



PRODUCT SELECTOR : ISSUE 4

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Leading with innovative solutions and manufacturing products of the highest quality, backed by a proven and responsive service.

G & J Hall products are produced by a programme of continual improvement through technical development and investment in the very latest manufacturing equipment and techniques.

**Our customer's success is our success**



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Electromagnetic drilling machines

**POWERBOR®**

Power, Precision and Productivity

*Industrial Application Examples:*

- **General engineering**
- **Bridge and highway maintenance**
- **Truck and trailer manufacturing**
- **Construction**
- **Mining**
- **Shipbuilding and railroad**
- **Refineries, offshore rigs and pipelines**
- **Lift and elevator repair**
- **Welding**
- **General metal fabrication**

The POWERBOR® range of electromagnetic drilling machines, annular hole cutters, step drills and accessories offers the engineer a totally flexible choice of equipment for quick, efficient and accurate metal cutting either on site or in the workshop.

Hole cutting capacities range from 8mm to 100mm and many features on these quality manufactured machines are included as standard.



### PB32

HEIGHT	WIDTH	DEPTH	TRAVEL	WEIGHT
300mm (11.7/8")	90mm (3.1/2")	240mm (9.1/2")	165mm (6.1/2")	12.5kgs

TOTAL POWER:	770 watt
MOTOR:	720 watt
MAGNETIC ADHESION:	1000kgs
VOLTAGE:	220/240v or 110v (A.C. Supply)
SPEED:	550 rpm (no load)
CUTTER CAPACITY:	12mm to 32mm
DRILLING CAPACITY:	18mm

MODEL NO	VOLTAGE
PB 32	240/110 VOLTS

The POWERBOR® PB32 has been ergonomically designed to provide an electromagnetic drilling machine that is totally user friendly.

- Fitted with the reliable and proven HITACHI D13 power unit
- Free 13mm drill chuck\*
- A complete coolant system is available
- All Powerbor® standard features are backed by a full range of replacement spares

### 12 months comprehensive warranty as standard

\* To fit drill chuck (13mm with 1/2" x 20) remove arbor (RH thread) and arbor support bracket.



### PB32 COMBI

HEIGHT	WIDTH	DEPTH	TRAVEL	WEIGHT
300mm (11.7/8")	90mm (3.1/2")	240mm (9.1/2")	165mm (6.1/2")	12.5kgs

TOTAL POWER:	770 watt
MOTOR:	720 watt
MAGNETIC ADHESION:	1000kgs
VOLTAGE:	220/240v or 110v (A.C. Supply)
SPEED:	25-550 rpm variable (no load)
CUTTER CAPACITY:	12mm to 32mm
DRILLING CAPACITY:	18mm
TAPPING CAPACITY:	12mm

MODEL NO	VOLTAGE
PB 32 COMBI	240/110 VOLTS

The PB32 Combi has the same excellent power to weight ratio as the PB32. In addition it has forward, reverse and variable speed as standard providing a choice of tapping, cutting and drilling capability.

- Forward and reverse facility
- Fitted with the reliable and proven HITACHI D13 power unit
- Free 13mm drill chuck\*
- A complete coolant system is available
- All Powerbor® standard features are backed by a full range of replacement spares

### 12 months comprehensive warranty as standard

\* To fit drill chuck (13mm with 1/2" x 20) remove arbor (RH thread) and arbor support bracket.

## THE POWERBOR® STANDARD - INCLUDED WITH ALL MACHINES

- Dual carrying handles for enhanced operating manoeuvrability
  - Reversible handles for use in restrictive conditions
  - Improved high density magnet for maximum adhesion
  - Corrosive resistant, tangle-free cable from stand to drill unit
- Isolating power relay for improved handling safety
- Control panel situated conveniently on the same side as the traverse handles
  - Free protective carrying case complete with safety strap, cutting fluid, safety guard and folding hex key set



### PB45

HEIGHT	WIDTH	DEPTH	TRAVEL	WEIGHT
370mm (14.1/2")	115mm (4.1/2")	280mm (11")	200mm (8")	20kgs

TOTAL POWER:	1200 watt
MOTOR:	1150 watt
MAGNETIC ADHESION:	1500kgs
VOLTAGE:	220/240v or 110v (A.C. Supply)
SPEED:	250 rpm / 450 rpm (load speed)
CUTTER CAPACITY:	12mm to 50mm
DRILLING CAPACITY:	23mm
ARBOR:	M.T.2

MODEL NO	VOLTAGE
PB 45	240/110 VOLTS

The cutting capacity to weight ratio of the POWERBOR® PB45 complements the PB32 but adds more cutting power.

The relatively light overall weight of the PB45 disguises the cutting and drilling power normally associated with much heavier machines.

- Fitted with the tried and tested EIBENSTOCK 2 speed motor unit
- A complete coolant system is available as an option
- All Powerbor® standard features are backed by a full range of replacement spares

**12 months comprehensive warranty as standard**

## THE POWERBOR® STANDARD - INCLUDED WITH ALL MACHINES

- Dual carrying handles for enhanced operating manoeuvrability
  - Reversible handles for use in restrictive conditions
  - Improved high density magnet for maximum adhesion
- Corrosive resistant, tangle-free cable from stand to drill unit
- Isolating power relay for improved handling safety
- Control panel situated conveniently on the same side as the traverse handles
  - Free protective carrying case complete with safety strap, cutting fluid, safety guard and folding hex key set



### PB70

HEIGHT	WIDTH	DEPTH	TRAVEL	WEIGHT
445mm (17.1/2")	110mm (4.1/4")	330mm (13")	200mm (8")	22kgs
<b>TOTAL POWER:</b>		1850 watt		
<b>MOTOR:</b>		1800 watt		
<b>MAGNETIC ADHESION:</b>		1500kgs		
<b>VOLTAGE:</b>		220/240v or 110v (A.C. Supply)		
<b>SPEED:</b>		60/140 rpm 200/470 rpm (load speed)		
<b>CUTTER CAPACITY:</b>		12mm to 70mm		
<b>DRILLING CAPACITY:</b>		32mm		
<b>TAPPING CAPACITY:</b>		24mm		
<b>ARBOR:</b>		M.T.3		

MODEL NO	VOLTAGE
PB 70	240/110 VOLTS

The POWERBOR® PB70 has been carefully designed to guarantee enhanced power and versatility.

A proven, powerful performer and still portable enough to be used on-site or in the workshop, the PB70 provides the perfect solution to even the most difficult of drilling applications.

It incorporates a reversible variable speed motor as standard, allowing it to be readily used for tapping applications.

- *Infinitely variable speed • Forward and reverse facility*
- *Fitted with a tried and tested EIBENSTOCK motor unit*
- *Constant torque • Electro-torque control • Soft start motor*
- *Thermal overload protection • Mechanical clutch*
- *Available option includes a complete coolant system*
- *All Powerbor® standard features are backed by a full range of replacement spares*

**12 months comprehensive warranty as standard**



### PB70/2

HEIGHT	WIDTH	DEPTH	TRAVEL	WEIGHT
445mm (17.1/2")	110mm (4.1/4")	330mm (13")	200mm (8")	22kgs
<b>TOTAL POWER:</b>		1750 watt		
<b>MOTOR:</b>		1700 watt		
<b>MAGNETIC ADHESION:</b>		1500kgs		
<b>VOLTAGE:</b>		220/240v or 110v (A.C. Supply)		
<b>SPEED:</b>		120/410 rpm (load speed)		
<b>CUTTER CAPACITY:</b>		12mm to 70mm		
<b>DRILLING CAPACITY:</b>		32mm		
<b>ARBOR:</b>		M.T.3		

MODEL NO	VOLTAGE
PB 70/2	240/110 VOLTS

The POWERBOR® PB70/2 is a workhorse that brings all the drilling capacity of the PB70 to applications that do not require the full range of professional variations.

- *Proven EIBENSTOCK 1700 watt motor*
- *All Powerbor® standard features are backed by a full range of replacement spares*

**12 months comprehensive warranty as standard**

## THE POWERBOR® STANDARD - INCLUDED WITH ALL MACHINES

- Dual carrying handles for enhanced operating manoeuvrability
  - Reversible handles for use in restrictive conditions
  - Improved high density magnet for maximum adhesion
- Corrosive resistant, tangle-free cable from stand to drill unit
- Isolating power relay for improved handling safety
- Control panel situated conveniently on the same side as the traverse handles
  - Free protective carrying case complete with safety strap, cutting fluid, safety guard and folding hex key set



## ELECTROMAGNETIC DRILLING SYSTEMS



### PB100

HEIGHT	WIDTH	DEPTH	TRAVEL	WEIGHT
480mm (18.7/8")	110mm (4.1/4")	320mm (12.1/2")	280mm (11")	25kgs

TOTAL POWER:	1100 watt
MOTOR:	1050 watt
MAGNETIC ADHESION:	2000kgs
VOLTAGE:	220/240v or 110v (A.C. Supply)
SPEED:	220, 260, 350, 420 rpm (no load)
CUTTER CAPACITY:	12mm to 100mm
DRILLING CAPACITY:	32mm
ARBOR:	M.T.3

MODEL NO	VOLTAGE
PB 100	240/110 VOLTS
PB 100 SB	Swivel Base 240/110 VOLTS

The PB100's base and body design achieves greatly enhanced rigidity and cutting capacity whilst its arbor design allows rapid cutter to twist drill change.

The swivel base option is a customer-led development providing convenience and practicality and allowing precise positioning of the cutter, whilst the weight is taken by the powerful magnet.

The swivel option allows for movement of the machine's body through 260° and a lateral movement of 22mm.

- Unique cutting capacity of 100mm plus
- Fitted with ATLAS COPCO B4/32 power unit
- A complete coolant system is available as an option
- All Powerbor® standard features are backed by a full range of replacement spares

**12 months comprehensive warranty as standard**



### PB100E

HEIGHT	WIDTH	DEPTH	TRAVEL	WEIGHT
480mm (18.7/8")	110mm (4.1/4")	320mm (12.1/2")	280mm (11")	25kgs

TOTAL POWER:	1750 watt
MOTOR:	1700 watt
MAGNETIC ADHESION:	2000kgs
VOLTAGE:	220/240v or 110v (A.C. Supply)
SPEED:	110, 175, 245, 385 rpm (load speed)
CUTTER CAPACITY:	12mm to 100mm
DRILLING CAPACITY:	32mm
ARBOR:	M.T.3

MODEL NO	VOLTAGE
PB 100E	240/110 VOLTS
PB 100E SB	Swivel Base 240/110 VOLTS

The POWERBOR® PB100E is a more powerful machine with total power of 1750W. The low spindle speed of 110rpm can be very useful on large cutter / difficult applications.

- Unique cutting capacity of 100mm plus
- Fitted with proven EIBENSTOCK 1700 watt motor unit
- A complete coolant system is available as an option
- All Powerbor® standard features are backed by a full range of replacement spares

**12 months comprehensive warranty as standard**

## THE POWERBOR® STANDARD - INCLUDED WITH ALL MACHINES

- Dual carrying handles for enhanced operating manoeuvrability
  - Reversible handles for use in restrictive conditions
  - Improved high density magnet for maximum adhesion
  - Corrosive resistant, tangle-free cable from stand to drill unit
- Isolating power relay for improved handling safety
- Control panel situated conveniently on the same side as the traverse handles
  - Free protective carrying case complete with safety strap, cutting fluid, safety guard and folding hex key set

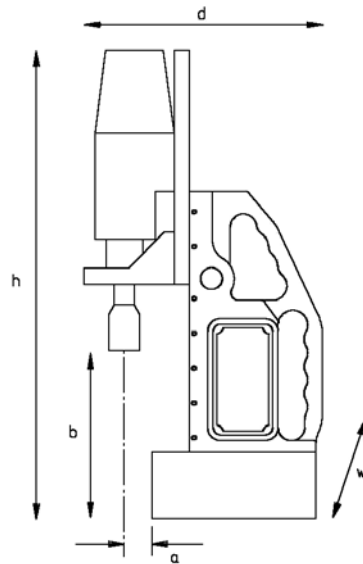


## MACHINE SPECIFICATIONS

CUTTER RANGE	
POWERBOR CUTTER Ø	POWERBOR MACHINE
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
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87	
88	
89	
90	
91	
92	
93	
94	
95	
96	
97	
98	
99	
100	

TWIST DRILL RANGE	
TWIST DRILL Ø	POWERBOR MACHINE
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	
32	

SPINDLE RPM	AVAILABLE SPINDLE SPEEDS						
	PB32	PB32 COMBI	PB45	PB70	PB70/2	PB100 PB100 SB	PB100E PB100E SB
50							
60							
70							
80							
90							
100							
110							
120							
130							
140							
150							
160							
170							
180							
190							
200							
210							
220							
230							
240							
250							
260							
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280							
290							
300							
310							
320							
330							
340							
350							
360							
370							
380							
390							
400							
410							
420							
430							
440							
450							
460							
470							
480							
490							
500							
510							
520							
530							
540							
550							



MACHINE DIMENSIONS (mm)								
MACHINE	HEIGHT (h)	WIDTH (w)	DEPTH (d)	TRAVEL	WEIGHT (kg)	MAGNET TO SPINDLE CL (a)	HEIGHT UNDER ARBOR (b)	MAGNET AREA
PB32	300	90	240	165	12.5	46	160	160 x 85
PB32 COMBI	300	90	240	165	12.5	46	160	160 x 85
PB45	370	115	280	200	20	36	140	200 x 100
PB70	445	110	330	200	22	48	175	200 x 100
PB70/2	445	110	330	200	22	48	175	200 x 100
PB100	480	110	320	280	25	60	210	220 x 110
PB100 SB	480	110	320	280	25	60	210	220 x 110
PB100E	480	110	320	280	25	75	210	220 x 110
PB100E SB	480	110	320	280	25	75	210	220 x 110

The hole making capacity on some of the machines can be extended using a Powerbor Step Drill.

Height under spindle for PB32 and PB32 Combi is 190mm with drill chuck fitted and 160mm with Powerbor arbor fitted.

The POWERBOR® complete cutting technology allows holes to be produced quicker and more efficiently, compared to conventional drills, and due to the cutter design, the load per tooth is greatly reduced; and the power used by the machine is kept to a minimum. This greatly increases productivity and the life expectancy of the machine.

**POWERBOR®**

ANNULAR HOLE CUTTERS AND ACCESSORIES



## ANNULAR HOLE CUTTERS AND ACCESSORIES



### POWERBOR® STANDARD M2 HSS CUTTERS

- For cutting general engineering and structural steels
- Dramatically outperform conventional twist drills, in terms of cutting speed and tool life



### POWERBOR® PREMIUM M42 COBALT CUTTERS

- Keep their cutting edge for longer than standard HSS - producing more holes between resharpening, reducing the cost per cut and increasing productivity



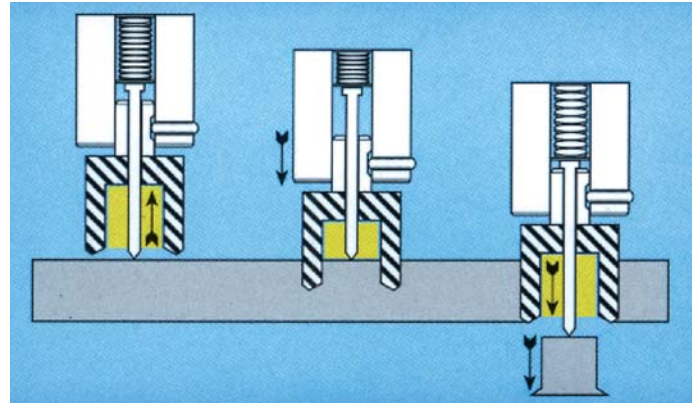
### POWERBOR® BLUE CUTTERS

- Distinctive 'blue' finish provides improved cutter properties and improved cutting performance
- Improved wear resistance, reducing friction and minimising 'pick up' of work piece material
- Greatly enhanced cutting tool life - three times longer - even without coolant
- Less stress on the drilling machine motor, leading to longer machine life

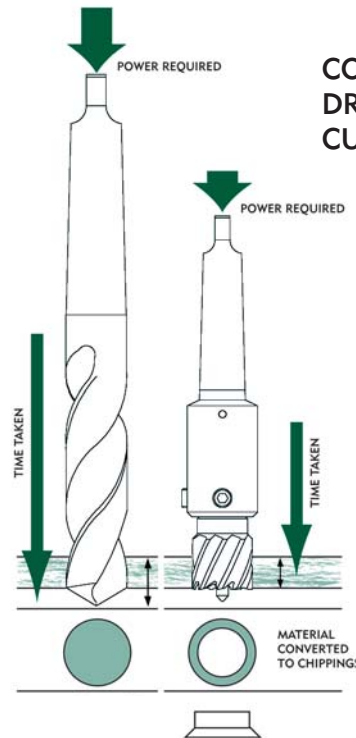


### POWERBOR® TUNGSTEN CARBIDE CUTTERS

- Suitable for drilling harder materials such as stainless steel, castings and higher grade wear resistant steels



POWERBOR® cutters produce a solid slug of steel which is ejected when the cutter breaks through and the hole is complete. This reduces the problems experienced by the swarf and chips generated by conventional drilling.



### COMPARISON OF TWIST DRILL AND BROACHING CUTTER PERFORMANCE

## POWERBOR® ACCESSORIES

REF NO	ITEM
PBA 130	1/2" x 20 Arbor
PBA 101	No. 2 MTS Arbor
PBA 102	No. 3 MTS Arbor
PBA 103	No. 4 MTS Arbor
PBA 104	No.2 Arbor (coolant)
PBA 105	No.3 Arbor (coolant)
PBA 106	No.4 Arbor (coolant)
PBA 113	Countersink 32mm
PBA 114	Countersink 65mm
	Clamping Plate
	Oil / Lubrication
	Spare Parts





## ANNULAR HOLE CUTTERS SPECIFICATIONS

### POWERBOR® CUTTER AVAILABILITY - IMPERIAL



STANDARD M2 HSS			
POWERBOR M2 CUT DEPTH 1"		POWERBOR M2 CUT DEPTH 2"	
DIA. INCH	AVAILABILITY	DIA. INCH	AVAILABILITY
7/16	•	7/16	•
1/2	•	1/2	•
9/16	•	9/16	•
5/8	•	5/8	•
11/16	•	11/16	•
3/4	•	3/4	•
13/16	•	13/16	•
7/8	•	7/8	•
15/16	•	15/16	•
1	•	1	•
1.1/16	•	1.1/16	•
1.1/8	•	1.1/8	•
1.3/16	•	1.3/16	•
1.1/4	•	1.1/4	•
1.5/16	•	1.5/16	•
1.3/8	•	1.3/8	•
1.7/16	•	1.7/16	•
1.1/2	•	1.1/2	•
1.9/16	•	1.9/16	•
1.5/8	•	1.5/8	•
1.11/16	•	1.11/16	•
1.3/4	•	1.3/4	•
1.13/16	•	1.13/16	•
1.7/8	•	1.7/8	•
1.15/16	•	1.15/16	•
2	•	2	•
2.1/16	•	2.1/16	•
2.1/8	•	2.1/8	•
2.3/16	•	2.3/16	•
2.1/4	•	2.1/4	•
2.5/16	•	2.5/16	•
2.3/8	•	2.3/8	•
2.7/16	•	2.7/16	•
2.1/2	•	2.1/2	•
2.9/16	•	2.9/16	•
2.5/8	•	2.5/8	•
2.11/16	•	2.11/16	•
2.3/4	•	2.3/4	•
2.13/16	•	2.13/16	•
2.7/8	•	2.7/8	•
2.15/16	•	2.15/16	•
3	•	3	•
3.1/16	•	3.1/16	•
3.1/8	•	3.1/8	•
3.3/16	•	3.3/16	•
3.1/4	•	3.1/4	•
3.5/16	•	3.5/16	•
3.3/8	•	3.3/8	•
3.7/16	•	3.7/16	•
3.1/2	•	3.1/2	•
4	•	4	•
Pilot 7/16 (s)	•	Pilot 7/16 (l)	•
Pilot (s)	•	Pilot (l)	•

3/4" SHANK

1.1/4" SHANK

COBALT			
POWERBOR M42 CUT DEPTH 1"		POWERBOR M42 CUT DEPTH 2"	
DIA. INCH	AVAILABILITY	DIA. INCH	AVAILABILITY
7/16	•	7/16	•
1/2	•	1/2	•
9/16	•	9/16	•
5/8	•	5/8	•
11/16	•	11/16	•
3/4	•	3/4	•
13/16	•	13/16	•
7/8	•	7/8	•
15/16	•	15/16	•
1	•	1	•
1.1/16	•	1.1/16	•
1.1/8	•	1.1/8	•
1.3/16	•	1.3/16	•
1.1/4	•	1.1/4	•
1.5/16	•	1.5/16	•
1.3/8	•	1.3/8	•
1.7/16	•	1.7/16	•
1.1/2	•	1.1/2	•
1.9/16	•	1.9/16	•
1.5/8	•	1.5/8	•
1.11/16	•	1.11/16	•
1.3/4	•	1.3/4	•
1.13/16	•	1.13/16	•
1.7/8	•	1.7/8	•
1.15/16	•	1.15/16	•
2	•	2	•
2.1/16	•	2.1/16	•
2.1/8	•	2.1/8	•
2.3/16	•	2.3/16	•
2.1/4	•	2.1/4	•
2.5/16	•	2.5/16	•
2.3/8	•	2.3/8	•
2.7/16	•	2.7/16	•
2.1/2	•	2.1/2	•
2.9/16	•	2.9/16	•
2.5/8	•	2.5/8	•
2.11/16	•	2.11/16	•
2.3/4	•	2.3/4	•
2.13/16	•	2.13/16	•
2.7/8	•	2.7/8	•
2.15/16	•	2.15/16	•
3	•	3	•
3.1/16	•	3.1/16	•
3.1/8	•	3.1/8	•
3.3/16	•	3.3/16	•
3.1/4	•	3.1/4	•
3.5/16	•	3.5/16	•
3.3/8	•	3.3/8	•
3.7/16	•	3.7/16	•
3.1/2	•	3.1/2	•
4	•	4	•
Pilot 7/16 (s)	•	Pilot 7/16 (l)	•
Pilot (s)	•	Pilot (l)	•

3/4" SHANK

1.1/4" SHANK

### RECOMMENDED CUTTING SPEEDS FOR HSS POWERBOR® CUTTERS

CUTTER DIAMETER	HIGH TENSILE STEEL	MILD STEEL
	RPM	RPM
12	239	637
14	205	546
16	179	477
18	159	424
20	143	382
22	130	347
24	119	318
26	110	294
28	102	273
30	95	255
32	90	239
34	84	225
36	80	212
38	75	201
40	72	191
42	68	182
44	65	174
46	62	166
48	60	159
50	57	153
52	55	147
54	53	141
56	51	136
58	49	132
60	48	127
62	46	123
64	45	119
66	43	116
68	42	112
70	41	109
72	40	106
74	39	103
76	38	101
78	37	98
80	36	95
82	35	93
84	34	91
86	33	89
88	33	87
90	32	85
92	31	83
94	30	81
96	30	80
98	29	78
100	29	76

CUTTER DIAMETER	HIGH TENSILE STEEL	MILD STEEL
	RPM	RPM
7/16	262	698
1/2	229	611
9/16	204	543
5/8	183	489
11/16	167	444
3/4	153	407
13/16	141	376
7/8	131	349
15/16	122	326
1	115	306
1.1/16	108	288
1.1/8	102	272
1.3/16	96	257
1.1/4	92	244
1.5/16	87	233
1.3/8	83	222
1.7/16	80	213
1.1/2	76	204
1.9/16	73	196
1.5/8	71	188
1.11/16	68	181
1.3/4	65	175
1.13/16	63	169
1.7/8	61	163
1.15/16	59	158
2	57	153
2.1/16	56	148
2.1/8	54	144
2.3/16	52	140
2.1/4	51	136
2.5/16	50	132
2.3/8	48	129
2.7/16	47	125
2.1/2	46	122
2.9/16	45	119
2.5/8	44	116
2.11/16	43	114
2.3/4	42	111
2.13/16	41	109
2.7/8	40	106
2.15/16	39	104
3	38	102
3.1/16	37	100
3.1/8	37	98
3.3/16	36	96
3.1/4	35	94
3.5/16	35	92
3.3/8	34	91
3.7/16	33	89
3.1/2	33	87
3.9/16	32	86
3.5/8	32	84
3.11/16	31	83
3.3/4	31	81
3.13/16	30	80
3.7/8	30	79
3.15/16	29	78
4	29	76

### PERIPHERAL SPEED

- MILD STEEL:  
24m/min - 80ft/min
- HIGH TENSILE STEEL:  
9m/min - 30ft/min



Sizes from 2.5/16" upwards are available to special order - ask for more details.

This innovative step drill has been designed for use with our popular range of Powerbor® Electromagnetic drilling machines. The unique design of the Powerbor® Step Drill allows a number of popular hole sizes to be drilled with just one tool. The new Powerbor® Step Drill offers a number of advantages over conventional drilling and cutting methods and can be used for many different industrial applications.



ONE STEP DRILL = UP TO FIVE DRILLS

# POWERBOR®

## STEP DRILL



*Industrial Application Examples:*

- General engineering
- Bridge and highway maintenance
- Truck and trailer manufacturing
- Construction
- Shipbuilding and railroad
- Offshore rigs and pipelines
- Elevator repair
- General metal fabrications

\*patent pending

### STEP DRILLS | FIVE STEPS



NOMINAL STEP Ø (MM)

TOOL NO	STARTER/ FOLLOW ON	1ST STEP	2ND STEP	3RD STEP	4TH STEP	5TH STEP	MAX MATERIAL THICKNESS	SHANK Ø	NO OF FLUTES
MPSD 0816	STARTER	8	10	12	14	16	12mm	3/4"	2
MPSD 1018	STARTER	10	12	14	16	18	12mm	3/4"	2
MPSD 2028	STARTER	20	22	24	26	28	12mm	3/4"	2
MPSD 3038	FOLLOW ON	30	32	34	36	38	12mm	3/4"	3
MPSD 4048	FOLLOW ON	40	42	44	46	48	12mm	3/4"	3

NOMINAL STEP Ø INCHES

TOOL NO	STARTER/ FOLLOW ON	1ST STEP	2ND STEP	3RD STEP	4TH STEP	5TH STEP	MAX MATERIAL THICKNESS	SHANK Ø	NO OF FLUTES
IPSD 3156	STARTER	5/16	3/8	7/16	1/2	9/16	12mm	3/4"	2
IPSD 3863	STARTER	3/8	7/16	1/2	9/16	5/8	12mm	3/4"	2
IPSD 6994	STARTER	11/16	3/4	13/16	7/8	15/16	12mm	3/4"	2
IPSD 1013	FOLLOW ON	1	1.1/16	1.1/8	1.3/16	1.1/4	12mm	3/4"	3
IPSD 1316	FOLLOW ON	1.5/16	1.3/8	1.7/16	1.1/2	1.9/16	12mm	3/4"	3
IPSD 1619	FOLLOW ON	1.5/8	1.11/16	1.3/4	1.13/16	1.7/8	12mm	3/4"	3
IPSD 1922	FOLLOW ON	1.15/16	2	2.1/16	2.1/8	2.3/16	12mm	3/4"	3

### STEP DRILLS | THREE STEPS



NOMINAL STEP Ø (MM)

TOOL NO	STARTER/ FOLLOW ON	1ST STEP	2ND STEP	3RD STEP	4TH STEP	5TH STEP	MAX MATERIAL THICKNESS	SHANK Ø	NO OF FLUTES
MPSD 1014	STARTER	10	12	14	-	-	25mm	3/4"	2
MPSD 1620	STARTER	16	18	20	-	-	25mm	3/4"	2
MPSD 2226	FOLLOW ON	22	24	26	-	-	25mm	3/4"	3
MPSD 2832	FOLLOW ON	28	30	32	-	-	25mm	3/4"	3
MPSD 3438	FOLLOW ON	34	36	38	-	-	25mm	3/4"	3
MPSD 4044	FOLLOW ON	40	42	44	-	-	25mm	3/4"	3
MPSD 4650	FOLLOW ON	46	48	50	-	-	25mm	3/4"	3

NOMINAL STEP Ø INCHES

TOOL NO	STARTER/ FOLLOW ON	1ST STEP	2ND STEP	3RD STEP	4TH STEP	5TH STEP	MAX MATERIAL THICKNESS	SHANK Ø	NO OF FLUTES
IPSD 4456	STARTER	7/16	1/2	9/16	-	-	25mm	3/4"	2
IPSD 6375	STARTER	5/8	11/16	3/4	-	-	25mm	3/4"	2
IPSD 8194	FOLLOW ON	13/16	7/8	15/16	-	-	25mm	3/4"	3
IPSD 1011	FOLLOW ON	1	1.1/16	1.1/8	-	-	25mm	3/4"	3
IPSD 1213	FOLLOW ON	1.3/16	1.1/4	1.5/16	-	-	25mm	3/4"	3
IPSD 1415	FOLLOW ON	1.3/8	1.7/16	1.1/2	-	-	25mm	3/4"	3
IPSD 1617	FOLLOW ON	1.9/16	1.5/8	1.11/16	-	-	25mm	3/4"	3
IPSD 1819	FOLLOW ON	1.3/4	1.13/16	1.7/8	-	-	25mm	3/4"	3
IPSD 1921	FOLLOW ON	1.15/16	2	2.1/16	-	-	25mm	3/4"	3



**PLEASE NOTE:**

The recommended drilling speed for each step of the Powerbor step drill is the same as for the equivalent size HSS cutter shown on page 13.

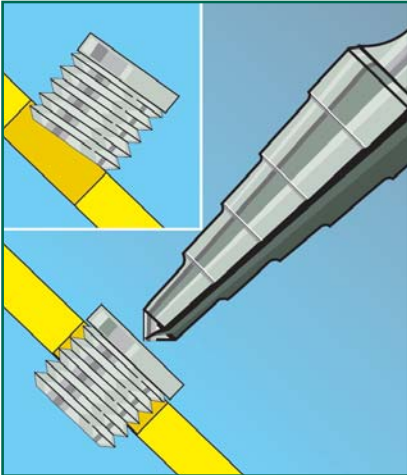


# POWERBOR®

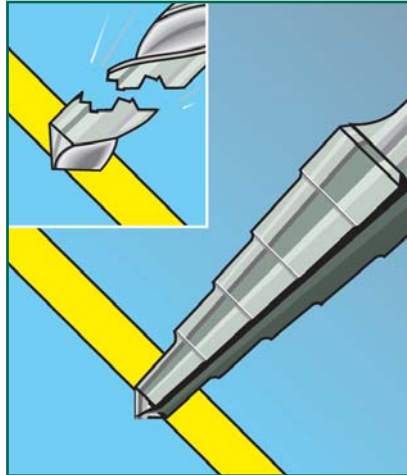
## STEP DRILL



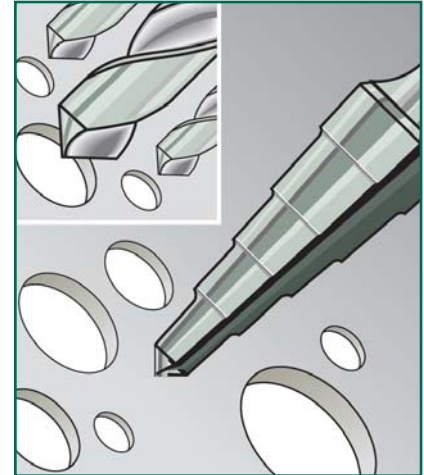
## ADVANTAGES OVER CONVENTIONAL DRILLS:



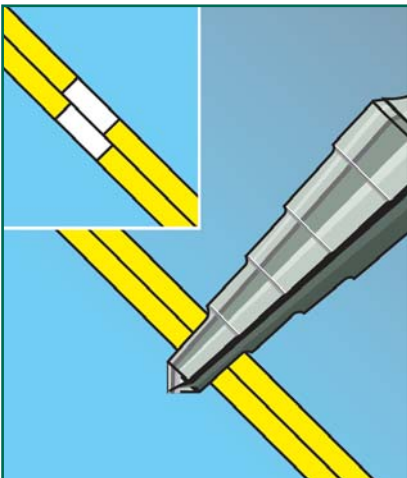
Easy to enlarge holes



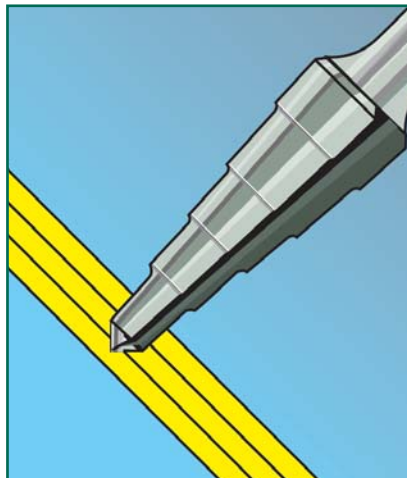
Increased rigidity



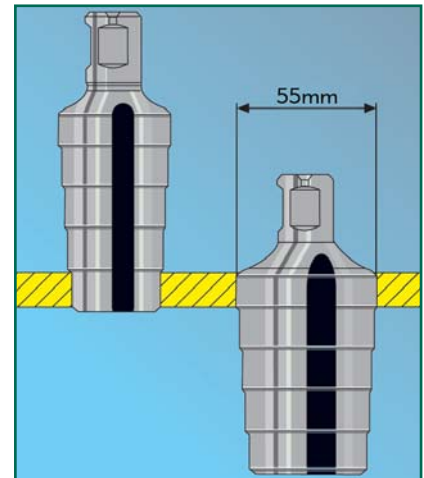
3 or 5 drill sizes on 1 tool



Rectify out of line holes



Drill through several stacked plates



Increased maximum diameter capability of Powerbor® Drilling Machine



This is the COMPLETE drill/tap solution, ranging from M6 to M24. The new Powerbor® Drill/Tap delivers great time and efficiency savings when compared to conventional tapping applications.



DRILLING AND TAPPING WITH ONE TOOL

**POWERBOR®**

2-IN-1 DRILL/TAP

*Industrial Application Examples:*

- General engineering
- Bridge and highway maintenance
- Truck and trailer manufacturing
- Construction
- Shipbuilding and railroad
- Offshore rigs and pipelines
- Elevator repair
- General metal fabrications

- Reduces set up time
- No more misalignment between core and tap
- No need for tap driving equipment
- Correct core hole size and thread every time
- Suitable for plate with a thickness equal to the thread size
- Includes a safety recess at the end of the thread to avoid tool damage whilst threading
- Simple to use, producing top quality threads

## 2-IN-1 DRILL/TAP

### 2-IN-1 DRILL TAP

Provides top quality threads every time, the 2-IN-1 DRILL/TAP is one tool that drills and taps. A great time saver, available in sizes M12, M16, M20 and M24. Also available as a handy set.



Available packaged in the following sizes:

19AM12 M12 | 19AM16 M16  
19AM20 M20 | 19AM24 M24



### POWERBOR® 2-IN-1 DRILL/TAP SET

Contains M12, M16, M20 and M24  
Powerbor® 2-in-1 Drill/Taps

Product code: 19S1224

### POWERBOR® COMBI DRILL/TAP KIT

Specially designed taps used together with either Blue Powerbor® 1/4" HEX shank drills or Blue Powerbor® cutters for drilling the core diameters.

The POWERBOR® COMBI DRILL/TAP KIT eliminates the need for tapping attachments.

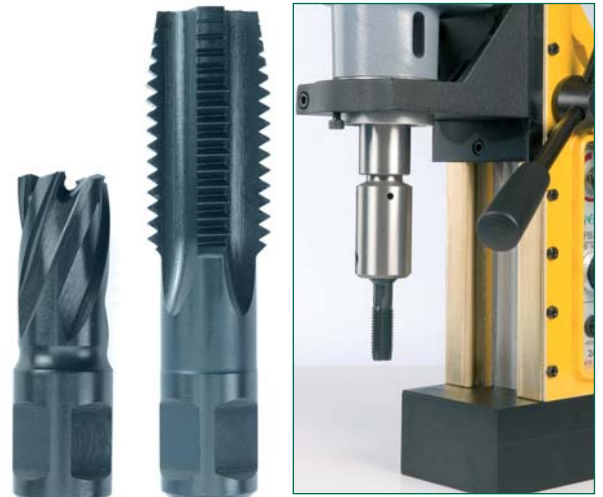


Available packaged in the following sizes:

19KDT6 M6 | 19KDT8 M8 | 19KDT10 M10

The M6 - M10 combi range of drills and taps are used with a unique adaptor having a standard 3/4" dia 2 flat shank with a 1/4" HEX bit drive. Fitted in seconds it means threads can be drilled and tapped easily when required.

*All component parts can be purchased individually.*



Available packaged in the following sizes:

19KDT12 M12 | 19KDT16 M16  
19KDT20 M20 | 19KDT24 M24

With the M12-M24 range Blue Powerbor® cutters are used for core drilling.

*All component parts can be purchased individually.*



# CONECUT®

## HIGH SPEED STEEL SHEET AND TUBE DRILLS

The most versatile hole-cutting tool for rapid drilling and enlarging holes in thin materials up to 2mm thick.

Designed for industrial applications, the diameter of the hole increases as the CONECUT® is advanced into the material, providing infinitely variable sizes

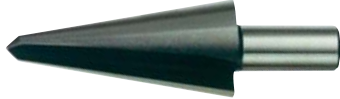
For use in sheet steel, non-ferrous metals, plastics, Formica and plywood



## HIGH SPEED STEEL SHEET & TUBE DRILLS

### METRIC / IMPERIAL

The most comprehensive range of Drills for all applications. Below is listed our current standard stock range - please enquire for other sizes. When drilling metals always use cutting compound - available in 30cc, 60cc and 1/2 kilo sizes.



TOOL NO	METRIC RANGE	IMPERIAL RANGE (APPROX)	SHANK TO FIT CHUCK SIZE	DRILLING SPEEDS RPM	
				FERROUS	NON-FERROUS
CC 0	3 - 14mm	(1/8" - 9/16")	1/4" (6.5mm)	400-800	900-2000
CC 1	6 - 20mm	(1/4" - 13/16")	3/8" (10mm)	200-600	500-1500
CC 1A*	9.5 - 22.5mm	3/8" - 7/8"	3/8" (10mm)	200-600	500-1500
CC 2*	16 - 30.5mm	(5/8" - 1.31/16")	3/8" (10mm)	150-400	400-1000
CC 3	25 - 40mm	(1" - 1.5/8")	3/8" (10mm)	100-300	300-500
CC 4+	37 - 52mm	(1.1/2" - 2.1/16")	1/2" (13mm)	100-200	200-400
CC 25**	16 - 25mm	(5/8" - 1")	3/8" (10mm)	150-400	400-1000
CC 820	8 - 20mm	(5/16" - 13/16")	3/8" (10mm)	200-600	500-1500
CC 430	4 - 30.5mm	(5/32" - 1.3/16")	3/8" (10mm)	150-400	400-1000
CC 830	8 - 30mm longdrill	(5/16" - 1.3/16")	3/8" (10mm)	150-400	400-1000
CC 315	3 - 15mm	(1/8" - 19/32")	1/4" (6.5mm)	400-800	900-2000

\* Finishing diameters of sizes 1A and 2 are designed to produce the international standard hole sizes for fitting of pushbuttons and indicator lights

\*\* Covers 20mm + 25mm conduit lights

+ Pilot hole required

### TiN - TITANIUM NITRIDE COATED

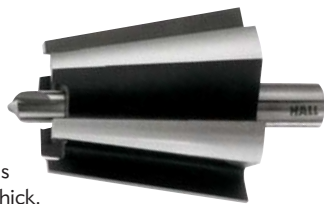


Prolongs tool life and reduces torque. Resists wear and abrasion while reducing pick-up along the cutting edge. Lower friction results in higher drilling speeds.

TOOL NO	METRIC RANGE	IMPERIAL RANGE (APPROX)	SHANK TO FIT CHUCK SIZE
CC 0 TiN	3 - 14mm	(1/8" - 9/16")	1/4" (6.5mm)
CC 1 TiN	6 - 20mm	(1/4" - 13/16")	3/8" (10mm)
CC 2 TiN	16 - 30.5mm	(5/8" - 1.3/16")	3/8" (10mm)

### TREPANNING ACTION

Variable sizes of larger diameters can be drilled without the need for a pre-drilled hole, with a smooth multi-flute action ensuring that clean round holes are produced. For drilling or enlarging holes in ferrous and non-ferrous material up to 2mm thick.



TOOL NO	METRIC RANGE	IMPERIAL RANGE (APPROX)	SHANK TO FIT CHUCK SIZE	DRILLING SPEEDS RPM
				FERROUS NON-FERROUS
TCC 3451	34 - 51mm	(1.3/8" - 2")	1/2" (13mm)	50-200 200-400
TCC 4360	43 - 60mm	(1.3/4" - 2.3/8")	1/2" (13mm)	50-150 150-400

Spare Centre Drill - can be purchased separately

### ELECTRICIANS CONECUT

The perfect electricians cutting tool for rapid drilling and enlarging holes in thin material up to 2mm.

The diameter of the hole increases as the Conecut® advances into the material.

Clearly marked at 20mm and 25mm, introducing a new collar feature that defines the 25mm dia and stops the tool following through the hole.



TOOL NO	DESCRIPTION
CCE 2025	Electricians Conecut

### SINGLE HOLE SIZE



For drilling holes of one diameter. Below are listed current standard stock sizes - please enquire for other diameters.

TOOL NO	HOLE SIZE	SHANK TO FIT CHUCK SIZE	DRILLING SPEEDS RPM	
			FERROUS	NON-FERROUS
CCSH 375C	3/8"	1/4" (6.5mm)	500-1200	1200-3000
CCSH 500C	1/2"	1/4" (6.5mm)	350-1000	1000-2000
CCSH 750C	3/4"	3/8" (10mm)	200-600	600-1300
CCSH 875C	*7/8"	3/8" (10mm)	200-600	600-1300
CCSH 1000C	1"	3/8" (10mm)	150-400	400-1000
CCSH 1125C	*1.1/8"	3/8" (10mm)	150-500	500-1000
CCSH 1375C	*1.3/8"	3/8" (10mm)	120-400	400-800

\* 1/2" - 3/4" - 1" USA knock-out sizes

### RUSTPROOFING

Used to produce the holes required for the rustproofing treatment of motor vehicles. Sizes coincide with plastic plugs inserted after injection of protective fluid.



TOOL NO	HOLE SIZE	SHANK TO FIT CHUCK SIZE	DRILLING SPEEDS RPM
			FERROUS
RP 1	8mm	1/4" (6.5mm)	500-1200
RP 2	10mm	1/4" (6.5mm)	500-1200

### SETS | PLASTIC WALLET

Plastic wallet containing Conecut® tools and 30cc pot of special cutting compound.



SET REF	CONTAINS TOOL NUMBERS	RANGE
CP 12	CC1 & 2	6 - 30.5mm
CP 210	CC0, 1 & 2	3 - 30.5mm
CP 2025*	CC1 & 25	6 - 25mm
CP 2230**	CC1A & 2	9.5 - 30.5mm

\* Electricians

\*\* Electronics

### SETS | METAL CASSETTE

Metal cassette containing Conecut® tools and 30cc pot of special cutting compound.



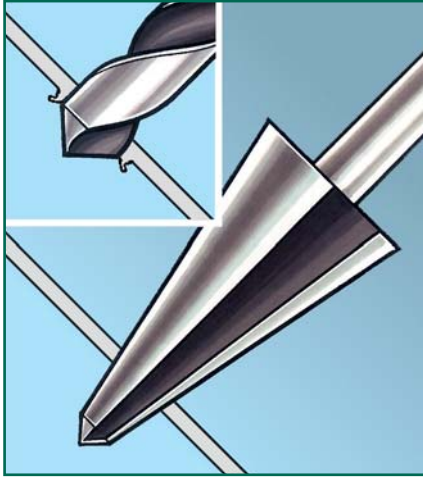
SET REF	CONTAINS TOOL NUMBERS	RANGE
CM 210	CC0, 1 & 2	3 - 30.5mm
CM 210TiN	CC0 TiN, CC1 TiN & CC 2 TiN	3 - 30.5mm



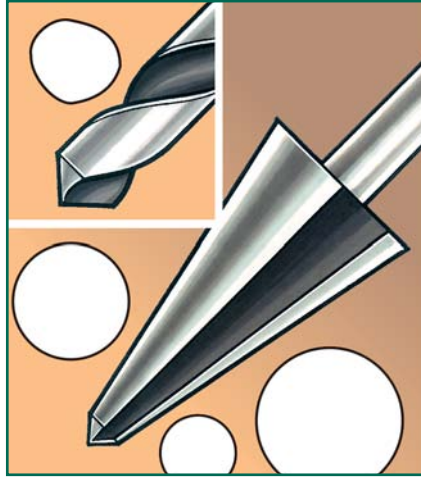
For metric/imperial unless otherwise specified, Conecut® with a steam tempered blue surface treatment, which is advantageous in many applications will be supplied. However, should it be required, all metric/imperial tools can be supplied with bright ground finish on body and point.



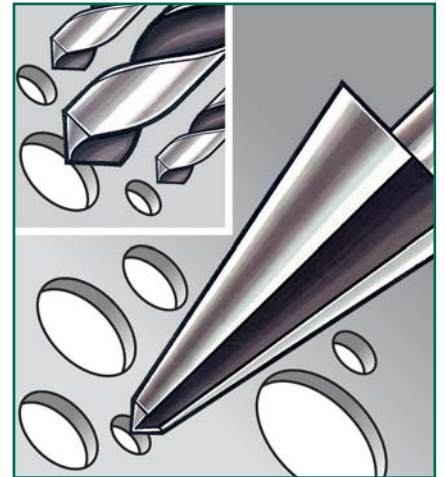
### ADVANTAGES OVER CONVENTIONAL DRILLS:



**BURR FREE HOLES**



**PERFECTLY ROUND HOLES**



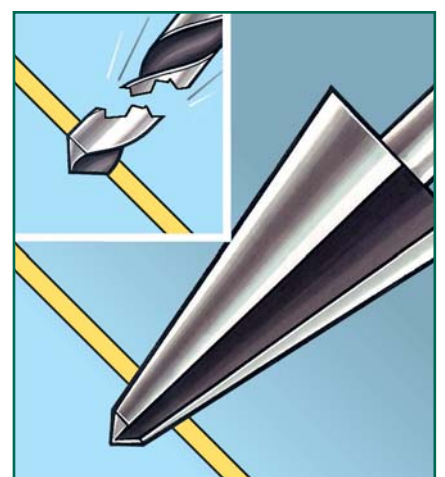
**ONE TOOL - A RANGE OF SIZES**



**NON-SLIP POINTS**



**DRILLS PLASTICS EASILY**



**STRONGER - MORE RIGID**

### CONECUT® FEATURES

Non-slip point; needs no centre punch

No flexing of drill whilst drilling

Multi-flute design

Drills from 3mm - 60mm dia.

Enlarges existing holes

Shank will not slip in chuck

Produces round, virtually burr-free holes in material up to 2mm thick

Drills holes of any diameter within range

### CUTTING COMPOUND

Helps maintain the sharpness of the cutting edge. Lubricity reduces torque and prevents undesirable material build up on the tool. Suitable for other metal cutting operations - thread cutting, normal drilling. ALWAYS USE WHEN DRILLING METALS.



REF	CONTAINER SIZE	PACK QUANTITY
09A 30	30cc	1
09A 60	60cc	1
09A 1/2K	1/2 kilo	1
09A 6020	60cc	Box of 20
09A 6040	60cc	Box of 40

### CONECUT® APPLICATIONS:

- ELECTRICAL
- HEATING
- VENTILATION
- PLUMBING
- SHOPFITTING INSTALLATIONS ETC.
- AUTO BODY REPAIR
- CONTROL PANELS
- SHEET METALWORK ETC.
- MAINTENANCE

# MULTICUT<sup>®</sup>

## HIGH SPEED STEEL STEP DRILLS

Designed for industrial applications, each step produces accurate, parallel holes with a small clearance on the nominal diameter.

The maximum material thickness is determined by the length of step  
(If the work piece can be reversed multiply thickness by 2).

For use in industrial power tools or pedestal drilling machines.





## HIGH SPEED STEEL STEP DRILLS

### METRIC

The most comprehensive range of Step Drills for all applications. Below is listed our current standard stock range - please enquire for other sizes.



When drilling metals always use cutting compound - available in 30cc, 60cc and 1/2 kilo sizes.

TOOL NO	DRILL SIZE IN MILLIMETRES	MAX MATERIAL THICKNESS	SHANK TO FIT CHUCK SIZE	DRILLING SPEEDS RPM	
				FERROUS	NON-FERROUS
MC 1M	4 5 6 7 8 9 10 11 12	5mm	6.5mm	400-800	900-2000
MC 2M	10 11 12 13 14 15 16 17 18 19 20	4mm	10mm	200-600	500-1500
MC 3M	20 21 22 23 24 25 26 27 28 29 30	4mm	13mm	150-400	400-1000
MC 3MS	20 21 22 23 24 25 26 27 28 29 30	4mm	10mm	150-400	400-1000
MC 4M	4 6 8 10 12	10mm	6.5mm	400-800	900-2000
MC 5M	6 8 10 12 14 16 18 20 22 24	5mm	10mm	150-400	400-1000
MC 6M	6 8 10 12 14 16 18	5mm	10mm	200-600	500-1500
MC 7M	4 6 8 10 12 14 16 18 20	4mm	10mm	200-600	500-1500
MC 8M	*14 16 18 20 22 24	5mm	10mm	150-400	400-1000
MC 9M	*20 22 24 26 28 30 32 34	5mm	10mm	150-300	300-800
MC 10M	4 6 8 10 12 14 16 18 20 22 24 26 28 30	4mm	13mm	150-400	400-1000
MC 10MS	4 6 8 10 12 14 16 18 20 22 24 26 28 30	4mm	10mm	150-400	400-1000
MC 11M	4 6 8 10 12 14 16 18 20 22	5mm	10mm	150-400	400-1000
MC 535	5 7.5 10 13 16 19 21 23 26 29 31 33 35	3.5mm	13mm	100-300	300-700
MC 535S	5 7.5 10 13 16 19 21 23 26 29 31 33 35	3.5mm	10mm	100-300	300-700

+ Pilot hole required

### IMPERIAL

TOOL NO	DRILL SIZE IN INCHES	MAX MATERIAL THICKNESS	SHANK TO FIT CHUCK SIZE	DRILLING SPEEDS RPM	
				FERROUS	NON-FERROUS
MC 1E	1/8 5/32 3/16 7/32 1/4 9/32 5/16 11/32 3/8 13/32 7/16 15/32 1/2	1/8"	1/4"	400-800	900-2000
MC 2E	1/4 5/16 3/8 7/16 1/2 9/16 5/8 11/16 3/4	1/8"	3/8"	200-600	500-1500
MC 3E	7/16 1/2 9/16 5/8 11/16 3/4 13/16 7/8 15/16 1 1.1/16 1.1/8	1/8"	3/8"	150-400	400-1000
MC 4E	3/4 13/16 7/8 15/16 1 1.1/16 1.1/8 1.3/16 1.1/4 1.5/16 1.3/8	1/8"	1/2"	100-300	300-500
MC 5E	3/16 1/4 5/16 3/8 7/16 1/2 9/16 5/8 11/16 3/4 13/16 7/8	1/8"	3/8"	200-400	400-1200
MC 6E	3/16 1/4 5/16 3/8 7/16 1/2	3/8"	1/4"	300-800	800-2000
MC 7E	3/16 1/4 5/16 3/8 7/16 1/2	1/8"	1/4"	300-800	800-2000
MC 8E	*9/16 5/8 11/16 3/4 13/16 7/8 15/16 1	1/8"	1/2"	150-400	400-1000
MC 9E	*13/16 7/8 15/16 1 1.1/16 1.1/8 1.3/16 1.1/4 1.5/16 1.3/8	1/8"	1/2"	150-300	300-800

+ Pilot hole required

### TiN - TITANIUM NITRIDE COATED



Prolongs tool life and reduces torque. Resists wear and abrasion while reducing pick-up along the cutting edge. Lower friction results in higher drilling speeds.

TOOL NO	DRILL SIZE IN MILLIMETRES	MAX MATERIAL THICKNESS	SHANK TO FIT CHUCK SIZE
MC 1MTiN	4 5 6 7 8 9 10 11 12	5mm	6.5mm
MC 2MTiN	10 11 12 13 14 15 16 17 18 19 20	4mm	10mm
MC 3MTiN	20 21 22 23 24 25 26 27 28 29 30	4mm	13mm

### TREPANNING ACTION

Variable sizes of larger diameters can be drilled without the need for a pre-drilled hole, with a smooth multi-flute action ensuring that clean round holes are produced. For drilling holes up to 4mm thick in most materials and incorporating popular diameters for PG, Conduit, BS pipe and automotive fittings.



TOOL NO	DRILL SIZE IN MILLIMETRES	MAX MATERIAL THICKNESS	SHANK TO FIT CHUCK SIZE	DRILLING SPEEDS RPM
				FERROUS NON-FERROUS
TMC 3040	30 31 32 33 34 35 36 37 38 39 40	4mm	13mm	100-300 300-500
TMC 4050	40 41 42 43 44 45 46 47 48 49 50	4mm	13mm	50-200 200-400
TMC 5060	50 51 52 53 54 55 56 57 58 59 60	4mm	13mm	50-150 150-400

Spare Centre Drill - can be purchased separately

### SPECIAL APPLICATION

All key sizes are marked on the tool.



TOOL NO	APPROX STARTING DIAMETER	APPLICATION	MAX MATERIAL THICKNESS	SHANK TO FIT CHUCK SIZE	DRILLING SPEEDS RPM	
					FERROUS	NON-FERROUS
MC 1232	8.5mm	12, 16, 20, 25 & 32mm holes for conduit entry	3.5mm	10mm	130-300	300-800
MC 1240	8.5mm	12, 16, 20, 25, 32 & 40mm holes for conduit entry	3.5mm	13mm	100-300	300-500
MCT 1232	6.5mm	Drills core holes for ISO conduit threads M12, M16, M20, M25 & M32 (1.5mm Pitch)	3.5mm	10mm	130-300	300-800
MCT 1240	6.5mm	Drills core holes for ISO conduit threads M12, M16, M20, M25, M32 & M40 (1.5mm Pitch)	3.5mm	13mm	100-300	300-500
MCCT 1225	6.5mm	Core & entry holes for ISO conduit threads 12mm x 1.5, 16mm x 1.5, 20mm x 1.5mm, 25mm x 1.5mm	6mm (tapping) 3mm (clearance)	10mm	150-400	400-1000
MCCT 1232	6.5mm	Core & entry holes for ISO conduit threads 12mm x 1.5, 16mm x 1.5, 20mm x 1.5mm, 25mm x 1.5mm, 32mm x 1.5mm	6mm (tapping) 3mm (clearance)	10mm	130-300	300-800
MC 1625	6mm	16, 20 & 25mm holes for conduit entry	3.5mm	10mm	150-400	400-1000
MC 1632	11mm	16, 20, 25 & 32mm holes for conduit entry	3.5mm	13mm	130-300	300-800
MC PG21	6.5mm	Drills clearance holes for PG fittings PG7, 9, 11, 13.5, 16, 21. Also 30.5mm pushbutton holes	3mm	13mm	130-300	300-800
MC PG29	6.5mm	Drills clearance holes for PG fittings PG7, 9, 11, 13.5, 16, 21, 29. Also 33mm, 35mm dia and 30.5mm pushbutton holes	3mm	13mm	100-300	300-500
MC 521	5mm	Drills clearance holes to take 3/8", 7/16" and 3/4" screw sizes for 'Greenlee' standard punches, 'slug buster' punches and 'slug splitter' punches	4mm	10mm	200-500	500-1300
MC 3/4KO	5.5mm	Drills clearance holes for 7/8" (1/2 KO), 1.1/8" (3/4" KO)	3.5mm	10mm	150-400	400-1000
MC 1KO	5.5mm	Drills clearance holes for 7/8" (1/2 KO), 1.1/8" (3/4" KO), 1.7/32" (Oil Tight), 1.1/4", 1.3/8" (1" KO)	3.5mm	10mm	150-300	300-800

### SETS | METAL CASSETTE

Metal cassette containing Multicut® tools and 30cc pot of special cutting compound.



SET REF	CONTAINS TOOL NUMBERS	RANGE
MCS 1	MC 1M, 2M & 3M	4 - 30mm
MCS 1TiN	MC 1MTiN, 2MTiN & 3MTiN	4 - 30mm
MCS 2	MC 1E, 2E & 3E	1/8" - 1.1/8"



### FASTENER STEP DRILLS

For threaded insert and riveted systems.



TOOL NO	RANGE		COMPATIBLE WITH
	Drills Ø mm		
NRT 13	Drills Ø mm for thread size	5.1 6.1 7.1 9.1 11.1 13.1 M3 M4 M5 M6 M8 M10	Tucker, Emhart and similar systems
	Drills Ø mm for thread size	4.8 6.4 7.2 9.6 10.65 M3 M4 M5 M6 M8	
NRA 10	Drills Ø mm	3.3mm 4.1mm 4.9mm	Avdel and similar systems
PR 1	Drills Ø mm		Tucker, 'Pop' Rivet and other blind riveting systems

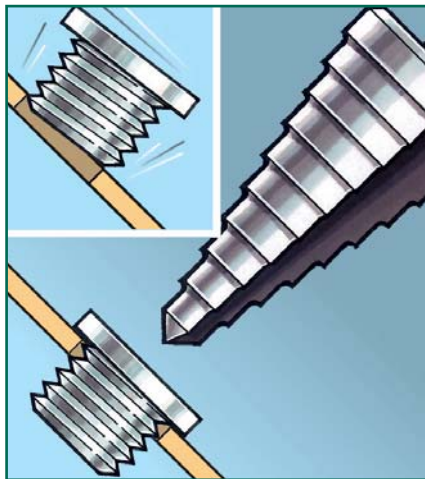
### CUTTING COMPOUND

SEE CONECUT® SECTION (PAGE 21) FOR FULL PRODUCT DETAILS





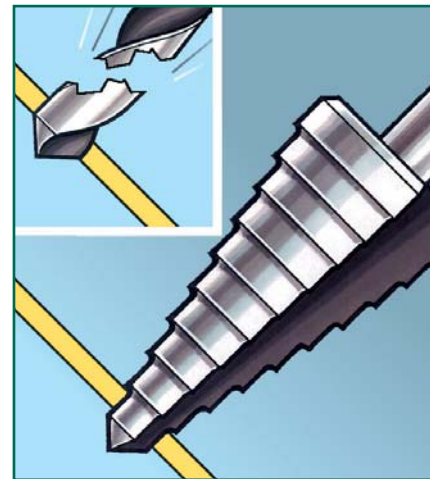
### ADVANTAGES OVER CONVENTIONAL DRILLS:



**EASY TO ENLARGE HOLES**



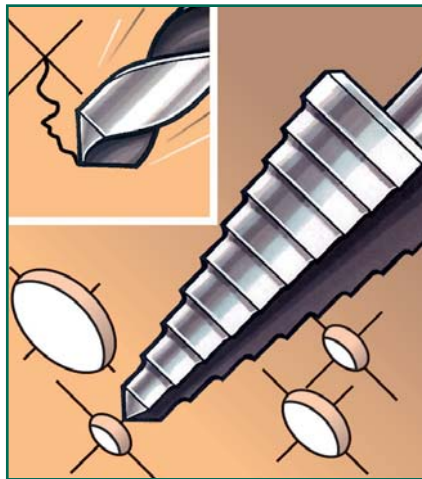
**ONE TOOL - A RANGE OF SIZES**



**STRONGER - MORE RIGID**



**BURR FREE HOLES**



**NON-SLIP POINTS**



**DRILLS PLASTICS EASILY**

#### APPLICATIONS:

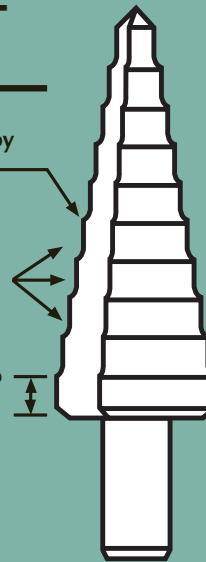
- ELECTRICAL
- HEATING
- VENTILATION
- PLUMBING
- SHOPFITTING INSTALLATIONS ETC.
- AUTO BODY REPAIR
- CONTROL PANELS
- SHEET METALWORK ETC.
- MAINTENANCE

#### MULTICUT FEATURES

Holes deburred by same operation

Up to 14 conventional drill sizes on one tool

Drills material up to 10mm thick



Non-slip point; needs no centre punch


No flexing of drill whilst drilling

Multi-flute design

Drills from 4mm - 60mm dia.

Enlarges existing holes

Shank will not slip in chuck



The innovative HEXIBIT® concept offers the most comprehensive range of step drills, taper drills, countersinks, hole type deburring cutters, drill reamers, taps and core drills. No power tool is complete without the efficient and versatile advantages of the HEXIBIT® kit.

The system allows quick tool change in drill chucks, hexagon adaptors and handle sockets, saving time and increasing efficiency.

The 1/4" hexagon shank on all products results in a non-slip positive drive.

HEXIBIT® products are manufactured from High Speed Steel and are suitable for use in mains and cordless power drills or screwdrivers.

## HEXIBIT®

### High speed steel 1/4" A/F Hexagon Shank power tool bits

- **Quick tool change in drill chuck, hexagon adapter or handle socket**
- **1/4" hexagon shank on all HEXIBIT® products provides non-slip, positive drive**
- **Suitable for use in mains and cordless power drills, screwdrivers or pedestal drills**
- **Manufactured from High Speed Steel**



## HIGH SPEED STEEL 1/4" A/F HEXAGON SHANK POWER TOOL BITS

A unique range of power tool accessories with 1/4" Hexagon Shank for quick change in three jaw chuck or hexagon adaptor.

### HSS METAL COUNTERSINKS 3 FLUTE 90°



For countersinking holes in metal.

TOOL NO	HEAD DIA	SET SCREW SIZE
XCM 06	6.3mm	M3
XCM 08	8.3mm	M4
XCM 10	10.4mm	M5
XCM 12	12.4mm	M6
XCM 16	16.5mm	M8
XCM 20	20.5mm	M10
XCM 25	25mm	M12

### HSS WOOD COUNTERSINKS 5 FLUTE 90°



For countersinking holes in wood and soft metal to accept wood screw heads.

TOOL NO	HEAD DIA	FOR WOOD SCREWS
XCW 10	10mm	Up to and inc. No. 10
XCW 15	15mm	Up to and inc. No. 16
XCW 20	20mm	Up to and inc. No. 24

### HSS STEP DRILLS



For drilling holes in ferrous and non-ferrous materials up to 5mm thick.

TOOL NO	SIZE
XS 412	4, 6, 8, 10, 12mm
XS 513	5, 7, 9, 11, 13mm
XS 820	8, 10, 12, 14, 16, 18, 20mm
XS 921	9, 11, 13, 15, 17, 19, 21mm
XS 308	3/16, 1/4, 5/16, 3/8, 7/16, 1/2"
XS 1412	4-12mm in 1mm increments
XS 11020	10-20mm in 1mm increments

### HSS SHEET & TUBE DRILLS



For drilling holes in ferrous and non-ferrous materials up to 2mm thick.

TOOL NO	SIZE
XT 314	3 - 14mm
XT 620	6 - 20mm

### HSS SINGLE HOLE SIZE SHEET & TUBE DRILLS



TOOL NO	SIZE	
XT 08	8mm	NEW
XT 10	10mm	NEW
XT 12	12mm	NEW
XT 14	14mm	NEW
XT 16	16mm	NEW

### HSS RETHREADER



TOOL NO	SIZE	
XLRR	3.5mm	NEW

### REAMERS MANUFACTURED FROM QUALITY TOOL STEEL



TOOL NO	RANGE OF DIAMETER	
XR 312	3mm - 12mm	NEW
XR 1025	10mm - 25mm	NEW
XR 1034	10mm - 34mm	NEW

### SOFT GRIP QUICK RELEASE HANDLE



TOOL NO	SPECIAL APPLICATION	
XH2	Useable with all Hexibits®	NEW

### HSS DEBURRING CUTTERS



Ideal for deburring and chamfering holes in a wide range of materials, particularly aluminium and other soft alloys. Smooth cutting, chatter-free action.

TOOL NO	DIAMETER OF CUT MIN & MAX
XD 208	2mm - 8mm
XD 513	5mm - 13mm
XD 720	7mm - 20mm

### HSS DRILL REAMERS



For drilling, reaming and enlarging holes in ferrous and non-ferrous materials up to 2mm thick.

TOOL NO	RANGE OF DIAMETER
XDR 1	3mm - 7mm
XDR 2	5mm - 12mm

### MAGNETIC HANDLE



Suitable for use with all Hexibits, a quality, durable, plastic handle with a 1/4" hexagon socket.

TOOL NO	SPECIAL APPLICATION
XH 1	For use for all Hexibits®

### MAGNETIC ADAPTOR



TOOL NO	SIZE
XA 1	Socket Adaptor suitable for 1/4" hexagon

### HSS TAPS



For tapping holes in ferrous and non-ferrous materials. Excellent for fast, easy tapping with cordless power tools.

TOOL NO	THREAD SIZE
XTAP M3	M3 x 0.5
XTAP M3.5	M3.5 x 0.6
XTAP M4	M4 x 0.7
XTAP M5	M5 x 0.8
XTAP M6	M6 x 1.0
XTAP M8	M8 x 1.25
XTAP M10	M10 x 1.5



## HIGH SPEED STEEL 1/4" A/F HEXAGON SHANK POWER TOOL BITS

### HSS CORE DRILLS (FOR TAPS)



TOOL NO	SPECIAL APPLICATION
XCD 358	Core drill for M3, M5 & M8 tap
XCD 3558	Core drill for M3.5, M5 & M8 tap
XCD 4610	Core drill for M4, M6 & M10 tap

### DRILLS



TOOL NO	SIZE
XDRILL1.0	1.0mm
XDRILL1.5	1.5mm
XDRILL2.0	2.0mm
XDRILL2.5 M3	2.5mm
XDRILL3.0	3.0mm
XDRILL3.3 M4	3.3mm
XDRILL3.5	3.5mm
XDRILL4.0	4.0mm
XDRILL4.2 M5	4.2mm
XDRILL4.5	4.5mm
XDRILL5.0 M6	5.0mm
XDRILL5.5	5.5mm
XDRILL6.0	6.0mm
XDRILL6.5	6.5mm
XDRILL6.8 M8	6.8mm
XDRILL7.0	7.0mm
XDRILL7.5	7.5mm
XDRILL8.0	8.0mm
XDRILL8.5 M10	8.5mm
XDRILL9.0	9.0mm
XDRILL9.5	9.5mm
XDRILL10	10mm
XDRILL10.2 M12	10.2mm

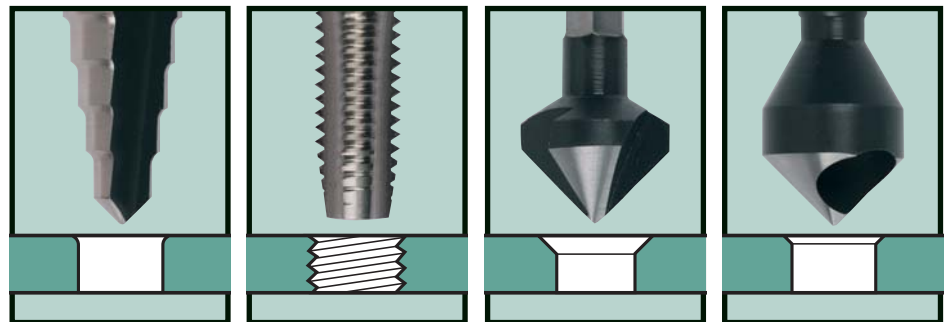


### KITS

KIT REF	CONTAINS TOOL NUMBERS
XK 1	XCM 06/08/10/12/16/20
XK 2	XCM 12/16/20, XD513, XCW 10/15
XK 3	XS513/820, XT314, XD513, XCM16, XCW15
XK 4	XS513/820, XT314, XD513, XCM12/16
XK 5	XS412/513/820, XT314, XCM16, XCW15
XK 6	XS412/513/820, XT314, XCM16, XCM12
XK 7	XTAPM3, M4, M5, M6, M8, M10
XK 8	XTAPM3.5, M4, M5, M6, M8, M10
XK 9	XTAPM3, M4, M5, M6, M8, 10, XCD358/4610
XK 10	XTAPM3.5, M4, M5, M6, M8, 10, XCD358/4610

### QUICK CHANGE

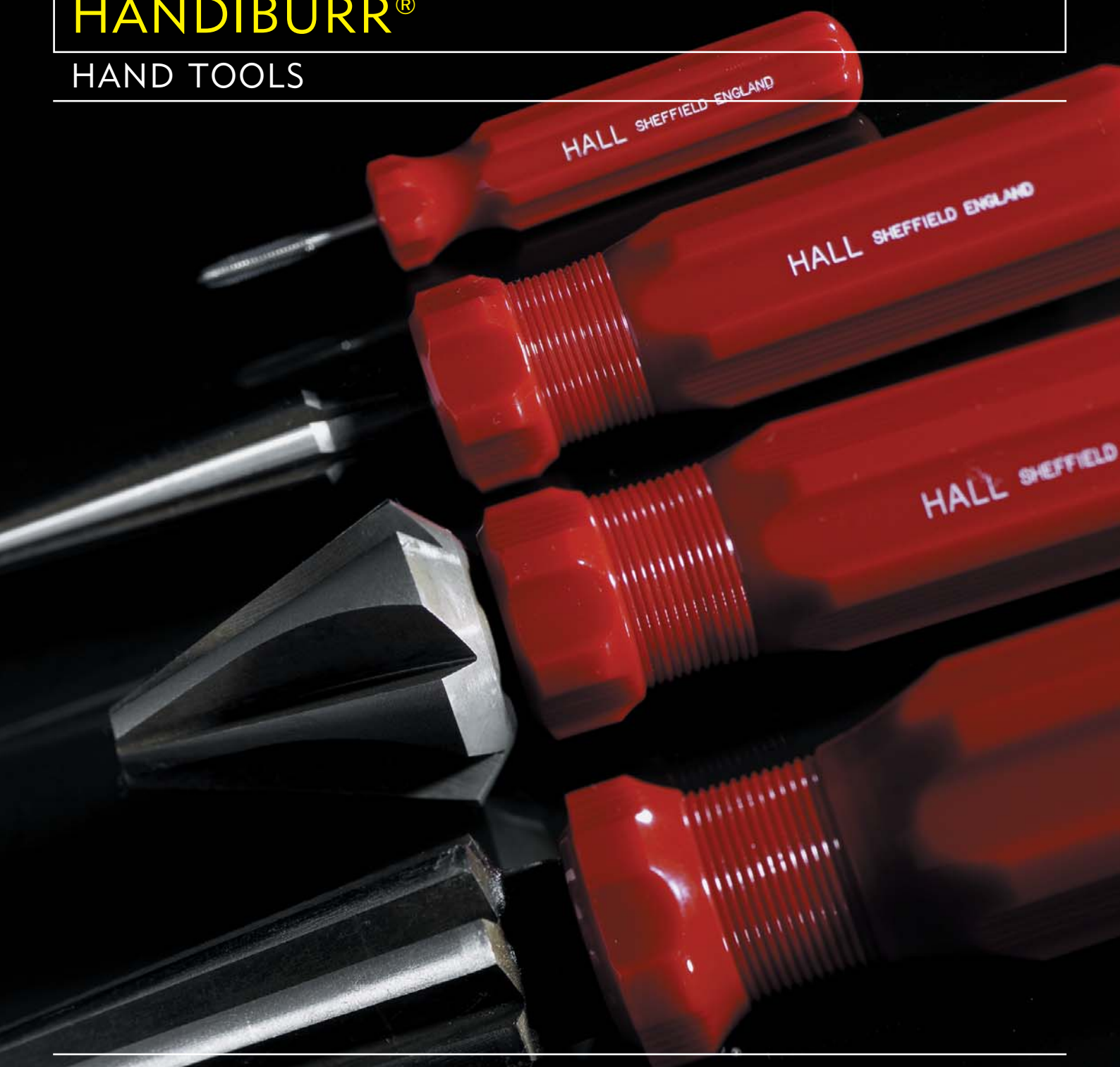
HEXAGON SHANK POWER TOOL BITS:



Rethreaders, Taper Reamers, Pipe Reamers, Chamferbits, Micro Drill Reamers

**HANDIBURR®**

HAND TOOLS



A superb range of precision made tools for rethreading, deburring, chamfering or enlarging holes.

## HAND TOOLS

### CHAMFERBITS



Handiburr® Chamferbits are made from High Speed Steel. The 3-Flute design provides a positive cutting action for chamfering or deburring holes in metals, plastics or wood. The end of tubes can also be deburred.

TOOL NO	SIZE	FLUTES	ANGLE
HB 1	12.4mm	3	90°
HB 2	25mm	3	90°

### PIPE REAMERS



Handiburr® Pipe Reamers are made from quality Tool Steel. They can be used to deburr all types of tube and pipe or any holes within the size range. Particularly suitable for electrical conduit tube, 15mm and 22mm copper pipe. Removes tabs on 'knockout' boxes. Safer, quicker and more effective than filing or other methods.

TOOL NO	SIZE	FLUTES	ANGLE
HB 3	10 - 34mm	6	40° incl. (approx)

### TAPER REAMERS



Handiburr® Taper Reamers are made from quality Tool Steel. They are designed for finishing or repairing holes in panels, sheet metal or any other thin materials. Ideal for opening out holes while maintaining concentricity and circularity.

TOOL NO	SIZE	FLUTES	ANGLE
HB 4	3 - 12 mm	6	8° incl. (approx)
HB 5	10 - 25 mm	8	8° incl. (approx)

### MICRO DRILL REAMERS



Handiburr® Micro Drill Reamers are precision ground from High Speed Steel. The 2-flute design enables both piercing and opening out of small holes in printed circuit board, shim etc. Ideally suited for the hobby enthusiast.

TOOL NO	SIZE	FLUTES
HB 40	1 - 5mm	2

### RETHREADERS



Handiburr® Rethreaders are based on a High Speed Steel Tap permanently fitted with a handle. They are designed principally for cleaning out the fixing holes in socket-switch or conduit-boxes, as these often have malformed threads or are blocked by plaster or cement.

TOOL NO	SIZE
HB 10	M3 x 0.5
HB 11	M3.5 x 0.6
HB 12	M4 x 0.7
HB 13	M5 x 0.8
HB 14	M6 x 1
HB 22	2BA
HB 24	4BA
HB 26	6BA
HB S1 SET	M3.5, M4, M6, 2BA

### LONG REACH RETHREADERS



One of the handiest tools in any tool box the Handiburr® Long Reach Rethreader makes light work of plaster, cement or paint filled threads in socket boxes and switch boxes. You can rely on getting a clean and quick fixing from this great little tool.

TOOL NO	SIZE
HB 11LR	M3.5 x 0.6

### CONDUIT RETHREADERS



TOOL NO	SIZE
HB 31	M20 x 1.5 conduit
HB 32	M25 x 1.5 conduit



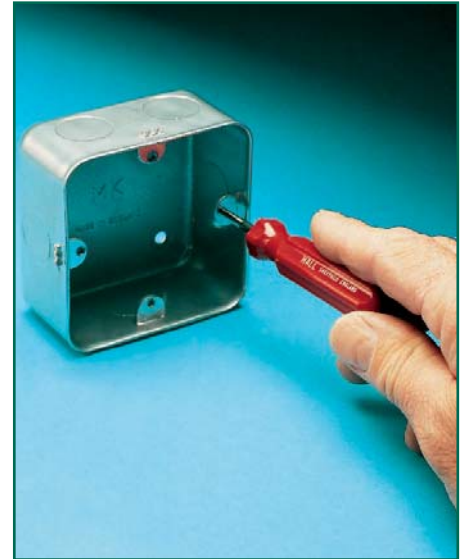
**A SUPERB RANGE OF PRECISION MADE HAND TOOLS FOR MULTIPLE APPLICATIONS:**



**TAPER REAMERS**



**CHAMFERBITS**



**RETHREADERS**



**PIPE REAMERS**



**MICRO DRILL REAMERS**



**CONDUIT RETHREADERS**

Countersinks, Counterbores and Hole Type Deburring Cutters

# COUNTERSINKS & COUNTERBORES

HIGH SPEED STEEL



# COUNTERSINKS

## HIGH SPEED STEEL

### 5 FLUTE

The 90° Angle together with the 0° rake angle makes this tool suitable for countersinking ferrous metals, hard plastics and wood.



TOOL NO	HEAD DIAMETER	OVERALL LENGTH MM	SHANK DIAMETER MM	SHANK LENGTH MM
CS5 8	8mm (5/16")	35	5	20.5
CS5 12	12mm (1/2")	39	6.35	20.5
CS5 16	16mm (5/8")	52	8	32
CS5 20	20mm (3/4")	58	10	35

### 3 FLUTE

The positive rake angle means that a quick cutting action together with a chatter-free operation is possible when Countersinking both ferrous and non-ferrous metals, hard and soft plastics.



To DIN 335C.  
90° Angle.  
For use on metal.

TOOL NO	HEAD DIAMETER	NORMAL LENGTH MM	SHANK DIAMETER MM
CS3 6	6.3mm	45	5
CS3 8	8.3mm	50	6
CS3 10	10.4mm	50	6
CS3 12	12.4mm	56	8
CS3 16	16.5mm	60	10
CS3 20	20.5mm	63	10
CS3 25	25mm	67	10
CS3 28	28mm	71	12
CS3 31	31mm	71	12

### HOLE TYPE DEBURRING CUTTERS

The arrangement of the through hole in relation to the precision-ground head results in a clean-cutting chatter-free tool for deburring and chamfering a wide range of materials at acceptable production speeds. Chip clearance is excellent and therefore makes these tools particularly suitable for soft alloys such as aluminium and brass, as well as all ferrous metals. Hole type deburring cutters are relatively simple to sharpen by grinding the cutting face inside the hole.



90° Angle.  
For use on metal.

TOOL NO	RANGE MM	OVERALL LENGTH MM	SHANK DIAMETER MM	SHANK LENGTH MM
DC 25	2 - 5	45	6	32
DC 510	5 - 10	48	8	30.5
DC 1015	10 - 15	65	10	37.5
DC 1520	15 - 20	84	12	48
DC 2025	20 - 25	102	15	56.5
DC 2530	25 - 30	115	15	55
DC 3035	30 - 35	127	15	60.5

### 3 FLUTE | MORSE TAPER SHANK



To DIN 335D.  
90° Angle.  
For use on metal.

TOOL NO	HEAD DIAMETER	NOMINAL LENGTH MM	SHANK
MT CS3 16	16.5 mm	85	No1 MTS
MT CS3 20	20.5 mm	100	No2 MTS
MT CS3 25	25 mm	106	No2 MTS
MT CS3 31	31 mm	112	No2 MTS
MT CS3 40	40 mm	140	No3 MTS



### KIT | PLASTIC BOX

#### 5 FLUTE

KIT REF	CONTAINS TOOLS NUMBERS
CS5 K1	CS5 8, CS5 12, CS5 16, CS5 20



### SETS | METAL CASSETTES

#### 3 FLUTE | 90° ANGLE DIN 335C

SET REF	CONTAINS TOOLS NUMBERS
CS3 S1	CS3 6, CS3 8, CS3 10, CS3 12, CS3 16, CS3 20



### SETS | METAL CASSETTES

#### HOLE TYPE DEBURRING CUTTER

SET REF	CONTAINS TOOLS NUMBERS
DC S1	DC 25, DC 510, DC 1015, DC 1520



Other European sizes of Countersinks are available upon request.



# COUNTERBORES

HIGH SPEED STEEL

## PLAIN SHANK (P)

Solid type with integral pilot,  
Manufactured to BS 328 PART 5/ISO DIN 373 for use in chucks or collets.



TO SUIT CAPSCREWS TOOL REF	NOMINAL CUTTING DIA. MM	NOMINAL PILOT DIA. MM	SHANK DIA. MM	OVERALL LENGTH MM
M3 P	6.0	3.4	5.0	71
M3.5 P	6.5	3.9	5.0	71
M4 P	8.0	4.5	5.0	71
M5 P	10.0	5.5	8.0	80
M6 P	11.0	6.6	8.0	80
M8 P	15.0	9.0	12.5	100
M10 P	18.0	11.0	12.5	100
M12 P	20.0	14.0	12.5	100

## SCREWED SHANK (S)

Solid type with integral pilot. For use in Clarkson type holder.



TO SUIT CAPSCREWS TOOL REF	NOMINAL CUTTING DIA. MM	NOMINAL PILOT DIA. MM	SHANK DIA. MM	OVERALL LENGTH MM
M4 S	8.0	4.5	6.0	65
M5 S	10.0	5.5	6.0	70
M6 S	11.0	6.6	6.0	76
M8 S	15.0	9.0	10.0	87
M10 S	18.0	11.0	10.0	89
M12 S	20.0	14.0	12.0	108



## SETS | METAL CASSETTES

### PLAIN SHANK

SET REF	CONTAINS TOOLS NUMBERS
CB S1	M3P, M4P, M5P, M6P, M8P, M10P

## SETS | METAL CASSETTES

### SCREWED SHANK

SET REF	CONTAINS TOOLS NUMBERS
CB S2	M4S, M5S, M6S, M8S, M10S

## MORSE TAPER SHANKS

For use in Morse taper sockets.  
Detachable pilot type. BS 328 PART 5/ISO DIN375/1868



## MORSE TAPER SHANK (T)

TO SUIT CAPSCREWS TOOL REF	NOMINAL CUTTING DIA. MM	LENGTH MM	MT SHANK NO
M8 T	15	132	2
M10 T	18	140	2
M12 T	20	140	2
M14 T	24	150	2
M16 T	26	180	3
M18 T	30	180	3
M20 T	33	190	3
M22 T	36	190	3
M24 T	40	190	3

Morse Shank Counterbores are supplied complete with Pilot unless specified.

## PILOT - FOR MORSE TAPER SHANK (T)

TO SUIT CAPSCREWS TOOL REF	NOMINAL DIAMETER MM	SHANK DIAMETER MM
M8 T	9	4
M10 T	11	5
M12 T	14	5
M14 T	16	6
M16 T	18	8
M18 T	20	8
M20 T	22	10
M22 T	24	10
M24 T	26	10

# COUNTERSINKS & COUNTERBORES

## RECOMMENDED CUTTING SPEEDS



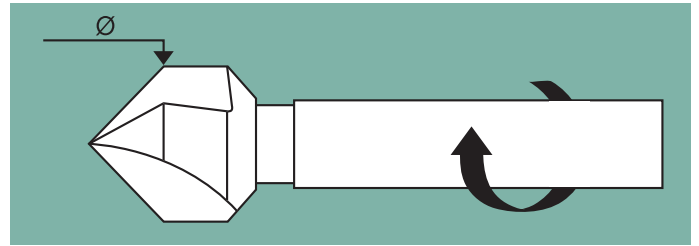
The cutting speeds shown in the table below should be used only as a guide. The specific speeds used will be dependent upon a variety of factors such as component condition, type of lubricant used, the rigidity of the set up etc, etc. The ideal speed therefore is best determined by testing.

Some tough/difficult to machine materials may require speeds lower than those stated but generally it is advised to start testing at the lower end of the range shown and increase until the ideal speed is determined.

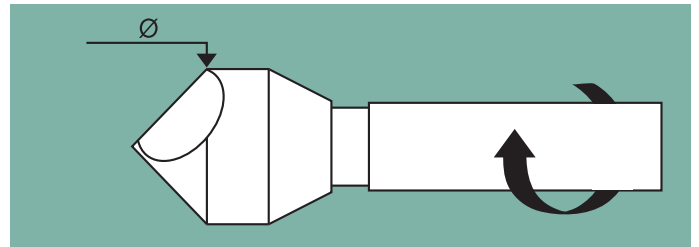
The life and efficiency of all cutting tools used on steels and non ferrous metals will be improved if an appropriate cutting lubricant/coolant is used.

Ø Metric	Ø Imperial	RPM	
		Ferrous	Non-Ferrous
5	3/16"	900-1900	1900-5200
6	1/4"	700-1600	1600-4400
8	5/16"	500-1200	1200-3200
10	3/8"	400-1000	1000-2600
11	7/16"	400-900	900-2400
12	1/2"	300-800	800-2000
14	9/16"	300-700	700-1800
16	5/8"	300-600	600-1600
18	11/16"	200-500	500-1500
20	13/16"	200-500	500-1500
22	7/8"	200-400	400-1200
24	15/16"	150-400	400-1000
26	1"	150-400	400-1000
28	1 1/8"	150-350	350-1000
30	1 3/16"	150-350	350-1000
32	1 1/4"	150-300	300-800
34	1 3/8"	100-300	300-800
36	1 7/16"	100-300	300-700
40	1 5/8"	100-300	300-500

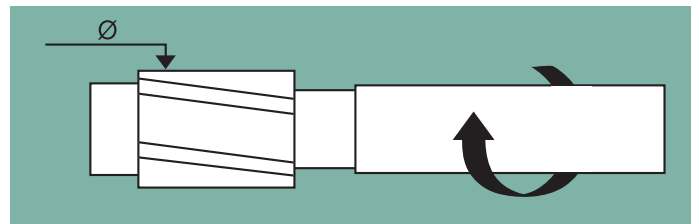
### COUNTERSINKS



### HOLE TYPE DEBURRING CUTTERS



### COUNTERBORES



Bradrad® precision tools drill and deburr from 1/4" to 4", or 5.5 to 100mm diameter, in material thicknesses up to 10mm.

Designed for industrial applications, each step produces accurate, parallel holes with a small clearance on the nominal diameter. It positively deburrs the entry side as the hole is drilled, and if the work can be reversed, both sides.

One 'S' Type Bradrad® can drill eleven different diameters, while the 'A' Type can drill nine.

The Bradrad® can be adapted for use on CNC machines.

# BRADRAD®

## HIGH SPEED STEEL STEP DRILLS FOR MACHINE SHOP APPLICATIONS

*Industrial Application Examples:*

- **Steel fabricators and engineers**  
- to replace punches and dies, and milling and trepanning on short-run or prototype work, particularly where material is over 1/16" thick
- **Jig and tool makers**
- **Aircraft manufacturers**
- **Car body repairs**
- **Electricians**
- **Plumbers and gas fitters**

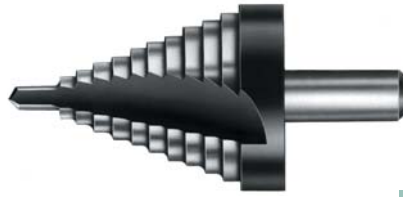




## HIGH SPEED STEEL STEP DRILLS FOR MACHINE SHOP APPLICATIONS

### S TYPE

'S' Type Bradrad® drills are used to machine a wide variety of materials and for many different applications. No pilot hole is required, and good quality deburred holes are produced with minimum of fuss using a bench drill or light pedestal drilling machine.



TOOL NO	DRILL SIZES IN mm FOR MATERIAL UP TO 3mm (1/8") THICK											SHANK AVAILABILITY		DRILLING SPEEDS RPM			
												MORSE TAPER	ROUND SHANK	FERROUS	NON FERROUS		
BS M1	5.5	8.5	11.5	14.5	17.5	20.5	23.5	26.5	29.5	32.5	35.5	•	•	•	•	80-250	250-700
BS M2	6	9	12	15	18	21	24	27	30	33	36	•	•	•	•	80-250	250-700
BS M3	6.5	9.5	12.5	15.5	18.5	21.5	24.5	27.5	30.5	33.5	36.5	•	•	•	•	80-250	250-700
BS M4	7	10	13	16	19	22	25	28	31	34	37	•	•	•	•	80-250	250-700
BS M5	7.5	10.5	13.5	16.5	19.5	22.5	25.5	28.5	31.5	34.5	37.5	•	•	•	•	75-220	220-650
BS M6	8	11	14	17	20	23	26	29	32	35	38	•	•	•	•	75-220	220-650
DRILL SIZES IN INCHES FOR MATERIAL UP TO 1/8" (3mm) THICK																	
BS E1	1/4	3/8	1/2	5/8	3/4	7/8	1	1.1/8	1.1/4	1.3/8	1.1/2	•	•	•	•	75-220	220-650
BS E2	9/32	13/32	17/32	21/32	25/32	29/32	1.1/32	1.5/32	1.9/32	1.13/32	1.17/32	•	•	•	•	75-220	220-650
BS E3	5/16	7/16	9/16	11/16	13/16	15/16	1.1/16	1.3/16	1.5/16	1.7/16	1.9/16	•	•	•	•	75-220	220-650
BS E4	7/32	11/32	15/32	19/32	23/32	27/32	31/32	1.3/32	1.7/32	1.11/32	1.15/32	•	•	•	•	75-220	220-650

### A TYPE (HSS Cobalt)

'A' Type Bradrad® drills incorporate a detachable centre drill and the first diameter is produced by a smooth trepanning action. Thereafter, the 'A' Type drills from step to step until the required diameter is achieved. The initial trepanning action produces a disc which must be removed before commencing the next hole.



TOOL NO	DRILL SIZES IN mm FOR MATERIAL UP TO 5mm (3/16") THICK											SHANK AVAILABILITY		DRILLING SPEEDS RPM			
												No 2 MTS	No 3 MTS	13mm (1/2")	FERROUS	NON FERROUS	
BA M2	36	39	42	45	48	51	54	57	60	-	-	•	•	•	•	50-150	150-375
BA M4	37	40	43	46	49	52	55	58	61	-	-	•	•	•	•	50-150	150-375
BA M6	38	41	44	47	50	53	56	59	62	-	-	•	•	•	•	50-150	150-375
DRILL SIZES IN INCHES FOR MATERIAL UP TO 3/16" (5mm) THICK																	
BA E1	1.1/2	1.5/8	1.3/4	1.7/8	2	2.1/8	2.1/4	2.3/8	2.1/2	-	-	•	•	•	•	50-150	150-375

### B TYPE (HSS Cobalt)

'B' Type Bradrad® drills incorporate a detachable centre drill, and the first diameter is produced by an 'end milling' action which ensures the rapid penetration of steel plate or structural steel supports.



TOOL NO	DRILL SIZES IN mm FOR MATERIAL UP TO 10mm (3/8") THICK											SHANK AVAILABILITY		DRILLING SPEEDS RPM			
												No 3 MTS		FERROUS	NON FERROUS		
BB M2	36	39	42	45	48	51	54	57	60	-	-	•		•	•	50-150	150-375
BB M4	37	40	43	46	49	52	55	58	61	-	-	•		•	•	50-150	150-375
BB M6	38	41	44	47	50	53	56	59	62	-	-	•		•	•	50-150	150-375
DRILL SIZES IN INCHES FOR MATERIAL UP TO 3/8" (10mm) THICK																	
BB E1	1.1/2	1.5/8	1.3/4	1.7/8	2	2.1/8	2.1/4	2.3/8	2.1/2	-	-	•		•	•	50-150	150-375

### F TYPE (HSS Cobalt)

'F' Type Bradrad® drills require a pilot hole which can be produced by an 'A' or 'B' Type Bradrad®, some other drilling method or even by flame cutting.



TOOL NO	PILOT Ø	DRILL SIZES IN mm								SHANK		DRILLING SPEEDS RPM		
										No 4 MTS	MATERIAL THICKNESS	FERROUS	NON FERROUS	
BFA M	60mm	65	70	75	80	85	90	95	100	-	•	5mm (3/16")	30-90	90-225
BFB M	80mm	-	-	-	-	85	90	95	100	-	•	10mm (3/8")	30-90	90-225

## HIGH SPEED STEEL STEP DRILLS FOR MACHINE SHOP APPLICATIONS

### SPECIAL APPLICATION | PG TYPE

PG Bradrad® drills are made from high speed steel for use in pedestal drills or industrial hand drills. Each hole is automatically deburred by the cutting edge of the next step. Detachable centre drill for easy regrind.

PG 21 & PG 29 for drilling the clearance holes for PG fittings in material up to 3mm thick.

PGT for drilling core holes for PG threads in material up to 5mm thick.



FOR PG NUMBER		PG 7	PG 9	PG 11	PG 13.5	PG 16	PG 21					PG 29			SHANK			DRILLING SPEEDS RPM	
TOOL NO	PILOT MM	DRILL SIZES IN MM											10MM	13MM	INTEGRAL 13MM	MAX MATERIAL THICKNESS	FERROUS	NON FERROUS	
PG 21	8	12.5	15.2	18.6	20.4	22.5	25.8	28.3	30.5	-	-	-	-	-	•	3mm	100-300	300-750	
PG 29	8	12.5	15.2	18.6	20.4	22.5	25.8	28.3	30.5	33.6	37	•	•	-	3mm	75-220	220-550		
PG T*	8.8	11.4	14	17.25	19	21.25	24.5	26.75	-	-	-	-	-	•	5mm	110-310	310-800		

### SPECIAL APPLICATION | PIPE TOOLS

BP1 - for drilling the clearance holes for BSP fittings in material up to 5mm thick.

BP2 - for drilling the core holes for BSP threads in material up to 5mm thick.



BSP SIZES		1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	SHANK					DRILLING SPEEDS RPM		
TOOL NO	PILOT MM	DRILL SIZES IN MM						INTEGRAL 13MM					MAX MATERIAL THICKNESS	FERROUS	NON FERROUS
BP 1	8.8	11.2	14.5	18.2	22.3	24.3	27.9	-	-	-	-	•	5mm	100-310	310-800
BP 2	8.8	8.8	11.8	15.3	19.0	21.0	24.5	-	-	-	-	•	5mm	120-360	360-900

### SPECIAL APPLICATION | ELECTRICAL

A range of sizes specially designed for work with conduits.



TOOL NO		PILOT MM	APPLICATION IN MM								SHANK		DRILLING SPEEDS RPM	
											TO FIT CHUCK	MAX MATERIAL THICKNESS	FERROUS	NON FERROUS
BC 1232		8	12, 16, 20, 25 & 32mm Holes for Conduit Entry								10mm	3.5mm	90-300	300-750
BC 1240		8	12, 16, 20, 25, 32 & 40mm Holes for Conduit Entry								13mm	3.5mm	70-220	220-550
BCT 1240		10.5	Drills core holes for ISO Conduit Threads M12, M16, M20, M25, M32 & M40 (1.5mm)								13mm	3.5mm	70-220	220-550

### SPECIAL APPLICATION | SAWBORER (HSS Cobalt)

Sawborer Bradrad® drills have been developed for opening out bores of tungsten carbide tipped circular saw blades with a hardness up to 42Rc.

The tool itself is made from cobalt steel and hardened to ensure maximum life between grinds.



TOOL NO		PILOT MM	BORE SIZE IN MM										SHANK		DRILLING SPEEDS RPM	
													No3 MORSE TAPER SHANK	MAX MATERIAL THICKNESS	FERROUS	NON FERROUS
BSB 2		16	20	25	30	35	40	45	50	55	60	-	•	5mm	50-150	150-375
BSB 4		16	20	22	25	30	32	35	40	-	-	-	•	5mm	75-220	220-650

TOOL NO		PILOT INCHES	BORE SIZE IN INCHES										SHANK		DRILLING SPEEDS RPM	
													No3 MORSE TAPER SHANK	MAX MATERIAL THICKNESS	FERROUS	NON FERROUS
BSB 3		5/8	3/4	7/8	1	1.1/8	1.1/4	1.3/8	1.1/2	-	-	-	•	5mm	75-220	220-650

# THREADING TOOLS

HIGH SPEED STEEL FOR QUALITY AND SERVICE



**SPIRAL POINT:**

For machine use only. Manufactured with a tough design for tapping through holes. These taps have a blue steam temper finish.

**STRAIGHT FLUTE:**

This general purpose tap is suitable for machine or hand use, and available with either taper, second or plug lead.

**SPIRAL FLUTE:**

For machine use only. Designed primarily for tapping blind holes. The right-hand spiral assists swarf removal.

**LONG SHANK:**

Straight flute taps with longer shanks. Suitable for deep-hole or other long-reach tapping applications.



# GROUND THREAD TAPS

HIGH SPEED STEEL

## ISO METRIC | COARSE

NOM. DIA. AND PITCH MM	STRAIGHT FLUTE	SHORT MACHINE TAPS			LEFT HAND	ISO LONG SHANK MACHINE TAPS
		SPIRAL POINT	SPIRAL FLUTE	AVAILABILITY		
M1.6 x 0.35	•	•				
M1.8 x 0.35	•	•				
M2 x 0.4	•	•	•	•		
M2.2 x 0.45	•	•				
M2.5 x 0.45	•	•	•			
M3 x 0.5	•	•	•	•		•
M3.5 x 0.6	•	•	•			
M4 x 0.7	•	•	•	•		•
M4.5 x 0.75	•	•	•			
M5 x 0.8	•	•	•	•		•
M6 x 1	•	•	•	•		•
M7 x 1	•	•	•			
M8 x 1.25	•	•	•	•		•
M9 x 1.25	•	•	•			
M10 x 1.5	•	•	•	•		•
M11 x 1.5	•	•				
M12 x 1.75	•	•	•	•		•
M14 x 2	•	•	•			
M16 x 2	•	•	•	•		•
M18 x 2.5	•	•	•	•		•
M20 x 2.5	•	•	•	•		•
M22 x 2.5	•	•	•	•		•
M24 x 3	•	•	•	•		•
M27 x 3	•					
M30 x 3.5	•					
M33 x 3.5	•					
M36 x 4	•					
M39 x 4	•					
M42 x 4.5	•					
M45 x 4.5	•					
M48 x 5	•					
M52 x 5	•					
M56 x 5.5	•					
M60 x 5.5	•					
M64 x 6	•					
M68 x 6	•					
M72 x 6	•					

## ISO METRIC | FINE

NOM. DIA. AND PITCH MM	STRAIGHT FLUTE	SPIRAL POINT	SPIRAL FLUTE	AVAILABILITY			
M3 x 0.35	•						
M3 x 0.6	•						
M3.5 x 0.35	•						
M4 x 0.5	•	•	•				
M4.5 x 0.5	•						
M5 x 0.5	•	•	•				
M5.5 x 0.9	•						
M6 x 0.75	•	•	•				
M7 x 0.75	•						
M8 x 0.75	•						
M8 x 1	•	•	•				
M9 x 1	•						
M10 x 0.75	•						
M10 x 1 <sup>++</sup>	•	•	•				
M10 x 1.25	•	•	•				
M12 x 1	•						
M12 x 1.25 <sup>++</sup>	•	•	•				
M12 x 1.5	•	•	•				
M14 x 1	•						
M14 x 1.25 <sup>++</sup>	•	•	•				
M14 x 1.5	•	•	•				
M16 x 1	•						
M16 x 1.5 <sup>*</sup>	•	•	•				
M18 x 1	•						
M18 x 1.5 <sup>++</sup>	•	•	•				
M18 x 2	•						
M20 x 1	•						
M20 x 1.5 <sup>*</sup>	•	•	•				
M20 x 2	•						
M22 x 1.5	•	•	•				
M24 x 1.5	•						
M24 x 2	•						
M25 x 1.5 <sup>*</sup>	•						
M27 x 1.5	•						
M27 x 2	•						
M30 x 1.5	•						
M30 x 2	•						
M32 x 1.5 <sup>*</sup>	•						
M33 x 2	•						
M40 x 1.5 <sup>++</sup>	•						

Metric Fine Left Hand and Long Shank available on request.  
 + Metric Conduit.  
 ++ Spark Plug.

The extensive range of ground thread taps is manufactured from quality high speed steel to internationally recognised ISO standards, ensuring both high performance and long tool life.



## UNC/NC

NOM. DIA. AND TPI	STRAIGHT FLUTE	SHORT MACHINE TAPS			LEFT HAND	ISO LONG SHANK MACHINE TAPS
		SPIRAL POINT	SPIRAL FLUTE	AVAILABILITY		
No. 1 x 64	•	•				
No. 2 x 56	•	•				
No. 3 x 48	•	•				
No. 4 x 40	•	•	•			
No. 5 x 40	•					
No. 6 x 32	•	•	•			
No. 8 x 32	•	•	•			
No. 10 x 24	•	•	•			
No. 12 x 24	•	•	•			
1/4 x 20	•	•	•	•		•
5/16 x 18	•	•	•	•		•
3/8 x 16	•	•	•	•		•
7/16 x 14	•	•	•	•		•
1/2 x 13	•	•	•	•		•
9/16 x 12	•	•	•	•		•
5/8 x 11	•	•	•	•		•
3/4 x 10	•	•	•	•		•
7/8 x 9	•	•	•	•		•
1 x 8	•	•	•	•		•
1.1/8 x 7	•					
1.1/4 x 7	•					
1.3/8 x 6	•					
1.1/2 x 6	•					
1.3/4 x 5	•					
2 x 4.1/2	•					

Larger sizes on application.

## UNF/NF

NOM. DIA. AND TPI	STRAIGHT FLUTE	SHORT MACHINE TAPS			LEFT HAND	ISO LONG SHANK MACHINE TAPS
		SPIRAL POINT	SPIRAL FLUTE	AVAILABILITY		
No. 0 x 80	•	•				
No. 1 x 72	•	•				
No. 2 x 64	•	•				
No. 3 x 56	•	•				
No. 4 x 48	•	•	•			
No. 5 x 44	•	•	•			
No. 6 x 40	•	•	•			
No. 8 x 36	•	•	•			
No. 10 x 32	•	•	•			
No. 12 x 28	•	•	•			
1/4 x 28	•	•	•	•		•
5/16 x 24	•	•	•	•		•
3/8 x 24	•	•	•	•		•
7/16 x 20	•	•	•	•		•
1/2 x 20	•	•	•	•		•
9/16 x 18	•	•	•	•		•
5/8 x 18	•	•	•	•		•
3/4 x 16	•	•	•	•		•
7/8 x 14	•	•	•	•		•
1 x 12	•	•	•	•		•
1.1/8 x 12	•					
1.1/4 x 12	•					
1.3/8 x 12	•					
1.1/2 x 12	•					

Larger sizes on application.

## AMERICAN UNIFIED 8 THREAD SERIES (8 UN)

NOM. DIA. AND TPI	STRAIGHT FLUTE	AVAILABILITY
1.1/8 x 8	•	
1.1/4 x 8	•	
1.3/8 x 8	•	
1.1/2 x 8	•	
1.5/8 x 8	•	
1.3/4 x 8	•	
1.7/8 x 8	•	
2 x 8	•	



# GROUND THREAD TAPS

## HIGH SPEED STEEL

The extensive range of ground thread taps is manufactured from quality high speed steel, ensuring both high performance and long tool life.



### BSP | BRITISH STANDARD PIPE | ISO 'G' SERIES

NOM. DIA. AND TPI	SHORT MACHINE TAPS				LONG SHANK MACHINE TAPS
	STRAIGHT FLUTE	SPIRAL POINT	SPIRAL FLUTE	LEFT HAND	
AVAILABILITY					
1/8 x 28	•	•	•	•	•
1/4 x 19	•	•	•	•	•
3/8 x 19	•	•	•	•	•
1/2 x 14	•	•	•	•	•
5/8 x 14	•	•	•	•	•
3/4 x 14	•	•	•	•	•
7/8 x 14	•	•	•	•	•
1 x 11	•	•	•	•	•
1.1/8 x 11	•	•	•	•	•
1.1/4 x 11	•	•	•	•	•
1.1/2 x 11	•	•	•	•	•
1.3/4 x 11	•	•	•	•	•
2 x 11	•	•	•	•	•
2.1/4 x 11	•	•	•	•	•
2.1/2 x 11	•	•	•	•	•
2.3/4 x 11	•	•	•	•	•
3 x 11	•	•	•	•	•
3.1/2 x 11	•	•	•	•	•
4 x 11	•	•	•	•	•

### NPT/API

AMERICAN NATIONAL PIPE TAPER

NOMINAL DIAMETER & TPI	STRAIGHT FLUTE
	AVAILABILITY
1/16 x 27	•
1/8 x 27	•
1/4 x 18	•
3/8 x 18	•
1/2 x 14	•
3/4 x 14	•
1 x 11.1/2	•
1.1/4 x 11.1/2	•
1.1/2 x 11.1/2	•
2 x 11.1/2	•

### NPTF

AMERICAN NATIONAL PIPE TAPER - DRYSEAL

NOMINAL DIAMETER & TPI	STRAIGHT FLUTE
	AVAILABILITY
1/16 x 27	•
1/8 x 27	•
1/4 x 18	•
3/8 x 18	•
1/2 x 14	•
3/4 x 14	•
1 x 11.1/2	•
1.1/4 x 11.1/2	•

### NPS

AMERICAN NATIONAL PIPE STRAIGHT

NOMINAL DIAMETER & TPI	STRAIGHT FLUTE
	AVAILABILITY
1/8 x 27	•
1/4 x 18	•
3/8 x 18	•
1/2 x 14	•
3/4 x 14	•
1 x 11.1/2	•

### BSPT

BRITISH STANDARD PIPE TAPER ISO 'RC' SERIES

NOMINAL DIAMETER & TPI	STRAIGHT FLUTE
	AVAILABILITY
1/8 x 28	•
1/4 x 19	•
3/8 x 19	•
1/2 x 14	•
3/4 x 14	•
1 x 11	•
1.1/4 x 11	•
1.1/2 x 11	•
2 x 11	•

### METRIC CONDUIT

NOMINAL DIAMETER & TPI	STRAIGHT FLUTE
	AVAILABILITY
M16 x 1.5	•
M20 x 1.5	•
M25 x 1.5	•
M32 x 1.5	•
M40 x 1.5	•

### BS CONDUIT

NOMINAL DIAMETER & TPI	STRAIGHT FLUTE
	AVAILABILITY
1/2 x 18	•
5/8 x 18	•
3/4 x 16	•
1 x 16	•
1.1/4 x 16	•
1.1/2 x 14	•
2 x 14	•

### PG

SIZE	STRAIGHT FLUTE
	AVAILABILITY
PG7	•
PG9	•
PG11	•
PG13.5	•
PG16	•

### BSW | BRITISH STANDARD WHITWORTH

NOM. DIA. AND PITCH BSW	SHORT MACHINE TAPS				ISO LONG SHANK MACHINE TAPS
	STRAIGHT FLUTE	SPIRAL POINT	SPIRAL FLUTE	LEFT HAND	
AVAILABILITY					
1/16 x 60	•				
3/32 x 48	•				
1/8 x 40	•	•	•	•	
5/32 x 32	•	•	•	•	
3/16 x 24	•	•	•	•	
7/32 x 24	•	•	•	•	
1/4 x 20	•	•	•	•	•
9/32 x 20	•	•	•	•	
5/16 x 18	•	•	•	•	•
3/8 x 16	•	•	•	•	•
7/16 x 14	•	•	•	•	•
1/2 x 12	•	•	•	•	•
9/16 12	•	•	•	•	
5/8 x 11	•	•	•	•	
11/16 x 11	•	•	•	•	
3/4 x 10	•	•	•	•	
13/16 x 10	•	•	•	•	
7/8 x 9	•	•	•	•	
15/16 x 9	•	•	•	•	
1 x 8	•	•	•	•	
1.1/8 x 7	•	•	•	•	
1.1/4 x 7	•	•	•	•	
1.3/8 x 6	•	•	•	•	
1.1/2 x 6	•	•	•	•	
1.5/8 x 5	•	•	•	•	
1.3/4 x 5	•	•	•	•	
1.7/8 x 4.1/2	•	•	•	•	
2 x 4.1/2	•	•	•	•	
2.1/4 x 4	•	•	•	•	
2.1/2 x 4	•	•	•	•	
2.3/4 x 3.1/2	•	•	•	•	
3 x 3.1/2	•	•	•	•	

### BSF | BRITISH STANDARD FINE

NOM. DIA. AND PITCH BSF	SHORT MACHINE TAPS				ISO LONG SHANK MACHINE TAPS
	STRAIGHT FLUTE	SPIRAL POINT	SPIRAL FLUTE	LEFT HAND	
AVAILABILITY					
3/16 x 32	•	•	•	•	
7/32 x 28	•	•	•	•	
1/4 x 26	•	•	•	•	•
9/32 x 26	•	•	•	•	
5/16 x 22	•	•	•	•	•
3/8 x 20	•	•	•	•	•
7/16 x 18	•	•	•	•	•
1/2 x 16	•	•	•	•	•
9/16 x 16	•	•	•	•	
5/8 x 14	•	•	•	•	
11/16 x 14	•	•	•	•	
3/4 x 12	•	•	•	•	
13/16 x 12	•	•	•	•	
7/8 x 11	•	•	•	•	
15/16 x 11	•	•	•	•	
1 x 10	•	•	•	•	
1.1/8 x 9	•	•	•	•	
1.1/4 x 9	•	•	•	•	
1.3/8 x 8	•	•	•	•	
1.1/2 x 8	•	•	•	•	
1.5/8 x 8	•	•	•	•	
1.3/4 x 7	•	•	•	•	
2 x 7	•	•	•	•	
2.1/4 x 6	•	•	•	•	
2.1/2 x 6	•	•	•	•	

### BA | BRITISH ASSOCIATION

BA SIZE NO.	SHORT MACHINE TAPS			
	STRAIGHT FLUTE	SPIRAL POINT	SPIRAL FLUTE	LEFT HAND
AVAILABILITY				
0	•	•	•	•
1	•	•	•	•
2	•	•	•	•
3	•	•	•	•
4	•	•	•	•
5	•	•	•	•
6	•	•	•	•
7	•	•	•	•
8	•	•	•	•
9	•	•	•	•
10	•	•	•	•

### BS | BRASS

NOM. DIA. & TPI	STRAIGHT FLUTE
	AVAILABILITY
1/4 x 26	•
5/16 x 26	•
3/8 x 26	•
7/16 x 26	•
1/2 x 26	•
9/16 x 26	•
5/8 x 26	•
3/4 x 26	•
7/8 x 26	•
1 x 26	•

# GROUND THREAD TAPS

KITS | SETS

## MINI TAP KITS



## PAIRS

Each kit contains: one HSSGT Straight Flute, Taper and Plug Lead Tap of each size.

KIT REF	THREAD RANGE
TK 1 PR	3, 4, 5, 6, 8, 10mm Metric Coarse
TK 2 PR	3, 4, 5, 6, 8, 10mm Metric Fine (10 x 1.25)
TK 3 PR	1/8, 3/16, 1/4, 5/16, 3/8, BSW
TK 4 PR	No.8, No.10, 1/4, 5/16, 3/8 UNC
TK 5 PR	No.8, No.10, 1/4, 5/16, 3/8 UNF

## TAPER LEAD

Each kit contains: one HSSGT Straight Flute Tap and Taper Lead of each size.

KIT REF	THREAD RANGE
TK 10T	3, 4, 5, 6, 8, 10, 12mm Metric Coarse
TK 11T	3, 4, 5, 6, 8, 10, 12mm Metric Fine
TK 12T	1/8, 3/16, 1/4, 5/16, 3/8, 7/16, 1/2 BSW
TK 13T	3/16, 1/4, 5/16, 3/8, 7/16, 1/2 BSF
TK 14T	No.8, No.10, 1/4, 5/16, 3/8, 7/16, 1/2 UNC
TK 15T	No.8, No.10, 1/4, 5/16, 3/8, 7/16, 1/2 UNF

## SECOND LEAD

Each kit contains: one HSSGT Straight Flute Tap and Second Lead of each size.

KIT REF	THREAD RANGE
TK 20S	3, 4, 5, 6, 8, 10, 12mm Metric Coarse
TK 21S	3, 4, 5, 6, 8, 10, 12mm Metric Fine
TK 22S	1/8, 3/16, 1/4, 5/16, 3/8, 7/16, 1/2 BSW
TK 23S	3/16, 1/4, 5/16, 3/8, 7/16, 1/2 BSF
TK 24S	No.8, No.10, 1/4, 5/16, 3/8, 7/16, 1/2 UNC
TK 25S	No.8, No.10, 1/4, 5/16, 3/8, 7/16, 1/2 UNF

## PLUG LEAD

Each kit contains: one HSSGT Straight Flute Tap and Plug Lead of each size.

KIT REF	THREAD RANGE
TK 30P	3, 4, 5, 6, 8, 10, 12mm Metric Coarse
TK 31P	3, 4, 5, 6, 8, 10, 12mm Metric Fine
TK 32P	1/8, 3/16, 1/4, 5/16, 3/8, 7/16, 1/2 BSW
TK 33P	3/16, 1/4, 5/16, 3/8, 7/16, 1/2 BSF
TK 34P	No.8, No.10, 1/4, 5/16, 3/8, 7/16, 1/2 UNC
TK 35P	No.8, No.10, 1/4, 5/16, 3/8, 7/16, 1/2 UNF

## SPIRAL POINT

Each kit contains: one HSSGT Spiral Point Tap of each size.

KIT REF	THREAD RANGE
TK 40SP	3, 4, 5, 6, 8, 10, 12mm Metric Coarse
TK 41SP	1/8, 3/16, 1/4, 5/16, 3/8, 7/16, 1/2 BSW
TK 42SP	3/16, 1/4, 5/16, 3/8, 7/16, 1/2 BSF
TK 43SP	No.8, No.10, 1/4, 5/16, 3/8, 7/16, 1/2 UNC
TK 44SP	No.8, No.10, 1/4, 5/16, 3/8, 7/16, 1/2 UNF

## SPIRAL FLUTE

Each kit contains: one HSSGT Spiral Flute Tap of each size.

KIT REF	THREAD RANGE
TK 50SF	3, 4, 5, 6, 8, 10, 12mm Metric Coarse
TK 51SF	1/8, 3/16, 1/4, 5/16, 3/8, 7/16, 1/2 BSW
TK 52SF	3/16, 1/4, 5/16, 3/8, 7/16, 1/2 BSF
TK 53SF	No.8, No.10, 1/4, 5/16, 3/8, 7/16, 1/2 UNC
TK 54SF	No.8, No.10, 1/4, 5/16, 3/8, 7/16, 1/2 UNF

## TAP INDEX SETS



## HSSGT TAPS IN METAL CASSETTE INDEX

Contains: Taper, Second and Bottoming HSSGT Taps in quality metal cassette index.

SET REF	THREAD RANGE
TI 1	3, 4, 5, 6, 8, 10, 12mm (Coarse)
TI 2	10, 1/4, 5/16, 3/8, 7/16, 1/2 UNF
TI 3	10, 1/4, 5/16, 3/8, 7/16, 1/2 UNC
TI 4	3/16, 1/4, 5/16, 3/8, 7/16, 1/2 BSF
TI 5	1/8, 3/16, 1/4, 5/16, 3/8, 7/16, 1/2 BSW



# GROUND THREAD TAPS

## SETS | WRENCHES

### CASED SETS OF HSSGT TAPS WITH HSS SPLIT CIRCULAR DIES, INCLUDING WRENCHES AND STOCKS

Each set in polished wood case contains: HSS Die, HSSGT Taper and Bottoming Tap per size. Tap Wrench and Diestock to suit. Screwdriver for Diestock adjustment.



### THREAD: METRIC ISO COARSE

SET REF	THREADING SIZE IN MILLIMETRES	DIAMETER OF DIES IN INCHES	TAPWRENCH NO.
SC /1	2, 2.5, 3, 3.5, 4, 5, 6	13/16	(ATW0)
SC /2	3, 4, 5, 6, 8, 10, 12	13/16 - 1.5/16	(ATW1)
SC /3	6, 7, 8, 9, 10, 11, 12	13/16 - 1.5/16	(ATW1)
SC /4	6, 7, 8, 9, 10, 12, 14, 16, 18, 20	1 - 1.5/16 - 1.1/2	(ATW3)
SC /5	14, 16, 18, 20	1.1/2 - 2	(ATW4)

### THREAD: METRIC ISO FINE

SET REF	THREADING SIZE IN MILLIMETRES	DIAMETER OF DIES IN INCHES	TAPWRENCH NO.
SC /6	3, 4, 5, 6, 8, 10, 12	13/16 - 1.5/16	(ATW1)
SC /7	6, 7, 8, 9, 10, 12, 14, 16, 18	13/16 - 1.5/16 - 1.1/2	(ATW3)

### THREAD: UNC/NC

SET REF	THREADING SIZE IN INCHES	DIAMETER OF DIES IN INCHES	TAPWRENCH NO.
SC /11	5, 10, 1/4, 5/16, 3/8, 7/16, 1/2	13/16 - 1.5/16	(ATW1)
SC /12	1/4, 5/16, 3/8, 7/16, 1/2	1 - 1.5/16	(ATW1)
SC /13	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4	1 - 1.1/2	(ATW3)
SC /14	1/4, 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 3/4	1 - 1.1/2	(ATW3)
SC /17	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4, 7/8, 1	1 - 1.5/16 - 2	(ATW1&4)

### THREAD: UNF/NF

SET REF	THREADING SIZE IN INCHES	DIAMETER OF DIES IN INCHES	TAPWRENCH NO.
SC /21	5, 10, 1/4, 5/16, 3/8, 7/16, 1/2	13/16 - 1.5/16	(ATW1)
SC /22	1/4, 5/16, 3/8, 7/16, 1/2	1 - 1.5/16	(ATW1)
SC /23	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4	1 - 1.1/2	(ATW3)
SC /24	1/4, 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 3/4	1 - 1.1/2	(ATW3)
SC /27	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4, 7/8, 1	1 - 1.5/16 - 2	(ATW1&4)

### THREAD: BSF

SET REF	THREADING SIZE IN INCHES	DIAMETER OF DIES IN INCHES	TAPWRENCH NO.
SC /30	3/16, 1/4, 5/16, 3/8, 7/16, 1/2	13/16 - 1.5/16	(ATW1)
SC /31	1/8, 3/16, 1/4, 5/16, 3/8, 7/16, 1/2	13/16 - 1.5/16	(ATW1)
SC /32	1/4, 5/16, 3/8, 7/16, 1/2	1 - 1.5/16	(ATW1)
SC /33	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4	1 - 1.1/2	(ATW3)
SC /34	1/4, 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 3/4	1 - 1.1/2	(ATW3)
SC /37	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4, 7/8, 1	1 - 1.5/16 - 2	(ATW1&4)

### THREAD: BSF

SET REF	THREADING SIZE IN INCHES	DIAMETER OF DIES IN INCHES	TAPWRENCH NO.
SC /40	3/16, 1/4, 5/16, 3/8, 7/16, 1/2	3/16 - 1.5/16	(ATW1)
SC /42	1/4, 5/16, 3/8, 7/16, 1/2	1 - 1.5/16	(ATW1)
SC /43	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4	1 - 1.1/2	(ATW3)
SC /44	1/4, 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 3/4	1 - 1.1/2	(ATW3)
SC /47	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4, 7/8, 1	1 - 1.5/16 - 2	(ATW1&4)

### THREAD: BA

SET REF	RANGE	DIAMETER OF DIES IN INCHES	TAPWRENCH NO.
SC /51	0, 1, 2, 3, 4, 5, 6	13/16	(ATW0)
SC /52	0, 1, 2, 3, 4, 5, 6, 7, 8	13/16	(ATW0)
SC /53	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	13/16	(ATW0)

### THREAD: BSP

SET REF	RANGE	DIAMETER OF DIES IN INCHES	TAPWRENCH NO.
SC /61	1/8, 1/4, 3/8, 1/2, 3/4, 1	1 - 1.1/2 - 2 - 2.1/4	(ATW 3&4)
SC /62	1.1/4, 1.1/2, 2	4	(ATW 5)

### THREAD: BSPT

SET REF	RANGE	DIAMETER OF DIES IN INCHES	TAPWRENCH NO.
SC /71	1/8, 1/4, 3/8, 1/2, 3/4, 1	1 - 1.1/2 - 2 - 2.1/4	(ATW 3&4)
SC /72	1.1/4, 1.1/2, 2	4	(ATW5)

### THREAD: NPT

SET REF	RANGE	DIAMETER OF DIES IN INCHES	TAPWRENCH NO.
SC /81	1/8, 1/4, 3/8, 1/2, 3/4, 1	1 - 1.1/2 - 2 - 2.1/4	(ATW 3&4)
SC /82	1.1/4, 1.1/2, 2	4	(ATW5)

### TAP WRENCHES

Available in sizes to cover the whole range of Taps and Dies.

Types: ATW0, ATW1



Types: ATW2 - ATW5



### ALL STEEL ADJUSTABLE TAPWRENCHES

TAP WRENCH NO.	CAPACITY						HAND REAMERS MM.	AVAILABILITY
	OVERALL LENGTH	SQUARE RANGE MM.	METRIC TAPS MM.	BOLT THREAD TAPS INCHES	BSP & BSPT INCHES	NPT & NPS INCHES		
ATW0	4.1/4"	2-5	1.4-6	1/16 - 1/4	-	-	2.5-6	•
ATW1	6.1/4"	2-8	1.4-12	1/16 - 1/2	-	-	2.5-10	•
ATW2	9.3/4"	3.55-9.5	4.5-14	3/16-9/16	1/16-1/4	1/16-1/8	4.5-11	•
ATW3	14"	4.8-11.4	6-20	1/4-3/4	1/8-3/8	1/16-1/4	7-15	•
ATW4	29.1/2"	8.6-24.1	14-42	9/16-1.5/8	3/8-1.1/8	1/4-1	11-30	•
ATW5	41"	19.1-40.1	36-90	1.3/8-3.1/2	1-3	1-2	24-52	•



### SINGLE ENDED WRENCHES

TAP WRENCH NO.	NOMINAL SQUARE SIZE A/F	L1 HANDLE LENGTH MM.	AVAILABILITY
SETW 1	.197"	98.5	•
*SETW 2	.242"	98.6	•
SETW 3	.294"	138	•
*SETW 4	.242"	138	•
SETW 5	.275"	138	•
SETW 6	.322"	168.5	•
SETW 7	.360"	168.5	•
SETW 8	.442"	168.5	•

\* These two wrenches have identical A/F sizes, but different overall dimensions.

# GROUND THREAD TAPS

## TAP SPECIFICATIONS - CHOICE OF TAP

Many factors have to be considered when choosing a tap for a particular application. The method of tapping, type of material, condition and type of equipment and batch quality are the main criteria which affect the choice of tap style.

### STRAIGHT FLUTE TAPS

#### FOR MACHINE OR HAND USE

This type is the basic tap designed as a general purpose tool for hand and machine operation.

As this basic tap will give acceptable performance in most materials and for medium sized production runs, it is usually the most economical tap to use. However, it performs best in materials where the cutting action results in chips which break up readily and do not present problems of chip disposal.

The regular hand tap has four flutes in sizes larger than 9/32" - 7mm diameter. These taps may not be suitable because of inadequate chip space when deep or blind holes have to be tapped in soft stringy materials. This applies particularly to the coarse pitch threads such as BSW and UNC.

### SPIRAL POINT

#### FOR MACHINE USE ONLY

Spiral point taps have straight flutes supplemented by angular cutting faces at the point. The angular cutting faces cut with a shearing action which propels the chips ahead of the tap leaving the flutes clear for the free flow of coolant to the point.

Spiral point taps are designed for use in through holes, but can be used in blind holes providing there is ample clearance beyond the threaded section to accommodate the chips. The advantages of a

spiral point tap are: the shearing action of the angular cutting faces produce a fine finish on the threads, shallower flutes permit a stronger cross section throughout the tap and cutting torque is less than that of a hand tap. HALL Spiral Point Taps have a blue steam-tempered finish to reduce surface friction.

### SPIRAL FLUTE TAPS

#### FOR MACHINE USE ONLY

These taps, designed primarily for machine tapping of blind holes, are used to the best advantage in materials which produce long stringy chips. The shearing action provided by the spiral flutes produces a better finish on difficult to machine metals and causes the chips to be drawn back, eliminating clogging at the cutting chamfer.

### LONG SHANK

These taps are based on shanks 50% longer than the ISO Short Machine and Hand Taps and are for deep hole or other 'long reach' tapping applications. Available in Taper, Second and Bottoming Leads.

### SERIAL TAPS

Serial taps comprise one or more undersized roughing taps which remove most of the material before final sizing with a finishing tap.

Some reasons for using serial taps are:

- The toughness of the material being tapped
- The amount of material to be removed could cause swarf choking with a single tap
- A very small tolerance on pitch diameter
- An extremely good finish required

The table below indicates taps which after considering the above factors may be suitable for use on a selection of common materials.

MATERIAL	CHOICE OF HALL TAP	
	THROUGH HOLES	BLIND HOLES
Low Carbon Steel	Straight Flute or Spiral Point	Straight Flute or Spiral Flute
High Carbon Steel	Straight Flute or Spiral Point	Straight Flute or Spiral Flute
Tool Steel	Straight Flute or Spiral Point	Straight Flute or Spiral Flute
Cast Steel	Straight Flute or Spiral Point	Straight Flute or Spiral Flute
Cast Iron	Straight Flute or Spiral Point	Straight Flute
Stainless Steel	Straight Flute or Spiral Point	Straight Flute or Spiral Flute
Die Cast Aluminium	Straight Flute or Spiral Point	Straight Flute or Spiral Flute
Silicon Aluminium	Straight Flute	Straight Flute
Die Cast Zinc	Straight Flute or Spiral Point	Straight Flute
Brass	Straight Flute	Straight Flute
Thermo-Setting Plastic (eg: Bakelite)	Straight Flute	Straight Flute
Thermo-Plastics (eg: Nylon)	Straight Flute or Spiral Point	Straight Flute or Spiral Flute

# GROUND THREAD TAPS

## TAP SPECIFICATIONS - DIMENSIONS



### ISO (SHORT) DIMENSIONS

THREAD SIZES							DIMENSIONS			
METRIC COARSE	METRIC FINE	UNC	UNF	BSW	BSF	BA	OVERALL LENGTH	THREAD LENGTH	SHANK Ø	SQUARE A/F
1.6			No 0	1/16			41	8	2.5	2.0
1.7/1.8						No 10	41	8	2.5	2.0
2.0		No 1	No 1			No 9	41	8	2.5	2.0
2.2		No 2	No 2			No 8	44.5	9.5	2.8	2.24
2.5		No 3	No 3	3/32		No 7/6	44.5	9.5	2.8	2.24
3	3	No 4/5	No 4/5	1/8		No 5	48	11	3.15	2.5
3.5	3.5	No 6	No 6			No 4	50	13	3.55	2.8
4	4			5/32			53	13	4.0	3.15
4.5	4.5	No 8	No 8			No 3	53	13	4.5	3.55
5	5	No 10	No 10	3/16	3/16	No 2	58	16	5.0	4.0
		No 12	No 12	7/32	7/32	No 1	62	17	5.6	4.5
6	6	1/4	1/4	1/4	1/4	No 0	66	19	6.3	5.0
7	7			9/32	9/32		66	19	7.1	5.6
8	8	5/16	5/16	5/16	5/16		72	22	8.0	6.3
9	9						72	22	9.0	7.1
10	10	3/8	3/8	3/8	3/8		80	24	10.0	8.0
11	11	7/16	7/16	7/16	7/16		85	25	8.0	6.3
12	12	1/2	1/2	1/2	1/2		89	29	9.0	7.1
14	14	9/16	9/16	9/16	9/16		95	30	11.2	9.0
16	16	5/8	5/8	5/8	5/8		102	32	12.5	10.0
18	18	11/16	11/16	11/16	11/16		112	37	14.0	11.2
20	20	3/4	3/4	3/4	3/4		112	37	14.0	11.2
22	22	7/8	7/8	7/8	7/8		118	38	16.0	12.5
24	24/25	1	1	1	1		130	45	18.0	14.0
	27/30		1.1/8				127	37	20.0	16.0
27							135	45	20.0	16.0
30		1.1/8		1.1/8	1.1/8		138	48	20.0	16.0
	32/33		1.1/4				137	37	22.4	18.0
33		1.1/4		1.1/4	1.1/4		151	51	22.4	18.0
	36		1.3/8				144	39	25.0	20.0
36		1.3/8		1.3/8			162	57	25.0	20.0
	39/40		1.1/2				149	39	28.0	22.4
39		1.1/2		1.1/2	1.1/2		170	60	28.0	22.4
42				1.5/8	1.5/8		170	60	28.0	22.4
45		1.3/4		1.3/4	1.3/4		187	67	31.5	25.0
48				1.7/8			187	67	31.5	25.0
52/56		2		2	2		200	70	35.5	28.0
60		2.1/4		2.1/4	2.1/4		221	76	40.0	31.5
64		2.1/2		2.1/2	2.1/2		224	79	40.0	31.5
68/72		2.3/4		2.3/4	2.3/4		234	79	45.0	35.5
		3		3	3		258	83	50.0	40.0



### ISO (LONG SHANK) DIMENSIONS

METRIC	UNC	UNF	No OF FLUTES	OVERALL LENGTH MM	THREAD LENGTH MM	SHANK Ø MM	SQUARE A/F MM
M3 x 0.50			3	66	11	2.24	1.80
M3.5 x 0.60			3	68	13	2.50	2.00
M4 x 0.70			3	73	13	3.15	2.50
M4.5 x 0.75			3	73	13	3.55	2.80
M5 x 0.80			3	79	16	4.0	3.15
M6 x 1.00	1/4	1/4	3	89	19	4.5	3.55
M7 x 1.00			3	89	19	5.6	4.5
M8 x 1.25	5/16	5/16	4	97	22	6.3	5.0
M9 x 1.25			4	97	22	7.1	5.6
M10 x 1.50			4	108	24	8.0	6.3
	3/8	3/8	4	108	24	7.1	5.6
M11 x 1.50	7/16	7/16	4	115	25	8.0	6.3
M12 x 1.75	1/2	1/2	4	119	29	9.0	7.1
M14 x 2.0	9/16	9/16	4	127	30	11.2	9.0
M16 x 2.0	5/8	5/8	4	137	32	12.5	10.0
M18 x 2.5	3/4	3/4	4	149	37	14.0	11.2
M20 x 2.5			4	149	37	14.0	11.2
M22 x 2.5	7/8	7/8	4	158	38	16.0	12.5
M24 x 3.0	1	1	4	172	45	18.0	14.0

### PIPE THREAD DIMENSIONS

THREAD SIZES		DIMENSIONS IN MM			
BSP (ISO 'G')	BSPT (ISO 'R')	OVERALL LENGTH	THREAD LENGTH	SHANK Ø	SQUARE A/F
1/8	1/8	59	15	8.0	6.3
1/4	1/4	67	19	10.0	8.0
3/8	3/8	75	21	12.5	10.0
1/2	1/2	87	26	16.0	12.5
5/8		91	26	18.0	14.0
3/4	3/4	96	28	20.0	16.0
7/8		102	29	22.4	18.0
1	1	109	33	25.0	20.0
1.1/8		115	34	28.0	22.4
1.1/4	1.1/4	119	36	31.5	25.0
1.1/2	1.1/2	125	37	35.5	28.0
1.3/4		132	39	35.5	28.0
2	2	140	41	40.0	31.5
2.1/4		142	42	40.0	31.5
2.1/2	2.1/2	153	45	45.0	35.5
2.3/4		160	46	50.0	40.0
3	3	164	48	50.0	40.0

THREAD SIZES			DIMENSIONS IN MM			
NPS	NPT (API)	NPTF DRYSEAL	OVERALL LENGTH	THREAD LENGTH	SHANK Ø	SQUARE A/F
	1/16		2.1/8	11/16	0.312	0.234
1/8	1/8	1/8	2.1/8	3/4	0.437	0.328
1/4	1/4	1/4	2.7/16	1.1/16	0.562	0.421
3/8	3/8	3/8	2.9/16	1.1/16	0.700	0.531
1/2	1/2	1/2	3.1/8	1.3/8	0.687	0.515
3/4	3/4	3/4	3.1/4	1.3/8	0.906	0.679
1	1	1	3.3/4	1.3/4	1.125	0.843
	1.1/4	1.1/4	4	1.3/4	1.312	0.984
	1.1/2		4.1/4	1.3/4	1.500	1.125
	2		4.1/2	1.3/4	1.875	1.406
	2.1/2		5.1/2	2.9/16	2.250	1.687
	3		6	2.5/8	2.625	1.968





# SPLIT CIRCULAR DIES & HEXAGON DIENUTS

HIGH SPEED STEEL



Manufactured from quality High Speed Steel to BS 1127:1950. Used for cutting external threads - either by machine, or by hand when used in a die stock.



Manufactured from quality High Speed Steel to BS 1127:1950. Used for correcting bruised and damaged external threads by hand.

## STANDARD METRIC COARSE ISO

NOM. DIA. AND PITCH	DIES - OUTSIDE DIAMETER						HEX DIENUT
	13/16"	1"	1.5/16"	1.1/2"	2"	3"	
AVAILABILITY							
M2 x 0.4	•*						
M2.2 x 0.45	•						
M2.5 x 0.45	•*						
M3 x 0.5	•*						•
M3.5 x 0.6	•						•
M4 x 0.7	•*						•
M4.5 x 0.75	•						•
M5 x 0.8	•*						•
M6 x 1	•*	•	•				•
M7 x 1	•*	•	•				•
M8 x 1.25		•*	•				•
M9 x 1.25		•*	•				•
M10 x 1.5		•*	•	•			•
M11 x 1.5			•	•			•
M12 x 1.75			•*	•			•
M14 x 2			•	•	•		•
M16 x 2				•	•		•
M18 x 2.5				•	•		•
M20 x 2.5				•	•		•
M22 x 2.5					•		•
M24 x 3					•		•
M27 x 3						•	•
M30 x 3.5						•	•
M33 x 3.5						•	•
M36 x 4						•	•
M39 x 4						•	•
M42 x 4.5							•

\* Left Hand available.

## METRIC FINE AND OTHER THREADS

NOM. DIA. AND PITCH	DIES - OUTSIDE DIAMETER						HEX DIENUT
	13/16"	1"	1.5/16"	1.1/2"	2"	3"	
AVAILABILITY							
M3 x 0.35	•						•
M3 x 0.6	•						•
M3.5 x 0.35	•						•
M4 x 0.5	•						•
M4.5 x 0.5	•						•
M5 x 0.5	•						•
M5.5 x 0.9	•						•
M6 x 0.75	•						•
M7 x 0.75	•						•
M8 x 1		•					•
M10 x 0.75		•					•
*M10 x 1		•					•
M10 x 1.25		•					•
M12 x 1			•				•
*M12 x 1.25			•				•
M12 x 1.5			•				•
*M14 x 1.25			•				•
M14 x 1.5			•	•			•
M16 x 1				•			•
**M16 x 1.5				•			•
*M18 x 1.5				•			•
M20 x 1					•		•
**M20 x 1.5					•		•
M20 x 2					•		•
M22 x 1.5					•		•
M24 x 1.5					•		•
M24 x 2					•		•
**M25 x 1.5					•		•
M27 x 2						•	•
M30 x 2						•	•
**M32 x 1.5						•	•

\* Spark Plug.  
\*\* Metric Conduit.

## BSW

NOM. DIA. AND PITCH	DIES - OUTSIDE DIAMETER						HEX DIENUT
	13/16"	1"	1.5/16"	1.1/2"	2"	3"	
AVAILABILITY							
1/8	•						•
5/32	•						•
3/16	•						•
7/32	•						•
1/4	•	•	•				•
5/16		•	•				•
3/8		•	•	•			•
7/16			•	•	•		•
1/2			•	•	•	•	•
9/16			•	•	•		•
5/8				•	•		•
11/16					•		•
3/4					•		•
7/8						•	•
1						•	•
1.1/8						•	•
1.1/4						•	•
1.3/8						•	•
1.1/2						•	•
1.3/4							•
2							•

## BSF

NOM. DIA. AND PITCH	DIES - OUTSIDE DIAMETER						HEX DIENUT
	13/16"	1"	1.5/16"	1.1/2"	2"	3"	
AVAILABILITY							
3/16	•						•
7/32	•						•
1/4	•	•	•				•
5/16		•	•				•
3/8		•	•	•			•
7/16			•	•	•		•
1/2			•	•	•	•	•
9/16			•	•	•		•
5/8				•	•		•
11/16					•		•
3/4					•		•
7/8						•	•
1						•	•
1.1/8						•	•
1.1/4						•	•
1.3/8						•	•
1.1/2						•	•
1.3/4							•
2							•

## BSP

NOM. DIA. AND PITCH	DIES - OUTSIDE DIAMETER						HEX DIENUT
	1"	1.5/16"	1.1/2"	2"	2.1/4"	3"	
AVAILABILITY							
1/8	•	•	•				•
1/4		•	•	•			•
3/8			•	•	•		•
1/2				•	•	•	•
5/8				•	•		•
3/4					•	•	•
7/8					•	•	•
1						•	•
1.1/4						•	•
1.1/2						•	•
1.3/4							•
2							•

## BSPT AND NPT (Dies supplied as solid non-adjustable)

NOM. DIA. AND PITCH	DIES - OUTSIDE DIAMETER				HEX DIENUT
	1"	1.1/2"	2"	2.1/4"	
AVAILABILITY					
1/8	•				•
1/4		•			•
3/8		•			•
1/2			•		•
3/4			•		•
1				•	•

Sizes: 1.1/4 - 1.1/2 - 2 available. Please inquire.



# SPLIT CIRCULAR DIES & HEXAGON DIENUTS

## HIGH SPEED STEEL



Manufactured from quality High Speed Steel to BS 1127:1950. Used for cutting external threads - either by machine, or by hand when used in a die stock.



Manufactured from quality High Speed Steel to BS 1127:1950. Used for correcting bruised and damaged external threads by hand.

### UNC / NC

NOM. DIA. AND PITCH	DIES - OUTSIDE DIAMETER						HEX DIENUT
	13/16"	1"	1.5/16"	1.1/2"	2"	3"	
	AVAILABILITY						
No.2	•						
No.3	•						
No.4	•						
No.5	•						
No.6	•						
No.8	•						
No.10	•						•
No.12	•						•
1/4	•	•	•				•
5/16		•	•				•
3/8		•	•	•			•
7/16			•	•			•
1/2			•	•	•		•
9/16			•	•	•		•
5/8				•	•		•
3/4				•	•		•
7/8					•		•
1					•		•
1.1/8						•	•
1.1/4						•	•
1.3/8						•	•
1.1/2						•	•
1.3/4							•
2							•

### UNF / NF

NOM. DIA. AND PITCH	DIES - OUTSIDE DIAMETER						HEX DIENUT
	13/16"	1"	1.5/16"	1.1/2"	2"	3"	
	AVAILABILITY						
No.2	•						
No.3	•						
No.4	•						
No.5	•						
No.6	•						
No.8	•						
No.10	•						•
No.12	•						•
1/4	•	•	•				•
5/16		•	•				•
3/8		•	•	•			•
7/16			•	•			•
1/2			•	•	•		•
9/16			•	•	•		•
5/8				•	•		•
3/4				•	•		•
7/8					•		•
1					•		•
1.1/8						•	•
1.1/4						•	•
1.3/8						•	•
1.1/2						•	•

### BS | BRASS

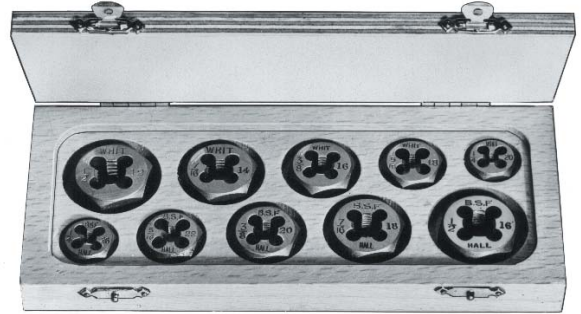
NOM. DIA. AND PITCH	DIES - OUTSIDE DIAMETER			
	1"	1.5/16"	1.1/2"	2"
	AVAILABILITY			
*1/4				
5/16	•	•		
3/8	•	•		
7/16		•		
1/2		•		
5/8			•	
3/4				•
7/8				•
1				•

\* BSF also.

### BA | BRITISH ASSOCIATION

NOM. DIA. AND PITCH	DIES - OUTSIDE DIAMETER		HEX DIENUT
	13/16"	1"	
	AVAILABILITY		
0	•	•	•
1	•	•	•
2	•	•	•
3	•	•	•
4	•	•	•
5	•	•	•
6	•	•	•
7	•	•	•
8	•	•	•
9	•	•	•
10	•	•	•

## SETS OF HSS HEXAGON DIENUTS IN POLISHED WOOD CASES



### THREAD: METRIC ISO COARSE

SET REF	THREADING SIZES IN MILLIMETRES
DN/1	6, 8, 10, 12
DN/2	6, 8, 10, 12, 14, 16, 18, 20, 22, 24

### THREAD: METRIC ISO COARSE, FINE, COMBINATION

SET REF	THREADING SIZES IN MILLIMETRES
DN/1C	6x1, 7x1, 8x1.25, 10x1.5, 12x1.75 coarse combination 6x0.75, 7x0.75, 8x1, 10x1, 12x1.25 fine

### THREAD: UNC / NC, UNF / NF

SET REF	THREADING SIZES IN INCHES	
UNC/NC	UNF/NF	
DN/11	DN/21	1/4, 5/16, 3/8, 7/16, 1/2
DN/12	DN/22	1/4, 5/16, 3/8, 7/16, 1/2*, 5/8, 3/4, 7/8, 1
DN/13	DN/23	10, 1/4, 5/16, 3/8, 7/16, 1/2*, 5/8, 3/4, 7/8, 1
DN/2C		1/4, 5/16, 3/8, 7/16, 1/2 Combination

\* 9/16 size can be included if required.

### THREAD: BSW, BSF

SET REF	THREADING SIZES IN INCHES	
UNC/NC	UNF/NF	
DN/31	DN/41	1/4, 5/16, 3/8, 7/16, 1/2
DN/32	DN/42	1/4, 5/16, 3/8, 7/16, 1/2*, 5/8, 3/4, 7/8, 1
DN/33	DN/43	3/16, 1/4, 5/16, 3/8, 7/16, 1/2*, 5/8, 3/4, 7/8, 1
DN/34	-	1/8, 3/16, 1/4, 5/16, 3/8, 7/16, 1/2*, 5/8, 3/4, 7/8, 1
DN/3C		1/4, 5/16, 3/8, 7/16, 1/2 Combination

\* 9/16 size can be included if required.



## DIESTOCKS FOR SPLIT CIRCULAR DIES

O/D INCHES	AVAILABILITY
13/16	•
1	•
1.5/16	•
1.1/2	•
2	•
2.1/4	•
3	•
4	•

A RANGE OF TOOLS SPECIALLY DEVELOPED FOR THE PROFESSIONAL ELECTRICIAN



DIE

GUIDE

## CONDUIT DIES AND GUIDES

CONDUIT THREAD SIZE	DIE OUTSIDE DIAMETER	SERIES	GUIDE BORE DIAMETER
M16 x 1.5	42mm (1.21/32")	B	16.5mm
M20 x 1.5	42mm (1.21/32")	B	20.5mm
M25 x 1.5	42mm (1.21/32")	B	25.5mm
M32 x 1.5	63.5mm (2.1/2")	D	32.5mm
M40 x 1.5	63.5mm (2.1/2")	D	40.5mm
1.1/4 1.1/2 & 2	89mm (3.1/2")	F	-



## DOUBLE HANDED DIESTOCKS

DIESTOCK REF	OVERALL LENGTH	DEPTH	WIDTH	SERIES
DHB	410mm	36mm	58mm	B
DHD	700mm	44mm	81mm	D
DHF	940mm	60mm	105mm	F



## RATCHET DIESTOCKS

DIESTOCK REF	OVERALL LENGTH	DEPTH	WIDTH	SERIES
RB	376mm	37mm	66.5mm	B
RD	649mm	63.5mm	86mm	D
RF	-	-	-	-



## BI-METAL HOLESAWS

TOOL NO	NOMINAL CUT DIAMETER
HS16	16mm
HS20	20mm
HS25	25mm
HS32	32mm
HS40	40mm



## HOLESAW ACCESSORIES

TOOL NO	DESCRIPTION
HSARBOUR	Arbor and Pilot Drill
HSPLOTDRILL	Spare Set of 5 Pilot Drills

Suitable for HSS 16 to HSS 25 only.



## SETS

RANGE WITH DOUBLE HANDED DIESTOCK

SET REF	RANGE IN MM	SERIES	CONTENTS: 1 EACH			AVAILABILITY
			DIES	GUIDES	DIESTOCK	
DHB/MET/2	16 - 20 - 25	B	16 - 20 - 25	16 - 20 - 25	DHB	•
DHB/MET/4	20 - 25	B	20 - 25	20 - 25	DHB	•
DHD/MET/1	32	D	32	32	DHD	•
DHD/MET/3	32 - 40	D	32 - 40	32 - 40	DHD	•

## SETS

RANGE WITH RATCHET DIESTOCK

SET REF	RANGE IN MM	SERIES	CONTENTS: 1 EACH			AVAILABILITY
			DIES	GUIDES	DIESTOCK	
RB/MET/2	16 - 20 - 25	B	16 - 20 - 25	16 - 20 - 25	RB	•
RB/MET/4	20 - 25	B	20 - 25	20 - 25	RB	•
RD/MET/1	32	D	32	32	RD	•
RD/MET/3	32 - 40	D	32 - 40	32 - 40	RD	•



## CONDUIT ELECTRICAL TAPS

Single thread size Conduit Taps | Hexagon Shank | Carbon Steel

TOOL NO	OVERALL LENGTH	SHANK SIZE
M12 X 1.5	45mm	10mm A/F Hex
M16 X 1.5	45mm	10mm A/F Hex
M20 X 1.5	45mm	13mm A/F Hex
M25 X 1.5	45mm	13mm A/F Hex
M32 X 1.5	45mm	13mm A/F Hex



## CONDUIT ELECTRICAL TAPS

Multi thread size Conduit Taps | Hexagon Shank | Carbon Steel

TOOL NO	CONDUIT THREAD SIZES	OVERALL LENGTH	SHANK SIZE
20mm/25mm	M20 x 1.5 / M25 x 1.5	43mm	13mm A/F Hex
20mm/25mm/32mm	M20 x 1.5 / M25 x 1.5 / M32 x 1.5	55.5mm	13mm A/F Hex





A RANGE OF TOOLS SPECIALLY DEVELOPED FOR THE PROFESSIONAL ELECTRICIAN



## CONECUT

TOOL NO	METRIC RANGE	IMPERIAL RANGE (APPROX)	SHANK TO FIT CHUCK SIZE	DRILLING SPEEDS RPM	
				FERROUS	NON-FERROUS
CC 1	6 - 20mm	(1/4" - 13/16")	3/8" (10mm)	200-600	500-1500
CC 1A	9.5 - 22.5mm	3/8" - 7/8"	3/8" (10mm)	200-600	500-1500
CC 2	16 - 30.5mm	(5/8" - 1.3/16")	3/8" (10mm)	150-400	400-1000
CC 3	25 - 40mm	(1" - 1.5/8")	3/8" (10mm)	100-300	300-500
CC 25	16 - 25mm	(5/8" - 1")	3/8" (10mm)	150-400	400-1000

## ELECTRICIANS CONECUT

The perfect electricians cutting tool for rapid drilling and enlarging holes in thin material up to 2mm.

The diameter of the hole increases as the Conecut® advances into the material.

Clearly marked at 20mm and 25mm, introducing a new collar feature that defines the 25mm dia and stops the tool following through the hole.



TOOL NO	DESCRIPTION
CCE 2025	Electricians Conecut

## ELECTRICIANS EARTH PREPARATION TOOL

The Earth Preparation Tool enables the electrician to prepare the surface around 20, 25 or 32mm holes, ensuring a good clean earth contact is made for the earth lug.

The bright surface produced is even and neat and extends to provide a full contact on the mating part.



TOOL NO	DESCRIPTION
EPT 2032	Electricians Earth Preparation Tool



## BRADRAD

A range of sizes specially designed for work with conduits.

TOOL NO	PILOT MM	APPLICATION IN MM	DRILLING SPEEDS RPM	
			TO FIT CHUCK	NON FERROUS
BC 1232	8	12, 16, 20, 25 & 32mm Holes for Conduit Entry	10mm	90-300
BC 1240	8	12, 16, 20, 25, 32 & 40mm Holes for Conduit Entry	13mm	220-550
BCT 1240	10.5	Drills core holes for ISO Conduit Threads M12, M16, M20, M25, M32 & M40 (1.5mm)	13mm	220-550



## MULTICUT

TOOL NO	APPROX STARTING DIAMETER	DRILL SIZE AND APPLICATION (MM)	MAX MATERIAL THICKNESS	SHANK TO FIT CHUCK SIZE	DRILLING SPEEDS RPM	
					FERROUS	NON-FERROUS
MC 1232	8.5mm	12, 16, 20, 25 & 32mm holes for conduit entry	3.5mm	10mm	130-300	300-800
MC 1240	8.5mm	12, 16, 20, 25, 32 & 40mm holes for conduit entry	3.5mm	13mm	100-300	300-500
MCT 1232	6.5mm	Drills core holes for ISO conduit threads M12, M16, M20, M25 & M32 (1.5mm Pitch)	3.5mm	10mm	130-300	300-800
MCT 1240	6.5mm	Drills core holes for ISO conduit threads M12, M16, M20, M25, M32 & M40 (1.5mm Pitch)	3.5mm	13mm	100-300	300-500
MCCT 1225	6.5mm	Core & entry holes for ISO conduit threads 12mm x 1.5, 16mm x 1.5, 20mm x 1.5mm, 25mm x 1.5mm	6mm (tapping) 3mm (clearance)	10mm	150-400	400-1000
MCCT 1232	6.5mm	Core & entry holes for ISO conduit threads 12mm x 1.5, 16mm x 1.5, 20mm x 1.5mm, 25mm x 1.5mm, 32mm x 1.5mm	6mm (tapping) 3mm (clearance)	10mm	130-300	300-800
MC 1625	6mm	16, 20 & 25mm holes for conduit entry	3.5mm	10mm	150-400	400-1000
MC 1632	11mm	16, 20, 25 & 32mm holes for conduit entry	3.5mm	13mm	130-300	300-800
MC PG21	6.5mm	Drills clearance holes for PG fittings PG7, 9, 11, 13.5, 16, 21. Also 30.5mm pushbutton holes	3mm	13mm	130-300	300-800
MC PG29	6.5mm	Drills clearance holes for PG fittings PG7, 9, 11, 13.5, 16, 21, 29. Also 33mm, 35mm dia and 30.5mm pushbutton holes	3mm	13mm	100-300	300-500

## HANDBURR

A superb range of precision made hand tools for multiple applications. These are ideal time and efficiency saving tools for the professional Electrician.

See page 29 for full details.



TAPER REAMERS



CHAMFERBITS



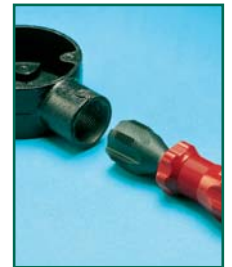
RETHREADERS



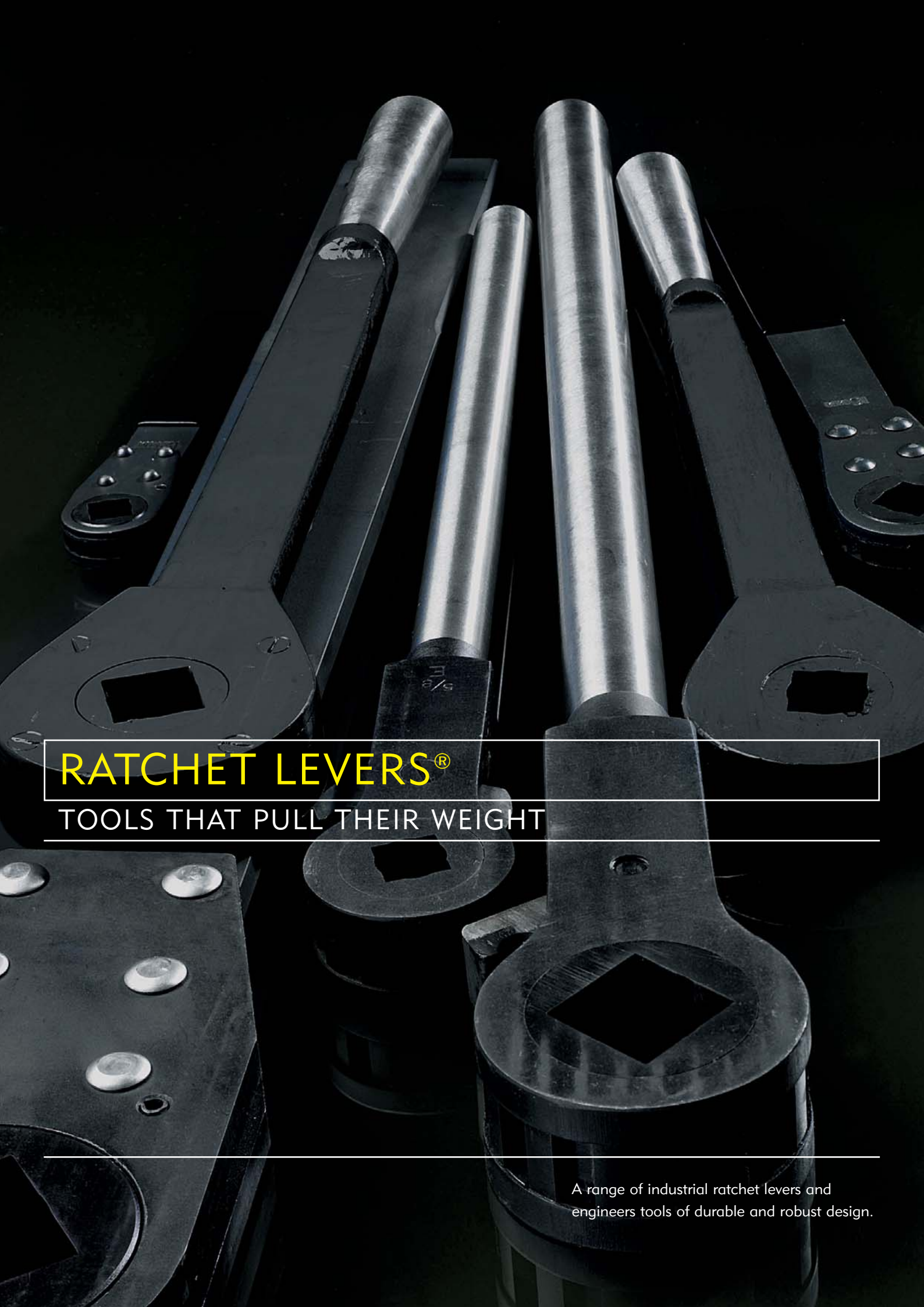
PIPE REAMERS



MICRO DRILL REAMERS



CONDUIT RETHREADERS



# RATCHET LEVERS®

TOOLS THAT PULL THEIR WEIGHT

A range of industrial ratchet levers and engineers tools of durable and robust design.

# RATCHET SPANNERS

## NO. 339 GENERAL PURPOSE NON-REVERSIBLE

General Purpose Spanners No. 339 are of robust all-steel construction, with an easy ratchet action. Handles are plastic-encased for comfort.



FRAME REF	SQUARE HOLES INCHES	SQUARE HOLES MM	HEX HOLES INCHES	HEX HOLES MM
<b>No.0</b>		<b>6</b>	7/16	
Handle length 6"	<b>1/4</b>	<b>7</b>	.445	<b>8</b>
Overall length 6.1/2"	<b>5/16</b>	<b>8</b>	1/2	
Across Head 1.1/8"	<b>3/8</b>	<b>9</b>	.525	<b>10</b>
Head thickness 1/2"	7/16	<b>10</b>	9/16	
	<b>1/2</b>	<b>11</b>		<b>13</b>
		<b>12</b>	.600	
<b>No.1</b>		<b>14</b>	11/16	<b>17</b>
Handle length 9.1/8"	9/16		.710	
Overall length 10"	<b>5/8</b>	<b>16</b>	<b>3/4</b>	<b>19</b>
Across Head 1.5/8"	<b>11/16</b>		.820	<b>22</b>
Head thickness 5/8"	<b>3/4</b>	<b>18</b>	7/8	<b>24</b>
	13/16	<b>20</b>	<b>.920</b>	
			1.010	
<b>No.2</b>	7/8			
Handle length 14"		<b>22</b>		<b>27</b>
Overall length 15"	15/16		1.1/8	
Across Head 2.3/16"		<b>24</b>	1.200	<b>30</b>
Head thickness 3/4"	<b>1</b>			<b>32</b>
<b>No.3</b>			1.300	
Handle length 17.3/4"	1.1/8	27	1.5/16	
Overall length 19.1/8"		<b>1.480</b>	<b>1.480</b>	
Across Head 2.13/16"	1.1/4	30	1.1/2	<b>36</b>
Head thickness 15/16"	1.3/8	<b>33</b>	<b>1.670</b>	41
<b>No.4</b>				
Handle length 24"	up to	up to	up to	up to
Overall length 26"				
Across Head 3.7/8"	<b>1.3/4 sq</b>	45 sq	2.1/4 A/F	55 A/F
Head thickness 1.1/8"				

## NO. 337 GENERAL PURPOSE REVERSIBLE

General Purpose Spanners No. 337 are of robust all-steel construction, with an easy ratchet action. Handles are plastic-encased for comfort.



FRAME REF	SQUARE HOLES INCHES	SQUARE HOLES MM	HEX HOLES INCHES	HEX HOLES MM
<b>No.0</b>		<b>6</b>	7/16	
Handle length 6"	<b>1/4</b>	<b>7</b>	.445	<b>8</b>
Overall length 6.1/2"	<b>5/16</b>	<b>8</b>	1/2	
Across Head 1.1/8"	<b>3/8</b>	<b>9</b>	.525	<b>10</b>
Head thickness 1/2"	7/16	<b>10</b>	9/16	
	<b>1/2</b>	<b>11</b>		<b>13</b>
		<b>12</b>	.600	
<b>No.1</b>		<b>14</b>	11/16	<b>17</b>
Handle length 9.1/8"	9/16		.710	
Overall length 10"	<b>5/8</b>	<b>16</b>	<b>3/4</b>	<b>19</b>
Across Head 1.5/8"	11/16		.820	<b>22</b>
Head thickness 5/8"	<b>3/4</b>	18	7/8	<b>24</b>
	13/16	<b>19</b>	.920	
		<b>20</b>	1.010	
<b>No.2</b>	<b>7/8</b>			
Handle length 14"		<b>22</b>		<b>27</b>
Overall length 15"	15/16		1.1/8	
Across Head 2.3/16"		<b>24</b>	1.200	<b>30</b>
Head thickness 3/4"	<b>1</b>			<b>32</b>
<b>No.3</b>			1.300	
Handle length 17.3/4"	1.1/8	27	1.5/16	
Overall length 19.1/8"		<b>1.480</b>	<b>1.480</b>	
Across Head 2.13/16"	1.1/4	30	1.1/2	36
Head thickness 15/16"	1.3/8	<b>33</b>	<b>1.670</b>	41
<b>No.4</b>				
Handle length 24"	up to	up to	up to	up to
Overall length 26"				
Across Head 3.7/8"	1.3/4 sq	45 sq	2.1/4 A/F	up to 55 A/F
Head thickness 1.1/8"				



Sizes shown in **bold** print indicate those sizes normally available from stock. Specials are available upon enquiry. Handle lengths are measured from centre of hole.

**Load Factors:** Hall levers are designed to withstand a normal load plus a considerable margin for safety. We define a normal load as the maximum gradual pull which could be exerted on the end of the handle by an average man.



# RATCHET LEVERS

## NO. 333 ENCLOSED ACTION NON-REVERSIBLE

No. 333 Ratchet Levers have a totally enclosed mechanism which is therefore protected against particularly dirty conditions such as construction sites or trenches, or corrosive atmosphere such as chemical plants or oil rigs.



FRAME REF	SQUARE HOLES INCHES	SQUARE HOLES MM	HEX HOLES INCHES	HEX HOLES MM
<b>No.30</b> Handle length 7" Across Head 1.11/16" Head thickness 5/8"	<b>3/8</b>	10		10
<b>No.31</b> Handle length 9" Across Head 2.1/2" Head thickness 7/8"	<b>7/16</b>	11	9/16 .600	13
<b>No.32</b> Handle length 11" Across Head 2.3/4" Head thickness 7/8"	<b>5/8</b>	16	.820	19
<b>No.33</b> Handle length 14" Across Head 2.7/8" Head thickness 1"	<b>3/4</b>	18	7/8 .920 15/16	22 24
<b>No.34</b> Handle length 16" Across Head 3.1/4" Head thickness 1.1/8"	<b>7/8</b>	<b>22</b>	1.1/8	27
<b>No.35</b> Handle length 20" Across Head 3.1/2" Head thickness 1.3/8"	<b>1</b>	24	1.200	30 32
<b>No.36</b> Handle length 17" Across Head 4.1/4" Head thickness 1.3/8"	<b>1.1/8</b> <b>1.1/4</b> <b>1.1/2</b>	27 30 33 36	1.300 1.5/16 1.480 1.1/2 1.670 1.11/16 1.860	36 41 46

## NO. 335 HEAVY DUTY REVERSIBLE

Also available as Ref:334 Non-Reversible

No. 335 Ratchet Levers are designed for the toughest loads. The racks and pawls are specially heat treated to withstand a higher load than the tubular handle - a safety feature designed to offer the operator some protection if the Lever is abused.



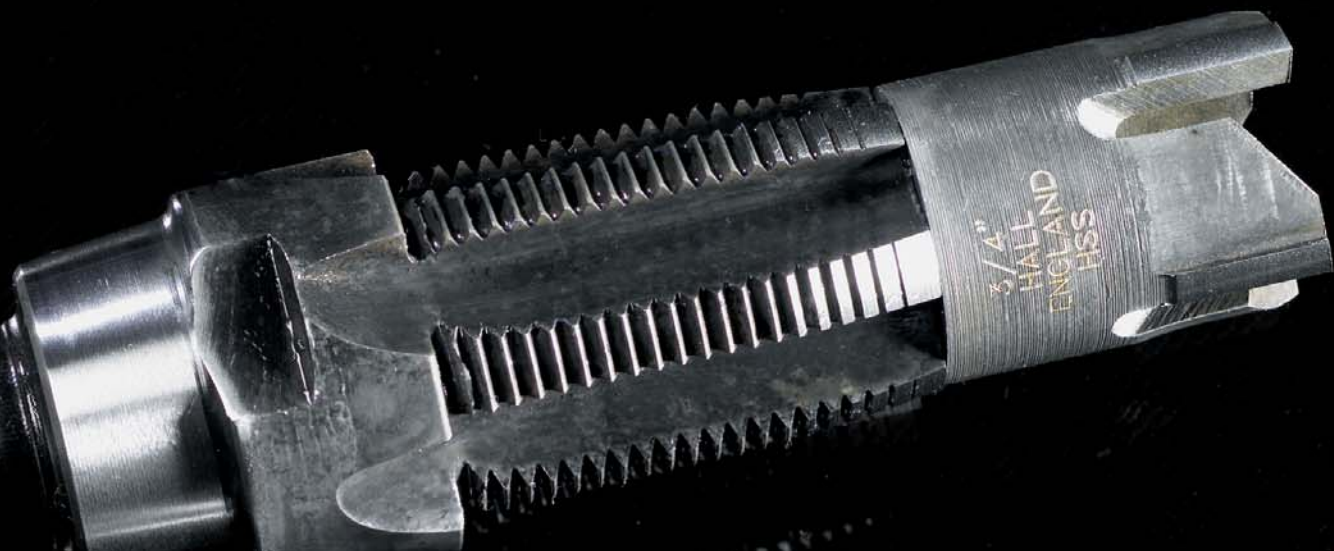
FRAME REF	SQUARE HOLES INCHES	SQUARE HOLES MM	HEX HOLES INCHES	HEX HOLES MM
<b>'A' Series</b> Handle length 16" Across Head 2" Head thickness 1.1/8"	<b>5/8</b> <b>3/4</b> <b>7/8</b>	16 18 22	3/4 .820 .920 15/16 <b>1.010</b>	19 22 24 27
<b>'B' Series</b> Handle length 22" Across Head 2.7/8" Head thickness 1.1/2"	<b>1</b> <b>1.1/8</b>	24 27 30	1.1/8 <b>1.200</b> 1.300 <b>1.5/16</b> <b>1.480</b>	30 <b>32</b> 36
<b>'C' Series</b> Handle length 26" Across Head 3.3/8" Head thickness 1.1/2"	<b>1.1/4</b> <b>1.3/8</b>	33 36	1.1/2 1.670 1.11/16 1.860	41 46
<b>'D' Series</b> Handle length 30" Across Head 4" Head thickness 1.7/8"	<b>1.1/2</b> <b>1.5/8</b>	39 42	1.7/8 2.050 2.1/16	50
<b>'E' Series</b> Handle length 40" Across Head 5.1/16" Head thickness 2"	<b>1.3/4</b> <b>1.7/8</b> <b>2</b>	45 48 52	2.220 2.1/4 2.580	55 60 65
<b>'F' Series</b> Handle length 48" Across Head 6.3/4" Head thickness 2.1/4"	over 2" to 3"	over 52mm 76mm	over 2.58" to 3.66"	over 65mm to 95mm



Sizes shown in **bold** print indicate those sizes normally available from stock. Specials are available upon enquiry. Handle lengths are measured from centre of hole.

**Load Factors:** Hall levers are designed to withstand a normal load plus a considerable margin for safety. We define a normal load as the maximum gradual pull which could be exerted on the end of the handle by an average man.





## COMBINED DRILLS & TAPS



Designed for use during the installation of feed connections etc in gas and water mains. These tools are manufactured from quality carbon chrome tool steel or high speed steel with ground threads and special anti-shock treatment. High speed steel drill taps and cups give better life on cement lined pipes and are usually preferred where the drilling operation is power assisted.





# COMBINED DRILLS & TAPS

All tools are suitable for general use in Underpressure Machines for the installation of feed connections in Gas and Water Mains; common makes of machine are Talbot, Peart/Pass, ALH and Wask.


## STANDARD DRILL TAPS

### QUALITY TOOL STEEL

Solid type drill taps are available with shanks suitable for all commonly used machines eg: Talbot Peart, Pass, ALH and Wask.

TOOL NO	SOLID DRILL TAPS	THREAD	AVAILABILITY					
			1/2	3/4	1	1.1/4	1.1/2	2
311A		BSP	•	•	•	•	•	•
311P		BSP	•	•	•	•	•	•
311		BSP	•	•	•	•	•	•
311T		BSPT	•	•	•			

Drill taps with a screw ended spigot to accept a carbon chrome tool steel cup are available with pass style shanks. The pilot drill provides support during drilling and therefore reduces oversize drilling and minimises ovality.

TOOL NO	SCREWED - ENDED DRILL TAPS	THREAD	AVAILABILITY						
			3/4	1	1.1/4	1.1/2	2	2.1/2	3
311B		BSP	•	•	•	•	•	•	•
		BSPT						•	•
311C		CUP DRILL TO SUIT 311B	•	•	•	•	•	•	•
Spare Centre Drills								•	•

2.1/2" and 3" = BSPT are supplied with centre drills

Hole saw drill taps have a carbon steel tap and are fitted with a special HSS hole saw. This design allows holes to be drilled and tapped very quickly with less effort than is required with other styles.

TOOL NO	HOLE SAW DRILL TAPS	THREAD	AVAILABILITY				
			3/4	1	1.1/4	1.1/2	2
313B TAP		BSP	•	•	•	•	•
313S HOLE SAW		SPECIAL HSS HOLE SAW TO SUIT 313B	•	•	•	•	•


## SUPER QUALITY DRILL TAPS

### SPECIALLY HARDENED HIGH SPEED STEEL

Solid type drill taps are available with shanks suitable for all commonly used machines eg: Talbot Peart, Pass, ALH and Wask.

TOOL NO	SOLID DRILL TAPS	THREAD	AVAILABILITY		
			1/2	3/4	1
311A HSS		BSP	•	•	•
311T HSS		BSPT	•	•	•

Drill taps with a screw ended spigot and pilot drill to accept a high speed steel cup are available with pass style shanks. The pilot drill provides support during drilling and therefore reduces oversize drilling and minimises ovality.

TOOL NO	SUPER DRILL AND TAP SETS	THREAD	AVAILABILITY		
			1.1/4	1.1/2	2
312B TAP		BSP	•	•	•
312C CUP		HSS CUP DRILL TO SUIT 312B	•	•	•
312D PILOT		HSS PILOT DRILL	•	•	•
312 Set Complete			•	•	•

312B from tool steel  
312C & 312D from HSS

### INSTRUCTIONS FOR ORDERING DRILL TAPS

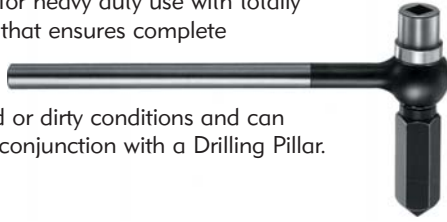
- In view of the visual similarity of many types of shank, always state the machine and model use.
- Specify type of pipe to be tapped, ie: cast iron, asbestos cement, concrete lined, etc.



# MISCELLANEOUS ENGINEERS TOOLS

## ENGINEERS RATCHET BRACES

All-steel construction for heavy duty use with totally enclosed mechanism that ensures complete protection from corrosion or clogging when used in exposed or dirty conditions and can easily be operated in conjunction with a Drilling Pillar.



### NO. 345 EXTRA SHORT HEAD - NO. 2 TAPER SQUARE DRILLS

BRACE NO.	HANDLE LENGTH IN INCHES	ACROSS HEAD IN INCHES
345	12	3.1/8

### NO. 346 SHORT HEAD - NO. 2 TAPER SQUARE DRILLS

BRACE NO.	HANDLE LENGTH IN INCHES	ACROSS HEAD IN INCHES
346	15	5.1/8

### NO. 347 LONG HEAD - NO. 2 TAPER SQUARE DRILLS

BRACE NO.	HANDLE LENGTH IN INCHES	ACROSS HEAD IN INCHES
347	15	8.1/4
347	18	9.3/8

### NO. 347 MS LONG HEAD - MORSE TAPER DRILLS

BRACE NO.	HANDLE LENGTH	ACROSS HEAD	MT SOCKET	FOR METRIC DRILLS	FOR IMPERIAL DRILLS
347 MS	12	6.1/8	No 1	up to 14mm	up to 35/64"
347 MS	15	6.1/2	No 2	14.25 - 23mm	9/16 - 29/32"
347 MS	18	7.13/16	No 3	23.25 - 31.75mm	59/64 - 1.1/4"
347 MS	24	12.1/2	No 4	32 - 50.5mm	1.17/64 - 2"



## REPAIRMANS REAMERS

TOOL NO.	SIZE	FLUTES
5 T	3 - 12mm	6
6 T	10 - 25mm	8



## PIPE BURRING REAMERS

TOOL NO.	NOMINAL PIPE BORE RANGE	FLUTES	SHANK
BR 2	1/8 - 1	6	Bit Stock
BR 3	1/4 - 1.1/4	8	Bit Stock
BR 3A	1/4 - 1.1/4	8	T' Handle
BR 4	1/4 - 1.1/4	8	1/2 Round
BR 5	1/4 - 1.1/2	8	Bit Stock
BR 6	1/2 - 2	10	Bit Stock
BR 7	1/2 - 2	10	T' Handle



## LARGE SCREW EXTRACTORS

TOOL NO.	SIZE IN INCHES	SIZES OF SQUARE A/F IN INCHES
LSE 8	3/4	15/16
LSE 9	1	15/16
LSE 10	1.1/4	15/16
LSE 11	1.1/2	1.7/32
LSE 12	2	1.11/16

## UNIVERSAL RATCHET STOCKS

Quick fitting of circular dies for maximum flexibility to cut difficult materials. Double-sided steel die holder. Easy-to-use ratchet mechanism. Dies will cut all conventional threads including BSP and Conduit.



FRAME REF	SIZE RANGE
<b>No.1</b> Handle length 9.1/8" Overall length 10" Across Head 1.5/8" Head thickness 1.1/4"	Will accept 13/16" and 1" o/dia Split Circular Dies
<b>No.2</b> Handle length 14" Overall length 15" Across Head 2.3/16" Head thickness 1.1/2"	Will accept 1" and 1.5/16" o/dia Split Circular Dies
<b>No.3</b> Handle length 17.3/4" Overall length 19.1/8" Across Head 2.13/16" Head thickness 2.1/16"	Will accept 1.1/2" and 2" o/dia Split Circular Dies

## UNIVERSAL RATCHET STOCKS GUIDES

OUTSIDE DIAMETER	SIZE
13/16"	When ordering a Universal Ratchet Stock GUIDE state the thread size and the outside diameter required.
1"	
1.5/16"	
1.1/2"	
2"	



## UNIVERSAL RATCHET STOCKS CENTRE

OUTSIDE DIAMETER
13/16"
1"
1.5/16"
1.1/2"
2"



**!** The Guide or Centre is fitted to the opposite side of the stock from the Die, therefore the outside diameter of the Guide or Centre will not be the same as the outside diameter of the Die being used.



## DRILLING PILLARS

HEIGHT OF PILLAR IN INCHES	RADIUS OR REACH OF ARM IN INCHES	LENGTH OF FEET IN INCHES
21	12	8.1/2
32	17	12



### HEALTH & SAFETY

Cutting tools may shatter when broken. Please take adequate precautions to ensure personal protection.





## PRODUCT SELECTOR : ISSUE 4

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