



2022 Texas Water - Vaughan Exhibition Event Outline

This is a 2-person team challenge designed to test their mechanical skills and ability to work together. Each team will be timed and judged on changing out an impeller, cutter bar and cutter nut on a Vaughan Chopper Pump model HE4K6CS. This pump will be a bare pump with no motor stool, motor, or base plate. It will be mounted to a mobile worktable. The team with the best time will be declared the winning team.

The tools provided will be 2) 9/16" ratchet wrenches, 2) alignment pins, 1) shaft holding tool, 1) 1/2" drive torque wrench and 1) 3/4" drive, 1 11/16" socket with 1) 1/2" to 3/4" drive adapter.

Pre-Challenge walk through and inspection.

- Before each team can start their pre-challenge walk through, they will need to present the required PPE to the judges for each team member. Required PPE are.
 - Gloves
 - Eye protection (safety glasses, face shield and/or safety goggles)
 - Hard hat
 - Work boots

If any of these PPE items are not presented to the judges before the pre-challenge walk through the team will be charged with a 5 second penalty per missing item to be added to their finishing time.

- The head judge will ask the team to identify who is the team captain.
- Each team will be given 2 minutes prior to their scheduled event time to walk through and inspect the challenge. During this 2-minute time frame each team will have the chance to inspect the toolbox and arrange the tools however they feel it is necessary. All tools must remain in the toolbox with the lid closed and latched before the challenge is started except for the torque wrench. It will be in its own case and preset to 50lbs.
- Each team can look over the pump to strategize their moves. No fasteners may be loosened or removed prior to the timed challenge.
- The pump shaft may be rotated prior to the start of the timed challenge.
- Each team may arrange the impeller, cutter bar and cutter nut that will be installed in the pump however they prefer as long as these items stay within the designated area on the work bench.
- During these 2 minutes the teams can ask judges questions. At no time are the judges to give any advise that could be used as an advantage.
- At 1 minute 30 seconds the head judge will announce 30 seconds remaining. This is an alert for the team to finish the Pre-Challenge walk through.
- A 10 second count down will be given to signal the end of the walk through. The team will have all the tools in the toolbox with the lid closed and latch by the end of the 2 minutes or a 5 second penalty will be added to their finishing time.
- At the end of these 2 minutes the head judge will ask the team captain if they have any questions and are they ready to proceed with the challenge.



The Challenge:

- Each member of the team will start in the designated starting/finishing area with their PPE on. Here they will wait for the head judge to signal the start of the event. The timer will start on the command from the head judge.
- The head judge will ask the team captain if the team is ready to begin. The team captain will signal to the head judge by stating “we are ready” with a thumbs up for both a visual and verbal signal to begin the challenge.
- When signaled to start the event, each team member will proceed with the challenge.
- The team will approach the work bench, open the toolbox, gather the tools needed and proceed to remove the suction manifold installing the alignment pins in the 11:00 and 1:00 positions.



- Once the suction manifold is removed, using the shaft holding tool loosen and remove the cutter nut.



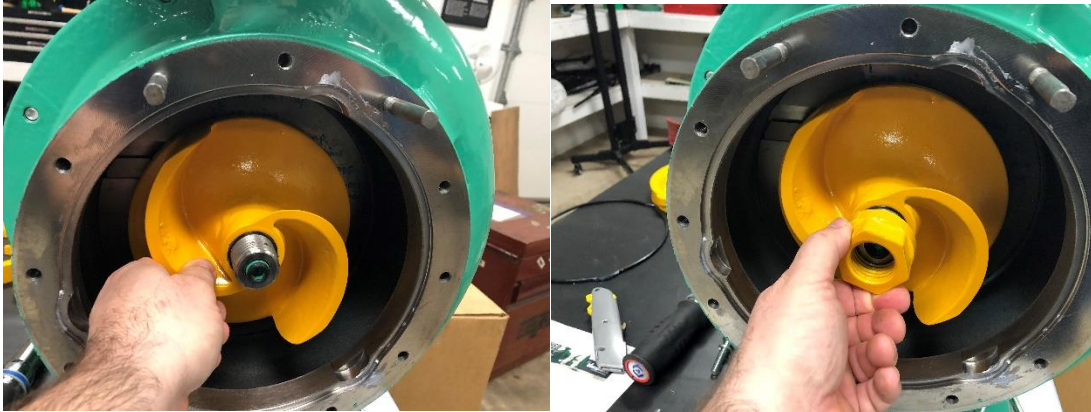
- Remove the cutter bar, Suction plate O-ring and impeller from the pump.



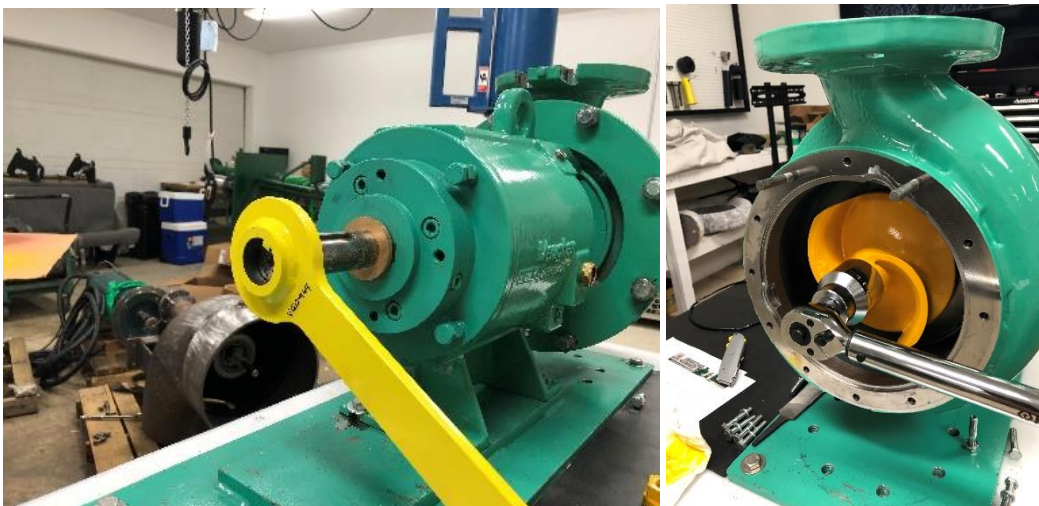
- Replace the impeller, cutter bar and cutter nut with the opposite-colored parts.



- Install the impeller then the cutter nut.



- Using the shaft holding tool, torque the cutter nut to 50 ft/lbs.



- Install the cutter bar and suction plate O-ring. Note the orientation of the "X". It will need to be located at the 12:00 position. Use a small amount of grease or anti-seize may be needed to help hold the O-ring in place.





- Install the Suction Manifold.



- Place all tools in the toolbox and close and latch the lid and the Torque wrench back in its box and latch the lid.
- The impeller, cutter bar and cutter nut that were removed will need to be placed in the designated area on the work bench.
- Once the team has completed the impeller, cutter bar and cutter nut change out, both team members will go to the start/finish area. Once both team members are in this designated area the team captain will yell DONE to signal the end of the event and the timer will stop.
- Once the event is finished the judges will assess any penalties to be added to the finishing time.