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Pool Skimmer

Assembly & Operating Instructions

Model SK-175

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John J. Flynn, Operations Manager Date

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James Warden, President Date

Tri Nuclear Record of Revision

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If you have any questions concerning changes in this document, please call the main Tri Nuclear office at 518-399-1389 or e-mail at info@trinuclear.com

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A. Brochure Drawing TNC-016-02

POOL SKIMMER
(Model SK-175)
Assembly and Operating Instructions

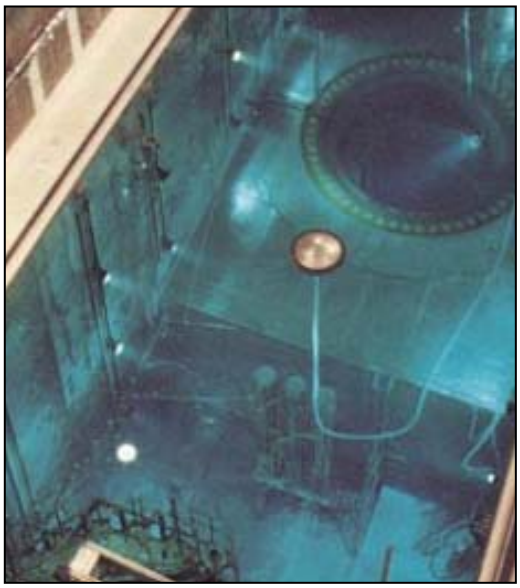
1.0 INTRODUCTION

The Pool Skimmer (Model No. SK-175) is a portable surface water skimmer for the Spent Fuel Pool and/or the Reactor Cavity. It is designed to operate in conjunction with a Tri Nuclear Underwater Filter/Vacuum system Model UFV-260 or UFV-100.

The SK-175 is designed to provide a skim perimeter of ~9-1/2 ft.at flow rates between 50-150 GPM. This permits a thin overflow depth, which is necessary to effectively use water tension to skim pool surface water and not dilute the overflow stream with sub-surface water.

This skimming action allows the SK-175 to:

- Remove floating dirt and debris, up to 0.125 inch [3.18 mm] in diameter, from the pool surface to maintain water clarity.
- Remove floating crud bursts to avoid "flea" type personnel contamination and high radiation levels over pools.
- Prevent crud plate-out on side walls of cavities during pump down, which can result in airborne contamination problems.



SK-175 Skimmer in operation at SONGS

The UFV-260 (or UFV-100) takes suction on the SK-175's bottom outlet camlock fitting. This draws water across the Skimmer Skirt and through the overflow trough.

As the filter cartridges start to load up from dirt buildup with extended operations, the flow can decrease through the skimmer. This will not significantly affect the skimming efficiency of the unit, since it is designed for a flow rate of between 50 and 150 GPM. The floating skirt weir will automatically adjust its level to the flow rate and maintain an efficient thin overflow stream.

1.1 Equipment Guide List

The following is the Equipment Guide List for the Pool Skimmer Model SK-175:

TNC Part Number	Description	Qty
SK-175	Pool Skimmer, 36” Dia w/ 2” female camlock	1

1.2 Materials of Construction

The following is a list of the materials of construction for the Pool Skimmer Model SK-175:

TNC Part No.	Description	Materials of Construction
SK-175	Pool Skimmer only	304 SS 316SS (for camlock fittings)
SK-S	Skimmer Skirt Material	Polyester Skirt
	Skimmer Skirt Tubing	Natural Latex Rubber
	Skimmer Skirt Clamp	304 Stainless Steel

2.0 Description of Equipment

The Skimmer is 36in diameter x ~22.50in high, weighs approximately 95 lbs and has a skim perimeter of ~ 9-1/2 feet. The skimmer design permits a thin overflow depth, which is necessary to effectively use the surface water tension to skim the pool surface, and not dilute the overflow stream with sub-surface water.

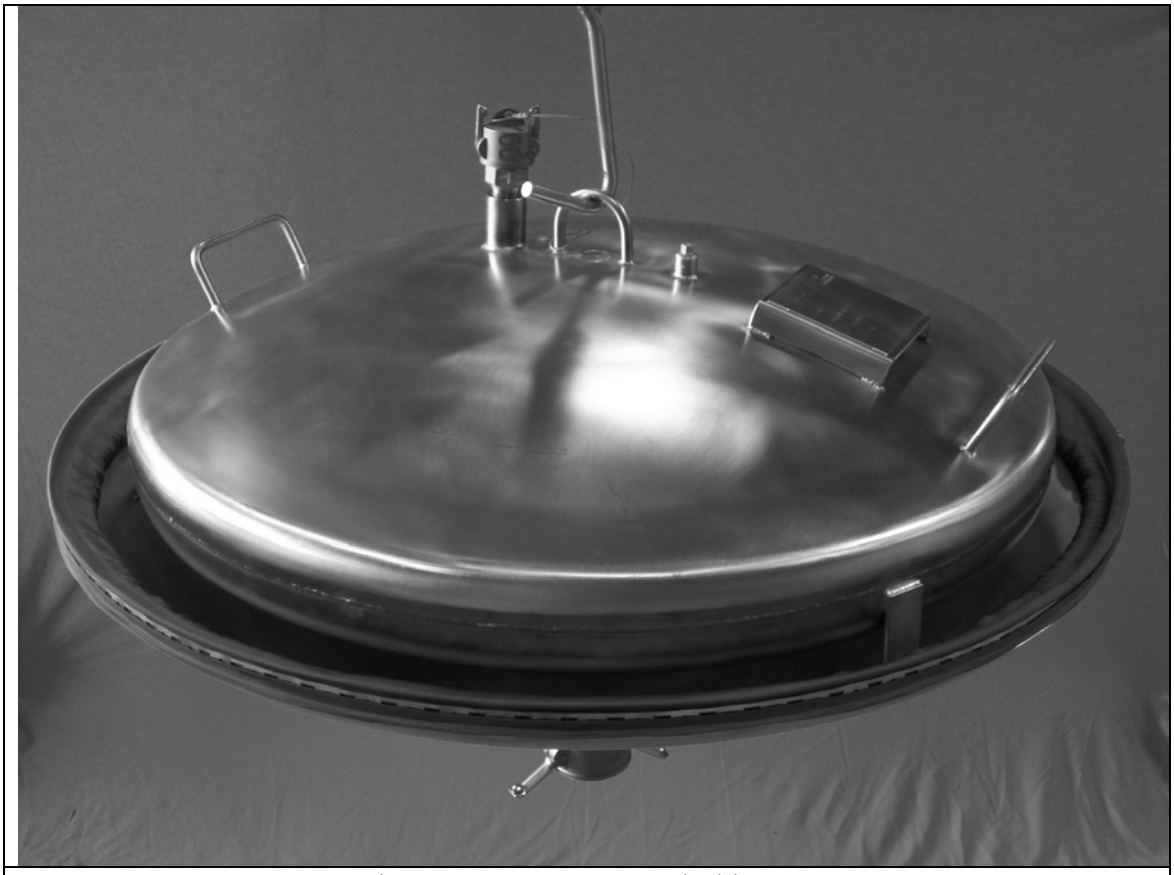


Figure 2.1 – SK-175 Pool Skimmer

As show on Tri Nuclear Drawing TNC-016-02, the SK-175 consists of the following components:

2.1 Skimmer Overflow Trough

The Skimmer Overflow Trough is 36in in dia and it collects the skimmed water and discharges it through a bottom center outlet 2in female camlock connection.

2.2 Buoyancy Chamber

The Buoyancy Chamber provides the skimmer the buoyancy to float in the water. It also contains an Internal Ballast Chamber (described in 2.3). The Buoyancy Chamber has provisions for lifting the Skimmer from a center lift bail or from the sides by two lift handles.

2.3 Internal Ballast Chamber

The Internal Ballast Chamber is designed to adjust the floating level of the skimmer by holding additional ballast weight.

2.4 Skimmer Skirt

The SK-175's Skimmer Skirt contains 1in flexible tubing that is designed to maintain proper level control over variable flow rates during skimming operations. This is accomplished by sewing polyester material around the rubber tubing and holding it in place on the skimmer with a large diameter fabricated stainless steel clamp.

The following items attach to the SK-175 Skimmer:

2.5 Suction Hose (not included with the SK-175 Skimmer)

The SK-175 connect to a standard Tri Nuclear Suction Hose 2in x 50ft lg with MxF camlic couplers. This hose then connects to a UFV-260 or UFV-100 system.

3.0 Equipment as shipped

(This is a general description of how the equipment is normally shipped. Packaging may differ depending on customer shipping requirements)

The SK-175 skimmer is shrink wrapped and shipped in 48" x 48" x 48" crate. Take care not to damage the skimmer skirt using cutting tools when removing the SK-175 from the crate.

3.1 Removing the SK-175 from the crate:

After removing the crate lid, remove the (2) 2x4's that are on top of and holding the skimmer in place. These are held in place by screws or nails.

Remove the side of the crate that is labeled "REMOVE THIS SIDE FIRST". It is secured by screws or nails.

Remove the shrink wrap around the center lift bail of the SK-175 skimmer. Connect an approved lifting strap, hook, or other similar lifting device to the center lift bail. The SK-175 weighs 95 LBS. Lift the SK-175 up and out of the skimmer crate.

4.0 ASSEMBLY AND INSTALLATION IN POOL

4.1 Check the position of the polyester skimmer skirt on the overflow trough to be sure it has not shifted position during shipment. The top of the skirt float tube should have enough slack to be able to extend upward approximately 1-1/2" above the top rim of the trough dished head.

4.2 Next, attach the end of a 50 ft. suction hose from the underwater filter unit to the 2” quick disconnect hose coupler attached to the skimmer bottom outlet connection.

4.3 The skimmer is now ready to be lowered into the pool water.

4.4 Addition of ballast water.

Depending on the weight of the hose, the temperature of the water, the boric acid content, etc., added ballast water will normally vary between 8oz and 1-1/2 gallons to achieve the proper floating level of the skimmer.

When proper buoyancy is achieved, the skimmer skirt will automatically adjust the overflow to maintain a minimum skimming water thickness as the flow rate varies with the gradual buildup of dirt on the filters.

Ballast water initially must be added to the skimmer float chamber through the top 3/4in male camlock connection (3/4in threaded plug on skimmers shipped prior to 2011).

Addition of ballast water to the Internal Ballast Chamber may not be necessary if the SK-175 Skimmer is sitting at the proper level with the filter pump / water flow SHUT OFF.

4.4.1 With the filter pump SHUT OFF, remove the camlock cap (or threaded plug) and add water to the buoyancy head chamber until the water level is approximately even with the weld line connecting the two float dished heads. This amount will vary between 8oz and 1-1/2 gallons of water.

4.4.2 Reinstall the camlock cap (or plug) in the top of the float chamber. The skimmer is now ready for start-up.

5.0 OPERATION

5.1 NORMAL OPERATION

CAUTION:

If the skimmer body rises too high in the water and loses suction, this usually indicates insufficient ballast water has been added to the float chamber; recheck Section 4.4 above.

CAUTION:

If the skimmer body floats too low in the water, or tilts excessively and is unstable, this usually is caused by too much water in the internal ballast chamber. Water will need to be removed from the internal ballast chamber.

NOTE:

If the overflow skirt is damaged or has built up an excessive dose rate and requires replacement, procure a new skimmer skirt from Tri Nuclear Corp. The skimmer should not be operated without a floating skirt since this would defeat the basic design feature of maintaining a thin overflow stream.

5.1.1 Start-up the underwater filter pump - the skimmer will begin to overflow and start the skimming operation. Note that the water level will drop in the trough when the pump starts up, and the overflow floating skirt ring will drop with the level and start overflowing. The skimmer body will rise slightly and float a little higher in the water. This is normal for this design.

5.1.2 As the underwater filter cartridges start to plug from dirt buildup with extended operations, the flow will decrease through the skimmer. This will not significantly affect the skimming efficiency of the unit, since it is designed for a flow rate of between 50 and 150 GPM. The floating skirt weir will automatically adjust its level to the flow rate and maintain an efficient thin overflow stream.

5.1.3 The dose rate on the underwater filters should be periodically and carefully monitored for radiation levels, since floating crud caught by the skimmer can cause high dose rate levels on the filter cartridges.

5.1.4 During normal skimming operations, it is normal for small portions of the skimmer skirt to be floating above the surface of the water at the lower flow rates of 50-100 GPM. This is due to the natural buoyancy of the skimmer skirt internal tubing. This phenomenon tends to be minimized at flow rates between 100-150 GPM.

5.2 SKIMMER SKIRT REPLACEMENT

If the skimmer skirt is damaged due to ripping or if it has been exposed to high contamination levels or high dose rates, it may be necessary to replace the skirt.

5.2.1 Remove and dispose of damaged/contaminated skirt by loosening the screw clamp band that holds the skirt in place.

Figure 5.1 – SK-175 with the Skimmer Skirt removed

5.2.2 Ensure the edge of the skimmer trough is smooth with no rough/sharp edges. With two people, place the new skimmer skirt in the skimmer trough so that the floatation tube portion is on the inside of the skimmer trough with the excess rip-stop nylon hanging over the edge of the overflow trough.

Figure 5.2 – SK-175 with the Skimmer Skirt shown pulled over the overflow trough

Note: Ensure that the hem on the rip-stop nylon is facing out.

5.2.2 Obtain the 1/2" x (approx.) 115" stainless steel screw clamp band to hold the skirt in place. Place the band on the skimmer overflow trough so that the sharp edges are facing out and tighten to just snug.

Figure 5.3 – SK-175 with the Skimmer Skirt band installed

Note: Ensure that the stainless steel band is up against the lip of the overflow trough.

5.2.3 Carefully pull the skirt up so that the edge of the skirt hem catches the band. See Photo below.

Figure 5.4 – SK-175 with the Skimmer Skirt band installed

Tighten band using the screw clamp. The floatation tube should have freedom to move up and down uniformly within the skimmer trough.

6.0 STORAGE REQUIREMENTS

When the SK-175 is removed from the pool and stored, ensure that the Skimmer Skirt is protected and does not become damaged during storage / handling.

If the skimmer unit is stored in an unheated building where freezing temperatures are possible, be sure to first drain the ballast water from the float chamber.

7.0 PRECAUTIONS AND WARNINGS

CAUTION:
When unpacking the items from the shipping crate, take care not to damage the skimmer and the attached skimmer skirt.

CAUTION:
If the skimmer body rises too high in the water and loses suction, this usually indicates insufficient ballast water has been added to the float chamber; recheck Section 4.4 above.

CAUTION:
If the skimmer body floats too low in the water, or tilts excessively and is unstable, this usually is caused by too much water in the internal ballast chamber. Water will need to be removed from the internal ballast chamber.

NOTE:
If the overflow skirt is damaged or has built up an excessive dose rate and requires replacement, procure a new skimmer skirt from Tri Nuclear Corp. The skimmer should not be operated without a floating skirt since this would defeat the basic design feature of maintaining a thin overflow stream.

8.0 REPLACEMENT PARTS

Below is a listing of **Recommended Spare Parts:**

Recommended Spare Parts

Qty	Part No.	Description
1	SK-S	Skimmer Skirt and stainless steel clamp

9.0 ADDITIONAL INFORMATION

For additional information, or if special problems develop, please contact:

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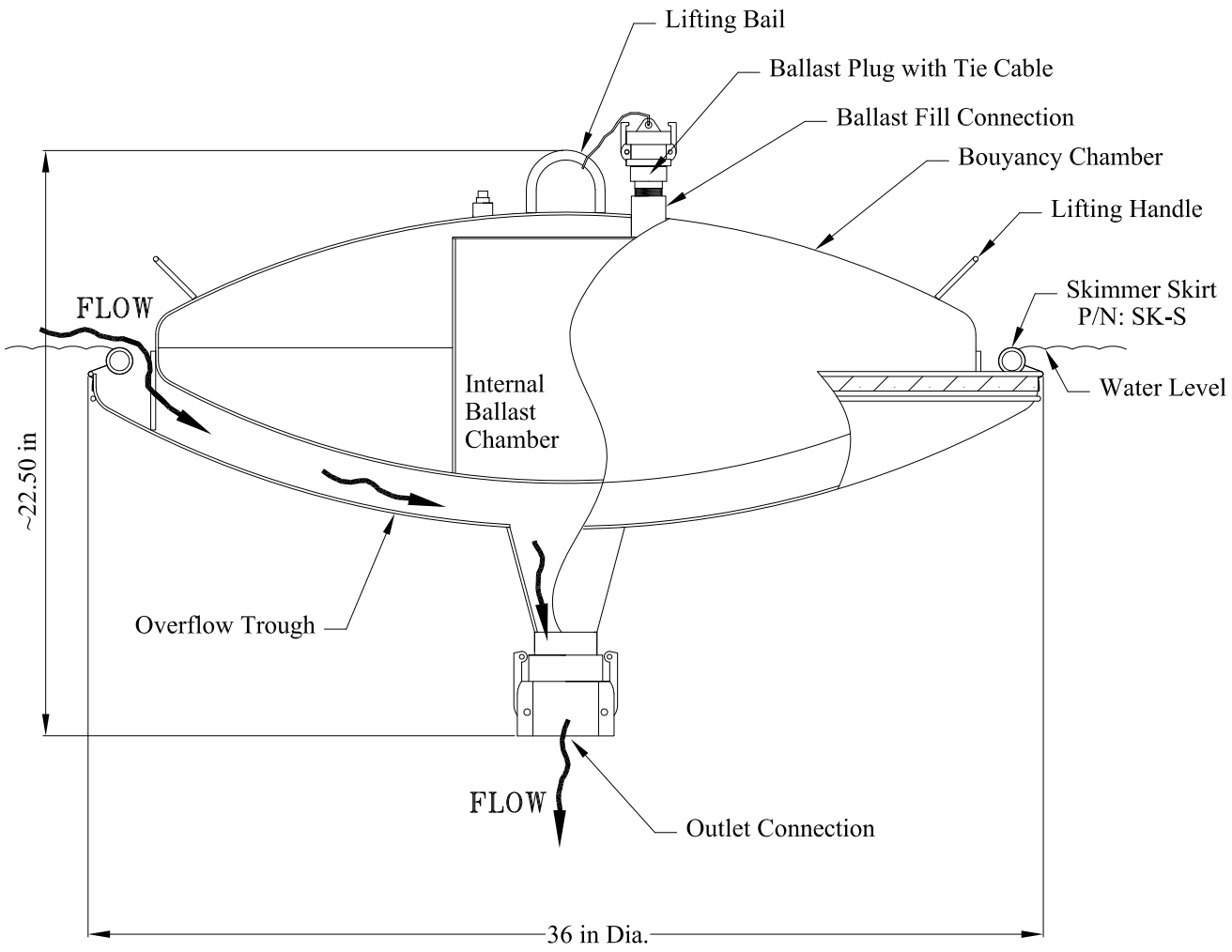

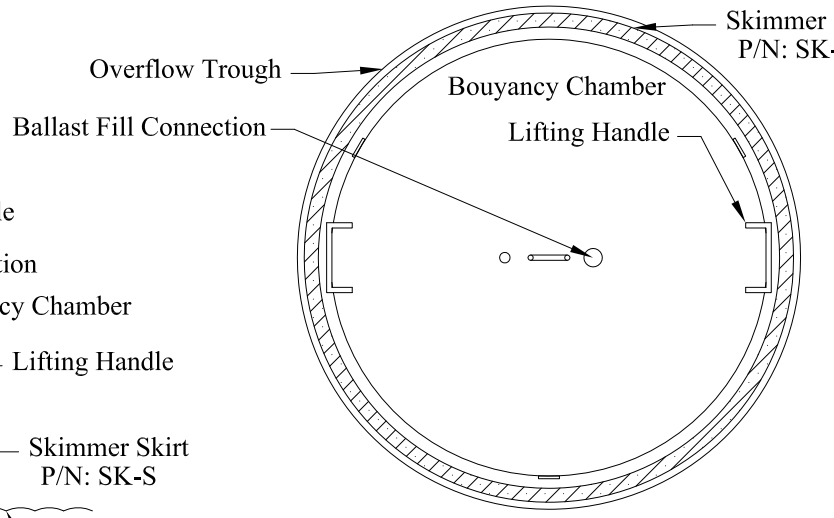

Top View

General Specifications:

- All Material - 304 SS
- Outlet Connection: 2" Female Camlock, SS
- Skimmer Skirt Material: Polyester
- Designed to have Suction Hose from UFV-100 or UFV-260 Attached to Outlet Connection
- Design Flow: 50 to 150 GPM
- Weigh: 95 Lbs.

Tri Nuclear Corp.
P.O. Box 1130, Ballston Lake, NY 12019

Pool Skimmer Unit

Model No. SK-175	Rev. Rick Russell Date 03/25/13	Brochure	
Dwg. TNC-016-02	Apv'd James L. Warden Date 03/26/13	Rev. A	Page 1 of 1