

# DIN EN 1088:2008-10 (E)

## Safety of machinery - Interlocking devices associated with guards - Principles for design and selection (includes Amendment A2:2008)

---

<b>Contents</b>		<b>Page</b>
Foreword .....		4
Introduction .....		5
<b>1</b>	<b>Scope .....</b>	<b>5</b>
<b>2</b>	<b>Normative references .....</b>	<b>5</b>
<b>3</b>	<b>Definitions .....</b>	<b>6</b>
<b>4</b>	<b>Operating principles and typical forms of interlocking devices associated with guards .....</b>	<b>8</b>
4.1	Interlocking principles .....	9
4.2	Typical forms of interlocking devices .....	9
4.3	Technological forms of interlocking devices .....	13
<b>5</b>	<b>Provisions for the design of interlocking devices (independent of the nature of the energy source) .....</b>	<b>13</b>
5.1	Actuation modes of mechanically actuated position detectors .....	13
5.2	Arrangement and fastening of position detectors .....	14
5.3	Arrangement and fastening of cams .....	15
5.4	Reducing the possibility of common cause failures .....	15
5.5	Guard locking device (see 3.4 and 4.2.2) .....	16
5.6	Delay devices .....	16
5.7	!!! Design to minimize defeat possibilities .....	16
5.8	Environmental considerations .....	20
<b>6</b>	<b>Additional technological requirements for electrical interlocking devices .....</b>	<b>20</b>
6.1	Compliance with EN 60204-1 .....	20
6.2	Interlocking devices incorporating mechanically actuated position switches .....	20
6.3	Interlocking devices incorporating non-mechanically actuated position switches (proximity switches and magnetic switches) .....	21
<b>7</b>	<b>Selection of an interlocking device .....</b>	<b>21</b>
7.1	General .....	21
7.2	Conditions of use and intended use .....	22
7.3	Risk assessment .....	22
7.4	Stopping time and access time .....	22
7.5	Frequency of access (frequency of opening the guard for access to the danger zone) .....	22
7.6	Performance considerations .....	23
<b>Annex A (informative)</b>	<b>Guard-operated interlocking device with one single cam-operated position detector (see Introduction) .....</b>	<b>24</b>
<b>Annex B (informative)</b>	<b>Guard-operated interlocking device with tongue-operated switch (see Introduction) .....</b>	<b>26</b>
<b>Annex C (informative)</b>	<b>Direct (mechanical) interlocking between guard and start/stop manual control (see Introduction) .....</b>	<b>27</b>
<b>Annex D (informative)</b>	<b>Captive-key interlocking device (see Introduction) .....</b>	<b>28</b>

<b>Annex E (informative) Trapped-key interlocking device (see introduction) .....</b>	<b>30</b>
<b>Annex F (informative) Plug and socket interlocking device [plug/socket combination] (see Introduction) .....</b>	<b>32</b>
<b>Annex G (informative) Guard-operated interlocking device incorporating two cam-operated position detectors (see Introduction) .....</b>	<b>34</b>
<b>Annex H (informative) Mechanical interlocking between a guard and a movable element (see Introduction) .....</b>	<b>36</b>
<b>Annex J (informative) Electrical interlocking device incorporating magnetically actuated [magnetic] switches (see Introduction) .....</b>	<b>37</b>
<b>Annex K (informative) Electrical interlocking device incorporating two proximity detectors (see Introduction) .....</b>	<b>38</b>
<b>Annex L (informative) Pneumatic/hydraulic interlocking devices (see Introduction) .....</b>	<b>39</b>
<b>Annex M (informative) Interlocking device with spring applied/power released guard locking device (see Introduction) .....</b>	<b>41</b>
<b>Annex N (informative) Interlocking device with guard locking, with manually operated delay device (see Introduction) .....</b>	<b>43</b>
<b>Annex ZA (informative) #Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC\$ .....</b>	<b>44</b>
<b>Annex ZB (informative) #Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC\$ .....</b>	<b>45</b>
<b>Bibliography .....</b>	<b>46</b>