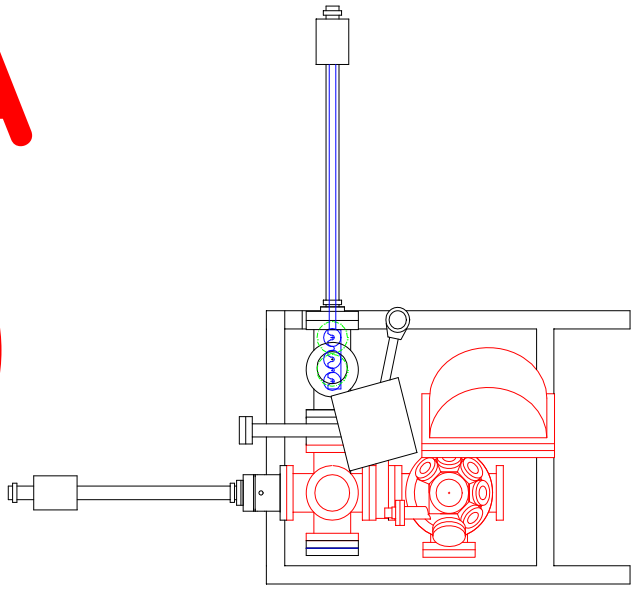
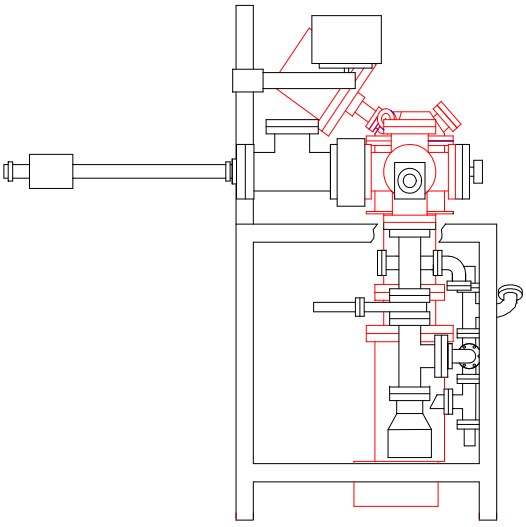
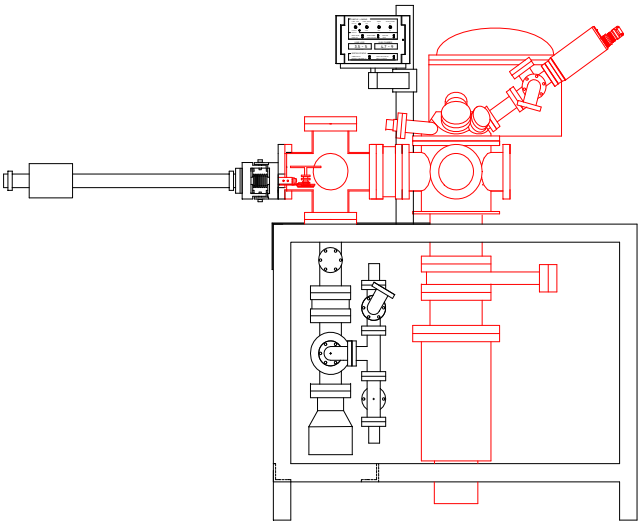
ESCA 2010







GOALS OF RECONFIGURATION

- REDUCE MAINTANCE COST
- SIMPLIFY OPERATION
- INSURE SAFE OPERATION FOR INEXPERIENCED USERS
- IMPROVE RELIABILITY
- PROVIDE FASTER SAMPLE ENTRY
- USE EXISTING COMPONENTS

About the drawings

- Red shows components that will not be changed
- Introduction Chamber pumping stack uses components from the existing introduction chamber.
- Magnetic loaders are shortened to less than 3 feet.
- Gimbals added to the transfer rod, used to enter the analytical chamber, will ease loading stubs onto sample platform.
- Storage chamber is provided, behind introduction chamber.
- Five position tray is provided in storage chamber.
- Five-way cross from existing introduction chamber could be used as storage chamber.
- New Automated Vacuum Controller replaces existing vacuum gauging and valve control.
- Automatic shutoff of Ion Gun differential pumping is provided in event the Turbo pump stops operating.

Discussion

Please feel free to use any ideas presented and proceed as you wish.

The configuration of the introduction pumping provides an improved pump-down sequence. Using our new Automatic Vacuum Controller the turbo pump can be run at full speed at all times without experiencing sudden excessive load changes. The introduction chamber is rough pumped with either an oil sealed pump or a scroll pump. We recommend using a scroll pump for oil free operation. At a pressure of about 10 to 20 torr the valve to the rough pump is closed and the valve to the turbo is opened. This provided fast pump downs times, longer turbo life and a source of continuous differential pumping for the Ion Gun.

The Automatic Vacuum controller provides simplification of the Cryo Pump regeneration cycle. The pumping configuration shown provides the necessary connections for the Cryo.

The Automatic Vacuum Controller requires the use of new Grandville Phillips Micro Ion Plus vacuum gauges. The existing G/P Model 303 gauge controller has been obsolete for 10 years. We are unable to recondition these controllers to a reliable condition.

The Automatic Vacuum Controller provides an interface to the Pfeiffer Turbo controller. This provides auto recovery from power outages and sensing of Turbo operating parameters.

The proposed system includes sensors to insure safe operation during sample transfer, maintenance and Cryo regeneration.

Much of this reconfiguration involves reuse of existing components and can be carried out by Cal Tech personnel. We would like to supply the unique components and will provide recommendations on standard components you can procure from other venders. We will be happy to participate in the actual reconfiguration in whatever capacity you will prefer.

If you wish to proceed we should take this overview to the next step. The general concepts outlined here need some feedback about how you would like to proceed.