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Hydraulic spin-on filters with finite lives — Method for verifying the rated fatigue life and the rated static burst pressure of the pressure-containing envelope

Filtres hydrauliques ~~vissés~~ à visser ayant une durée de vie ~~finie~~ spécifiée — Méthode de vérification de la ~~résistance à la~~durée de vie nominale en fatigue et de la pression statique d'éclatement ~~du corps de filtre~~nominale de l'enveloppe sous pression

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Foreword

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This document was prepared by Technical Committee ISO/TC 131, *Fluid power systems*, Subcommittee SC 6, *Contamination control.*

This second edition cancels and replaces the first edition (ISO 12829:2016), of which has been technically revised.

The main changes are as follows:

— ~~—~~a key was added to Figure 1~~Figure 1;~~;

— ~~—~~test fluid was revised;

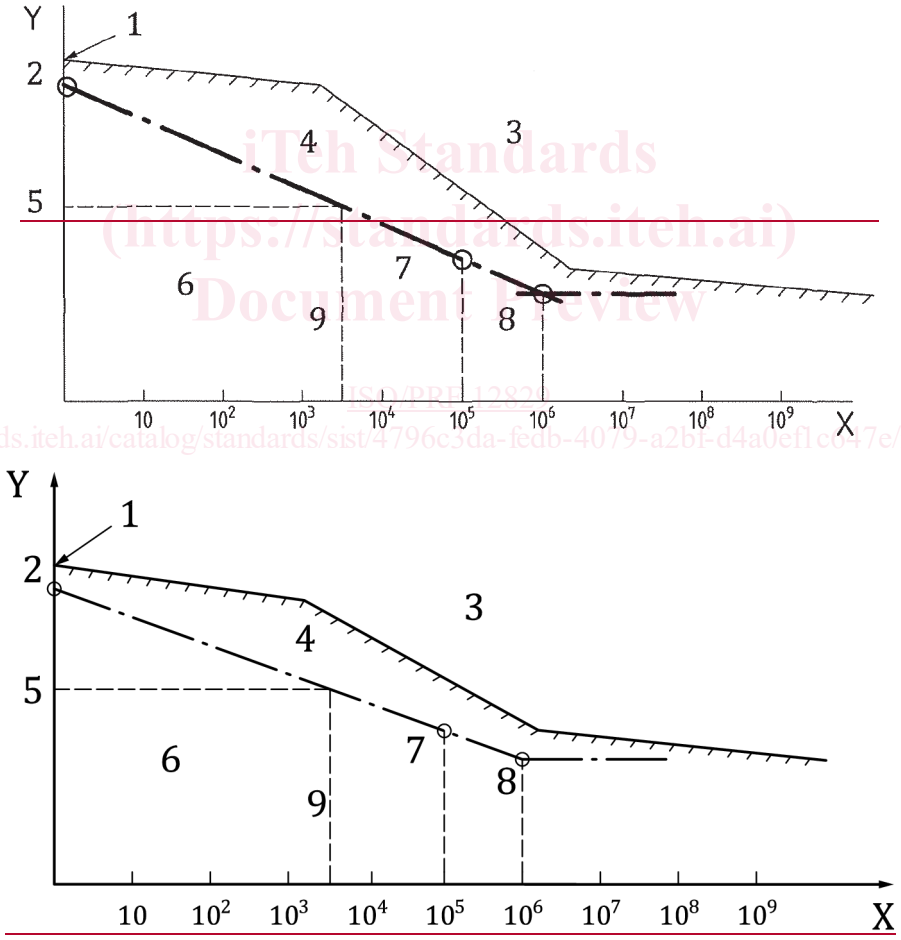
— Figure 2~~ Figure 2~~ was revised.

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 hydraulic fluid power systems, power is transmitted and controlled through a liquid under pressure within an enclosed circuit. A basic requirement of hydraulic fluid power components is that they should be capable of adequately containing the pressurized fluid.

The pressure to which an individual component can normally be subjected has a relationship with the rated fatigue pressure and minimum burst pressure. This relationship can be estimated and used as a basis of total life expectancy for the component in an individual application. Such an estimate is applied by the user. Factors such as shock, heat, misuse, etc., are to be judged by the user in each application. Selection of a specific pressure and life expectancy for a component in a particular application can be based upon the rated fatigue pressure and burst pressure as described in Figure 1~~Figure 1.~~ This finite life pressure rating test procedure differs from the (NFPA)T2.6.1 R2 infinite life pressure rating document (which is referred to in ISO/TR 10771-~~-~~2) and can be visualized from the S-N diagram in Figure 1~~Figure 1.~~ (NFPA)T2.6.1 R2 is a rating system along the vertical axis, with its fatigue strength distribution and assurance level in the vertical direction at a defined life. The finite life method described in this document is a rating system along the horizontal axis, with its fatigue life distribution and assurance level in the horizontal direction at a defined stress (pressure).



Key

X	cycles	5	applied pressure
Y	pressure	6	verified safe range
1	burst point	7	fatigue life/rated fatigue pressure
2	rated static burst pressure	8	rated fatigue pressure
3	fatigue failure range	9	life expectancy
4	unverified safe range		

Figure 1 — Possible S-N curve method for estimating finite life rating

Because the service life of the element container for a finite life spin-on hydraulic filter is relatively short, a fatigue life of 100 000 cycles is judged sufficient for common industrial ratings. Ratings at levels other than 100 000 cycles are permitted; this document may be applied for those cases. The method of rating includes both pressure and minimum life. The pressure rating of the filter head or mounting base can be subjected to the full 10^6 fatigue cycles established by (NFPA)T2.6.1 R2.

The spin-on housing, because of its construction, can be tested and evaluated as an elastic body with specific pressure cycle test times and pressure rise rate conditions.

~~It needs to be noted that this~~This document deals only with verifying the pressure ratings of spin-on filters. Separate from this verification procedure, manufacturers have the continuing responsibility to use managerial controls necessary to test spin-on filters that are representative of production.

