

ISO 13041-3:2009-03 (E)

Test conditions for numerically controlled turning machines and turning centres - Part 3: Geometric tests for machines with inverted vertical workholding spindles

| Contents | | Page |
|---|--|-------------|
| Foreword | | iv |
| 1 | Scope | 1 |
| 2 | Normative references | 1 |
| 3 | Terms and definitions | 1 |
| 4 | Preliminary remarks | 2 |
| 4.1 | Measuring units | 2 |
| 4.2 | Reference to ISO 230-1 and ISO 230-7 | 3 |
| 4.3 | Machine levelling | 3 |
| 4.4 | Testing sequence | 3 |
| 4.5 | Tests to be performed | 3 |
| 4.6 | Measuring instruments | 3 |
| 4.7 | Diagrams | 3 |
| 4.8 | Software compensation | 3 |
| 4.9 | Minimum tolerance | 3 |
| 4.10 | Machine classifications, descriptions, terminology and designation of axes | 3 |
| 4.11 | Turrets | 8 |
| 4.12 | Machine size categories | 8 |
| 5 | Geometric tests | 9 |
| 5.1 | Workholding spindle(s) | 9 |
| 5.2 | Relation between workholding spindle(s) and linear axes of motion | 11 |
| 5.3 | Angular deviations of linear axis motion | 14 |
| 5.4 | Turret and power-driven tools | 20 |
| 5.5 | Swivelling workholding spindle head | 28 |
| 6 | Tests for checking accuracy of axes of rotation | 29 |
| 6.1 | Rotational accuracy of workholding spindle | 29 |
| 6.2 | Rotational accuracy of tool spindle | 31 |
| Annex A (informative) Three-point measuring method | | 33 |
| Bibliography | | 35 |