8 D-75 Schematic Diagrams

Fig. 8.1 D-75 Schematic Diagrams

For Amplifier S/N 24530 and below use schematic number MI-270b
For Amplifier S/N 24531 and above use schematic number J 0116-4

9 Parts

9.1 General Information

Section 9 contains illustrations and parts lists for the D-75 power amplifier. This information should be used with the service, repair and adjustment procedure in Section 4.

Most of the mechanical and structural type parts are illustrated and indexed on exploded view drawings. Electrical and electronic parts on these illustrations are also identified by the circuit reference designation next to the illustration. Both the index number and the reference designation are included in the parts list in separate columns. The reference designations correspond to those shown in schematic diagrams.

Electrical and electronic parts located on printed circuit boards are illustrated by schematic symbols on the trace side and by component shape symbols on the component side. Reference designations also appear on these diagrams.

The quantity of each part used in each location is also shown in the parts listing.

9.2 Standard and Special Parts

Many electrical and electronic parts used in the D-75 are standard items stocked by and available from electronic supply houses. However, some electronic parts that appear to be standard, are actually special. A part ordered from Crown will assure an acceptable replacement. Structural items, covers and panels are available from Crown only.

9.3 Ordering Parts

When ordering parts, be sure to give the amplifier model and serial number and include the part description and Crown Part Number (CPN) from the parts list. Price quotes are available upon request.

9.4 Shipment

1. Shipment will be made by UPS or best method unless you specify a preferred method.
2. Shipments are made F.O.B. Elkhart, Indiana only.
3. Established Crown accounts will be freight prepaid and billed unless shipped by truck or air freight.
4. All others will be shipped freight collect.

9.5 Terms

1. Normal terms are C.O.D. unless the order is prepaid.
2. Net 30 days terms apply only to those firms who have an established line of credit with Crown.
3. If prepaying please add an amount for the freight charge. $2.00 is average for an order under one pound.
NOTE: Part prices are subject to change without notice.
4. New parts returned for credit are subject to a 10% restocking charge.
5. You must receive authorization from the Parts Dept. before returning parts for credit.
6. We are not a general parts warehouse! Parts are available for servicing Crown products only.

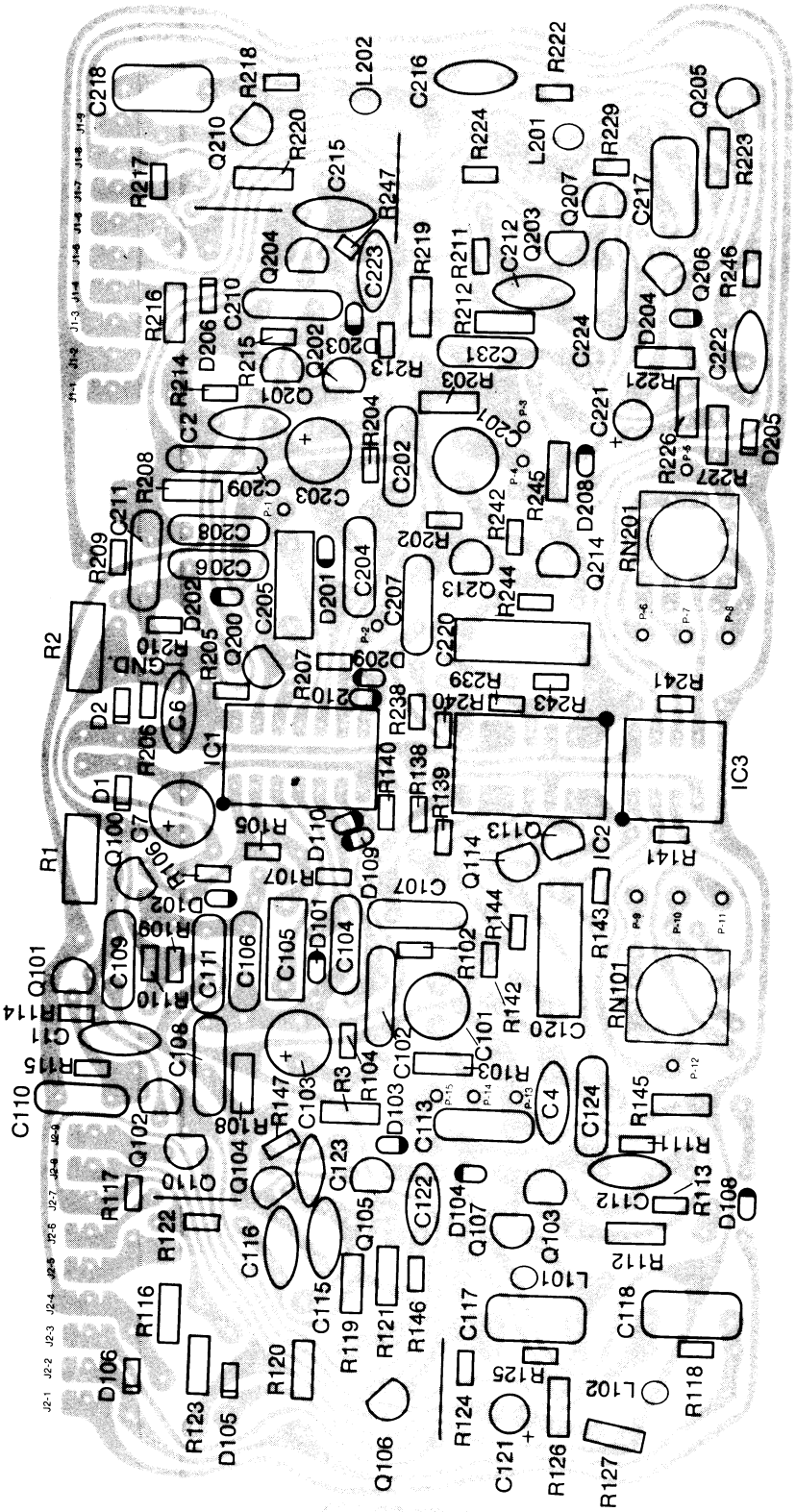


Fig. 9.1a D-75 MainModule

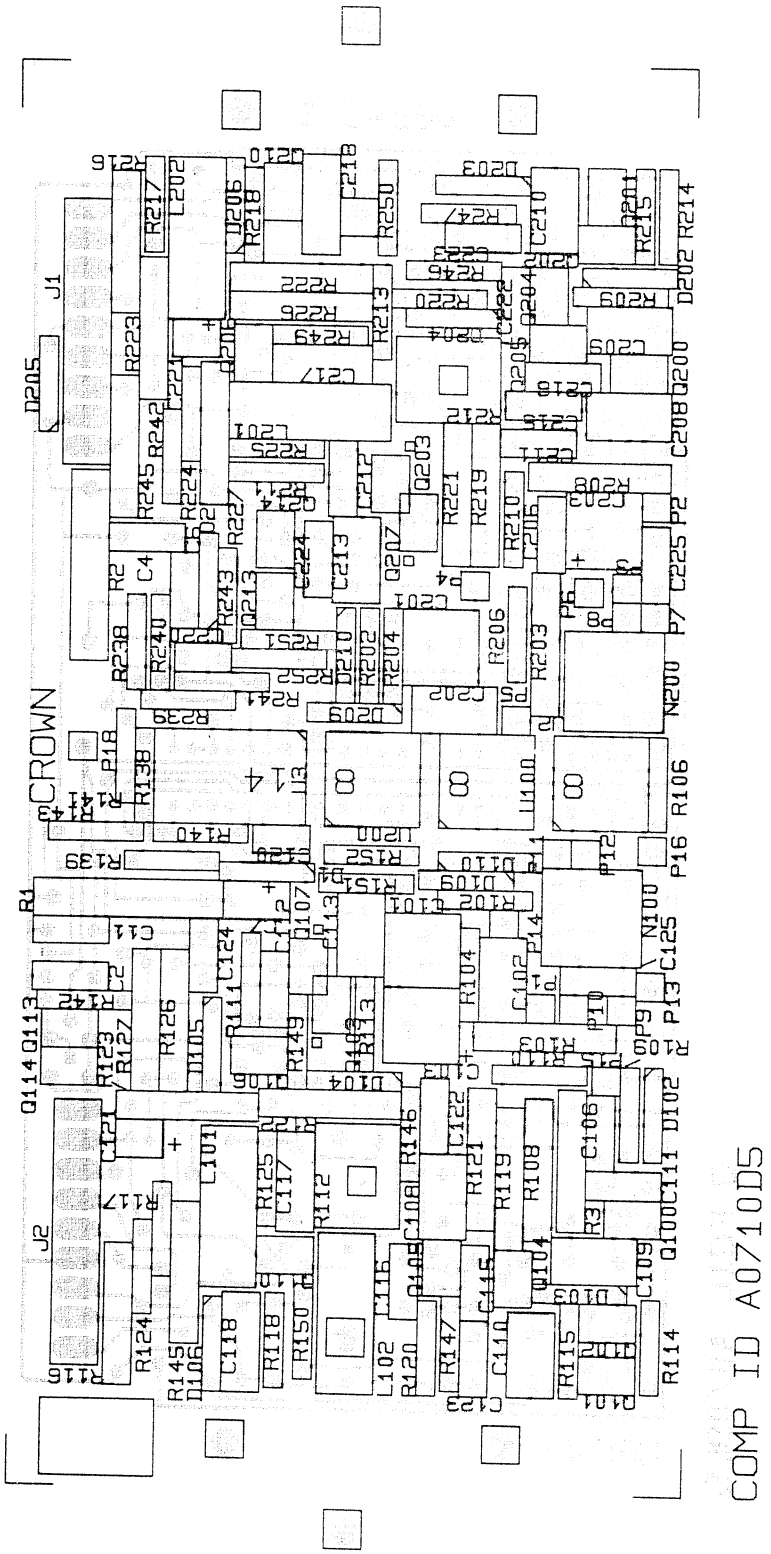


Fig. 9.1b D-75 MainModule

9.6 Illustrated Parts Lists

Parts List: D-75 Main Board Module Q41944J1

Schematic Designation	Description	Qty.	Part No.	Misc. Info
Capacitors				
C111, C211	5pf mica	2	C 2820-6	
C106, C206	27pf mica	2	C 2342-1	
C124, C224	82pf mica	2	C 3627-4	
C107. C207	100pf mica	2	C 3410-5	
C108, C208, C109, C209, C113, C213	120pf mica	6	C 3290-1	
C102, C202 C104, C204 C110, C210	200pf mica	6	C 3411-3	
C105, C205 C117, C217	.0015mf 200V filmatic	2	C 3089-7	
C118, C218 C2, C4, C6, C11 C112, C212, C115, C215, C116, C216, C122, C222, C123, C223	.0082mf 200V filmatic	4	C 3063-2	
C120, C220	.01mf disc	14	C 1751-4	
C7	.22mf 100V filmatic	2	C 3218-2	
C121, C221	4.7mf 63V vert	1	C 4253-8	
C101, C201	10mf 50V vert	2	C 3728-0	
C103, C203	22mf 16V N-P vert	2	C 5311-3	
	100 mf/12V vert	2	C 3729-8	
Diodes				
D105, D205 D106, D206 D104, D204, D108, D208, D102, D202, D101, D201, D109, D209, D110, D210	1N 4003	4	C 2851-1	
D103, D203	1N4148	12	C 3181-2	
D1, D2	1N270	2	D 6212-1	
	1N961 B 10V zener	2	C 3549-0	
Integrated Circuits				
U100	LF357 Op amp	1	C 6527-3	
U2	RC4558 Dual Op amp	1	C 3919-5	
U3	LM339N	1	C 4345-2	

D-75 Main Board Module Q41944J1 Continued ...

Schematic Designation	Description	Qty.	Part No.	Misc. Info
Coils				
L101, L201, L102, L202	.5MH Axial Grn	4	C 3510-2	
Transistors				
Q101, Q201, Q103, Q203, Q105, Q205, Q113, Q213, Q114, Q214, Q102, Q202	2N3859A NPN	12	D 2961-7	
Q107, Q207	MPSA06 NPN	2	C 3528-5	
Q104, Q204, Q106, Q206	2N 4125 PNP	4	C 3625-8	
Q100, Q200	PN4250A PNP	2	C 3786-8	
Q110, Q210	MPSA56 PNP	2	C 3954-2	
Resistors				
R115, R215	56 ohm 1/4w 5cf	2	C 3511-0	
R120, R220	120 ohm 1/4w 5cf	2	C 4723-0	
R118, R218	100 ohm 1/4w 5cf	2	C 2872-6	
R122, R222	120 ohm 1/2w 5cf	2	C 3837-9	
R117, R217, R124, R224	180 ohm 1/4W 5cf	4	C 2873-5	
R125, R225, R147, R247	470 ohm 1/4w 5cf	4	C 2626-7	
R103, R203	510 ohm 1/2w 1MF	2	C 3304-0	
R113, R213	750 ohm 1/4w 5cf	2	C 3803-1	
R114, R214	820 ohm 1/4w 5cf	2	C 3301-6	
R1, R2	820 ohm 1w 5 comp	2	C 3648-0	
R107, R207, R146, R246, R102, R202	1K ohm 1/4w 5cf	6	C 2627-5	
R145, R245	1.5K ohm 1/2w 5cf	2	C 1076-6	
R111, R211	2.2K ohm 1/4w 5cf	2	C 2628-3	
R110, R210	3.9K ohm 1/4w 5cf	2	C 2630-9	
R126, R226, R127, R227	4.7K ohm 1/2w 5cf	4	C 1640-9	
R116, R216, R123, R223	5.6K ohm 1/2w 5cf	4	C 3299-2	
R104, R204 R143, R243	10K ohm 1/4w 5cf	4	C 2631-7	
R106, R206 R138, R238	22K ohm 1/4w 5cf	2	C 3302-4	
R140,R240	33K ohm 1/4w 5cf	4	C 4346-0	
R109, R209	56K ohm 1/4w 5cf	2	C 2882-8	
R139, R239	150K ohm 1/4w 5cf	2	C 4216-5	
R141, R242	1M ohm 1/4w 5cf	2	C 3198-6	
RN100, RN200	Bal. input trimmer	2	D 4669-4	

D-75 Main Board Module Q41944J1 Continued ...

Schematic Designation	Description	Qty.	Part No.	Misc. Info
R112, R212	Selected bias resistor	2		Typically 92-240 ohms
R3, R108, R208, R119, R219				
R121, R221	10K ohm 1/2w 1MF	7	C 2343-9	
R142, R242	15K ohm 1/4w 5cf	2	C 2632-5	
R105, R205, R144, R244	18K ohm 1/4w 5cf	4	C 2633-3	

Parts List: D-75 Main Board Module Q42530-8

Capacitors				
C111, C211	5pf mica	2	C 2820-6	
C106, C206	27pf mica	2	C 2342-1	
C124, C224				
C125, C225	82pf mica	2	C 3627-4	
C108, C208, C109, C209, C113, C213	120pf mica	6	C 3290-1	
C102, C202				
C110, C210	200pf mica	4	C 3411-3	
C7	.001mf disc			(not in current production)
C117, C217	.0082mf 200V filmatic	2	C 3063-2	
C118, C218	.0027mf 200V filmatic	2	C 3481-6	
C2, C4, C6, C11, C12, C13 C112, C212, C115, C215, C116, C216, C122, C222, C123, C223 C119, C219, C120 C220, C123, C223	.01mf disc	14	C 1751-4	
C121, C221	.1mf 63v ceramic	6	C 5639-7	
C101, C201	10mf 50V vert	2	C 3728-0	
C103, C203	22mf 16V N-P vert	2	C 5311-3	
	100 mf/12V vert	2	C 3729-8	
Diodes				
D105, D205 D106, D206 D102, D202, D104, D204, D109, D209, D110, D210	1N 4003	4	C 2851-1	
D103, D203	1N4148	8	C 3181-2	
	1N270	2	D 6212-1	

D-75 Main Board Module Q42530-8 Continued ...

Schematic Designation	Description	Qty.	Part No.	Misc. Info
D1, D2	1N961 B 10V zener	2	C 3549-0	
Integrated Circuits				
U100	LF357 Op amp	2	C 7621-3	
U2	RC4558 Dual Op amp	1	C 3919-5	
U3	LM339N Volt Comparator	1	C 4345-2	
Coils				
L101, L201, L102, L202	.5MH Axial Grn	4	C 3510-2	
Transistors				
Q101, Q201, Q103, Q203, Q105, Q205, Q113, Q213, Q114, Q214, Q102, Q202	2N3859A NPN	12	D 2961-7	
Q107, Q207	MPSA06 NPN	2	C 3528-5	
Q104, Q204, Q106, Q206	2N 4125 PNP	4	C 3625-8	
Q100, Q200	PN4250A PNP	2	C 3786-8	
Q110, Q210	MPSA56 PNP	2	C 3954-2	
Resistors				
R115, R215	56 ohm 1/4w 5cf	2	C 3511-0	
R120, R220	120 ohm 1/4w 5cf	2	C 4723-0	
R118, R218	100 ohm 1/4w 5cf	2	C 2872-6	
R122, R222	120 ohm 1/2w 5cf	2	C 3837-9	
R117, R217, R124, R224	180 ohm 1/4W 5cf	4	C 2873-5	
R125, R225	47 ohm 1/4w 5 cf	2	C 1011-3	
R147, R247	470 ohm 1/4w 5% cf	2	C 2626-7	
R103, R203	510 ohm 1/2w 1MF	2	C 3304-0	
R113, R213	750 ohm 1/4w 5cf	2	C 3803-1	
R114, R214	820 ohm 1/4w 5cf	2	C 3301-6	
R1, R2	910 ohm 3w 5% cf	2	C 7389-7	
R146, R246, R102, R202	1K ohm 1/4w 5cf	6	C 2627-5	
R145, R245	1.5K ohm 1/2w 5cf	2	C 1076-6	
R111, R211	2.2K ohm 1/4w 5cf	2	C 2628-3	
R110, R210	3.9K ohm 1/4w 5cf	2	C 2630-9	
R126, R226, R127, R227	4.7K ohm 1/2w 5cf	4	C 1640-9	
R116, R216, R123, R223	5.6 ohm 1/2w 5cf	4	C 3299-2	
R104, R204	10K ohm 1/4w 5% cf	2	C2631-7	
R143, R243	4.7K ohm 1/4w 5cf	2	C 3939-3	
R106, R206	22K ohm 1/4w 5cf	2	C 3302-4	

D-75 Main Board Module Q42530-8 Continued ...

Schematic Designation	Description	Qty.	Part No.	Misc. Info
R138, R238				
R140,R240	33K ohm 1/4w 5cf	4	C 4346-0	
R109, R209	56K ohm 1/4w 5cf	2	C 2882-8	
R139, R239				
R141, R241	150K ohm 1/4w 5cf	4	C 4216-5	
RN100, RN200	Bal. input trimmer	2	D 4669-4	
R112, R212	500 ohm trimmer	2	C 6048-0	
R3				
R108, R208,				
R119, R219				
R121, R221	10K ohm 1/2w 1MF	7	C 2343-9	
R142, R242	15K ohm 1/4w 5cf	2	C 2632-5	
R149, R150				
R249, R250	13K 1/4w 5% cf	4	C 4300-7	
R151, R251	9.53K 1/4w 1% mf	2	C 6161-1	
R152, R252 (open)				
Misc.				
	D-75 Board (without parts)	1	D 6248-5	
	TO92 heatsink	1	C 3493-1	
	IC Socket (8 pin)	3	C 3451-9	
	IC Socket (14 pin)	1	C 3450-1	
	PC Mnt RCPT	18	C 4731-3	

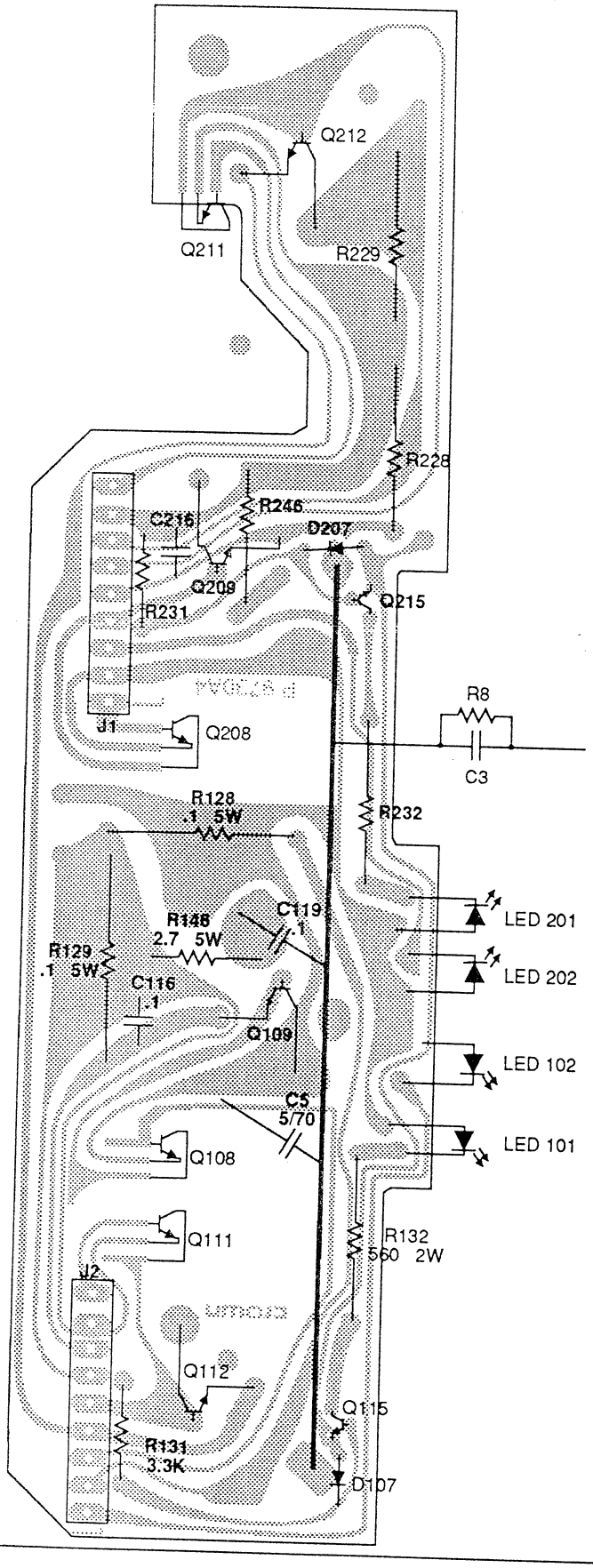


Fig. 9.2 D-75 Output Module

Parts List: D-75 Output Module Q41945J8

Schematic Designation	Description	Qty.	Part No.	Misc. Info
Capacitors				
C12				
C116,C216	.01mf disc	3	C 1751-4	
C119, C219	.1mf 200V Filmatic	2	C 2938-6	
C1, C5	5mf 70V	2	C 5050-7	
Diodes				
D107, D207	1N4148	2	C 3181-1	
Transistors				
Q115, Q215	2N3859A NPN	2	D 2961-7	
Resistors				
R8	2.7 ohm .5W 5CF	1	C 2857-8	
R148, R248	2.7 ohm 1 w 10%	2	C 1001-4	
R128, R228				
R129, R229	.1 ohm 5 w 10% wire	4	C 3291-9	
R132, R232	560 ohm 2 w 5 comp	2	C 4724-8	
R131, R231	3.3K ohm 1/2 w 5CF	2	C 1051-9	
Misc.				
	9 pin connector	2	C4730-5	
	D-75 Board (without parts)	1	P 9730A4	
1	Solder lug .144" hole	1	D 1220-9	Located at one corner of the output board

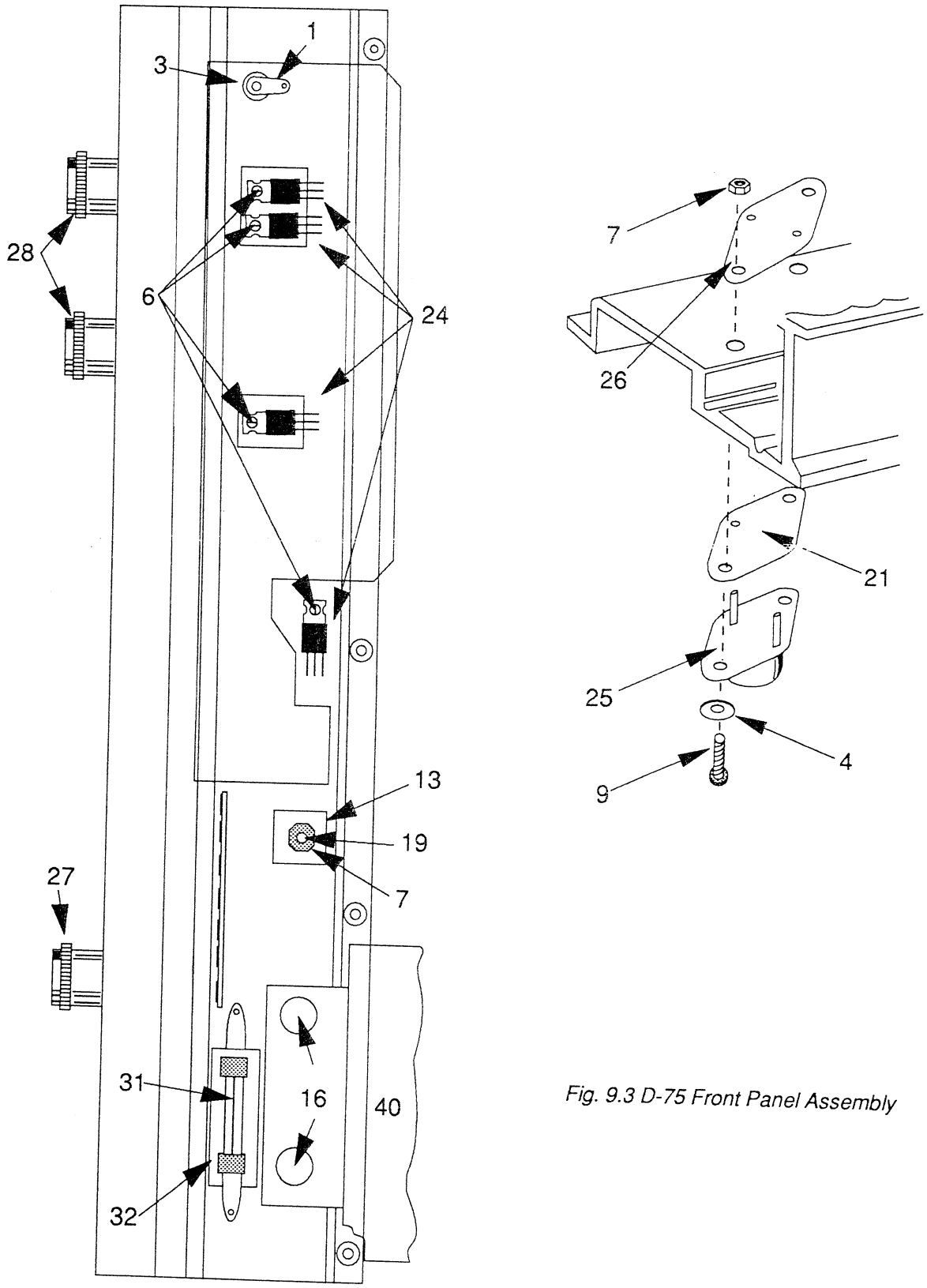


Fig. 9.3 D-75 Front Panel Assembly

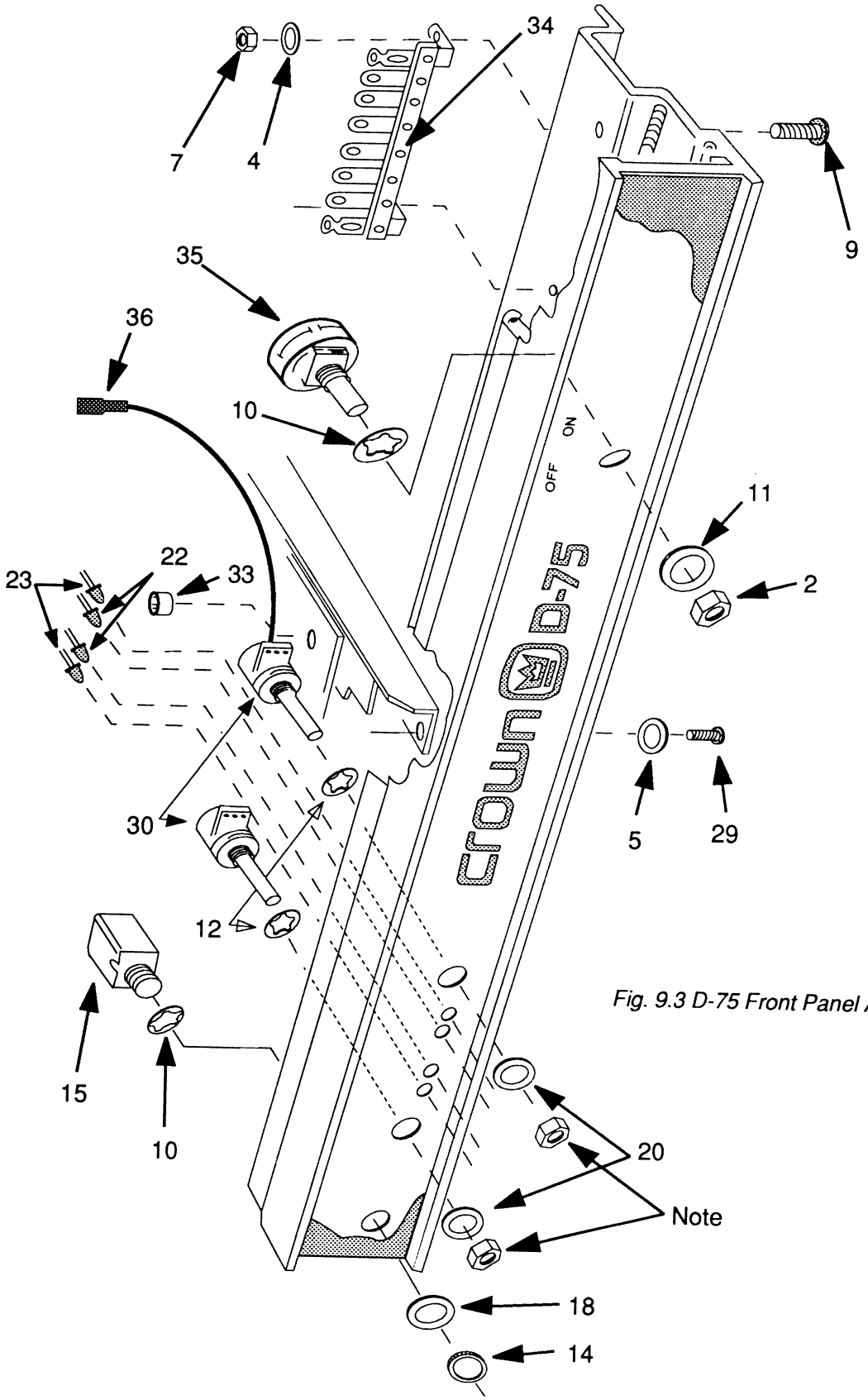


Fig. 9.3 D-75 Front Panel Assembly

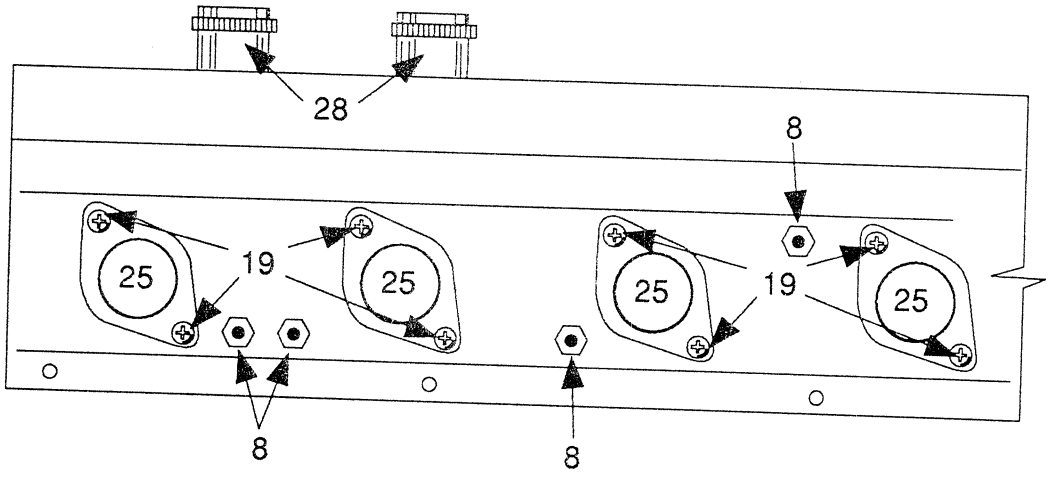
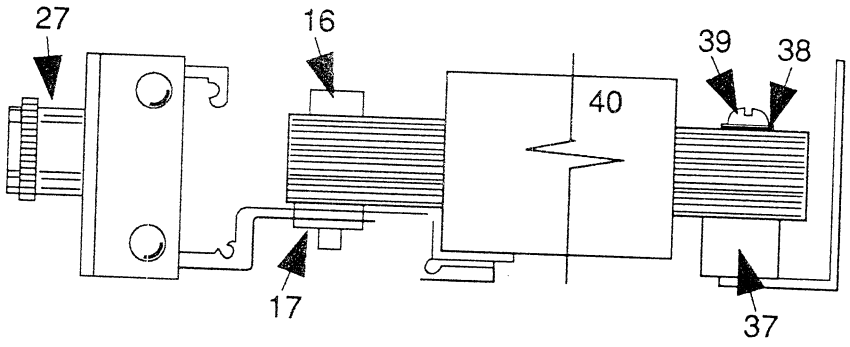


Fig. 9.3 D-75 Front Panel Assembly



Parts List: Front Panel Assembly

Index No.	Schematic Designation	Description	Qty.	Part No.	Misc. Info
2		.375 bright nut	1	C 1288N7	On-Off switch hardware
3		.375x.141x.031 fiber	2	C 1296-0	Output board hardware
4		#6 star lockwasher	11	C 5594-4	Output board, bridge, and terminal strip
5		#4 star lockwasher	4	C 1824-9	Crossmember hardware
6		4-40x.375 screw	4	C 5561-5	TIP47 hardware
7		6-32 hex nuts	11	C 1889-2	Output board, bridge, and D 3503-6 terminal strip
8		4-40 hex nuts	4	C 1938-7	TIP47 hardware
9		6-32x.375 screw	2	C 3879-1	D 3503-6 terminal strip
10		.375 star lockwasher	2	C 2188-8	Headphone jack and on-off switch hardware
11		.625x.375x.030 washer	1	C 2189-6	On-off switch hardware
12		.25 lockwasher	2	C 2365-2	Level control hardware
13	DMI	VH148 6 amp	1	C 3062-4	
14		.375 knurled nut	1	C 3495B2	Headphone jack hardware
15		3 conductor jack	1	C 3507-8	Headphone jack
16		Nylon transformer pin	2	D 3557-2	Transformer hardware
17		Tinnerman speed nut	2	C 3558-1	Transformer hardware
18		.625ODx.375ID washer	1	C 3628-2	(On older amps only)
19		6-32x.625 phillips	9	C 3879-1	Output brd. and bridge rectifier bridge hardware
20		.440x.260x.015 washer	2	C 4023-5	Level controls
21		Insulating wafer (TO-3)	4	C 4039-1	Output transistor hardware
22	D102,D202	Red L.E.D.	2	C 4341-1	IOC indicator
23	D101, D201	Green L.E.D.	2	C 4430A0	Sig. presence indicator
24	Q108, Q208, Q112, Q212	TIP47 driver	4	C 4647-1	Driver transistor
25	Q109, Q209, Q112, Q212	NPN power transistor	4	C 4751-1	Output transistor
26		TO-3 insulator	4	D 4071-3	
27		.83 aluminum knob .25	1	D 4075-4	On-Off knob 10 05
28		.83 aluminum knob .12	2	D 4076-2	Level controls 34-01
29		4-40x.375 round head	4	C 5961-5	Crossmember hardware 22-06 machine screw
30	R101, R201	25K ohm audio	2	D 4688-4	Level controls taper pot
31	F1	AGC 2.5 amp fuse	1	C 3775-1	(In older amps only)
32		Fuse block	1	C 3776-9	Holds C 3775-1
33		.187x.115x.125 spacer	4	C 4759-4	Main pc board hardware
34		Terminal strip #6 hole	1	D 3600-0	Volt. modification terminal strip
35	SW2	Rotary power switch	1	D 3492-2	On-Off switch
36		Cable receptacles	15	C 3849-4	For connections on the main board
37		.5 transformer mount	2	C 3556-5	Power transformer assy.
38		Nylon Shoulder washer	2	C 4251-2	Power transformer assy.
39		8-32x.875 round head	2	C 4252-0	Transformer hardware machine screw
40	T1	D-75 transformer	1	D 4668-6	

D 3492-2 1005
D 4076-2 24-01
C 9460-4 33-08

POWER SWITCH
ITEMS

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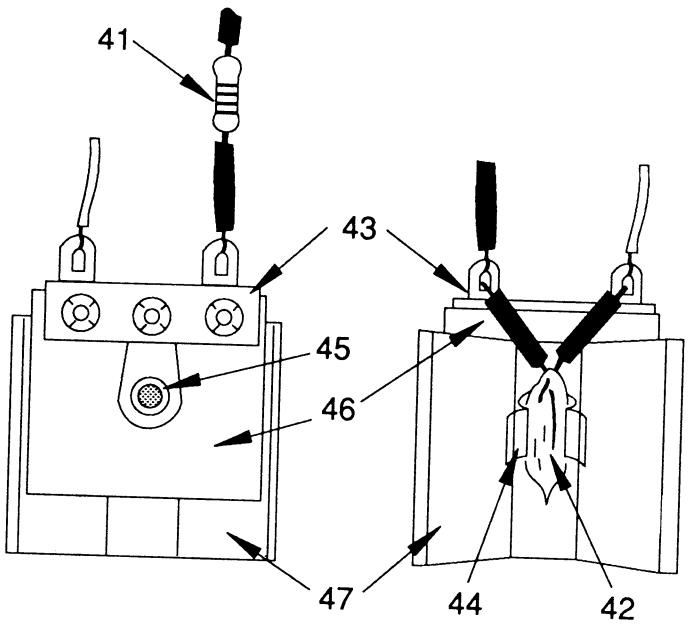

Fig. 9.4 D-75 Neon Bracket Assembly

D-75 Neon bracket assembly

Index No.	Schematic Designation	Description	Qty.	Part No.	Misc. Info
41	R5	27K ohm 1/2w 5cf	1	C 1056-8	
42	I1	Neon lamp NE2H	1	C 2500-4	
43		3 AUA terminal strip	1	D 1242-3	
44		SS module pipe clip	1	C 1727-4	
45		.093 steel eyelet	1	C 3529-2	
46		1.2x1.2x.015 fishpaper	1	D 4756-9	
47		Neon lamp bracket	1	D 4781-7	

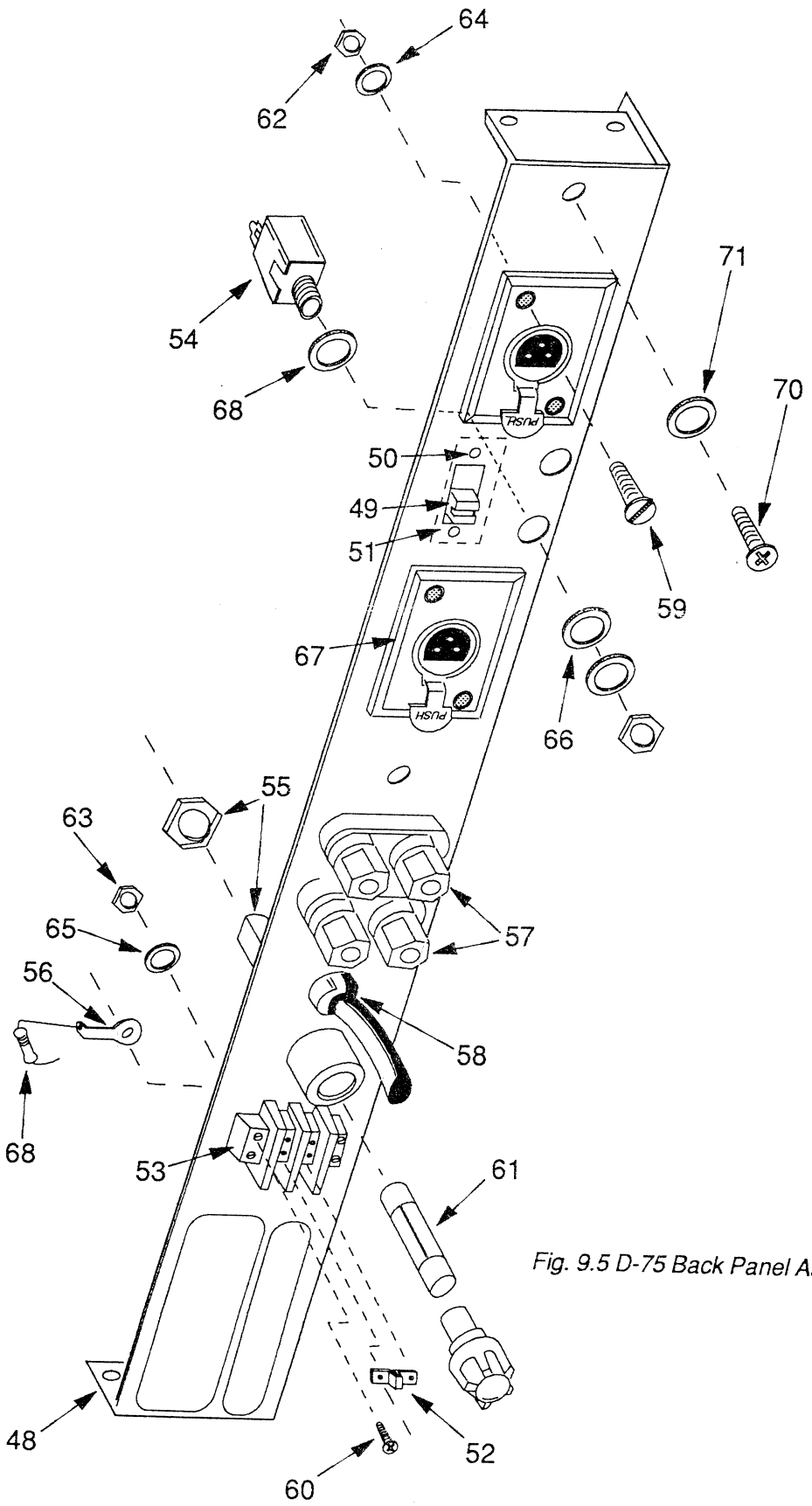

Fig. 9.5 D-75 Back Panel Assembly

Parts List: D-75 Back Panel Assembly

Index No.	Schematic Designation	Description	Qty.	Part No.	Misc. Info
48		D-75 back panel	1	F 9734-9	
49	SW1	DPDT slide switch	1	C 4110-0	Dual-mono switch
50		Steel eyelet	2	C 3529-2	
51		D-75 rear panel switch	1	M20103A2	Rear panel with C 4110-0 mounted
52		Barrier block jumper	1	C 4726-3	
53		2 terminal barrier block	1	C 3489-9	
54		2 conductor jack	2	C 3423-8	Input jacks
55		HTA fuseholder with nut	1	C 5597A5	
56		505 solder lug #8 hole	1	D 2935-1	Under screw holding barrier block onto rear panel
57		Dual binding post	2	C 2823-0	Output connectors
58		HEYCO strain relief	1	C 4896-4	
59		4-40x.375 screw	4	C 2247-2	XLR connector hardware
60		6-32x.5 binding head	4	C 2176-3	Barrier block hardware
61	F1	3AG 2 amp 1.25x.25	1	C 5829-4	phillips screw
61a	F1	3AG 1 amp 1.25x.25	1	C 3065-7	
62		4-40 hex nut	4	C 1938-7	Amcron
63		6-32 hex nut	4	C 1889-2	XLR hardware
64		#4 star lockwasher	4	C 1824-9	Barrier block hardware
65		#6 star lockwasher	4	C 5594-4	XLR hardware
66		.625x.375x.015 washer	2	C 7674-2	Barrier block hardware
67		XLR female	2	C 4902-0	Unbalanced input jack hardware
68		.375 jack insulated	2	C 1306-7	Balanced input jacks
69	R6	2.7 ohm 1/2w 5cf	1	C 2857-8	Unbalanced input jack shoulder washer hardware
70		8-32x.25 screw	2	C 5962-3	Resistor
71		#8 star lockwasher	2	C 1951-0	

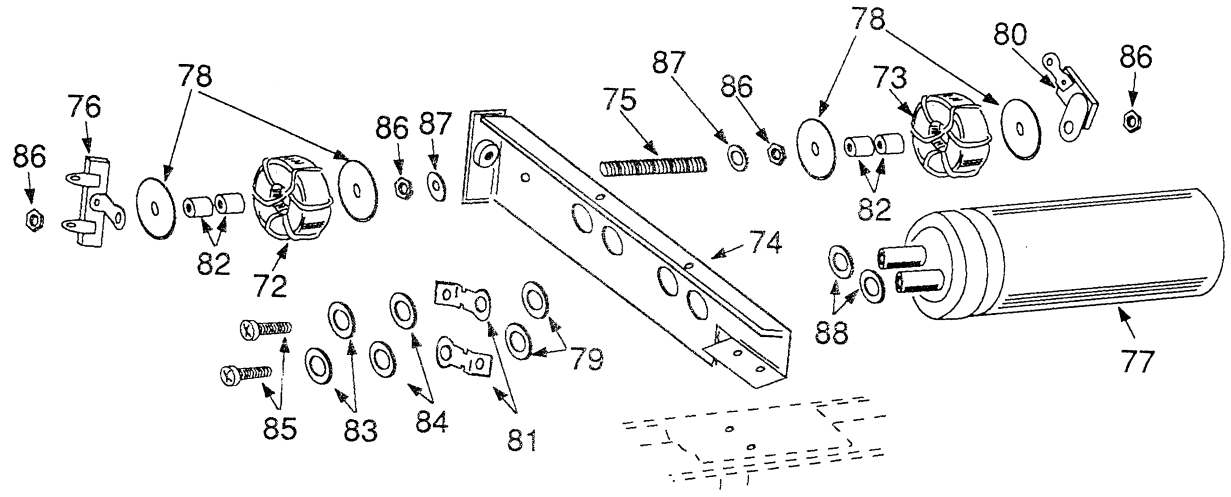

Fig. 9.6 D-75 Capacitor Bracket Assembly

Parts List: D-75 Capacitor Bracket Assembly

Index No.	Schematic Designation	Description	Qty.	Part No.	Misc. Info
72	L103	D-75 output coil	1	M43209-2	
73	L203	D-75 output coil	1	M43208-4	
74		D-75 Capacitor bracket	1	F10104-2	
75		8-32x2.125 stud	1	C 4738-8	Output coil hardware
76		3 AUA terminal strip	1	D 4725-4	Used with output coil
77	C8, C9	10000mf 40V	2	C 4250-4	Power supply capacitors
78		.8750Dx.1871D washer	4	D 3609-1	Output coil hardware
79		.5000 Dx.1951Dx.0625	4	C 3575-9	Capacitor hardware
80		2ALUE terminal strip	1	D 3504-4	Output coil
81		389 solder lug .218 hole	4	D 2934-4	Capacitor hardware
82		3/80Dx3/16IDx1/4"	4	C 2762A8	Output coil hardware
83		#10 star lockwasher	4	C 2279-5	Capacitor hardware
84		#8 type A plain washer	4	C 1951-0	Capacitor hardware
85		10-32x.5 truss head	4	C 2049-2	Capacitor hardware phillips screw
86		8-32 hex nut	4	C 1986-6	Output coil hardware
87		#8 star lockwasher	2	C 1951-0	Output coil hardware
88		.75 fiber washer	4	C 1648-2	Capacitor hardware

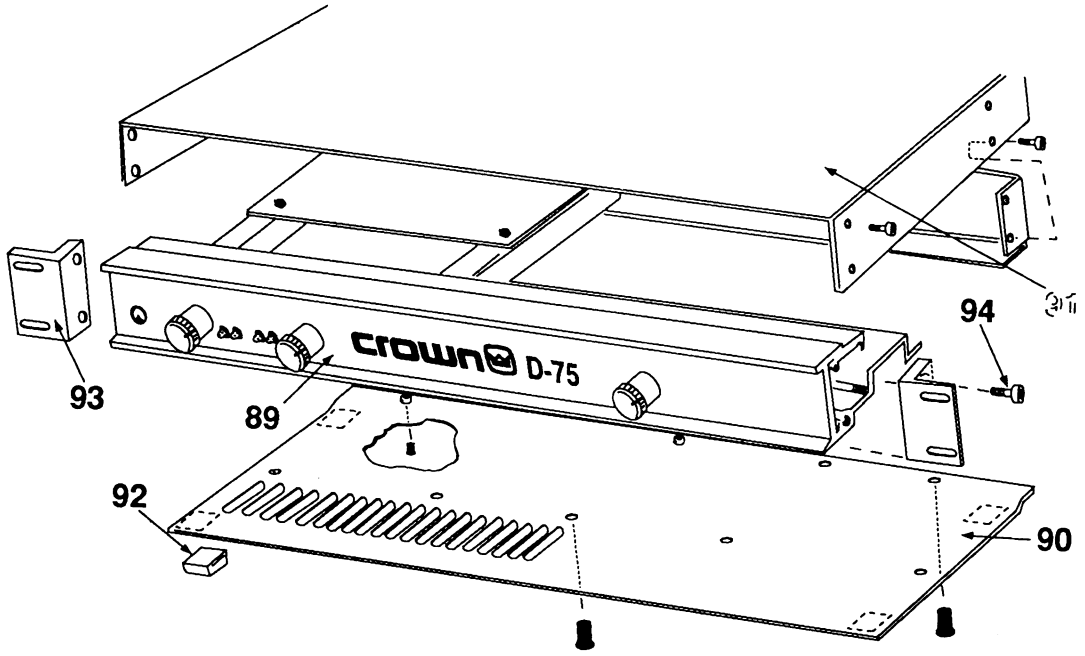

Fig. 9.7 D-75 Final Assembly

Parts List: D-75 Final Assembly

Index No.	Schematic Designation	Description	Qty.	Part No.	Misc. Info
89		Front panel	1	M20162-0	
89a		Lexan Overlay	1	F11023-3	
89b		AMCRON Overlay	1	F10953-2	
90		Bottom cover assembly	1	M20073K5	
91		Top cover assembly	1	F10015K6	
92		Feet	1	C 3342-0	
93		Rack ear	2	D 4800-5	
94		6-32x3/4socket head screw4	4	C 1858-7	

Parts List: Accessory Kit

Description	Qty	.Part No.	Misc.
(Accessory Kit)	1	(M43204-3)	
Panel screws	4	D 5263-6	
Washers	4	D 4137-2	
Dual banana plugs	2	C 2981-4	
Wire nuts	2	C 3069-9	
Fuseholder	2	C 3060-8	
Fuse 1.5 amp	2	C 2957-6	Normally with fuseholder
Selfstick Feet	4	C 3342-0	

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Appendix A: Installation

Before beginning the installation of your amplifier, please carefully note the following: It is always wise to remove power from the unit and turn the input level controls off while making connections - especially if the load is a loudspeaker system. This will eliminate any chance of loud blasts or damage to the loudspeakers.

A.1 Mounting

The D-75 can be mounted into a standard 19 inch wide equipment rack or a custom cabinet of your own design. It occupies 1.75 inches of vertical rack space.

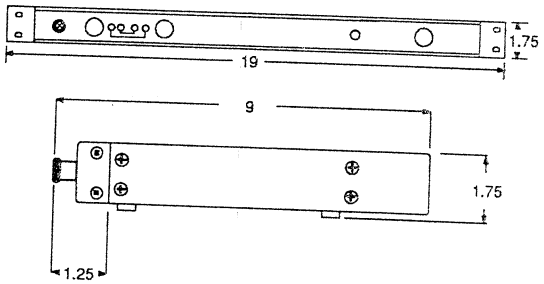

Fig. A.1 D-75 Mounting Dimentions

A.2 Wiring

The input and output jacks are located on the rear panel. Please use care in making connections, selecting signal sources and controlling the output level. The load you save may be your own! Crown is not liable for any damage done to loads due to careless amplifier usage and deliberate overpowering.

The D-75 may be operated in either STEREO (Dual or two-channel) or MONO mode by switching the stereo-mono switch on the rear panel of the amplifier. There are VERY IMPORTANT wiring differences between these two modes which are discussed next.

A.2.1 STEREO

The installation is very intuitive in STEREO mode. The input of Channel 1 feeds the output of the same channel as does the input of Channel 2. To put the amplifier in stereo mode, slide the Stereo-Mono switch at the back of the amplifier downward. Be very careful not to short the two outputs together while in STEREO mode and observe correct loudspeaker polarity. The load impedance should not be less than 4 ohms at either channel.

CAUTION: Never parallel the two outputs by directly tying them together or parallel them with the output of any other amplifier. Such connection does not result in increased power output and can possibly cause the unit to fail.

A.2.2 MONO

Installing the amplifier in MONO mode is very different. MONO mode is activated when the Stereo-Mono switch is pushed upward. In this mode only the Channel 1 input should be used. DO NOT USE THE CHANNEL 2 INPUT or signal level. Keep the Level control of Channel 2 turned completely down.

Note: The input jack and Level control of Channel 2 are not defeated in MONO mode. Any signal fed into Channel 2 will beat against the signal in Channel 1.

The output wiring is very different, too. The polarity of the output of Channel 2 is inverted so it can be bridged with the output of Channel 1. The outputs of both channels receive the same signal from the input of Channel 1.

The first and most common configuration connects the positive lead from the loudspeaker to the red post or positive terminal of Channel 1 and the negative lead to the red post or positive terminal of Channel 2 (the inner black posts are not used). This method, called "bridged-mono," produces the single highest-powered output and is the configuration referred to in section 7.2 of the Specifications. The load impedance should not be less than 8 ohms in this mode.

CAUTION: Be certain that all equipment (meters, switches, etc.) connected to the MONO output lines are balanced. Both sides of the line must be totally isolated from the input grounds. If this is not strictly observed, severe oscillation may result.

A.3 Input

The unbalanced inputs have a nominal impedance of 25 K ohms and will accept most line-level outputs. The XLR inputs are 20 K ohms balanced and 10K ohms unbalanced (pin 2 is noninverting). There are three precautions to take when connecting to the inputs: 1) Keep undesirable signals off the inputs, 2) Avoid ground loops and 3) Avoid feedback between an output and an input.

Large subsonic (subaudible) frequencies are sometimes present in the input signal and can overload, overheat or otherwise damage loudspeakers. To remove such

Input Wiring Tips

1. Use only shielded cable. The higher the density of the shield (the outer conductor), the better the cable. Spiral wrapped shield is not recommended.

2. Keep unbalanced cables as short as possible - avoid cable lengths greater than 10 feet. (Long unbalanced cables may have noticeable high-frequency loss and are at higher risk of picking up interference from other nearby components.)

3. Do not run signal cables together with high-level wiring such as loudspeaker wires or AC cords. (This greatly lessens the chance of hum or noise being induced or picked up from asymmetrical ground loops.)

4. Turn the entire system off before changing any connections and turn the level controls all the way down before powering the system back up. Crown is not liable for damage incurred when any transducer or component is overdriven.

frequencies (and any unwanted DC that may also be present), place a capacitor in series in the input signal line. The graph in Figure A.2 shows how the value of the capacitor affects the frequency response. Use only a low-leakage paper, mylar or tantalum capacitor.

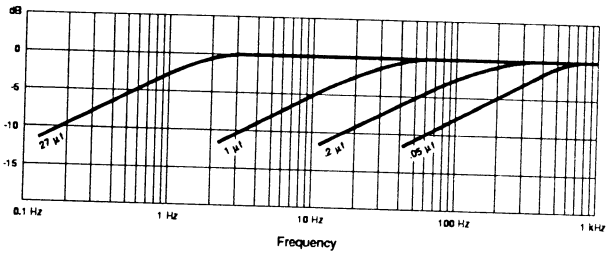

Fig. A.2 Input High Pass Filter

If large amounts of ultrasonic or RF (radio frequency) are found on the input, such as bias from tape recorders, etc., place a low-pass filter on the input. While the highest RF levels that can be reasonably expected may not damage the amplifier, they can burn out tweeters or other sensitive loads, activate the amplifier's protective system or overload the controlled-slewing-rate stage of the amp. (This latter amp stage provides RF overload protection.)

The following filters are recommended for such situations:

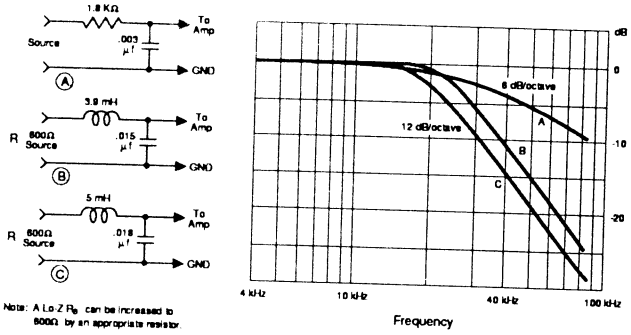

Fig. A.3 RFI (Lowpass) Filter

Another problem to prevent is ground loops - undesirable currents flowing in a grounded system, possibly causing hum in the output. A common form of loop is a pair of input cables whose area is subjected to a magnetic hum field. To prevent ground loops causing magnetic induction, lace both cables together along their length, and away from the power transformer. DO NOT CONNECT THE INPUT AND OUTPUT GROUNDS TOGETHER.

Yet another facet of this problem occurs when input and output grounds, tied together as in testing or metering, allow feedback oscillation from load current flowing in the loop. In some systems, even the AC power line may provide this feedback path. Proper grounding, isolation of inputs and common AC-line devices is good practice.

A.4 Output

Consider the power handling capacity of your load before connecting it to the amplifier. Crown is not liable for damage incurred at any transducer due to its being overpowered. The use of loudspeaker protection fuses is highly recommended (see Section 3.3.4). Please also pay close attention to the Operating Precautions section (Section 4.1).

Under normal stereo conditions, a load impedance less than four ohms should not be used. The monitor output is parallel to the main outputs so any load connected to it, such as headphones, will affect the load impedance. Be careful when wiring multiple transducers to a channel. (Two 8-ohm speakers in parallel present an impedance of 4 ohms while the same two speakers in series have a 16 ohm impedance.)

Use speaker cables of sufficient gauge (thickness) for the length used. Otherwise, power is lost through cable heating and the damping factor decreased due to cable resistance. Refer to the nomograph below for recommended wire sizes (Figure 3.6). If dynamic moving-coil loudspeakers are used, find RL by measuring the resistance of the voice coil with an ohmmeter. If electrostatic loudspeakers are used, use the rated nominal impedance of the manufacturer for RL.

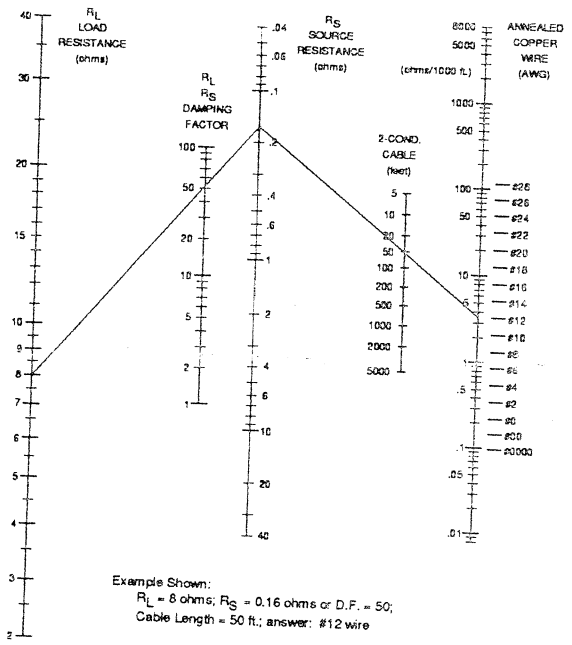

Fig. A.4 Wire -Size Nomograph

Use the nomograph as follows:

1. Note the load resistance of the speakers connected to each channel of the amplifier. Mark this value on the nomograph "Load Resistance" line.
2. Choose an acceptable system damping factor (50 is typical). Mark this value on the "Damping Factor" line.
3. Draw a pencil line through these two points, intersecting the "Source Resistance" line.
4. On the "2-Cond. Cable" line, mark the length of cable run.
5. Draw a pencil line from the intersection point on the "Source Resistance" line through the mark on the "2-Cond. Cable" line.
6. Note where the pencil line intersects the "Annealed Copper Wire" line. The value is the required gauge of speaker cable.
7. If the size of cable exceeds what you want to use, settle for a lower damping factor and try again or use more than one cable for each line. A "rule of thumb" for the latter choice is: Every time you double the number of conductors (of equal gauge) the resulting apparent gauge is three less. For example, you determine that you need #10 AWG wire but this is too large, so you decide instead to use two #13 AWG wires in place of each #10 wire and achieve the same affect. In this same example you could also substitute four #16 AWG wires.

To prevent high-frequency oscillations:

1. Lace the loudspeaker cables together.
2. Keep the speaker cables well separated from the input cables.
3. Never connect the amplifier's input and output grounds together.
4. As a last resort, install a lowpass filter on the signal input line (see preceding Input section).

TRANSFORMER COUPLING

Loads that are primarily inductive such as 70 V step-up transformers and electrostatic loudspeakers require special attention. To prevent large low-frequency currents from damaging the transformer (and prevent the PS-200 from unnecessarily activating its protective system) it may be necessary to install a capacitor in series with the load. If you are unsure whether this is necessary, measure the DC resistance across the terminals of each load with an ohmmeter. If the resistance you measure is less than 3 ohms either add the following parts as illustrated in Figure 3.7 or add an appropriate high-pass filter.

Place an external non-polarized capacitor of 590 to 708 mfd and a 4 ohm power resistor in series with the positive (+) lead as shown below:

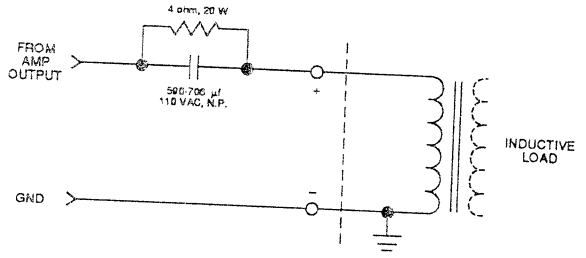

Fig. A.5 Connection to an Inductive Load

A.5 Load Protection

We recommend that you protect your loudspeakers (or other sensitive loads) from damage resulting from excessive power. A common way to do this is to put a fuse in series with the load. The fuse may be single, fusing the overall speaker system or it may be multiple,

with one fuse on each driver.

Fuses help prevent damage due to prolonged overload, but provide essentially no protection against damage from large transients. To minimize this problem, use high-speed instrument fuses such as the Littlefuse 361000 series. Figure 3.8 is a nomograph showing fuse size versus loudspeaker peak power ratings. If, on the other hand, the loudspeaker is only susceptible to damage caused by overheating, use a fuse or circuit breaker having the same slow thermal response as the loudspeaker itself (such as a slow-blow fuse).

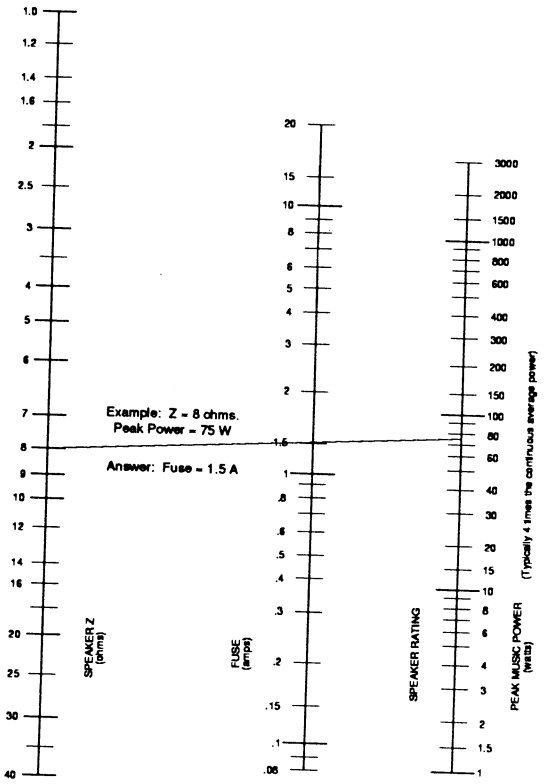

Fig. A.6 Fuse Nomograph for Loudspeaker Protection

Use Good Connectors

1. Male connectors on speaker cables should not be exposed to prevent possible short circuits.

2. Connectors which might accidentally cause the two channels to be tied together during making and breaking of connections should not be used. (A common example is the standard 3-wire 1/4-inch stereo phone plug.)

3. Connectors which can be plugged into AC power receptacles should never be used.

4. Connectors having low-current-carrying capacity should not be used.

5. Connectors having any tendency to short, or having shorted leads should never be used.

Appendix B: Operation

B.1 Precautions

Although your amplifier is well protected from any external faults, we recommend the following precautions be taken for safe operation:

1. When using input sources of uncertain level or any audio components which have not previously been used with your amplifier, always begin with the level controls at a minimum and gradually increase them while monitoring the audio output level to avoid suddenly blasting the loudspeakers.
2. Always turn the level controls down before inserting a headphone set into the output monitor jack on the front panel. This will eliminate the risk of damaging the headset or your ears with high sound levels.
3. Turn the amplifier off and unplug it from the AC line before replacing the fuse. (The unit must be totally disconnected from the AC power source because the fuse socket is still powered even when the unit is turned off.)
4. Operate the amp with the correct fuse (2 amp for 100 or 120 VAC; 1 amp for 200, 220 or 240 VAC).
5. Never drive a transformer-coupled device (such as an electrostatic loudspeaker) or any other device which appears as a low-frequency short (less than 3 ohms) without a series isolating capacitor. Such operation may damage the load and/or needlessly activate the amplifier's VI limiting.
6. Operate the amplifier from AC mains of not more than 10% above the selected line voltage and only the specified line frequency (50/60 Hz). Failure to comply with these limits will invalidate the warranty.
7. Never connect the output to a power supply output, battery, or power main. Damage incurred by such a hookup is not covered by the warranty.
8. Do not expose the amplifier to corrosive chemicals such as soft drinks, lye, salt water, etc.
9. Do not tamper with the circuitry. Circuit changes made by unauthorized personnel, or unauthorized circuit modifications, will invalidate the warranty.

B.2 Controls

Independent level controls and a power switch and power indicator are located on the front panel. Both level controls are used in STEREO mode, but only the Channel 1 control should be used in MONO mode. They are used to adjust the desired output level (both the monitor output and the main outputs) and have thirty one detents for precise adjustment.

The operation mode is switched between STEREO and MONO by the Stereo-Mono switch located on the back panel. Also located on the back panel is an AC line fuse.

In addition to the above essential controls, your high-performance amplifier has an IOC (Input/Output Comparitor) indicator and a Signal Presence indicator for each channel.

The red IOC LEDs are located on the front panel above the level controls. They will flash or glow whenever the distortion specifications of the amplifier are being exceeded.

Note: The IOC indicators also double as STAND-BY indicators and will glow every time this feature is active (turn-on delay, Low-Frequency Interrupt and temperature overload). It is also normal for them to glow momentarily when the AC power is turned off.

The green Signal Presence LEDs are located on the front panel between the level controls. They blink or glow any time there is more than 0.6 V RMS at the output of the D-75. (If the signal level is very low they may not illuminate.) This provides a convenient method of observing whether or not a signal has been interrupted somewhere in between the input and the output.

B.3 Protection

Crown power amplifiers are widely known for their quality construction, high reliability and extensive internal protection circuitry. The D-75 is no exception. It is protected against all the common hazards which plague high-powered amplifiers, including: shorted, open and mismatched loads (load impedance too low); overloaded power supplies; excessive temperature; chain destruction phenomena; input overload damage; and, high frequency overload blowups.

Protection against shorted and low impedance loads is provided by a fast-acting limiter circuit which instantaneously limits the output power to a maximum safe stress value. It functions automatically as a current limiter at audio frequencies whose current limiting threshold is dependent on the history of the output signal. Output current causes the threshold to increase. The no-signal threshold is high enough to allow tone bursting (even into 4 ohms) without premature limiting, as is found in some recent products of other manufacturers.

Since the limiter has no instantaneous response to output voltage, flyback transients do not appear in the output when limiting occurs on inductive loads. (Flyback transients are a normal by-product of VI limiting, also called "Energy Limiter," with an inductive load. The amplifier yields to the

inductive load which causes the load to emanate a pulse. This returned inductive energy has the opposite polarity or the original pulse - hence the name "flyback" pulse. It results in a rasping, popping distortion which is very irritating.)

Because the current limiter of the D-75 will not yield to the constant current demands of an inductive load but will sustain them, it is immune to flyback distortion.

Early amplifier designs frequently employed fixed current limiters, reducing flyback transients, but had serious difficulty obtaining reliable low frequency output - especially at full-voltage into 4 ohm loads. In addition, many early designs used fragile epi-base or triple-diffused outputs which mated poorly to the current limiting protection schemes used and resulted in low performance. The D-75 uses two multiple epitaxial silicon power transistors per channel. Their toughness allows the reliable use of a current limiter. And since limiting is adjusted to the spectral content of the signal, much larger power outputs are safely achieved.

At subsonic frequencies, it behaves as a VI limiter and provides the increased protection needed to prevent destruction due to excessive heat build-up in the half of the output stage that is being driven.

DC applied to the input should never cause accidental loudspeaker damage because of a input coupling capacitor.

All the amplifier's voltage-amplifier circuitry is designed to be inherently current-limited. Thereby, if any of the devices should fail (which is extremely unlikely) no damage will occur to the rest of the stages.

The AC line for 100 or 120 V is fused with a 2 A fuse. For 200, 220 or 240 VAC, a 1 A fuse is used. The use of any other type or size fuse will invalidate the warranty.

The input stage is protected against excessive input signal level (overdrive) by a series-limiting resistor.

The amplifier features a controlled slew rate which, coupled with the protection circuits, guards the amplifier from blowups when fed large RF input signals.

B.4 Fuse Replacement

An AC line fuse is located next to the power cord on the back panel of the amplifier. To replace the fuse, first TURN OFF THE POWER SWITCH AND DISCONNECT THE POWER PLUG FROM THE POWER SOURCE. Unscrew the cap of the fuse holder and remove the fuse.

Replace the fuse with a 2 amp fuse for 100 or 120 VAC operation and a 1 amp fuse for 200, 220 or 240 VAC operation. Reassemble in reverse order.

IMPORTANT: The fuse holder still has power even when the power switch is turned off. **ALWAYS DISCONNECT AC POWER BEFORE REPLACING FUSES.**