

# **HEAT TREAT EQUIPMENT**

## **Quality Used Heat Treating Equipment**

### **Item V-1138 – Ipsen 5-Bar Vacuum Furnace**

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**Manufacturer:** ..... Ipsen  
**Type:** ..... Rectangular Horizontal Vacuum Furnace  
**Model:** ..... VTC-324-R – 5 Bar  
**Condition:** ..... 1985, excellent condition  
**Load Area:** ..... 24” wide x 36” long x 14” high  
**Maximum Temp:** ..... 2400°F (uniform within  $\pm 10^{\circ}\text{F}$ )  
**Ultimate Pressure:** ..... 10-3 Torr range  
**Maximum Load:** ..... 800 pounds gross  
**Heating Elements:** ..... Graphite, one (1) zone  
**Thermocouples:** ..... Nickel/Moly-Nickel  
**Electrical:** ..... 460V / 3-Phase / 60Hz  
**Heating:** ..... 112.5 KW, graphite elements  
**Cooling Fan:** ..... 2-speed: 125 HP/31 HP at 3600/1800 RPM  
**Insulation:** ..... Rigid graphite board with coated hot face  
..... backed by graphite felt  
..... molybdenum shields in critical areas  
**Other:** ..... Extensive spare parts  
..... Additional new Stokes pump  
..... Many new hot zone OEM parts

#### **Controls:**

**Temp Control:** ..... Honeywell UMC 800 (updated 2000)  
**Vacuum Control:** ..... Recorder/Controller with partial pressure point

#### **Pumps:**

**Mechanical Pump:** .... Stokes 212, 150 CFM (70 l/s) – 2 HP  
**Booster Pump:** ..... Stokes 310, 400 CFM (185 l/s) – 7.5 HP

#### **Cooling Modes:**

**Vacuum:** ..... 700 Torr N<sub>2</sub> gas backfill  
**Recirculation:** ..... 700 Torr, 2, 3, 4, or 5 bar positive pressure

#### **Insulation:**

**Vacuum:** ..... 700 Torr N<sub>2</sub> gas backfill  
**Recirculation:** ..... 700 Torr, 2, 3, 4, or 5 bar positive pressure

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**NOTE:** equipment is sold “AS IS, WHERE IS” and buyer shall indemnify seller against and hold seller harmless from any and all claims, actions and damages arising out of the possession, operation, condition or use of the equipment.

Seller suggests that you contact the manufacture for important information pertaining to safety and proper use and operation of the above equipment. For safety reasons, we request that you do not place the equipment into service until you have received current safety instructions from the manufacturer.

Specifications are taken with care, but are not certified.  
No warranties or guarantees, written or implied.



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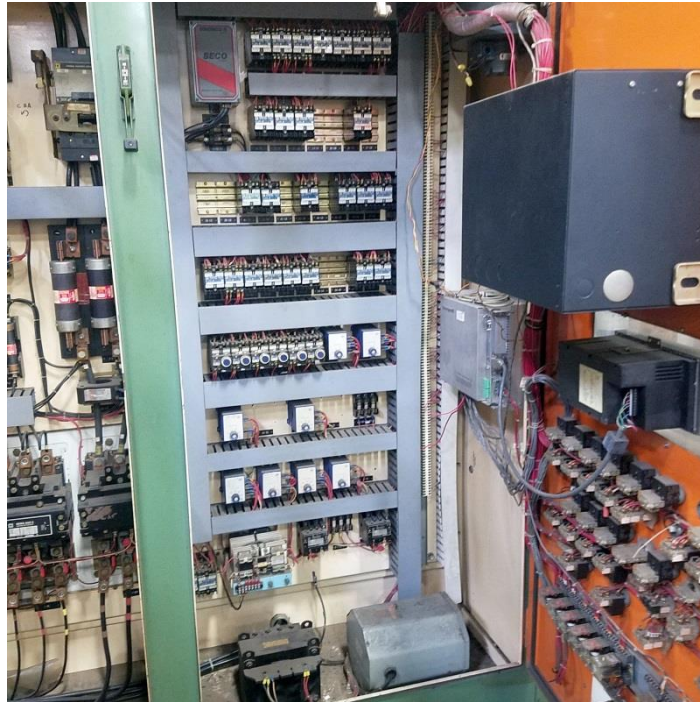


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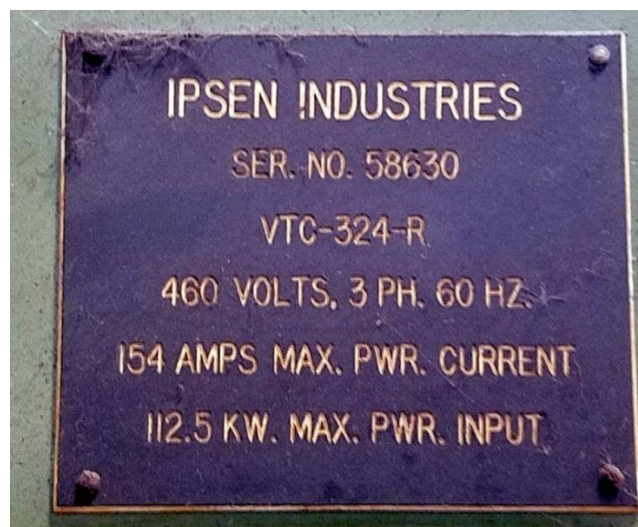
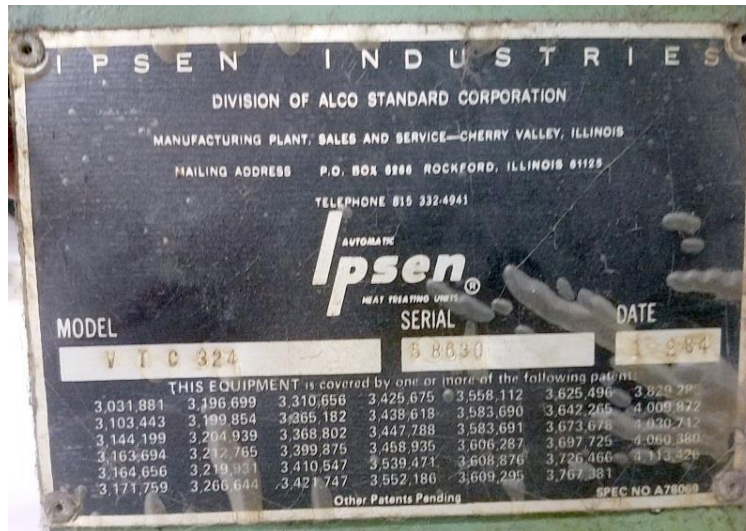


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SERIAL NUMBER: SO#58630

MODEL: VTC-324-R

TYPE INTERNAL: Graphite

HEATING ELEMENTS: Graphite

<u>Delta Hook-Up</u>	<u>112.5 KW</u>
<u>460 PRI Volts</u>	<u>60 HZ</u>
<u>42 SEC Volts</u>	<u>1 Zone</u>

TYPE HEARTH: Graphite

TYPE THERMOCOUPLES: Nickel/Molybdenum-Nickel 2400°F max temp range

COOLING FAN: 125/31 HP 3600/1800 RPM

PARTIAL PRESSURE GAS: Nitrogen

COOLING GAS: Nitrogen

GAS COOLING PRESSURE: 700 mm/2,3,4,5 Bar

MECHANICAL PUMP:

1st Stage:	<u>Stokes</u>	<u>400 cfm</u>
	<u>2 HP</u>	<u>1 3/4 pint oil cap.</u>
2nd Stage:	<u>Stokes</u>	<u>150 cfm</u>
	<u>7 1/2 HP</u>	<u>4 gallon oil cap.</u>

ELECTRICAL SEQUENCE: 24-680 (see Appendix)

VACUTRONIK: YES (.1 to 1000  $\mu$  to Atmos range)



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SPECIFICATIONS	
IPSEN MODEL VTC-324-R AUTOMATIC VACUUM UNIT WITH TURBO-BLOWER GAS COOLING	
Shown below is a synopsis of the pertinent design features of this unit which are fully detailed in the specifications that follow.	
Work Size:	24" wide x 36" long x 14" high (600 mm x 910 mm x 355 mm)
Maximum Load:	800 pounds gross (375 Kg) using graphite hearth
Input:	112.5 kw using graphite elements
Maximum Temperature:	2400° F. (1315° C.)
Ultimate Pressure:	10 <sup>-6</sup> Torr range
Vacuum Piping:	<del>Roughing bypass type with foreline holding pump</del>
Diffusion Pump:	<del>Varian 10" diameter at 11,230 cfm (5,300 l/s)</del>
Mechanical Pump:	Stokes 150 c.f.m. (70 l/s)
Booster Pump:	Stokes 400 c.f.m. (185 l/s)
Temperature Control:	DCP-7700 Microprocessor with recorder
Vacuum Control:	Recorder/Controller with partial pressure set point.
Cooling Modes:	Vacuum, 700 Torr N <sub>2</sub> Gas backfill and N <sub>2</sub> Gas fan recirculation at 700 Torr, 2, 3, 4, or 5 bar positive pressure
Insulation:	Rigid graphite board with coated hot face backed by graphite felt. <i>MOLY SHIELDS IN CRITICAL AREAS</i>
Work Survey Thermocouple Feed Through:	Standard three octal socket penetrations

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**SPECIFICATIONS**  
**IPSEN MODEL VTC-324-R AUTOMATIC VACUUM  
UNIT WITH TURBO-BLOWER GAS COOLING**

1. General Operating Details and Performance

- 1.1 2400° F. maximum furnace temperature; normal operating range 900° F. to 2350° F.
- 1.2 112.5 kw. heating input at 460 volts nominal, 3 phase, 60 hertz.
- 1.3 Rectangular horizontal loading heating chamber with free working area 24" wide, 36" long and 14" high capable of supporting a uniformly distributed load of 800 pounds gross.
- 1.4 Temperature uniform and within  $\pm 10^{\circ}$  F. throughout the free working area in the normal operating range.
- 1.5 <sup>10-3</sup> 10-6 torr ultimate pressure; evacuation of empty, cold, thoroughly outgassed, and inert gas purged furnace to an operating pressure of <sup>50 MIC/POUNDS</sup> ~~5x10-4~~ torr within <sup>15</sup> ~~10~~ minutes.
- 1.6 The leak-up rate will not exceed 3 micron per hour for empty, cold, thoroughly outgassed, and inert gas purged furnace.
- 1.7 Heat-up rate of empty furnace to 2000° F. from ambient not to exceed 20 minutes.
- 1.8 Cooling rate of empty furnace using turbo-blower circulated nitrogen gas from 2000° F. to 350° F. not to exceed 5 minutes with furnace backfilled up to 5 bar absolute.
- 1.9 Fully automatic pre-selected cycle sequence with selection of cooling in vacuum, inert atmosphere backfill, or fan circulated inert atmosphere at 700 Torr, 2, 3, 4 or 5 bar positive pressure.

2. General Furnace Design and Details

- 2.1 Cylindrical furnace frame of carbon steel plate inner and outer shells welded into a water jacketed vessel with heavy carbon steel door seal flange.
  - 2.1.1 Joints exposed to vacuum are MIG type welded for optimum vacuum integrity.

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Page 2 of 10