

# DIN EN ISO 10423:2005-07 (E)

Petroleum and natural gas industries - Drilling and production equipment - Wellhead and christmas tree equipment (ISO 10423:2003); English version EN ISO 10423:2004

---

<b>Contents</b>		<b>Page</b>
Foreword .....		5
Introduction.....		6
<b>1</b>	<b>Scope.....</b>	<b>7</b>
1.1	Purpose .....	7
1.2	Applicability .....	7
1.3	Service conditions .....	8
1.4	Product specification levels (PSL) .....	9
<b>2</b>	<b>Normative references.....</b>	<b>12</b>
<b>3</b>	<b>Terms, definitions and abbreviated terms.....</b>	<b>14</b>
3.1	Terms and definitions .....	14
3.2	Abbreviated terms .....	26
<b>4</b>	<b>Design and performance — General requirements .....</b>	<b>27</b>
4.1	Performance requirements — General .....	27
4.2	Service conditions .....	27
4.3	Design methods .....	29
4.4	Miscellaneous design information .....	33
4.5	Design documentation.....	34
4.6	Design review .....	34
4.7	Design verification .....	34
<b>5</b>	<b>Materials — General requirements.....</b>	<b>34</b>
5.1	General .....	34
5.2	Written specifications.....	34
5.3	Mandrel tubing and casing hangers.....	35
5.4	Bodies, bonnets, end and outlet connections .....	38
5.5	Ring gaskets .....	45
5.6	Test coupons (TC).....	46
5.7	Qualification test coupons (QTC).....	49
5.8	Heat-treating equipment qualification.....	52
5.9	Material qualification.....	52
5.10	Bullplugs and valve-removal plugs.....	52
5.11	Back-pressure valves .....	52
5.12	Pressure-boundary penetrations.....	52
5.13	Wear bushings.....	52
5.14	Hub-end connectors .....	52
<b>6</b>	<b>Welding — General requirements .....</b>	<b>53</b>
6.1	General .....	53
6.2	Non-pressure-containing weldments other than weld overlays (PSL 1 to PSL 3) .....	53
6.3	Pressure-containing fabrication weldments for bodies, bonnets, end and outlet connections, bullplugs, valve-removal plugs and back-pressure valves .....	53
6.4	Pressure-containing repair weldments for bodies, bonnets, end and outlet connections, bullplugs, valve-removal plugs and back-pressure valves .....	58
6.5	Weld overlay for corrosion resistance and/or hard facing and other material surface property controls .....	60

7	Quality control .....	63
7.1	General .....	63
7.2	Measuring and testing equipment .....	63
7.3	Quality control personnel qualifications .....	64
7.4	Quality control requirements .....	64
7.5	Quality control records requirements .....	101
8	Equipment marking .....	106
8.1	Marking requirements .....	106
8.2	Wellhead equipment .....	108
8.3	Connectors and fittings .....	108
8.4	Casing and tubing hangers .....	108
8.5	Valves and chokes .....	109
8.6	Loose connectors [flanged, threaded, other end connectors (OEC) and welded] .....	110
8.7	Other equipment .....	110
8.8	Studs and nuts .....	111
8.9	Christmas trees .....	111
8.10	Valve-removal plugs .....	111
8.11	Bullplugs .....	111
8.12	Back-pressure valves .....	112
9	Storing and shipping .....	112
9.1	Draining after testing .....	112
9.2	Rust prevention .....	112
9.3	Sealing surface protection .....	112
9.4	Assembly and maintenance instructions .....	112
9.5	Ring gaskets .....	112
9.6	Age control of non-metallic materials .....	112
10	Equipment-specific requirements .....	113
10.1	Flanged end and outlet connections .....	113
10.2	Threaded end and outlet connections .....	146
10.3	Studs and nuts .....	152
10.4	Ring gaskets .....	154
10.5	Valves .....	160
10.6	Casing and tubing heads .....	175
10.7	Casing and tubing hangers .....	180
10.8	Tubing-head adapters .....	185
10.9	Chokes .....	187
10.10	Tees and crosses .....	190
10.11	Test and gauge connections for 103,5 MPa and 138,0 MPa (15 000 psi and 20 000 psi) equipment .....	195
10.12	Fluid sampling devices .....	195
10.13	Christmas trees .....	198
10.14	Cross-over connectors .....	198
10.15	Adapter and spacer spools .....	203
10.16	Actuators .....	204
10.17	Lock screws, alignment pins and retainer screw packing mechanisms .....	208
10.18	Other end connectors (OECs) .....	209
10.19	Top connectors .....	210
10.20	Surface and underwater safety valves and actuators .....	211
10.21	Bullplugs .....	216
10.22	Valve-removal plugs .....	219
10.23	Other pressure-boundary penetrations .....	219
10.24	Back-pressure valves .....	220
11	Repair and remanufacture .....	220

<b>Annex A</b> (informative) <b>Purchasing guidelines</b> .....	<b>221</b>
<b>Annex B</b> (informative) <b>US Customary unit tables and data for this International Standard</b> .....	<b>240</b>
<b>Annex C</b> (informative) <b>Method of calculating stud bolt lengths for type 6B and 6BX flanges</b> .....	<b>295</b>
<b>Annex D</b> (informative) <b>Recommended flange bolt torque</b> .....	<b>297</b>
<b>Annex E</b> (informative) <b>Recommended weld groove design dimensions</b> .....	<b>301</b>
<b>Annex F</b> (informative) <b>Performance verification procedures</b> .....	<b>305</b>
<b>Annex G</b> (informative) <b>Design and rating of equipment for use at elevated temperatures</b> .....	<b>339</b>
<b>Annex H</b> (normative) <b>Design and manufacture of surface wellhead running, retrieving and testing tools, clean-out tools and wear bushings</b> .....	<b>342</b>
<b>Annex I</b> (normative) <b>Performance verification procedures for surface safety valves and underwater safety valves</b> .....	<b>347</b>
<b>Annex J</b> (normative) <b>Repair and remanufacture requirements</b> .....	<b>355</b>
<b>Annex K</b> (informative) <b>Recommended specifications for top connectors for christmas trees</b> .....	<b>368</b>
<b>Annex L</b> (normative) <b>Specifications for valve-removal preparations and valve-removal plugs</b> .....	<b>383</b>
<b>Annex M</b> (informative) <b>List of tables and figures</b> .....	<b>399</b>
<b>Bibliography</b> .....	<b>409</b>
<b>Annex ZA</b> (normative).....	<b>410</b>