

# SERIES Z/T335

## Heavy-Duty Safety-Rated, Positive-Break Limit Switches



### Features & Benefits

- **“Positive-Break” NC contacts** ... won’t stick or weld shut.
- **Watertight design** ... meets IP67 washdown requirements.
- **Rugged, corrosion-resistant housing** ... tolerates hostile environments.
- **Six popular actuator styles** ... for application versatility.
- **Four 90° actuator mounting positions** ... provide installation flexibility.
- **Slow or snap-action operation** ... choose to best satisfy application requirements.
- **Safety-system approved (Z335 Series)** ... for use in machine guarding applications.
- **Meets rigid safety agency standards** ... IEC, BG, VDE, UL and CSA.
- **Optional LED indicators** ... provide visual display of supply voltage and switch operation.

### Description

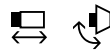
The Z/T335 Series limit switches are designed for use with movable machine guards/access gates which must be closed for operator safety ... and for any other presence/position sensing application normally addressed with conventional limit switches. Their positive-opening NC contacts provide a higher level of safety and/or reliability than conventional spring-driven switches whose contacts can weld or stick shut.

Each is available with a choice of six standard actuators ... rounded plunger, roller plunger, roller rocking lever, rod rocking lever, adjustable roller rocking lever and one-way roller lever ... mountable in any one of four 90° positions. All rocking levers are positively-locked to the shaft, and are adjustable throughout 360° in 10° increments.

Units are available with a choice of slow-action or snap-action contacts.

Their rugged metal housing and IP67 rating make them ideal alternatives to conventional limit switches.

### Typical Applications

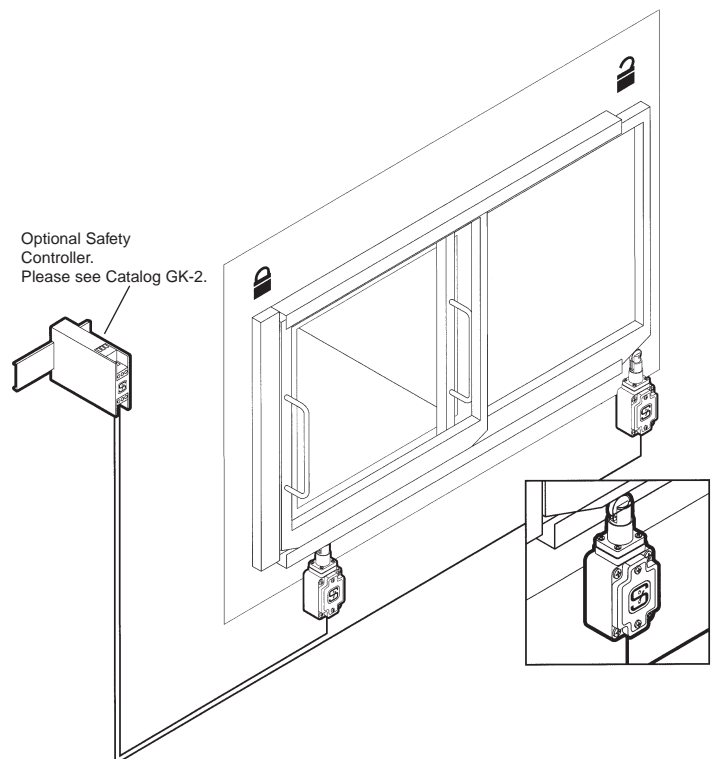


The Z/T335 Series may be used in any presence/position sensing application normally addressed with conventional limit switches. Snap-action models with positive-break NC contacts (Z335 Series) are approved for use in safety systems. For safety applications the switch must be mounted such that the actuating element of the machine displaces the switch actuator far enough to exceed the positive-break point. (See contact function diagrams: symbol \*).

### ORDERING GUIDE

FOR FEATURE:	SPECIFY:
1. Contact operation: Slow Action Snap Action	T Z
2. Operating head	4V
3. Roller lever	H
4. Body size	335-
5. No. of NO contacts	1
6. No. of NC contacts	1
7. Degree of protection IP 67	z
8. Sealing of operating head (optional)	z
Example 1:	T4VH 335-11z
Example 2:	Z4VH 335-11z

**Note:** The Z/T335 Series is also available with 1 NO and 2 NC and with 3 NC contacts. Please consult factory.



# Z/T335 TECHNICAL DATA

## MECHANICAL SPECIFICATIONS

<b>Housing</b>	Diecast aluminum with enamel finish
<b>Operating Temperature</b>	-22°F to +195°F (-30°C to +90°C)
<b>Mechanical Life</b>	30 million operations
<b>Maximum Operating Rate</b>	5000 operations/hour
<b>Bounce Time</b>	Z335 Series: < 2 ms T335 Series: Function of cam speed
<b>Changeover Time</b>	Z335 Series: < 2 ms for cam speed of 1 mm/minute T335 Series: Function of cam speed
<b>Degree of Protection</b>	IP67
<b>Conformity to Standards</b>	IEC 947-5-1 EN 60947-5-1 DIN VDE 0660 Part 200 BG-GS-ET-15 DIN EN 50041 CSA-C22.2 No. 14 (Suffix -1577) UL508 (Suffix -1594)

## ELECTRICAL SPECIFICATIONS

<b>Contacts</b>	Fine silver
<b>Contact Configuration</b>	Double-pole, double-break with electrically-separated contact bridges
<b>Contact Gap</b>	Z335 Series: 2x0.03 inches T335 Series: 2x0.16 inches
<b>Contact Rating</b>	4A/230VAC 2.5A/400VAC
<b>Switching Action</b>	Z335 Series: Snap-action with positive-break NC contacts T335 Series: Slow-action, positive-break NC contacts
<b>Short Circuit Protection</b>	Fuse: 10A (time delay) 16A (no time delay) 6A (time delay) as positive-break position switch
<b>Rated Insulation Voltage</b>	500VAC
<b>Rated Impulse Withstand Voltage</b>	6kV
<b>Type Terminals</b>	Screw terminals, maximum 2.5mm <sup>2</sup> (AWG13) wire

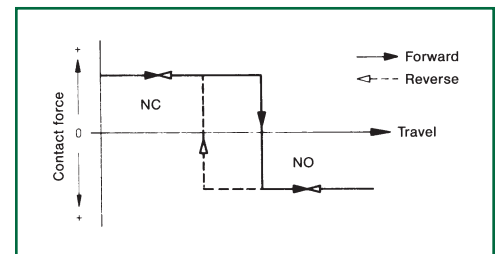


Slow Action Switch  
T335 Ⓢ Ⓟ

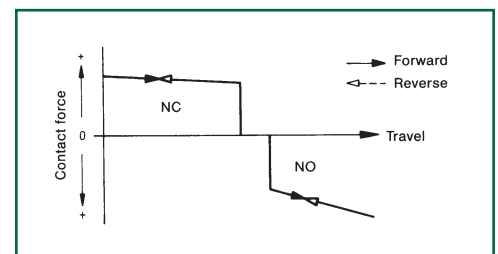


Snap Action Switch  
Z335 Ⓢ Ⓟ

## SNAP ACTION CONTACT SYSTEMS

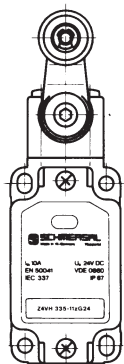


## SLOW ACTION CONTACT SYSTEMS



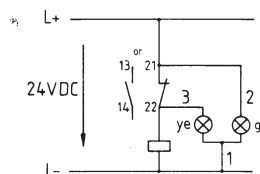
## LED INDICATOR MODELS

Green LED (gn) indicator supply voltage and yellow LED (ye) indicator for switch operation of NO or NC contacts for **24VDC**. Available for all models of Series 335.

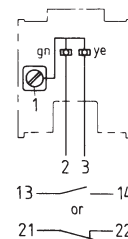


Shown here:  
Z4VH 335-11zG24

Wiring diagram:



Shown here:  
indication of operation of NC contact (terminals 21-22);  
for indication of operation of NO contact use terminals 13-14



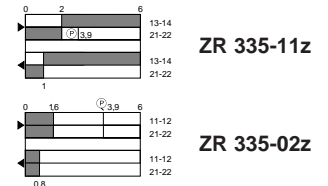
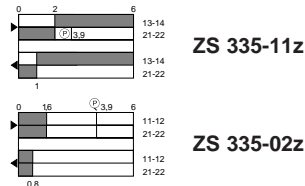
protected against wrong polarity connection  
protected against transient voltages 700V  
Attention: no inductive loads

# Z/T335 TECHNICAL DATA

## Contact function diagrams

Snap action positive break  
1 NO + 1 NC

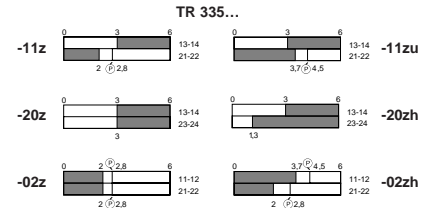
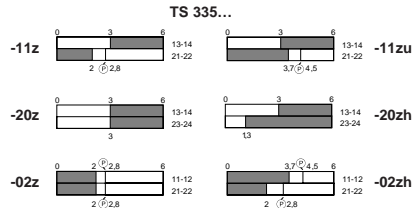
2 NC



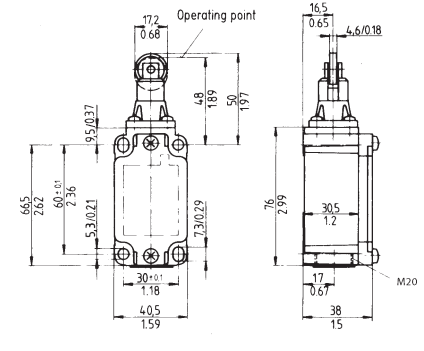
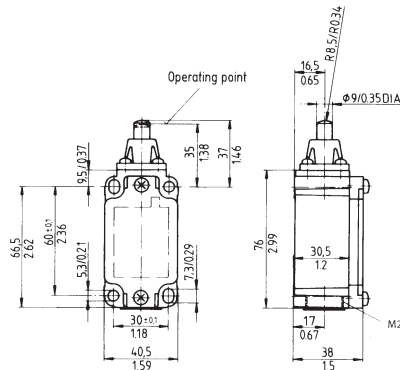
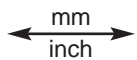
Slow action 1 NO + 1 NC

make before break 2 NO simultaneous contacts staggered (2-step)

2 NC simultaneous contacts staggered (2-step) (CW-CCW)



Dimensions



## Types of Actuators

Rounded plunger  
Style S

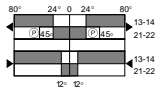
Roller plunger  
Style R

Part No.	Contact Function	Model	Actuating Force	
			Style S	Style R
13-14 21-22	Snap Action positive break	ZS 335-11z	12 N	ZR 335-11z 12 N
11-12 21-22	Snap Action positive break	ZS 335-02z	12 N	ZR 335-02z 12 N
13-14 21-22	Slow Action Make before break	TS 335-11z	15 N	TR 335-11z
		TS 335-11zu		TR 335-11zu
13-14 23-24	Slow Action 2-step	TS 335-20z*	17 N	TR 335-20z*
		TS 335-20zh*		TR 335-20zh*
11-12 21-22	Slow Action 2-step	TS 335-02z	14 N	TR 335-02z
		TS 335-02zh		TR 335-02zh

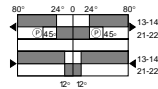
11-12  
21-22 Slow Action 1 NC CW + 1 NC CCW

\* Not for use in safety applications

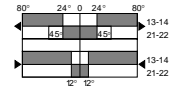
# Z/T335 TECHNICAL DATA



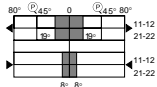
Z4VH 335-11z



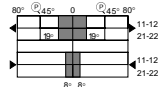
Z4V7H 335-11z



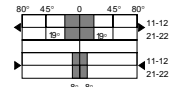
Z4V10H 335-11z



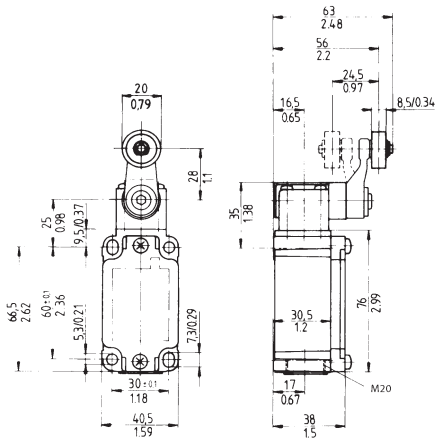
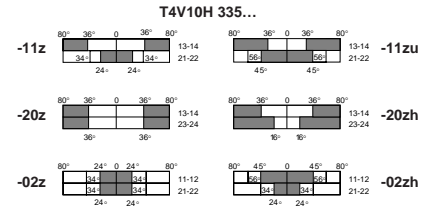
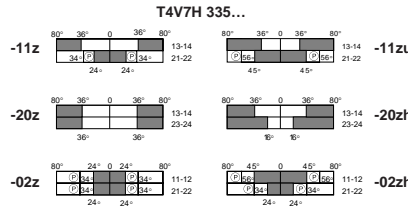
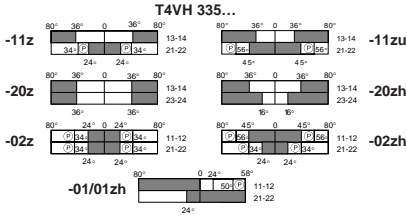
Z4VH 335-02z



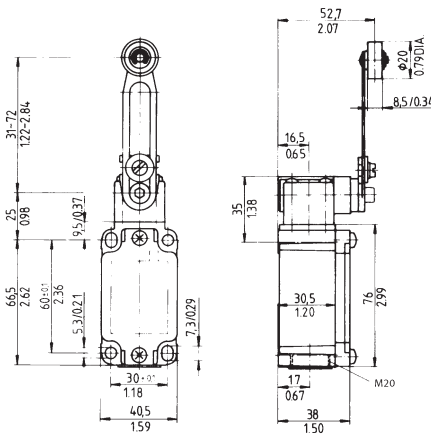
Z4V7H 335-02z



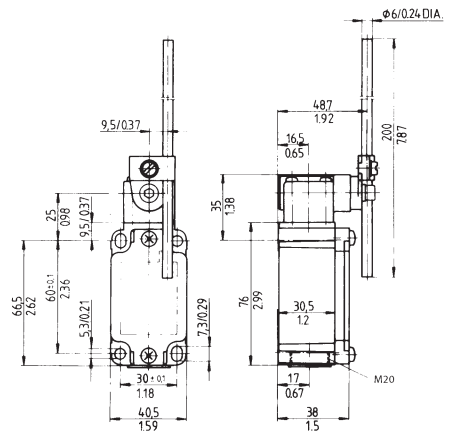
Z4V10H 335-02z



4V operating head with roller rocking lever Style H



4V operating head with adjustable roller rocking lever Style 7H\*



4V operating head with rod rocking lever Style 10H\*

	Actuating Force		Actuating Force		Actuating Force
Z4VH 335-11z	27 Ncm	Z4V7H 335-11z*	27 Ncm	Z4V10H 335-11z*	27 Ncm
Z4VH 335-02z	27 Ncm	Z4V7H 335-02z*	27 Ncm	Z4V10H 335-02z*	27 Ncm
T4VH 335-11z	27.5 Ncm	T4V7H 335-11z*	27.5 Ncm	T4V10H 335-11z*	27.5 Ncm
T4VH 335-11zu	27.5 Ncm	T4V7H 335-11zu*	27.5 Ncm	T4V10H 335-11zu*	27.5 Ncm
T4VH 335-20z*	28 Ncm	T4V7H 335-20z*	28 Ncm	T4V10H 335-20z*	28 Ncm
T4VH 335-20zh*	28 Ncm	T4V7H 335-20zh*	28 Ncm	T4V10H 335-20zh*	28 Ncm
T4VH 335-02z	27.5 Ncm	T4V7H 335-02z*	27.5 Ncm	T4V10H 335-02z*	27.5 Ncm
T4VH 335-02zh	27.5 Ncm	T4V7H 335-02zh*	27.5 Ncm	T4V10H 335-02zh*	27.5 Ncm

TVH 335-01/01zh 26.5 Ncm  
(other levers upon request)

\* Not for use in safety applications

# Z/T335 TECHNICAL DATA

## Contact function diagrams

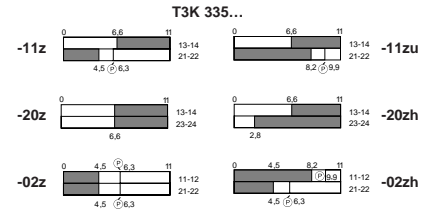
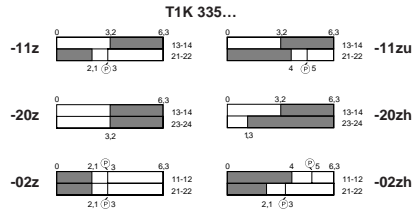
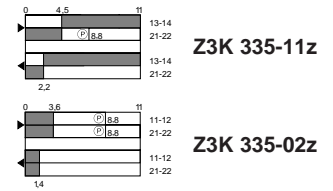
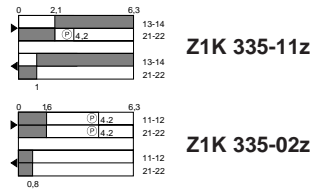
Snap action positive break  
1 NO + 1 NC

2 NC

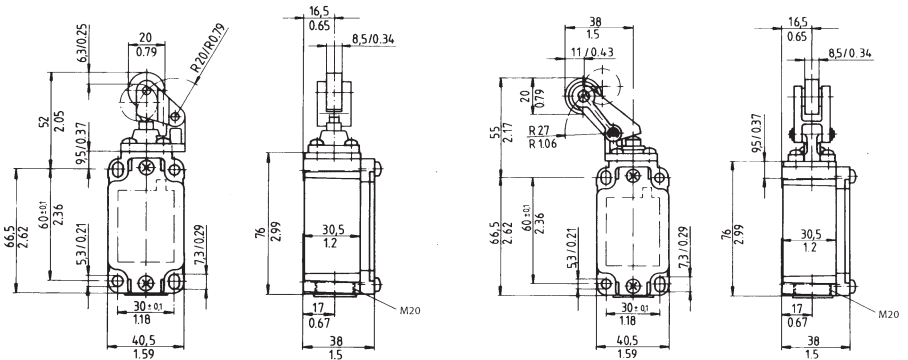
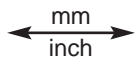
Slow action 1 NO + 1 NC

make before break 2 NO simultaneous  
contacts staggered (2-step)

2 NC simultaneous  
contacts staggered (2-step)  
(CW-CCW)



Dimensions



## Types of Actuators

One-way roller lever  
Style 1K

One-way roller lever  
Style 3K

Part No.	Contact Function	One-way roller lever Style 1K		One-way roller lever Style 3K	
		Part No.	Actuating Force	Part No.	Actuating Force
13-14 21-22	Snap Action positive break	Z1K 335-11z	12 N	Z3K 335-11z	5.0 N
11-12 21-22	Snap Action positive break	Z1K 335-02z	12 N	Z3K 335-02z	5.0 N
13-14 21-22	Slow Action Make before break	T1K 335-11z	15 N	T3K 335-11z	6.3 N
21-22		T1K 335-11zu		T3K 335-11zu	
13-14 23-24	Slow Action 2-step	T1K 335-20z*	17 N	T3K 335-20z*	7.2 N
21-22		T1K 335-20zh*		T3K 335-20zh*	
11-12 21-22	Slow Action 2-step	T1K 335-02z	14 N	T3K 335-02z	6.0 N
21-22		T1K 335-02zh		T3K 335-02zh	

\* Not for use in safety applications