

# ISO/TS 13399-302:2013-10 (E)

## Cutting tool data representation and exchange - Part 302: Concept for the design of 3D models based on properties according to ISO/TS 13399-3: Modelling of solid drills and countersinking tools

---

<b>Contents</b>		<b>Page</b>
Foreword .....		v
Introduction .....		vii
<b>1</b>	<b>Scope .....</b>	<b>1</b>
<b>2</b>	<b>Normative references .....</b>	<b>1</b>
<b>3</b>	<b>Starting elements, coordinate systems, planes .....</b>	<b>1</b>
3.1	General .....	1
3.2	Reference system .....	2
3.3	Coordinate system at the cutting part .....	2
3.4	MCS coordinate system .....	3
3.5	Planes .....	4
3.6	Cutting reference point (CRP) .....	4
<b>4</b>	<b>Design of the model .....</b>	<b>5</b>
4.1	General .....	5
4.2	Necessary parameters for the connection interface feature .....	6
<b>5</b>	<b>Twist drill .....</b>	<b>6</b>
5.1	General .....	6
5.2	Necessary properties .....	7
5.3	Geometry of the non-cutting part including the connection .....	8
5.4	Geometry of the cutting part .....	8
5.5	Twist drill -- Complete .....	9
<b>6</b>	<b>Step drill .....</b>	<b>10</b>
6.1	General .....	10
6.2	Necessary properties .....	10
6.3	Geometry of the non-cutting part including the connection .....	11
6.4	Geometry of the cutting part .....	11
6.5	Step drill -- Complete .....	12
<b>7</b>	<b>Core drill .....</b>	<b>12</b>
7.1	General .....	12
7.2	Necessary properties .....	13
7.3	Geometry of the non-cutting part including the connection .....	14
7.4	Geometry of the cutting part .....	14
7.5	Core drill -- Complete .....	15
<b>8</b>	<b>Counterbore .....</b>	<b>15</b>
8.1	General .....	15
8.2	Necessary properties .....	16
8.3	Geometry of the non-cutting part including the connection .....	16
8.4	Geometry of the cutting part .....	16
8.5	Counterbore -- Complete .....	17
<b>9</b>	<b>Stepped countersinking tool or tapered countersinking tool .....</b>	<b>18</b>

9.1	General .....	18
9.2	Necessary properties .....	19
9.3	Geometry of the non-cutting part including the connection .....	20
9.4	Geometry of the cutting part .....	20
9.5	Stepped or tapered countersinking tool -- Complete .....	22
10	Spot drill .....	23
10.1	General .....	23
10.2	Necessary properties .....	23
10.3	Geometry of the non-cutting part including the connection .....	24
10.4	Geometry of the cutting part .....	24
10.5	Spot drill -- Complete .....	25
11	Centre drill .....	25
11.1	General .....	25
11.2	Necessary properties .....	27
11.3	Geometry of the non-cutting part including the connection .....	28
11.4	Geometry of the cutting part .....	28
11.5	Centre drill -- Complete .....	29
12	Shell core drills .....	30
12.1	General .....	30
12.2	Necessary properties .....	31
12.3	Geometry of the non-cutting part .....	32
12.4	Geometry of the cutting part .....	33
12.5	Shell core drill -- Complete .....	34
13	Shell counterbore .....	34
13.1	General .....	34
13.2	Necessary properties .....	35
13.3	Geometry of the non-cutting part .....	35
13.4	Geometry of the cutting part .....	35
13.5	Shell counterbore -- Complete .....	35
14	Tapered shell countersinking tool .....	36
14.1	General .....	36
14.2	Necessary properties .....	37
14.3	Geometry of the non-cutting part .....	37
14.4	Geometry of the cutting part .....	38
14.5	Tapered shell countersinking tool .....	38
15	Stepped shell countersinking tool .....	38
15.1	General .....	38
15.2	Necessary properties .....	39
15.3	Geometry of the non-cutting part .....	39
15.4	Geometry of the cutting part .....	40
15.5	Stepped shell countersinking tool complete .....	40
16	Modelling of guide pilots .....	40
16.1	General .....	40
16.2	Necessary properties .....	41
16.3	Guide pilot .....	41
17	Design of details .....	42
17.1	Basis for modelling .....	42
17.2	Contact/clamping surfaces -- Orientation .....	42
17.3	Chamfers, roundings, others .....	43
18	Attributes of surfaces -- Visualization of model features .....	43
19	Structure of design elements (tree of model) .....	43

<b>20</b>	<b>Data exchange model .....</b>	<b>44</b>
	<b>Annex A (informative) Information about nominal dimensions .....</b>	<b>45</b>
	<b>Bibliography .....</b>	<b>46</b>