PROCESS SPECIFICATION

TITLE

CO2 Cleaning Procedures

APPROVALS:	DATE	REV	DCN NO	BY	CHK	DCC	DATE
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CHECKED:							
APPROVED:							
DCC RELEASE:							

Operation Instructions For the CO2 Purifier (SGP-50-100) and SnoGun

Introduction

The application of the CO2 cleaning system includes, but is not limited to, the cleaning of LIGO optics after they are installed in the interferometer's chambers, the cleaning of magnets after sanding, and the cleaning of magnet/standoff assemblies prior to bonding
Manufacturer: Va-Tran Systems, Inc.
677 Anita Street, Suite A
Chula Vista, CA 91911
800-379-4231

Safety Considerations

The CO2 purifier is designed to operate at normal CO2 cylinder pressures of 800-1200 psi, however, it can not withstand the very high pressure of expanding liquid CO2 if cold liquid is trapped anywhere in the CO2 path and power to the unit is interrupted. To prevent this from happening, the unit is designed without a power switch, to be run continuously. If the power has to be turned off because the unit will not be used for a certain length of time, please, follow the instructions shown later in this document.

.Hook-up instructions

The CO2 purifier should be connected to a vapor cylinder of CO2, **NOT CO2 LIQUID.**
Make this connection from the CO2 cylinder to the "INPUT" with the six foot (SG-6) CO2 hose provided. Connect the SNO GUN to the purifier by attaching the female CGA-320 fitting at the end of the hose opposite the SNO GUN onto the adapter protruding out from the "OUTPUT" valve of the purifier. Use the Teflon washers provided to ensure a good seal.

Using the system

When all connections have been made, open the valve on the CO2 cylinder thus allowing the CO2 vapor to fill the hose to the purifier. If no leak is detected, open the "INPUT" valve to the purifier.
After a few seconds, the purifier will be full of CO2 vapor and the flow of CO2 should stop.
If no leaks are present, open the "OUTPUT" valve on the purifier to fill the SNO GUN hose with CO2 vapor. If no leaks are detected in the system, plug the purifier into a non switched 115 vac outlet and allow the unit to begin condensing the CO2 vapor into CO2 liquid. After 15 minutes the unit will be ready to use.

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Shutting the system down

When the SNO GUN will not be used for some time, the SNO GUN and the purifier should be drained of liquid CO2. The proper procedure for draining the purifier and the SNO GUN hose is to be sure the CO2 valves on the supply cylinder and the “INPUT” and the “OUTPUT” are open.
Unplug the purifier, so that it will not continue to cool the CO2.
Open the adjusting valve on the body of the SNO GUN and allow the system to bleed until no dry ice is being formed at the SNO GUN tip and the frost has melted from the metal fittings of the SNO GUN rupture disk assembly. This may take about 10-15 minutes. Close the CO2 valve on the supply cylinder and continue to bleed the system until the pressure gage on the purifier reads 300 psi. This may take 3-4 minutes. Close the “INPUT” valve to the purifier. Close the “OUTPUT” valve on the purifier. Allow the SNO GUN assembly to bleed down completely and close the SNO GUN control valve. Is recommended to keep a slight positive pressure on the CO2 purifier so contaminants do not enter the system.

Using the SNO GUN

To begin the cleaning cycle, open the nozzle valve and allow gas to flow until ice particles are prouced. Oncethe flow is at a steady rate, direct to the parts being cleaned. Move the gun across the surface in a manner similar to washing a car with a hose. Position the gun's tip at about 45 degrees and approximately 3 inches from the surface. A standard cleaning cycle should be less than 10 seconds. Longer than that creates risk of re-contamination.