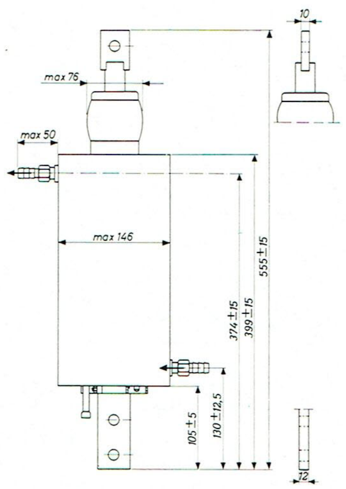
ADZAM ignitrons

M.B.L.E ELECTRONICS

PL 5555



AUXILIARY ANODE RATINGS

max. inverse voltage (main anode conducting)	(V)	25
max. peak inverse voltage (main anode not conducting)	(V)	160
max. peak forward voltage	(V)	160
max. peak current	(A)	20
max. average current (aver. time 10 sec.)	(A)	5

IGNITOR RATINGS

max. pos. ignitor peak voltage	(V)	3400
max. neg. ignitor peak voltage	(V)	5
max. peak forward current	(A)	100
max. r.m.s. current	(A)	15
max. average current (average time = 10 sec)	(A)	2

recommended circuit: separate excitation (see circuit overleaf)

COOLING

Type of cooling	water	
Pressure drop at q = 9 litre/min	max.	0.2 kg/cm²
Temperature rise at q = 9 litre/min	max.	5.5 °C
Inlet water temperature		
for substantially constant load	min.	6 °C
recommended	min.	10 °C
for widely fluctuating loads	min.	20 °C
Waterflow at maximum demand and maximum continuous average current	min.	9 l/min
Waterflow at no load	min.	3 l/min

POWER RECTIFYING SERVICE

peak anode voltage (inverse and forward)	(V)	900	2100
peak anode current	(A)	1800	1200
average current contin. duty	(A)	200	150
average current overload during 1 minute (max. once per two hours)	(A)	400	300
maximum fault current (max. duration 0.15 sec)	(A)	12000	9000

A.C. CONTROL SERVICE

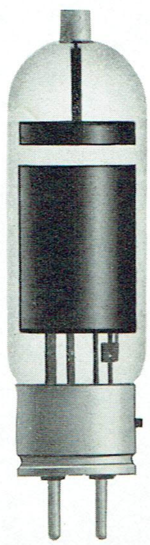
max. r.m.s. mains voltage	(V)	2400	
demand power (two tubes anti-parallel)	(kVA)	2400	1105
avg. current per tube	(A)	135	207
max. average time	(sec)	1.66	1.66
max. fault current (duration 0.15 sec)	(A)	6000	6000

PL 5684/C3JA THYRATRON FOR IGNITRON FIRING

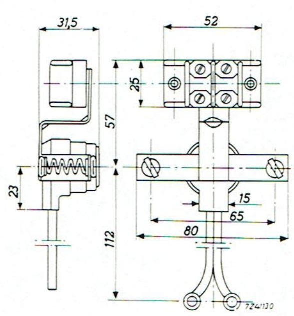
The PL 5684/C3JA is a three-electrode inert-gas filled thyratron with a directly heated cathode and negative control characteristics. The main application of this tube is in ignitron-firing circuits.

The tube, which requires a heating-up time of minimum 30 seconds, has been designed for an average anode current of 2.5 A, the permissible anode current being 30 A. Its peak forward voltage is as high as 1000 V; the peak inverse anode voltage amounts to 1250 V.

The PL 5684/C3JA fits the medium 4-pins socket with bayonet. The use of socket type B8 700 90 is recommended, since it is made of highly insulating material.



PROTECTIVE THERMOSTAT SWITCH

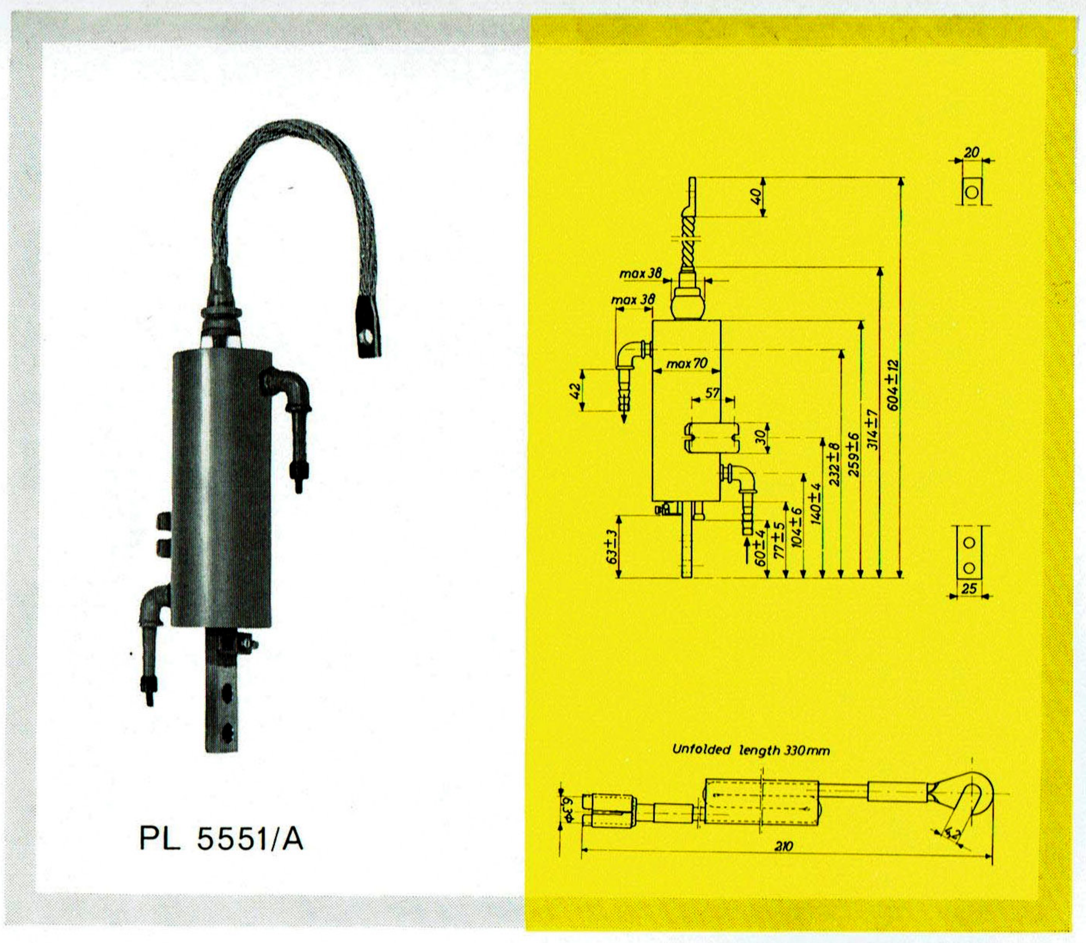


Electrical data

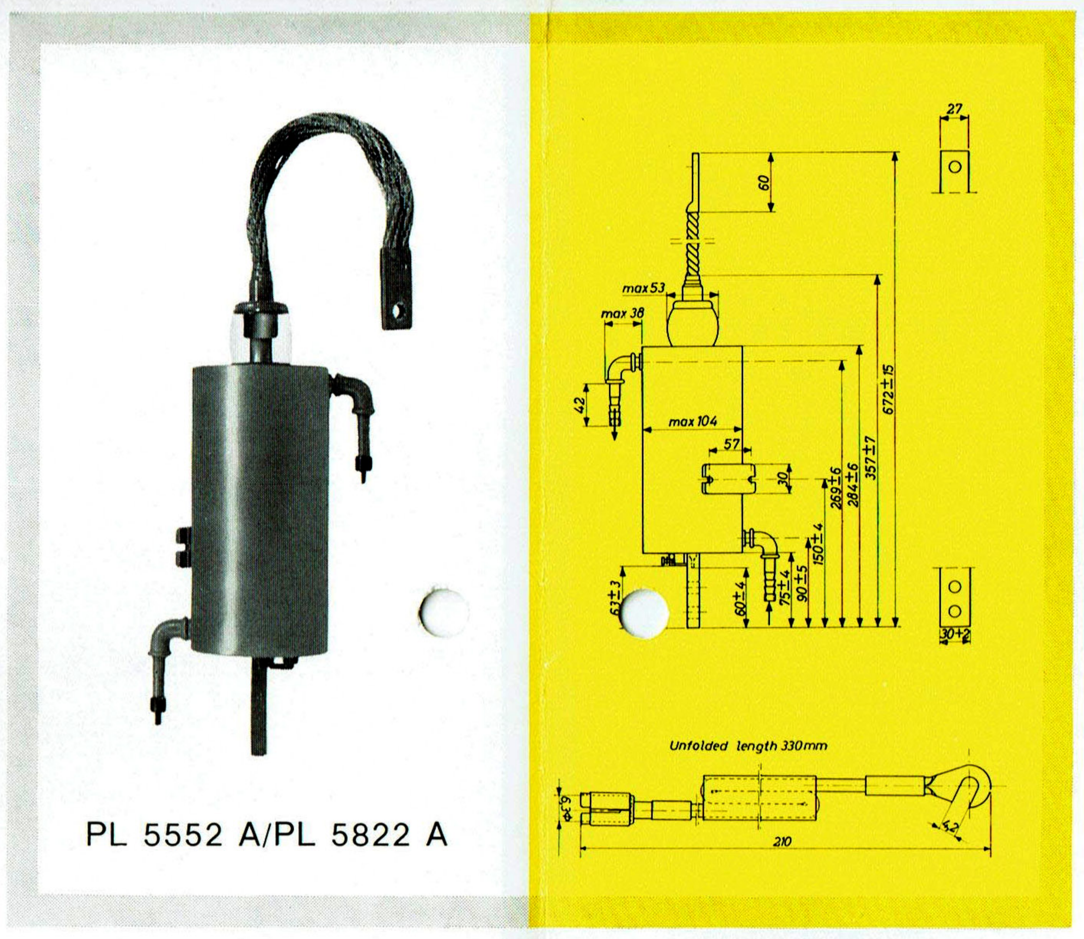
30 V direct voltage at 10 A
125 V alternating voltage at 10 A
250 V alternating voltage at 8 A
600 V alternating voltage at 0.5 A

Maximum permissible voltage between house and system under operating conditions is 600 V_{rms}.

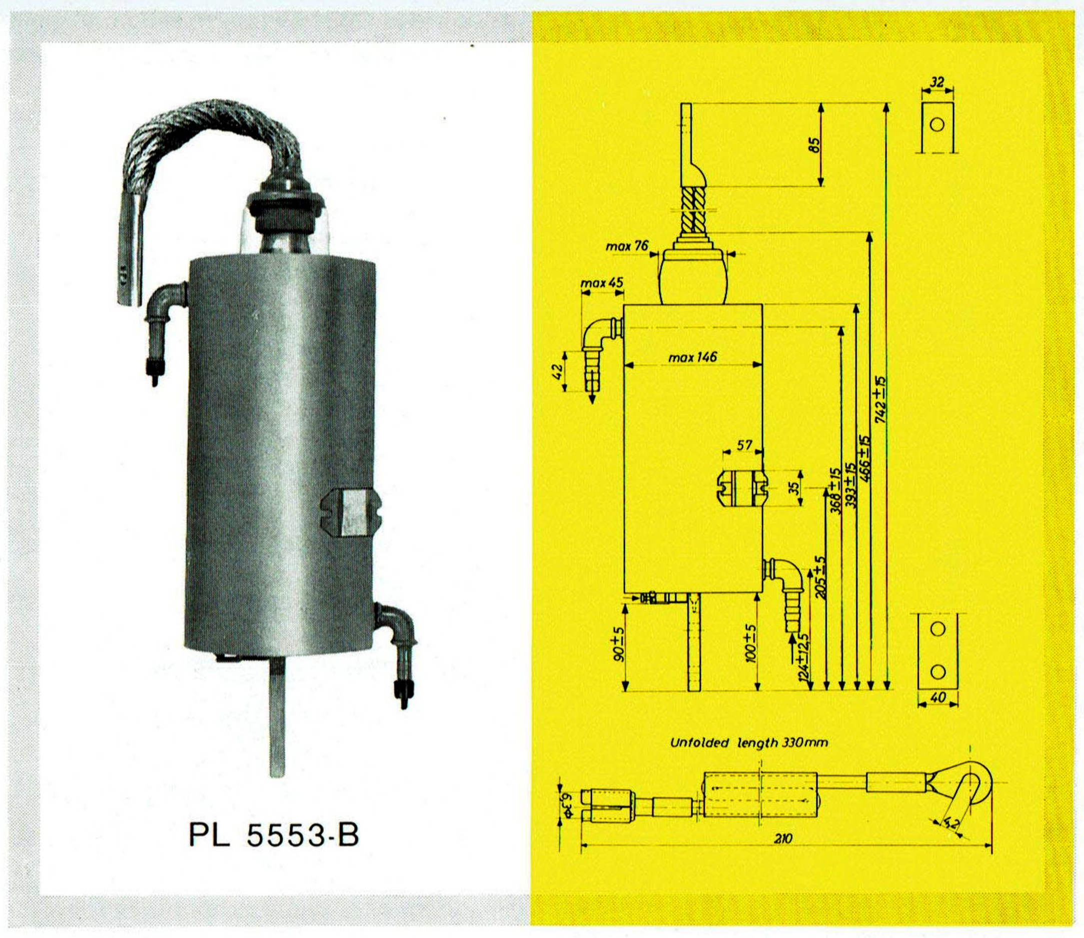
ignitrons



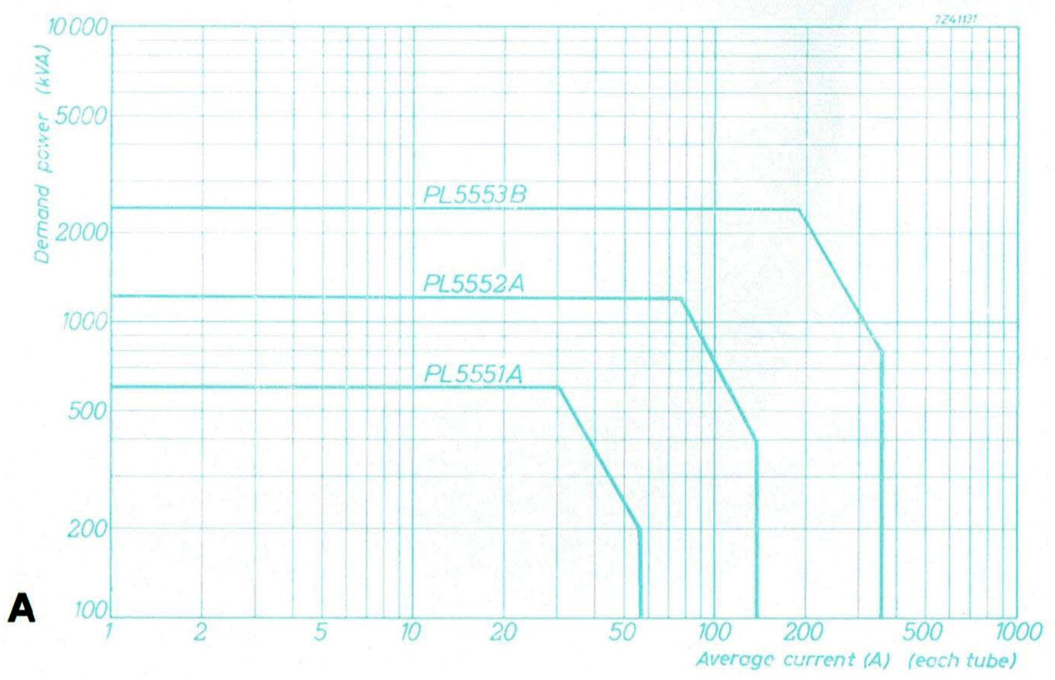
PL 5551/A

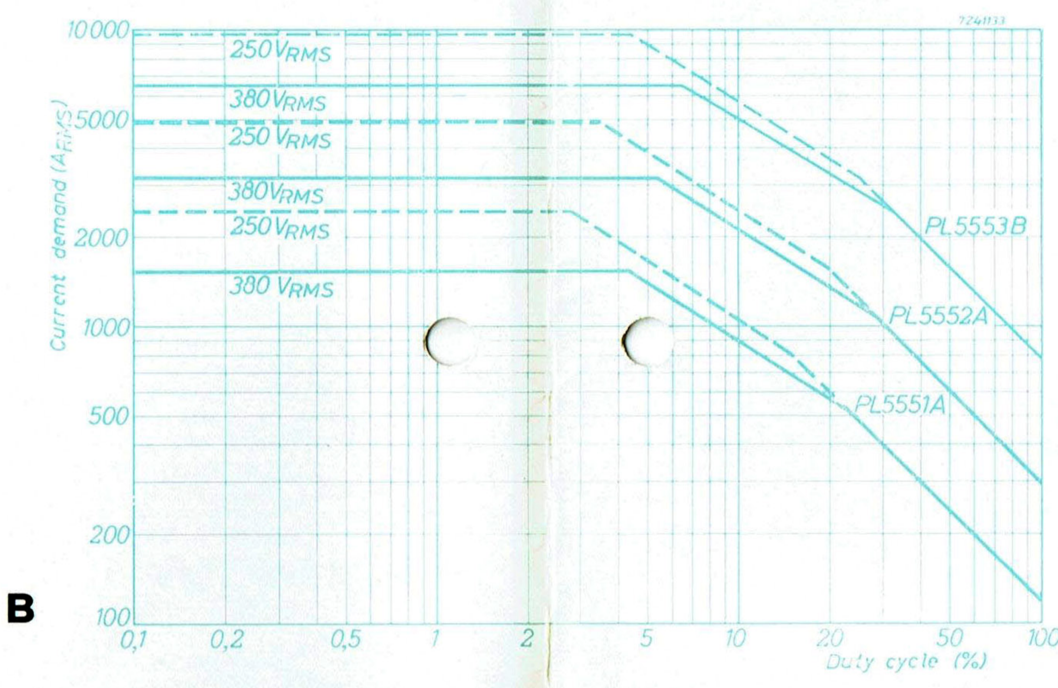


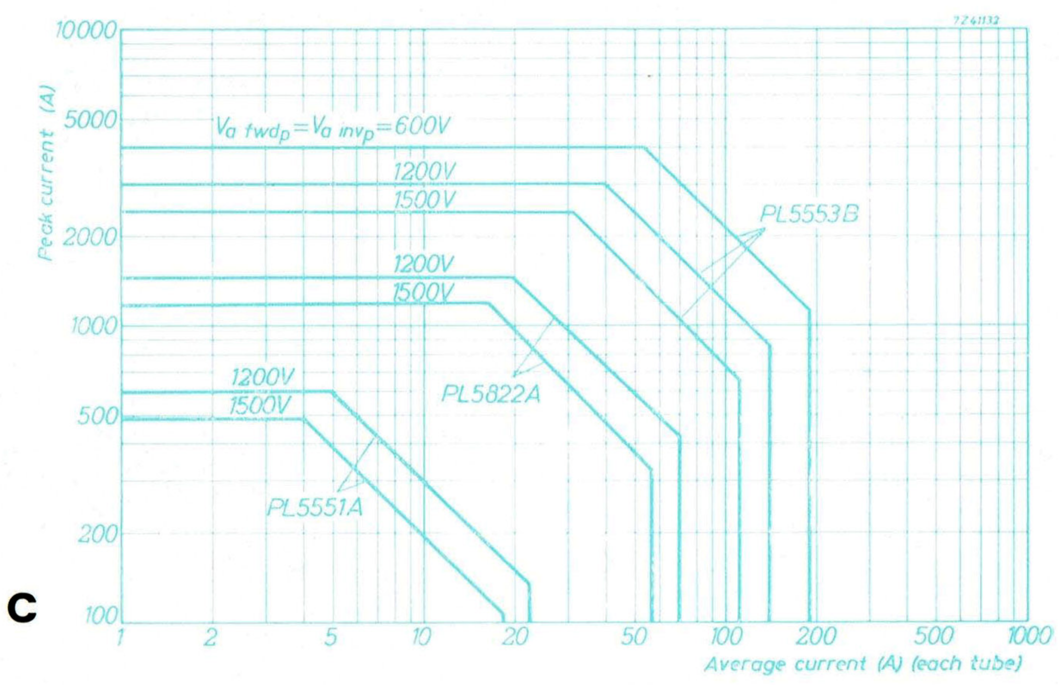
PL 5552 A/PL 5822 A



PL 5553-B

A


B


C


A.C. WELDER CONTROL SERVICE

(two tubes connected in inverse-parallel)

frequency range: 25 - 60 c/s				curve A		curve B	
type	mains voltage (V_{rms})	maximum aver. time (sec)	max. fault current (0.15 sec) (A)	demand power (kVA)	average current (A)	current demand (A_{rms})	duty cycle (%)
PL 5551A	220	18	6720	530 180	30.2 56	2400 800 125	2.8 15.6 100
	250	18	6720	600 200	30.2 56	2400 800 125	2.8 15.6 100
	380	11.8	4400	600 200	30.2 56	1580 527 125	4.3 23.7 100
	600	7.5	2800	600 200	30.2 56	1000 333 125	6.7 37.5 100
PL 5552A	220	14	13400	1060 350	75.6 140	4800 1600 311	3.5 19.5 100
	250	14	13400	1200 400	75.6 140	4800 1600 311	3.5 19.5 100
	380	9.4	8800	1200 400	75.6 140	3160 1050 311	5.3 29.6 100
	600	5.8	5600	1200 400	75.6 140	2000 667 311	8.4 46.7 100
PL 5553B	220	11	27000	2120 705	192 355	9600 3200 790	4.4 24.7 100
	250	11	27000	2400 800	192 355	9600 3200 790	4.4 24.7 100
	380	7.3	17800	2400 800	192 355	630 2100 790	6.7 37.5 100
	600	4.6	11200	2400 800	192 355	4000 1330 790	10.6 59.3 100

IGNITOR RATINGS AND CIRCUITS

A. Ignitor maxima

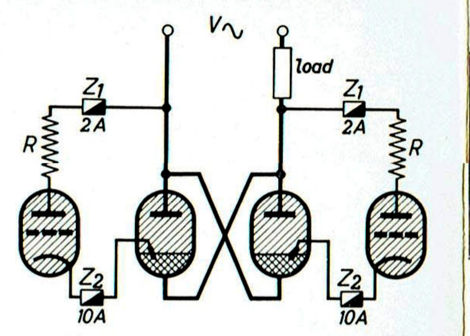
maximum positive ignitor peak voltage = max. pos. anode voltage
maximum negative ignitor peak voltage = 5 V
maximum peak forward current = 100 A
maximum r.m.s. current = 10 A
maximum average current (T_{av} = 5 sec) = 1 A

B. Anode excitation

a. Ignitor characteristics

peak firing voltage (maximum) = 200 V
typical value of peak ignitor current = 6-8 A
peak firing current (maximum) = 12 A
maximum ignition time (under above conditions) = 100 µsec

b. Circuit requirements



recommended value of R

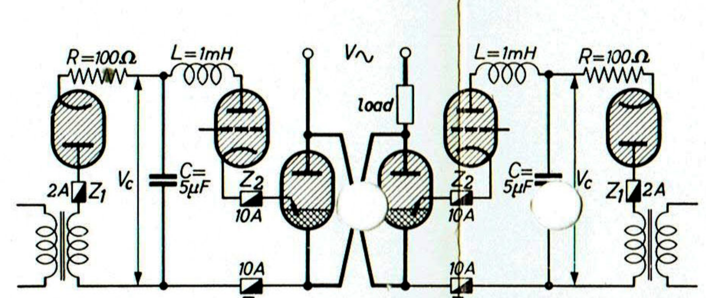
mains voltage	R
220 V_{rms}	2 Ω
250 V_{rms}	2 Ω
380 V_{rms}	4 Ω
500 V_{rms}	5 Ω
600 V_{rms}	6 Ω

recommended thyratron: PL 5684

peak ignitor voltage required to fire = min. 200 V

peak ignitor current required to fire:
PL 5551A = min. 12 A
PL 5552A = min. 12 A
PL 5822A = min. 25 A
PL 5553B = min. 30 A

C. Separate excitation



recommended thyratron : PL 106
recommended rectifier tube : DCG4/1000
ohmic resistance of series inductance (1 mH) : max. 2 Ω

V_c under operating conditions = 650 ± 50 V
peak value of closed-circuit current = 40—50 A

COOLING DATA

type of cooling: water				
type of ignitron	PL 5551A	PL 5552A	PL 5822A	PL 5553B
minimum flow at maximum load (solenoid valve open)	4 litre/min	6 litre/min	6 litre/min	9 litre/min
minimum inlet water temperature	10 °C	10 °C	10 °C	10 °C
maximum inlet water temperature - A.C. control service - (measured at thermostat mount)	40 °C	40 °C	—	40 °C
maximum inlet water temperature - three-phase welding service - (measured at thermostat mount)	35 °C	—	35 °C	35 °C
pressure drop per tube at minimum flow (maximum load)	0.13 kg/cm²	0.35 kg/cm²	0.35 kg/cm²	0.35 kg/cm²
maximum temperature rise at minimum flow	4 °C	4 °C	4 °C	6 °C

FREQUENCY CHANGER RESISTANCE WELDING SERVICE

frequency range mains voltage: 50 - 60 c/s						
type	max. peak voltage (V)	max. peak current (A)	max. aver. current (A)	max. aver. time (sec)	aver. curr. peak curr. (max.) ($T_{av} \leq 0.2$ s)	surge curr. peak curr. (max.) ($T \leq 0.15$ s)
PL 5551A	1200	600 135	5 22.5	10	1/6	12.5
	1500	480 108	4 18	10	1/6	12.5
PL 5822A	1200	1500 420	20 70	6.25	1/6	12.5
	1500	1200 336	16 56	6.25	1/6	12.5
PL 5553B	600	4000 1140	54 190	6.25	1/6	12.5
	1200	3000 840	40 140	6.25	1/6	12.5
	1500	2400 672	32 112	6.25	1/6	12.5

PRACTICAL INTERCHANGEABILITY LIST

- **Comprising all important ignitron types available in the world and equivalent or near equivalent to ADZAM types.**
- **Indicating the changes which have to be made, if a near equivalent type is replaced by an ADZAM type.**
- **Showing that ADZAM types are FULLY interchangeable with tubes of all important brands in the whole world. Nearly 100 different tubes can be replaced by only 5 ADZAM types!**

type number	ADZAM type
5551	PL5551-A
5551-A	PL5551-A
5551-A/652	PL5551-A
5552	PL5552-A
5552-A/651	PL5552-A
5552-A	PL5552-A
5553-A	PL5553-B
5553-B	PL5553-B
5553-B/655	PL5553-B
5555	PL5555
5822	PL5822-A
A.C.E.C. taille B	PL5551-A
A.C.E.C. taille C	PL5552-A
A.C.E.C. taille D	PL5553-B
AJ5551	PL5551-A
AJ5551-A	PL5551-A
AJ5552	PL5552-A
AJ5552-A	PL5552-A
AJ5553-B	PL5553-B
AJ6346	PL5551-A 4)
AJ6347	PL5552-A 4)
AR10	PL5552-A
AR10T	PL5552-A 1)
AR10TP	PL5552-A 2)
AR10TWS	PL5552-A 3)
AR14	PL5551-A
AR14T	PL5551-A 1)
AR14TP	PL5551-A 2)
AR14TWS	PL5551-A 3)
AX5551A	PL5551-A
AX5552A	PL5552-A
AX5553B	PL5553-B
AX5555	PL5555
AX5822A	PL5822-A
AX7585	PL5552-A
BK24	PL5552-A
BK24A	PL5552-A 4)
BK24B	PL5552-A 1)
BK34	PL5553-B
BK34A	PL5553-B 4)
BK34B	PL5553-B 1)
BK42	PL5551-A
BK42A	PL5551-A 4)
BK42B	PL5551-A 1)
BK46	PL5555
GL5551/FG-271	PL5551-A
GL5551-A	PL5551-A
GL5552/FG-235A	PL5552-A
GL5552-A	PL5552-A
GL5553-A	PL5553-B
GL5553-B	PL5553-B
GL5555/FG238B	PL5555
GL5555	PL5555
GL5822-A	PL5822-A
GL6346	PL5551-A 4)
GL6347	PL5552-A 4)
GL6348	PL5553-B 4)
GL6511	PL5822-A 4)
NL1022-A	PL5822-A
NL1051-A	PL5551-A
NL1052-A	PL5552-A
NL1053-A	PL5553-B
NL5551	PL5551-A
NL5552	PL5552-A
NL5553	PL5553-B
PL2052-A	PL5552-A
SBS	PL5551-A
SCS	PL5552-A
SCS3	PL5822-A
SDR	PL5555
SDS	PL5553-B
TH7020	PL5551-A
TH7021	PL5551-A 5)
TH7030	PL5552-A
TH7031	PL5552-A 5)
TH7040	PL5553-B
TH7041	PL5553-B 5)
VJ5551-A	PL5551-A
VJ5552-A	PL5552-A
VJ5553-B	PL5553-B
WL5551	PL5551-A
WL5551/652	PL5551-A
WL5551-A	PL5551-A
WL5551-A/652	PL5551-A
WL5552	PL5552-A
WL5552/651	PL5552-A
WL5552-A	PL5552-A
WL5552-A/652	PL5552-A
WL5553	PL5553-B
WL5553-B	PL5553-B
WL5553-B/655	PL5553-B
WL5555	PL5555
WL5555/653-B	PL5555
WL5822-A	PL5822-A

1) **DIRECT equivalent, provided that internationally dimensioned thermostat mounting material is used.**
2) **DIRECT equivalent, provided that internationally dimensioned thermostat mounting material and protective thermostat no. 55306 is used.**
3) **DIRECT equivalent, provided that internationally dimensioned thermostat mounting material and water-saving thermostat 55305 is used.**
4) **DIRECT equivalent, provided that internationally dimensioned thermostat material is used and all the tubes in the same equipment are replaced.**
5) **DIRECT equivalent, provided waterflow switch and thermostat material are replaced.**

S.A. MANUFACTURE BELGE DE LAMPES ET DE MATERIEL ELECTRONIQUE N.V.
80, rue des deux gares, BRUXELLES Tél. 21.82.00 (20 L.) Twee Stationsstraat 80, BRUSSEL

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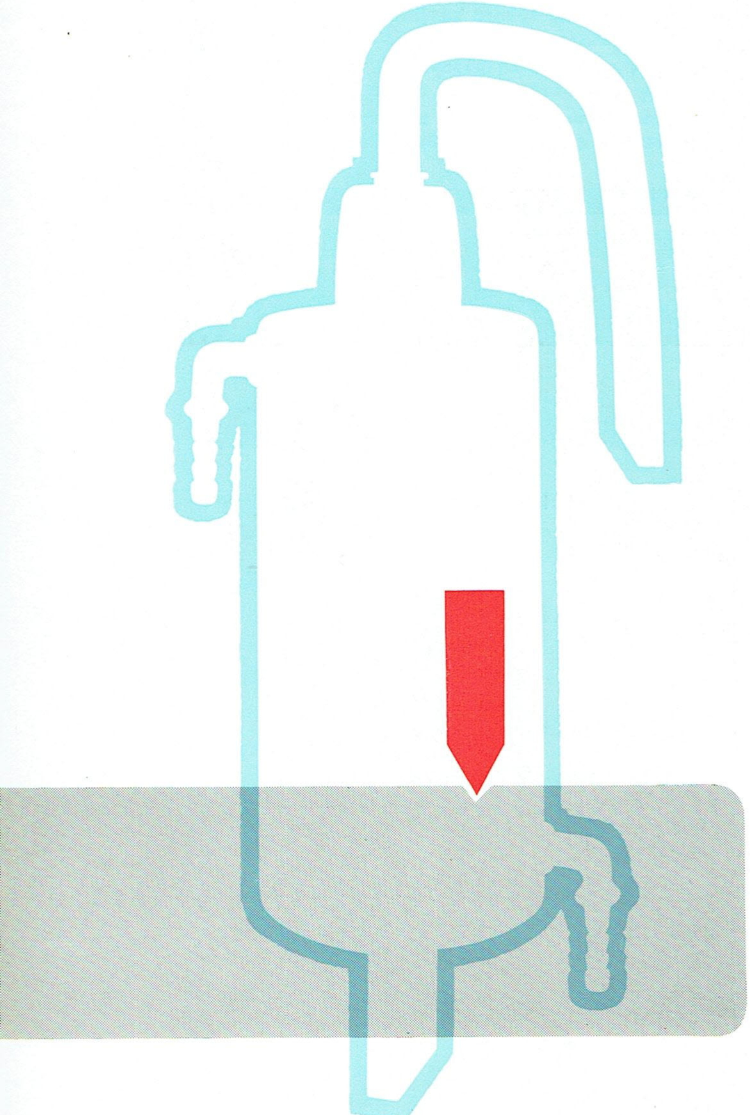
ADZAM



ignitrons

An important branch of the fast growing industrial electron-tube family is formed by the ignitrons. They are mainly used for switching on and off strong electric currents, particularly in the field of electronic resistance welding. The welds obtained by this process are better, more even and more reliable than those made by conventional welding methods. The reliability of resistance-welding equipment is in large measure dependent on its vital centre, the ignitron. Years of constant research have resulted in a very favourable life expectancy for our types of ignitron. An exclusive feature in this respect is the construction of the ignitor, which allows a tube design that combines excellent electrical properties with a very long life.

The thermostatically controlled versions of our ignitron types show a marked improvement as regards water economy and protection of tubes and equipment against overheating. In addition, the number of switchings of the thermostat and the solenoid valve is minimized, which considerably adds to the useful life of these components.

The entire manufacturing process, together with the close inspection and elaborate tests after the production, is aimed at constructing a tube that will prove its flawless functioning millions of times.

Weighty plus points of our types of ignitrons are:

— thoroughly power-tested at maximum load;

— absolutely vacuum-tight by seam-resistance welding;

— internationally dimensioned thermostat mounting material;

— improved ignitor connection ("2-fix" contact block), precluding lead-through leakage;

— our five ignitron types can fully replace more than a hundred types of other makes.

For further technical details and application information on our complete range of tubes reference is made to our tube bulletin "Ignitrons".

reliable
robust
efficient
versatile