ICS 13.160
CCS A 25

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 35982-2018

Mechanical vibration and shock -- Coupling forces at the man-machine interface for hand-transmitted vibration

Issued on: February 6, 2018 **Implemented on: September 1, 2018**

Issued by: State Administration for Market Regulation, China National Standardization Administration

Table of Contents

Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the translation method equivalent to the use of ISO 15230.2007 "Coupling force of mechanical vibration and impact of hand-transmitted vibrations man-machine interface" (English

Text version).

This standard is proposed and managed by the National Standardization Technical Committee for Mechanical Vibration, Impact and Condition Monitoring (SAC/TC53).

This standard is drafted by. Jilin Provincial Institute of Safety Science and Technology.

Introduction

The coupling force between the arm system and the hand-held or guided machine with which it is used is a very important factor. Although this

Force exists in both vibration and non-vibration machines. This standard is mainly aimed at the man-machine interface. The arm system directly contacts the surface of the vibrating machine.

A series of force descriptions.

The coupling force involved in operating a vibrating machine usually consists of two parts. The first part is the force applied by the arm system, which is used

To provide the necessary control and guidance to achieve the desired production efficiency, this standard is aimed at this quasi-static force (frequency below 5Hz);

The part is the biodynamic force, which is the force generated by the arm system's biodynamic reaction to vibration.

The effects of different couplings on the vibrating surface on the human body have the following two aspects.

The relationship between the vibration of the handle that may be measured and the vibration transmitted to the arm system changes. This change will affect the vibration of the arm system

Movement effect.

Coupling can result in a series of responses to the vascular system, nervous system, joints, and tendons that are exposed to the anatomy under vibration.

In general, based on the study of the physiological effects of a large number of vibrations on the human body, the vibration conditions of the machine are simulated, ie, the thrust and grip force are used to describe the vibration conditions.

Coupling force between hand and machine handle.

This standard is useful for coupled data reporting in epidemiology or laboratory research.

In the future, when measuring or evaluating the impact of mechanical vibrations on people at the work site, consideration may be given to contact with the vibration surface of the arm system.

Effect.

Measurements of coupling forces and vibration accelerations need to take into account their potential interactions.

Mechanical vibration and shock

Hand-transmitted vibration man-machine interface coupling force

1 Scope

This standard describes the coupling parameters between the machine operator's hand and the surface of the vibrating machine.

The coupling between the hand and the vibrating surface can be described by different parameters and combinations of these parameters.

--- Force. such as thrust, pull, grip;

--- Pressure applied to the skin.

In addition, standard measurement methods are provided in Appendix A to Appendix E. measurement step guidance, parameter coupling force and pressure measurement, and

Required measurement tool.

This standard does not apply to hand-related forces.

2 Symbols and Abbreviations

The following symbols and abbreviations apply to this document.

2.1 Symbols

F force

i natural number

n sum total number of elements

Local pressure of Pi surface unit i

S surface

t time

T operation cycle

alpha Angle formed by hand and section

The angle formed by the beta machine and the section

delta grip coefficient

gamma thrust factor

2.2 Lower corner subscript

BD Biodynamics

c Contact

Coup coupling

f Feed

g Guide

Gr grip

l Lift