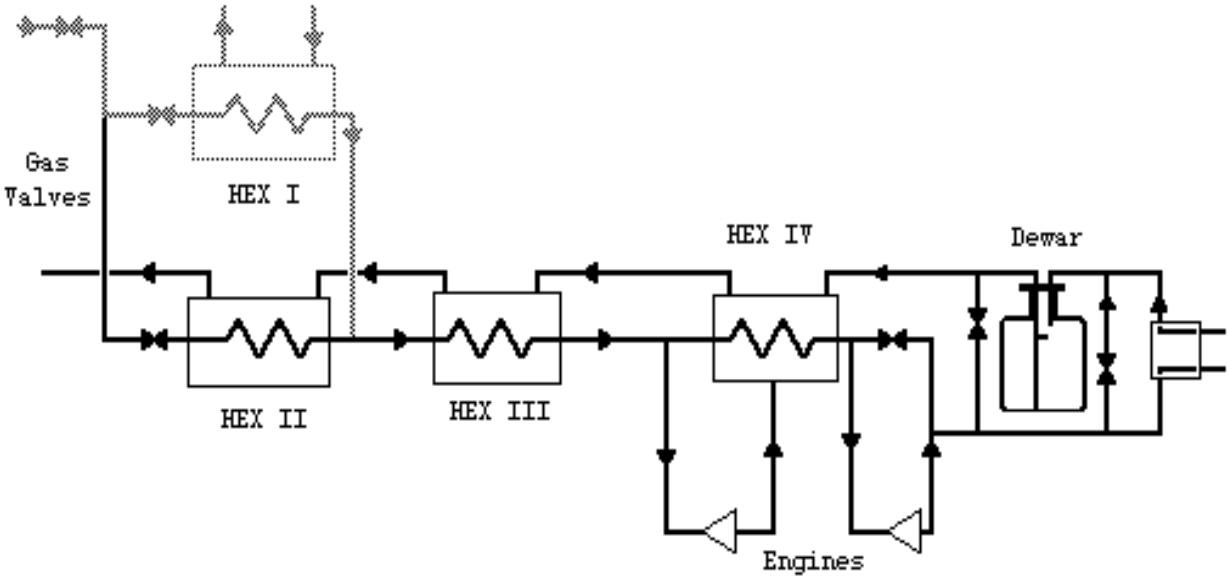
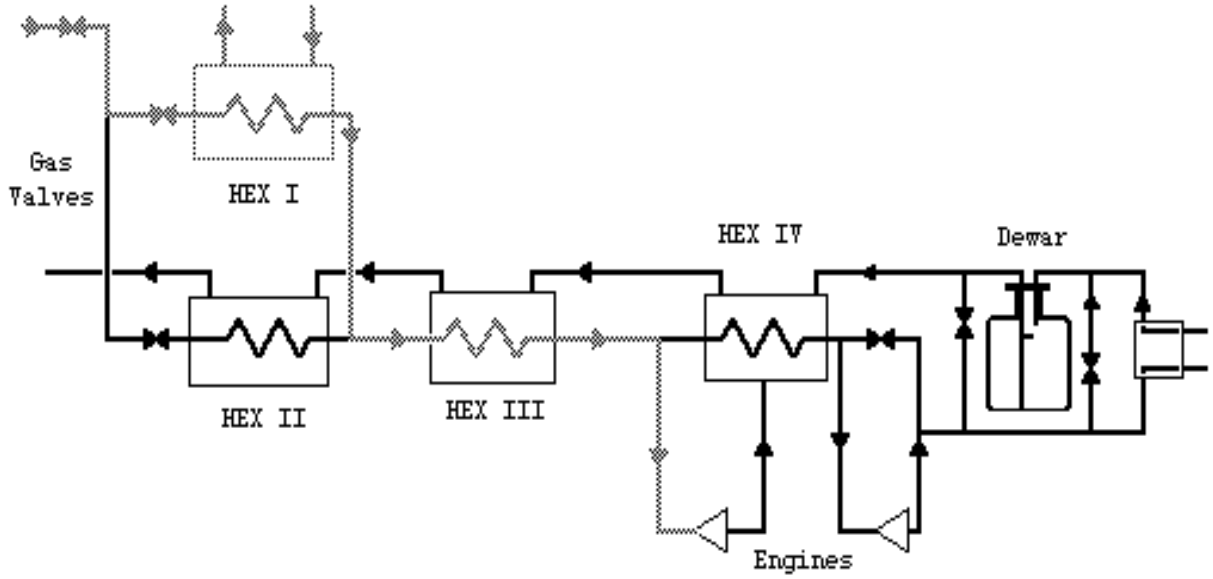
COOL DOWN PROCESS

The following diagrams and descriptions will show you the basic principles used to cool down a star refrigeration system.



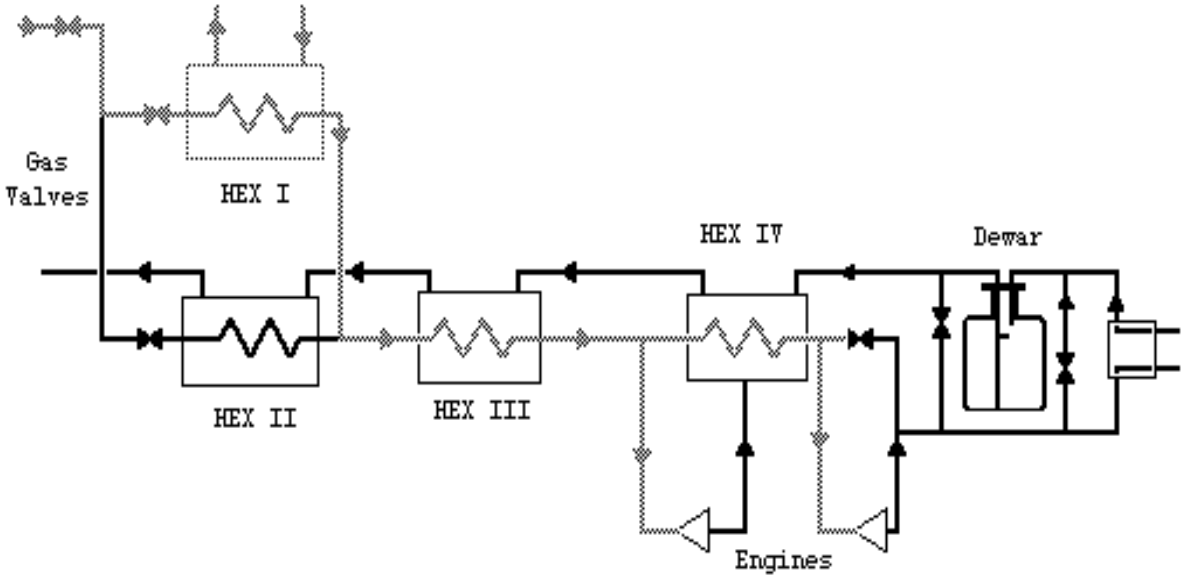
HEX I: The cool down process must start with HEX I and its flow of liquid nitrogen, which is used as the initial cooling fluid. The supply side stream of high-pressure helium gas reaches 80°K as a result of giving up its heat to the liquid nitrogen flowing through the shell side. The block and bleed panel, valves 123 and 125, provides the helium gas a return path to the compressor.

HEX III



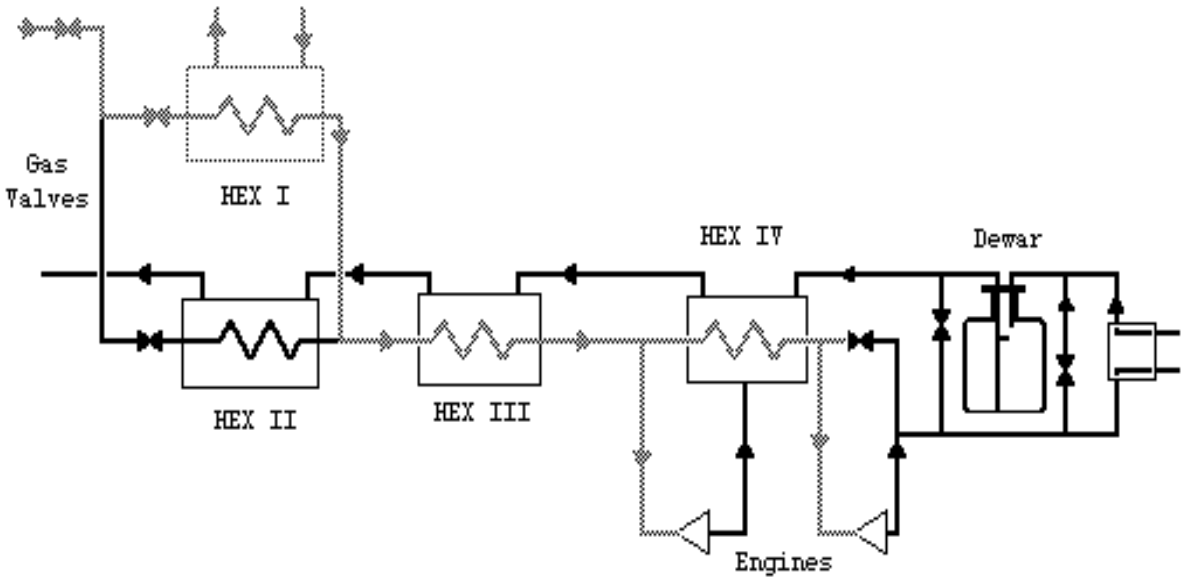
The helium supply to HEX III can be cooled to <100°K by using valves 133 and 135 on the block and bleed panel.

HEX IV



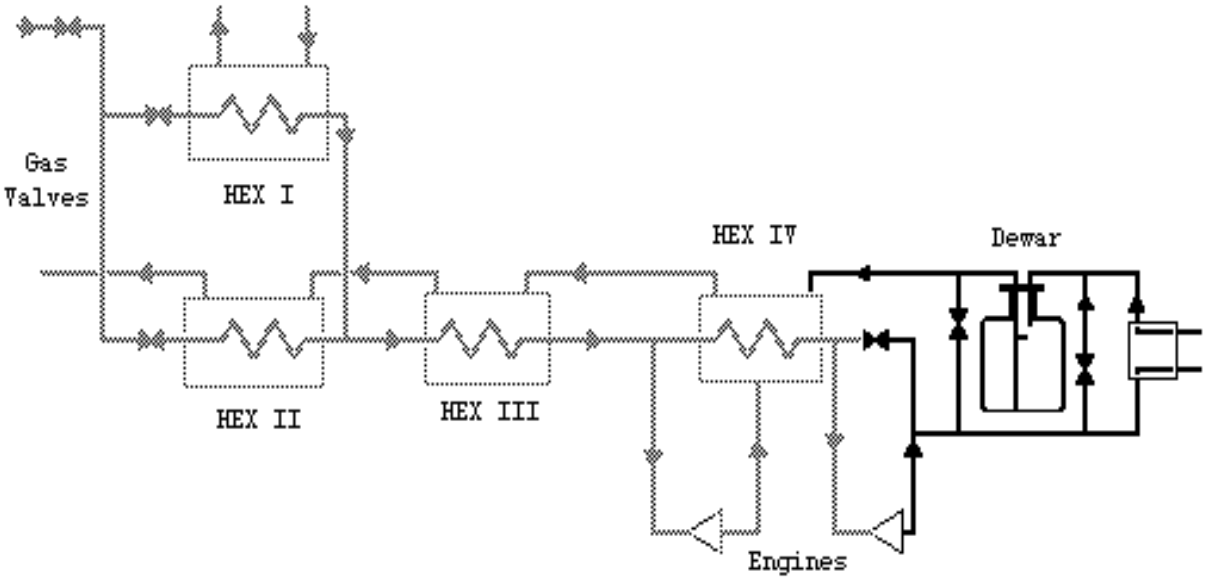
The helium supply to HEX IV can be cooled to <100°K by using valves 153 and 155 on the block and bleed panel.

DRY ENGINE



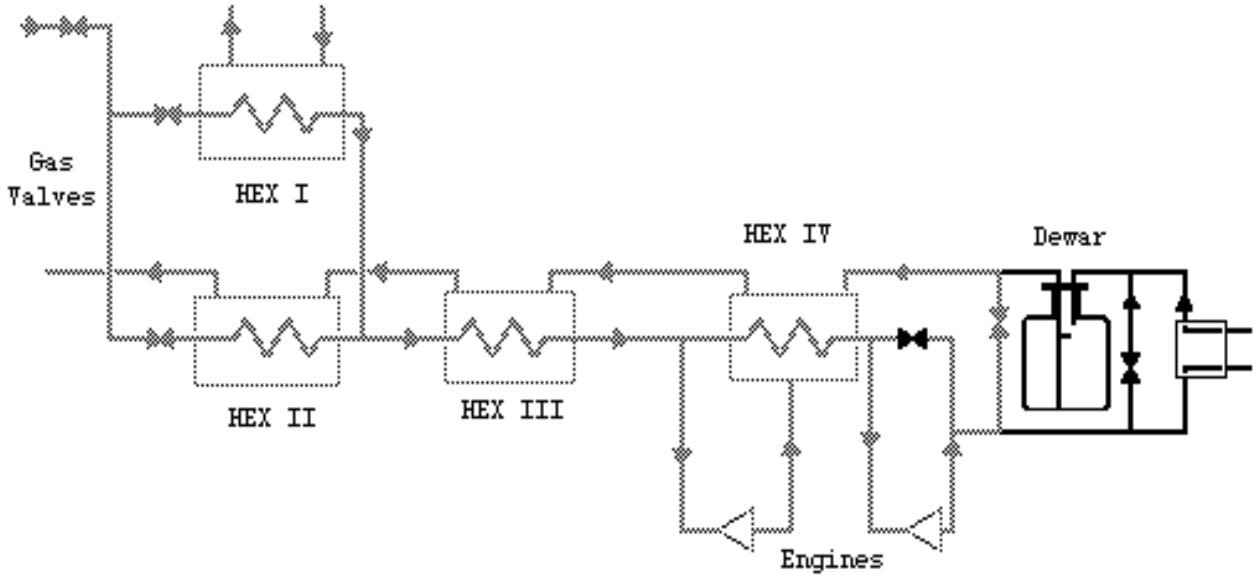
The dry engine can be started once the helium supply stream leaving HEX III is lower than 100°K. The dry engine will provide the necessary refrigeration to continue the cool down. The return flow will cool down the shell side of HEX II.

HEX II



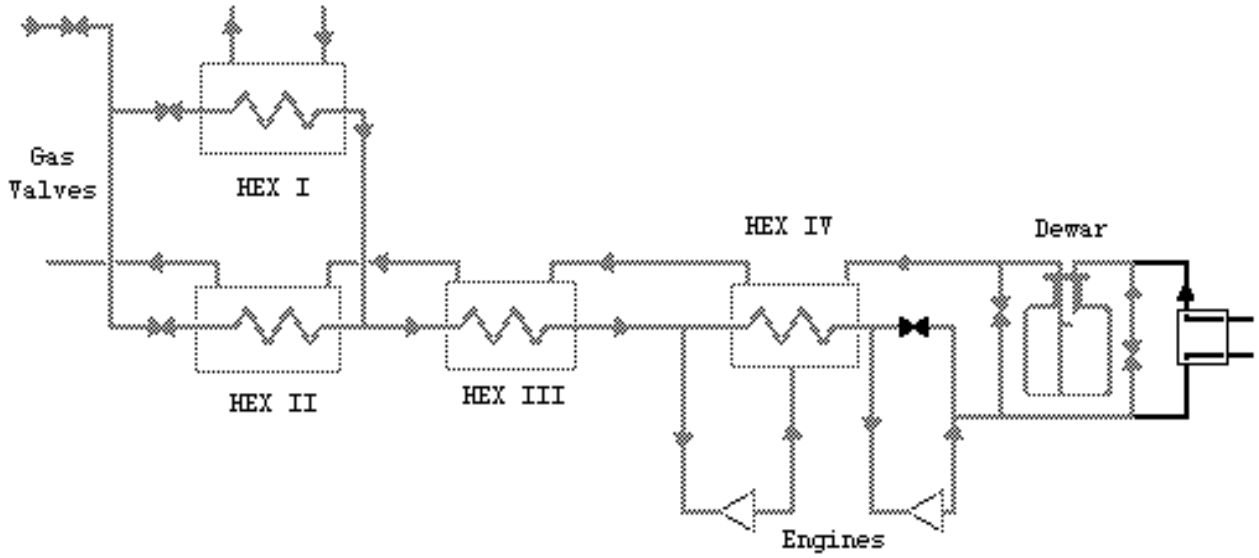
Once the shell side of HEX II is cooled to <100°K, the valve EVX2 can be opened and the heat exchanger brought fully on line.

WET ENGINE



At this point, the wet engine can be started. The flow of liquid helium from the wet engine can be directed by EXVBY back through the shell sides of the heat exchanger, which aids in cooling.

DEWAR



The dewar can now be included in the refrigeration loop by valve EVJBBY, cooled down and filled. (A manual valve, 354, provides an initial cool down path for the dewar.)

The magnet strings, not pictured here, are cooled down in a similar way.