

Press Tool Components



This section contains a range of Boneham & Turner Die Sets and Press Tool Standard Parts, the majority in accordance with present I.S.O Standards, a direct result of the company's involvement and dedication over recent years in the formulation of this world standard for the Press Tool and related industries.

The product range comprises, Die Sets, Pillars and Bush Assemblies, Spring Units and Accessories, all produced from high quality materials and manufactured utilising the latest in machine tool technology and inspection equipment to guarantee end user quality, performance and service life.

DIE SETS

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ELASTOMERS

/ Elastomer Springs

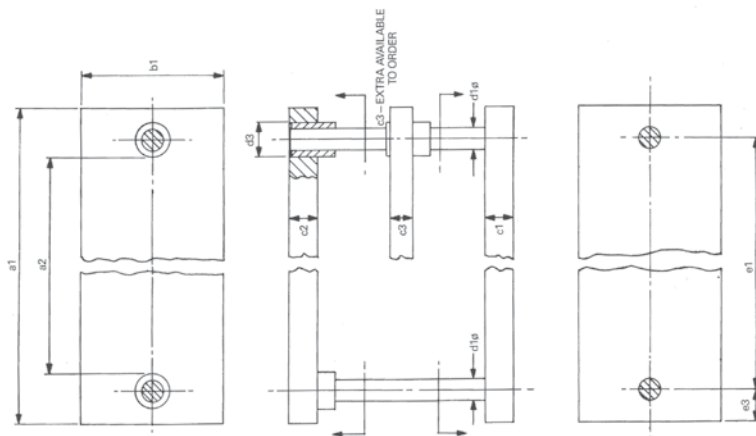
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PUNCHES & DIES

/ Punches / Dies

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Die Set Centre Pillar



• Order Instructions

State – Reference of Die Set

Daylight – when in closed position

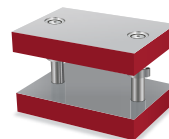
Stroke

Or pin and bush lengths

Also state if alternative Headed Ball Cage Bushes are required and if Punch Shank is required, state size.

Notes

These Die Sets are fitted as standard with Plain Guide Bushes. The Die Sets can be fitted with Ball Cage Bushes at extra cost.

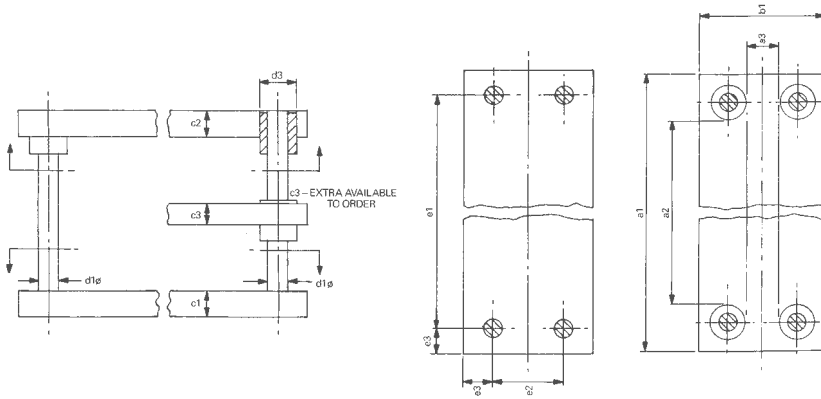


B & T Ref	a1	x b1	Plain Bush a2	Headed Cage Bush a2	+ 0 -2mm c1	+ 0 -2mm c2	c3*	d1*	d3	e1	e3
MCP 1	200	x100	78	70	32	32	25/32	24/25	40	120	40
MCP 2	200	x125	78	70	32	32	25/32	24/25	40	120	40
MCP 3	200	x160	78	70	32	32	25/32	24/25	40	120	40
MCP 4	200	x200	78	70	32	32	25/32	24/25	40	120	40
MCP 5	250	x125	128	120	32	32	25/32	24/25	40	170	40
MCP 6	250	x160	128	120	32	32	25/32	24/25	40	170	40
MCP 7	250	x200	128	120	32	32	25/32	24/25	40	170	40
MCP 8	250	x250	128	120	32	32	25/32	24/25	40	170	40
MCP 9	315	x160	173	165	40	40	32/40	30/32	48	225	45
MCP 10	315	x200	173	165	40	40	32/40	30/32	48	225	45
MCP 11	315	x250	173	165	40	40	32/40	30/32	48	225	45
MCP 12	315	x315	173	165	40	40	32/40	30/32	48	225	45
MCP 13	400	x200	258	250	40	40	32/40	30/32	48	310	45
MCP 14	400	x250	258	250	40	40	32/40	30/32	48	310	45
MCP 15	400	x315	258	250	40	40	32/40	30/32	48	310	45
MCP 16	400	x400	258	250	40	40	32/40	30/32	48	310	45
MCP 17	500	x250	338	330	40	40	32/40	38/40	58	400	50
MCP 18	500	x315	338	330	40	40	32/40	38/40	58	400	50
MCP 19	500	x400	338	330	40	40	32/40	38/40	58	400	50
MCP 20	500	x500	338	330	40	40	32/40	38/40	58	400	50

* d1 – 1 Pin of each diameter will be used to prevent incorrect assembly when tooled.

* c3 – Supplied extra, standard thicknesses shown in table.

Die Set Four Pillar



Order Instructions

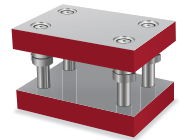
State – Reference of Die Set
Daylight – when in closed position
Stroke

Or pin and bush lengths

Also state if alternative Plain Guide Bushes are required
and if Punch Shank is required, state size.

Notes

All Four Pillar die sets are fitted with Plain Ball Cage Bushes.
Plain Guide Bushes can be fitted upon request.

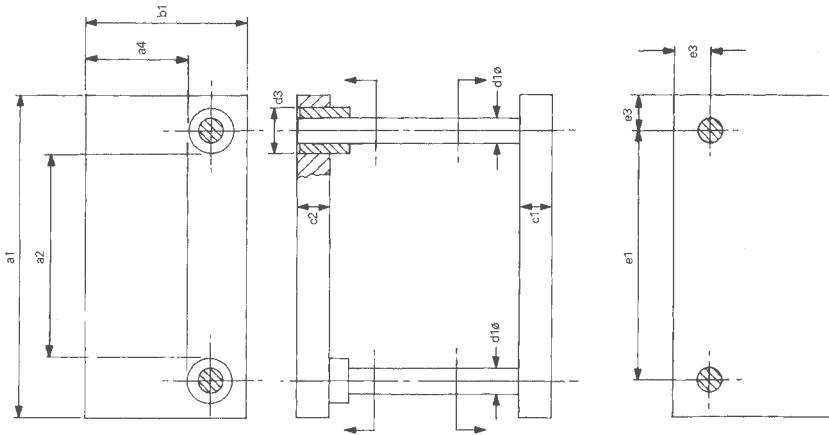


B & T Ref	a1	x b1	Plain Bush a2	Headed Cage Bush a2	Plain Bush a3	Headed Cage Bush a3	+ 0 -2mm c1	+ 0 -2mm c2	c3*	d1*	d3	e1	e2	e3
MFP 1	200	x100	108	100			32	32	25/32	20	32	140		30
MFP 2	200	x125	108	100			32	32	25/32	20	32	140		30
MFP 3	200	x160	108	100	68	60	32	32	25/32	20	32	140	100	30
MFP 4	200	x200	108	100	108	100	32	32	25/32	20	32	140	140	30
MFP 5	250	x125	158	150			32	32	25/32	20	32	190		30
MFP 6	250	x160	158	150	68	60	32	32	25/32	20	32	190	100	30
MFP 7	250	x200	158	150	108	100	32	32	25/32	20	32	190	140	30
MFP 8	250	x250	158	150	158	150	32	32	25/32	20	32	190	190	30
MFP 9	315	x160	195	187			40	40	32/40	25	40	235		40
MFP 10	315	x200	195	187	80	72	40	40	32/40	25	40	235	120	40
MFP 11	315	x250	195	187	130	122	40	40	32/40	25	40	235	170	40
MFP 12	315	x315	195	187	195	187	40	40	32/40	25	40	235	235	40
MFP 13	400	x200	280	272	80	72	40	40	32/40	25	40	320	120	40
MFP 14	400	x250	280	272	130	122	40	40	32/40	25	40	320	170	40
MFP 15	400	x315	280	272	195	187	40	40	32/40	25	40	320	235	40
MFP 16	400	x400	280	272	280	272	40	40	32/40	25	40	320	320	40
MFP 17	500	x250	362	354	112	104	40	40	32/40	32	48	410	160	45
MFP 18	500	x315	362	354	177	169	40	40	32/40	32	48	410	225	45
MFP 19	500	x400	362	354	262	254	40	40	32/40	32	48	410	310	45
MFP 20	500	x500	362	354	362	354	40	40	32/40	32	48	410	410	45

* c3 – (Supplied extra). Standard thicknesses shown in table.

* d1 – To prevent incorrect assembly when tooling 1 pin will be offset. (Top right by 5mm)

Die Set Rear Pillar



Order Instructions

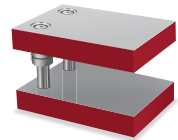
State – Reference of Die Set
Daylight – when in closed position
Stroke

Or pin and bush lengths

Also state if alternative Headed Ball Cage Bushes are required and if Punch Shank is required, state size.

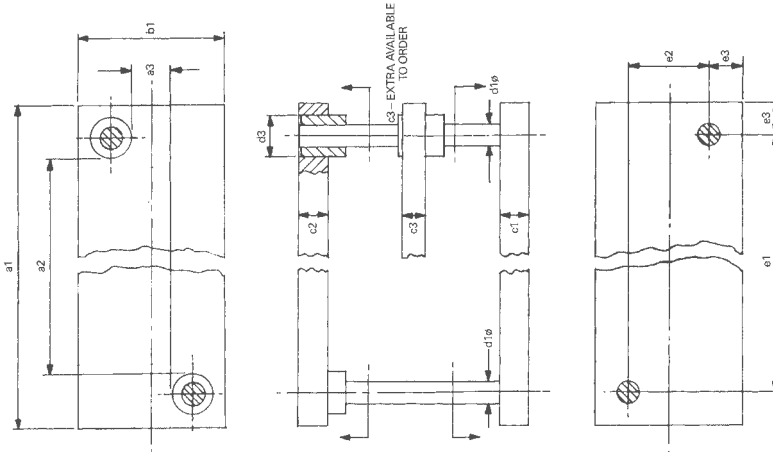
Notes

These Die Sets are fitted as standard with Plain Guide Bushes.
The Die Sets can be fitted with Ball Cage Bushes at extra cost.



B & T Ref	a1	x b1	Plain Guide Bush	Headed Cage Bush	Plain Guide Bush	Headed Cage Bush	+ 0 -2mm	+ 0 -2mm	d1	d3	e1	e3
			a2	Bush a2	a3	Bush a3	c1	c2				
MRP 1	200	x100	78	70			32	32	25	40	120	40
MRP 2	200	x125	78	70	64	60	32	32	25	40	120	40
MRP 3	200	x160	78	70	99	95	32	32	25	40	120	40
MRP 4	200	x200	78	70	139	135	32	32	25	40	120	40
MRP 5	250	x125	128	120	64	60	32	32	25	40	170	40
MRP 6	250	x160	128	120	99	95	32	32	25	40	170	40
MRP 7	250	x200	128	120	139	135	32	32	25	40	170	40
MRP 8	250	x250	128	120	189	185	32	32	25	40	170	40
MRP 9	315	x160	173	165	89	85	40	40	32	48	225	45
MRP 10	315	x200	173	165	129	125	40	40	32	48	225	45
MRP 11	315	x250	173	165	179	175	40	40	32	48	225	45
MRP 12	315	x315	173	165	244	240	40	40	32	48	225	45
MRP 13	400	x200	258	250	129	125	40	40	32	48	310	45
MRP 14	400	x250	258	250	179	175	40	40	32	48	310	45
MRP 15	400	x315	258	250	244	240	40	40	32	48	310	45
MRP 16	400	x400	258	250	329	325	40	40	32	48	310	45
MRP 17	500	x250	338	330	169	165	40	40	40	58	400	50
MRP 18	500	x315	338	330	234	230	40	40	40	58	400	50
MRP 19	500	x400	338	330	319	315	40	40	40	58	400	50
MRP 20	500	x500	338	330	419	415	40	40	40	58	400	50

Die Set Diagonal Pillar



Order Instructions

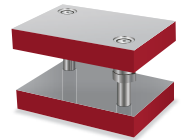
State – Reference of Die Set
Daylight – when in closed position
Stroke

Or pin and bush lengths

Also state if alternative Headed Ball Cage Bushes are required and if Punch Shank is required, state size.

Notes

These Die Sets are fitted as standard with Plain Guide Bushes.
The Die Sets can be fitted with Ball Cage Bushes at extra cost.



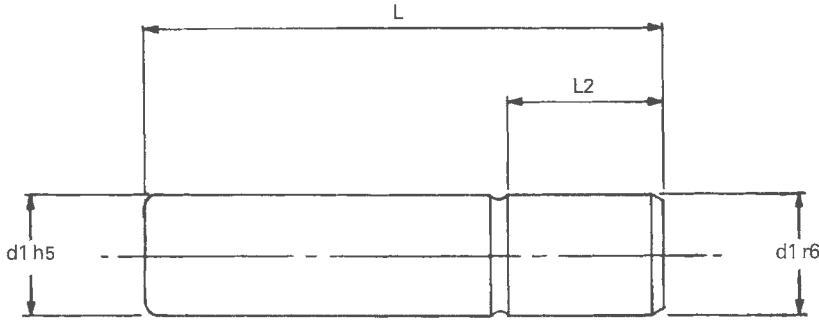
B & T Ref	a1 x b1		Plain Bush a2	Headed Cage Bush a2	Plain Bush a3	Headed Cage Bush a3	+ 0 -2mm c1	+ 0 -2mm c2	c3*	d1*	d3	e1	e2	e3
	MDP 1	200	x100	78	70			32	32	25/32	24/25	40	120	
MDP 2	200	x125	78	70			32	32	25/32	24/25	40	120		40
MDP 3	200	x160	78	70			32	32	25/32	24/25	40	120		40
MDP 4	200	x200	78	70	78	70	32	32	25/32	24/25	40	120	120	40
MDP 5	250	x125	128	120			32	32	25/32	24/25	40	170		40
MDP 6	250	x160	128	120			32	32	25/32	24/25	40	170		40
MDP 7	250	x200	128	120	78	70	32	32	25/32	24/25	40	170	120	40
MDP 8	250	x250	128	120	128	120	32	32	25/32	24/25	40	170	170	40
MDP 9	315	x160	173	165			40	40	32/40	30/32	48	225		45
MDP 10	315	x200	173	165	58	50	40	40	32/40	30/32	48	225	110	45
MDP 11	315	x250	173	165	108	100	40	40	32/40	30/32	48	225	160	45
MDP 12	315	x315	173	165	173	165	40	40	32/40	30/32	48	225	225	45
MDP 13	400	x200	258	250	58	50	40	40	32/40	30/32	48	310	110	45
MDP 14	400	x250	258	250	108	100	40	40	32/40	30/32	48	310	160	45
MDP 15	400	x315	258	250	173	165	40	40	32/40	30/32	48	310	225	45
MDP 16	400	x400	258	250	258	250	40	40	32/40	30/32	48	310	310	45
MDP 17	500	x250	338	330	88	80	40	40	32/40	38/40	58	400	150	50
MDP 18	500	x315	338	330	153	145	40	40	32/40	38/40	58	400	215	50
MDP 19	500	x400	338	330	238	230	40	40	32/40	38/40	58	400	300	50
MDP 20	500	x500	338	330	338	330	40	40	32/40	38/40	58	400	400	50

* d1 – 1 Pin of each diameter will be used to prevent incorrect assembly when tooling.

* c3 – Supplied extra, standard thicknesses shown in table.

Guide Pins

BS 7568 PT 27/I.S.O 9182/3 Type B1



Order Instructions

State MGP, together with d1 diameter and length

Notes

The length shown as L2 is oversized (r6) to provide press fit in the nominal machined bore of the plate.
Guide Pins are manufactured from hardened mild steel and precision ground

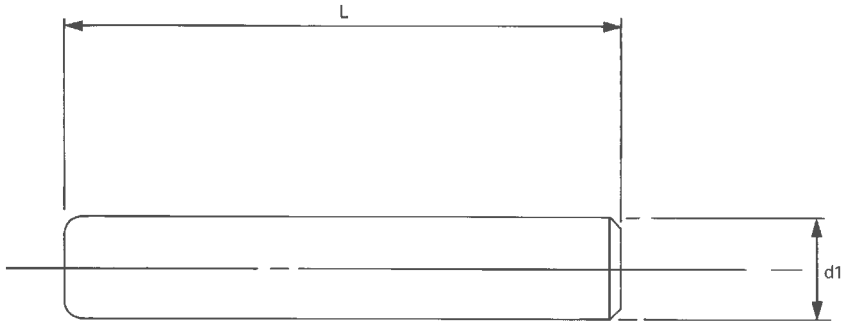


	d1 Diameter									
	16	20	24	25	30	32	38	40	48	50
	L2									
	25	32	32	32	40	40	40	40	50	50
L 90										
L 100										
L 112										
L 125										
L 140										
L 160										
L 180										
L 200										
L 224										
L 250										
L 280										
L 315										
L 355										
L 400										
L 450										
L 500										

The following diameters are used to prevent incorrect assembly of the Die Set upper and lower Plates 24mm, 30mm, 38mm, 48mm.

Guide Pins Parallel

BS 7568 PT 26/I.S.O 9182/2 Type A1



Order Instructions

State MPGR, together with d1 diameter and length

Notes

Guide Pins on this page are ground to h5 limits to ensure a sliding fit onto the bore of the Guide Bush.
Parallel Guide Pins are manufactured from hardened mild steel and precision ground.

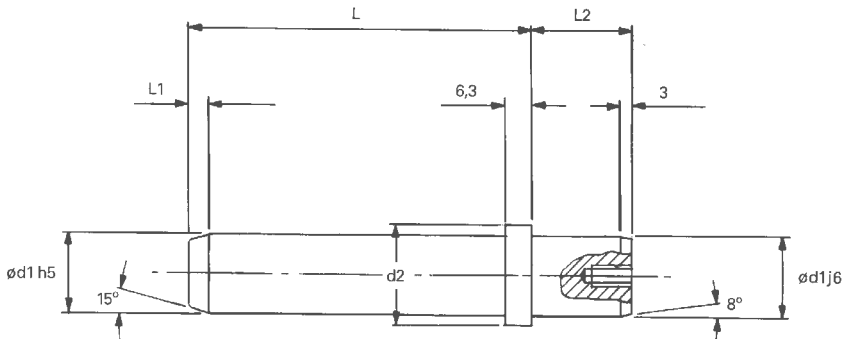


L	d1 = h5 Tolerance									
	16	20	24	25	30	32	38	40	48	50
90										
100										
112										
125										
140										
160										
180										
200										
224										
250										
280										
315										
355										
400										
450										
500										

The following diameters are used to prevent incorrect assembly of the Die Set upper and lower Plates 24mm, 30mm, 38mm, 48mm.

Guide Pins with Shoulder, End Locking

BS 7568 PT 129/I.S.O 9182/5 Type-D



Order Instructions

State MSGP, together with d1 diameter and length L. Standard Screw and Washer included. Retiners can be supplied to order.

Notes

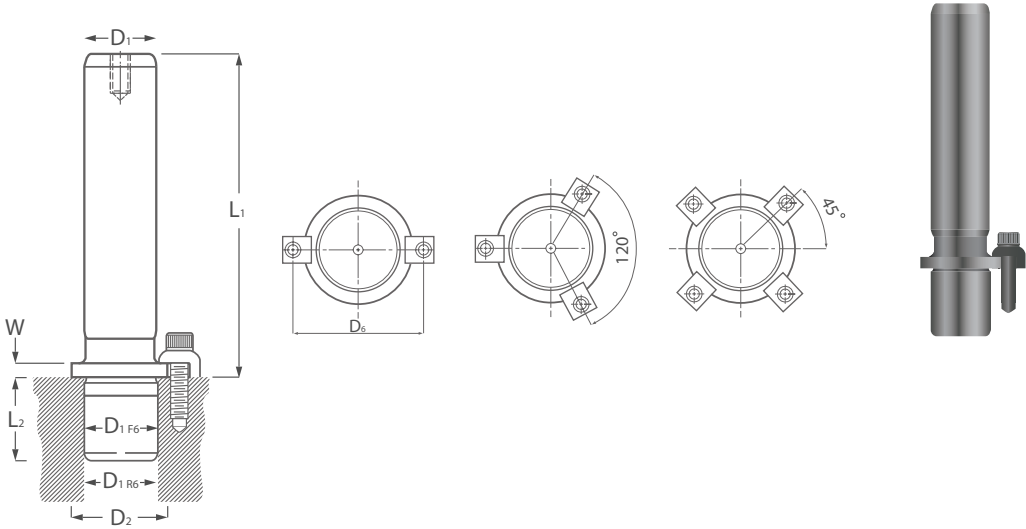
The length shown at L2 is oversize (j6) to provide a press fit in the normal machined bore of the plate. Guide Pins are manufactured from hardened mild steel and precision ground.



d1	16	20	24	25	30	32	38	40	48	50
d2	20	25	32	32	40	40	50	50	63	63
L2	16	20	25	25	32	32	40	40	50	50
L 80										
L 90										
L 100										
L 112										
L 125										
L 140										
L 160										
L 180										
L 200										
L 224										
L 250										
L 280										
L 315										
L 355										
L 400										
L 450										
500										

The following diameters are used to prevent incorrect assembly of the Die Set upper and lower Plates 24mm, 30mm, 38mm, 48mm.

Demountable Guide Pillars



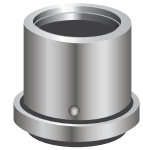
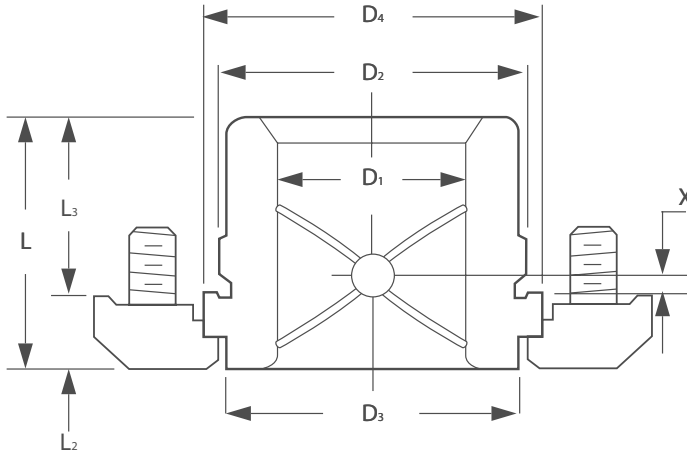
Notes

Ensure that the Dimension X Leaves clearance for bush at bottom of stroke.
Bushes Supplied with Clamps and Screws.

D1	18	19	24	25	30	32	40	42	50	52	63	80
D2	25.6	25.6	32.6	32.6	40.6	40.6	50.8	50.8	63.8	63.8	76	93
W	5	5	5	5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
L2	20	20	24	24	30	30	37	37	45	45	49	60
L1												
70												
80												
90												
100												
110												
120												
130												
140												
150												
160												
170												
180												
200												
220												
240												
260												
280												
320												
360												
400												

Demountable Bushes

Low Profile



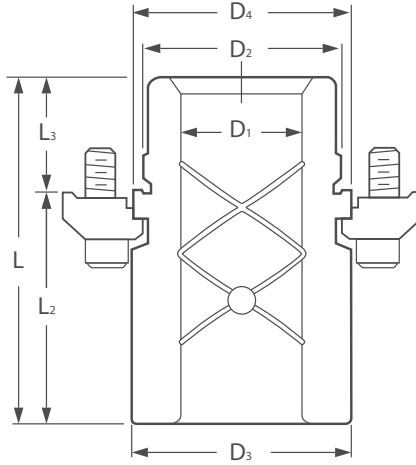
Part Reference	D1	D2	D3	D4	L	L2	L3	X
DGBLP	18	28	28	32.5	28	10	18	6
DGBLP	19	28	28	32.5	28	10	18	6
DGBLP	24	38	36	47	33	10	23	6
DGBLP	25	38	36	47	33	10	23	6
DGBLP	30	45	43	54	40	10	30	10
DGBLP	32	45	43	54	40	10	30	10
DGBLP	40	54	48	63	52	14	38	10
DGBLP	42	54	48	63	52	14	38	10
DGBLP	50	65	64	75	62	14	48	20
DGBLP	52	65	64	75	62	14	48	20
DGBLP	63	81	79	93	75	14	61	20
DGBLP	80	100	99	115	92	14	78	32

Demountable Bushes

Extra Long Shoulder

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PRESS TOOL PARTS

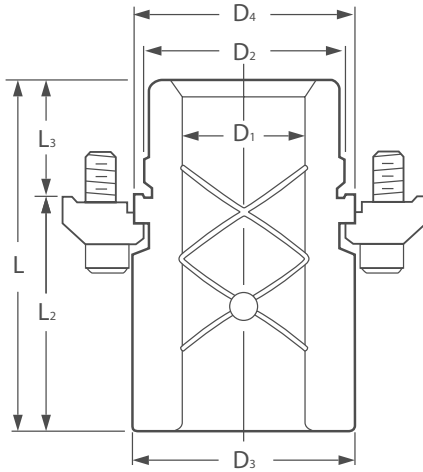


Part Reference	D1	D2	D3	D4	L	L2	L3
DGBEL	24	38	44	47	98	75	23
DGBEL	25	38	44	47	98	75	23
DGBEL	30	45	51	54	100	75	25
DGBEL	32	45	51	54	100	75	25
DGBEL	40	54	60	63	115	85	30
DGBEL	42	54	60	63	115	85	30
DGBEL	50	65	75	75	135	100	35
DGBEL	52	65	75	75	135	100	35
DGBEL	63	81	90	93	148	100	48



Demountable Bushes

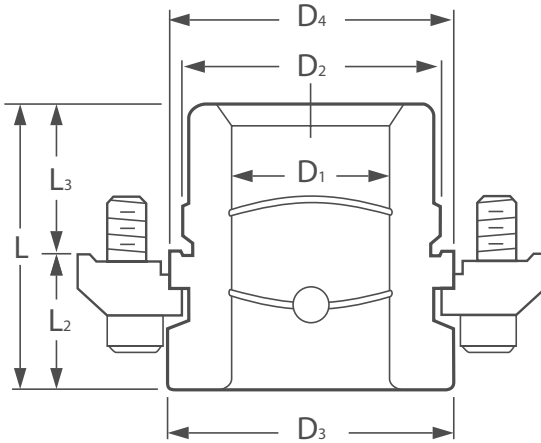
Long Shoulder



Part Reference	D1	D2	D3	D4	L	L2	L3
DGBL	18	28	28.5	32.5	50	32	18
DGBL	19	28	28.5	32.5	50	32	18
DGBL	24	38	44	47	70	47	23
DGBL	25	38	44	47	70	47	23
DGBL	30	45	51	54	75	50	25
DGBL	32	45	51	54	75	50	25
DGBL	40	54	60	63	80	50	30
DGBL	42	54	60	63	80	50	30
DGBL	50	65	73	75	85	50	35
DGBL	52	65	73	75	85	50	35
DGBL	63	81	90	93	100	52	48
DGBL	80	100	110	115	100	52	48

Demountable Bushes

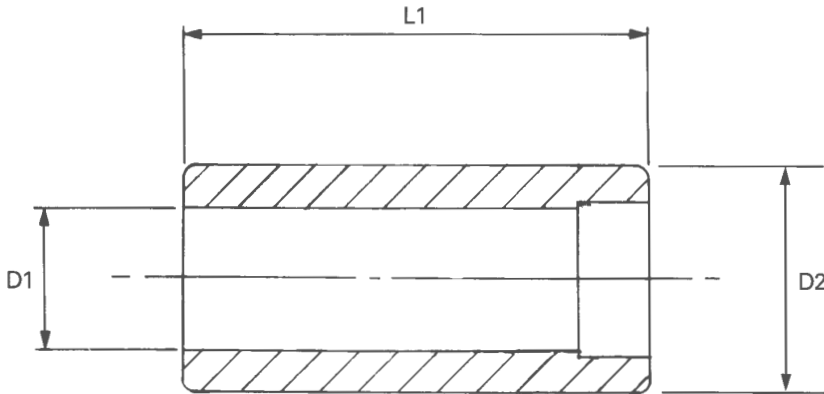
Short Shoulder



Part Reference	D1	D2	D3	D4	L	L2	L3
DGBS	18	28	28.5	32.5	34	16	18
DGBS	19	28	28.5	32.5	34	16	18
DGBS	24	38	44	47	44	21	23
DGBS	25	38	44	47	44	21	23
DGBS	30	45	51	54	46	21	25
DGBS	32	45	51	54	46	21	25
DGBS	40	54	60	63	51	21	30
DGBS	42	54	60	63	51	21	30
DGBS	50	65	73	75	60	25	35
DGBS	52	65	73	75	60	25	35
DGBS	63	81	90	93	75	27	48
DGBS	80	100	110	115	75	27	48

Guide Bushes

BS 7568 PT 17 1992/I.S.O 9448/2 Form A



Order Instructions

State MGPB, with bore and length required.

Notes

These Bushes incorporate counter bore of I.S.O form G type Bushes, to act as an oil reservoir.
 Guide Bushes are manufactured from hardened mild steel and precision ground.
 The Bushes are intended to fit in a hole with an H7 tolerance.

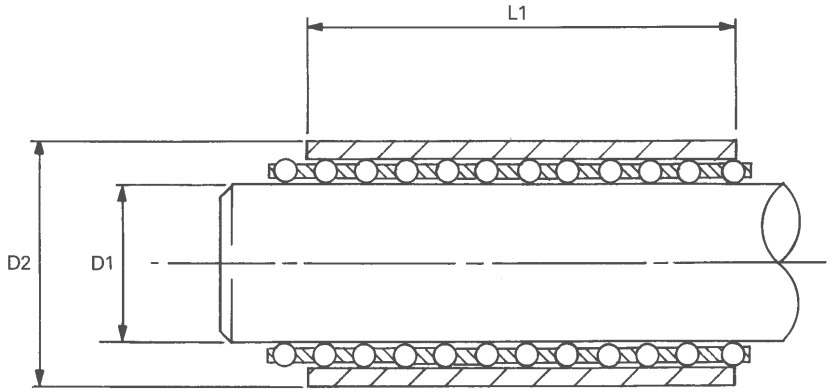


D1	D1 = G6 Tolerance									
	16	20	24	25	30	32	38	40	48	50
L1	D2 = n6 Tolerance									
	28	32	40	40	48	48	58	58	70	70
25										
32										
40										
50										
63										
80										
100										
125										
160										

The following diameters are used to prevent incorrect assembly of the Die Set upper and lower Plates 24mm, 30mm, 38mm, 48mm.

Ball Cage Bushes Plain

I.S.O 9448/3 Form B



Order Instructions

State PBCB, plus D1 diameter and length.

Notes

Cage Retainers available if required.
 The Linear Cage only, can be supplied to order.
 The Standard Plain and Headed Ball Cage Bushes are used when improved accuracy is required.
 They are interchangeable with Plain Guide Bushes.
 The Bushes are suitable for fitting in a receiving hole with an H7 tolerance.

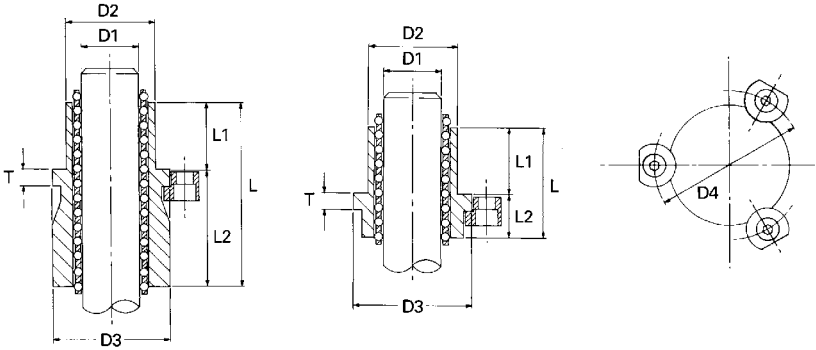


D1	16	20	24	25	30	32	38	40	48	50
	D2 = n6 Tolerance									
D2	28	32	40	40	48	48	58	58	70	70
L1 25										
L1 32										
L1 40										
L1 50										
L1 63										
L1 80										
L1 100										
L1 125										
L1 160										

The following diameters are used to prevent incorrect assembly of the Die Set upper and lower Plates 24mm, 30mm, 38mm, 48mm.

Ball Cage Bushes Headed

I.S.O 9448/7 Form F



• **Order Instructions**

State HBCB, plus D1 diameter and length L and length L1.

Notes

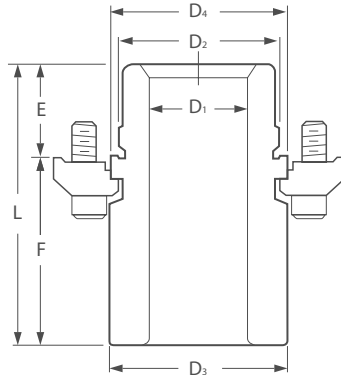
Cage Retainers available if required.
 Linear cages are available separately on request.
 Retaining Clamps available to order.
 The Standard Plain and Headed Ball Cage Bushes are used when improved accuracy is required.
 They are interchangeable with Plain Guide Bushes.
 The Bushes are suitable for fitting in a receiving hole with an H7 tolerance.



D1	16		20		24		25		30		32		38		40		48		50	
	L	L2	L	L2	L	L2	L	L2	L	L2	L	L2	L	L2	L	L2	L	L2	L	L2
D2	28		32		40		40		48		48		58		58		70		70	
D3	36		40		48		48		56		56		66		66		80		80	
D4	53		57		65		65		73		73		83		83		97		97	
T	6.3		6.3		6.3		6.3		6.3		6.3		6.3		6.3		6.3		6.3	
L1 25	35 10		37 12		37 12		37 12													
L1 25	57 32		45 20		61 36		61 36													
L1 25			61 36		81 56		81 56													
L1 32	42 10		44 12		57 25		57 25		44 12		44 12									
L1 32	64 32		68 36		82 50		82 50		77 45		77 45									
L1 32									95 63		95 63									
L1 40	50 10		52 12		52 12		52 12		72 32		72 32		55 15		55 15					
L1 40			76 36		80 40		80 40		96 56		96 56		85 45		85 45					
L1 40													111 71		111 71					
L1 50			62 12		62 12		62 12		65 15		65 15		82 32		82 32		68 18		68 18	
L1 50					90 40		90 40		95 45		95 45		113 63		113 63		100 50		100 50	
L1 50																	130 80		130 80	
L1 63					75 12		75 12		78 15		78 15		78 15		78 15		99 36		99 36	
L1 63									108 45		108 45		113 50		113 50		134 71		134 71	
L1 80													95 15		95 15		98 18		98 18	
L1 80													130 50		130 50		143 63		143 63	
L1 100																	118 18		118 18	
L1 100																	163 63		163 63	

The following diameters are used to prevent incorrect assembly of the Die Set upper and lower Plates 24mm, 30mm, 38mm, 48mm.

Ball Bearing Demountable Guide Bushes



Long Shoulder

Part Reference	Pillar Diameter	D1	D2	D3	L3	L2	L1
DGBB	25	33	45	50	30	35	65
DGBB	25	33	45	50	30	50	80
DGBB	25	33	45	50	30	65	95
DGBB	32	40	54	60	30	50	80
DGBB	32	40	54	60	30	65	95
DGBB	32	40	54	60	30	80	110
DGBB	40	48	65	73	30	50	80
DGBB	40	48	65	73	30	65	95
DGBB	40	48	65	73	30	80	110
DGBB	40	48	65	73	30	100	130
DGBB	50	62	81	91	50	60	110
DGBB	50	62	81	91	50	80	130
DGBB	50	62	81	91	50	100	150
DGBB	50	62	81	91	50	120	170
DGBB	63	75	95	105	50	100	150
DGBB	63	75	95	105	50	120	170
DGBB	63	75	95	105	50	140	190

Short Shoulder

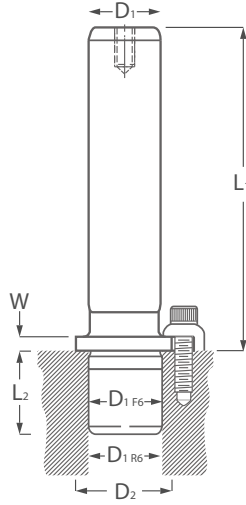
Part Reference	Pillar Diameter	D1	D2	D3	L3	L2	L1
DGBBS	32	40	54	60	50	15	65
DGBBS	40	48	65	73	60	15	75
DGBBS	50	62	81	85	80	20	100
DGBBS	63	75	95	99	90	20	110

Clamp Data

Diameter	Radius		Size				Clamp Reference	Per Bush	Screw Size	SH
	M	N	A	B	C	D				
25	32.5	43	19.8	15.9	6.5	11.4	DC1	3	M8	19.4
32	37	47	19.8	15.9	6.5	11.4	DC1	3	M8	19.4
40	43.5	54	19.8	15.9	6.5	11.4	DC1	3	M8	19.4
50	52.5	63	19.8	15.9	6.5	11.4	DC1	4	M8	19.4
63	59.5	70	19.8	15.9	6.5	11.4	DC1	4	M8	19.4



Ball Bearing Demountable Guide Pillars



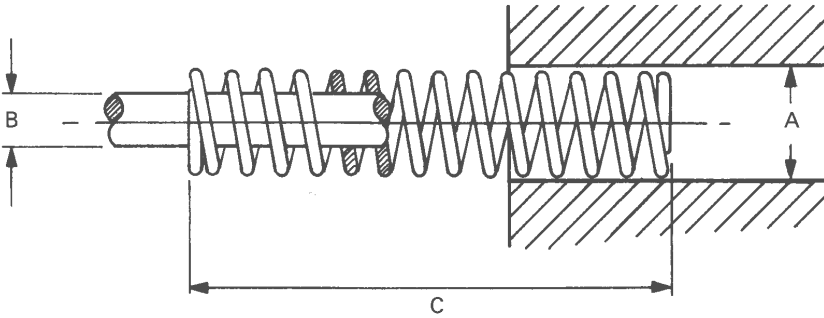
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PRESS TOOL PARTS

D1	18	19	24	25	30	32	40	42	50	52	63	80
D2	25.6	25.6	32.6	32.6	40.6	40.6	50.8	50.8	63.8	63.8	76	93
W	5	5	5	5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
L2	20	20	24	24	30	30	37	37	45	45	49	60
L1												
70												
80												
90												
100												
110												
120												
130												
140												
150												
160												
170												
180												
200												
220												
240												
260												
280												
320												
360												
400												

Die Springs

BS 7568 PT 4 1992/Colour Coded I.S.O 10243



Die Springs are precision manufactured and have ends which are ground square to ensure even compression of spring.

Boneham & Turners Die Springs are available in four colour-coded load rated classifications. All springs are guaranteed to fit the hole and rod diameters and depicted in the reference table. Sizes and colour codes are in accordance with ISO 10243.

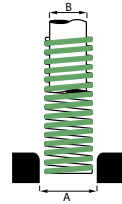
	ISO Colour Code	Load	Max Deflection	Code	
	Green	Light Load	40%	LDS	Page ??
	Blue	Medium	37.5%	MDS	Page ??
	Red	Heavy	30%	HDS	Page ??
	Yellow	Extra Heavy	25%	EHDS	Page ??



Die Springs

- **Order Instructions**
State references only.

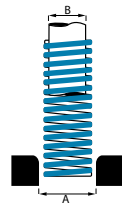
Notes
Table shows rate of deflection kilograms per 1mm of deflection.



Green - Light Load

Hole	Rod	C Free Lengths														
Size A	Dia B	25	32	38	51	64	76	89	102	115	127	152	178	203	254	
12.5	6.3	LDS 1	LDS 2	LDS 3	LDS 4	LDS 5	LDS 6									
12.5	6.3	1.83	1.67	1.39	1.16	.95	.72									
16	8	LDS 7	LDS 8	LDS 9	LDS 10	LDS 11	LDS 12	LDS 13	LDS 14							
16	8	2.39	2.34	1.97	1.60	1.09	1.02	.88	.80							
20	10	LDS 15	LDS 16	LDS 17	LDS 18	LDS 19	LDS 20	LDS 21	LDS 22	LDS 23	LDS 24	LDS 25				
20	10	5.69	4.59	3.40	2.50	2.04	1.63	1.43	1.22	1.11	.97	.77				
25	12.5	LDS 26	LDS 27	LDS 28	LDS 29	LDS 30	LDS 31	LDS 32	LDS 33	LDS 34	LDS 35	LDS 36	LDS 37	LDS 38		
25	12.5	10.2	8.19	6.32	4.49	3.59	2.86	2.45	2.15	1.91	1.70	1.43	1.28	1.06		
32	16			LDS 39	LDS 40	LDS 41	LDS 42	LDS 43	LDS 44	LDS 45	LDS 46	LDS 47	LDS 48	LDS 49	LDS 50	
32	16			9.59	6.83	5.40	4.49	3.79	3.26	2.96	2.55	2.19	1.86	1.61	1.28	
40	20				LDS 51	LDS 52	LDS 53	LDS 54	LDS 55	LDS 56	LDS 57	LDS 58	LDS 59	LDS 60	LDS 61	
40	20				9.38	7.45	6.43	5.20	4.39	4.04	3.77	2.86	2.57	2.31	1.73	
50	25					LDS 62	LDS 63	LDS 64	LDS 65	LDS 66	LDS 67	LDS 68	LDS 69	LDS 70	LDS 71	
50	25					15.91	12.75	11.12	9.59	8.26	7.24	6.12	5.30	4.49	3.57	

Blue - Medium Load

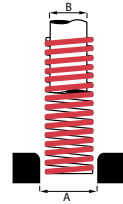


Hole	Rod	C Free Lengths														
Size A	Dia B	25	32	38	51	64	76	89	102	115	127	152	178	203	254	
12.5	6.3	MDS 1	MDS 2	MDS 3	MDS 4	MDS 5	MDS 6									
12.5	6.3	3.06	2.53	2.18	1.58	1.23	1.04									
16	8	MDS 7	MDS 8	MDS 9	MDS 10	MDS 11	MDS 12	MDS 13	MDS 14							
16	8	5.04	3.78	3.46	2.69	2.09	1.82	1.55	1.38							
20	10	MDS 15	MDS 16	MDS 17	MDS 18	MDS 19	MDS 20	MDS 21	MDS 22	MDS 23	MDS 24	MDS 25				
20	10	10.00	7.41	5.71	4.25	3.29	2.56	2.24	2.02	1.85	1.69	1.35				
25	12.5	MDS 26	MDS 27	MDS 28	MDS 29	MDS 30	MDS 31	MDS 32	MDS 33	MDS 34	MDS 35	MDS 36	MDS 37	MDS 38		
25	12.5	14.99	12.04	9.49	7.00	5.41	4.41	3.90	3.37	2.86	2.64	2.12	1.82	1.61		
32	16			MDS 39	MDS 40	MDS 41	MDS 42	MDS 43	MDS 44	MDS 45	MDS 46	MDS 47	MDS 48	MDS 49	MDS 50	
32	16			18.87	13.67	10.10	8.21	7.05	6.00	5.25	4.57	3.86	3.32	2.95	2.18	
40	20				MDS 51	MDS 52	MDS 53	MDS 54	MDS 55	MDS 56	MDS 57	MDS 58	MDS 59	MDS 60	MDS 61	
40	20				18.52	14.28	11.02	9.25	8.26	7.32	6.40	5.26	4.50	3.74	3.07	
50	25					MDS 62	MDS 63	MDS 64	MDS 65	MDS 66	MDS 67	MDS 68	MDS 69	MDS 70	MDS 71	
50	25					21.32	17.14	14.28	12.14	10.81	9.89	8.16	7.09	6.10	4.48	

Die Springs

- **Order Instructions**
State references only.

Notes
Table shows rate of deflection kilograms per 1mm of deflection.



Red – Heavy Load

Hole	Rod	C Free Lengths													
Size A	Dia B	25	32	38	51	64	76	89	102	115	127	152	178	203	254
12.5	6.3	HDS 1	HDS 2	HDS 3	HDS 4	HDS 5	HDS 6								
12.5	6.3	4.29	3.39	2.99	2.00	1.53	1.35								
16	8	HDS 7	HDS 8	HDS 9	HDS 10	HDS 11	HDS 12	HDS 13	HDS 14						
16	8	7.72	5.39	4.95	3.78	3.09	2.62	2.21	2.00						
20	10	HDS 15	HDS 16	HDS 17	HDS 18	HDS 19	HDS 20	HDS 21	HDS 22	HDS 23	HDS 24	HDS 25			
20	10	22.03	17.14	13.16	9.59	7.35	6.09	5.15	4.51	3.92	3.48	2.88			
25	12.5		HDS 27	HDS 28	HDS 29	HDS 30	HDS 31	HDS 32	HDS 33	HDS 34	HDS 35	HDS 36	HDS 37	HDS 38	
25	12.5		30.29	22.34	15.91	12.55	10.10	8.57	7.45	6.63	5.89	4.88	4.18	3.65	
32	16			HDS 39	HDS 40	HDS 41	HDS 42	HDS 43	HDS 44	HDS 45	HDS 46	HDS 47	HDS 48	HDS 49	HDS 50
32	16			39.58	27.74	21.62	17.54	14.38	12.44	10.91	9.49	7.96	6.85	6.03	4.73
40	20				HDS 51	HDS 52	HDS 53	HDS 54	HDS 55	HDS 56	HDS 57	HDS 58	HDS 59	HDS 60	HDS 61
40	20				35.70	27.44	22.34	19.38	16.63	14.48	13.06	10.71	9.08	7.85	6.22
50	25					HDS 62	HDS 63	HDS 64	HDS 65	HDS 66	HDS 67	HDS 68	HDS 69	HDS 70	HDS 71
50	25					42.13	34.58	29.38	24.99	21.93	19.58	15.71	13.67	11.93	9.08

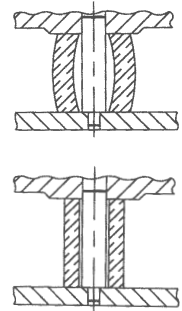
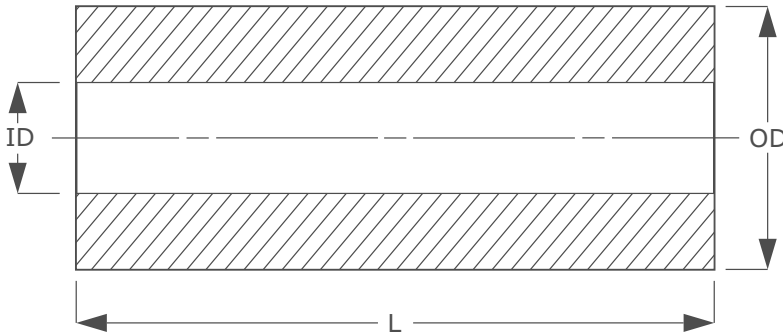


Yellow – Extra Heavy Load

Hole	Rod	C Free Lengths													
Size A	Dia B	25	32	38	51	64	76	89	102	115	127	152	178	203	254
12.5	6.3	EHDS 1	EHDS 2	EHDS 3	EHDS 4	EHDS 5	EHDS 6								
12.5	6.3	5.96	4.48	3.67	2.67	2.16	1.74								
16	8	EHDS 7	EHDS 8	EHDS 9	EHDS 10	EHDS 11	EHDS 12	EHDS 13	EHDS 14						
16	8	12.03	9.08	7.35	5.33	4.20	3.47	3.00	2.61						
20	10	EHDS 15	EHDS 16	EHDS 17	EHDS 18	EHDS 19	EHDS 20	EHDS 21	EHDS 22	EHDS 23	EHDS 24	EHDS 25			
20	10	29.88	22.84	18.05	13.05	10.09	8.33	7.09	6.18	5.40	4.85	3.98			
25	12.5		EHDS 27	EHDS 28	EHDS 29	EHDS 30	EHDS 31	EHDS 32	EHDS 33	EHDS 34	EHDS 35	EHDS 36	EHDS 37	EHDS 38	
25	12.5		38.18	35.29	21.16	16.42	13.34	11.27	9.82	8.74	7.78	6.48	5.50	4.79	
32	16			EHDS 39	EHDS 40	EHDS 41	EHDS 42	EHDS 43	EHDS 44	EHDS 45	EHDS 46	EHDS 47	EHDS 48	EHDS 49	EHDS 50
32	16			53.88	36.00	27.45	22.28	18.39	15.81	14.28	12.65	10.40	8.99	7.75	6.20
40	20				EHDS 51	EHDS 52	EHDS 53	EHDS 54	EHDS 55	EHDS 56	EHDS 57	EHDS 58		EHDS 60	EHDS 61
40	20				64.05	49.67	38.65	32.74	28.66	24.99	22.54	17.14		13.46	10.91
50	25					EHDS 62	EHDS 63	EHDS 64	EHDS 65	EHDS 66	EHDS 67	EHDS 68		EHDS 70	EHDS 71
50	25					72.32	58.34	48.45	41.31	35.90	32.23	24.37		19.07	15.60



Elastomer Springs



Boneham & Turners range of Polyurethane Elastomer Springs have a nominal Hardness of 90 Shore A, other hardness are available on request.

Lengths of the each bar are kept in stock to provide a quick turnaround on standard and non-standard lengths.

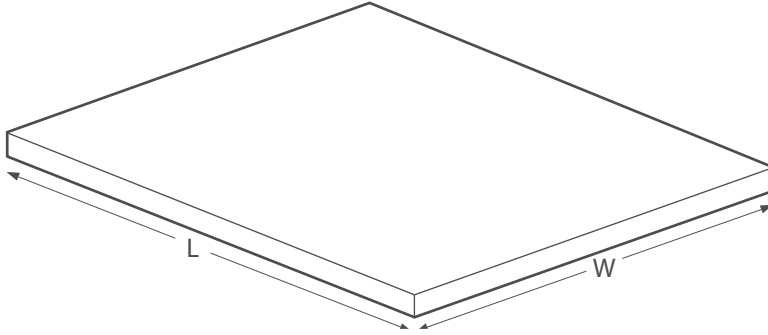


Standard Length

B & T Ref.	Outside Diameter	Length	Inside Diameter	Maximum Compression
ES 1	16	16	6.5	4
ES 2	16	20	6.5	5
ES 3	16	25	6.5	6.25
ES 4	20	16	8.5	4
ES 5	20	20	8.5	5
ES 6	20	25	8.5	6.25
ES 7	20	32	8.5	8
ES 8	25	20	10.5	5
ES 9	25	25	10.5	6.25
ES 10	25	32	10.5	8
ES 11	25	40	10.5	10
ES 12	32	32	13.5	8
ES 13	32	40	13.5	10
ES 14	32	50	13.5	12.5
ES 15	32	63	13.5	15.75
ES 16	40	32	13.5	8
ES 17	40	40	13.5	10
ES 18	40	50	13.5	12.5
ES 19	40	63	13.5	15.75
ES 20	40	80	13.5	20
ES 21	50	32	17	8
ES 22	50	40	17	10
ES 23	50	50	17	12.5
ES 24	50	63	17	15.75

B & T Ref.	Outside Diameter	Length	Inside Diameter	Maximum Compression
ES 25	50	80	17	20
ES 26	50	100	17	25
ES 27	63	32	17	8
ES 28	63	40	17	10
ES 29	63	50	17	12.5
ES 30	63	63	17	15.75
ES 31	63	80	17	20
ES 32	63	100	17	25
ES 33	63	125	17	31.25
ES 34	80	32	21	8
ES 35	80	40	21	10
ES 36	80	50	21	12.5
ES 37	80	63	21	15.75
ES 38	80	80	21	20
ES 39	80	100	21	25
ES 40	80	125	21	31.25
ES 41	100	32	21	8
ES 42	100	40	21	10
ES 43	100	50	21	12.5
ES 44	100	63	21	15.75
ES 45	100	80	21	20
ES 46	100	100	21	25
ES 47	100	125	21	31.25

Elastomer Plates



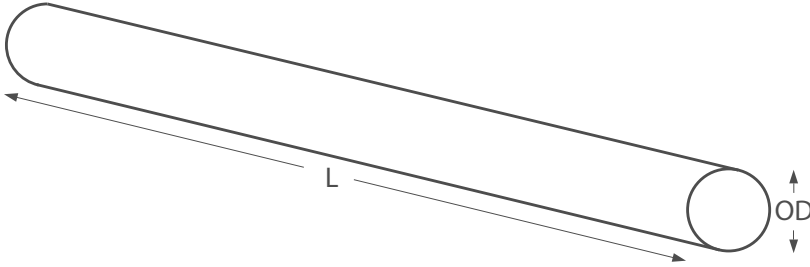
- **Order Instructions**
State W, L, Thickness and quantity.

Notes
Available in 80 shore and 90 shore.



W	L	T
500	500	10
500	500	12
500	500	16
500	500	20
500	500	25
500	500	30
500	500	35
500	500	40
500	500	45
500	500	50
500	500	60
500	500	70
500	500	90

Elastomer Solid Bars



- **Order Example**
Diameter 32mm by 300 long.

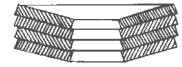
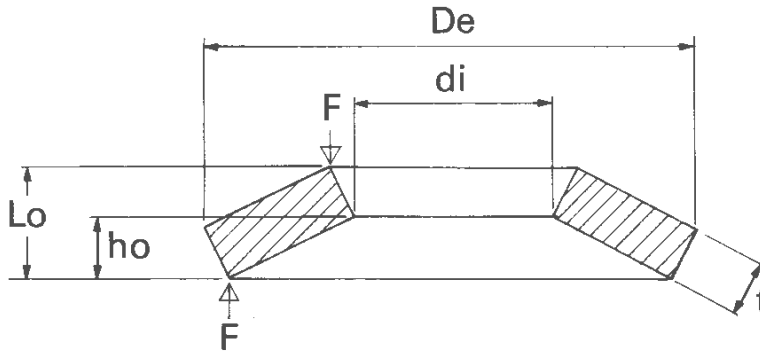
Notes
Available in 80 shore and 90 shore.



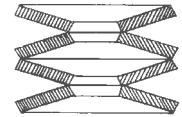
OD	L
16	250
20	250
25	250
32	500
40	500
50	500
63	500
80	500
100	500
125	500

Disc Springs

D.I.N 2093



Total Deflections =
Deflection of one spring.
Total Force F = Force
per spring x number
of springs in parallel.



Total Deflections =
Deflection per
spring x number
of springs in stack

• Order Instructions

State Disc spring together with De size and thickness

Notes

For non-static applications maximum deflection 0.75 Lo .
Technical information can be obtained upon receipt
of full details.

All specifications subject to change without notice.

A combination of Series and Parallel stacking can be used.



Recommended Clearance (Total) for Guide Pins

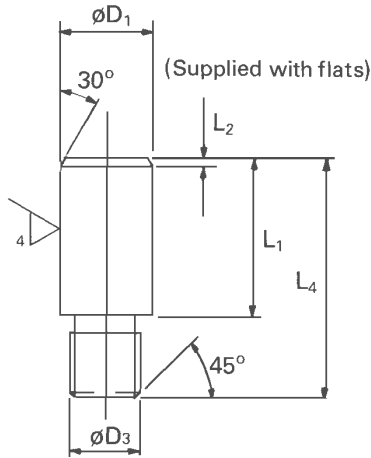
Hole Size	Clearance
8.3mm to 13.1 mm	.15mm
16.3mm to 19.4mm	.20mm
22.6mm to 25.8mm	.25mm

Pin Size						When $S = 0.4 ho$		When $S = 0.6 ho$		When $S = 0.75 ho$		When $S = ho$	
	De	di	t	ho	Lo	F	S	F	S	F	S	F	S
8	16	8.2	0.4	0.5	0.9	116	0.20	143	0.30	155	0.38	165	0.50
8	16	8.2	0.6	0.45	1.05	255	0.18	349	0.27	412	0.34	503	0.45
8	16	8.2	0.9	0.35	1.25	566	0.14	825	0.21	1000	0.26	1320	0.35
10	20	10.2	0.5	0.65	1.15	194	0.26	237	0.39	254	0.49	268	0.65
10	20	10.2	0.8	0.55	1.35	456	0.22	631	0.33	745	0.41	929	0.55
10	20	10.2	1.1	0.45	1.55	854	0.18	1240	0.27	1530	0.34	1980	0.45
12	25	12.2	0.7	0.9	1.6	456	0.36	558	0.54	601	0.68	635	0.90
12	25	12.2	0.9	0.7	1.6	542	0.28	737	0.42	868	0.53	1050	0.70
12	25	12.2	1.5	0.55	2.05	1630	0.22	2380	0.33	2910	0.41	3820	0.55
16	31.5	16.3	0.8	1.05	1.85	527	0.42	642	0.63	687	0.79	722	1.05
16	31.5	16.3	1.25	0.90	2.15	1180	0.36	1620	0.54	1920	0.68	2360	0.90
16	31.5	16.3	1.75	0.70	2.45	2170	0.28	3160	0.42	3900	0.53	5040	0.70
20	40	20.4	1.00	1.30	2.30	777	0.52	948	0.78	1020	0.98	1070	1.30
20	40	20.4	1.50	1.15	2.65	1640	0.46	2240	0.69	2620	0.86	3200	1.15
20	40	20.4	2.25	0.90	3.15	3640	0.36	5300	0.54	6540	0.68	8460	0.90
25	50	25.4	1.25	1.60	2.85	1180	0.64	1440	0.96	1550	1.20	1650	1.60
25	50	25.4	2.00	1.40	3.40	2910	0.56	4020	0.84	4760	1.05	5900	1.40
25	50	25.4	3.00	1.10	4.10	6660	0.44	9740	0.66	12000	0.83	15600	1.10

F = Load (N/mm²) = S deflection in mm.

Punch Shanks

ISO 10242/ Type B



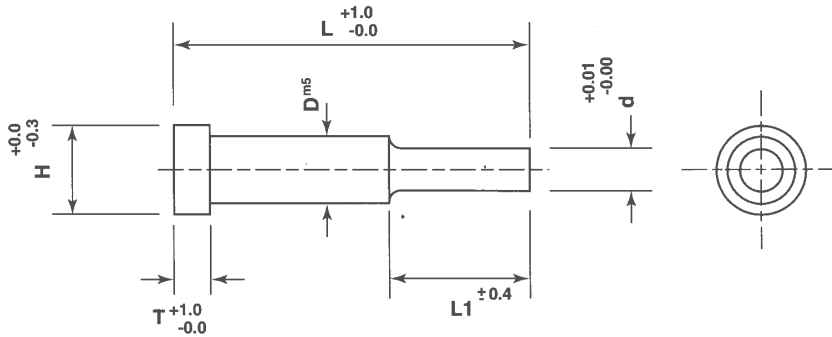
D1 f9	D3 6g	L1	L2	L4
20	M 16 x 1.5	40	2	58
25	M 16 x 1.5	45	2.5	68
25	M 20 x 1.5	45	2.5	68
32	M 20 x 1.5	56	3	79
32	M 24 x 1.5	56	3	79
40	M 24 x 1.5	71	4	93
40	M 27 x 2	71	4	93
50	M 30 x 2	80	5	108
50	M 30 x 2	80	5	108

Punches

BS 7568 PT 5/I.S.O 8020 Type B

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PRESS TOOL PARTS



Notes

T = All 5mm

Material Chrome Steel D₂.

Specials including other materials and sizes, price and delivery upon applications.

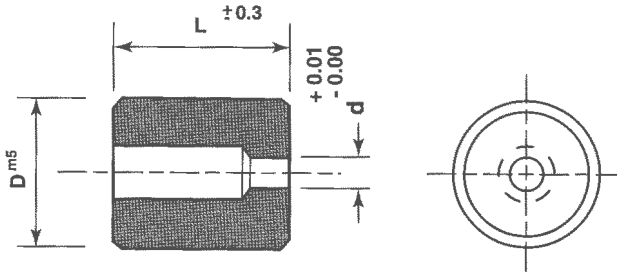
Please state required 'd' diameter when ordering.



Ref.	D			L Lengths						H	L1
	Body Diam.	From	To	56	63	71	80	90	100		
MHP 1	5	1.0	4.5							8	12
MHP 2	6	1.5	5.5							9	13
MHP 3	8	2.5	7.5							11	14
MHP 4	10	4.5	9.5							13	16
MHP 5	13	6.5	12.5							16	21
MHP 6	16	9.5	15.5							19	24
MHP 7	20	12.5	19.5							24	27
MHP 8	25	16.5	24.5							29	32
MHP 9	32	22.5	31.5							36	32

Dies

Plain



Notes

T = All 5mm
 Specials including other materials and sizes, price and delivery upon application.
 Please state required 'd' diameter when ordering.



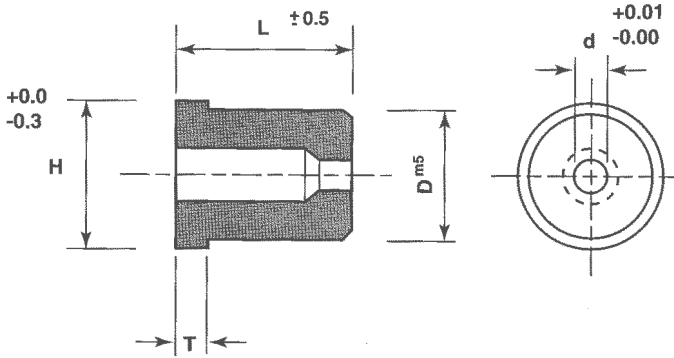
Ref.	D	d		L Lengths		
		From	To	17	24	30
MPD 1	6	1	3			
MPD 2	10	2	5			
MPD 3	13	3	7			
MPD 4	16	4	8			
MPD 5	20	6	11			
MPD 6	22	9	13			
MPD 7	25	12	16			
MPD 8	32	13	20			
MPD 9	38	16	26			

Dies

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PRESS TOOL PARTS

Headed



Notes

T = All 5mm
Please Note - Standard increments 0.5mm.
Customer to machine for clearance.

Specials including other materials and sizes, price and delivery upon application.



Ref.	D	d		L Lengths				H
		From	To	19	22	25	35	
MHD 1	6	1	3					9
MHD 2	10	2	5					13
MHD 3	13	3	7					16
MHD 4	16	4	8					19
MHD 5	20	6	11					23
MHD 6	22	9	13					25
MHD 7	25	12	16					28