Robarge

ENTERPRISES

Operator's Manual & Part Listing

Pro City Kit

Operating Nut Removal Wrenches
And Replacement Operating Nuts

Model-120-07

Caution: It is the operator's responsibility to read and understand operating procedures before use.

Product Information

Thank you for choosing this product from **Robarge Enterprises, LLC!**

Your new **Pro City Kit** will save you money and time while replacing rounded or worn out operating valve nuts with new, long-lasting stainless steel replacement nuts. This **Pro City Kit** includes two extracting wrenches with attachments and an assortment of replacement stainless steel operating valve nuts with an installing wrench.

The **Pro City Kit** with its simple step-by-step directions and figures will have you changing worn out operating valve nuts with new stainless steel nuts quickly and efficiently.

We encourage you to read this owner's manual thoroughly before, and refer back to it while using this product. There are many different combinations of components to use for different situations.

Warning! If these wrenches are used improperly, you could cause irreversible damage to the wrenches and/or its components, voiding their limited warranty.

Warranty Information

Robarge Enterprises, Inc. offers a limited lifetime warranty on all wrenches for any manufacturing defects for the life of the wrench.

It is the operator's responsibility to read and understand operating procedures before using any of these products.

Use of these wrenches in any way other than described in the instructions may void their warranty

Table of Contents:

Additional Helpful Tools

* Roll of duct tape: It helps to hold nuts and bolts in the sockets for installation.
* A good flash light, spot light, or a mirror if sun is available: Helps identify the shape of the old Operating Nut down in the Valve box and the retaining nut or bolt that holds down the old Operating Nut.
* Strong Magnet: To retrieve any lost steel items.

Safety Equipment

- Face Shield – Safety Glasses
- Hard Hat
- A good pair of leather gloves
- Safety vest when on the road right of way
- Steel toe shoes

Cleaning the Valve Box

A Vac machine or a Mud pump used after flushing out the Valve Box with water does a very good job of cleaning Valve Boxes. Repeat this process a number of times to make sure the debris are out from around the valve nut and underneath it, if possible. This will help you see and identifying the operating nut shape and the retaining nut or bolt.

Assembly of the Wrench

Assemble the Pulling Wrench according to the diagram and steps below.

1. Thread the Plunger up the Threaded Pulling Shaft about 2 inches with the lobes facing down.

2. Install the Thread Protector onto the end of the Threaded Pulling Shaft using the Allen Wrench.

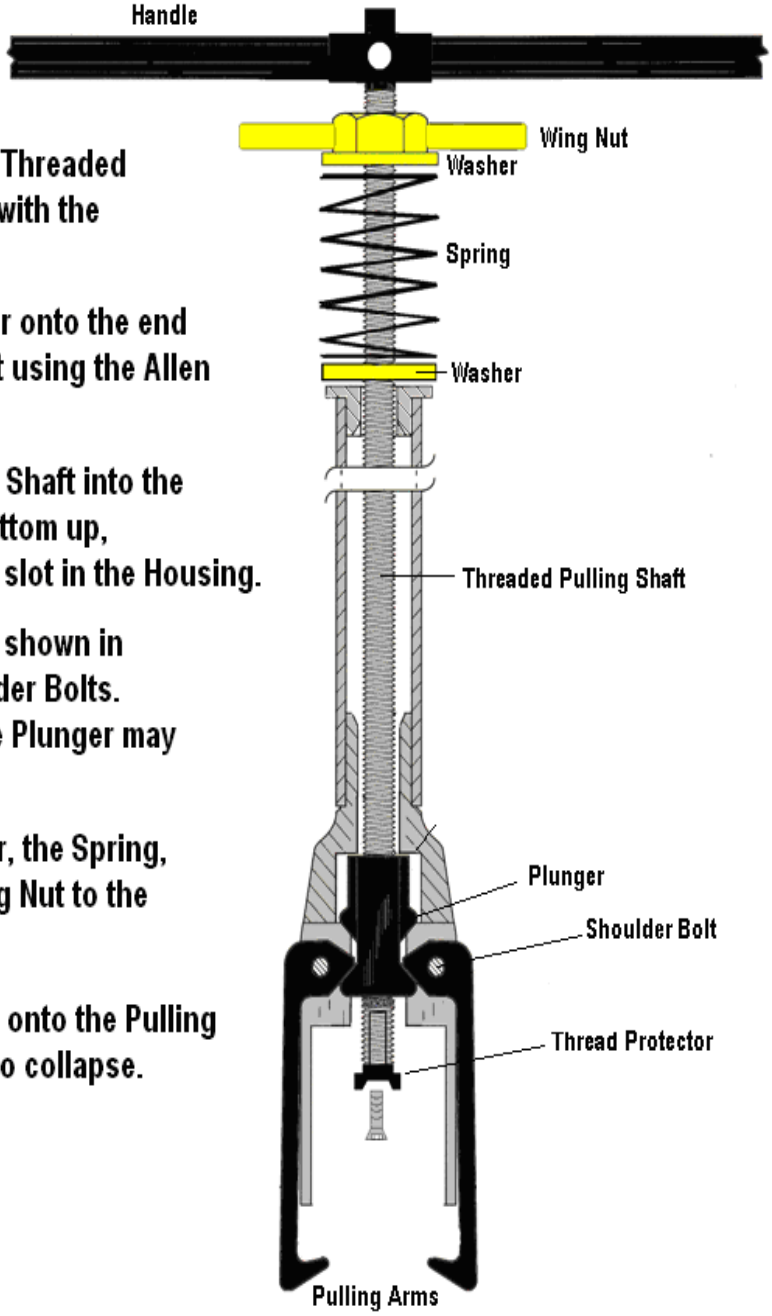
3. Slide the Threaded Pulling Shaft into the Wrench Housing from the bottom up, aligning the Plunger into the slot in the Housing.

4. Install the Pulling Arms as shown in the diagram using the Shoulder Bolts. (DO NOT OVER TIGHTEN - the Plunger may not move freely.)

5. At the top, install a Washer, the Spring, another Washer and the Wing Nut to the Threaded Pulling Shaft.

6. Thread the Wing Nut down onto the Pulling Shaft until the Spring starts to collapse.

7. Install the Handle on top.



Remove Retaining Nut or Bolt

The **Pro City Kit** comes with a variety of Nut Extracting Sockets and Adapters. All are drilled to be pinned to the Power Shaft. It is best to use the Power Shaft and Extracting Sockets separate from the Wrench Housing for better visibility in the Valve Box.

If you are not sure of which size Extracting Socket to use, begin with the largest Extracting Socket and work your way down to the smaller Sockets, until you feel that the Socket is grabbing the corners of the Retaining Nut or Bolt. If the nut or bolts are too big for 15/16 Extracting Socket and you have the Drill and Tap Kit a 1-1/8 Hole Saw will cut off all corners of the nut or bolt and the 15/16 Extracting Socket will lock on and pull off.

Remember to work the Nut or Bolt back and fourth so not to strip the Valve Stem. This will also help to clean out the thread grooves. Always pin all Sockets to the Power Shaft, so they aren't lost in the Valve Box!

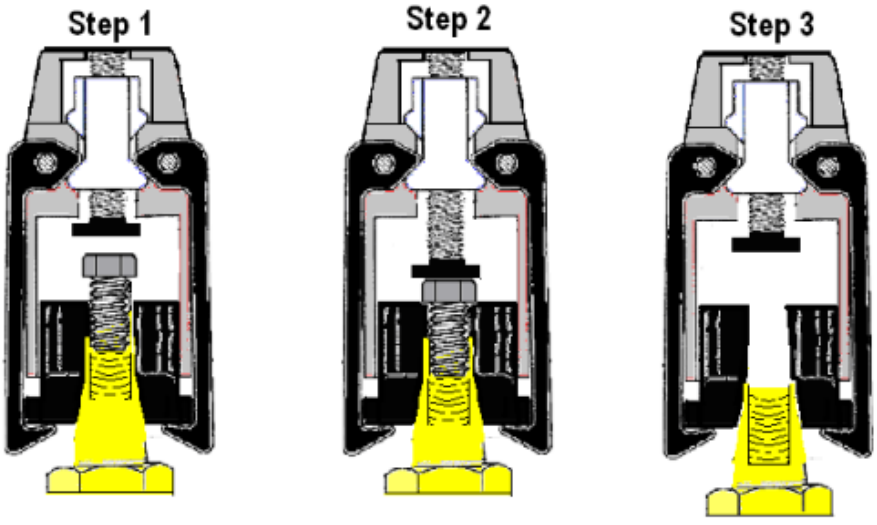
Setting the Wrench up to Pull a Old Operating Nut

Before lowering the Pulling Wrench down into the Valve Box, you must set the Threaded Pulling Shaft in the correct position. To do this, install the Handle onto the Pulling Shaft and turn the Handle counter clockwise until the Thread Protector at the bottom of the shaft touches the Plunger. The Pulling Arms can be set in any position you prefer from wide open to Spring loaded closed. To set wide open, loosen the Wing Nut off of the spring. For any other position, just tighten Wing Nut down onto the Spring. DO NOT let the Threaded Shaft turn during these adjustments. The spring should never be fully collapsed. Your Wrench is now set to be lowered down into the valve box and over the old Operating Nut. Lock the Pulling Arms under the base, turning back and forth, to making sure the Pulling Arms are locked under the base lip on BOTH SIDES. With the arms locked on, start turning the Pulling Shaft clockwise. As you turn the Pulling Shaft down, there are TWO things to watch for: FIRST - DO NOT FULLY COLLASPE THE SPRING. Back off of the Wing Nut to relieve the pressure. SECOND - NEVER PULL ON A NUT WITH ONLY ONE ARM HOOKED UNDER THE BASE OF THE NUT. If only one arm is pulling on the Nut, the Wrench will pull to one side or the other of the Valve Box. Back off of the Pulling Shaft and try to work the Arms back and forth with the spring fairly tight. This can help to loosen debris under the old Operating Nut. Begin to pull the Nut off again, but DO NOT FULLY COLLASPE THE SPRING. The Wrench will stand straight up and down while pulling if both arms are properly hooked under the old Nut. Some old Operating Nuts will pop right off; others can take a fair amount of pressure to pop off. Check if the Nut is off by pulling up on the Wrench once in a while.

Pulling the Old Operating Nut that was held on with a Bolt

Before following the next three steps, hook the Wrench on as shown in step 3 and pull up on it. It might just pull off. If not, follow these steps.

Step 1- Reinstall a new Bolt into the Valve Stem that is slightly longer than the old bolt, leaving a gap between the Nut head and the rounded Valve Nut, as shown below.
Step 2- Start pulling the rounded Valve Nut off. Just remember the Valve Nut can only come up to the bottom of the Bolt Head.
Step 3- Back off of the Pulling Shaft and pull the Wrench off. Pull the Bolt out of the Stem and reinstall the Wrench. The old Valve Nut should just pull off the rest of the way. If not, repeat steps 1and 2 and use a bolt that is 1/4” longer and will pull the Valve Nut higher.



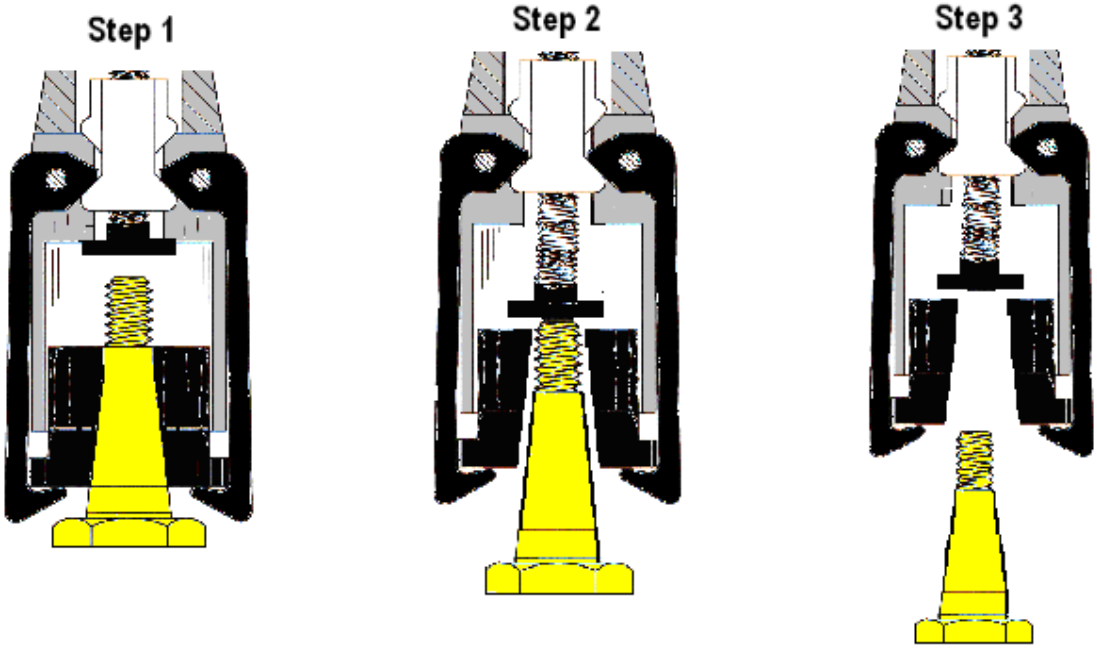
Pulling the Old Operating Nut that was held on with a Nut

Before following the next three steps, hook the Wrench on as shown in step 1 and pull up on it. It might just pull off. If not, follow these steps.

Step 1- Start with the Pulling Shaft backed up in the Wrench as far as possible. Next, lock the Pulling Arms on the Nut using the spring loaded Wing Nut at the top of the Wrench.

Step 2- Turn the Pulling Shaft clockwise until it engages the Valve Stem. Make sure you do not collapse the spring tight under the Wing Nut. When the end of the Pulling Shaft engages the top of the Valve Stem, you can back off the Wing Nut. The Pulling Arms will stay tight on the Valve Nut.

Step 3- Both arms must be hooked on the old Valve Nut while pulling, to ensure no damage is done to the Wrench. If they are not both hooked, the Wrench will pull to one side or the other of the Valve Box. If they are both hooked on properly, the Wrench will pull straight up and down in the Valve Box.



Replace the Old Operating Nut with a New Stainless Steel Operating Nut

Save your old Operating Nut, as you will need it to match it with a new Operating Nut. All of the new Valve Nuts in the Kit have an 11/16” hole; except for the #2 and 3 Nuts, which has a 3/4” hole.

If the Retaining Nut you removed from the Valve Stem is 3/4”, you will have to bore out the new Replacement Nut with a 3/4" hole before you install it. To double check the size, see if a 3/4” bolt fits through the hole in the old Valve Nut. If it does, you will need to bore out the new Valve Nut to a 3/4" hole.

Next, using the Gauge Stem Plate, place the old Operating Nut onto the different stem sizes to find the best fitting stem. Each stem on the Gauge Stem Plate is identified by a number, as are all of the new Stainless Steel Operating Nuts in the Kit. If the old Operating Nut fits a stem on the Gauge Plate, use the matching new Stainless Steel Operating Nut from the Kit.

To prevent installing a new Nut that may not seat all the way down onto the stem, it is best to try the next size larger Nut out of the Kit, if there is one. Insert the larger Nut into the Installing Wrench and lower it onto the Valve Stem. If it bottoms out and does not hold onto the Stem, use the original Replacement Nut you chose. This process will help make sure the correct Operating Nut is installed.

Replacing Lost Operating Nuts

You will need a very clean Valve Box to properly replace a lost Operating Nut. There are few different things you need to know.

First, was the old Operating Nut held down with a retaining nut or a bolt, and is it still on or in the Valve Stem. This is where a magnet comes in handy. Ninety-nine percent of Valve Stems are made out of non ferrous metals, like brass or bronze. A magnet will not stick to these Valve Stems, but if there is a corroded steel nut or bolt left on or in the Valve Stem the magnet will attract to it. This needs to be removed using an Extracting Socket.

If you're having trouble removing a nut or bolt, check inside of the Extracting Socket for filings. If the filings are yellow, STOP for you are twisting on the Valve Stem. If the filings are silver or steel, keep going - there is still a Nut or Bold to be removed.

Try to save the Retaining Nut or Bolt you remove so you can size it up with a new stainless steel Retaining Nut or Bolt from the Kit.

If there are no threads on top of the Valve Stem they might have been sheered off. The new Replacement Nuts have sharp ridges that will bite into the Valve Stem to hold in place. For the best results, try to install the larger Replacement Nuts first. If they're too big for the Valve Stem they will come back up in the Installing Wrench.

When the correct Replacement Nut is driven on, it will hold tight onto the Valve Stem. This is not a permanent fix unless you bolt it down. There is an for the **PRO CITY KIT** called a DRILL AND TAP KIT. With this kit you can drill and tap the Valve Stem to bolt the new Replacement Nut down properly.

Replace Retaining Nut or Bolt

The **Pro City Kit** supplies you with a variety of stainless steel nuts, bolts and washers most commonly used with water Operating Nuts.

There are 6 Sockets with built in spacers that fit the new Nuts and Bolts. Always pin the Sockets to the Power Shaft before using them to installing a Nut or Bolt.

Tear off a piece of duct tape and wrap it around the outside of the new Nut or Bolt, and then place it in the Socket. The Nut or Bolt should hold firmly in the Socket so it doesn't fall out as it's lowered into the Valve Box to be threaded into the Valve Stem.

To start the Nut or Bolt on the Valve Stem, push down firmly on the Power Shaft, turning clockwise at the same time.

When tightening a Retaining Bolt or Nut, watch the VALVE NUT AS IT MAY ALSO BE TURNING. Most likely you will need to close or open the valve all of the way and then continue tightening. DO NOT OVER TIGHTEN - BRASS STRIPS EASILY.

If the retaining nut or bolt was lost, follow one of the next steps to replace it:

When replacing a nut, start with the smallest Nut first, and then work your way to larger ones.

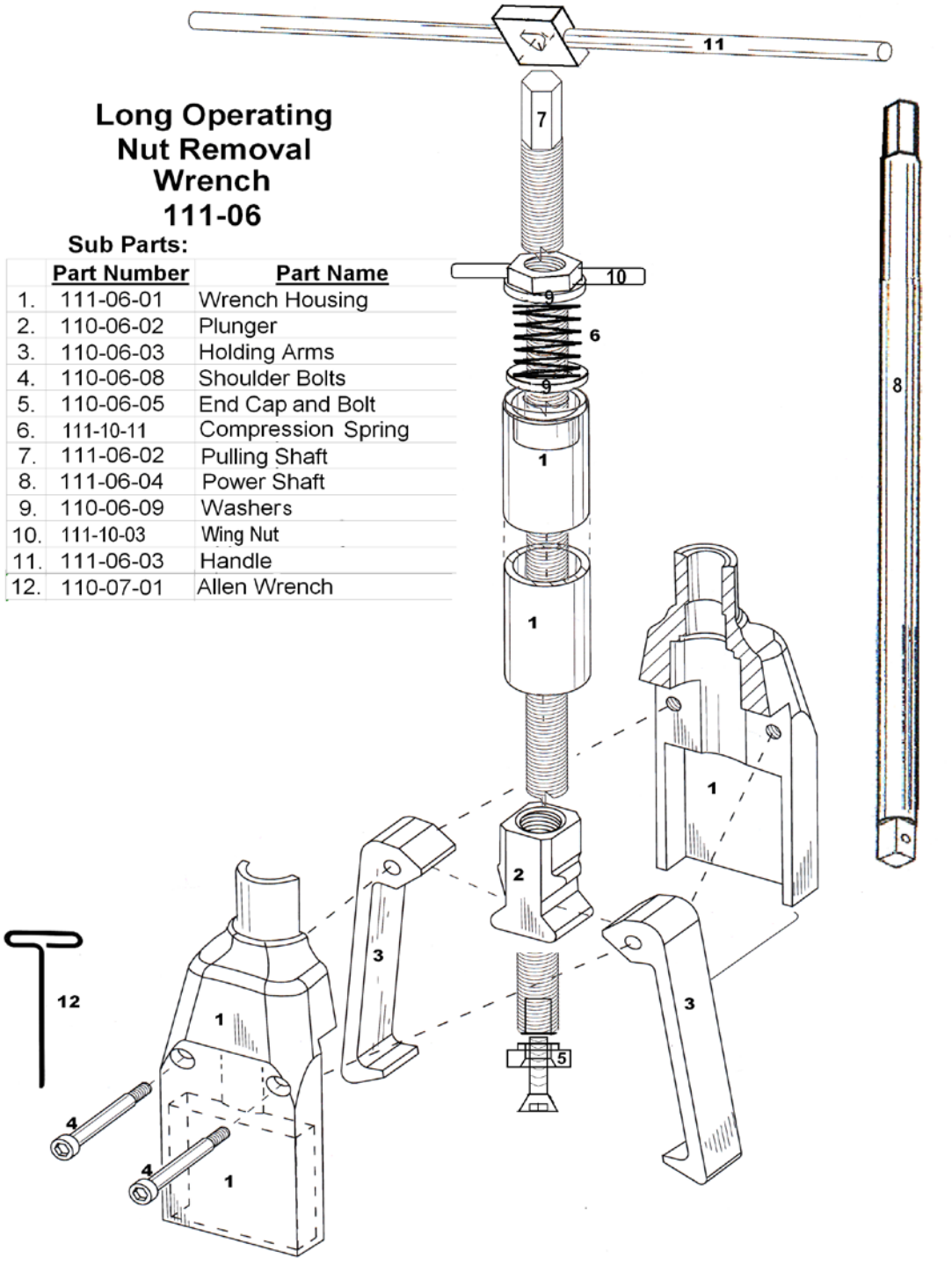
When replacing a Bolt, start with the largest Bolt first, and then work your way to the smaller ones.

Part Lists

Long Operating Nut Removal Wrench 111-06

Sub Parts:

	Part Number	Part Name
1.	111-06-01	Wrench Housing
2.	110-06-02	Plunger
3.	110-06-03	Holding Arms
4.	110-06-08	Shoulder Bolts
5.	110-06-05	End Cap and Bolt
6.	111-10-11	Compression Spring
7.	111-06-02	Pulling Shaft
8.	111-06-04	Power Shaft
9.	110-06-09	Washers
10.	111-10-03	Wing Nut
11.	111-06-03	Handle
12.	110-07-01	Allen Wrench



Pro City Kit Inventory List

PVC Pipe Protector 6 inch	120-07-01
6ft. 3in Nut Removal Wrench Housing	111-10-05
7ft Threaded Pulling Shaft and End cap	111-10-01
7ft Power Shaft	111-10-08
7ft Nut Installing Wrench	111-10-07
1 Steel Plunger	111-10-02
Stainless Steel Wing Nut with washer and spring	111-10-03
Drill and Tap Kit	121-10
Set of Extracting Sockets	120-07-02
Retaining Nuts & Bolts plus Pins for Sockets	120-07-03
Set of Deep Sockets with Sleeves	120-07-04
Allen wrench set	110-07-01
Holding Arms long & short	111-10-06
Removable Handle for Shafts	111-06-03
Toolbox	100-06-01
Upper Plastic Gauge Plate	100-06-02
Lower Plastic Holding Plate	100-06-03
Dead Blow Hammer	100-06-05
#1 Stainless Steel Operating Nut	101-06
#2 Stainless Steel Operating Nut	102-06
#3 Stainless Steel Operating Nut	103-06
#4 Stainless Steel Operating Nut	104-06
#5 Stainless Steel Operating Nut	105-06
#6 Stainless Steel Operating Nut	106-06
#7 Stainless Steel Operating Nut	107-06
#8 Stainless Steel Operating Nut	108-06
#9 Stainless Steel Operating Nut	109-06
#10 Stainless Steel Operating Nut	110-06

Drill and Tap Kit # 121-10

1 Drill guide
2 Drill Chuck and Key
3 3/8th Tap
4 1/4 in Drill and 11/32 in Drill
5 Drill Collar
6 Bolts and Washers

STEP BY STEP DIRECTIONS TO DRILL AND TAP A VALVE STEM

1. Pin the Drill Chuck to the Power Shaft. And then install 3/8” tapping into Drill Chuck, making sure it’s tight in the Chuck. Thread the 3/8” tap into Drill Guide for at least 2 or 3 threads.

2. Lower the Drill Guide into recess of the new Stainless Steel Operating Nut, making sure it seats.

3. Unscrew the 3/8” tap out of Drill Guide and pull it out of the Valve Box, leaving the Drill Guide in the new Operating Nut.

4. Pull out the 3/8” tap from the Drill Chuck and install a 1/4" Drill Bit and tighten it down. Put tape around the retaining pin on shaft so it won’t hit anything while spinning.

5. Lower the Power Shaft back into the Valve Box, putting the Drill into the center of the Drill Guide until the Drill hits the Valve Stem. Holding the shaft straight up and down, attach a Power Drill to the top of the Power Shaft to turn the shaft. High speed is not necessary in this instance; using lower speeds are less likely to break the drill bit.

6. Start drilling with a slight downward pressure. The goal is to make a small pilot hole in the Valve Stem that is about 1/4" deep.

7. Pull the Shaft out of the Valve Box and remove the Drill Bit out of the Chuck. Reinstall the 3/8” tap into the Chuck and tighten it down. Lower the Power Shaft down into the Valve Box and thread it back into the Drill Guide to pull it out of the Operating Nut. (If the Operating Nut comes up with Drill Guide that’s okay, but don’t drop the Operating Nut into the Valve Box - be careful.)

8. If the new Operating Nut is still on the Valve Stem it should be pulled off to make room for the shavings to fall away from the Valve Stem. If you leave the new Operating Nut on the Valve Stem while drilling, you will need to blow or wash the shavings off the top of the Operating Nut, as they will build up and possibly bind during the drilling process.

9. With the Operating Nut off, you should see the 1/4" pilot hole in the Valve Stem. Install the 1/4" Drill Bit into the Drill Chuck and tighten it down. Place the Collar onto the Bit about 1” up the Bit and tighten it down. The Collar will stop the Bit drilling at any depth you place it. Approximately 1” of threads is enough to hold down a new Operating Nut.

10. After drilling the 1/4" pilot hole a little over 1” deep, put the 11/32” Drill Bit into the Chuck and tighten it down. When starting to drill with this bit, (IMPORTANT) DO NOT PUT PRESSURE DOWN ON THE POWER SHAFT, AS IT WILL PULL ITSELF DOWN. HOLD UP A LITTLE AND TAKE YOUR TIME TO AVOID BREAKING THE DRILL BIT.

11. The 11/32” drill bit will bottom out in the 1/4" pilot hole. Now you can put pressure on the Power Shaft to drill deeper. If you prefer to drill deeper, it is easiest to start with a 1/4" drill to begin a deeper pilot hole first.

12. Now install the 3/8” Tapping Tool into the Drill Chuck and tighten it down. Lower the Power Shaft and Tapping Tool down into the drilled hole on the Valve Stem. Holding down on the Power Shaft, start turning it clock wise until the threading starts.

13. If you think the Valve Stem is turning while tapping, you can reinstall the Stainless Steel Operating Nut onto the Valve Stem. This insures that you will notice if the entire Operating Nut and Valve Stem are turning while tapping. The pressure to tap is minimal so always back up the tool after a thread or two and be sure to stop if it tightens so not to break the tap. Six to ten threads is enough threads to secure the Bolt down tight on the new Operating Nut.

14. Pull the Drill Chuck off of the Power Shaft and pin on the Socket for the 3/8” bolt. Insert the Bolt and Washer and then lower it into the Valve Box. Bolt down the new Operating Nut. If the Bolt tightens before the bolt head hits the Washer, use a shorter Bolt. You will see the Washer indent a little when the Bolt is properly tightened down.

IF YOU PREFER TO USE A 1/2" BOLT, YOU JUST NEED A. 7/16” DRILL BIT. B. 1/2" FORM TAP.

Trouble Shooting

Remove Retaining Nut or Bolt

Q: Not sure if there is any of the retaining nut or bolt left?
A: Check with a magnet if possible it will stick to steel not the brass or non ferrous metals. Most likely there is still a very little of the old retaining nut or bolt left. It is still best to start with the largest Extracting Socket and work your way down to the smaller ones. You may want to tap them down on top of the old operating nut to make sure you are able to catch something to pull off. If there is brass looking filing in the socket stop that is the stem. Only steel filings in the Extracting Socket indicate a nut or bolt that needs to be removed.

Pull the Old Operating Nut off of the Valve Stem

Q: Why aren't the both Holding Arms locking on the old operating nut?
A: If you are not sure the Holding Arms are going past the bottom of the old operating nut, most likely there is corrosion build up underneath the old operating nut that needs to be cleaned out. Using the Power Shaft with a long pin installed, scrap the underside of the old operating nut the best you can.
A: Are the Holding Arms straight not bent? If so, pull them off the Pulling Wrench and straighten them.
A: Using a bar or shaft try pushing it in.

Replace the Old Retaining Nut or Bolt with a Stainless Steel Retaining Nut or Bolt

Q: Not sure if the nut or bolt went on all the way?
A: If you have the new Stainless Steel Operating Nut installed, you need to block the operating nut so not to turn while tightening. You don't want the valve nut to turn while you are tightening the Retaining Nut or Bolt. Using the Installing Wrench turn it over and tap on the corners of the new operating nut to check for any movement if it rocks you my have to tighten retainer some more.

ACCESSORIES

Specialized Pulling Arms # 222-10-1

FOR PULLING VERY TALL OPERATING NUTS

USED WERE OPERATING NUTS HAVE NO CLEARANCE BETWEEN VALVE BOX AND NUT