Automatic Pre-cooling System Lite ver.1 8/7/2006

Power control	Port 1			Port 2	Port 3	
	NC1	NC2	NO1	NC3	Scroll Pump	Control Valve
Solenoid valve (120VAC/60Hz, Cryogenic)	Normally Closed	Normally Closed	Normally Open	Normally Closed		Normally Closed
When power ON (energized) … (No differential pressure required to open/close.)	OPEN	OPEN	CLOSE	OPEN	START	OPEN
Check pipes before starting pre-cooling	CLOSE (OFF)	CLOSE (OFF)	OPEN (OFF)	OPEN (ON)	Pre-vacuum	OPEN (ON)
Normal pre-cooling	OPEN (ON)	OPEN (ON)	CLOSE (ON)	CLOSE (OFF)	STOP (OFF)	OPEN (ON)
Proceed pumping when… (1) Tanks run out (2) Pre-cooling finished with nobody (3) Troubles	CLOSE (OFF)	CLOSE (OFF)	OPEN (OFF)	OPEN (ON)	START (ON)	CLOSE (OFF)
In case of power failure						
(Do nothing)	CLOSE (OFF)	CLOSE (OFF)	OPEN (OFF)	CLOSE (OFF)	STOP (OFF)	CLOSE (OFF)
Pumping after recovery (on site work)	CLOSE (OFF)	CLOSE (OFF)	OPEN (OFF)	OPEN (ON)	START (ON)	CLOSE (OFF)

* Pump should be pre-set to be LS (Low Speed) mode for safety.
* Solenoid valves generate heat. Please watch them.
* For pumping the line, open/close valves in advance of starting pumping.