

LOUDSPEAKER PAGING SYSTEMS

TRANSMISSION CHARACTERISTICS OF LOUDSPEAKERS

1. GENERAL

1.01 This section describes the essential transmission characteristics of loudspeakers. The loudspeakers included are presently available items which are widely used in paging systems.

1.02 The transmission characteristics of loudspeakers which are required for paging system design as covered in Section AB22.335 are described in this section. The mechanical characteristics will be listed in other sections of the practices.

1.03 This section is reissued to bring the information in Table 1 up to date. Several of the loudspeaker types have been discontinued by the manufacturer and replaced with other models. Arrows indicating changes have been omitted.

2. DESCRIPTION OF TRANSMISSION CHARACTERISTICS — TABLE 1

2.01 Table 1 gives the essential transmission characteristics of presently available paging system loudspeakers.

2.02 The first column of the table contains the name of the manufacturer and the type number which has been assigned to the item. Where a KS number is shown with a manufacturer's type number it indicates that these items are equivalent. Where the KS number is shown alone it indicates that the unit is usually made by this manufacturer.

2.03 The second column shows whether the unit is a direct radiator (cone-type speaker), a driver unit, a horn or a combination unit including driver and horn units.

2.04 The third column indicates the impedance rating of the voice coil of direct radiators and driver units. This is the manufacturer's nom-

inal rating and can be expected to vary somewhat between individual units.

2.05 The fourth column indicates the maximum input power capacity of the unit. This rating is specified by the manufacturer. If this rating is exceeded either on steady tone or speech peaks, excessive distortion will result and mechanical damage to the unit can be expected. It is important that audio power fed to a loudspeaker be limited to the frequency range for which the loudspeaker is rated. Many units can be damaged by applying audio power to them at a frequency below their rated range even though this low-frequency power does not exceed the power rating of the loudspeaker.

2.06 Column five shows frequency response. The figures shown indicate the nominal band over which the unit will satisfactorily reproduce sound. Variations of ± 6 db can be expected within this band. The upper and lower cutoff frequencies are those where the response is more than 6 db below the average response in the usable band.

2.07 The sixth column of the table lists the Hopkins-Stryker efficiency rating. This may be considered the amount (in db) by which the loudspeaker is less efficient than a "perfect" radiator. Certain effects of loudspeaker directivity characteristics are included in the computation of this figure.

2.08 The seventh column lists the loudness pressure rating for the loudspeaker. This is the sound level produced on the axis of the loudspeaker at a distance of 30 feet for an input power of 1 milliwatt. This test is made with a special loudness weighted signal.

2.09 The eighth column indicates the magnitude of the angle of coverage. Where only one figure is shown, a circular pattern can be assumed. Where two values are given, the horizontal and vertical angles of coverage are indicated.

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2.10 The ninth column is devoted to explanatory notes. These are necessary to qualify some of the information in preceding columns.

2.11 It will be noted that in some respects the information presented in the table will differ from that published by the manufacturer for the various units. This is because the manner

in which some loudspeaker characteristics are measured has not been standardized for the manufacturing industry. Use of the ratings in the table is to be recommended where difference exists, since the methods used to obtain them are the same for all units (resulting in a more accurate basis for comparison) and will probably prove to be a more realistic indication of the performance of the unit in paging system service.

TABLE 1

MANUFACTURER & NUMBER	TYPE	VOICE COIL IMPEDANCE (OHMS)	MAXIMUM POWER (WATTS)	RATED FREQUENCY RESPONSE	HOPKINS-STRYKER EFFICIENCY RATING (DB)	LOUDNESS PRESSURE RATING (DB)	INCLUDED ANGLE OF COVERAGE	NOTES
Altec Lansing								
755A (KS-14703)	8" Cone	4	8	# 70-13,000 cps	-21.4	44.5	70°	
KS-12046	8" Cone-In Encl.	4**	8	100-12,000 cps	-21.4	44.5	70°	The KS-12046 assembly includes KS-14703 loudspeaker and KS-12048 autotransformer in cabinet
φ400B	8" Cone	8	12	#130- 6,500 cps	-15.2	50.7	70°	
KS-14705	Horn	8	40	300- 6,000 cps	-10.8	55.2	H120°; V40°	With 730A Driver Unit and 27A (KS-14707) receiver attachment
KS-14705	Horn	8	25	300- 6,000 cps	-12.1	53.9	H120°; V40°	With 720A Driver Unit and 27A (KS-14707) receiver attachment
KS-14706	Horn	8	40	500- 6,000 cps	- 9.7	57.8	H90°; V60°	With 730A Driver Unit
KS-14706	Horn	8	25	500- 6,000 cps	-10.9	56.6	H90°; V60°	With 720A Driver Unit
φ30A	Horn	8	40	350- 5,500 cps	- 8.3	59.2	50°	With 730A Driver Unit
φ40A	Horn	8	40	220- 5,500 cps	- 8.0	61.0	50°	With 730A Driver Unit
KS-12047	*Horn	8	25	500- 6,500 cps	-11.0	56.0	H45°; V30°	With 720A Driver Unit
730A	Driver Unit	8	40	Depends on horn used				
720A (KS-14704)	Driver Unit	8	25	Depends on horn used				
Atlas								
HLE-1-32	Driver-Horn	16	30	250- 6,500 cps	-11.1	56.4	60°	Explosion proof, approved for Class I, Group C & D atmospheres
HLE-2-32	Driver-Horn	16	30	250- 6,500 cps	-12.5	55.0	60°	Explosion proof, approved for Class I, Group C & D and Class II, Group E, F and G atmospheres
DuKane								
φ5A25	Driver-Horn	15	10	450- 5,000 cps	-10.8	54.7	60°	
φ5A35	Driver-Horn	15	20	400- 7,000 cps	-10.7	55.3	50°	
Electro-Voice								
848 (CDP)	Driver-Horn	16	25	200- 9,500 cps	-13.5	54.6	H120°; V90°	
ensen								
AP-10	5" Cone-In Encl.	3-4	5	250- 8,500 cps	-24.2	39.2	100°	
AR-10	5" Cone-Horn	3-4	6	250- 6,500 cps	-20.0	46.6	60°	
P8SX	8" Cone	6-8	7	# 80- 8,000 cps	-19.6	46.3	70°	
VH91	Driver-Horn	8	15	400- 5,000 cps	-11.5	54.5	60°	
VR11	Driver-Horn	8	15	400- 3,500 cps	-14.4	52.4	60°	For overhead suspension 360° coverage
VH20	Driver-Horn	16	25	200- 6,500 cps	- 8.8	60.2	60°	
KS-14792 L1 & L3	8" Cone-In Encl.	8**	4	150- 7,000 cps	-18.5	47.4	70°	In metal enclosure; data are for unidirectional operation
H200	Horn	16	30	250- 5,000 cps	- 8.6	60.1	60°	With D-30 Driver Unit
H200	Horn	16	40	250- 6,000 cps	- 8.6	60.1	60°	With D-40 Driver Unit
D-30	Driver Unit	16	30	Depends on horn used				
D-40	Driver Unit	16	40	Depends on horn used				

* Bi-directional Unit

** Line Transformer with Unit

Tested in KS-12035 (2 cu. ft.) Enclosure

φ Manufacture Discontinued

TABLE 1 (Contd)

MANUFACTURER & NUMBER	TYPE	VOICE COIL IMPEDANCE (OHMS)	MAXIMUM POWER (WATTS)	RATED FREQUENCY RESPONSE	HOPKINS-STRYKER EFFICIENCY RATING (DB)	LOUDNESS PRESSURE RATING (DB)	INCLUDED ANGLE OF COVERAGE	NOTES
Racon								
RE-11	Driver-Horn	15	12	450- 5,500 cps	-13.7	51.9	60°	
RE-12	Driver-Horn	15	10	450- 5,000 cps	-11.7	53.8	60°	
RR-40	*Driver-Horn	16	40	350- 5,000 cps	-12.0	54.2	40°	Data are for each unit
XP-1	Driver Unit	15	30	300- 4,000 cps	-16.0	51.5	60°	Explosion proof, approved for Class I, Group C & D atmospheres
XP-2	Driver Unit	15	30	300- 4,000 cps	-22.2	45.1	60°	Explosion proof, approved for Class I, Group C & D and Class II, Group E, F & G atmospheres
Stromberg-Carlson								
RC-27	8" Cone	8	10	# 90- 8,500 cps	-20.0	46.0	70°	
RF-460	8" Cone	8	12	# 70-12,000 cps	-16.4	49.5	70°	
University								
1B8	Driver-Horn	8	12	400-12,000 cps	-11.8	54.2	60°	
1BR	Driver-Horn	8	12	350- 4,500 cps	-14.1	52.2	60°	For overhead suspension 360° coverage
PH Reflex Trumpet	Horn	16	30	250- 5,000 cps	- 8.9	59.8	70°	With SA-30 Driver Unit
PH Reflex Trumpet	Horn	16	30	250- 5,000 cps	- 8.7	60.0	70°	With PA-30 Driver Unit
PH Reflex Trumpet	Horn	16	25	250- 4,000 cps	- 6.3	61.7	70°	With MA-25 Driver Unit
RSH Radial Reflex Projector	Horn	16	30	300- 3,400 cps	-10.1	58.4	120°	For overhead suspension 360° coverage with SA-30 Driver Unit
RSH Radial Reflex Projector	Horn	16	30	300- 3,400 cps	- 9.8	58.7	120°	For overhead suspension 360° coverage with PA-30 Driver Unit
RSH Radial Reflex Projector	Horn	16	25	300- 3,400 cps	- 8.4	60.1	120°	For overhead suspension 360° coverage with MA-25 Driver Unit
SMH Reflex Trumpet	Horn	16	30	300- 4,500 cps	- 7.8	60.2	70°	With SA-30 Driver Unit
SMH Reflex Trumpet	Horn	16	30	300- 4,500 cps	- 7.6	60.4	70°	With PA-30 Driver Unit
SMH Reflex Trumpet	Horn	16	25	300- 4,000 cps	- 7.0	61.0	70°	With MA-25 Driver Unit
Cobraflex-2 Trumpet	Horn	16	30	300- 7,500 cps	-11.4	56.8	H100°; V50°	With SA-30 Driver Unit
Cobraflex-2 Trumpet	Horn	16	30	300- 7,500 cps	-11.2	57.0	H100°; V50°	With PA-30 Driver Unit
Cobraflex-2 Trumpet	Horn	16	25	340- 4,100 cps	- 9.6	58.6	H100°; V50°	With MA-25 Driver Unit
PA-30	Driver Unit	16**	30	Depends on horn used				
SA-30	Driver Unit	16**	30	Depends on horn used				
MA-25	Driver Unit	16	25	Depends on horn used				
MM-2	Driver-Horn	16	15	700- 4,500 cps	-11.0	54.0	120°	
7101	Driver-Horn	16	25	300- 4,000 cps	- 9.4	58.4	60°	Explosion proof, approved for Class I, Group C & D atmospheres
7102	Driver-Horn	16	25	300- 4,000 cps	-26.0	41.8	60°	Explosion proof, approved for Class I, Group C & D and Class II, Group E, F and G atmospheres

* Bi-directional Unit

** Line Transformer with Unit

Tested in KS-12035 (2 cu. ft.) Enclosure

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