Testing and Rating Ventilating Fans
(Axial and Propeller Types)
A RECORDED VOLUNTARY STANDARD OF THE TRADE

COMMODOITY STANDARDS

Simplified Practice Recommendations and Commercial Standards are developed by manufacturers, distributors, and users in cooperation with the Commodity Standards Division of the Office of Industry and Commerce, Bureau of Foreign and Domestic Commerce, and with the National Bureau of Standards.

The purpose of Simplified Practice Recommendations is to eliminate avoidable waste through the establishment of standards of practice for stock sizes and varieties of specific commodities that currently are in general production and demand. The purpose of Commercial Standards is to establish standard methods of test, rating, certification, and labeling of commodities, and to provide uniform bases for fair competition.

The adoption and use of a Simplified Practice Recommendation or a Commercial Standard is voluntary. However, when reference to a Commercial Standard is made in contracts, labels, invoices, or advertising literature, the provisions of the standard are enforceable through usual legal channels as a part of the sales contract.

A Simplified Practice Recommendation or a Commercial Standard originates with the proponent industry. The sponsors may be manufacturers, distributors, or users of the specific product. One of these three elements of industry submits to the Commodity Standards Division the necessary data to be used as the basis for developing a standard of practice. The Division, by means of assembled conferences or letter referenda, or both, assists the sponsor group in arriving at a tentative standard of practice and thereafter refers it to the other elements of the same industry for approval or for constructive criticism that will be helpful in making any necessary adjustments. The regular procedure of the Division assures continuous servicing of each effective Simplified Practice Recommendation and Commercial Standard, through review and revision, whenever, in the opinion of the industry, changing conditions warrant such action. Simplified Practice Recommendations and Commercial Standards are printed and made available by the Department of Commerce through the Government Printing Office and the Department of Commerce field offices.

UNITED STATES DEPARTMENT OF COMMERCE
Charles Sawyer, Secretary
Testing and Rating Ventilating Fans
(Axial and Propeller Types)

Effective for New Production From June 25, 1951

1. PURPOSE

1.1 The purpose of this commercial standard is to establish standard methods of testing and rating ventilating fans for the guidance of producers, distributors, and users.

2. SCOPE

2.1 This standard covers definitions, construction requirements, and methods of testing and rating axial and propeller fans, and a uniform method for declaring compliance with the standard.

3. DEFINITIONS

3.1 Axial fans.—The term “axial fans” shall cover vaneaxial and tubeaxial fans.

3.1.1 Vaneaxial fan.—A vaneaxial fan (fig. 1) is designed to move air or gases over a wide range of volumes and pressures. It is generally constructed of sheet or cast metals, and consists of a casing, wheel, guide vanes, and driving mechanism. It may or may not have a gradually enlarging outlet and streamlined inlet.

![Figure 1. Vaneaxial fan—either belt drive or direct connection.](image)

3.1.2 Tubeaxial fan.—A tubeaxial fan (fig. 2) is similar to a vaneaxial fan but does not have guide vanes. It may or may not have a gradually enlarging outlet and streamlined inlet.
3.2 Propeller fan.—The term “propeller fan” (fig. 3) applies to a fan that is designed to move air from one enclosed space to another, or from indoors to outdoors, or vice versa. This type of fan is designed to move air or gases over a wide range of volumes at low pressures.

3.3 Manufacturer.—For the purposes of this standard, the manufacturer shall be the company or organization which evidences its responsibility to the purchaser by permanently affixing its name, address, or nationally registered trade-mark or trade name to the fan.

4. REQUIREMENTS

4.1 Construction.—The fan unit and any accessories shall be of substantial construction, and free from objectionable vibration or reverberation effects, so as to provide for safe operation and minimum vibration. Fans for residential or commercial use shall be reasonably quiet in operation. Fans for industrial use shall have noise levels as low as practicable taking into consideration pressure characteristics and the ambient noise level of the industrial area involved.

4.2 Electrical equipment.—All electrical equipment, including motor and controls, shall conform to applicable requirements of the National Electrical Code. Motors, when operating under rated conditions, shall not have a temperature rise exceeding NEMA standards,\(^1\) shall be designed for continuous duty and be so marked, and shall cause no unreasonable amount of radio interference.

4.3 Rating.—Axial and propeller fans shall be tested in accordance with the applicable sections of the Standard Code for the Testing

\(^1\)National Electrical Manufacturers' Association, Motor and Generator Standards Publication No. 45-102 (June 1945), or latest revision.
of Centrifugal and Axial Fans. The manufacturer’s published ratings shall have been determined by tests of the equipment, made in accordance with the provisions of the standard test code.

5. MARKING

5.1 Manufacturer’s name or trade-mark.—The fan manufacturer’s name or nationally registered trade-mark or trade name shall be clearly, legibly, and permanently marked in a position visible or readily accessible after installation.

5.2 Motor ratings.—The catalog number of the fan and the rating of the motor in volts, amperes, and horsepower shall be marked in the manner specified in 5.1 for name or trade-mark.

5.3 Compliance labeling.—The manufacturer shall permanently attach, in a visible position, a label embodying the wording of the full compliance declaration shown in 5.4, or the following wording:

This fan complies with Commercial Standard CS178–51.

It is understood that only those fans which comply with this standard may be so labeled and that all marking may be included in a single nameplate.

5.4 Compliance declaration.—In order that the purchaser may be assured of obtaining fans rated according to this standard, manufacturers may individually or in concert with their trade association declare that the ratings of fans have been determined in accordance with this standard. They may include in their sales literature, invoices, and contracts, the following statement:

The ratings of these fans have been determined in accordance with Commercial Standard CS178–51, as developed by the trade under the procedure of the Commodity Standards Division, and issued by the U. S. Department of Commerce.

6. EFFECTIVE DATE

6.1 Having been passed through the regular procedure of the Commodity Standards Division, and approved by the acceptors herein-after listed, this commercial standard was issued by the United States Department of Commerce, effective from June 25, 1951.

EDWIN W. ELY,
Chief, Commodity Standards Division.

HISTORY OF PROJECT

On April 14, 1949, the Propeller Fan Manufacturers’ Association, after consulting interested manufacturers, requested the cooperation of the National Bureau of Standards in the establishment of a commercial standard for testing and rating ventilating fans of the axial and propeller types. A draft of the proposed standard was submitted by the Propeller Fan Manufacturers’ Association on July 29, 1949, and subsequently adjusted in accordance with suggestions of manufacturers and other interested organizations.

2 National Association of Fan Manufacturers’ Bulletin 110, or latest revision, issued jointly by the American Society of Heating and Ventilating Engineers and the National Association of Fan Manufacturers.
On June 27, 1950, the revised proposed commercial standard was circulated to the trade for advance comment. This draft was reviewed in detail by the Propeller Fan Manufacturers' Association on September 29, 1950, and adjusted to represent the composite views of all interested groups. The recommended standard was circulated to the industry for consideration and acceptance on March 1, 1951.

Following acceptance by a satisfactory majority, and in the absence of active, valid opposition, an announcement was issued on May 25, 1951, that the standard had been accepted as a recorded voluntary standard of the trade, effective for new production from June 25, 1951.

Project Manager: H. A. Bonnet, Commodity Standards Division, Office of Industry and Commerce.

STANDING COMMITTEE

The following individuals comprise the membership of the standing committee, which is to review, prior to circulation for acceptance, revisions proposed to keep the standard abreast of progress. Comment concerning the standard and suggestions for revision may be addressed to any member of the committee or to the Commodity Standards Division, Office of Industry and Commerce, U. S. Department of Commerce, which acts as secretary for the committee.

Manufacturers:

Tom Byrd, Lau Blower Co., 2001 Home Avenue, Dayton, Ohio (chairman).
M. L. Aitken, Propellair Division, Robbins & Myers, Inc., Springfield, Ohio.
C. Espy Reed, Reed Unit-Fans, Inc., 1001 Saint Charles Avenue, New Orleans 8, La.

Distributors:

M. O. Hollis, Raybro Electric Supplies, Inc., Tampa, Fla.
W. M. Schermes, Schermes Co., 220 West Seventy-second, Kansas City 5, Mo.

Installers:

E. F. Gaines, Home Conditioning Co., Tenth & Moffet, Joplin, Mo.
T. J. Oliver, Oliver & McClellan, Inc., 30 Church Street, New York 7, N. Y.

Consumers:

Carl E. Helfrich, 21 East York Street, Savannah, Ga. (representing American Institute of Architects).
ACCEPTANCE OF COMMERCIAL STANDARD

If acceptance has not previously been filed, this sheet properly filled in, signed, and returned will provide for the recording of your organization as an acceptor of this commercial standard.

Date __________________________

Commodity Standards Division,
Office of Industry and Commerce,
U. S. Department of Commerce,
Washington 25, D. C.

Gentlemen:

We believe that the Commercial Standard 178-51 constitutes a useful standard of practice, and we individually plan to utilize it as far as practicable in the testing and rating of ventilating fans of the axial and propeller types, with which we are directly concerned as a

producer, \(^1\) distributor, \(^1\) purchaser, \(^1\) testing laboratory. \(^1\)

We reserve the right to depart from it as we deem advisable.

We understand, of course, that only those articles which actually comply with the standard in all respects can be identified or labeled as conforming thereto.

Signature of authorized officer __________________________

(In ink)

(Kindly typewrite or print the following lines)

Name and title of above officer __________________________

Organization __________________________

(Fill in exactly as it should be listed)

Street address __________________________

City, zone, and State __________________________

\(^1\) Underscore which one. Please see that separate acceptances are filed for all subsidiary companies and affiliates which should be listed separately as acceptors. In the case of related interests, trade associations, trade papers, etc., desiring to record their general support, the words "General support" should be added after the signature.
TO THE ACCEPTOR

The following statements answer the usual questions arising in connection with the acceptance and its significance:

1. Enforcement.—Commercial standards are commodity specifications voluntarily established by mutual consent of those concerned. They present a common basis of understanding between the producer, distributor, and consumer and should not be confused with any plan of governmental regulation or control. The United States Department of Commerce has no regulatory power in the enforcement of their provisions, but since they represent the will of the interested groups as a whole, their provisions through usage soon become established as trade customs, and are made effective through incorporation into sales contracts by means of labels, invoices, and the like.

2. The acceptor's responsibility.—The purpose of commercial standards is to establish, for specific commodities, nationally recognized grades or consumer criteria, and the benefits therefrom will be measurable in direct proportion to their general recognition and actual use. Instances will occur when it may be necessary to deviate from the standard and the signing of an acceptance does not preclude such departures; however, such signature indicates an intention to follow the commercial standard where practicable in the production, distribution, or consumption of the article in question.

3. The Department's responsibility.—The major function performed by the Department of Commerce in the voluntary establishment of commercial standards on a Nation-wide basis is fourfold: first, to act as an unbiased coordinator to bring all interested parties together for the mutually satisfactory adjustment of trade standards; second, to supply such assistance and advice as past experience with similar programs may suggest; third, to canvass and record the extent of acceptance and adherence to the standard on the part of producers, distributors, and users; and fourth, after acceptance, to publish and promulgate the standard for the information and guidance of buyers and sellers of the commodity.

4. Announcement and promulgation.—When the standard has been endorsed by a satisfactory majority of production or consumption in the absence of active valid opposition, the success of the project is announced. If, however, in the opinion of the standing committee or of the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold promulgation and publication.
The organizations listed below have individually accepted this standard for use as far as practicable in the production, distribution, testing, purchase, use, or installation of ventilating fans of the axial and propeller types. In accepting the standard they reserved the right to depart from it as they individually deem advisable. It is expected that articles which actually comply with the requirements of this standard in all respects will be regularly identified or labeled as conforming thereto, and that purchasers will require such specific evidence of conformity.

### ASSOCIATIONS

(General Support)
- American Association of Engineers, Chicago, Ill.
- Propeller Fan Manufacturers’ Association, Detroit, Mich.

### FIRMS AND OTHER INTERESTS

- Acme Equipment Co., Muskogee, Okla.
- Aerovent Fan Co., Inc., Piqua, Ohio
- Air Controls, Inc., Division of Cleveland Heater Co., Cleveland, Ohio
- Albert, Henry, Jr., & Co., Inc., Pikesville, Md.
- Bar-Brook Manufacturing Co., Inc., Shreveport, La.
- Baner, John J., Co., Inc., New York, N. Y.
- Breeze, W. L., Co., Reading, Pa.
- Bowser-Morner Testing Laboratories, Dayton, Ohio
- Buffalo Forge Co., Buffalo, N. Y.
- Constar Supply & Chemical Co., Ridgewood, N. J.
- Columbia Electrical Co., Kansas City, Mo.
- Electric Supply Co., Atlanta, Ga.
- Garden City Fan Co., Chicago, Ill.
- General support.
- Hartrell Propeller Fan Co., Piqua, Ohio.
- Holcomb & Hoke Manufacturing Co., Inc., Indianapolis, Ind.
- Home Conditioning Co., Joplin, Mo.
- Hunt, Robert W., Co., Chicago, Ill.
- Ig Electric Ventilating Co., Chicago, Ill.
- Lau Blower Co., Dayton, Ohio.
- New York Blower Co., Chicago, Ill.
- Newton-Stinchcomb Co., Baltimore, Md.
- Oliver & McClellan, Inc., New York, N. Y.
- Omaha Testing Laboratories, Omaha, Neb.
- Orman Wood & Metal Products, Columbus, Ind.
- Patzig Testing Laboratories, Des Moines, Iowa.
- Peerless Electric Co., Warren, Ohio.
- Pittsburgh Testing Laboratory, Pittsburgh, Pa.
- Plank Electric Co., Norwich, Conn.
- Quotelaire Corp., Houston, Tex.
- Raybro Electric Supplies, Inc., Tampa, Fla.
- Redman Engineering Service, High Point, N. C.
- Reed Unit-Fans, Inc., New Orleans, La.
- Rhodes Equipment Co., St. Louis, Mo.
- Riverside Electric Co., Riverside, Ill.
- Schermes Co., Kansas City, Mo.
- Sears, Roebuck & Co., Chicago, Ill.
- Sonntag, J. H., & Co., Dallas, Tex.
- Sprague, V. E., Co., Inc., Columbus, Ind.
- Stephenson Appliance Co., Raleigh, N. C.
- Tour, Sam, & Co., Inc., New York, N. Y.
- Tran Electric Co., La Crosse, Wis.
- United States Testing Co., Inc., Hoboken, N. J.
- Viking Air Conditioning Corp., Cleveland, Ohio. (General support.)
- Weaver, G. B., & Sons Electric Co., Salisbury, N. C.
- Westendorf & Co., Baltimore, Md.
- Western Blower Co., Seattle, Wash.
- Wing, L. J., Manufacturing Co., Linden, N. J.

### UNITED STATES GOVERNMENT

- Agriculture, U. S. Department of, Division of Purchase, Sales, and Traffic, Washington, D. C.
- Army, United States, Office of the Assistant Chief of Staff, Washington, D. C.
- Federal Housing Administration, Underwriting Division, Washington, D. C. (General support.)

### COMMERCIAL STANDARDS

<table>
<thead>
<tr>
<th>CS No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-40.</td>
<td>Commercial standards and their value to business.</td>
</tr>
<tr>
<td>1-42.</td>
<td>Clinical thermometers.</td>
</tr>
<tr>
<td>2-30.</td>
<td>Mopsticks.</td>
</tr>
<tr>
<td>3-40.</td>
<td>Stoddard solvent.</td>
</tr>
<tr>
<td>4-39.</td>
<td>Staple porcelain (all-clay) plumbing fixtures.</td>
</tr>
<tr>
<td>5-46.</td>
<td>Pipe nipples: brass, copper, steel, and wrought-iron.</td>
</tr>
<tr>
<td>7-29.</td>
<td>Standard weight malleable iron or steel screwed unions.</td>
</tr>
<tr>
<td>8-51.</td>
<td>Gage blanks.</td>
</tr>
<tr>
<td>9-33.</td>
<td>Builders’ template hardware.</td>
</tr>
<tr>
<td>11-41.</td>
<td>Moisture regains of cotton yarns.</td>
</tr>
<tr>
<td>13-44.</td>
<td>Dress patterns.</td>
</tr>
<tr>
<td>14-51.</td>
<td>Boys' sport and dress shirt (woven fabrics) size measurements.</td>
</tr>
<tr>
<td>15-46.</td>
<td>Men's and women's sizes (made from woven fabrics).</td>
</tr>
<tr>
<td>16-29.</td>
<td>Wallpaper.</td>
</tr>
<tr>
<td>17-47.</td>
<td>Diamond core drill fittings.</td>
</tr>
<tr>
<td>18-29.</td>
<td>Hickory golf shafts.</td>
</tr>
<tr>
<td>19-42.</td>
<td>Foundry patterns of wood.</td>
</tr>
</tbody>
</table>
20-49. Vitreous china plumbing fixtures.
22-40. Builders' hardware (nontempered plate).
23-30. Feldspar.
24-43. Screw threads and tap-drill sizes.
26-30. Aromatic red cedar closet lining.
27-36. Mirrors.
30-31. (Withdrawn).
31-38. Wood shingles.
33-43. Knit underwear (exclusive of garters and panty girders).
35-49. Hardwood plywood.
36-53. Fourdrinier wire cloth.
37-51. Steel boxes for plate screws.
38-32. Hospital rubber sheathing.
39-37. (Withdrawn).
40-42. Surgeons' rubber gloves.
41-22. Surgeons' latex gloves.
42-49. Structural fiber insulating board.
43-72. Grading of sulphonated oils.
44-32. Apple wraps.
46-49. Hosier lengths and sizes.
47-34. Marking of gold-filled and rolled-gold-plate articles other than watchcases.
48-40. Domestic burners for Pennsylvania antracite (underfeed type).
49-34. Chip board, laminated chip board, and miscellaneous boards for bookbinding purposes.
50-34. Binders board for bookbinding and other purposes.
51-34. Marking and articles made of silver in combination with gold.
52-35. Mohair pile fabrics (100-percent mohair plain velvet, 100-percent mohair plain frieze, and 50-percent mohair plain frieze).
53-33. Colors and finishes for cast stone.
54-33. Mattresses for hospital beds.
55-33. Mattresses for institutions.
56-49. Oak flooring.
57-46. Buck cloths, buckrams, and impregnated fabrics for bookbinding purposes except library binding.
59-44. Textiles—testing and reporting.
61-37. Wood-slat venetian blinds.
63-38. Colors for bathroom accessories.
64-37. Walnut veneers.
66-38. Marking of articles made wholly or in part of platinum.
67-38. Marking articles made of karat gold.
68-38. Liquid hypochlorite disinfectant, deodorant, and germicide.
70-41. Phenolic disinfectant (emulsifiable type) (published with CST1-41).
71-41. Phenolic disinfectant (soluble type) (published with CST0-41).
72-38. Household insecticide (liquid spray type).

CS No.

74-29. Solid hardwood wall paneling.
75-42. Automatic mechanical draft oil burners designed for domestic installations.
77-48. Enameled cast-iron plumbing fixtures.
79-40. Blown, drawn, and dropped lenses for sun glasses (published with CS17-46).
80-41. Electric direction signal systems other than semaphore type for commercial and other vehicles subject to special motor vehicle laws (after market).
81-41. Adverse-weather lamps for vehicles (after market).
82-41. Inner-controlled spotlamps for vehicles (after market).
83-41. Clearance, marker, and identification lamps for vehicles (after market).
84-41. Electric tail lamps for vehicles (after market).
85-41. Electric license-plate lamps for vehicles (after market).
87-41. Red electric warning lanterns.
88-41. Liquid burning flares.
89-40. Marking of stair treads and risers.
90-49. Power cranes and shovels.
91-41. Factory-fitted Douglas fir enameled seats.
92-41. Cedar, cypress, and redwood tank stock lumber.
93-50. Portable electric drills (exclusive of high frequency).
94-41. Calking lead.
95-41. Lead pipe.
96-41. Lead flanges and benders.
97-42. Electric supplementary driving and passing lamps for vehicles (after market).
98-42. Artists' oil paints.
99-42. Gas floor furnaces—gravity circulating type.
100-47. Porcelain-enamed steel utensils.
101-43. Flue-connected oil-burning space heaters equipped with vaporizing-type burners.
102- . (Reserved for Diesel and fuel-oil engines.)
103-48. Radiator gauges and valour (with or without other decorative yarn).
104-49. Warm-air furnaces equipped with vaporizing-type oil burners.
106-44. Boys' pajama sizes (woven fabrics).
107-45. (Withdrawn).
108-43. Treading automobile and truck tires.
109-44. Solid-fuel-burning forced-air furnaces.
110-43. Tire repairs—vulcanized (passenger, truck, and bus tires).
111-43. Earthwood (vitreous-glazed) plumbing fixtures.
112-43. Homogeneous fiber wallboard.
113-51. Oil-burning floor furnaces equipped with vaporizing-type burners.
114-43. Hospital sheeting for mattress protection.
115-44. Porcelain-enamed tanks for domestic use.
116-44. Bituminized-fiber drain and sewer pipe.
117-49. Mineral wool insulation for heated industrial equipment.
118-44. Marking of jewelry and novelties of silver.

(E) 119-45. Dial indicators (for linear measurements).


121-45. Women’s slip sizes (woven fabrics).

122-49. Western softwood plywood.

123-49. Grading of diamond powder.

(E) 124-45. Master disks.

125-47. Prefabricated homes.

126-45. Tank mounted air compressors.

127-45. Self-contained mechanically re-frigerated drinking water coolers.

128-49. Men’s sport shirt sizes—woven fabrics (other than those marked with regular neckband sizes.)

129-47. Materials for safety wearing apparel.

130-46. Color materials for art education in schools.

131-46. Industrial mineral wool products, all types—testing and reporting.

132-46. Hardware cloth.

133-46. Woven wire netting.


135-46. Men’s shirt sizes (exclusive of work shirts).


137-51. Size measurements for men’s and boys’ shorts (woven fabrics).

138-49. Insect wire screening.

139-47. Work gloves.

140-47. Testing and rating convectors.

141-47. Sine bars, blocks, plates, and fixtures.

142-51. Automotive lifts.

143-47. Standard strength and extra strength perforated clay pipe.

144-47. Formed metal porcelain enameled sanitary ware.


146-47. Gowns for hospital patients.

147-47. Colors for molded urea hot plates, and rib-knit rayon underwear.

148-49. Utility-type house-dress sizes.

150-48. Hot-rolled call steel bars (produced from Tee-section rails).


152-48. Copper naphthenate wood-preservative (spray, brush, dip application).


154-. (Reserved for wire rope).


156-49. Colors for polystyrene plastics.

157-49. Ponderosa pine and sugar pine plywood.

158-49. Model forms for girls’ apparel.

159-49. Sun glass lenses made of ground and polished plate glass, thereof thermally curved.

160-49. Wood-fiber blanket insulation (for building construction).


162-49. Tufted bedspreads.


164-. (Reserved for concrete mixers).


166-50. Size measurements for men’s work trousers. 

167-50. Automotive and general service copper tube.

168-50. Polystyrene plastic wall tiles, and adhesives for their application.

169-50. Galvanized ware fabricated from prepainted steel sheets.


171-50. Hardwood veneered doors.


174-51. 140-F dry-cleaning solvent.

175-51. Circular-knitted gloves and mittens.

176-51. Prefinished wall panels.

177-51. Bituminous-coated metal septic tanks (single compartment, residential).

178-51. Testing and rating ventilating fans (axial and propeller types).

179-51. Installation of attic ventilation fans in residences.

180-52. Model forms for boys’ apparel.

Where “(E)” precedes the CS number, it indicates an emergency commercial standard, drafted under war conditions with a view toward early revision.

Notice.—Those interested in commercial standards with a view toward accepting them as a basis of everyday practice may secure copies of the above standards, while the supply lasts, by addressing the Commodity Standards Division, Office of Industry and Commerce, U. S. Department of Commerce, Washington 25, D. C.
U. S. DEPARTMENT OF COMMERCE

Field Service

Albuquerque, N. Mex., 203 W. Gold Ave.
Atlanta 3, Ga., 50 Whitehall St. SW.
Baltimore 2, Md., 200 E. Lexington St.
Boston, Mass., 40 Broad St.
Buffalo 3, N. Y., 117 Ellicott St.
Butte, Mont., 306 Federal Bldg.
Charleston 4, S. C., Area 2, Sergeant Jasper Bldg.
Cheyenne, Wyo., 410 Federal Office Bldg.
Chicago 1, Ill., 221 N. La Salle St.
Cincinnati 2, Ohio, 105 W. Fourth St.
Cleveland 14, Ohio, 925 Euclid Ave.
Dallas 2, Tex., 1114 Commerce St.
Denver 2, Colo., 142 New Custom House
Detroit 26, Mich., 230 W. Fort St.
El Paso, Tex., 310 San Francisco St.
Hartford 1, Conn., 135 High St.
Houston 14, Tex., 602 Federal Office Bldg.
Jacksonville 1, Fla., 311 W. Monroe St.
Kansas City 6, Mo., 903 McGee St.
Los Angeles 15, Calif., 112 W. Ninth St.
Louisville 2, Ky., 631 Federal Bldg.
Memphis 3, Tenn., 229 Federal Bldg.

Miami 32, Fla., 36 NE. First St.
Milwaukee 2, Wis., 517 E. Wisconsin Ave.
Minneapolis 2, Minn., 607 Marquette Ave.
Mobile 10, Ala., 100-13 St. Joseph St.
New Orleans 12, La., 333 St. Charles Ave.
New York 4, N. Y., 42 Broadway
Oklahoma City 2, Okla., 102 NW. Third St.
Omaha 2, Nebr., 1319 Farnam St.
Philadelphia 6, Pa., 1015 Chestnut St.
Phoenix, Ariz., 808 N. First St.
Pittsburgh 22, Pa., 717 Liberty Ave.
Portland 4, Oreg., 520 SW. Morrison St.
Providence 3, R. I., 327 Post Office Annex
Reno, Nev., 1479 Wells Ave.
Richmond 19, Va., 400 E. Main St.
St. Louis 1, Mo., 1114 Market St.
Salt Lake City 1, Utah, 109 W. Second, South
San Francisco 2, Calif., 870 Market St.
Savannah, Ga., 125-29 Bull St.
Seattle 4, Wash., 123 U. S. Court House

For local telephone listing, consult section devoted to U. S. Government