



NANJING OCEAN INDUSTRY CO., LTD

NANJING OCEAN GROUP CO., LIMITED

CRYOGENIC PUMP

-THE PROFESSIONAL SUPPLIER OF CRYOGENIC PUMP



CATALOG 2025

CRYOGENIC PISTON PUMP

Industrial gas pumps are primarily used for air separation products, such as filling liquid oxygen, liquid nitrogen, liquid argon, and liquid carbon dioxide, as well as air supply systems. The units mainly include single-row, double-row, and three-row reciprocating pumps. Please refer to the parameter table for specific details.

Its flow is 30-5,000L/H and its maximum exit pressure is 800 bar. An electromagnetic adjustable speed motor of a fixed rotating speed motor of a variable frequency and variable speed motor, or an explosion proof motor or an explosion proof variable frequency motor can be equipped per actual requirements.

Standard Configuration

- JB/T9076 specifications for reciprocating
- Cryogenic liquid pumps
- GB/T9234 power reciprocating pumps

Instructions for Installing Units

- The pump inlet shall be close to the storage tank to the greatest extent.
- From the pump to the storage tank, the liquid inlet and air return pipeline shall be kept upward sloping to make the air inside the pipeline return to the storage tank. Reverse u-shaped elbows prohibited in the liquid inlet pipeline and u-shaped elbows are prohibited in the air return pipeline.
- Ball valves or brake valves shall be used for the liquid inlet pipeline and the air return pipeline, stop valves shall not be used, elbows shall be reduced to reduce pipeline resistance.
- Thermal insulation shall be performed for the liquid inlet pipeline and the air return pipeline.
- In order to keep the safety of the unit or auxiliary pipelines and facilitate operation, a liquid outlet air outlet pressure interlocking device with automatic control can be equipped.
- After the reciprocating pump is operated for 600 hours, the motor direction can be changed to make the transmission case rotate in a reversed direction so as to enhance the service life of the transmission case.



1)Cryogenic Gases Filling Piston Pump

Scope of Application

- Such pumps are mainly used for liquid oxygen(LOX), liquid nitrogen(LIN), liquid argon(LAR) and liquefied natural gas(LNG).
- Filling of all kinds of cylinders with light, medium and high pressure.
- Filling of all kinds of storage tanks.
- Gases supply & distribution systems.
- Flow: 50-6,000L/H
- Maximum Exit Pressure: 165Bar- 800Bar

Optional Configuration

- Stationary motor/ frequency control
- Safety valve/ cryogenic stop valve
- Liquid outlet pressure interlocking device
- Air outlet temperature interlocking device
- Air outlet pressure interlocking device

Performance Features

- This pump has classic design and stable performances; its service life can reach up to 20 years
- Using the high-vacuum jacket pump head, and the vacuum degree reaches 10^{-5} torr so as to reduce cold loss
- Its seal is reliable, the service life of packing can each 150,000 times/ cylinder and the service life of the piston ring is as long as 3,000,000 times/ cylinder
- An auxiliary gas sealing device can be equipped to further enhance the service life of the sealing element
- Maintenance is convenient ; it merely takes two hours to perform a routine check
- The pump can be continuously operated for 24 hours



Table of Cryogenic Gases Filling Piston Pump Performance Parameters

Model	NO.	Flow	Inlet Pressure	Max Pressure	Power	Size mm(DN)		
		L/h	Bar		KW	Liquid Inlet	Liquid Outlet	Return Air
*SINGLE-ROW PUMP								
HG-IG-BP50- 150/ 165	1	50-150	0.2-8.0	165	4	25	10	25
HG-IG-BP100- 250/ 165	1	100-250	0.2-8.0	165	4	25	10	25
HG-IG-BP200 -350/ 165	1	200-350	0.2-8.0	165	4	25	10	25
HG-IG-BP200 -450/ 165	1	200-450	0.2-8.0	165	5.5	25	10	25
HG-IG-BP300- 600/ 165	1	300-600	0.2-8.0	165	7.5	25	10	25
HG-IG-BP300 -700/165	1	300-700	0.2-8.0	165	11	25	10	25
HG-IG-BP400- 800/ 165	1	400-800	0.2-8.0	165	11	32	15	25
HG-IG-BP500- 1000/ 165	1	500-1000	0.2-8.0	165	11	32	15	25
HG-IG-BP600- 1200/ 165	1	600-1200	0.2-8.0	165	15	32	15	25
HG-IG-BP200- 450/ 250	1	200-450	0.2-8.0	250	7.5	32	15	25
HG-IG-BP300- 600/ 250	1	300-600	0.2-8.0	250	11	32	15	25
HG-IG-BP400- 800/ 250	1	400-800	0.2-8.0	250	15	32	15	25
HG-IG-BP200- 450/ 350	1	200-450	0.2-8.0	350	11	32	15	25
HG-IG-BP300- 600/ 350	1	300-600	0.2-8.0	350	15	32	15	25
*DOUBLE-ROW PUMP								
HG-IG-2BP800- 1500/ 165	2	800-1500	0.2-8.0	165	15	40	15	32
HG-IG-2BP1000- 2000/ 165	2	1000-2000	0.2-8.0	165	22	40	15	32
HG-IG-2BP1000- 2500/ 165	2	1000-2500	0.2-8.0	165	30	40	15	32
HG-IG-2BP800- 1500/ 250	2	800-1500	0.2-8.0	250	22	40	15	32
HG-IG-2BP800- 2000/ 250	2	800-2000	0.2-8.0	250	30	40	15	32
HG-IG-2BP800- 1500/ 350	2	800-1500	0.2-8.0	350	37	40	15	32
*THREE-ROW PUMP								
HG-IG-3BP1500- 3000/ 165	3	1500-3000	0.2-8.0	165	30	50	20	40
HG-IG-3BP2000- 4000/ 165	3	2000-4000	0.2-8.0	165	37	50	20	40
HG-IG-3BP2000- 4500/ 165	3	2000-4500	0.2-8.0	165	37	50	20	40
HG-IG-3BP2500- 5000/ 165	3	2000-5000	0.2-8.0	165	37	50	20	40
HG-IG-3BP1500- 3000/ 250	3	1500-3000	0.2-8.0	250	45	50	20	40
HG-IG-3BP2000- 4500/ 250	3	2000-4500	0.2-8.0	250	75	50	20	40
HG-IG-3BP1500- 3000/ 350	3	1500-3000	0.2-8.0	350	55	50	20	40

2)Cryogenic Liquid Filling Piston Pump

Scope of Application

- Such pumps are mainly used for liquid carbon dioxide(LCO₂), liquid nitrous oxide(LN₂O)
- Filling of carbon dioxide liquid cylinders
- Air supply, air distribution systems
- Flow: 100-4,000L/H
- Maximum Exit Pressure: 100Bar

Optional Configuration

- Stationary motor/ electromagnetic speed regulation/ frequency control
- Safety valve/ cryogenic stop valve
- Air return temperature interlocking device
- Liquid outlet pressure interlocking device

Performance Features

- The precooling is fast, which makes it not easy to form dry ice inside the pump.
- The simple pump head module design facilitates maintenance.
- The pump has the design of new type gland packing and ultra-long service life.
- Maintenance is convenient; it merely takes two hours to perform a routine check.
- The pump can be continuously operated for 24 hours.

Table of Cryogenic Liquid Filling Piston Pump Performance Parameters

Model	NO.	Flow	Inlet Pressure	Max Pressure	Power	Size mm(DN)		
		L/h	Bar		KW	Liquid Inlet	Liquid Outlet	Return Air
HG-IG-BP100-400/100	1	100-400	13.8-24	100	5.5	25	20	25
HG-IG-BP300-600/100	1	300-600	13.8-24	100	5.5	25	20	25
HG-IG-BP500-900/100	1	500-900	13.8-24	100	5.5	25	20	25
HG-IG-BP600-1200/100	1	600-1200	13.8-24	100	7.5	25	20	25
HG-IG-BP1000-2000/100	1	1000-2000	13.8-24	100	7.5	32	20	25



3) Large Flow & Medium Pressure Piston Pump

Applicability

- Such pumps are mainly used for liquid oxygen(LOX), liquid nitrogen(LIN), liquid argon(LAR) and liquefied natural gas(LNG)
- Gases supply systems at large & medium steel factory
- Filling of Dewar bottles
- Filling of storage tanks

Performance Parameters

- Flow: 4,000-72,500 L/h
- Maximum Exit Pressure: 80Bar

Performance Features

- The pump has modular design and a wide coverage of flow.
- A high vacuum jacket pump head is used, and the vacuum degree reaches 10^{-5} torr so as to reduce cold loss.
- It has a reliable sealing structure.
- Multiple configurations enhance the safety and automation degree of the pump.

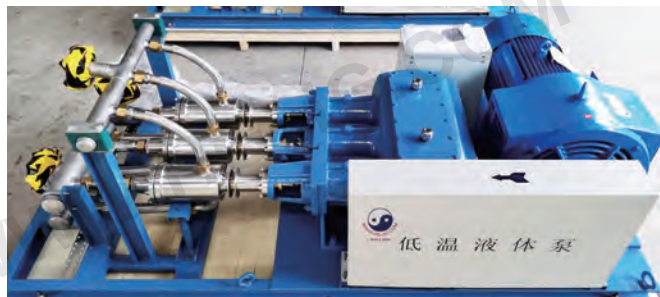


Table of Large Flow and Medium Pressure Piston Pump Performance Parameters

Model	NO.	Flow	Inlet Pressure	Max Pressure	Power	Size mm(DN)		
		L/h	Bar		KW	Liquid Inlet	Liquid Outlet	Return Air
HG-IG-3BP4000-8000/30	3	4000-8000	0.2-8.0	30	18.5	65	40	40
HG-IG-3BP5000-10000/30	3	5000-10000	0.2-8.0	30	22	65	40	40
HG-IG-3BP8000-15000/30	3	8000-15000	0.2-8.0	30	30	65	40	40
HG-IG-3BP10000-20000/30	3	10000-20000	0.2-8.0	30	37	65	40	40
HG-IG-3BP10000-25000/30	3	10000-25000	0.2-8.0	30	45	100	65	50
HG-IG-3BP10000-30000/30	3	10000-30000	0.2-8.0	30	55	65	40	40
HG-IG-3BP5000-10000/60	3	5000-10000	0.2-8.0	60	37	65	40	40
HG-IG-3BP8000-15000/60	3	8000-15000	0.2-8.0	60	55	65	40	40
HG-IG-5BP-72500/60	5	72500	0.2-8.0	60	185	150	80	80

4) Special Medium Piston Pump

Such pumps are mainly used for filling, transporting & increasing the pressure of electronic grade high-purity special gases, such as Ammonia Gas(NH_3), Ethylene gas(C_2H_4), Nitrous Oxide(N_2O) and so on.

Applicability

- Boosting & Delivery the electronic grade high-purity special gases.
- Filling of special gases

Performance Parameters

- Flow: 100-1,000 L/h
- Maximum Exit Pressure: 80Bar

Performance Features

- Anti-explosion configuration is utilized for all electrical components.
- All surfaces in contact with the medium are processed and cleaned to ensure surface cleanliness, preventing contamination of the high-purity medium.
- Using the high vacuum jacket pump head ensures that the vacuum degree reaches 10^{-5} torr and reduce the cold loss.
- The pump can be continuously operated for 24 hours.

CRYOGENIC CENTRIFUGAL PUMP

Such pumps are mainly used for filling and transporting cryogenic liquids, such as liquid oxygen (LOX), liquid nitrogen (LIN), liquid argon (LAR), liquefied natural gas (LNG), and cooling liquids, into storage tanks. The units are primarily single-stage, single-suction, direct-connected centrifugal pumps.

Applicability

- Filling of cryogenic tank wagons
- Unloading of cryogenic tank wagons
- Delivery of liquids

Main Technical Parameters

- Flow: 5.0 ~ 200m³/h
- Head: 10 ~ 1,000m
- Speed: 960 ~ 5,000r/min

Performance Features

- Its structure is compact and simple.
- High performance copper alloy is used for volutes and impellers so as to guarantee the safety of pumps in liquid oxygen working conditions.
- The pump has mature and reliable mechanical seal, strong anti-cavitation ability, long service life as well as convenient installation and replacement.
- A high strength and cryogenic stainless steel shaft is used.
- Static and dynamic balance tests are performed for the impellers and rotors so as to guarantee the stability of such rotors.
- A variable frequency and variable speed motor can be utilized to make the pump have a wider operation range.
- The inlet and outlet flanges are equipped with flexible connection and a liquid inlet filter; the pipeline vibration is small and the operation is stable.



Table of Cryogenic Centrifugal Pump Performance Parameters

Model	Flow	Head	Speed	Power				Efficiency	NPSHr	Size mm(DN)	
	m³/h	m	r/min	LIN	LOX	LAr	LNG			Inlet	Outlet
				kW						%	m
HG-IG-CCP13/130	13	130	2940	22				38	2.0	50	40
HG-IG-CCP24/60	24	60	2935	11				60	2.3	65	50
HG-IG-CCP24/90	24	70	2935	18.5			11	60	2.3	65	50
	24	90						54	2.0	65	50
	24	110	3150	22			11	54	2.2	65	50
	24	134	3350					55	2.8	65	50
HG-IG-CCP40/90	40	70	2940	22	22	30	22	57	1.5	80	50
	40	90		22	30	30	22	57	1.5		
	60	85		22	30	37	22	61	1.7		
HG-IG-CCP80/120	60	129	2950	37	55	75	22	50.5	1.3	100	50
	80	120		55	75	75	30	54.5	1.9		
	100	105		55	75	90	37	53	2.7		
HG-IG-CCP120/135	90	145	2950	55	75	90	30	60	2.8	100	80
	120	135		75	90	110	37	66	3.4		
	150	127		75	90	132	37	68	4.2		
	120	135		75	90	110	37	66	3.4		
	150	127		75	90	132	37	68	4.2		
HG-IG-CCP25/270	20	280	2950	37	55	75	18.5	38	1.4	100	50
	25	270		45	55	75	22	40	1.8		
	30	256		45	75	75	22	41	1.9		
HG-IG-CCP50/250	40	270	2950	55	75	90	30	45	1.4	100	50
	50	250		75	90	110	30	47	1.8		
	60	240		75	110	132	37	48	1.9		

MULTI-PHASE CRYOGENIC CENTRIFUGAL PUMP

This type of pump is used for the delivery and transfer of liquid oxygen (LOX), liquid nitrogen (LIN), liquid argon (LAR), liquefied natural gas (LNG), and other cryogenic liquids at high pressure. Additionally, it is suitable for water, oil, and other chemical liquids. The unit is a multi-phase, cascade-structured centrifugal pump, and depending on the performance of its seals, it can be classified as either a submerged pump or a seal pump.

Applicability

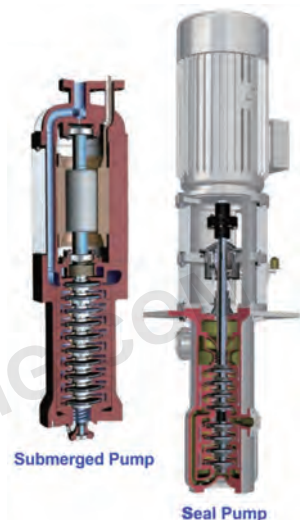
- Unloading the cryogenic liquid from tank wagon in high pressure
- High pressure liquid transfer for ASU Plant
- No leakage working environment requested for LNG
- LNG Pressurizing in Peak shaving stations
- Pressurization and Transfer of LNG in LNG power plant

Main Technical Parameters

- Flow: 20-500 m³/h
- Head: 10-1,100 m
- Speed: 1,450-3,550 r/min

Performance Features

- Low speed design and more stable unit operation.
- Compact and simple structure.
- Labyrinth seal or lip seal is configured according to different working conditions. The continuous working time can reach more than 16,000h.
- The volute and the impeller are made of high-performance copper alloy to ensure the safety under the condition of liquid oxygen.
- High-strength low-temperature stainless steel shaft.
- The impeller and the rotor are subject to static and dynamic balance tests, so as to ensure the stability of the rotor.
- The variable-frequency and variable-speed motor is used to make the pump operating range wider.
- The inlet and outlet flanges are equipped with flexible connections and inlet filters, the pipeline vibration is small and the operation is stable.



LNG SUBMERGED PUMP

Such pumps are mainly used for filling of vehicle-mounted cylinders at LNG Natural gas station, Filling, Transport and Delivery of LNG tanks wagons at LNG liquid plants, LNG receiving station.

Submerged pumps are mainly used in conditions that require zero leakage of the medium. The units feature a centrifugal system.

Applicability

- LNG receiving station
- Filling LNG Dewar tanks
- Filling LNG tank wagons in LNG liquid plant
- Transport & Delivery of LNG
- LNG Zero leakage environment

Main Technical Parameters

- Flow: 2-200 m³/h
- Head: 15-450 m
- Speed: 1,000-6,000 r/min

Performance Features

- The submerged unit is installed in the vacuum vessel and completely immersed in the medium, there is no motive seal, which guarantees zero leakage and reduce the cold loss, then it can start rapidly.
- Then inlet is equipped with an inducer, which greatly reduces the requirement on the NPSHa of the system device.
- The guide vane has a multiple runner guide vane type structure, which realizes the self-balancing of hydraulic power radial force.
- The motor and the pump are an entirety, which is a high-speed variable-frequency motor, which enhances the working range.
- The imported cryogenic bearings have mature technology, which have the service life more than 16,000 hours.



L-CNG HIGH PRESSURE FILLING PUMP

Such pumps are mainly used for filling of high pressure gas cylinders at L- CNG natural gas stations. The units are mainly piston pumps with single-row/ double-row/ three-row cold ends.

Applicability

- Filling of high pressure gas cylinders at L- CNG natural gas stations
- Urban natural gas peakshaving station pipe network gas supplement and pressure boost
- Filling of LNG Dewar bottles

Main Technical Parameters

- Flow: 500-5,000 L/h
- Maximum exit pressure: 10-350 Bar

Standard Configuration

- Liquid inlet filter
- Liquid outlet pressure gauge and root valve
- Drive box case oil temperature sensor
- Liquid inlet, return air metal hose
- Damper



Performance Features

- All electric components are configured as per anti-explosion requirements.
- A high-vacuum jacket pump head is used, and the vacuum degree reaches 10^{-5} torr to reduce cold loss to the greatest extent.
- The piston seal is made of special material and the service life of the piston seal is over 4, 000 hours.
- The exit pressure pulse is small and the motor load is steady.
- The transmission case has a self-lubricating system and it operates in a steady manner. In addition, it is equipped with an oil temperature interlocking device to monitor the transmission case temperature, and the device interlocks with the control system so as to guarantee the safety of the unit.

Table of L- CNG High Pressure Filling Pump Performance Parameters

Model	NO.	Flow	Inlet Pressure	Max Pressure	Power	Size mm(DN)		
		L/h	Bar		KW	Liquid Inlet	Liquid Outlet	Return Air
*SINGLE-ROW PUMP								
HG-IG-LCBP800/250	1	800	0.2-16	250	15	32	15	25
HG-IG-LCBP1000/250	1	1000	0.2-16	250	15	32	15	25
*DOUBLE-ROW PUMP								
HG-IG-2LCBP1500/250	2	1500	0.2-16	250	22	50	15	32
HG-IG-2LCBP2000/250	2	2000	0.2-16	250	30	50	15	32
*THREE-ROW PUMP								
HG-IG-3LCBP2500/250	3	2500	0.2-16	250	37	50	20	40
HG-IG-3LCBP3000/250	3	3000	0.2-16	250	45	50	20	40
HG-IG-3LCBP3500/250	3	3500	0.2-16	250	45	50	20	40
HG-IG-3LCBP4000/250	3	4000	0.2-16	250	55	50	20	40
HG-IG-3LCBP4500/250	3	4500	0.2-16	250	75	50	20	40
HG-IG-3LCBP5000/250	3	5000	0.2-16	250	75	50	20	40

L-CNG & L- LNG PUMP SKIDS

CNG/ LNG pump skids are mainly used for CNG/ LNG natural gas stations. They are fully integrated equipment of gas stations. They have advantages such as small floor space, less investment, simple and convenient installation and short construction period and so on.

L-CNG pump skid system includes

L-CNG high pressure reciprocating pumps (one is in service and the other is for standby purpose or both them are used simultaneously), pneumatic valve, instrument system, electronic control system, thermal insulation pipeline, packaging frame and CNG gas filling machine, etc. The on-site installation is simple and convenient, what is needed to do is connecting the fluid inlet pipeline, air return pipeline, fluid outlet pipeline, control cable and instrument air.

• Flow: 500-5,000L/h (liquid state)

• Maximum exit pressure: 275 Bar

L-LNG pump skid system includes:

L-LNG immersed pumps (including pump pool, single pump or double pump), pneumatic stop valve, BOG vaporizer, storage tank booster, instrument system, electronic control system, thermal insulation pipeline, packaging frame and LNG liquid filling machine, etc. The on-site installation is simple and convenient. All that is needed to do is connecting the fluid inlet pipeline, air return pipeline, fluid outlet pipeline, control cable and instrument air. After the initial system precooling is finished, the system can be in standby status for 24 hours; liquid shall be filled in case it is operated.

Flow: 12-25 m³/h (single pump)

Head: 140-240m



VEHICLE-MOUNTED HIGH PRESSURE LIQUID NITROGEN PUMP SKIDS

The movable high-pressure liquid nitrogen pump skid provided by our company can be used for oil and natural gas extraction.

The large-flow liquid nitrogen pump skid can be used for purging natural gas pipelines. It is suitable for long-distance transportation and has high reliability.

Main Performance Features

• Flow: 50-20,000L/h (liquid state)

• Max outlet pressure: 700 Bar

• The system (pump skid) integration level is high, all components are installed in a complete manner: power system (fuel generator set)/ pump/ vaporizer/ control system/ pipeline/ fuel supply system.

• The system utilizes point monitoring and PLC control, automatic operation of the system can be realized.

• The system operation is simple, what is needed to do is connecting the inlet and outlet pipelines, switching on power supply or starting the power system.

• The system has a special design, that allows it to adapt to outdoor operations and frequent highway transportation. In addition, it has outstanding anti-bumping, windproof and independent working ability.



VAPORIZER

No power consumption, no pollution, environmentally friendly, easy to install, and convenient to maintain.

Made with specialized aluminum material for heat exchange, featuring a highly efficient, lightweight, and durable design with a sufficient design margin.

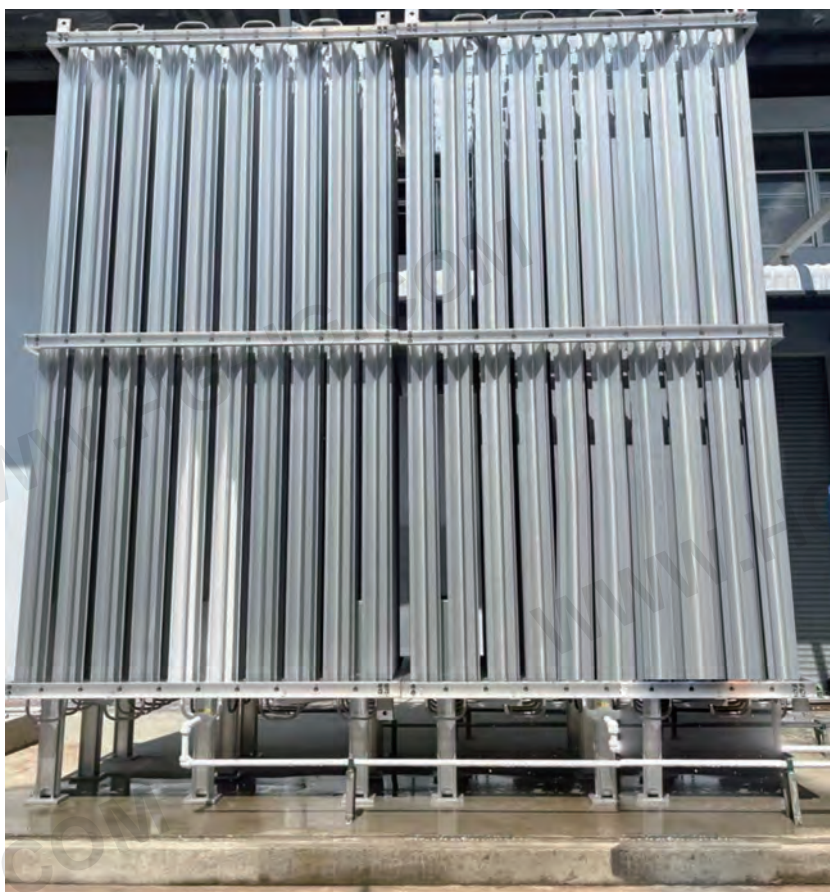
The advanced and sophisticated technique of high-pressure pipe forming ensures sufficient contact between the under-pressure pipe and the heat exchange pipe, optimizing heat exchange efficiency. All vaporizers are manufactured and cleaned in accordance with oxygen service standards, ensuring safer usage.

1)AIR AMBIENT VAPORIZER

Ambient vaporizer utilizes air natural convection to heat the cryogenic liquid in the aluminum heat exchange tubes, making them totally evaporate into gases, it is a kind of high efficient energy-saving heat transmission equipment.

- Suitable Medium: LO₂, LN₂, LAr, LNG, LCO₂, LNH₃, LC₂H₄, LN₂O, LH₂, LHe, LPG, LC₂H₄
- Flow-rate: 20~16000NM³/h
- Work Pressure: 5 bar~1000 bar
- Standard: GB / ASME / CCS / CE

TYPE	CAPACITY(NM ³ /H)	WORK PRESSURE(BAR)	MEDIUM
VERTICAL/ HORIZONTAL	20-16000	5-1000	LO ₂ /LN ₂ /LAR
			LCO ₂ /LN ₂ O/LC ₂ H ₄ /LNG



2) WATER BATH VAPORIZER

This series are to use special efficient carburetor electric heaters water, simplified compact heat exchange tube type heat in cryogenic liquid (LO₂, LN₂, LAr, LNG, LCO₂, LC₂H₄, LPG), the temperature control system adopts advanced, the work is very stable, export gasification temperature for normal or user requirements can be set Its main characteristics are as follows:

- * Specifically high efficiency electric heating equipment, general speaking, the periodicity of replacing is more than 18 months.
- * Automatic and semi-automatic double circuits temperature control box, it is safe and certifiable, can work without intermission or infallible.
- * It adopts high grade special cryogenic stainless steel heat exchanger, which was designed compactly and will-abide rough use.
- * The surface is painted by the imported painting, and can keep high quality more permanently.
- * It uses the LG hot water special circulating pump. The water temperature is statuesque and no bedding phenomena.
- * You will have quieter working environment without noise and shake.
- * It is produced by the standards of food oxygen.
- * The parts are very complete, every carburetor contains; the main body, electric heating equipment, control box liquid level meter, thermometer inlet valve blow down valve ad so on.

Optional configurations for customers:

- ★ For the materials of the tunnel body, you can choose carbon steel or stainless steel.
- ★ The acousto-optic alarm of the temperature of the exits.
- ★ Emergency cutting off equipment
- ★ The whole equipment is picking designed
- ★ We can design and produce according to the standard of electronic grade.
- ★ It can use siemens electrical apparatus
- ★ It can adopt explosion prevention electric cabinet and explosion prevention electric heating equipment
- Suitable Medium: LO₂, LN₂, LAr, LNG, LCO₂, LNH₃, LC₂H₄, LN₂O, LH₂, LHe, LPG, LC₂H₄
- Flow-rate: 50~5000 NM³/h
- Work Pressure: 5 bar-1000 bar
- Standard: GB / ASME / CCS / CE



JUST TRUST **US** DO THE BEST
LET

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