



ESDU 00010

Issued April 2000
Issue 23 August 2016

Aircraft Noise Series: Record of Documents

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1. PREFACE TO AIRCRAFT NOISE SERIES

Noise, from whatever source, has become a matter of wide concern. Those responsible for the design, certification and operation of aircraft of many different types need to apply their skills more and more to minimizing the health hazards, annoyance, reduction in environmental amenity and the costs which these may incur. To do this, while at the same time maintaining efficient and socially desirable technological progress, requires the provision of authoritative and reliable data relating to the estimation of noise. Such data must identify the many parameters involved, the relationships between them and lead to the various means of attenuating noise at source and elsewhere.

The data on noise prediction and sound propagation, in common with many other phenomena relating to noise, are of concern to engineers and scientists. However, these data are often widely scattered and when located may be of variable quality and relevance to the practical application. The designer or operator does not, generally speaking, have the facilities or time required to collect and evaluate all the data available which may be applicable. These data need to be vouched for by a significant cross section of the engineering and scientific community, concerned both with their derivation and application, and need to be evaluated under as impartial circumstances as can be arranged.

A number of Data Items, relating to aircraft noise, were prepared by the Engineering Sciences Data Unit (ESDU) under contract to the Ministry of Defence (Procurement Executive). Her Majesty's Government has agreed to the public issue of these Items, within the ESDU Series, as a service to all who are concerned with noise. ESDU has continued to add to those Data Items to increase the range of noise sources covered and extend the range of application of the Series. These data are prepared by ESDU for use by the designer and equally his or her customer and by all others who may be concerned with noise problems; by serving the needs of many the task will be accomplished at much lower overall cost and result in an independently derived and, it is hoped, a universally acceptable database.

A qualified staff is employed by ESDU to collect and evaluate the data. In carrying out this work, the staff have the assistance of many individuals drawn from industry and research and educational establishments throughout the world. Data which are irrelevant or unreliable are discarded and the remainder are correlated and distilled into an authoritative working tool for practical application. Throughout, the work of the staff is guided and monitored by an expert group and ad hoc working parties. The Series on Aircraft Noise is prepared under the guidance of the Aircraft Noise Committee which has the following constitution.

Chairman

Mr D.C. Riordan — Bombardier, Belfast (Short Brothers plc)

Members

Mr S. Arrowsmith*	— European Aviation Safety Agency (EASA), Germany
Mr W.D. Bryce	— Bryce Research (Member Emeritus)
Ms C.L. Burley*	— NASA, Langley Research Center, USA
Dr T. Imamura*	— The University of Tokyo, Japan
Prof. P. Joseph	— Institute of Sound and Vibration Research, Southampton
M. P. Lempereur	— Airbus France, Toulouse, France
Mr C.J. Mead	— Aero Acoustics Ltd, Surrey, UK
Mr A.D. Moore	— Rolls-Royce plc, Derby
Mr D. Patience	— BAE SYSTEMS, Frimley
Mr R. Pinker*	— Pinker Noise Consultancy, UK
Dr D. Rhodes	— Civil Aviation Authority, Environmental Research & Consultancy Department (ERCD), London
Dr B.J. Tester	— Institute of Sound and Vibration Research, Southampton

* Corresponding Member

The member of staff of ESDU concerned is:

Dr C.B. Chinoy – Head of the Aircraft Noise and Structural Dynamics Group.

Unlike many other forms of information, data are living, being constantly generated and tested in practice. Likewise ESDU is a living organism which draws its strength not only from the sources of new data but also from those who apply the working tools we provide. Accordingly, users of the service are encouraged to regard ESDU as a widely based group of people constantly available to answer questions and discuss the application of data in engineering.

The response of structures to acoustic excitations is the subject of a separate ESDU Series on Vibration and Acoustic Fatigue.

The terminology used in the Aircraft Noise Data Items will be familiar to most users and is defined in appropriate texts and Standards (*e.g.* Glossary of acoustics and electroacoustic terminology. BS 4727: Part 3: Group 08: 1995). Users having difficulty in this respect are invited to contact the staff at ESDU by mail, e-mail, telephone, telex or fax.

2. AMENDMENT RECORD FOR AIRCRAFT NOISE SERIES

So that the user may at any time check where previous amendments to the Series have been made, the following is a complete list of those changes. Further details relating to the changes may always be obtained from ESDU.

Item		Change	Dated
66016	Amend. A	Page 1 replaced by reprint.	Feb. 1978
66017	Amend. A	Page 1 replaced by reprint.	Feb. 1978
74001	Withdrawn	Superseded by ESDU 02020.	Jan. 2003
74003	Amend. A	Page 6 replaced by reprint, last line N/m^2 changed to $N\ s/m^3$.	Nov. 1976
74004	Amend. A	Page 4 replaced by reprint. Bottom table last line values of $Z_A/\rho_0 a_0$ corrected. Page 8 replaced, values on ordinate axes multiplied by 10^{-1} .	Nov. 1976
75019	Withdrawn	Superseded by ESDU 02020	Jan. 2003
75020	Amend. A	Pages 1 to 3, 5, 12, 13, 22 and 29 replaced by reprint. Reference pressure corrected on pages 1 and 2. Notation for pressures, and worked example and computer output, made consistent. Axis label corrected on Fig. 6.	Aug. 1985
	Amend. B	Pages 1 to 6 and 21 to 25 reprinted. Subroutine listings withdrawn. Program issued on diskette as ESDUpac A7520.	Nov. 1992
	Amend. C	Program to generate input file added.	June 2003
75021	Amend. A	Pages 2, 10, 12 and 13 replaced by reprint. Source of Derivation 1 given. Program amended (changed lines identified on listing).	Aug. 1985
	Amend. B	Page 1 replaced by reprint. Appendix A reprinted incorporating updated computer program.	June 1988
	Amend. C	Item reprinted. Note added on use of data in response calculations. Program listings withdrawn. Program issued on diskette as ESDUpac A7521.	Nov. 1992
	Amend. D	Pages 1 and 2 and pages 9 to 12 replaced.	May 1997
76020	Amend. A	Computer program added.	May 2008