



**Elmo  
Rietschle**

**IE3**



# L-BV 5 N

## Data sheet 2BV5 111

### Liquid ring vacuum pump

#### General information

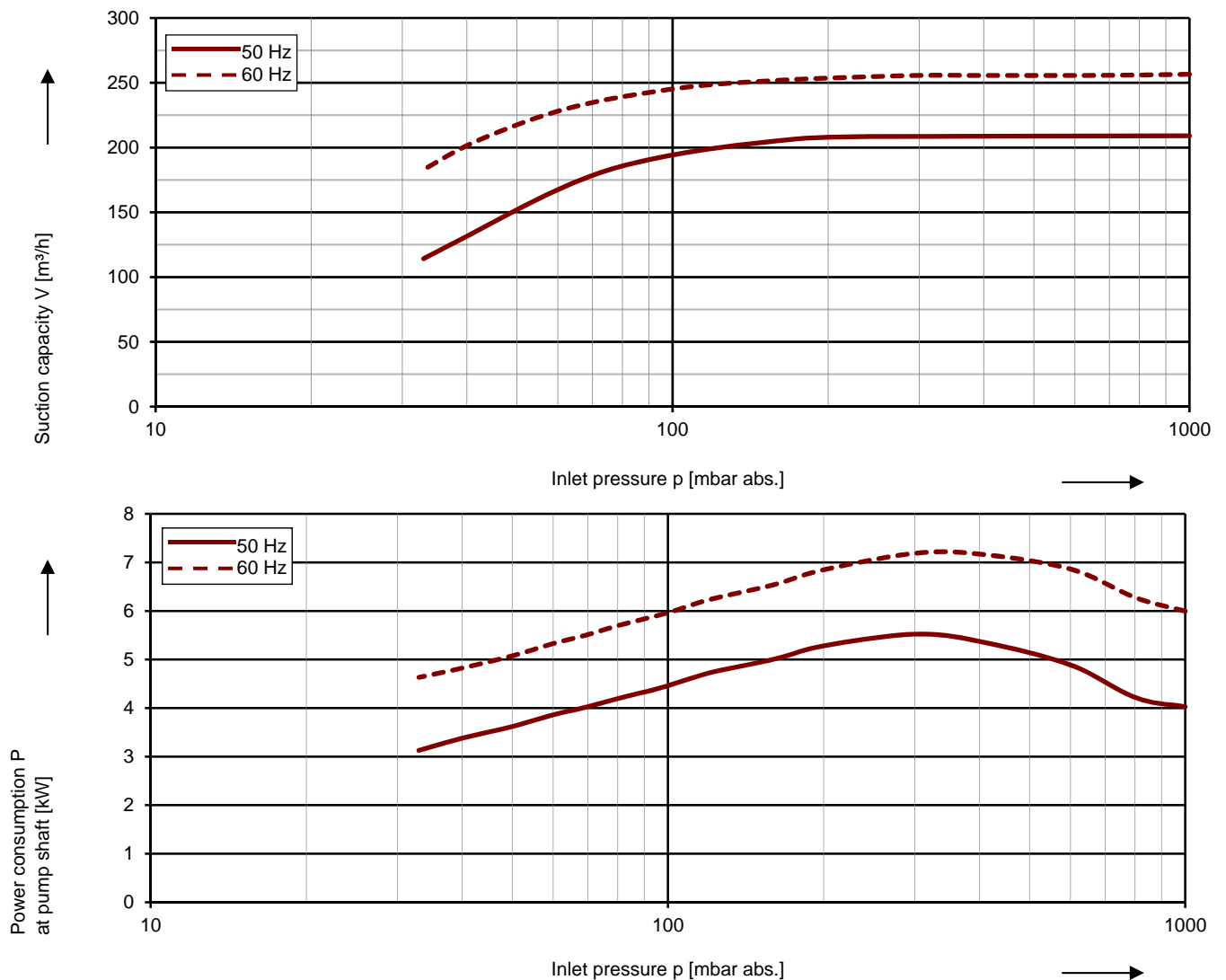
Elmo Rietschle vacuum pumps of the model range L-BV5 are suitable for evacuating gases and wet vapours down to inlet pressures of 33 mbar abs. (97 % vacuum). All these vacuum pumps are equipped with built-in cavitation protection. They work cavitation free down to 80 mbar abs. For operation at lower inlet pressures the integrated cavitation protection should be connected for protecting the vacuum pump (no external pipes necessary).

The vacuum pumps are particularly space-saving, reliable and robust in their monoblock design. The reinforced stainless steel shaft, the permanently lubricated bearings and the ceramic internal coating of the pump housings prevent wear, corrosion and calcification.



#### Performance curves

##### Vacuum operation



The characteristic curves are based on the evacuation of 100 % saturated air and an intake temperature of 20 °C. At a suction pressure of 1013 mbar abs. and a temperature of the operating liquid of 15 °C (water as operating liquid) the characteristic curves will be achieved. The tolerance is  $\pm 10\%$ .

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 ATEX-pumps with 2006/42 EG for category 2G are available, too.

## Selection and ordering data

Typ 2BV5 111

| Fre-<br>quency  | Rated                  |                  |       | Service<br>factor | Efficiency | Quantity of<br>operating<br>liquid<br>1) | Sound<br>pressure<br>level<br>2) | Weight<br>Approx. | Order No.                        |
|---|------------------------|------------------|-------|-------------------|------------|--|----------------------------------|-------------------|----------------------------------|
|   | Voltage                | Current          | Power |                   |            |  |                                  |                   |                                  |
| Hz  | V                      | A                | kW    | SF                | -          | m <sup>3</sup> /h                        | dB(A)                            | kg                |                                  |
| <b>3~ 50/60 Hz, IP55, Insulation material class F, UL 1450 and CAN/CSA C22.2 No. 68-09 (certificate number E225239)</b> |                        |                  |       |                   |            |  |                                  |                   |                                  |
| 50  | 190-210 Δ              | 29,9 Δ           | 5,5   | 1,36              | IE3        | 0,72                                     | 67                               | 120 *             | <b>2BV5111-0</b> □ <b>K03-1B</b> |
| 60  | 190-210 YY / 380-420 Y | 33,0 YY / 16,5 Y | 7,2   | 1,19              | IE3        | 0,81                                     | 72                               | 124 **            |                                  |
|   | 200 YY                 | 28,5 YY          | 7,2   | 1,19              | NP         | 0,81                                     | 72                               |                   |                                  |
| <b>3~ 50/60 Hz, IP55, Insulation material class F, UL 1450 and CAN/CSA C22.2 No. 68-09 (certificate number E225239)</b> |                        |                  |       |                   |            |  |                                  |                   |                                  |
| 50  | 220-240 Δ / 380-420 Y  | 25,0 Δ / 15,0 Y  | 5,5   | 1,36              | IE3        | 0,72                                     | 67                               | 120 *             | <b>2BV5111-0</b> □ <b>K03-6B</b> |
| 60  | 220-240 YY / 440-480 Y | 28,5 YY / 14,3 Y | 7,2   | 1,19              | IE3        | 0,81                                     | 72                               | 124 **            |                                  |
|   | 230 YY / 460 Y         | 25,0 YY / 12,4 Y | 7,2   | 1,19              | NP         | 0,81                                     | 72                               |                   |                                  |
| <b>3~ 50/60 Hz, IP55, Insulation material class F, UL 1450 and CAN/CSA C22.2 No. 68-09 (certificate number E225239)</b> |                        |                  |       |                   |            |  |                                  |                   |                                  |
| 50  | 500 Y                  | 11,4 Y           | 5,5   | 1,36              | IE3        | 0,72                                     | 67                               | 120 *             | <b>2BV5111-0</b> □ <b>Q03-3B</b> |
| 60  | 575 Y                  | 9,9 Y            | 7,2   | 1,19              | NP         | 0,81                                     | 72                               | 124 **            |                                  |
| <b>3~ 50/60 Hz, IP55, Insulation material class F, UL 1450 and CAN/CSA C22.2 No. 68-09 (certificate number E225239)</b> |                        |                  |       |                   |            |  |                                  |                   |                                  |
| 50  | 380-420 Δ / 660-725 Y  | 14,8 Δ / 8,5 Y   | 5,5   | 1,36              | IE3        | 0,72                                     | 67                               | 120 *             | <b>2BV5111-0</b> □ <b>Q03-7B</b> |
| 60  | 440-480 Δ              | 14,3 Δ           | 7,2   | 1,19              | IE3        | 0,81                                     | 72                               | 124 **            |                                  |
|   | 460 Δ                  | 12,4 Δ           | 7,2   | 1,19              | NP         | 0,81                                     | 72                               |                   |                                  |

| Materials   |            |            |         |
|---|------------|------------|---------|
| Casing  | Port plate | Impeller   | Lantern |
| Cast iron (internal surface with ceramic coating) | Cast iron  | Bronze     | -       |
| CrNi steel  | CrNi steel | CrNi steel | -       |

- 1) The quantities of operating liquid apply for fresh water operation without discharge liquid separator. Tolerance ±10%
- 2) Measuring surface sound pressure level acc. to EN ISO 3744, measured with an equivalent unit at a distance of 1 m. The pump is throttled to an average suction pressure, with piping connected, but no relief valves fitted, tolerance ±3 dB (A).

| Voltage range                        |                                      | Efficiency | 60 Hz      |        |
|--------------------------------------|--------------------------------------|------------|------------|--------|
| 50 Hz                                | 60Hz                                 |            | 2BV5...-.. | □ .. □ |
| 3~                                   |                                      |            |            |        |
| 200 VΔ                               | 200 V YY / 230 VΔ / 400 VY           | <br>IE3    | •          | K 1    |
| 190-210 VΔ                           | 190-210 VYY / 220-240 VΔ / 380-420VY | <br>IE3    | •          | K 6    |
| 200 V YY / 230 VΔ / 400 VY           | 230 V YY / 460 VY                    | <br>IE3    | •          | K 6    |
| 190-210 VYY / 220-240 VΔ / 380-420VY | 220-240 VYY / 440-480VY              | <br>IE3    | •          | K 6    |
| 475-525 V Y                          | 550-600 V Y                          | <br>IE3    | •          | Q 3    |
| 475-525 VΔ                           | 550-600 VΔ                           | <br>IE3    | •          | Q 5    |
| 400 VΔ / 690 V Y                     | 460 VΔ                               | <br>IE3    | •          | Q 7    |

All L-BV fulfil the 2006/42/EC (machinery) and 2006/95/EC (low voltage) directives and the EN 60034-1 norm "Rotating electrical machines". The motors comply with EN 60 034-1 / -2 / -30 (IEC 60034) and thermal class F. Voltage tolerances for three phase motors are +/-10%. The frequency tolerance is +/- 2 % maximum. Service factor (SF) and motor efficiency according NEMA MG1-12.

### Operation liquid quantity for 50 Hz / 60 Hz [m<sup>3</sup>/h]

| p1        | Fresh water |             | Partial recirculation |             |
|-----------|-------------|-------------|-----------------------|-------------|
|           | 15 °C       |             | 8 °C                  | 12 °C       |
| mbar abs. | 15 °C       |             | 8 °C                  | 12 °C       |
| > 500     | 0,35 / 0,35 | 0,23 / 0,25 | 0,26 / 0,27           | 0,29 / 0,3  |
| 200 - 500 | 0,7 / 0,7   | 0,34 / 0,39 | 0,4 / 0,45            | 0,49 / 0,52 |
| < 200     | 1,32 / 1,32 | 0,45 / 0,53 | 0,55 / 0,64           | 0,72 / 0,81 |

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). Complete circuit systems L-SV available on request.

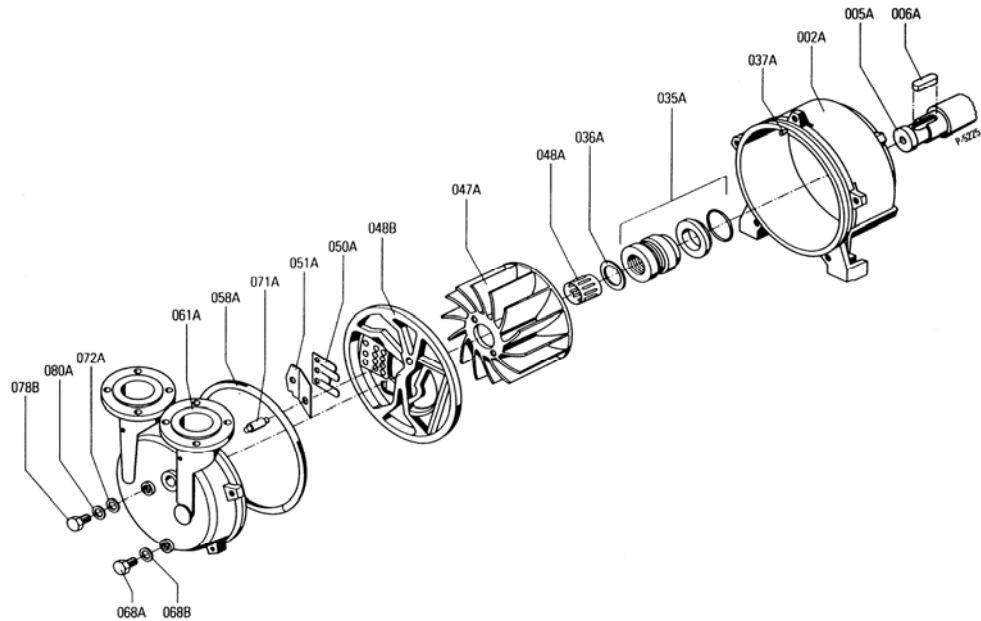
### Max. additional water carry over / Back pressure

| Frequency [Hz] | Water carry-over [m <sup>3</sup> /h] | Back pressure [mbar] atm. |
|----------------|--------------------------------------|---------------------------|
| 50             | 3,3                                  | 1300                      |
| 60             | 3,3                                  | 1300                      |

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.

The cast iron machines are completely painted in standard color RAL 9006.

All cast parts of the stainless steel version are pickled and passivated, the motor is standardly painted in RAL 9006.



| Part No. |                                  | Materials  |  |
|----------|----------------------------------|--|--|
|          |                                  | Grey cast iron - internal surface with   | Cast chrome-nickel-molybdenum steel  |
| 002      | Casing                           | Grey cast iron - internal surface with ceramic coating against corrosion and abrasion<br>EN-GJL HB 195 / EN-JL2030)<br>EN 1561 | Cast chrome-nickel-molybdenum steel<br>(G-X5CrNiMoNb 18-10 / 1.4581)<br>EN 10283                             |
| 005      | Pump shaft                       | Chrome steel<br>(X20Cr13 / 1.4021)<br>EN 10088 - 3   | Chrome-nickel-molybdenum steel<br>(X6CrNiMoTi 17-12-2 / 1.4571)<br>EN 10088 - 3                              |
| 006      | Feather key                      | Chrome-nickel-molybdenum steel<br>(X6CrNiMoTi 17-12-2 / 1.4571)<br>EN 10088 - 3  | Chrome-nickel-molybdenum steel<br>(X6CrNiMoTi 17-12-2 / 1.4571)<br>EN 10088 - 3                              |
| 035      | Mechanical seal                  | SIC / Carbon / Viton (FPM) / Chrome-nickel-molybdenum steel<br>(EN 12756 - BQ1VGG)   | SIC / Carbon / Viton (FPM) / Teflon (PTFE) sheathed / Chrome-nickel-molybdenum steel<br>(EN 12756 - Q1BM1GG) |
| 036      | Washer                           | Chrome steel<br>(X20Cr13 / 1.4021)<br>EN 10088 - 3   | Chrome-nickel-molybdenum steel<br>(X6CrNiMoTi 17-12-2 / 1.4571)<br>EN 10088 - 3                              |
| 037      | Set screw                        | Chrome-nickel-molybdenum steel<br>(X5CrNiMo 17-12-2 / 1.4401)<br>EN 10088 - 2  | Chrome-nickel-molybdenum steel<br>(X5CrNiMo 17-12-2 / 1.4401)<br>EN 10088 - 2                                |
| 047      | Impeller                         | Cast aluminium bronze<br>(G-CuAl10Fe5Ni5 / CC33G-GS)<br>EN 1982  | Cast chrome-nickel-molybdenum steel<br>(G-X5CrNiMoNb 18-10 / 1.4581)<br>EN 10283                             |
| 048      | Tolerance ring for impeller      | Chrome-nickel steel<br>(X12CrNi 17-7 / 1.4310)<br>EN 10088 - 2   | Chrome-nickel steel<br>(X12CrNi 17-7 / 1.4310)<br>EN 10088 - 2   |
| 049      | Port plate                       | Grey cast iron<br>(EN-GJL HB 195 / EN-JL2030)<br>EN 1561   | Cast chrome-nickel-molybdenum steel<br>(G-X5CrNiMoNb 18-10 / 1.4581)<br>EN 10283                             |
| 050      | Valve plate                      | Teflon (PTFE)  | Teflon (PTFE)  |
| 051      | Intercepting plate               | Chrome-nickel-molybdenum steel<br>(X10CrNiMoTi 18-10 / 1.4571)<br>EN 10088 - 2   | Chrome-nickel-molybdenum steel<br>(X10CrNiMoTi 18-10 / 1.4571)<br>EN 10088 - 2                               |
| 058      | Gasket for cover                 | Nitrile-butadiene-caotchouc (NBR 70)<br>ISO 1629   | Silicone core, Teflon (PTFE) sheathed  |
| 061      | Cover                            | Grey cast iron<br>(EN-GJL HB 195 / EN-JL2030)<br>EN 1561   | Cast chrome-nickel-molybdenum steel<br>(G-X5CrNiMoNb 18-10 / 1.4581)<br>EN 10283                             |
| 063      | Screw                            | Steel (DIN ISO 8992)   | Steel (DIN ISO 8992)   |
| 068      | Plug screw                       | Machining steel, lead alloyed<br>(11SMnPb30 / 1.0718)<br>EN 10087  | Chrome-nickel-molybdenum steel<br>(X5CrNiMo 17-12-2 / 1.4401)<br>EN 10088 - 3                                |
| 069      | Sealing ring                     | Teflon (PTFE)  | Teflon (PTFE)  |
| 071      | Pipe of cavitation               | Teflon (PTFE)  | Teflon (PTFE)  |
| 072      | Washer for cavitation protection | Chrome-nickel steel<br>(X5CrNi 18-10 / 1.4301)<br>EN 10088 - 3   | Chrome-nickel steel<br>(X5CrNi 18-10 / 1.4301)<br>EN 10088 - 3   |
| 079      | Plug screw                       | Machining steel, lead alloyed<br>(11SMnPb30 / 1.0718)<br>EN 10087  | Chrome-nickel-molybdenum steel<br>(X5CrNiMo 17-12-2 / 1.4401)<br>EN 10088 - 3                                |
| 080      | Sealing ring                     | Teflon (PTFE)  | Teflon (PTFE)  |

Changes in particular of the quoted performance curve, data and weights may occur without prior notice. The data given do not constitute an obligation from our side to deliver as shown.

Elmo Rietschle is a brand of Gardner Denver

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