
**Mechanical vibration — Rotor
balancing —**

Part 11:
**Procedures and tolerances for rotors
with rigid behaviour**

Vibrations mécaniques — Équilibrage des rotors —

*Partie 11: Modes opératoires et tolérances pour rotors à
comportement rigide*





COPYRIGHT PROTECTED DOCUMENT

© ISO 2016, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Pertinent aspects of balancing	1
4.1 General.....	1
4.2 Representation of the unbalance.....	1
4.3 Unbalance effects.....	2
4.4 Reference planes for unbalance tolerances.....	2
4.5 Correction planes.....	4
4.5.1 General.....	4
4.5.2 Rotors which need one correction plane only.....	4
4.5.3 Rotors which need two correction planes.....	4
4.5.4 Rotors with more than two correction planes.....	4
4.6 Permissible residual unbalance.....	4
5 Similarity considerations	5
5.1 General.....	5
5.2 Permissible residual unbalance and rotor mass.....	5
5.3 Permissible residual specific unbalance and service speed.....	6
6 Specification of unbalance tolerances	6
6.1 General.....	6
6.2 Derivation of the unbalance tolerances.....	6
6.3 Balance quality grade G.....	7
6.3.1 Classification.....	7
6.3.2 Special designs.....	7
6.3.3 Permissible residual unbalance.....	10
6.4 Experimental evaluation.....	10
6.5 Unbalance tolerances based on bearing forces or vibrations.....	10
6.5.1 Bearing forces.....	10
6.5.2 Vibrations.....	11
6.6 Methods based on established experience.....	11
7 Allocation of permissible residual unbalance to tolerance planes	11
7.1 Single plane.....	11
7.2 Two planes.....	11
7.2.1 General.....	11
7.2.2 Limitations for inboard rotors.....	12
7.2.3 Limitations for outboard rotors.....	12
8 Allocation of unbalance tolerances to correction planes	13
8.1 General.....	13
8.2 Single plane.....	14
8.3 Two planes.....	14
9 Assembled rotors	14
9.1 General.....	14
9.2 Balanced as a unit.....	14
9.3 Balanced on component level.....	14
10 Accounting for errors in the verification of permissible residual unbalances	15
10.1 General.....	15
10.2 Unbalance tolerance.....	15
10.3 Combined error of unbalance measurements.....	15