

# Replacing MS11-NG2 Push-rod

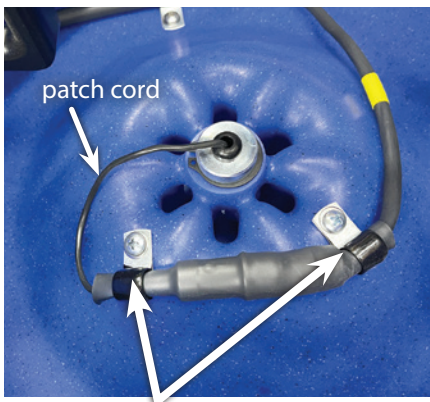
If the push-rod on your MS11-NG2 camera has been damaged, you can replace it yourself with replacement sections. You will need a large area to unwind the new push rod out, or have a helper hold the bundle together as you attach the end and then feed it in to the reel.

## Tools you will need

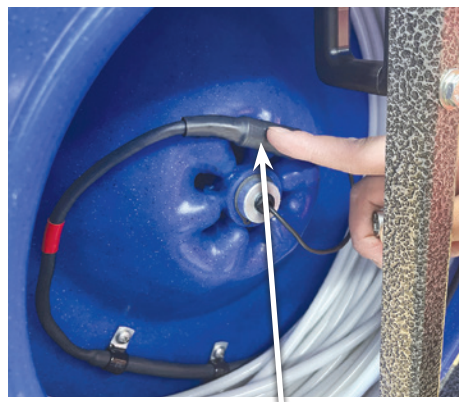
- Screwdriver
- Power screwdriver with 3/8" adapter
- 4: 3/8" vinyl clamps
- 2: 10/32 x 3/4" bolts
- 2: 10/32 hex nuts
- 2: 10 x 3/4" self tapping screws
- Electrical tape
- Membrane sleeve (*incl with new push-rod*)
- Heat gun



## 1 Remove old push-rod

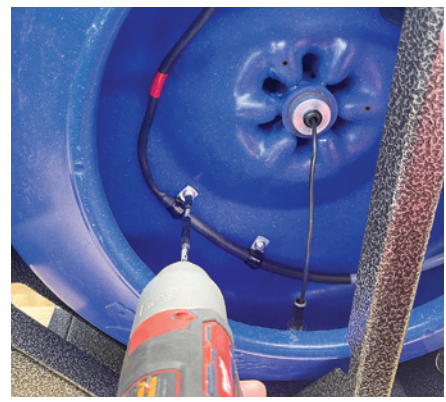


Remove the 2 clamps which secure the push-rod/patch cord connection.



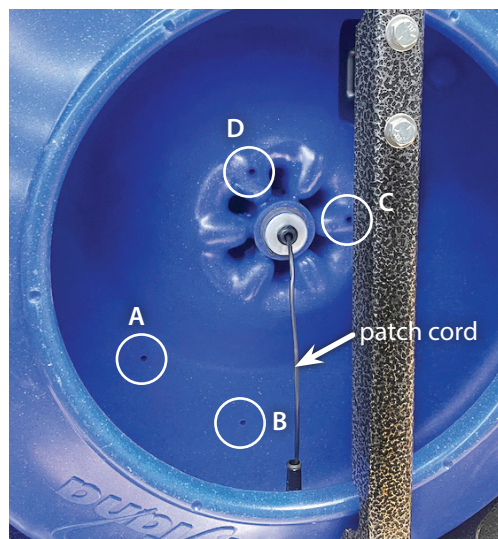
Carefully cut the membrane wrap on the push-rod side and peel back.

Disconnect old push rod from patch cord



Remove the two brackets that secure the end of the old push-rod to the reel.

Remove old push-rod, be careful to not let it spring out. Remove any remaining membrane from patch cord.



Note the attachment holes A, B, C and D on the reel (left), for reattaching clamps moving forward.

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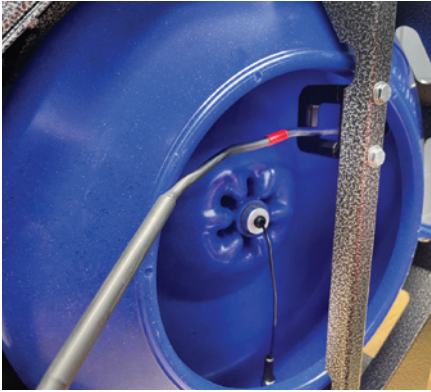
▶ [youtube.com/videoMyTana](https://youtube.com/videoMyTana)

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## 2 Start new push-rod

Cut open the new section of push-rod taking care to not let it spring out of control.

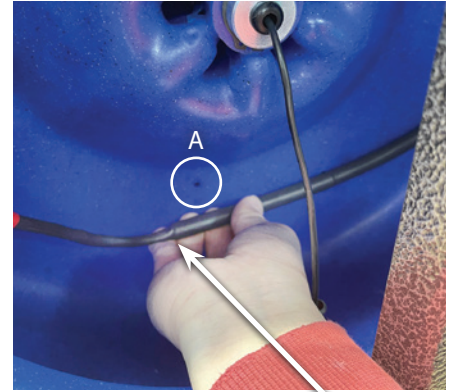
Carefully lay it out on the ground. Make sure no one steps on it or nothing rolls over it.



Feed the patch cord connection end of the new push-rod through the guide bracket so the push-rod will load in counter clockwise.



Feed new push-rod in...



...until it is about in this position, note bump at start of main push rod in relation to hole A.

## 3 Attach anchor bolts



Attach the first clamp with one of the 10/32 x 3/4" bolts to hole A (hex nuts will be added later).

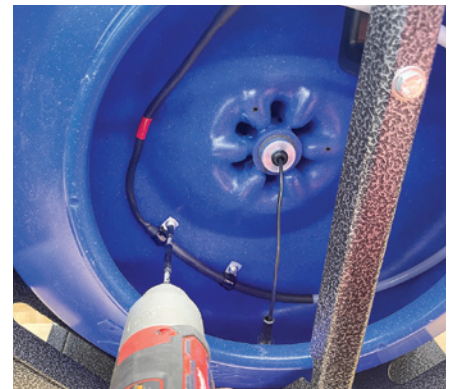


Screw in just until snug. You will tighten it completely after all the push-rod is loaded into the reel.



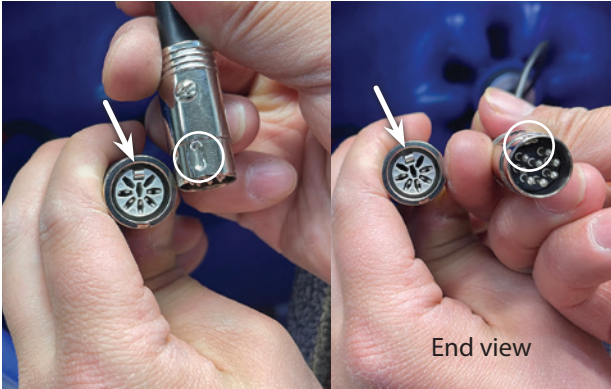
Attach a second clamp with the other 10/32 x 3/4" bolt to hole B.

Check that both bolts are snug. Reel should look like this.





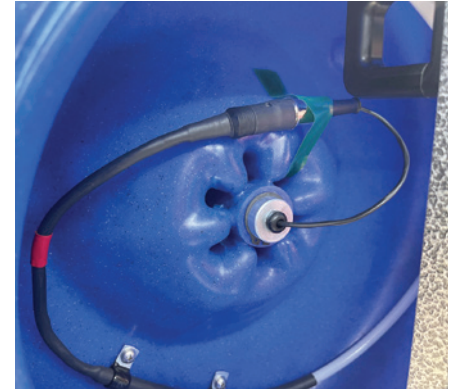
## 4 Patch cord connection



Line up the notch on the patch cord with the "key" on the push-rod as shown.

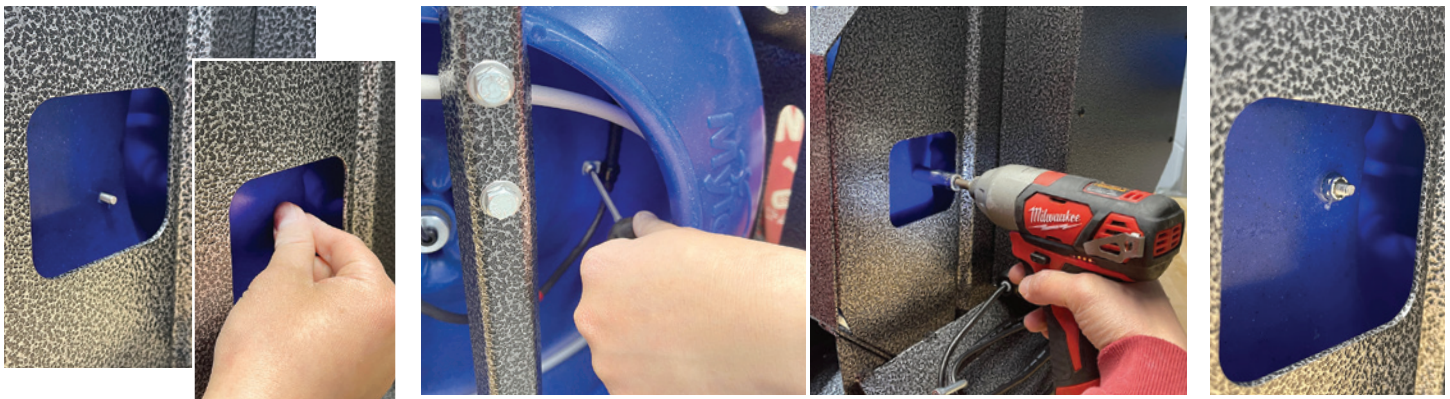


With notches lined up, push together until snug



Put electrical tape over connection to keep it out of the way while feeding the rest of the push-rod into the reel.

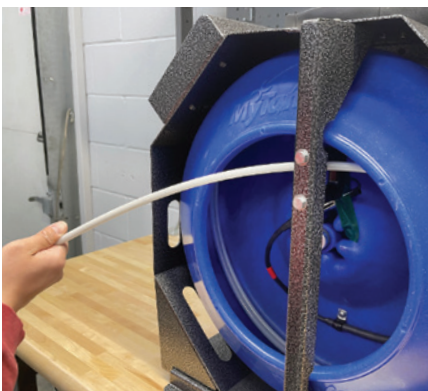
## 5 Secure anchor bolts



Screw the hex nuts onto the bolts on the back side of the reel, through the frame opening.

Hold the bolt secure on the inside as you tighten the nut on the backside using the 3/8" adapter on the power drill.

## 6 Feed new push rod in



Finish winding the new push rod into the reel counter clockwise.



Be sure to stack the push-rod in neat "rows" to avoid kinking it.



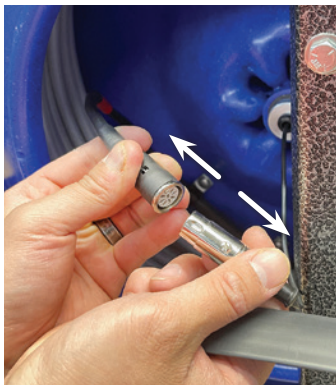
It is best to feed the camera head connector through the guide and keep it inside of the reel.



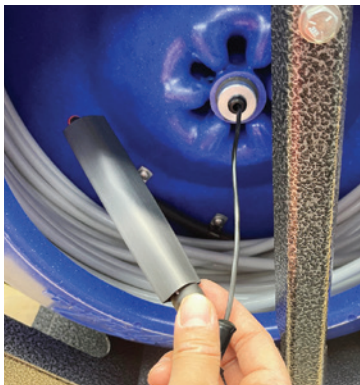
If you leave it out like this, it could spring out as you are working. Remove electrical tape.



## 7 Add membrane wrap



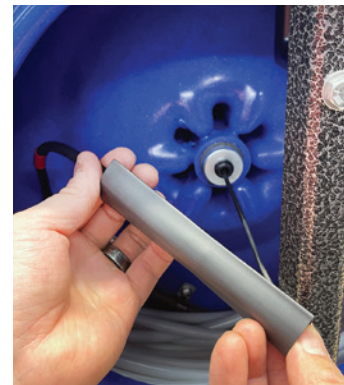
Disconnect the patch cord connection.



Slide the membrane sleeve over the push-rod connection.



Reconnect the patch cord to the push-rod.



Position the membrane sleeve over both sides so the connection is covered completely.

## 8 Shrink wrap and clamps



Use the heat gun to shrink the membrane over the connection.



Without wasting time and working while the membrane is pliable, position the last 2 clamps over the membrane on either side of the connection.



Line the clamps up with holes C and D and squeeze to tighten.



Use the self tapping screws to attach to holes C and D.

