



E V O S u b o f e r s

ATTENZIONE

Leggete con attenzione questo manuale e seguite le istruzioni passo per passo.

Queste istruzioni mostrano un'installazione in modo generico, ma non contengono i metodi specifici di installazione per il vostro veicolo.

Un prolungato ascolto a volume molto elevato può causare danni permanenti al sistema uditivo: raccomandiamo di non eccedere con il volume.

Potenti sistemi car audio possono produrre pressioni sonore che eccedono il limite previsto da alcune legislazioni: rispettate le norme del vostro Paese.

Consigliamo un ascolto a livello moderato durante la guida: dovete essere sempre in grado di udire i rumori esterni per affrontare eventuali situazioni di emergenza.

Un sistema car audio fornisce le migliori prestazioni solo se correttamente installato: è quindi necessaria una buona conoscenza delle problematiche meccaniche ed acustiche dell'auto.

Per evitare qualsiasi rischio, raccomandiamo che l'installazione sia eseguita da personale specializzato, nel rispetto delle norme di sicurezza vigenti.

La Coral Electronic non risponde di eventuali danni a persone o cose derivati dalla mancata osservanza di queste raccomandazioni e/o dall'uso improprio dei propri prodotti.

WARNING

Please read this manual carefully and follow the instructions step by step.

These instructions generally show you how to install a subwoofer, but they do not explain the specific installation methods for your type of car.

Protracted listening at very high volume level may cause permanent hearing damages: we recommend to not exceed with high volume.

High-powered car audio systems may produce pressure levels which exceed the limits of legislations in some countries, as so, please respect such rules in your country.

We also recommend the use of a moderate volume level while driving: you must always be able to hear external noises in order to face possible emergency situations promptly.

A car audio system gives its best performances only if correctly installed: for this reason, a good car's acoustical and mechanical knowledges are required.

To ensure total safety, we strongly recommend you to entrust installation to a qualified personnel, respecting the current safety laws.

Coral Electronic declines any liability for damages caused to people and things in disregarding the contents of the present manual and/or concerning the improper use of its products.

Ogni altoparlante fornisce le migliori prestazioni solo se correttamente utilizzato: l'impianto in cui verrà inserito, le modalità di installazione e la taratura del sistema saranno quindi responsabili delle prestazioni acustiche complessive e dell'affidabilità dell'altoparlante stesso.

CARICAMENTO

I subwoofer della linea Evolution sono adatti a diversi tipi di carico acustico: cassa chiusa, bass-reflex, carico simmetrico e free-air (pianale). La scelta è dettata dallo spazio disponibile e dalle prestazioni che si vogliono ottenere. Le caratteristiche generiche sono:

- cassa chiusa: è il box più piccolo e facile da costruire, ma con una sensibilità leggermente inferiore a quella degli altri sistemi;

- cassa reflex: richiede una maggior abilità per la realizzazione del box, ma offre una gamma bassa corposa ed un'ottima dinamica;

- carico simmetrico: è il sistema più critico e difficile da realizzare, suggeriamo la sua costruzione solo a persone molto esperte;

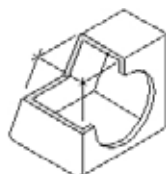
- free-air (pianale): è un'installazione molto semplice, ma non fornisce le prestazioni di un box ben realizzato e limita la tenuta in potenza dell'altopar-

A loudspeaker supplies its best performances only if correctly used: the audio system where the speaker is used into, the way of installation and a right tuning are directly responsible for total acoustic performances and loudspeaker's reliability.

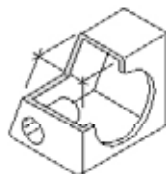
CONFIGURATION

Evolution line subwoofers are suitable for different kinds of acoustic load: closed box, bass-reflex, band-pass and free-air (back shelf). The choice is suggested by available space and the requested performances.

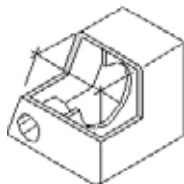
Generic characteristics are:



- closed box: it's the smallest and simplest enclosure to build, but it supplies a little bit lower pressure than other configurations;



- bass-reflex: it requests more skill to build the enclosure, but it offers powerful low frequency range and very good dynamics;



- band-pass: it's the most critical and hard to build enclosure, we suggest its construction just to very expert people;

- free-air (back shelf): it's a very easy installation, but it doesn't offer performances like a well realised box and reduces loudspeaker power handling.

CONSTRUZIONE

Per ottenere i risultati previsti, è importante attenersi alle indicazioni di questo manuale. Se non avete gli attrezzi o l'esperienza necessari, rivolgetevi ad un installatore professionista. Indossate sempre adeguati mezzi di protezione durante l'uso degli attrezzi.

Per la realizzazione del box, suggeriamo l'utilizzo di pannelli di MDF (Medium Density Fibreboard) da almeno 19 millimetri di spessore, uniti da abbondante colla vinilica. Prestate attenzione affinché il mobile non presenti fessure: da ciò dipenderà la buona resa delle basse frequenze. Ultimato il box, ripassate tutte le giunzioni interne con abbondante colla vinilica. Inoltre, per smorzare ogni vibrazione, potete spalmare le pareti interne con materiale bituminoso.

Scegliete un tubo in PVC (come quelli utilizzati in edilizia) per realizzare il condotto reflex, che deve essere saldamente incollato al mobile.

Ponete una guarnizione in neoprene (quella autoadesiva per infissi) da 2-3 millimetri tra il box e l'altoparlante. Usate delle guarnizioni anche quando il progetto prevede dei pannelli amovibili.

Per realizzare un subwoofer con più altoparlanti, dovete semplicemente affiancare più box dello stesso tipo (stesso altoparlante e stesso carico).

CONSTRUCTION

In order to reach expected results, it's very important to follow these instructions. If you think you don't have right tools or enough experience, please contact a professional installer. Be sure to wear right protective equipment during the construction.

To build the enclosure, we suggest to use MDF (Medium Density Fibreboard) panels, with thickness of 19 millimetres at least, jointed with a lot of vinyl glue. Pay attention that the enclosure doesn't present any splits: this can affect the bass frequency response. After finished the box, put a lot of vinyl glue onto all internal joints. Also, in order to eliminate every vibrations, you can apply dumping material on panel's internal side.

Choose a PVC tube (like the ones used in building) to realize the reflex vent, that have to be firmly glued to the enclosure.

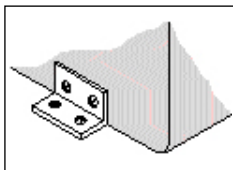
Put a neoprene gasket with 2-3 millimetres of thickness (like the one used on windows) between box and loudspeaker. Use the same gasket when the project requires removable panels.

To realize a subwoofer with several speakers, you just have to place side by side some boxes of the same type (same speaker and same configuration).

INSTALLAZIONE

Assicuratevi che il subwoofer non possa interferire con una guida in totale sicurezza.

Controllate la superficie di posizionamento per prevenire danni al serbatoio, ai cavi elettrici o alle condutture idrauliche. Fissate con cura il subwoofer ad una superficie solida, in un luogo protetto da polvere, umidità ed oggetti in movimento.



INSTALLATION

Make sure that the subwoofer never interferes with your total driving safety.

Check the mounting location carefully, to avoid damages to the gas tank, electrical wires or hydraulic pipes. Fix the subwoofer carefully on a steady surface, away from dust, moisture and moving objects.

COLLEGAMENTI

Prima di effettuare i collegamenti, spegnete l'autoradio, l'amplificatore e tutti gli apparati elettronici del sistema audio, per evitare possibili danni.

Collegate il subwoofer all'amplificatore utilizzando cavo di buona qualità. Fate scorrere i fili attraverso una guaina di protezione; non passate vicino a centraline elettroniche, ai cablaggi dell'auto-vettura o a parti che generano calore.

La sezione del cavo deve essere adeguata alla potenza applicata ed alla lunghezza del cavo stesso, come da tabella:

WIRINGS

Before starting connections, turn off car radio, amplifier and all electrical devices in your audio system, in order to avoid possible damages.

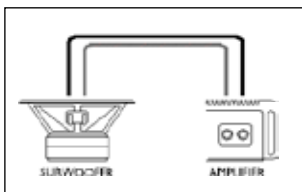
Link the subwoofer to the amplifier by using high quality cable. Route all wires through a protection grummet; don't put cable close to electronic devices, car wiring or heat-generating parts

The wire gauge has to be adapted to the used power and to the cable length, as on underneath table:

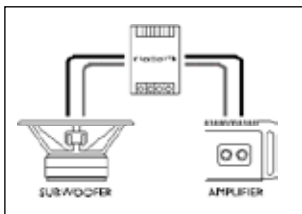
	0÷2 meters	> 2 meters
150 watt rms	14 AWG / 2.2 mm ²	14 AWG / 2.2 mm ²
300 watt rms	14 AWG / 2.2 mm ²	12 AWG / 3.3 mm ²
450 watt rms	12 AWG / 3.3 mm ²	10 AWG / 5.3 mm ²

TARATURA

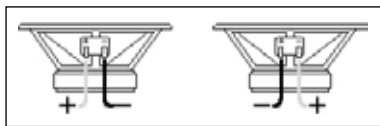
Utilizzate l'uscita filtrata per subwoofer del vostro amplificatore e regolate il suo controllo low-pass tra 60 e 120 Hertz. Se disponibile, utilizzate il filtro subsonico e regolatelo intorno ai 25 Hertz. Se l'amplificatore ha il controllo di fase, regolatelo sulla posizione che offre il miglior risultato.



Se il vostro amplificatore non ha un'uscita per subwoofer, utilizzate un crossover passivo con frequenza di taglio compresa tra i 60 e 120 Hertz.



I volumi dell'abitacolo e del bagagliaio influenzano sulla risposta alla basse frequenze e giocano una parte importante nelle prestazioni del sistema car audio; anche la fase di collegamento del subwoofer influenza la resa acustica: provate ad invertire tra di loro i fili positivo e negativo del subwoofer (controfase), quindi scegliete la posizione che offre il miglior risultato nella vostra auto.



Inoltre, è possibile aggiustare la risposta variando la posizione del subwoofer e la direzione di emissione dell'altoparlante.



TUNING

Use the subwoofer filtered output of your amplifier and adjust its low-pass control between 60 and 120 Hertz.

If available, use the subsonic filter by setting its cut frequency around 25 Hertz. If the amplifier is equipped with a phase control, adjust it in order to obtain the right sound.

If your amplifier is not equipped with subwoofer output, use a passive crossover with cut frequency between 60 and 120 Hertz.

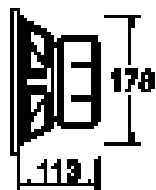
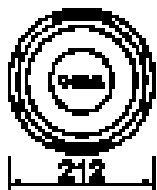
The volumes of passenger compartment and car's trunk influence the bass frequency response and play an important role on performances of the car audio system; also subwoofer linking phase influences acoustic result: try to invert positive and negative wires of the subwoofer (out of phase), then choose the position offering the best performances in your car.

Therefore, it's possible to adjust bass response by changing the subwoofer position or loudspeaker emitting direction.

EVO 220

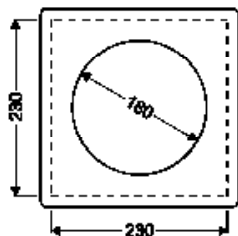
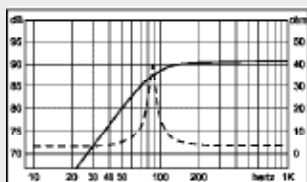


	EVO 220	
max power	watt	400
nominal power	watt	200
sensitivity (2.83 V/1m)	dB	90
nominal impedance	ohm	4



CLOSED BOX (small)

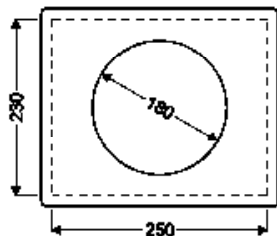
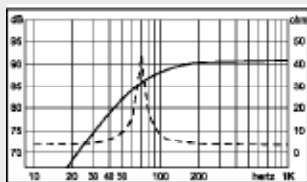
range : 70 ÷ 120 Hz
 sensitivity : 87 dB @ 80 Hz
 volume : 7 litres



materiale fonoassorbente / sound-absorbing material

CLOSED BOX (large)

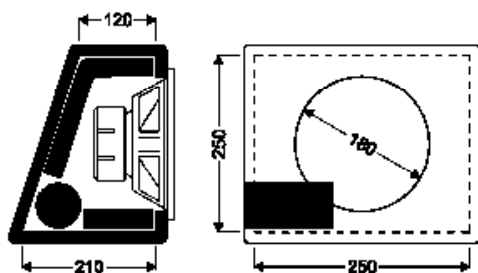
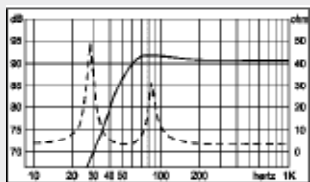
range : 60 ÷ 120 Hz
 sensitivity : 87 dB @ 70 Hz
 volume : 10 litres



materiale fonoassorbente / sound-absorbing material

REFLEX BOX (small)

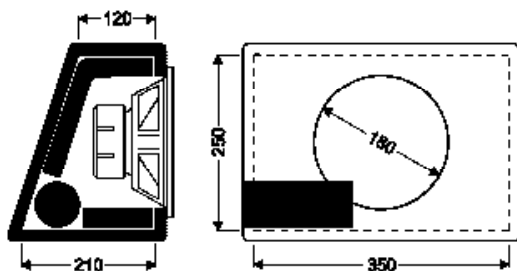
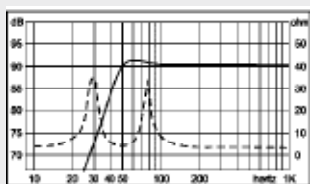
range : 52 ÷ 120 Hz
sensitivity : 91 dB @ 68 Hz
tube : Ø 74 x 200 mm
volume : 10 litres



■ materiale fonoassorbente / sound-absorbing material

REFLEX BOX (large)

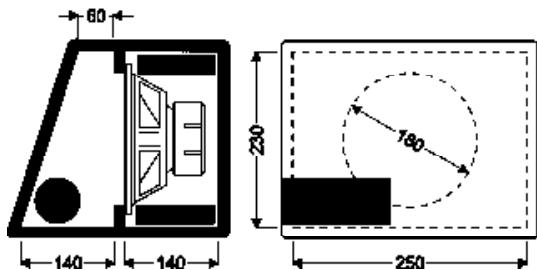
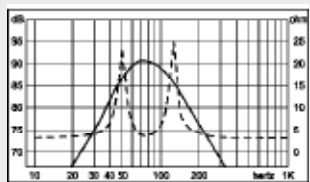
range : 45 ÷ 120 Hz
sensitivity : 91 dB @ 53 Hz
tube : Ø 74 x 210 mm
volume : 14 litres



■ materiale fonoassorbente / sound-absorbing material

BAND-PASS BOX

range : 52 ÷ 110 Hz
sensitivity : 90 dB @ 58 Hz
tube : Ø 74 x 200 mm
Vc/Vb volume : 8/6 litres

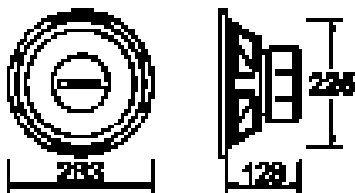


■ materiale fonoassorbente / sound-absorbing material

EVO 260 EVO 262

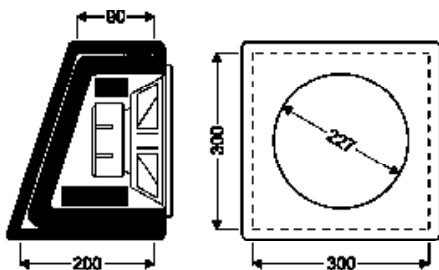
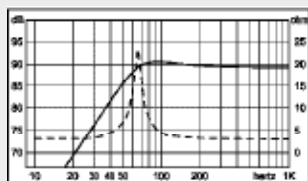


subwoofer		EVO 260	EVO 262
max power	watt	500	500
nominal power	watt	250	250
sensitivity (2.83 V/1m)	dB	90	90
nominal impedance	ohm	4	4+4



CLOSED BOX (small)

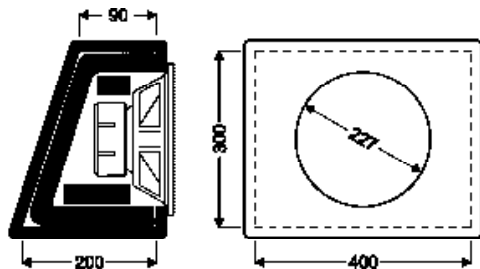
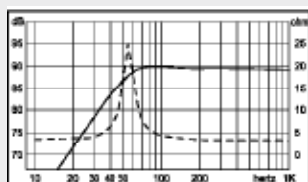
range : 50 ÷ 120 Hz
sensitivity : 88 dB @ 55 Hz
volume : 13 litres



 materiale fonoassorbente / sound-absorbing material

CLOSED BOX (large)

range : 45 ÷ 120 Hz
sensitivity : 88 dB @ 55 Hz
volume : 17 litres



 materiale fonoassorbente / sound-absorbing material

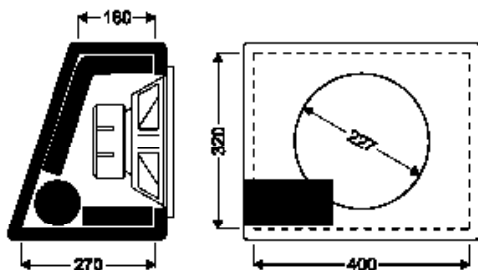
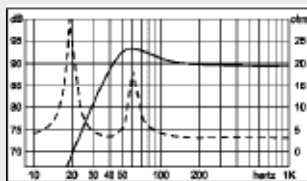
REFLEX BOX (small)

range : 37 ÷ 120 Hz

sensitivity : 93 dB @ 55 Hz

tube : \varnothing 74 x 170 mm

volume : 28 litres



■ materiale fonoassorbente / sound-absorbing material

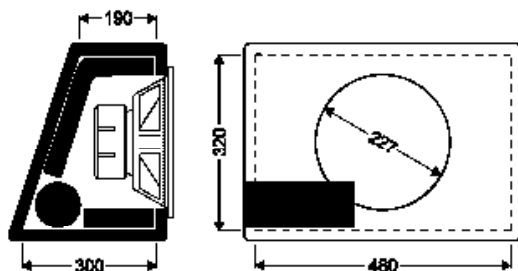
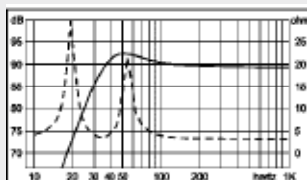
REFLEX BOX (large)

range : 31 ÷ 120 Hz

sensitivity : 92 dB @ 48 Hz

tube : \varnothing 74 x 170 mm

volume : 38 litres



■ materiale fonoassorbente / sound-absorbing material

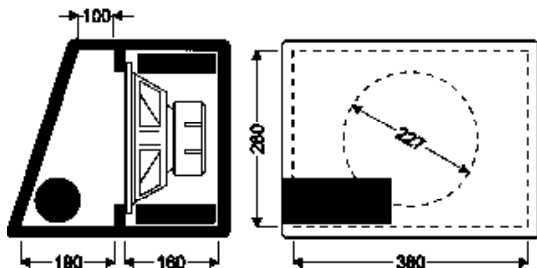
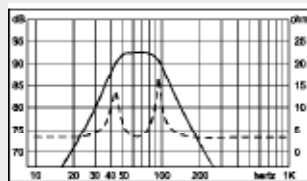
BAND-PASS BOX

range : 42 ÷ 100 Hz

sensitivity : 92 dB @ 50 Hz

tube : \varnothing 94 x 170 mm

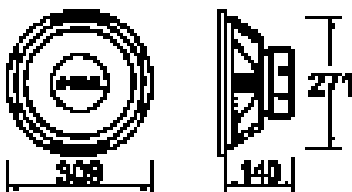
Vc/Vb volume : 17/15 litres



■ materiale fonoassorbente / sound-absorbing material

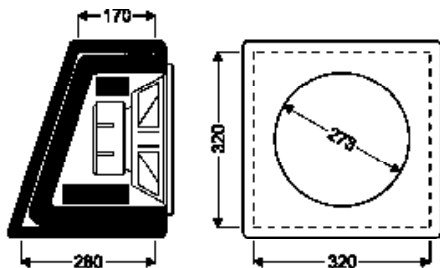
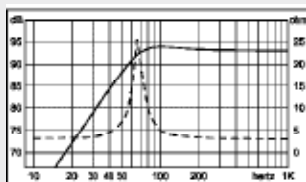
EVO 320

subwoofer		EVO 320	EVO 322
max power	watt	700	700
nominal power	watt	350	350
sensitivity (2.83 V/1m)	dB	92	92
nominal impedance	ohm	4	4+4



CLOSED BOX (small)

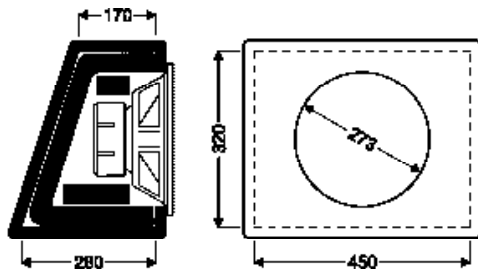
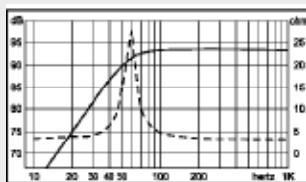
range : 50 ÷ 120 Hz
 sensitivity : 90 dB @ 50 Hz
 volume : 22 litres



 materiale fonoassorbente / sound-absorbing material

CLOSED BOX (large)

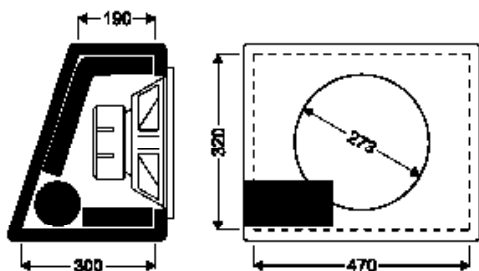
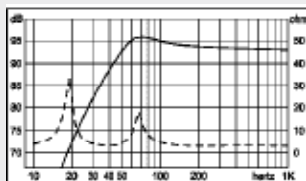
range : 45 ÷ 120 Hz
 sensitivity : 90 dB @ 50 Hz
 volume : 32 litres



 materiale fonoassorbente / sound-absorbing material

REFLEX BOX (small)

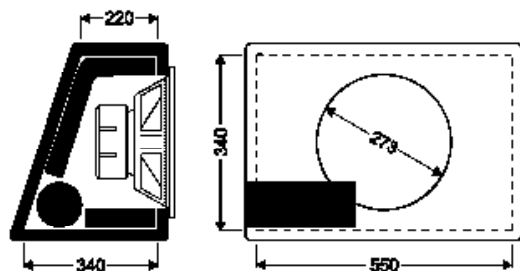
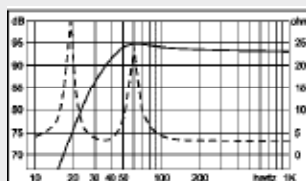
range : 42 ÷ 120 Hz
sensitivity : 95 dB @ 60 Hz
tube : Ø 94 x 200 mm
volume : 37 litres



■ materiale fonoassorbente / sound-absorbing material

REFLEX BOX (large)

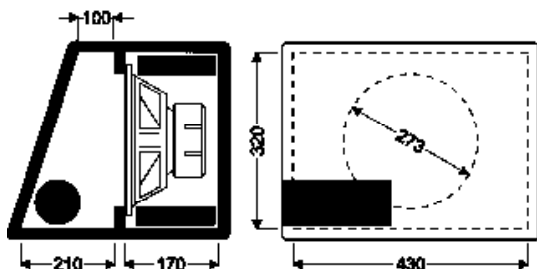
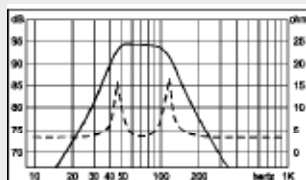
range : 35 ÷ 120 Hz
sensitivity : 94 dB @ 50 Hz
tube : Ø 94 x 180 mm
volume : 52 litres



■ materiale fonoassorbente / sound-absorbing material

BAND-PASS BOX

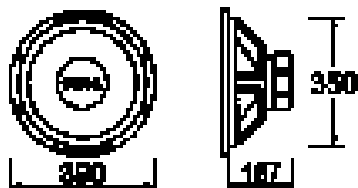
range : 42 ÷ 120 Hz
sensitivity : 94 dB @ 50 Hz
tube : Ø 119 x 180 mm
Vc/Vb volume : 23/21 litres



■ materiale fonoassorbente / sound-absorbing material

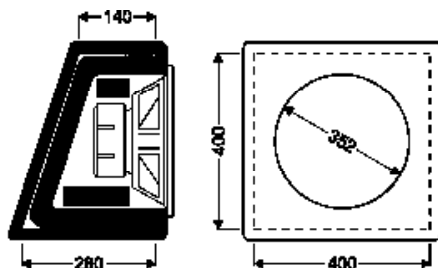
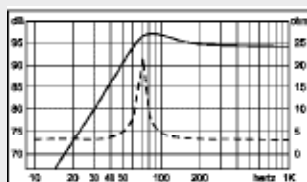
EVO 400

	EVO 400	
max power	watt	800
nominal power	watt	400
sensitivity (2.83 V/1m)	dB	94
nominal impedance	ohm	4



CLOSED BOX (small)

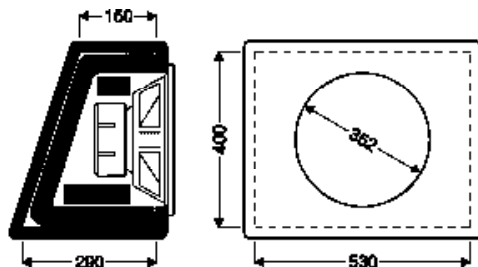
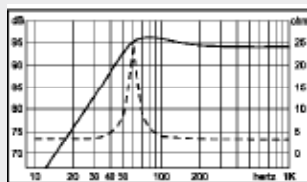
range : 45÷120 Hz
 sensitivity : 95 dB @ 70 Hz
 volume : 32 litres



 materiale fonoassorbente / sound-absorbing material

CLOSED BOX (large)

range : 40÷120 Hz
 sensitivity : 95 dB @ 60 Hz
 volume : 47 litres



 materiale fonoassorbente / sound-absorbing material

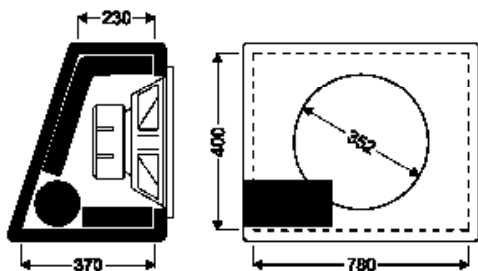
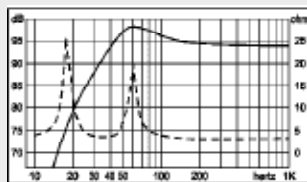
REFLEX BOX (small)

range : 35 ÷ 120 Hz

sensitivity : 97 dB @ 55 Hz

tube : Ø 154 x 240 mm

volume : 93 litres



■ materiale fonoassorbente / sound-absorbing material

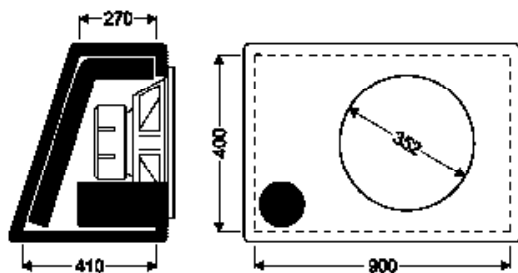
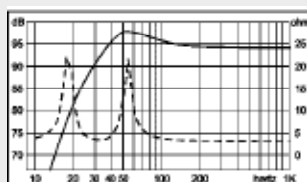
REFLEX BOX (large)

range : 31 ÷ 120 Hz

sensitivity : 97 dB @ 45 Hz

tube : Ø 154 x 240 mm

volume : 122 litres



■ materiale fonoassorbente / sound-absorbing material

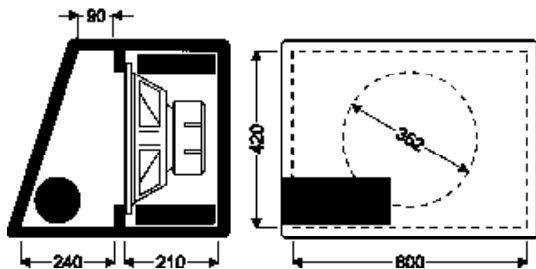
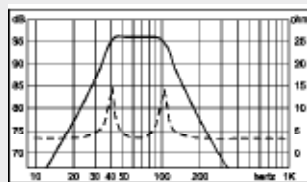
BAND-PASS BOX

range : 35 ÷ 120 Hz

sensitivity : 96 dB @ 45 Hz

tube : Ø 154 x 250 mm

Vc/Vb volume : 53/42 litres



■ materiale fonoassorbente / sound-absorbing material

Technical data

	EVO 220	EVO 260	EVO 320	EVO 400	EVO 262	EVO 322
max power (W)	400	500	700	800	500	700
nominal power (W)	200	250	350	400	250	350
frequency range (Hz)	40÷400	30÷300	25÷250	20÷200	30÷300	25÷250
sensitivity (dB)	90	90	92	94	90	92
nominal impedance (ohm)	4	4	4	4	4 + 4	4 + 4
resonance frequency - Fs (Hz)	46	30	33	31	32	33
mechanical Q factor - Qms	7.76	5.71	6.35	8.10	6.49	6.25
electrical Q factor - Qes	0.39	0.53	0.48	0.63	0.6(*)	0.61(*)
total Q factor - Qts	0.38	0.48	0.45	0.58	0.55(*)	0.56(*)
moving mass - Mms (g)	59.5	107.3	110.9	167.8	95.8	122.3
compliance - Cms (mm/N)	0.20	0.26	0.21	0.15	0.26	0.18
emission diameter - D (mm)	164	210	257	328	210	257
equivalent volume - Vas (l)	13	43	80	153	43	70
force factor - B x L (N/A)	11.8	11.2	12.4	13.1	10(*)	11.3(*)
voice coil resistance - Re (ohm)	3.2	3.2	3.2	3.2	3.2+3.2	3.2+3.2
voice coil inductance - Le (mH)	1.7	1.8	1.3	1.5	1.4(*)	1.0(*)
linear excursion - Xmax (mm)	±7.7	±10.7	±5.6	±5.6	±9.5	±5.5
voice coil diameter - (mm)	50	50	60	60	50	60
external diameter - (mm)	212	263	309	390	263	309
cut out diameter - Ø (mm)	180	227	273	352	227	273
mounting depth - (mm)	113	128	140	167	128	140

(*) parametri misurati con le bobine in parallelo / parameters are measured with parallel voice coils

GARANZIA

La Coral Electronic garantisce le caratteristiche ed il perfetto funzionamento dei propri prodotti e si impegna a sostituire quelle parti che risultassero difettose di fabbricazione entro due anni dalla data di acquisto, certificata dal documento di vendita. La garanzia decade in caso di utilizzo improprio o di manomissione.

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Coral Electronic guarantees characteristics and perfect operation of its products. Coral Electronic will replace those parts which should prove defective within two years from the date of purchase, certified by the sales receipt. The warranty is void in case of misuse or illegal opening.



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