

INTERNATIONAL
STANDARD

ISO
10423

First edition
1994-07-15

**Petroleum and natural gas industries —
Drilling and production equipment —
Specification for valves, wellhead and
christmas tree equipment**
(standards.iteh.ai)

*Industries du pétrole et du gaz naturel — Équipement de forage et de
production — Spécifications pour vannes, équipement pour tête de puits
et sapin de Noël*
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Reference number
ISO 10423:1994(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 10423 was prepared by the American Petroleum Institute (API) (as Spec 6A, 16th edition) and was adopted, under a special "fast-track procedure", by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum and natural gas industries*, in parallel with its approval by the ISO member bodies.

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Introduction

International Standard ISO 10423:1994 reproduces the content of API Spec 6A, 16th edition, 1989. ISO, in endorsing this API document, recognizes that in certain respects the latter does not comply with all current ISO rules on the presentation and content of an International Standard. Therefore, the relevant technical body, within ISO/TC 67, will review ISO 10423:1994 and reissue it, when practicable, in a form complying with these rules.

This International Standard is not intended to obviate the need for sound engineering judgement as to when and where this International Standard should be utilized and users of this standard should be aware that additional or differing requirements may be needed to meet the needs for the particular service intended.

Standards referenced herein may be replaced by other international or national standards that can be shown to meet or exceed the requirements of the referenced standards.

Appendices A, C, D, E and H to this document should not be considered as requirements. They are included only as guidelines or information.

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Petroleum and natural gas industries — Drilling and production equipment — Specification for valves, wellhead and christmas tree equipment

1 Scope

This International Standard provides for the availability of safe, dimensionally and functionally interchangeable wellhead and christmas tree equipment by laying down the requirements for performance, design, materials, testing, inspections, welding, marking, handling, storing and shipping.

2 Requirements **iTeh STANDARD PREVIEW** (standards.iteh.ai)

Requirements are specified in:

"API Specification 6A (Spec 6A), 16th edition, October 1, 1989 — *Specification for Wellhead and Christmas Tree Equipment*", <https://standards.iteh.ai/catalog/standards/sist/85c0b2c1-7e49-4d4b-90c6-9795480adc5e/iso-10423-1994>

adopted as ISO 10423.

For the purposes of international standardization, however, modifications shall apply to specific clauses and paragraphs of publication API Spec 6A. These modifications are outlined below.

Page 80

Information given in the POLICY is relevant to the API publication only.

Page 83

Information given in the PREFACE and FOREWORD is relevant to the API publication only.

Page 87

Table 104.1

The referenced standards listed hereafter are available under the following ISO references:

API Std 5B as ISO 10422
API Spec 5L as ISO 3183-1 (under publication)
MIL-Std 105 as ISO 2859-1

Page 89

Abbreviations

Substitute the unit symbol cm^3 for the abbreviation cc to express a volume in cubic centimetres ($1 \text{ cm}^3 = 10^{-3} \text{ dm}^3$ or litre).

Page 89, page 139 and other pages

Information relating to the use of the API monogram is relevant to the API publication only.

Page 110

Subclause 503.3a(3)(b)

In the title of paragraph (b), the unit symbol for kilogram shall be amended to read **Vickers 10 kg method**.

Page 116 et seqq.

Quality control

Acceptance criteria for quality control requirements shall be in accordance with ISO 2859-1. The reference to MIL-STD-105D, therefore, shall be replaced by a reference to the ISO standard.

Page 219

Appendix B — Metric conversions

Throughout publication API Spec 6A and its Supplement 1, the conversion of English units shall be made in accordance with ISO 31. The content shall be replaced by the following.

LENGTH	1 inch (in)	= 25,4 mm (exactly)
	1 foot (ft)	= 304,8 mm
PRESSURE	1 pound-force per square inch (lbf/in ²) or psi	= 6 894,757 Pa
	NOTE 1 bar = 10 ⁵ Pa	
STRENGTH OR STRESS	1 pound-force per square inch (lbf/in ²)	= 6 894,757 Pa
IMPACT ENERGY	1 foot-pound force (ft·lbf)	= 1,355 818 J
TORQUE	1 foot-pound force (ft·lbf)	= 1,355 818 N·m
TEMPERATURE	The following formula was used to convert degrees Fahrenheit (°F) to degrees Celsius (°C):	
	$^{\circ}\text{C} = 5/9 (^{\circ}\text{F} - 32)$	
VOLUME	1 cubic foot	= 0,028 316 8 m ³ or 28,316 8 dm ³
MASS	1 pound (lb)	= 0,453 592 37 kg (exactly)
FORCE	1 pound-force (lbf)	= 4,448 222 N


Specification for Wellhead and Christmas Tree Equipment

API SPECIFICATION 6A (SPEC 6A)
SIXTEENTH EDITION, OCTOBER 1, 1989

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 American National Standard

ANSI/API Spec 6A

American Petroleum Institute
1220 L Street, Northwest
Washington, DC 20005



NOTICE

**As of February 1, 1992, Spec 6A is accompanied
with Supplements 1 and 2 under separate cover.**

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This document is intended to supplement rather
than replace individual engineering judgment.

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Supplement 1
(October 1, 1991)


Specification for Valves and Wellhead Equipment

API SPECIFICATION 6A (SPEC 6A)
SIXTEENTH EDITION, OCTOBER 1, 1989

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Preface

This supplement covers corrections and changes in API Spec 6A (Sixteenth Edition, October 1, 1989): *Specification for Wellhead and Christmas Tree Equipment* approved by letter ballots dated October 16, 1989, January 23, 1990 and October 11, 1990.

This supplement shall become effective on the date printed on the cover but may be used voluntarily from the date of distribution.

Page 6, Par. 101. *Revise the second paragraph to read:*

The technical content provides requirements for performance, design, materials, testing, inspection, welding, marking, handling, storing and shipping by the manufacturer. This specification does not apply to field use or field testing of wellhead and christmas tree equipment.

Page 9, Table 104.1. *Revise table and renumber.*

Change "5A" to "5CT," change revision date to March 15, 1988.

Replace ASTM A370 with ASTM A703/A703 M-87b: Steel Castings, General Requirements for Pressure Containing Parts.

Page 9, Table 104.1, Item 5. *Change revision date to May 31, 1985.*

Page 9, Par. 106. *Change "shall not be considered as" to "are not."*

Page 12, Corrosion Resistant Alloy. *Revise "molybdenum" to 'molybdenum.'*

Page 13. *Add the following definition:*

Heat Treat Lot — Material placed on loading or carrying devices and moved as a batch through one heat treatment cycle.

Page 15, Par. 301.1. *Insert the following as the third sentence:*

Other requirements include load capability, cycles, and operating force or torque.

Page 15. *Delete Par. 301.2 thru 301.8.*

Page 16, Par. 302.2b. *Change "The design shall take into account. . ." to "The design shall consider . . ."*

Page 16, Par. 302.3a. *Delete "or exceed the"; add ", including metallics" following "materials" in line two. Delete the first sentence of the second paragraph.*

Page 16, Par. 303.3. *Change title to "Other End Connectors, Bodies and Bonnets."*

Page 16, Par. 303.3. *Replace with the following.*

Other end connectors, bodies, and bonnets shall be designed in accordance with one of more of the following methods:

Page 16, Par. 303.3 Note. *Replace first sentence with the following:*

In the event stress levels calculated by these methods exceed the allowable stresses, other methods identified by the manufacturer shall be used to justify these stresses.

Page 16, Table 302.3. *In second column heading change "Flange" to "End & Outlet Connections."*

Page 16, Table 302.3. *Add double asterisk (**) for FF service to Stainless Steel in second column.*

Page 16, Table 302.3. *Change "Stainless** steel" to "Stainless steel**."*

Page 17, Par. 303.3d(3)(b). *In second sentence change "anticipated maximum allowable working pressure" to "rated working pressure."*

Page 18, Par. 303.4. *Formula should read:*

$$S_A = 0.83 S_y$$

Page 18, Par. 304.3. *Tolerances should read ±.*

Page 18, Par. 307. *Change "are required to" to "shall."*

Page 21, Par. 403.5a. *Change "the required tests . . . acceptable material" to "the tests shall be performed as follows:"*

Page 21, Par. 403.5b(2). *In second paragraph change "specification" to "specified."*

Page 21, Par. 403.5c(2). *In third paragraph change "specification" to "specified."*

Page 21, Par. 404.1b. *In second paragraph change "cannot" to "shall not."*

Page 22, Par. 404.2d. *Add "PSL 1-4" preceding the paragraph title "Impact Testing."*

Page 24, Par. 404.4c(2). *In third paragraph, sixth line, change "on" to "no."*

Page 24, Par. 404.5b. *In fourth line change "used" to "required."*

Page 24, Par. 404.5c. *Add the following paragraph:*

When the manufacturer specifies a material for PSL 3 or 4 with chemical composition requirements per a recognized industry standard the material shall meet the tolerance ranges of the referenced industry standard. When the manufacturer specifies a material chemistry not covered by a recognized industry standard, the tolerance ranges shall meet Table 404.7. The above tolerance requirements only apply to materials covered by Table 404.5."

Page 24, Table 404.5. *In title replace "PSL 4" with "PSL 2-4."*

Page 25, Table 404.7. *In note change "valves" to "values."*

Page 25, Par. 405.2c. *Add:*

CRA — Hardness shall meet the manufacturer's written specification.

Page 25, Par. 405.3b(4). For Oil quenching delete "greater than" and add "minimum" following F.

Page 25, Par. 406.1. In fourth paragraph, lines two and six, change "may" to "shall." In fifth paragraph change "may" to "shall."

Page 26, Par. 406.2c. Replace "ASTM A370, Figure 3" with "ASTM A703, Figure 1."

Page 26, Par. 406.2c Note. Change "ASME Section VII" to "ASME Section VIII."

Page 26, Par. 406.4b(2). Replace with the following:

406.4b(2). Methods. Hardness testing shall be performed in accordance with procedures specified in ASTM E10. Other test methods may be used for CRA's provided they are converted to Brinell.

Page 27, Par. 407.1. In second paragraph, third line change the second "of" to "at."

Page 27, Par. 407.1. Replace the fourth paragraph with the following:

When the QTC is a trepanned outlet or a prolongation removed from a production part the QTC shall qualify only the same production parts. When the QTC is a sacrificial production part, it shall qualify only the same production parts.

Page 27, Par. 407.2b. Change "Figure 407.1" to "Figure 406.1."

Page 27, Par. 407.2c(3) Note. Change "Section VII" to "Section VIII."

Page 31, Par. 503.1e(4). Replace with the following:

Preheating of assemblies or parts when required by the WPS shall be performed to manufacturer's written procedures.

Page 31, Par. 503.3a(3)(a). Add the word "as" between "be" and "shown."

Page 33, Par. 504.1e. Delete the word "adequate."

Page 33, Par. 505.1b(1)(a). In the first paragraph, fourth line, add the words "by the manufacturer" after specified.

Page 34, Par. 505.1b(1)(c). In second paragraph add "for required hardness test locations" after "505.1."

Page 34, Par. 505.1c(1). Delete the words "However" and "adequate."

Page 34, Par. 505.2d. Renumber to 505.3 and renumber 505.2d(1) to 505.3a and 505.2d(2) to 505.3b.

Page 34, Par. 505.2d(2). Delete the words "however" and "adequate."

Page 35, Par. 603.2b(7). Delete

"When appropriate the following additional information shall be provided.

Page 36, Par. 605.2a(3). Replace with the following:

LOOSE CONNECTORS. No hardness test is required.

BODIES, BONNETS AND END AND OUTLET CONNECTIONS. 1000, 2000, 3000 AND 5000 PSI (6,9; 13,8; 20,7; 34,5 MPa) W.P. Hardness test per MIL Std 105D, Level II, 4.0 AQL.

BODIES, BONNETS AND END AND OUTLET CONNECTIONS. 10,000, 15,000, 20,000 PSI (69,0; 103,5; 138,0 MPa) W.P. Each part shall be hardness tested.

METHODS. Hardness testing shall be performed in accordance with procedures specified in ASTM E10.

- a) Hardness conversion to other measurement units shall be in accordance with ASTM E-140.
- b) Tests shall be performed at a location determined by the manufacturer's specifications and following the last heat treatment cycle (including all stress relieving heat treatment cycles) and all exterior machining.

e) When bodies, end and outlet connections have different API material designations, each part shall be tested.

d) Acceptance Criteria. Parts shall exhibit the following minimum values.

ISO 10423: API Material Designations	Brinell Hardness
36K, 45K	HB140
60K	HB174
75K	HB197

e) Parts not complying with these minimum hardness levels are acceptable when the measured value satisfies the following requirement.

The average tensile strength, as determined from the tensile tests results, shall be used with the QTC hardness measurements in order to determine the minimum acceptable hardness value for production parts fabricated from the same heat. The minimum acceptable hardness value for any part shall be determined by:

$$H_{BC} = \frac{UTS}{UTS_{QTC}} (HB_{QTC})$$

Where:

H_{BC} = Minimum acceptable Brinell hardness for part after the final heat treatment cycle (including stress relieving cycles).

UTS = Minimum acceptable ultimate tensile strength for the applicable material designation.

UTS_{QTC} = Average ultimate tensile strength determined from the QTC tensile tests.

HB_{QTC} = The average of the Brinell hardness values observed among all tests performed on the QTC.

Page 37, 44, 45, 46 and 47, Tables 605.1, 3, 4, 5 and 6. Add Par. 605.1e in columns 2, 3, 4, and 5 and add MR0175 to column 1.

Page 38, Par. 605.2a(4). In third paragraph change "5A" to "5CT."

Page 38, Par. 605.2b(7). Change "605.2c(8)" to "605.2b(8)" and "605.2c(9)" to "605.2b(9)."

Page 42, Par. 605.2c(13). In second line change "must" to "shall."

Page 43, Par. 605.3a. Add the following:

The requirements shown for stems are the same as for bodies and bonnets except that material properties shall conform to the requirements of Section 401 and Section 402.

Page 43, Par. 605.5. Add the following:

The requirements shown for V.B.S.M. are the same as for bodies and bonnets except material properties shall conform to the requirements of Section 401 and Section 402 and volumetric NDE is not required.

Page 46, Par. 605.7a(5). Replace the fourth paragraph with the following:

For NACE Class I and II bolting, see NACE Std. MR0175.

Page 48, Par. 605.8d(4). In third paragraph change "must" to "shall."

Page 51, Table 605.11. In row labeled "Traceability" and column labeled "PSL 4" delete "605.9e(8)".

Page 54, Par. 605.10a(4). Replace with the following:

Sampling. Each part shall be hardness tested.
Methods. Hardness testing shall be performed in accordance with procedures specified in ASTM E-10 or ASTM E-18. Tests shall be performed at a location determined by the manufacturer's specifications and following the last heat treatment (including all stress relieving heat treatment cycles) and all exterior machining.
Acceptance Criteria. Per manufacturer's specification.

Page 57, Par. 606.2a(1). Revise as follows:

Revise first sentence to read:

Body, Bonnet, End and Outlet Connections, Stem, Mandrel Tubing Hanger, and Mandrel Casing Hanger Records for:

Delete (TC) in three places.

Page 57, Par. 606.2a(2). Revise as follows:

Revise first sentence to read:

Body, Bonnet, End and Outlet Connections, Stem, Mandrel Tubing Hanger, Valve Bore Sealing Mechanisms, and Mandrel Casing Hanger Records for;

Page 58, Par. 606.2a(3). Revise third paragraph to read:

All records required for PSL 2 are also required for PSL 3.

Change (.) following "Welding Process Records" to a colon (:). Change "Filler Materials" to "Filler Material Type."

Page 58, Par. 606.2a(3). Add the following:

Dimensional Verification Records [those activities required by 605.2c(4)].

Page 58, Par. 606.2a(4). Delete "Dimensional Verification Records."

Page 60, Par. 701.2a, 701.2b and 701.2c. Add GP (group) number marking to the examples after PR; 5, 2 and 5, respectively.

Page 60, Par. 702.1. Change "to conform" to "in conformance."

Page 60, Par. 702.2. Change "to conform" to "in conformance."

Page 66, Par. 901.2c(1). In line six change "must" to "shall."

Page 67, Table 901.2. Change the max bore dimension for the 5/8 flange to 5.16.

Page 69, Table 901.3. Change the max bore dimension for the 5/8 flange to 5.16.

Page 71, Table 901.4. Change the max bore dimension for the 5/8 flange to 5.16.

Page 81, Table 901.12. In upper right figure delete "(0.8)" and on "T" change "X0.12" to "+0.12."

Page 83, Table 901.13. Change max bore of 4 1/16 x 4 1/4 flange to 4.28.

Page 87, Figure 902.1. Revise to show "q" as a reference dimension.

Page 87, Table 902.1. Revise column 7 to show "q" Depth at two (2) decimal places (.xx).

Page 92, Par. 904.3b(2). Delete this paragraph.

Page 92, Par. 904.3b(3). Delete this paragraph.

Page 96, Par. 905.2. Add "and Table 905.1" following "301."

Page 98, Table 905.4. Change "7 x 5/8" to 7 1/16 x 5/8."

Page 104. Add the following tables.

**TABLE 905.13
REGULAR AND FULL OPENING FLANGED
SWING AND LIFT CHECK VALVES
10,000 PSI (69,0 MPa) RATED
WORKING PRESSURE**

Nominal Size		End to End Dimension ± 0.06 (1,5)	
in.	(mm)	in.	(mm)
1 13/16	(46)	18.25	(463,6)
2 1/16	(52)	20.50	(520,7)
2 9/16	(65)	22.25	(565,2)
3 1/16	(78)	24.38	(619,3)
4 1/16	(103)	26.38	(670)
5/8	(130)	29.00	(736,6)
7 1/16	(179)	35.00	(889)

TABLE 905.14
REGULAR AND FULL OPENING FLANGED
SWING AND LIFT CHECK VALVES
15,000 PSI (103,4 MPa) RATED
WORKING PRESSURE

Nominal Size		End to End Dimension ± 0.06 (1,5)	
in.	(mm)	in.	(mm)
1 ¹³ / ₁₆	(46)	18.00	(457,2)
2 ¹ / ₁₆	(52)	19.00	(482,6)
2 ⁹ / ₁₆	(65)	21.00	(533,4)
3 ¹ / ₁₆	(78)	23.56	(598,4)
4 ¹ / ₁₆	(103)	29.00	(736,6)

TABLE 905.15
REGULAR AND FULL OPENING FLANGED
SWING AND LIFT CHECK VALVES
20,000 PSI (138 MPa) RATED
WORKING PRESSURE

Nominal Size		End to End Dimension ± 0.06 (1,5)	
in.	(mm)	in.	(mm)
1 ¹³ / ₁₆	(46)	21.00	(533,4)
2 ¹ / ₁₆	(52)	23.00	(584,2)
2 ⁹ / ₁₆	(65)	26.50	(673,1)
3 ¹ / ₁₆	(78)	30.50	(774,7)

Page 105, Par. 906.2. Change "must" to "shall."

Page 106, Par. 907.1b, Group 1(a). Change "must" to "shall."

Page 107, Table 906.1. Delete footnote 3.

Page 108, Par. 907.1b, Group 2(a). Change "must" to "shall."

Page 108, Par. 907.1b, Groups 3(a), (b) and (c). Change "must" to "shall," four places total.

Page 108, Par. 907.2a(3). Change "must" to "shall" in line 4.

Page 108, Par. 907.2a(4). Change "must" to "shall" in lines 4, 7, 9 and 11.

Page 108, Par. 907.2a(5). Change "must" to "shall" in lines 4, 6, 11, 12 and 14.

Page 108, Par. 907.2b(1). Change "must" to "shall" in line 3.

Page 109, Par. 907.2b(3). Change "must" to "shall" in line 4.

Page 109, Par. 907.2b(4). Change "must" to "shall" in lines 4, 8, 10 and 11.

Page 109, Par. 907.2b(5). Change "must" to "shall" in lines 4, 6, 11, 12 and 14.

Page 109, Par. 907.2b(6). Change "must" to "shall" in lines 4, 6, 13, 14 and 16.

Page 110, Par. 907.3g. Change "5" to "5CT" in line 6.

Page 110, Par. 907.5. Replace with the following:

Welding shall conform to the requirements of Section 500.

Page 110, Par. 908.2a. Change "must" to "shall" in line 2.

Page 110, Par. 908.2b. Change "must" to "shall" in line 2.

Page 110, Table 908.1. Change "must" to "shall."

Page 111, Par. 908.3f. Change "must" to "shall" in lines 2.

Page 111, Par. 908.6b. Delete this paragraph.

Page 111, Par. 909.2. Change "must" to "shall" in line 2.

Page 111, Table 908.2. Change "must" to "shall."

Page 112, Par. 909.3b. Change "will" to "shall" in lines 2 and 6.

Page 112, Par. 909.3c(2). Change "will" to "shall" in line 5.

Page 116, Table 910.2. Add: 3 ¹/₁₆" \times 1 ¹³/₁₆" \times 6.31 \times 6.31 to the 15,000 rated W.P. columns. Also, in the 15,000 rated W.P. column, add fractions 1 ³/₁₆", ¹/₁₆", ⁹/₁₆", ¹/₁₆, and ¹/₁₆ for 4 ¹/₁₆" outlet B.

Page 116, Table 910.2. Change "Flanged" to "Flange" in title.

Page 118, Par. 911.4. Replace "capable of withstanding" with "rated for."

Page 118, Par. 912.1. Change "must" to "shall" in line 3.

Page 118, Par. 912.2. Change "must" to "shall" in line 2.

Page 118, Par. 912.3a. Add the word "or" following "902" in line 2; change the comma (,) following 918 to a period (.) in line 3 and delete the remainder of the sentence following "918."

Page 118/119. Table 912.1 and 914.1. Change "must" to "shall."

Page 122, Par. 915.2b(3). Capitalize "L" in line 2.

Page 122, Par. 915.2d. Change "will" to "shall" in line 8.

Page 122, Par. 915.3c. Change "parts" to "elements" in line 1.

Page 124, Par. 916.1. Change "if" to "when" in line 6 and "must" to "shall" in line 8.

Page 124, Par. 916.2. Delete "operating" in line 2.

Page 124, Par. 916.3a. Change "must" to "shall" in line 6.

Page 124, Par. 916.3d. Change "must" to "shall" in line 2.

Page 124, Par. 916.3e. Change "must" to "shall" in line 6.

Page 125, Par. 916.4d. Change "must" to "shall" in line 4.

Page 125, Par. 916.5a(2). Change "will" to "shall" in line 6.

Page 126, Par. 917.2. Change "must" to "shall" in line 2.

Page 126, Par. 918.2. Change "must" to "shall" in line 2.

Page 126, Table 917.1. Change "must" to "shall."

Page 126, Table 918.1. Change "must" to "shall," three places.

Page 127, Section 1000. Add the following Section 1000.

Page 138, Figure A1. Delete "10,000 psi Test Pressure" in title.

Page 139, Figure A2. Delete "15,000 psi Test Pressure" in title.

SECTION 1000 REPAIR AND REMANUFACTURE REQUIREMENTS

DEFINITIONS To be added to Section 200 in Spec 6A.

Date of Repair/Remanufacture — The date of repairer's/remanufacturer's final acceptance of finished equipment.

Remanufacture — An activity involving disassembly, reassembly, and testing of API Spec 6A equipment with or without the replacement of parts where machining, welding, heat treating, or other manufacturing operations are employed. Remanufacture does not include the replacement of bodies.

Replacement Part — Parts used to repair/remanufacture a piece of equipment that meets the API Spec 6A requirement for the applicable repair/remanufacture Specification Level (RL). See 1002.

Repair — An activity involving disassembly, reassembly, and testing of API Spec 6A equipment with or without the replacement of parts. Repair does not include machining, welding, heat treating, other manufacturing operations or the replacement of bodies.

Repair Level — Generic term for the level that equipment will be repaired or remanufactured to under this specification. See 1002.

Repairer/Remanufacturer — The principal agent in the repair and remanufacture of API Spec 6A equipment who chooses to be in compliance with API Spec 6A.

Manufacturing Operation — An activity involving but not limited to the machining, welding, heat treating or other processes utilized to produce a finished product.

SECTION 1000 REPAIR AND REMANUFACTURE REQUIREMENTS

1001. GENERAL. This section was formulated to provide for the repair and remanufacture of wellhead and christmas tree equipment originally manufactured to API 6A 15th Edition or later editions. It is a requirement of this section that for equipment repaired or remanufactured in accordance with this specification to be marked with the API monogram (See Section 1008.1a). It shall have originally been marked with the monogram in addition to have been manufactured to API Specification 6A 15th Edition or later editions PSL 1 or higher.

1002. REPAIR/REMANUFACTURE LEVELS (RL). This section establishes requirements for the four repair/remanufacture levels. These four RL designations define different levels of technical requirements for the equipment being repaired/remanufactured.

1. RL 1 — Any API 6A equipment identified as PSL 1-4 which is repaired/remanufactured to meet the requirements of API 6A RL 1.

2. RL 2 — Any API 6A equipment identified as PSL 2-4 which is repaired/remanufactured to meet the requirements of API Spec 6A RL 2.

3. RL 3 — Any API 6A equipment identified as PSL 3-4 which is repaired/remanufactured to meet the requirements of API 6A RL 3.

4. RL 4 — Any API 6A equipment identified as PSL 4 which is repaired/remanufactured to meet the requirements of API 6A RL 4.

1003. DESIGN. For RL1-4, the design shall meet the requirements of the applicable PSL's and PR's in accordance with Sections 300 and 900 of this specification.

1004. MATERIAL FOR REPLACEMENT PARTS. Material requirements for repair level RL-1 thru RL-4 shall meet the requirements for materials specified by Section 400 of this specification.