

# DIN EN 1853:2019-09 (E)

## Agricultural machinery - Trailers - Safety (includes Amendment :2019)

---

<b>Contents</b>		<b>Page</b>
European foreword .....		4
Introduction .....		5
<b>1</b>	<b>Scope .....</b>	<b>6</b>
<b>2</b>	<b>Normative references .....</b>	<b>6</b>
<b>3</b>	<b>Terms and definitions .....</b>	<b>7</b>
<b>4</b>	<b>Safety requirements and/or protective/risk reduction measures .....</b>	<b>11</b>
4.1	General .....	11
4.2	Stability .....	11
4.2.1	Stability and immobilisation of the detached trailer .....	11
4.2.2	Stability in the raised position when tipping .....	12
4.2.3	Minimum load on the drawbar hitch .....	12
4.2.4	Blocking device for axle suspension and bogie axle .....	13
4.2.5	Stability during travelling .....	13
4.3	Boarding means .....	13
4.4	Tipping .....	14
4.5	Hydraulic, pneumatic and electrical interconnections .....	15
4.6	Safety of the control system .....	15
4.6.1	General .....	15
4.6.2	Performance levels .....	15
4.7	Other requirements .....	15
4.8	Load securing .....	16
4.9	Jacking points .....	16
4.10	Visibility .....	16
4.11	Opening and closing of the rear discharge gate .....	16
4.11.1	General .....	16
4.11.2	Opening .....	17
4.11.3	Closing .....	17
4.12	Conveyor devices .....	18
4.13	Additional requirements for high-tip trailers .....	19
4.14	Additional requirements for hook-lift trailers .....	19
4.14.1	Stability in the raised position when tipping .....	19
4.14.2	Load on the drawbar hitch .....	19
4.14.3	Locking device .....	20
4.14.4	Markings .....	20
4.14.5	Overload .....	20
4.14.6	Safety of the control system .....	20
<b>5</b>	<b>Verification of the safety requirements and/or protective/risk reduction measures .....</b>	<b>21</b>
<b>6</b>	<b>Information for use .....</b>	<b>23</b>
6.1	Instruction handbook .....	23
6.1.1	General .....	23
6.1.2	Additional information specific to hook-lift trailers .....	26
6.2	Marking .....	26
6.3	Warning signs .....	27
Annex A (normative)	List of hazards .....	29

<b>Annex B (normative) Stability tests (rear tipping trailers)</b> .....	<b>34</b>
<b>B.1 Scope</b> .....	<b>34</b>
<b>B.2 Test equipment</b> .....	<b>34</b>
<b>B.3 Test procedure</b> .....	<b>34</b>
<b>B.4 Test acceptance</b> .....	<b>35</b>
<b>Annex C (normative) Verification of stability by calculation</b> .....	<b>36</b>
<b>C.1 Scope</b> .....	<b>36</b>
<b>C.2 Calculation method</b> .....	<b>36</b>
<b>C.3 Basic assumptions for the calculation</b> .....	<b>36</b>
<b>C.4 Input data</b> .....	<b>36</b>
<b>C.5 Coordinate systems</b> .....	<b>38</b>
<b>C.6 Stability criterion</b> .....	<b>39</b>
<b>C.7 Calculation procedure</b> .....	<b>39</b>
<b>C.8 Stability check</b> .....	<b>40</b>
<b>Annex D (normative) Calculation method of vertical force in the tractor coupling device during exchange</b> .....	<b>43</b>
<b>Annex E (normative) Scraper floor</b> .....	<b>44</b>
<b>E.1 Guarding</b> .....	<b>44</b>
<b>E.1.1 General</b> .....	<b>44</b>
<b>E.1.2 Moving path of scraper floor</b> .....	<b>44</b>
<b>E.1.3 Front turning points</b> .....	<b>47</b>
<b>E.1.4 Rear turning points</b> .....	<b>49</b>
<b>E.2 Adjustment of scraper floor</b> .....	<b>50</b>
<b>Annex F (normative) Visibility</b> .....	<b>51</b>
<b>Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of Directive 2006/42/EC aimed to be covered</b> .....	<b>52</b>
<b>Bibliography</b> .....	<b>53</b>