ENGINEERING DATA
STROMBERG-CARLSON NO. 412 RADIO RECEIVERS

STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY
ROCHESTER, NEW YORK

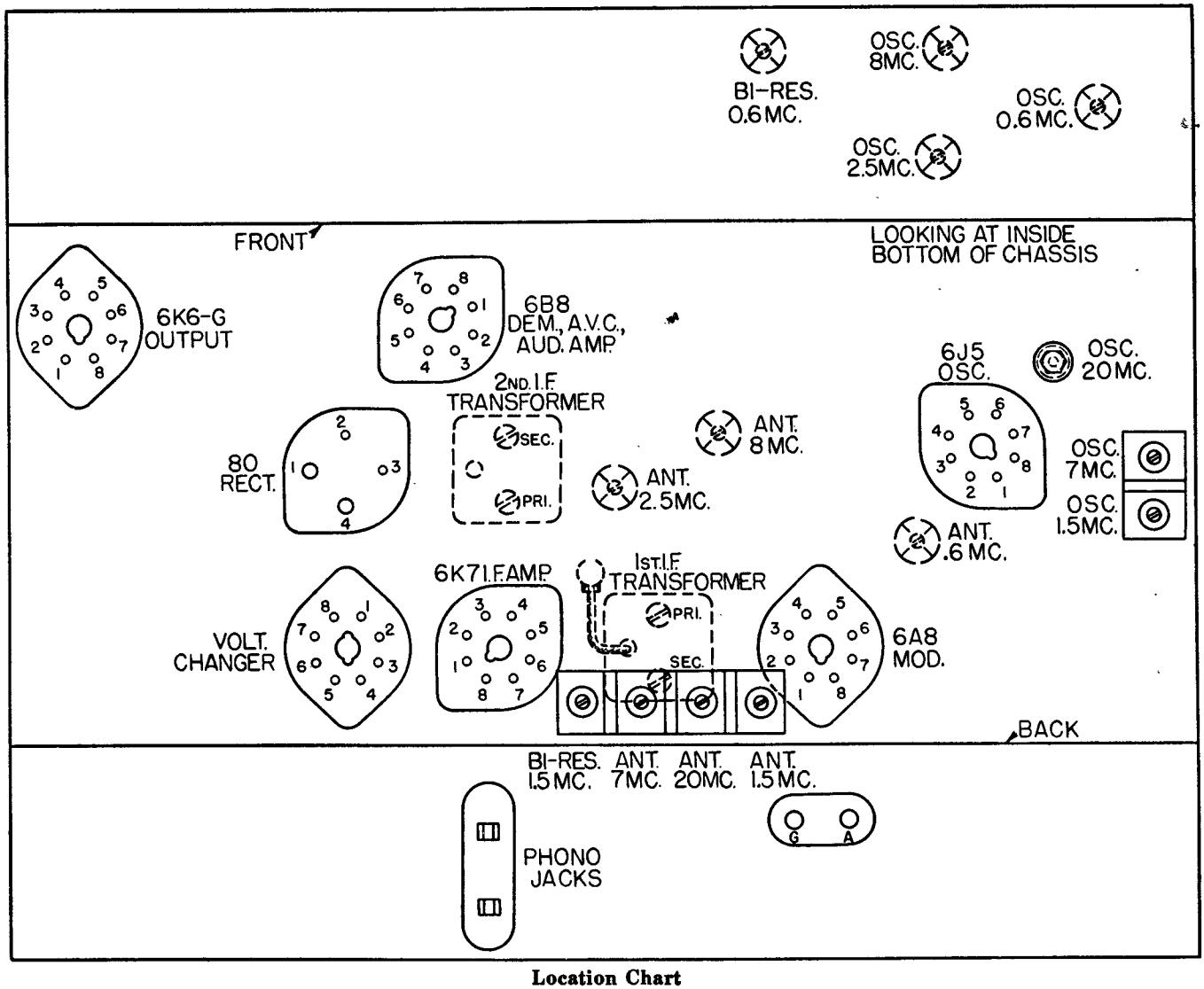
IDENTIFICATION TABLE

Model	Input Power Frequency	Chassis	Cabinet	Speaker
412-H	50-60 Cycles	30346	30589	30602
412-HB	25-60 Cycles	30347	30589	30602

SPECIFICATIONS

Voltage Rating ..... Standard 50-60 Cycles; also available 25-60 Cycles
Type of Circuit ..... Superheterodyne
Tuning Ranges ..... 0.54 to 1.7 Mc.; 2.3 to 7.6 Mc.; 7.6 to 23 Mc.
Number of Tubes ..... Six
Type of Tubes .....
- 1—6A8 Modulator
- 1—6J5 Oscillator
- 1—6K7 I. F. Amplifier
- 1—6B8 Demodulator, A. V. C. and Audio
- 1—6K6G Output
- 1—80 Rectifier

Input Power Rating ..... 65 Watts
Intermediate Frequency ..... 455 Kilocycles
Speaker Voice Coil Impedance at 400 cycles ..... Approximately 5 Ohms
Speaker Field Coil Resistance ..... Approximately 1200 Ohms



Location Chart

ALIGNING INFORMATION

Never Align Unless Absolutely Necessary

Use a good modulated signal generator (test oscillator) with variable output voltage and connect a sensitive output meter across the voice coil of the speaker.

Always align using the smallest possible input from the signal generator. A strong signal makes adjustments inaccurate.

Always have receiver volume control full on. Never align with tone control in "Bass" position. See location chart on Page 1 for location of all the aligning adjustment screws.

Aligning Procedure (follow this order exactly)

I. Dial pointer adjustment.

With the plates of the gang tuning capacitor fully engaged, set the dial pointer directly on the upper black line located at the extreme low frequency end of the dial scale.

II. Intermediate frequency adjustments.

1. Set the range switch to the Standard Broadcast position.
2. Tune set to extreme low frequency end of the dial.
3. Connect the ground terminal of the signal generator to the ground terminal of the chassis.
4. Introduce a modulated signal of 455 Kilocycles to the grid cap of the 6A8 Tube, using a 0.1 microfarad capacitor in series with the output lead of the signal generator. (Do not remove the grid clip from this tube.)
5. Adjust the I. F. Aligners for maximum signal in the following order:
   A. Secondary of second I. F. transformer.
   B. Primary of second I. F. transformer.
   C. Secondary of first I. F. transformer.
   D. Primary of first I. F. transformer.

III. Radio frequency adjustments.

Short Wave Range (C Band)

1. Replace the 0.1 microfarad capacitor in series with the output lead of the signal generator with a 400 ohm carbon type resistor, and connect it to the antenna terminal of the chassis.
2. Set the range switch to the short-wave position (C Band).
3. Set the signal generator frequency and the receiver tuning dial to 8 megacycles.
4. Adjust the "8 MC." OSCillator and ANTenna aligners (iron cores) for maximum signal.
5. Set the signal generator frequency and the receiver tuning dial to 20 megacycles.
6. Adjust the "20 MC." OSCillator (air trimmer) aligner by loosening the lock nut and moving the plunger in or out until maximum signal is obtained. If two positions are found at which maximum signal occurs always use the minimum capacitance position (most outward position of plunger). Always be sure to tighten the lock nut after the aligning adjustment has been completed. An SD-76 aligning tool is recommended for alignment of air trimmer capacitors of the plunger type.
7. Adjust the "20 MC." ANTenna aligning capacitor for maximum signal.
8. Repeat operations 3, 4, 5, 6 and 7 until no further improvement results.

Medium Wave Range (B Band).

Leave the receiver connected to the signal generator in the same manner as when adjusting the Short Wave Range (C Band).

1. Set the range switch to the Medium short-wave position.
2. Set the signal generator frequency and the receiver tuning dial to 2.5 megacycles.
3. Adjust the "2.5 MC." OSCillator and ANTenna aligners (iron cores) for maximum signal.

4. Set the signal generator frequency and the receiver tuning dial to 7 MC.
5. Adjust the "7 MC." OSCillator and ANTenna aligning capacitors for maximum signal.
6. Repeat operations 2, 3, 4 and 5 until no further improvement results.

Standard Broadcast Range (A Band).

1. Replace the 400 ohm carbon type resistor in series with the output lead from the signal generator with a 200 micro-microfarad capacitor.
2. Set the range switch to the Standard Broadcast position.
3. Set the signal generator frequency and the receiver tuning dial to 0.6 MC.
4. Adjust the "0.6 MC." OSCillator, Bi-Resonator and ANTenna aligners (iron cores) for maximum signal.
5. Set the signal generator frequency and the receiver tuning dial to 1.5 MC.
6. Adjust the "1.5 MC." OSCillator, Bi-Resonator and ANTenna aligning capacitors for maximum signal.
7. Repeat operations 3, 4, 5 and 6 until no further improvement results.

CONTINUITY TEST

CAUTION: Remove all tubes and disconnect the receiver from the power supply and short C2 (16 mf. capacitor) to chassis base before making continuity test. Be sure to remove the "short" after continuity tests have been completed.

Use a good meter capable of measuring accurately up to several megohms.

The resistances given are often approximate, owing to electrolytic capacitors in the circuit. When this is the case, be sure to reverse the test leads and read the highest resistance.

Read from the indicated terminals to chassis base unless otherwise specified.

See location chart on Page 2 for position and numbering of terminals.

			TERMINALS OF SOCKETS							
Tube	*Circuit*	*Cap*	1	2	3	4	5	6	7	8
6A8	Modulator	1.6M	S	S	10¶	60000¶	47000¶	60000¶	S	150¶
6J5	Oscillator	—	S	S	20000¶	O	47000¶	O	S	S
6K7	I.F. Amp.	1.5M	S	S	10¶	80000¶	150¶	10000¶	S	150¶
6B8	Dem.—A. V. C. Audio	10M	S	S	500000¶	500000¶	500000¶	3M	S	60¶
6K6G	Output	—	S	S	340¶	S	1.3M	260000¶	S	S
80	Rectifier	—	1200¶	420¶	420¶	1200¶	—	—	—	—

Symbols used on chart are as follows: ¶—ohms; M—megohms; S—short; O—open.

Other Tests Not Shown on Chart

Antenna terminal to chassis base:

Range switch set to standard broadcast position..... 50 ohms
Range switch set to medium wave position..... "short"
Range switch set to short wave position..... "short"

Ground terminal to chassis base..... "short"

Between terminals of A. C. plug:

A. C. switch open..... "open"
A. C. switch closed..... 8 ohms

Terminals of A. C. plug to chassis base..... "open"

Phono terminals to chassis base:

Terminal nearest to the top of the chassis..... "short"
Terminal nearest to the bottom of the chassis..... 1 megohm

R. F. coil tests measured directly across R. F. coil terminals with range switch set in standard broadcast position. (See wiring diagram on Page 6 for location of coil terminals.)

L6—1.5 ohms; L7—1 ohm; L8—50 ohms; L9—3 ohms; L11—.2 ohm; L12—.2 ohm; L13—.1 ohm; L14—short; L15—.6 ohm; L16—4 ohms; L17—.2 ohm; L18—.2 ohm; L19—.2 ohm; L20—short.

NORMAL VOLTAGE READINGS

Take all readings with chassis operating and tuned to approximately 1000 Kc.—no signal.
Use a line voltage of 120 volts, or make allowance for any slight variation.
Use a good high resistance voltmeter having a resistance of at least 1000 ohms per volt.
Take all D. C. readings on the 500 volt scale except when an asterisk appears.
Read from indicated terminals to chassis base.
See location chart on Page 1 for position of terminals.
A. C. voltages are indicated by italics.

			Terminals of Sockets								*Heater Voltages Between Heater Terminals*	
Tube	*Circuit*	*Cap*	1	2	3	4	5	6	7	8	*Socket Terminal Numbers*	*Volts A. C.*
6A8	Modulator	0	0	0	+255	+90	−10	+90	*6.3*	+2*	2–7	*6.3*
6J5	Oscillator	—	0	0	+150	—	−10	—	*6.3*	0	2–7	*6.3*
6K7	I. F. Amp.	0	0	0	+255	+100	+2*	—	*6.3*	+2*	2–7	*6.3*
6B8	Dem.—A. V. C. Audio	0	0	0	+60	0	0	+15	*6.3*	0	2–7	*6.3*
6K6G	Output	—	0	0	+235	+255	−1	—	*6.3*	—		
80	Rectifier	—	+345	*350*	*350*	+345	—	—	—	—	1–4	*5*

***Read on lowest possible scale of voltmeter.**

REPLACEMENT PARTS

Capacitors

Piece Number	Circuit Designation	Part
24405	C-25	.04 mf. Capacitor
24559	C-36	100 mmf. Capacitor
24637	C-5	.0017 mmf. Capacitor
24994	C-23, 24	.05 mf. Capacitor
25487	C-33	.001 mf. Capacitor
26512	C-37, 38	2—100 mmf. Capacitor
27108	C-21, 22	2—.05 mf. Capacitors
27305	C-35	50 mmf. Capacitor
27538	C-6, 29	.005 mf. Capacitor
27577	C-51	15 mmf. Capacitor
28559	C-31	.001 mf. Capacitor
29973	C-27, 28	.25 mf. Capacitor
30322	C-30	.005 mf. Capacitor
30512	C-4	440 mmf. Capacitor
30853	C-32	.003 mf. Capacitor
30854	C-34	.002 mfd. Capacitor
28730	C-1	Electrolytic Capacitor (large), 16 mf., 450 Volts
28732	C-2, 3	Electrolytic Capacitor (small), 16 mf., 300 Volts
30502	C-7, 8	Aligning Capacitor Assembly (2 unit)
30433	C-10, 11, 12, 13	Aligning Capacitor Assembly (4 unit)
30311	C-53	Aligning Capacitor (Air Trimmer)
29621	C-18, 19, 20	Variable Capacitor (3 gang)

Coils, Transformers and Speaker

30670	L-8, 9	Antenna Coil (Standard Broadcast)
30671	L-6, 7	Bi-Resonator Coil
30672	L-15, 16	Oscillator Coil (Standard Broadcast)
30673	L-11, 12	Antenna Coil (Medium Wave)
30674	L-17, 18	Oscillator Coil (Medium Short Wave)
30675	L-13, 14	Antenna Coil (Short Wave)
30676	L-19, 20	Oscillator Coil (Short Wave)
30127	L-21, 22; C-14, 15	1st I. F. Transformer
30405	L-23, 24; C-16, 17	2nd I. F. Transformer
30395	L-1, 2, 3, 4	50-60 Cycle Power Transformer
30396	L-1, 2, 3, 4, 5	Power Transformer (25 cycle sets only)
SD-69	L-27, 28	Speaker
30640	L-25, 26	Output Transformer
30528	L-27	Cone for Speaker
30534		Ring for Speaker Cone

Controls and Knobs

26061		Switch Off-On and Tone Control
29297		Dial Drive Shaft
29518	R-1	Volume Control
30668		Range Switch
28843		Small Plain Knob
29084		Knob with Arrow
27628		Felt Washer for Knobs

Resistors

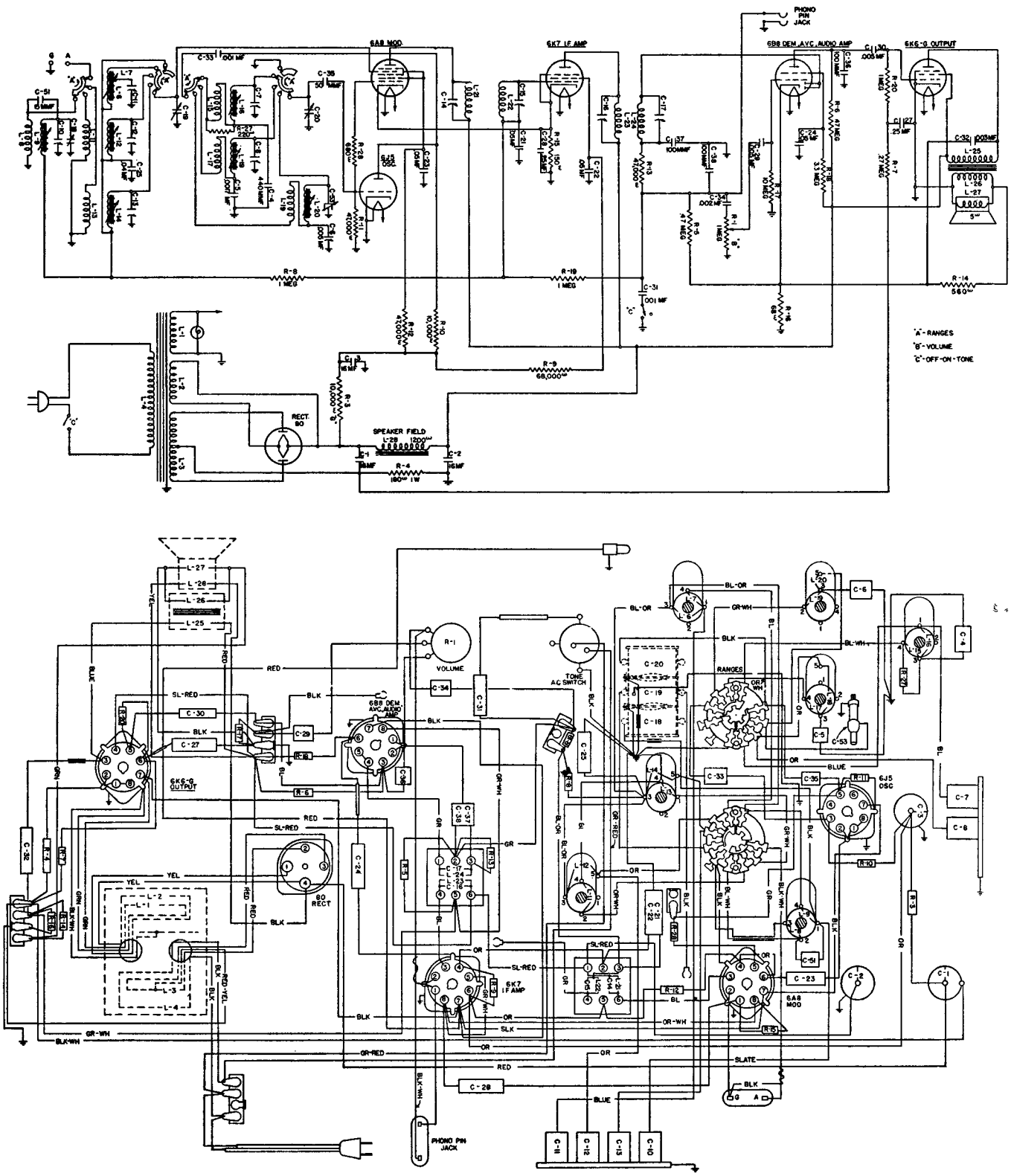
26319	R-16	68 ohm Resistor
26323	R-15	150 ohm Resistor
26325	R-27	220 ohm Resistor
26330	R-14	560 ohm Resistor
26331	R-28	680 ohm Resistor
26345	R-10	10,000 ohm Resistor
26353	R-11, 12, 13	47,000 ohm Resistor
26355	R-9	68,000 ohm Resistor
26357	R-8	100,000 ohm Resistor
26362	R-7	270,000 ohm Resistor
26365	R-5, 6	470,000 ohm Resistor
26369	R-19, 20	1 megohm Resistor
26375	R-18	3.3 megohm Resistor
26381	R-17	10 megohm Resistor
28948	R-4	180 ohm Resistor, 1 Watt
30417	R-3	10,000 ohm Resistor, 1 Watt

Miscellaneous Parts

SD-26	Dial Glass
SD-35	Set Screws for Drive Pulley
SD-67	Dial Drive Cord
18	Cord Tip for Pick-up Connection
19532	Phono Jack
24135	Felt Foot for Cabinet
26035	Rubber Bushing for Mounting Variable Capacitor
26122	Antenna and Ground Terminal Strip
26187	Clamp for Electrolytic Capacitor (large)
27088	Spring Washer for Mounting Coils
27560	Clamp for Electrolytic Capacitor (small)
27668	Washer for Dial Drive Shaft
28652	Power Supply Cord
28694	Lamp Socket Assembly
29379	Palnut for Control Shafts
29479	Screw for Mounting Dial Escutcheon
29514	Palnut for Mounting I. F. Transformer
29525	Dial Pointer
29619	Dial Drive Pulley
29628	Spring for Dial Drive Cord
29956	Pilot Lamp (Mazda 44)
30151	8-Prong Socket
30153	4-Prong Socket
30388	Dial Escutcheou
31352	Dial Scale

Tools and Accessories

SD-29	Phillip's No. 1 Screwdriver (for Escutcheon Screws)
SD-76	Air Trimmer Locking and Adjusting Tool
24608	Aligning Tool
26962	Furniture Touch-up Kit
28601	Cabinet Polish (pint can)
30647	Radio-Phono Switch Kit



Wiring Diagram and Schematic Circuit