



India Mark II Riser Main (Lifting Spanners) Replacement

Remove the riser main from the well, using lifting spanners. This procedure requires four people.

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INTRODUCTION

This guide will show you how to pull the riser main from the well using three lifting spanners.

This procedure requires four people: one on each of the lifting arms, and one to control the pipe vise. Communication is very important throughout this procedure. If the person handling the pipe vise opens it before everyone is ready, the riser main could drop through the vise and be lost down the well.



TOOLS:

- [24mm Wrench](#) (1)
-

Step 1 — Access Door



- ☑ Before performing any repairs, perform a water test on the pump by raising and lowering the handle a full 40 strokes. A properly performing pump will yield greater than 10 liters.
- Remove the hex head bolt from the top of the access door on the pump head.
- ☑ On reassembly, this bolt should be hand-tight.

Step 2



- Pull the access door straight up off the pump head.
- ⓘ Store the access door in a sanitary place to prevent contamination.

Step 3



- ✦ The access door has a tongue that fits into the base of the pump head.
- i The access door makes a convenient tray to hold nuts and bolts during the disassembly.


Step 4 — Chain



- Place the spacer collar around the pump rod below the raised chain, with the beveled side down, and the flat side facing up.

Step 5



 The following procedure requires two people. If you attempt to do this alone, you risk injuring yourself and damaging the pump.

- Lift the pump handle until the base of the chain comes to rest on the spacer collar, and the chain is slack. Hold the handle in this position while the chain is being detached.

Step 6



- Using the two access holes, place an angled socket wrench on the bolt and nut attaching the chain to the pump handle.

Step 7



- Hold the wrench on the bolt stationary.
- Loosen the nut.

Step 8



- Remove the nut from the chain bolt.

Step 9



- Remove the washer from the chain bolt.

Step 10



- Remove the chain bolt.

Step 11



- Pull the top of the chain straight off of the pump handle.

Step 12 — Head



- Remove the two bolts from the handle side of the pump head.
- Use one wrench on the bolt and another on the nut beneath. Hold the bolt stationary and loosen the nut.

Step 13



- Remove the two bolts and nuts from the handle side.

Step 14



- After removing the two handle side bolts, have your partner support the weight of the handle.
- Remove the two remaining bolts in the same fashion.

Step 15



- Lift and remove the pump head from the pump.
- ⓘ Store the pump head in a sanitary place, preferably above ground, to prevent contamination.

Step 16 — Chain



- Slightly twist the head flange, until the corners overhang the top of the tank far enough to grab.

Step 17



- Lift the head flange up about one foot above the tank.

Step 18



- Slide the rod clamp around the pump rod, and support it on the tank base.
- ⓘ Make sure the pegs in the base of the rod clamp fit into the appropriate holes in the top of the tank.

Step 19



- Tighten the rod clamp against the pump rod.

⚠ Be sure the pump rod is centered within the jaws of the clamp and held securely.


Step 20



- Lower the head flange.

Step 21



- Unscrew the chain from the top of the pump rod.
 - Remove the chain.
 - Check the chain for signs of wear or damage.
-  Set the chain in a sanitary place, such as the access door that was previously removed.

Step 22 — Head Flange



- Remove the chain support from around the pump rod.

Step 23



- Remove the jam nut from the top of the pump rod.

Step 24



- Remove the head flange.

Step 25



- Screw the jam nut back onto the top of the pump rod.

Step 26 — Tank



- Screw a T-handle onto the top of the pump rod. Tighten the T-handle up against the jam nut.

Step 27



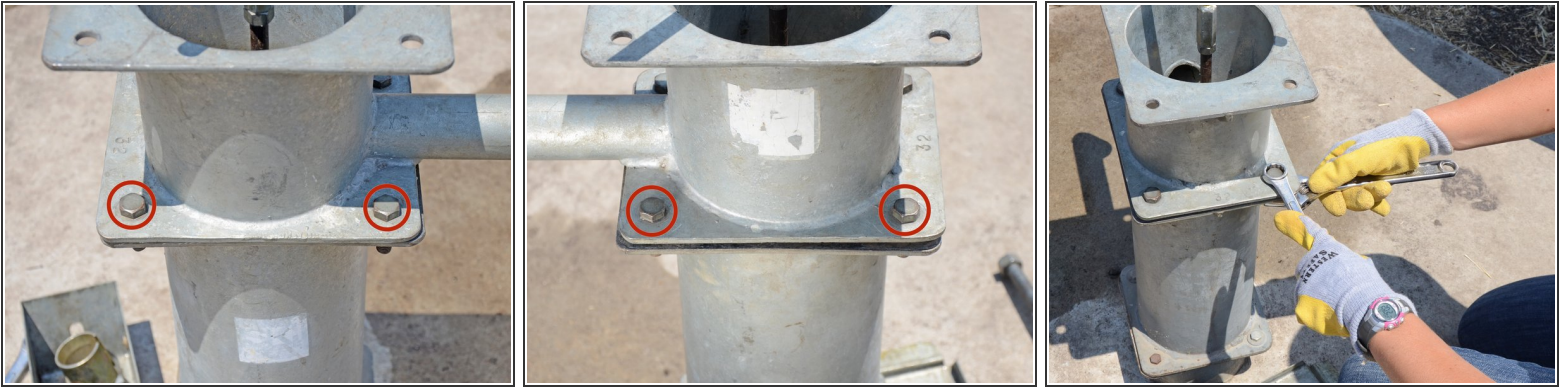
- Loosen the rod vise.

Step 28



- Remove the rod vise from the tank.

Step 29



- Remove the four bolts connecting the tank to the top flange.
- Use one wrench on the bolt and a second wrench on the nut beneath. Hold the bolt still and loosen the nut.

Step 30




- Twist the tank 45 degrees in order to get a better grasp on it.

Step 31



- Lift the tank straight up, about one foot.

 The tank is attached to the riser main, and the two must be lifted as a unit. Be careful and get help, as this can be very heavy.

Step 32



- Have a third person place the pipe vise around the riser main, on top of the top flange.
- Tighten the pipe vise securely around the riser main.

Step 33



- Secure the pipe vise to the top flange with two bolts and nuts to hold the pipe vise in place.

Step 34



- Unscrew the tank from the riser main.

Step 35



- Lift the tank up a few inches above the top of the riser main.

Step 36



- Insert the rod vise between the riser main and the tank, around the pump rod.
- Tighten the rod vise onto the pump rod.

Step 37



- Unscrew the T-handle from the pump rod and remove it.
- ⓘ Keep the T-handle ready to reattach to the pump rod after the tank is removed.

Step 38



- Remove the tank.

Step 39 — Riser Main Coupling



- Place a coupling over the pump rod, on top of the rod vise.

Step 40



- Reattach the T-handle to the top of the pump rod.

Step 41



- Loosen and remove the rod vise from the pump rod.
- ⓘ The coupling will drop down onto the riser main.


Step 42



- Screw the coupling onto the end of the riser main.
- Use a pipe wrench to tighten the coupling onto the riser main.

Step 43 — Riser Main



 When using the lifting arms, it is essential that each arm have a gap above and below it, and that the openings alternate direction up the pipe.

- Set the first lifting arm just above (but not touching) the pipe vise.

Step 44



- Add the other two lifting arms.
- Ensure three things about the arms:
 - They must be equally spaced around the riser main (120° apart).
 - The arms must not touch each other, the coupling at the top, or the pipe vise at the bottom.
 - The openings should alternate, to keep the riser main secure.

Step 45



 Communication is very important throughout this procedure.

- As each person lifts up on their lifting spanner, they announce "got it" to let everyone else know they're holding.
- Once all three lifters have announced that they've "got it," loosen the vise.

Step 46



- With the vise loosened, lift up the riser main 1-2 feet.
- Lift only as high as everyone is comfortable.

Step 47



- Tighten the pipe vise, with the following procedure:
 - Announce "tightening."
 - Tighten the vise.
 - Announce "Tight."

Step 48



- Slide the three lifting spanners down on the riser main, into new lifting positions.
- ❗ Again, make sure the lifting spanners don't touch anything above or below, and that they are evenly spaced about the pipe.

Step 49



- Once all of the lifters have said "got it," loosen the pipe vise.

Step 50



- Lift the riser main another 1-2 feet.

Step 51



- Tighten the pipe vise, following the same verbal procedure.
- Repeat the procedure several times:
 - Once everyone is securely holding the pipe, loosen the pipe vise.
 - Lift the pipe.
 - Tighten the pipe vise.
 - Slide the lifting spanners down to a new position.

Step 52



- i** At ten feet, you will reach the first coupling in the riser main.
- i** While the three lifters are holding the riser main, the vise operator must open the vise wide enough to let the coupling pass through the jaws.

Step 53



- Lift the riser main up through the pipe vise, until the coupling clears the jaws.
- Tighten the pipe vise and move the lifting spanners down to a new position.

Step 54



- Lift the riser main high enough that there is room beneath the coupling for the three lifting spanners.
- Tighten the pipe vise.

Step 55




- Use a pipe vise to unscrew the first section of riser main from the coupling.
- ⓘ Be careful not to remove the coupling from the lower section of riser main. You may need to use two pipe wrenches to hold the coupling still while you loosen the top section of riser main.

Step 56




- Unscrew the upper section of riser main from the coupling.

 Be careful—the pipe will likely be full of water, that will leak out above the coupling as you unscrew the pipe.

Step 57



- Lift the section of pipe straight up from the coupling.

 Be very careful to hold the pipe as straight up as possible. If it bends or falls over, it may damage the pump rod, or injure someone. Always have at least two people holding the pipe.

Step 58



- Place the rod vise on the pump rod between the section of riser main.
- Tighten the rod vise on the pump rod.

Step 59



- Use two wrenches to disconnect the upper section of pump rod from the lower section.
- ⓘ Hold the lower section stationary and rotate the upper section.
- Once detached, lift and remove the upper sections of riser main and pump rod together, and set them down.

Step 60



- Remove the T-handle from the top of the pump rod.

Step 61



- Screw the T-handle onto the newly exposed top of the pump rod.

Step 62



- Loosen and remove the rod vise.

- ☑ Repeat the lifting procedure for the remaining sections of riser main and pump rod.

To reassemble your device, follow these instructions in reverse order.