



STANDARD FASTENING PRODUCTS CATALOG

BOLT BUDDY

NUT BUDDY

ALPHALOK

VALULOK

33375 GLENDALE AVENUE
LIVONIA MI 48150-1615

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Alpha

All Parts Are Modeled in Customer Specific Design Formats

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VALUE ADDED FASTENER PRODUCTS

HISTORY

- NUT & RETAINER, BOLT & RETAINER AND “U”-NUT PRODUCTS HAVE BEEN AROUND FOR MANY YEARS. THEY GENERATE LABOR COST SAVINGS BY SPEEDING UP JOINT ASSEMBLY. ALSO, HYDRO-FORMED FRAME DESIGNS AND UNIBODY VEHICLE CONSTRUCTION HAVE LED TO MANY RESTRICTED ACCESS JOINT LOCATIONS. THESE JOINTS REQUIRE THIS TYPE OF SPECIALTY FASTENER PRODUCT.
- OVER THE YEARS THESE PARTS HAVE BEEN DESIGNED FOR SPECIFIC INDIVIDUAL APPLICATIONS. THIS DESIGN APPROACH HAS LED TO MANY HUNDREDS OF PARTS WITH SIMILAR DIMENSIONS PURCHASED AT LOWER VOLUMES AND HIGHER COST.

CHALLENGE

- WE MUST COMMONIZE PART SIZES AND SHAPES BASED ON FASTENER PERFORMANCE STANDARDS. THIS WILL CREATE LOGICAL PART FAMILIES.
- WE MUST INCORPORATE THE REDUCTION OF MATERIAL WASTE, UTILIZATION OF HIGH SPEED MANUFACTURING EQUIPMENT AND EDGE OF THE ART AUTOMATED ASSEMBLY METHODS IN EACH PRODUCT DESIGN.
- ALL TOOLING SHOULD BE CONSTRUCTED AS FLEXIBLE MODULES ALLOWING FOR MULTIPLE PARTS TO BE PRODUCED FROM A SINGLE DIE.

RESULT

- THE -VALUE ADDED FASTENER- STANDARD PART CATALOG FROM THE ALPHA GROUP.

ADVANTAGES

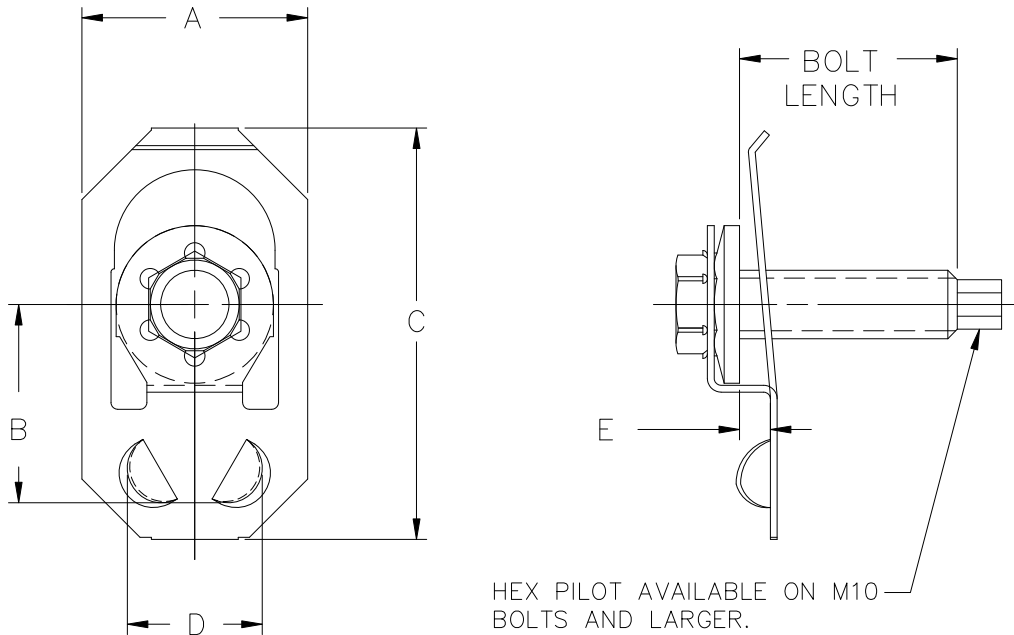
- PART FAMILIES DESIGNED TO COMPLIMENT FASTENER PERFORMANCE REQUIREMENTS.
- FAMILIES OF PARTS DESIGNED TO ELIMINATE MATERIAL WASTE.
- LARGER QUANTITIES OF FEWER PARTS WILL ELIMINATE REDUNDANT PART NUMBERS ALLOWING FOR CUSTOMER COST CONTROL.
- PRODUCTS HAVE BEEN DESIGNED TO TAKE ADVANTAGE OF THE LATEST AUTOMATED ASSEMBLY AND HIGH SPEED MANUFACTURING METHODS.
- THE DIMENSIONAL FOOTPRINT OF EACH PART IS CLEARLY DEFINED FOR EASE OF USE BY THE ENGINEERING COMMUNITY.
- GREATLY REDUCED PROTOTYPE EXPENSE AND FEWER PAPERWORK DELAYS. ALL PRODUCT OFFERINGS WILL BE AVAILABLE QUICKLY FROM PRODUCTION TOOLING AT THE PRODUCTION PIECE PRICE.
- NO PRODUCTION TOOLING COST TO OUR CUSTOMERS.
- DIES ARE MODULAR ALLOWING FOR FAST AND ACCURATE ADJUSTMENT. MOST PARTS THAT MUST DEVIATE FROM THE PUBLISHED PRODUCT STANDARDS WILL BE TOOLED AT NO COST, WILL BE AVAILABLE IN WEEKS, WILL BE PRODUCED FROM PRODUCTION TOOLING AND PRICED AT THE PRODUCTION PIECE PRICE.
- ALPHA ENGINEERING WILL ADVISE PRODUCT DELIVERY TIMING.

VALUE ADDED FASTENERS

BBR SERIES

Bolt and Retainer – “Bolt Buddy” TYPE

ALPHA – 33375 GLENDALE AVE. LIVONIA, MI 48150-1615 PH: 734.523.1000 FAX: 734.425.1297 www.alphausa.com



Dimensions in mm

REV 6/25/07

PART NUMBER	SIZE	A	B	C	D	E	MATERIAL THICKNESS
BBR-06 HF	M6x1.00	22.0 20.8	21.9 20.9	41.1 REF	12.5 11.5	3.0 REF	0.5/0.7
BBR-08 HF	M8x1.25	26.8 25.6	27.0 26.2	50.9 REF	16.0 15.0	3.6 REF	0.7/0.9
BBR-10 HF	M10X1.50	33.3 32.1	32.7 31.7	63.1 REF	20.0 19.0	5.0 REF	0.8/1.0
BBR-12 HF	M12X1.75	38.0 36.4	38.4 37.4	73.6 REF	23.0 21.4	5.7 REF	1.0/1.2
BBR-14 HF	M14x 2.00	46.6 45.0	45.0 44.0	87.4 REF	27.6 26.0	7.0 REF	1.2/1.4

BBR-14 HF-50-10.9-STD

PART TYPE
BOLT BUDDY RETAINER

BOLT SIZE

BOLT TYPE
HEX FLANGE

BOLT LENGTH
EXCLUDING POINT

PROPERTY CLASS
CLASS 8.8 or 10.9

BOLT POINT TYPE
STD=NO PILOT PLT=PILOT
HEX=HEX PILOT

OTHER SIZES AVAILABLE AS CUSTOM ORDER – CALL FOR TIMING



VALUE ADDED FASTENERS

BBR SERIES PRODUCTS

General Specifications, Assembly Information, Mechanical and Performance Requirements

ALPHA – 33375 GLENDALE AVE. LIVONIA, MI 48150-1615 PH: 734.523.1000 FAX: 734.425.1297 www.alphausa.com

1. SCOPE

This standard covers material, heat treatment, and performance of BOLT BUDDY RETAINER TYPE assemblies, in the range of M6 to M14 inclusive.

1.1 REFERENCES.

ISO-261: ISO general-purpose metric screw threads -- General plan

ISO-965: ISO general-purpose metric screw threads – Tolerances

ISO-1502: ISO general-purpose metric screw threads -- Gauges and gauging

2. MATERIAL AND HEAT TREATMENT

2.1 MATERIAL

Material used in the manufacture of the retainer must meet the performance requirements of this standard.

2.2 HEAT TREATMENT

Heat treat as necessary to meet the performance requirements of this standard.

2.3 FASTENERS

Fasteners must meet the General purpose metric screw thread standards

ISO 261, ISO 965, and ISO 1502.

2.4 IDENTIFICATION

The assemblies may be permanently and legibly marked with manufacturers identification.

2.5 WORKMANSHIP

The bolt and retainer shall be free from cracks, splits, burrs, loose scale, sharp edges and any defect that may affect fit, form, or function.

2.6 MANUFACTURING VARIATIONS

Retaining feature and other dimensional details of parts may vary within envelope dimensions given, provided all requirements of this specification are met.

3. PERFORMANCE

3.1 KEYHOLE PANEL DATA

Recommended keyhole panel dimensions are shown in Figure 1 and listed in Table 1.

3.2 INSTALLATION

Assemblies shall be designed to minimize the required installation force to assemble them to the application panel.

3.3 RETENTION

Assemblies shall be placed into the test panel per Figure 2. The retaining feature must lock into the specified panel hole.



VALUE ADDED FASTENERS

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3.4 BOLT TWIST-OUT

Assemblies shall be placed in the test fixture per Figure 2. Torque shall be applied to the hex of the bolt using a standard socket driven with a certified torque wrench. The retainer shall not fracture and the bolt shall not twist out below the minimum torque requirement specified in Table 2.

The testing panel (Figure 2) shall be constructed of tool steel, be ground smooth to a surface roughness of $R_a = 0.8 \mu\text{m}$, and be hardened to HRC 58-60. The test panel should be manufactured to the thickness shown in Table 2. Installation forces shall be applied at a travel rate of $4 \pm 1 \text{mm}$ per second using a testing setup per Figure 2.



VALUE ADDED FASTENERS

BBR SERIES PRODUCTS

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Figure 1. Keyhole Panel Data

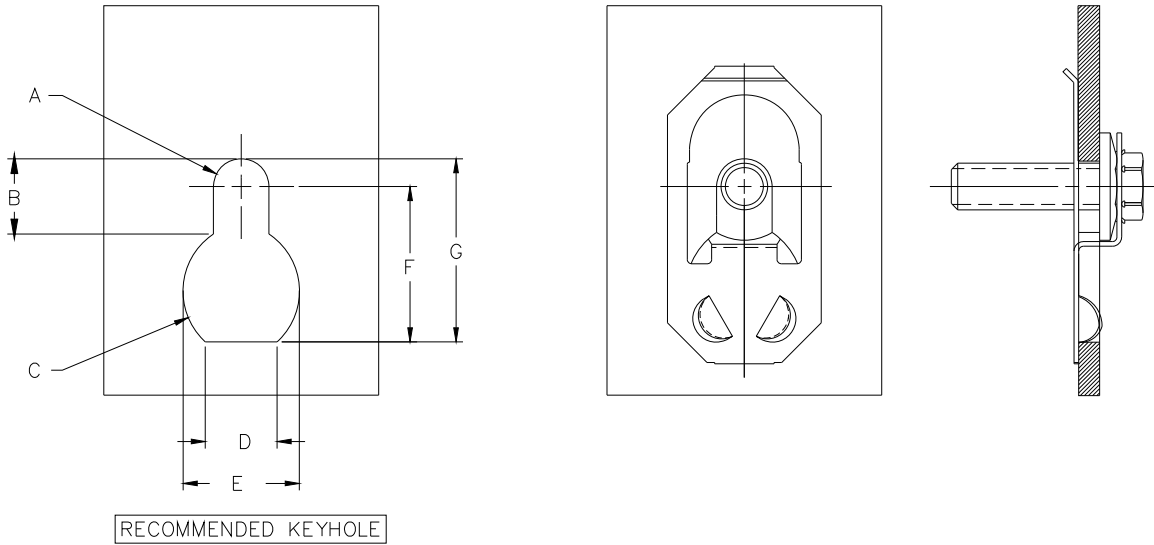


Table 1. Recommended Panel Data

Dimensions in mm

PART NUMBER	PANEL THICKNESS	A ±0.1	B REF.	C ±0.5	D ±0.5	E MIN.	F ±0.5	G REF.
BBR-06-HF	1.5-2.8	3.2	6.0	9.7	10.0	16.6	21.9	25.1
BBR-08-HF	2.0-3.5	4.2	11.6	11.9	12.0	20.4	26.6	30.8
BBR-10-HF	3.0-4.5	5.2	14.2	14.9	15.4	24.9	32.7	37.9
BBR-12-HF	4.0-5.5	6.5	15.5	18.5	17.4	30.5	38.7	45.2
BBR-14-HF	5.0-6.5	7.8	18.5	21.8	20.4	35.7	45.5	53.4

Consideration should be given to tolerance of manufacturing practices used to emboss and punch these features when designing panels in which they are employed.



VALUE ADDED FASTENERS

BBR SERIES PRODUCTS

General Specifications, Assembly Information, Mechanical and Performance Requirements

ALPHA – 33375 GLENDALE AVE. LIVONIA, MI 48150-1615 PH: 734.523.1000 FAX: 734.425.1297 www.alphausa.com

Figure 2. Installation Method

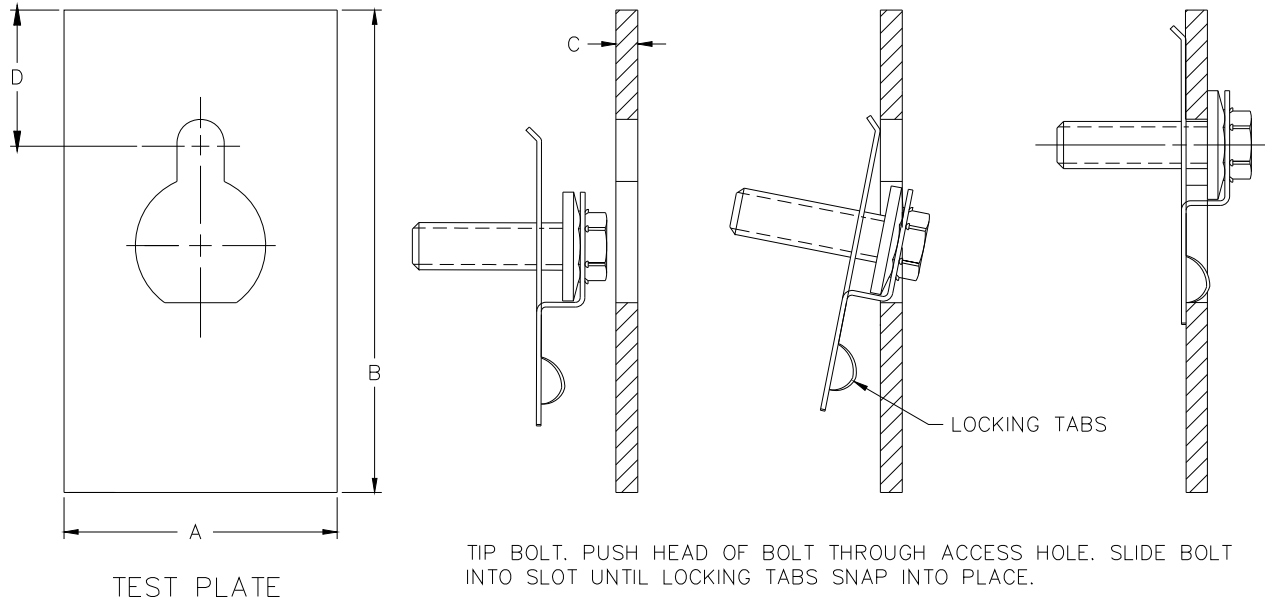


Table 2. Test Plate Dimensions and Performance Specifications

Dimensions in mm

PART NUMBER	A REF	B REF	C REF	D REF	TWIST-OUT MINIMUM *
BBR-06 HF	50.0	90.0	2.0	25.0	12 N•m
BBR-08 HF	65.0	100.0	3.0	35.0	27 N•m
BBR-10 HF	80.0	125.0	4.0	45.0	42 N•m
BBR-12 HF	100.0	160.0	5.0	60.0	63 N•m
BBR-14 HF	120.0	200.0	6.0	70.0	93 N•m

*Twist-out performance numbers are from Class 10 prevailing torque nut standards and represent three times the maximum first installation torque.

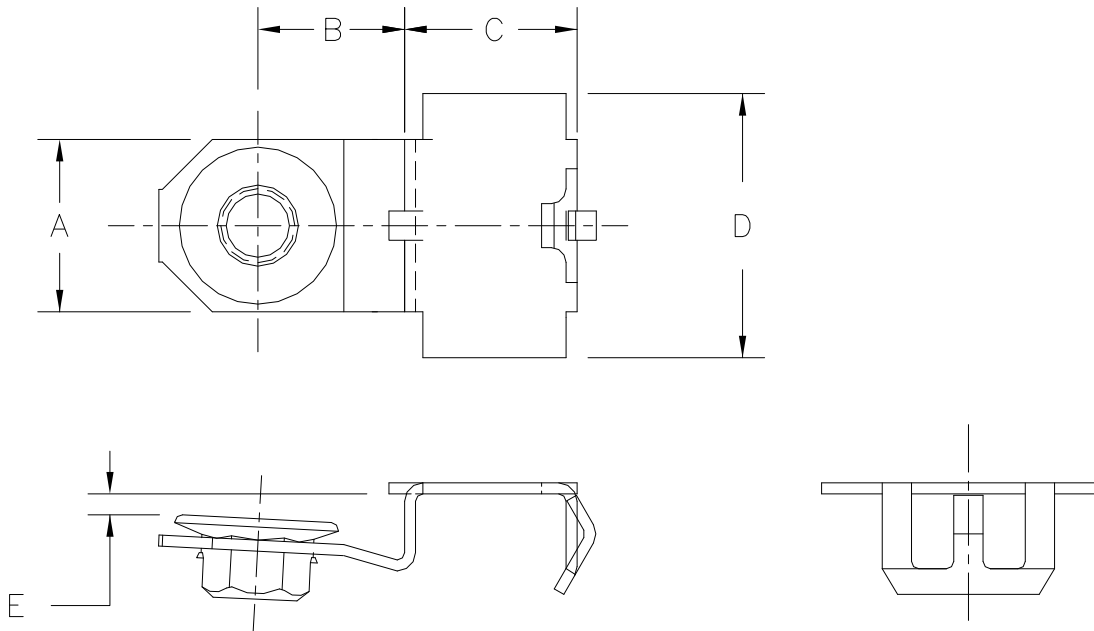


VALUE ADDED FASTENERS

NBR SERIES

Nut and Retainer – “Nut Buddy” TYPE

ALPHA – 33375 GLENDALE AVE. LIVONIA, MI 48150-1615 PH: 734.523.1000 FAX: 734.425.1297 www.alphausa.com



Dimensions in mm

REV 6/25/07

PART NUMBER	SIZE	A	B	C	D	E MAX.	MATERIAL THICKNESS
NBR-08 HFC	M8X1.25	21.0	15.25	19.0	28.0	1.3	0.9/1.1
NBR-08 HFF	M8X1.00	20.0	14.75	REF	REF		
NBR-10 HFC	M10X1.50	24.0	20.25	24.0	36.0	1.8	1.0/1.2
NBR-10 HFF	M10X1.25	23.0	19.75	REF	REF		
NBR-12 HFC	M12X1.75	28.0	25.25	29.0	43.0	2.0	1.2/1.4
NBR-12 HFF	M12X1.50	27.0	24.75	REF	REF		
NBR-14 HFC	M14X2.00	33.0	30.25	34.0	48.0	3.2	1.4/1.6
NBR-14 HFF	M14X1.50	32.0	29.75	REF	REF		
NBR-16 HFC	M16x2.00	37.0	35.25	39.0	55.0	4.5	1.6/1.8
NBR-16 HFF	M16x1.50	36.0	34.75	REF	REF		

NBR-14 HFF-10-STD

PART TYPE
NUT BUDDY RETAINER

NUT
SIZE

NUT TYPE
HEX FLANGE FINE
OR COARSE

PROPERTY CLASS
CLASS 9 or 10

NUT TYPE
STD=NO PREVAILING TORQUE
PRT=PREVAILING TORQUE

OTHER SIZES AVAILABLE AS CUSTOM ORDER – CALL FOR TIMING



VALUE ADDED FASTENERS

NBR SERIES PRODUCTS

General Specifications, Assembly Information, Mechanical and Performance Requirements

ALPHA – 33375 GLENDALE AVE. LIVONIA, MI 48150-1615 PH: 734.523.1000 FAX: 734.425.1297 www.alphausa.com

1. SCOPE

This standard covers material, heat treatment, and performance of NUT BUDDY RETAINER TYPE assemblies, in the range of M8 to M16 inclusive.

1.1 REFERENCES.

ISO-261: ISO general-purpose metric screw threads -- General plan

ISO-965: ISO general-purpose metric screw threads – Tolerances

ISO-1502: ISO general-purpose metric screw threads -- Gauges and gauging

2. MATERIAL AND HEAT TREATMENT

2.1 MATERIAL

Material used in the manufacture of the retainer must meet the performance requirements of this standard.

2.2 HEAT TREATMENT

Heat treat as necessary to meet the performance requirements of this standard.

2.3 FASTENERS

Fasteners must meet the General purpose metric screw thread standards

ISO 261, ISO 965, and ISO 1502.

2.4 IDENTIFICATION

The assemblies may be permanently and legibly marked with manufacturers identification.

2.5 WORKMANSHIP

The nut and retainer shall be free from cracks, splits, burrs, loose scale, sharp edges and any defect that may affect fit, form, or function.

2.6 MANUFACTURING VARIATIONS

Retaining feature and other dimensional details of parts may vary within envelope dimensions given, provided all requirements of this specification are met.

3. PERFORMANCE

3.1 PANEL DATA

Recommended panel dimensions are shown in Figure 1 and listed in Table 1.

3.2 INSTALLATION

Assemblies shall be designed to minimize the required installation force to assemble them to the application panel.

3.3 RETENTION

Assemblies shall be placed into the test panel per Figure 2. The retaining feature must lock into the specified panel hole.



VALUE ADDED FASTENERS

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3.4 NUT TWIST-OUT

Assemblies shall be placed in the test fixture per Figure 2. Torque shall be applied to the hex of the nut using a standard socket driven with a certified torque wrench. The retainer shall not fracture and the bolt shall not twist out below the minimum torque requirement specified in Table 2.

The testing panel (Figure 2) shall be constructed of tool steel, be ground smooth to a surface roughness of $R_a = 0.8 \mu\text{m}$, and be hardened to HRC 58-60. The test panel should be manufactured to the thickness shown in Table 2. Installation forces shall be applied at a travel rate of $4 \pm 1 \text{mm}$ per second using a testing setup per Figure 2.



VALUE ADDED FASTENERS

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Figure 1. Panel Example

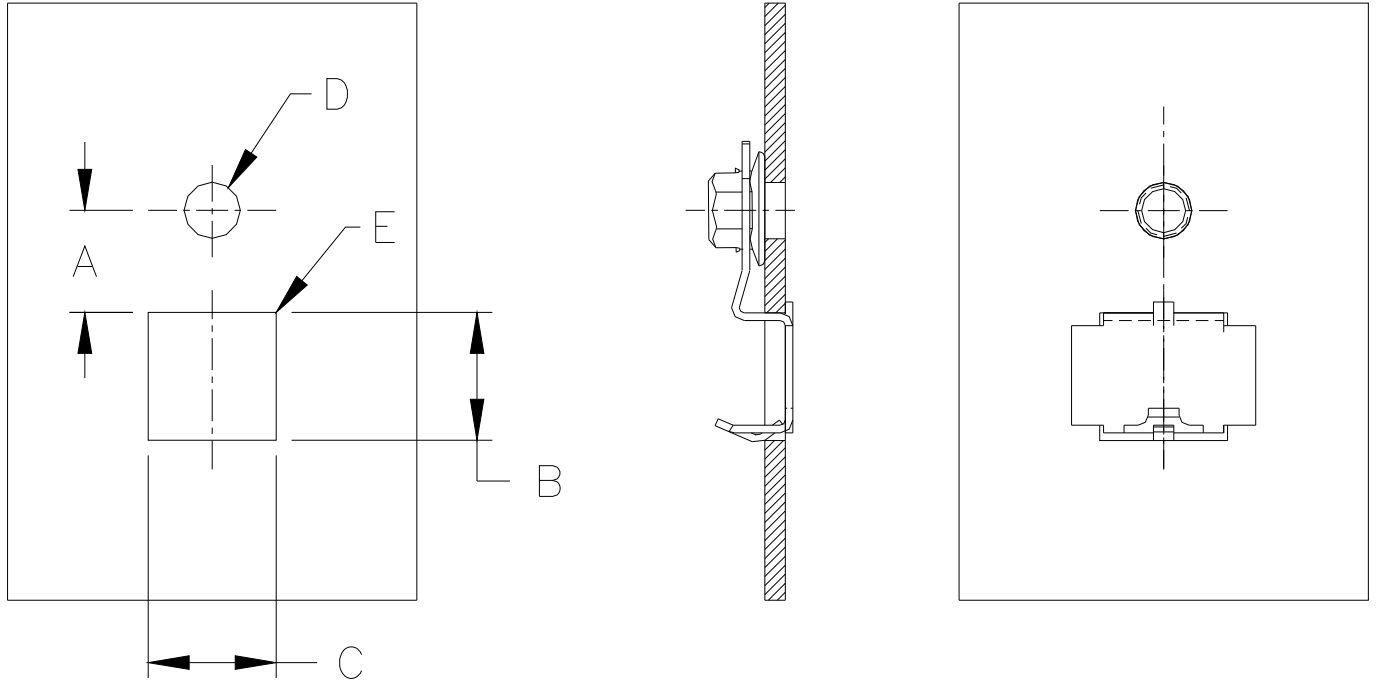


Table 1. Recommended Panel Data

Dimensions in mm

PART NUMBER	PANEL THICKNESS	A +0.25	B +0.25	C +0.25	D MIN.	E RAD.+0.25
BBR-08 HF	1.5 / 2.8	15.0	20	20	9.0	1.5
BBR-10 HF	2.0 / 3.5	20.0	25	25	11.0	1.5
BBR-12 HF	2.5 / 4.0	25.0	30	30	13.0	1.5
BBR-14 HF	2.8 / 4.5	30.0	35	35	15.0	1.5
BBR-16 HF	3.0 / 5.0	35.0	40	40	17.5	1.5

Consideration should be given to tolerance of manufacturing practices used to emboss and punch these features when designing panels in which they are employed.



VALUE ADDED FASTENERS

NBR SERIES PRODUCTS

General Specifications, Assembly Information, Mechanical and Performance Requirements

ALPHA – 33375 GLENDALE AVE. LIVONIA, MI 48150-1615 PH: 734.523.1000 FAX: 734.425.1297 www.alphausa.com

Figure 2. Installation Method

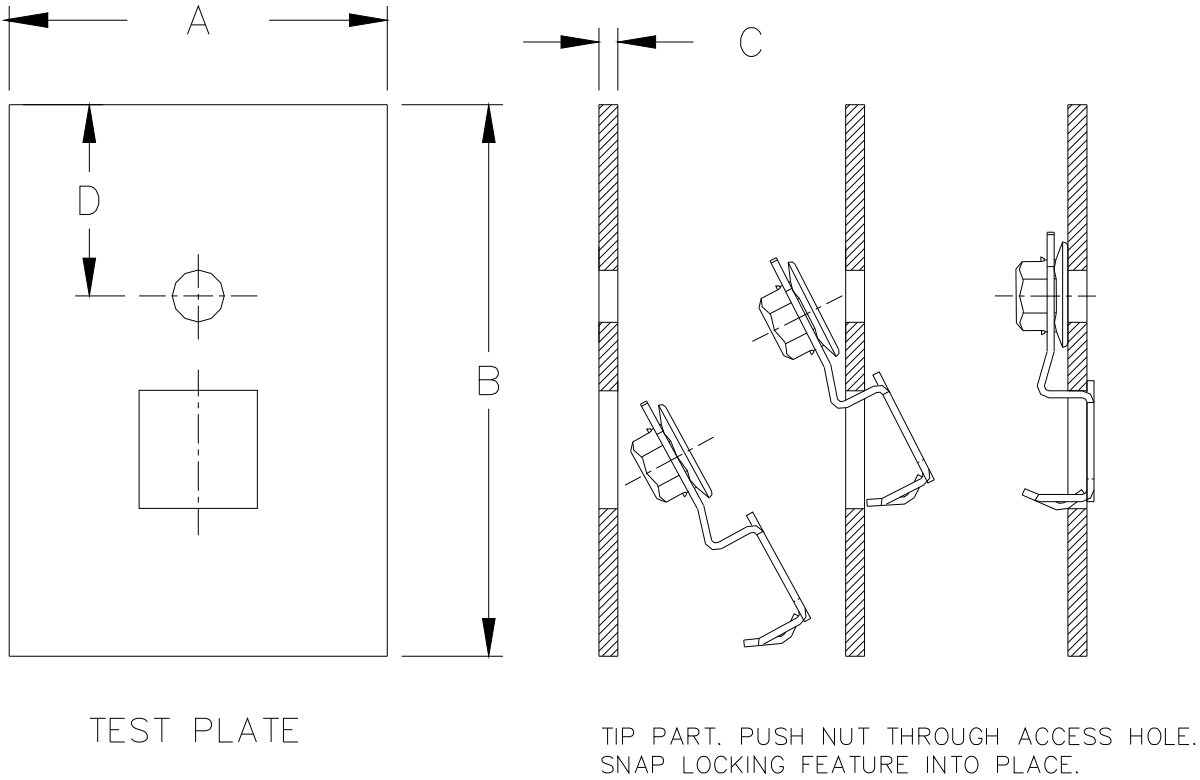


Table 2. Test Plate Dimensions and Performance Specifications

Dimensions in mm

PART NUMBER	A Ref.	B Ref.	C ± 0.25	D Ref.	TWIST-OUT MINIMUM *
NBR-08 HF	50.0	100.0	2.3	25	27 N•m
NBR-10 HF	75.0	150.0	3.0	30	42 N•m
NBR-12 HF	80.0	160.0	3.5	35	63 N•m
NBR-14 HF	90.0	180.0	3.8	40	93 N•m
NBR-16 HF	100.0	200.0	4.0	50	126 N•m

*Twist-out performance numbers are from Class 10 prevailing torque nut standards and represent three times the maximum first installation torque.

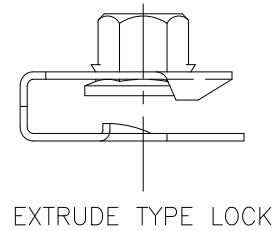
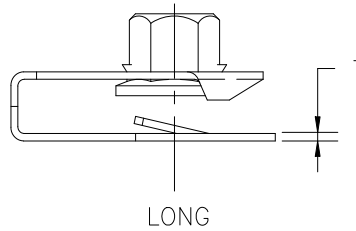
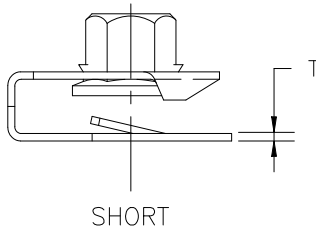
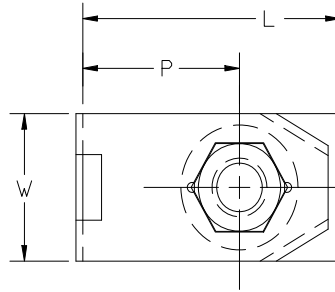
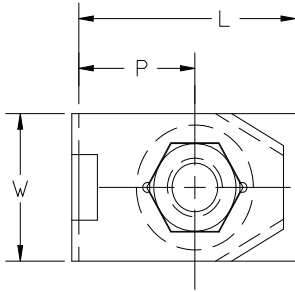


VALUE ADDED FASTENERS

NRU SERIES

Nut & Retainer Assembly – “U” TYPE

ALPHA – 33375 GLENDALE AVE. LIVONIA, MI 48150-1615 PH: 734 523-1000 FAX: 734 425-1297 www.alphausa.com



DIMENSIONS IN MM

Rev 6/25/07

PART NUMBER	N	L	T	W	P	PANEL RANGE
NRU-08 S-HF	M8x1.25	29.2/30.8	0.71/0.89	18.2/19.8	13.7/15.3	0.8/4.0
NRU-08 L-HF	M8x1.25	35.7/37.3	0.71/0.89	18.2/19.8	20.2/21.8	0.8/4.0
NRU-10 S-HF	M10x1.5	36.2/37.8	0.91/1.09	23.2/24.8	17.1/19.3	1.5/5.5
NRU-10 L-HF	M10x1.5	46.2/47.8	0.91/1.09	23.2/24.8	27.7/29.3	1.5/5.5
NRU-12 S-HF	M12x1.75	44.7/46.3	1.14/1.32	29.2/30.8	22.7/24.3	1.5/5.5
NRU-12 L-HF	M12x1.75	55.2/56.8	1.14/1.32	29.2/30.8	31.2/32.8	1.5/5.5
NRU-14 S-HF	M14x 2	55.2/56.8	1.14/1.32	33.2/34.8	31.2/32.8	3.0/5.5
NRU-14 L-HF	M14x 2	68.2/69.8	1.14/1.32	33.2/34.8	44.2/45.8	3.0/5.5
NRU-16 S-HF	M16x 2	58.2/59.8	1.14/1.32	39.2/40.8	31.2/32.8	3.0/5.5
NRU-16 L-HF	M16x2	71.2/72.8	1.14/1.32	39.2/40.8	44.2/45.8	3.0/5.5

NRU-14 S-HF-10-PTM

PART TYPE
NUT RETAINER “U” TYPE

NUT SIZE
S = SHORT L = LONG

NUT TYPE
HEX FLANGE

PROPERTY CLASS
CLASS 8 or 10

PREVAILING TORQUE
NPT=NONE PTM=METAL

OTHER SIZES AVAILABLE AS CUSTOM ORDER – CALL FOR TIMING



VALUE ADDED FASTENERS

NRU SERIES PRODUCTS

General Specifications, Assembly Information, Mechanical and Performance Requirements

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1. SCOPE

This standard covers material, heat treatment, and performance of NUT & RETAINER - "U" TYPE assemblies, in the range of M8 to M16 inclusive.

1.1 REFERENCES.

ISO-261: ISO general-purpose metric screw threads -- General plan

ISO-965: ISO general-purpose metric screw threads – Tolerances

ISO-1502: ISO general-purpose metric screw threads -- Gauges and gauging

2. MATERIAL AND HEAT TREATMENT

2.1 MATERIAL

Material used in the manufacture of the retainer must meet the performance requirements of this standard.

2.2 HEAT TREATMENT

Heat treat as necessary to meet the performance requirements of this standard.

2.3 FASTENERS

Fasteners must meet the General purpose metric screw thread standards ISO 261, ISO 965, and ISO 1502.

2.4 IDENTIFICATION

The assemblies may be permanently and legibly marked with manufacturers identification.

2.5 WORKMANSHIP

The nut and retainer shall be free from cracks, splits, burrs, loose scale, sharp edges and any defect that may affect fit, form, or function.

2.6 MANUFACTURING VARIATIONS

Retaining feature and other dimensional details of parts may vary within envelope dimensions given, provided all requirements of this specification are met.

3. PERFORMANCE

3.1 PANEL DATA

Recommended panel dimensions are shown in Figure 1 and listed in Table 1.

3.2 INSTALLATION

Assemblies shall be designed to minimize the required installation force to the application panel. As applications vary considerably, the maximum installation force specification shall be designated with each individual design release. The method of testing installation force performance is depicted in Figure 2 and the maximum installation forces are listed in Table 2.

The testing panel (Figure 2) shall be constructed of tool steel, be ground smooth to a surface roughness of $R_a = 0.8 \mu\text{m}$, and be hardened to HRC 58-60. The test panel should be manufactured to the mean application panel thickness and have an edge radius per Table 2. Installation forces shall be applied at a travel rate of $4 \pm 1 \text{mm per second}$ using a testing setup per Figure 2.



VALUE ADDED FASTENERS

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3.3 RETENTION

Assemblies shall be placed onto the test panel per Figure 2. The retaining feature must lock into the specified panel hole. Pull force shall be applied through the throat area of the retainer at a travel rate of 4 ± 1 mm per second. Retainer shall not detach from the panel at a load below the minimum specified in Table 2.

3.4 NUT TWISTOUT

Assemblies shall be placed in the test fixture per Figure 2. A pin should be placed through the inner diameter of the nut and the test panel hole to avoid the part twisting off the test panel. Torque shall be applied to the hex of the nut using a standard socket driven with a certified torque wrench. The retainer shall not fracture and the nut shall not twist out below the minimum torque requirement specified in Table 2.



VALUE ADDED FASTENERS

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Figure 1. Panel Examples

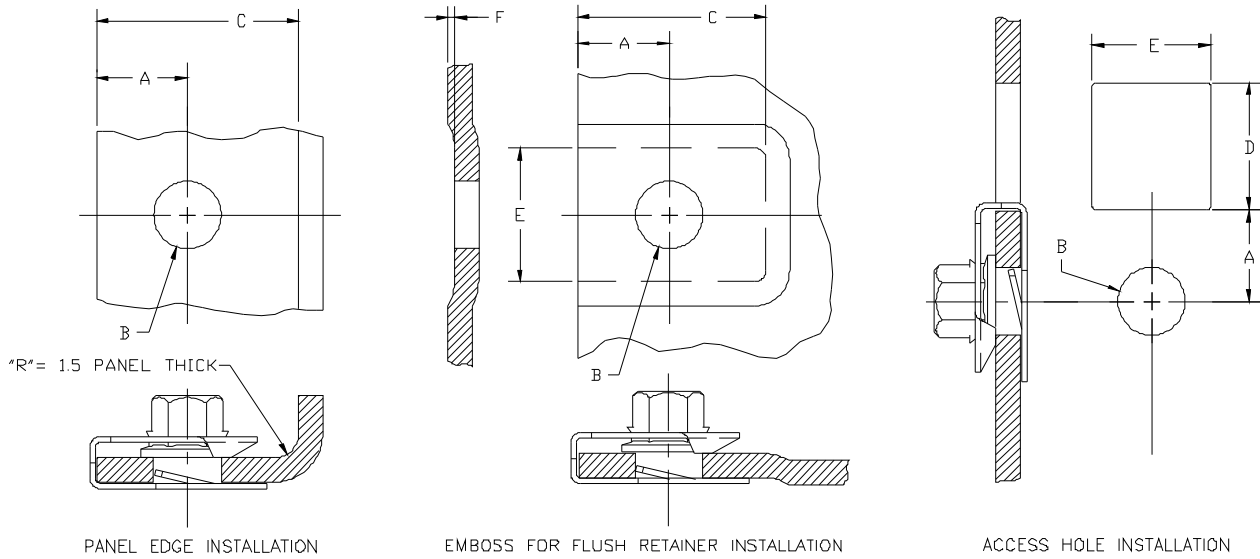


Table 1. Recommended Panel Data

Dimensions in mm

PART NUMBER	A	B	C	D	E	F
	EDGE DISTANCE	PANEL HOLE DIAMETER	LENGTH CLEARANCE	SLOT OPENING	SLOT OPENING	EMBOSS DEPTH
NRU-08 S-HF	13.5	12.5	31.0 MIN.	23.5 MIN.	21.5 MIN.	1.5
	12.5	11.3				1.0
NRU-08 L-HF	20.0	12.5	37.5 MIN.	28.0 MIN.		1.5
	19.0	11.3				1.0
NRU-10 S-HF	17.5	16.0	38.0 MIN.	28.5 MIN.	26.5 MIN.	1.8
	16.5	14.7				1.3
NRU-10 L-HF	27.5	16.0	48.0 MIN.	36.0 MIN.		1.8
	26.5	14.7				1.3
NRU-12 S-HF	22.5	19.0	46.5 MIN.	35.0 MIN.	32.5 MIN.	2.3
	21.5	17.5				1.8
NRU-12 L-HF	32.5	19.0	56.5 MIN.	42.5 MIN.		2.3
	31.5	17.5				1.8
NRU-14 S-HF	31.0	22.0	57.0 MIN.	43.0 MIN.	36.5 MIN.	2.3
	30.0	20.5				1.8
NRU-14 L-HF	44.0	22.0	70.0 MIN.	52.5 MIN.		2.3
	43.0	20.5				1.8
NRU-16 S-HF	31.0	24.0	60.0 MIN.	45.0 MIN.	42.5 MIN.	2.3
	30.0	22.5				1.8
NRU-16 L-HF	44.0	24.0	73.0 MIN.	55.0 MIN.		2.3
	43.0	22.5				1.8

Consideration should be given to tolerance of manufacturing practices used to emboss and punch these features when designing panels in which they are employed.



VALUE ADDED FASTENERS

NRU SERIES PRODUCTS

General Specifications, Assembly Information, Mechanical and Performance Requirements

ALPHA – 33375 GLENDALE AVE. LIVONIA, MI 48150-1615 PH: 734 523-1000 FAX: 734 425-1297 www.alphausa.com

Figure 2. Performance Testing Methods

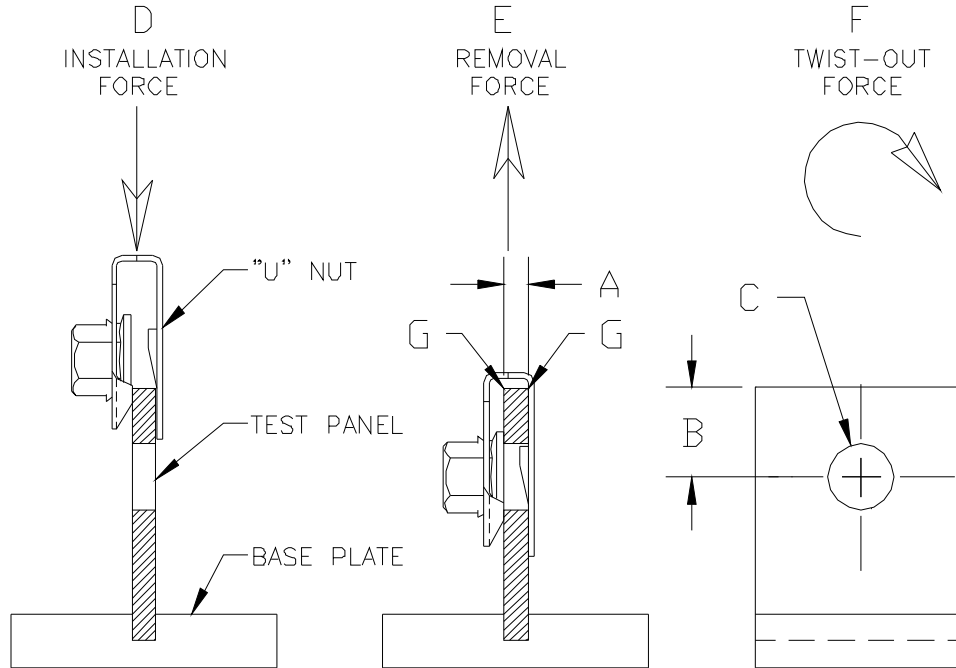


Table 2. Test Plate Dimensions and Performance Specifications

Dimensions in mm unless otherwise specified

PART NUMBER	A	B	C	D	E	F	G
	PANEL THICKNESS	HOLE TO EDGE	HOLE DIAMETER	INSTALL MAXIMUM	REMOVE MINIMUM	TWIST-OUT MINIMUM *	EDGE RADIUS
NRU-08 S-HF	2.4	12.5	11.3	90 N	13 N	27 N•m	0.3
NRU-08 L-HF	2.4	19.0	11.3	90 N	13 N	27 N•m	0.3
NRU-10 S-HF	3.5	16.5	14.7	90 N	13 N	42 N•m	0.5
NRU-10 L-HF	3.5	26.5	14.7	90 N	13 N	42 N•m	0.5
NRU-12 S-HF	3.5	21.5	17.5	90 N	13 N	63 N•m	0.7
NRU-12 L-HF	3.5	31.5	17.5	90 N	13 N	63 N•m	0.7
NRU-14 S-HF	4.3	30.0	20.5	120 N	13 N	93 N•m	1.0
NRU-14 L-HF	4.3	44.0	20.5	120 N	13 N	93 N•m	1.0
NRU-16 S-HF	4.3	30.0	22.5	120 N	13 N	126 N•m	1.2
NRU-16 L-HF	4.3	44.0	22.5	120 N	13 N	126 N•m	1.2

*TWIST-OUT PERFORMANCE NUMBERS ARE FROM CLASS 10 PREVAILING TORQUE NUT STANDARDS AND REPRESENT THREE TIMES THE MAXIMUM FIRST INSTALLATION TORQUE.

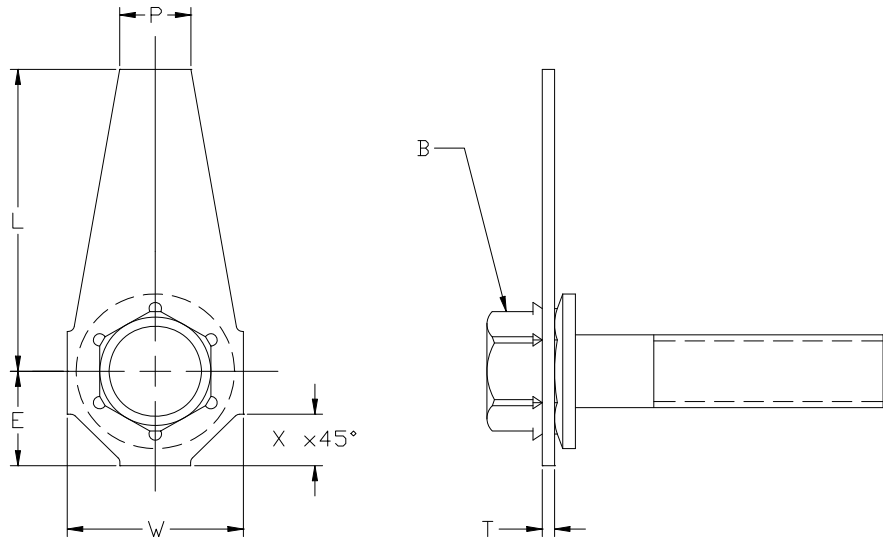


VALUE ADDED FASTENERS

BRS SERIES

Bolt & Retainer Assembly – SINGLE

ALPHA – 33375 GLENDALE AVE. LIVONIA, MI 48150-1615 PH: 734.523.1000 FAX: 734.425.1297 www.alphausa.com



Rev 6/25/07

DIMENSIONS IN MM

PART NUMBER	B	L	T	W	P	E	X
BRS-1025-HF	M10x1.5	25	1.5/1.8	23/24	17.1	13.5	7.3
BRS-1035-HF	M10x1.5	35	1.5/1.8	23/24	14.8	13.5	7.3
BRS-1050-HF	M10x1.5	50	1.5/1.8	23/24	11.4	13.5	7.3
BRS-1065-HF	M10x1.5	65	1.5/1.8	23/24	8.0	13.5	7.3
BRS-1235-HF	M12x1.75	35	1.5/1.8	27/28	18.2	15.5	8.5
BRS-1250-HF	M12x1.75	50	1.5/1.8	27/28	14.4	15.5	8.5
BRS-1265-HF	M12x1.75	65	1.5/1.8	27/28	10.6	15.5	8.5
BRS-1275-HF	M12x1.75	75	1.5/1.8	27/28	8.0	15.5	8.5
BRS-1435-HF	M14x2	35	2.0/2.3	32/33	21.4	18.5	10.0
BRS-1450-HF	M14x2	50	2.0/2.3	32/33	16.4	18.5	10.0
BRS-1465-HF	M14x2	65	2.0/2.3	32/33	11.3	18.5	10.0
BRS-1475-HF	M14x2	75	2.0/2.3	32/33	8.0	18.5	10.0
BRS-1635-HF	M16x2	35	2.5/2.8	36/37	24.0	20.5	11.2
BRS-1650-HF	M16x2	50	2.5/2.8	36/37	18.0	20.5	11.2
BRS-1665-HF	M16x2	65	2.5/2.8	36/37	12.0	20.5	11.2
BRS-1675-HF	M16x2	75	2.5/2.8	36/37	8.0	20.5	11.2

BRS-14 65-HF-50-8.8-PLT

PART TYPE: BOLT RETAINER SINGLE
 BOLT SIZE: M14
 RET. LENGTH: 65 CENTER TO END
 BOLT TYPE: HEX FLANGE
 BOLT LENGTH: 50 EXCLUDING POINT
 PROPERTY CLASS: CLASS 8.8 or 10.9
 BOLT POINT TYPE: PLT= PILOTED
 STD=NO PILOT NP=ANTI CROSS THREADING

OTHER SIZES AVAILABLE AS CUSTOM ORDER – CALL FOR TIMING

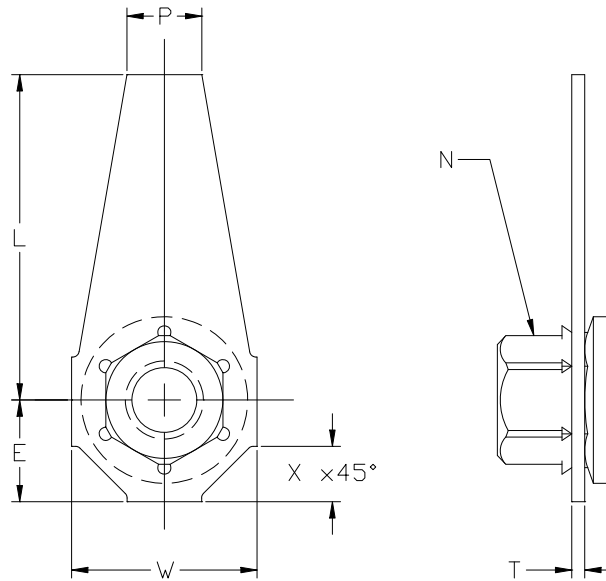


VALUE ADDED FASTENERS

NRS SERIES

Nut & Retainer Assembly – SINGLE

ALPHA – 33375 GLENDALE AVE. LIVONIA, MI 48150-1615 PH: 734.523.1000 FAX: 734.425.1297 www.alphausa.com



DIMENSIONS IN MM

Rev 6/25/07

PART NUMBER	N	L	T	W	P	E	X
NRS-1025-HF	M10x1.5	25	1.5/1.8	23/24	17.1	13.5	7.3
NRS-1035-HF	M10x1.5	35	1.5/1.8	23/24	14.8	13.5	7.3
NRS-1050-HF	M10x1.5	50	1.5/1.8	23/24	11.4	13.5	7.3
NRS-1065-HF	M10x1.5	65	1.5/1.8	23/24	8.0	13.5	7.3
NRS-1235-HF	M12x1.75	35	1.5/1.8	27/28	18.2	15.5	8.5
NRS-1250-HF	M12x1.75	50	1.5/1.8	27/28	14.4	15.5	8.5
NRS-1265-HF	M12x1.75	65	1.5/1.8	27/28	10.6	15.5	8.5
NRS-1275-HF	M12x1.75	75	1.5/1.8	27/28	8.0	15.5	8.5
NRS-1435-HF	M14x2	35	2.0/2.3	32/33	21.4	18.5	10.0
NRS-1450-HF	M14x2	50	2.0/2.3	32/33	16.4	18.5	10.0
NRS-1465-HF	M14x2	65	2.0/2.3	32/33	11.3	18.5	10.0
NRS-1475-HF	M14x2	75	2.0/2.3	32/33	8.0	18.5	10.0
NRS-1635-HF	M16x2	35	2.5/2.8	36/37	24.0	20.5	11.2
NRS-1650-HF	M16x2	50	2.5/2.8	36/37	18.0	20.5	11.2
NRS-1665-HF	M16x2	65	2.5/2.8	36/37	12.0	20.5	11.2
NRS-1675-HF	M16x2	75	2.5/2.8	36/37	8.0	20.5	11.2

NRS-14 65-HF-10-PTP

PART TYPE
NUT RETAINER SINGLE

NUT
SIZE

LENGTH
CENTER TO END

NUT TYPE
HEX FLANGE

PROPERTY CLASS
CLASS 8 or 10

PREVAILING TORQUE
NPT=NONE, PTM=METAL, PTP=PLASTIC

OTHER SIZES AVAILABLE AS CUSTOM ORDER – CALL FOR TIMING

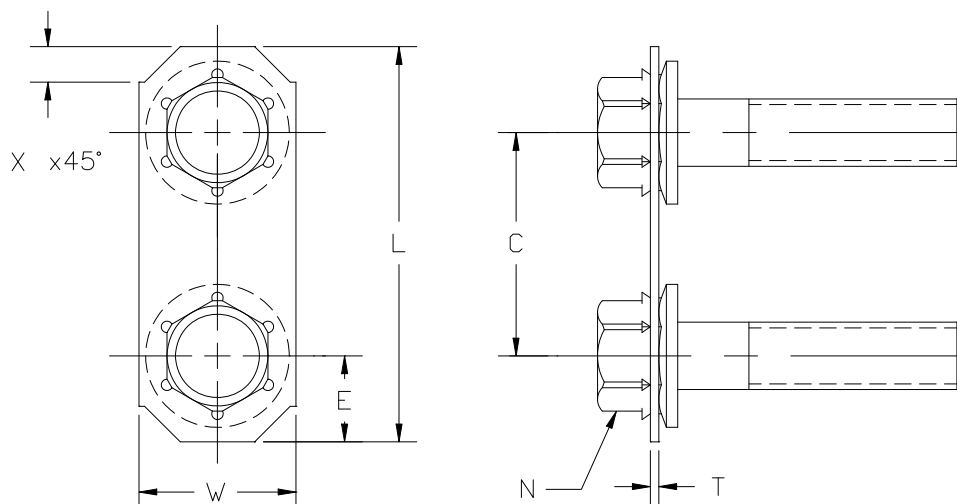


VALUE ADDED FASTENERS

BRD SERIES

Bolt & Retainer Assembly – DOUBLE

ALPHA – 33375 GLENDALE AVE. LIVONIA, MI 48150-1615 PH: 734.523.1000 FAX: 734.425.1297 www.alphausa.com



Rev 6/25/07

DIMENSIONS IN MM

PART NUMBER	B	C	T	W	L	E	X
BRD-1030-HF	M10x1.5	30	1.5/1.8	23/24	57	13.5	7.3
BRD-1050-HF	M10x1.5	50	1.5/1.8	23/24	77	13.5	7.3
BRD-1065-HF	M10x1.5	65	1.5/1.8	23/24	92	13.5	7.3
BRD-1080-HF	M10x1.5	80	1.5/1.8	23/24	107	13.5	7.3
BRD-10100-HF	M10x1.5	100	1.5/1.8	23/24	127	13.5	7.3
BRD-1230-HF	M12x1.75	30	1.5/1.8	27/28	61	15.5	8.5
BRD-1250-HF	M12x1.75	50	1.5/1.8	27/28	81	15.5	8.5
BRD-1265-HF	M12x1.75	65	1.5/1.8	27/28	96	15.5	8.5
BRD-1280-HF	M12x1.75	80	1.5/1.8	27/28	111	15.5	8.5
BRD-12100-HF	M12x1.75	100	1.5/1.8	27/28	131	15.5	8.5
BRD-1450-HF	M14x2	50	2.0/2.3	32/33	87	18.5	10.0
BRD-1465-HF	M14x2	65	2.0/2.3	32/33	102	18.5	10.0
BRD-1480-HF	M14x2	80	2.0/2.3	32/33	117	18.5	10.0
BRD-14100-HF	M14x2	100	2.0/2.3	32/33	137	18.5	10.0
BRD-14115-HF	M14x2	115	2.0/2.3	32/33	152	18.5	10.0
BRD-1650-HF	M16x2	50	2.5/2.8	36/37	91	20.5	11.2
BRD-1665-HF	M16x2	65	2.5/2.8	36/37	106	20.5	11.2
BRD-1680-HF	M16x2	80	2.5/2.8	36/37	121	20.5	11.2
BRD-16100-HF	M16x2	100	2.5/2.8	36/37	141	20.5	11.2
BRD-16115-HF	M16x2	115	2.5/2.8	36/37	156	20.5	11.2

BRD-14 65-HF-50-8.8-PLT

PART TYPE: BOLT RETAINER DBL
 BOLT SIZE: 14
 SPACING CENTER TO CENTER: 65
 BOLT TYPE: HEX FLANGE
 BOLT LENGTH EXCLUDING POINT: 50
 PROPERTY CLASS: CLASS 8.8 or 10.9
 BOLT POINT TYPE: PLT=PILOTED
STD=NO PILOT NP=ANTI CROSS THREADING

OTHER SIZES AVAILABLE AS CUSTOM ORDER – CALL FOR TIMING

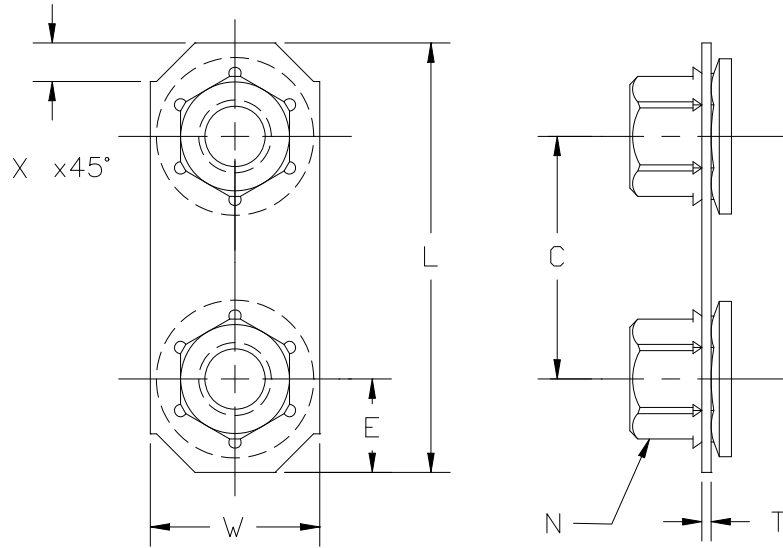


VALUE ADDED FASTENERS

NRD SERIES

Nut & Retainer Assembly – DOUBLE

ALPHA – 33375 GLENDALE AVE. LIVONIA, MI 48150-1615 PH: 734.523.1000 FAX: 734.425.1297 www.alphausa.com



DIMENSIONS IN MM

Rev 6/25/07

PART NUMBER	N	C	T	W	L	E	X
NRD-1030-HF	M10x1.5	30	1.5/1.8	23/24	57	13.5	7.3
NRD-1050-HF	M10x1.5	50	1.5/1.8	23/24	77	13.5	7.3
NRD-1065-HF	M10x1.5	65	1.5/1.8	23/24	92	13.5	7.3
NRD-1080-HF	M10x1.5	80	1.5/1.8	23/24	107	13.5	7.3
NRD-10100-HF	M10x1.5	100	1.5/1.8	23/24	127	13.5	7.3
NRD-1230-HF	M12x1.75	30	1.5/1.8	27/28	61	15.5	8.5
NRD-1250-HF	M12x1.75	50	1.5/1.8	27/28	81	15.5	8.5
NRD-1265-HF	M12x1.75	65	1.5/1.8	27/28	96	15.5	8.5
NRD-1280-HF	M12x1.75	80	1.5/1.8	27/28	111	15.5	8.5
NRD-12100-HF	M12x1.75	100	1.5/1.8	27/28	131	15.5	8.5
NRD-1450-HF	M14x2	50	2.0/2.3	32/33	87	18.5	10.0
NRD-1465-HF	M14x2	65	2.0/2.3	32/33	102	18.5	10.0
NRD-1480-HF	M14x2	80	2.0/2.3	32/33	117	18.5	10.0
NRD-14100-HF	M14x2	100	2.0/2.3	32/33	137	18.5	10.0
NRD-14115-HF	M14x2	115	2.0/2.3	32/33	152	18.5	10.0
NRD-1650-HF	M16x2	50	2.5/2.8	36/37	91	20.5	11.2
NRD-1665-HF	M16x2	65	2.5/2.8	36/37	106	20.5	11.2
NRD-1680-HF	M16x2	80	2.5/2.8	36/37	121	20.5	11.2
NRD-16100-HF	M16x2	100	2.5/2.8	36/37	141	20.5	11.2
NRD-16115-HF	M16x2	115	2.5/2.8	36/37	156	20.5	11.2

NRD-14 65-HF-10-PTP

PART TYPE: NUT RETAINER DBL
 NUT SIZE: M14x2
 SPACING CENTER TO CENTER: 65
 NUT TYPE: HEX FLANGE
 PROPERTY CLASS: CLASS 8 or 10
 PREVAILING TORQUE: NPT=NONE, PTM=METAL, PTP=PLASTIC

OTHER SIZES AVAILABLE AS CUSTOM ORDER – CALL FOR TIMING

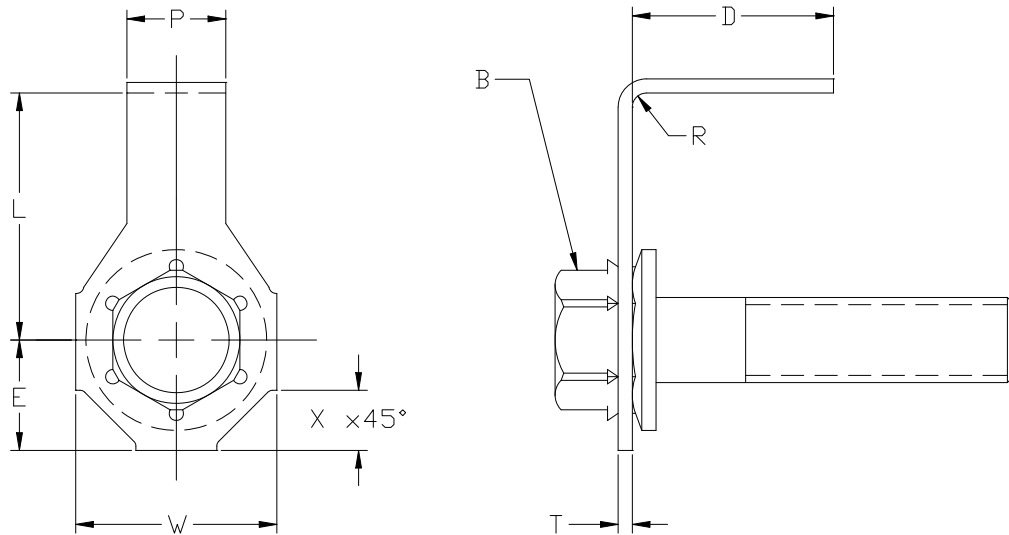


VALUE ADDED FASTENERS

BRL SERIES

Bolt & Retainer Assembly – 90 DEGREE BEND

ALPHA – 33375 GLENDALE AVE. LIVONIA, MI 48150-1615 PH: 734.523.1000 FAX: 734.425.1297 www.alphausa.com



DIMENSIONS IN MM

Rev 6/25/07

PART NUMBER	B	L	D	T	W	P	E	X
BRL-1015-HF	M10x1.5	15	24.0	1.5/1.8	23/24	12.0	13.5	7.3
BRL-1025-HF	M10x1.5	25	24.0	1.5/1.8	23/24	12.0	13.5	7.3
BRL-1035-HF	M10x1.5	35	24.0	1.5/1.8	23/24	12.0	13.5	7.3
BRL-1050-HF	M10x1.5	50	24.0	1.5/1.8	23/24	12.0	13.5	7.3
BRL-1215-HF	M12x1.75	15	28.5	1.5/1.8	27/28	14.0	15.5	8.5
BRL-1225-HF	M12x1.75	25	28.5	1.5/1.8	27/28	14.0	15.5	8.5
BRL-1235-HF	M12x1.75	35	28.5	1.5/1.8	27/28	14.0	15.5	8.5
BRL-1250-HF	M12x1.75	50	28.5	1.5/1.8	27/28	14.0	15.5	8.5
BRL-1420-HF	M14x2	20	32.0	2.0/2.3	32/33	16.0	18.5	10.0
BRL-1435-HF	M14x2	35	32.0	2.0/2.3	32/33	16.0	18.5	10.0
BRL-1450-HF	M14x2	50	32.0	2.0/2.3	32/33	16.0	18.5	10.0
BRL-1465-HF	M14x2	65	32.0	2.0/2.3	32/33	16.0	18.5	10.0
BRL-1620-HF	M16x2	20	36.0	2.5/2.8	36/37	18.0	20.5	11.2
BRL-1635-HF	M16x2	35	36.0	2.5/2.8	36/37	18.0	20.5	11.2
BRL-1650-HF	M16x2	50	36.0	2.5/2.8	36/37	18.0	20.5	11.2
BRL-1665-HF	M16x2	65	36.0	2.5/2.8	36/37	18.0	20.5	11.2

BRL-14 65-28.5-HF-50-8.8-PLT

PART TYPE BOLT LENGTH BEND LENGTH BOLT TYPE BOLT LENGTH PROPERTY CLASS BOLT POINT TYPE
 BOLT RETAINER L SIZE CENTER TO INSIDE INSIDE TO END HEX FLANGE EXCLUDING POINT CLASS 8.8 or 10.9 STD=NO PILOT PLT= PILOTTED
 NP=ANTI CROSS THREADING

OTHER SIZES AVAILABLE AS CUSTOM ORDER – CALL FOR TIMING

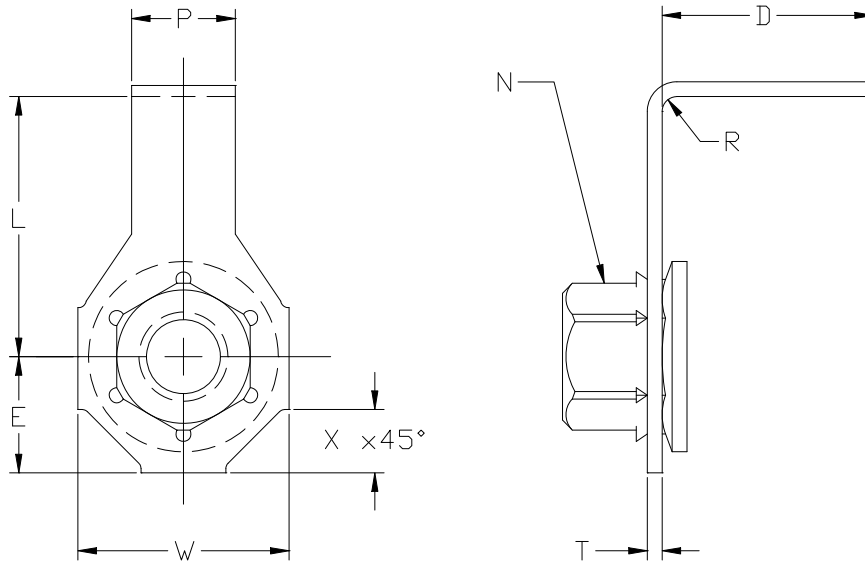


VALUE ADDED FASTENERS

NRL SERIES

Nut & Retainer Assembly – 90 DEGREE BEND

ALPHA – 33375 GLENDALE AVE. LIVONIA, MI 48150-1615 PH: 734.523.1000 FAX: 734.425.1297 www.alphausa.com



Rev 6/25/07

DIMENSIONS IN MM

PART NUMBER	N	L	D	T	W	P	E	X
NRL-1015-HF	M10x1.5	15	24.0	1.5/1.8	23/24	12.0	13.5	7.3
NRL-1025-HF	M10x1.5	25	24.0	1.5/1.8	23/24	12.0	13.5	7.3
NRL-1035-HF	M10x1.5	35	24.0	1.5/1.8	23/24	12.0	13.5	7.3
NRL-1050-HF	M10x1.5	50	24.0	1.5/1.8	23/24	12.0	13.5	7.3
NRL-1215-HF	M12x1.75	15	28.5	1.5/1.8	27/28	14.0	15.5	8.5
NRL-1225-HF	M12x1.75	25	28.5	1.5/1.8	27/28	14.0	15.5	8.5
NRL-1235-HF	M12x1.75	35	28.5	1.5/1.8	27/28	14.0	15.5	8.5
NRL-1250-HF	M12x1.75	50	28.5	1.5/1.8	27/28	14.0	15.5	8.5
NRL-1420-HF	M14x2	20	32.0	2.0/2.3	32/33	16.0	18.5	10.0
NRL-1435-HF	M14x2	35	32.0	2.0/2.3	32/33	16.0	18.5	10.0
NRL-1450-HF	M14x2	50	32.0	2.0/2.3	32/33	16.0	18.5	10.0
NRL-1465-HF	M14x2	65	32.0	2.0/2.3	32/33	16.0	18.5	10.0
NRL-1620-HF	M16x2	20	36.0	2.5/2.8	36/37	18.0	20.5	11.2
NRL-1635-HF	M16x2	35	36.0	2.5/2.8	36/37	18.0	20.5	11.2
NRL-1650-HF	M16x2	50	36.0	2.5/2.8	36/37	18.0	20.5	11.2
NRL-1665-HF	M16x2	65	36.0	2.5/2.8	36/37	18.0	20.5	11.2

NRL-14 65-28.5-HF-10-PTP

PART TYPE: NUT RETAINER L
 NUT SIZE: 14
 LENGTH: 65 (CENTER TO INSIDE)
 BEND LENGTH: 28.5 (INSIDE TO END)
 NUT TYPE: HEX FLANGE
 PROPERTY CLASS: CLASS 8 or 10
 PREVAILING TORQUE: 10 (NPT=NONE, PTM= METAL, PTP=PLASTIC)

OTHER SIZES AVAILABLE AS CUSTOM ORDER – CALL FOR TIMING



VALUE ADDED FASTENERS

BRS, NRS, BRD, NRD, BRL, & NRL SERIES PRODUCTS

General Specifications, Assembly Information, Mechanical and Performance Requirements

ALPHA – 33375 GLENDALE AVE. LIVONIA, MI 48150-1615 PH: 734.523.1000 FAX: 734.425.1297 www.alphausa.com

1. SCOPE

This standard covers material, heat treatment, and performance of BOLT & RETAINER and NUT & RETAINER assemblies, in the range of M10 to M16 inclusive.

2. MATERIAL AND HEAT TREATMENT

2.1 MATERIAL

Material selection must be based on meeting the performance requirements of this standard.

2.2 IDENTIFICATION

The retainers may be permanently and legibly marked with manufacturers identification.

2.3 HEAT TREATMENT

Heat treat as necessary to meet the performance requirements of this standard. Wherever possible, retainer heat treatment must not exceed HRC 38.

2.4 FASTENERS

Fasteners must meet the General purpose metric screw thread standards ISO 261, ISO 965, and ISO 1502.

2.5 STAKING

Fasteners must be staked to retainer plates to meet the performance requirements of this standard. The number of stakes may vary as long as the performance requirements are met.

2.6 FINISH

Assemblies are to be finished per customer requirements. Finish is not required on staked areas.

2.6 WORKMANSHIP

The retainers shall be free from cracks, splits, burrs, loose scale, sharp edges and any defect that may affect fit, form, or function.

3. PERFORMANCE

3.1 TWIST-OUT

Twist-out performance of each fastener is defined in Table 1. This number represents three times the first on maximum torque specification for each fastener size.

3.2 PUSH-OUT

Push-out performance of each fastener is defined in Table 1.

Table 1
Performance Requirements

Fastener Size	Unsupported Torque-Out (N•m)		Push-Out (kN)
	Nut PC 8 Bolt PC 8.8	Nut PC 10 Bolt PC 10.9	
M10x1.5	31.5	42.0	2.2
M12x1.75	46.5	63.0	2.4
M14x2.0	72.0	93.0	2.6
M16x2.0	96.0	126.0	2.8





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