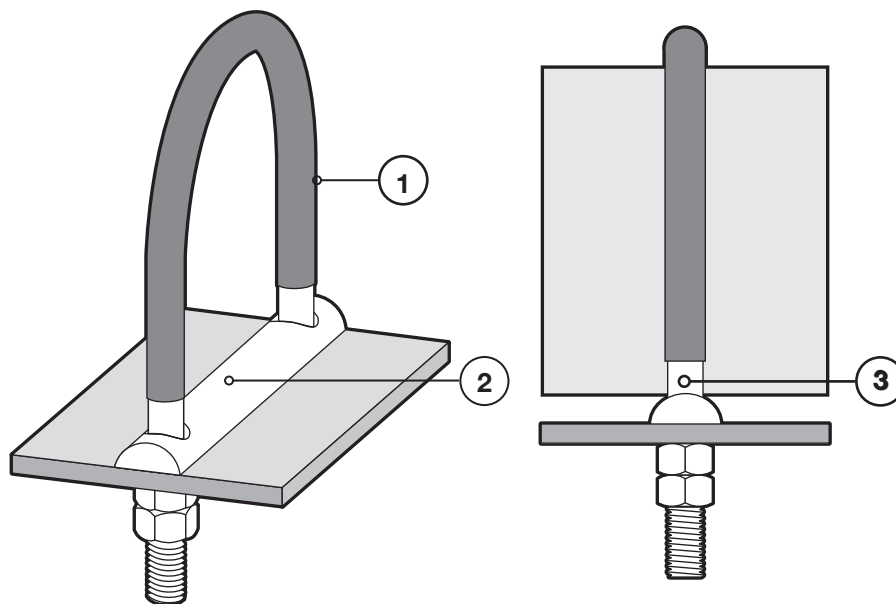


DEEPWATER

NU-BOLT™ ASSEMBLY

General

The Nu-Bolt assembly combines a half-round I-Rod support with a modified pipe U-bolt. Standard U-bolts are coated black steel, but 316 stainless steel may be substituted. Standard U-bolt coatings are hot-dip galvanized or SermaGard. All U-bolts have cross-linked polyolefin (polyshrink) applied to the shank. The half-round I-Rod, which separates the pipe from the support, is cut and drilled to fit. The assembly includes four (4) nuts.



Polyshrink (Item 1) specifications

Property	Value
	Metric [Imperial]
Max operating temp	110 °C [230 °F]
Min operating temp	-55 °C [-67 °F]
Tensile strength	14.47 MPa [2,100 psi]
Elongation	550%
Specific gravity	1.1r
Heat shock	No cracking /flowing
Hardness	50D
Dialectic strength	500 kV/mm [12,700 V/mil]
Volume resistivity	1016 Ohm/cm
Water absorption	0.1%
Adhesive peel strength	
to steel D1000	61 N/cm [35 pli]
to PVC D1000	35 N/cm [20pli]

U-bolt (Item 3) load values

U-bolt weights do not include I-Rod thermoplastic.

Bolt stock diameter Ø	Max load @ 650° F	Max load @ 750° F
mm [in]	kg [lb]	kg [lb]
6 [1/4]	220 [485]	195 [435]
10 [3/8]	550 [1220]	495 [1090]
13 [1/2]	1025 [2260]	915 [2020]
16 [5/8]	1645 [3620]	1465 [3230]
19 [3/4]	2460 [5420]	2195 [4830]
22 [7/8]	3425 [7540]	3055 [6730]
25 [1]	4500 [9920]	4020 [8850]

I-Rod (Item 2), I-Rod HT, and PEEK specifications

I-Rod thermoplastic is standard for most Nu-Bolt assemblies. In harsh conditions, I-Rod HT or Peek can be substituted.

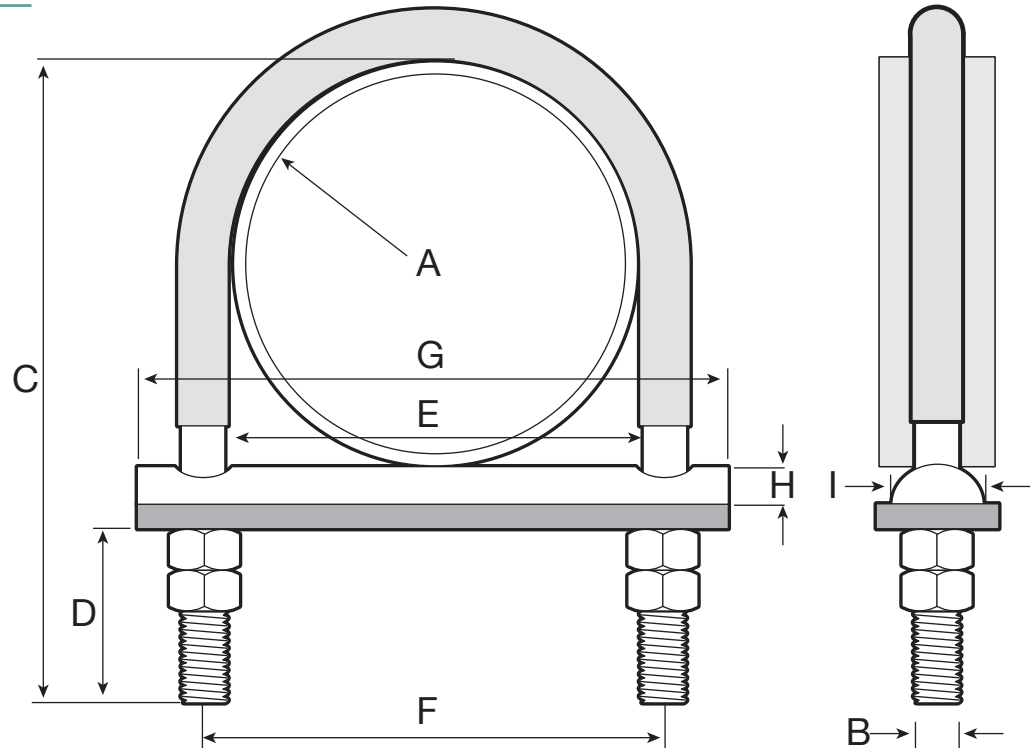
Property	I-Rod	I-Rod HT	PEEK unfilled
	Metric [Imperial]	Metric [Imperial]	Metric [Imperial]
Density (23°C)	1.41 g/cm³ [0.0509 lb/in³]	1.28 g/cm³ [0.0462 lb/in³]	1.31 g/cm³ [0.047 lb/in³]
Tensile strength	64.8 MPa [9.4 ksi]	114 MPa [16.5 ksi]	110 MPa [16 ksi]
Tensile modulus	2.62 GPa [380 ksi]	3.45 GPa [500 ksi]	3.44 GPa [500 ksi]
Elongation @ break	30-60%	30-60%	20%
Flexural modulus	2.76 GPa [400 ksi]	3.45 GPa [500 ksi]	4.13 GPa [600 ksi]
Flexural strength	82.7 MPa [13 ksi]	138 MPa [20 ksi]	172 MPa [25 ksi]
Comp. strength	103 MPa [15 ksi]	152 MPa [22 ksi]	127 MPa [20 ksi]
Coefficient of friction	0.25	0.42	-
IZOD impact	0.534 J/cm [1 ft-lb/in]	0.267 J/cm [0.5 ft-lb/in]	0.534 J/cm [1 ft-lb/in]
Rock hardness M/R	88/120	112/125	100/126
Min. service temp*	-110 °C [-166° F]	-	-
Max. service temp	83 °C [181° F]	171 °C [340° F]	249 °C [480° F]
Melting point	168 °C [329° F]	210 °C [410° F]	340 °C [644° F]
Coefficient of linear expan.	97.2 µm/m°C [54 µin/in°F]	55.8 µm/m°C [31 µin/in°F]	-
Heat deflection	104 °C [220° F]	204 °C [400° F]	160 °C [320° F]
Flammability rating	HB	V/0	V/0
Dialectic strength	16.5 kV/mm [420 V/mil]	32.7 kV/mm [830 V/mil]	18.9 kV/mm [480 V/mil]

*This was lowest temperature possible at testing facility; actual minimum service temperature is probably lower.

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Nu-Bolt assembly weights

Nominal pipe size mm [in]	U-bolt stock Ø mm [in]	Nu-Bolt weight kg [lb]
15 [1/2]	6 [1/4]	0.05 [0.12]
15 [1/2]	10 [3/8]	0.16 [0.35]
20 [3/4]	6 [1/4]	0.07 [0.15]
20 [3/4]	10 [3/8]	0.18 [0.4]
25 [1]	6 [1/4]	0.07 [0.15]
25 [1]	10 [3/8]	0.18 [0.4]
32 [1 1/4]	10 [3/8]	0.21 [0.45]
40 [1 1/2]	10 [3/8]	0.23 [0.5]
50 [2]	10 [3/8]	0.23 [0.5]
80 [3]	13 [1/2]	0.45 [1.0]
100 [4]	13 [1/2]	0.53 [1.15]
150 [6]	16 [5/8]	1.14 [2.5]
200 [8]	16 [5/8]	1.36 [3.0]
250 [10]	19 [3/4]	2.27 [5.0]
300 [12]	22 [7/8]	3.40 [7.5]
350 [14]	22 [7/8]	3.86 [8.5]
400 [16]	22 [7/8]	4.32 [9.5]
450 [18]	25 [1]	6.14 [13.5]
500 [20]	25 [1]	6.82 [15.0]
600 [24]	25 [1]	8.64 [19.0]
750 [30]	25 [1]	10.0 [22.0]
900 [36]	25 [1]	10.7 [23.5]



Nu-Bolt assembly dimensions

(A) Nominal pipe size mm [in]	(B) U-bolt stock Ø mm [in]	(C) U-bolt height mm [in]	(D) Thread length mm [in]	(E) Inside gap mm [in]	(F) Bolt C-to C mm [in]	(G) I-Rod length mm [in]	(H) I-Rod height mm [in]	(I) I-Rod width mm [in]
15 [1/2]	6 [1/4]	83 [3 1/4]	60 [2 3/8]	24 [15/16]	31 [1 3/16]	64 [2 1/2]	8 [5/16]	19 [3/4]
20 [3/4]	6 [1/4]	85 [3 5/16]	60 [2 3/8]	29 [1 1/8]	35 [1 3/8]	76 [3]	8 [5/16]	19 [3/4]
25 [1]	6 [1/4]	87 [3 7/16]	60 [2 3/8]	35 [1 3/8]	41 [1 5/8]	76 [3]	8 [5/16]	19 [3/4]
25 [1]	10 [3/8]	87 [3 7/16]	60 [2 3/8]	35 [1 3/8]	44 [1 3/4]	76 [3]	11 [7/16]	25 [1]
32 [1 1/4]	10 [3/8]	95 [3 3/4]	64 [2 1/2]	43 [1 3/4]	54 [2 1/8]	89 [3 1/2]	11 [7/16]	25 [1]
40 [1 1/2]	10 [3/8]	102 [4]	64 [2 1/2]	51 [2]	60 [2 3/8]	102 [4]	11 [7/16]	25 [1]
50 [2]	10 [3/8]	114 [4 1/2]	64 [2 1/2]	62 [2 7/16]	71 [2 13/16]	114 [4 1/2]	11 [7/16]	25 [1]
65 [2 1/2]	13 [1/2]	134 [5 1/4]	76 [3]	75 [2 15/16]	87 [3 7/16]	127 [5]	11 [7/16]	25 [1]
80 [3]	13 [1/2]	148 [5 13/16]	76 [3]	90 [3 9/16]	103 [4 1/16]	152 [6]	11 [7/16]	25 [1]
100 [4]	13 [1/2]	173 [6 13/16]	76 [3]	116 [4 9/16]	129 [5 1/16]	178 [7]	11 [7/16]	25 [1]
120 [5]	13 [1/2]	198 [7 13/16]	76 [3]	143 [5 5/8]	156 [6 1/8]	203 [8]	11 [7/16]	25 [1]
150 [6]	16 [5/8]	241 [9 1/2]	95 [3 3/4]	171 [6 3/4]	187 [7 3/8]	229 [9]	11 [7/16]	25 [1]
200 [8]	16 [5/8]	292 [11 1/2]	95 [3 3/4]	222 [8 3/4]	238 [9 3/8]	279 [11]	11 [7/16]	25 [1]
250 [10]	19 [3/4]	351 [13 13/16]	102 [4]	279 [10 7/8]	295 [11 5/8]	343 [13 1/2]	18 [11/16]	38 [1 1/2]
300 [12]	22 [7/8]	408 [16 1/16]	108 [4 1/4]	327 [12 7/8]	349 [13 3/4]	406 [16]	18 [11/16]	38 [1 1/2]
350 [14]	22 [7/8]	440 [17 5/16]	108 [4 1/4]	359 [14 1/8]	381 [15]	432 [17]	18 [11/16]	38 [1 1/2]
400 [16]	22 [7/8]	490 [19 5/16]	108 [4 1/4]	410 [16 1/8]	432 [17]	483 [19]	18 [11/16]	38 [1 1/2]
450 [18]	25 [1]	551 [21 11/16]	121 [4 3/4]	461 [18 1/8]	486 [19 1/8]	546 [21 1/2]	18 [11/16]	38 [1 1/2]
500 [20]	25 [1]	602 [23 11/16]	121 [4 3/4]	511 [20 1/8]	537 [21 1/8]	597 [23 1/2]	18 [11/16]	38 [1 1/2]
600 [24]	25 [1]	703 [27 11/16]	121 [4 3/4]	613 [24 1/8]	638 [25 1/8]	699 [27 1/2]	18 [11/16]	38 [1 1/2]
700 [28]	25 [1]	805 [31 11/16]	121 [4 3/4]	715 [28 1/8]	740 [29 1/8]	800 [31 1/2]	18 [11/16]	38 [1 1/2]
750 [30]	25 [1]	856 [33 11/16]	121 [4 3/4]	765 [31 1/8]	791 [31 1/8]	851 [33 1/2]	18 [11/16]	38 [1 1/2]
900 [36]	25 [1]	1008 [39 11/16]	121 [4 3/4]	918 [36 1/8]	943 [37 1/8]	1003 [39 1/2]	18 [11/16]	38 [1 1/2]