



5. Connectors

API Hubs and Clamps

Section 5b. API Hubs and Clamps

Hubs and Clamps are designed and manufactured in accordance with the following specifications:-

API 16A	Specification for Drill Through Equipment.
API 6A	Specification for Wellhead and Christmas Tree Equipment.
NACE MR-01-75	Sulphide Stress Cracking Resistant Metallic Materials for Oilfield Equipment.
ASME VIII	Boiler and Pressure Vessel Code.
ANSI B31.3	Chemical Plant and Petroleum Piping.

Hubs are available as Weld Neck, Integral & Blinds and are available in the following materials and pressure ratings:-

MAX. WORKING PRESSURE	2,000 PSI	3,000 PSI	5,000 PSI	10,000 PSI	15,000 PSI	20,000 PSI
TEST PRESSURE	3,000 PSI	4,500 PSI	7,500 PSI	15,000 PSI	22,500 PSI	30,000 PSI
PRODUCT SPECIFICATION LEVELS	1,2,3 & 4	1,2,3 & 4	1,2,3 & 4	1,2,3 & 4	1,2,3 & 4	1,2,3 & 4
API TEMPERATURE RATING	K (-60 DEG C) TO Y (+345 DEG C)	K (-60 DEG C) TO Y (+345 DEG C)	K (-60 DEG C) TO Y (+345 DEG C)	K (-60 DEG C) TO Y (+345 DEG C)	K (-60 DEG C) TO Y (+345 DEG C)	K (-60 DEG C) TO Y (+345 DEG C)
Min. YIELD	60,000 PSI	60,000 PSI	60,000 PSI	60,000 PSI	75,000 PSI	75,000 PSI
Min. TENSILE	85,000 PSI	85,000 PSI	85,000 PSI	85,000 PSI	95,000 PSI	95,000 PSI
MATERIAL	API 60K	API 60K	API 60K	API 60K	API 75K	API 75K

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GENERAL NOTES: Please contact RBV Energy for any special material or dimensional requirements.

5b.1 Max. working pressures stated are suitable for temperatures up to 121°C.
De-rating of max. working pressure will occur as the operating temperature increases above 121°C.



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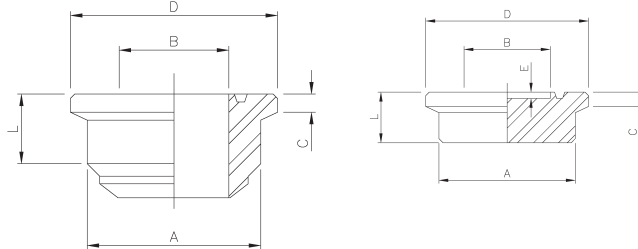


Table 5b.1 API Type 16B Integral Hub Connections for 2,000 psi and 3,000 psi Rated Working Pressure

Nominal Size and Bore B	Outside Diameter D	Total Thickness C	Large Diameter of Neck A	Neck Length for Clamp Clearance L	Ring Groove Number	Ring Gasket Number	Clamp Number
2,000 psi							
7 $\frac{1}{16}$	10.375	1.443	8.875	2.50	SR-45	RX-45	25
16 $\frac{3}{4}$	20.375	1.269	19.000	3.13	SR-65	RX-65	12
21 $\frac{1}{4}$	26.375	1.872	24.500	5.00	SR-73	RX-73	18
3,000 psi							
11	15.625	1.399	14.000	3.13	SR-53	RX-53	9
13 $\frac{3}{8}$	18.375	1.336	16.750	3.19	SR-57	RX-57	11
16 $\frac{3}{4}$	21.250	1.459	19.625	3.68	SR-65	RX-65	14

GENERAL NOTES: Dimensions are in inches.
Dimension 'E' Counterbore is optional

Section 5b. API Hubs and Clamps

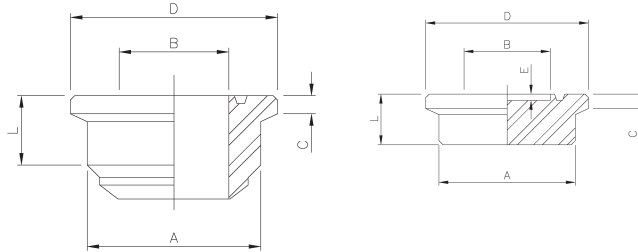


Table 5b.2 API Type 16BX Integral Hub Connections for 5,000 psi Rated Working Pressure

Nominal Size and Bore B	Outside Diameter D	Total Thickness C	Large Diameter of Neck A	Neck Length for Clamp Clearance L	Ring Gasket Number	Clamp Number
5,000 psi						
2 ¹ / ₁₆	5.031	1.166	3.656	2.22	BX-152	1
2 ⁹ / ₁₆	5.781	1.166	4.406	2.27	BX-153	2
3 ¹ / ₈	6.312	1.166	4.938	2.36	BX-154	4
4 ¹ / ₁₆	7.625	1.197	6.250	2.38	BX-155	5
7 ¹ / ₁₆	13.250	1.622	11.625	3.38	BX-156	6
9	13.250	1.622	11.625	3.38	BX-157	8
11	16.250	1.654	14.625	4.13	BX-158	10
13 ⁹ / ₁₆	20.625	1.871	19.000	4.88	BX-160	13
16 ³ / ₄	25.625	1.778	24.000	5.50	BX-162	19
21 ¹ / ₄	31.250	3.630	27.875	6.75	BX-165	27

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GENERAL NOTES: Dimensions are in inches.
Dimension 'E' Counterbore is optional

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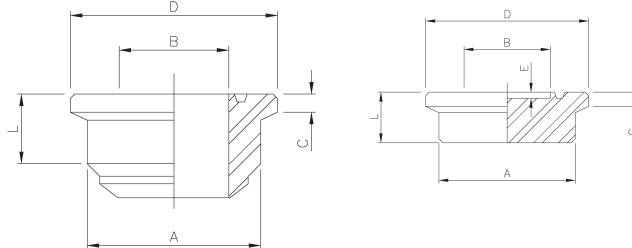


Table 5b.3 API Type 16BX Integral Hub Connections for 10,000 psi Rated Working Pressure

Nominal Size and Bore B	Outside Diameter D	Total Thickness C	Large Diameter of Neck A	Neck Length for Clamp Clearance L	Ring Gasket Number	Clamp Number
10,000 psi						
1 ¹ / ₁₆	5.031	1.166	3.656	2.22	BX-151	1
2 ¹ / ₁₆	5.781	1.166	4.406	2.27	BX-152	2
2 ⁹ / ₁₆	6.312	1.166	4.938	2.36	BX-153	4
3 ¹ / ₁₆	7.625	1.197	6.250	2.38	BX-154	5
4 ¹ / ₁₆	8.437	1.310	6.812	2.82	BX-155	6
7 ¹ / ₁₆	16.250	1.653	14.625	4.13	BX-156	10
9	16.250	1.653	14.625	4.13	BX-157	10
11	20.625	2.035	18.625	4.75	BX-158	22
13 ³ / ₈	22.250	2.309	20.625	5.31	BX-159	15
16 ³ / ₄	28.000	3.005	25.000	6.17	BX-162	28
18 ³ / ₄	31.250	3.630	27.875	6.75	BX-164	27
21 ¹ / ₄	34.000	4.005	30.500	8.22	BX-166	26

GENERAL NOTES: Dimensions are in inches.

Dimension 'E' Counterbore is optional

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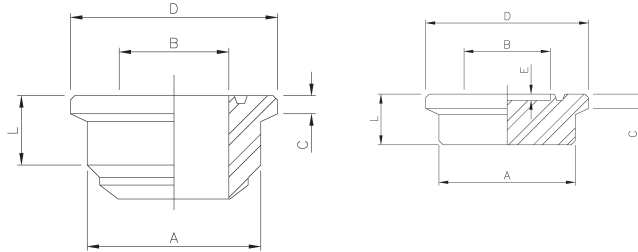


Table 5b.4 API Type 16BX Integral Hub Connections for 15,000 psi Rated Working Pressure

Nominal Size and Bore B	Outside Diameter D	Total Thickness C	Large Diameter of Neck A	Neck Length for Clamp Clearance L	Ring Gasket Number	Clamp Number
15,000 ps						
1 $\frac{1}{16}$	5.781	1.166	4.406	2.27	BX-151	2
2 $\frac{1}{16}$	6.125	1.622	4.500	3.22	BX-152	3
2 $\frac{9}{16}$	6.125	1.622	4.500	3.22	BX-153	3
3 $\frac{1}{16}$	8.437	1.310	6.812	2.82	BX-154	6
4 $\frac{1}{16}$	13.250	1.622	11.625	3.38	BX-155	8
7 $\frac{1}{16}$	20.626	2.035	18.625	4.75	BX-156	22
11	22.250	2.309	20.625	5.31	BX-158	15
13 $\frac{5}{8}$	28.000	3.005	25.000	6.17	BX-159	28
18 $\frac{3}{4}$	34.000	4.005	30.500	8.22	BX-164	26

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GENERAL NOTES: Dimensions are in inches.
Dimension 'E' Counterbore is optional

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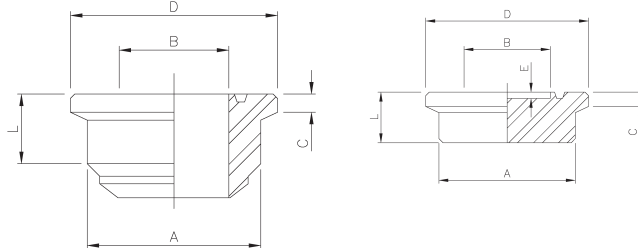


Table 5b.5 API Type 16BX Integral Hub Connections for 20,000 psi Rated Working Pressure

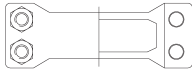
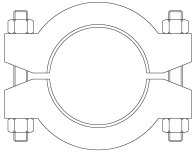
Nominal Size and Bore B	Outside Diameter D	Total Thickness C	Large Diameter of Neck A	Neck Length for Clamp Clearance L	Ring Gasket Number	Clamp Number
20,000 psi						
1 ¹ / ₁₆	6.125	1.622	4.500	3.22	BX-151	3
2 ¹ / ₁₆	6.125	1.622	4.500	3.22	BX-152	3
2 ⁹ / ₁₆	8.437	1.310	6.812	2.82	BX-153	6
3 ¹ / ₁₆	13.250	1.622	11.625	3.38	BX-154	8
4 ¹ / ₁₆	16.250	1.653	14.625	4.13	BX-155	10
7 ¹ / ₁₆	22.250	2.308	20.625	5.31	BX-156	15
11	27.997	3.005	25.000	6.17	BX-158	28

GENERAL NOTES: Dimensions are in inches.

Dimension 'E' Counterbore is optional

Section 5b. API Hubs and Clamps

Table 5b.6 Clamps for API Type 16B and 16BX Hub Connections



HUB		
Clamp Number	API Designated Size	Working Pressure (psi)
1	1 ¹³ / ₁₆	10,000
	2 ¹ / ₁₆	5,000
2	1 ¹³ / ₁₆	15,000
	2 ¹ / ₁₆	10,000
	2 ⁹ / ₁₆	5,000

HUB		
Clamp Number	API Designated Size	Working Pressure (psi)
3	1 ¹³ / ₁₆	20,000
	2 ¹ / ₁₆	15,000
	2 ¹ / ₁₆	20,000
	2 ⁹ / ₁₆	15,000
4	2 ⁹ / ₁₆	10,000
	3 ¹ / ₈	5,000
5	3 ¹ / ₁₆	10,000
	4 ¹ / ₁₆	5,000
6	2 ⁹ / ₁₆	20,000
	3 ¹ / ₁₆	15,000
	4 ¹ / ₁₆	10,000
8	3 ¹ / ₁₆	20,000
	4 ¹ / ₁₆	15,000
	7 ¹ / ₁₆	5,000
	9	5,000
9	11	3,000
	4 ¹ / ₁₆	20,000
	7 ¹ / ₁₆	10,000
	9	10,000
	11	5,000
10	4 ¹ / ₁₆	20,000
	7 ¹ / ₁₆	10,000

HUB		
Clamp Number	API Designated Size	Working Pressure (psi)
11	13 ³ / ₈	3,000
12	16 ³ / ₄	2,000
13	13 ³ / ₈	5,000
14	16 ³ / ₄	3,000
15	7 ¹ / ₁₆	20,000
	11	15,000
	13 ³ / ₈	10,000
18	21 ¹ / ₄	2,000
19	16 ³ / ₄	5,000
22	7 ¹ / ₁₆	15,000
	11	10,000
25	7 ¹ / ₁₆	2,000
26	16 ³ / ₄	15,000
	21 ¹ / ₄	10,000
27	18 ³ / ₄	10,000
	21 ¹ / ₄	5,000
28	11	20,000
	13 ³ / ₈	15,000
	16 ³ / ₄	10,000

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Table 5b.7 RX & BX RTJ Ring Numbers for API Specification 16A Equipment

Ring Number	API Designated Size	Rated Working Pressure	Ring Number	API Designated Size	Rated Working Pressure	Ring Number	API Designated Size	Rated Working Pressure
Type 16B Integral Hub Connections:			Type 16BX Integral Hub Connections:					
RX 45	7 ¹ / ₁₆	2,000	BX 156	7 ¹ / ₁₆	5,000	BX 156	7 ¹ / ₁₆	15,000
RX 65	16 ³ / ₄	2,000	BX 157	9	5,000	BX 158	11	15,000
RX 73	21 ¹ / ₄	2,000	BX 158	11	5,000	BX 159	13 ⁵ / ₁₆	15,000
RX 53	11	3,000	BX 160	13 ⁵ / ₁₆	5,000	BX 164	18 ³ / ₄	15,000
RX 57	13 ⁵ / ₁₆	3,000	BX 162	16 ³ / ₄	5,000	BX 156	7 ¹ / ₁₆	20,000
RX 65	16 ³ / ₄	3,000	BX 165	21 ¹ / ₄	5,000	BX 158	11	20,000
			BX 156	7 ¹ / ₁₆	10,000			
			BX 157	9	10,000			
			BX 158	11	10,000			
			BX 159	13 ⁵ / ₁₆	10,000			
			BX 162	16 ³ / ₄	10,000			
			BX 164	18 ³ / ₄	10,000			
			BX 166	21 ¹ / ₄	10,000			

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Table 5b.7 RX & BX RTJ Ring Numbers for API Specification 16A Equipment

Ring Number	API Designated Size	Rated Working Pressure	Ring Number	API Designated Size	Rated Working Pressure	Ring Number	API Designated Size	Rated Working Pressure
Type 16B Integral Hub Connections:			Type 16BX Integral Hub Connections:					
RX 45	7 ¹ / ₁₆	2,000	BX 156	7 ¹ / ₁₆	5,000	BX 156	7 ¹ / ₁₆	15,000
RX 65	16 ³ / ₄	2,000	BX 157	9	5,000	BX 158	11	15,000
RX 73	21 ¹ / ₄	2,000	BX 158	11	5,000	BX 159	13 ⁵ / ₁₆	15,000
RX 53	11	3,000	BX 160	13 ⁵ / ₁₆	5,000	BX 164	18 ³ / ₄	15,000
RX 57	13 ⁵ / ₁₆	3,000	BX 162	16 ³ / ₄	5,000	BX 156	7 ¹ / ₁₆	20,000
RX 65	16 ³ / ₄	3,000	BX 165	21 ¹ / ₄	5,000	BX 158	11	20,000
			BX 156	7 ¹ / ₁₆	10,000			
			BX 157	9	10,000			
			BX 158	11	10,000			
			BX 159	13 ⁵ / ₁₆	10,000			
			BX 162	16 ³ / ₄	10,000			
			BX 164	18 ³ / ₄	10,000			
			BX 166	21 ¹ / ₄	10,000			