

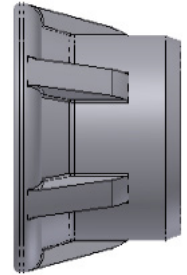
FLANGEFORM[®] NUTS AND STUDS

PROVIDES ONE OF THE FASTENER INDUSTRY'S STRONGEST ATTACHMENT POINTS, MAKING IT IDEAL FOR AUTOMOTIVE, APPLIANCE, SOLAR RACKING, AND GENERAL INDUSTRIAL APPLICATIONS.



FLANGEFORM[®] NUTS

Flangeform Clinch Nuts are threaded fasteners with unique ribs designed for installation into thin gauge materials. The fastener plunges the pre-punched hole and wraps itself around the material whilst the ribs embed themselves providing an integral high strength attachment point.



ADVANTAGES

- High strength attachment point in thin materials.
- Accurate & positive positioning.
- High bending moment resistance.
- One fastener type per size covering material thickness range.
- No weld splatter / fumes – environmentally friendly process.
- Provides a flush mounting surface.
- Provides exceptional strength from both sides of the mating sheet, unlike traditional clinch fasteners which provide exceptional strength from only one side of the mating sheet.
- Can be installed into 2 layers of material.
- Ideally suited to multiple insertion and automated assembly in die or off line.

PROCESS

HOLE PREPERATION

A pre-punched or drilled hole is required with a tolerance of $\pm 0.1\text{mm}$. Refer to product data sheet for hole sizes.

SHEET PREPERATION

Flangeform is suited up to 80Rb.

SHEET THICKNESS

Refer to the product data sheet for material thickness range.

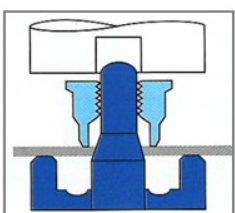
INSTALLATION

Can be used on progression, transfer, off-line mechanical / hydraulic presses using auto-fed or manual technique.

TOOLING

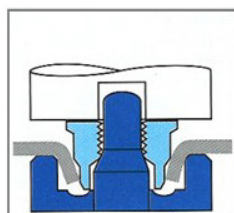
Mini-Die (bottom tool) will vary depending upon the material thickness, hole size and hardness.

LOCATION



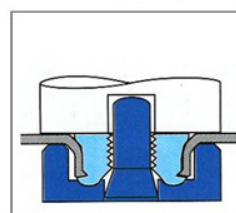
Material is placed over the mini-die and radially located on the pin.

PLUNGING



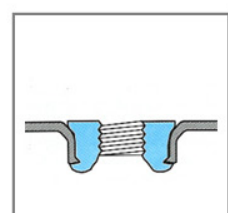
Force is applied to the nut/stud which enables it to plunge the material.

WRAPPING



The nut/stud is formed around the parent material by the profile of the mini-die.

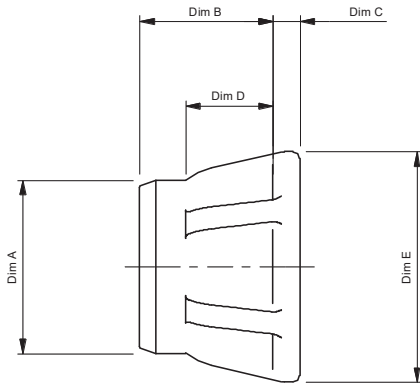
INSTALLED



The nut is flush and integral with the component.

FLANGEFORM® NUTS

TECHNICAL DATA



Thread Size		Can Dia. A	Overall Height B	Spline Length D	Flange Dia. E	Material mm	Hole Size Typical	Tonnage Typical
Unified	Metric							
-	M4	6.63	5.13	2.85	8.8	0.7	4.6	3
						1	4.6	3
						1.2	4.6	3
						1.5	4.7	3.5
10-32	M5	8.25	7.68	4.25	10.9	0.7	4.8	3.5
						1	4.8	3.5
						1.2	5.5	4
						1.5	5.7	4.5
1/4	M6	9.9	9.18	5	13.17	2	5.8	5
						0.7	5.1	4
						1	5.1	4
						1.2	5.9	4.5
						1.5	6.5	5.5
5/16	M8	13.29	10.85	5.65	17.6	2	6.5	6
						2.5	6.6	8
						0.7	6.9	5
						1	6.9	5
						1.2	8	5.5
						1.5	8	7.5
7/16	M10	16.48	12.58	6.45	21.75	2	8.5	8
						2.5	8.6	9.5
						3	8.9	10
						1	9.4	8
						1.2	9.4	8.5
						1.5	10	9.5
1/2	M12	19.9	16.23	8.75	26.3	2	10.3	10
						2.5	11.4	11.5
						3	11.6	12
						1.5	11.1	16
						2	12.1	16.5
						2.5	13.1	17
						3	13.1	17.5

MATERIAL

Nuts

Steel BS EN ISO 10263-2.
Finished nuts to conform to
BS3692 Grade 8 mechanical
properties. Other materials
are available.

THREAD

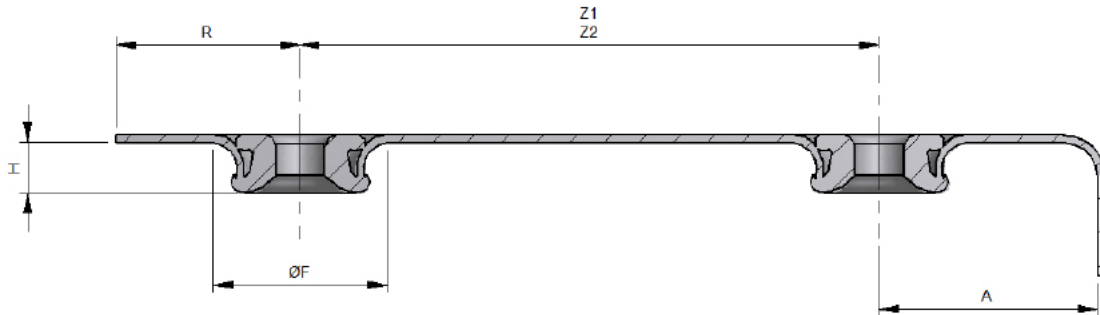
Standard ISO Metric coarse pitch
series to ISO 965/BS 3643-6H.
Gauge tolerances in accordance
with ISO 1502 / BS919 used to
determine thread acceptability.
After plating, threads must be
capable of accepting a Go gauge
of basic size. Other thread forms
available.

FINISH

Zinc & Clear trivalent passivation
as standard, other plating finishes
available.

FLANGEFORM® NUTS

INSTALLATION DATA



Flangeform studs manual emplacement data.						
Nut size	Dimension H	Dimension ØF	Dimension R min	Dimension A min	*Dimension Z1	*Dimension Z2
M4	2.5	9.5	7.0	9.0	16.0	13.0
M5	3.8	12.5	8.5	10.0	19.0	16.0
M6	4.00-5.0	15.0	10.0	12.0	22.0	19.0
M8	5.5-7.5	19.0	14.0	15.0	28.5	24.0
M10	6.5-8.5	25.4	17.0	20.0	38.0	32.0
M12	10.2-10.7	35.0	25.0	27.0	48.0	44.0

*Dimension Z1 When nuts are emplaced manually simultaneously.

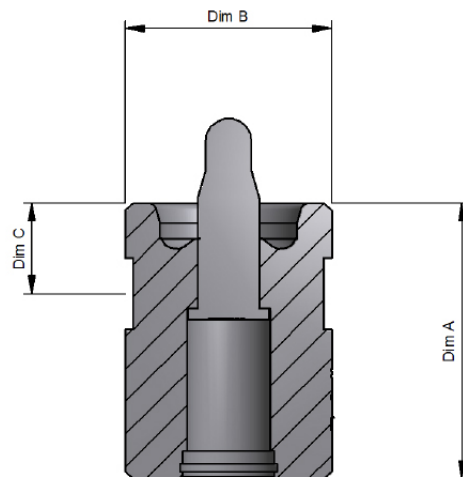
*Dimension Z2 When nuts are emplaced manually one at a time.

These dimensions relate to when standard mini-dies are used. Mini-dies can be modified & tailored to customer needs to achieve closer A & Z dimensions.

MINI DIE INSERTION TOOL DIMENSIONS

Mini-die tools are specific for each metric / imperial size of Flangeform nut and material thickness. This data is required to choose the correct mini-die for the application.

Size	Height A	Diameter B	Groove Centre C
M4	20.70/20.80	15.989/16.000	8
M5	27.55/27.65	18.989/19.000	8
M6	32.00/32.10	21.963/21.975	12.5
M8	38.00/38.10	28.463/28.475	12.5
M10	54.00/54.10	37.963/37.975	12.5
M12	66.10/66.00	44.980/45.000	21



FLANGEFORM® NUTS

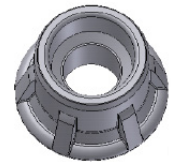
HOW TO SPECIFY

- **Product code** – High Torque Spline feature is product code 10, the standard spline feature is product code 20.
- **Thread code** – Refer to thread code matrix.
- **Grade & plating code** – Grade 8 is H, 9 is J. Standard plating is Zinc & Clear trivalent passivation (W).

Part Number Layout / Meaning		
Product	Thread	Grade & Finish
10	M06	HW
10	M06	HW
10	M06	HW

THREAD CODE MATRIX

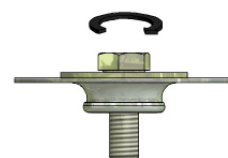
		M					
		4	5	6	8	10	12
Metric	Coarse - 6H	M04	M05	M06	M08	M10	M12
	Coarse - 6E	E04	E05	E06	E08	E10	E12
	Fine	N04	N05	N06	N08	N10	N12



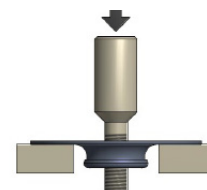
Unified	Coarse	8-32	10-24	12-24	1/4-20	5/16-18	3/8-16	7/16-14	1/2-13
		CEG	CTE	CTV	C04	C05	C06	C07	C08
	Fine	8-36	10-32	12-28	1/4-28	5/16-24	3/8-24	7/16-20	1/2-20
		FEG	FTE	FTV	F04	F05	F06	F07	F08

PERFORMANCE DATA

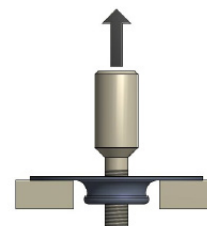
Nut Size	Material Thickness mm	Cold Rolled Mild Steel		
		Push-out Kn	Pull-out Kn	Torque-out Nm
M5	0.7	3	4	9
	1	7	7	9
	1.5	9	10	9
M6	0.7	3.9	4.7	19
	1	7.3	7.4	19
	1.5	11.9	11	19
	2	14	11.5	19
M8	0.7	4.8	4.5	
	1	6.5	9.7	36
	1.5	13.1	16	36
	2	17	16	36
	2.5	27.9	18	36
M10	1	7.3	9.6	
	1.5	10.8	15.2	80
	2	16.7	20	81
	2.5	28	20	84
	3	29	20	86
M12	1.5	26	18	100
	2	44	24	114
	2.5	44	28	140
	3	45	31	140



Torque Out



Push Out



Pull Out

Note: The data provided above is for general guidance only and may vary depending upon material, hole size, tonnages & tooling. For specific advice and data please contact BAS Components technical centre.

FLANGEFORM® STUDS

Flangeform Clinch Studs are threaded fasteners with unique ribs designed for installation into thin gauge materials. The fastener plunges the pre-punched hole and wraps itself around the material whilst the ribs embed themselves providing an integral high strength attachment point. Flangeform studs are available with dog-points, plain shank & shouldered.



ADVANTAGES

- High strength attachment point in thin materials.
- Accurate & positive positioning.
- High bending moment resistance.
- Can be produced in a threaded, plain shank & shouldered design.
- Pull & push out strength is of similar performance.
- Provides a flush mounting surface.
- No weld splatter / fumes - environmentally friendly process.
- Can be installed into 2 layers of material
- Ideally suited to multiple insertion and automated assembly in die or off line.

PROCESS

HOLE PREPERATION

A pre-punched or drilled hole is required with a tolerance of +/- 0.1mm. Refer to product data sheet for hole sizes.

SHEET PREPERATION

Flangeform is suited up to 80Rb.

SHEET THICKNESS

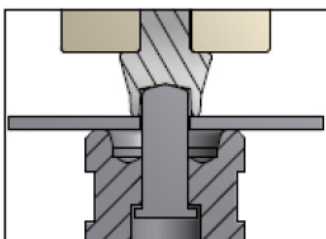
Refer to the product data sheet for material thickness range.

INSTALLATION

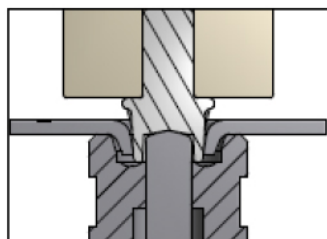
Can be used on progression, transfer, off-line mechanical / hydraulic presses using autofed or manual technique.

TOOLING

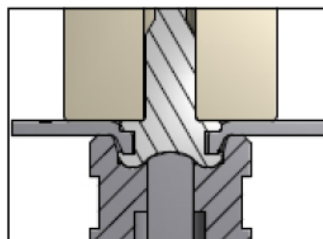
Mini-Die (bottom tool) will vary depending upon the material thickness, hole size and hardness.



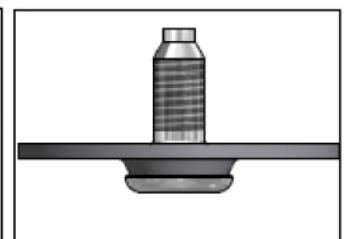
Material is placed over the mini-die and the stud located in the top tool.



Force is applied to the stud which enables it to plunge the material.



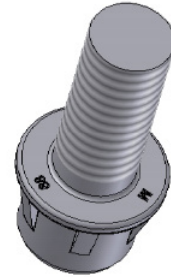
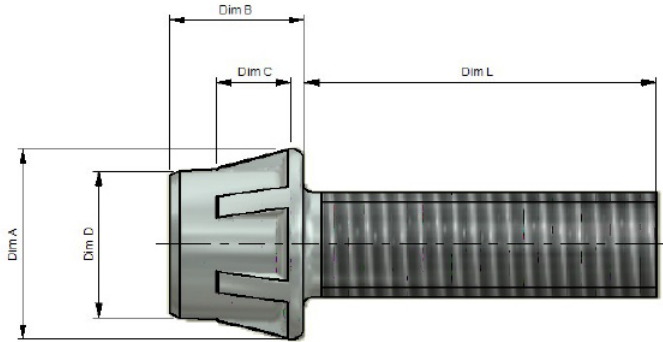
The stud is formed around the parent material by the mini-die profile.



The stud is flush with the parent material and integral.

FLANGEFORM® STUDS

TECHNICAL DATA – STUD



Thread Size	Flange Dia. A	Overall Head Height B	Spline Length C	Can Dia. D	Stud Length Range L	Material Thickness mm	Hole Size Typical	Tonnage Typical
M4	8.8	5.6	2.75	6.7	8 - 20	0.7	4.6	2.5
						1	4.6	3
						1.2	4.6	3
						1.5	4.7	3
M5	8.8	5.6	2.75	6.7	8 - 20	0.7	4.6	2.5
						1	4.6	3
						1.2	4.6	3
						1.5	4.7	3
						2	5	3.5
M6	10.85	7.6	4.2	8.32	8 - 35	0.7	4.8	3.5
						1	4.8	3.5
						1.2	5.5	4
						1.5	5.7	4.5
						2	5.8	5
M8	13.12	9.1	4.95	9.97	10 - 70	2.5	6.2	5.5
						0.7	5.1	5
						1	5.1	5
						1.2	5.9	5.5
						1.5	6.5	7.5
						2	6.5	8
M10	17.7	10.85	5.65	13.3	15 - 70	2.5	6.6	9.5
						3	6.9	10
						0.7	6.9	5
						1	6.9	5
						1.2	8	5.5
						1.5	8	7.5
						2	8.5	8
						2.5	8.6	9.5
						3	8.9	10

MATERIAL

Studs

Steel BS EN ISO 10263-2. Finished studs to conform to ISO 898-1 Grade 4.8 mechanical properties.

Or

Steel BS EN ISO 10263-4. Finished studs to conform to ISO 898-1 Grade 8.8 and above mechanical properties. Other grades available.

THREAD

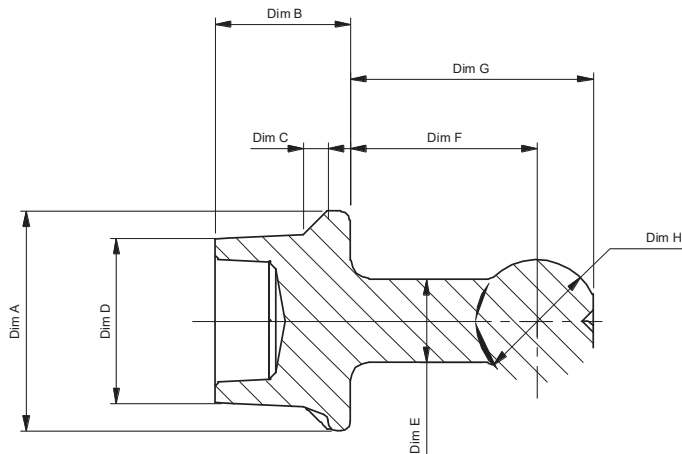
Standard ISO Metric coarse pitch series to ISO 965/BS 3643-6g. Gauge tolerances in accordance with ISO 1502 / BS919 used to determine thread acceptability. After plating, threads must be capable of accepting a Go gauge of basic size. Other thread forms available.

FINISH

Zinc & Clear trivalent passivation as standard, other plating finishes available.

FLANGEFORM® STUDS

TECHNICAL DATA – BALL STUD

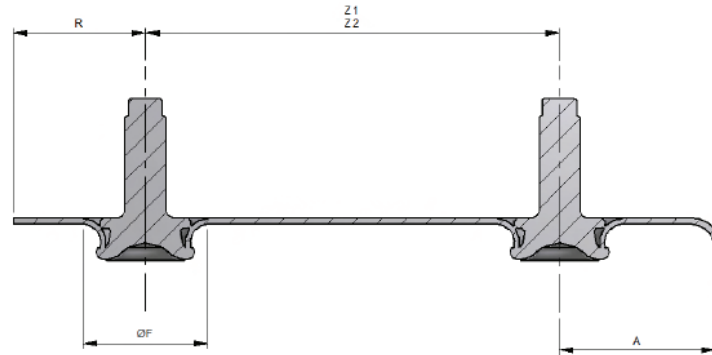


Head Size	Flange Dia. A	Overall Head Height B	Spline Length C	Can Dia. D	E	F	G	H	Material Thickness mm	Hole Size Typical	Tonnage Typical
M6	13.1	9.1	4.95	9.97	6.7	5-15	10-20	10	0.7	4.8	3.5
									1	4.8	3.5
									1.2	5.5	4
									1.5	5.7	4.5
									2	5.8	5
M8	17.7	10.85	2	13.3	6.7	5-15	10-20	10	2.5	6.2	5.5
									0.7	5.1	5
									1	5.1	5
									1.2	5.9	5.5
									1.5	6.5	7.5
									2	6.5	8
									2.5	6.6	9.5
									3	6.9	10

Designs requiring different lengths & ball diameters are possible, please contact the engineering department for further information.

FLANGEFORM® STUDS

INSTALLATION DATA



Flangeform studs manual emplacement data.						
Stud size	Dimension H	Dimension ØF	Dimension R min	Dimension A min	*Dimension Z1	*Dimension Z2
M4/M5	2.5	9.5	7.0	9.0	16.0	13.0
M6	3.8	12.5	8.5	10.0	19.0	16.0
M8	4.0-5.0	15.0	10.0	12.0	22.0	19.0
M10	5.5-7.5	19.0	14.0	15.0	28.5	24.0

*Dimension Z1 When studs are emplaced manually simultaneously.

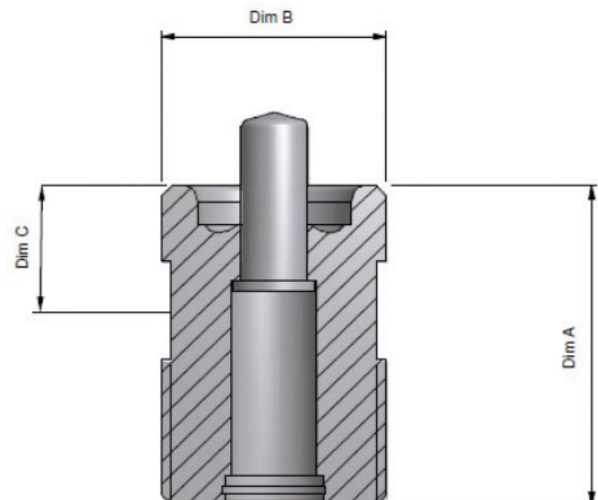
*Dimension Z2 When studs are emplaced manually one at a time.

These dimensions relate to when standard mini-dies are used. Mini-dies can be modified & tailored to customer needs to achieve closer A & Z dimensions.

MINI DIE INSERTION TOOL DIMENSIONS

Mini-die tools are specific for each metric / imperial size of Flangeform stud and material thickness. This data is required to choose the correct mini-die for the application.

Size	Height A	Diameter B	Groove Centre C
M4 / M5	20.70 / 20.80	15.989 / 16.000	8
M6	27.55 / 27.65	18.989 / 19.000	8
M10	32.00 / 32.10	21.963 / 21.975	12.5
M8	38.00 / 38.10	28.463 / 28.475	12.5



FLANGEFORM® STUDS

HOW TO SPECIFY

- **Product code** – the standard stud design is code 30, with a dog-point is 3D.
- **Thread code** – refer to thread code matrix.
- **Grade & plating code** – grade 8 is H, 9 is J. Standard Plating is Zinc & Clear trivalent passivation (W).
- **Stud length** – this value determines the approximate length of stud.

Part Number Layout / Meaning			
Product	Thread	Grade & Finish	Stud Length
30	M06	HW	20
30	M07	HW	20
30	M08	HW	20
30	M06	HW	20

THREAD CODE MATRIX

Metric		M					
		4	5	6	8	10	12
Metric	Coarse - 6H	M04	M05	M06	M08	M10	M12
	Coarse - 6E	E04	E05	E06	E08	E10	E12
	Fine	N04	N05	N06	N08	N10	N12

Unified	Coarse	8-32	10-24	12-24	1/4-20	5/16-18	3/8-16	7/16-14	1/2-13
		CEG	CTE	CTV	C04	C05	C06	C07	C08
	Fine	8-36	10-32	12-28	1/4-28	5/16-24	3/8-24	7/16-20	1/2-20
		FEG	FTE	FTV	F04	F05	F06	F07	F08

PERFORMANCE DATA

Stud Size	Material Thickness mm	Cold Rolled Mild Steel		
		Push-out Kn	Pull-out Kn	Torque-out Nm
M6	0.7	3	4	9
	1	7	7	9
	1.5	9	10	9
M8	0.7	3.9	4.7	19
	1	7.3	7.4	19
	1.5	11.9	11	19
	2	14	11.5	19
M10	0.7	4.8	4.5	
	1	6.5	9.7	36
	1.5	13.1	16	36
	2	17	16	36
	2.5	27.9	18	36
M12	1	7.3	9.6	
	1.5	10.8	15.2	80
	2	16.7	20	81
	2.5	28	20	84
	3	29	20	86

Note: The data provided above is for general guidance only and may vary depending upon material, hole size, tonnages & tooling.

For specific advice and data please contact BAS Components technical centre.