

“Talk
for
Themselves”

W. E. CHAPMAN
Registered Pharmacist
Fairlee, Vermont

RECEPTION



Champion
Tubes

Champion Tubes

"Talk for Themselves"



*Transparent
Counter
Display*

Champion Radio Works, Inc.

DANVERS
MASSACHUSETTS

It's what you show on your counter that makes for sales, the quality of Champion Radio Tubes will take care of the repeat orders.

ALL Champion Radio Tubes are packed in individual transparent cartons (as shown on opposite page.)

¶ These individual transparent cartons are packed in a transparent container holding six tubes. Eight transparent containers make up a standard package of 48, four transparent containers make up a standard package of 24.

STANDARD PACKAGE QUANTITIES

201A	48
V199	48
X199	48
200A	24
X112	24
X171	24
X120	24
X240	24
Y227	24
X226	48
X280	24

"Known by the Box"



¶ Contents of every standard package of Champion Radio Tubes are packed in transparent cartons which are shipped in transparent counter containers ready for automatic counter sales.

A Word About Champion Tubes

TO meet the demand for a good scientifically designed radio tube a great deal of time and money has been spent in perfecting and developing the Champion Tubes.

Q A tube is a precision instrument whose value is determined by rigid inspection and the utmost care in manufacture. Years of experience in making Champion vacuum products are behind each process of construction. At final inspection the tests are so severe that all Champion Tubes which survive are matched perfectly and will work equally well as Radio or Audio Amplifiers, or as Detectors.

The Importance of the Filament

Q An especially sensitive filament has been produced which will give off a very high *Emission of Electrons* at a low temperature. This means that Champion Tubes will work better and use less current; "A" batteries will run longer without charging.

Q Another point in this connection is the greatly Increased Life due to the low filament temperature. When a filament is

new it is tough and strong. As it burns it crystalizes and gradually becomes brittle, and eventually it will burn out. The brighter it is burned the sooner this condition is brought about and the shorter the tube life.

Aging

Q When tubes are first made a careful aging process is necessary to bring the active substance in the filament to the surface, and to stabilize the efficiency of the Tube in continued operation. All Champion Tubes are carefully seasoned to insure maximum signal strength throughout normal life. The filament may temporarily be *restored* to activity by any common reactivator designed for the purpose, or by burning without plate voltage applied. *Reviving* in this manner should not be done, however, until a weakening of the tube is noticed as this process is somewhat harmful to the filament, and a second application will be made necessary in a short time.

Tube Noises

Q The workmanship and materials used throughout are the best obtainable. Great

care has been exercised to prevent any sustained vibrations which might cause microphonic noise in operation. Vibrations of this nature are caused by improperly supported elements in the tube. A loose filament is the worst offender. Champion Tubes have a *special hook* or top filament support with a springiness sufficient to keep an even tension on the filament at all times. In addition the Champion 199 type Tubes are fitted with a special glass bead construction which holds the grid, plate, and filament in rigid space relation.

Q The bakelite bases are selected to insure against loose contacts or pins, and are indelibly branded with the Champion Trade Mark and guarantee.

New Champion Radio Tubes *X-281, X-222, X-250*

Q Specifications and details not ready at time of going to press.

UX-226 *Champion* *A. C. Amplifier*



THE Champion UX-226 is designed for use either as a radio or audio frequency amplifier. It employs a heavy filament of the oxide coated type designed for operation on low voltage alternating current. The electrical characteristics are similar to those of the Champion 201-A, except that Champion UX-226 is not generally suitable for use as a detector.




RATING :			
Fil. Volts			1.5 (transformer)
Fil. Current-Amps			1.05
Plate Voltage	90	135	180
Grid Voltage	-6	-9	-13.5

List Price \$3.00

UY-227

5 Prong

Champion A. C. Detector

 THE Champion UY-227 differs from a general purpose tube in that it has a heater element instead of a filament. Emission in a tube is caused by heating the surface of the filament which is heated so as to emit electrons. In the Champion UY-227 the emitting surface is separated from the heating wire by a piece of insulating material. This does away with the hum which would be heard if a general purpose tube were lighted with alternating current.

Q In order to get a separate electrical connection to the cathode, or emitting surface, an extra prong is necessary in the base.

RATING:

Heater Volts	2.5 (transformer)
Heater Amps	1.75
Plate Volts	90
Grid Leak	2-9 ½-1
Grid return lead is connected to Cathode.	

List Price \$6.00




UY-227

UX-280

Full Wave

Champion Rectifier

 THE Champion UX-280 is a full thermionic rectifier. This tube is evacuated to a very high degree, and has many advantages over the gaseous conduction type of rectifier.

Q A very heavy oxide filament is used in the Champion 280, which will stand very severe treatment, and still continue to give unusually high emission.

Q The plates of the Champion UX-280 full wave rectifier are made of monel mesh in order to facilitate the dissipation of heat.



UX-280

INPUT:

Fil. Volts	5.-
Fil. Amps	2.-
Plate Volts A.C.	300.-

OUTPUT:

Max. D.C. Current	125. Milliamps
Max. D.C. Voltage	260. Volts (at input to filter circuit)


List Price \$5.00

UX-112-A

Power Amplifier

Champion

General Purpose Tube

 THE Champion UX-112-A is similar in characteristics to the Champion 112, except that it takes only one quarter ampere filament current. It may be used in any position where either a 112 or 201-A is now employed and will greatly improve results in the latter case, either as a detector, or a radio or audio frequency amplifier.



UX-112-A


RATING:

Fil. Volts		5.-
Fil. Amps.		.25
Plate Volts	135	157.5
Grid Bias	-9	-10.5

List Price \$3.50

Champion X-201-A

Detector and Amplifier

 HIS is the standard tube designed to meet every use connected with radio reception.

Q The years of research behind this tube are justified by the enormous popularity which it enjoys among radio enthusiasts.

Q The test specifications on Champion X-201-A Tubes are so rigid that all tubes are guaranteed to be perfectly matched, and will work equally well as detectors or amplifiers.

RATING:


Filament Voltage	5.
Filament Current	.25
Plate Voltage, as Detector	45.
Plate Voltage, as Amplifier	90 to 135
"C" Voltage, as Amplifier	-4.5 to -9.

Reduced List Price \$1.50



X-201-A

Champion V-199

 THE V-199 fits the old type UV-199 socket, while the X-199 takes the new standard UX socket. Aside from the type base and socket the two tubes are identical.

Q They will work with the same efficiency either as detectors or as radio or audio amplifiers.


List Price . . \$2.25



V-199

Champion X-199

Detector and Amplifier

 THE X-199 and V-199 Champion Tubes are designed to operate very efficiently in either portable or home dry battery sets.

Q Four of these Tubes draw less current from the "A" battery than one of the storage battery type.




X-199

RATING :

Filament Voltage	3.
Filament Current	.06
Plate Voltage, as Detector	45.
Plate Voltage, as Amplifier	90.
"C" Voltage, as Amplifier	-4.5

List Price \$2.25

Champion X-200-A

 THE Champion X-200-A is a super sensitive detector tube. With this tube in the detector position a marked increase in signal strength and clarity of tone will be noticed, especially on distant stations.

Q The Champion X-200-A has characteristics such that it may be used as the detector in any set now using X-201-A type tubes. It is very stable in operation and does not require critical adjustment of plate voltage.

Q With Champion X-200-A Tubes the very weakest of Radio Signals may be easily detected.

Q Not only will there be increased volume on stations you now hear but you will bring in stations you were never able to get before.

Champion X-200-A

Super Sensitive Detector



RATING:

Filament volts	5.0
Filament amperes	.25
Plate volts (Max.)	45.
Grid Condenser	.00025 mfd.
Grid Leak	2-3 megohms

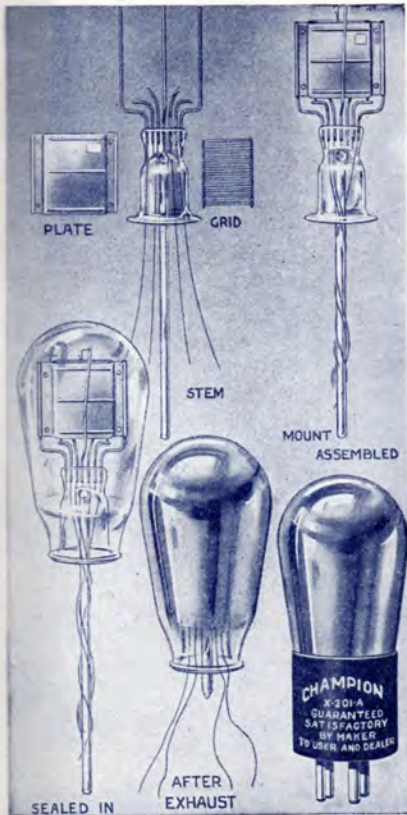
List Price \$4.00

Why are Tubes Silvered?

WHEN a tube is assembled a small strip of magnesium is attached to the plate for this purpose. The tube is then evacuated to as high a degree of vacuum as is possible with modern equipment. The plate is then heated electrically in order to drive off all the occluded gases adhering to it.

Q Magnesium when heated in air will burn to form Magnesium Oxide. When heated in an evacuated tube it "explodes" burning up all the gases still remaining in the tube, thereby *perfecting to a greater degree the desired vacuum.*

Q The surplus magnesium condenses on the inner surface of the bulb creating the *silver coating*. In fact, a tube with no magnesium will not function at all. However, complete silvering is unnecessary. A small spot of silvering on the bulb shows that the magnesium was in excess of what was needed to "get" the vacuum.



Champion X-112

FOR the last stage of audio frequency amplification try a Champion X-112.

Q Modern sets deliver so much power to the Loud speaker that a new tube had to be brought out to handle the increased output.

Q A Champion X-112 in place of an X-201-A in the audio frequency circuit of a storage battery set will give greatly increased volume without distortion.

Champion X-112

Power Tube




RATING:

Filament Voltage				5.00
Filament Current				.50
Plate Voltage	90	135	157.5	
"C" Voltage	-6	-9	-10.5	

Reduced List Price \$3.50

Champion X-171

Power Amplifier

 THE Champion X-171 is a Power Amplifier Tube designed to have a very low output impedance. It is intended for the last Audio stage only.

Q When operated at maximum plate voltage great volume will result without a trace of distortion. Due to the high plate current under these conditions it is usually necessary to use some form of loudspeaker coupling such as an output transformer, or choke coil with by-pass condenser, to keep DC from the loudspeaker circuit.

Q It is essential that a "C" Battery of the proper voltage be used in connection with the Champion X-171.


RATING:

Filament Voltage	5.		
Filament Current	.5		
Plate Voltage	90	135	180
"C" Voltage	-16.5	-27	-40.5
Reduced List Price \$3.50		



X-171

Champion X-120

 HAMPION X-120 is a new Power Amplifier for use in the last stage of Audio frequency Amplification in sets now employing tubes of the 199 type.

Q Dry battery set owners will find greatly increased volume and exceptional clarity of tone with the Champion X-120.

Q To secure the best results, maximum plate voltage should be used, along with proper "C" battery or negative grid bias.



X-120

RATING:

Filament Voltage	3.
Filament Current	.125
Plate Voltage	135.
"C" Voltage	-22.5

List Price . . \$2.50

Champion X-240




X-240

High Mu

*Detector and
Voltage Amplifier*

Filament Volts 5.
Filament Current .25
Plate Volts maximum 180.

 THE Champion X-240 is designed chiefly for use in resistance coupled amplifier circuits. It has a very high amplification factor, ($\mu = 30$) and is therefore not

designed for use in the last audio stage, where a Champion X-112 or X-171 will work to better advantage.

Q In constructing an amplifier of this kind it is always well to use good quality parts, such as coupling resistances and blocking condensers. A "C" battery should always be used to keep out distortion.

Reduced List Price \$2.00

INSTRUCTIONS FOR USE OF CHAMPION POWER TUBES


 HAMPION X-112. In order to secure best results a C battery or negative grid bias should be used, the value of which should correspond to the amount of plate voltage used as shown by the following table.

PLATE VOLTAGE	NEG. GRID BIAS
90 Volts	6.0 Volts
112.5 Volts	7.5 Volts
135 Volts	9.0 Volts
157.5 Volts	10.5 Volts

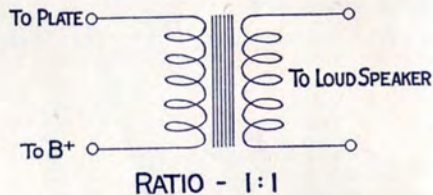
Q The filament rheostat should be placed in the negative A battery lead. The grid return lead should be connected to the negative of the C battery. The positive terminal of the C battery should be connected to the negative filament lead between rheostat and tube.

Q CHAMPION X-171 is for use only in last audio stage. The amount of undistorted power which can be delivered increases rapidly as the plate voltage is increased; therefore a plate voltage as near the maximum of 180 volts as is possible should be used. At maximum voltage a negative grid bias or C battery of 40 volts must be used. Connections are made same as for Champion X-112.

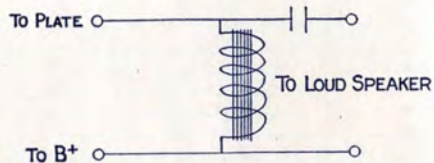
Q At more than 90 volts plate, the D. C. Plate current is too high to be passed safely through the windings of most loud

speakers. The plate current should therefore be supplied through a transformer or choke as shown:—

TRANSFORMER



CHOKE



Q These are typical diagrams for connecting loud speaker when using the Champion X-171 Power Amplifier in Last Audio stage.

GUARANTEE

Any just claim by a Champion Tube User will be allowed without discussion by the Champion dealer.

If for any reason adjustment with dealer fails, the user should fill in his name as well as that of his Champion dealer, and the factory upon receipt of this claim will make good this guarantee.

The reliability of the manufacturer is your protection.

Name

Address

Dealer's Name

Factory Credit Rating
Commercial Rating

DUN

BRADSTREET

\$1,000,000—Aaa1
\$1,000,000—GAs
Read just what you buy, how your money
is spent, and what you have to depend on
after it is spent.

Champion Radio Works, Inc.
Danvers
Massachusetts