

ISO 21234:2022-05 (E)

Road vehicles - Heavy commercial vehicles and buses - Mass moment of inertia measurement

Contents		Page
Foreword		v
Introduction		vi
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Principles	2
5	Variables	3
5.1	Reference system	3
5.2	Variables to be measured	3
6	Measuring equipment	4
7	Test conditions	4
7.1	General	4
7.2	Ambient conditions	4
7.3	Test surface	4
7.4	Test vehicle	4
7.5	Operating and other liquids	5
7.6	Loading conditions, suspension and mechanical parts	5
8	Determination of the I_{xx} , I_{yy} , I_{zz} , and I_{xz} mass moments of inertia	5
8.1	General	5
8.1.1	Platform levelness	5
8.1.2	Platform weight and stiffness	5
8.1.3	Pivot location	6
8.1.4	Vehicle weight	6
8.1.5	Vehicle/platform MOI comparison	6
8.1.6	Vehicle location on the platform	6
8.1.7	Vehicle restraints	6
8.1.8	Platform oscillation amplitude	6
8.1.9	Pivot bearing damping	7
8.1.10	Oscillation period measurement	7
8.2	Determination of I_{xx} and I_{yy} using a stable pendulum	8
8.2.1	General guidance	8
8.2.2	Procedure	9
8.2.3	Determination of I_{xx} and I_{yy}	9
8.2.4	Data presentation	10
8.3	Determination of I_{xx} and I_{yy} using an unstable pendulum	10
8.3.1	General guidance	10
8.3.2	Procedure	10
8.3.3	Calculation of I_{xx} and I_{yy}	11
8.3.4	Data presentation	12
8.4	Determination of I_{zz} using a torsional pendulum	12
8.4.1	General guidance	12
8.4.2	Procedure	12

8.4.3	Calculation of I_{zz}	12
8.4.4	Data presentation	13
8.5	Determination of I_{xz} using a torsional pendulum	13
8.5.1	General guidance	13
8.5.2	Procedure	13
8.5.3	Calculation of I_{xz}	13
8.5.4	Data presentation	14
8.6	Determination of I_{zz} using a multi-filar torsional pendulum	14
8.6.1	General guidance	14
8.6.2	Procedure	15
8.6.3	Calculation of I_{zz}	16
8.6.4	Data presentation	16
8.7	I_{xx} , I_{yy} , I_{zz} , and I_{xz} results checks	16
8.8	Parallel Axis Theorem	16
Bibliography		17