

# **QWIK-TIP**

Refuse Container Lifting and Dumping Accessory  
for Rear-Loading Packer

**OPERATION INSTRUCTIONS**

**MAINTENANCE GUIDE**

**PARTS LIST**

**IMPORTANT**

Two Copies Furnished  
Keep One In Cab of Vehicle

**WARNING**

**READ AND UNDERSTAND ALL DECALS AND THIS MANUAL BEFORE  
OPERATING QWIK-TIP**

**U.S. Patent 5,425,613**

**Canadian Patent Pending**

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## **GENERAL OPERATION INSTRUCTIONS AND SAFETY PRECAUTIONS**

The Qwik-Tip Refuse Container Lifting and Dumping Accessory mounted on a rear-loading packer is designed with the operator's safety in mind. However, as with any industrial machinery, especially those that apply force through hydraulic pressure, the ultimate responsibility for safety rests with the user. An alert, conscientious attitude and strict observance of all known safe operating practices are the best ways to prevent accidents.

An untrained operator presents a safety hazard. Before operating the Qwik-Tip unit, it is the operator's responsibility to be thoroughly familiar with the instructions contained in this manual.

Publication of these precautions does not imply or in any way represent an all inclusive list. It is the operator's responsibility to be familiar with, and ensure that operation is in accordance with safety requirements and codes including all applicable Occupational Safety and Health Act (OSHA) and American National Standards Institute (ANSI) rules, regulations and requirements.

**CAUTION:** Never operate Qwik-Tip while wearing jewelry or loose clothing. These items may become caught by or entangled in the Qwik-Tip causing serious injury. Wear proper safety equipment as required by employer.

**CAUTION:** Never operate Qwik-Tip while under the influence of alcohol, narcotics or other mood altering substances.

**CAUTION:** Always stand clear and keep clear of rear of vehicle and the rear-loading packer's hopper while lifting and dumping a refuse container with the Qwik-Tip.

**CAUTION:** Never allow operator, helper or a bystander to stand in a position where falling refuse or a falling container could cause injury.

1. MAKE CERTAIN THE AREA IN WHICH THE REFUSE CONTAINER IS RAISED AND LOWERED HAS OVERHEAD CLEARANCE AND IS SPECIFICALLY CLEAR OF ALL OBSTRUCTIONS, INCLUDING, TREE LIMBS, UTILITY WIRES, REFUSE CONTAINER ENCLOSURES, OTHER VEHICLES OR PERSONS BEFORE OPERATING THE QWIK-TIP.
2. ONLY OPERATE QWIK-TIP WITH THE LIFTING AND DUMPING CONTROLS ON THE SIDE OF THE VEHICLE AND WITH BOTH OF OPERATOR'S FEET STANDING ON LEVEL GROUND.
3. CHECK VEHICLE'S HYDRAULIC FLUID AT LEAST MONTHLY AND CHANGE FLUID REGULARLY FOR SMOOTH AND EFFICIENT OPERATION OF THE QWIK-TIP ACCESSORY.
4. LUBRICATE QWIK-TIP ACCESSORY AS PER SCHEDULE FOUND IN THIS MANUAL.

5. READ AND FOLLOW URGENT WARNING DECALS, OPERATING DECALS, QWIK-TIP CONTROLS DECAL, CAUTION DECALS AND THIS MANUAL BEFORE USING THE QWIK-TIP ACCESSORY.
6. VISUALLY INSPECT QWIK-TIP FREQUENTLY FOR LOOSENED BOLTS, SET SCREWS, EXCESSIVE WEAR, WORN PARTS BROKEN STRUCTURES, BROKEN WELDS, OTHER DAMAGE OR SIGNS OF ABUSE.
7. KEEP ALL DECALS IN PLACE AND LEGIBLE; AND RETAIN THIS MANUAL IN VEHICLE.
8. DO NOT ALLOW QWIK-TIP TO BE USED BY PERSONS NOT FAMILIAR WITH ITS OPERATION.
9. DO NOT USE QWIK-TIP IF UNIT SHOWS SIGNS OF DAMAGE, ABUSE OR FAILS TO OPERATE FREELY.
10. DO NOT ATTEMPT TO LIFT REFUSE CONTAINERS LARGER THAN 10 YARDS CAPACITY.
11. NEVER LOAD THE PACKER'S HOPPER ABOVE THE LOADING SILL.
12. IF REFUSE CONTAINER SHOWS SIGNS OF DAMAGE, HAS BROKEN OR BENT TRUNNION BARS. OR APPEARS TO BE UNSAFE OR OVERLOADED DO NOT LIFT WITH QWIK-TIP
13. HYDRAULIC FLUID OPERATES UNDER HIGH TEMPERATURES AND HIGH PRESSURE. AVOID CONTACT WITH HOSES, FITTINGS OR CYLINDERS TO PREVENT BURNS.
14. DO NOT ATTEMPT TO REPAIR, ADJUST OR REPLACE HYDRAULIC HOSES OR FITTINGS WITH THE QWIK-TIP LOWER TIP BAR IN THE RAISED POSITION OR, LIE UNDER THE LOWER TIP BAR WHEN IN A RAISED POSITION AS THE RELEASE OF HYDRAULIC FLUID AND/OR PRESSURE WILL CAUSE LOWER TIP BAR TO FALL. REMEMBER, HYDRAULIC FLUID ESCAPING UNDER PRESSURE MAY CAUSE INJURY
15. WHEN RAISING TAILGATE OF PACKER TO EMPTY RUBBISH OR PERFORM MAINTENANCE BE SURE TO SUPPORT TAILGATE AND QWIK-TIP UNIT WITH SUPPORT JACKS CAPABLE OF SUPPORTING TAILGATE AND THE QWIK-TIP LIFTING AND DUMPING ACCESSORY, OR AT LEAST 8,500 LBS.
16. DO NOT ATTEMPT TO OPERATE QWIK-TIP UNIT OR LIFT CONTAINERS WITH THE QWIK-TIP UNIT UNLESS BOTH THE VEHICLE AND PACKER BODY ARE ON LEVEL GROUND
17. DO NOT MOVE VEHICLE WITH THE CONTAINER STILL ATTACHED, HANGING OR DANGLING FROM THE QWIK-TIP LIFTING AND DUMPING ACCESSORY.

## **OPERATING INSTRUCTIONS**

1. POSITION CONTAINER SO THAT ITS TRUNNION BARS ARE WITHIN GRASPING RANGE OF THE QWIK-TIP'S ROTATING HOOKS.
2. CHECK TO SEE THAT TRUNNION BARS ARE NOT BENT, CRACKED OR BROKEN.
3. BE SURE REFUSE IS COMPLETELY INSIDE THE CONTAINER AS WITH THE LID CLOSED, AND THAT NO REFUSE IS PROTRUDING ABOVE THE CONTAINER'S WALLS.
4. ONLY NOW CAN YOU BEGIN TO LIFT AND DUMP THE CONTAINER WITH THE QWIK-TIP.
5. ADJUST QWIK-TIP "BANG BAR" ABOVE THE HOPPER TO THE SIZE OF THE CONTAINER, AS NEEDED, BY PULLING THE RIGHT-HAND QWIK-TIP CONTROL HANDLE. (if your unit has this option)
6. STAND TO THE SIDE OF THE VEHICLE THAT HAS THE LIFTING AND DUMPING CONTROLS.
7. PULL THE LEFT-HAND QWIK-TIP CONTROL HANDLE OUT TO ENGAGE ROTATING HOOKS TO START THE LIFT AND DUMP CYCLE.

**NOTE:** *RELEASING THE LEFT-HAND QWIK-TIP CONTROL HANDLE WILL STOP THE QWIK-TIP ROTATING HOOKS AND ITS DUMPING CYCLE BUT NOT THE PACKER BLADE.*

8. DUMP ENOUGH REFUSE TO FILL VEHICLE'S HOPPER, USE PACKER BLADE TO EMPTY HOPPER. CONTINUE DUMPING CYCLE UNTIL CONTAINER IS EMPTY.
9. TO LOWER EMPTY CONTAINER TO THE GROUND, PUSH LEFT-HAND QWIK-TIP CONTROL HANDLE IN UNTIL HOOKS STOP ROTATING AND CONTAINER IS ON THE GROUND, FREE FROM THE VEHICLE AND HOOKS ARE BACK TO THEIR ORIGINAL STORED POSITION.

**NOTE:** *TO OPERATE LOWER TIP BAR ONLY (NOT HOOKS) PRESS AND HOLD BLACK QWIK-TIP OVERRIDE BUTTON AND PULL LEFT-HAND QWIK-TIP CONTROL HANDLE*

## **MAINTENANCE GUIDE**

THE FOLLOWING INSPECTION AND MAINTENANCE OPERATIONS SHOULD BE PERFORMED AT THE RECOMMENDED INTERVALS OR AT ANY TIME THE QWIK-TIP UNIT SHOWS SIGNS OF IMPROPER OR ABNORMAL OPERATION. FOLLOWING THIS GUIDE WILL HELP INSURE THE MAXIMUM IN OPERATOR SAFETY AND SATISFACTION WITH YOUR QWIK-TIP LIFTING AND DUMPING ACCESSORY.

### **REGULAR DAILY INSPECTION**

1. CHECK THAT THE QWIK-TIP UNIT OPERATES FREELY, SMOOTHLY AND THAT THE ROTATING HOOKS OPERATE IN UNISON, AND THERE IS NO UNUSUAL NOISE OR VIBRATION.
2. CHECK FOR ANY APPARENT DAMAGE OR ABUSE TO THE QWIK-TIP UNIT SUCH AS BENT OR DISTORTED PARTS, OR CRACKED WELDS WHICH MAY HAVE RESULTED FROM ABUSE, LIFTING OVERLOADED CONTAINERS OR LIFTING CONTAINERS IN EXCESS OF 10 YARDS.
3. CHECK FOR EXCESSIVE WEAR OR DAMAGE IN THE FOLLOWING AREAS:
  - A. Rotating Hooks
  - B. Lower Tip Bar
  - C. All Cylinders
  - D. Welds
  - E. Frame and End Plates
4. MAKE CERTAIN HOSES, FITTINGS AND CONNECTIONS ARE IN GOOD ORDER, SECURE AND FREE FROM CRACKS OR LEAKS.
5. CHECK FOR OIL LEAKS IN THESE AREAS:
  - A. HYDRAULIC LIFT CYLINDERS
  - B. HYDRAULIC HOSES - REPLACE IF THEY SHOW SIGNS OF EXCESSIVE ABRASION OF THE COVERING OR LEAKAGE, i.e. HYDRAULIC FLUID UNDER UNIT
  - C. HYDRAULIC FITTINGS - TIGHTEN OR REPLACE ALL HYDRAULIC COMPONENTS AS MAY BE REQUIRED TO STOP OIL LEAKAGE.

6. HYDRAULIC FLUID AND FILTERS - THE QWIK-TIP LIFTING AND DUMPING ACCESSORY CONNECTS TO AND OPERATES OFF THE PACKER'S HYDRAULIC SYSTEM. EXPERIENCE HAS TAUGHT US THAT ALMOST ALL PROBLEMS WHICH PREVENT THE SMOOTH AND EFFICIENT OPERATION OF THE QWIK-TIP UNIT ARE TRACED DIRECTLY TO THE PACKER'S HYDRAULIC FLUID, FILTERS AND RESERVOIR TANK. IT IS OF UTMOST IMPORTANCE THAT STRICT ADHERENCE TO THE PACKER MANUFACTURER'S PREVENTIVE MAINTENANCE PROGRAM BE OBSERVED.
7. **LUBRICATION - ALL QWIK-TIP GREASE FITTINGS WEEKLY** FREQUENT INSPECTION OF GREASE POINTS IS ADVISABLE.
8. EXAMINE ALL DECALS. IF THEY ARE FOUND TO BE ILLEGIBLE THEY SHOULD BE REPLACED. DECALS ARE OBTAINABLE FROM QWIK-TIP, INC. AT NO CHARGE

### **IMPORTANT: MAINTAINING TORQUE**

AS PART OF REGULAR MAINTENANCE OF THE QWIK-TIP LIFTING AND DUMPING ACCESSORY, AT LEAST ONCE EVERY 21 DAYS:

**A.** TORQUE ALL 5/8" - 11 GRADE EIGHT ACTUATOR BOLTS (8). FOUR (4) BOLTS ON EACH ACTUATOR. TORQUE EACH BOLT TO 220 FOOT LBS.

**NOTE:** THE TOP BOLT ON EACH ACTUATOR IS COUNTERSUNK AND HAS A 3/8" HEX DRIVE HEAD. THESE BOLTS ARE LOCATED ON INSIDE OF THE RIGHT AND LEFT SIDE PLATES. FAILURE TO TORQUE THESE BOLTS CAN RESULT IN FAILURE OF THE LOWER HYDRAULIC STEEL TUBES ON EACH ACTUATOR.

**B.** TORQUE ALL GRASPING HOOKS' 5/16 HEX DRIVE HEAD TAPER-LOCK BUSHING SET SCREWS (4). TWO (2) ON EACH HOOK. TORQUE EACH SCREW TO 66 FOOT LBS. THESE SCREWS ARE LOCATED ON THE HOOKS' HUB. FAILURE TO TORQUE THESE SCREWS CAN RESULT IN THE HOOK LOOSENING ON THE ACTUATOR SHAFT.

### **ANNUAL INSPECTION**

1. PERFORM STEPS 1 THROUGH 8 OF REGULAR INSPECTION ABOVE.
2. MAINTAIN TORQUE AS SET FORTH IN A AND B ABOVE.

# **QWIK –TIP FINISHING AND ADJUSTMENT INSTRUCTIONS**

## **STEP ONE**

Attached tip-bar control valve handle (provided) to valve. If bang bar option is included in your Installation, Also install bang bar control handle (provided)

## **STEP TWO**

PROCEDURE TO CHECK AND ADJUST QWIK-TIP OPERATION AND TIMING OF HOOKS AND TIP BAR:

- a. Stand at right side (curbside) of truck facing Qwik-Tip tip-bar and bang bar control handles. You are now viewing left-side hook and lower tip-bar
- b. PULL Qwik-Tip tip-bar control handle OUT, this will activate hooks causing them to rotate from "7 o'clock", their parked position, to "1 o'clock" position, at which time lower tip-bar MUST begin to rotate upward, while hooks continue to complete their rotation and lock in place at "3 o'clock". Tip-bar will now be at "11 o'clock". A switch mounted on the right side actuator under actuator side cover controls tip bar up cycle. A pre-set cam is fastened to center of actuator shaft and activates the switches plunger to start tip bar up cycle This cam has a timing location pin that maintains hook and tip bar timing in up cycle only.
- c. PUSH same Qwik-Tip tip-bar control handle IN, this will activate tip bar to rotate back down from "11 o'clock" position to "9 o'clock" at which time hooks MUST start to rotate back down with tip-bar until both are returned to their starting positions fully parked and stop. A switch mounted under the right side taillight box cover controls activation of hooks in the down cycle. This switch has an adjustable roller arm that can be accessed from between the right side taillight box (outer) and the upper tip bar leg. This switch rides on a cam welded to the right side upper tip bar leg at the pivot point. This switch arm adjusts to control the timing of the hooks in the down cycle.

**NOTE: above timing is critical for proper container release**

- d. If bang bar option is included in installation, operate bang bar control handle by pulling it OUT and IN to be sure bang bar is moving through its entire travel. Bang bar is moved during refuse collection to adjust hopper opening.
- e. Cycle the Qwik-Tip unit at least four (4) times to remove any air from hydraulic system. CHECK ALL HYDRAULIC FITTINGS FOR LEAKS. Re-install right-side taillight box. CHECK LIGHTS FOR PROPER OPERATION.

## **STEP THREE**

DECAL PLACEMENT: (attached hereto)

*NOTE: Qwik-Tip is shipped with a urethane primer sealer already applied. However, primer needs to be scuffed before topcoats are applied.*

# **SERVICE BULLETIN NO: 001**

DATE: December 1, 1995

**TO: ALL QWIK-TIP DEALERS, DISTRIBUTORS & OWNERS**

***SUBJECT.-*** MAINTAINING TORQUE ON ACTUATOR BOLTS AND ON GRASPING HOOKS' TAPER-LOCK BUSHING SET SCREWS.

AS PART OF YOUR REGULAR MAINTENANCE OF THE QWIK-TIP LIFTING AND DUMPING ACCESSORY, PLEASE BE SURE TO TORQUE AT LEAST ONCE EVERY 21 DAYS, THE FOLLOWING:

- A.** Torque all 5/8" - 11, Grade Eight, Actuator Bolts (8). Four (4) bolts on each actuator. Torque each bolt to 220 foot lbs.

**Note:** The top bolt on each actuator is countersunk and has a 3/8" HEX drive head.

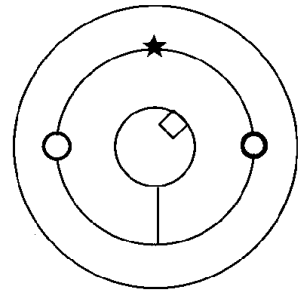
These bolts are located on inside of the right and left Side Plates. Failure to torque these bolts can result in the failure of the lower steel tubes on each actuator.

- B.** Torque all grasping hooks 5/16 " HEX drive Taper-Lock bushing set screws (4). Two (2) on each hook. Torque each screw to 66 foot lbs. These screws are located on the hook hub. Failure to torque these screws can result in the hook becoming loose on actuator shaft.

READ AND INSERT THIS BULLETIN IN YOUR OPERATION INSTRUCTIONS AND MAINTENANCE GUIDE MANUALS.

## TAPER-LOCK HOOK BUSHINGS,

● INSERT SETSCREWS TO INSTALL ★ INSERT SETSCREWS TO REMOVE



### WARNING

To ensure that drive is not unexpectedly Started, turn off and lock out or tag power source before proceeding. Failure to observe these precautions could result in bodily injury.

### TO INSTALL

1. Clean shaft, bore of bushing, outside of bushing and hub bore of all oil, paint and dirt. File away any burrs
2. Insert bushing in hub. Match the hole pattern, not threaded. holes (each complete hole will be threaded on one side only).
3. LIGHTLY! Oil SETSCREWS and thread into those half-threaded holes indicated. by ● on above diagram.

### CAUTION

Do not lubricate the bushing taper, bushing bore. hub taper or the shaft doing so could result in breakage of the product..

4. Position assembly onto shaft allowing for the small axial movement which will occur during tightening procedure.
5. Alternately torque SETSCREWS to recommended torque setting of 66 foot pounds.

### CAUTION

Do not use worn hex key wrenches. Doing so may result in a loose assembly or may damage screws.

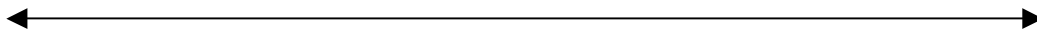
6. To increase gripping force, hammer face of bushing using drift; or sleeve. (Do Not Hit Bushing Directly With Hammer.)
7. Re-torque set screws after; hammering.
8. Recheck screw torque's after initial run-in, and periodically thereafter. Repeat steps 5,.6, and 7 if loose

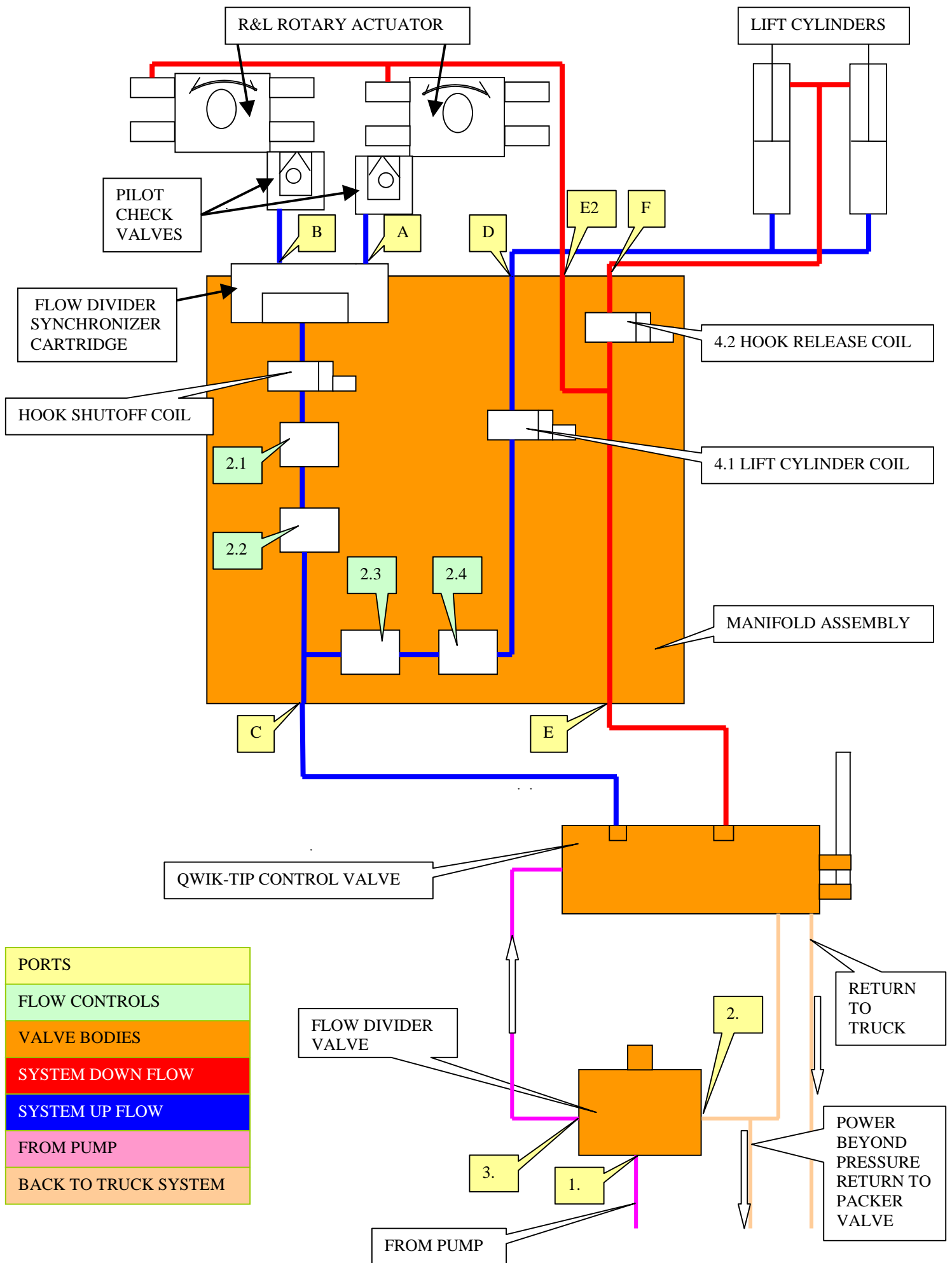
### TO REMOVE

1. Remove all screws.
2. Insert screws in holes indicated by ★ on drawing. Loosen bushing by alternately tightening screws.

# **IMPORTANT** **NOTICE**

**QWIK- TIP HOOKS MUST ALWAYS BE RETURNED TO STORED OR PARKED POSITION WHEN IN TRANSIT TO PREVENT SERIOUS DAMAGE TO HOOKS AND ROTARY ACTUATORS . FAILURE TO FOLLOW THIS NOTICE WILL VOID WARRANTY .**



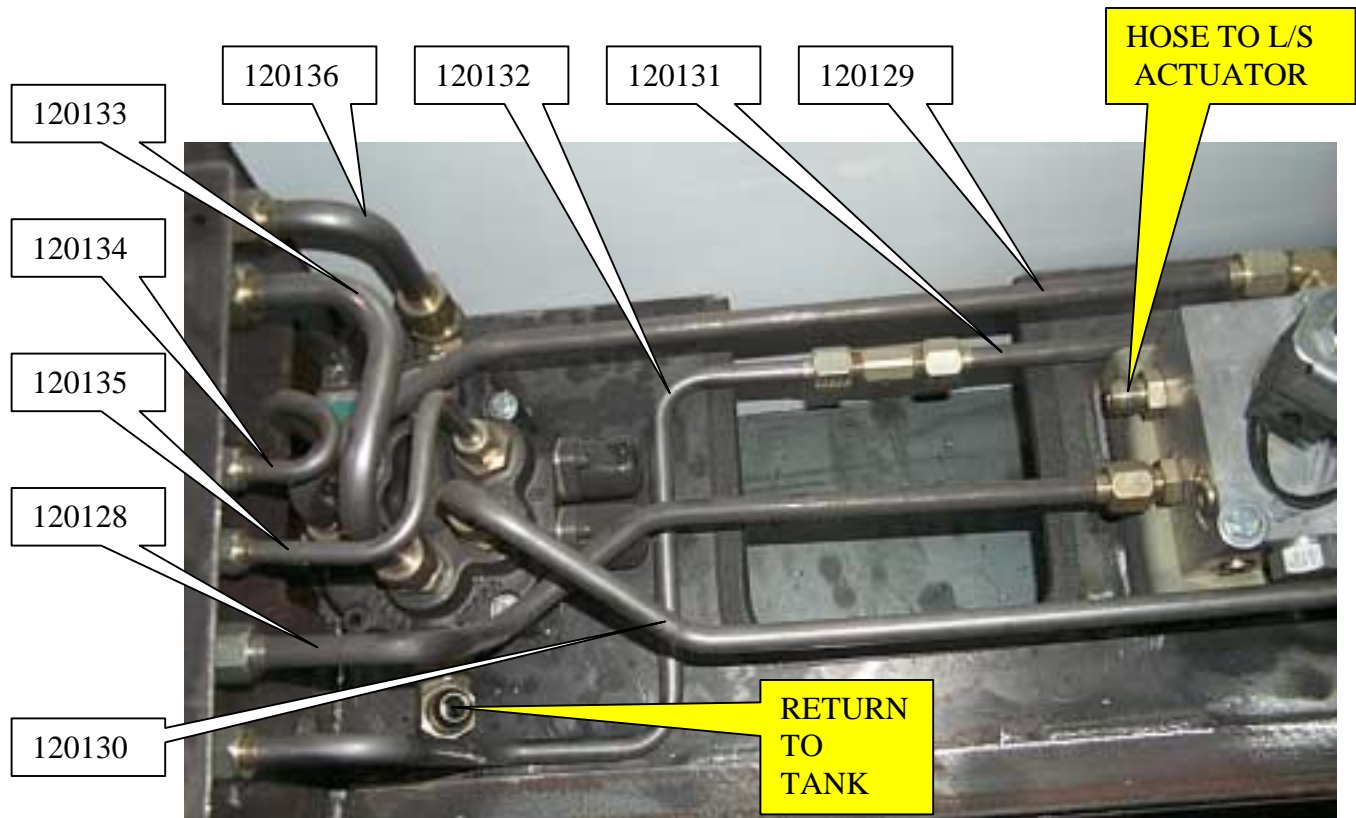


## **DESCRIPTION OF MANIFOLD PORTS**

1. Flow Control number **2.1** Hook Speed Down
2. Flow Control number **2.2** Hook Speed Up
3. Flow Control number **2.3** Cylinder Up
4. Flow Control number **2.4** Cylinder Down
5. Solenoid Function Control **3.0** Override
6. Solenoid Function Control **4.1** Cylinder Up
7. Solenoid Function Control **4.2** Hook Down

## **INLET & EXIT PORT DESCRIPTION**

1. Port number **A & B** Hook up through flow divider
2. Port number **C** Inlet from control valve-raise
3. Port number **D** Cylinder raise
4. Port number **E** Inlet from control valve-lower
5. Port number **F** Hook down
6. Port number **E2** Cylinder lower



## CONTROL VALVE & MANIFOLD TUBING PART NUMBERS

<u>NUMBER</u>	<u>DESCRIPTION</u>
98    120128	ACTUATOR UP RIGHT SIDE
99    120129	MANIFOLD INLET
100   120130	MANIFOLD OUTLET
101   120131	ACTUATOR DOWN LEFT SIDE
102   120132	ACTUATOR DOWN RIGHT SIDE
103   120133	RETURN OUTLET
104   120134	BANG BAR UP
105   120135	BANG BAR DOWN
106   120136	PRESSURE IN

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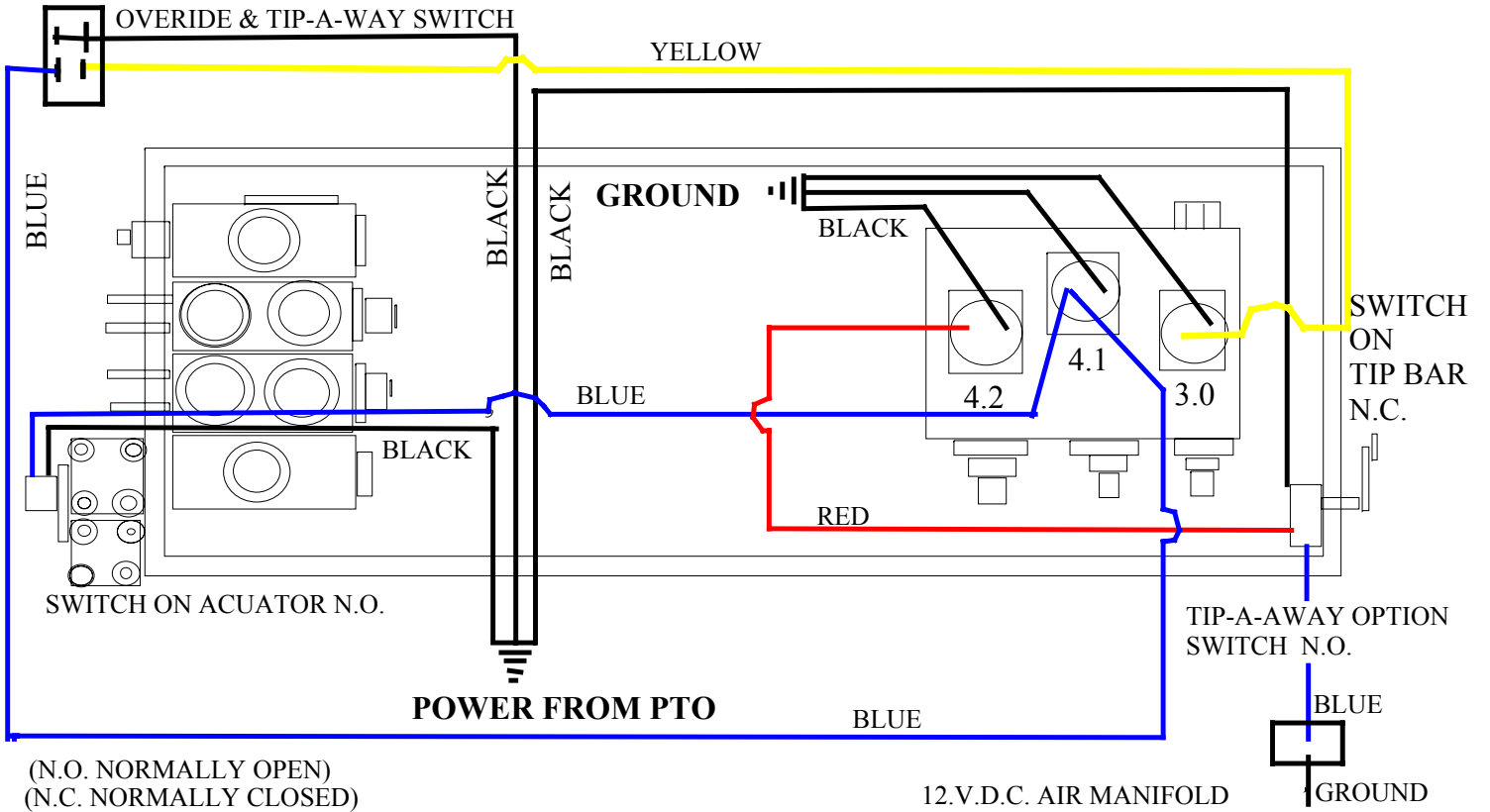
### LEFT AND RIGHT ACTUATOR TUBE PART NUMBERS *PART NUMBERS BELOW ARE NOT PICTURED*

107   120137	LEFT FORWARD OUTER TUBE
108   120138	LEFT REAR INNER TUBE
109   120139	RIGHT FORWARD OUTER TUBE
110   120140	RIGHT REAR INNER TUBE

Note: all tubes are quantity of one per unit (December 2000)

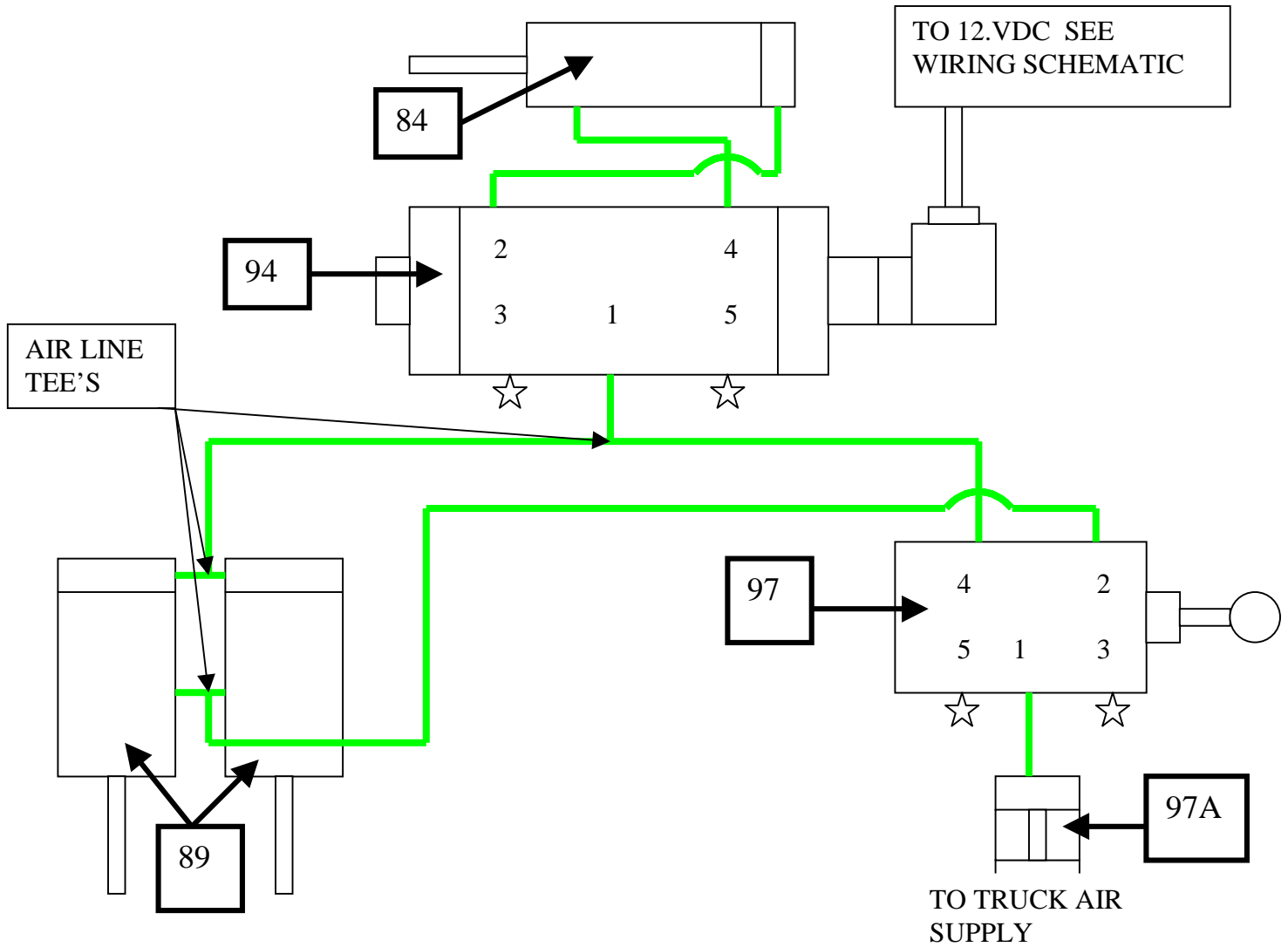


# QWIK-TIP TIP-A-WAY OPTION ELECTRICAL SCHEMATIC



# TIP-A-WAY OPTION

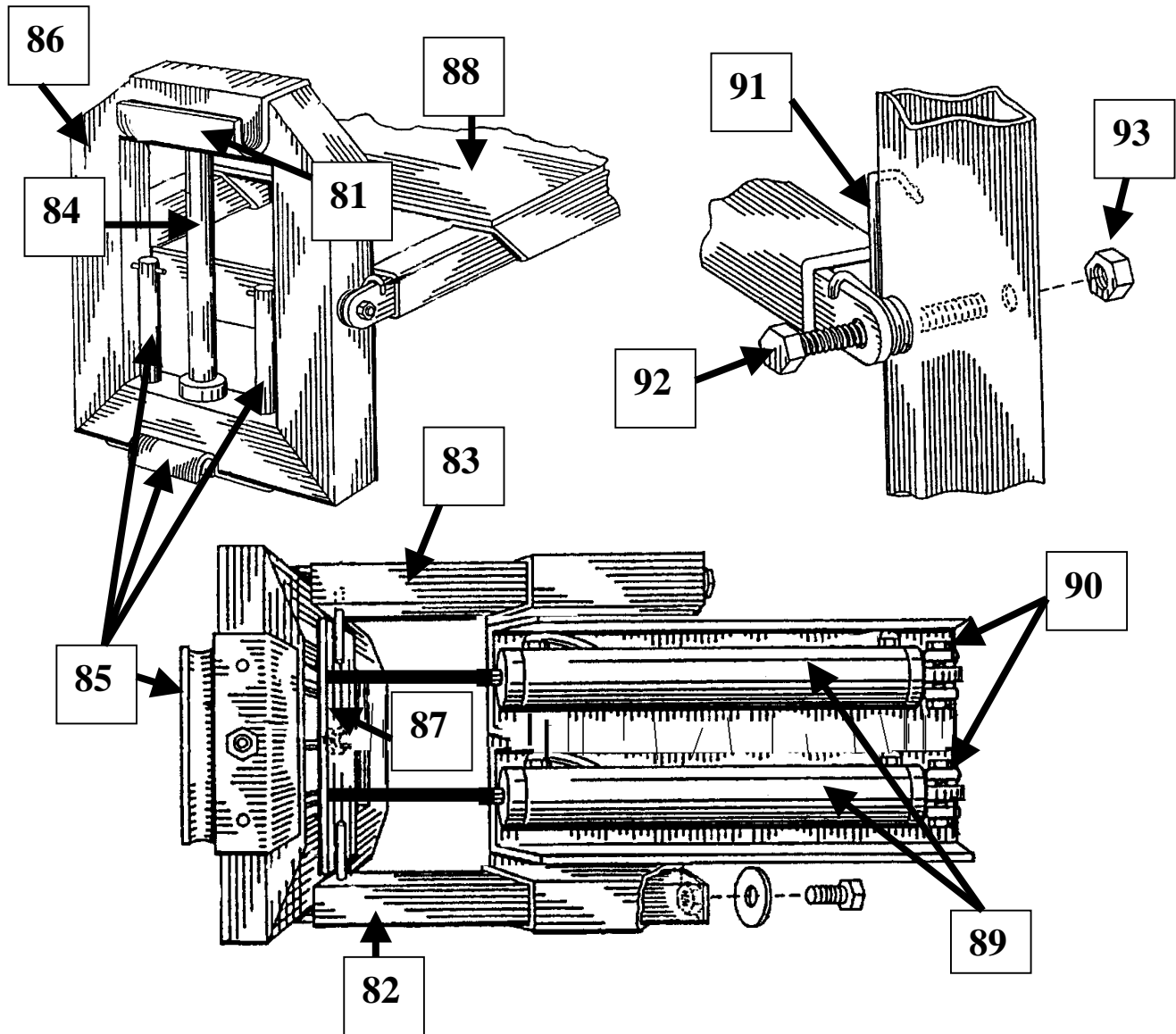
## AIR SCHEMATIC



<u>NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
84	LOCK CYLINDER	1
89	PUSH OUT CYLINDER	2
94	12.VDC AIR MANIFOLD	1
97	AIR TOGGLE SWITCH	1
97A	AIR PRESSURE PROTECTOR VALVE	1

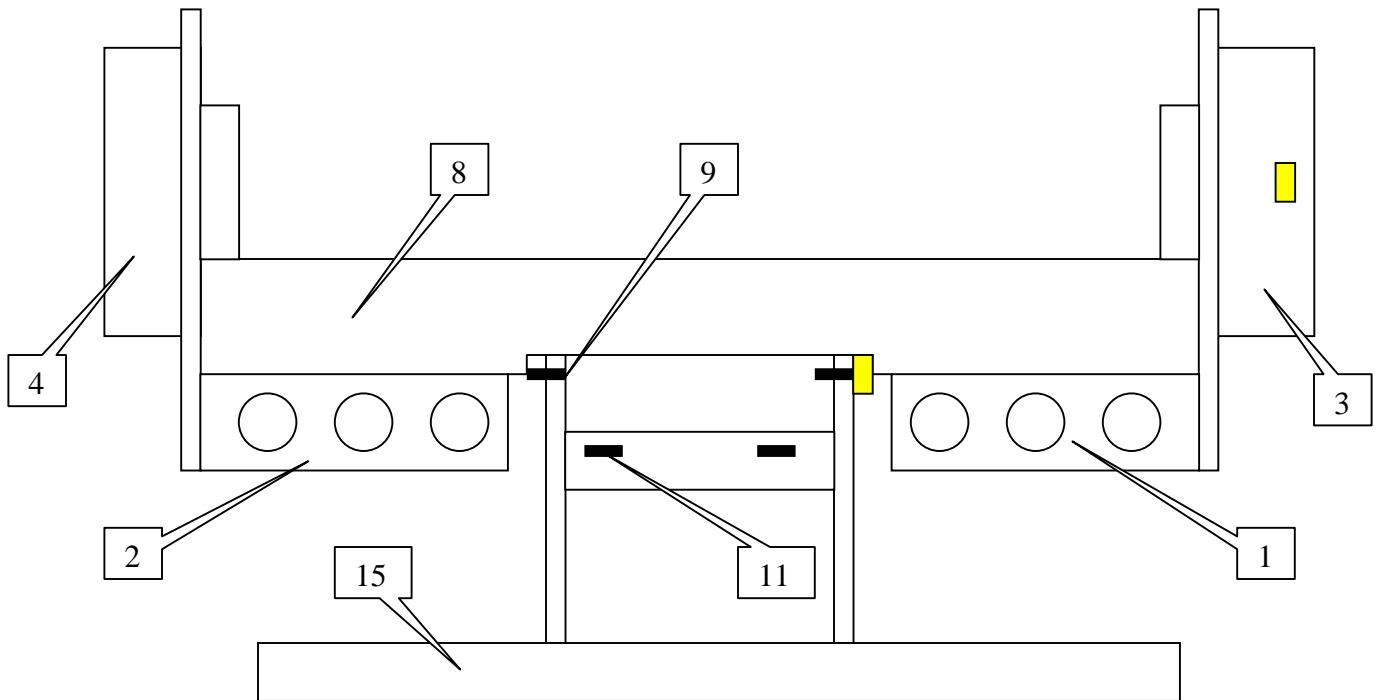
☆ NOTE: PORTS # 3 & 5 ARE EXHAUST PORTS AND MUST BE OPEN

## TIP-A-WAY CART LIFTING ACCESSORY



NUMBERS	QTY.	DESCRIPTION	PART NUMBER
81	1	LIFT HOOK ASSEMBLY	111002
82	1	LEFT SIDE SLIDER ARM	111003
83	1	RIGHT SIDE SLIDER ARM	111004
84	1	LOCK CYLINDER (6")	111001
85	1	LOCK HOOK ASSEMBLY	111005
86	1	FACE PLATE ASSEMBLY	111006
87	1	SWIVEL PLATE	111007
88	1	BASE ASSEMBLY	111008
89	1	PUSH OUT CYLINDER (8")	111009
90	1	CYLINDER FASTENER	111010
91	1	FACE PLATE TORSION SPRING	111012
92	2	PIVOT BOLT	111013
93	2	LOCK NUT	111014

# QT BOLSTER



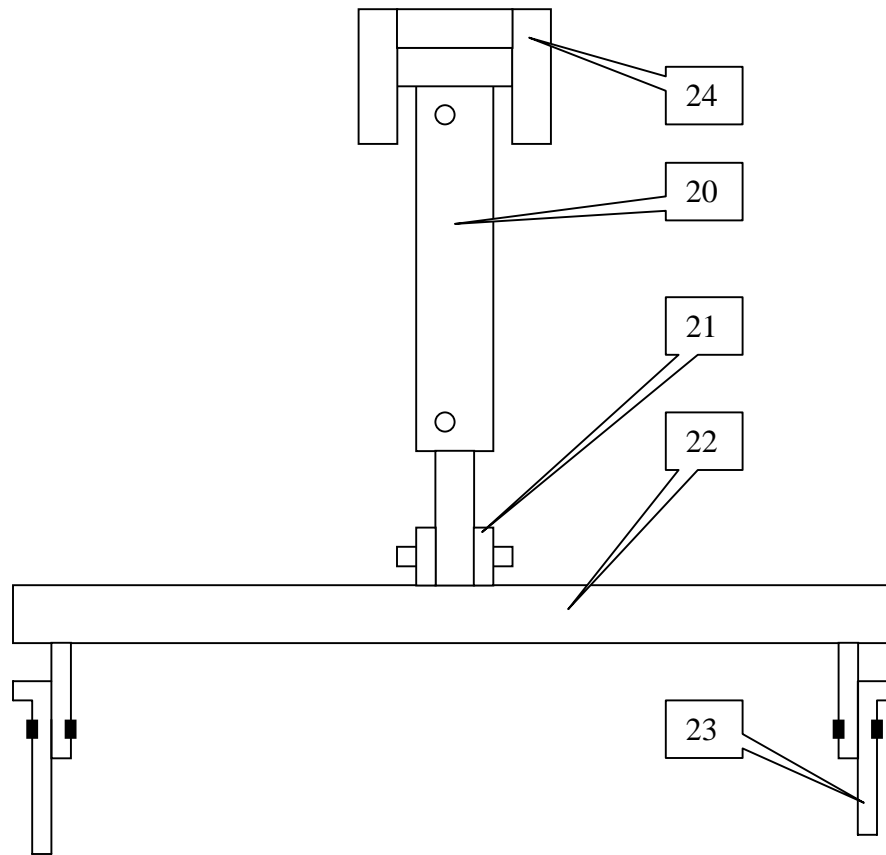
## LOCATION OF HOOK & TIP BAR MICRO SWITCHES

### NUMBERS

### DESCRIPTION

1	LIGHT BOX RIGHT SIDE
2	LIGHT SIDE LEFT SIDE
3	ACTUATOR COVER RIGHT SIDE
4	ACTUATOR COVER LEFT SIDE
8	BOLSTER BODY ASSEMBLY
9	BOLSTER HINGE PINS (2)
11	UPPER LIFT RAM PINS (2)
15	TIP BAR ASSEMBLY

# BANG BAR ASSEMBLY



## NUMBERS

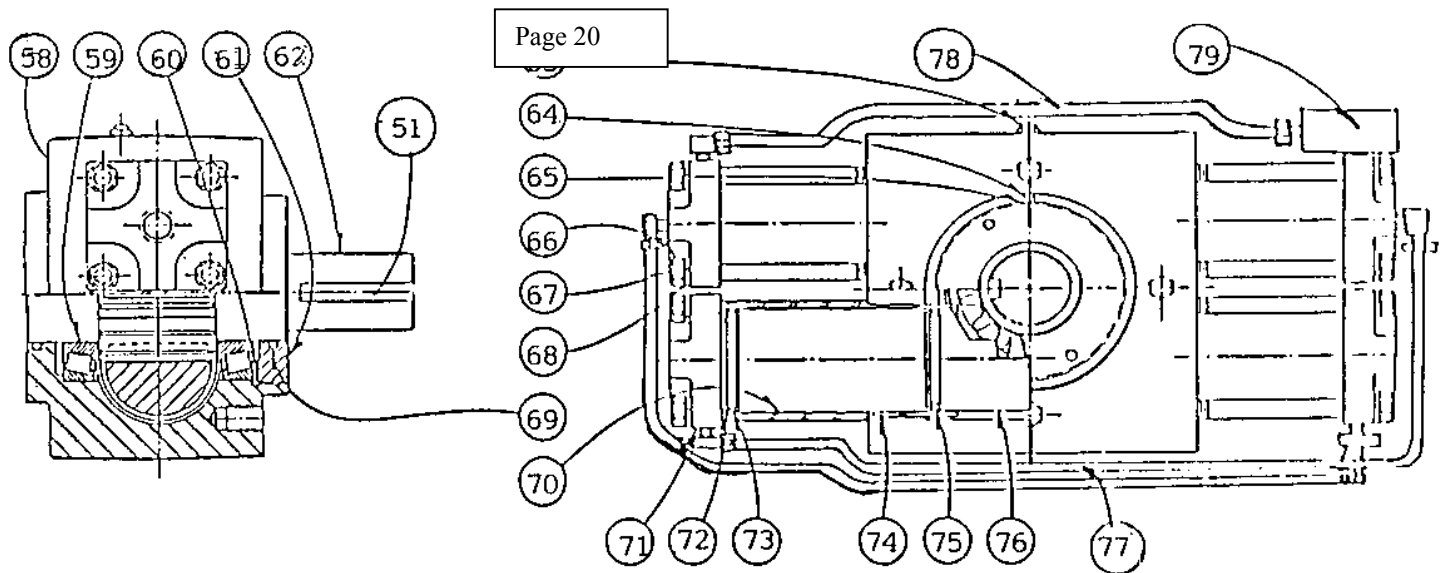
20  
21  
22  
23  
24

## DESCRIPTION

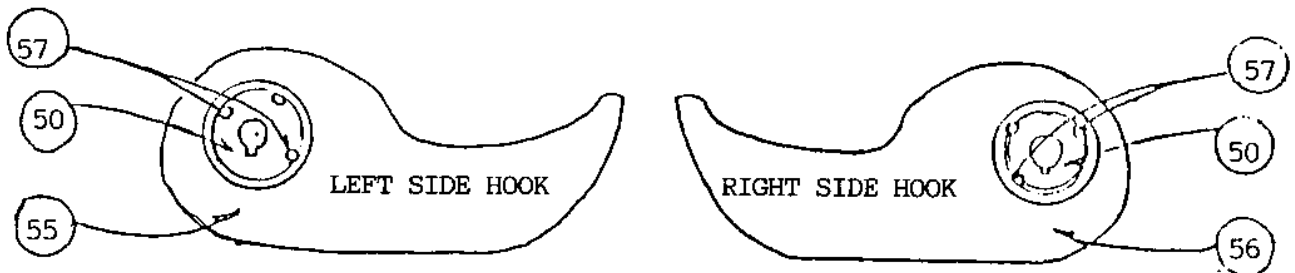
BANG BAR CYLINDER  
BANG BAR RAM BRACKETS  
BANG BAR TUBE ASSEMBLY  
BANG BAR ANCHOR PLATES  
BANG BAR CYLINDER ANCHOR

LEFT SIDE ACTUATOR PART # 702045

RIGHT SIDE ACTUATOR PART # 702046

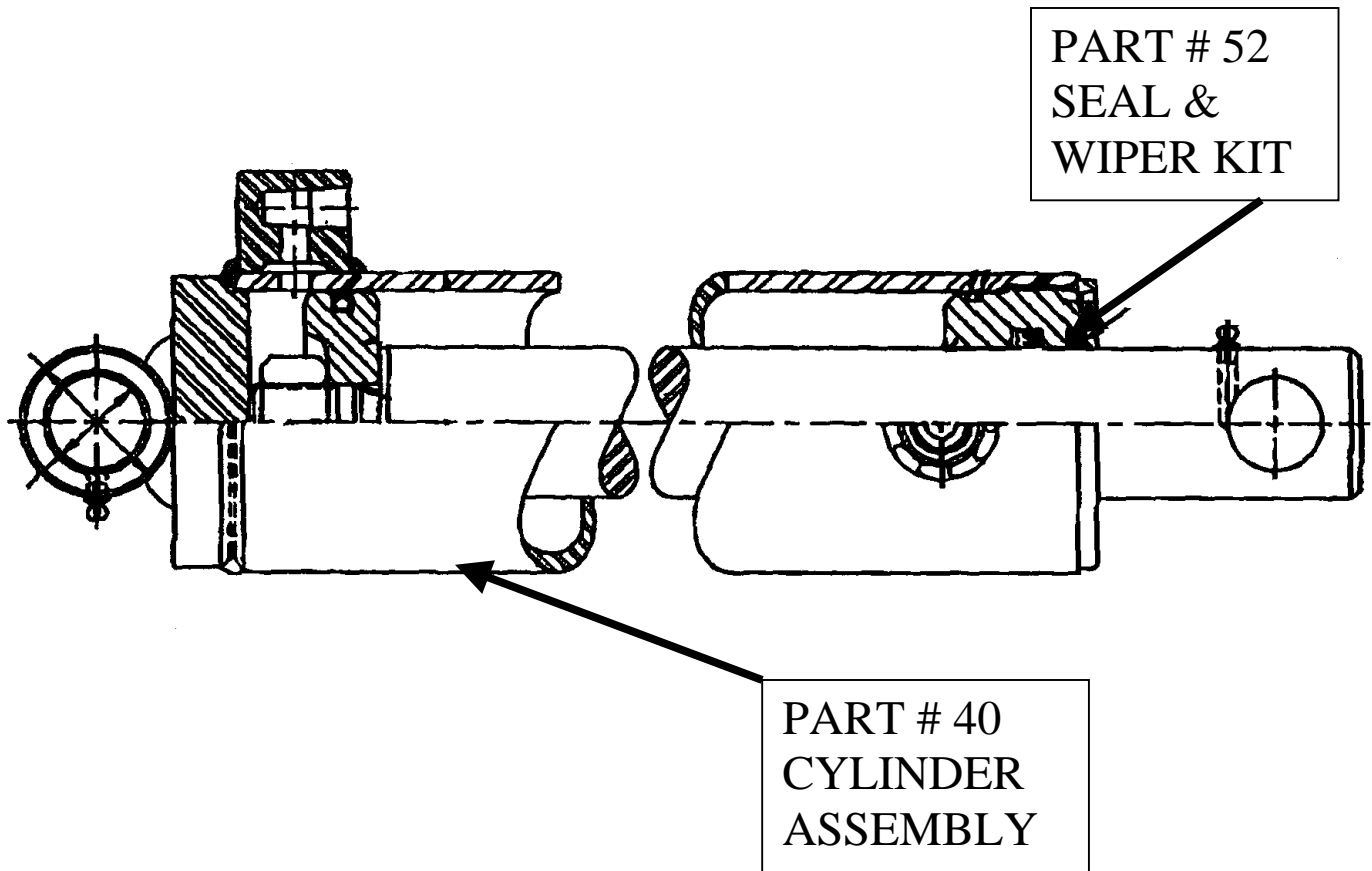


ALWAYS USE SERIAL NUMBERS AND MODEL NUMBERS WHEN ORDERING PARTS.



NUMBERS	DESCRIPTION
50	HOOK TAPER LOCK BUSHING
51	HOOK KEY
55	HOOK ASSEMBLY LEFT SIDE
56	HOOK ASSEMBLY RIGHT SIDE
57	BUSHING SET SCREWS
58	HOUSING
59	BEARING
60	O RING, BEARING CAP
61	BEARING CAP
62	PINION
63	RELIEF VALVE
64	SET SCREW BEARING CAP
65	NYLON PELLETT BEARING CAP
66	NUT TIE ROD
67	TIE ROD
68	LOCKWASHER, TIE ROD
69	O RING, PINION
70	CYLINDER TUBE
71	CYLINDER HEAD
72	BACK UP, CYL. HD.
73	O RING, CYL. HD.
74	O RING, CYL. O.D.
75	SEAL, PISTON
76	PISTON RACK
77	ACTUATOR LONG TUBE
78	CHECK VALVE TUBE
79	PILOT CHECK VALVE

# TIP BAR CYLINDER ASSEMBLY



# QWIK-TIP PART LIST

JANUARY 1997

PART NUMBER	DESCRIPTION	QUANTITY PER UNIT	
1	101,030	LIGHT BOX RIGHT SIDE	1
2	101,031	LIGHT BOX LEFT SIDE	1
3	101,034	ACTUATOR COVER RIGHT	1
4	101,091	ACTUATOR COVER LEFT	1
5	102,010	BOLSTER INNER PIVOT BRACE	2
6	102,039	BOLSTER INNER PIVOT BRACE BUSH	2
7	102,044	LIGHT & ACTUATOR BOX HINGES	8
8	101,060	BOLSTER ASSEMBLY	1
9	102,038	BOLSTER PIN	2
10	202,049	UPPER TIP LEG BUSHING	2
11	202,052	UPPER RAM PINS RIGHT & LEFT	2
12	200,104	TIP BAR SWITCH CAM	1
13	202,050	TIP BAR OUTER RAM BUSHING	2
14	202,051	TIP BAR INNER RAM BUSHING	2
15	201,061	TIP BAR ASSEMBLY	1
16	302,045	LOWER RAM PIN	2
17	302,042	LOWER RAM ANCHOR OUTER BUSHING	2
18	302,043	LOWER RAM ANCHOR INNER BUSHING	2
19	301,062	TIP BAR ANCHOR ASSEMBLY	1
20	401,048	BANG BAR CYLINDER	1
21	402,078	BANG BAR RAM BRACKETS	2
22	401,088	BANG BAR TUBE ASSEMBLY	1
23	401,089	BANG BAR ANCHOR PLATES	2
24	402,090	BANG BAR CYLINDER ANCHOR PLATE	1
25	500,150	VERTICAL CONTROL HANDLE ASSEMBLY	2
26	501,056	OVER RIDE SOLENOID	1
27	501,057	CONTROL VALVE CALVES	2
28	501,095	FLOW DIVIDER BODY	1
29	501,096	FLOW DIVIDER CARTRIDGE 19.2	1
30	501,101	FLOW SYNCHRONIZER	1
31	501,121	CONTROL MOUNT PLATE	1
32	502,054	CONTROL SOLENOID	2
33	503,057	COIL	3
34	504,055	FLOW CONTROL VALVE 16.2	2
34A	501,088	FLOW CONTROL VALVE 4.2	1
34B	501,089	FLOW CONTROL VALVE 12.5	1
35	501,094	CONTROL VALVE (DUAL)	1
35A	501,102	CONTROL VALVE (SINGLE)	1
36	501,063	MANIFOLD ASSEMBLY	1
37	501,098	FLOW DIVIDER VALVE ASSEMBLY	1

38	702,045	ACTUATOR LEFT	1
39	702,046	ACTUATOR RIGHT	1
40	702,047	LIFT CYLINDERS	2
41	800,105	OVERRIDE SWITCH AND CAP	1
42	800,141	ACTUATOR SWITCH CAM	1
43	801,102	SWITCH ON ACTUATOR	1
44	801,103	SWITCH ON TIP BAR	1
45	900,109	HEX BOLT GRADE 8 FLAT HEAD	2
46	900,115	CONTROL ID DECAL	1
47	901,067	URGENT WARNING	1
48	901,068	OPERATING INSTRUCTIONS (DECAL)	1
49	901,069	CAUTION STAND CLEAR	1
49A	901,070	HOOK WARNING	1
49B	901,071	QWIK-TIP NAME	2
50	902,052	HOOK TAPER LOCK BUSHING	2
51	902,123	HOOK KEY	2
52	902,125	TIP CYLINDER REPAIR SEALS	2
53	907,066	CAUTION KEEP HANDS CLEAR	12
54	901,097	HOSE GUARD	1
55	901,063	HOOK ASSEMBLY LEFT SIDE	1
56	901,064	HOOK ASSEMBLY RIGHT SIDE	1
57	901,065	BUSHING SET SCREWS	4
58	701,066	HOUSING	**
59	701,067	BEARING	**
60	701,068	O RING, BEARING CAP	**
61	701,069	BEARING CAP	**
62	701,070	PINION	**
63	701,071	RELIEF VALVE	**
64	701,072	SET SCREW BEARING CAP	**
65	701,073	NYLON PELLET BEARING CAP	**
66	701,074	NUT TIE ROD	**
67	701,075	TIE ROD	**
68	701,076	LOCK WASHER, TIE ROD	**
69	701,077	O RING, PINION	**
70	701,078	CYLINDER TUBE	**
71	701,079	CYLINDER HEAD (END OR SIDE PORTS)	**
72	701,080	BACKUP CYLINDER HEAD (IN SEAL KIT)	**
73	701,081	O RING, CYLINDER HEAD (IN SEAL KIT)	**
74	701,082	O RING, CYLINDER O.D. (IN SEAL KIT)	**
75	701,083	SEAL PISTON (IN SEAL KIT)	**
76	701,084	PISTON RACK	**
77	701,085	ACTUATOR LONG TUBE	**
78	701,086	CHECK VALVE TUBE	**
79	701,087	PILOT CHECK VALVE	**
80	801,088	OVERRIDE SWITCH PLUG (2PCS)	1
81	111002	LIFT HOOK ASSEMBLY	*1
82	111,003	LEFT SIDE SLIDER ARM	*1
83	111,004	RIGHT SIDE SLIDER ARM	*1
84	111,001	LOCK CYLINDER	*1
85	111,005	LOCK HOOK ASSEMBLY	*1

86	111,006	FACE PLATE ASSEMBLY	*1
87	111,007	SWIVEL PLATE	*1
88	111,008	BASE ASSEMBLY	*1
89	111,009	PUSH OUT CYLINDER	*2
90	111,010	CYLINDER FASTENER	*2
91	111,012	FACE PLATE TORSION SPRING	*1
92	111,013	PIVOT BOLT	*2
93	111,014	LOCK NUT	*2
94	111,015	12.VDC AIR MANIFOLD	*1
95	111,017	12.V ELECTRIC TOGGLE SWITCH	*1
96	111,018	TOGGLE SWITCH BOOT	*1
97	111,016	AIR TOGGLE SWITCH	*1
97A	111,019	AIR PRESSURE PROTECTOR VALVE	*1
98	120,128	TUBING	1
99	120,129	TUBING	1
100	120,130	TUBING	1
101	120,131	TUBING	1
102	120,132	TUBING	1
103	120,133	TUBING	1
104	120,134	TUBING	1
105	120,135	TUBING	1
106	120,136	TUBING	1
107	120,137	TUBING	1
108	120,138	TUBING	1
109	120,139	TUBING	1
110	120,140	TUBING	1

**\* TIP-A-WAY OPTION**

**\*\* SPECIAL ORDER CALL FOR QUOTE**

*JANUARY 1997*