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**Tools for pressing — Gas springs —**  
**Part 5:**  
**Safety instructions for gas springs**

*Outillage de presse — Ressorts à gaz —*

*Partie 5: Instructions de sécurité pour les ressorts à gaz*

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## Foreword

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 documents 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](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

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](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 8, *Tools for pressing and moulding*.

A list of all parts in the ISO 11901 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](http://www.iso.org/members.html)

## Introduction

This document was developed to align the ISO standard with the most commonly used gas springs safety standard, and to give some recommendations about instructions for use.



# Tools for pressing — Gas springs —

## Part 5: Safety instructions for gas springs

### 1 Scope

This document describes the safety requirements for gas springs in accordance with ISO 11901-1, ISO 11901-3 and ISO 11901-4 intended for use in press tool and their correct installation instructions.

The instructions and operating conditions described in [Annex A](#) help to maximise lifetime and ensure the safe operation of nitrogen gas springs.

### 2 Normative references

There are no normative references in this document.

### 3 Terms and definitions

No terms and definitions are listed in this document

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

### 4 Safety protection for nitrogen gas springs

#### 4.1 General

Incorrect use of nitrogen gas springs can pose a risk to people and the machine/die.

Some potential causes of damage and the mode of operation of the protection equipment used to avoid them are described in [4.2](#) to [4.4](#).

#### 4.2 Uncontrolled return stroke safety protection

It is possible that the piston rod of the nitrogen gas spring does not immediately follow the return stroke of the press: this can be caused by a jammed tool part or cam (see [Figure 1](#)). As a result, when the jammed part is released, the piston rod of the nitrogen gas spring exceeds the permitted speed during the return stroke and the piston rod slams unchecked onto the final stop (return stroke of the rod pushing out the jammed part without stamping counterforce). This can seriously damage the nitrogen gas spring or cause it to fail. To avoid this, nitrogen gas springs shall be designed to vent the gas to the atmosphere – thereby depressurizing the spring – in the event that the maximum permitted piston rod speed is exceeded. This reduces the risk of injuries caused by the ejection of gas spring parts.