

# seepex.com

all things flow

## seepex.com Operations Challenge Exhibition Event

### General

- Teams will change the stator and rotor in a seepex Smart Conveying Technology (SCT) pump. The shortest time (adjusted for penalties) wins.
- Only two of the team members are allowed to remove the stator and rotor from the pump. The other two team members will reinstall them. Only the “working” two team members may touch the pump or perform any work on the pump. The “non-working” team members may hold, gather, organize, or exchange parts/tools directly with the “working” teammates, but may not touch the pump or perform any work whatsoever on the pump.
- Time starts when a team member picks up either of the two end wrenches from the table to begin disassembly. Time stops when both end wrenches are placed on the table after reassembly.

### Tools *(supplied by seepex)*

- End Wrench (qty 2)
- Circlip (Snap Ring) Tool

### Average Expected Time

- 3 – 6 minutes

### Items Required by Teams

- Steel toe shoes are recommended but not required

### Awards

- Trophy provided for lowest time (adjusted for penalties)
- Trophy provided for lowest time in the Engineer-Only Division

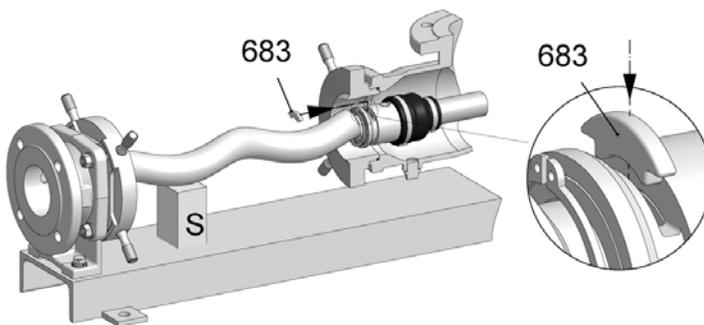
## Step by Step Procedure (Refer to Explosion Drawing for Item Numbers)

### Disassembly – First Two Team Members

- Remove eight hexagon nuts (item 639) and washers (637) and remove the four adjusting segments (635).
- Remove the two stator halves (601.u, 601.o).
- Remove the circlip (snap-ring, 643).
- Slide the support ring (682) out of the way.
- Remove the locking plate (683).
- Remove the rotor (600) completely out and away from the pump. *There will be an o-ring on the rotor – leave it in place.*
- Hand the rotor to your teammate for reinstallation.

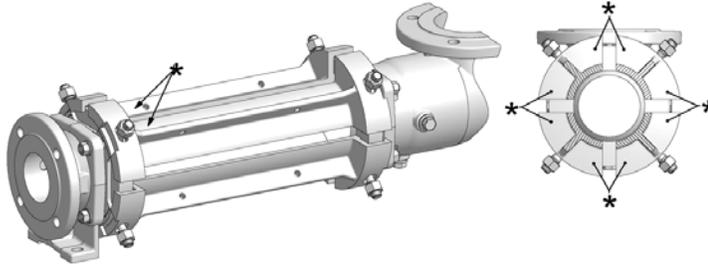
### Reassembly – Remaining Two Team Members

- Insert the rotor (600) into the rotor head (640), aligning the pin in the rotor head with the groove in the rotor.
- Install the locking plate (683) making sure it slides all the way down into the groove.

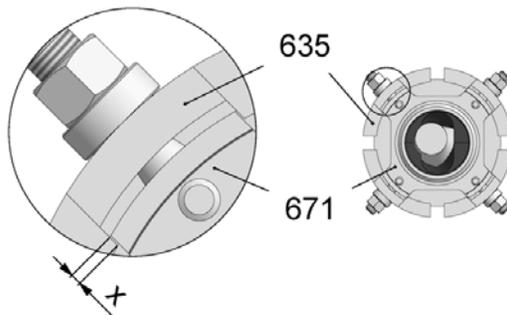


- Slide the support ring (682) over the locking plate and install the circlip (snap ring, 643).
- Install the lower half of the stator (601.u).

- Note the four adjusting segments are each marked with letters A, B, C, and D\*. Install the adjusting segments with A to A, B-B, C-C, and D-D. It is not important that a particular letter be positioned at a particular point around the pump, only that the letters on each adjusting segment match to each other.



- Install the two lower adjusting segments (635) with hexagon nuts (639) and washers (637).
- Install the top half of the stator (601.o) and the two upper adjusting segments (635) with hexagon nuts (639) and washers (637).
- Tighten all eight hexagon nuts (639) to the point where each adjusting segment's (635) slotted end is aligned to lock onto the guide notches of the segment retainers (671).



- Once the hexagon nuts are tight enough to show proper alignment to the segment retainer notches, you are finished.
- *Note that in actual use the hexagon nuts are further tightened to produce the proper rotor/stator compression. In the interest of time, this procedure is not required for this challenge.*

SCT Animation Showing the Work to be Performed

<http://www.youtube.com/watch?v=RyBwqXwUaG8&list=PLAF6804CC116E04AB&index=4>

## What the Judges Are Looking For

- The judges will pay particular attention to the following
  - Safe conduct
  - Proper use of team participants
  - Removal of the rotor fully out and away from the pump
  - Proper assembly of the rotor to rotor head
  - Proper fit of the stator inside the adjusting segments, i.e. stator positioned correctly at its beveled ends to the bevels on the segment retainers, and outside stator ridges correctly positioned in the spaces between the adjusting segments
  - The correct installment of the adjusting segments so that the lettered markings match
  - The correct alignment of the ends of the adjusting segments to the segment retainer notches
  - Adequate tightening of the hexagon nuts to insure the adjusting segments are in correct alignment with the segment retainers

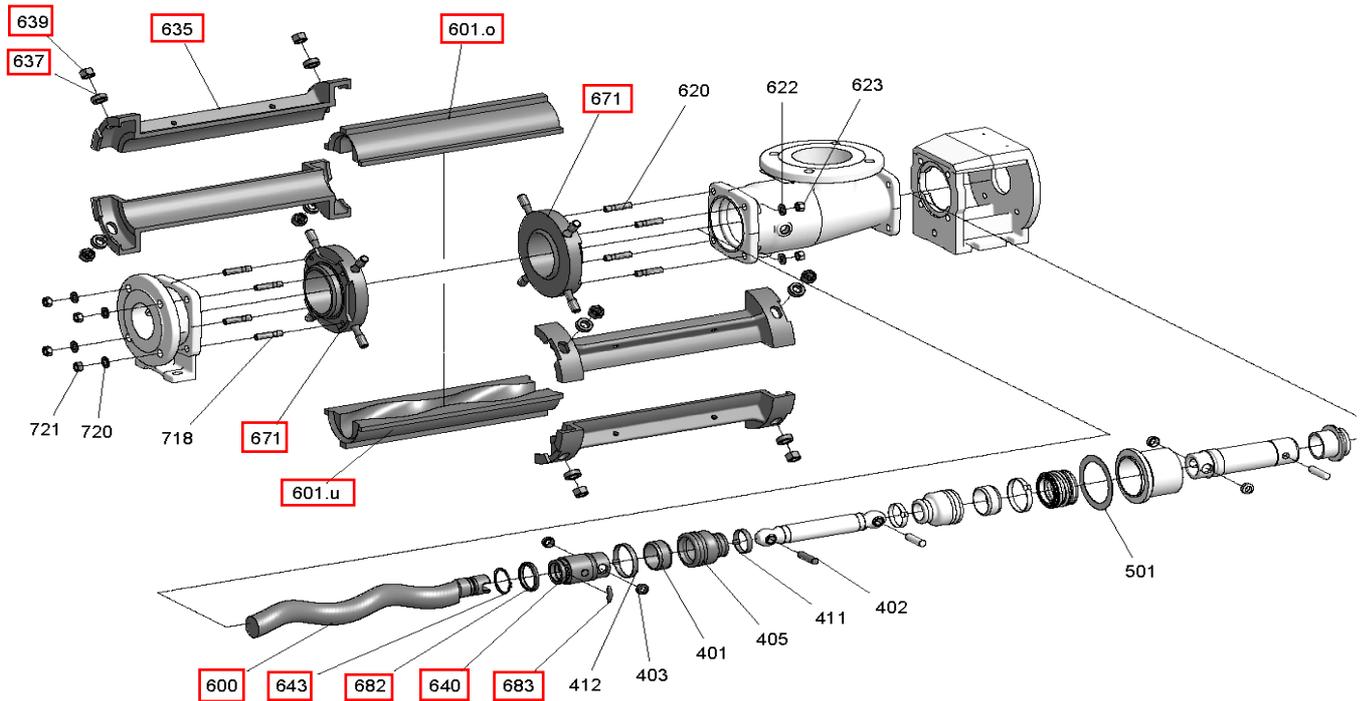
## Penalties

- Time penalties will be added to your actual time for the following
  - Failure to work safely
  - “Non-working” team member touches the pump or performs any work whatsoever on the pump
  - Failure to remove the rotor fully out and away from the pump when handing it to the installing teammate
  - Failure to properly attach the rotor to the rotor head
  - Failure to properly position the adjusting segments around the stator so that the outside stator ridges are correctly positioned in the spaces between the adjusting segments
  - Failure to properly position the adjusting segments according to their letter markings
  - Failure to adequately tighten the adjusting segments to the segment retainers. *Failure occurs if a judge can move an adjusting segment off of the notch in the segment retainer*
  - Dropped parts onto the floor

## Practice

- If you or your team desires to practice
  - AT TEXAS WATER - A smaller SCT pump will be located at the seepex booth in the exhibit hall during official exhibit hall hours (required tools will be available for your use)
  - BEFORE TEXAS WATER – Contact Todd Cranford ([tcranford@seepex.net](mailto:tcranford@seepex.net)) for scheduling

Explosion drawing



Part List

item	Qty.	denomination
401	1	retaining sleeve
402	1	coupling rod pin
403	2	guide bushing
405	1	universal joint sleeve
406	1	holding band
407	1	holding band
501	1	casing gasket
561	1	o-ring
600	1	rotor
601.u	1	stator half
601.o	1	stator half
622	4	washer
623	4	hexagon nut

item	Qty.	denomination
635	4	adjusting segment
636	8	stud bolt
637	8	special washer
639	8	hexagon nut
640	1	rotor head
642	1	o-ring
643	1	circlip
671	2	segment retainer
682	1	support ring
683	1	locking plate
720	4	hexogon nut
721	4	washer
731	1	o-ring

   Items used for the Operations Challenge Exhibition Event