

Alcoa
Fastening
Systems



BobTail[®]

The Next
Generation HuckBolt[®]

No Pintail
Fast Installation
Vibration Resistant

1/2"-1", 12mm-20mm



The Huck BobTail® System

Advanced fasteners and tooling delivering ultimate strength, installation speed, and vibration resistance.

Representing the most advanced fastening technology to date, the BobTail® System (fasteners and tooling) has been developed to deliver the highest level of performance and reliability.

Engineered to meet the unique challenges of a wide range of assembly applications, BobTail offers safe, quiet, swaged-on installation technology in an advanced HuckBolt design.

BobTail is designed to deliver superior joining strength in even the most extreme environments. Available in a wide range of sizes and grades, BobTail also offers quick and easy installation, and up to 10 times the fatigue strength of conventional nuts and bolts. Finally, when you factor in the cost of the fasteners with installation and inspection labor, BobTail often provides an overall lower installed cost.

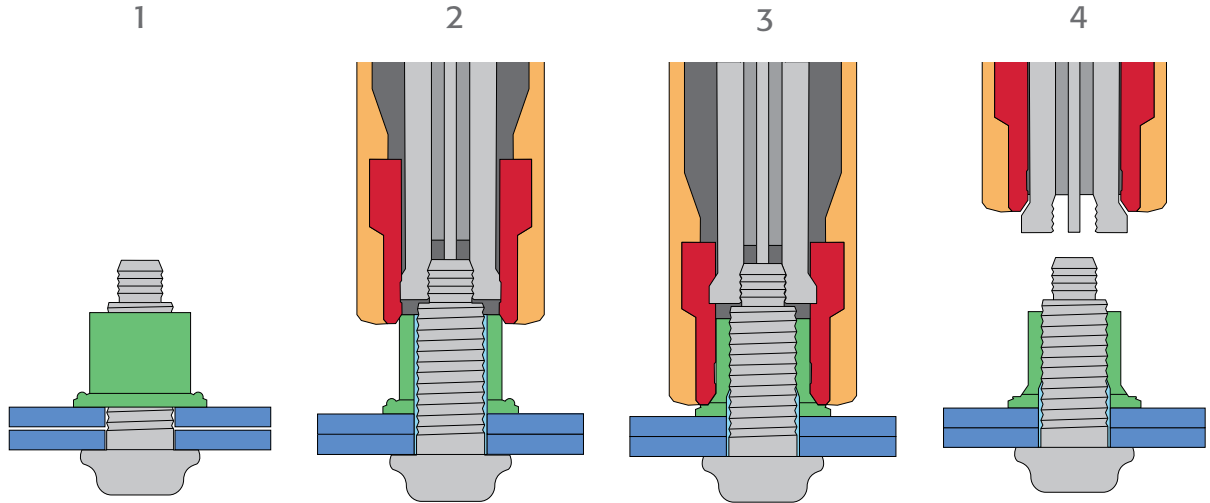


BobTail® Benefits

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

Unmatched Speed of Installation

The BobTail® System delivers a lightening-quick installation cycle time for greater productivity – as fast as two seconds*. This quick cycle is due, in part, to the short time required to apply the tool to the pin and initiate the installation cycle. Once the operator engages the trigger, the swage and eject sequence is programmed to complete the cycle without any additional worker input.



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

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, causing the swaging anvil to press on the collar, drawing up any sheet gap.

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.

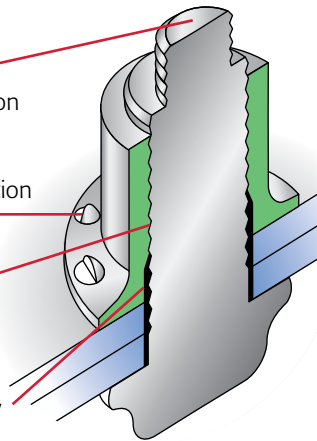
When swaging of the collar into the pin lockgrooves is complete, the tool ejects the fastener and releases the puller to complete the sequence.

* Based on a typical installation of a 5/8" Grade 8 fastener

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.
- Visual evidence of successful installation provided by installation indicator.
- Collar material swaged into the lockgrooves forms a permanent, vibration-resistant connection.
- Low-swage technology allows for faster, lighter tooling with parts that last longer.



Quick Visual Inspection



The installation indicator in the collar flange – a proprietary Huck design – indicates the BobTail collar has been fully swaged on.

BobTail® System

Not just manufactured. Huck-engineered.



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.

In addition, Huck BobTail lockbolts are not subjected to torsion during installation, so they can safely be taken to higher preload values than conventional bolts, resulting in a much tighter joint.

Installed Gap Comparison

HuckBolt



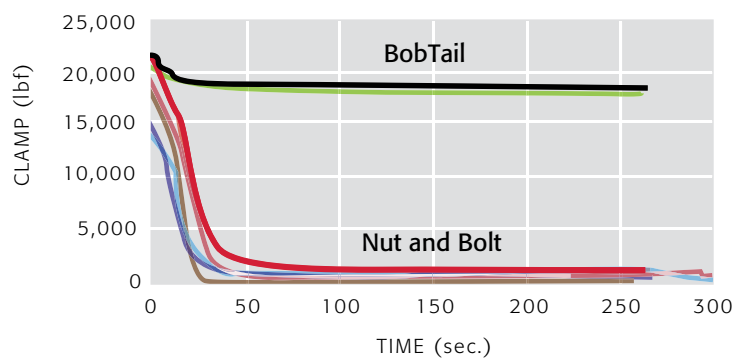
The swaged collar forms over the lock thread, and eliminates the gap.

Standard Bolt



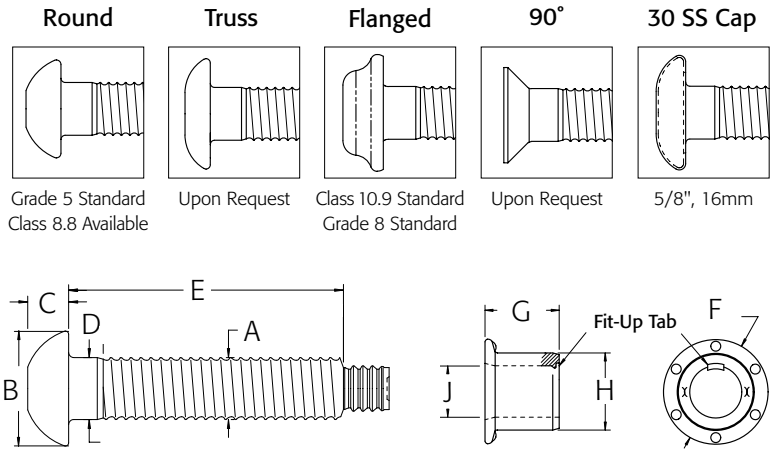
Regular nuts and bolts have gap, which allows for loosening by vibration.

Transverse Vibration Comparison 14mm class 10.9



This chart shows nut and bolt clamp scatter is much wider compared to BobTail, and that once vibration begins, clamp load quickly decays with conventional nuts and bolts, while it holds constant with the BobTail.

Head Style Options



Fastener Dimensions

		Round Head		Flanged Head		Stainless Steel Cap		Truss / 90° / 30	
Diameter	A	B	C	B	C	B	C	B	C
1/2"	.500 max	.953 - .861	.297 - .335	—	—	—	—	Upon Request	—
5/8"	.625 max	1.086 - 1.196	.367 - .432	1.270 - 1.330	.448 - .499	1.270 - 1.330	.300 - .340	Upon Request	—
3/4"	.750 max	1.326 - 1.440	.455 - .530	1.520 - 1.600	.550 - .600	—	—	—	—
7/8"	.875 max	1.540 - 1.665	.525 - .585	—	—	—	—	—	—
1"	1.000 max	1.750 - 2.000	.590 - .650	—	—	—	—	—	—
12mm	12.0 max	—	—	24.1 - 25.4	8.9 - 9.6	—	—	—	—
14mm	14.0 max	—	—	30.0 max	11.5 max	—	—	—	—
16mm	16.0 max	—	—	32.3 - 33.8	11.4 - 12.2	—	—	—	—
20mm	20.0 max	—	—	40.3 - 42.4	15.0 - 16.0	—	—	—	—

Standard Head Style and Strength Levels

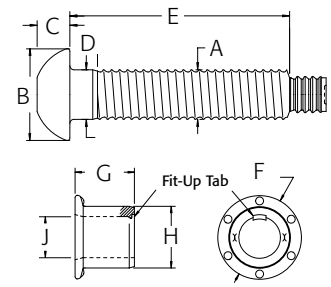
Diameter	Round	Flanged
1/2"	Grade 5	Grade 8
5/8"	Grade 5	Grade 8
3/4"	Grade 5	Grade 8
7/8"	Grade 5	Grade 8 Upon Request
1"	Grade 8	Grade 5
12mm	Class 8.8 Upon Request	Class 10.9
14mm	Class 8.8	Class 10.9, Class 8.8
16mm	Class 8.8 Upon Request	Class 10.9
20mm	Class 8.8 Upon Request	Class 10.9



Inch data and dimensions

Collar Dimensions

Diameter	F	G	H		J
			Grade 5	Grade 8	
1/2"	1.010 - 1.080	0.728 - 0.748	0.749 - 0.759	0.762 - 0.772	0.506 - 0.518
5/8"	1.270 - 1.330	0.912 - 0.932	0.935 - 0.945	0.953 - 0.963	0.633 - 0.645
3/4"	1.520 - 1.600	1.095 - 1.115	1.132 - 1.142	1.145 - 1.155	0.760 - 0.774
7/8"	1.775 - 1.865	1.280 - 1.300	1.310 - 1.325	—	0.885 - 0.900
1"	1.930 - 2.010	1.460 - 1.490	1.500 - 1.515	1.525 - 1.540	1.010 - 1.030

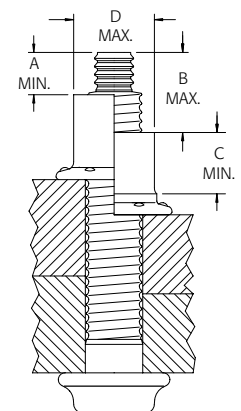


Grip Tables

Grip	Grip Range	1/2"		5/8"		3/4"		7/8"		1"	
		D	E	D	E	D	E	D	E	D	E
4	.25-.62	0.150	1.440	0.150	1.601	0.160	1.850	0.250	2.056	0.250	2.260
8	.50-.87	0.150	1.690	0.150	1.851	0.160	2.100	0.250	2.306	0.250	2.510
12	.75-1.12	0.150	1.940	0.150	2.101	0.160	2.350	0.250	2.556	0.250	2.760
16	1.00-1.37	0.150	2.190	0.150	2.351	0.160	2.600	0.250	2.806	0.250	3.010
20	1.25-1.62	0.150	2.440	0.150	2.601	0.160	2.850	0.250	3.056	0.250	3.260
24	1.50-1.87	0.150	2.690	0.150	2.851	0.160	3.100	0.250	3.306	0.250	3.510
28	1.75-2.12	0.150	2.940	0.150	3.101	0.160	3.350	0.250	3.556	0.250	3.760
32	2.00-2.37	0.150	3.190	0.150	3.351	0.160	3.600	0.500	3.806	0.500	4.010
36	2.25-2.62	0.150	3.440	0.150	3.601	0.160	3.850	0.500	4.056	0.500	4.260
40	2.50-2.87	0.150	3.690	0.150	3.851	0.375	4.100	0.500	4.306	0.500	4.510
44	2.75-3.12	0.150	3.940	0.375	4.101	0.375	4.350	0.500	4.556	0.500	4.760
48	3.00-3.37	0.375	4.190	0.375	4.351	0.375	4.600	0.500	4.806	0.500	5.010
52	3.25-3.62	0.375	4.440	—	—	0.375	4.850	0.500	5.056	0.500	5.260
56	3.50-3.87	0.375	4.690	—	—	0.375	5.100	0.500	5.306	0.500	5.510
60	3.75-4.12	0.375	4.940	—	—	0.375	5.350	0.500	5.556	0.500	5.760
64	4.00-4.37	—	—	—	—	0.375	5.600	0.500	5.806	0.500	6.010
68	4.25-4.62	—	—	—	—	0.375	5.850	0.500	6.056	0.500	6.260
72	4.50-4.87	—	—	—	—	0.375	6.100	0.500	6.306	0.500	6.510

Installed Fastener Values - lbf (KN)

Diameter	Clamp		Tensile		Shear	
	Grade 5	Grade 8	Grade 5	Grade 8	Grade 5	Grade 8
1/2"	12,050 (53.6)	15,800 (70.3)	17,050 (75.8)	21,300 (94.7)	14,000 (62.3)	16,400 (72.9)
5/8"	19,200 (85.4)	26,000 (115.6)	27,100 (120.5)	36,600 (162.8)	22,500 (100.1)	26,000 (115.6)
3/4"	28,400 (126.3)	37,200 (165.5)	40,100 (178.4)	50,100 (222.8)	32,400 (144.1)	38,000 (169.0)
7/8"	39,250 (174.6)	—	55,450 (246.6)	—	43,400 (193.0)	—
1"	51,500 (229.1)	64,000 (284.7)	72,700 (323.4)	90,900 (404.3)	56,500 (251.3)	68,000 (302.5)



Hole Data

Diameter	Max Hole
1/2"	9/16"
5/8"	11/16"
3/4"	13/16"
7/8"	15/16"
1"	1 - 1/8"

Inspection Data

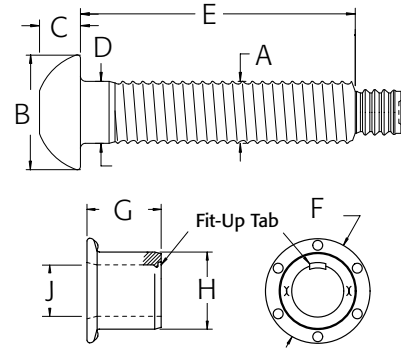
Diameter	A min	B max	C min	D max
1/2"	.428"	.933"	.568"	.726"
5/8"	.428"	.959"	.710"	.908"
3/4"	.535"	1.098"	.852"	1.090"
7/8"	.600"	1.192"	.990"	1.261"
1"	.685"	1.308"	1.150"	1.452"

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.

Metric data and dimensions

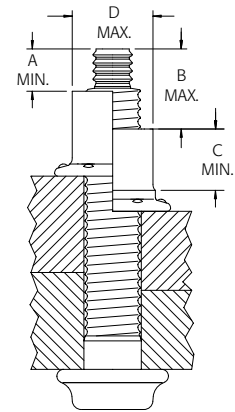
Collar Dimensions

Diameter	F	G	H	J
12mm (10.9)	24.1 - 25.4	17.3 - 17.7	18.3 - 18.5	12.1 - 12.3
14mm (8.8)	28.2 - 29.6	20.5 - 21.0	20.9 - 21.1	14.0 - 14.3
14mm (10.9)	28.2 - 29.6	20.5 - 21.0	21.1 - 21.5	14.0 - 14.4
16mm (10.9)	32.3 - 33.8	23.1 - 23.7	24.1 - 24.5	16.0 - 16.4
20mm (10.9)	40.3 - 42.1	29.0 - 29.6	30.2 - 30.6	20.1 - 20.5



Grip Tables

Grip	Grip Range	12mm		14mm		16mm		20mm	
		D	E	D	E	D	E	D	E
10	5-15	3.8	34.2	3.8	37.1	3.8	40.1	3.8	45.9
15	10-20	3.8	39.2	3.8	42.1	3.8	45.1	3.8	50.9
20	15-25	3.8	44.2	3.8	47.1	3.8	50.1	3.8	55.1
25	20-30	3.8	49.2	3.8	52.1	3.8	55.1	3.8	60.9
30	25-35	3.8	54.2	3.8	57.1	3.8	60.1	3.8	65.9
35	30-40	3.8	59.2	3.8	62.1	3.8	65.1	3.8	70.9
40	35-45	3.8	64.2	3.8	67.1	3.8	70.1	3.8	75.9
45	40-50	3.8	69.2	3.8	72.1	3.8	75.1	3.8	80.9
50	45-55	3.8	74.2	3.8	77.1	9.5	80.1	3.8	85.9
55	50-60	3.8	79.2	3.8	82.1	9.5	85.1	3.8	90.9
60	55-65	3.8	84.2	3.8	87.1	9.5	90.1	3.8	95.9
65	60-70	3.8	89.2	3.8	92.1	9.5	95.1	9.5	100.9
70	65-75	3.8	94.2	3.8	97.1	9.5	100.1	9.5	105.9
75	70-80	3.8	99.2	9.5	102.1	9.5	105.1	9.5	110.9
80	75-85	9.5	104.2	9.5	107.1	9.5	110.1	9.5	115.9
85	80-90	—	—	—	—	9.5	115.1	—	—
90	85-95	—	—	—	—	9.5	120.1	—	—
95	90-100	—	—	—	—	9.5	125.1	—	—
100	95-105	—	—	—	—	9.5	130.1	—	—
105	100-110	—	—	—	—	9.5	135.1	—	—
110	105-115	—	—	—	—	9.5	140.1	—	—
115	110-120	—	—	—	—	9.5	145.1	—	—
120	115-125	—	—	—	—	9.5	150.1	—	—



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.

Installed Fastener Values - lbf (KN)

Diameter	Clamp	Tensile	Shear
12mm (10.9)	14,600 (64.9)	19,700 (87.6)	14,700 (65.4)
14mm (8.8)	15,000 (66.7)	21,500 (95.6)	18,500 (82.3)
14mm (10.9)	19,500 (86.7)	27,000 (120.1)	21,100 (93.8)
16mm (10.9)	26,000(115.6)	36,600 (163.0)	26,000 (115.6)
20mm (10.9)	40,700 (181.0)	57,300 (254.9)	41,000 (182.4)

Inspection Data

Diameter	A min	B max	C min	D max
12mm	10.9mm	24.0mm	14.1mm	17.3mm
14mm	10.9mm	24.4mm	15.8mm	20.2mm
16mm	10.9mm	24.8mm	18.0mm	23.1mm
20mm	13.9mm	28.5mm	22.6mm	28.8mm

Hole Data

Diameter	Max Hole
12mm	13.5mm (17/32")
14mm	15.5mm (39/64")
16mm	17.5mm (11/16")
20mm	22mm (7/8")

BobTail® Installation Tooling

Our proprietary 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, SWAGEFORWARD® BobTail tools allow the operator to position his or her hand at a safe distance from the working structure during installation.



Model SFBTT20
SWAGEFORWARD®

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

Smooth-operating BobTail installation tooling 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.



Model BTT35

Tooling Selection (Inches)

Diameter	*Tool	Installation	Cutter
1/2"	*BTT25 BTT25-ST BTT25-DT	99-7855	99-7855CC
	BTT35LS	99-7825	99-7825CC
	*SFBTT20-IT SFBTT20-ST SFBTT20-DT	99-7882	99-7882CC
5/8"	*SFBTT20-IT SFBTT20-ST SFBTT20-DT	99-7881	99-7881CC
	*BTT35 BTT35-ST BTT35-DT	99-7851	99-7851CC
	BTT35LS	99-7821	99-7821CC
3/4"	*BTT57 BTT57-ST BTT57-DT	99-7856	99-7856CC
	BTT35LS	99-7826	99-7826CC
7/8"	*BTT57 BTT57-ST BTT57-DT	99-7853	99-7853CC
1"	*BTT57 BTT57-ST BTT57-DT	99-7857	99-7857CC

Tooling Selection (Metric)

Diameter	*Tool	Installation	Cutter
12mm	*BTT25 BTT25-ST BTT25-DT	99-7850	99-7850CC
	BTT35LS	99-7820	99-7820CC
	*SFBTT20-IT SFBTT20-ST SFBTT20-DT	99-7880	99-7880CC
14mm	*SFBTT20-IT SFBTT20-ST SFBTT20-DT	99-7884	99-7884CC
	*BTT25 BTT25-ST BTT25-DT	99-7854	99-7854CC
	BTT35LS	99-7824	99-7824CC
16mm	*SFBTT20-IT SFBTT20-ST SFBTT20-DT	99-7881	99-7881CC
	*BTT35 BTT35-ST BTT35-DT	99-7851	99-7851CC
	BTT35LS	99-7821	99-7821 CC
20mm	BTT35LS	99-7822	99-7822CC
	*BTT57 BTT57-ST BTT57-DT	99-7852	99-7852CC

* Marked tools require the following additional parts:

3-Tool Controller	128441-3
Relief Valve with Transducer	128415
Hydraulic Hose Assembly	125926-XX
Control Cord (Tool to Controller)	128418-XX
Cable Assembly (Transducer to Controller)	128457-XX
Cord Assembly (2-Wire controller to Powerig)	118308-XX



Model BTT57

Collar Cutter Feature



While BobTail fasteners install permanently, BobTail installation tooling features a collar cutter nosepiece that makes fastener removal easier than ever.

Tooling Weight and Dimensions

Model	Weight	Length	Height	Width
BTT35LS	13.0 lbs	15.318"	2.868"	2.380"
BTT35	13.0 LBS	8.550"	2.870"	2.380"
BTT20	8.5 LBS	5.53"	8.51"	2.97"
BTT25	8 LBS	10.480"	2.492"	2.010"
BTT57	20.5 LBS	13.624"	3.538"	3.00"

Nose Assembly Clearance Dimensions

Install	Fig	A	B	C	D
99-7820	B	7.69	6.49	1.31	3.82
99-7821	A	7.67	6.01	1.75	N/A
99-7822	A	7.88	6.65	2.19	N/A
99-7824	B	7.68	6.28	1.61	3.83
99-7825	B	7.68	6.28	1.43	3.92
99-7826	A	7.88	6.65	2.19	N/A
99-7850	B	5.74	4.46	1.31	2.35
99-7851	A	5.84	4.28	1.75	N/A
99-7852	A	7.58	6.06	2.19	N/A
99-7853	A	8.1	6.66	2.44	N/A
99-7854	A	5.74	4.45	1.61	N/A
99-7855	B	5.74	4.46	1.43	2.6
99-7856	A	7.58	6.06	2.19	N/A
99-7857	A	8.82	7.36	2.75	N/A
99-7880	C	1.02	1.31	N/A	N/A
99-7881	C	1.02	1.75	N/A	N/A
99-7882	C	1.02	1.43	N/A	N/A
99-7884	C	1.01	1.61	N/A	N/A
Cutter	Fig	A	B	C	D
99-7820CC	B	7.66	6.47	1.31	3.369
99-7821CC	A	7.61	6.05	1.75	N/A
99-7822CC	A	7.89	6.9	2.06	N/A
99-7824CC	A	7.65	6.25	1.75	N/A
99-7825CC	B	7.65	6.25	1.43	3.34
99-7826CC	A	7.89	6.97	2.00	N/A
99-7850CC	B	5.72	4.43	1.313	2.69
99-7851CC	A	6.24	4.24	1.75	N/A
99-7852CC	A	7.51	6.07	2.06	N/A
99-7853CC	A	8.067	6.06	2.44	N/A
99-7854CC	A	5.7	4.33	1.75	N/A
99-7855CC	B	5.72	4.43	1.43	2.96
99-7856CC	A	7.59	6.07	2.00	N/A
99-7857CC	A	8.82	7.36	2.75	N/A
99-7880CC	C	2.52	1.31	N/A	N/A
99-7881CC	C	2.52	1.75	N/A	N/A
99-7882CC	C	2.52	1.43	N/A	N/A
99-7884CC	C	2.52	1.51	N/A	N/A

Huck Powerig® Hydraulic Units

Model 918	Model 940	Model 969 not shown
High-production applications	Portable; production and repair	Portable; Repair
Operates up to 2 tools; 2 gpm flow rate	70 in 3/min flow rate	6 cubic in./min.
Electrically powered; 220, 440, or 550 volts, 3 phase	Electrically powered; 115 or 220 volts, single phase	6.2 BAR/90 psi Air
Weighs 708 lbs, operational	Weighs 75 lbs	Weighs 18.4 lbs
44"L x 25"W x 30"H	12.5"L x 10.5"W x 18"H	9.5"L x 5"W x 10.4"H

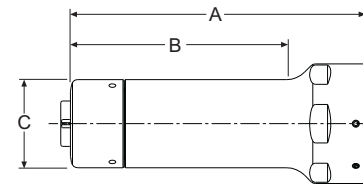


Fig. A

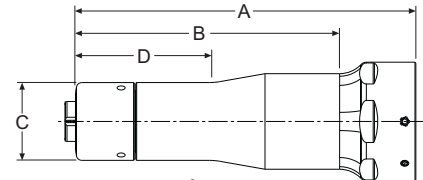


Fig. B

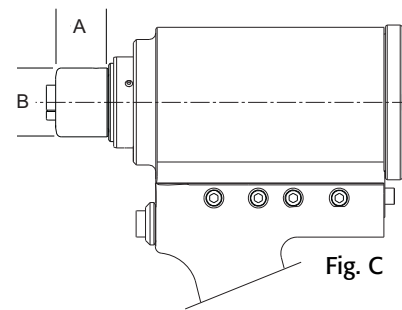


Fig. C

The standard BobTail installation system includes a Powerig® hydraulic power unit, hydraulic hoses, fittings, and a BobTail installation tool.



Powerig
Model 918



Powerig
Model 940

Ordering Information

Follow the form below to construct a part number for ordering BobTail pins and their respective collars.
Refer to the Grip Tables (pages 6-7) 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

Collars BT (TYPE) - (MATERIAL) (DIAMETER) (FINISH)

Example: BTC5-R20UA is a BobTail Collar, Grade 5 Carbon Steel, 5/8" Diameter, Zinc Plated

Inch Series

Bolt Head Style	Prefix	Bolt Material	Code
Grade 5			
Round	BTR	Medium Carbon Steel	BR
Truss	BT30		
90° Flush	BT90		
Grade 8			
Flanged	BT	Alloy Steel	DT

Diameter	Code
1/2"	16
5/8"	20
3/4"	24
7/8"	28
1"	32

Grip
Refer to Grip Tables on pages 6-7

Finish	Suffix
Zinc Plate, Clear Chromate .0003"	G
Zinc Plate, Clear Chromate .0004"	GA
Geomet - 1 Coat	NP
Geomet - 2 Coat	D1
Oil Finish	no suffix

Metric Series

Bolt Head Style	Prefix	Bolt Material	Code
Class 8.8			
Round	MBTR	Medium Carbon Steel	BR
Flanged	MBT		
Class 10.9			
Flanged	MBT	Alloy Steel	DT

Diameter	Code
12mm	12
14mm	14
16mm	16
20mm	20

Grip
Refer to Grip Tables on pages 6-7

Finish	Suffix
Zinc Plate, Clear Chromate .0003"	G
Zinc Plate, Clear Chromate .0004"	GA
Geomet - 1 Coat	NP
Geomet - 2 Coat	D1
Oil Finish	no suffix

Collars

Bolt Head Style	Prefix	Material	Code
Grade 5	BTC5-	Low Carbon Steel	R
Grade 8	BTC8-	Low Carbon Steel	R
Class 8.8	MBTC-	Low Carbon Steel	BR
Class 10.9	MBTC-	Low Carbon Steel	R

Diameter	Code
1/2"	16
5/8"	20
3/4"	24
7/8"	28
1"	32
12mm	12
14mm	14
16mm	16
20mm	20

Finish	Suffix
Zinc Plate	UA
Zinc Plate	BL
Zinc Plate	UA
Zinc Plate	BL

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Waco, TX 76712, USA
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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
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AFS Industrial Distribution
Group Headquarters
1925 North MacArthur Drive
Tracy, CA 95376, USA
Tel: 800 826 2884
Fax: 209 839 3022

AFS Industrial Distribution
14300 Clay Terrace Blvd.
Suite 250
Carmel, IN 46032, USA
Tel: 800 826 2884
Fax: 800 573 2645

Latin America Sales
Avenida Parque Lira
79-402 Tacubaya
Mexico C P 11850
Tel: +52 55 5515 1776
Fax: +52 55 5277 7564

Brazil Sales
Av. Nações Unidas, 12.901
Torre Oeste, 3º andar
São Paulo – SP – Brasil
04578-000
Tel: 0800 015 9888
Fax: +55 11 5509 0200

International Locations

India Operations
Unit no. 28, Chowringhee Court
55/1, Chowringhee Road
Kolkata – 700071
India
Tel: +91 33 4069 9170/80
Fax: +91 33 4069 9184

Japan/Korea Sales
Alcoa Japan Ltd.
#1013 NBF Hibiya Bldg.
Uchisaiwai-cho, Chiyoda-ku
Tokyo 100-1011
Japan
Tel: +81 3 3539 6577
Fax: +81 3 3539 6585

Melbourne Operations
1508 Centre Road
Clayton, Victoria, 3168
Australia
Tel: +61 3 8545 3333
Fax: +61 3 8545 3390

Suzhou Sales
58 Yinsheng Road, Shengpu
Suzhou Industrial Park
Suzhou Jiangsu 215126
China
Tel: 0512 62823800-8888
Fax: 0512 62863810

Telford Operations
Unit C, Stafford Park 7
Telford, Shropshire TF3, 3BQ
United Kingdom
Tel: +44 1952 2900 11
Fax: +44 1952 2904 59

Alcoa Fastening Systems
St Cosme Operations
9 rue de Cressonnieres
72110 Saint Cosme en Varais
France
Tel: +33 0 2.43.31.41.00
Fax: +33 0 2.43.31.41.41

Alcoa Fastening Systems
Kelkheim Operations
Industriestr. 6
65779 Kelkheim
Germany
Tel: +49 [0] 6195 8050
Fax: +49 [0] 6195 2001

AFShuck.net

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