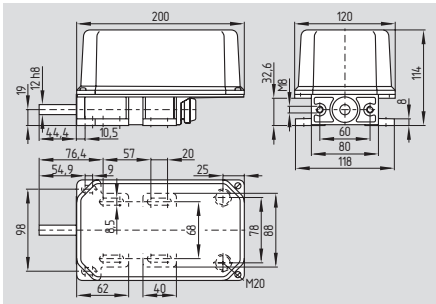


Gear-switches

G 50/150



- Snap or slow action
- Metal enclosure with impact-resistant plastic hood
- Version G 50-2047, safety gear-switch for stage and studios to VBG 70
- Various cam shapes for varying switch travel
- Available for easy adjustment of switching points by setting disk cams from front
- Connecting flange available
- 2 cable entries M20 x 1.5
- Protection class IP 65

Only type G 50 is approved to VBG 70 as safety gear-switch for stages and studios, ordering suffix -2047

Approvals



Ordering details

G ①-②-③④⑤/③④⑤/...y-⑥

| No. | Replace | Description |
|-----|---------|---|
| ① | 50 | Transmission ratio $\leq 1:50$ |
| | 150 | Transmission ratio $\geq 1:50$ |
| ② | 100 | Gear ratio |
| | | For example: 1:100 Refer to selection table page 1-150 |
| ③ | M | Snap action M |
| | Z | Snap action Z \ominus |
| | T | Slow action T \ominus |
| ④ | 1 to 4 | Number of NO (max. 4) |
| | 1 to 4 | Number of NC (max. 4) |

Technical data

| | |
|--------------------------------|--|
| Standards: | DIN VDE 0660-200 VBG 70 |
| Enclosure: | light alloy die-casting |
| Cover: | polyester |
| Protection class: | IP 65 to EN 60529 |
| Contact material: | silver |
| Rough switching point setting: | standard: 4° steps to 360° on the disk cams front setting: 3.4° steps |
| Fine switching point setting: | max. 0.5 turns |
| Gear ratio: | |
| G 50: | 1:50, 1:35, 1:25, 1:17 |
| G 150: | 1:150, 1:75, 1:100, 1:220, 1:300, 1:450 |
| Contact blocks: | max. 8: on T/M 697 max. 4 with cams $\varnothing 36$ mm G 50-050 and G 150-150: Z/T 6881 (otherwise additional 1:1 ratio required) |
| Contact type: | M 697: 1 change-over contact, T 697: 1 NC, double break, Z/T 6881: change-over contact with galvanically separated contact bridges \ominus |
| Switching system: | slow and snap action |
| Termination: | T/M 697: screw terminals M 3 Z/T 6881: screw terminals M 3.5 |
| Cable section: | max. 2.5 mm ² (incl. conductor ferrules) |
| U_{imp} : | 4 kV |
| U_j : | 250 V |
| I_{the} : | T/M 697: 6 A Z/T 6881: 10 A |
| I_e/U_e : | T/M 697: 4 A / 230 VAC Z/T 6881: 2.5 A / 230 VAC |
| Utilisation category: | AC-15 |
| Max. fuse rating: | 6 A gL/gG D-fuse |
| Switchover time: | M 697: ≤ 10 ms Z 6881: ≤ 5 ms |
| Bounce duration: | - |
| Ambient temperature: | - 30 °C ... + 80 °C |
| Mechanical life: | T/M 697: 30 million operations Z/T 6881: > 1 million operations |
| Switching frequency: | T/M 697: 10.000/h Z/T 6881: 3.000/h |

Note

Range of application

Gear switches are fit for multiple applications: motorisation of theatre scenes, controlling and positioning of lifts, and platforms, gate control, etc. Depending on the contact type, they are used for switching-off or positioning movement cycles. They are geared by means of an axle.

Operating principle

In the base models with transmission ratios of $i = 1:50$ (G 50) or $1:150$ (G 150), the gear revolutions are directly transmitted to the disc cam by the worm and the worm wheel, i.e. for every 50 or 150 axle revolutions, the disc cams are rotated once over 360°.

For the switching point set-up of the contacts, the central screw must be loosened. Each disc cam can be set from 4° to 4°; they all have gearing as well as a positive drive with the worm wheel. After the set-up has been carried out, the central screw must be firmly retightened.

For disc cams with front setting, "index 1600", the dowel of the disc cam must be pushed in using the screwdriver, which is located inside switch.

Note

Setting disk cams from front:

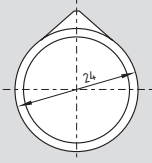
- Possible on all $\varnothing 24$ mm cams
- Min. adjustment 3.4°
- Max. adjustment 360°
- Other cam combinations on request

Do not adjust against the switch plunger!

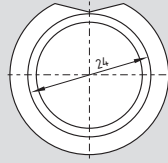
- Max. 4 contact blocks possible with contact block Z 6881, ordering suffix Z and T 6881, ordering suffix T11
- Max. 8 contact blocks possible with contact block M 697, ordering suffix M and T 697, ordering suffix T01

Gear-switches

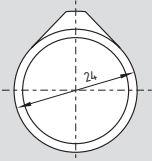
System components



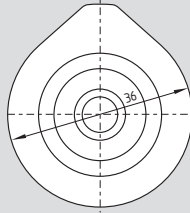
Pointed cam 24 mm Ø



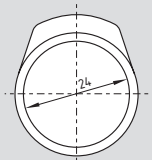
360° full cam 24 mm Ø



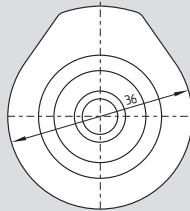
30° cam 24 mm Ø



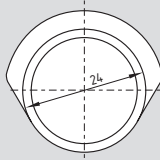
Pointed cam 36 mm Ø



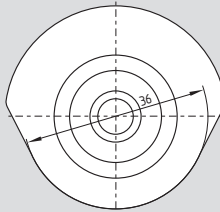
90° cam 24 mm Ø



60° cam 36 mm Ø

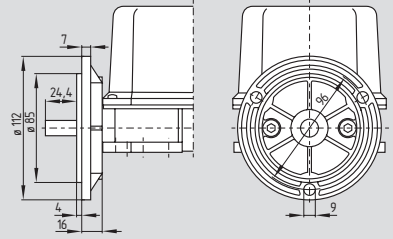


180° cam 24 mm Ø

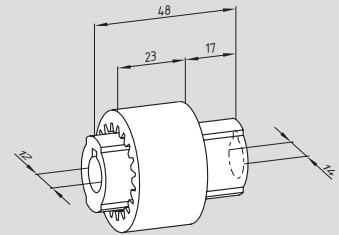


180° cam 36 mm Ø

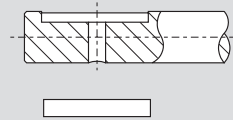
System components



Flange FL1



Bowex coupling



Shaft with slot and key -1368-3

Ordering details

Pointed cam Ø 24 mm **ordering suffix 1600-**
 30° cam Ø 24 mm **ordering suffix 2281-**
 90° cam Ø 24 mm **ordering suffix 1601-**
 180° cam Ø 24 mm **ordering suffix 2269-**
 360° full cam Ø 24 mm **ordering suffix 1905-**

Cam forms ø 24mm:

- Standard cam forms:
Pointed, 30°, 90°, 180° and 360° cam
- max. 8 contact blocks possible
- Suitable for setting from front

For further details see table on page 1-150.

Ordering details

Pointed cam Ø 36 mm **ordering suffix 1582-***
 60° cam Ø 36 mm **ordering suffix 1582-***
 180° cam Ø 36 mm **ordering suffix 1739-***

* Different combinations possible on request.

Cam forms:

- Standard cam forms:
Pointed, 60° and 180° cam
- Max. 4 contact blocks possible

Ordering details

Flange FL1 **ordering suffix -FL1**
 Bowex coupling with
 shaft diameters
 12 and 14 mm **ordering suffix -1368-2**
 12 and 12 mm **ordering suffix -1368-4**
 Shaft with slot
 and key **ordering suffix -1368-3**
 Teardrop cam with
 front setting **ordering suffix -1600-1***
 (Example with 4 pointed cams)

Gear-switches

Cams Ø 24

| Pointed cam Type/ Trans- mission ratio | Usable revolutions | | | | Run-on revolutions | | | | Hysteresis revolutions | | Cam travel per shaft rotation | Shaft rotation with 1° cam travel | Shaft revolution | | |
|--|----------------------|-------|-------|-------|--------------------|-------|-------|-------|---------------------------|-----|-------------------------------------|--|---------------------|------|------|
| | Switching element | M | Z | T11 | T01 | M | Z | T11 | T01 | M | | | Z | min. | max. |
| | | | | | | | | | | | | | | | |
| G 50 1:17 | 16.1 | 15.4 | 15.9 | 16.1 | 0.9 | 1.6 | 1.1 | 0.9 | 0.14 | 0.2 | 21.20° | 17° | 0.6 | 600 | |
| G 50 1:25 | 23.6 | 22.8 | 23.4 | 23.6 | 1.4 | 2.2 | 1.6 | 1.4 | 0.2 | 0.3 | 14.40° | 25° | 0.9 | 600 | |
| G 50 1:35 | 33.1 | 31.7 | 32.8 | 33.1 | 1.9 | 3.3 | 2.2 | 1.9 | 0.3 | 0.5 | 10.30° | 35° | 1.2 | 600 | |
| G 50 1:50 | 47.3 | 45.3 | 46.8 | 47.3 | 2.7 | 4.7 | 3.2 | 2.7 | 0.4 | 0.7 | 7.20° | 50° | 1.7 | 600 | |
| G 150 1:75 | 71.0 | 68.0 | 70.2 | 71.0 | 4.0 | 7.0 | 4.8 | 4.0 | 0.6 | 1.0 | 4.80° | 75° | 2.5 | 600 | |
| G 150 1:100 | 94.5 | 90.6 | 93.6 | 94.5 | 5.5 | 9.4 | 6.4 | 5.5 | 0.8 | 1.3 | 3.60° | 100° | 3.4 | 600 | |
| G 150 1:150 | 141.7 | 136.0 | 140.4 | 141.7 | 8.3 | 14.0 | 9.6 | 8.3 | 1.2 | 2.0 | 2.40° | 150° | 5.0 | 600 | |
| G 150 1:220 | 208.0 | 199.4 | 206.0 | 208.0 | 12.0 | 20.6 | 14.0 | 12.0 | 1.8 | 3.0 | 1.64° | 220° | 7.3 | 600 | |
| G 150 1:300 | 283.5 | 272.0 | 280.8 | 283.5 | 16.5 | 28.0 | 19.2 | 16.5 | 2.4 | 4.0 | 1.20° | 300° | 10.0 | 600 | |
| G 150 1:450 | 425.2 | 407.9 | 421.2 | 425.2 | 24.8 | 42.1 | 28.8 | 24.8 | 3.6 | 6.0 | 0.80° | 450° | 15.0 | 600 | |
| 90° cam | | | | | | | | | | | | | | | |
| G 50 1:17 | 13.2 | 12.5 | 13.0 | 13.2 | 3.8 | 4.6 | 4.0 | 3.9 | 0.14 | 0.2 | 21.20° | 17° | 0.6 | 600 | |
| G 50 1:25 | 19.4 | 18.4 | 19.2 | 19.4 | 5.6 | 6.7 | 5.9 | 5.8 | 0.2 | 0.3 | 14.40° | 25° | 0.9 | 600 | |
| G 50 1:35 | 27.2 | 25.8 | 26.9 | 27.2 | 7.9 | 9.4 | 8.2 | 8.0 | 0.3 | 0.5 | 10.30° | 35° | 1.2 | 600 | |
| G 50 1:50 | 38.9 | 36.9 | 38.4 | 38.9 | 11.3 | 13.4 | 11.7 | 11.6 | 0.4 | 0.7 | 7.20° | 50° | 1.7 | 600 | |
| G 150 1:75 | 58.3 | 55.3 | 57.6 | 58.3 | 16.9 | 20.0 | 17.6 | 17.4 | 0.6 | 1.0 | 4.80° | 75° | 2.5 | 600 | |
| G 150 1:100 | 77.7 | 73.8 | 76.8 | 77.7 | 22.6 | 26.8 | 23.5 | 23.2 | 0.8 | 1.3 | 3.60° | 100° | 3.4 | 600 | |
| G 150 1:150 | 116.6 | 110.7 | 115.2 | 116.6 | 34.0 | 40.0 | 35.0 | 34.0 | 1.2 | 2.0 | 2.40° | 150° | 5.0 | 600 | |
| G 150 1:220 | 171.0 | 162.3 | 169.0 | 171.0 | 50.0 | 59.0 | 52.0 | 51.0 | 1.8 | 3.0 | 1.64° | 220° | 7.3 | 600 | |
| G 150 1:300 | 233.0 | 221.3 | 230.4 | 233.0 | 68.0 | 80.0 | 71.0 | 70.0 | 2.4 | 4.0 | 1.20° | 300° | 10.0 | 600 | |
| G 150 1:450 | 349.7 | 332.0 | 345.6 | 349.7 | 102.0 | 121.0 | 106.0 | 105.0 | 3.6 | 6.0 | 0.80° | 450° | 15.0 | 600 | |
| 180° cam | | | | | | | | | | | | | | | |
| G 50 1:17 | 8.5 | 7.9 | 8.4 | 8.5 | 8.5 | 9.1 | 8.6 | 8.5 | 0.14 | 0.2 | 21.20° | 17° | 0.6 | 600 | |
| G 50 1:25 | 12.6 | 11.6 | 12.3 | 12.6 | 12.4 | 13.4 | 12.7 | 12.4 | 0.2 | 0.3 | 14.40° | 25° | 0.9 | 600 | |
| G 50 1:35 | 17.6 | 16.2 | 17.3 | 17.6 | 17.4 | 18.8 | 17.7 | 17.4 | 0.3 | 0.5 | 10.30° | 35° | 1.2 | 600 | |
| G 50 1:50 | 25.1 | 23.2 | 24.7 | 25.1 | 24.9 | 26.8 | 25.3 | 24.9 | 0.4 | 0.7 | 7.20° | 50° | 1.7 | 600 | |
| G 150 1:75 | 37.7 | 34.7 | 37.0 | 37.7 | 37.3 | 40.3 | 38.0 | 37.3 | 0.6 | 1.0 | 4.80° | 75° | 2.5 | 600 | |
| G 150 1:100 | 50.2 | 46.3 | 49.3 | 50.2 | 49.8 | 53.7 | 50.7 | 49.8 | 0.8 | 1.3 | 3.60° | 100° | 3.4 | 600 | |
| G 150 1:150 | 75.4 | 69.5 | 74.0 | 75.4 | 74.6 | 80.5 | 76.0 | 74.6 | 1.2 | 2.0 | 2.40° | 150° | 5.0 | 600 | |
| G 150 1:220 | 110.5 | 101.9 | 108.5 | 110.5 | 109.5 | 118.1 | 111.5 | 109.5 | 1.8 | 3.0 | 1.64° | 220° | 7.3 | 600 | |
| G 150 1:300 | 150.7 | 139.0 | 148.0 | 150.7 | 149.3 | 161.0 | 152.0 | 149.3 | 2.4 | 4.0 | 1.20° | 300° | 10.0 | 600 | |
| G 150 1:450 | 226.1 | 208.4 | 221.9 | 226.1 | 223.9 | 241.6 | 228.1 | 223.9 | 3.6 | 6.0 | 0.80° | 450° | 15.0 | 600 | |
| 360° cam | | | | | | | | | | | | | | | |
| G 50 1:17 | 1.6 | 1.0 | 1.5 | 1.6 | 15.4 | 16.0 | 15.5 | 15.4 | 0.14 | 0.2 | 21.20° | 17° | 0.6 | 600 | |
| G 50 1:25 | 2.4 | 1.5 | 2.2 | 2.4 | 22.6 | 23.5 | 22.8 | 22.6 | 0.2 | 0.3 | 14.40° | 25° | 0.9 | 600 | |
| G 50 1:35 | 3.4 | 2.1 | 3.1 | 3.4 | 31.6 | 32.9 | 31.9 | 31.6 | 0.3 | 0.5 | 10.30° | 35° | 1.2 | 600 | |
| G 50 1:50 | 4.8 | 3.0 | 4.4 | 4.8 | 45.2 | 47.0 | 45.6 | 45.2 | 0.4 | 0.7 | 7.20° | 50° | 1.7 | 600 | |
| G 150 1:75 | 7.3 | 4.5 | 6.6 | 7.3 | 67.7 | 70.5 | 68.4 | 67.7 | 0.6 | 1.0 | 4.80° | 75° | 2.5 | 600 | |
| G 150 1:100 | 9.7 | 6.0 | 8.8 | 9.7 | 90.3 | 94.0 | 91.2 | 90.3 | 0.8 | 1.3 | 3.60° | 100° | 3.4 | 600 | |
| G 150 1:150 | 14.5 | 9.0 | 13.2 | 14.5 | 135.5 | 141.0 | 136.8 | 135.5 | 1.2 | 2.0 | 2.40° | 150° | 5.0 | 600 | |
| G 150 1:220 | 21.3 | 13.1 | 19.4 | 21.3 | 198.7 | 206.9 | 200.6 | 198.7 | 1.8 | 3.0 | 1.64° | 220° | 7.3 | 600 | |
| G 150 1:300 | 29.0 | 17.9 | 26.5 | 29.0 | 271.0 | 282.1 | 273.5 | 271.0 | 2.4 | 4.0 | 1.20° | 300° | 10.0 | 600 | |
| G 150 1:450 | 43.5 | 26.9 | 39.7 | 43.5 | 406.5 | 423.1 | 410.3 | 406.5 | 3.6 | 6.0 | 0.80° | 450° | 15.0 | 600 | |