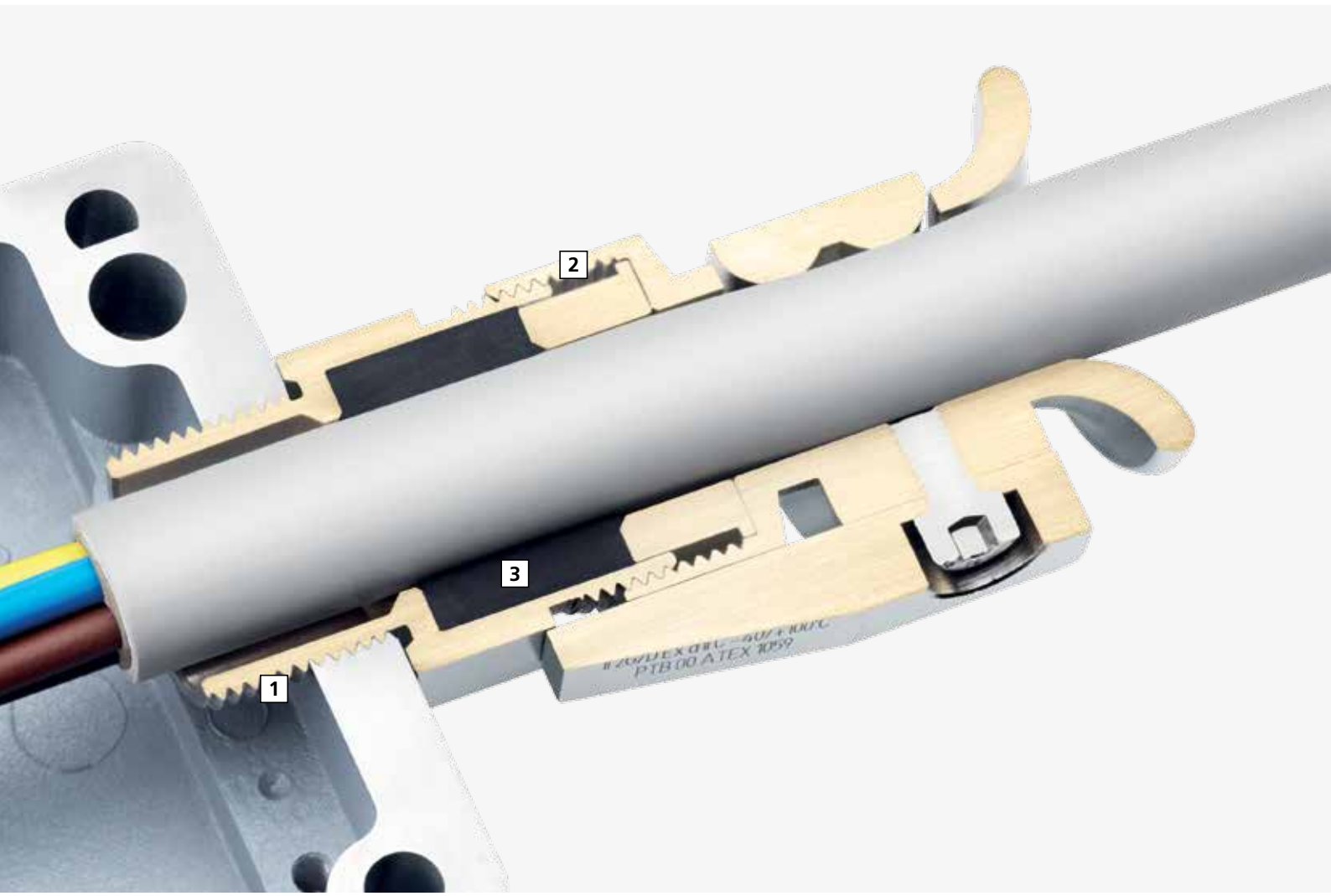
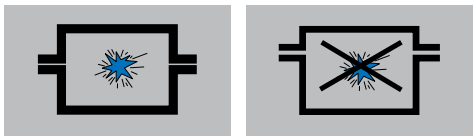


Flameproof enclosures Ex d IIC
and increased safety Ex e II



Principle
With ignition protection type Ex d IIC, components which can ignite an explosive atmosphere are arranged in a housing. This housing must contain the pressure of the explosion and an explosive mixture within itself, and it must prevent the explosion from spreading to the explosive atmosphere surrounding the housing.

Important design parameters
- The mechanical stability must correspond to that of a predetermined safety factor against internal explosion pressures.
- Gaps between two parts of a housing must be designed sufficiently long and narrow that exiting hot gas cannot ignite an explosive atmosphere which might be present in the hazardous area.
- The parameters for the gaps preventing an arc-through, width/length, are different for Explosion Subgroups IIA, IIB and IIC. The highest requirements on gap parameters are placed on the housings of Explosion Subgroup IIC.

Applications
- Equipment which during normal operation can generate sparks or electric arcs and/or hot components; this includes switchgear and circuit breakers, controls, motors, transformers, slip rings, collectors, regulating resistors, fuses, lighting fixtures, heating cartridges and friction brakes.

Cable glands for flameproof enclosures are tested according to IEC/EN 60079-1 for the following points:

- mechanical design and pressure testing
- electrical and thermal behaviour

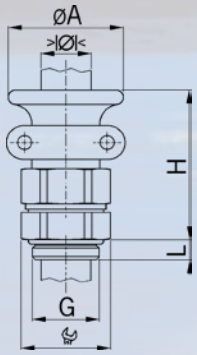
1 Entry threads
Long entry threads in metric, Pg, gas pipe or NPT designs provide maximum safety with respect to the quality of attachment.

2 Spanner surfaces
Large, solid spanner surfaces on the pressure nut and bottom section allow safe tightening with the assembly tool.

3 Guaranteed sealing capability
The ingenious sealing insert and matching inner contours ensure a targeted deformation of the insert and thus guarantee its tightness. Protection Class IP68 (30 bar) facilitate optimal usage.

Testing standards
EC 60079-0:2011 / EN 60079-0:2009
IEC 60079-1:2007 / EN 60079-1:2007
IEC 60079-31:2008 / EN 60079-31:2009

Marking
II 2G Ex db eb IIC
II 2D Ex ta IIIC
Equipment protection Level Gb Da
PTB 00 ATEX 1059
IECEx PTB 12.0056



Designation:	Series 18
Material:	Nickel-plated brass
Screws:	Stainless steel A2
Seal:	NBR one-piece sealing insert, not overall length insulated
Temperature range:	-40°C / +100°C
Protection class:	IP 68 (30 bar)
Test standard:	see page 8
Category 2G:	II 2G Ex db eb IIC
Category 2D:	II 2D Ex ta IIIC
Zone:	Gas 1 and 2 / dust 21 and 22
Certificate:	EC-type examination certificate PTB 00 ATEX 1059
IECEx Certificate:	IECEx PTB 12.0056
Approvals:	

Entry thread metric

G	>|Ø|< min mm	>|Ø|< max mm	mm	øA mm	H mm	L mm	Art.-Nr.	
M16x1.5	7.0	9.0	20	27	57	12	**1817.09.26**	25
M20x1.5	9.0	11.0	24	30	57	12	**1820.11.26**	25
M20x1.5	11.0	13.0	26	32	57	14	**1820.16.26**	25
M25x1.5	13.0	16.5	32	40	67	16	**1825.21.26**	10
M25x1.5	16.5	20.0	36	44	67	16	**1825.21.27**	10
M32x1.5	20.0	24.0	46	48	78	17	**1832.29.26**	5
M40x1.5	24.0	28.0	46	52	78	17	**1840.29.27**	5
M50x1.5	28.0	32.0	55	60	85	17	**1850.36.26**	5
M50x1.5	32.0	36.0	55	64	85	17	**1850.36.27**	5
M63x1.5	36.0	40.0	70	75	88	20	**1863.48.26**	1
M63x1.5	40.0	44.0	70	80	88	20	**1863.48.27**	1

Entry thread Pg

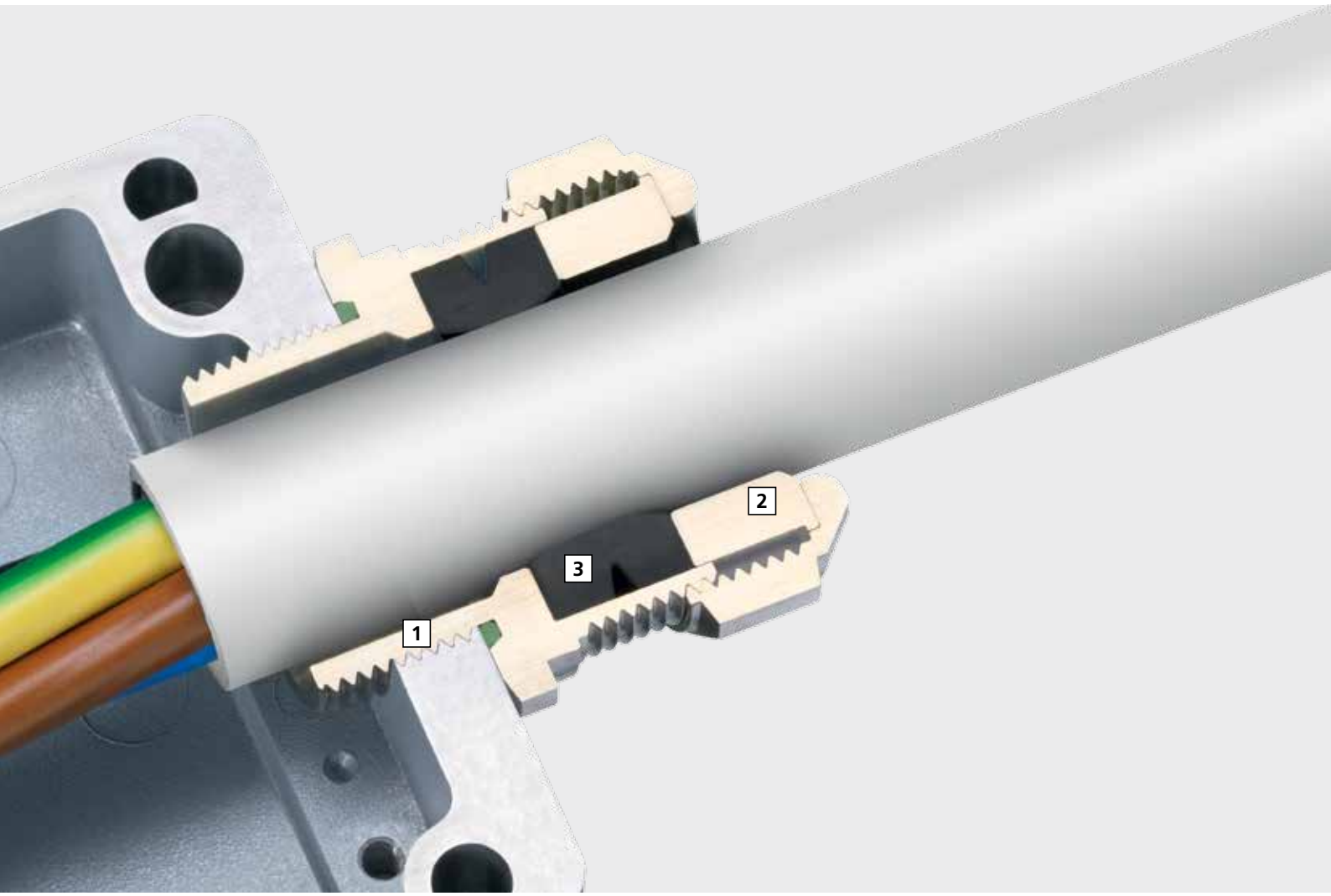
G	>|Ø|< min mm	>|Ø|< max mm	mm	øA mm	H mm	L mm	Art.-Nr.	
Pg 9	7.0	9.0	20	27	57	12	**1809.26**	25
Pg 11	9.0	11.0	24	30	57	12	**1811.26**	25
Pg 13	11.0	13.0	26	32	57	14	**1813.26**	25
Pg 16	11.0	13.0	26	32	57	14	**1816.26**	25
Pg 21	13.0	16.5	32	40	67	16	**1821.26**	10
Pg 21	16.5	20.0	36	44	67	16	**1821.27**	10
Pg 29	20.0	24.0	45	48	78	17	**1829.26**	5
Pg 29	24.0	28.0	45	52	78	17	**1829.27**	5
Pg 36	28.0	32.0	55	60	85	17	**1836.26**	5
Pg 36	32.0	36.0	55	64	85	17	**1836.27**	5
Pg 48	36.0	40.0	64	75	88	20	**1848.48.26**	1
Pg 48	40.0	44.0	64	80	88	20	**1848.48.27**	1

Entry thread NPT

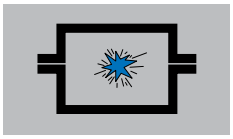
G	>|Ø|< min mm	>|Ø|< max mm	mm	øA mm	H mm	L mm	Art.-Nr.	
NPT 3/8"	7.0	9.0	20	27	57	15.5	**183/8NPT.09.26**	25
NPT 1/2"	9.0	11.0	24	30	57	20	**181/2NPT.11.26**	25
NPT 1/2"	11.0	13.0	26	32	57	20	**181/2NPT.16.26**	25
NPT 3/4"	9.0	11.0	27	30	57	20	**183/4NPT.11.26**	25
NPT 3/4"	11.0	13.0	26	32	57	20	**183/4NPT.16.26**	25
NPT 3/4"	13.0	16.5	32	40	67	20	**183/4NPT.21.26**	10
NPT 1"	13.0	16.5	32	40	67	25	**181NPT.21.26**	10
NPT 1"	16.5	20.0	36	44	67	25	**181NPT.21.27**	10
NPT 1 1/4"	20.0	24.0	45	48	78	26	**1811/4NPT.29.26**	5
NPT 1 1/4"	24.0	28.0	45	52	78	26	**1811/4NPT.29.27**	5
NPT 1 1/2"	28.0	32.0	55	60	85	26	**1811/2NPT.36.26**	5
NPT 1 1/2"	32.0	36.0	55	64	85	26	**1811/2NPT.36.27**	5

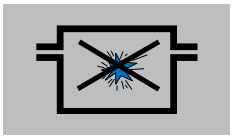
Gas-pipe entry thread

G	>|Ø|< min mm	>|Ø|< max mm	mm	øA mm	H mm	L mm	Art.-Nr.	
G 3/8"	7.0	9.0	20	27	57	12	**183/8G.09.26**	25
G 1/2"	9.0	11.0	24	30	57	14	**181/2G.11.26**	25
G 1/2"	11.0	13.0	26	32	57	14	**181/2G.16.26**	25
G 3/4"	13.0	16.5	32	40	67	16	**183/4G.21.26**	10
G 3/4"	16.5	20.0	36	44	67	16	**183/4G.21.27**	10
G 1"	20.0	24.0	45	48	78	17	**181G.29.26**	5
G 11/4"	24.0	28.0	45	52	78	17	**1811/4G.29.27**	5
G 11/2"	28.0	32.0	55	60	85	17	**1811/2G.36.26**	5
G 2"	36.0	40.0	64	75	88	20	**1848.26**	1
G 2"	40.0	44.0	64	80	88	20	**1848.27**	1



Flameproof enclosures Ex d IIC
and increased safety Ex e II





For a description of the protection type of flameproof enclosures, please see Page 8 of this brochure.

Ex e II principle
In the case of ignition protection with an increased safety type, operation is based on the equipment preventing ignition of the explosive atmosphere which can also leak into the housing. The equipment may not reach temperatures which are above the temperature class of gases which could potentially arise in the place of use, and sparks caused by electrical or mechanical means may also not occur. In electrical machines, electrical-thermal testing is thus of particular importance. In operation, protection against overloading is essentially important to maintaining explosion protection.

Important design parameters
- There are special protection requirements for non-insulated active components.
- Air and creepage gaps are dimensioned larger than is generally the case in industry. Special requirements apply to the IP protection classes which must be maintained.
- More stringent requirements apply to windings with mechanical stability and insulating capacity, and the windings must be protected against elevated temperatures.

Applications
- Installation materials such as junction boxes and distribution boxes, terminal compartments for heaters, storage batteries, transformers, inductive ballasts, electrical motors, squirrel cage induction motors, lighting fixtures.

Cable glands for increased safety are tested according to IEC/EN 60079-7 for the following points:
- mechanical design
- electrical-thermal testing

1 Entry threads
Long entry threads in metric designs allow maximum safety with respect to the quality of attachment.

2 Compact design
The compact design allows space-saving assembly on equipment, and the large clamping range reduces the number of different types.

3 Guaranteed sealing capability
The ingenious sealing insert and matching inner contours ensure a targeted deformation of the insert and thus guarantee its tightness. Protection Class IP68 (30 bar) facilitate optimal usage.

Testing standards
EC 60079-0:2011 / EN 60079-0:2009
IEC 60079-1:2007 / EN 60079-1:2007
IEC 60079-31:2008 / EN 60079-31:2009

Marking
II 2G Ex db eb IIC
II 2D Ex ta IIIC
Equipment protection Level Gb Da
PTB 00 ATEX 1034X
IECEx PTB 12.0055X

Designation:	Ex Compact MS
Material:	Nickel-plated brass
Seal:	NBR
	one-piece sealing insert, not overall length insulated
O-Ring :	FPM
Temperature range:	-60°C / +105°C
Protection class:	IP 68 (30 bar)
Test standard:	see page 10
Category 2G:	II 2G Ex db eb IIC
Category 2D:	II 2D Ex ta IIIC
Zone:	Gas 1 and 2 / dust 21 and 22
Certificate:	EC-type examination certificate PTB 10 ATEX 1034X
IECEx Certificate:	IECEx PTB 12.0055X
Approvals:	

Entry thread metric

G	>|Ø|< min mm	>|Ø|< max mm	mm	H mm	L mm	Art.-Nr.	
M16x1.5	3.0	7.0	21	26	12	**EX1126.17.070**	25
M16x1.5	5.0	10.0	24	26	12	**EX1126.17.100**	25
M20x1.5	5.0	11.0	24	26	12	**EX1126.20.110**	25
M20x1.5	9.0	14.0	30	26	12	**EX1126.20.140**	25
M25x1.5	7.5	15.0	32	28	12	**EX1126.25.150**	20
M25x1.5	12.5	18.0	32	28	12	**EX1126.25.180**	20
M32x1.5	17.0	23.0	41	33	12	**EX1126.32.230**	10
M32x1.5	21.0	26.0	41	33	12	**EX1126.32.260**	10
M40x1.5	21.0	26.0	41	33	14	**EX1126.40.260**	10
M40x1.5	24.0	32.0	50	34	14	**EX1126.40.320**	10
M50x1.5	28.0	36.0	55	34	14	**EX1126.50.360**	5
M50x1.5	35.0	42.0	60	35	14	**EX1126.50.420**	5
M63x1.5	36.0	44.0	65	35	14	**EX1126.63.440**	1
M63x1.5	43.0	50.0	70	35	14	**EX1126.63.500**	1

Available on request:

Executions in stainless steel A2 and A4, NPT entry threads