

Dual Compact Systems



Dual compact systems are complete stereo systems for record reproduction and radio reception. That is, completely equipped with automatic turntable, all-band tuner, stereo amplifier and protective cover. Two speakers matched to the system are always included wherever designated by the letter »L«.

No home, apartment or room is too large or too small for a top quality Dual compact system. It takes up little more space than a record player, and is designed to give you much more sound than a single record playing unit would.

Dual compact systems are designed for listening now, and in the future, since they are compatible with all the quadraphonic systems known today. With only two additional speakers, quadraphonic effect reproduction will be possible, increasing spatial realism and your listening pleasure.

Antiskating

Compensation for the force which causes the tonearm to move inward (skate) during play. Without antiskating compensation, the relative pressures on the walls of the record grooves would be uneven, causing distortion.

Balance

Optimum volume range between two (stereo) or four (quad) channels in relation to the listening position. The balance control permits the recovery of sound equilibrium where room acoustics or asymmetric speaker placement impair normal balance.

Chromium dioxide (CrO₂) tape

Tape with a magnetizable coating of chromium dioxide particles. CrO₂ tape has broader frequency response than the »standard« ferric oxide tape, but requires different bias and equalization, as well as a higher erasing current.

Compliance

Refers to the compliance of a stylus in the phono cartridge. High compliance means the stylus can optimally follow the record groove even with minimum tracking force, while still transmitting a high output level without distortion.

Continuous (power) output

Also called sine-continuous output. The output power of an amplifier which can be obtained during a period of at least 10 minutes when being driven with 1 kHz sinusoidal signal with a maximum of 1% distortion.

Cue control

Permits smooth lowering and raising of the tonearm at any point on the record.

Cynch-plug-socket

Also called RCA plug connection. Single-pole plug connection.

Decibel (dB)

A logarithmic scale of measuring two values, by means of which voltage or output ratios are shown. It is used to indicate sound volume, channel separation, signal-to-noise ratio and other technical data.

Decoder

An electronic component for matrix quadraphonic systems which decodes the original four channels from the two encoded transmission channels.

Dolby Noise Reduction System

An electronic process for reduction of the inherent noise of tapes. High frequencies are amplified until their volume is sufficiently above the inherent noise of the tape. During playback, this level boost is reduced to the original volume. Thus the noise level is also reduced proportionately, achieving noise-free playback. (»Dolby« is a trademark of Dolby Laboratories, Inc.)

Dynamic power

The maximum power output of an amplifier available for short volume peaks without resulting in an increase of distortion.

High fidelity

Means faithfulness to the original. To qualify as »high fidelity«, reproduced sound may differ from the original only in a small degree. The requirements for HiFi equipment are established in Germany by DIN 45 500 (standard for HiFi home studio equipment). All Dual HiFi stereo systems and components meet or surpass these standards.

Loudness compensation

The human ear becomes less sensitive to bass and treble at low volume levels. Bass and treble must therefore be emphasized to a greater degree than midrange frequencies at low volume levels. This is done automatically by the loudness compensation control.

Mode Selector

The Dual Mode Selector maintains the vertical tracking angle in the multiple-play and single-play modes. During single-play the tonearm is parallel to the record. For multiple-play the tonearm pivot and thus the tonearm are raised to parallel the center of the record stack.

Multiphonics

Please refer to page 30.

Pitch control

Regulates the speed of the record, and therefore the pitch of the music. Useful when accompanying a record with live music, for film soundwork, etc.

Quadraphonic sound

Please refer to page 30.

Receiver

The combination of tuner and amplifier in one chassis.

Sensitivity

Measurement of a receiver's or tuner's ability to receive weak or distant signals. In the FM band, sensitivity is indicated in microvolts (μ V), which is a millionth of a volt. For amplifiers, sensitivity is the input voltage required for full output of the final stage.

Signal-to-noise ratio

The ratio between background noise and the effective signal; it is measured in dB.

Speaker matrix

Decodes the differential signals contained in stereo recording and passes them to the two rear speakers to provide quadraphonic effect.

Stereo sound

Please refer to page 30.

Stroboscope

Instrument used to check platter speeds. At nominal speed (33¹/₃ or 45 rpm) the marks on the stroboscope appear to remain stationary. Dual stroboscope discs are placed on the platter to check the speed. Dual 1228, Dual 1229, Dual 601 and Dual 701 are all equipped with built-in illuminated stroboscopes.

Synchronous operation

Constant rotation of a turntable platter, which requires advanced engineering. Deviations from synchronous operation show up as pitch variations and are measured as percentages.

Tape background noise

Basic inherent noise of magnetic tape, generally heard as »hiss«.

Tracking angle selector

Changeover device to maintain the vertical tracking angle during multiple-play and single-play modes. In contrast to the Mode Selector it is not the tonearm, but the cartridge holder which is adapted to the operating mode.

Tracking force

Tracking force is measured in ponds (p). One pond corresponds to the mass of one gram. Instead of the term pond (p), the new, internationally agreed-upon term of millinewton (mN) will be used from now on.

Tuner

A high quality radio receiver without power amplifier or speaker.

Vertical tracking angle

Records are cut internationally at a standardized cutting stylus angle and should also be tracked at exactly the same angle in multiple-play mode. See »tracking angle selector« and »mode selector«.



Dual KA 12 L walnut finish

Dual KA 12 L W white enamel

Moderately priced stereo system for record reproduction and radio reception. Equipment: Dual 1211 automatic turntable; all-band tuner; 2 x 6 watt stereo amplifier; two wide-range speakers matched to the system; Dual H 14 cover.

Dimensions (with cover):
357 x 180 x 325 mm (W x H x D)

Weight (with cover): 9.6 Kg

Dimensions of speakers:
each 197 x 300 x 105 mm (W x H x D)

Weight: each 1.8 Kg

- Dual 1211 automatic turntable with Dual CDS 650 ceramic cartridge
- All-band tuner with switchable AFC for FM
- Fold-out ferrite antenna
- Blackout dial scale
- 2 x 6 watt transistor amplifier
- Input selectors for phono, tape and tuner
- Built-in speaker matrix for quadrasonic effect reproduction
- 4 output jacks for speakers

Speakers for Dual KA 12 L in walnut finish are supplied with matching color grille.
Technical data: Pages 64 and 65

Dual KA 12 L compact system — fits any home shelf.



Dual KA 32 L HiFi Compact System

26



Dual KA 32 L walnut finish

Dual KA 32 L W white enamel

Compact, space-saving HiFi stereo system for record reproduction and radio reception. Equipment: Dual 1225 HiFi automatic turntable; HiFi tuner; 2 x 15 watt HiFi stereo amplifier; two Dual CL 138 HiFi speakers matched to the system (technically similar to Dual CL 144); Dual CH 21 cover.

Dimensions (with cover):

420 x 210 x 385 mm (W x H x D)

Weight (with cover): 11 Kg

Dimensions of speakers (for Dual KA 32 L

and Dual KA 32 L W):

each 230 x 363 x 162 mm (W x H x D)

Weight: each 4.3 Kg

The Dual KA 32 L W includes speakers with aluminium metal grille.

- All-band HiFi tuner, with switchable automatic AFC for FM tuning accuracy
- Built-in ferrite antenna
- Blackout dial scale
- 2 x 15 watt HiFi amplifier and 2-stage equalizer-preamplifier
- Input selector buttons for phono, tape deck and tuner
- Built-in speaker matrix for quadrasonic effect reproduction
- Quadrasonic/stereo selector switch
- 4 speaker output jacks and two connections for quadrasonic decoder
- Headphone jack
- Dual 1225 HiFi automatic turntable — description on pages 5 and 66

Technical data: Pages 64 and 65



Dual KA 61 walnut finish
Dual KA 61 W white enamel
 (Without speakers)
Dual KA 61 L walnut finish
Dual KA 61 L W white enamel
 (Complete with 2 Dual
 CL 144 HiFi 2-way-speakers)
 Compact, high output HiFi stereo system
 for record reproduction and radio recep-
 tion. Equipment: Dual 1228 HiFi automatic
 turntable, HiFi tuner; 2 x 30 watt HiFi
 stereo amplifier; Dual CH 21 cover.

Dimensions (with cover):
 420 x 210 x 385 mm (W x H x D)
 Weight (with cover): 12.1 Kg
 Dimensions of speakers (for Dual KA 61 L
 and Dual KA 61 L W):
 each 250 x 477 x 203 mm (W x H x D)
 Weight: each 6.4 Kg
 The Dual KA 61 L in walnut finish includes
 speakers with matching color grille.

- All-band HiFi tuner with 5 wavebands;
 5 FM station keys; switchable FM
 muting; automatic AFC for FM tuning
 accuracy
- Blackout dial scale
- 2 x 30 watt HiFi amplifier and 2-stage
 equalizer-preamplifier
- Loudness compensation
- Input selector switches for phono, tuner
 and tape deck
- Built-in speaker matrix for quadrasonic
 effect reproduction
- Quadrasonic/stereo selector switch
- 4 speaker output jacks and two
 connections for quadrasonic decoder
- Headphone jack
- Dual 1228 HiFi automatic turntable —
 description on pages 7 and 66

Technical data: Pages 64 and 65

Dual KA 460 Four-Channel HiFi Compact System

28

Dual KA 460

Universal HiFi compact system with advanced engineering and low-profile design. An ideal combination of top quality HiFi components for record reproduction and radio reception. Equipment: Dual 601 belt-drive HiFi turntable; all-band HiFi tuner; 4 x 30 watt four-channel amplifier; integrated SQ and multimatrix decoder; Dual CH 40 cover and base with automatic tilt-hold.

Dimensions (with cover):

650 x 180 x 440 mm (W x H x D)

Weight (with cover): 19.5 Kg

You can make your speaker selection for the KA 460 from the comprehensive Dual line. Recommendations and information concerning the best type of speakers for your listening room are shown in the Table on page 46.

- HiFi stereo tuner with 5 wavebands; 7 VHF station keys; automatic AFC for FM tuning accuracy
- Tuning indicator instruments for FM receiving range and station buttons for easy FM station finding
- Tuning meters for center-tune and signal strength, determining the best radio reception
- Discrete 4 x 30 watt four-channel amplifier with advanced electronics
- Integrated SQ matrix decoder and multimatrix decoder
- Four slide controls for individual control of volume and sound for each channel
- 6 speaker output jacks, 2 stereo headphone jacks
- Connection jack for CD 4 demodulator and connection jack for Dual RC 40 remote control unit
- Dual 601 belt-drive HiFi automatic turntable — description on pages 9 and 67

The KA 460 Dual compact system operates in the following modes.

Stereo:

Reproduction of stereo radio programs and records with two speakers.

2 x Stereo:

Stereo reproduction in two rooms, or stereo reproduction with four speakers in unusually large or acoustically unfavorable rooms.

4-channel:

4-channel reproduction from quadraphonic tape recorder, and quadraphonic reproduction from CD 4 records via connection with Dual CD 40 demodulator.

SQ:

Quadraphonic reproduction of SQ records, tape recordings or cassettes, as well as radio programs transmitted in SQ.

Multi:

4-channel reproduction of stereo and other matrix encoded records, tape recordings and cassettes, as well as radio programs transmitted in the matrix format.

Technical data: Pages 64 and 65





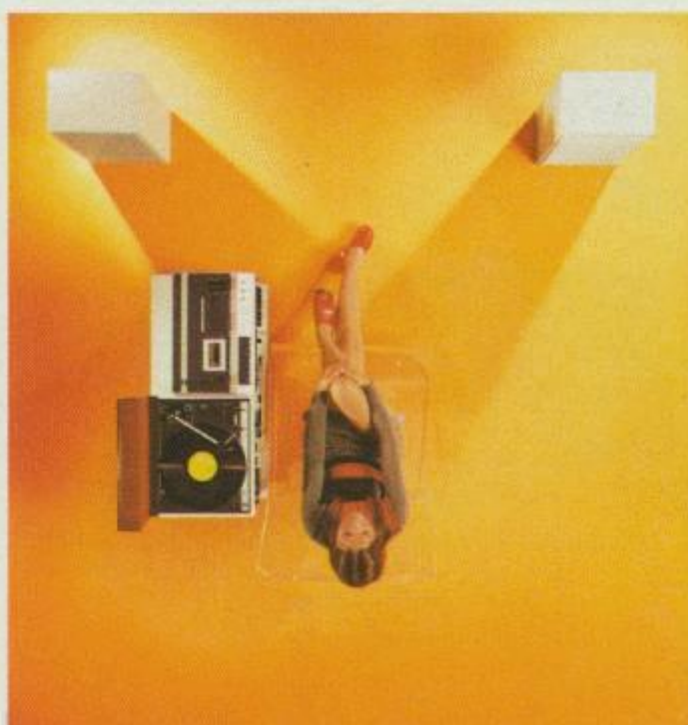


Fig. 1

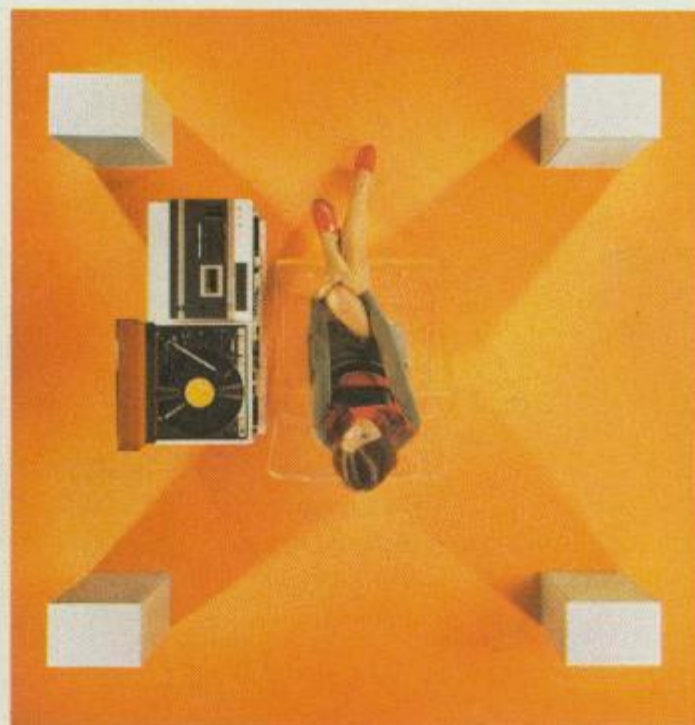


Fig. 2

If you want to enjoy music with the highest reproduction quality you need a HiFi stereo or quadraphonic system. Only then do you have the feeling of enjoying the best seat in a concert hall with outstanding acoustics.

A brief word of explanation: Stereophonic and quadraphonic sound are recording and reproduction techniques and permit three-dimensional listening. Whereas high fidelity (HiFi), is a standard of quality. In Germany, HiFi quality is defined in DIN 45 500. All Dual HiFi units not only meet this standard but in most cases surpass it.

Dual has a wide range of high quality stereo and quadraphonic systems which meet high fidelity standards. These start with the Dual home systems and continue through Dual compact systems up to the Dual components.

And all of the systems are made for now and the future, so anyone purchasing a Dual HiFi stereo system today will be able to expand to quadraphonic sound very simply.

Stereophonic Sound

This is sound that is recorded on two channels and which gives a certain degree of dimensional realism. Recording requires at least two microphones, and two separate channels are used for recording, storage and transmission. For reproduction, a stereo amplifier and two speakers are needed.

Fig. 1

Dual stereo system with components:
Dual CS 701 HiFi automatic turntable
Dual C 901 HiFi cassette deck
Dual CV 120 HiFi stereo amplifier
Dual CT 18 stereo tuner
2 Dual speakers

An improvement of three-dimensional reproduction can be attained with quadraphonic effect reproduction, which is not, however, the same as quadraphonic sound. For quadraphonic effect reproduction, two additional speakers, behind or adjacent to the listening position, are needed.

Quadraphonic Sound

This is an extension of stereophonic music reproduction and operates with four channels. Why four channels? In the concert hall most of the sound does not reach the listener directly. Approximately 70% is first reflected by the walls, ceiling, or floor before it reaches the ears of the listeners or recording microphones. The reflected sound, conditioned by the room acoustics, is picked up in quadraphonic recordings by two additional microphones, stored on two additional channels and passed via a quadraphonic amplifier to the four speakers. In this way, reproduction is obtained under approximately the

same acoustic conditions as in the recording room (e. g. concert hall). Sound sources are directed toward the listener and also come from behind him.

Fig. 2

Dual quadraphonic system with components:
Dual CS 701 HiFi automatic turntable
Dual C 901 HiFi cassette deck
Dual CV 240 HiFi four-channel amplifier
Dual CT 18 stereo tuner
4 Dual speakers

Two Quadraphonic Reproduction Systems:

1. »Discrete« or »4-4-4 Method«

The signals recorded by means of microphones are recorded on four independent, electronically separate sound tracks or channels. Reproduction requires a four-channel amplifier, such as the Dual CV 240, and four speakers.

2. »Matrix« or »4-2-4 Method«

For storage on the sound track, the four recording channels are stored in two stereo channels by means of a coded circuit. For four-channel reproduction, the two transmitting channels are again decoded into four channels by means of a decoder — such as Dual's CV 240 and CDV 60 models.

Multiphonic

This is a universal matrix system developed by Dual for all known quadraphonic systems, and for four-channel reproduction of stereo records, tapes and radio broadcasts. The Dual multiphonic system provides a three-dimensional quality not previously possible for stereo signals.

Dual Components



Discerning listeners look to Dual for these advantages. And they choose Dual for even more, such as advanced audio circuitry and full-range control and connection facilities.

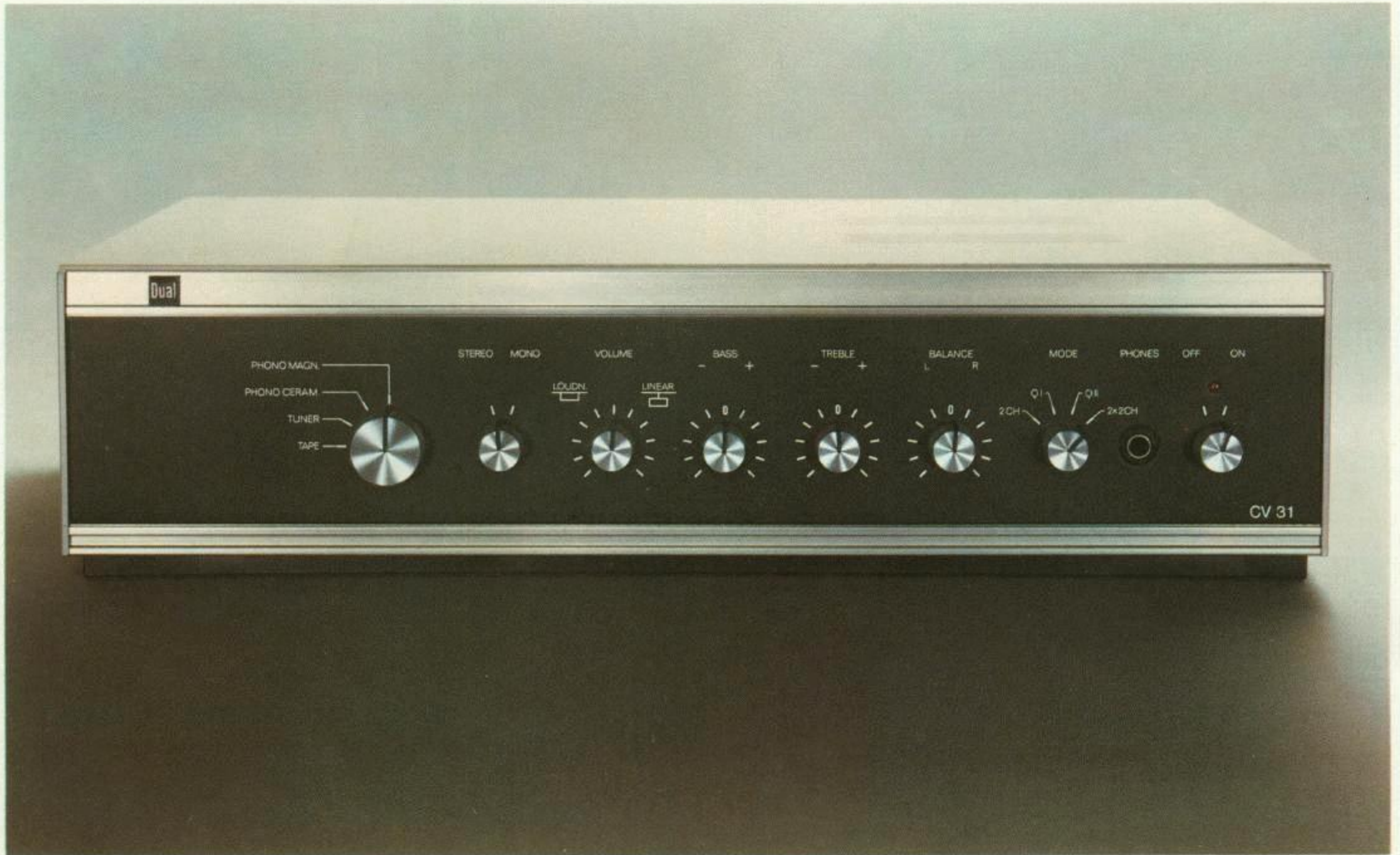
A complete Dual component system comprises six components — designed to match perfectly in both performance and styling. A typical system would be: a turntable, stereo amplifier, tuner, tape or cassette deck and two speakers. A Dual receiver, combining the functions of both tuner and amplifier is an alternate choice. Both types of systems are available as stereo or quadraphonic set-ups.

Dual's audio components are the finest quality HiFi modules — units with which you can build up a stereo or quadraphonic system gradually, upgrade an existing system, or create a new system from the beginning. You can rely on every Dual HiFi component in your system for the utmost in quality sound reproduction, technical precision and operating convenience.

And to expand a Dual stereo system into a full quadraphonic system, Dual offers the required amplifier for simple conversion. Two additional speakers are also required, and can be selected easily from the wide range of Dual systems. In either stereo or quad, with a Dual HiFi component system, you'll be enjoying the finest in sound reproduction.

Dual CV 31 HiFi Stereo Amplifier

32



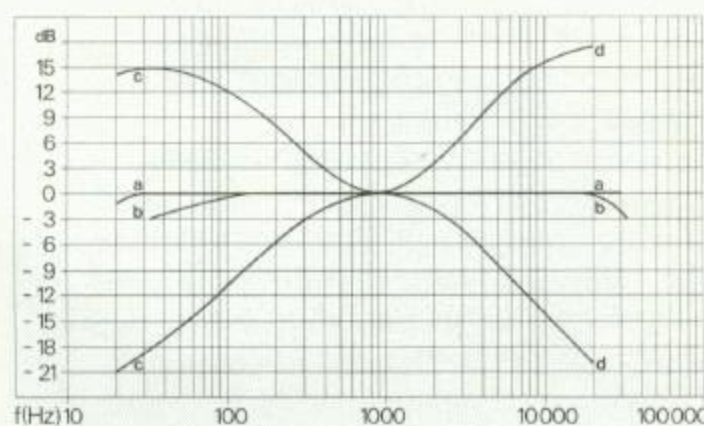
When connected to the Dual CT 18 tuner and two speakers, the Dual CV 31 is completely adapted for radio reception. The units are perfectly matched, in both performance and styling.

Dual CV 31 walnut finish
Dual CV 31 W white enamel
 Reasonably priced 2 x 15 watt HiFi stereo amplifier with 2-stage equalizer-preamplifier.
 Dimensions: 420 x 108 x 335 mm (W x H x D)
 Weight: 5.1 Kg

- 2 x 15 watt power output
- Input selector switch for magnetic phono cartridge and ceramic/crystal cartridge, as well as tuner and tape
- Speaker matrix for quadrasonic effect reproduction
- 4 speaker output jacks
- Connection jack for quadrasonic decoder

Technical data: Page 63

Frequency response graphs

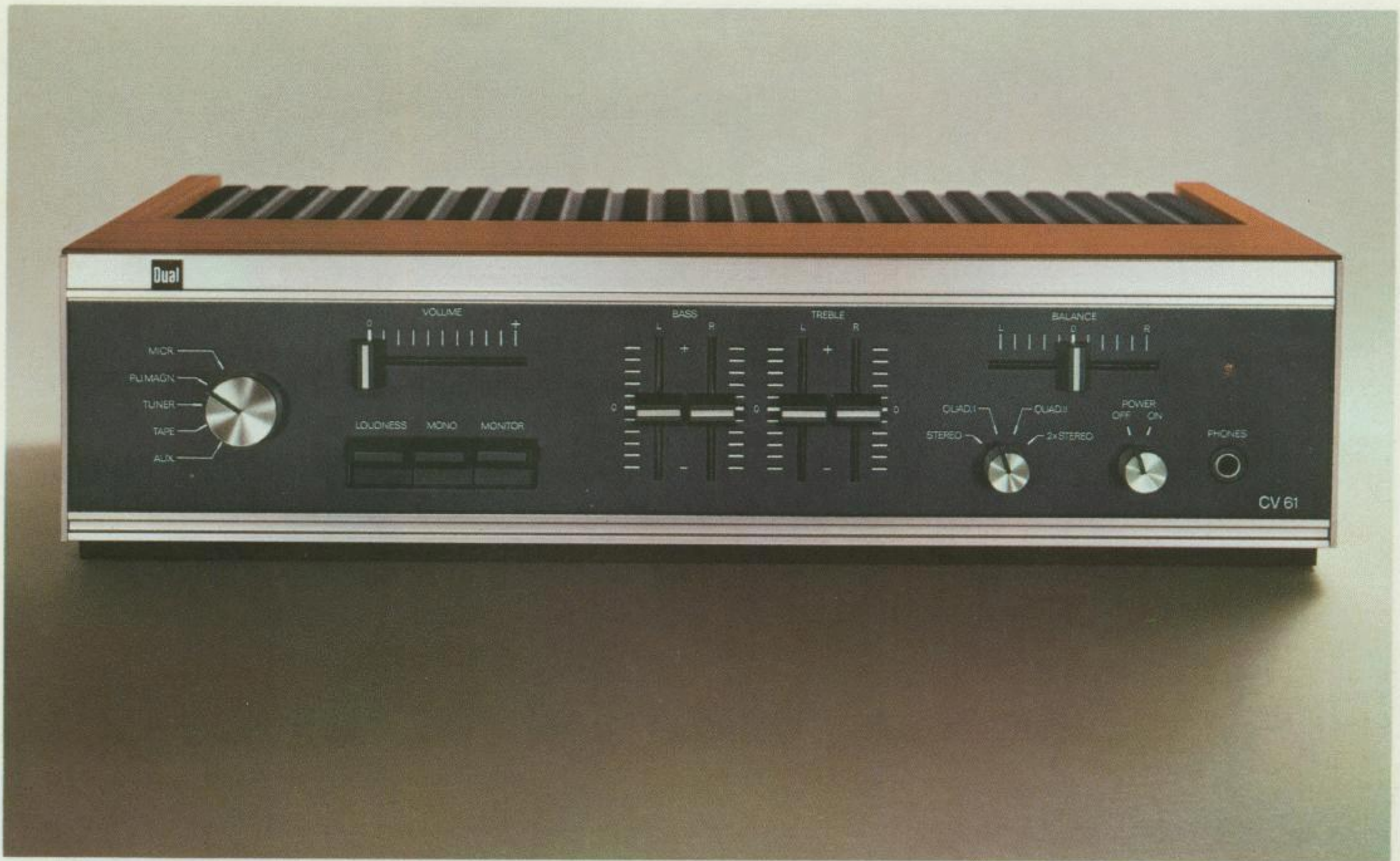


a = frequency response b = power bandwidth c = bass control range d = treble control range

The Dual CV 31 meets and surpasses the requirements in DIN 45 500 for HiFi home studio equipment.



Harmonic distortion at 40 Hz, 1,000 Hz, and 12,500 Hz as a function of the output power.



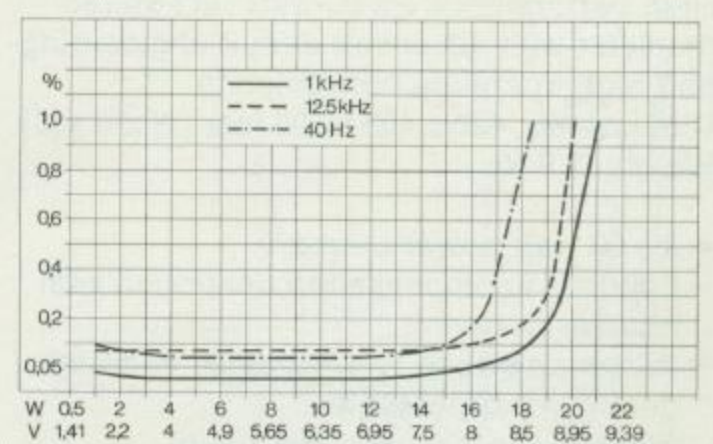
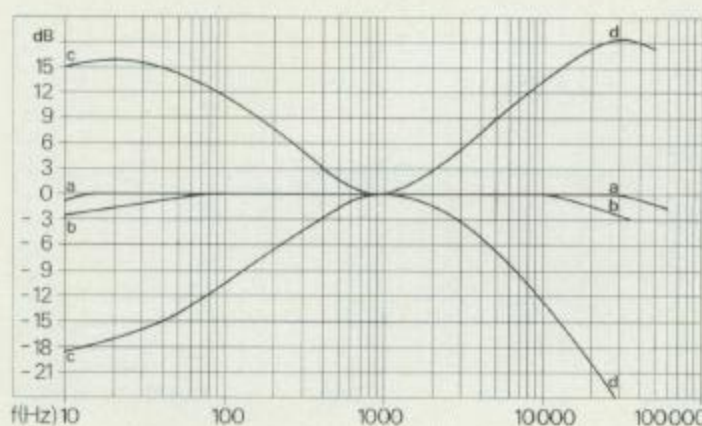
The combination of a tuner, such as the Dual CT 18, with the Dual CV 61, allows the reproduction of radio broadcasts through speakers.

Dual CV 61 walnut finish
Dual CV 61 W white enamel
 2 x 30 watt HiFi stereo amplifier with outstanding power bandwidth and minimum distortion. Human-engineered for operating ease.
 Dimensions: 420 x 108 x 305 mm (W x H x D)
 Weight: 6.2 Kg

- 2 x 30 watt power output
- Loudness compensation controlled with contour button
- Six slide controls: volume, balance and separate bass and treble controls for each channel
- Speaker matrix for quadraphonic effect reproduction
- 4 output jacks for speakers
- Electronic output stage protection, with current restriction and thermo switch

All measured values of the Dual CV 61 surpass the requirements in DIN 45 500 for HiFi home studio equipment.

Frequency response graphs



a = frequency response b = power bandwidth c = bass control range d = treble control range
 Harmonic distortion at 40 Hz, 1,000 Hz, and 12,500 Hz as a function of the output power.



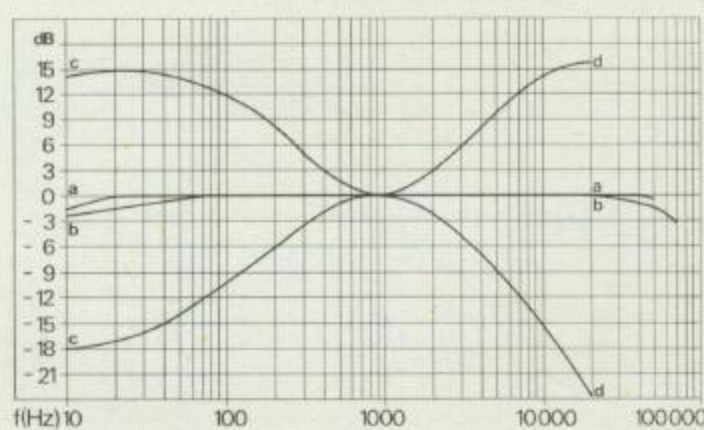
- Six slide controls: loudness, balance, and separate bass and treble controls for each channel
- Electronic protection circuit, with visual indicator

The Dual CV 120 surpasses the requirements in DIN 45 500 for HiFi home studio equipment.

Dual CV 120 walnut finish
Dual CV 120 W white enamel
 High performance 2 x 60 watt HiFi stereo amplifier with advanced circuit engineering and high operating convenience.
 Dimensions: 420 x 108 x 335 mm (W x H x D)
 Weight: 7.9 Kg

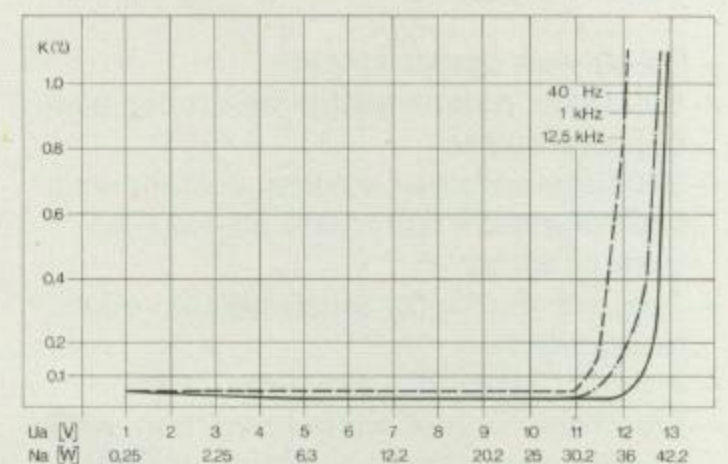
- 2 x 60 watt power output
- Loudness compensation controlled with contour button
- Presence switch to emphasize midrange during vocal passages
- Steep slope high and low filters
- Output jacks for two pairs of speakers
- Headphone jack

Frequency response graphs

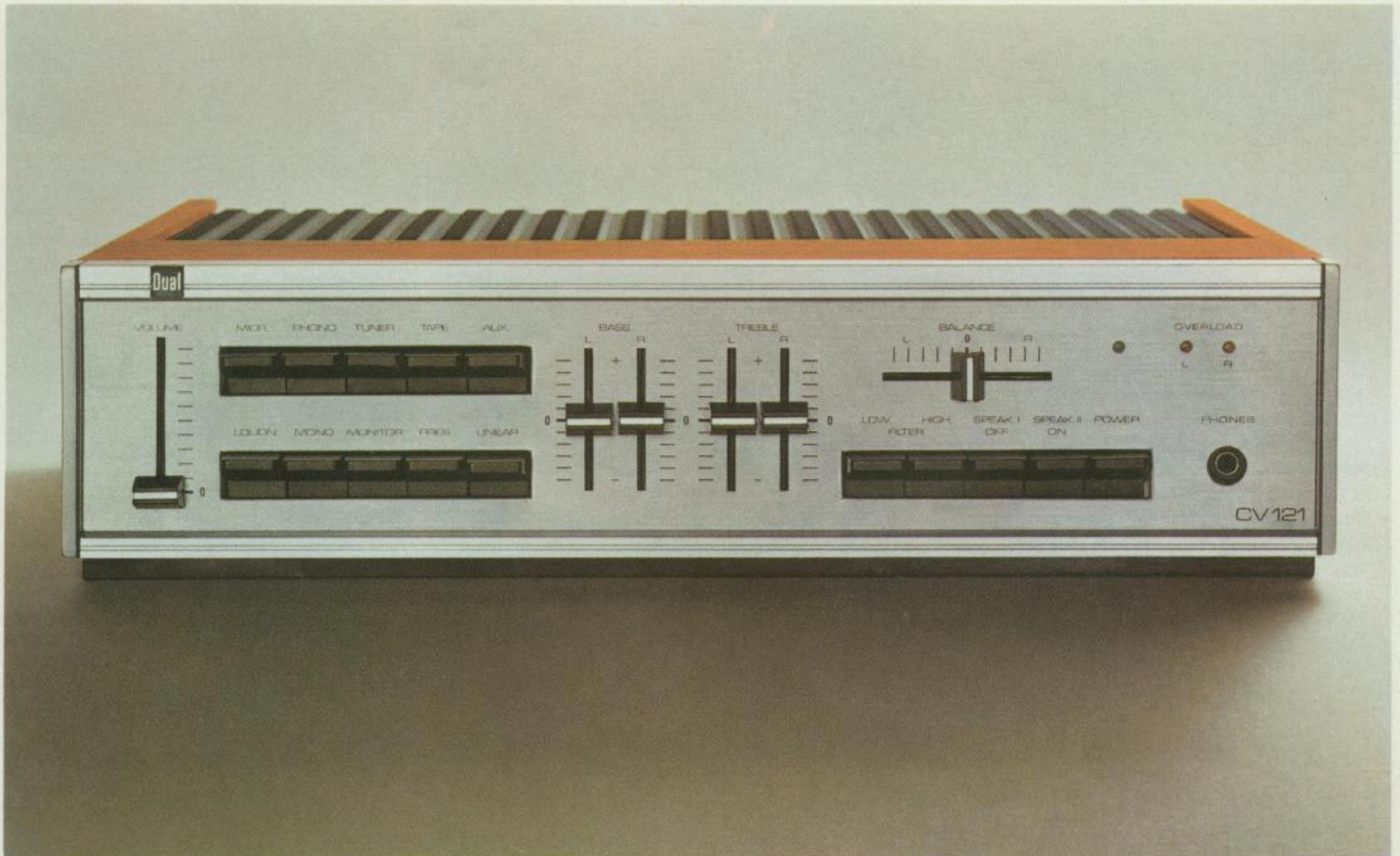


a = frequency response b = power bandwidth
 c = bass control range d = treble control range

Technical data: Page 63



Harmonic distortion at 40 Hz, 1,000 Hz, and 12,500 Hz as a function of the output power.



Dual CV 121 walnut finish

Dual CV 121 W white enamel

High quality 2 x 60 watt HiFi stereo amplifier with advanced circuit design and contemporary metallic look. Human-engineered for the utmost operating convenience.

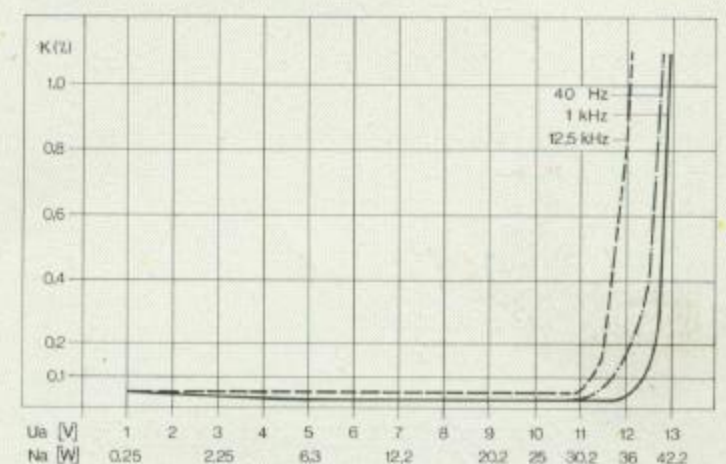
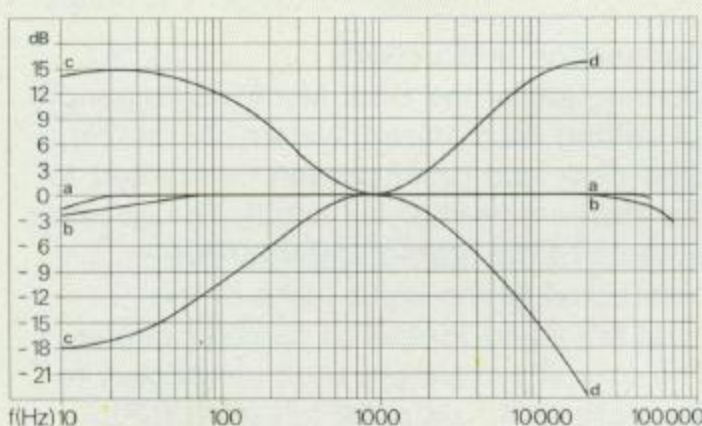
Dimensions: 420 x 108 x 335 mm (W x H x D)

Weight: 7.9 Kg

- 2 x 60 watt power output
- Loudness compensation controlled with contour button
- Presence switch to emphasize midrange during vocal passages
- Steep slope high and low filters
- Connection jacks for decoder-amplifier, two pairs of speakers and headphones
- Six slide controls: volume, balance, and separate bass and treble controls for each channel
- Electronic protection circuit for output stages, with visual indicator

Connection of the Dual CT 19 tuner with the Dual CV 121 creates a system ready for radio reception.

Frequency response graphs



a = frequency response b = power bandwidth c = bass control range d = treble control range Harmonic distortion at 40 Hz, 1,000 Hz, and 12,500 Hz as a function of the output power.

The Dual CV 121 surpasses the requirements in DIN 45 500 for HiFi home studio equipment.

Technical data: Page 63

Dual MV 61 HiFi Multiphonic Sound Additional Amplifier

36

Dual MV 61 walnut finish

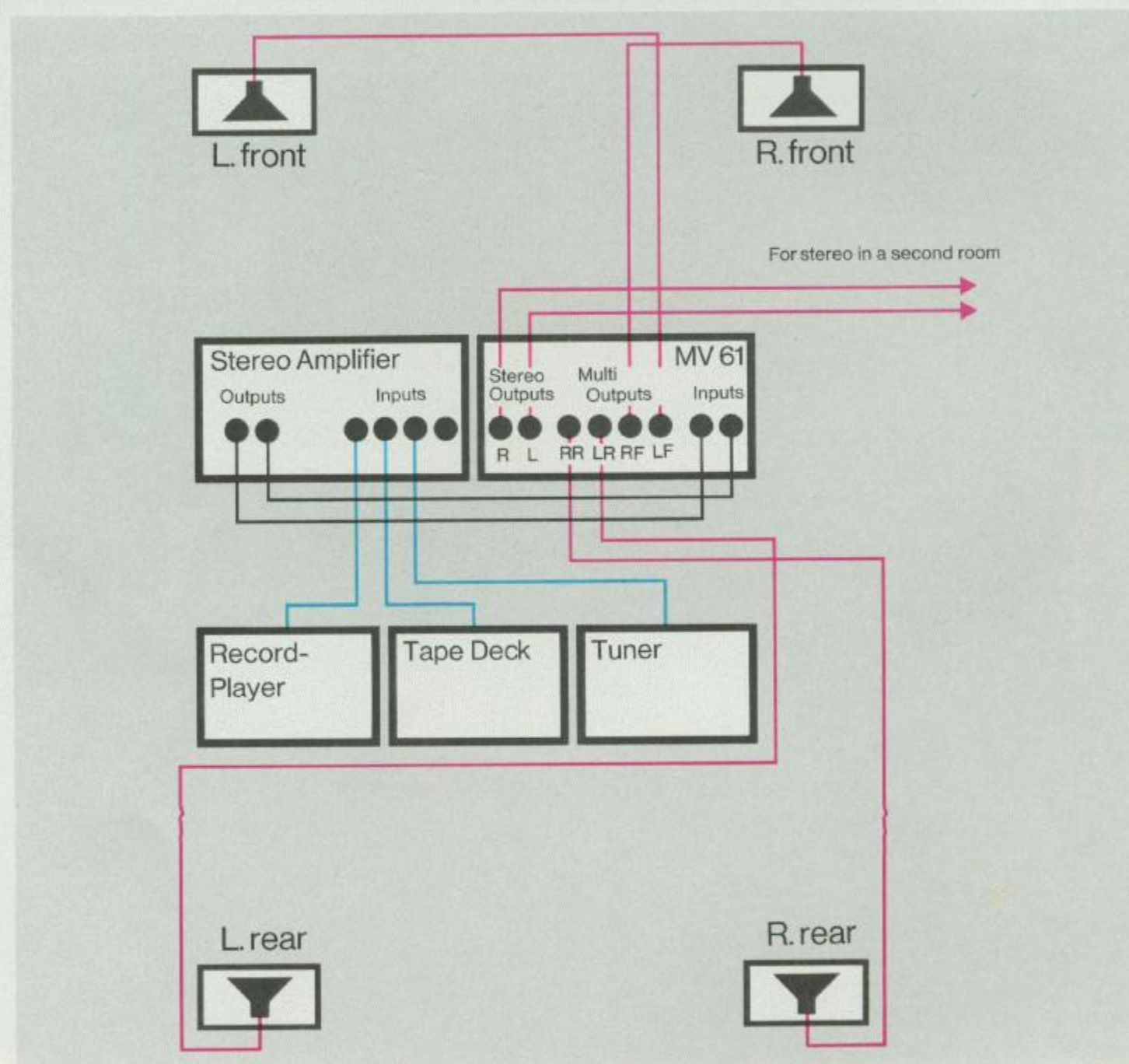
Dual MV 61 W white enamel

HiFi multiphonic additional amplifier for quadrasonic effect reproduction with stereo recordings and matrix-encoded four-channel records. In combination with an available stereo system and two additional speakers, four-channel reproduction can now be heard with the exciting concert hall dimension for full spatial realism.

Dimensions: 200 x 108 x 335 mm (W x H x D)

Weight: 3.5 Kg

- 2 x 30 watt power output, designed for connection with all Dual stereo amplifiers
- Four-channel reproduction of all matrix encoded records (SQ, QS)
- Simulated quadrasonic reproduction of all discrete four-channel records
- Quadrasonic effect reproduction with all stereo programs (stereo records, tape recordings, cassettes and radio broadcasts)
- Stereo reproduction in a second room
- Output jacks for 3 pairs of speakers



The Dual MV 61 meets and surpasses the requirements in DIN 45 500 for HiFi home studio equipment.

Technical data: Page 63

Connection Instructions

Connection of the Dual MV 61 is as simple as setting up a stereo system. Turntable, tape deck and tuner remain connected to the stereo amplifier, as usual. The speaker outputs of the stereo amplifier are connected to the input jacks of the Dual MV 61 by means of speaker cables. The four speakers are then connected to the designated outputs: left front (LF), right front (RF), left rear (LR) and right rear (RR). The operating mode switch should be set to »Multi«

The volume of the rear speakers is set by means of the »left« and »right« controls so that the listening position is reached uniformly by the four speakers. Varying distances of the two rear speakers in relation to the listening position can be compensated for by making adjustments with the two controls.

Dual CD 40 Four Channel Record Demodulator

Dual CDV 60 HiFi Decoder Amplifier

Dual CD 40 walnut finish
Dual CD 40 W white enamel
 Four-channel record demodulator for expanding a present quadraphonic system to include CD 4 reproduction of records. Quadraphonic/stereo switch. Optional reproduction of stereo or CD 4 quadraphonic, with pilot light indication. Three connection jacks: cartridge input, four-channel output and direct cartridge output. Dimensions: 200 x 108 x 335 mm (W x H x D) Weight: 2.7 Kg



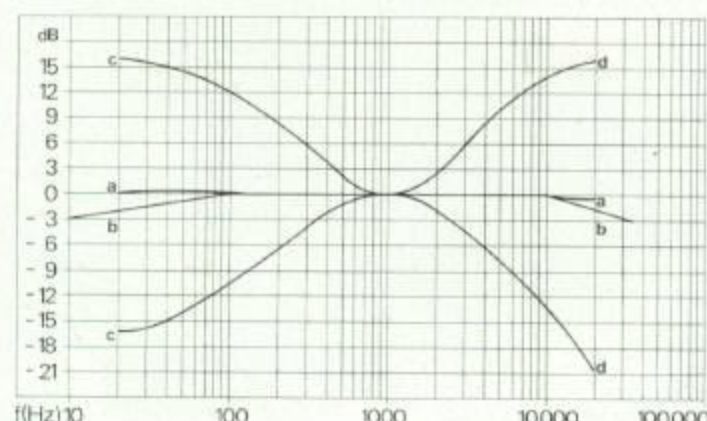
Dual CDV 60 walnut finish
Dual CDV 60 W white enamel
 HiFi decoder-amplifier with advanced IC circuitry and contemporary styling. Expands present stereo systems into discrete quadraphonic systems. Dimensions: 420 x 108 x 350 mm (W x H x D) Weight: 6.4 Kg

- 2 x 30 watt power output
- Integrated SQ and multiphonic decoder
- Four-channel input amplifier and discrete four-channel inputs for four-channel tape decks and CD 4 record demodulator
- Quadraphonic connection jack for Dual home systems and compact systems
- Master volume control for all four channels
- Four level controls for individual adjustment of each channel

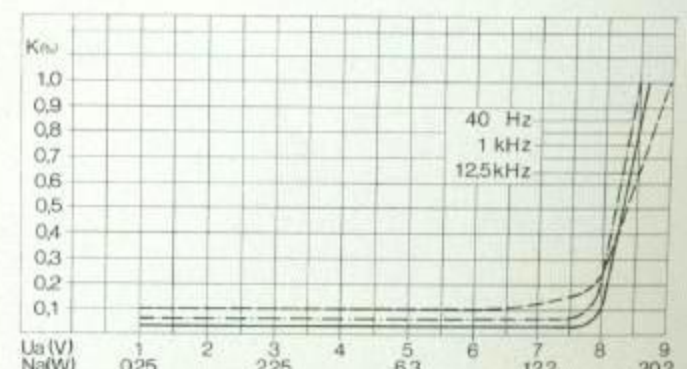
The Dual CDV 60 surpasses the requirements in DIN 45 500 for HiFi home stereo equipment.

Technical data: Page 63

Frequency response graphs



a = frequency response b = power bandwidth c = bass control range d = treble control range



Harmonic distortion at 40 Hz, 1,000 Hz, and 12,500 Hz as a function of the output power.

Dual CV 240 HiFi Four Channel Amplifier

38

Dual CV 240 walnut finish

Dual CV 240 W white enamel

Discrete 4 x 60 watt HiFi four-channel amplifier with modern module design and IC circuitry. Basic unit needed for a quadraphonic system — built to meet exacting demands. Outstanding power bandwidth and connections for system versatility.

Dimensions: 420 x 108 x 385 mm (W x H x D)

Weight: 12.6 Kg

- 4 x 60 watt power output
- Integrated SQ and multiphonic decoder
- Loudness compensation controlled with loudness button
- Presence switch to emphasize midrange during vocal passages
- Monitor switch for monitoring tape recordings
- Steep slope high and low filters
- 4 discrete four-channel inputs for four-channel tape recorders and CD 4 record demodulator
- Output jacks for three pairs of speakers
- Four-channel headphone jacks
- Bass and treble controls and master volume control for all four channels
- Four level controls for individual adjustment of each channel
- Selector switch for stereo, 2 x stereo, four-channel SQ, multi
- Connection for Dual RC 40 remote control unit

The Dual CV 240 surpasses the requirements in DIN 45 500 for HiFi home studio equipment.

Technical data: Page 63

The discrete Dual CD 40 four-channel record demodulator with integrated equalizer-preamplifier expands four-channel reproduction systems to include quadraphonic reproduction of CD 4 records. The demodulator is connected between the turntable and the Dual CV 240 (description on page 37).

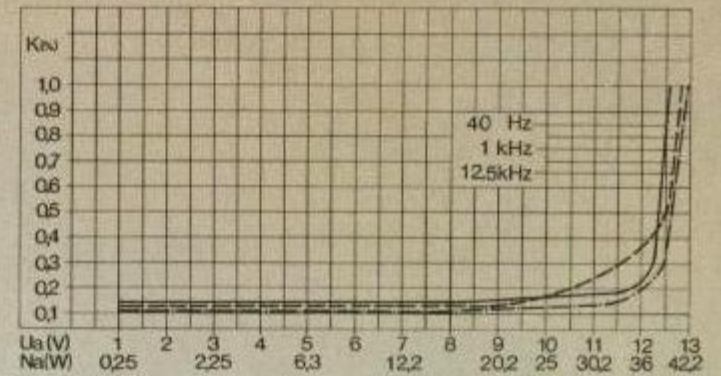
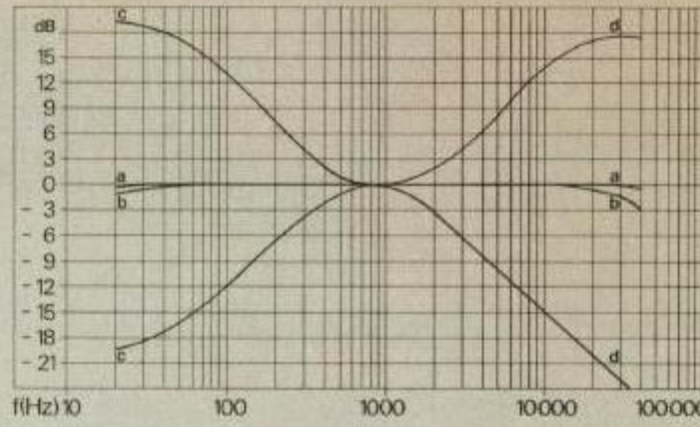


Dual RC 40

Remote control unit with joystick balance and continuous master volume control. Allows adjustment of all four speakers to achieve optimum setting from actual listening position in the room. Comes with 4 m of speaker cable for connection with Dual CV 240 or Dual CR 120 and all four speakers of the quadraphonic system. Dimensions: 90 x 51 x 121 mm (W x H x D) Weight: 0.45 Kg



Frequency response graphs



a= frequency response b= power bandwidth c= bass control range d= treble control range Harmonic distortion at 40 Hz, 1,000 Hz, and 12,500 Hz as a function of the output power.

