

Event Precheck: You will have a 3 minute precheck period. You will be told when there are 2 minutes, 1 minute, 30 seconds, and 10 seconds left. In this time, you will have the opportunity to ask questions, inspect the pump, set the tripod hoist chain length, set the tripod height, review the programming panel, open/presort the tools in the toolbox, and preset the torque wrenches. All tools must be in the toolbox with the latches closed, the chain hoist must be in the taped off square (18" x 18"), and the tripod must be collapsed by the end of the precheck. During the precheck, you can remove the 6 locks/keys, lock out tag, and expo marker. These can start in hand at the beginning of the event. Announce to the judges who the safety supervisor is during the precheck. This individual will be the last one to put a lock on the pump and must fill out lockout tag by signing name and date. The tag may not be dated or signed until the actual timed event starts. Each member must maintain possession of their key(s) during the entire event if they have installed a lock (keep wristband on arm or in pocket). The team members must start behind the designated starting line until the event has started.

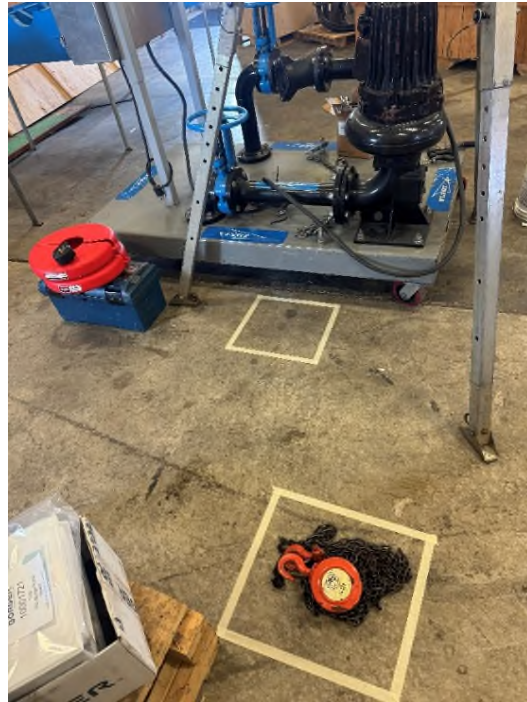
- Tools provided include: 3/4” wrench (2), 5/8” wrench (2), screw driver (2), T15 bit, pick, socket wrench, 10 MM socket with hex/allen bit (2), 8 MM socket with hex/allen bit, replacement check ball, replacement O ring, oil pan, lock out tag, expo marker (2), locks/keys (6), gate valve lockout (2), lockout hasp (3), torque wrenches. ***NOTE: the torque wrenches are not pictured. Unlike previous years, we will be using physical torque wrenches. Torque the bolts to specific specs from instructions. Also verbalize “torqued to spec”.***



- All lifts must be performed with the hoist. The pump may not leave the ground without being attached to the hoist. The tripod legs must not leave the ground when supporting the pump.
- The hoist operator must use the hoist in its intended manner, and a separate team member must guide the equipment out of or into its intended position, meaning that two hands must be on the pump at all times while it's moving.
- A 14" x 14" area will be marked off representing a wet well. The work must be performed without stepping or standing on the wet well area. Any tools or parts in the wet well area will receive a penalty.
- Hardhat, safety glasses, pants, and steel toe boots are required for all participants. Work gloves (not latex) must be used when working on the pump. If only working on the programming, work gloves are not required.
- The tripod will start in the collapsed position and will not be extended. You can extend the tripod in your precheck and also preset the length of chain on the hoist. By the time the precheck is over, the hoist must be back in the 18" x 18" square and the tripod must be collapsed again. If you choose to extend the legs, they can stay at that height.
- The starting position for the panel is with the power in the "ON" position. The ending position for the event must be with the power disconnect back in the "ON" position.
- After all work is complete, all tools, locks, and keys must be returned to the toolbox with the latches closed.
- ***NOTE: This year there will be no seal behind the impeller. You will simply remove the impeller, vocalize "replacing seal", and count out loud to 20 one thousand. Example: One one thousand, two one thousand, three one thousand, etc. This should be the way you count for all event counts.***

Event Instructions:

- View images below. Note boxed off areas to show where the hoist/wet well area will be and note the direction of the pump handle. The handle will start and end with the high point facing the check ball.



- The duties of programming the pump, replacing the check ball, simulating oil replacement, and simulating seal replacement can be done by any team member. There will also be a written quiz labeling parts from a Flygt 3102 pump.

Lockout/Tagout

- Turn off power to pump 2 and connect lockout hasp. Each team member must put a lock on the hasp. The safety supervisor must put their lock on last which will include lockout tag with name and date as shown in the image below. No team members may touch any part of the pump skid until the power to the pump is locked out.



- Once the power is locked out, you may begin closing the valves to the pump. When closed, put the gate valve lockout over the wheel, connect a lockout hasp, and put your lock on the hasp as shown below. *Note: if only 2 people are working on the pump, these are the only 2 locks needed. If the person working on the programming decides to work on any part of the pump/check ball, they must put their second lock on either hasp before working on the equipment.*



Replacing the check ball

- Using $\frac{3}{4}$ " wrench, unscrew the two bolts and pull out the old ball.
- Gasket does not have to be replaced. Put in the new ball from the toolbox and retighten the bolts



Simulating oil and seal replacement

- Stand up tripod and connect hoist to the pump/tripod
- Using 10mm socket with hex/allen bit, remove the 4 bolts supporting the pump housing



- Using the chain hoist, lift the pump up and set it on the ground. When moving the pump, a team member should be keeping their hands on the pump to guide it up and down. Ensure tripod legs do not leave the ground. Ensure the pump is being lifted by the hoist and not a team member



- Put the oil pan under the “oil out” plug.
- Using 5/8” wrench, remove the “oil out” plug. *Note: there will not be oil in the pump*



- Remove the “oil in” plug. This will create a vent allowing you to start vocalizing your 10 second count simulating the oil draining.
- Vocalize/simulate “lubing O ring” on “oil out” plug
- Reinstall the “oil out” plug. Tighten to 10-40Nm (7.5-29.5 ft-lb). While using torque wrench, also vocalize “torqued to spec”.
- Simulate pouring oil into the “oil in” plug while also vocalizing a 10 second count.



- Vocalize/simulate “lubing O ring” on “oil in” plug
- Reinstall the “oil in” plug. Tighten to 10-40Nm (7.5-29.5 ft-lb). While using torque wrench, also vocalize “torqued to spec”.
- Lay the pump flat and use the 8 MM socket with hex/allen bit to remove the impeller screw



- When the impeller is removed, you will see that there is no seal in place. This is different from previous years. Vocalize a 20 second count to simulate seal replacement



- Reinstall the impeller. Torque to 65Nm (48ft-lb) and vocalize “torqued to spec”. Tighten a further 1/8 turn after tightening to the correct torque.
- Rotate the impeller a full turn while vocalizing “impeller spins free and clear”.
- Use two screw drivers to check clearance and verify the impeller is secured to the shaft

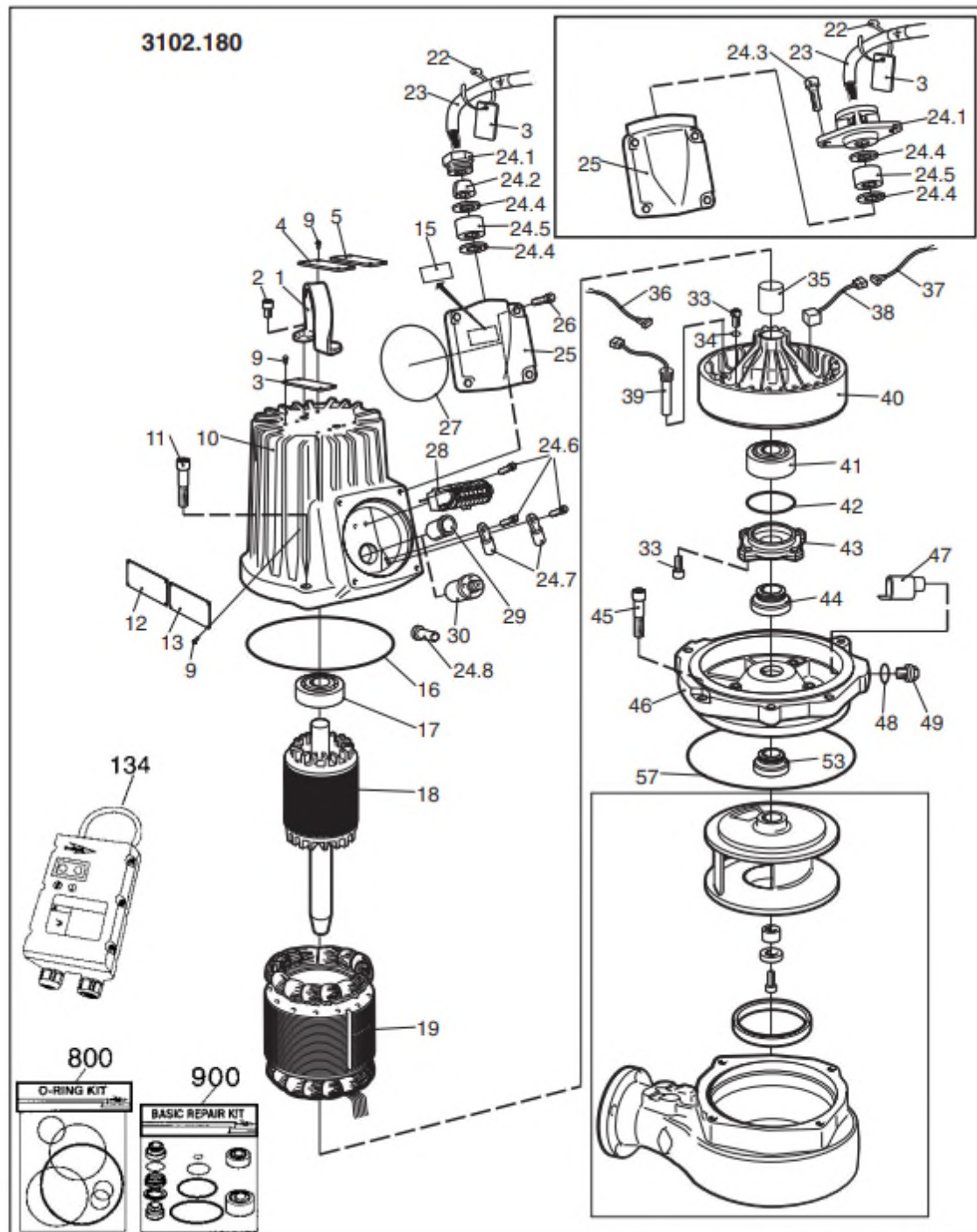


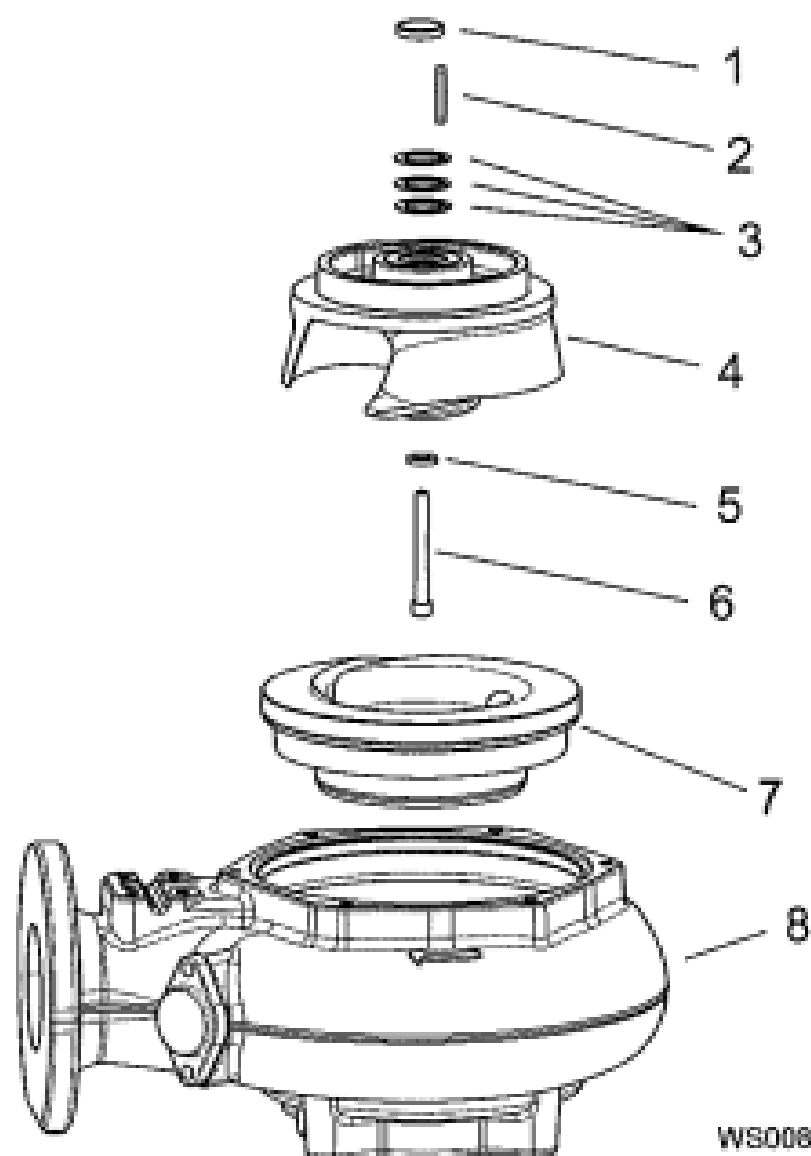
- Using the tripod/hoist, lift the pump back into the starting position. Tighten the four bolts. Torque to 57 Nm (42 ft-lb) and vocalize “torqued to spec”.
- Unclip the hoist from the pump handle
- Remove locks/hasps from gate valve lockout. You cannot remove locks for other team members.
- Remove gate valve lockout and open the valves.
- Remove locks and lockout tag from power of the panel.
- Restore power to pump 2
- Put all tools into the toolbox. Collapse tripod. Set tripod leg lengths back to starting position. Put tripod and hoist back in the starting position. Ensure that no part of the hoist is crossing the taped off lines.

Written Quiz

- This will simply be labeling pump parts. This can be done at any time during the event, not including the precheck. Pump parts can be seen from images/link below

https://www.scruggsco.com/wp-content/uploads/2024/01/892338_07-Flygt-3102-Parts-List.pdf





WS008331B

1. Ring
2. Parallel key
3. Washers
4. Impeller
5. Washer
6. Impeller screw
7. Insert ring
8. Pump housing

Programming the pump:

Pump programming steps will be provided for the event

1 Summary

The following will walk you through the controller section of the Operators Challenge.

- From the home screen setup the controller by using the Setup Wizard
 - Go into settings
 - Go into Set up Wizard
 - Do not enter a new site key
 - Set up Station as
 - A Pump Station
 - That will be emptied
 - US Units
 - 1 MultiSmart Base unit
 - Nothing for a bottom board
 - 1 Well
 - 2 pumps
 - Probe
 - Disable fail safe
 - Use probe number 3.0/10-xx
 - Set to Feet
 - Keep at default of 10% increments
 - No motor protection
 - 240 VAC Supply protection
 - No communications just hit next
 - Verify everything is correct on summary page and press yes to restart
 - Once Controller is restarted DO NOT GO INTO ADVANCED SETUP
- Have instructor verify controller is set back correctly
- Change the primary level sensor from probe to transducer
 - Go into settings
 - I/O Faults and level
 - Level Control devices
 - Scroll down to Primary
 - Config
 - Choose Analog
 - Save
 - Restart later
 - Config
 - Range of sensor 15 Feet
 - Save
 - Press Home key (looks like a house)
 - Press Fault
 - Highlight Config Changed

Xylem Water Solutions
14125 South Bridge Circle
Tel (704) 409-9700 Fax (704) 295-9080
www.flygtus.com



- Reboot Unit
 - Yes You are
- Once Controller restarts input new setpoints
 - Go into settings
 - Set points
 - Level control set points
 - Change Lead to:
 - Start at 6 feet
 - Stop at 3 feet
 - Change Lag to:
 - Start at 7 feet
 - Stop at 4 feet
 - Save
 - Back
 - Alarm Setpoints
 - Change High level to:
 - On at 9
 - Off at 8
 - Save
 - Press home key
- Have instructor verify setup
- Load 1 pump configuration
 - Go into Settings
 - More
 - More
 - Backup Options
 - Configurations
 - Restore Backup
 - Choose oc_1_pump
 - Restore
 - Yes you want to continue
- Congratulations You are done.

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Penalties for 2026 Flygt Event		
Penalty	Time added for each occurrence	# of penalties
Body in Wetwell Area	20 minutes/DQ from event	
Unsafe act that causes injury	20 minutes/DQ from event	
Improper/inaccurate setup of controller	60 seconds	
Safety Violation (incorrect PPE, not closing/opening valves, not locking out properly, tripod legs coming off the ground)	30 seconds	
Tools placed in wetwell area	10 seconds	
Failure to finish precheck in designated time	10 seconds	
Test question answered incorrectly	10 seconds	
Failure to follow any steps from given instructions. This could include skipping any step, failure to use/set torque wrench properly, failure to vocalize phrases or counts, chain hoist outside of taped area, failure to guide pump up/down, failure to return tools in the toolbox, failure to check clearance/rotate impeller, ETC.	10 seconds	
Team Name:		
Total seconds in penalties:		
Raw time:		
Total time:		