

# API Ballot 6581

## TG DSE

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<b>Work Item Number</b>	7048 and 7054
<b>Title of Work Item</b>	API Spec 7-2, Addendum 3
<b>Ballot Revision Level</b>	1
<b>Type of Ballot</b> (Initial, Comment, Comment resolution (reference API ballot#), 1 <sup>st</sup> Re-ballot, 2 <sup>nd</sup> Re-ballot, etc.)	Initial
<b>Submitter Name(s)</b>	Tony Collins
<b>API Document Modified</b>	Spec 7-2 Edition 2
<b>Impacted Documents</b>	API SPEC 7-2, <i>Threading and Gauging of Rotary Shouldered Connections</i>
<b>Revision Key</b>	Revisions are noted with yellow highlight

**Work Item Charge:** to publish work items 7048 and 7054

**Ballot Rationale:** work items have been approved but need publication to go into effect

**Ballot Text:** Draft document attached

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**Date of Issue:** XXXX, 2024 (Monogram Program Effective Date: 6 months after publication)

**Affected Publication:** API Specification 7-2, Threading and Gauging of Rotary Shouldered Connections, Second Edition, January 2017

## ADDENDUM 3

*Section 6.2, third paragraph, shall be changed to the following:*

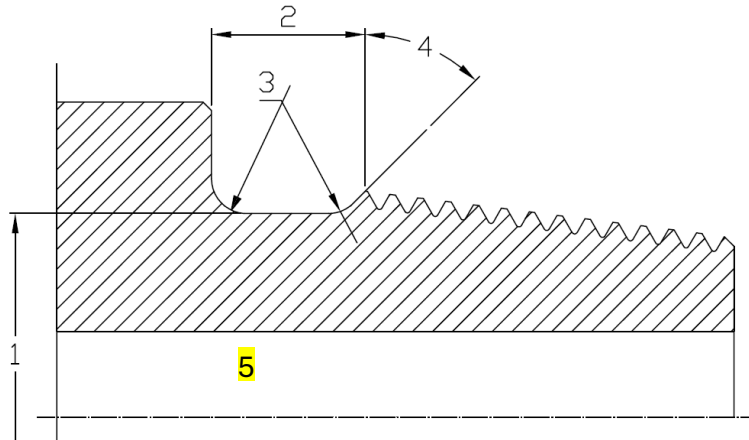
Stress-relief grooves are recommended for use only on pin threads with pitch diameter, C, at gauge point greater than 89 mm (3.5 in) and a pin ID no larger than the Recommend Max Pin ID with Stress Relief Groove given in Table B.6 (C.6). This is to limit the reduction in cross section to less than 12.5%, or 15% for pin threads with a pitch diameter, C at gauge point less than 102 mm (4.0 in)

*Section 6.2, fifth paragraph, shall be changed to the following:*

Stress-relief grooves on pins cause a slight reduction in the tensile strength and torsional strength of the connection. However, under most conditions this reduction in cross-sectional area is more than offset by the reduction in fatigue failures. The limits here are based on typical experience. The user should consider the benefit of SRG to fatigue life versus the loss of strength for their application.

Figure 8; Add dimension 5 to inside diameter

Add to key **5** Recommended Max Pin ID with Stress relief Groove



**Key**

- |   |  |   |   |
|---|--|---|---|
| 1 | stress-relief groove diameter, $D_{SRG}$ ,<br>1.6 $\mu\text{m}$ (63 $\mu\text{in.}$ ) $R_a$ finish | 3 | radius 6.4 $\pm$ 0.4 mm (0.25 in. $\pm$ 0.016 in.),<br>1.6 $\mu\text{m}$ (63 $\mu\text{in.}$ ) $R_a$ finish, blended with $D_{SRG}$ |
| 2 | groove length, $L_{SRG}$ ,<br>18.26 to 26.19 mm (0.719 to 1.031 in.)                               | 4 | 45° ref   |

**5** Recommended Max Pin ID with Stress relief Groove

NOTE 1 The radius of Key 3 may undercut the shoulder if it does not reduce the area of the sealing face.

NOTE 2 See Table B.6 (C.6) for dimensions.

**7.6 Add third paragraph**

Thread height shall be acceptable if the deviation from the standardization on the template falls within  $+0.02/-0.07$  mm ( $+0.001/-0.003$  in.).

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Table B.2 Column 2

root flat width **add tolerance**  $F_r \pm 0.05$

root flat width	$F_r \pm 0.05$	—	—	—	—	—	1.19
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table B.6 **add column 8**

1	2	3	4	5	6	7	8
Connection Size and Style	Box Boreback Contour			Box Groove		Diameter of Pin Groove	Recommend Max Pin ID with Stress Relief Groove
	Cylinder Diameter $D_{CB}$ +0.400	Depth to Last Thread Scratch $L_X$ reference	Depth to End of Cylinder $L_{CYL}$ $\pm 6.25$	Diameter of Box Groove $D_{BG}$ +0.79 0	Depth to Start of Box Groove $L_{BG}$ 0 -3.18		
NC35	82.15	82.55	133.36	84.54	85.85	82.06	57.94
NC38	88.12	88.90	139.71	90.48	91.94	89.10	65.10
NC40	92.87	101.60	152.41	94.85	104.64	95.80	65.89
NC44	101.61	101.60	152.41	103.59	104.64	104.57	74.63
NC46	106.76	101.60	152.41	109.15	104.64	109.88	80.16
NC50	117.48	101.60	152.41	119.46	104.64	120.44	91.29
NC56	121.85	114.30	165.11	123.04	117.34	134.03	98.43
NC61	132.95	127.00	177.81	134.14	130.04	148.31	113.51
NC70	152.00	139.70	190.51	153.19	142.74	170.53	136.53
3 1/2 REG	—	—	—	—	—	—	—
4 1/2 REG	94.47	95.25	146.06	96.04	98.55	101.93	57.94
5 1/2 REG	114.31	107.95	158.76	114.31	111.25	123.67	87.33
6 5/8 REG	134.14	114.30	165.11	134.93	117.34	137.59	105.56
7 5/8 REG	148.82	120.65	171.46	148.82	123.95	161.26	127.00
8 5/8 REG	172.24	123.95	174.76	172.24	127.00	185.44	151.61
5 1/2 FH	129.77	114.30	165.11	130.97	117.34	133.35	101.60
6 5/8 FH	153.60	114.30	165.11	154.39	117.34	156.94	126.21

NOTE See Figures 7, 8, and 9 for meaning of dimensions.

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**Table B.7** change values in columns 4, 5 and 8 as noted

1	2	3	4	5	6	7	8
Thread Form	Taper $T$ mm/mm	Threads per 25.4 mm $n$	Compensated Lead Parallel to Taper <sup>a</sup> $L_{ct}$	Ball-point Diameter for Taper and Lead $d_b$ $\pm 0.05$	Thread Height Compensated for Taper <sup>b</sup> $h_{cn}$ $+0.02/-0.08$	Thread Height for template <sup>b</sup> $h_{cn}$	Ball-point Diameter for Thread Height $d_{bh}$ $\pm 0.05$
V-038R	1/6	4	6.37201	3.66	3.09	3.08748	1.83
V-038R	1/4	4	6.39942	3.66	3.06670	3.06670	1.83
V-040	1/4	5	5.11953	2.92	2.97	2.97400	0.86
V-050	1/4	4	6.39942	3.67	3.72	3.71751	1.12
V-050	1/6	4	6.37202	3.67	3.72	3.74345	1.12
V-055	1/8	6	4.24160	2.44	1.42	1.41788	1.83

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Table C.2

root flat width **add tolerance**  $F_r \pm 0.002$

root flat width	$F_r \pm 0.002$	—	—	—	—	—	0.047
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table C.6 add column 8 as noted

1	2	3	4	5	6	7	8
Connection Size and Style	Box Boreback Contour			Box Groove		Diameter of Pin Groove	Recommend Max Pin ID with Stress Relief Groove
	Cylinder Diameter	Depth to Last Thread Scratch	Depth to End of Cylinder	Diameter of Box Groove	Depth to Start of Box Groove		
	$D_{CB}$ $+0.016$ 0	$L_X$ reference	$L_{CYL}$ $\pm 0.25$	$D_{BG}$ $+0.031$ 0	$L_{BG}$ 0 $-0.125$	$D_{SRG}$ 0 $-0.031$	
NC35	3.234	3.25	5.25	3.328	3.38	3.231	2.281
NC38	3.469	3.50	5.50	3.562	3.62	3.508	2.563
NC40	3.656	4.00	6.00	3.734	4.12	3.772	2.594
NC44	4.000	4.00	6.00	4.078	4.12	4.117	2.938
NC46	4.203	4.00	6.00	4.297	4.12	4.326	3.156
NC50	4.625	4.00	6.00	4.703	4.12	4.742	3.594
NC56	4.797	4.50	6.50	4.844	4.62	5.277	3.875
NC61	5.234	5.00	7.00	5.281	5.12	5.839	4.469
NC70	5.984	5.50	7.50	6.031	5.62	6.714	5.375
3 1/2 REG	—	—	—	—	—	—	—
4 1/2 REG	3.719	3.75	5.75	3.781	3.88	4.013	2.281
5 1/2 REG	4.500	4.25	6.25	4.500	4.38	4.869	3.438
6 5/8 REG	5.281	4.50	6.50	5.312	4.62	5.417	4.156
7 5/8 REG	5.859	4.75	6.75	5.859	4.88	6.349	5.000
8 5/8 REG	6.781	4.88	6.88	6.781	5.00	7.301	5.969
5 1/2 FH	5.109	4.50	6.50	5.156	4.62	5.250	4.000
6 5/8 FH	6.047	4.50	6.50	6.078	4.62	6.179	4.969
NOTE See Figures 7, 8, and 9 for meaning of dimensions.							

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Table C.7 change values in column 4 as noted

1	2	3	4	5	6	7	8
Thread Form	Taper $T$ in./ft	Threads per inch $n$	Compensated Lead parallel to taper <sup>a</sup> $L_{ct}$	Ball-point Diameter for Taper and Lead $d_b$ $\pm 0.002$	Thread Height Compensated for Taper <sup>b</sup> $h_{cn}$ $+0.001/-0.003$	Compensated Thread Height for Template <sup>b</sup> $h_{cn}$	Ball-point Diameter for Thread Height $d_{bh}$ $\pm 0.002$
V-038R	2	4	0.250867	0.144	0.122	0.121554	0.072
V-038R	3	4	0.251946	0.144	0.121	0.120736	0.072
V-040	3	5	0.201556	0.115	0.117	0.117087	0.034
V-050	3	4	0.251946	0.144	0.146	0.146359	0.044
V-050	2	4	0.250867	0.144	0.147	0.147380	0.044
V-055	1.5	6	0.166992	0.096	0.056	0.055822	0.072

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Table K.2 Column 2

root flat width **add tolerance**  $F_r \pm 0.05$

root flat width	$F_r \pm 0.05$	0.86	0.86	1.42	1.70	1.73
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table K.6 add column 8

1	2	3	4	5	6	7	8
Connection Size and Style	Box Boreback Contour			Box Groove		Diameter of Pin Groove	Recommend Max Pin ID with Stress Relief Groove
	Cylinder Diameter $D_{CB} \begin{smallmatrix} +0.4 \\ 0 \end{smallmatrix}$	Depth to Last Thread Scratch $L_X$ ref	Depth to End of Cylinder $L_{CYL} \pm 6.35$	Diameter of Box Groove $D_{BG} \begin{smallmatrix} +0.79 \\ 0 \end{smallmatrix}$	Depth to Start of Box Groove $L_{BG} \begin{smallmatrix} 0 \\ -18.3 \end{smallmatrix}$		
NC77	166.30	152.40	203.20	167.49	155.58	188.01	154.79
3 1/2 FH	81.77	82.55	133.35	83.34	85.72	85.90	50.80
4 1/2 FH	100.41	88.90	139.70	102.01	92.07	106.17	62.71
5 1/2 IF	144.48	114.30	165.10	146.46	117.47	149.58	121.44
6 5/8 IF	171.46	114.30	165.10	173.44	117.47	176.55	149.23
4 OH SW	105.57	88.90	139.70	109.88	92.07	105.81	77.80
4 1/2 OH LW	115.09	82.55	133.35	119.23	85.72	114.35	86.51
4 1/2 OH SW	115.09	82.55	133.350	119.23	85.72	114.35	86.51
3 1/2 XH	—	—	—	87.33	79.37	83.92	59.54
3 1/2 H90	90.48	88.90	139.70	93.68	92.07	92.48	65.10
4 H90	98.43	95.25	146.05	102.39	98.42	102.00	66.68
4 1/2 H90	106.38	101.60	152.40	109.53	104.77	110.49	76.20
5 H90	111.92	107.95	158.75	115.50	111.12	117.34	83.34
5 1/2 H90	119.08	107.95	158.75	122.23	111.12	124.23	90.50
6 5/8 H90	133.76	114.30	165.10	137.32	117.47	140.10	107.16
7 H90	133.76	127.00	177.80	136.53	130.17	151.00	115.90
7 5/8 H90	152.41	142.88	193.68	154.79	146.05	173.58	139.70
8 5/8 H90	171.46	155.58	206.38	173.84	158.75	195.80	161.93
3 1/2 SL H90	—	—	—	95.36	71.42	86.36	53.98
GOST Z-161	143.77	114.30	165.10	144.86	117.47	147.29	115.90
GOST Z-189	171.28	114.30	165.10	172.34	117.47	174.80	144.48



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NOTE See Figures 7, 8, and 9 for meaning of dimensions.

Table K.7 change values in columns 4, 5 and 8 as noted

1	2	3	4	5	6	7	7
Thread Form	Taper $T$ mm/mm	Threads per 25.4 mm $n$	Compensated Thread Length <sup>a</sup> $L_{ct}$	Ball-point Diameter for Taper and Lead $d_b$ $\pm 0.05$	Thread Height Compensated for Taper <sup>b</sup> $h_{cn}$ $+0.02/-0.08$	Compensated Thread Height for template <sup>b</sup> $h_{cn}$	Ball-point Diameter for Thread Height $d_{bh}$ $\pm 0.05$
90-V-050	1/6	3.5	7.28230	0.202	2.54	2.53519	0.072
90-V-050	1/4	3.5	7.31362	0.202	2.50	2.50227	0.072
V-065	1/6	4.0	6.37202	0.144	2.82	2.82128	0.072
V-076	1/8	4.0	6.36239	0.144	2.35	2.34604	0.072
90-V-084	5/48	3.0	8.47814	0.236	2.29	2.29358	0.072

NOTE 1 See Figures 15 and 16 for meaning of dimensions.

NOTE 2 For thread forms not included in this table, different ball-point diameters may be required.

<sup>a</sup> Compensated thread length ( $L_{ct}$ ) is for measurements parallel to the taper cone. Non-compensated thread length is parallel to thread axis.

<sup>b</sup> Compensated thread height ( $h_{cn}$ ) is for measurements normal to the taper cone. Non-compensated thread height is normal to thread axis.

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Table L2 Column 2

root flat width **add tolerance**

root flat width	$F_r \pm 0.002$	0.034	0.034	0.056	0.067	0.068
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Table L.6 add column 8

1	2	3	4	5	6	7	8
Connection Size and Style	Box Boreback Contour			Box Groove		Pin Groove	Recommend Max Pin ID with Stress Relief Groove
	Cylinder Diameter $D_{CB} \begin{smallmatrix} +0.016 \\ 0 \end{smallmatrix}$	Depth to Last Thread Scratch $L_X \text{ ref}$	Depth to End of Cylinder $L_{CYL} \pm 0.25$	Diameter of Box Groove $D_{BG} \begin{smallmatrix} +0.031 \\ 0 \end{smallmatrix}$	Depth to Start of Box Groove $L_{BG} \begin{smallmatrix} 0 \\ -0.125 \end{smallmatrix}$	Diameter of Pin Groove $D_{SRG} \begin{smallmatrix} 0 \\ -0.031 \end{smallmatrix}$	
NC77	6.547	6.000	8.000	6.594	6.125	7.402	6.094
3 1/2 FH	3.219	3.250	5.250	3.281	3.375	3.382	2.000
4 1/2 FH	3.953	3.500	5.500	4.016	3.625	4.180	2.469
5 1/2 IF	5.688	4.500	6.500	5.766	4.625	5.889	4.781
6 5/8 IF	6.750	4.500	6.500	6.828	4.625	6.951	5.875
4 OH SW	4.156	3.500	5.500	4.326	3.625	4.166	3.063
4 1/2 OH LW	4.531	3.250	5.250	4.694	3.375	4.502	3.406
4 1/2 OH SW	4.531	3.250	5.250	4.694	3.375	4.502	3.406
3 1/2 XH	—	—	—	3.438	3.125	3.304	2.344
3 1/2 H90	3.562	3.500	5.500	3.688	3.625	3.641	2.563
4 H90	3.875	3.750	5.750	4.031	3.875	4.016	2.625
4 1/2 H90	4.188	4.000	6.000	4.312	4.125	4.350	3.000
5 H90	4.406	4.250	6.250	4.547	4.375	4.620	3.281
5 1/2 H90	4.688	4.250	6.250	4.812	4.375	4.891	3.563
6 5/8 H90	5.266	4.500	6.500	5.406	4.625	5.516	4.219
7 H90	5.266	5.000	7.000	5.375	5.125	5.945	4.563
7 5/8 H90	6.000	5.625	7.625	6.094	5.750	6.834	5.500
8 5/8 H90	6.750	6.125	8.125	6.844	6.250	7.709	6.375
3 1/2 SL H90	—	—	—	3.754	2.812	3.400	2.125
GOST Z-161	5.660	4.500	6.500	5.703	4.625	5.799	4.563
GOST Z-189	6.743	4.500	6.500	6.785	4.625	6.882	5.688
NOTE See Figures 7, 8, and 9 for meaning of dimensions.							

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**Table L.7 change values in column 4 as noted**

1	2	3	4	5	6	7	8
Thread Form	Taper	Threads per inch	Compensated Lead Parallel to Taper <sup>a</sup>	Ball-point Diameter for Taper and Lead	Thread Height Compensated for Taper <sup>b</sup>	Thread Height for Template <sup>b</sup>	Ball-point Diameter for Thread Height
	$T$ in./ft	$n$	$L_{ct}$	$d_b$ $\pm 0.002$	$h_{cn}$ $+0.001/-0.003$	$h_{cn}$	$d_{bh}$ $\pm 0.002$
90-V-050	2	3.5	0.286704	0.202	0.100	0.099811	0.072
90-V-050	3	3.5	0.287937	0.202	0.099	0.098515	0.072
V-065	2	4.0	0.250867	0.144	0.111	0.111074	0.072
V-076	1.5	4.0	0.250488	0.144	0.092	0.092364	0.072
90-V-084	1.25	3.0	0.333785	0.236	0.090	0.090299	0.072

NOTE 1 See Figures 15 and 16 for meaning of dimensions.

NOTE 2 For thread forms not included in this table, different ball-point diameters may be required.

<sup>a</sup> FOOTNOTE 1 Compensated thread length ( $L_{ct}$ ) is for measurements parallel to the taper cone. Non-compensated thread length is parallel to thread axis.

<sup>b</sup> FOOTNOTE 2 Compensated thread height ( $h_{cn}$ ) is for measurements normal to the taper cone. Non-compensated thread height is normal to thread axis.

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