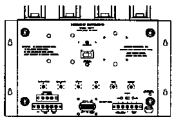
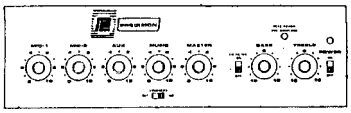
AMPLIFIERS

"WM" SERIES



GROMMES~PRECISION

"ST" SERIES



MIXER AMPLIFIERS				
WATTS	INPUTS	OUTPUTS	FEATURES	PART #
1.5W	lo-Z (bal., 600 ohm) or hi-Z (switchable)	8 & 600 ohm	2 independent output channels, 2 level controls for each output channel, low distortion, wide frequency response, all steel construction. Shelf or wall mount. Made in USA.	**PE-2A GP**
1W	1 mic input, lo-Z bal. or hi-Z unbal.	8 & 500 ohm	Flanges on housing allow for wall-mounting.	**1703 RAY**
15W	2 channel input: lo-Z/telephone page (screw terminals) + two aux inputs wired in parallel (RCA jax).	25v & 70v lines, 4-8 ohm, music on hold output	Mixer amplifier: voice activated muting, tone control adjustment, music on hold output of the auxiliary channel, automatic level control limiter, made in USA. 3 year warranty.	**B15 GP**
30w				**B30 GP**
100w	1 hi-Z input	25v & 70v lines, 4- 8 ohm	Booster amplifier.	**1811-100 RAYMER**
100W	4 channel input: 2 mic (hi or lo Z, XLR), 2 aux (RCA), one 600 ohm/tel-page mixer (screw terminals).	25v & 70v lines, 4- 8 ohm	Mixer Amplifier: Full range bass & trebel controls, auto-mute or contact closure muting, mic inputs have built-in isolation transformers and 15v phantom power.	**ST-100E GP** **WM-100 GP wall mountable**

Any sound system (whether large or small) is composed of three fundamental components, linked together by interconnecting cables. There must be some type of:
1.) sound source, like a microphone, CD player, or tape deck
2.) amplification (by an amplifier)
3.) loudspeaker.

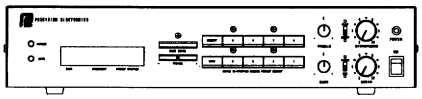
1.) Sources — Most sources (CD player, tape deck, Muzak, tuner/reciever, telephone pages) present a standardized signal to the amplifier, making interconnection easy. To connect the source to the amplifier, the typical jumper cable required is a two conductor shielded cable with a male RCA (phono) connector attached to each end.

Microphones as a source are the exception to the standard. First, they can be either hi or lo impedance (Z). Lo Z mics are best because they are generally better quality and are less prone to loss and RF interference. Hi Z mics are usually less expensive, with fewer types available. Any installation requiring long runs of mic cable or with potential RFI problems should use lo Z mics. Be aware that not all amplifiers can accommodate both impedances. Also, microphones typically use XLR type connectors (rather than the RCA type). To connect the mic to the amp, hybrid jumper cables are often required (with differing connectors on each end).

2.) Amplifiers — In most cases, a single amplifier of adequate power will suffice. If more power is need than the amp can supply, then booster amplifiers are available. An amplifier's output is rated in watts, as are speakers. The combined wattage of all the speakers should not exceed the amplifier's wattage (otherwise the amp will burn up!). For instance, a ten watt amplifier can safely operate up to ten one watt speakers.

3.) Speakers — Connection from the amp to the speaker can be direct (as with an 8 ohm speaker), or through transformers. Multiple-speaker commercial systems typically use the 70 volt transformer type. This is called a constant voltage or distributed system. The voltage from the amp is raised (transformed) to reduce the loss over long runs of wire. A transformer attached to each speaker then lowers the voltage back down and also isolates the voice coil of the speaker from the amp. This prevents impedance matching problems. As to the size of the speaker, an 8" ceiling speaker with grill is used in most commercial applications.

"PR" SERIES

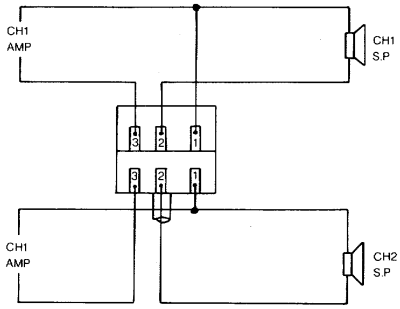


TUNER/RECEIVER AMPLIFIERS AM/FM digital			
WATTS	OUTPUTS	FEATURES	PART #
tuner only	2 jacks	External antenna connections, AM/FM tuning, power on/off switch, 50 Hz - 15 kHz ± 2 freq. response, -55dB signal to noise, 5 watts rms power required, 14 lbs.	**1820 RAYMER**
line amplifier 1W, 8 ohm 100mW, 600 ohm	8 & 600 ohm	AM/FM LCD display digital tuner/receiver with 5 AM & 5 FM station memory presets. Auto station search. Mono or stereo input. Built in antenna. 3 yr. warranty.	**T-115 GP**
20W	4 & 8 ohm, 25v & 70.7v	AM/FM analog tuner/receiver, combined mono output for use with background music systems. Switch selects between internal tuner or external music source.	**1829-20D RAYMER**
30W		3 channel input (1 mic, 1aux, 1-600 ohm/tel-page) AM/FM receiver amplifier, 30W continuous RMS. 8 preset station memory, auto music search, 600 ohm "music on hold" line driver w/independent gain control, auto-mute. 3 yr. warranty.	**PR-31 GP**

GROMMES~PRECISION

STEREO LEVEL CONTROL

VOLUME CONTROL — With a sound system that uses **8 ohm speakers**, use an 8 ohm L-pad, placed in series between the amplifier and each speaker, to control the volume of each speaker (assuming a "home run" of wire is laid all the way back to the amplifier for each speaker). In a **70 volt system** wired with each speaker in parallel, use a variable autotransformer attenuator, placed in series between the amplifier and each speaker's transformer, to control the volume of each speaker. In a 70 volt system wired with each speaker in series, one attenuator would effect the volume of all speakers simultaneously. Yet another way to control the volume in a 70 volt system (wired in parallel) is to place a 5,000 ohm linear-tapered pot in series on the 70 volt side of each speaker's transformer.

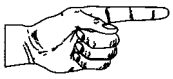


Atlas/Soundolier 800-876-7337
Grommes-Precison 800-746-2346
Lowell Mfg Co 314-257-3400
Quam-Nichols Co 773-488-5800

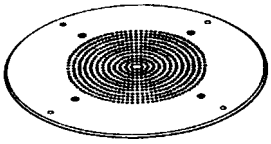
TELEPHONE INTERCONNECT

•TGSP-4A self powered tone generator

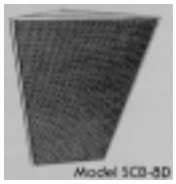
The **TGSP-4A** is a self-powered tone generator that provides signaling or annunciation for a sound system. In single-strike installation mode, it produces a chime note when an external switch or relay circuit is closed. In repeat installation mode, it provides a choice of a repeating chime note, steady tone or siren; the siren has top priority, tone second, and chime third. The output level and tone frequency are adjustable. ***Made by UNIVERSITY SOUND.***

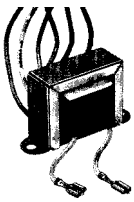


MICROPHONES—See "microphone" § of catalog. **www.shure.com**



8 ohm CEILING SPEAKERS				
SIZE	FREQ. RESPONSE	WATTS	NOTES	PART #
8"	90 Hz - 12k Hz	12w	"full range"	**MC8A UNI**
8"	65 Hz - 30k Hz	20w	coaxial, extended range	**8C10COB QAM**
8"	30 Hz - 30k Hz	18w	coaxial, extended range	**8C10FECOB QAM**
8"	30 Hz - 20k Hz	18w	extended range	**8C10FEPAXB QAM**
8"	80 Hz - 8k Hz	15w	public address, background music	**8C10PAXB QAM**
8"	65 Hz - 17k Hz	8w	PA spkr & Xformer	**8C5PAX/TBL70B**
8"	***65 Hz - 17k Hz***	***8w***	***PA spkr, grill, & Xfmr!***	***C5/B70/W QAM* (best value)***
8"	65 Hz - 17k Hz	8w	PA spkr, grill, Xfmr, vol.control	**C5/B70/W/VK**
12"	45 Hz - 16k Hz	20w	"full range"	**MC12A UNI**
12"	50 Hz - 14k Hz	18w	PA spkr	**12C10PAX QAM**








SPEAKER ACCESSORIES

SPEAKER X-FORMERS	TBLUB QUAM — 5 watt, 25v & 70.7v primary w/ taps for ¼, ½, 1, 2 & 5 watts. 8 ohm secondary. TCL70B QUAM —10 watt, 70.7 v primary w/taps for 5/8, 1-¼, 2-½, 5 & 10 watts. 8 ohm secondary.
WALL PLATE ATTENUATORS (place in series between amplifier & speaker)	QC-10 QUAM — 20 watt autotransformer attenuator, 10 plus "0" (off) positions, total attenuation is 36 dB. Comes with single gange brushed stainless steel plate & knob. 50LVC LOW — 50 watt attenuator, 10 plus "0" (off) positions, 36 dB total, 2 gang mour stainless steel plate w/knob, 25v or 70v line. QC-100 QUAM — Same as QC-10 (above) except 100 watts.
SPKR SUPPORT BRIDGES	SSB-2 QUAM — Supports ceiling speakers; eliminates tile sags, mounts 8" round, squa torsion spring grills.
BACKBOXES (TOPHATS)	ERD-8 QUAM — 22 awg carbon steel, acoustic foam liner, white finish, for 8" spkrs. 8-PSBX LOW — Plastic, economical, to prevent spkr back pressure vibrtation in 8" spk
CEILING BAFFLES (GRILLS)	AL8-A LOW — Aluminum, round, w/floating conical diffuser for controlled 360° sound dispersion in low level ceiling installations. Alum. finish. for 8" spkrs. BR8W LOW — Aluminum, round, baffle for 8"spkrs. White finish. SB-8 LOW — Blk & wht steel downlight torsion mount baffle w/ pre-mounted threaded s studs.
SURFACE WALL BAFFLES	WB-4/5D ARG — Regualr baffle for 4-5" spkrs, wood-grain finish. 10-100W TRE — Walnut finish baffle for 4" spkrs. EHF80-P LOW — Plastic, sloping, beige color, for 8" spkrs. PWB-8C ARG — Over-sized baffle for 8" spkr, wood-grain flinish. 14"x16.25"x6.25". SYSTEM 4VC QAM — Slant-faced baffle w/8" spkr & 70v Xfmr & volume ctrl. 14-100W TRE — Walnut finish baffle for 8" spkrs. 14-4770WVC TRE — Walnut finish baffle for 8" spkr + spkr + 70v xfmr + vol. control. 16-100W TRE — Walnut finish baffllle for 12" spkrs.
CORNER BAFFLES	SCB-8D ARG — Slanting corner baffle, wood-grain finish, cain grille, for 8" spkr. SCB-12D ARG — Same as SCB-8D but for 12" spkr. CB-12D ARG — Non-slanting corner baffle, wood-grain finish, cain grille, for 12" spkr.
STEEL PLASTER RINGS	PR8 LOW — Circular steel plaster rings for installations in new construction where prot enclosures cannot be used. For 8" spkrs.