



Product Manual



VHL Staninless steel centrifugal pump

——Professional quality,international standards

Standard Reference

GB/T699	High quality carbon structure steel
GB/T1220	Stainless steel stick
GB/T3216-2005	Gyraton kinetic pump Water power performance check and accept experiment firsts and seconds
GB/T5661	Cavity size for mechanical seal and soft filling of axial suc- -tion centrifugal pump
GB/T5662	Marking performance and dimensions of axial inhalation centrifugal pumps
GB/T13007	Centrifugal pump efficiency
HG/T2902	Polytetrafluoroethylene resin for molding
HG/T4090	Plastic Lining Equipment electric spark experiment method
JB/T4127.1	Technical conditions of mechanical seal
JB/T8097	Vibration surver and appraisal procedure of pump
HG/T 20592-2009	Steel pipe flange series of PH
HG/T 20615-2009	Steel pipe flange series of class

Overview

VHL Series is single stage single suction cantilever chemical centrifugal pump, short for stainless steel centrifugal pump. The pump adopts a new hydraulic model, 5% increase in efficiency compared to normal VHL pumps. Increase axle diameter, extended bearing box, increase bearing, reduction of cantilever ratio, make it more stable.

Use

The series of this pumps are widely used in chemical, petroleum, pharmaceutical, electropower, food, environmental protection, smelting, miner paper, tanker unloading, chemical fiber synthesis and other fields.

Model meaning

VHL80-65-160

VHL Stainless steel centrifugal pump

80 Inlet diameter 80mm

65 Outlet diameter 65mm

160 Impeller diameter 160mm

Installation height calculation

In selecting the pump in our company, the installation height should be considered. The vertical distance between the suction level and the pump shaft should be less than the installation height specified by the pump. The following formula is used to calculate:

$$H_{sz} \leq H_a - H_v - \Delta H_s - (NPSH)_r$$

H_{sz} —Fixed installation height(m)

H_a —Atmospheric pressure head on site

H_v —Vaporization pressure head of liquid temperature(m)

ΔH_s —Suction pipe loss head(m)

$NPSH$ —Cavitation allowance specified on the performance parameter table(m)



VHL stainless steel centrifugal pump

Pump shaft power

Pump power refers to the input power of the pump, is N .

The output power is the effective power transferred by the pump to the liquid as it passes through the pump. is N_e

$$N_e = \rho \times g \times Q \times H$$

$$N_e = \text{Shaft power (W)}$$

$$\rho = \text{Liquid density (m}^3/\text{kg)}$$

$$g = \text{Gravity acceleration (m/s}^2\text{)}$$

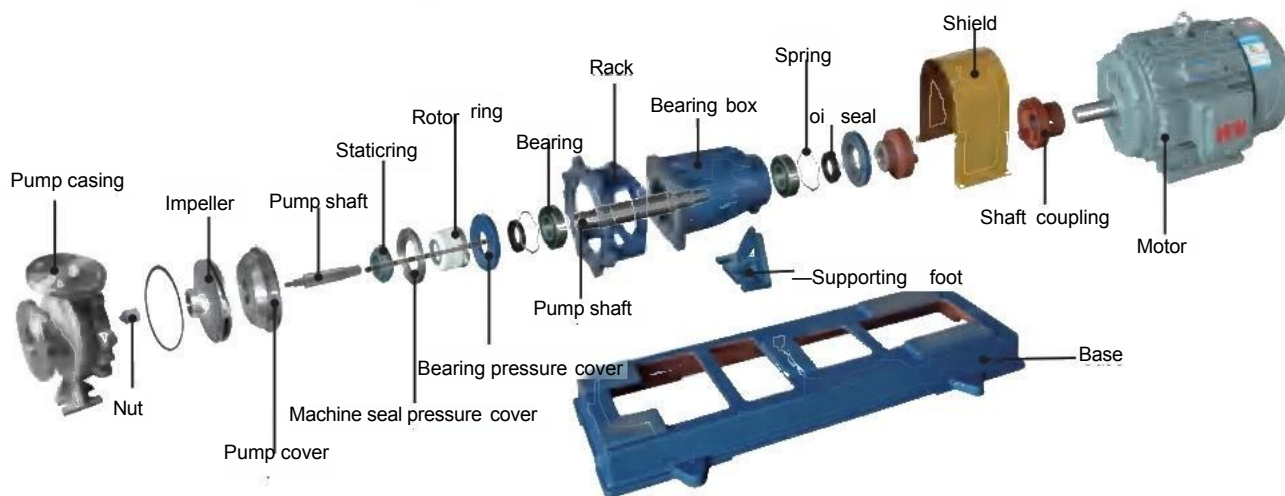
$$Q = \text{Flow (m}^3/\text{h)}$$

$$H = \text{Head (m)}$$

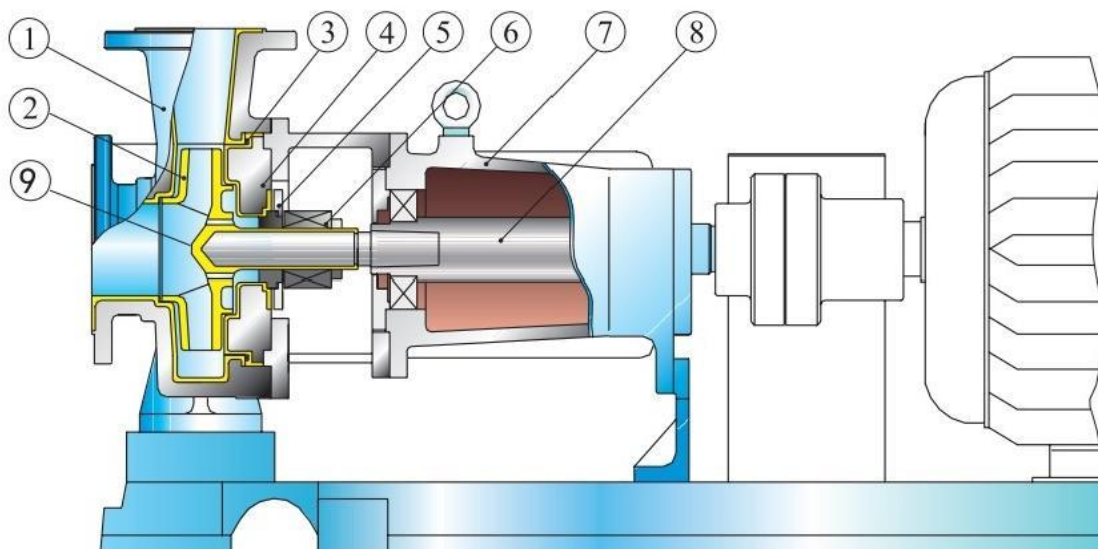
Input power and output power are not equal, because there is a loss of power in the pump, the size of the loss is commonly used to measure the efficiency of the pump. Efficiency is expressed by η . The efficiency of pump is the ratio of output power to input power.

$$\eta = \frac{N_e}{N}$$

Part removal drawings



Materials and structures



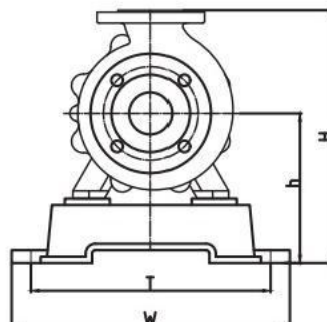
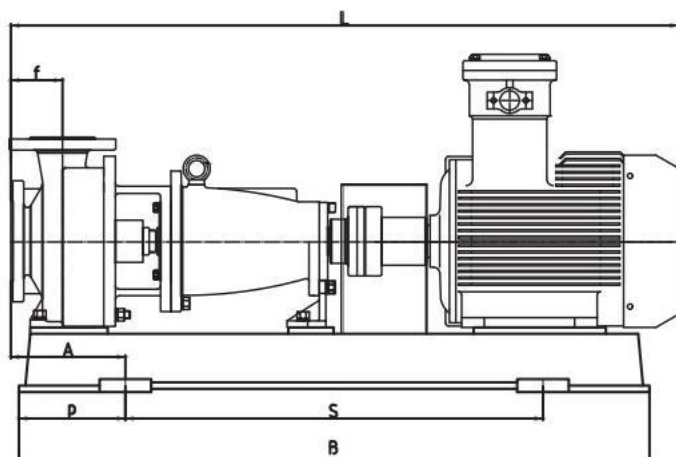
NO.	Name	Materials	NO.	Name	Materials
1	Pump casing	Stainless steel 304/316L	6	Mechanical seal	carbide
2	Impeller	Stainless steel 304/316L	7	Bearing box	HT200
3	Gasket ring	FKM	8	Pump shaft	Stainless steel 304/316L
4	Pump cover	Stainless steel 304/316L	9	Nut	Stainless steel 304/316L
5	Shaft sleeve	Stainless steel 304/316L			

Performance parameter

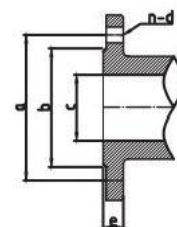
NO	Type	Flow	Head	EFF	NPSHr	Aperture		Speed	Power
NO.	Type	m³/h	m	%	m	mm		r/min	kw
1	VHL25-25-125	3.2	20	53	1.8	25 × 25	50HZ	2900	0.75
							60HZ	3600	
2	VHL25-25-160	3.2	32	46	1.8	25 × 25	50HZ	2900	1.1
							60HZ	3600	
3	VHL25-25-200	3.2	50	43	1.8	25 × 25	50HZ	2900	1.5
							60HZ	3600	
4	VHL25-25-250	3.2	80	40	1.8	25 × 25	50HZ	2900	2.2
							60HZ	3600	
5	VHL40-32-125	6.3	20	52	1.8	40 × 32	50HZ	2900	1.1
							60HZ	3600	
6	VHL40-32-160	6.3	32	47	1.8	40 × 32	50HZ	2900	2.2
							60HZ	3600	
7	VHL40-32-200	6.3	50	38	1.8	40 × 32	50HZ	2900	4
							60HZ	3600	
8	VHL40-32-250	6.3	80	32	1.8	40 × 32	50HZ	2900	7.5
							60HZ	3600	
9	VHL50-32-125	12.5	20	51	2	50 × 32	50HZ	2900	2.2
							60HZ	3600	
10	VHL50-32-160	12.5	32	46	2	50 × 32	50HZ	2900	4
							60HZ	3600	
11	VHL50-32-200	12.5	50	39	2	50 × 32	50HZ	2900	7.5
							60HZ	3600	
12	VHL50-32-250	12.5	80	33	2	50 × 32	50HZ	2900	15
							60HZ	3600	
13	VHL65-50-125	25	20	62	2	65 × 50	50HZ	2900	3
							60HZ	3600	
14	VHL65-50-160	25	32	57	2	65 × 50	50HZ	2900	5.5
							60HZ	3600	
15	VHL65-40-200	25	50	52	2	65 × 40	50HZ	2900	11
							60HZ	3600	
16	VHL65-40-250	25	80	46	2	65 × 40	50HZ	2900	18.5
							60HZ	3600	
17	VHL65-50-315	25	125	39	2	65 × 50	50HZ	2900	30
							60HZ	3600	
18	VHL80-65-125	50	20	69	3	80 × 65	50HZ	2900	5.5
							60HZ	3600	
19	VHL80-65-160	50	32	67	2.3	80 × 65	50HZ	2900	11
							60HZ	3600	
20	VHL80-50-200	50	50	63	2.5	80 × 50	50HZ	2900	15
							60HZ	3600	
21	VHL80-50-250	50	80	57	2.5	80 × 50	50HZ	2900	30
							60HZ	3600	
22	VHL80-50-315	50	125	47	2.5	80 × 50	50HZ	2900	45
							60HZ	3600	
23	VHL100-80-125	100	20	77	4.2	100 × 80	50HZ	2900	11
							60HZ	3600	

NO	Type	Flow	Head	EFF	NPSHr	Aperture		Speed	Power
NO.	Type	m ³ /h	m	%	m	mm		r/min	kw
24	VHL100-80-160	100	32	73	4.3	100 × 80	50HZ	2900	15
							60HZ	3600	
25	VHL100-65-200	100	50	72	3.9	100 × 65	50HZ	2900	22
							60HZ	3600	
26	VHL100-65-250	100	80	68	3.6	100 × 65	50HZ	2900	37
							60HZ	3600	
27	VHL100-65-315	100	125	62	3.2	100 × 65	50HZ	2900	75
							60HZ	3600	
28	VHL125-100-200	200	50	77	5	125 × 100	50HZ	2900	45
							60HZ	3600	
29	VHL125-100-250	200	80	75	4.5	125 × 100	50HZ	2900	75
							60HZ	3600	
30	VHL125-100-315	200	125	72	4.5	125 × 100	50HZ	2900	110
							60HZ	3600	
31	VHL150-125-250	200	20	77	3.2	150 × 125	50HZ	1450	18.5
							60HZ	1800	
32	VHL150-125-315	200	32	75	3.2	150 × 125	50HZ	1450	30
							60HZ	1800	
33	VHL150-125-400	200	50	70	3.2	150 × 125	50HZ	1450	45
							60HZ	1800	
34	VHL200-150-250	400	20	81	4.5	200 × 150	50HZ	1450	37
							60HZ	1800	
35	VHL200-150-315	400	32	79	4.5	200 × 150	50HZ	1450	55
							60HZ	1800	
36	VHL200-150-400	400	50	78	4.5	200 × 150	50HZ	1450	90
							60HZ	1800	

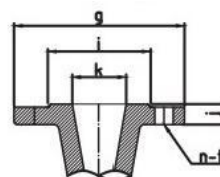
Mounting size



Suction flange



Outlet flange



NO.	Type	Mounting size									Suction flange					Outlet flange				
		L	S	P	W	T	H	h	f	d	C	a	b	e	n-d	k	g	i	~	n-t
1	VHL50-32-125	950	600	155	385	310	352	212	80	25	50	165	125	20	4-Ø18	32	140	100	18	4-Ø18
2	VHL50-32-160	1025	600	155	385	310	692	232	80	25	50	165	125	20	4-Ø18	32	140	100	18	4-Ø18
3	VHL50-32-200	1075	650	170	420	360	440	260	80	25	50	165	125	20	4-Ø18	32	140	100	18	4-Ø18
4	VHL50-32-250	1200	720	205	500	435	480	280	100	25	50	165	125	20	4-Ø18	32	140	100	18	4-Ø18
5	VHL65-50-125	995	600	155	385	360	352	242	80	25	65	185	145	20	4-Ø18	50	165	125	20	4-Ø18
6	VHL65-50-160	1075	650	170	420	360	392	232	80	25	65	185	145	20	4-Ø18	50	165	125	20	4-Ø18
7	VHL65-40-200	1180	720	205	500	440	440	260	100	25	65	185	145	20	4-18	40	150	110	18	4-Ø18
8	VHL65-40-250	1350	935	215	600	520	510	280	100	25	65	185	145	20	4-Ø18	40	150	110	18	4-Ø18
9	VHL80-65-125	1095	650	170	420	360	392	232	100	25	80	200	160	20	8-Ø18	65	185	145	20	4-Ø18
10	VHL80-65-160	1180	720	205	500	440	440	260	100	25	80	200	160	20	8-Ø18	65	185	145	20	4-Ø18
11	VHL80-50-200	1180	720	205	500	440	460	260	100	25	80	200	160	20	8-Ø18	50	165	125	20	4-Ø18
12	VHL80-50-250	1543	930	240	600	520	460	260	100	25	80	200	160	20	8-Ø18	50	165	125	20	4-Ø18
13	VHL100-80-125	1180	720	205	500	440	440	260	100	25	100	220	180	22	8-Ø18	80	200	160	20	8-Ø18
14	VHL100-80-160	1180	720	205	500	440	460	260	100	25	100	220	180	22	8-Ø18	80	200	160	20	8-Ø18
15	VHL100-65-200	1543	930	240	600	520	525	300	100	25	100	220	180	22	8-Ø18	65	185	145	20	4-Ø18
16	VHL100-65-250	1625	940	240	590	520	595	345	125	25	100	220	180	24	8-Ø18	65	185	145	20	4-Ø18
17	VHL125-100-200	1690	1055	280	660	600	650	370	125	25	125	250	210	26	8-Ø18	100	220	180	24	8-Ø18
18	VHL125-100-250	1810	1200	300	730	670	685	405	140	28	125	250	210	26	8-Ø18	100	220	180	24	8-Ø18
19	VHL150-125-250	1430	840	215	540	490	705	350	140	28	150	285	240	30	8-Ø22	125	245	210	27	8-Ø18
20	VHL150-125-315	1612	940	260	600	550	735	380	140	28	150	285	240	30	8-Ø22	125	245	210	27	8-Ø18
21	VHL150-125-400	1680	940	240	600	550	815	415	140	28	150	285	240	30	8-Ø22	125	245	210	27	8-Ø18
22	VHL200-150-250	1762	1060	270	660	590	775	400	160	28	200	340	295	33	12-Ø22	150	285	240	28	8-Ø22
23	VHL200-150-315	1835	1060	320	660	600	835	435	160	28	200	340	295	33	12-Ø22	150	285	240	28	8-Ø22
24	VHL200-150-400	2150	1200	300	730	670	890	440	165	28	200	340	295	33	12-Ø22	150	285	240	28	8-Ø22

Technical characteristics

Pump shaft:

Adopt the combination of carbon steel shaft and stainless steel shaft, carbon steel in bearing box, overflowing parts are stainless steel, both of them were through taper fit, remove the shaft sleeve.

Shaft seal:

VHL pump shaft seal using mechanical seal, it can be divided into two parts: one end surface and two end surfaces. Can be configured 224、m7n、108n、wb2 etc.

Full seal shaft:

Integrated stainless steel shaft, cancel the shaft sleeve design, avoid the leakage of the shaft sleeve, ensure that the shaft does not touch the medium, improve the life of the shaft.

New Castings:

The casting is made of silica sol and treated by acid pickling and passivation. There will be no sand holes.

Use attention

1. Ferromagnetic impurity and hard impurity are not allowed in the medium transported by fluorine-lined centrifugal pump. If there are ferromagnetic particles, magnetic filters are required. Moreover, it is not suitable to produce a large amount of crystalline medium after stopping.
2. The fluorine-lined centrifugal pump is not allowed to operate at a rated flow rate of less than 30%.
3. For the delivery of medium density greater than 1200kg/m liquid, we need to inform our sales department, motor power needs to be appropriately increased.
4. The maximum working pressure of mechanical seal is 1.0 MPA, beyond which a mechanical seal thrust ring is required.
5. Prevent static electricity: when conveying low conductivity liquid, such as ultra-pure water or fluorine inert liquid, will produce static electricity, will cause discharge and pump damage, should take anti-static measures. (please consult the technical department of our company)
6. Special medium selection of special grinding parts, such as hydrofluoric acid selection pressureless sintering silicon carbide, nitric acid choice ceramic or silicon carbide.

Installation instructions

1. Build the concrete foundation according to the size, at the same time bury the anchor bolt.
2. Before installation, the pump group equipment should be carefully checked, each part should be intact, there is no sundries in the pump cavity.
3. Put the pump unit on the basis, put a pair of wedge cushion between the bottom plate and the foundation, by adjusting the wedge pad, find the level.
4. The inlet and outlet lines of the pump should be supported separately by support
5. After installation, the coupling is rotated with bare hands to check whether there are any phenomena such as rubbing and running, so that it can rotate easily and freely
6. In order to prevent sundries from entering the pump, we recommend the installation of filters, the filter area should be more than 2-3 times of the pipeline cross section area.
7. The pump with high lift should be installed with reverse stop valve on the outlet line to prevent damage caused by sudden shutdown.
8. The installation height of the pump must be in line with the cavitation allowance of the pump and the pipeline loss and the temperature of the medium must be taken into account.

Start operation

1. Before opening the equipment, fill the pump chamber with the liquid to be transported to close the outlet valve and connect to the power supply.
2. Turn on the power and check the steering of the pump in the direction of the sign.
3. Pump unit trial operation 5-10 minutes, if there is no abnormal phenomenon can be put into operation.
4. When stopping, the outlet valve should be closed first, and then cut off the power supply.

Equipment disassembly

- 1.Wash the pump body with clear water first when disassembling until the corrosive medium inside the pump shell is completely clean.
- 2.when replacing pump machine fittings,may not use sharp object,hard object to hit the pump parts,the removed parts should be light,sealing face facing up.

Maintenance

- 1.Periodic inspection of pumps and motors,replacement of vulnerable parts.
- 2.When the long-term stop is not needed,clean the flow channel inside the pump and cut off the power supply,and cover the dust cover.
- 3.Turn on the machine in the direction of the sign.Reverse and idling are strictly prohibited.

After-sale service

Provision of spare parts:Vastfortune is able to quickly and reliably supply vulnerable parts and spare parts needed in the production phase to ensure that production does not stagnate.

Equipment maintenance:Vastfortune will help customers to maintain and maintain equipment,timely detection of weak links,careful management to reduce or even avoid repair costs.

Timely service:Equipment downtime or malfunction,customers can contact Vastfortune Company at any time,we will make a quick response for you.

Technical support:Vastfortune service,dedicated and meticulous.We will provide consultation for customers,elite after-sales team,advanced service awareness,expert technical guidance,throughout the product design,selection, sales,use of the entire process.

Simple problem solving

Problem description	Cause analysis	Solution
Unextractable medium	1.Air in inlet piping 2.Inlet pipe leakage 3.Liquid shortage in pump cavity 4.Foreign body in inlet pipe 5.Pump equipment steering marking is inconsistent 6.The suction height is too high	1.Recharge/exhaust 2.Is the inlet pipe damaged 3.Increased injection of liquid 4.Check the pipeline for foreign bodies 5.Adjusting the steering of pump equipment 6.Lower installation height
Flow,head insufficiency	1.There is foreign body in the pipeline 2.Motor speed insufficiency 3.Impeller damage	1.Clean up foreign bodies 2.Check motor and circuit 3.Replacement of impeller
Excessive power	1.Medium density is too large 2.The error between pump axis and motor axis is large 3.Mechanical friction	1.Reducing the specific gravity of medium 2.Adjust axis position 3.Carry out overhaul
Pump equipment vibration	1.Big error between pump axis and motor axis 2.High suction,cavitation 3.Mechanical friction	1.Adjust axis position 2.Lower installation height 3.Inspection of wear and tear

Special performance

Selection item	Description
Electrostatic conductivity	Prevent static electricity from causing fire or explosion
Double-sided machine seal	High temperature resistance and high solid content
Insulation sleeve	Insulation pump cavity to prevent crystallization damage machine seal
High temperature resistance	Suitable for use between 100℃ and 160℃
Motor protector	Can cut off the power instantly
Non-standard motor	For special occasions and special requirements
Non-standard flange	You can customize any standard flange

If you have any other requirements, please contact us.

Full service

- 1.Pre-sale services:Help customers select and design.
- 2.After-sales service:The warranty is one year
- 3.Availability of spare parts.

Easily damaged parts

Name	Explain
Impeller	The easily damaged part is the match of the mechanical seal, the mechanical seal of the centrifugal pump is very important, can greatly improve the service life. Mechanical seal dry grinding, conveying high solid medium, high temperature, high pressure, not installed in place will reduce the service life.
Mechanical seal	
Pump cover	
Machine seal gland	
Tension bolt	

Corrosion resistance table

Chemical resistance ratings:

A Excellent
 B Good
 C Fair
 X Not recommended
 - Data not available

Chemical resistance ratings:

1 20°C
 2 40°C
 3 60°C
 4 80°C
 5 100°C
 6 120°C

CHEMICAL	PP	PVDF	PTFE	Stainless steel	FKM	NBR	99 Ceramic	High density carbon	
Sulfuric Acid	0~10%	A4	A6	A6	B1	A6	B2	A5	A6
	10~75%	A3	A3	A6	X	A4	X	A5	A6
	75~100%	B2	B1	A4	C1	A4	-	A5	A4
Nitric Acid	10%	A3	A3	A5	A5	A5	X	A5	A6
	30%	A2	A3	A6	A5	A6	X	A5	A6
	50%	B2	A3	A3	A5	A1	X	A5	A5
Hydrochloric Acid	0~25%	A4	A6	A6	X	A3	B1	A5	A6
	15~40%	A4	A6	A6	X	B2	X	A5	A6
Hydrofluoric Acid	10%	B2	A6	A6	X	A3	X	-	A3
	30%	C2	A6	A6	X	A4	-	-	A3
	60%	X	A5	A6	X	A4	-	-	A2
Acetic Acid	20%	A2	A3	A6	B5	B1	B2	A5	A4
	80%	B1	A3	A6	B1	X	-	A5	A4
Sodium Hydroxide	20%	A3	A3	A6	B1	B1	B2	-	A3
	50%	A3	A3	A6	B1	X	B1	-	A3
Bromine Water	C1	A4	A3	C1	A2	-	A1	A2	
Ethyl Alcohol	A2	A6	A3	B5	A3	X	A3	A5	
Acetone	A2	X	A6	A5	X	-	A3	A5	
Freon12	X	A4	A6	B5	A1	X	A4	A4	
Aluminum Chloride	A4	A6	A6	X	A5	B4	A4	A5	
Ammonia Liquid	A1	A4	A6	A5	C1	B1	A3	A5	
Aqua regia	C2	A1	A5	X	B2	-	A4	-	
Formaldehyde	A4	A4	A6	A4	A4	X	A4	A5	
Gasoline	X	A6	A6	A5	B3	B3	A4	A6	
Kerosene	A1	A6	A6	A5	A1	B1	A4	A6	
Methyl alcohol	A3	A6	A6	A5	B2	B4	A5	A6	
Toluene	C1	A3	A4	A5	B1	-	A5	A4	
Trichloroethylene	C1	A6	A6	B5	A1	-	A4	A6	
Xylene	X	A3	A6	A5	B1	-	A5	A5	
Nitric acid anhydrous	C1	A3	A3	-	A1	-	A5	A2	
Oleum	X	X	A6	X	A4	-	A5	A2	
Potassium hydroxide	A4	A3	A6	A1	B1	C2	-	A6	

No leakage

Maintenance free

Super corrosion resistance



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