

## HDL(M)6 Nut/Screw Assembly

Remove, repair, and reassemble the nut and screw assembly in your HDL series double lock vise.

In these instructions when we refer to the “front” of the vise or nut/screw assembly, we mean the end that has the hex for the handle and is closest to the operator. The end that is farthest from the operator is considered the “rear”.

(Numbers in parentheses reference the mechanical drawing on the last page.)

### Removing the nut and screw assembly from your vise

1. Remove the rear moveable jaw from your vise.
2. Remove the button head cap screw (#28) from the front end of the vise body.
3. Place a spacer block between the stationary jaw and the front moveable of the vise. Place your handle on the hex end of the lead screw (#7) and turn clockwise to draw the jaws together. As the front jaw tightens on the block, continue turning. This will push the holding block (#17) out of the vises center channel. *A small rubber spring pre-load block (#34) and steel wedge friction clamp (#33) will fall out of the holding block (#17) when it is clear of the vise.*
4. Once the holding block (#17) is free of the vise remove your spacer block, the remaining moveable jaw, and the stationary jaw.
5. Remove the chip guards (#46 & 47)
6. Slide the nut and screw assembly toward you until it is all the way out of the vise body.

## **Disassembling the nut and screw assembly**

1. Remove the small spiral retaining ring (#6) from the rear nut.  
*This ring has a small tab on the end of it that can be hooked and pried inward then lifted up until it is out of the snap ring groove.*
2. Unscrew and remove the rear nut (#4) from the screw (#7) by holding on to the rear nut and turning the hex on the lead screw in a counter clockwise direction.  
*As you unscrew the nut from the lead screw a rubber seal (#5) will come out of the nut. This was being held in by the retaining ring that was removed in the previous step.*
3. Hold on to the front nut and turn the screw in a clockwise direction until you can see the small spiral retaining ring (#16) in the back of the front nut. Remove this spiral retaining ring the same way you did with the one in the rear nut in step #1.
4. Once the spiral retaining ring (#16) has been removed continue to turn the screw in a clockwise direction until the nut (#14) is free from the threads on the clutch (#13) and gently slide the nut off the end of the screw. There is an o-ring that will come out of the nut and remain on the clutch when you remove the nut. The spiral retaining ring you removed was holding this o-ring in the nut.
5. Stand the screw (#7) up on the hex end and using an external snap ring pliers remove the external snap ring (#10) from the screw.

6. Place the clutch (#13) in a vise with non marring jaws or wrap a rag around the clutch to prevent the clutch from being damaged. Apply only enough pressure to prevent the clutch from turning when you turn the lead screw using the hex handle. ***Do not apply so much pressure that you crush or oblong the clutch.*** Turn the lead screw clockwise until you feel the pin (#12) being depressed and popping out of the drive notch. Continue turning the screw clockwise 180 degrees. *If the nut and screw assembly has a pin that has been over traveled it will be resting in the ramped slot in the clutch. You will need to turn the screw counterclockwise to release the pin from the over travel notch. Then turn the screw 180 degrees in a counter clockwise direction.*
7. Wearing gloves or wrapping a rag around the clutch, firmly grasp the clutch and tap the threaded end of the lead screw on a soft, non marring surface until the clutch spacer starts to slide off the screw. When the clutch reaches the area where the pin (#12) and the springs (#11) are contained by the clutch sleeve hold a rag or your hand over that area so the pin and springs don't fly out. Continue to slide the clutch sleeve down and remove it from the lead screw. *If your vise has built up excessive grit and chips it may take a few hard blows to get the clutch off the screw.*
8. If the pin and springs are still in the screw remove them at this time.
9. Slide the holding block assembly (#17) down and off the threaded end of the lead screw. *If the holding block binds in the area of the drive slot use a file to smooth out any ridges on the slot edge.*

### **Disassembling the holding block**

1. Remove set screw (#25) and set aside
2. Using a spanner wrench turn the threaded collar (#23) counter clockwise and remove it from the holding block.
3. Turn the holding block upside down and gently tap it until remaining items slide out of holding block. Remaining items will be the thrust washers (#19) 3 each, thrust bearing (#20) 1 each, collar (#22) 1 each, spring (#21) 6 each.

### **Reassembly of the holding block**

1. Place a new o-ring (#18) in the holding block (#17)
2. Place a new o-ring (#24) in the threaded collar (#23)
3. Place holding block (#17) on a flat surface with the threaded end up.
4. Place the following parts in the holding block in the order listed
  - a. Thrust bearing washer (#19)
  - b. Thrust bearing (#20) *Coat with a high grade grease*
  - c. Thrust bearing washer (#19)
  - d. Collar (#22)
  - e. Six compression springs (#21) *Placed in the holes of the collar*
  - f. Thrust bearing washer (#19)

5. Place the threaded collar (#23) on top and compress the springs while threading the collar into the holding block. The threaded collar has two holes for the spanner wrench and two half moon slots  $\frac{3}{4}$  of the way down the side making an intermittent thread. Looking through the tapped hole where the set screw was (#25), continue to screw the collar into the holding block until you can see one of the slots appear. Watching the slots through the threaded hole, continue to thread the collar into the holding block  $\frac{1}{2}$  turn at a time until the last thread on the collar before the slot is past the set screw hole. You should only be able to see the slot in the collar.
6. Place set screw (#25) in the threaded hole of the collar and tighten. Then back off the set screw and tighten until it is snug.  
*Over tightening of this set screw will deform the collar and cause your vise screw to bind during use.*

### **Reassembling the nut and screw assembly**

1. Stand the screw on the hex end. Apply a thin coat of oil in the slot that holds the springs (#11) and the pin (#12) and down the length of the screw to the shoulder on the hex end
2. Place the holding block on the threaded end of the screw with the threaded collar side facing towards the hex end of the screw. Slide the holding block all the way down to the shoulder of the screw.
3. Slide a new o-ring (#15) onto the smooth end of the clutch
4. Place a new spiral retaining ring (#16) onto the smooth end of the clutch after the o-ring
5. Place clutch (#13) on the screw, smooth end first, with the two notches on the inside of the clutch facing downward opposite the drive slot. Slide the clutch down the screw, stopping just before the slot. *Do not cover the slot with the clutch.*

6. Place three springs (#11) into the slot standing them up vertically, one spring in each hole
7. Lay the pin (#12) on top of the 3 springs holding them in place with your hand. Use a pliers to compress and hold down the pin while you slide the clutch over the top of the pin.
8. When the clutch is on far enough to hold the pin in place, grasp the clutch with a rag or gloved hand and slide it all the way down, seating it in the mating bore of the holding block (#17). *There is a snap ring groove on the screw that will be visible when the clutch is in proper position.*
9. Stand the screw up with hex end on your work surface. Hold the screw with one hand and turn the clutch counter clockwise until the pin drops into the notch on the inside diameter of the clutch. *There are two notches on the inside diameter of the clutch. One has a ramp and the other does not. The pin must be in the notch that **does not** have the ramp*
10. Using an external snap ring pliers, slide the snap ring (#10) down the length of screw and snap into place in the groove on the screw. *Snap rings have one side that the edges will feel sharp and the other side the edges will feel rounded. The sharp side of the edges should be facing away from the clutch when installed. If the snap ring is installed backwards. The snap ring will have a tendency to pop out of its groove.*
11. Place a small amount of grease in the front nut (#14) then slide it on the screw with the plunger (#40) facing the hex end of the screw until it reaches the threads on the clutch. Thread the nut onto the clutch in a counter clock wise direction until all the threads of the clutch are inside the nut. *The threads in the front nut are left handed.*

12. Stand the screw on a soft surface with the threaded end down.  
Use a small screw driver to push the o-ring (#15) down into the recess of the nut.
13. Slide the spiral retaining ring down using a small screw Driver. Spread the end that is nearest the nut apart and push the leading edge into the groove on the inside diameter of the nut. Follow the retaining ring around with the screw driver (in the same fashion as threading a nut onto a bolt) until it snaps into the groove. Push the snap ring out from the inside to make sure it is seated in the groove in the nut.
14. Using the vise handle turn the screw counter clockwise while holding the front nut until the nut comes to a stop near the holding block. *There should be a small gap between the front nut and holding block.*
15. Spin the holding block counter clockwise until the set screw is facing straight up and in line with the top of the nut.
16. Place spiral retaining ring (#6) on the threaded end of the screw and slide it down towards the front nut.
17. Take seal (#5) and using a utility knife cut a slit in the diameter and place the seal around the diameter of the screw just behind the threads at the end of the screw. *This seal is very stiff. Cutting a slit in it allows you to slip it around the screw without having to push it on over the threads and possibly damaging the seal.*
18. Place a small amount of grease in the rear nut (#4) and thread it onto the screw in a clockwise direction until the threads are fully engaged in the nut.
19. Stand the screw and nut up on the rear nut. Slide the seal (#5) down and use a small screw driver to push the seal into the relief of the rear nut until it sits below the snap ring groove in the nut.

20. Slide the spiral retaining ring down and thread it into the retaining ring groove of the nut in the same manner as you did in step 12 for the front nut.
21. Turn the rear nut counter clock wise until you can feel resistance. *Do not force the nut any further than the point you feel resistance or it will force the seal and retainer out of place.*
22. Turn the nut back until the front and rear nut are in line with each other. *This sets the timing of the front and rear nut.*
23. Slide the nut and screw assembly back into the vise until it reaches the holding block assembly.
24. Make sure that the set screw in the holding block is facing up. Place the rubber spring pre-load block (#34) and steel wedge friction clamp (#33) into the space on the right side of the holding block (#17). *If these parts show excessive ware, or are deformed you may want to replace them.*
25. Place the stationary jaw back on your vise and tighten
26. Place the rear moveable on your vise and snap into place
27. Place the handle on the hex of the screw and turn clockwise until the rear moveable closes tight against the stationary jaw. Continue to tighten your vise until it draws the holding block containing the friction clamp into the vise. You will feel some resistance until the friction block slides into the vise. If the friction clamp will not slide into the vise, it may be necessary to use a hammer and punch to lightly tap on the friction clamp while maintaining pressure on the screw.
28. Once the holding block has slid into the vise body you can place your front moveable jaw on the vise and snap into place.

29. Continue to close the jaws of the vise until both the front and rear moveable contact the stationary.

30. Replace the button head cap screw (#28)

31. Your vise is now ready for use.

## HDL(M)6 Mechanical Drawing

