Soft Start and Pressure Control for Rotary Vane Pumps

Photo shows Model 800-28 and Model 200-7 Pumps with motors and Soft Start Variable Frequency Drive (VFD) Unit

Soft Start

To minimize turbulence and particles during evacuation, you may "Soft Start" your pump down and then switch to maximum speed to give the ultimate vacuum you need. When your system pressure reaches the required vacuum, you may want to slow the pump again to perhaps 20% of capacity.

Pressure Control

Just determine the vacuum level that is best for your process and adjust the set point on your vacuum gauge accordingly. The pump will then run at maximum speed until that pressure is reached and will then slow its speed to maintain the vacuum you have selected. Adjust the dead band, or hysteresis, on your gauge to give the control range that you need.

Roughing for Cryo or Ion Pumps

With this system you can operate your mechanical pump at maximum speed, or use a Soft Start Program as described above. When the high vacuum pump takes over, slow the mechanical pump to about 20% of capacity and keep it running slowly so it will be warmed up and ready for the next pump down cycle. Or if the high vacuum cycle is very long you may want to turn the mechanical pump off when roughing is complete.

- **Soft Start Roughing to Limit Turbulence**
- **No Moving Parts; No Conductance Limiting**
- **Control Pressure by Adjusting Pump Speed**
- **Reduce Pump Noise and Extend Pump Life**
- **Remote Control with 4-20 mA or Serial Input**

Backing of Turbo and Diffusion Pumps

Use a single mechanical pump for roughing and backing for turbo or diffusion pumps. For roughing, ramp the pump speed up slowly to minimize turbulance in the chamber. After crossover slow the mechanical pump to perhaps 25% of capacity. If your foreline gauge has a process control relay an unexpected increase in pressure will switch the pump to full speed until the pressure recovers.

Soft Start Ordering Information

The VRC Soft Start uses a variable frequency drive (VFD) to start, stop and control the speed of the Rotary Vane Pump. The input power you provide to the VFD can be either single or three phase of a voltage that matches the pump motor voltage. The VFD will convert it to 3 phase to power the pump. But it is not a transformer and the input voltage must be whatever the motor requires. For example, if you provide 208V, single phase into the controller you will get 208V, 3 phase out to the motor. 240V, single phase power in will give 240V, 3 phase out to the motor. Be certain that your line voltage matches your motor voltage.

The Soft Start Control can be located up to 300 feet, 100 meters, from the pump and it will accept 4-20 mA or serial inputs or contact closures for start, stop speed and ramp.

When the Soft Start is ordered with a new vane pump it is shipped with a 6 ft. (2 m) cord wired from the VFD to the pump motor. Cords available up to 100 ft.

P/N Soft-220-1/2 HP price each ....$495.
for pump models 100-3.5 and 200-7

P/N Soft-220-1 to 2 HP price each ....$695.
for pump models 400-14, 600-21, 800-28, and 1000-35

P/N Soft-220-3 to 5 HP price each ....$995.
for pump models 1500-53 and 1800-64

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