





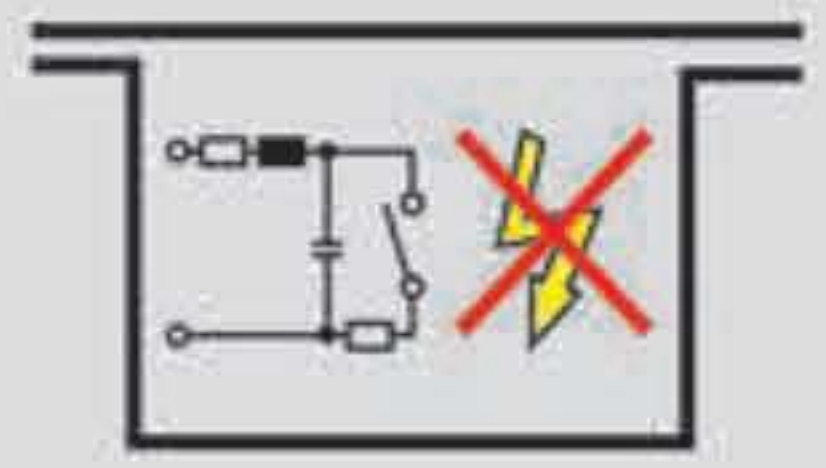
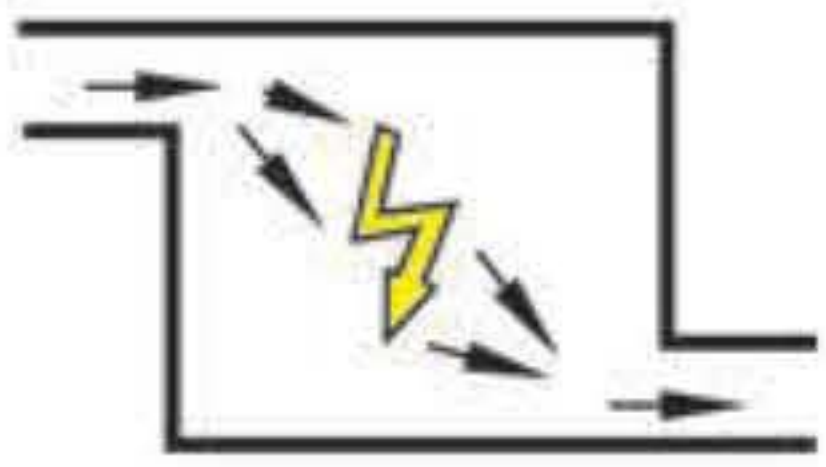

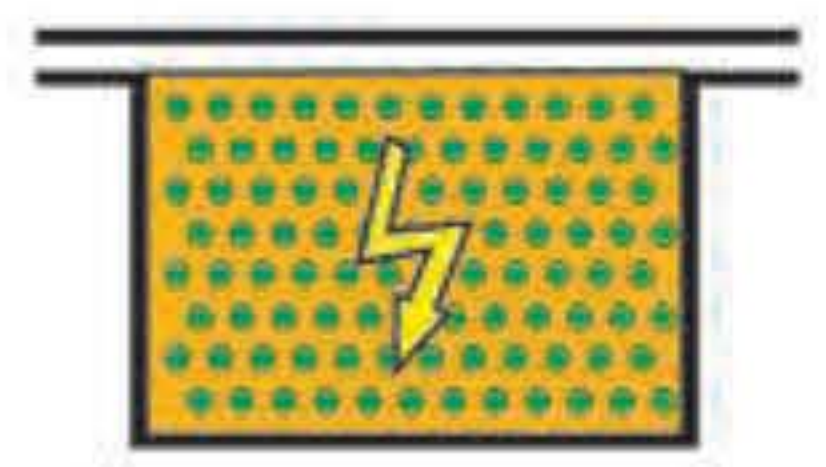

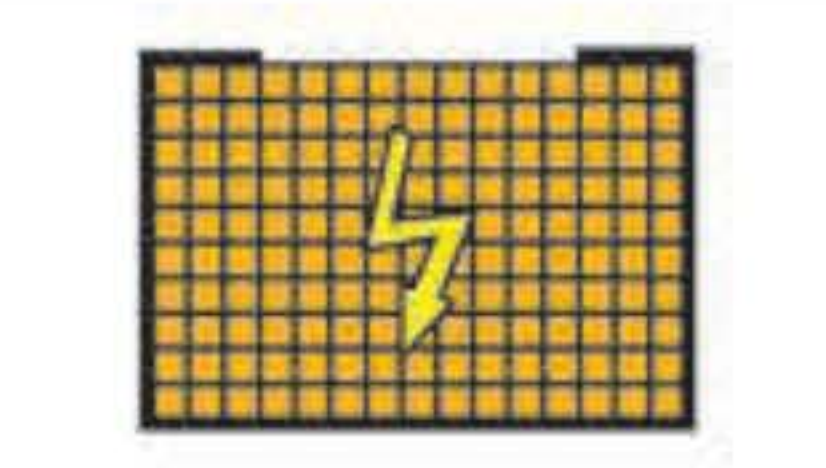
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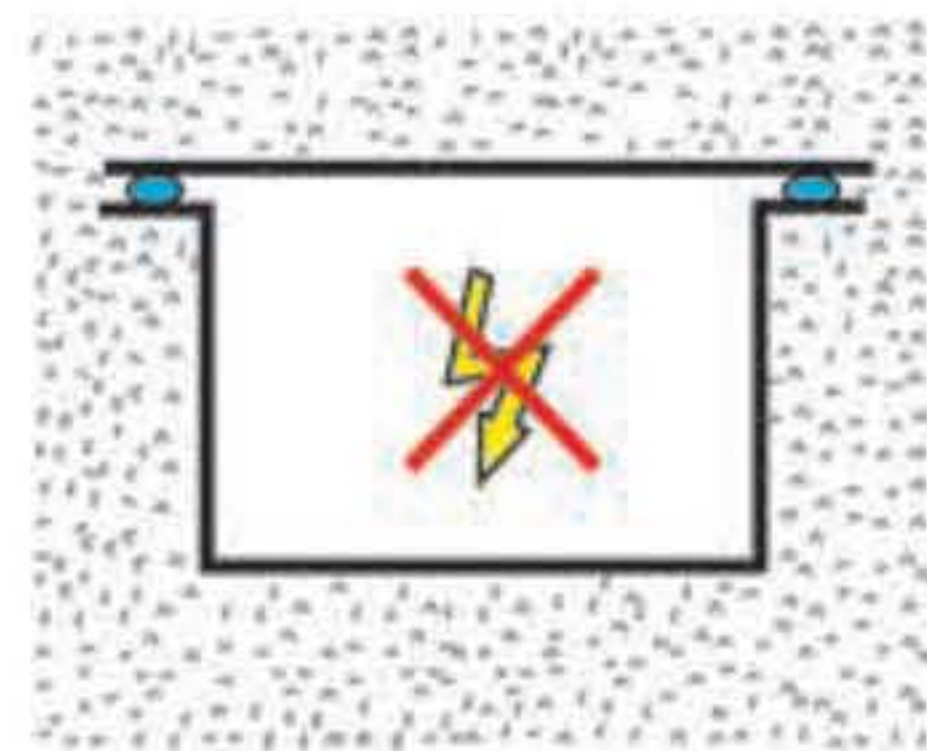
Explosion Proof

Common Knowledge

■ Gb3836 in the system of electrical equipment protection method

Standard Numbers	International foreign Corresponding standard	Explosion-proof type	Explosion-proof principle	Graphical method
GB3836.1	IEC60079-0 EN60079-0 FM3600 UL2279	General requirements	—	—
GB3836.2	IEC60079-1 EN60079-1 FM3600 UL2279	Flame-proof "d"	The equipment in normal operation, the parts which can ignite an explosion in the enclosure, Flame-proof shell can withstand the internal explosion pressure without loss, and can prevent spread to outside the shell.	
GB3836.3	IEC60079-7 EN60079-7 FM3600 UL2279	Increased safety type "e"	In normal operation, won't produce arc, spark and dangerous high temperature on the structure and into a step take protective measures to improve equipment safety.	
GB3836.4	IEC60079-11 EN60079-11 FM3601 UL2279	Intrinsically safe "i"	Equipment internal circuit under specified conditions, normal work and certain fault condition the electric spark of generation and intrinsically safe circuits.a.	
GB3836.5	IEC60079-2 EN60079-2 FM3620 NFPA496	Positive pressure type "P"	Maintain internal protection gas pressure is higher than all around, lest explosive mixture into the enclosure, or make plenty of protective gas through the shell, make internal explosive mixture concentration drop to lower explosive limit the following.	
GB3836.6	IEC60079-6 EN60079-6 FM3600 UL2279	Oil filled type "O"	The electrical equipment parts of the whole immersed in protecting liquid, the equipment can not ignite head or shell outside of explosive gas.	
GB3836.7	IEC60079-5 EN60079-5 FM3600 UL2279	Filling sand mold "q"	Electrical equipment a explosion-proof type, will be able to ignite explosive gas are fixed conductive department a complete embedded filler material, in order to prevent light external explosive gas environment.	
GB3836.8	IEC60079-15 EN60079-15 UL2279	"n" type	Electrical equipment must not light surrounding explosive gas(In normal working condition and in it fixed the abnormal operating conditions)	
GB3836.9	IEC60079-18 EN60079-18 FM3600 UL2279	Encapsulation type "m"	Light will be part of the explosive mixture encapsulation in complex, make it cannot fire around the explosive gas.	

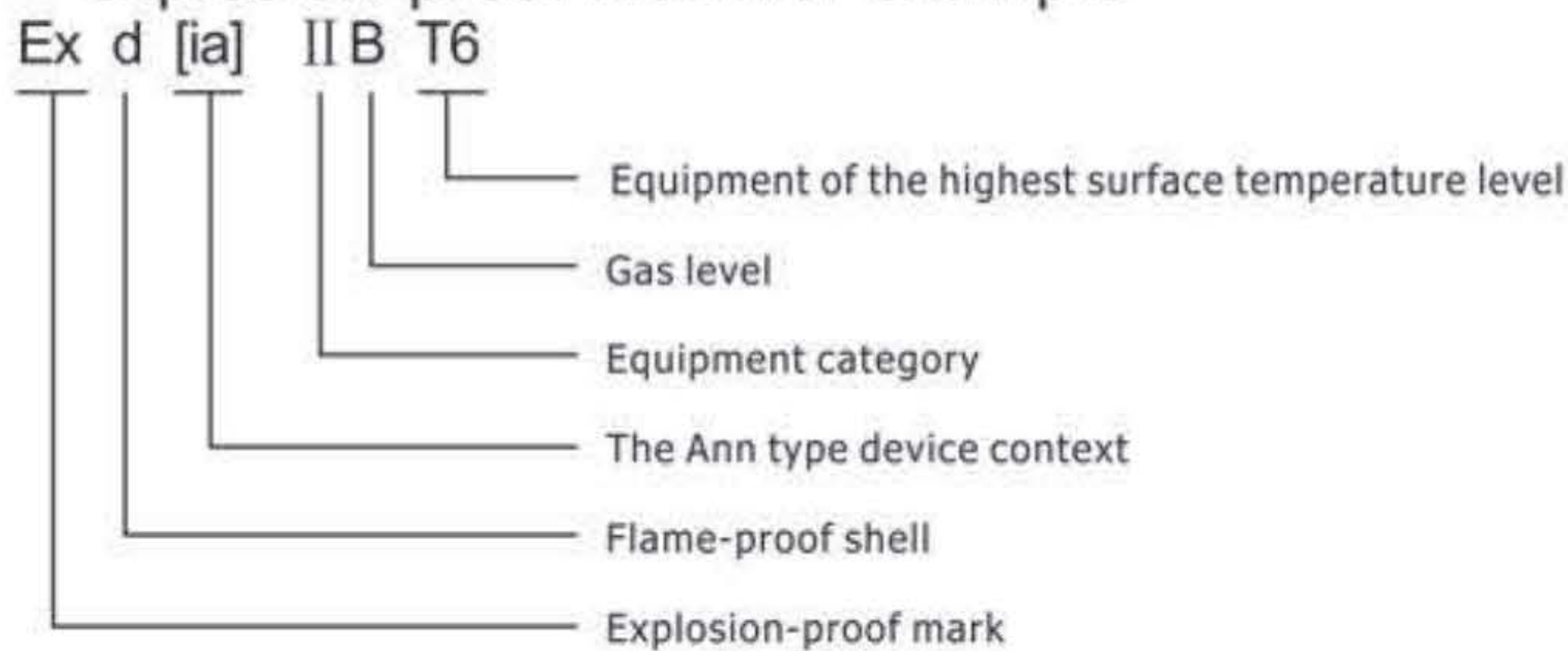
■ Dust explosive electric equipment protection method

Standard Numbers	International foreign Corresponding standard	Explosion-proof type	Explosion-proof principle	Graphical method
GB12476.1	IEC61241-0 IEC61241-1 EN61241-0 EN61241-1	Dusty explosion-proof "DIP"	<p>Combustible dust environment with electrical equipment part 1 with shell and limit surface temperature protection electrical equipment the first quarter: electrical equipment technical requirements</p> <p>Combustible dust environment with electrical equipment. Part 1 with shell and limit surface temperature protection electrical equipment the second quarter: electrical equipment selection, installation and maintenance.</p>	

Explosive gas environment with electrical equipment the dangerous site classification

0 Class	1 Class	2 Class
Explosive gas environment continuous appear, long between the place.	In the normal operation may arise when explosive gas environment place	In normal operation, it is not likely to explosive gas ring environment, if there is only occasionally occurs and is only short time existing sites.

Explosive gas environment with electrical equipment explosion-proof mark for example



II Kind of electrical equipment of the highest surface temperature group

Temperature group	Equipment the highest surface temperature(°C)
T1	450
T2	300
T3	200
T4	135
T5	100
T6	85

Explosive gas or steam categories and temperature group

Temperature group	T1	T2	T3	T4	T5	T6		
I	Methane	—	—	—	—	—		
II A	Acetic acid Acetone Acetonitrile Allyl acyl fluorine Ammonia Aniline Ethyl benzene Benzene Methyl styrene Three toluene Pentane - 2 - ketone (methyl propyl ketone)	Cresol Bromine ethane Isobutane Butyl fluoride Chloride methane Propane Chloroethane Oil Nitrogen (mixed) Benzene	Cyclopentane Methyl cyclopentane Propionic acid Acetylene Methanol Formic acid armour grease Acetic fat Epoxy ethane Diisopropyl ether	Propyl alcohol Cyclohexanone Ethylene Furan Butane Methylamine Chlorohydrin Acrylic b fat	Pentane Methyl cyclohexane Oil (including gasoline) Diesel Kerosene Already paraffin ethanethiol Amyl alcohol chlorobutane Tetrahydrothiophene	Acetaldehyde	—	Ethyl nitrite
II B	Propiolic (Methyl acetylene) Cyclopropane Acrylonitrile	Hydrogen cyanide Coke oven gas	Butadiene-1,3 Epoxy ethane Methacrylate Furan	Two formaldehyde A hydrogenated furfuryl alcohol Crotonaldehyde Ethanethiol	Ethyl methyl ether Diethyl ether Butyl ether Tetrafluoroethylene	—	—	—
II C	Hydrogen	Acetylene	—	—	Carbon disulfide	—		

Zoning and installation standard

GB3836.14-2000 Explosive gas environment with electrical equipment
Part 14: Dangerous site classification

GB3836.15-2000 Explosive gas environment with electrical equipment
Part 15: Dangerous site electrical installation(Except coal mine)

■ Explosive gas classification group

Electrical equipment category	Representative gas	Gas classification	The biggest test security clearance(MESG)	Minimum ignition current(MIC)
I type	Methane(Methane)	—	—	—
II A type	Propane	A	MESG>0.9mm	MIC ratio>0.8
II B type	Ethylene	B	MESG0.5mm~0.9mm	MIC ratio: 0.45~0.8
II C type	Hydrogen/Acetylene	C	MESG<0.5mm	MIC ratio<0.45

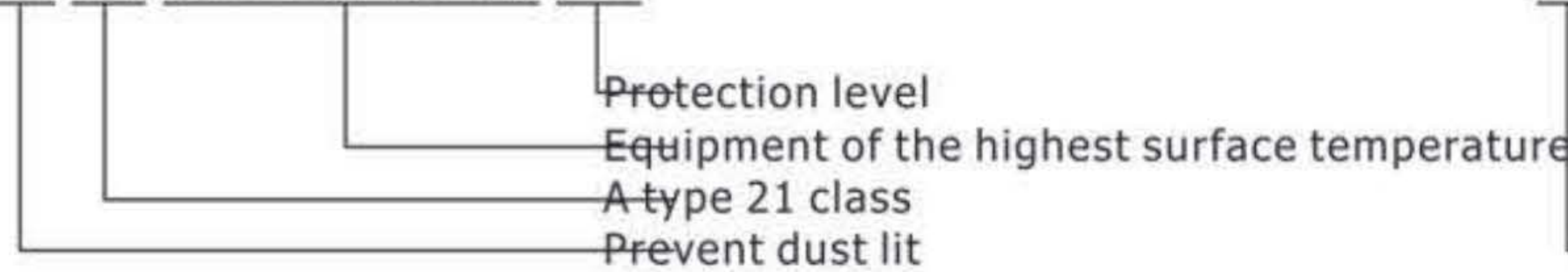
Note: I class: Coal mine underground (methane) using electrical equipment; II class: The factory (except coal mine of the other explosive gas environment) use electrical equipment
 *: Applies only to II kind of flameproof “d” intrinsically safe “I” Electrical equipment and parts “n” type electrical equipment

■ Combustible dust environment with electrical equipment

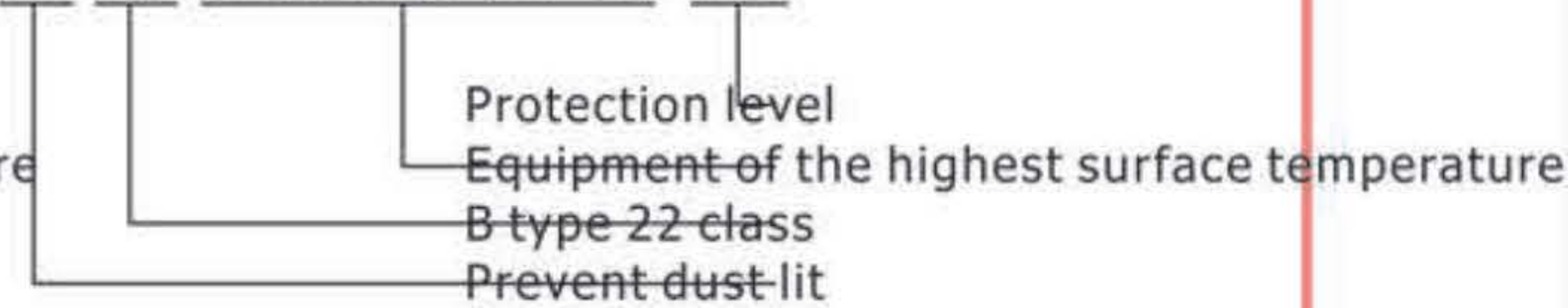
20 class	21 class	22 class
In the normal operation process, combustible dust continuous out now or often appear, the amount of enough to form flammability dust in mixture with air and/or may form can't control system and thick dust layer of the place and container internal	In the normal operation process, the possible dust quantity foot to of combustible dust in mixture with air but not delimit the 20 places. This area includes: and filling or discharge dust point directly adjacent place. Appear dust layer and positive often operating conditions may give rise to an explosive concentration of combustible the place of dust in mixture with air.	Under abnormal conditions, combustible dust and occasional just a short time exist or combustible dust of occasional product or may have dust layer and produce combustible dust air mixture place, if can't guarantee can be ruled out combustibility dust accumulation or dust layer, is to be classified zone 21

■ Combustible dust environment with electrical equipment explosion-proof mark for example

DIP A21 Ta170°C(or TA, T3) IP65



DIP B22 TB 200°C(or TB, T3) IP54



■ Dust explosive electric equipment protection method

Standard Numbers	IEC standard	Explosion-proof type	Allow applicable area	Explosion-proof mark for example	Equipment for example
GB12476.1	IEC61241-1-1	Combustible dust environment with electrical equipment part 1. Points: with shell and limit surface temperature protection the electrical equipment of the first quarter: electrical equipment technology operation requirements	20 class 21 class 22 class	DIP A21 TA170°C (or TA, T3)	Switch, motor, indicating device, control System system, transformer, fuse, plug Pin, socket and lighting lamps and lanterns
GB12476.2	IEC61241-1-2	Combustible dust environment with electrical equipment part 1. Points: with shell and limit surface temperature protection the electrical equipment of the second quarter: electrical equipment to choose choose, installation and maintenance	—	—	Switch, motor, indicating device, control system system, lighting lamps and lanterns, electric heater, alarm, indicating device, control device

■ Dust tight type(A type electrical equipment)

20 class, 21 class, 22 class(Have conductivity dust)	22 class
IP6X Mark DIP A20 or DIP A21	IP5X Mark DIP A22

■ Dust tight type(B type electrical equipment)

20 class, 21 class, 22 class(Have conductivity dust)	22 class
Dust tight type according to GB12476.1 The first20.4.3.4 article regulations Supplemental requirements according to GB12476.1 The first13 article provisions. Mark DIP B20 or DIP B21	Dust type according to GB12476.1 The first 20.4.3.5 article regulations GB12476.1 The first13 not apply article Mark DIP B22.

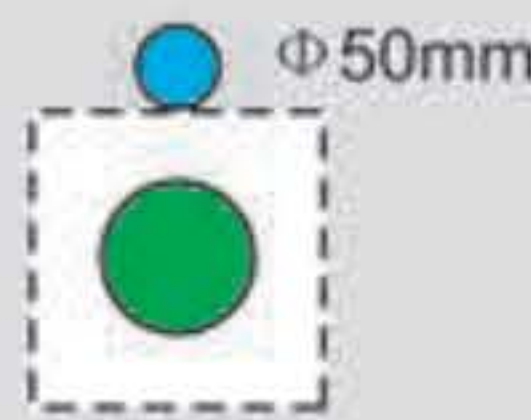
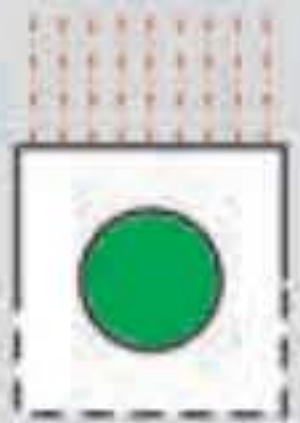
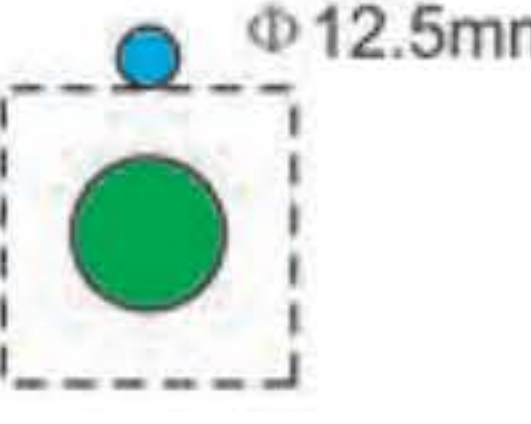
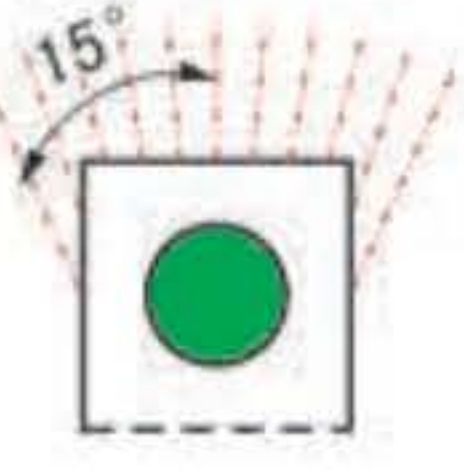
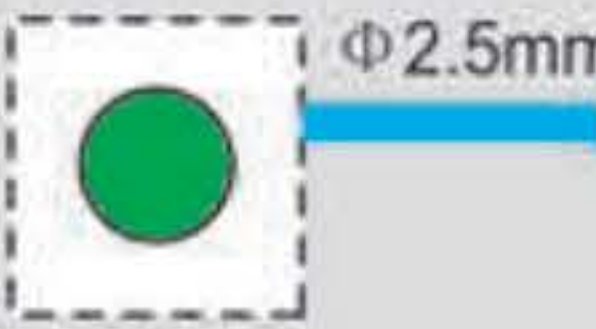
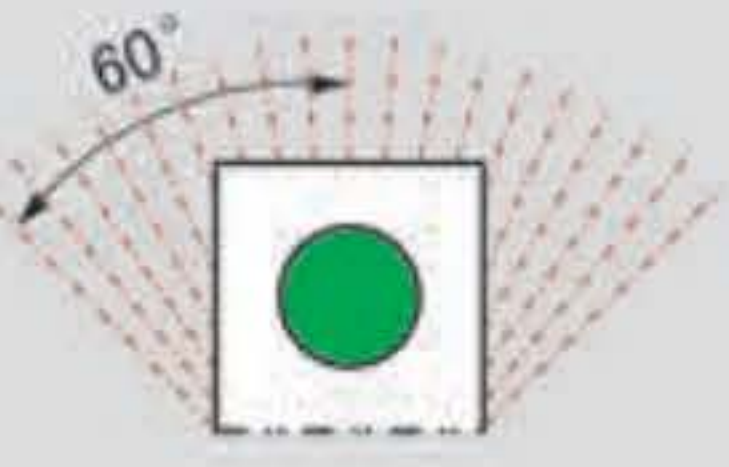
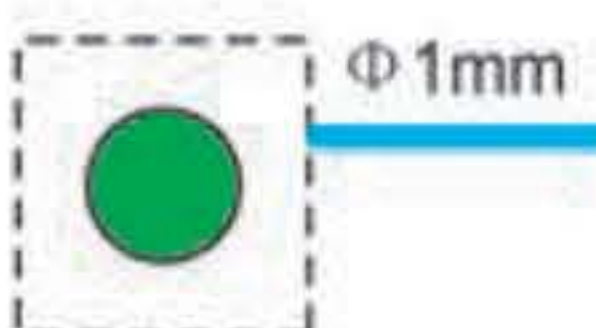
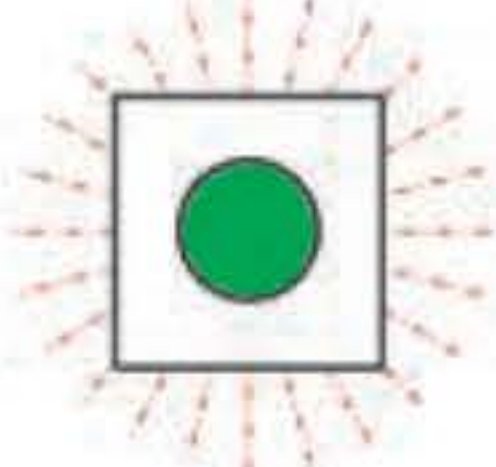
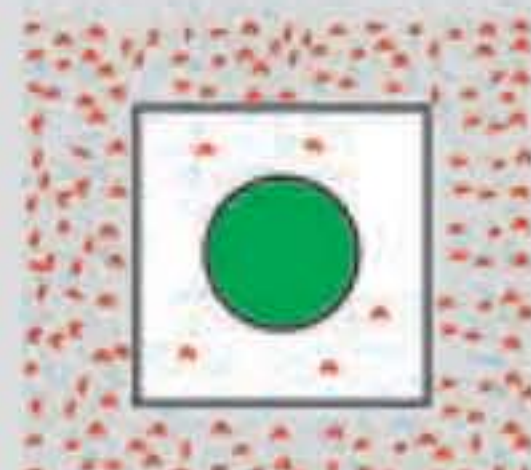
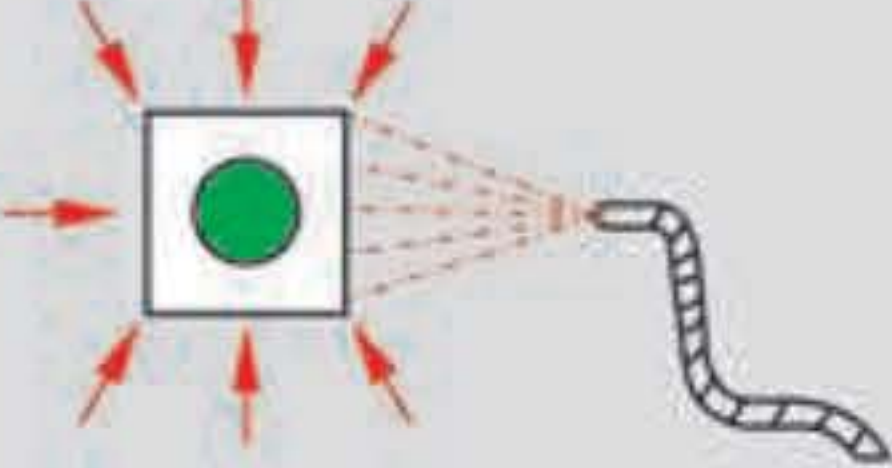
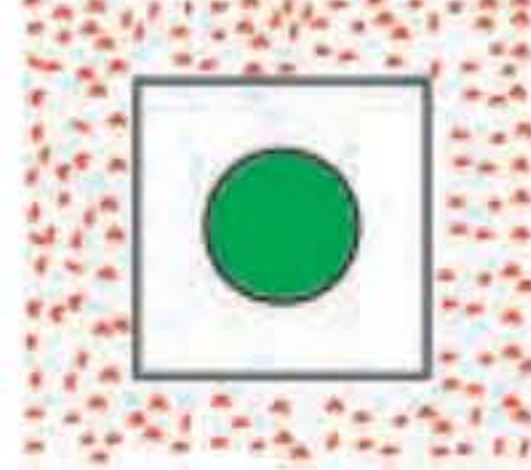
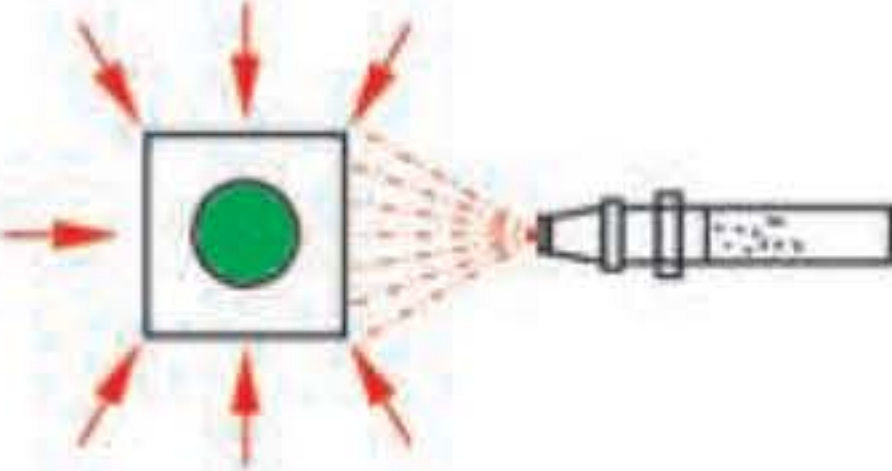
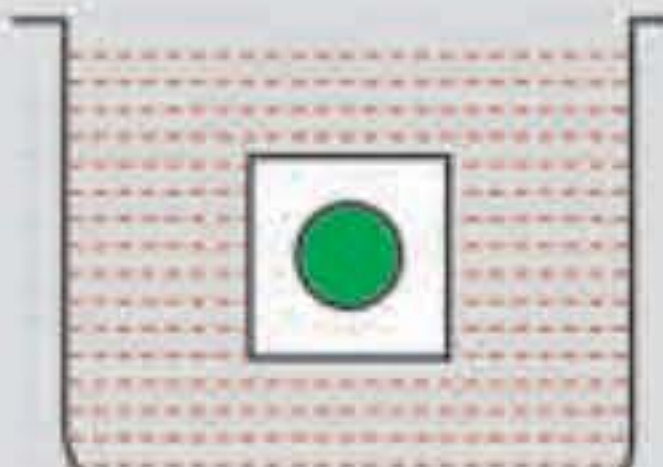

■ A type Dust prevention lighting electrical equipment choice

Kinds of dust	20 class or 21 class	22 class
Conductivity	DIP A20 or DIP A21	DIP A21(IP6X)
Non conductivity	DIP A20 or DIP A21	DIP A22 or DIP A21

■ B type Dust prevention lighting electrical equipment choice

Kinds of dust	20 class or 21 class	22 class
Conductivity	DIP B20 or DIP B21	DIP B21
Non conductivity	DIP B20 or DIP B21	DIP B22 or DIP B21

■ The international protection level standard

		IP □ □	
		Prevent foreign object into the shell level	Water-proof into shell level
	Try to test	Anti armor	
0	Don't do test	Itself inherent protection	0 Don't do test Itself inherent protection
1	 $\Phi 50\text{mm}$	Can prevent diameter greater than 50mm solid class content into the crust (Such as: hand accidental contact)	1  Drop (Vertical drop) harmless shadow ring
2	 $\Phi 12.5\text{mm}$	Can prevent diameter greater than 12.5mm solid class content into the crust (Such as: finger)	2  15° When the shell from the normal position tilt within 15° , vertical drop water no harmful effects.
3	 $\Phi 2.5\text{mm}$	Can prevent diameter greater than 2.5mm. Solid class content into the crust (Such as: tools, conductor)	3  60° Vertical into 60° scope water spray no harmful effects
4	 $\Phi 1\text{mm}$	Can prevent diameter greater than 1mm Solid class content into the crust (Such as: small tools, conductor)	4  Any direction splash no harmful effects
5		Dust, dust into quantity not affect equipment is often running	5  Any direction water without harmful influence.
6		Dust tight, no dust into	6  Violent waves or intense spray, water inflow not to have Impact damage.
			7  Dip provisions pressure and water After the time specified, water inflow not be to harmful effects.
			8  Under the pressure of provisions in a long time diving, water should not enter in the shell

• Fluorescence high pressure mercury lamp

Bulb type	Power(W)	Power supply voltage(V)	Working voltage(V)	Working current(A)	Flux(1m)	Average life expectancy(h)	Socket type	Diameter (mm)	Length(mm)
GGY50	50	220	95	0.62	1575	3500	E27	55	145
GGY80	80		110	0.85	2940	3500		70	170
GGY125	125		115	1.25	4990	5000		80	190
GGY175	175		130	1.50	7350	5000	E40	90	222
GGY250	250		130	2.15	11025	6000		90	234
GGY400	400		135	3.25	21000	6000		120	300

• Since the ballast fluorescence high pressure mercury lamp

Bulb type	Power(W)	Power supply voltage(V)	Working current(A)	Flux(1m)	Average life expectancy(h)	Socket type	Diameter(mm)	Length(mm)
GGZ125	125	220	0.58	1500	3000	E27	80	154
GGZ160	160		0.75	2560	3000		80	190
GGZ250	250		1.20	4900	3000	E40	90	234
GGZ450	450		2.25	11000	3000		120	300

• Metal halide lamp

Bulb type	Power(W)	Power supply voltage(V)	Working voltage(V)	Working current(A)	Flux(1m)	Average life expectancy(h)	Color temperature(K)	Socket type	Diameter (mm)	Length(mm)
ZJD70	70	220	85	0.98	5000	5000	4000	E27	56	141
ZJD100	100		100	1.20	8000	5000	4000		56	155
ZJD150	150		110	1.80	13000	10000	4300		56	155
ZJD175	175		130	1.50	14000	10000	4300	E40	90	222
ZJD250	250		135	2.15	20500	10000	4300		90	222
ZJD400	400		135	3.25	35000	10000	4000		120	290

• High pressure sodium lamp

Bulb type	Power(W)	Power supply voltage(V)	Working voltage(V)	Working current(A)	Flux(1m)	Average life expectancy(h)	Socket type	Diameter (mm)	Length(mm)
NG50T	50	220	85	0.76	3600	18000	E27	38	155
NG70T	70		90	0.98	6000	18000		38	155
NG100T	100		95	1.20	8500	18000		38	185
NG110T	110		105	1.30	10000	16000		38	185
NG150T	150		100	1.80	16000	24000	E40	46	210
NG250T	250		100	3.00	28000	24000		46	259
NG400T	400		100	4.60	48000	24000		46	287

• Incandescent lamp

Power(W)	Power supply voltage(V)	Flux(lm)	Average life expectancy(h)	Socket type	Diameter(mm)	Length(mm)
40	220	283	1000	E27	60	110
60		500	1000		60	110
100		1025	1000		60	110
150		1600	1500		60	110
200		2000	1500		60	110
300		4050	1500	E40	100	190

服务无止境……

编后语：

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