# Packerhead Production and Maintenance

Rapid City Pipe Machine

# Packerhead Production and Maintenance

Helena Pipe Machine

Menoken Pipe Machine

# Cretex History of Packerhead Production and Maintenance

- 1977 Round Table Discussion
  - See attached handout for meeting details

- 1981 Packerhead Production
  - See attached handout for meeting details

# Top causes for bad packerhead pipe

1. Mix design and consistency

2. Cages

2. Worn out Equipment/Maintenance

# Mix Design and Mixers

1. Use correct CTS approved mix design and stay within set parameters.

2. Make sure that Quantec PL 490 (Soap) is being mixed at the correct ratio of 10 parts water to 1 part soap.

3. Mixers could be oiled with recover.

4. Wet Mix
   - Product Issues
     - Slumping, Bells Pealing, Out of round pipe, Slabbing, Excessive rifling
   - Machine Changes
     - Runs lower horsepower on automated machines, leads to overloading the rollerhead.

5. Dry Mix
   - Product Issues
     - Porous looking pipe, Bad Bells, Short Tongues
   - Machine Changes
     - Runs higher horse power on automated machines, allowing the rollerhead to run out of mix.

6. Moisture probes and sensors should be calibrated and functional.

7. Always use proper lockout procedures when cleaning and repairing

# Bell Expander Wear Parts

1. Inspect the bearing tape on the T-block and the pie plate daily. Replace when missing.
2. Check rawhide bushing annually.
   - ❖ See bearing tape installation instruction handout


# Cages

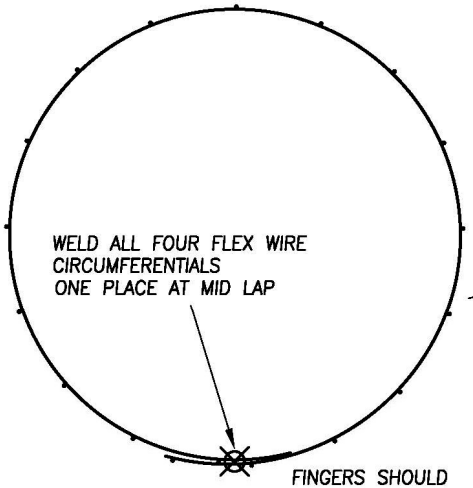
1. Follow steel manual. W2.0/W2.0 and W2.0/W2.5 wire does not work on conventional machines.
2. Make sure mesh roller settings are adjusted to make round cages.
3. Use correct centering devices on bell expander to keep cage concentric to bell.

# Cages

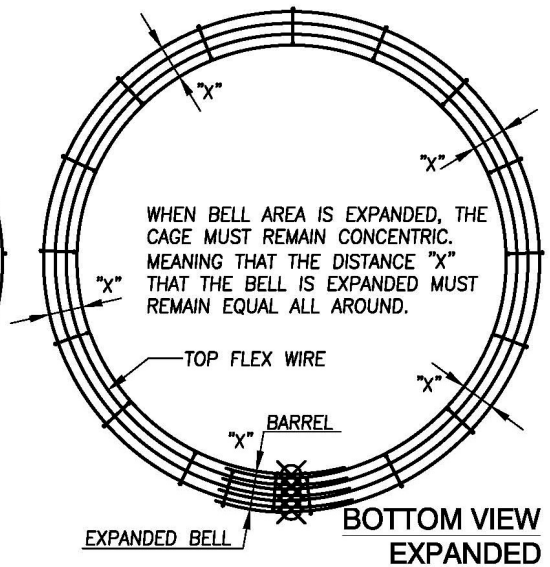
4. Level and align welding stand to bell expander.
   - Skewed bells cause leaning pipe that could lead to falling pipe.

5. Clip pyramid spacer to circumferential steel that has been welded.
   - ❖ Reduces spacer cracks. See attached handout for locations.
6. Use magnets or spacers when expanding highway and smaller CX4 cages.
   - ❖ See attached handout for correct magnet sizes

# Packerhead Production and Maintenance




BOTTOM VIEW - UNEXPANDED

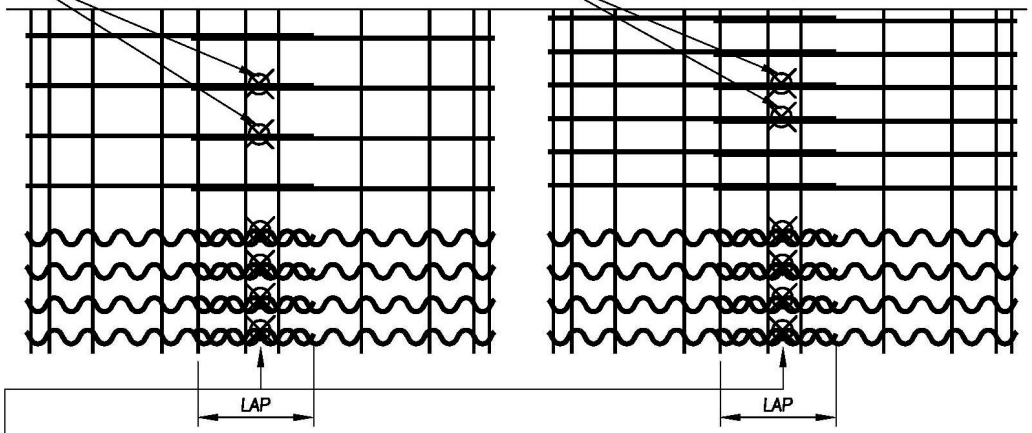



BOTTOM VIEW
EXPANDED

CAGE WILL STAND STRAIGHT

3" WIRE CAGES – SKIP THE NEXT WIRE ABOVE THE FOUR FLEX WIRES, THEN WELD THE FOLLOWING TWO STRAIGHT WIRE CIRCUMFERENTIALS AS SHOWN. THIS ALLOWS FOR A BETTER TRANSITION.

2" WIRE CAGES – SKIP THE NEXT (2) WIRES ABOVE THE FOUR FLEX WIRES, THEN WELD THE FOLLOWING TWO STRAIGHT WIRE CIRCUMFERENTIALS AS SHOWN. THIS ALLOWS FOR A BETTER TRANSITION.

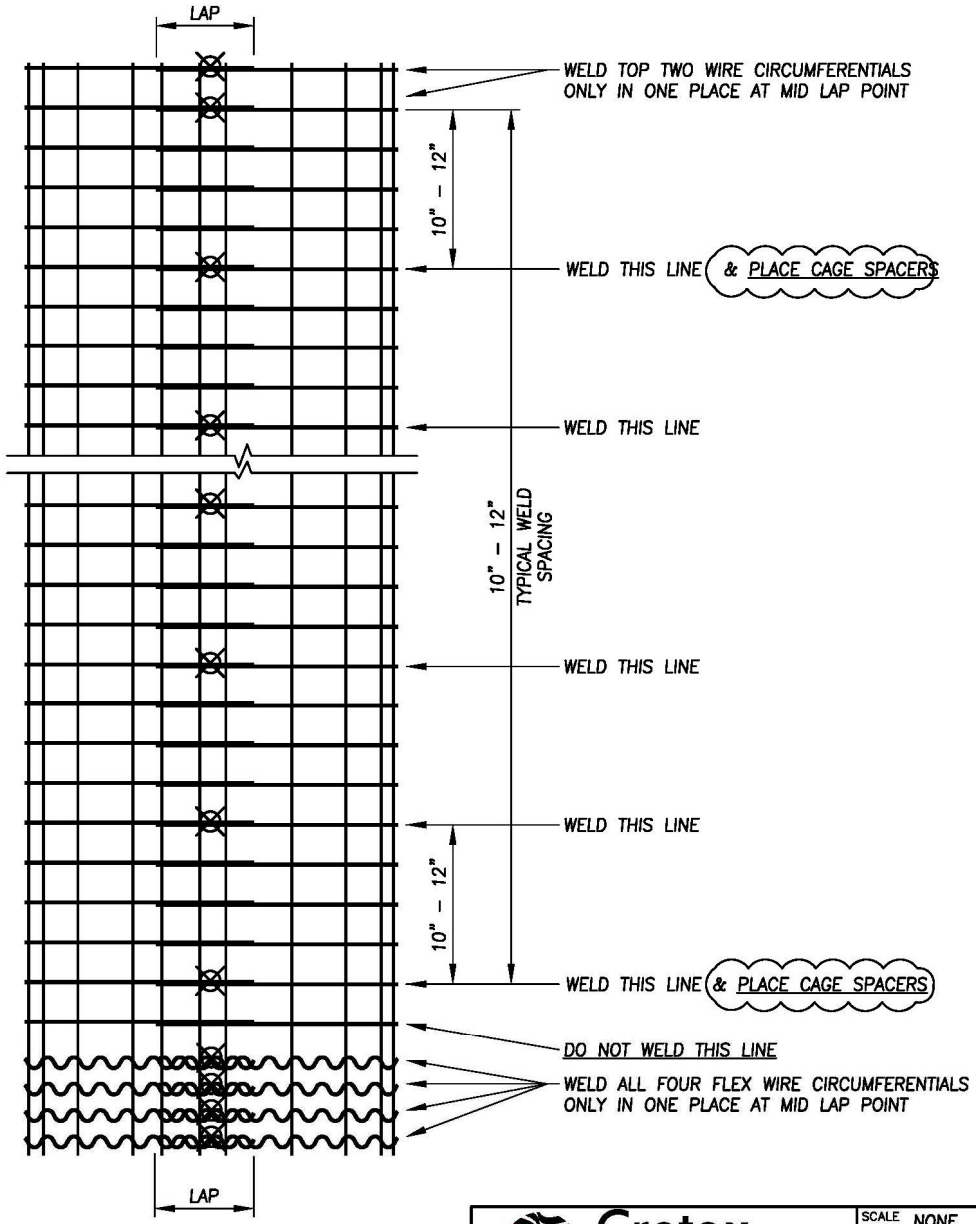



WELD ALL FOUR FLEX WIRES ONLY IN ONE PLACE AT MID LAP POINT.
NOTE – WELDING AT TWO PLACES ON FLEX WIRE DOES NOT ALLOW THE BELL TO EXPAND EQUALLY. THIS CREATES A FLATTENED AREA AT THE LAP AND CAGE DOES NOT STAND STRAIGHT, WHICH MAY CAUSE PIPE TO SLAB OR FAIL TO STAND AFTER STRIPPING.

BELL AREA - LAP WELDING DETAIL

Cretex Concrete Products

| | |
|---|---|
| SCALE | NONE |
| UPDATE | 12-18-13 |
| DR'N. | CKD. |
| TITLE | FLEX WIRE CAGE LAP BELL AREA WELDING DETAIL |
| NUMBER | SK9976-1 |




LAP WELDING DETAIL

Cretex Concrete Products

| | |
|---|---|
| SCALE | NONE |
| UPDATE | 12-18-13 |
| DR'N. | CKD. |
| TITLE | LAP WELDING DETAILS PIPE MACHINE CAGE (3" SPACING) |
| NUMBER | SK9976-3 |

# Kiln Carts

1. Keep top surfaces clean so pipe sit level on carts.

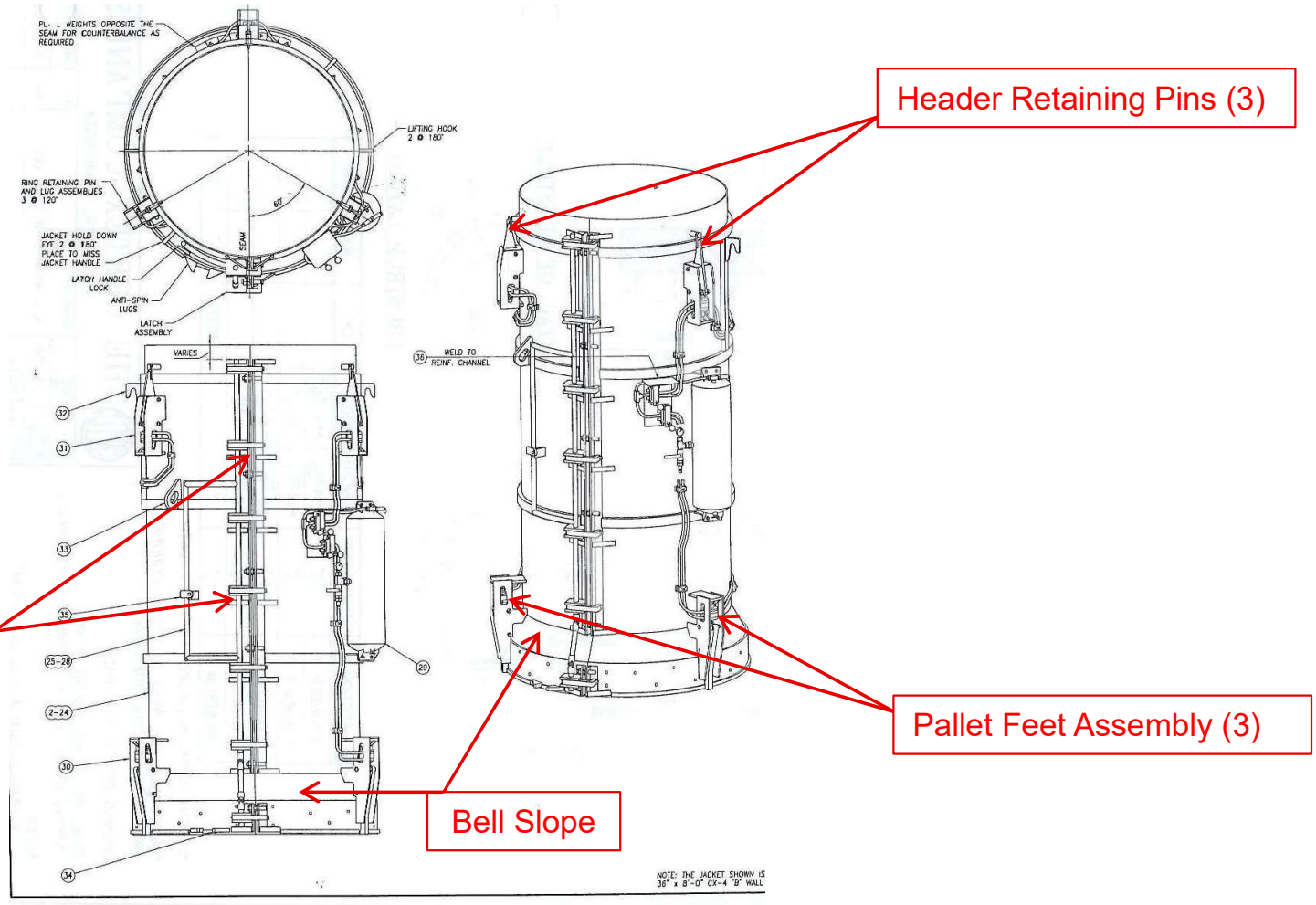
2. Check wheels for alignment.

3. Check bearings on regular basis.
   - Grease periodically throughout the year.
   - Use water proof and higher temperature grease.

4. Keep tracks clean and free of debris.

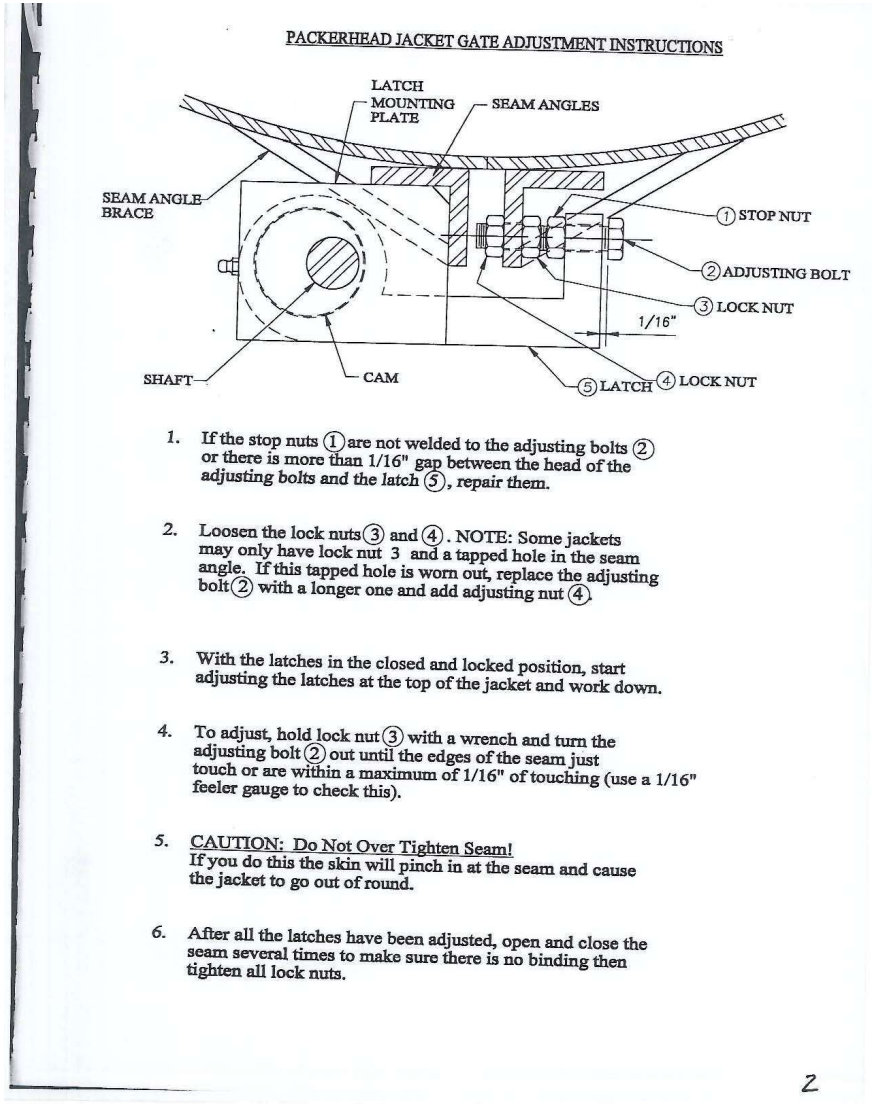
# Pipe Machine Jackets

1. Scrape and wash all concrete build up after every use.
   - Inside, outside, all gates and seams.
   - Double check CX4 bell slope
2. Grease all cams and oil or grease the header retaining pins and pallet retaining lugs daily. Make sure header pins are not bent and moving freely.



# Pipe Machine Jackets

3. Check gate for proper adjustment daily.
   - Seam should be tight when closed.
   - ❖ Follow packerhead jacket gate adjustment instructions.



PACKERHEAD JACKET GATE ADJUSTMENT INSTRUCTIONS



1. If the stop nuts ① are not welded to the adjusting bolts ② or there is more than 1/16" gap between the head of the adjusting bolts and the latch ⑤, repair them.

2. Loosen the lock nuts ③ and ④. NOTE: Some jackets may only have lock nut 3 and a tapped hole in the seam angle. If this tapped hole is worn out, replace the adjusting bolt ② with a longer one and add adjusting nut ④.

3. With the latches in the closed and locked position, start adjusting the latches at the top of the jacket and work down.

4. To adjust, hold lock nut ③ with a wrench and turn the adjusting bolt ② out until the edges of the seam just touch or are within a maximum of 1/16" of touching (use a 1/16" feeler gauge to check this).

5. CAUTION: Do Not Over Tighten Seam!
   If you do this the skin will pinch in at the seam and cause the jacket to go out of round.

6. After all the latches have been adjusted, open and close the seam several times to make sure there is no binding then tighten all lock nuts.

2

# Pipe Machine Jackets

4. Check pallet feet for wear. Replace if pallet foot is 1/4” worn out.

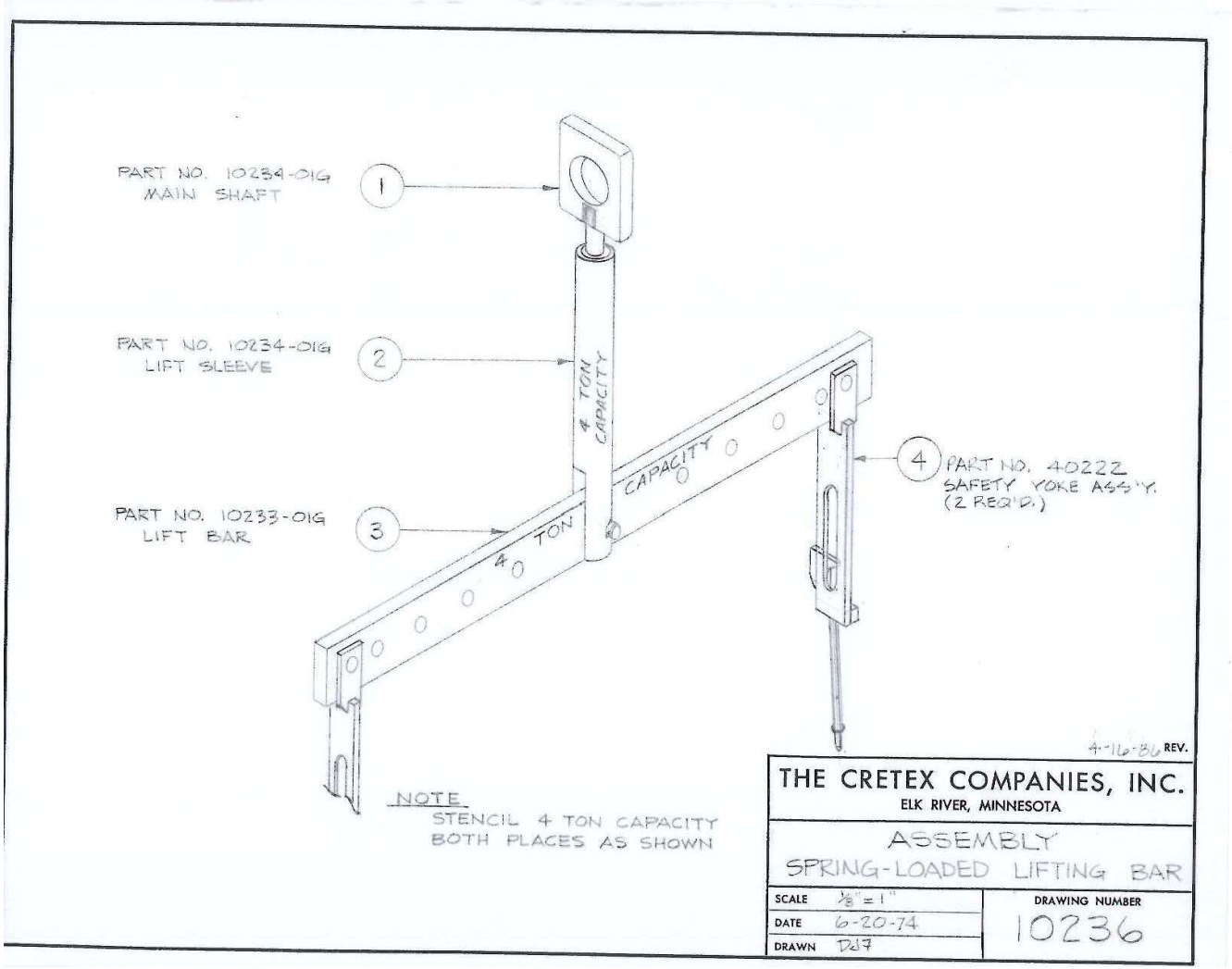
# Pipe Machine Jackets

5. Check wear band for wear. Replace wear bands if worn more than 1/16”.

# Pipe Machine Jackets

6. Never move jackets with a pipe squeezer rig. Always move jackets with the correct size jacket carriers.

- Use only approved stripping bars and yokes during production.



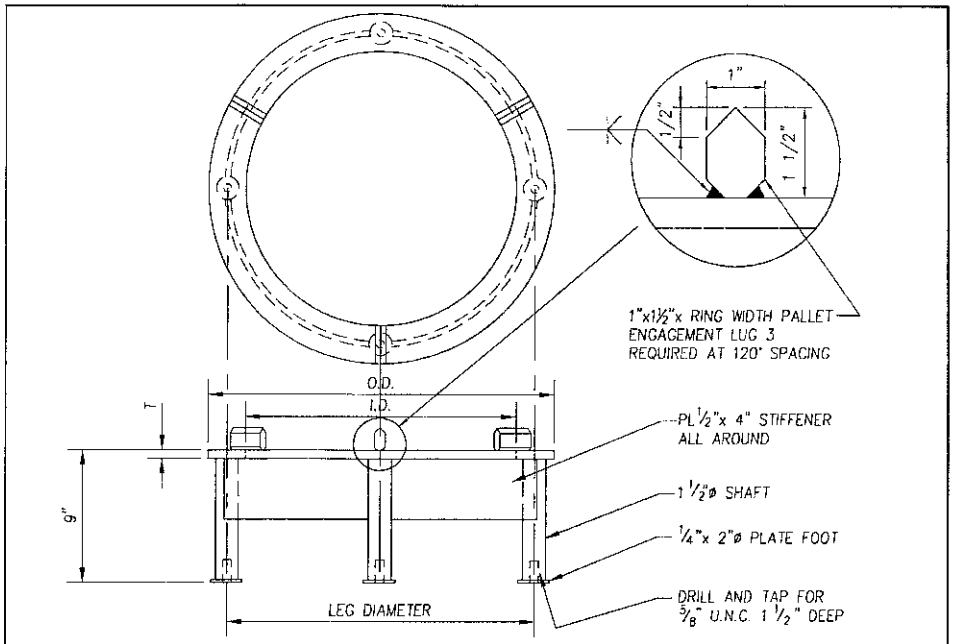
# Headers and Pallets

1. Leg Repairs.
   - ❖ Follow instructions on pallet leg repair process. Attached in handout.
   - ❖ Details for repair in drawing series 11239. Attached in handout.
2. Clean Pallets with stainless steel wool. Regular steel wool or copper gauze can be used.
   - Dirty pallets can cause bad bells.
   - Dirty OD can cause jacket to close hard. This could result in damaged bell down unit and wear out the jacket wear bands quicker.
   - Dirty ID can cause the pallet to stick to the longbottom. This could result in excessive wear to the trowel, damage to the bell down unit and pallet legs breaking off.

# Packerhead Production and Maintenance

## Vibrator Ring Specifications

- CX4, 30A, IHC




| PIPE SIZE | T | I.D. | O.D. | LEG DIA. | LUG WIDTH |
|---|---|---|---|---|---|
| 12" | ½ | 13 | 18 | 15 | 2 ½ |
| 15" | ½ | 16 | 21 ¾ | 18 | 2 ⅞ |
| 18" | ½ | 19 | 25 ½ | 21 ¼ | 3 ¼ |
| 21" | ½ | 22 | 29 | 25 ¼ | 3 ½ |
| 24" | ½ | 25 | 32 ½ | 27 ¼ | 3 ¾ |
| 27" | ⅝ | 28 | 36 | 30 ½ | 4 ¼ |
| 30" | ⅝ | 31 | 39 ½ | 33 ½ | 4 ¼ |
| 33" | ⅝ | 34 | 43 | 36 ½ | 4 ½ |
| 36" | ⅝ | 37 | 46 | 39 ½ | 4 ½ |

THE CRETEX COMPANIES INC.
ELK RIVER, MINNESOTA

| SCALE | NONE (1=1) | REVISION | BY | DATE |
|---|---|---|---|---|
| DATE | 7-14-93 | REV. 12"-21" DIM., ADD SECTION A-A | BWM | 03/03/03 |
| DR'N. | SLW APVD | REV. 12"-15" O.D. & LUG WIDTH | BWM | 03/18/03 |
| TITLE | VIBRATOR RING FOR 12"-36" CX4 PALLETS | NUMBER | 11754 | REV. E |

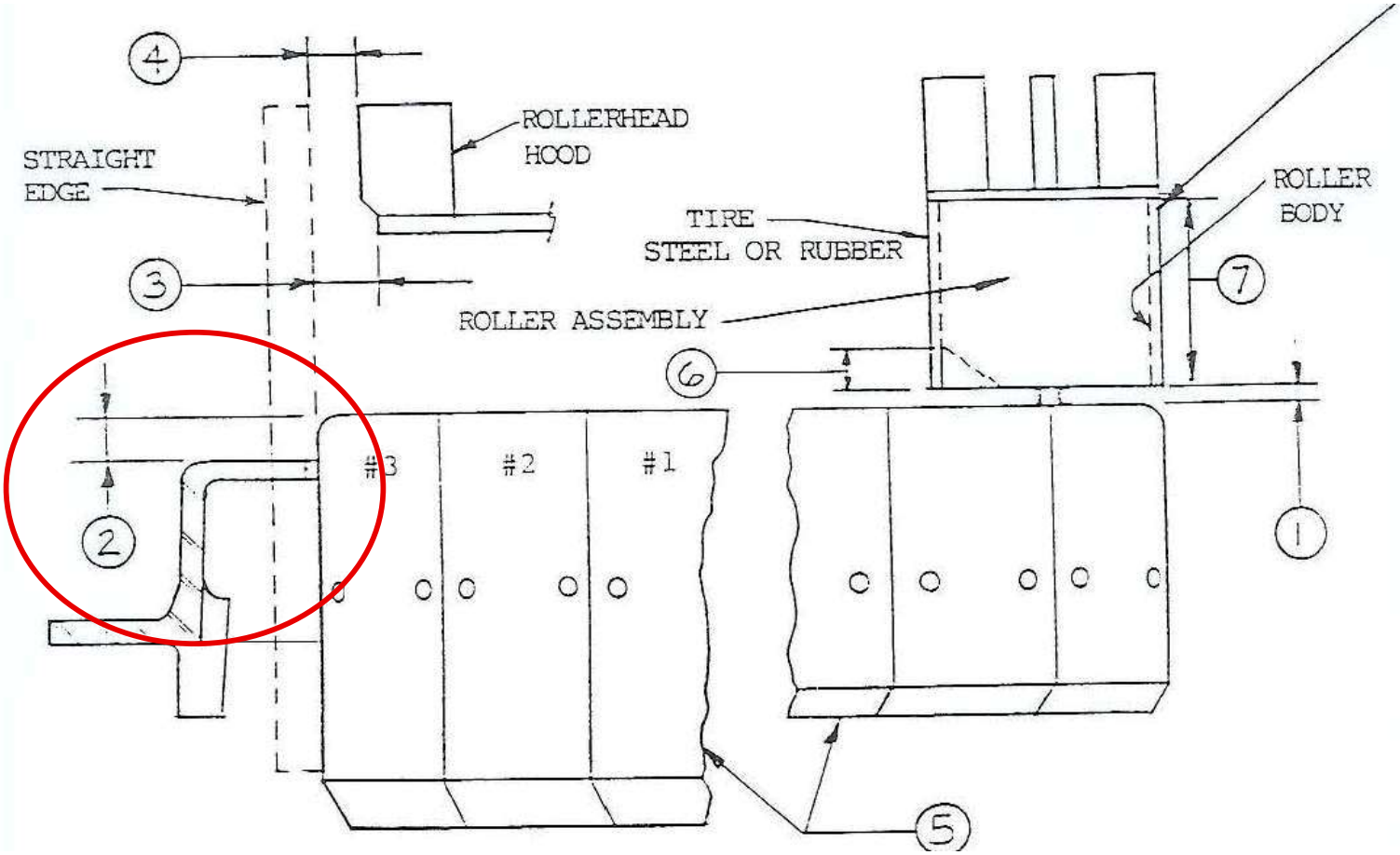
# Headers and Pallets

3. Mix and use pallet lube 205 on a daily basis.
   - Only mix up enough for that days application.
   - Mopping works best for applying pallet lube to pallets.
   - Wipe off any excess pallet lube.

4. Clean headers with copper gauze.
   - Apply a light coat of approved release agent
     - Hill and Griffith “FR-50 VOC”
     - Allied “Allied Concrete form oil 100 (CFR)”
   - Spraying application works best

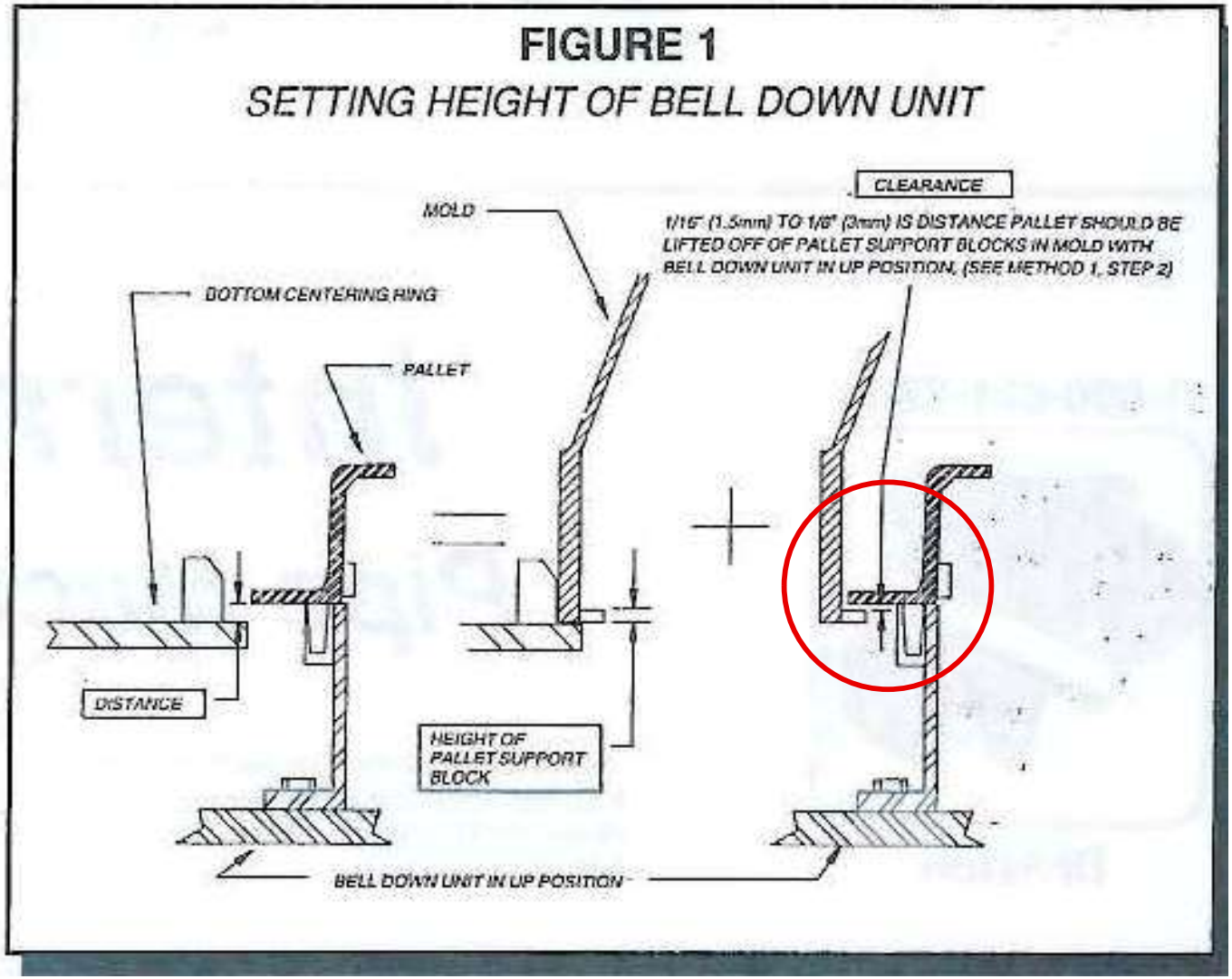
# Pipe Machine Settings

1. Check that the top of the longbottom is 1/4” above the top of the pallet when the bell down unit is raised.



# Pipe Machine Settings

2. Adjust bell down unit height until the pallet is lifted off the support blocks or pallet feet an 1/8”.



# Packerhead Production and Maintenance

## Taking Aim At Production

from McCRACKEN-QUINN

### Adjusting The Bell Down Unit

An improperly adjusted bell down unit on a packerhead pipe machine can result in poor quality of the finished bells and unnecessary wear and tear on the equipment. It can also affect production efficiency.

The proper setting of the bell down unit determines if or how high the pallet is lifted off the mold support lugs when the bell is being made. Lifting to the proper height has two advantages:

1. It reduces wear on the pallets and mold support lugs, giving them a longer service life.
2. It permits better transfer of vibration from the bell down unit vibrator to the bell, making for a better bell and/or shorter vibration times.

Care should be taken that the curing pallet is not lifted too high, since the pallet and/or pipe may not drop completely down until the pipe is stripped. If the curing pallet and pipe are not resting on the pallet support blocks when the mold is opened, the pipe will settle, causing concrete to separate from the cage. Loss of the bell and/or pipe is also possible.

Two of the more commonly-used methods of adjusting the height of the bell down unit are detailed below.

#### Setting the height of the bell down unit.

STEP 1 Place a curing pallet on the turning and vibrating standard.

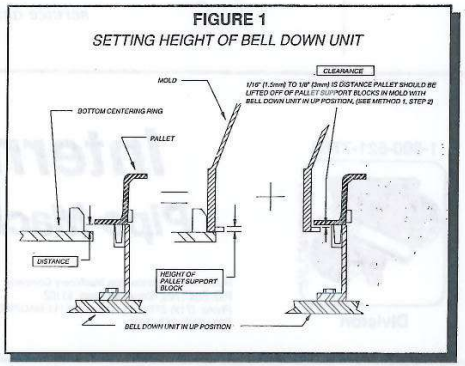
STEP 2 Adjust the bell down unit height until the curing pallet is lifted 1/16" (1.5mm) to 1/8" (3mm) above the pallet support blocks on the mold. The distance above the turntable that the pallet should be lifted is shown in Figure 1:

**Distance = Height of Pallet Support Block + Clearance.**

This height is set by adjusting the stop rods on the bell down unit in the machine pit.

NEVER INSERT ANY PARTS OF YOUR BODY INTO EQUIPMENT SUCH AS A BELL DOWN UNIT THAT CAN BE STARTED FROM A REMOTE LOCATION.

FIGURE 1
*SETTING HEIGHT OF BELL DOWN UNIT*




The following is another method of setting the bell down unit height, possibly more accurate in that it compensates for any deflection in the bottom centering ring and turntable. This method applies mainly to machines with self-cleaning bell down units.

STEP 1 Lower the bell down unit.

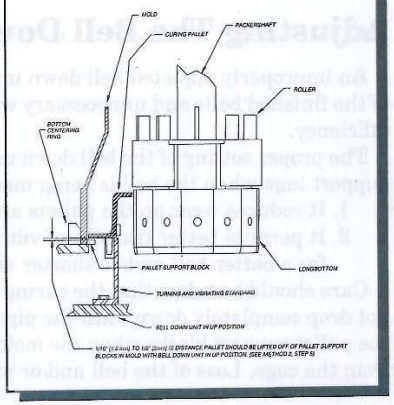
STEP 2 Place a mold and curing pallet on the turntable and rotate them under the packershaft.

STEP 3 Lower the top table until it holds the mold down.

STEP 4 Raise the bell down unit.

STEP 5 Adjust the bell down unit height until the curing pallet flange is 1/16" (1.5mm) to 1/8" (3mm) above the mold pallet supports as shown in Figure 2. This height is set by adjusting the stop rods on the bell down unit in the machine pit. This measurement should be made by **visual** observation in the pit. NEVER INSERT ANY PARTS OF YOUR BODY INTO EQUIPMENT SUCH AS A BELL DOWN UNIT THAT CAN BE STARTED FROM A REMOTE LOCATION.

FIGURE 2
*PROPER ROLLERHEAD AND BELL DOWN UNIT ADJUSTMENT*




STEP 6 After the height of the bell down unit is set, the bell down unit should be lowered.

STEP 7 Rotate the mold and curing pallet out of the way.

After using either of the above methods, set the vibration timer to the proper vibration setting for the diameter of pipe to be made (refer to your machine operator's manual). Machine setup can now resume.

*McCracken realizes that there are many practical ways to solve problems and to make equipment adjustments in the pipe plant. We are presenting methods that work for us, but our lists are by no means all-inclusive. If you have other solutions, ideas, or questions, or if you feel you require service assistance, please contact us.*


1-800-621-7768

CONCRETE PIPE MACHINERY — McCRACKEN

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MACHINE FOUNDRY — QUINN

Division

# Packerhead Production and Maintenance

## Taking Aim At Production from McCRACKEN-QUINN

### Troubleshooting Bell Problems

One of the greatest concerns of a packerhead pipe producer is the quality of his bells. Most of the problems encountered here can be avoided by following proper bell-making techniques.

The following list of problems and possible causes, while not complete, should give you a good starting point towards solving your bell area concerns. Beneath each problem heading are listed possible causes, and items in parentheses indicate suggestions to try, or comments.

### What to Check First When Bell Problems Develop:

1. Make sure that the bell down unit is lifting the curing pallet to the proper height.
2. Check that the top of the longbottom is 1/4" (6mm) above the top of the pallet when the bell down unit is raised.
3. Check the timer for proper vibrating and turning time.
4. Make certain that the proper amount of water is sprayed onto the concrete during the bell cycle, if applicable.
5. Check that the pallets have been properly **cleaned** and oiled.
6. Check to see that the shock absorber pads have a minimum of 1/8" (3mm) clearance (applies only to older machines).

### PROBLEM Cage Lift

Causes:

1. Too much concrete on the rollerhead while making bell (over-packing).

### PROBLEM Cracks in Top of Bell

Causes:

1. Bell down unit is lifting pallet too high.
2. Pallet is not properly seated in mold for turning and vibration.
3. Improper stripping of mold (mold not level).
4. Pipe sticking to mold (material too wet).

### PROBLEM Exposed Wire or Wire Shadow in Bells

Causes:

1. Cages are going off-center (try using cage stirrups).
2. Cages are out-of-round.
3. Cage diameter is incorrect.
4. Bells were not properly expanded. (Bells should be expanded to center on pallet flange.)

### PROBLEM Rocky Exterior Bells

Causes:

1. Bell material too dry.
2. Not enough bell water added.
3. Not enough material in bell. (Add concrete until cage stops turning.)
4. Over or under vibration during bell cycle.
5. Vibrator weights incorrectly set.
6. Adjustment to shock absorber pads incorrect.
7. Bell down unit not lifting pallet.
8. The top of the longbottom should be 1/4" (6mm) above the top of the pallet when the bell down unit is raised.
9. Check mix design (may have too much rock).
10. Check bell reinforcing for size and location.

### PROBLEM Rough Interior Bells

Causes:

1. Bell material too dry.
2. Not enough bell water added.
3. Not enough material in bell. (Add concrete until cage stops turning.)
4. Over or under vibration during bell cycle.
5. Vibrator weights incorrectly set.
6. Adjustment to shock absorber pads incorrect.
7. Bell down unit not lifting pallet.
8. The top of the longbottom should be 1/4" (6mm) above the top of the pallet when the bell down unit is raised.
9. **Dirty pallets.**
10. No release agent being used.
11. Release agent not properly applied.
12. Wrong type of release agent used.
13. Check mix design (may have too much rock).

### PROBLEM Picking Off of the Bells on the Transition

Causes:

1. Concrete is too wet.
2. Cage lift.
3. Over or under vibration during bell cycle.
4. Vibrator weights incorrectly set.
5. Adjustment to shock absorber pads incorrect.
6. Bell down unit not lifting pallet.
7. The top of the longbottom should be 1/4" (6mm) above the top of the pallet when the bell down unit is raised.
8. (Try using an admix to reduce concrete bond to mold.)

### PROBLEM Swedging

Causes:

1. Concrete is too wet.
2. Too much concrete on the rollerhead during the first pass while making the bell (over-packing).
3. Too much concrete on the rollerhead during the second pass.
4. Cage lift. (Pipe settles after stripping.)

*If you have additional questions, or feel you require service assistance, contact McCracken. As always, we're as close as the telephone:*
***(toll-free) 1-800-621-7768***

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Quinn Division

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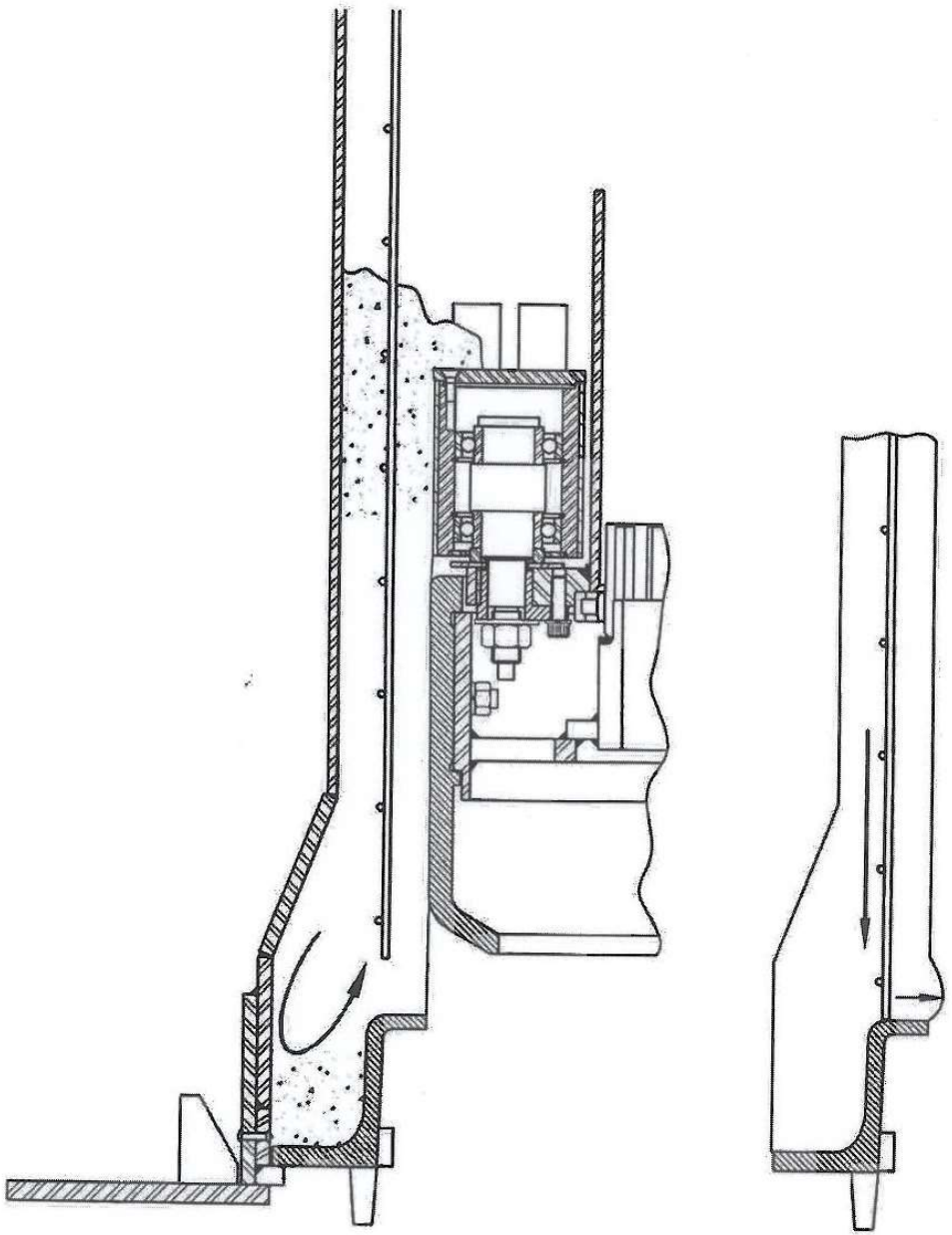
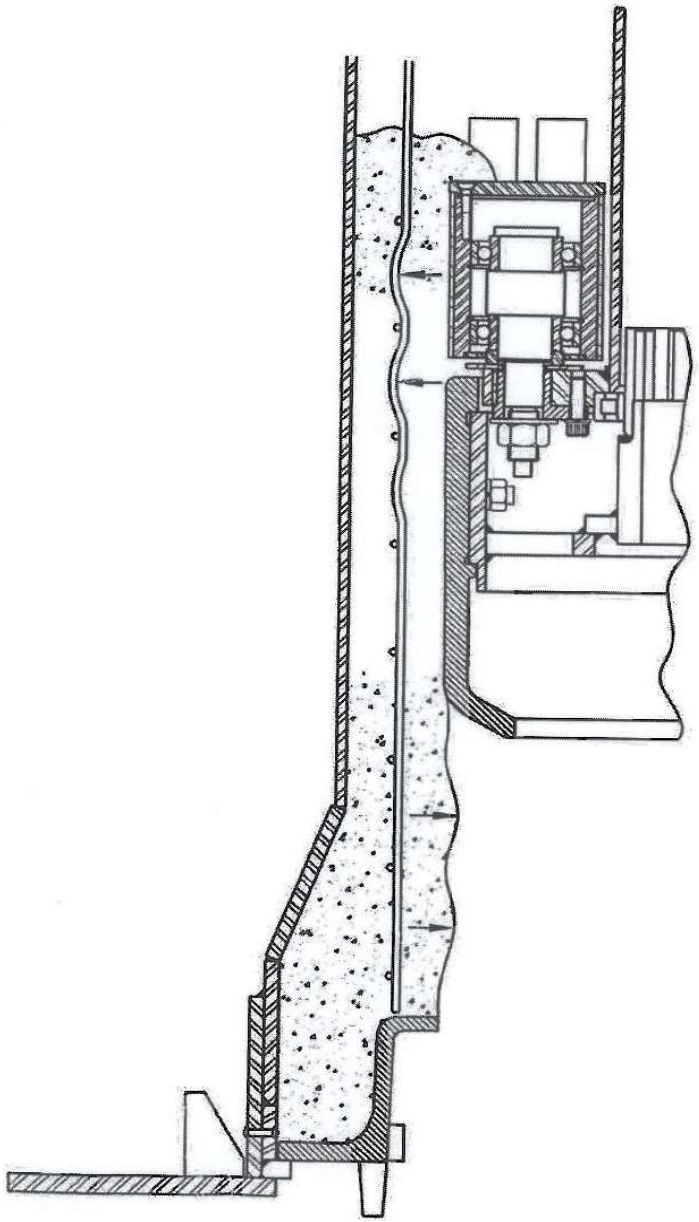


OVERPACK IN BELL
SHOWING CAGE LIFT



OVERPACK IN BARREL

# Pipe Machine Settings

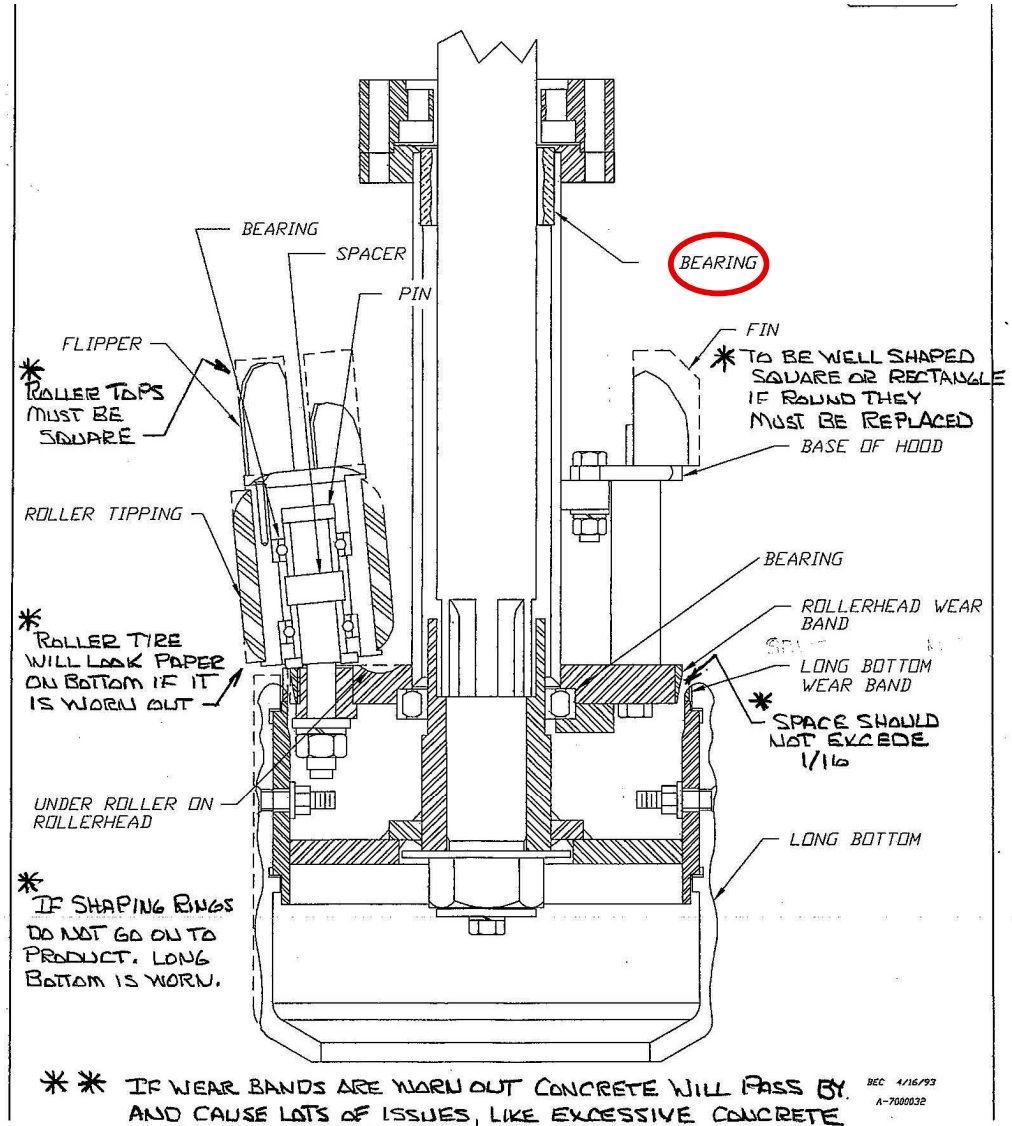
3. Enter your machine settings

4. Record all your machine settings daily
   - Rise time
   - Vibrator and rotator timing
   - Feed belt speed
   - Feed belt position
   - Hopper gate opening
   - Turn table speed
   - Crosshead lift stop for up and down positions
     - CX4 and Hwy/IHC Oscillator lift stops are different. Record separately.
   - Bell water
   - Barrel water

5. Keeping records of settings benefit anyone else who may need to run the machine and when things change so the records can be used as a point of reference.

# Rollerhead/Long Bottom

1. The rollerhead/long bottom is the most critical part of the pipe machine for making quality product.



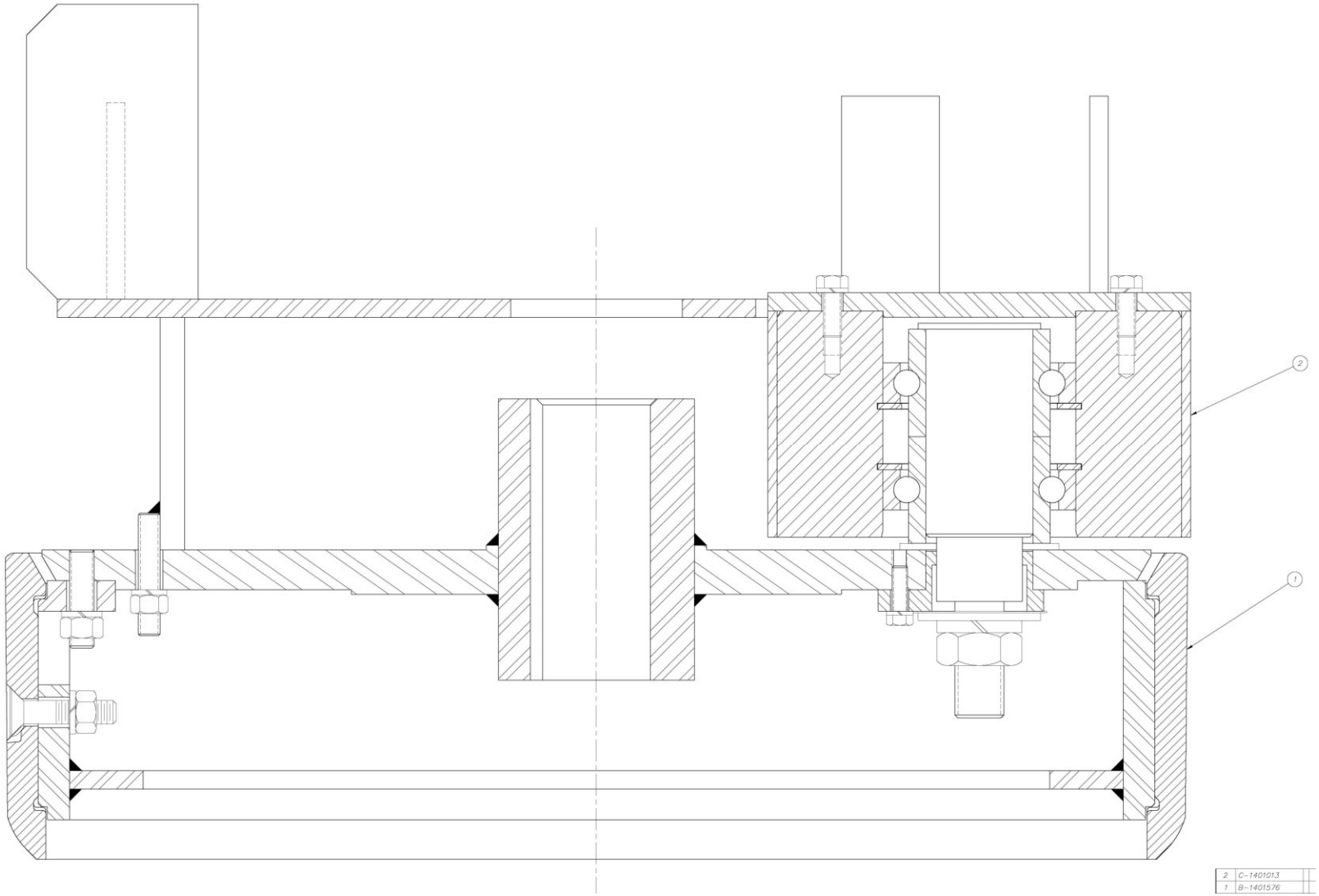
# Rollerhead/Long Bottom

2. Rollerheads need to be rebuilt once they do not meet the specifications listed.

3. Rollerhead settings and specifications
   - Conventional machines should be set as per attached drawing number 11513 items 1,3,4,5,6,7 and drawing 11513-1
   - Bi-Di Rollerheads should be set up as per the attached drawings and specification sheets.

# Rollerhead/Long Bottom

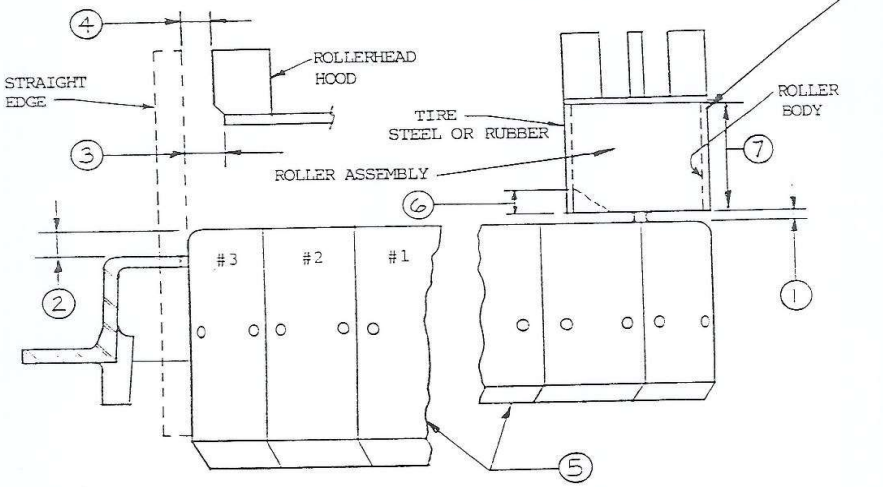
Conventional Rollerhead.
Fargo, Cedar Rapids, Duluth, Menoken, Riverton, Rapid City and Helena



# Rollerhead/Long Bottom

## Conventional Rollerhead Specifications

THE ROLLER ASSEMBLIES SHOULD BE ADJUSTED TO BE EVEN WITH THE EDGE OF THE TROWEL. THE ROLLER SHOULD NEVER BE ADJUSTED TO A DIAMETER LARGER THAN THE INSIDE DIAMETER OF THE TONGUE FORMER OR STEEL WEAR RING. THE ROLLER SHOULD BE STRAIGHT AND NOT TILT IN.




1. DISTANCE BETWEEN ROLLER ASSEMBLY AND ROLLERHEAD FRAME SHOULD BE 1/8" TO 1/4".
2. THE CROSSHEAD DOWN STOP SHOULD BE SET TO ALLOW TROWEL TO ENTER THE PALLET AND STOP WITH 1/4" OF TROWEL PROTRUDING ABOVE THE TOP FLANGE OF THE PALLET. THE ROLLER ASSEMBLIES SHOULD NEVER ENTER THE PALLET.
3. THE ROLLERHEAD HOOD CONTROLS THE AMOUNT OF CONCRETE AVAILABLE TO BE PACKED OUT BY THE ROLLER ASSEMBLIES. THE HOOD TO TROWEL DIMENSIONS FOR THE 12" THROUGH 36" SHOULD BE 1/2" AND THE 42" THROUGH 72" SHOULD BE 1".
4. THE ROLLERHEAD HOOD PADDLE TO TROWEL DIMENSION SHOULD BE 1/4" TO 3/8" LESS THAN THE HOOD TO TROWEL DIMENSION.
5. WHEN A TROWEL SEGMENT KIT IS BOLTED TO THE TROWEL HUB, IT SHOULD BE PHYSICALLY PLACED THROUGH THE INSIDE OF A PALLET BEFORE IT IS PLACED IN PRODUCTION. AN OVERSIZED TROWEL THAT WOULD NOT PASS THROUGH THE PALLET COULD CAUSE CONSIDERABLE DAMAGE. SHORT AND LONG SEGMENTS (7" OR 10") ARE AVAILABLE.
6. WHEN ROLLER BODY WEARS 3/16" IT SHOULD BE REPLACED OR REPAIRED. DON'T SHORTEN THE TIRE TO FIT BODY.
7. 12" THRU 36" ROLLERS ARE 5" HIGH AND *42" AND UP ARE 6" OR 10" HIGH.*

| THE CRETEX COMPANIES, INC<br>ELK RIVER, MINNESOTA | | | |
|---|---|---|---|
| SCALE | REVISION | BY | DATE |
| DATE 1-6-89 | 9-13-94 CS:pq | | |
| DR'N. SLW:km / CK'D. | | | |
| APV'D. | | | |
| TITLE<br>PACKERHEAD ADJUSTMENT SPECIFICATIONS | | NUMBER<br>11513 | |

**ROLLERHEAD HOOD & TROWEL SPECIFICATIONS**

| SIZE | TROWEL DIA. | HOOD DIA. | PADDLE DIA. |
|---|---|---|---|
| 12" | 12.110 | 11" | 11-1/2 |
| 15" | 15.110 | 14" | 14-1/2" |
| 18" | 18.110 | 17" | 17-1/2" |
| 21" | 21.110 | 20" | 20-1/2" |
| 24" | 24.125 | 22" | 23-1/4" |
| 27" | 27.125 | 25" | 26-1/4" |
| 30" | 30.125 | 28" | 29-1/4" |
| 33" | 33.125 | 31" | 32-1/4" |
| 36" | 36.125 | 34" | 35-1/4" |
| 42" | 42.125 | 40" | 41-1/4" |
| 48" | 48.125 | 46" | 47-1/4" |
| 54" | 54.125 | 52" | 53-1/4" |
| 60" | 60.125 | 58" | 59-1/4" |
| 66" | 66.125 | 63" | 64-1/4" |
| 72" | 72.125 | 70" | 71-1/4" |

WHEN THE HOOD DIAMETER OR THE PADDLE DIAMETER WEARS 1/2" THE HOOD SHOULD BE BUILT UP WITH HARD SURFACE WELDING ROD OR REPLACED.

WHEN THE TROWEL DIAMETER WEARS 1/16" (.060) EACH SEGMENT SHOULD BE SHIMMED OUT 1/32" (.030). REPLACE TROWEL SEGMENTS IN THE SAME ORDER AS THEY ARE REMOVED.

SEGMENTS CAN BE USED UNTIL THEY ARE WORN DOWN TO THE POINT THAT A FLAT HEAD BOLT WILL NO LONGER HOLD THEM, BUT NOT TO EXCEED FIVE SHIMS.

INSTALL NEW TROWEL SEGMENTS CLOCKWISE LOOKING DOWN FROM THE TOP.

PI-TAPE ALL NEWLY INSTALLED TROWEL SEGMENTS AND REPORT IF ACTUAL MEASUREMENT IS 0.010 SMALLER THAN DESIGN.

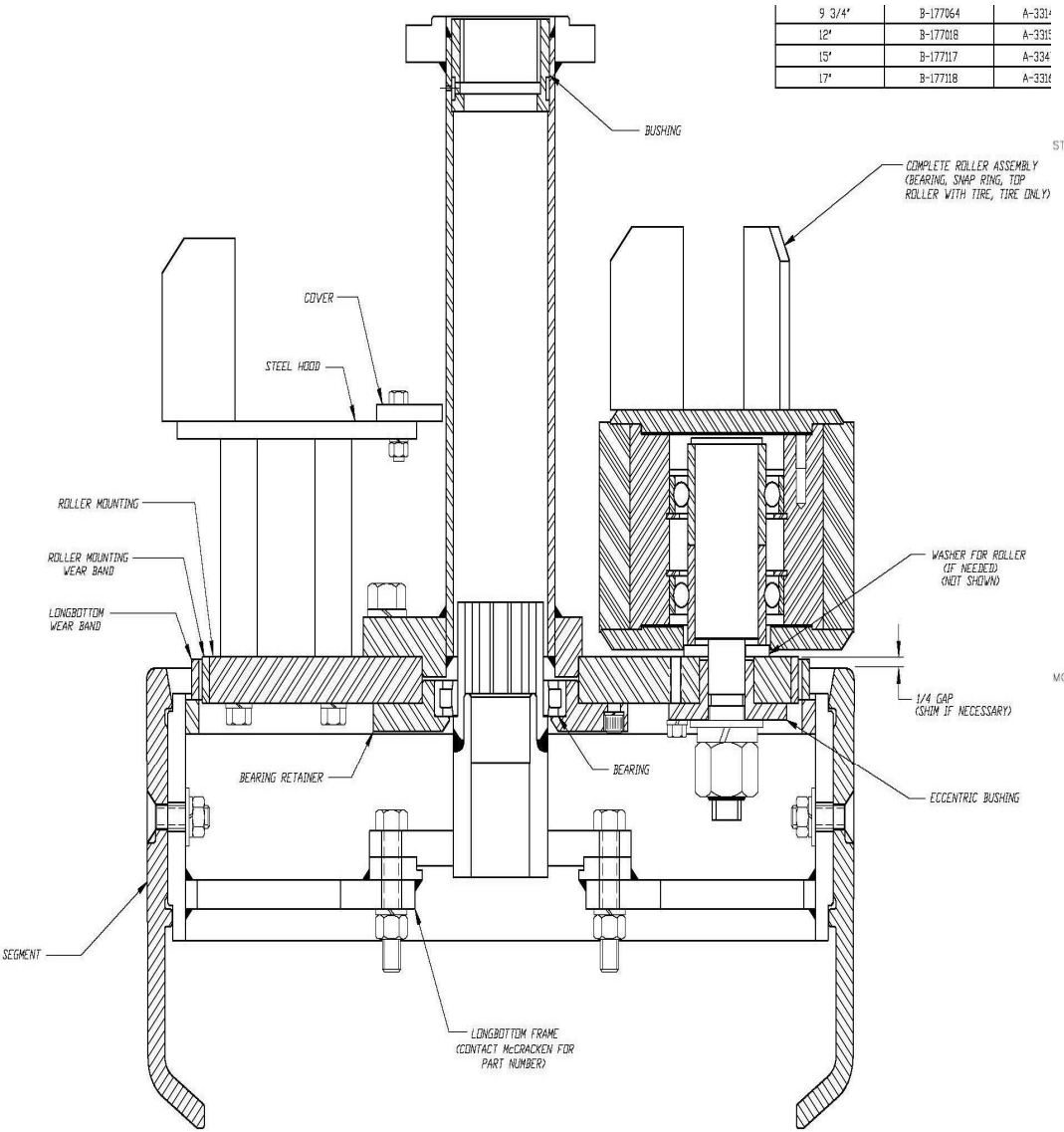
9-15-94 REV.

| THE CRETEX COMPANIES, INC.<br>ELK RIVER, MINNESOTA | | |
|---|---|---|
| ROLLERHEAD HOOD AND TROWEL SPECIFICATIONS | | |
| SCALE | NONE | DRAWING NUMBER |
| DATE | 1-6-89 | 11513-1 |
| DRAWN | CS:pq | |

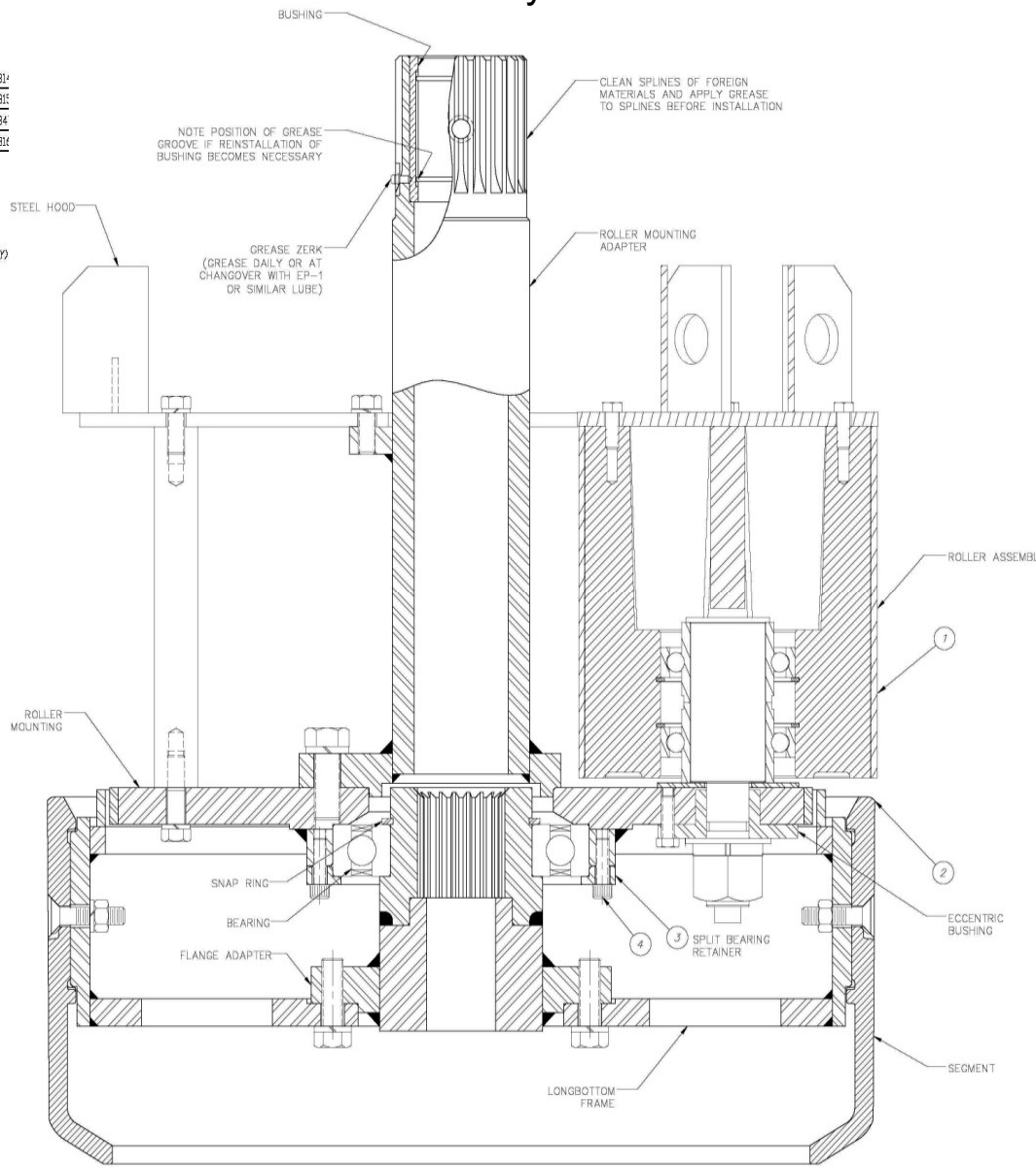
FARGO 782

# Rollerhead/Long Bottom

Bonner Springs, West Des Moines, Shakopee Rollerhead.

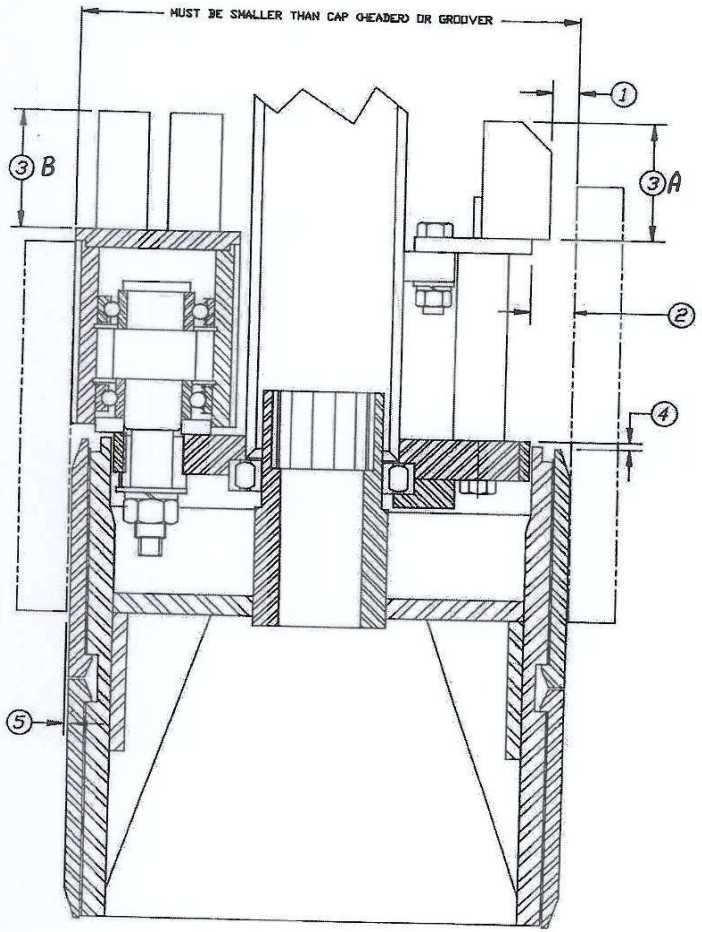



Quick change Rollerhead. Humboldt & Hawley



# Rollerhead/Long Bottom

## Bi-Di Rollerhead Specifications



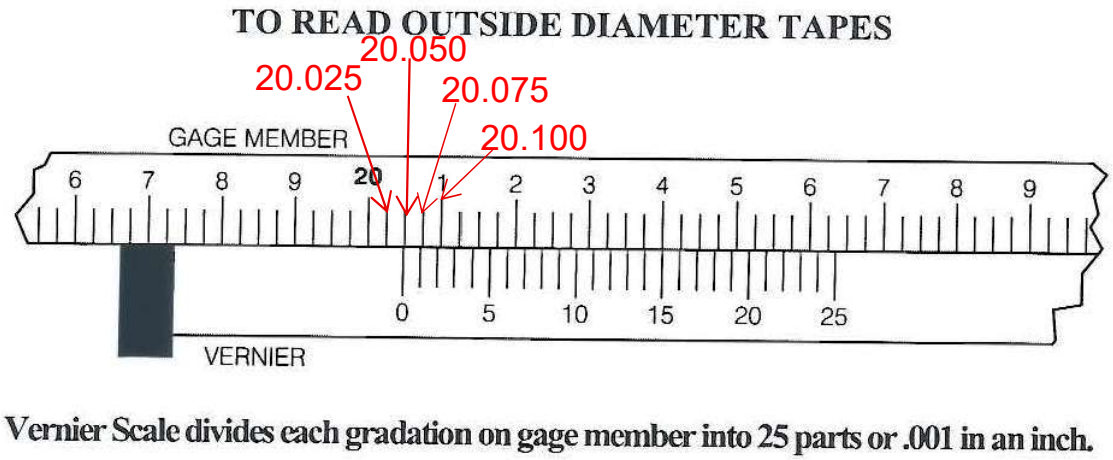

**BIDI ROLLERHEAD SETUP**

| SIZE | 1 | 2 | 3A | 3B | 4 |
|---|---|---|---|---|---|
| 12" | 9/16 | 1 | 3 | 3 | 1/4 |
| 15" | 7/16 | 15/16 | 4 | 4 | 1/4 |
| 18" | 13/32 | 13/32 | 4 | 4 | 1/4 |
| 21" | 3/8 | 7/8 | 4 | 4 | 1/4 |
| 24" | 3/8 | 7/8 | 4 | 4 | 1/4 |
| 27" | 3/8 | 7/8 | 6 | 5 | 1/4 |
| 30" | 1/4 | 3/4 | 6 | 5 | 1/4 |
| 33" | 3/8 | 7/8 | 6 | 5 | 1/4 |
| 36" | 3/8 | 7/8 | 6 | 5 | 1/4 |

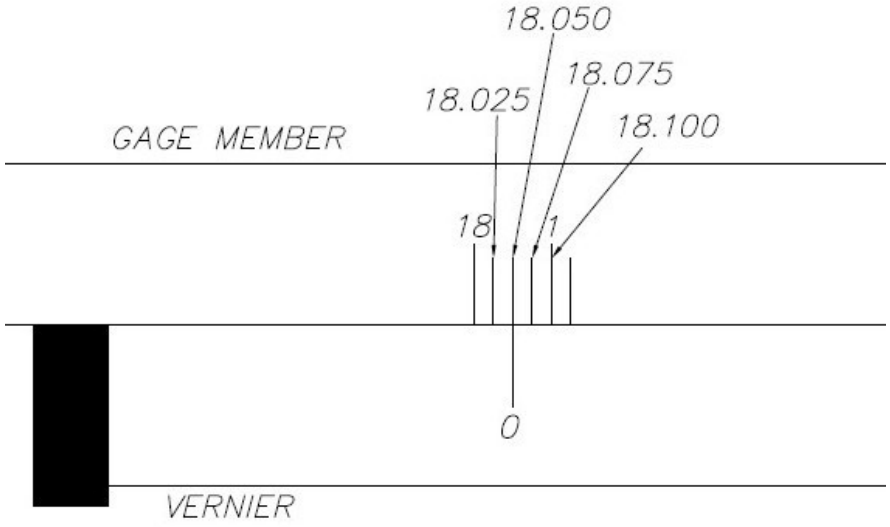
**NOTE:** Point 4 is a design dimension and may vary due to build-up of tolerances.

# Rollerhead/Long Bottom

4. Use a Pi-tape to measure the wear of the trowels/segments.




Vernier Scale divides each gradation on gage member into 25 parts or .001 in an inch.




- If we find a reverse taper, the trowel/segment should be replaced.
- Use shims to build out trowels/segments to proper specification.
- ❖ See attached handout for rollerhead inspection and shimming procedure.
- A maximum of 4 shims can be used before trowels/segments should be replaced.
- Each shim is 0.015 thick. Adding 1 shim around the complete longbottom equals 0.030 to the pi-tape measurement.
- 12”-21” should be shimmed to 0.110
- 24”-36” should be shimmed to 0.125
- A new 24” longbottom has a machined taper from top to bottom.
  - Top 24.095-24.125 Note: 2/10 of 1 degree or .050 per side taper
  - Bottom 24.003-24.033 Note: New pallets measure .155 ID

# Rollerhead/Long Bottom

5. Record/Log the Pi-tape results daily.
   - ❖ See attached handout for a sample rollerhead inspection record.
6. Rollerheads should be visually checked during production.
   - Rollers should be spinning freely
   - Ensure nuts are tight on rollerhead and shaft

❖ See attached handout for rollerhead, rollers and longbottom maintenance and care instructions.

Worn eccentrics

Worn rollerhead frame

# Packerhead Production and Maintenance

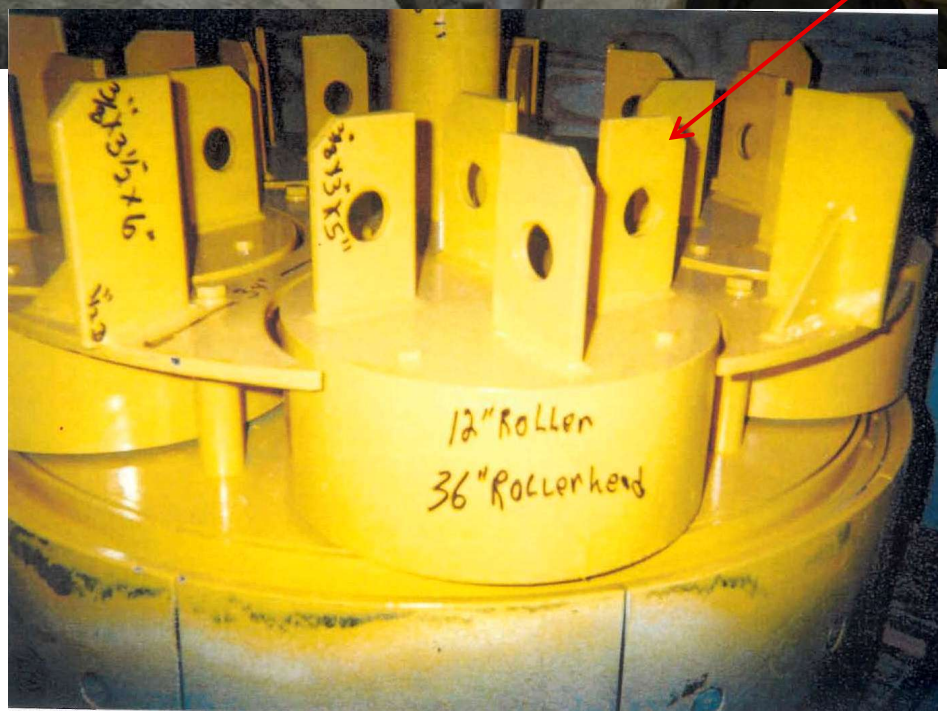
Roller cavities filled with concrete.

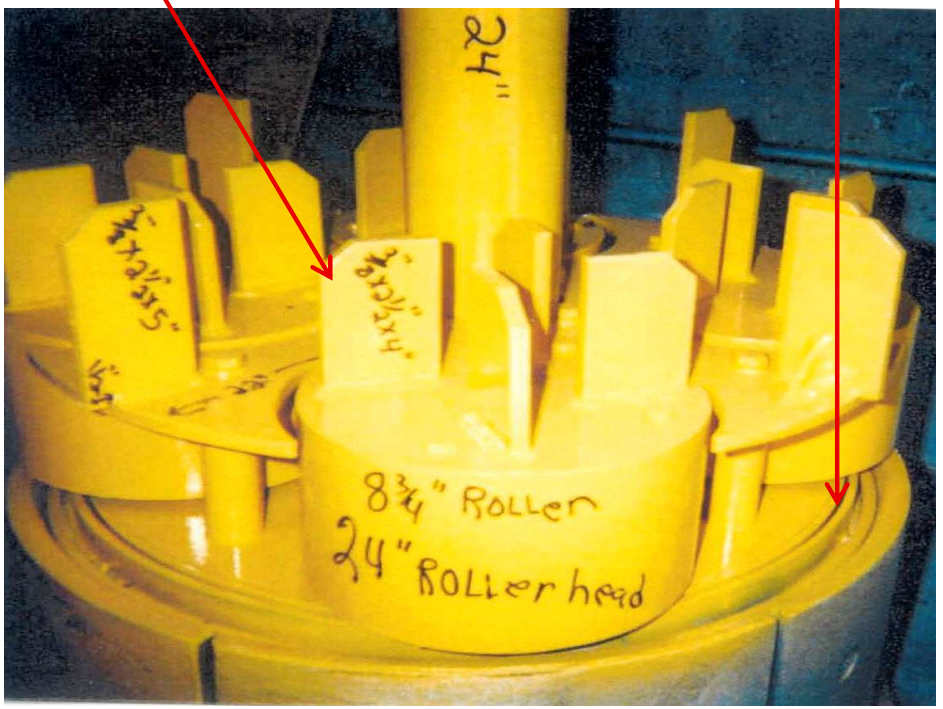
# Packerhead Production and Maintenance

Manufacturer sends out the replacement spider with 6” fins. These should be cut down to our specifications (5”) or best practice height.

Varying fin heights on rollers. These should be cut to our specifications or best practice height.

Inner and outer wear bands

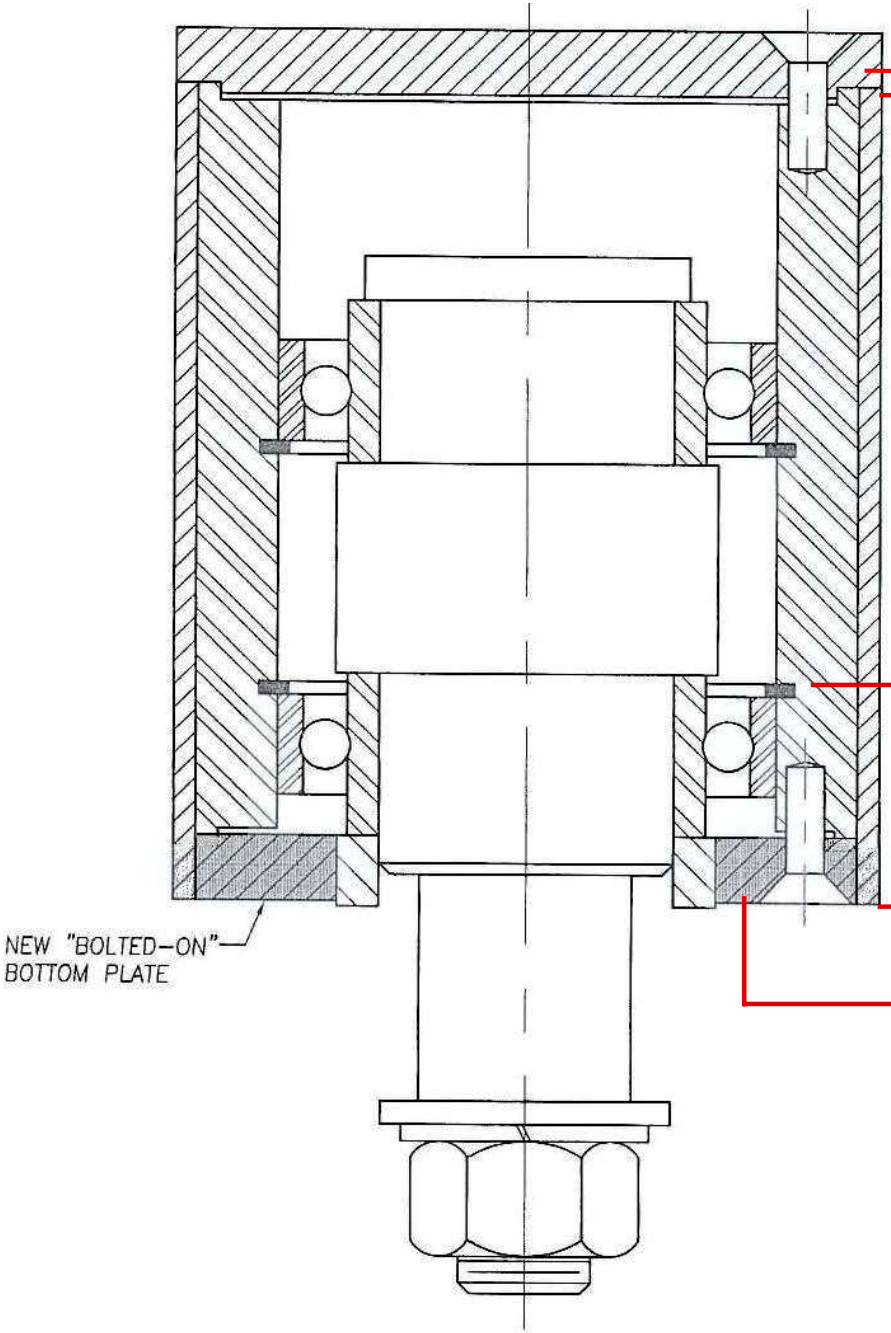


# Packerhead Production and Maintenance

## Roller Maintenance

# Roller Maintenance




Roller top-3/8” thick

Roller Skin/Tire- 4 5/8”

- Roller top +Roller Skin/Tire = 5”

- New or rebuilt rollers have a nominal height of 5”.

Replacement bottom plate-3/8” thick

Roller body is machined to 4-1/4”
If roller body is worn to less than 4 1/4” it can not be machined anymore and should be junked out.

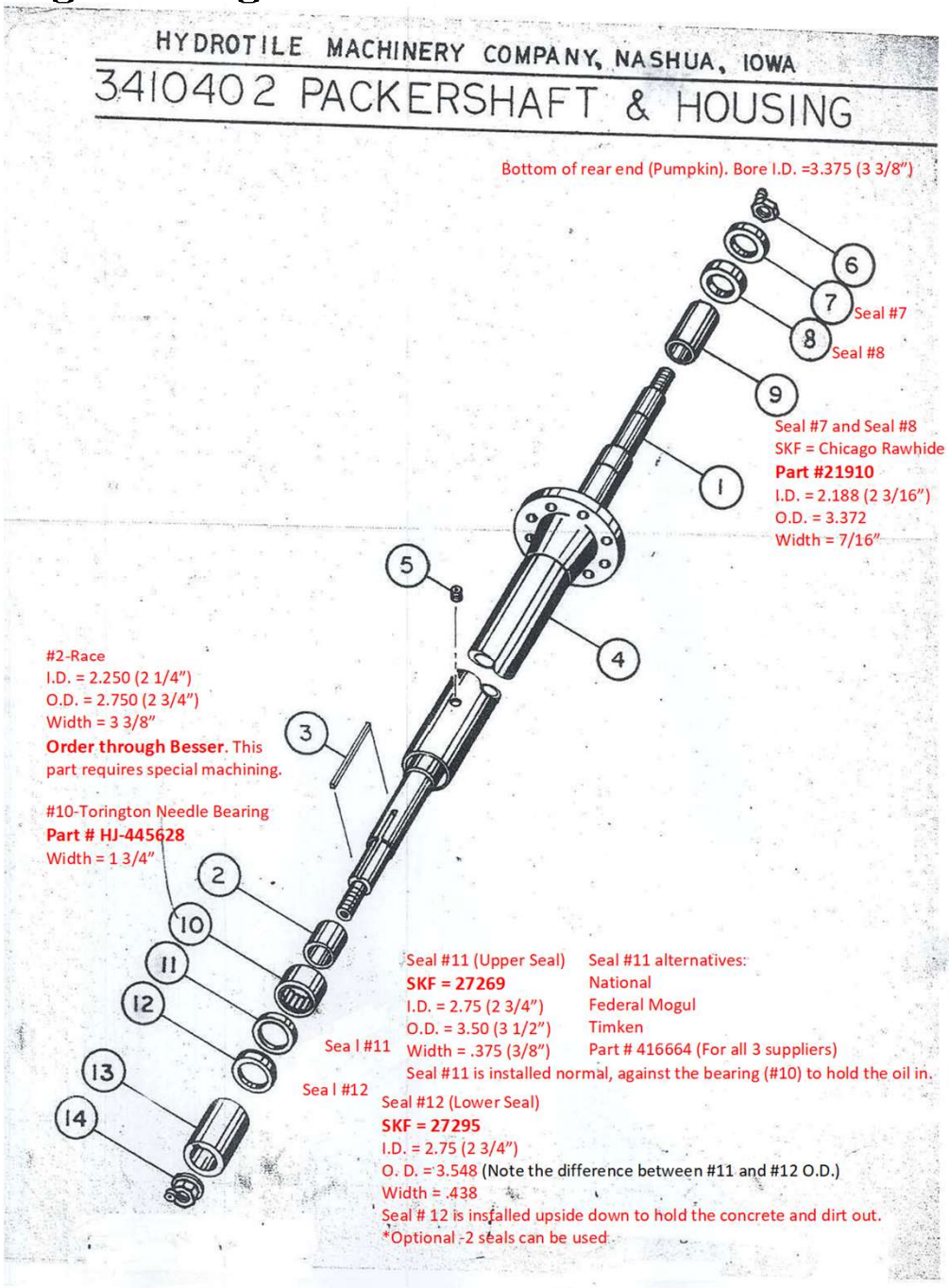
# Rebuilt Rollers and Roller Wear Parts

# Rebuilt Rollers and Roller Wear Parts

# Packerhead Production and Maintenance

## Replacing Bearings and Seals of Packershaft and Housing

- Instructions for removing packershaft and housing



# Packerhead Production and Maintenance

Rifling

1. This is a visual check to see if the machine settings are correct.
   - 1/2” rifling is maximum for Highway pipe
   - 3/8” rifling for CX4/P4 especially vacuum test pipe
   - 1/4” for 36” pipe and larger
   - Excessive rifling is usually caused by wet mix, loose segment, loose roller, segment not installed or ground properly

# Packerhead Production and Maintenance

# Pipe Machine Bell Down Unit


TV standard/vibrator ring

Bell down unit guide tubes

Bell down boxings/brass bushings

Adjustable bell down unit stopper
(additional unit on opposite side)

# Realignment Procedure

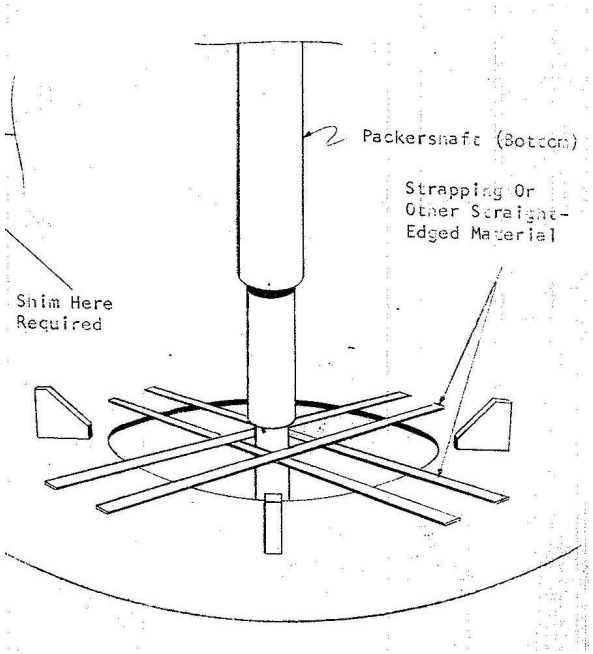
1. Check bronze bearings in crosshead bearing tubes for excessive wear. Worn bearings should be replaced.

2. Check top and bottom of guide tubes to see if they have had any movement. Broken welds or jack screws will show sings of movement. Hang plumb bobs at 90° from top of guide to tubes. Measure at the top and bottom. There should not be a variance of more than 1/16$^{th}$ of an inch.

3. If your machine is equipped with a packershaft enclosure, check the bronze bearing at the bottom of the enclosure.

# Realignment Procedure

4. Check the packershaft with a dial indicator to see if it is running true.




5. All measurements should be taken with the crosshead in lift. When you drop the crosshead down, bump the crosshead in lift an inch or two.

6. With crosshead in the low or down position, hang two plumb bobs at 90˚from top of packershaft. Now measure the distance from packershaft to string at top and then again at bottom. Note these measurements. Note: Make sure the top table is lowered to the bottom of its stroke and undo the lift rod connection, allowing crosshead to be raised without lifting the toptable. Also **remove overload bearings**.

# Realignment Procedure

6. String lines at 90˚

6. Remove the overload bearings

# Realignment Procedure

7. Now raise crosshead to top of stroke. Steady plumb bobs. Now measure again. You will need only to take measurement at bottom of packershaft. Note this measurement.

8. The measurement from the top of packershaft to bottom of packershaft should read the same. There should not be a variance of more than 1/8”.
9. With the shafts running true and the shaft enclosure centered around the shafts, adjust crosshead until top and bottom measurements are within 1/8”. Replace overload bearings with new bearings and set to allow 1/16” clearance throughout the stroke on each side of channel.
   - See #16 for shaft adjusting bolts for Hydrotile shaft aligning.
   - See #17 for shaft adjusting bolts for Bi-Di/McCracken shaft aligning

# Realignment Procedure

10. Now that the packershaft is plumb, remove plumb bobs. Lower crosshead until packershaft is within one of the holes in the table. With table in correct position with stop bar in locked position and rubber bumper stops in good position, measure from packershaft to I.D. of hole in table in four 90˚ locations. Do this with all four holes before doing any adjustment. Note all measurements.
11. At this time, make sure table centering ring is against the four cam followers that are bolted to the front post.
12. If the measurement from the packershaft to the I.D. of table hole is off in the direction of between the two front posts, then it is a matter of adjusting cam followers out
    The table can be moved in or out by adjusting the cam followers in the direction required. During all adjustments, the table should be rotated as this will help in moving table. After table has been returned to correct position, make sure all bolts and set screws have been secured properly. Note: It may be necessary to cut loose the table stops and reposition.

McCracken Pipe Machine table centering ring

Hydrotile Pipe Machine table centering ring

# Realignment Procedure

13. With Hydrotile and McCracken packershafts, you will find 1/2” or 5/8” NC threaded hole in bottom of unit packershaft. Also in center of McCracken top vibrating plate on bell down unit, there is also a hole for alignment.

14. If the bell down unit is not level, it should be done now. Once leveled then check for being centered.

# Realignment Procedure

For centering bell down unit, it will be necessary to loosen mounting bolts on some machines and moving the complete unit until centered. On larger machines using guide tubes, it is a matter of loosening the bolts holding the guide tubes at the top and moving the upper portion of guides until centered.

Now that the packerhead is plumb from bottom to top of stroke, the toptable or mud pan can be centered with packershaft. Reattach toptable lift rods and adjust to ensure toptable is lifting level

Should your McCracken machine be equipped with toptable guide tubes, it is a matter of moving guide tubes

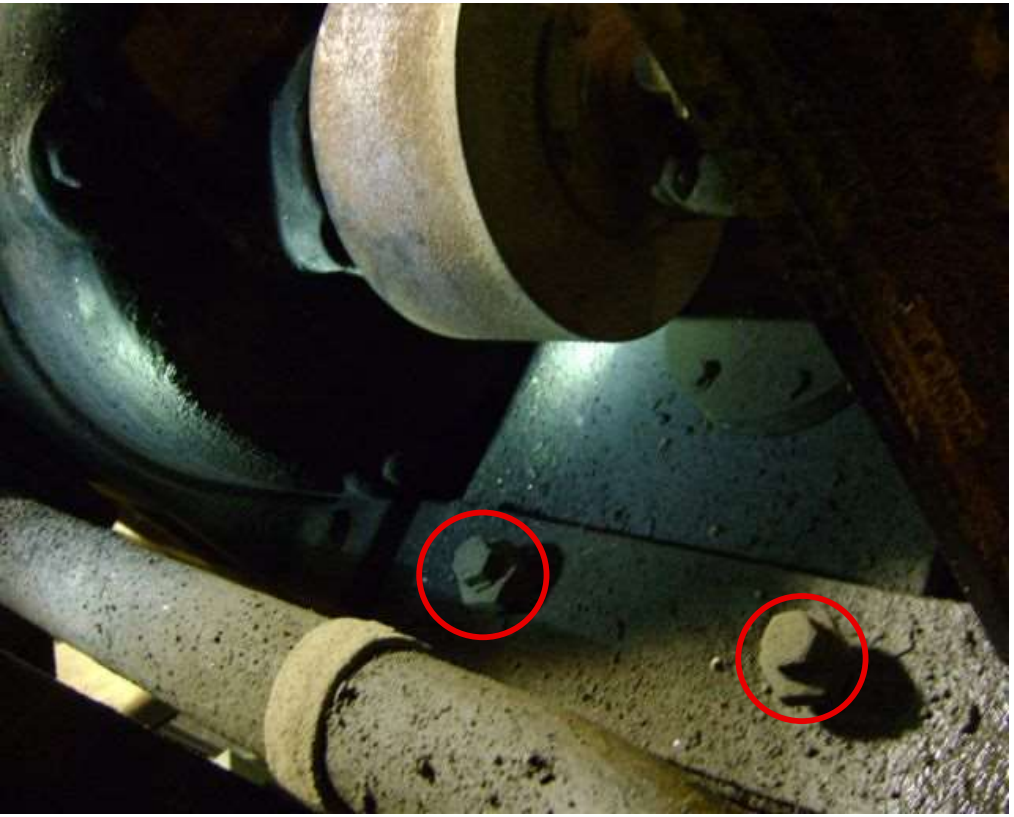
Loosen the bolts at bottom of guide tubes. Move toptable until centered. Lightly tighten guide tubes.

Raise toptable to the top of stroke. Repeat same procedure to center as was done at bottom of guide tubes. Lightly tighten guide tubes.

Lower toptable to bottom of stroke. Re-measure, and if necessary, make adjustments as required. Tighten guide tubes securely. Raise toptable to top of stroke again. Measure and make adjustment as required. Tighten guide tubes securely.

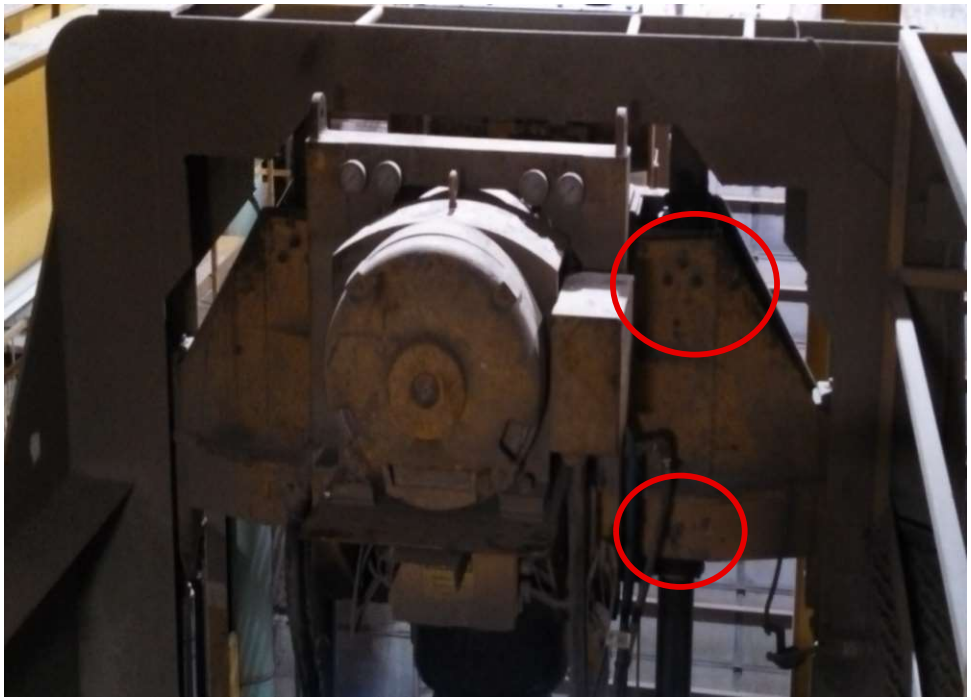
# Realignment Procedure

15. Once each of the components have been centered, it would be advisable to tack weld to assure that the components stay in place and then should any on of the components misalign in the future, one can visually check and if welds are broken, it then can be brought back to the original position.
16. Shaft adjusting bolts for Hydrotile shaft aligning:



# Realignment Procedure

17. Shaft adjusting bolts for Bi-Di/McCracken shaft aligning.



# Packerhead Pipe Machine Audit

## A. Safety Check

1. Main power disconnect locks out all motors and controls.
2. Two disconnects that lock out both the bell packer rotator and the hydraulic pump, located preferably in the pit.
3. Hydraulic lock out for bell packer with hydraulic drive.
4. Mechanical 1/4 turn hydraulic ball valve on lower hose of main lift cylinder.
5. Mechanical stop located at cross head and bell packer for blocking purposes.
6. Inspect all hoisting equipment: trolley, cables, hooks, stripping bar, upper limit switch.
7. Turntable limit switch: turntable should not turn unless cross head is at top of stroke.
8. Machine and parts painted with proper safety colors.
9. Safety labels.

# Packerhead Pipe Machine Audit

## B. Alignment

1. View the main shaft as it passes through the frame cross member and check the wobble in the main shaft or cross head
2. Check boxings for wear (10 total PH36) (4 on cross head)
3. Is the rollerhead centered at the top table centering plate and at jacket centering plate.
4. The bellpacker should lift straight up and rotate true.

## C. Mechanical

1. Check packerhead speeds, range and gear.
2. Check oil levels each day prior to start-up.
3. Listen for peculiar noises, gear box, pump noises, bell packer. Listen to the machine as you would your car.
4. Touch hydraulic hose to check oil temperature. This will tell you if it's running hot.
5. Look for worn or broken parts
6. Check cage positioner setting using a cage to see if it's working and adjusted properly
7. Check rollerhead for adjustments and wear. See Drawing #11513
8. Check conveyor belts so that all concrete is removed from belt and bottom idlers, and make sure belt is running true.

# Packerhead Pipe Machine Audit

## D. Pipe Production

1. Check machine setting: rise time, vibration, and rotation, bellpacker lift, cross head down stop, rpm's.
2. Check settings using daily setting log.
   a. Rollerhead and longbottom speeds need to be the same.
3. Observe pipe cycle and sequence.
4. Check pipe on cart or kiln for pack, cracks, rifling, twist, squareness, straightness and steel cover.
5. Inspect pallets for excessive (puddling) of pallet lube 205. Mop off the excess lube.
6. Are bearing tape on T-blocks and pie plates in place?
7. Are the bell expander centering devises being used?
8. Inspect steel cage for spacing, lap, straight and square, proper welding and roundness (per Steel Manual)
9. The top table hold down cylinder and stops should be adjusted to prevent crooked tops.
10. Check that the cart is flat and has a clean surface.
11. Clean floor in kiln.

# Packerhead Pipe Machine Audit

## E. Clean Up

1. The hopper, skip, conveyor belt, top table, vibrator plate, and turn table should be free of concrete or concrete build up.
2. The cage positioner and packershaft housing must not have any concrete build up.
3. Roller assemblies should be numbered and disassembled from roller head frame and all concrete build up removed (except between trowel segments) each day.
4. All 6 guide tubes should be oiled (motor oil).
5. Oil the hopper, skip, top table, vibrator plate, cage positioner, packershaft housing and packerhead at the end of each day.
6. Does the plant have and use the proper oil sprayers?

# Packerhead Pipe Machine Audit

## E. Tipped Out Pipe and Stock Piles

1. Check for cracks:
   a. Tip out
      - Squeezing too hard
      - Dropping when releasing squeeze pads
   b. Longitudinal
   c. Twist
   d. Bell
   e. Barrel
   f. Snap ring groove
   g. Tongue shoulder
2. Check for general appearance:
   a. Barrel straightness
   b. Joint squareness
   c. Finish
   d. Repair work
   e. Wire cover
   f. Wall thickness
   g. Slumping
   h. Rifling

# Packerhead Pipe Machine Audit

## E. Tipped Out Pipe and Stock Piles – Cont.

3. Check header and pallet removal procedures to see that product is not being damaged
4. Check that every header (clean with copper gauze) and pallet are being cleaned with steel wool, stainless steal wool, or copper gauze after removal from product and prior to running.
5. Clean buildup from all headers and pallets during the cleaning process.
6. Verify that testing procedures are correct