CAUTION ! ! :

IMPORTANT !!

STEEL CYLINDERS PLACED UNDER GROUND MAY BE SUBJECT TO CORROSION DUE TO CHEMICAL OR ELECTROLYTIC ACTION IF INSTALLED IMPROPERLY. IF THE PROTECTIVE BARRIER IS DAMAGED THE RATE OF DETERIORATION WILL VERY AT EACH LOCATION. CANTON ELEVATOR INC. CAN ASSUME NO LIABILITY FOR CYLINDER FAILURE WHICH IS CAUSED BY IMPROPER INSTALLATION (WHICH COMPROMISES FACTORY APPLIED CORROSION PROTECTION) IN A CORROSIVE OR DESTRUCTIVE ENVIRONMENT. FINAL CONDITION OF CYLINDER PROTECTIVE WRAP IS THE RESPONSIBILITY OF THE ELEVATOR INSTALLER. CONTACT THE FACTORY IF YOU HAVE ANY QUESTIONS OR CONCERNS.

RAM PACKER:

HYDRAULIC JACK UNITS WITH CYLINDER LENGTHS IN EXCESS OF 15 ft WHICH ARE SHIPPED ASSEMBLED USUALLY EMPLOY A PACKER TO SECURE THE RAM DURING SHIPMENT. THE PACKER IS INSTALLED ON THE RAM AT MID–LENGTH. IF A RAM PACKER IS EMPLOYED, A CARD READING " CAUTION – RAM PACKER INSTALLED " WILL BE AFFIXED TO THE CYLINDER. IF A RAM PACKER IS USED IT MUST BE REMOVED PRIOR TO INSTALLING THE JACK UNIT.

IMPORTANT !!

– TO ENSURE THAT THE PROPER CYLINDER IS BEING INSTALLED, CHECK THE JOB NUMBER (MARKED ON THE PACKAGING AND THE CYLINDER), AND MEASURE CYLINDER LENGTH AND COMPARE AGAINST LENGTH SHOWN ON ENCLOSED SHEET CY1.

– LOCATE JACK UNIT AS SHOWN ON PLAN VIEW OF ELEVATOR LAYOUT.

– DO NOT OPERATE ELEVATOR UNTIL WELL HOLE IS BACKFILLED. PIT SUPPORT CHANNEL WAS NOT DESIGNED TO HANDLE LOAD WITHOUT FILL BELOW IT.

KEEP PARTS CLEAN: CLEANLINESS IS OF PRIME IMPORTANCE FOR HYDRAULIC ELEVATOR INSTALLATIONS. ANY FOREIGN MATTER CAN SEVERELY DAMAGE PARTS IN THE HYDRAULIC SYSTEM.

A. – CYLINDER INSTALLATION

During unloading, handling, and installation, continually monitor condition of cylinder corrosion protective wrapping and immediately repair any damaged areas.

1. If cylinder is in more than one section, sections are to be assembled with either threaded line coupler(s) or slip weld joint(s) refer to Section E "Multi–Section Cylinder Assembly" of these instructions.
2. Double wrap assembled cylinder joints with supplied corrosion protective wrap in accordance with container instructions. Overlap factory applied protective wrap. Carefully inspect entire cylinder for cuts or tears in the protective wrap. Any faults must be double wrapped prior to installation. Factory applied wrap is checked for integrity after loading on truck at factory. Final condition and integrity of corrosion wrap must be verified by the installer.
3. Set cylinder plumb and to the height specified on sheet CY1. (Jack should always be set to the dimension shown from the top of the cylinder flange to the finish floor of the bottom landing.) See Section D " Recommended Plumbing Method " for procedure for plumbing jack unit. CYLINDER MUST BE SET ABSOLUTELY PLUMB!!
4. Cylinder assembly is factory straightened. For proper operation installed cylinder must be straight within 1/4 inch total variation over its entire length.
5. Back fill with CLEAN sand or fill evenly all around the cylinder. If well hole has water, the back fill will cause the water level to rise and may cause the cylinder to "float" when partially backfilled. If there is any water in the hole, or if the cylinder is to be left without ram or platform weight, partially fill the cylinder with oil prior to back filling to prevent "floating". The plumbness should be checked every few feet of back fill to ensure that the cylinder remains in the proper plumb position. Prior to installation of pit floor around cylinder, cross brace cylinder to pit walls with timbers to prevent movement during installation of floor.

B. – RAM INSTALLATION

1. If ram is in more than one section refer to Section F " Assembly of Multi–Section Rams " of this instruction.
2. Ram may be hoisted using a swivel.
3. If the ram is provided for present travel, with the cylinder for future travel, ensure that the "stopper" is lowered into the cylinder before the ram with the lifting hole "up".
4. Carefully lower the ram into the cylinder. Check the entire length and circumference for burrs or nicks. Remove any burrs or nicks with a fine file and then polish the filed area.

C. – HEADBEARING INSTALLATION

Also see enclosed sheet CY4.

1. Install bearing ring down over ram and seat on cylinder flange.
2. Install the O–Ring in the groove on top of the cylinder flange. Ensure the cleanliness of the groove and the O–Ring.
3. Thoroughly lubricate both the ram and the packing with hydraulic oil or petroleum jelly. While rotating the packing, slide it down over the top of the ram.
4. Install the tapered end of the wiper ring into the head. Slide the head and wiper ring down over the ram and the packing with a rotating motion far enough to engage the cap screws. Check O–Ring seating prior to tightening cap screws. Tighten cap screws evenly in an opposed pattern.
5. Note that cylinder will need to be bled prior to use.
6. The head bearing should be repacked using the additional supplied packing, after the completion of all hatch construction, and prior to turning the elevator over for regular operation.

AFTER JACK UNIT IS COMPLETELY INSTALLED

– Install drip fitting in head and route plastic tube to 5 Gallon drip can in pit (or install oil reclaiming unit shown at Section G of this instruction).

– Anchor pit support channel to pit floor after plumbing and alignment using wedge anchors supplied.

– Affix supplied Buffer Tags to Buffer Assembly in the general location shown on sheet CY6. (if tags were supplied loose).

– If ram contacts inside of cylinder during operation, rotate ram 90 degrees in cylinder.

D. – RECOMMENDED PLUMBING METHOD

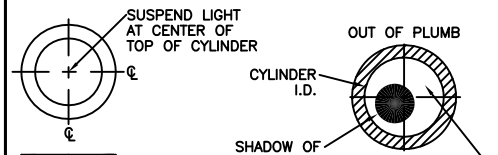


Fig. 2.

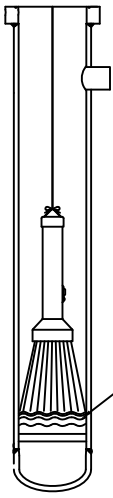


Fig. 1.

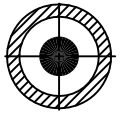


Fig. 3.

Secure a reliable cord to the end of a light source (flashlight). The cord should be tied to the light so that the light hangs straight down. Add a sufficient quantity of oil to the cylinder to completely cover the safety bulkhead at the bottom of the cylinder (note that the oil level will drop due to the orifice in the safety bulkhead–replenish oil as needed). Secure the free end of the cord to a stable point at or above the top of the cylinder. Lower the flashlight down into the cylinder until the pattern of the beam is equal in size to the I.D. of the cylinder (see Fig. 1.). At the top of the cylinder, the cord must be at the exact center of the cylinder (see Fig. 1.). Looking down into the cylinder, the light will be reflected up from the surface of the oil. The flashlight will be seen as a dark circle (see Fig. 2.). If the shadow of the flashlight is not perfectly centered with respect to the I.D. of the cylinder, the cylinder is out of plumb (see Fig. 2.). Reorient the cylinder as required so that the shadow of the flashlight is exactly centered (see Fig. 3.). When the shadow of the flashlight is like that in Fig. 3. the cylinder is plumb. Recheck the plumb of the cylinder frequently during back filling of the well hole.

E. – MULTI–SECTION CYLINDER ASSEMBLY

I THREADED LINE COUPLER JOINT

1. While monitoring the condition of cylinder corrosion protection wrap, lower bottom section of cylinder into well hole and secure a clamp (see Section J of this instruction for suggested clamp construction) 4 to 5 feet below the female joint. Lower the cylinder until the clamp rests on the pit floor. If the protective wrap was damaged–repair it before proceeding.
2. Assembled cylinder joints shall be field welded by a certified welder and leak tested before the cylinder is installed in the jack well hole casing.
3. Align cylinder sections so that the threads may be started by hand. Make sure the the coupler is not "cross threaded".
4. If using suggested clamps, install a clamp about 6 inches from each section end. After hand tightening, use a large hammer to drive the clamp on the upper section in a clockwise direction until joint is completely tight, and marks are aligned, or use commercially available chain wrenches. Repeat the above 4 steps for each joint of the cylinder.
5. The assembled cylinder must be straight to within 1/4 inch total variation over its entire length.
6. The completely assembled cylinder must be leak checked prior to setting in accordance with Section H of this instruction.

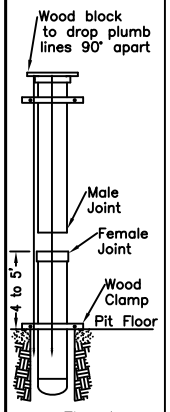


Fig. 4.

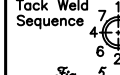


Fig. 5.

(Only for Slip Collar Weld Joint Jobs)

II If you have a Slip Collar Weld joint:

1. While monitoring the condition of the cylinder corrosion protective wrap, lower bottom section of cylinder into well hole and secure a clamp (see Section J J for suggested clamp construction) 4 to 5 feet below the female joint. Lower the cylinder until the clamp rests on the pit floor. If the protective wrap was damaged – repair it before proceeding.
2. Thoroughly clean each joint section with a quality solvent (such as mineral spirits), and wipe completely dry. Lower next section into collar and turn upper section slightly to ensure proper seating.
3. Drop two plumb lines from the top of the upper section and set at 90 degrees apart along the sides of cylinder. Plumb lines should extend a minimum of 10 feet below the joint. Check plumbness of the sections and realign as necessary.
4. Using a low heat setting, tack weld 1/4 " to 3/8 " wide at approximately 3 " intervals around the joint (see Fig. 5.). Remove all slag.
5. PRIOR TO CHECKING CYLINDER PLUMBNESS ALLOW THE WELDS TO COOL.
6. Check plumbness of sections, and if required, replumb by tack welding opposite the out of plumb condition. Remove all slag.
7. Using low heat setting, stagger welds about 1 " long around joint between tack welds. Remove all slag. Check plumbness of cylinder constantly as you are welding.
8. Using low heat setting, make a light continuous weld around joint until weld is built up to thickness of collar. Remove all slag.

Continued above.....

II If you have a Slip Collar Weld joint (continued):

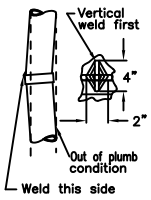


Fig. 6.

(Only for Slip Collar Weld Joint Jobs)

Check plumbness of cylinder constantly as you are welding.

ASSEMBLED (COOLED) CYLINDER MUST BE STRAIGHT TO WITHIN 1/4 INCH TOTAL VARIATION OVER ITS ENTIRE LENGTH.

To Correct Out of Plumb Condition

9. If cylinder is out of plumb after completing Step # 8, correct the misalignment by welding light beads, at a low heat setting opposite the out of plumb condition as shown in Fig. 6. at left. Repeat the above 9 steps for each joint of the cylinder.
10. The completely welded cylinder must be leak checked prior to setting, in accordance with Section H of this instruction.

F. – MULTI–SECTION RAM ASSEMBLY

1. Clean the threads and joint thoroughly with a quality solvent (such as mineral spirits), and wipe completely dry.
2. Thoroughly lubricate male & female step joints, O–Ring, & O–Ring groove with hydraulic oil or petroleum jelly. Install O–Ring in groove on male section.
3. Assemble wood clamp wrench (see Section J for suggested clamp construction) on each ram section as shown in Fig. 7. Use care in tightening wood clamp so as not to deform the hollow ram sections.
4. Lubricate threads liberally with white lead or equal.
5. Align joint in such a manner that the threads may be started by hand. Make sure the joint is not "cross threaded", and that the O–Ring on the male section is not damaged during engagement. After hand tightening, use a large hammer to drive the upper wood clamp in a clockwise direction to tighten the joint. Continue tightening the joint in this manner until the two small alignment (center punch) marks are aligned perfectly.
6. After assembling, carefully inspect the joint for defects such as a knife edge or a slight step between the joined sections. If found, remove all such defects with a fine file and polish filed area as required. Repeat the above 6 steps for each joint.

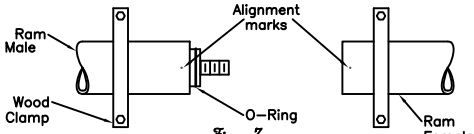


Fig. 7.

STANDARD (IN–GROUND) JACK UNIT

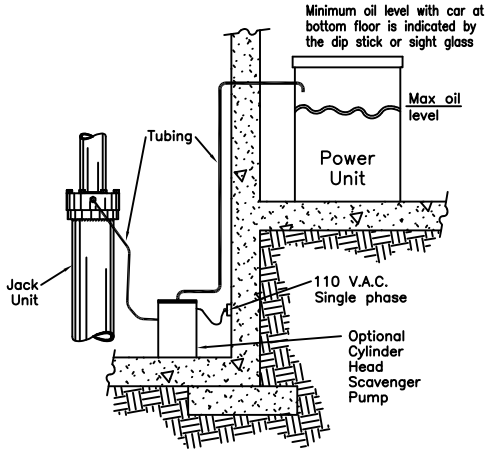
CANTON ELEVATOR

HYDRAULIC JACK UNIT INSTALLATION INSTRUCTIONS

READ THESE INSTRUCTIONS CAREFULLY BEFORE INSTALLING JACK UNIT

iS.101–2 4–27–12

G. – OIL RECLAIMING LINE INSTALLATION

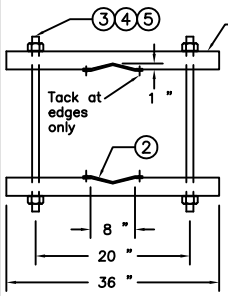


1. Locate and mount the optional cylinder head scavenger pump either on the pit floor as shown, or on the jack unit itself (depending on the pump). Note the 110 Volt power requirement.
2. In the side of the Power Unit tank drill a hole above the maximum oil level which will accomodate the supplied. tubing.
3. Route and connect as required the supplied tubing from the cylinder head drip ring fitting to the scavenger pump inlet. Route and connect as required the supplied tubing from the scavenger pump outlet to the drilled hole in the Power Unit tank.
4. Note that if the optional cylinder head scavenger pump was not supplied, simply connect the supplied tubing from the cylinder head drip ring fitting to the 5 gallon oil collection can.

H. – CYLINDER LEAK CHECK INSTRUCTIONS

1. Place cylinder head flange O–Ring in groove on cylinder head.
2. Place a circular piece of 10 Ga. sheet metal over the O–Ring. Sheet metal should be sized so as to completely cover the installed O–Ring and fit inside of the installed head bolts. Make sure the sheet metal has no burrs or rough spots which could damage the O–Ring.
3. Place the Head Ring on the sheet metal. Install the Head cap screws and tighten.
4. Attach a source of compressed air to the cylinder by means of a nipple with an air hose fitting installed in the cylinder oil outlet fitting.
5. Elevate cylinder until the lowest joint is approximately 4 to 5 feet above the pit floor.
6. Pressurize the cylinder to 60 P.S.I. and maintain.
7. When pressurized, apply oil all over the joint and check for air bubbles. The presence of air bubbles indicates a leak.
8. Note that before attempting to repair any leak, the air pressure in the cylinder must be relieved. After repairing the leaking joint, repressurize the cylinder and recheck. After repairing a joint, recheck the cylinder for plumbness. Repeat the above steps as required for all the joints.

J. – WOOD CLAMP WRENCH ASSEMBLY



Bill of Material

Item	Qty	Description
1	2	4" X 4" wood
2	2	4" X 16" non–abrasive leather
3	2	3/4" All Thread (length to suit)
4	4	3/4" Hex Nut
5	4	3/4" Flat Washer

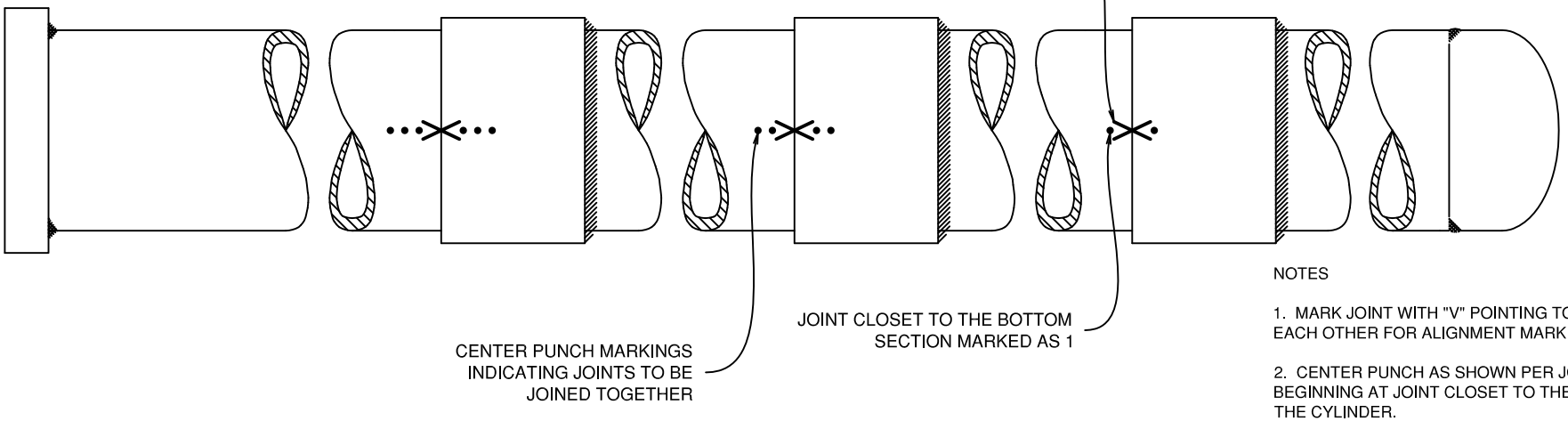
NOTE: Glue & tack leather to wood.

CANTON ELEVATOR

INSTALLATION INSTRUCTIONS

READ THESE INSTRUCTIONS CAREFULLY BEFORE INSTALLING EQUIPMENT

IS.201 12–3–12



NOTES

1. MARK JOINT WITH "V" POINTING TOWARDS EACH OTHER FOR ALIGNMENT MARK AS SHOWN.

2. CENTER PUNCH AS SHOWN PER JOINT NUMBER BEGINNING AT JOINT CLOSET TO THE BOTTOM OF THE CYLINDER.

3. IF JOB IS DUAL JACK UNITS, ALSO PERMANENTLY MARK EACH JOINT AS "JACK 1" OR "JACK 2".

4. MAKE SURE MARKING IS CLEARLY VISIBLE ON FINAL CYLINDER PRIOR TO SHIPMENT.

CANTON ELEVATOR INCORPORATED

CYLINDER MARKING PROCEDURE

(ALL THREADED CYLINDERS)