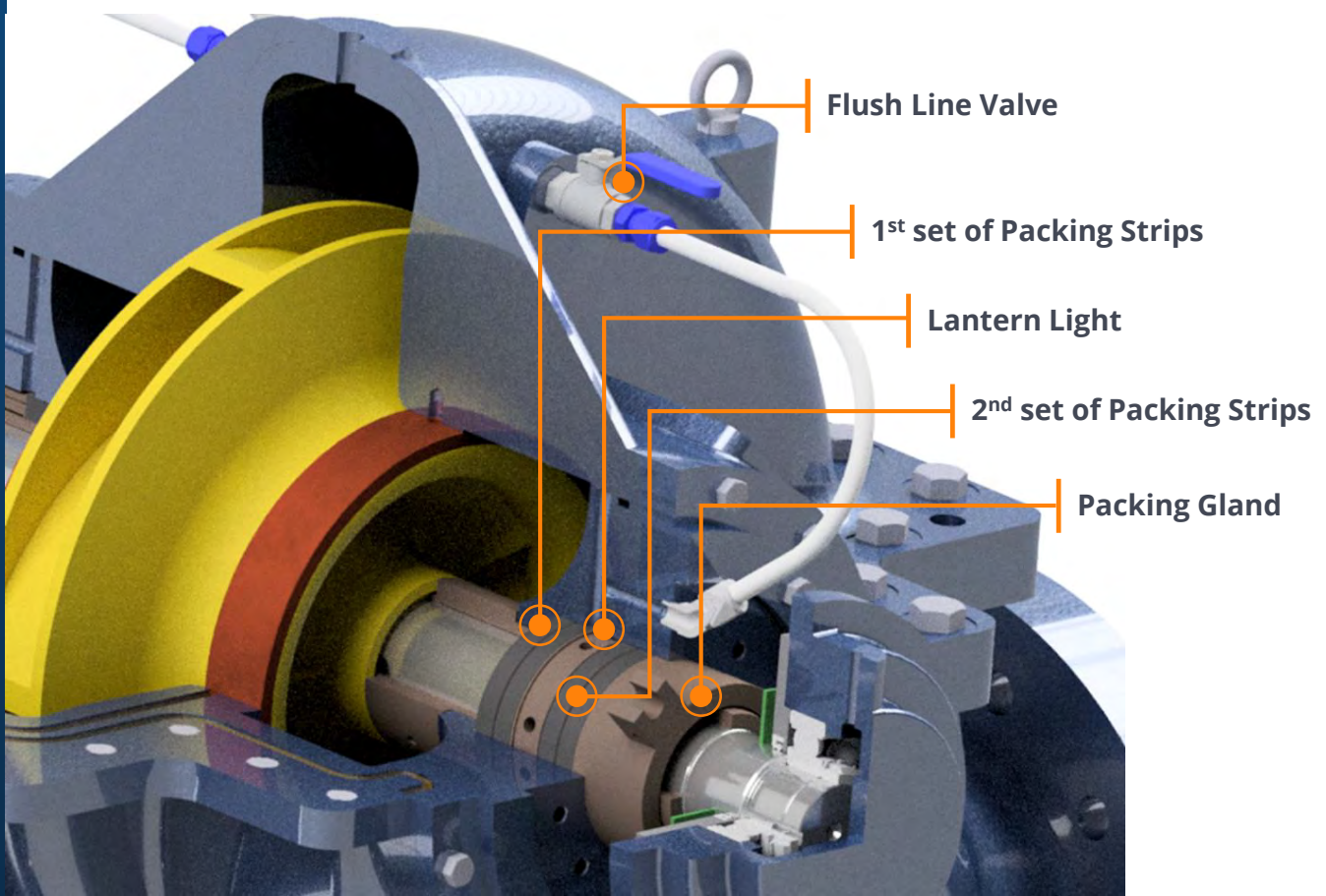


Packing strips and packing gland tightening procedure

Correct operation of a centrifugal pump implies that it does not present any uncontrolled leakage. To prevent this, packing strips and packing glands can be used to provide proper sealing and still allow a smooth rotation. Therefore, packing strips require a certain level of lubrication, which is provided by the pumped fluid leaking through them. It is very important to provide an adequate lubrication to the packing strips, otherwise they can burn out, causing scoring in the shaft and excess leakage of the pumped fluid.

We explain the correct procedure to install and tighten the packing strips and packing gland on a pump and how to determine the adequate leakage rate that must be provided to them so that they operate at their optimal capacity.



Packing Strips and Packing Gland Tightening Procedure **With Flush Line Valves**

NOTE: In order to correctly monitor pressure on the flush line during the packing strips and packing gland tightening procedure, a pressure gauge should be installed in the flush line. This pressure gauge can be removed once this tightening procedure is completed.

To properly place and tighten the packing strips and packing glands follow these steps:

1. Insert the first set of packing strips over the shaft from the coupling side. Install each packing strip individually. Make sure the joints of each packing strip are separated 90 degrees from each other.
2. Insert the lantern ring over the shaft from the coupling side until it reaches the first set of packing strips. Make sure the lantern ring is in contact with the flush line's hole.
3. Insert the second set of packing strips over the shaft sleeve. Remember to install each packing strip individually, separating the joints of each packing strip 90 degrees from each other.



The quantity of the packing strips on each set placed before and after the lantern ring may vary in order to correctly place the lantern ring below the flush line's hole.

4. Assemble and insert the packing gland over the shaft until it reaches the packing strips.
5. Manually place the washers and hex nuts over the studs to secure the packing gland to the pump's case.
6. Repeat steps 1 thru 7 to place the packing strips and packing gland on the pump's non coupling side, if your pump has two stuffing box areas, such as BB pumps.
7. Before starting the pump, make sure that the packing strips are quite loose (on both sides of the pump, if applicable) and that the flush valve(s) is completely open.
8. Start the pump up.

9. From the coupling side, observe the leakage rate thru the packing gland. The pump must be run for 20 minutes with steady leakage before any tightening is performed.
10. Close the flush line valve until you reach a differential pressure between 1 and 2 bars (between 14.5 and 29 psi) between the flush line pressure and the suction pressure.
11. The pump must be run for 10 minutes with a steady leakage before any tightening is performed.
12. Using a wrench, tighten the hex nuts that secure the packing gland to the case very slowly (about 1/8 of a turn) in an alternating pattern.
13. Let the packing strips set for approximately 5 minutes after each tightening cycle is performed. Observe the leakage rate and the differential pressure between the suction pressure and the flush line.
14. If the differential pressure changes, regulate the flush line valve to reach a differential pressure between 1 and 2 bars (between 14.5 and 29 psi).
15. Repeat steps 14 thru 16 until an acceptable leakage rate thru the packing gland is reached (a minimum of 120 drops per minute is required). Once the acceptable leakage rate is reached, the pressure gauge installed on the flush line can be removed.
16. Once finished, repeat steps 9 thru 17 on the non-coupling side (if your pump is a between bearings pump).



Since packing strips are lubricated by the pumped fluid, it is very important that they are not tightened to the point that no leakage occurs, since this will cause the packing strips to burn and severe damage and scoring to the shaft and shaft sleeve may occur. Packing glands must never be tightened to the point that they impede the turning of the shaft.

Packing Strips and Packing Gland Tightening Procedure **Without Flush Line Valves**

To properly place and tighten the packing strips and packing glands follow these steps:

1. Insert the first set of packing strips over the shaft from the coupling side. Install each packing strip individually. Make sure the joints of each packing strip are separated 90 degrees from each other.
2. Insert the lantern ring over the shaft from the coupling side until it reaches the first set of packing strips. Make sure the lantern ring is in contact with the flush line's hole.
3. Insert the second set of packing strips over the shaft sleeve. Remember to install each packing strip individually, separating the joints of each packing strip 90 degrees from each other.



The quantity of the packing strips on each set placed before and after the lantern ring may vary in order to correctly place the lantern ring below the flush line's hole.

4. Assemble and insert the packing gland over the shaft until it reaches the packing strips.
5. Manually place the washers and hex nuts over the studs to secure the packing gland to the pump's case.
6. Repeat steps 1 thru 7 to place the packing strips and packing gland on the pump's non coupling side, if your pump has two stuffing box areas, such as BB pumps.
7. Before starting the pump, make sure that the packing strips are quite loose (on both sides of the pump, if applicable).
8. Start the pump up.
9. From the coupling side, observe the leakage rate thru the packing gland. The pump must be run for 20 minutes with steady leakage before any tightening is performed.
10. Using a wrench, tighten the hex nuts that secure the packing gland to the case very slowly (about 1/8 of a turn) in an alternating pattern.

11. Let the packing strips set for approximately 5 minutes after each tightening cycle is performed. Observe the leakage rate and the differential pressure between the suction pressure and the flush line.
12. Repeat steps 12 and 13 until an acceptable leakage rate thru the packing gland is reached (a minimum of 120 drops per minute is required).
13. Once finished, repeat steps 9 thru 14 on the non-coupling side (if your pump is a between bearings pump).



Since packing strips are lubricated by the pumped fluid, it is very important that they are not tightened to the point that no leakage occurs, since this will cause the packing strips to burn and severe damage and scoring to the shaft and shaft sleeve may occur. Packing glands must never be tightened to the point that they impede the turning of the shaft.