

OSRAM VALVE

TYPE U.12Full Wave Rectifying
Valve.

Price, 17/6

The output of the OSRAM U.12 when fed through suitable power amplifying valves such as the OSRAM P.X.4 is sufficient for operation of loudspeakers of the moving coil type, and also extremely useful for supplying the field current to the same instruments. The valve is particularly useful for all cases where rectified current of not more than 120 milliamps is required at output volts of the order of 350. Such a voltage is adequate for both H.T. supply to the amplifying valves and for automatic grid bias to the same valves.



A.C. volts R.M.S. input.	Load Current.	Approximate D.C. Volts Output (neglecting voltage drop across smoothing choke).
350+350	120	320
	90	350
	60	380
250+250	120	180
	90	210
	60	250

NOMINAL RATING.

Filament Volts	...	...	...	4.0 A.C.
Filament Current	...	...	...	2.5 amps, approx.
Anode Volts R.M.S.	...	...	...	350+350 max.
Rectified Current	...	...	...	120 milliamps max (smoothed with 4 mfd. condenser).

OSRAM VALVE

TYPE U.14Full Wave Rectifying
Valve.

Price, 22/6

The output from the OSRAM U.14 is adequate for feeding power valves of the larger type such as the OSRAM L.S.5A and L.S.6A etc. It is also a very useful valve for supplying the field current to moving coil loudspeakers, designed to obtain the magnetising current from the A.C. mains. Up to 120 milliamps rectified current can be drawn from the U.14 valve and the output transformer may be designed to supply to the two anodes a maximum voltage of 500 R.M.S. each with an appropriate filament winding to supply 4 volts 2.5 amperes.



The following figures show the approximate output voltage obtainable, assuming a 4 mfd. condenser across the out-put.

A.C. volts R.M.S. input.	Load Current.	Approximate D.C. Volts Output (neglecting voltage drop across smoothing choke).
400+400	120	400
	90	430
	60	470
500+500	120	540
	90	575
	60	620

NOMINAL RATING.

Filament Volts	...	...	...	4.0 A.C.
Filament Current	...	...	...	2.5 amps, approx.
Anode Volts R.M.S.	...	...	...	500+500 max.
Rectified Current	...	...	...	120 milliamps max (smoothed with 4 mfd condenser).

OSRAM VALVE

TYPE GU.1

Hot Cathode Mercury
Vapour Rectifying Valve.

Price, 25/-



The OSRAM GU.1 is a single wave rectifier the bulb of which, instead of enclosing a vacuum, is filled with mercury vapour.

When the valve is working the bulb will be filled with a blue glow.

The GU.1 is capable of a rectified current up to $\frac{1}{4}$ ampere at any anode voltage up to 1,000 max. provided time is given for the cathode to heat up before switching on the anode volts. The maximum output is 60 milliamps if the anode and cathode volts are applied simultaneously.

It is recommended that two OSRAM GU.1 Valves be connected to provide a full wave rectifying circuit in order to obtain the utmost efficiency. The great advantages of the mercury vapour rectifier are small bulk for large output, and very low internal resistance.

NOMINAL RATING.

Filament Volts	4.0 A.C.
Filament Current	3.0 amps. approx.
Anode Volts	from about 250 up to 1,000 max.
Rectified Current for instantaneous switching of filament and anode voltage	60 milliamps max. each valve.
Rectified Current for $\frac{1}{4}$ minute delayed switching of anode voltage	250 milliamps max. each valve.

OSRAM VALVES FOR D.C. MAINS SETS.

Type.	Purpose	Filament		Amplification Factor	Impedance, ohms.	Mutual Conductance ma/volt.
		Volts.	Current, amps.			
D.S.	Screen Grid H.F. valve.	16.0	0.25	550	500,000	1.1
D.H.	Detector and R.C. amplifier	16.0	0.25	40	10,800	3.7
D.L.	L.F. and Loud-speaker Power Valve.	16.0	0.25	12	2,660	4.5
D.P.T.	Pentode	16.0	0.25	90	30,000	3.0

OSRAM D.C. Mains Valves have 16 volt 0.25 amp. filaments designed to operate in series with the minimum expenditure of current from the mains.

In addition, the heater cathode insulation is such as to enable a set to be constructed with a common H.T. negative lead and the grid bias to each valve taken through a separate biasing resistance to the cathode. This is of the greatest advantage in simplifying set design and enabling a similar circuit to be employed for both OSRAM A.C. and D.C. VALVES, the difference merely being in the filament connections.

OSRAM VALVE

TYPE D.S

(For operation from D.C.
Mains).Screen Grid High Fre-
quency Amplifying Valve.

Price, 22/6

The OSRAM D.S. is an Indirectly Heated Screen Grid H.F. Amplifying Valve of which the filament current is only 0.25 ampere.

It is designed to operate as an H.F. amplifier with the filament wired in series with other OSRAM D.C. Mains Valves from the Direct Current electric supply through a "breakdown voltage" resistance of appropriate value. The insulation resistance between heater and cathode is of a high order. This prevents the possibility of breakdown even though several OSRAM D.C. valves are wired with the filaments in series. This is an important and valuable feature of OSRAM D.C. VALVES.



Anode Volts.	Screen Grid Volts.	Recommended Grid Bias Volts.	Average Anode Current m.a.	Approx. Screen Current m.a.
100-200	50-70	-1.5 to -3	2.4 to 1.6	0.3

NOMINAL RATING.

Filament Volts	.....	16.0
Filament Current	.....	0.25 amp.
Anode Volts	.....	200 max.
Screen Grid Volts	.....	70 max.
Amplification Factor	.....	550
Impedance	.....	500,000 ohms.
Mutual Conductance	.....	1-1

OSRAM VALVE

TYPE D.H

(For operation from D.C.
Mains).Detector and Amplifying
Valve.

Price, 15/-



The OSRAM D.H. is an Indirectly Heated Cathode Valve suitable for filament heating from D.C. electric light mains, in series with other OSRAM D.C. VALVES and a suitable "breakdown voltage" resistance.

The D.H. is of extremely rigid construction and has very efficient characteristics. For these reasons it is particularly suitable as a Detector Valve in D.C. sets where its high amplification Factor and relatively low Impedance make for sensitive detection and good quality reproduction.

Purpose.	Anode Volts.	Recommended Grid Bias Volts.	Average Anode Current m.a.
As grid leak Detector.	50-100	Grid leak joined to cathode.	4.0 to 8.0
As power grid Detector.	150	Grid leak joined to cathode.	13.0
As anode bend Detector.	50-200	-1.5 to -6	Very small
In L.F. amplifier (first stage only).	150-200	-2 to -3	5.5 to 6.0

NOMINAL RATING.

Filament Volts	.....	16.0 approx.
Filament Current	.....	0.25 amp.
Anode Volts	.....	200 max.
Amplification Factor	.....	40
Impedance	.....	10,800 ohms.
Mutual Conductance	.....	3.7
Anode Dissipation	.....	2.5 watts max.

OSRAM VALVE

TYPE D.L

(For operation from D.C. Mains).

L.F. Amplifier and Power Valve.

Price, 17/6

The OSRAM D.L is an Indirectly Heated Cathode Valve suitable for use as an Amplifier or Loudspeaker valve in a set obtaining its filament supply directly from the D.C. mains. For this purpose the filament current of 0.25 amp. makes for economical operation and easy heat dissipation from the external series resistance.

As with other OSRAM D.C. valves special attention has been paid to high insulation resistance between heater and cathode.

The OSRAM D.L has exceptionally good characteristics and enables adequate loud-speaker strength to be obtained for a very small applied signal.



Anode Volts.	Average Anode Current m.a.	Approximate Negative Grid Bias Volts.
100	10.0	4.0
150	16.0	7.0
200	25.0	8.0

NOMINAL RATING.

Filament Volts	...	16.0 approx.
Filament Current	...	0.25 amp.
Anode Volts	...	200 max.
Amplification Factor	...	12
Impedance	...	2580 ohms.
Mutual Conductance	...	4.5
Anode Dissipation	...	5.0 watts max.

OSRAM VALVE

TYPE D.PT

(For operation from D.C. Mains).

Pentode Power Amplifying Valve.

Price, 25/-

The OSRAM D.PT is an Indirectly Heated Cathode Pentode Valve suitable for use in D.C. mains sets.

In common with other OSRAM D.C. Valves the insulation resistance between heater and cathode is tested to withstand a potential difference sufficient for the use of automatic grid bias between cathode and a common H.T. negative lead, even though up to six D.C. valves be used in the set.

The OSRAM D.PT has excellent characteristics and as a loudspeaker valve will give adequate power output for all normal purposes. The loudspeaker or output choke should be shunted by a resistance of approximately 10,000 ohms.



Anode Volts.	Screen Grid Volts.	Recommended Negative Grid Bias Volts.	Average Anode Current m.a.	Screen Current m.a.
200	200	10	40.0	6.5

Automatic grid bias is recommended and a value of 230 to 250 ohms is suitable for the grid resistance.

NOMINAL RATING.

Filament Volts	...	16.0 approx.
Filament Current	...	0.25 amp.
Anode Volts	...	200 max.
Screen Grid Volts	...	200 max.
Amplification Factor	...	90
Impedance	...	30,000 ohms.
Mutual Conductance	...	3.0
Anode Dissipation	...	8 watts max.

PRINCIPAL BROADCASTING
STATIONS AND TUNING CHART.

Station.	Wave metres.	Power K.W.	Dials.		
			1	2	3
Huizen	1875	8.5			
Radio Paris	1725	10 80	150	150	150
Königsweaterhausen	1635	75.0	150	150	150
Daventry National	1584	35.0	125	125	125
Moscow	1481	100 100	175	175	175
Eiffel Tower	1445	15.0	115	115	115
Warsaw	1411	158.0	115	115	115
Mofala	1352	40.0	85	85	85
Moscow	1304	100 100	85	85	85
Istanbul	1200	5.0			
Kahndberg	1153	10.0	90	90	90
Moscow	1103	40.0			
Leningrad	1000	100 100	20	20	20
Budapest	550	23.0			
Munich	533	1.7			
Riga	525	13.0			
Vienna	517	20.0			
Brussels	509	20.0			
Milan FLAORILE	501	8.5			
Prague	487	10 120			
North Regional	479	70.0			
Langenberg	473	17.0			
Lyons	468	20 5			
Beromünster	459	77.0			
Rome	441	75.0			
Belgrade	430	3.0			
Kharkov	427	25.0			
Madrid	424	2.0			
Rabat	418	2.5			
Dublin	413	1.5			
Katowice	408	16.0			
Sottens	403	32.0			
Midland Regional	399	38.0			
Bucharest	394	16.0			
Frankfurt	390	1.7			
Toulouse	385	8.0			
Lwow	381	21.0			
Glasgow	376	1.2			

PRINCIPAL BROADCASTING
STATIONS AND TUNING CHART.

Station.	Wave metres.	Power K.W.	Dials.		
			1	2	3
Hamburg	372	1.7			
Algiers	363	13.0			
Muhlacker	360	75.0			
London Regional	356	70.0			
Grax	352	9.5			
Barcelona	349	8.0			
Strasbourg	345	15.0			
Brussels	338	20.0			
Breslau	325	1.7			
Goteborg	322	15.0			
Cardiff	319	1.2			
North National	301	70.0			
Hilversum	299	8.5 20			
Aberdeen		1.2			
Bournemouth		1.2			
Dundee		0.16			
Edinburgh	288.5	0.4			
Newcastle		1.2			
Plymouth		0.16			
Swansea		0.16			
Bratislava	279	14.0			
Heilsberg	276	75.0			
Turin	274	8.5			
London National	261	68.0			
Horky	257	15.0			
Toulouse	256	1.0			
Gleiwitz	253	5.6			
German & Swedish relays	246				
Wilno <i>5. 10. 12</i>	244	22.0 22.0			
Belfast	242	1.2			
Nureberg	239	2.3			
Cologne	227	1.7			
Cork	224	1.5			
Helsinki	221	15.0			
Königsberg	217	1.7			
Warsaw	214	1.2			

Station.	Wave Length	Dials.			KW
		1	2	3	
LAHTI	1796	154	166		54.0
VIENNA (Exp)	1237	58	115		2.1
REYKJAVIK	1200	80	106		75
OSLO	1082	35	85		
KOOWYK (Exp)	1055	40	90		.6
LAUSANNE	680	0	30		
CROYDON		50	58		
HOTON. (Det. Obs)	900				
SUNDYALL	540				15
PARIS P.T.T	447				1
Stockholm	436				75
Berlin. Witz	418				17
Anchorage	390				10
Radiol. L.	3704				.5
BRNO	342				300
MILAN	331.5				8.5

Station.	Wave Length	Dials.			KW
		1	2	3	
Poste Parisian	328				1.2
Grenoble	328				2.2
Cranston					1.5
BANCO (Det.)	313				1.5
Radio Victoria					
Bordeaux. P.T.T.	304				35
Montpellier	286				12
Copenhagen	281				.75
Bremen	270				.3
Lille P.T.T.	265.4				2
MANUSKA Ostr.	270				17
Leipzig	259				23
					15
Trieste	248				1
Nimes	237				2
Lodz (Exp)	235				1
Fecamp					
PALERMO	2124				4
Amt. of S. Group.	169				

CARE AND USE OF BATTERIES.

Notes on Care of Accumulators.

1. Add nothing but pure distilled water to the cells, and do this often enough to keep the plates covered.

2. Never over-discharge the battery. (Test the specific gravity by a Hydrometer.)

3. Do not leave the battery for any length of time in a discharged condition.

4. Recharge about every two months, whether battery is used or not.

5. Keep battery clean and filling plugs and connections tight.

6. Pour off and discard old acid annually when cells are in a fully charged condition, and refill with fresh acid immediately.

Dry Batteries.

If dry batteries are used for High Tension current, a fixed condenser of about 2 mfd. should be connected across the + and -ve terminals to short circuit high frequency currents, if this is not already provided in the set. Super-capacity batteries should be employed for sets taking a total anode current greater than 9 milliamperes. Discard and renew dry batteries when signals get weak, or crackling or whistling noises commence. Test volts occasionally with a high resistance voltmeter.

Remember that the successful performance of the set largely depends on the High Tension Supply, and where this is obtained from dry Batteries a reliable Battery is essential. Equally necessary for good quality is the correct grid bias, and as a source of both H.T. supply and grid bias, MAGNET Dry Batteries are recommended for consistent and long service.

BATTERIES RECORD CHART.

L.T. Accumulator *Oldham, C.B.S. / Fuller, Oldham*

Put into Use (Date) *Nov. 1930* *A. H.A.*

LAST CHARGE.		LAST CHARGE.	
Date.	Remarks.	Date	Remarks.
<i>Dec 23 / 31.</i>		<i>Nov 1931.</i>	

H.T. Battery <i>Not used</i>	Grid Battery <i>Fuller, Oldham</i>
Put into use (Date) <i>Nov 31</i>	Put into use (Date) <i>Nov 1931</i>
Renewed or Recharged (Date)	Renewed (Date)
<i>22nd Jan 1931</i>	
	Renew Grid Battery annually.

OSRAM VALVES—PRICE LIST.

Group.	Type.	Price.
2-volt Battery	S.21	20/-
	S.22	20/-
	H.2	8/6
	H.210	8/6
	H.L.2	8/6
	H.L.210	8/6
	L.210	8/6
	L.P.2	10/6
	P.2	13/6
	P.T.2	20/-
4-volt Battery	P.240	13/6
	DG.2	20/-
	S.410	20/-
	H.410	8/6
	H.L.410	8/6
	L.410	8/6
6-volt Battery	P.410	10/6
	P.415	13/6
	P.T.425	20/-
	S.610	20/-
	H.610	8/6
6-volt Battery	H.L.610	8/6
	L.610	8/6
	P610	10/6
	P.625A	13/6
	P.625	13/6
	P.T.625	25/-

Prices apply only in Great Britain and Northern Ireland.

OSRAM VALVES—PRICE LIST.

Group.	Type.	Price.
A.C. Mains Power Amplifiers and Power Pentodes	MS.4B	22/6
	M.S.4	22/6
	VMS4	22/6
	M.H.4	15/-
	M.H.L.4	15/-
	M.L.4	17/6
	P.X.4	20/-
	L.S.5A	25/-
	L.S.6A	30/-
	P.T.4	25/-
D.C. Mains	M.P.T.4	25/-
	D.S.	22/6
	D.H.	15/-
	D.L.	17/6
Rectifiers	D.PT	25/-
	U.10	15/-
	U.12	17/6
	U.14	22/6
	GU.1	25/-

Prices apply only in Great Britain and Northern Ireland.

GECOPHONE

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1. GECOPHONE Compact All-Electric Screen-Grid Receiver for A.C. Mains (as illustrated above). Inlaid Walnut cabinet with built-in Inductor Dynamic Loud Speaker. **Price 18 Guineas**
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5. GECOPHONE All-Electric Radio Gramophone for A.C. Mains. Inlaid Walnut cabinet. **Price 40 Guineas**
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Prices include OSRAM VALVES, as standard, and Royalty.

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Osram Valves

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