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ABSTRACT

This template is formatted to the Vertical Flight Society (VFS) Forum paper guidelines. A portion of the guidelines themselves has been used as “filler” in this template. Replace this text, as well as the following, with the body of your paper. **An abstract of approximately 150 words is required and should consist of a single paragraph only.** It should be a summary, not an introduction, and be complete in itself. It should not contain any numerical references to figures or references contained in the paper. The abstract should indicate the subject covered in the paper and should state the objectives of the investigation. Newly observed facts and conclusions must be stated in summary form. Readers should not have to read the paper to understand the abstract. The abstract should be centered across the width of the first page. Please download the “Forum Guide for Authors” via the Mira submission site at www.vtol.org/mira for a more comprehensive and easier-to-read outline. **The recommended length of a paper is 10 to 20 pages and must not exceed 30-pages in-length. The PDF size should be between 5 and 10 MB and not exceed 15 MB in size for optimal downloading experience.**

NOTATION

This section is optional if only a few symbols or simple equations are used. In this case, the symbols should be defined in the text when introduced. If more than a few symbols or equations are used, a Notation section should be included. It should list and define the symbols used (including units). Place the symbols in alphabetical order, English first, Greek next, and then subscripts. The metric and dual system (metric and English) should be used if possible. If used, this section is the first section in the two-column format.

INTRODUCTION

The paper should be formatted for printing on 8.5-inch by 11-inch paper. Margins should be at least 0.75 inches and not more than 1.0 inch (top, bottom, and sides). A standard proportional font (such as Helvetica or Times) should be used throughout the paper. The font size in the title block is at the discretion of the author, but should never be less than 10 point. All of the rest of the paper should be 10 point. The title block and abstract should be centered across the width of the first page. Except for the Title Block, fully justified text throughout the paper is preferred. Left justified is acceptable.

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The introduction should introduce the subject, provide some background, including a brief assessment of prior work by

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others (citing relevant references), and an explanation of how the paper contributes to the field. It is not a summary. The introduction tells what has been done, what needs to be done, and how the present results relate to past work and present needs.

MAIN BODY — MAJOR HEADING

Organize the Main Body under logical headings and subheadings. Do not number the headings. Main headings are centered on the page, subheadings begin at the left margin above the text, and sub-subheadings are set at the left margin on the first line of the paragraph. Use third person. Avoid jargon, slang and commercialism. Use acronyms and footnotes sparingly. Use simple English prose in paragraph form wherever possible. Pages should be numbered and centered at the bottom of the page.

The body of a paper should be single-spaced and in two columns of equal width (with a 0.20 inch “gutter” between columns). The first page must include a Copyright Statement. The statement should be a footnote at the bottom of and within the left column. Elements of the paper plus the sections and subsections within the body of the paper should NOT be numbered or lettered.

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Unless only a few are used, all equations should be numbered in the order introduced and referred to in the text by number. Equations and/or symbols may be presented in any suitable form; however, clarity for the printer is essential. Special symbols should be identified.

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Illustrations and graphics used in figures must be clear and sharp. Converting to PDF files can sometimes affect the resolution of images: If you do the conversion to PDF, carefully review the conversion of all images. Lettering should be large enough to be legible, at least 1/16" high. If needed for clarity, selected figures can be double column width. Illustrations/figures showing plotted data should have axes labeled with appropriate names and units. Symbol keys should be included to identify plotted lines and data when needed. Additional information or parameter values related to a figure should generally be placed in the figure caption rather than on the figure itself. Each figure must be numbered, have a caption, and be cross-referenced in the text, such as: as shown in Figure 1.

Tables

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CONCLUSIONS

The most important results of the paper should be summarized as a concise list of numbered items. Conclusions should

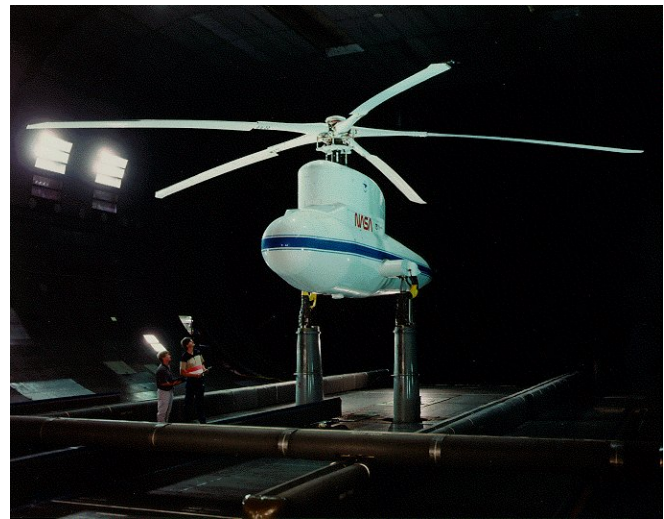


Figure 1. Sikorsky bearingless rotor mounted in the NASA Ames 40-by-80-Foot Wind Tunnel.

Table 1. AgustaWestland AW609 Aircraft Characteristics.

Characteristic	English	Metric
Engines	2 x P&WC ^a PT6C-67A turboshaft	
Passengers	6 to 9 pax + 1–2 crew	
Engine Power	2 x 1,940 shp	2 x 1,450 kW
Wingspan	33.8 ft	10.3 m
Length	46 ft	14.0 m
Height	15 ft	4.5 m
Proprotor Diameter	26 ft	7.9 m
Max Useful Load	5,500 lb	2,500 kg
Max Gross Weight	16,000 lb	6,974 kg
Range	750 nm	1,389 km
Service ceiling	25,000 ft	11,364 m
Vmax (at cruise)	275 kt	509 km/h

^aP&WC: Pratt & Whitney Canada

be supported by development in the main text and no new material should be introduced in this section. If the paper did not result in specific conclusions, then the section may be entitled Concluding Remarks or Concluding Recommendations, with brief summary comments as appropriate.

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APPENDIX

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ACKNOWLEDGMENTS

If used, this should be placed at the end of the paper, before the references. If used, one or more acknowledgments to contributors, a sponsor or technical monitor should be placed at the end of the paper, before the references section. Also include any research or project support/funding sources here.

REFERENCES

All reference material should be grouped in the final section of the paper, numbered, and placed in the order cited in the text. Reference only that material which is readily available to the reader. Do not include classified material, internal company memoranda, or reports unavailable to the reader. Additional information on citing references in the text is provided in the Authors Guide.

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1. Johnson, W., *Helicopter Theory*, Princeton University Press, Princeton, NJ, 1980, pp. 808–813.
2. Leishman, J. G., *Principles of Helicopter Aerodynamics*, Cambridge University Press, New York, NY, 2000, Chapter 10.

For a section in a book, the following style should be used:

3. Friedmann, P. P., and Hodges, D. H., “Rotary-Wing Aeroelasticity with Application to VTOL Vehicles,” *Flight-Vehicle Materials, Structures, and Dynamics*, edited by A. K. Noor and S. L. Venneri, Vol. 5, Part II, Chap. 6, American Society of Mechanical Engineers, New York, NY, 1993, pp. 299–391.

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For Journal of the American Helicopter Society Volume 1 to Volume 53 (2008):

5. Chopra, I., “Dynamic Stability of a Bearingless Circulation Control Rotor Blade in Hover,” *Journal of the American Helicopter Society*, Vol. 30, (4), 1985, pp. 40–47. DOI: 10.4050/JAHS.30.40.

For Journal of the American Helicopter Society Volume 54 (2009) to Current:

6. Yeo, H., Potsdam, M., and Ormiston, R. A., “Rotor Aeroelastic Stability Analysis Using Coupled Computational Fluid Dynamics/Computational Structural Dynamics,” *Journal of the American Helicopter Society*, Vol. 56, (4), October 2011, pp. 1884–2013. DOI: 10.4050/JAHS.56.042003.

For a report, the following style should be used:

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8. Johnson, W., “A Comprehensive Analytical Model of Rotorcraft Aerodynamics and Dynamics, Part I: Analytical Development,” NASA TM 81182, 1980.

For a conference paper, the paper number (where available) and proceedings volume information must be given. For Vertical Flight Society meetings, the location of the meeting should be given. Note: prior to 2019, VFS was known as AHS (American Helicopter Society).

Examples of this style are:

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