

## Vacuum Furnace Comparison Chart Metric Measurement

Standard Units	VF-20	VF-30	VF-40
Hot Zone			
Size id x h (mm)	254 x 254	279 x 305	305 x 432
Volume (cubic meters)	0.0127	0.0187	0.0314
Max Operating Temperature (°C)	1760	1760	1149
Temperature Uniformity (°C)	+/- 8 at 1204	+/- 8 at 1204	+/- 14 at 1093
Time to 1038°C (min)	12	15	15
Graphite	•	•	•
Type - K thermocouples	•	•	•
Type - S thermocouples	•	•	•
Type - OVERTEMP	•	•	•
Thermocouple Calibration System	•	•	•
Max Wt. Of Parts (kg)	18.1	27.2	49.9
· <del>-</del>			1010
Vacuum Pumping  * Turbo Pump	•		
•		•	•
* Diffusion Pump			
Typical Ultimate			
Typical Leak Rate			
* Pump Selection Based on Process			
Process Data Out			
Compact Flash - CSV file	•	•	•
Ethernet - CSV file			
Paper Chart Recorder			
Digital Chart Recorder			
· ·		<u> </u>	
Vacuum Gauging			
Pirani Gage			
Thermocouple - Low Vac sensing	•	•	•
Convection			
Diaphragm - Inert gas backfill	•	•	•
Cold Cathode - High Vac	•	•	•
Hot Ion - High Vac			
Part Cooling ( Std. Cooling Time from 1093°- 649°)			
8.495 cubic meters per minute	4.5 min		
16.99 cubic meters per minute	4.5 11111	4.5 min	5.5 min
·		4.0 111111	0.0 111111
Required Utilities			
Compressed Air (psi)			
Inert Gas (psi)			
Inert Gas (psi)			
Inert Gas (psi) Water Temperature	75.7	94.6	113.6
Inert Gas (psi) Water Temperature Water Quality	75.7	94.6	113.6
Inert Gas (psi) Water Temperature Water Quality Water (Ipm @117 kg/sq cm. Differential)	75.7 100	94.6 100	113.6 150
Inert Gas (psi) Water Temperature Water Quality Water (Ipm @117 kg/sq cm. Differential) Electrical			
Inert Gas (psi) Water Temperature Water Quality Water (Ipm @117 kg/sq cm. Differential) Electrical Circuit Breaker Size (amp) Peak Current Draw (amp)	100	100	150
Inert Gas (psi) Water Temperature Water Quality Water (Ipm @117 kg/sq cm. Differential) Electrical Circuit Breaker Size (amp) Peak Current Draw (amp)  Cost Per Run	100	100	150
Inert Gas (psi) Water Temperature Water Quality Water (Ipm @117 kg/sq cm. Differential) Electrical Circuit Breaker Size (amp) Peak Current Draw (amp)	100	100	150
Inert Gas (psi) Water Temperature Water Quality Water (Ipm @117 kg/sq cm. Differential) Electrical Circuit Breaker Size (amp) Peak Current Draw (amp)  Cost Per Run *** If the Furnace is running a recipe with a fast ramp to near max temp of	100	100	150
Inert Gas (psi) Water Temperature Water Quality Water (Ipm @117 kg/sq cm. Differential) Electrical Circuit Breaker Size (amp) Peak Current Draw (amp)  Cost Per Run  *** If the Furnace is running a recipe with a fast ramp to near max temp of furnace, holding for 5 minutes, then rapid cooling the furnace down	100 80	100 80	150 135
Inert Gas (psi) Water Temperature Water Quality Water (Ipm @117 kg/sq cm. Differential) Electrical Circuit Breaker Size (amp) Peak Current Draw (amp)  Cost Per Run  *** If the Furnace is running a recipe with a fast ramp to near max temp of furnace, holding for 5 minutes, then rapid cooling the furnace down Power Usage (kwh) Gas Usage (cu ft)	100 80	100 80	150 135
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Inert Gas (psi) Water Temperature Water Quality Water (Ipm @117 kg/sq cm. Differential) Electrical Circuit Breaker Size (amp) Peak Current Draw (amp)  Cost Per Run  *** If the Furnace is running a recipe with a fast ramp to near max temp of furnace, holding for 5 minutes, then rapid cooling the furnace down Power Usage (kwh) Gas Usage (cu ft)  Typical hourly running cost (based on \$0.15/kwh \$0.40/0.283 cubic meter Ar)	100 80 12 0.227 \$1.99/hr	100 80 17 0.34 \$2.69/hr	150 135 33 0.453 \$5.13/hr
Inert Gas (psi) Water Temperature Water Quality Water (Ipm @117 kg/sq cm. Differential) Electrical Circuit Breaker Size (amp) Peak Current Draw (amp)  Cost Per Run *** If the Furnace is running a recipe with a fast ramp to near max temp of furnace, holding for 5 minutes, then rapid cooling the furnace down Power Usage (kwh) Gas Usage (cu ft)  Typical hourly running cost (based on \$0.15/kwh \$0.40/0.283 cubic meter Ar)  PLC GE Fanuc	100 80 12 0.227 \$1.99/hr	100 80 17 0.34 \$2.69/hr	150 135 33 0.453 \$5.13/hr
Inert Gas (psi) Water Temperature Water Quality Water (Ipm @117 kg/sq cm. Differential) Electrical Circuit Breaker Size (amp) Peak Current Draw (amp)  Cost Per Run *** If the Furnace is running a recipe with a fast ramp to near max temp of furnace, holding for 5 minutes, then rapid cooling the furnace down Power Usage (kwh) Gas Usage (cu ft)  Typical hourly running cost (based on \$0.15/kwh \$0.40/0.283 cubic meter Ar)  PLC GE Fanuc Allen Bradley	100 80 12 0.227 \$1.99/hr	100 80 17 0.34 \$2.69/hr	150 135 33 0.453 \$5.13/hr
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Inert Gas (psi) Water Temperature Water Quality Water (Ipm @117 kg/sq cm. Differential) Electrical Circuit Breaker Size (amp) Peak Current Draw (amp)  Cost Per Run  *** If the Furnace is running a recipe with a fast ramp to near max temp of furnace, holding for 5 minutes, then rapid cooling the furnace down Power Usage (kwh) Gas Usage (cu ft)  Typical hourly running cost (based on \$0.15/kwh \$0.40/0.283 cubic meter Ar)  PLC GE Fanuc Allen Bradley  HMI 203.2 mm touchscreen	100 80 12 0.227 \$1.99/hr	100 80 17 0.34 \$2.69/hr	150 135 33 0.453 \$5.13/hr
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Inert Gas (psi) Water Temperature Water Quality Water (Ipm @117 kg/sq cm. Differential) Electrical Circuit Breaker Size (amp) Peak Current Draw (amp)  Cost Per Run *** If the Furnace is running a recipe with a fast ramp to near max temp of furnace, holding for 5 minutes, then rapid cooling the furnace down Power Usage (kwh) Gas Usage (cu ft)  Typical hourly running cost (based on \$0.15/kwh \$0.40/0.283 cubic meter Ar)  PLC GE Fanuc Allen Bradley  HMI 203.2 mm touchscreen 304.8 mm touchscreen Operator Safety Light Curtain CE Marked	100 80 12 0.227 \$1.99/hr	100 80 17 0.34 \$2.69/hr	150 135 33 0.453 \$5.13/hr
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Inert Gas (psi) Water Temperature Water Quality Water (Ipm @117 kg/sq cm. Differential) Electrical Circuit Breaker Size (amp) Peak Current Draw (amp)  Cost Per Run  *** If the Furnace is running a recipe with a fast ramp to near max temp of furnace, holding for 5 minutes, then rapid cooling the furnace down Power Usage (kwh) Gas Usage (cu ft)  Typical hourly running cost (based on \$0.15/kwh \$0.40/0.283 cubic meter Ar)  PLC GE Fanuc Allen Bradley  HMI 203.2 mm touchscreen 304.8 mm touchscreen  Operator Safety Light Curtain CE Marked Light Tree E-Stop	100 80 12 0.227 \$1.99/hr	100 80 17 0.34 \$2.69/hr	150 135 33 0.453 \$5.13/hr
Inert Gas (psi) Water Temperature Water Quality Water (Ipm @117 kg/sq cm. Differential) Electrical Circuit Breaker Size (amp) Peak Current Draw (amp)  Cost Per Run *** If the Furnace is running a recipe with a fast ramp to near max temp of furnace, holding for 5 minutes, then rapid cooling the furnace down Power Usage (kwh) Gas Usage (cu ft)  Typical hourly running cost (based on \$0.15/kwh \$0.40/0.283 cubic meter Ar)  PLC GE Fanuc Allen Bradley  HMI 203.2 mm touchscreen 304.8 mm touchscreen  Operator Safety Light Curtain CE Marked Light Tree E-Stop Chamber access interlocks	100 80 12 0.227 \$1.99/hr	100 80 17 0.34 \$2.69/hr	150 135 33 0.453 \$5.13/hr
Inert Gas (psi) Water Temperature Water Quality Water (Ipm @117 kg/sq cm. Differential) Electrical Circuit Breaker Size (amp) Peak Current Draw (amp)  Cost Per Run  *** If the Furnace is running a recipe with a fast ramp to near max temp of furnace, holding for 5 minutes, then rapid cooling the furnace down Power Usage (kwh) Gas Usage (cu ft)  Typical hourly running cost (based on \$0.15/kwh \$0.40/0.283 cubic meter Ar)  PLC GE Fanuc Allen Bradley  HMI 203.2 mm touchscreen 304.8 mm touchscreen  Operator Safety Light Curtain CE Marked Light Tree E-Stop	100 80 12 0.227 \$1.99/hr	100 80 17 0.34 \$2.69/hr	150 135 33 0.453 \$5.13/hr
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