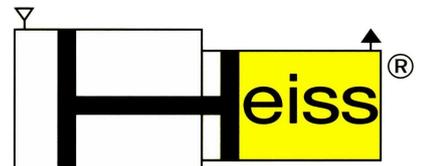


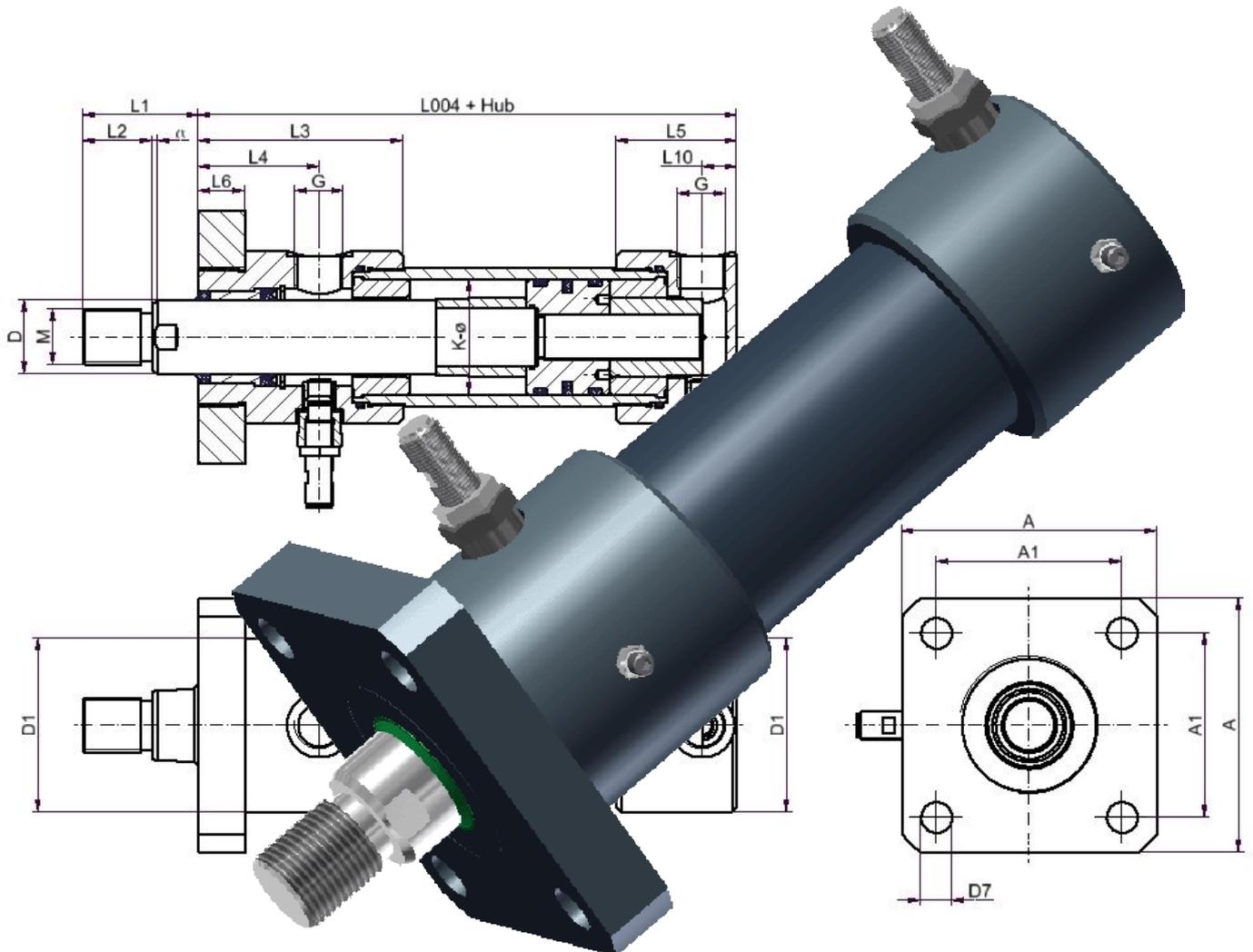
# Standard Cylinder Series

SZ100, SZ160, SZ250

With pressure resistant inductive proximity switch



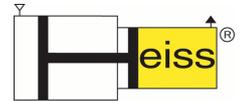
HYDRAULIK + PNEUMATIK GMBH



- Elegant design by integration into cylinders at both end positions
- Contact free, wear free switching operation
- Precise and reliable end position sensing and high repeat accuracy
- For maximum continuous duty temperatures from -20 to +70°C by default
- Choice from 10 different piston sizes between 25 and 200mm and 23 different attachment for pressures up to 250bar
- Available for use with water

# Standard Cylinder Series

SZ100, SZ160, SZ250 with pressure resistant inductive proximity switch



## General information cylinder:

The cylinders are manufactured for the below listed applications in threaded design with ground and hard-chrome plated cylinder rods.

Special purpose designs of almost any kind can be considered. Intermediate sizes or piston sizes up to 500mm diameter are possible.

Cylinders can be fitted with vent valves upon request. Please indicate the desired location for the vent when ordering.

Please request our electronic product catalogue for CAD data or download it from [www.heiss.de](http://www.heiss.de).

## Technical specifications cylinder:

### Operating pressure:

Depending on cylinder series chosen, 100, 160 or 250bar. For higher operating pressures or hydraulic shocks, please contact us.

### Operating fluids:

Hydraulik oil on the basis of mineral oils for example H, HL, HLP-oils per DIN 51524/51525. Other operating fluids like fire resisting fluids or water are possible upon request.

### Operating temperature:

By default the cylinder is fitted with seals for a temperature range from -20°C to +80°C. High temperature resistant seals can be fitted without changes in design. However, the max. permissible operating temperature of the inductive proximity switches needs to be considered.

### Piston travel speed:

Maximum 0,5 m/s. Please contact us for higher piston travel speeds.

### Cylinder stroke:

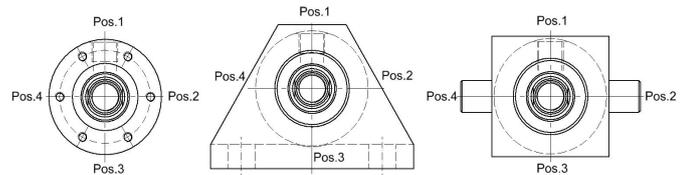
The maximum permissible stroke is dependent on the permissible buckling stress. For dimensioning help please use the load/buckling diagram with the simplified calculation formulas.

### Position of connections:

The default positions of the ports, the proximity switches and the damper adjustment screws can be found in the overview of configurations. Should a different position be desired, please, indicate this when ordering.

Looking at the face of the piston rod end Pos. 1 is the position for connections with all configurations. Should the positions of ports, proximity switches or dampers be required elsewhere, please, indicate this when ordering.

*Example in combination with various attachments:*



Should the port position be rotated by 90° in clockwise direction for example, please, indicate with order "hydraulic port in Pos. 2".

### Tolerances:

Tolerances for stroke and stroke dependent dimensions according to DIN ISO 2768 - g T1 (previously DIN 7168 - g)

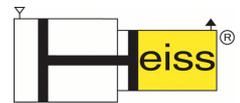
Other tolerances according to DIN ISO 2768 - m T1 (previously DIN 7168 - m)

### Attachment elements:

Swivel heads, rod clevis and rod end straight eyes as well as pivot brackets and pillow blocks for pivot pin attachments can be found in our main catalogue under Accessories.

# Standard Cylinder Series

SZ100, SZ160, SZ250 with pressure resistant inductive proximity switch



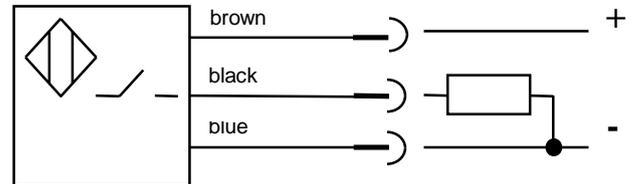
## General Information on inductive proximity switches

Inductive proximity switches allow touch-free sensing of end positions of the hydraulic cylinders and are thus wear-free. They are inverse-polarity protected and are protected against inductive voltage peaks.

### Specifications:

Output function	: PNP
Operating voltage U	: 10...30 V DC
Ripple max.	: ≤15 %
Current carrying capacity I <sub>a</sub>	: 200 mA
No-load current I <sub>r</sub>	: 10 mA
Switching frequency f <sub>max</sub>	: 1000 Hz
Switching hysteresis H	: ≤15%
Nom. switching distance S <sub>n</sub>	: 1,5 mm
Short-circuit protected	: yes
Pressure resistant	: to 500 bar
Ambient temperature	: -25...+70°C
Connection type	: angled connector with permanently attached cable (3m)
Cable type	: PVC/PUR oil resistant
Enclosure type	: IP 67 (DIN 40050)
Housing material	: 1.4104 (stainless steel)

### Wiring diagram:



### Attention!

Proximity switches are adjusted ex works. Should you loosen or readjust the proximity switches, do so only with the cylinder in the respective end-position. Otherwise the proximity switch may be screwed in too deep and may get damaged by the switching piston.

By default the switching point of the proximity switch is located exactly at the end-position of the cylinder. Should the stroke be limited by external factors the switching point can be moved inward up to 6mm upon customers request. With your order please request the inward positioning of the switching point as follows:

- Inward positioning of the switching point on the rod side (**V**) for example by 2mm ⇒ **SV 2**
- Inward positioning of the switching point on the bottom side (**H**) for example by 3mm ⇒ **SH 3**
- Inward positioning of the switching point on both sides (**V & H**) for example by 1mm each ⇒ **SVH 1**

The desired code designation needs to be added to the type designation when ordering because the switching points cannot be moved subsequently.

By default the Block Cylinder is equipped with proximity switches on both sides. Should only one proximity switch be required, please, add for rod side position "V" or for bottom side position "H" to the designator for proximity switches "IN".

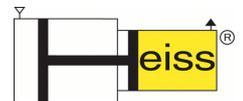
### Dimensions:

Piston-Ø	25	32	40	50	63	80	100	125	160	200
<b>SZ 100 Dim. E:</b>	83	85	87	90	93	97	103	130	140	150
<b>SZ 160 Dim. E:</b>	83	85	87	90	93	97	103	130	140	150
<b>SZ 250 Dim. E:</b>	85	87	90	93	97	103	108	140	150	163

Please note that all additional specifications and dimensions including configurations and functional modes can be found on the standard catalogue pages of the respective cylinder series.

# Standard Cylinder Series

SZ100, SZ160, SZ250 with pressure resistant inductive proximity switch

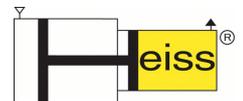


Overview of configurations:

Front view	Side view	Configuration	Description
		110	<b>BASIC ATTACHMENT</b> Clamping possible on cylinder tube
		111	<b>THREAD ATTACHMENT</b> With male thread on cylinder head
		111-1	<b>THREAD ATTACHMENT</b> Centering shoulder and threaded holes on the face of the cylinder head
		111-2	<b>THREAD ATTACHMENT</b> Centering shoulder and threaded holes on the face of the cylinder bottom
		112	<b>FLANGE ATTACHMENT</b> On front of cylinder head with four bolt holes
		112-1	<b>FLANGE ATTACHMENT</b> On back of cylinder head with 4 bolt holes
		113	<b>FOOT ATTACHMENT</b> Tangential foot screwed onto cylinder tube

# Standard Cylinder Series

SZ100, SZ160, SZ250 with pressure resistant inductive proximity switch

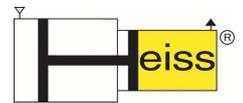


## Overview of configurations:

Front view	Side view	Configuration	Description
		113-1	<b>FOOT ATTACHMENT</b> Angled foot screwed onto cylinder head
		113-2	<b>FOOT ATTACHMENT</b> Angled foot screwed onto cylinder head and angled foot shiftable along cylinder tube
		114	<b>PIVOT PIN ATTACHMENT</b> At front end of cylinder head
		114-1	<b>PIVOT PIN ATTACHMENT</b> At back end of cylinder head
		115	<b>PIVOT PIN ATTACHMENT</b> On cylinder tube, position adjustable
		116	<b>PIVOT PIN ATTACHMENT</b> At cylinder bottom (pivot pins removable)
		117	<b>FLANGE ATTACHMENT</b> At cylinder bottom with 4 bolt holes

# Standard Cylinder Series

SZ100, SZ160, SZ250 with pressure resistant inductive proximity switch



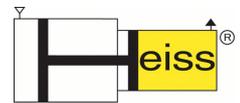
Overview of configurations:

Front view	Side view	Configuration	Description
<p>View A:</p>		118	<b>PIVOT EYE ATTACHMENT</b> With bronze bushing at cylinder bottom
<p>View A:</p>		218	<b>PIVOT EYE ATTACHMENT</b> With bronze bushings both ends
<p>View A:</p>		119	<b>PIVOT EYE ATTACHMENT</b> With ball and socket joint at cylinder bottom
<p>View A:</p>		219	<b>PIVOT EYE ATTACHMENT</b> With ball and socket joints both ends
		120	<b>NONDIFFERENTIAL CYLINDER</b> Piston rod both sides, can be combined with any attachment
<p>View A:</p>		125	<b>CLEVIS ATTACHMENT</b> Clevis bracket at cylinder bottom
<p>View A:</p>		225	<b>CLEVIS ATTACHMENT</b> Both ends (clevis bracket at cylinder bottom and rod clevis at rod end)

- Other attachment combinations and cylinder sizes available upon request -

# Standard Cylinder Series

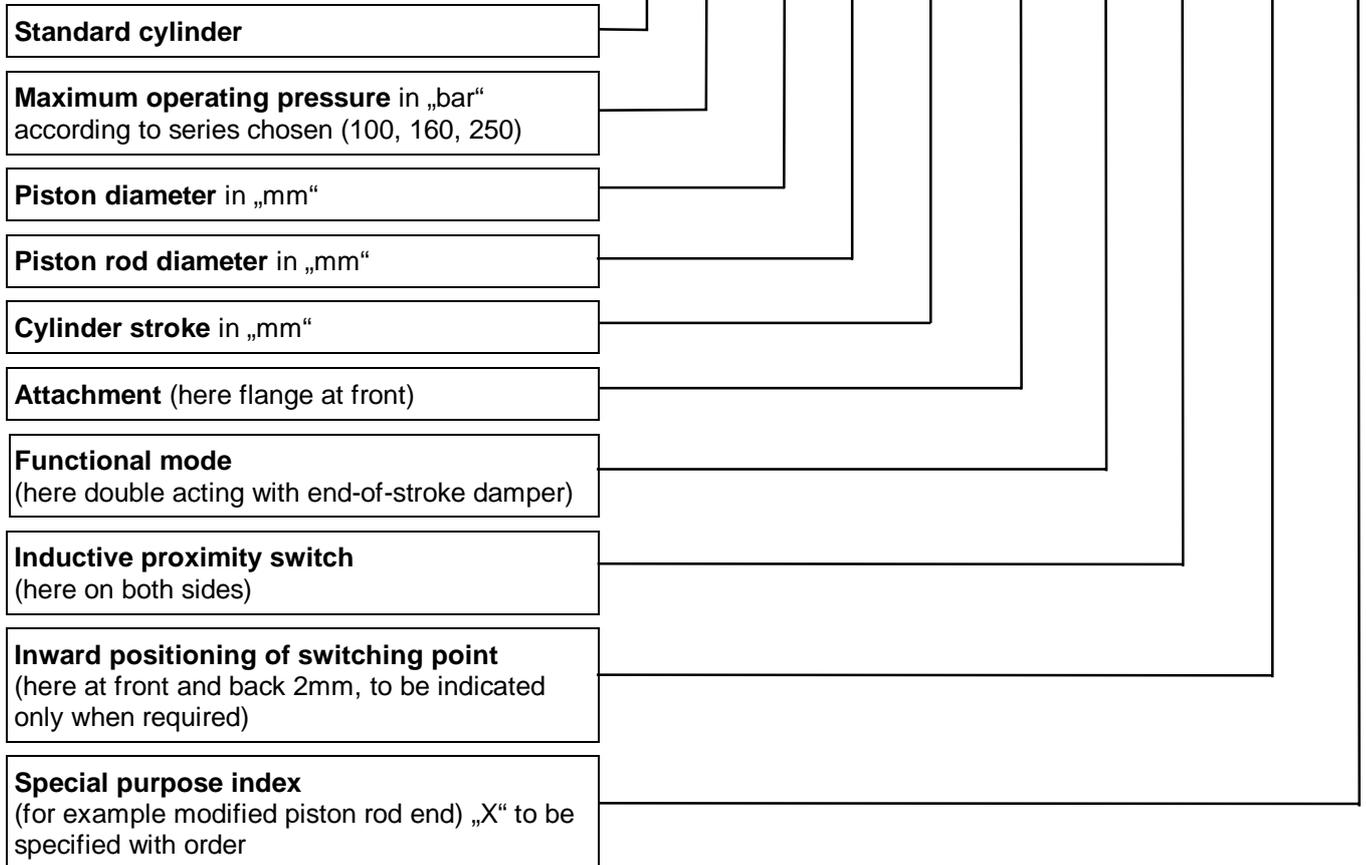
SZ100, SZ160, SZ250 with pressure resistant inductive proximity switch



## Type designation

Description:

**SZ 250 - 50 / 32 / 200 - 112 . 003 . IN . SVH2 . X**



### Examples for ordering:

#### SZ 100-32/16/85-117.003.IN.X

Standard cylinder for operating pressure of 100 bar  
 Piston diameter: 32 mm  
 Piston rod diameter: 16 mm  
 Cylinder stroke: 85 mm  
 Flange attachment on bottom side  
 Double acting  
 Inductive proximity switch on both sides  
 Special purpose index explained in plain text

#### SZ 250-63/40/400-113-120.004.IN.SVH2

Standard cylinder for operating pressure of 250 bar  
 Piston diameter: 63 mm  
 Piston rod diameter: 40 mm  
 Cylinder stroke: 400 mm  
 Foot attachment on the side with continuous piston rod  
 Double acting with end-of-stroke damper on both sides  
 Inductive proximity switch on both sides  
 Forward positioning of switching point on both sides by 2mm.

#### SZ 160-50/25/100-112.003.INV.SV1

Standard cylinder for operating pressure of max. 160 bar  
 Piston diameter 50 mm  
 Piston rod diameter 25 mm  
 Cylinder stroke 100 mm  
 Flange attachment at front of cylinder head with four bolt holes  
 Functional mode double acting  
 Inductive proximity switch on rod side (INV)  
 Inward positioning of switching point on rod side by (SV) by 1 mm.

Design subject to change Revision C \* 08.02.2012 \*K.E.