CAUTION ! ! : STEEL CYLINDERS INSTALLED IN A DESTRUCTIVE ENVIRONMENT MAY BE SUBJECT TO CORROSION DUE TO CHEMICAL OR ELECTROLYTIC ACTION. THE RATE OF DETERIORATION WILL VARY AT EACH LOCATION. CANTON ELEVATOR Inc. CAN ASSUME NO LIABILITY FOR CYLINDER FAILURE WHICH IS CAUSED BY INSTALLATION IN A CORROSIVE OR DESTRUCTIVE ENVIRONMENT.

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 UNITS 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

BEFORE BEGINNING INSTALLATION OF THE JACK UNIT:

MEASURE THE PIT DEPTH, FLOOR TRAVEL, AND CLEAR OVER–HEAD AT JOB SITE. MAKE SURE THESE CRITICAL DIMENSIONS MATCH WHAT WE HAVE SHOWN ON OUR DRAWINGS. IF ANY OF YOUR HOISTWAY DIMENSIONS ARE DIFFERENT – DO NOT PROCEED WITH YOUR INSTALLATION UNTIL YOU CONTACT THE FACTORY!!

INSTALL JACK BOTTOM OIL LINE CONNECTION PIPE BEFORE SETTING THE JACK UNIT. USE EXPANDO OR EQUAL MIXTURE ON THREADED CONNECTION. BOTTOM CONNECTION RISER PIPE GOES INSIDE SQUARE TUBE JACK POST.

1. If cylinder is in more than one section, sections are to be assembled with either slip weld joint(s) or threaded line coupler(s) (refer to Section E "Assembly of Multi–Section Cylinders" of these instructions).
2. SET CYLINDER TO THE HEIGHT SPECIFIED ON SHEET C1. (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).
3. Cylinder assembly is factory straightened. For proper operation installed cylinder must be straight within 1/4 inch total var–iation over its entire length.
4. 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. – HEAD/BEARING INSTALLATION

See Sheet CY4. in this manual.

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. Then install the phenolic back–up ring under the wiper as shown. Slide the Head, Wiper, and Phenolic Ring down over the Ram and the Packing, with a rotating motion, far enough to engage the Cap Screws. Verify proper O–Ring seating in groove 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 STAND ASSY. TO PIT FLOOR AFTER ALIGNMENT USING WEDGE ANCHORS SUPPLIED.

D. – RECOMMENDED ALIGNMENT METHOD

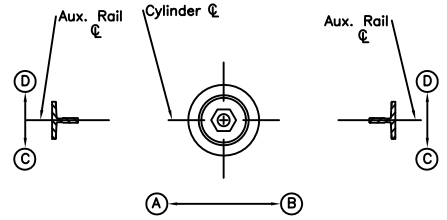
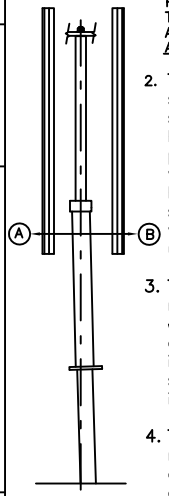
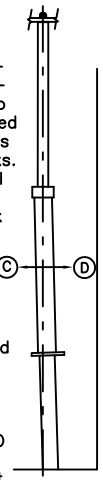


Fig. 1.



Misalignment in the A–B direction
Fig. 2.

1. BEFORE BEGINNING ALIGNMENT PROCEDURE, ENSURE THAT THE ELEVATOR GUIDE RAILS ARE SECURELY INSTALLED AND ABSOLUTELY PLUMB !
2. The desired installed re–sult of the jack unit in–stallation procedure is to have the jack unit aligned parallel in both directions with the guide rail stacks. Being that the guide rail stacks are plumb–this will ensure that the jack unit is plumb as well.
3. To correct misalign–ment in the A–B dir–ection, the jack stand and square post stab–ilizers should be adjusted sideways along the wall insert of the hoistway.
4. To correct for jack unit misalignment in the C–D direction, adjust the cylinder and square post stabilizers in or out from the guide rail brackets on the rear wall to correct.



Misalignment in the C–D direction
Fig. 3.

E. – MULTI–SECTION CYLINDER ASSEMBLY

I SLIP WELD JOINT – INSTALL RISER PIPE IN BOTTOM OF CYL–INDER BEFORE BEGINNING.

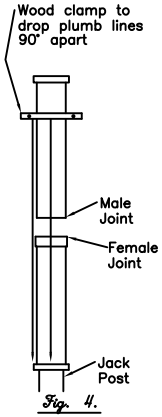


Fig. 4.

1. Lower bottom section of cylinder onto the jack post square tube assembly.
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.
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 necessary.
4. 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 cont–inuous weld around joint until weld is built up to thickness of collar. Remove all slag. Check plumbness of cylinder constantly as you are welding.

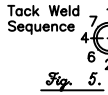


Fig. 5.

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

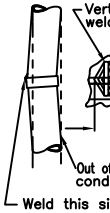


Fig. 6.

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 air pressure checked prior to setting, in accordance with Section H of this instruction.

II THREADED LINE COUPLER JOINT – INSTALL RISER PIPE IN BOTTOM OF CYLINDER BEFORE BEGINNING. RISER PIPE GOES INSIDE OF SQUARE JACK POST.

1. Lower the bottom section of the cylinder onto the jack post square tube/jack stand assembly in pit. Wood clamps (see Section J of this instruction for suggested clamp construction) should be installed to facilitate handling.

II THREADED LINE COUPLER JOINT (cont.) –

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.
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 air pressure 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.

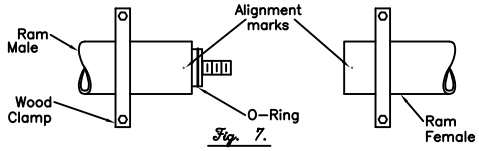


Fig. 7.

CANTON DUAL ROPED JACK UNIT

CANTON ELEVATOR

HYDRAULIC JACK UNIT INSTALLATION INSTRUCTIONS

READ THESE INSTRUCTIONS CAREFULLY BEFORE INSTALLING THE JACKS

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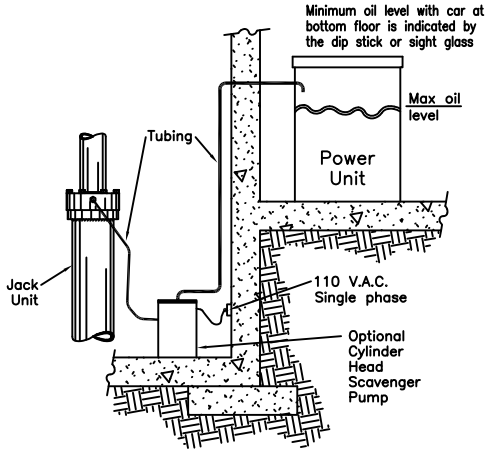
G. – OIL RECLAIMING LINE INSTALLATION

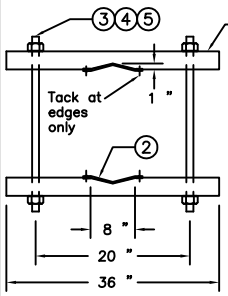


1. Locate and mount the optional cylinder head scavenger pump either on the pit floor as shown, or on the jack unit itself (depending on the pump). Note the 110 Volt power requirement.
2. In the side of the Power Unit tank drill a hole above the maximum oil level which will accomodate the supplied. tubing.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

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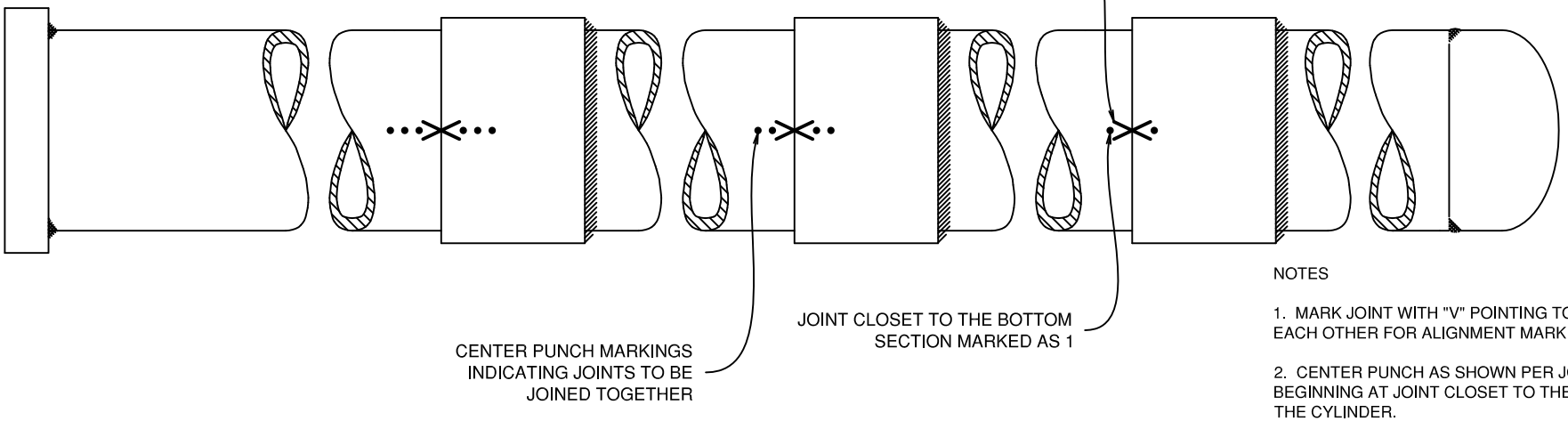

NOTES

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)