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 THE CYLINDER LENGTH AND COMPARE AGAINST THE LENGTH SHOWN ON ENCLOSED SHEET CY1.

IMPORTANT !! — LOCATE THE JACK UNIT AS SHOWN ON THE PLAN VIEW OF THE ELEVATOR LAYOUT.

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 collar(s) (refer to Section E "Assembly of Multi–Section Cylinders" of these instructions).
2. If partial well holes are used (see CY1 sheet), 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 TO THE HEIGHT SPECIFIED ON SHEET CY1. (Cylinder should always be set to the dimension shown from the top of the cylinder head flange to the finish floor of the bottom landing).
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. CYLINDER MUST BE ALIGNED PERFECTLY PARALLEL WITH THE INSTALLED ELEVATOR GUIDE RAILS. See Section D "Recommended Alignment Method" for procedure for aligning jack unit to guide rails. (Ensure that guide rails are plumb and parallel).

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. 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 CYLINDER BASE PLATE TO PIT FLOOR AFTER ALIGNMENT USING WEDGE ANCHORS SUPPLIED.

– Affix supplied Buffer Tags to Cylinder Assembly in the general location shown on sheet CY3 (if tags were shipped loose).

D. – RECOMMENDED ALIGNMENT METHOD

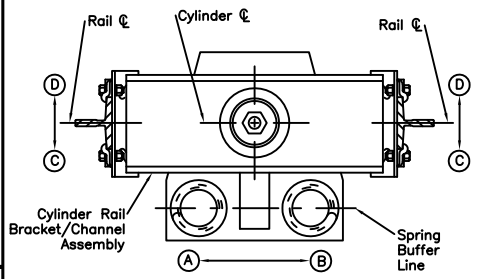
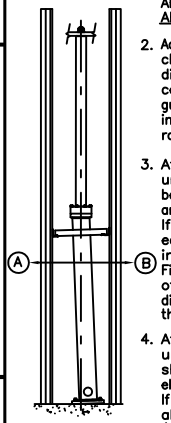


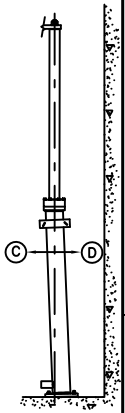
Fig. 1.

1. BEFORE BEGINNING ALIGNMENT PROCEDURE, ENSURE THAT THE ELEVATOR GUIDE RAILS ARE SECURELY INSTALLED AND ABSOLUTELY PLUMB !
2. Adjust the cylinder rail bracket/channel assembly in the C–D direction so that the cylinder centerline is aligned with the guide rails' centerlines as shown in Fig. 1. Secure the cylinder rail clip fasteners.
3. At the bottom of the jack unit, measure the distances between the cylinder centerline and the guide rails' centerlines. If these distances are not equal the jack is misaligned in the A–B direction (see Fig. 2.). Relocate the bottom of the jack unit in the A–B direction as required to center the cylinder.
4. At the bottom of the jack unit, the cylinder centerline should be aligned with the elevator guide rails' centerlines. If not, the jack unit is misaligned in the C–D direction (see Fig. 3.). Relocate the bottom of the jack unit in the C–D direction as required so that the cylinder centerline and the guide rails' centerlines are aligned.



Misalignment in the A–B direction

Fig. 2.



Misalignment in the C–D direction

Fig. 3.

E. – MULTI–SECTION CYLINDER ASSEMBLY

I THREADED LINE COUPLER JOINT

1. While monitoring the condition of cylinder corrosion protection wrap (if the job has partial well holes) lower bottom section of cylinder into the pit and rest base plate on pit floor. If the protective wrap was damaged–repair it before proceeding. Wood clamps (see Section J of this instruction for suggested clamp construction) may be installed on cylinder sections to facilitate handling.
2. Thoroughly clean each joint section with a quality solvent (such as mineral spirits), and wipe completely dry. Apply supplied Expando and water mixture to male and female pipe threads.
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 clamps 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 the marks are aligned and THE CYLINDER RAIL BRACKET/CHANNEL ASSY IS ALIGNED WITH THE BUFFER SPRINGS AS SHOWN IN FIGURES 1 AND 4.
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.

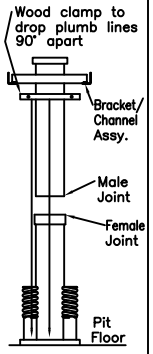


Fig. 4.

Tack Weld Sequence

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 (if the job has partial well holes) lower bottom section of cylinder into the pit and rest base plate on pit floor. If protective wrap was damaged–repair it before proceeding. Wood clamps (see Section J of this instruction) may be installed on cylinder sections to facilitate handling.
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 to ensure proper seating, and TO ALIGN RAIL BRACKET/CHANNEL ASSEMBLY WITH BUFFER SPRINGS AS SHOWN IN FIG.s 1 AND 4.
3. Drop two plumb lines from a wood clamp (see Section J) as shown in Figure 4. and set 90 degrees apart along the sides of the cylinder. Plumb lines should extend as far as possible below the joint. Check plumbness of sections and realign if needed.
4. RECHECK ALIGNMENT OF RAIL BRACKET/CHANNEL, then using a low heat setting tack weld 1/4 to 3/8 " wide at 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. Check plumbness of cylinder constantly as you are welding. Continued above.....

II If you have a Slip Collar Weld Joint (cont.)–

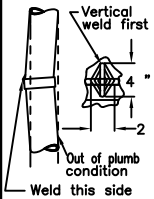


Fig. 6.

(Only for Slip Collar Weld Joint Jobs)

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.

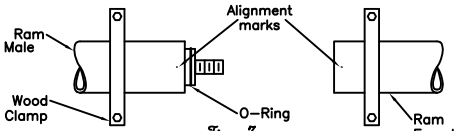


Fig. 7.

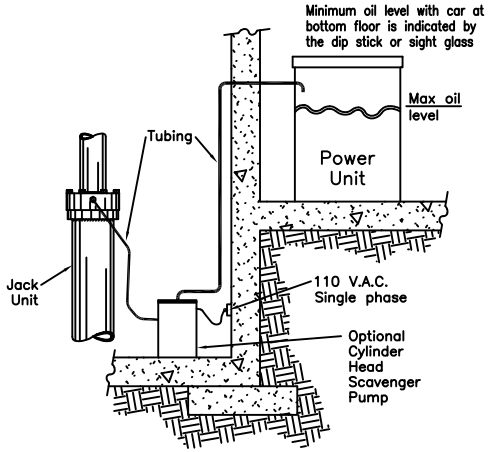
HOLELESS CANTILEVER JACK UNIT

CANTON ELEVATOR

HYDRAULIC JACK UNIT INSTALLATION INSTRUCTIONS

READ THESE INSTRUCTIONS CAREFULLY BEFORE INSTALLING JACK UNIT

G. – OIL RECLAIMING LINE INSTALLATION

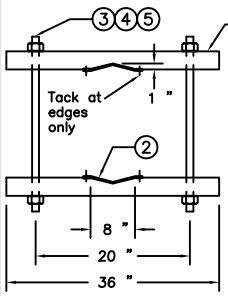


1. Locate and mount the optional cylinder head scavenger pump either on the pit floor as shown, or on the jack unit itself (depending on the pump). Note the 110 Volt power requirement.
2. In the side of the Power Unit tank drill a hole above the maximum oil level which will accomodate the supplied. tubing.
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

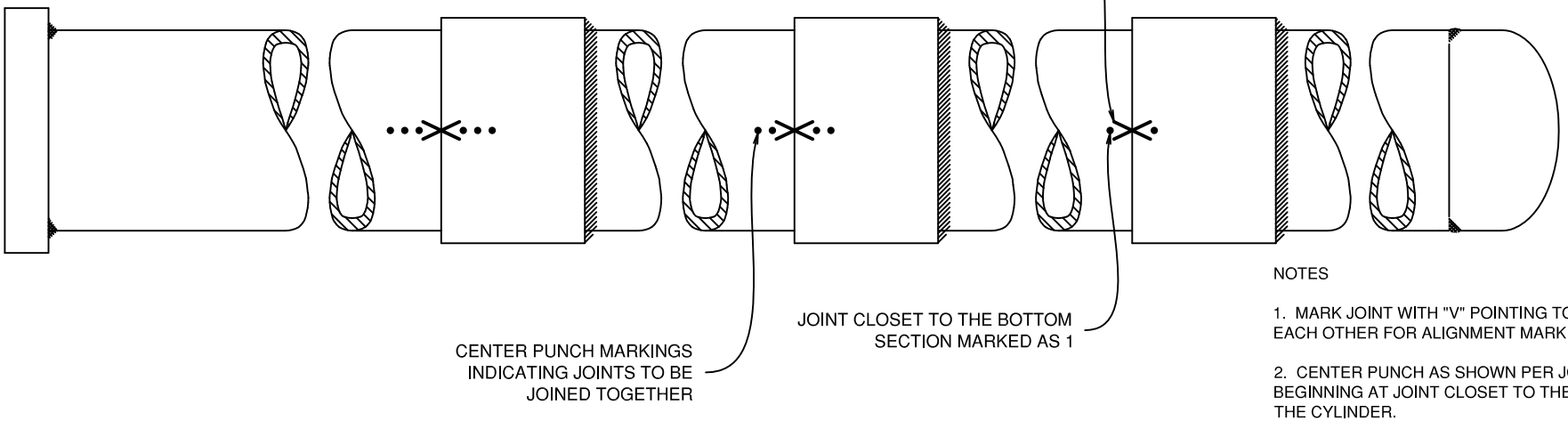
NOTE: Glue & tack leather to wood.

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)