PHILIPS

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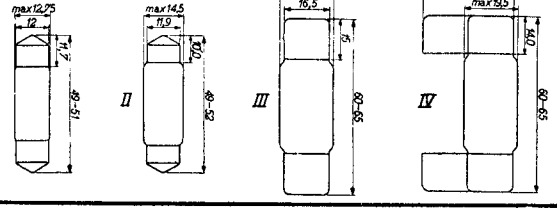
4370 4373

RARE GAS CARTRIDGES
LIMITEURS DE TENSION A GAZ RARE
EDELGASSICHERUNGEN

Type		4349	4369	4370	4371	4372	4373
Starting voltage Tension d'allumage Zündspannung	V	130-180	150-200	80-120	150-200	280-350	150-200
Min. extinguishing voltage Tension d'extinction min Min Löschspannung	V	110	110	60	110	250	110
Steady current intensity max Intensité de courant continue max Max stetiger Stromstärke	mA	25	50	50	25	25	50
Max continual load Charge continue max Max Dauerbelastung	W	3	6	6	3	3	6
Max temporary load Charge temporelle max Max. zeitweise Belastung	A	5	10	10	5	2,5	10
	sec.	3	3	3	3	1	3
Fuse in series Fusible en série Seriensicherung	max A	6	10	10	6	10	10
Capacitor discharge [1] Décharge d'un condensateur [1] Kondensatorentladung [1]	Ws	10	10	10	10	10	10
Coil discharges [2] Décharges d'une bobine [2] Spulenentladungen [2]		-	50 000 x 10 Ws	200 000 x 10 Ws 50 000 x 25 Ws	-	-	-
Max line voltage Tension du ligne max Max Leitungsspannung	V=	70	70	36	70	200	70
	V~	75	75	50	75	180	75
Dimensions, see fig Encombrements voir fig Abmessungen siehe Abb	No	I	IV	IV	II	IV	III

[1] Max capacitor discharge which can pass repeatedly through the cartridge Care should be taken that the average load does not exceed the indicated max continual load
Decharge max qui peut passer le limiteur à gaz rare à plusieurs reprises. La charge moyenne ne doit pas dépasser la charge continue max indiquée
Max Kondensatorentladung die mehrmals durch die Edelgassicherung gehen darf. Die Durchschnittsbelastung soll aber nicht die angegebene max Dauerbelastung überschreiten.

[2] The number of times the cartridge can support a discharge of 10 and 25 Ws resp., which is produced when the supply of energy to a coil with iron core is suddenly interrupted (e.g. in magnetic brakes)
Le nombre de fois que le limiteur de tension peut supporter une décharge de 10 et 25 Ws resp décharge qui ce produit lorsque l'alimentetion d'une bobine à noyau de fer est interrompue brusquement (p.e dans les freins magnétiques)
Gibt an wie oft die Edelgassicherung eine Entladung von 10 bzw 25 Ws auszuhalten vermag wenn bei einer Spule mit Eisenkern die Stromzufuhr plötzlich abgeschnitten wird (z.B. in Magnetbremsen)



SURGE ARRESTERS

Explanation of published data:

1. Starting voltage (Ignition voltage; V_{ign})

The specified minimum and maximum starting voltage values indicate the voltage limits below which no ignition will take place and above which all tubes will ignite.

2. Extinguishing voltage (V_{ext})

At voltages equal to or lower than the voltage specified, the discharge is extinguished.

3. Line voltage (V_{line})

Surge arresters can be used for the protection of lines, the maximum operating voltage of which does not exceed the value specified. It is clear that surge arresters can also be used for the protection of lines and apparatus to which under normal conditions no voltage is applied.

4. Surge current (Isurge)

The values specified for the maximum temporary current and the appartaining period of time should be regarded as design values and are a measure for the ability to discharge large quantities of electrical energy during a brief period.

Heavy discharges (within the time specified) resulting in currents that are about equal to the maximum surge current can be drawn off several times.

Moderate discharges can take place many times before the surge arrester will fail. Failure will generally be due to too large deviations from the published starting and extinguishing voltages

If there is a great chance of heavy continuous discharges, it is recommended to insert a series resistor, e.g. a voltage dependent resistor. In doing so the surge arrester will be protected against too large energies, whilst a voltage dependent resistor (exponent at least 4 to 5) will ensure extinguishing when discharge has taken place, also in the case of power lines.

5. Fuse in series

In the case of discharges of long duration e.g. as a result of direct contact between low and high-tension

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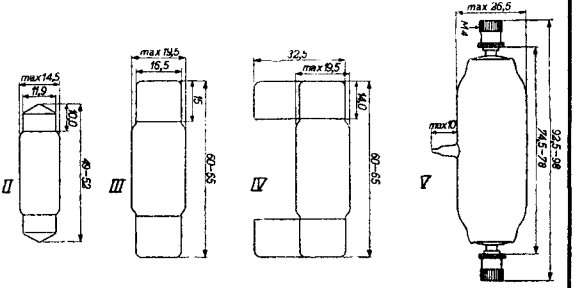
Type		4378	4379	4380	4383	4390	4397
Starting voltage Tension d'allumage Zündspannung	V	80 120	280-350	280-350	280 350	700-850	400-500
Min. extinguishing voltage Tension d'extinction min Min. Löschspannung	V	60	130	250	130	300	200
Steady current intensity, max Intensité de courant continue max Max. stetiger Stromstärke	mA	50	50	15	25	60	25
Max continuel load Charge continue max. Max Dauerbelastung	W	6	6	3	3	20	6
Max temporary load Charge temporelle max Max. zeitweise Belastung	A	10	10	2.5	5	–	5
	sec.	3	3	1	3	–	1
Fuse in series Fusible en série Serrensicherung	max. A	10	10	6	6	–	10
Capacitor discharge [1]) Décharge d'un condensateur [1]) Kondensatorentladung [1])	Ws	10	10	10	10	500	10
Coil discharges [2]) Décharges d'une bobine [2]) Spulenentladungen [2])		200 000 x 10 Ws 50 000 x 25 Ws	50 000 x 10 Ws	–	–	–	–
Max line voltage Tension du ligne max Max. Leitungsspannung	V ⎓	36	50	200	50	–	150
	V~	50	180	180	180	–	230
Dimensions, see fig Encombrements voir fig Abmessungen, siehe Abb	No	III	IV	II	II	V	IV

[1]) Max capacitor discharge which can pass repeatedly through the cartridge Care should be taken that the average load does not exceed the indicated max continual load
Décharge max., qui peut passer le limiteur à gaz rare à plusieurs reprises. La charge moyenne ne doit pas dépasser la charge continue max indiquée
Max Kondensatorentladung die mehrmals durch die Edelgassicherung gehen darf Die Durchschnittsbelastung soll aber nicht die angegebene max Dauerbelastung überschreiten.

[2]) The number of times the cartridge can support a discharge of 10 and 25 Ws resp., which is produced when the supply of energy to a coil with iron core is suddenly interrupted (e.g. in magnetic brakes)
Le nombre de fois, que le limiteur de tension peut supporter une décharge de 10 et 25 Ws resp décharge qui ce produit lorsque l'alimentation d'une bobine à noyau de fer est interrompue brusquement (p.e. dans les freins magnétiques)
Gibt an wie oft die Edelgassicherung eine Entladung von 10 bzw 25 Ws auszuhalten vermag wenn bei einer Spule mit Eisenkern die Stromzufuhr plötzlich abgeschnitten wird (z.B. in Magnetbremsen)



lines, care should be taken that the lines to be protected are disconnected, since otherwise damage will be caused to the surge arrester. A series-connected fuse may serve this purpose. The value published applies to a normal fuse type

6. Capacitive discharge

Like the surge current value the value (expressed in watt seconds) given under this heading is a measure for the power of the surge arrester. For this value it also holds that energies equal to the value published can be drawn off a few times, and that energies that are several times smaller can be drawn off many times before the surge arrester will be unserviceable

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Starting voltage Tension d'allumage Zündspannung	V	130–180	150–200	80–120	150–200	280–350	150–200	80–120	280–350	280–350	280–350	460–660[1])	400–500
Min. extinguishing voltage Tension d'extinction min. Min. Löschspannung	V	110	110	60	110	250	110	60	130	250	130	400[1])	200
Surge current, max.	A	5	10	10	5	2,5	10	10	10	2,5	5	25	5
Courant de choc, max. Stromstoss, max.	sec	3	3	3	3	1	3	3	3	1	3	3	1
Fuse in series Fusible en série Seriensicherung	max A	6	10	10	6	6	10	10	10	6	6	25	6
Capacitive discharge Décharge capacitive Kapazitive Entladung	Ws	10	10	10	10	10	10	10	10	10	10	500	10
Max. line voltage	$V_{=}$	70	70	36	70	200	70	36	50	200	50	–	150
Tension du ligne max Max. Leitungsspannung	$V_{\sim}$	75	75	50	75	180	75	50	180	180	180	300	230
Dimensions, see fig. Encombrements, voir fig. Abmessungen, siehe Abb.	No.	I	IV	IV	II	IV	III	III	IV	II	II	V	IV

[1])A.C. voltage (rms value); Tension alternative (valeur efficace); Wechselspannung (Effektivwert)

PHILIPS

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PHILIPS

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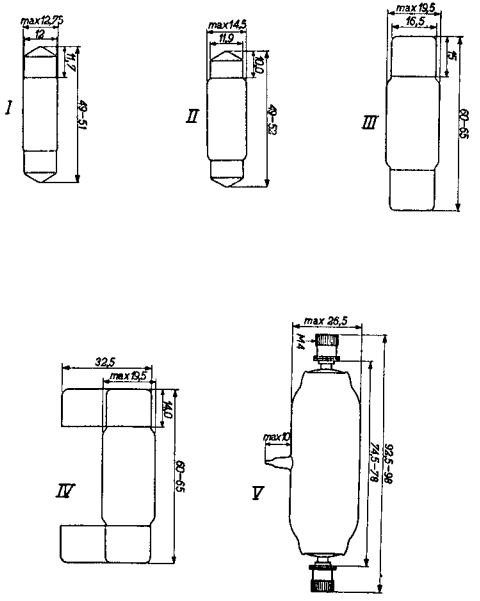
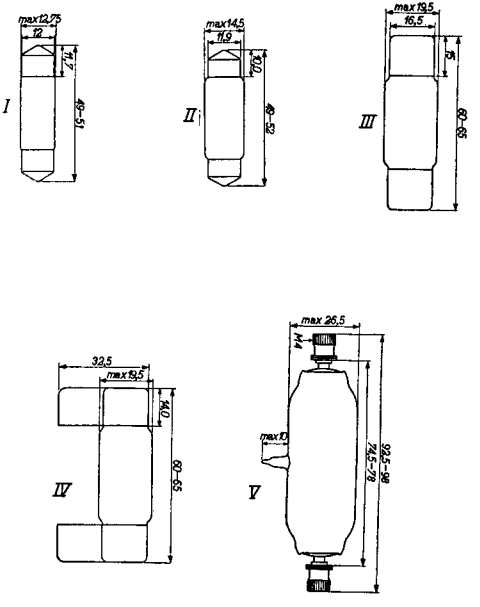
Starting voltage Tension d'allumage Zündspannung	V	130-180	150-200	80-120	150-200	280-350	150-200	80-120	280-350	280-350	280-350	700-910	400-500
Min. extinguishing voltage Tension d'extinction min. Min. Löschspannung	V	110	110	60	110	250	110	60	130	250	130	200	200
Surge current, max. Courant de choc, max. Stromstoss, max.	A	5	10	10	5	2,5	10	10	10	2,5	5	25	5
	sec	3	3	3	3	1	3	3	3	1	3	3	1
Fuse in series Fusible en série Seriensicherung	max A	6	10	10	6	6	10	10	10	6	6	25	6
Capacitive discharge Décharge capacitive Kapazitive Entladung	Ws	10	10	10	10	10	10	10	10	10	10	500	10
Max. line voltage Tension du ligne max. Max. Leitungsspannung	$V_{=}$	70	70	36	70	200	70	36	50	200	50	175	150
	$V_{\sim}$	75	75	50	75	180	75	50	180	180	180	300	230
Dimensions, see fig. Encombrements, voir fig. Abmessungen, siehe Abb.	No.	I	IV	IV	II	IV	III	III	IV	II	II	V	IV


I
max12,75
12
7,4
15–49
II
max14,5
11,9
10,0
49–53
III
max 19,5
16,5
15
59–65
IV
32,5
max 15,5
10,0
59–65
V
max 26,5
14,4
max 11
74,5–78
95,5–98


I
max12,75
12
7,4
49-51
II
max14,5
11,9
7,0
43-49
III
max19,5
16,5
5
59-63
IV
32,5
max13,5
7,0
59-63
V
max 26,5
7,4
max10
74,5-78
92,5-96

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Electronic Tube

HANDBOOK

4349 4369 4370 4371 4372 4373
4378 4379 4380 4383 4390 4397

page	sheet	date
1	1	1949.08.08
2	1	1956.11.11
3	2	1949.08.08
4	2	1956.11.11
5	3	1956.11.11
6	3	1959.09.09
7	4	1956.11.11
8	4	1959.09.09
9	FP	1999.12.28