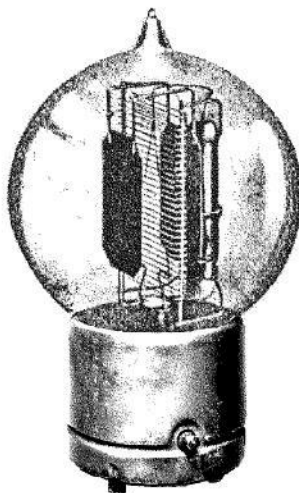


Western Electric

201A/B Vacuum Tube **(Type 201A as U.S. Navy type CW-186)**

PRELIMINARY



Classification—Filamentary, detector, voltage amplifier triode

The 201A tube is similar to the 102 tube except that grid constructions had thirty-seven laterals on each side instead of thirty-one. This tube had a three-contact base, specified by the Navy, the forth connection (one side of the filament) being made to the bayonet pin (metal base shell). In the standard telephone repeater base this tube was known to the Western Electric Type D and was assigned the code number 201B.

Applications

Audio-frequency voltage amplifier.
Detector or modulator.

Dimensions—Dimensions, outline diagrams of the tube and base, and the arrangement of the electrode connections to the base terminals are shown in Figures 1 through 4.

Base— 201A : Navy, three-contact, bayonet type*(the forth connection being made to the bayonet pin.) having special contact metal at the end of contact pins.

201B : Medium, four-pin, bayonet type having special contact metal at the ends of the contact pins.

* Corroded color of the long-term, was the same as BRASS, but the material was found to be a result of Nickel-silver (German silver) is polished.

Socket— 201A : Navy, three-contact, bayonet-slot type, with bayonet contact, preferably provided with contact-metal contacts. (refer to Figure 6, bottom right of photo)

201B : Four-contact, bayonet-slot type, preferably provided with contact-metal contacts, such as the Western Electric 100L for front of panel mounting or 100R for rear of panel mounting.

Mounting Positions—Either vertical or horizontal. If mounted in a horizontal position, the plane of the filament, which is indicated in Figure 2, Figure 4 should be vertical.

Average Direct Interelectrode Capacitances

	<u>A</u>	<u>B</u>	<u>C</u>
Grid to plate, $\mu\mu\text{f.}$	5.0	5.4	6.5
Grid to filament, $\mu\mu\text{f.}$	2.9	3.6	5.7
Plate to filament, $\mu\mu\text{f.}$	1.7	2.4	4.9

Column A—Based tube without socket. (reference 102G, dataset value)

Column B—Based tube without socket. (Actual measurement value of an 102G own by itself.

Column C—Based tube without socket. (Actual measurement value of 201A (Nickel-silver base))

*Measurement equipment: hp 4261A LCR Meter, (Test signal Freq.: 1 kHz, Level : 1 Volt)

Filament Rating

Filament current..... 1.25 ampere, d.c.

Nominal filament voltage..... 2.5 - 3.0 volts

The filament of this tube is designed to operate on a current basis and should be operated at as near the rated current as is practicable. **Filament Current Must Never Exceed 1.3 Amperes.**

Characteristics—Electrical and mechanical information is refer to Tabular Data 4 : DWG No. ESR-255549 (8-28-29) . Plate current characteristics of 1 sample 201A tube are shown in Figure 7 as functions of grid voltage for several values of plate voltage. The grid and plate voltages are measured from the negative end of the filament. Plate current characteristics as functions of plate voltage are shown in Figure 8 for several values of grid voltage.

TABLE (Actual measurement value of 201A - № 36506 D)

<u>Plate VOLT- age</u>	<u>Grid Bias</u>	<u>Plate Cur- rent</u>	<u>Amplifi- cation Factor</u>	<u>Plate Resis- tance</u>	<u>Trans- conduc- tance</u>	<u>Input VOLT- age</u>	<u>Load Resis- tance</u>	<u>Output VOLT- age</u>
<u>Volts</u>	<u>Volts</u>	<u>Milli- amperes</u>		<u>Ohms rp</u>	<u>Micro- mhos</u>	<u>Peak Volts</u>	<u>R</u>	<u>Peak Volts</u>
130	-2.0	0.24	38.1	159000	240	2.0	R = r_p	28
							R = $3r_p$	43
							R = $5r_p$	49
130	-1.0	0.56	39.8	100000	400	1.0	R = r_p	18
							R = $3r_p$	26
							R = $5r_p$	29
*160	-3.0	0.21	36.7	180000	200	3.0	R = r_p	43
							R = $3r_p$	62
							R = $5r_p$	68
*160	-2.0	0.47	38.3	110000	350	2.0	R = r_p	33
							R = $3r_p$	49
							R = $5r_p$	54
*160	-1.0	0.90	38.7	79000	490	1.0	R = r_p	16
							R = $3r_p$	25
							R = $5r_p$	28
**190	-3.0	0.41	37.8	122000	310	3.0	R = r_p	46
							R = $3r_p$	69
							R = $5r_p$	77
**190	-2.0	0.79	38.1	85000	450	2.0	R = r_p	35
							R = $3r_p$	52
							R = $5r_p$	58
**190	-1.0	1.32	39.1	67000	580	1.0	R = r_p	18
							R = $3r_p$	27
							R = $5r_p$	30

* Maximum operating conditions.

** This data, for comparing the 201A and 102G, and are measured by exceed the maximum rating intentionally. maximum rating of 201A are E_b (max) : 150 Volts, Max input voltages : 2.5 volts.

Note: This data sheet was, does not actually exist. This data is the result of investigating Western Electric 207A owned by itself, and data of literature are gathered in the format, similar to "Western Electric V.T. DATA SHEET 10ZG (SSUE 1" (1936). However, all contents is correct!

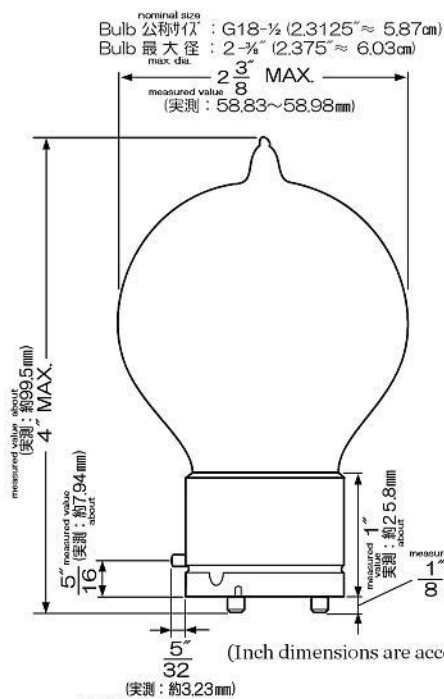


FIG. 1

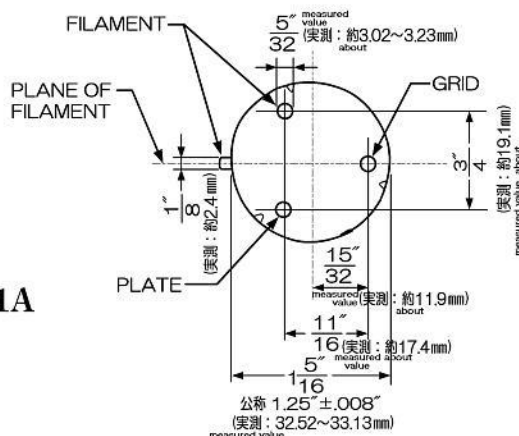


FIG. 2

(Inch dimensions are according to John W. Stokes in the "70 Years of Radio Tubes and Valves".)

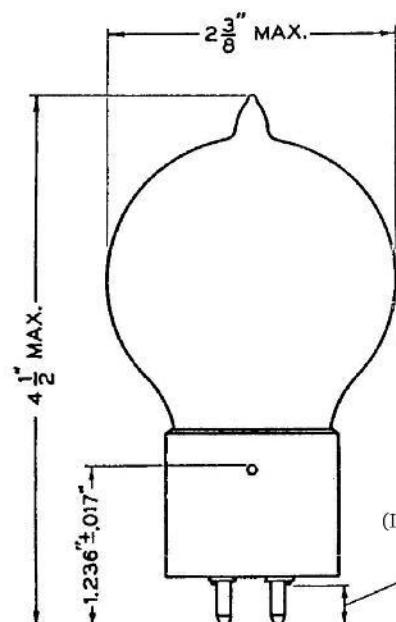


FIG. 3

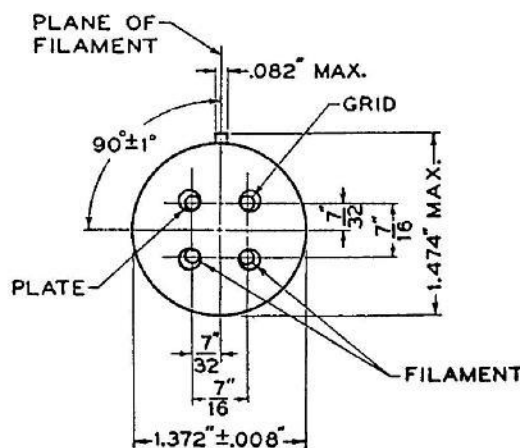


FIG. 4

(Inch dimensions are according to in the "V.T. DATA SHEET 102G ISSUE 1".)

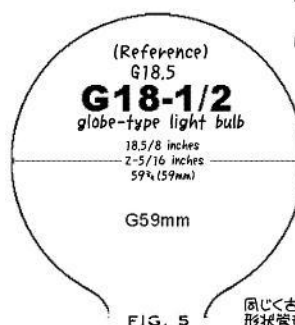


FIG. 5

注:Bulb sizeの'G78-1/2'は古い電球形状の表記で、文字'G'は電球の形状「Globe(球形)」であることを示している。
文字に続く数字は、8分の1インチ単位で管径を示す。よって、まず $18 \times 1/2$ インチで、 $1/8 \times 18.5$ ($18.5/18$)インチの直径
であり、これを示している。普通に着けられ、長さ59mm程度、また「Z」法における Z-5/16インチ。

NOTE : BULB SIZE 'G18-1/2' in the notation of the old days, the letter 'G' is bulb shape indicates that
the 'Globe (spherical)'. The number that follows the letter, within the indicates diameter of the bulb
in one-eighth inch units. i.e. show that with $18 \times 1/2$ inch have $1/8 \times 18.5$ ($18.5/18$) inches diameter.
When denoting normally, Z-5/16 inches in imperial system, about 59mm in metric system.

ちなみに、普通の電球は“A型”。“A型”という文字に特別な意味は無いようだが、形状は“洋梨型”と呼ばれる。A型の“首”の部分の横断面に長いのをP/S型というが、日本では明確では無いらしい。また、日本では、なぜか“茄子型”電球というのを呼ぶ。

Incidentally, an ordinary light bulb “A” type. There does not seem special meaning to the letter “A”, but the shape is called a “Pear Shaped” light bulb. Is referred to as “P/S” type part of the “A” type of “neck” is a long straight, but does not seem to have clear in Japan. Also, in Japan, refers to this when say “eggplant” bulb.

古物愛好に「見られる」形状は「S」型と呼ばれる。所以は「Straight side」の1つことだ。RCAの「UX-201A」等、ST管以前を代表する球形「採管」も同じ。こちらで、真空管「アノード」の周りを「苺子管」と呼ばれるのは有名。

Shape can be seen in antique bulb is referred to as the "S" type. Why's that "Straight side".
 The shape of the tube ST tube before such as "201A" of the RCA is also the same.

同く古物電球に見られる形状を同じ。小さい方は Shape can be seen in that. Same shape tube in Japan.

形状は「T型」と呼ばれる。所以は「Tubular shape (筒型)」と「ラ」で「T」。RCAの「199」や「120」等の同く日本では「T」呼ばれる。the same antique bulb is referred to as a "T" type, "Tubular shape (cylindrical)" why's such as "199" or "120" in the RCA also the same. The small bulb, called "jijube bulb"

Note: This data sheet was, does not actually exist. This data is the result of investigating Western Electric 201A owned by itself, and data of literature are gathered in the format, similar to "Western Electric V.T. DATA SHEET 102G (ISSUE 1" (1936). However, all contents is correct !

WESTERN ELECTRIC COMPANY, INCORPORATED
ENGINEERING DEPARTMENT
NEW YORK, U. S. A.

Sketch No. **ES164202**

TYPE	PLATES	PLATE SPACING	GRID SPACING	GRID WIRES	FILAMENT LENGTH	I_A	E_B	I_B	M_0	R_0	USE
D	18x8 1610B3	1/2"	5/8"	37x2 1610B3	28"	1.3	150	4 mil.	±0		Detector

Tabular Data 1 : Sketch No. ES-164202 (1918)

TYPE	A.T. & T. CODE NO.	ARMY CODE	NAVY CODE	DESCRIPTION	SPECIFICATIONS						164508
					PLATES	GRIDS	PLATE SPACING	GRID SPACING	GRID WIRES	FILAMENT	
D	201 A 201 B			THREE CONTACT BASE FOUR	18" x 8" 1610B3	11" x 2" 1610B3	1/2" 161273	5/8" 161273	37x2 1610B3	28" B	G 182

Tabular Data 2 : Sketch No. ES-164508 (1918)

ES-271024

201

TUBES, TUBES AND VACUUM TUBE SOCKETS

ISSUE 3
Nov. 1922

For reference only. Subject to change without notice.

NOTE: All repeater bulbs and repeater bulb sockets are known, now, as vacuum tubes and vacuum tube sockets respectively. Vacuum tubes designed for use by the A.T. & T. and Associated Bell Companies either as repeaters, oscillators, or modulators will be referred to as vacuum tubes.

7 copies for Mr. J.L. McQuarrie (3 for Mr. Gill,
3 for Mr. W.C. Adams.

LABORATORY REGISTRATION	CODE NUMBERS				STATUS	REMARKS	USED AS	VACUUM TUBE SOCKETS			
	W. E. E.	CODE	ARMY CODE	NAVY CODE				CODE NUMBER	STATUS	REMARKS	
2	201-A				Obsolete	Has no property marking. Three point contact to fit U.S. Navy sockets.	Voltage Amplifier Detector	Never tested - applied by W.E. Co.		Preliminary design of 3 point socket shown on ES-189810. Only sample made.	

Tabular Data 3 : Sketch No. ES-271024 (Issue 3 Nov.1922)

注：3接点ソケットの実際の形状は、Fig.6 を参照。(写真の右下)

NOTE : The actual shape of the three-conductor socket, see Fig.6. (Bottom right of the photo)

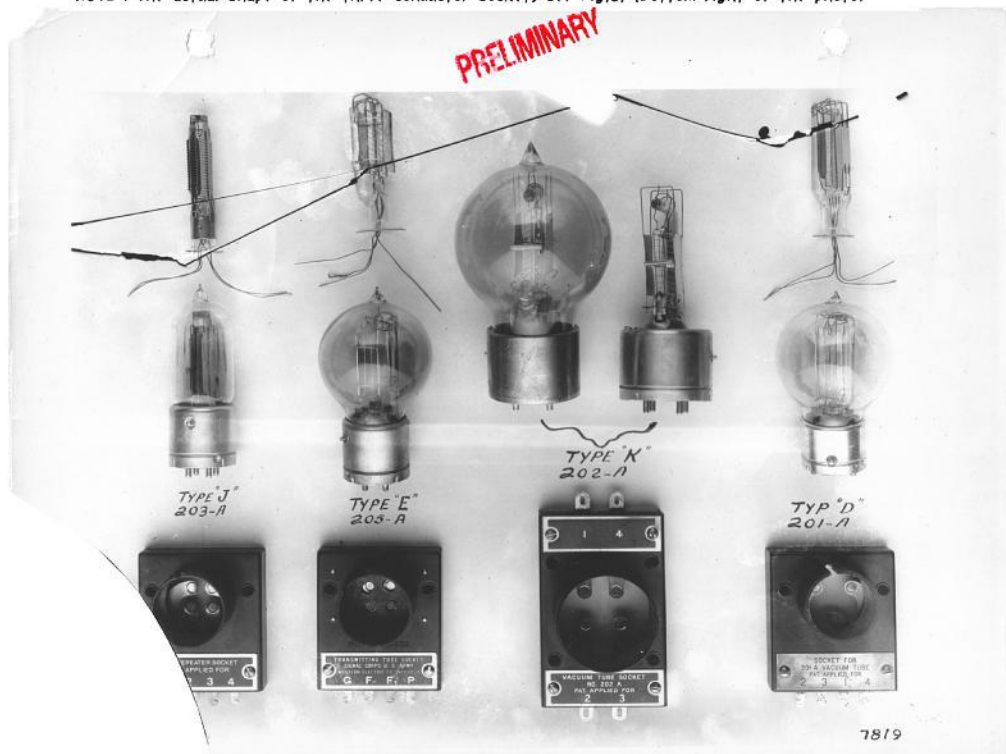


FIG. 6

Note: This data sheet was, does not actually exist. This data is the result of investigating Western Electric 201A owned by itself, and data of literature are gathered in the format, similar to "Western Electric V.T. DATA SHEET 102G ISSUE 1" (1936). However, all contents is correct !

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
CODE NUMBERS					SPEC. NO.	DRAWING NO.	PHOTO NO.	BULB	SOCKET	USES	I _A AMPS	E _A VOLTS	E _B VOLTS	E _B MAX VOLTS	I _B MILS NORM	E _c VOLTS	μ	MAX. INPUT VOLTS
LAB. TYPE NO.	W.E. CODE	A.T.&T. CODE	ARMY CODE	NAVY CODE														
D	201A			CW 188 M 3030		8737	G 18½	NOT STANDARD	VOLTAGE AMPLIFIER DETECTOR	1.25	25-30	100	150	4-90	0-15	37-44	2.5	
D	201B					8720-A	G 18½	203 B W.E. STAND	VOLTAGE AMPLIFIER DETECTOR	1.25	25-30	100	150	4-90	0-15	37-44	2.5	

20	21	22	23	24	25	26	27	28	29	30
IMPED. R _g @	POWER	REMARKS	PLATES	GRIDS	PLATE SPACING	GRID SPACING	GRID WIRES	FILAMENT	BASE	LAB. TYPE NO.
70000-100000		OBS- METAL SHELL IS ONE TERMINAL CONNECTION	1½ X ¾ 161083	1½ X ¾ 161083	½ 161473	⅞ 161473	37 X 2 161083	2½	3CONTACT	D
70000-100000		OBS- REPLACED BY TYPE V.	1½ X ¾ 161083	1½ X ¾ 161083	½ 161473	⅞ 161473	37 X 2 161083	2½	4CONTACT	D

NOTES:

① PLATE CURRENTS (I_A) GIVEN ARE FOR NORMAL PLATE VOLTAGE (E_A) AND ZERO GRID POTENTIAL (E_c).

② IMPEDANCES (R_g) GIVEN ARE FOR NORMAL PLATE VOLTAGE (E_A) AND ZERO GRID POTENTIAL (E_c).

③ OTHER PLATE VOLTAGES TO 200% MAY BE USED WHEN PROPER ADJUSTMENTS OF THE GRID POTENTIAL ARE MADE.

④ 200-A LICENSED FOR GOVERNMENTAL COMMUNICATION PURPOSES IN

NOTE:

THIS DRAWING FOR USE IN DEPT 220 ONLY.

VACUUM TUBE INFORMATION

30144 SCALE ~

DRAWN BY REL CHECKED BY REL

TRACED BY REL ENGINEER REL

BELL TELEPHONE LABORATORIES, INC. NEW YORK

ESR-255549

注：この資料は、Western Electric 201-A の規格を紹介するために、JL10RW/T.Kishimotoが、④から Type D (201A, 201B) に関係する部分を選択したもの、出典が判るように、④のタイトルと1桁数値は移した。
 NOTE : This Tabular Data is introduce a specifications of Western Electric 201-A tube, except pertinent portions to Type D (201A, 201B) from the drawing, by JL10RW/T.Kishimoto.
 Source to As is apparent, I left the edition number field and the title of the drawing.

Tabular Data 4 : Drawing No. ESR-255549 (Issue 4 8-28-29)

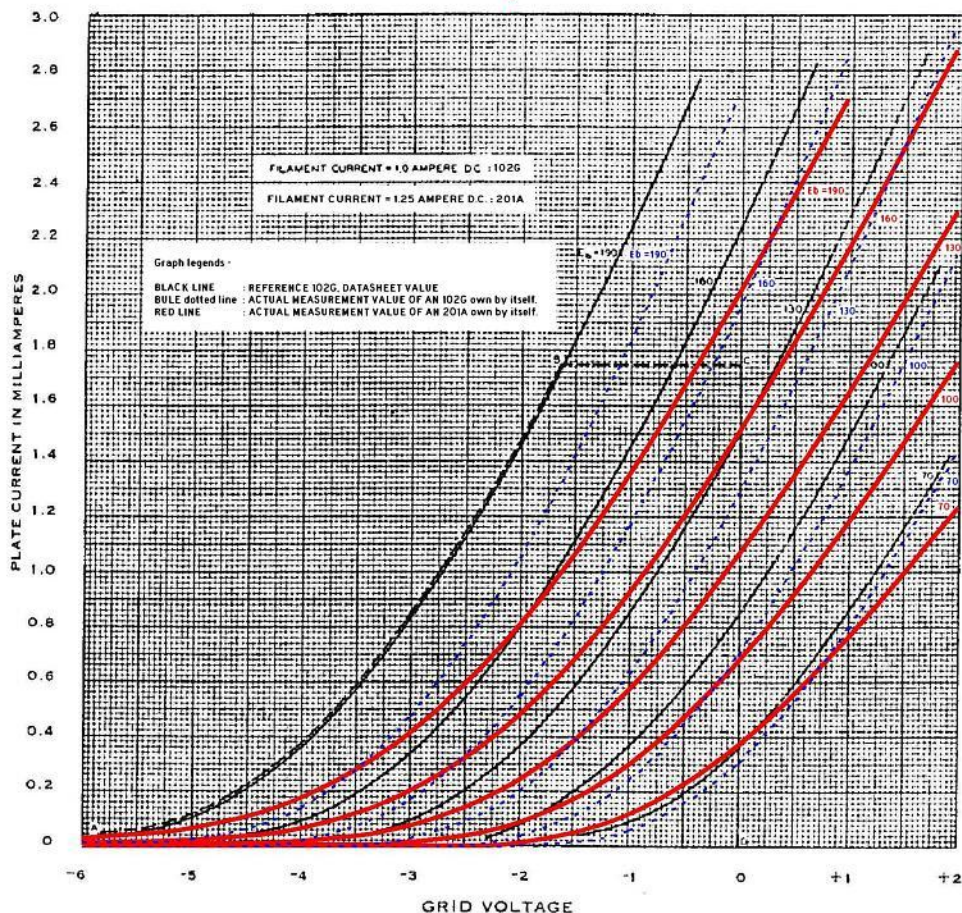
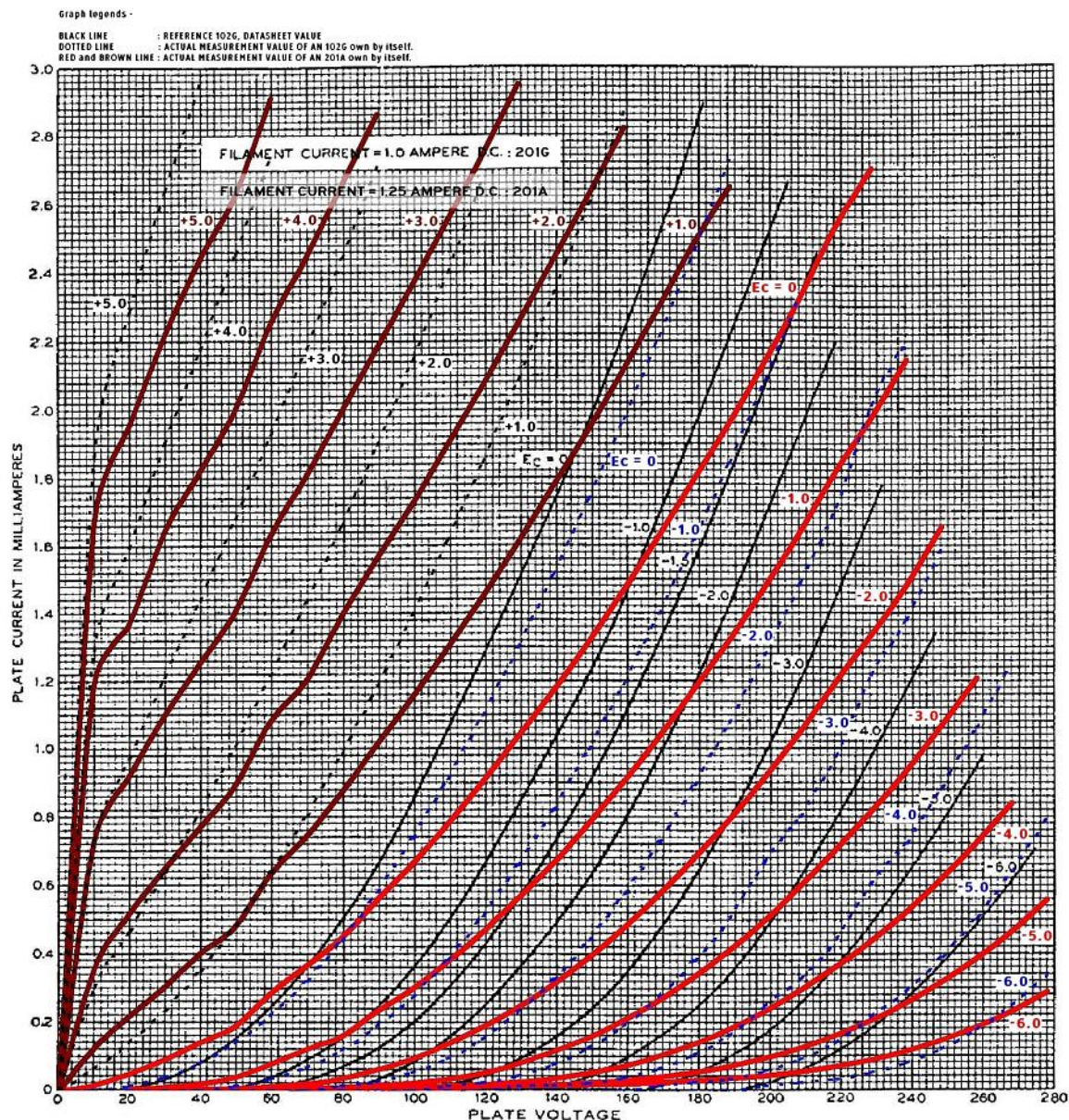


FIG. 7

Note: This data sheet was, does not actually exist. This data is the result of investigating Western Electric 201A owned by itself, and data of literature are gathered in the format, similar to "Western Electric V.T. DATA SHEET 102G ISSUE 1" (1936). However, all contents is correct !



PRELIMINARY

- Source : 1) Gerald F.J. Tyne "Saga of the Vacuum Tube"
 2) John W. Stokes "70 Years of Radio Tubes and Valves"
 3) "The Complete Western Electric Vacuum Tube Library" by James Cross
 4) "V.T. DATA SHEET 102G, ISSUE 1" BELL Telephone Lab (A.T. & T) and Western Electric Company
 5) "Western Electric Type 201A" Reverse Time Page, Mike Schultz (http://uv201.com/Tube_Pages/we_201a.htm)
 6) "West. Elect. 201-A" Bill's Vintage tube Site, Bill Condon (<http://www.bill01a.com/tubephotos/we-201a.htm>)
 7) "W.E. tubes Part 1" TUBE & VALVE GALLERY, EU VALVE (<http://www3.osk3web.ne.jp/~euvalve/gallery/wepart1.html>)
 8) "真空管 [01A真空管]物語" JAZOP, JA1KGW/青山健太郎さんちの 真空管蔵末記 (<http://homepage2.nifty.com/Kawoyama/tubestory01atube.html>)

1-C-36-3M
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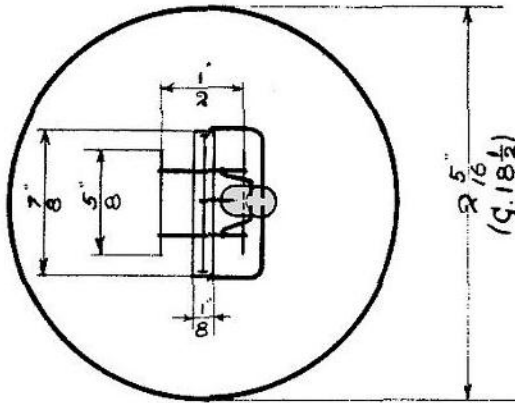
A development of Bell Telephone Laboratories, Incorporated.
 the research laboratories of the American Telephone and Telegraph Company, and the Western Electric Company

V. T. DATA SHEET 102G
 ISSUE 1

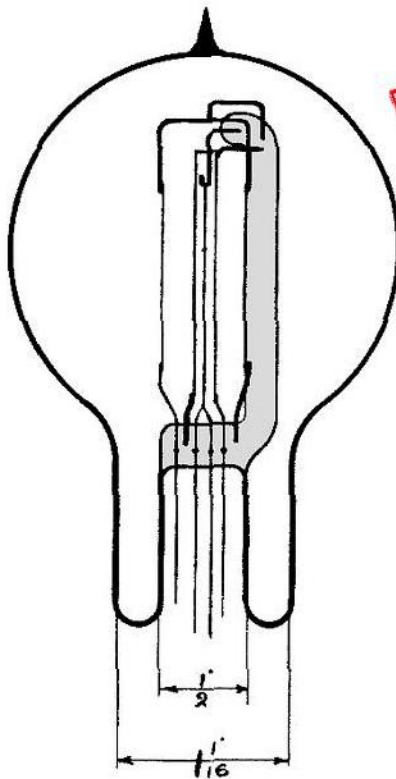
APPENDIX A

WESTERN ELECTRIC COMPANY, INCORPORATED
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NEW YORK, U. S. A.

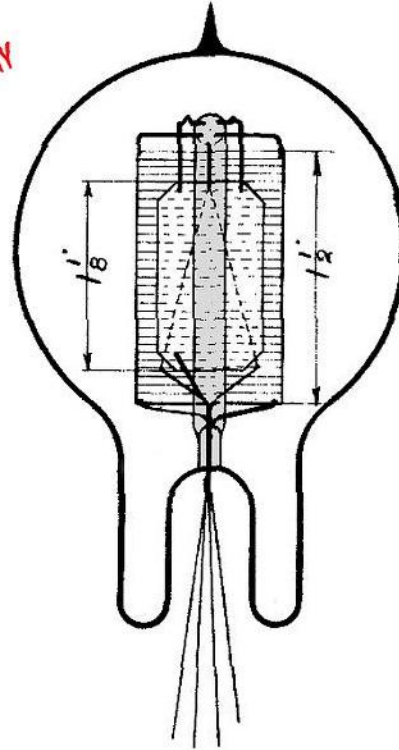
Sketch No. **ES-161473**



GRID	31 X 2
ANCHOR WIRES	.015 NICKEL
FILAMENT	E. 7
SUPPORT ROD	3/16" DIAM.



PRELIMINARY



TYPE V - VACUUM TUBE.

TYPE D SAME AS V EXCEPT GRID IS 37 X 2

WJL
RFT.

SCALE - FULL SIZE

FIG. 9

Note: This data sheet was, does not actually exist. This data is the result of investigating Western Electric 201A owned by itself, and data of literature are gathered in the format, similar to "Western Electric V.T. DATA SHEET 102G ISSUE 1" (1936). However, all contents is correct !

APPENDIX B

WESTERN ELECTRIC COMPANY, NEW YORK, U. S. A.
ENGINEERING DEPARTMENT

Sketch No. **ES/61083**

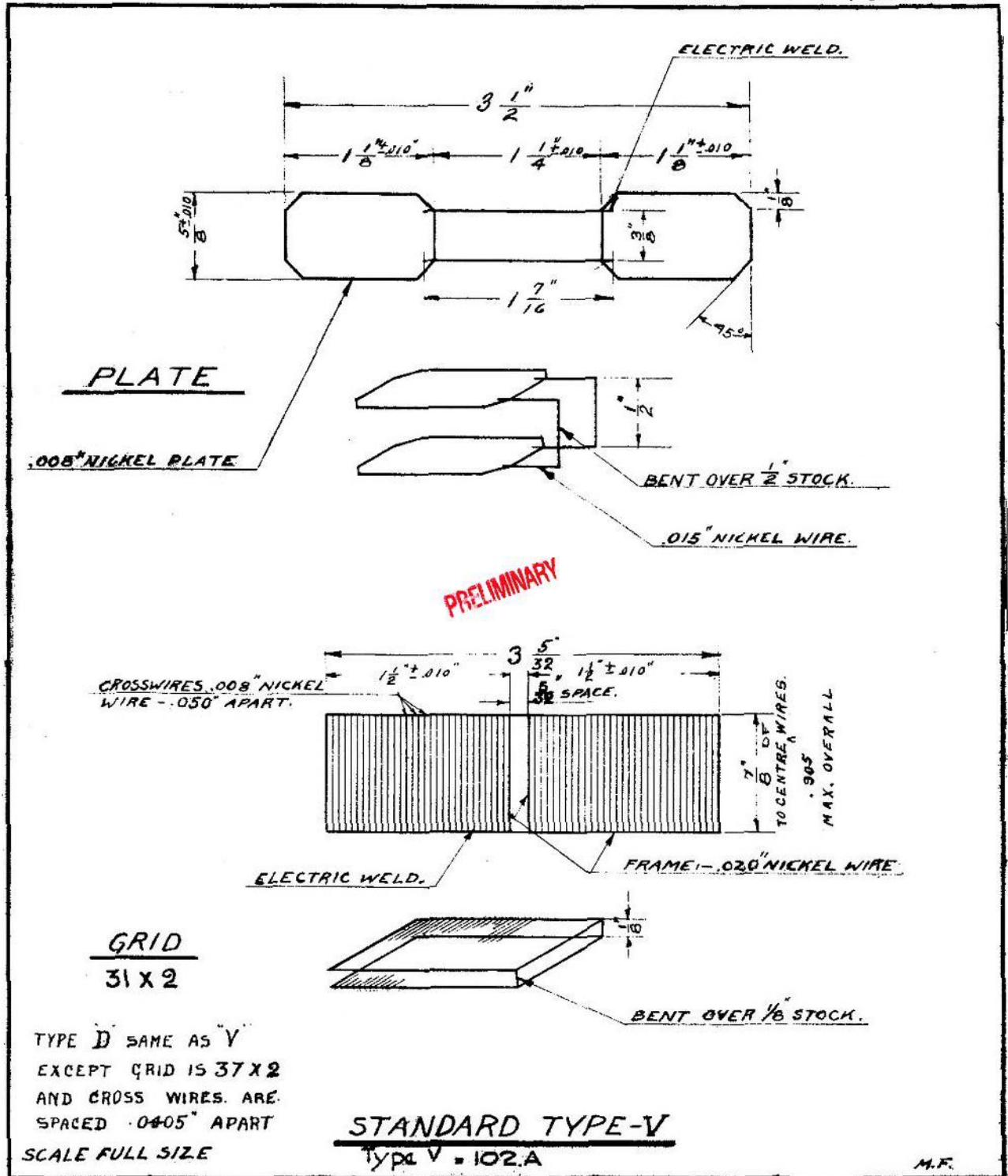


FIG. 10

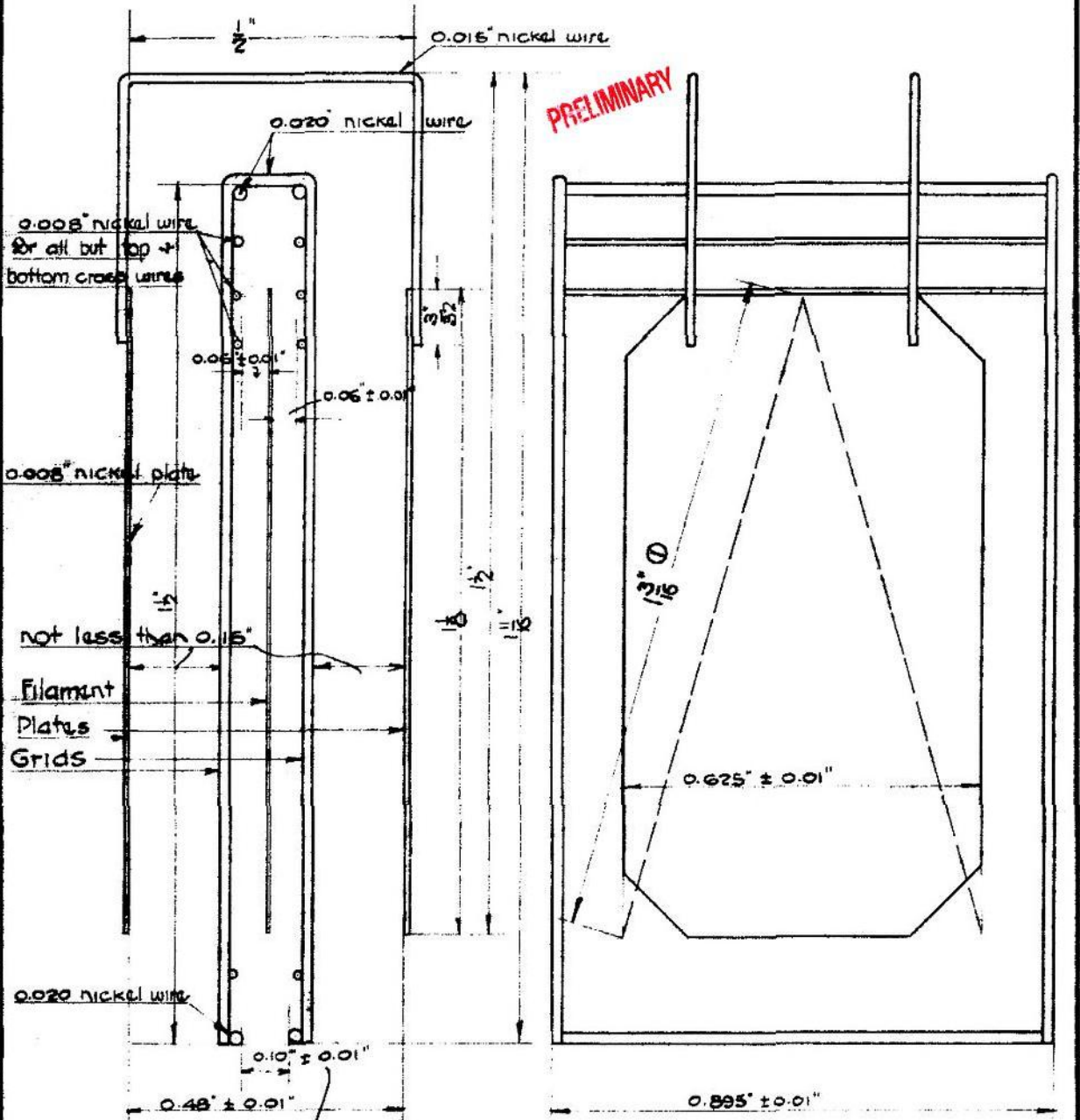
Note: This data sheet was, does not actually exist. This data is the result of investigating Western Electric 201A owned by itself, and data of literature are gathered in the format, similar to "Western Electric V.T. DATA SHEET 102G ISSUE 1" (1936). However, all contents is correct !

APPENDIX C

WESTERN ELECTRIC COMPANY, INCORPORATED
ENGINEERING DEPARTMENT
NEW YORK, U. S. A.

Sketch No. **ES 162581**

VACUUM TUBES GRID, PLATE and FILAMENT SPACING



This dimension to apply between top and bottom cross wires; do not measure at the welds.

Note: Dimensions given in decimals must be strictly adhered to.

Types D, 102A and 201A.

ISSUE 1. 7-30-17
DIM. ① WAS 2 3/8"
ISSUE 2. 8-15-17.

FIG. 11