

This is a preview of "BS EN 60534-8-4:2015". Click here to purchase the full version from the ANSI store.

**BS EN 60534-8-4:2015**



**BSI Standards Publication**

## **Industrial-process control valves**

Part 8-4: Noise considerations —  
Prediction of noise generated by  
hydrodynamic flow

**bsi.**

...making excellence a habit.™

This is a preview of "BS EN 60534-8-4:2015". [Click here to purchase the full version from the ANSI store.](#)

This British Standard is the UK implementation of EN 60534-8-4:2015. It is identical to IEC 60534-8-4:2015. It supersedes BS EN 60534-8-4:2005 which is withdrawn.

The UK participation in its preparation was entrusted by Technical Committee GEL/65, Measurement and control, to Subcommittee GEL/65/2, Elements of systems.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2016.

Published by BSI Standards Limited 2016

ISBN 978 0 580 82833 1

ICS 17.140.20; 23.060.40; 25.040.40

**Compliance with a British Standard cannot confer immunity from legal obligations.**

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 29 February 2016.

#### **Amendments/corrigenda issued since publication**

<b>Date</b>	<b>Text affected</b>
-------------	----------------------

---

This is a preview of "BS EN 60534-8-4:2015". [Click here to purchase the full version from the ANSI store.](#)

## EUROPÄISCHE NORM

December 2015

ICS 17.140.20; 23.060.40; 25.040.40

Supersedes EN 60534-8-4:2005

English Version

Industrial-process control valves - Part 8-4: Noise considerations -  
Prediction of noise generated by hydrodynamic flow  
(IEC 60534-8-4:2015)

Vannes de régulation des processus industriels -  
Partie 8-4: Considérations sur le bruit - Prévisions du bruit  
généralé par un écoulement hydrodynamique  
(IEC 60534-8-4:2015)

Stellventile für die Prozessregelung -  
Teil 8-4: Geräuschbetrachtungen - Vorausberechnung der  
Geräuschemission für flüssigkeitsdurchströmte Stellventile  
(IEC 60534-8-4:2015)

This European Standard was approved by CENELEC on 2015-10-20. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

This is a preview of "BS EN 60534-8-4:2015". [Click here to purchase the full version from the ANSI store.](#)

## European foreword

The text of document 65B/1005/FDIS, future edition 3 of IEC 60534-8-4, prepared by SC 65B "Measurement and control devices", of IEC/TC 65 "Industrial-process measurement, control and automation" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60534-8-4:2015.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2016-07-20
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-10-20

This document supersedes EN 60534-8-4:2005.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

## Endorsement notice

The text of the International Standard IEC 60534-8-4:2015 was approved by CENELEC as a European Standard without any modification.

This is a preview of "BS EN 60534-8-4:2015". Click here to purchase the full version from the ANSI store.

(normative)

### Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60534-1	-	Industrial-process control valves - Part 1: Control valve terminology and general considerations	EN 60534-1	-
IEC 60534-2-3	-	Industrial-process control valves - Part 2-3: Flow capacity - Test procedures	EN 60534-2-3	-
IEC 60534-8-2	-	Industrial-process control valves - Part 8-2: Noise considerations - Laboratory measurement of noise generated by hydrodynamic flow through control valves	EN 60534-8-2	-
IEC 60534-8-3	-	Industrial-process control valves - Part 8-3: Noise considerations - Control valve aerodynamic noise prediction method	EN 60534-8-3	-

This is a preview of "BS EN 60534-8-4:2015". Click here to purchase the full version from the ANSI store.

## CONTENTS

FOREWORD .....	3
INTRODUCTION .....	5
1 Scope .....	6
2 Normative references .....	6
3 Terms and definitions .....	6
4 Symbols .....	7
5 Preliminary calculations .....	9
5.1 Pressures and pressure ratios .....	9
5.2 Characteristic pressure ratio $x_{FZ}$ .....	9
5.3 Valve style modifier $F_d$ .....	10
5.4 Jet diameter $D_j$ .....	10
5.5 Jet velocity .....	10
5.6 Mechanical power $W_m$ .....	10
6 Noise predictions .....	10
6.1 Internal sound pressure calculation .....	10
6.2 Transmission loss .....	13
6.3 External sound pressure calculation .....	14
7 Multistage trim .....	14
7.1 General .....	14
7.2 Preliminary calculations .....	15
7.3 Prediction of noise level .....	15
7.3.1 General criteria .....	15
7.3.2 Multistage devices (see Figures 1 and 3) .....	15
7.3.3 Fixed multistage devices with increasing flow areas (see Figure 2) .....	16
Annex A (informative) Examples of given data .....	21
Bibliography .....	31
Figure 1 – Examples of multistage trim in globe and rotary valves .....	16
Figure 2 – Example of fixed multistage device with increasing flow area .....	17
Figure 3 – Example of multistage trim in globe valve .....	17
Figure 4 – Globe valve (Cage trim, V-port plug) .....	18
Figure 5 – Globe valves (parabolic-plug) .....	18
Figure 6 – Multihole trims .....	19
Figure 7 – Eccentric rotary valves .....	19
Figure 8 – Butterfly valves .....	20
Figure 9 – Segmented ball valve – 90° travel .....	20
Figure A.1 – The influence of the $x_{FZ}$ value on prediction accuracy .....	30
Table 1 – Numerical constants $N$ .....	9
Table 2 – Typical values of $A_\eta$ .....	11
Table 3 – Indexed third octave center frequencies and “A” weighting factors .....	13
Table A.1 – Calculation: Examples 1 to 3 .....	22