

STATEMENT OF WORK

PR 4200551272

1. SCOPE OF WORK

The Contractor shall provide four vacuum pumping stations to be used in detector testing dewars located in various laboratories at NASA-GSFC. These pumping systems shall be complete systems, to include one turbo pump, one dry foreline pump, pressure gauges and readouts and all the necessary cables per pumping station for a fully functional system.

2. GENERAL REQUIREMENTS

The systems should be assembled in a cart with casters as one functional unit and shall have all the necessary cables and components for a complete system. In addition it shall include one reducing flange per station ISO/NW 100 to NW 40 for a total of four units.

The specifications below are stated as a minimum baseline, but the vendor can suggest higher performance components.

Turbo Pumping speed

N ₂	250 l/s
He	255 l/s
H ₂	220 l/s
Ar	250 l/s

Gas throughput at full rotational speed (with recommended forepump) Ambient Temp. (25°C)

N ₂	170 sccm
Ar	110 sccm

Compression ratio & Foreline Tolerance

N ₂	$> 1 \times 10^{11}$
He	$> 1 \times 10^8$
H ₂	1.5×10^6
Ar	$> 1 \times 10^{11}$

Base pressure $< 1 \times 10^{-10}$ mbar ($< 1 \times 10^{-10}$ Torr)

Inlet flange

Foreline flange	CFF 6" O.D. ISO 100
Rotational speed	KF16 NW (KF25 - optional)
Start-up time	60000 rpm (1010 Hz driving frequency)
	< 3 minutes
Operating position	Any
Operating ambient temperature	+5 °C to +35 °C
Relative humidity of air	0 - 90 % (not condensing)
Bakeout temperature	80 °C at inlet flange max (ISO flange)
	120 °C at inlet flange max (CFF flange)
Lubricant	Permanent lubrication
Cooling requirements	Forced air (5- 35 °C ambient temperature)
	Water (mandatory if ambient temperature > 35 °C)
Noise Pressure level	< 50 dB(A) at 1 meter
Storage temperature	-40° C to +70° C
Weight kg (lbs)	Pump ISO 100 5.5 kg (12.3)
	Pump CFF 6" 7.5 kg (16.5)
	Pump ISO 160 5.7 kg (12.6)
	Pump CFF 8" 9.7 kg (20.9)

Roughing pump specifications:

Peak pumping speed (60 Hz)	110 L/m, 6.6 m ³ /hr, 4.0 cfm
Peak pumping speed (50 Hz)	90 L/m, 5.4 m ³ /hr, 3.3 cfm
Ultimate pressure	5.0 × 10 ⁻² torr (6.6 × 10 ⁻² mbar)
Maximum inlet pressure	1 atmosphere (0 psig)
Maximum outlet pressure	1.5 atmosphere (7.5 psig)
Inlet connection	NW25 KF flange
Exhaust connection	1/4-in. female nat'l pipe thread
Exhaust connection adapter	NW16 KF adapter provided
Gas ballast connection	1/8-in. female nat'l pipe thread
	5 to 40 °C (41 to 104 °F)
Ambient operating temperature	

May 21, 2015.