

## Series ORG R1/ORV R1



Single-row ventilation grille with first row adjustable louvres and a built-in air flow regulator

### Application

- For supply and exhaust ventilation, heating and air conditioning systems in industrial, commercial and domestic premises.

### Features

- Reduced thickness compared to single-row grilles with optional air flow control.
- Possibility to adjust the air flow from the indoor side using a special foot.

### Design

- Made of high quality extruded aluminium profile.
- The polymer or anodized coating of the grille provides resistance to adverse weather conditions.
- Grilles with special dimensions can be manufactured upon request.
- Grilles with movable front louvres for adjustment of the supply jet geometry and an integrated air volume regulator (second row of louvres) for changing the air quantity.

### Modifications

- Can be equipped with an adapter (A) (see the end of the section).
- Can be equipped with special springs (p) for quick installation (see the end of the section).

### ORG R1. Standard series and cross-sectional area [m<sup>2</sup>]

| Height H [mm] | Length L [mm] |       |       |       |       |       |       |       |       |       |       |       |       |       |
|---------------|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|               | 100           | 150   | 200   | 250   | 300   | 350   | 400   | 450   | 500   | 600   | 700   | 800   | 900   | 1000  |
| 100           | 0.005         | 0.007 | 0.012 | 0.014 | 0.018 | 0.021 | 0.025 | 0.027 | 0.029 | 0.036 | 0.043 | 0.050 | 0.057 | 0.064 |
| 150           | 0.008         | 0.011 | 0.019 | 0.022 | 0.029 | 0.033 | 0.040 | 0.043 | 0.047 | 0.057 | 0.068 | 0.079 | 0.090 | 0.101 |
| 200           | 0.011         | 0.016 | 0.026 | 0.031 | 0.041 | 0.046 | 0.056 | 0.061 | 0.066 | 0.080 | 0.096 | 0.111 | 0.126 | 0.142 |
| 250           | 0.014         | 0.020 | 0.033 | 0.039 | 0.052 | 0.059 | 0.071 | 0.078 | 0.084 | 0.101 | 0.121 | 0.140 | 0.159 | 0.179 |
| 300           | 0.017         | 0.025 | 0.041 | 0.049 | 0.064 | 0.072 | 0.088 | 0.096 | 0.103 | 0.124 | 0.148 | 0.172 | 0.196 | 0.219 |
| 350           | 0.021         | 0.030 | 0.049 | 0.058 | 0.076 | 0.086 | 0.104 | 0.113 | 0.123 | 0.145 | 0.173 | 0.201 | 0.229 | 0.256 |
| 400           | 0.024         | 0.035 | 0.056 | 0.067 | 0.088 | 0.099 | 0.121 | 0.131 | 0.142 | 0.169 | 0.201 | 0.233 | 0.265 | 0.297 |
| 450           | 0.027         | 0.039 | 0.063 | 0.075 | 0.099 | 0.112 | 0.136 | 0.148 | 0.160 | 0.189 | 0.226 | 0.262 | 0.298 | 0.334 |
| 500           | 0.031         | 0.044 | 0.071 | 0.085 | 0.112 | 0.125 | 0.152 | 0.166 | 0.179 | 0.213 | 0.253 | 0.294 | 0.334 | 0.375 |
| 600           | 0.036         | 0.052 | 0.085 | 0.101 | 0.133 | 0.149 | 0.181 | 0.197 | 0.213 | 0.193 | 0.231 | 0.268 | 0.305 | 0.342 |
| 700           | 0.042         | 0.061 | 0.099 | 0.117 | 0.155 | 0.173 | 0.211 | 0.230 | 0.248 | 0.221 | 0.264 | 0.307 | 0.350 | 0.392 |
| 800           | 0.049         | 0.071 | 0.114 | 0.136 | 0.179 | 0.201 | 0.244 | 0.266 | 0.287 | 0.259 | 0.309 | 0.358 | 0.408 | 0.458 |
| 900           | 0.055         | 0.079 | 0.128 | 0.152 | 0.201 | 0.225 | 0.274 | 0.298 | 0.323 | 0.287 | 0.342 | 0.397 | 0.453 | 0.508 |
| 1000          | 0.062         | 0.089 | 0.143 | 0.171 | 0.225 | 0.253 | 0.307 | 0.334 | 0.362 | 0.324 | 0.386 | 0.449 | 0.511 | 0.574 |

### ■ ORV R1. Standard series and cross-sectional area [m<sup>2</sup>]

| Height H [mm] | Length L [mm] |       |       |       |       |       |       |       |       |       |       |       |       |       |
|---------------|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|               | 100           | 150   | 200   | 250   | 300   | 350   | 400   | 450   | 500   | 600   | 700   | 800   | 900   | 1000  |
| 100           | 0.005         | 0.008 | 0.011 | 0.014 | 0.017 | 0.020 | 0.023 | 0.026 | 0.030 | 0.036 | 0.042 | 0.049 | 0.055 | 0.062 |
| 150           | 0.007         | 0.011 | 0.016 | 0.020 | 0.025 | 0.029 | 0.034 | 0.038 | 0.043 | 0.052 | 0.061 | 0.071 | 0.079 | 0.089 |
| 200           | 0.001         | 0.019 | 0.026 | 0.033 | 0.041 | 0.048 | 0.055 | 0.062 | 0.070 | 0.085 | 0.099 | 0.114 | 0.128 | 0.143 |
| 250           | 0.014         | 0.022 | 0.031 | 0.039 | 0.049 | 0.057 | 0.066 | 0.074 | 0.083 | 0.101 | 0.117 | 0.136 | 0.152 | 0.171 |
| 300           | 0.018         | 0.029 | 0.041 | 0.052 | 0.064 | 0.075 | 0.087 | 0.098 | 0.110 | 0.133 | 0.155 | 0.179 | 0.201 | 0.225 |
| 350           | 0.021         | 0.033 | 0.046 | 0.059 | 0.072 | 0.084 | 0.098 | 0.110 | 0.124 | 0.149 | 0.173 | 0.201 | 0.225 | 0.253 |
| 400           | 0.025         | 0.040 | 0.056 | 0.071 | 0.088 | 0.103 | 0.119 | 0.134 | 0.150 | 0.181 | 0.211 | 0.244 | 0.274 | 0.307 |
| 450           | 0.027         | 0.043 | 0.061 | 0.078 | 0.096 | 0.112 | 0.130 | 0.146 | 0.164 | 0.197 | 0.230 | 0.266 | 0.298 | 0.334 |
| 500           | 0.029         | 0.047 | 0.066 | 0.084 | 0.103 | 0.121 | 0.140 | 0.158 | 0.177 | 0.213 | 0.248 | 0.287 | 0.323 | 0.362 |
| 600           | 0.036         | 0.057 | 0.080 | 0.101 | 0.124 | 0.145 | 0.169 | 0.189 | 0.213 | 0.193 | 0.221 | 0.259 | 0.287 | 0.324 |
| 700           | 0.043         | 0.068 | 0.096 | 0.121 | 0.148 | 0.173 | 0.201 | 0.226 | 0.253 | 0.231 | 0.264 | 0.309 | 0.342 | 0.386 |
| 800           | 0.050         | 0.079 | 0.111 | 0.140 | 0.172 | 0.201 | 0.233 | 0.262 | 0.294 | 0.268 | 0.307 | 0.358 | 0.397 | 0.449 |
| 900           | 0.057         | 0.090 | 0.126 | 0.159 | 0.196 | 0.229 | 0.265 | 0.298 | 0.334 | 0.305 | 0.350 | 0.408 | 0.453 | 0.511 |
| 1000          | 0.064         | 0.101 | 0.142 | 0.179 | 0.219 | 0.256 | 0.297 | 0.334 | 0.375 | 0.342 | 0.392 | 0.458 | 0.508 | 0.574 |

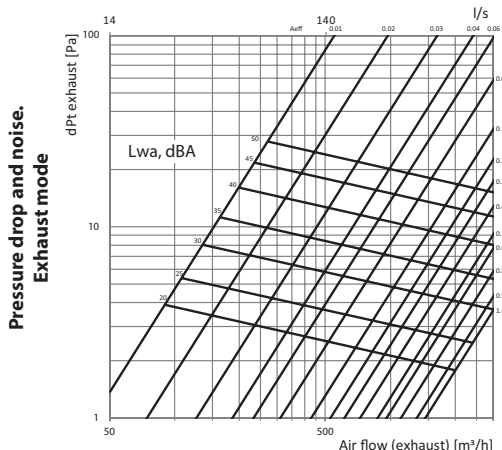
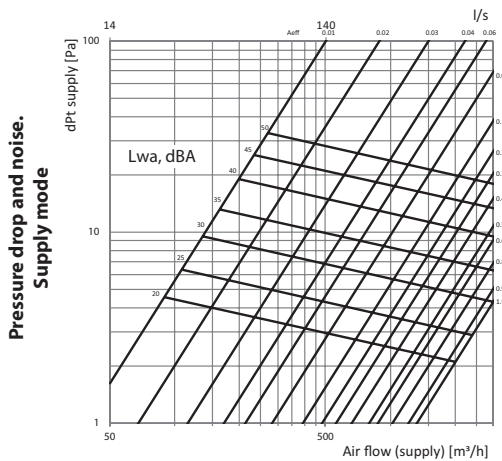
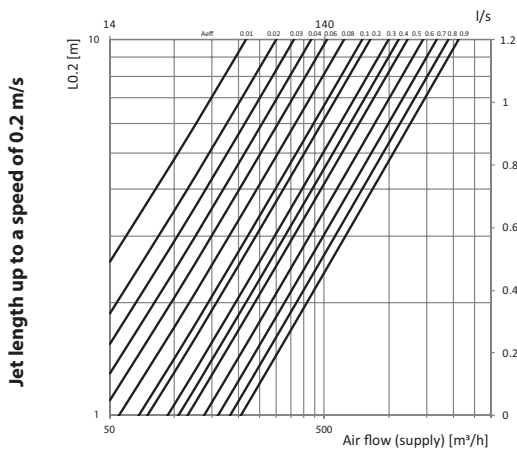
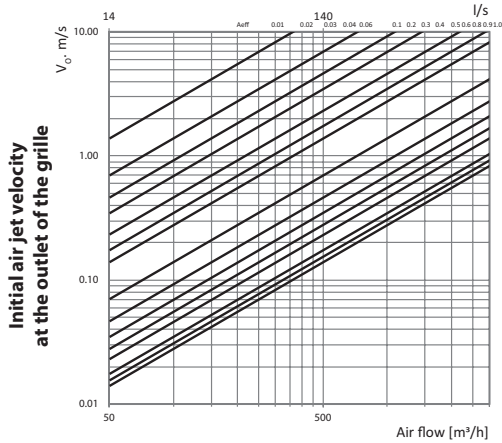
### ■ ORG R1. Weight [kg]

| Height H [mm] | Length L [mm] |      |      |      |      |      |      |      |      |      |      |      |       |       |
|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|
|               | 100           | 150  | 200  | 250  | 300  | 350  | 400  | 450  | 500  | 600  | 700  | 800  | 900   | 1000  |
| 100           | 0.19          | 0.23 | 0.32 | 0.37 | 0.46 | 0.50 | 0.60 | 0.64 | 0.69 | 0.85 | 0.99 | 1.13 | 1.27  | 1.41  |
| 150           | 0.25          | 0.31 | 0.44 | 0.51 | 0.64 | 0.70 | 0.83 | 0.90 | 0.96 | 1.2  | 1.39 | 1.59 | 1.78  | 1.98  |
| 200           | 0.31          | 0.39 | 0.55 | 0.63 | 0.79 | 0.87 | 1.03 | 1.11 | 1.19 | 1.49 | 1.73 | 1.97 | 2.21  | 2.45  |
| 250           | 0.38          | 0.47 | 0.67 | 0.77 | 0.98 | 1.07 | 1.26 | 1.36 | 1.46 | 1.84 | 2.13 | 2.43 | 2.73  | 3.02  |
| 300           | 0.44          | 0.55 | 0.77 | 0.89 | 1.12 | 1.23 | 1.46 | 1.57 | 1.69 | 2.13 | 2.47 | 2.82 | 3.16  | 3.5   |
| 350           | 0.50          | 0.63 | 0.90 | 1.03 | 1.30 | 1.43 | 1.70 | 1.83 | 1.96 | 2.47 | 2.87 | 3.27 | 3.67  | 4.07  |
| 400           | 0.56          | 0.70 | 1.00 | 1.15 | 1.45 | 1.60 | 1.89 | 2.04 | 2.19 | 2.77 | 3.21 | 3.65 | 4.09  | 4.53  |
| 450           | 0.63          | 0.79 | 1.12 | 1.29 | 1.63 | 1.79 | 2.13 | 2.29 | 2.46 | 3.11 | 3.61 | 4.11 | 4.60  | 5.1   |
| 500           | 0.68          | 0.88 | 1.23 | 1.41 | 1.78 | 1.96 | 2.32 | 2.51 | 2.69 | 3.4  | 3.94 | 4.49 | 5.03  | 5.58  |
| 600           | 0.84          | 1.06 | 1.52 | 1.75 | 2.20 | 2.43 | 2.89 | 3.12 | 3.35 | 4.16 | 4.94 | 5.63 | 6.31  | 7     |
| 700           | 0.97          | 1.23 | 1.77 | 2.03 | 2.56 | 2.83 | 3.36 | 3.63 | 3.89 | 4.94 | 5.74 | 6.54 | 7.34  | 8.14  |
| 800           | 1.09          | 1.38 | 1.97 | 2.27 | 2.86 | 3.16 | 3.76 | 4.05 | 4.35 | 5.53 | 6.42 | 7.31 | 8.20  | 9.1   |
| 900           | 1.22          | 1.55 | 2.22 | 2.55 | 3.22 | 3.55 | 4.22 | 4.56 | 4.89 | 6.22 | 7.22 | 8.23 | 9.23  | 10.24 |
| 1000          | 1.34          | 1.69 | 2.43 | 2.79 | 3.52 | 3.89 | 4.62 | 4.98 | 5.35 | 6.8  | 7.90 | 9.00 | 10.09 | 11.19 |

### ■ OPB P1. Weight [kg]

| Height H [mm] | Length L [mm] |      |      |      |      |      |      |      |      |      |      |      |       |       |
|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|
|               | 100           | 150  | 200  | 250  | 300  | 350  | 400  | 450  | 500  | 600  | 700  | 800  | 900   | 1000  |
| 100           | 0.19          | 0.25 | 0.31 | 0.38 | 0.44 | 0.50 | 0.56 | 0.63 | 0.68 | 0.84 | 0.97 | 1.09 | 1.22  | 1.34  |
| 150           | 0.23          | 0.31 | 0.39 | 0.47 | 0.55 | 0.63 | 0.70 | 0.79 | 0.86 | 1.06 | 1.23 | 1.38 | 1.55  | 1.69  |
| 200           | 0.32          | 0.44 | 0.55 | 0.67 | 0.77 | 0.90 | 1.00 | 1.12 | 1.23 | 1.52 | 1.77 | 1.97 | 2.22  | 2.43  |
| 250           | 0.37          | 0.51 | 0.63 | 0.77 | 0.89 | 1.03 | 1.15 | 1.29 | 1.41 | 1.72 | 2.03 | 2.27 | 2.55  | 2.79  |
| 300           | 0.46          | 0.64 | 0.79 | 0.97 | 1.12 | 1.30 | 1.45 | 1.63 | 1.78 | 2.2  | 2.56 | 2.86 | 3.22  | 3.52  |
| 350           | 0.50          | 0.70 | 0.87 | 1.07 | 1.23 | 1.43 | 1.60 | 1.79 | 1.96 | 2.43 | 2.83 | 3.16 | 3.55  | 3.89  |
| 400           | 0.60          | 0.83 | 1.03 | 1.26 | 1.46 | 1.70 | 1.89 | 2.13 | 2.32 | 2.89 | 3.36 | 3.76 | 4.22  | 4.62  |
| 450           | 0.64          | 0.90 | 1.10 | 1.36 | 1.57 | 1.83 | 2.04 | 2.29 | 2.51 | 3.12 | 3.63 | 4.05 | 4.56  | 4.98  |
| 500           | 0.69          | 0.96 | 1.19 | 1.46 | 1.69 | 1.96 | 2.19 | 2.46 | 2.69 | 3.35 | 3.89 | 4.35 | 4.89  | 5.35  |
| 600           | 0.85          | 1.20 | 1.49 | 1.84 | 2.13 | 2.47 | 2.77 | 3.11 | 3.40 | 4.21 | 4.94 | 5.53 | 6.22  | 6.8   |
| 700           | 0.99          | 1.39 | 1.73 | 2.13 | 2.47 | 2.87 | 3.21 | 3.61 | 3.94 | 4.94 | 5.74 | 6.42 | 7.22  | 7.91  |
| 800           | 1.13          | 1.59 | 1.97 | 2.43 | 2.82 | 3.27 | 3.65 | 4.11 | 4.49 | 5.63 | 6.54 | 7.31 | 8.23  | 9     |
| 900           | 1.27          | 1.78 | 2.21 | 2.73 | 3.16 | 3.67 | 4.09 | 4.60 | 5.03 | 6.31 | 7.34 | 8.20 | 9.23  | 10.09 |
| 1000          | 1.41          | 1.98 | 2.45 | 3.02 | 3.50 | 4.07 | 4.53 | 5.10 | 5.58 | 7    | 8.14 | 9.10 | 10.24 | 11.19 |

## Technical data



The following factors are used to calculate the noise performance

### Sound power correction factor depending on octaves

| Aeff |                  | Octave frequency band [Hz] |     |     |     |      |      |      |      |
|------|------------------|----------------------------|-----|-----|-----|------|------|------|------|
|      |                  | 63                         | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| 0,01 | Kok supply [dB]  | 6                          | 3   | 0   | -1  | -5   | -12  | -11  | -7   |
|      | Kok exhaust [dB] | 4                          | 2   | 0   | -2  | -3   | -11  | -12  | -6   |
| 0,1  | Kok supply [dB]  | 6                          | 4   | 0   | -2  | -6   | -12  | -11  | -8   |
|      | Kok exhaust [dB] | 4                          | 3   | -1  | -2  | -3   | -11  | -13  | -8   |
| 0,5  | Kok supply [dB]  | 7                          | 4   | -1  | -3  | -7   | -12  | -13  | -9   |
|      | Kok exhaust [dB] | 4                          | 4   | 0   | -3  | -4   | -15  | -14  | -7   |
| 1    | Kok supply [dB]  | 7                          | 5   | 0   | -3  | -8   | -14  | -13  | -9   |
|      | Kok exhaust [dB] | 5                          | 4   | 1   | -2  | -9   | -16  | -15  | -8   |

Sound power level in octaves is calculated as:

$$L_{waok} = L_{wa} + K_{ok}$$

### Correction factors for calculating the pressure drop and sound power level depending on the position of the grille louvers

Depending on the position of the plates of the second row, the values of the pressure drop and sound power change and must be corrected using correction factors.

| Second row closure |    | 0% | 25% | 50%  | 75%  |
|--------------------|----|----|-----|------|------|
| Supply             | Kp | 1  | 2.6 | 11.3 | 24.3 |
|                    | Kf | +0 | +15 | +20  | +27  |
| Exhaust            | Kp | 1  | 2.4 | 11   | 23.5 |
|                    | Kf | +0 | +14 | +20  | +25  |

Pressure drop correction

$$dPt' = dPt \times Kp$$

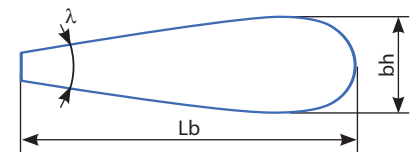
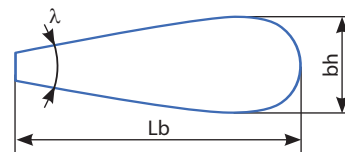
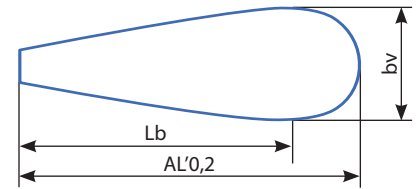
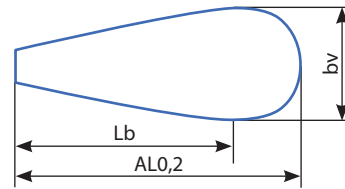
Sound power level correction

$$Lwa' = Lwa \times Kf$$

### Geometric parameters of the air jet

The nature and geometry of the jet varies depending on the height of the grille and the angle of its louvers.

| Discharge angle (front row of plates) | Without Coanda effect |       |       | With Coanda effect |      |       |
|---------------------------------------|-----------------------|-------|-------|--------------------|------|-------|
|                                       | h>300                 |       |       | h<300              |      |       |
|                                       | 0°                    | 44°   | 90°   | 0°                 | 44°  | 90°   |
| KL0,2                                 | 1                     | 0.84  | 0.57  | 1.37               | 0.97 | 0.71  |
| Lb                                    | 0.61                  | 0.6   | 0.39  | 0.75               | 0.75 | 0.51  |
| bv                                    | 0.14                  | 0.087 | 0.077 | 0.13               | 0.08 | 0.068 |
| bh                                    | 0.45                  | 0.49  | 0.58  | 0.47               | 0.51 | 0.63  |



$$L'0,2 = L0,2 \times KL0,2$$

$$Lb = L0,2 \times KLb$$

$$bv = L0,2 \times Kbv$$

$$bh = L0,2 \times Kbh$$

### Velocities at different jet distances

In addition to the given length L0,2, where the velocity is 0.2 m/s, the jet lengths with corresponding velocities at the end can also be calculated.

|    |     |      |      |      |      |
|----|-----|------|------|------|------|
| X  | 0.2 | 0.25 | 0.3  | 0.4  | 0.5  |
| Kx | 1   | 0.81 | 0.68 | 0.52 | 0.42 |

$$Lx = L0,2 \times Kx$$

The data applies to horizontally adjusted first and second row louvers (x0) and a grille positioned 800 mm from the ceiling (without Coanda effect).

### ■ Designation key

#### l0.2 - air jet length.

Defined as the maximum distance from the outlet of the jet from the diffuser to the point at which the air flow velocity is 0.2 m/s.

**Lb** – distance to maximum jet expansion [m].

**bv** – maximum vertical jet expansion [m].

**bh** – maximum horizontal jet expansion.

**VO** – initial air jet velocity at the outlet of the diffuser [m/s].

**Vx** – velocity on the jet axis at a distance x from the diffuser [m/s].

**x** – distance from the diffuser [m].

**dPt** – total pressure drop [Pa].

**LWA** – weighted average sound power level by filter A [dBA].

**LWAok** – octave sound power level [dB].

**Kok** – octave sound power correction factor [dB].

**dt** – temperature difference between supply and room air [°C].

**kl0.2** – coefficient of jet length variation.

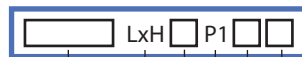
**Kbv** – vertical jet expansion coefficient.

**Kbh** – horizontal jet expansion coefficient.

**Kp** – correction factor for recalculating the total pressure drop.

**Kf** – correction factor for recalculating sound power level.

### ■ Ordering scheme



#### Grille type:

ORG – single-row grille with individually adjustable horizontal louvres

ORV – single-row grille with individually adjustable vertical louvres

#### Opening dimensions:

L – length [mm]

H – height [mm]

#### Grille coating:

\_\_\_\_\_ colour\* (white by default)

An – anodized

#### Accessories:

A – adapter

R1 – built-in air flow regulator

#### Grille fastening:

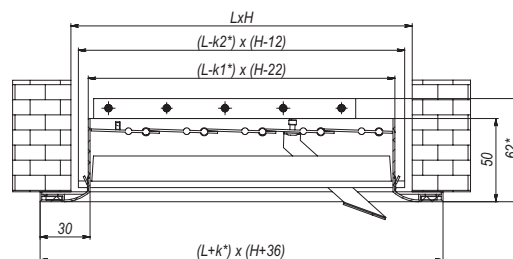
p – springs

#### \* Standard polymer coating colours:

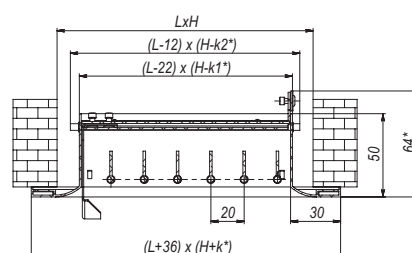


### ■ Overall and mounting dimensions

| Dimensions [mm] |    |      |      |
|-----------------|----|------|------|
| L               | k  | k1   | k2   |
| 100             | 37 | 20.8 | 8.8  |
| 150             | 22 | 35.8 | 23.8 |
| 200             | 42 | 15.8 | 3.8  |
| 250             | 27 | 30.8 | 18.8 |
| 300             | 47 | 10.8 | -1.2 |
| 350             | 32 | 25.8 | 13.8 |
| 400             | 52 | 5.8  | -6.2 |
| 450             | 37 | 20.8 | 8.8  |
| 500             | 22 | 35.8 | 23.8 |



**ORG R1**



**ORV R1**