



**International
Standard**

ISO 16630

**Metallic materials — Sheet and strip
— Hole expanding test**

*Matériaux métalliques — Tôles et bandes — Essai d'expansion de
trou*

**Third edition
2026-08**

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Foreword

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This document was prepared by Technical Committee ISO/TC 164, *Mechanical testing of metals*, Subcommittee SC 2, *Ductility testing*.

This third edition cancels and replaces the second edition (ISO 16630:2017), which has been technically revised.

The main changes are as follows:

- correction of the definition of the limiting hole expansion ratio in [3.1](#);
- addition of the visual inspection on the surfaces of die and punch in the hole expanding test in [6.2.1](#);
- addition of the observation on the working surface of test piece to make sure no draw-in occurs in [8.4](#);
- modification of the observation method to detect the first crack in [8.5](#);
- modification of the condition on stopping the movement of the punch in [8.7](#);
- addition of the automated method of optical crack detection and measurement of the diameter in [8.7](#);
- addition of [Annex A](#) on the accuracy of original hole diameters.

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.

Introduction

In automotive parts manufacturing, sheet metal is primarily processed by shearing, bending and stretch-drawing operations.

Included with these processes are the bending up (plunging) of flanges (rims) around punched holes, and this can result in rupture of the material.

Various test methods are available to establish the suitability of the sheet metal for the forming processes involved. The hole expanding test is one of the best methods for evaluating the suitability of the sheet metal for forming such “flanges” because it closely resembles the process used under production conditions to form such flanges (plunged rims) starting with punched holes.

Because of the details given in this document, the relevance of the test will be immediately apparent. By adhering to the procedures laid down in this document, scatter in the test results is minimized.

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