TECHNICAL DATA INCLUDED IN THIS BROCHURE MAY BE CHANGE FROM TIME TO TIME DUE TO THE PRODUCT IMPROVEMENTS UNDERTAKES BY THE MANUFACTURER. THE COMPANY RESERVES THE UNCONDITIONAL RIGHTS TO IMPLEMENT SUCH CHANGES WITHOUT REFERENCE TO THIRD PARTIES.



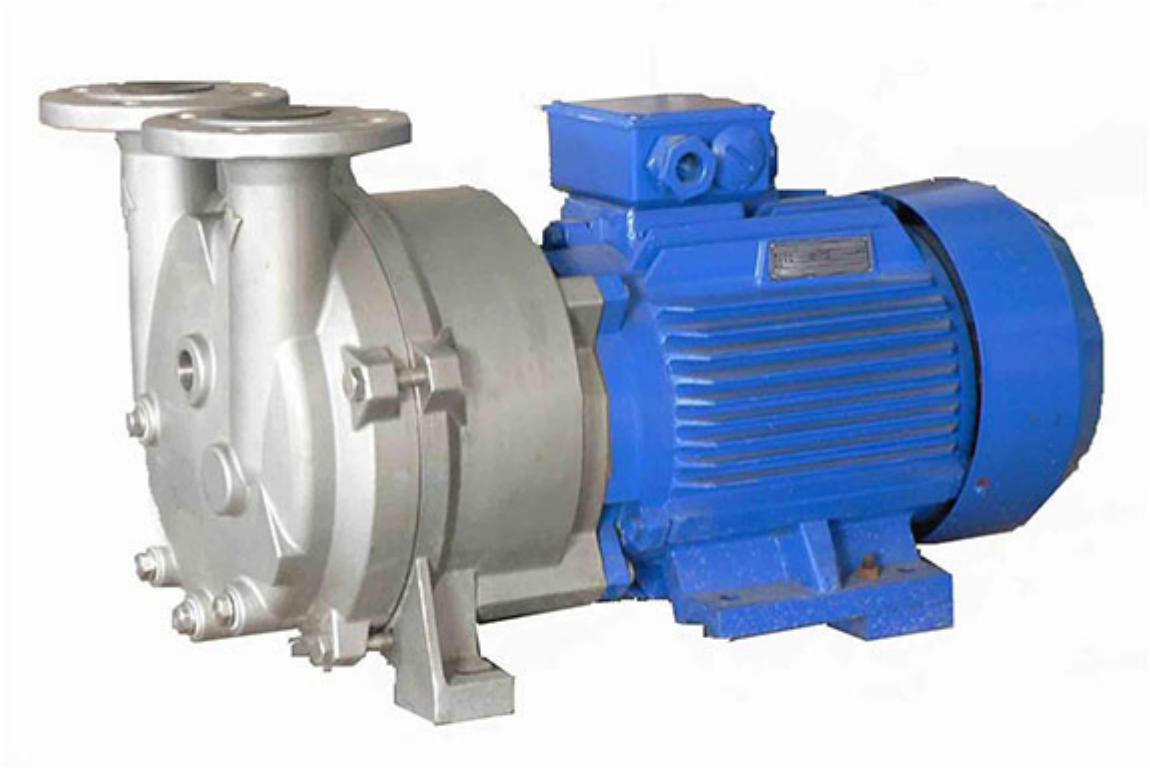
ShangHai HanThing pump Co.,ltd
Website: www.hanthing.com
Address: NO.566, Tongli road, songjiang district, Shanghai, China
Mobile: +86-021-56550238
Email: sales@hanthing.com

汉森
Hanthing

国家产品质量免检 丨 中国著名品牌

# 2BV系列真空泵

## 2BV Series Vacuum Pump



Product Catalog 2020

# 2BV Series Water Ring Vacuum Pump

## Overview

2BV series water ring vacuum pumps are energy-efficient products developed by our company after making market investigation and analysis based on many years of scientific research and production experience, in combination with international advanced technology. As a new generation product with excellent performance and advantages, 2BV series water ring vacuum pump meets your requirements better than SK, 2SK series water ring vacuum pump (similar pumping performance).

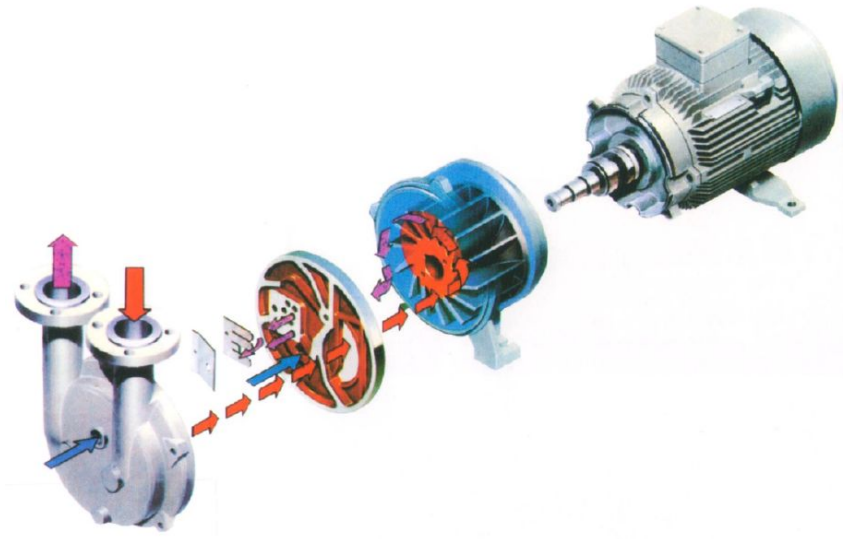
### ■ Purpose

- The products are mainly used for suction of solid particle-free and water-insoluble gas. They are widely used in vessel evacuation, condenser evacuation, water extraction system, plastic molding (degassing), food processing, vacuum distillation, hospital sterilization, central attraction and beverage can production line, also used in petroleum, chemicals, pharmacy, power, metallurgy, environmental protection and other industries.

### ■ Working principle

- 2BV series pump is of coaxial direct-coupled design, with pump body directly mounted on the motor. The rotation of impeller is driven by motor shaft, which makes the working fluid to form liquid ring in the oval pump body, (the working fluid plays the role of sealing medium, compression medium and cooling medium at the same time, without wear and no need for lubrication) as the impeller is eccentric relative to the rotating liquid ring. As a result, the liquid reciprocates within the space between the blades just as motion of piston in air cylinder, which causes suction and compression of gas. In the suction phase, liquid ring moves away from the hub, inhaling the pumped medium (gas) axially from the suction port; while in the exhaust stage, liquid ring gradually approaches the hub and expel the pumped medium (gas) axially from the exhaust port to extract vacuum. In addition, the external liquid pipeline connected to the pump body continuously injects with liquid to supplement the liquid carried by the discharged gas.

  (See schematic diagram)



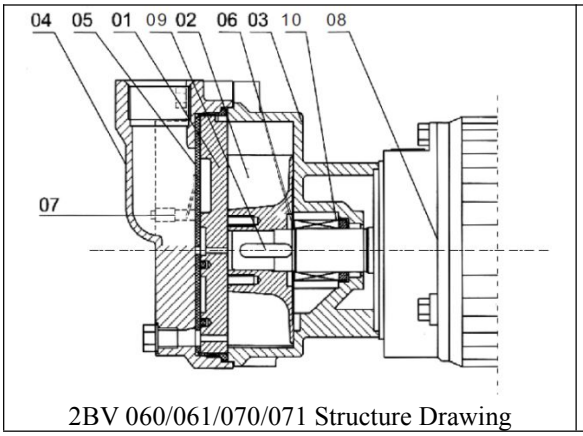
# Structure features of 2BV Series Water Ring Vacuum Pump

## ■ Materials for main parts

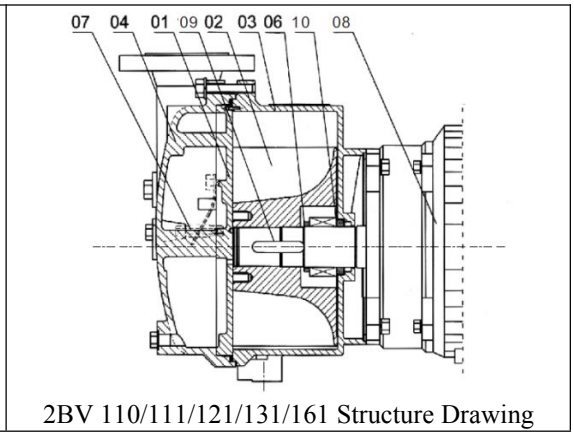
| Name | Name | | | |
|---|---|---|---|---|
| | A | B | E | H |
| Pump body | HT200 | HT200 | ZG07Cr19Ni9 (304) | ZG07Cr19Ni11M02 (316) |
| Pump cover | HT200 | HT200 | ZG07Cr19Ni9 (304) | ZG07Cr19Ni11M02 (316) |
| Impeller | ZG20Cr13 | ZCuAL10Fe3 | ZG07Cr19Ni9 (304) | ZG07Cr19Ni11M02 (316) |
| Distributor | HT200 | ZCuAL10Fe3 (2BV060~071)<br>HT200 (2BV110~161) | ZG07Cr19Ni9 (304) | ZG07Cr19Ni11M02 (316) |
| Shaft | 20Cr13 | | | |

Note: materials of parts are not limited to four combinations in the above table, flexible combination can be chosen according to use condition and user requirements.

## ■ Structure drawing and structure features



2BV 060/061/070/071 Structure Drawing



2BV 110/111/121/131/161 Structure Drawing

| | | | |
|---|---|---|---|
| 01 | Distributor | 06 | Mechanical sealing gasket |
| 02 | Impeller | 07 | Cavitation protective pipe |
| 03 | Pump body | 08 | (Long shaft) motor |
| 04 | Pump cover | 09 | Key |
| 05 | Sealing gasket | 10 | Mechanical sealing |

- Coaxial design for motor and pump, easy to install;
- Rotor is directly mounted on the motor shaft without coupling;
- Pump body is directly mounted on the motor housing, with no need for alignment;
- With mechanical seal as standard configuration to absolutely eliminate leaks;
- 100% oil-free design, greatly reducing water consumption and being conducive to environmental protection;
- Self-priming, easy to operate;
- With stainless steel shaft and aluminum bronze impellers to ensure strong corrosion resistance, products can adapt to a variety of harsh environments;
- Unique design of flexible exhaust port, including a series of vents covered with Teflon valve plate, which can automatically adjust to suitable exist area based on the actual inlet pressure of pump to ensure that the pump is in the best operation status within the vacuum range;

# Representation method and parameters of 2BV Series Water Ring Vacuum Pump

## ■ Representation method of single pump and complete set

| • Representation method of single pump | | • Representation method of complete set | |
|---|---|---|---|
| 2BV □□□ −0 | Minimum inhalted absolute pressure is 33hPa;<br>Nominal radius of impeller mm;<br>Water ring vacuum pump | 2BV□□□−0 □ □ □ | Code of air ejector: no word means there's no, "p" equipped with air ejector;<br>Code of gas-water separator: no word represents overhead type, "G" is pot-type;<br>Material code: see material table, for example, "B" means the main flow passage components are of common materials;<br>Same as single pump |

## ■ Pressure unit conversion

- 1atm (standard atmospheric pressure) =1013.25hPa (Hectopascal)
- 1mmHg (mmHg)=1Torr) =1.333hPa (Hectopascal)
- 1atm (standard atmospheric pressure) =760mmHg (mmHg)
- 1bar=1000hPa (Hectopascal)
- 1mbar=1hPa (Hectopascal)

## ■ Performance and parameters

| Product model | Rated power | Maximum gas flow | | Minimum inhalted pabs | Pump revolution speed | Flow of working fluid | Weight |
|---|---|---|---|---|---|---|---|
| | kW | $m^3/h$ | $m^3/mln$ | hPa | r/mln | $m^3/h$ | kg |
| 2BV060-0 | 1.1 | 27 | 0.45 | 33 | 2840 | 0.12 | 33 |
| 2BV061-0 | 1.5 | 52 | 0.87 | 33 | 2840 | 0.12 | 34 |
| 2BV070-0 | 3 | 80 | 1.33 | 33 | 2830 | 0.15 | 54 |
| 2BV071-0 | 4 | 110 | 1.83 | 33 | 2890 | 0.25 | 62 |
| 2BV110-0 | 4 | 165 | 2.75 | 33 | 1440 | 0.4 | 97 |
| 2BV111-0 | 5.5 | 230 | 3.83 | 33 | 1445 | 0.5 | 113 |
| 2BV121-0 | 7.5 | 280 | 4.67 | 33 | 1445 | 0.6 | 144 |
| 2BV131-0 | 11 | 400 | 6.67 | 33 | 1460 | 0.9 | 194 |
| 2BV161-0 | 15 | 500 | 8.3 | 33 | 970 | 1.2 | 340 |

# 2BV series gas meter and ordering instruction

## ■ Gas meter

| Product model | Gas flow (saturated air) $m^3/h$ | | | | | |
|---|---|---|---|---|---|---|
| | Inhalted pabs 40 hPa | Inhalted pabs 60 hPa | Inhalted pabs 100 hPa | Inhalted pabs 200 hPa | Inhalted pabs 400 hPa | Inhalted pabs 600 hPa |
| 2BV060-0 | 9.5 | 16 | 22 | 26 | 27 | 26.5 |
| 2BV061-0 | 27 | 37 | 45 | 49 | 52 | 50 |
| 2BV070-0 | 34 | 48 | 64 | 75 | 78 | 80 |
| 2BV071-0 | 91 | 100 | 104 | 110 | 108 | 106 |
| 2BV110-0 | 110 | 135 | 155 | 163 | 162 | 160 |
| 2BV111-0 | 175 | 190 | 215 | 230 | 225 | 220 |
| 2BV121-0 | 225 | 260 | 265 | 280 | 276 | 270 |
| 2BV131-0 | 310 | 350 | 365 | 396 | 392 | 380 |
| 2BV161-0 | 364 | 440 | 485 | 500 | 494 | 480 |

**The above parameters are based on the conditions: inhalted gas is saturated, suction temperature is 20℃, working fluid temperature is 15℃, exhaust pressure is standard atmospheric pressure of 1013.25hPa.**

## ■ Ordering instruction

**Parameters to be provided when ordering**

- Pump model and desired gas flow at operating point, pressure parameters. (Pump model code should include material code and type of gas-water separator)
- Inlet pressure, outlet pressure (it is required to provide specific values )
- Medium temperature and chemical composition (normal temperature medium will be delivered if not stated)

**Instruction on model selection**

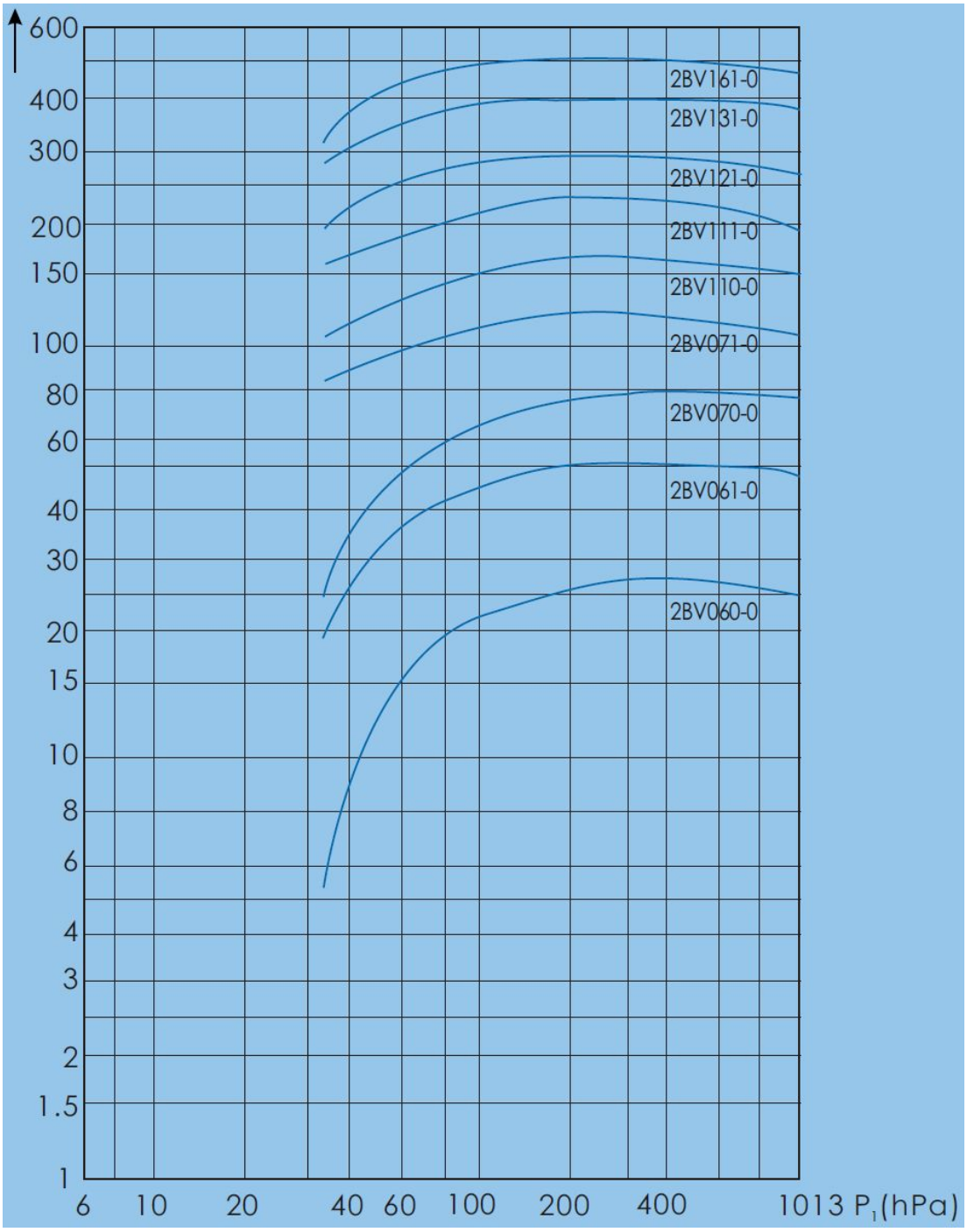
- If used in flammable and explosive places, such as oil, coal and other industries, flameproof motor must be used (Limited to 2BV110-161, support structure).
- Type of pump is mainly determined by gas flow, vacuum required during working.
- For selection of pump, it is necessary to know the gas composition, so as to select appropriate pump based on pumping gas. If the gas contains steam, particles and corrosive gas, auxiliary equipment can be installed at the air inlet pipeline of pump, such as condensers, dust collector and the like.
- All shaft seals of pump should be of mechanical seal structure.
- Pump rotation direction is clockwise (from the point of motor side).
- Y2 series motor with protection class of IP54.

**For special model selection not included in the catalogue or other information, please consult Water Pump Technical Center of Shanghai East Pump Group.**

# Spectrum diagram of 2BV Series Water Ring Vacuum Pump

## Spectrum diagram

Gas flow Q ($m^3/h$)

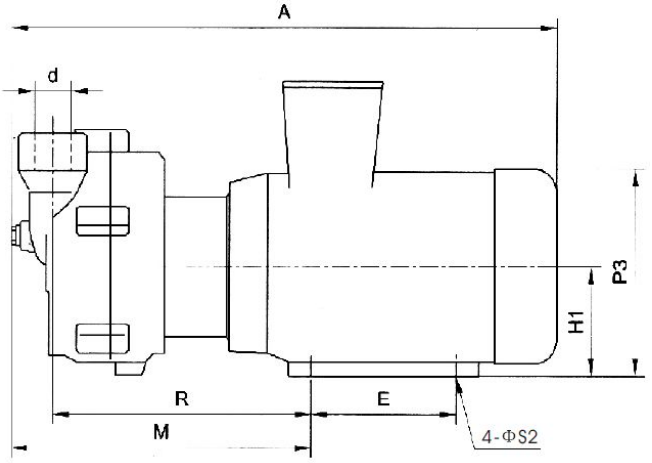


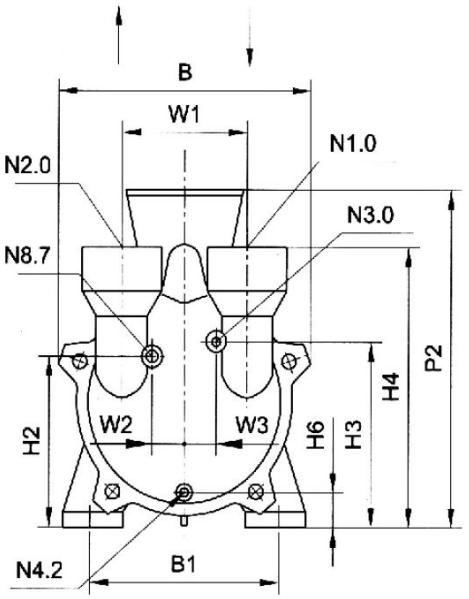

Inhalted absolute pressure ⟶

The above parameters are based on the conditions: inhalted gas is saturated, suction temperature is 20 ℃ , working fluid temperature is 15 ℃ , exhaust pressure is standard atmospheric pressure of 1013.25hPa.

# 2BV060~2BV071 dimension and installation drawing

## 2BV060~2BV071 dimension and installation drawing




N1.0 air suction port N4.2 drain port
N2.0 exhaust port N8.7 cavitation protection port
N3.0 working fluid port

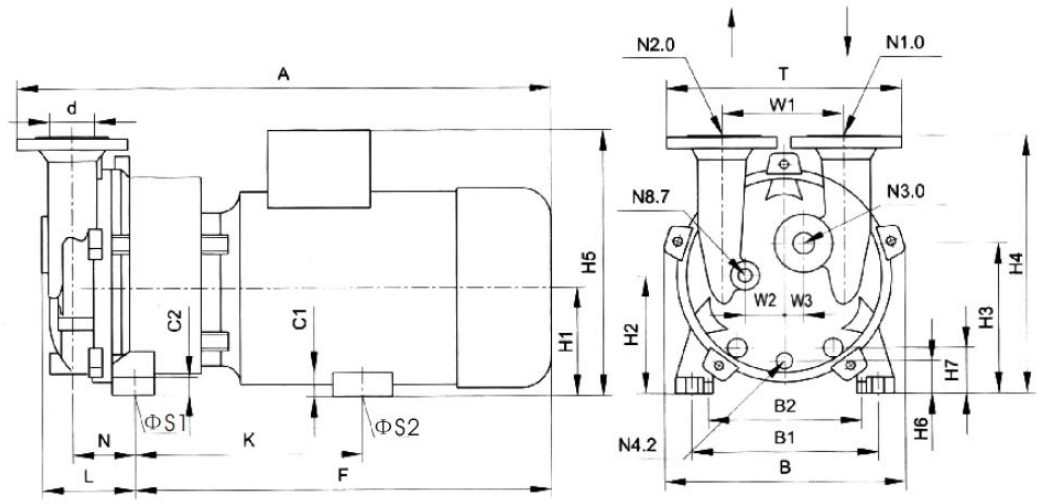
| Type | A | B | B1 | R | E | M | H1 | H2 | H3 | H4 | H6 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2BV060-0 | 455 | 186 | 140 | 217 | 100 | 244 | 90 | 118 | 126 | 195 | 37.5 |
| 2BV061-0 | 476 | 186 | 140 | 236 | 100 | 263 | 90 | 118 | 126 | 195 | 37.5 |
| 2BV070-0 | 545 | 223 | 160 | 252 | 140 | 280 | 100 | 128 | 146 | 222 | 33 |
| 2BV071-0 | 566 | 223 | 190 | 278 | 140 | 309 | 112 | 140 | 158 | 234 | 45 |

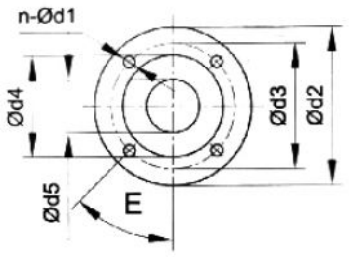
| Type | ΦS2 | P2 | P3 | W1 | W2 | W3 | d | N3.0 | N4.2 | N8.7 |
|---|---|---|---|---|---|---|---|---|---|---|
| 2BV060-0 | Φ10 | 250 | 180 | 110 | 25.5 | 21 | Rp1 | Rp3/8 | Rp1/4 | Rp3/8 |
| 2BV061-0 | Φ10 | 250 | 180 | 110 | 25.5 | 21 | Rp1 | Rp3/8 | Rp1/4 | Rp3/8 |
| 2BV070-0 | Φ12 | 270 | 203 | 110 | 33 | 27 | Rp1½ | Rp3/8 | Rp1/4 | Rp3/8 |
| 2BV071-0 | Φ12 | 300 | 225 | 110 | 33 | 27 | Rp1½ | Rp3/8 | Rp1/4 | Rp3/8 |

汉森 Hanthing

# 2BV060~2BV071 dimension and installation drawing

## 2BV110~2BV161 dimension and installation drawing




N1.0 air suction port N4.2 drain port
N2.0 exhaust port N8.7 cavitation protection port
N3.0 working fluid port

| Type | A | B | B1 | B2 | C1 | C2 | H1 | H2 | H3 | H4 | H5 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2BV110-0 | 637 | 325 | 255 | 190 | 41 | 26 | 140 | 156 | 202 | 361 | 328 |
| 2BV111-0 | 679 | 325 | 265 | 216 | 36 | 26 | 150 | 166 | 212 | 371 | 363 |
| 2BV121-0 | 771 | 347 | 265 | 216 | 36 | 26 | 150 | 167 | 217 | 385 | 363 |
| 2BV131-0 | 852 | 377 | 300 | 254 | 35 | 30 | 175 | 194 | 249 | 427 | 435 |
| 2BV161-0 | 1044 | 479 | 370 | 279 | 30 | 30 | 210 | 225 | 303 | 512 | 485 |

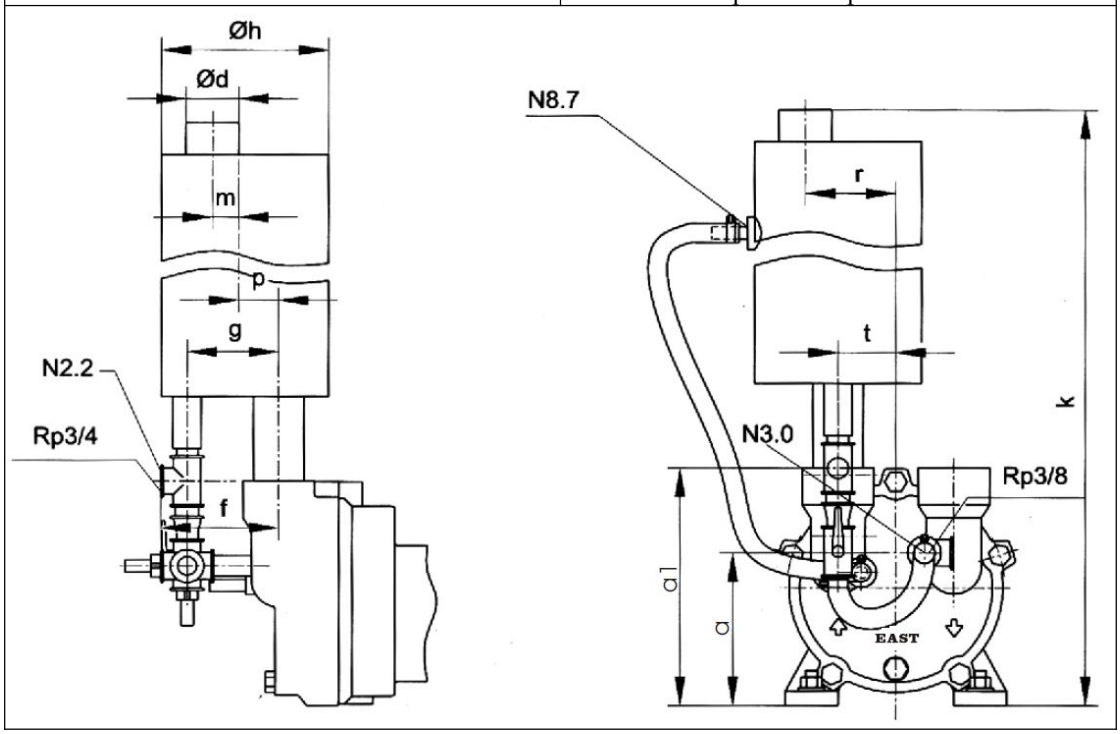
| Type | H6 | H7 | K | L | F | N | ΦS1 | ΦS2 | T | Φd1 | Φd2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2BV110-0 | 38 | 57 | 342 | 130 | 464 | 92 | Φ12 | Φ12 | 340 | Φ18 | Φ165 |
| 2BV111-0 | 48 | 68 | 348 | 130 | 500 | 92 | Φ12 | Φ12 | 340 | Φ18 | Φ165 |
| 2BV121-0 | 39 | 60 | 430 | 147 | 584 | 97 | Φ12 | Φ12 | 382 | Φ18 | Φ185 |
| 2BV131-0 | 53 | 76 | 477.5 | 147 | 658.5 | 103 | Φ15 | Φ15 | 382 | Φ18 | Φ185 |
| 2BV161-0 | 51 | 80 | 555 | 201 | 808 | 138 | Φ15 | Φ15 | 450 | Φ18 | Φ205 |

| Type | Φd3 | Φd4 | Φd5 | n | E | W1 | W2 | W3 | d | N3.0 | N4.2 | N8.7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2BV110-0 | Φ125 | Φ99 | Φ52 | 4 | 45° | 180 | 52 | 27 | DN50 | Rp3/4 | Rp3/8 | Rp3/8 |
| 2BV111-0 | Φ125 | Φ99 | Φ52 | 4 | 45° | 180 | 52 | 27 | DN50 | Rp3/4 | Rp3/8 | Rp3/8 |
| 2BV121-0 | Φ145 | Φ118 | Φ66.5 | 4 | 45° | 200 | 57 | 29 | DN65 | Rp3/4 | Rp3/8 | Rp3/8 |
| 2BV131-0 | Φ145 | Φ118 | Φ66.5 | 4 | 45° | 200 | 62.5 | 32 | DN65 | Rp3/4 | Rp3/8 | Rp3/8 |
| 2BV161-0 | Φ160 | Φ132 | Φ80 | 8 | 22.5° | 250 | 81 | 41 | DN80 | Rp3/4 | Rp3/8 | Rp3/8 |

# 2BV060~2BV071 dimension and installation drawing of complete set

## ■ 2BV060~2BV071 dimension and installation drawing of complete set

| (With overhead gas-water separator) | N2.2 overflow port of gas-water separator<br>N3.0 working fluid port<br>N8.7 cavitation protection port |
|---|---|

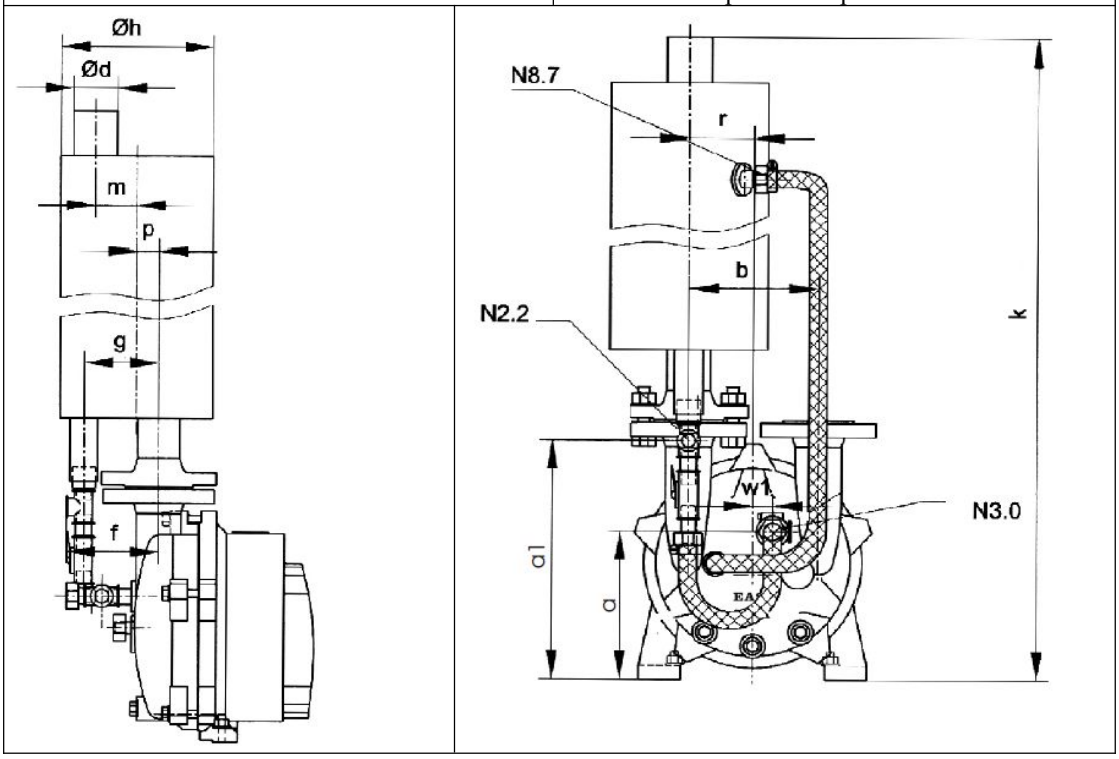



| Type | a | a1 | Φd | f | g | Φh | k | m | p | r | t | N2.2 | N3.0 | N8.7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2BV060-0 | 126 | 201 | Φ40 | 153 | 74 | Φ127 | 531 | 27 | 30 | 71 | 55 | Rp1/2 | Rp3/8 | Rp3/8 |
| 2BV061-0 | 126 | 201 | Φ40 | 153 | 74 | Φ127 | 531 | 27 | 30 | 71 | 55 | Rp1/2 | Rp3/8 | Rp3/8 |
| 2BV070-0 | 146 | 221 | Φ50 | 167 | 87 | Φ159 | 637 | 31 | 32 | 86 | 55 | Rp1/2 | Rp3/8 | Rp3/8 |
| 2BV071-0 | 158 | 233 | Φ50 | 167 | 87 | Φ159 | 649 | 31 | 32 | 86 | 55 | Rp1/2 | Rp3/8 | Rp3/8 |

# 2BV110~2BV161 dimension and installation drawing of complete set

## ■ 2BV110~2BV161 dimension and installation drawing of complete set

| (With overhead gas-water separator) | N2.2 overflow port of gas-water separator<br>N3.0 working fluid port<br>N8.7 cavitation protection port |
|---|---|




| Type | a | a1 | b | Φd | f | g | Φh | k | m | p | r | W1 | N2.2 | N3.0 | N8.7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2BV110-0 | 202 | 322 | 180 | Φ63 | 125 | 107 | Φ219 | 907 | 60 | 32 | 90 | 27 | Rp1 | Rp3/4 | Rp3/8 |
| 2BV111-0 | 212 | 332 | 180 | Φ63 | 125 | 107 | Φ200 | 917 | 60 | 32 | 90 | 27 | Rp1 | Rp3/4 | Rp3/8 |
| 2BV121-0 | 217 | 337 | 200 | Φ76 | 131 | 138 | Φ273 | 913 | 62 | 43 | 100 | 29 | Rp1 | Rp3/4 | Rp3/8 |
| 2BV131-0 | 249 | 369 | 200 | Φ76 | 131 | 138 | Φ273 | 955 | 62 | 43 | 100 | 29 | Rp1 | Rp3/4 | Rp3/8 |
| 2BV161-0 | 303 | 425 | 250 | Φ89 | 151 | 164 | Φ325 | 1116 | 67 | 69 | 125 | 41 | Rp1 | Rp3/4 | Rp3/8 |