EXPLORAVAC UNLIMITED

- INNOVATIVE DESIGN
- RAPID RESPONSE QUOTING
- TRANSPARENT PRICING
- STATE-OF-THE-ART EQUIPMENT
- CUTTING EDGE SOFTWARE CONTROL
- SWIFT PRODUCTION CYCLES

TURNKEY VACUUM SYSTEMS

Ideal® vacuum

OUR PRODUCTS DEVELOP TOMORROW'S TECHNOLOGIES

MADE IN USA

THERMAL VACUUM SIMULATION TO UNPRECEDENTED HEIGHTS

TURNKEY VAC. SIMULATION CHAMBERS

- Fully equipped and ready to run
- Flexible modular chamber design
- Fully integrated AutoExplor smart control
- Optimized pumps and equipment
- 1 year system warranty
- Remote system operation support

ExploraVAC Unlimited™ is a turnkey vacuum chamber solution, designed to streamline testing and experimentation performed in vacuum. With complete integration of all essential components and systems, including pumping, instrumentation, and thermal control, each unit arrives fully equipped and ready to run. Our commitment to a productive user experience means that customers can dive into their experiments with confidence, knowing that every element necessary for vacuum system operation is seamlessly integrated and optimized for performance.

ADVANCED CAPABILITIES

- Altitude ramping & simulation
- High orbit space
- Thermal cycling
- Thermal radiation & absorption
- Rapid decompression
- Degassing

EXPLORAVAC UNLIMITED

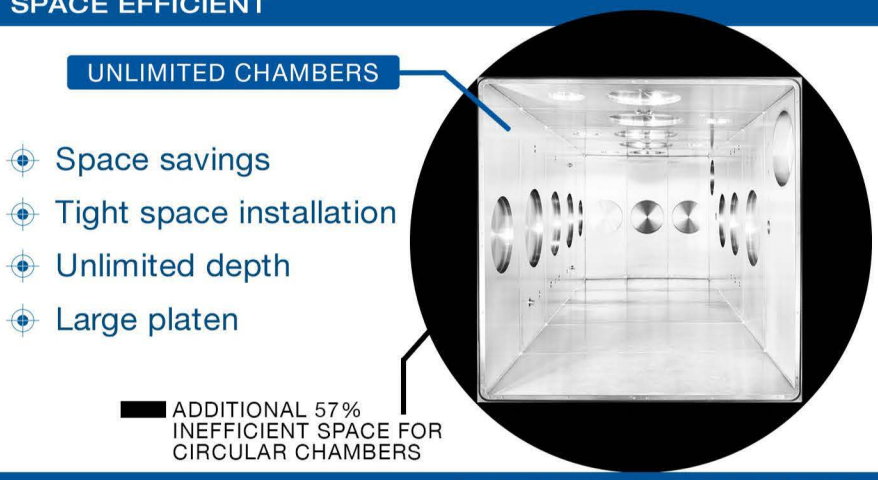
QUALITY VACUUM CHAMBERS

Sizes in inches

36 x 36 x 36	48 x 48 x 36	60 x 60 x 36	72 x 72 x 36

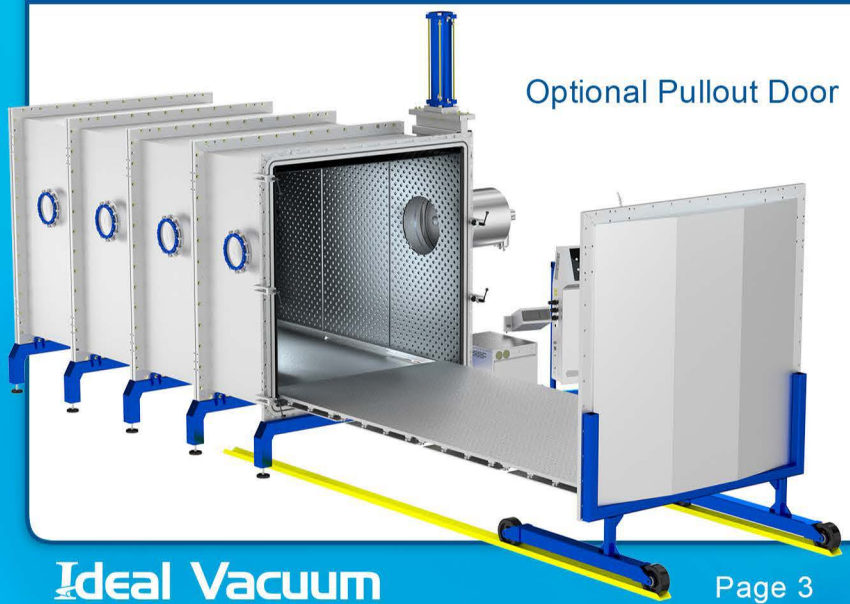
The modular architecture of Ideal Vacuum's sectional vacuum chambers offers a space-efficient rectangular footprint with customizable width, height, depth, and configuration. Our stainless steel chambers are carefully fabricated with quality materials and components, and include mechanical polishing for peak vacuum performance. Offering integrated stands, single/double/pullout access doors, customizable ports, and payload fixturing options, every aspect of our chambers is engineered for convenience and adaptability to your unique requirements.

SPACE EFFICIENT



Chamber Specifications
High vacuum rated to $3x10^{-8}$ Torr
Rectangular space efficient design
FKM (Viton) elastomer seals
304L stainless steel construction
Mechanically polished surfaces
Available port sizes up to ISO-630 (CF16.5)
Starts at 24 in. up to 72 in. (larger available)
Depth 28 in. up to 180 in. (larger available)
Stackable 36 in. (91 cm) long sections

CHAMBER DOOR CONFIGURATION



Optional Pullout Door

Optional Single or Double Door

ADVANCED SYSTEM CONTROL

Powered by AUTOEXPLOR™ software

All ExploraVAC™ Unlimited vacuum systems include a touch screen control console. Running AutoExplor™ vacuum system control software, the console may be used to operate all system functions. Simple direct operations of system functions such as rough/vent, temperature setpoint, and sensor readouts. Further advanced control is available for recipe building, data logging, and remote system access.

CONTROL FEATURES

- Touchscreen control interface
- Visual/Audible system fault indicators
- Emergency stop
- Embedded Windows PC control
- Onboard vacuum gauge controller
- LED chamber lighting

ADVANCED RECIPE CONTROL

- Pressure and temperature setpoints
- Pressure and temperature ramping
- Selectable thermocouple setpoint control
- Data graphing and data logging
- Logical recipe branching

INTEGRATIONS

- AutoExplor™ API for external systems integration
- TCP/IP connectivity with remote system dashboard
- Auxiliary device support
- Compatibility includes LabVIEW, Python, and Visual Basic

VACUUM PUMPING PACKAGES

To meet the individual needs of each customer application, ExploraVAC Unlimited systems are available with a range of both wet and dry vacuum pumping technologies.

ROUGH VACUUM PUMPING PACKAGES

Rough Vacuum Wet

- Rotary vane pump with optional booster
- Economical price point
- Integrated control valves
- Intelligent pump control system
- Pump health monitoring

Rough Vacuum Dry

- Dry screw pump with optional booster
- Clean, oil-free pumping performance
- Low maintenance operation
- Integrated control valves
- Intelligent pump control system
- Pump health monitoring

HIGH VACUUM PUMPING PACKAGES

High Vacuum Wet

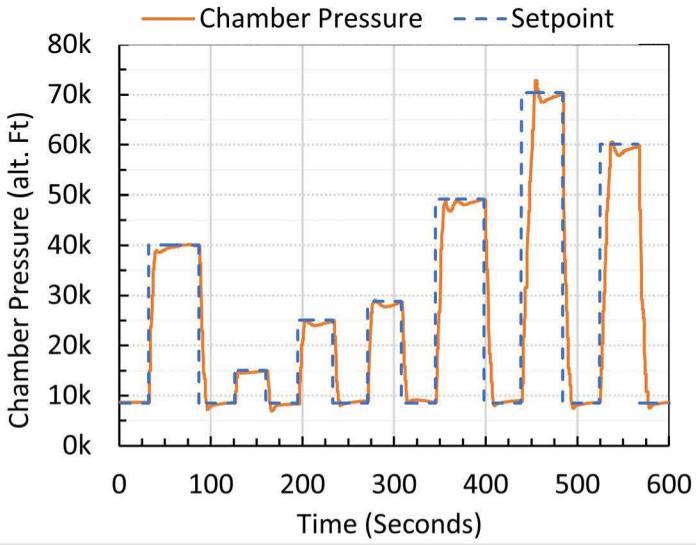
- Diffusion type high vacuum pump
- Integrated high vac gate valve
- Ultimate pressure down to 5×10^{-7} Torr
- Dedicated diffusion holding pump
- Upgraded cold head for low oil backstreaming

High Vacuum Dry

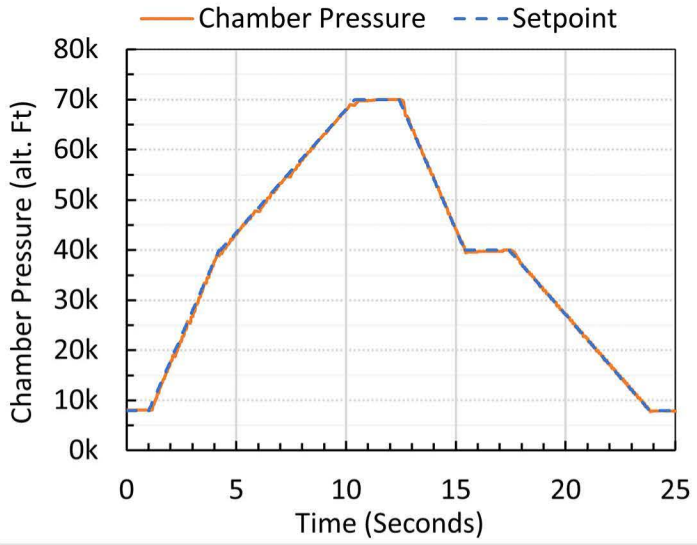
- Cryo Pumping or Turbo Pumping
- Integrated high vac gate valve
- Ultimate pressure down to 5×10^{-8} Torr
- No oil back streaming
- Low maintenance operation
- Intelligent pump control system
- Pump health monitoring

ACCURATE PRESSURE CONTROL

<15sec Rapid Decompression DO-160 Battery



Altitude Ramping



With available altitude pressure control options, ExploraVAC systems can run the accurate and repeatable altitude simulations critically needed by customers in the space and aerospace industries. Your ExploraVAC system's custom tuned controls take care of the challenging job of simulating altitude conditions in vacuum.

FEATURES

- Variable electronic valve throttling
- Optional regulated gas purges
- Meets DO-160 and MIL-STD 810G pressure testing requirements
- Precise pressure setpoint control <5% overshoot <2% settled accuracy
- Electronically controlled altitude ramping
- Set ramp start/stop and rate
- Build, save, and run system recipes

THERMAL PLATENS

Thermal Platen Features

- 6061-T6 precision machined conductive platen
- Thermally isolated design maintains ambient chamber exterior temperature
- Platen matched to system chamber size
- ¼”-20 tapped hole grid
- Thermal limits -180°C to 375°C
- Custom platen coatings available
- User assignable thermocouple channels
- Partial or full pullout available

For many applications, temperature control in vacuum can be achieved through placing or fixturing a payload onto a conductive thermal platen. Our platens offer single or dual-surface thermal control, coupled with options for resistive heating and circulated cooling to ensure precise wide range temperature regulation. Paired with a variety of available energy sources, our systems can achieve optimal thermal uniformity and rapid ramping.

Platen Power Solutions

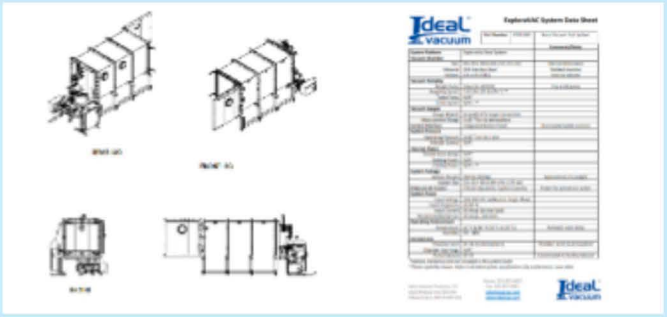
- **Regulated Liquid Nitrogen (LN2) control system**
  - Cooling down to -160°C
  - Fast ramp rates
- **Recirculating Liquid Chiller**
  - Cascade Refrigerated Design
  - Heating/cooling from -110° to +250° (depends on chiller model)
- **Resistive Heating**
  - Vacuum hardened integral platen heaters
  - High power density heating for fast positive ramping (10°C/minute typical) to 375°C
  - Available on all platen configurations for heated only or hybrid installation with cooling loop

BUILDING AN EXPLORAVAC SYSTEM

ENGINEERING

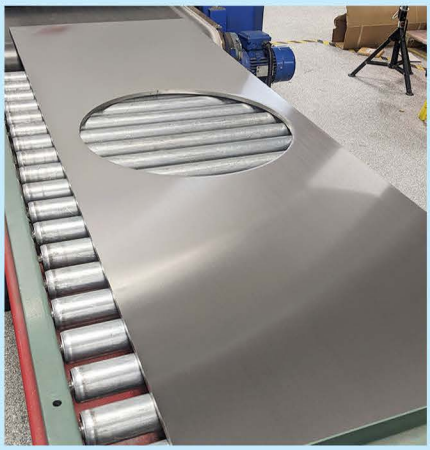
Our engineering team works closely with the ExploraVAC end users to verify system specifications and build the right configuration to meet the customer's needs.

- Facility footprint planning
- Pumping performance simulation
- Electrical power specifications
- Control options
- Joint Critical Design Review (CDR)



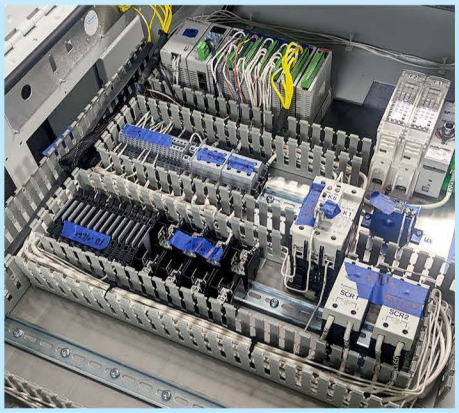
FABRICATION

Ideal Vacuum's skilled machining and fabrication team constructs the vacuum chamber and supporting hardware in our manufacturing facility in Albuquerque, New Mexico. All components are tested for fitment and helium leak tested to verify integrity.



ASSEMBLY

ExploraVAC user interface console, pump control systems, and auxiliary device controls are assembled by Ideal Vacuum's UL 508A certified electrical panel shop. Meanwhile, the chamber is assembled with thermal control surfaces, vacuum pumping packages, control valves, and gauging systems. The full system is then assembled, leak checked, and function tested.



SYSTEM TESTING AND DELIVERY

TESTING

After assembly, each ExploraVAC system is subjected to rigorous testing to verify optimal vacuum and thermal performance. System datasheets with real test data are provided with the final package. When required, Ideal Vacuum accommodates factory acceptance testing and inspection so customers can validate systems before delivery.

DELIVERY

Our logistics team evaluates system size, customer location, shipment plans, and delivery of each ExploraVAC system. Onsite engineer installation and end user training is available when required.

WET PUMP SELECTION GUIDE

EXPLORAVAC UNLIMITED

Chamber Specs			Rough Vacuum				High Vacuum					
Chamber Size	SA (in^2)	Volume (ft^3)	Quick Rough Pumps	Minutes to 30 mTorr	Medium Rough Pumps	Minutes to 30 mTorr	Medium Diffusion Pumps	Minutes to 5e-6 Torr	Minutes to 5e-7 Torr	Quick Diffusion Pumps	Minutes to 5e-6 Torr	Minutes to 5e-7 Torr
24x24x28	3840	9	nXR90i	3.5	nXR60i	4.6						
24x24x32	4224	11	nXR90i	4.4	nXR60i	5.4						
24x24x36	4608	12	nXR90i	4.6	nXR60i	6.0						
28x28x28	4704	13	nXR90i	5.2	nXR60i	6.4						
28x28x32	5152	15	nXR90i	5.6	nXR60i	7.2						
28x28x36	5600	16	nXR90i	6.9	nXR60i	7.6						
36x36x36	7776	27	SV100 WAU 251	3.4	nXR60i	12.2	VHS-4	29	460	VHS-6	8.5	95
36x36x72	12960	54	SV100 WAU 251	6.8	nXR90i	18.5	VHS-6	15	200	VHS-10	7	66
36x36x108	18144	81	SV220 WAU 501	5.0	SV100 WAU 251	9.8	VHS-6	22	315	HS-20	5.5	48
36x36x144	23328	108	SV220 WAU 501	6.6	SV100 WAU 251	13.5	VHS-6	28	440	HS-20	7.5	64
36x36x180	28512	135	SV320 WAU 1001	5.3	SV100 WAU 251	16.3	VHS-10	15	195	HS-20	8	84
36x36x216	33696	162	SV320 WAU 1001	6.4	SV100 WAU 251	20.5	VHS-10	18	240	HS-20	9.5	104
48x48x36	11520	48	SV100 WAU 251	6.0	nXR90i	19.0	VHS-4	37	600	VHS-10	6	54
48x48x72	18432	96	SV220 WAU 501	6.0	SV100 WAU 251	12.1	VHS-6	21	305	HS-20	6.5	48
48x48x108	25344	144	SV320 WAU 1001	5.9	SV100 WAU 251	18.3	VHS-10	13.5	165	HS-20	7	72
48x48x144	32256	192	SV630 WAU 2001	7.9	SV220 WAU 501	12.1	VHS-10	18	247	HS-20	9	102
48x48x180	39168	240	SV630 WAU 2001	4.3	SV220 WAU 501	15.2	VHS-10	22.5	330	HS-20	11	135
48x48x216	46080	288	SV630 WAU 2001	4.9	SV220 WAU 501	17.8	VHS-10	24	360	2x HS-20	6.5	64
60x60x36	15840	75	SV220 WAU 501	4.5	SV100 WAU 251	9.0	VHS-6	17	225	VHS-10	7.5	76
60x60x72	24480	150	SV320 WAU 1001	5.6	SV100 WAU 251	18.0	VHS-6	28	430	HS-20	6.5	64
60x60x108	33120	225	SV630 WAU 2001	3.7	SV220 WAU 501	13.9	VHS-10	16.5	225	HS-20	9	95
60x60x144	41760	300	SV630 WAU 2001	4.8	SV220 WAU 501	18.5	VHS-10	21.5	310	HS-20	11	135
60x60x180	50400	375	SV630 WAU 2001	6.0	SV320 WAU 1001	15.0	VHS-10	26	400	2x HS-20	7	70
60x60x216	59040	450	SV630 WAU 2001	8.0	SV320 WAU 1001	18.5	HS-20	16	215	2x HS-20	8	86
72x72x36	20736	108	SV320 WAU 1001	4.2	SV100 WAU 251	13.5	VHS-6	22	315	HS-20	5	49
72x72x72	31104	216	SV630 WAU 2001	3.5	SV220 WAU 501	13.4	VHS-6	35	575	HS-20	8	84
72x72x108	41472	324	SV630 WAU 2001	5.2	SV220 WAU 501	20.0	VHS-10	20.5	300	HS-20	11	126
72x72x144	51840	432	SV630 WAU 2001	6.9	SV320 WAU 1001	17.0	VHS-10	26	405	2x HS-20	7.5	70
72x72x180	62208	540	2xSV630 WAU2001	4.4	SV320 WAU 1001	21.0	HS-20	16.5	225	2x HS-20	8.5	90
72x72x216	72576	648	2xSV630 WAU2001	5.2	SV630 WAU 2001	10.4	HS-20	19.5	275	3x HS-20	6.5	67

RECOMMENDED TURBO

RECOMMENDED TURBO

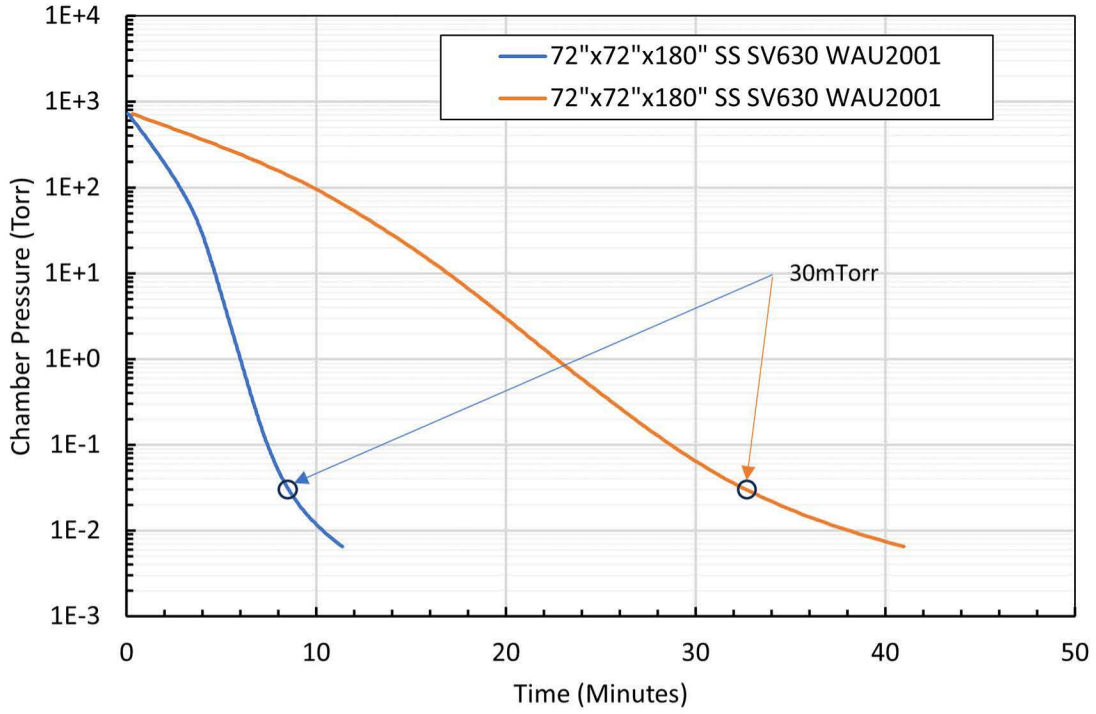
Diffusion Pumps	L/s	Gate Valve	Kw	Water (GPM)
VHS-4	960	ISO-160	1.5	0.4
VHS-6	1900	ISO-200	2.2	0.4
VHS-10	4300	ISO-320	5.1	0.4
HS-20	8000	ISO-500	12	1.5

DRY PUMP SELECTION GUIDE

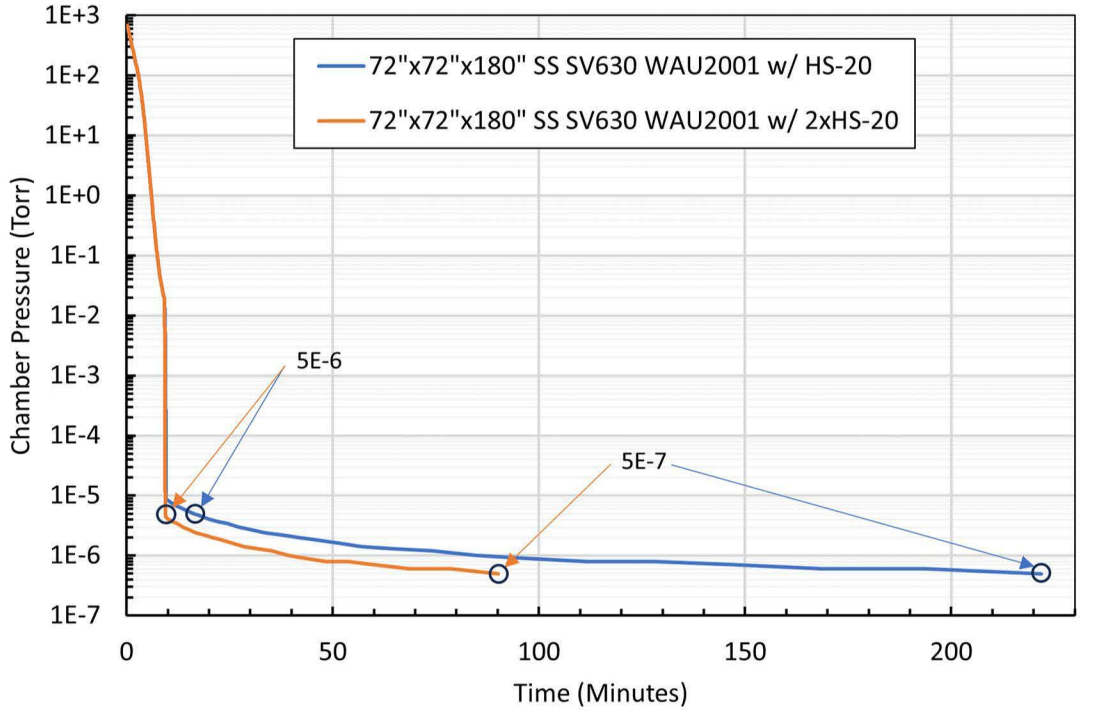
Chamber Specs			Rough Vacuum				High Vacuum					
Chamber Size	SA (in^2)	Volume (ft^3)	Quick Rough Pumps	Mins. to 30 mTorr	Medium Rough Pumps	Mins. to 30 mTorr	Quick HV	Mins. to 5e-6 Torr	Mins. to 5e-7 Torr	Medium HV	Mins. to 5e-6 Torr	Mins. to 5e-7 Torr
24x24x28	3840	9	nXR90i	3.5	nXR60i	4.6	HiPace 800	10	114	HiPace 450	20	290
24x24x32	4224	11	nXR90i	4.4	nXR60i	5.4	HiPace 800	11	125	HiPace 450	22	320
24x24x36	4608	12	nXR90i	4.6	nXR60i	6.0	HiPace 1200	8	78	HiPace 700	13	170
28x28x28	4704	13	nXR90i	5.2	nXR60i	6.4	HiPace 1200	8.5	92	HiPace 700	15.5	210
28x28x32	5152	15	nXR90i	5.6	nXR60i	7.2	HiPace 1200	9	100	HiPace 700	16.5	220
28x28x36	5600	16	nXR90i	6.9	nXR60i	7.6	HiPace 1200	9.5	108	HiPace 700	17.5	240
36x36x36	7776	27	Varodry 200	3.3	nXR60i	13.2	HiPace 1200	13	160	HiPace 800	20	285
36x36x72	12960	54	Varodry 200	7.0	nXR90i	21.5	2x HiPace 1200	11.5	135	HiPace 1200	22.5	330
36x36x108	18144	81	DV300 WSU 501	4.0	Varodry 200	10.0	TM250+HiPace 800	6.5	60	HiPace 1200	32	525
36x36x144	23328	108	DV300 WSU 501	5.4	Varodry 200	13.0	TM250+HiPace 1200	7.5	80	2x HiPace 1200	21	300
36x36x180	28512	135	DV300 WSU 501	6.8	Varodry 200	16.5	TM250+2x HiPace1200	8	84	2x HiPace 1200	26	395
36x36x216	33696	162	DV300 WSU 1001	5.2	DV300 WSU 501	8.2	TM450+HiPace 1200	6.5	70	2x HiPace 1200	31	500
48x48x36	11520	48	Varodry 200	5.8	nXR90i	19.5	2x HiPace 1200	9.5	105	HiPace 800	14.5	450
48x48x72	18432	96	DV300 WSU 501	4.9	Varodry 200	12.0	3x HiPace 1200	10.5	104	HiPace 1200	31.5	510
48x48x108	25344	144	DV300 WSU 1001	4.6	Varodry 200	17.5	TM250+HiPace 1200	8.5	90	2x HiPace 1200	23	340
48x48x144	32256	192	DV300 WSU 1001	6.2	DV300 WSU 501	9.5	TM450+HiPace 1200	6.5	65	2x HiPace 1200	32	525
48x48x180	39168	240	DV300 WSU 1001	7.4	DV300 WSU 501	11.6	TM450+HiPace 1200	8	84	3x HiPace 1200	26	400
48x48x216	46080	288	D650 WAU 2001	4.2	DV300 WSU 501	13.9	TM450+HiPace 1200	9	96	3x HiPace 1200	28	445
60x60x36	15840	75	DV300 WSU 501	3.6	Varodry 200	9.0	3x HiPace 1200	8.5	90	HiPace 1200	25	380
60x60x72	24480	150	DV300 WSU 501	7.2	Varodry 200	18.0	TM250+HiPace 1200	7.5	77	2x HiPace 1200	20.5	290
60x60x108	33120	225	DV300 WSU 1001	7.0	DV300 WSU 501	11.0	TM450+HiPace 1200	6	60	2x HiPace 1200	29	450
60x60x144	41760	300	DV650 WSU 2001	4.5	DV300 WSU 501	14.5	TM450+HiPace 1200	9.5	82	3x HiPace 1200	24.5	360
60x60x180	50400	375	DV650 WSU 2001	5.6	DV300 WSU 501	18.0	TM450+HiPace 1200	11.5	106	3x HiPace 1200	30	480
60x60x216	59040	450	DV800 WSU 2001	5.6	DV300 WSU1001	13.8	TM450+2x HiPace1200	11	115	3x HiPace 1200	35	590
72x72x36	20736	108	DV320 WSU 501	5.2	Varodry 200	13.0	TM250+HiPace 1200	7.5	57	HiPace 1200	32	525
72x72x72	31104	216	DV650 WSU 2001	3.3	DV300 WSU 501	10.5	TM250+HiPace 1200	9.2	84	2x HiPace 1200	26	395
72x72x108	41472	324	DV650 WSU 2001	4.9	DV300 WSU 501	15.7	TM250+2x HiPace1200	11	126	2x HiPace 1200	36	600
72x72x144	51840	432	DV650 WSU 2001	6.5	DV300 WSU 501	21.0	TM450+HiPace 1200	9.5	107	3x HiPace 1200	30	490
72x72x180	62208	540	DV800 WSU 2001	6.8	DV300 WSU1001	16.5	2x TM450+HiPace1200	6	60	TM250+HiPace1200	19	265
72x72x216	72576	648	DV800 WSU 2001	8.2	DV300 WSU1001	20.0	2x TM450+HiPace1200	7	74	TM250+HiPace1200	23	340

PUMP DOWN CURVES

CHAMBER EVACUATION - LOG PRESSURE SCALE



PUMP DOWN COMPARISON



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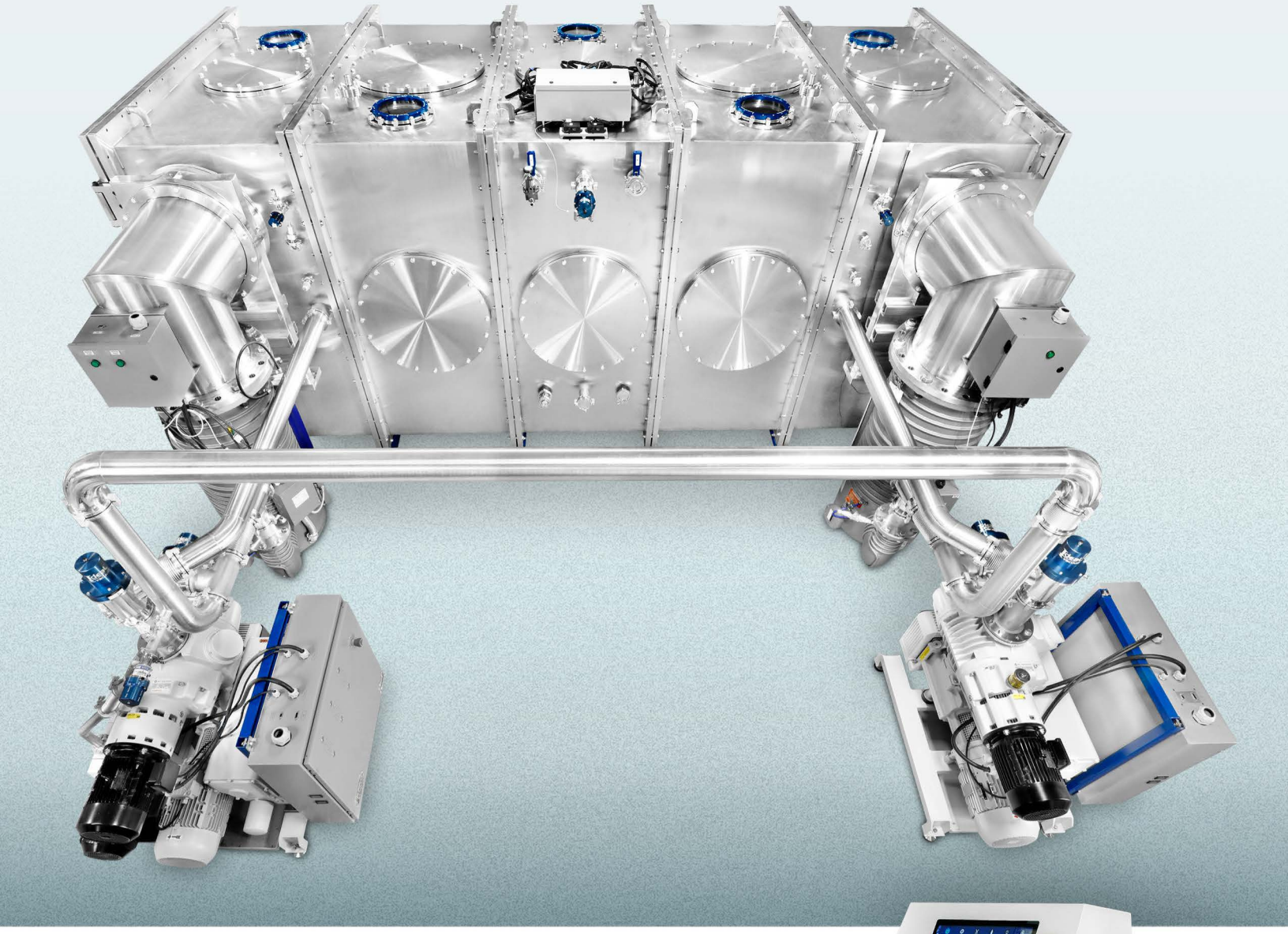

We are ready to help you engineer the right system for your needs. Contact our design team to build your own ExploraVAC Unlimited!

MADE IN USA

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