER, NIPPLE .....	3
10	3-397-010150	HOSE ASSEMBLY, 21" .....	2
11	3-397-010129	HOSE ASSEMBLY, 19" .....	4
12	2068-6-6S	ADAPTER, 90 SWIVEL .....	7
13	2047-6-6S	ADAPTER, 90 SWIVEL .....	3
14	3-397-010203	HOSE ASSEMBLY, 26" .....	1
15	3-397-010235	HOSE ASSEMBLY, 144" .....	1
16	3-397-010239	HOSE ASSEMBLY, 260" .....	2
17	3-397-010212	HOSE ASSEMBLY, 50" .....	2
18	3-846-010042	VALVE, PILOT OPERATED DOUBLE CHECK .....	1
19	2066-6-6S	ADAPTER, SWIVEL .....	3

# WARRANTY

## MANUFACTURER'S GUARANTEE POLICY

### LANDOLL CORPORATION WARRANTY

LANDOLL warrants each new and unused LANDOLL machine, when properly assembled, adjusted, and operated, to be free of defects in material and workmanship, in normal use and properly serviced, for a period of twelve (12) months after date of delivery by the Dealer to the original retail purchaser. LANDOLL shall repair or replace, at it's option, f.o.b. it's factory or designated DEALER location, any part or parts of such new and unused machine which shall have been reported in writing to LANDOLL within thirty days from date of failure thereof and which LANDOLL inspection shall disclose to have been defective. Defective parts must be returned to the LANDOLL factory, freight prepaid. LANDOLL will not be liable for labor, transportation, or any other charges resulting from replacement of a defective part. This warranty is void if any part not supplied by LANDOLL is used in assembly or repair, or if the machine has been altered, abused, or neglected. LANDOLL repair parts are warranted for ninety (90) days from date of replacement or for the unexpired warranty period of the applicable LANDOLL machine, whichever period is longer. LANDOLL makes no warranty whatsoever as to purchased component parts and other trade accessories except to the extent that such items are warranted by the manufacturer thereof. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESSED, IMPLIED, OR STATUTORY (INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PURPOSE) AND LANDOLL SHALL NOT BE LIABLE FOR SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY KIND ON ACCOUNT OF ANY LANDOLL PRODUCT.

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

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

7/21/88

