

## DATA SETS

### MULTIPLE INSTALLATION INFORMATION

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A. Free Air Convection . . . . .	57	<i>Note:</i> Hereafter, unless specifically stated, KS-20018-L11 type, -L12 type, -L15 type, and -L17 type cabinets will be referred to as KS-20018-L11, -L12, -L15, and -L17 cabinets, respectively.	
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The cabinets facilitate installation and wiring and present a pleasing appearance for the completed data set installation. Information contained in this section, together with a general knowledge of

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telephone installation procedures, will aid in the selection of the proper cabinet for any data station installation.

1.02 This section is reissued to:

- Add information on KS-20018-L19 and -L20 cabinets
- Add information on 40A3 data mounting
- Add information on data sets (DSs) 103JR, 113AR-type, 113CR-type, 113DR-type, 212AR-type, and data auxiliary set (DAS) 801CR-type.
- Add information on 1A1 and 1A2 power units used with KS-20018 cabinets
- Delete reference to most data sets rated MD
- Add information on DATAPHONE® II service multiple arrangements
- Delete reference to KS-20018-L10 cabinet.

1.03 Tables summarize the available cabinets and associated hardware and provide weights, dimensions, power dissipation, and other information.

1.04 Grounding and customer-provided power requirements are the same as those listed for individual data set installations in specific data set practices and in Section 590-010-200.

1.05 Information given herein concerning heat dissipation is valid for altitudes to approximately 10,000 feet except for DATAPHONE II service data sets, where more stringent limits are required. Limits for DATAPHONE II service data sets are specified in Part 7.

## 2. PLANNING FOR INSTALLATION

2.01 Where two or more data sets or a multiple data set station and other telephone apparatus are to be installed on customer premises, a multiple data set cabinet should be considered in planning the installation. The recommended cabinets are KS-20018, KS-20093-L1 (MD) and KS-19643-L2 (MD). The KS-20018-L11, -L12, -L15, and -L17 cabinets have been designed for the "new family" data sets, but can also house older types of data sets while

providing a modern appearance. ♦ "New family" data sets are defined as 103JR, 113CR, 113DR, 201CR, 202SR, 208BR, and 212AR. The KS-20018-L19 and -L20 are special-purpose cabinets and are for use with the 510A data service unit and data sets 407C and 407CR, respectively. ♦ Other methods of housing the multiple data set installation should be considered only after an effort has been made to use a cabinet. Consider the following factors when planning a multiple data set installation:

- Plan with the customer for present installation requirements **and** for future expansion.
- Consider space available for the installation and select the area most suitable for a multiple data set installation.
- Observe proper utilization of window and wall space in the overall installation.
- Where possible, take advantage of false floors and ceilings to conceal interface cords and cables which make for an unsightly presentation. Such floors and ceilings are often used in conjunction with computer installations.
- Where possible, take advantage of air flow from false floors to aid dissipation of equipment-generated heat.
- When shelving or equipment other than Bell System cabinets are used for housing data sets, the location and the type of mounting blocks become a problem. For suggested types of mounting blocks and connections, refer to Section 590-010-200.
- Position mounting blocks for practical location of terminations.
- When shelving is used, conceal mounting cables, cords, and mounting blocks where possible. Connections and mounting blocks must be accessible to minimize "down time" of data sets.

2.02 A typical multiple data set installation using both large and small Bell System cabinets installed on a false floor to conceal interconnecting cables is shown in Fig. 1. The cabinets are also arranged in the installation to provide the best Bell System image. An example of a well planned shelf

arrangement of a multiple data set installation using the false ceiling is shown in Fig. 2. Proper selection of wall space lends itself to a better appearance. The honeycomb panels effectively conceal mounting blocks, connecting cords, and cables, located to allow accessibility to leads and mounting blocks for installation or removal of data sets.

**Note:** Where possible, do not enclose or conceal data sets within the confines of any closure on customer premises other than a Bell System cabinet provided for this purpose.

**2.03** Dimensions, weights, and other pertinent data on all three types of cabinets are listed in Table A to aid in selecting of the proper cabinet for a particular installation. Current data sets and data auxiliary sets are listed by size, weight, and power requirements in Tables B and C. Available mounting hardware and data mountings are listed in Table D. For temperature and humidity requirements, data set installation tests, or other unique installation requirements for the particular data set being installed, refer to the appropriate data set section.

### 3. KS-19643-L2 CABINET (MD)

#### A. Description

**3.01** ♦The KS-19643-L2 cabinet (Fig. 3 and 4) is for older type data sets and is not recommended for "new family" data sets.♦ This cabinet is furnished in a two-tone gray, textured vinyl finish (front door is light olive gray; the remainder of the cabinet is dark gray). The cabinet has a hinged top cover, under which connecting blocks required for the installation may be located. The top cover is louvered to dissipate heat generated by the data sets. A front door, which may be hinged on either side, provides easy access when the cabinet is installed in corners or side by side (Fig. 5). A flush rear door, which provides access to the back of the data sets or to the interconnecting cables, is shown in Fig. 4. The rear door is removable for installation and maintenance.

**3.02** Twenty power outlets are arranged in a vertical strip along the middle of the right side with the outlets facing the rear of the cabinet. A 14-gauge, 3-conductor KS-19643-L11 power cord, which connects to a customer-supplied power outlet, must be ordered separately, if required. Refer to the section covering the applicable data set for

proper connections and for type of power outlet to be supplied by the customer.

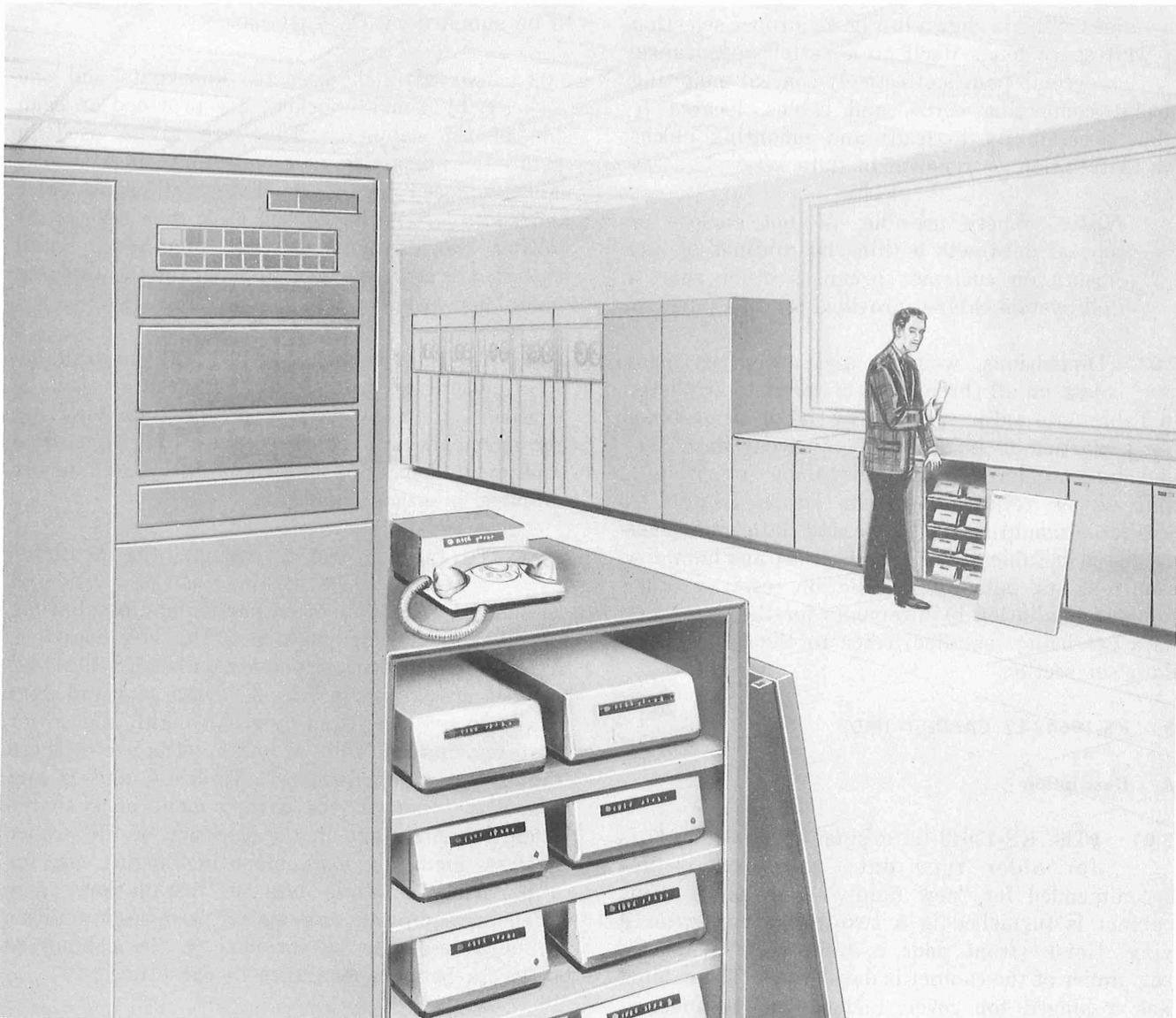
**3.03** Two 3/4-inch diameter knockouts and one 1- by 4-inch knockout are provided on each side of the cabinet. They are to be used in installations requiring interconnecting cables between cabinets placed side by side. Four 3/8-inch diameter knockouts are provided on each side to permit bolting two or more cabinets together. Small spacers are also provided to separate the cabinets when they are coupled together (Fig. 5).

**3.04** The cabinet is designed so that the available mounting space within the cabinet can be modified to allow for a number of shelving arrangements and also to accommodate panel-type equipment, key telephone units, associated power supplies, or other apparatus.

**3.05** To fully utilize a cabinet, the available mounting space within must be considered versus the needs of the particular installation. Available mounting space and the hole locations for optional shelf arrangements for the KS-19643-L2 cabinet are shown in Fig. 6. Data sets and data auxiliary sets are listed by size, weight, and power requirements in Tables B and C. The use of these tables, in conjunction with Tables A and D and Fig. 6, will aid in the arrangement of available mounting space and in the selection of the proper shelves, mounting bars, mounting angles, etc, for a particular multiple data set installation. Any telephone equipment on customer premises in addition to data sets may be included in the cabinet to reflect a better appearance in the office.

**3.06** The KS-19643-L3 shelf, -L4 mounting bar, and -L5 through -L9, -L12, and -L13 mounting angles (Fig. 5 and 7) may be ordered separately to modify the mounting space within the cabinet. The shelves may be located at various heights to provide ready access to the contents of the cabinet. The mounting bars and angles allow for mounting standard 23-inch plates, key telephone units, or other associated accessories.

**3.07** Mounting blocks, required for terminating the mounting cords and any other cable normally terminated on customer premises, may be located within the upper portion of the cabinet under the top cover.



**Fig. 1—Cabinets Using False Floor for Multiple Data Set Installation**

**B. Installation**

**3.08** Position the cabinet in the proper location. Adjust the four leveling bolts, and when the cabinet is level, tighten the locking nuts (Fig. 5). Install shelves, mounting bars, angles, and any other apparatus that may have been ordered separately to provide the optimum arrangement for the particular data station. How the various mounting accessories may be used to provide an arrangement for a typical installation is shown in Fig. 5.

**3.09** When the cabinet must be secured to the floor, remove and discard the four leveling bolts. Fasten the cabinet by inserting appropriate size bolts through the leveling bolt holes and into the floor.

**4. KS-20093-L1 CABINET (MD)**

**A. Description**

**4.01** The KS-20093-L1 cabinet is free-standing, with four adjustable levelers (Fig. 8). It is



**Fig. 2—Shelf Arrangement Using False Ceiling for Multiple Data Set Installation**

designed to accept all cable inputs through its bottom from a false floor, and by use of an optional adapter, may also accept the cable inputs through its top from a false ceiling. The cabinet is designed to house a variety of rack-mounted equipment and rack-mounted data sets, but by using optional shelves may be adapted to accept shelf-mounted equipment. Items designed especially for KS-20093-type cabinets are listed in Table E. Dimensions, weight, power requirements, and associated telephones used with shelf-mounted and rack-mounted data sets are listed in Tables B and C, respectively.

**4.02** External and internal dimensions of the cabinet are shown in Fig. 9 and 10. Refer to Fig. 9 through 12 and Tables B, C, D, and E for selection of necessary hardware for best arrangement of a particular data station.

**4.03** A typical multiple cabinet arrangement using the KS-20093-type cabinet is shown in Fig. 13.

**4.04** The cabinet is furnished in a two-tone smooth vinyl finish (doors are off-white; remainder of cabinet is dark gray).

TABLE A

## DATA SET CABINET SIZES, WEIGHTS AND AVAILABLE POWER STRIPS

CABINET	EXTERNAL MEASUREMENTS (IN.)			AVAILABLE MTG SPACE (IN.)			APPROX WEIGHT (POUNDS)	AVAILABLE POWER STRIPS
	HEIGHT	WIDTH	DEPTH	HEIGHT	WIDTH	DEPTH		
KS-19643-L2 (MD)	66	28	19	61	23.5	16.5	152	1 power strip 20 outlets (P/O cabinet)
KS-20093-L1 (MD)	72	34	30.5	THREE COMPARTMENTS 68    5    7 68    27    14.5 68    32    12			300	1 power strip 24 outlets (KS-20129)
KS-20018-L1	12	24	12	9	23	12	14.5	1A2 for 19-inch mounting provides 7 outlets. 1A1 for 23-inch mounting provides 8 outlets. B3E23-10-1† provides 9 outlets for 23-inch mounting. KS-22291-L1 provides 14 outlets for vertical mounting on 48-3/4 inch centers (P/O cabinet). X 715-001† provides 15 outlets for vertical mounting on 48-3/4 inch centers.
KS-20018-L2	17	24	12	14	23	12	18	
KS-20018-L3	24	24	12	20	23	12	25.5	
KS-20018-L4	30	24	12	26	23	12	27.5	
KS-20018-L5*	9	20	12	6	19	12	13	
KS-20018-L6*	9	13	12	6	11.75	12	8	
KS-20018-L7	30	24	17	26	23	17	33	
KS-20018-L8	24	24	17	20	23	17	25	
KS-20018-L11-Type	30	24	19	26	23	18	34	
KS-20018-L12-Type	17	24	19	14	23	18	23	
KS-20018-L15-Type	72	28.5	26	63	23	22	190	
KS-20018-L17-Type	72	29.5	26	63	23	22	230	
KS-20018-L19	13	20	12	10	19	13	15	
KS-20018-L20	32	24	19	26	23	18	45	

\* KS-20018-L5 and -L6 do not have 23-inch mountings.

† Manufactured by Waber Electronic, Inc.

TABLE B4

**SHELF-MOUNTED DATA APPARATUS — SIZES, WEIGHTS,  
AND POWER REQUIREMENTS**

DATA SET	DIMENSIONS (INCHES)			APPROX WEIGHT (POUNDS)	POWER REQUIRE- MENTS (WATTS)	ASSOCIATED EQUIPMENT
	WIDTH	DEPTH	HEIGHT			
103JR-Type	5.75	11.25	2.25	5	10	565HK
113AR-Type	5.75	11.25	2.25	4	2	565HK
113CR-Type	5.75	11.25	2.25	5	10	565HK
113DR-Type	5.75	11.25	2.25	5	10	565HK
201CR	10.50	14.00	4.25	13	22	565HK
202SR-Type	5.75	11.25	2.25	5.25	6	565HK
202T-Type	5.75	11.25	2.25	4.25	4.6	
208A	16.00	11.50	4.25	20	26	568HAA-3
208BR	16.00	11.50	4.25	20	26	565HK
209A	20.50	13.75	5.00	40	100	568HAA-3
212AR-Type	5.75	11.25	2.25	4	9	565HK
303-Type	17.00	10.00	6.00	23	62	
2024	15.50	13.05	4.21	20.5	50	
2048	15.50	13.05	4.21	20.5	60	
2096	15.50	13.05	4.21	20.5	65	
<b>DATA AUXILIARY SET</b>						
801A6 (MD)	11.00	10.50	5.50	16	15	
801CR-Type	5.75	11.25	2.25	5.5	8	
809B	17.00	10.00	6.00			
<b>SWITCHED DATA SERVICE UNIT</b>						
501A-Type	16.00	11.40	4.30	17.25		
<b>DATA CONTROL UNIT</b>						<b>COMCODE MOUNTING BRACKETS</b>
2100A	19.0	6.0	9.0	25	34	842 991 291 842 991 309

TABLE C4

**RACK-MOUNTED DATA APPARATUS—SIZES, WEIGHTS,  
AND POWER REQUIREMENTS**

DATA SET	DIMENSIONS (INCHES)			APPROX WEIGHT (POUNDS)	POWER REQUIRE- MENTS (WATTS)	ASSOCIATED EQUIPMENT/REMARKS
	WIDTH	DEPTH	HEIGHT			
103JR-Type	1.50	10.40	5.60		10	40A3
108D-Type	1.13	7.10	5.55	2	5	28A2, 28D1, or J70165 for LV Hub
108E-Type	1.13	7.10	5.55	2	5	28A2, 28D1, or J70165
113B-L1 (MD)	1.49	9.75	9.35	2.25	3.3	32A1 (MD)
113CR-Type	1.50	10.40	5.60		10	40A3
113DR-Type	1.50	10.40	5.60		10	40A3
201CR	3.25	14.00	10.50	13	22	42A-Type
202SR-Type	1.50	10.40	5.60	1.75	6	40A3
202T-Type	1.50	10.40	5.60	0.95	4.6	40B1
208A	16.00	11.50	4.25	20	26	D-180556 (19- or 23-inch Rack Mounting)
208BR	16.00	11.50	4.25	20	26	D-180556 (19- or 23-inch Rack Mounting)
209A	20.50	13.50	5.00	42	100	D-180556 (23-inch Rack Mounting)
212AR-Type	1.50	10.40	5.60	1.4	8	40A3
303-Type	17.00	10.00	6.00	23		9A-Type
405A, B						
407A (MD)	1.45	12.10	8.00	2.5	12	41-Type DM
407B (MD)	1.45	12.12	8.00	3	14.5	41-Type DM
407CR	3.70	13.20	10.00	5.5	60	41-Type DM
2024*	19.00	15.40	15.00	105	350	64-Type DM
2048*	19.00	15.40	15.00	105	430	64-Type DM
2096*	19.00	15.40	15.00	105	500	64-Type DM
<b>DATA AUXILIARY SET</b>						
801CR-Type	1.50	10.40	5.60	1.6	8	
809B1	17.00	10.00	6.00	25	16	19-, 23-, or 25-inch Rack Mounting
811F	23.00	9.00	6.00	23		23-inch Rack Mounting
811G	5.00	3.10	8.00	2.5		29A1
811H	5.00	3.10	5.00	2		29B1

♦TABLE C (Contd)♦

**RACK-MOUNTED DATA APPARATUS—SIZES, WEIGHTS,  
AND POWER REQUIREMENTS**

DATA SET	DIMENSIONS (INCHES)			APPROX WEIGHT (POUNDS)	POWER REQUIRE- MENTS (WATTS)	ASSOCIATED EQUIPMENT/REMARKS
	WIDTH	DEPTH	HEIGHT			
816B1	23.00	9.00	8.50	37		23-inch Rack Mounting
820E-Type	23.00	8.75	6.00	18		23-inch Rack Mounting
824A	10.00	10.00	6.00	11		87-Type Mounting Bracket
828D	6.90	4.60	7.50	5.5		Wall Mounted
829A	1.30	9.60	5.50	1		46A2
829B	1.3	9.6	5.5	1.6	1.2	46A2
829C	1.3	9.6	5.5	1.25	1.2	46A2
<b>DATA SERVICE UNIT</b>						
500A-Type	11.5	11.0	4.0	10.5	17	48A
<b>CHANNEL SERVICE UNIT</b>						
550A-Type	8.0	2.75	5.0	3.5		48A
<b>DATA COUPLER</b>						
1000A (MD)	4.75	7.00	7.00	1.5		Rack Mounting
1000B (MD)	4.75	2.00	7.00	1.5	1.25	Rack Mounting
1001A (MD)	9.00	2.25	11.00	2.5		Rack Mounting
1001D (MD)	4.75	2.00	7.00	1.75	2.5	Rack Mounting
1001E (MD)	4.75	2.00	7.00	1.75		Rack Mounting
1001F (MD)	4.75	2.00	7.00	1.75	1.8 DC 3.6 AC	Rack Mounting
<b>APPARATUS MOUNTING</b>						
103A-Type	18.9	6.4	3.8	5	NONE	
<b>DATA MULTIPLEXER</b>						
1200A	23.0	11.6	8.0	45	125 95	Master Remote (Each equipped with 8 PS1 CKT packs)

◆TABLE C (Contd)◆

**RACK-MOUNTED DATA APPARATUS—SIZES, WEIGHTS,  
AND POWER REQUIREMENTS**

DATA SET	DIMENSIONS (INCHES)			APPROX WEIGHT (POUNDS)	POWER REQUIREMENTS (WATTS)	ASSOCIATED EQUIPMENT/REMARKS
	WIDTH	DEPTH	HEIGHT			
<b>DATA CONTROL UNIT</b>						
200A	2.7	4.6	1.1	0.5	NONE	DS201C, 202T, 208A
1800A	10.6	8.1	3.4	4	10	1200A
						<b>COMCODE MOUNTING BRACKETS</b>
2100A	19.0	6.0	9.0	25	34	842 991 291
2200A	17.5	16.0	10.5	50	200	842 991 309
<b>DATA MOUNTING</b>						
53A1	23.0	11.6	8.0	30	45	1200A
58A1	23.0	6.5	2.0	7.5	8 (-24 Vdc)  22 (-48 Vdc)	1200-Type or 53A1

\*Weight and power figures include 290A1 power units.

**4.05** Externally the cabinet appears to have six doors of equal size but actually there are five (three front and two rear). The three front doors conceal two sizes of enclosure, a 5-inch wide enclosure behind the left front door and an enclosure which will accept 25-inch mounted equipment behind the center and right doors.

**4.06** The center door is designed to accept a panel-type data auxiliary set (DAS) which provides line, telephone, and control functions, such as DAS 804K. When these control functions are not required, a KS-20093-L5 door panel should be ordered to complete the door assembly (Fig. 13). When a control panel is required, a KS-20093-L6 half-door panel should be ordered to cover the lower half of the opening (Fig. 14).

**Caution:** To prevent damage when opening the cabinet from the front, open the left door first, then the right and center doors.

**4.07** Two doors provide access to the rear of the cabinet. The top of the cabinet has openings which provide ventilation. Two removable plates on top of the cabinet conceal cable entrance holes (Fig. 15). When these plates are removed, the holes provide access to cables from a false ceiling. A KS-20093-L2 duct assembly (Fig. 9) may be ordered and installed to contain and protect cables connected to the cabinet from above. Cable guides are provided along the right inside wall, and on the left mounting post in the rear of the cabinet (Fig. 10). If additional guides are desired, KS-20093-L8 cable retainers (Fig. 15) may be ordered as required. The retainers have a magnetic backing to permit mounting on any flat surface in the cabinet. The bottom of the cabinet is open to allow cables to feed through from a false floor. If cables are fed into the cabinet from the bottom when there is no false floor, the cabinet may be raised approximately an inch and then leveled by the levelers to prevent pinching the cables.

**4.08** The cabinet has two removable kickplates (Fig. 14) which must be removed when

TABLE D

DATA SET CABINETS  
AVAILABLE MOUNTING HARDWARE

CABINET	AVAILABLE MOUNTING PLATES	AVAILABLE DATA MOUNTINGS				
		NOMENCLATURE	FUNCTION	DIMENSION (INCHES)		
				HEIGHT	WIDTH	DEPTH
KS-19643-L2 (MD)	Shelf KS-19643-L3 mounts on a 23-inch frame. Mounting bars KS-19643-L4 through -L9, -L12, and -L13 alter KS-19643 cabinets for optional arrangements.					
KS-20093-L1 (MD)	<p>Mounting plates KS-20093-L10A, -L10B, -L10C provide mounting for customer interface connectors.</p> <p>Mounting plate KS-20093-L11 provides mounting base for connecting a DS 303-type and DAS 806 together.</p> <p>Shelf KS-20093-L14 mounts on 23-inch frame and is 10 inches deep.</p> <p>Shelf KS-20093-L9 mounts on either 23- or 25-inch frame and is 12 inches deep.</p> <p>KS-20093-L15A through J adapters reduce the frame mounting width of the cabinets 2 inches.</p>	DAS 820E2	Provides connecting private line facilities to low speed data terminals. Mounts on a 23-inch frame.	6.00	23.00	11.25

## ◆TABLE D (Contd)◆

DATA SET CABINETS  
AVAILABLE MOUNTING HARDWARE

CABINET	AVAILABLE MOUNTING PLATES	AVAILABLE DATA MOUNTINGS				
		NOMENCLATURE	FUNCTION	DIMENSION (INCHES)		
				HEIGHT	WIDTH	DEPTH
KS-20018-L1	Shelf KS-20018-L9A mounts on a 19-inch frame and is 9.5 inches deep. Shelves KS-20018-L9B and -L9C mount on 23-inch frames and are 9.5 and 14 inches deep, respectively. Grille-type shelf KS-20018-L9D mounts on 23- or 25-inch frame and is 12 inches deep. KS-20018-L103A through J adapters reduce the frame mounting width of the cabinets by 2 inches.	40A3 Data Mounting	Provides facilities for mounting, powering, remote testing, and connecting up to 8 DS 103J, 113C, 113D, 212A, or DAS 801C-L1.	6.90	18.90	13.50
KS-20018-L2						
KS-20018-L3						
KS-20018-L4						
KS-20018-L5*		40B1 Data Mounting	Provides facilities for mounting, powering, and connecting up to 16 DS 202T.	6.90	18.90	13.50
KS-20018-L6*						
KS-20018-L7						
KS-20018-L8						
KS-20018-L11-Type	41A1 Data Mounting (MD)	Provides facilities for mounting and powering up to 8 DS 407A and contains 46A1 and 47A1 data units for local and remote testing of DS 407A.	8.67	23.00	6.50	
KS-20018-L12-Type						
		41A2 Data Mounting (MD)	Provides facilities for mounting and powering up to 8 DS 407A or DS 407B. Contains 46A1 and 47A1 data units for local and remote testing of DS 407A and DS 407B.	8.67	23.00	16.50

◆TABLE D (Contd)◆

**DATA SET CABINETS  
AVAILABLE MOUNTING HARDWARE**

CABINET	AVAILABLE MOUNTING PLATES	AVAILABLE DATA MOUNTINGS				
		NOMENCLATURE	FUNCTION	DIMENSION (INCHES)		
				HEIGHT	WIDTH	DEPTH
		41A3 Data Mounting	Provides facilities for mounting and powering up to 8 DS 407AR or DS 407BR. Contains 46A1 and 47A1 data units for local and remote testing of DS 407AR and DS 407BR.	8.67	23.00	16.50
		41B1 Data Mounting (MD)	Provides facilities for mounting and powering up to 8 DS 407A.	8.67	23.00	16.50
		41B2 Data Mounting (MD)	Provides facilities for mounting and powering up to 8 DS 407A or DS 407B.			
		41B3 Data Mounting	Provides facilities for mounting and powering up to 8 DS 407AR or DS 407BR.	8.67	23.00	16.50
KS-20018-L15-Type  KS-20018-L17-Type		42A-Type Data Mounting	Provides facilities for mounting up to 6 DS 201C.	11.30	22.90	14.90
		46A1 Data Mounting	Provides facilities for mounting and powering up to 8 DAS 829-type.	7.00	19.00	13.25
		46B1 Data Mounting	Provides facilities for mounting and powering up to eight 48A1 data units.	7.00	19.00	13.25

◆TABLE D (Contd)◆

**DATA SET CABINETS  
AVAILABLE MOUNTING HARDWARE**

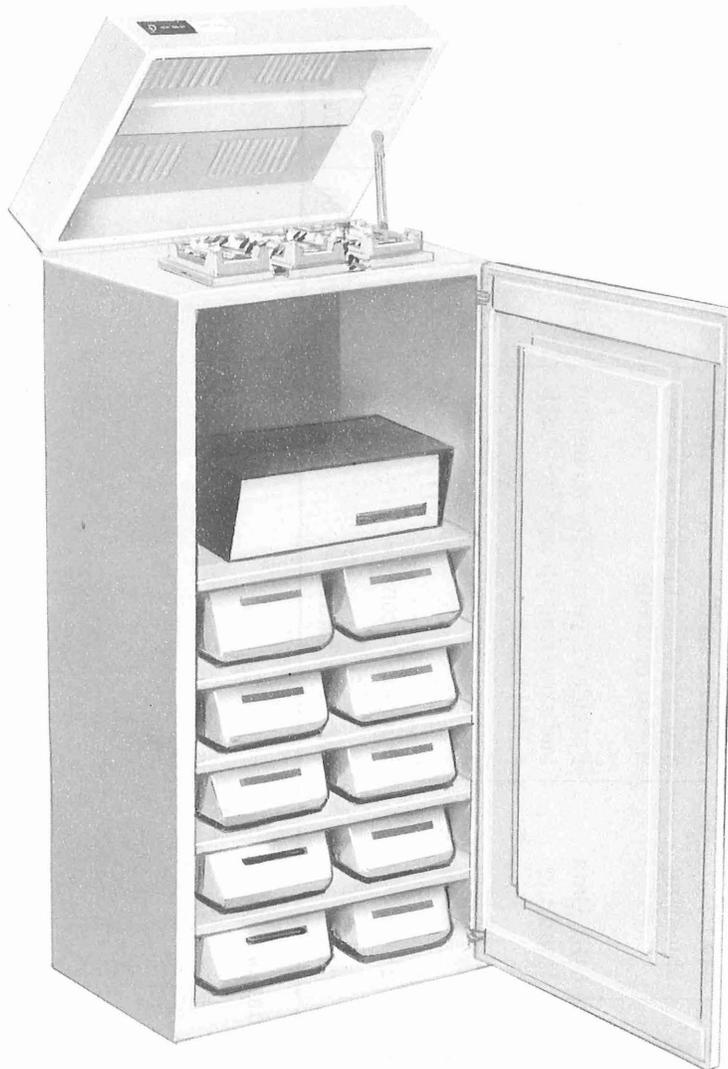
CABINET	AVAILABLE MOUNTING PLATES	AVAILABLE DATA MOUNTINGS				
		NOMENCLATURE	FUNCTION	DIMENSION (INCHES)		
				HEIGHT	WIDTH	DEPTH
KS-20018-L19		46C1 Data Mounting (MD)	Provides facilities for mounting and powering up to two 48B1 and up to six 48C1 data units.	7.00	19.00	13.25
KS-20018-L20		48A-Type Data Mounting	Provides facilities for mounting and powering up to five 500A-type data service units and up to ten 550A-type channel service units.	13.20	23.30	11.30
KS-20018-L20		57A1 Data Mounting	Provides facilities for mounting and powering up to 4 DS 407C. Contains 51A-type and 47A-type data units for local and remote testing of DS 407C.	10.60	21.00	16.60
		57A2 Data Mounting	Provides facilities for mounting and powering up to 4 DS 407CR. Contains 51A-type and 47A-type data units for local and remote testing of DS 407CR.	10.60	21.00	16.60
		57B1 Data Mounting	Provides facilities for mounting and powering up to 4 DS 407C.	10.60	21.00	16.60
		57B2 Data Mounting	Provides facilities for mounting and powering up to 4 DS 407CR.	10.60	21.00	16.60
		D180556	Provides facilities for mounting 1 DS 208-type or 1 DS 209A.			

◆TABLE D (Contd)◆

**DATA SET CABINETS  
AVAILABLE MOUNTING HARDWARE**

CABINET	AVAILABLE MOUNTING PLATES	AVAILABLE DATA MOUNTINGS				
		NOMENCLATURE	FUNCTION	DIMENSION (INCHES)		
				HEIGHT	WIDTH	DEPTH
<b>DATAPHONE II SERVICE</b>						
KS-20018-L11A	Mounting Brackets Comcode 842 991 291  842 991 309	64A1 Data Mounting	Provides facilities for mounting and powering up to 8 DS 2024A, 2048A, or 2096A.	15.00	19.00	15.40
KS-20018-L15C		64B1 Data Mounting	Provides facilities for mounting and powering up to 8 DS 2024B or 2048B.	15.00	19.00	15.40
		2100A	Diagnostic console	6.00	16.00	9.00
		2200A	Network controller	10.50	17.50	16.00

\* KS-20018-L5 and -L6 do not have 23-inch mountings.



**Fig. 3—KS-19643-L2 Cabinet—Front View Showing Shelves and Mounting Blocks (MD)**

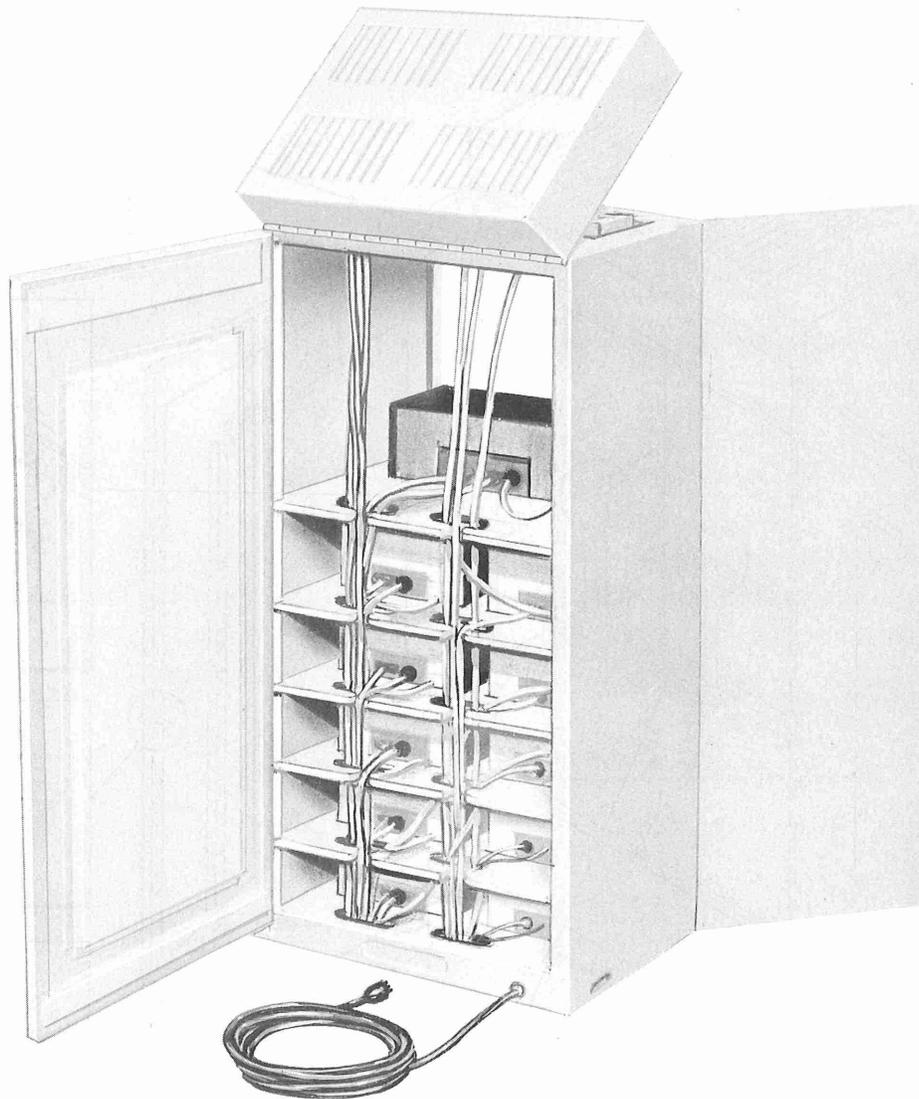
transporting the cabinet by hand truck or fork lift to prevent damage to the plate.

**4.09** Internally the cabinet is a 2-compartment shell; one 5 by 68 inches and another 25 by 68 inches (Fig. 10 and 15). The 5-inch compartment has two angle brackets mounted along the inside walls to accept apparatus which mounts on 5-inch mounting plates. The two angle brackets contain tapped 12-24 holes on 1-inch centers to allow flexibility when mounting apparatus vertically in the cabinet. This compartment is designed to mount customer interface connectors. The left front door provides access to this area.

**4.10** Cable guides and brackets are provided to “dress” customer cables in the customer interface portion of the cabinet.

**4.11** Holes in the panel between the 5- and 25-inch compartments provide access for cables being distributed from one compartment to the other. A cable guide located between the front center door and cabinet frame facilitates the distribution of cables vertically.

**4.12** The 25-inch compartment is designed for data sets which mount on 25-inch mounting plates. Four vertical mounting surfaces, two along either side spaced 6.3 inches apart, are arranged



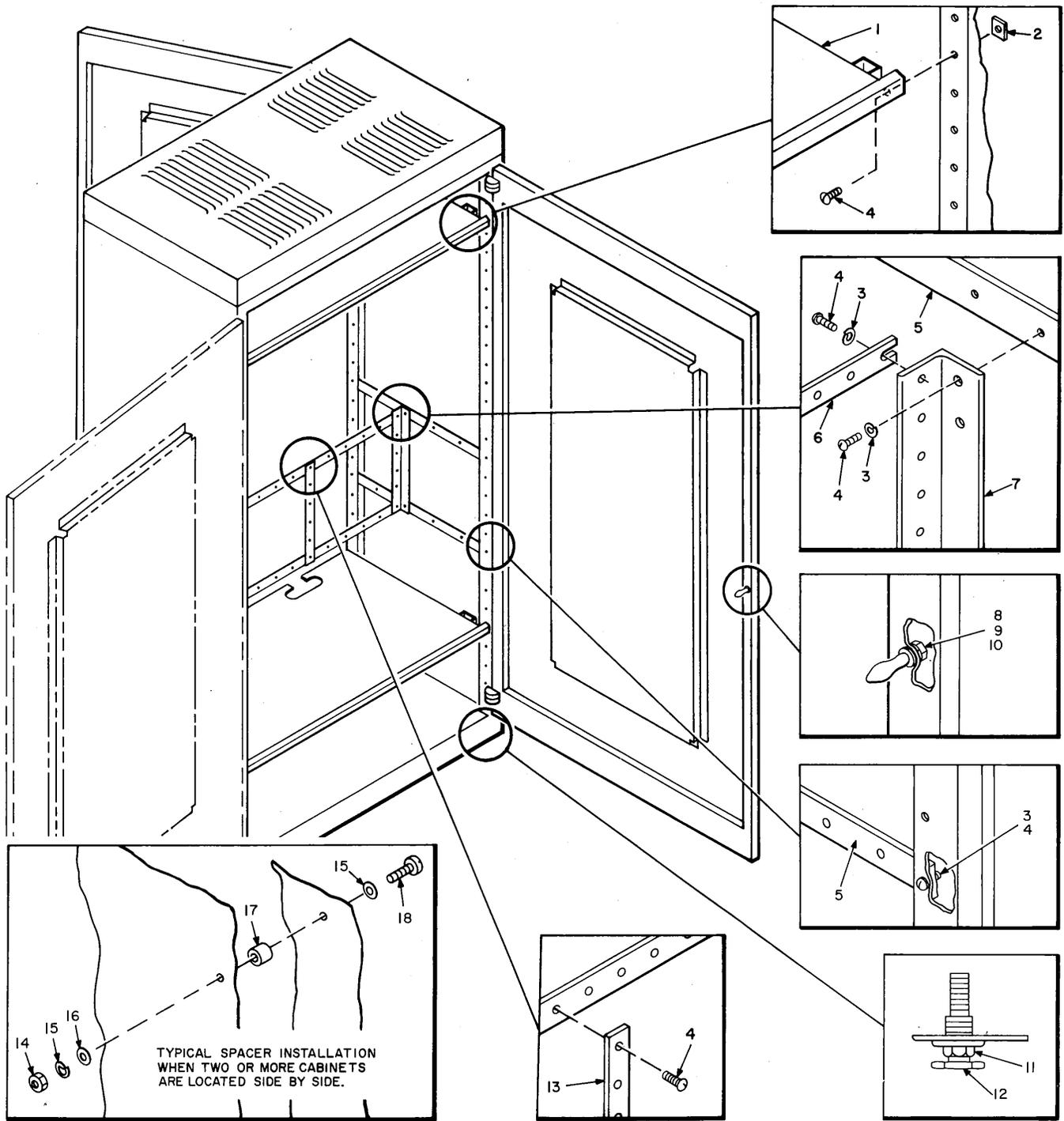
**Fig. 4—KS-19643-L2 Cabinet—Rear View Showing Cable Channeling and Power Cord (MD)**

to provide rear and front mounting within the same cabinet, and have 68 tapped 12-24 holes on 1-inch centers to allow versatility in mounting apparatus vertically.

**4.13** An optional mounting post (KS-20093-L4) can be installed (Fig. 10) to provide a mounting surface between the two fixed mounting surfaces for apparatus which requires mounting plates of less than 25 inches. This mounting post has mounting holes matching with those of the existing mounting surfaces.

**4.14** The left rear mounting surface (Fig. 10) can be moved to permit 25-, 23- or 19-inch panel mounting.

**4.15** When 23-inch wide equipment is to be mounted in the front of the KS-20093-L1 cabinet, adapter plates are required to reduce the 25-inch frame to the nominal 23-inch distance required. The KS-20093-L15-type adapter plates are available in the various lengths as shown in Table F. ♦These adapter plates can be used to reduce any cabinet by 2 or 4 inches in rack width.♦



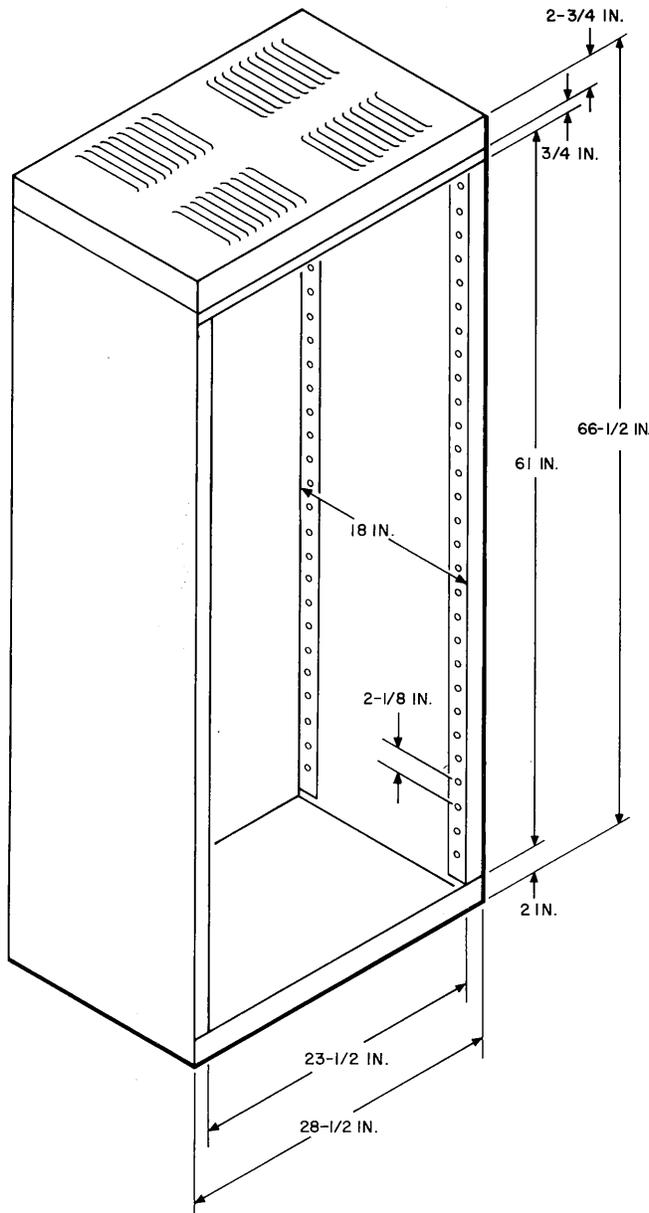
- 1. SHELF KS-19643-L3
- 2. NO. 12 NUT
- 3. NO. 12 LOCKWASHER
- 4. 12 X 24 X 5/8 ROUND-HEAD SCREW
- 5. MOUNTING BAR KS-19643-L4
- 6. 67B MOUNTING BRACKET

- 7. MOUNTING ANGLES KS-19643-L5/L6/L7/L8/L9
- 8. STRIKE
- 9. NO. 8 LOCKWASHER
- 10. NO. 8 NUT
- 11. HEXAGON LOCKING NUT
- 12. HEX HEAD LEVELING BOLT

- 13. MOUNTING BAR P37A901
- 14. NUT
- 15. LOCKWASHER
- 16. FLATWASHER
- 17. SPACER
- 18. SCREW

TYPICAL SPACER INSTALLATION  
WHEN TWO OR MORE CABINETS  
ARE LOCATED SIDE BY SIDE.

Fig. 5—Typical Removal and Installation of Shelves, Mounting Angles, and Mounting Bars for KS-19643-L2 Cabinet (MD)



**Fig. 6—Front View of KS-19643-L2 Cabinet Showing Available Mounting Space and Mounting Holes (MD)**

**4.16** A KS-20129 power strip equipped with twenty-four 117-Vac outlets may be installed in the rear of the KS-20093-L1 cabinet. The power strip comes with a 6-foot long 14-3 power cord equipped with a 3-conductor plug. It may be mounted with the cord either at the top or bottom to allow either underfloor or overhead wiring.

**4.17** A KS-20093-L9 shelf assembly (Fig. 11) may be ordered when a station requires shelf-mounted equipment. The shelf is 12 inches deep and may be mounted on either 23- or 25-inch racks. A 23- by 10-inch shelf (Fig. 12) may also be ordered if required.

**4.18** The KS-20093 cabinet, as delivered, contains brackets which provide rigidity during transportation. The removable kickplates with attaching hardware are stored inside the cabinet.

## B. Installation

**4.19** Position the cabinet in its permanent location and level it as follows:

**Note:** The KS-20093-L1 cabinet depends upon the installation of data sets and associated components for support and rigidity. As a result, the following procedure should be used wherever possible to ensure proper alignment and leveling of the cabinets. This is especially true when there are a number of these cabinets side by side.

- (a) Remove the three discardable braces from the rear of the cabinet and the two kickplates from the mounting racks.
- (b) Lower the cabinet as far as possible by releasing the locknuts on the four leveling feet and turning the adjusting screws counterclockwise with a screwdriver.
- (c) Partially equip the cabinet near the top of the racks (where possible) with a minimum of 18 inches of equipment on both the front and rear racks. Lightly tighten the equipment panel mounting screws to prevent rocking.
- (d) Place a level with plumb vial against the front of the doors and adjust the leveling screws until the cabinet stands vertically in a front to rear direction.
- (e) Adjust cabinet for squareness by applying sideward hand pressure to a side of the cabinet near the top and then tighten equipment panel mounting screws. Out-of-squareness may be observed as a misalignment of doors at their top edges.

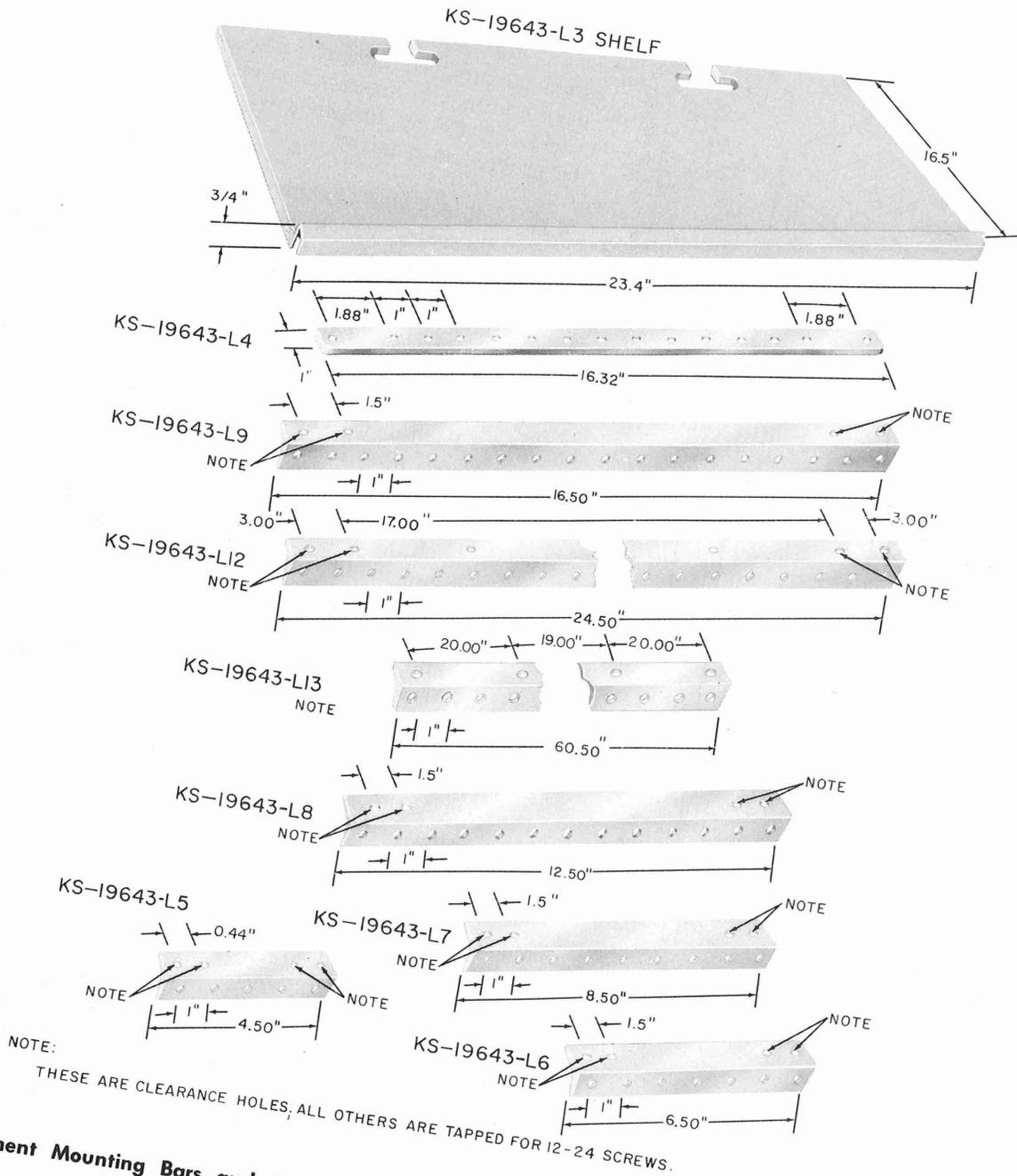


Fig. 7—Equipment Mounting Bars and Angles for Altering KS-19643-L2 Cabinets for Optional Arrangements (MD)

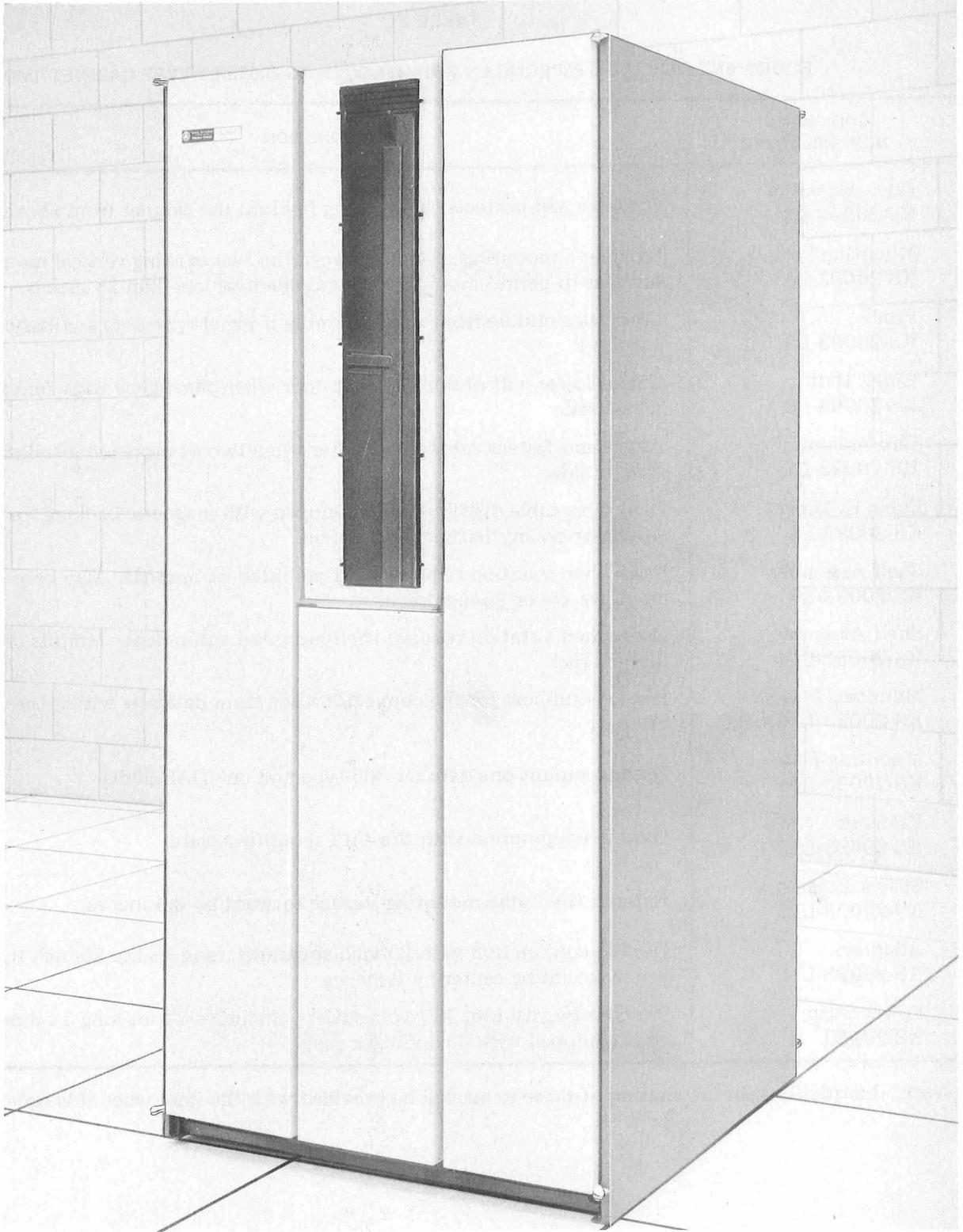


Fig. 8—KS-20093-L1 Cabinet—Front View (MD)

TABLE E

## EQUIPMENT DESIGNED ESPECIALLY FOR USE WITH KS-20093-L1 TYPE CABINET (MD)

EQUIPMENT NOMENCLATURE	FUNCTION
Duct Assembly KS-20093-L2	Contains and protects cables being fed into the cabinet from above.
Mounting Post KS-20093-L4	Provides a mounting surface between the two existing vertical mounting surfaces to permit mounting of equipment of less than 25 inches.
Panel KS-20093-L5	Completes middle front door assembly if panel-type data auxiliary set is not used.
Panel, Half KS-20093-L6	Covers lower half of middle front door when panel-type data auxiliary set is used.
Clip Assembly KS-20093-L7	Aligns and fastens cabinets together when two or more are installed side by side.
Cable Retainer KS-20093-L8	Facilitates cable distribution. Equipped with magnetic backing for mounting on any flat metallic surface.
Shelf Assembly KS-20093-L9	Used when a station requires shelf-mounted equipment. May be mounted on either 23- or 25-inch rack.
Shelf Assembly KS-20093-L14	Used when a station requires shelf-mounted equipment. Mounts on a 23-inch rack.
Mounting Plates KS-20093-L10A,B,C	Provides support for the connector leads from data sets within the cabinet.
Mounting Plate KS-20093-L11	Used to mount one data set 303-type and one DAS 806D.
Fastener KS-20093-L12	Used in conjunction with the -L11 mounting plate.
Spacer Bracket KS-20093-L13	Extends the frame mounting surface forward by 3.4 inches.
Adapters KS-20093-L15	Used in conjunction with 23-inch apparatus, reduces the 25-inch from frame mounting center by 2 inches.
Power Strip KS-20129	Provides twenty-four 117-volt outlets. Includes 6-foot long 14-3 power cord equipped with 3-conductor plug.

*Note:* Instructions for installation of these items will be provided with the item when it is ordered.

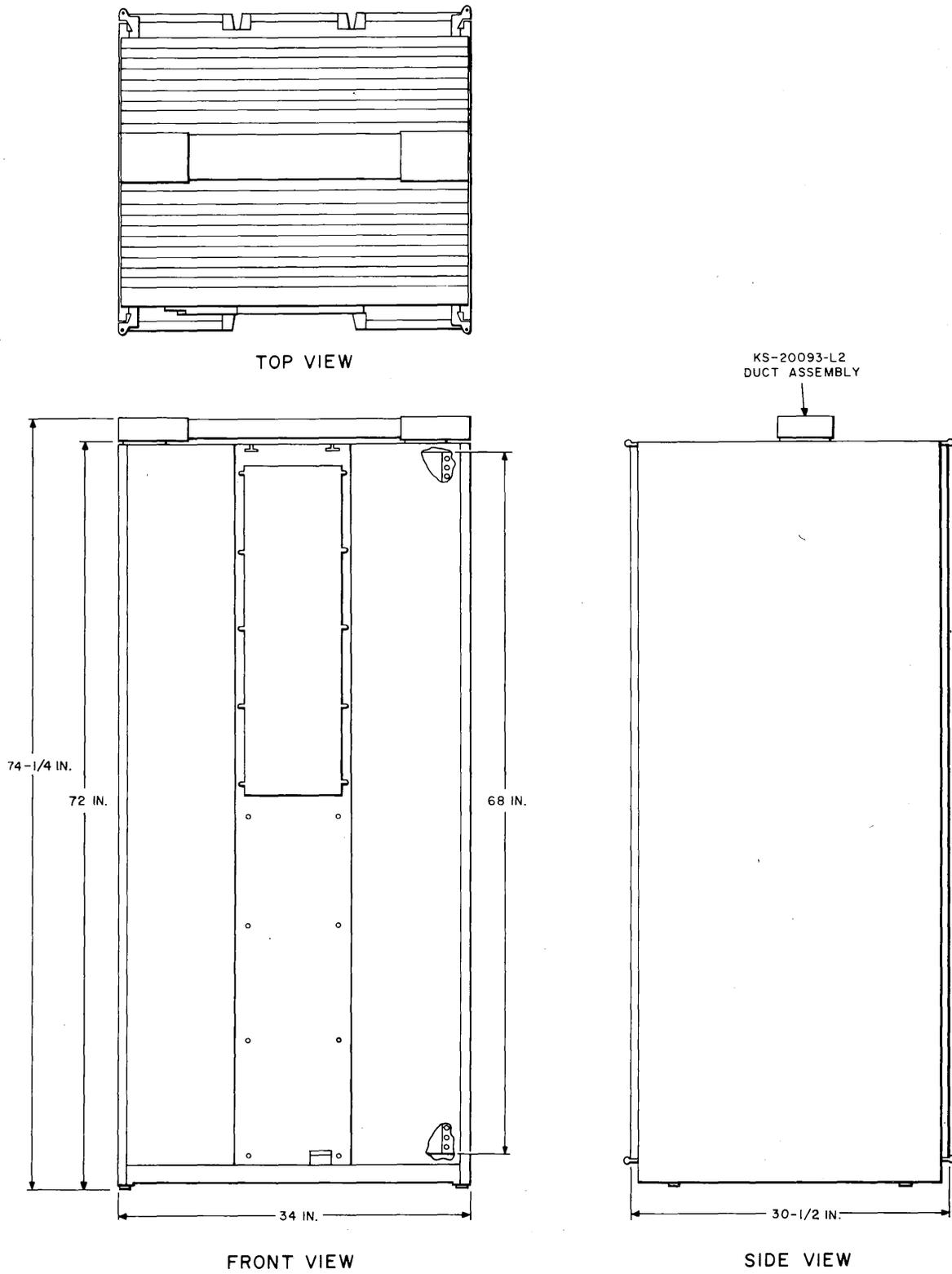
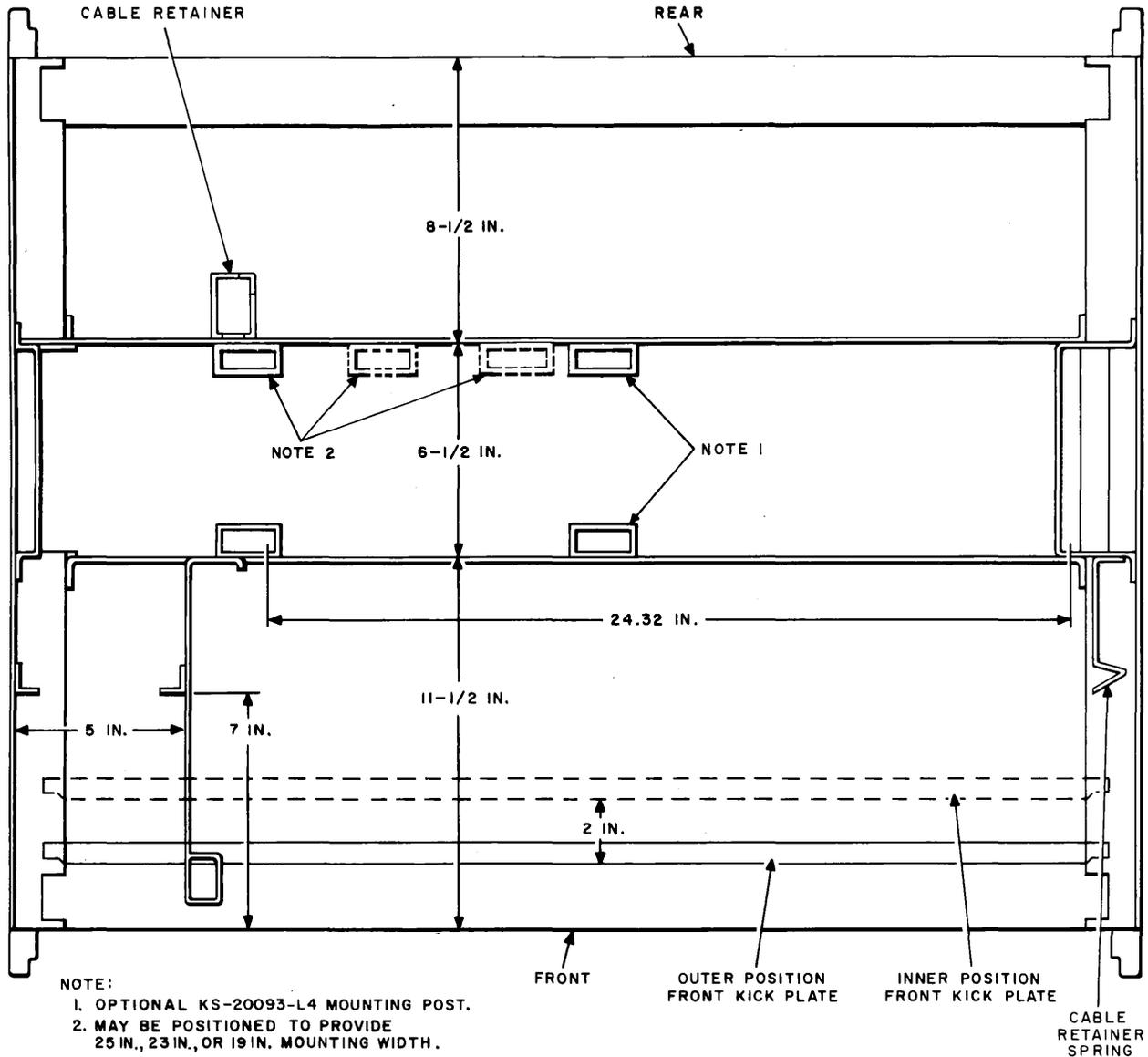


Fig. 9—Front and Side Views of KS-20093-L1 Cabinet Showing External Measurements (MD)



TOP VIEW SHOWING INTERNAL APPARATUS MOUNTING

Fig. 10—Top View of KS-20093-L1 Cabinet Showing Internal Measurements (MD)

(f) Place level with a plumb vial against the side of the cabinet and adjust the leveling screws until the cabinet stands vertically in a side-to-side direction. Repeat (d).

(g) Tighten locknuts on the leveling feet.

**4.20** Install the kickplates in the outer position when forced ventilation is provided from under a false floor, or in the inner position when

forced ventilation is not provided under floor (Fig. 10 and 15).

**4.21** If installation requires more than one cabinet, align and fasten the cabinets together with KS-20093-L7 clip assembly.

**4.22** After the cabinet has been fully equipped, ground the cabinet and connect ac power as specified in the specific data set practice and in Section 590-010-200.

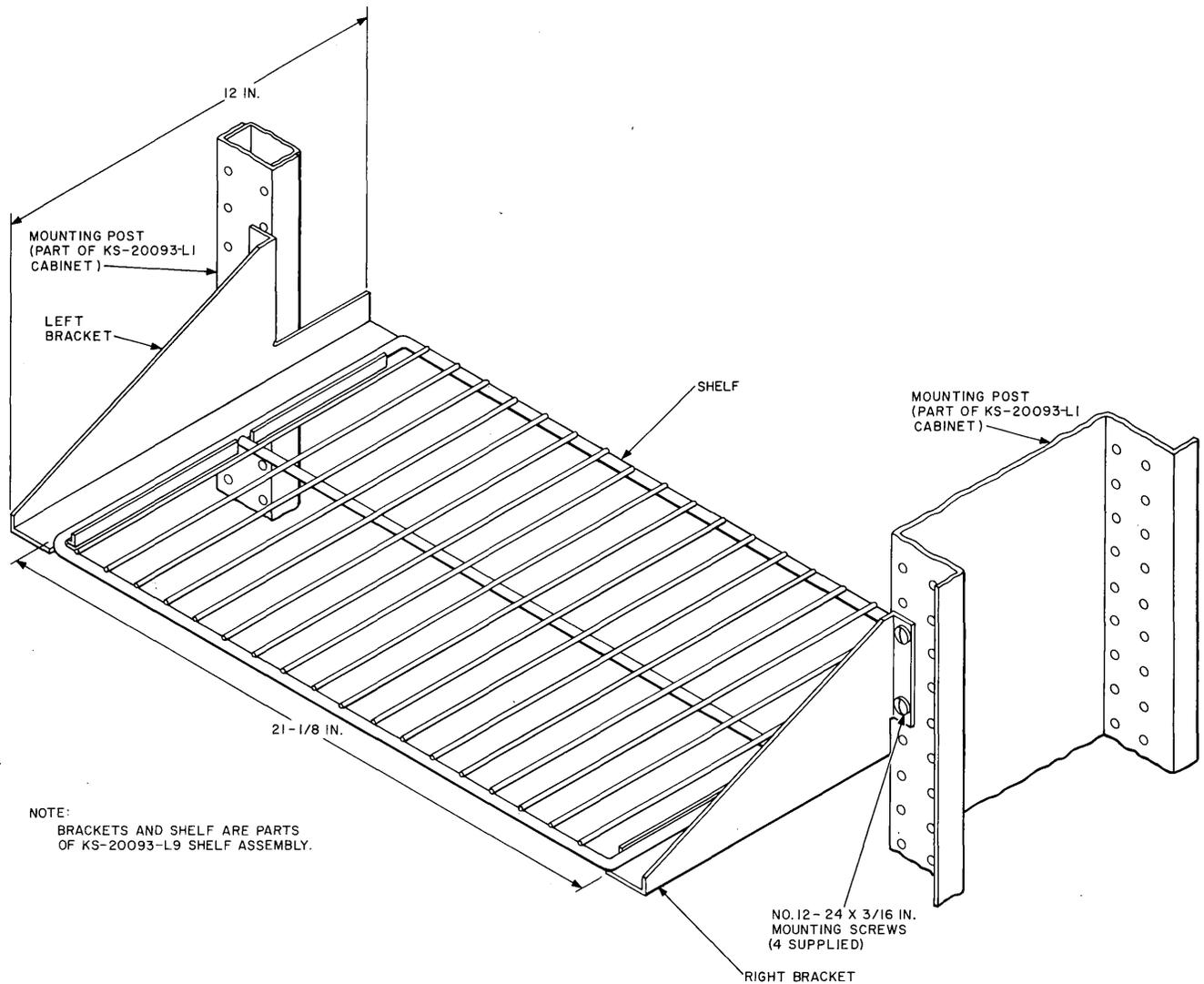


Fig. 11—KS-20093-L9 Shelf Assembly for KS-20093-L1 Cabinet (MD)

## 5. KS-20018 CABINETS

### A. Description

**5.01** The KS-20018 cabinets satisfy a wide variety of installation requirements for housing telephone equipment, telephone apparatus, and data sets mounted on apparatus mountings or shelves. The cabinets and dimensions are shown in Table A and Fig. 16 and 17.

#### *KS-20018-L1 Through -L8 Cabinets*

**5.02** The KS-20018-L1 through -L8 cabinets are "look-alikes" in that they consist of a basic

framework housing and a front and rear panel (Fig. 18). The cabinets are made of aluminum and have a two-tone gray textured vinyl finish (framework housing is dark gray; front and rear panels are light olive gray).

**5.03** The KS-20018-L1, -L2, -L5, and -L6 cabinets are provided with four tapered, circular legs equipped with rubber feet to prevent slippage. The KS-20018-L3, -L4, -L7, and -L8 cabinets are provided with a 2-inch fixed skirt which runs completely around the base of the cabinet with a 6-inch opening at the rear for cable egress. Four leveling bolts are provided with the skirt.

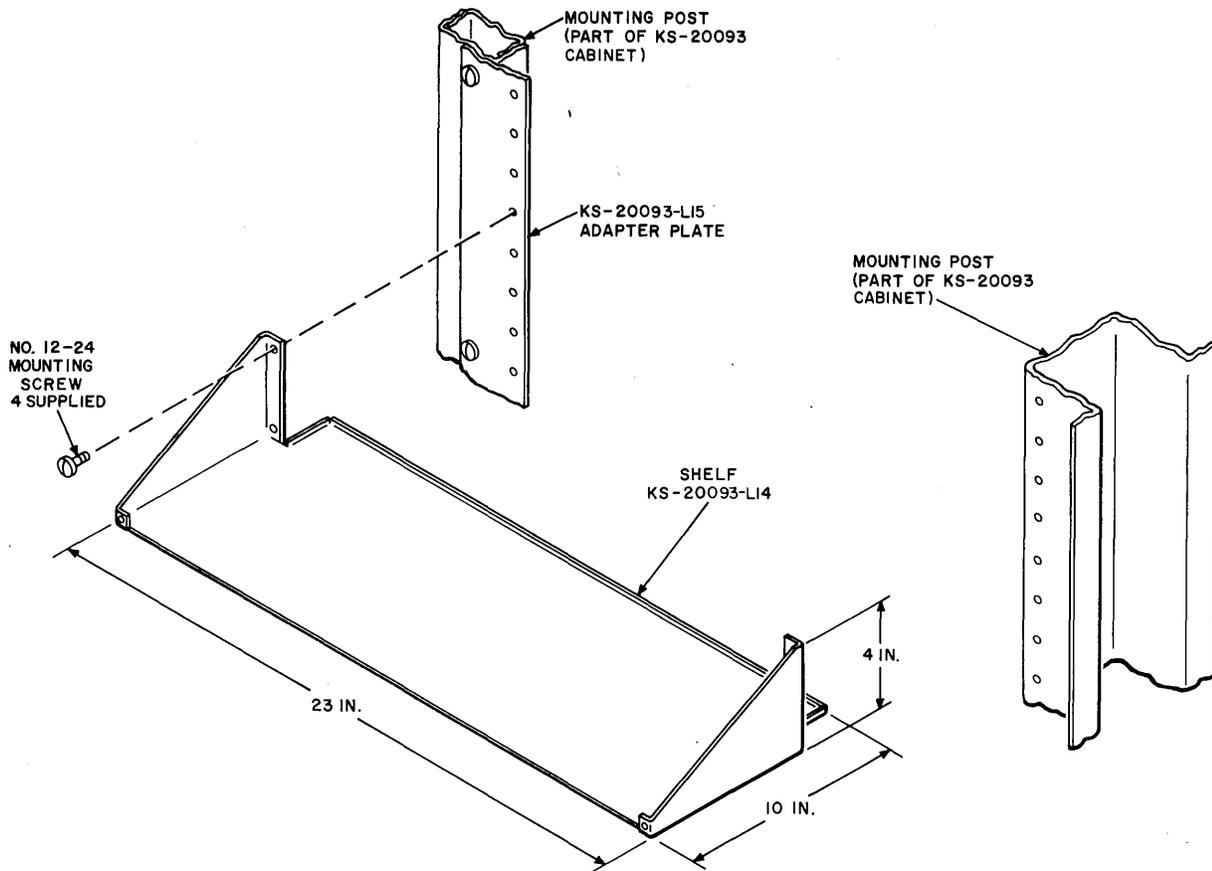


Fig. 12—KS-20093-L14 Shelf Installation for KS-20093-L1 Cabinet (MD)

**5.04** The front and rear panels for the cabinets are each held in the closed position by two spring-loaded latches (Fig. 18). To open a panel, apply an outward pressure at the top of the panel until the latches disengage. Then to remove the panel, lift it up and away from the brackets holding the bottom in position.

**5.05** Internally, the cabinets provide the space for mounting apparatus and telephone equipment as shown in Fig. 19 and 20. The cabinets with an overall depth of 12 inches (-L1 through -L6) accept equipment designed for 12-inch deep framework (11.82 inches maximum). The -L7 and -L8 cabinets have an overall depth of 17 inches and accept larger shelf-mounted equipment, such as data set 201C (16.82 inches maximum depth).

**5.06** Two channel mounting brackets within each cabinet provide vertical mounting surfaces containing tapped 12-24 holes spaced on 1-inch centers. The mounting brackets are spaced to

accept a 23-inch or 19-inch equipment panel with appropriate KS-20018-L103 A through J adapters. However, the -L5 cabinet accepts only 19-inch equipment panels and the -L6 cabinet accepts only 11-3/4 inch equipment panels.

**5.07** Access for power and interface cables is provided through rectangular ports in the base of each cabinet (Fig. 21). Covers for the ports are held in place by two quick-release fasteners that release when the center stem is pulled up. The port covers can be installed to either completely or partially cover the ports, providing for limited cable egress.

**5.08** A 1A1, or B3E23-10-1\* power panel may be installed in those KS-20018 cabinets which accept 23-inch panels. ♦A 1A2 power panel may be installed in cabinets which accept 19-inch panels.♦ The 590B power panel (MD) is equipped with eight outlets for providing ac power distribution. The 1A1 power panel provides a ninth outlet on its

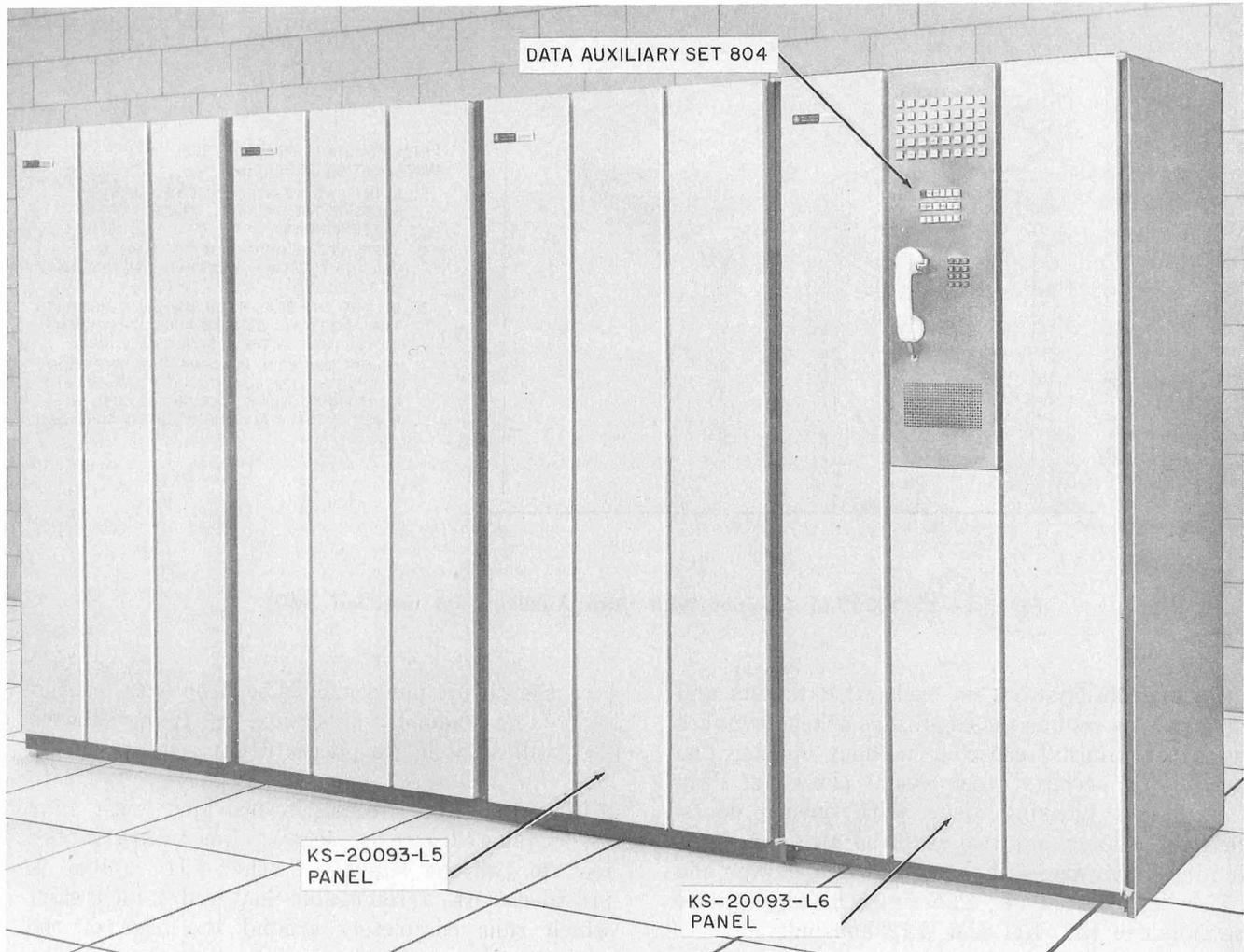


Fig. 13—Typical Multiple Data Set Cabinet Installation Using KS-20093-L1 Cabinet (MD)

end for tandem operation. An appropriate length KS-16935 or KS-14532 power cord must be ordered with each 1A1 or 1A2 power panel.

\*B3E23-10-1 power panel equipped with nine outlets is available from Waber Electronic Incorporated, SGL Industries, Incorporated, 300 Harvard Avenue, Westville, N.J.

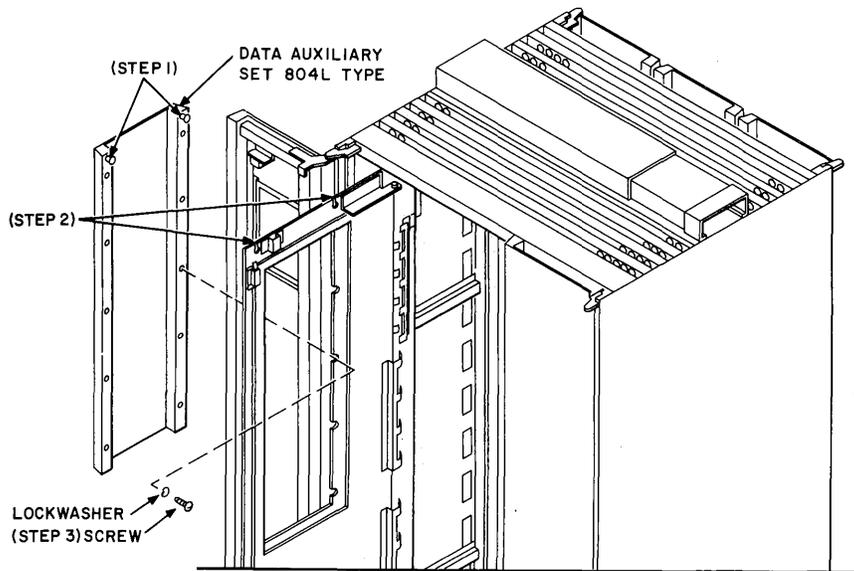
**5.09** Ventilation is provided by large screened ports in the base, and by two 1/2-inch wide slots that run the full width of each cabinet at the top of the front and rear panels.

#### ***KS-20018-L11, -L12, -L15, and -L17 Cabinets***

**5.10** The KS-20018-L11, -L12, -L15, and -L17 cabinets have been developed to complement

the new line of Bell System data sets and data auxiliary sets. In addition to providing a modern appearance, the cabinets have the ability to dissipate the greater amounts of heat generated by compact arrangements of multiple data set installations.

**5.11** The -L11 and -L12 cabinet housings are made of clear anodized or painted aluminum (Fig. 17). The front and rear doors can be either perforated black anodized aluminum or transparent plastic panels. The perforated black anodized or painted aluminum door yields an effective opening of approximately 45 percent to provide adequate airflow for heat dissipation. The transparent plastic door panel is a flame retardant polycarbonate sheet, solar gray in color, which permits 50 percent light transmission. The "see-through" characteristic permits direct close-up viewing of status indicator



DATA AUXILIARY SET (DAS) 804L  
INSTALLATION PROCEDURE

1. START TWO MOUNTING SCREWS IN THE TOP HOLES OF THE DAS 804L. DO NOT TIGHTEN THESE SCREWS.
2. SUPPORT THE WEIGHT OF THE 804L BY PLACING THE TWO MOUNTING SCREWS IN HOLES OF THE DOOR.
3. SECURE THE 804L FROM THE BACK SIDE WITH TEN ADDITIONAL SCREWS AND LOCKWASHERS. DO NOT TIGHTEN THESE SCREWS SECURELY.
4. ADJUST THE 804L PLACEMENT ON THE DOOR BY SHIFTING THE 804L TO THE RIGHT OR LEFT AS REQUIRED. WHILE HOLDING THE 804L IN PLACE, TIGHTEN ALL THE MOUNTING SCREWS.

Fig. 14—KS-20093-L1 Cabinet With Data Auxiliary Set Installed (MD)

lamps and designations on enclosed data sets and apparatus, as well as the conditions of test switches and other internal controls, without opening the door. This permits quick visual checks of data sets without blocking aisles with opened doors. The -L17 cabinet has two textured clear anodized aluminum side panels plus a 150 cfm blower and a 77A heat detector. The finish is identical to the finish of the -L11 and -L12 housings.

5.12 Table G identifies the available door option suffix codes for the -L11, -L12, -L15, and -L17 cabinets. (Hereafter, unless specifically stated, KS-20018-L11A, B, C; -L12A, B, C; -L15A, B, C, D; and -L17A, B, C, D cabinets will be referred to as KS-20018-L11, -L12, -L15, and -L17, respectively.)

To order separate doors for certain KS-20018 cabinets, refer to Table H.

The KS-20018-L13 and -L14 doors are designed specifically to fit the -L11 and -L12 cabinets; however, they may also be used on the older types of cabinet as shown in Table H.

**Note:** Static charge buildup on the plastic door which may attract dust and dirt particles, may be eliminated by any one of a number of anti-static cleaners, such as a spray type supplied by Cadillac Plastic and Chemical Company, Detroit, Michigan. Drying or wiping

the plastic panel should be done with a clean damp chamois, or equivalent (paper towels will scratch the plastic door).

5.13 The -L12 cabinet is provided with four tapered, circular legs equipped with rubber feet to prevent slippage. The -L11 cabinet is provided with a removable louvered 2-inch skirt which runs completely around the base of the cabinet with a 13-inch opening at the rear. The KS-20018-L15 and -L17 cabinets (Fig. 17) are supported on a removable 5-inch high steel base. Each corner of the base is provided with adjustable leveling screws equipped with nonmarring slipproof rubber feet. Levelers are shipped loose and must be installed at time of cabinet installation if needed. If limited cabinet mobility is desired, the two rubber feet on the rear side of the base can be replaced with an equivalent Teflon substitute. The cabinet with base can be tilted backward slightly and slid on the Teflon feet.

**Note:** Exercise caution when sliding cabinet with foot against base, as this may cause the knockouts to be inadvertently pushed out.

The front and rear panels of the base are identical and interchangeable. Each panel has two 3-1/2 inch by 4-inch knockouts for cable ports. When a cable port knockout is used, protect the exposed edges with the gasket material supplied with each

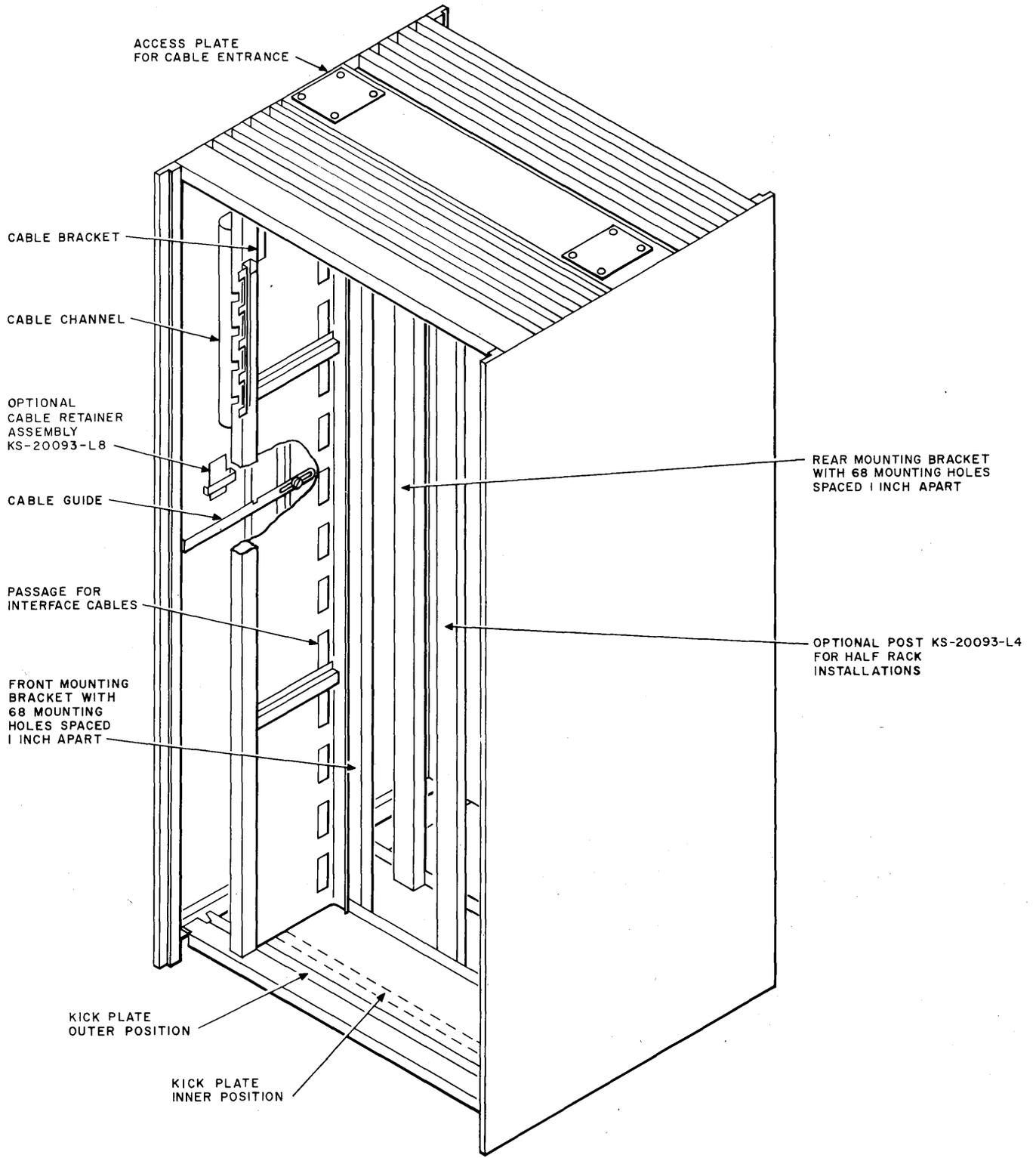


Fig. 15—Components of KS-20093-L1 Cabinet (MD)

TABLE F  
ADAPTER PLATE

KS-20018	LENGTH IN INCHES
-L103A	68
-L103B	30
-L103C	18
-L103D	12
-L103E	10
-L103F	9
-L103G	8
-L103H	6
-L103J	3

cabinet. Each panel also has an 18-inch by 3-1/2 inch knockout provided for ventilation and/or mounting a grille assembly.

5.14 The -L15 and -L17 cabinets are provided with a removable perforated cabinet top vent held in place with four screws.

5.15 The -L15 is similar to the -L17 cabinet. The -L17 includes two -L16 side panels, ventilation blower with grille and filter assembly, and a 77A detector for sensing ambient temperature variation, and blower control. These are *not* included with the -L15, but can be ordered as optional equipment. By installing all of these, the -L15 can be field-modified into an -L17 cabinet.

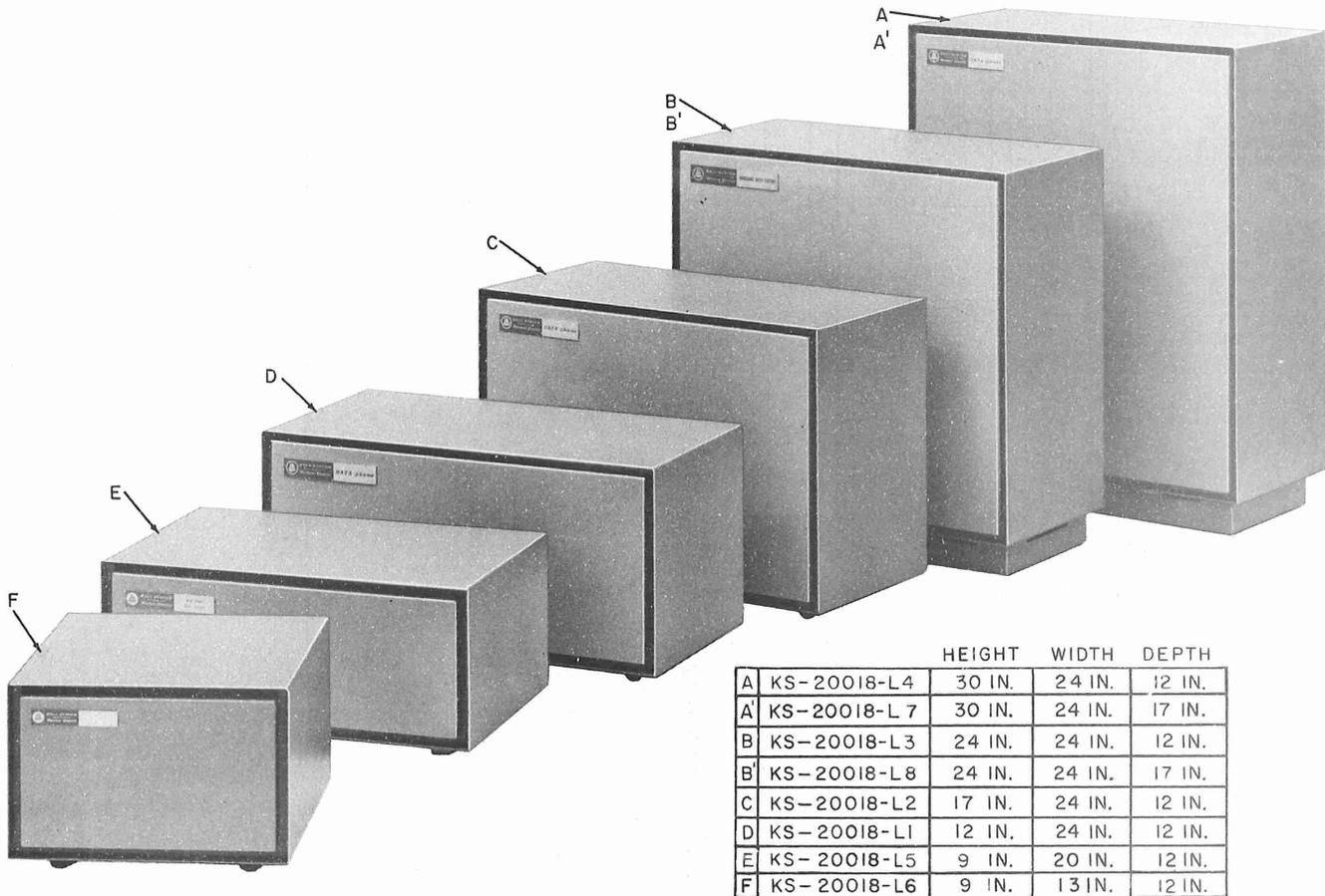
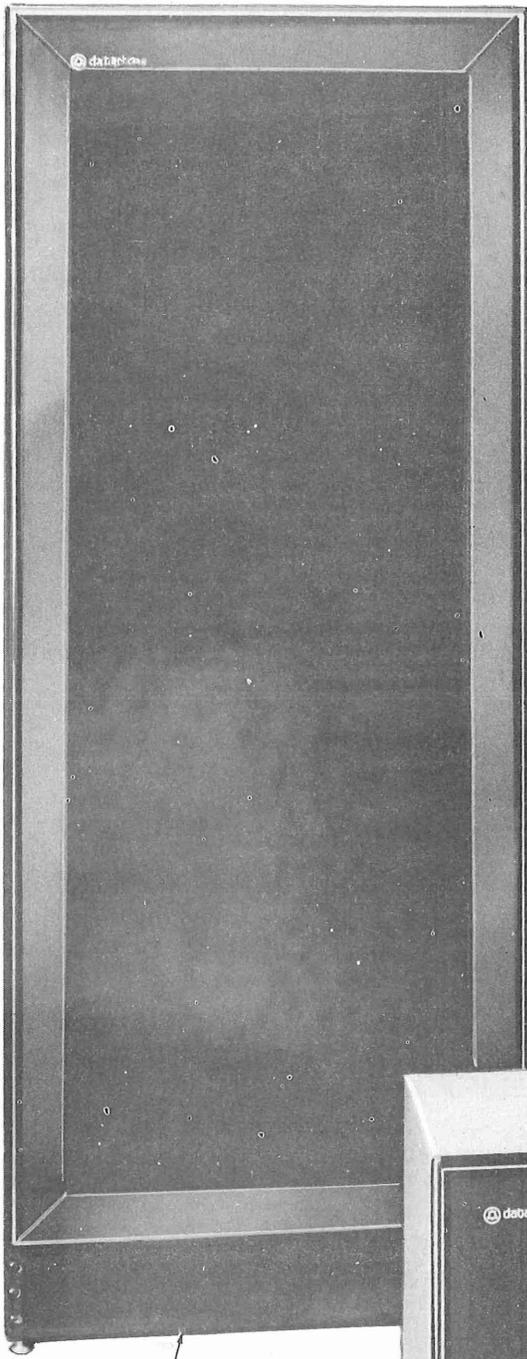


Fig. 16—KS-20018-L1 Through -L8 Cabinets—Identification and Approximate External Measurements

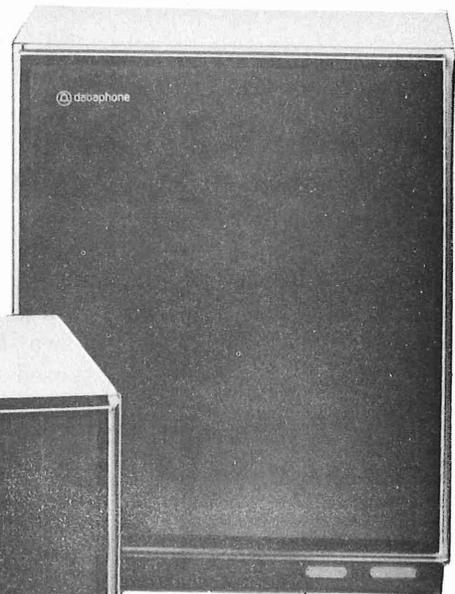


KS-20018-L15  
OR L17

CABINET	HEIGHT	WIDTH	DEPTH
KS-20018-L11	30 IN.	24 IN.	19 IN.
KS-20018-L12	17 IN.	24 IN.	19 IN.
KS-20018-L15 OR -L17-TYPES	72 IN.	29 IN.	26 IN.



KS-20018-L12



KS-20018-L11

Fig. 17—KS-20018-L11, -L12, -L15, and -L17 Cabinets—Identification and Approximate Measurements

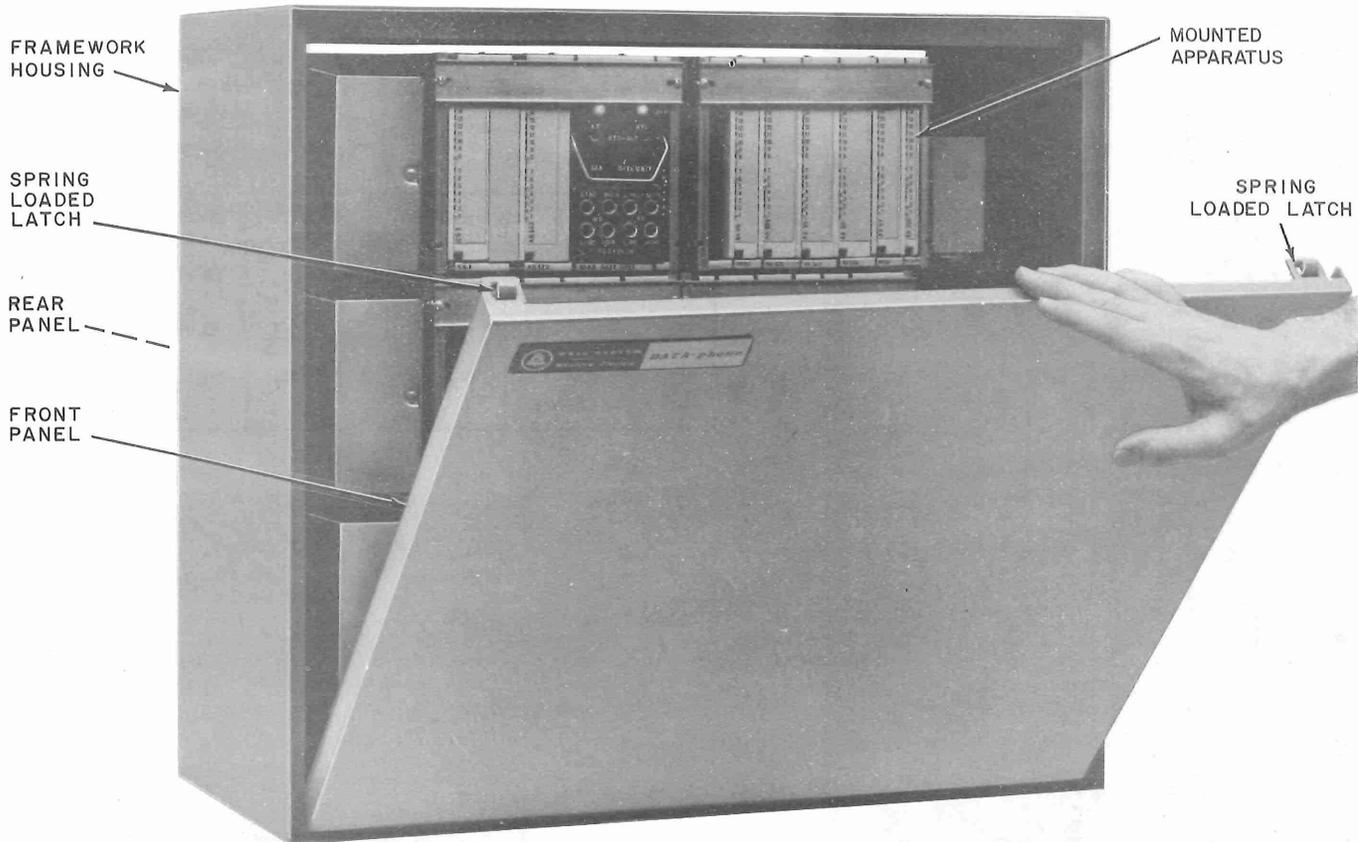


Fig. 18—Components of KS-20018 Cabinet

5.16 The KS-20018-L16 side panel is a single flat sheet of clear anodized aluminum measuring 67 inches high and 22 inches wide. Two -L16 side panels are required to cover the exposed sides of the -L15 cabinet. The -L16 side panel can also be used between -L15 cabinets in a multiple cabinet array to act as a separator where interaction between adjacent cabinets is not desired.

5.17 The following KS-coded blowers and filters are available:

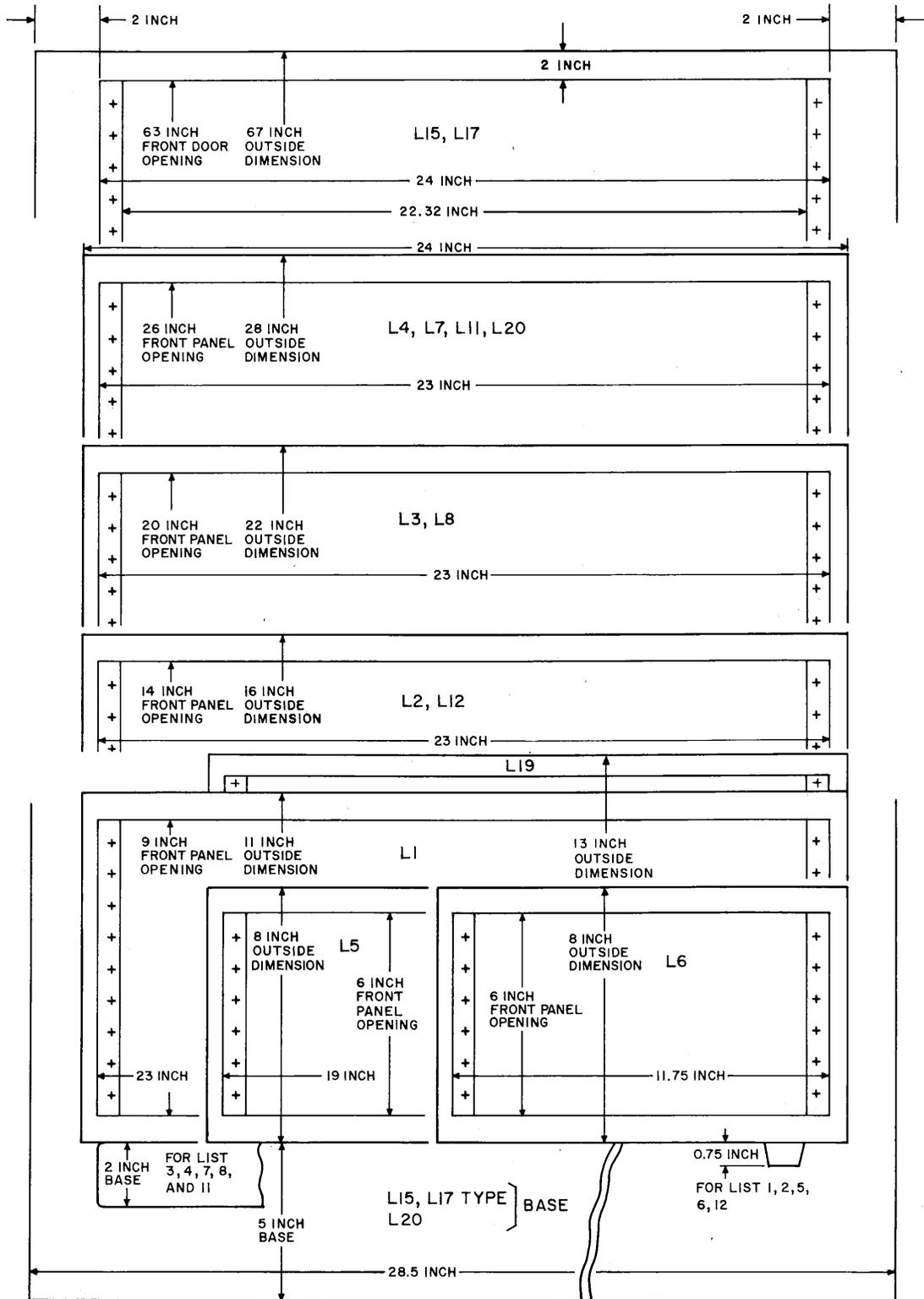
- 300 cfm blower and filter assembly KS-22100-L1
- 150 cfm blower and filter assembly KS-22100-L2 (formerly McLean Model 1E-220C-35)
- Permanent filter for -L1 blower KS-22100-L3
- Permanent filter for -L2 blower KS-22100-L4 (formerly McLean Model S-1006-37 filter).

5.18 The following items can be ordered from McLean Engineering Company, Princeton Junction, N.J. 08550:

- Separate grille for -L2 blower, Part No. S-1878-11
- Replaceable filter for -L2 blower, Part No. S-1032-21
- Neutrolain air filter coating for permanent-type air filters, Part No. S-1083
- Filter grille panel for -L2 blower, Model No. 35G19S9.

The 77A detector can be ordered from Western Electric Company, Montgomery, Ill.

5.19 The front and rear doors of the -L11 and -L12 cabinets can be removed the same as the -L1 through -L8 cabinets. The hinged front



NOTE:  
ALL DIMENSIONS ARE APPROXIMATE.

Fig. 19—Front View of Internal Mounting Space Available in KS-20018 Cabinets

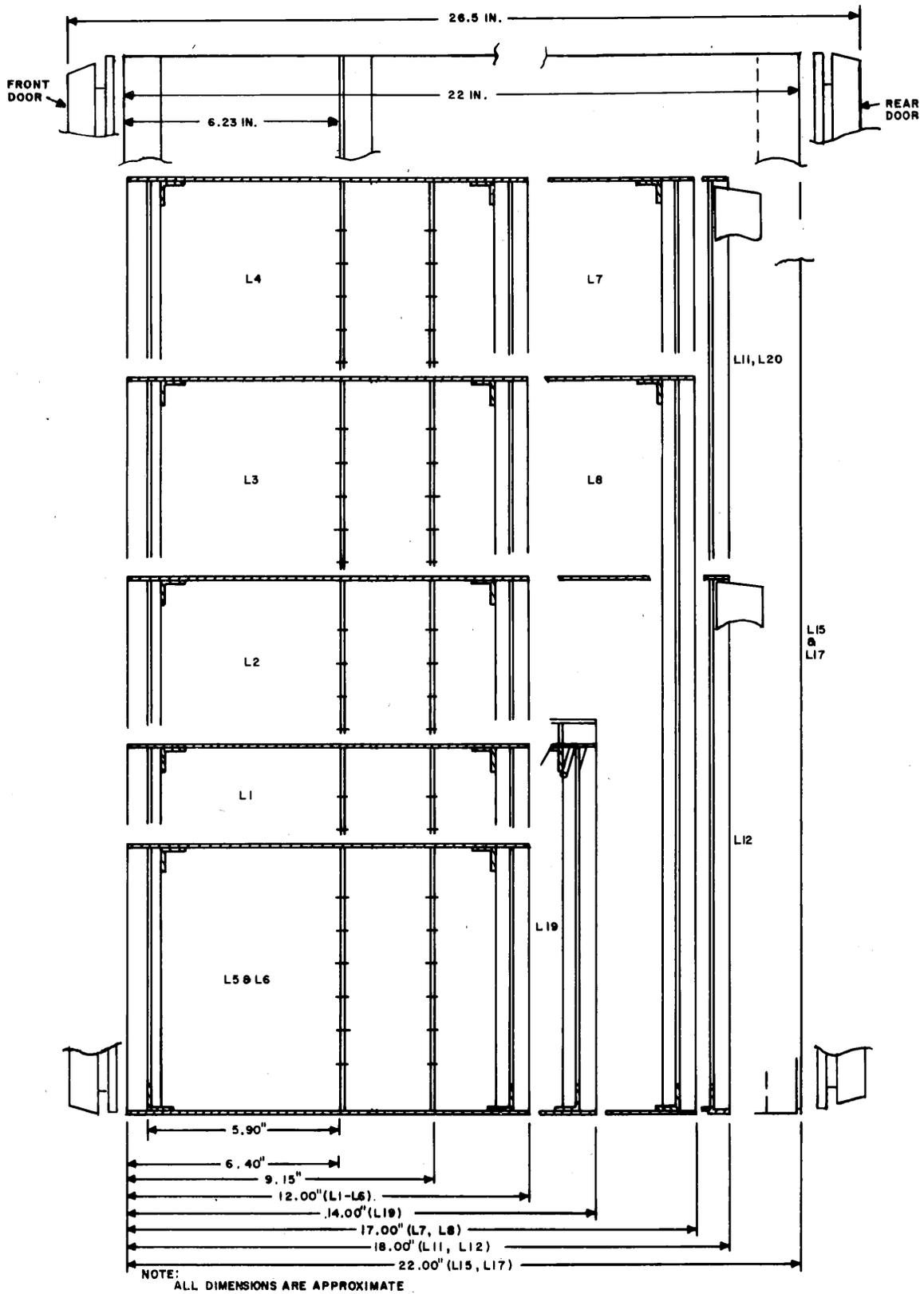


Fig. 20—Side View of Internal Mounting Space Available in KS-20018 Cabinets

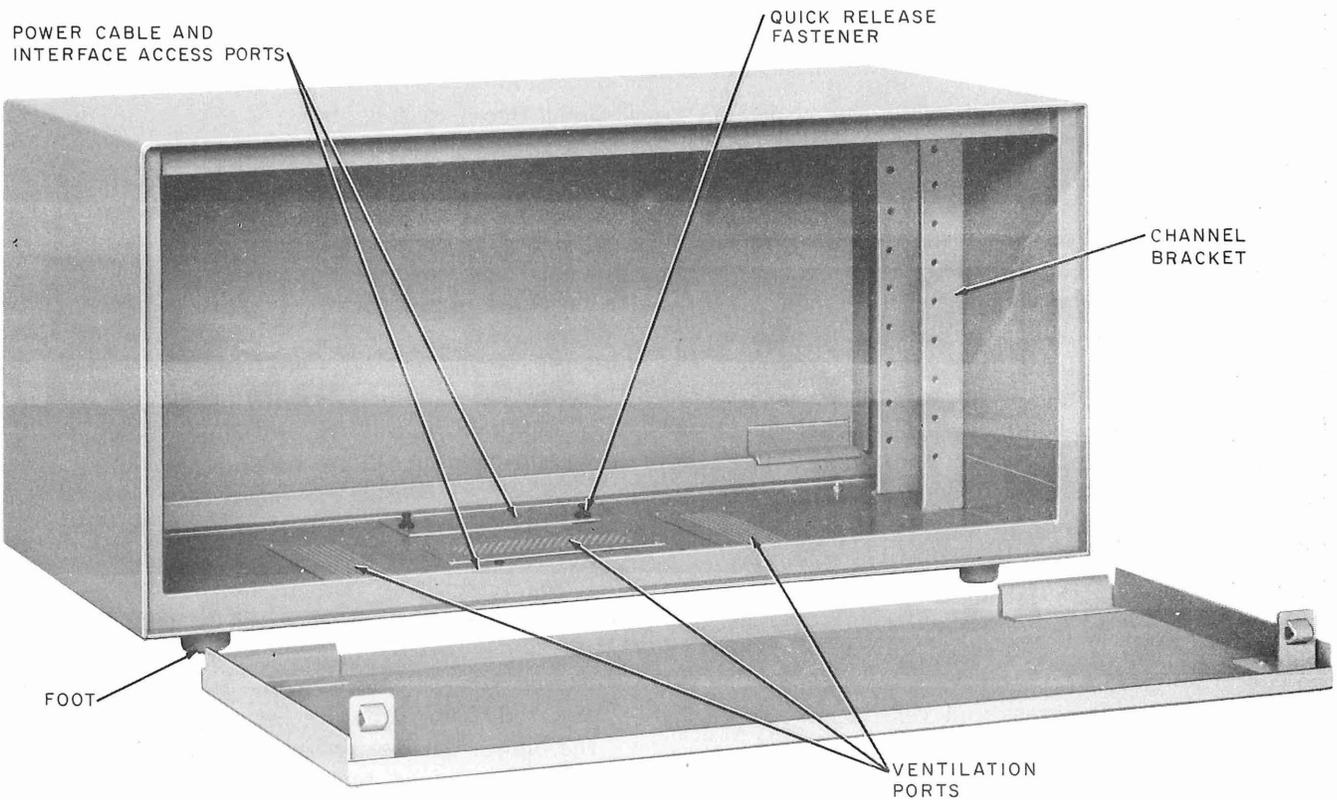


Fig. 21—KS-20018-L2 Cabinet—Internal View

TABLE G

DOOR OPTION SUFFIX

KS-20018 -L11, -L12, -L15, OR -L17 CABINET	FRONT DOOR	REAR DOOR
A	Transparent	Perforated
B	Perforated	Perforated
C	Transparent	Transparent
D (-L15 and -L17 only)	Transparent	Top Half— Perforated Bottom Half— Solid

TABLE H

CABINET DOORS

KS-20018 DOOR	KS-20018 CABINET
-L13A	Transparent Door for -L2 or -L12
-L13B	Transparent Door for -L4, -L7, or -L11
-L14A	Perforated Door for -L2 or -L12
-L14B	Perforated Door for -L4, -L7, or -L11

and rear doors provided with the KS-20018-L15 and -L17 cabinets are equipped with magnetic latches. Each door has a magnetic strip assembly

attached to its nonhinge side vertical member. This magnetic strip locks onto the steel cabinet when the door panel is closed and holds it in the closed position. Should the door be rehinged to provide the opposite swing, move the magnetic strip assembly to the nonhinge side of the door.

## SECTION 590-010-201

On early production models that contain two magnetic strip assemblies, this latter adjustment is not necessary.

**5.20** Internally, the cabinets provide the space for mounting apparatus and telephone equipment as shown in Fig. 19 and 20. Two channel mounting uprights within each -11 or -12-type cabinet provide vertical mounting surfaces containing tapped 12-24 holes spaced on 1-inch centers. The channel mounting uprights are spaced to accept a 23-inch equipment panel or 19-inch panel with appropriate KS-20018-L103 A through J adapters. A forward mounting space of approximately 6.25 inches is available when equipment is mounted on the front surfaces of the channel mounting uprights and 9.15 inches when the equipment is mounted on the rear surfaces of the uprights. The channel mounting uprights of the -L15 and -L17 cabinets are movable on 1-inch centers between the front and rear of the cabinet.

**5.21** The -L11 and -L12 cabinets have an open bottom for cable egress and ventilation. A filler plate is available to cover the front half, center half, or back half of the bottom of the cabinets. Two filler plates can be used to completely cover the bottom of the cabinets, if desired. An extra plate must be ordered to accomplish this. Cable access for the -L15 and -L17 cabinets is provided directly through the open cabinet bottom, when a false floor is available. When free standing on a standard floor, cable access is made through knockouts provided on the front and rear base panels (Fig. 22). When a knockout is used, smooth all burrs and line the edges with the cable protecting strip grommet material supplied with the cabinet.

**5.22** The 1A1 or B3E23-10-1 power panel may be installed in cabinets which accept 23-inch panels. A 15-ampere breaker protected ac power strip equipped with 14 outlets (KS-22291-L1), or a 15-outlet ac power strip (X715-001) is supplied with each -L15 and -L17 cabinet (Fig. 22). This power strip can be mounted vertically in any one of the four -L15 or -L17 cabinet corners to accommodate the installed equipment. In areas where local codes require fewer service outlets than are provided, a plastic blank plug, or equivalent, may be inserted into any unused outlet. A TWIST-LOCK\* connector is used to mate with a 10-foot KS-14532-L25 power cord to provide ac input to the power strip. One of two power cords is supplied with the -L15 and -L17 cabinets. A KS-14532-L25 power cord (to be

used only with X715-001 power strip) or a KS-14532-L38 power cord (used with either X715-001 or KS-22291-L1 power strip) may be used.

\*Trademark of Harvey Hubbell, Inc.

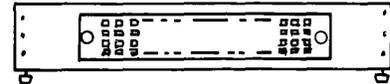
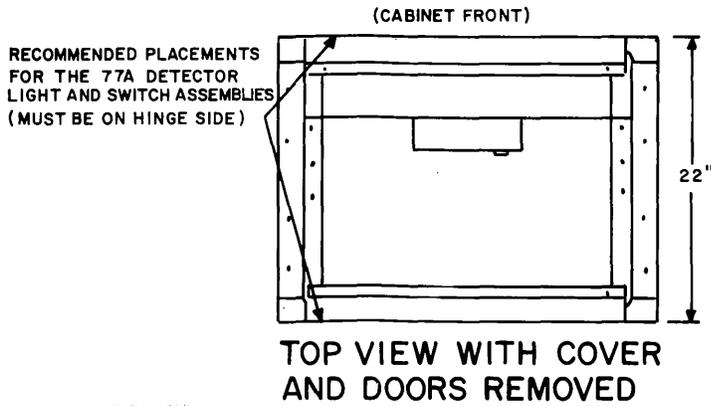
**5.23** Ventilation in -L11 and -L12 cabinets is provided by the open bottom, the perforated door panel, and in the -L11 cabinet by the louvered skirt. Ventilation for the -L15 and -L17 cabinets can be provided in a number of ways.

- Through the open bottom of the 5-inch high base using customer-supplied forced air floor circulation. The base of the cabinet is attached by four bolts and is removable.
- Through the knockout positions provided on the front and rear base panels. A grille assembly with or without a filter element can be attached over the knockout, if desired.
- Forced air ventilation using an internal ac powered ventilation blower. Operation of the blower can be controlled by sensing the cabinet ambient temperature with a 77A detector.

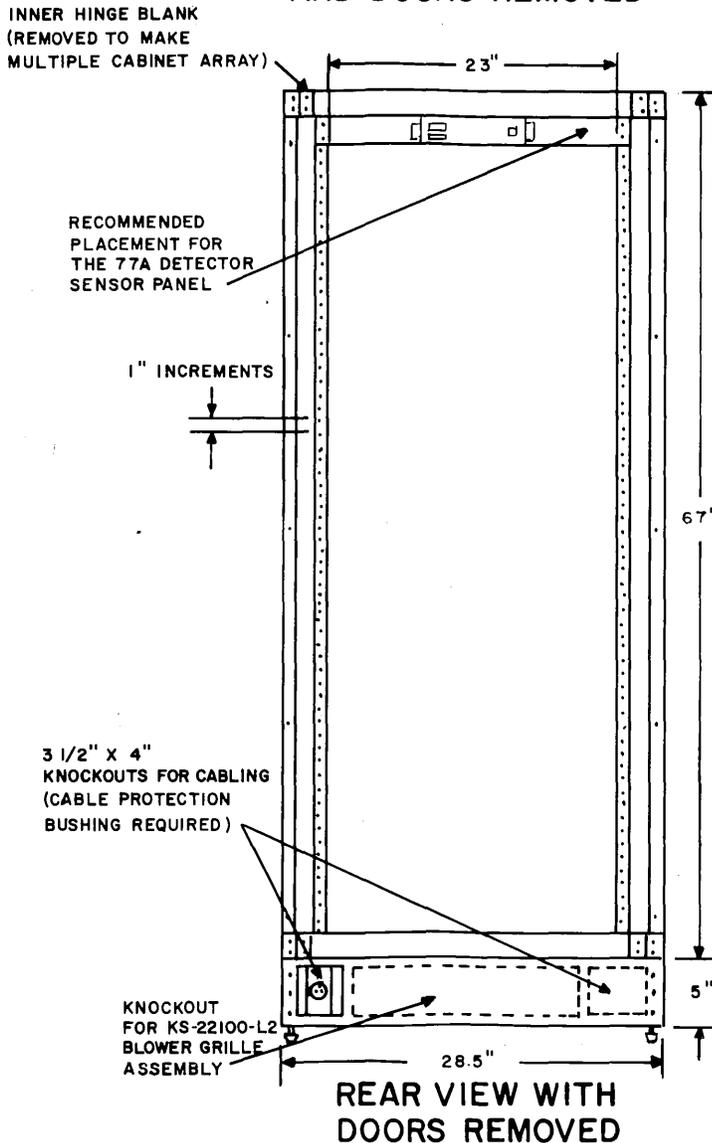
### **KS-20018-L9 Shelves**

**5.24** The KS-20018-L9A, -L9B, -L9C, and -L9D shelves may be ordered to support shelf-mounted equipment in the cabinets. The -L9D shelf (Fig. 23) provides grille-type shelf space for added ventilation, whereas the -L9A, -L9B, and -L9C shelves are solid. The depth, mounting dimensions, and color of the shelves are shown in Table I.

**5.25** When planning for a multiple data set installation which includes shelf-mounted equipment, it is recommended that the KS-20018-L7 or -L8 cabinet be used with the KS-20018-L9C shelf for larger data sets, the -L9A or -L9B shelf for smaller sets, and the -L9D shelf for new family data sets. The 12-inch deep cabinets using the KS-20018-L9A, -L9B, or -L9D shelf will accept the smaller data sets 202-type other than 202S and 202T. However, this arrangement is not desirable due to the cost involved and the following modifications



BASE PANEL FRONT VIEW SHOWING BLOWER GRILLE



KS-20018-L15 OR-L17 CABINET

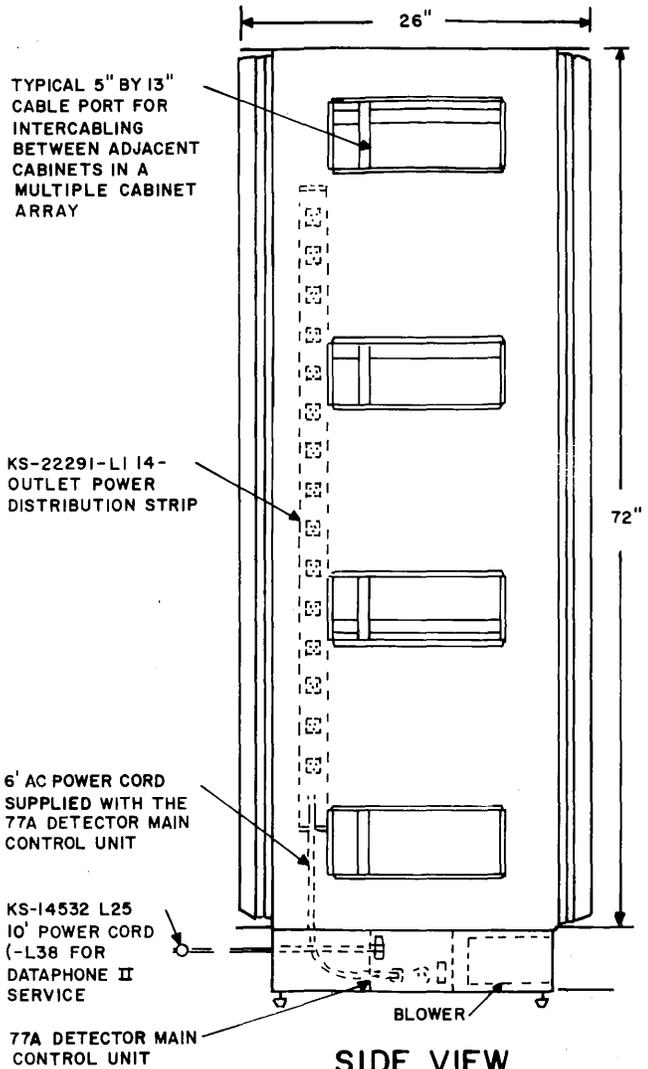


Fig. 22—Detail Drawing of KS-20018-L15 or -L17 Cabinet

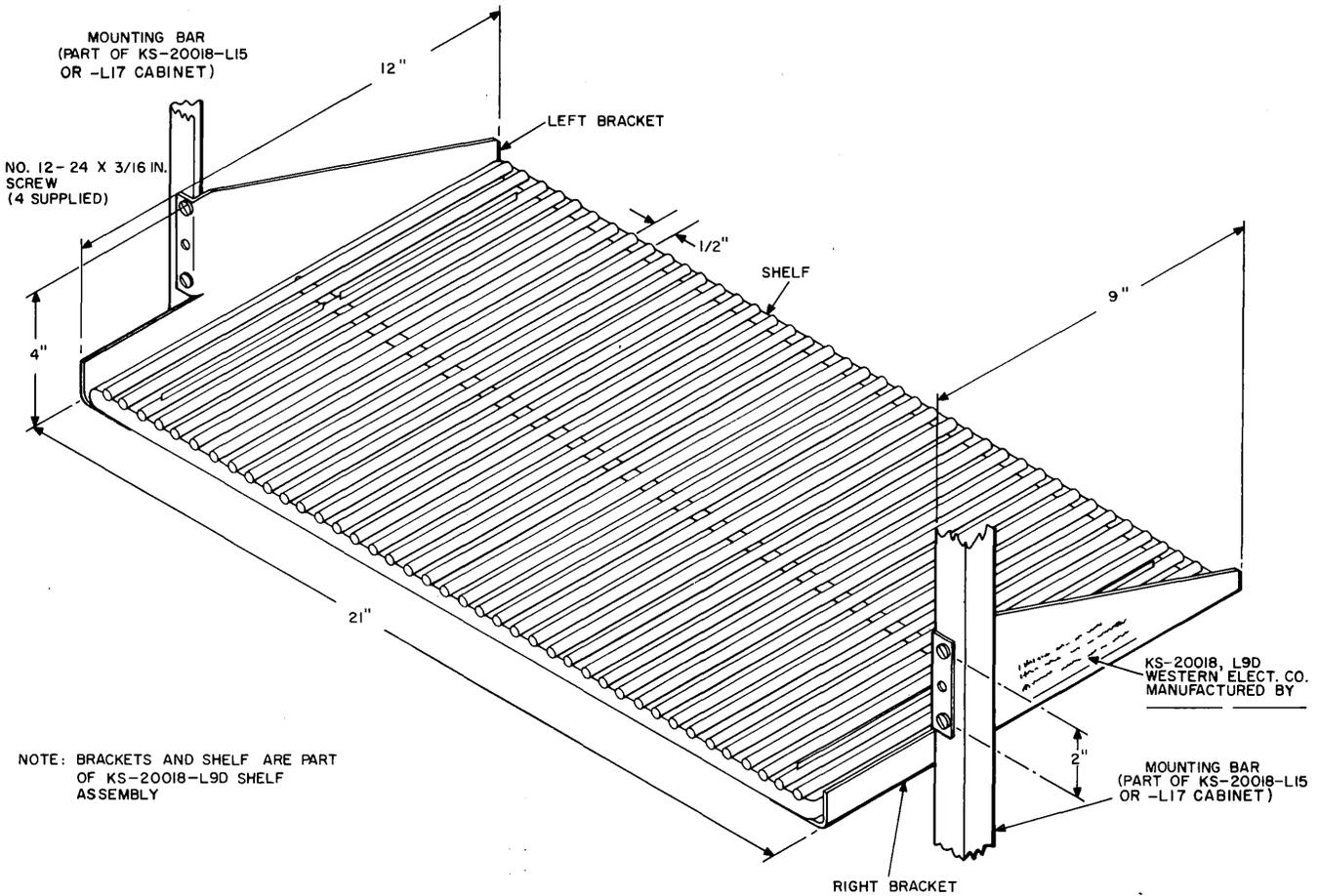


Fig. 23—KS-20018-L9D Shelf Assembly

TABLE 10

MOUNTING DIMENSIONS

KS-20018 SHELVES	DEPTH (IN.)	MOUNTING FRAME (IN.)	COLOR
-L9A	9.5	19	GREEN
-L9B	9.5	23	GREEN
-L9C	14	23	GREEN
-L9D	12	23 or 25	BLACK

which are required of the sets and the interface cord connector:

- (a) Replace the existing ac power cord with a KS-14532-L20 power cord, which is provided with a right angle connector.

- (b) Change the plastic shell of the 25-pin interface cord connector with a KS-19196-L5 right angle hood or Cinch part number 239-13-99-140 (available with the locking feature).

- (c) Replace, if necessary, the P-38C088 test button plunger with the P-47M253 plunger. The new plunger does not protrude as far in front of the set.

The -L9D shelf is designed to permit air flow through for cooling the new family data sets. It is intended for use in KS-20018-L15 or -L17 cabinets, although it can be mounted in any cabinet which provides 23- or 25-inch mounting centers.

**B. Installation**

5.26 Figures 19 and 20 are composite line drawings showing the height, width, and clearance dimensions of all the KS-20018 cabinets. These

drawings are provided to make selection of the most appropriate cabinet for an installation. The versatility provided by a family of similar cabinets with different dimensions requires local engineering to determine cabinet clearance and access requirements for each installation.

**5.27** The KS-20018-L1 through -L8, -L11 and -L12 cabinets are installed using the following general information, which may be modified by local engineering.

**5.28** Position the cabinet in its permanent location. The larger cabinets (24 inches or higher) must be leveled. Adjust the four leveling bolts until cabinet is level.

**5.29** When KS-20018-L3, -L4, -L7, and -L8 cabinets must be secured to the floor, remove the four leveling bolts and insert 1/4-20 by 3-inch bolts through the 3/8-inch diameter holes provided in the base of the cabinet, through the leveling bolt holes, and into the floor. For KS-20018-L11 and -L12 cabinets, use 1/4-20 by 1-1/2 inch bolts. When securing a cabinet to the floor, ensure that proper access is provided.

**5.30** For an installation where it is necessary to stack 24- or 30-inch high cabinets vertically, bolt the cabinets together and to the floor or wall to avoid tipping. To secure two stacked cabinets together, remove the four leveling bolts from the upper cabinet, drill four 3/8-inch (or larger) diameter holes through the top of the lower cabinet in line with the leveling bolt holes on the upper cabinet. Insert the four leveling bolts removed from the upper cabinet through the drilled holes in the bottom cabinet and up into the threaded leveling bolt holes of the top cabinet. If required, holes may be drilled in the top of the lower cabinet to permit inter-cabinet cabling.

**5.31** Figure 24 shows some recommended arrangements for installing Bell System equipment in the KS-20018-L11 and -L12 cabinets. For equipment other than shown in Fig. 24, refer to the appropriate BSP for detailed information such as mounting requirements, dimensions, weight, etc.

**5.32** The KS-20018-L15 and -L17 cabinets are installed using the following procedure.

**5.33** Position the cabinet in its permanent location. Level the cabinet as follows:

(a) Place a level with plumb vial against the front of the doors and adjust the leveling screws until the cabinet stands vertically in a front to rear direction.

(b) Place a level with plumb vial against the side of the cabinet and adjust the leveling screws until the cabinet stands vertically in a side-to-side direction.

(c) Tighten locknuts on the leveling feet.

**5.34** Figure 25 shows a typical KS-20018-L15D cabinet partly assembled. The -L15D was chosen to show the optional rear door panel as half-perforated and half solid. Both the -L15 and -L17 cabinets are shipped with the base attached, but where special installations are required, the base can be removed. The base is secured to the cabinet with four slotted hexhead bolts.

**5.35** The base illustrated in Fig. 25 shows that the large center knockout can be used to increase airflow through the cabinet by use of an optional filter grille panel. After the knockout has been removed, smooth the burrs and mount the filter grille panel with four 12-24 by 1/2-inch long screws. At each end of the center knockout are three holes, the center hole being tapped for 10-32 binding head screws. By threading a 10-32 by 1/2-inch screw through these tapped center holes from inside the base, the outside protruding threads permit securing a grille without a filter element. The grille or filter grille panel is included with the -L17 cabinet but must be ordered with the -L15 cabinet, if desired.

**5.36** The cabinet base supports the weight of the cabinet and equipment on two base side channels of heavy gauge steel. The front and rear base panels are interchangeable and provide two 3-1/2 by 4-inch knockouts for use as cable ports as well as the larger knockout for the blower.

**5.37** Figure 25 also shows a KS-20018-L16 side panel installed. Two -L16 side panels must be ordered with each -L15 cabinet. To install the -L16 panel on an individual cabinet, loosen all the screws on the vertical and horizontal trim members. Remove either the front or rear vertical trim member and slide the panel behind the trim.

KS-20018-L11 - TYPE CABINET

DATA SET TYPE	202S	202T	(829)
DATA MTG TYPE	40A	39 & 40B	(46)
MAX NO. OF DATA SETS PER DATA MTG	8	16	(8)
RECOMMENDED NO. OF DATA SET DATA MTG PER CABINET	3	3	(3)

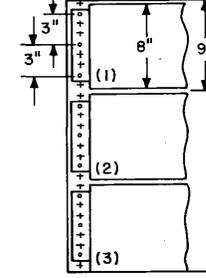
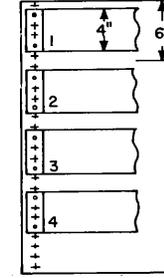
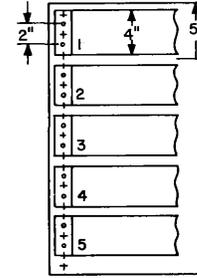
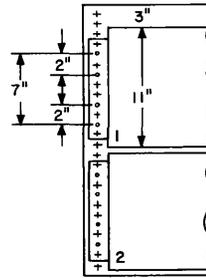
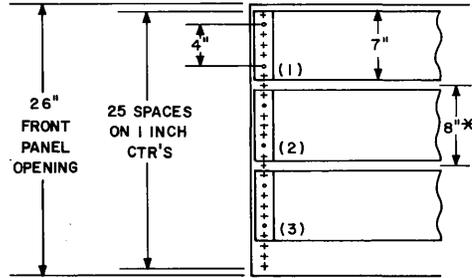
201C
42A1 & 42A2
6
2

208A	208B
D-180556	D-180556
1	1
4	5

209A
D-180556
1
3

407A
41
8
3

TOP INSIDE OF CABINET



\*MAY BE MTG ON 7" CTR'S

KS-20018-L12 - TYPE CABINET

DATA SET TYPE	202S	202T	(829)
RECOMMENDED NO. OF DATA SET DATA MTG PER CABINET	2	2	(2)

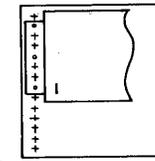
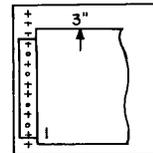
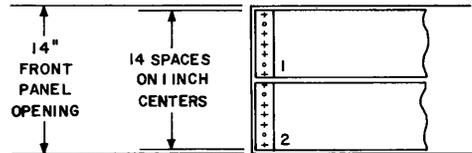
201C
1

208A	208B
0	0

209A
0

407A
1

TOP INSIDE OF CABINET



NOTE:  
ALL DIMENSIONS ARE APPROXIMATE.  
REFER TO APPROPRIATE DATA SET  
BSP FOR FURTHER THERMAL AND  
WEIGHT INFORMATION.

Fig. 24—Recommended Multiple Data Set Arrangements in KS-20018-L11 and -L12 Cabinets

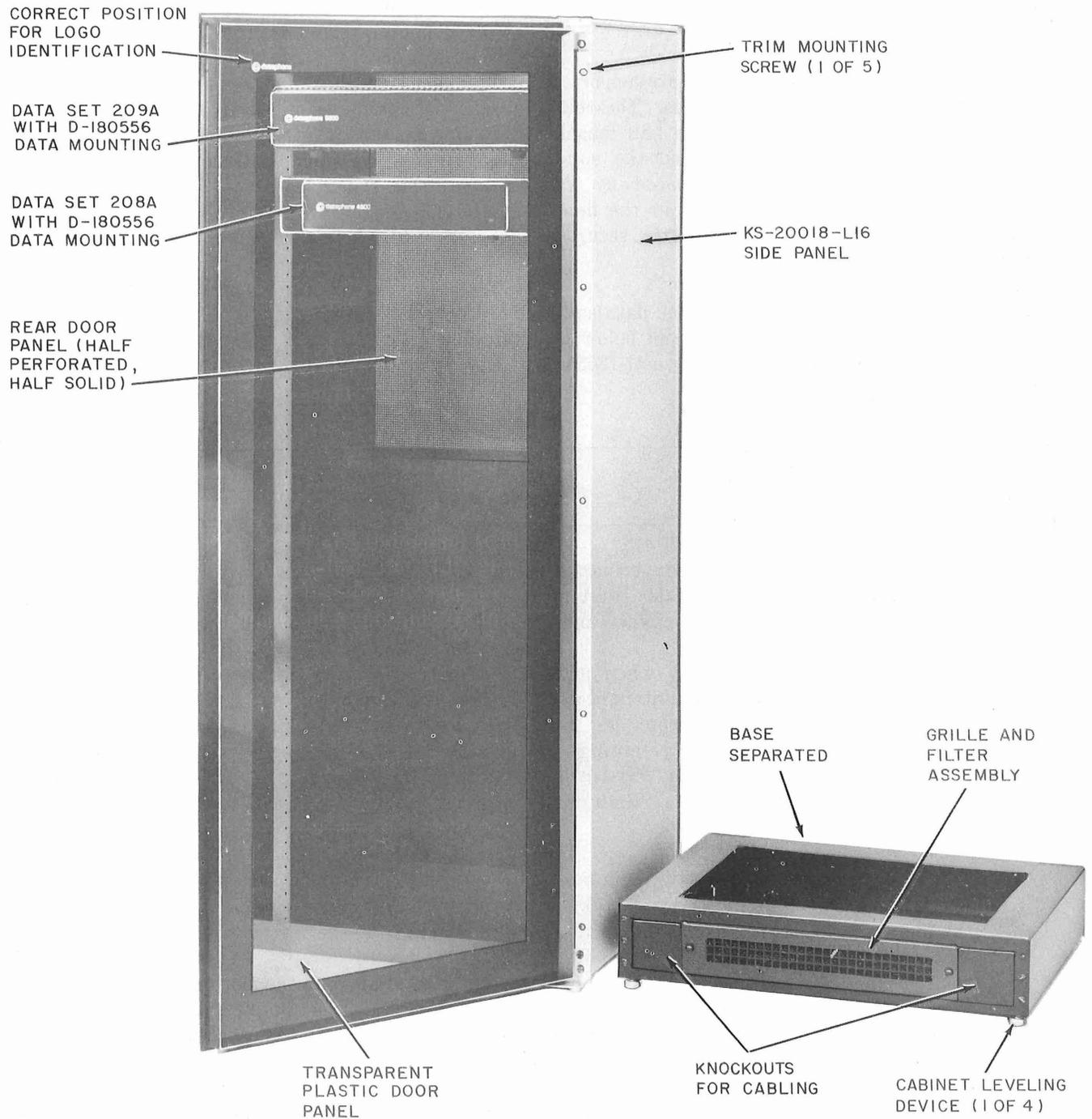


Fig. 25—Typical KS-20018-L15D Cabinet

Reinstall vertical trim member and tighten all trim screws after seating trim against the -L16 side panel. A side panel can be installed to minimize interaction between cabinets in a multiple cabinet array.

**5.38** When it is desired that a cabinet blend with the decor of its surroundings, any other color or design of side panel, similar in size, can be used. The KS-20018-L16 side panel dimensions are 21.9 inches wide, 66.9 inches high, and

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approximately 0.050 inch thick, but panels up to 0.125 inch thick may be used.

**5.39** Full-length removable door panels are supported and secured in the door channels. The rear door panel shown in Fig. 25 uses two half-length panels. The perforated top panel and the solid bottom panel are supported and spaced by an H-shaped cross member which floats in the door panel channel and is held in place by the secured half panels.

**5.40** Figure 25 also shows two installed data sets. At the top is a data set 209A and below is a data set 208A. Each is supported by a D-180556 data mounting.

**5.41** Both the -L15 and -L17 cabinets are manufactured with the door hinge assemblies mounted on the right side as shown in Fig. 26. The rear door has the opposite swing. The door hinge assembly on either front or rear door can be transposed from right to left to create the opposite swing when necessary. Should the need arise, the front and rear doors can also be interchanged.

**5.42** To change the door hinge assembly from one cabinet side to the other, proceed as follows. The procedure presumes the transfer from the right side to the left.

---

STEP	PROCEDURE
1	Locate the two pairs of hinge blanks as shown in Fig. 26. The mounting screws for the hinge blanks are found under the black plastic caps. Carefully slide a thin common blade screwdriver between the cabinet and the plastic cap and gently pry the cap loose.  <b>Note:</b> The caps may fly when pried off. Spare caps and washers should be available during installation and maintenance calls for replacement of lost or damaged original parts. They are a safety item protecting both craft personnel and customer. The smaller black cap (part No. RH-06) and retaining washer (part No. RHW-063) are used on the doors. A larger black cap (part No. RH-10) and retaining washer (part No. RH-104) are used on the cabinet frame members. Both can be ordered from CAPPLUGS Div., Protective Closures Co., Inc., Buffalo, N.Y.
2	After removing the plastic caps, note that one hinge blank is secured using two binder head screws and the second blank is secured with flat head screws. Remove the hinge blanks and hardware. Set aside to reinstall in place of the hinge assemblies.
3	Have the door supported and remove the three screws from the bottom hinge assembly which secures the hinge to the door. Then remove the three similar screws from the top hinge assembly. Remove the door from the hinge assemblies and set aside for reinstallation.
4	Remove the hardware securing the bottom hinge assembly to the cabinet frame. Remove the <b>bottom</b> hinge assembly and install it in place of the <b>top</b> hinge blanks on the opposite side of the cabinet using the same attaching hardware.
5	Similarly remove the top hinge assembly and reinstall at the bottom hinge blank position on the opposite side of the cabinet.
6	Pry off and remove the small plastic inserts from the tapped holes in the door and insert them in the opposite corners.

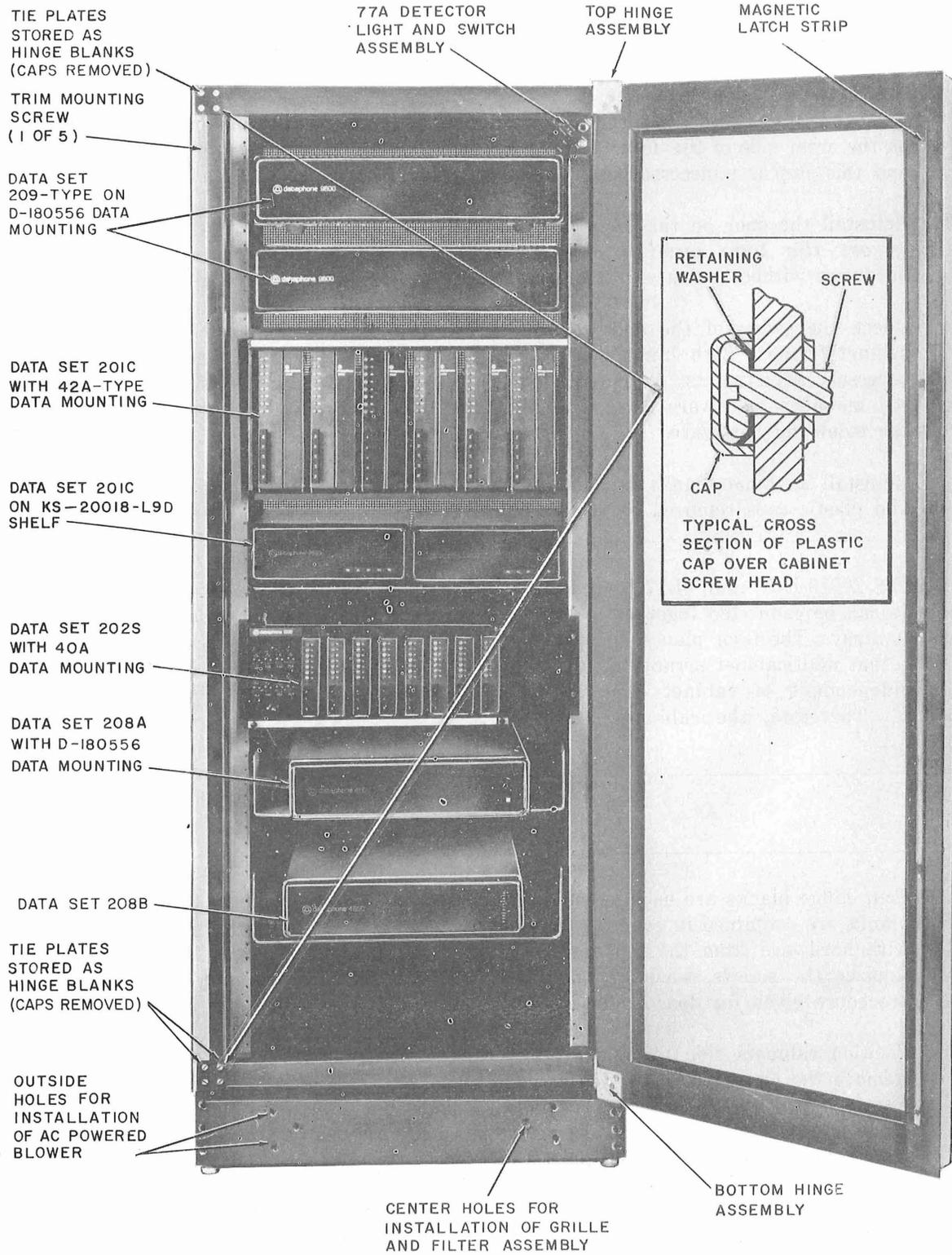


Fig. 26—KS-20018-L15D Cabinet With Various Data Sets Installed

STEP	PROCEDURE
7	Remove the screws holding the magnetic strip assembly to the door and reinstall the strip on the other side of the door. Early production models have two magnetic strip assemblies and this step is unnecessary.
8	Reinstall the door on the hinge assemblies. <b><i>Do not invert the door. This would invert the logo symbol.</i></b> The door is drilled and tapped to accept the attaching hardware without being inverted. Replace the attaching hardware removed in Step 3.
9	Check the swing of the door for clearance, ease of operation, and alignment with the cabinet frame. Both hinge assembly mounting holes are slightly elongated to permit necessary adjustments. When satisfactory alignment and clearance is achieved, check that <b><i>all</i></b> mounting hardware is securely tightened. Take care not to overtighten or disfigure the mounting hardware.
10	Reinstall the hinge blanks to the vacant hinge assembly locations using the screws, washers, and plastic caps removed in Steps 1 and 2. Door hinge reversal is now complete.

**5.43** Both KS-20018-L15 and -L17 individual cabinets can be connected together to form a multicabinet array. The floor plan suggested in Fig. 27 shows that multicabinet arrangements are completely independent of cabinet door swing requirements. Therefore, the cabinets can be

arranged for convenience of the installation requirements and/or the necessities of equipment to be installed. The following procedure describes how to connect individual cabinets into a cabinet array as shown in Fig. 27 and 28.

STEP	PROCEDURE
1	Four hinge blanks are used as tie plates to secure adjacent cabinets together. Two hinge blanks are contained in each corner of the cabinet frame. Remove the inner hinge blanks with hardware from the top and bottom corners of cabinet frame, both front and rear. Replace the screws, washers, and black plastic caps. (If necessary, see Step 1 of the procedure given for door hinge assembly reversal.)
2	Position cabinets side by side in the desired location. Level the cabinets as required. Remove the appropriate screws from the front and back panels on the cabinet base (see Fig. 22 for locations). Secure a hinge tie plate blank between the cabinets under both front and rear doors as shown in Fig. 29, using the hardware removed from the base panels with washer and black plastic cap.
3	On top of each cabinet, remove the appropriate corner retaining screws that secure the horizontal trim member. Place the hinge blanks on top of the vent cover to span between cabinets as shown in Fig. 29. Secure the hinge blanks and vent cover by replacing the original hardware.
4	Check the operation of all cabinet doors for clearance, ease of operation, and alignment with the cabinet frames. Adjust the hardware securing the door assemblies as necessary to obtain normal operation.

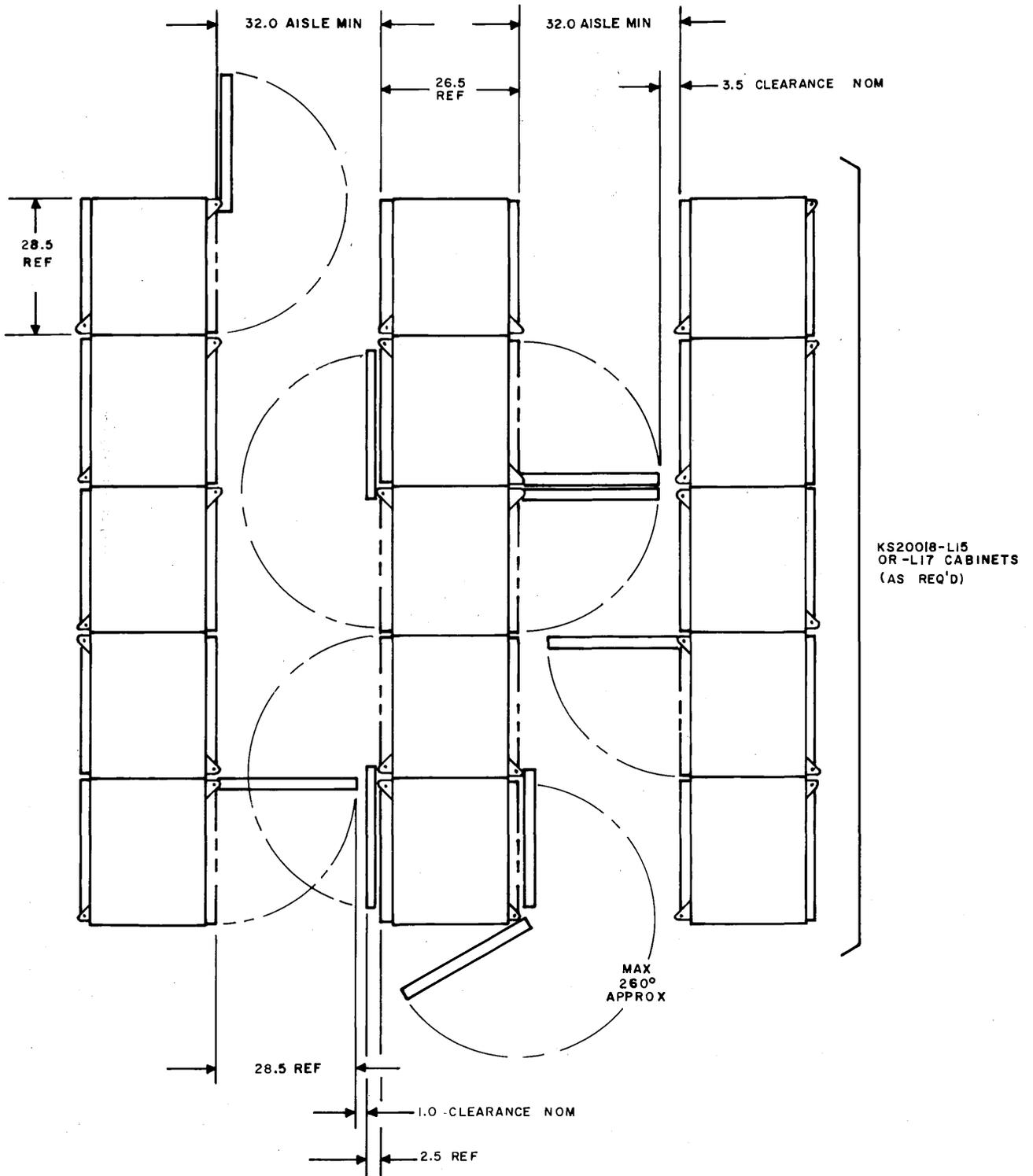


Fig. 27—Typical Floor Plan for KS-20018-L15 or -L17 Multiple Cabinet Array



Fig. 28—KS-20018-L15 or -L17 Multiple Cabinet Array

STEP

PROCEDURE

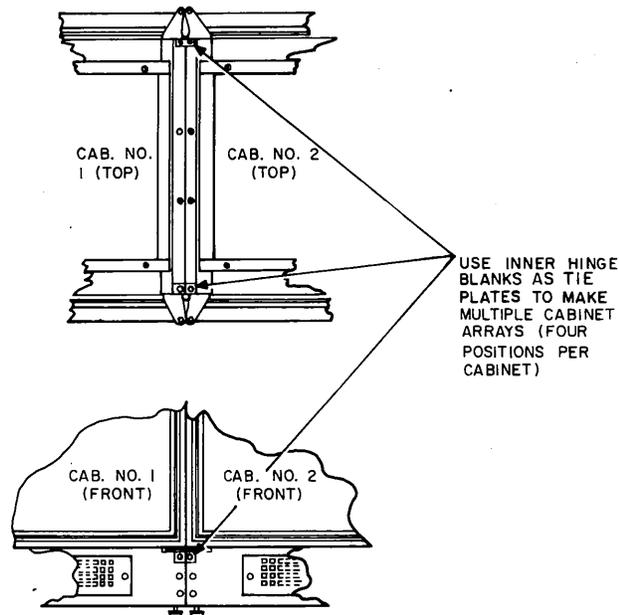


Fig. 29—Hinge Blank Location on KS-20018-L15 or -L17 Cabinet

- 5 Repeat Steps 1 through 4 until the cabinet array is complete.

5.44 Figure 26 shows a typical KS-20018-L15D cabinet with various data sets installed. Figure 30 shows some recommended arrangements for installing groups of similar data equipment in the -L15 and -L17 cabinets. Note that the anticipated heat (wattage or BTU/hr) to be generated by the equipment has also been approximated. This heat factor is further discussed in Part 6.

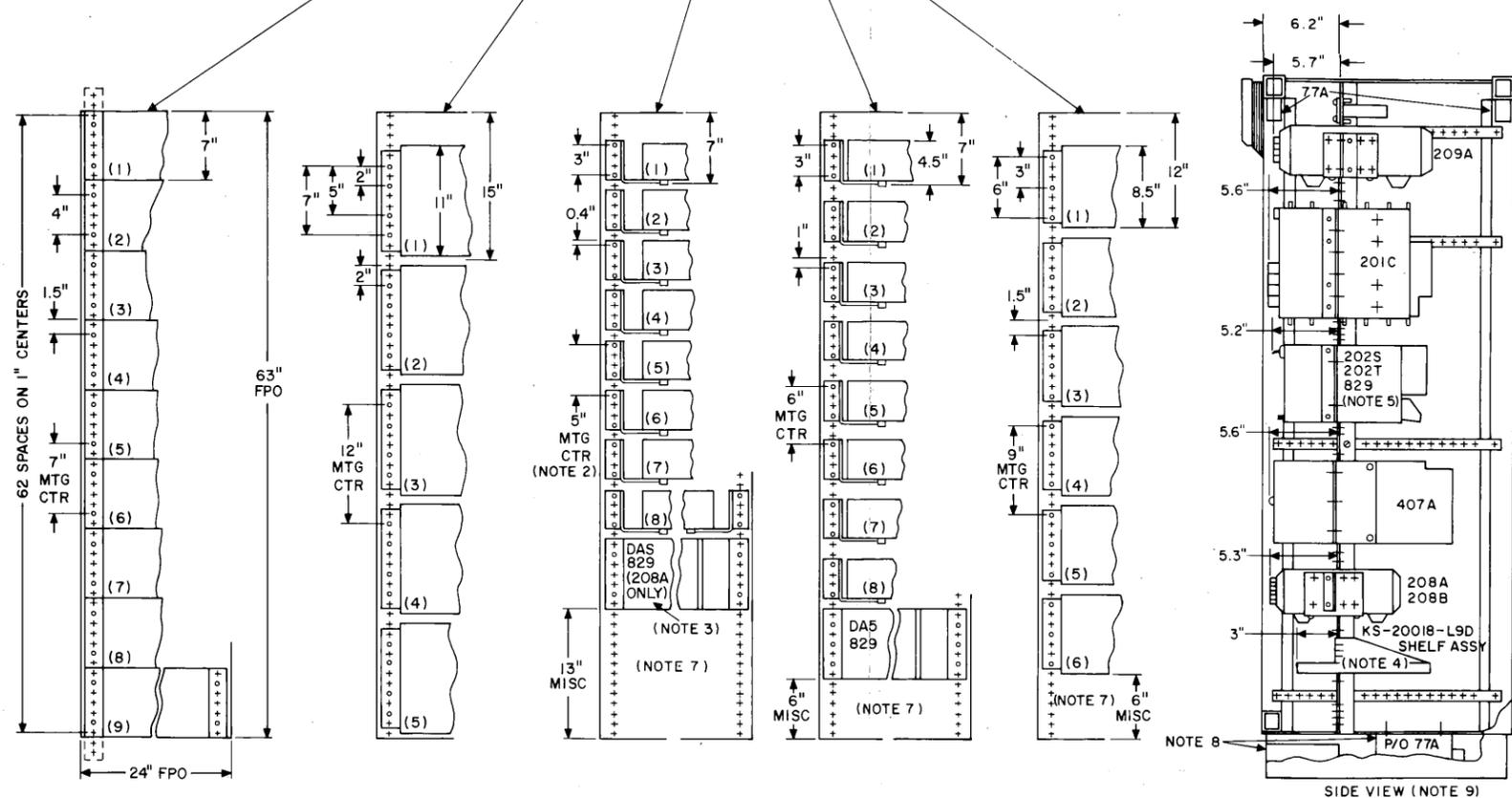
blower control when cabinet temperature exceeds recommended levels. Operation of the 77A detector is described in Part 6. The following procedures provide the installation instructions for the 77A detector for field modifications due to hinge assembly reversal or cabinet upgrading. (See Fig. 31 and 32).

5.45 A 77A detector consists of four interconnected units which provide alarm functions and

---

STEP	PROCEDURE
<b>Light and Switch Assembly</b>	
1	If this installation is for upgrading an -L15 cabinet to an -L17, the 77A detector mounting hardware is packaged as a ship-loose item; otherwise use existing hardware.
2	Loosen the four 4-40 cover screws on the front light and switch assembly (containing the test button and heat alarm light), and remove the cover. In early production models, where the cover holes are not slotted, the four 4-40 cover screws must be removed.
3	If the light and switch assembly is already mounted and must be moved, take it out by removing the No. 6 mounting screws which hold it to the cabinet frame.
4	Align the mounting holes of the light and switch assembly with the holes in the cabinet front door upper hinge corner as shown in Fig. 32.
5	Secure the assembly to the cabinet frame with two No. 6 mounting screws in the outer mounting holes. If an outer mounting hole is stripped, an inner hole may be used instead. Adjust the switch button to its rearmost position by turning the plastic nut in a counterclockwise direction, <b>by hand</b> , until no threads are showing on the switch bushing. If this unit is an early production model with elongated mounting holes, position it as far into the cabinet as possible. <b>Do not</b> tighten the mounting screws at this time.
6	Repeat Steps 1 through 5 to mount the rear alarm switch assembly to the rear upper hinge corner of the cabinet frame.
<b>Sensor Panel Installation</b>	
7	Position the sensor panel assembly through the cabinet front door and against the vertical mounting bars near or at the top of the cabinet with the connectors facing to the rear. Secure the assembly to the vertical mounting bars using four 12-24 screws supplied.
8	Connect the loose cord from the light and switch assembly, which is terminated by connector P4, to connector J4 on the sensor panel assembly. Secure the cord in the clips provided on the sensor panel assembly.
<b>Main Control Unit Installation</b>	
9	Place the main control unit in the mounting area provided in the cabinet base, generally on the same side as the ac power strip, and lift it up under the horizontal frame member of the cabinet base. Position the unit so that the switch and ac receptacles are accessible through the rear door. Align the mounting holes of the main control unit with the holes in the horizontal base frame member and secure in place using two 12-24 inch screws supplied. To prevent damage to internal components, do not use mounting screws that will extend more than 1/4-inch into the unit.
10	Position the loose cord from the main control unit, which is terminated by connector J1, into the cable guides inside the cabinet and connect it to connector P1 on the sensor panel assembly. Secure the cord in the clip provided on the sensor panel.

DATA SET TYPE	202S	202T	829	201C		208A	208B	209A	407A	
DATA MTG TYPE	40A	39A/40B	46C	42A	42A	D-180556	D-180556	D-180556	41	
MAX NO DATA SETS / DATA MTG	8	16	8	6	6	1	1	1	8	
NO. DATA MTGS / CAB	RECM	9	3*	†	4*	5	8*	8	8*	6
	MAX	9	9	9	5	5	12	12	10	6
FULLY LOADED DATA MTG APPROX	WATTS	50W	80W	11W	132W	96W	26W	26W	100W	100W
	BTU/HR (NOTE 6)	170.7	273.12	37.55	450.65	327.74	88.76	88.76	341.4	341.4
	LBS	36 LBS	33 LBS	33 LBS	67 LBS	62 LBS	20 LBS	20 LBS	45 LBS	60 LBS



- NOTES:
- SEE APPROPRIATE DATA SET BSP FOR FORCED AIR AND AMBIENT TEMPERATURE DERATING REQUIREMENTS, WEIGHT AND WATTAGE INFORMATION.
  - SPACING REQUIREMENTS FOR AMBIENT TEMPERATURES ARE COVERED ELSEWHERE IN THIS SECTION.
  - DATA AUX SET 829 IN MIXED INSTALLATION OF THE NEW FAMILY OF DATA SETS ARE THE LEAST HEAT SENSITIVE AND CAN HAVE LAST ORDER OF PLACEMENT.
  - SHELF SHOWN FOR MECHANICAL REASONS ONLY. MAY BE PLACED AS REQUIRED.
  - DATA AUX SET 829 SHOWN FOR MECHANICAL REASONS ONLY.
  - ONE WATT = APPROX 3.41 BTU/HR.
  - THIS IS SPARE SPACE.
  - BLOWER & 77A HEAT DETECTOR SHOWN ARE PART OF KS-20018-L17 TYPE CABINET.
  - FOR MULTIPLE ARRANGEMENTS INCLUDING MORE THAN ONE DATA SET TYPE USE THE RELATIVE DATA SET MOUNTING ORDER SHOWN, THE HIGHEST DATA SET BEING THE LEAST TEMPERATURE SENSITIVE. VERTICAL MOUNTING CENTERS SHOWN ARE FOR CLARITY ONLY.
  - ALL DIMENSIONS ARE APPROXIMATE. REFER TO APPROPRIATE DATA SET BSP FOR FURTHER THERMAL AND WEIGHT INFORMATION.
  - FOR "DATAPHONE" II MULTIPLE ARRANGEMENTS, SEE FIGURES 36 AND 37.
  - \* WITH 46-TYPE DATA MTGS FOR 829 DAS.
  - † AS REQUIRED FOR DATA SETS.

Fig. 30—Recommended Multiple Data Set Arrangements in KS-20018-L15 or -L17 Cabinets

STEP

PROCEDURE

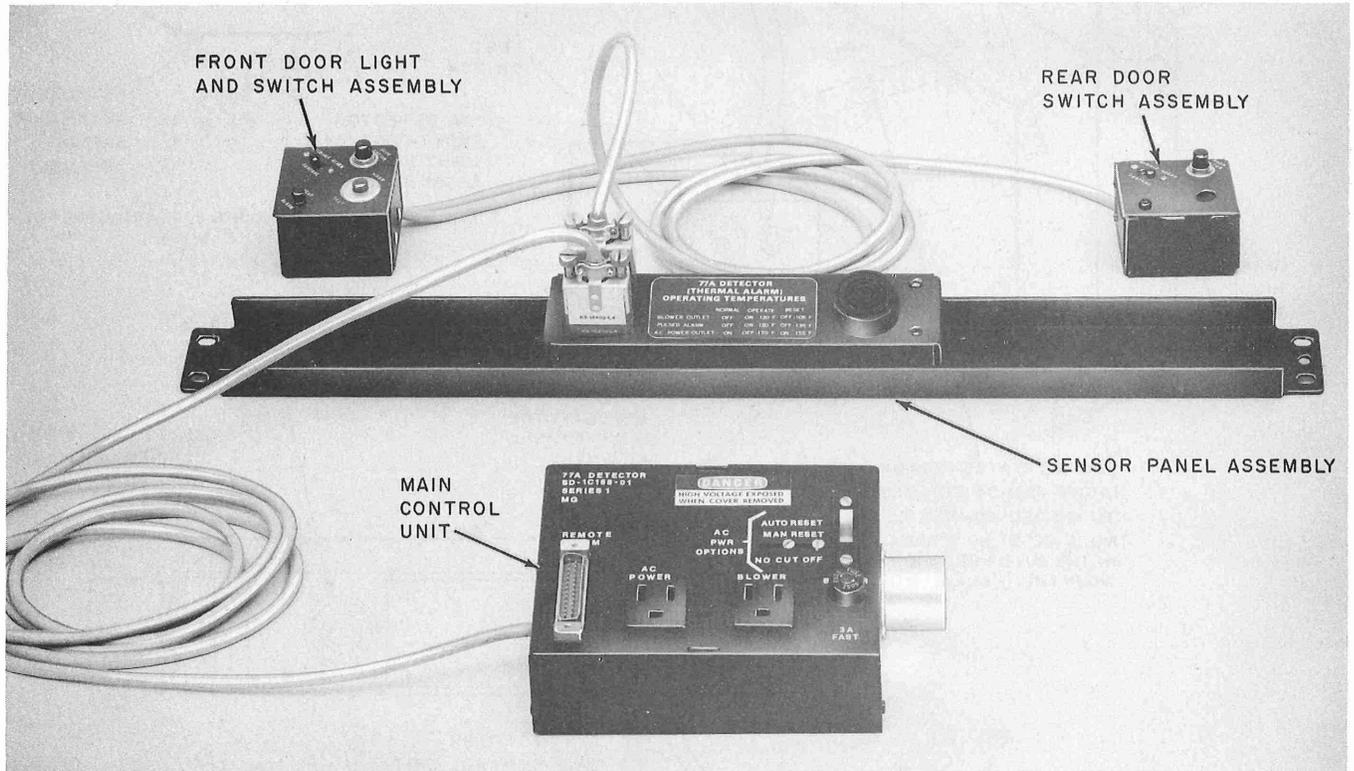


Fig. 31—77A Detector Assembly

- 11 Remove the 10-foot KS-14532-L25 or -L38 ac power cord (whichever is provided) from the ac power strip connector. Connect the female TWIST-LOCK end of the cord to the ac connector on the main control unit. Connect the 6-foot KS-14532-L24 ac power cord, supplied with the 77A detector, between the ac power strip connector and the AC POWER receptacles on the main control unit. Set the option switch on the main control unit to the AUTO.RESET position.

**Note:** All ac power cords listed in Step 11 are provided with a female connector having a split ground pin. This type connector (Hubbell No. 7593) is a factor to consider if substitution is necessary.

- 12 Verify that the cords from the light and switch assembly and the main control unit are securely attached to the connectors on the sensor panel.

#### Door Switch Assembly Adjustment

- 13 Connect a data set extension cord (M25A or similar, equipped with a KS-19087-L2 connector) to the REMOTE ALARM connector on the main control unit. Route the cord through the

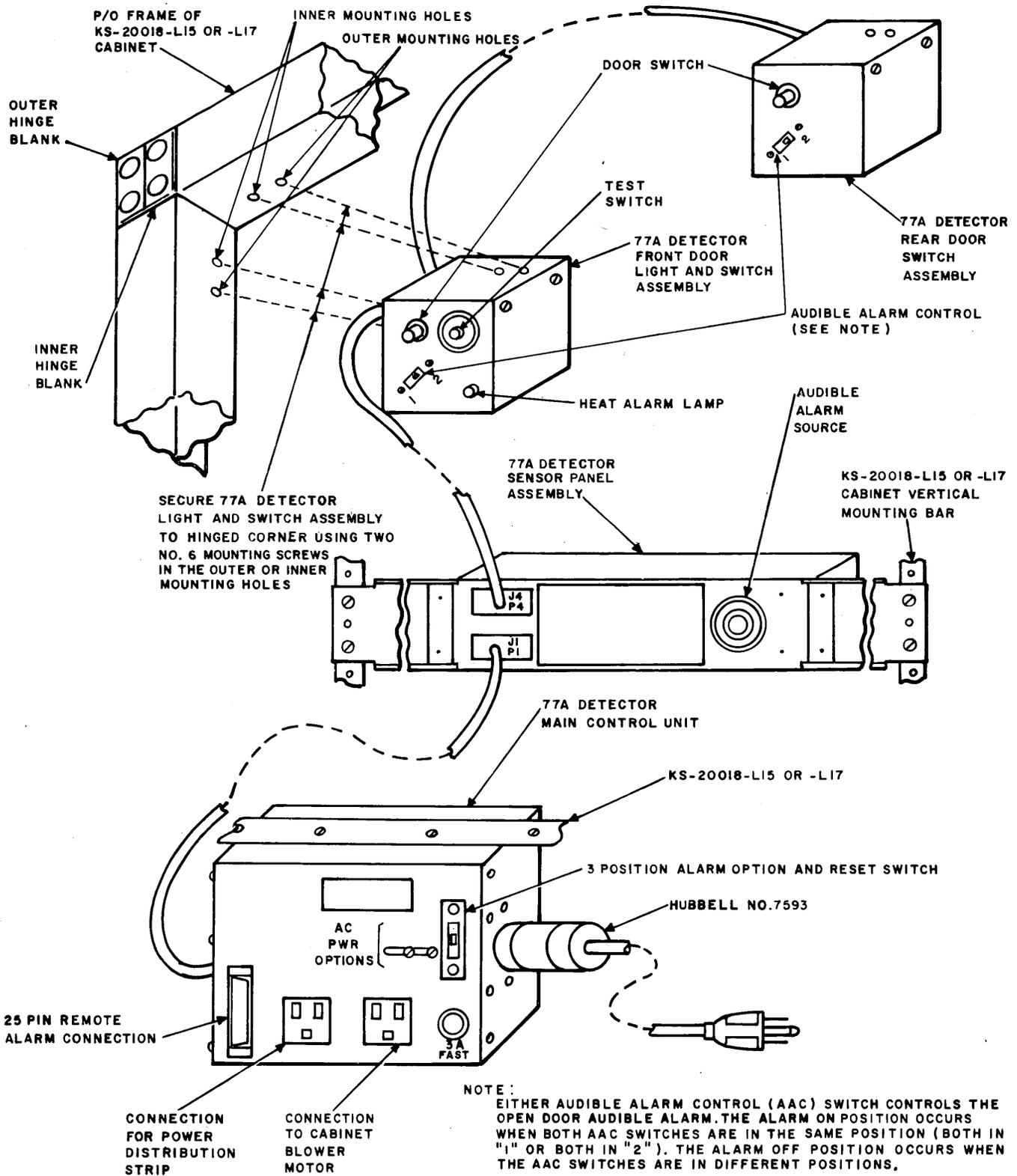


Fig. 32—Detail of 77A Detector Assembly

## STEP

## PROCEDURE

base of the cabinet to a convenient location for making continuity measurements. Make the following measurements using a KS-14510-L1 volt-ohm-milliammeter (VOM), or equivalent, on the RX1 scale.

- 14 Connect the VOM to pins 1 and 5 on the connector of the remote alarm cord.

**Requirement:** With the front door open, the VOM indicates continuity (less than 4 ohms). With the front door switch depressed, the VOM indicates loss of continuity.

- 15 Adjust the front door lamp and switch assembly by turning the black plastic hexagonal door switch retaining nut. Turn the nut clockwise, by hand, until the switch is operated (indicated by loss of continuity between terminals 1 and 5) when the cabinet door is about 1 inch from closure.

- 16 Adjust early production lamp and switch assemblies by moving the unit forward until the switch is operated (indicated by loss of continuity between terminals 1 and 5) when the cabinet door is about 1 inch from closure. Tighten the mounting screws and recheck operation.

**Note:** If the door switch is operated when the door is more than 1 inch from closure, to prevent damage to the switch, **do not** fully close the door.

- 17 Adjust the rear door switch assembly by repeating Steps 14 and 15 or 16 and observing continuity between terminals 1 and 15.

- 18 Replace the covers on both door switch assemblies.

**Final Tests**

- 19 Set the front door audible alarm control switch to position 1 and close the front door. Set the rear door audible alarm control switch to position 2. Disconnect the lamp and switch assembly cord from the sensor panel. Connect the VOM to terminals P and V on the lamp and switch cord male connector. Depress and hold the rear door switch.

**Requirement:** The VOM indicates continuity.

- 20 Release the rear door switch.

**Requirement:** The VOM indicates loss of continuity.

- 21 Open the front door.

**Requirement:** The VOM indicates loss of continuity.

- 22 Depress and hold the rear door switch.

**Requirement:** The VOM indicates loss of continuity.

---

STEP	PROCEDURE
23	Release the rear door switch and connect the VOM to terminals H and L on the lamp and switch connector.  <b>Requirement:</b> The VOM indicates continuity.
24	Depress the alarm test switch.  <b>Requirement:</b> The VOM indicates loss of continuity.
25	Connect the lamp and switch assembly cord to the sensor panel.  <b>Note:</b> The following tests are made with the doors and the door switch assembly controls set as indicated. If a control is not mentioned, its position does not matter. If desired, the audible alarm on the sensor panel may be muffled with a piece of tape while making the following tests.
26	Set the audible alarm control switch on both the front and rear door switch assemblies to position 1 and open both doors. Connect the main control unit ac power cord to a source of 117 Vac power <b>not</b> controlled by a switch.  <b>Requirement:</b> A steady audible alarm sounds.
27	Set the front door audible alarm control switch to position 2.  <b>Requirement:</b> The audible alarm is silenced.
28	Set the rear door audible alarm control switch to position 2.  <b>Requirement:</b> A steady audible alarm sounds.
29	Set the front door audible alarm control switch to position 1.  <b>Requirement:</b> The audible alarm is silenced.
30	Depress the alarm test switch on the front door light and switch assembly.  <b>Requirement:</b> Pulsing audible and visual alarms activate and BLOWER ac outlet is energized.
31	Close the rear door and depress and hold the front door switch and the alarm test switch on the front door light and switch assembly.  <b>Requirement:</b> Pulsing audible and visual alarms activate and BLOWER ac outlet is energized.
32	Release the front door switch.  <b>Requirement:</b> Pulsing audible and visual alarms activate and BLOWER ac outlet is energized.

## STEP

## PROCEDURE

33 Open the rear door and depress the front door switch and the alarm test switch on the front door light and switch assembly.

**Requirement:** Pulsing audible and visual alarms activate and BLOWER ac outlet is energized.

34 Connect the VOM to terminals 1 and 9 on the remote alarm extension cord.

**Requirement:** The VOM indicates no continuity.

35 Remove the ac power cord from the main control unit.

**Requirement:** The VOM indicates continuity.

36 Reconnect the ac power input cord.

**Requirement:** The VOM indicates no continuity.

37 Connect the VOM to terminals 1 and 13 on the remote alarm extension cord.

**Requirement:** The VOM indicates no continuity.

38 Depress and hold the alarm test switch on the front door light and switch assembly.

**Requirement:** The VOM indicates a pulsing continuity.

39 Release the alarm test switch.

**Requirement:** The VOM indicates no continuity.

40 Set the option switch on the main control unit to the AUTO.RESET position and disconnect the main control unit cord at the sensor panel.

**Requirement:** The VOM indicates continuity.

41 Reconnect the main control unit cord to the sensor panel.

**Requirement:** The VOM indicates no continuity.

42 If any of the requirements are not met, replace the main control unit with a known good unit and repeat Steps 14 through 41. If the requirements are still not met, replace the door switch assemblies and repeat Steps 14 through 41. Finally, if the requirements are not met, replace the sensor panel assembly.

43 If all requirements are met, disconnect the remote alarm extension cord and secure both connectors on the sensor panel. Remove the tape used to muffle the audible alarm.

**Caution:** *The connectors on the sensor panel must never be disconnected when there is operating equipment in the cabinet. This causes immediate*

STEP	PROCEDURE
	<b><i>ac power cutoff unless the ac option switch on the main control unit is in the NO CUTOFF position.</i></b>
	<b><i>Note:</i></b> When the remote alarm is used, the customer must provide the remote alarm monitoring facilities and a cord terminated with a KS-19087-L2 connector, or equivalent, to mate with the remote alarm connector on the main control unit.

5.46 To install the ac powered blower in a KS-20018-L15 cabinet, proceed as follows:

STEP	PROCEDURE
1	Remove the center knockout from the cabinet front (or rear) base panel. It is recommended that the blower be mounted in the front base panel for the best control of heat dissipation. Carefully smooth off all burrs after removing the knockout, and line the edges with the grommet strip supplied.
2	Before mounting, examine the blower exhaust vent. A movable vent is provided to give some direction of airflow. Unless otherwise required, adjust the vent to direct the airstream up and slightly toward the cabinet front. Check that the vent adjustment hardware is securely tightened before mounting the blower in the cabinet base.
3	Remove grille and slide the blower assembly through the knockout hole. Secure the blower assembly to the base panel, which is drilled and tapped to accept four 12-24 screws.
4	Install the grille assembly to the blower using the two captive knurled thumbscrews provided.
5	Connect the blower assembly ac power cord to the cabinet ac power strip. When the ac power strip is energized, the blower will operate. If a 77A detector is installed, connect the blower assembly ac power cord to the BLOWER receptacle on the 77A detector main control unit.
6	Check that the ac input power cord supplying the 77A detector main control unit is connected to an ac source <b><i>not</i></b> controlled by a switch.
7	Test the blower assembly installation by pressing the ALARM TEST switch on the 77A detector light and switch assembly.
	<b><i>Requirement:</i></b> Pulsing audible and visual alarms activate and the blower is energized, delivering a steady air stream into the cabinet.
8	If the test does not operate the blower assembly but provides the pulsing alarms, the probable trouble is the BLOWER FUSE located on the 77A detector main control unit. If

## STEP

## PROCEDURE

both alarms and blower assembly fail to operate, check that the ac power source to the 77A detector main control unit is providing 117 Vac and is not being controlled by a switch.

- 9 If the procedures of Steps 5 through 8 fail to produce satisfactory operation, replace the blower assembly with one known to be good.

**Caution:** *Do not remove either connector mounted on the sensor panel assembly when any enclosed data apparatus is operating. This causes immediate ac power cutoff unless the main control unit is optioned for NO CUTOFF.*

5.47 Refer to the appropriate section for the data sets being installed for more detailed installation information and wattage requirements.

## 6. THERMAL CONSIDERATIONS

6.01 The KS-20018-L15 and -L17 cabinets provide increased capability for dissipating the heat expected from compact data set arrangements. This capability is possible because of the perforated cabinet top vent, a perforated door panel, and the available use of an internal or external forced air system. Thermal considerations are the approximate total wattage (or BTU/hr) expected and whether acceptable equipment operating temperatures can be maintained using free air convection or forced air convection.

### A. Free Air Convection

6.02 For open data mountings containing vertically mounted circuit packs such as those used in multiple data set 201C-type arrangements, the KS-20018-L15 or -L17 cabinet with a transparent front door panel and a perforated rear door panel can dissipate up to approximately 520 watts with a maximum internal ambient temperature rise of 20°F. This consideration can be realized only if the cabinet levelers are extended to provide a minimum of 1 inch clear space between the cabinet base and the floor.

6.03 There is an alternative to this consideration when air space beneath the cabinet base is restricted. Remove the large center knockout from

the base panel and mount a separate grille (no filter or blower assembly) over the knockout hole.

6.04 The maximum permissible internal temperature rise is generally dependent on individual data set component temperature limits. Free air convection flow patterns that control the internal cabinet temperatures are dependent on the geometry of the mounted and enclosed data apparatus. For closed housings, such as those used with data set 208-type, higher cabinet temperatures are expected because of the restricted air flow between these sets. For example, when mounting eight data sets 208-type on 5-inch vertical mounting centers which provides 1 inch of clear vertical space between housings, a worst case internal air cabinet temperature rise of approximately 41°F over the external ambient is reached. If the vertical centers are increased to 6 inches, which provides 2 inches of clearance between housings, a temperature rise of approximately 22°F is expected. Increasing the mounting centers to 7 inches, which provides 3 inches of clearance between housings, a temperature rise of approximately 15°F is expected. Therefore, in considering ambient conditions above a normal room temperature of approximately 75°F, these sets should be mounted on vertical centers of 6 inches or greater, or forced air convection should be provided.

### B. Forced Air Convection

6.05 Forced air ventilation of the KS-20018-L15 or -L17 cabinet can be provided by one or two blowers mounted in the cabinet base. Either of two KS-22100 blowers may be used depending on air flow requirements. The L2 blower measures 3-1/2 inches high, 19 inches wide, and 7 inches deep. The -L2 blower delivers 150 cubic feet of filtered air per minute. The -L2 blower with a clean filter dissipates approximately 80 watts of cabinet heat. This dissipation decreases as the filter gets dirty and reduces to approximately

60 watts when the inlet air supply to the blower is completely blocked. The -L1 blower measures 5 inches high, 19 inches wide, and 10 inches deep, and has a free air delivery of 300 cfm of filtered air. The -L1 blower dissipates approximately 140 watts, reducing to approximately 86 watts when its inlet air supply is completely blocked. Both blowers operate on 117 Vac, 60 Hz. Upon initial installation, motor relubrication is recommended using SAE 20 nondetergent oil. To extend blower life, annual relubrication of the motor is recommended. The -L1 blower motor has oil ports which are accessed by removing the grille and filter.

**6.06** Check filters periodically to assure an adequate cabinet air supply; a suggested interval is every three months. This interval applies to both disposable filters, which are removed and replaced when dirty, and permanent washable filters which must be recoated with the proper adhesive after washing in hot or cold water. The washable type filter is provided with the KS-20018-L17 cabinet. Upon initial installation, the air filter should be coated with the recommended filter coating.

### C. Heat Dissipation

**6.07** Figure 33 shows the relationship between heat dissipation within the cabinet and maximum internal air temperature rise, including both free and forced air convection, for the open type data set 201C with vertically mounted circuit packs in multiple arrays. With one blower, filter, and grille assembly in operation, the cabinet can dissipate up to approximately 1000 watts while holding the cabinet internal air temperature within an approximate 20°F rise. With two blowers operating, greater heat dissipation and lower operating temperatures can be achieved. For DATAPHONE II service requirements, see Part 7 and Tables K and L.

**6.08** Figure 34 shows both free and forced air convection for heat dissipation/temperature rise relationships for individually housed data sets 208-type. The relationships are charted for three different vertical mounting centers which provide three different separations between data set housings. Using eight data sets 208-type, each dissipating approximately 26 watts, and with one blower, filter, and grille assembly in operation, the expected temperature rise is approximately 11°F, 9°F, and

6°F for 5-inch, 6-inch and 7-inch vertical mounting centers, respectively.

**6.09** Figure 35 shows similar heat dissipation/temperature rise relationships for the data set 209-type on both 6-inch and 7-inch vertical mounting centers.

**6.10** Note that the maximum allowable room temperature is also considered for data sets 201C-type (Fig. 33), data sets 208-type (Fig. 34), and data sets 209-type (Fig. 35) in each mounting arrangement. Knowing the maximum room temperature to be encountered, the proper spacing and/or forced air ventilation may be selected. For example, in a maximum expected room ambient of approximately 113°F or less, temperature limits should not be exceeded for the eight data sets 209-type which dissipate approximately 800 watts when mounted on 6-inch vertical mounting centers with no forced ventilation other than that provided within each set.

### D. Temperature Control and Alarm System (77A Detector)

**6.11** The temperature control and alarm system is provided by circuits contained in the 77A detector. The 77A detector is an optional feature for the KS-20018-L15 cabinet and a standard feature for the -L17 cabinet. Circuits of the 77A detector are designed to prevent equipment damage by providing audible and visual alarms, blower control, and optional power cutoff when there is an excessive rise in the internal temperature of a cabinet enclosure. The 77A detector consists basically of four subassemblies as shown in Fig. 31 and 32, and weighs approximately 5 pounds. Descriptions of the subassemblies are as follows:

**Note:** The 77A detector is not recommended as a temperature alarm for arrangements of DATAPHONE II service apparatus.

### Main Control Unit

**6.12** The main control unit measures approximately 2 inches by 4-1/2 inches by 6 inches and is mounted in the base of the cabinet on the same side as the ac power strip. The main control unit uses a 117-Vac 60-Hz input to supply power to all the 77A detector subassemblies, and to two controlled 117-Vac outlets for (1) the cabinet ac power strip and (2) the ac powered blower, when used. There

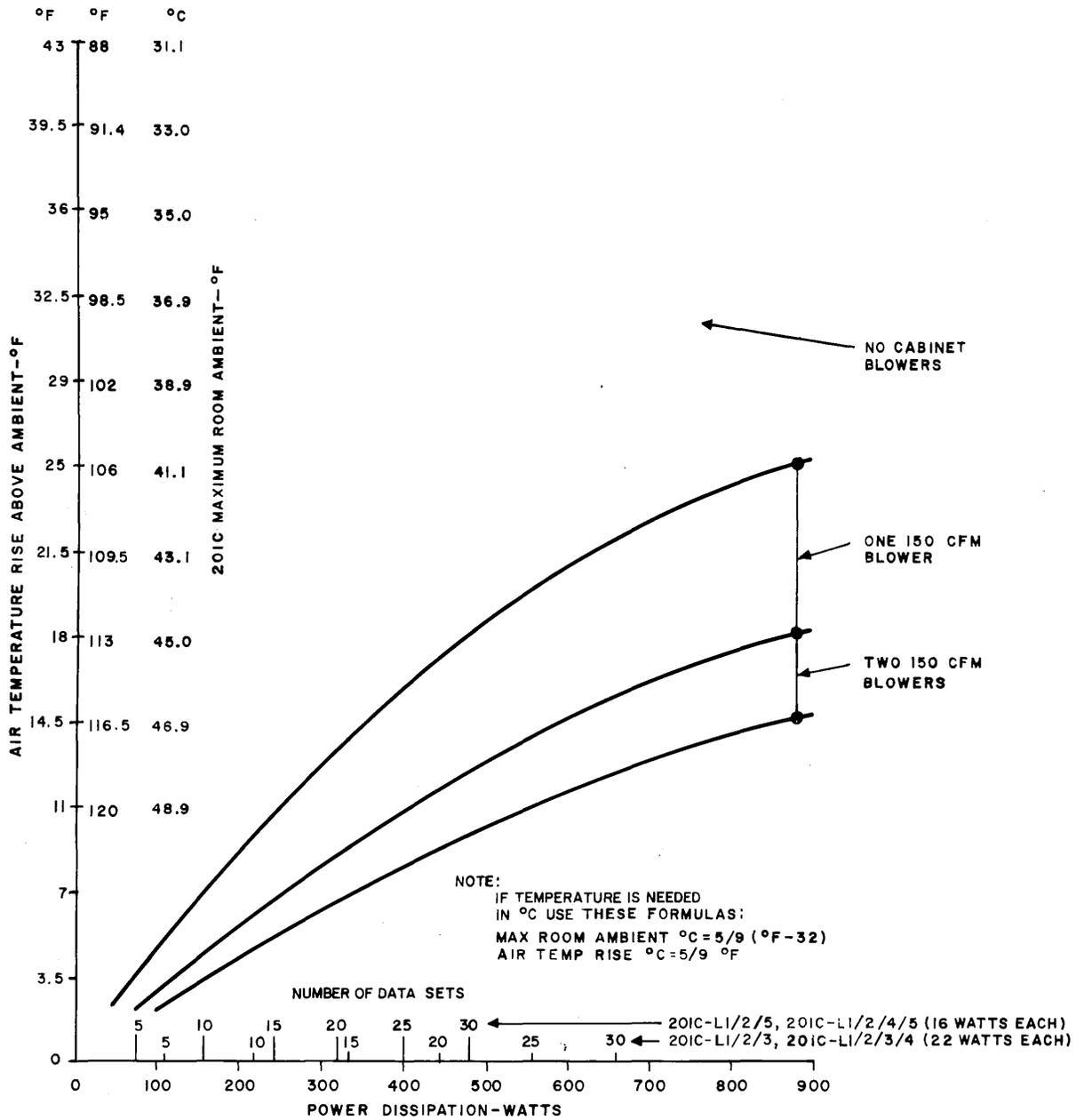


Fig. 33—Internal Air Temperature Rise VS Power Dissipation in KS-20018-L15 or -L17 Cabinet for Data Set 201C-Type

is a 3-position ac power option switch on the main control unit to provide automatic reset (AUTO.RESET), manual reset (MAN.RESET), or no ac cutoff (NO CUTOFF). Also, the main control unit provides a remote alarm connector for customer use which provides contact closures to indicate the various operational states of the 77A detector.

**Sensor Panel Assembly**

6.13 The sensor panel assembly contains three nonadjustable temperature sensing devices, an audible alarm device, and two connectors that terminate cords from the other units. The three temperature sensing devices have been manufactured

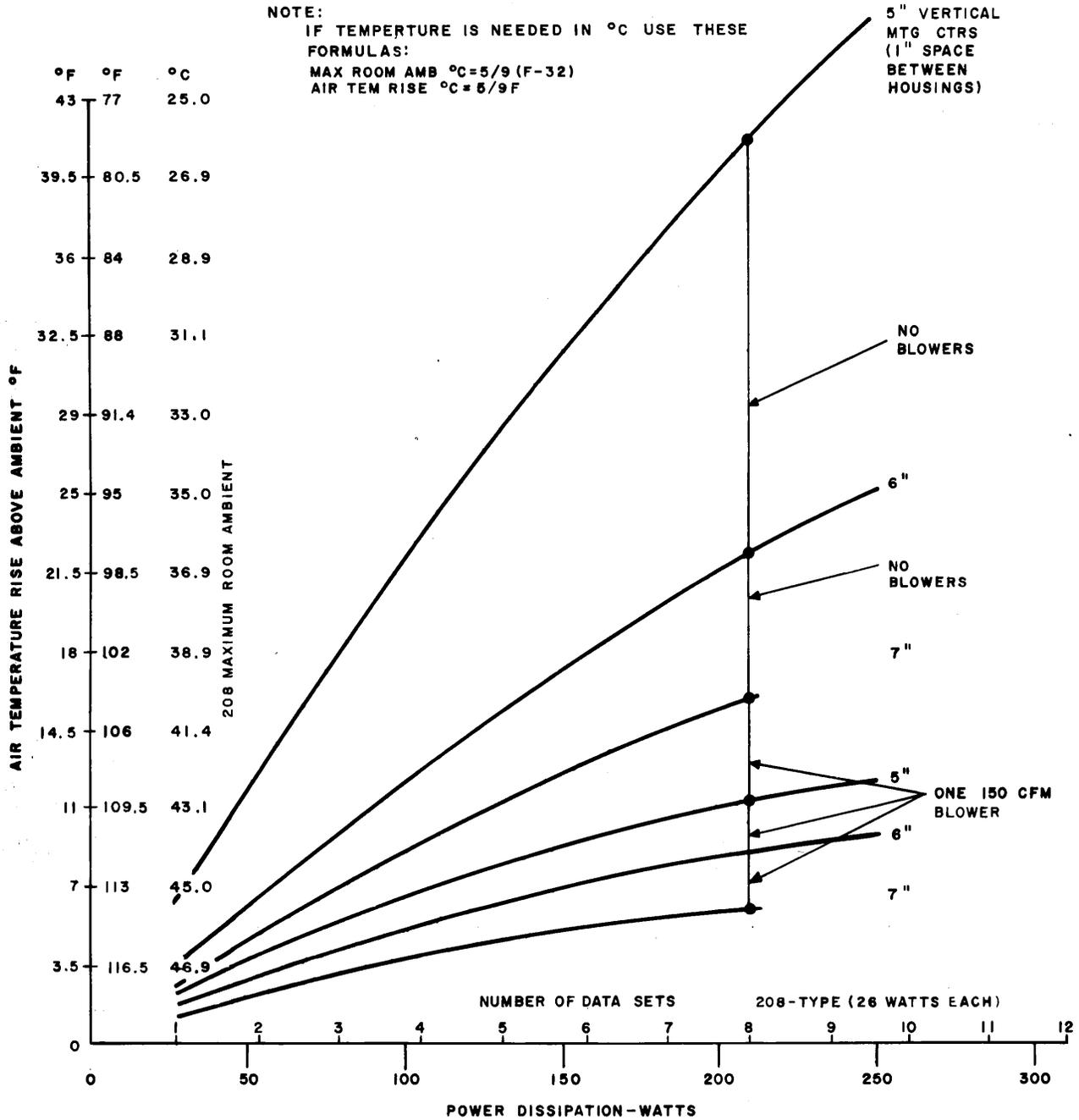


Fig. 34—Internal Air Temperature Rise VS Power Dissipation in KS-20018-L15 or -L17 Cabinet for Data Set 208-Type

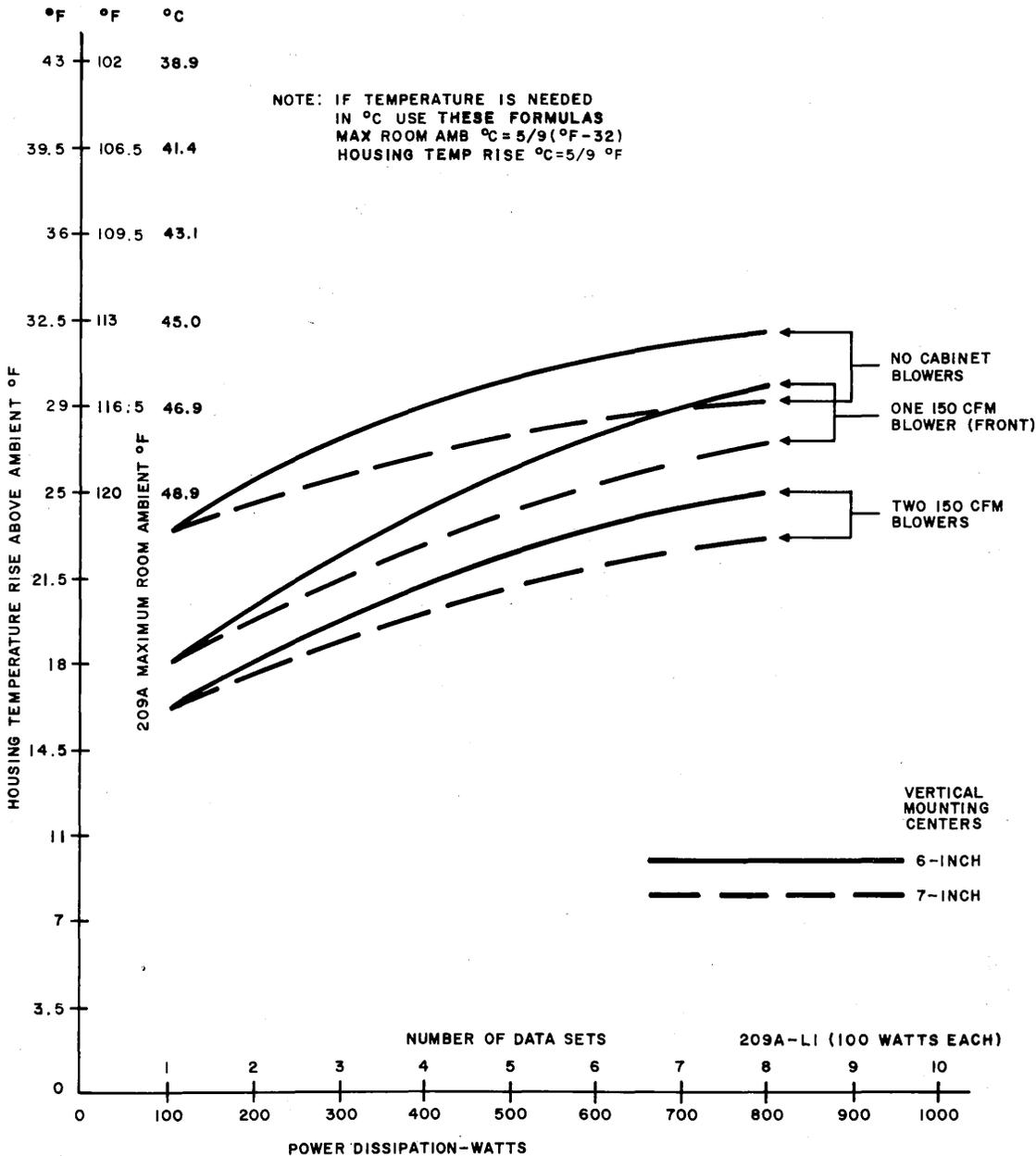


Fig. 35—Internal Air Temperature Rise VS Power Dissipation in KS-20018-L15 or -L17 Cabinet for Data Set 209-Type

to close tolerances and are mounted behind the panel label. This panel uses 2 inches of vertical mounting space on the 23-inch mounting uprights and must be mounted with the connector facing the rear just under the cabinet top. It provides sufficient thermal mass for the sensors so that relatively fast fluctuations in air stream temperatures do not cause an alarm indication.

**Light and Switch Assemblies**

6.14 Both light and switch assemblies measure approximately 2-1/2 inches by 2-1/2 inches by 2 inches. Each is mounted under the upper corner of the cabinet frame on the same side as the door hinge. The assembly for the front door contains a DOOR SWITCH, an AUDIBLE ALARM

CONTROL switch, a TEST switch and a HEAT ALARM visual indicator light. The assembly for the rear door contains a DOOR SWITCH and an AUDIBLE ALARM switch.

#### E. Operating Temperatures

6.15 The 77A detector assemblies function together to react to three ambient temperature levels selected by the preset nonadjustable thermal sensors on the sensor panel. Temperatures below the lowest level hold the 77A detector in a quiescent state. Other levels are as follows:

- (a) The lowest level is the maximum recommended ambient temperature for continuous operation of data apparatus (120°F).
- (b) The intermediate level is that temperature at which equipment malfunction and substantially reduced data apparatus life is expected (150°F).
- (c) The highest level is that temperature at which substained operation will result in permanent damage to heat sensitive components (170°F).

#### Lowest Level Temperature

6.16 If the internal temperature of the equipment cabinet at the sensor panel assembly reaches the lowest of the preset temperature levels, the ac power receptacle on the main control unit designated BLOWER is energized and a contact closure is made between P3-1 and P3-9 at the REMOTE ALARM connector. An internally mounted blower (optional with the KS-20018-L15 cabinet and standard for the -L17 cabinet) is operated to increase the airflow through the cabinet. If the temperature subsequently drops approximately 15°F below the preset level (about 105°F), the 77A detector circuits automatically return to the previous state. The blower outlet deenergizes and the REMOTE ALARM contact closure through connector P3 opens.

#### Intermediate Level Temperature

6.17 If the internal temperature of the equipment cabinet at the sensor panel assembly reaches the intermediate preset temperature level, the blower remains energized and a pulsing audio-visual alarm is enabled within the cabinet. The minor, lowest level temperature, alarm being provided to a remote

location through the contact closure between P3-1 and P3-9 is maintained, while the next alarm level is enabled by a pulsing contact closure between P3-1 and P3-13 at the REMOTE ALARM connector on the main control assembly. This alarm status is maintained unless the temperature drops approximately 15°F below the preset level (about 135°F) where the 77A detector circuits automatically return to the previous state (low level alarm).

#### Highest Level Temperature

6.18 If the internal temperature of the equipment cabinet at the sensor panel assembly reaches the highest preset temperature level, the position of the AC POWER OPTION switch determines circuit operation of the 77A detector. The three positions of the AC POWER OPTION switch and the conditions provided are as follows:

- (a) If the option switch is in the AUTO.RESET position, the pulsing audio-visual alarm and contact closure P3-1 and P3-13 are switched to continuous operation. The AC POWER outlet on the main control assembly is **deenergized** to prevent permanent equipment damage. The BLOWER ac outlet remains energized. If the cabinet temperature drops approximately 15°F (to about 155°F), the 77A detector circuits return to the previous state (intermediate level alarm).
- (b) If the option switch is in the MAN.RESET position, circuit operation is the same as for AUTO.RESET position with one exception. Resetting the 77A detector circuits after the sensor temperature has been reduced to about 155°F can be accomplished only by manually moving the AC POWER OPTION switch to AUTO.RESET position. The switch may then be returned to the MAN.RESET position if desired.
- (c) If the option switch is in the NO CUTOFF position, the low and intermediate level alarms operate as previously described. When the highest level temperature is reached, however, the ac power to the outlet strip is **not** cut off [as in (a)] but the pulsing audio-visual alarms will be changed to continuous operation. The NO CUTOFF switch position may also be used to immediately restore ac power after cutoff without regard to the cabinet temperature.

**Note:** A locking mechanism is provided to prevent unintentional selection of this option. Selection is accomplished first by loosening both screws on the locking mechanism associated with the option switch. Then move the mechanism to the left and set the switch to the NO CUTOFF position. After selecting the desired option, retighten the locking mechanism screws.

#### F. Audible Alarm Control

**6.19** For customer convenience, the audible alarm signal may be used in several ways. It may be disabled when the front or rear door is opened by sliding the AUDIBLE ALARM CONTROL switch on the appropriate switch assembly to the opposite position. This conditions the 77A detector circuit to enable the audible alarm to sound when the intermediate and highest temperature levels are reached, and to be silenced when the door is opened. The alarm resumes when the door is closed, unless the cabinet temperature has been reduced to at least the low level (no audible alarm) condition. When a door is opened, a steady alarm contact closure is provided between P3-1 and P3-5 for the front door and P3-1 and P3-15 for the rear door on the REMOTE ALARM connector. Operation of the HEAT ALARM light is unaffected by either the AUDIBLE ALARM CONTROL switch or an open door.

**6.20** When both AUDIBLE ALARM CONTROL switches are in the same position, the audible alarm continues to sound during elevated temperatures even with the front and/or rear doors open. This open door condition may be of advantage, if desired, by monitoring the audible alarm while the cabinet is cooling. The monitoring can also be done at remote locations through the REMOTE ALARM connector P3 on the main control assembly. A change in temperature status will cause a corresponding change in the audible signal and remote alarm contact closures. Table J defines the various audible states of each temperature range under different operating conditions.

**6.21** In addition to the functions already described, the audible alarm may be used as a cabinet security alarm that sounds whenever a front or rear door is opened with or without a temperature alarm. This feature is established whenever both AUDIBLE ALARM CONTROL switches are set in the same position. The alarm is silenced by moving

the AUDIBLE ALARM CONTROL switch to the OFF position, or when temperature alarms are not active, by closing the appropriate door. The HEAT ALARM light does not operate in the security mode unless there is also a temperature alarm.

#### G. Testing

**6.22** A momentary pushbutton test switch labeled ALARM TEST is provided on the front door light and switch assembly. Depressing this button simulates the intermediate temperature level independent of the position of the AUDIBLE ALARM CONTROL switch. A successful test is indicated by operation of the blower and the pulsing audio-visual alarm. The ac power cutoff circuits may be tested when necessary by removing either one of the two connectors on the sensor panel assembly after the AC POWER OPTION switch is positioned to AUTO.RESET. A successful test is indicated by removal of 117 Vac power from the AC POWER outlet on the main control unit.

**Note:** Extreme caution should be used to avoid removal of either connector on the sensor panel assembly when any enclosed data apparatus is operating. Such removal will cause immediate ac power cutoff unless the AC POWER OPTION switch on the main control assembly is set to the NO CUTOFF position.

#### 7. DATAPHONE II SERVICE MULTIPLE ARRANGEMENTS

**7.01** The term DATAPHONE II service refers primarily to three data set types—2024, 2048, and 2096. Multiple arrangements of those data sets are housed in 64A1 or 64B1 data mountings operating on commercial 117 Vac 60 Hz power.

**7.02** DATAPHONE II service equipment arrangements differ from previous data set arrangements for the following reasons:

- (1) Higher power dissipation (up to 500 watts per mounting) and higher current requirements.
- (2) Forced convection cooling using three self-contained fans on each data mounting.
- (3) Ambient temperature limitations as a function of altitude.

TABLE J

## AUDIO AND VISUAL STATES OF ALARM

TEMPERATURE RANGE	ALARM	BOTH DOORS CLOSED	ONE OR BOTH DOORS OPEN		TEST SWITCH ON
			AUDIBLE ALARM SWITCH		
			IN DIFFERENT POSITIONS	IN SAME POSITION	
40-119° F (4-48° C)	Visual Audible	Off Off	Off Off	Off Steady	Pulsed Pulsed
120-149° F (49-65° C) (Low Temp Condition)	Visual Audible	Off Off	Off Off	Off Steady	Pulsed Pulsed
150-169° F (66-76° C) (Intermediate Temp Condition)	Visual Audible	Pulsed Pulsed	Pulsed Off	Pulsed Pulsed	Pulsed Pulsed
170° F and Above (77° C & Above) (High Temp Condition)	Visual Audible	Steady Steady	Steady Off	Steady Steady	Steady* Pulsed

\* If the ac power option NO CUTOFF is selected, visual alarm will pulse.

7.03 Recommended multiple installations of DATAPHONE II service data sets are described herein for the following:

- KS-20018-L11A cabinet
- KS-20018-L15C cabinet
- Commercial cabinets (certain types).

**Note:** The KS-20018-L17 cabinet may be used to mount one 2100A diagnostic console or one 2200A network controller.

7.04 Details of each arrangement are provided in the following paragraphs. Temperature—altitude limitations are listed in Tables K, L, and M. Mounting arrangements are illustrated in Fig. 36 and 37. Current requirements for each of the three types of DATAPHONE II service data sets are given in Table N.

#### A. General Considerations

7.05 The 64A1 and 64B1 data mountings include a 290A1 power unit for ac operation.

**Caution:** *This unit becomes hot to the touch under maximum load conditions. Handle with care after several hours of continuous operation. Allow time for the unit to cool before attempting removal. Appropriate warning labels are conspicuously displayed on the power units.*

7.06 For proper system operation, adhere to ac current and line power recommendations.

#### B. KS-20018-Type Cabinets

7.07 Only the KS-20018-L11A and -L15C cabinets are recommended for the DATAPHONE II service multiple arrangements (Fig. 36).

♦TABLE K♦

**TEMPERATURE-ALTITUDE LIMITS FOR MULTIPLE ARRANGEMENTS OF  
DS 2024 "DATAPHONE" II SERVICE APPARATUS**

ARRANGEMENT	APPROXIMATE ALTITUDE — FEET ABOVE SEA LEVEL	MAXIMUM AMBIENT TEMPERATURE IN °F			
		4 MTGS	3 MTGS	2 MTGS	1 MTG
KS-20018-L11A 64-Type Mtg Only	0 - 1000				120
	1001 - 6000				120*
	6001 - 10000				110
KS-20018-L15C	0 - 1000	120	120	120	120
	1001 - 6000	120	120	120	120
	6001 - 10000	115	120	120	120
Commercial†	0 - 1000	120	120	120	120
	1001 - 6000	115	120	120	120
	6001 - 10000	100	110	120	120

\*If a network controller is contained in the -L11A, derate maximum ambient temperature to 115°F.

† See Table M.

♦TABLE L♦

**TEMPERATURE-ALTITUDE LIMITS FOR MULTIPLE ARRANGEMENTS OF  
DS 2048 "DATAPHONE" II SERVICE APPARATUS**

ARRANGEMENT	APPROXIMATE ALTITUDE — FEET ABOVE SEA LEVEL	MAXIMUM AMBIENT TEMPERATURE IN °F			
		4 MTGS	3 MTGS	2 MTGS	1 MTG
KS-20018-L11A 64-Type Mtg Only	0 - 1000				120
	1001 - 6000				115*
	6001 - 10000				110*
KS-20018-L15C	0 - 1000	120	120	120	120
	1001 - 6000	115	120	120	120
	6001 - 10000	100	110	120	120
Commercial†	0 - 1000	120	120	120	120
	1001 - 6000	105	115	120	120
	6001 - 10000	90	100	115	120

\* If a network controller is contained in the -L11A, derate maximum ambient temperature to 95°F for operation above 6000 feet and to 110°F for operation between 1001 and 6000 feet.

† See Table M.

TABLE M

**TEMPERATURE-ALTITUDE LIMITS FOR MULTIPLE ARRANGEMENTS OF  
DS 2096 "DATAPHONE" II SERVICE APPARATUS**

ARRANGEMENT	APPROXIMATE ALTITUDE — FEET ABOVE SEA LEVEL	MAXIMUM AMBIENT TEMPERATURE IN °F			
		4 MTGS	3 MTGS	2 MTGS	1 MTG
KS-20018-L11A 64-Type Mtg Only	0 - 1000				120
	1001 - 6000				110*
	6001 - 10000				95*
KS-20018-L15C	0 - 1000	120	120	120	120
	1001 - 6000	110	120	120	120
	6001 - 10000	95	105	115	120
Commercial†	0 - 1000	115	120	120	120
	1001 - 6000	100	110	120	120
	6001 - 10000	NR‡	95	110	120

\* If a network controller is contained in the -L11A, derate maximum ambient temperature to 90°F for operation above 6000 feet and to 105°F for operation between 1001 and 6000 feet.

† A 19-inch wide commercial cabinet having a louvered top with at least 22 square inches of open area. For commercial cabinets having at least 2 square feet of open area, apply KS-20018-L15C criteria.

‡ Not recommended.

### C. KS-20018-L11A Cabinet

**7.08** The KS-20018-L11A can accommodate the following combinations:

- (1) One 64-type data mounting containing a maximum of eight data sets, 2024-, 2048-, or 2096-types in any combination (64A—any combination of PL sets; 64B—any combination of DDD sets).
- (2) One 64-type data mounting and one 2200A data control unit (network controller).
- (3) One 64-type data mounting and one 2100A diagnostic console.
- (4) One 64-type data mounting and one 46-type data mounting containing 829-type data auxiliary sets.

**7.09** Mount the network controller and the 46-type data mounting containing the 829-type DASs above the 64-type data mounting (Fig. 36). If only a 64-type data mounting is used, mount it centrally in the cabinet.

### D. KS-20018-L15C Cabinet

**7.10** The KS-20018-L15C cabinet can accommodate up to four 64-type data mountings containing data sets 2024, 2048, or 2096 in any PL or DDD combination. Two KS-20018-L16 side panels must be added to a single cabinet, or the ends of a cabinet array. A KS-22100-L1 blower is required for each cabinet. Locate the cabinet in an area so that personnel are not continuously exposed to blower sound.

**7.11** Install the blower by removing the front base support channel of the KS-20018-L15 cabinet and mounting the blower in its place. The blower and its accompanying brackets then act as

the front structural support member of the base. The blower brackets can be used to provide cable port access adjacent to the blower by remounting the brackets on the blower with access ports in the front location.

**Caution:** *Exercise care when installing a blower in a cabinet with equipment already mounted because of front base support channel removal. If possible, mount blower prior to mounting other equipment.*

#### E. Additional Power Strip

**7.12** Certain KS-20018-L15C cabinets require a second 15-ampere ac power strip and power cord. If one or two data mountings equipped with DS 2024, 2048, or 2096 are used in one cabinet, an additional power strip and power cord is **not required**. The power cord should be connected to a wall outlet protected by a 15-ampere circuit breaker.

**7.13** All other arrangements require a second KS-22291-L1 power strip and a KS-14532-L38 power cord. Connect cords from the power strips into individual 15-ampere wall outlets. Only two data mountings should be connected to each power strip. Thus arrangements of three or four data mountings require two power strips. For an intermix of data sets, refer to Table N to determine current requirements.

#### F. Commercial Cabinets

**7.14** Commercial cabinets can be used for DATAPHONE II service multiple installations provided the criteria in paragraphs 7.15 through 7.22 are followed.

**7.15** No more than four 64-type data mountings are permitted in a vertical stack. When customer equipment is contained in the same enclosure, the air entering the DATAPHONE II service mounting stack shall not exceed 49 degrees Celsius (120°F). A 4-inch clearance must separate customer equipment and DATAPHONE II service

equipment. Air flow must be unobstructed both entering and leaving the enclosure.

**7.16** If more than two 64-type data mountings are in the arrangement, the cabinet must be equipped with a blower and air filter. The blower should have a free air delivery of 300 to 350 cubic feet/minute (CFM) and should be capable of developing a static pressure of 0.9 inch of water. Air flow should be delivered vertically into the bottom of the mounting stack; that is, the blower exhaust port must be 6 to 8 inches from the front surface of the 64-type data mounting.

**7.17** When only one or two data mountings are used, the mounting(s) may be operated with the blower and air filter specified in paragraph 7.16 or with an air filter alone.

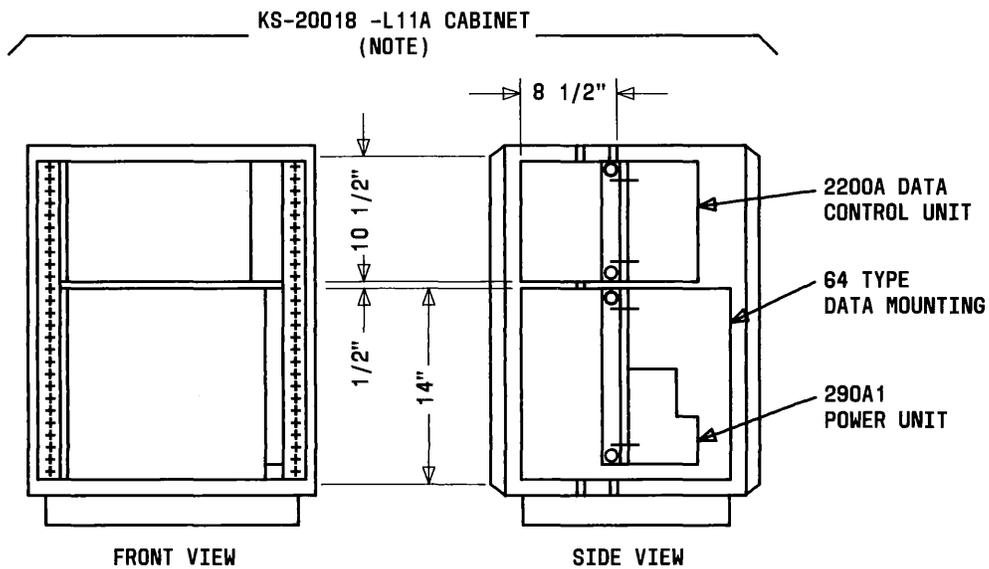
**7.18** The cabinet must have a louvered top providing at least 22 square inches of opening and an equivalent unobstructed entry area. A clearance of 4 inches from the top of the uppermost data mounting to the top of the cabinet is recommended for cabinets having less than two square feet of open top area.

**7.19** In cabinets designed for 19-inch equipment mounting, the 64-type data mounting can be equipped with brackets to allow flush front surface installation. Brackets are available from WECO as comcode 842 532 541. For 19-inch installations, the 290A1 power units may be located between two data mountings paired on a flush mounting bracket, comcode 842 989 451.

**7.20** When 290A1 power units are placed between data mountings, the cabinet depth should be 22 inches minimum.

**7.21** Extension connectors must be used for the 290A1 power unit mounting scheme. The extensions required for each mounting are listed in Table O.

DATA SET TYPE		2024A	2024B	2048A	2048B	2096A
DATA MTG. TYPE		64A	64B	64A	64B	64A
MAX. NO. DATA SETS/ DATA MTG.		8	8	8	8	8
MAX. NO. DATA MTG. PER CABINET	-L11A	1	1	1	1	1
	-L15C	4	4	4	4	4
	COMM.	4	4	4	4	3
FULLY LOADED DATA MTG. APPROX.	WATTS	350	350	430	430	500
	BTU/HR	1194	1194	1467	1467	1706
	LBS.	105	105	105	105	105



NOTE:  
INSTALLATION REQUIRES REAR  
CABINET MOUNTING USING REARMOST  
HOLES IN DATA MOUNTING FOR  
FRAME BRACKETS.

Fig. 36—Recommended Multiple Data Set Arrangements for DATAPHONE II Service in KS-20018-L11A and -L15C Cabinets (Sheet 1 of 2)

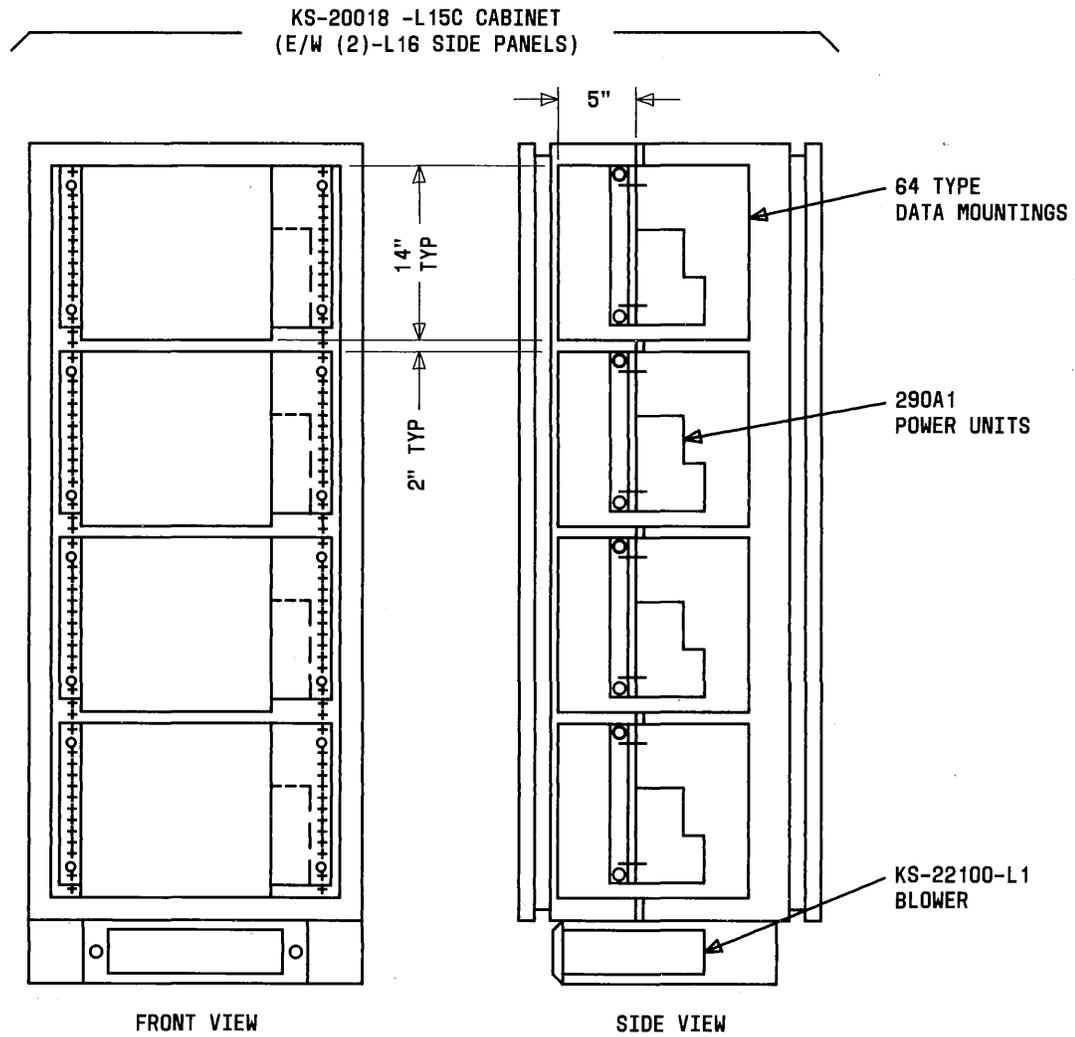


Fig. 36—Recommended Multiple Data Set Arrangements for DATAPHONE II Service in KS-20018-L11A and -L15C Cabinets (Sheet 2 of 2)



◆TABLE N◆

**APPROXIMATE LINE CURRENT AND WATTAGE REQUIREMENTS FOR  
"DATAPHONE" II SERVICE DATA SETS IN STAND-ALONE  
AND MULTIPLE MOUNTINGS**

DATA SET TYPE	STAND-ALONE MTG		MULTIPLE MOUNTING				
	WATTS	AMP	UNLOADED 64-TYPE MTG AMPS	D WATTS/ PLUG-IN	D AMP/ PLUG-IN	FULL LOAD*	
						AMPS	WATTS
2096	65	0.7	0.65	53	0.50	4.7	500
2048	60	0.6	0.65	45	0.45	4.1	430
2024	50	0.5	0.65	35	0.35	3.3	350

\*Maximum Values.

◆TABLE O◆

**POWER UNIT EXTENSIONS**

DESCRIPTION	SUPPLIER	COMCODE
290A1 Mounting Cord Extension	WEC0	842 989 469
290A1 Fan Cord Extension	WEC0	842 989 477

7.22 Caution must be exercised in ac power distribution in certain multiple installations due to heavy ac current requirements. Follow the requirements given in paragraphs 7.12 and 7.13 for power strips. Non-KS power strips must be capable of handling full 15-ampere service.◆

**8. REFERENCES**

8.01 The following documents provide additional information relating to data set and data coupler installation.

SECTION	TITLE
590-010-200	Data Sets and Data Access Arrangements—General Installation and Connection Information
590-010-202	Data Sets—Station Arrangements For Mixed Data Set Types in 40A2 Data Mounting