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# INTERNATIONAL STANDARD



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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

## Assembled joints between fittings and polyethylene (PE) pressure pipes — Test of resistance to pull out

*Assemblages entre raccords et tubes sous pression en polyéthylène (PE) — Essai de résistance à l'arrachement*

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## FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up 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.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 3501 was drawn up by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, and circulated to the Member Bodies in June 1974.

It has been approved by the Member Bodies of the following countries :

Australia	Ireland	Spain
Austria	Israel	Sweden
Belgium	Italy	Switzerland
Chile	Mexico	Turkey
Czechoslovakia	Netherlands	United Kingdom
Denmark	Norway	U.S.A.
Finland	Poland	U.S.S.R.
France	Portugal	Yugoslavia
Germany	Romania	
India	South Africa, Rep. of	

No Member Body expressed disapproval of the document.

# Assembled joints between fittings and polyethylene (PE) pressure pipes – Test of resistance to pull out

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for checking the ability of assembled joints (excluding fusion-welded joints) between fittings and polyethylene (PE) pressure pipes to withstand longitudinal tensile stresses.

The test is applicable regardless of the design and materials of the fitting used for jointing polyethylene pipes and applies to pipe with a nominal diameter up to and including 63 mm (2.480 in).

## 2 PRINCIPLE

Checking of the ability of an assembled joint to resist pulling out when submitted to longitudinal tension.

## 3 APPARATUS

Tensometer capable of holding the test specimen at a constant longitudinal stress.

Alternatively, the calculated force may be applied to the specimen by means of weights, in which case the specimen shall be suspended on a frame with a suitable stirrup at the lower end of the specimen to hold the weights.

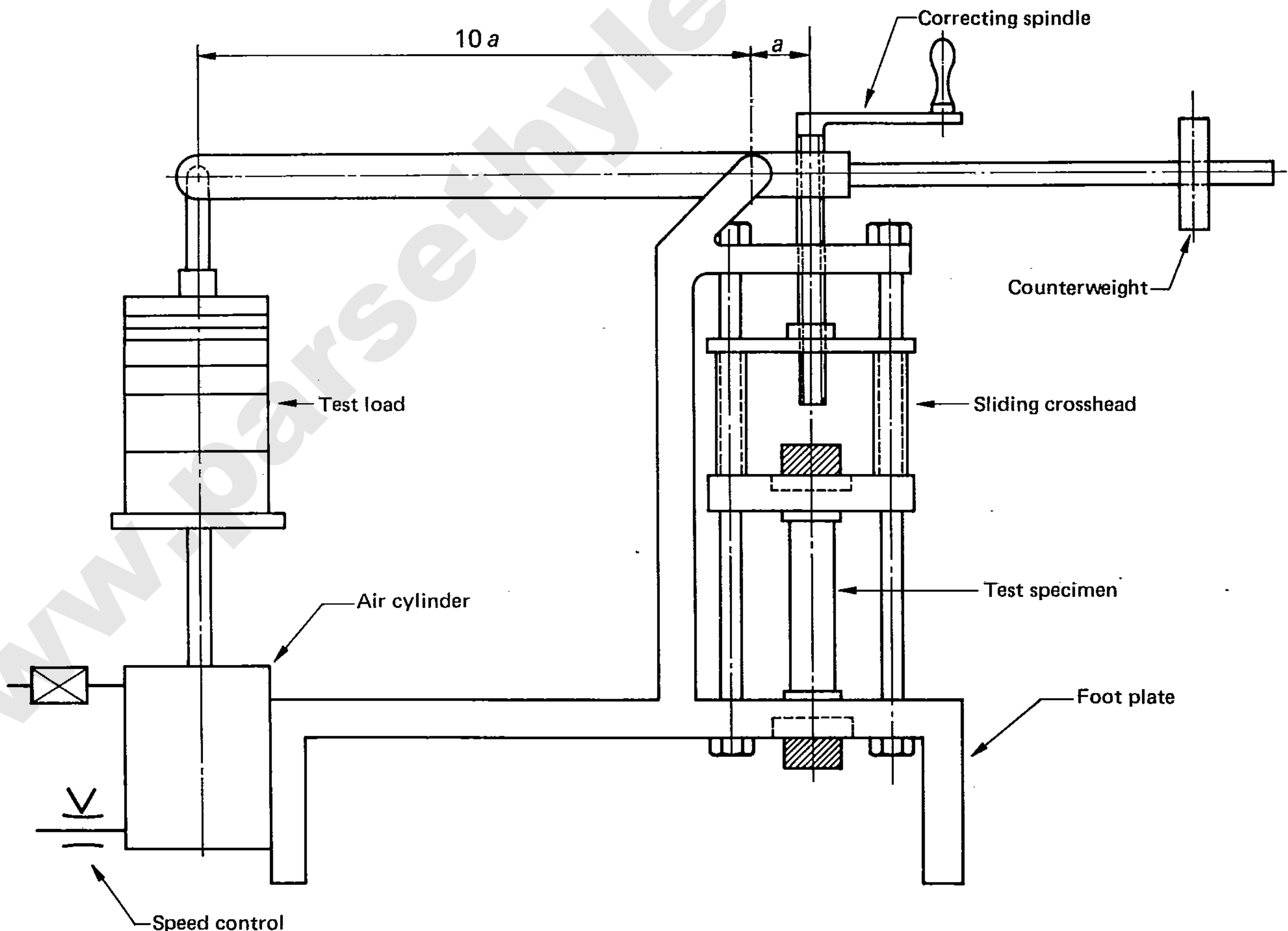


FIGURE — Diagram of suitable apparatus

#### 4 TEST SPECIMEN

The test specimen shall consist of the fitting to be tested assembled with one or more pieces of polyethylene pipe, of the size and quality for which the fitting is designed.

Each piece of pipe shall be at least 300 mm (12 in) in length.

The assembly of the joints should be carried out in accordance with the individual national practices or standards.

#### 5 PROCEDURE

From the dimensions of the pipe, calculate the cross-section of the pipe wall, and from this figure calculate the force ( $K$ ) necessary to produce a longitudinal stress of one and a half times the maximum permissible working stress of the material from which the pipe is made, using the following formula :

$$K = 1,5 \times \sigma_t \times \frac{\pi}{4} (d_e^2 - d^2)$$

where

$\sigma_t$  is the permissible induced stress for the considered polyethylene pipe;

$d_e$  is the nominal outside diameter of the pipe;

$d$  is the internal diameter of the pipe.

The test temperature shall be  $20 \pm 2$  °C.

Secure the test specimen in the apparatus.

Apply the calculated force gradually over a period of 30 s.

Hold the specimen in constant tension for a period of at least 1 h.

#### 6 TEST REPORT

The test report shall refer to this International Standard and shall indicate :

- the calculated force;
- whether or not the joint has loosened.

The joint shall be deemed satisfactory if, during the test, the pipe has not been pulled from the fitting.