

## Tungsten Carbide Rotary Burrs



# Features of the Master Tungsten carbide burr

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Master tungsten carbide burrs are machine ground from a carefully selected grade of tungsten carbide designed to produce high stock removal rates together with long life. Even hardened steels of up to 67 HRC can be machined and if used correctly their high rate of efficiency can give a life of fifty to a hundred times that of their equivalent in high speed steel. This depends of course on the application and mode of use. Tungsten carbide allows heavier cuts and heavier feeds and can produce an excellent surface finish. It is also possible to regrind the teeth thus offering a further cost saving.






## Uses of the Master tungsten carbide burr

Due to the nature of tungsten carbide and its extreme hardness the range of applications and uses is very large. The automotive, aircraft, precision engineering and foundry industries are typical users and applications include the machining of:-

- (a) Castings, sand cores, ceramics, plastics and other similar materials, glass fibre etc.
- (b) Tough materials i.e. The deburring and blending of cobalt, nickel and chrome steels, welds, forgings, moulds and dies.
- (c) Hard materials i.e. Milling HSS, hardwelds, chilled iron and stellite. Also blending and modifying hardened tools and dies.

## User Information

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-  The standard tooth pitch on a Master tungsten carbide burr will suit almost all operations on any material as long as the burr is run at the correct speed.
-  The running speeds should be kept high to minimise tooth loading and consequently reduce chipping.
-  Apply constant movement and light pressure when in use. Remove high spots first and then traverse the work. Excessive pressure should not be applied as this can cause impact damage to the burr especially on very hard materials or irregular shapes.
-  A cutter should never be allowed to lock, or wedge, in the workpiece profiles or cavities since this will certainly result in shattered teeth and/or a broken shank. Select the proper shape of cutter for the job.
-  Insert the shank well down in the collet, but not so far as to engage the radiused shoulder below the head. If overhand is necessary, it is essential that at least one half of the shank is securely gripped in the collet.

## Master standards and service

### Standards

Tungsten Carbide Burrs are produced in a wide range of shapes and sizes as detailed in this catalogue. Some additional standards have been introduced which include:






- Large Diameter Burrs 19mm (3/4") and 25mm (1") on both 6mm and 8mm shanks (See page 8).
- Ripper Cut Burrs for Aluminium (See page 6).
- A comprehensive range of burrs, mounted on Imperial Size Shanks are now available upon request.
- Double Ended Burrs in lengths 38mm, 50mm and 75mm.

### Specials

Tungsten Carbide Burrs having special shapes, sizes or cuts can be supplied and quotations made on receipt of details i.e. Drawings or Samples. *We will make every effort to accommodate your particular requirements.*

### Quality Control

Each cutter manufactured on fully automatic machinery is subsequently tested rigorously for weakness, concentricity and quality, thus ensuring the high standard of product required by both Master and the customer.

-  The workpiece should be securely held in either a vice, or a jig, so that it cannot move whilst cutting.
-  Check that the collet is the correct size and not worn or eccentric. The cutter must run true. Rotational eccentricity produces a type of hammering that will affect the finish of the work and jeopardise the life of the teeth and the shank.
-  Faceshields to protect the full face, neck, ears, etc. should be worn in preference to eye goggles, particularly when the chipbreaker is not supplied.
-  It is important to use burrs in hand grinding tools of good quality and to overhaul these tools regularly. Worn bearings are often the cause of chipped burrs. Ensure that the drive tool has enough power.
-  If the teeth of a cutter tend to get clogged (i.e. when cutting aluminium, brass etc.) they should be cleared periodically by cutting into a spare piece of soft cast iron. Also the occasional application of tallow is helpful.



## FLUTING STYLES

### SINGLE CUT

General purpose cut for all metallic materials giving fast stock removal together with a good surface finish on stainless steel, hardened steel, cast iron and weld preparation.



### DOUBLE CUT

Allows rapid stock removal and increased production rates. Effectively breaks down the chips as the material is removed, resulting in a smoother running burr. Recommended for working on materials which produce long chips - soft steels, cast iron welds.



### DIAMOND CUT

The staggered tooth formation, left and right-hand spiral, provides more cutting edges which result in greater material penetration of heat treated steels and tough alloy steels. This tooth geometry also gives faster metal removal, a smoother cutting action with improved tool control. Creates a powder-like chip.



### RIPPER CUT

Free and fast cutting action with excellent stock removal on non-ferrous and non-metallic materials, for example, aluminium, soft steels and reinforced plastics. Produces a good finish with minimum tooth loading.

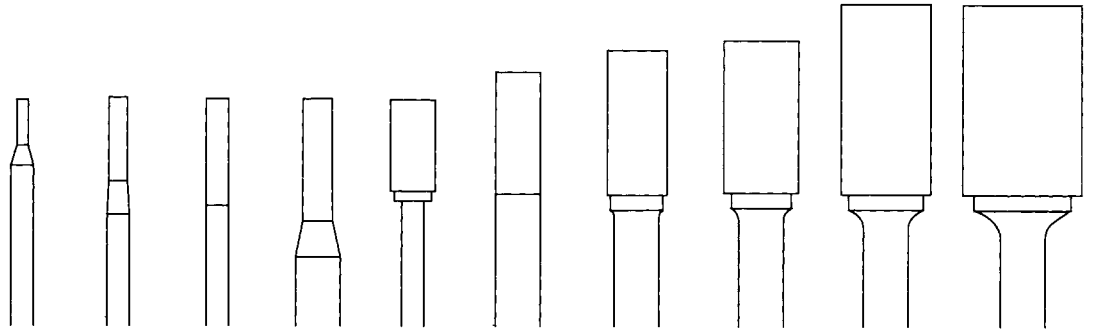


# Master Tungsten Carbide Rotary Burrs



## CYLINDER without End Cut

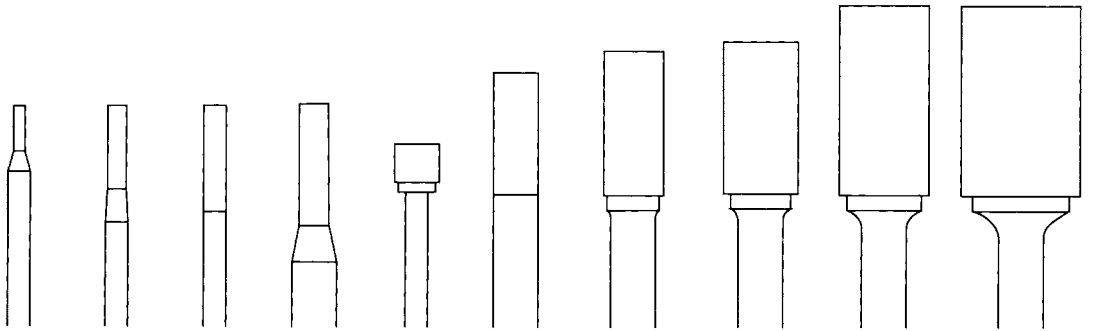
All Head Diameters Actual Size



Ref. No.	A050603	A0251103	A031403	A041606	A061203	A061606	A081906	A102006	A122506	A162506
Head-Ø mm	1.5	2.5	3	4	6	6	8	10	12	16
Head length mm	6	11	14	16	12	16	19	20	25	25
Shank-Ø mm	3	3	3	6	3	6	6	6	6	6
Overall length mm	38	38	38	50	50	50	63	60	65	69

## CYLINDER with End Cut

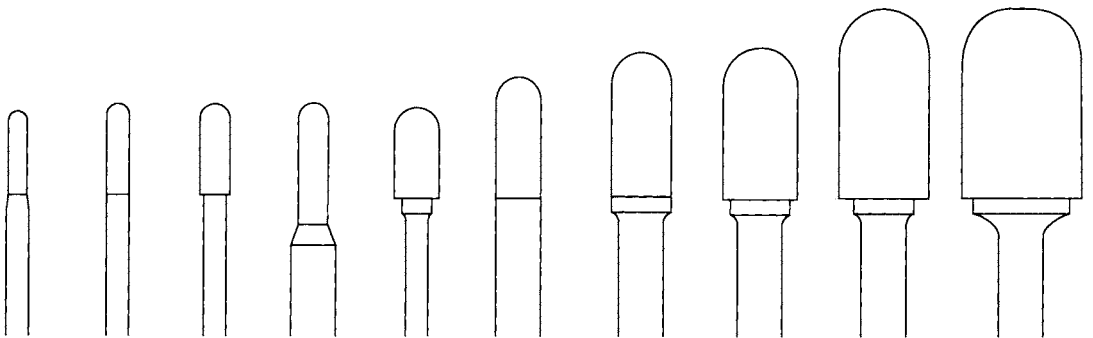
All Head Diameters Actual Size



Ref. No.	B0150603	B0251103	B031403	B041606	B060503	B061606	B081906	B102006	B122506	B162506
Head-Ø mm	1.5	2.5	3	4	6	6	8	10	12	16
Head length mm	6	11	14	16	5	16	19	20	25	25
Shank-Ø mm	3	3	3	6	3	6	6	6	6	6
Overall length mm	38	38	38	50	50	50	63	60	65	69

## CYLINDRICAL BALL NOSE

All Head Diameters Actual Size



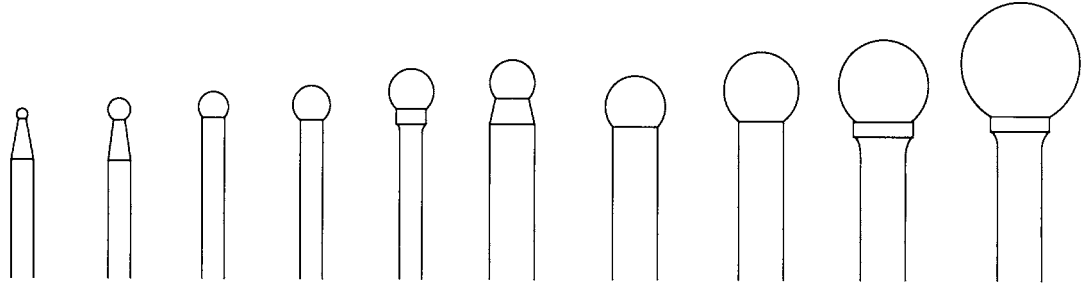
Ref. No.	C0251103	C031403	C041203	C041606	C061203	C061606	C081906	C102006	C122506	C162506
Head-Ø mm	2.5	3	4	4	6	6	8	10	12	16
Head length mm	11	14	12	16	12	16	19	20	25	25
Shank-Ø mm	3	3	3	6	3	6	6	6	6	6
Overall length mm	38	38	38	50	50	50	63	60	65	69

# Master Tungsten Carbide Rotary Burrs



## BALL

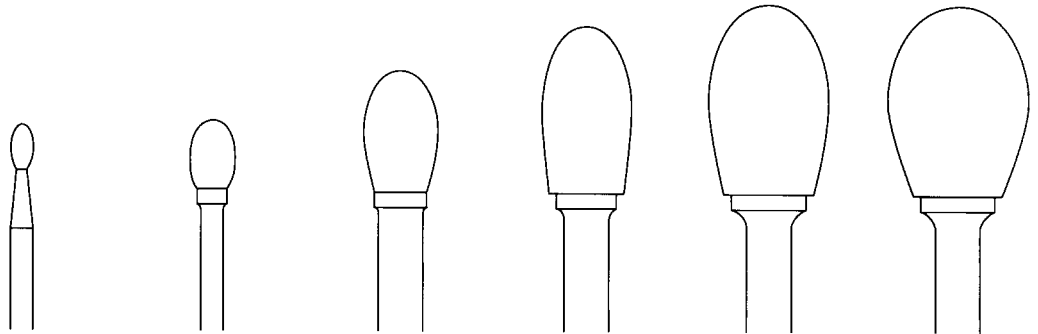
All Head Diameters Actual Size



Ref. No.	D01501503	D030303	D040403	D050503	D060603	D060606	D080806	D101006	D121206	D161606
Head-Ø mm	1.5	3	4	5	6	6	8	10	12	16
Head length mm	1.5	2.8	3.4	4	5	4.7	6	9	11	14
Shank-Ø mm	3	3	3	3	3	6	6	6	6	6
Overall length mm	60	38	38	38	44	50	50	49	51	58

## OVAL

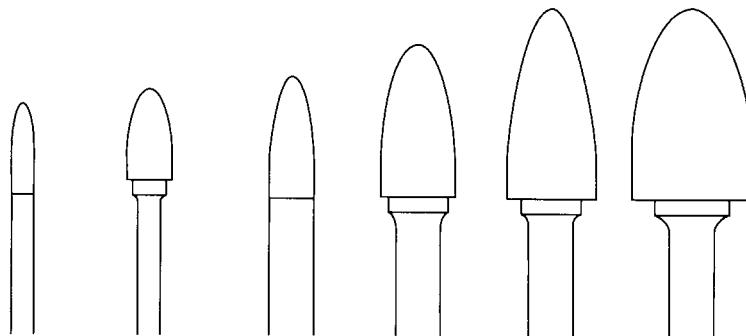
All Head Diameters Actual Size



Ref. No.	E030603	E060903	E101606	E122206	E162506	E192506
Head-Ø mm	3	6	10	12	16	19
Head length mm	6	9	16	22	25	25
Shank-Ø mm	3	3	6	6	6	6
Overall length mm	38	47	60	66	69	69

## BALL NOSE TREE

All Head Diameters Actual Size

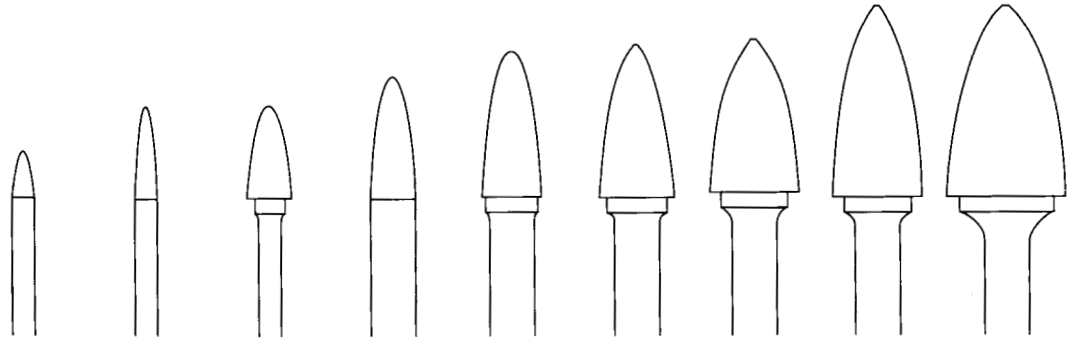


Ref. No.	F031203	F061203	F061606	F101906	F122506	F162506
Head-Ø mm	3	6	6	10	12	16
Head length mm	12	12	16	19	25	25
Shank-Ø mm	3	3	6	6	6	6
Overall length mm	38	56	50	63	65	69



## POINTED TREE

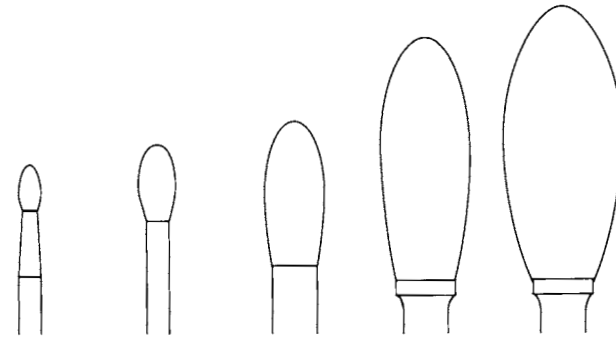
All Head Diameters Actual Size



Ref. No.	G030603	G031203	G061203	G061606	G081906	G102006	G122006	G122506	G162506
Head-Ø mm	3	3	6	6	8	10	12	12	16
Head length mm	6	12	12	16	19	20	20	25	25
Shank-Ø mm	3	3	3	6	6	6	6	6	6
Overall length mm	38	38	50	50	63	60	63	65	69

## FLAME SHAPE

All Head Diameters Actual Size

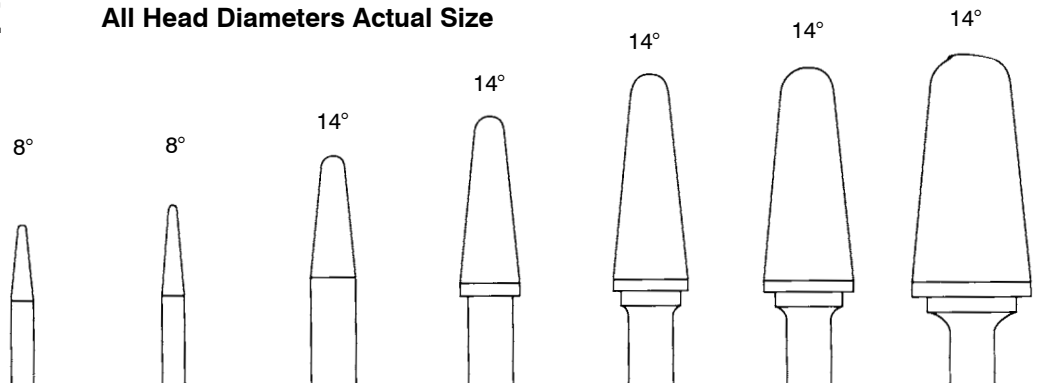


Ref. No.	H030603	H051003	H081906	H123206	H163606
Head-Ø mm	3	5	8	12	16
Head length mm	6	10	19	32	36
Shank-Ø mm	3	3	6	6	6
Overall length mm	38	38	63	76	80



## BALL NOSE CONE

All Head Diameters Actual Size



Ref. No.	L031003	L031203	L061606	L082206	L102706	L122806	L163006
Head-Ø mm	3	3	6	8	10	12	16
Head length mm	10	12	16	22	27	28	30
Shank-Ø mm	3	3	6	6	6	6	6
Overall length mm	38	38	50	69	74	76	77

# Master Tungsten Carbide Rotary Burrs



## CONE Included Angle

All Head Diameters Actual Size



12°

14°

7°

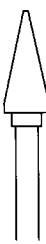
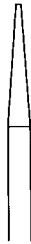
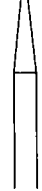
22°

14°

28°

28°

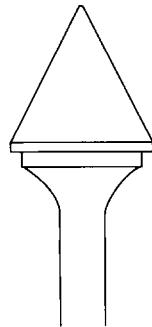
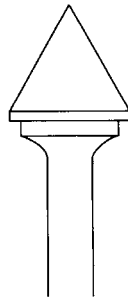
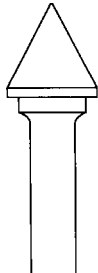
31°



Ref. No.	M030903	M031203	M031603	M061203	M061906	M101606	M122206	M162506
Head-Ø mm	3	3	3	6	6	10	12	16
Head length mm	9	12	16	12	19	16	22	25
Shank-Ø mm	3	3	3	3	6	6	6	6
Overall length mm	38	38	38	53	50	63	69	73

## CONE 60°

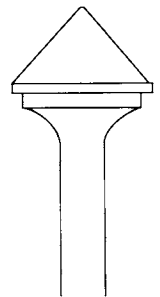
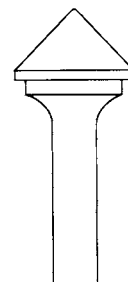
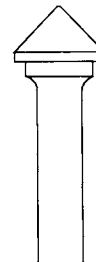
All Head Diameters Actual Size



Ref. No.	M121106	M161506	M191806
Head-Ø mm	12	16	19
Head length mm	11	15	18
Shank-Ø mm	6	6	6
Overall length mm	58	61	65

## CONE 90°

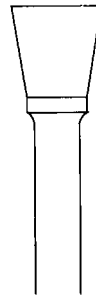
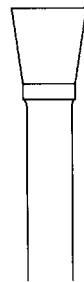
All Head Diameters Actual Size



Ref. No.	M120606	M160806	M191006
Head-Ø mm	12	16	19
Head length mm	6	8	10
Shank-Ø mm	6	6	6
Overall length mm	54	57	58

## INVERTED CONE

All Head Diameters Actual Size



Ref. No.	N030403	N060603	N060806	N101006	N121206
Head-Ø mm	3	6	6	10	12
Head length mm	4	6	8	10	12
Shank-Ø mm	3	3	6	6	6
Overall length mm	38	44	50	53	57





For use on Aluminium, Soft Steels and Reinforced Plastics

## Cylinder



Ref. No.	Head Dia. x Length mm	Shank Ø mm
A061906R	6 x 19	6
A102006R	10 x 20	6
A122506R	12 x 25	6
A162506R	16 x 25	6
A192506R	19 x 25	6
A192508R	19 x 25	8

## Cylinder - Radius End



Ref. No.	Head Dia. x Length mm	Shank Ø mm
C061906R	6 x 19	6
C102006R	10 x 20	6
C122506R	12 x 25	6
C192506R	19 x 25	6
C192508R	19 x 25	8

## Ball



Ref. No.	Head Dia. x Length mm	Shank Ø mm
D060606R	6 x 5	6
D101006R	10 x 8	6
D121206R	12 x 11	6
D161606R	16 x 14	6
D191906R	19 x 16	6
D191908R	19 x 16	8

## Oval



Ref. No.	Head Dia. x Length mm	Shank Ø mm
E101606R	10 x 16	6
E122206R	12 x 22	6
E162506R	16 x 25	6
E192506R	19 x 25	6
E192508R	19 x 25	8

## Tree - Radius End



Ref. No.	Head Dia. x Length mm	Shank Ø mm
F061906R	6 x 19	6
F102006R	10 x 20	6
F122506R	12 x 25	6
F162506R	16 x 25	6
F193206R	19 x 32	6
F193208R	19 x 32	8

## 14° Taper - Radius End



Ref. No.	Head Dia. x Length mm	Shank Ø mm
L102706R	10 x 27	6
L122806R	12 x 28	6
L163006R	16 x 30	6
L193806R	19 x 38	6
L193808R	19 x 38	8

**Note: Coarse teeth burrs should be run faster than fine teeth burrs.**

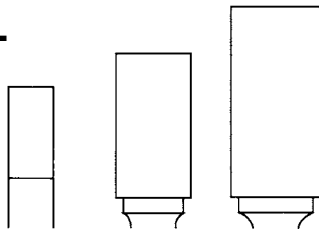




# Master Tungsten Carbide Long Shank Rotary Burrs



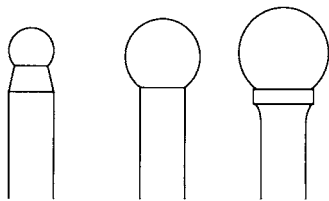
## CYLINDRICAL



All Head Diameters Actual Size

Ref. No.	A061206	A101906	A122506
Head-Ø mm	6	10	12
Head length mm	12	19	25
Shank-Ø mm	6	6	6

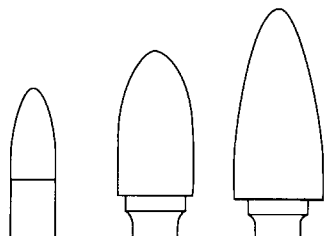
## BALL



All Head Diameters Actual Size

Ref. No.	D060606	D101006	D121206
Head-Ø mm	6	10	12
Head length mm	5	8	11
Shank-Ø mm	6	6	6
Overall length mm	155	158	161

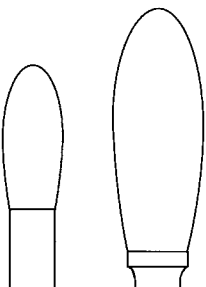
## BALL NOSE TREE



All Head Diameters Actual Size

Ref. No.	F061206	F101906	F122506
Head-Ø mm	6	10	12
Head length mm	12	19	25
Shank-Ø mm	6	6	6
Overall length mm	162	169	175

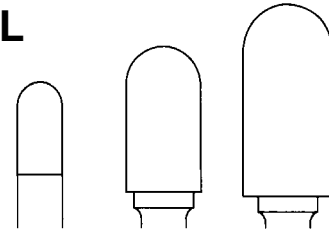
## FLAME SHAPE



All Head Diameters Actual Size

Ref. No.	H081906	H123206	
Head-Ø mm	8	12	
Head length mm	19	32	
Shank-Ø mm	6	6	
Overall length mm	169	182	

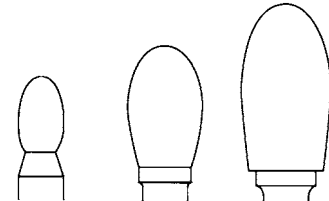
## CYLINDRICAL BALL NOSE



All Head Diameters Actual Size

Ref. No.	C061206	C101906	C122506
Head-Ø mm	6	10	12
Head length mm	12	19	25
Shank-Ø mm	6	6	6

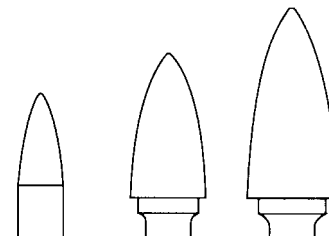
## OVAL



All Head Diameters Actual Size

Ref. No.	E061006	E101606	E122206
Head-Ø mm	6	10	12
Head length mm	10	16	22
Shank-Ø mm	6	6	6
Overall length mm	160	166	172

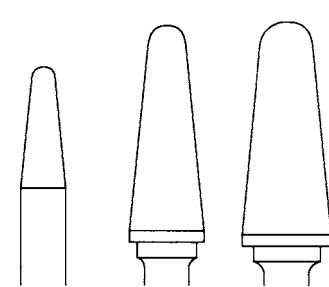
## POINTED TREE



All Head Diameters Actual Size

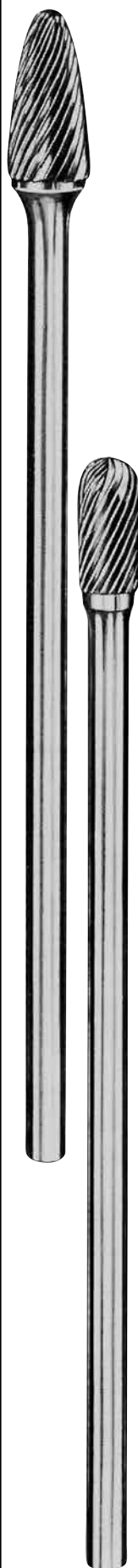
Ref. No.	G061206	G101906	G122506
Head-Ø mm	6	10	12
Head length mm	12	19	25
Shank-Ø mm	6	6	6

## BALL NOSE CONE 14°

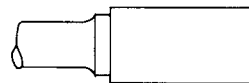
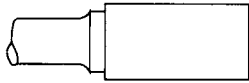


All Head Diameters Actual Size

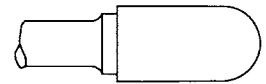
Ref. No.	L061606	L102706	L122806
Head-Ø mm	6	10	12
Head length mm	16	27	28
Shank-Ø mm	6	6	6



# Master Tungsten Carbide Large Rotary Burrs



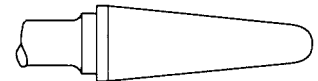
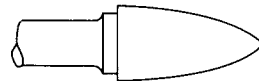
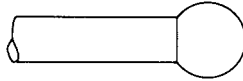
WITH  
END  
CUT



Ref. No.	Head Dia. x Length mm	Shank Ø mm
A192506	19 x 25	6
A192508	19 x 25	8
A252506	25 x 25	6
A252508	25 x 25	8

Ref. No.	Head Dia. x Length mm	Shank Ø mm
B252506	25 x 25	6
B252508	25 x 25	8

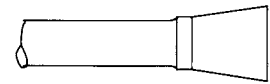
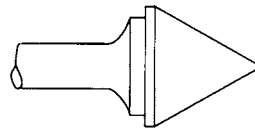
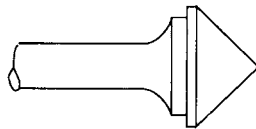
Ref. No.	Head Dia. x Length mm	Shank Ø mm
C192506	19 x 25	6
C192508	19 x 25	8
C252506	25 x 25	6



Ref. No.	Head Dia. x Length mm	Shank Ø mm
D191906	19 x 16	6
D191908	19 x 16	8
D252508	25 x 21	8

Ref. No.	Head Dia. x Length mm	Shank Ø mm
G192506	19 x 25	6
G192508	19 x 25	8

Ref. No.	Head Dia. x Length mm	Shank Ø mm
L193808	19 x 38	8



Ref. No.	Head Dia. x Length mm	Shank Ø mm
M191006-90°	19 x 10	6
M191008-90°	19 x 10	8
M251306-90°	25 x 13	6
M251308-90°	25 x 13	8

Ref. No.	Head Dia. x Length mm	Shank Ø mm
M191806-60°	19 x 18	6
M191808-60°	19 x 18	8
M252506-60°	25 x 25	6
M252508-60°	25 x 25	8

Ref. No.	Head Dia. x Length mm	Shank Ø mm
N191606	19 x 16	6
N191608	19 x 16	8

A general guide to speeds is given in the table below. However the final selection of the optimum cutting speed for a particular operation can only be made by the user taking all factors into account and by preliminary trial.

## Speed chart - approx. R.P.M. in 1000s

MATERIAL	HEAD DIA.	1/8"	5/32"	1/4"	5/16"	3/8"	1/2"	5/8"	1"
		3mm	4mm	6mm	8mm	10mm	13mm	16mm	25mm
Alum, Zinc Base, Plastics	20-90	20-90	10-60	10-50	10-50	10-40	10-30	8-20	
Cast Iron, Brass, Copper	40-90	40-90	20-50	20-50	15-40	10-30	10-25	10-20	
Glass Fibre	40-90	40-90	30-50	20-30	15-20	15-20	10-15	8-10	5-8
Mild Steel, Bronze	60-90	60-90	50-80	30-40	25-40	20-30	15-20	10-15	8-10
Nimonic, Titanium, Stainless, Hardened Steels, Ceramics	50-90	40-80	30-60	25-50	20-40	15-30	10-20	8-15	

**Note: Coarse teeth burrs should be run faster than fine teeth burrs.**



# The right tool for the right job

Master recommend that you will get the most efficient use from your burrs by using the correct tool. We are distributors of **PNEUMATIC TOOLS** and we will be happy to advise you in the selection of Tools for your particular application.



## TURBINE GRINDER MINIATURE PRECISION TOOL

Series 10-90 100,000 RPM Front Exhaust Oil-free  
 High Speed for fine deburring  
 Capacity 4.5mm diameter Tungsten Carbide Burr  
 Collett size available from Ø1mm to Ø3mm (1/16" - 1/8")



## PENCIL GRINDER MINIATURE PRECISION TOOL

Series 12R04 60,000 RPM REAR EXHAUST  
 High Speed for fine deburring  
 Capacity 6mm diameter Tungsten Carbide Burr  
 Collett size available from Ø1mm to Ø3mm (1/16" - 1/8")



## RIGHT ANGLE GRINDER

Medium Duty  
 Series 12-12 .3HP Front or Rear Exhaust  
 12,000 and 20,000 rpm  
 Capacity 12mm diameter Tungsten Carbide Burr



## EXTENSION GRINDER

Medium duty 3" and 5" Extension Front or Rear Exhaust  
 Series 12-11 .3HP  
 25,000 and 28,000 rpm  
 Capacity 12mm diameter Tungsten Carbide Burr



## EXTENSION GRINDER
















Medium to Heavy Duty  
 Series 12-21 .6HP Rear Exhaust 18,000 to 25,000 rpm  
 Capacity 12mm diameter Tungsten Carbide Burr  
 Series 12-26 .9HP Side or Rear Exhaust 12,000 to 22,000 rpm  
 Capacity 25mm diameter Tungsten Carbide Burr  
 Series 10-31 1.3HP Side Exhaust 12,000 to 18,000 rpm  
 Capacity 25mm diameter Tungsten Carbide Burr



## INLINE GRINDER

Medium to Heavy Duty  
 Series 12-10 .3HP Front or Rear Exhaust 25,000 to 34,000 rpm  
 Capacity 12mm diameter Tungsten Carbide Burr  
 Series 12-20 .6HP Front or Rear Exhaust 18,000 to 25,000 rpm  
 Capacity 16mm diameter Tungsten Carbide Burr  
 Series 12-25 .9HP Front or Rear Exhaust 12,000 to 25,000 rpm  
 Capacity 25mm diameter Tungsten Carbide Burr

A comprehensive catalogue detailing the full range of pneumatic tools, e.g. Die Grinders, Sanders, Angle Grinders, Drills, Routers and Saws is available upon request.

-  Precision Mounted Points
-  Precision Internal Grinding Wheels
-  Precision Toolroom Wheels
-  CBN and Diamond Superabrasives
-  Ceralox Ceramic Abrasives
-  Non Woven Surface Finishing Products
-  MASTERFLEX Polishing Products
-  Coated Abrasives
-  Pneumatic Tools, Accessories & Servicing
-  Flapwheels
-  Dressing Equipment
-  Grinding Quills
-  Grinding Wheels
-  Cut-off Wheels
-  Cratex Rubber Products

For further information on our full range of products or advice on a particular application problem please contact us at the address shown below.



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