

*HORIZONTAL TWIN CHAMBER VACUUM OIL QUENCHING GAS COOLING
FURNACE*



Application

It is used for vacuum oil quenching of materials like alloy steel, bearing steel, bearing steel, die steel, high speed steel etc. also for aging and gas cooling process for the above materials.

Main specifications

Parameter\Model	HCOQ-33 4D	HVOQ-44 6D	HVOQ-55 7D	HVOQ-66 9D	HVOQ-77 11D	HVOQ-88 12D	HVOQ-99 15D
Effective hot zone size W*H*L (mm)	300*300 *400	400*400 *600	500*500 *700	600*600 *900	700*700 *1100	800*800 *1200	900*900 *1500
Load capacity (Kg)	75	250	400	600	1000	1200	1500
Heating power (KW)	48	75	90	150	270	360	480
Max. Temperature (°C)	1150	1150	1150	1150	1150	1150	1150
	1350	1350	1350	1350	1350	1350	1350
Temperature Uniformity (°C)	±5	±5	±5	±5	±5	±5	±5
Vacuum degree (Pa)	4×10^{-1}	4×10^{-1}	4×10^{-1}	4×10^{-1}	4×10^{-1}	4×10^{-1}	4×10^{-1}
	4×10^{-3} /6*(10 ⁻⁴)	4×10^{-3} /6*(10 ⁻⁴)	4×10^{-3} /6*(10 ⁻⁴)	4×10^{-3} /6*(10 ⁻⁴)	4×10^{-3} /6*(10 ⁻⁴)	4×10^{-3} /6*(10 ⁻⁴)	4×10^{-3} /6*(10 ⁻⁴)
Pressure increasing rate (Pa/h)	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26
	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65
Transportation time (s)	≤12	≤15	≤20	≤25	≤35	≤35	≤40
Oil tank volume (L)	800	2000	3500	5500	9500	11000	14000
Cooling gas (99.995%)	N ₂ /Ar	N ₂ /Ar	N ₂ /Ar	N ₂ /Ar	N ₂ /Ar	N ₂ /Ar	N ₂ /Ar
Gas cooling pressure (bar)	2	2	2	2	2	2	2

Configuration Options

- Furnace door type: on line; off line; Vertically up and down
- Insulation gate in the middle: Mechanically driven; Pneumatically driven
- Quenching oil flow type: Paddle stirring, Nozzle jetting, both of the two types
- Furnace heath: Graphite heating elements and graphite felt heat insulation;
Nichrome heating elements and stainless steel heat insulation;
Molybdenum heating elements and metal heat insulation
- Gas cooling type: Build-in heat exchanger; external heat exchanger; none
- Vacuum pump unit and vacuum gauge: Imported brand; high quality domestic brand
- Vacuum degree: High vacuum; Medium vacuum
- PLC: Siemens; OMRON; Mitsubishi
- Temperature controller: Shimaden; Eurotherm; Honeywell
- Thermocouple: Type K; Type N; Type S
- Recorder: Paper recorder; Paperless recorder
- HMI: Simulation screen; Touchscreen with industrial computer
- Electrical component: High quality domestic brand; Schneider; Siemens

Technical features

- Horizontal, twin chamber, internal heating
- Excellent temperature uniformity realized by octagon shaped furnace hearth
- The heating elements adopt unigne honceramic supporting technology. It can be used five years without any insulation problem.
- The inner trolley is overlap type stretchable structure with frequency converting function. It has a stable transportation speed with “full fast slow” step, which makes the transportation time very short.
- Build-in heat exchanger and forced gas cooling type contribute to the uniformed and high low rating jet gas, which eventually makes the cooing speed very fast.
- High volume oil tank and hot oil cooling by external circulation and heat exchanger has a better cooling effect.
- Two cooling types, oil stirring and oil injection cooling, are used for various kinds of products, which makes the products have less deformation.
- Larger load capacity and higher efficiency comparing with other same

specification products.

立式双室真空气冷油淬炉

VERTICAL TWIN CHAMBER VACUUM GAS COOLING OIL QUENCHING FURNACE



Application

It is used for vacuum oil quenching of materials like alloy steel, high speed steel, super high strength steel, M300 steel and etc. It is specially suitable for vacuum heat treatment of long rod type parts, plate type parts, long axle parts, landing gears and similar large size parts. The job treated by the furnace have little deformation and good structure.

Main specifications

Parameter Model	VVOQ-0812 D	VVOQ-1018 D	VVOQ-1218 D	VVOQ-1520 D	VVOQ-1825 D
Effective hot zone $\Phi \times H$ (mm)	Φ 800*1200	Φ 1000*1500	Φ 1200*1800	Φ 1500*2500	Φ 1800*3000
Loading capacity(kg)	600	1000	1200	2000	2500
Heating power (KW)	240	330	450	570	750
Max. Temperatu re(℃)	1050	1050	1050	1050	1050
	1350	1350	1350	1350	1350
Temperatu re uniformit y(℃)	± 5	± 5	± 5	± 5	± 5
Vacuum degree (Pa)	4×10^{-1}	4×10^{-1}	4×10^{-1}	4×10^{-1}	4×10^{-1}
	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$
Pressure degree (Pa /h)	≤ 0.26	≤ 0.26	≤ 0.26	≤ 0.26	≤ 0.26
	≤ 0.65	≤ 0.65	≤ 0.65	≤ 0.65	≤ 0.65
Transport ation time(s)	≤ 20	≤ 36	≤ 45	≤ 60	≤ 72
Oil tank volume (L)	5000	98000	11000	180000	240000
Cooling gas (99.99 5%)	N ₂ /Ar	N ₂ /Ar	N ₂ /Ar	N ₂ /Ar	N ₂ /Ar
Gas cooling pressure(bar)	2	2	2	2	2

Configuration Options

- Twin chamber vertical structure: Integral type; movable heating chamber type; movable oil tank type
- Quenching oil stirring type: Paddle stirring, Nozzle jetting, both of the two types
- Furnace hearth: Graphite heating elements and graphite felt heat insulation;
Nichrome heating elements and stainless steel heat insulation;
Molly heat element and metal heat insulation
- Vacuum pump unit and vacuum gauge: Imported brand; high-quality domestic brand
- Vacuum degree: High vacuum; Medium vacuum
- PLC: Siemens; OMRON; Mitsubishi
- Temperature controller: Shimaden; Euro-therm; Honeywell
- Therm-couple: Type K; Type N; Type S
- Recorder : Paper recorder; Paperless recorder
- HMI: Simulation screen; Touchscreen with industrial computer
- Electric component: High-quality domestic brand; Schneider; Siemens

Technical features

- Vertical twin chamber. User can choose the vertical structural moving type and layout according to their own requirements.
- Excellent temperature uniformity realized by optimized furnace hearth.
- The inner material trolley has frequency converting function. It has a stable transportation speed with “full-fast-slow” steps, which makes the transportation time very short.
- Protective gas can be put into the furnace to minimize the oil vaporization and ensure a fast cooling speed in the gas quenching process.
- High volume oil tank and hot oil cooling by external circulation and heat exchanger has a better cooling effect.
- Two cooling types, oil stirring cooling and oil injection cooling, are used for various kinds of products, which makes the product have less deformation.
- Larger loading capacity and higher efficiency comparing with other same specification products.

立式底装料真空气淬炉

VERTICAL BOTTOM LOADING VACUUM GAS QUENCHING FURNACE



Application

It is used for vertical gas quenching of materials like tool steel, die steel, high speed steel, super high strength steel and etc. It is specially suitable for vacuum gas quenching of large size easy deforming products like long rod type parts, axle parts, plate type parts and etc. The components have little deformation and good cooling effect.

Main Specifications

[illegible]

Configuration options

- Bottom loading:The bottom door can move and be fixed horizontally
- Vertical movement:Screw moving;nut moving
- Gas quenching type:360° nozzle gas inject cooling;external heat exchange cooling
- Furnace hearth: Graphite heating element and graphite felt heat insulation
 Molly heating element and metal heat insulation
- Vacuum pump unit and vacuum gauge:Imported brand;high-quality domestic brand
- Vacuum degree:High vacuum;Medium vacuum
- PLC:Siemens;OMRON; Mitsubishi
- Temperature controller:Shimaden;Euro-therm;Honeywell
- Thermo-couple:Type K;Type N;Type S
- Recorder :Paper recorder;Paperless recorder
- HMI:Simulation screen;Touch screen with industrial computer
- Electrical component:High-quality domestic brand;Schneider;Siemens

Technical features

- Vertical, single chamber, bottom loading structure. It is optional to choose the moving-out bottom door device according to customer' s requirement.
- Excellent temperature uniformity realized by optimized furnace hearth.
- The bottom door device structure is optional for ball bearing screw or trapezium screw, nut moving or screw moving.
- The elevation device frame is equipped with auto-balance correction device to eliminate the accumulated error. The elevation is stable and without vibration.
- For different cooling speed requirements, it can use single heat ex-changer furnace hearth or dual and multi-stage heat ex-changer furnace hearth.
- Variable direction cooling technology, cooling it can do both vertical injection cooling and 360° all around.

卧式单室真空高压气淬炉

HORIZONTAL SINGLE CHAMBER VACUUM HIGH PRESSURE GAS QUENCHING FURNACE



Application

It is used for gas quenching of materials like tool steel, die steel, high speed steel, super high strength steel and etc. It has no special dimension and shape requires for the components. The components have little deformation and good cooling effect.

Main specifications

Parameter\Model	HVGQ-33 4S	HVGQ-44 6S	HVGQ-55 7S	HVGQ-66 9S	HVGQ-77 11S	HVGQ-88 12S	HVGQ-99 15S
Effective hot zone W*H*L (mm)	300*300*400	400*400*600	500*500*700	600*600*900	700*700*1100	800*800*1200	900*900*1500
Loading capacity (kg)	75	250	400	600	1000	1200	1500
Heating power (KW)	48	75	90	150	270	360	480
Max. Temperature (°C)	1150	1150	1150	1150	1150	1150	1150
	1350	1350	1350	1350	1350	1350	1350
Temperature uniformity (°C)	±5	±5	±5	±5	±5	±5	±5
Vacuum degree (Pa)	4×10^{-1}	4×10^{-1}	4×10^{-1}	4×10^{-1}	4×10^{-1}	4×10^{-1}	4×10^{-1}
	4×10^{-3} /6*(10 ⁻⁴)	4×10^{-3} /6*(10 ⁻⁴)	4×10^{-3} /6*(10 ⁻⁴)	4×10^{-3} /6*(10 ⁻⁴)	4×10^{-3} /6*(10 ⁻⁴)	4×10^{-3} /6*(10 ⁻⁴)	4×10^{-3} /6*(10 ⁻⁴)
Pressure increasing rate (Pa/h)	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26
	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65
Gas quenching pressure (bar)	6/10/15 /20	6/10/15 /20	6/10/15 /20	6/10/15 /20	6/10/15 /20	6/10/15 /20	6/10/15 /20
Cooling gas (99.995%)	N ₂ /Ar/He	N ₂ /Ar/He	N ₂ /Ar/He	N ₂ /Ar/He	N ₂ /Ar/He	N ₂ /Ar/He	N ₂ /Ar/He

Configuration options

- Furnace door type: On-line; Off-line; Vertically up and down; Rotating
- Gas quenching type: 360° nozzle gas inject cooling
External heat exchanger cooling

Gas flow vertically alternative cooling

- Furnace hearth:graphite heating elements and graphite felt heat insulation
Molly heating elements and all-metal heat insulation
- Vacuum pump unit and vacuum gauge:Imported brand;high-quality domestic brand
- Vacuum degree:High vacuum;Medium vacuum
- PLC:Siemens;OMRON;Mitsubishi
- Temperature controller:Shimaden;Euro-therm;Honeywell
- Thermo-couple:Type K;Type N;Type S
- Recorder:Paper recorder;Paperless recorder
- HMI:Simulation screen;Touch screen with industrial computer
- Electrical component:High-quality domestic brand;Schneider;Siemens

Technical features

- Horizontal, single chamber, horizontal loading structure. Furnace door open type can be customized design.
- Excellent temperature uniformity realized by optimized furnace hearth.
- For different cooling speed requirements, it can use single heat ex-changer furnace hearth cooling or dual and multi-stage heat ex-changer furnace hearth cooling.
- For different components, it is optional to use backside gas inlet quenching circulation system or front side gas inlet quenching circulation system.
- To use unique two-stage heat ex-changer, the exchange area is twice than before.

卧式双室真空高压气淬炉

HORIZONTAL TWIN CHAMBER VACUUM HIGH PRESSURE GAS QUENCHING FURNACE



Application

It is used for gas quenching of materials like tool steel, die steel, high speed steel, super high strength steel and etc. The heating chamber is separated with the quenching chamber, which saves much energy and has good cooling.

Main specifications

Parameter\Model	HVGQ-33 4D	HVGQ-44 6D	HVGQ-55 7D	HVGQ-66 9D	HVGQ-77 11D	HVGQ-88 12D	HVGQ-99 15D
Effective hot zone W*H*L (mm)	300*300 *400	400*400 *600	500*500 *700	600*600 *900	700*700 *1100	800*800 *1200	900*900 *1500
Loading capacity (kg)	75	250	400	600	1000	1200	1500
Heating power (KW)	48	75	90	150	270	360	480

Max. Temperature(℃)	1150	1150	1150	1150	1150	1150	1150
	1350	1350	1350	1350	1350	1350	1350
Temperature uniformity(℃)	±5	±5	±5	±5	±5	±5	±5
Vacuum degree (Pa)	4×10^{-1}	4×10^{-1}	4×10^{-1}	4×10^{-1}	4×10^{-1}	4×10^{-1}	4×10^{-1}
	4×10^{-3} /6*(10 ⁻⁴)	4×10^{-3} /6*(10 ⁻⁴)	4×10^{-3} /6*(10 ⁻⁴)	4×10^{-3} /6*(10 ⁻⁴)	4×10^{-3} /6*(10 ⁻⁴)	4×10^{-3} /6*(10 ⁻⁴)	4×10^{-3} /6*(10 ⁻⁴)
Pressure increasing rate(Pa/h)	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26
	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65
Transportation time(S)	≤12	≤15	≤20	≤25	≤30	≤30	≤35
Gas quenching pressure(bar)	6/10/15 /20	6/10/15 /20	6/10/15 /20	6/10/15 /20	6/10/15 /20	6/10/15 /20	6/10/15 /20
Cooling gas(99.995%)	N ₂ /Ar/He	N ₂ /Ar/He	N ₂ /Ar/He	N ₂ /Ar/He	N ₂ /Ar/He	N ₂ /Ar/He	N ₂ /Ar/He

Configuration Options

- Furnace door type:On-line;Off-line;Vertically up and down;Rotating
- Gas quenching type:Cold airflow vertically cooling
Cold airflow side-to-side cooling
- Furnace hearth:Graphite heating elements and graphite felt heat insulation
Molybdenum heating elements and metal heat insulation
- Vacuum pump unit and vacuum gauge:imported brand;high-quality domestic brand
- Vacuum degree:High vacuum;Medium vacuum

- PLC:Siemens;OMRON;Mitsubishi
- Temperature controller:Shinmaden;Euro-therm;Honeywell
- Thermo-couple:Type K;Type N;Type S
- Recorder:Paper recorder;Paperless recorder
- HMI:Simulation screen/Touchscreen with industrial computer
- Electrical component:High-quality domestic brand;Schneider;Siemens

Technical features

- Horizontal twin chamber, horizontal loading structure. Furnace door type can be customized design.
- Gas quenching chamber is an independent part, which has a high heat exchanging speed.
- The inner loading trolley is integral structure. The materials transportation is stable and finished in a short time.
- According to the treating jobs, users can choose to configure axial-flow type high power gas quenching fan or centrifugal high power gas quenching fan.

欧式单室真空退火炉

HORIZONTAL SINGLE CHAMBER VACUUM ANNEALING FURNACE



Application

It is used for bright annealing of materials like tool steel, die steel, high-speed steel, ultra-strength steel, magnetic material, stainless steel, non-ferrous metal, and so on.

Main specifications

Parameter\Mode l	HVA-33 4S	HVA-44 6S	HVA-55 7S	HVA-66 9S	HVA-77 11S	HVA-88 12S	HVA-99 15S
Effective hot zone size W*H*L (mm)	300*300*400	400*400*600	500*500*700	600*600*900	700*700*1100	800*800*1200	900*900*1500
Loading capacity (kg)	75	250	400	600	100	1200	1500
Heating power (KW)	48	75	90	150	270	360	480
Max temperature (℃)	1350	1350	1350	1350	1350	1350	1350
Temperature uniformity (℃)	±5	±5	±5	±5	±5	±5	±5
Vacuum degree (Pa)	4×10^{-1}	4×10^{-1}	4×10^{-1}	4×10^{-1}	4×10^{-1}	4×10^{-1}	4×10^{-1}
	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$
Pressure increasing rate (Pa/h)	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26
	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65
Gas cooling pressure (bar)	2	2	2	2	2	2	2

Configuration Options

- Furnace door type: On-line; Vertically up and down; Rotating
- Furnace hearth: Graphite heating elements and graphite felt heat insulation
Molybdenum heating elements and all-metal heat insulation
- Vacuum pump unit and vacuum gauge: imported brand; high-quality domestic brand
- Vacuum degree: High vacuum; Medium vacuum
- PLC: Siemens; OMRON; Mitsubishi
- Temperature controller: Shimaden; Euro-therm; Honeywell
- Thermo-couple: Type K; Type N; Type S
- Recorder : Paper recorder; Paperless recorder
- HMIL: Simulation screen; Touchscreen with industrial computer
- Electric component: High-quality domestic brand; Schneider; Siemens

Technical features:

- Horizontal, single chamber, loading horizontally. The way of opening door is optional according to the customer's requirements.
- Excellent temperature uniformity realized by optimized furnace hearth.
- Full metal insulation screen adopts rear insulation technology.

立式底装料真空退火炉

VERTICAL BOTTOM LOADING VACUUM ANNEALING FURNACE



Application

It is used for bright annealing of materials like tool steel, die steel, high-speed steel, ultra-strength steel, magnetic material, stainless steel, non-ferrous metal. It also specially applies to vacuum annealing of large size jobs which is easy to deform, such as long pole-shape parts, shaft parts board parts, and etc.

Main specifications

Parameter\Mod el	VVA-06 08S	VVA-08 08S	VVA-10 10S	VVA-12 12S	VVA-12 15S	VVA-15 15S	VVA-15 20S
Effective hot zone size Φ *H(mm)	Φ 600*80 0	Φ 800*80 0	Φ 1000*1 000	Φ 1200*1 200	Φ 1200*1 500	Φ 1500*1 500	Φ 1500*2 000
Loading capacity (kg)	650	850	1000	1150	1300	1450	1800
Heating power (KW)	120	180	270	330	390	420	540
Max temperature ($^{\circ}\text{C}$)	1150	1150	1150	1150	1150	1150	1150
	1350	1350	1350	1350	1350	1350	1350
Temperature uniformity($^{\circ}\text{C}$)	± 5	± 5	± 5	± 5	± 5	± 5	± 5
Vacuum degree (Pa)	$4*10^{-1}$	$4*10^{-1}$	$4*10^{-1}$	$4*10^{-1}$	$4*10^{-1}$	$4*10^{-1}$	$4*10^{-1}$
	$4*10^{-3}$	$4*10^{-3}$	$4*10^{-3}$	$4*10^{-3}$	$4*10^{-3}$	$4*10^{-3}$	$4*10^{-3}$
	$/6*(10^{-4})$	$/6*(10^{-4})$	$/6*(10^{-4})$	$/6*(10^{-4})$	$/6*(10^{-4})$	$/6*(10^{-4})$	$/6*(10^{-4})$
Pressure increasing rate (Pa/h)	≤ 0.26	≤ 0.26	≤ 0.26	≤ 0.26	≤ 0.26	≤ 0.26	≤ 0.26
	≤ 0.65	≤ 0.65	≤ 0.65	≤ 0.65	≤ 0.65	≤ 0.65	≤ 0.65
Gas cooling pressure (bar)	2	2	2	2	2	2	2

Configuration Options

- Furnace door type:On-line;Off-line;Vertically up and down;Rotating
- Furnace hearth:Graphite heating elements and graphite felt heat insulation
- Molybdenum heating elements and all-metal heat insulation
- Vacuum pump unit and vacuum gauge:imported brand;high-quality domestic brand
- Vacuum degree:High vacuum;Medium vacuum
- PLC:Siemens;ONRON;Mitsubishi
- Temperature controller:Shimaden;Euro-therm;Honeywell

- Thermo-couple:Type K;Type N;Type S
- Recorder :Paper recorder;Paperless recorder
- HMIL:Simulation screen;Touchscreen with industrial computer
- Electric component:High-quality domestic brand;Schneider;Siemens

Technical features

- Vertical ,Single chamber, Bottom loading.It is optional to choose the moving-out bottom door device according to customer' s requirement.
- Excellent temperature uniformity realized by optimized furnace hearth.
- The lifting transmission structure of the bottom furnace door has several options according to the on-site situation,
- The lifting structure has function of eliminating the cumulative errors of lifting system automatically.The movements are of high stability and no vibration.

高真空回火炉

HIGH VACUUM TEMPERING FURNACE



Application

It is used for vacuum tempering of materials like tool steel, die steel, high-speed steel, ultra-strength steel, titanium alloy after vacuum quenching and solution treatment, also for re-crystallization annealing and vacuum aging of non-ferrous metal.

Main specifications

Parameter\Model	HVT-334S	HVT-446S	HVT-557S	HVT-669S	HVT-7711S	HVT-8812S	HVT-9915S
Effective hot zone size W*H*L (mm)	300*300*400	400*400*600	500*500*700	600*600*900	700*700*1100	800*800*1200	900*900*1500
Loading capacity (kg)	75	250	400	600	1000	1200	1500
Heating power (KW)	30	45	75	100	150	180	240
Max temperature (°C)	750	750	750	750	750	750	750
Temperature uniformity (°C)	±5	±5	±5	±5	±5	±5	±5
Vacuum degree (Pa)	4×10^{-3} / 6×10^{-4}	4×10^{-3} / 6×10^{-4}	4×10^{-3} / 6×10^{-4}	4×10^{-3} / 6×10^{-4}	4×10^{-3} / 6×10^{-4}	4×10^{-3} / 6×10^{-4}	4×10^{-3} / 6×10^{-4}
Pressure increasing rate (Pa/h)	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26
	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65
Gas cooling pressure (bar)	2	2	2	2	2	2	2

Configuration Options

- Furnace door type:On-line;Off-line;Vertically up and down;Rotating
- Vacuum pump unit and vacuum gauge:imported brand;high-quality domestic brand
- PLC:Siemens;OMRON;Mitsubishi
- Temperature controller:Shimaden;Euro-therm;Honeywell
- Thermo-couple:Type K;Type N;Type S
- Recorder :Paper recorder;Paperless recorder
- HMIL:Simulation screen;Touchscreen with industrial computer
- Electric component:High-quality domestic brand;Schneider;Siemens

Technical features

- Horizontal, single chamber, loading horizontally. The way of opening door is optional according to customer' s requirements.
- The hearth consists of wide nichrome heating elements and multi-layer stainless steel heat insulation with good temperature uniformity performance.
- Tempering is finished under the high vacuum. The jobs after treatment are bright without any color changes.
- The fast cooling system composed of inner heat ex-changer and gas cooling circulation can effectively prevents components from tempering brittleness.
- It has convection heating device, which can ensure the temperature uniformity at the state of low temperature.

卧式双室真空渗碳炉

HORIZONTAL DOUBLE CHAMBER VACUUM CARBURIZING FURNACE



Application

It is used for the carburizing and quenching after carburizing of materials like structure steel (20CrMnTi、12Cr2Ni4A、12Cr2Ni3A, etc), high alloy carburizing steel, stainless steel (1Cr13, etc), quenching of tool steel and die steel, quenching and annealing of gear parts, sleeve parts, precision bearing, glib pump mechanical parts, precision machine parts.

Main specifications

Parameter\Model	VCQ-33 4D	VCQ-44 6D	VCQ-55 7D	VCQ-66 9D	VCQ-77 11D	VCQ-88 12D	VCQ-99 15D
Effective hot zone size W*H*L (mm)	300*300*400	400*400*600	500*500*700	600*600*900	700*700*1100	800*800*1200	900*900*1500
Loading capacity (kg)	75	250	400	600	1000	1200	1500
Heating power (KW)	48	75	90	150	270	360	480
Max temperature (°C)	1150	1150	1150	1150	1150	1150	1150
	1350	1350	1350	1350	1350	1350	1350
Temperature uniformity (°C)	±5	±5	±5	±5	±5	±5	±5
Vacuum degree (Pa)	4*10 ⁻¹	4*10 ⁻¹	4*10 ⁻¹	4*10 ⁻¹	4*10 ⁻¹	4*10 ⁻¹	4*10 ⁻¹
Pressure increasing rate (Pa/h)	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26
	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65
Carburizing medium	C ₂ H ₂ +N ₂	C ₂ H ₂ +N ₂	C ₂ H ₂ +N ₂	C ₂ H ₂ +N ₂	C ₂ H ₂ +N ₂	C ₂ H ₂ +N ₂	C ₂ H ₂ +N ₂
Carburizing medium (mbar)	5-20	5-20	5-20	5-20	5-20	5-20	5-20
Controlling way	Multi-pulse	Multi-pulse	Multi-pulse	Multi-pulse	Multi-pulse	Multi-pulse	Multi-pulse
Transportation time (s)	≤15	≤20	≤25	≤30	≤35	≤35	≤40
Quenching medium	oil/gas	oil/gas	oil/gas	oil/gas	oil/gas	oil/gas	oil/gas

Configuration Options

- Furnace type: Twin chamber horizontal;Twin chamber vertical
- Quenching type: Vacuum oil quenching;Vacuum gas quenching
- Vacuum pump unit and vacuum gauge: Important brand;High-quality domestic brand
- PLC: Siemens;OMRON;Mitsubishi
- Temperature controller: Shimaden;Euro-therm;Honeywell

- Type thermo-couple: Type K;Type N;Type S
- Recorder: Paper recorder; Paperless recorder
- HMI:Simulation screen;Touchscreen with industrial computer
- Electric component: High-quality domestic brand;Schneider;Siemens

Technical features

- Horizontal twin chamber with one carburizing chamber and one quenching chamber. The quenching medium is optional according to the on-side situation.
- On the squirrel cage graphite heating hearth configures evenly nozzles for injecting carburizing medium, to make sure the atmosphere well-distributed.
- Exclusive vacuum carburizing technology and accuracy control of carburizing parameters provide the best concentration distribution of carburizing period.
- Quenching material transportation car runs stably, carrying out “full-fast-slow” movements in a short transportation time.
- 21 century environment friendly equipment:safety, low cost and high efficiency.
- It is controlled by pules gas, which is more better for blind-hole carburizing.

立式真空水淬炉

VERTICAL VACUUM WATER QUENCHING FURNACE



Application

It is used for the solution treatment of titanium alloy in aerospace industry, such as TC4、TC16,beryllium bronze in aircraft instrument elastic instrument elastic elements;precision alloy in aircraft sensor like Ni-based and Co-based high elastic alloy 3J1、3J21,Ni-based constant elastic alloy 3J53; stainless steel in the field of nuclear energy like 17-4PH, 410.

Main specifications

Parameter\Model	VVWQ-303 0D	VVWQ-404 0D	VVWQ-505 0D	VVWQ-606 0D	VVWQ-806 0D
Effective hot zone size $\Phi \times H$ (mm)	$\Phi 300 \times 300$	$\Phi 400 \times 400$	$\Phi 500 \times 500$	$\Phi 600 \times 600$	$\Phi 800 \times 600$
Loading capacity (kg)	50	75	120	200	300
Heating power (KW)	35	60	75	90	120
Max temperature (℃)	1350	1350	1350	1350	1350
Temperature uniformity (℃)	± 5	± 5	± 5	± 5	± 5
Vacuum degree (Pa)	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$
Pressure increasing rate (Pa/h)	≤ 0.26	≤ 0.26	≤ 0.26	≤ 0.26	≤ 0.26
	≤ 0.65	≤ 0.65	≤ 0.65	≤ 0.65	≤ 0.65
Transportation time (s)	≤ 6	≤ 6	≤ 6	≤ 6	≤ 6
Quenching medium	Purified water	Purified water	Purified water	Purified water	Purified water

Configuration Options

- Twin chamber vertical structure: Integral type;movable heating chamber type;movable water tank type
- Furnace hearth:Molybdenum heating elements and metal heat insulation
- Quenching water stirring type: Paddle stirring, nozzle jetting, both of the two types

- PLC: Siemens;OMRON;Mitsubishi
- Temperature controller:Shimaden;Euro-therm;Honeywell
- Thermo-couple:Type K; Type N;Type S
- Recorder:Paper recorder; Paperless recorder
- HMI:Simulation screen;Touchscreen with industrial computer
- Electrical component:High-quality domestic brand;Schneider;Siemens

Technical features

- Vertical, twin chambers. Integral type or split type structure are optional in accordance with on site situation
- Jobs loading type:hanging type or bracket type.
- The furnace hearth is designed through modularized optimization with good temperature uniformity performance.
- Compared with horizontal transmission quenching device, the quenching device made up of vertical material lifting trolley has the advantage of shorter transportation time.
- The special know-how will be used, which makes the furnace no need to charge other gases to suppress water vapor, thoroughly prevents water vapor entering into heating chamber and polluting the vacuum pump system.
- It has high volume water quenching tank equipped with cooling circulation system, which has a better water quenching effect.
- It also has extendibility, Which can improve the production efficiency.
- The water vapor has no any pollution to the heating chamber and pumps.

立式底装料高真空钎焊炉

VERTICAL BOTTOM LOADING VACUUM BRAZING FURNACE



Application

It is used for vacuum brazing of materials like non-ferrous metal, stainless steel, titanium alloy, high temperature alloy, cemented carbide and so on.

Main specifications

Parameter\Model	VHVB-06 08S	VHVB-08 08S	VHVB-10 10S	VHVB-12 12S	VHVB-12 15S	VHVB-15 20S
Effective hot zone size Φ *H (mm)	Φ 600*800	Φ 800*800	Φ 1000*100 0	Φ 1200*120 0	Φ 1200*150 0	Φ 1500*200 0
Loading capacity (kg)	650	850	1000	1150	1450	1800

Heating power (KW)	120	180	270	330	420	540
Max temperature (°C)	1350	1350	1350	1350	1350	1350
Temperature uniformity (°C)	±5	±5	±5	±5	±5	±5
Vacuum degree (Pa)	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$
Pressure increasing rate (Pa/h)	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26
	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65
Gas cooling pressure (bar)	2/6/10	2/6/10	2/6/10	2/6/10	2/6/10	2/6/10

Configuration Options

- Bottom loading type: Vertical door can move horizontally, horizontally fixed
- Vertical movement: Screw moving; Nut moving
- Furnace hearth: Graphite heating elements and graphite felt heat insulation
- Molybdenum heating elements and all-metal heat insulation
- Vacuum pump unit and vacuum gauge: Imported brand; high-quality domestic brand
- PLC: Siemens; OMRON; Mitsubishi
- Temperature controller: Shimaden; Euro-therm; Honeywell
- Thermo-couple: Type K; Type N; Type S
- Recorder : Paper recorder; Paperless recorder
- HMI: Simulation screen; Touchscreen with industrial computer
- Electric component: High-quality domestic brand; Schneider; Siemens

Technical features

- Vertical, single chamber, bottom loading. It is optional to choose the moving-out bottom door device according to customer's requirement.
- The furnace hearth is designed through modularized with good temperature uniformity performance.

- The lifting transmission structure of the bottom door has multiple choices according to the on-site situation.
- The lifting structure has function of eliminating the cumulative errors of lifting system automatically. The movements are of high stability and no vibration.
- The vacuum system inlet is configured with gas condensate phase inversion device and filter collection device, preventing welding flux vapor polluting vacuum system.
- Unique gauge anti-pollution technology guarantees the long service life of the vacuum gauge.
- Unique rear insulation has larger radiation area and better insulation performance.

卧式高真空钎焊炉

HORIZONTAL HIGH VACUUM BRAZING FURNACE



Application

It is used for the vacuum brazing of material like non-ferrous metal, stainless steel, titanium alloy, high temperature alloy, cemented carbide and so on.

Main specifications

Parameter\Model	HHVB-44 6S	HHVB-55 7S	HHVB-66 9S	HHVB-77 11S	HHVB-88 12S	HHVB-99 15S
Effective hot zone size W*H*L (mm)	400*400 *600	500*500 *700	600*600 *900	700*700 *1100	800*800 *1200	900*900 *1500
Loading capacity (kg)	250	400	600	1000	1200	1500
Heating power (KW)	75	90	150	270	360	480
Max temperature (℃)	1350	1350	1350	1350	1350	1350
Temperature uniformity (℃)	±5	±5	±5	±5	±5	±5
Vacuum degree (Pa)	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$	4×10^{-3} / $6 \times (10^{-4})$
Pressure increasing rate (Pa/h)	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26
	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65
Gas cooling pressure (bar)	2/6/10	2/6/10	2/6/10	2/6/10	2/6/10	2/6/10

Configuration Options

- Furnace door type: On line; Off-line; Vertically up and down; Rotating
- Furnace hearth: Graphite heating elements and graphite felt heat insulation
- Molybdenum heating elements and metal heat insulation
- Vacuum pump unit and vacuum gauge: Imported brand; high-quality domestic brand

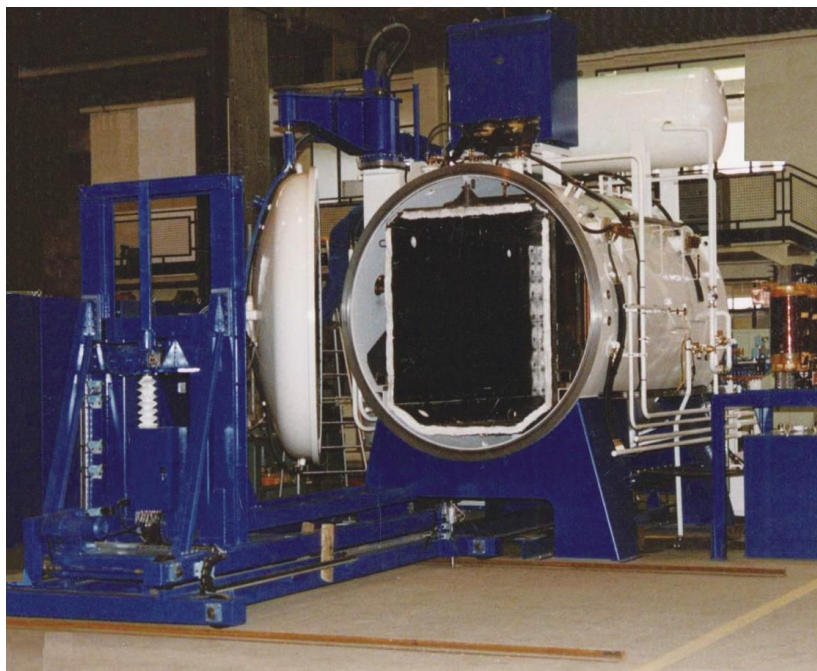
- PLC:Siemens;OMRON;Mitsubishi
- Temperature controller:Shimaden;Euro-therm;Honeywell
- Thermo-couple:Type K;Type N;Type S
- Recorder:Paper recorder;Paperless recorder
- HMI:Simulation screen;Touchscreen with industrial computer
- Electric component: High-quality domestic brand; Schneider;Siemens

Technical features

- Horizontal, single chamber, loading horizontally.
- The furnace hearth is designed through modularized optimization with good temperature uniformity performance.
- The vacuum system inlet is configured with gas condensate phase inversion device and filter collection device, preventing welding flux vapor polluting the vacuum system.
- Unique gauge anti-pollution technology guarantee the long service life of the vacuum gauge.
- Unique rear insulation has larger radiation area and better insulation performance.

高真空铝钎焊炉

HIGH VACUUM ALUMINIUM BRAZING FURNACE



Application

It is used for vacuum brazing of material like heat ex-changer, air condition evaporator, condenser, radar grid antenna, waveguide tube, and etc.

Main specifications

Parameter\Mod el	VAB-44 6S	VAB-55 7S	VAB-66 9S	VAB-77 11S	VAB-88 12S	VAB-99 15S	VAB-12 1230S
Effective hot zone size W*H*L (mm)	400*40 0*600	500*50 0*700	600*60 0*900	700*70 0*1100	800*80 0*1200	900*90 0*1500	1200*1 200*30 00
Loading capacity (kg)	200	300	400	800	1000	1200	3000
Heating power (KW)	45	75	90	180	210	300	660
Max temperature (℃)	700	700	700	700	700	700	700
Temperature uniformity (℃)	±3	±3	±3	±3	±3	±3	±3
Vacuum degree (Pa)	8*10(1 0 ⁻⁴)	8*10(1 0 ⁻⁴)	8*10(1 0 ⁻⁴)	8*10(1 0 ⁻⁴)	8*10(1 0 ⁻⁴)	8*10(1 0 ⁻⁴)	8*10(1 0 ⁻⁴)
Pressure increasing rate (Pa/h)	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26
	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65

Configuration Options

- Furnace door type:On-line;Off-line;Vertically up and down;Rotating\
- Vacuum pump unit and vacuum gauge:Imported brand;high-quality domestic brand
- PLC:Siemens;OMRON;Mitsubishi
- Temperature controller:Shimaden;Euro-therm;Honeywell
- Thermo-couple:Type K;Type N;Type S
- Recorder:Paper recorder;Paperless recorder

- HMI: Simulation screen; Touchscreen with industrial computer
- Electrical component: High-quality domestic brand; Schneider; Siemens

Technical features

- Horizontal, single chamber.
- The furnace hearth consists of several zones. wide nickel-chromium alloy heater and multi-layer stainless steel heat insulation, which has a good temperature uniformity.
- The inlet of vacuum system is configured with gas condensate phase inversion device and filter collection device, preventing the vacuum system from pollution from welding flux vapor.
- Unique gauge anti-pollution technology guarantees the long service life of the vacuum gauge.

真空扩散焊炉/真空热压炉

VACUUM DIFFUSION WELDING FURNACE



Application

It is used for pressure diffusion welding process and PM pressure sintering process of materials like dissimilar alloy, ceramics, metal ceramics.

Main specifications

Parameter\Model	VDP-446	VDP-556	VDP-666	VDP-776	VDP-886	VDP-996
Effective hot zone size W*H*L (mm)	400*400*600	500*500*600	600*600*600	700*700*600	800*800*600	900*900*600
Heating power (KW)	75	90	150	270	360	540
Max temperature (℃)	1350	1350	1350	1350	1350	1350
Temperature uniformity (℃)	±5	±5	±5	±5	±5	±5
Vacuum degree (Pa)	4×10^{-3} / 6×10^{-4}	4×10^{-3} / 6×10^{-4}	4×10^{-3} / 6×10^{-4}	4×10^{-3} / 6×10^{-4}	4×10^{-3} / 6×10^{-4}	4×10^{-3} / 6×10^{-4}
Pressure increasing rate (Pa/h)	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26
	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65

Main specifications

Parameter\Model	VDP-446	VDP-556	VDP-666	VDP-776	VDP-886	VDP-996
Effective hot zone size W*H*L (mm)	400*400*600	500*500*600	600*600*600	700*700*600	800*800*600	900*900*600
Heating power (KW)	75	90	150	270	360	540
Max temperature (°C)	2350	2350	2350	2350	2350	2350
Temperature uniformity (°C)	±5	±5	±5	±5	±5	±5
Vacuum degree (Pa)	4*10 ⁻³ /6*(10 ⁻⁴)	4*10 ⁻³ /6*(10 ⁻⁴)	4*10 ⁻³ /6*(10 ⁻⁴)	4*10 ⁻³ /6*(10 ⁻⁴)	4*10 ⁻³ /6*(10 ⁻⁴)	4*10 ⁻³ /6*(10 ⁻⁴)
Pressure increasing rate (Pa/h)	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26	≤0.26
	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65	≤0.65

Technical features

- Single chamber, internal heating, cold wall, horizontal
- Equipped hydraulic press device ensures the system controlled loading pressure precisely.
- The pressure method has two options: Single-way pressure and double-way pressure.
- The hot zone has two options: graphite insulation and full metal insulation.
- The loading pressure has many options: 30T、50T、100T、200T、400T、500T、800T、1000T
- The temperature has many options: 1500°C、1800°C、2000°C、2300°C、2500°C。
- The pressure head has two options: iso static pressing graphite, TZM alloy.