Alcoa Fastening Systems

ALCOA

BobTail®

The next generation small diameter HuckBolt®.

No pintail
Fast installation
Vibration resistant

3/16"-3/8"

HUCK®

Meishan v. Howmet
IPR2026-00268
Ex. 1010-001

The Huck BobTail® System

Engineered for the highest level of performance and reliability.

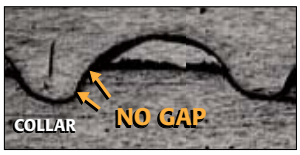
The Huck BobTail® system was developed to meet the unique challenges of a wide range of assembly applications, offering safe, quiet, swaged-on installation technology in an advanced HuckBolt® design.

Offering up to 10 times the fatigue strength of conventional nuts and bolts, BobTail delivers ultimate strength, installation speed, and vibration resistance. It has been designed to provide superior joining strength in even the most extreme environments. Available in a wide range of sizes, grades, and materials, BobTail often provides an overall lower installed cost when you factor in the cost of the fasteners with installation speeds and inspection labor.

Unlike conventional nuts and bolts, which have gaps on the thread flanks even when tightened, the BobTail system is designed for full metal-to-metal contact around the bolt thread by the collar. An installed BobTail has no gaps and delivers a more secure connection, providing reliability even in the most severe environments.

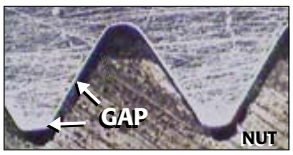
Installed gap comparison

HuckBolt



The swaged collar forms over the lock thread, and eliminates the gap.

Standard Bolt



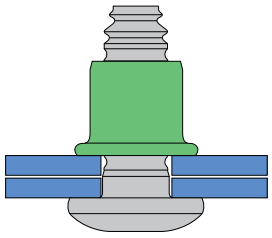
Regular nuts and bolts have gap, which allows for loosening by vibration.

Petitioner's Ex. 1010-002

Unmatched speed of installation

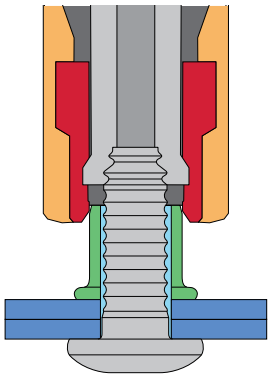
The BobTail® System delivers a lightening-quick installation cycle time for greater productivity. This quick cycle is due, in part, to the short time required to apply the tool to the pin and complete the installation cycle. Once the operator engages the trigger, the swage sequence begins. Releasing the trigger ejects the fastener.

1



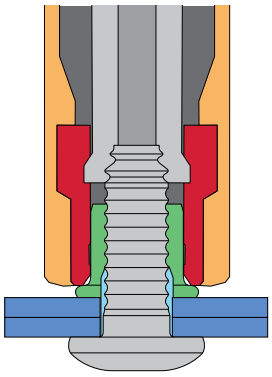
The pin is inserted into the prepared hole, and the collar is placed onto the pin.

2



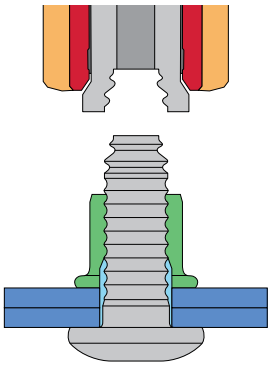
The installation tool is applied to annular pull grooves. When the tool is activated, a puller in the nose assembly draws the pin into the tool, tension loading the joint and drawing up any sheet gap.

3



At a predetermined force, the anvil begins to swage the collar into the pin's lockgrooves. Continued swaging elongates the collar and pin, developing precise clamp.

4

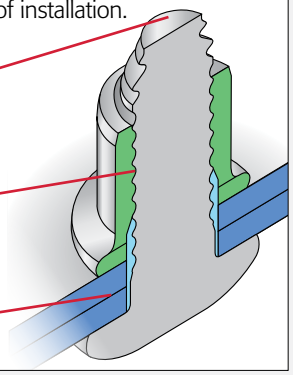


When swaging of the collar into the pin lockgrooves is complete, the tool ejects the fastener and releases the puller to complete the sequence.

Secure, fast installation

Combining an advanced fastener design with the latest in easy-to-use, ergonomic installation tooling, the BobTail system delivers a strong connection and sets a new standard for ease of installation.

- Pintail-less design means reduced noise, no waste, and improved corrosion resistance.
- Collar material swaged into the lockgrooves forms a permanent, vibration-resistant connection.
- Low-swage technology allows for faster, lighter weight tooling that costs less.



Visual inspection

Before Swaging

After Swaging

The swaging process deforms and changes the color of the collar.

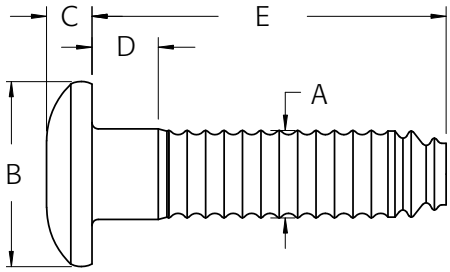
BobTail® benefits

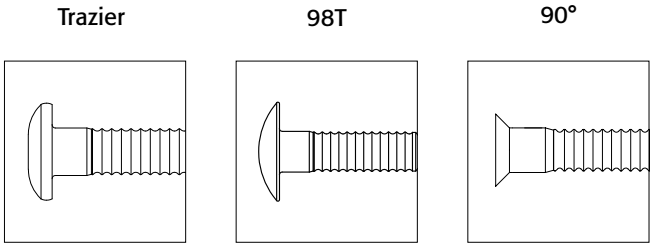
- No pintail
- Unmatched installation speed
- Low overall installed cost
- Superior fatigue strength
- Vibration resistance
- Ergonomically designed installation tooling
- Silent installation
- No repetitive stress injuries
- Eliminates need for secondary operations
- No special training or skills required for operators
- Quick visual inspection is all that's needed for a quality-assured joint

Petitioner's Ex. 1010-003

Data and dimensions

Head style options





Fastener dimensions

		Trazier		98T		90°	
Diameter	A	B	C	B	C	B	C
3/16"	.187 max	–	–	.488 – .468	.110 – .090	.354 – .328	.085 – .075
1/4"	.249 max	.537 – .507	.140 – .120	–	–	.473 – .437	.113 – .104
5/16"	.313 max	.680 – .640	.175 – .150	–	–	.589 – .547	.141 – .127
3/8"	.374 max	.820 – .780	.210 – .190	–	–	.709 – .656	.168 – .152

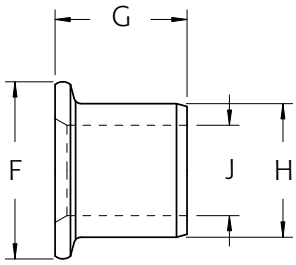
Grip tables

Grip	Grip Range	3/16" (6)		1/4" (8)		5/16" (10)		3/8" (12)	
		D	E	D	E	D	E	D	E
4	.125 - .375	0.187	0.835	0.187	1.000	0.187	1.156	0.187	1.310
6	.250 - .500	0.312	0.960	0.312	1.125	0.312	1.281	0.312	1.435
8	.375 - .625	0.437	1.085	0.437	1.250	0.437	1.406	0.437	1.560
10	.500 - .750	0.562	1.210	0.562	1.375	0.562	1.531	0.562	1.685
12	.625 - .875	0.687	1.335	0.687	1.500	0.687	1.656	0.687	1.810
14	.750 - 1.000	0.812	1.460	0.812	1.625	0.812	1.781	0.812	1.935
16	.875 - 1.125	0.937	1.585	0.937	1.750	0.937	1.906	0.937	2.060
18	1.000 - 1.250	1.062	1.710	1.062	1.875	1.062	2.031	1.062	2.185
20	1.125 - 1.375	1.187	1.835	1.187	2.000	1.187	2.156	1.187	2.310

Petitioner's Ex. 1010-004

Collar dimensions

Diameter	F	G	H	J
3/16"	0.370 - 0.390	0.270 - 0.290	0.287 MAX	0.187 - 0.192
1/4"	0.485 - 0.515	0.360 - 0.380	0.396 MAX	0.250 - 0.255
5/16"	0.610 - 0.640	0.458 - 0.478	0.500 MAX	0.316 - 0.322
3/8"	0.730 - 0.770	0.545 - 0.565	0.600 MAX	0.376 - 0.384



Installed fastener values

	Carbon Steel						Aluminum			Stainless Steel		
	Grade 2 (R)			Grade 5 (BR)			2024 (C)			305 (U)		
Diameter	Clamp	Tensile	Shear	Clamp	Tensile	Shear	Clamp	Tensile	Shear	Clamp	Tensile	Shear
3/16"	1025	1650	1725	1200	2200	2430	550	1000	1050	1025	1455	2000
1/4"	1805	3000	3050	2300	3700	4300	950	1800	1875	1805	2750	3550
5/16"	2810	4600	4725	4200	6000	6700	1500	2850	2925	2810	4250	5525
3/8"	4020	6500	6825	5980	9300	9600	2200	4200	4200	4020	6100	7950

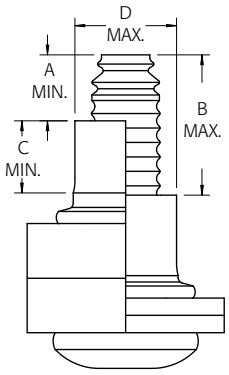
Inspection data

Diameter	A min	B max	C min	D max
3/16"	0.155	0.461	0.195	0.271
1/4"	0.225	0.535	0.260	0.361
5/16"	0.280	0.600	0.325	0.457
3/8"	0.345	0.665	0.390	0.542

Hole data

Diameter	Max Hole
3/16"	0.219
1/4"	0.281
5/16"	0.359
3/8"	0.422

Should "A" or "B" dimensions exceed the given values, the fastener is out-of-grip. A "C" dimension less than the given value indicates an incomplete swage. A "D" dimension greater than the given values indicates an incorrect or worn anvil on the installation tool.



Petitioner's Ex. 1010-005

BobTail® Installation Tooling

Our unique design means easier, quicker installation.

Lightweight, technologically advanced tooling

Newly designed BobTail tooling makes the installation process quicker and easier by reducing the force required to install each fastener. More compact and lighter weight than previous Huck lockbolt production tooling, BobTail installation tools also offer greater operator flexibility as well as extended reach into difficult areas.

For tight, space-constrained applications, BobTail tools allow the operator to position his or her hand at a safe distance from the working structure during installation.

Tooling selection

Diameter	Tool	Installation Nose	Cutter Nose
3/16"	244BT 2480	99-7921 99-7921	99-7921CC –
1/4"	244BT 2480	99-7922 99-7922	99-7922CC 99-7922CC
5/16"	256BT 2503	99-7923 99-7923	99-7923CC –
3/8"	256BT 2503 SFBTT8-12	99-7924 99-7924 –	99-7924CC 99-7924CC –

Tooling weight and dimensions

Model	Type	Weight	Length	Height	Width
244BT	pneudraulic	6.3 lbs	5.99"	12.79"	1.44"
256BT	pneudraulic	11 lbs	6.99"	14.85"	1.50"
2480	hydraulic	2.2 lbs	8.21"	6.55"	1.82"
2503	hydraulic	4.62 lbs	7.87"	6.08"	2.00"
SFBTT8-12	hydraulic	4.0 lbs	4.72"	2.29"	1.70"

Safe and silent performance

The BobTail fastener is installed without a pin-break, contributing to the dramatic reduction of noise on the shop floor, and subsequently, improved worker hearing safety. Instances of foreign object damage (FOD) and loose pintail injuries are eliminated. Because BobTail tooling features a smooth, shock-free installation sequence, repetitive stress injuries are eliminated, and overall safety is increased.

Cost-efficient operation

The BobTail System's low swage technology directly contributes to longer tool and component life, while allowing extended tool maintenance cycles. As a result, costs for parts and overall support are reduced, while system uptime is increased.

This BobTail installation tool was specifically designed to perform in tight spaces with less than 5-1/2" of clearance.

Petitioner's Ex. 1010-006

Ordering Information

Follow the form below to construct a part number for ordering BobTail pins and their respective collars.
Refer to the Grip Tables (page 4) for grip numbers.

Pins

BT (HEAD STYLE) - (MATERIAL) (DIAMETER) - (GRIP NUMBER) (FINISH)
Example: BTR-BR20-8 is a BobTail Pin, Round Head, Grade 5 Carbon Steel, 5/8" Diameter, Grip 8, Oil Finish

Head Style	Prefix
Trazier	BT
98T	BT98T
90°	BT90

Material	Code
Grade 2 Carbon Steel	R
Grade 5 Carbon Steel	BR
2024 Aluminum	C
305 Stainless Steel	U
430 Stainless Steel	4U

Diameter	Code
3/16"	6
1/4"	8
5/16"	10
3/8"	12

Grip
Refer to Grip Table on page 4

Finish	Suffix
Zinc, clear chromate	GA

Collars

Collars BTC (GRADE) - (MATERIAL) (DIAMETER) (FINISH)
Example: BTC5-R8UA is a BobTail Collar, Grade 5 Carbon Steel, 1/4" Diameter, Zinc Plated

Grade	Prefix
Grade 2	BTC
Grade 5	BTC5
Grade 8	BTC8

Material	Code
Low Carbon Steel	R
Aluminum	2B
305 Stainless Steel	U
430 Stainless Steel	4U

Diameter	Code
3/16"	6
1/4"	8
5/16"	10
3/8"	12

Finish	Suffix
Zinc Plate (Gr 2)	GAH
Zinc Plate (Gr 5)	UA
Zinc Plate (Gr 8)	BL

Petitioner's Ex. 1010-007

Alcoa Fastening Systems

For more than 120 years, the name Alcoa has been recognized worldwide as a strong leader in product quality and customer support. These strengths are found in every product manufactured for Alcoa Fastening Systems, offering the greatest breadth and depth of fastening system solutions in the industry.

Alcoa Fastening Systems (AFS) maintains company offices in the United States and in many other countries. Authorized AFS fastener distributors are also located in many of the world's industrial centers, where they provide a ready source of AFS fasteners, installation tools, tool parts, and application assistance. Visit the Web site to locate authorized distributors.

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Waco, TX 76712, USA
P.O. Box 8117
Waco, TX 76714-8117, USA
Tel: 800 388 4825
Fax: 800 798 4825

Installation Tool Division
1 Corporate Drive
Kingston, NY 12401, USA
Tel: 800 278 4825
Fax: 845 334 7333

AFS Industrial Distribution Group Headquarters
1925 North MacArthur Drive
Tracy, CA 95376, USA
Tel: 209 839 3000
Fax: 209 839 3022

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