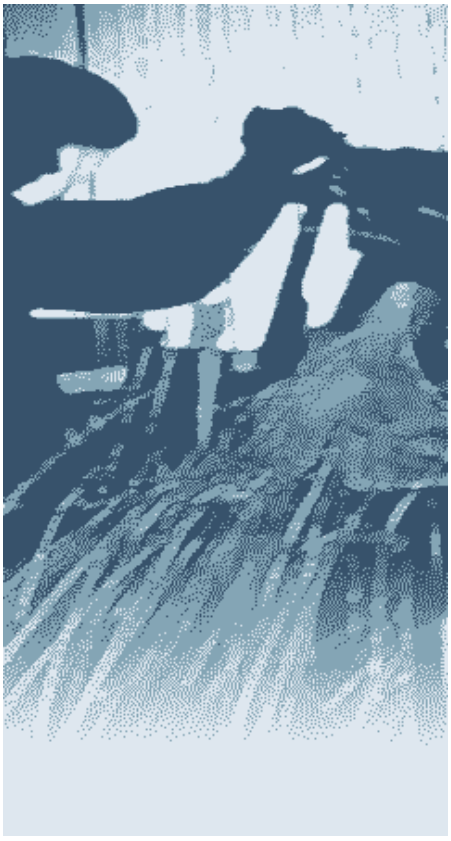
LINEAR SHAFTING



Universal application as guide ways for ball bushings.

- Induction hardened and ground precision shafting in Tolerance h6 or h7.l
- Steel grade CF 53 Super Finish
- Hardness 63 ± 2 Rockwel
- Stainless
- Hollow Grade 100 CR 6
- Supplied as cut length, fully machined, or random lengths

Typically used in construction of Machine Tools, Presses, Plastic Moulding and Die Casting Machines, Textile Machinery, Printing and Packaging Machines or wherever
low friction and high precision are design criterias.

Click for relevant Product below

Linear Shafting

CF53 Steel, Induction Hardened.
CF53 Steel Hard Chrome Plated, Induction Hardened
X90 Stainless Steel, Induction Hardened.
X46 Stainless Steel, Induction Hardened.
Hollow Steel 100 CR6, Induction Hardened.

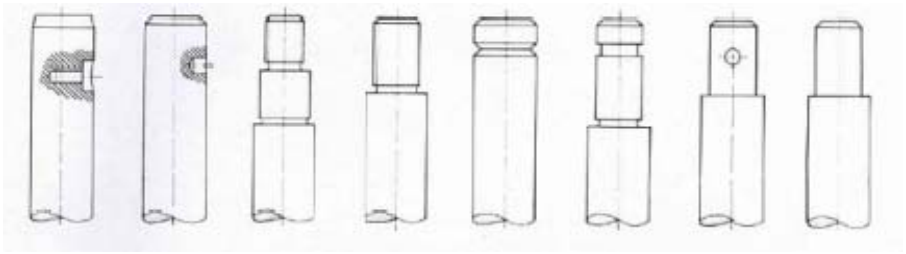
Associated Products

Non Linear general engineering specifications.
Ball Screws.
Aluminium Shaft supports & End supports.
Linear Guideways.
Linear Ball Bushings.

Click for Material Specifications Charts

LINEAR SHAFTING (METRIC & INCH)

Linear Shafts



Examples of Induction Hardened Shafts with machined ends

Materials:
CF53 Steel, Induction Hardened.
CF53 Steel Hard Chrome Plated, Induction Hardened.
X90 Stainless Steel, Induction Hardened.
X46 Stainless Steel, Induction Hardened.
Hollow Steel 100 CR6, Induction Hardened.

Finish: Precision Ground & polished to 8-12 Micro Inches Ra.

Associated Products:
Non Linear general engineering specifications.
Ball Screws.
Aluminium Shaft supports & End supports.
Linear Guideways.
Linear Ball Bushings.

When ordering: Please state: **Material + O.D + Length + any machining required**

All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Nominal Diameter O.D.		Tolerance mm		Tolerance inch		Roundness inch		Minimum Hardness		Random Lengths	
mm	inch	h6	h7	"L"	"S"	"L"	"S"	mm	inch	mm	feet
5		0 / -0.008	0 / -0.012					1.0		6000	
6		0 / -0.008	0 / -0.012					1.0		6000	
	1/4			.2495 .2490	.2490 .2485	0.00015	0.0003		0.45		20.0
8		0 / -0.009	0 / -0.015					1.0		6000	
	3/8			.3745 .3740	.3740 .3735	0.00015	0.0003		0.045		20.0
10		0 / -0.009	0 / -0.015					1.0		6000	
12		0 / -0.011	0 / -0.018					1.0		6000	
	1/2			.4995 .4990	.4990 .4985	0.00025	0.0003		0.06		20.0
14		0 / -0.011	0 / -0.018					1.0		6000	
	5/8			.6245 .6240	.6240 .6235	0.00025	0.0003		0.06		20.0
16		0 / -0.011	0 / -0.018					1.0		6000	
	3/4			.7495 .7490	.7490 .7485	0.00025	0.0003		0.09		20.0
20		0 / -0.013	0 / -0.021					1.8		6000	
25		0 / -0.013	0 / -0.021					1.8		6000	
	1			.9995 .9990	.9990 .9985	0.00025	0.0003		0.09		20.0
30		0 / -0.013	0 / -0.021					2.0		6000	
	1 1/4			1.2495 1.2490	1.2490 1.2485	0.00025	0.0003		0.110		20.0
	1 1/2			1.4494 1.4989	1.4989 1.4984	0.00025	0.0003		0.110		20.0
40		0 / -0.016	0 / -0.025					2.5		6000	
50		0 / -0.016	0 / -0.025					2.5		6000	
	2			1.9994	1.9987	0.00025	0.0003		0.11		20.0

				1.9987	1.9980						
60		0 / -0.019	0 / -0.030					3.0		6000	
	2 1/2			2.4993 2.4985	2.4985 2.4977	0.00032	0.0004		0.11		20.0
70		0 / -0.019	0 / -0.030					3.0		6000	
80		0 / -0.019	0 / -0.030					3.0		6000	
100		0 / -0.022	0 / -0.035					3.3		6000	

MATERIAL SPECIFICATIONS CHART

All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Precision Steel Shafts

MATERIAL		COMPOSITION %						
Number	**Type of Steel**	**C**	**Si**	**Mn**	**P**	**S**	**CR**	**MO**
CF53	Induction Hardening	0.50 / 0.57	0.15 / 0.35	0.40 / 0.70	0.035	0.035	N/A	N/A

Hardness: 63/65 RC
Tolerance: h6 or h7

Stainless Steel Shafts

MATERIAL		COMPOSITION %						
Number	**Type of Steel**	**C**	**Si**	**Mn**	**P**	**S**	**CR**	**MO**
1.4112	X90 CR MOV 18	0.85 / 0.95	1.0	1.0	0.045	0.030	17.00 / 19.00	1.00 / 1.30
1.4034	X46 CR 13	0.40 / 0.50	1.0	1.0	0.045	0.030	12.00 / 14.00	N/A

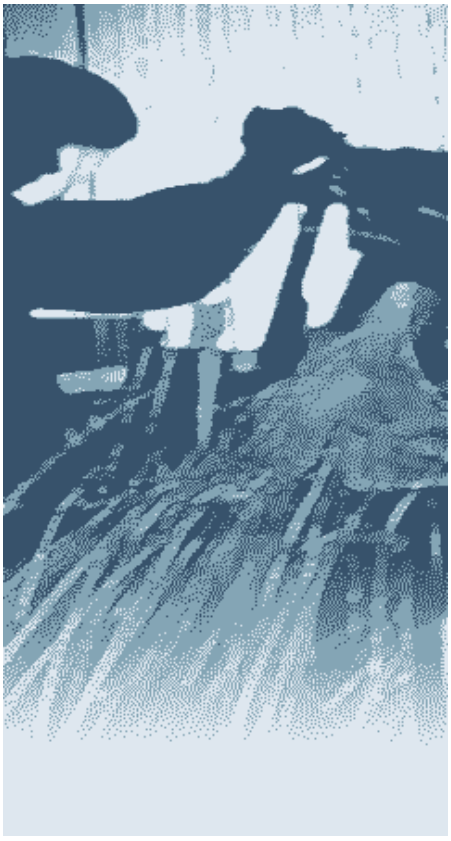
Hardness: 52/56 RC
Tolerance: h6 or h7

Induction Hardened Hollow Shafts

MATERIAL		COMPOSITION %						
Number	**Type of Steel**	**C**	**Si**	**Mn**	**P**	**S**	**CR**	**MO**
1.2067	100 CR 6	0.95 / 1.05	1.15 / 1.35	0.25 / 1.70	0.035	0.035	1.40 / 1.70	N/A

Hardness: 60/64 RC
Depth of Hardness: 1-2mm
Surface finish: 0.3mm
Tolerance: h6 or h7

TENSION PINS



A tension pin is a slotted cylindrical fastener, heat-treated to achieve optimal toughness, resilience and shear strength. In manufacture, it is formed to a controlled diameter greater than the hole into which it is pressed. The self-locking tension pin is stronger and costs considerably less than mild carbon steel straight pin, taper pins or grooved pins of equivalent sizes.

Being hollow, the tension pin is lighter than a solid pin. Because it is self-locking,
it saves the weight of projecting heads, tabs and extra locking parts.

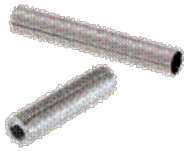
Click for relevant Pin below

Standard Pins

Metric Tension Pin (slotted) DIN7346 / ISO13337 Light Duty
Metric Tension Pin (slotted) DIN1481 / ISO 8752 Heavy Duty
Metric Coiled Spring Pin DIN8750 / ISO7343 Standard Duty
Metric Coiled Spring Pin DIN8748 / ISO7344 Heavy Duty

Non-Standard Bushes

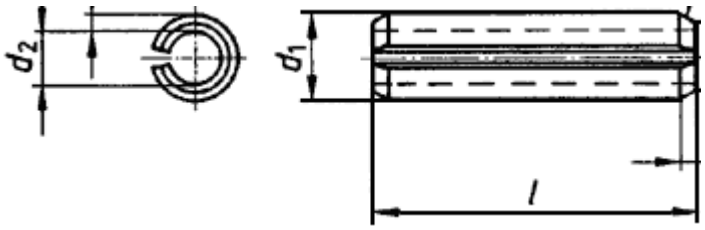
Inch Tension pin
Inch Coiled Spring Pin
Various special configuration Pins



Click for Installation/Removal of Tension Pins

Click for Tension Pin Applications

TENSION PIN – DIN7346 / ISO13337 Light Duty (METRIC)



Standard Lengths: 10mm – 200mm. For customized lengths, please contact our Sales Dept.

Pins with a nominal diameter of 10mm or greater may be delivered with one chamfer.

Materials: Spring Steel / High Carbon Steel
Stainless Steel (Chrome AISI 420 & Nickel AISI 302/304SS)

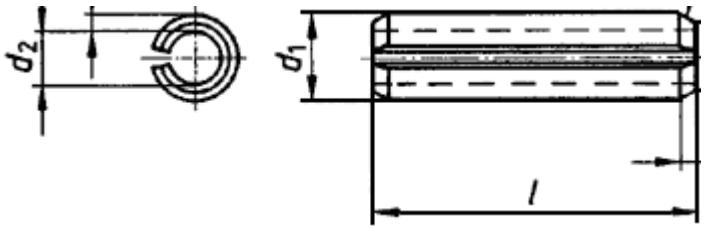
Finish: Oiled (other finishes on request)

When ordering: Please state: Nominal Diameter + Length + DIN-number

All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Diameter Nominal	Before Insertion			Chamfer Length		Wall Thickness	Recommended Hole Size		Double Shear kN
	O.D. d1		I.D. d2						
	Min.	Max.		Min.	Max.		Min.	Max.	Min.
mm	mm	mm	mm	mm	mm	mm	mm	mm	Carbon Steel only
2.0	2.30	2.40	1.90	0.20	0.40	0.20	2.00	2.10	1.50
2.5	2.80	2.90	2.30	0.25	0.45	0.25	2.50	2.60	2.40
3.0	3.30	3.50	2.70	0.25	0.45	0.30	3.00	3.10	3.50
3.5	3.80	4.00	3.10	0.30	0.50	0.35	3.50	3.65	4.60
4.0	4.40	4.60	3.40	0.50	0.70	0.50	4.00	4.15	8.00
4.5	4.90	5.10	3.90	0.50	0.70	0.50	4.50	4.65	8.80
5.0	5.40	5.60	4.40	0.50	0.70	0.50	5.00	5.15	10.40
6.0	6.40	6.70	4.90	0.70	0.90	0.75	6.00	6.15	18.00
8.0	8.50	8.80	7.00	1.50	1.80	0.75	8.00	8.25	24.00
10.0	10.50	10.80	8.50	2.00	2.40	1.00	10.00	10.25	40.00
12.0	12.50	12.80	10.50	2.00	2.40	1.00	12.00	12.30	48.00
13.0	13.50	13.80	11.00	2.00	2.40	1.20	13.00	13.18	66.00
14.0	14.50	14.80	11.50	2.00	2.40	1.50	14.00	14.18	84.00
16.0	16.50	16.80	13.50	2.00	2.40	1.50	16.00	16.18	98.00
18.0	18.50	18.90	15.00	2.00	2.40	1.70	18.00	18.18	126.00
20.0	20.50	20.90	16.50	2.00	2.40	2.00	20.00	20.21	158.00
21.0	21.50	21.90	17.50	2.00	2.40	2.00	21.00	21.21	168.00
25.0	25.50	25.90	21.50	3.00	3.40	2.00	25.00	25.21	202.00
28.0	28.50	28.90	23.50	3.00	3.40	2.50	28.00	28.21	280.00
30.0	30.50	30.90	25.50	3.00	3.40	2.50	30.00	30.21	302.00
35.0	35.50	35.90	28.50	3.00	3.60	3.50	35.00	35.25	490.00
40.0	40.50	40.90	32.50	4.00	4.60	4.00	40.00	40.25	634.00
45.0	45.50	45.90	37.50	4.00	4.60	4.00	45.00	45.25	720.00
50.0	50.50	50.90	40.50	4.00	4.60	5.00	50.00	50.25	1000.00

TENSION PIN – DIN1481 / ISO8752 Heavy Duty (METRIC)



Standard Lengths: 10mm – 200mm. For customized lengths, please contact our Sales Dept.

Pins with a nominal diameter of 10mm or greater may be delivered with one chamfer.

Materials: Spring Steel / High Carbon Steel
Stainless Steel (Chrome AISI 420 & Nickel AISI 302/304SS)

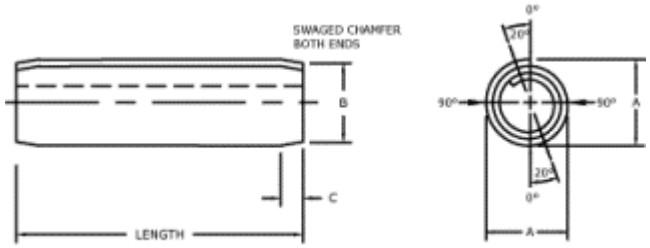
Finish: Oiled (other finishes on request)

When ordering: Please state: Nominal Diameter + Length + DIN-number

All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Diameter Nominal	Before Insertion			Chamfer Length		Wall Thickness	Recommended Hole Size		Double Shear kN
	O.D. d1		I.D. d2						
	Min.	Max.		Min.	Max.		Min.	Max.	Min.
mm	mm	mm	mm	mm	mm	mm	mm	mm	Carbon Steel only
1.0	1.20	1.30	0.80	0.15	0.35	0.20	1.00	1.10	0.70
1.5	1.70	1.80	1.10	0.25	0.45	0.30	1.50	1.60	1.58
2.0	2.30	2.40	1.50	0.35	0.55	0.40	2.00	2.10	2.82
2.5	2.80	2.90	1.80	0.40	0.60	0.50	2.50	2.60	4.38
3.0	3.30	3.50	2.10	0.50	0.70	0.60	3.00	3.10	6.32
3.5	3.80	4.00	2.30	0.60	0.80	0.75	3.50	3.65	9.06
4.0	4.40	4.60	2.80	0.65	0.85	0.80	4.00	4.15	11.24
4.5	4.90	5.10	2.90	0.80	1.00	1.00	4.50	4.65	15.36
5.0	5.40	5.60	3.40	0.90	1.10	1.00	5.00	5.15	17.54
6.0	6.40	6.70	4.00	1.20	1.40	1.20	6.00	6.15	26.04
8.0	8.50	8.80	5.50	2.00	2.40	1.50	8.00	8.25	42.76
10.0	10.50	10.80	6.50	2.00	2.40	2.00	10.00	10.25	70.16
12.0	12.50	12.80	7.50	2.00	2.40	2.50	12.00	12.30	104.10
13.0	13.50	13.80	8.50	2.00	2.40	2.50	13.00	13.30	115.10
14.0	14.50	14.80	8.50	2.00	2.40	3.00	14.00	14.30	144.70
16.0	16.50	16.80	10.50	2.00	2.40	3.00	16.00	16.30	171.00
18.0	18.50	18.90	11.50	2.00	2.40	3.50	18.00	18.30	222.50
20.0	20.50	20.90	12.50	3.00	3.40	4.00	20.00	20.30	280.60
21.0	21.50	21.90	13.50	3.00	3.40	4.00	21.00	21.30	298.20
25.0	25.50	25.90	15.50	3.00	3.40	5.00	25.00	25.30	438.50
28.0	28.50	28.90	17.50	3.00	3.40	5.50	28.00	28.30	542.60
30.0	30.50	30.90	18.50	3.00	3.40	6.00	30.00	30.30	631.40
32.0	32.50	32.90	20.50	3.00	3.60	6.00	32.00	32.30	684.00
35.0	35.50	35.90	21.50	3.00	3.60	7.00	35.00	35.30	859.00
38.0	38.50	38.90	23.50	4.00	4.60	7.50	38.00	38.30	1003.00
40.0	40.50	40.90	25.50	4.00	4.60	7.50	40.00	40.30	1068.00
45.0	45.50	45.90	28.50	4.00	4.60	8.50	45.00	45.30	1360.00
50.0	50.50	50.90	31.50	4.00	4.60	9.50	50.00	50.30	1685.00

COILED SPRING PIN – DIN8750 / ISO7343 Standard Duty & DIN8748 / ISO7344 Heavy Duty (METRIC)

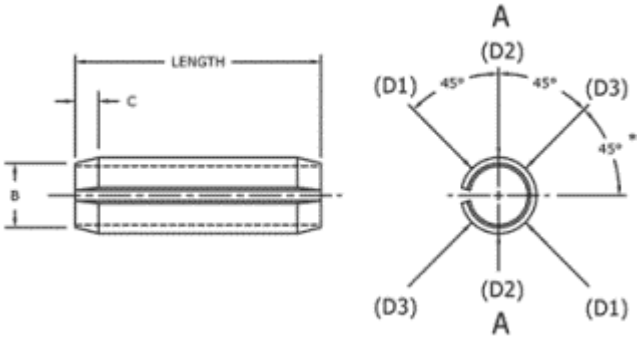


Standard Lengths:	10mm – 200mm. For customized lengths, please contact our Sales Dept.
Materials:	Spring Steel / High Carbon Steel Stainless Steel (Chrome AISI 420 & Nickel AISI 302/304SS)
Finish:	Oiled (other finishes on request)
When ordering:	Please state: Nominal Diameter + Length + DIN-number

All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Diameter Nominal	Diameter A				Chamfer		Recommended Hole Size		Minimum Double Shear in kN			
	Standard Duty		Heavy Duty		Diameter B	Length C			Standard Duty		Heavy Duty	
	Min.	Max.	Min.	Max.	Max.	Min.	Min.	Max.	Carbon steel & 420SS	302/ 304SS	Carbon steel & 420SS	302/ 304SS
mm	mm	mm	mm	mm	mm	mm	mm	mm				
1	1.05	1.15	N/A	N/A	0.95	0.3	1.0	1.04	0.60	0.45	N/A	N/A
1.5	1.62	1.73	1.61	1.71	1.40	0.5	1.5	1.60	1.45	1.05	1.90	1.45
2	2.13	2.25	2.11	2.21	1.90	0.7	2.0	2.10	2.50	1.90	3.50	2.50
2.5	2.65	2.78	2.62	2.73	2.40	0.7	2.5	2.60	3.90	2.90	5.50	3.80
3	3.15	3.30	3.12	3.25	2.90	0.9	3.0	3.10	5.50	4.20	7.60	5.70
3.5	3.67	3.84	3.64	3.79	3.40	1.0	3.5	3.62	7.50	5.70	10.00	7.60
4	4.20	4.40	4.15	4.30	3.90	1.1	4.0	4.12	9.60	7.60	13.50	10.00
5	5.25	5.50	5.15	5.35	4.85	1.3	5.0	5.12	15.00	11.50	20.00	15.50
6	6.25	6.50	6.18	6.40	5.85	1.5	6.0	6.12	22.00	16.80	30.00	23.00
8	8.30	8.63	8.25	8.55	7.80	2.0	8.0	8.15	39.00	30.00	53.00	41.00
10	10.35	10.80	10.30	10.65	9.75	2.5	10.0	10.15	62.00	48.00	84.00	64.00
12	12.40	12.85	12.30	12.75	11.70	3.0	12.0	12.20	89.00	67.00	120.00	91.00
16	16.45	17.00	16.40	16.90	15.60	4.0	16.0	16.30	155.00	N/A	210.00	N/A

TENSION PIN – Heavy Duty (INCH)



Standard Lengths: 1/16 Inches – 4 Inches. For customized lengths, please contact our Sales Dept.

Materials: Spring Steel / High Carbon Steel
Stainless Steel (Chrome AISI 420 & Nickel AISI 302/304SS)

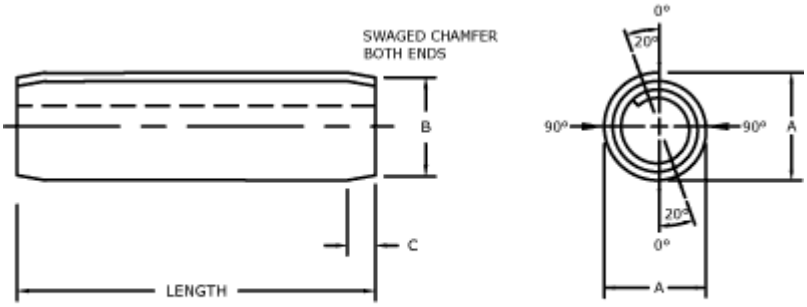
Finish: Oiled (other finishes on request)

When ordering: Please state: Nominal Diameter + Length

All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

A				B	C		Wall	Recommended		Minimum Double Shear in Lbs	
Diameter Nominal		Diameter D1 + D2 + D3			Chamfer Length		Thickness	Hole Size			
		Min.	Max.	Max.	Min.	Max.		Min.	Max.	Carbon steel & 420SS	302/304SS
1/16	.062	.066	.069	.059	.007	.028	.012	.062	.065	430	250
5/64	.078	.083	.086	.075	.008	.032	.018	.078	.081	800	460
3/32	.094	.099	.103	.091	.008	.038	.022	.094	.097	1,150	670
1/8	.125	.131	.135	.122	.008	.044	.028	.125	.129	1,875	1,090
5/32	.156	.162	.167	.151	.010	.048	.032	.156	.160	2,750	1,600
3/16	.187	.194	.199	.182	.011	.055	.040	.187	.192	4,150	2,425
7/32	.219	.226	.232	.214	.011	.065	.048	.219	.224	5,850	3,400
1/4	.250	.258	.264	.245	.012	.065	.048	.250	.256	7,050	4,100
5/16	.312	.321	.330	.306	.014	.080	.062	.312	.318	10,800	6,300
3/8	.375	.385	.395	.368	.016	.095	.077	.375	.382	16,300	9,500
7/16	.437	.448	.459	.430	.017	.095	.077	.437	.445	19,800	11,500
1/2	.500	.513	.524	.485	.025	.110	.094	.500	.510	27,100	15,800
5/8	.625	.640	.653	.608	.030	.125	.125	.625	.636	46,000	18,800
3/4	.750	.769	.784	.730	.030	.150	.150	.750	.764	66,000	23,200

COILED SPRING PIN Standard Duty & Heavy Duty (INCH)



Standard Lengths: 1/16 Inches – 4 Inches. For customized lengths, please contact our Sales Dept.

Materials: Spring Steel / High Carbon Steel
Stainless Steel (Chrome AISI 420 & Nickel AISI 302/304SS)

Finish: Oiled (other finishes on request)

When ordering: Please state: Nominal Diameter + Length + Duty

All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

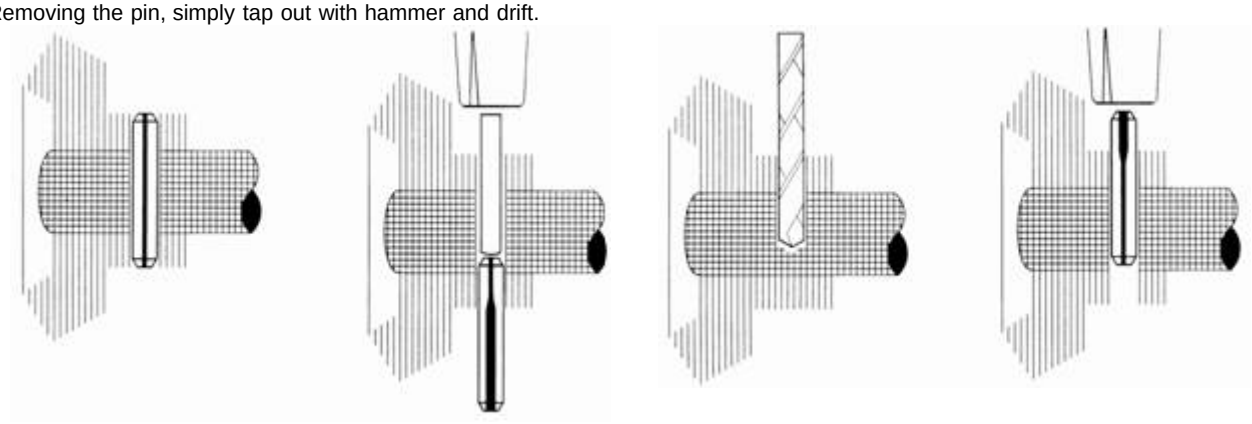
Diameter Nominal		Diameter A				Chamfer		Recommended Hole Size		Minimum Double Shear in Lbs			
		Standard Duty		Heavy Duty		Nominal				Standard Duty		Heavy Duty	
		Min.	Max.	Min.	Max.	Max. B	Ref. C	Min.	Max.	Carbon Steel & 420SS	302/ 304SS	Carbon Steel & 420SS	302/ 304SS
1/16	.062	.067	.072	.066	.070	.059	.028	.061	.065	330	265	475	360
5/64	.078	.083	.088	.082	.086	.075	.032	.077	.081	550	425	800	575
3/32	.094	.099	.105	.098	.103	.091	.038	.093	.097	775	600	1,150	825
1/8	.125	.131	.138	.130	.136	.121	.044	.124	.129	1,400	1,100	2,000	1,700
5/32	.156	.163	.171	.161	.168	.152	.048	.155	.160	2,200	1,700	3,100	2,400
3/16	.187	.196	.205	.194	.202	.182	.055	.185	.192	3,150	2,400	4,500	3,500
7/32	.219	.228	.238	.226	.235	.214	.065	.217	.224	4,200	3,300	5,900	4,600
1/4	.250	.260	.271	.258	.268	.243	.065	.247	.256	5,500	4,300	7,800	6,200
5/16	.312	.324	.337	.322	.334	.304	.080	.308	.318	8,700	6,700	12,000	9,300
3/8	.375	.388	.403	.386	.400	.366	.095	.370	.383	12,600	9,600	18,000	14,000
1/2	.500	.516	.535	.514	.532	.488	.110	.493	.510	25,500	17,500	32,000	25,000

INSTALLATION / REMOVAL OF TENSION PINS

Tension pins employ a chamfered end to facilitate line-up and insertion. Typical insertion techniques are tapping with a hammer or pressing in using air or hydraulic press.

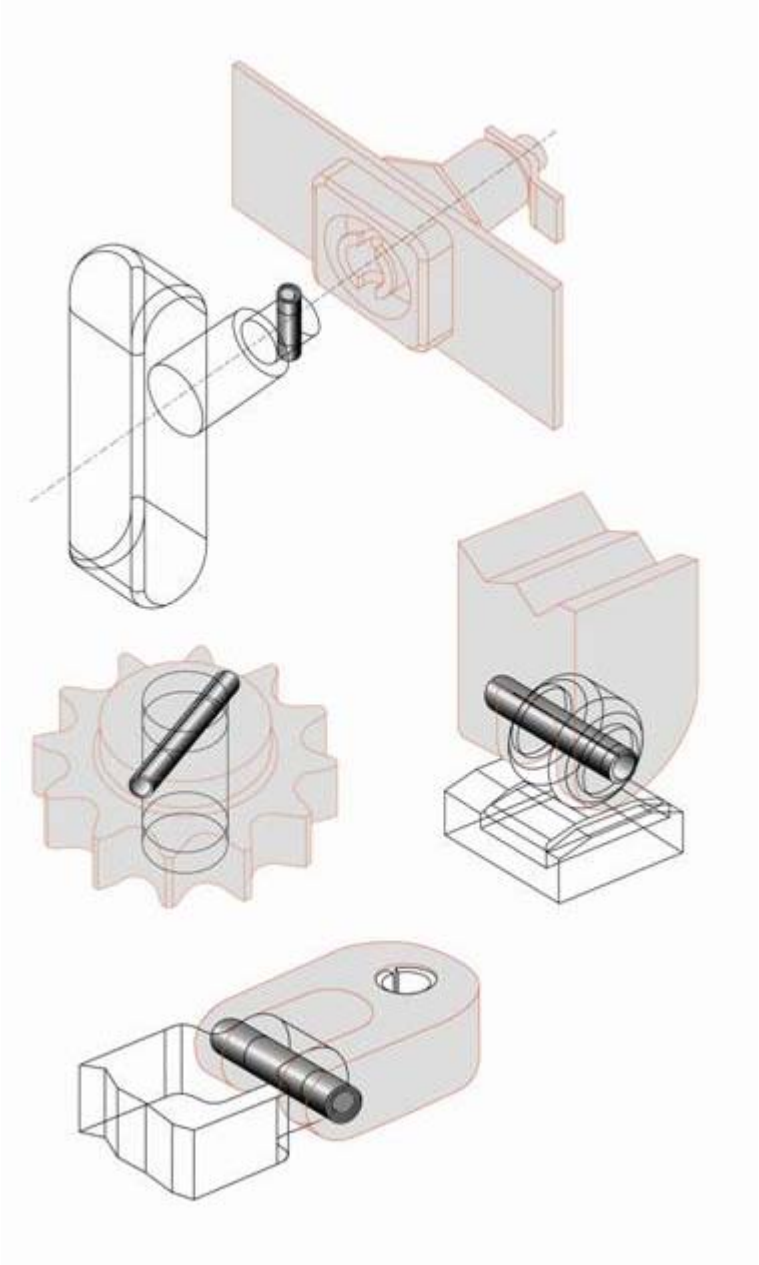
Compressed as it is driven into a hole, the pin exerts continuous spring pressure against the sides of the hole, positively preventing loosening by vibration. Pin dimensions, outside diameters in their free state and elastic limits are engineered so that this self-locking action is achieved in holes drilled to normal production tolerances. No reaming operations are needed to ensure a tight fit. No secondary operations are required to keep the pin in position.

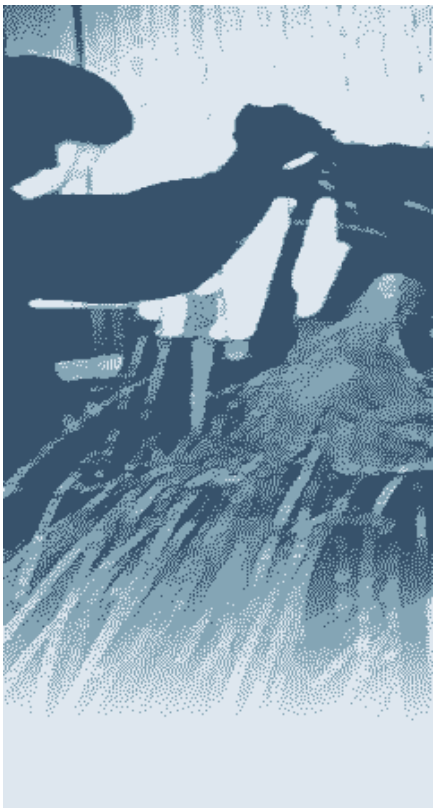
Removing the pin, simply tap out with hammer and drift.



Drill hole | Press or tap in place | Inserted pin | Tap out with hammer or drift

TENSION PINS – Examples of Applications





TENSION BUSHES

Solving problems related to static and dynamic bearing loads of machine parts is the forte of tension bushes.

Tension bushes, manufactured from rolled spring steel and through hardened offer a cost effective solution to protecting machine parts that are subjected to harsh and abrasive low lubrication environments.

They provide the ideal bearing surface for parts subjected to high load, low speed rotational or oscillating motions.

Used extensively in the manufacture of agricultural and construction equipment to protect pivot housings. Ideal for using in the ends of hydraulic ram arms for protection against rotational wear.

Click for relevant Bush below

Standard bushes

Metric Internal tension bush with Straight Slot

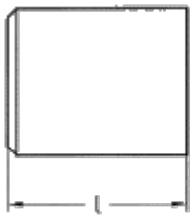
Non-standard bushes

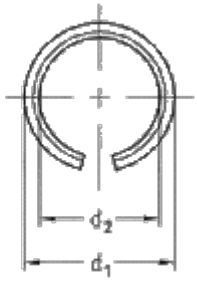
Inch Internal Tension Bush with Straight Slot
Internal Tension Bush with Arrow Slot
Internal Tension Bush with Wavy Slot
Internal Tension Bush – scrolled for easy lubrication
External Tension Bush with Straight Slot
Various special configuration Tension Bushes

Click for Installation/Removal of Tension Bushes

Click for Tension Bush Applications

INTERNAL TENSION BUSH – DIN1498 (METRIC)





Materials: CK67 Spring Steel DIN 17222 (AISI 1070-1095)
Stainless Steel (Chrome AISI 420 & Nickel AISI 302/304SS) non-standard, please contact our Sales Dept.
Heat treatment: Hardened and tempered

Finish: Oiled (other finishes on request)

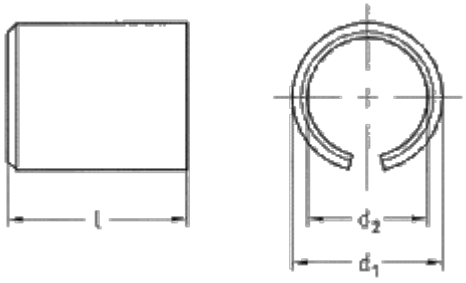
When ordering: Please state: **O.D + I.D. + required Length** (ie: 14-10-50)

All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Nominal O.D. d1 mm	Nominal I.D. d2 mm	Lengths L mm	Wall thickness mm	Tolerance hole size Min. mm	Tolerance hole size Max. mm	O.D. before insertion mm	I.D. after insertion Min. I.D. mm	I.D. after insertion Max. I.D. mm	I.D. after insertion for Length mm	Ext. chamfer (tolerance) mm	Int. chamfer (tolerance) mm
14	**10**	**10-50**	2	14	14.027	14.5				1.5 (±0.2)	1 (±0.2)
16	**10**	**10-50**	3	16	16.027	16.5				1.5 (±0.2)	1 (±0.2)
16	**10**	**10-50**	2	16	16.027	16.5				1.5 (±0.2)	1 (±0.2)
18	**12**	**10-50**	3	18	18.027	18.5				1.5 (±0.2)	1 (±0.2)
18	**14**	**10-50**	2	18	18.027	18.5	+0.040	+0.098	10-50	1.5 (±0.2)	1 (±0.2)
20	**14**	**10-50**	3	20	20.033	20.5				1.5 (±0.2)	1 (±0.2)
20	**16**	**10-50**	2	20	20.033	20.5				1.5 (±0.2)	1 (±0.2)
22	**16**	**10-50**	3	22	22.033	22.5				1.5 (±0.2)	1 (±0.2)
24	**18**	**10-50**	3	24	24.033	24.5				1.5 (±0.2)	1 (±0.2)
26	**20**	**10-100**	3	26	26.033	26.5				2 (±0.5)	1 (±0.2)
28	**20**	**10-100**	4	28	28.033	28.5				2 (±0.5)	1 (±0.2)
28	**22**	**10-100**	3	28	28.033	28.5				2 (±0.5)	1 (±0.2)
30	**25**	**10-100**	2.5	30	30.033	30.5				2 (±0.5)	1 (±0.2)
32	**25**	**10-100**	3.5	32	32.039	32.5				2 (±0.5)	1 (±0.2)
32	**26**	**10-100**	3	32	32.039	32.5	+0.065	+0.149	10-50	2 (±0.5)	1 (±0.2)
35	**25**	**10-100**	5	35	35.039	35.5	+0.065	+0.195	50-100	2 (±0.5)	1 (±0.2)
35	**27**	**10-100**	4	35	35.039	35.5				2 (±0.5)	1 (±0.2)
35	**28**	**10-100**	3.5	35	35.039	35.5				2 (±0.5)	1 (±0.2)
36	**30**	**10-100**	3	36	36.039	36.5				2 (±0.5)	1 (±0.2)
38	**30**	**10-100**	4	38	38.039	38.5				2 (±0.5)	2 (±0.5)
40	**30**	**10-100**	5	40	40.039	40.5				2 (±0.5)	2 (±0.5)
40	**32**	**10-100**	4	40	40.039	40.5				2 (±0.5)	2 (±0.5)
42	**33**	**10-100**	4.5	42	42.039	42.5				2 (±0.5)	2 (±0.5)
42	**35**	**10-100**	3.5	42	42.039	42.5				2 (±0.5)	2 (±0.5)
45	**35**	**10-100**	5	45	45.039	45.5	+0.080	+0.180	10-50	2 (±0.5)	2 (±0.5)
45	**36**	**10-100**	4.5	45	45.039	45.5	+0.080	+0.240	50-100	2 (±0.5)	2 (±0.5)
50	**40**	**10-100**	5	50	50.039	50.5				2.5 (±0.5)	2 (±0.5)
50	**42**	**10-100**	4	50	50.039	50.8				2.5 (±0.5)	2 (±0.5)
54	**45**	**10-100**	4.5	54	54.046	54.8				2.5 (±0.5)	2 (±0.5)
55	**45**	**10-100**	5	55	55.046	55.8				2.5 (±0.5)	2 (±0.5)
58	**50**	**10-100**	4	58	58.046	58.8				2.5 (±0.5)	2 (±0.5)
60	**50**	**10-100**	5	60	60.046	60.8				2.5 (±0.5)	2 (±0.5)
65	**55**	**10-200**	5	65	65.046	65.8				2.5 (±0.5)	2 (±0.5)

70	**60**	**10-200**	5	70	70.046	70.8				2.5 (±0.5)	3 (±1.0)
75	**65**	**10-200**	5	75	75.046	75.8	+0.100	+0.290	10-50	2.5 (±0.5)	3 (±1.0)
80	**70**	**10-200**	5	80	80.046	80.8	+0.100	+0.400	50-100	2.5 (±0.5)	3 (±1.0)
85	**70**	**10-200**	7.5	85	85.054	85.8	+0.100	+0.560	100-200	2.5 (±0.5)	3 (±1.0)
90	**75**	**10-200**	7.5	90	90.054	90.8				2.5 (±0.5)	3 (±1.0)
90	**80**	**40-200**	5	90	90.054	90.8				3 (±1.0)	3 (±1.0)
95	**80**	**40-200**	7.5	95	95.054	95.8				3 (±1.0)	3 (±1.0)
100	**85**	**40-200**	7.5	100	100.054	100.8				3 (±1.0)	3 (±1.0)
100	**90**	**40-200**	5	100	100.054	100.8				3 (±1.0)	3 (±1.0)
105	**90**	**40-200**	7.5	105	105.054	105.8	+0.120	+0.340	40-50	3 (±1.0)	3 (±1.0)
105	**95**	**40-200**	5	105	105.054	105.8	+0.120	+0.470	50-100	3 (±1.0)	3 (±1.0)
110	**95**	**40-200**	7.5	110	110.054	110.8	+0.120	+0.660	100-200	3 (±1.0)	3 (±1.0)
110	**100**	**40-200**	5	110	110.054	111				3 (±1.0)	3 (±1.0)
115	**100**	**40-200**	7.5	115	115.054	116				3 (±1.0)	3 (±1.0)
120	**105**	**40-200**	7.5	120	120.054	121				3 (±1.0)	3 (±1.0)
125	**110**	**40-200**	7.5	125	125.063	126	+0.120	+0.470	40-100	3 (±1.0)	3 (±1.0)
130	**115**	**40-200**	7.5	130	130.063	131	+0.120	+0.660	100-200	3 (±1.0)	3 (±1.0)
135	**120**	**40-200**	7.5	135	135.063	136				3 (±1.0)	3 (±1.0)
140	**125**	**40-200**	7.5	140	140.063	141				4 (±1.0)	4 (±1.0)
145	**130**	**40-200**	7.5	145	145.063	146				4 (±1.0)	4 (±1.0)
150	**135**	**40-200**	7.5	150	150.063	151				4 (±1.0)	4 (±1.0)
155	**140**	**40-200**	7.5	155	155.063	156				4 (±1.0)	4 (±1.0)
160	**145**	**40-200**	7.5	160	160.063	161	+0.145	+0.545	40-100	4 (±1.0)	4 (±1.0)
165	**150**	**40-200**	7.5	165	165.063	166	+0.145	+0.775	100-200	4 (±1.0)	5 (±1.0)
175	**155**	**40-200**	10	175	175.063	176				4 (±1.0)	5 (±1.0)
180	**160**	**40-200**	10	180	180.063	181				4 (±1.0)	5 (±1.0)
185	**165**	**40-200**	10	185	185.072	186				4 (±1.0)	5 (±1.0)
190	**170**	**40-200**	10	190	190.072	191				4 (±1.0)	5 (±1.0)
200	**180**	**40-200**	10	200	200.072	201				4 (±1.0)	5 (±1.0)

INTERNAL TENSION BUSH (INCH)



Materials: CK67 Spring Steel DIN 17222 (AISI 1070-1095)
Stainless Steel (Chrome AISI 420 & Nickel AISI 302/304SS) non-standard, please contact our Sales Dept.
Heat treatment: Hardened and tempered.

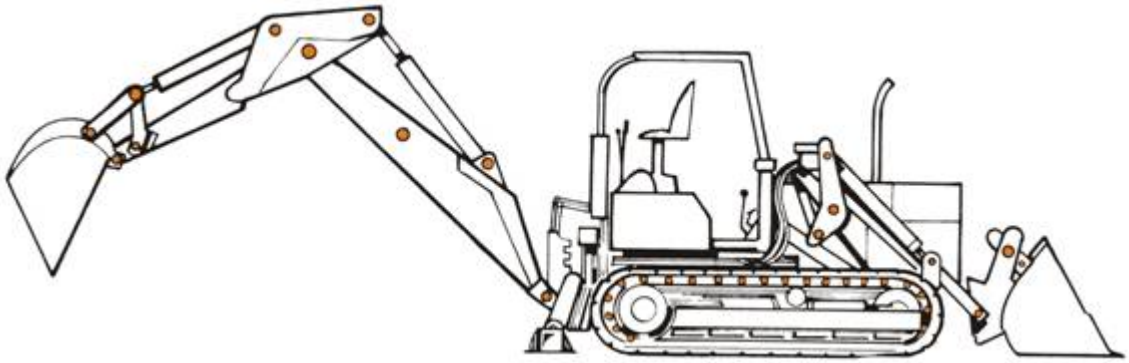
Finish: Oiled (other finishes on request)

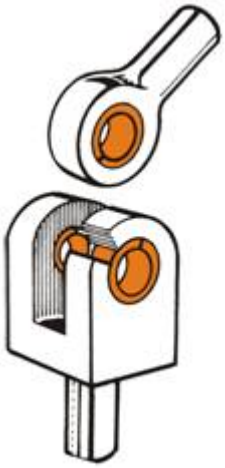
When ordering: Please state: **O.D + I.D. + required Length** (ie: 3/4 -1/2 - 1)

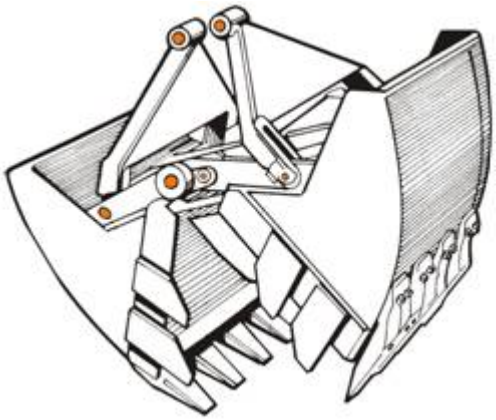
All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

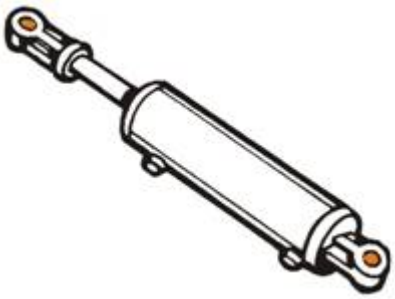
Nominal O.D. d1	Nominal I.D. d2	Lengths L	Wall thickness	Recommended hole size		O.D. before insertion (+0.02)	I.D. after insertion		Length of External chamfer	
				Min.	Max.		Min. I.D.	Max. I.D.	Min.	Max.
3/4	**1/2**	**1/2 -1 1/2**	1/8	0.7500	0.7511	0.770	0.503	0.507	0.060	0.090
1	**3/4**	**1/2 -1 1/2**	1/8	1.0000	1.0013	1.020	0.753	0.757	0.080	0.120
1 1/8	**3/4**	**3/4 – 2**	3/16	1.1250	1.1263	1.145	0.753	0.757	0.080	0.120
1 1/4	**1**	**1/2 -2**	1/8	1.2500	1.2513	1.270	1.003	1.007	0.080	0.120
1 3/8	**1**	**3/4 – 2**	3/16	1.3750	1.3765	1.395	1.128	1.132	0.080	0.120
1 3/8	**1 1/8**	**3/4 - 2**	1/8	1.3750	1.3765	1.395	1.128	1.132	0.080	0.120
1 1/2	**1 1/8**	**3/4 - 2**	3/16	1.5000	1.5015	1.520	1.253	1.257	0.080	0.120
1 1/2	**1 1/4**	**3/4 – 1 1/2**	1/8	1.5000	1.5015	1.520	1.253	1.257	0.080	0.120
1 1/2	**1 1/4**	**2 – 3**	1/8	1.5000	1.5015	1.520	1.253	1.257	0.080	0.120
1 1/2	**1**	**1 – 1 1/2**	1/4	1.5000	1.5015	1.520	1.253	1.257	0.080	0.120
1 1/2	**1**	**2 – 3**	1/4	1.5000	1.5015	1.520	1.253	1.257	0.080	0.120
1 5/8	**1 1/4**	**3/4 - 2**	3/16	1.6250	1.6265	1.645	1.253	1.257	0.080	0.120
1 3/4	**1 3/8**	**3/4 - 2**	3/16	1.7500	1.7515	1.770	1.503	1.507	0.080	0.120
1 3/4	**1 1/2**	**3/4 – 1 1/2**	1/8	1.7500	1.7515	1.770	1.503	1.507	0.080	0.120
1 3/4	**1 1/2**	**2 – 3**	1/8	1.7500	1.7515	1.770	1.503	1.507	0.080	0.120
1 7/8	**1 1/2**	**3/4 - 2**	3/16	1.8750	1.8765	1.895	1.503	1.507	0.080	0.120
2	**1 5/8**	**1 - 2 1/2**	3/16	2.0000	2.0013	2.020	1.750	1.757	0.080	0.120
2	**1 3/4**	**1 - 2 1/2**	1/8	2.0000	2.0013	2.020	1.750	1.757	0.080	0.120
2	**1 1/2**	**1 – 1 1/2**	1/4	2.0000	2.0013	2.020	1.750	1.757	0.080	0.120
2	**1 1/2**	**2 - 3**	1/4	2.0000	2.0013	2.020	1.750	1.757	0.080	0.120
2 1/4	**2**	**1 – 3**	1/8	2.2500	2.2513	2.270	2.003	2.007	0.080	0.120
2 1/4	**1 3/4**	**1 - 2 1/2**	1/4	2.2500	2.2513	2.270	2.003	2.007	0.080	0.120
2 3/8	**2**	**3/4 - 2**	3/16	2.3750	2.3768	2.406	2.004	2.012	0.100	0.150
2 1/2	**2 1/4**	**1 1/4 - 3**	1/8	2.5000	2.5013	2.520	2.250	2.266	0.080	0.120
2 1/2	**2**	**1 – 1 1/2**	1/4	2.5000	2.5013	2.520	2.250	2.266	0.080	0.120
2 1/2	**2**	**2 – 3**	1/4	2.5000	2.5013	2.520	2.250	2.266	0.080	0.120
2 3/4	**2 1/2**	**1 - 3**	1/8	2.7500	2.7513	2.770	2.504	2.516	0.080	0.120
3	**2 1/2**	**1 – 1 1/2**	1/4	3.0000	3.0018	3.032	2.504	2.512	0.100	0.150
3	**2 1/2**	**2 - 3**	1/4	3.0000	3.0018	3.032	2.504	2.516	0.100	0.150
3 1/2	**3**	**1 – 1 1/2**	1/4	3.5000	3.5021	3.532	3.005	3.013	0.100	0.150
3 1/2	**3**	**2 - 3**	1/4	3.5000	3.5021	3.532	3.005	3.019	0.100	0.150

TENSION BUSHES – Examples of Application





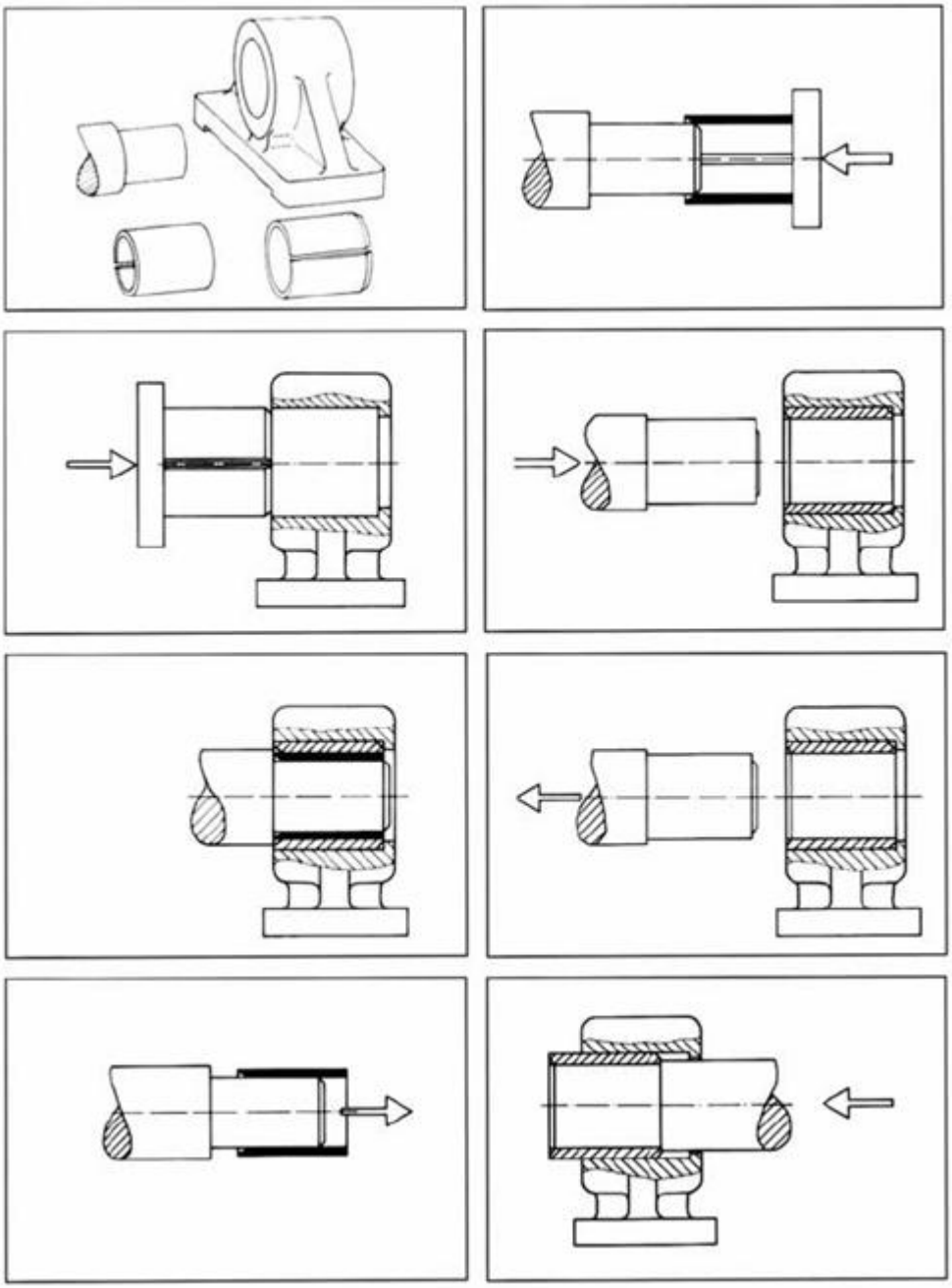




INSTALLATION / REMOVAL OF TENSION BUSH

Due to the inherent elastic qualities, full length slit and chamfered end, tension bushes are easy to install with minimal tools. A Wide range of sizes can be installed using only a hammer and drift or hydraulic hand press.

Because their design permits compression and expansion they can be installed without causing damage to the surface of the bore or shaft to which they are fitted.



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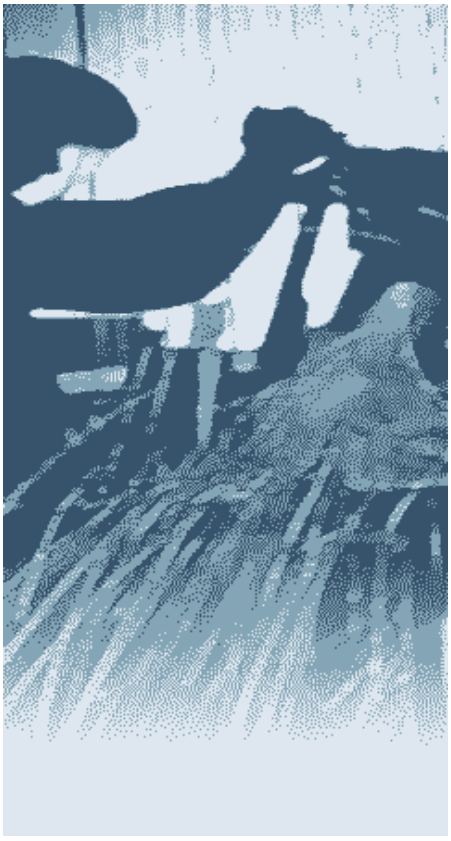

SPECIAL NUTS & BOLTS

- ISO 9001.
- Full CNC machine shop facilities.
- All materials machined.
- Max. diameter 250mm (10”).
- Up to 700mm between centres.
- Bar feed CNC lathes for larger batch quantities.
- From special one-off productions to large batch runs.
- 24-hour breakdown service

For further information & Specifications – please contact our Sales Dept.

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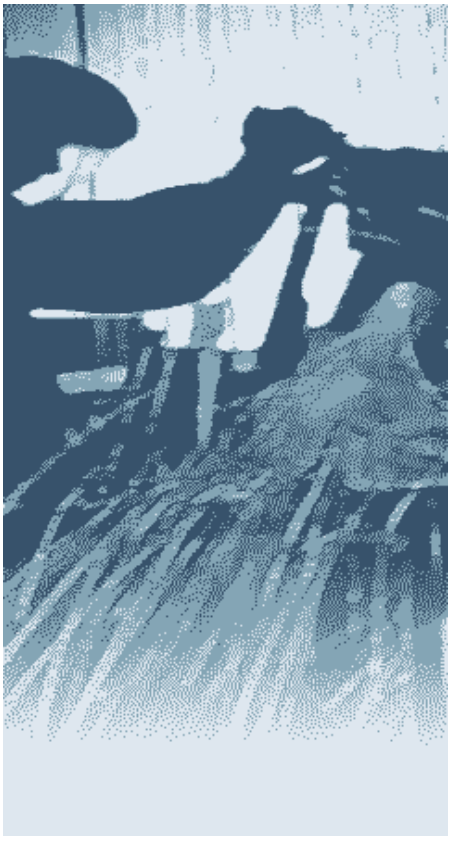

TURNED PARTS

- ISO 9001.
- Full CNC machine shop facilities.
- All materials machined.
- Max. diameter 250mm (10”).
- Up to 700mm between centres.
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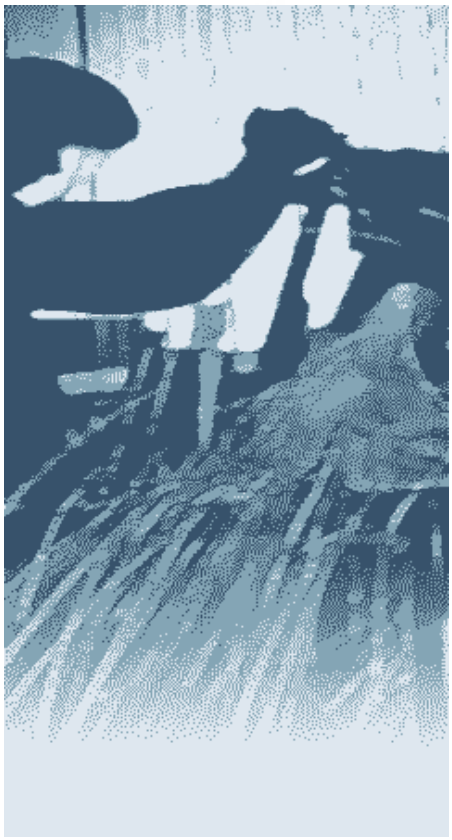
- 24-hour breakdown service

For further information & Specifications – please contact our Sales Dept.

headland engineering



SHEET METAL FASTENERS

The fasteners shown below feature attachment by mechanical means avoiding the damage and uncertainty often associated with weld nuts and studs allowing their use in pre-finished materials.

Click relevant picture for type variations and specifications

RH

RM

S

FH

F

SO

KF2

AS

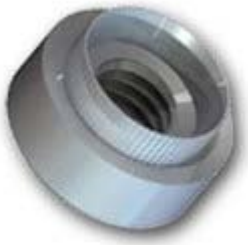
PFC2P

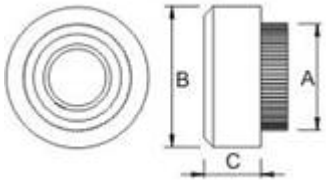
PFC2

PF31

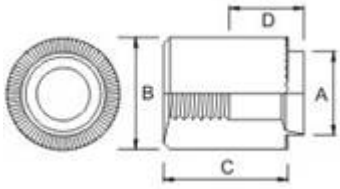
TP

RIVET BUSH





Version: RH



Version: RF (standoff)

Generel Info: Designed for installation into sheet metal.

Versions: RH / RF (standoff)

Materials: Steel/zinc
Stainless Steel

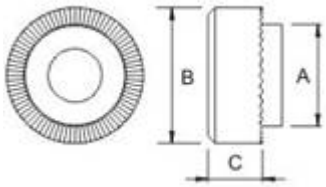
Advantages: Ideal for both thinner and harder sheet metals.
Can be installed by hand or automatic methods.
Suitable for use in punched or drilled holes.
Can be used for sheet thickness up to 5.9mm.
Can be used to join two sheets together.

When ordering: Please state: Version + Thread size + Sheet Thickness + (length) + Material

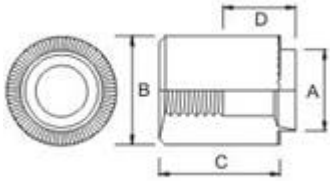
All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Thread Size	A +0.00 / -0.13 mm	B ± 0.15 mm	C ± 0.13 mm	C RF type mm	D RF type for lengths mm	Recommended hole size -0.00 / + 0.05 mm	Sheet Thickness mm	Note!
M2.5	5.54	7.92	3.17	3 - 50	8-10: D=3mm 11-13: D=6mm 14-16: D=9mm 17-22: D=12mm	5.54	0.9 – 5.9	Non-standard
M3	5.54	7.92	3.17	3 - 50		5.54	0.9 – 5.9	
M3.5	6.73	9.52	3.17	3 - 50		6.73	0.9 – 5.9	Non-standard
M4	6.73	9.52	3.17	3 - 50		6.73	0.9 – 5.9	
M5	7.92	11.10	3.81	3 - 50		7.92	0.9 – 5.9	
M6	9.52	12.70	5.08	3 - 50		9.52	0.9 – 5.9	
M8	12.70	15.87	6.35	3 - 50		12.70	1.2 – 5.9	
M10	15.87	19.05	7.62	3 - 50		15.87	1.2 – 5.9	
M12	19.05	25.40	10.16	3 - 50		19.05	1.2 – 5.9	Non-standard

MINI RIVET BUSH



Version: RM



Version: MF (standoff)

Generel Info: Designed for installation into sheet metal where space is at a premium.

Versions: RM / MF (standoff)

Materials: Steel/zinc
Stainless Steel

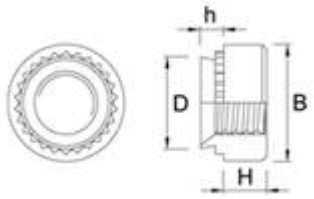
Advantages: Ideal for both thinner and harder sheet metals.
Can be installed by hand or automatic methods.
Suitable for use in punched or drilled holes.
Can be used for sheet thickness up to 3.0mm.
Can be installed closed to edge of sheet.
Provides an almost flush finish.

When ordering: Please state: Version + Thread size + Sheet Thickness + (length) + Material

All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Thread Size	A +0.00 / -0.13 mm	B ± 0.15 mm	C ± 0.13 mm	C MF type mm	D MF type for lengths mm	Recommended hole size -0.00 / + 0.05 mm	Sheet Thickness mm	Note!
M2.5	4.19	5.50	2.80	3 - 50	8-10: D=3mm 11-13: D=6mm 14-16: D=9mm 17-22: D=12mm	4.19	0.8 – 3.0	Non-standard
M3	4.19	5.50	2.80	3 - 50		4.19	0.8 – 3.0	
M3.5	5.41	7.00	3.20	3 - 50		5.41	0.8 – 3.0	Non-standard
M4	5.41	7.00	3.20	3 - 50		5.41	0.8 – 3.0	
M5	6.40	8.50	3.80	3 - 50		6.40	0.8 – 3.0	
M6	7.70	10.00	5.10	3 - 50		7.70	0.8 – 3.0	
M8	9.70	12.00	6.50	3 - 50		9.70	0.8 – 3.0	Non-standard
M10	12.70	16.00	7.60	3 - 50		12.70	0.8 – 3.0	Non-standard
M12	15.87	19.00	10.20	3 - 50		15.87	0.8 – 3.0	Non-standard

SELF CLINCH NUT



Version: S

Generel Info: Designed for installation into sheet metal.

Versions: S

Materials: Steel/zinc S
Stainless Steel CLS
Grade 400 Stainless Steel SP

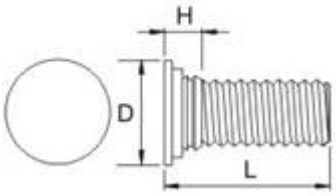
Advantages: Ideal for both thinner and harder sheet metals.
Can be installed by hand or automatic methods.
Suitable for use in punched or drilled holes.
Can be used for sheet thickness up to 3.0mm.
Can be installed closed to edge of sheet.
Provides an almost flush finish.

When ordering: Please state: Version + Thread size + Sheet Thickness + Material

All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Thread Size	B Max. mm	D ± 0.2 mm	H ± 0.10 mm	h Max. mm	Sheet Thickness Min. mm	Recommended hole size + 0.08 – 0.00 mm	Distance centre line hole to sheet edge mm	Note!
M2	4.22	6.3	1.5	0.76	0.8	4.25	4.8	Non-standard
M2	4.22	6.3	1.5	0.97	1.0	4.25	4.8	Non-standard
M2	4.22	6.3	1.5	1.37	1.4	4.25	4.8	Non-standard
M2.5	4.22	6.3	1.5	0.76	0.8	4.25	4.8	Non-standard
M2.5	4.22	6.3	1.5	0.97	1.0	4.25	4.8	Non-standard
M2.5	4.22	6.3	1.5	1.37	1.4	4.25	4.8	Non-standard
M3	4.22	6.3	1.5	0.76	0.8	4.25	4.8	
M3	4.22	6.3	1.5	0.97	1.0	4.25	4.8	
M3	4.22	6.3	1.5	1.37	1.4	4.25	4.8	
M3ALT	4.73	7.1	1.5	0.76	0.8	4.75	5.6	
M3ALT	4.73	7.1	1.5	0.97	1.0	4.75	5.6	
M3ALT	4.73	7.1	1.5	1.37	1.4	4.75	5.6	
M4	5.38	7.9	2.0	0.76	0.8	5.4	6.9	
M4	5.38	7.9	2.0	0.97	1.0	5.4	6.9	
M4	5.38	7.9	2.0	1.37	1.4	5.4	6.9	
M5	6.38	8.7	2.0	0.76	0.8	6.4	7.1	
M5	6.38	8.7	2.0	0.97	1.0	6.4	7.1	
M5	6.38	8.7	2.0	1.37	1.4	6.4	7.1	
M6	8.72	11.05	4.1	1.37	1.4	8.75	8.6	
M6	8.72	11.05	4.1	2.21	2.3	8.75	8.6	
M8	10.44	12.65	5.5	1.37	1.4	10.5	9.7	
M8	10.44	12.65	5.5	2.21	2.3	10.5	9.7	

SELF CLINCH STUD



Version: FH

Generel Info: Designed for installation into sheet metal.

Versions: FH

Materials: Steel/zinc FH
Stainless Steel FHS
Grade400 Stainless Steel FH4

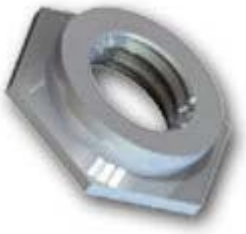
Advantages: Easy assembly with any squeeze press.
No damage to decorative finishes on sheets.
High torque resistance.
Always perpendicular to sheet.
Visual proof of security.
Head installs flush with surface of sheet.

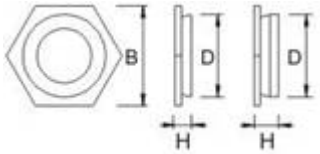
When ordering: Please state: Version + Thread size + Length + Material

All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Thread Size	D ± 0.4 mm	H mm	L mm	Recommended hole size + 0.08 / - 0.00 mm	Sheet Thickness Min. mm	Distance centre line hole to sheet edge mm	Note!
M2	3.3	1.75	8/10/12/15/18/20	2.0	1.0	5.2	
M2.5	4.1	1.95	6/8/10/12/15/18	2.5	1.0	5.4	
M3	4.6	2.1	6/8/10/12/15/16/18/20/22/25/30/35	3.0	1.0	5.6	
M4	5.9	2.4	6/8/10/12/14/15/16/18/20/25/30/35	4.0	1.0	7.2	
M5	6.5	2.7	8/10/12/14/15/16/18/20/25/30/35	5.0	1.0	7.2	
M6	8.2	3.0	10/12/14/15/16/18/20/25/30/35	6.0	1.6	7.9	
M8	9.6	3.7	10/12/15/18/20/25/30/35	8.0	2.4	9.0	

FLUSH SELF CLINCH NUT





Version: F

Generel Info: Designed for installation into sheet metal to provide a thread within the sheet thickness.

Versions: F

Materials: Stainless Steel

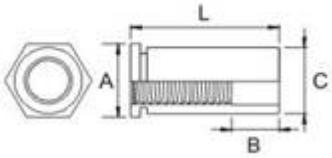
Advantages: Can be used in sheets where lack of space prevents the use of conventional fasteners.
Easy assembly into round holes.
High pull out torque / high torque resistance.
Provide flush finish to both side of the sheet.

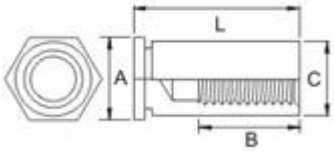
When ordering: Please state: Version + Thread size + Sheet Thickness

All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Thread Size	B ± 0.2 mm	D Max. mm	H Max. mm	Sheet Thickness Min. mm	Recommended hole size + 0.08 / - 0.00 mm	Distance centre line hole to sheet edge mm	Note!
M2.5	4.8	4.35	1.5	1.5	4.4	6.0	Non-standard
M2.5	4.8	4.35	2.3	2.4	4.4	6.0	Non-standard
M3	4.8	4.35	1.5	1.5	4.4	6.0	
M3	4.8	4.35	2.3	2.4	4.4	6.0	
M3ALT	6.4	5.35	1.5	1.5	5.4	6.5	
M3ALT	6.4	5.35	2.3	2.4	5.4	6.5	
M3.5	6.4	5.35	1.5	1.5	5.4	6.5	
M3.5	6.4	5.35	2.3	2.4	5.4	6.5	
M4	7.9	7.35	1.5	1.5	7.4	7.2	
M4	7.9	7.35	2.3	2.4	7.4	7.2	
M5	9.5	7.85	1.5	1.5	7.9	8.8	
M5	9.5	7.85	2.3	2.4	7.9	8.8	
M6	9.5	8.70	3.1	3.2	8.75	8.8	Sheet thickness & Body size
M6	9.5	8.70	3.9	4.0	8.75	8.8	

SELF CLINCH STANDOFF





Version: SO

Version: BSO (blind standoff)

Generel Info: Designed for installation into sheet metal to serve as spacers / distance pieces.

Versions: SO / BSO

Materials: Steel/zinc SO / BSO
Stainless Steel SOS / BSOS
Grade 400 Stainless Steel SO4 / BSO4

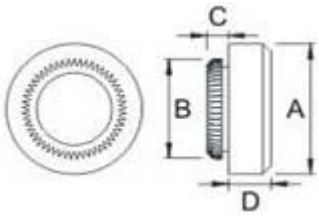
Advantages: Available in a range a spacer lengths.

When ordering: Please state: Version + Thread Size + Length (6/8/10/12/14/16/18/20/22/25) + Material

All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Thread Size	A mm	B SO type for lengths mm	B BSO type for lengths mm	C +0.00 / -0.13 mm	L mm	Sheet Thickness Min. mm	Recommended hole size -0.00 / + 0.05 mm	Distance Centre line hole to sheet edge mm	Note!
M2.5	4.8	6: 6mm	6: 6mm	4.18	6-25	1.0	4.2	6.0	Non-standard
M3	4.8	8: 8mm	8-10: 4mm	4.18	6-25	1.0	4.2	6.0	
M3ALT	6.4	10-14: 4mm	12: 5mm	5.39	6-25	1.0	5.4	6.8	
M4	7.9	16-20: 8mm	14-16: 6.5mm	7.10	6-25	1.3	7.2	8.0	
M5	7.9	22-25: 11mm	18-25: 9.5mm	7.10	6-25	1.3	7.2	8.0	

SELF CLINCH BROACHING NUT



Version: KF2

Generel Info: Designed for installation into resin based printed circuit boards.

Versions: KF2

Materials: Steel/zinc KF2
Steel/electro tin KF2
Stainless Steel KFS2

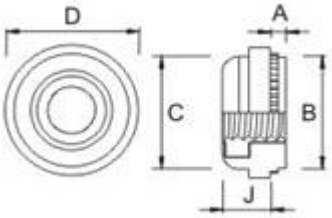
Advantages: Simple press-in installation.
Guaranteed not to crack brittle PCB.

When ordering: Please state: Version + Thread size + Sheet Thickness + Material

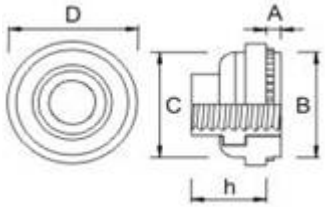
All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Thread Size	A mm	B mm	C Max. mm	D mm	Sheet Thickness Min. mm	Recommended hole size + 0.08 / - 0.00 mm	Distance centre line hole to sheet edge mm	Note!
M2.5	5,56	4,60	1,5	1,5	1,53	4,22	4,4	
M3	4,56	4,60	1,5	1,5	1,53	4,22	4,4	
M3.5	7,00	5,88	1,5	1,6	1,53	5,50	5,5	
M4	8,74	6,75	1,5	2,0	1,53	6,40	6,4	
M5	9,53	7,30	1,5	3,0	1,53	6,90	7,1	

SELF CLINCH FLOATING FASTENER



Version: AS (non-locking)



Version: LAS (locking)

Generel Info: Designed for installation into sheet metal.

Versions: AS / LAS

Materials: Steel/zinc AS / LAS
Stainless Steel AC / LAC

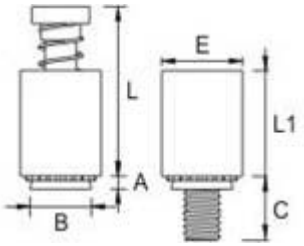
Advantages: Permits adjustment for mating hole misalignment.

When ordering: Please state: Version + Thread size + Sheet Thickness + Material

All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Thread Size	A Max. mm	B Max. mm	C Max. mm	D ± 0.4 mm	J Max. mm	h Max. mm	Sheet Thickness Min. mm	Recommended hole size ± 0.08 mm	Distance centre line hole to sheet edge mm	Note!
M3	0.97	7.38	7.4	9.14	3.3	4.83	1.0	7.40	7.62	
M3	1.37	7.38	7.4	9.14	3.3	4.83	1.4	7.40	7.62	
M4	0.97	9.38	9.3	11.2	3.3	5.33	1.0	9.40	8.64	
M4	1.37	9.38	9.3	11.2	3.3	5.33	1.4	9.40	8.64	
M5	0.97	10.29	10.3	11.94	4.32	6.86	1.0	10.31	9.14	
M5	1.37	10.29	10.3	11.94	4.32	6.86	1.4	10.31	9.14	
M6	1.37	13.08	13.8	15.3	5.33	7.90	1.4	13.10	11.0	Only 1 thickness

SELF CLINCH RECESS PANEL FASTENER



Version: PFC2P

Generel Info: Designed for installation into sheet metal.

Versions: PFC2P

Materials: Stainless Steel

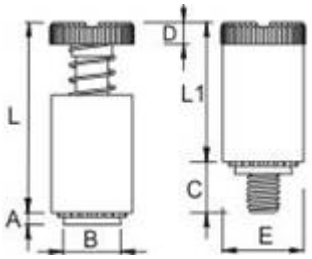
Advantages: Pre-assembled spring-loaded panel fastener.

When ordering: Please state: Version + Thread size + Screw Length

All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Thread Size	Screw Length mm	A Max. mm	B Max. mm	C ± 0.4 mm	Driver Size mm	E ± 0.25 mm	L Nom mm	L1 Max. mm	Sheet Thickness Min. mm	Recommended hole size + 0.08 mm	Distance centre line hole to sheet edge mm	Note!
M3	40	1.53	6.71	6.4	No. 1	7.92	13.72	9.40	1.53	6.73	6.35	
M4	50	1.53	7.90	7.9	No. 2	9.53	17.91	12.19	1.53	7.92	7.87	
M5	50	1.53	8.72	7.9	No. 2	10.31	17.91	12.45	1.53	8.74	8.63	
M5	72	1.53	8.72	11.1	No. 2	10.31	17.91	12.45	1.53	8.74	8.63	
M6	60	1.53	10.47	9.5	No. 3	11.89	22.99	15.75	1.53	10.49	9.65	

SELF CLINCH KNURLED PANEL FASTENER



Version: PFC2

Generel Info: Designed for installation into sheet metal.

Versions: PFC2

Materials: Stainless Steel

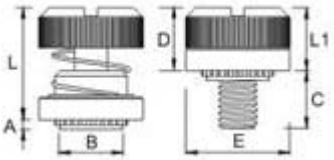
Advantages: Pre-assembled spring-loaded panel fastener.

When ordering: Please state: Version + Thread size + Screw Length

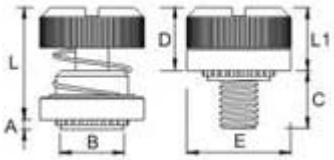
All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Thread Size	Screw Length	A Max.	B Max.	C ± 0.4	D ± 0.13	E ± 0.25	L Nom	L1 Max.	Sheet Thickness Min.	Recommended hole size + 0.08	Distance centre line hole to sheet edge	Note!
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
M3	40	1.53	6.71	6.4	1.83	7.92	13.72	9.14	1.53	6.73	6.40	
M4	50	1.53	7.90	7.9	2.08	9.53	17.53	11.43	1.53	7.92	7.90	
M5	50	1.53	7.98	7.9	2.08	10.31	17.53	11.47	1.53	8.74	8.65	
M5	72	1.53	7.98	11.1	2.08	10.31	17.53	11.47	1.53	8.74	8.65	
M6	60	1.53	9.48	9.5	2.46	11.89	22.35	14.73	1.53	10.49	9.65	

SELF CLINCH LOW PROFILE PANEL FASTENER



Version: PF31



Version: PF32

Generel Info: Designed for installation into sheet metal.

Versions: PF31 for 1.0 mm sheet & PF32 for 1.5mm sheet

Materials: Retainer & Screw: Carbon Steel Bright Nickel over Copper Flash
Spring: Stainless Steel

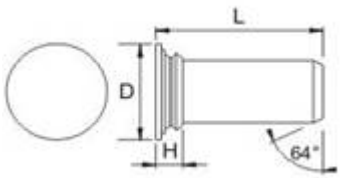
Advantages: Pre-assembled spring-loaded panel fastener.

When ordering: Please state: Version + Thread size

All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Thread Size	Screw Length mm	A Max. mm	B Max. mm	C ± 0.4 mm	D ± 0.13 mm	E ± 0.25 mm	L Nom mm	L1 Max. mm	Sheet Thickness Min. mm	Recommended hole size + 0.08 mm	Distance centre line hole to sheet edge mm	Note!
M3	30	0.97	5.48	7.62	5.13	10.31	15.11	8.26	1	5.5	6.6	
M3	30	1.48	5.48	7.62	5.13	10.31	15.11	8.26	1.5	5.5	6.6	
M4	30	0.97	6.38	7.62	5.26	11.89	15.24	8.38	1	6.4	7.37	
M4	30	1.48	6.38	7.62	5.26	11.89	15.24	8.38	1.5	6.4	7.37	
M5	30	0.97	7.98	7.62	5.59	13.46	15.37	8.51	1	8.0	8.38	
M5	30	1.48	7.98	7.62	5.59	13.46	15.37	8.51	1.5	8.0	8.38	
M6	35	1.48	9.48	8.89	6.12	15.88	17.15	9.78	1.5	9.5	9.65	

SELF CLINCH PIN



Version: TP

Generel Info: Designed for installation into sheet metal.

Versions: TP

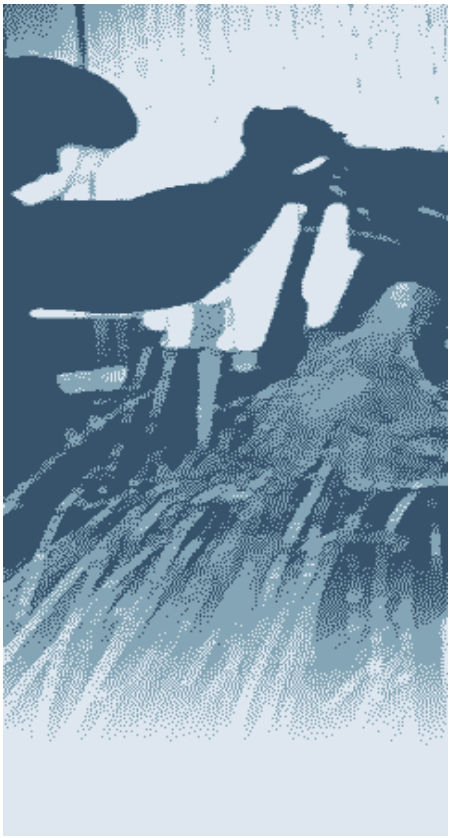
Materials: Steel/zinc TP
Stainless Steel TPS

Advantages: For a number of positioning, pivot and alignment applications.
Chamfered end makes mating hole location easier.

When ordering: Please state: Version + Pin Diameter + Length + Material

All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Pin Diameter ± 0.5 mm	D ± 0.15 mm	H Max. mm	L ± 0.4 mm	Recommended hole size + 0.08 mm	Sheet Thickness Min. mm	Distance centre line hole to sheet edge mm	Note!
3	5.20	2.29	8/10/12/16	3.5	1	6.4	
4	6.12	2.29	8/10/12/16	4.5	1	7.1	
5	7.19	2.29	10/12/16/20	5.5	1	7.6	
6	8.13	2.29	12/16/20	6.5	1	7.9	



THREADED INSERTS FOR PLASTICS

When selecting the insert the prime consideration will be the type of plastic used. The installation methods will also be a deciding factor in the choice of insert style.

Our range covers inserts which can be cold installed or installed by heat generated either by direct heat or ultrasonic vibrations. The majority of threaded inserts and studs are designed for installation after moulding, but we also offer a mould-in type.

If your design calls for a threaded insert or stud to be installed into plastic, Headland has a fastener to suit your application.

Click relevant picture for type variations and specifiations

Sonic-Sert

Tec-Sert

Press-Sert

Fin-Sert

Heat-Sert

Thread-Sert

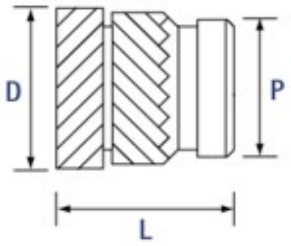
Spirol-Sert

Expan-Sert

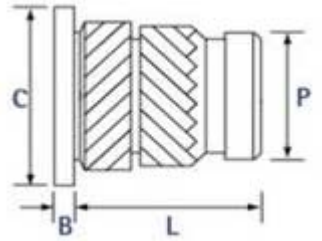
Flow-Sert

Click for inserts Characteristics Chart

SONIC-SERT – heat/ultrasonic installation



Version: unheaded Sonic-Sert



Version: headed Sonic-Sert

Generel Info: Designed for installation into Thermoplastics.

Versions: Unheaded and Headed versions as standard.
Unheaded studded and Headed studded versions – please contact our Sales Dept.

Materials: Brass (steel or stainless steel are non-standards – please contact our Sales Dept.)

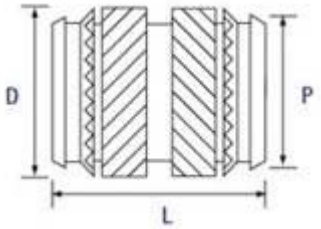
Advantages: Permits thin boss walls allowing compact boss design.
Provides high torque and pull out performance.
Rapid installation using heat or ultrasonics.
Self-aligning – assists installation.

When ordering: Please state: Version + Thread size + Material

All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Thread Size	L mm	B mm	C mm	D mm	P mm	Recommended hole size -0.00 / + 0.10 mm	Boss Wall Thickness mm	Note!
M2	4.0	0.53	4.8	3.6	3.1	3.2	1.3	
M2.5	5.7	0.61	5.5	4.6	3.9	4.0	1.6	
M3	5.7	0.61	5.5	4.6	3.9	4.0	1.6	
M3.5	7.1	0.76	6.4	5.4	4.7	4.8	1.8	
M4	8.2	0.91	7.1	6.3	5.5	5.6	2.1	
M5	9.5	1.09	7.9	7.1	6.3	6.4	2.6	
M6	12.7	1.35	9.5	8.7	7.9	8.0	3.3	
M8	12.7	1.35	11.1	10.2	9.5	9.6	4.5	Non-standard
M10	12.7	1.60	14.0	12.6	11.8	11.9	6.0	Non-standard

TEC-SERT – heat installation



Version: Tec-Sert

Generel Info: Designed for installation into Thermoplastics.

Versions: Unheaded version only.

Materials: Brass (steel or stainless steel are non-standards – please contact our Sales Dept.)

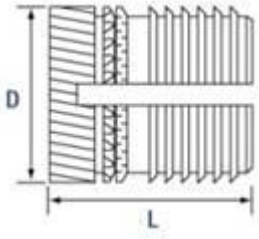
Advantages: Symmetrical (duo-orientation) assisting automatic feeding.
Provides high torque and pull out performance.
Permits thin boss walls allowing compact boss design.

When ordering: Please state: Version + Thread size + Material

All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Thread Size	L mm	D mm	P mm	Recommended hole size -0.00 / + 0.10 mm	Boss Wall Thickness mm	Note!
M2	3.9	3.5	3.1	3.2	1.3	Non-standard
M2.5	5.7	4.4	3.9	4.0	1.6	
M3	5.7	4.4	3.9	4.0	1.6	
M3.5	7.1	5.2	4.7	4.8	1.8	
M4	8.1	6.1	5.5	5.6	2.1	
M5	9.5	6.8	6.3	6.4	2.6	
M6	12.7	8.5	7.9	8.0	3.3	
M8	12.7	10.0	9.5	9.6	4.5	Non-standard
M10	12.7	12.3	11.8	11.9	6.0	Non-standard

PRESS-SERT – cold press installation



Version: Press-Sert

Generel Info: Designed for installation into Thermoplastics.

Versions: Unheaded version only.

Materials: Brass (steel or stainless steel are non-standards – please contact our Sales Dept.)

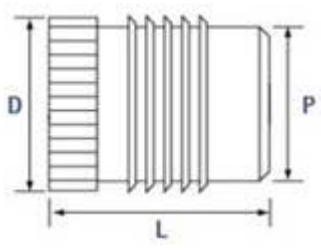
Advantages:
Degree of self locking action on screw.
Provides high torque and pull out performance.
Easy press-in insertion.
Low screw installation torque.

When ordering: Please state: Version + Thread size + Material

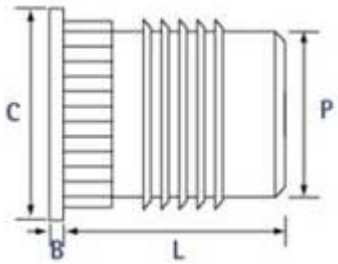
All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Thread Size	L mm	D mm	Recommended hole size -0.00 / + 0.10 mm	Boss Wall Thickness mm	Note!
M2	4.0	3.7	3.2	1.6	Non-standard
M2.5	5.8	4.5	4.0	2.0	Non-standard
M3	5.8	4.5	4.0	2.0	
M3.5	7.2	5.3	4.8	2.4	
M4	8.2	6.2	5.6	2.8	
M5	9.5	6.9	6.4	3.2	
M6	12.7	8.5	8.0	4.0	
M8	12.7	10.1	9.6	4.8	Non-standard

FIN-SERT – cold press installation



Version: unheaded Fin-Sert



Version: headed Fin-Sert

Generel Info: Designed for installation into Thermoplastics.

Versions: Unheaded and Headed versions.

Materials: Brass (steel or stainless steel are non-standards – please contact our Sales Dept.)

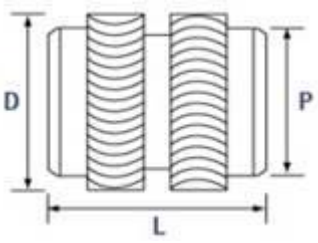
Advantages: Easy press-in insertion.
Free running thread.
High pull-out performance.
Self-aligning – assists installation.

When ordering: Please state: Version + Thread size + Material

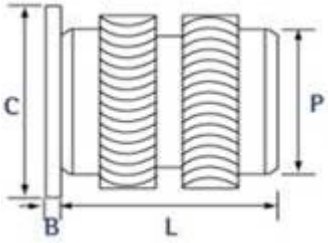
All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Thread Size	L mm	B mm	C mm	D mm	P mm	Recommended hole size -0.00 / + 0.10 mm	Boss Wall Thickness mm	Note!
M2	4.0	0.45	4.8	3.7	3.1	3.2	1.6	Non-standard
M2.5	4.8	0.58	5.5	4.5	3.9	4.0	2.0	Non-standard
M3	4.8	0.58	5.5	4.5	3.9	4.0	2.0	
M3.5	6.4	0.74	6.4	5.3	4.7	4.8	2.4	
M4	7.9	0.89	7.1	6.1	5.5	5.6	2.8	
M5	9.5	1.07	7.9	7.0	6.3	6.4	3.2	
M6	12.7	1.32	9.5	8.6	7.9	8.0	4.0	
M8	12.7	1.32	11.0	10.2	9.5	9.6	4.8	Non-standard

HEAT-SERT – heat installation



Version: unheaded Heat-Sert



Version: headed Heat-Sert

Generel Info: Designed for installation into notch sensitive amorphous Thermoplastics.

Versions: Unheaded and Headed versions as standard.
Unheaded studded and Headed studded versions – please contact our Sales Dept.

Materials: Brass (steel or stainless steel are non-standards – please contact our Sales Dept.)

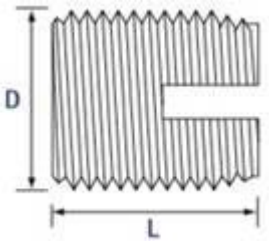
Advantages: Low stress generating characteristics – ideal for amorphous thermoplastics.
Double ended – assists automatic feeding (unheaded version).
High torque resistance.
Self-aligning – assists installation.

When ordering: Please state: Version + Thread size + Material

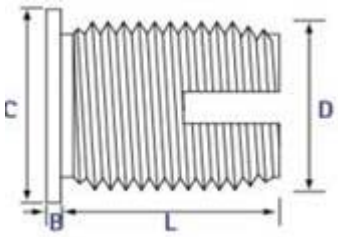
All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Thread Size	L mm	B mm	C mm	D mm	P mm	Recommended hole size -0.00 / + 0.10 mm	Boss Wall Thickness mm	Note!
M2	3.9	0.51	4.8	3.5	3.1	3.2	1.4	Non-standard
M2.5	5.8	0.58	5.5	4.4	3.9	4.0	1.8	Non-standard
M3	5.8	0.58	5.5	4.4	3.9	4.0	1.8	
M3.5	7.1	0.74	6.4	5.2	4.7	4.8	2.1	
M4	8.1	0.89	7.1	6.1	5.5	5.6	2.4	
M5	9.5	1.07	7.9	6.9	6.3	6.4	2.8	
M6	12.7	1.32	9.5	8.5	7.9	8.0	3.6	
M8	12.7	1.32	11.1	10.0	9.5	9.6	5.0	Non-standard

THREAD-SERT – cold screw installation



Version: unheaded Thread-Sert



Version: headed Thread-Sert

Generel Info: Designed for installation into Thermoplastics and Thermosetting plastics.

Versions: Unheaded and Headed versions.

Materials: Brass (steel or stainless steel are non-standards – please contact our Sales Dept.)

Advantages: High pull-out resistance.
Ideal where jack-out loading is unavoidable.
Can carry high loads in weak plastics.

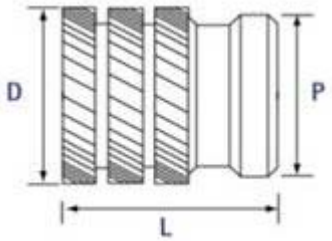
When ordering: Please state: Version + Thread size + Material

All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

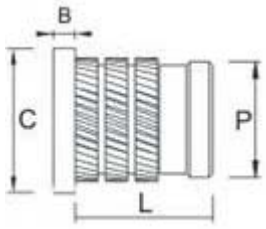
Thread Size	L mm	B mm	C mm	D mm	Recommended hole size Thermoplastics mm	Recommended hole size Thermosetting mm	Boss Wall Thickness mm	Note!
M2.5	6.0	0.58	6.0	4.5	4.0 - 4.1	4.1 - 4.3	pre-testing	Non-standard
M3	6.0	0.58	6.5	5.0	4.5 - 4.6	4.6 - 4.8	pre-testing	
M3.5	8.0	0.73	7.5	6.0	5.3 - 5.4	5.5 - 5.7	pre-testing	
M4	8.0	0.89	8.0	6.5	5.8 - 5.9	6.0 - 6.2	pre-testing	
M5	10.0	1.06	9.5	8.0	7.1 - 7.2	7.3 - 7.6	pre-testing	
M6	14.0	1.32	12.0	10.0	8.6 - 8.8	9.0 - 9.4	pre-testing	
M8	15.0	1.32	14.0	12.0	10.6 - 10.8	11.0 - 11.4	pre-testing	Non-standard
M10	18.0	1.57	16.0	14.0	12.6 - 12.8	13.0 - 13.4	pre-testing	Non-standard

SPIROL-SERT – cold press installation

Version: unheaded Spirol-Sert



Version: headed Spirol-Sert



Generel Info: Designed for installation into Thermosetting plastics.

Versions: Unheaded and Headed versions as standard.
Unheaded studded and Headed studded versions – please contact our Sales Dept.

Materials: Brass (steel or stainless steel are non-standards – please contact our Sales Dept.)

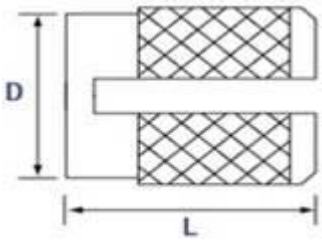
Advantages: Easy press-in insertion.
Provides high torque resistance.
Low bursting stress allows the use of thinner wall bosses reducing the risk of sink marks.
Self-aligning – assists installation.

When ordering: Please state: Version + Thread size + Material

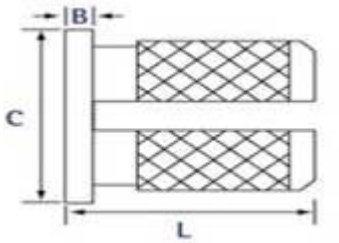
All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Thread Size	L mm	B mm	C mm	D mm	P mm	Recommended hole size -0.00 / + 0.10 mm	Boss Wall Thickness mm	Note!
M2	4.1	0.51	4.8	3.3	3.0	3.1	1.6	Non-standard
M2.5	5.3	0.58	5.5	4.2	3.7	3.8	2.0	Non-standard
M3	5.3	0.58	5.5	4.2	3.7	3.8	2.0	
M3.5	6.3	0.74	6.4	5.0	4.5	4.6	2.5	
M4	7.4	0.89	7.1	5.8	5.3	5.4	2.5	
M5	8.3	1.07	7.9	6.6	6.1	6.2	2.5	
M6	9.2	1.32	9.5	8.2	7.7	7.8	2.8	
M8	9.2	1.32	11.1	9.7	9.3	9.3	3.8	Non-standard
M10	9.2	1.57	14.0	12.7	12.2	12.3	5.0	Non-standard

EXPAN-SERT – cold press installation



Version: unheaded Expan-Sert



Version: headed Expan-Sert

Generel Info: Designed for installation into Thermosetting plastics.

Versions: Unheaded, Headed, Reverse Headed versions as standard.

Materials: Brass (steel or stainless steel are non-standards – please contact our Sales Dept.)

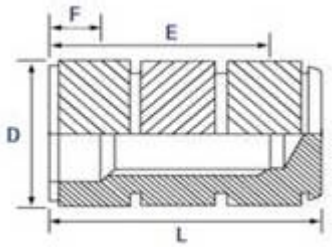
Advantages: Easy press-in insertion.
Self-locking action on the screw – ideal where vibration is present.

When ordering: Please state: Version + Thread size + Material

All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Thread Size	L mm	B mm	C mm	D mm	Recommended hole size -0.00 / + 0.10 mm	Boss Wall Thickness mm	Note!
M2	3.9	0.43	4.8	3.2	3.2	2.4	Non-standard
M2.5	4.7	0.51	5.5	4.0	4.0	3.2	Non-standard
M3	4.7	0.51	5.5	4.0	4.0	3.2	
M3.5	6.3	0.66	6.4	4.7	4.8	3.6	
M4	7.9	0.82	7.1	5.5	5.6	4.0	
M5	9.4	0.99	7.9	6.3	6.4	4.8	
M6	12.6	1.25	9.5	7.9	8.0	6.0	
M8	12.6	1.25	11.1	9.5	9.6	7.0	Non-standard

FLOW-SERT – mould-in installation



Version: Flow-Sert

Generel Info: Designed for mould-in installation.

Versions: Unheaded version only.

Materials: Brass.

Advantages: Blind ended – prevents ingress of plastic.
Counterbore prevents ingress of plastic and eases assembly on locating pins.
Rolled threads reduce risk of contamination of mouldings due to metal swarf.
Absence of “pip” at blind end reduces risk of contamination and assists automatic insert loaders.

When ordering: Please state: Version + Thread size + Material

All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Thread size	L mm	D mm	E Min. mm	F mm	Note!
M2	5.5	3.4	3.6	1.0	Non-standard
M2.5	6.4	4.3	4.0	1.2	Non-standard
M3	7.3	4.7	4.6	1.3	
M3.5	9.2	5.5	6.0	1.6	
M4	10.2	6.3	6.7	1.8	
M5	11.2	7.3	7.4	2.0	
M6	14.4	9.8	8.1	2.0	
M8	16.5	11.4	11.1	2.3	Non-standard
M10	17.9	13.8	11.9	2.4	Non-standard

INSERT CHARACTERISTICS CHART

Recommended/Yes: Possible: High: ΔΔ Moderate: Δ

Not Recommended/No: ☹

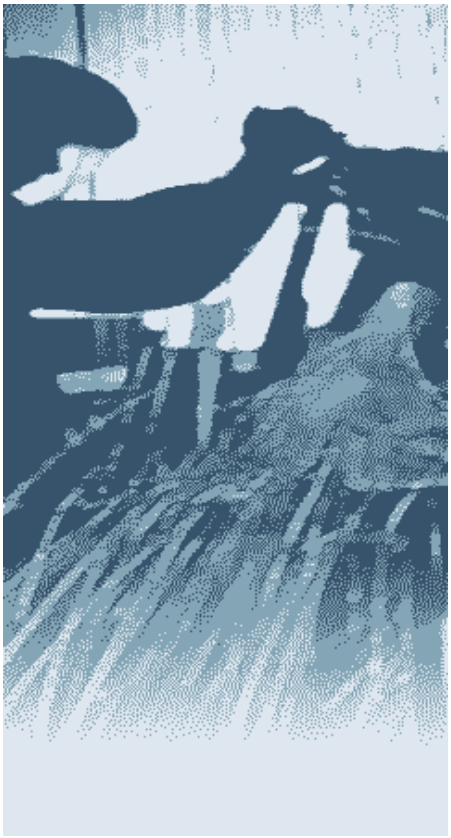
All data is correct to the best of our knowledge, however Headland cannot be held responsible for any errors or omissions.

Material Characteristics	SONIC	TEC	HEAT	FIN	PRESS	THREAD	SPIROL	EXPAN	FLOW
Hard Thermoplastics				☹	☹		☹		
Medium Thermoplastics							☹		
Soft Thermoplastics			☹				☹	☹	
Amorphous Thermoplastics	☹	☹		☹	☹	☹	☹	☹	
Thermosetting Polyester	☹	☹	☹	☹	☹			☹	
Thermosetting (other)	☹	☹	☹	☹	☹				
Foams – Thermoplastics				☹	☹		☹	☹	
Foams - Thermosetting	☹	☹	☹	☹	☹		☹	☹	

Fastener Characteristics	SONIC	TEC	HEAT	FIN	PRESS	THREAD	SPIROL	EXPAN	FLOW
Pull out	ΔΔ	ΔΔ	ΔΔ	Δ	Δ	ΔΔ	Δ	Δ	ΔΔ
Direct Torque	ΔΔ	ΔΔ	ΔΔ	Δ	Δ	☹	ΔΔ	Δ	ΔΔ
Jack Out	ΔΔ	ΔΔ	ΔΔ	Δ	Δ	ΔΔ	Δ	Δ	ΔΔ
Free Running Thread					☹			☹	
Thread Locking Effect	☹	☹	☹	☹		☹	☹		☹
Symmectrical	☹			☹	☹	☹	☹	☹	☹

Installation Methods	SONIC	TEC	HEAT	FIN	PRESS	THREAD	SPIROL	EXPAN	FLOW
Hand Tools	☹	☹	☹	☹			☹		☹
Simple Press	☹	☹	☹			☹			☹
Direct Heat				☹	☹	☹	☹	☹	☹
Ultrasonics		☹	☹	☹	☹	☹	☹	☹	☹
Tapping Machine	☹	☹	☹	☹	☹		☹	☹	☹
Moulded In				☹	☹	☹	☹	☹	
Fully Automated									☹

V SEALS



V seals are unique all-rubber seals for rotary shafts. Developed in the 1960's, it has been used successfully by OEM and the replacement market world wide in a broad range of applications.

The V seal provides a perfect solution to prevent the ingress of dirt, dust, water or combinations of these media while positively retaining grease. With its unique design and performance the V seal protects a wide range of bearing types. It can also be used as a secondary seal to protect primary seals that do not perform well in hostile environments.

The V seal is normally stretched and mounted directly on the shaft, where it is positioned by the inherent tension of the rubber body. It rotates with the shaft and seals axially against a stationary counter face, at right angles to the shaft. The counter face can be the end face of a bearing or a washer, stamping, bearing housing, or even the metal case of oil seal. The sealing lip is flexible and applies only a relatively light contact pressure against the counter face and yet is still sufficient to maintain the sealing function. The low contact pressure (that varies with the fitted width) allows the seal to run dry in many applications.

Due to the centrifugal force, the contact pressure of the lip decreases with increased speed. This means that frictional losses and heat are kept to a minimum, resulting in excellent wear characteristics and extended seal life. Once break-away torque is overcome, the power losses reduce steadily until around the 10 – 15 m/s band when they reduce quite quickly. In the 15 – 20 m/s band, the losses reduce to zero and the V seal then serves as clearance seal and deflector.

V seals protect any bearing on a rotary shaft from ingress of foreign bodies.

Click for relevant product below

Standard Seals

A Type V-seals
S Type V-seals

Non-Standard Seals

Please contact our Sales Dept.

Click for Material Specifications Charts