

Silo overfill monitoring system

the complete protection for silos and vessels

S

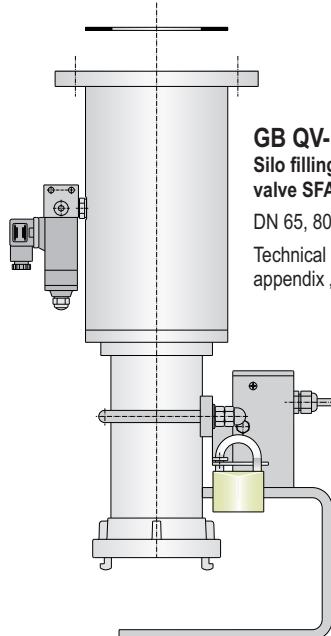
Appliance information

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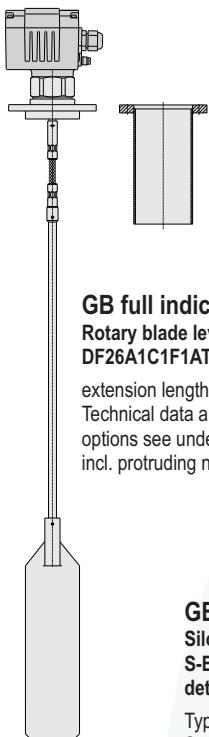
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Appliance information

GB basic module



011-0200



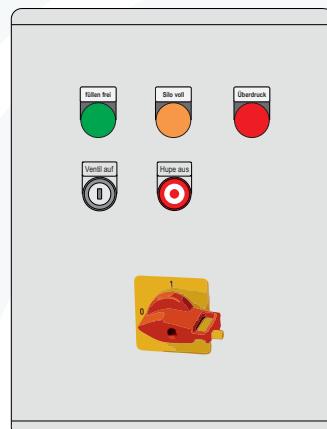
011-0201

GB full indicator
Rotary blade level indicator
DF26A1C1F1AT0LW0630
extension length 900 mm
Technical data and
options see under **DF-GI**
incl. protruding nozzle

GB control
Silo filling control
S-EST... with Dilo pressure
detector and jet-filter control
Type on customer's demand
Supply voltage 230 V, 24 V DC

GB signal horn
Horn for acoustic signals
HPW11-07
Technical data
see page 8 (**HP-GI-01**)

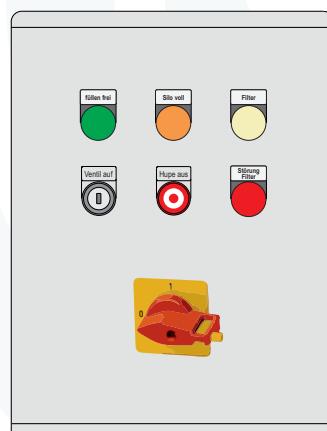
011-0202



Function sequence

1. While coupling the filling pipe, the swivelling lever swivels beside
 - the limit switch will be actuated
 - the overfill monitoring system will be put into operation
 - the full indicator will be switched on
 - the jet filter starts the operation and cleans in intervals during the whole filling process
 - the blocking valve opens
 - the green lamp "filling o.k." lights up
2. The filling process can be started
3. The filling level reaches the full indicator
 - the green lamp switches off
 - the red lamp "Silo full" lights up
 - the horn sounds (the signal of the horn can be turned off by pushing the pushbutton "Horn off")
4. The filling process will be stopped immediately and the filling pipe will be emptied
5. After approx. 30 sec. the blocking valve closes the filling pipe automatically

(under supervision, the blocking valve can be opened with a key-operated switch, to empty the filling pipe or to refill small remaining quantities).



011-0203

ATEX option

Dust

for all devices

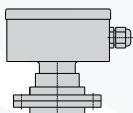
ATEX option

Gas+
Dust

for a part of devices

Appliance information

E1 pressure switch



E1 silo pressure switch for pressure monitoring and limitation of the last surge
E1-MSD-070

Technical data see under **MSD-GI-01**
incl. protruding nozzle, red lamp "overpressure" and controller part are installed in the silo filling control

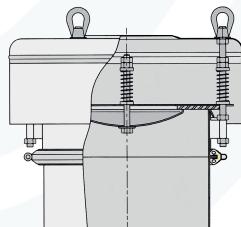
011-0204

Function

If the pressure increases in the silo, e.g. during the last torrent, the pressure detector will register this depending on the adjusted pressure and will signalise to the controller.

- the blocking valve closes the filling pipe immediately
- the green lamp "filling free" switches off
- the red lamp "overpressure" lights up
- the horn sounds
- the filter is cleaning itself

E3 safety valve



011-0206

E3 Silo-Ex-Implo-Valve for pressure release
E3-SEI-250

Technical data see page 9 (**SEI-GI-01**)
incl. protruding nozzle

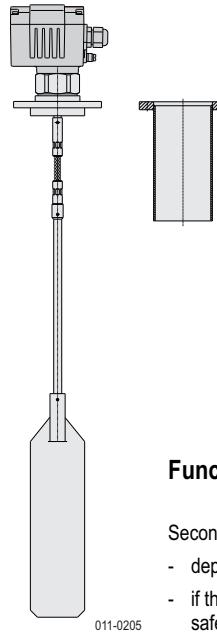
Function

The **Silo-Ex-Implo-Valve** protects silos from overpressure and low pressure while

- pneumatic filling
- Sticking of the dust precipitation filter
- Fermentation
- Temperature variations
- Condensation
- high output
- Aspiration

E supplementary modules

E2 full indicator 2



011-0205

E2 rotary blade level indicator as safety full indicator
E2-DF26A1C1F1AT0LW0430

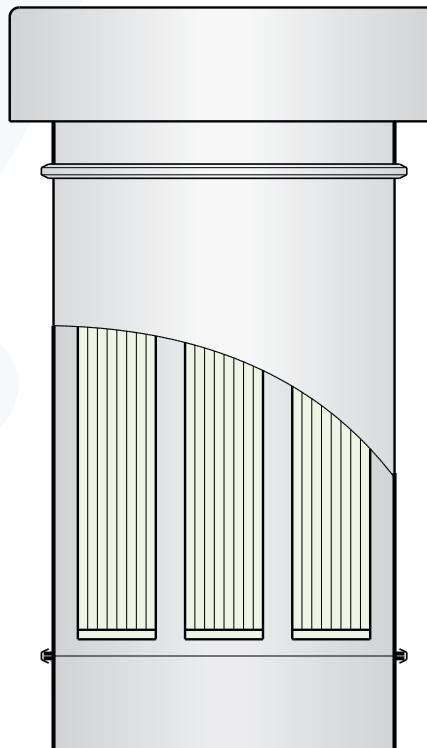
extension length 700 mm
Technical data see under **DF-GI-01**
incl. protruding nozzle

Function

Second full indicator instead of a timer

- depending on volume, instead of time controlled after-run
- if the filling level reaches the measuring blade of the safety full indicator the blocking valve will close immediately

E4 jet filter



E4 silo jet filter with pneumatic purification

Filter area depending on requirement:
E4-SJF-130 with 13 m²
E4-SJF-200 with 20 m²
E4-SJF-240 with 24 m²

Silo top filter with purification by compressed air incl. Protruding nozzle, time controller and necessary compressed air control valves, compressed air switch to control if compressed air is available and in the controller are installed the silo filling control and a red lamp "no compressed air".

Funktion

from the air blast circuit breaker

If the compressed air sinks under approx. 5 bar

- after 30 seconds the blocking valve closes the filling pipe
- the green lamp "filling free" goes out
- the red lamp "no compressed air" lights up
- the horn sounds

Appliance information

E5 vibrating filter



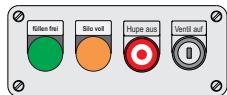
E5 controller for vibrating filter of the silo
E5-SRS

Controlling of a vibrator 0.18 up to 0.25 kW, installed in the silo filling control, with white lamp "filter" and red lamp "failure filter"

Function

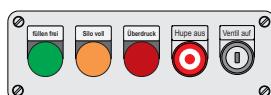
- the filter will be vibrated (cleaned) before and after the filling process

E7 operator panel

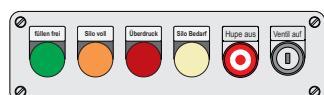


E7 on site operating
E7-SVB

in various models for mounting next to the filling pipe and for operation directly on-site

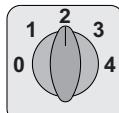


011-0209



E supplementary modules

E6 silo unblocking



011-0208

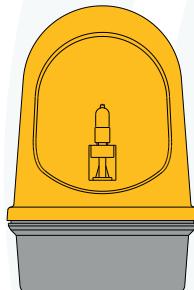
E6 selection switch for silo filling
E6-SFG

Switch to select the silo filling and to avoid the false filling
Optional installed in the controller or for installation in the control room of the plant

Function

- **Setting „0“** - all silos inaccessible
- **Setting „1“** - Silo 1 may be filled, all the other silos are inaccessible
- **Setting „2“** - Silo 2 may be filled, all the other silos are inaccessible etc.

E8 signal lamp



011-0210

E8 rotating mirror beacons as signal lamp
E8-HL883

yellow with halogen lamp, additional or instead of the horn

Technical data see page 10 (HL-GI-01)

E9 QV monitoring



E9 pinch valve monitoring
E9-QSD

pressure switch installed at the pinch valve with corresponding controller part installed in the silo filling control

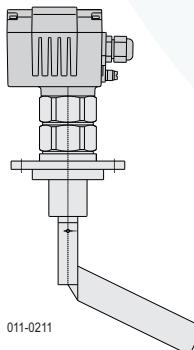


Function

Monitoring of pinch valve functions

- E9.0 signalises "Valve defect" with yellow light
- E9.1 signalises "Valve closed" with white light
- E9.2 signalises "Valve closed" - "Valve open" with two white lights

E10 empty indicator



E10 rotary blade level indicator for demand or empty detection

E10.1-DF23A1C1F1AS2V

white light "silo demand" or "silo empty" and controller part installed in the silo filling control

Function

- E10.1 signalises "silo empty" with white light
- E10.3 signalises "silo demand" with white light
other functions on customer's request

Appliance information

E supplementary modules

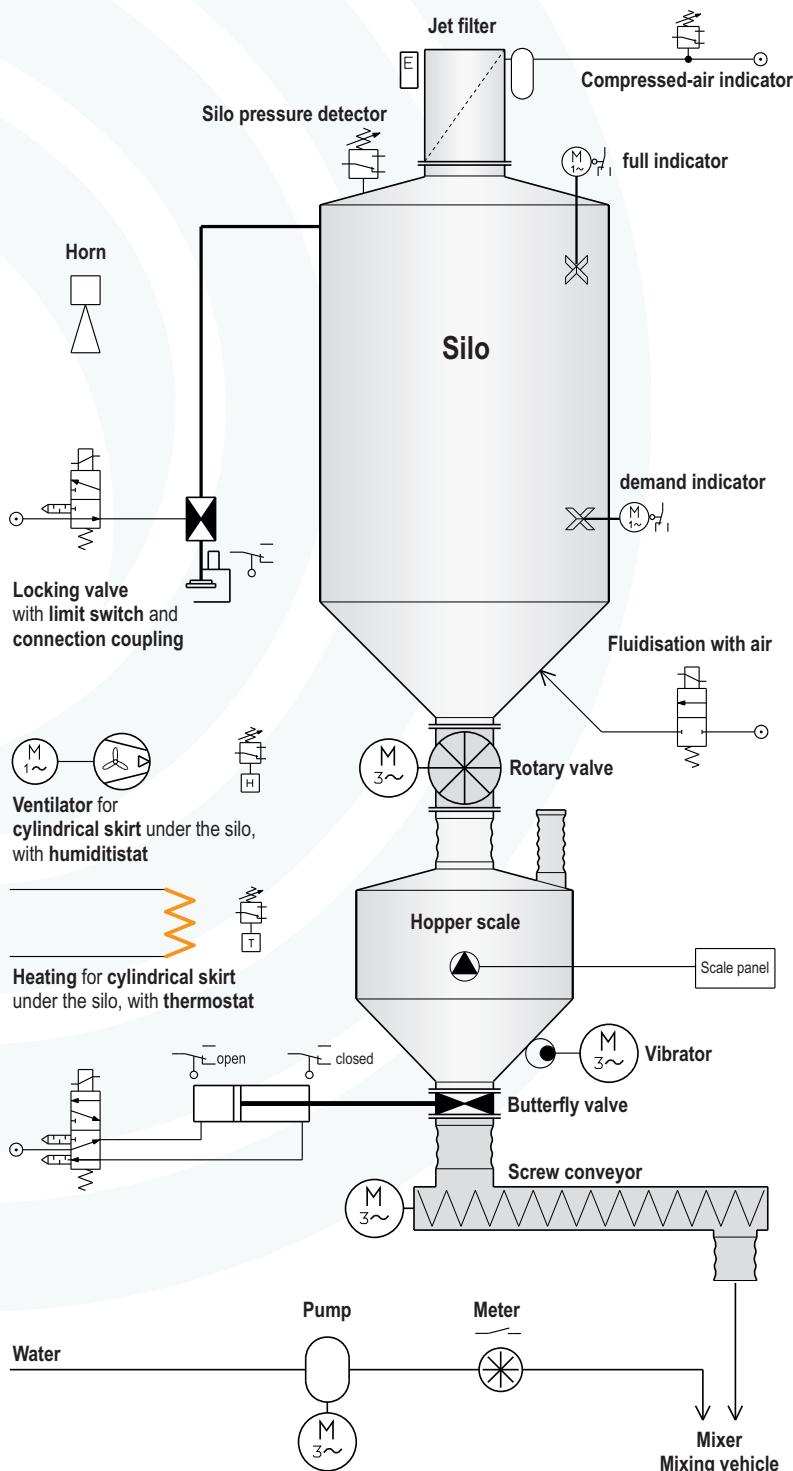
E11 extensions

E11 extensions of silo filling control

E11-EST-EW

supplementation of the electric control for further silo components e.g. as like as shown in the diagram.

On customer's request, other models possible also



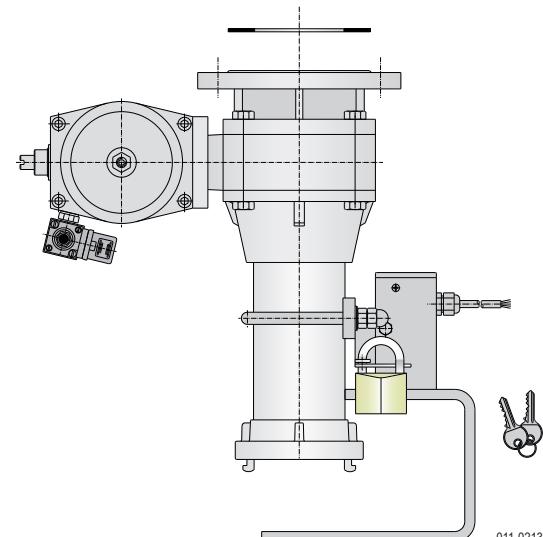
E12 ball valve

E12 silo filling device as locking valve

E12-SFA-K... with ball valve

DN 80 or 100 mm

Technical description please see appendix „Silo filling device“

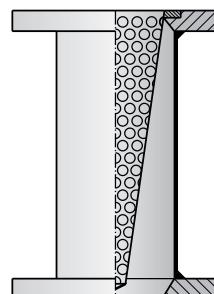


E13 Control sieve

E-13 silo control sieve

E13-SFS

with hole size 10 mm for mounting in the filling pipe

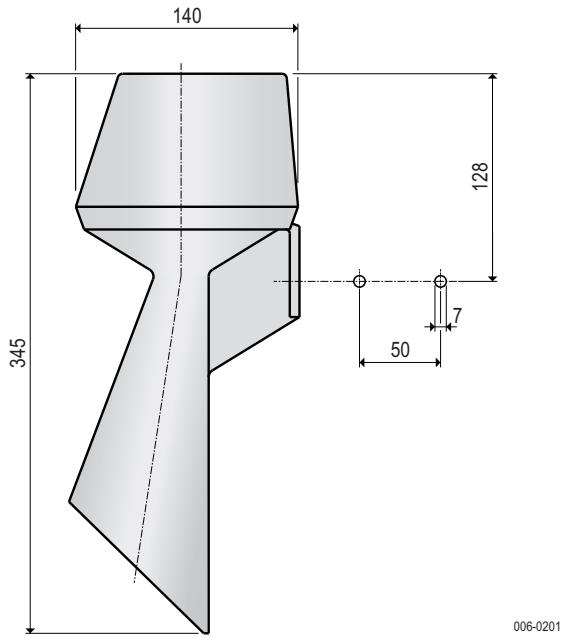


011-0214

Appliance information

GB signal horn

Dimensions



Use

All-purpose signal horn for dry and moist locations inside as well as for the use outdoor.

Technical data

Material	Housing	ABS
Colour		grey
Mounting position		vertical
Volume		approx. 110 dB(A), 1m
Ambient temperature		-20 °C ... +40 °C
Supply voltage	06 07 13	110 ... 120 V ~ (AC) 220 ... 240 V ~ (AC) 24 V --- (DC)
Power consumption		max. 0.3 A
Cyclic duration factor		100 % (Continuous operating mode)
Cable entry		Gland M20x1.5
Type of protection		IP55 acc. to DIN EN 60529
Maintenance		none
Weight		1.15 kg

Type selection

Order code

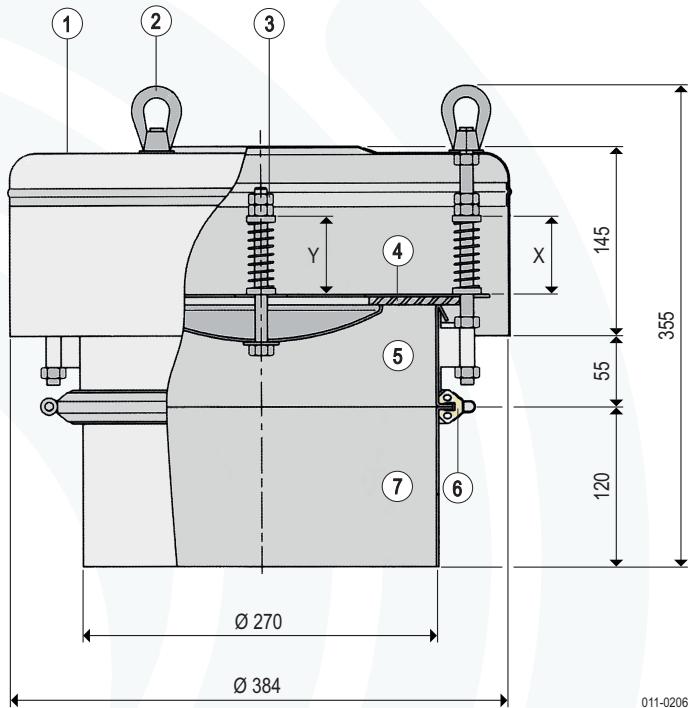
HPW11-06	110 ... 120 V ~
HPW11-07	220 ... 240 V ~
HPW11-13	24 V ---/~

Subject to modification

Appliance information

E3 safety valve

Dimensions



Use

The Silo-Ex-Implo-Valve protects silos and vessels from high pressure and low pressure. The valve has to be mounted at the top of silos or vessels.

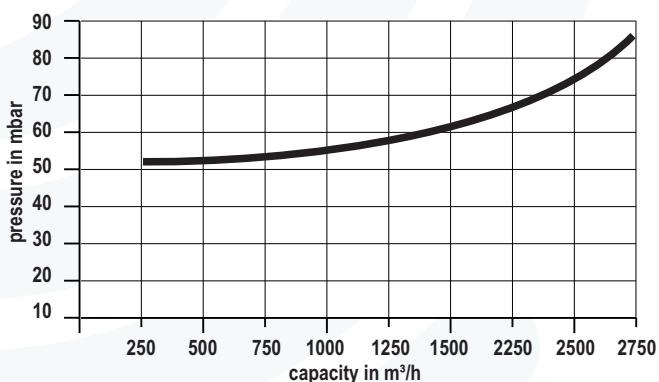
It protects against:

- pneumatic filling
- sticking of the dust precipitation filter
- fermentation
- temperature variations
- condensation
- high output
- aspiration

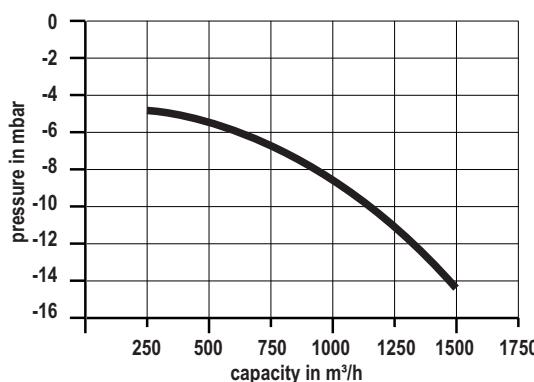
Technical data

Type	E3-SEI-250
Materials	1 Covering hood Stainless steel 1.4306 / 304 L 2 Lifting bracket 1.4306 / 304 L 3 Spring guidance, screws and nuts 1.4306 / 304 L 4 Valve disc 1.4306 / 304 L and gasket white, food 5 Corpus 1.4306 / 304 L 6 Clamping ring 1.4306 / 304 L and profiled gasket, neopren white, food 7 weld-in frame 1.4306 / 304 L
Installation	vertical (flared-end tube horizontal)
Temperature range	T _a -25 °C ... +70 °C

Curve by overpressure



Curve by low pressure



Adjustment tables

High pressure		Low pressure	
X mm	mbar	Y mm	mbar
65	60	50	12
75	50	63	9
85	40	80	5
		92	2

Factory setting

High pressure	50 mbar
Low pressure	2 mbar
max. adjustable pressure	
High pressure	60 mbar
Low pressure	12 mbar

ATEX option

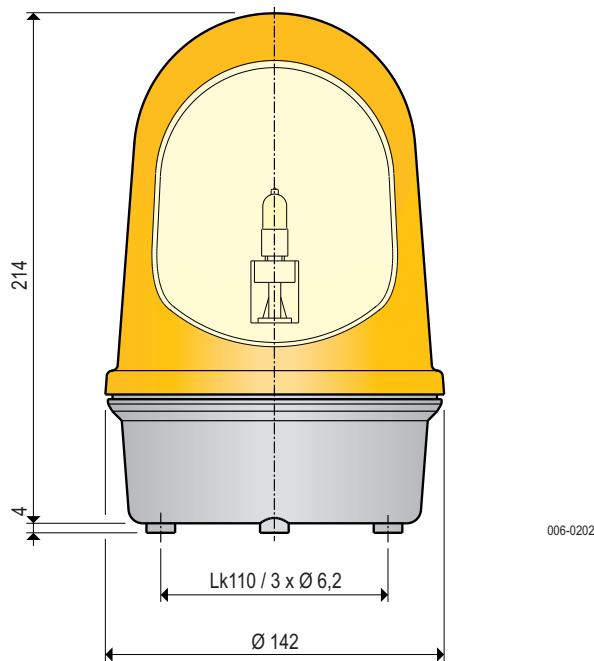
B4 Dust II 2D IIIIB

ATEX option II 2G IIIB and II 2D IIIIB

Appliance information

E8 signal lamp

Dimensions



Use

All-purpose signal lamp for dry and moist locations inside as well as for the use outdoors.

Technical data

Material	Housing Collar/cap	PC/ABS-Blend PC, translucent
Colour	Housing	black
Collar colour	1 2 3	red green yellow
Installation	upright or hanging	vertical
Fixing		base mounting
Ambient temperature		-30 °C ... +50 °C
Supply voltage	75 68	24 V === (DC) 220 ... 240 V
Current consumption		3.0 A
Drive		friction wheel, low-wear
Rotation speed		180 U/min
Life duration of drive		>5.000 h
Duty cycle		100 %
Halogen lamp		35 Watt
Cable entry		Ø 5 ... 7 mm
Type of protection		IP65 acc. to DIN EN 60529
Weight		0.760 kg

Type selection

Order code

HL883-*75	24 V ===
HL883-*68	220 ... 240 V ~
* = Collar colour	

Subject to modification

Silo filling device

Shut-off valve for filling process of silos

SFA

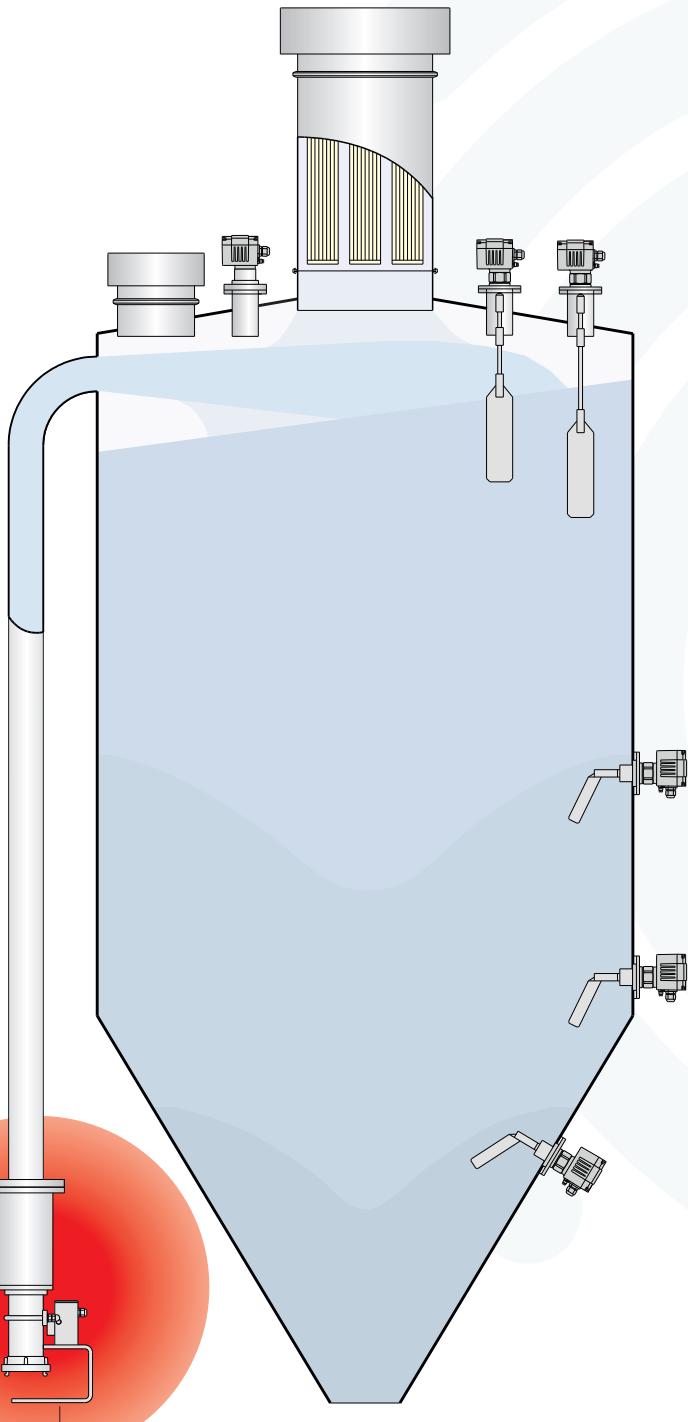
Appliance information

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Quick air-exhaust valve Pressure switch	

Application

Shut-off valve with connection coupling and swivelling lever

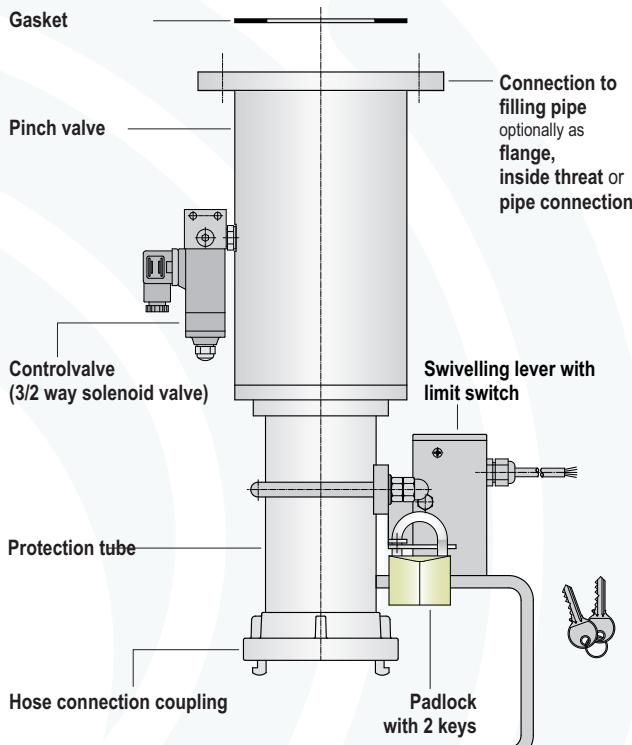
Silo filling device for shut-off the filling pipe in order to protect the silo plant against overload and overpressure



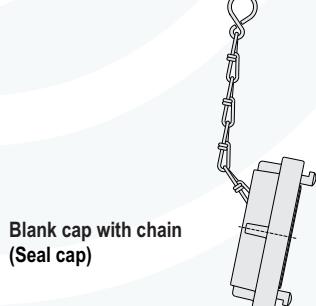
In order to avoid angel-hair, turbulences or
change of core structure we supply optionally
the silo filling device completely seamless.

Appliance information

Silo filling device with pinch valve
Type: SFA ...Q ... DN 65, 80, 100, and 125



011-0200



ATEX option

B3

Dust II 1/3D IIIB

Manufacturing modification

optional on customer's request

Filling pipe connection

Flange
Internal thread
Tube

Pinch valve

Housing and filling pipe connection Aluminium AlMgSi1
Stainless steel 1.4571 / 316 Ti

Clamping sleeve (product touching) Aluminium AlMgSi1
Stainless steel 1.4571 / 316 Ti

Hoses
NR Caoutchouc, resistant to abrasion
NRE Caoutchouc, resistant to abrasion, ATEX
NW Caoutchouc, inside white for food
EP EPDM for food
EPE EPDM for food, ATEX
VI VITON

Control valve for pinch valve (3/2 way solenoid valve)

normally closed, 230 V AC (SFA ...Q normally open)
normally closed, 24 V DC (SFA ...Q normally open)
normally closed, 24 V AC (SFA ...Q normally open)
normally open, 230 V AC (SFA ...Q normally closed)
normally open, 24 V DC (SFA ...Q normally closed)
normally open, 24 V AC (SFA ...Q normally closed)

Protection tube

Steel, galvanized
Stainless steel 1.4571 / 316 Ti
Aluminium AlMgSi1

Hose connection coupling (system and material)

Storz, Aluminium
Storz, Aluminium/Stainless steel 1.4571 / 316 Ti
Storz, Stainless steel 1.4571 / 316 Ti
TW coupling, DIN 28450, Brass
TW coupling, DIN 28450, Stainless steel 1.4408
Camlock DIN 2828, Stainless steel 1.4408
Guillemin, Aluminium

Limit switch (Filling hose connected)

Swivelling lever limit switch mechanical
Swivelling lever limit switch inductive
Swivelling lever limit switch NAMUR
Limit switch mechanical mounted on couplings*
Limit switch inductive mounted on couplings*
Limit switch NAMUR mounted on couplings*
* not available with Camlock or Guillemin couplings

Cable length for limit switches

2 m cable (not available with mechanical limit switch)
5 m cable
10 m cable

Accessories for silo filling device

Quick air-exhaust valve Valve installed at SFA ...Q
(incl. silencer) Valve as separate component

Compressed air switch Switch installed at SFA ...Q
Switch as separate component

Padlock (with 2 keys) for swivelling lever, keyed alike
for swivelling lever, keyed different
for Storz fixed couplings and Storz blank cap (keyed alike)
for Storz fixed couplings and Storz blank cap (keyed different)

Covering hose connection

Blank cap with chain Storz couplings/Swivelling lever limit switch
Storz couplings/built-in limit switch

Mother end cap for Camlock couplings/Swivelling lever limit switch
End cap for Road tanker couplings (TW coupling, DIN 28450)

Further accessories

on request

ATEX option II 1/2G IIB

B11 II 1/2D IIIB

Single parts

Silo filling device with pinch valve

Type SFA ...Q ... DN 65, DN 80 and 100

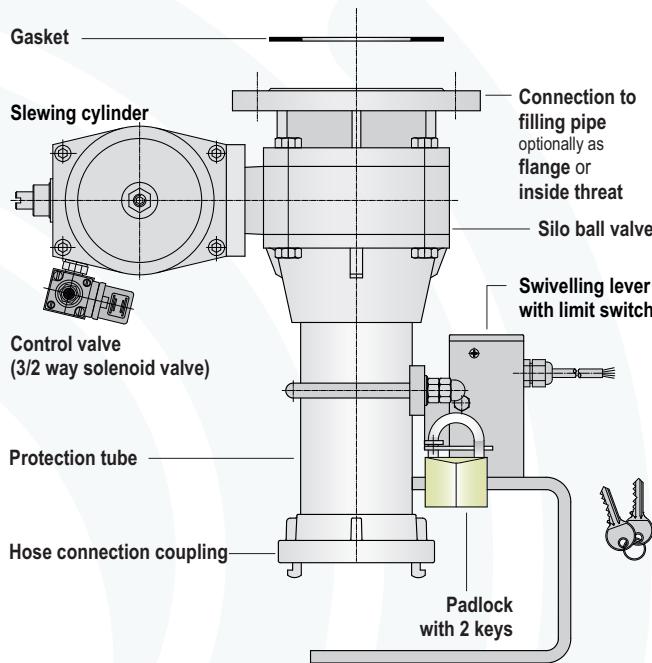
	DN 65	DN 80	DN 100	
Gasket	077-002-DIR-ABF	090-002-DIR-ABF	115-002-DIR-ABF	
Hexagonal nut	0934-05-000-STV	0934-05-000-STV	0934-05-000-STV	
Cylinder head screw	0912-05-045-STV	0912-05-045-STV	0912-05-045-STV	
3/2-way solenoid valve with all components	230 V AC 0 820 005 250B 24 V DC 0 820 005 251B 24 V AC 0 820 005 253B	QV-065-FG-AX-XX	QV-080-FG-AX-XX	QV-100-FG-AX-XX
Pinch valve depending on version	0914-06X010-V4A	0914-06X010-V4A	0914-06X010-V4A	
Threaded pin				
Protection tube made of Steel, galvanized 1.4571 / 316 Ti Aluminium	065-200-NIP-STV 065-200-NIP-V4A 065-200-NIP-AL	080-200-NIP-STV 080-200-NIP-V4A 080-200-NIP-AL	100-200-NIP-STV 100-200-NIP-V4A 100-200-NIP-AL	
Swivelling lever with integrated limit switch 2=2 m, 5=5 m, 0=10 m Cable length	SES-065-X SIS-065-X SNS-065-X	SES-080-X SIS-080-X SNS-080-X	SES-100-X SIS-100-X SNS-100-X	
Padlock with 2 keys	KS-VS025-G, or optional KS-VS025-U,	the same key for all locks a separate key for every lock		
Thread pin	0914-05X010-V4A	0914-05X010-V4A	0914-05X010-V4A	
Connection coupling made of Aluminium Aluminium /1.4581 / 318 1.4581 / 318	K-FSZ075IG2½-AL K-FSZ075IG2½-VA	K-FSZ075IG3-AL K-FSZ075IG3-VA	K-FSZ110IG4-AL K-FSZ110IG4-AV K-FSZ110IG4-VA	

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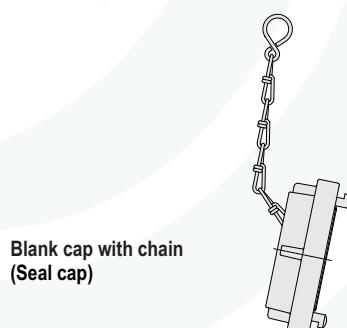
Appliance information

Silo filling device with ball valve

Type SFA ... K ... DN 80 and 100



011-0213



Blank cap with chain
(Seal cap)

Manufacturing modification

optional on customer's request

Filling pipe connection	Flange Internal thread
Ball valve	Aluminium Stainless steel Seal rings PTFE / VITON
Housing and filling pipe connection	single acting (Valve closes in case of power and/or compressed air failure)
Actuator	without position switch 1 switch signal ball valve „closed“ 2 switches signals ball valve „open“ / „closed“
Position switch (position indication „open/closed“)	normally closed, 230 V AC (SFA ... K normally closed) normally closed, 24 V DC (SFA ... K normally closed) normally closed, 24 V AC (SFA ... K normally closed)
Control valve for ball valve (3/2 way solenoid valve)	Protection tube Steel, galvanized Stainless steel 1.4571 / 316 Ti Aluminium AlMgSi1
Hose connection coupling (system and material)	Storz, Aluminium Storz, Aluminium/Stainless steel 1.4571 / 316 Ti Storz, Stainless steel 1.4571 / 316 Ti TW coupling, DIN 28450, Brass TW coupling, DIN 28450, Stainless steel 1.4408 Camlock DIN 2828, Stainless steel 1.4408 Guillemin, Aluminium
Limit switch (Filling hose connected)	Swivelling lever limit switch mechanical Swivelling lever limit switch inductive Limit switch mechanical mounted on couplings* Limit switch inductive mounted on couplings* * not available with Camlock or Guillemin couplings
Cable length for limit switches	2 m cable (not available with mechanical limit switch) 5 m cable 10 m cable

Accessories for silo filling device

Quick air-exhaust valve (incl. silencer)	Valve installed at SFA ... K Valve as separate component
Padlock (with 2 keys)	for swivelling lever, keyed alike for swivelling lever, keyed different for Storz fixed couplings and Storz blank cap (keyed alike) for Storz fixed couplings and Storz blank cap (keyed different)
Covering hose connection	
Blank cap with chain	Storz couplings/Swivelling lever limit switch Storz couplings/built-in limit switch

Mother end cap for	Camlock couplings/Swivelling lever limit switch
End cap for	Road tanker couplings (TW coupling, DIN 28450)

Further accessories on request

ATEX option

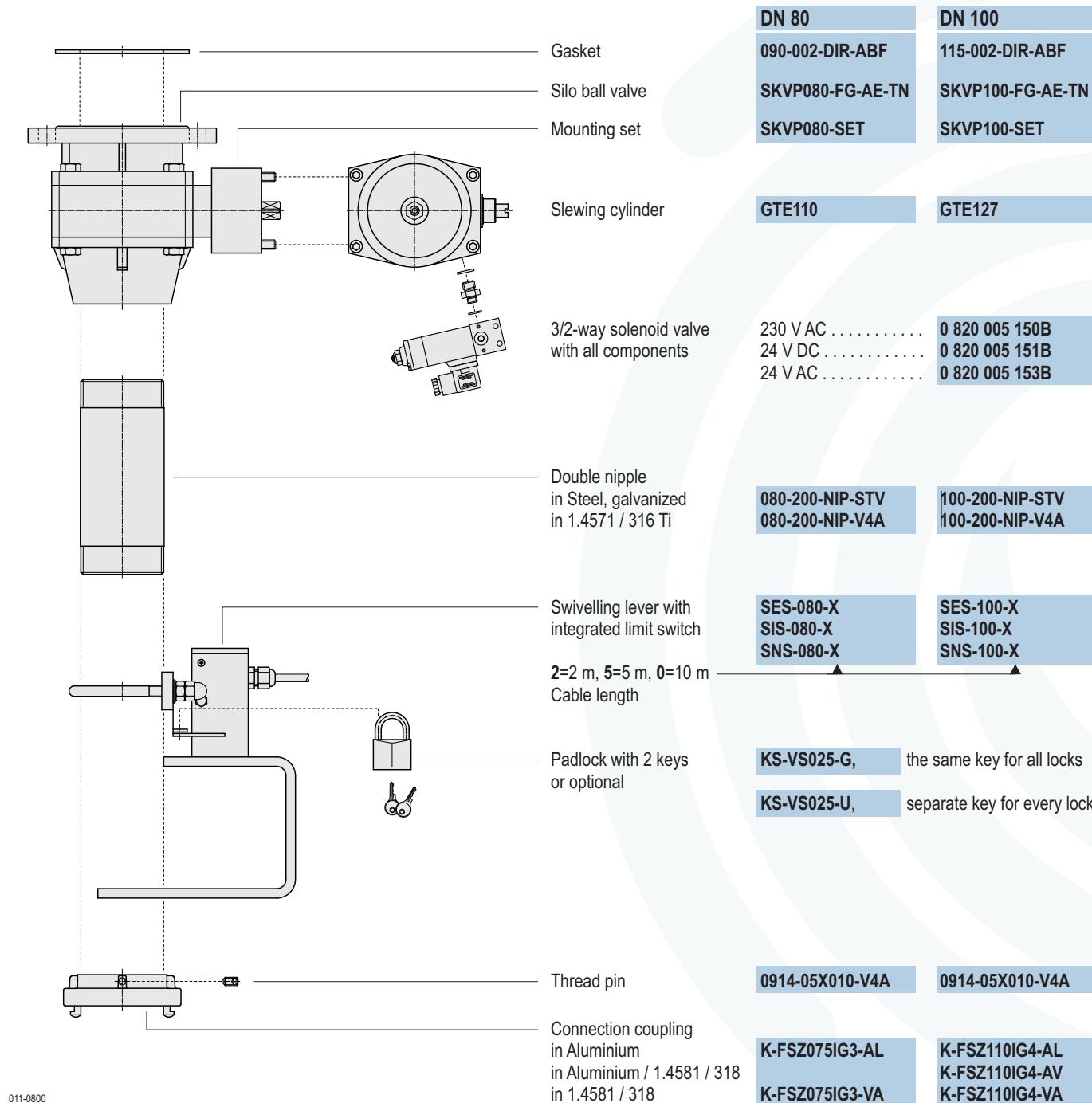
B7

Dust II 2/3D IIIB

Single parts

Silo filling device with ball valve

Type SFA ... K ... DN 80 and 100



011-0800

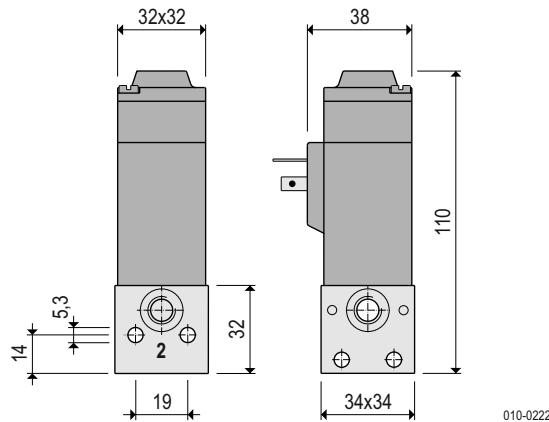
Accessories for pinch valves and silo filling devices

QV / SFA

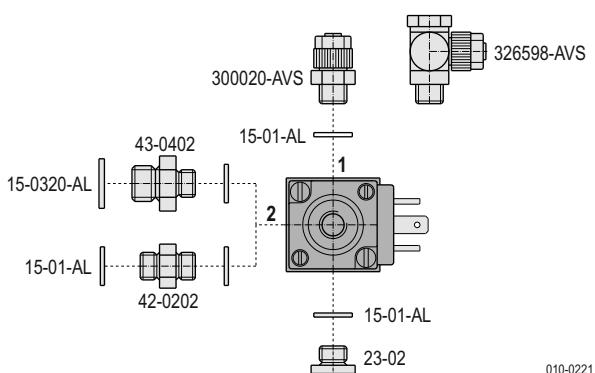
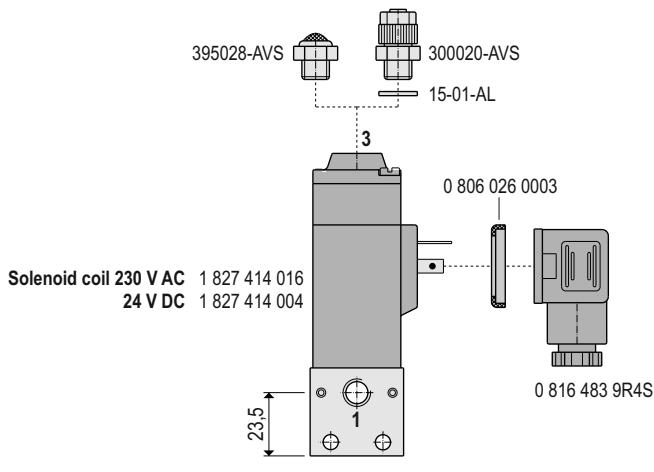
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3/2 way solenoid valve, normally open	03
Quick air-exhaust valve Compressed air switch	04

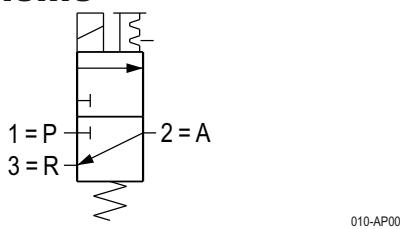
Dimensions



Components



Control scheme



Technical data

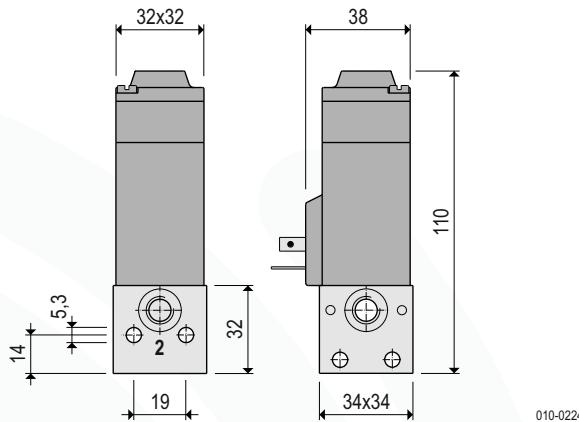
Construction type	Poppet valve, applicable for oil-free usage with manual override
Sealing	elastic soft rubber seal (VITON)
Solenoid coil	4 x 90° turnable
Socket connector	4 x 90° turnable
Connection thread	G 1/8
Mounting position	any
Ambient temperature	max. +50 °C
Medium temperature	max. +50 °C
Min. working pressure	0 bar
Nominal pressure	10 bar
Nominal flow	from 1 to 2 100 l/min from 2 to 3 120 l/min
Nominal size	1.8

Electrical data

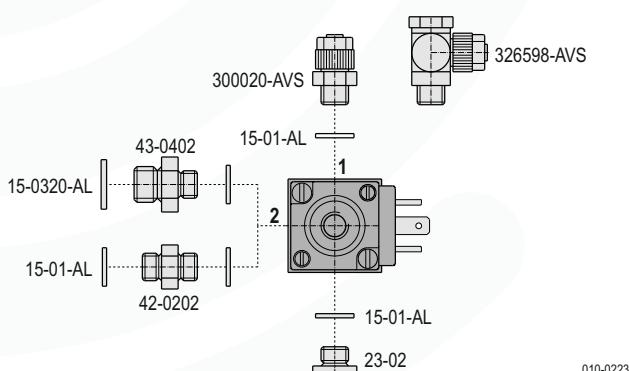
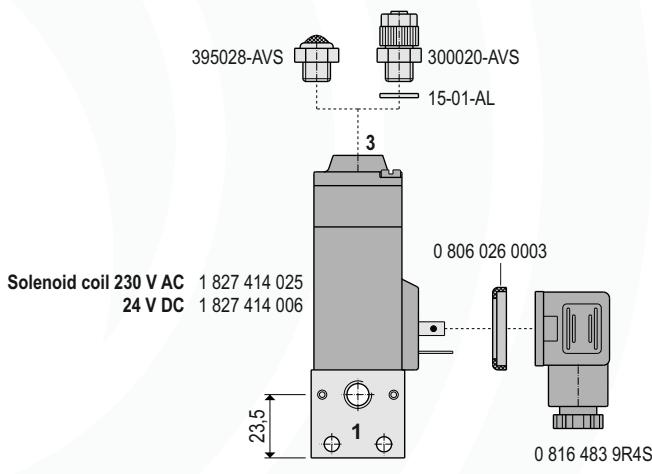
Power supply	230 V AC 24 V DC 24 V AC
Power consumption	with AC pick-up power 21 VA holding power 14 VA
	with DC 8 W
Cyclic duration factor	100 %
Type of protection in acc. to EN DIN 60529	IP00 without socket connector IP65 with socket connector

Power supply	Order code solenoid valve
230 V AC	0 820 005 150
24 V DC	0 820 005 151
24 V AC	0 820 005 153

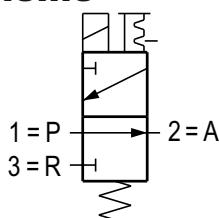
Dimensions



Components



Control scheme



010-AP01

Technical data

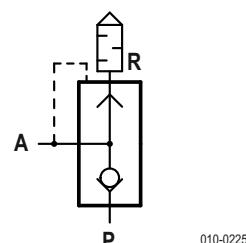
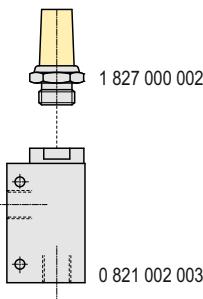
Construction type	Poppet valve, applicable for oil-free usage with manual override
Sealing	elastic soft rubber seal (VITON)
Solenoid coil	4 x 90° turnable
Socket connector	4 x 90° turnable
Connection thread	G 1/8
Mounting position	any
Ambient temperature	max. +50 °C
Medium temperature	max. +50 °C
Min. working pressure	0 bar
Nominal pressure	10 bar
Nominal flow	from 1 to 2 100 l/min from 2 to 3 120 l/min
Nominal size	1.8

Electrical data

Power supply	230 V AC 24 V DC 24 V AC
Power consumption	with AC pick-up power 21 VA holding power 14 VA
	with DC 8 W
Cyclic duration factor	100 %
Type of protection in acc. to EN DIN 60529	IP00 without socket connector IP65 with socket connector

Power supply	Order code solenoid valve
230 V AC	0 820 005 250
24 V DC	0 820 005 251
24 V AC	0 820 005 253

Quick air-exhaust valve

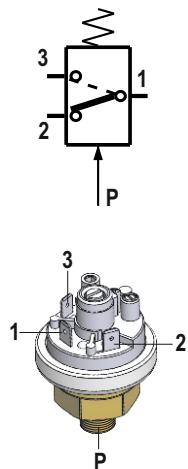
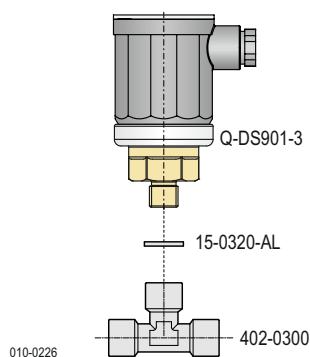


Construction type	Poppet valve, applicable for oil-free usage
Sealing	elastic soft rubber seal (NBR)
Connection thread	A und P = G 1/4, R = 3/8
Mounting position	any
Ambient temperature	max. +40 °C
Control medium temperature	max. +40 °
Min. working pressure	0.5 bar
Nominal pressure	10 bar
Nominal flow	from P to A 1000 l/min from A to R 2050 l/min
Nominal size	6
Silencer	G 3/8

Order code

0 821 002 003

Compressed air switch



Materials	
Housing	PA/PC
Connection thread	Brass
Membrane	NBR
Connection thread	G 1/4
Mounting position	any
Ambient temperature	-20 °C ... +85 °C
Medium temperatur	max. +85 °C
Max. working pressure	10 bar
Works setting	3.0 bar
Capacity of the contact	6 A / 250 V AC
Signal contact	change-over contact
Cable entry	M16x1.5
Electrical connection	AMP plug pins 6.35
Type of protection	IP65 according to DIN EN 60529

ATEX option

B0 Dust Ex II 3D Ex tc IIIB T 135 °C Dc

Order code

Q-DS901-3

Quick air-exhaust valve and compressed air switch

as a complete assembly

