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AMENDMENT 1
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Pneumatic fluid power — Determination of flow-rate characteristics of components using compressible fluids —

Part 1: General rules and test methods for steady-state flow

AMENDMENT 1: Effective conductance

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Transmissions pneumatiques — Détermination des caractéristiques de débit des composants traversés par un fluide compressible —

Partie 1: Règles générales et méthodes d'essai en régime stationnaire

AMENDEMENT 1: Conductance effective

ISO 6358-1:2013/Amd 1:2020
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Pneumatic fluid power — Determination of flow-rate characteristics of components using compressible fluids —

Part 1:
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AMENDMENT 1: Effective conductance

Scope

Add the following sentence at the end of the paragraph:

A method for evaluating the flow ability of pneumatic components using effective conductance, C_a, is given in Annex I.

Annex I

Add the following annex after Annex H, before the Bibliography.

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Annex I
(informative)

Method for evaluating the flow ability of pneumatic components using "effective conductance, C_a"

I.1 General

This annex describes a method for evaluating the flow ability of pneumatic components, taking a global point of view by using a simplified parameter "effective conductance, C_a".

The normal set of four flow-rate characteristic parameters, sonic conductance, C, critical back-pressure ratio, b, subsonic index, m, and cracking pressure, Δp_c, are used to accurately describe the flow-rate characteristics of pneumatic components. However, this annex describes an option for capturing a representative feature of flow characteristics of a component with a single value and for comparing the flow ability of similar components. The flow ability of components using the normal four parameters is complicated. But, the effective conductance, C_a, integrates these four parameters and can be used as a simplified parameter to evaluate the average flow ability of pneumatic components (variation of the back-pressure ratio from 0 to 1).

Although effective conductance, C_a, can compare the flow ability of components easily, it cannot compare them accurately. A cautionary example is shown in Figure I.5.

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NOTE 1 This annex does not apply to components that have pressure dependence.

NOTE 2 When the working range of a component is precisely known and in particular when its flow variations are limited, the four flow-rate characteristic parameters given in ISO 6358-1 (this document) and ISO 6358-2 are preferred for comparing similar components.

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I.2 Definition of effective conductance, C_a

Effective conductance, C_a, is defined by Formula (I.1). This value is obtained by integrating the conductance characteristic curve of a component and using its average over the range of back-pressure ratios (from 0 to 1), as shown in Figure I.

$$C_a = \int_0^1 C_e \, d\left(\frac{p_2}{p_1}\right) \tag{I.1}$$

where

C_a is the effective conductance in the same units as C_e.

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