RESOLUTION NO. 664

A RESOLUTION TO AWARD THE SELECTION ON PA SYSTEM FOR WILSONVILLE LIBRARY.

WHEREAS, the City staff has prepared a report on the above captioned subject which is attached hereto as Exhibit "A"; and

WHEREAS, the City Council has duly considered the subject and the recommendation(s) contained in the staff report; and

WHEREAS, interested parties, if any, have had an opportunity to be heard on the subject.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Wilsonville does hereby adopt the staff report attached hereto as Exhibit "A", with the recommendation(s) contained therein and further instructs that action appropriate to the recommendation(s) be taken.

ADOPTED by the City Council of the City of Wilsonville at a regular meeting thereof this 2nd day of May, 1988, and filed with the Wilsonville City Recorder this same date.

William E. Stark

WILLIAM E. STARK, Mayor

ATTEST:

Vera A. Rojas

VERA A. ROJAS, City Recorder

SUMMARY of Votes:

Mayor Stark	AYE
Councilor Edwards	AYE
Councilor Braymen	AYE
Councilor Clarke	NO
Councilor Jameson	NO

CITY OF Wilsonville
30000 S.W. Town Center Loop E. • P.O. Box 220 • 503-682-1011
Wilsonville, Oregon 97070

EXHIBIT "A"

TO: Honorable Mayor and City Council

FROM: Ray Shorten, Finance Director

DATE: April 28, 1988

RE: New City Library Public Address System

I have reviewed the proposals received on this equipment, as well as the attached memo from Nancy Dillon.

I concur with her recommendation to purchase the system from Spectrum Systems Design at a total installed purchase price of $3,867.00.

Where as both companies have provided excellent references and are offering basically the same equipment, I think the cost factor is the only valid criteria for recommending award to Spectrum Systems Design.

CITY OF Wilsonville
30000 S.W. Town Center Loop E. • P.O. Box 220 • 503-682-1011
Wilsonville, Oregon 97070

TO: RAY SHORTEN, FINANCE DIRECTOR

FROM: NANCY DILLON, ACCTG SPECIALIST/PURCHASING CLERK

DATE: APRIL 21, 1988

RE: RECOMMENDATION REGARDING PROPOSALS SUBMITTED ON P.A. SYSTEM FOR NEW LIBRARY

The Request for Proposal process was chosen as our best avenue to select the public address system for the new Library. The "Request" was published according to the time-frame outlined in our purchasing rules and 13 vendors requested that specification packets be sent to them. I have attached a packet for your information. Three proposals (summary shown below) were received prior to the deadline, Tuesday, April 19, 1988 at 5:00 p.m.

VENDOR	COST OF MAT'L/LABOR	COST OF SERVICE CONTRACT
Telesystems West	$6,058.00	not included
Audio Concern	$3,960.00	$100/year
Spectrum Systems Design	$3,867.00	$105/year

The detailed specifications for the p.a. system were prepared for Phila Schwann, Library Director, by Audio Concern, an audio consultant from Aloha, Oregon. Along with these specifications, we included in the packet, general directions as to the criteria that would be used to review each proposal. The criteria are as follows: product compatibility with the proposed design, references, and the cost of the total system including an annual service contract.

After reviewing the proposals, it was apparent that both the low bids were prepared using the brand name equipment outlined in the specification. Because of this, I feel confident that we are accurately comparing the same merchandise.

Both companies had excellent references. From the references given, it looks as if Audio Concern installs many systems for churches, most in the the Portland area. They also furnished the system for the Wilsonville Community Center. Spectrum Systems Design had more installations in the business sector from throughout the Northwest. Also from Spectrum's references, it was obvious that they have the skills to design and install very sophisticated systems, involving video, projection, and music equipment. Again, I feel that both companies have the expertise and professionalism to effectively furnish and install our system.

From these factors, I conclude that the only difference between the proposals is the actual cost (a difference of $93.00). We did contact both vendors and ask what the minimum time would be to obtain the speaker boxes needed by the electrical contractor. Spectrum System Design could have the materials to us in 24 hours after we placed the order. The City could be responsible for the added freight charge. Audio Concern would need 5 days to furnish the material.

RECOMMENDATION:

Have Spectrum System Design furnish and install the library public address systems for their proposed price of $3,867.00, with the understanding that if we wish to have the needed materials rushed to the electrical contractor, that the City will incur the extra freight costs.

CITY OF Wilsonville
30000 S.W. Town Center Loop E. • P.O. Box 220 • 503-682-1011
Wilsonville, Oregon 97070

REQUEST FOR PROPOSAL

LIBRARY PUBLIC ADDRESS SYSTEM

The City of Wilsonville will be accepting proposals for furnishing and installing a public address system for the new City Library building currently under construction at 8200 S.W. Wilsonville Road, Wilsonville OR.

Detailed specifications for the proposed system may be obtained from the City of Wilsonville Finance Dept. at 30000 S.W. Town Center Loop E. or by calling 682-1011.

Proposals will be accepted until 5:00 p.m. on Tuesday, April 19, 1988. Proposals will not be accepted after this date.

Proposals received will be reviewed by City Council and the sucessful vendor may be awarded the contact at the regularly scheduled Council meeting on May 2, 1988.

The Wilsonville City Council reserves the right to reject any or all proposals if it appears to be in the best interest of the City.

Publish: Daily Journal of Commerce 4/1/88
Canby Herald/Wilsonville Spokesman 4/6/88

CITY OF Wilsonville
30000 S.W. Town Center Loop E. • P.O. Box 220 • 503-682-1011
Wilsonville, Oregon 97070

GENERAL INFORMATION

The attached specifications were prepared for the City by an outside consultant, Audio Concern. Any specifications using the name of a manufacturer, brand name or mark are not intended to limit bidding. Rather, they are used to assist the bidder in preparing his bid, and to indicate the quality of material and equipment which is desired and acceptable.

All proposals should include at least four (4) references from companies using similar systems to those being bid. Any promotional material concerning the system and its components would also be helpful.

Please include in the proposal, information concerning maintenance and parts replacement on the system and information about the possibility of a annual service contract to cover all maintenance.

Each proposal shall be reviewed by City staff and a recommendation will be prepared for the City Council. The criteria to determine the best proposal for the City will be as follows:

1. Product compatibility with the proposed design
2. References
3. Cost of the total system including annual service contract

CITY OF Wilsonville
30000 S.W. Town Center Loop E. • P.O. Box 220 • 503-682-1011
Wilsonville, Oregon 97070

SPECIFICATIONS FOR PUBLIC ADDRESS SYSTEM

GENERAL PROVISIONS:

Electroacoustical Consultant for this project is the Audio Concern, 20005 S.W. Charlene Court, Aloha, OR 97006, (503)642-0246, Attention: Stephen C. Huegli.

These applications are intended as a standard of quality, function, performance and appearance which will be considered as acceptable.

FUNCTIONS:

The sound reinforcing system shall provide clear, natural sound uniformly distributed throughout the designated areas.

Microphone placement and control of sound directed to three designated areas shall occur from and be controlled at the circulation desk. These three areas shall be designated as the Library Proper, Staff and Work Areas, and the Multi-Purpose Room. The Multi-Purpose Room system shall also provide for control of sound independent from the other areas of the library.

The system shall have adequate dynamic range without audible clipping or distortion to accommodate speech reinforcement.

PERFORMANCE CRITERIA:

Frequency Response: Measured at seated ear height in continuous one-third octave bands, 70 to 10,000 Hz., typically +3 db.

Noise: System noise shall not exceed an equivalent input noise of -120 dBu based on a 10,000 Hz bandwidth. Predominant noise component in the system output under any operating condition shall be that of the input stage.

Dynamic Range: The system shall deliver a minimum sound pressure level of 80 dB to any location at seated ear height at less than 5% total acoustical harmonic distortion.

Any deviation from these criteria must be approved by the Electroacoustical Consultant.

EQUIPMENT:

Loudspeakers:

The loudspeaker shall be a full range device, producing a phase coherent waveform flat within +3 db from 70 Hz to 10,000 Hz. Usable frequency response shall extend from 40 Hz to 18,000 Hz. High frequency dispersion shall be 180 degrees at 10,000 Hz. or greater, in both horizontal and vertical planes.

All loudspeakers shall be the B.E.S.T. C-12BHT ceiling speaker or equivalent.

Each speaker will include one B.E.S.T. FMB (front mount bezel) for use with drop ceiling tiles, sheetrock ceilings or drywall applications. Each speaker mounted within a drop ceiling tile shall include the B.E.S.T. TBS-12 Support Bridge to prevent tile sag. Each speaker mounted within a plenum air return shall include one B.E.S.T. PBB-1.2 Back Can. Each speaker shall include one 70-volt transformer and be tapped as specified on the floor plan.

Power Amplifiers:

Rated output 30 watts, with input modules as indicated.

Circulation Desk: Toa A-903

One balanced low impedance microphone input with phantom modification: H-02S Module

One balanced low impedance line output: T-01S Module

Multi-purpose Room: Toa A-903

Two balanced low impedance microphone inputs with phantom modification: H-02S Modules

Two high impedance balanced auxiliary inputs: B-01S Module

One balanced low impedance line output: T-01S Module

Equipment Cabinet:

Wall mounted equipment cabinets shall have a locking front door and be equal to the Soundolier Series AWR-3. One shall be installed within the full height wall at the end of the circulation desk. The second to be installed within the wall of storage room #120, adjacent to the Multi-Purpose Room.

Microphones:

Circulation Desk: One microphone shall be supplied equivalent to the Shure SM-78 dynamic unidirectional microphone with twenty foot cord.

One floor stand shall be equal to the Atlas MS-12C

One lavalier microphone shall be equal to the Shure SM-83 omnidirectional condenser lavalier microphone, with twenty foot cord.

Connector & Switch Plates:

Circulation Desk: Furnish one plate with four switches to control page to designated three areas plus all page.

Multi-Purpose Room: Furnish one dual microphone jack plate with Cannon XLR-3 Female connectors or equal.

Furnish one line jack plate with two 1/4" phone jacks for balanced Auxiliary Input to mixer and Mixer Output.

Furnish one switch plate with two switches to determine system connection to Multi-Purpose Room East speakers and West speakers.

Wiring:

Microphone lines shall be Belden 8451 or approved equal, continuous without splices from mic. receptacle to amplifier input.

Line level output from Circulation Desk mixer T-01S module to Multi-Purpose room Aux Input Module shall use Belden 8451 or equivalent.

Speaker wiring shall be twisted pair with overall plastic jacket, sized for maximum .5 db line loss.

INSTALLATION

Equipment shall be completely installed, tested and in operating order under the terms of this specification.

Installation shall be made under the supervision of a trained representative of the manufacturer, and in accordance with all appropriate local electrical codes for public buildings.

A.C. lines shall be three-wire color coded #14 ground wire.

Supply all necessary equipment for a complete finished installation.

Equipment and installation shall be of a design to eliminate electrical shock to operators.

Component grounds, interconnections and cable shield grounds to be rendered such that system shall be free from ground loops, hum, noise, instability and cross-talk. Shop drawings to show all interconnections between system components, grounding or cable shields and system components.

ORIENTATION AND INSTRUCTIONS:

The contractor shall render instruction of the owner's personnel in the proper operation of the systems.

TECHNICAL MANUAL:

Technical manual shall include complete servicing instructions, including:

Manufacturer's instruction books & specification sheets on major system components.

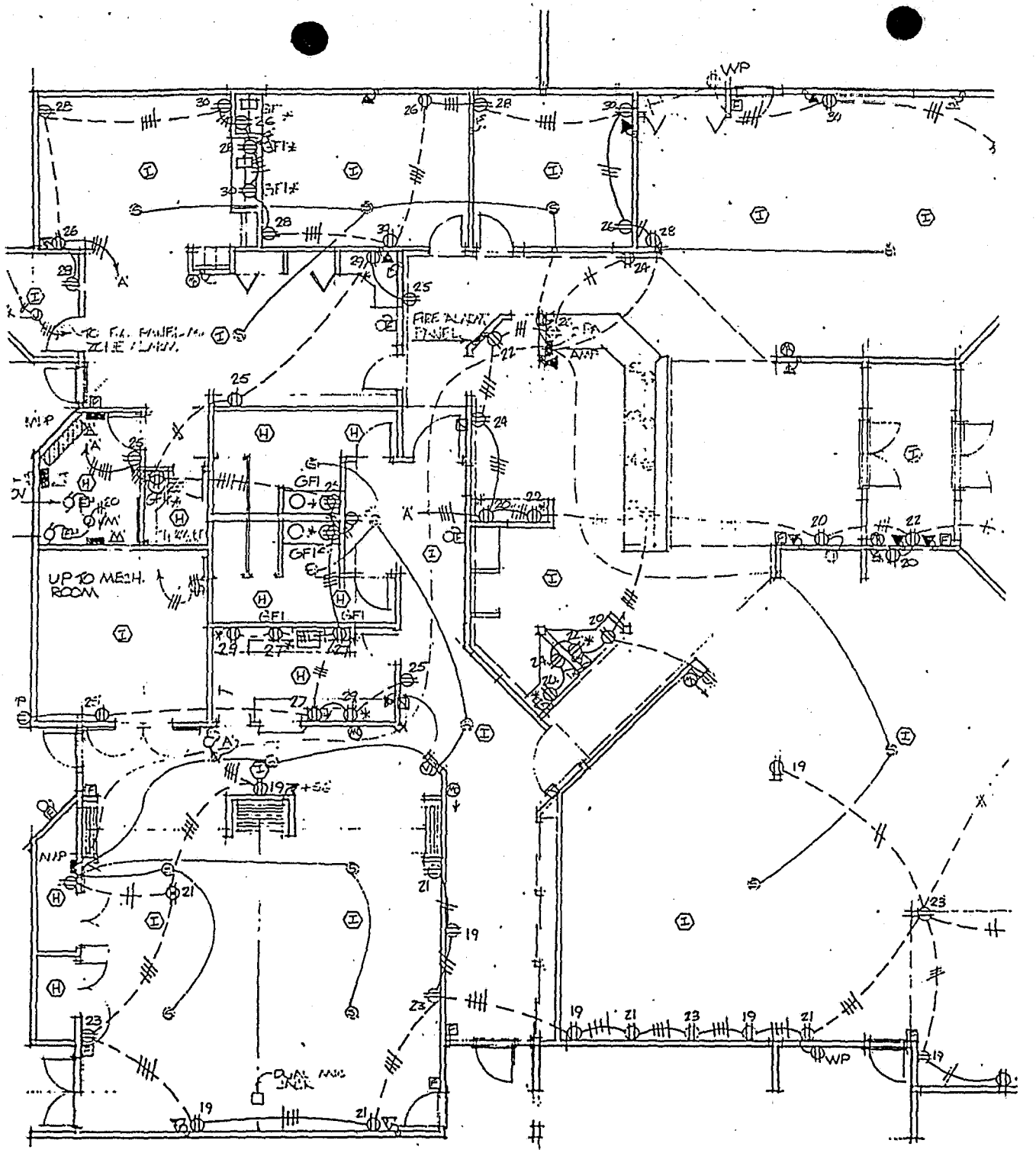
System operation instructions.

Complete as-built drawings showing internal wiring of all equipment assemblies, wiring between equipment assemblies, running sheets showing cable color coding and terminal connections of all equipment assemblies and junction boxes.

Tap connections on all speaker transformers, power amplifier outputs.

MAINTENANCE AND SERVICE:

The sound system shall be guaranteed against defects in material and workmanship for a period of one (1) year from the date of completion of the installation. During this period, any service and/or parts replacement shall be make at no cost to the Owner. Any request for service or repair under this warranty shall be honored, except when damage has resulted from obvious vandalism or Acts of God.



FLOOR PLAN- POWER

SCALE 1/8"=1'-0"

SPECTRUM
SYSTEMS DESIGN

1634 S.W. ALDER STREET
PORTLAND, OR 97205
(503) 248-0248

CITY OF WILSONVILLE
PUBLIC LIBRARY

PROPOSAL
FOR
PUBLIC ADDRESS SYSTEM

PREPARED BY
SPECTRUM SYSTEMS DESIGN
APRIL 18, 1988

City of Wilsonville
Public Address System
April 18, 1988

GENERAL RESPONSIBILITIES

1. SPECTRUM will be responsible for fabrication, preinstall and installation of Public Address System as described in the request for proposal dated April 1, 1988.

2. SPECTRUM will furnish all equipment and materials, whether specifically mentioned herein or not, to ensure a complete and operating system.

3. SPECTRUM will be responsible for the initial adjustment of the systems as herein prescribed and will provide all test equipment for the system check-out and acceptance tests.

4. SPECTRUM will provide on-the-job training in the operation and maintenance of the systems for personnel designated by the Owner.

QUALIFICATIONS

SPECTRUM has ten years experience in the fabrication, assembly, and installation of video and audiovisual systems of similar magnitude and quality as specified for this job. SPECTRUM holds a state of Oregon license for electrical contractor limited energy and limited journeyman - limited energy electrician. Refer to Exhibit A - List of Projects and Exhibit B - List of References.

1. WARRANTY PERIOD

   SPECTRUM will include a statement of warranty on the entire system and on the individual pieces of equipment. The system warranty will be for a period of one year from the date of system acceptance by the Owner.

   All manufacturer's equipment warranties will be activated in the Owner's name and will commence on the date of system acceptance. In the case of modified equipment, the manufacturer's warranty is normally voided. In such cases, SPECTRUM will provide the Owner with a warranty equivalent to that of the original manufacturer.

2. ANNUAL MAINTENANCE

   SPECTRUM will vacumn inside racks, check all connections and functions and check for proper sound quality.

City of Wilsonville
Public Address System
April 18, 1988

PUBLIC ADDRESS SYSTEM

FUNCTION: The P.A. System will consist fo a paging microphone at the circulation desk and mircophone inputs in the multipurpose room. The system will also consist of amplifier mixers to send auido from the microphones to the 16 ceiling speakers installed throughout the facility. There will be switches that will allow for the independent sending of audio to the east and west multipurpose areas

EQUIPMENT:

QTY	EQUIPMENT	UNIT PRICE	EXTENSION
	SPEAKERS		
16	BES C-12 BHT Speaker	46.80	$ 748.80
16	BES FMB Bezel	2.40	38.40
16	BES TBS-12 Support Bridge	26.40	422.40
16	PBB 1.2 Back Can	4.20	67.20
	POWER AMPS		
2	TOA A-903	249.60	499.20
3	TOA H-025	26.40	79.20
2	TOA T-01S	31.20	62.40
2	TOA B-01S	25.20	50.40
	EQUIPMENT CABINET		
2	Soundolier AWR -3	113.50	227.00
	MICROHONES		
1	Shure SM-78	124.20	124.20
1	Shure SM-83	198.70	198.70
2	AudioTechnica AT8314-20 20' Mic Cable	9.65	19.30
1	AudioTechicia M5-12C Mic Stand	19.30	19.30
			$2,556.50
	MATERIALS AND LABOR		1,310.50
	PROJECT TOTAL		$3,867.00
	ANNUAL MAINTENACE		$105.00

SPECTRUM
SYSTEMS DESIGN

1634 S.W. ALDER STREET
PORTLAND, OR 97205
(503) 248-0248

DESIGN & INSTALLATION PROJECTS

IBM - Anchorage, AK - Spokane, WA - Reno, NV - Portland, OR

EXECUTIVE BRIEFING ROOM. Video projection of multiple computer inputs, video cassette and video disc, program audio playback, slide, 16mm and remote control systems. Modify corporate design to the branch's space. Design through installation.

ROGUE VALLEY MEDICAL CENTER - Medford, OR

SMULLIN CENTER - HEALTH EDUCATION. TWO HUNDRED SEAT AUDITORIUM - TWO HUNDRED SEAT LECTURE HALLS - FOUR MEETING ROOMS - SIX CLASSROOMS. Video, audio, P.A., slide, remote control, paging, visual doctor call and video lighting systems. Design through bid specification.

SERVIO LOGIC - New York, NY & Alameda, CA

EXECUTIVE OFFICE, CONFERENCE ROOM, TRAINING ROOM & PROJECTION BOOTH. Multi-projector slide, video projection of computer/video, talkback and remote control systems. Design through installation.

INTEL CORPORATION - Hillsboro, OR

JONES FARM - CUSTOMER CONFRENCE ROOM. Program audio, slide, video projection with video cassette/ computer and remote control systems. Design through installation.

HAWTHORNE FARM III - TWO HUNDRED SEAT PRESENTATION ROOM & FOUR TRAINING ROOMS. Program audio, slide, video projection with video cassette and computer, audio teleconfernece and remote control systems. Design through bid specification.

U.S. BANCORP - Portland, OR

EXECUTIVE OFFICE BOARDROOM - EXECUTIVE CONFERENCE - PROJECTION BOOTH. Slide, 16mm, program audio, video projection, audio and video, distribution network, talkback, video playback/record, and remote control systems. Design through installation.

FEASIBILTY STUDY. For satellite downlink, microwave, master antenna television system, and forty-three story distribution network for The Tower and Plaza tenants

MODEL OFFICE FOR NEW BUILDINGS. Design and installation of multi-image slide projection system with custom light, show, screen, and curtain control systems.

OREGON INSTITUTE OF TECHNOLOGY - Klamath Falls, OR

CLASS ROOM/LABORATORY BUILDING. AUDITORIUM 120 SEATS - LARGE CLASSROOM 43 SEATS - TWO SPEECH CLASSROOMS. Video projection, audio, PA, slide, video camera stand, video taping and remote control systems. Design through bid specification.

SINGER LINK - Sunnyvale, CA

FLIGHT SIMULATOR SALES/TRAINING ROOM. Three rear projection screens of computer flight simulator and video cassette, multi-image slide, intercoms and remote control systems. Documentation and installation.

FAIRCHILD CORPORATION - Cupertino, CA

PRESENTATION ROOM & TWO EXECUTIVE CONFERENCE ROOMS. Program audio playback, multi-image projection, voice reinforcement, video projection with two video cassettes/multiple computers, audio teleconference, satellite downlink and remote control systems. Design through installation.

MCDONALDS CORPORATION - Bellevue, WA & Portland, OR

TRAINING ROOM. Video projection of video cassette/computer and loctern camera, slide, sound reinforcement, program audio playback, remote control and custom podium. Design through installation.

PACIFIC NORTHWEST BELL - Seattle, WA

AUDITORIUM, BOARDROOM & DINING ROOM. Complex remote control system per room. Design through installation.

FAIRCHILD ADVANCED PROCESSOR DIVISION - Palo Alto, CA

VIDEO PROJECTION PRESENTATION ROOM. Video projection with video cassette/multiple computer inputs and program audio playback systems. Design through installation.

RAINIER NATIONAL BANK - Bellevue, WA

RAINIER BANK PLAZA AUDITORIUM. Program audio playback, slide, video projection, talkback, video playback/record and remote control systems. Equipment purchase through installation.

UNIVERSITY OF OREGON - Eugene, OR

SCIENCE FACILITIES BUILDING. TWO HUNDRED THIRTY SEAT LECTURE HALL - NINTY FOUR SEAT LECTURE HALL. Audio, video projection, P.A., intercom, video camera stand, and remote control systems. Design through bid specifications.

SPROUSE REITZ HEADQUARTERS - Portland, OR

PRESENTATION/MEETING ROOM. Program audio, complex voice reinforcement, slide, video projection of video cassette and remote control systems. Design through installation.

PIHAS, SCHMIDT, WESTERDAHL - Portland, OR

PRESENTATION ROOM. Program audio playback/record, slide, video projection with two video cassettes/ computer, focus group viewing, video distribution and remote control systems. Design through installation.

OREGON HIGH DESERT MUSEUM - Bend, OR

VIDEO PROJECTION THEATRE. The theatre has video projection from two video cassette units, audio system and a timer remote control system. Design through installation.

BONNEVILLE POWER ADMINISTRATION - Portland, OR

DITTMER CONTROL CENTER. Feasibility Study #1 - Convert the theatre format of six slide projector to 18 slide projectors with video projection from video cassette and remote control of different shows.

DITTMER CONTROL CENTER. Feasibility Study #2 - Convert the format to video projection with three interactive video disc and remote control of different shows.

DITTMER CONTROL CENTER.Study #2 - Design completion and technical observation.

AV PRODUCTION AREA. Recording booth room, audio mixing room, video editing room, multi-image production room and confrence room. Design development and installation.

CONFERENCE ROOMS - Portland, OR

Brown, Dugan & Associates
Borders, Perrin & Norrander
Chiles Foundation
Columbia Steel
Coates Advertising
First Interstate Bank of Oregon
First Interstate Services
Ford Industries
Gerber Advertising
Johnson & Higgins
Louisiana-Pacific
Marketing One
Marsh - McLennan
Morton, Cole & Weber
Omark Industries
Port of Portland - Airport
Portland Development Commision
Russell Development Commison
Soil Conservation Service
Thunder Media Advertising
Unify Corperation
Walnut Park Company
Whitman, Inc

CONFERENCE ROOMS - Outside Portland

AT&T, Seattle, WA
Murdock Charitable, Vancouver, WA
Corps of Engineers, Walla Walla, WA
Nerco Minerals, Fairbanks, AK & Vancouver, WA
Pacific First Federal, Tacoma, WA
Pacific Telcom, Vancouver, WA
Providence Hospital, Seattle, WA

ADDITIONAL PROJECTS

ADVERTISING MUSEUM, Portland, OR	- Three Exhibits
ARMY CORP OF ENGINEERS, Bonneville, OR	- Visitors Information Center
BOEING COMMERCIAL AIRPLANE CO., Seattle, WA	- Visitor Information Center
	- Traveling Cockpit
CAPE PERPETUA, Yachats, OR	- Theatre Upgrade
FT. STEVENS, Hammond, OR	- Theatre Feasibility Study
OREGON HEALTH SCIENCE UNIVERSITY, Portland, OR	- Two Classrooms
OREGON STATE POLICE, Salem, OR	- Traveling Multi-Image
U. S. FOREST SERVICE, Multnomah Falls, OR	- Outdoor Exhibit
WASHINGTON PARK ZOO, Portland, OR	- Alaska Tudra Exhibit
WESTERN FORESTRY CENTER, Portland, OR	- Tillamook Burn Exhibit

SPECTRUM
SYSTEMS DESIGN

1634 S.W. ALDER STREET
PORTLAND, OR 97205
(503) 248-0248

R E F E R E N C E S

OWNER NAME & ADDRESS	PROJECT NAME & LOCATION	DATE OF COMPLETION	CONTRACT TYPE	ARCHITECT OR ENGINEERING FIRMS
Rogue Valley Medical Center 2825 Barnett Road Medford, Oregon Lois Banke (503) 770-4148	Rogue Valley Medical Center Health Education Facility Medford, Oregon Chris Robinson (503) 770-4148	8/88	C	Patterson Snider & Stewart 45 Hawthorne Medford Oregon 97504 Doug Snider (503) 772-5203
Virginia Mason Clinic P.O. Box 900 Seattle, Washington 98111 Taylor Ubben (206) 223-6983	The Mason Clinic 1100 Ninth Ave. Auditorium Complex Seattle, Washington	8/89	P	The NBBJ Group 111 S. Jackson St. Seattle, Washington 98104 Mike Miller (503) 223-5167
McDonald's Corporation 2700 Northup Way Bellevue, Washington Jim Cravens (206) 827-9700	McDonald's Corporation Training Room Kirkland, Washington Jean Boyle (206) 827-9700	4/88	P	
Oregon High Desert 59800 S. Highway 97 Bend, Oregon 97702 Jerry Moore (503) 382-4754	Spirit of the West Exhibit 59800 S. Highway 97 Bend, Oregon	3/89	P	Porterfield Design 842 N.W. Columbia Street Bend, Oregon 97701 Tom Porterfield (503) 382-6456
Oregon Institute of Tech. Klamath Falls, Oregon Roger Wiltrout (503) 882-6321 Ext. 567	Oregon Institute of Tech. Classroom/Laboratory Bldg. Klamath Falls, Oregon	7/89	C	SRG Partnership 520 S.W. Yamhill St Portland, Oregon 97204 Jerry Jay (503) 222-1917
Providence Medical Center 500 17th C-34008 Seattle, Washington 98122 Colleen McDough (206) 326-5537	Providence Medical Center East Conference Room Third Floor Kevin Deasy (206) 326-5680	2/88	P	
Bonneville Power Admin. 905 N.E. 11th Ave P.O. Box 3621 SSG Portland, Oregon 97232 Bill Murlin (503) 230-5141	Bonneville Power Admin. Administration Building Contract: DE-AC79-87BP37014	1/88	I	Bonneville Power P.O. Box 3621 EMQC Portland, Oregon 97208 Ralph Shuping, (503) 230-3000
Port of Portland Box 3529 Portland, Oregon 97208 Richard Rush (503) 231-5000 Ext. 416	Portland International Airport Contract 29875-465 International Trade & Business Center Audiovisual and Lighting Systems	12/87	I	Zimmer Gunsul Fasca Partnership 320 S.W. Oak St. #500 Portland, Oregon 97204 Duane Hunting (503) 224-3860

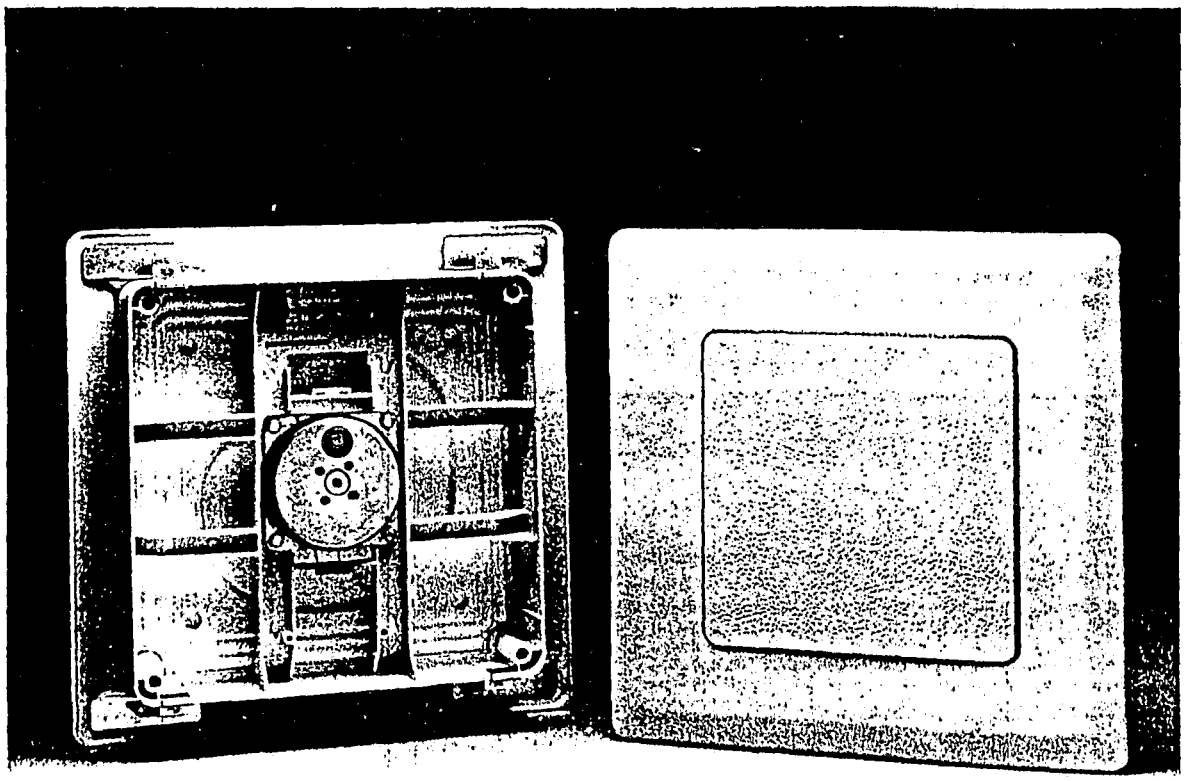
OWNER NAME & ADDRESS	PROJECT NAME & LOCATION	DATE OF COMPLETION	CONTRACT TYPE	ARCHITECT OR ENGINEERING FIRMS
Servio Logic 1420 Harbor Bay Parkway Alameda, California David Taylor (415) 748-6200	Servio Logic Presentation/Training Alameda, California	6/87	P	Associated Designs 117 S.W. Taylor Portland, Oregon 97204 Sam Taylor (503) 224-1878
I.B.M. 355 S. Grand Ave. Los Angeles, CA 90060	Executive Briefing Room 2525 C Street Anchorage, Alaska 99503 Tom Boardman (907) 265-0745	2/87	P	Kumin Associates 3000 "A" Street #202 Anchorage, Alaska Greg Frosberg (907) 563-8877
Pihas Schmidt Westerdahl 319 S.W. Washington Portland, Oregon Paul Nordstrom (503) 279-4000	Pihas Schmidt Westerdahl Presentation Room Portland, Oregon	10/86	P	BGBG Interiors 920 S.W. 3nd Ave. Portland, Oregon 97204 Phil Beyl (503) 224-9656
Rainier National Bank 600 University, PO Box 3966 Seattle, Washington John Richards (206) 621-5559	Rainier Bank Plaza Auditorium Bellevue, Washington	9/86	I	Alta Consulting Services 8383 158th Ave. N.W. #200 Redmond, Washington Bruce Portzer (206) 881-1155
Singer Link Flight Simulation 1077 E. Arques Ave. Sunnyvale, California 94088 Bobbie Peterson (408) 720-5743	Singer/Link Flight Simulator/Sales Room Sunnyvale, California	5/86	I	Kopple Technical Services 1476 Rosita Road Pacifica, california 94044 Stuart Kopple (415) 692-7775
I.B.M. 355 S. Grand Ave. Los Angeles, CA 90060 Brent Wolfe (213) 621-6977	Executive Briefing Room 50 West Liberty Reno, Nevada 99201 Jim Wilson (702) 734-4513	3/86	P	Ted Fuetsch Associates 50 West Liberty #900 Reno, Nevada 89501 Ted Fuetsch (702) 329-7624
Fairchild Semiconductor Corp. 10400 Ridgeview Court Cupertino, California 95014 Bill Densham (408) 864-6118	Presentation Room Fairchild Corp. Cupertino, California	3/86	S	
Sprouse Reitz 1411 S.W. Morrison Portland, Oregon 97208 Robert Sprouse II (503) 224-8220	Sprouse Reitz Presentation/Conference Room Portland, Oregon	2/86	P	Hermanson, McNiven & Assoc. 1507 N.W. 24th Portland, Oregon 97210 David McNiven (503) 222-1948
Pacific Northwest Bell 1600 Bell Plaza Seattle, Washington Steve Saunto (206) 345-5112	Pacific Northwest Bell Remote Control Systems Seattle, Washington	1/86	P	

OWNER NAME & ADDRESS	PROJECT NAME & LOCATION	DATE OF COMPLETION	CONTRACT TYPE	ARCHITECT OR ENGINEERING FIRMS
I.B.M. 355 S. Grand Ave. Los Angeles, CA 90060 Brent Wolfe (213) 621-6977	Executive Briefing Room West 201 North River Dr. Spokane, Washington 99201 George Carter (509) 838-5777	11/85	P	Northwest Architects West 800 Stevens Street Spokane, Washington (509) 838-8240
Intel HF-III Hawthorne Farm III Hillsboro, Oregon	Intel HF-III Presentation/Training Hillsboro, Oregon	12/84	C	SRG Partnership 520 S.W. Yamhill St Portland, OR 97204
I.B.M. 355 S. Grand Ave. Los Angeles, CA 90060 Brent Wolfe (213) 621-6977	Executive Briefing Room 1211 S.W. Fifth Ave Portland, Oregon	12/84	P	Skidmore Owings & Merrill 900 S.W. 5th Ave. Portland, Oregon 97204 Randy Dubois (503) 226-1431 (503) 222-1948

"P" - Audio Visual Design/Installation
"S" - Audio Visual Subcontractor
"C" - Audio Visual Consultant
"I" - Audio Visual Install Only
"JV" - Joint Venture - Audio Visual Install Only

B.E.S.
COMMERCIAL SOUND PRODUCTS DIVISION

C-12B
Hemispherically Radiating Ceiling/Multi Purpose Speaker



DESCRIPTION

The B.E.S. C-12B is a high performance, high definition, yet very cost effective speaker. Like all B.E.S. ceiling speakers, it is a hemispherical radiator, producing a 180 degree hemispherical dispersion pattern. As a result of this exceptionally wide coverage, the number of speakers required for maximum results is substantially fewer than that of limited dispersion, conventional ceiling speakers.

Another outstanding feature is the 10-1/4" × 10-1/4" square, thin 2-3/4" configuration which resembles a 12" square light fixture, blending into any decor situation.

The innovative and patented mounting system, is designed for high speed installation, again reducing overall costs.

The C-12B will quickly flush mount into ceiling tiles and sheetrock ceilings and walls. It will instantly flush fit into 12" concealed spline ceilings, closely resembling a light fixture. When it is not mounted in a ceiling the dispersion characteristics are omnidirectional, making it very well suited for paging and background music in corridors.

C-12B ARCHITECT AND ENGINEERING SPECIFICATIONS

The loudspeaker shall be a full range device, producing a phase coherent waveform from 100 Hz to 10 kHz. Total radiating area shall be 100 sq. in. (253 cm 2). High frequency dispersion shall be 180 degrees at 10 kHz or greater, in both horizontal and vertical planes.

The loudspeaker shall have a sensitivity of 93 db spl, 1 w, 1 m and rated power capacity shall be 20 w continuous 40 w program material, according to E.I.A. standard R S 426A. Nominal impedance shall be 8 ohms.

The loudspeaker shall be 10-1/4" × 10-1/4" × 2-3/4" and weigh 56 oz. The magnetic assembly shall utilize a ferrite magnet with a nominal weight of 13 oz. The voice coil shall be made of copper wire and 1 inch (25mm) in diameter operating in magnetic field of not less than 8,000 gauss.

The speaker shall be the B.E.S. C-12B ceiling speaker or equivalent.

SPECIFICATIONS:

Power capacity:	20 W continuous 40 W program
Frequency response:	100 Hz — 10 kHz
Impedance:	8 Ohms
Sensitivity:	93 db, 1 watt, 1 meter
Dispersion:	180 Degrees (H and V)
Dimensions:	10-1/4" × 10-1/4" × 2-3/4"

Product shall be:

1) Surface mountable
2) Flush mountable in:
   a) Ceiling tiles
   b) Sheetrock ceilings
   c) Sheetrock walls
   d) Any material up to 1" in thickness
3) Corridor mounting
4) 12" concealed spline ceiling mountable
5) Available with optional 70V Transformer and back can for Plenum air return installations

MOUNTING DATA:

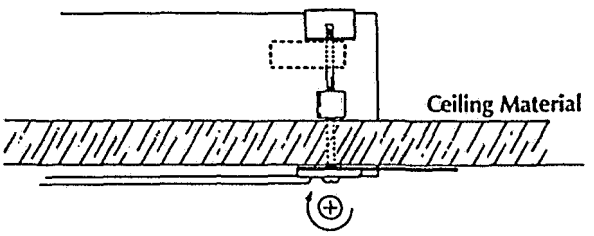
Dimensions:	10-1/4" × 10-1/4" × 2-3/4"
Baffle cutout dimensions:	11-1/4" × 11-1/4"

Available Accessories:

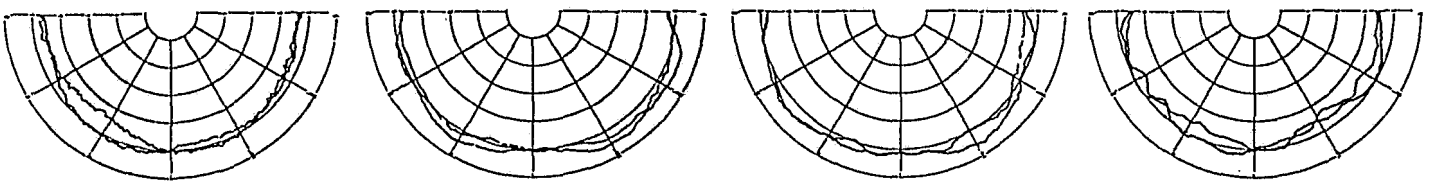
- Flush mount trim bezel for flush mounting into ceiling tile or sheetrock.
- 12" concealed spline ceiling installation trim bezel.
- Surface mount trim bezel.
- Corridor wall mounting rear trim bezel which will cover the rear of the C12B when edge mounted on a corridor wall.
- **TBS-12** usable with C12 installed into a ceiling tile or a C12 and PBB12 back box.
- **PBB 1.2**—Back can dimensions: 11" × 11-15/16" × 8"
- **T-70-70v** transformer.

This is how the B.E.S. high speed mounting system works:

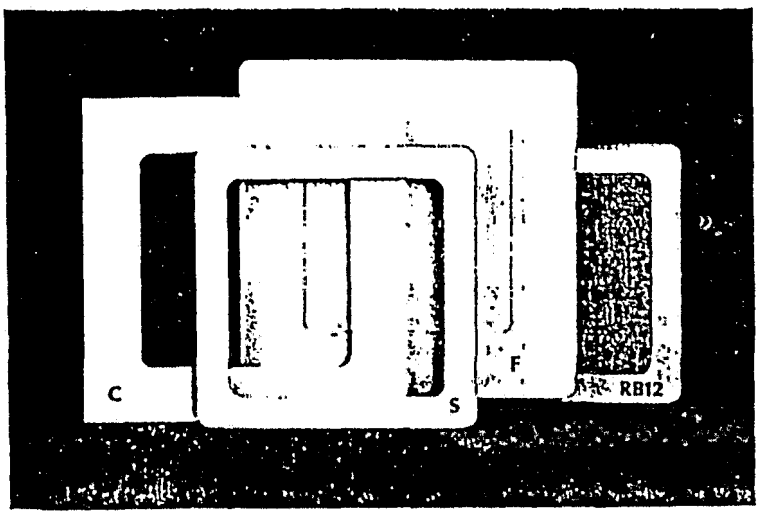
1. An 11-1/4" × 11-1/4" hole is cut in the sheetrock or tile using an enclosed template.
2. After termination of wires, the speaker is placed in the cut out space in the ceiling.
3. As each of the four screws is turned clockwise the cam on the end of the screw will swing over from position A to position B.
4. As the screw is turned this cam will thread its way down towards the back of the ceiling tile sheetrock or concealed spline. When it contacts the material it will stop, firmly gripping the material and locking the speaker in place. This mounting system will accommodate ceiling materials of up to 1" in thickness.
5. After installation a trim bezel is snapped on the front of the speaker which will cover all cut tile edges.



C-12B mounting hardware detail.



Horizontal Dispersion is indicated in Black.
Vertical Dispersion is indicated in Blue.



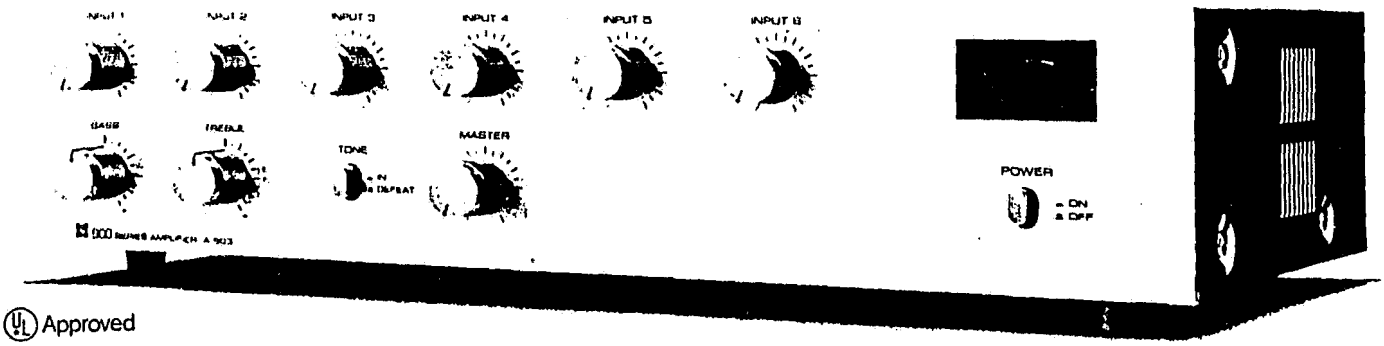
S = SURFACE MOUNT
C = CONCEALED SPLINE 12" SQUARE
F = FLUSH MOUNT
RB12 = REAR BEZEL

B.E.S.
COMMERCIAL SOUND PRODUCTS DIVISION
12753 Moore St Cerritos, CA 90701
(213) 926-0201 / (800) 592-4644

TOA NEW 900 SERIES

SIX-CHANNEL MIXER POWER AMPLIFIER [30-WATT]

A-903



Ⓤ Approved

Ⓢ Applying

Features

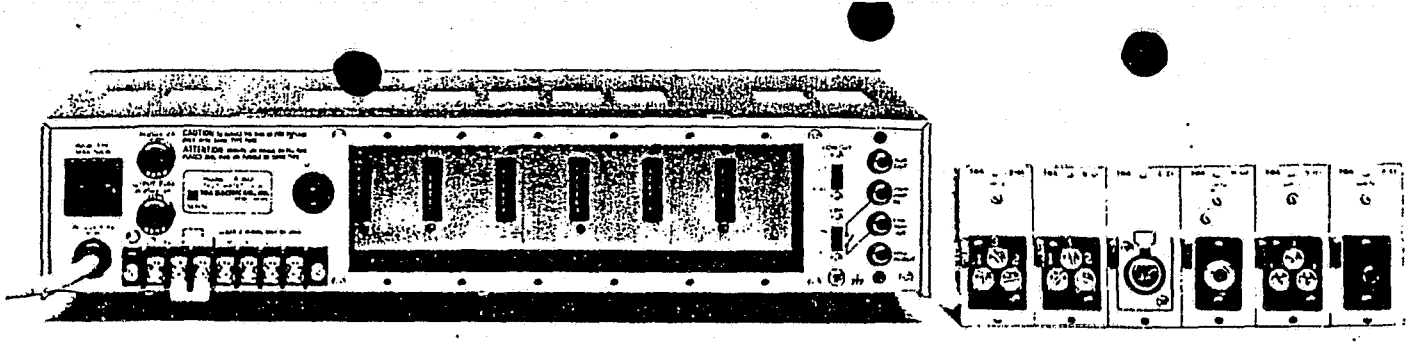
1. Output power: 30 watts RMS
2. Wide frequency response: 20 to 20,000Hz, ±1 dB
3. Low distortion and noise level
4. Excellent output regulation
5. Bass and treble controls
6. Bridging input and output
7. Signal processing input and output
8. Built-in protection circuitry
9. Separate output terminals for 4 and 8 ohms, 25 and 70 volts
10. Full range of plug-in modules
11. Portable or rack-mounted type

Description

The TOA A-903 Mixer Power Amplifier controls and mixes up to six independent input signals. The A-903 delivers up to 30 watts of output power. Optional accessory modules are available to enable a variety of applications. Edge connectors on the rear of the unit permit TOA plug-in modules to be used. Modules include the H-01, H-02 and H-03 series microphone preamplifiers, the E-01 and E-11 mag. phono preamplifiers, the X-01 and X-11 series auxiliary preamplifiers, the B-01 and B-11 series bridging transformers, the L-01 series line matching transformers, the I-01 paging input and the S-01, S-02 and S-03 tone signal generators. Other features include a muting function that allows sources fed to certain input module accessories (the E-11, X-11 series or B-11 series modules) to be muted. The A-903 has output terminals to match 4- or 8-ohm speaker systems and 25- or 70-volt speaker distribution systems. A matching rack is available.

TOA Sound & Communications

TOA ELECTRIC CO., LTD.
KOBE JAPAN

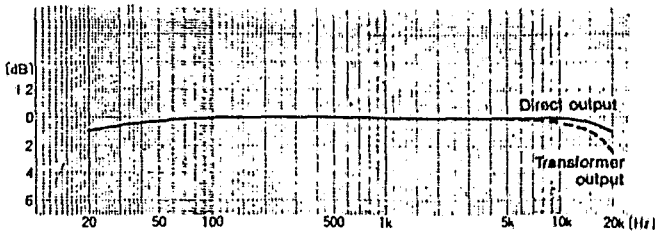


Specifications

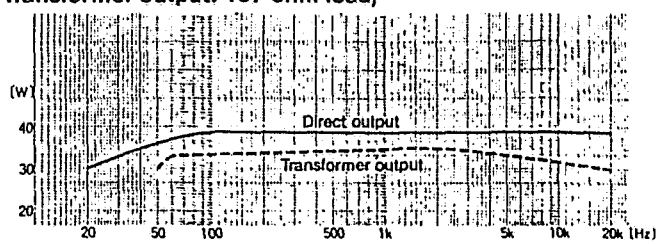
Type	6-channel mixer power amplifier
Output Power	30 watts RMS
Power Bandwidth	(D) 20—20,000Hz, 0.5% THD (T) 50—20,000Hz, 0.5% THD
Frequency Response	(D) 20—20,000Hz, ±1dB (T) 20—15,000 Hz, ±1 dB (T) 20—20,000Hz, +1dB/−3 dB
Total Harmonic Distortion	0.02% at 1 kHz, rated output
Inputs	Six input ports: Each port accepts any input module except the T-01. Use the T-01 only in port #5 or #6 One bridging input/output
Input Sensitivity/Impedance	Input ports #1 to #6: 100 mV/10k ohms Bridging input/output: 100 mV/3.3k ohms
Source Impedance	200 ohms with H-01/H-02 module (balanced Lo Z microphone preamplifier) 50k ohms with H-03 module (unbalanced Hi Z microphone preamplifier), E-01/E-11 module (mag. phono preamplifier) 220k ohms with X-01/X-11 module (auxiliary preamplifier) 10k ohms with B-01/B-11 module (bridging transformer) 600 ohms with L-01 module (line matching transformer), I-01 (paging input) 600 ohms (load impedance) with T-01 module (line output)
Preamp Out/Power Amp In	1,000 mV into 600 ohms/1,000 mV, 10k ohms
Outputs **(D)—Direct** **(T)—Transformer**	Main (T): 4 ohms, 25 and 70 volts, balanced Main (D): 8 ohms, unbalanced Aux: 10k ohms, 1,000 mV
Output Regulation (1 kHz)	(D): Less than 0.5 dB, no load to full load (T): Less than 1.0 dB, no load to full load
Signal-to-Noise Ratio (Band Pass: 20—20,000 Hz) With Tone Controls Centered	Master volume min.: 90 dB Master volume max.: 77 dB Power amplifier only: 105 dB
Tone Controls	Bass: ±10 dB at 100 Hz; Treble: ±10 dB at 10 kHz
Controls	6 input gain controls 1 bass tone control 1 power ON/OFF switch 1 tone defeat switch 1 master gain control 1 treble tone control 1 link switch 1 low-cut switch (60 Hz, 6 dB/octave)
Indicator	1 illuminated VU meter
Protection Circuitry	Built-in with 2 AC fuses (1 inside) and 1 output fuse
Connectors	Inputs #1 to #6: Card-edge connector Bridging: RCA phono jack Mixer preamp output: RCA phono jack Power amp input: RCA phono jack Aux ouput: RCA phono jack Output: Screw-terminal strip Mute: 2-pin socket AC power cord/plug: SJT, 3-prong type AC outlet: 3-pin grounding type
Power Consumption	AC 120 volts, 60 Hz, 60 watts
Temperature Range	−10°C to +60°C (12°F to 140°F)
Dimensions	3.98"(H)X16.54"(W)X10.43"(D) (101X420X265mm) Rack-mounting space size: "2U" (3.46")
Weight (without input modules)	16.1 lbs. (7.3 kg)
Color	Silver
Standard Accessories	2 volume control covers 1 muting terminal plug
Other Features	Output disconnected for approx. 5 sec after power turned on. Muting function: provided for modules E-11, X-11, B-11
Optional Accessories	Plug-in modules (see specifications for individual modules), rack mounting bracket model MB-921

*Specifications are subject to change without notice.

Frequency Response
at 1/10 rated output (Direct output: 8-ohm load, Transformer output: 167-ohm load)



Power Output vs Frequency
at 0.5% THD (Direct output: 8-ohm load, Transformer output: 167-ohm load)



Architect's and Engineer's Specifications

The mixer power amplifier shall have six mixer input ports and shall be capable of operation from a 120V, 50/60Hz line. Each input port shall be usable with microphone, phono pickup or high-level devices. The amplifier shall meet the following performance criteria. Power output shall be 30W at less than 0.5% THD from 20 to 20,000Hz (direct output) or 50 to 20,000Hz (transformer output). Frequency response shall be ±1dB from 20 to 20,000Hz (direct output) or 20 to 15,000Hz (transformer output). Source impedances shall be 200/50k ohms with a microphone preamplifier, 50k ohms with a mag. phono preamplifier, 220k ohms with an auxiliary preamplifier, 10k ohms with a bridging transformer, 600 ohms with a line matching transformer, 600 ohms with a paging input. Load impedance shall be 4, 8, 20.8 (25V line) or 163.3 ohms (70V line). Load voltage shall be 11, 15.5, 25 or 70 volts. Equivalent input noise shall be −126dBm with a Lo Z microphone preamplifier. Output noise shall be 90dB below rated output when all gain controls are off.

The plug-in accessory modules usable with the mixer power amplifier shall be the H-01, H-02 and H-03 series microphone preamplifiers, the E-01 and E-11 mag. phono preamplifiers, the X-01 and X-11 series auxiliary preamplifiers (high-level input), the B-01 and B-11 series bridging transformers (high-level balanced-line bridging input), the L-01 series line matching transformers (high-level balanced-line matched input), the I-01 paging input (high-level paging input for TOA intercom systems EXES-1000, EXES-5000 and EX-16), the S-01, S-02 and S-03 tone signal generators (1 kHz sine wave, buzzer/yelp, one-tone chime/continuous chime), and the T-01 series line output modules.

The mixer power amplifier shall be rack mounted using the TOA MB-921 rack mounting bracket. The TOA PF-911 perforated panel (1.73", 1 rack unit) shall provide suitable ventilation and shall be finished in a color to match the mixer power amplifier.

The amplifier's dimensions shall be 3.98"(H)X16.54"(W)X10.43"(D) (101X420X265mm) and its weight shall be 16.1 lbs. (7.3kg).

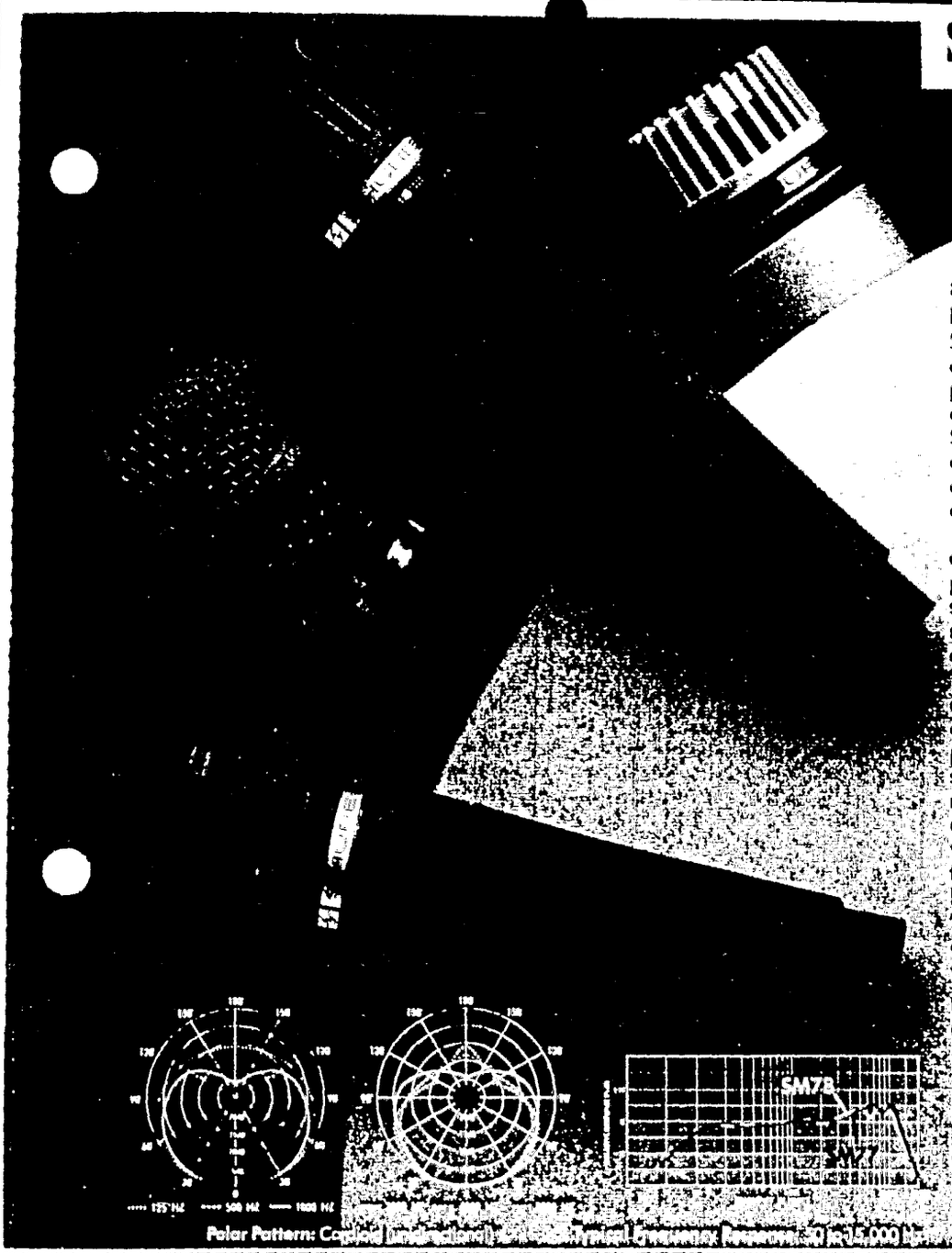
The mixer power amplifier shall be TOA model A-903.

TOA Sound & Communications

TOA ELECTRIC CO., LTD.

JAPAN

SM77 and SM78



Microphones that say something about your sense of style.

In a beautiful break from tradition, the SM77 and SM78 Dynamic Microphones combine beautiful styling with uncompromising sound. They feature Shure's exclusive non-reflecting, textured Suedecoat™ exterior. The finish assures a comfortable grip, never tarnishes, and is easy to clean. Choice of colors include ebony, tan and brown.

The microphones are also smaller and 28% lighter on average than their predecessors—making them less of a strain to hold during lengthy performances. And their small profiles won't obscure the performer's face.

To assure the finest sound, both microphone styles have a fixed low-frequency rolloff and an upper midrange presence peak in their frequency response. A uniform cardioid pattern rejects background noise for maximum amplifier gain before feedback, and prevents coloration when performers sing from an off-axis position. The SM78's built-in windscreen provides excellent "pop" protection. And the slim SM77 is especially effective on instrument pickup where crisp, clear sound is demanded.

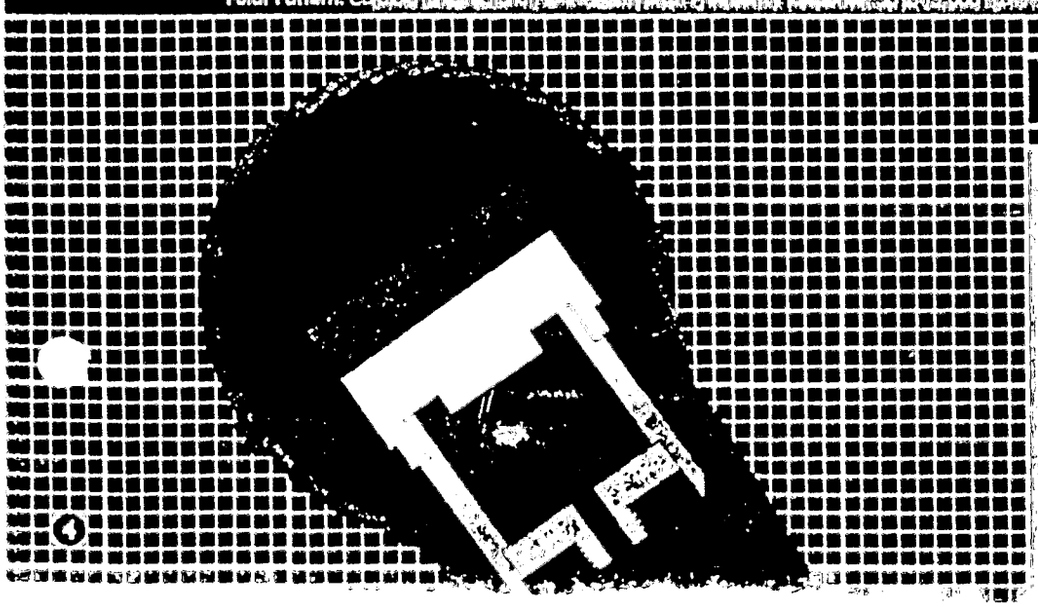
Polar Pattern: Cardioid

Impedance Rating: 150 ohms

Output Level:
Open Circuit Voltage: 0.13 mV (−77.5 dB, 0 dB = 1V/μbar)
Power Level: −57.5 dB, 0 dB = 1 mW/μbar

Supplied Accessories: Swivel adapter, foam-lined storage/carrying case

Optional Accessories: See Pages 6 and 7



QUALI

Shure puts it together right.

Shure has always assembled their microphones to last the test of time—to assure their great sound never varies. Where structural integrity must be maintained, cartridge parts are permanently press-fitted (Diagram: yellow, green, blue) instead of glued. Each grille is precision-brazed (Diagram: orange) at the mounting ring rather than spot welded or glued. And components are manufactured to precise tolerances assuring a perfect fit. There have never been cost-cutting shortcuts taken at Shure—and there never will be.

The AUDIO CONCERN Inc.

TO: City of Wilsonville Finance Department
30000 S.W. Town Center Loop E
Wilsonville, Oregon 97070
682-1011

From: The Audio Concern
20005 S.W. Charlene Court
Alona, Oregon 97006
642-0246

SUBJECT: Bid Proposal
Library Public Address System
8200 S.W. Wilsonville Road
Wilsonville, Oregon 97070

RECEIVED
APR 19 1988
CITY OF WILSONVILLE

20005 S.W. Charlene Ct. Aloha, OR 97006 (503) 642-0246

A.C.I.

TOTAL PACKAGE BID PRICE: $3960

This bid price is for all components for the sound reinforcement system as described in the "REQUEST FOR PROPOSAL -- LIBRARY PUBLIC ADDRESS SYSTEM, and includes the labor to effect the complete installation, including:

Power Amplifiers:

2	TOA A-903A Mixer/Amplifiers
2	TOA MB-921A Rack Mounting Brackets
3	TOA H-02s Mic Modules
2	TOA B-01s Bridging Input Modules
2	TOA T-01s Line Output Modules

Equipment Cabinets:

2	SOUNDOLIER AWR-3 Equipment Cabinets

Speaker Components:

1	SOUNDOLOIER AT-10 Volume Control
16	B.E.S.T. C-12BHT Hemispherically Radiating Speakers
16	B.E.S.T. FMB Surface Mt. Bezels
16	B.E.S.T. TBS-12 T-Bar Supports
7	B.E.S.T. PBB-1.2 Plenum Air Back Cans

Microphones:

1	ASTATIC 960 (in place of the Shure SM-78)
1	ATLAS MS-12C Floor Stand
1	ASTATIC 144 (in place of the Shure SM-83)
2	20-Ft. Microphone Cords

Connectors and Switch Plates:

1	Circulation Desk: 4-Pos Page Control Switch Assembly
1	Multi-Purpose Room: Dual Mic Jack Plate
1	Multi-Purpose Room: Line In/Out Jack Plate
1	Multi-Purpose Room: Speaker Select Switch Assembly

Installation/Orientation and Instructions/Technical Manual:

Shall be in accordance with proposal specifications.

NOTE: A.C.I. is licensed with the State of Oregon as a Limited Energy Electrical Contractor, employing a licensed Limited Journeyman/Limited Energy Electrician on all of its sound reinforcement installations.

20005 S.W. Charlene Ct. Aloha, OR 97006 (503) 642-0246

Maintenance and Service:

The sound system shall be guaranteed against defects in material and workmanship for a period of one (1) year from the date of completion of the installation. During this period, any service and/or parts replacement shall be made at no cost to the Owner. Any request for service or repair under this warranty shall be honored, except when damage has resulted from obvious vandalism or Acts of God.

Further, the following equipment will be subject to a two-year warranty: The ASTATIC microphones recommended as alternatives in this bid proposal.

As the system herein proposed contains state-of-the-art proven equipment, additional payments supporting a service contract would likely prove inequitable to the owner. A.C.I. would supply, however, such a contract for the sum of $100 per year. This would include the maintenance and repair of equipment subject to normal use, and would not honor repair of equipment when damage has resulted from obvious vandalism or Acts of God.

WILSONVILLE CENTER

April 19, 1988

To Whom It May Concern:

The Audio Concern, designed and installed the p.a. and sound system for Wilsonville Center.

The bid submitted to us when we were ready to install the system was detailed, comprehensive and understandable.

Stephen Huegli was available to answer questions and explain the bid and equiptment.

The work was completed in a timely manner and according to the contract.

The system works well and has met our needs.

I have no hesitation in recommending the Audio Concern.

J. Florence Whitney

J. Florence Whitney, Director
Wilsonvile Center

7965 S.W. Wilsonville Rd
7965 S.W. Wilsonville Rd
P.O. Box 633
P.O. Box 633
Wilsonville, Or 97070
Wilsonville, Or 97070

mt. tabor seventh-day adventist church

office of the pastor

January 13, 1987

Stephen Huegli
Audio Concern, Inc.
20005 S.W. Charlene Ct.
Aloha, OR. 97006

Dear Steve:

We are indeed grateful for the new sound system you installed last fall. It is working great.

Shortly after you installed the system we had a church break-in and a wireless mike stolen. We appreciated your speedy work to get a replacement and helping with other equipment in the meantime.

One of the things we appreciated Steve was the personal interest you took in our project to meet our particular needs. Your attendance at our church services during the first week or so to help train our men at the controls and availability to answer their questions was great.

Thanks again Steve for a job well done.

Cordially yours,

Cliff Hoffman

Cliff Hoffman
Associate Pastor

1001 s.e. 60th avenue • portland, oregon 97215 • telephone (503) 233-7606

ST MATTHEW LUTHERAN CHURCH

12390 S.W. CANYON ROAD BEAVERTON, OREGON 97005

LETTER OF RECOMMENDATION

for

THE AUDIO CONCERN, INC

11 April 1985

To Whom It May Concern:

Re: Construction of the sound system for the St. Matthew Lutheran Church sanctuary

Between July 1984 and April 1985, Mr. Stephen Huegli and The Audio Concern, Inc. were employed by St. Matthew Lutheran Church as the audio contractor for the construction of the musical and public address sound system for our new 900 person church sanctuary. The sound system was earlier designed by the well known northwest audio consultants, Towne, Richards, & Chaudiere of Seattle. This system was very complex, requiring two complete systems, one for the Nave and one for the Choir. The cost of this system was in excess of $30,000. It was very important to the life of the church that the system provide unobtrusive, high fidelity sound reinforcement for a wide variety of sanctuary events, including normal church services, organ and choir concerts, and various liturgical events. It was also important that the ability to make high quality tape recording of most santuary events be provided.

Mr. Huegli and The Audio Concern did an outstanding job of installing the St. Matthew system. Sound systems of this complexity normally require that a number of installation problems, such as exact speaker placement, equipment selection for sound balance, and placement of various microphone plug-ins, must be solved at the time of building construction. Mr. Huegli worked with the St. Matthew staff, our Seattle consultants, and the building construction crew in a most effective manner. In particular, contributions made by The Audio Concern were:

1) A potential problem in Nave and Choir speaker wide angle sound coverage was found, researched, and solved with tasteful and cost effective modification to the speaker cabinets.

2) Mr. Huegli showed us how to install two high fidelity sound mixing boards for about the same price as the original design which called for a rather expensive remote control sound level control unit; this was especially important to us because it allowed us to make much better tape recordings, including ones in stereo, than would have otherwise been possible.

3) The Audio Concern made many recommendations on the installation of microphones and sound monitoring facilities that have alrady paid many dividends in using our sound reinforcement and recording systems. Miniature "PZT" microphones were installed in several locations that allow us to achieve very high quality sound reinforcement with hardly anyone knowing they are there!

In short, we believe that Mr. Huegli and the The Audio Concern are a very professional company, one that has outstanding technical knowledge, but also the sensitivity gained from a broad musical and church background to provide a very high level of audio construction design and installation. We are pleased to give our highest recommendation of their work.

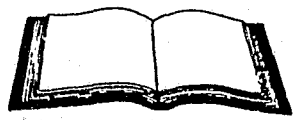
Sincerely yours,

Thomas M Reeder

Thomas M. Reeder, Chairman
Audio and Tape Ministry Program
St. Matthew Lutheran Church

TMR/sm

First Church of the Open Bible



REV. PHIL E. NEWELL
3223 S.E. 92nd, Portland, OR 97266
775-1565

June 18, 1984

To Whom It May Concern:

As past co-ordinator of the Greater Portland Praise Gathering Fellowship I had the responsibility of arranging for the sound system used at the 1983 Praise Gathering service held at the Portland Memorial Colesium. The committee and I decided to use the services of Steve Huegli and AUDIO CONCERN, based on the recommendation from some local pastors. We found Steve and his crew to be very knowledgeable and helpful in carrying out the project.

I particularly appreciated Steve's desire that things be done right and not just the easiest way. That desire on his part cost him several more hours of work than was originally thought necessary but he moved through the project with a gracious and self-sacrificing response. Also, he was never demanding but understood and functioned well within the limits of his authority.

Without hesitation, I recommend Steve Huegli and AUDIO CONCERN as a firm possessing both significant quality and depth of understanding in thier field and a commitment to integrity in their business practice.

Respectfully yours,

Phil E. Newell

Phil E. Newell

PEN/nt

August 15, 1984

Mr. Steve Huegli
The Audio Concern, Inc.
20005 S.W. Charlene Court
Aloha, Oregon 97006

Dear Steve,

I am writing to convey to you the appreciation of myself and the congregation for the sound system your company installed. It has proven to be an excellent addition to our facilities. May I detail a few things we are so pleased with.

1) DESIGN As you are aware, our sanctuary presents some difficult acoustical problems. You took the time to research the problems and design a system that successfully overcame those problems. Our people were pleased with your clear analysis of the problem and constructive solutions. The result provided high quality sound reinforcement throughout the room with an easy-to-operate system that was aesthetically pleasing.

2) TECHNICAL QUALITY The system was designed and installed to the highest standards of the industry. Since installation several local sound companies have seen the installation and expressed appreciation. In fact, one company referred people to us to see what a "professional church system" was like. My reading in AV journals has further reinforced the fact that we have a "state of the art" system. It has operated flawlessly since installation!

3) DOCUMENTATION The system is completely documented--from drawings that locate wiring to full specifications and operating instructions for each piece of the system. You have been more than patient and generous with personal advice and troubleshooting our operators so that we know the system inside out.

4) FLEXIBILITY The system was designed and constructed to be sensitive to the needs of congregational worship--yet with the flexibility to adapt to other settings. It has served as the mixing board for a state-wide television feed, produced broadcast quality sound for musical concerts, and functioned with ease as the sound control for a major conference. As we become more familiar with it we find more and more ways it can meet "special" needs while still functioning week by week to meet our "regular" chores.

Steve, we appreciate the work you have done--and the spirit of ministry and service in which it was shared!

If we can be of assistance to you, or serve as a reference please do not hesitate to let us know. You may feel free to share this letter with others and invite them to be in touch with us. We will be sure to send our friends to you.

Yours in Christ.

Arvin R. Luchs

Dr. Arvin R. Luchs
Minister of Church Programming

1110 franklin • l. je, idaho 83702
first united methodist church

A.C.I.

PROJECTS COMPLETE

The following is a list of projects completed by Stephen Huegli of the AUDIO CONCERN, Inc..

CHRIST CHURCH, ASSEMBLIES OF GOD
Beaverton, Oregon
Job: Design, install sanctuary speaker system

SEQUOYAH COMMUNITY CHURCH
Oakland, California
Job: Design, install sanctuary reinforcement system

ST. MATTHEWS CATHOLIC CHURCH
Hillsboro, Oregon
Job: Design, install sanctuary reinforcement system

MACARTHUR BLVD CHRISTIAN CHURCH
Vancouver, Washington
Job: Acoustical consultant for multi-purpose gymnasium. Supplied acoustic materials and oversaw installation.

THE PRAISE GATHERING
Memorial Coliseum
Portland, Oregon
Job: Design and install reinforcement system for 8500 seat audience

LENTS BAPTIST CHURCH
Portland, Oregon
Job: Design and install new sanctuary sound reinforcement system

LAKE GROVE CHRISTIAN CHURCH
Lake Grove, Oregon
Job: Design and install new sanctuary sound system

FIRST METHODIST CHURCH/CATHEDRAL OF THE ROCKIES
Boise, Idaho
Job: Design and install main sanctuary sound system

EVERGREEN ASSEMBLY OF GOD CHURCH
Vancouver, Washington
Job: Design and install sanctuary sound system

ADVANCE INTERIORS
Portland, Oregon
Job: Design and install communications system for office

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A.C.I.

WILSONVILLE CENTER
Wilsonville, Oregon
Job: Design and install sound reinforcement system for multi-purpose room

PORTLAND CABLE ACCESS
Portland, Oregon
Job: Design and install acoustical treatment for both video production studios

UNIVERSITY OF PORTLAND
Portland, Oregon
Job: Design and install sanctuary sound system for new Student Chapel

MOUNT TABOR SEVENTH DAY ADVENTIST CHURCH
Portland, Oregon
Job: Design and install main sanctuary sound reinforcement system

PORTLAND STATE UNIVERSITY
Portland, Oregon
Job: Install sound systems in four class rooms and three auditoriums

ALOHA CHURCH OF GOD
Aloha, Oregon
Job: Design and install main sanctuary sound system

SANDY BAPTIST CHURCH
Sandy, Oregon
Job: Design and install main sanctuary sound system

ST. CYRILS CATHOLIC CHURCH
Wilsonville, Oregon
Job: Consult, provide sanctuary sound equipment

ST. PAULS CATHOLIC CHURCH
Silverton, Oregon
Job: Consult, update and equalize presently owned system

ST. CECILIA CATHOLIC CHURCH
Beaverton, Oregon
Job: Consult, update and equalize sound system

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A.C.I.

OAK HARBOR BAPTIST CHURCH
Oak Harbor, Washington
Job: Design and supply components for a sound system

TEKNIFILM, INC.
Portland, Oregon
Job: Design and construct four phase project including audio, video, video duplication, audio and video production studio.

WESTWAY RECORDING STUDIOS
Portland, Oregon
Job: Install and modify studio A for radio post production

NORTHWESTERN, INC.
Portland, Oregon
Job: Co-Design and construct Studio A control room: Install console and related equipment
Studio C: Install and modify console for film mixing

RADIO GOSPEL FELLOWSHIP
Denver, Colorado
Job: Design and install radio broadcast facility

MCA-WHITNEY RECORDING STUDIO
Glendale, California
Job: Maintenance engineer, install Studio B Neve console

HAVEN OF REST, Inc.
Hollywood, California
Job: Select, install, maintain studio broadcast equipment

SOMERSET CHRISTIAN CHURCH
Beaverton, Oregon
Job: Design and install sound reinforcement system

ST. MATTHEW LUTHERAN CHURCH
Beaverton, Oregon
Job: Design and installation of a new sanctuary sound reinforcement system

NEW LIFE UNITED PENTECOSTAL CHURCH
Aloha, Oregon
Job: Installation of speaker system for the main sanctuary

BEAVERCREEK CHRISTIAN CHURCH
Beavercreek, Oregon
Job: Installation of a sanctuary sound system

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A.C.I.

PROEBSTOL EVENGELICAL FREE CHURCH
Vancouver, Washington
Job: Design of a new sanctuary sound system, installation of Phase I: Console and related components

VALLEY COMMUNITY PRESBYTERIAN CHURCH
Portland, Oregon
Job: Design & install main sanctuary sound reinforcement system

FIRST CHRISTIAN CHURCH
Portland, Oregon
Job: Install sound system for both the main sanctuary and fellowship hall

BANKERS LIFE BUILDING
Portland, Oregon
Job: Install CRT cabling for complete computer operations center

TIGARD HIGH SCHOOL
Tigard, Oregon
Job: Design and install gymnasium sound reinforcement system

WASHUGAL UNITED METHODIST CHURCH
Washugal, Washington
Job: Design and install sanctuary sound reinforcement system

TRINITY LUTHERAN CHURCH
Beaverton, Oregon
Job: Design and install new audio console, designed new sanctuary sound system for second phase installation

HOLY TRINITY CATHOLIC CHURCH
Beaverton, Oregon
Job: Design and install new sanctuary speaker system

CHEHALEM BAPTIST CHURCH
Newberg, Oregon
Job: Design and install new sanctuary sound system

CORNERSTONE AND ASSOCIATES
Tigard, Oregon
Job: Design and install office background/page speaker system

20005 S.W. Charlene Ct. Aloha, OR 97006 (503) 642-0246

COMMERCIAL SOUND DIVISION
PRODUCT SPECIFICATIONS

MODEL
960

DYNAMIC CARDIOID MICROPHONE

OUTSTANDING PERFORMANCE, APPEARANCE AND DEPENDABILITY

The Astatic Model 960 is a dynamic cardioid microphone especially designed to meet the demanding requirements of professional sound reinforcement, broadcasting and the recording industry. A breakthrough in vibration isolation with an especially developed elastomer as the major component in a carefully designed internally shock mounted dynamic element system reduces cable, stand and handling noise to extremely low levels. The 960's overall balance and beautifully shaped housing combine for exceptional "in-the-hand" comfort. A low profile on-off switch, with locking option to prevent accidental shut off, is conveniently located for ease of operation.

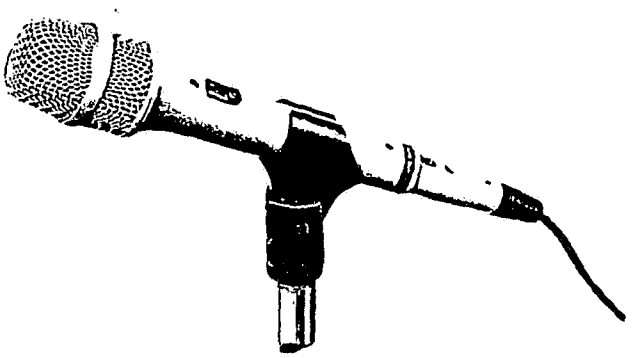
The 960's wide range frequency response is smooth and flat with a slight presence boost for that crisp, clean "natural" sound professional users prefer. A superior and uniform unidirectional pickup pattern, factory adjusted for acoustical repeatability, minimizes feedback, off-axis coloration, reverberation, background noise and placement problems. The 960's proximity effect provides a warm bass boost when used close to the sound source. A built-in, multi-stage blast filter effectively controls breath "pop" and wind disturbances.

The 960 is finished with an extremely durable, non-reflecting, textured "Earthtone" gray urethane paint. The 960 is supplied with an "Easy-On" swivel adaptor and is available separately (no cable) or with 5.5 m (18 ft.) of heavy duty, extra flexible, two conductor shielded cable (960C).

The Model 960 is produced in the U.S.A. by Astatic Corporation, manufacturer of professional quality microphones since 1932.

SPECIFICATIONS

● GENERATING ELEMENT:	Dynamic
● POLAR PATTERN:	Unidirectional Cardioid
● FREQUENCY RESPONSE:	40 to 16,000 Hz
● OUTPUT LEVEL @ 1000 Hz:	
Open Circuit Voltage	-75 dB (0.178 mv) (0dB = 1 volt/microbar)
Power Level	-55 dB (0dB = 1 mw/10 microbars)
● FRONT-TO-BACK RATIO:	25 dB (see polar pattern)
● IMPEDANCE:	250 ohms
● CABLE ASSEMBLY (960C):	Astatic CC-113, 5.5 m (18 ft.), heavy duty, extra flexible, two conductor, shielded with an A3F type connector at the microphone
● SWITCH:	SPST low profile slide switch, line shorting in the off position
● SWITCH LOCK:	Loosen screw (need not remove) to rotate lock, rotate, tighten screw
● DIMENSIONS:	44 mm (1 23/32") diameter 186 mm (7 5/16") long
● WEIGHT:	269 grams (9½ oz.)
● HOUSING:	Die cast zinc alloy
● GRILLE SCREEN:	Woven steel
● FINISH:	Extremely durable, textured, non-reflecting, "earthtone" gray urethane paint
● SWIVEL ADAPTOR:	Astatic EO-50 "Easy-On" stand adaptor with 5/8"-27 thread
● PHASING:	Positive pressure (movement of diaphragm inward) will generate a positive voltage on white cable lead



APPLICATIONS

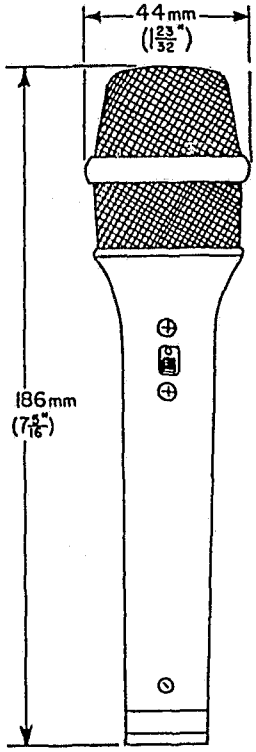
The Astatic Model 960, because of its professional sound and rugged construction, is an excellent choice where quality of reproduction is a factor in public address installations such as auditoriums, churches, schools, courtrooms, theaters, factories; for teleconferencing, and in both the broadcast and recording industries.

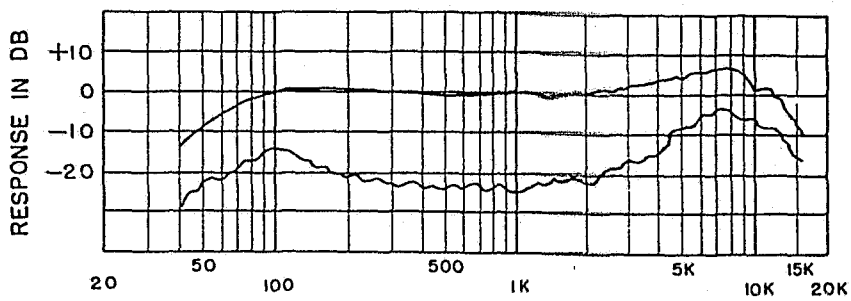
ASTATIC CORP, Commercial Sound Division, P.O. Box 120, Conneaut, Ohio 44030 - 0120 (216) 593-1111, Telex 980712

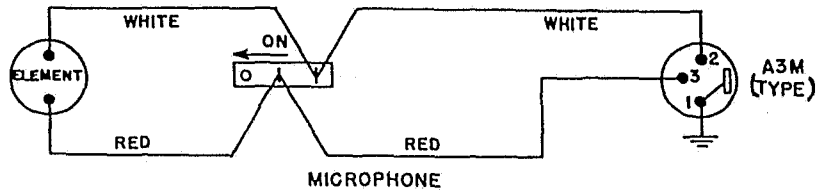
EXPORT: International Division, Conneaut, Ohio 44030 - 0120 USA Telex 980712
IN CANADA: Canadian Astatic Ltd., 1220 Ellesmere Rd., Scarborough, Ontario M1P2X5, (416) 293-2222

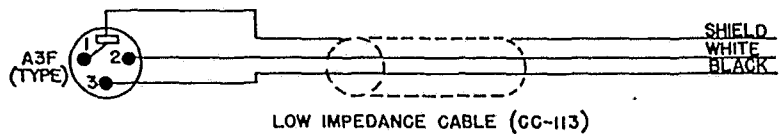
SPECIFICATIONS

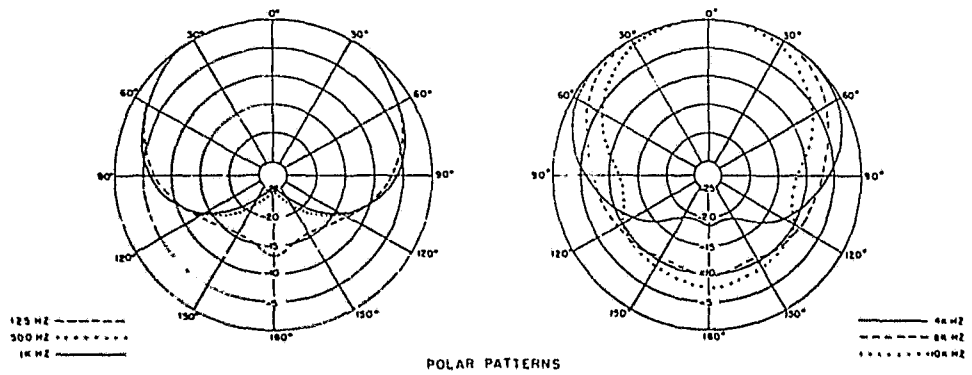
MODEL 960











SCREEN GRILLE FIELD SERVICE

If the microphone screen grille becomes deformed because of extreme abuse, the screen may be reformed by unscrewing the grille assembly and using firm thumb pressure. A replacement ball screen assembly is also available - - - order Astatic part number 42234-00-00.

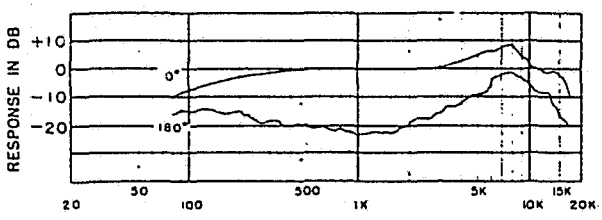
GUARANTEE

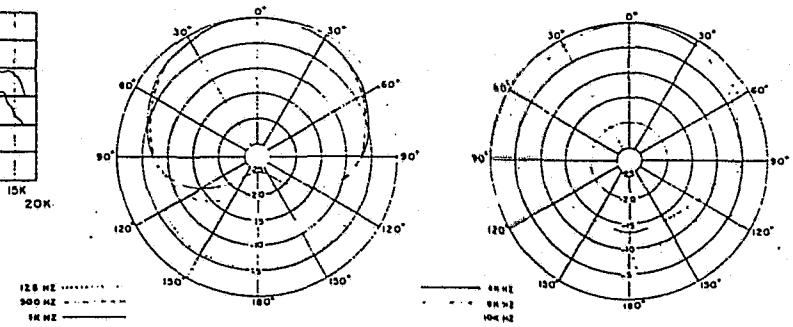
The Astatic Corporation guarantees to repair or replace (at our option) all Commercial Sound Division microphones for a period of one year from the date of the original purchase if found to be of defective manufacture. This guarantee includes all parts and labor. This guarantee does not include the finish or damages caused by tampering or abuse. This guarantee is in lieu of any other guarantees, express or implies, and under no circumstances does the manufacturer assume any responsibility for consequential or accidental damages. Return, transportation charges prepaid to:

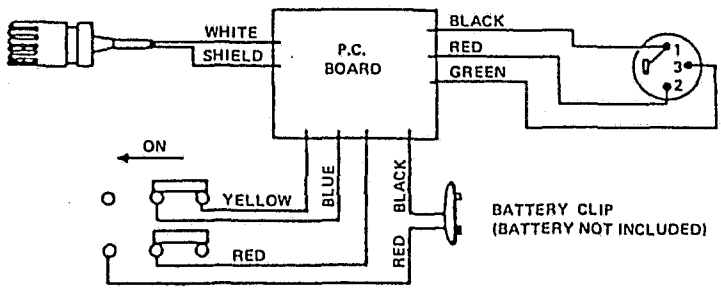
The Astatic Corporation
Service Department
Harbor and Jackson Streets
Conneaut, Ohio 44030

SPECIFICATIONS

MODEL 844







BATTERY INSTALLATION

1. Remove the 4 screws and the cover from the back of the 844 Belt Pack.

2. Remove the foam block from the battery holder. NOTE: The foam block is used to secure and insulate the battery connector when a battery is not used. For future use, the foam piece can be stored in the space next to the output connector.

3. Snap the battery connector onto the 9 volt battery and place the battery in the holder so that the connector is facing the circuit board.

4. Replace the cover and the 4 screws. NOTE: The cover should be positioned so that the notch on the underside of the cover is at the output connector end of the Belt Pack.

2

YEAR

LIMITED
WARRANTY

TWO YEAR LIMITED WARRANTY

The Astatic Corporation guarantees to repair or replace (at our option) all Commercial Sound Division microphones for a period of two years from the date of the original purchase if found to be of defective manufacture. This guarantee includes all parts and labor. This guarantee does not include the finish or damages caused by tampering or abuse. This guarantee is in lieu of any other guarantees, expressed or implied, and under no circumstances does the manufacturer assume any responsibility for consequential or accidental damages. Return, transportation charges prepaid to:

The Astatic Corporation
Service Department
Harbor & Jackson Streets
Conneaut, OH 44030

The unit will be returned prepaid.