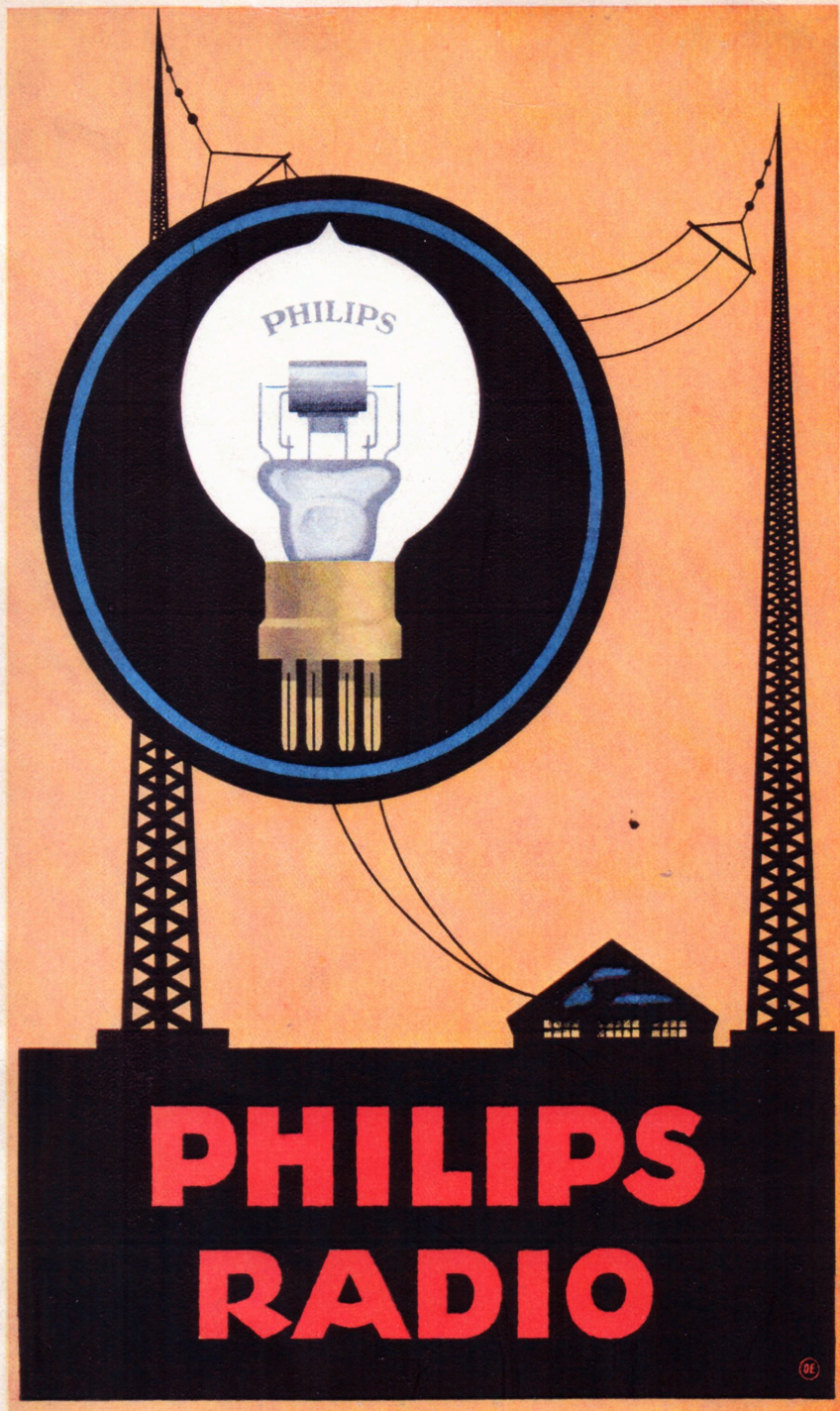




PHILIPS

RECEIVING VALVES

TRANSMITTING VALVES

RECTIFYING VALVES



PHILIPS' GLOW LAMP WORKS Ltd.

RECEIVING VALVES.

A. Triodes or Three-electrodes valves.

We have pleasure in submitting below a short summary of all types of triodes as actually manufactured by us.

Our *Type B II* (Fig. 1) is a Miniwatt-valve of the high-vacuum Dull-Emitter Type. The filament consumption only is 0.15 A at 1.6–1.8 V; care should be taken, not to overcharge the filament. This will shorten the life of the valve considerably and the amplification factor will not be any higher.

This valve can be used both as a Detector and as an Amplifier: anode tension to be 30–75 Volts. Apart from the economy in current-consumption which renders it possible to operate the valve off two dry-cells, the absolute freeness of distortion or other noises makes this valve the ideal

valve for reception and especially for multistage amplifying.

Types D I and D IV provided with a tungsten wire filament are low-vacuum valves viz. they have a gasfilling of low pressure, which pressure has been chosen in such a way that the valve remains absolutely constant even when intensively used during a long period. Owing to the gasfilling this valve operates with a low tension (25–30 Volt) on the anode.

The gasfilled triodes can be specially recommended for use as Detectors, when using them together with a grid-condensor, there is no need to use a grid leak. Both D I & D IV have a filament that will take 0.5 A at 3.5 V; the saturation-current is about 2.5 mA. The type D I is especially built for the normal European sets and has a Standard four pin base (base A) as used generally in England and France. D IV is built for American



No. 1

Receiving tube B II
2/3 of actual size.



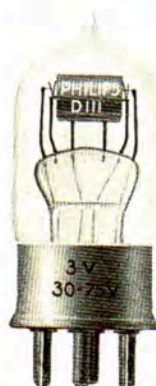
No. 2

Receiving tube D IV
2/3 of actual size.

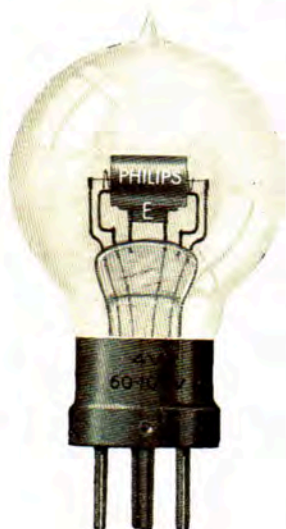


No. 3
Receiving tube D II
 $\frac{2}{3}$ of actual size.

Type D III is a high-vacuum triode, provided with cap B (see sketch on pag. 8) to fit lamp-holders as supplied with a certain type of apparatus mainly of German make. The filament will take abt. 0.5 A at 3 V.



No. 4
Receiving tube D III
 $\frac{2}{3}$ of actual size.



No. 5
Receiving tube E
 $\frac{2}{3}$ of actual size.

sets and provided with a Standard American base with four short pins (base C). On page 8 can be found a sketch with particulars of dimensions of the different bases.

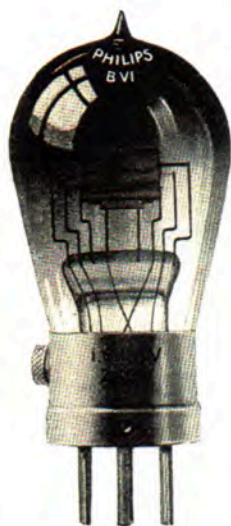
Types D II & D V are high-vacuum tubes for general use both as Detectors and Amplifiers; as the Characteristics of these high-vacuum tubes are practically the same for all tubes, they are to be recommended especially for multi-stage amplification, the more so as an exact regulation of the anode tension (30—75 V) is not necessary.

As far as Watt-consumption, saturation-current, types of bases a.s.o. are concerned D II & D V correspond exactly to D I resp. D IV.

Type E is a high-vacuum triode of somewhat larger capacity than our type D and almost similar to the current French and English Type R. The filament takes abt. 0.7 A at 4 V, the saturation current is abt. 10 mA. This type is specially suitable for larger sets equipped with larger anode batteries, an anode-tension of 60—100 V being required. As a rule these types E are supplied with our cap A.

B. Tetrodes or Double-grid valves.

As a result of a second grid being used, a battery with a capacity of 12 V at the utmost will do for the anode and consequently the receiving-set can be simplified considerably.



No. 6
Receiving tube B VI
 $\frac{2}{3}$ of actual size.

When the second grid (inner-grid) is connected to the positive side of the anode-battery, as indicated on the circuit-diagram supplied with every tetrode, this tube can replace in all circuits the ordinary triode both for detecting and amplifying.

When using the tetrode as a detector a tension of 2–4 Volts (with regard to the positive side of the filament) is required; when using the tetrodes for amplifying purposes, this anode tension should be slightly higher (4–10 V). The amplifying will be considerably increased by giving the exterior grid a negative tension of abt. 1 V (with regard to the negative side of the filament).

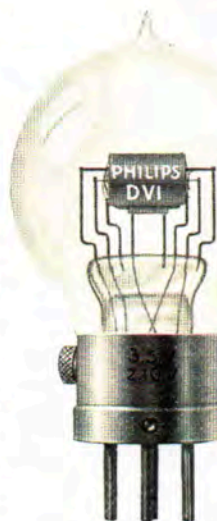
We actually manufacture two types of double grid valves:

1. *Type B VI* is a double grid valve with the filament of our Miniwatt-type, taking abt. 0.15 A at 1.6–1.8 V. The B VI is the most economical valve manufactured until now, as not only a considerable economy in watt-consumption, but also a very sensible economy in anode tension is obtained. For these reasons this valve must be considered as:

the ideal valve for the amateur.

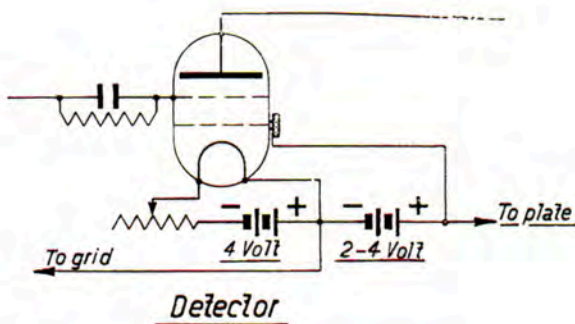
It will operate off a single cell of an accumulator or off a dry cell, whereas one or at the utmost 2 flashlightlampbatteries will be sufficient to get finest results.

2. *Type D VI* is a double-grid valve with a tungsten filament, taking abt. 0.5 A at 3.5 V. Unless stated otherwise when ordering, tetrodes are supplied with cap A; the connections of filament, control (outer) grid and plate with



No. 7
Receiving tube D VI
 $\frac{2}{3}$ of actual size.

Page 7 gives a summary of the principal dimensions of all receiving-valves.



Specimen of schemes for connection of type D VI.

Please note that when using an iron wire resistance the receiving-valve must be stamped "Series" and with the value required for that valve; this value must correspond exactly to the value stamped on the iron wire resistance.

TYPE	TRIODES							TETRODES	
	B II Dull- emitter hard	D I soft	D II hard	D III hard	D IV soft	D V hard	E hard	B VI Dull- emitter Double- grid valve	D VI Double- grid valve
Reproduction. . . .	1	3	3	4	2	2	5	6	7
Anode tension	30/75 V	25/30 V	30/75 V	30/75 V	25/30 V	30/75 V	60/100 V	2/10 V	2/10 V
Filament tension . . .	abt.0.15A	abt. 0.5 A	abt. 0.5 A	abt. 0.5 A	abt. 0.5 A	abt. 0.5 A	abt. 0.7 A	abt.0.15 A	abt. 0.5 A
Filament current . . .	1,6/1,8 V	3,5 V	3,5 V	3 V	3,5 V	3,5 V	4 V	1,6/1,8 V	3.5 V
Diameter	42 mm	30 mm	30 mm	30 mm	45 mm	45 mm	55 mm	46 mm	55 mm
Total length	95 mm	87 mm	87 mm	75 mm	115 mm	115 mm	105 mm	105 mm	105 mm
Cap	A	A	A	B	C	C	A	A	A

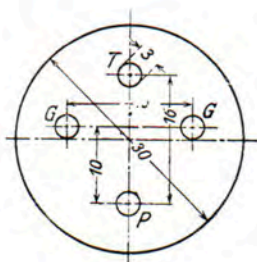
For Characteristic curves see pages 11 and 12.

Please find below sketches of the 3 types of caps, our valves can be supplied with. The figures indicating the connections for the different electrodes are placed in these sketches as if the valve were seen at the bottom of the cap.

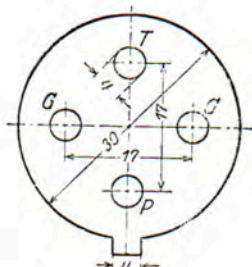
Caps of type A have a little punch to indicate the plate connection.

Lampholders to take valves with cap A, provided with 4 pins, for connecting to the apparatus, can be supplied on demand.

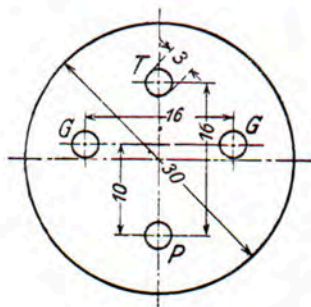
All caps are NICKEL PLATED.



Cap A.



Cap B.

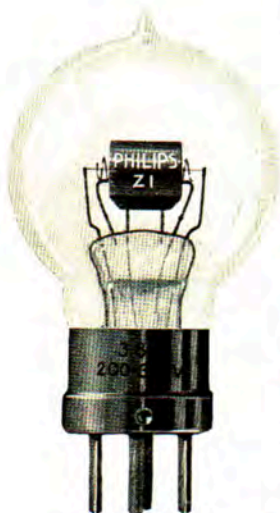


Cap C.

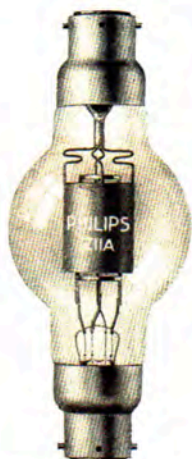
TRANSMITTING VALVES.

On page 9 a summary is given of the principal characteristics of transmitting valves actually manufactured by us. The smallest type Z I may be used not only for transmitting purposes, but also and with remarkably fine results, as last lamp of a multistage amplifier for a loud-speaker. An anode tension of at least 150 V should be applied when using these valves in connection with a loud-speaker.

Each valve of the types Z II A, Z II B, Z III, is supplied with a label, mentioning the exact value of tension and amperage of the filament.

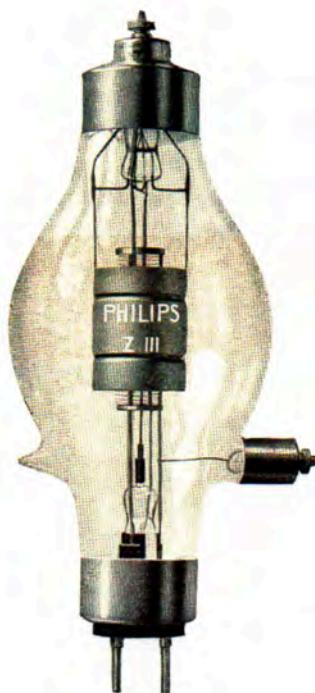


No. 9
Transmitting tube Z I
 $\frac{2}{3}$ of actual size.



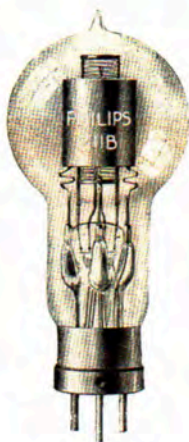
No. 10

Transmitting valve Z II A
2/5 of actual size.



No. 11

Transmitting valve Z III
1/3 of actual size.



No. 12

Transmitting valve Z II B
2/5 of actual size.

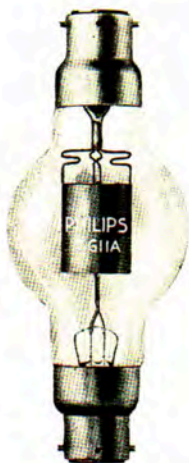
Type	Z I	Z II A	Z II B	Z III
Reproduction. . .	Fig. 9	Fig. 10	Fig. 12	Fig. 11
Capacity	2,5 W	10/20 W	10/20 W	50/100 W
Anode tension . .	200/300 V	500/1000 V	500/1000 V	1000/2000 V
Filament tension .	abt. 1,4 A	abt. 2,7 A	abt. 2,7 A	abt. 4,5 A
Filament current .	3,8 V	6 V	6 V	8 V
Diameter	55 mm	60 mm	60 mm	100 mm
Total length . . .	105 mm	150 mm	140 mm	270 mm
Cap	A	Swan	A	—

The characteristic curves are shown on page 13.

RECTIFYING VALVES.

We supply three different types of rectifying valves to match our transmitting valves Z II A, Z II B & Z III. These valves are exactly the same as the corresponding transmitting valves with the only difference that they contain only two electrodes; the grid being omitted.

These rectifying valves are mainly used when operating the corresponding transmitters from A. C.



No. 13

Rectifying valve Z G II A
2/5 of actual size

Type	Z G II A	Z G II B	Z G III
Max. tension to be rectified . . .	1000	1000	2000
Loss of anode tension	135 V	135 V	270 V
Anode current.	60 mA	60 mA	150 mA
Filament current.	abt. 2,7 A	abt. 2,7 A	abt. 4,5 A
Filament tension.	6 V	6 V	8 V
Diameter.	60 mm	60 mm	100 mm
Total length	150 mm	140 mm	270 mm
Cap.	Swan	A	—

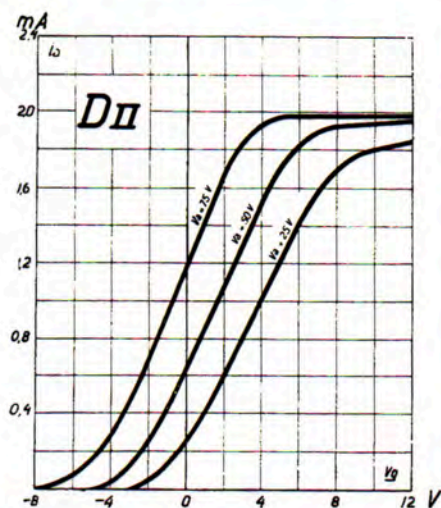
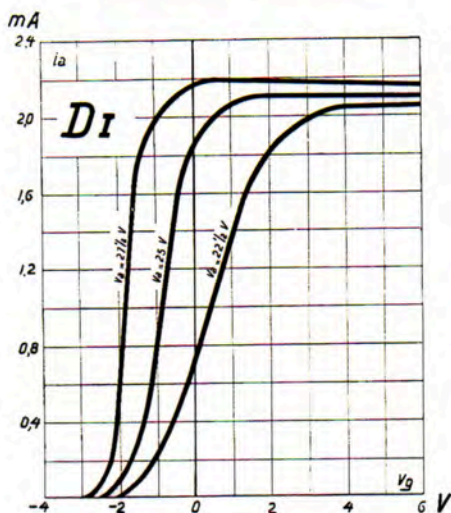
Characteristic Curves of Receiving tubes Types D I and D II.

i_a = Anode current in mA

V_g = Grid tension in Volts

V_a = Anode tension in Volts

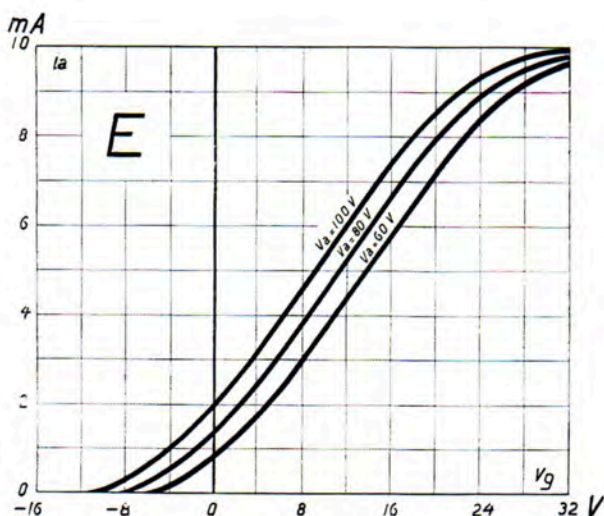
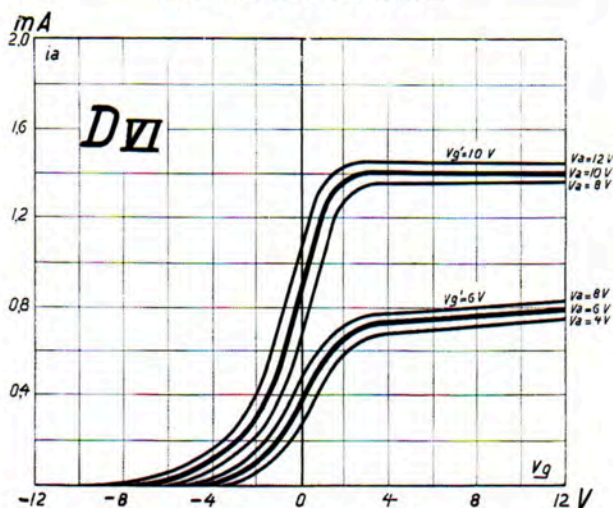
All tensions are to be considered with regard to the negative side of the filament.



Characteristic Curves of Receiving valves Types D VI and E.

- i_a = Anode current in mA
 V_g = Grid tension in Volts
 V_g^1 = Tension of the inner grid in Volts
 V_a = Anode tension in Volts

All tensions are to be considered with regard to the negative side of the filament.



Characteristic Curves of Transmitting valves

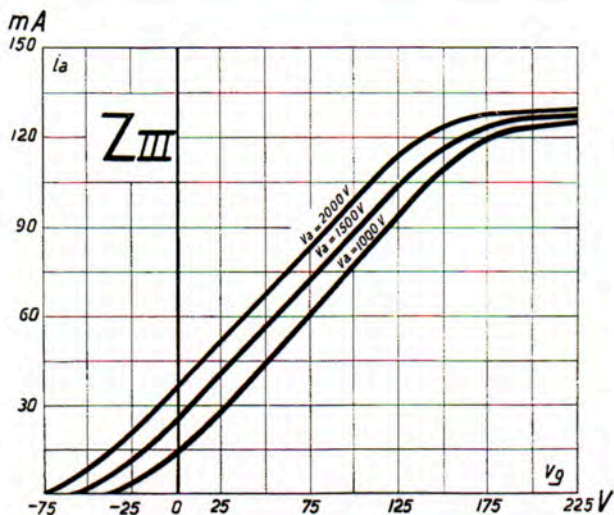
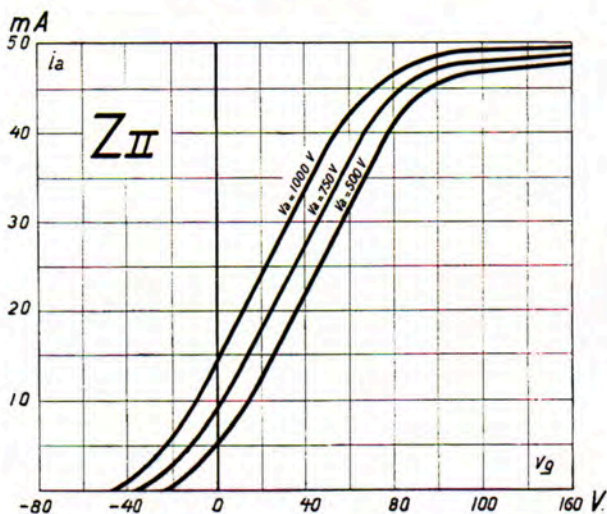
Types Z II and Z III.

i_a = Anode current in mA

V_g = Grid tension in Volts

V_a = Anode tension in Volts

All tensions are to be considered with regard to the negative side of the filament.





PHILIPS' GLOW LAMP WORKS Ltd.

7500 HANDS