



**PRESTO INTERNATIONAL UK LTD**

## **TRAINING MANUAL**

### **Part 6**

## **THE PRESTO CATALOGUE**

# DRILLS

## TYPES OF DRILL

### JOBBER DRILL

SERIES 01???

Length Fixed by BS328  
Considered to be the Standard Drill  
Fixed Overall length per diameter  
Drilling Depth 6 x Diameter

### STUB DRILL

SERIES 02???

Length Fixed by DIN 1897  
Shorter than a Jobber Drill  
More robust than a jobber drill  
Fixed Overall length per diameter  
Drilling Depth 4 x Diameter

### LONG SERIES DRILL

SERIES 04???

Length Fixed by DIN 340  
Longer than a Jobber Drill  
Weaker than a jobber drill  
Fixed Overall length per diameter  
Drilling Depth 10 x Diameter

### EXTRA LONG DRILL

SERIES 05???

Length Fixed by BS328  
Longer than a Long Series Drill  
Very Weak - Need support when drilling  
There are 5 Overall length variations per diameter  
All length's in mm's, even fractional diameters  
Drilling Depth Over 10 x Diameter

### MORSE TAPER SHANK DRILL

SERIES 11???

Length Fixed by DIN 345  
Used only in machines  
Fixed Overall length per diameter  
Large range of diameters 2mm to 100mm (1/16" - 4")

## MORSE TAPER SHANK EXTRA LENGTH DRILL

SERIES 15???

Similar to above, but with availability of longer reach

There are 6 Overall length variations per diameter

### Overall Length of Drills

Example; Straight Shank Drill, Diameter 6.0mm

Stub Drill	66mm Overall Length
Jobber Drill	93mm Overall Length
Long Series Drill	139mm Overall Length
Extra Length Drill	Available in 200mm, 250mm, 315mm & 400mm Overall Length's

### Flute Forms or Shapes

1. Standard "J" Shape Flute

General purpose Drill



2. Parabolic Flute (or Worm Pattern)

SM100 drills are M2 HSS  
SM200 drills are M42 8% Cobalt  
Series 01401



3. Quick Helix (or Quick Spiral)

Series 01300

Used in soft materials, e.g. Aluminium, Copper & Zinc



4. Slow Helix (or Slow Spiral)

Series 01200

Used in brittle materials, e.g. Brass, Plastics & Bakelite



5. Heavy Duty Cobalt

Series 01111



Same flute form as the standard drill, but with a thicker web than normal.  
Normally supplied with 135° split point, for heavy duty use.

## DRILL CUTTING SPEEDS

MATERIAL	Hard's	SPEEDS & (feeds)		
		Stub	Jobber	Long S
<b>Steel</b>				
lead free cutting	120Hb	36 (5)	33 (4)	22 (3)
low carbon	150Hb	32 (5)	27 (4)	20 (3)
medium carbon	250Hb	27 (4)	22 (3)	17 (3)
Alloy Steel	250Hb	21 (4)	18 (3)	16 (2)
Alloy steel treated	300Hb	14 (3)	11 (2)	9 (2)
Alloy steel treaded	350Hb	9 (2)	7 (2)	6 (2)
<b>Stainless steel</b>				
Free cutting	250Hb	16 (4)	14 (2)	12 (2)
Austenitic Non-Mag	250Hb	9 (4)	7 (4)	6 (3)
Duplex alloys	300Hb	12 (3)	9 (3)	7 (2)
<b>Cast Irons</b>				
Plain Grey Cast	150Hb	35 (4)	33 (4)	25 (3)
SG & Malleable	250Hb	30 (4)	22 (4)	20 (3)
Alloy cast	300Hb	19 (4)	17 (3)	15 (3)
<b>Aluminium</b>				
Soft & Extruded	100Hb	55 (7)	50 (6)	40(5)
Wrought & Treated	150Hb	45 (5)	40 (5)	30 (3)
Cast 5% Si	120Hb	40 (5)	35 (4)	30 (3)
Cast 10% Si	150Hb	33 (4)	30 (4)	27 (3)
<b>Copper alloys</b>				
Pure Copper	100Hb	42 (5)	40 (4)	30 (3)
Brass Soft Yellow	150Hb	40 (5)	40 (5)	
Brass Tough Red	200Hb	37 (5)	37 (5)	
Hi-tensile Bronze	250Hb	28 (4)	25 (4)	23 (3)
<b>Titanium</b>				
Pure Titanium	200Hb	28 (4)	18 (4)	15 (3)
Titanium Alloys	300Hb	9 (2)	7 (2)	6 (2)
<b>Nickel</b>				
Pure Nickel	200Hb	12 (4)	14 (4)	10 (3)
Nimonic 75, Hasteloy	300Hb	10 (4)	9 (4)	7 (3)
Inconel 718	300Hb	7 (3)	5 (3)	3 (2)

Speeds given in Metres / min Feeds In brackets(4)

Use Cobalt Drills, or HSS at reduced speed of 66%

Specialist drills are available for most material or difficult applications please consult catalogue for application orientated drills

Use Quick Spiral Bright Finish on Aluminium, copper,  
Use Slow Spiral Bright Finish on Brasses

If quick or slow spiral not available, bright finish is a good alternative for non ferrous materials

# DRILL SPEED CHART

Diameter	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"
Meters/min	3	5	6	8	10	12	16	19
5	530	318	265	199	159	133	99	84
7	743	446	371	279	223	186	139	117
9	955	573	477	358	286	239	179	151
12	1273	764	637	477	382	318	239	201
15	1591	955	796	597	477	398	298	251
20	2122	1273	1061	796	637	530	398	335
22	2334	1401	1167	875	700	584	438	369
25	2652	1591	1326	995	796	663	497	419
<b>27</b>	<b>2865</b>	<b>1719</b>	<b>1432</b>	<b>1074</b>	<b>859</b>	<b>716</b>	<b>537</b>	<b>452</b>
30	3183	1910	1591	1194	955	796	597	503
35	3713	2228	1857	1393	1114	928	696	586
40	4244	2546	2122	1591	1273	1061	796	670
45	4774	2865	2387	1790	1432	1194	895	754
50	5305	3183	2652	1989	1591	1326	995	838

FEED CHART								
Diameter	3	5	6	8	10	12	16	19
Feed Code	Feed per revolution in mm's							

(1)	0.030	0.035	0.045	0.055	0.062	0.070	0.085	0.110
(2)	0.045	0.060	0.065	0.070	0.100	0.110	0.130	0.160
<b>(3)</b>	<b>0.062</b>	<b>0.080</b>	<b>0.095</b>	<b>0.120</b>	<b>0.140</b>	<b>0.150</b>	<b>0.160</b>	<b>0.210</b>
(4)	0.085	0.110	0.120	0.160	0.190	0.200	0.240	0.280
(5)	0.120	0.150	0.170	0.220	0.260	0.280	0.320	0.360
(6)	0.150	0.190	0.210	0.280	0.330	0.350	0.400	0.450
(7)	0.180	0.230	0.250	0.330	0.390	0.420	0.460	0.520

Feeds in Brackets (4) from speed chart above  
 Figure in **bold** are the best general purpose speed and feed for use on steel as a good starting point  
 To convert Metres/Minute peripheral speed to RPM use formula:-

$$\text{RPM} = \frac{\text{Metres per minute} \times 1000}{3.1416 (\pi) \times \text{Diameter in MM's}}$$

Penetration rate = RPM x Feed per revolution

Speeds and Feeds are given as starting points, the design of the drill can effect the performance and life