CROSSFIRE
CHEMICAL INJECTION PUMP

One N’ Done Packing Installation Guide

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Available Options:

One N' Done Soft Goods Kit

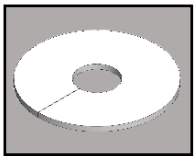
- Part number series: **LCO-1ND-00-XF1**
- Purchase if replacing an existing One N' Done packing
- Comes complete with a new One N' Done packing, retaining gland and applicable O-rings only
- *Recommendation: We recommend purchasing and installing a replacement nitrided plunger with every purchase of a soft goods kit. Plungers are purchased separately, and not included in the kit.*

One N' Done Packing	O-rings (1 Large & 2 Small)	One N' Done Retaining Gland x1 (showing top view and side profile)
		 

One N' Done Conversion Kit

- Part number series **LCO-1ND-00-XF1-CNVK** or **LCO-1ND-00-XF1-CNFK-ATR**
- Purchase if replacing an existing Chevron Vee packing
- Comes complete with a new One N' Done packing, applicable O-rings, One N' Done follower, retaining gland, nitrided plunger (regular length or adjustable length), plunger disc, half groove dowel pin, and Delrin bushing.
- *Note: Once a conversion kit has been completed, please order a soft goods kit for all future packing replacements. Conversion kits are only required once, for the first switch from Chevron Vee packing to One N' Done packing.*

(Pictures of included parts on next page)

One N' Done Packing	O-Rings (1 Large & 2 Small)	One N' Done Follower	One N' Done Retaining Gland x1 (showing top view and side profile)
			 
Nitrided Plunger	Plunger Disc	Half-Groove Dowel Pin	Delrin Bushing
			

Recommended Tools:

- Deburring tool/file
- Angled pick
- Allen keys – 3/16", 2.5mm & 5mm
- Hammer
- Red N' Tacky Lube
- Vice grips
- 1/8" Center punch
- Optional: Rubber mallet

Document Instructions:

For instructions on how to install the One N Done **soft goods kit**, refer to **page 5.**

For instructions on how to install the One N Done **conversion kit**, refer to **page 12**.

Installation of One N' Done Soft Goods Kit:

Step 1: Disassemble

- Ensure the motor is powered off and the priming valve on the fluid end is completely closed
    - Disconnect all fluid lines and isolate chemicals
- Remove the four bolts from the fluid end yoke
- Slide the fluid end and attached yoke off the pump
- Unscrew the packing gland adjustment nut (item #16, *Figure 1*), yoke, and remove the follower (item #15, *Figure 1*) and retaining gland (item #20, *Figure 1*). Set aside for later re-assembly. *Note: If you already have a retaining gland installed, dispose of the extra. Only one is needed.*

Step 2: Remove & Discard Old Soft Goods

- Remove the top and bottom bushings (item #1, #12, *Figure 1*) from the fluid end
    - Remove and discard O-rings (item #4, #10, #11, *Figure 1*)
- Remove the old One N' Done packing (item #14, *Figure 1*) and discard

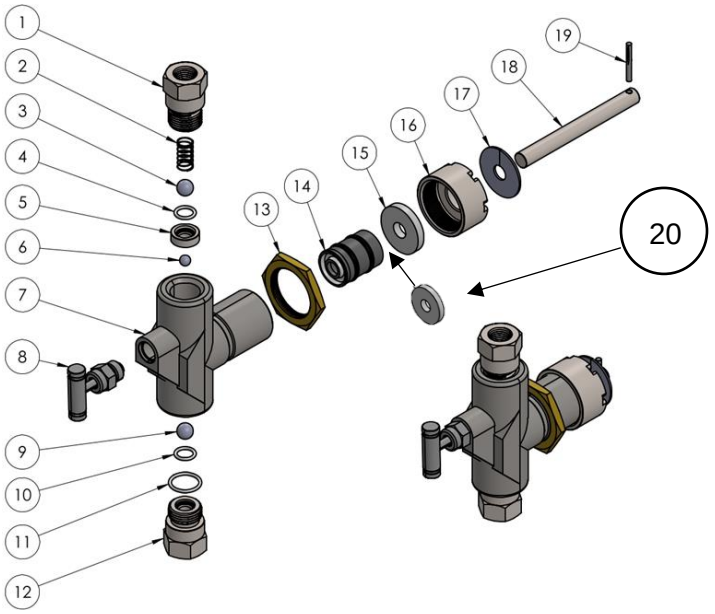
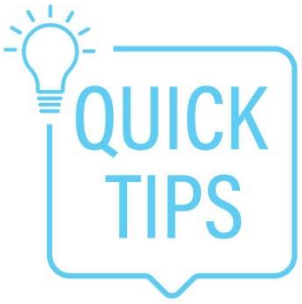


FIGURE 1: EXPLODED FLUID END – TECHNICAL DRAWING



*The original packing is **no longer** usable so do not worry about damaging it when removing it. However, please be careful not to damage the inside of the fluid end.*

Try using an angled pick or use a sharp tool to dig into the ID of the One N' Done to leverage and pry out the packing.

Step 3: Lubricate the One N' Done & Fluid End

- Lube the One N' Done Packing
    - Apply a small amount of lube to the outside (OD) of the One N' Done packing on the spring side *(Figure 2)*
        - Recommended Brand: Red N' Tacky, rice grain sized amount

Warning: **Do NOT lube the ID (inside) of the One N' Done Packing**

- Lube the Fluid End
    - Apply a pea sized amount of lube on the inside of the fluid end where the packing will be inserted *(Figure 3)*

FIGURE 2: LUBE ONE N' DONE OD

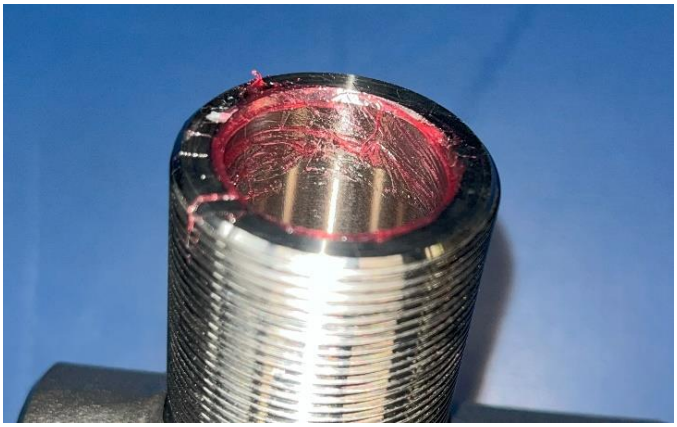
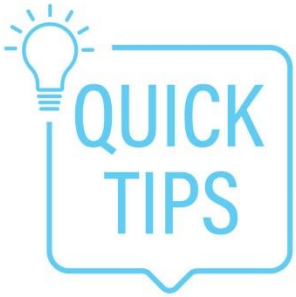


FIGURE 3: LUBE FLUID END ID

Step 4: Insert One N' Done

- Set the One N' Done on a clean hard surface, spring side up, *(Figure 4)* and line up the fluid end over the packing *(Figure 5)*
- Insert the spring side edge of the One N' Done into the fluid end chamber *(Figure 5)*
- Using a firm amount of pressure, begin to push down the fluid end
- The One N' Done should start to glide into the fluid end
- Continue pushing down the fluid end until the packing has been fully inserted



If the One N' Done begins to move too far sideways, stop pressing down onto it. Readjust so that the packing is oriented straight with the fluid end. Rotating the packing from its original position can help reduce damage.

Caution: *Be careful not to distort the shape of the One N' Done as this can affect the packings performance. If your One N' Done is oblong shaped (Figure 6, Figure 7), has any damage on the spring, or body of the packing, contact your sales representative for further instruction.*

FIGURE 4: SPRING SIDE OF ONE N' DONE

FIGURE 5: INSTALLING ONE N' DONE

FIGURE 6: DAMAGED ONE N' DONE – **DO NOT USE**

FIGURE 7: DAMAGED ONE N' DONE **– DO NOT USE**

- Alternate installation method:
  - Put the fluid end in a vice with the packing chamber facing up
  - Set the packing on the fluid end (spring side down)
    - Ensure the packing is straight and aligned with the fluid end
  - Gently tap the packing into the fluid end with a rubber mallet

- Once the packing has been inserted, ensure it is all the way in the fluid end chamber. Reference *Figure 8* for an example where the packing is not inserted to the correct depth, and *Figure 9* for an example where it is inserted to the correct depth.

FIGURE 8: INCORRECT DEPTH

FIGURE 9: CORRECT DEPTH

Step 5: Install O-rings

- Locate the three O-rings included in the kit (2 small, 1 large)
- Locate the bushings removed in step 1
    - Install the O-rings back into the appropriate bushings
    - 1x large and 1x small for the bottom bushing *(item #12, Figure 1)*
    - 1x small for the inside seat *(item #5, Figure 1)*
- Re-attach the bushings and all internal parts back onto the fluid end *(Figure 1)*

Step 6: Optional - Remove & Install New Plunger

Note: A new plunger is not included in the soft goods kit. We strongly recommend you replace the plunger while completing the soft goods kit, however the plunger must be purchased separately.

- Remove the old plunger
    - There are two different pin styles that keep the plunger in place:

        1.) Traditional Spring Pin: *Figure 8*

            The spring pin must be tapped out through the bottom of the plunger. Insert a 1/8” metal punch into the top of the hole and hammer the spring pin down and out the bottom of the hole.

        2.) New Half Groove Dowel Pin: *Figure 9*

            The new half groove dowel pin must be removed from the top and **cannot** be hammered through as the pin is tapered. Grab vice grips, hold onto the pin, and pull the pin up and out of the hole.

FIGURE 8: TRADITIONAL SPRING PIN

FIGURE 9: HALF GROOVE DOWEL PIN

- Discard the old plunger
- Locate the new plunger
    - Ensure you have the correct plunger length (adjustable length or standard) and that the plunger is Nitrided (*Figure 10, Figure 11*)

FIGURE 10: NOT NITRIDED

FIGURE 11: NITRIDED

- Insert the plunger into the thrust rod, line up the holes (*Figure 12*)
- Insert the half grove dowel pin into the plunger/thrust rod hole (*Figure 13*)
    - Reminder: The dowel pin is tapered, insert the smaller end into the hole with the larger diameter side face up
    - The larger side has three grooves cut into the pin for easy identification
- With a hammer, give the dowel pin a light tap, until engaged. The dowel pin will stick out slightly.

FIGURE 12: INSERT PLUNGER INTO THRUST ROD

FIGURE 13: INSERT DOWEL PIN

Warning: **Do NOT lube the plunger. The plunger must remain dry.**

Step 7: Reassemble

- Locate the fluid end rebuilt with the new One N' Done packing
- Locate the packing gland adjustment nut, retaining gland, and follower set aside in step 1 (item #15, #16, #20 – *Figure 1*)
- Screw the fluid end back onto the yoke until 0-1 threads are showing *(Figure 14)*
    - Ensure the arrow on the side of the fluid end is pointing up *(Figure 15)*
    - Tighten the brass lock nut until secure

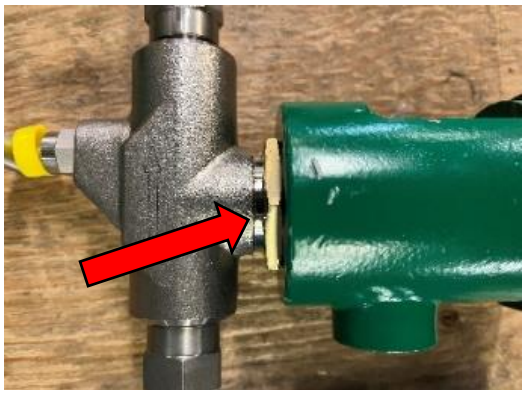


FIGURE 14: 0-1 THREADS

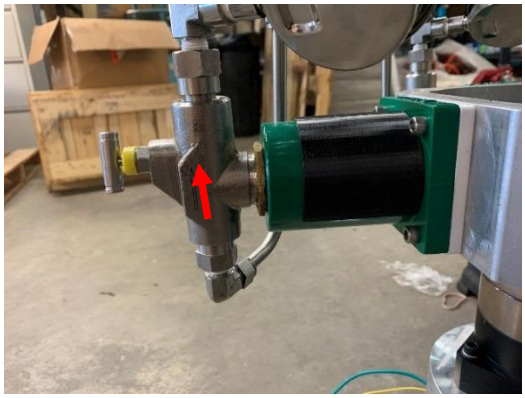


FIGURE 15: FLUID END ORIENTATION – ARROW UP

- Locate the retaining gland (item #20 - *Figure 1*) and insert into the packing chamber. This should inset into the chamber, taking up any remaining space as demonstrated in *Figure 9*.
- Next, insert the packing follower (item #15 - *Figure 1*), followed by the packing gland adjustment nut (item #16 - *Figure 1*)
- Tighten until secure.

Confused on how to tell the difference between the retaining gland and the packing follower? The retaining gland is designed to go inside the packing chamber, so the outside diameter (OD) will match the OD of the One N' Done packing. The packing follower will have a larger OD to match the inner diameter (ID) of the packing gland nut and is designed to sit outside the packing chamber, <u>not</u> inset. Additionally, the retaining gland is much thinner than the packing follower.

Any questions? Call LCO!

The One N' Done packing has a one-piece, spring-loaded design. This means the packing will auto adjust based on wear and tear and does not require manual adjustment of the packing nut based on performance. Once the packing nut is set, do not adjust, or tighten further at any point during packing lifespan.

- Slide the yoke and fluid end onto the plunger until the yoke has fully seated to the pump *(Figure 15)*
- Insert bolts through the yoke and onto the pump. Tighten bolts in a cross hatched pattern with a 3/16" Allen Key until secure.

Step 8: Complete a Manual Rotation Check

- Remove the clear acrylic top cover from the pump
- Insert an 5mm Allen key into the bolt in the center motor shaft and manually spin the motor *(Figure 16)*
    - The motor should spin 360 degrees with no resistance
    - If there is resistance that cannot be rotated past, a fluid end is bottoming out on the plunger
    - In such event, manually spin the fluid end out and off the yoke, one full turn at a time, until you can rotate past the fluid end
- Then, align the apex of the cam in line with the fluid end of interest *(Figure 17)*
    - Turn the fluid end in (further onto the green yoke) until the plunger bottoms out on the inside of the fluid end
    - Back the fluid end off, just until the arrow on the side of the fluid end body is pointing up (less than one full turn) *(Figure 18)*
    - Tighten brass lock nut to secure position

- Repeat this process on all fluid ends
- Re-check and complete a full 360-degree rotation

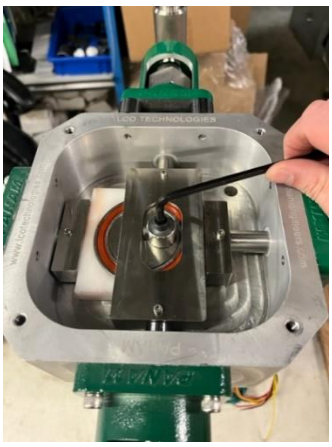


FIGURE 16: MANUALLY ROTATE 360 DEGREES WITH ALLEN KEY

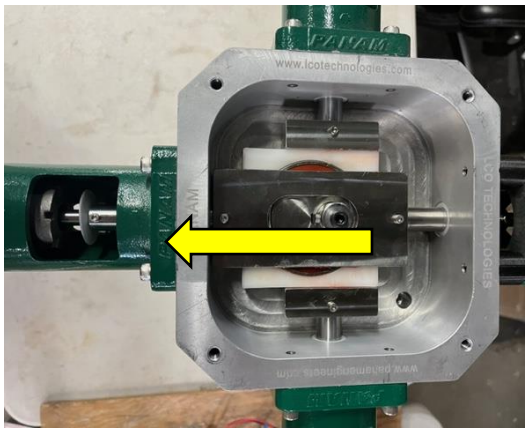


FIGURE 17: ALIGN APEX OF CAM WITH FLUID END OF INTEREST (YELLOW ARROW)

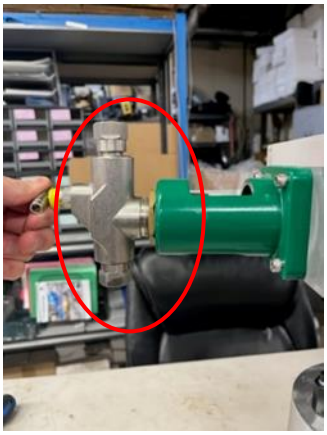
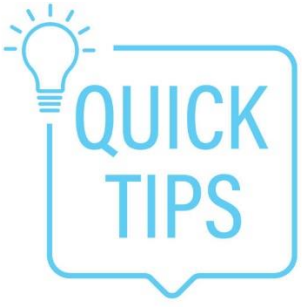


FIGURE 18: FLUID END ARROW POINTING UP

Warning: *The initial 360-degree manual rotation will only indicate if a fluid end is installed too close to the platform (plunger bottoming out). It will not indicate if a fluid end is installed too far out from the platform, which is equally important. If a fluid end is installed too far out, it can damage the packing and cause chemical leaks. Double check all fluid ends show 0-1 threads, even if the initial 360 rotation check passes.* If the fluid ends are not properly installed, this will cause damage to the pump and may lead to extreme wear and tear.

Step 9: Start Up Pump

- Ensure that your new One N' Done packing has been installed correctly:
  - Prior to introducing chemical or fluid, run the pump **DRY** for 5 minutes
  - Reintroduce the process and examine your fluid ends



If a fluid end is leaking, choke the discharge side of the fluid end that is leaking, close to the set point of the relief valve, and let it run for a couple of hours to allow the packing to form a better seal.

It should stop leaking. At this time, you can remove the restriction from the discharge side of the fluid end and proceed with operations.

Installation of One N' Done Conversion Kit:

Step 1: Disassemble

- Ensure the motor is powered off and the priming valve is completely closed
  - Disconnect all fluid lines and isolate chemicals
- Remove the four bolts from the fluid end yoke
- Slide the fluid end and attached yoke head off the pump
- Unscrew the packing gland adjustment nut (item #16, *Figure 1*) and yoke

Step 2: Remove & Discard Old Soft Goods

- Remove the top and bottom bushings (item #1, #12, *Figure 1*) from the fluid end
  - Remove and discard O-rings (item #4, #10, #11, *Figure 1*)
- Remove the old One N' Done packing (item #14, *Figure 1*) and discard
- Remove the old packing follower (item #15, *Figure 1*) and discard

***Warning:** Using the old chevron packing follower with a One N' Done packing may result in packing failure. The provided follower **and** retaining gland in the conversion kit **must be used** as it does not compress the One N' Done packing.*

- Locate the Delrin bushing for the fluid end of interest (item #6, *Figure 2*)
  - Unscrew the two bolts holding this bushing in place – set bolts aside
  - Pull the Delrin bushing out and off the top works – discard

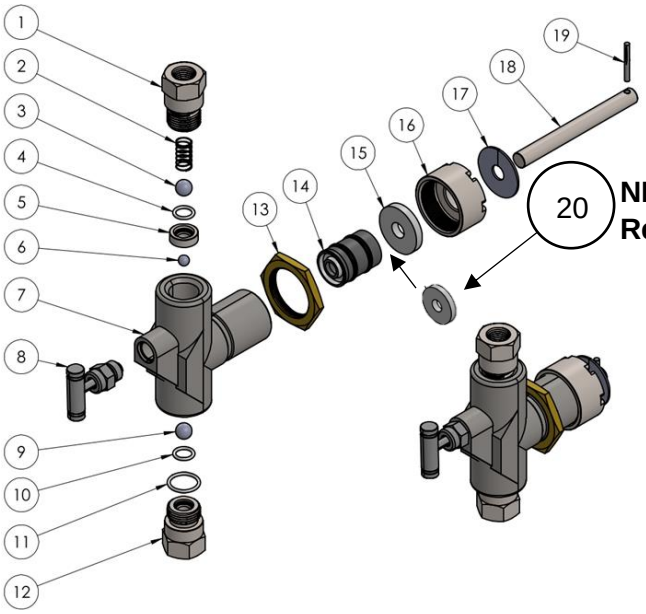


FIGURE 1: EXPLODED FLUID END – TECHNICAL DRAWING

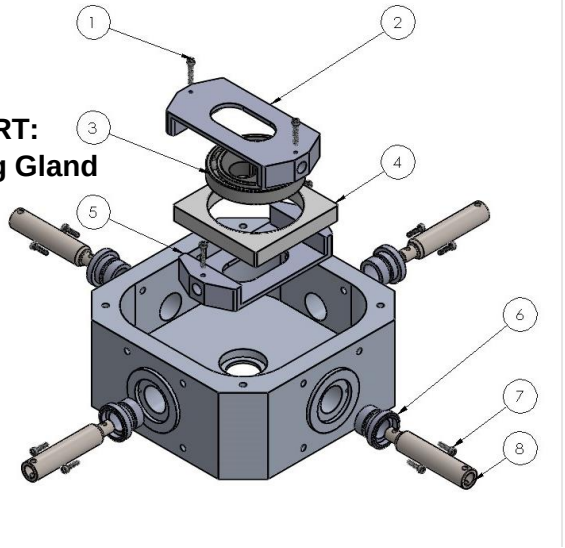
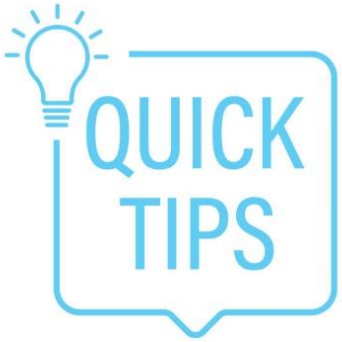


FIGURE 2: EXPLODED TOP WORKS – TECHNICAL DRAWING



*The original packing is **no longer** usable so do not worry about damaging it when removing it. However, please be careful not to damage the inside of the fluid end.*

Try using an angled pick or use a sharp tool to dig into the ID of the One N' Done to leverage and pry out the packing.

Step 3: Deburr Edge

- Check the inside edge of the fluid end to see if it has a sharp edge
    - *Figure 3* shows the **incorrect** sharp edge, *Figure 4* shows the **correct** deburred edge
    - All new Fluid End purchases from April 2023 have the corrected edge
- If the edge has not been smoothed this can cause damage to the packing O-rings and will cause performance issues
- Use a deburring tool or file to remove the sharp edge
- Clean any metal debris or shavings

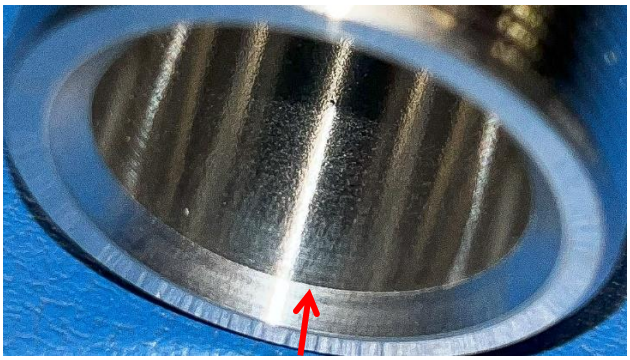


FIGURE 3: INCORRECT SHARP EDGE

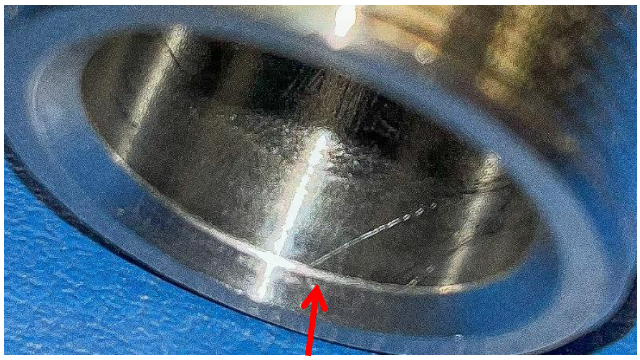


FIGURE 4: CORRECT DEBURRED EDGE

Warning: **Ensure there are no metal shavings or debris left inside the fluid end.**

Step 4: Lubricate the One N' Done & Fluid End

- Lube the One N' Done Packing
    - Apply a small amount of lube to the outside (OD) of the One N' Done packing on the spring side *(Figure 5)*
        - Recommended Brand: Red N' Tacky, rice grain sized amount

Warning: **Do NOT lube the ID of the One N' Done Packing**

- Lube the Fluid End
    - Apply a pea sized amount of lube on the inside of the fluid end where the packing will be inserted *(Figure 6)*

FIGURE 5: LUBE ONE N' DONE OD

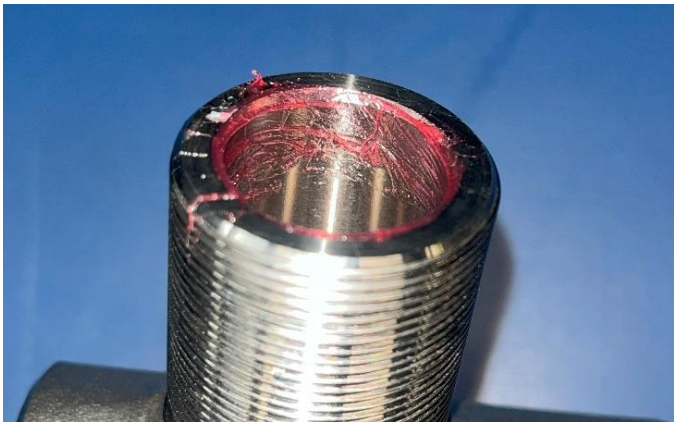
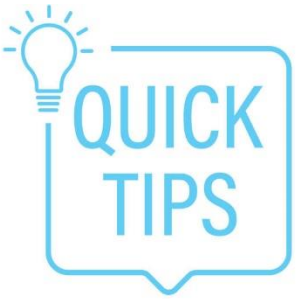


FIGURE 6: LUBE FLUID END ID

Step 5: Insert One N' Done

- Set the One N' Done on a clean hard surface, spring side up, *(Figure 7)* line up the fluid end over the packing *(Figure 8)*
- Insert the spring side edge of the One N' Done into the fluid end chamber
- Using a firm amount of pressure, begin to push down the fluid end
- The One N' Done should start to glide into the fluid end
- Continue pushing down the fluid end until the packing has been fully inserted



If the One N' Done begins to move too far sideways, stop pressing down onto it. Readjust so that the packing is oriented straight with the fluid end. Rotating the packing from its original position can help reduce damage.

***Caution:** Be careful not to distort the shape of the One N' Done as this can affect the packings performance. If your One N' Done is oblong shaped (Figure 9, Figure 10), has any damage on the spring, or body of the packing, contact your sales representative for further instruction.*

FIGURE 7: SPRING SIDE OF ONE N' DONE

FIGURE 8: INSTALLING ONE N' DONE

FIGURE 9: DAMAGED ONE N' DONE – DO NOT USE

FIGURE 10: DAMAGED ONE N' DONE – DO NOT USE

- Alternate installation method:
  - Put the fluid end in a vice with the packing chamber facing up
  - Set the packing on the fluid end (spring side down)
    - Ensure the packing is straight and aligned with the fluid end
  - Gently tap the packing into the fluid end with a rubber mallet

- Once the packing has been inserted, ensure it is all the way in the fluid end chamber. Reference *Figure 11* for an example where the packing is not inserted to the correct depth, and *Figure 12* for an example where it is inserted to the correct depth.

FIGURE 11: INCORRECT DEPTH

FIGURE 12: CORRECT DEPTH

Step 6: Install O-rings and Delrin Bushing

- Locate the three O-rings included in the kit (2 small, 1 large)
  - Locate the top and bottom bushings removed in step 1
  - Install the O-rings back into the appropriate bushings
    - 1x large and 1x small for the bottom bushing *(item #12, Figure 1)*
    - 1x small for the inside seat *(item #5, Figure 1)*
  - Re-attach the bushings and all internal parts back onto the fluid end *(Figure 1)*
- Locate the new Delrin bushing and install into the top works *(item #6, Figure 2)*
  - Attach the two screws set aside in step 2, tighten until snug

Step 7: Remove & Install New Plunger

- Remove the old plunger
  - There are two different pin styles that keep the plunger in place:

    1.) Traditional Spring Pin:

    The spring pin must be tapped out through the bottom of the plunger. Insert a 1/8” metal punch into the top of the hole and hammer the spring pin down and out the bottom of the hole.

    2.) New Half Groove Dowel Pin:

    The new half groove dowel pin must be removed from the top and cannot be hammered through as the pin is tapered. Grab vice grips, hold onto the pin, and pull the pin up and out of the hole.

FIGURE 13: TRADITIONAL SPRING PIN

FIGURE 14: HALF GROOVE DOWEL PIN

- Discard the old plunger
- Locate the new plunger
    - Ensure you have the correct plunger length (adjustable length or standard) and that the plunger is Nitrided (*Figure 15, Figure 16*)

FIGURE 15: NOT NITRIDED

FIGURE 16: NITRIDED

- Insert the plunger into the thrust rod, line up the holes (*Figure 17*)
- Insert the half grove dowel pin into the plunger/thrust rod hole (*Figure 18*)
    - Reminder: The dowel pin is tapered, insert the smaller end into the hole with the larger diameter side face up
    - The larger side has three grooves cut into the pin for easy identification
- With a hammer, give the dowel pin a light tap, until engaged. The dowel pin will stick out slightly.

FIGURE 17: INSERT PLUNGER INTO THRUST ROD

FIGURE 18: INSERT DOWEL PIN

Warning: **Do NOT lube the plunger. The plunger must remain dry.**

Step 8: Reassemble

- Locate the fluid end rebuilt with the new One N' Done packing
- Locate the packing gland adjustment nut, **new retaining gland** and **new follower** provided in the kit (item #15, #16, #20 – *Figure 1*)
- Screw the fluid end back onto the yoke until 0-1 threads are showing *(Figure 19)*
- Ensure the arrow on the side of the fluid end is pointing up *(Figure 20)*
- Tighten the brass lock nut until secure

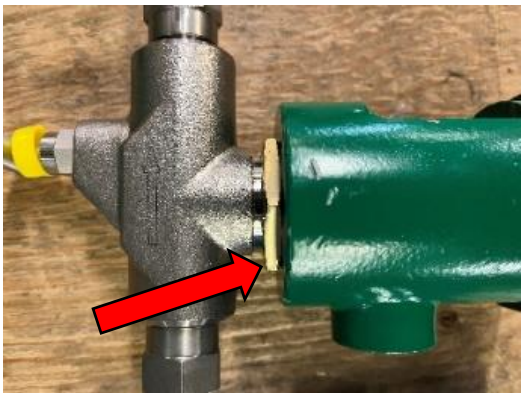


FIGURE 19: 0-1 THREADS

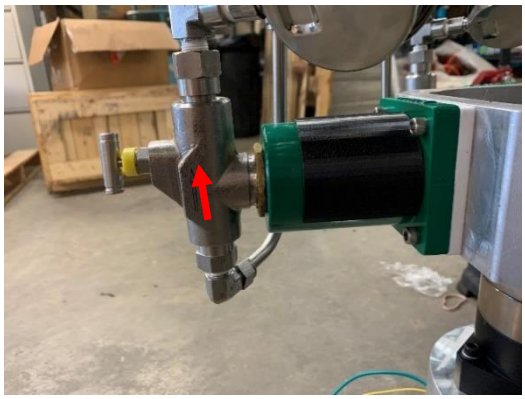


FIGURE 20: FLUID END ORIENTATION – ARROW UP

ORIGINAL YOKE

ORIGINAL YOKE W SPACER

2ND EDITION YOKE

3RD EDITION YOKE

Note: There are multiple versions of the green yoke that you may have out in the field. If you have an original yoke with spacer, a 2nd edition yoke, or a 3rd edition yoke, please proceed with the instructions. If you have an ***original yoke, with no white spacer****, please contact LCO and we will provide a 3rd edition yoke free of charge.*

- Locate the retaining gland (item #20 - *Figure 1*) and insert into the packing chamber. This should inset into the chamber, taking up any remaining space as demonstrated in *Figure 12*.
- Next, insert the packing follower (item #15 - *Figure 1*), followed by the packing gland adjustment nut (item #16 - *Figure 1*)
- Tighten until secure.

Confused on how to tell the difference between the retaining gland and the packing follower? The retaining gland is designed to go inside the packing chamber, so the outside diameter (OD) will match the OD of the One N' Done packing. The packing follower will have a larger OD to match the inner diameter (ID) of the packing gland nut and is designed to sit outside the packing chamber, not inset. Additionally, the retaining gland is much thinner than the packing follower.

Any questions? Call LCO!

The One N' Done packing has a one-piece, spring-loaded design. This means the packing will auto adjust based on wear and tear and does not require manual adjustment of the packing nut based on performance. Once the packing nut is set, do not adjust, or tighten further at any point during packing lifespan.

- Slide the yoke and fluid end onto the plunger until the yoke has fully seated to the pump *(Figure 20)*
- Insert bolts through the yoke and onto the pump. Tighten bolts in a cross batched pattern with a 3/16" Allen Key until secure
- Attach the plunger disc provided in the kit to the plunger *(Figure 21)*

FIGURE 21: PLUNGER DISC ON PLUNGER

Step 9: Complete a Manual Rotation Check

- Remove the clear acrylic top cover from the pump
- Insert an Allen key into the bolt in the center motor shaft and manually spin the motor *(Figure 22)*
    - The motor should spin 360 degrees with no resistance
    - If there is resistance that cannot be rotated past, a fluid end is bottoming out on the plunger
    - In such event, manually spin the fluid end out and off the yoke, one full turn at a time, until you can rotate past the fluid end
- Then, align the apex of the cam in line with the fluid end of interest *(Figure 23)*
    - Turn the fluid end in (further onto the green yoke) until the plunger bottoms out on the inside of the fluid end
    - Back the fluid end off, just until the arrow on the side of the fluid end body is pointing up (less than one full turn) *(Figure 24)*
    - Tighten brass lock nut to secure position
- Repeat this process on all fluid ends
- Re-check and complete a full 360-degree rotation

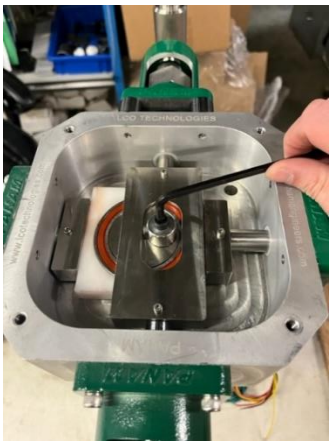


FIGURE 22: MANUALLY ROTATE 360 DEGREES WITH ALLEN KEY

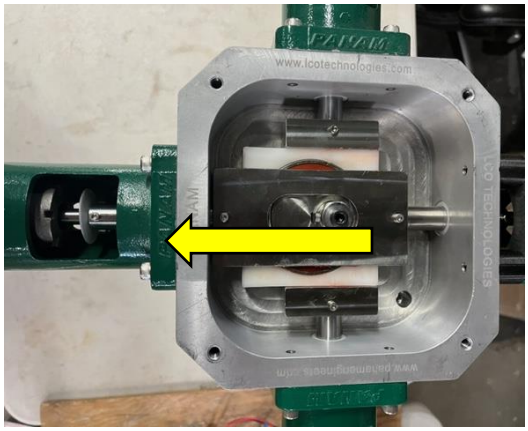


FIGURE 23: ALIGN APEX OF CAM WITH FLUID END OF INTEREST (YELLOW ARROW)

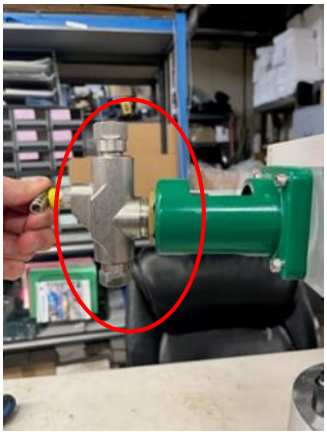
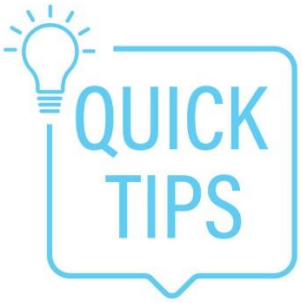


FIGURE 24: FLUID END ARROW POINTING UP

Warning: *The initial 360-degree manual rotation will only indicate if a fluid end is installed too close to the platform (plunger bottoming out). It will not indicate if a fluid end is installed too far out from the platform, which is equally important. If a fluid end is installed too far out, it can damage the packing and cause chemical leaks. Double check all fluid ends show 0-1 threads, even if the initial 360 rotation check passes.* If the fluid ends are not properly installed, this will cause damage to the pump and may lead to extreme wear and tear.

Step 10: Start Up Pump

- Ensure that your new One N' Done packing has been installed correctly:
  - Prior to introducing chemical or fluid, run the pump **DRY** for 5 minutes
  - Reintroduce the process and examine your fluid ends



If a fluid end is leaking, choke the discharge side of the fluid end that is leaking, close to the set point of the relief valve, and let it run for a couple of hours to allow the packing to form a better seal.

It should stop leaking. At this time, you can remove the restriction from the discharge side of the fluid end and proceed with operations.

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