

DIN 45679:2013-02 (E)

Mechanical vibration - Measurement and evaluation of coupling forces for assessment of vibration exposure of the hand-arm system

| Contents | | Page |
|-----------------------|---|-------------|
| Foreword | | 3 |
| Introduction | | 4 |
| 1 | Scope | 5 |
| 2 | Symbols and indices | 5 |
| 3 | Parameters at hand-grip interface | 6 |
| 3.1 | Contact pressure | 6 |
| 3.2 | Push force | 7 |
| 3.3 | Guiding force | 8 |
| 3.4 | Lifting force | 8 |
| 3.5 | Gripping force | 9 |
| 3.6 | Feed force | 11 |
| 3.7 | Contact forces | 11 |
| 3.8 | Coupling force | 12 |
| 3.9 | Torsion and friction | 13 |
| 4 | Parameters for the coupling-dependent evaluation of the vibration exposure | 13 |
| 4.1 | Coupling factor ccp | 13 |
| 4.2 | Coupling-dependent frequency-weighted acceleration ahwc | 13 |
| 4.3 | Coupling force-dependent vibration total value ahvc | 13 |
| 4.4 | Coupling force-dependent daily vibration exposure value A(8)c | 14 |
| 5 | Measuring procedure and evaluation of measurement results | 14 |
| 5.1 | General | 14 |
| 5.2 | Measuring the gripping force | 14 |
| 5.3 | Measuring the push force | 15 |
| 5.4 | Measuring the pressure distribution on the contact surface of the hand | 16 |
| 5.5 | Processing the measurement results: Time history | 16 |
| 5.6 | Processing the measurement results: Averaging the values | 16 |
| 5.7 | Evaluation of the measurement results | 17 |
| 6 | Calculation of the coupling force-dependent values | 17 |
| 6.1 | Coupling force-dependent frequent-weighted acceleration | 17 |
| 6.2 | Coupling force-dependent vibration total value and daily vibration exposure value | 19 |
| Annex A (normative) | Requirements for measuring equipment | 20 |
| Annex B (informative) | Biodynamic effects of machine contact forces | 23 |
| Annex C (informative) | Calculation of the gripping force and push force from a pressure measurement | 25 |
| Annex D (informative) | Measurement report | 27 |
| Annex E (informative) | Calibration and methods for comparison of different force measuring instruments | 29 |
| Annex F (informative) | Examples of typical coupling forces and coupling factors | 31 |
| Bibliography | | 32 |