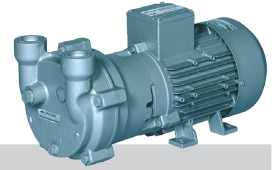
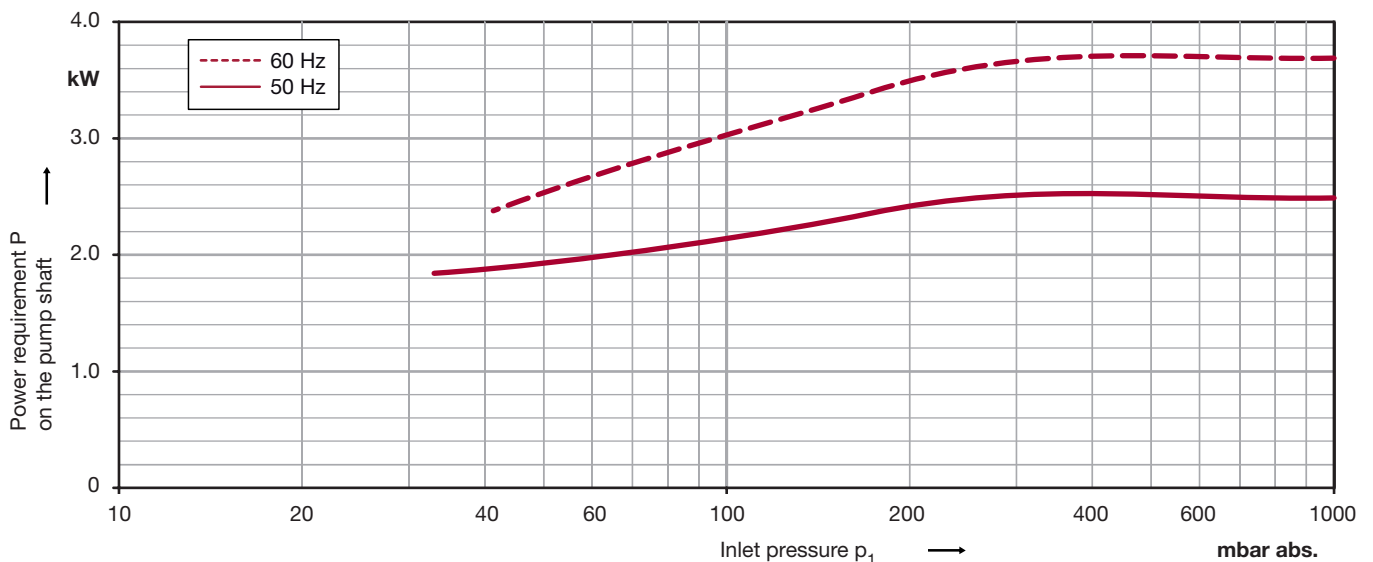
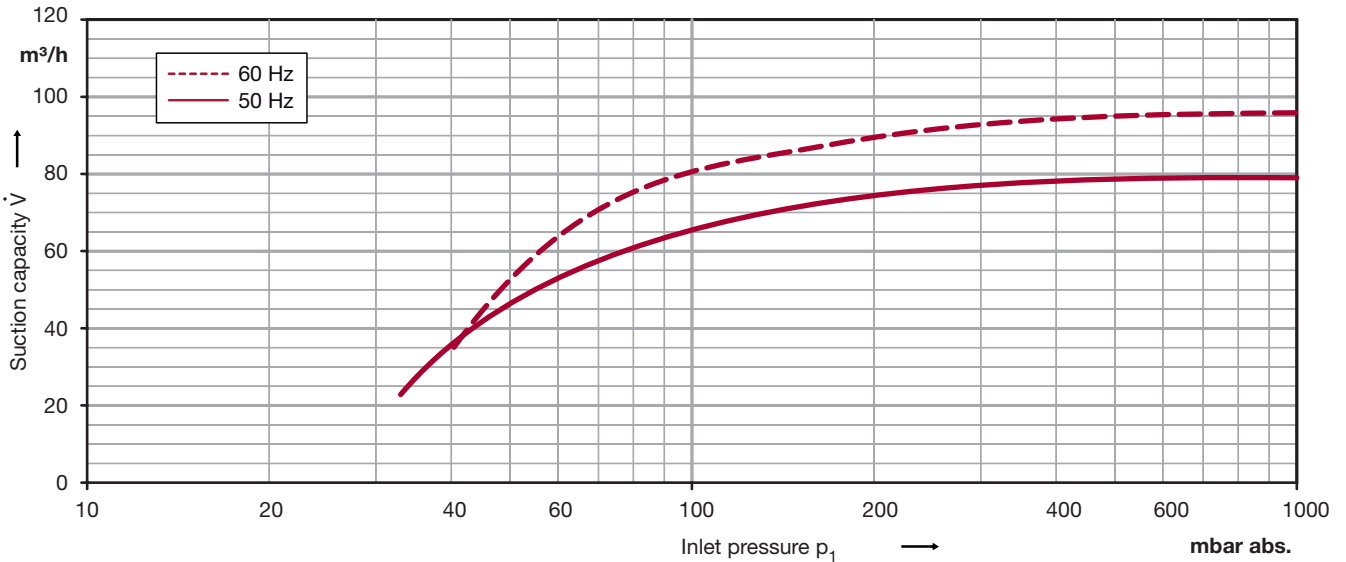


# Data sheet liquidring pump

Series L-BV2 | L\_200  
Range 2BV2 070 Vacuum pump ATEX



## Performance curves for vacuum operation



Vacuum pumps of the L-BV2 range are suitable for evacuating gases and wet vapours down to inlet pressures of 33 mbar abs. (97% vacuum). All these vacuum pumps are equipped with built-in cavitation protection. For operation below 80 mbar abs. the cavitation protection should be connected to protect the vacuum pump. All pumps L-BV2 are especially space-saving in their monoblock design. They are available in cast iron (standard color RAL 9006). The motor is painted as standard in RAL 9006.

The motors are supplied as standard for the input voltage ranges of 50 and 60 Hz and for the protection category IP55 as well as approved for UL and CSA. Vacuum pumps with ATEX 94/9 EG for category 2G are available, too. The characteristics are valid for the inlet of air with a relative humidity of 100 % and a temperature of 20 °C, compression to 1013 mbar abs. and water at 15 °C as operating liquid. The tolerance is  $\pm 10 \%$ .

## Selection and ordering data

| Materials  | Motor data |         |        |     |             | Service-factor | Order-No.                       | Quantity of operating liquid | Sound pressure level ** | Weight approx. |
|--|------------|---------|--------|-----|-------------|----------------|---------------------------------|------------------------------|-------------------------|----------------|
|  | Rated      |         |        |     |             |                |                                 |                              |                         |                |
|  | voltage    | current | output |     |             |                |                                 |                              |                         |                |
| V  | A          | kW      |        | SF  | m³/h        | dB(A)          | kg                              |                              |                         |                |
| <b>ATEX 3- 50-Hz version, protection class IP 55, insulation class F</b> |            |         |        |     |             |                |                                 |                              |                         |                |
| cast iron/ceramic/bronze   | 230Δ       | 400Y    | 9.22   | 5.3 | <b>2.35</b> | 1.06           | <b>2BV2070-0ND01-1S-Z Z=F91</b> | 0.28                         | 65                      | 35             |
| cast iron/ceramic/bronze   | 500Δ       |         | 4.24   |     | <b>2.35</b> | 1.06           | <b>2BV2070-0ND01-5S-Z Z=F91</b> | 0.28                         | 65                      | 35             |
| CrNi steel/ceramic/CrNi steel  | 230Δ       | 400Y    | 9.22   | 5.3 | <b>2.35</b> | 1.06           | <b>2BV2070-0PD01-1S-Z Z=F91</b> | 0.28                         | 65                      | 35             |
| CrNi steel/ceramic/CrNi steel  | 500Δ       |         | 4.24   |     | <b>2.35</b> | 1.06           | <b>2BV2070-0PD01-5S-Z Z=F91</b> | 0.28                         | 65                      | 35             |
| CrNi steel/CrNi steel/CrNi steel   | 230Δ       | 400Y    | 9.22   | 5.3 | <b>2.35</b> | 1.06           | <b>2BV2070-0HD01-1S-Z Z=F91</b> | 0.28                         | 65                      | 35             |
| CrNi steel/CrNi steel/CrNi steel   | 500Δ       |         | 4.24   |     | <b>2.35</b> | 1.06           | <b>2BV2070-0HD01-5S-Z Z=F91</b> | 0.28                         | 65                      | 35             |
| <b>ATEX 3- 60-Hz version, protection class IP 55, insulation class F</b> |            |         |        |     |             |                |                                 |                              |                         |                |
| cast iron/ceramic/bronze   | 460Δ       |         | 8.0    |     | <b>3.45</b> | 1.33           | <b>2BV2070-0NG03-6S-Z Z=F91</b> | 0.34                         | 70                      | 70             |
| CrNi steel/ceramic/CrNi steel  | 460Δ       |         | 8.0    |     | <b>3.45</b> | 1.33           | <b>2BV2070-0PG03-6S-Z Z=F91</b> | 0.34                         | 70                      | 70             |
| CrNi steel/CrNi steel/CrNi steel   | 460Δ       |         | 8.0    |     | <b>3.45</b> | 1.33           | <b>2BV2070-0HG03-6S-Z Z=F91</b> | 0.34                         | 70                      | 70             |

The motors are designed according to DIN EN 60 034 / DIN IEC 34-1 and temperature class F.

For the three phase machines the tolerances are  $\pm 10\%$  for fixed voltage . The frequency tolerance is maximum  $\pm 2\%$ .

All L-BV2 achieve the standards and norms of the low voltage directive 72/23/EWG, rotating electrotechnical motor EN 60034-1-34, electromagnetic compatibility (EMC) DIN EN 61000-0/-6/-4.

\*\* Measuring-surface sound-pressure level acc. to DIN EN 21680, measured at a distance of 1 m at medium inlet pressure and with connected pipes.

\*\*\* The quantities of operating liquid apply for fresh water operation without discharge liquid separator.

For partial recirculation operation the quantity of the fresh applied refrigerant can be reduced by circulation of the operating liquid in a circuit (with discharge liquid separator and internal recirculation of the operating liquid, available as accessories).

An inlet pressure of 10 mbar abs. can be achieved by connecting a gas ejector (see accessories). The gas ejector can be mounted directly onto the vacuum pump.

## Other voltages

|  |  | 2BV2 070-...□-□ □ S |                  |
|--|--|---------------------|------------------|
| 50 Hz  | 60 Hz  |                     |                  |
| <b>3-</b>  |  |                     |                  |
| 185...220 V Δ / 320...380 V Y<br>220...240 V Δ / 345...415 V Y<br>345...415 V Δ<br>500 V Δ | 200...254 V Δ / 345...440 V Y<br>220...275 V Δ / 380...480 V Y<br>380...480 V Δ<br>575 V Δ | H<br>H<br>H<br>H    | 0<br>8<br>7<br>5 |
| <b>3- ATEX Category 2G</b>   |  |                     |                  |
| 230 V Δ / 400 V Y<br>400 V Δ / 690 V Y<br>500 V Δ  | -<br>-<br>-  | D<br>D<br>D         | 1<br>6<br>5      |
| -<br>-<br>-  | 460 V Δ<br>460 V Y<br>575 V Δ  | G<br>G<br>G         | 6<br>1<br>5      |

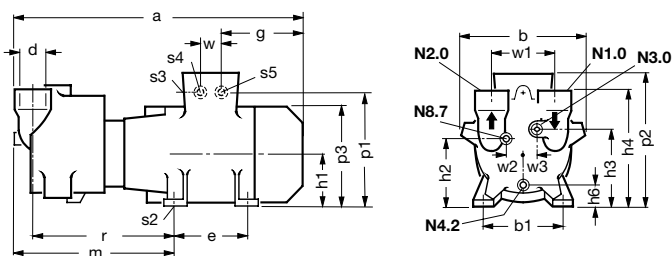
## Quantity of Operating Liquid

| Frequency | for fresh water operation / partial recirculation Inlet pressure p (abs.) *** |                |            |
|-----------|---|----------------|------------|
|           | < 200 mbar  | 200 - 500 mbar | > 500 mbar |
| Hz        | m³/h  | m³/h           | m³/h       |
| 50        | 0.28/0.15   | 0.28/0.15      | 0.28/0.15  |
| 60        | 0.34/0.18   | 0.34/0.18      | 0.34/0.18  |

## Max. add. water carry-over or permissible back pressure

| Frequency | max. additional water carry-over | max. permissible back pressure |
|-----------|----------------------------------|--------------------------------|
| Hz        | m³/h                             | mbar abs.                      |
| 50        | 0.7                              | 1200                           |
| 60        | 0.7                              | 1200                           |

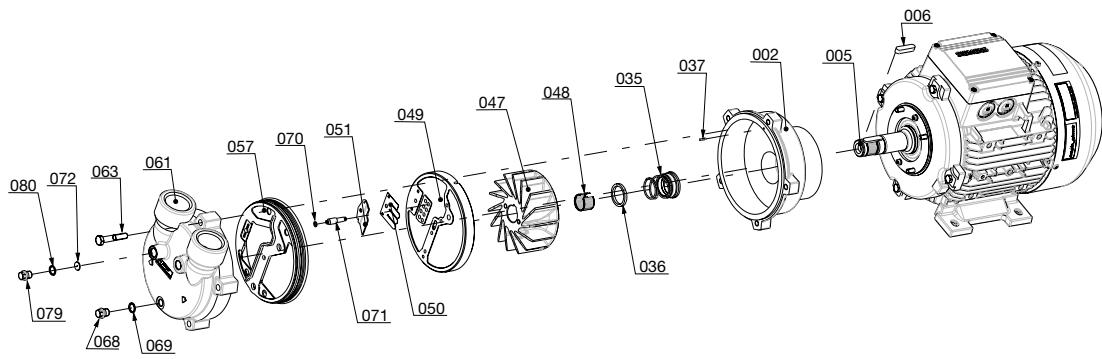
## Dimensions



N1.0 Inlet flange  
N2.0 Pressure flange  
N3.0 Connection operating liquid  
N4.2 Drain  
N8.7 Cavitation protection

| [mm]              | a   | b         | b1        | e   | g   | h1  | h2  | h3             | h4      | h6      | m       | p1  | p2  | p3  | r   |
|-------------------|-----|-----------|-----------|-----|-----|-----|-----|----------------|---------|---------|---------|-----|-----|-----|-----|
| 2BV2 070-...1-... | 545 | 232       | 196       | 140 | 189 | 100 | 128 | 146            | 222     | 33      | 299,5   | 178 | 236 | 201 | 262 |
| 2BV2 070-...3-... | 551 | 266       | 216       | 140 | 224 | 133 | 160 | 178            | 254     | 65      | 271     | 240 | 300 | 266 | 233 |
|                   | s2  | s3/s4     | s5        | w   | w1  | w2  | w3  | d (N1.0, N2.0) | N3.0    | N4.2    | N8.7    |     |     |     |     |
| 2BV2 070-...1-... | 12  | M32 x 1.5 | M32 x 1.5 | 42  | 110 | 33  | 27  | G1½ x 20       | G¾ x 12 | G¼ x 12 | G¾ x 12 |     |     |     |     |
| 2BV2 070-...3-... | 14  | M32 x 1.5 | M32 x 1.5 | 42  | 110 | 33  | 27  | G1½ x 20       | G¾ x 12 | G¼ x 12 | G¾ x 12 |     |     |     |     |

## Exploded drawing



## Materials of construction

| Part-No. | Designation                            | Material combination   |   |   |
|----------|--|--|---|---|
|          |  | cast iron/ceramic/bronze   | CrNi steel/ceramic/CrNi steel   | CrNi steel/CrNi steel/CrNi steel  |
| 002      | Casing                                 | Grey cast iron<br>(EN-GJL HB 195 / EN-JL2030) EN 1561                        | Cast chrome-nickel-molybdenum steel<br>(G-X6CrNiMo 18-10 / 1.4408) EN 10213-4                                   | Cast chrome-nickel-molybdenum steel<br>(G-X6CrNiMo 18-10 / 1.4408) EN 10213-4                                   |
| 005      | Pump shaft                             | Chrome steel<br>(X20Cr13 / 1.4021) EN 10088 - 3                              | Chrome-nickel-molybdenum steel<br>(X6CrNiMoTi 17-12-2 / 1.4571) EN 10088 - 3                                    | Chrome-nickel-molybdenum steel<br>(X6CrNiMoTi 17-12-2 / 1.4571) EN 10088 - 3                                    |
| 006      | Feather key                            | Chrome-nickel-molybdenum steel<br>(X6CrNiMoTi 17-12-2 / 1.4571) EN 10088 - 3 | Chrome-nickel-molybdenum steel<br>(X6CrNiMoTi 17-12-2 / 1.4571) EN 10088 - 3                                    | Chrome-nickel-molybdenum steel<br>(X6CrNiMoTi 17-12-2 / 1.4571) EN 10088 - 3                                    |
| 035      | Mechanical seal                        | Carbon / Ceramic / Viton (FPM) /<br>Chrome-nickel steel (EN 12756 - BVVGG)   | SIC / Carbon / Viton (FPM) / Teflon (PTFE)<br>sheathed / Chrome-nickel-molybdenum steel<br>(EN 12756 - Q1BM1GG) | SIC / Carbon / Viton (FPM) / Teflon (PTFE)<br>sheathed / Chrome-nickel-molybdenum steel<br>(EN 12756 - Q1BM1GG) |
| 036      | Washer                                 | Chrome-nickel steel<br>X10CrNiS 18-9 / 1.4305 / EN 10088 - 3                 | Chrome-nickel steel<br>X10CrNiS 18-9 / 1.4305 / EN 10088 - 3  | Chrome-nickel steel<br>X10CrNiS 18-9 / 1.4305 / EN 10088 - 3  |
| 037      | Set screw                              | Chrome-nickel-molybdenum steel<br>(X5CrNiMo 17-12-2 / 1.4401) EN 10088 - 2   | Chrome-nickel-molybdenum steel<br>(X5CrNiMo 17-12-2 / 1.4401) EN 10088 - 2                                      | not applicable  |
| 047      | Impeller                               | Cast aluminium bronze<br>(G-CuAl10Fe5Ni5 / CC33G-GS) EN 1982                 | Cast chrome-nickel-molybdenum steel<br>(G-X6CrNiMo 18-10 / 1.4408) EN 10213-4                                   | Cast chrome-nickel-molybdenum steel<br>(G-X6CrNiMo 18-10 / 1.4408) EN 10213-4                                   |
| 048      | Tolerance ring<br>for impeller         | Chrome-nickel steel<br>(X12CrNi 17-7 / 1.4310) EN 10088 - 2                  | Chrome-nickel steel<br>(X12CrNi 17-7 / 1.4310) EN 10088 - 2   | Chrome-nickel steel<br>(X12CrNi 17-7 / 1.4310) EN 10088 - 2   |
| 049      | Port plate                             | Ceramic - C221 EN 60672 - 1  | Ceramic - C221 EN 60672 - 1   | Cast chrome-nickel-molybdenum steel<br>(G-X6CrNiMo 18-10 / 1.44.08)<br>EN 10213-4                               |
| 050      | Valve plate                            | Teflon (PTFE)  | Teflon (PTFE)   | Teflon (PTFE)   |
| 051      | Intercepting plate                     | Chrome-nickel-molybdenum steel<br>(X10CrNiMoTi 18-10 / 1.4571) EN 10088 - 2  | Chrome-nickel-molybdenum steel<br>(X10CrNiMoTi 18-10 / 1.4571) EN 10088 - 2                                     | Chrome-nickel-molybdenum steel<br>(X10CrNiMoTi 18-10 / 1.4571) EN 10088 - 2                                     |
| 057      | Gasket for cover                       | Nitrile-butadiene-caotchouc (NBR)<br>ISO 1629                                | Viton (FPM)   | flat gasket: Teflon (PTFE) and O-ring:<br>silicone-caotchouc / Teflon (PTFE) sheathed                           |
| 061      | Cover                                  | Grey cast iron<br>(EN-GJL HB 195 / EN-JL2030) EN1561                         | Cast chrome-nickel-molybdenum steel<br>(G-X6CrNiMo 18-10 / 1.4408) EN 10213-4                                   | Cast chrome-nickel-molybdenum steel<br>(G-X6CrNiMo 18-10 / 1.4408) EN 10213-4                                   |
| 063      | Screw                                  | Steel (DIN ISO 8992)   | Steel (DIN ISO 8992)  | Steel (DIN ISO 8992)  |
| 068      | Plug screw                             | Machining steel, lead alloyed<br>(11SMnPb30 / 1.0718) EN 10087               | Chrome-nickel-molybdenum steel<br>(X10CrNiMoTi 18-10 / 1.4571) EN 10088 - 3                                     | Chrome-nickel-molybdenum steel<br>(X10CrNiMoTi 18-10 / 1.4571) EN 10088 - 3                                     |
| 069      | Sealing ring                           | Teflon (PTFE)  | Teflon (PTFE)   | Teflon (PTFE)   |
| 070      | O-Ring                                 | FPM (flour rubber)   | FPM (flour rubber)  | FEP (Perfluorethylenpropylen) & Silicon   |
| 071      | Pipe of cavitation<br>protection       | Chrome-nickel-molybdenum steel<br>(X10CrNiMoTi 18-10 / 1.4571) EN 10088 - 3  | Chrome-nickel-molybdenum steel<br>(X10CrNiMoTi 18-10 / 1.4571) EN 10088 - 3                                     | Chrome-nickel-molybdenum steel<br>(X10CrNiMoTi 18-10 / 1.4571) EN 10088 - 3                                     |
| 072      | Washer for<br>cavitation<br>protection | Chrome-nickel steel<br>(X5CrNi 18-10 / 1.4301) EN 10088 - 3                  | Chrome-nickel steel<br>(X5CrNi 18-10 / 1.4301) EN 10088 - 3   | Chrome-nickel steel<br>(X5CrNi 18-10 / 1.4301) EN 10088 - 3   |
| 079      | Plug screw                             | Machining steel, lead alloyed<br>(11SMnPb30 / 1.0718) EN 10087               | Chrome-nickel-molybdenum steel<br>(X5CrNiMo 17-12-2 / 1.4401) EN 10088 - 3                                      | Chrome-nickel-molybdenum steel<br>(X5CrNiMo 17-12-2 / 1.4401) EN 10088 - 3                                      |
| 080      | Dichtring                              | Teflon (PTFE)  | Teflon (PTFE)   | Teflon (PTFE)   |



Changes in particular the quoted performance curve, datas and weights without prior notice. The figures are without obligations.

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# **Gardner Denver**

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