

PHILIPS

Data handbook



Electronic
components
and materials

Components and materials

Part 3b October 1978

Loudspeakers

COMPONENTS AND MATERIALS

Part 3b

October 1978

Loudspeakers

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DATA HANDBOOK SYSTEM

Our Data Handbook System is a comprehensive source of information on electronic components, sub-assemblies and materials; it is made up of three series of handbooks each comprising several parts.

ELECTRON TUBES	BLUE
SEMICONDUCTORS AND INTEGRATED CIRCUITS	RED
COMPONENTS AND MATERIALS	GREEN

The several parts contain all pertinent data available at the time of publication, and each is revised and reissued periodically.

Where ratings or specifications differ from those published in the preceding edition they are pointed out by arrows. Where application information is given it is advisory and does not form part of the product specification.

If you need confirmation that the published data about any of our products are the latest available, please contact our representative. He is at your service and will be glad to answer your inquiries.

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ELECTRON TUBES (BLUE SERIES)

Part 1a	December 1975	ET1a 12-75	Transmitting tubes for communication, tubes for r.f. heating Types PE05/25 to TBW15/25
Part 1b	August 1977	ET1b 08-77	Transmitting tubes for communication, tubes for r.f. heating, amplifier circuit assemblies
Part 2a	November 1977	ET2a 11-77	Microwave tubes Communication magnetrons, magnetrons for microwave heating, klystrons, travelling-wave tubes, diodes, triodes T-R switches
Part 2b	May 1978	ET2b 05-78	Microwave semiconductors and components Gunn, Impatt and noise diodes, mixer and detector diodes, backward diodes, varactor diodes, Gunn oscillators, sub- assemblies, circulators and isolators
Part 3	January 1975	ET3 01-75	Special Quality tubes, miscellaneous devices
Part 4	March 1975	ET4 03-75	Receiving tubes
Part 5a	March 1978	ET5a 03-78	Cathode-ray tubes Instrument tubes, monitor and display tubes, C.R. tubes for special applications
Part 5b	May 1975	ET5b 05-75	Camera tubes, image intensifier tubes
Part 6	January 1977	ET6 01-77	Products for nuclear technology Channel electron multipliers, neutron tubes, Geiger-Müller tubes
Part 7a	March 1977	ET7a 03-77	Gas-filled tubes Thyratrons, industrial rectifying tubes, ignitrons, high-voltage rectifying tubes
Part 7b	March 1977	ET7b 03-77	Gas-filled tubes Segment indicator tubes, indicator tubes, switching diodes, dry reed contact units
Part 8	May 1977	ET8 05-77	TV picture tubes
Part 9	March 1978	ET9 03-78	Photomultiplier tubes; phototubes

SEMICONDUCTORS AND INTEGRATED CIRCUITS (RED SERIES)

Part 1a	August 1978	SC1a 08-78	Rectifier diodes, thyristors, triacs Rectifier diodes, voltage regulator diodes (> 1,5 W), transient suppressor diodes, rectifier stacks, thyristors, triacs
Part 1b	May 1977	SC1b 05-77	Diodes Small signal germanium diodes, small signal silicon diodes, special diodes, voltage regulator diodes (< 1,5 W), voltage reference diodes, tuner diodes
Part 2	November 1977	SC2 11-77	Low-frequency and dual transistors
Part 3	January 1978	SC3 01-78	High-frequency, switching and field-effect transistors
Part 4a	June 1976	SC4a 06-76	Special semiconductors* Transmitting transistors, field-effect transistors, dual transistors, microminiature devices for thick and thin-film circuits
Part 4b	September 1978	SC4b 09-78	Devices for optoelectronics Photosensitive diodes and transistors, light emitting diodes, photocouplers, infrared sensitive devices, photoconductive devices
Part 4c	July 1978	SC4c 07-78	Discrete semiconductors for hybrid thick and thin-film circuits
Part 5a	November 1976	SC5a 11-76	Professional analogue integrated circuits
Part 5b	March 1977	SC5b 03-77	Consumer integrated circuits Radio-audio, television
Part 6	October 1977	SC6 10-77	Digital integrated circuits LOCMOS HE4000B family
Signetics integrated circuits 1978			Bipolar and MOS memories Bipolar and MOS microprocessors Analogue circuits

* The most recent information on field-effect transistors can be found in SC3 01-78, on dual transistors in SC2 11-77, and on microminiature devices in SC4c 07-78.

COMPONENTS AND MATERIALS (GREEN SERIES)

Part 1	June 1977	CM1 06-77	Assemblies for industrial use High noise immunity logic FZ/30-series, counter modules 50-series, NORbits 60-series, 61-series, circuit blocks 90-series, circuit block CSA70(L), PLC modules, input/output devices, hybrid circuits, peripheral devices, ferrite core memory products
Part 2a	October 1977	CM2a 10-77	Resistors Fixed resistors, variable resistors, voltage dependent resistors (VDR), light dependent resistors (LDR), negative temperature coefficient thermistors (NTC), positive temperature coefficient thermistors (PTC), test switches
Part 2b	February 1978	CM2b 02-78	Capacitors Electrolytic and solid capacitors, film capacitors, ceramic capacitors, variable capacitors
Part 3	January 1977	CM3 01-77	Radio, audio, television Components for black and white television, components for colour television
Part 3a	September 1978	CM3a 09-78	FM tuners, television tuners, surface acoustic wave filters
Part 3b	October 1978	CM3b 10-78	Loudspeakers
Part 4a	November 1978	CM4a 11-78	Soft ferrites Ferrites for radio, audio and television, beads and chokes, Ferroxcube potcores and square cores, Ferroxcube transformer cores
Part 4b	December 1976	CM4b 12-76	Piezoelectric ceramics, permanent magnet materials
Part 6	April 1977	CM6 04-77	Electric motors and accessories Small synchronous motors, stepper motors, miniature direct current motors
Part 7	September 1971	CM7 09-71	Circuit blocks Circuit blocks 100 kHz-series, circuit blocks 1-series, circuit blocks 10-series, circuit blocks for ferrite core memory drive
Part 8	February 1977	CM8 02-77	Variable mains transformers
Part 9	March 1976	CM9 03-76	Piezoelectric quartz devices
Part 10	April 1978	CM10 04-78	Connectors



General

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SURVEY OF TYPES

The loudspeakers are divided into groups and per group they are arranged in order of their type number, as shown in the survey below. *Conversion of catalogue number to type number is given in the list following this survey.*

LOW POWER LOUDSPEAKERS

basic part of type number	cone dimensions		shape of flange	impedance version Ω	power handling capacity W	page
	inches	mm				
AD0198/Z.	1¼ ϕ	31 ϕ	round	8/15/25	0,3	B3
AD2071/Z.	2½ ϕ	64 ϕ	round	4/8/15/25/50	1	B7
AD2099/Z.	2 ϕ	50 ϕ	round	8/15/25	0,5	B11
AD3071/Y.	3 ϕ	81 ϕ	round	4/8/15/25/50/150	2	B15
AD3371/Y.						
AD4072/X.	4 ϕ	105 ϕ	round	4/8/15/25	3	B19
AD4472/X.						

MEDIUM POWER LOUDSPEAKERS

AD3591/X.	3 x 5	75 x 130	oval	4/8/15/25/50	3	C3
AD3595/X.	3 x 5	75 x 130	oval	4/8/15/25	3	C7
AD3880/X.	3 x 8	82 x 205	oval	4/8/15	4	C11
AD3890/X.	3 x 8	82 x 205	oval	4/8/15/25/70/800	4	C15
AD4085/X.	4 ϕ	105 ϕ	round	4/8/15	3	C19
AD4485/X.	4 ϕ	105 ϕ	square	4/8/15	3	
AD4095/X.	4 ϕ	105 ϕ	round	4/8/15/25	3	C23
AD4495/X.	4 ϕ	105 ϕ	square	4/8/15/25	3	
AD4481/X4	4 ϕ	105 ϕ	square	4	8	C27
AD4681/M.	4 x 6	102 x 154	oval	4/8/25	6	C31
AD4681/X.	4 x 6	102 x 154	oval	4/8/15/25	6	C35
AD4682/X.	3½ x 6	94 x 154	oval	4/8/15/25	6	C39
AD4685/X.	3½ x 6	94 x 154	oval	4/8	4	C43
AD4691/M.	4 x 6	102 x 154	oval	4/8/15/25/800	4	C47
AD4691/X.	4 x 6	102 x 154	oval	4/8/15/25	4	C51
AD4692/X.	3½ x 6	94 x 154	oval	4/8/15/25	4	C55
AD4890/X.	4 x 8	96 x 210	oval	4/8/15/25	10	C59
AD5081/M.	5 ϕ	120 ϕ	round	4/8/15/25	6	C63
AD5081/X.	5 ϕ	120 ϕ	round	4/8/15/25	6	C67
AD5780/M.	5 x 7	132 x 182	oval	4/8/15/25	6	C71
AD5780/X.	5 x 7	132 x 182	oval	4/8/15/25	6	C75

MEDIUM POWER LOUDSPEAKERS (continued)

basic part of type number	cone dimensions		shape of flange	impedance version Ω	power handling capacity W	page
	inches	mm				
AD5790/X.	5 x 7	132 x 182	oval	4/8	4	C79
AD5791/M.	5 x 7	132 x 182	oval	4/8	10	C83
AD7080/M.	7 ϕ	165 ϕ	octagonal	4/8/15	6	C87
AD7080/X.	7 ϕ	165 ϕ	octagonal	4/8	6	C91
AD7090/X.	7 ϕ	165 ϕ	octagonal	4/8	4	C95
AD7091/M.	7 ϕ	165 ϕ	octagonal	4/8/400/800	3	C99
AD7091/X.	7 ϕ	165 ϕ	octagonal	4/8/800	3	C103
AD8081/M.	8 ϕ	205 ϕ	octagonal	4/8	8	C107
AD8081/X.	8 ϕ	205 ϕ	octagonal	4/8	8	C111

HIGH POWER FULL-RANGE LOUDSPEAKERS

AD3080/X4	3 ϕ	87 ϕ	round	4	6	D3
AD4060/M4	4 ϕ	102 ϕ	round	4	15	D7
AD5061/M.	5 ϕ	128 ϕ	octagonal	4/8	10	D11
AD7062/M.	7 ϕ	166 ϕ	octagonal	4/8	30	D15
AD70620/M.	7 ϕ	165 ϕ	round	4/8	30	D19
AD7063/M.	7 ϕ	166 ϕ	octagonal	4/8	10	D23
AD70630/M.	7 ϕ	165 ϕ	round	4/8	10	D27
9710/M8	8½ ϕ	217 ϕ	round	8	20	D31
AD1065/M.	10 ϕ	261 ϕ	round	4/8/15	10	D35
AD1265/M.	12 ϕ	311 ϕ	round	4/8/15	20	D39
AD12100/HP.	12 ϕ	311 ϕ	round	4/8	50	D43
AD12100/M.	12 ϕ	311 ϕ	round	4/8/15	25	D47

HIGH POWER TWEETER LOUDSPEAKERS

AD0140/T.	1 ϕ	94 ϕ	round	4/8	4	E3
AD0141/T.	1 ϕ	94 ϕ	round	4/8	4	E7
AD01600/T.	1 ϕ	94 ϕ	square	4/8/15	4	
AD01605/T.						E11
AD01610/T.	1 ϕ	94 ϕ	square	4/8/15	4	E15
AD0162/T.	1 ϕ	94 ϕ	round	8/15	4	E19
AD0163/T.	1 ϕ	94 ϕ	round	8/15	4	E23
AD01630/T.	1 ϕ	94 ϕ	square	8/15	4	
AD01631/T.						E27
AD01632/T.	1 ϕ	94 ϕ	square	8/15	6	
AD01633/T.						E31
AD2095/T.	2 ϕ	51 ϕ	round	4/8/15	2,5	
AD2295/T.			square			E35
AD2096/T.	2 ϕ	50 ϕ	round	4	3	E39
AD2273/T.	2¼ ϕ	58 ϕ	square	4/8	3	
AD2274/T.						E43

GENERAL

HIGH POWER SQUAWKER LOUDSPEAKERS

basic part of type number	cone dimensions		shape of flange	impedance version Ω	power handling capacity W	page
	inches	mm				
AD0210/Sq. AD0211/Sq.	2 ϕ	134 ϕ	round	4/8	20	F3
AD5060/Sq. AD5061/Sq.	5 ϕ 5 ϕ	128 ϕ 129 ϕ	octagonal octagonal	4/8 4/8	10 10	

HIGH POWER WOOFER LOUDSPEAKERS

AD4050/W.	4 ϕ	101 ϕ	round	4/8	15	G3
AD4060/W.	4 ϕ	101 ϕ	round	4/8	15	G7
AD5060/W.	5 ϕ	129 ϕ	octagonal	4/8	10	G11
AD7060/W.	7 ϕ	166 ϕ	octagonal	4/8	30	G15
AD70601/W.	7 ϕ	166 ϕ	round	4/8	30	G19
AD70610/W.	7 ϕ	166 ϕ	round	4/8	30	
AD70611/W.						G23
AD70650/W.	7 ϕ	166 ϕ	round	4/8	40	G27
AD7066/W.	7 ϕ	166 ϕ	octagonal	4/8	40	G31
AD80601/W.	8 ϕ	204 ϕ	round	4/8	50	
AD80602/W.						G35
AD8061/W.	8 ϕ	204 ϕ	octagonal	4/8	30	G39
AD80651/W.	8 ϕ	204 ϕ	round	4/8	50	
AD80652/W.						G43
AD8066/W.	8 ϕ	204 ϕ	octagonal	4/8	40	G47
AD80671/W.	8 ϕ	204 ϕ	round	4/8	60	
AD80672/W.						G51
AD1065/W.	10 ϕ	261 ϕ	round	4/8	30	G55
AD10100/W.	10 ϕ	261 ϕ	round	4/8	40	G59
AD10200/W.	10 ϕ	261 ϕ	round		80	
AD10600/W.	10 ϕ	261 ϕ	round		40	
AD10650/W.	10 ϕ	261 ϕ	round		60	G63
AD12200/W.	12 ϕ	311 ϕ	round	4/8	80	G65
AD12250/W8	12 ϕ	311 ϕ	round	8	100	G69
AD12600/W.	12 ϕ	311 ϕ	round	4/8	40	G73
AD12650/W.	12 ϕ	311 ϕ	round	4/8	60	G77

ACCESSORIES

Passive radiators

AD8000	8 ϕ	205 ϕ	octagonal			H3
AD8001	8 ϕ	205 ϕ	round			
AD8002						H5
AD1200	12 ϕ	311 ϕ	round			H7

ACCESSORIES (continued)

Cross-over networks

type number	dimensions l x w x h	cross-over frequency	impedance version	power handling capacity W	page
	mm	Hz	Ω		
ADF1500/4	83 x 42 x 35	1500	4	80	H9
ADF1500/8		1800	8		
ADF2000/4	83 x 42 x 35	2000	4	20	H11
ADF2000/8		2000	8		
ADF2400/4	83 x 42 x 35	2400	4	20	H13
ADF2400/8		2400	8		
ADF3000/4	83 x 42 x 35	3000	4	80	H15
ADF3000/8		4000	8		
ADF600/5000/4	140 x 60 x 36	600/5000	4	40	H17
ADF600/5000/8		600/5000	8		
ADF700/2600/4	140 x 60 x 36	650/2800	4	80	H19
ADF700/2600/8		700/2600	8		
ADF700/3000/4	140 x 60 x 36	700/3000	4	80	H21
ADF700/3000/8		700/3000	8		



GENERAL

CONVERSION LIST

Conversion of catalogue number (for ordering) to type number.

catalogue number	type number	catalogue number	type number
2403 256 12001	AD0199/Z25 *	2404 257 34301	AD4480/X4 *
12101	AD0198/Z25	34302	X8 *
12102	Z15	34303	X15 *
12103	Z8	46001	AD7062/M4
		46002	M8
2403 257 22001	AD2271/T4 *	46101	AD70620/M4
22002	T8 *	46102	M8
22101	AD2273/T4		
22102	T8	2404 258 48201	AD8000
22201	AD2274/T4		
22202	T8	2404 259 80001	AD8001
23501	AD3371/Y4	80002	AD8002
23502	Y8		
23503	Y15	2422 256 22201	AD2099/Z25
23504	Y25	22202	Z15
23505	Y50	22203	Z8
23506	Y150	24301	AD4095/X4
23601	AD3071/Y4	24302	X8
23602	Y8	24303	X15
23603	Y15	24304	X25
23604	Y25	24311	AD4495/X4
23605	Y50	24312	X8
23606	Y150	24313	X15
23701	AD3370/Y4 *	24314	X25
23702	Y8 *	30301	AD3590/X4 *
23704	Y25 *	30302	X50 *
23705	Y150 *	30303	X400 *
23801	AD2071/Z4	30304	X8 *
23802	Z8	30305	X15 *
23803	Z15	30307	X25 *
23804	Z25	30311	AD3595/X4
23806	Z50	30312	X8
24205	AD4072/X4	30313	X15
24206	X8	30314	X25
24207	X15	30501	AD3890/X4
24208	X25	30502	X800
24805	AD4472/X4	30503	X8
24806	X8	30504	X15
24807	X15	30505	X25
24808	X25	30506	X70
		30601	AD4691/X4
2404 257 24201	AD4470/Y4 *	30602	X8
24202	Y8 *	30603	X15
24203	Y15 *	30604	X25
24204	Y25 *	30612	M4
		30613	M800 *
		30614	M15

* Obsolete type.

catalogue number	type number	catalogue number	type number
2422 256 30615	M8	2422 257 21012	AD12600/W8
30616	M25	22001	AD2071/T4 *
30705	AD4890/X4	22002	T8 *
30706	X8	23701	AD3070/Y4 *
30707	X15	23702	Y8 *
30708	X25	23703	Y15 *
30801	AD4692/X4	23704	Y25 *
30802	X8	23801	AD2070/Z4 *
30803	X15	23802	Z8 *
30804	X25	23803	Z15 *
31001	AD3591/X4	23804	Z25 *
31002	X8	24203	AD4070/Y15 *
31003	X15	24204	Y25 *
31004	X25	24301	AD4085/X4
31005	X50	24302	X8
32001	AD2090/T4 *	24303	X15
32002	T8 *	24311	AD4485/X4
32003	T15 *	24312	X8
32005	AD2290/T4 *	24313	X15
32006	T8 *	30301	AD3880/X4
32007	T15 *	30302	X8
32101	AD2095/T4	30303	X15
32102	T8	30401	AD4681/X4
32103	T15	30402	AD4681/X8
32201	AD2295/T4	30403	X15
32202	T8	30404	X25
32203	T15	30409	M4
32301	AD2096/T4	30411	M8
34301	AD4090/X8 *	30413	M25
34302	X15 *	30601	AD4682/X4
34401	AD4050/W4	30602	X8
34402	W8	30603	X15
36001	AD5790/M4 *	30604	X25
36002	X4	30701	AD4685/X4
36003	M8 *	30702	X8
36004	M15 *	31201	AD1265/W4 *
36005	X8	31202	W8 *
36011	AD5791/M4	31301	AD1065/W4
36012	M8	31302	W8
37001	AD7091/M800	31411	AD12650/W4
37002	X800	31412	W8
37003	M400	31511	AD12200/W4
37004	M4	31512	W8
37005	X4	32001	AD0210/Sq4
37008	X8	32002	Sq8
37009	M8	32011	AD0211/Sq4
37101	AD7090/X4	32012	Sq8
37102	X8	33201	AD0140/T4
		33202	T8

* Obsolete type.

GENERAL

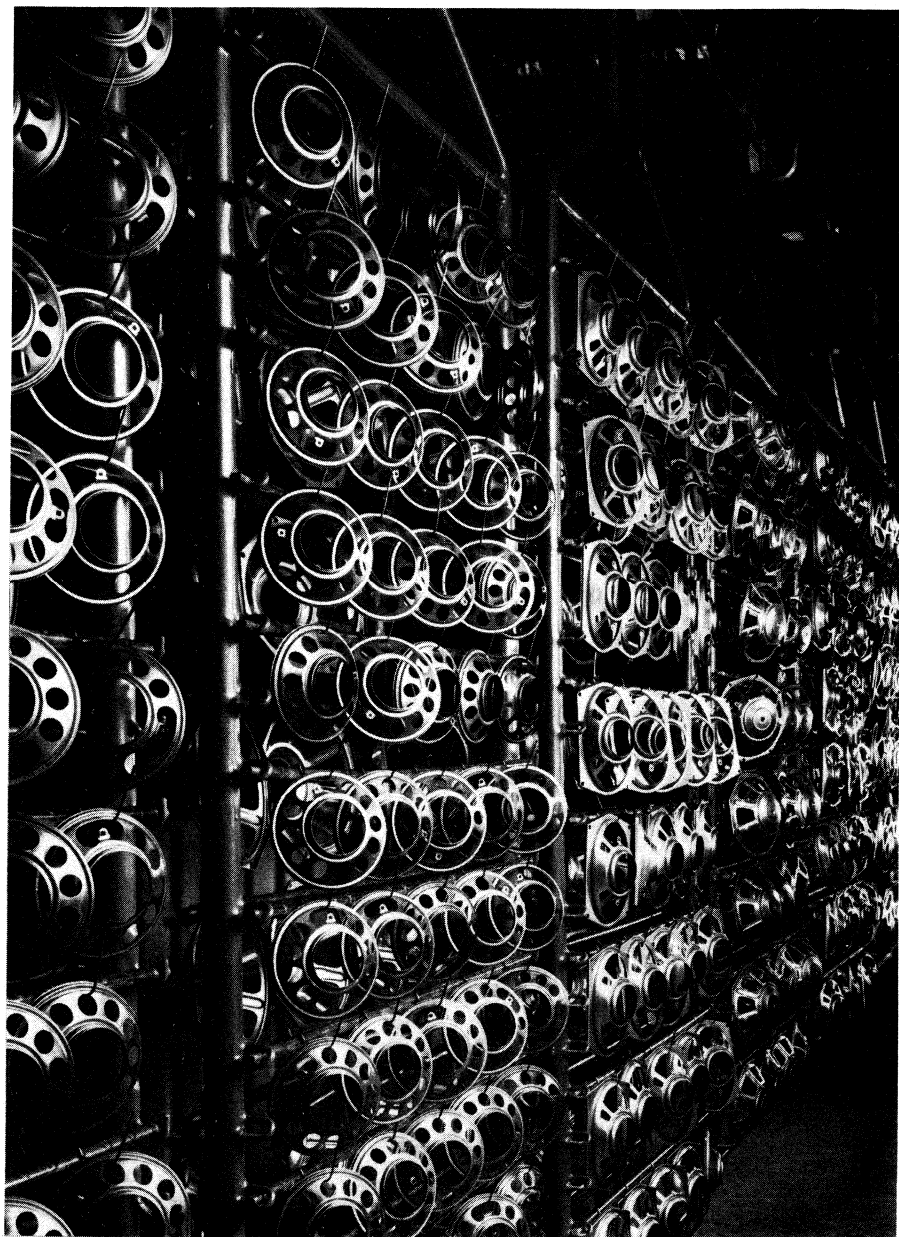
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catalogue number	type number	catalogue number	type number
2422 257 33211	AD0141/T4	2422 257 35705	AD5081/M4
33212	T8	35706	M8
33312	AD0162/T8	35707	M15
33313	T15	35708	M25
33402	AD0163/T8	36101	AD5780/X4
33403	T15	36102	X8
33501	AD01600/T4	36103	X15
33502	T8	36104	X25
33503	T15	36105	M4
33511	AD01605/T4	36106	M8
33512	T8	36107	M15
33513	T15	36108	M25
33601	AD01610/T4	37801	AD7080/X4
33602	T8	37802	X8
33603	T15	37803	M4
33802	AD01630/T8	37804	M8
33803	T15	37805	M15
33805	AD01632/T4	37906	AD7063/M4
33806	T8	37907	M8
33807	T15	37911	AD7060/W4
33815	AD01633/T4	37912	W8
33816	T8	37915	AD70610/W4
33817	T15	37916	W8
34301	AD4080/X4 *	37917	AD70611/W4
34302	X8 *	37918	W8
34303	X15 *	38211	AD8081/M4
34304	X25 *	38212	M8
34311	AD4481/X4	38213	X4
34519	AD3080/X4	38214	X8
34601	AD4060/W4	38405	AD8061/W4
34602	W8	38406	W8
34619	M4	38501	AD8066/W4
35301	AD5060/W4	38502	W8
35302	W8	38601	AD8067/W4 *
35511	AD5061/M4	38602	W8 *
35512	M8	38605	MFB *
35401	AD5060/Sq4	39101	AD6980/X4 *
35402	Sq8	39102	X8 *
35405	AD5061/Sq4	39103	M4 *
35406	Sq8	39104	M8 *
35511	M4	41001	AD1065/M4
35512	M8	41002	M8
35701	AD5081/X4	41003	M15
35702	X8		
35703	X15		
35704	X25		

* Obsolete type.

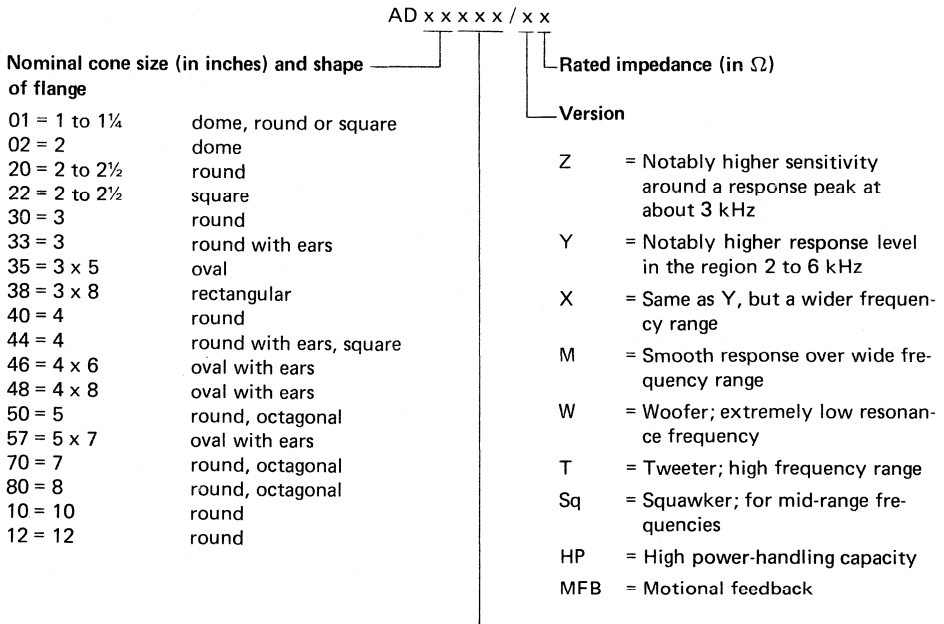
catalogue number	type number	catalogue number	type number
2422 257 41101	AD1265/M4	4304 078 72500	ADF500/4500/8 *
41102	M8	72720	ADF1600/4 *
41103	M15	72820	ADF1600/8 *
41201	AD10100/W4	72840	ADF500/4500/4 *
41202	W8	72850	ADF2400/8 *
41301	AD12100/W4 *	72860	ADF2400/4 *
41302	W8 *		
47001	AD7066/W4		
47002	W8		
47005	MFB *		
47101	AD70601/W4		
47102	W8		
47201	AD70650/W4		
47202	W8		
48101	9710/M8		
48201	AD80601/W4		
48202	W8		
48401	AD80651/W4		
48402	W8		
48511	AD80652/W4		
48512	W8		
48601	AD80671/W4		
48602	W8		
48711	AD80672/W4		
48712	W8		
51001	AD12100/M4		
51002	M8		
51003	M15		
51101	AD12100/HP4		
51102	HP8		
61012	AD12250/W8		
2422 259 12001	AD1200		
3104 207 10100	ADF2400/8		
10110	/4		
10120	ADF2000/8		
10130	/4		
10140	ADF600/5000/8		
10150	/4		
10210	ADF1500/4		
10220	/8		
10230	ADF3000/4		
10240	/8		
10250	ADF700/2600/4		
10260	/8		
10270	ADF700/3000/4		
10280	/8		

* Obsolete type.



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TYPE NUMBER SYSTEM



Magnet system

- 10 = ceramic, 102 mm φ
- 40 to 44 = ceramic, 60 mm φ
- 60 to 64 = ceramic, 72 mm φ
- 600 to 649 = ceramic, 72 mm φ
- 65 to 67 = ceramic, 90 mm φ
- 650 to 679 = ceramic, 90 mm φ
- 70 to 74 = ceramic, 30 mm φ
- 80 to 84 = ceramic, 53 mm φ
- 85 to 89 = ceramic, 46 mm φ
- 90 to 94 = steel alloy, 18 mm φ
- 95 to 97 = steel alloy, 14 mm φ
- 98, 99 = steel alloy, 10 mm φ
- 100 = ceramic, 130 mm φ
- 200 = ceramic, 125 mm φ
- 250 = ceramic, 138 mm φ

Example: AD0162/T8 = 1-inch dome, 72 mm φ ceramic magnet, tweeter, 8 Ω.

CHOICE OF TYPE

A correctly chosen loudspeaker is essential to obtain adequate acoustic results from electro-acoustic equipment.

The following factors should be considered when choosing a loudspeaker :

- Shape, size and attachment with reference to the available space;
- Quality and sensitivity, a compromise between fidelity of reproduction and price;
- The frequency response characteristic in relation to the kind of application;
- Impedance and power handling capacity, which should be adapted to the output stage of the equipment;
- Appearance and finish.

To assist customers in making their choice, our loudspeakers have been divided into three main groups :

- High power: (hi-fi/full range)
- Medium power
- Low power

The high power series comprises top-quality woofers, squawkers and tweeters intended for use in special combinations with appropriate filters and enclosures. Their excellent sound reproduction conforms in every respect to the high fidelity standards IEC 268 and DIN45500. The system power handling capacity is from 10 W to 250 W - the latter for theatres and out-door applications. Full range high power loudspeakers are also available. These speakers also conform to IEC 268 and DIN45500 but have been designed to meet somewhat less stringent requirements. They are specially for juke boxes, musical instruments, monitoring and public address systems.

The medium power series may be subdivided according to the application into round and oval versions, usually for radio, audio and television. Loudspeakers having a metal magnet system - which keeps stray magnetic fields low - are particularly recommended for television.

The low power types are mainly used in small radios, intercoms and portable television.

RESPONSE CURVES

For the medium and low power range a curve of a loudspeaker mounted on an IEC baffle, showing the sound pressure as a function of the frequency is normally given in the data sheets.

For the high power range curves are given of a loudspeaker mounted on an IEC baffle or mounted in an enclosure.

TERMS AND DEFINITIONS

"Unmounted": The loudspeaker is placed in a clamping set-up which does not influence its radiation characteristics.

"Mounted in enclosure": The loudspeaker front mounted in enclosure of dimensions specified on the data sheet.

"Baffle": The loudspeaker is fitted to a baffle of dimensions specified on the data sheet (flush mounted or front mounted).

"Half free field": The acoustical conditions on the forward side approach those of free space.

"Anechoic room": The acoustical conditions approach those of free space. (IEC Publication 268, Part 5, Section 1).

"Operating power": Is the sine-wave power input to the loudspeaker which corresponds with a sound level of 96 dB with respect to 2×10^{-4} μ bar at a microphone distance of 1 m. This sound level is the average level over the rated frequency range of the loudspeaker.

"Maximum power": The power of a continuous sinusoidal signal within the rated frequency range which the loudspeaker element or system can handle for ten minutes without any damage, e. g. either thermal or mechanical deformation.

"Characteristic sensitivity" The sound pressure produced at a distance of 1 m when the loudspeaker is supplied with a pink-noise signal, the voltage of which corresponds to a power of 1 W in the rated impedance.

"Compliance" is the reciprocal of the stiffness of the suspension.

TEST METHODS AND MEASUREMENTS

The atmospheric conditions for measurement are:

Temperature	:	15 to 35 °C
Relative humidity	:	45 to 75 %
Pressure	:	860 to 1060 mbar

1 Impedance

The impedance is the modulus of the lowest value of the electrical impedance in the frequency range above the bass resonance frequency of the loudspeaker as determined by the method specified in para. 3 below.

1.1 Measuring apparatus

- Audio-frequency sine-wave generator with a constant output voltage over the range 0 to 20 000 Hz.
- Linear amplifier with an output impedance not greater than 1/3 of the rated loudspeaker impedance and a power output of approx. 0,1 x the power-handling capacity of the loudspeaker.
- A 1 Ω resistor connected in series with the loudspeaker.
- An electronic voltmeter shunted across the 1 Ω resistor.

1.2 Conditions

- The loudspeaker is unmounted.
- The power input to the loudspeaker will not exceed 0,1 x the power-handling capacity as determined in para. 4 below.

1.3 Measuring result

Rated impedance is stated on the data sheets. The measured impedance will not be lower than 20% of the rated impedance.

2 Voice coil resistance

The voice coil resistance is the (d.c.) resistance of the voice coil.

2.1 Measuring apparatus

Low current d.c. ohmmeter.

2.2 Conditions

The d.c. power input to the loudspeaker does not exceed 0,1 x the power-handling capacity.

2.3 Measuring result

The rated resistance is given on the data sheets, tolerance $\pm 10\%$.

3. Resonance frequency

The resonance frequency is that frequency where the modulus of the electrical impedance has its first principal maximum in an ascending scale, the electrical input being such as to have no significant effect on the resonant frequency.

3.1 Measuring apparatus

Same as for "Impedance". See para. 1.

3.2 Conditions

- The loudspeaker is measured unmounted.
- The resonance frequency is determined after applying to the loudspeaker for a duration of 5 s a test signal equal to that required to test the power handling capacity.

3.3 Measuring result

The resonance frequency is that frequency at which the voltmeter indicates the first minimum deflection as the frequency is swept slowly from 0 Hz, the output voltage of the amplifier being such that the voltmeter reads for the resonance frequency:

- 40 to 60 mV for loudspeakers with a rated impedance less than 20 Ω ;
- 15 to 25 mV for loudspeakers with a rated impedance between 20 Ω and 100 Ω ;
- 4 to 6 mV for loudspeakers with a rated impedance greater than 100 Ω .

The rated resonance frequency is stated on the data sheets.

4 Power handling capacity

The power handling capacity is the nominal power which the loudspeaker will satisfactorily handle as checked by an accelerated life test.

4.1 Test apparatus

- Generator supplying test signal in accordance with IEC268, para. 9.3.
- Power amplifier with an output impedance not greater than 1/3 of the rated impedance of the loudspeaker.
- Voltmeter indicating the r. m. s. value of the voltage.

4.2 Conditions

- A test voltage is applied to the loudspeaker for an uninterrupted period of 100 hrs. The r.m.s. value of this voltage corresponds with the specified power handling capacity of the loudspeaker.
- The test voltage has a frequency distribution corresponding with that of the output of a filter as specified in IEC Publication 268, part 5 para. 9.3 when fed from a white noise source.
- If the loudspeaker is designed to operate in a restricted frequency range, the corresponding network (filter) which is connected to the loudspeaker during the test, is specified on the data sheet. The test voltage is measured at the input terminals of the network.
- The method of mounting is as specified on the data sheet.

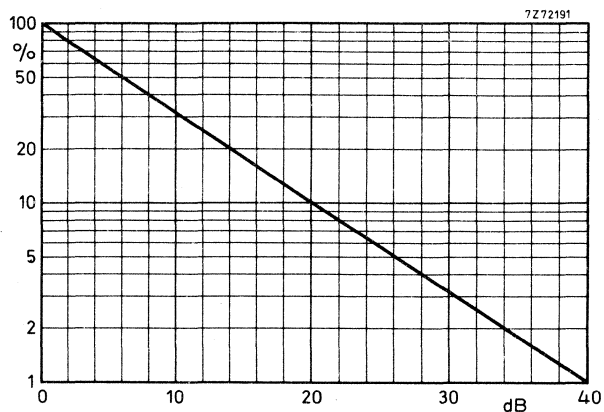
4.3 Test result

To pass this test the loudspeaker has to function properly at the end of the test period. Deviation from the specified resonance frequency is allowed.

5 **Total non-linear distortion**

This is the ratio between the r.m.s. value of the harmonic content of the sound pressure to the value of the total sound pressure over the frequency range of the loudspeaker.

The difference in dB between fundamentals and harmonic contents, can be converted into a distortion percentage with the aid of following nomogram.



Difference in dB converted into % distortion

5.1 Conditions

- The loudspeaker is mounted as specified on the data sheet.
- The power input to the loudspeaker is the operating power.
- The microphone distance is as specified on the data sheet. (See also definition of "Operating power")

5.2 Measuring result

The distortion curve with its limit of high power loudspeakers is given on the data sheet.

6 Sweep voltage

The sweep voltage test involves the loudspeaker to receive a sinusoidal test signal of specified constant amplitude. The frequency of this signal is swept through the specified frequency range.

6.1 Test apparatus

- Audio-frequency sinus-signal generator with a constant output voltage over the range from 0 to 20 000 Hz.
- Linear amplifier with an output power appropriate to the loudspeaker under test and an output impedance not greater than $1/3$ x the rated loudspeaker impedance. For power see 6.2.
- An electronic voltmeter with high input impedance.

6.2 Conditions

- The loudspeaker is tested unmounted.
- The input voltage is
 - a) for the medium and low power range such that the power input to the loudspeaker is $0,5$ x the specified power handling capacity.
 - b) for the High power range as specified on the data sheets.
- If the loudspeaker is designed to operate in a restricted frequency range, the corresponding network (filter) which is connected to the loudspeaker during the test, is specified on the data sheet. The test voltage is measured at the input terminals of the network.

6.3 Test result

To pass this test the loudspeaker has to function properly during the test.

7 Flux density

This is the magnetic flux density measured in the air gap.

7.1 Measuring apparatus

- Differential search coil pair.
- Galvanometer.

7.2 Conditions

- The distance between the centres of the two coils is equal to the air gap height minus 1 mm.
- The two coils are put into the air gap symmetrical with respect to the poleplate.

7.3 Measuring result

The minimum flux density as measured on production samples is stated on the data sheet.

8 **Frequency response**

The frequency response is the graph representing the sound pressure as a function of frequency applying to the loudspeaker a constant sine-wave signal V.

8.1 Measuring apparatus

- | | |
|-------------------------|--------------------------------------|
| - Microphone | Bruel & Kjaer, type 4131, 4145 |
| - Microphone amplifier | Bruel & Kjaer, type 2606, 2607, 2608 |
| - Cathode follower | Bruel & Kjaer, type 2619 |
| - Sine/random generator | Bruel & Kjaer, type 1024 |
| - Level recorder | Bruel & Kjaer, type 2305, 2307 |

The apparatus is set as follows:

- | | |
|----------------------------|----------|
| - Writing speed | 125 mm/s |
| - Paper speed | 3 mm/s |
| - Range potentiometer | 50 dB |
| - Lower limiting frequency | 10 Hz |
| - Rectifier response | r. m. s. |
| - Writing width | 100 mm |
| - Compressor speed | 300 dB/s |

8.2 Conditions

- Sine-wave signal $V = \sqrt{W \cdot Z_r}$
where
- for anechoic room measurements $W = 50$ mW, unless otherwise stated on the data sheets.

V = test voltage

Z_r = rated impedance as specified on the data sheet

- Microphone position: in axis of loudspeaker on a distance of 50 cm for anechoic room measurements

8.3 Measuring result

A description of the sensitivity and the frequency response **curve(s)** are given on the data sheet.

9 **Direction of magnetization**

The magnet is so magnetized that the centre-pole is south for systems with a ring magnet, and north for systems with a slug magnet.

10 **Polarity**

The cone of the loudspeaker will move outwards when a d. c. voltage is applied to the terminals so that the red terminal is positive.

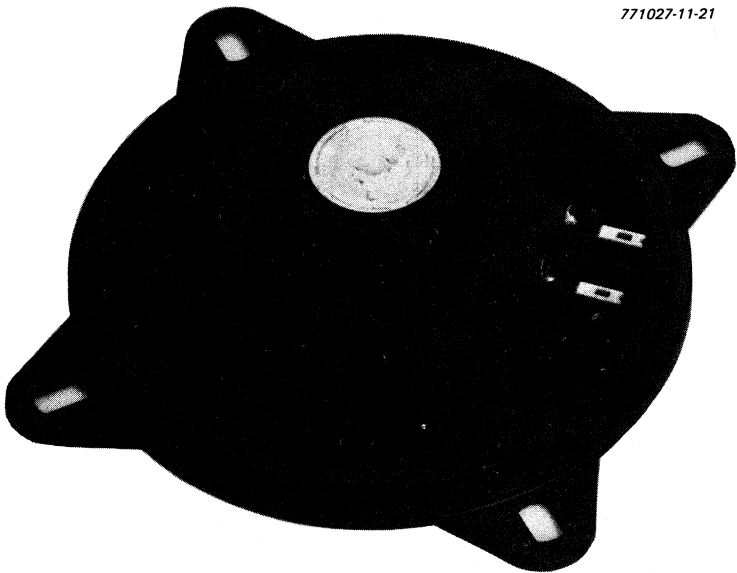
The voltage applied does not exceed the "sweep voltage".



Low power loudspeakers



771027-11-21



Type AD4472/X15

1¼ INCH LOW POWER LOUDSPEAKER

APPLICATION

The absence of magnetic stray field due to steel alloy sinterpot magnet system, makes this loudspeaker suitable for use in portables, intercoms and dictation equipment where very small dimensions are required.

TECHNICAL DATA

	version		
	Z8	Z15	Z25
Rated impedance	8	15	25 Ω
Voice coil resistance	7,1	13,5	19,8 Ω
Rated frequency range	300 to 7000		Hz
Resonance frequency	500		Hz
Power handling capacity, loudspeaker unmounted, measured without filter	300		mW
Operating power (sound level 74 dB, 0,5 m)	87	86	73 mW
Sweep voltage (frequency range: 400 to 15000 Hz)	1,1	1,5	1,9 V
Energy in air gap	5,3		mJ
Flux density	0,5		T
Air-gap height	2,5		mm
Voice coil height	1,5	2,1	2,3 mm
Core diameter	10		mm
Magnet material	steel alloy		
diameter	10		mm
mass	0,006		kg
Mass of loudspeaker	0,017		kg

The loudspeaker has a polycarbonate cone and surround. Connection to the loudspeaker by soldering.

Dimensions in mm

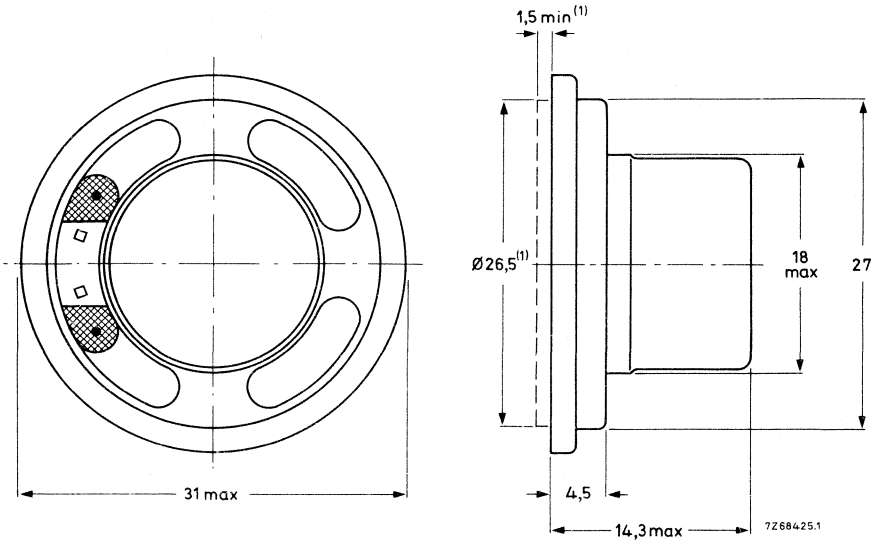
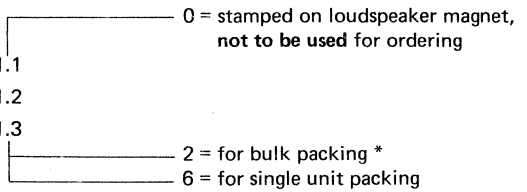


Fig. 1.

(1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity. One tag is indicated by + sign for in-phase connection.

AVAILABLE VERSIONS

- AD0198/Z25, catalogue number 2403 256 121.1
- AD0198/Z15, catalogue number 2403 256 121.2
- AD0198/Z8, catalogue number 2403 256 121.3



FREQUENCY RESPONSE CURVE (see Fig. 2)

Sound pressure measured in anechoic room, loudspeaker mounted on IEC baffle.

* Minimum packing quantity 5 per unit.

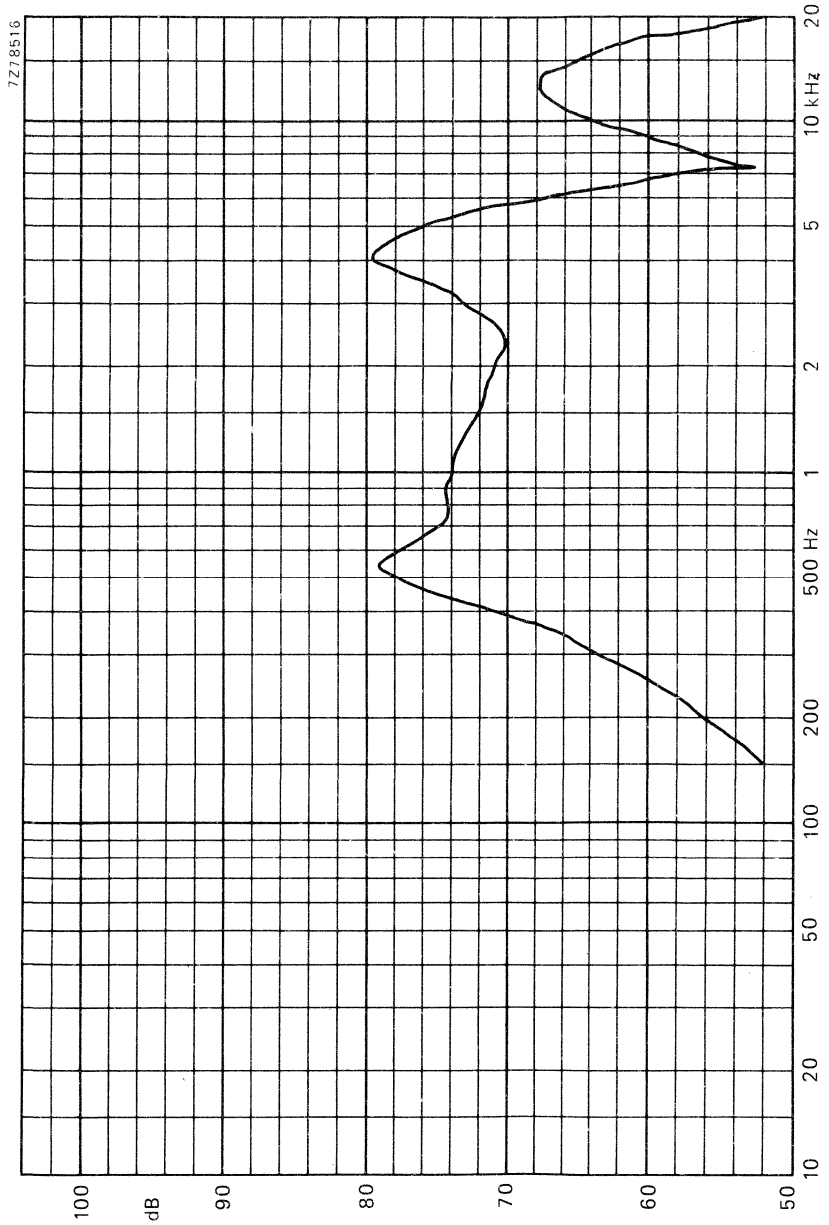


Fig. 2.



2½ INCH LOW POWER LOUDSPEAKER

APPLICATION

For portable receivers and intercoms.

TECHNICAL DATA

	version				
	Z4	Z8	Z15	Z25	Z50
Rated impedance	4	8	15	25	50 Ω
Voice coil resistance	3,5	7,1	13,7	22,8	37 Ω
Rated frequency range	180 to 4000				Hz
Resonance frequency	360				Hz
Power handling capacity, loudspeaker unmounted, measured without filter	1				W
Operating power (sound level 90 dB, 0,5 in)	0,25				
Sweep voltage (frequency range: 240 to 15000 Hz)	1	1,4	1,9	2,5	5 V
Energy in air gap	12,7				mJ
Flux density	0,74				T
Air-gap height	2,5				mm
Voice coil height	2,7	2,2	3,0	3,6	3,9 mm
Core diameter	10				
Magnet material	ceramic				
diameter	31				mm
mass	0,02				kg
Mass of loudspeaker	0,064				kg

The loudspeaker has a plastic frame, and a paper cone and surround. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions (mm)

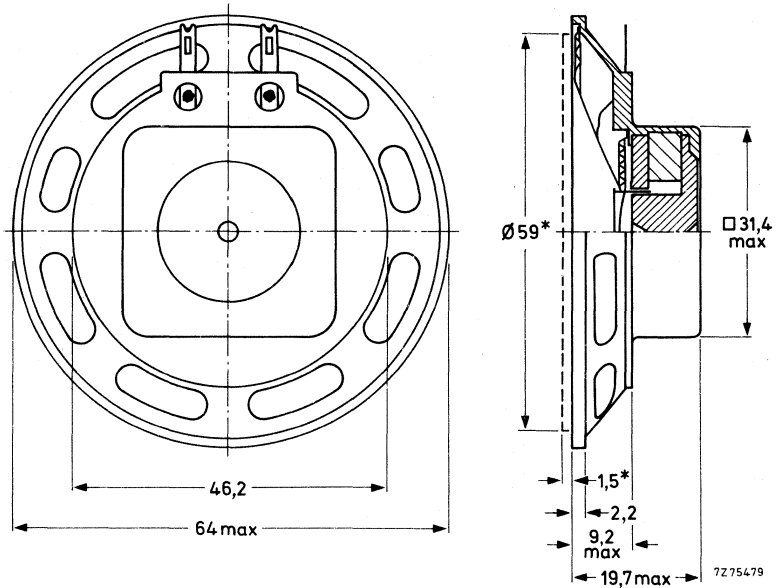


Fig.1.

*Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by + sign for in-phase connection.

AVAILABLE VERSIONS

AD2071/Z4, catalogue number 2403 257 238.1

AD2071/Z8, catalogue number 2403 257 238.2

AD2071/Z15, catalogue number 2403 257 238.3

AD2071/Z25, catalogue number 2403 257 238.4

AD2071/Z50, catalogue number 2403 257 238.6

0 = stamped on loudspeaker magnet,
not to be used for ordering

2 = for bulk packing **

6 = for single unit packing

FREQUENCY RESPONSE CURVE (see Fig. 2)

Sound pressure measured in anechoic room, loudspeaker mounted on IEC baffle.

** Minimum packing quantity 5 per unit.

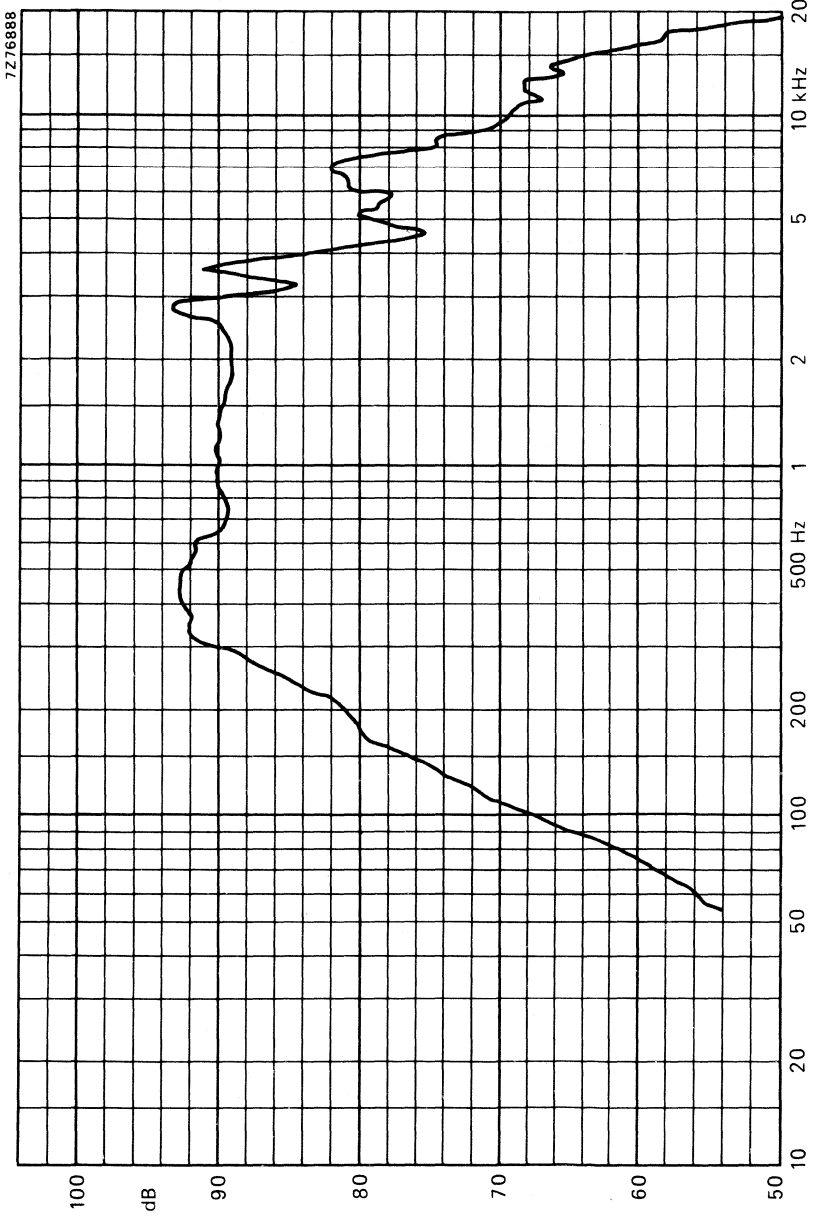


Fig.2.



2 INCH LOW POWER LOUDSPEAKER

APPLICATION

The absence of magnetic stray field due to steel alloy sinterpot magnet system, makes this loudspeaker suitable for use in portables, intercoms and dictation equipment where very small dimensions are required.

TECHNICAL DATA

	version		
	Z8	Z15	Z25
Rated impedance	8	15	25 Ω
Voice coil resistance	7,1	13,5	19,8 Ω
Rated frequency range	300 to 4000		Hz
Resonance frequency	420		Hz
Power handling capacity, loudspeaker unmounted, measured without filter	500		mW
Operating power (sound level 74 dB, 0,5 m)	42	36	36 mW
Sweep voltage (frequency range: 300 to 10 000 Hz)	1,4	1,9	2,5 V
Energy in air gap	5,3		mJ
Flux density	0,5		T
Air-gap height	2,5		mm
Voice coil height	1,7	2,1	2,3 mm
Core diameter	10		mm
Magnet material	steel alloy		
diameter	10		mm
mass	0,006		kg
Mass of loudspeaker	0,021		kg

The loudspeaker has a paper cone and surround. Connection to the loudspeaker by soldering.

Dimensions in mm

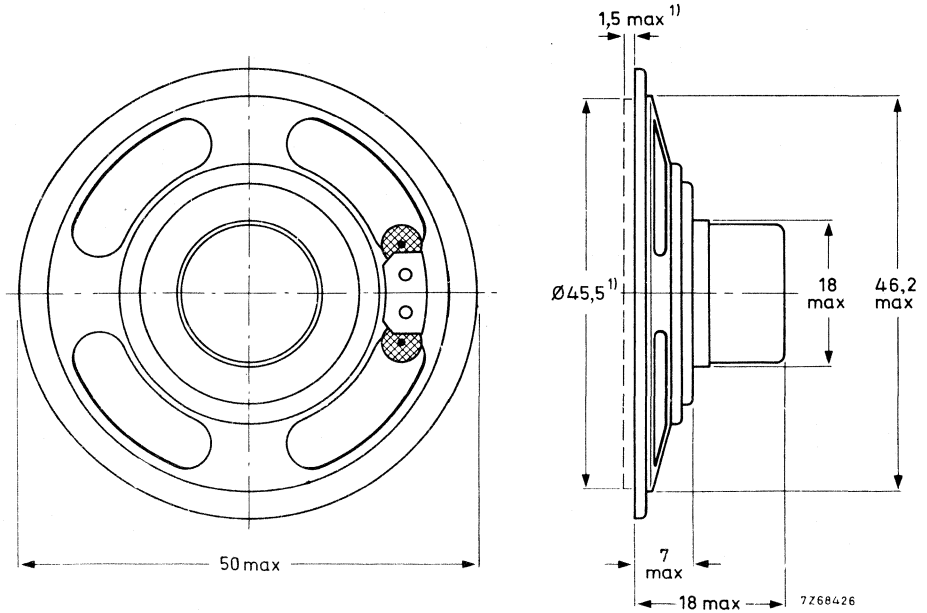


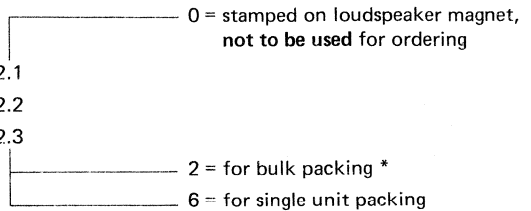
Fig. 1.

(1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

- AD2099/Z25, catalogue number 2422 256 222.1
- AD2099/Z15, catalogue number 2422 256 222.2
- AD2099/Z8, catalogue number 2422 256 222.3



FREQUENCY RESPONSE CURVE (Fig. 2)

Sound pressure measured in anechoic room, loudspeaker mounted on IEC baffle. Above 1000 Hz the sensitivity may be, over the width of one octave, maximum 2 dB lower than indicated. Input power 50 mW.

* Minimum packing quantity 5 per unit.

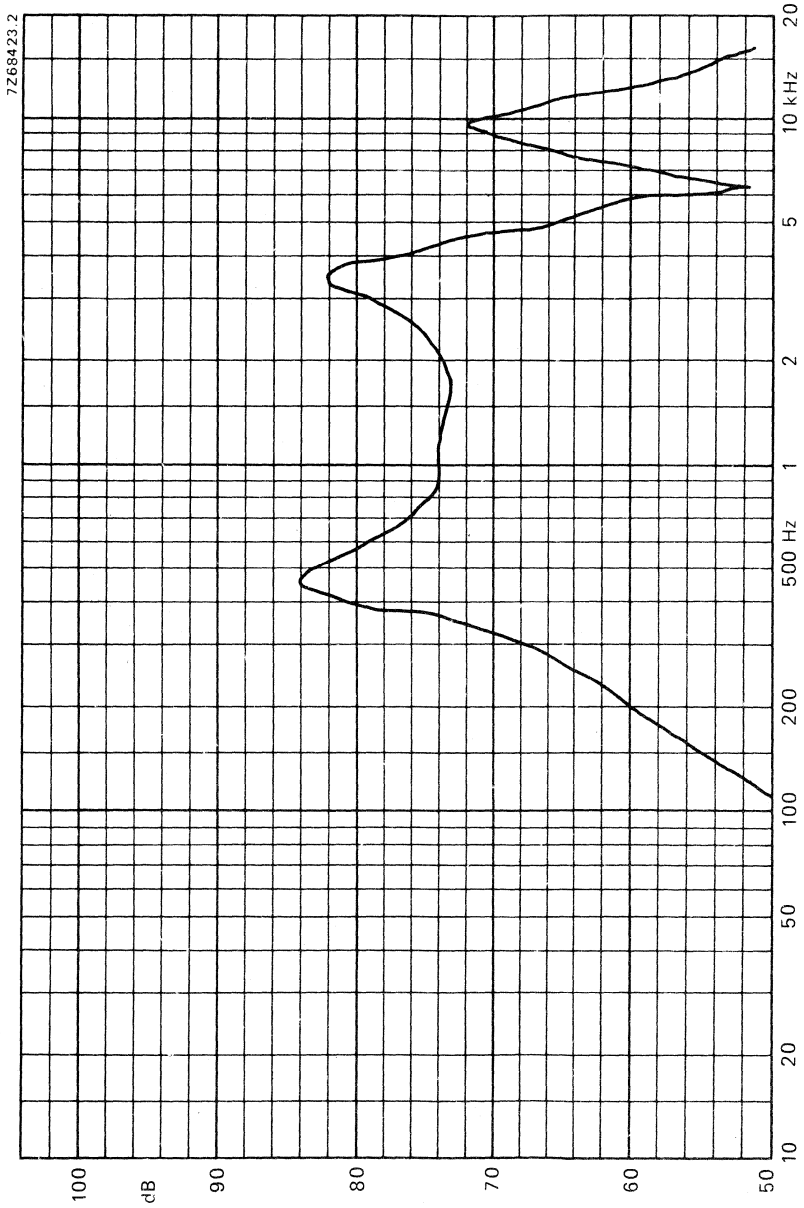


Fig. 2.



3 INCH LOW POWER LOUDSPEAKERS

APPLICATION

For portable receivers and intercoms.

TECHNICAL DATA

	version					
	Y4	Y8	Y15	Y25	Y50	Y150
Rated impedance	4	8	15	25	50	150 Ω
Voice coil resistance	3,5	7,1	13,7	22,8	45	127 Ω
Rated frequency range	100 to 6000					Hz
Resonance frequency	250					Hz
Power handling capacity, loudspeaker unmounted, measured without filter	2					W
Operating power (sound level 90 dB, 0,5 m)	0,225					W
Sweep voltage (frequency range 170 to 15 000 Hz)	1,4	2,0	2,7	3,5	7,1	12,2 V
Energy in air gap	12,7					mJ
Flux density	0,74					T
Air-gap height	2,5					mm
Voice coil height	2,7	2,2	3,0	3,6	4,7	3,5 mm
Core diameter	10					mm
Magnet material	ceramic					
diameter	30					mm
mass	0,018					kg
Mass of loudspeaker	0,059					kg

The loudspeakers have a plastic frame, and a paper cone and surround. Type AD3371/Y. is provided with 4 mounting ears (dotted in Fig. 1). Connection to the loudspeakers by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

AD3071/Y.
AD3371/Y.

Dimensions in mm

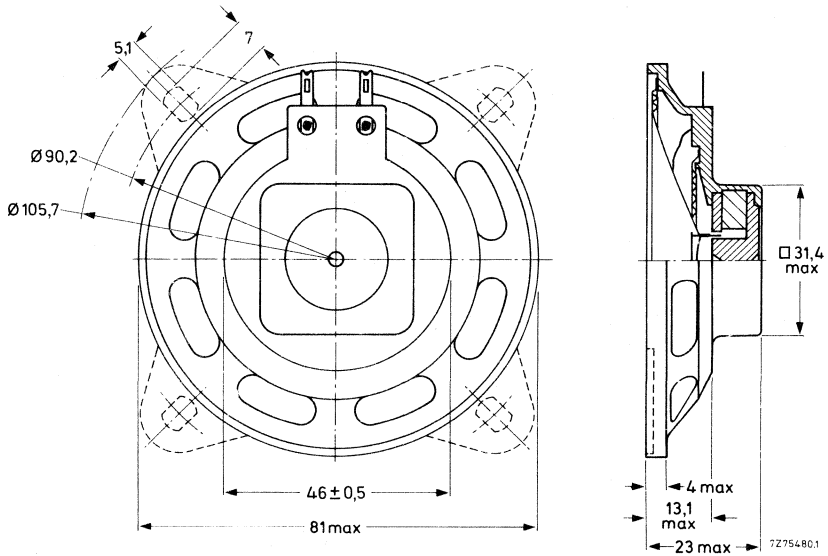


Fig. 1 Dotted mounting ears for type AD3371/Y.

AVAILABLE VERSIONS

- AD3071/Y4, catalogue number 2403 257 236 . 1
 - AD3071/Y8, catalogue number 2403 257 236 . 2
 - AD3071/Y15, catalogue number 2403 257 236 . 3
 - AD3071/Y25, catalogue number 2403 257 236 . 4
 - AD3071/Y50, catalogue number 2403 257 236 . 5
 - AD3071/Y150, catalogue number 2403 257 236 . 6
 - AD3371/Y4, catalogue number 2403 257 235 . 1
 - AD3371/Y8, catalogue number 2403 257 235 . 2
 - AD3371/Y15, catalogue number 2403 257 235 . 3
 - AD3371/Y25, catalogue number 2403 257 235 . 4
 - AD3371/Y50, catalogue number 2403 257 235 . 5
 - AD3371/Y150, catalogue number 2403 257 235 . 6
- 0 = stamped on loudspeaker magnet,
not to be used for ordering
- 2 = for bulk packing*
— 6 = for single unit packing

FREQUENCY RESPONSE CURVE (see Fig. 2)

Sound pressure measured in anechoic room, loudspeaker mounted on IEC baffle.

* Minimum packing quantity 5 per unit.

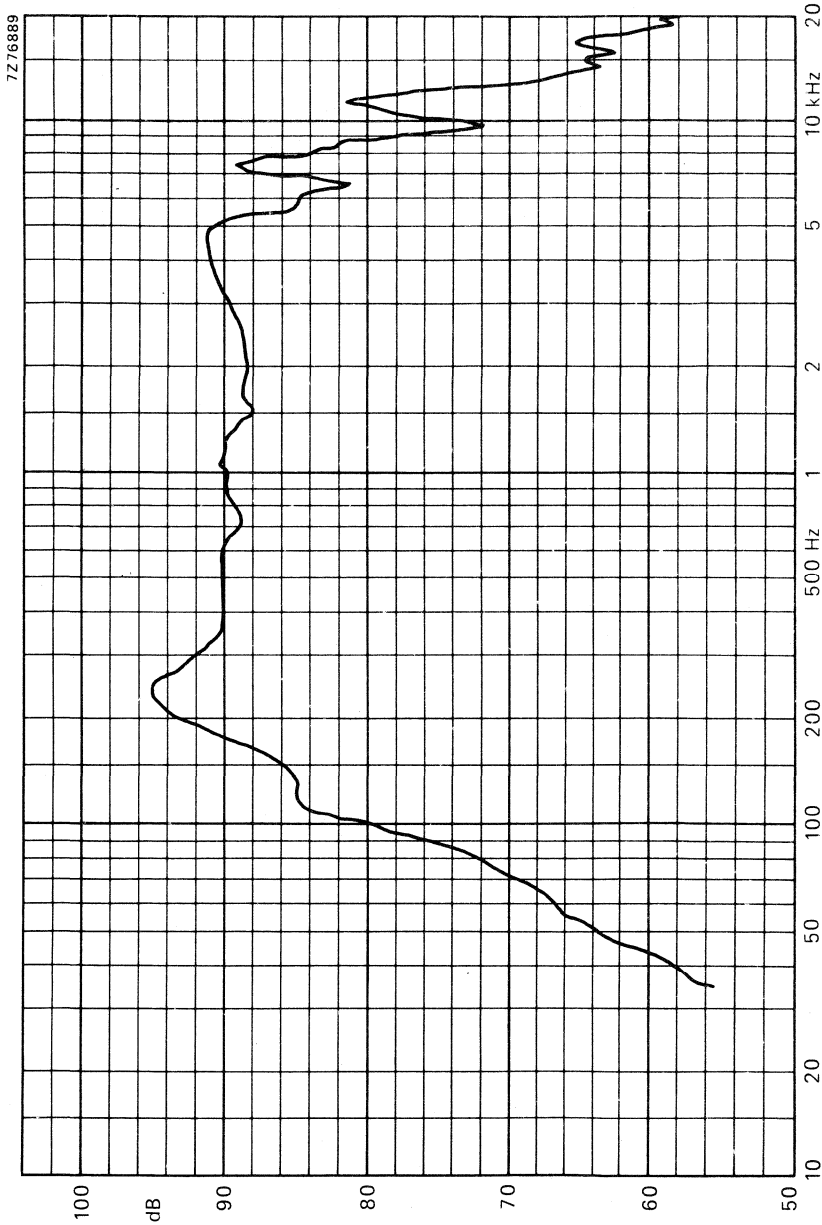


Fig. 2.



4 INCH LOW POWER LOUDSPEAKERS

APPLICATION

For portable receivers and intercoms.

TECHNICAL DATA

	version			
	X4	X8	X15	X25
Rated impedance	4	8	15	25 Ω
Voice coil resistance	3,5	7,1	13,7	22,8 Ω
Rated frequency range	80 to 15 000			Hz
Resonance frequency	170			Hz
Power handling capacity, loudspeaker unmounted, measured without filter	3			W
Operating power (sound level 90 dB, 0,5 in)	0,18			W
Sweep voltage (frequency range 100 to 20 000 Hz)	1,4	2	2,7	3,5 V
Energy in air gap	12,7			mJ
Flux density	0,74			T
Air-gap height	2,5			mm
Voice coil height	2,7	2,2	3,0	3,6 mm
Core diameter	10			mm
Magnet material	ceramic			
diameter	31			mm
mass	0,02			kg
Mass of loudspeaker,				
round flange version	0,079			kg
square flange version	0,087			kg

The loudspeakers have a plastic frame, and a paper cone and surround. Connection to the loudspeakers is by means of 2,8 mm (0,11 inch) tag connectors or soldering.

AD4072/X.
AD4472/X.

Dimensions (mm)

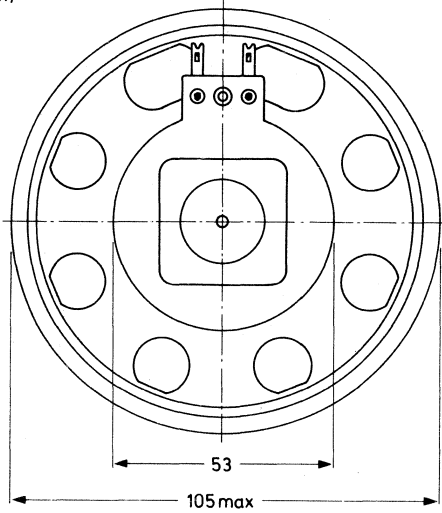


Fig. 1a.

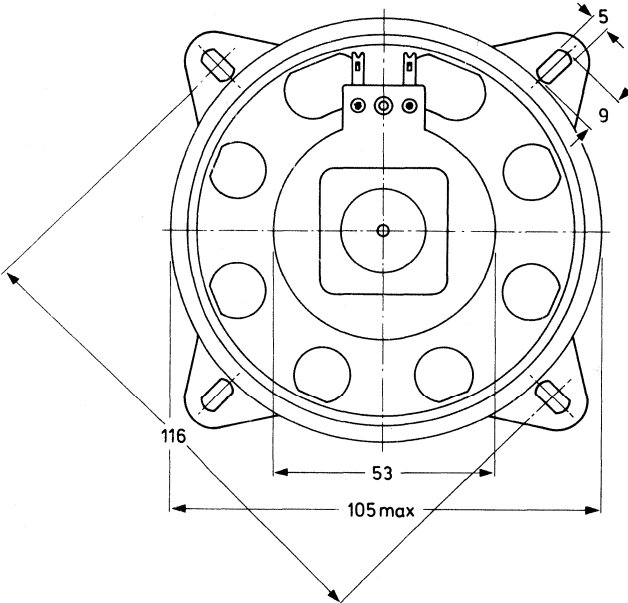
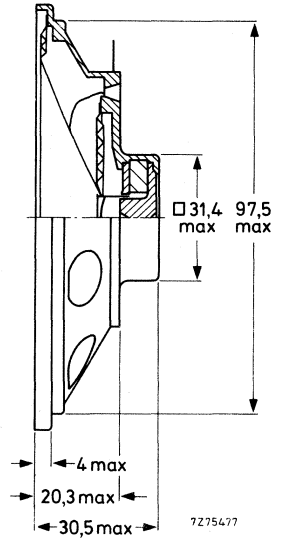
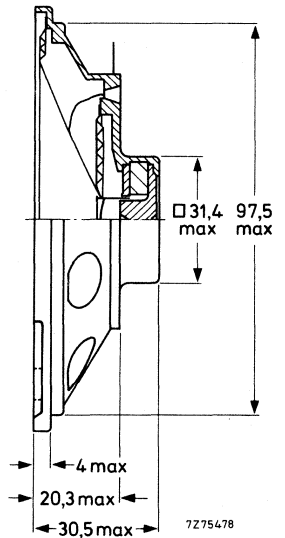


Fig. 1b.



One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

Round flange version

- AD4072/X4, catalogue number 2403 257 242.5
- AD4072/X8, catalogue number 2403 257 242.6
- AD4072/X15, catalogue number 2403 257 242.7
- AD4072/X25, catalogue number 2403 257 242.8

0 = stamped on loudspeaker magnet,
not to be used for ordering

Square flange version

- AD4472/X4, catalogue number 2403 257 248.5
- AD4472/X8, catalogue number 2403 257 248.6
- AD4472/X15, catalogue number 2403 257 248.7
- AD4472/X25, catalogue number 2403 257 248.8

2 = for bulk packing *
6 = for single unit packing



FREQUENCY RESPONSE CURVE (see Fig.2)

Sound pressure measured in anechoic room, loudspeaker mounted on IEC baffle.

* Minimum packing quantity 5 per unit.

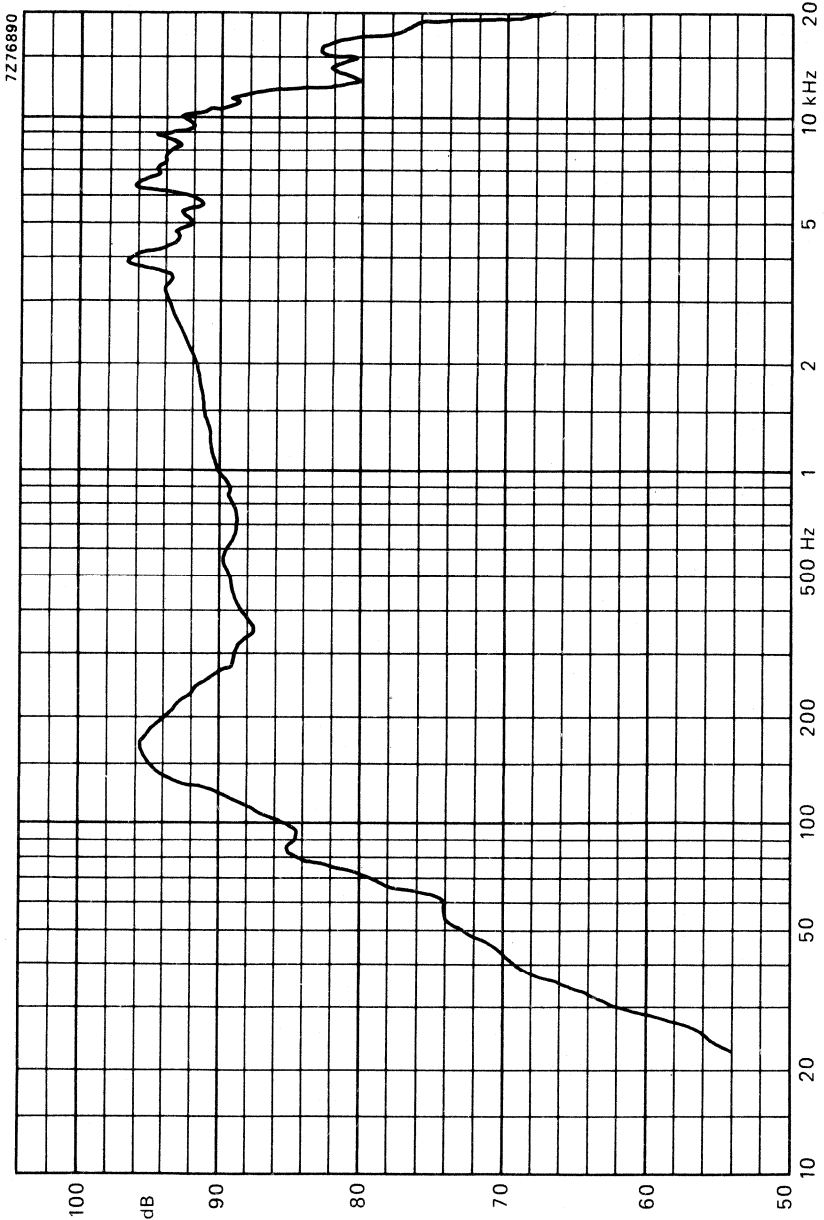
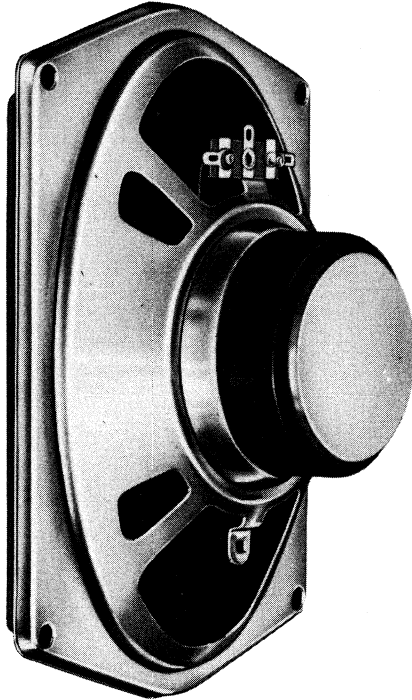


Fig.2.

Medium power loudspeakers



721010-26-06



Type AD4681/X4

3 x 5 INCH OVAL MEDIUM POWER LOUDSPEAKER

APPLICATION

For use in portable radios, tape recorders and, due to absence of stray magnetic field, this loudspeaker can also be used in television sets. High sensitivity.

TECHNICAL DATA

	X4	X8	version		X50	X400	
			X15	X25			
Rated impedance	4	8	15	25	50	400	Ω
Voice coil resistance	3,4	7,2	13,8	22,6	45	275	Ω
Rated frequency range			85 to 12000				Hz
Resonance frequency			180				Hz
Power handling capacity, measured without filter, loudspeaker unmounted			3				W
Sweep voltage	2,4	3,5	4,7	6,1	8,7	24,5	V
Energy in air gap			39				mJ
Flux density			0,8				T
Air-gap height			3				mm
Voice coil height	2	1,8	2,55	2,8	2,9	3,1	mm
Core diameter			18				mm
Magnet material			steel alloy				
diameter			18				mm
mass			0,027				kg
Mass of loudspeaker			0,13				kg

The loudspeaker has a paper cone and surround. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions (mm)

Baffle hole

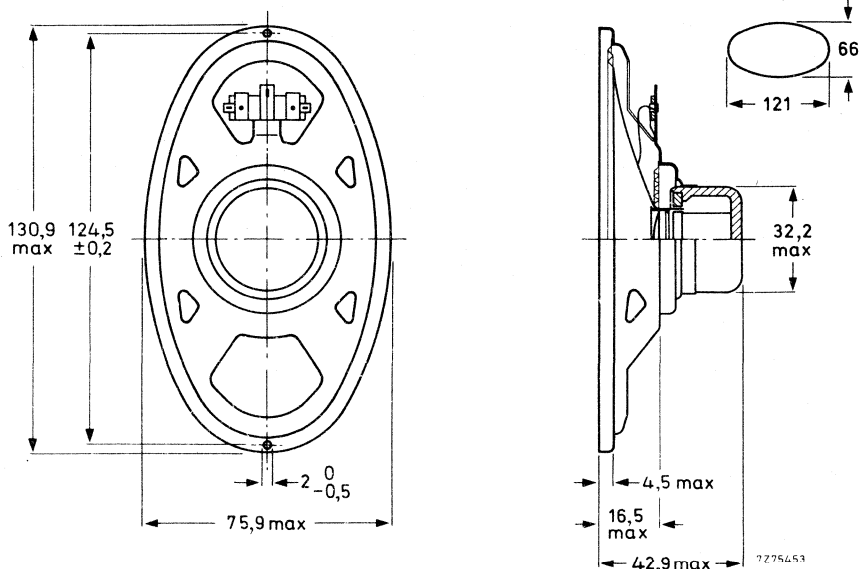


Fig. 1.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

- AD3591/X4, catalogue number 2422 256 310.1
- AD3591/X8, catalogue number 2422 256 310.2
- AD3591/X15, catalogue number 2422 256 310.3
- AD3591/X25, catalogue number 2422 256 310.4
- AD3591/X50, catalogue number 2422 256 310.5
- AD3591/X400, catalogue number 2404 256 310.1

0 = stamped on loudspeaker magnet,
not to be used for ordering

2 = for bulk packing *

6 = for single unit packing

FREQUENCY RESPONSE CURVE (see Fig. 2)

Curve a: Sound pressure.

Curves d2 and d3: 2nd and 3rd harmonic distortion.

The curves are measured in anechoic room, loudspeaker mounted on IEC baffle.

* Minimum packing quantity 12 per unit.

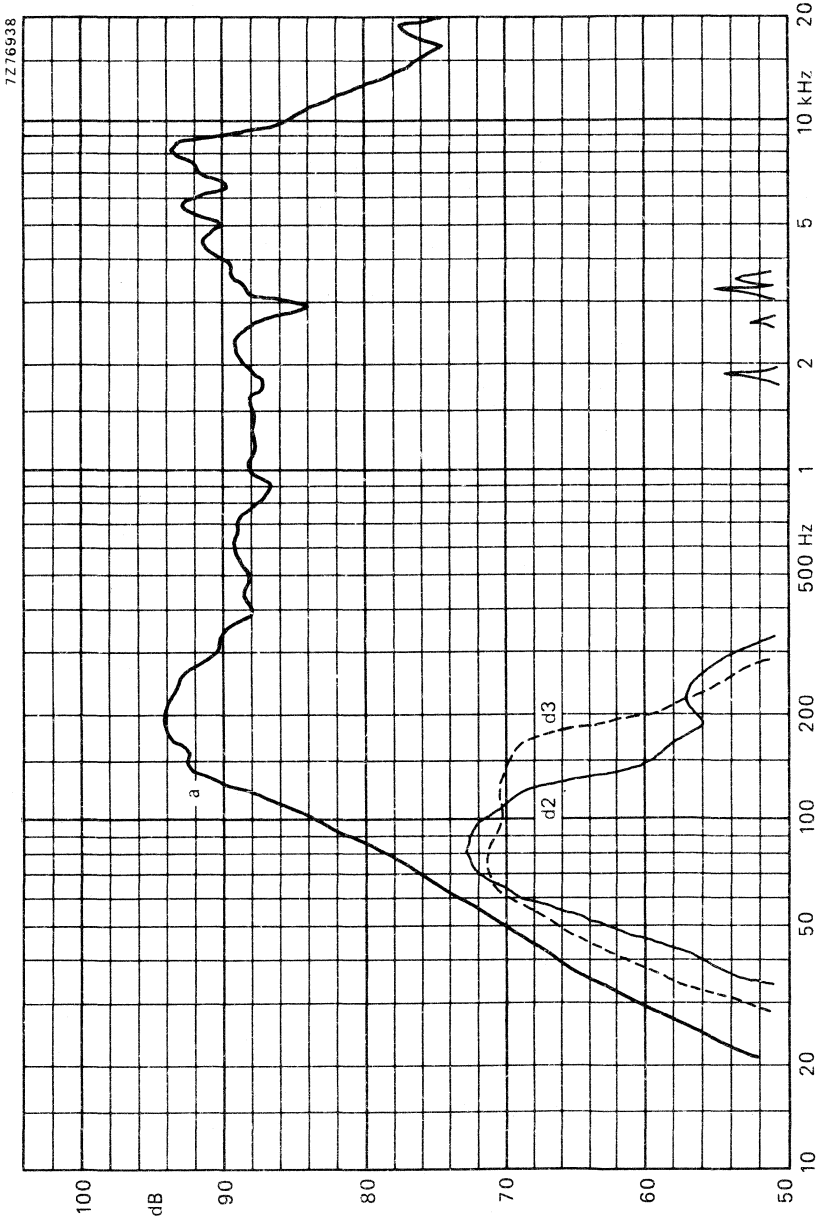


Fig. 2.



DEVELOPMENT SAMPLE DATA

This information is derived from development samples made available for evaluation. It does not form part of our data handbook system and does not necessarily imply that the device will go into production

AD3595/X.

3 x 5 INCH MEDIUM POWER LOUDSPEAKER

APPLICATION

For use in portable radios, tape recorders and, due to absence of stray magnetic field, this loudspeaker can also be used in television sets. High sensitivity.

TECHNICAL DATA

	version				
	X4	X8	X15	X25	
Rated impedance	4	8	15	25	Ω
Voice coil resistance	3,4	7,1	13,5	22,5	Ω
Rated frequency range		90 to 15000			Hz
Resonance frequency		180			Hz
Power handling capacity, measured without filter, loudspeaker unmounted		3			W
Operating power (sound level 90 dB, 1 m)		1,5			W
Sweep voltage, frequency range: 80 to 20 000 Hz	2,5	3,5	4,7	6,2	V
Energy in air gap		20,5			mJ
Flux density		0,77			T
Air-gap height		2,5			mm
Voice coil height	3,5	4,2	2,7	3,3	mm
Core diameter		14,5			mm
Magnet material		steel alloy			
diameter		14,5			mm
mass		0,013			kg
Mass of loudspeaker		0,13			kg

The loudspeaker has a paper cone and surround. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions (mm)

Baffle hole

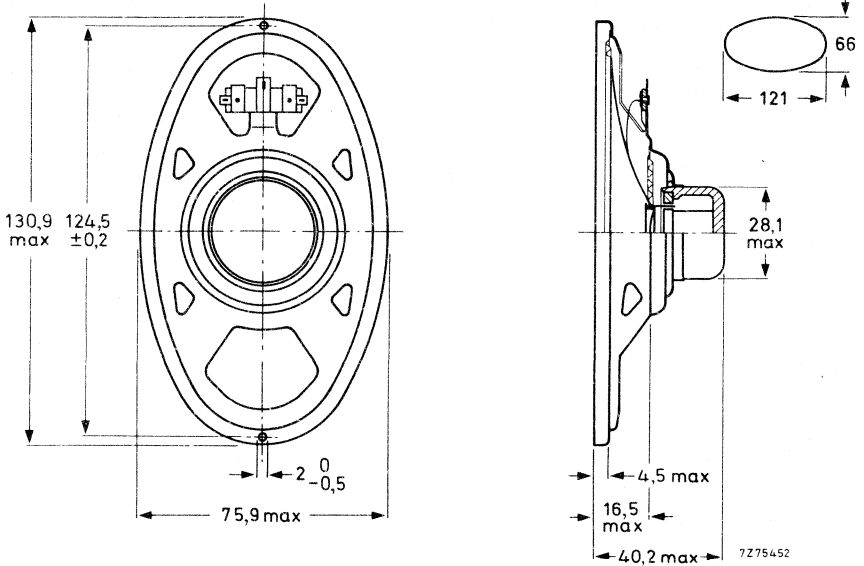


Fig. 1.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSION

- AD3595/X4, catalogue number 2422 256 303.1
- AD3595/X8, catalogue number 2422 256 303.2
- AD3595/X15, catalogue number 2422 256 303.3
- AD3595/X25, catalogue number 2422 256 303.4

1 = stamped on loudspeaker magnet, **not to be used for ordering**

3 = for bulk packing *
7 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve a: Sound pressure.

Curves d2 and d3: 2nd and 3rd harmonic distortion, measured at the operating power of 1,5 W.

The curves are measured in anechoic room, loudspeaker mounted on IEC baffle.

* Minimum packing quantity 12 per unit.

DEVELOPMENT SAMPLE DATA

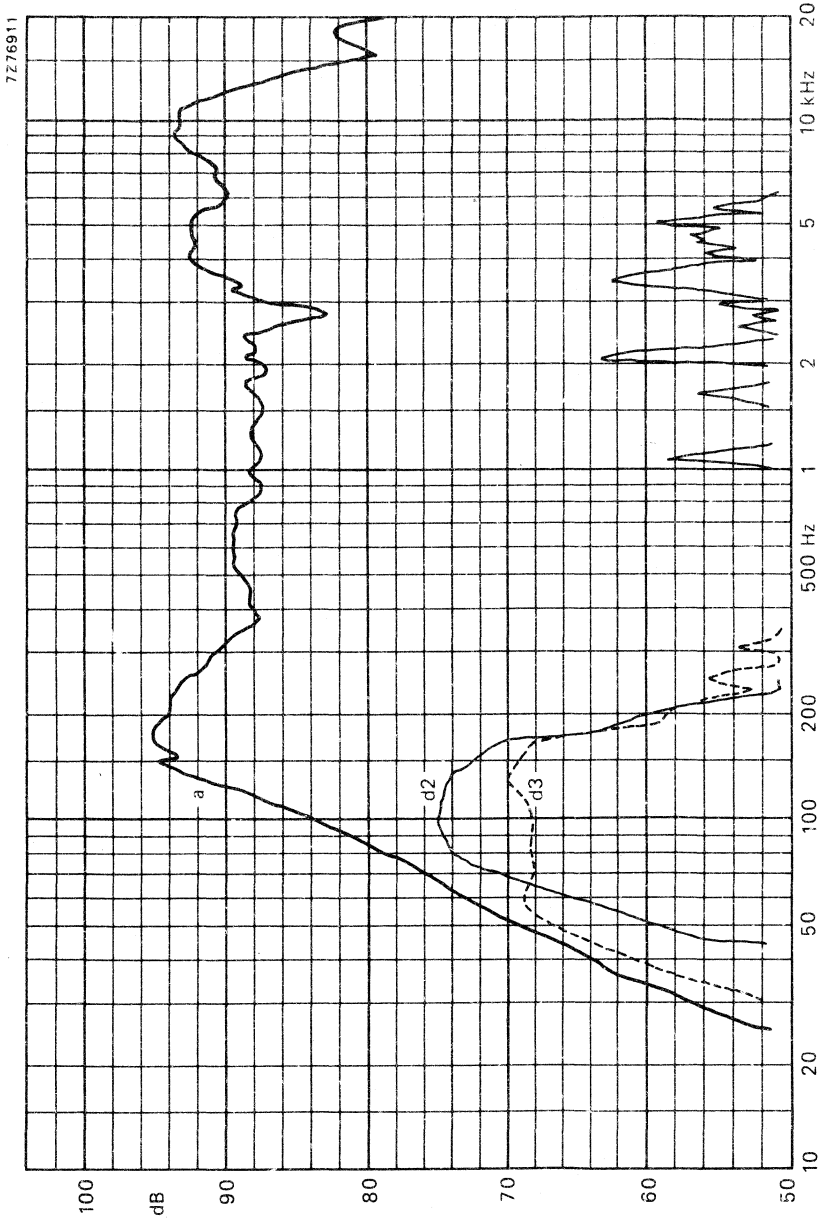


Fig. 2.



3×8 inch OVAL MEDIUM POWER LOUDSPEAKER

APPLICATION

For use in portable radios and tape recorders

TECHNICAL DATA

	version			
	X4	X8	X15	
Rated impedance	4	8	15	Ω
Voice coil resistance	3,4	7,1	13,8	Ω
Resonance frequency	120	120	120	Hz
Power handling capacity, measured without filter, loudspeaker unmounted	4	4	4	W
Sweep voltage	2,8	5,5	5,5	V
Energy in airgap	55	55	55	mJ
Flux density	1	1	1	T
Airgap height	3	3	3	mm
Voice coil height	2,4	3,1	2,5	mm
Core diameter	18	18	18	mm
Magnet material	ceramic	ceramic	ceramic	
diameter	53	53	53	mm
mass	0,1	0,1	0,1	kg
Mass of loudspeaker	0,3	0,3	0,3	kg

The loudspeaker has a paper cone and a treated paper surround. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions (mm)

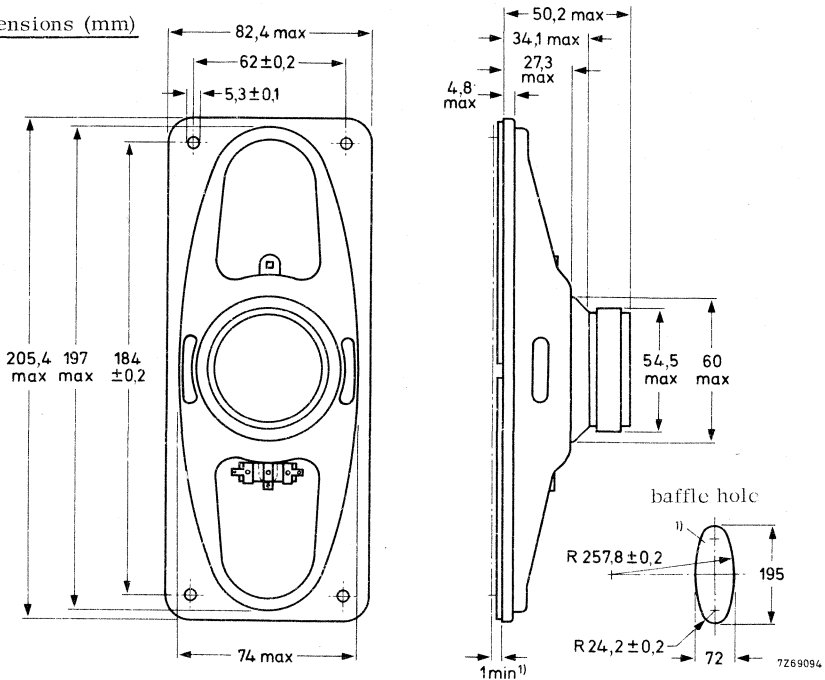


Fig. 1

1) Baffle hole and clearance depth required for cone movement at specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

- AD3880/X4. catalogue number 2422 257 303. 1
- AD3880/X8. catalogue number 2422 257 303. 2
- AD3880/X15. catalogue number 2422 257 303. 3

- (0 = stamped on loudspeaker magnet, not to be used for ordering)
- 2 = for bulk packing *)
- 6 = for single unit packing

FREQUENCY RESPONSE CURVE

See Fig. 2. Input power 50 mW

→ Sound pressure measured in anechoic room, loudspeaker mounted on IEC baffle.

*) minimum packing quantity 6 per unit.

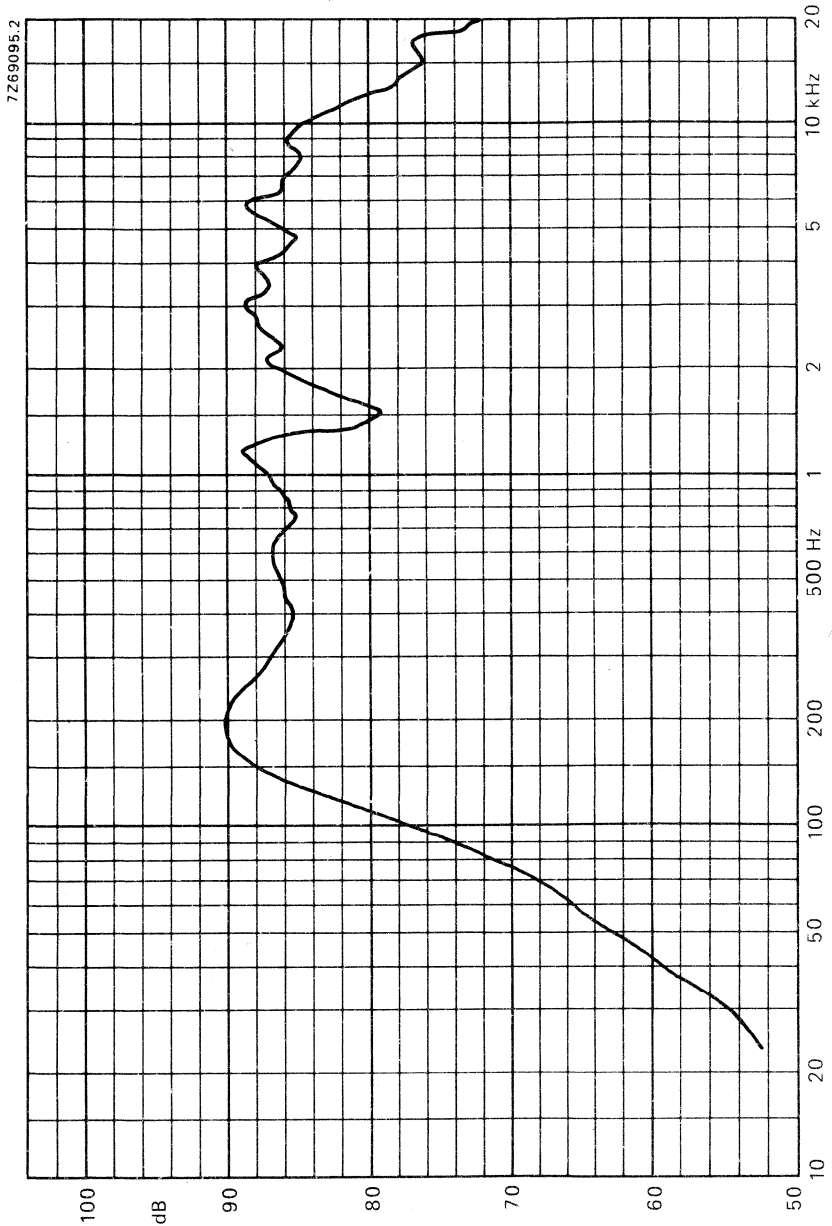


Fig. 2



3×8 inch OVAL MEDIUM POWER LOUDSPEAKER

APPLICATION

For use in portable radios and tape recorders.
The absence of stray field due to steel alloy sinterpot magnet system, makes this loudspeaker also suitable for use in television sets.

TECHNICAL DATA

	version					
	X4	X8	X15	X25	X70	X800
Rated impedance	4	8	15	25	70	800 Ω
Voice coil resistance	3,4	7,1	13,5	22,7	58	600 Ω
Resonance frequency	120	120	120	120	120	120 Hz
Power handling capacity, measured without filter, loudspeaker unmounted	4	4	4	4	4	4 W
Sweep voltage	2,8	4	5,5	7,1	11,8	40 V
Energy in air gap	39	39	39	39	39	39 mJ
Flux density	0,8	0,8	0,8	0,8	0,8	0,8 T
Airgap height	3	3	3	3	3	3 mm
Voice coil height	2,4	2,8	2,5	2,8	4,8	5,1 mm
Core diameter	18	18	18	18	18	18 mm
Magnet material	steel alloy	steel alloy	steel alloy	steel alloy	steel alloy	steel alloy
diameter	18	18	18	18	18	18 mm
mass	0,027	0,027	0,027	0,027	0,027	0,027 kg
Mass of loudspeaker	0,21	0,21	0,21	0,21	0,21	0,21 kg

The loudspeaker has a paper cone and a treated paper surround. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions (mm)

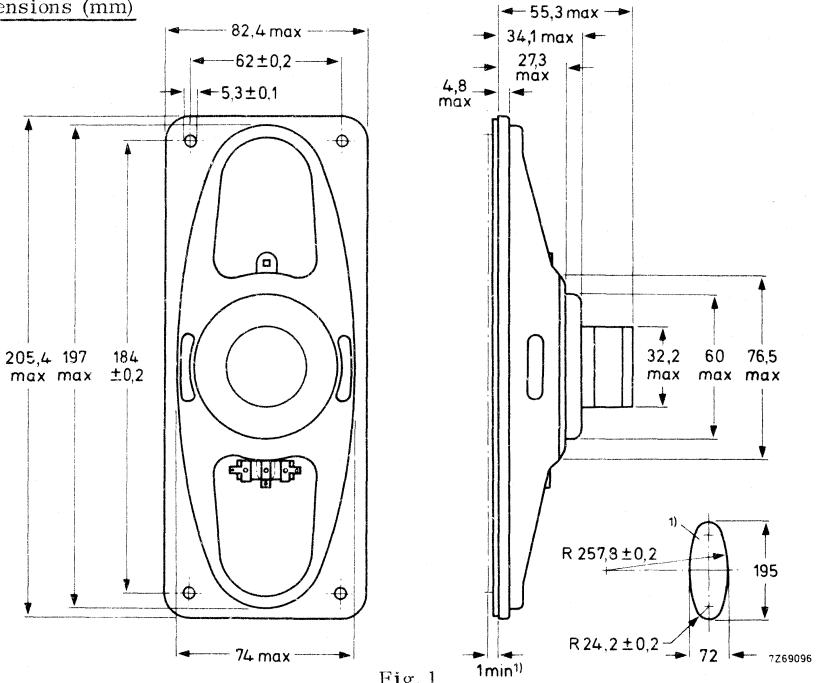


Fig. 1

1) Baffle hole and clearance depth required for cone movement at specified power handling Capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

- AD3890/X4, catalogue number 2422 256 305.1
- AD3890/X8, catalogue number 2422 256 305.3
- AD3890/X15, catalogue number 2422 256 305.4
- AD3890/X25, catalogue number 2422 256 305.5
- AD3890/X70, catalogue number 2422 256 305.6
- AD3890/X800, catalogue number 2422 256 305.2

(0 = stamped on loudspeaker magnet,
not to be used for ordering)

2 = for bulk packing *)
6 = for single unit packing

FREQUENCY RESPONSE CURVE

See Fig. 2. Input power 50 mW

→ Sound pressure measured in anechoic room, loudspeaker mounted on IEC baffle.

*) Minimum packing quantity 6 per unit

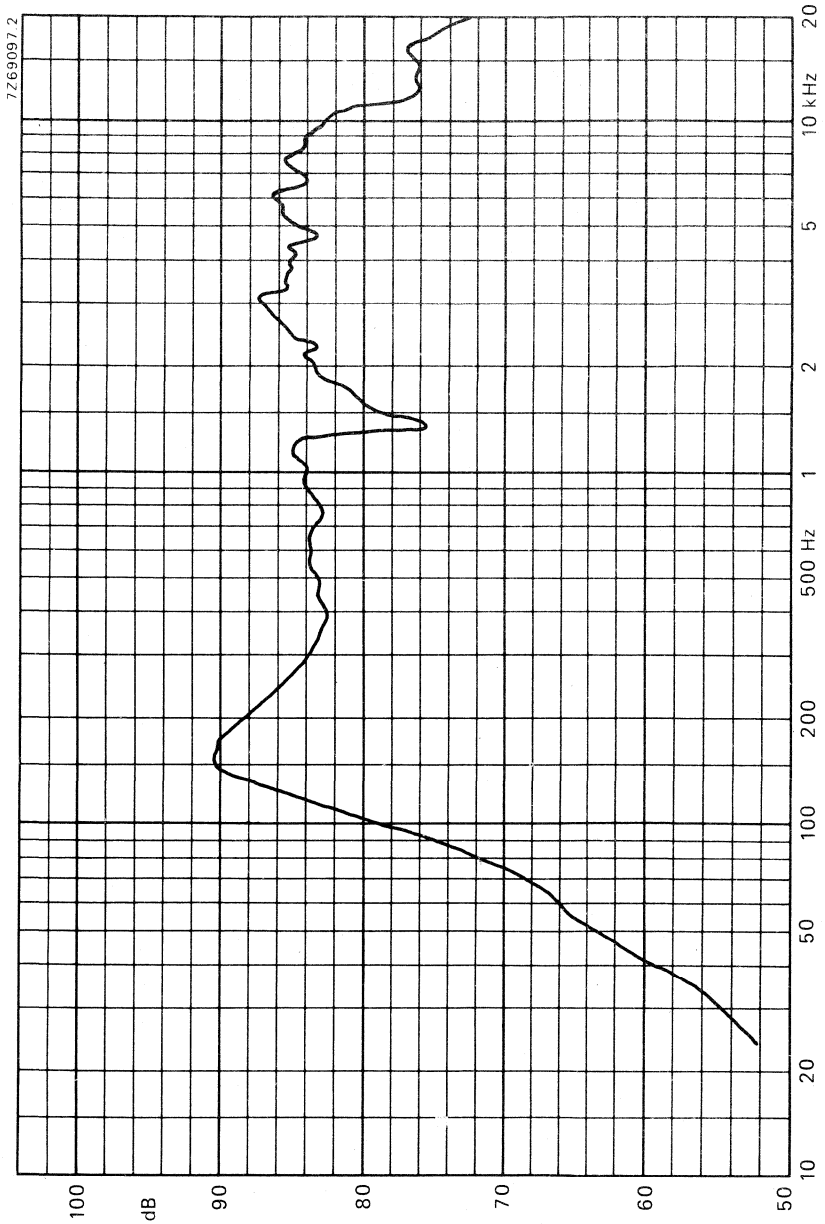


Fig.2



4 INCH MEDIUM POWER LOUDSPEAKER

APPLICATION

For audio equipment in general. Frequency response up to 14 kHz, high sensitivity in bass region.

TECHNICAL DATA

	version			
	X4	X8	X15	
Rated impedance	4	8	15	Ω
Voice coil resistance	3,4	7,1	13,5	Ω
Rated frequency range	80 to 14 000			Hz
Resonance frequency	150			Hz
Power handling capacity, measured without filter, loudspeaker unmounted	3			W
Operating power (sound level 90 dB, 1 m)	0,7			W
Sweep voltage (75 to 20 000 Hz)	2,5	3,5	4,7	V
Energy in air gap	38			mJ
Flux density	1,1			T
Air-gap height	2,5			mm
Voice coil height	3,5	4,1	2,7	mm
Core diameter	14			mm
Magnet material	ceramic			
diameter	46			mm
mass	0,053			kg
Mass of loudspeaker	0,16			kg

The loudspeaker has a paper cone and surround. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

AD4085/X.
AD4485/X.

Dimensions (mm)

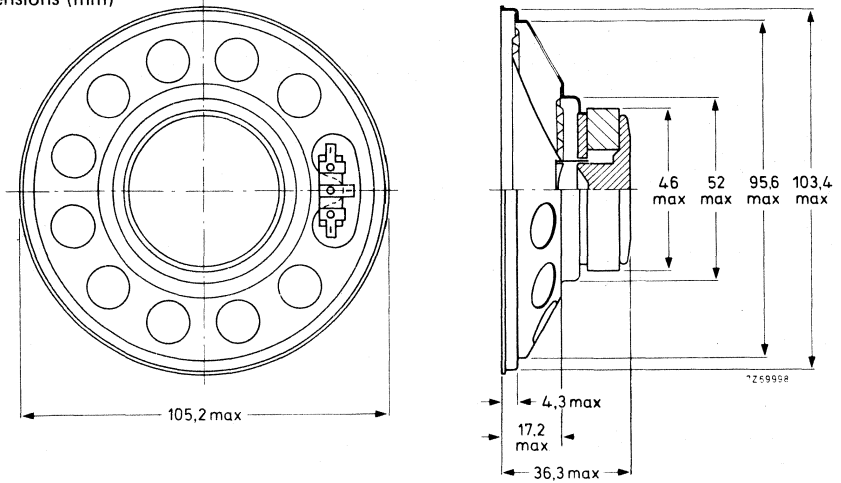


Fig. 1a Round flange type AD4085/X.

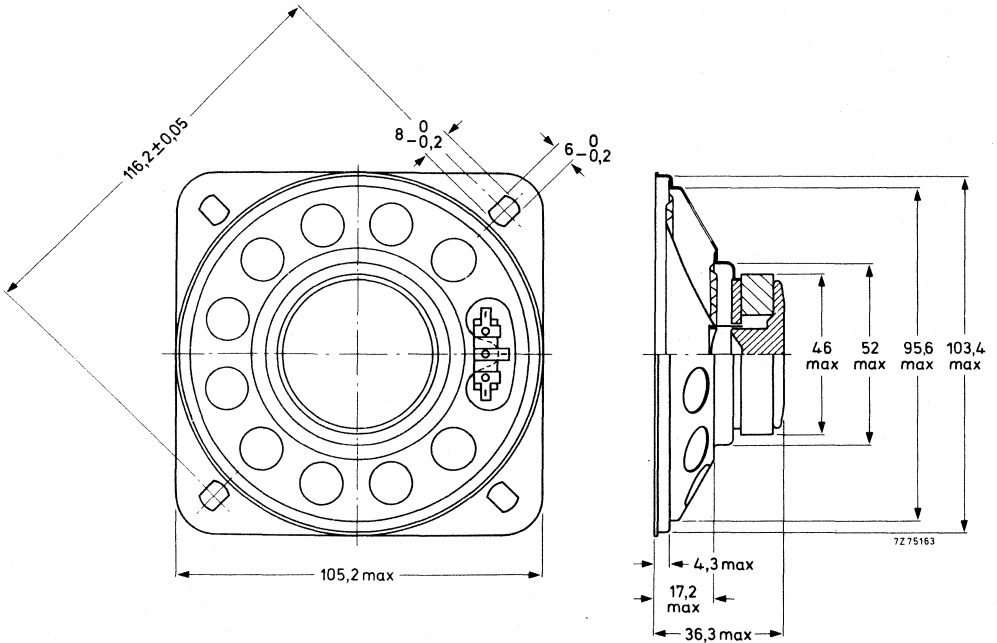


Fig. 1b Square flange type AD4485/X.

Baffle hole diameter 96 mm.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

Round flange type

AD4085/X4, catalogue number 2422 257 243.1
AD4085/X8, catalogue number 2422 257 243.2
AD4085/X15, catalogue number 2422 257 243.3

(0 = stamped on loudspeaker magnet,
not to be used for ordering)

2 = for bulk packing *
6 = for single unit packing

Square flange type

AD4485/X4, catalogue number 2422 257 243.1
AD4485/X8, catalogue number 2422 257 243.2
AD4485/X15, catalogue number 2422 257 243.3

(1 = stamped on loudspeaker magnet
not to be used for ordering)

3 = for bulk packing *
7 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve b: Sound pressure measured in anechoic room, loudspeaker mounted on baffle according to IEC 268-5, par. 4.4.

Curve c: 2nd and 3rd harmonic distortion measured at the operating power of 0,6 W in anechoic room. Loudspeaker front mounted on IEC baffle.

* Minimum packing quantity 9 per unit.



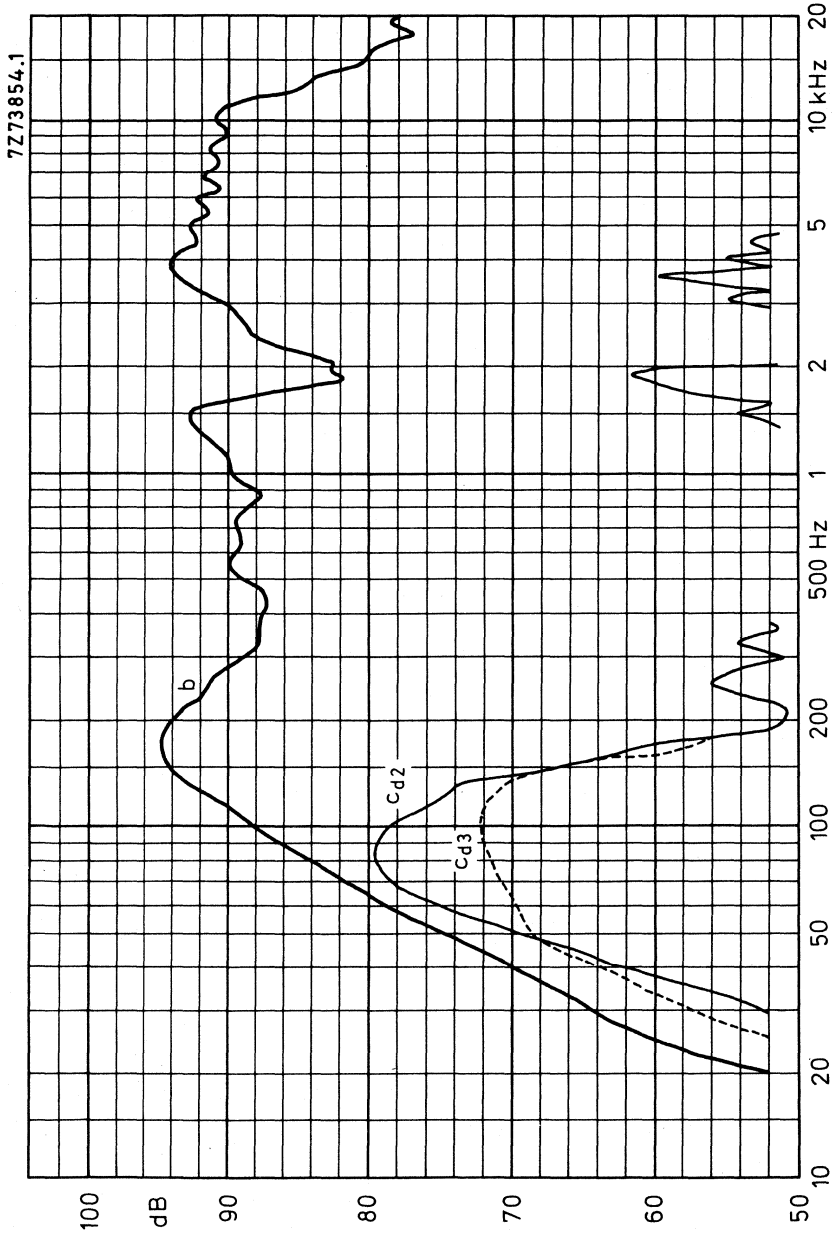


Fig. 2.

DEVELOPMENT SAMPLE DATA

This information is derived from development samples made available for evaluation. It does not form part of our data handbook system and does not necessarily imply that the device will go into production

AD4095/X.
AD4495/X.

4 INCH MEDIUM POWER LOUDSPEAKERS

APPLICATION

For portable receivers and intercoms. Particularly suited for television receivers due to absence of stray field.

TECHNICAL DATA

	version			
	X4	X8	X15	X25
Rated impedance	4	8	15	25 Ω
Voice coil resistance	3,4	7,1	13,5	22,5 Ω
Rated frequency range	80 to 15 000			Hz
Resonance frequency	150			Hz
Power handling capacity, loudspeaker unmounted, measured without filter	3			W
Operating power (sound level 90 dB, 0,5 m)	1	1,2	1	1 W
Sweep voltage (frequency range 75 to 20 000 Hz)	2,45	3,45	4,74	6,2 V
Energy in air gap	19			mJ
Flux density	0,77			T
Air-gap height	2,5			mm
Voice coil height	3,5	4,2	2,7	3,3 mm
Core diameter	14,5			mm
Magnet material	steel alloy			
diameter	14,5			mm
mass	0,013			kg
Mass of loudspeaker	0,11			kg

The loudspeakers have a paper cone and surround. Type AD4095/X. has a round flange, type AD4495/X. has a square flange. Connection to the loudspeakers is by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

AD4095/X.
AD4495/X.

Dimensions in mm

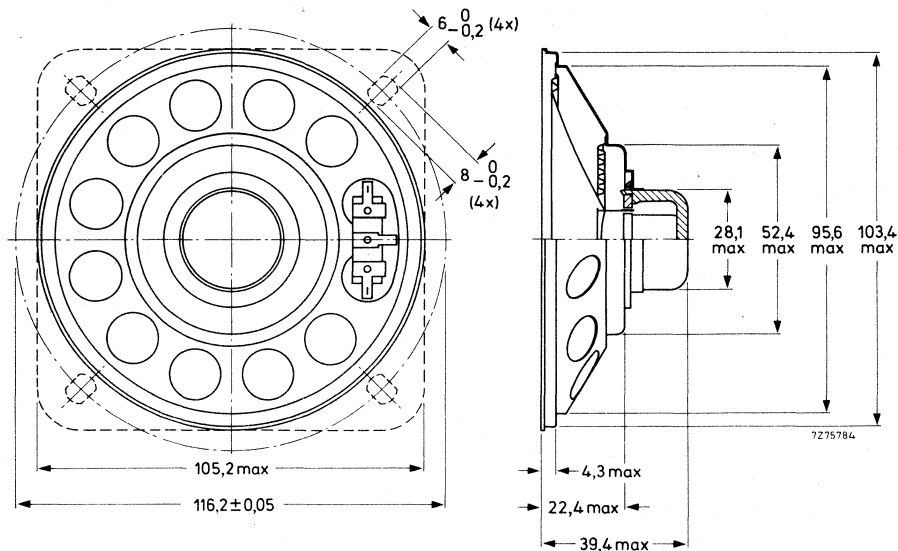


Fig. 1 The dotted lines show the square flange with fixing holes of type AD4495/X.

Baffle hole diameter 96 mm.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

Round flange type

- AD4095/X4, catalogue number 2422 256 243 . 1
- AD4095/X8, catalogue number 2422 256 243 . 2
- AD4095/X15, catalogue number 2422 256 243 . 3
- AD4095/X25, catalogue number 2422 256 243 . 4

0 = stamped on loudspeaker magnet,
not to be used for ordering

2 = for bulk packing*
6 = for single unit packing

Square flange type

- AD4495/X4, catalogue number 2422 256 243 . 1
- AD4495/X8, catalogue number 2422 256 243 . 2
- AD4495/X15, catalogue number 2422 256 243 . 3
- AD4495/X25, catalogue number 2422 256 243 . 4

1 = stamped on loudspeaker magnet,
not to be used for ordering

3 = for bulk packing*
7 = for single unit packing

FREQUENCY RESPONSE CURVE (see Fig. 2)

Curve a: Sound pressure measured in anechoic room, loudspeaker mounted on IEC baffle.

Curves d2 and d3: 2nd and 3rd harmonic distortion measured at the operating power in anechoic room.

Loudspeaker mounted on IEC baffle.

* Minimum packing quantity 9 per unit.

LEVEL/IMPEDANCE PROFILE DATA

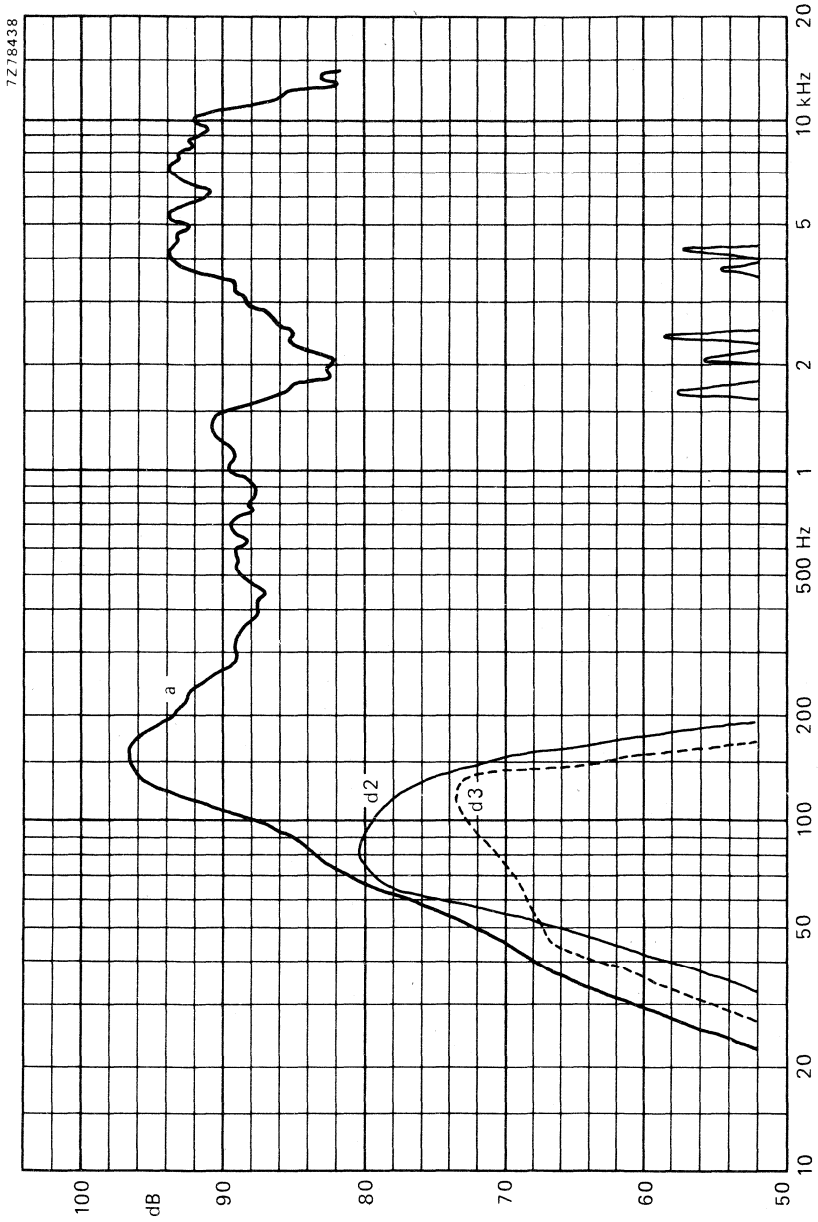


Fig. 2.



4 inch MEDIUM POWER LOUDSPEAKER

APPLICATION

With its excellent power handling capacity very suitable for car radios.

TECHNICAL DATA

Rated impedance	4	Ω
Voice coil resistance	3, 4	Ω
Rated frequency range	90 to 14000	Hz
Resonance frequency	140	Hz
Power handling capacity, measured without filter loudspeaker unmounted	8	W
Operating power (sound level 90 dB, 1 m)	0, 8	W
Sweep voltage (80 to 20000 Hz)	3, 5	V
Energy in air gap	50	mJ
Flux density	0, 95	T
Air gap height	3	mm
Voice coil height	4, 4	mm
Core diameter	18	mm
Magnet material	ceramic	
diameter	54	mm
mass	0, 1	kg
Mass of loudspeaker	0, 25	kg

The loudspeaker has a paper cone and a textile surround. Connection to the loudspeaker by means of 2, 8 mm (0, 11 inch) tag connectors or by soldering.

Dimensions (mm)

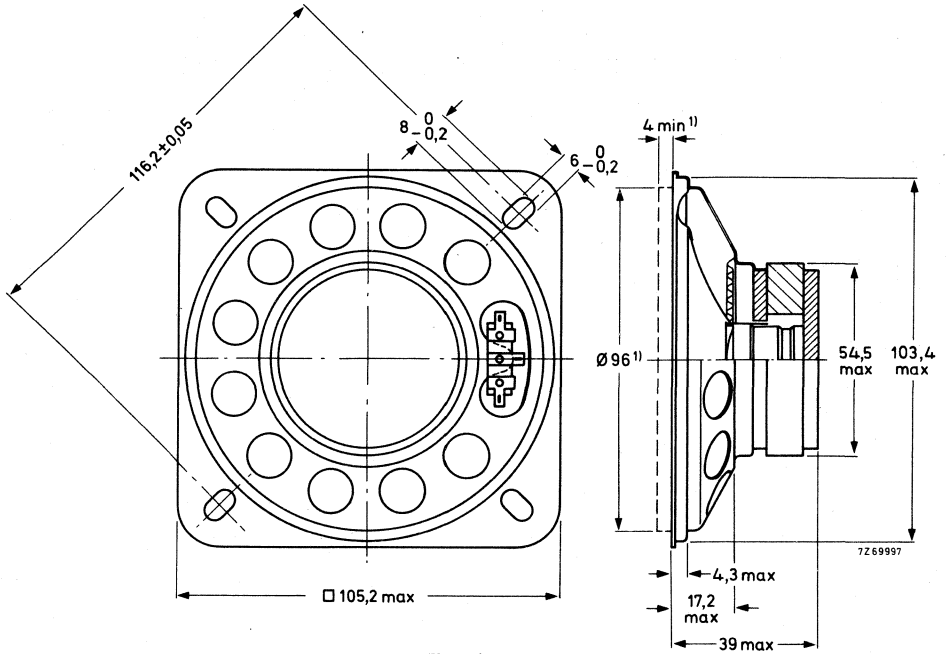


Fig. 1

1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSION

AD4481/X4, catalogue number 2422 257 343. 1

- (1 = stamped on loudspeaker magnet, not to be used for ordering)
- 3 = for bulk packing *)
- 7 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve b: Sound pressure measured in anechoic room, loudspeaker mounted on baffle according to IEC268-5, par. 4. 4.

Curve c: 2nd and 3rd harmonic distortion, measured at the operating power of 0,8 W. Loudspeaker front mounted on IEC baffle.

*) Minimum packing quantity 9 per unit.

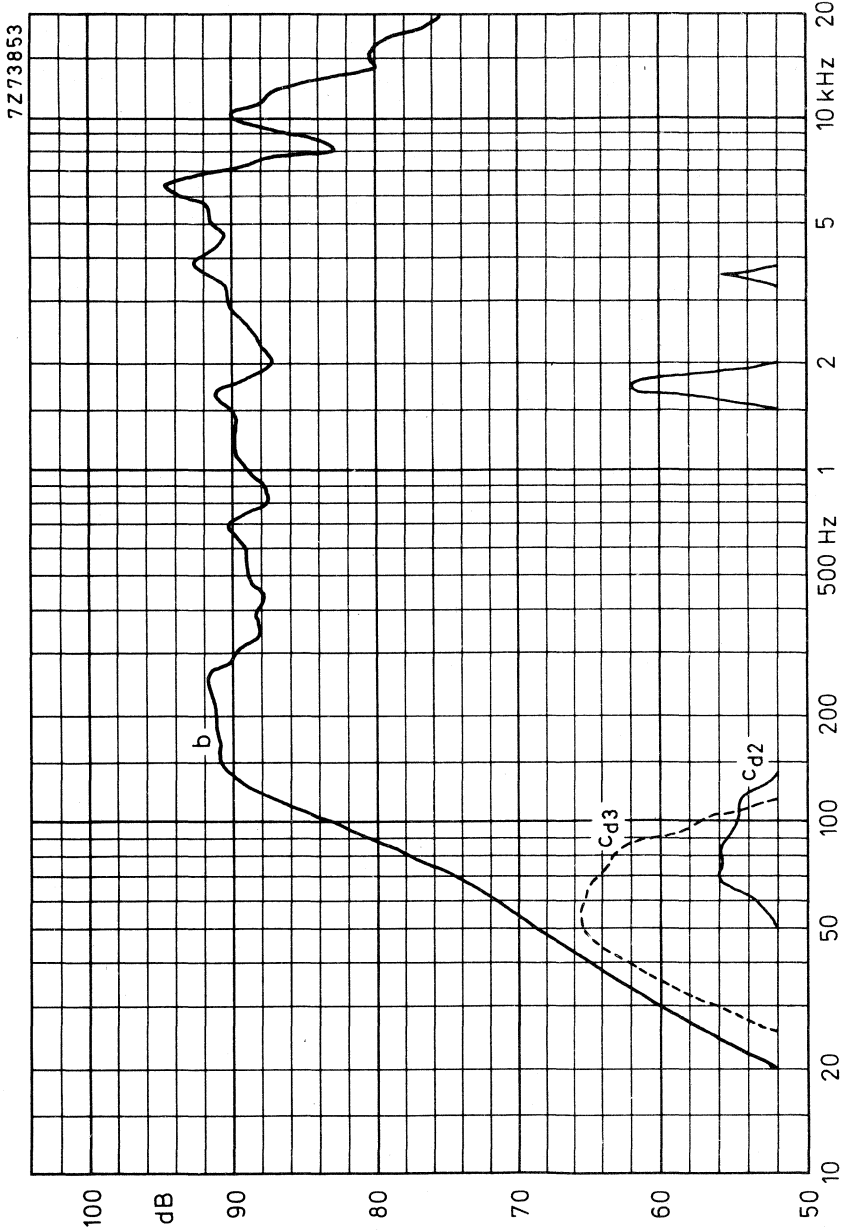


Fig. 2



4 × 6 inch OVAL MEDIUM POWER LOUDSPEAKER

APPLICATION

A full range loudspeaker for car and domestic radios, tape recorders and portable record players.

This speaker has an extended frequency response up to 20 kHz.

TECHNICAL DATA

	version		
	M4	M8	M25
Rated impedance	4	8	25 Ω
Voice coil resistance	3,4	7,1	22,7 Ω
Resonance frequency	135	135	135 Hz
Power handling capacity, measured without filter loudspeaker unmounted	6	6	6 W
Sweep voltage	2,8	4	7,1 V
Energy in airgap	55	55	55 mJ
Flux density	1	1	1 T
Airgap height	3	3	3 mm
Voice coil height	4,5	3,9	4 mm
Core diameter	18	18	18 mm
Magnet material	ceramic	ceramic	ceramic
diameter	53	53	53 mm
mass	0,1	0,1	0,1 kg
Mass of loudspeaker	0,26	0,26	0,26 kg

The loudspeaker has a paper dual cone and surround and a foam plastic gasket on the flange. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions (mm)

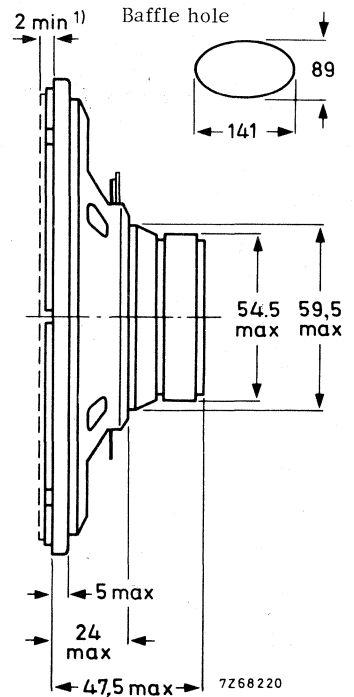
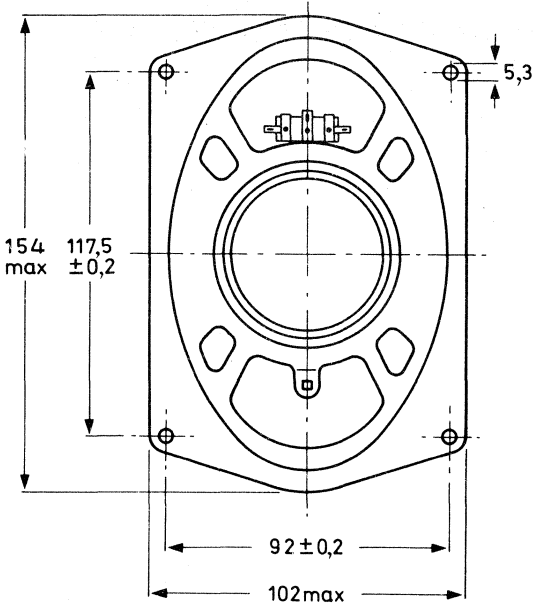


Fig. 1

1) Baffle hole and clearance depth required for cone movement at specified power handling capacity.


One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

- AD4681/M4, catalogue number 2422 257 304.9
 - (0 = stamped on the loudspeaker magnet, not to be used for ordering)
 - 2 = for bulk packing *)
 - 6 = for single unit packing

- AD4681/M8, catalogue number 2422 257 304.1
 - (1 = stamped on the loudspeaker magnet, not to be used for ordering)
- AD4681/M25, catalogue number 2422 257 304.3
 - 3 = for bulk packing *)
 - 7 = for single unit packing

FREQUENCY RESPONSE CURVE

Fig.2 Sound pressure measured in anechoic room, loudspeaker mounted on IEC baffle. ← 
Input power 50 mW.

*) Minimum packing quantity 7 per unit.

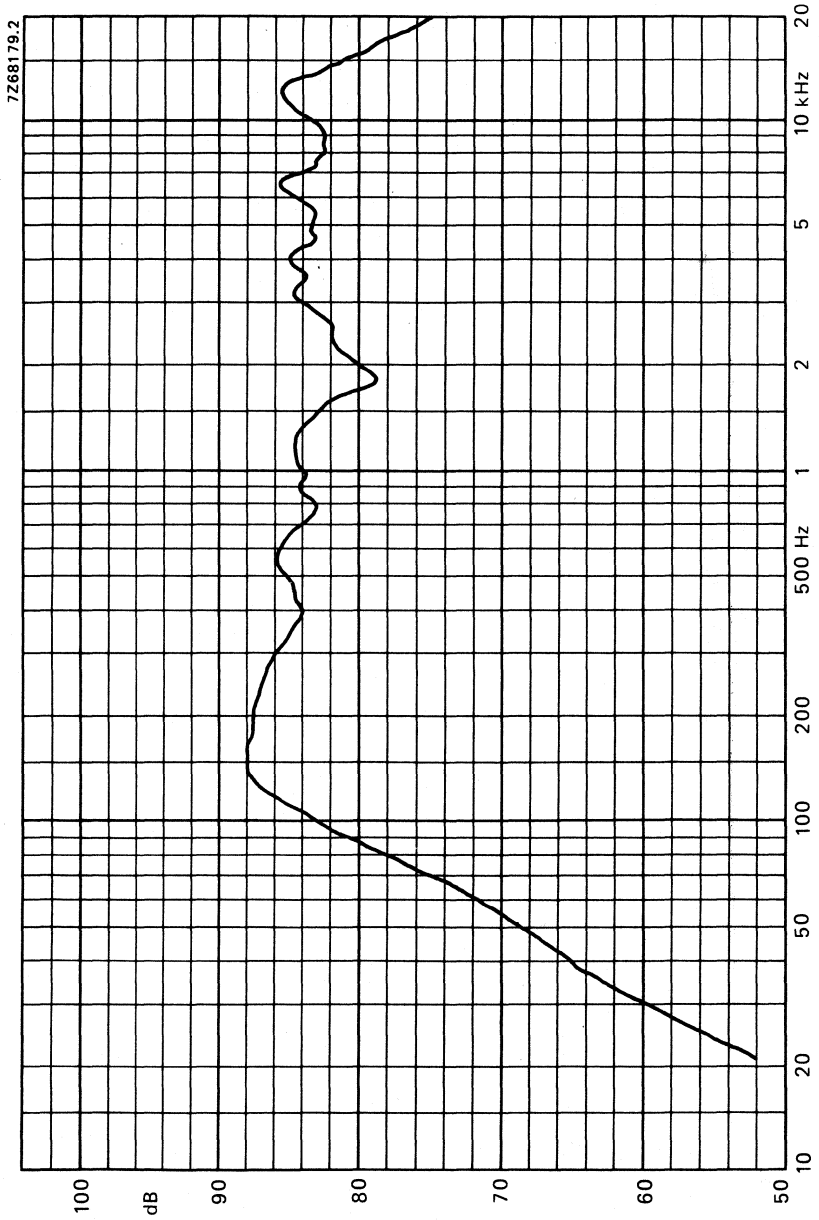


Fig. 2

4 x 6 INCH MEDIUM POWER LOUDSPEAKER

APPLICATION

For car and domestic radios, tape recorders and portables. High sensitivity at 3000 Hz.

TECHNICAL DATA

	version			
	X4	X8	X15	X25
Rated impedance	4	8	15	25 Ω
Voice coil resistance	3,1	7,1	13,5	22,7 Ω
Rated frequency range		75 to 12000		Hz
Resonance frequency		140		Hz
Power handling capacity, measured without filter loudspeaker unmounted		6		W
Sweep voltage	3,5	4,9	6,7	8,7 V
Energy in air gap		55		mJ
Flux density		1		T
Air-gap height		3		mm
Voice coil height	4,5	3,9	3,2	4 mm ←
Core diameter		18		mm
Magnet material		ceramic		
diameter		53		mm
mass		0,1		kg
Mass of loudspeaker		0,26		kg

The loudspeaker has a paper cone and surround and a foam plastic gasket on the flange. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions in mm

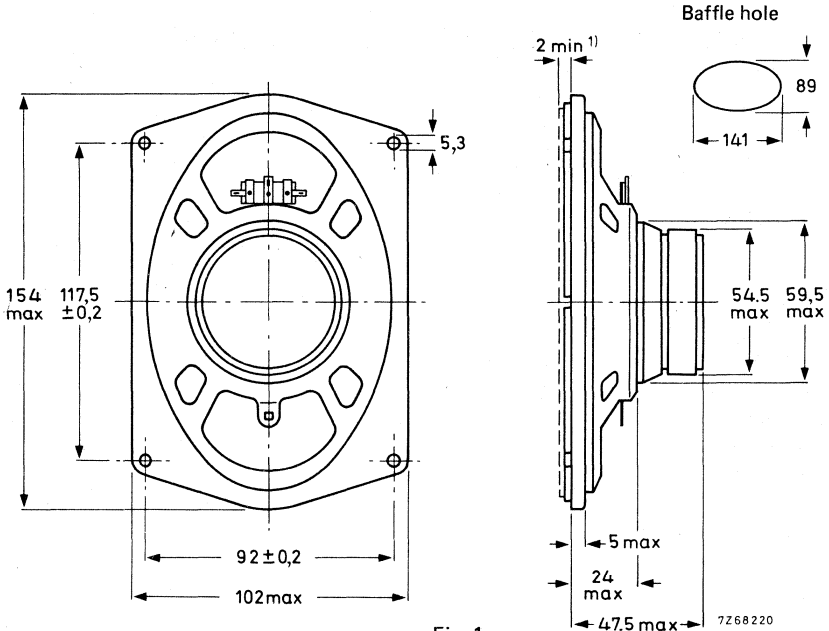


Fig. 1.

(1) Baffle hole and clearance depth required for cone movement at specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

- AD4681/X4, catalogue number 2422 257 304.1
- AD4681/X8, catalogue number 2422 257 304.2
- AD4681/X15, catalogue number 2422 257 304.3
- AD4681/X25, catalogue number 2422 257 304.4

- 0 = stamped on loudspeaker magnet, **not to be used** for ordering
- 2 = for bulk packing *
- 6 = for single unit packing

FREQUENCY RESPONSE CURVE (Fig. 2)

Input power 50 mW. Sound pressure measured in anechoic room, loudspeaker mounted on IEC baffle.

* Minimum packing quantity 7 per unit.

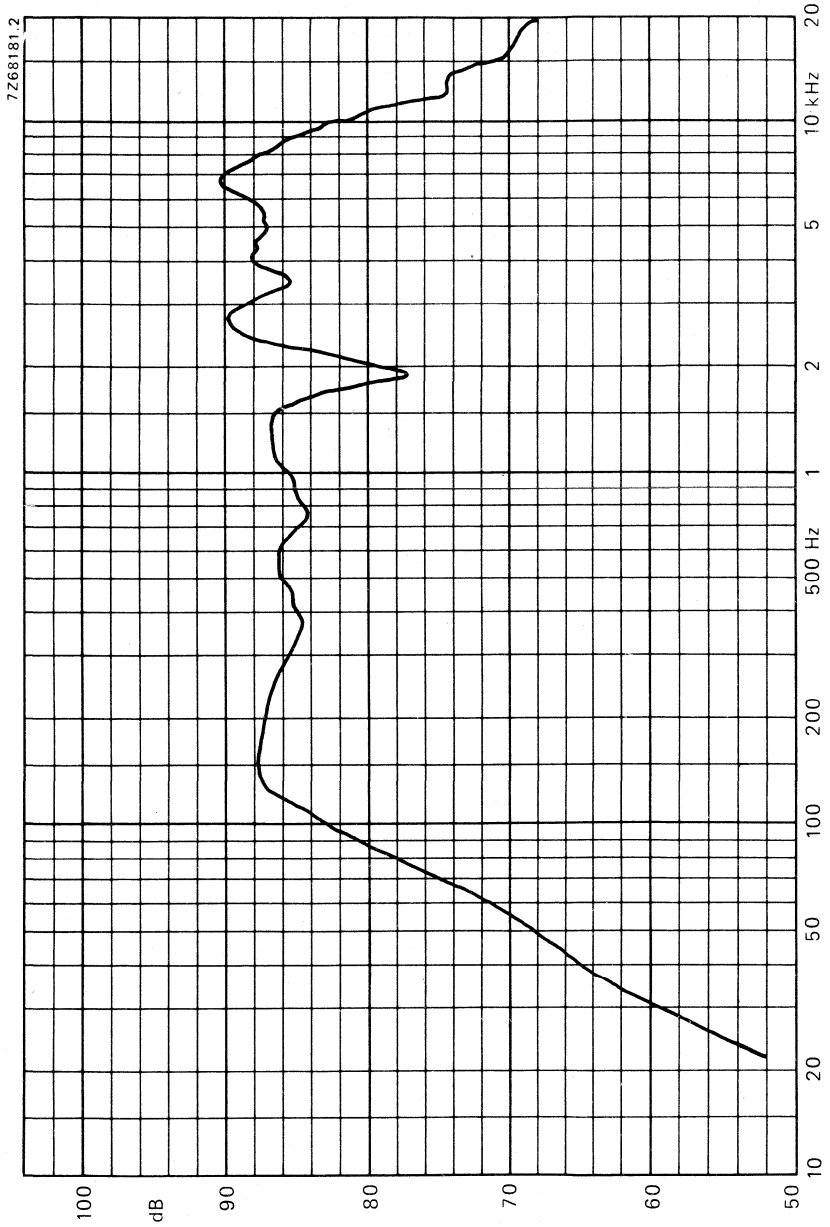


Fig. 2.



3½ x 6 inch OVAL MEDIUM POWER LOUDSPEAKERS

APPLICATION

For car and domestic radios, tape recorders, portable record players and intercoms.

TECHNICAL DATA

	version				
	X4	X8	X15	X25	
Rated impedance	4	8	15	25	Ω
Voice coil resistance	3,1	7,1	13,5	22,7	Ω
Rated frequency range	80 to 13 000				Hz
Resonance frequency	140				Hz
Power handling capacity, measured without filter, loudspeaker unmounted	6				W
Operating power (sound level 90 dB, 1 m)	0,7				W
Sweep voltage (70 to 20 000 Hz)	3,5	4,9	6,7	8,7	V
Energy in air gap	55				mJ
Flux density	1				T
Air-gap height	3				mm
Voice coil height	4,4	3,9	3,2	4	mm
Core diameter	18				mm
Magnet material	ceramic				
diameter	54				mm
mass	0,1				kg
Mass of loudspeaker	0,25				kg

The loudspeaker has a paper cone and surround and a foam plastic gasket. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions (mm)

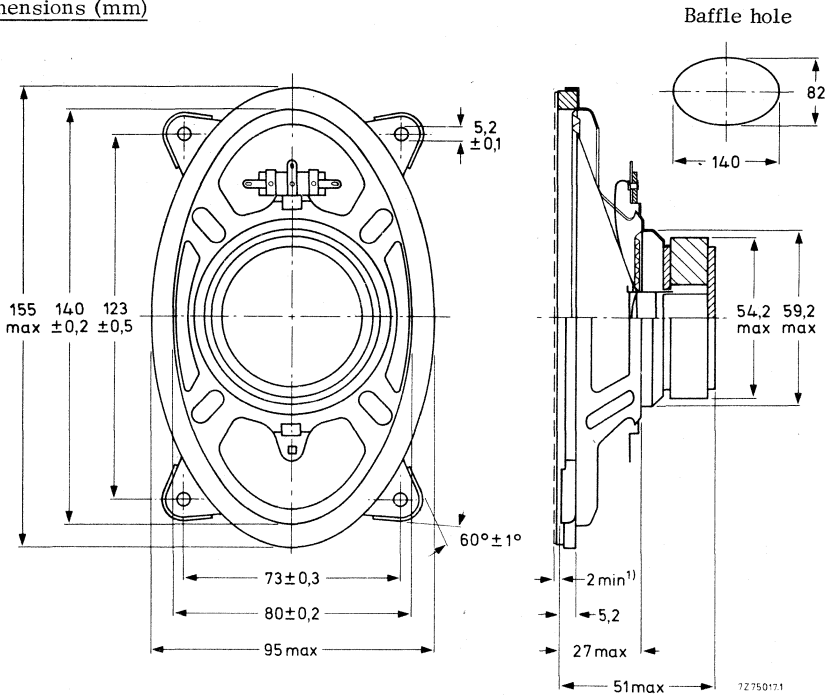


Fig. 1

1) Clearance depth required for cone movement at the specified power handling capacity. One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

- AD4682/X4, catalogue number 2422 257 306.1
 - AD4682/X8, catalogue number 2422 257 306.2
 - AD4682/X15, catalogue number 2422 257 306.3
 - AD4682/X25, catalogue number 2422 257 306.4
- (0 = stamped on loudspeaker magnet, not to be used for ordering)
- 2 = for bulk packing *)
 - 6 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve b: Sound pressure measured in anechoic room, loudspeaker mounted on baffle according to IEC268-5, par. 4.4.

Curve c: 2nd and 3rd harmonic distortion, measured at the operating power of 0,7 W in anechoic room. Loudspeaker front mounted on IEC baffle.

*) Minimum packing quantity 7 per unit.

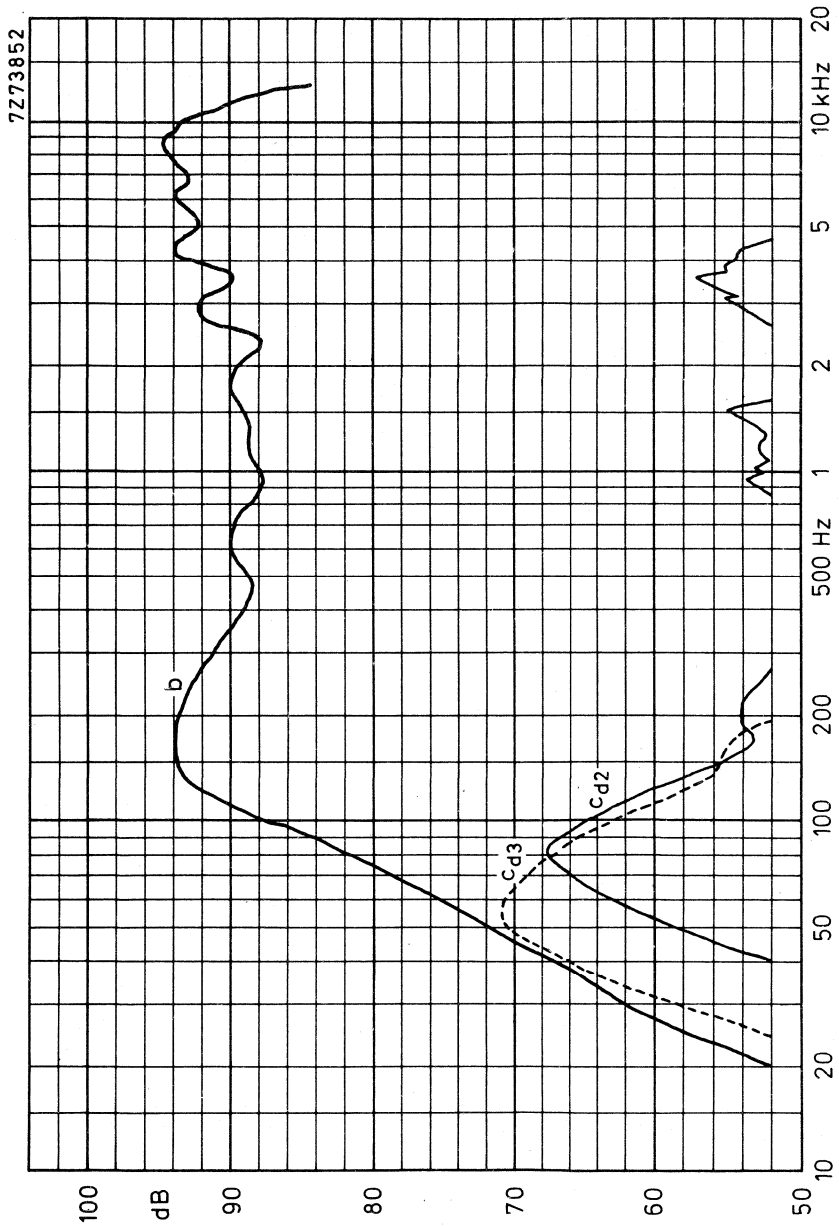


Fig. 2



DEVELOPMENT SAMPLE DATA

This information is derived from development samples made available for evaluation. It does not form part of our data handbook system and does not necessarily imply that the device will go into production

AD4685/X.

3½ x 6 INCH MEDIUM POWER LOUDSPEAKER

APPLICATION

For car and domestic radios, tape recorders, portable record players, and intercoms.

TECHNICAL DATA

	version	
	X4	X8
Rated impedance	4	8 Ω
Voice coil resistance	3,4	7,1 Ω
Rated frequency range	70 to 15000 Hz	
Resonance frequency	140 Hz	
Power handling capacity, measured without filter, loudspeaker unmounted	4	W
Operating power (sound level 90 dB, 1 m)	1	W
Sweep voltage (70 to 20 000 Hz)	2,8	4 V
Energy in air gap	38 mJ	
Flux density	1,1 T	
Air-gap height	2,5 mm	
Voice coil height	3,5	4,2 mm
Core diameter	14,5 mm	
Magnet material	ceramic	
diameter	46 mm	
mass	0,05 kg	
Mass of loudspeaker	0,12 kg	

The loudspeaker has a paper cone and surround and a foam plastic gasket. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions (mm)

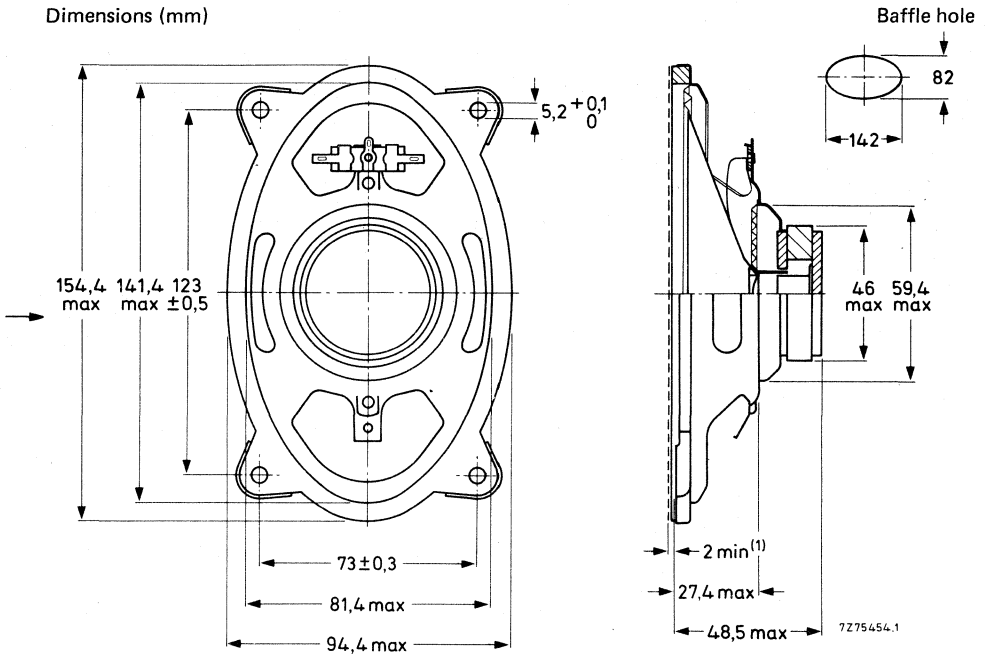
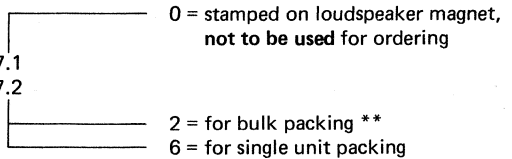


Fig. 1

* Clearance depth required for cone movement at the specified power handling capacity.
One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD4685/X4, catalogue number 2422 257 307.1
AD4685/X8, catalogue number 2422 257 307.2



FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve a: Sound pressure.

Curves d2 and d3: 2nd and 3rd harmonic distortion, measured at the operating power of 1 W.

The curves are measured in anechoic room, loudspeaker mounted on IEC baffle.

** Minimum packing quantity 7 per unit.

DEVELOPMENT SAMPLE DATA

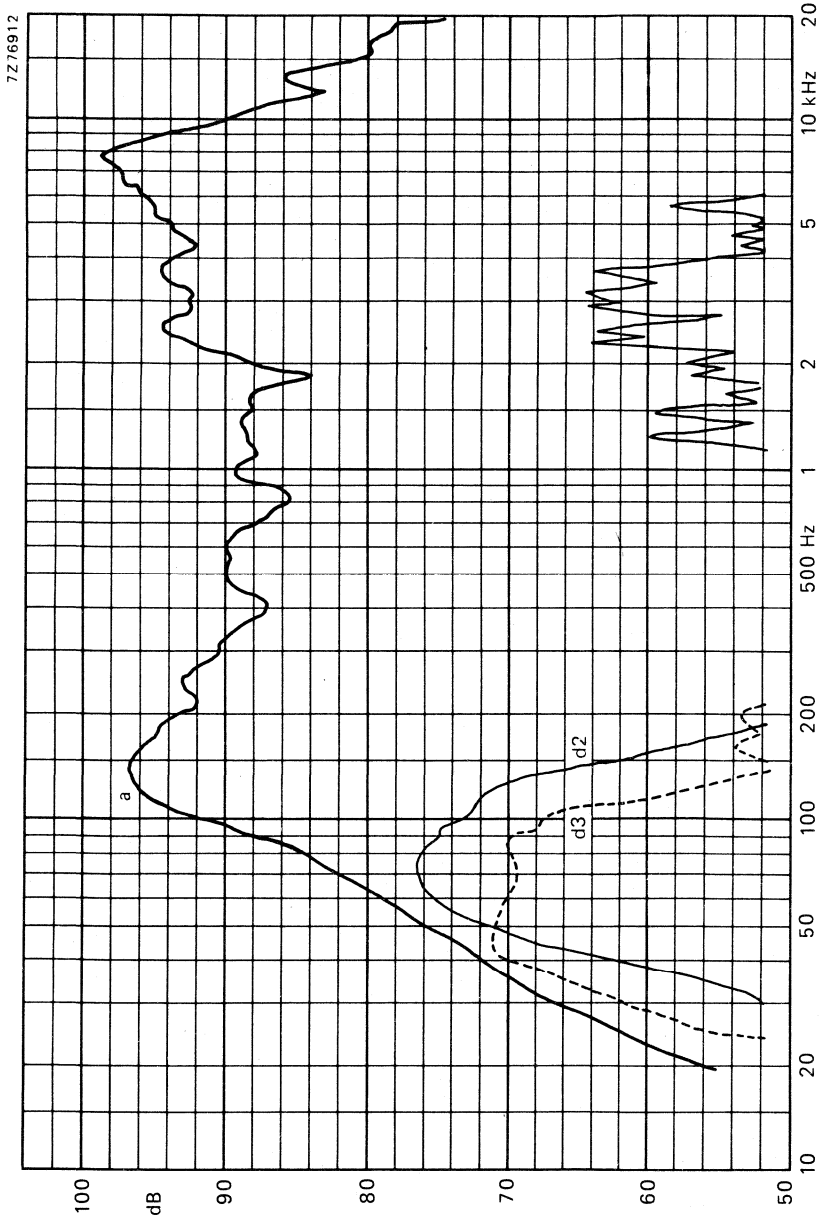


Fig. 2.



4 × 6 inch OVAL MEDIUM POWER LOUDSPEAKER

APPLICATION

A full range loudspeaker with an extended frequency response up to 20 kHz. This loudspeaker can be used for black and white as well as colour television sets due to absence of stray field from the magnet system.

TECHNICAL DATA

	version				
	M4	M8	M15	M25	
Rated impedance	4	8	15	25	Ω
Voice coil resistance	3,4	7,1	13,5	22,7	Ω
Resonance frequency	135	135	135	135	Hz
Power handling capacity, measured without filter loudspeaker unmounted	6	6	6	6	W
Sweep voltage	3,15	4,9	6,7	8,7	V
Energy in airgap	39	39	39	39	mj
Flux density	0,8	0,8	0,8	0,8	T
Airgap height	3	3	3	3	mm
Voice coil height	4,5	3,9	3,2	4	mm
Core diameter	18	18	18	18	mm
Magnet material	steel alloy	steel alloy	steel alloy	steel alloy	
diameter	18	18	18	18	mm
mass	0,027	0,027	0,027	0,027	kg
Mass of loudspeaker	0,16	0,16	0,16	0,16	kg

The loudspeaker has a paper dual cone and surround and a foam plastic gasket on the flange. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions (mm)

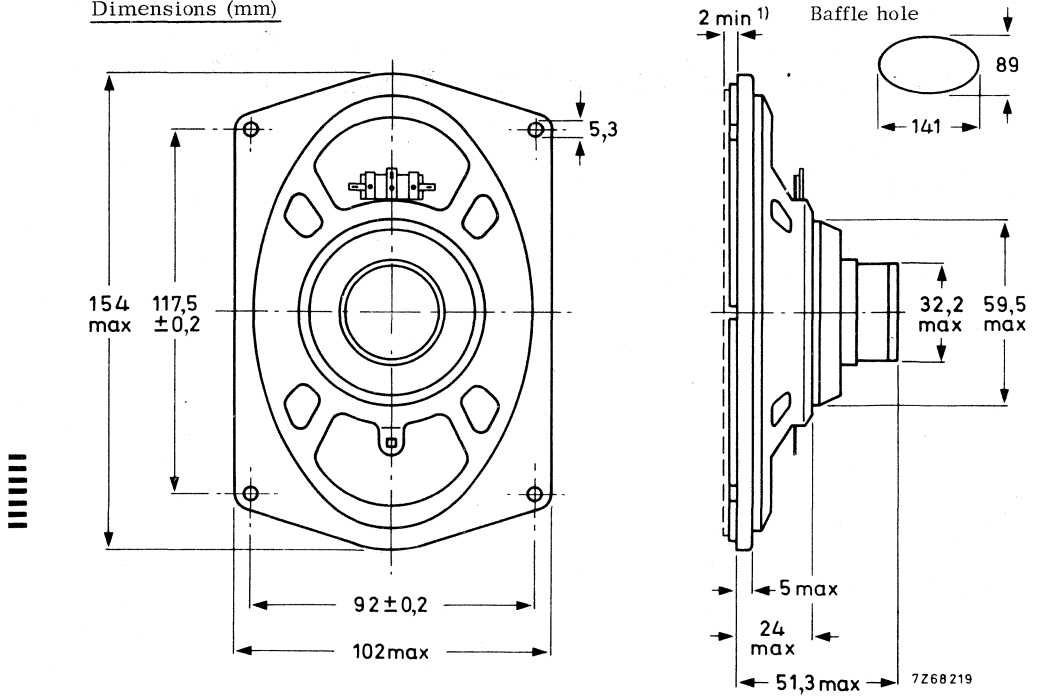


Fig. 1

¹⁾ Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

- AD4691/M4, catalogue number 2422 256 306.2
 - AD4691/M8, catalogue number 2422 256 306.5
 - AD4691/M15, catalogue number 2422 256 306.4
 - AD4691/M25, catalogue number 2422 256 306.6
- (1 = stamped on loudspeaker magnet,
not to be used for ordering)
- 3 = for bulk packing *)
- 7 = for single unit packing

FREQUENCY RESPONSE CURVE

Fig.2 Sound pressure measured in anechoic room, loudspeaker mounted on IEC baffle. Input power 50 mW. ←



*) Minimum packing quantity 7 per unit.

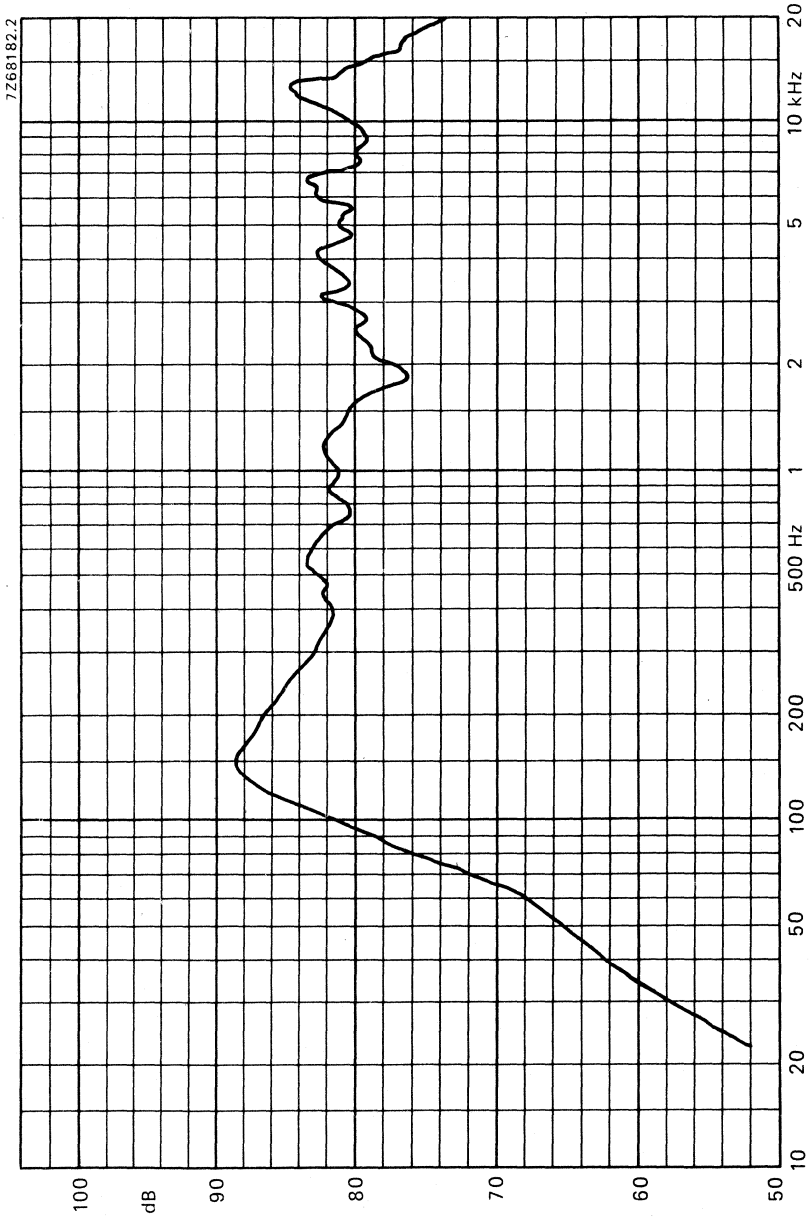


Fig.2

4 × 6 inch OVAL MEDIUM POWER LOUDSPEAKER

APPLICATION

The absence of stray field makes this loudspeaker very suitable for use in black and white as well as colour television sets.

High sensitivity at 3000 Hz. Frequency response up to 12 kHz.

TECHNICAL DATA

	version				
	X4	X8	X15	X25	
Rated impedance	4	8	15	25	Ω
Voice coil resistance	3,4	7,1	13,5	22,7	Ω
Resonance frequency	140	140	140	140	Hz
Power handling capacity, measured without filter, loudspeaker unmounted	6	6	6	6	W
Sweep voltage	3,5	4,9	6,7	8,7	V
Energy in airgap	39	39	39	39	mJ
Flux density	0,8	0,8	0,8	0,8	T
Airgap height	3	3	3	3	mm
Voice coil height	4,5	3,9	3,2	4	mm
Core diameter	18	18	18	18	mm
Magnet material	steel	steel	steel	steel	
	alloy	alloy	alloy	alloy	
diameter	18	18	18	18	mm
mass	0,027	0,027	0,027	0,027	kg
Mass of loudspeaker	0,16	0,16	0,16	0,16	kg

The loudspeaker has a paper cone and surround and a foam plastic gasket on the flange. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions (mm)

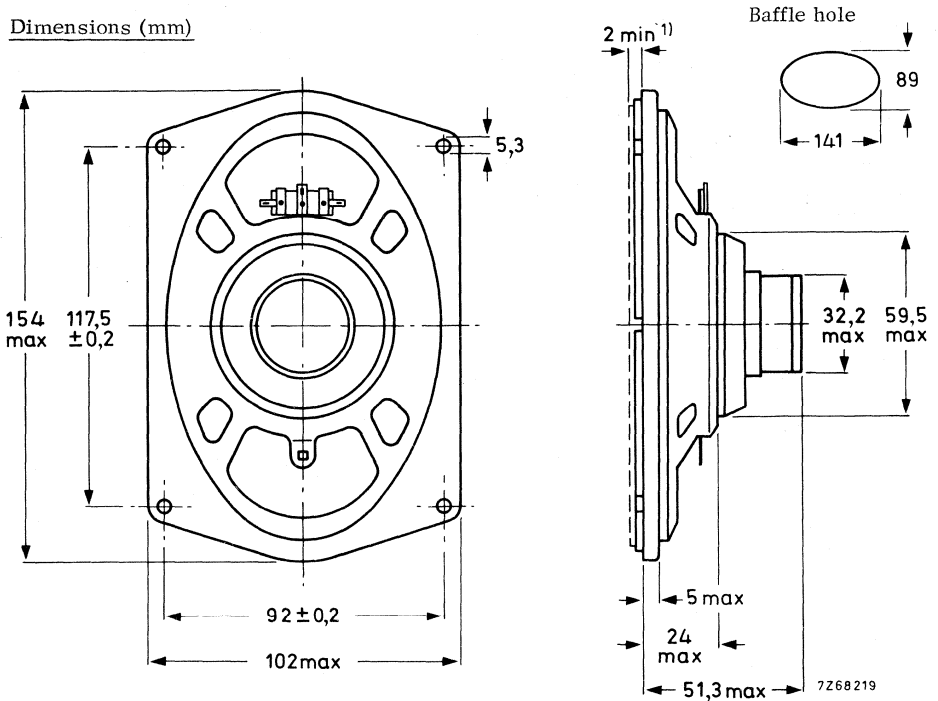


Fig. 1

1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

- AD 4691/X4, catalogue number 2422 256 306.1
- AD 4691/X8, catalogue number 2422 256 306.2
- AD 4691/X15, catalogue number 2422 256 306.3
- AD 4691/X25, catalogue number 2422 256 306.4

(0 = stamped on loudspeaker magnet,
not to be used for ordering)

- 2 for bulk packing*)
- 6 for single unit packing

FREQUENCY RESPONSE CURVE

Fig. 2. Input power 50 mW
Sound pressure measured in anechoic room, loudspeaker mounted on IEC baffle.

*) Minimum packing quantity 7 per unit.

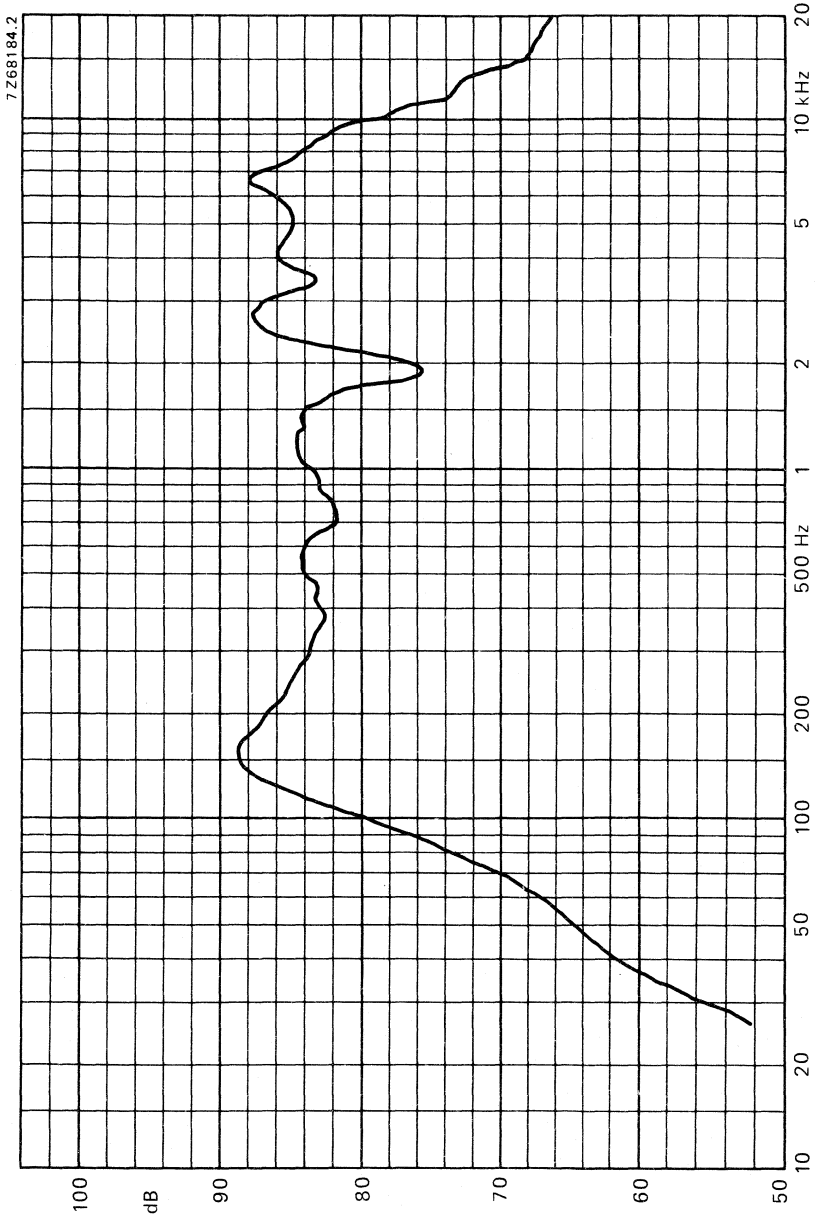


Fig.2



3½ x 6 inch OVAL MEDIUM POWER LOUDSPEAKERS

APPLICATION

For colour television sets. Low stray field and high sensitivity.

TECHNICAL DATA

	version				
	X4	X8	X15	X25	
Rated impedance	4	8	15	25	Ω
Voice coil resistance	3,1	7,1	13,5	22,7	Ω
Rated frequency range	80 to 13 000				Hz
Resonance frequency	140				Hz
Power handling capacity, measured without filter, loudspeaker unmounted	4				W
Operating power (sound level 90 dB, 1 m)	1				W
Sweep voltage (70 to 20 000 Hz)	2,8	4	5,5	7,1	V
Energy in air gap	39				mJ
Flux density	0,8				T
Air gap height	3				mm
Voice coil height	3	3,9	3,2	4	mm
Core diameter	18				mm
Magnet material	steel alloy				
diameter	18				mm
mass	0,027				kg
Mass of loudspeaker	0,14				kg

The loudspeaker has a paper cone and surround and a foam plastic gasket. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering. ←

Dimensions (mm)

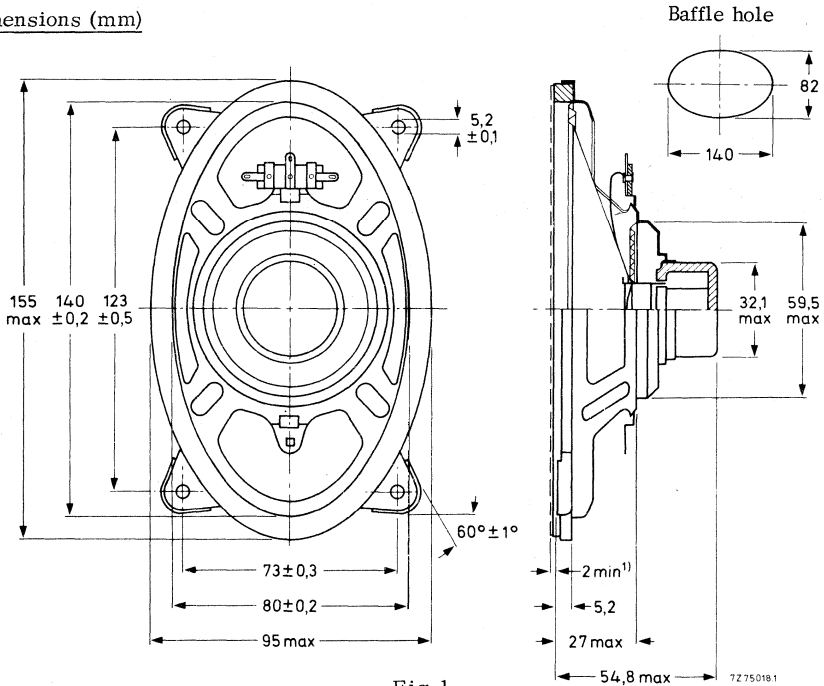


Fig.1

1) Clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

- AD4692/X4, catalogue number 2422 256 308.1
- AD4692/X8, catalogue number 2422 256 308.2
- AD4692/X15, catalogue number 2422 256 308.3
- AD4692/X25, catalogue number 2422 256 308.4

(0 = stamped on loudspeaker *magnet, not to be used for ordering)

2 = for bulk packing *)
6 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve b: Sound pressure measured in anechoic room, loudspeaker mounted on baffle according to IEC268-5, par. 4.4.

Curve c: 2nd and 3rd harmonic distortion, measured at the operating power of 1 W in anechoic room. Loudspeaker front mounted on IEC baffle.

*) Minimum packing quantity 7 per unit.

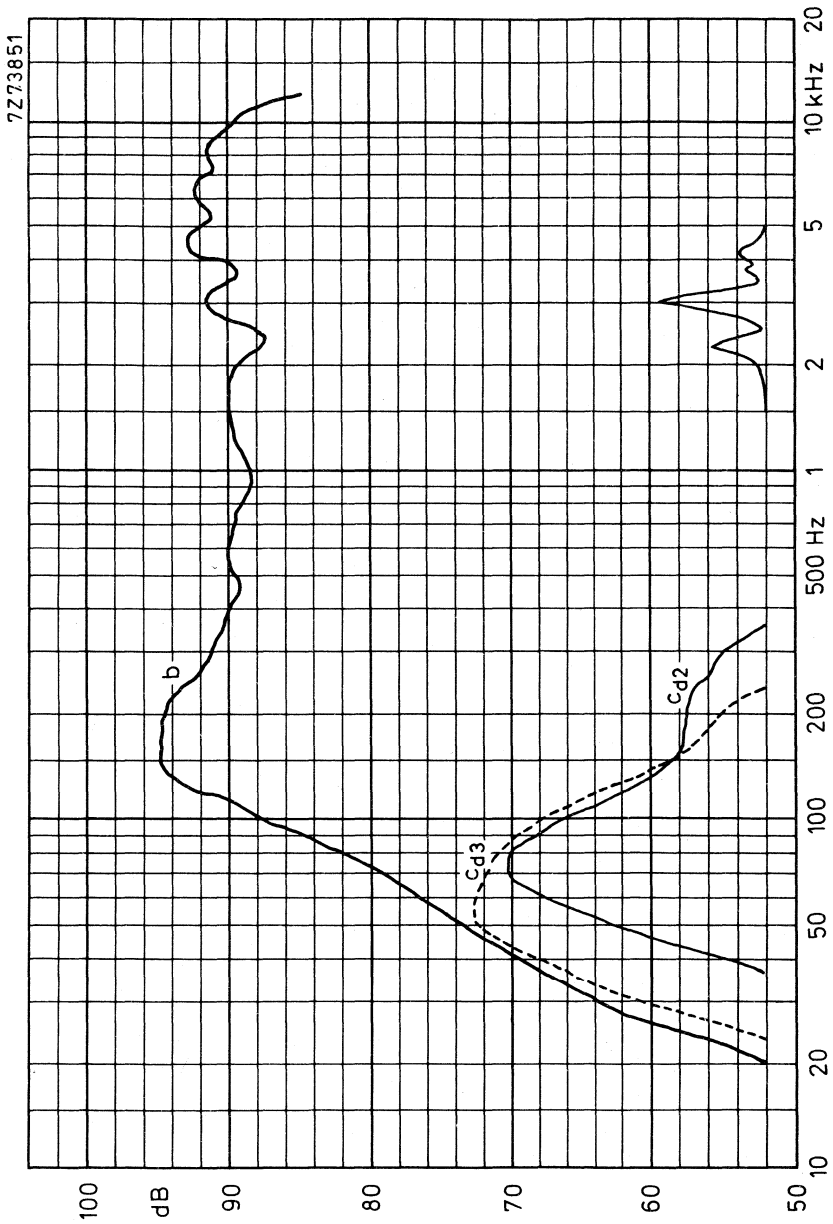


Fig. 2



4 x 8 inch OVAL MEDIUM POWER LOUDSPEAKER

APPLICATION

For colour television sets. Low stray field, low resonance frequency, high sensitivity in bass region.

TECHNICAL DATA

	version				
	X4	X8	X15	X25	
Rated impedance	4	8	15	25	Ω
Voice coil resistance	3,4	7,1	13,5	22,7	Ω
Rated frequency range	55 to 13 000				Hz
Resonance frequency	110				Hz
Power handling capacity, measured without filter, loudspeaker unmounted	10				W
Operating power (sound level 90 dB, 1 m)	0,7				W
Sweep voltage (55 to 20 000 Hz)	4	5,7	7,8	10	V
Energy in air gap	39				mJ
Flux density	0,8				T
Air gap height	3				mm
Voice coil height	4,5	3,9	3,2	4	mm
Core diameter	18				mm
Magnet material	steel alloy				
diameter	18				mm
mass	0,027				kg
Mass of loudspeaker	0,23				kg

The loudspeaker has a paper cone and surround and a foam plastic gasket. Connection to ← the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions (mm)

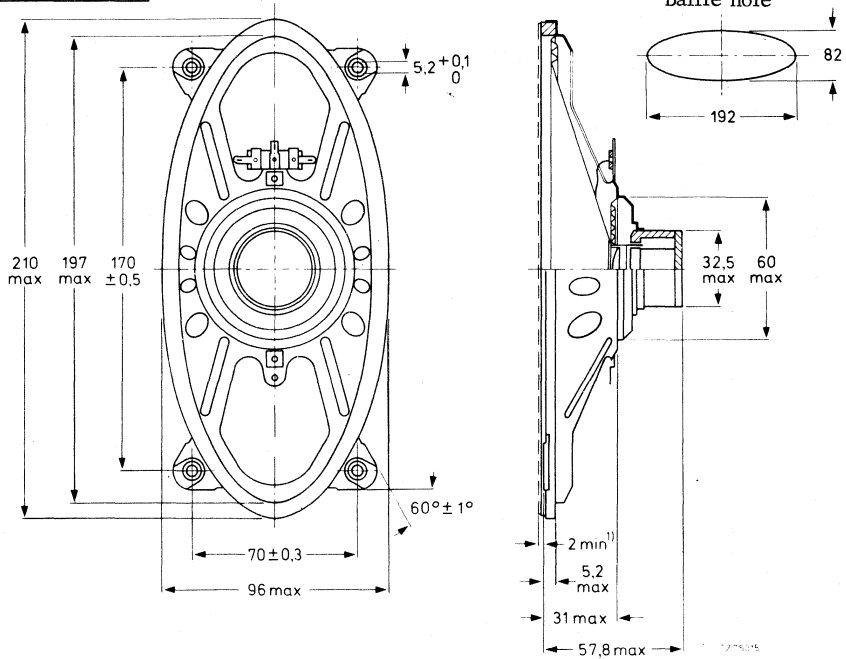


Fig.1

1) Clearance depth required for cone movement at the specified power handling capacity. One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

- AD4890/X4, catalogue number 2422 256 307. 5
- AD4890/X8, catalogue number 2422 256 307. 6
- AD4890/X15, catalogue number 2422 256 307. 7
- AD4890/X25, catalogue number 2422 256 307. 8

(0 = stamped on loudspeaker magnet, not to be used for ordering)

2 = for bulk packing*)
6 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig.2)

Curve b: Sound pressure measured in anechoic room, loudspeaker mounted on baffle according to IEC268-5, par. 4.4.

Curve c: 2nd and 3rd harmonic distortion, measured at the operating power of 0,7 W in anechoic room. Loudspeaker front mounted on IEC baffle.

*) Minimum packing quantity 5 per unit.

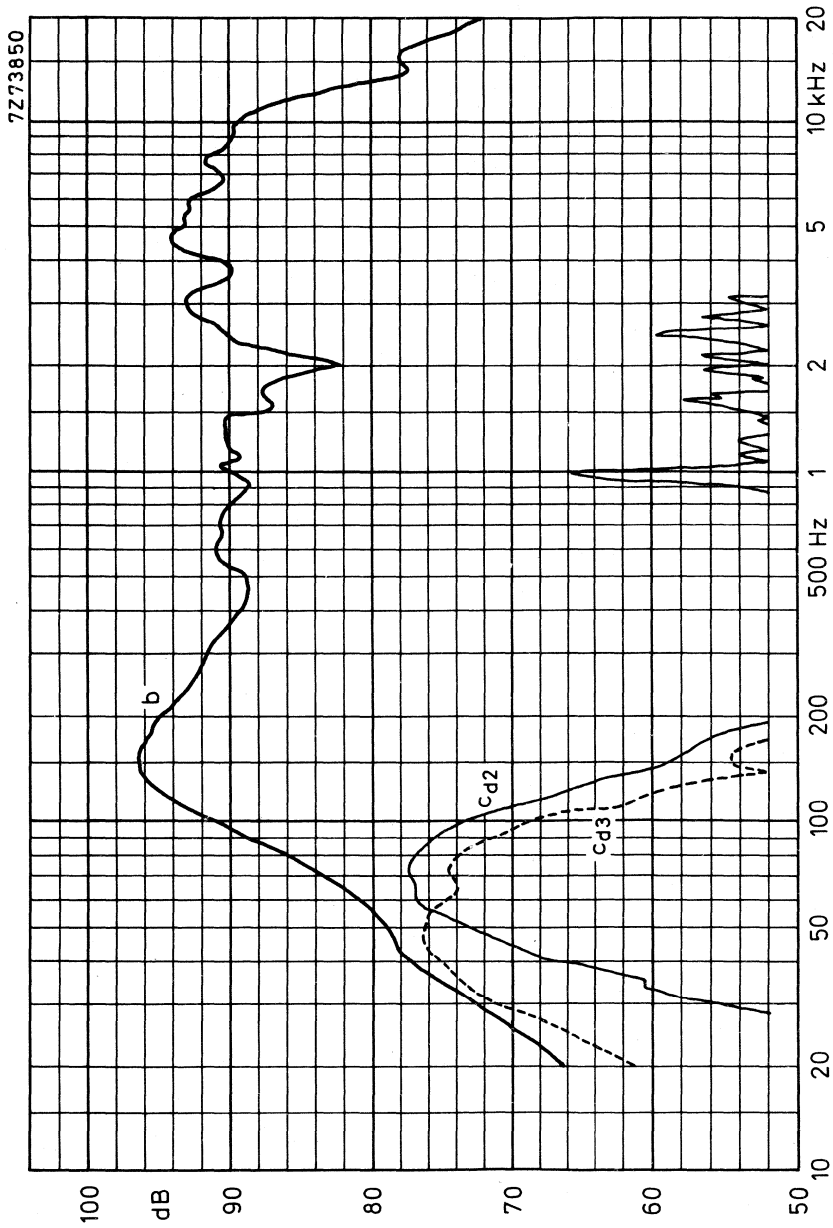


Fig. 2



5 inch ROUND MEDIUM POWER LOUDSPEAKERS

APPLICATION

Dual cone loudspeaker for car and domestic radios, tape recorders, portable record players and intercoms.

TECHNICAL DATA

	version				
	M4	M8	M15	M25	
Rated impedance	4	8	15	25	Ω
Voice coil resistance	3,4	7,1	13,5	22,7	Ω
Rated frequency range	70 to 20 000				Hz
Resonance frequency	135				Hz
Power handling capacity, measured without filter, loudspeaker unmounted	6				W
Operating power (sound level 90 dB, 1 m)	0,7				W
Sweep voltage (70 to 20 000 Hz)	3,5	4,9	6,7	8,7	V
Energy in air gap	55				mJ
Flux density	1				T
Air-gap height	3				mm
Voice coil height	4,4	3,6	3,2	4	mm
Core diameter	18				mm
Magnet material	ceramic				
diameter	53				mm
mass	0,1				kg
Mass of loudspeaker	0,25				kg

The loudspeaker has a paper dual cone and surround, and a foam plastic gasket on the flange. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering. ←

Dimensions (mm)

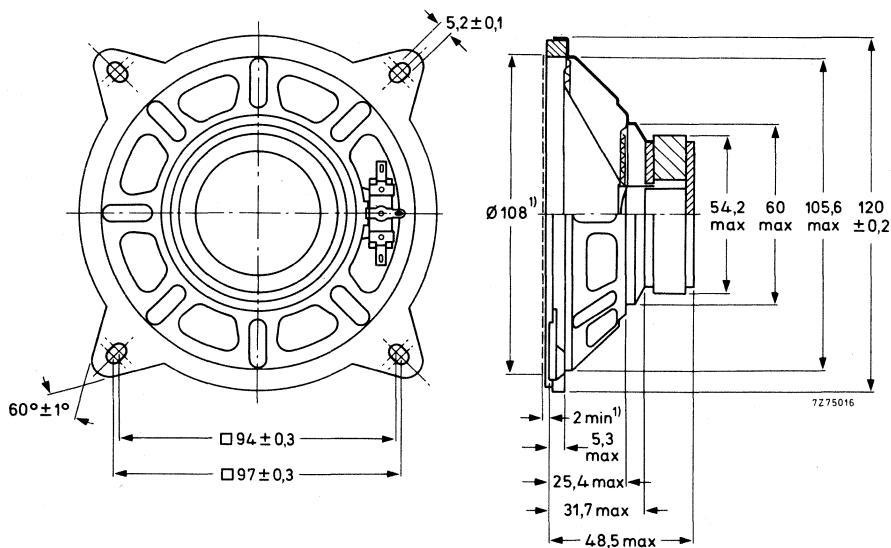


Fig. 1

¹⁾ Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

- AD5081/M4, catalogue number 2422 257 357.5
- AD5081/M8, catalogue number 2422 257 357.6
- AD5081/M15, catalogue number 2422 257 357.7
- AD5081/M25, catalogue number 2422 257 357.8

(0 = stamped on loudspeaker magnet,
not to be used for ordering)

2 = for bulk packing *)
6 = for single unit packing

FREQUENCY RESPONSE CURVE (see Fig. 2)

→ Sound pressure measured in anechoic room, loudspeaker mounted on baffle according to IEC268-5, par. 4.4. Input power 50 mW.

*) Minimum packing quantity 6 per unit.

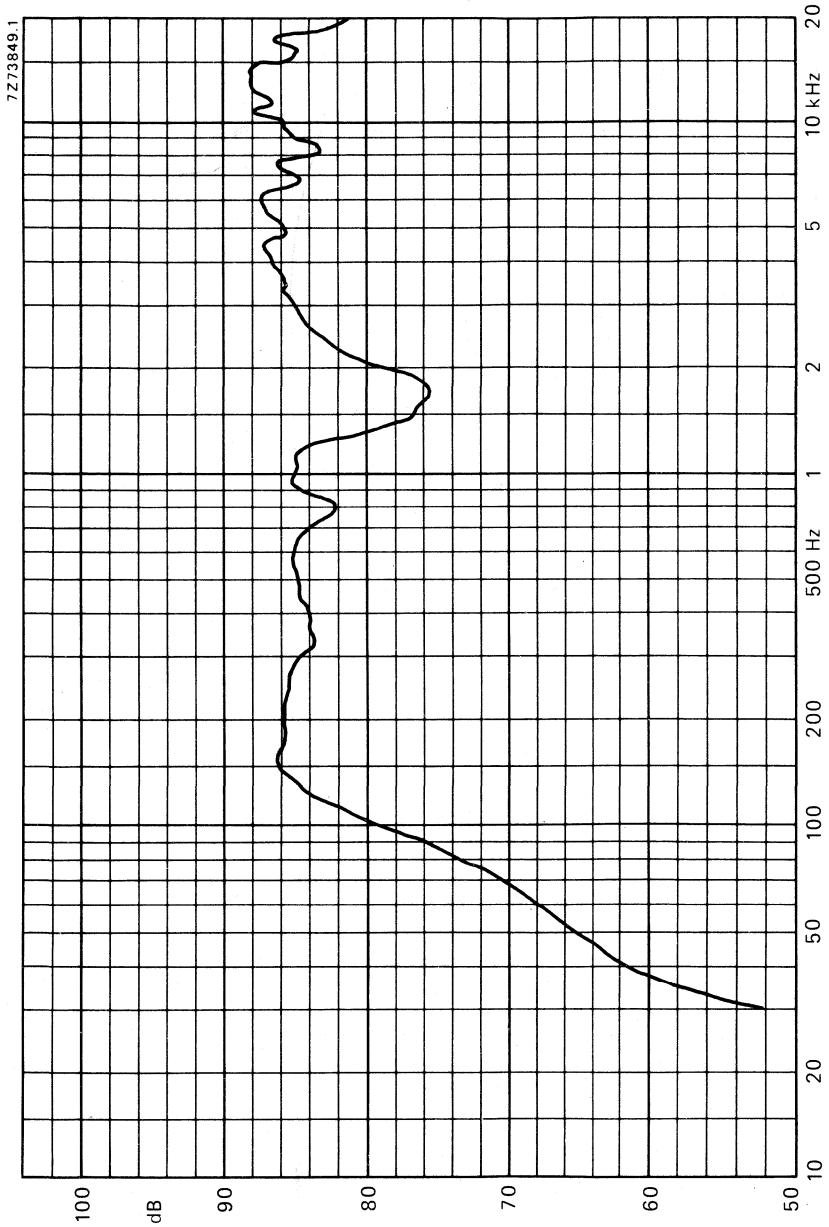


Fig. 2



5 inch ROUND MEDIUM POWER LOUDSPEAKER

APPLICATION

For car and domestic radios, tape recorders, portable record players and intercoms.

TECHNICAL DATA

	version				
	X4	X8	X15	X25	
Rated impedance	4	8	15	25	Ω
Voice coil resistance	3,4	7,1	13,5	22,7	Ω
Rated frequency range	60 to 14 000				Hz
Resonance frequency	140				Hz
Power handling capacity, measured without filter, loudspeaker unmounted	6				W
Operating power (sound level 90 dB, 1 m)	0,7				W
Sweep voltage (70 to 20 000 Hz)	3,5	4,9	6,7	8,7	V
Energy in air gap	55				mJ
Flux density	1				T
Air-gap height	3				mm
Voice coil height	4,4	3,9	3,2	4	mm
Core diameter	18				mm
Magnet material	ceramic				
diameter	53				mm
mass	0,1				kg
Mass of loudspeaker	0,25				kg

The loudspeaker has a paper cone and surround and a foam plastic gasket. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering. ←

Dimensions (mm)

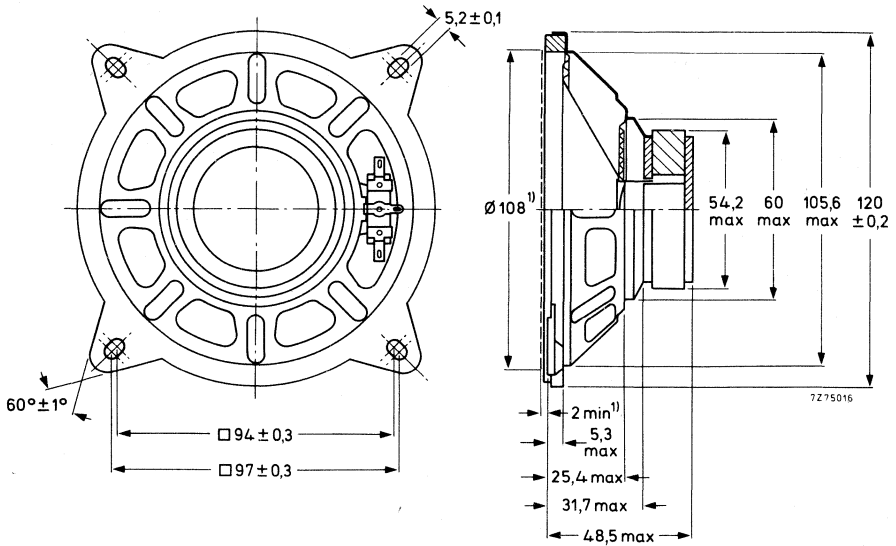


Fig. 1

1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

- AD5081/X4, catalogue number 2422 257 357.1
- AD5081/X8, catalogue number 2422 257 357.2
- AD5081/X15, catalogue number 2422 257 357.3
- AD5081/X25, catalogue number 2422 257 357.4

(0 = stamped on loudspeaker magnet,
not to be used for ordering)

- 2 = for bulk packing *)
- 6 = for single unit packing

FREQUENCY RESPONSE CURVE (see Fig. 2)

→ Sound pressure measured in anechoic room, loudspeaker mounted on baffle according to IEC268-5, par. 4.4. Input power 50 mW.

*) Minimum packing quantity 6 per unit.

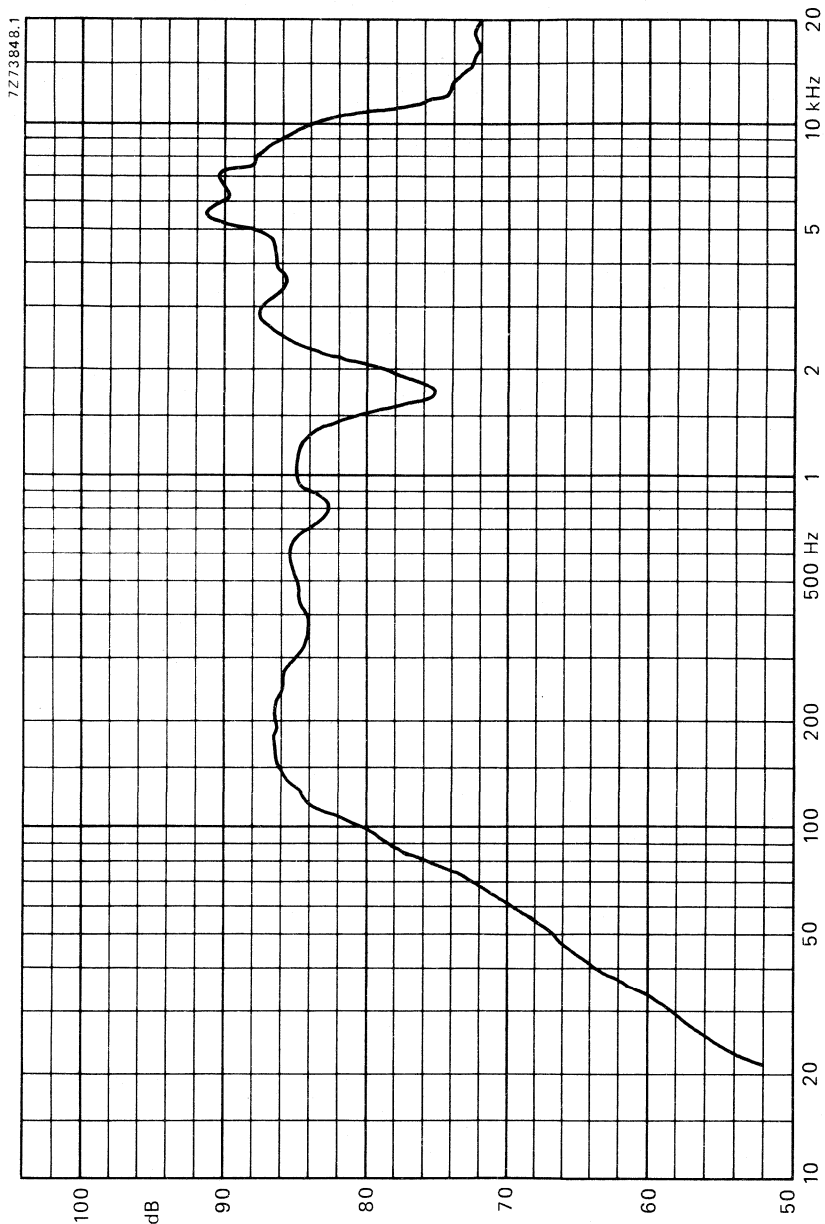


Fig. 2



5 × 7 inch OVAL MEDIUM POWER LOUDSPEAKER

APPLICATION

A full range loudspeaker for car and domestic radios, tape recorders and portable record players.

This loudspeaker has an extended frequency response up to 20 kHz due to its dual-cone construction.

TECHNICAL DATA

	version				
	M4	M8	M15	M25	
Rated impedance	4	8	15	25	Ω
Voice coil resistance	3,4	7,1	13,5	22,7	Ω
Resonance frequency	100	100	100	100	Hz
Power handling capacity, measured without filter loudspeaker unmounted	6	6	6	6	W
Sweep voltage	2,8	4	5,5	8,7	V
Energy in air gap	53	53	53	53	mJ
Flux density	0,98	0,98	0,98	0,98	T
Air-gap height	3	3	3	3	mm
Voice coil height	4,5	3,9	3,2	4	mm
Core diameter	18	18	18	18	mm
Magnet material	ceramic	ceramic	ceramic	ceramic	
diameter	53	53	53	53	mm
mass	0,1	0,1	0,1	0,1	kg
Mass of loudspeaker	0,32	0,32	0,32	0,32	kg

The loudspeaker has a paper dual cone and surround, and a foam plastic gasket on the flange. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions (mm)

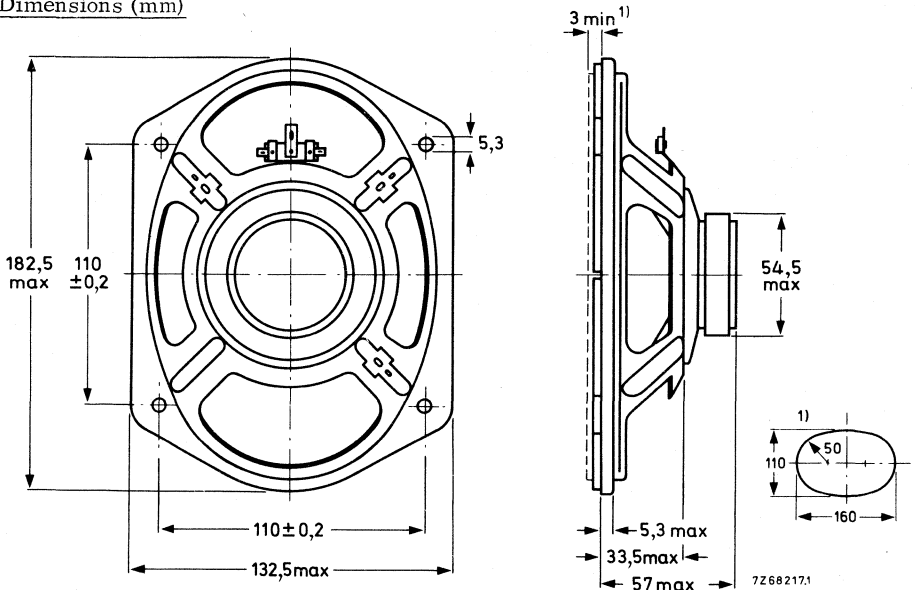


Fig. 1

1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD 5780/M4, catalogue number 2422 257 361.5

AD 5780/M8, catalogue number 2422 257 361.6

AD 5780/M15, catalogue number 2422 257 361.7

AD 5780/M25, catalogue number 2422 257 361.8

(0 = stamped on loudspeaker magnet,
not to be used for ordering)

— 2 for bulk packing*)

— 6 for single unit packing

FREQUENCY RESPONSE CURVE

Fig. 2. Input power 50 mW

Sound pressure measured in anechoic room, loudspeaker mounted on IEC baffle.

*) Minimum packing quantity 4 per unit.

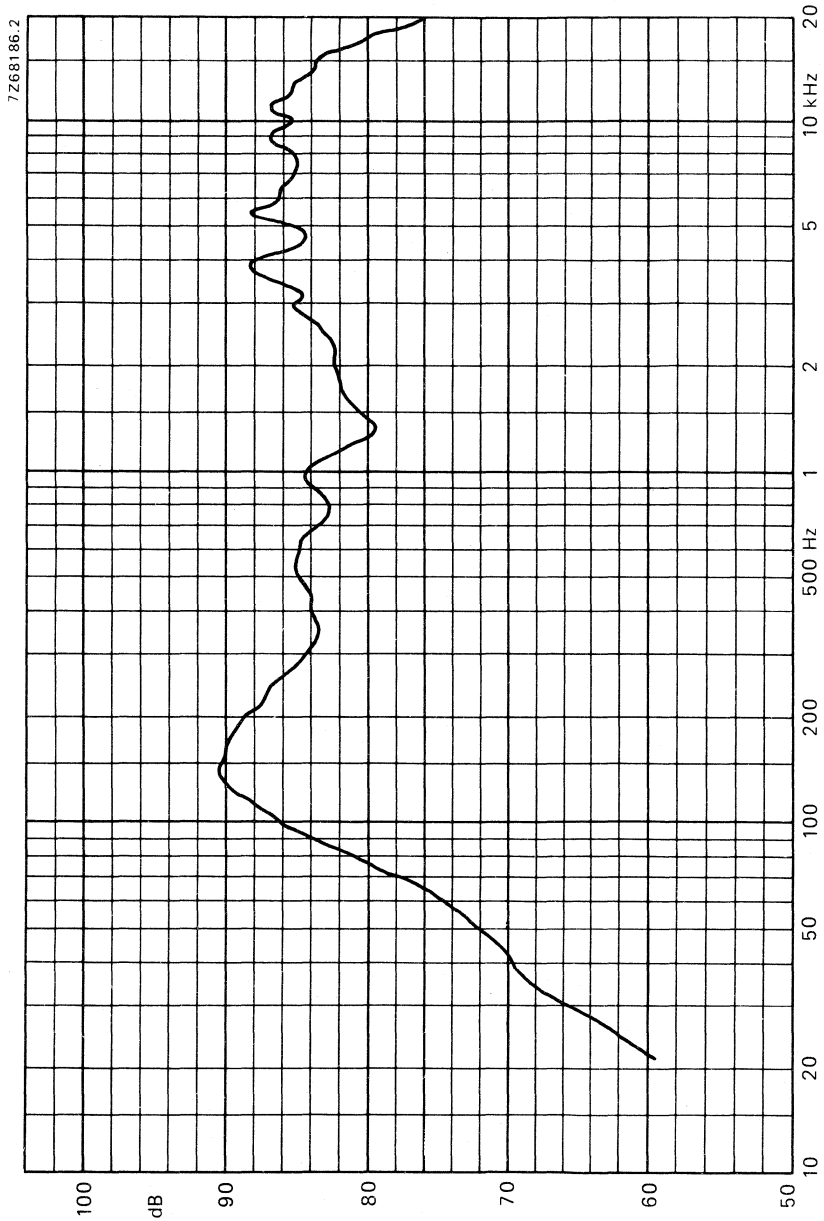


Fig. 2



5 × 7 inch OVAL MEDIUM POWER LOUDSPEAKER

APPLICATION

For car and domestic radios, tape recorders and portable record players.
High sensitivity at 4000 Hz. Frequency range up to 10 kHz.

TECHNICAL DATA

	version				
	X4	X8	X15	X25	
Rated impedance	4	8	15	25	Ω
Voice coil resistance	3,4	7,1	13,5	22,7	Ω
Resonance frequency	115	115	115	115	Hz
Power handling capacity, measured without filter, loudspeaker unmounted	6	6	6	6	W
Sweep voltage	3,4	3,5	4,8	6,1	V
Energy in airgap	55	55	55	55	mJ
Flux density	0,98	0,98	0,98	0,98	T
Airgap height	3	3	3	3	mm
Voice coil height	4,5	3,9	3,2	4	mm
Core diameter	18	18	18	18	mm
Magnet material	ceramic	ceramic	ceramic	ceramic	
diameter	53	53	53	53	mm
mass	0,1	0,1	0,1	0,1	kg
Mass of loudspeaker	0,32	0,32	0,32	0,32	kg

The loudspeaker has a paper cone and surround, and a foam plastic gasket on the flange.
Connection to the loudspeaker by 2,8 mm (0,11 inch) tag connectors or by soldering. ←

Dimensions (mm)

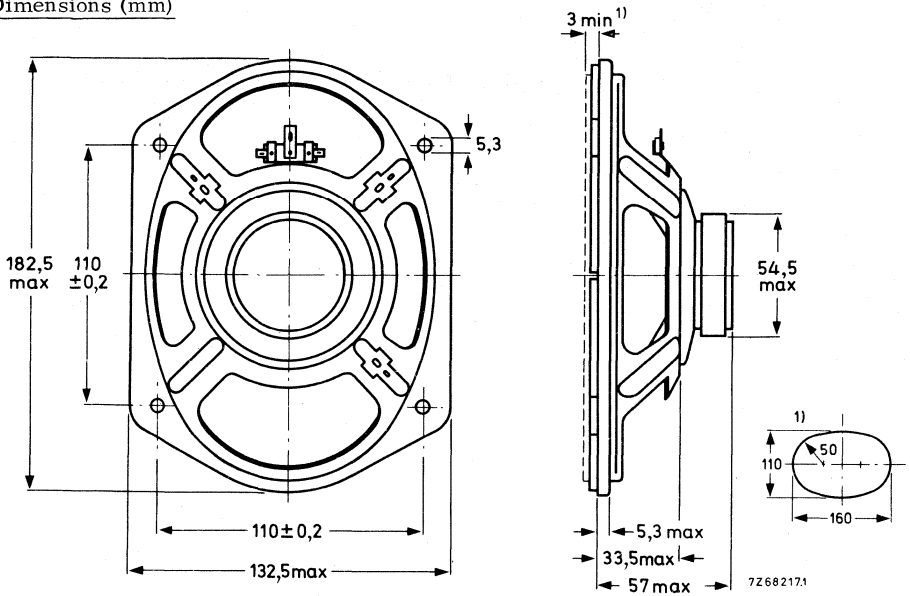


Fig. 1

1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

- AD 5780/X4, catalogue number 2422 257 361.1
- AD 5780/X8, catalogue number 2422 257 361.2
- AD 5780/X15, catalogue number 2422 257 361.3
- AD 5780/X25, catalogue number 2422 257 361.4

(0 = stamped on loudspeaker magnet,
not to be used for ordering)

— 2 for bulk packing*)
— 6 for single unit packing

FREQUENCY RESPONSE CURVE

→ Fig. 2. Input power 50 mW
Sound pressure measured in anechoic room, loudspeaker mounted on IEC baffle.

*) Minimum packing quantity 4 per unit.

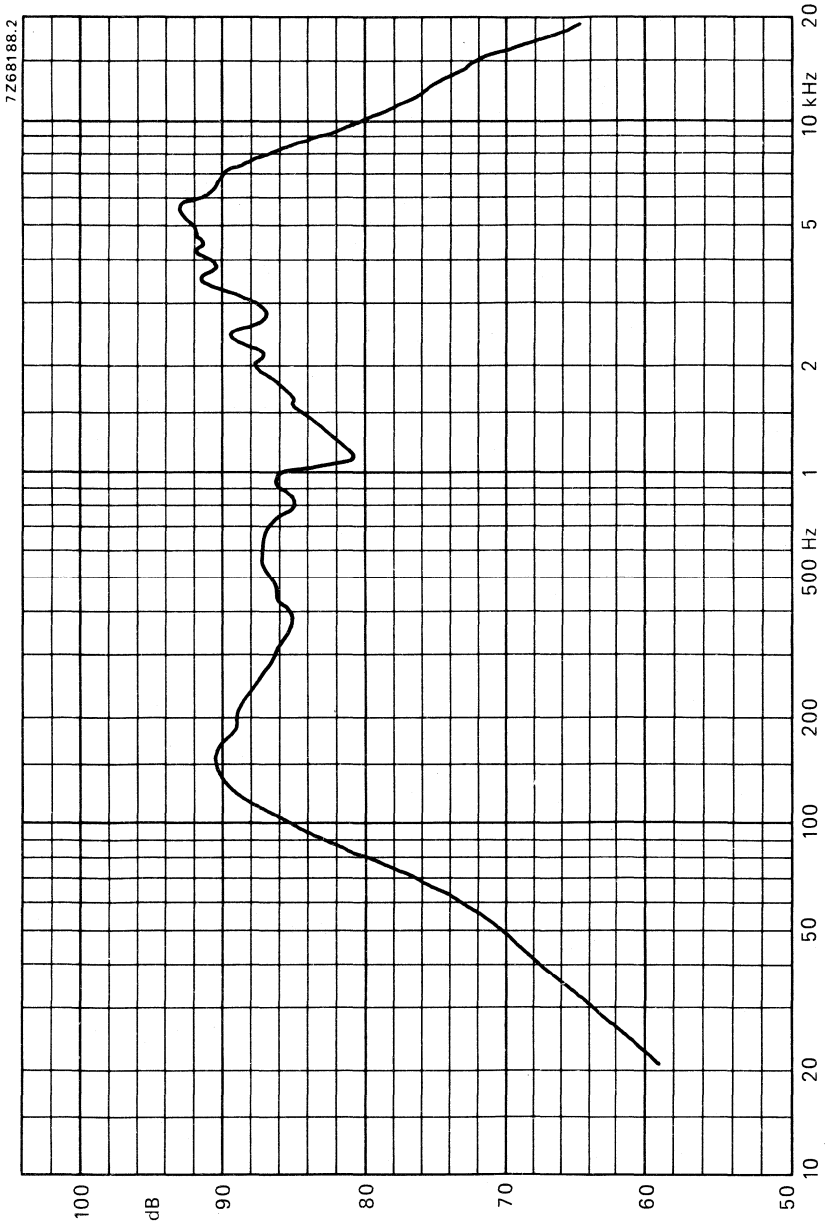


Fig. 2



5 × 7 inch OVAL MEDIUM POWER LOUDSPEAKER

APPLICATION

The loudspeaker can be used in black and white as well as colour television sets due to absence of stray magnetic field. High sensitivity at 3000 Hz.

TECHNICAL DATA

	version		
	X4	X8	
Rated impedance	4	8	Ω
Voice coil resistance	3,4	7,1	Ω
Resonance frequency	115		Hz
Power handling capacity, measured without filter, loudspeaker unmounted	4		W
Operating power	0,7		W
Sweep voltage	2,45	4	V
Energy in air gap	39		mJ
Flux density	0,8		T
Air-gap height	3		mm
Voice coil height	4,5	3,9	mm
Core diameter	18		mm
Magnet material	steel alloy		
diameter	18		mm
mass	0,027		kg
Mass of loudspeaker	0,22		kg

The loudspeaker has a paper cone, a treated paper surround, and a foam plastic gasket on the flange. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions (mm)

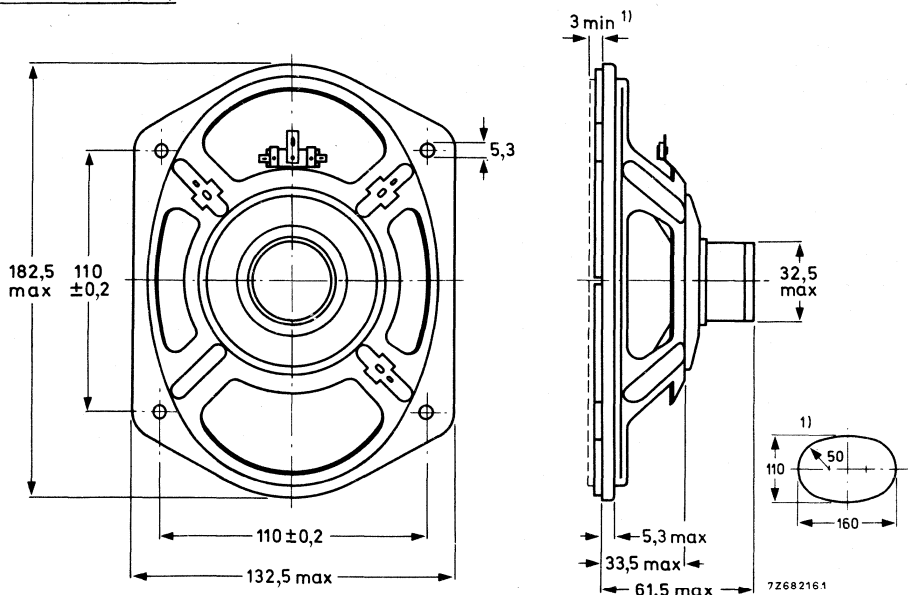


Fig. 1

1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD5790/X4, catalogue number 2422 256 360.2

AD5790/X8, catalogue number 2422 256 360.5

(0 = stamped on loudspeaker magnet,
not to be used for ordering)

2 for bulk packing*)

6 for single unit packing

FREQUENCY RESPONSE CURVES(see Fig. 2)

Curve b: Sound pressure measured in anechoic room at input power of 2, 2 W.
Loudspeaker mounted on IEC baffle.

Curve c: 2nd and 3rd harmonic distortion, measured at input power of 2, 2 W in anechoic room. Loudspeaker mounted on IEC baffle.

*) Minimum packing quantity 4 per unit.

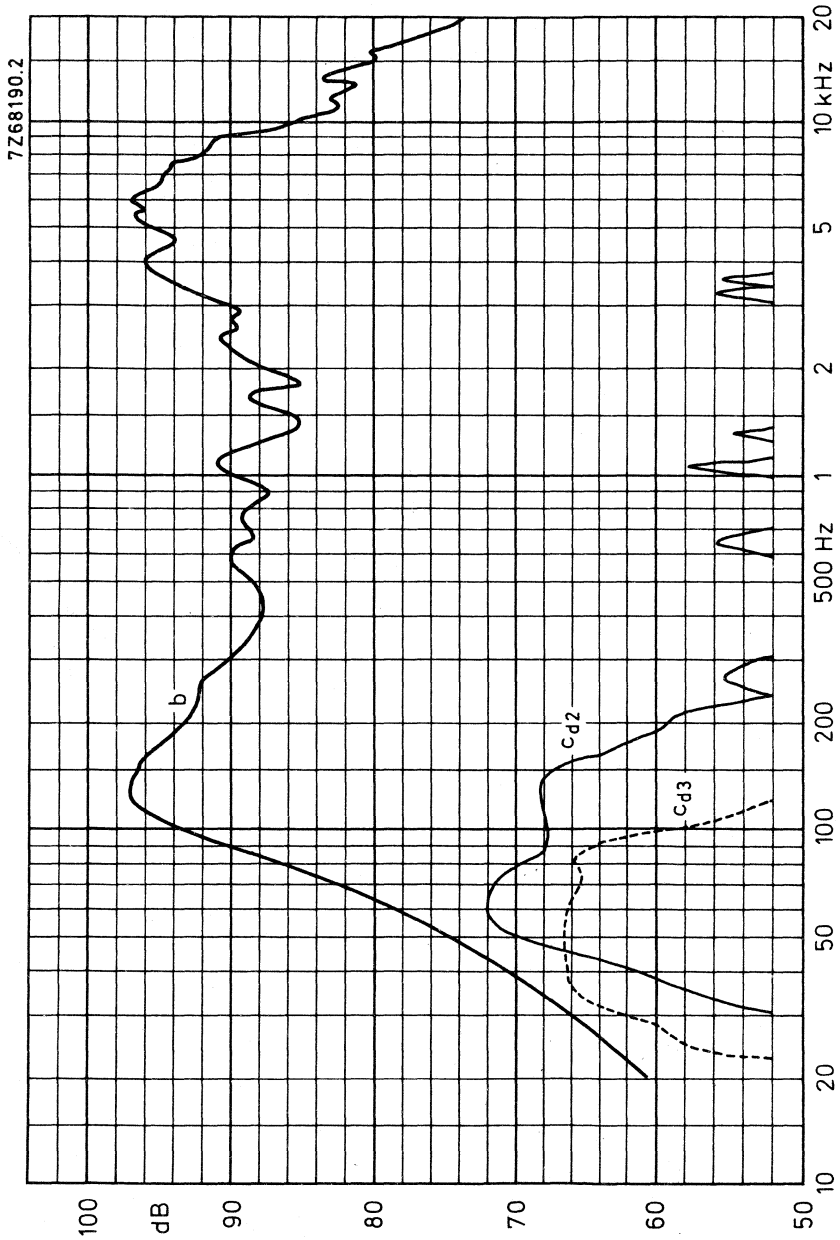


Fig.2



5 × 7 inch OVAL MEDIUM POWER LOUDSPEAKER

APPLICATION

The absence of stray field makes this loudspeaker very suitable for use in black and white as well as colour television sets. High sensitivity at 3000 Hz.

TECHNICAL DATA

	version	
	M4	M8
Rated impedance	4	8 Ω
Voice coil resistance	3, 4	7, 1 Ω
Resonance frequency	100	100 Hz
Power handling capacity, measured without filter, loudspeaker unmounted	10	10 W
Sweep voltage	2, 8	4 V
Energy in airgap	39	39 mJ
Flux density	0, 8	0, 8 T
Airgap height	3	3 mm
Voice coil height	4, 5	3, 9 mm
Core diameter	18	18 mm
Magnet material	steel alloy	steel alloy
diameter	18	18 mm
mass	0, 027	0, 027 kg
Mass of loudspeaker	0, 22	0, 22 kg

The loudspeaker has a paper dual cone and surround, and a foam plastic gasket on the flange. Connection to the loudspeaker by means of 2, 8 mm (0, 11 inch) tag connectors or by soldering.

Dimensions (mm)

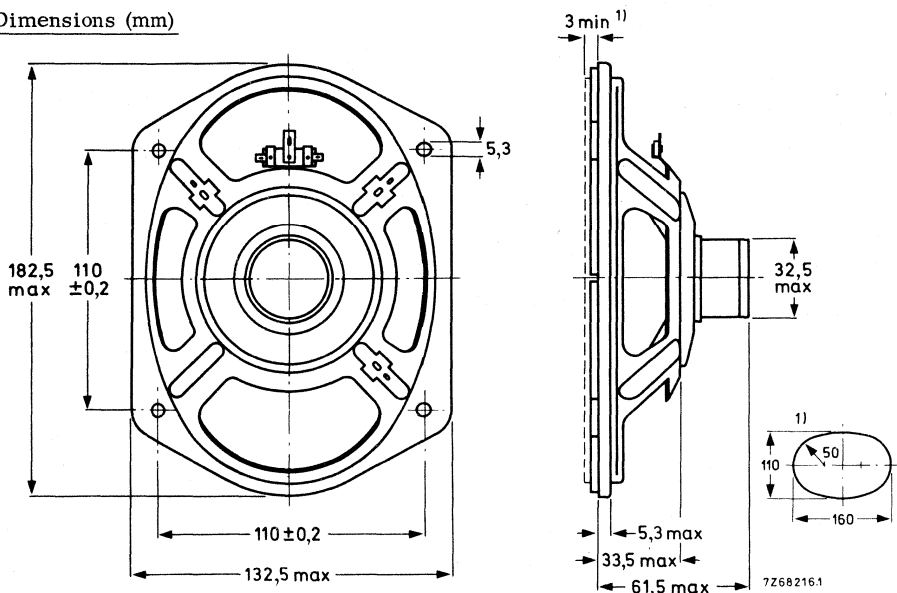


Fig. 1

1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD5791/M4, catalogue number 2422 256 360.1

AD5791/M8, catalogue number 2422 256 360.2

1 = stamped on the loudspeaker magnet,
Not to be used for ordering

3 = for bulk packing *)

7 = for single unit packing

FREQUENCY RESPONSE CURVE

Fig. 2 Sound pressure measured in anechoic room, loudspeaker unmounted.

Above 1000 Hz the sensitivity may be, over the width of one octave, maximum 2 dB lower than indicated.

Input power 50 mW

*) Minimum packing quantity 4 per unit.

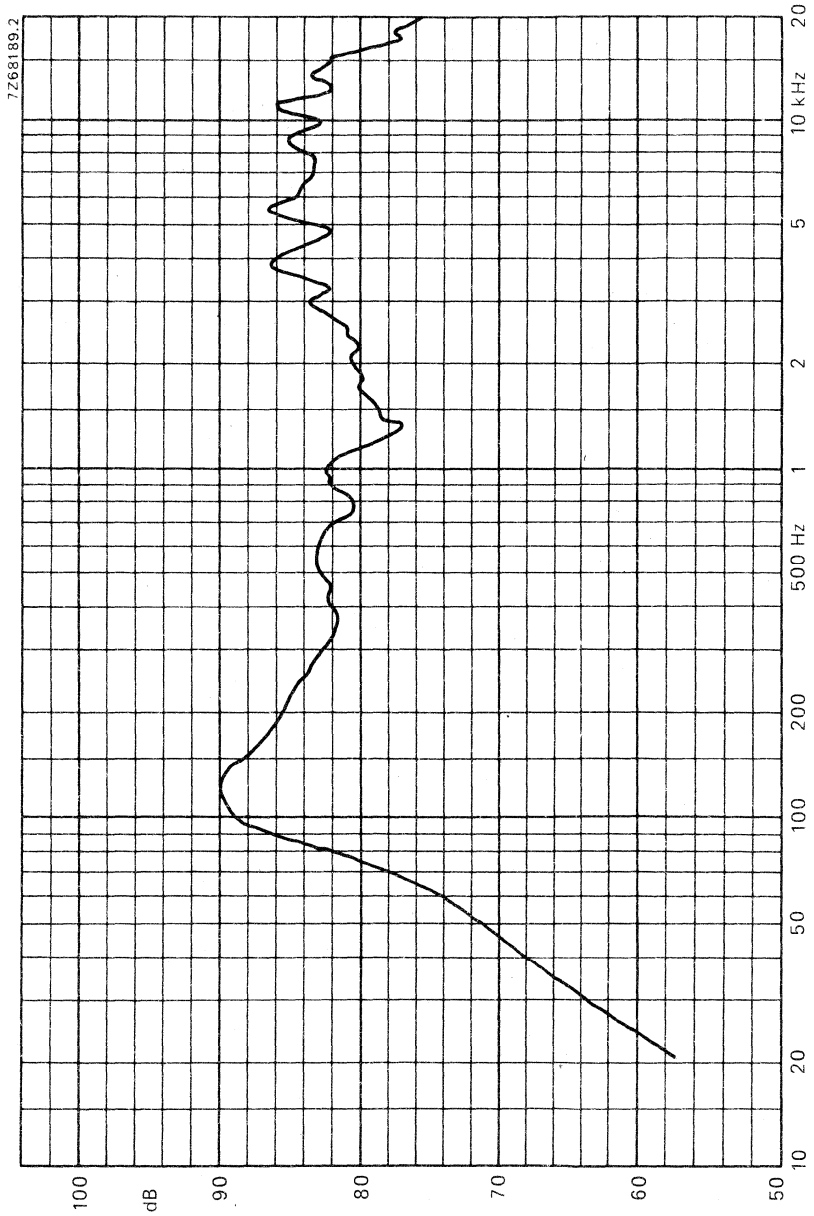


Fig. 2



7 inch OCTAGONAL MEDIUM POWER LOUDSPEAKER

APPLICATION

For car and domestic radios, acoustic enclosures and public address systems.
Frequency range up to 15 kHz.

TECHNICAL DATA

	version			
	M4	M8	M15	
Rated impedance	4	8	15	Ω
Voice coil resistance	3,4	7,1	13,5	Ω
Resonance frequency	105	105	105	Hz
Power handling capacity, measured without filter loudspeaker unmounted	6	6	6	W
Sweep voltage	2,8	4	6,7	V
Energy in airgap	55	55	53	mJ
Flux density	0,98	0,98	0,98	T
Airgap height	3	3	3	mm
Voice coil height	4,5	3,9	3,2	mm
Core diameter	18	18	18	mm
Magnet material	ceramic	ceramic	ceramic	
diameter	53	53	53	mm
mass	0,1	0,1	0,1	kg
Mass of loudspeaker	0,29	0,29	0,29	kg

The loudspeaker has a paper dual cone and surround, and a foam plastic gasket on the flange. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering. ←

Dimensions (mm)

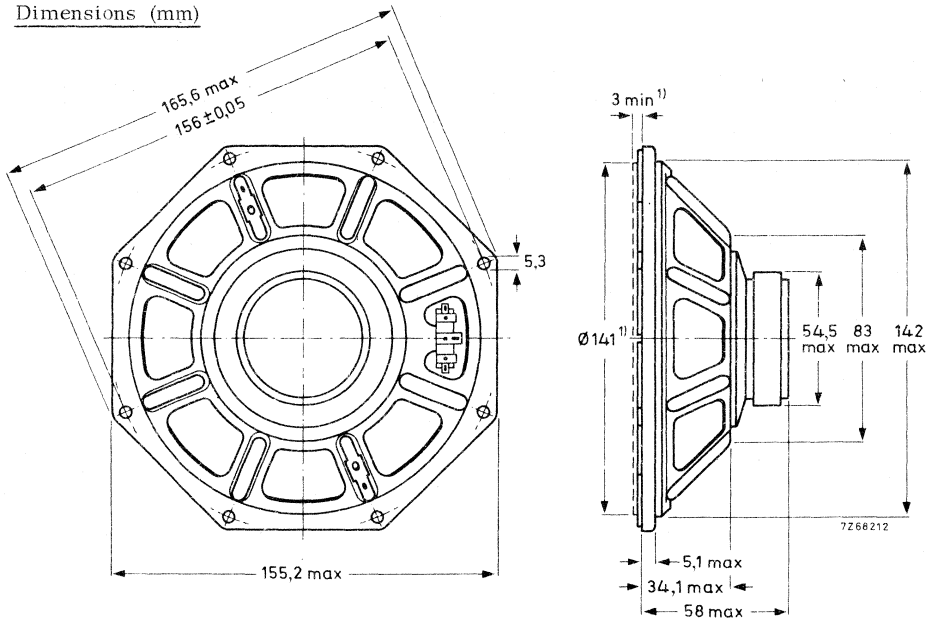


Fig. 1.

1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD7080/M4, catalogue number 2422 257 378.3

AD7080/M8, catalogue number 2422 257 378.4

AD7080/M15, catalogue number 2422 257 378.5

(0 = stamped on the loudspeaker magnet, not to be used for ordering)

2 = for bulk packing *)

6 = for single unit packing

FREQUENCY RESPONSE CURVE

Fig.2. Input power 50 mW

→ Sound pressure measured in anechoic room, loudspeaker mounted on IEC baffle.

*) Minimum packing quantity 4 per unit.

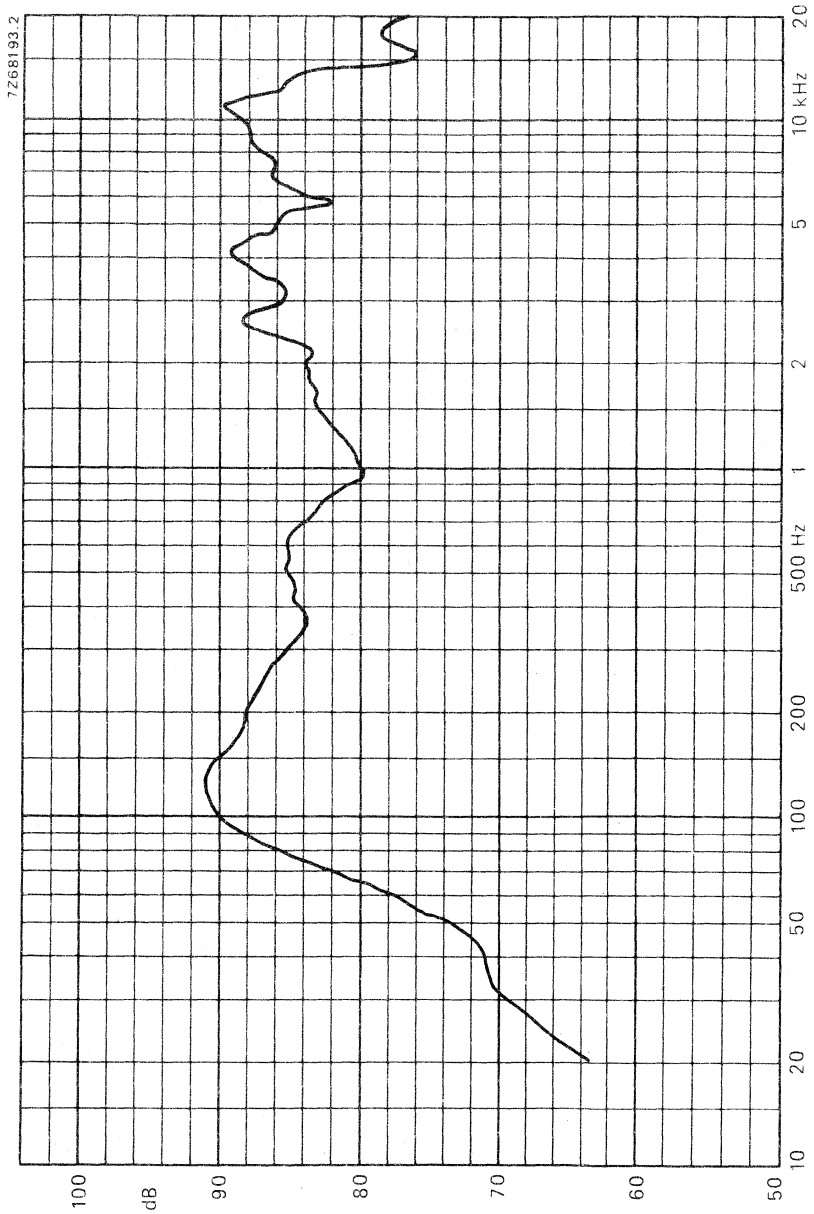


Fig. 2



7 inch OCTAGONAL MEDIUM POWER LOUDSPEAKER

APPLICATION

For car and domestic radios and acoustic enclosures.
High sensitivity at 4000 Hz.

TECHNICAL DATA

	version		
	X4	X8	
Rated impedance	4	8	Ω
Voice coil resistance	3,4	7,1	Ω
Resonance frequency	115	115	Hz
Power handling capacity, measured without filter loudspeaker unmounted	6	6	W
Sweep voltage	3,5	4,9	V
Energy airgap	55	55	mJ
Flux density	0,98	0,98	T
Airgap height	3	3	mm
Voice coil height	4,5	3,9	mm
Core diameter	18	18	mm
Magnet material	ceramic	ceramic	
diameter	53	53	mm
mass	0,1	0,1	kg
Mass of loudspeaker	0,29	0,29	kg

The loudspeaker has a paper cone and surround, and a foam plastic gasket on the flange. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions (mm)

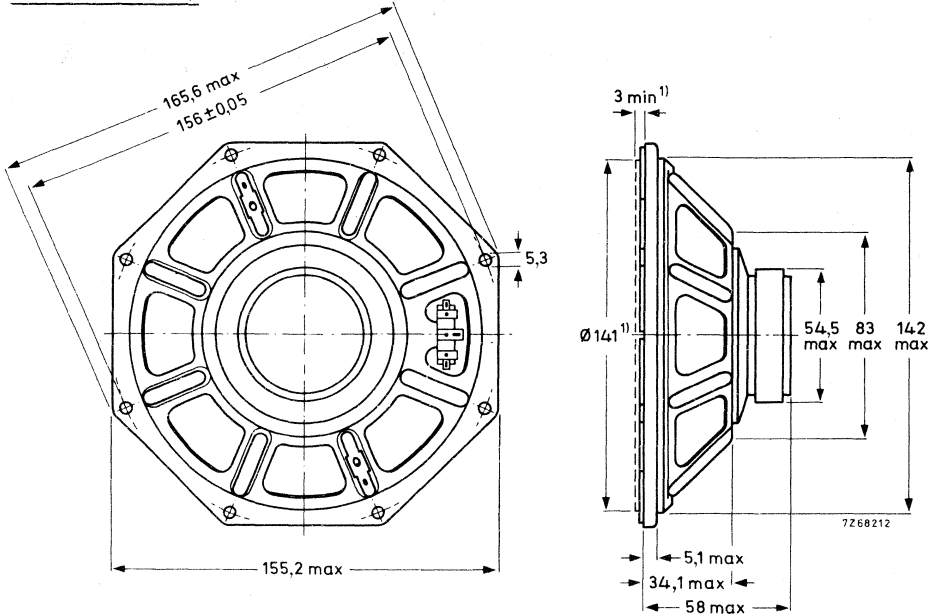


Fig. 1.

1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for on-phase connection.

AVAILABLE VERSIONS

AD 7080/X4, catalogue number, 2422 257 378.1

AD 7080/X8, catalogue number, 2422 257 378.2

(0 = stamped on loudspeaker magnet,
not to be used for ordering)

— 2 for bulk packing*)

— 6 for single unit packing.

FREQUENCY RESPONSE CURVE

Fig. 2. Input power 50 mW

→ Sound pressure measured in anechoic room, loudspeaker is mounted on IEC baffle.

*) Minimum packing quantity 4 per unit.

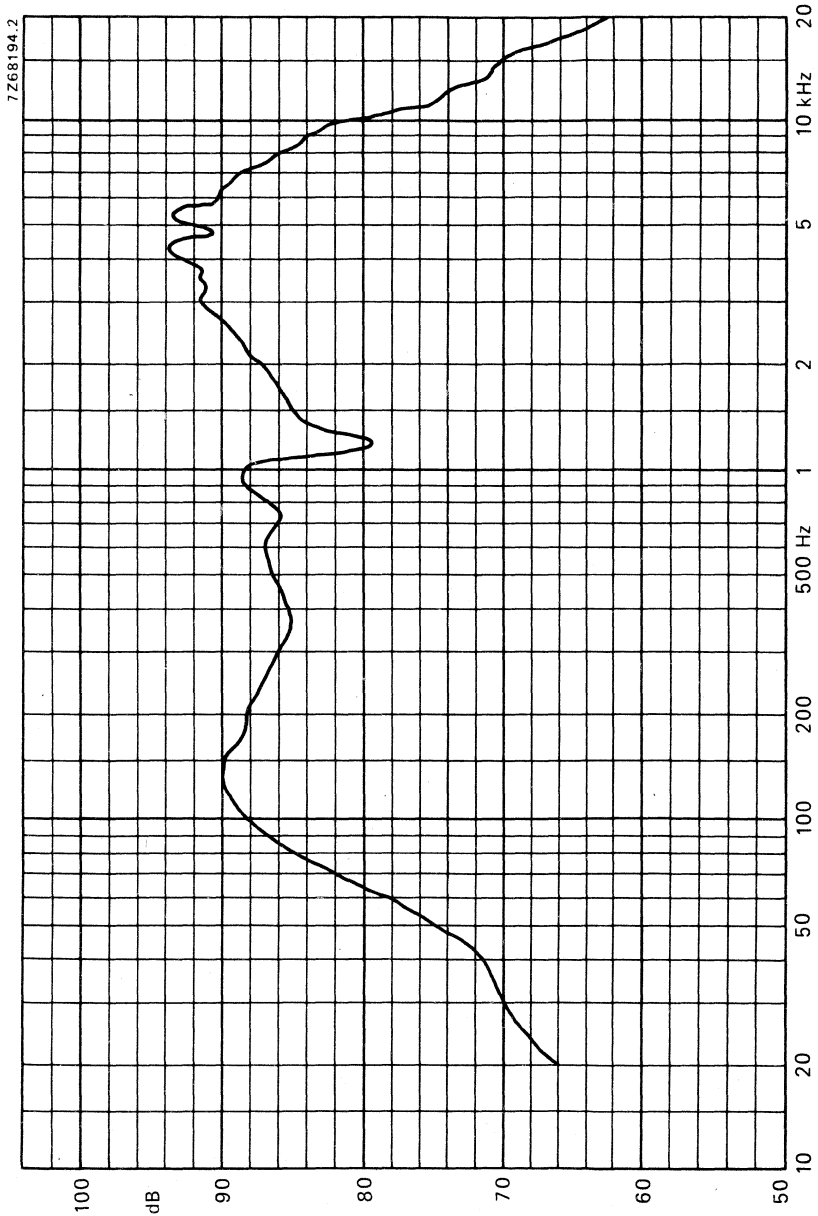


Fig.2



7 INCH MEDIUM POWER LOUDSPEAKER

APPLICATION

For video and audio equipment.

TECHNICAL DATA

	version	
	X4	X8
Rated impedance	4	8 Ω
Voice coil resistance	3,4	7,1 Ω
Rated frequency range	75 to 13 000 Hz	
Resonance frequency	115	Hz
Power handling capacity, measured without filter loudspeaker unmounted	4	W
Operating power for 90 dB sound level	0,85	0,7 W
Sweep voltage	2,8	4 V
Energy in air gap	39	mJ
Flux density	0,8	T
Air-gap height	3	mm
Voice coil height	4,5	3,9 mm
Core diameter	18	mm
Magnet material	steel alloy	
diameter	18	mm
mass	0,027	kg
Mass of loudspeaker	0,29	kg

The loudspeaker has a paper cone and surround, and foam segments.

Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions in mm

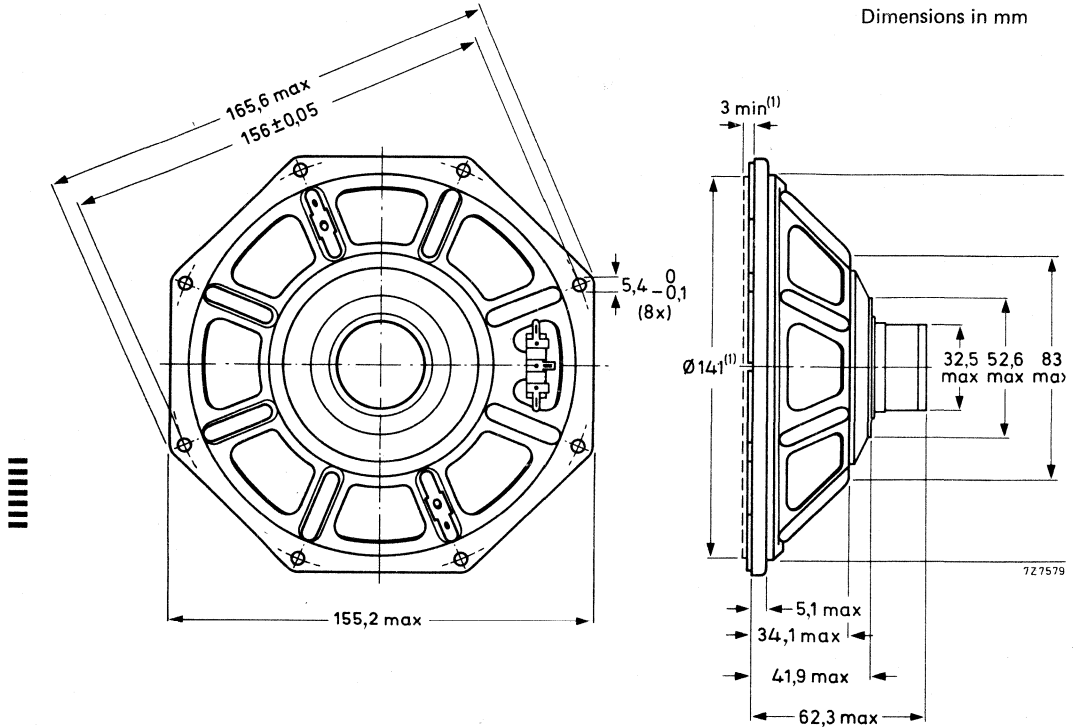


Fig. 1.

(1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD7090/X4, catalogue number 2422 256 371.1

AD7090/X8, catalogue number 2422 256 371.2

0 = stamped on loudspeaker magnet, **not to be used** for ordering

2 = for bulk packing *

6 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Measured in anechoic room at the operating power. Loudspeaker mounted on IEC baffle.

Curve a: Sound pressure.

Curves d2 and d3: 2nd and 3rd harmonic distortion.

* Minimum packing quantity 4 per unit.

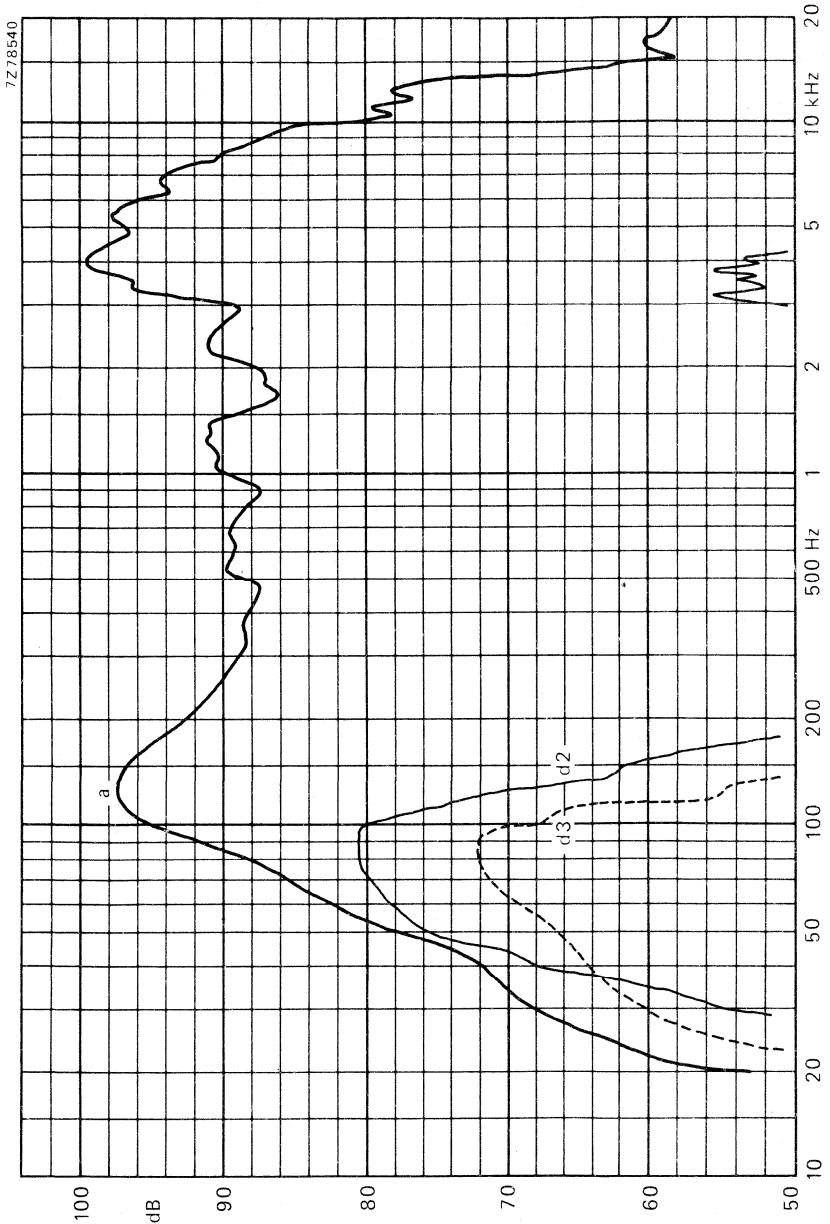


Fig. 2.



7 inch ROUND MEDIUM POWER LOUDSPEAKER

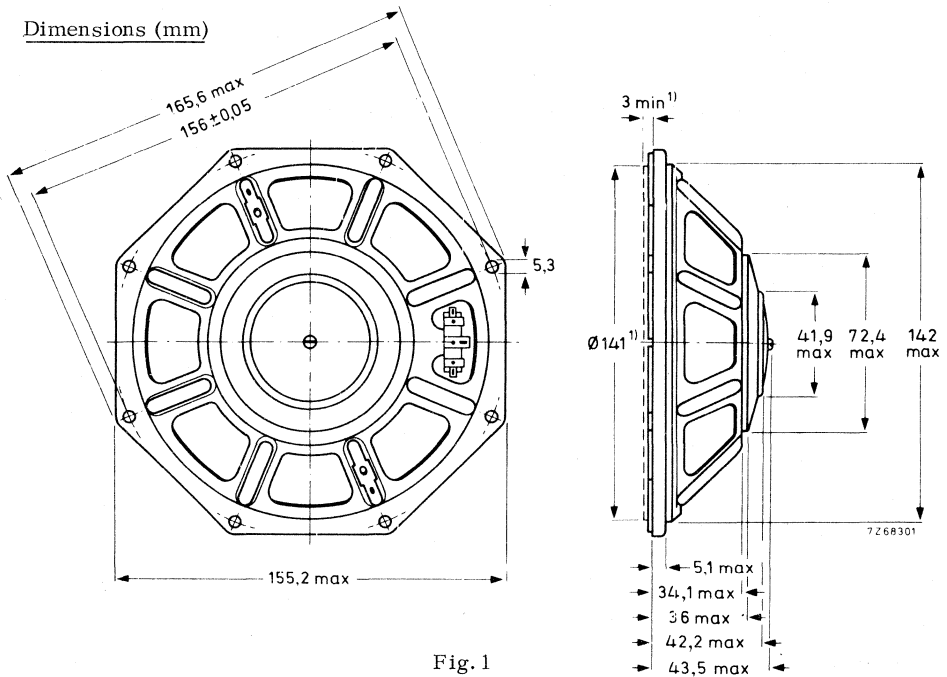
APPLICATION

For television sets and record players.

TECHNICAL DATA

	version				
	M4	M8	M400	M800	
Rated impedance	4	8	400	800	Ω
Voice coil resistance	3, 4	7, 1	330	600	Ω
Resonance frequency	105	105	105	105	Hz
Power handling capacity, measured without filter loudspeaker unmounted	3	3	3	3	W
Sweep voltage	2, 45	3, 5	24, 5	34, 5	V
Energy in airgap	39	39	39	39	mJ
Flux density	0, 8	0, 8	0, 8	0, 8	T
Airgap height	3	3	3	3	mm
Voice coil height	2, 4	3, 1	4	4, 65	mm
Core diameter	18	18	18	18	mm
Magnet material	steel alloy	steel alloy	steel alloy	steel alloy	
diameter	18	18	18	18	mm
mass	0, 027	0, 027	0, 027	0, 027	kg
Mass of loudspeaker	0, 22	0, 22	0, 22	0, 22	kg

The loudspeaker has a paper dual cone and surround, and a foam plastic gasket on the flange. Connection to the loudspeaker by means of 2, 8 mm (0, 11 inch) tag connectors or by soldering.



¹⁾ Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD7091/M4 , catalogue number 2422 256 370.4

AD7091/M8 , catalogue number 2422 256 370.9

AD7091/M400, catalogue number 2422 256 370.3

AD7091/M800, catalogue number 2422 256 370.1

(0 = stamped on loudspeaker magnet
not to be used for ordering)

2 = for bulk packing *)
6 = for single unit packing

FREQUENCY RESPONSE CURVE

Fig. 2 Input power 50 mW
Sound pressure measured in anechoic room, loudspeaker unmounted.
Above 1000 Hz the sound pressure may be, over the width of one octave,
maximum 2 dB lower than indicated.

*) Minimum packing quantity 4 per unit.

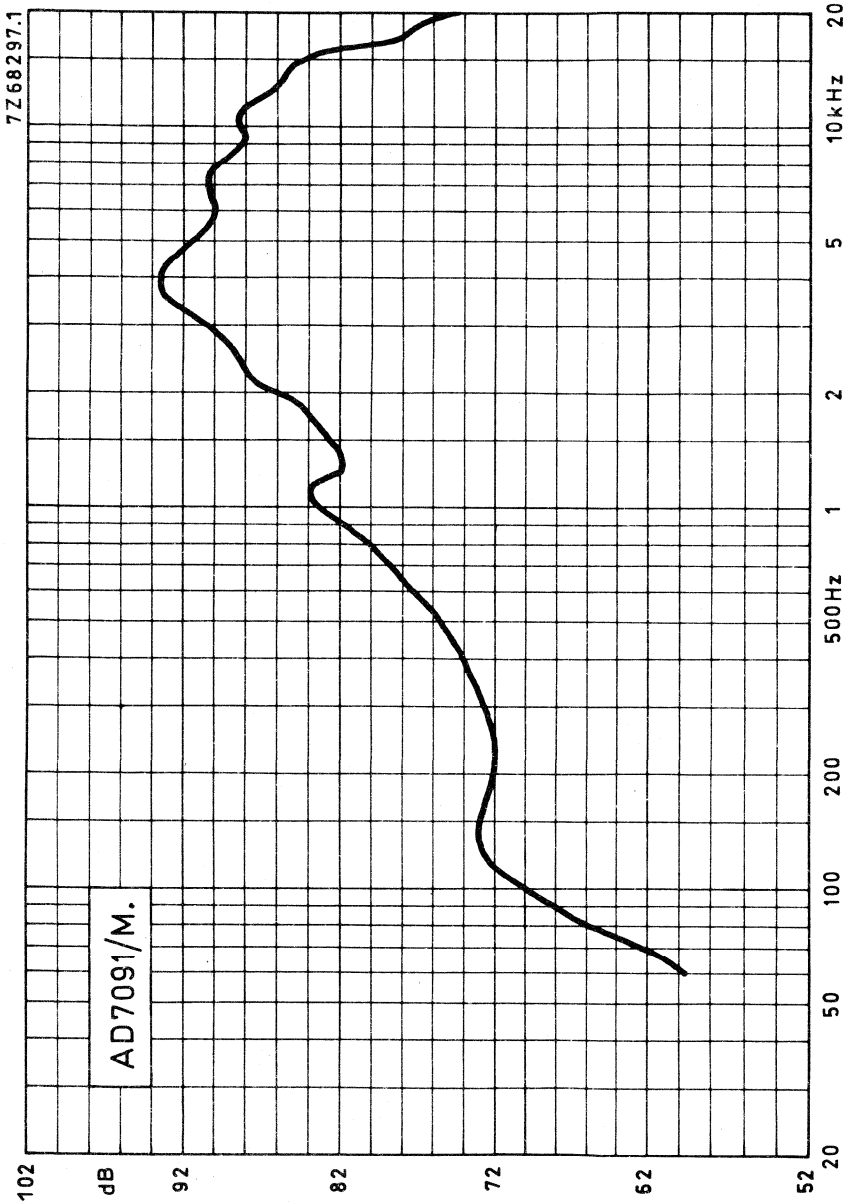


Fig. 2



7 inch ROUND MEDIUM POWER LOUDSPEAKER

APPLICATION

For television sets and record players.

TECHNICAL DATA

	version			
	X4	X8	X800	
Rated impedance	4	8	800	Ω
Voice coil resistance	3,4	7,1	600	Ω
Resonance frequency	115	115	115	Hz
Power handling capacity, measured without filter loudspeaker unmounted	3	3	3	W
Sweep voltage	2,45	3,5	34,5	V
Energy in airgap	39	39	39	mJ
Flux density	0,8	0,8	0,8	T
Airgap height	3	3	3	mm
Voice coil height	2,4	3,1	4,65	mm
Core diameter	18	18	18	mm
Magnet material	steel	steel	steel	
	alloy	alloy	alloy	
diameter	18	18	18	mm
mass	0,027	0,027	0,027	kg
Mass of loudspeaker	0,22	0,22	0,22	kg

The loudspeaker has a paper cone and surround, and a foam plastic gasket on the flange. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions (mm)

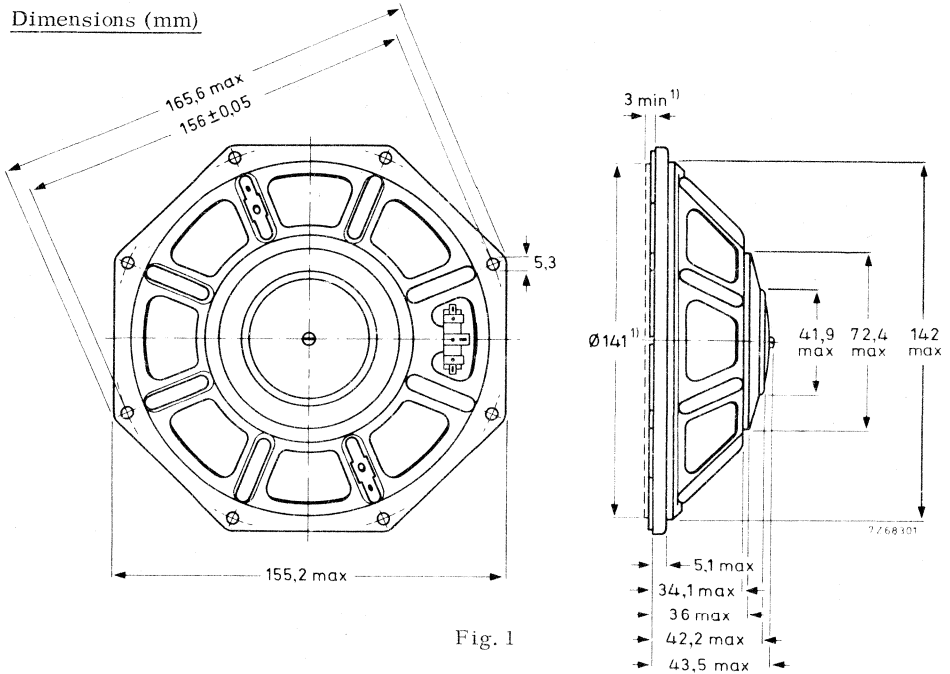


Fig. 1

1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD7091/X4 , catalogue number 2422 256 370,5

AD7091/X8 , catalogue number 2422 256 370,8

AD7091/X800, catalogue number 2422 256 370,2

(0 = stamped on loudspeaker magnet
not to be used for ordering)

2 = for bulk packing *)
6 = for single unit packing

FREQUENCY RESPONSE CURVE

Fig. 2 Input power 50 mW

Sound pressure measured in anechoic room, loudspeaker unmounted.

Above 1000 Hz the sound pressure may be, over the width of one octave, maximum 2 dB lower than indicated.

*) Minimum packing quantity 4 per unit.

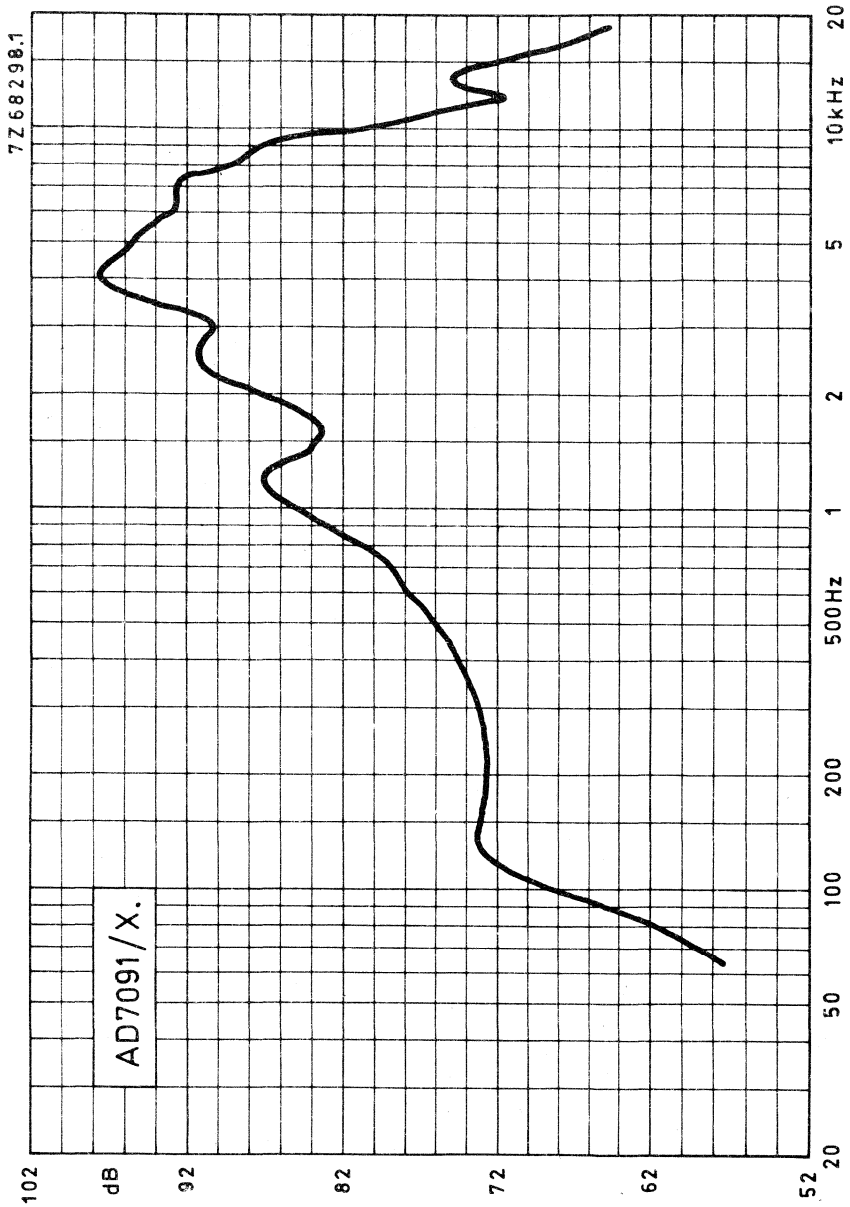


Fig. 2



8 inch OCTAGONAL MEDIUM POWER LOUDSPEAKERS

APPLICATION

A full range loudspeaker for domestic radios, public address systems, and ceiling sets. This loudspeaker has an extended frequency response up to 20 kHz due to its dual-cone construction.

TECHNICAL DATA

	version		
	M4	M8	
Rated impedance	4	8	Ω
Voice coil resistance	3, 4	7, 1	Ω
Rated frequency range	50 to 14 000		Hz
Resonance frequency	75		Hz
Power handling capacity, measured without filter, loudspeaker unmounted	8		W
Operating power (sound level 90 dB, 1 m)	1		W
Sweep voltage (40 to 20 000 Hz)	4	5, 5	V
Energy in air gap	50	53	mJ
Flux density	0, 95	0, 98	T
Air gap height	3		mm
Voice coil height	6	5, 3	mm
Core diameter	18		mm
Magnet material	ceramic		
diameter	53		mm
mass	0, 1		kg
Mass of loudspeaker	0, 37		kg

The loudspeaker has a paper dual cone and surround. Connection to the loudspeaker by means of 2, 8 mm (0, 11 inch) tag connectors or by soldering.

Dimensions (mm)

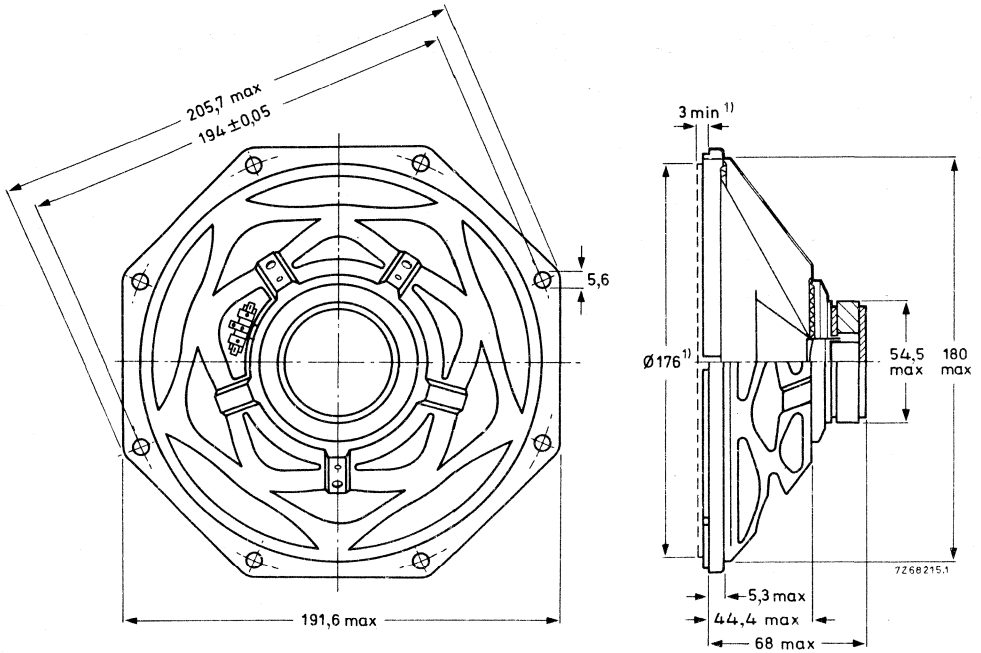


Fig. 1

¹⁾ Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD8081/M4, catalogue number 2422 257 382.1
AD8081/M8, catalogue number 2422 257 382.2

(1 = stamped on loudspeaker magnet, not to be used for ordering)

3 = for bulk packing*)

7 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve b: Sound pressure measured in anechoic room, loudspeaker mounted on baffle according to IEC268-5, par. 4.4.

Curve c: 2nd and 3rd harmonic distortion, measured at the operating power of 1 W in anechoic room. Loudspeaker front mounted on IEC baffle.

*) Minimum packing quantity 4 per unit.

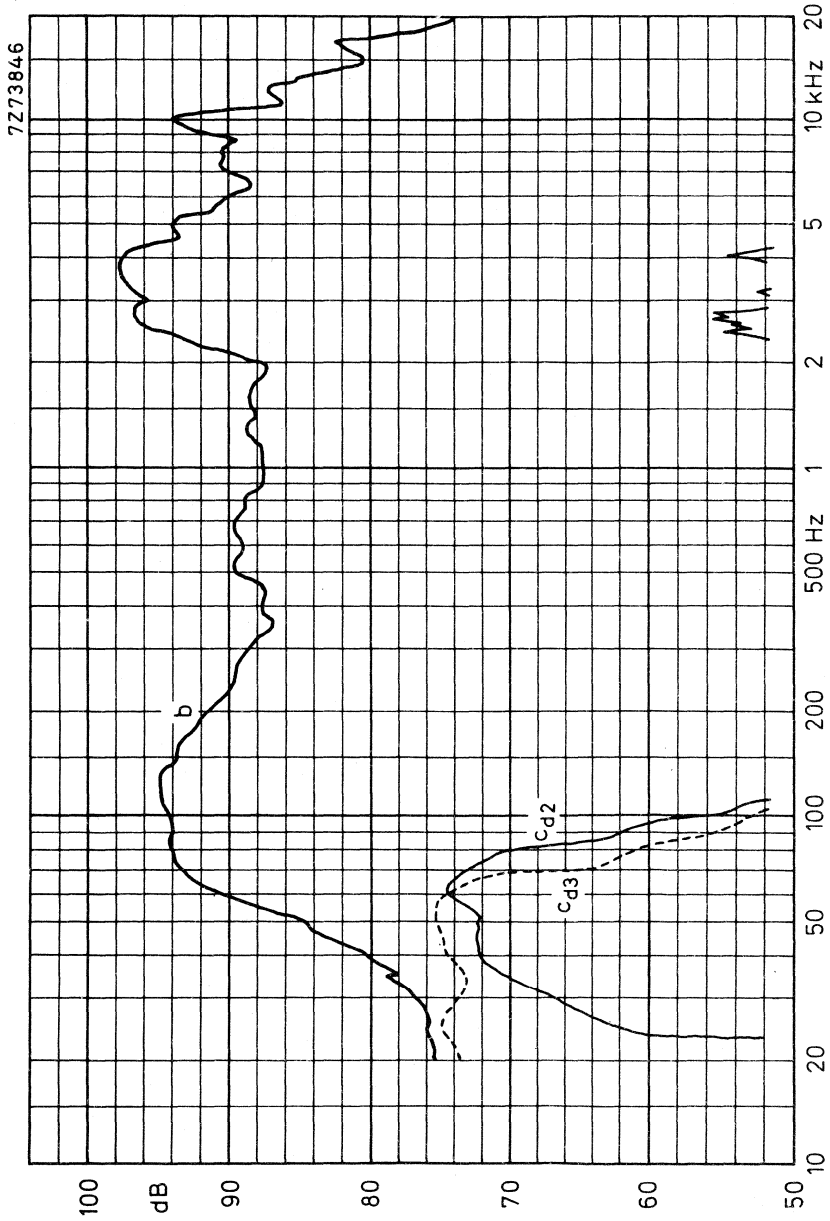


Fig.2



8 inch OCTAGONAL MEDIUM POWER LOUDSPEAKER

APPLICATION

For domestic radios, public address systems, and ceiling sets. High sensitivity at 4000 Hz.

TECHNICAL DATA

	version		
	X4	X8	
Rated impedance	4	8	Ω
Voice coil resistance	3,4	7,1	Ω
Rated frequency range	70 to 11 000		Hz
Resonance frequency	95		Hz
Power handling capacity, measured without filter, loudspeaker unmounted	8		W
Operating power (sound level 90 dB, 1 m)	0,7		W
Sweep voltage (50 to 20 000 Hz)	4	5,6	V
Energy in air gap	53		mJ
Flux density	0,98		T
Air gap height	3		mm
Voice coil height	6	5,3	mm
Core diameter	18		mm
Magnet material	ceramic		
diameter	53		mm
mass	0,1		kg
Mass of loudspeaker	0.37		kg

The loudspeaker has a paper cone and surround. Connection to the loudspeaker by means of 2, 8 mm (0,11 inch) tag connectors or by soldering.

Dimensions (mm)

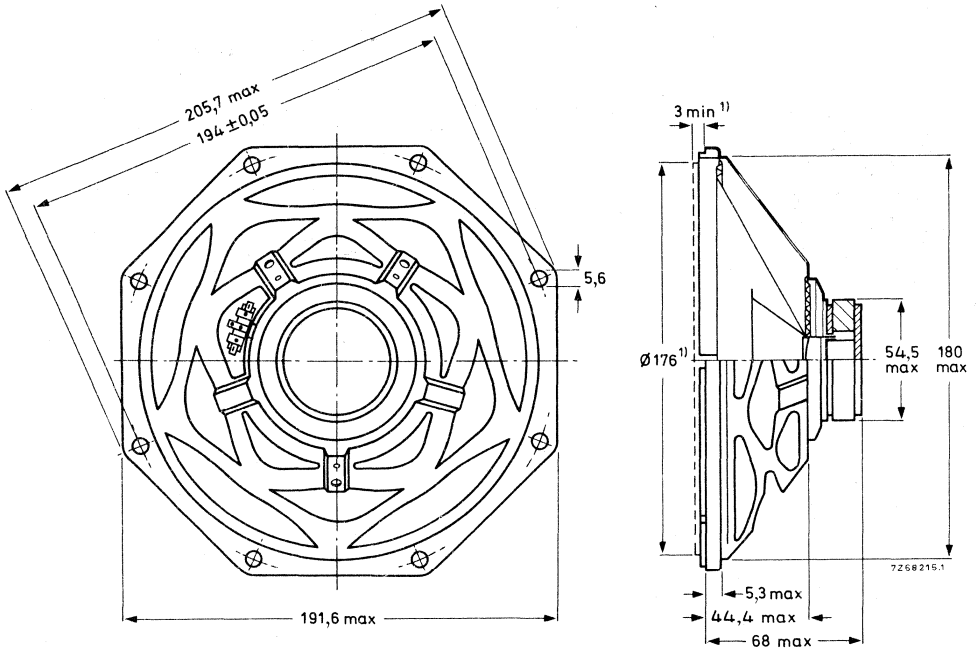


Fig.1

1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD8081/X4, catalogue number 2422 257 382.3

AD8081/X8, catalogue number 2422 257 382.4

(i = stamped on loudspeaker magnet, not to be used for ordering)

3 = for bulk packing *)

7 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig.2)

Curve b: Sound pressure measured in anechoic room, loudspeaker mounted on baffle according to IEC268-5, par. 4.4.

Curve c: 2nd and 3rd harmonic distortion, measured at the operating power of 0,7 W in anechoic room. Loudspeaker front mounted on IEC baffle.

*) Minimum packing quantity 4 per unit.

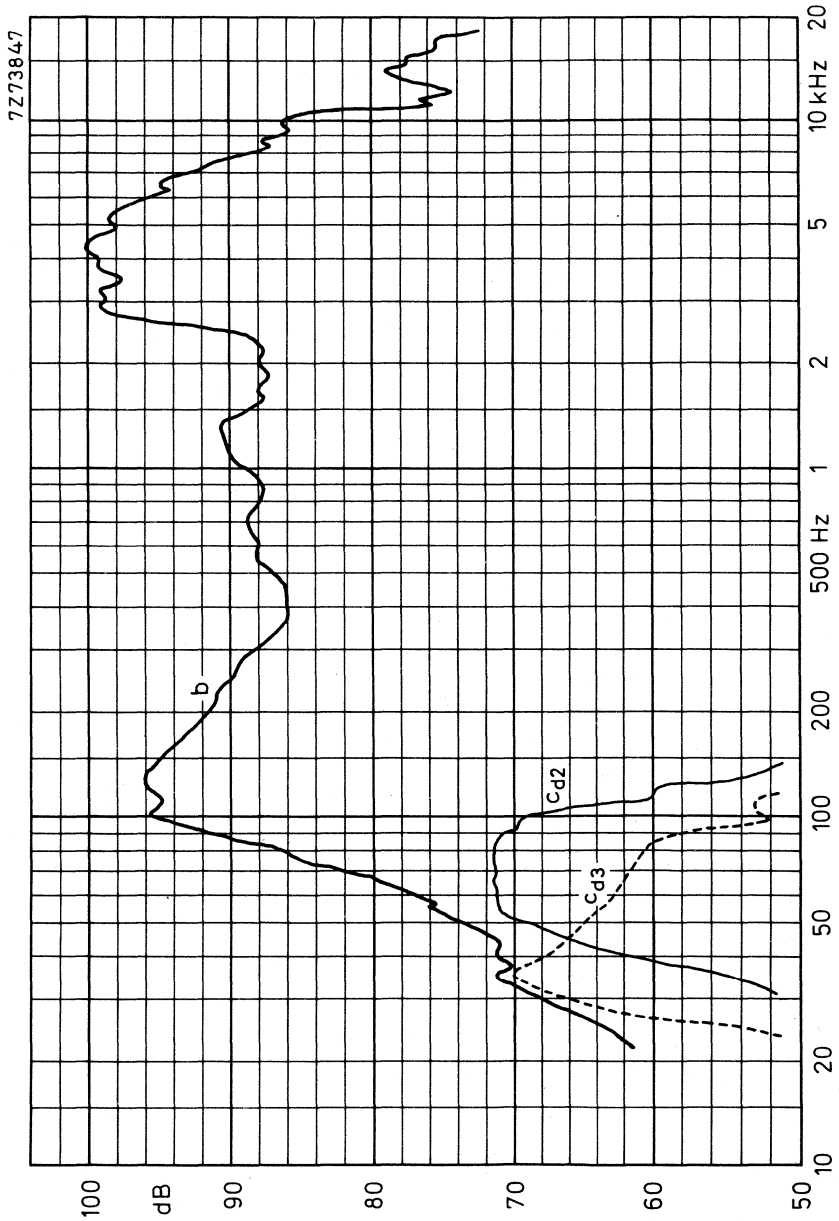


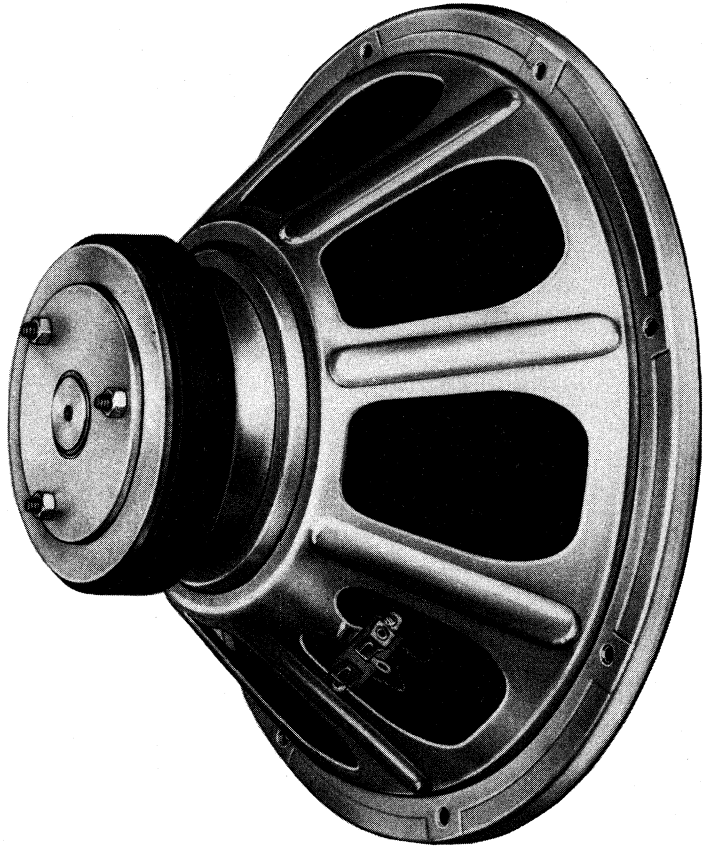
Fig. 2



High power full-range loudspeakers



721010-26-08



Type AD12100/M4



3 INCH HIGH POWER FULL RANGE LOUDSPEAKER

APPLICATION

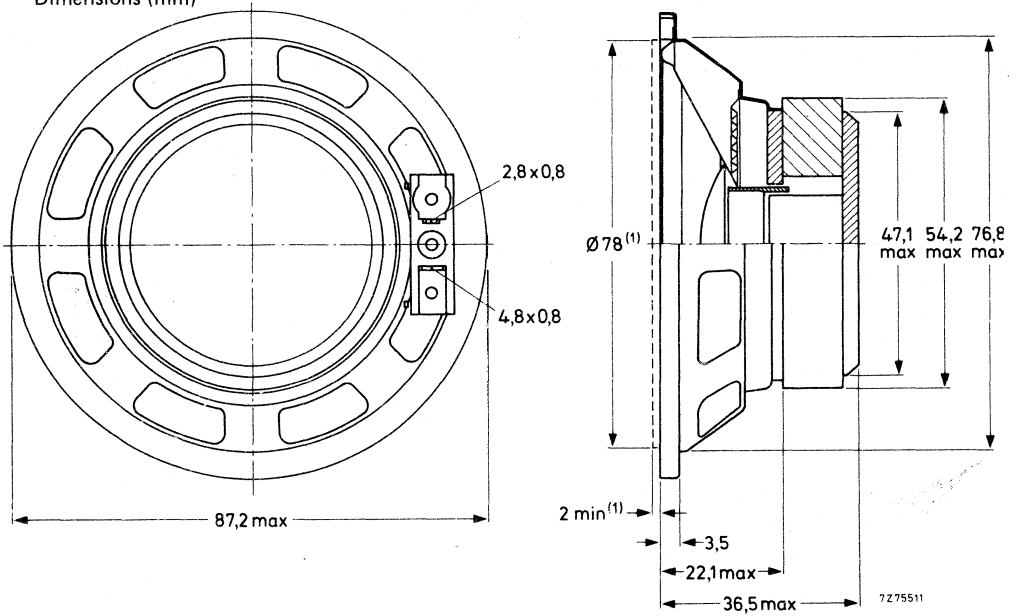
Mainly for use with car radios.

TECHNICAL DATA

Rated impedance	4 Ω
Voice coil resistance	3,4 Ω
Rated frequency range	35 to 2000 Hz
Resonance frequency	90 Hz
Power handling capacity, measured without filter	
unmounted	6 W
mounted in 1 l sealed enclosure	10 W
Operating power (sound level 90 dB, 1 m)	2,5 W
Sweep voltage, frequency range: 45 to 20 000 Hz	3,5 V
Energy in air gap	55 mJ
Flux density	1 T
Air-gap height	3 mm
Voice coil height	4,4 mm
Core diameter	18 mm
Magnet material	ceramic
diameter	53 mm
mass	0,1 kg
Mass of loudspeaker	0,22 kg

The loudspeaker has a paper cone and a textile surround. Connection to the loudspeaker by means of 4,8 mm (0,19 inch) or 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions (mm)



(1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSION

AD 3080/X4, catalogue number 2422 257 345.9

- 1 = stamped on loudspeaker magnet, **not to be used for ordering**
- 3 = for bulk packing
- 7 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve a: Sound pressure measured in anechoic room, loudspeaker mounted on IEC baffle.

Curves d2 and d3: 2nd and 3rd harmonic distortion, measured at the operating power of 2,5 W in anechoic room, loudspeaker front mounted on IEC baffle.

DEVELOPMENT SAMPLE DATA

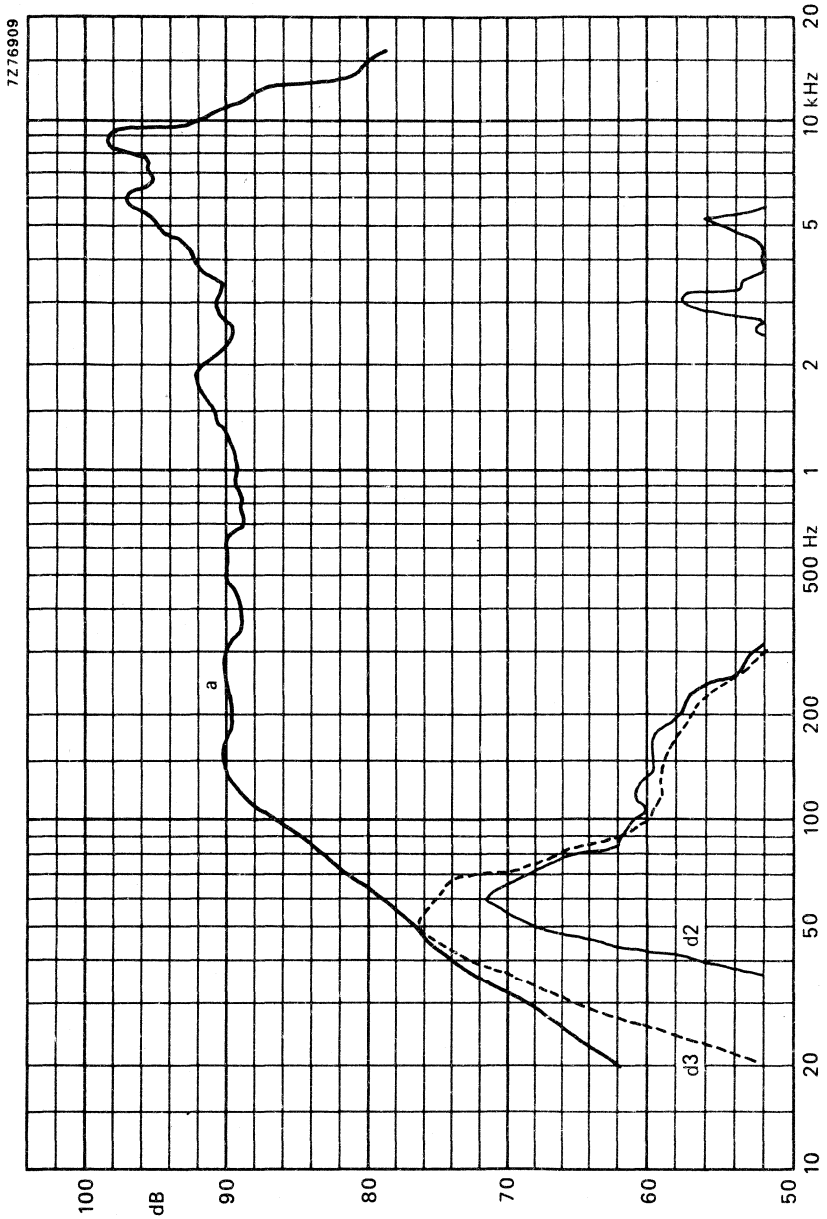


Fig. 2.



DEVELOPMENT SAMPLE DATA

This information is derived from development samples made available for evaluation. It does not form part of our data handbook system and does not necessarily imply that the device will go into production

AD4060/M4

4 INCH HIGH POWER FULL RANGE LOUDSPEAKER

APPLICATION

For car radios.

TECHNICAL DATA

Rated impedance	4 Ω
Voice coil resistance	3,2 Ω
Rated frequency range	75 to 20 000 Hz
Resonance frequency	95 Hz
Power handling capacity, mounted on IEC baffle	15 W
Operating power	6,2 W
Sweep voltage, frequency range: 30 to 6000 Hz	6,3 V
Energy in air gap	127 mJ
Flux density	0,87 T
Air-gap height	5 mm
Voice coil height	6 mm
Core diameter	25 mm
Magnet material	ceramic
diameter	72 mm
mass	0,26 kg
Mass of loudspeaker	0,62 kg

The loudspeaker has a paper cone, a textile surround and a hard paper gasket. Connection to the loudspeaker by means of a 2,8 mm (0,11 inch) and a 4,8 mm (0,19 inch) tag connector or by soldering.

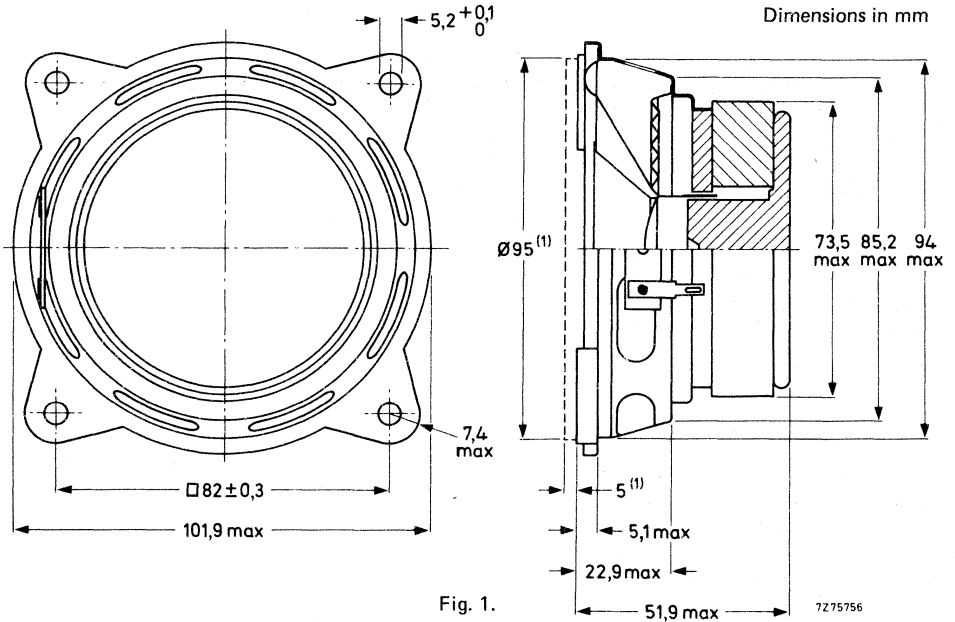


Fig. 1.

(1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

The largest of the two connection tags should have + polarity.

AVAILABLE VERSION

AD4060/M4, catalogue number 2422 257 346.9

- 1 = stamped on loudspeaker magnet, not to be used for ordering
- 3 = for bulk packing
- 7 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Measured in anechoic room, loudspeaker mounted on IEC baffle.

Curve a: Sound pressure.

Curves d2 and d3: 2nd and 3rd harmonic distortion, measured at the operating power of 6,2 W.

DEVELOPMENT SAMPLE DATA

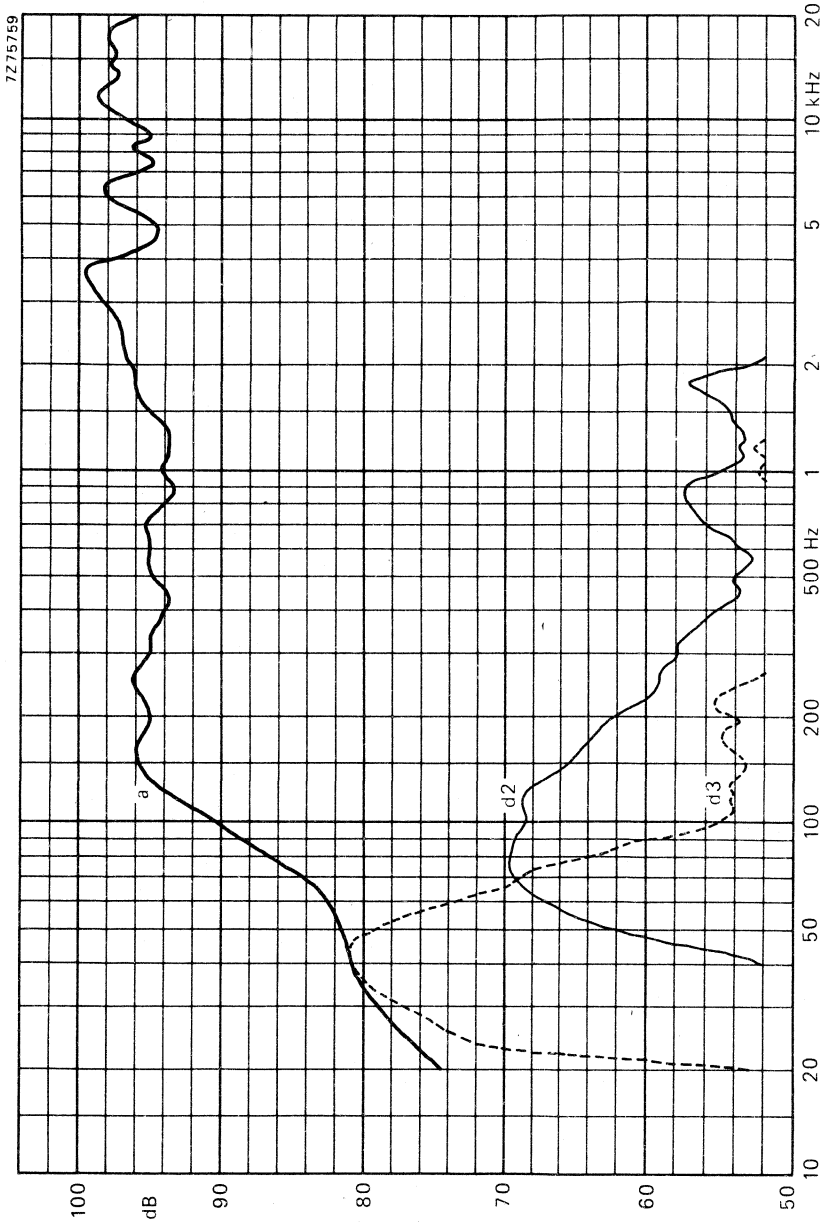


Fig. 2.



5 INCH HIGH POWER FULL RANGE LOUDSPEAKER

APPLICATION

A full range loudspeaker for small sealed enclosures of maximum 7 litres and also suitable for use in bookshelves enclosures.

Extended frequency response 75 Hz – 20 kHz in 7 litres enclosures.

TECHNICAL DATA

	version	
	M4	M8
Rated impedance	4	8 Ω
Voice coil resistance	3,2	7 Ω
Rated frequency range	75 to 20 000 Hz	
Resonance frequency	85	Hz
Power handling capacity measured without filter, loudspeaker unmounted	10	W
mounted in 7 l sealed enclosure	15	W
Operating power	2	3 W
Sweep voltage	3,2	4,5 V
Energy in air gap	127	mJ
Flux density	0,87	T
Air-gap height	5	mm
Voice coil height	6	6,6 mm
Core diameter	25	mm
Magnet material	ceramic	
diameter	27	mm
mass	0,26	kg
Mass of loudspeaker	0,665	kg

The loudspeaker has a paper cone, a textile surround and a foam plastic gasket on the flange.
Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions in mm

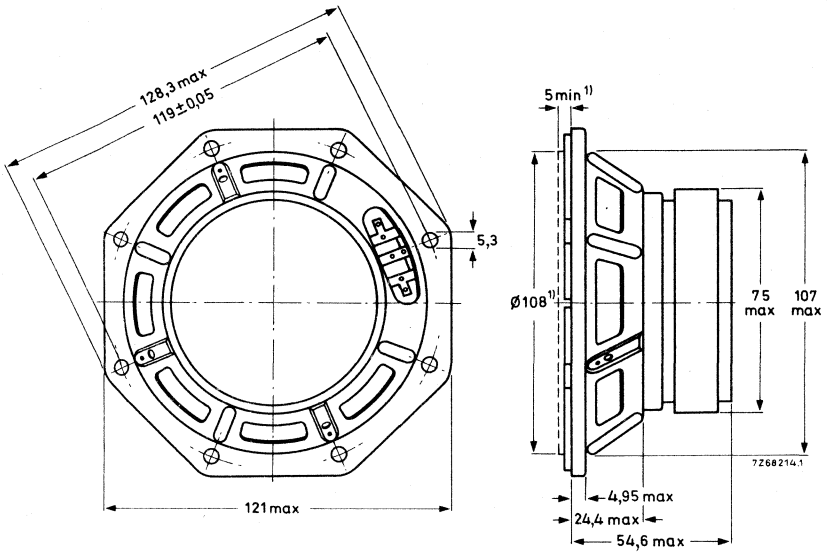


Fig. 1.

(1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD5061/M4, catalogue number 2422 257 355.1

AD5061/M8, catalogue number 2422 257 355.2

1 = stamped on loudspeaker magnet
not to be used for ordering

3 for bulk packing *
7 for single unit packing

FREQUENCY RESPONSE CURVE (See Fig. 2)

Measured in anechoic room at the operating power. Loudspeaker mounted on IEC baffle.

Curve a: Sound pressure.

Curves d2 and d3: 2nd and 3rd harmonic distortion.

* Minimum packing quantity 6 per unit.

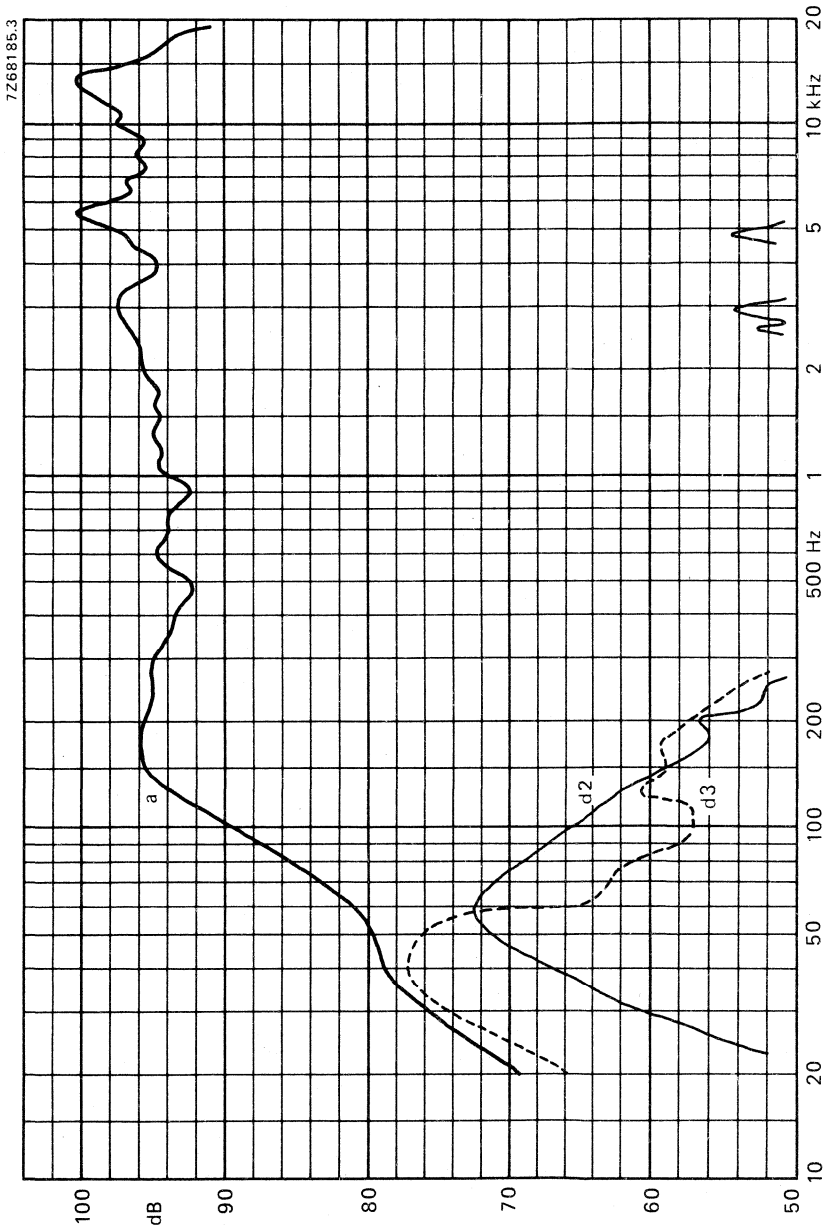


Fig. 2.



7 inch HIGH POWER FULL RANGE LOUDSPEAKER

APPLICATION

For high fidelity reproduction in sealed acoustic enclosures. Maximum enclosure volume 7 litres. High power handling capacity with very low distortion.

TECHNICAL DATA

	version		
	M4	M8	
Rated impedance	4	8	Ω
Voice coil resistance	4, 3	8	Ω
Resonance frequency	45	45	Hz
Power handling capacity, measured without filter, mounted in 7 l sealed enclosure	30	30	W
Operating power	5	5	W
Sweep voltage	3, 8	5, 3	V
Energy in air gap	135	140	mJ
Flux density	0, 87	0, 93	T
Air-gap height	5	5	mm
Voice coil height	11	11	mm
Core diameter	25	25	mm
Magnet material	ceramic	ceramic	
diameter	72	72	mm
mass	0, 26	0, 26	kg
Mass of loudspeaker	0, 68	0, 68	kg

The loudspeaker has a paper dual cone and a rubber surround.

Connection to the loudspeaker by means of 6, 3 mm (0, 25 inch) tag connectors or soldering.

Dimensions (mm)

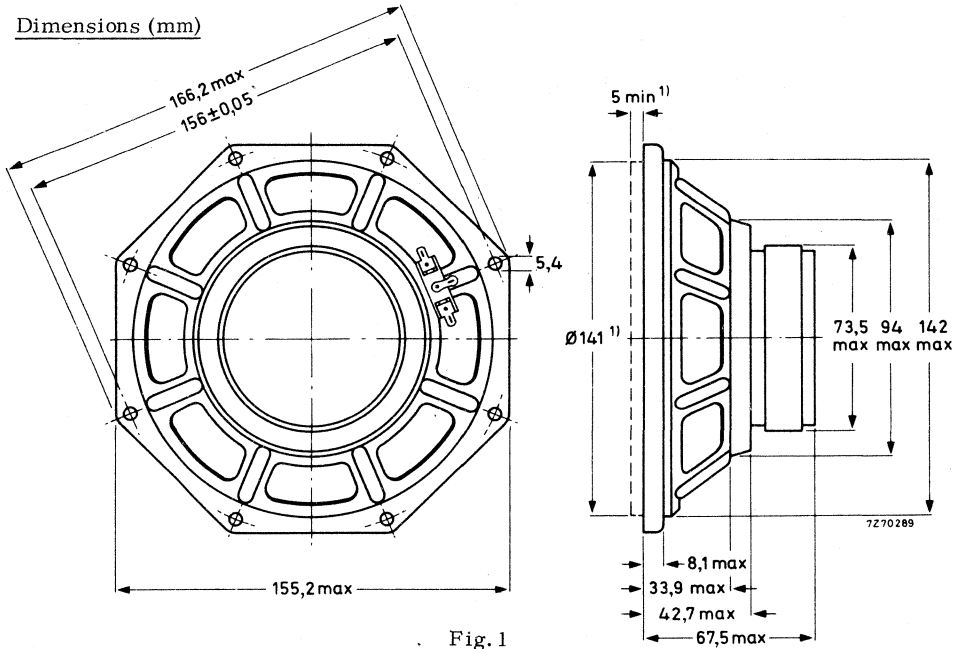


Fig. 1

1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD7062/M4, catalogue number 2404 257 460.1

AD7062/M8, catalogue number 2404 257 460.2

(0 = stamped on loudspeaker magnet,
not to be used for ordering)

2 = for bulk packing *)

6 = for single unit packing

FREQUENCY RESPONSE CURVE

See Fig. 2

Curve b: Sound pressure measured in anechoic room at operating power. Loudspeaker mounted in sealed 80 l enclosure, filled with 1 kg of glass wool.

Curve c: 2nd and 3rd harmonic distortion, measured at the operating power of 5 W in anechoic room, loudspeaker mounted in sealed 80 l enclosure, filled with 1 kg of glass wool.

*) Minimum packing quantity 4 per unit.

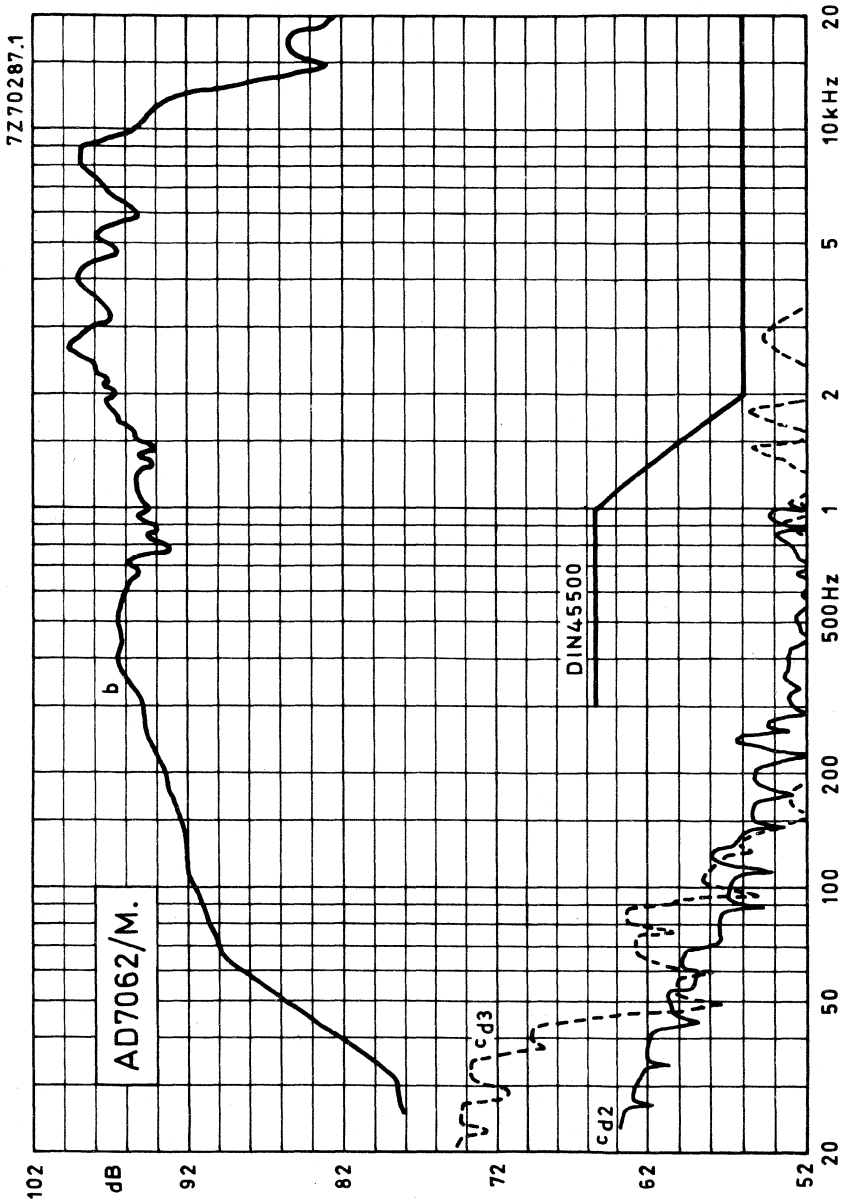


Fig. 2



7 inch HIGH POWER FULL RANGE LOUDSPEAKER

APPLICATION

For high fidelity reproduction in sealed acoustic enclosures. Maximum enclosure volume 7 litres. High power handling capacity with very low distortion.

TECHNICAL DATA

	version	
	M4	M8
Rated impedance	4	8 Ω
Voice coil resistance	4,3	8 Ω
Rated frequency range	50 to 13 000 Hz	
Resonance frequency	45	Hz
Power handling capacity, measured without filter, mounted in 7 l sealed enclosure	30	W
Operating power	5	W
Sweep voltage	3,8	5,3 V
Energy in air gap	135	140 mJ
Flux density	0,87	0,93 T
Air-gap height	5	mm
Voice coil height	11	mm
Core diameter	25	mm
Magnet material	ceramic	
diameter	72	mm
mass	0,26	kg
Mass of loudspeaker	0,68	kg

The loudspeaker has a paper dual cone and a rubber surround. Connection to the loudspeaker by means of 6,3 mm (0,25 inch) tag connectors or by soldering.

Dimensions in mm

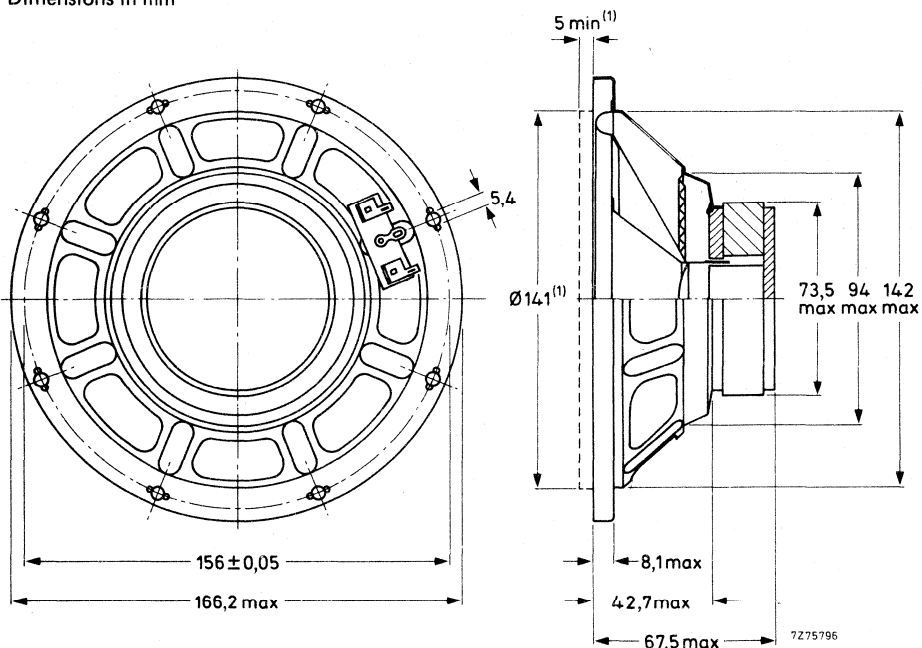


Fig. 1.

(1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD70620/M4, catalogue number 2404 257 461 . 1

AD70620/M8, catalogue number 2404 257 461 . 2

- 0 = stamped on loudspeaker magnet, **not to be used** for ordering
- 2 = for bulk packing*
- 6 = for single unit packing

FREQUENCY RESPONSE CURVE (See Fig. 2)

Curve a: Sound pressure measured in anechoic room at operating power. Loudspeaker mounted in sealed 80 l enclosure, filled with 1 kg of glass wool.

Curves d2 and d3: 2nd and 3rd harmonic distortion, measured at the operating power of 5 W in anechoic room, loudspeaker mounted in sealed 80 l enclosure, filled with 1 kg of glass wool.

* Minimum packing quantity 4 per unit.

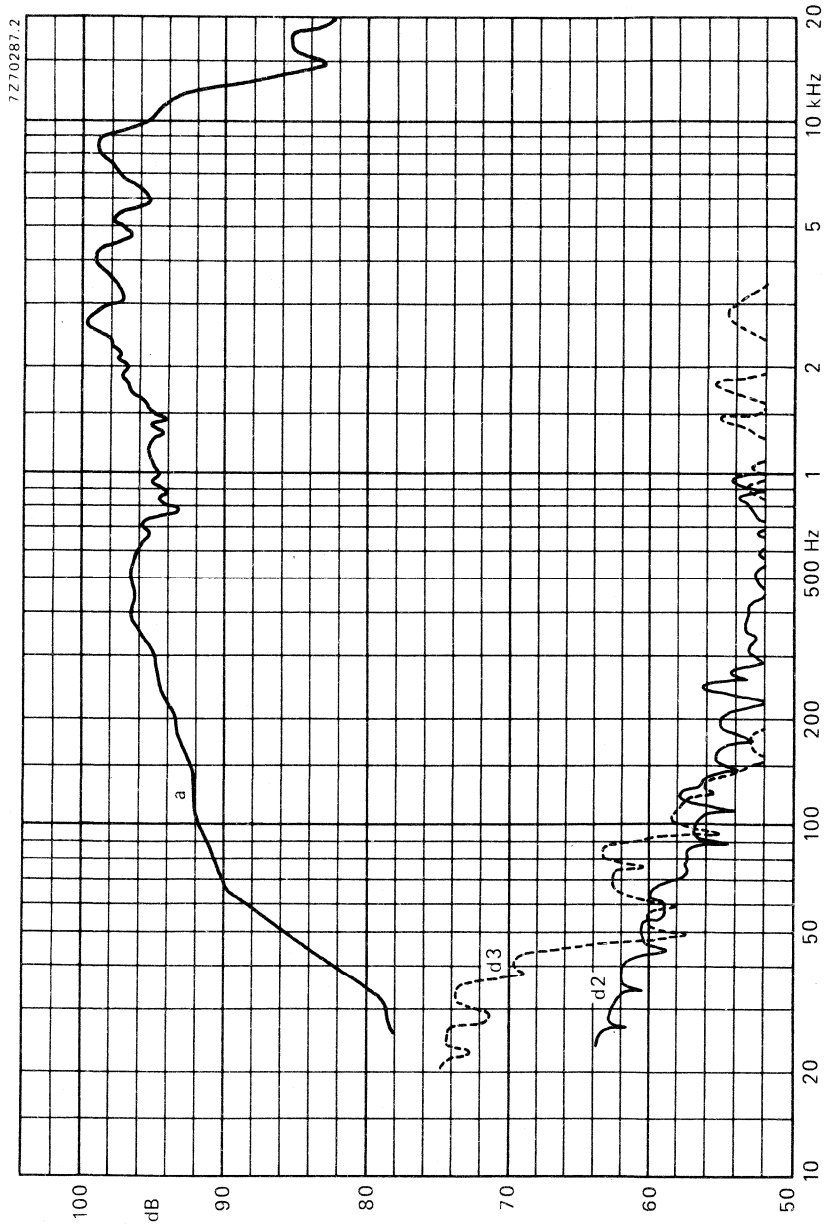


Fig. 2.



7 inch HIGH POWER FULL RANGE LOUDSPEAKER

APPLICATION

For high fidelity reproduction in sealed acoustic enclosures. Maximum enclosure volume 25 litres.

Smooth response from 60 to 8000 Hz.

TECHNICAL DATA

	version		
	M4	M8	
Rated impedance	4	8	Ω
Voice coil resistance	3,2	7	Ω
Resonance frequency	60	60	Hz
Power handling capacity, measured without filter, loudspeaker unmounted	10	10	W
Operating power	2,2	2,2	W
Sweep voltage	4,5	6,3	V
Energy in air gap	127	127	mJ
Flux density	0,87	0,87	T
Air-gap height	5	5	mm
Voice coil height	6	6,6	mm
Core diameter	25	25	mm
Magnet material	ceramic	ceramic	
diameter	72	72	mm
mass	0,26	0,26	kg
Mass of loudspeaker	0,745	0,745	kg

The loudspeaker has a paper dual cone and a textile surround.

Connection to the loudspeaker by means of 6,3 mm (0,25 inch) tag connectors or by soldering.

Dimensions (mm)

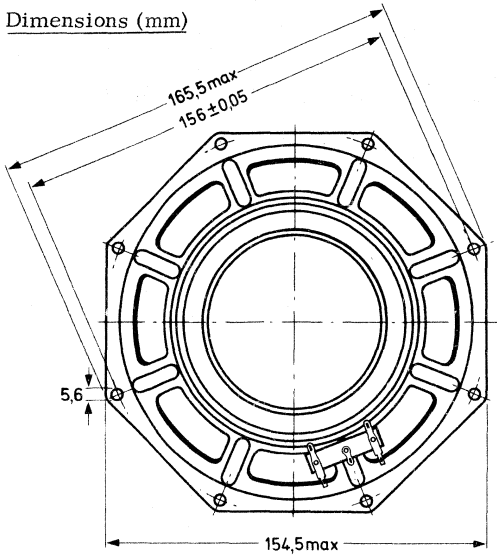
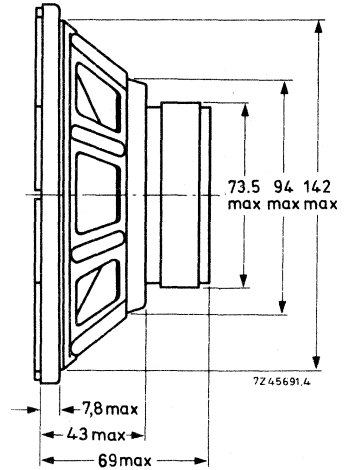


Fig. 1



Baffle hole diameter 141 mm

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD7063/M4, catalogue number 2422 257 379.6

AD7063/M8, catalogue number 2422 257 379.7

(0 = stamped on loudspeaker magnet,
not to be used for ordering)

2 = for bulk packing *)

6 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve b : Sound pressure measured in anechoic room at input power of 2,2 W.
Loudspeaker mounted on IEC baffle.

Curve c : 2nd and 3rd harmonic distortion, measured at input power of 2,2 W in anechoic room. Loudspeaker mounted on IEC baffle.

*) Minimum packing quantity 4 per unit.

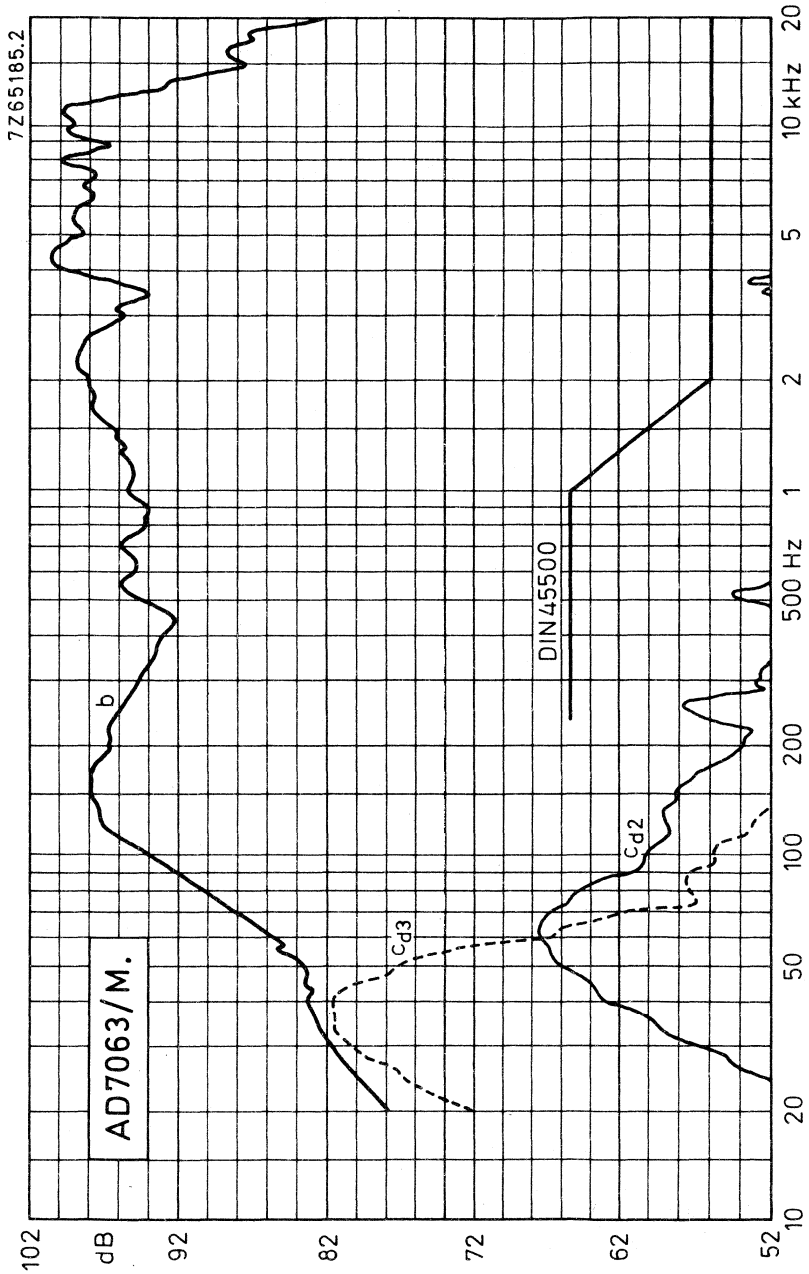


Fig. 2



7 inch HIGH POWER FULL RANGE LOUDSPEAKER

APPLICATION

For high fidelity reproduction in sealed acoustic enclosures. Maximum enclosure volume 25 litres.
Smooth response from 60 to 8000 Hz.

TECHNICAL DATA

	version	
	M4	M8
Rated impedance	4	8 Ω
Voice coil resistance	3,2	7 Ω
Rated frequency range	60 to 15 000 Hz	
Resonance frequency	60	Hz
Power handling capacity, measured without filter, loudspeaker unmounted mounted in 15 l sealed enclosure	10 15	W W
Operating power	2,2	W
Sweep voltage, frequency range: 30 to 20 000 Hz	4,5	6,3 V
Energy in air gap	127	mJ
Flux density	0,87	T
Air-gap height	5	mm
Voice coil height	6	6,6 mm
Core diameter	25	mm
Magnet material	ceramic	
diameter	72	mm
mass	0,26	kg
Mass of loudspeaker	0,745	kg

The loudspeaker has a paper dual cone and a textile surround. Connection to the loudspeaker by means of 6,3 mm (0,25 inch) tag connectors or by soldering.

Dimensions in mm

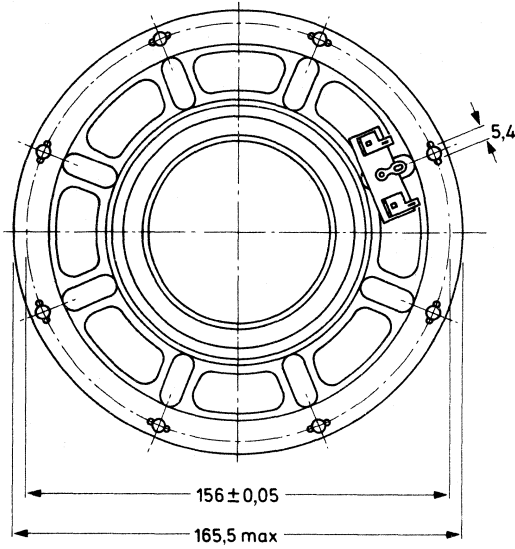
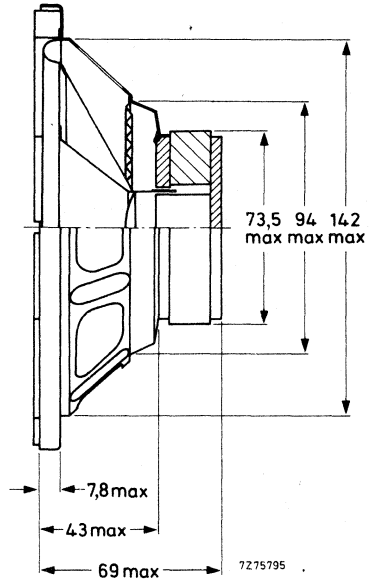


Fig. 1.



Baffle hole diameter 141 mm.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD70630/M4, catalogue number 2422 257 379 . 6

AD70630/M8, catalogue number 2422 257 379 . 7

0 = stamped on loudspeaker magnet,
not to be used for ordering

2 = for bulk packing*

6 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Measured in anechoic room at input power of 2,2 W. Loudspeaker mounted on IEC baffle.

Curve a: Sound pressure.

Curves d2 and d3: 2nd and 3rd harmonic distortion.

* Minimum packing quantity 4 per unit.

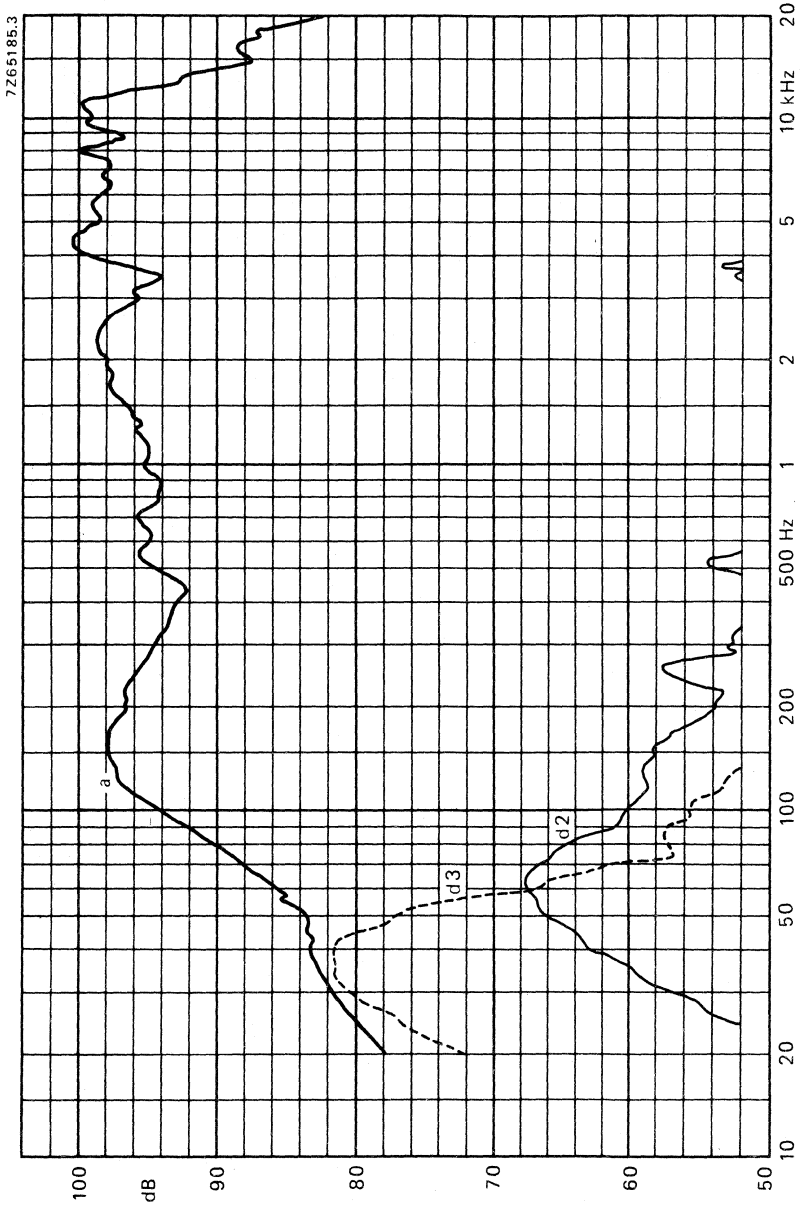


Fig. 2.



8½ inch HIGH POWER FULL RANGE LOUDSPEAKER

APPLICATION

A full range loudspeaker for studio monitoring equipment and domestic bass reflex enclosures for high fidelity reproduction from 45 Hz to 19 kHz.

TECHNICAL DATA

Rated impedance	8 Ω
Voice coil resistance	6,4 Ω
Frequency range	45 to 19000 Hz
Resonance frequency	50 Hz
Power handling capacity measured without filter	
loudspeaker mounted in sealed enclosure < 30 l	20 W
loudspeaker mounted in sealed enclosure > 30 l	10 W
Operating power	1,3 W
Sweep voltage, frequency range: 35 to 20000 Hz	6,3 V
Energy in air gap	203 mJ
Flux density	0,9 T
Air-gap height	6 mm
Voice coil height	8,9 mm
Core diameter	34 mm
Magnet material	ceramic
diameter	92 mm
mass	0,4 kg
Mass of loudspeaker	1,32 kg

The loudspeaker has a paper dual cone and surround and a cork gasket on the flange.

Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

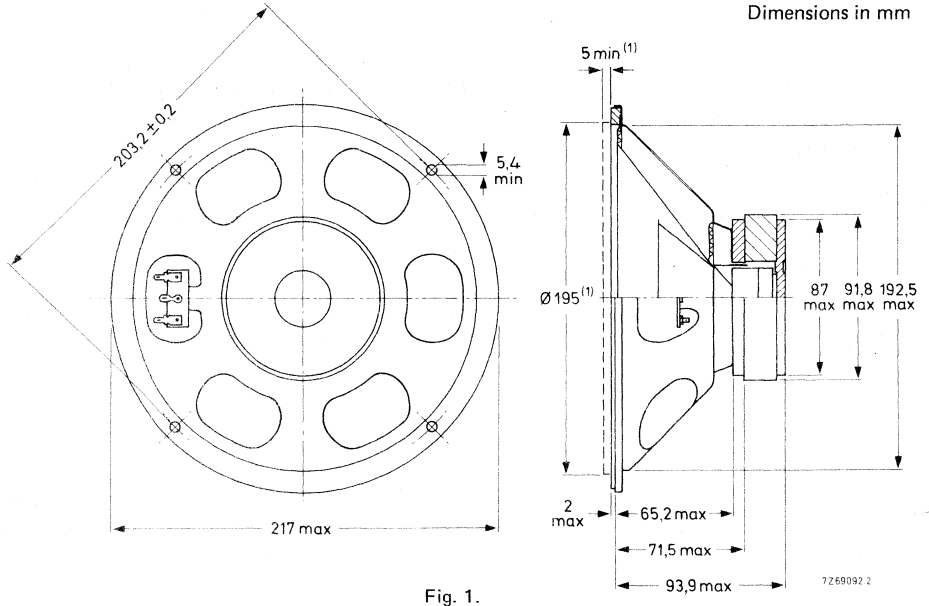


Fig. 1.

(1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSION

9710/M8, catalogue number 2422 257 481.1

- 0 = stamped on loudspeaker magnet, **not to be used for ordering**
- 2 = for bulk packing*
- 6 = for single unit packing

FREQUENCY RESPONSE CURVES

See Fig. 2.

Curve a: Sound pressure measured in anechoic room, loudspeaker mounted on IEC baffle.

Curves d2 and d3: 2nd and 3rd harmonic distortion, measured at the operating power of 1,3 W in anechoic room, loudspeaker mounted in sealed 80 l enclosure, filled with 1 kg of glass wool.

* Minimum packing quantity 2 per unit.

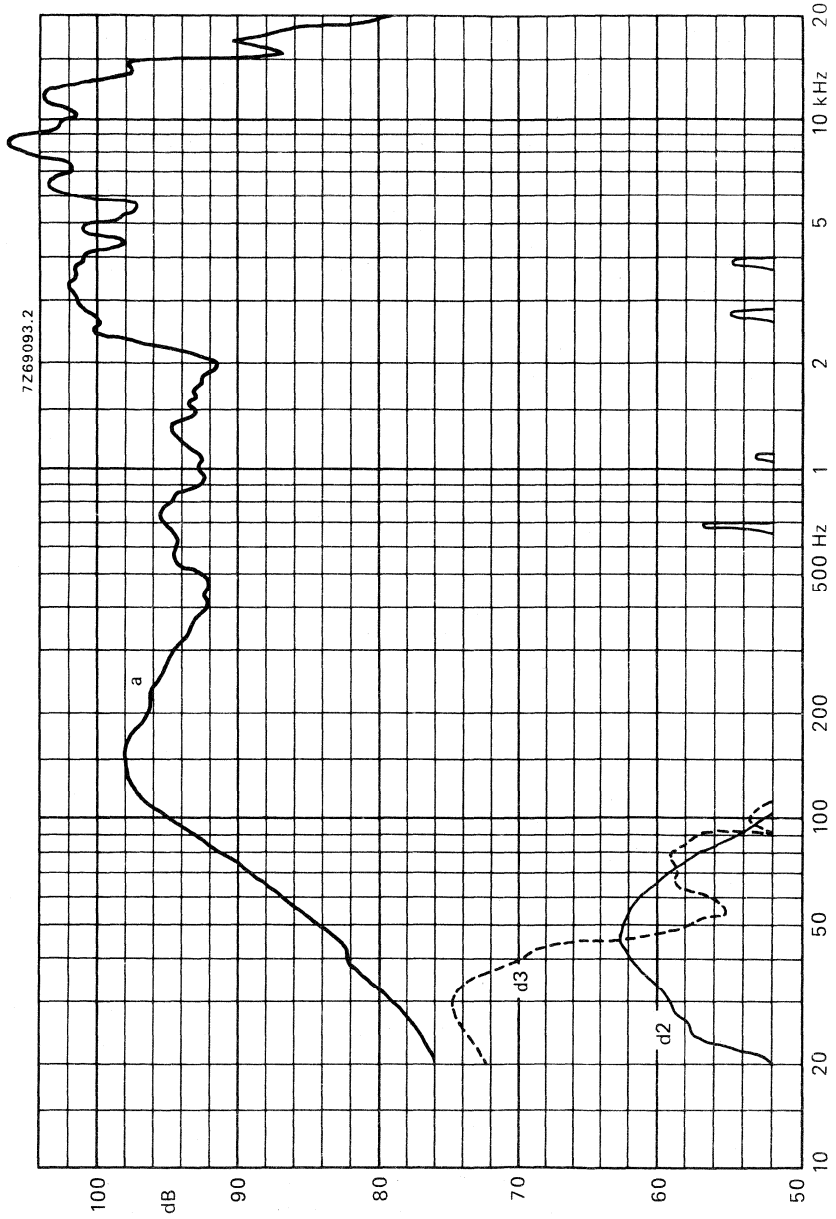


Fig. 2.



10 inch HIGH POWER FULL RANGE LOUDSPEAKER

APPLICATION

A full range loudspeaker with high sensitivity for public address systems in enclosures greater than 20 litres.

Smooth response from 60 Hz to 18000 Hz.

TECHNICAL DATA

	version			
	M4	M8	M15	
Rated impedance	4	8	15	Ω
Voice coil resistance	3,4	7	13	Ω
Resonance frequency	55	55	55	Hz
Power handling capacity, measured without filter, loudspeaker unmounted	10	10	10	W
Operating power	1,5	1,5	1,5	W
Sweep voltage	4,5	6,3	8,7	V
Energy in airgap	225	225	225	mJ
Flux density	1,12	1,12	1,12	T
Airgap height	5	5	5	mm
Voice coil height	6,5	6,5	4,5	mm
Core diameter	25	25	25	mm
Magnet material	ceramic	ceramic	ceramic	
diameter	90	90	90	mm
mass	0,45	0,45	0,45	kg
Mass of loudspeaker	1,52	1,52	1,52	kg

The loudspeaker has a paper dual cone and surround.

Connection to the loudspeaker by means of 6,3 mm (0,25 inch) tag connectors or by soldering.

Dimensions (mm)

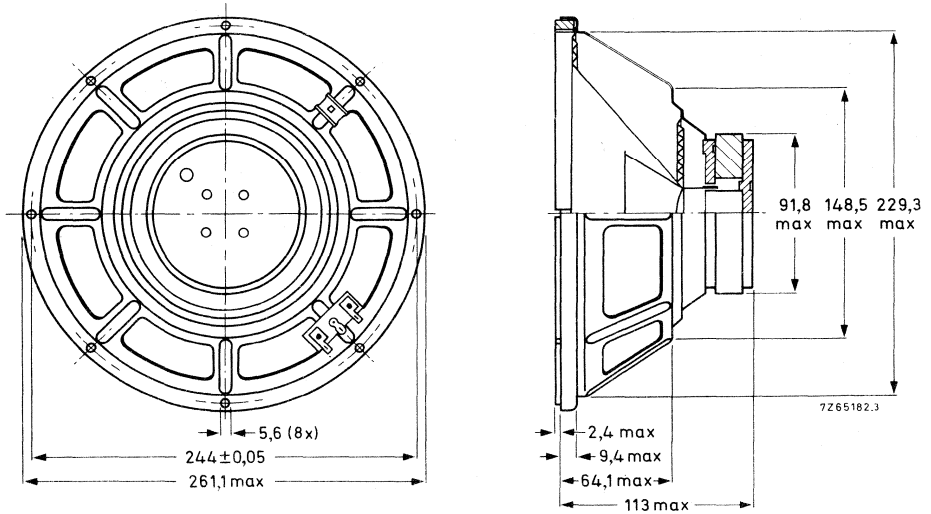


Fig. 1

(1) Baffle hole diameter.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD1065/M4, catalogue number 2422 257 410.1

AD1065/M8, catalogue number 2422 257 410.2

AD1065/M15, catalogue number 2422 257 410.3

(0 = stamped on loudspeaker magnet,
not to be used for ordering)

2 = for bulk packing *)

6 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve b : Sound pressure measured in anechoic room at operating power of 1,5 W.
Loudspeaker mounted in sealed 80 l enclosure, filled with 1 kg of glass wool.

Curve c : 2nd and 3rd harmonic distortion, measured at operating power of 1,5 W in anechoic room. Loudspeaker mounted in 80 l enclosure, filled with 1 kg of glass wool.

*) Minimum packing quantity 1 per unit.

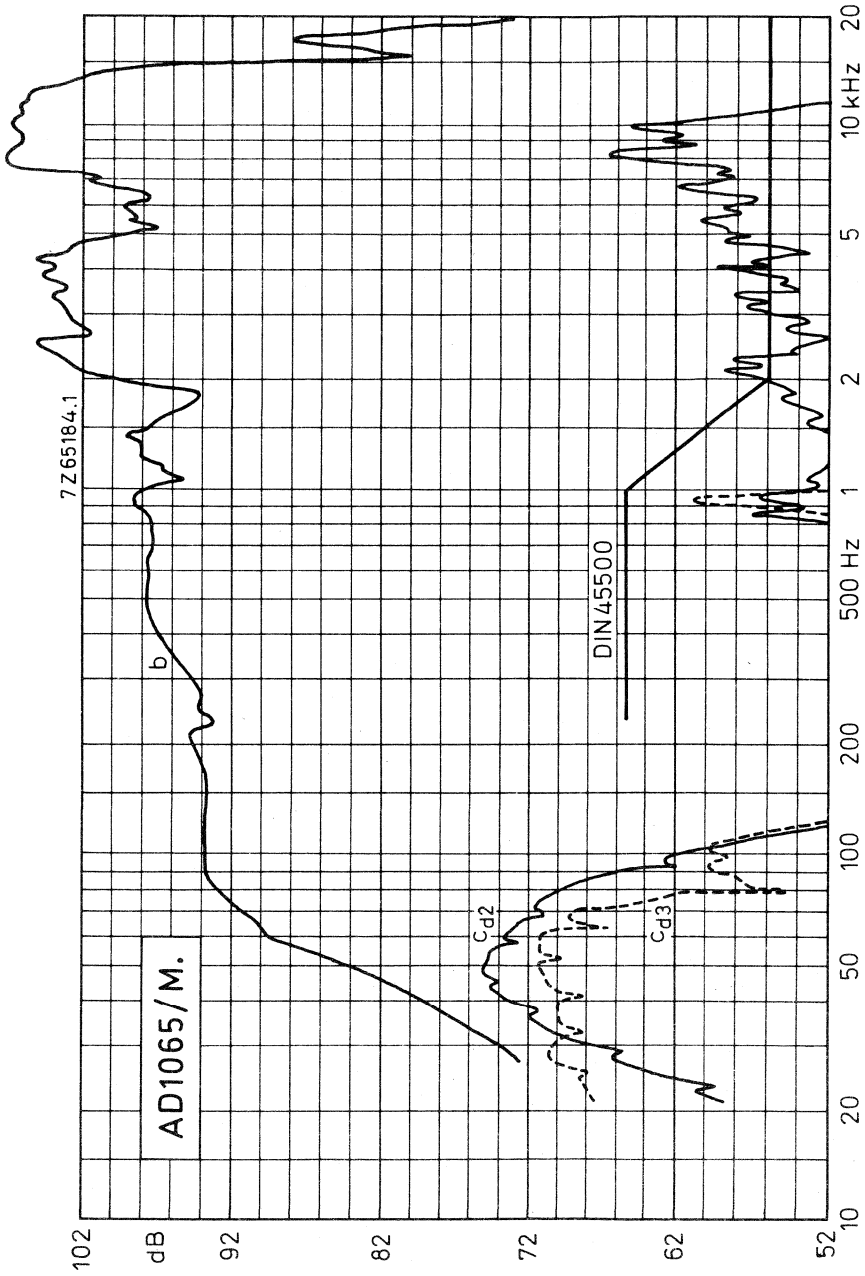


Fig. 2



12 inch HIGH POWER FULL RANGE LOUDSPEAKER

APPLICATION

Public address systems.

TECHNICAL DATA

	version			
	M4	M8	M15	
Rated impedance	4	8	15	Ω
Voice coil resistance	3.4	7	13	Ω
Resonance frequency	45	45	45	Hz
Power handling capacity, measured without filter, loudspeaker unmounted	20	20	20	W
Operating power	1,44	1,44	1,44	W
Sweep voltage	6,3	9	12,2	V
Energy in airgap	225	225	225	mJ
Flux density	1,12	1,12	1,12	T
Airgap height	5	5	5	mm
Voice coil height	6,5	6,5	4,5	mm
Core diameter	25	25	25	mm
Magnet material	ceramic	ceramic	ceramic	
diameter	90	90	90	mm
mass	0,45	0,45	0,45	kg
Mass of loudspeaker	1,8	1,8	1,8	kg

The loudspeaker has a paper dual cone and surround.

Connection to the loudspeaker by means of 6,3 mm (0,25 inch) tag connectors or by soldering.

Dimensions (mm)

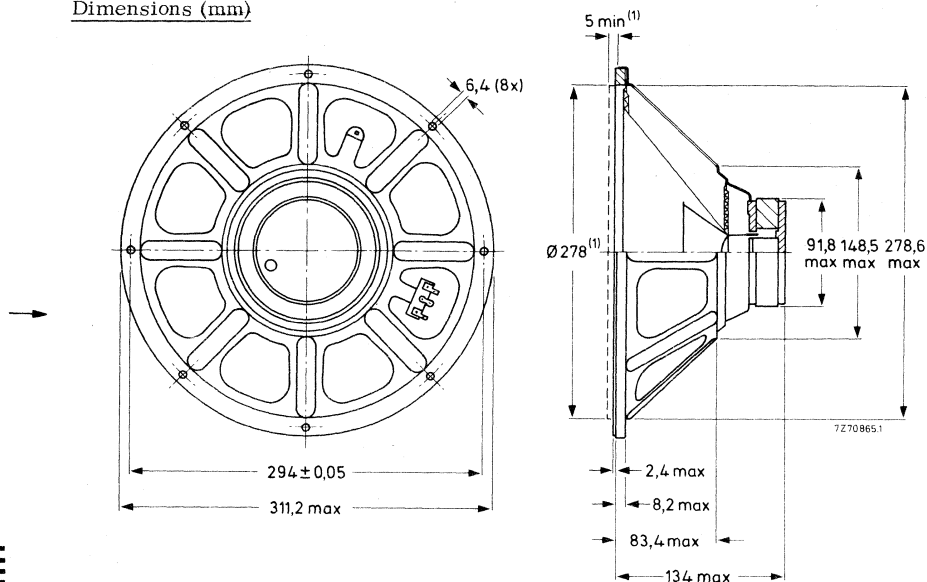


Fig. 1

(1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD1265/M4, catalogue number 2422 257 411.1

AD1265/M8, catalogue number 2422 257 411.2

AD1265/M15, catalogue number 2422 257 411.3

(0 = stamped on loudspeaker magnet, not to be used for ordering)

2 = for bulk packing *)
6 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve b : Sound pressure measured in anechoic room at operating power of 1,44 W.
Loudspeaker mounted in sealed 80 l enclosure, filled with 1 kg of glass wool.

Curve c : 2nd and 3rd harmonic distortion, measured at operating power of 1,44 W in anechoic room. Loudspeaker mounted in sealed 80 l enclosure, filled with 1 kg of glass wool.

*) Minimum packing quantity 1 per unit.

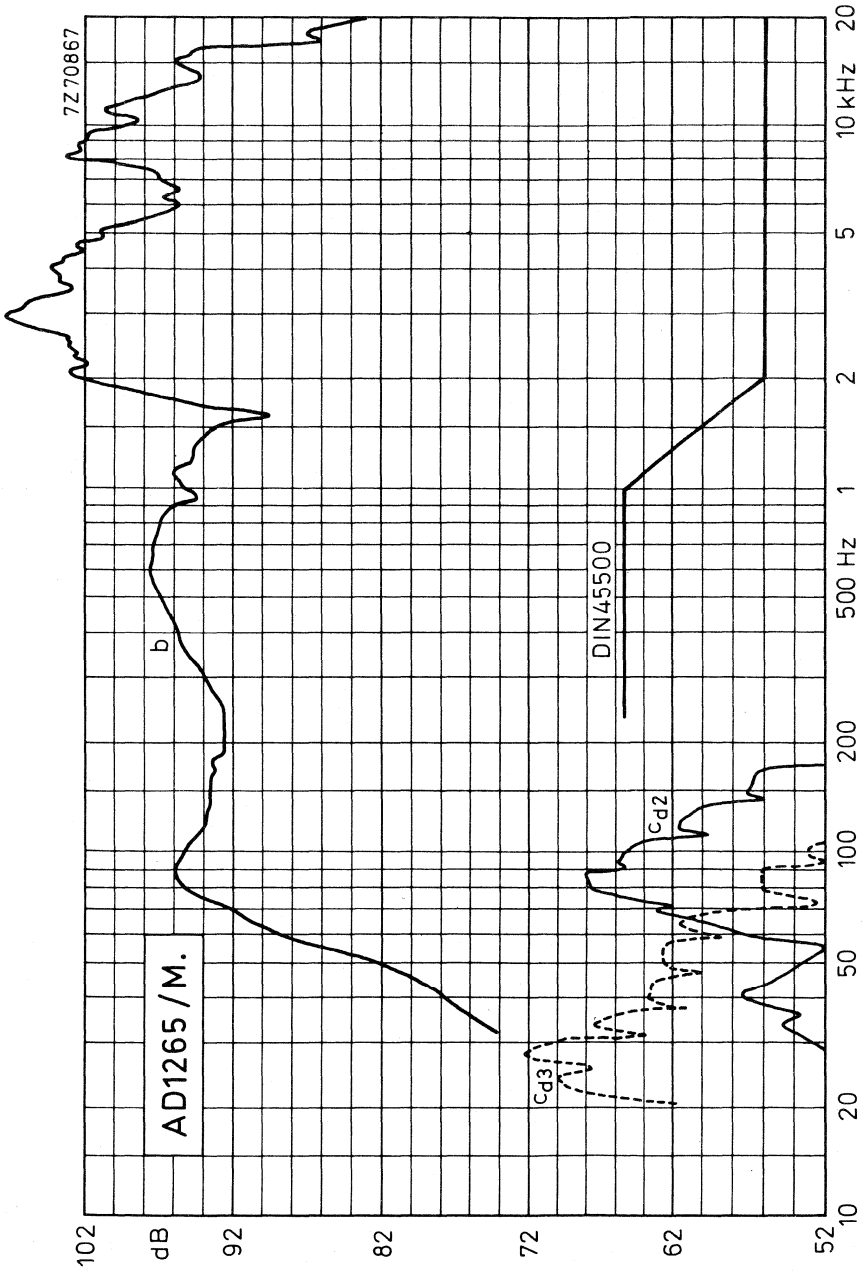


Fig. 2



12 inch HIGH POWER FULL RANGE LOUDSPEAKER

APPLICATION

A dual cone loudspeaker for high power applications such as guitar amplifiers and electronic organs.

TECHNICAL DATA

	version		
	HP4	HP8	
Rated impedance	4	8	Ω
Voice coil resistance	3,5	7,2	Ω
Resonance frequency	60	60	Hz
Power handling capacity, measured without filter loudspeaker unmounted	50	50	W
Operating power	1	1	W
Sweep voltage	10	14	V
Energy in airgap	820	820	mJ
Flux density	1,03	1,03	T
Airgap height	8	8	mm
Voice coil height	12,2	12,5	mm
Core diameter	50	50	mm
Magnet material	ceramic	ceramic	
diameter	130	130	mm
mass	1	1	kg
Mass of loudspeaker	3,27	3,27	kg

The loudspeaker has a paper dual cone, a textile surround and a cork gasket on the flange.

Connection to the loudspeaker by means of 6,3 mm (0,25 inch) tag connectors or by soldering.

Dimensions (mm)

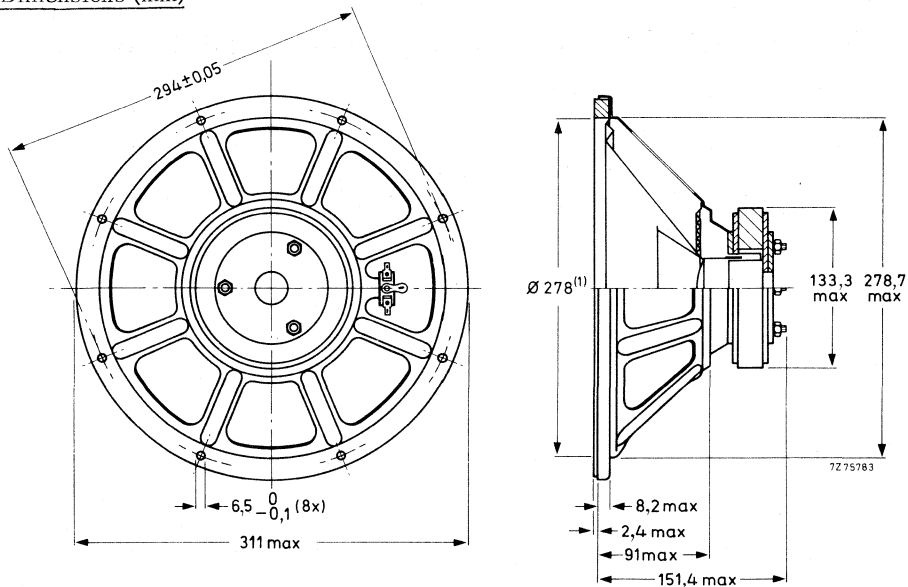


Fig. 1

(1) Baffle hole diameter.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD 12100/HP4, catalogue number 2422 257 511.1

AD 12100/HP8, catalogue number 2422 257 511.2

(0 = stamped on loudspeaker magnet,
not to be used for ordering)

2 for bulk packing*)

6 for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve b : Sound pressure measured in anechoic room at operating power of 1 W.
Loudspeaker mounted in sealed 80 l enclosure, filled with 1 kg of glass wool.

Curve c : 2nd and 3rd harmonic distortion, measured at operating power of 1 W in anechoic room. Loudspeaker mounted in 80 l enclosure, filled with 1 kg of glass wool.

*) Minimum packing quantity 1 per unit.

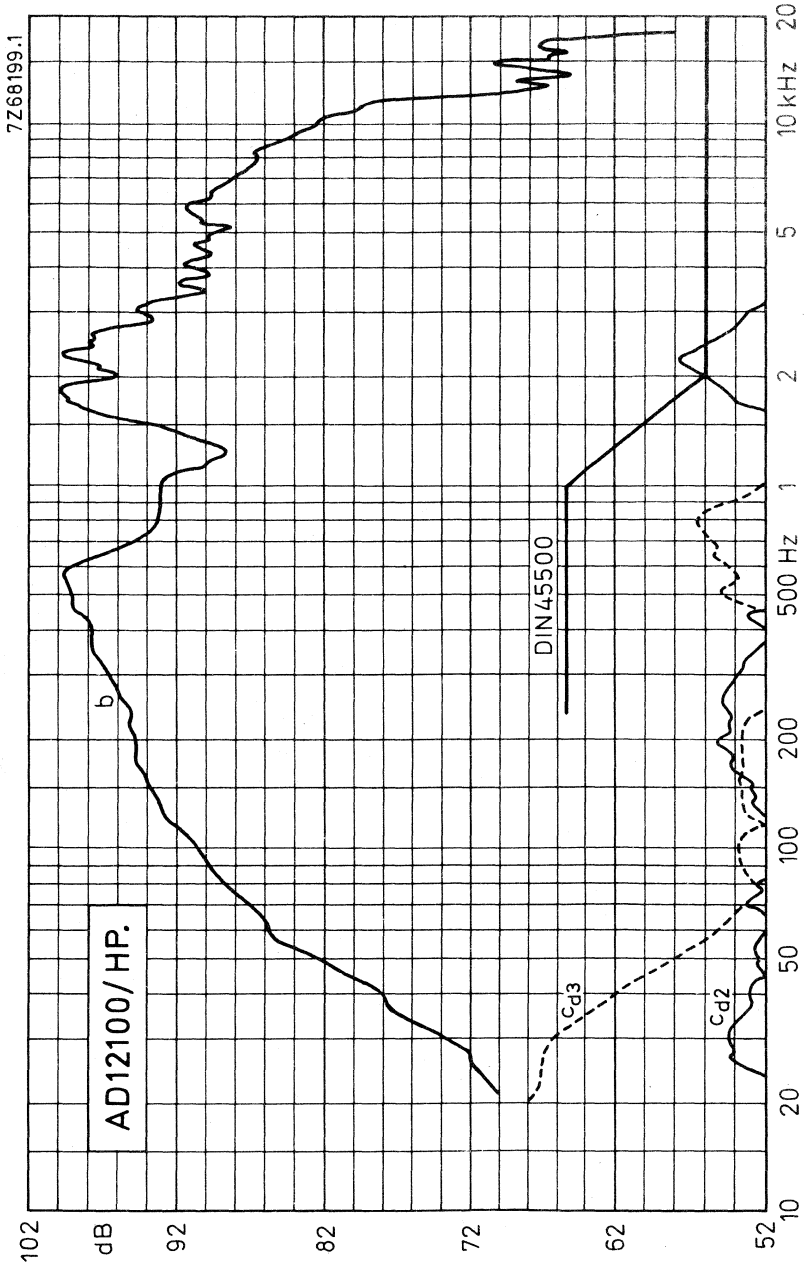


Fig. 2



12 inch HIGH POWER FULL RANGE LOUDSPEAKER

APPLICATION

A dual-cone loudspeaker with extremely high sensitivity for power applications such as public address systems, discotheques and domestic enclosures greater than 50 litres, and open baffles.

TECHNICAL DATA

	version			
	M4	M8	M15	
Rated impedance	4	8	15	Ω
Voice coil resistance	3,2	7	13,2	Ω
Resonance frequency	45	45	45	Hz
Power handling capacity, measured without filter, loudspeaker unmounted	25	25	25	W
Operating power	0,55	0,55	0,6	W
Sweep voltage	6,3	9	12,2	V
Energy in airgap	970	970	970	mJ
Flux density	1,15	1,15	1,15	T
Airgap height	8	8	8	mm
Voice coil height	9,1	10,3	13,3	mm
Core diameter	33,4	33,4	33,4	mm
Magnet material	ceramic	ceramic	ceramic	
diameter	130	130	130	mm
mass	1	1	1	kg
Mass of loudspeaker	3,3	3,3	3,3	kg

The loudspeaker has a paper dual cone and surround and a cork gasket on the flange.

Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering. ←

Dimensions (mm)

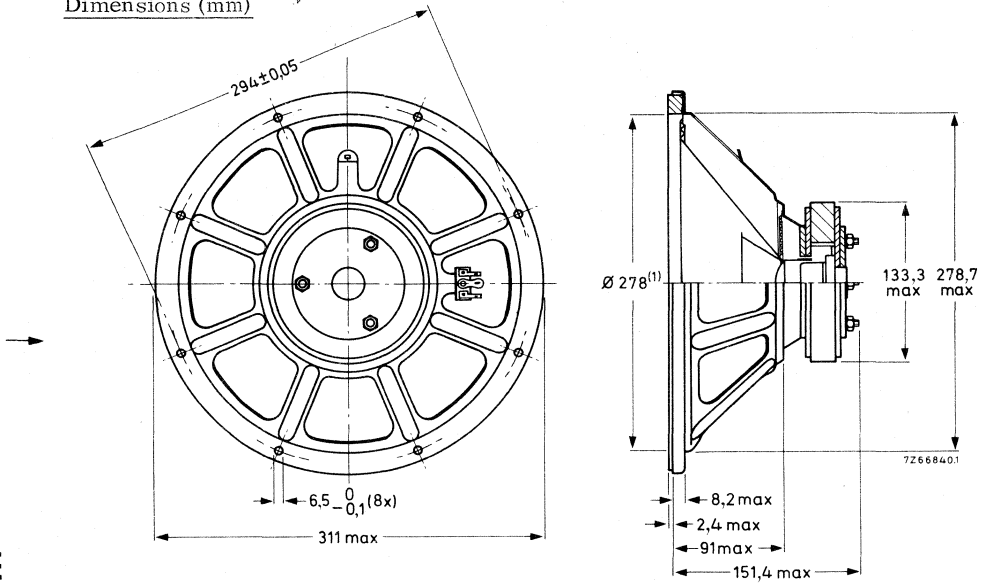


Fig. 1

(1) Baffle hole diameter.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD 12100/M4, catalogue number 2422 257 510.1

AD 12100/M8, catalogue number 2422 257 510.2

AD 12100/M15, catalogue number 2422 257 510.3

(0 = stamped on loudspeaker magnet,
not to be used for ordering)

2 for bulk packing*)

6 for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve b : Sound pressure measured in anechoic room at operating power of 0,55 W.
Loudspeaker mounted in sealed 80 l enclosure, filled with 1 kg of glass wool.

Curve c : 2nd and 3rd harmonic distortion, measured at operating power of 0,55 W in
anechoic room. Loudspeaker mounted in 80 l enclosure, filled with 1 kg of
glass wool.

*) Minimum packing quantity 1 per unit.

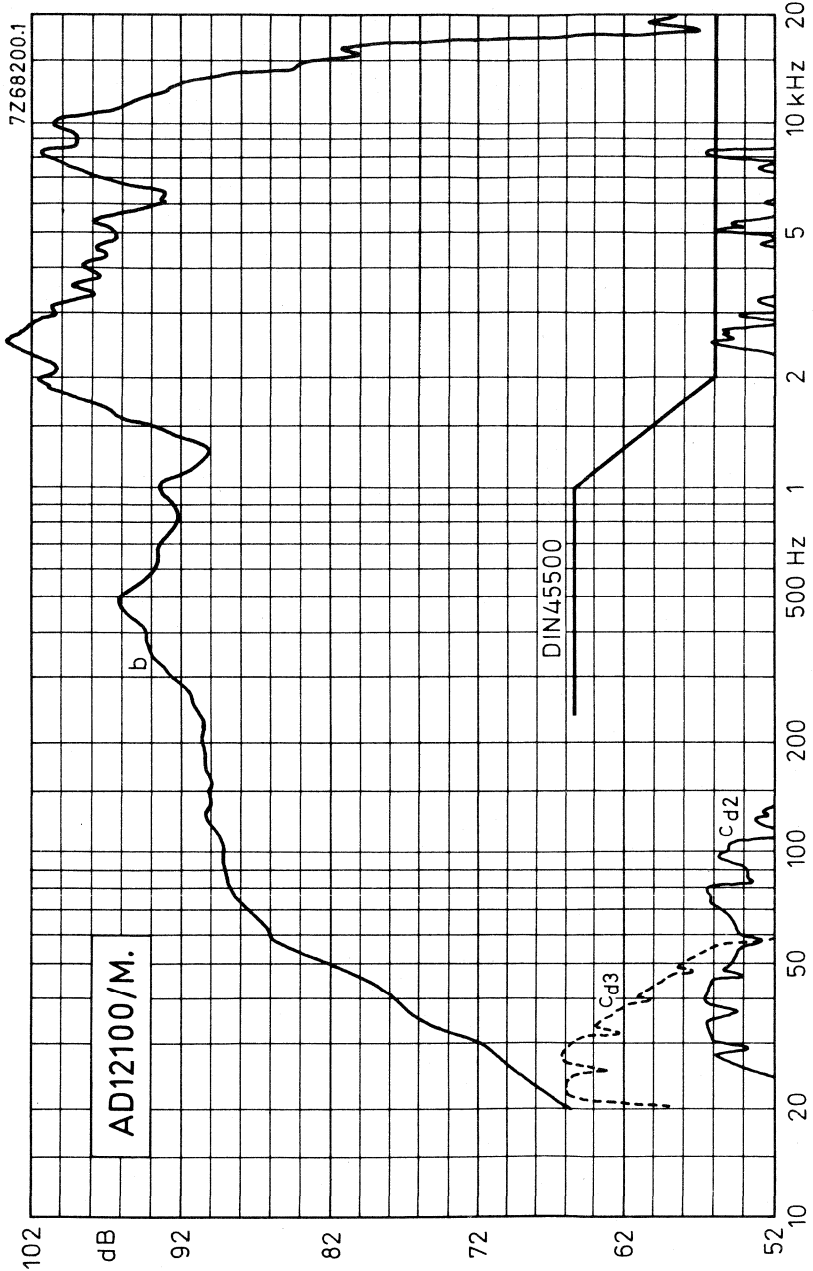


Fig. 2



High power tweeter loudspeakers



770728-15-02



Type AD01605/T8

|||||

1 inch HIGH POWER DOME TWEETER LOUDSPEAKER

APPLICATION

For the reproduction of audio frequencies from 1600 Hz to 22 000 Hz in multi-way high-fidelity loudspeaker systems. Minimum recommended cross-over frequency 1600 Hz with 12 dB/octave slope.

TECHNICAL DATA

	version	
	T4	T8
Rated impedance	4	8 Ω
Voice coil resistance	3, 4	6, 3 Ω
Rated frequency range	1600 to 20 000 Hz	
Resonance frequency	1200	Hz
Power handling capacity, measured with filter: 12 μ F - 0,35 mH	20	W
5 μ F - 0,2 mH	40	W
8 μ F - 0,5 mH		20 W
3,2 μ F - 0,35 mH		40 W
loudspeaker unmounted		
Operating power		4 W
Sweep voltage (500 to 20 000 Hz)	3	4, 5 V
Energy in air gap		59 mJ
Flux density		0,9 T
Air-gap height		2,5 mm
Voice coil height	2, 4	3, 2 mm
Core diameter		25 mm
Magnet material	ceramic	
diameter		61 mm
mass		0,1 kg
Mass of loudspeaker		0,25 kg

The loudspeaker has a polycarbonate dome and a voice coil of aluminium wire.

Connection to the loudspeaker is by means of 2,8 mm (0,11 inch) tag connectors or by soldering. ←

Dimensions (mm)

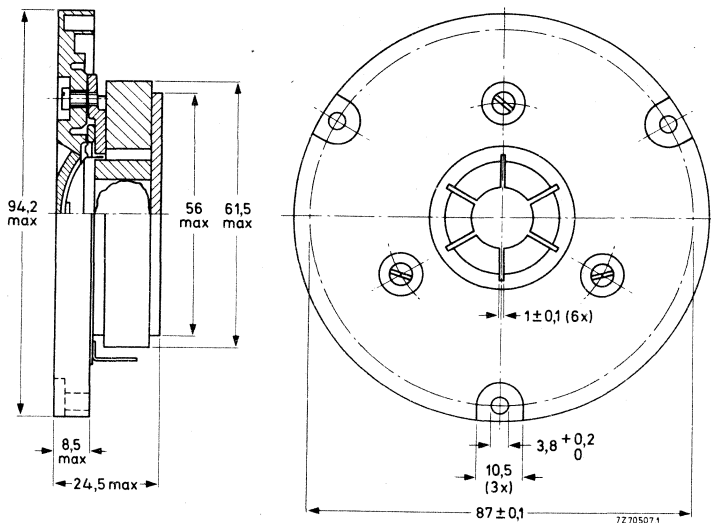


Fig. 1

One tag is indicated by a red mark for in-phase connection

Baffle hole diameter 75 mm.

Face of loudspeaker should lie in line with plane of baffle.

AVAILABLE VERSIONS

AD0140/T4, catalogue number 2422 257 332.1

AD0140/T8, catalogue number 2422 257 332.2

(0 = stamped on loudspeaker magnet,
not to be used for ordering.)

2 = for bulk packing *)

6 = for single unit packing

FREQUENCY RESPONSE CURVES

Curve b: Sound pressure measured in half free field, input at operating power.
Loudspeaker mounted on baffle, dimensions 50 x 50 mm.

Curve c: 2nd and 3rd harmonic distortion, measured at the operating power of 4 W in
anechoic room. Loudspeaker unmounted.

*) Minimum packing quantity 9 per unit.

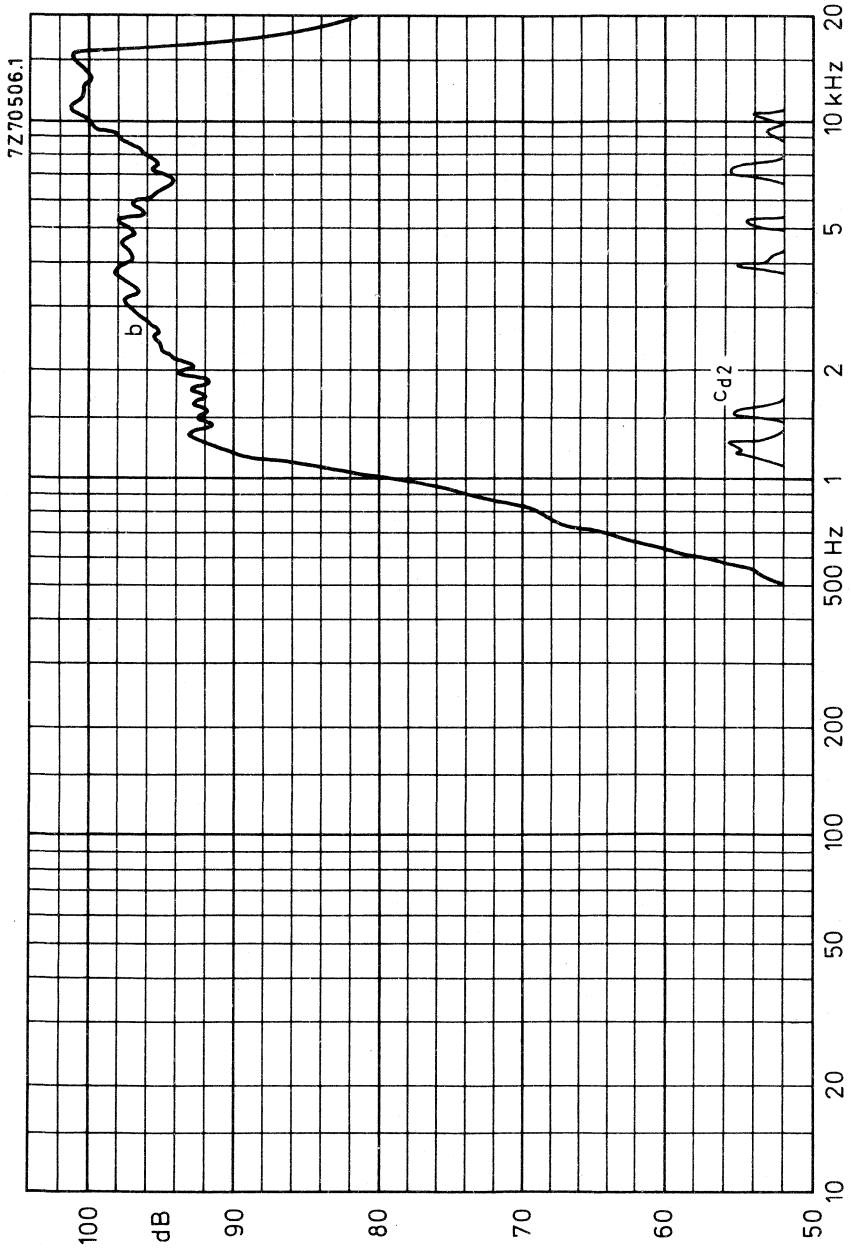


Fig. 2



1 INCH HIGH POWER DOME TWEETER LOUDSPEAKER

APPLICATION

For the reproduction of frequencies from 2000 Hz to 22 000 Hz in multi-way high-fidelity loudspeaker systems. Minimum recommended crossover frequency 2000 Hz with 12 dB/octave slope.

TECHNICAL DATA

	version	
	T4	T8
Rated impedance	4	8 Ω
Voice coil resistance	3,4	6,3 Ω
Rated frequency range	2000 to 20 000 Hz	
Resonance frequency	1450	Hz
Power handling capacities, a/b (see Fig.1), loudspeaker unmounted,		
at 2000 Hz; C = 12 μ F; L = 0,35 mH	20/4	W
at 2000 Hz; C = 8 μ F; L = 0,5 mH		20/4 W
at 4000 Hz; C = 5 μ F; L = 0,2 mH	50/6	W
at 4000 Hz; C = 3,2 μ F; L = 0,35 mH		50/6 W
Operating power		6 W
Sweep voltage, frequency range: 500 to 20 000 Hz high pass filter:		
12 μ F — 0,35 mH	3	V
5 μ F — 0,2 mH		4,5 V
Energy in air gap		59 mJ
Flux density		0,9 T
Air-gap height		2,5 mm
Voice coil height	2,4	3,2 mm
Core diameter		25 mm
Magnet material	ceramic	
diameter		61 mm
mass		0,1 kg
Mass of loudspeaker		0,25 kg

The loudspeaker has an impregnated textile dome and a diffuser integrated in the cover. Connection to the loudspeaker is by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

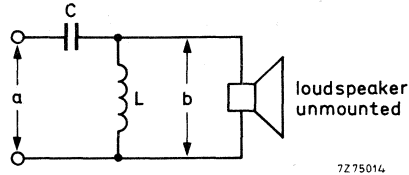


Fig.1 Measuring circuit.
 a = system power handling capacity.
 b = loudspeaker power handling capacity.

Dimensions (mm)

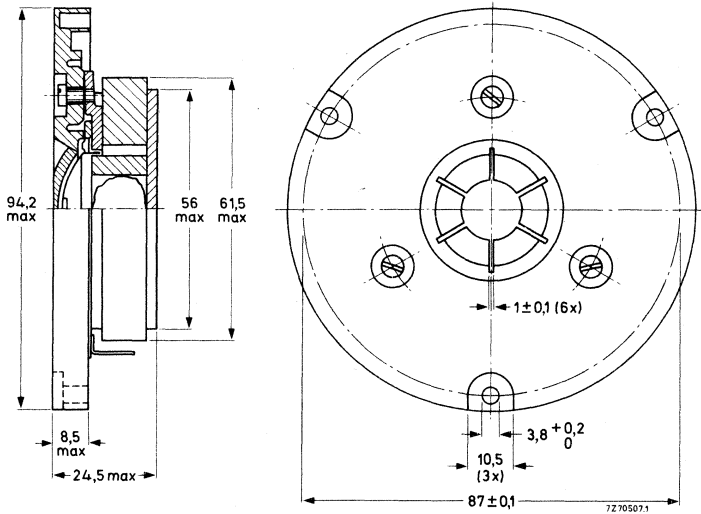


Fig.2

One tag is indicated by a red mark for in-phase connection. Baffle hole diameter 75 mm. Face of loudspeaker should lie in line with plane of baffle.

AVAILABLE VERSIONS

AD0141/T4, catalogue number 2422 257 332.1

AD0141/T8, catalogue number 2422 257 332.2

- 1 = stamped on loudspeaker magnet, **not to be used** for ordering.
- 3 = for bulk packing *
- 7 = for single unit packing.

* Minimum packing quantity 9 per unit.

FREQUENCY RESPONSE CURVES

Curve b: Sound pressure measured in anechoic room, loudspeaker unmounted.

Curve c: 2nd and 3rd harmonic distortion, measured at the operating power of 6 W in anechoic room, loudspeaker unmounted.



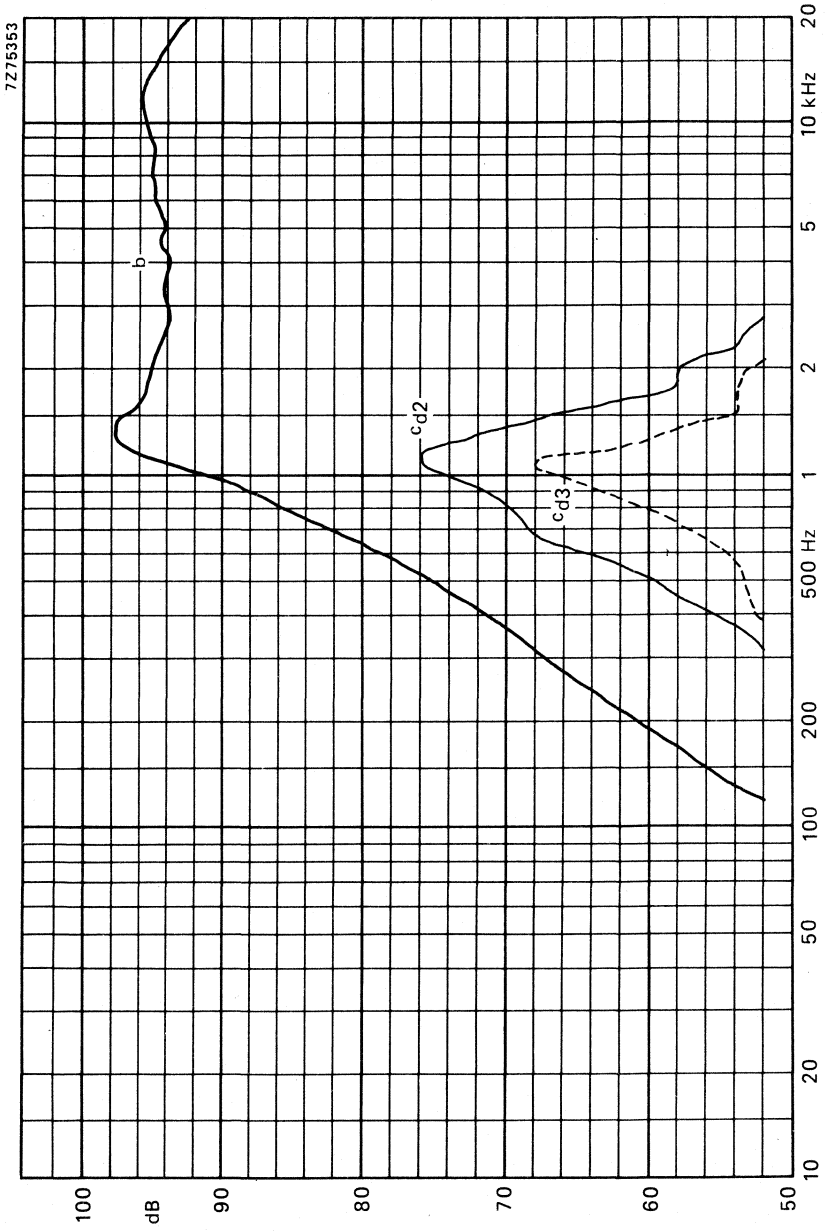


Fig.3



DEVELOPMENT SAMPLE DATA

This information is derived from development samples made available for evaluation. It does not form part of our data handbook system and does not necessarily imply that the device will go into production

AD01600/T.
AD01605/T.

1 INCH HIGH POWER DOME TWEETER LOUDSPEAKERS

APPLICATION

For high power, high-fidelity loudspeaker systems. The tweeters have a very wide radiating pattern due to their flat front and forward dome.

TECHNICAL DATA

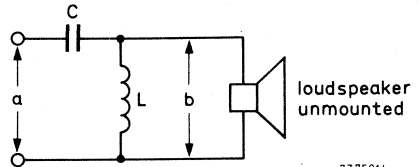
	version		
	T4	T8	T15
Rated impedance	4	8	15 Ω
Voice coil resistance	3,4	6,3	12,5 Ω
Rated frequency range	700 to 22 000		Hz
Resonance frequency	1250		Hz
Power handling capacities, a/b (see Fig. 1), loudspeaker unmounted,			
at 2000 Hz; C = 12 μ F; L = 0,35 mH	20/4		W
at 2000 Hz; C = 8 μ F; L = 0,5 mH		20/4	W
at 2000 Hz; C = 3,3 μ F; L = 1 mH			20/4 W
at 4000 Hz; C = 5 μ F; L = 0,2 mH	50/6		W
at 4000 Hz; C = 3,2 μ F; L = 0,35 mH		50/6	W
at 4000 Hz; C = 1,5 μ F; L = 0,8 mH			50/6 W
Operating power		5	W
Sweep voltage, frequency range: 500 to 20 000 Hz high pass filter:			
12 μ F - 0,35 mH	3,2		V
8 μ F - 0,5 mH		4,5	V
3,3 μ F - 1 mH			5,5 V
Energy in air gap		75	mJ
Flux density		1,2	T
Air-gap height		2,5	mm
Voice coil height	2,4	3,2	3,4 mm
Core diameter		25	mm
Magnet material		ceramic	
diameter		72	mm
mass		0,24	kg
Mass of loudspeaker		0,5	kg

The loudspeakers have an impregnated textile dome. They are provided with an acoustic sealing strip at the back of the square flange. Type AD 01605/T is a 'de luxe' version with two aluminium rings at the front. Connection to the tweeters by means of tag connectors or by soldering.

Fig. 1 Measuring circuit.

a = system power handling capacity.
b = loudspeaker power handling capacity.

Dimensions in mm



7275014

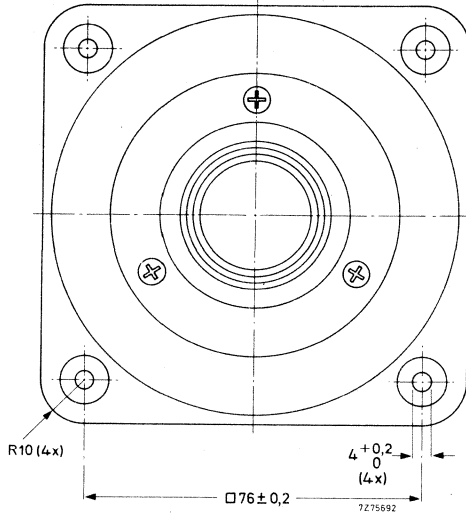
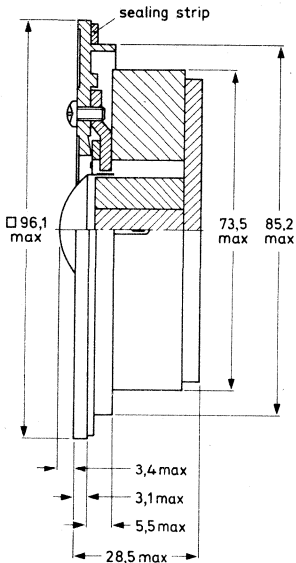


Fig. 2.

One tag is indicated by a red mark for in-phase connection. Face of loudspeaker should not lie behind plane of baffle.

AVAILABLE VERSIONS

- AD01600/T4, catalogue number 2422 257 335 . 1
- AD01600/T8, catalogue number 2422 257 335 . 2
- AD01600/T15, catalogue number 2422 257 335 . 3

0 = stamped on loudspeaker magnet,
not to be used for ordering

2 = for bulk packing*
6 = for single unit packing

- AD01605/T4, catalogue number 2422 257 335 . 1
- AD01605/T8, catalogue number 2422 257 335 . 2
- AD01605/T15, catalogue number 2422 257 335 . 3

1 = stamped on loudspeaker magnet,
not to be used for ordering

3 = for bulk packing*
7 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 3)

Curve a: Sound pressure measured in anechoic room, loudspeaker unmounted.

Curves d2 and d3: 2nd and 3rd harmonic distortion, measured at the operating power of 5 W in anechoic room, loudspeaker front mounted on IEC baffle.

* Minimum packing quantity 10 per unit.

DEVELOPMENT SAMPLE DATA

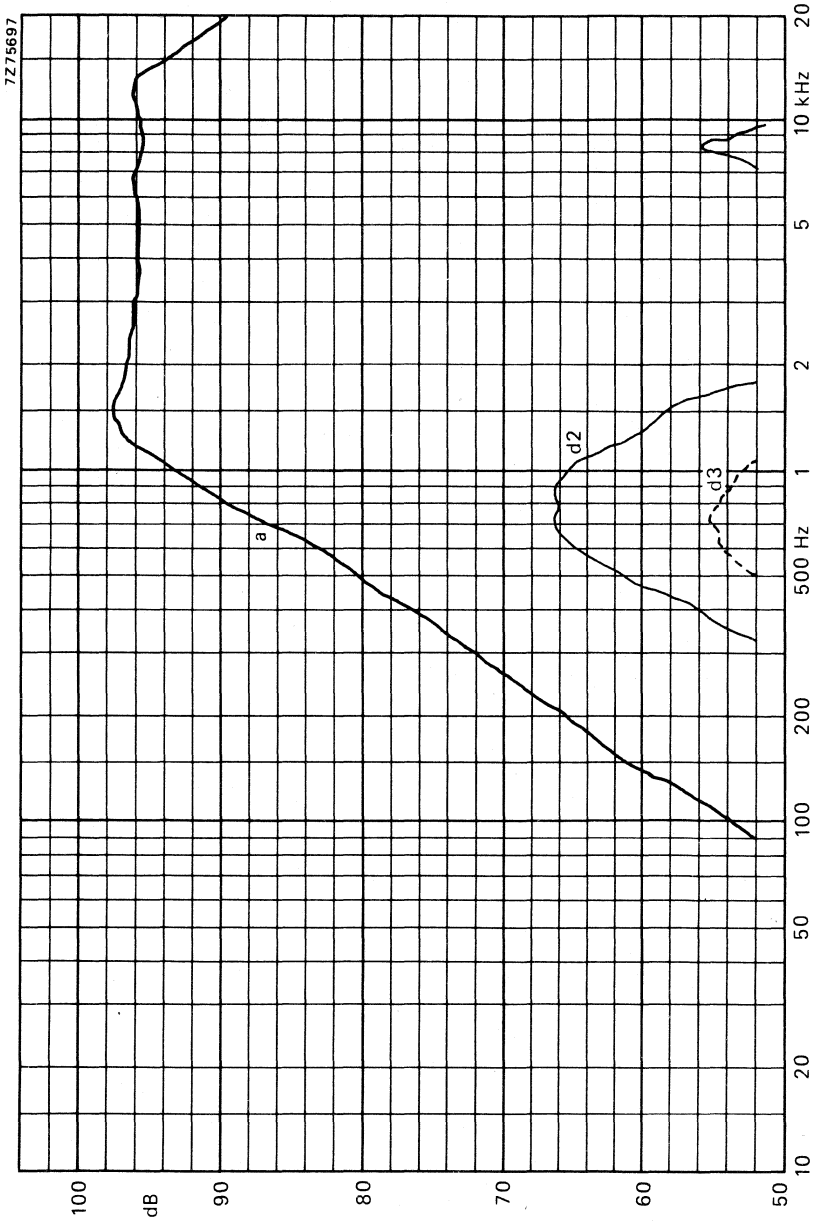


Fig. 3.



DEVELOPMENT SAMPLE DATA

AD01610/T.

This information is derived from development samples made available for evaluation. It does not form part of our data handbook system and does not necessarily imply that the device will go into production

1 INCH HIGH POWER DOME TWEETER LOUDSPEAKERS

APPLICATION

For high power, high-fidelity loudspeaker systems. The tweeter has a wide radiating pattern due to its nearly flat conical front.

TECHNICAL DATA

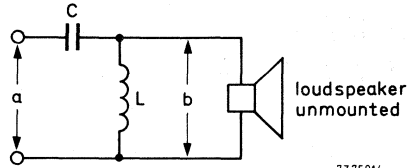
	version		
	T4	T8	T15
Rated impedance	4	8	15 Ω
Voice coil resistance	3,4	6,3	12,5 Ω
Rated frequency range	750 to 22 000		Hz
Resonance frequency	1250		Hz
Power handling capacities, a/b (see Fig. 1), loudspeaker unmounted,			
at 2000 Hz; C = 12 μ F; L = 0,35 mH	20/4		W
at 2000 Hz; C = 8 μ F; L = 0,5 mH		20/4	W
at 2000 Hz; C = 3,3 μ F; L = 1 mH			20/4 W
at 4000 Hz; C = 5 μ F; L = 0,2 mH	50/6		W
at 4000 Hz; C = 3,2 μ F; L = 0,35 mH		50/6	W
at 4000 Hz; C = 1,5 μ F; L = 0,8 mH			50/6 W
Operating power	4		W
Sweep voltage, frequency range: 500 to 20 000 Hz			
high pass filter:			
12 μ F - 0,35 mH	3,2		V
8 μ F - 0,5 mH		4,5	V
3,3 μ F - 1 mH			5,5 V
Energy in air gap	75		mJ
Flux density	1,2		T
Air-gap height	2,5		mm
Voice coil height	2,4	3,2	mm
Core diameter	25		mm
Magnet material	ceramic		
diameter	72		mm
mass	0,24		kg
Mass of loudspeaker	0,5		kg

The loudspeaker has an impregnated textile dome. It is provided with an acoustic sealing strip at the back of the square flange. Connection to the tweeter by means of tag connectors or by soldering.

Fig. 1 Measuring circuit.

a = system power handling capacity.
 b = loudspeaker power handling capacity.

Dimensions (mm)



7275014

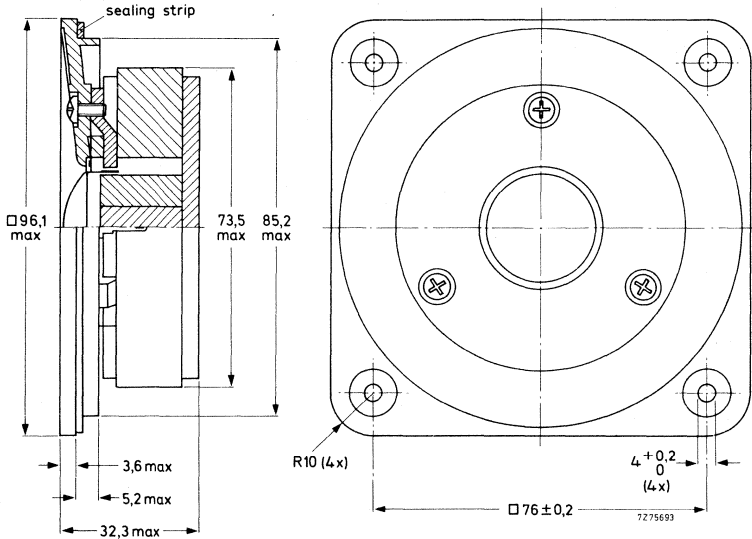


Fig. 2.

One tag is indicated by a red mark for in-phase connection. Face of loudspeaker should not lie behind plane of baffle.

AVAILABLE VERSIONS

- AD01610/T4, catalogue number 2422 257 336 . 1
- AD01610/T8, catalogue number 2422 257 336 . 2
- AD01610/T15, catalogue number 2422 257 336 . 3

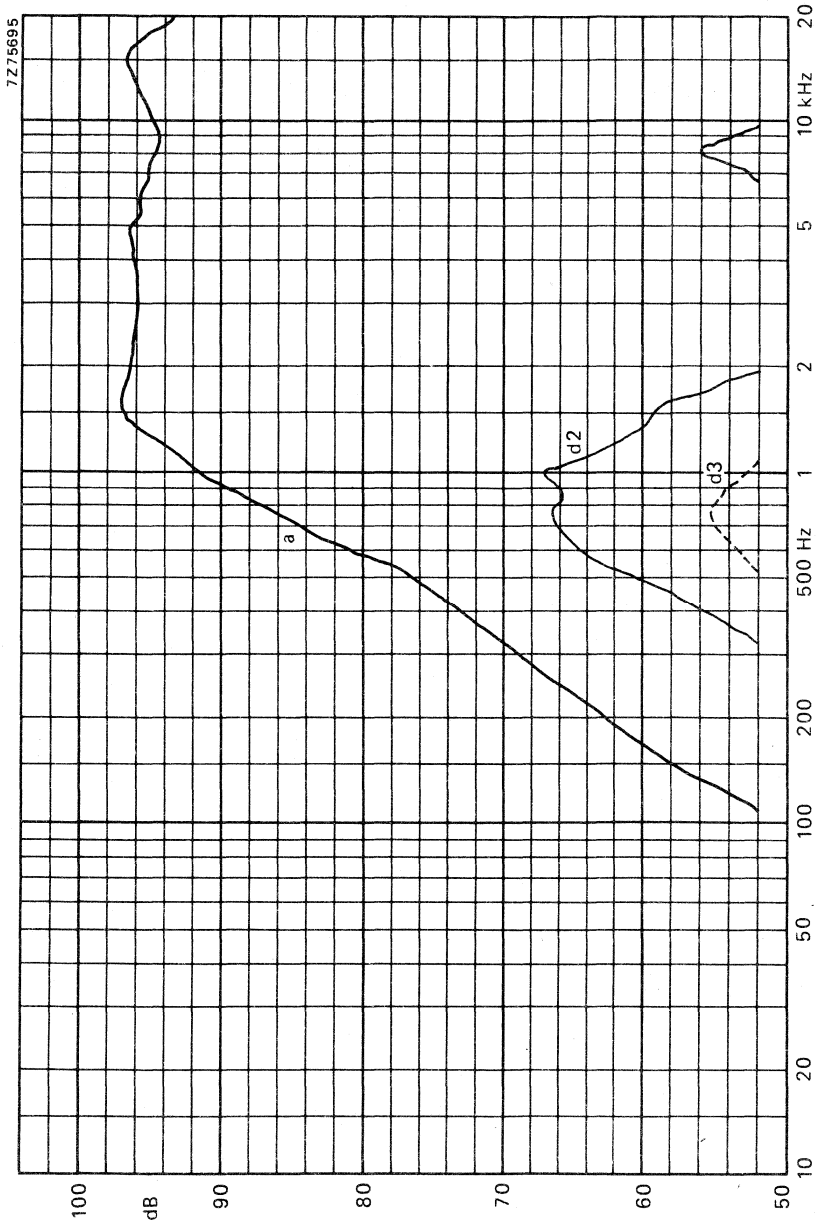
- 0 = stamped on loudspeaker magnet, **not to be used for ordering**
- 2 = for bulk packing*
- 6 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 3)

Curve a: Sound pressure measured in anechoic room, loudspeaker unmounted.

Curves d2 and d3: 2nd and 3rd harmonic distortion, measured at the operating power of 4 W in anechoic room, loudspeaker front mounted on IEC baffle.

* Minimum packing quantity 10 per unit.



DEVELOPMENT SAMPLE DATA

Fig. 3.



1 inch HIGH POWER DOME TWEETER LOUDSPEAKERS

APPLICATION

For use in direct and indirect radiating systems for reproduction of audio frequencies from 2000 Hz to 22 000 Hz with very low distortion in multi-way high fidelity loudspeaker systems in accordance with DIN45500. Minimum recommended cross-over frequency 1600 Hz. The loudspeaker has a very high sensitivity.

TECHNICAL DATA

	version		
	T8	T15	
Rated impedance	8	15	Ω
Voice coil resistance	6,3	12,5	Ω
Rated frequency range	2000 to 22 000		Hz
Resonance frequency	1000		Hz
Power handling capacities a/b (see Fig. 1)			
at 2000 Hz C = 8 μ F L = 0,5 mH	20/4		W
C = 3,3 μ F L = 1 mH		20/4	W
at 4000 Hz C = 3,2 μ F L = 0,35 mH	50/6		W
C = 1,5 μ F L = 0,8 mH		50/6	W
Operating power		2	W
Sweep voltage	4,5	5,5	V
frequency range: 500 - 20 000 Hz			
high pass filter : 8 μ F - 0,5 mH			
Energy in air gap		75	mJ
Flux density		1,2	T
Air gap height		2,5	mm
Voice coil height	2,4	3,4	mm
Core diameter		25	mm
Magnet material	ceramic		
diameter		72	mm
mass		0,24	kg
Mass of loudspeaker		0,5	kg

The loudspeaker has a polycarbonate dome and a diffusor integrated in the cover.

Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

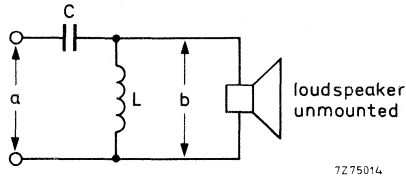


Fig. 1. Measuring circuit.
a = system power handling capacity
b = loudspeaker power handling capacity.

Dimensions (mm)

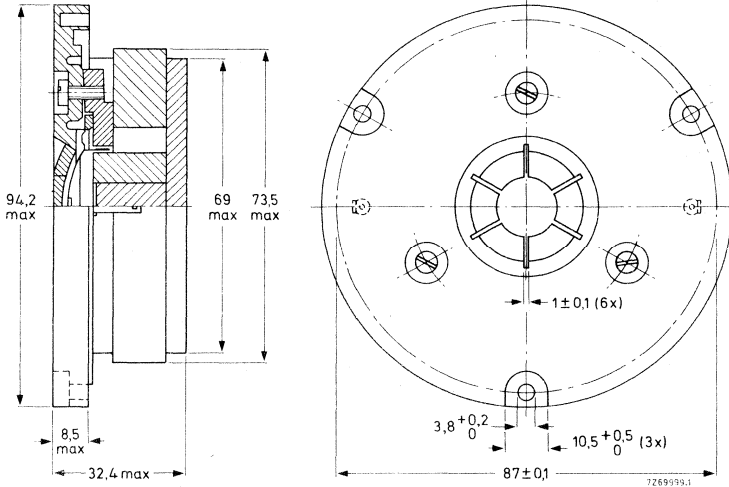


Fig. 2.

One tag is indicated by a red mark for in-phase connection.
Face of loudspeaker should not lie behind plane of baffle.

AVAILABLE VERSIONS

AD0162/T8, catalogue number 2422 257 333.2
AD0162/T15, catalogue number 2422 257 333.3

- (1 = stamped on loudspeaker magnet, not to be used for ordering)
- 3 = for bulk packing ^{*)}
- 7 = for single unit packing

^{*)} Minimum packing quantity 9 per unit.

FREQUENCY RESPONSE CURVES (see Fig. 3)

Curve b: Sound pressure measured in anechoic room, loudspeaker unmounted.

Above 1000 Hz, over the width of one octave, the sound pressure may be a maximum of 2 dB lower than indicated.

Curve c: 2nd and 3rd harmonic distortion, measured at the operating power of 2 W in anechoic room, loudspeaker unmounted.



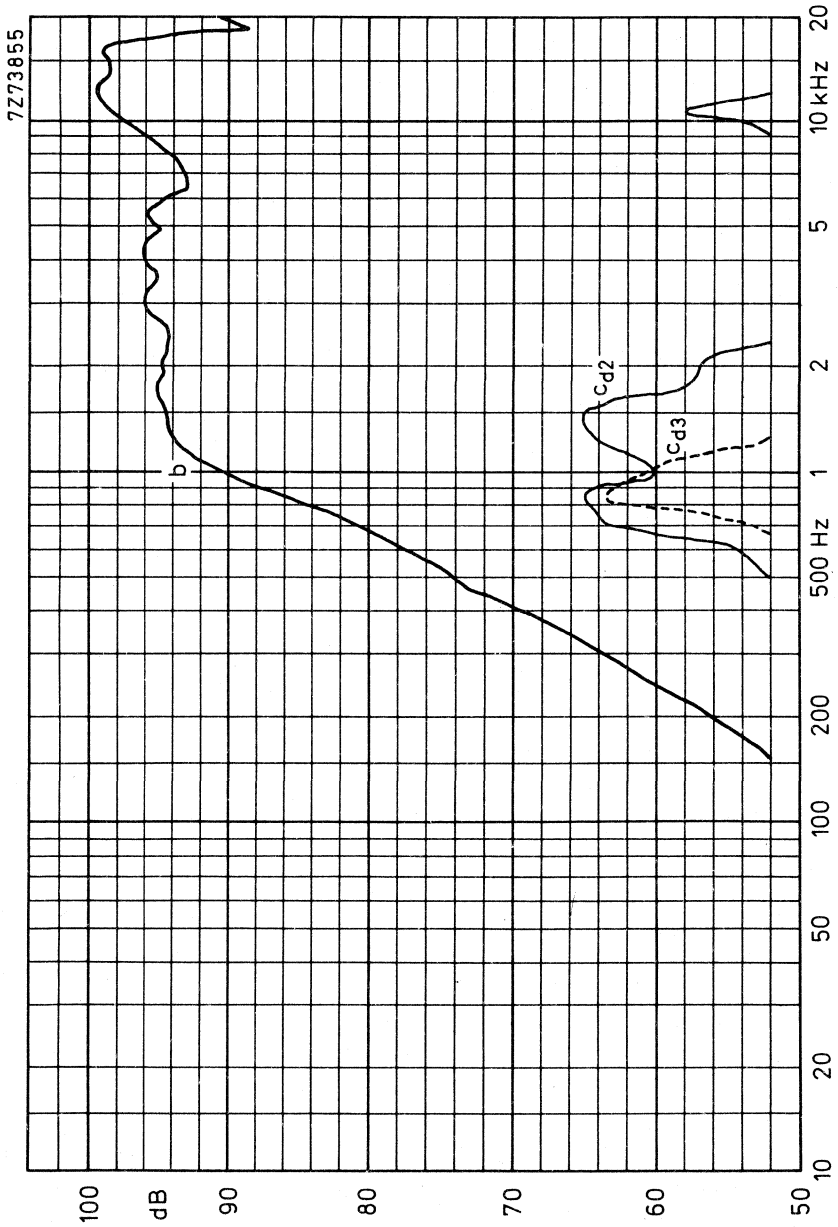


Fig. 3.

1 INCH HIGH POWER DOME TWEETER LOUDSPEAKER

APPLICATION

For use in direct and indirect radiating systems for reproduction of frequencies from 2000 Hz to 22 000 Hz with very low distortion in multi-way high-fidelity loudspeaker systems in accordance with DIN 45500. Minimum recommended crossover frequency 2000 Hz. The loudspeaker has a very high sensitivity.

TECHNICAL DATA

	version	
	T8	T15
Rated impedance	8	15 Ω
Voice coil resistance	6,3	12,5 Ω
Rated frequency range	2000 to 22 000 Hz	
Resonance frequency	1300	Hz
Power handling capacities, a/b (see Fig.1), loudspeaker unmounted,		
at 2000 Hz; C = 8 μ F; L = 0,5 mH	20/4	W
at 2000 Hz; C = 3,3 μ F; L = 1 mH		20/4 W
at 4000 Hz; C = 3,2 μ F; L = 0,35 mH	50/6	W
at 4000 Hz; C = 1,5 μ F; L = 0,8 mH		50/6 W
Operating power		2 W
Sweep voltage, frequency range: 500 to 20 000 Hz high pass filter: 8 μ F — 0,5 mH	4,5	V
3,3 μ F — 1 mH		5,5 V
Energy in air gap		75 mJ
Flux density		1,2 T
Air-gap height		2,5 mm
Voice coil height	2,4	3,4 mm
Core diameter		25 mm
Magnet material	ceramic	
diameter		72 mm
mass		0,24 kg
Mass of loudspeaker		0,5 kg

The loudspeaker has an impregnated textile dome and a diffuser integrated in the cover. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

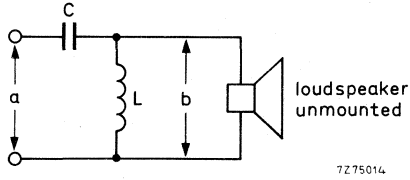


Fig.1 Measuring circuit.
 a = system power handling capacity.
 b = loudspeaker power handling capacity.

Dimensions (mm)

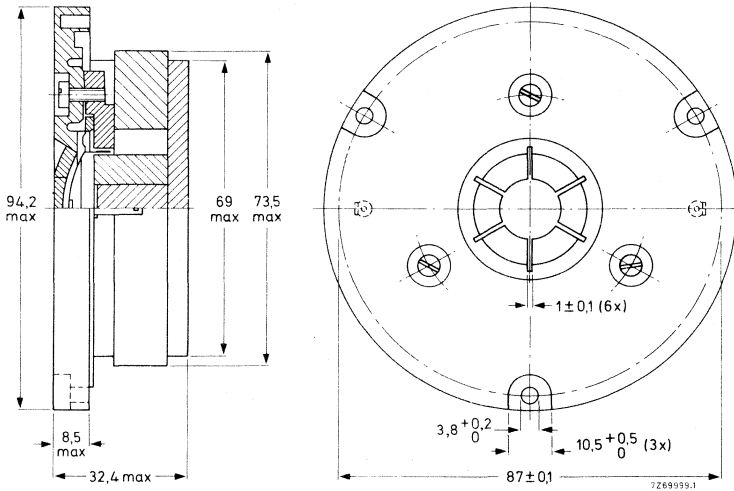


Fig.2

One tag is indicated by a red mark for in-phase connection. Face of loudspeaker should not lie behind plane of baffle.

AVAILABLE VERSIONS

AD0163/T8, catalogue number 2422 257 334.2

AD0163/T15, catalogue number 2422 257 334.3

- 0 = stamped on loudspeaker magnet, **not to be used** for ordering
- 2 = for bulk packing *
- 6 = for single unit packing

* Minimum packing quantity 9 per unit.

FREQUENCY RESPONSE CURVES (see Fig. 3)

Curve a: Sound pressure measured in anechoic room, loudspeaker unmounted.

Curve d2: 2nd harmonic distortion, measured at the operating power of 2 W in anechoic room, loudspeaker unmounted.



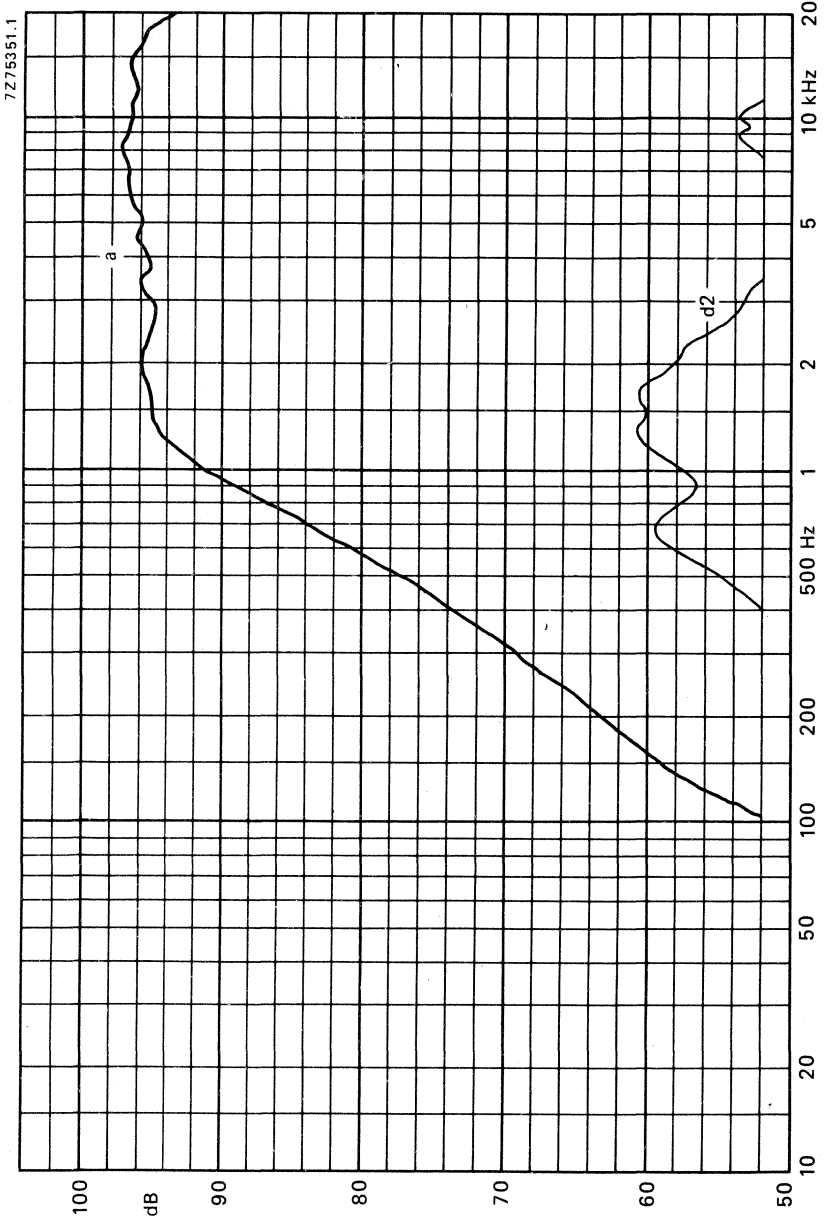


Fig. 3.



DEVELOPMENT SAMPLE DATA

This information is derived from development samples made available for evaluation. It does not form part of our data handbook system and does not necessarily imply that the device will go into production

AD01630/T.
AD01631/T.

1 INCH HIGH POWER DOME TWEETER LOUDSPEAKERS

APPLICATION

For use in direct and indirect radiating systems for reproduction of frequencies from 2000 Hz to 22 000 Hz with very low distortion in multi-way high-fidelity loudspeaker systems in accordance with DIN 45 500. Minimum recommended crossover frequency 2000 Hz. The loudspeaker has a very high sensitivity.

TECHNICAL DATA

	version	
	T8	T15
Rated impedance	8	15 Ω
Voice coil resistance	6,3	12,5 Ω
Rated frequency range	2000 to 22 000 Hz	
Resonance frequency	1300	Hz
Power handling capacities, a/b (see Fig. 1), loudspeaker unmounted,		
at 2000 Hz; C = 8 μ F; L = 0,5 mH	20/4	W
at 2000 Hz; C = 3,3 μ F; L = 1 mH		20/4 W
at 4000 Hz; C = 3,2 μ F; L = 0,35 mH	50/6	W
at 4000 Hz; C = 1,5 μ F; L = 0,8 mH		50/6 W
Operating power		3 W
Sweep voltage, frequency range: 500 to 20 000 Hz high pass filter:		
8 μ F — 0,5 mH	4,5	V
3,3 μ F — 1 mH		5,5 V
Energy in air gap		75 mJ
Flux density		1,2 T
Air-gap height		2,5 mm
Voice coil height	2,4	3,4 mm
Core diameter		25 mm
Magnet material		ceramic
diameter		72 mm
mass		0,24 kg
Mass of loudspeaker		0,5 kg

The loudspeakers have an impregnated textile dome and a diffuser integrated in the cover. Both types have a square flange and are similar except for the two aluminium rings with which the front of type AD01631/T is embellished. Connection to the tweeters by means of tag connectors or by soldering.

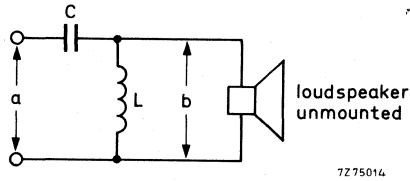
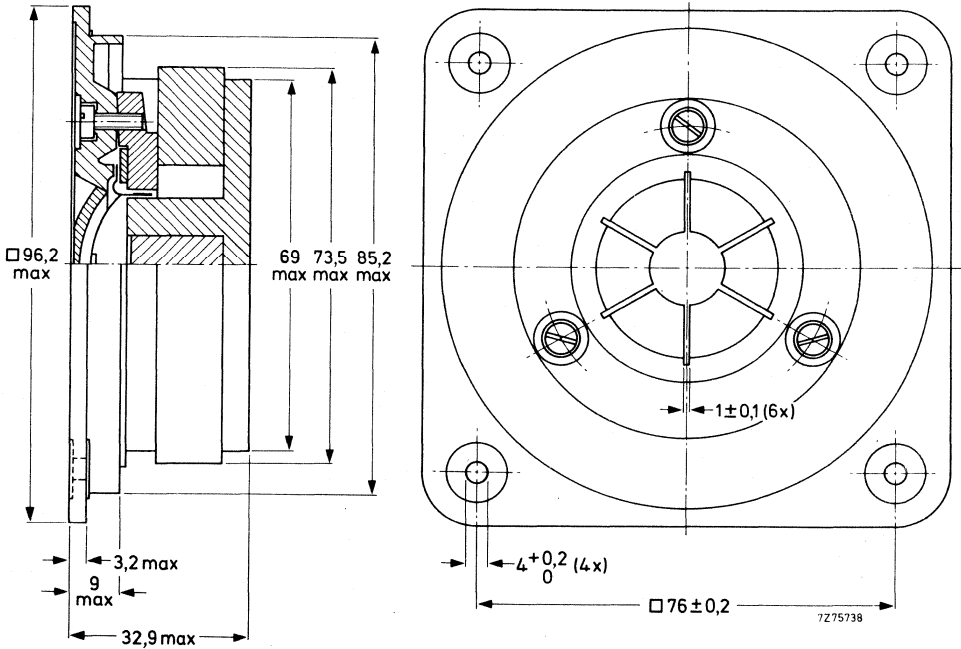


Fig. 1 Measuring circuit.
a = system power handling capacity.
b = loudspeaker power handling capacity.

Dimensions (mm)



One tag is indicated by a red mark for in phase connection. Face of loudspeaker should not lie behind plane of baffle.

AVAILABLE VERSIONS

AD01630/T8, catalogue number 2422 257 338.2
AD01630/T15, catalogue number 2422 257 338.3

0 = stamped on loudspeaker magnet,
not to be used for ordering

2 = for bulk packing *
6 = for single unit packing

AD01631/T8, catalogue number 2422 257 338.2
AD01631/T15, catalogue number 2422 257 338.3

1 = stamped on loudspeaker magnet,
not to be used for ordering

3 = for bulk packing *
7 = for single unit packing

DEVELOPMENT SAMPLE DATA

FREQUENCY RESPONSE CURVES (see Fig. 3)

Curve a: Sound pressure measured in anechoic room, loudspeaker unmounted.

Curve d2: 2nd harmonic distortion, measured at the operating power of 3 W in anechoic room, loudspeaker unmounted.



* Minimum packing quantity 9 per unit.

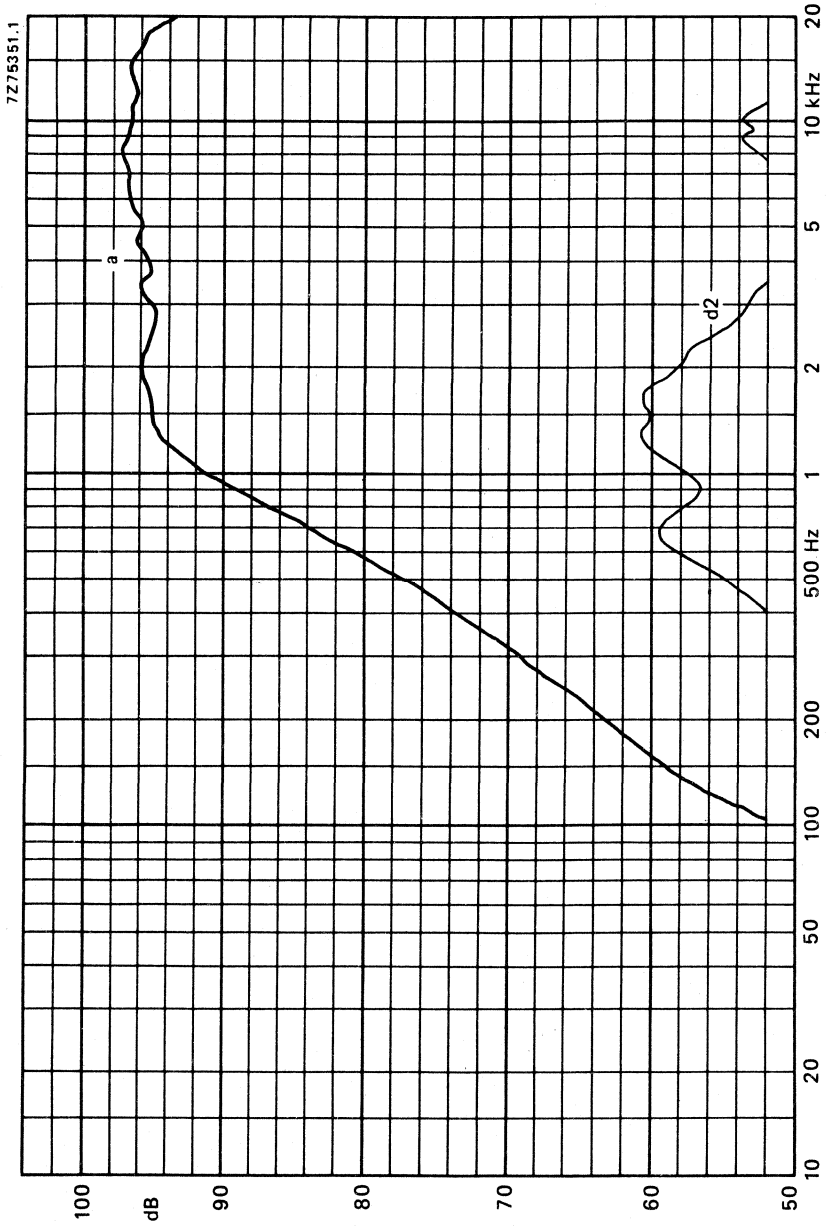


Fig. 3.

DEVELOPMENT SAMPLE DATA

This information is derived from development samples made available for evaluation. It does not form part of our data handbook system and does not necessarily imply that the device will go into production

AD01632/T.
AD01633/T.

1 INCH HIGH POWER DOME TWEETER LOUDSPEAKERS

APPLICATION

For use in direct and indirect radiating systems for reproduction of frequencies from 2000 Hz to 22 000 Hz with very low distortion in multi-way high-fidelity loudspeaker systems in accordance with DIN 45 500. Minimum recommended crossover frequency 2000 Hz. The loudspeaker has a very high sensitivity.

TECHNICAL DATA

	version	
	T8	T15
Rated impedance	8	15 Ω
Voice coil resistance	6,3	12,5 Ω
Rated frequency range	2000 to 22 000 Hz	
Resonance frequency	1300	Hz
Power handling capacities, a/b (see Fig. 1), loudspeaker unmounted,		
at 2000 Hz; C = 8 μ F; L = 0,5 mH	50/6	W
at 2000 Hz; C = 3,3 μ F; L = 1 mH		50/6 W
at 4000 Hz; C = 3,2 μ F; L = 0,35 mH	70/8	W
at 4000 Hz; C = 1,5 μ F; L = 0,8 mH		70/8 W
Operating power		2 W
Sweep voltage, frequency range: 500 to 20 000 Hz		
high pass filter:		
8 μ F — 0,5 mH	4,5	V
3,3 μ F — 1 mH		5,5 V
Energy in air gap		75 mJ
Flux density		1,2 T
Air-gap height		2,5 mm
Voice coil height	2,4	3,4 mm
Core diameter		25 mm
Magnet material		ceramic
diameter		72 mm
mass		0,24 kg
Mass of loudspeaker		0,5 kg

The loudspeakers have a paper dome and a diffuser integrated in the cover. Both types have a square flange and are similar except for the two aluminium rings with which the front of type AD01633/T. is embellished. Two tinned 2,8 mm (0,11 inch) tag connectors permit connection to the tweeters by plugging or soldering.

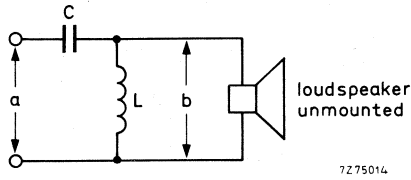
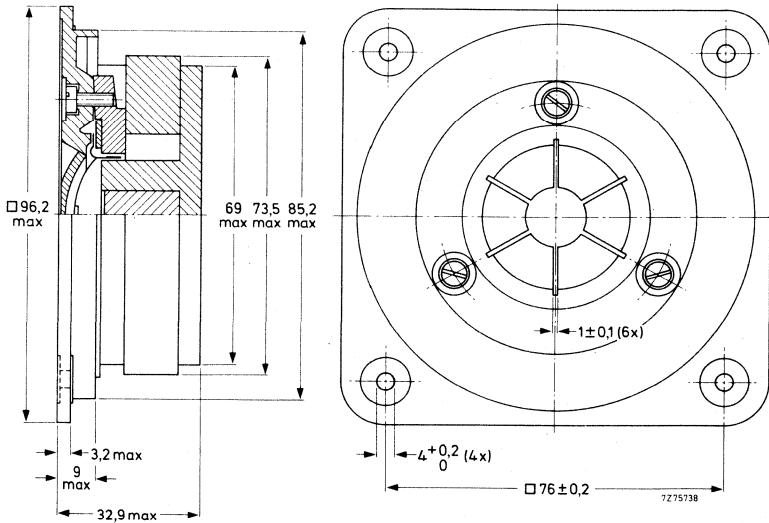


Fig. 1 Measuring circuit.
a = system power handling capacity.
b = loudspeaker power handling capacity.

Dimensions in mm



One tag is indicated by a red mark for in phase connection. Face of loudspeaker should not lie behind plane of baffle.

AVAILABLE VERSIONS

- AD01632/T4, catalogue number 2422 257 338 . 5
 - AD01632/T8, catalogue number 2422 257 338 . 6
 - AD01632/T15, catalogue number 2422 257 338 . 7
 - AD01633/T4, catalogue number 2422 257 338 . 5
 - AD01633/T8, catalogue number 2422 257 338 . 6
 - AD01633/T15, catalogue number 2422 257 338 . 7
- 0 = stamped on loudspeaker magnet,
not to be used for ordering
- 2 = for bulk packing*
6 = for single unit packing
- 1 = stamped on loudspeaker magnet,
not to be used for ordering
- 3 = for bulk packing*
7 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 3)

Curve a: Sound pressure measured in anechoic room, loudspeaker unmounted.

Curve d2: 2nd harmonic distortion, measured at the operating power of 2 W in anechoic room, loudspeaker unmounted.

DEVELOPMENT SAMPLE DATA



* Minimum packing quantity 9 per unit.

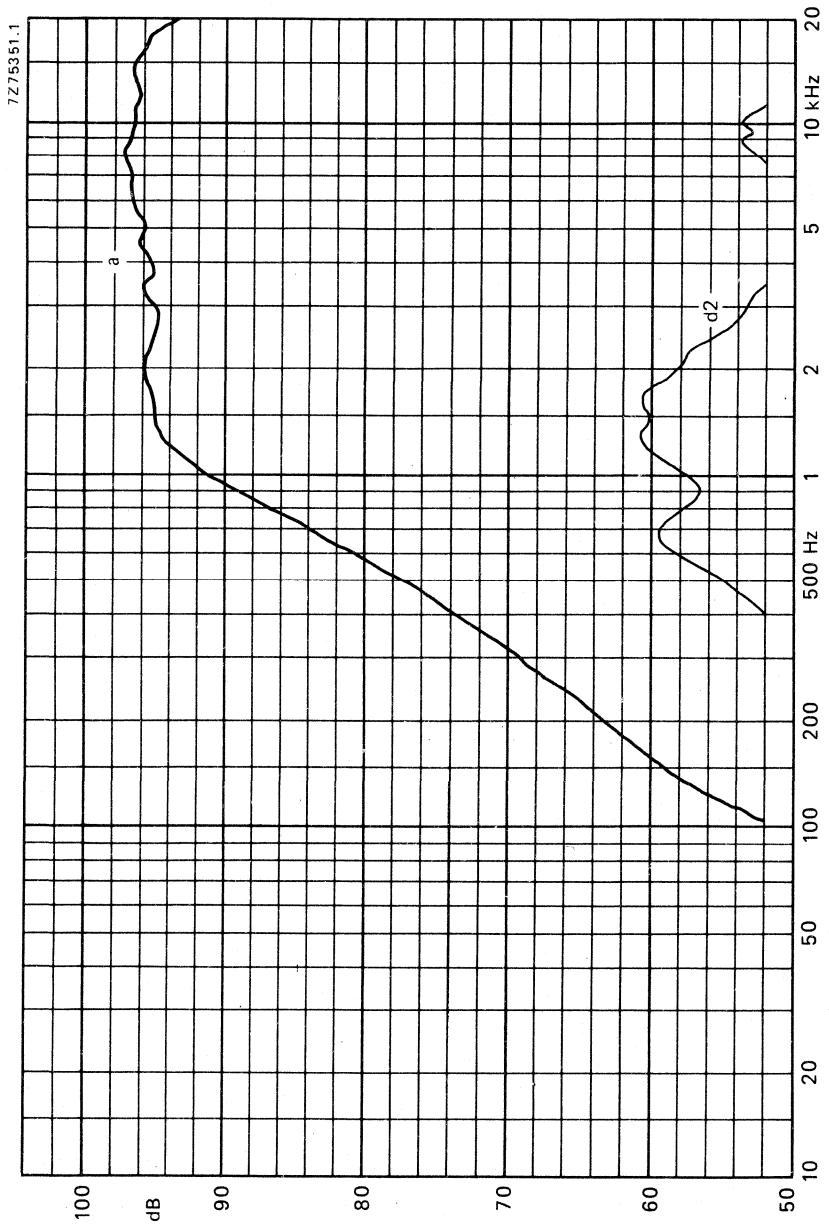


Fig. 3.

2 INCH HIGH POWER TWEETER LOUDSPEAKERS

APPLICATION

For the reproduction of frequencies up to 20 kHz with very low distortion in multi-way high-fidelity loudspeaker systems in accordance with DIN 45500. This loudspeaker may be used in television sets, due to absence of stray field from the tweeter magnet system.

TECHNICAL DATA

	version		
	T4	T8	T15
Rated impedance	4	8	15 Ω
Voice coil resistance	3,4	6,6	13,5 Ω
Resonance frequency		1300	Hz
Rated frequency range		3000 to 20 000	Hz
Power handling capacity, loudspeaker unmounted,			
PHC loudspeaker		2,5	W
PHC system, crossover frequency 3000 Hz, loudspeaker in series with capacitor of	12	5	2,7 μ F
Operating power		5	W
Sweep voltage (600 to 17 000 Hz)	2,8	4	5,5 V
loudspeaker in series with capacitor of	12	5	2,7 μ F
Energy in air gap		21	mJ
Flux density		0,8	T
Air-gap height		2,5	mm
Voice coil height	2,0	2,9	2,8 mm
Core diameter		14,5	mm
Magnet material		steel alloy	
diameter		18	mm
mass		0,013	kg
Mass of loudspeaker		0,07	kg

The loudspeaker has a paper cone and surround. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering. ←

AD2095/T.
AD2295/T.

Dimensions (mm)

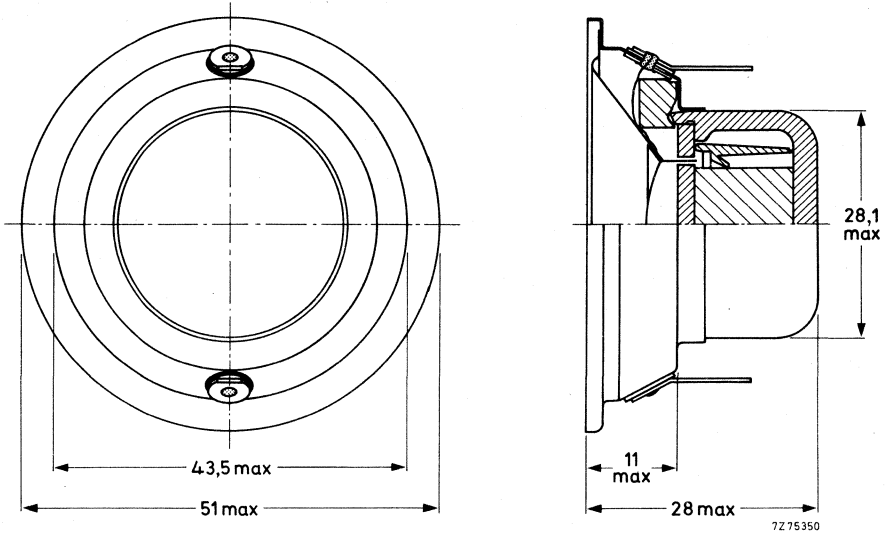


Fig.1a

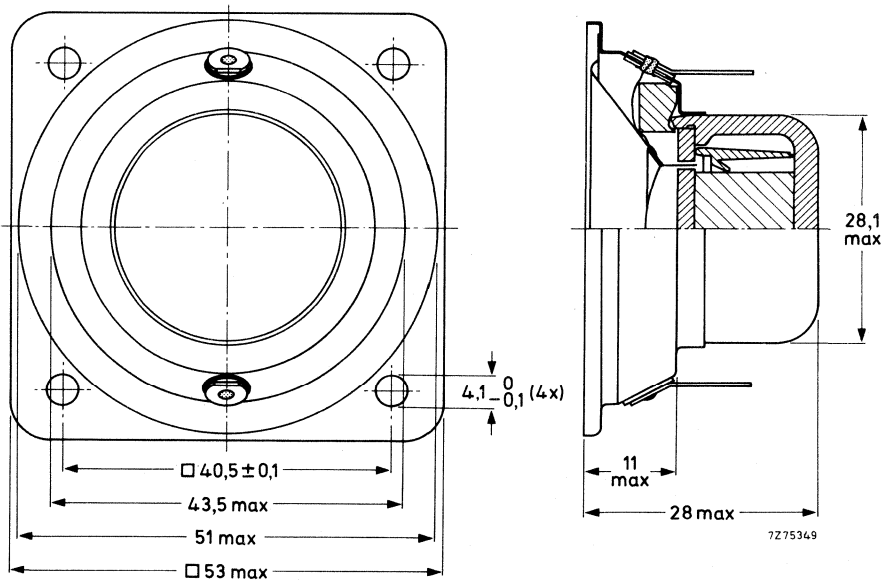


Fig.1b

One tag is indicated by a red mark for in-phase connection. Baffle hole diameter 44 mm.

AVAILABLE VERSIONS

Round flange version

AD2095/T4, catalogue number 2422 256 321.1

AD2095/T8, catalogue number 2422 256 321.2

AD2095/T15, catalogue number 2422 256 321.3

Square flange version

AD2295/T4, catalogue number 2422 256 322.1

AD2295/T8, catalogue number 2422 256 322.2

AD2295/T15, catalogue number 2422 256 322.3

0 = stamped on loudspeaker magnet,
not to be used for ordering

2 = for bulk packing *

6 = for single unit packing

FREQUENCY RESPONSE CURVES

Curve b: Sound pressure measured in anechoic room, loudspeaker unmounted.

Curve c: 2nd and 3rd harmonic distortion, measured at the operating power of 5 W in anechoic room, loudspeaker unmounted.



* Minimum packing quantity 25 per unit.

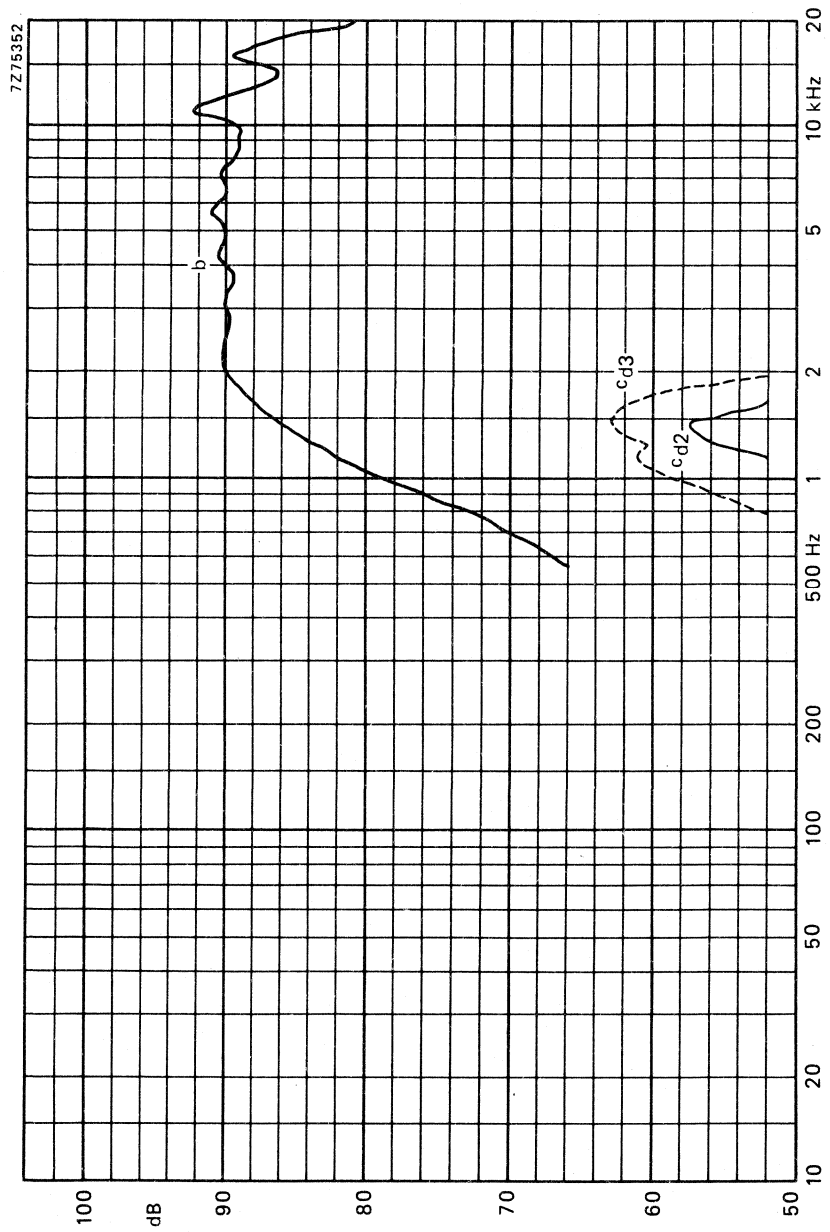


Fig.2

2 INCH HIGH POWER TWEETER LOUDSPEAKER

APPLICATION

For the reproduction of frequencies up to 20 kHz with very low distortion in multi-way high-fidelity loudspeaker systems in accordance with DIN 45500. This loudspeaker may be used in television sets, due to absence of stray field from the tweeter magnet system.

TECHNICAL DATA

Rated impedance	4 Ω
Voice coil resistance	3,4 Ω
Resonance frequency	1300 Hz
Rated frequency range	1200 to 20 000 Hz
Power handling capacity, loudspeaker unmounted,	
PHC loudspeaker	3 W
PHC system, crossover frequency 3000 Hz,	6 W
loudspeaker in series with capacitor of 12 μ F	
Operating power	6 W
Sweep voltage (600 to 17 000 Hz)	3.5 V
loudspeaker in series with capacitor of 12 μ F	
Energy in air gap	15,5 mJ
Flux density	0,73 T
Air-gap height	2,25 mm
Voice coil height	2 mm
Core diameter	14,5 mm
Magnet material	steel alloy
diameter	23 mm
mass	0,013 kg
Mass of loudspeaker	0,05 kg

The loudspeaker has a paper cone and surround. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions in mm

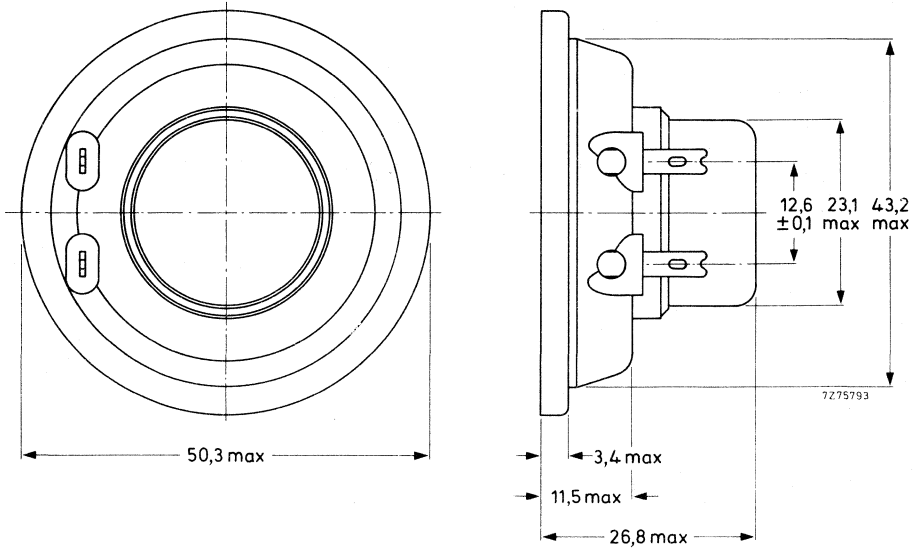


Fig. 1.

One tag is indicated by + sign for in-phase connection.

AVAILABLE VERSION

AD2096/T4, catalogue number 2422 256 323.1

- 0 = stamped on loudspeaker magnet, **not to be used** for ordering
- 2 = for bulk packing *
- 6 = for single unit packing

FREQUENCY RESPONSE CURVE (see Fig. 2)

Measured in anechoic room at a power of 1,5 W, loudspeaker unmounted.

Curve a: Sound pressure.

Curves d2 and d3: 2nd and 3rd harmonic distortion.

* Minimum packing quantity 25 per unit.

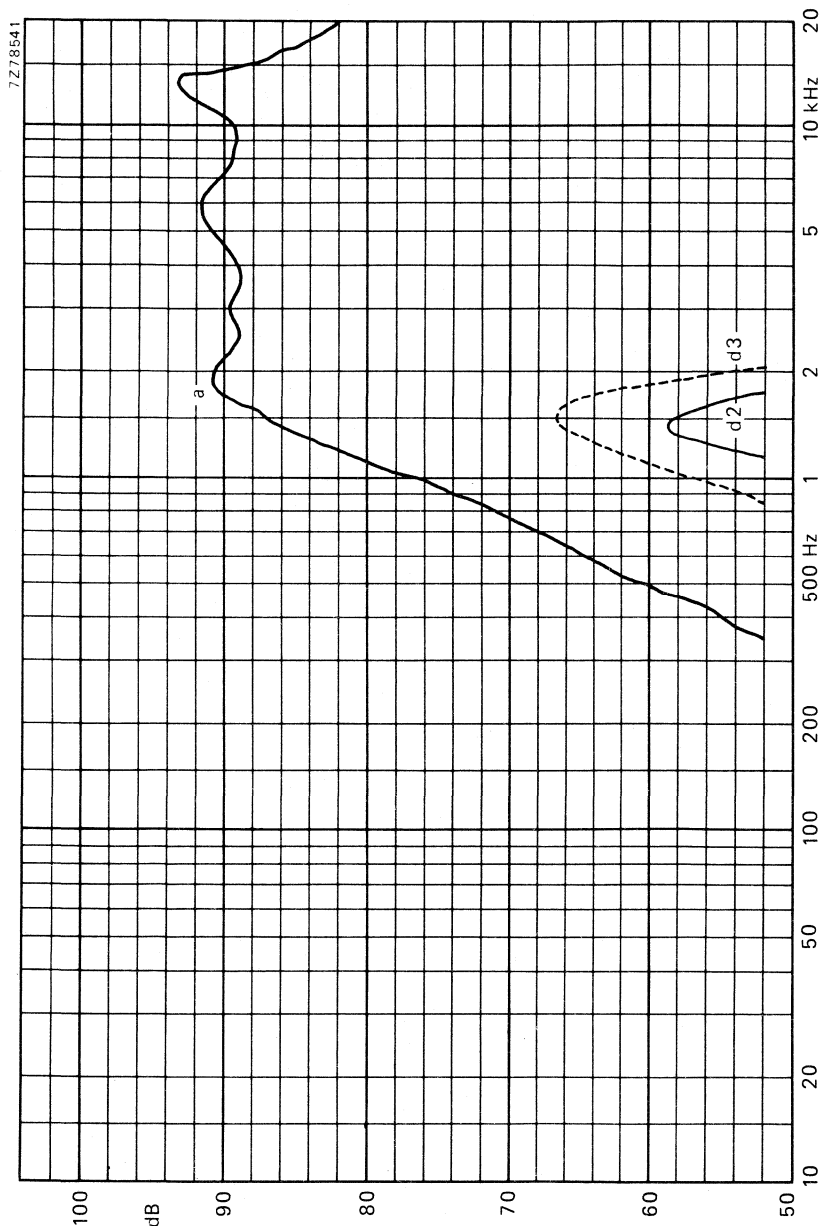


Fig. 2.



DEVELOPMENT SAMPLE DATA

This information is derived from development samples made available for evaluation. It does not form part of our data handbook system and does not necessarily imply that the device will go into production

AD2273/T.
AD2274/T.

2¼ INCH HIGH POWER TWEETER LOUDSPEAKERS

APPLICATION

For acoustic enclosures. Type AD2274/T. is also very suitable for television sets because this type is provided with a magnetic shield.

TECHNICAL DATA

	versions	
	T4	T8
Rated impedance	4	8 Ω
Voice coil resistance	3,5	7,1 Ω
Rated frequency range	1500 to 10 000 Hz	
Resonance frequency	1000	Hz
Power handling capacity, measured with a series capacitor of 5 μF and a signal acc. DIN 45573 cross-over frequency 2400 Hz loudspeaker unmounted	10	W
Operating power	to be established W	
Sweep voltage (700 to 15 000 Hz)	1,4	2 V
Energy in air gap	12,7	mJ
Flux density	740	T
Air-gap height	2,5	mm
Voice coil height	2,7	2,2 mm
Core diameter	10	mm
Magnet material	ceramic	
diameter	31	mm
mass	0,02	kg
Mass of loudspeaker	0,07	kg

The loudspeakers have a paper cone and surround. Connection to the loudspeakers by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions (mm)

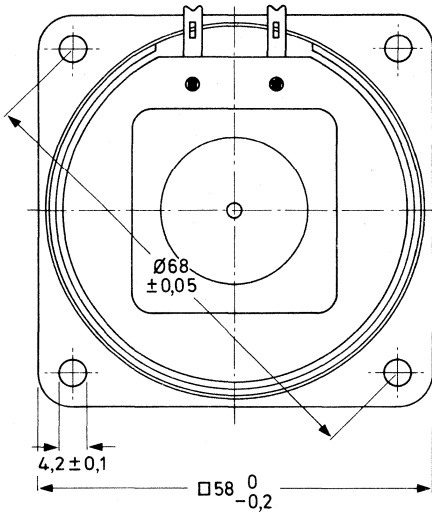


Fig. 1.

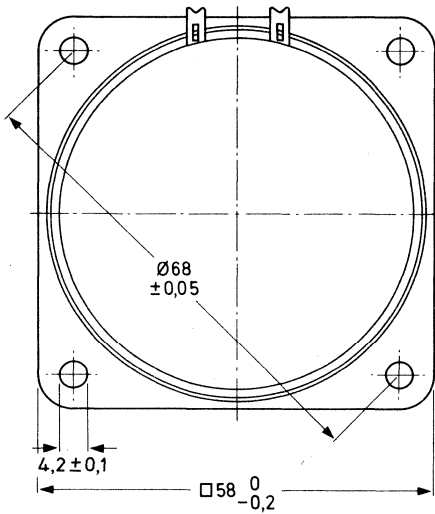


Fig. 2.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

Without magnetic shield

AD2273/T4, catalogue number 2403 257 221.1

AD2273/T8, catalogue number 2403 257 221.2

With magnetic shield

AD2274/T4, catalogue number 2403 257 222.1

AD2274/T8, catalogue number 2403 257 222.2

(0 = stamped on loudspeaker magnet
not to be used for ordering)

2 for bulk packing *
6 for single unit packing

RESPONSE CURVES

Input power 50 mW.

Sound pressure measured in anechoic room, loudspeaker unmounted.

Fig. 3 Directional curve at 10 000 Hz.

Fig. 4 Frequency response curve. Over the width of one octave, the characteristic may be maximum 2 dB lower than indicated.

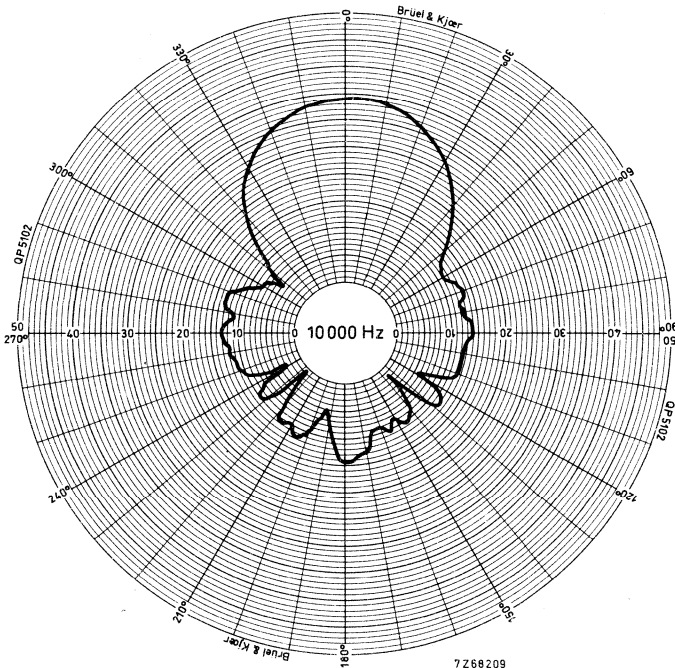


Fig. 3.

* Minimum packing quantity 25 per unit.

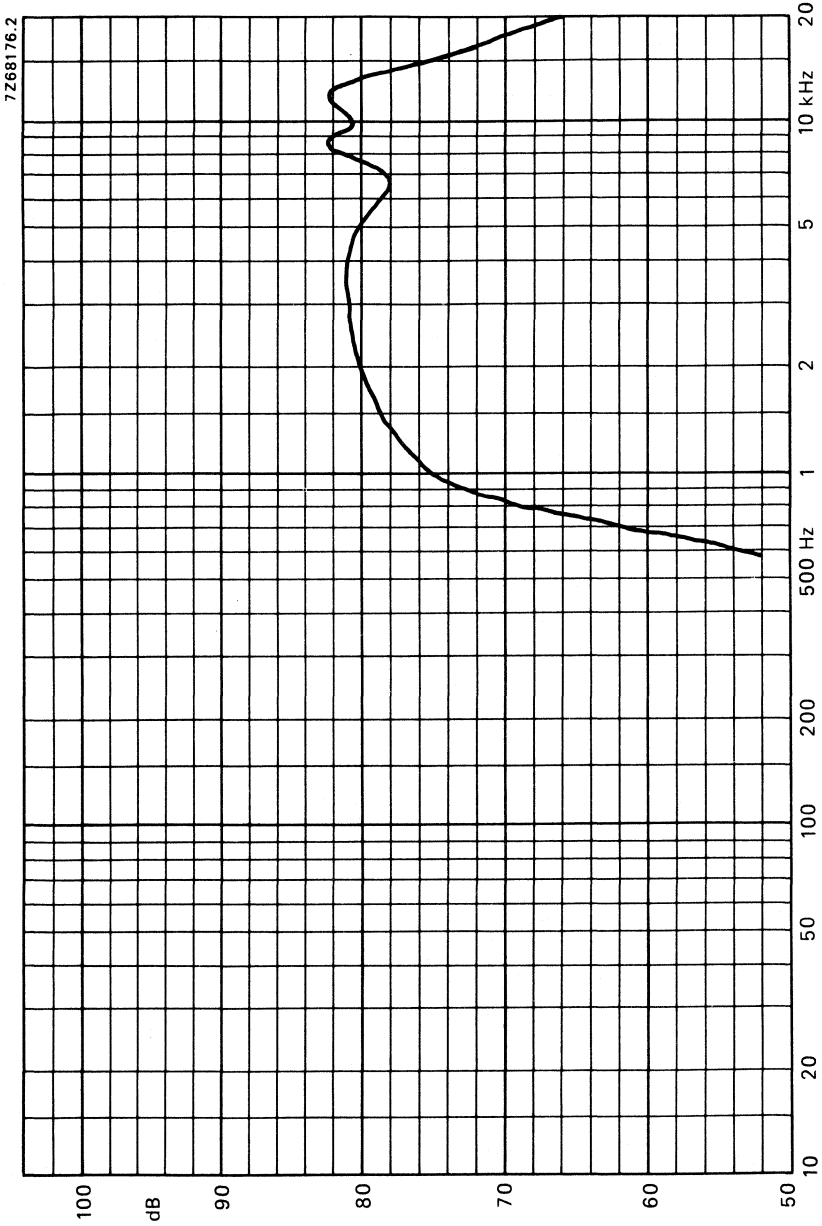


Fig. 4.

High power squawker loudspeakers



760115-04-07



Type AD0210/Sq4



Dimensions in mm

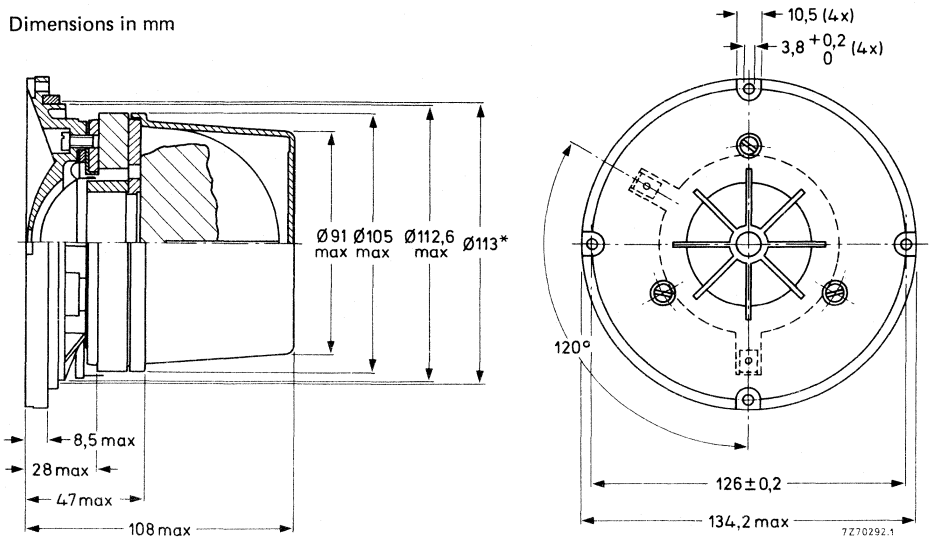


Fig. 1.

* Baffle hole diameter 110 mm.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

With paper dome

AD0210/Sq4, catalogue number 2422 257 320.1

AD0210/Sq8, catalogue number 2422 257 320.2

0 = stamped on loudspeaker magnet,
not to be used for ordering

2 = for bulk packing **

6 = for single unit packing

With textile dome

AD0211/Sq4, catalogue number 2422 257 320.1

AD0211/Sq8, catalogue number 2422 257 320.2

1 = stamped on loudspeaker magnet,
not to be used for ordering

3 = for bulk packing **

7 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve a: Sound pressure measured in anechoic room, loudspeaker mounted on IEC baffle at operating power.

Curves d2 and d3: 2nd and 3rd harmonic distortion, measured at the operating power in anechoic room. Loudspeaker front mounted on IEC baffle.

** Minimum packing quantity 6 per unit.

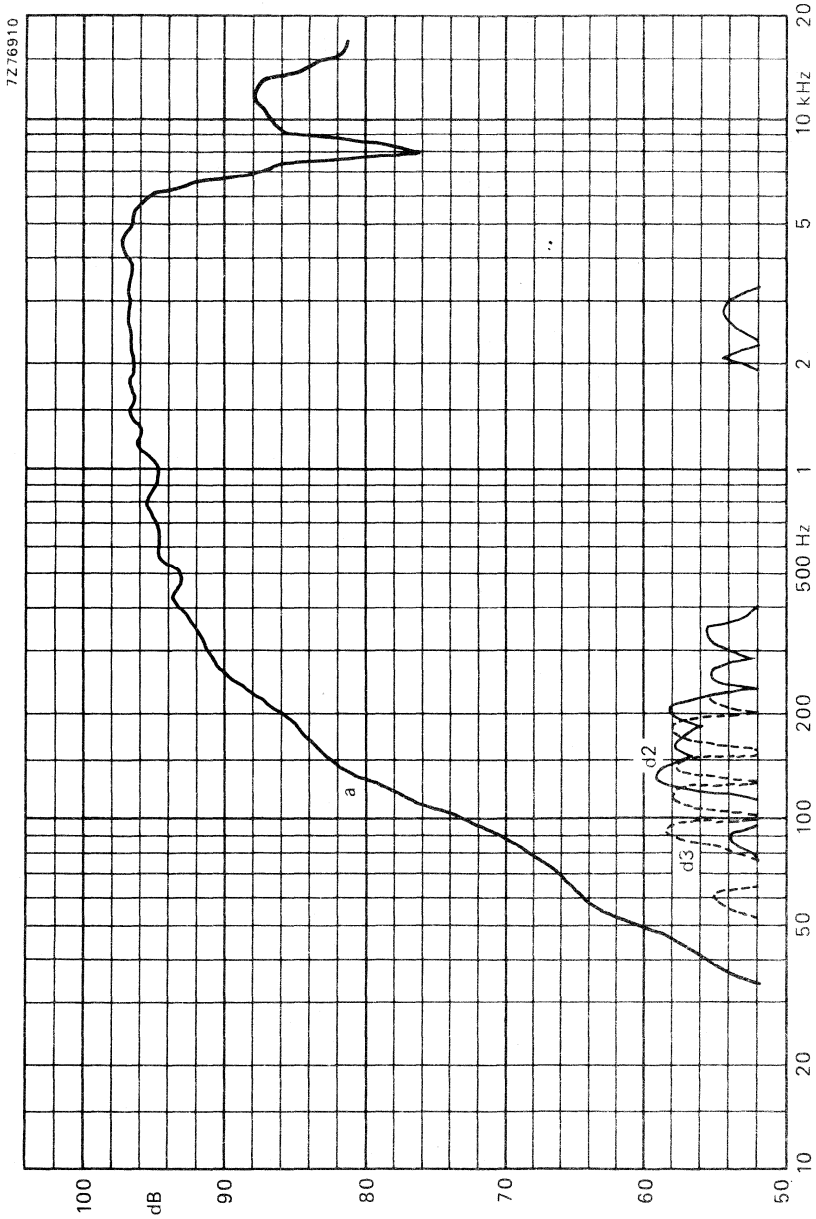


Fig. 2.



5 inch HIGH POWER SQUAWKER LOUDSPEAKER

APPLICATION

For the reproduction of audio frequencies from 500 to 4500 Hz with very low distortion ← in multi-way high-fidelity loudspeaker systems in accordance with DIN45500. The loudspeaker has an excellent spherical radiation pattern.

TECHNICAL DATA

	version	
	Sq4	Sq8
Rated impedance	4	8 Ω
Voice coil resistance	3, 4	6, 4 Ω
Resonance frequency	210	210 Hz
Power handling capacity		
measured with filter: 72 μF - 2, 1 mH (4Ω)	40	— W
36 μF - 4, 5 mH (8Ω)	—	40 W
loudspeaker unmounted		
Operating power	4	4 W
Sweep voltage		
frequency range: 400 - 5000 Hz		
filter high pass : 72 μF - 2, 1 mH (4Ω)	3, 5	— V
36 μF - 4, 5 mH (8Ω)	—	5 V
Energy in air gap	140	140 mJ
Flux density	0, 93	0, 93 T
Air-gap height	5	5 mm
Voice coil height	6, 8	6, 8 mm
Core diameter	25	25 mm
Magnet material	ceramic	ceramic
diameter	72	72 mm
mass	0, 23	0, 23 kg
Mass of loudspeaker	0, 8	0, 8 kg

The loudspeaker has a paper cone, a rubber surround and a sealed pot; no acoustic isolation required. Connection to the loudspeaker by means of 6, 3 mm (0, 25 inch) tag connectors or by soldering.

Dimensions (mm)

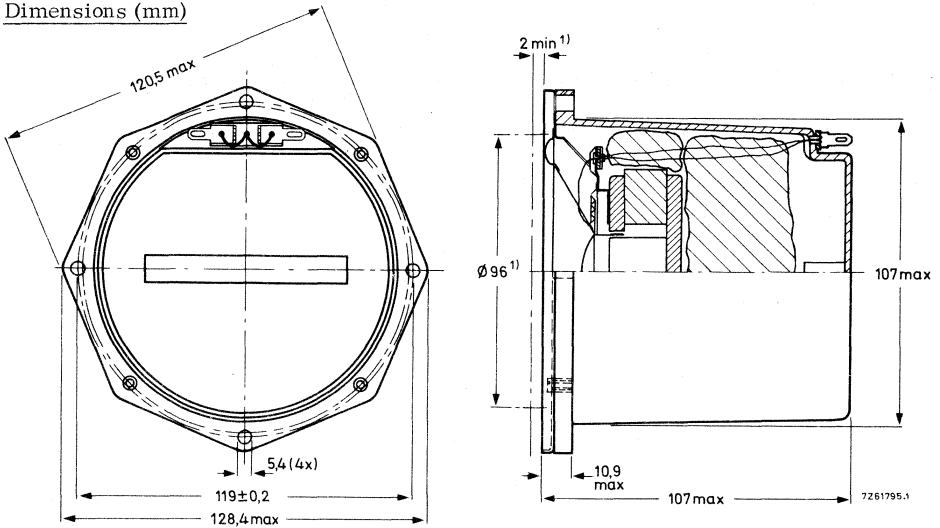


Fig. 1

1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

- AD5060/Sq4, catalogue number 2422 257 354.1
- AD5060/Sq8, catalogue number 2422 257 354.2

(0 = stamped on loudspeaker magnet
not to be used for ordering)

- 2 = for bulk packing *)
- 6 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve b: Sound pressure measured in half free field at operating power of 4 W in anechoic room, loudspeaker mounted on IEC baffle.

Curve c: 2nd and 3rd harmonic distortion, measured at the operating power of 4 W in anechoic room.

*) Minimum packing quantity 6 per unit.

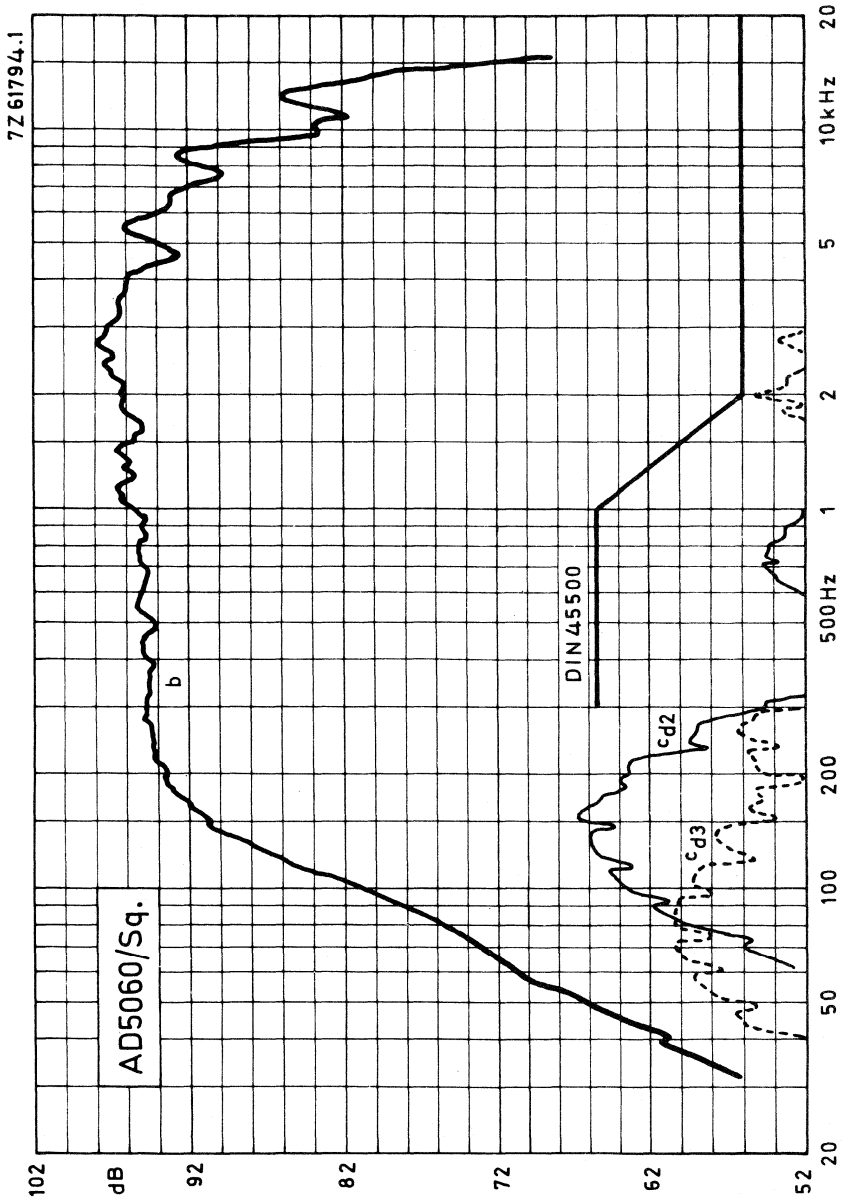


Fig. 2



Dimensions (mm)

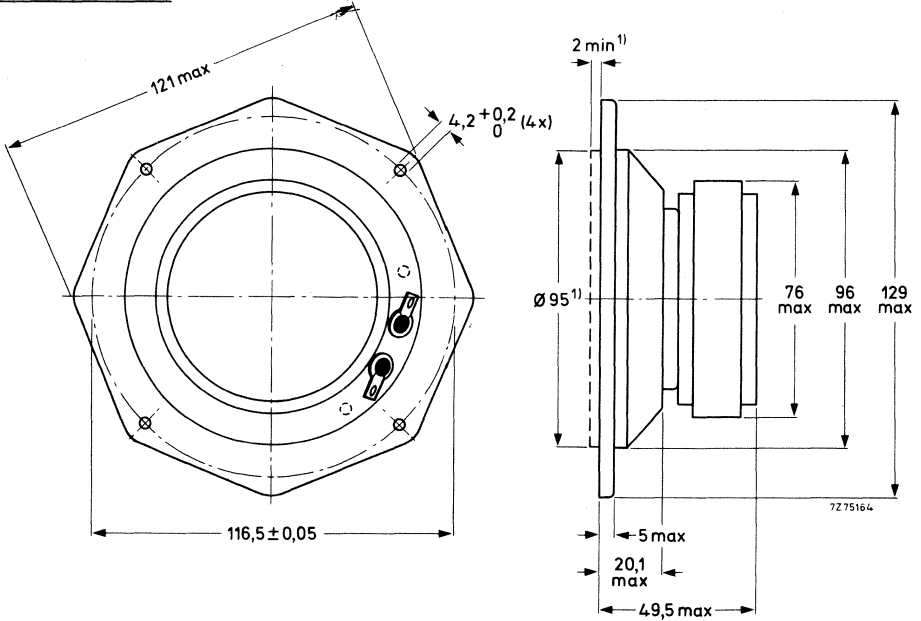


Fig. 1

1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD5061/Sq4, catalogue number 2422 257 354.5

AD5061/Sq8, catalogue number 2422 257 354.6

(0 = stamped on loudspeaker magnet
not to be used for ordering)

2 = for bulk packing *)

6 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve b: Sound pressure measured in half free field at operating power of 2 W in anechoic room, loudspeaker mounted on IEC baffle.

Curve c: 2nd and 3rd harmonic distortion, measured at the operating power of 2 W in anechoic room.

*) Minimum packing quantity 6 per unit.

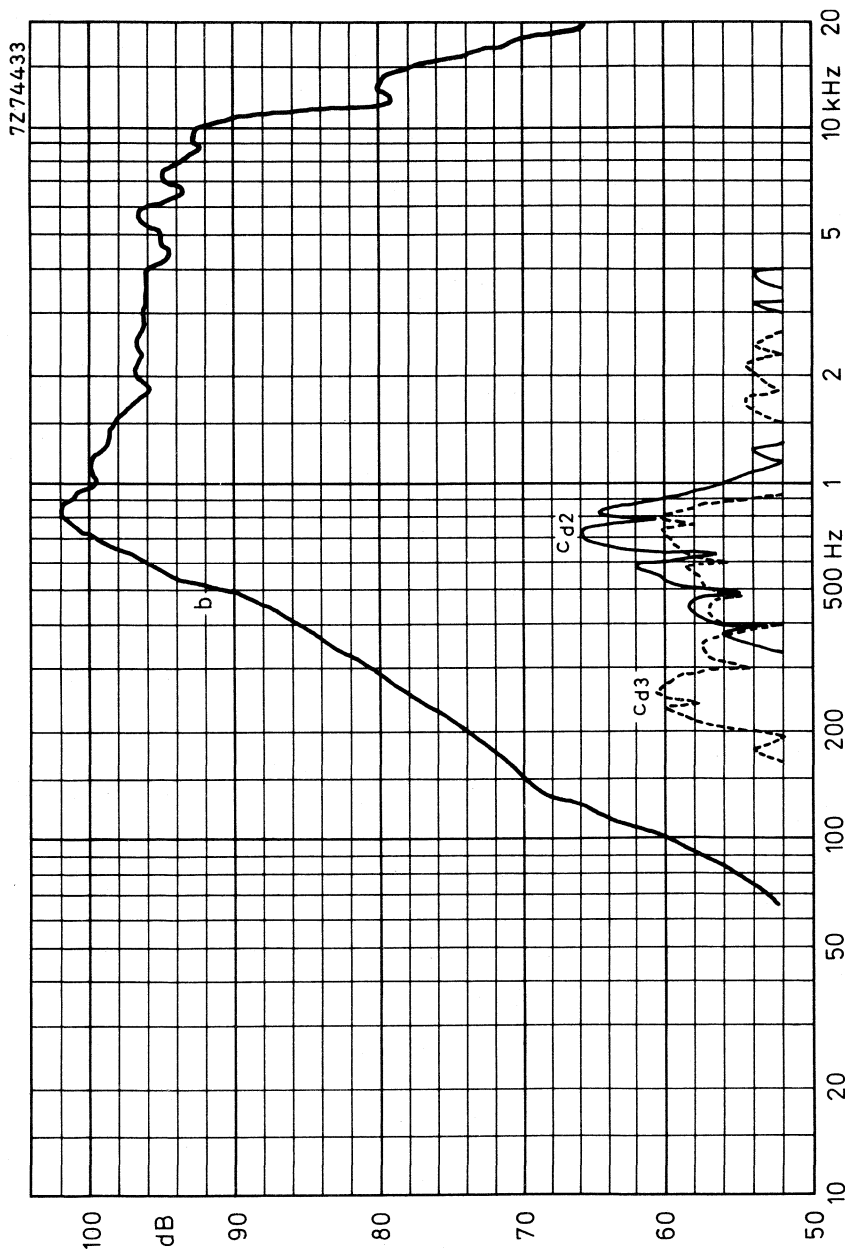


Fig. 2



High power woofer loudspeakers



771128-12-01



Type AD12200/W8

4 INCH HIGH POWER WOOFER LOUDSPEAKER

APPLICATION

The absence of stray field due to steel alloy sinterpot magnet system makes this loudspeaker very suitable for use in television sets. It can be used in sealed acoustic enclosures and in bass reflex enclosures of maximum 7 litres.

TECHNICAL DATA

	version	
	W4	W8
Rated impedance	4	8 Ω
Voice coil resistance	3,2	7 Ω
Rated frequency range	35 to 2000 Hz	
Resonance frequency	60	Hz
Power handling capacity measured without filter, mounted in 7 l bass reflex enclosure	15	W
Operating power	8	W
Sweep voltage, frequency range: 30 to 6000 Hz	5,5	7,75 V
Energy in air gap	100	mJ
Flux density	0,85	T
Air-gap height	5	mm
Voice coil height	6	mm
Core diameter	25	mm
Magnet material	steel alloy	
diameter	25	mm
mass	0,06	kg
Mass of loudspeaker	0,42	kg

The loudspeaker has a paper cone, a rubber surround and a sealing strip at the rear of the gasket. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions in mm

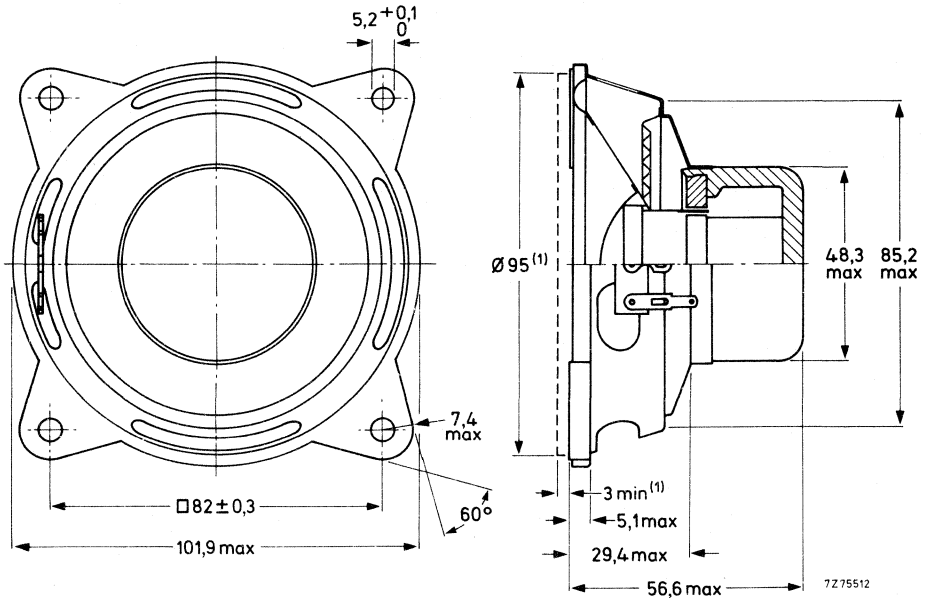


Fig. 1.

(1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSION

AD4050/W4, catalogue number 2422 256 344.1
 AD4050/W8, catalogue number 2422 256 344.2

0 = stamped on loudspeaker magnet, **not to be used** for ordering

2 = for bulk packing

6 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve a: Sound pressure measured in anechoic room, loudspeaker mounted in 7 l bass reflex enclosure.
 Curves d2 and d3: 2nd and 3rd harmonic distortion, measured at the operating power.

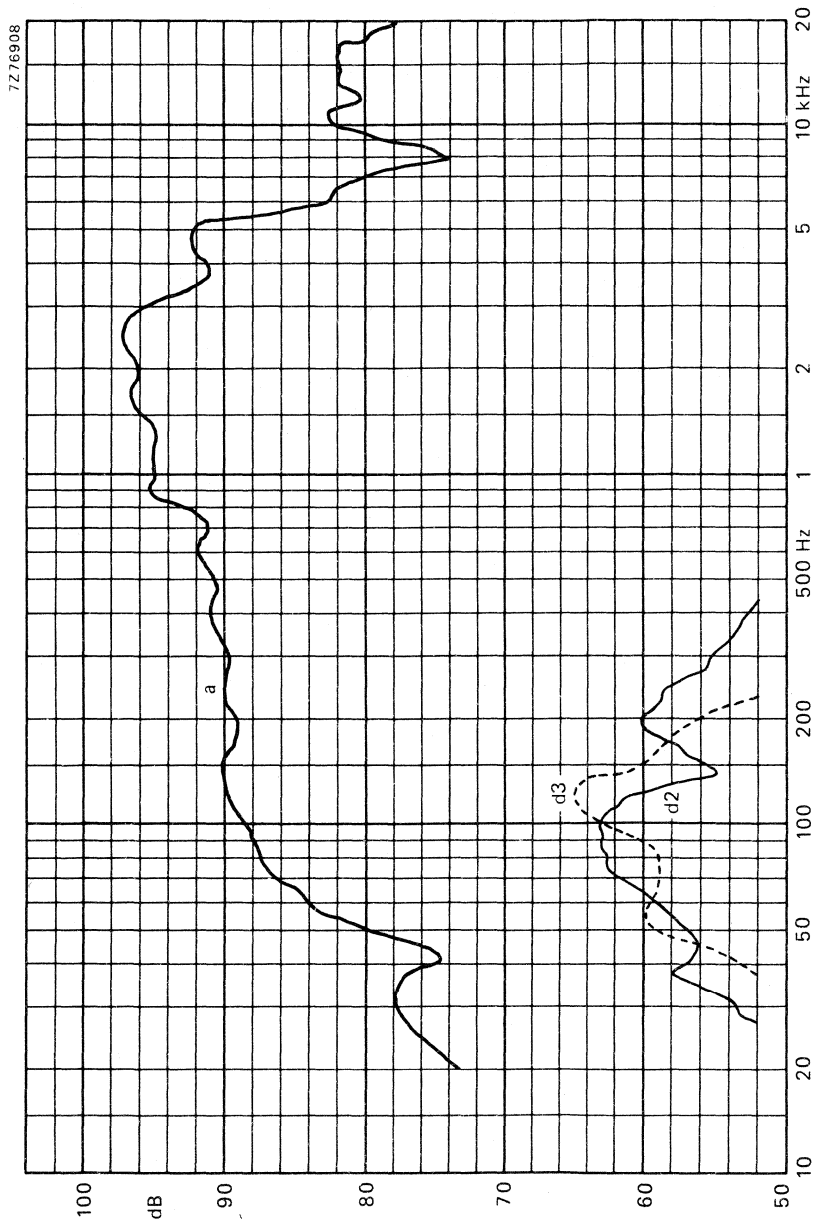


Fig. 2.

4 INCH HIGH POWER WOOFER LOUDSPEAKER

APPLICATION

For use in bass reflex enclosures of maximum 7 litres.

TECHNICAL DATA

	version	
	W4	W8
Rated impedance	4	8 Ω
Voice coil resistance	3,8	6,7 Ω
Rated frequency range	50 to 11 000 Hz	
Resonance frequency	60	Hz
Power handling capacity measured without filter, mounted in 2 l sealed enclosure	30	W
mounted in 5 l bass reflex enclosure	15	W
Operating power	12	W
Sweep voltage, frequency range: 50 to 20 000 Hz	5,5	7,7 V
Energy in air gap	140	mJ
Flux density	0,93	T
Air-gap height	5	mm
Voice coil height	10	mm
Core diameter	25	mm
Magnet material	ceramic	
diameter	72	mm
mass	0,26	kg
Mass of loudspeaker	0,62	kg

The loudspeaker has a paper cone, a rubber surround, and a sealing strip at the rear of the gasket. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.

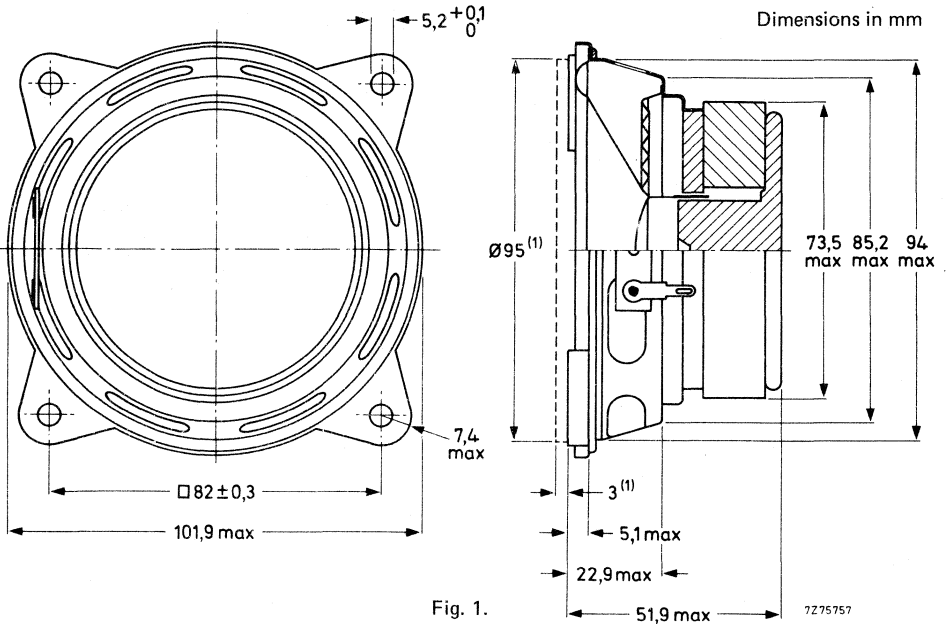


Fig. 1.

(1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD 4060/W4, catalogue number 2422 257 346.1
 AD 4060/W8, catalogue number 2422 257 346.2

- 0 = stamped on loudspeaker magnet, not to be used for ordering
- 2 = for bulk packing
- 6 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Measured in anechoic room, loudspeaker mounted on IEC baffle.

Curve a: Sound pressure.

Curves d2 and d3: 2nd and 3rd harmonic distortion, measured at the operating power of 12 W.

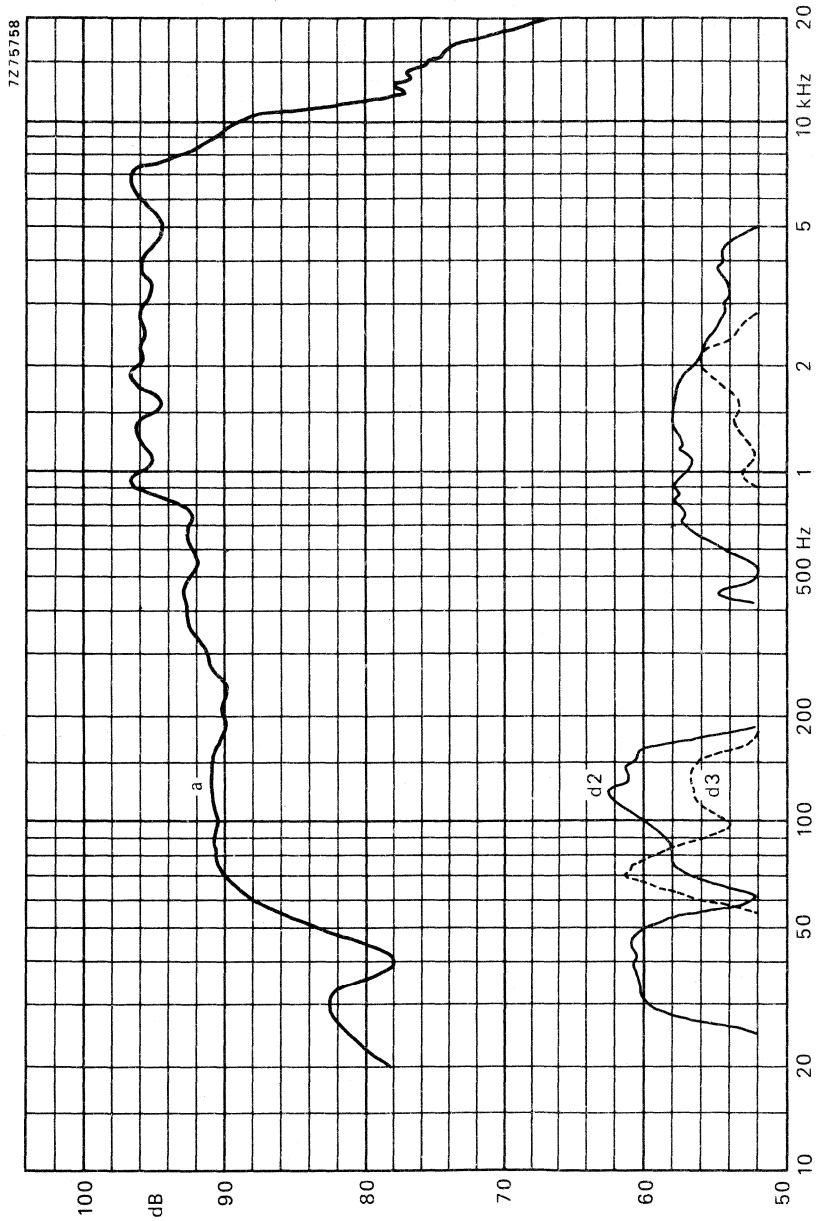


Fig. 2.



5 INCH HIGH POWER WOOFER LOUDSPEAKER

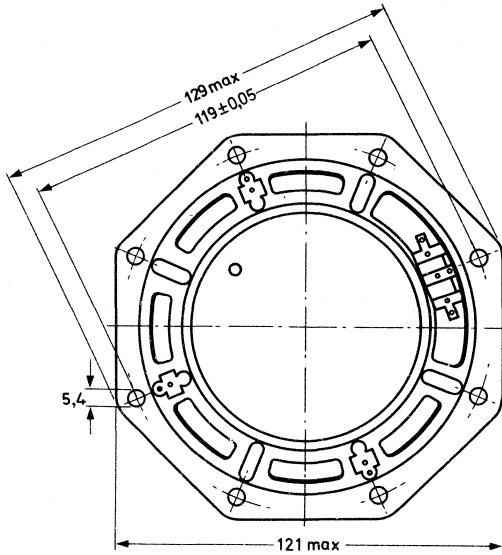
APPLICATION

For high quality reproduction in sealed acoustic enclosures. Maximum enclosure volume 3 litres.
Maximum recommended cross-over frequency 5000 Hz.

TECHNICAL DATA

	version	
	W4	W8
Rated impedance	4	8 Ω
Voice coil resistance	3,4	7 Ω
Rated frequency range	75 to 13 000 Hz	
Resonance frequency	60	Hz
Power handling capacity, mounted in 3 l sealed enclosure	10	W
Operating power for 90 dB sound level	2	W
Sweep voltage, frequency range: 40 to 4000 Hz	2,8	4,2 V
Energy in air gap	140	mJ
Flux density	0,93	T
Air-gap height	5	mm
Voice coil height	6,8	mm
Core diameter	25	mm
Magnet material	ceramic	
diameter	72	mm
mass	0,23	kg
Mass of loudspeaker	0,7	kg

The loudspeaker has a paper cone and a rubber surround. Connection to the loudspeaker by means of 2,8 mm (0,11 inch) tag connectors or by soldering.



Dimensions in mm

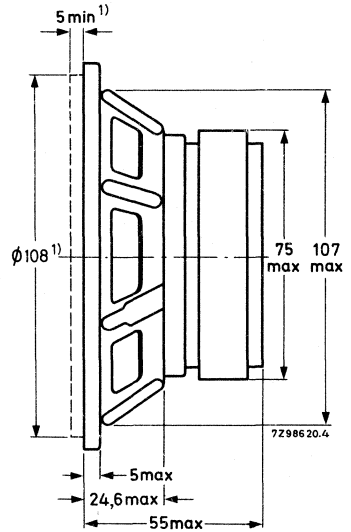


Fig. 1.

(1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD5060/W4, catalogue number 2422 257 353.1

AD5060/W8, catalogue number 2422 257 353.2

(0 = stamped on loudspeaker magnet, **not to be used for ordering**)

2 = for bulk packing*

6 = for single unit packing

FREQUENCY RESPONSE CURVES

Curve a: Sound pressure measured in anechoic room at input power of 2 W. Loudspeaker mounted in sealed 3 l enclosure.

Curves d2 and d3: 2nd and 3rd harmonic distortion, measured at input power of 2 W in anechoic room, loudspeaker mounted in 3 l enclosure.

* Minimum packing quantity 8 per unit.

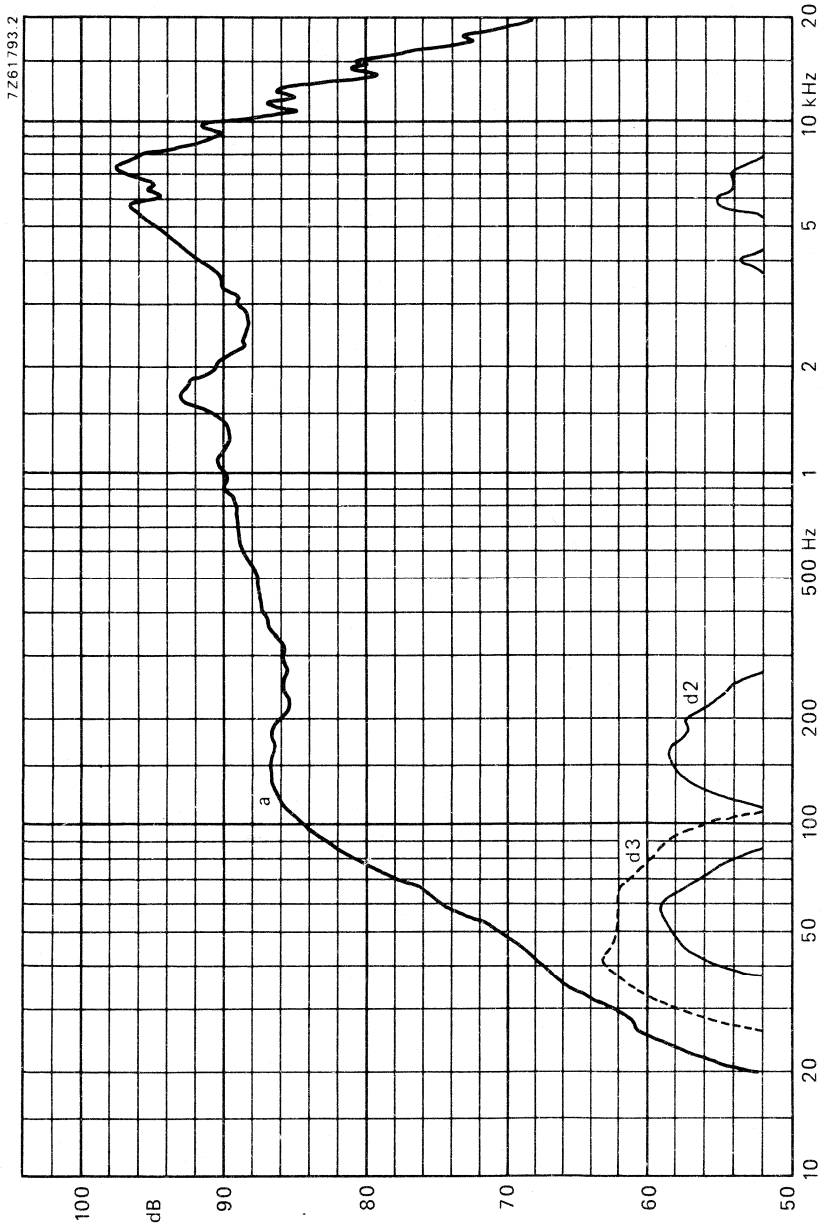


Fig. 2.



7 inch HIGH POWER WOOFER LOUDSPEAKER

APPLICATION

For high fidelity reproduction in sealed acoustic enclosures.

Maximum enclosure volume 7 litres; maximum recommended cross-over frequency 3 000 Hz.

Rated frequency range 40 to 3 000 Hz.

TECHNICAL DATA

	version	
	W4	W8
Rated impedance	4	8 Ω
Voice coil resistance	4,3	8 Ω
Resonance frequency	45	45 Hz
Power handling capacity, measured without filter, mounted in 7 l sealed enclosure	30	30 W
Operating power	6,3	6,3 W
Sweep voltage frequency range 35 - 5000 Hz	3,8	5,3 V
Energy in air gap	135	140 mJ
Flux density	0,87	0,93 T
Air-gap height	5	5 mm
Voice coil height	11	11 mm
Core diameter	25	25 mm
Magnet material	ceramic	ceramic
diameter	72	72 mm
mass	0,26	0,26 kg
Mass of loudspeaker	0,68	0,68 kg

The loudspeaker has a paper cone and a rubber surround.

Connection to the loudspeaker by means of 6,3 mm (0,25 inch) tag connectors or by soldering.

Dimensions (mm)

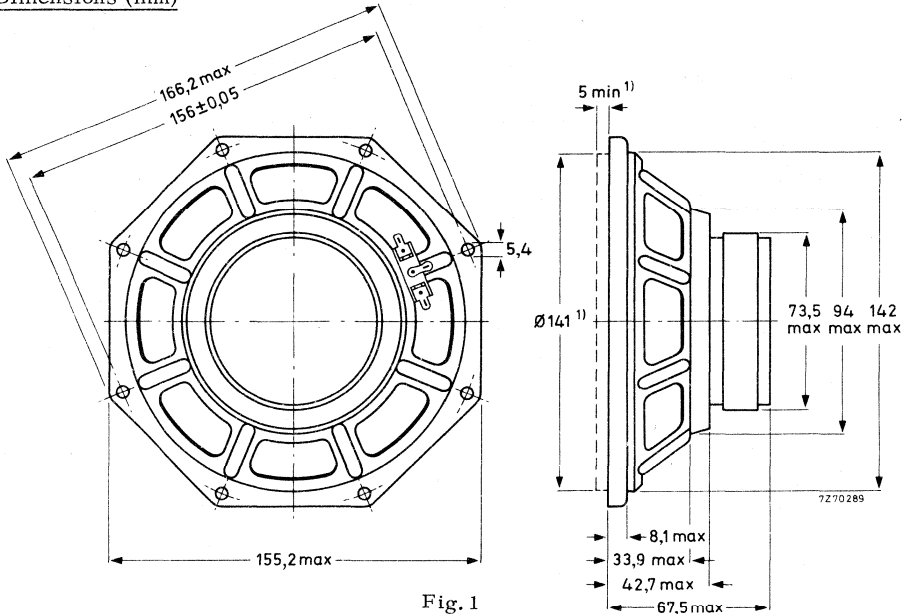


Fig. 1

¹⁾ Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD7060/W4, catalogue number 2422 257 379.1

AD7060/W8, catalogue number 2422 257 379.2

(1 = stamped on loudspeaker magnet, not to be used for ordering)

3 = for bulk packing *)

7 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve b: Sound pressure measured in anechoic room, input at an operating power of 6,3 W. Loudspeaker mounted in sealed 80 l enclosure, filled with 1 kg of glass wool.

Curve c: 2nd and 3rd harmonic distortion, measured at the operating power of 6,3 W in anechoic room, loudspeaker mounted in sealed 80 l enclosure with 1 kg of glass wool.

*) Minimum packing quantity 4 per unit.

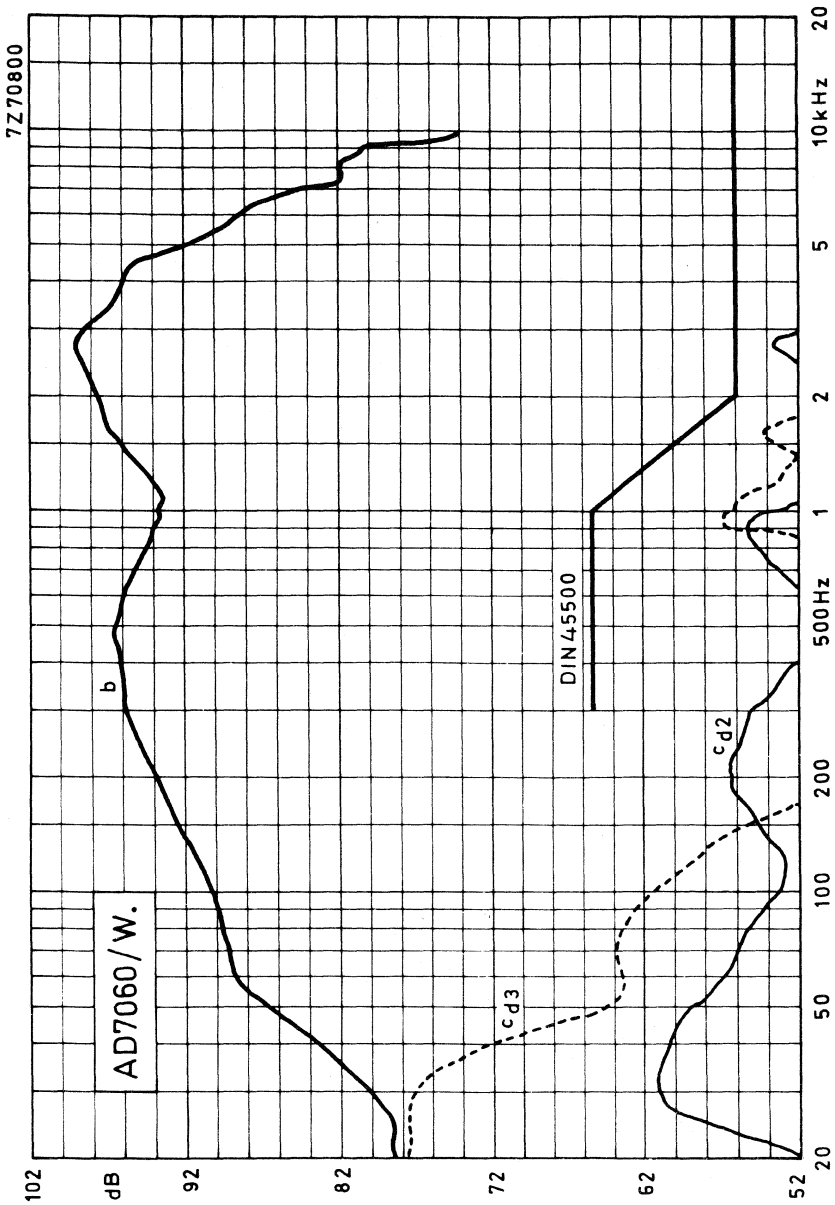


Fig. 2



DEVELOPMENT SAMPLE DATA

This information is derived from development samples made available for evaluation. It does not form part of our data handbook system and does not necessarily imply that the device will go into production

AD70601/W.

7 inch HIGH POWER WOOFER LOUDSPEAKER

APPLICATION

For high fidelity reproduction in sealed acoustic enclosures.

Maximum enclosure volume 7 litres; maximum recommended cross-over frequency 3 000 Hz

TECHNICAL DATA

	version	
	W4	W8
Rated impedance	4	8 Ω
Voice coil resistance	4,3	8 Ω
Rated frequency range	40 to 3000 Hz	
Resonance frequency	45 Hz	
Power handling capacity, measured without filter, mounted in 7 l sealed enclosure	30 W	
Operating power	6,3	W
Sweep voltage, frequency range 35 - 5 000 Hz	3,8	5,3 V
Energy in air gap	135	140 mJ
Flux density	0,87	0,93 T
Air-gap height	5 mm	
Voice coil height	11 mm	
Core diameter	25 mm	
Magnet material	ceramic	
diameter	72 mm	
mass	0,26 kg	
Mass of loudspeaker	0,68 kg	



The loudspeaker has a paper cone and a rubber surround.

Connection to the loudspeaker by means of 6,3 mm (0,25 inch) tag connectors or by soldering.

Dimensions in mm

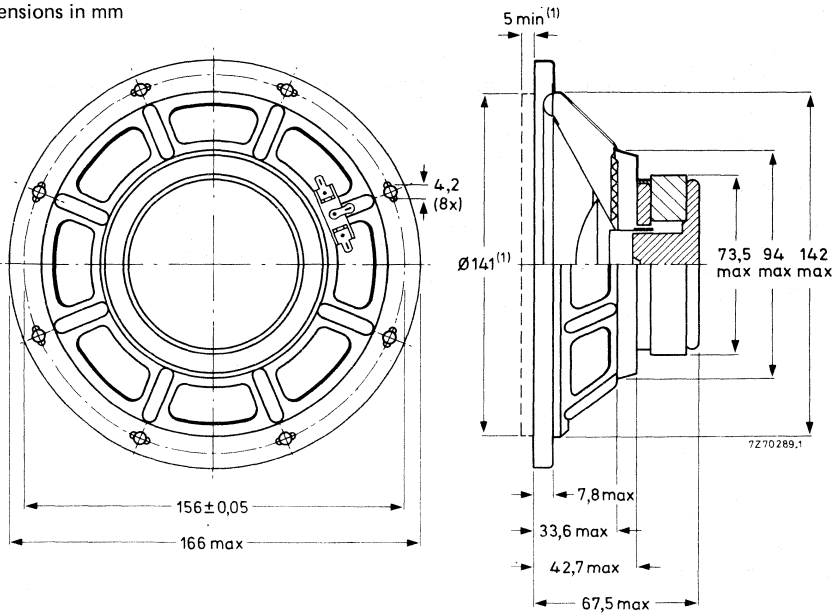


Fig. 1.

(1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD70601/W4, catalogue number 2422 257 471 . 1

AD70601/W8, catalogue number 2422 247 471 . 2

0 = stamped on loudspeaker magnet,
not to be used for ordering

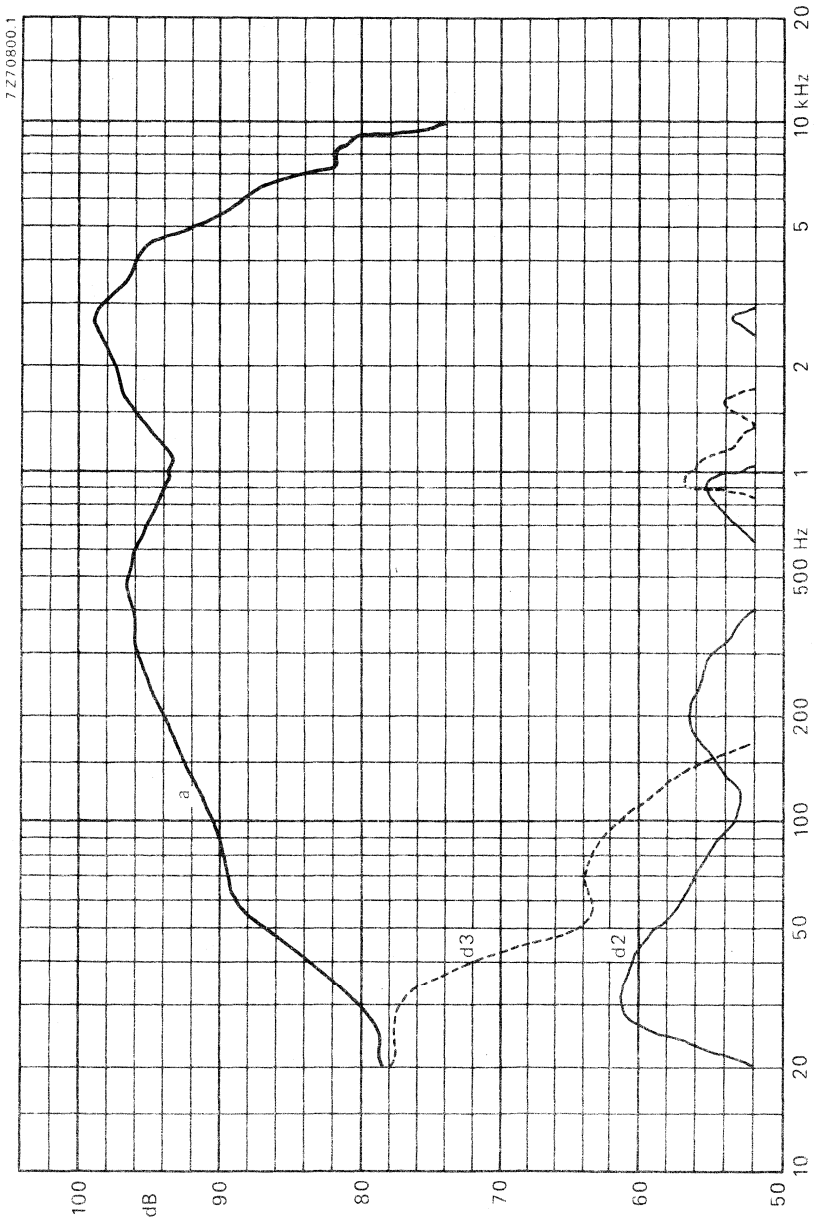
2 = for bulk packing*
6 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve a: Sound pressure measured in anechoic room, input at an operating power of 6,3 W. Loudspeaker mounted in sealed 80 l enclosure, filled with 1 kg of glass wool.

Curves d2 and d3: 2nd and 3rd harmonic distortion, measured at the operating power of 6,3 W in anechoic room, loudspeaker mounted in sealed 80 l enclosure with 1 kg of glass wool.

* Minimum packing quantity 4 per unit.



DEVELOPMENT SAMPLE DATA

Fig. 2.



7 inch HIGH POWER WOOFER LOUDSPEAKERS

APPLICATION

For high fidelity reproduction in sealed acoustic enclosures. Recommended enclosure volume 15 litres; maximum recommended cross-over frequency 3 000 Hz. Smooth roll-off frequency characteristic.

TECHNICAL DATA

	version	
	W4	W8
Rated impedance	4	8 Ω
Voice coil resistance	4	8,5 Ω
Rated frequency range	50 to 4000 Hz	
Resonance frequency	45 Hz	
Power handling capacity, measured without filter, mounted in 15 l sealed enclosure	30 W	
Operating power	12	W
Sweep voltage, frequency range: 35 - 4 000 Hz	5	7 V
Energy in air gap	134	140 mJ
Flux density	0,64	0,72 T
Air-gap height	5 mm	
Voice coil height	10 mm	
Core diameter	25 mm	
Magnet material	ceramic	
diameter	72 mm	
mass	0,24 kg	
Mass of loudspeaker	0,67 kg	

The loudspeakers a paper cone and a rubber surround. Connection to the loudspeakers by means of 6,3 mm (0,25 inch) tag connectors or by soldering.

A second connecting plate permits support of a filter capacitor.

Type AD70611/W. is similar to type AD70610/W., but is equipped with a black foam plastic gasket.

Dimensions in mm

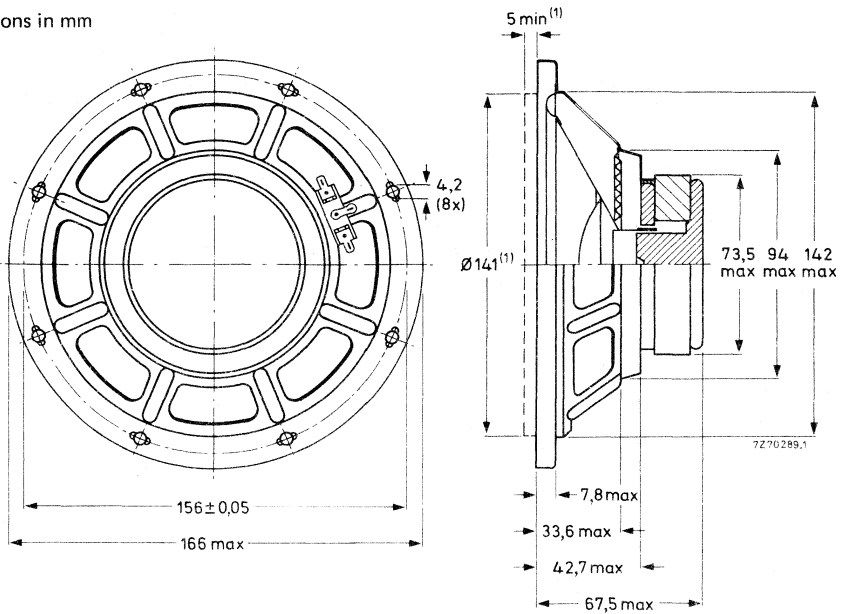


Fig. 1.

(1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

Without foam plastic gasket

AD70610/W4, catalogue number 2422 257 379 . 5

AD70610/W8, catalogue number 2422 257 379 . 6

With foam plastic gasket

AD70611/W4, catalogue number 2422 257 379 . 7

AD70611/W8, catalogue number 2422 257 379 . 8

1 = stamped on loudspeaker magnet,
not to be used for ordering

3 = for bulk packing*
7 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve a: Sound pressure measured in anechoic room, input at an operating power of 12 W. Loudspeaker mounted in sealed 15 l enclosure.

Curves d2 and d3: 2nd and 3rd harmonic distortion, measured at the operating power of 12 W in anechoic room, loudspeaker mounted in sealed 15 l enclosure.

* Minimum packing quantity 4 per unit.

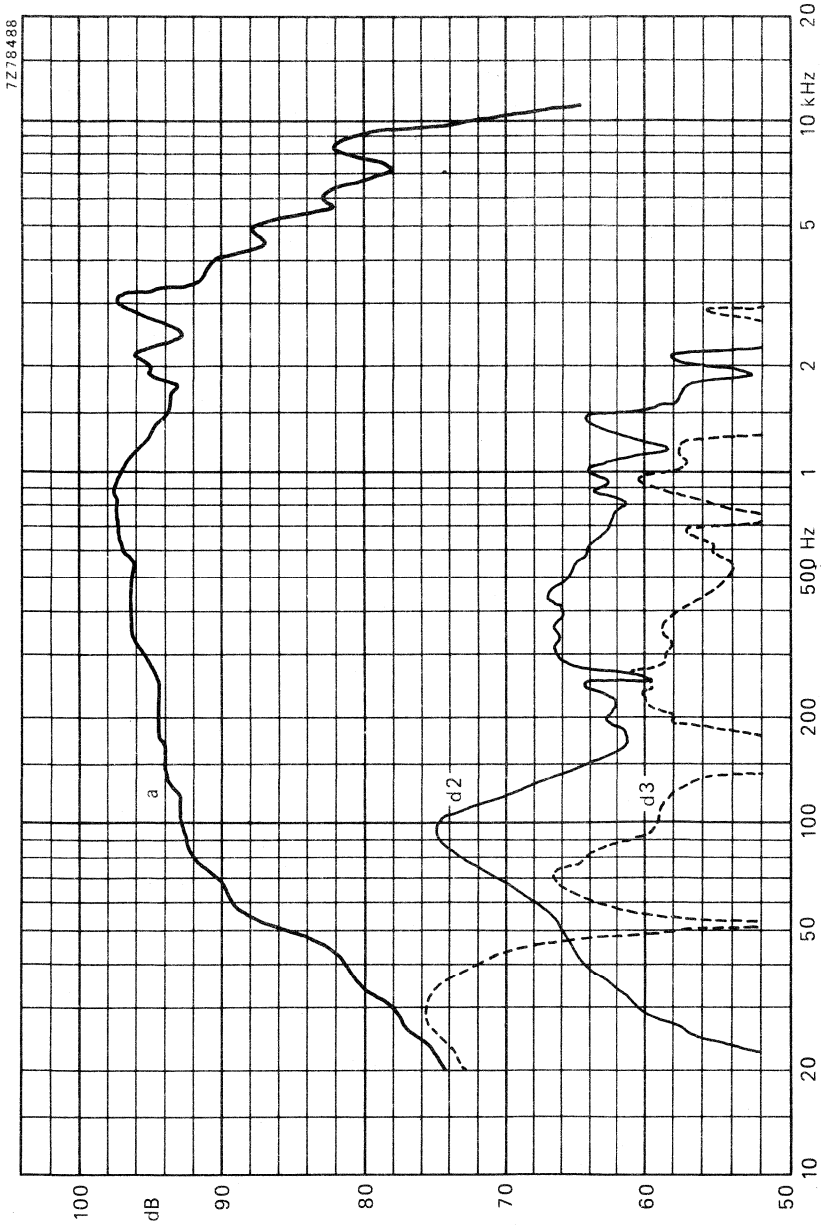


Fig. 2.



7 inch HIGH POWER WOOFER LOUDSPEAKER

APPLICATION

For high fidelity reproduction in sealed acoustic enclosures in accordance with DIN45500. Maximum enclosure volume 7 l. Maximum recommended cross-over frequency 2000 Hz. High power handling capacity with very low distortion.

TECHNICAL DATA

	version	
	W4	W8
Rated impedance	4	8 Ω
Voice coil resistance	4,3	8 Ω
Rated frequency range	70 to 5000 Hz	
Resonance frequency	45	Hz
Power handling capacity, measured without filter mounted in 7 l sealed enclosure	40	W
Operating power	4	W
Sweep voltage	3,8	5,3 V
Energy in air gap	225	207 mJ
Flux density	1,1	1,2 T
Air-gap height	5	mm
Voice coil height	11	mm
Core diameter	25	mm
Magnet material	ceramic	
diameter	90	mm
mass	0,45	kg
Mass of loudspeaker	1,15	kg

The loudspeaker has a paper cone and a rubber surround. Connection to the loudspeaker by means of 6,3 mm (0,25 inch) tag connectors or by soldering.

Dimensions in mm

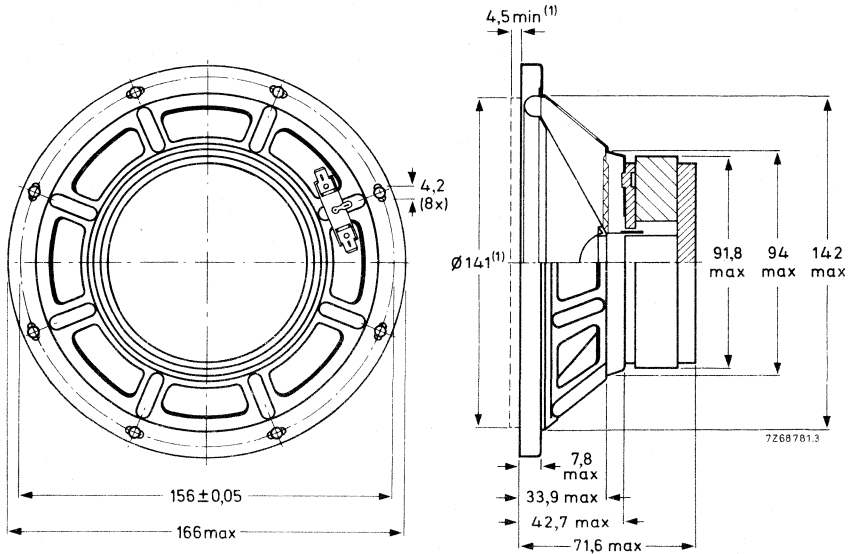


Fig. 1.

(1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD70650/W4, catalogue number 2422 257 472 . 1

AD70650/W8, catalogue number 2422 257 472 . 2

0 = stamped on loudspeaker magnet,
not to be used for ordering

2 = for bulk packing*

6 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve a: Sound pressure measured in anechoic room, loudspeaker mounted in sealed 80 l enclosure, filled with 1 kg of glass wool.

Curves d2 and d3: 2nd and 3rd harmonic distortion, measured at the operating power of 4 W in anechoic room, loudspeaker mounted in sealed 80 l enclosure, filled with 1 kg of glass wool. Loudspeaker front mounted on baffle, dimensions 640 x 540 mm.

* Minimum packing quantity 3 per unit.

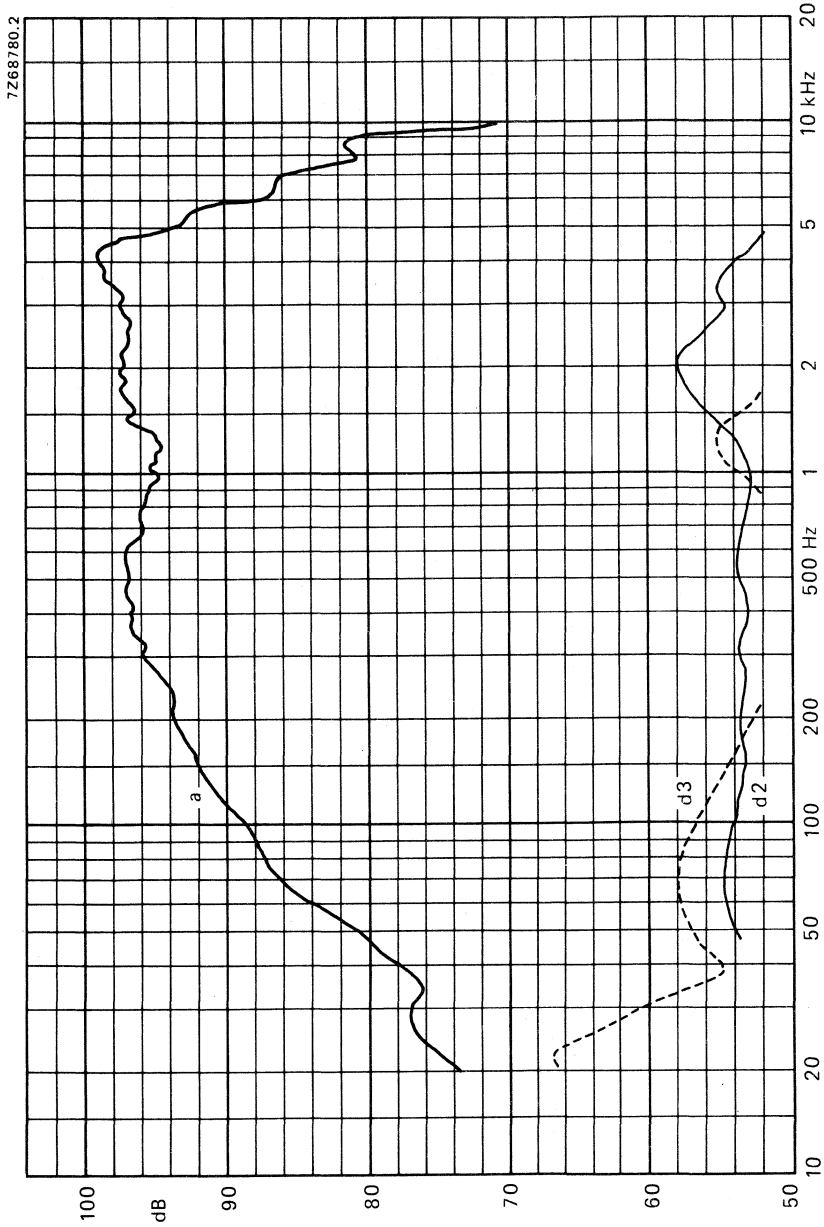


Fig. 2.



7 inch HIGH POWER WOOFER LOUDSPEAKER

APPLICATION

For high fidelity reproduction in sealed acoustic enclosures in accordance with DIN45500. Maximum enclosure volume 7 l.

Maximum recommended cross-over frequency 2000 Hz. High power handling capacity with very low distortion.

TECHNICAL DATA

	version		
	W4	W8	
Rated impedance	4	8	Ω
Voice coil resistance	4, 3	8	Ω
Resonance frequency	45	45	Hz
Power handling capacity, measured without filter mounted in 7 l sealed enclosure	40	40	W
Operating power	4	4	W
Sweep voltage	3, 8	5, 3	V
Energy in air gap	225	207	mJ
Flux density	1, 1	1, 2	T
Air-gap height	5	5	mm
Voice coil height	11	11	mm
Core diameter	25	25	mm
Magnet material	ceramic	ceramic	
diameter	90	90	mm
mass	0, 45	0, 45	kg
Mass of loudspeaker	1, 15	1, 15	kg

The loudspeaker has a paper cone and a rubber surround.

Connection to the loudspeaker by means of 6, 3 mm (0, 25 inch) tag connectors or by soldering.

* Also available in MFB version. Data on request.

Dimensions (mm)

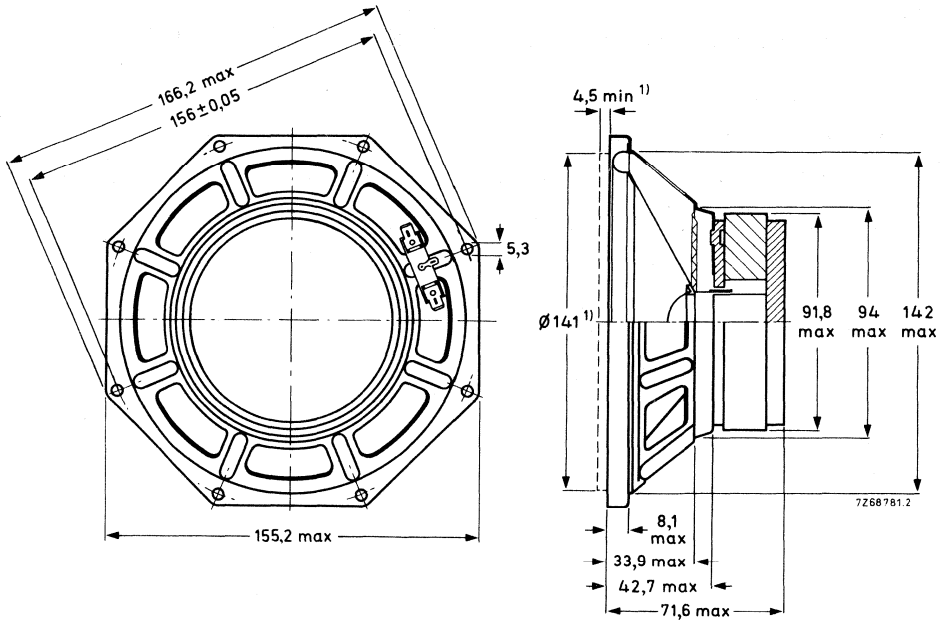


Fig.1

1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD7066/W4, catalogue number 2422 257 470.1

AD7066/W8, catalogue number 2422 257 470.2

(0 = stamped on loudspeaker magnet,
not to be used for ordering)

2 = for bulk packing *)

6 = for single unit packing

*) Minimum packing quantity 3 per unit.

FREQUENCY RESPONSE CURVES

Fig. 2

Curve b: Sound pressure measured in anechoic room, loudspeaker mounted in sealed 80 l enclosure, filled with 1 kg of glass wool.

Curve c: Total non-linear distortion, measured at the operating power of 4 W in anechoic room, loudspeaker mounted in sealed 80 l enclosure, filled with 1 kg of glass wool. Loudspeaker front mounted on baffle, dimensions 640 x 540 mm.



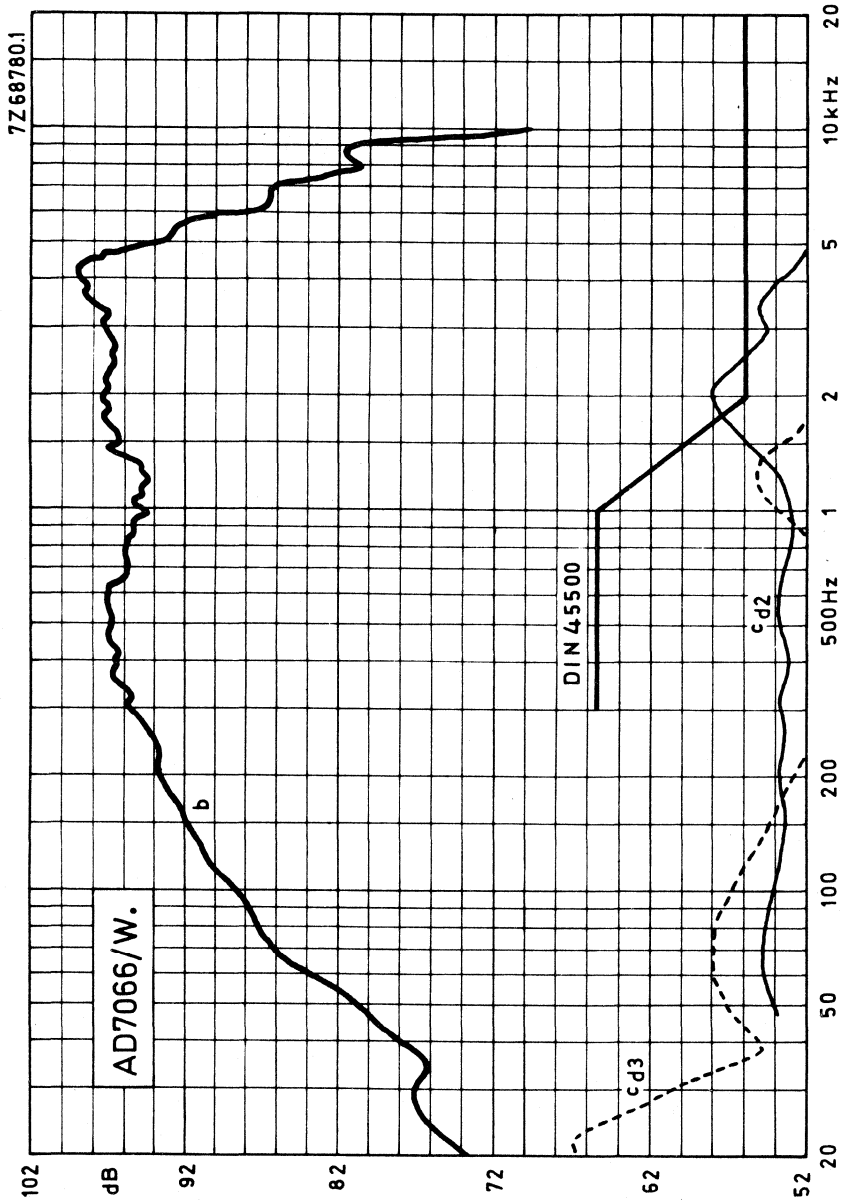


Fig.2

DEVELOPMENT SAMPLE DATA

This information is derived from development samples made available for evaluation. It does not form part of our data handbook system and does not necessarily imply that the device will go into production

AD80601/W.
AD80602/W.

8 INCH HIGH POWER WOOFER LOUDSPEAKERS

APPLICATION

For high-fidelity reproduction in sealed acoustic enclosures. Maximum enclosure volume 25 litres. Maximum recommended crossover frequency 2000 Hz.

TECHNICAL DATA

	version	
	W4	W8
Rated impedance	4	8 Ω
Voice coil resistance	3,8	7,5 Ω
Rated frequency range	50 to 4000 Hz	
Resonance frequency	42	Hz
Power handling capacity, measured without filter, mounted in 25 l sealed enclosure	50	W
Maximum power on loudspeaker	100	W
Operating power	5	W
Sweep voltage (frequency range 35 to 3000 Hz)	5	6,3 V
Characteristic sensitivity		*
Energy in air gap	140	mJ
Flux density	0,93	T
Force factor (B x l) at 1 A	4,5	5 Wb/m
Total moving mass	14 x 10 ⁻³ kg	
Compliance, loudspeaker unmounted	1,12 x 10 ⁻³ m/N	
Air-gap height	5	mm
Voice coil height	10	mm
Core diameter	25	mm
Magnet material	ceramic	
diameter	72	mm
mass	0,26	kg
Mass of loudspeaker	0,8	kg

Type AD80601/W. has a rubber surround, type AD80602/W. has a polyester surround (being the only difference between the two types). They have a round flange. Connection to the loudspeaker by means of 5,1 mm (0,2 inch) or 2,8 mm (0,11 inch) tag connectors or by soldering.

* To be established.

Dimensions in mm

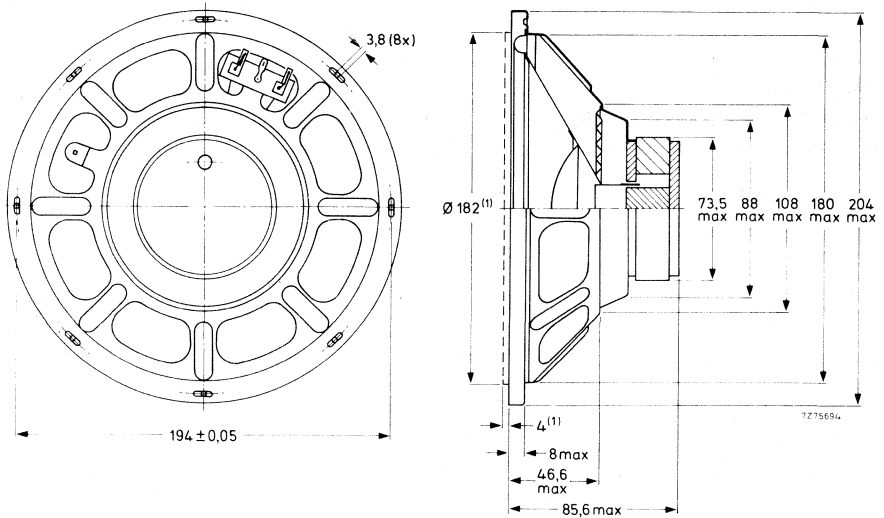


Fig. 1.

(1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

With rubber surround

AD80601/W4, catalogue number 2422 257 482 . 1

AD80601/W8, catalogue number 2422 257 482 . 2

0 = stamped on loudspeaker magnet,
not to be used for ordering

2 = for bulk packing*

6 = for single unit packing

With polyester surround

AD80602/W4, catalogue number 2422 257 483 . 1

AD80602/W8, catalogue number 2422 257 483 . 2

1 = stamped on loudspeaker magnet,
not to be used for ordering

3 = for bulk packing*

7 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve a: Sound pressure measured in anechoic room at operating power. Loudspeaker mounted in sealed 25 l enclosure, filled with 1 kg of glass wool.

Crues d2 and d3: 2nd and 3rd harmonic distortion, measured at the operating power of 5 W in anechoic room, loudspeaker mounted in sealed 25 l enclosure, filled with 1 kg of glass wool.

* Minimum packing quantity 3 per unit.

DEVELOPMENT SAMPLE DATA

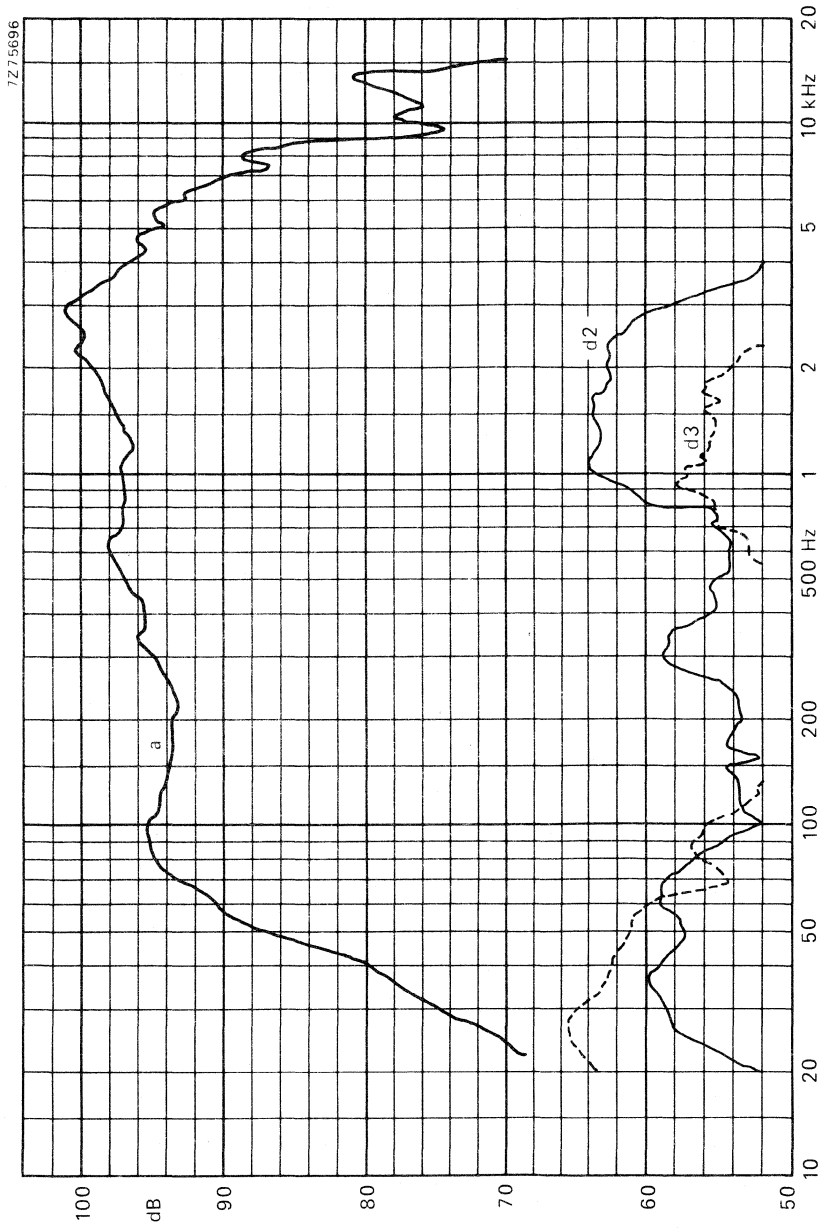


Fig. 2.



8 inch HIGH POWER WOOFER LOUDSPEAKER

APPLICATION

For high fidelity reproduction in sealed acoustic enclosures. Maximum enclosure volume 25 litres. Maximum recommended cross-over frequency 2000 Hz. Rated frequency range 30 to 5 000 Hz.

TECHNICAL DATA

	version		
	W4	W8	
Rated impedance	4	8	Ω
Voice coil resistance	4,3	8	Ω
Resonance frequency	42	42	Hz
Power handling capacity, measured without filter, mounted in 25 l sealed enclosure	30	30	W
Operating power	3,4	3,4	W
Sweep voltage	5	7	V
Energy in air gap	135	140	mJ
Flux density	0,87	0,93	T
Air-gap height	5	5	mm
Voice coil height	11	11	mm
Core diameter	25	25	mm
Magnet material	ceramic	ceramic	
diameter	72	72	mm
mass	0,26	0,26	kg
Mass of loudspeaker	0,8	0,8	kg

The loudspeaker has a paper cone and a rubber surround.

Connection to the loudspeaker by means of 6,3 mm(0,25 inch) tag connectors or by soldering.

Dimensions (mm)

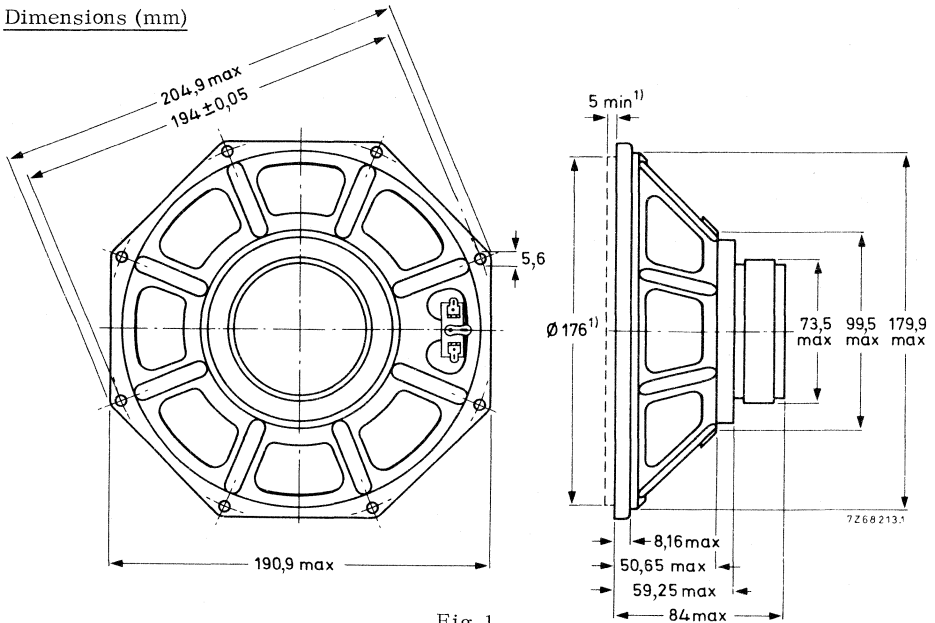


Fig. 1

1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD8061/W4, catalogue number 2422 257 384.5

AD8061/W8, catalogue number 2422 257 384.6

(0 = stamped on loudspeaker magnet, not to be used for ordering)

2 = for bulk packing *)

6 = for single unit packing

FREQUENCY RESPONSE CURVES

See Fig. 2

Curve b: Sound pressure measured in anechoic room at operating power. Loudspeaker mounted in sealed 80 l enclosure, filled with 1 kg of glass wool.

Curve c: 2nd and 3rd harmonic distortion, measured at the operating power of 3, 4 W in anechoic room, loudspeaker mounted in 80 l enclosure, filled with 1 kg of glass wool.

*) Minimum packing quantity 3 per unit.

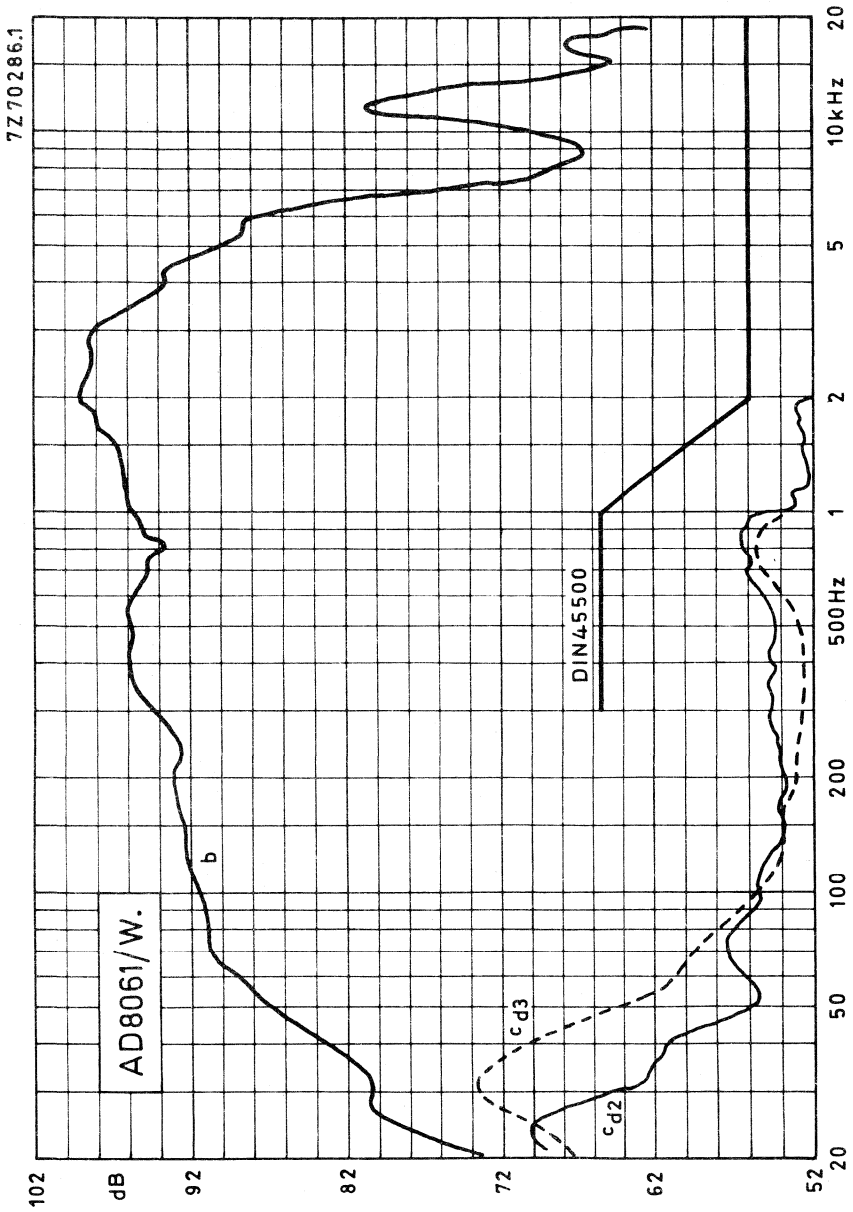


Fig. 2



DEVELOPMENT SAMPLE DATA

This information is derived from development samples made available for evaluation. It does not form part of our data handbook system and does not necessarily imply that the device will go into production

AD80651/W.
AD80652/W.

8 INCH HIGH POWER WOOFER LOUDSPEAKERS

APPLICATION

For high-fidelity reproduction in sealed acoustic enclosures. Maximum enclosure volume 25 litres.
Maximum recommended crossover frequency 2500 Hz.

TECHNICAL DATA

	version	
	W4	W8
Rated impedance	4	8 Ω
Voice coil resistance	3,8	7 Ω
Rated frequency range	50 to 5000 Hz	
Resonance frequency	39	Hz
Power handling capacity, measured without filter, mounted in 25 l sealed enclosure	50	W
Maximum power on loudspeaker	100	W
Operating power	3,8	W
Sweep voltage (frequency range 35 to 3000 Hz)	5	6,3 V
Energy in air gap	229	203 mJ
Flux density	1,1	1,2 T
Force factor (B x l) at 1 A	5,4	6,5 Wb/m
Total moving mass	17,5 x 10 ⁻³ kg	
Compliance, loudspeaker unmounted	1,02 x 10 ⁻³ m/N	
Air-gap height	5	mm
Voice coil height	10	mm
Core diameter	25	mm
Magnet material	ceramic	
diameter	90	mm
mass	0,45	kg
Mass of loudspeaker	1,15	kg

Type AD80651/W. has a paper cone and a rubber surround, type AD80652/W. has a paper cone and a polyester surround (being the only difference between the two types). Connection to the loudspeaker by means of 5,1 mm (0,2 inch) or 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions in mm

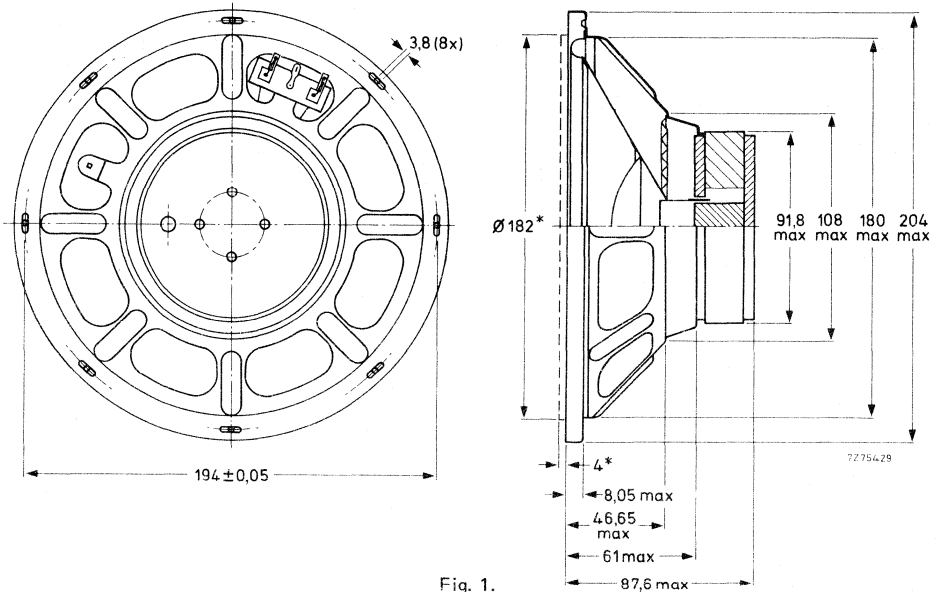


Fig. 1.

* Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

With rubber surround

AD80651/W4, catalogue number 2422 257 484 . 1

AD80651/W8, catalogue number 2422 257 484 . 2

0 = stamped on loudspeaker magnet,
not to be used for ordering

2 = for bulk packing**

6 = for single unit packing

With polyester surround

AD80652/W4, catalogue number 2422 257 485 . 1

AD80652/W8, catalogue number 2422 257 485 . 2

1 = stamped on loudspeaker magnet,
not to be used for ordering

3 = for bulk packing**

7 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve a: Sound pressure measured in anechoic room at operating power. Loudspeaker mounted in sealed 25 l enclosure, filled with 1 kg of glass wool.

Curves d2 and d3: 2nd and 3rd harmonic distortion, measured at the operating power of 2,5 W in anechoic room, loudspeaker mounted in sealed 25 l enclosure, filled with 1 kg of glass wool.

** Minimum packing quantity 3 per unit.

DEVELOPMENT SAMPLE DATA

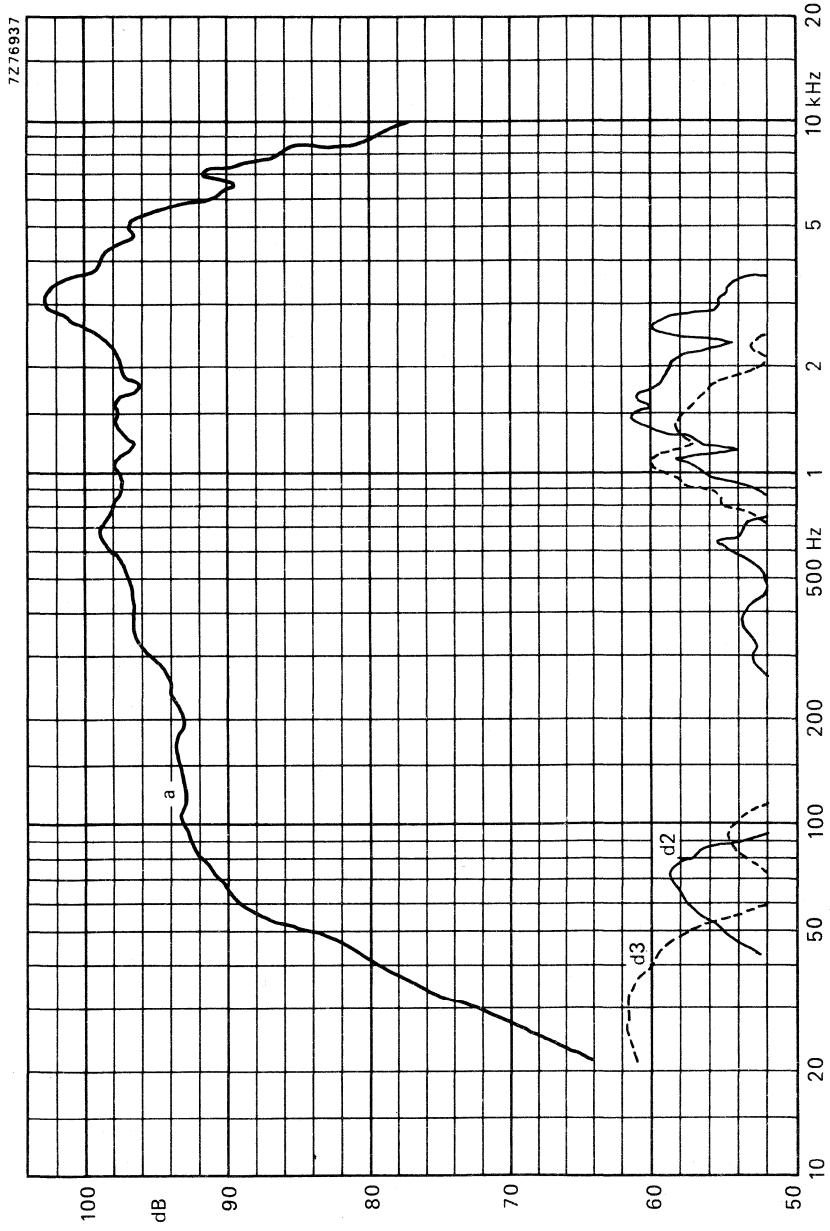


Fig. 2.



8 inch HIGH POWER WOOFER LOUDSPEAKER

APPLICATION

For high fidelity reproduction in sealed acoustic enclosures. Maximum enclosure volume 25 litres. Maximum recommended cross-over frequency 2500 Hz.
Rated frequency range 30 to 5000 Hz.

TECHNICAL DATA

	version		
	W4	W8	
Rated impedance	4	8	Ω
Voice coil resistance	4, 3	8	Ω
Resonance frequency	39	39	Hz
Power handling capacity, measured without filter, mounted in 25 l sealed enclosure	40	40	W
Operating power	2, 5	2, 5	W
Sweep voltage	5	7	V
Energy in air gap	229	203	mJ
Flux density	1, 1	1, 2	T
Air-gap height	5	5	mm
Voice coil height	11	11	mm
Core diameter	25	25	mm
Magnet material	ceramic	ceramic	
diameter	90	90	mm
mass	0, 45	0, 45	kg
Mass of loudspeaker	1, 15	1, 15	kg

The loudspeaker has a paper cone and a rubber surround.

Connection to the loudspeaker by means of 6, 3 mm (0, 25 inch) tag connectors or by soldering.

Dimensions (mm)

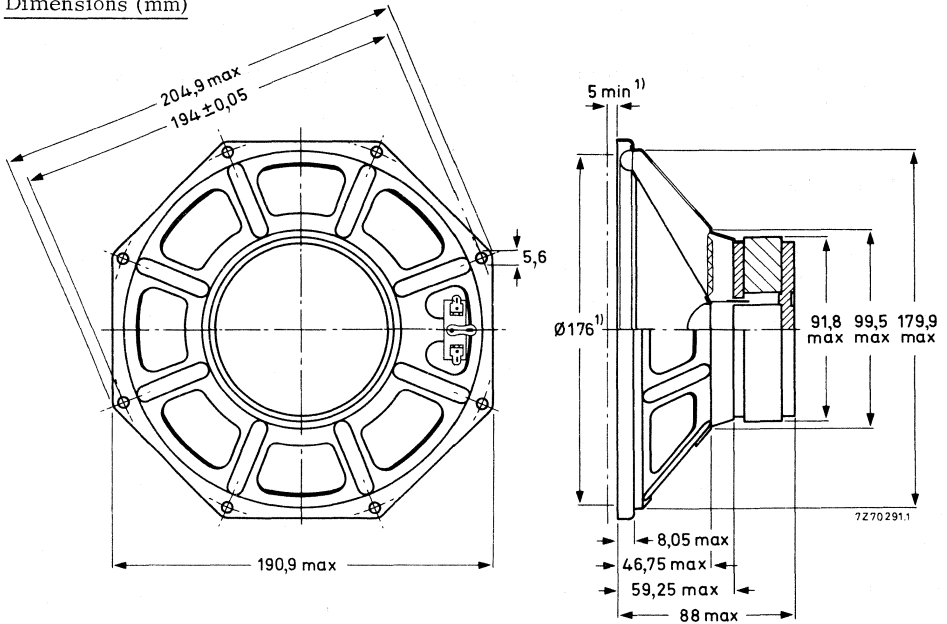


Fig. 1

1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD8066/W4, catalogue number 2422 257 385.1

AD8066/W8, catalogue number 2422 257 385.2

- (0 = stamped on loudspeaker magnet, not to be used for ordering)
- 2 = for bulk packing *)
- 6 = for single unit packing

FREQUENCY RESPONSE CURVES

See Fig. 2

Curve b: Sound pressure measured in anechoic room at operating power. Loudspeaker mounted in sealed 80 l enclosure, filled with 1 kg of glass wool.

Curve c: 2nd and 3rd harmonic distortion, measured at the operating power of 2,5 W in anechoic room, loudspeaker mounted in sealed 80 l enclosure, filled with 1 kg of glass wool.

) Minimum packing quantity 3 per unit.

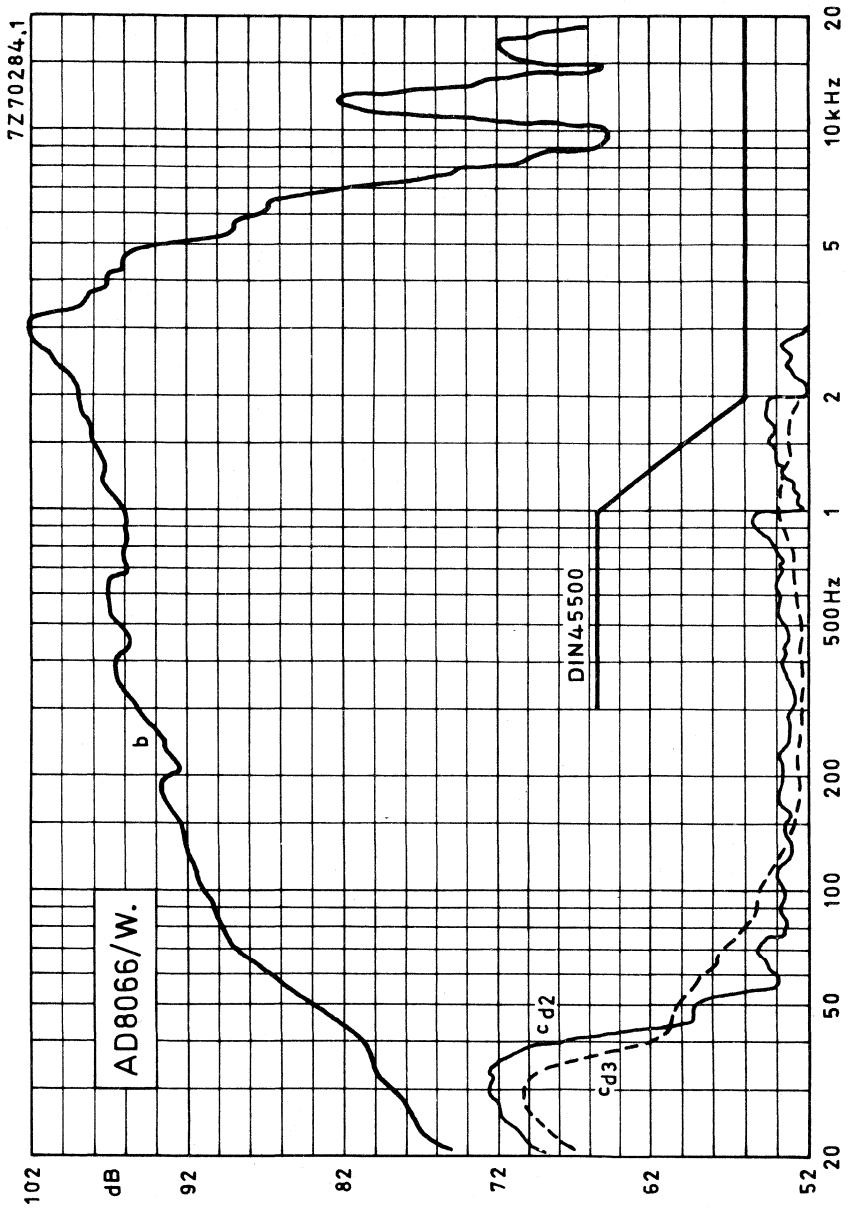


Fig. 2



DEVELOPMENT SAMPLE DATA

This information is derived from development samples made available for evaluation. It does not form part of our data handbook system and does not necessarily imply that the device will go into production

AD80671/W.
AD80672/W.

8 INCH HIGH POWER WOOFER LOUDSPEAKER

APPLICATION

For high-fidelity reproduction according to DIN 45500 in sealed acoustic enclosures. Maximum enclosure volume 25 litres. Maximum recommended crossover frequency 3000 Hz.

TECHNICAL DATA

	version	
	W4	W8
Rated impedance	4	8 Ω
Voice coil resistance	4	7,6 Ω
Rated frequency range		40 to 3000 Hz
Resonance frequency		35 Hz
Power handling capacity, measured without filter, mounted in 25 l enclosure		60 W
Maximum power on loudspeaker		120 W
Operating power		9 W
Sweep voltage, frequency range: 35 to 3000 Hz	5	7 V
Characteristic sensitivity		*
Energy in air gap		225 mJ
Flux density		0,7 T
Force factor (B x l) at 1 A	7	9,5 Wb/m
Total moving mass	27×10^{-3}	24×10^{-3} kg
Compliance, loudspeaker unmounted	$0,84 \times 10^{-3}$	$0,85 \times 10^{-3}$ m/N
Air-gap height		5 mm
Voice coil height	12,7	12,8 mm
Core diameter		34 mm
Magnet material		ceramic
diameter		90 mm
mass		0,42 kg
Mass of loudspeaker		1,3 kg

Type AD80671/W. has a paper cone and a rubber surround, type AD80672/W. has a paper cone and a polyester surround (being the only difference between the two types). Connection to the loudspeaker by means of 5,1 mm (0,2 inch) or 2,8 mm (0,11 inch) tag connectors or by soldering.

* To be established.

Dimensions in mm

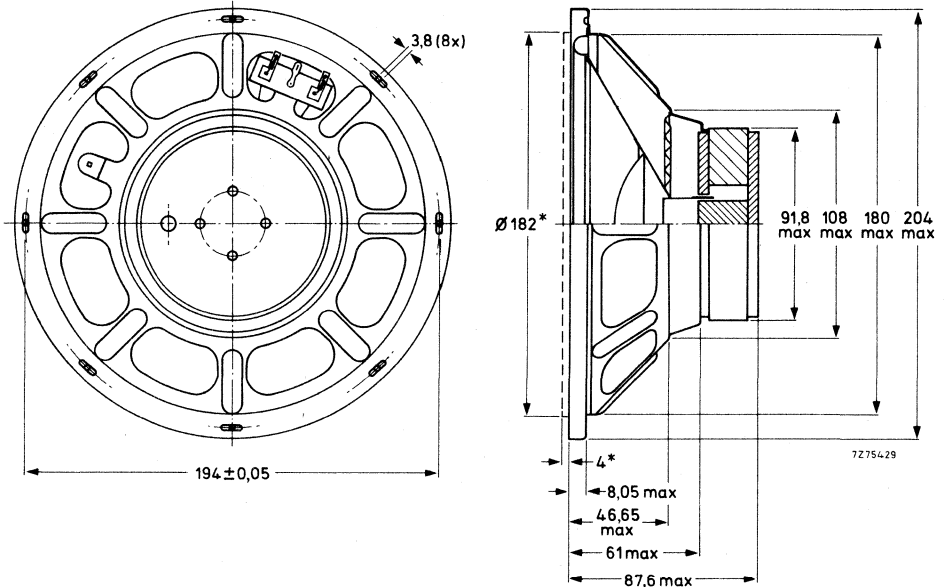


Fig. 1.

* Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

With rubber surround

AD80671/W4, catalogue number 2422 257 486 . 1

AD80671/W8, catalogue number 2422 257 486 . 2

0 = stamped on loudspeaker magnet, **not to be used for ordering**

2 = for bulk packing**

6 = for single unit packing

With polyester surround

AD80672/W4, catalogue number 2422 257 487 . 1

AD80672/W8, catalogue number 2422 257 487 . 2

1 = stamped on loudspeaker magnet, **not to be used for ordering**

3 = for bulk packing**

7 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve a: Sound pressure measured in half free field at operating power. Loudspeaker mounted in sealed 25 l enclosure, filled with 1 kg of glass wool.

Curves d2 and d3: 2nd and 3rd harmonic distortion, measured at the operating power at 6 W in anechoic room, loudspeaker mounted in sealed 25 l enclosure, filled with 1 kg of glass wool.

** Minimum packing quantity 3 per unit.

DEVELOPMENT I SAMPLE DATA

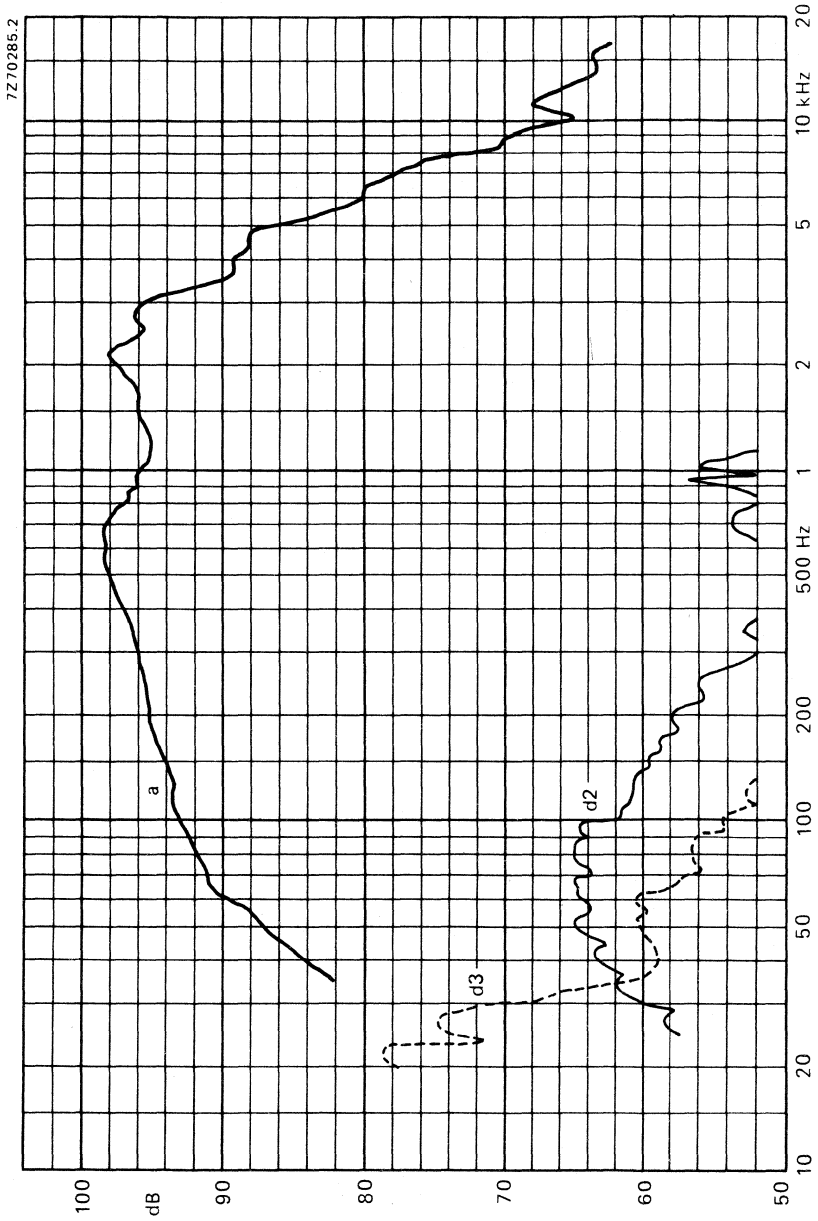


Fig. 2.



10 inch HIGH POWER WOOFER LOUDSPEAKER

APPLICATION

For high fidelity reproduction in sealed acoustic enclosures in accordance with DIN 45500. Recommended enclosure volume 35 litres. Maximum recommended cross-over frequency 1000 Hz. Rated frequency range 40 to 3000 Hz.

TECHNICAL DATA

	version		
	W4	W8	
Rated impedance	4	8	Ω
Voice coil resistance	3,2	6,8	Ω
Resonance frequency	20	20	Hz
Power handling capacity, measured without filter, mounted in 35 l sealed enclosure	30	30	W
Operating power	5	5	W
Sweep voltage	5	7	V
Energy in airgap	280	280	mJ
Flux density	0,94	0,94	T
Airgap height	5	5	mm
Voice coil height	12,1	13,5	mm
Core diameter	25	25	mm
Magnet material	ceramic	ceramic	
diameter	90	90	mm
mass	0,45	0,45	kg
Mass of loudspeaker	1,8	1,8	kg

The loudspeaker has a paper cone and a rubber surround.

Connection to the loudspeaker by means of 6,3 mm (0,25 inch) tag connectors or by soldering.

Dimensions (mm)

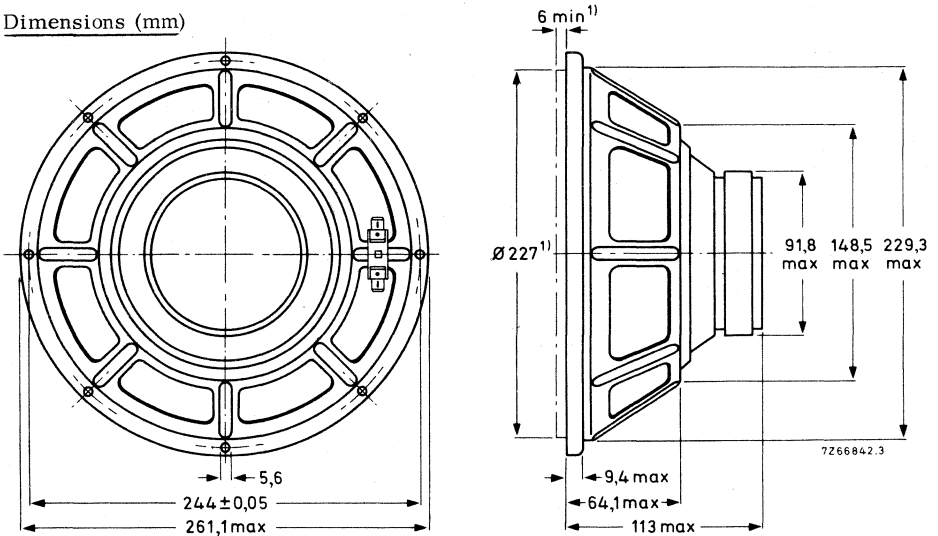


Fig. 1

1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD 1065/W4, catalogue number 2422 257 313.1

AD 1065/W8, catalogue number 2422 257 313.2

(0 = stamped on loudspeaker magnet,
not to be used for ordering)

— 2 for bulk packing *)

— 6 for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve b : Sound pressure measured in anechoic room at operating power of 5 W.
Loudspeaker mounted in sealed 80 l enclosure, filled with 1 kg of glass wool.

Curve c : 2nd and 3rd harmonic distortion, measured at operating power of 5 W in anechoic room. Loudspeaker mounted in 80 l enclosure, filled with 1 kg of glass wool.

*) Minimum packing quantity 1 per unit.

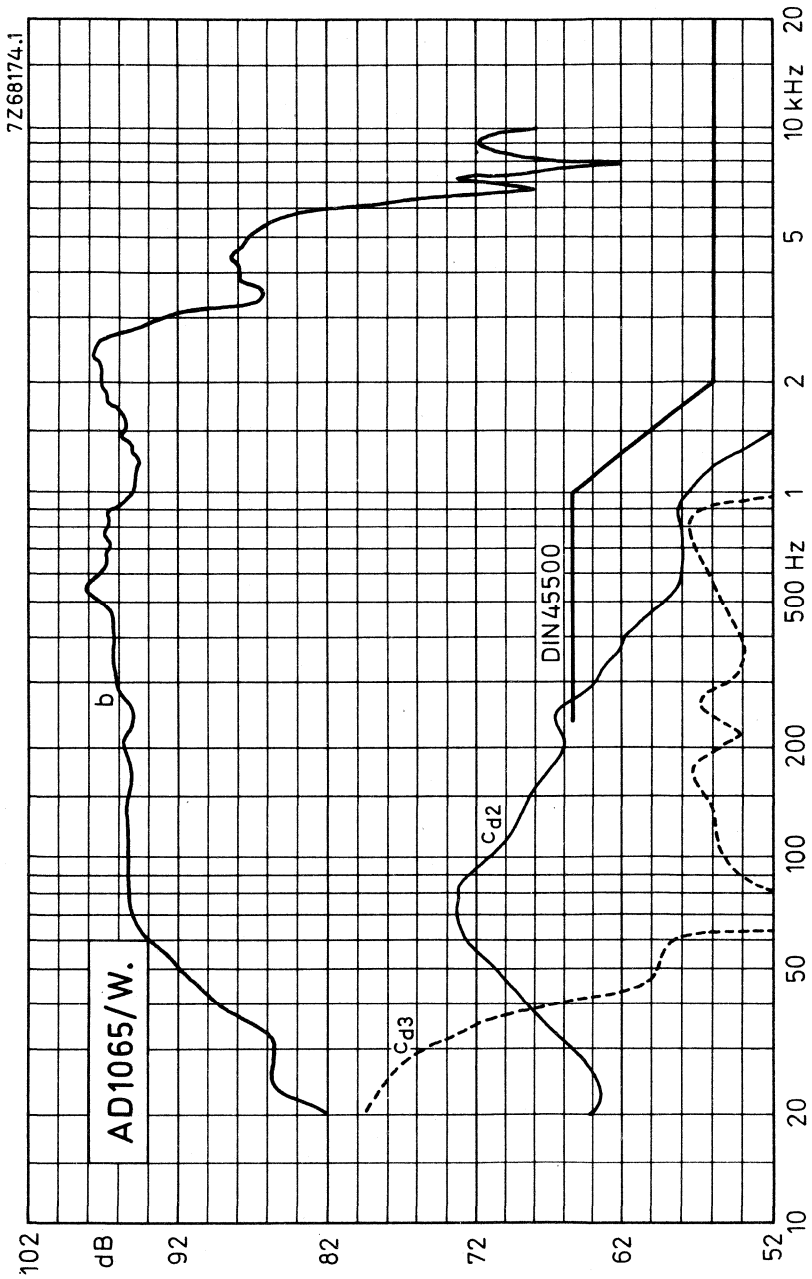


Fig 2



10 inch HIGH POWER WOOFER LOUDSPEAKER

APPLICATION

For high fidelity reproduction in sealed acoustic enclosures in accordance with DIN45500. Recommended enclosure volume 35 litres. Maximum recommended cross-over frequency 800 Hz. Rated frequency range 35 to 800 Hz.

TECHNICAL DATA

	version		
	W4	W8	
Rated impedance	4	8	Ω
Voice coil resistance	3,4	6,5	Ω
Resonance frequency	25	25	Hz
Power handling capacity, measured without filter mounted in 35 l sealed enclosure	40	40	W
Operating power	2,5	2,5	W
Sweep voltage	5	7	V
Energy in airgap	820	820	mJ
Flux density	1,03	1,03	T
Airgap height	8	8	mm
Voice coil height	15	17,2	mm
Core diameter	50	50	mm
Magnet material	ceramic	ceramic	
diameter	130	130	mm
mass	1,05	1,05	kg
Mass of loudspeaker	3,0	3,0	kg

The loudspeaker has a paper cone and a rubber surround.

Connection to the loudspeaker by means of 6,3 mm (0,25 inch) tag connectors or by soldering.

Dimensions (mm)

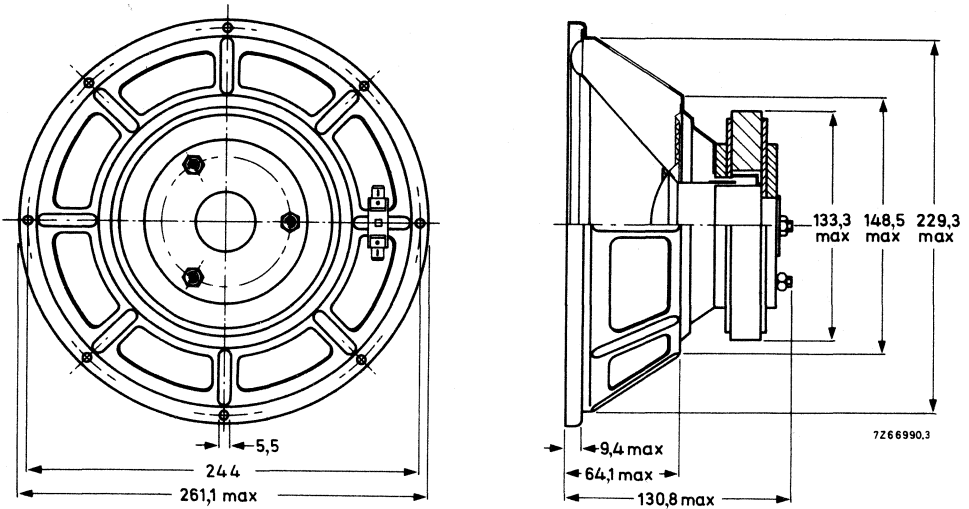


Fig. 1

Baffle hole diameter 227 mm

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD 10100/W4, catalogue number 2422 257 412.1

AD 10100/W8, catalogue number 2422 257 412.2

- (0 = stamped on loudspeaker magnet, not to be used for ordering)
- 2 for bulk packing^{*)}
- 6 for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve b : Sound pressure measured in anechoic room at operating power of 2,5 W.
Loudspeaker mounted in sealed 80 l enclosure, filled with 1 kg of glass wool.

Curve c : 2nd and 3rd harmonic distortion, measured at operating power of 2,5 W in anechoic room. Loudspeaker mounted in sealed 80 l enclosure, filled with 1 kg of glass wool.

^{*)} Minimum packing quantity 1 per unit.

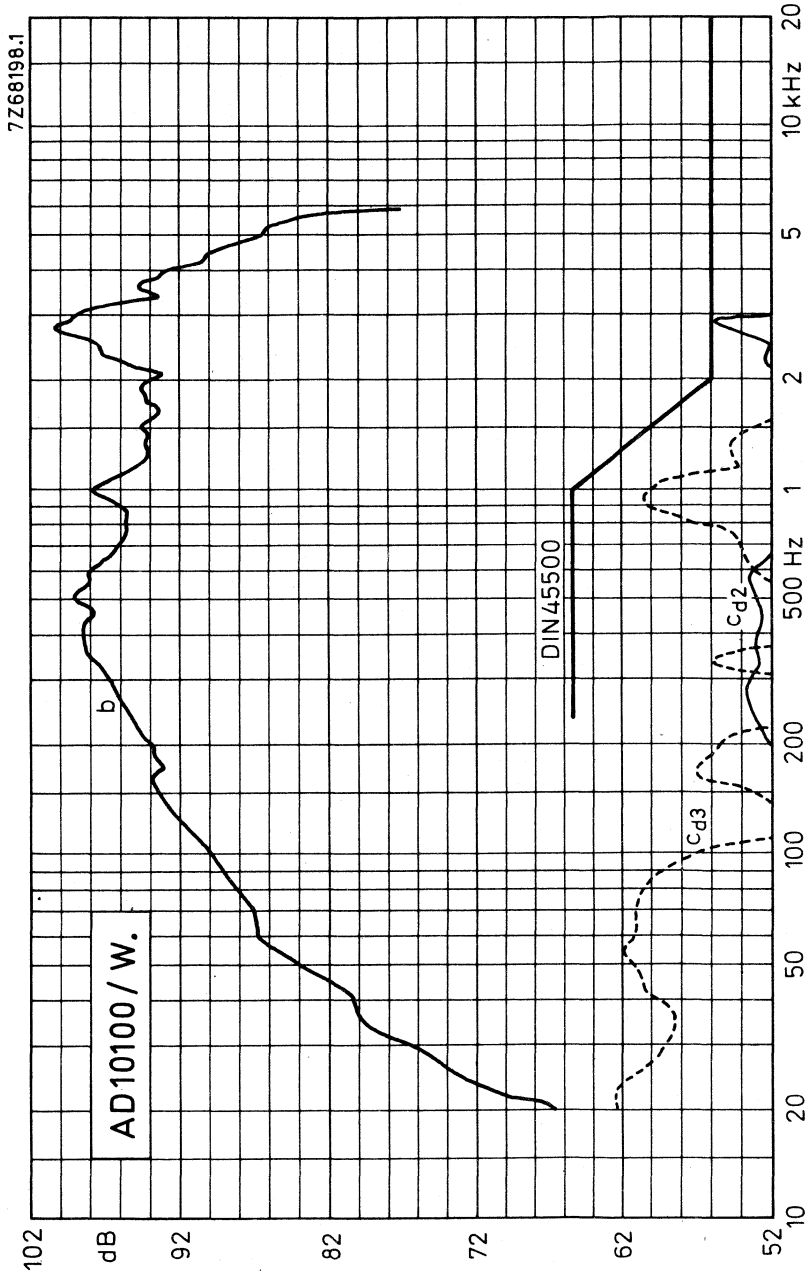


Fig. 2



DEVELOPMENT SAMPLE DATA

This information is derived from development samples made available for evaluation. It does not form part of our data handbook system and does not necessarily imply that the device will go into production

AD10200/W.
AD10600/W.
AD10650/W.

10 INCH HIGH POWER WOOFER LOUDSPEAKERS

APPLICATION

For high-fidelity reproduction in sealed acoustic enclosure. Recommended volume of enclosure 50 litres.

TECHNICAL DATA *

	power handling capacity	operating power	
AD10200/W.	80	8,5	W
AD10600/W.	40	5,5	W
AD10650/W.	60	8	W



* Extended information available shortly.

DEVELOPMENT SAMPLE DATA

This information is derived from development samples made available for evaluation. It does not form part of our data handbook system and does not necessarily imply that the device will go into production

AD12200/W

12 INCH HIGH POWER WOOFER LOUDSPEAKER

APPLICATION

For high-fidelity bass reproduction in sealed acoustic enclosure. Recommended volume of enclosure 80 litres. The loudspeaker has a very low distortion.

TECHNICAL DATA

	version	
	W4	W8
Rated impedance	4	8 Ω
Voice coil resistance	3,3	6,7 Ω
Rated frequency range	35 to 1800 Hz	
Resonance frequency	22 Hz	
Power handling capacity, mounted in 80 l sealed enclosure, measured without filter	80 W	
Maximum power on loudspeaker	* W	
Operating power	5 W	
Sweep voltage, frequency range: 35 to 2000 Hz	7	10 V
Characteristic sensitivity	88	* dB
Energy in air gap	485	508 mJ
Flux density	0,65	0,72 T
Force factor (B x l) at 1 A	9,5	13 Wb/m
Total moving mass	67×10^{-3}	62×10^{-3} kg
Compliance, loudspeaker unmounted	$0,8 \times 10^{-3}$	$0,9 \times 10^{-3}$ m/N
Air-gap height	7 mm	
Voice coil height	17 mm	
Core diameter	50 mm	
Magnet material	ceramic	
diameter	125 mm	
mass	0,85 kg	
Mass of loudspeaker	3 kg	

The loudspeaker has a paper cone, a rubber surround and black foam gaskets. Connection to the loudspeaker by means of 5,1 mm (0,2 inch) or 2,8 mm (0,11 inch) tag connectors or by soldering.

* To be established.

Dimensions in mm

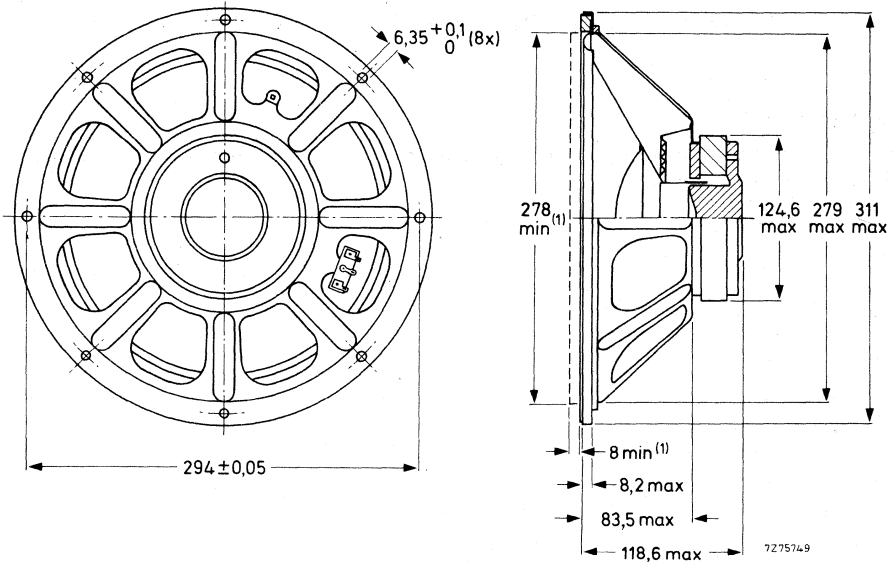


Fig. 1.

(1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSION

AD12200/W4, catalogue number 2422 257 315.1

AD12200/W8, catalogue number 2422 257 315.2

1 = stamped on loudspeaker magnet,
not to be used for ordering

3 = for bulk packing*
7 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve a: Sound pressure measured in anechoic room, loudspeaker mounted in 80 l enclosure.

Curves d2 and d3: 2nd and 3rd harmonic distortion, measured at the operating power of 5 W in anechoic room, loudspeaker mounted in sealed 80 l enclosure, filled with 0,5 kg of glass wool.

* Minimum packing quantity 1 per unit.

DEVELOPMENT SAMPLE DATA

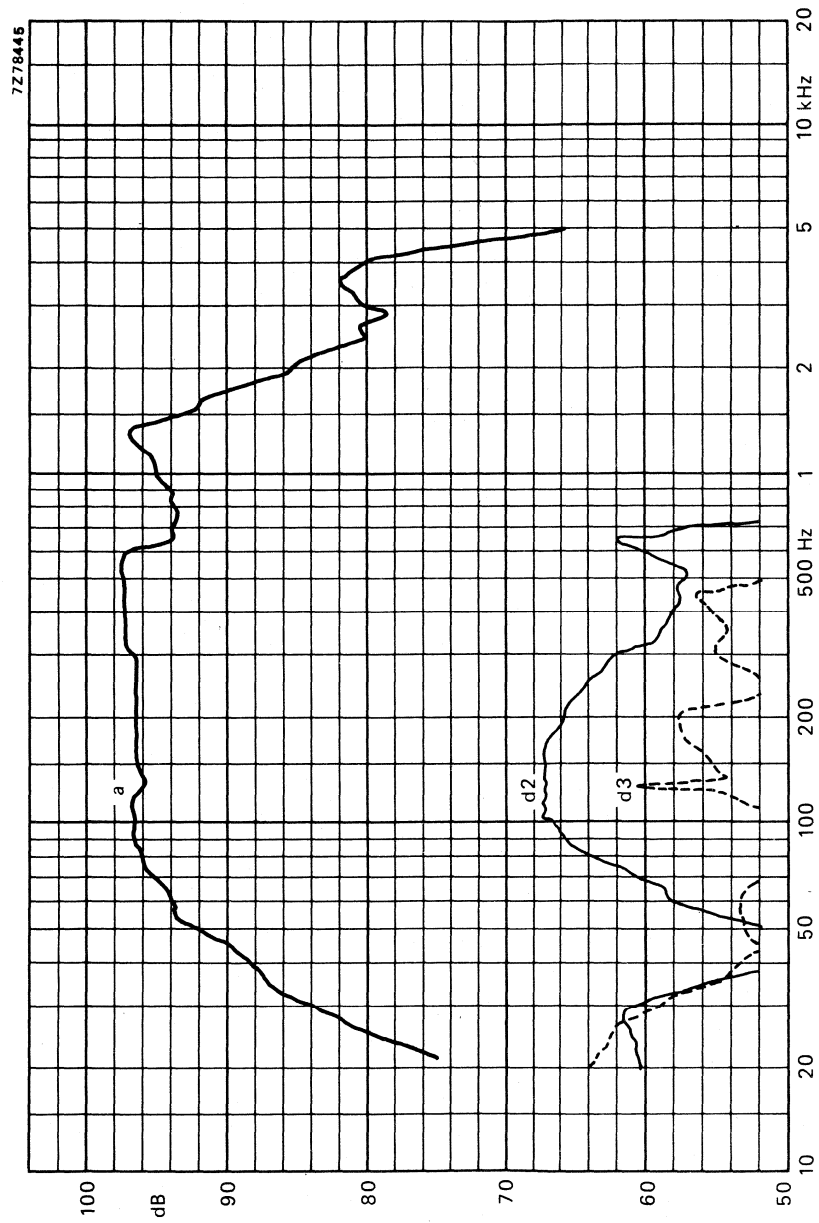


Fig. 2.



This information is derived from development samples made available for evaluation. It does not form part of our data handbook system and does not necessarily imply that the device will go into production

12 INCH HIGH POWER WOOFER LOUDSPEAKER

APPLICATION

For high-fidelity bass reproduction in sealed acoustic enclosure. Recommended volume of enclosure 80 litres. The loudspeaker has a very low distortion.

TECHNICAL DATA

Rated impedance	8 Ω
Voice coil resistance	6,6 Ω
Rated frequency range	40 to 3500 Hz
Resonance frequency	24 Hz
Power handling capacity, mounted in 80 l sealed enclosure, measured without filter	100 W
Operating power	2,9 W
Sweep voltage, frequency range: 35 to 2000 Hz	10 V
Energy in air gap	600 mJ
Flux density	0,88 T
Force factor (B x l) at 1 A	13 Wb/m
Total moving mass	54 x 10 ⁻³ kg
Compliance, loudspeaker unmounted	0,89 x 10 ⁻³ m/N
Air-gap height	8 mm
Voice coil height	24 mm
Core diameter	50 mm
Magnet material	ceramic
diameter	138 mm
mass	1,15 kg
Mass of loudspeaker	3,8 kg

The loudspeaker has a paper cone and a foam rubber surround. Connection to the loudspeaker by means of 5,1 mm (0,2 inch) or 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions in mm

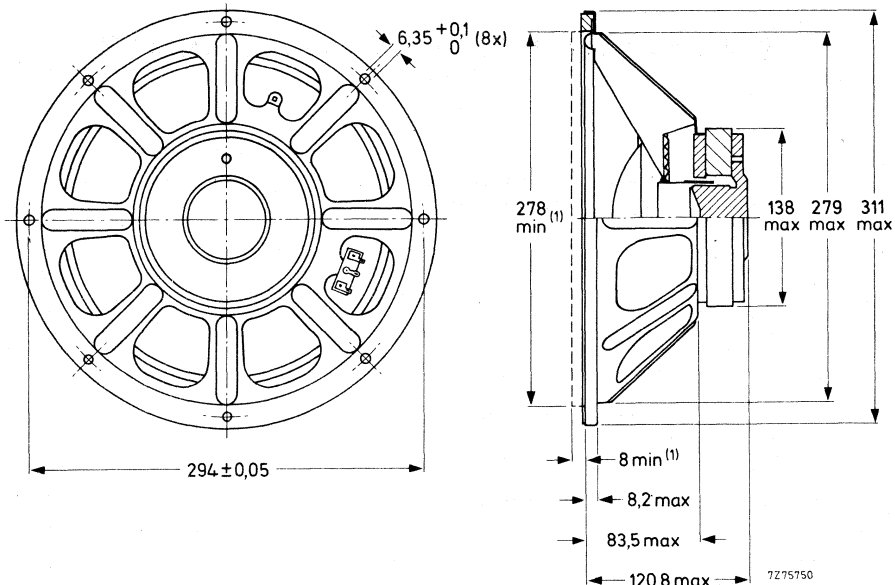


Fig. 1.

(1) Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSION

AD12250/W8, catalogue number 2422 257 610.2

1 = stamped on loudspeaker magnet, not to be used for ordering

3 = for bulk packing*

7 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig. 2)

Curve a: Sound pressure measured in anechoic room, loudspeaker mounted in 80 l enclosure.

Curves d2 and d3: 2nd and 3rd harmonic distortion, measured at the operating power of 2,9 W in anechoic room, loudspeaker mounted in sealed 80 l enclosure, filled with 0,5 kg of glass wool.

* Minimum packing quantity 1 per unit.

DEVELOPMENT SAMPLE DATA

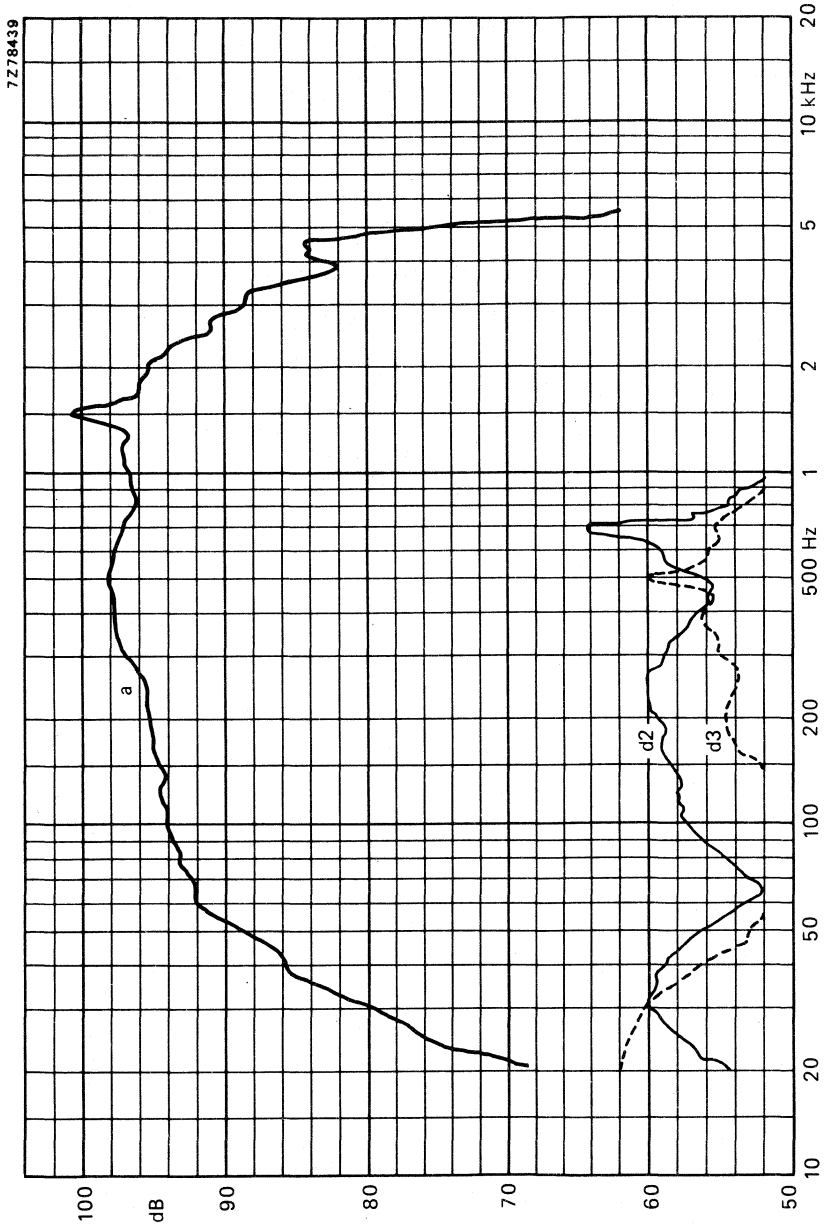


Fig. 2.



DEVELOPMENT SAMPLE DATA

This information is derived from development samples made available for evaluation. It does not form part of our data handbook system and does not necessarily imply that the device will go into production

AD12600/W.

12 INCH HIGH POWER WOOFER LOUDSPEAKER

APPLICATION

For high-fidelity bass reproduction in sealed acoustic enclosure. Recommended volume of enclosure 80 litres. The loudspeaker has a very low distortion.

TECHNICAL DATA

	version	
	W4	W8
Rated impedance	4	8 Ω
Voice coil resistance	3,4	6,9 Ω
Rated frequency range	40 to 3500 Hz	
Resonance frequency	27	29 Hz
Power handling capacity, mounted in 80 l sealed enclosure, measured without filter	40	W
Maximum power on loudspeaker	80	W
Operating power	4	W
Sweep voltage, frequency range: 35 to 1500 Hz	6	8,5 V
Characteristic sensitivity	88	dB
Energy in air gap	129	mJ
Flux density	0,63	T
Force factor (B x l) at 1 A	4,9	6 Wb/m
Total moving mass	35×10^{-3}	33×10^{-3} kg
Compliance, loudspeaker unmounted	$1,92 \times 10^{-3}$	$1,96 \times 10^{-3}$ m/N
Air-gap height	5	mm
Voice coil height	12	mm
Core diameter	25	mm
Magnet material	ceramic	
diameter	72	mm
mass	0,29	kg
Mass of loudspeaker	1,32	kg

The loudspeaker has a paper cone and a foam rubber surround. Connection to the loudspeaker by means of 5,1 mm (0,2 inch) or 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions (mm)

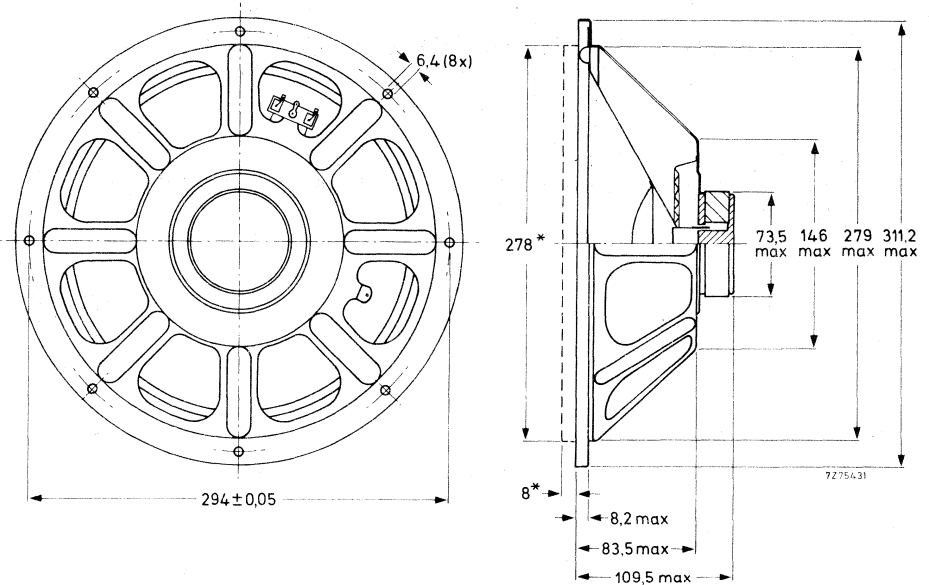


Fig.1

* Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSION

AD12600/W4, catalogue number 2422 257 210.1

AD12600/W8, catalogue number 2422 257 210.2

1 = stamped on loudspeaker magnet, **not to be used** for ordering

3 = for bulk packing **

7 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig.2)

Curve a: Sound pressure measured in anechoic room, loudspeaker mounted in 80 l enclosure.

Curves d2 and d3: 2nd and 3rd harmonic distortion, measured at the operating power of 2 W in anechoic room, loudspeaker mounted in sealed 80 l enclosure, filled with 0,5 kg of glass wool.

** Minimum packing quantity 1 per unit.

DEVELOPMENT SAMPLE DATA

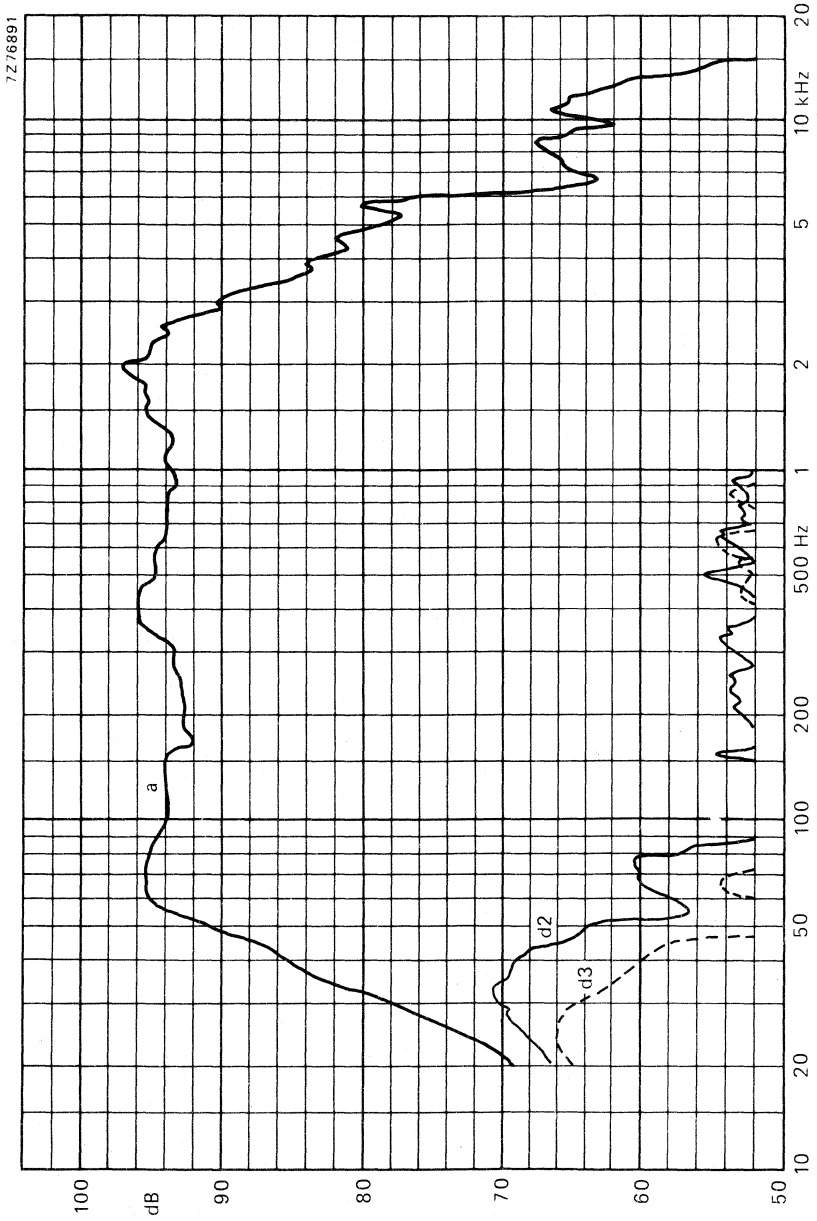


Fig. 2



DEVELOPMENT SAMPLE DATA

This information is derived from development samples made available for evaluation. It does not form part of our data handbook system and does not necessarily imply that the device will go into production

AD12650/W.

12 INCH HIGH POWER WOOFER LOUDSPEAKER

APPLICATION

For high-fidelity bass reproduction in sealed acoustic enclosure. Recommended volume of enclosure 80 litres. The loudspeaker has a very low distortion.

TECHNICAL DATA

	version	
	W4	W8
Rated impedance	4	8 Ω
Voice coil resistance	3	5,9 Ω
Rated frequency range	35 to 2000 Hz	
Resonance frequency	20	23 Hz
Power handling capacity, mounted in 80 l sealed enclosure, measured without filter	60	W
Maximum power on loudspeaker	100	W
Operating power	5	4 W
Sweep voltage, frequency range: 35 to 2000 Hz	6,7	7,5 V
Characteristic sensitivity	87	88 dB
Energy in air gap	220	245 mJ
Flux density	0,68	0,75 T
Force factor (B x l) at 1 A	6,9	7,9 Wb/m
Total moving mass	52×10^{-3}	49×10^{-3} kg
Compliance, loudspeaker unmounted	$1,34 \times 10^{-3}$	$1,77 \times 10^{-3}$ m/N
Air-gap height	5	mm
Voice coil height	16	mm
Core diameter	35	mm
Magnet material	ceramic	
diameter	90	mm
mass	0,53	kg
Mass of loudspeaker	1,8	kg

The loudspeaker has a paper cone and a foam rubber surround. Connection to the loudspeaker by means of 5,1 mm (0,2 inch) or 2,8 mm (0,11 inch) tag connectors or by soldering.

Dimensions (mm)

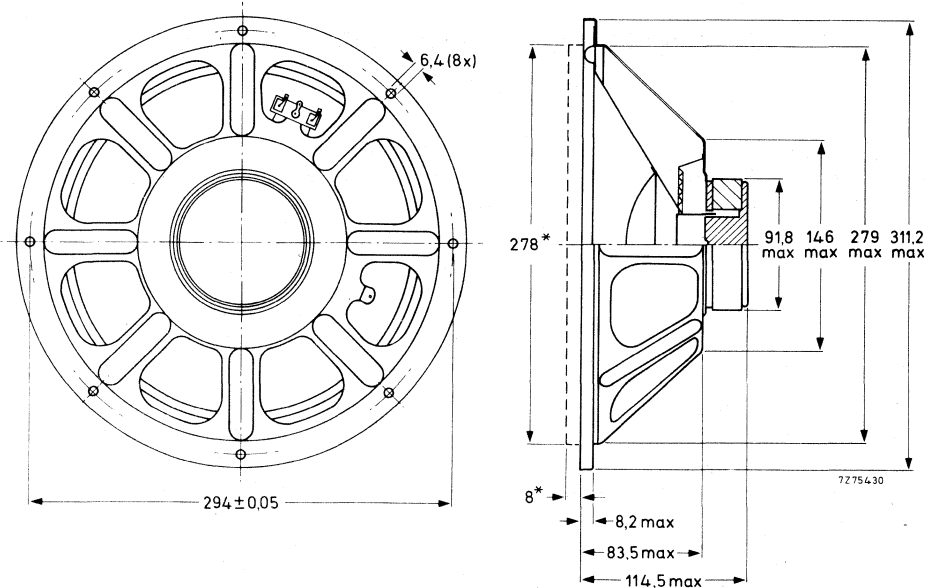


Fig.1

* Baffle hole and clearance depth required for cone movement at the specified power handling capacity.

One tag is indicated by a red mark for in-phase connection.

AVAILABLE VERSIONS

AD12650/W4, catalogue number 2422 257 314.1

AD12650/W8, catalogue number 2422 257 314.2

1 = stamped on loudspeaker magnet, **not to be used** for ordering

3 = for bulk packing **
7 = for single unit packing

FREQUENCY RESPONSE CURVES (see Fig.2)

Curve a: Sound pressure.

Curves d2 and d3: 2nd and 3rd harmonic distortion.

The curves are measured in anechoic room at the operating power, the loudspeaker mounted in sealed 80 l enclosure, filled with 0,5 kg of glass wool.

** Minimum packing quantity 1 per unit.

DEVELOPMENT SAMPLE DATA

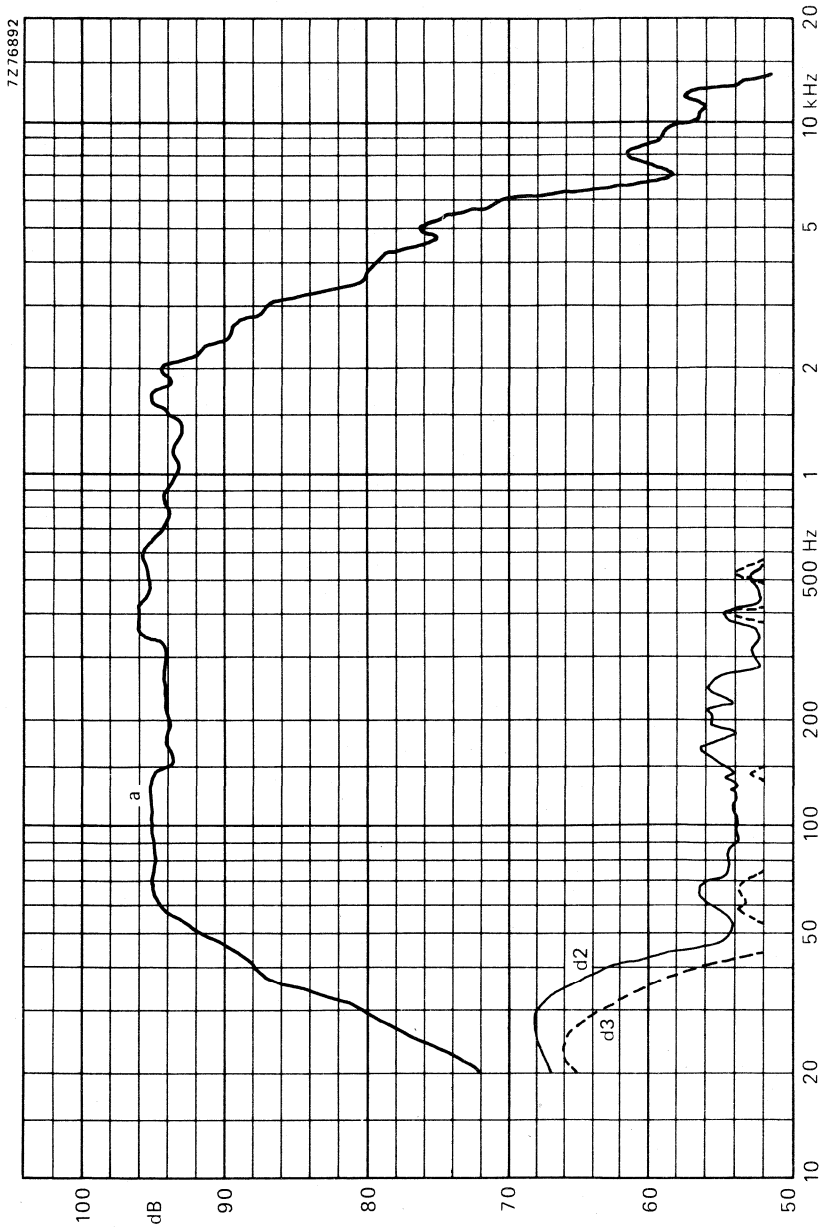


Fig. 2.



Accessories



Passive radiators
Cross-over networks

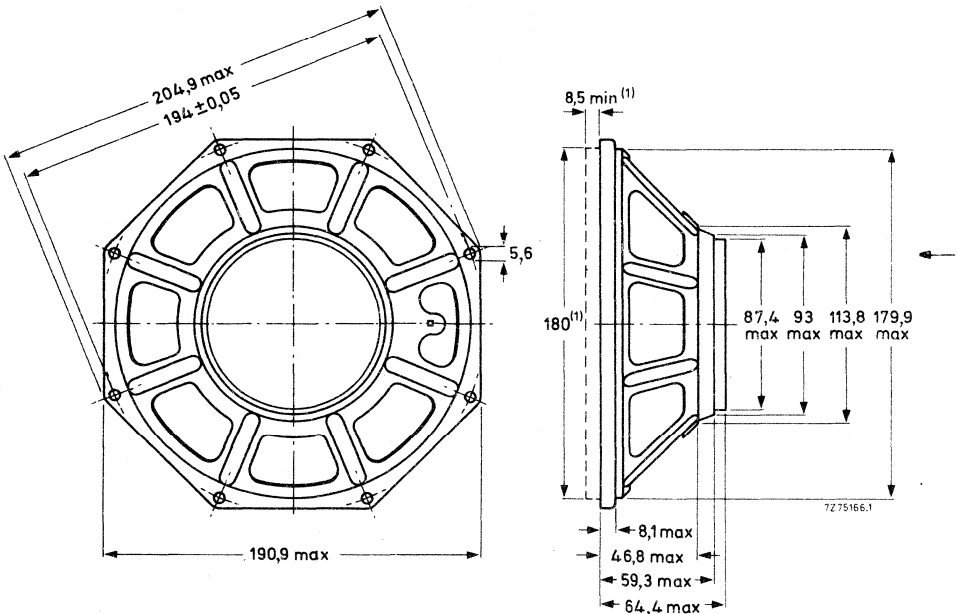
8 inch PASSIVE RADIATOR

APPLICATION

To be used in combination with loudspeaker AD8066/W. in a sealed 35 l enclosure for an improved bass response.

TECHNICAL DATA

Effective area	$2,5 \times 10^{-2} \text{ m}^2$
Moving mass:	
tuned mass	21,5 g
cone mass	9,8 g
total moving mass	31,3 g
Mass of radiator	0,235 kg
CATALOGUE NUMBER	2404 258 48201



(1) Baffle hole and clearance depth required for cone movement.

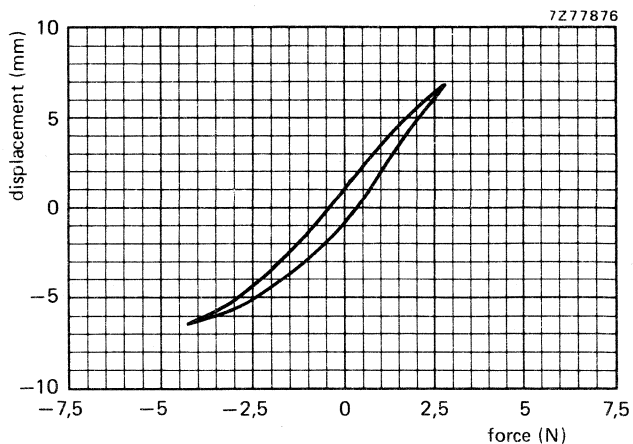
8 INCH PASSIVE RADIATORS

APPLICATION

To be used in combination with loudspeaker AD80651/W. and AD80652/W. respectively, in a sealed 35 l enclosure for an improved bass response.

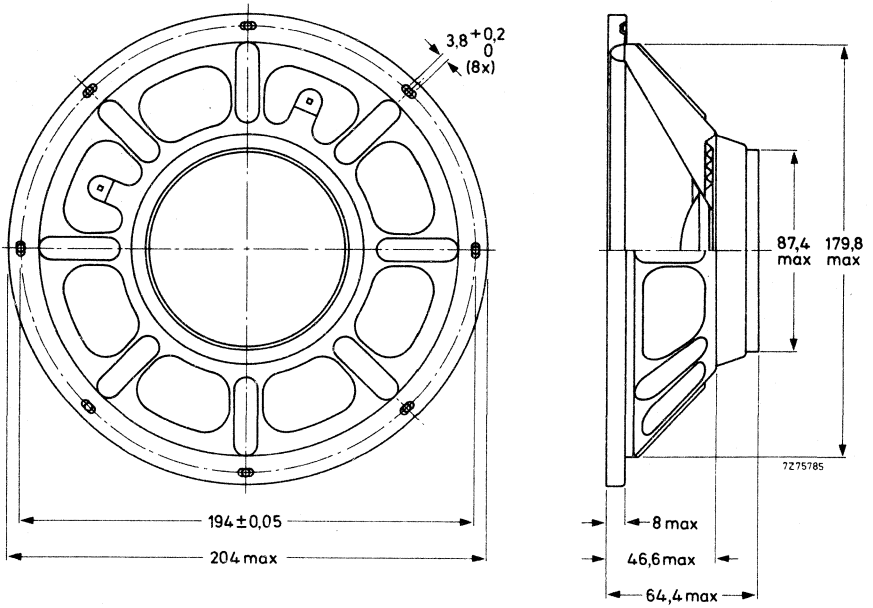
TECHNICAL DATA

Effective area	$2,5 \times 10^{-2} \text{ m}^2$
Moving mass:	
tuned mass	21,5 g
cone mass	7,0 g
total moving mass	31,3 g
Speed of displacement	100 mm/s
Static compliance	1,6 mm/N
Mass of radiator	235 g



Type AD8001 is equipped with a rubber surround and is matching loudspeaker AD80651/W., type AD8002 is equipped with a polyester surround and is matching loudspeaker AD80652/W..

AD8001
AD8002



CATALOGUE NUMBERS

AD8001 (with rubber surround) 2404 259 800.1
AD8002 (with polyester surround) 2404 259 800.2

- 0 = stamped on radiator
not to be used for ordering
- 2 = for bulk packing *
- 6 = for single unit packing

* Minimum packing quantity 3 per unit.

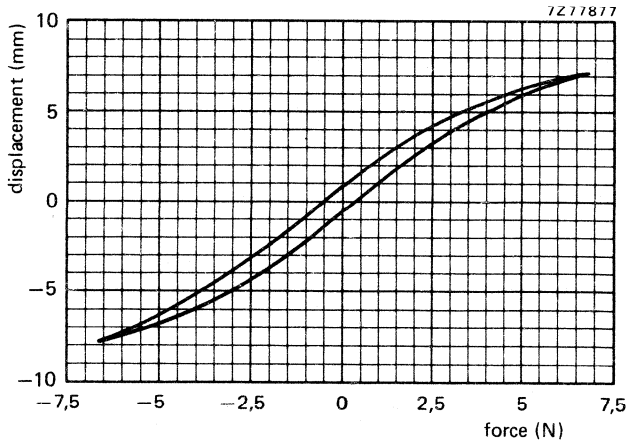
12 INCH PASSIVE RADIATOR

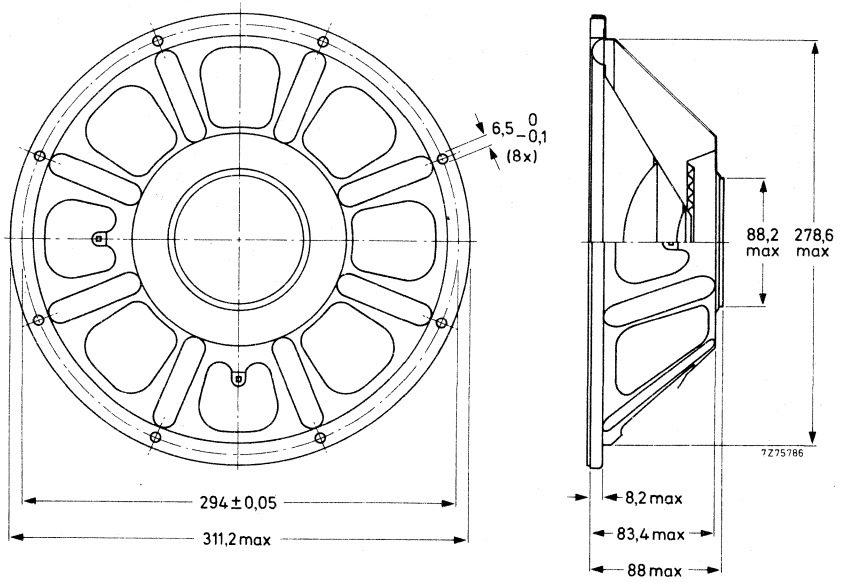
APPLICATION

To be used in combination with loudspeaker AD12200/W. in a sealed 100 l enclosure for an improved bass response.

TECHNICAL DATA

Effective area	5×10^{-2}	m^2
Moving mass:		
tuned mass	21,5	g
cone mass	15	g
total moving mass	49	g
Speed of displacement	100	mm/s
Static compliance	2,55	mm/N
Mass of radiator	710	g





CATALOGUE NUMBER

2422 259 120.1

0 = stamped on radiator
not to be used for ordering

2 = for bulk packing *

6 = for single unit packing



* Minimum packing quantity 1 per unit.

2-WAY CROSS-OVER NETWORK

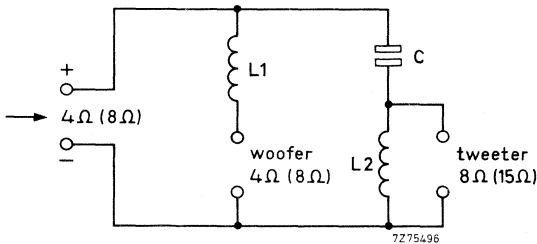
APPLICATION

For use in 2-way loudspeaker systems with high fidelity woofers and dome tweeters. The latter with increased impedance to obtain a higher power handling capacity for the system.

TECHNICAL DATA

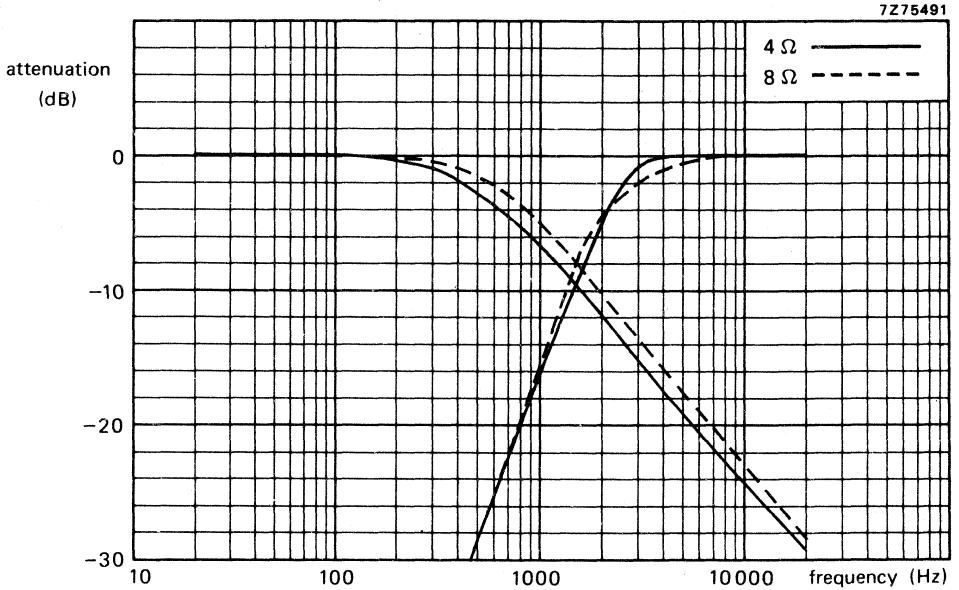
Rated impedance	
type ADF1500/4	4 Ω
type ADF1500/8	8 Ω
Cross-over frequency	
type ADF1500/4	1500 Hz
type ADF1500/8	1800 Hz
Power handling capacity	80 W
Slope	
low pass	6 dB/octave
high pass	12 dB/octave

Circuit diagram



	version		
	4 Ω	8 Ω	
L1	1,2	2,1	mH
L2	0,5	1,2	mH
C	8	3,3	μ F

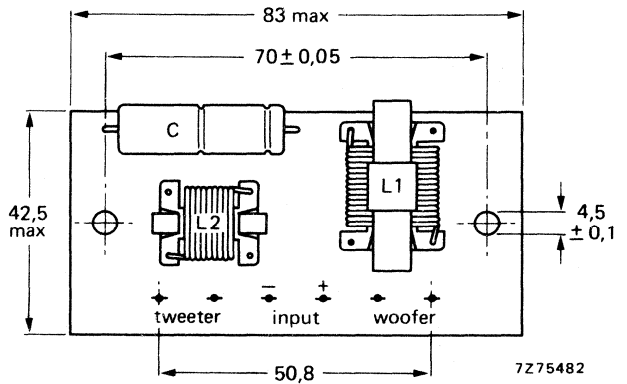
Frequency characteristics



Dimensions (mm) and connections

Total height 35 mm

6 soldering tags for connection



CATALOGUE NUMBERS

Type ADF1500/4: catalogue number 3104 207 10210

Type ADF1500/8: catalogue number 3104 207 10220

2-WAY CROSS-OVER NETWORK

APPLICATION

For use in 2-way loudspeaker systems with high power woofers and dome tweeters.

TECHNICAL DATA

Rated impedance

type ADF2000/4

4 Ω

type ADF2000/8

8 Ω

Cross-over frequency

2000 Hz

Power handling capacity

20 W

Slope

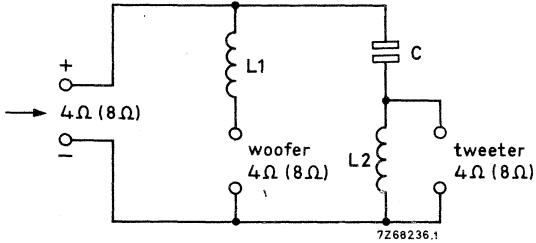
low pass

6 dB/octave

high pass

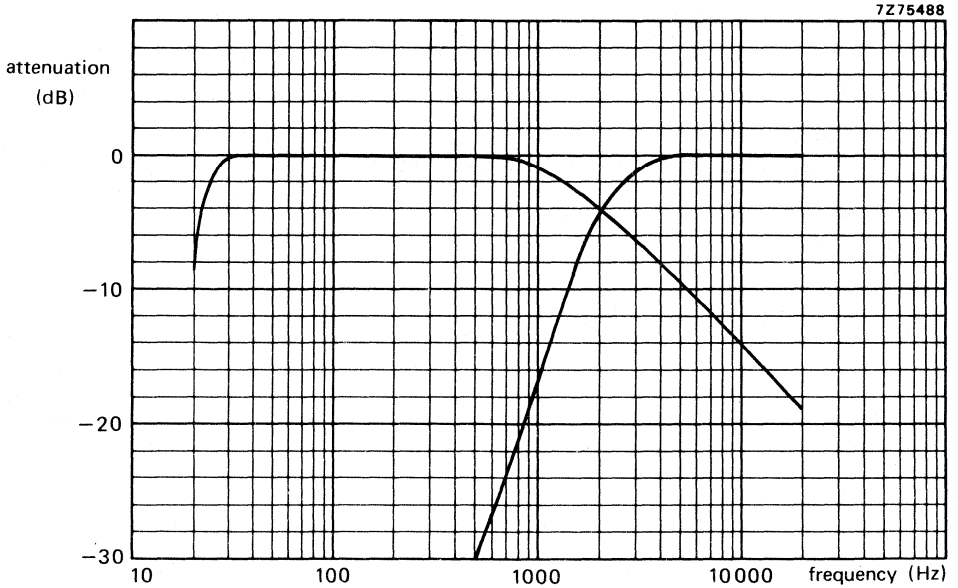
12 dB/octave

Circuit diagram



	version		
	4 Ω	8 Ω	
L1	0,8	0,8	mH
L2	0,35	0,5	mH
C	12	8	μ H

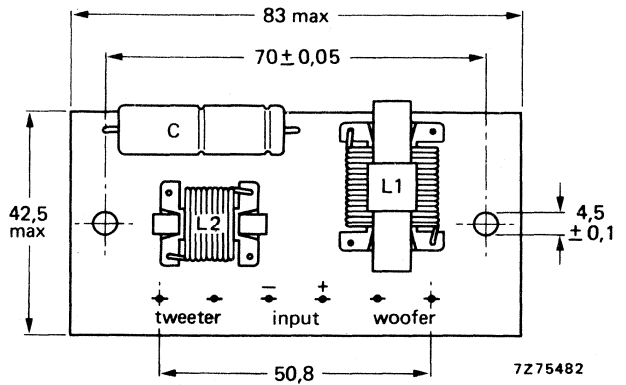
Frequency characteristics



Dimensions (mm) and connections

Total height 35 mm

6 soldering tags for connection



CATALOGUE NUMBERS

Type ADF2000/4: catalogue number 3104 207 10130

Type ADF2000/8: catalogue number 3104 207 10120

2-WAY CROSS-OVER NETWORK

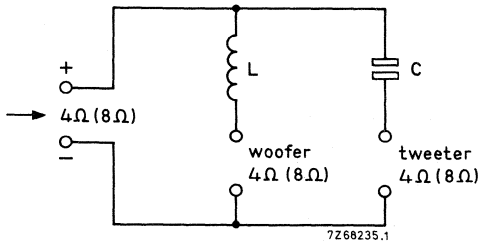
APPLICATION

For use in 2-way loudspeaker systems with high fidelity or high quality woofers and cone tweeters
AD2071/T., AD2090/T. or AD2095/T.

TECHNICAL DATA

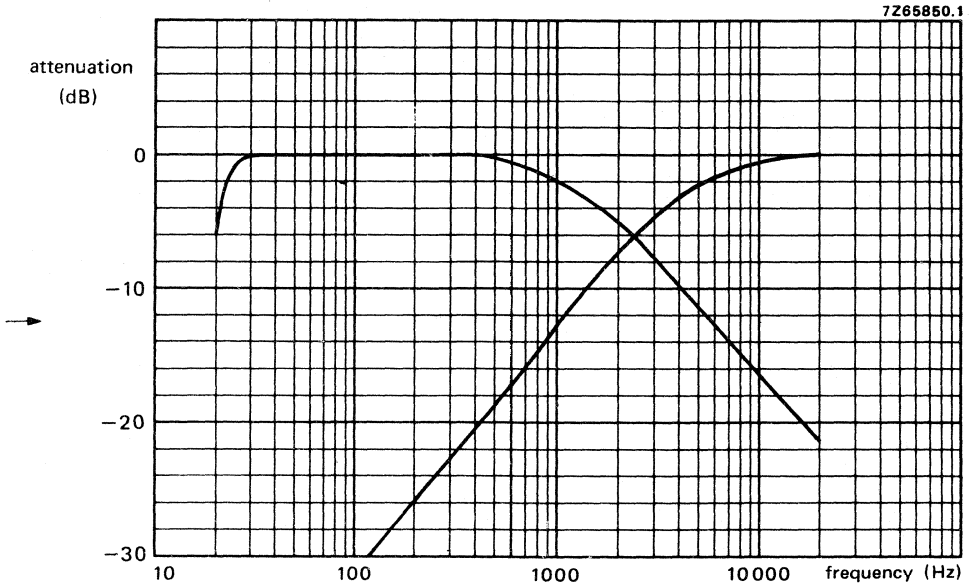
Rated impedance	
type ADF2400/4	4 Ω
type ADF2400/8	8 Ω
Cross-over frequency	2400 Hz
Power handling capacity	20 W
Slope	
low pass	6 dB/octave
high pass	6 dB/octave

Circuit diagram



		version		
		4 Ω	8 Ω	
L		0,5	1,2	mH
C		12	5	μ F

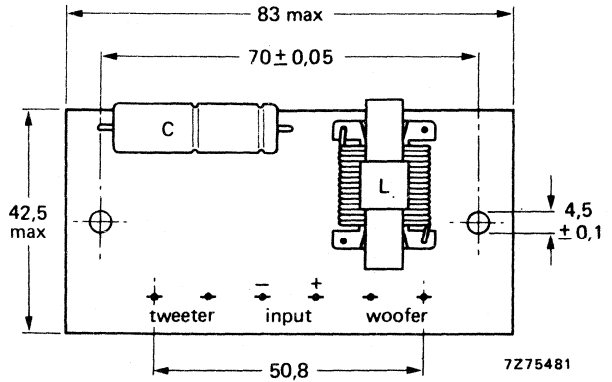
Frequency characteristics



Dimensions (mm) and connections

Total height 35 mm

6 soldering tags for connection



CATALOGUE NUMBERS

- Type ADF2400/4: catalogue number 3104 207 10110
- Type ADF2400/8: catalogue number 3104 207 10100

2-WAY CROSS-OVER NETWORK

APPLICATION

For use in 2-way loudspeaker systems with high fidelity woofers and dome tweeters.

TECHNICAL DATA

Rated impedance

type ADF3000/4

4 Ω

type ADF3000/8

8 Ω

Cross-over frequency

type ADF3000/4

3000 Hz

type ADF3000/8

4000 Hz

Power handling capacity

80 W

Slope

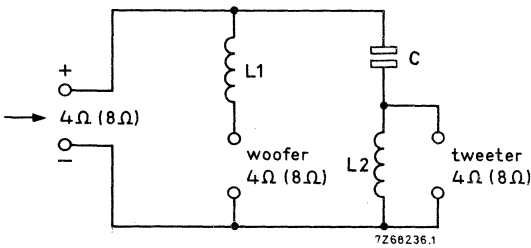
low pass

6 dB/octave

high pass

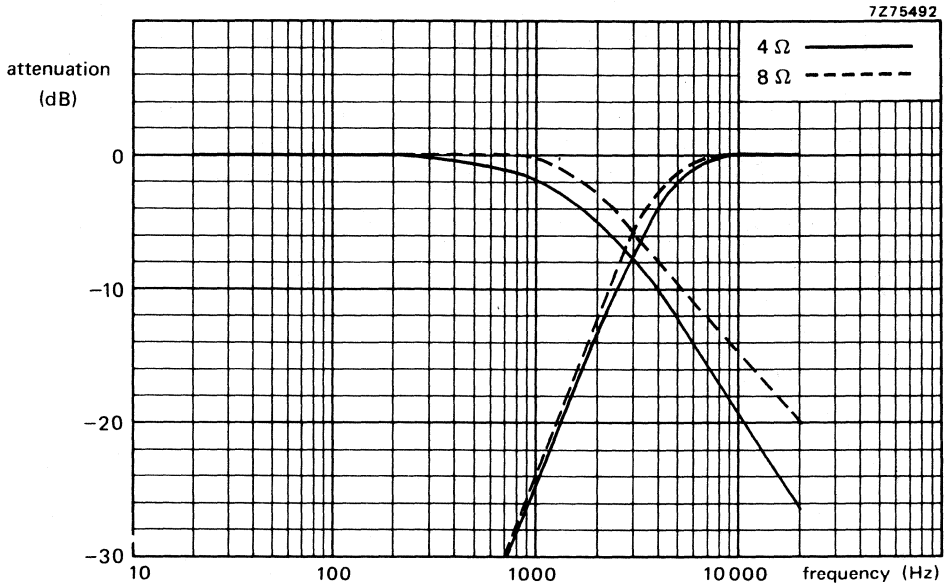
12 dB/octave

Circuit diagram



	version		
	4 Ω	8 Ω	
L1	0,5	0,8	mH
L2	0,2	0,5	mH
C	8	3,3	μF

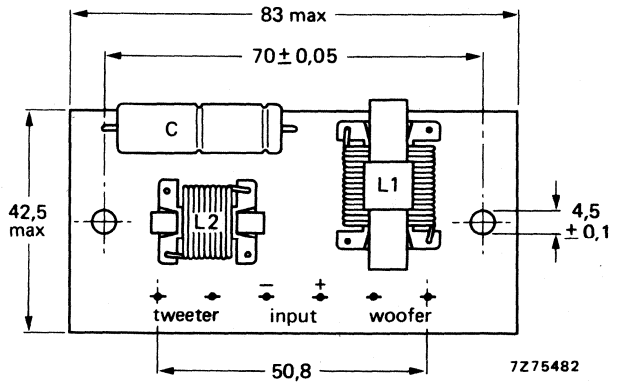
Frequency characteristics



Dimensions (mm) and connections

Total height 35 mm

6 soldering tags for connection



CATALOGUE NUMBERS

Type ADF3000/4: catalogue number 3104 207 10230

Type ADF3000/8: catalogue number 3104 207 10240

3-WAY CROSS-OVER NETWORK

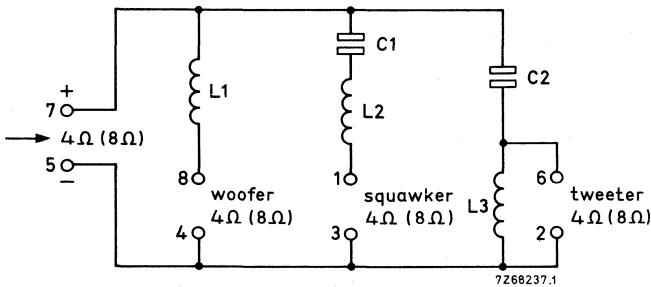
APPLICATION

For use in 3-way loudspeaker systems with high power woofers, squawkers and dome tweeters.

TECHNICAL DATA

Rated impedance	
type ADF600/5000/4	4 Ω
type ADF600/5000/8	8 Ω
Cross-over frequencies	600 and 5000 Hz
Power handling capacity	40 W
Slope	
low pass	6 dB/octave
band pass (mid-range)	6 dB/octave
high pass	12 dB/octave

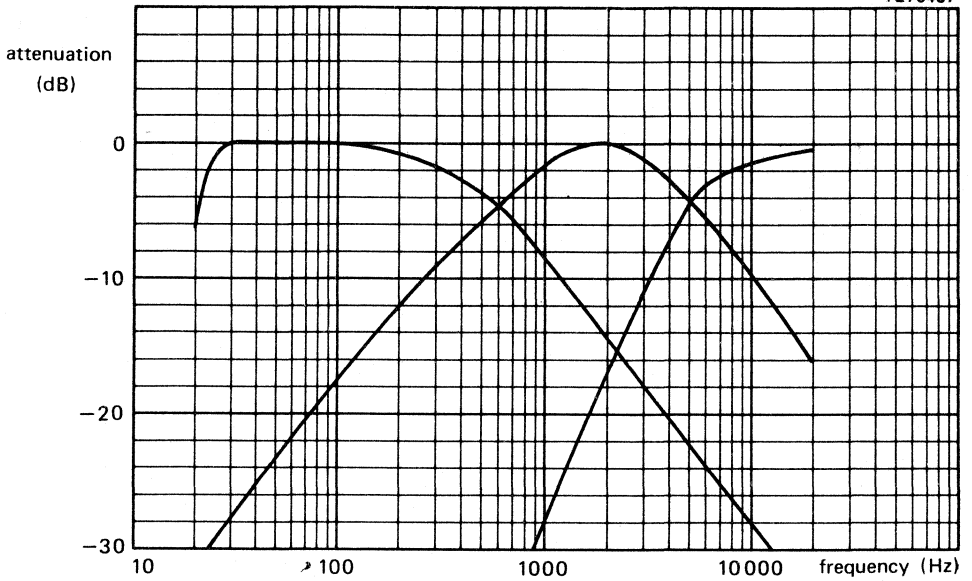
Circuit diagram



	version		
	4 Ω	8 Ω	
L1	2,1	2,1	mH
L2	0,2	0,35	mH
L3	0,2	0,5	mH
C1	50	24	μF
C2	5	3,3	μF

Frequency characteristics

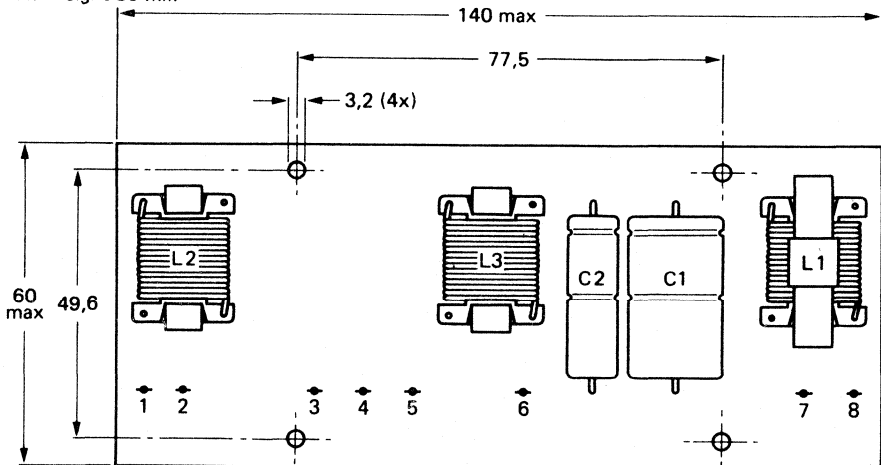
7Z75487



Dimensions (mm) and connections

See also circuit diagram for connection to the 8 soldering tags.

Total height 36 mm



7Z75484

CATALOGUE NUMBERS

Type ADF600/5000/4: catalogue numbers 3104 207 10150

Type ADF600/5000/8: catalogue number: 3104 207 10140

3-WAY CROSS-OVER NETWORK

APPLICATION

For use in 3-way loudspeaker systems with high fidelity woofers, squawkers and dome tweeters; the latter with increased impedance to obtain a higher power handling capacity for the system.

TECHNICAL DATA

Rated impedance

type ADF700/2600/4

4 Ω

type ADF700/2600/8

8 Ω

Cross-over frequencies

type ADF700/2600/4

650 and 2800 Hz

type ADF700/2600/8

700 and 2600 Hz

Power handling capacity

80 W

Slope

low pass

6 dB/octave

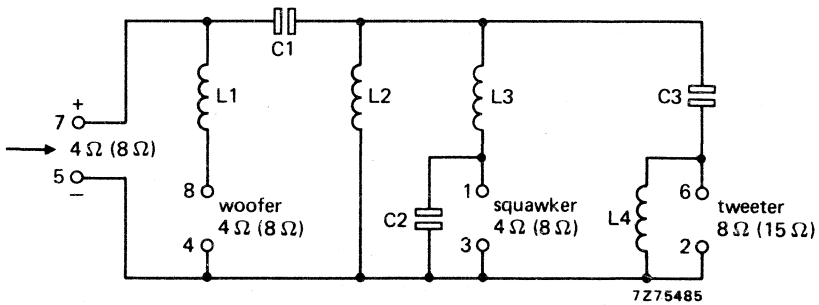
band pass (mid-range)

12 dB/octave

high pass

12 dB/octave

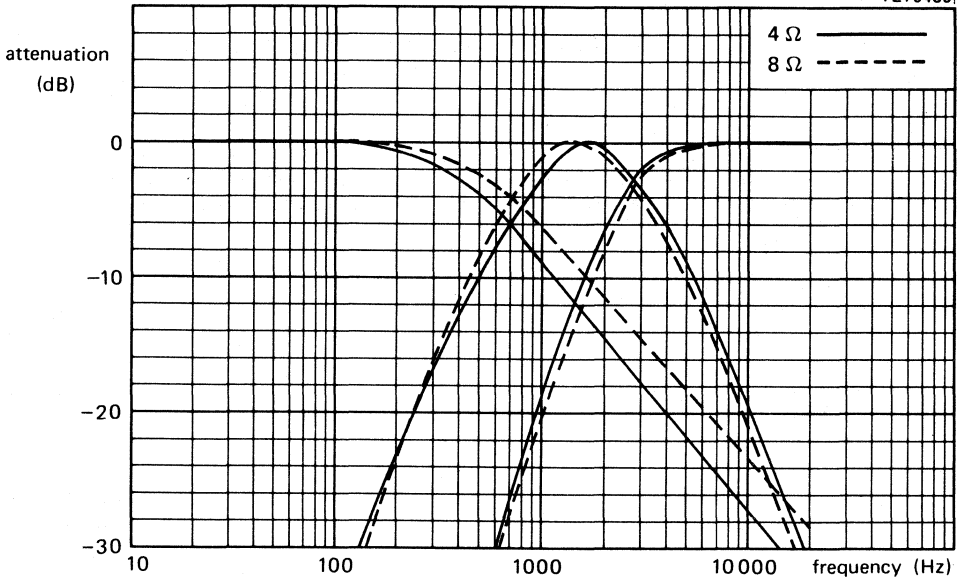
Circuit diagram



	version		
	4 Ω	8 Ω	
L1	2,1	3	mH
L2	1,2	2,1	mH
L3	0,35	0,8	mH
L4	0,5	0,8	mH
C1	36	24	μF
C2	8	5	μF
C3	5	3,3	μF

Frequency characteristics

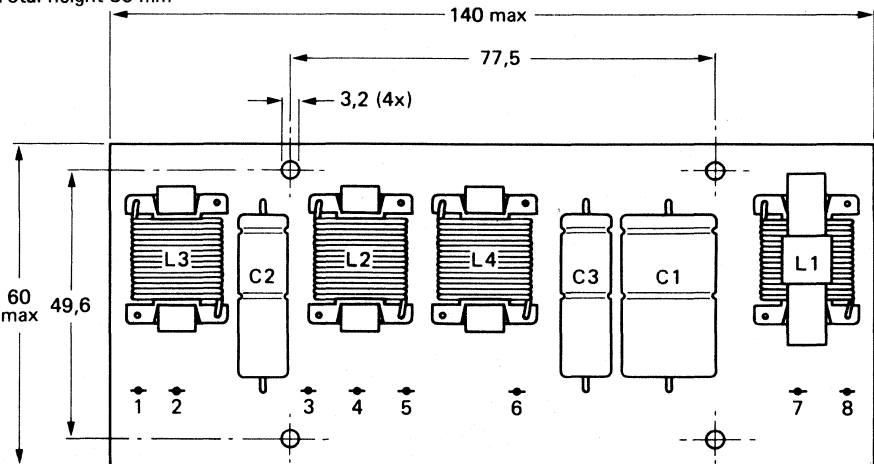
7Z75489



Dimensions (mm) and connections

See also circuit diagram for connection to the 8 soldering tags.

Total height 36 mm



CATALOGUE NUMBERS

7Z75483

Type ADF700/2600/4: catalogue number 3104 207 10250

Type ADF700/2600/8: catalogue number 3104 207 10260

3-WAY CROSS-OVER NETWORK

APPLICATION

For use in 3-way loudspeaker systems with high fidelity woofers, squawkers and dome tweeters.

TECHNICAL DATA

Rated impedance
 type ADF700/3000/4
 type ADF700/3000/8

4 Ω
 8 Ω

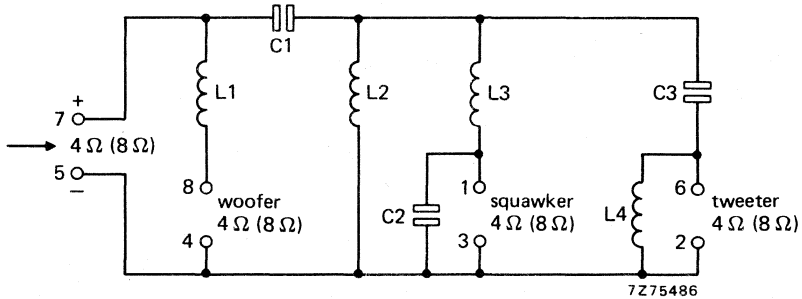
Cross-over frequencies
 Power handling capacity

700 and 3000 Hz
 80 W

Slope
 low pass
 band pass (mid-range)
 high pass

6 dB/octave
 12 dB/octave
 12 dB/octave

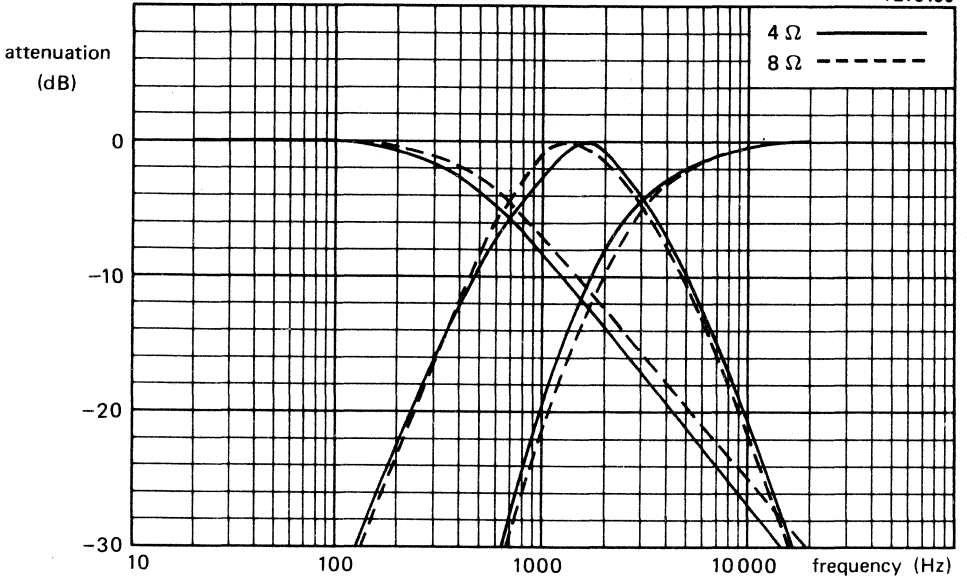
Circuit diagram



	version		
	4 Ω	8 Ω	
L1	2,1	3	mH
L2	1,2	2,1	mH
L3	0,35	0,8	mH
L4	0,35	0,5	mH
C1	36	24	μF
C2	8	5	μF
C3	6,8	5	μF

Frequency characteristics

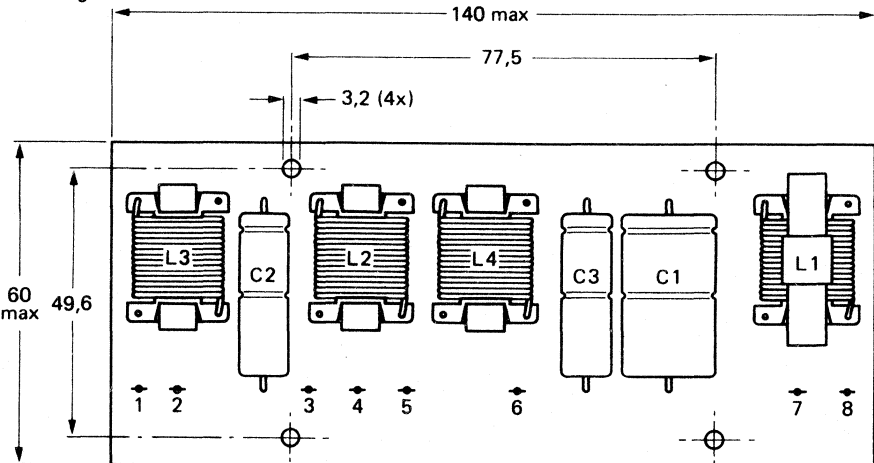
7275490



Dimensions (mm) and connections

See also circuit diagram for connection to the 8 soldering tags.

Total height 36 mm



7275483

CATALOGUE NUMBERS

Type ADF700/3000/4: catalogue number 3104 207 10270

Type ADF700/3000/8: catalogue number 3104 207 10280

Recommended loudspeaker combinations



RECOMMENDED LOUDSPEAKER COMBINATIONS

4 and 8 Ω impedance

no.	combination			cross-over frequency	enclosure volume	power handling capacity
	woofer	squawker	tweeter			
1	AD4050/W4(8)	—	AD2295/T8(15)	4000 Hz	5 l, bass reflex	15 W
2	AD70600/W4(8)	—	AD2296/T4(8)	2400 Hz	9 l	20 W
3	AD70600/W4(8)	—	AD0141/T8(15)	1600 Hz	9 l	25 W
4	AD80652/W4(8)	AD5060/Sq4 (8)	AD0140/T4(8)	700/3000 Hz	25 l	40 W
5	AD80652/W4(8) with AD8002	AD0211/Sq4 (8)	AD01630/T8(15) or AD01631/T8(15)	700/2400 Hz	35 l	50 W
6	9710/M8	—	—	—	40 l, bass reflex	25 W
7	AD12650/W8	AD5061/Sq8	AD0141/T8	2100/8000 Hz	60 l	60 W
8	AD12200/W8 with AD1200	AD0211/Sq4 (8)	AD01605/T4(8)	800/5000 Hz	100 l	100 W

For more information see our book "Building Hi-Fi speaker systems".



A	General (with survey)	
B	Low power	
C	Medium power	
D		full range
E	High power	tweeters
F		squawkers
G		woofers
H	Accessories	
J	Recommended loudspeaker combinations	

Argentina: FAPESA I.y.C., Av. Crovara 2550, Tablada, Prov. de BUENOS AIRES, Tel. 652-7438/7478.

Australia: PHILIPS INDUSTRIES HOLDINGS LTD., Elcoma Division, 67 Mars Road, LANE COVE, 2066, N.S.W., Tel. 427 08 88.

Austria: ÖSTERREICHISCHE PHILIPS BAUELEMENTE Industrie G.m.b.H., Triester Str. 64, A-1101 WIEN, Tel. 62 91 11.

Belgium: M.B.L.E., 80, rue des Deux Gares, B-1070 BRUXELLES, Tel. 523 00 00.

Brazil: IBRAPE, Caixa Postal 7383, Av. Paulista 2073-S/Loja, SAO PAULO, SP, Tel. 284-4511.

Canada: PHILIPS ELECTRONICS LTD., Electron Devices Div., 601 Milner Ave., SCARBOROUGH, Ontario, M1B 1M8, Tel. 292-5161.

Chile: PHILIPS CHILENA S.A., Av. Santa Maria 0760, SANTIAGO, Tel. 39-40 01.

Colombia: SADAPE S.A., P.O. Box 9805, Calle 13, No. 51 + 39, BOGOTA D.E. 1., Tel. 600 600.

Denmark: MINIWATT A/S, Emdrupvej 115A, DK-2400 KØBENHAVN NV., Tel. (01) 69 16 22.

Finland: OY PHILIPS AB, Elcoma Division, Kaivokatu 8, SF-00100 HELSINKI 10, Tel. 1 72 71.

France: R.T.C. LA RADIODIETECHNIQUE-COMPELEC, 130 Avenue Ledru Rollin, F-75540 PARIS 11, Tel. 355-44-99.

Germany: VALVO, UB Bauelemente der Philips G.m.b.H., Valvo Haus, Burchardstrasse 19, D-2 HAMBURG 1, Tel. (040) 3296-1.

Greece: PHILIPS S.A. HELLENIQUE, Elcoma Division, 52, Av. Syngrou, ATHENS, Tel. 915 311.

Hong Kong: PHILIPS HONG KONG LTD., Comp. Dept., Philips Ind. Bldg., Kung Yip St., K.C.T.L. 289, KWAI CHUNG, N.T. Tel. 12-24 51 21.

India: PHILIPS INDIA LTD., Elcoma Div., Band Box House, 254-D, Dr. Annie Besant Rd., Prabhadevi, BOMBAY-25-DD, Tel. 457 311-5.

Indonesia: P.T. PHILIPS-RALIN ELECTRONICS, Elcoma Division, 'Timah' Building, Jl. Jen. Gatot Subroto, JAKARTA, Tel. 44 163.

Ireland: PHILIPS ELECTRICAL (IRELAND) LTD., Newstead, Clonskeagh, DUBLIN 14, Tel. 69 33 55.

Italy: PHILIPS S.p.A., Sezione Elcoma, Piazza IV Novembre 3, I-20124 MILANO, Tel. 2-6994.

Japan: NIHON PHILIPS CORP., Shuwa Shinagawa Bldg., 26-33 Takanawa 3-chome, Minato-ku, TOKYO (108), Tel. 448-5611.
(IC Products) SIGNETICS JAPAN, LTD., TOKYO, Tel. (03) 230-1521.

Korea: PHILIPS ELECTRONICS (KOREA) LTD., Elcoma Division, Philips House, 260-199 Itaewon-dong, Yongsan-ku, SEOUL, Tel. 794-4202.

Mexico: ELECTRONICA S.A. de C.V., Varsovia No. 36, MEXICO 6, D.F., Tel. 533-11-80.

Netherlands: PHILIPS NEDERLAND B.V., Afd. Elonco, Boschdijk 525, NL 5600 PD EINDHOVEN, Tel. (040) 79 33 33.

New Zealand: PHILIPS Electrical Ind. Ltd., Elcoma Division, 2 Wagener Place, St. Lukes, AUCKLAND, Tel. 867 119.

Norway: NORSK A/S PHILIPS, Electronica Dept., Vitaminveien 11, Grefsen, OSLO 4, Tel. (02) 15 05 90.

Peru: CADESA, Rocca de Vergallo 247, LIMA 17, Tel. 62 85 99.

Philippines: ELDAC, Philips Industrial Dev. Inc., 2246 Pasong Tamo, MAKATI-RIZAL, Tel. 86-89-51 to 59.

Portugal: PHILIPS PORTUGUESA S.A.R.L., Av. Eng. Duharte Pacheco 6, LISBOA 1, Tel. 68 31 21.

Singapore: PHILIPS SINGAPORE PTE LTD., Elcoma Div., P.O.B. 340, Toa Payoh CPO, Lorong 1, Toa Payoh, SINGAPORE 12, Tel. 53 88 11.

South Africa: EDAC (Pty.) Ltd., South Park Lane, New Doornfontein, JOHANNESBURG 2001, Tel. 24/6701.

Spain: COPRESA S.A., Balmes 22, BARCELONA 7, Tel. 301 63 12.

Sweden: A.B. ELCOMA, Lidingövägen 50, S-115 84 STOCKHOLM 27, Tel. 08/67 97 80.

Switzerland: PHILIPS A.G., Elcoma Dept., Edenstrasse 20, CH-8027 ZÜRICH, Tel. 01/44 22 11.

Taiwan: PHILIPS TAIWAN LTD., 3rd Fl., San Min Building, 57-1, Chung Shan N. Rd, Section 2, P.O. Box 22978, TAIPEI, Tel. 5513101-5.

Turkey: TÜRK PHILIPS TICARET A.S., EMET Department, Inonu Cad. No. 78-80, ISTANBUL, Tel. 43 59 10.

United Kingdom: MULLARD LTD., Mullard House, Torrington Place, LONDON WC1E 7HD, Tel. 01-580 6633.

United States: (Active devices & Materials) AMPEREX SALES CORP., Providence Pike, SLATERSVILLE, R.I. 02876, Tel. (401) 762-9000.
(Passive devices) MEPCO/ELECTRA INC., Columbia Rd., MORRISTOWN, N.J. 07960, Tel. (201) 539-2000.
(IC Products) SIGNETICS CORPORATION, 811 East Arques Avenue, SUNNYVALE, California 94086, Tel. (408) 739-7700.

Uruguay: LUZILETRON S.A., Rondeau 1567, piso 5, MONTEVIDEO, Tel. 9 43 21.

Venezuela: IND. VENEZOLANAS PHILIPS S.A., Elcoma Dept., A. Ppal de los Ruices, Edif. Centro Colgate, CARACAS, Tel. 36 05 11.