

TANNOY.
Integrated
Drive Systems



Technical
Manual and
Enclosure
Construction
Guide

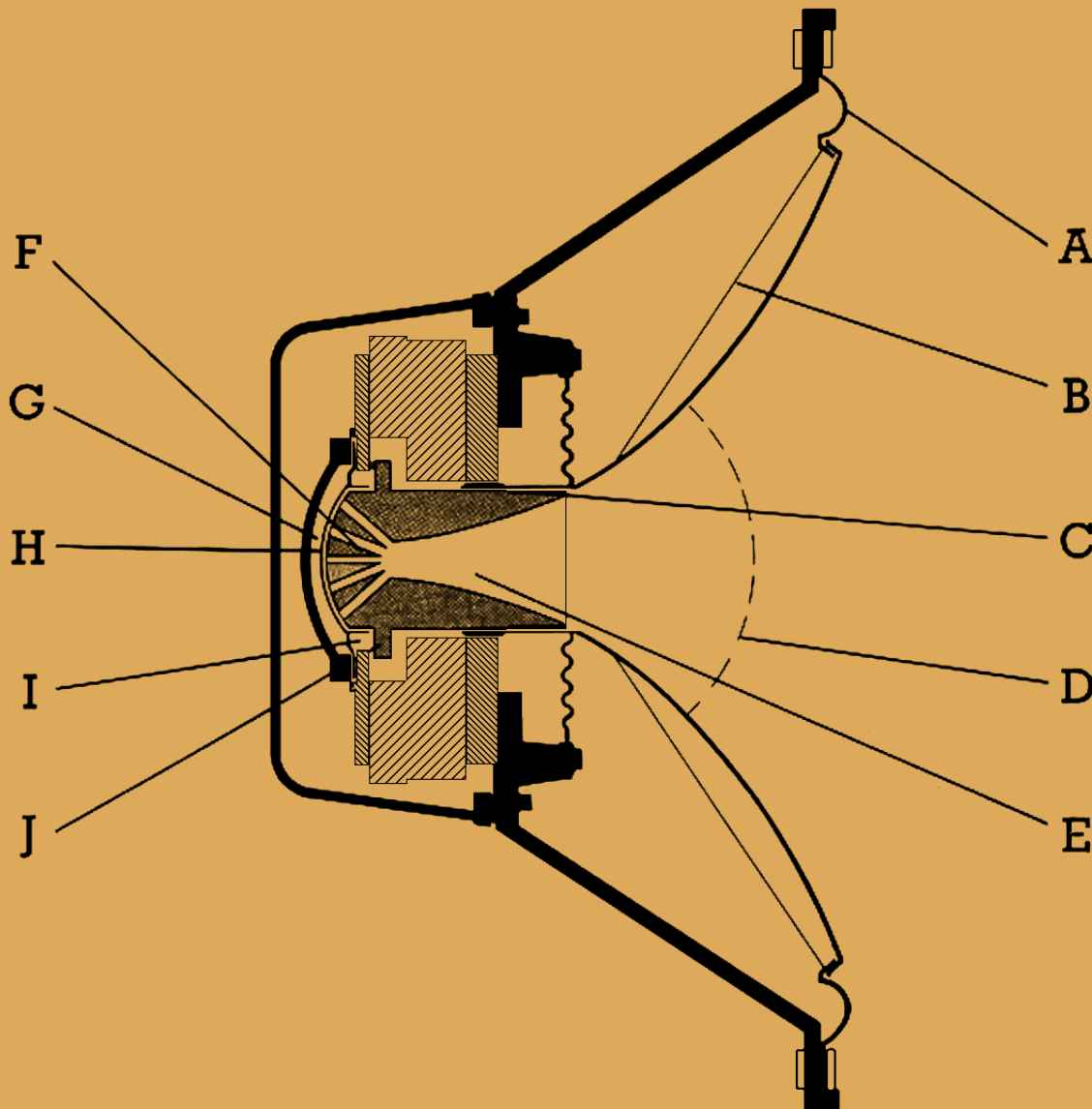
The Drive Systems in this range – the DU 386 DU 316 and DU 296 – are capable, when mounted in suitable enclosures, of reproducing the entire audio spectrum at the high sound levels and with the low distortion required in professional work and in the most ambitious domestic installations. Each system consists of a direct radiator bass unit and a high-frequency compression driver, both located concentrically within the same frame and magnet assembly.

The low-frequency section is a long excursion, low resonance loudspeaker

having a 2" high temperature voice coil. The unique Girdacoustic reinforced cone, a feature of the DU 386 and DU 316 ensures true piston action and smooth performance extending well into the midrange region. The DU 296 uses a newly developed polyolefin cone material which gives a particularly smooth colourfree response.

High frequencies are reproduced by a horn-loaded compression driver utilizing a duralumin diaphragm and 2" diameter aluminium voice coil.

**Tannoy
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Drive
Systems**



- A Rolled surround for stability in low bass response.
- B Unique ribbing virtually eliminates cone break-up ensuring smooth response and extraordinary high power capacity (DU 316 & DU 386)
- C High temperature voice coil.
- D Dustproof, acoustically transparent sealing dome.
- E Concentric HF horn (completed by curved LF cone.)
- F Phase-compensating multiple throat for extended and smooth HF response.
- G Acoustic balance cavity for reduced distortion.
- H Precision contoured high frequency diaphragm.
- I Aluminium voice coil conductor for high power capacity and superb HF response.
- J Exclusive magnetic shunt for increased LF flux.

Crossover Network

The crossover network receives an electrical signal containing the full frequency spectrum from the amplifier and divides it between the low frequency and high frequency sections of the loudspeaker system. Tannoy networks are of the highest quality: capacitors are non-polarized, solid dielectric types for low losses and close tolerances; resistors and inductors are very generously rated; and all components are assembled on a fibreglass printed circuit board for maximum reliability.

Specifications

| | DU386 | DU316 | DU296 |
|---|----------------------------|----------------------------|----------------------------|
| Power Handling Capacity in Watts continuous programme | 85 | 60 | 50 |
| Nominal Impedance ohms | 8 | 8 | 8 |
| Sensitivity: Sound Pressure Level in dB measured at 1 metre for 1 watt input (anechoic) | 92dB | 91dB | 90dB |
| Cross over Frequency at 12dB per octave | 1000 Hz | 1200 Hz | 1500 Hz |
| Low Frequency Direct Radiator | | | |
| Nominal Diameter mm (inches) | 386 (15) | 307 (12) | 254 (10) |
| Voice Coil Diameter mm (inches) (Copper wire) | 50 (2) | 50 (2) | 50 (2) |
| BL Factor Tesla Metres (gauss.cm) | 20 (20 × 10 ⁶) | 16 (16 × 10 ⁶) | 10 (10 × 10 ⁶) |
| Fundamental Resonance Hz | 20 | 20 | 25 |
| High Frequency Compression Driver | | | |
| Duralumin Diaphragm Diameter mm (inches) | 50 (2) | 50 (2) | 50 (2) |
| Voice Coil Diameter mm (inches) (Aluminium Wire) | 50 (2) | 50 (2) | 50 (2) |
| Horn Cut-off Frequency in Hz | 500 | 500 | 800 |
| Shipping Weight Kg (lbs) | 14 (31) | 8 (17½) | 7 (15½) |

Enclosures

The enclosures shown in the following pages are the equivalents of those used in the Tannoy Integrated Loudspeaker range - the Arden, Berkeley, Cheviot, Devon and Eaton. The proportions of each may be altered by up to 25% as long as the internal volume remains relatively unchanged. All are ported to provide low-frequency loading, although the ports may be omitted and a totally sealed cabinet constructed if the tighter, infinite baffle sound is preferred. Any other forms of enclosures, such as horn-loaded types and labyrinths are not recommended. Enclosures should be solidly constructed from 18mm (¾") high-density chipboard (also known as 'particle board') or plywood, using sufficient glue to ensure that all joints are airtight when dry.

The sub-baffles called for in the drawings permit the Integrated Drive Systems to be recess mounted. This configuration places the front of the transducer very nearly in the same plane with the baffle surface, thus avoiding tunnel and diffraction effects that might adversely affect frequency response. The sub-baffles should be glued in place to avoid air leaks and further secured with wood screws.

The floor-standing cabinets should be braced internally, front-to-rear as shown, to reduce the spurious resonances which can occur in large panel areas. Internal surfaces of all enclosures should be lined with 2" thick fibreglass wadding (sold in rolls for thermal insulation) to absorb reflections and eliminate standing waves. The base detail on the floor models may be modified as desired.

Grille frames should be made from 12mm (½") chipboard or plywood, painted black and covered with an acoustically transparent open weave cloth. Holes must be cut in the frame at appropriate locations to provide an acoustical opening in front of the port area and for clearance around the network knobs. The grille frame must be easily removable to allow access to the crossover controls. One way of doing this is to use 'Velcro' hook and pile fastening pads, stapled and glued at various points on the frame and positioned to mate with complementary pads similarly fixed to the front baffle of the enclosure.

Amplifier Power

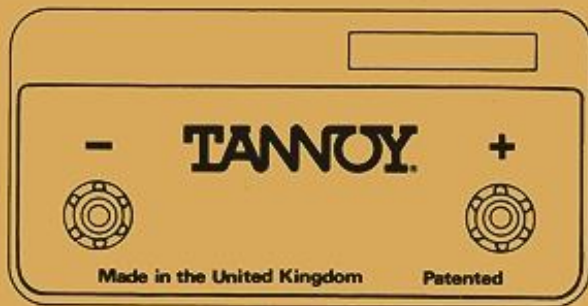
Any Integrated Drive System can safely be driven by an amplifier with a power rating equal to the power handling capacity of that system, ie; 85 Watts RMS for the DU 386, 60 Watts RMS for the DU 316, and 50 Watts RMS for the DU 296. A more powerful

amplifier can be used with a system if precautions are taken to avoid conditions such as switch-on surges and amplifier clipping which may result in momentary power peaks greatly in excess of the specified ratings.

Connections to Amplifier

The loudspeaker should be connected to the amplifier with suitable low-resistance twin-cable. Ordinary lighting flex is suitable for distances of up to 20 feet - for greater distances heavier gauge wire is recommended.

Connection to the system is by two screw terminals on the connector panel; one Red (+) and other Black (-). The red terminal should be connected to the amplifier (+) output and the black terminal to the amplifier (-) output (sometimes designated as 'common')

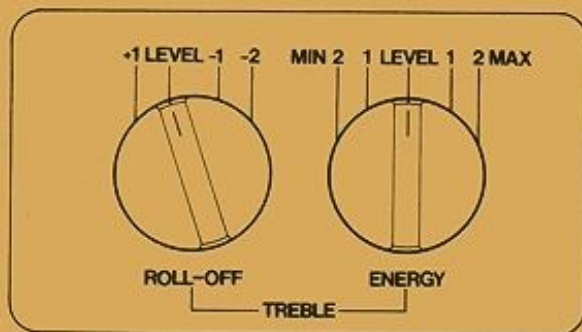


DC 316 and DC 386 Kits

Care must be taken to ensure that the amplifier is switched off when connecting or disconnecting the loudspeakers. Failure to

A pair of loudspeakers should be placed 7-14 feet (2-4 metres) apart so that the main listening position and the two loudspeakers form a triangle with approximately equal sides. To provide optimum stereo imaging

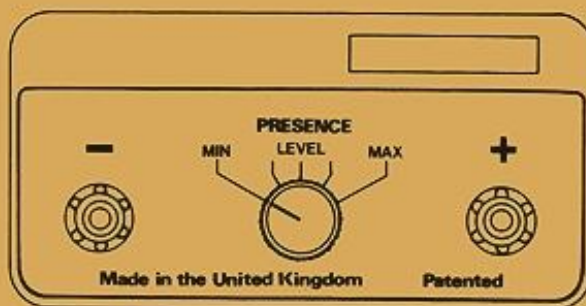
Each system is provided with two controls labelled 'Roll-off' and 'Energy'. These controls can be used to compensate for the acoustic characteristics of the listening room and should be adjusted with amplifier controls in the 'flat' or uncompensated position. Each loudspeaker system should be adjusted individually. This is most easily done by rotating the amplifier Balance control to select the desired loudspeaker.



The 'Energy' control has five positions and enables the output of the high-frequency driver to be increased or decreased over its entire range from 1 KHz to 20 KHz. The 'Roll-

When using two loudspeakers for stereo it is essential that consistent polarity is observed for both channels. This can be checked aurally by placing them side-by-side and listening to a monophonic signal with good bass content played through both left and right channels.

Every Tannoy Loudspeaker System is guaranteed against any manufacturing defect in parts or workmanship for a period of five years. This warranty does not cover



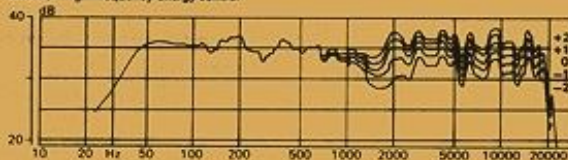
DC 296 Kit

do so may seriously damage them and invalidate the Warranty.

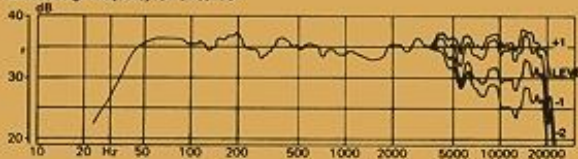
over a fairly wide area, they should be angled slightly inwards so that their axes intersect at a point a few feet in front of the listening position.

off' control affects only the extreme high frequencies, ie, those above 5 KHz.

Effect of High Frequency energy control



Effect of High Frequency roll-off control



The flattest response will be obtained with both controls set at 'Level' position, which should be used for initial listening tests. If the overall high frequency sound quality seems too prominent, the -1 or -2 positions for the 'Energy' control should be tried. If the sound is subdued, +1 or +2 will be preferred. Once the 'Energy' setting has been established, the 'Roll-off' control can be adjusted to reduce extreme high-frequency content if necessary.

If the phasing is correct the bass will be full and rich, whereas if it is incorrect there will be very little bass due to cancellation effects. Incorrect phasing can be rectified by reversing the connecting leads on ONE of the systems (at either the amplifier or loudspeaker terminals - but not both).

any defects or failures caused by abuse or improper operation; such determination to be made at the sole discretion of Tannoy on the basis of physical inspection.

Important

System Location

System Adjustment

Phasing

Warranty

Title

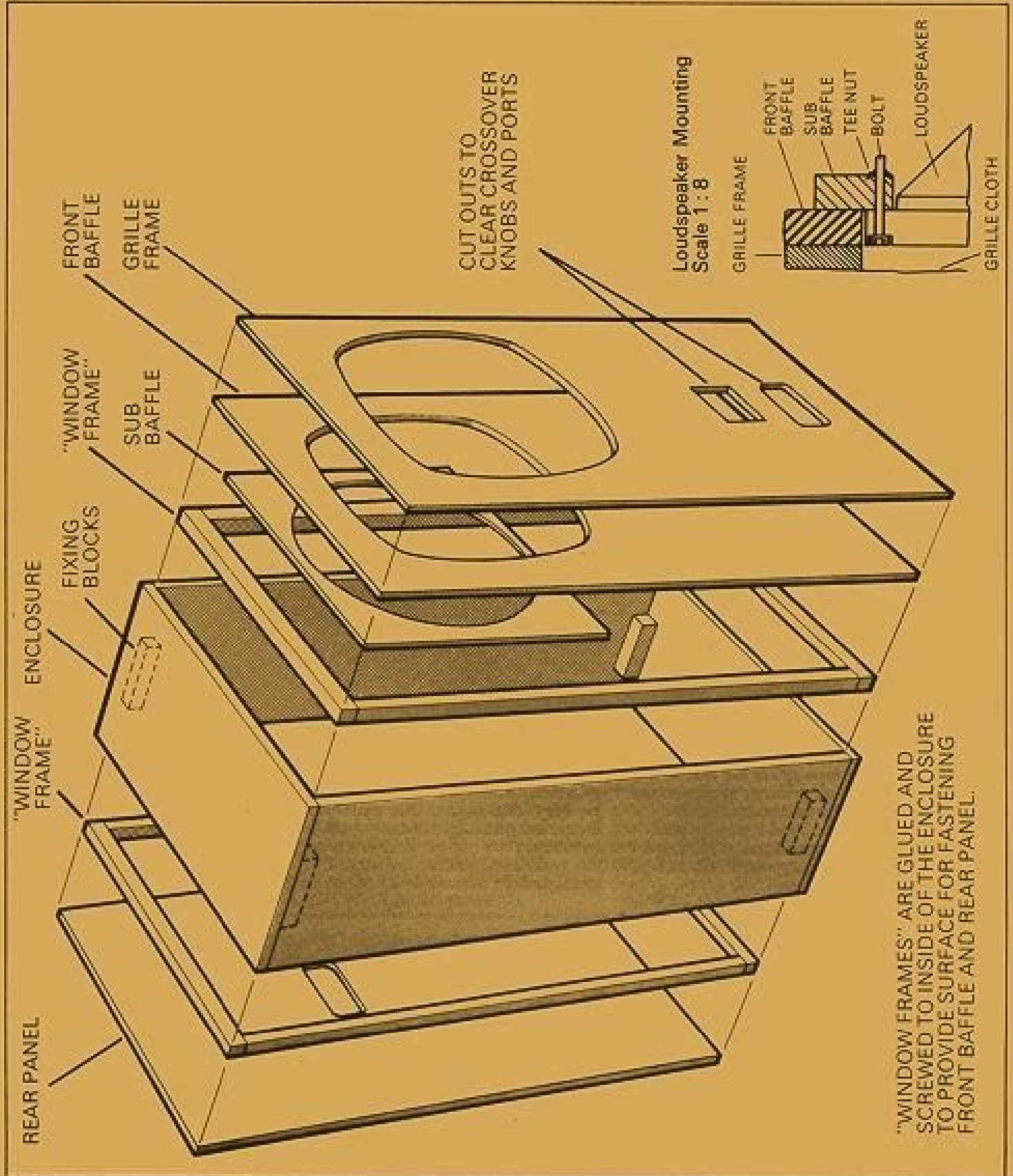
Suggested Construction

Figure

1

Scale

1:8



Title

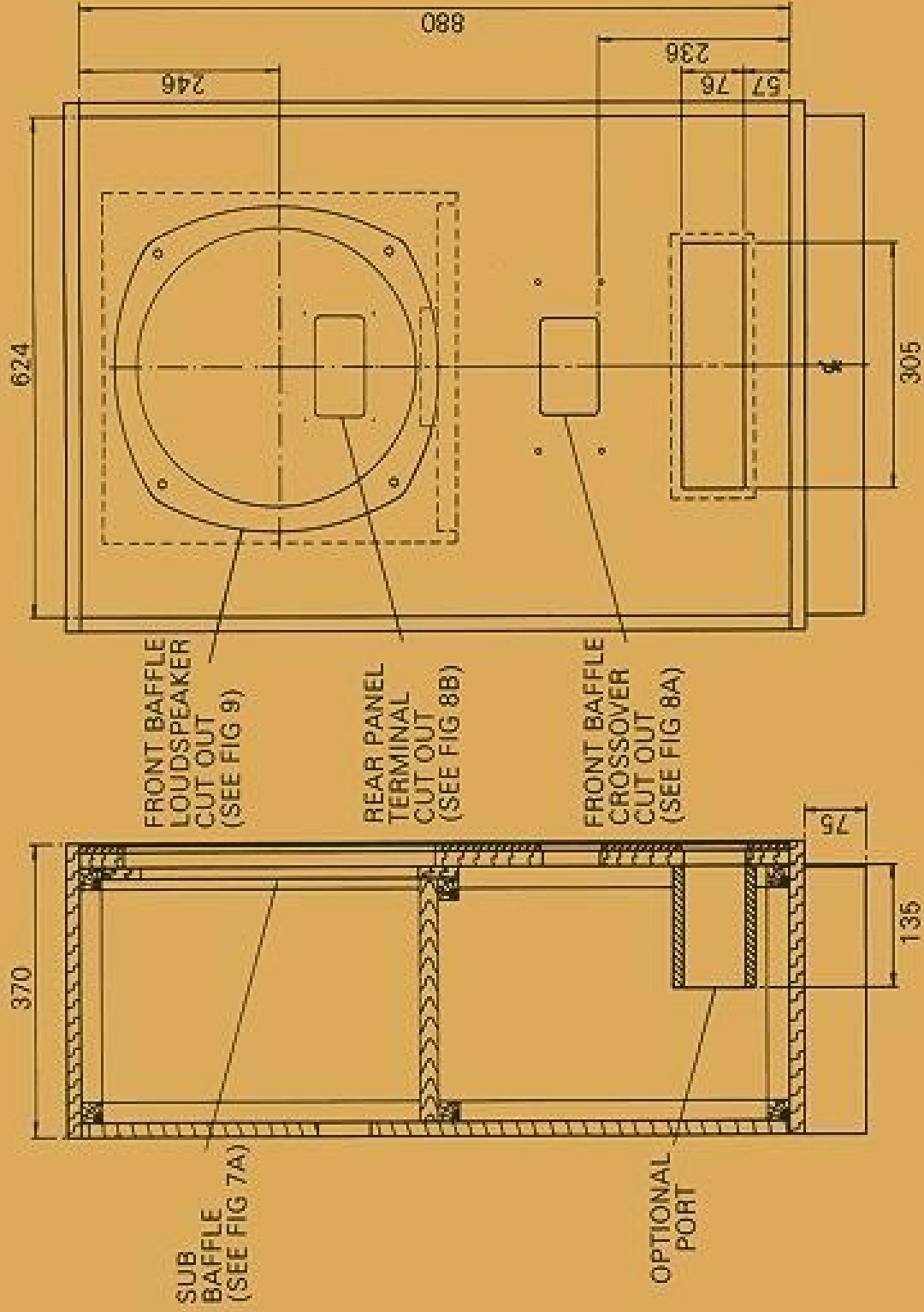
Arden Equivalent
Drive system DU 388
Internal volume 175 litres

Figure

2

Scale

1:8



Title

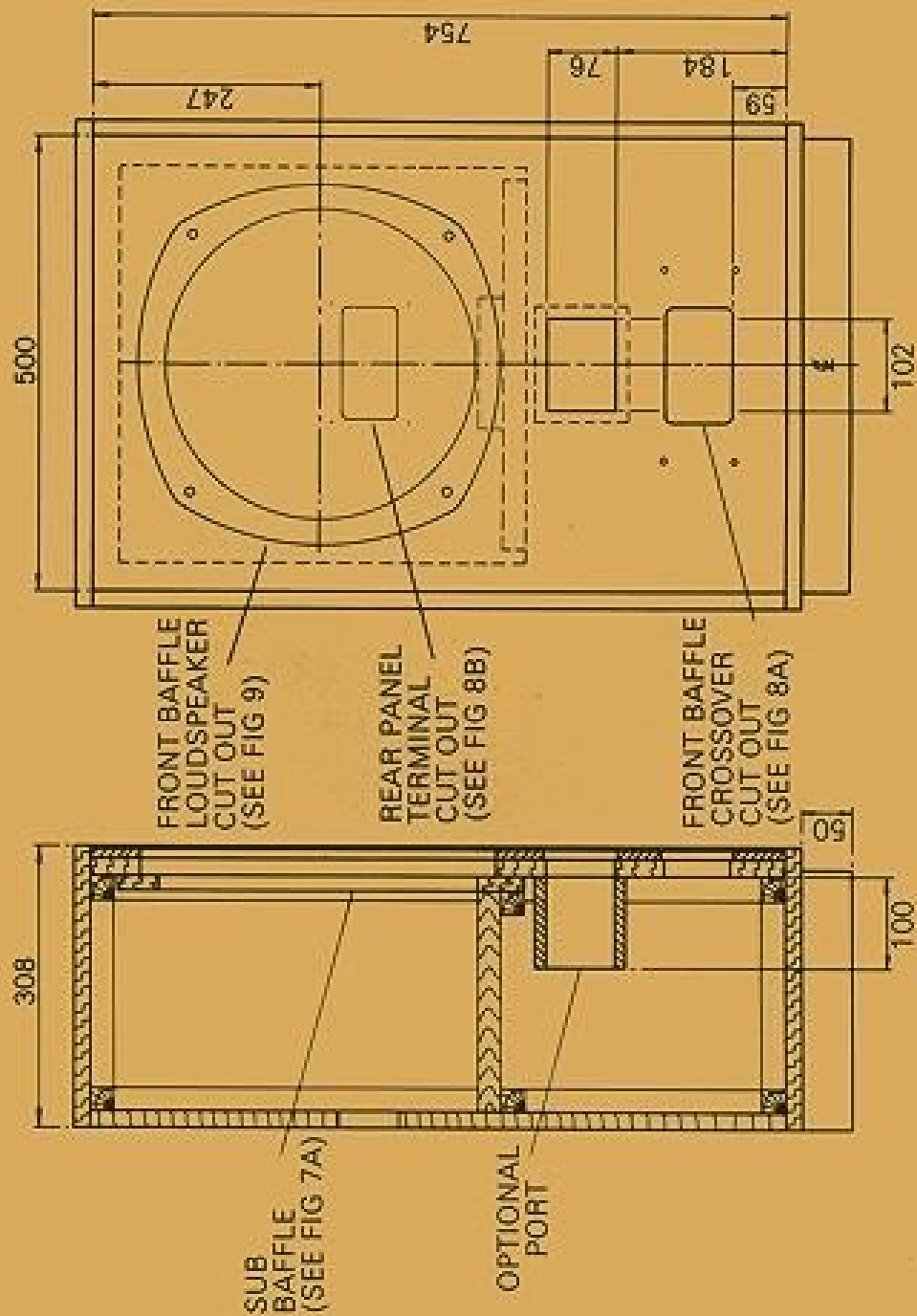
Berkeley Equivalent
Drive system DU 388
Internal volume 98 litres

Figure

3

Scale

1:8



TANNOY.

Title

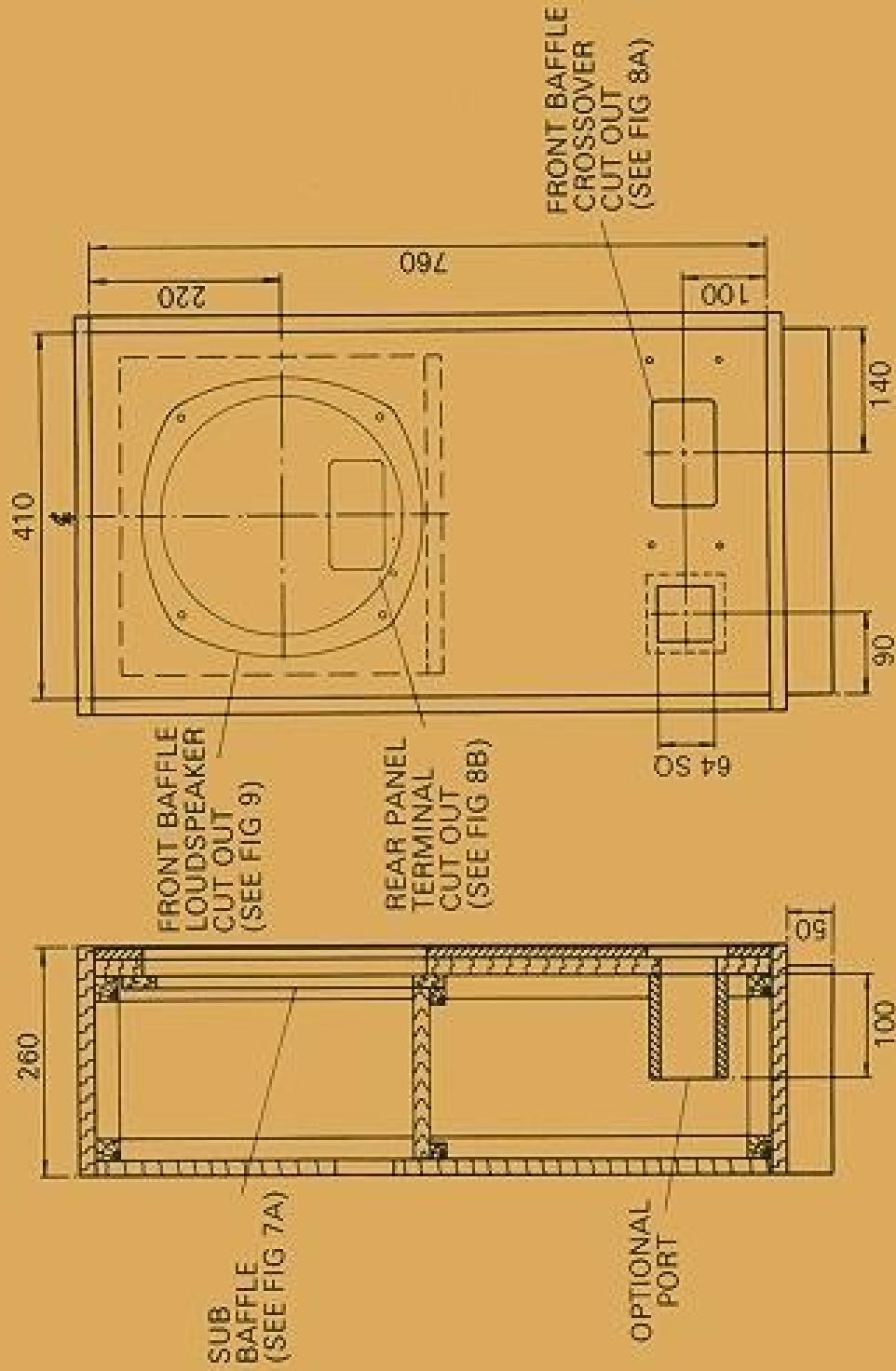
Chemot Equivalent
Drive system DU 316
Internal volume 65 litres

Figure

4

Scale

1:8



Title

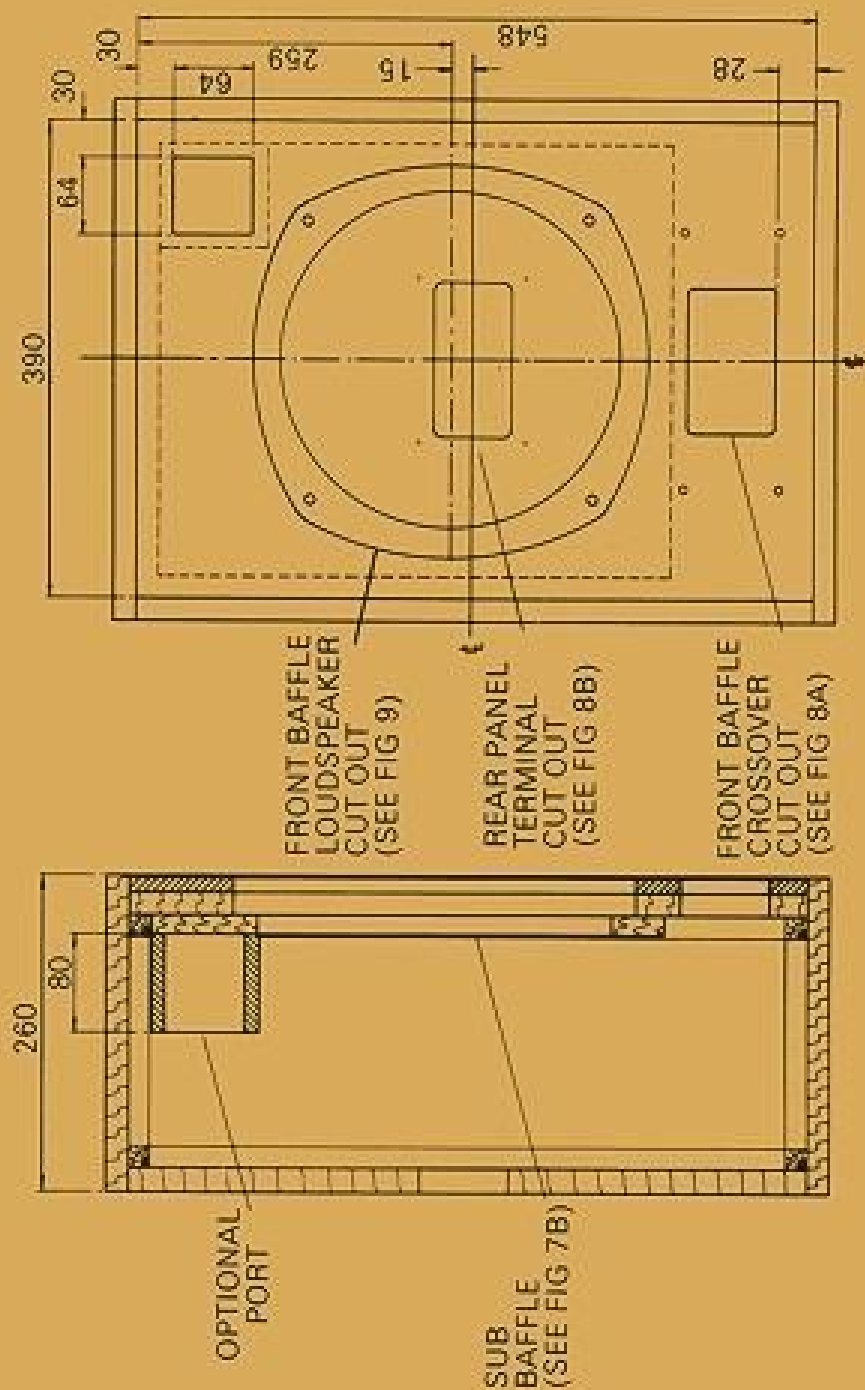
Devon Equivalent
Drive system DU 316
Internal volume 42 litres

Figure

5

Scale

1:6



Title

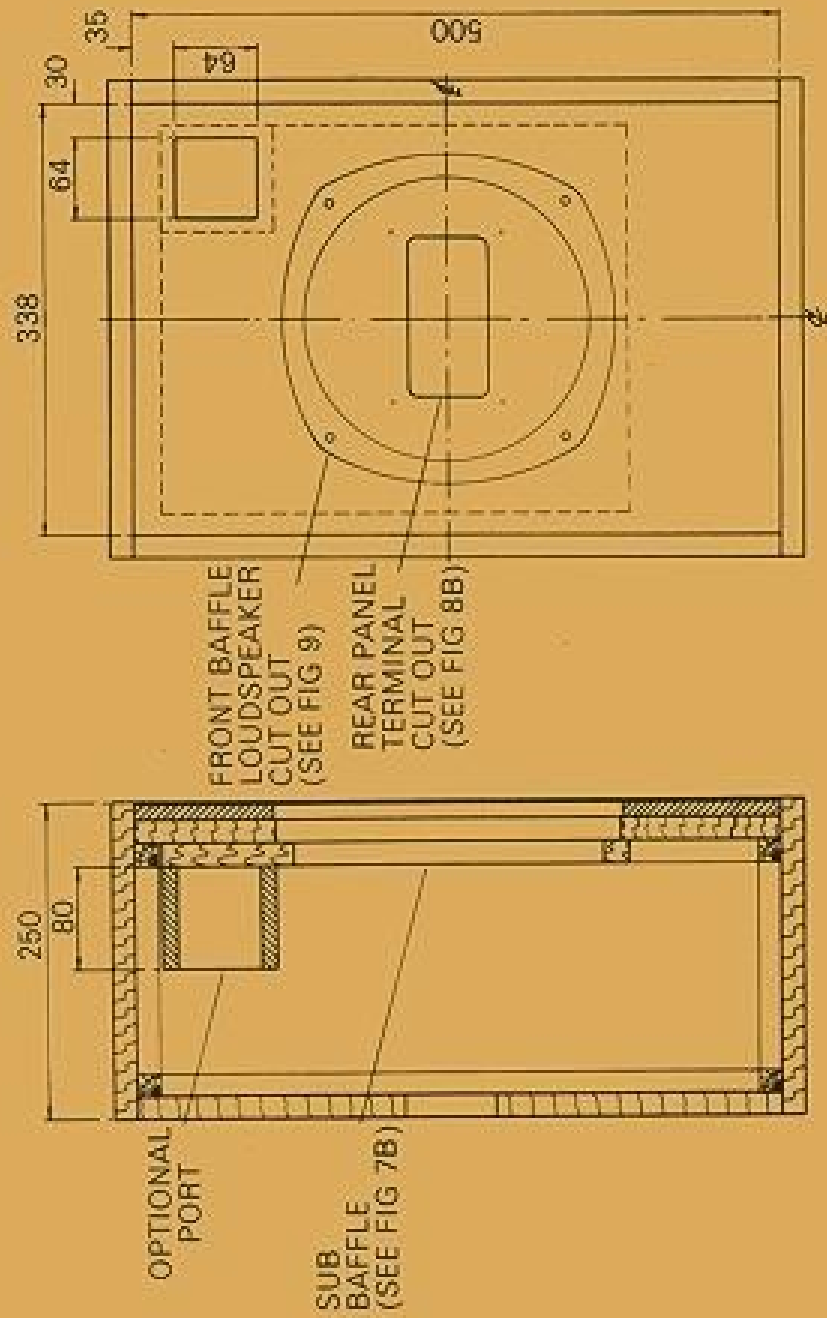
T165 Equivalent
Drive system DU 286
Internal volume 30 litres

Figure

6

Scale

1:6



Title
Sub Baffles

Figure
7

Scale
1:6

| A ENCLOSURE | LS UNIT | A1 | A2 | B | C | D | TEENUTS |
|-------------|---------|-----|-----|---------|---------|---------|---------|
| FIG 2 | DU 386 | 435 | 435 | 340 DIA | 10 DIA | 395 PCD | M8 |
| FIG 3 | DU 386 | 435 | 435 | 340 DIA | 10 DIA | 395 PCD | M8 |
| FIG 4 | DU 316 | 360 | 360 | 285 DIA | 8.5 DIA | 320 PCD | M5 |

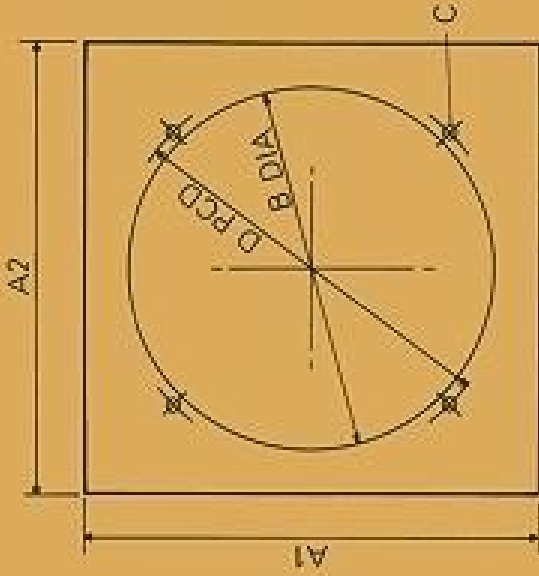


FIG 7A

| B ENCLOSURE | LS UNIT | A1 | A2 | A3 | B | C | D | TEENUTS |
|-------------|---------|-----|-----|-----|---------|---------|---------|---------|
| FIG 5 | DU 316 | 175 | 240 | 354 | 285 DIA | 6.5 DIA | 320 PCD | M5 |
| FIG 8 | DU 298 | 140 | 228 | 304 | 232 DIA | 6.5 DIA | 267 PCD | M5 |

CUT TO CLEAR
PORT IF FITTED

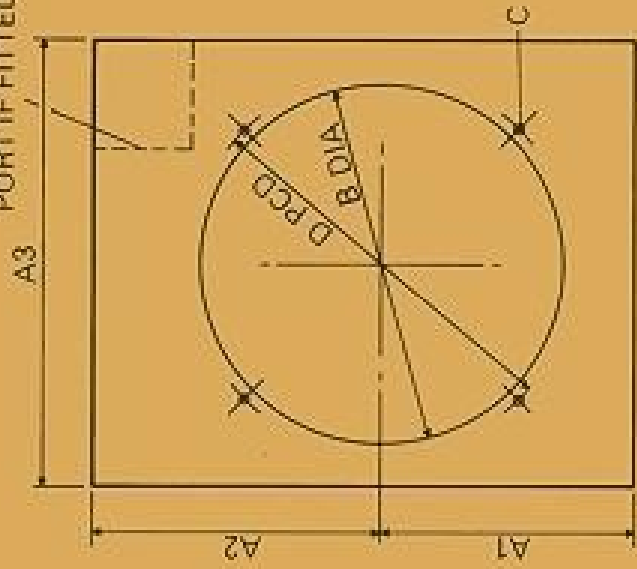


FIG 7B

TANNOY

Title

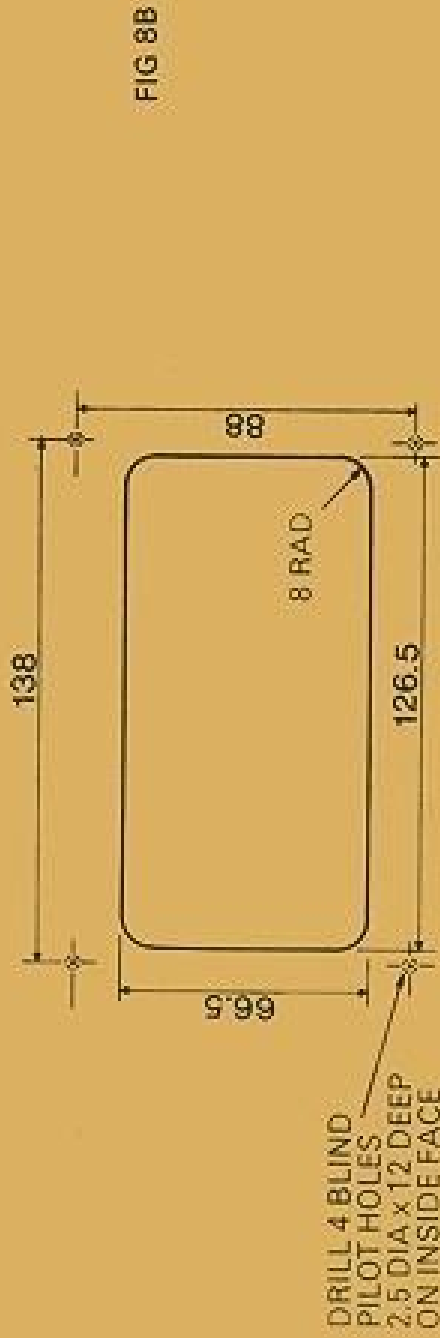
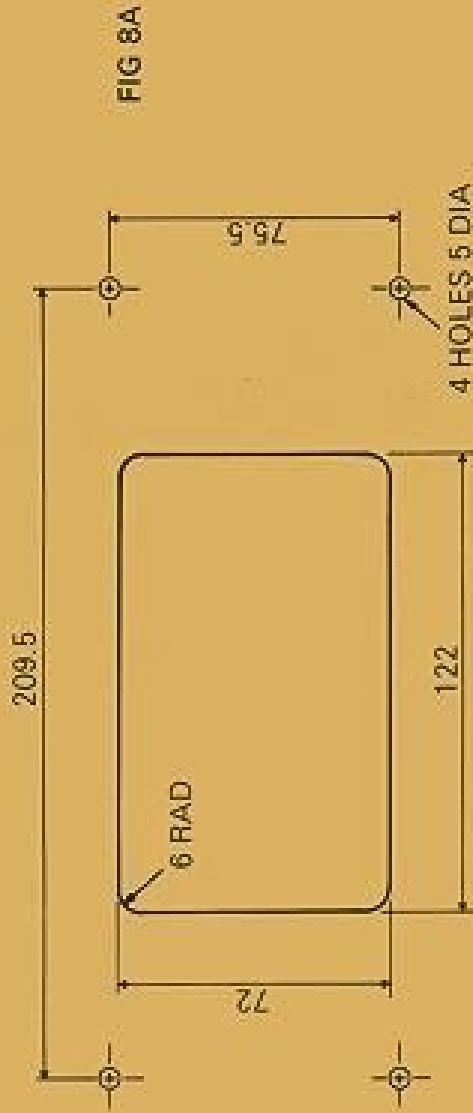
A: Crossover Cutout
B: Terminal Panel Cutouts

Figure

8

Scale

1:2



Title

Grille Frame and Front
Baffle cut out

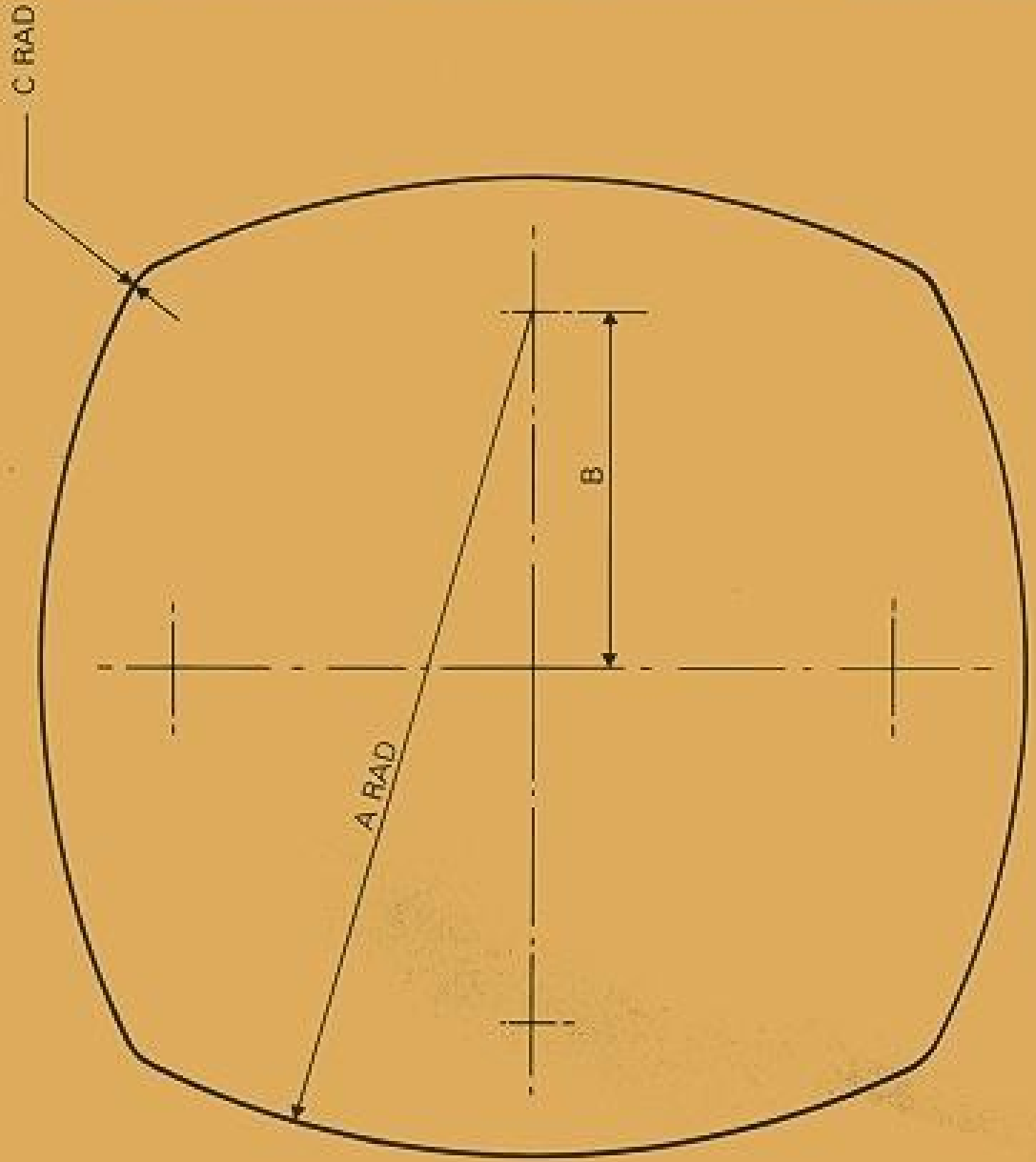
Figure

9

Scale

1:2

| ENCLOSURE | LS UNIT | A | B | C |
|-----------|---------|---------|------|--------|
| FIG 2 | DU 386 | 288 RAD | 93 | 34 RAD |
| FIG 3 | DU 386 | 289 RAD | 93 | 34 RAD |
| FIG 4 | DU 316 | 250 RAD | 93.5 | 33 RAD |
| FIG 5 | DU 316 | 250 RAD | 93.5 | 33 RAD |
| FIG 6 | DU 286 | 225 RAD | 95 | 33 RAD |



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Tannoy reserve the right to make changes in
product specifications in accordance with a
policy of continual research and development.