



Traveler Related Common Procedures

Procedure Title	LCLS-II String Valve Cleaning Procedure	
Procedure ID	CP- L2PRO-CST-CHEM-VALV-CLN	
Procedure Description	This procedure describes the cleaning of valves used for SRF cavity and string assembly.	
Revision	R1	
Author	Sign:	Date:
	Name: Liang Zhao	
Reviewer	Sign:	Date:
	Name: Jim Follkie/Kirk Davis/Tony Reilly	
Revision Notes	<i>Describe any changes between revisions here.</i>	
	R1: Initial Release	
References	<i>List and Hyperlink all documents related to this procedure.</i>	

Valve Cleaning Procedure

Note: Right angle valve and gate valve are two types of valves used during clean room assembly of LCLS-II cavity string. This procedure covers the cleaning of these two types of valves before admission into the cleanroom for string assembly.

Gate valve

VAT all metal gate valves come in double bags. Remove the outer bag in the chemistry room. Wipe down the inner bag with iso-propanol alcohol. Transfer the valve into the clean room with the inner bag. They are kept as received, with visual inspection and particle count check before using. Use ionized nitrogen to blow clean before assembly.

Right angle valve

- Open valve up slightly, about a quarter inch gap looking from the port facing the bellows, as shown in Figure 1.

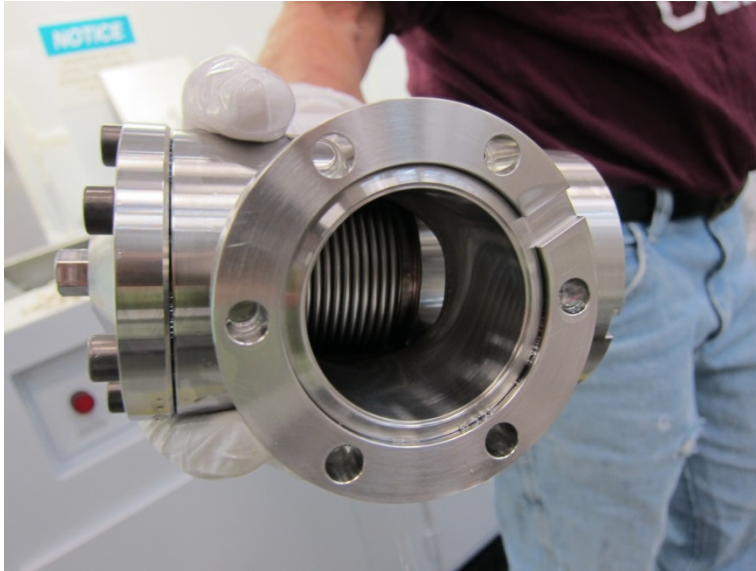


Figure 1

- Check that the ultrasonic tank is clean before using. Place a clean plastic sheet on the bottom of the tank to prevent the valve contacting the tank directly. Place the valve on top of the plastic sheet, with actuator nut facing up.
- Close the draining valve of USC tank. Fill the tank with UPW and Micro90 to make a solution of 2% concentration. Examples of Micro90 volume needed are listed in Table 1. Proportion the detergent volume according to the actual solution level, which depends on the height of the valve. Make sure that the two connecting ports on the valve are immersed in water, and the water level should be below the bonnet seal, as shown in Figure 2.

Table 1. Ultrasonic tank volume and corresponding detergent volume needed

Tank size	Full volume (ml)	Detergent volume if use full tank (ml)	Volume at draining port (ml)	Detergent volume if fill to draining port (ml)
SS 10"x14"	22968	459	15553	311
SS 12"x18"	42512	850	31083	622

- Check that the tank heater temperature is set at 130°F and turn on the heater. Turn on the ultrasonic power. Clean for about an hour. Note that it takes about 30 minutes for the tank temperature to ramp up from ambient to 130°F. The valve should be cleaned at 130°F solution for at least 15 minutes.

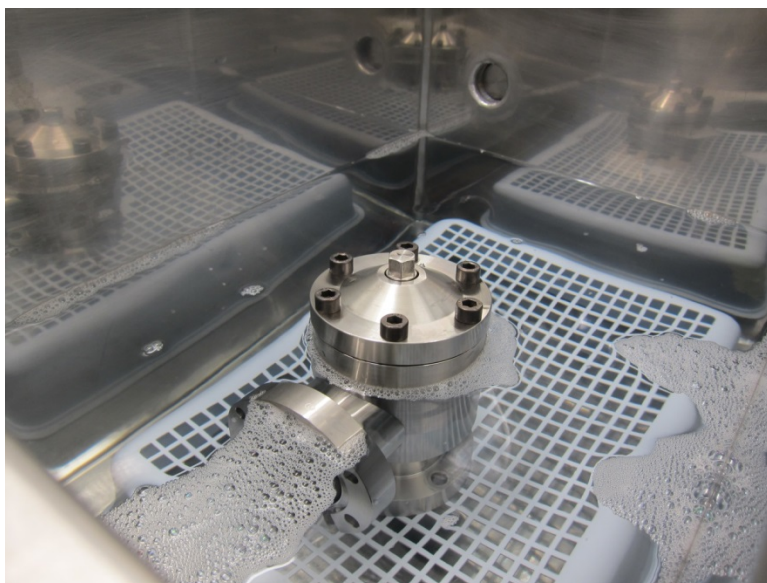


Figure 2

- Turn off the tank heater and ultrasonic power. Take valve out and rinse thoroughly with UPW from the hose. Let water run through the valve by entering from one port and exiting from the other. After about 3 minutes, reverse flow direction and continue rinsing for another 3 minutes. Shown in Figure 3.



Figure 3

- After rinsing is complete, put angle valve in an oven with actuator nut facing up, as shown in Figure 4. Dry overnight (~15 hours) at 100°C in nitrogen atmosphere.

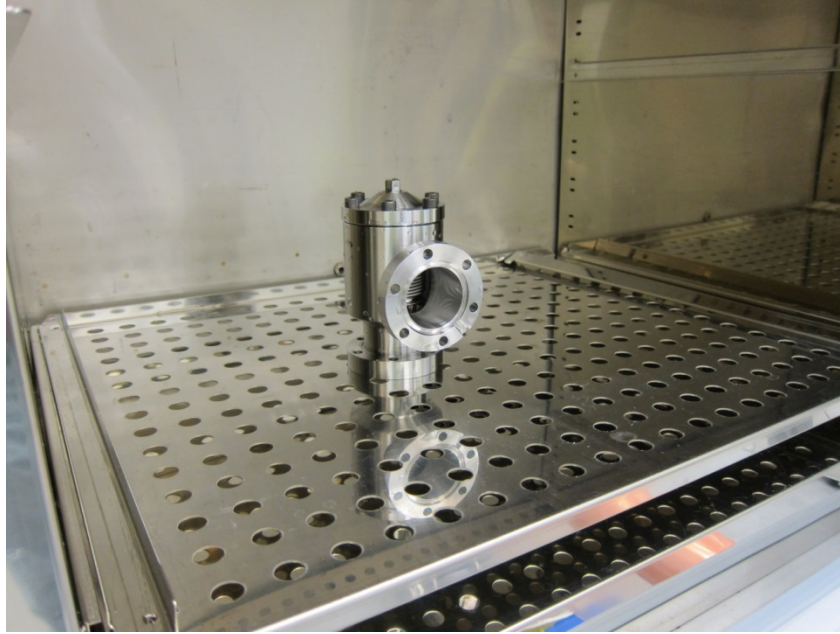


Figure 4

- Cool down and vent the oven. Take the valve out of the oven. Store in sealed clean plastic bag.