

ISO/TR 17243-1:2014-12 (E)

Machine tool spindles - Evaluation of machine tool spindle vibrations by measurements on spindle housing - Part 1: Spindles with rolling element bearings and integral drives operating at speeds between 600 min⁻¹ and 30000 min⁻¹

Contents		Page
Foreword		iv
Introduction		v
1	Scope	1
2	Normative references	1
3	Terms and definitions	2
4	Preliminary operations	3
4.1	General	3
4.2	Process load	3
4.3	Spindle speed	3
4.4	Thermal conditions	4
4.5	Spindle position and orientation	4
4.6	Tool or workpiece balancing	4
4.7	Spindle chuck	4
4.8	Spindle cooling	5
4.9	Drawbar	5
4.10	Background vibration	5
4.11	Idle operation	5
5	Measurement and operational procedures	5
5.1	Measuring instruments	5
5.2	Measurement locations/directions	6
5.3	Sensor mounting procedures	7
6	Evaluation parameters	8
6.1	Vibration velocity parameter	8
6.2	Vibration acceleration parameter	9
6.3	Demodulated vibration spectra bearing analysis methods	10
7	Spindle classification	10
7.1	General	10
7.2	Classification according to rated power	10
7.3	Classification according to maximum spindle speed	10
7.4	Classification according to bearing type	10
8	Evaluation	11
8.1	General	11
8.2	Criterion I: vibration magnitude	11
8.3	Criterion II: change in vibration magnitude	12
8.4	General zone boundaries	12
8.5	Examples of evaluation zone boundary values	13
8.6	Operational limits	14
Annex A (informative) Introduction to alternative bearing condition assessment techniques		16
Bibliography		18

Bibliography 18