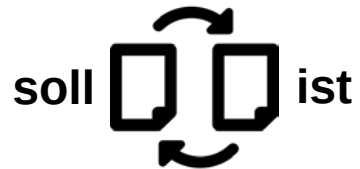


Bearbeitungshinweise zu den Tabellen O.1 bis O.4:



Schrift-Farben:

grün	Daten in der EU-Baumusterprüfbescheinigung zum Ex-Gerät zu finden
gelb	Daten auf dem Typenschild des Ex-Gerätes zu finden
blau	Daten in der Betriebsanleitung zum Ex-Geräte zu finden
rosa	Daten in der Betreiber-Dokumentation zu finden
grau	Daten aus Normen

Zellen-Farbe:

grau	Detail-Prüfung, ggf. mit Mess-/Prüfmittel
rot	weitergehende mündliche Hinweise während des Vortrages

Annex O (informative)

Inspection tables for initial inspections (from IEC 60079-17)

Table O.1 shows the initial inspection schedule for Ex "d", Ex "e", Ex "n" and Ex "t"/"tD" installations.

**Table O.1 – Initial inspection schedule for Ex "d", Ex "e", Ex "n"
and Ex "t"/"tD" installations**

Check that: X = required for all types, – = not required for initial inspection, n = type "n" only, t = type "t" and "tD" only		Ex "d"	Ex "e"	Ex "n" Ex "t"/"tD"
		Initial Inspection		
A	GENERAL (ALL EQUIPMENT)			
1	Equipment is appropriate to the EPL/Zone requirements of the location	X	X	X
2	Equipment group is correct	X	X	X
3	Equipment temperature class is correct (only for gas)	X	X	n
4	Equipment maximum surface temperature is correct			t
5 → 15	Degree of protection (IP grade) of equipment is appropriate for the level of protection/group/conductivity	X	X	X
6	Equipment circuit identification is correct	X	X	X
7	Equipment circuit identification is available	X	X	X
8	Enclosure, glass parts and glass-to-metal sealing gaskets and/or compounds are satisfactory	X	X	X
9	There is no damage or unauthorized modifications	X	X	X
10	There is no evidence of unauthorized modifications	-	-	-
11	Bolts, cable entry devices (direct and indirect) and blanking elements are of the correct type and are complete and tight			
	– physical check	X	X	X
	– visual check	-	-	-
12	Threaded covers on enclosures are of the correct type , are tight and secured			
	– physical check	X	-	-
	– visual check	-	-	-
13	Joint surfaces are clean and undamaged and gaskets, if any, are satisfactory and positioned correctly	X	-	-
14	Condition of enclosure gaskets is satisfactory	X	X	X
15 → 5	There is no evidence of ingress of water or dust in the enclosure in accordance with the IP rating	X	X	X
16 ok ?? ???	Dimensions of flanged joint gaps are: – within the limits in accordance with manufacturer's documentation or – within maximum values permitted by relevant construction standard at time of installation or – within maximum values permitted by site documentation	X	-	-
17	Electrical connections are tight	-	X	X
18	Unused terminals are tightened	-	X	n
19	Enclosed-break and hermetically sealed devices are undamaged	-	-	n
20	Encapsulated components are undamaged	-	X	n

Kommentiert [MT1]: IP Ex Equipment ungleich IP Industrie

Kommentiert [MT2]: z.B. Ex „d“ --> genaue Zuordnung notwendig

Kommentiert [MT3]: Das wird doch mit dem Ex Gerät festgelegt und geprüft! Was soll der Betreiber hier messen (und dabei den Spalt beschädigen)?

Sinnvoller wäre z.B. Drehmoment und die Angabe der Schraubenqualität (auf dem Typenschild, wenn abweichend)

Check that: X = required for all types, – = not required for initial inspection, n = type "n" only, t = type "t" and "tD" only		Ex "d"	Ex "e"	Ex "n" Ex "t/tD"
		Initial Inspection		
21	Flameproof components are undamaged	-	X	n
22	Restricted breathing enclosure is satisfactory – (type "nR" only)	-	-	n
23	Test port, if fitted, is functional – (type "nR" only)	-	-	n
24	Breathing operation is satisfactory – (type "nR" only)	-	-	n
25	Breathing and draining devices are satisfactory	X	X	n
EQUIPMENT SPECIFIC (LIGHTING)				
26	Fluorescent lamps are not indicating EOL effects	-	X	X
27	HID lamps are not indicating EOL effects	X	X	X
28	Lamp type, rating, pin configuration and position are correct	X	X	X
EQUIPMENT SPECIFIC (ELECTRICAL MACHINES)				
29	Electrical machine fans have sufficient clearance to the enclosure and/or covers, cooling systems are undamaged, electrical machine foundations have no indentations or cracks.	X	X	X
30	The ventilation airflow is not impeded	X	X	X
31	Insulation resistance (IR) of the electrical machine windings is satisfactory	X	X	X
B INSTALLATION – GENERAL				
1	Type of cable is appropriate	X	X	X
2	There is no obvious damage to cables	X	X	X
3	Sealing of trunking, ducts, pipes, conduits and cables is satisfactory	X	X	X
4	Stopping boxes and cable boxes are correctly filled	X	-	-
5	Integrity of conduit system and interface with mixed system maintained	X	X	X
6	Earthing connections, including any supplementary earthing bonding connections are satisfactory			
	– physical check (for example connections are tight and conductors are of sufficient cross-section)	X	X	X
	– visual check	-	-	-
7	Fault loop impedance (TN systems) or earthing resistance (IT systems) is satisfactory	X	X	X
8	Automatic electrical protective devices are set correctly (auto-reset not possible)	X	X	X
9	Automatic electrical protective devices operate within permitted limits	X	X	X
10	Specific (special) conditions of use (if applicable) are complied with	X	X	X
11	Cables not in use are correctly terminated	X	X	X
12	Obstructions adjacent to flameproof flanged joints are in accordance with IEC 60079-14	X	-	-
13	Variable voltage/frequency installation complies with documentation	X	X	X
INSTALLATION – HEATING SYSTEMS				
14	Temperature sensors function according to manufacturer's documents	X	X	t
15	Safety cut off devices function according to manufacturer's documents	X	X	t
16	The setting of the safety cut off is sealed	X	X	-
17	Reset of a heating system safety cut off possible with tool only	X	X	-
18	Auto-reset is not possible	X	X	-

Kommentiert [MT4]: EOL - End of Live // vor Inbetriebnahme?

Kommentiert [MT5]: nicht geregelt; typischer Wert: 1000 MOhm

Kommentiert [MT6]: siehe IEC 60364

Check that: X = required for all types, – = not required for initial inspection, n = type "n" only, t = type "t" and "tD" only		Ex "d"	Ex "e"	Ex "n" Ex "t/tD"
		Initial Inspection		
19	Reset of a safety cut off under fault conditions is prevented	X	X	-
20	Safety cut off independent from control system	X	X	-
21	Level switch is installed and correctly set , if required	X	X	-
22	Flow switch is installed and correctly set , if required	X	X	-
INSTALLATION – ELECTRICAL MACHINES				
23	Electrical machine protection devices operate within the permitted t_E or t_A time limits .	-	X	-
C ENVIRONMENT				
1	Equipment is adequately protected against corrosion, weather, vibration and other adverse factors	X	X	X
2	No undue accumulation of dust and dirt	X	X	X
3	Electrical insulation is clean and dry	-	X	X

Kommentiert [MT7]: Kann der Betreiber dies überhaupt feststellen?

Table O.2 shows the initial inspection schedule for Ex "i" installations.

Table O.2 – Initial inspection schedule for Ex "i" installations

Check that: X = required, – = not required for initial inspection		Grade of inspection Initial Inspection
A	EQUIPMENT	
1	Circuit and/or equipment documentation is appropriate to the EPL/Zone	X
2	Equipment installed is that specified in the documentation	X
3	Circuit and/or equipment category and group correct	X
4	IP rating of equipment is appropriate to the Group III material present	X
5	Equipment temperature class is correct	X
6	Ambient temperature range of the apparatus is correct for the installation	X
7 ??	Service temperature range of the apparatus is correct for the installation	X
8	Installation is clearly labelled	X
9	Enclosure, glass parts and glass-to-metal sealing gaskets and/or compounds are satisfactory	X
10	Cable glands and blanking elements are the correct type , complete and tight	
	– physical check	X
	– visual check	-
11	There is no damage or unauthorized modifications	X
12	There is no evidence of unauthorized modifications	-
13	Diode safety barriers, galvanic isolators, relays and other energy limiting devices are of the approved type , installed in accordance with the certification requirements and securely earthed where required	X
14	Condition of enclosure gaskets is satisfactory	X
15	Electrical connections are tight	X
16	Printed circuit boards are clean and undamaged	X
17	The maximum voltage U_m of the associated apparatus is not exceeded	X

Kommentiert [MT8]: Das gilt doch nur für Ex-Komponenten

Check that: X = required, – = not required for initial inspection		Grade of inspection
		Initial Inspection
B	INSTALLATION	
1	Cables are installed in accordance with the documentation	X
2	Cable screens are earthed in accordance with the documentation	X
3	There is no obvious damage to cables	X
4	Sealing of trunking, ducts, pipes, conduits and cables is satisfactory	X
5	Point-to-point connections are all correct (initial inspection only)	X
6	Earth continuity is satisfactory (for example connections are tight, conductors are of sufficient cross-section) for non-galvanically isolated circuits	X
7	Earth connections maintain the integrity of the type of protection	X
8	Intrinsically safe circuit earthing is satisfactory	X
9	Insulation resistance is satisfactory	X
10	Separation is maintained between intrinsically safe and non-intrinsically safe circuits in common distribution boxes or relay cubicles	X
11	Short-circuit protection of the power supply is in accordance with the documentation	X
12	Specific (special) conditions of use (if applicable) are complied with	X
13	Cables not in use are correctly terminated	X
C	ENVIRONMENT	
1	Equipment is adequately protected against corrosion, weather, vibration and other adverse factors	X
2	No undue external accumulation of dust and dirt	X

Kommentiert [MT9]: Sollte Teil der EU-Baumusterprüfung sein...

Table O.3 shows the inspection schedule for Ex "p" and "pD" installations.

Table O.3 – Inspection schedule for Ex "p" and "pD" installations

Check that: X = required, – = not required for initial inspection		Grade of inspection
		Initial Inspection
A	EQUIPMENT	
1	Equipment is appropriate to the EPL/zone requirements of the location	X
2	Equipment group is correct	X
3	Equipment temperature class or surface temperature is correct	X
4	Equipment circuit identification is correct	X
5	Equipment circuit identification is available	X
6	Enclosure, glasses and glass-to-metal sealing gaskets and compounds are satisfactory	X
7	There is no damage or unauthorized modifications	X
8	There is no evidence of unauthorized modifications	-
9	Lamp type, rating , and position are correct	X

Check that: X = required, – = not required for initial inspection		Grade of inspection
		Initial Inspection
B	INSTALLATION	
1	Type of cable is appropriate	X
2	There is no obvious damage to cables	X
3	Earthing connections, including any supplementary earthing bonding connections, are satisfactory – physical check for example connections are tight and conductors are of sufficient cross-section – visual check	X –
4	Fault loop impedance (TN systems) or earthing resistance (IT systems) is satisfactory	X
5	Automatic electrical protective devices operate within permitted limits	X
6	Automatic electrical protective devices are set correctly	X
7	Protective gas inlet temperature is below maximum specified	X
8	Ducts, pipes and enclosures are in good condition	X
9	Protective gas is substantially free from contaminants	X
10	Protective gas pressure and/or flow is adequate	X
11	Pressure and/or flow indicators, alarms and interlocks function correctly	X
???		
12	Conditions of spark and particle barriers of ducts for exhausting the gas in hazardous area are satisfactory	X
13	Specific (special) conditions of use (if applicable) are complied with	X
C	ENVIRONMENT	
1	Equipment is adequately protected against corrosion, weather, vibration and other adverse factors	X
2	No undue accumulation of dust and dirt	X

Kommentiert [MT10]: siehe IEC 60364

Kommentiert [MT11]: Kann der Betreiber dies überhaupt feststellen?

Kommentiert [MT12]: Kann der Betreiber dies überhaupt feststellen?

Table O.4 shows the inspection schedule for Ex "o" installations.

Table O.4 – Inspection schedule for Ex "o" installations

Check that: X = required, – = not required for initial inspection		Grade of inspection
		Initial Inspection
A	EQUIPMENT	
1	Equipment is appropriate to the EPL/Zone requirements of the location	X
2	Equipment group is correct	X
3	Equipment temperature class is correct	X
4	Equipment circuit identification is correct	X
5	Equipment circuit identification is available	X
6	Enclosure, glass parts and glass-to-metal sealing gaskets and/or compounds are satisfactory	X
7	There are no unauthorized modifications	X
8	There are no visible unauthorized modifications	–
9	Bolts, cable entry devices (indirect) and blanking elements are of the correct type and are complete and tight	

Check that: X = required, – = not required for initial inspection		Grade of inspection
		Initial Inspection
	– physical check	X
	– visual check	-
10	Electrical connections are tight	X
11	Condition of enclosure gaskets is satisfactory	X
12	Breathing and draining devices are satisfactory. The manufacturer's schedule for maintenance requirements for the drying agent are documented to have been followed	X
13	Sealed enclosure pressure-relief devices are satisfactory	X
14	Enclosures marked Permanently Sealed have no visible evidence that the enclosure has been opened	X
15	maximum/minimum criteria of the protective liquid	
	a) level of the protective liquid shall be at or below the maximum and above the minimum permitted level ;	X
	b) the maximum working angle to the horizontal of the equipment shall be satisfactory	X
16	Enclosures intended to be opened	
	The level of the protective liquid is correct .	X
17	When a dipstick is provided, the dipstick is secured in its measurement position and its seal is satisfactory	X
18	remote-indicating protective liquid level indicating device operation is satisfactory	X
19	switching device schedule for cleaning/filtering/replacement of the protective liquid following a given number of normal switching operations or interruption of fault currents is documented	X
B	INSTALLATION – GENERAL	
1	Type of cable is appropriate	X
2	There is no obvious damage to cables	X
3	Sealing of trunking, ducts, pipes, conduits and cable glands is satisfactory	X
4	Stopping boxes, cable boxes and cable glands are correctly filled	X
5	Integrity of conduit system and interface with mixed system maintained	X
6	Earthing connections, including any supplementary earthing bonding connections are satisfactory	
	– physical check (for example connections are tight and conductors are of sufficient cross-section)	X
	– visual check	-
7	Fault loop impedance (TN systems) or earthing resistance (IT systems) is satisfactory	X
8 ???	Automatic electrical protective devices are set correctly (auto-reset not possible)	X
9 ???	Automatic electrical protective devices operate within permitted limits	X
10	Specific (special) conditions of use (if applicable) are complied with	X
11	Cables not in use are correctly terminated	X
12	Variable voltage/frequency installation complies with documentation	X
	INSTALLATION – HEATING SYSTEMS	
13	Temperature sensors function according to manufacturer's documents	X
14	Safety cut off devices function according to manufacturer's documents	X
15	The setting of the safety cut off is sealed	X
16	Reset of a heating system safety cut off possible with tool only	X

Kommentiert [MT13]: siehe IEC 60364

Kommentiert [MT14]: Kann der Betreiber dies überhaupt feststellen?

Check that: X = required, – = not required for initial inspection		Grade of inspection
		Initial Inspection
17	Auto-reset is not possible	X
18	Reset of a safety cut off under fault conditions is prevented	X
19	Safety cut off independent from control system	X
20	Level switch is installed and correctly set , if required	X
21	Flow switch is installed and correctly set , if required	X
C	ENVIRONMENT	
1	Equipment is adequately protected against corrosion, weather, vibration and other adverse factors	X
2	No undue accumulation of dust and dirt	X
3	Electrical insulation is clean and dry	-

Kommentiert [MT15]: Kann der Betreiber dies überhaupt feststellen?