

### Standard Units

#### Hot Zone

	VF-20	VF-30	VF-40
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

#### 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	□	□	□

#### 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 min	5.5 min

#### Required Utilities

Compressed Air (psi)			
Inert Gas (psi)			
Water Temperature			
Water Quality			
Water (lpm @117 kg/sq cm. Differential)	75.7	94.6	113.6
Electrical			
Circuit Breaker Size (amp)	100	100	150
Peak Current Draw (amp)	80	80	135

#### 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)	12	17	33
Gas Usage (cu ft)	0.227	0.34	0.453
Typical hourly running cost (based on \$0.15/kwh \$0.40/0.283 cubic meter Ar)	\$1.99/hr	\$2.69/hr	\$5.13/hr

#### 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	•	•	•
Over-Temp safety latch	•	•	•

Protected by US Patents 6649887 & 7724045 - others pending

• Option □