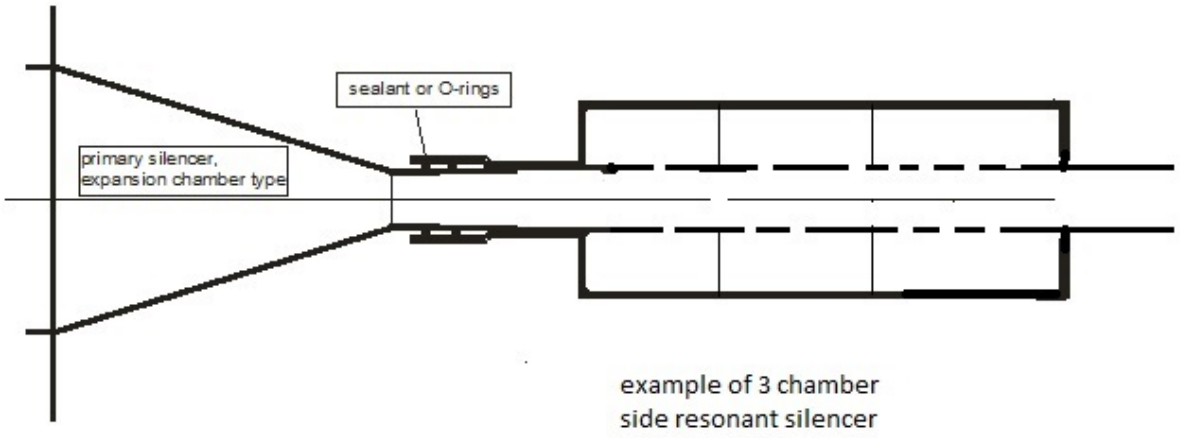
ANNEX 5P

NOISE RULES

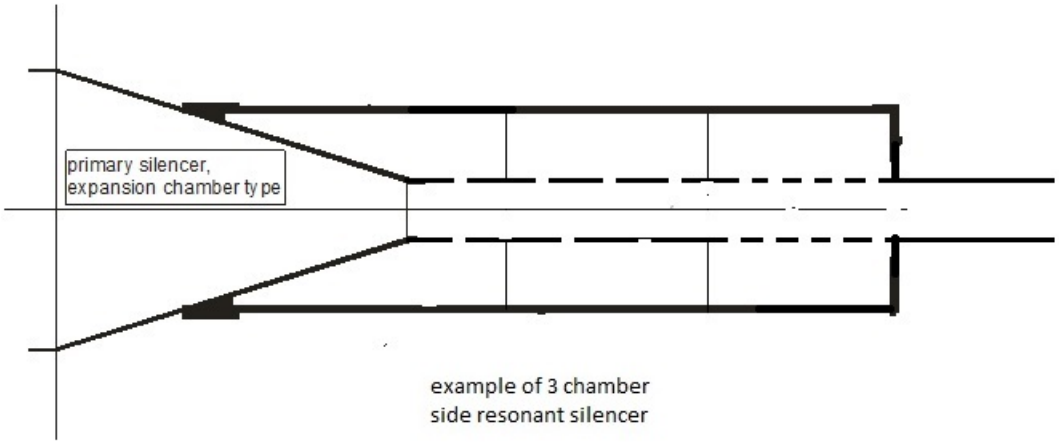
A.5P.1 The engine(s) shall be fitted with a silencing system on the exhaust consisting of a primary and a secondary silencer. The primary silencer shall be not less than 30 mm diameter and 100mm length and shall have a total exhaust outlet area of not more than 80 mm^2. It may be of the expansion chamber (tuned pipe) type.

A secondary silencer has to be added. It is to be fitted to the exhaust outlet of the primary silencer or integrated with the primary silencer according to one of the examples shown in diagram. A.5P.1 (a) & (b).

A.5P.1 (a) EXAMPLE OF F3D EXTERNAL SILENCER



A.5P.1 (b) EXAMPLE OF F3D INTEGRATED SILENCER



A.5P.2 Noise test

A noise test shall be carried out during the model aircraft processing and at any request of the Technical Officer after a race.
The test method is given in A.5P.2.1
The noise test has to be carried out with a calibrated sound level meter according to IEC61672 –1:2002 Class 1. The "A" frequency weighting shall be used in all cases.
A wind screen must be used in case of outdoor measurements in conditions with wind speed > 2 m/s..

A.5P.2.1 Measurement procedure.

A.5P.2.1.1 Equipment.

The acoustic noise is generated by an electronic white noise generator with a bandwidth of 500 – 4000 Hz (-3 dB points, low- and high pass filters minimal 6 dB/octave) and a loudspeaker of the 1" horn driver type with a resonance frequency of 300 Hz or lower.

The loudspeaker needs an adapter to fit it to the pipe. It has a 15 mm internal diameter opening and an O-ring seal similar to O-rings used on current engines. (O-ring OD 21 – 21.3 mm), so it will fit all normally used pipes. The adapter is designed for minimum volume.

A sound level meter according to IEC 61672-1:2002 class 2 can be used with frequency weighting "A" and mode "slow".

A.5P.2.1.2 Measurement.

All measurements take place at a distance of 100 ± 5 mm of the centre of the relevant opening. The sound source is placed on a table.

1. Reference measurement of the noise source @ 10 cm, see fig.1 X dB(A)
2. Measurement of the pipe plus silencer connected to the source @ 10cm, see fig.2 Y dB(A)

The insertion loss IL of the pipe + silencer is defined as X – Y.
The minimum requirement for IL is 20 dB(A).

It is recommended that X > 100 dB(A) to prevent background noise disturbing the measurement.
Background noise needs to be less than 60 dB(A).

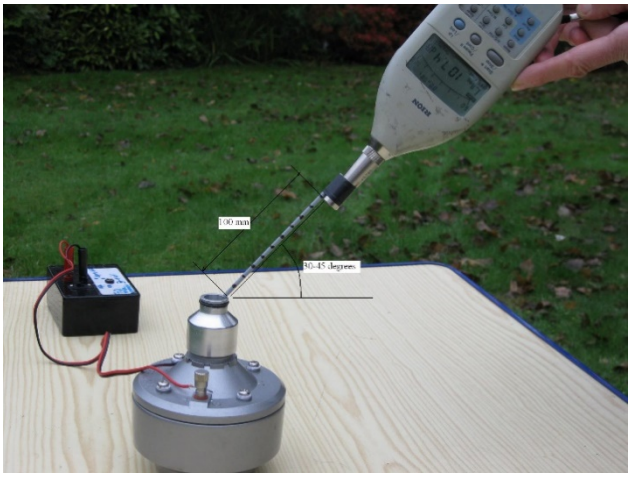


Fig 1: Reference measurement at a distance of 10 cm from the adapter opening.

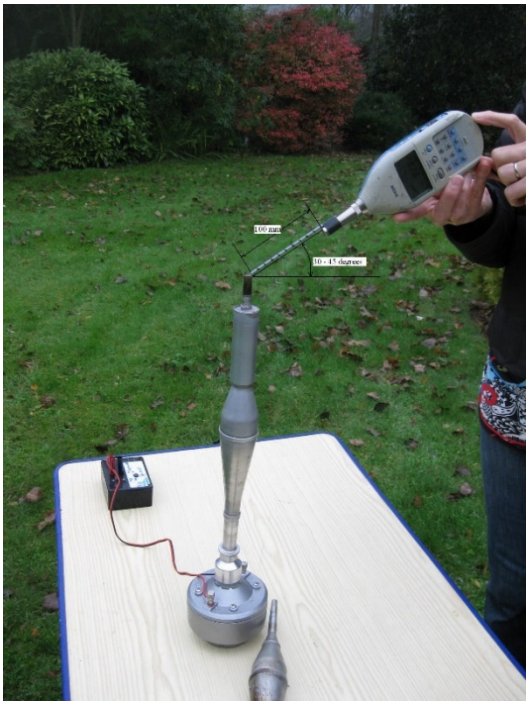


Fig. 2: Measurement of the exhaust system.