

# MANITOWOC LIFTS

## INSTALLATION INSTRUCTIONS AND PARTS LIST

### "SWING-RAIL" SINGLE POST DRIVE OVER LIFT

A-1AA1B SERIES (SEMI-HYDRAULIC)

A-1AA3B SERIES (FULL HYDRAULIC)

(9000LB. CAPACITY)

### SINGLE POST ALIGNMENT LIFT

A-1AN1B SERIES (SEMI-HYDRAULIC)

A-1AN3B SERIES (FULL HYDRAULIC)

### Recommendations

**AIR EXHAUST:** Pipe air exhaust outside building when possible or install the MANITOWOC LIFTS silencer furnished with this lift. This eliminates noise and provides a much more satisfactory installation.

**PIPING:** Use only new pipe. See that threads are perfect. Use only metal-seated unions. Before using the pipe, hammer it to loosen all scale, spelter, and dirt, then wash the interior with kerosene. The pipe should pitch up gradually from the cylinder to the control valve with no traps or low places. Use pipe sealing compound on the male threads of all screw connections, unless your local authorities require the use of some special material. Do not use on the female thread. Verify that all pipe joints are tight, with no leaks prior to backfill and pouring of concrete.

**COMPRESSOR:** The compressor should be of the two stage type. Operating pressure to be 135 psi. **An air pressure relief valve, set to limit the air supply pressure to no more than 162 psi must be installed.** Air pressure and tank storage size are important as they determine the lifting speed and capacity of the lift.

**All piping, fittings, and valves must have a rated burst pressure of not less than 405 psi (Three times the Maximum Operating Pressure). Do not use plastic piping, fittings or valves.**

**INSTALLATION MUST BE MADE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS AND IN STRICT CONFORMANCE WITH THESE INSTRUCTIONS.**

### USE ONLY MANITOWOC LIFTS AUTHORIZED REPLACEMENT PARTS

#### - Warning -

This lift is designed for indoor use only! Outdoor installation will void the warranty.

- Do not pressurize system with shipping strap in place! Do not operate until system is properly filled with oil.
- The plunger top plate has foolproof pin which must be kept in line with the safety leg. The plunger should not be rotated in the cylinder. If the plunger is removed, it must be oriented as stated above when put back in the cylinder.

#### - Caution -

If lift will not be installed within one week, fill plunger-cylinder assembly with SAE 10 hydraulic oil. After the plunger assembly is installed and piping has been completed, fill the system with oil to protect the plunger from corrosion until the facility is opened. Do not raise plunger until oil has been added.

**THESE INSTRUCTIONS MUST BE THOROUGHLY READ AND FOLLOWED BY INSTALLER DURING INSTALLATION, AND THEN BY THE USER THROUGHOUT THE LIFE OF THE LIFT. THESE INSTRUCTIONS MUST ALSO BE THOROUGHLY READ AND FOLLOWED BY THE AUTHORIZED SERVICE CONTRACTOR DOING SERVICE WORK ON THE LIFT TO ASSURE PROPER ASSEMBLY OR DISASSEMBLY.**

**FOR PROBLEMS OR QUESTIONS WITH THE INSTALLATION, CALL TOLL FREE: 800-321-8173**



**SVI International, Inc.**

**Manitowoc Lifts - An SVI Brand Product Line**

155 Harvestore Drive, DeKalb, IL

# GENERAL INFORMATION

1. MANITOWOC LIFTS products are designed to give many years of trouble free operation if installed correctly and given proper care.
2. An automatic lock leg is shipped disassembled from the plunger and cylinder assembly. This reduces the possibility of shipping damage to these items.
3. The series A-1AA3B, A-1AN3B lift operates on the full hydraulic principle, which means that the load and lifting assembly are at all times supported and on a continuous column of oil which extends from the cylinder to the oil control valve.
4. The series A-1AA1B, A-1AN1B lift operates on the semi-hydraulic principle, which means that the load and lifting assembly are raised by air acting directly on the oil in the plunger, the plunger acting as oil reservoir.
5. With top of the cylinder form ring installed flush with floor, the top of the plunger extends 7/8" above floor level. This positions the plunger wiper seal ring above floor level away from dirt and water which may accumulate in the form ring.
6. The models A-1AA1B, A-1AA3B, A-1AN1B, & A-1AN3B contain low oil control valves. These valves stop operation of the lift when oil level drops to a minimum safe level. Operation of lifts without sufficient oil can be hazardous and damaging to the lift.
7. All semi-hydraulic lifts must be run up full stroke with air valve open and lift topped out for approximately 30 seconds every 4 to 6 partial strokes. This is done to allow automatic bleeding of trapped air in order to avoid blowing oil out of the exhaust muffler.

MANITOWOC LIFTS will not assume any responsibility of liability, financial, legal, or otherwise, in connection with the installation of its lifts which goes beyond the stated limitations of the standard instruction sheet or drawings currently applying, at the date of shipment, to individual models of MANITOWOC LIFTS.

In the event MANITOWOC LIFTS representatives consult with contractors, owners, or their employees regarding location of lifts or any other matters such as layout, head room, or floor planning, this consultation shall not be taken as a representation of accuracy, and the Company will not assume any liability or responsibility in any manner whatsoever. It is suggested that an architect be consulted.

**LOCATING THE LIFT.** Proper location of a lift is essential to insure efficient usage and operation. Therefore a careful study should be made of the area available for installation.

## CONSIDER:

**DIRECTION OF TRAFFIC** flow.

**APPROACH SPACE** to allow adequate maneuverability of the car.

**WORKING AREA** required around car.

**FLOOR SLOPE** - 1/8" per ft. drainage slope away from lift recommended. Floor slope must provide sufficient clearance so that swing rails are free to move with lift in "Down" position.

**HEADROOM** above lift. Provide ceiling clearance for your highest vehicle when the lift is raised.

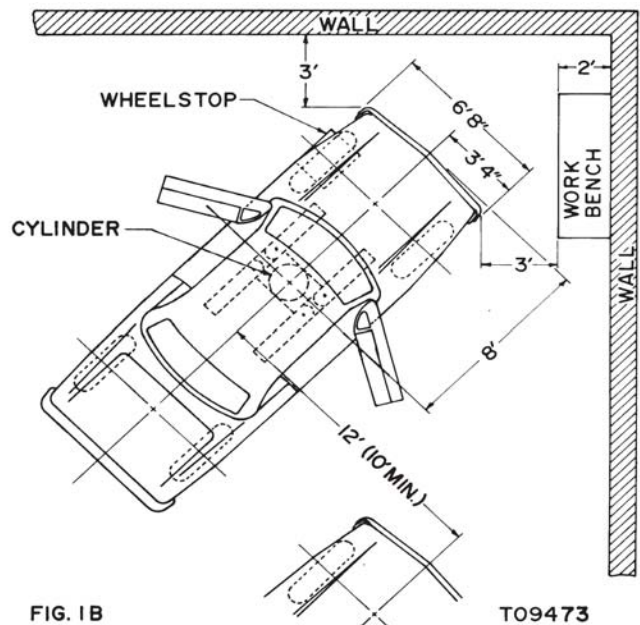
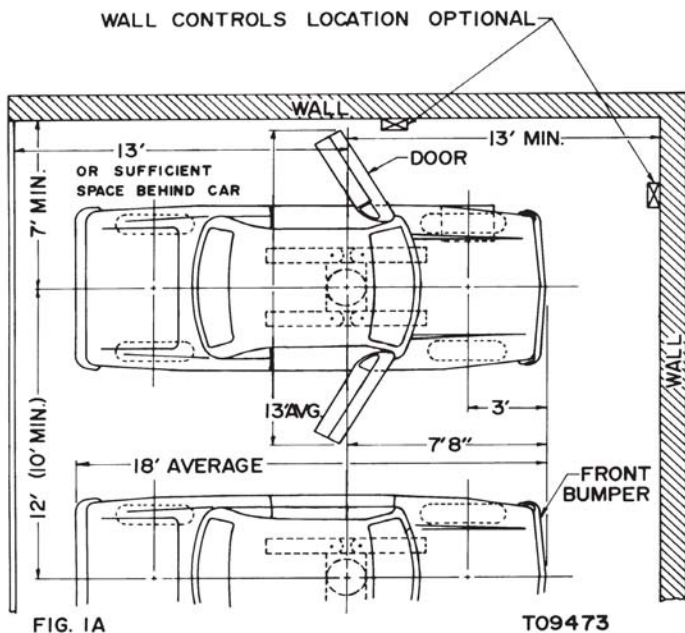
The sketches below show two types of installation: - one showing a lift perpendicular or parallel to a wall, and the other, a lift at an angle to a wall. (The latter used when sufficient approach space is not available).

**Note:** recommended 3 ft. minimum clearance aisle and space for a work bench provided in front of car. (Fig. 1B)

**Note:** clearance required on either side of car for opening doors.

When two or more lifts are installed adjacent to one another, they should be set with a recommended distance of 12 ft. between center lines of lifts. It is possible to locate adjacent lifts 10 ft. apart, but this spacing should be used only when absolutely necessary.

Location of the lift control valve is optional to some extent and must be determined to best suit the installation. Controls should be located to give the operator a clear unobstructed view of the lift.



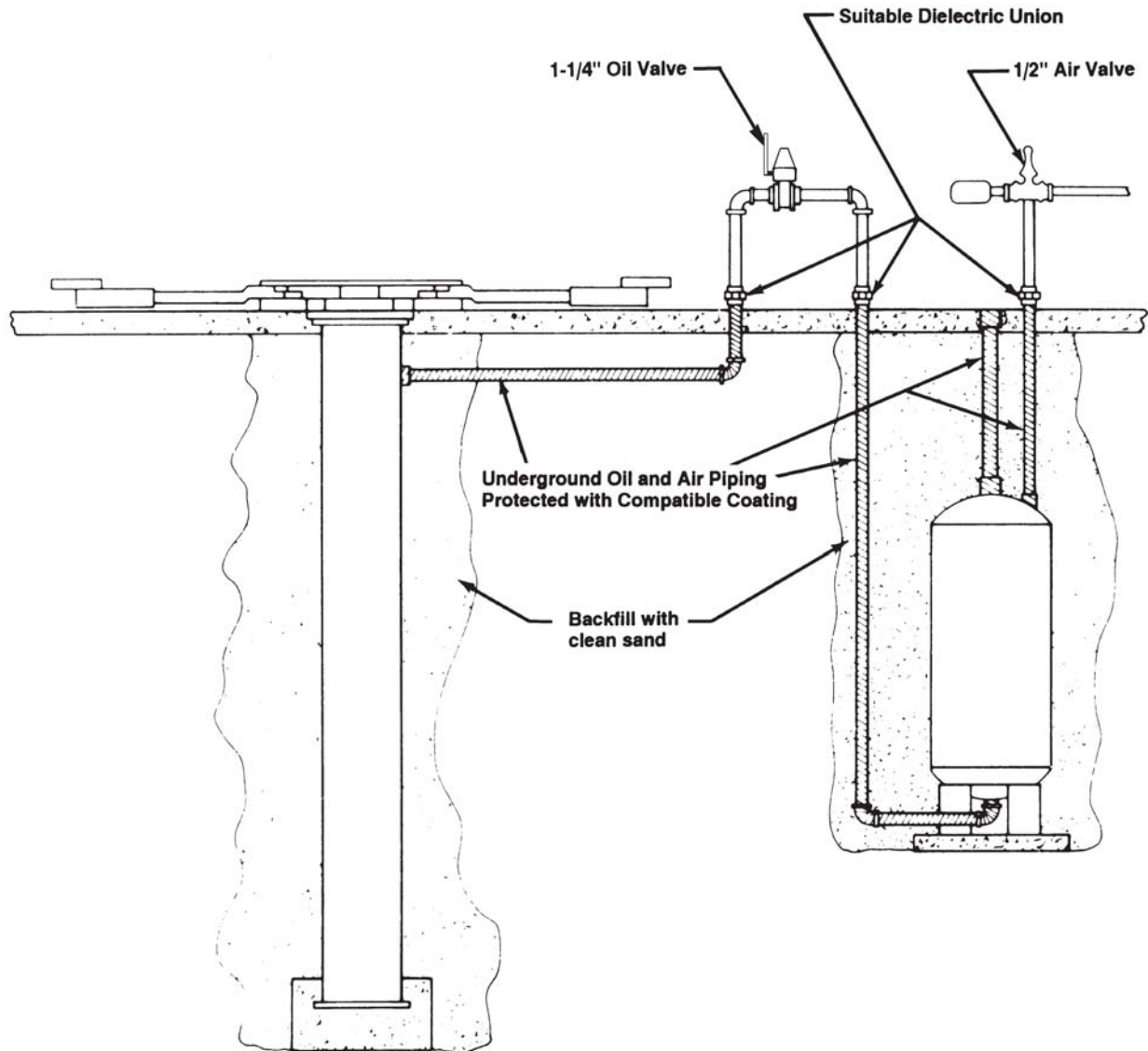
**NOTE:** Dimensions indicated in sketches are recommended minimum only.

# INSTALLATION INSTRUCTIONS FOR ENVIROKOTE COATED LIFT COMPONENTS

The excavation must be free of any material that may damage the Envirokote Coating on the Lift Cylinder and Air/Oil Tank. Equipment for installing these components must be adequate to prevent damage to the coating from dragging or dropping. Similar care must be given to the coated piping. Backfill must consist of clean sand or other suitable fill that is free of organic material, rocks, debris, and other sharp objects. The backfill must be deposited carefully and completely around the buried Air/Oil Tank, Lift Cylinder and Piping. When tamping backfill, care must be taken to avoid damaging the Envirokote Coating.

All underground piping, joints, fittings, and tie-ins to the Envirokote Coated Lift Cylinders and Air/Oil Tanks must be coated with a material compatible with the Envirokote Coating. Make all piping connections in accordance with local, state, or Federal regulations. Suitable Dielectric Unions must be used to isolate protected underground piping from unprotected above ground piping. All bracing and/or supports for unprotected above ground piping must be attached above the Dielectric Unions.

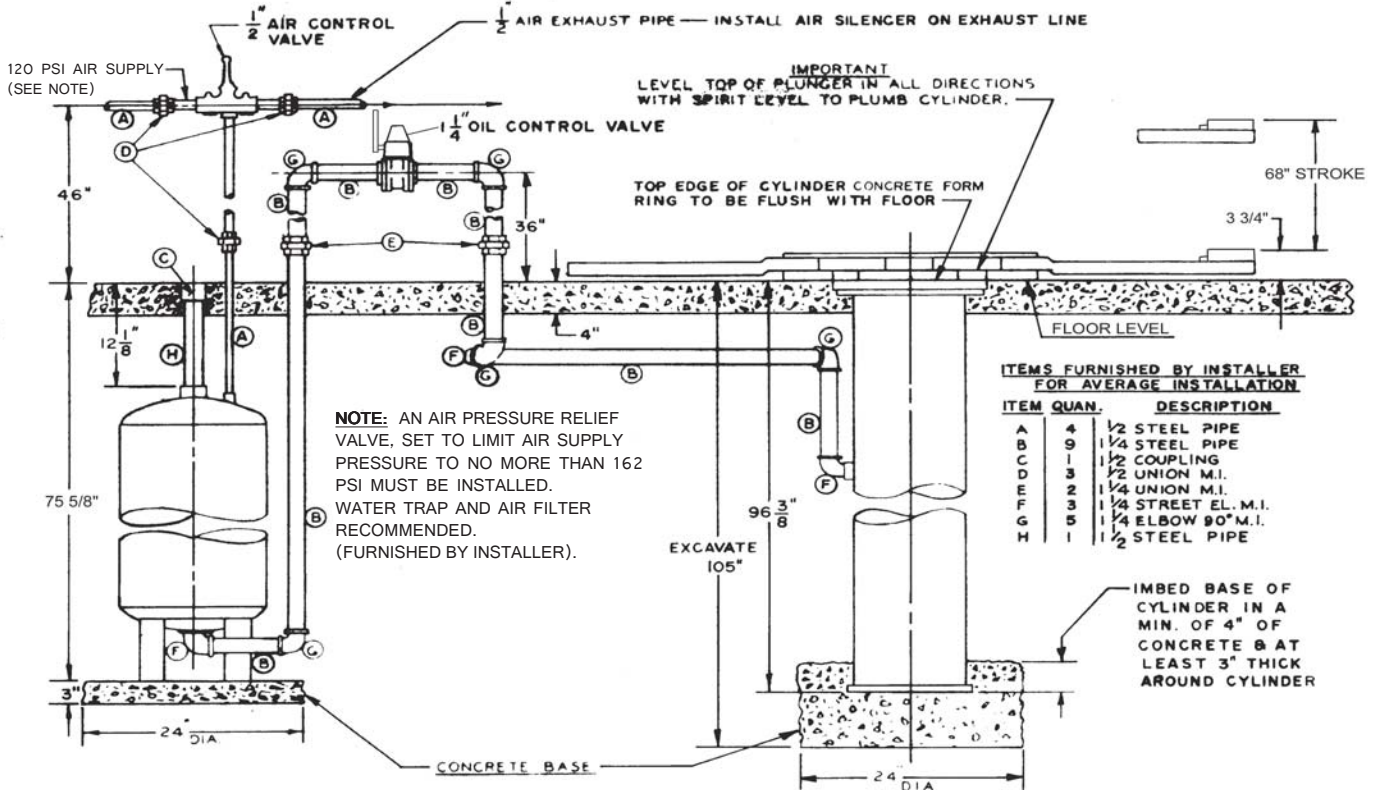
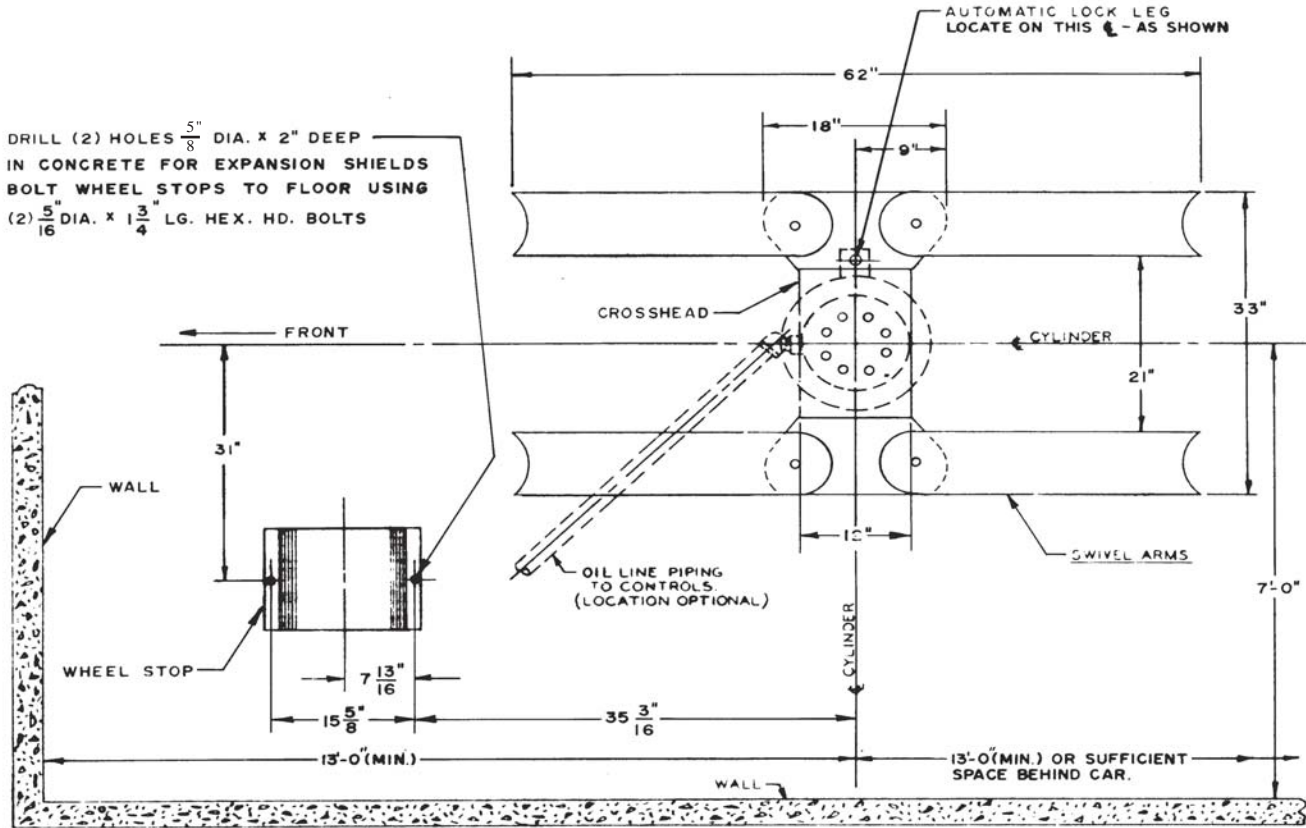
## TYPICAL INSTALLATION DETAIL



# INSTALLATION INSTRUCTIONS

SERIES A-1AA3B

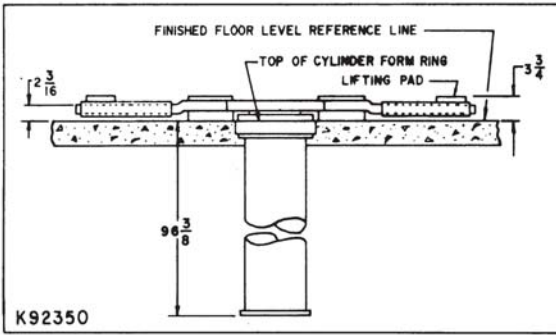
SERIES A-1AN3B SIMILAR (WITHOUT CROSSHEAD)



## INSTALLATION WITH CYL. CONCRETE FORM RING FLUSH WITH FLOOR

R16273

FIG. 2



## FLOOR CONDITIONS

Determine what floor conditions exist or will exist where the lift is to be installed. Under no circumstances should the Service Station floor be sloped toward the lift plunger. This condition will result in rusted and pitted cylinders and leakage at the packing. Where a frame lift is installed in an existing Station where the floor slope cannot be controlled, it is recommended that a floor drain be installed next to the lift plunger. Note that the top of the superstructure swing arms are 2 3/16" above a level floor. Floor slope must provide sufficient clearance so that swing rails are free to move with lift in "down" position.

## INSTALLATION INSTRUCTIONS

SERIES A-1AA3B/A1AN3B

1. **LOCATION** Determine lift location and make certain that proper working space and clearance is available as outlined in previous section "Locating the Lift."
2. Excavate hole for cylinder assembly at least 24" in diameter to a depth of 105" measuring depth from finished floor level at form ring location. If oil tank is to be buried, excavate a minimum diameter of 24" to a depth of 74" below finished floor level. Dig trench for oil and air lines from tank to controls.
3. **INSPECT CYLINDER FOR SHIPPING DAMAGE AND CHECK DRAIN PLUG FOR TIGHTNESS BEFORE CYLINDER ASSEMBLY IS INSTALLED.**
4. **AUTOMATIC LOCK LEG ATTACHMENT.** Match the mounting brackets on the automatic lock leg with the mounting brackets on the cylinder and attach using two 3/8"-16 x 3/4" long hex head bolts. (See page 13) Remove inner tube from automatic lock and set aside. Assemble box assembly (K) to support plate (V) with two each 5/16-18 x 5/8 lg. hex capscrew (H) and 5/16 lockwasher (I). (See page 10)
5. Connect to cylinder assembly a 1-1/4" street elbow, a 1-1/4" nipple approximately 16 inches long, and an elbow as shown. Make all connections oil tight. Plug elbow to keep out dirt. (Fig. 2)
6. Pour concrete base so that top is approximately 96 3/8" below finished floor level.
7. Lower the cylinder assembly into the hole so that the automatic lock tube is on the L.H. - R.H. center line of the lift cylinder. Locate and hold so that the top of the form ring is flush with the finished floor level. Top edge of plunger must be level in both directions. Block in position.
8. Complete piping as shown in Fig. 2. Install oil control valve with inlet and outlet ports horizontal and handle oriented vertically upward. Spring loaded handle can be pulled toward the operator to activate the lift. The air-oil tank may be installed below ground if desired, and if local ordinances permit. Piping arrangement applies for either above or below ground installation. Install extension on oil fill opening, so tank may be filled and gauged at floor level. (See Fig. 2).
9. **Fill System with oil** - The requirements are approximately 55 gals. Use only oil which is recommended by the petroleum manufacturer for hydraulic lifts. Viscosity rating should be approximately 100-125 SSU at 100°F. Most SAE 10 oils (new) are acceptable. Avoid oils which foam under air pressure. A rust inhibitive type oil is recommended. Follow the steps given below, keeping in mind that the system must be filled and bled gradually.
  - A. Remove the shipping strap from top of plunger and cylinder assembly by removing the two (2) 7/16"-14 x 1 1/2" long bolts and discard the shipping strap. Put the same (2) bolts back into the same holes to hold the wiper retaining ring. **IMPORTANT:** Six bolts are required to properly hold the wiper retaining ring.
  - B. Place Air Control Valve handle in exhaust position.
  - C. Remove oil gauge from oil fill pipe. **WARNING:** Serious personal injury could occur if you attempt to remove any oil filler cap with pressure still in the system. Always lower the lift fully, and open the air valve and keep it open until "All" pressure is fully exhausted. Do not position any part of your body over the cap when removing. Remove the cap slowly.
  - D. Loosen air vent plug (located in top cylinder casing).
  - E. Fill tank to the full level on the oil gauge.
  - F. Remove Float Assembly from the loose parts kit and insert through tank fill opening with the hook end up. Check float to be certain it is free and floating. (Ref. Fig. 3.)

Float Guide and Oil Gauge Assembly are installed in tank at factory. The Float Assembly, which is packaged in the loose parts package, must be installed during lift installation.

**Caution:**  
If for any reason the length of the fill pipe is changed, the length of the oil gauge assembly must also be increased or decreased by exactly the same amount. The disc must be reattached if it is removed to change dip stick length.

### INSTALLING LOW OIL CONTROL AND OIL GAUGE ASSEMBLY

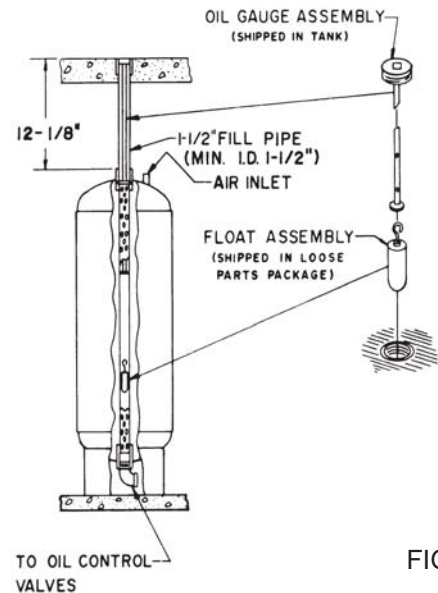


FIG. 3

**WARNING:**

Under no circumstances should a lift be operated with the float assembly removed. Such operation can result in a potentially hazardous condition should a low oil condition occur.

- G. Replace oil gauge and move air control valve handle to "Raise" or supply position.
  - H. Bleed air from cylinder by gradually admitting oil to cylinder by means of the oil control valve. Air will escape from air vent. When a steady stream of oil flows freely from air vent hole, close oil control valve and tighten air vent plug. Raise plunger no more than 3 ft. Close oil control valve. Apply soapy water to all air pipe joints and observe for leaks. Also observe all oil pipe joints for leaks.
  - I. Place air control valve in exhaust position and open oil control valve until plunger is completely lowered. Check oil level in tank using the oil gauge. Add sufficient oil in tank to bring the oil level up to the top hole in oil gauge. Replace oil gauge.
  - J. Repeat bleed and refill procedure until no air escapes from air vent.
10. Embed base of cylinder in 4" min. of concrete and at least 3" thick around cylinder. See Fig. 2.
11. After concrete has hardened around base of cylinder, back fill with clean sand.  
**(IMPORTANT: Do not allow foreign matter to contaminate fill.)** Tamp fill solidly, checking regularly to keep plunger exactly plum in all directions by laying level across top of plunger when making back fill. THIS IS VERY IMPORTANT.
12. Complete Concreting. Fill area outside of concrete form ring with concrete to floor level. Grease (4) 3/8-16 UNC X 3/4" Lg. hex hd. bolts and screw into support plate to prevent concrete from plugging holes. Be sure to pour concrete under Automatic Lock Support Plate. See Fig. 7.
- CAUTION:** If for any reason the plunger is extended and left in the "up" position while concrete work is being completed, the plunger should be protected by application of a coating of a suitable grease.
13. BALLAST SHOULD BE PROVIDED FOR PLUNGER. This may be accomplished by filling the hollow of the plunger with a mixture of clean oil and sand, (no foundry sand), is recommended. Care should be taken not to let sand get into packing area by providing a funnel of some type.
14. FINAL ASSEMBLY

- A. After concrete has hardened, assemble automatic lock components. See instructions on page 10. Re install inner tube to automatic lock assembly, engage safety dog to support the inner tube at its lowest position.
- B. Refer to Fig. 8 for Models A-1AA1B & A-1AA3B, or to Fig. 4 for mounting hole pattern only, of models A-1AN1B or A-1AN3B, since MANITOWOC LIFTS does not supply the superstructures for these lifts.
- C. For A-1AA1B & A-1AA3B Series lifts only. Position the crosshead (A) on the plunger by first locating the "fool-proof pin" in its proper location in the crosshead. Fasten the crosshead to the plunger, using (8) hex hd. bolts (B).
- D. Grease both sides and position swing arm washer (H) on crosshead anchor plate.
- E. Insert swing arm (J) into crosshead anchor plate (after applying grease to end of arm).
- F. Insert Pivot Bushing (L) and lock washer (K) into swing arm hole.

- G. Secure with bolt (M).
- H. Raise lift about 2 ft.
- I. Put Lift Adapter Assembly (N) on swing arm (J). Secure with lock washer (Q) and bolt (P).
- J. With lift still raised about 2 ft., fasten the inner post of the automatic lock (V) with bolt (C). Make sure all sides of inner post are parallel with sides of rectangular hole in cover plate.
- K. After tightening all bolts, install plastic plugs (R), (S), and (T) into proper places.

**15. IMPORTANT**

**OPERATING INSTRUCTIONS.**

The permanent operating instructions along with inspection and maintenance instruction furnished with this lift should be permanently and conspicuously displayed in the lift control area. Automotive lifts should be operated by trained personnel only. If you do not know how to position or lift a vehicle properly, do not guess. Get training. Start by reading the operating instructions, the booklet "Lifting It Right", and the "Automotive Lift Safety Tip" sheet furnished with the lift. Also refer to the vehicle manufacturer's service manual for proper lift points and lifting procedures.

**16. IMPORTANT**

**HOW TO ORDER REPLACEMENT PARTS.**

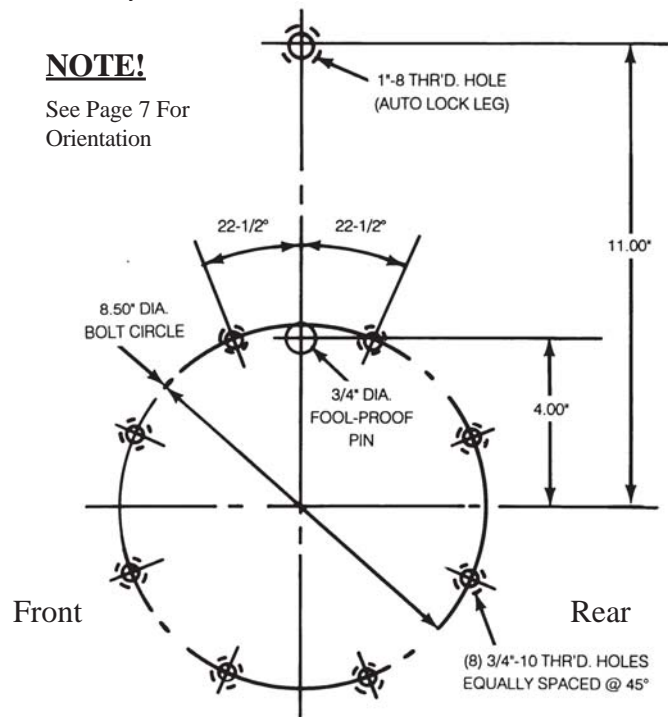
Be sure to mention the lift model number and serial number in correspondence dealing with service information and when ordering replacement parts. This information is on the top of the plunger and cylinder assembly.

**17. IMPORTANT**

Underground corrosion takes place in varying degrees throughout the United States and may cause a major problem with lift equipment. To protect underground lift components, MANITOWOC LIFTS recommends that an analysis of local soil conditions be obtained, and that a knowledgeable source be consulted relative to the implementation of an adequate corrosion control system. See MANITOWOC LIFTS warranty.

**NOTE!**

See Page 7 For Orientation

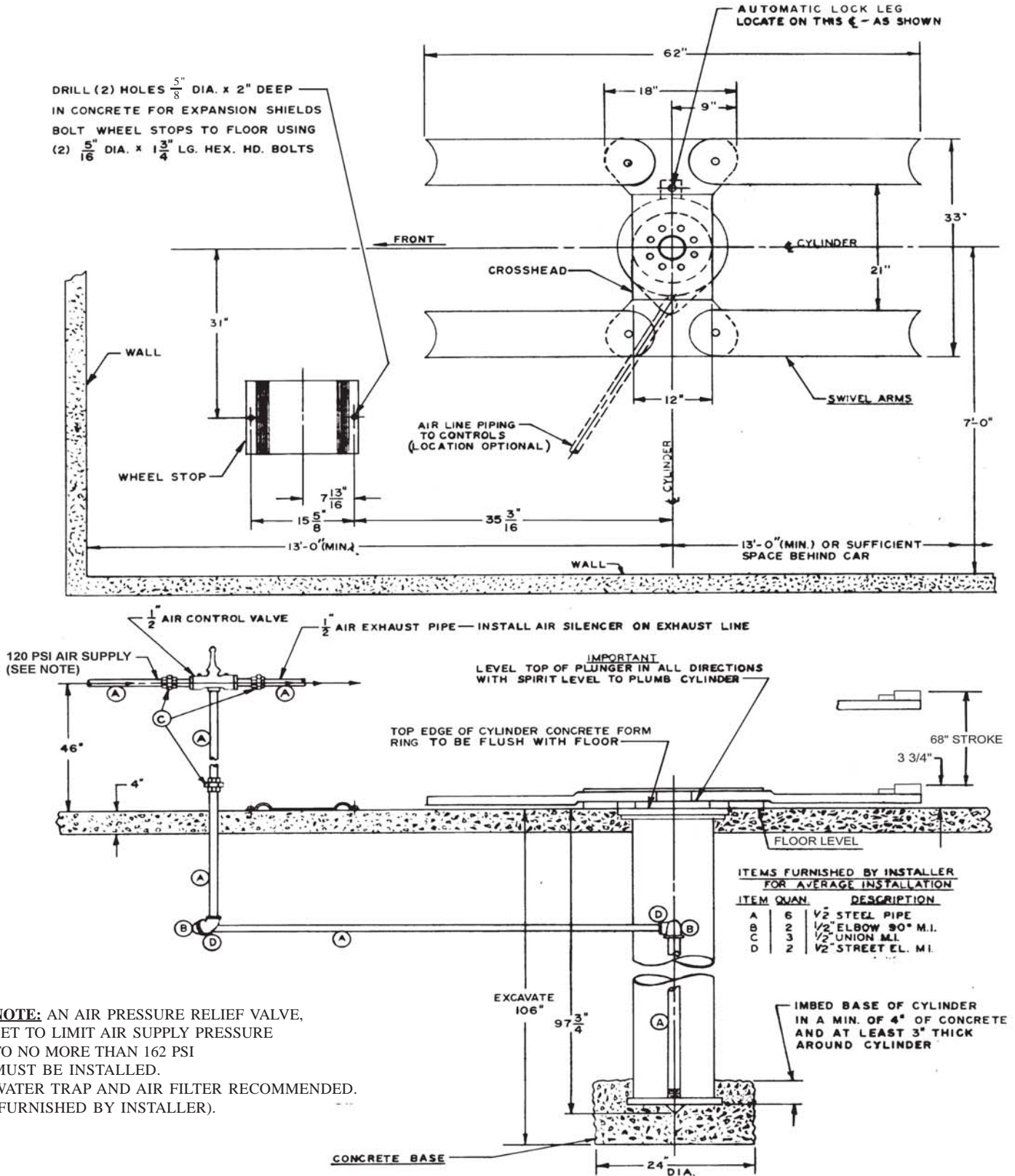


**FIG. 4  
SUPERSTRUCTURE MOUNTING HOLE PATTERN  
A-1AN1B & A-1AN3B SERIES ALIGNMENT LIFTS**

# INSTALLATION INSTRUCTIONS

SERIES A-1AA1B

SERIES A-1AN1B SIMILAR (WITHOUT CROSSHEAD)



**NOTE:** AN AIR PRESSURE RELIEF VALVE, SET TO LIMIT AIR SUPPLY PRESSURE TO NO MORE THAN 162 PSI MUST BE INSTALLED. WATER TRAP AND AIR FILTER RECOMMENDED. (FURNISHED BY INSTALLER).

## INSTALLATION WITH CYL. CONCRETE FORM RING FLUSH WITH FLOOR

FIG. 5

# INSTALLATION INSTRUCTIONS

## A-1AA1B & A-1AN1B SERIES

1. LOCATION Determine lift location and make certain that proper working space and clearance is available as outlined in previous section "Locating the Lift."
2. Excavate hole for cylinder assembly at least 24" in diameter to a depth of 106" measuring depth from finished floor level at form ring location. Dig 10" wide by 10" deep trench for air line from control location to plunger assembly.
3. INSPECT CYLINDER FOR SHIPPING DAMAGE AND CHECK DRAIN PLUG FOR TIGHTNESS BEFORE CYLINDER ASSEMBLY IS INSTALLED.
4. AUTOMATIC LOCK LEG ATTACHMENT. Match the mounting brackets on the automatic lock leg with the mounting brackets on the cylinder and attach using two 3/8"-16 x 3/4" long hex head bolts. (See page 12) Remove inner tube from automatic lock and set aside. Assemble box assembly (K) to support plate (V) with two each 5/16-18 x 5/8 lg. hex capscrew (H) and 5/16 lockwasher (I). (See page 10)
5. Connect to cylinder assembly a 1/2" pipe approximately 8'-0" long, and an elbow as shown in Fig. 5. Plug elbow to keep out dirt. Make all connections oil tight. Avoid excessive amounts of pipe dope and teflon tape, excess material can plug orifices in low oil control.
6. Pour concrete base so that top is approximately 97 3/4" below finished floor level.
7. Lower the cylinder assembly into the hole so that the automatic lock tube is on the L.H. - R.H. center line of the lift cylinder. Locate and hold so that the top of the form ring is flush with the finished floor level. Top edge of plunger must be level in both directions. Block in position.
8. Run 1/2" pipe to control valve and complete remainder of piping as shown in Fig. 5.
9. Fill System with oil. Remove the shipping strap and the shipping plug located at the upper end of the plunger and cylinder assembly by removing the two (2) 7/16"-14 x 1 1/2" long bolts, discard the shipping strap and plug. Put the same two (2) bolts into the same holes to hold the wiper retaining ring. **IMPORTANT:** Six bolts are required to properly hold the wiper retaining ring. Install the pipe plug and oil gauge as shown in Fig 6. Approximately 42 gals. of oil are required. Use only oil which is recommended by the petroleum manufacturer for hydraulic lifts. Viscosity ratings should be approximately 150-200 SSU at 100°F. Most SAE 10 oils (new) are acceptable. Avoid oils which foam under air pressure. Avoid overfilling, excess oil will be forced out of exhaust muffler. A rust inhibitive type oil is recommended. Follow the steps given below, keeping in mind that the system must be filled and bled gradually.
  - A. Place Air Control Valve handle in exhaust position.
  - B. Remove oil fill plug (located in plunger head).
  - C. Loosen air vent plug (located in top cylinder casing).
  - D. Fill plunger with oil to high mark on oil gauge.
  - E. Replace fill plug.
  - F. Tighten air vent plug.
  - G. Carefully admit a small amount of air to system by

placing air control valve in supply or raise position and raising plunger NO MORE THAN 3 FEET.

H. Place air control valve in neutral position.

I. Loosen air vent plug with a screwdriver. Air will escape through air vent plug. When oil starts to escape, tighten vent plug. While piping is still exposed, apply soapy water to all pipe joints to test for leaks.

J. Place air control valve in exhaust position until plunger is completely lowered.

K. Remove oil fill plug and check oil level. Add oil if necessary.

**CAUTION** - Always place air control valve in exhaust position before removing pipe plug. Repeat bleed and refill procedure until no air escapes from air vent.

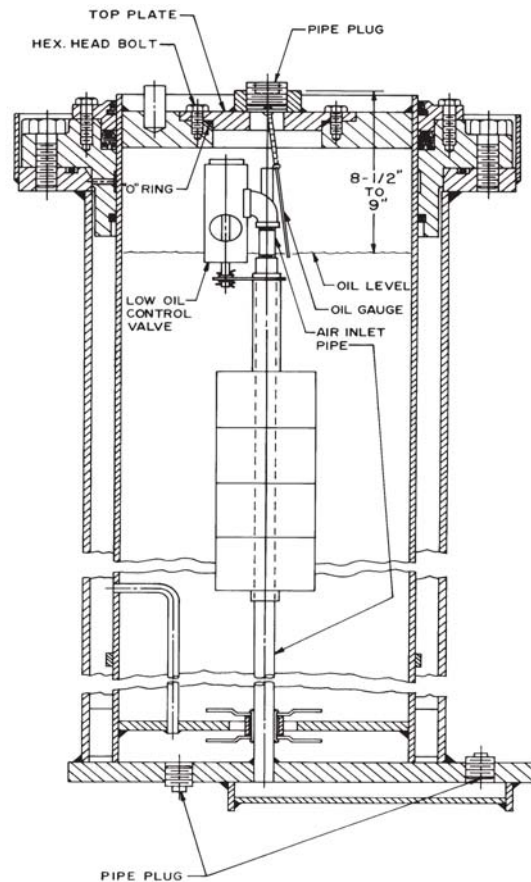
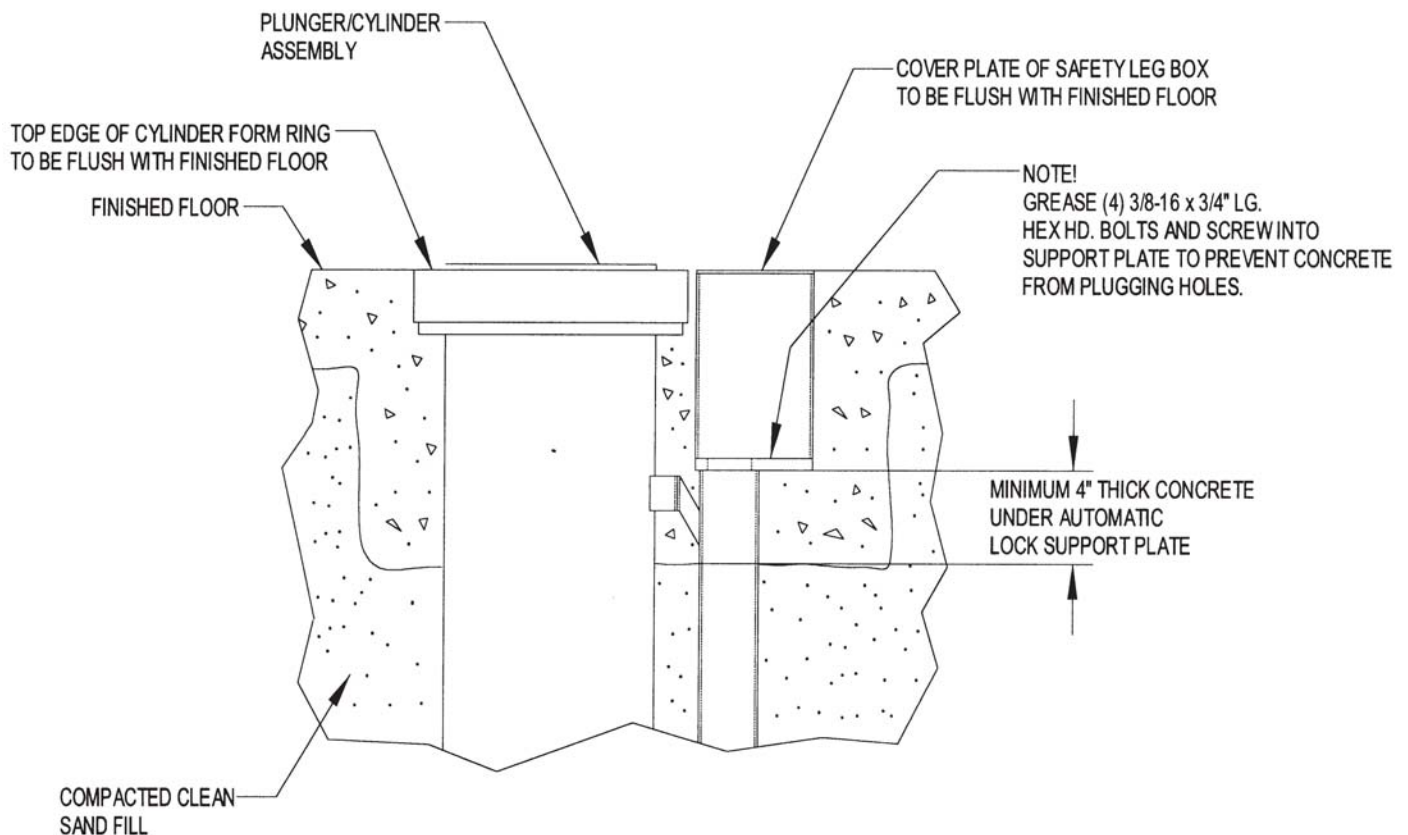


FIG. 6

10. Embed base of cylinder in 4" min. of concrete and at least 3" thick around cylinder. See Fig. 5.
11. After concrete has hardened around base of cylinder, back fill with clean sand. **(IMPORTANT: Do not allow foreign matter to contaminate fill.)** Tamp fill solidly, checking regularly to keep plunger exactly plum in all directions by laying level across top of plunger when making back fill. **THIS IS VERY IMPORTANT.**
12. Complete Concreting. Fill area outside of concrete form ring with concrete to floor level. Grease (4) 3/8-16 UNC X 3/4" Lg. hex hd. bolts and screw into support plate to prevent concrete from plugging holes. Be sure to pour concrete under Automatic Lock Support Plate. See Fig. 7. Avoid sloping floor towards cylinder head.

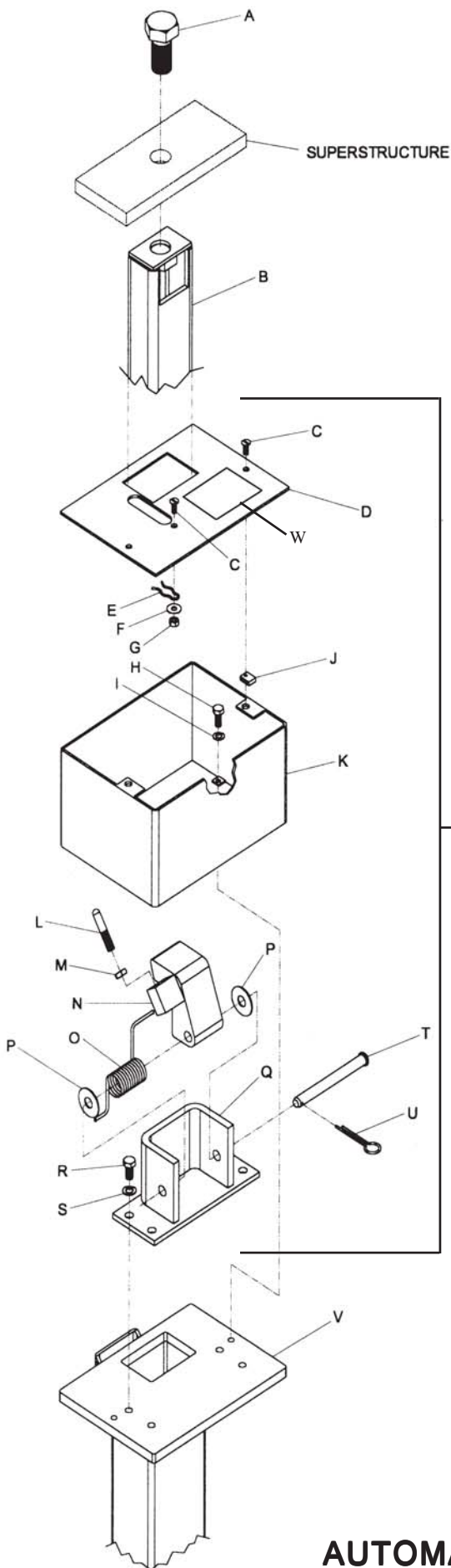
13. **FINAL ASSEMBLY** (See Fig. 8)
  - A. After concrete has hardened, assemble automatic lock components. See instructions on page 10. Reinstall inner tube to automatic lock assembly, engage safety dog to support the inner tube at its lowest position.
  - B. Refer to Fig. 8 for Models A-1AA1B & A-1AA3B, or to Fig. 4 for mounting hole pattern only, of models A-1AN1B or A-1AN3B, since MANITOWOC LIFTS does not supply the superstructures for these lifts.
  - C. For A-1AA1B & A-1AA3B Series lifts only. Position the crosshead (A) on the plunger by first locating the “fool-proof pin” in its proper location in the crosshead. Fasten the crosshead to the plunger, using (8) hex hd. bolts (B).
  - D. Lubricate both sides of swing arm washers (H) with a multipurpose grease and position on crosshead anchor plate.
  - E. Insert swing arm (J) into crosshead anchor plate (after applying grease to end of arm).
  - F. Grease and insert pivot bushing (L) and lock washer (K) into swing arm hole.
  - G. Secure with bolt (M).
  - H. Raise lift about 2 ft.
  - I. Put Lift Adapter Assembly (N) on swing arm (J).
  - J. Secure with lock washer (Q) and bolt (P).  
With lift still raised about 2 ft., fasten the inner post of the automatic lock (V) with bolt (C). Make sure all sides of inner post are parallel with sides of rectangular hole in cover plate.
  - K. After tightening all bolts, install plastic plugs (R), (S), and (T) into proper places.

14. **IMPORTANT**  
**OPERATING INSTRUCTIONS.**  
The permanent operating instructions along with inspection and maintenance instruction furnished with this lift should be permanently and conspicuously displayed in the lift control area. Automotive lifts should be operated by trained personnel only. If you do not know how to position or lift a vehicle properly, do not guess. Get training. Start by reading the operating instructions, the booklet “Lifting It Right”, and the “Automotive Lift Safety Tip” sheet furnished with the lift. Also refer to the vehicle manufacturer’s service manual for proper lift points and lifting procedures.
15. **IMPORTANT**  
**HOW TO ORDER REPLACEMENT PARTS.**  
Be sure to mention the lift model number and serial number in correspondence dealing with service information and when ordering replacement parts. This information is on the top of the plunger and cylinder assembly.
16. **IMPORTANT**  
Underground corrosion takes place in varying degrees throughout the United States and may cause a major problem with lift equipment. To protect underground lift components, MANITOWOC LIFTS recommends that an analysis of local soil conditions be obtained, and that a knowledgeable source be consulted relative to the implementation of an adequate corrosion control system. See MANITOWOC LIFTS warranty.



**INSTALLATION DETAIL**

FIG. 7



Code No.	No. Req.	Symbol No.	Description
A	1	K01914-35	1"-8 x 2" Hex Hd. Bolt
B	1	N23042	Safety Leg Weldment
C	3	K95104	1/4"-20 x 5/8" Flt. Slotted Hd. Screw
D	1	K95100	Cover Plate
E	1	K95083	Hairpin Clip
F	1	K02204	1/4" Flat Washer
G	1	Q10218-06	1/4"-20 Hex Nut Self Locking
H	2	K95105	5/16"-18 x 5/8" Hex Hd. Cap Screw
I	2	B-104-29	5/16" Lockwasher
J	2	K81038-24	1/4"-20 Speed Nut Type "U"
K	1	N23044	Box Assembly
L	1	K88435	Automatic Latch Handle
M	1	K01934	3/8"-16 Hex Jam Nut
N	1	K95088	Safety Dog Weldment
O	1	K95084	Spring
P	2	K95101	Spacer Washer
Q	1	K95099	Dog Mounting Assembly
R	4	K01901	3/8"-16 x 3/4" Hex Hd. Cap Screw
S	4	B-104-32	3/8" Lockwasher
T	1	K95085	Clevis Pin
U	1	A-493-15	Cotter Pin
V	1	N23045	Support Plate Assembly
W	1	K95221	Warning Label
X	1	K34368	Safety Dog Latch Kit(Less B, K & V)

### INSTALLATION

1. Attach hairpin clip (E) to underside of cover plate (D) using (1) 1/4-20 x 5/8 Lg. flat hd. screw (C), (1) self locking nut (G), and (1) flat washer (F).
2. Screw jam nut (M) on handle (L) and then screw handle (L) into safety dog (N) until 1-7/16" of it protrudes from the safety dog (N) (See Figure A, Below). Secure handle (L) in position with jam nut (M).

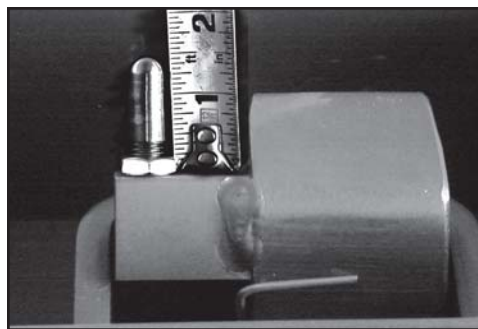


Figure A.

3. Assemble safety dog (N) with handle (L), spring (O), two spacer washers (P), clevis pin (T), and cotter pin (U) to dog mount weldment (Q), as shown. Note: Long leg of spring (O) should contact back of safety dog (N). Then install this assembly into box, and fasten to support plate (V) with four each 3/8-16 x 3/4 lg. hex hd. capscrew (R) and 3/8" lock washer (S).
4. Install cover plate with hairpin clip to box assembly.

### OPERATION AND ADJUSTMENT

**WARNING:** Latch does not automatically reset after lowering except at bottom of stroke.

1. Disengage the automatic lock by pulling the handle (L) back until it engages the hairpin clip (E). This holds the automatic lock open and the lift can be lowered.
2. The lock is reset automatically when the lift reaches the bottom of the stroke and the superstructure contacts the handle (L). If the lock does not reengage at the bottom of the stroke, it means that handle (L) does not protrude through the cover plate enough and must be adjusted out further until the superstructure contacts it.

### Note!

**WHEN ENGAGED AUTOMATIC LATCH HANDLE (L) MUST BE FLUSH OR BELOW COVER PLATE (D).**

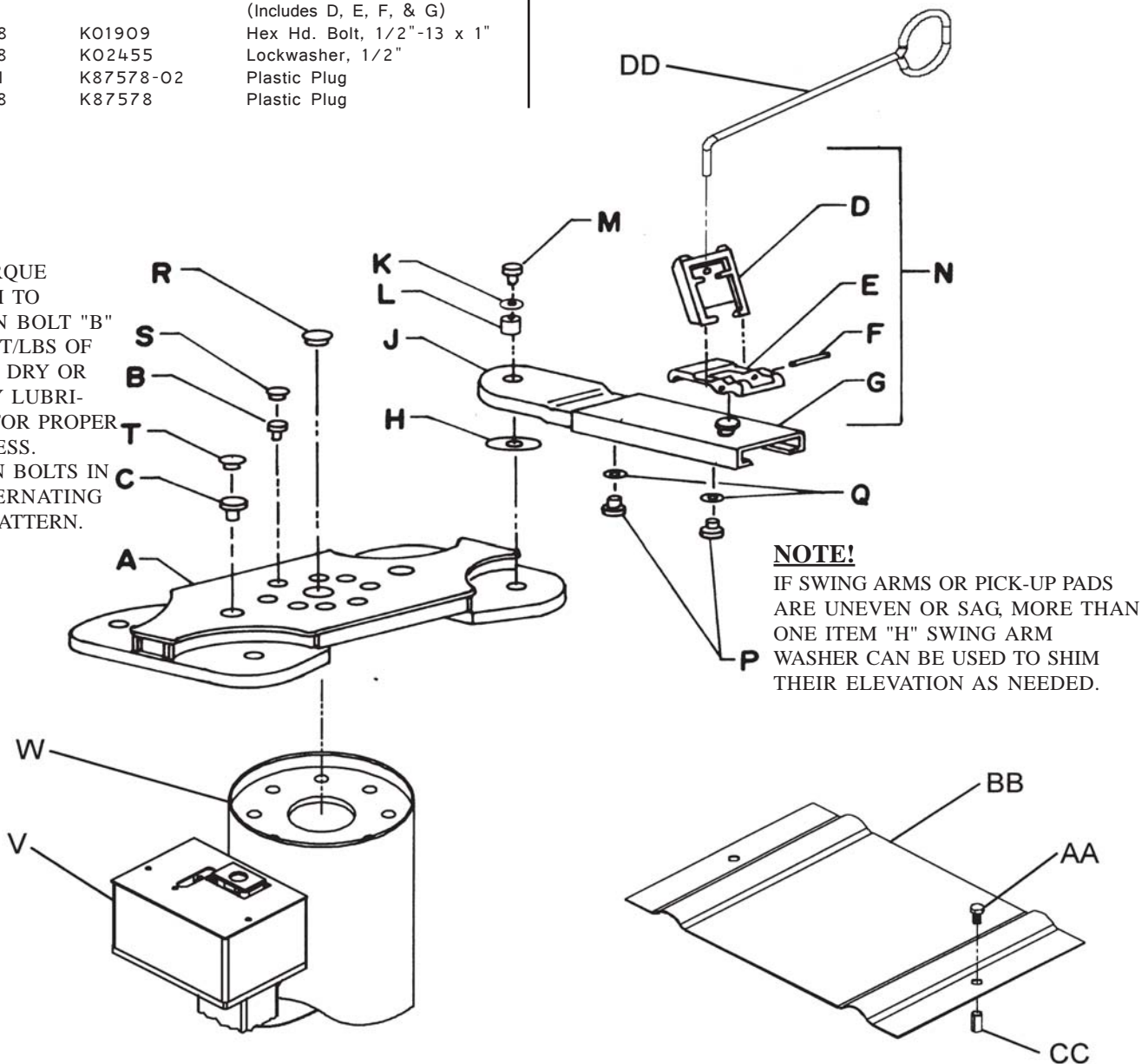
## AUTOMATIC LOCK ASSEMBLY

When ordering replacement parts, always mention lift model number and serial number.

**SERIES A-1AA1B  
SERIES A-1AA3B**

Code No.	No. Req.	Symbol No.	Description	Code No.	No. Req.	Symbol No.	Description
A	1	T13961	Crosshead Assembly	T	2	K87578-01	Plastic Plug
B	8	Q10412-15	Hex Hd. Bolt, 3/4"-10 x 2"	V	1		Automatic Lock Assy. (See Page 10 )
C	1	K01914-35	Hex Hd. Bolt, 1"-8 x 2"	W	1	T13952-01	Plunger/Cylinder Assy. (Semi Hyd.) (68" Rise) (See Page 12)
D	4	R16123-02	Pick-up Pad (With Protruded Ends)	W	1	T13946-01	Plunger/Cylinder Assy. (Full Hyd.) (68" Rise) (See Page 13)
E	4	R12709-02	Swivel Base Pad	AA	2	K03782	Hex Hd. Bolt 5/16"-18 x 1 3/4"
F	4	Q10038-04	Spiral Pin	BB	1	T07915	Wheel Stop
G	4	R12710-02	Sliding Base Assembly	CC	2	K79695	Expansion Shield
H	8	K87033	Swing Arm Washer	DD	1	K62563-01	Positioning Rod
J	4	R13252	Swing Arm				
K	4	K02215	Lockwasher 7/16" Hvy.				
L	4	K85825	Swing Arm Pivot				
M	4	K78272	Hex Hd. Bolt, 7/16"-14 x 2 1/4"				
N	4	N20366-01	Lift Adapter Assembly (Includes D, E, F, & G)				
p	8	K01909	Hex Hd. Bolt, 1/2"-13 x 1"				
Q	8	K02455	Lockwasher, 1/2"				
R	1	K87578-02	Plastic Plug				
S	8	K87578	Plastic Plug				

**NOTE!**  
USE TORQUE WRENCH TO TIGHTEN BOLT "B" TO 150 FT/LBS OF TORQUE DRY OR LIGHTLY LUBRICATED FOR PROPER TIGHTNESS. TIGHTEN BOLTS IN AN ALTERNATING CROSS PATTERN.

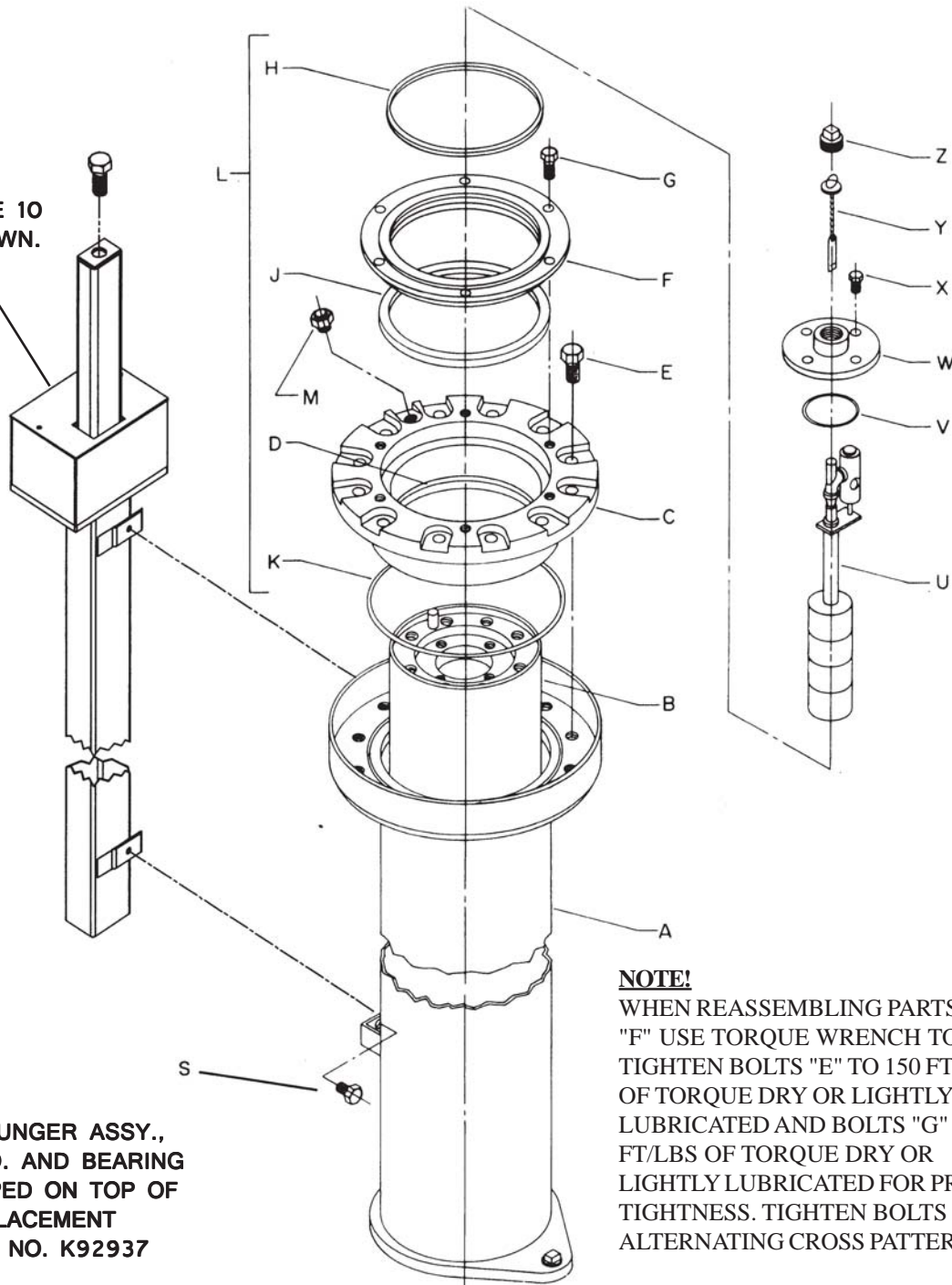


**NOTE!**  
IF SWING ARMS OR PICK-UP PADS ARE UNEVEN OR SAG, MORE THAN ONE ITEM "H" SWING ARM WASHER CAN BE USED TO SHIM THEIR ELEVATION AS NEEDED.

When ordering replacement parts, always mention lift model number and serial number.

Code No.	No. Req.	Symbol No.	Description	Code No.	No. Req.	Symbol No.	Description
A	1	T13952-01	Plunger & Cylinder Assy	L	1	K34301	Seal Kit (Includes D, H, J & K)
B	1	T13948-G1	Plunger Assembly (see note)	M	1	N21812-G1	Air Vent
C	1	T13943-03	Upper Bearing	S	2	K01901	Hex Hd. Bolt 3/8"-16 x 3/4"
D	1		Felt Wiper	U	1	R13365	Low Oil Control
E	12	Q10412-01	Hex Hd. Bolt 3/4"-10 x 2-1/4"	V	1	Q10068-32	O-Ring
F	1	R18229-02	Wiper Retainer	W	1	N18842	Cover
G	6	K01907	Hex Hd. Bolt 7/16"-14 x 1-1/2"	X	4	K47659	Hex Hd. Bolt 3/8"-16 x 7/8"
H	1		Wiper	Y	1	N18490-01	Oil Gauge
J	1		Seal	Z	1	K02284	Pipe Plug 1-1/4"
K	1		O-Ring				

**AUTOMATIC LOCK ASSEMBLY. SEE PAGE 10 FOR PARTS BREAKDOWN.**



**NOTE:**  
WHEN ORDERING PLUNGER ASSY., SPECIFY SYMBOL NO. AND BEARING CODE LETTER STAMPED ON TOP OF PLUNGER. FOR REPLACEMENT PLUNGER ORDER KIT NO. K92937

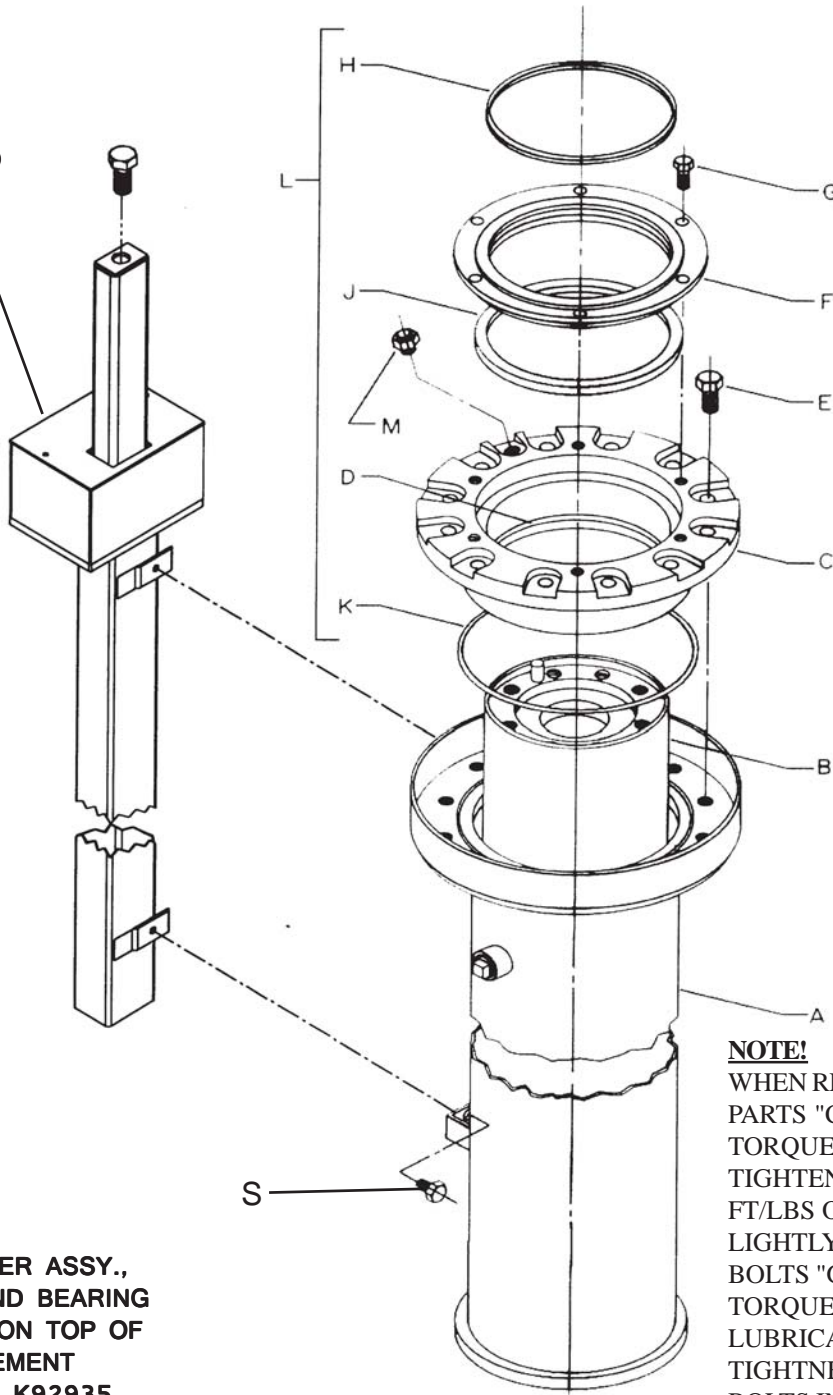
**NOTE!**  
WHEN REASSEMBLING PARTS "C" & "F" USE TORQUE WRENCH TO TIGHTEN BOLTS "E" TO 150 FT/LBS OF TORQUE DRY OR LIGHTLY LUBRICATED AND BOLTS "G" TO 30 FT/LBS OF TORQUE DRY OR LIGHTLY LUBRICATED FOR PROPER TIGHTNESS. TIGHTEN BOLTS IN AN ALTERNATING CROSS PATTERN.

## PLUNGER AND CYLINDER ASSEMBLY (SEMI HYDRAULIC)

When ordering replacement parts, always mention lift model number and serial number.

Code No.	No. Req.	Symbol No.	Description	Code No.	No. Req.	Symbol No.	Description
A	1	T13946-01	Plunger & Cylinder Assy	H	1		Wiper
B	1	T13935-G1	Plunger Assembly (see note)	J	1		Seal
C	1	T13943-03	Upper Bearing	K	1		O-Ring
D	1		Felt Wiper	L	1	K34301	Seal Kit (Includes D, H, J & K)
E	12	Q10412-01	Hex Hd. Bolt 3/4"-10 x 2-1/4"	M	1	N21812-G1	Air Vent
F	1	R18229-02	Wiper Retainer	S	2	K01901	Hex Hd. Bolt 3/8"-16 x 3/4"
G	6	K01907	Hex Hd. Bolt 7/16"-14 x 1-1/2"				

**AUTOMATIC LOCK ASSEMBLY. SEE PAGE 10 FOR PARTS BREAKDOWN.**



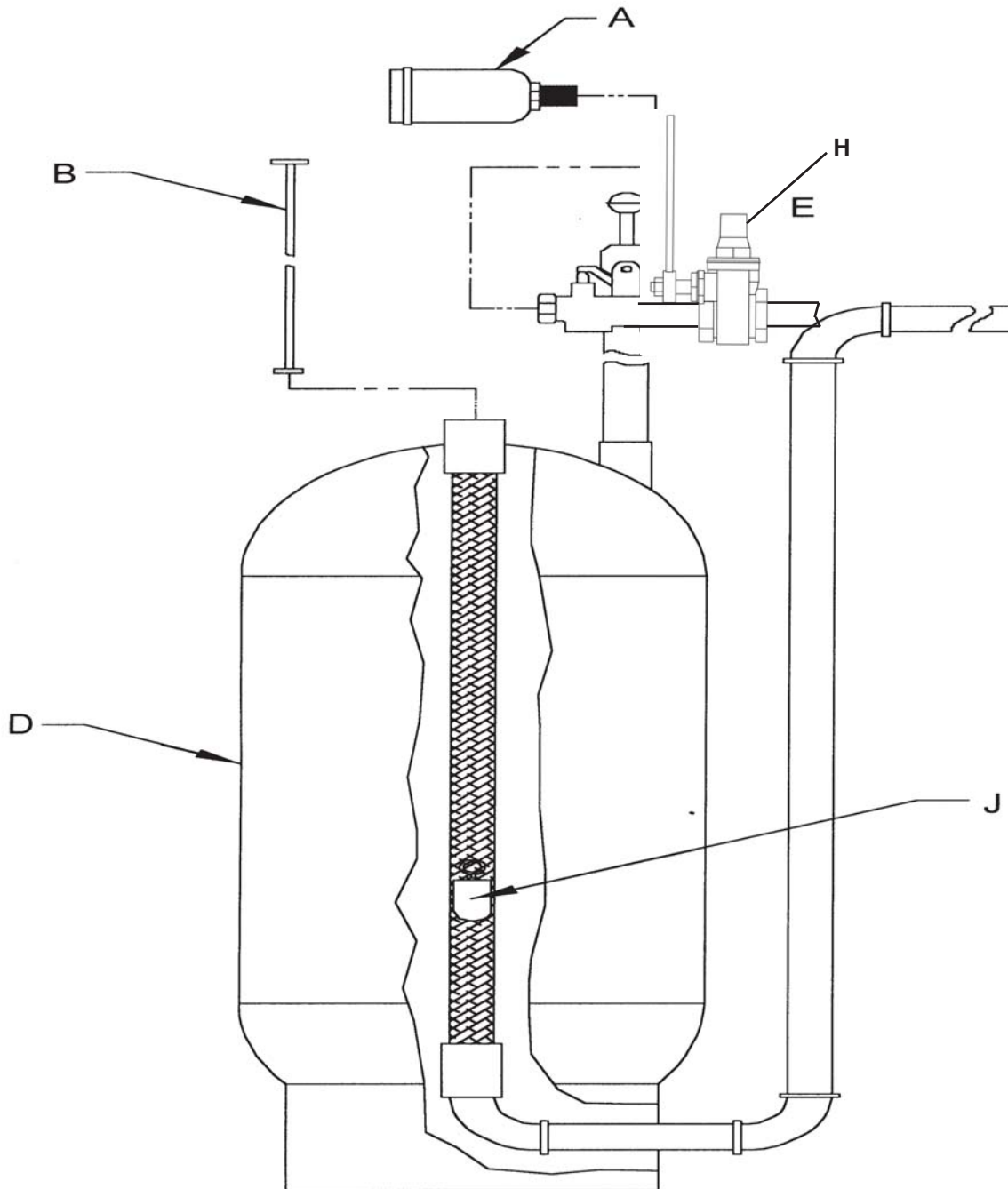
**NOTE:**  
 WHEN ORDERING PLUNGER ASSY., SPECIFY SYMBOL NO. AND BEARING CODE LETTER STAMPED ON TOP OF PLUNGER. FOR REPLACEMENT PLUNGER ORDER KIT NO. K92935

**NOTE!**  
 WHEN REASSEMBLING PARTS "C" & "F" USE TORQUE WRENCH TO TIGHTEN BOLTS "E" TO 150 FT/LBS OF TORQUE DRY OR LIGHTLY LUBRICATED AND BOLTS "G" TO 30 FT/LBS OF TORQUE DRY OR LIGHTLY LUBRICATED FOR PROPER TIGHTNESS. TIGHTEN BOLTS IN AN ALTERNATING CROSS PATTERN.

## PLUNGER AND CYLINDER ASSEMBLY (FULL HYDRAULIC)

When ordering replacement parts, always mention lift model and serial number.

Code No.	No. Req.	Symbol No.	Description
A	1	K81439	Muffler
B	1	N19687-01	Oil Gauge Assy. (1-1/2" Plug)
D	1	R19028-G1	Oil Tank with Oil Gauge Installed
E	1	K68832-01	Two-way Air Valve (See Page 15, Fig.9 & Fig. 10)
H	1	N23105	Oil Valve (See Page 15, Fig. 11)
J	1	K86957	Float Assy.



## OIL TANK, GAUGE, VALVES, ETC.

When ordering replacement parts, always mention lift model number and serial number.

## REPAIR PARTS

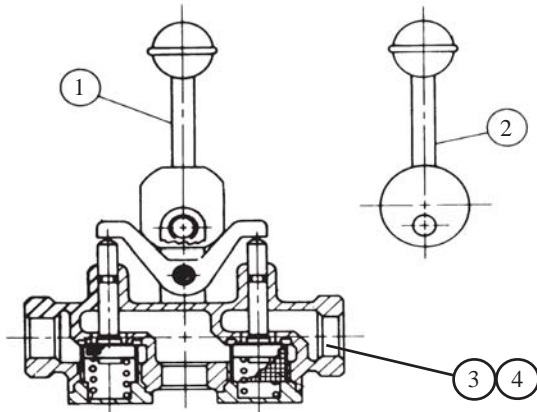


FIG. 9  
AIR VALVE

ITEM	PART #	DESCRIPTION
1	K34361	LOCKING HANDLE KIT(CONSISTS OF A CLEVIS PIN, RETAINING RINGS & HANDLE)
2	K34362	DEADMAN HANDLE KIT(CONSISTS OF A CLEVIS PIN, RETAINING RINGS & HANDLE)
3	K68832	LOCKING TYPE AIR VALVE w/ HANDLE (FULL HYDRAULIC WALL CONTROL)
4	K85963	DEADMAN TYPE AIR VALVE w/ HANDLE (SEMI-HYDRAULIC WALL CONTROL)

FOR AIR VALVE REPLACEMENT PARTS, DETERMINE MFG. OF VALVE:  
IF MFG. IS KINGSTON, USE PARTS LIST BELOW (FIG. 10)  
IF MFG. IS CONSOLIDATED BRASS AND VALVE HAS A TWO-PIECE HANDLE WITH A PLASTIC KNOB, USE PARTS LIST ABOVE (FIG. 9)

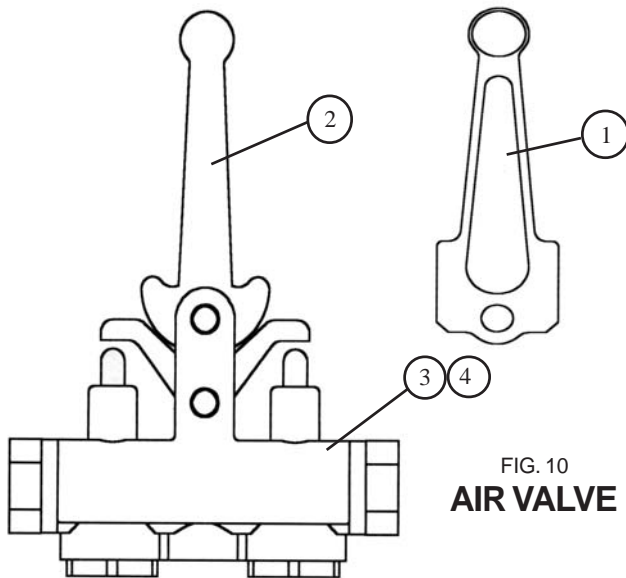


FIG. 10  
AIR VALVE

## REPAIR PARTS

ITEM	PART #	DESCRIPTION
1	K34363	LOCKING HANDLE KIT(CONSISTS OF A CLEVIS PIN, RETAINING RINGS & HANDLE)
2	K34364	DEADMAN HANDLE KIT(CONSISTS OF A CLEVIS PIN, RETAINING RINGS & HANDLE)
3	K68832-01	LOCKING TYPE AIR VALVE w/ HANDLE (FULL HYDRAULIC WALL CONTROL)
4	K85963-02	DEADMAN TYPE AIR VALVE w/ HANDLE (SEMI-HYDRAULIC WALL CONTROL)

## WALL CONTROL VALVE

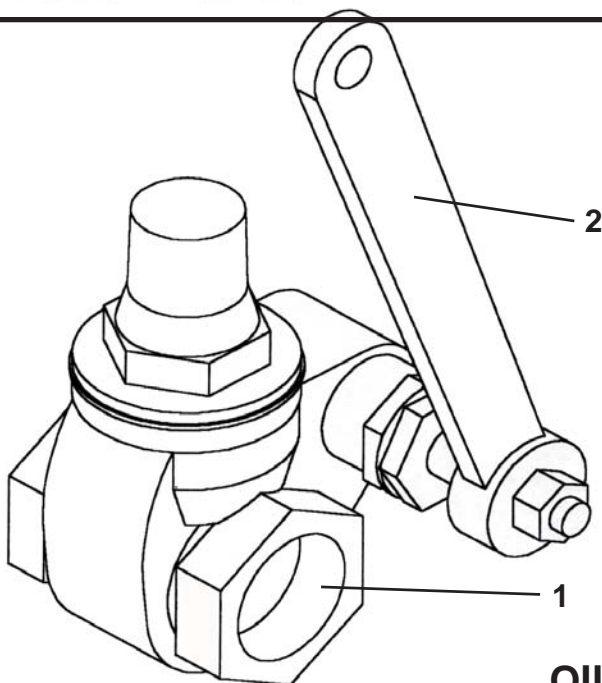


FIG. 11  
OIL VALVE

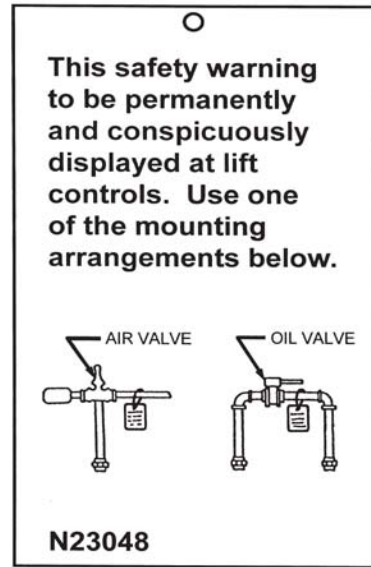
ITEM	DESCRIPTION	PART #
1	OIL VALVE W/HANDLE	N23105
2	REPLACEMENT HANDLE	N23105-01

**PULL HANDLE TO ACTIVATE  
SPRING RETURN**





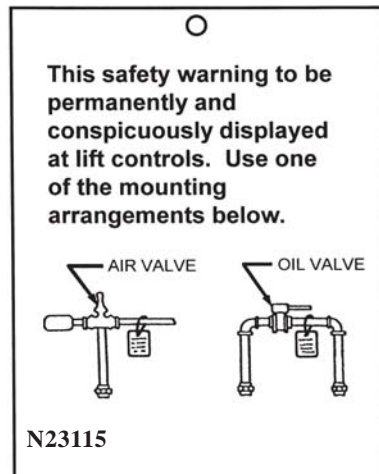
**FRONT**



**BACK**



**FRONT**











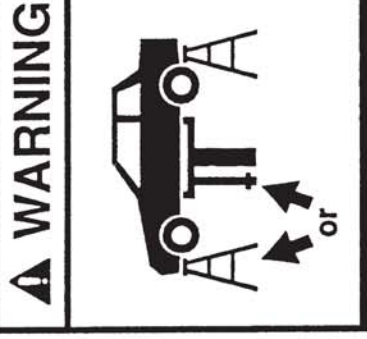
**BACK**

## **SAFETY WARNING PLACARDS**

# SAFETY WARNING LABELS FOR INGROUND LIFTS

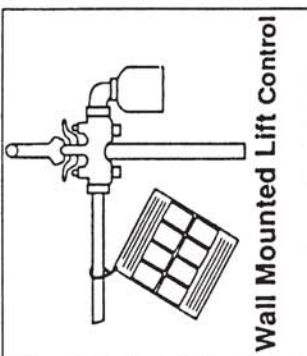
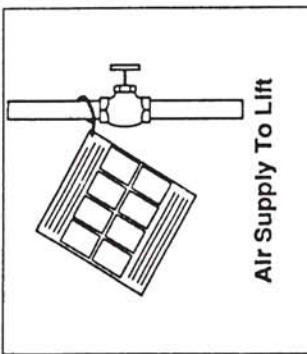
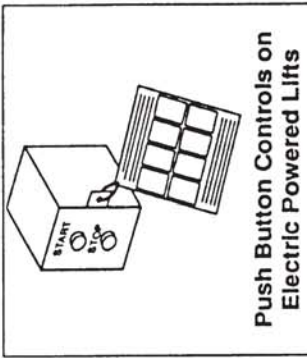
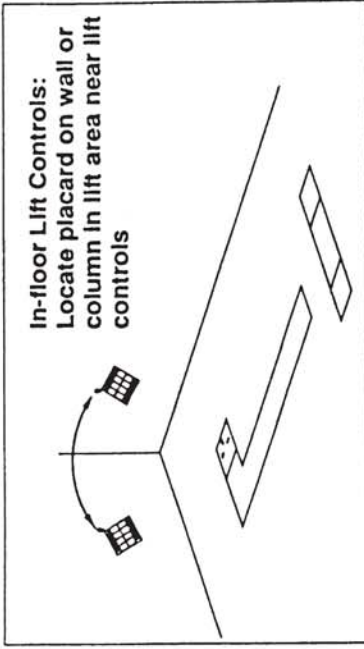
Lift Owner/User Responsibilities:

- A. This Safety Warning placard **SHALL** be displayed in a conspicuous location in the lift area
- B. Use one of the mounting arrangements illustrated on back of this placard
- C. These Safety Warning labels supplement other documents supplied with the lift.
- D. Be certain all lift operators read and understand these labels, operating instructions and other safety related information supplied with the lift.

	<b>▲ WARNING</b> Do not override self-closing lift controls. ©
	<b>▲ WARNING</b> DO NOT remove oil fill plug before reading manufacturer's manuals. ©
	<b>▲ WARNING</b> Position vehicle center of gravity over lift. ©
	<b>▲ WARNING</b> Remain clear of lift when raising or lowering vehicle. ©
	<b>▲ WARNING</b> Keep feet clear of lift while lowering. ©
	<b>▲ WARNING</b> Clear area if vehicle is in danger of falling. ©
	<b>▲ WARNING</b> Avoid excessive rocking of vehicle while on lift. ©
	<b>▲ WARNING</b> Chock wheel to prevent vehicle movement. ©
	<b>▲ WARNING</b> Use lift locking device or 4 stands to support vehicle. ©
<p>The messages and pictographs shown are generic in nature and are meant to generally represent hazards common to all automotive lifts regardless of specific style.</p> <p>Funding for the development and validation of these labels was provided by the Automotive Lift Institute, PO Box 1519 New York, NY, 10101-1519.</p> <p>They are protected by copyright. Set of labels may be obtained from ALI or its member companies.</p> <p>© 1992 by ALI, Inc. ALI/WL500W</p>	

## SAFETY WARNING LABELS

# TYPICAL PLACARD LOCATIONS



**CAUTION**

Use height extenders when necessary to ensure good contact.

**CAUTION**

Always use safety stands when removing or installing heavy components.

**CAUTION**

Use vehicle manufacturer's lift points.

**CAUTION**

Authorized personnel only in lift area.

**CAUTION**

Lift to be used by trained operator only.

The messages and pictographs shown are generic in nature and are meant to generally represent hazards common to all automotive lifts regardless of specific style.

Funding for the development and validation of these labels was provided by the Automotive Lift Institute, PO Box 1519 New York, NY, 10101-1519.

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**SAFETY INSTRUCTIONS**

Do not operate a damaged lift.

**SAFETY INSTRUCTIONS**

Proper maintenance and inspection is necessary for safe operation.

**SAFETY INSTRUCTIONS**

Read operating and safety manuals before using lift.

**CAUTION**

Auxiliary adapters may reduce load capacity.

## SAFETY WARNING LABELS



MANITOWOC LIFTS



An SVI Brand Product Line

# MANITOWOC LIFTS

[www.manitowoclifts.com](http://www.manitowoclifts.com)

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