



ISO 6953-2

**Pneumatic fluid power —
Compressed air pressure regulators
and filter-regulators —**

Part 2:
**Test methods to determine the
main characteristics to include in
supplier's literature**

*Transmissions pneumatiques — Régulateurs de pression et
filtres-régulateurs pour air comprimé —*

*Partie 2: Méthodes d'essai pour déterminer les principales
caractéristiques à inclure dans la documentation des fournisseurs*

**Third edition
2024-01**

This is a preview of ISO 6953-2:2024. [Click here to purchase the full version from the ANSI store.](#)



COPYRIGHT PROTECTED DOCUMENT

© ISO 2024

All rights reserved. Unless otherwise specified, or required in the context of its implementation, 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
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

| | |
|--|-----------|
| Foreword | v |
| Introduction | vi |
| 1 Scope | 1 |
| 2 Normative references | 1 |
| 3 Terms and definitions | 2 |
| 4 Symbols and units | 2 |
| 5 Test conditions | 2 |
| 5.1 Gas supply..... | 2 |
| 5.2 Temperature..... | 2 |
| 5.3 Pressures..... | 3 |
| 5.4 Inlet pressure..... | 3 |
| 5.5 Test pressures (regulated pressure)..... | 3 |
| 6 Test procedure to verify rated pressure | 3 |
| 7 Flow characteristics tests | 4 |
| 7.1 Test installation..... | 4 |
| 7.2 General requirements..... | 5 |
| 7.3 Test procedures..... | 6 |
| 7.3.1 Initial test procedure..... | 6 |
| 7.3.2 Forward flow rate-pressure characteristics test..... | 6 |
| 7.3.3 Relief flow rate-pressure characteristics test..... | 6 |
| 7.3.4 Procedure for other regulated pressure values..... | 7 |
| 7.4 Calculation of characteristics..... | 7 |
| 7.4.1 Flow rate-pressure characteristic curves..... | 7 |
| 7.4.2 Flow rate-pressure hysteresis..... | 8 |
| 7.4.3 Maximum forward sonic conductance..... | 8 |
| 7.4.4 Maximum relief sonic conductance..... | 9 |
| 8 Pressure regulation test | 9 |
| 8.1 Test circuit..... | 9 |
| 8.2 Test procedure..... | 9 |
| 9 Maximum air consumption at null forward flow rate or relief flow rate for pilot-operated regulator with air bleed | 10 |
| 9.1 Test installation..... | 10 |
| 9.2 Test procedures..... | 10 |
| 9.3 Calculation of characteristics..... | 10 |
| 10 Special test procedures | 11 |
| 10.1 Pilot pressure/regulated pressure characteristics test in the case of external pilot-operated pressure regulators..... | 11 |
| 10.1.1 Test installation..... | 11 |
| 10.1.2 Test procedures..... | 11 |
| 10.1.3 Calculation of characteristics..... | 11 |
| 10.2 Output resolution in the case of manual air pressure regulator..... | 13 |
| 10.2.1 Test installation..... | 13 |
| 10.2.2 Test procedures..... | 13 |
| 10.2.3 Calculation of characteristic..... | 14 |
| 10.3 Resolution in case of pressure-pilot air pressure regulator..... | 15 |
| 10.3.1 Test procedures..... | 15 |
| 10.3.2 Calculation of characteristic..... | 15 |
| 10.4 Sensitivity..... | 15 |
| 10.4.1 Test procedures..... | 15 |
| 10.4.2 Calculation of characteristic..... | 16 |
| 10.5 Repeatability test..... | 16 |

This is a preview of ISO 6953-2:2024. [Click here to purchase the full version from the ANSI store.](#)

| | | |
|---------------------|--|-----------|
| 10.5.3 | General test method | 17 |
| 10.5.4 | Test execution | 17 |
| 10.5.5 | Calculation of the repeatability value | 18 |
| 11 | Presentation of data | 18 |
| 11.1 | General | 18 |
| 11.2 | Flow rate-pressure characteristics | 18 |
| 11.3 | Pressure regulation characteristics | 18 |
| 11.4 | Maximum air consumption for pilot operated regulators with air bleed | 18 |
| 11.5 | Additional characteristics for pressure-pilot air pressure regulators | 18 |
| 11.6 | Additional characteristics for manual air pressure regulators | 19 |
| Annex A | (informative) Comparison of repeatability test methods for manual air pressure regulators | 20 |
| Bibliography | | 39 |

This is a preview of ISO 6953-2:2024. [Click here to purchase the full version from the ANSI store.](#)

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 131, *Fluid power systems*, Subcommittee SC 5, *Control products and components*.

This third edition cancels and replaces the second edition (ISO 6953-2:2015), which has been technically revised.

The main changes are as follows:

- addition of new paragraph for an additional test for relief flow rate ([7.3.3](#));
- addition of new paragraph for a test for resolution in case of pressure-pilot air pressure regulator ([10.3](#));
- addition of new detailed test procedure for repeatability test for manual air-pressure regulator and pilot pressure air-pressure regulator ([10.5](#));
- addition of measure of the sensitivity.

A list of all parts in the ISO 6953 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

This is a preview of ISO 6953-2:2024. [Click here to purchase the full version from the ANSI store.](#)

In pneumatic fluid power systems, power is transmitted and controlled through a gas under pressure within a circuit.

When pressure reduction or pressure regulation is required, regulators and filter-regulators are components designed to maintain the pressure of the gas at an approximately constant level.

It is therefore necessary to know the performance characteristics of these components in order to determine their suitability in an application.