

# ISO 23788:2012-07 (E)

## Metallic materials - Verification of the alignment of fatigue testing machines

---

<b>Contents</b>		<b>Page</b>
Foreword .....		iv
Introduction .....		v
<b>1</b>	<b>Scope .....</b>	<b>1</b>
<b>2</b>	<b>Normative references .....</b>	<b>1</b>
<b>3</b>	<b>Terms and definitions .....</b>	<b>1</b>
<b>4</b>	<b>Symbols .....</b>	<b>3</b>
<b>5</b>	<b>Measurement requirements .....</b>	<b>4</b>
<b>5.1</b>	<b>Testing machine .....</b>	<b>4</b>
<b>5.2</b>	<b>Alignment cell .....</b>	<b>4</b>
<b>5.3</b>	<b>Design and manufacturing .....</b>	<b>4</b>
<b>5.4</b>	<b>Machining .....</b>	<b>6</b>
<b>5.5</b>	<b>Inspection before attaching the strain gauges .....</b>	<b>6</b>
<b>5.6</b>	<b>Instrumentation with strain gauges .....</b>	<b>6</b>
<b>5.7</b>	<b>System checks .....</b>	<b>7</b>
<b>6</b>	<b>Alignment measurement calculations .....</b>	<b>7</b>
<b>6.1</b>	<b>General .....</b>	<b>7</b>
<b>6.2</b>	<b>Cylindrical alignment cell .....</b>	<b>7</b>
<b>6.3</b>	<b>Thick rectangular alignment cell .....</b>	<b>9</b>
<b>6.4</b>	<b>Thin rectangular alignment cell .....</b>	<b>9</b>
<b>6.5</b>	<b>Classification of machine alignment .....</b>	<b>9</b>
<b>7</b>	<b>Procedure for verification of machine alignment .....</b>	<b>10</b>
<b>7.1</b>	<b>Purpose and frequency .....</b>	<b>10</b>
<b>7.2</b>	<b>Procedure .....</b>	<b>10</b>
<b>8</b>	<b>Reporting .....</b>	<b>11</b>
<b>8.1</b>	<b>Basic information .....</b>	<b>11</b>
<b>8.2</b>	<b>Special information .....</b>	<b>12</b>
<b>Annex A (informative) Causes of specimen bending and misalignment in fatigue testing machines</b>		<b>17</b>
<b>Annex B (normative) Evaluating uncertainty in the alignment measurement .....</b>		<b>19</b>
<b>Annex C (informative) Method for measuring machine lateral stiffness .....</b>		<b>22</b>
<b>Annex D (informative) Three-strain gauge configuration .....</b>		<b>24</b>
<b>Annex E (informative) Determination of bending contribution due to inherent imperfections in a cylindrical alignment cell device .....</b>		<b>26</b>
<b>Annex F (informative) Numerical example .....</b>		<b>27</b>
<b>Annex G (normative) Alignment gauge -- A method for qualitative assessment of alignment of test systems for cylindrical specimens .....</b>		<b>28</b>
<b>Bibliography .....</b>		<b>30</b>