



Nederlandse norm

NEN-ISO 21573-2

(en)

Building construction machinery and equipment
- Concrete pumps - Part 2: Procedure for
examination of technical parameters (ISO
21573-2:2008, IDT)

ICS 91.220

juli 2008

Als Nederlandse norm is aanvaard:

- ISO 21573-2:2008.IDT

VOORBEELD
Preview

Normcommissie 400 908 "Voorkeuren teksten"

Apart from exceptions provided by the law, nothing from this publication may be duplicated and/or published by means of photocopy, microfilm, storage in computer files or otherwise, which also applies to full or partial processing, without the written consent of the Netherlands Standardization Institute.

The Netherlands Standardization Institute shall, with the exclusion of any other beneficiary, collect payments owed by third parties for duplication and/or act in and out of law, where this authority is not transferred or falls by right to the Reproduction Rights Foundation.

Auteursrecht voorbehouden. Behoudens uitzondering door de wet gesteld mag zonder schriftelijke toestemming van het Nederlands Normalisatie-instituut niets uit deze uitgave worden verveelvoudigd en/of openbaar gemaakt door middel van fotokopie, microfilm, opslag in computerbestanden of anderszins, hetgeen ook van toepassing is op gehele of gedeeltelijke bewerking.

Het Nederlands Normalisatie-instituut is met uitsluiting van ieder ander gerechtigd de door derden verschuldigde vergoedingen voor verveelvoudiging te innen en/of daartoe in en buiten rechte op te treden, voor zover deze bevoegdheid niet is overgedragen c.q. rechtens toekomt aan de Stichting Reprorecht.

Although the utmost care has been taken with this publication, errors and omissions cannot be entirely excluded. The Netherlands Standardization Institute and/or the members of the committees therefore accept no liability, not even for direct or indirect damage, occurring due to or in relation with the application of publications issued by the Netherlands Standardization Institute.

Hoewel bij deze uitgave de uiterste zorg is nagestreefd, kunnen fouten en onvolledigheden niet geheel worden uitgesloten. Het Nederlands Normalisatie-instituut en/of de leden van de commissies aanvaardden derhalve geen enkele aansprakelijkheid, ook niet voor directe of indirecte schade, ontstaan door of verband houdend met toepassing van door het Nederlands Normalisatie-instituut gepubliceerde uitgaven.

Preview

**Building construction machinery and
equipment — Concrete pumps —**
Part 2:
**Procedure for examination of technical
parameters**

*Machines et matériels pour la construction des bâtiments — Pompes à
béton —*
Partie 2: Procédure pour la détermination des paramètres techniques



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

Copyright
Preview

**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2008

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword.....	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions.....	1
4 Test items of performances.....	1
5 Pumping performance test	2
6 Performance of hopper and agitator.....	6
7 Performance of cleaning water pump.....	7
8 Performance of concrete distributor boom	7
9 Performance of outrigger.....	8
Annex A (informative) Theoretical pumping output and delivery pressure for rotary pump.....	12

Copyright
Preview

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 21573-2 was prepared by Technical Committee ISO/TC 195, *Building construction machinery and equipment*, Subcommittee SC 1, *Machinery and equipment for concrete work*.

ISO 21573 consists of the following parts, under the general title *Building construction machinery and equipment — Concrete pumps*:

- *Part 1: Terminology and commercial specifications*
- *Part 2: Procedure for examination of technical parameters*

Building construction machinery and equipment — Concrete pumps

Part 2: Procedure for examination of technical parameters

1 Scope

This part of ISO 21573 specifies the procedure and requirements for examining the technical commercial specifications of concrete pumps as defined in ISO 21573-1.

It applies to mobile (with or without boom) and stationary concrete pumps.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 21573-1, *Building construction machinery and equipment — Concrete pumps — Part 1: Terminology and commercial specifications*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 21573-1 and the following apply.

3.1

single-roller rotary pump

concrete pump that discharges fresh concrete by squeezing an elastic tube by one rotating roller

3.2

double-roller rotary pump

concrete pump that discharges fresh concrete by squeezing an elastic tube between double rotating rollers

4 Test items of performances

The following performances are tested in this examination:

- a) pumping performance;
- b) hopper and mixing performance of the agitator;
- c) performance of the cleaning water pump;
- d) performance of the distributing boom;
- e) performance of the outrigger.

ISO 21573-2:2008(E)

5 Pumping performance test (see Tables 1 to 3)

5.1 Piston pump

5.1.1 Pumping output

The volumetric output of the concrete pump is indicated by the theoretical delivery volume.

The theoretical delivery volume is calculated by the following formula.

$$Q_{th} = \left(D^2 \times \frac{\pi}{4} \right) \times S_t \times N \times 6 \times 10^{-8}$$

where

Q_{th} is the theoretical output volume (m³/h);

D is the diameter of concrete cylinder (mm);

S_t is the stroke length of concrete piston (mm);

N is the number of strokes per minute (min⁻¹).

5.1.2 Delivery pressure

The delivery pressure is indicated by the maximum theoretical pressure.

The maximum theoretical pressure is calculated by one of the following formulas.

$$p_{th,max} = p_L \times \left(\frac{d_1^2}{D^2} \right) \quad : \text{head-side operation}$$

$$p_{th,max} = p_L \times \left[\frac{(d_1^2 - d_2^2)}{D^2} \right] \quad : \text{rod-side operation}$$

where

$p_{th,max}$ is the maximum theoretical delivery pressure;

p_L is the setting of the lowest pressure limiting device;

d_1 is the diameter of main hydraulic cylinder;

D is the diameter of concrete cylinder;

d_2 is the rod diameter.

5.2 Rotary pump

5.2.1 Single-roller rotary pump (see A.1)

5.2.1.1 Pumping output

$$V_1 = r_5 \times 2 \times \alpha \times \pi \times \frac{\phi^2}{4} \quad (\text{mm}^3)$$

$$r_5 = r_2 + \frac{\phi}{2} \quad (\text{mm})$$

$$\alpha = \cos^{-1} \left[\frac{(r_1^2 + r_5^2 - r_3^2)}{(2 \times r_1 \times r_5)} \right] \times \frac{\pi}{180} \quad (\text{rad})$$

$$q = \frac{(2 \times \pi \times r_5 \times \pi \times \phi^2)}{4} - (2 \times V_1) \quad (\text{mm}^3/\text{r})$$

$$Q_{\text{th,max}} = N \times 60 \times q \times 10^{-9} \quad (\text{m}^3/\text{h})$$

5.2.1.2 Delivery pressure

$$p_{\text{th,max}} = \frac{p_1}{S} \quad (\text{MPa})$$

$$p_1 = \frac{T}{\sin \beta_1 \times \frac{r_1}{10^3}} \quad (\text{N})$$

$$\beta_1 = \frac{(2\pi \times X_G)}{(2\pi \times r_3)} \quad (\text{rad})$$

$$X_G = \frac{(4 \times a)}{3\pi} \quad (\text{mm})$$

$$a = [r_4^2 + (r_3 \times \cos \theta)^2]^{1/2} \quad (\text{mm})$$

$$r_4 = r_3 \times (1 - \sin \theta) \quad (\text{mm})$$

$$\theta = \cos^{-1} \left[\frac{(r_1^2 + r_3^2 - r_2^2)}{(2 \times r_1 \times r_3)} \right] \times \frac{\pi}{180} - \frac{\pi}{2} \quad (\text{rad})$$

$$r_2 = r_p - \phi - t \quad (\text{mm})$$

$$r_3 = r_0 + t \quad (\text{mm})$$

Bestelformulier

NEN

Stuur naar:

NEN Uitgeverij
t.a.v. afdeling Marketing
Antwoordnummer 10214
2600 WB Delft

NEN Uitgeverij

Postbus 5059
2600 GB Delft

Vlinderweg 6
2623 AX Delft

T (015) 2 690 390
F (015) 2 690 271

www.nen.nl/normshop

Ja, ik bestel

__ ex. NEN-ISO 21573-2:2008 en Machines en apparatuur voor de bouw - € 79.70
Betonpompen - Deel 2: Procedure voor onderzoek van technische
parameters

Wilt u deze norm in PDF-formaat? Deze bestelt u eenvoudig via
www.nen.nl/normshop

Stel uw vraag aan
Klantenservice via:

[@NEN_webcare](https://twitter.com/NEN_webcare)

Gratis e-mailnieuwsbrieven

Wilt u op de hoogte blijven van de laatste ontwikkelingen op het gebied van normen, normalisatie en regelgeving? Neem dan een gratis abonnement op een van onze e-mailnieuwsbrieven. www.nen.nl/nieuwsbrieven

Retourneren

Fax: (015) 2 690 271
E-mail: marketing@nen.nl
Post: NEN Uitgeverij,
t.a.v. afdeling Marketing
Antwoordnummer 10214,
2600 WB Delft
(geen postzegel nodig).

Gegevens

Bedrijf / Instelling

T.a.v. O M O V

E-mail

Klantnummer NEN

Uw ordernummer BTW nummer

Postbus / Adres

Postcode Plaats

Telefoon Fax

Factuuradres (indien dit afwijkt van bovenstaand adres)

Postbus / Adres

Postcode Plaats

Datum Handtekening

Voorwaarden

- De prijzen zijn geldig tot 31 december 2015, tenzij anders aangegeven.
- Alle prijzen zijn excl. btw, verzend- en handelingskosten en onder voorbehoud bij o.m. ISO- en IEC-normen.
- Bestelt u via de normshop een pdf, dan betaalt u geen handeling en verzendkosten.
- Meer informatie: telefoon (015) 2 690 391, dagelijks van 8.30 tot 17.00 uur.
- Wijzigingen en typfouten in teksten en prijsinformatie voorbehouden.
- U kunt onze algemene voorwaarden terugvinden op: www.nen.nl/leveringsvoorwaarden.