

# INDUSTRIAL TOOLING CORPORATION LTD

FOLIO TOOLING CATALOGUE FOR CNC ROUTERS AND CUTTING TABLES

ISSUE 6



# Company Profile

For over 30 years ITC have been manufacturing and supplying high quality round cutting tools to specifically meet the needs of our customers. No order is too big or small, we're happy to produce everything from 1000-piece jobs to individual orders.

#### Passionate About Precision

ITC have consistently achieved success by investing in a team of capable, time-served and enthusiastic engineers and technical sales people, backed up by an in-house team which is second to none. From solid carbide and PCD tooling, through to indexable milling, turning and boring, plus top quality tool holders, ITC has an unbeatable product range.

- Our state-of-the-art production facility includes CNC grinding machines from the industry's leading manufacturers, including: Walter, Deckel, Rollomatic and Anca
- ITC's centralised oil filtration system ensures that grinding takes place under optimum conditions with clean oil.

  Our inspection department maintains these high standards by using computerised laser measuring equipment
- We source the best available products from around the world, and stock over 100,000 Solid Carbide and HSS-Co tools on the shelf ready for immediate dispatch, with a speedy modification service also available
- · ITC can also provide same-day dispatch on standard stocked lines, whatever your industry sector may be

#### Technical jobs made simple

More companies than ever before, both in the UK and abroad, choose ITC to solve their manufacturing problems.

The reason for this? ITC's combination of a straightforward, first class service, rapid response, huge stocks and access to a diverse and ever-growing product line.

Our continued investment in cutting edge CNC grinding equipment gives us the capacity to rapidly manufacture custom made tools to your precise requirements, and to return used tools to an 'as new' condition.

#### A greater range

ITC's range of solid carbide routers, engravers and blades for the sign manufacturer are designed to give the best possible finish on the full range of materials used in today's high-tech sign industry.

Whether you are cutting foam, aluminium, acrylic, wood, brass or stainless steel, we can offer you the best possible selection of tooling for all your applications.

- Standard engraving
- Solid carbide knife blades for cutting tables
- · One-off specials or tool modification for more unusual jobs
- Comprehensive range of metric and imperial collets for your router spindle
- In-house manufacturing unit to re-sharpen your tooling and ensure maximum cost efficiency
- Full range of TCT woodworking tooling for next day delivery

If you have any other queries or require further details, please don't hesitate to ask us.

#### itc-ltd.co.uk

You'll find all your router tooling needs at your fingertips on our website, with features that include:

- Fast search facility
- Industry-specific sectors
- Online catalogue
- New products
- Special offers
- Technical help



#### **Expert support**

We don't just supply specialist tools; we provide a highly specialised customer service.

Our staff are fully trained to provide expert technical advice and ongoing back-up on everything from specific tooling needs to general guidance on getting a project off the ground.

If you're not sure where to start we can even, upon request, arrange for one of our technical representatives to visit and assess your requirements.

Whatever your query, we're happy to offer immediate help, simply call:

#### Sally Hunt:

+44 (0) 1204 303435

+44 (0) 7971 542893

sally.hunt@itc-ltd.co.uk

ITC Tamworth: +44 (0) 1827 304500

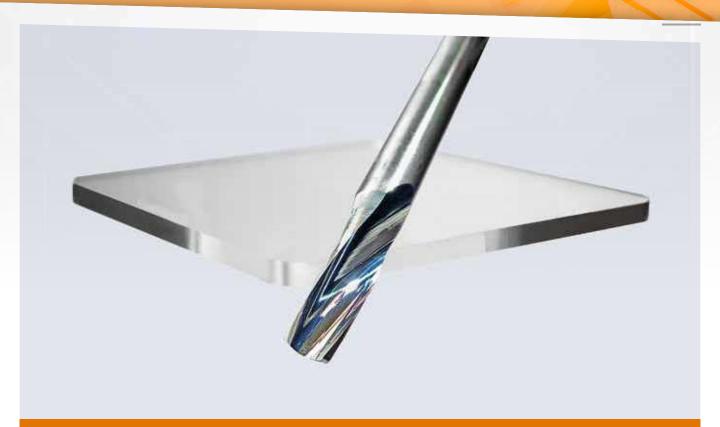


| Tool          | Series No. / Description   | Page |
|---------------|--|------|
|               | Clearcut Single Flute Router   | 7    |
|               | 180-10-A Series Single Flute Router For Aluminium & ACM - Reinforced Shank                     | 9    |
|               | 180-10-A Series Single Flute Router For Aluminium & ACM - Reinforced Shank - Coated            | 10   |
|               | 180-10-STA Series Single Flute Stub Router For Aluminium & Plastics                            | 11   |
| 5-3-3-3       | 180-10-STA Series Single Flute Stub Router For ACM - Coated                                    | 12   |
|               | Di-Bond Folding Tool   | 13   |
| <b>***</b>    | Folding Tool - Mineral Core ACM  | 14   |
|               | 180-10 Series Single Flute Router  | 16   |
|               | 180-10-ST Series Single Flute Stub Router  | 17   |
|               | 180-10-LG Series Single Flute Router   | 18   |
|               | 180-10-LH Series Downward Spiral Single Flute Router   | 19   |
|               | 180 Series 2 Flute / 3 Flute Straight Routers  | 20   |
|               | 180 Series Downward Spiral 2 Flute / 3 Flute   | 21   |
|               | 2571 Series 2 Flute Router   | 22   |
|               | 2011 Series 2 Flute Coated Router - AlTiN Coated   | 23   |
|               | 2591 Series 2 Flute Router – TiN Coated  | 24   |
|               | 2041 Series 2 Flute Router For Pocketing Applications  | 25   |
|               | 2621 Series 2 Flute Square End Router - Long Series  | 26   |
|               | 2631 Series 2 Flute Square End Router - Extra Long Series                                      | 27   |
|               | 2121 Series XXLS 2 Flute Square End Router   | 28   |
|               |  |      |
|               | 2091 Series Upcut / Downcut Router   | 29   |
|               | 2552 Series 2 Flute Ball Nose Router   | 30   |
|               | 2662 Series 2 Flute Ball Nose Router - Long Series   | 31   |
|               | 2632 Series 2 Flute Ball Nose Router - Extra Long Series                                       | 32   |
|               | 2122 Series XXLS 2 Fluter Ball Nose Router   | 33   |
|               | 3551 Series 3 Flute Router   | 34   |
|               | 3061 Series 3 Flute Router For Stainless Steel   | 35   |
| -             | 164-27 Series 2 Flute Miniature Router   | 36   |
|               | 164-27ST Series 2 Flute Miniature Stub Router  | 37   |
|               | 4071 Series Chamfer Tool   | 38   |
|               | 4011 Series Corner Rounding Cutter   | 39   |
| 4             | D Series Tools for Superior Engraving One Dimensional Engraving Tools                          | 40   |
|               | 3 Dimensional Series Engraving Tools   | 41   |
|               | 190 Series Diamond Cut Router For Glass Fibre  | 42   |
|               | 9001 Series Multi-Flute Router   | 43   |
|               | Clearcut Single Flute Router - Balanced  | 45   |
|               | 180-10-A Series Single Flute Router For Aluminium & ACM - Reinforced Shank - Balanced          | 46   |
|               | 180-10-A Series Single Flute Router For Aluminium & ACM - Reinforced Shank - Balanced - Coated | 47   |
|               | 1001 Series Single Flute Router - Balanced   | 48   |
|               | 180-10-LH Series Downward Spiral Single Flute Router For Aluminium & Plastics - Balanced       | 49   |
| <b>©</b> ——   | Di-Bond Folding Tool - Balanced  | 50   |
| <b></b>       | Vee Groove Tool - Balanced   | 51   |
| 4             | D Series Tools for Superior Engraving One Dimensional Engraving Tools - Balanced               | 52   |
|               | Flat Drag Knife Blades   | 53   |
|               | Round Shank Drag Knife Blades  | 54   |
|               | Oscillating Blades   | 55   |
| 0             | Rotation Blades  | 56   |
|               | VDS Series Carbide Drill   | 57   |
|               | Hand Taps  | 58   |
|               | Edge & Radius / Edge & Chamfer Routers   | 59   |
|               | 3071 Series Bed Skimming Tool  | 60   |
| <b>₩</b> 1.4. | Carbide Tipped Routers   | 61   |
|               | Sacrificial Sheets / Lubricant / Anti-Slip Matting   | 62   |
|               |  |      |
| ₹ 0           | Router Collets   | 63   |

#### Router Series Selection

✓✓ Recommend | ✓ Suitable | x Unsuitable

|                   |                |           |            | MATERIAL   |           |           |            |
|-------------------|----------------|-----------|------------|------------|-----------|-----------|------------|
| Series No.        | Acrylic/Foamex | ACM       | Aluminium  | Wood       | Laminates | Brass     | Steel      |
| CLEARCUT          | //             | ✓         | /          |            |           |           | ×          |
| 180-10            | ✓              | <b>√</b>  | <b>✓</b>   | ✓          |           |           | ×          |
| 180-ST            | ✓              | <b>//</b> | <b>/</b> / | <b>✓</b>   |           |           | ×          |
| 180-A             | ✓              | <b>✓</b>  | ✓          | <b>√</b>   |           |           | ×          |
| 180-J-A           | ×              | <b>//</b> | ✓          |            |           |           | ×          |
| 180-K-A           | ×              | ✓         | <b>//</b>  |            |           |           | ×          |
| 180-STA           | ✓              | <b>✓</b>  | ✓          | <b>✓</b>   |           |           | ×          |
| 180-J-STA         | ×              | <b>//</b> | ✓          |            |           |           | ×          |
| 180-K-STA         | ×              | ✓         | <b>//</b>  |            |           |           | ×          |
| 180-LG            | ✓              | ✓         | ✓          | ✓          |           |           | ×          |
| 180-LH            | ✓              | ✓         | <b>✓</b>   | ✓          | ✓         |           | ×          |
| 180-20            |                |           |            | <b>//</b>  | <b>//</b> |           | ×          |
| 180-30            |                |           |            | <b>//</b>  | <b>//</b> |           | ×          |
| 180-21            | ✓              | ✓         | ✓          | <b>//</b>  |           |           | ×          |
| 180-31            | ✓              | ✓         | ✓          | <b>//</b>  |           |           | ×          |
| CLEARCUT-BAL      | <b>//</b>      | ✓         | <b>✓</b>   |            |           |           | ×          |
| 180-A-BAL         |                | <b>//</b> | <b>//</b>  |            |           |           | ×          |
| 180-J-A-BAL       | ×              | <b>//</b> | ✓          |            |           |           | ×          |
| 180-K-A-BAL       | ×              | ✓         | <b>//</b>  |            |           |           | ×          |
| 1001 (High-Speed) | ×              | ✓         | <b>//</b>  |            |           |           | ×          |
| ENG               | <b>/</b> /     | <b>//</b> | <b>//</b>  | <b>//</b>  | ✓         | <b>//</b> | <b>/</b> / |
| ENG-BAL           | <b>//</b>      | <b>//</b> | <b>//</b>  | <b>//</b>  | ✓         | <b>//</b> | <b>//</b>  |
| 2041              | ✓              |           | <b>//</b>  |            |           |           | ×          |
| 2011              |                |           |            | <b>//</b>  | <b>//</b> |           | <b>//</b>  |
| 2571              | ✓              |           |            | <b>//</b>  |           |           | ×          |
| 2552              | ✓              | ✓         | <b>//</b>  | ✓          |           |           | ✓          |
| 3551              |                |           | ✓          | <b>//</b>  |           | <b>//</b> | ✓          |
| 2591              | ✓              |           |            |            |           | ✓         | ✓          |
| 2621              | <b>//</b>      |           |            | <b>//</b>  |           |           | ✓          |
| 2662              | //             |           | <b>√</b>   | <b>/</b> / |           |           | ✓          |
| 2631              | //             |           | ✓          | <b>//</b>  |           |           | ✓          |
| 2632              | <b>//</b>      |           | ✓          | <b>/</b> / |           |           | ✓          |
| 2121              | //             |           |            | <b>//</b>  |           |           | ✓          |
| 2122              | <b>//</b>      |           |            | <b>/</b> / |           |           | ✓          |
| 164-27ST          | <b>//</b>      |           | ✓          | ✓          |           | ✓         | ✓          |
| 3061              | ×              | ×         | ×          | ×          |           | <b>//</b> | <b>//</b>  |
| 4071              | <b>//</b>      | ✓         | ✓          | ✓          |           | ✓         | ✓          |
| 3D                | ✓              |           |            | <b>/</b> / |           |           | ×          |
| 4011              | <b>//</b>      | ✓         | <b>//</b>  | ✓          |           | <b>//</b> | ✓          |
| 2091              |                |           |            | <b>//</b>  | <b>//</b> |           | ×          |



# ACRYLIC CUTTING AND FINISHING

Usually the aim when cutting Acrylic on a CNC Router is to have a minimal amount of subsequent operations to complete the project once the component has been machined. ITC's Clearcut Single Flute Router used under the correct machining conditions helps to eliminate additional sanding and polishing operations.

As always, the cutting tool is only one variable in achieving a great finish when cutting any material. Workpiece mounting issues, CNC machine rigidity, tool holding accuracy and collet condition all play vital parts in obtaining the best possible finish on your component's cut edges. All of these variables are especially relevant when cutting Acrylic.

Here below are a few simple steps to follow to achieve a great finish on your Acrylic:

- If your CNC machine has a tool changer utilise 2 tools to achieve the best possible finish. 1 tool for a roughing cut, 1 tool for a finishing cut. Once the finishing tool becomes slightly blunt it can be re-used as the roughing tool in future projects.
- Use the largest diameter possible Clearcut tool, a 6mm diameter tool is sufficient for most Acrylic thicknesses. Choose the shortest flute length possible to cover your material thickness. This will give you the most rigid tool setup possible.

Using the example of a 6mm diameter tool, cutting 6mm thick Acrylic Sheet, use the following machining strategy to cut out your component:

CUT 1 - TOOL 1 (Roughing Tool)

Spindle Speed 20,000 RPM. Feed Rate 2m/min (33mm/sec). Depth of Cut 5.8mm. Offset 0.4mm\*.

CUT 2 - TOOL 2 (Finishing Tool)

Spindle Speed 20,000 RPM. Feed Rate 1m/min (17mm/sec). Depth of Cut to machine bed. Offset 0.0mm.

\* This factor can vary depending on material type/brand etc. but is usually between 0.2 and 0.6mm. Experimental cuts with your own material type will establish the ideal Offset.

Tel: +44 (0) 1827 304500 Email: sales@itc-ltd.co.uk



#### Description

Solid carbide single flute, upward spiral, 15° helix. Manufactured from Ultra Wear Resistant Micrograin Carbide, to extremely tight tolerances with a highly polished flute.

#### **Application**

Designed to give an exceptional finish on perspex and acrylic materials. In some cases eliminating the need for flame polishing components after cutting. This range of tool also offers exceptional surface finish on foamex and similar materials.

#### Metric Sizes (mm)

| Catalogue No. | Size | Shank Diameter | Overall Length | Length of Cut |
|---------------|------|----------------|----------------|---------------|
| 180-0787-10-F | 2    | 6              | 50             | 7             |
| 180-1181-10-C | 3    | 3              | 40             | 8             |
| 180-1181-10-D | 3    | 3              | 40             | 12            |
| 180-1181-10-E | 3    | 3              | 40             | 6             |
| 180-1181-10-F | 3    | 6              | 50             | 10            |
| 180-1575-10-C | 4    | 4              | 40             | 11            |
| 180-1575-10-D | 4    | 4              | 50             | 15            |
| 180-1575-10-E | 4    | 4              | 50             | 6             |
| 180-1575-10-F | 4    | 6              | 50             | 10            |
| 180-1969-10-C | 5    | 5              | 50             | 12            |
| 180-1969-10-D | 5    | 5              | 58             | 21            |
| 180-1969-10-F | 5    | 6              | 50             | 12            |
| 180-2362-10-C | 6    | 6              | 58             | 21            |
| 180-2362-10-D | 6    | 6              | 75             | 26            |
| 180-2362-10-E | 6    | 6              | 58             | 14            |
| 180-3150-10-C | 8    | 8              | 75             | 26            |
| 180-3150-10-E | 8    | 8              | 64             | 14            |
| 180-3937-10-C | 10   | 10             | 75             | 26            |
| 180-4724-10-C | 12   | 12             | 84             | 26            |

#### 2 Flute Router

| Catalogue No. |   | Shank Diameter | Overall Length | Length of Cut |
|---------------|---|----------------|----------------|---------------|
| 180-2362-27-E | 6 | 6              | 58             | 14            |



At ITC we understand the constant pressure our customers are under to be price competitive, often involving using less expensive ACM (Aluminium Composite Material) sheet material. This can cause real issues for the customer, as they may find their usual tools aren't lasting as long as they have previously. Sometimes less expensive ACM sheets use recycled substrates in their composition which result in poor surface finish and reduced tool life.

ITC work continuously to evolve and improve our range of ACM tooling to address the issues facing our customers worldwide by working with ACM manufacturers and suppliers to establish which grades machine most satisfactorily.

This means that customers can make more informed choices when purchasing materials for jobs and also have their expectations more realistically managed.

This research has resulted in the extremely comprehensive range of router cutting and folding tools being offered to our customers, with new coatings and geometries for use on all grades of materials including virgin material ACM, recycled material ACM, fire retardant mineral core panels A2 and steel faced composite sheet.

All of these tools are available balanced for high speed frequency spindle and with stop rings for ATC systems.

\* To further assist customers with extended tool life we offer a re-sharpening service involving chopping off the worn part of the tool, usually the bottom 3mm, and re-end cutting the tool enabling it to perform as new.

Tel: +44 (0) 1827 304500 Email: sales@itc-ltd.co.uk

# 180-10-A Series

### Single Flute Router For Aluminium & ACM - Reinforced Shank



#### Description

Solid carbide single flute, upward spiral, 30° helix on reinforced 6mm shank, ideal for reducing number of collet changes, manufactured from Ultra Wear Resistant Micrograin Carbide.

#### **Application**

Offers exceptional surface finish on aluminium and ACM.

#### Metric Sizes (mm)

| Catalogue No.    | Size | Shank Diameter | Overall Length | Length of Cut |
|------------------|------|----------------|----------------|---------------|
| 180-0787-10-A    | 2    | 6              | 50             | 7             |
| 180-0984-10-A    | 2.5  | 6              | 50             | 8             |
| 180-1181-10-A-XL | 3    | 6              | 50             | 10            |
| 180-1378-10-A    | 3.5  | 6              | 40             | 10            |
| 180-1181-10-B    | 3    | 1/4"           | 50             | 12            |
| 180-1575-10-A    | 4    | 6              | 50             | 10            |
| 180-1575-10-A-XL | 4    | 6              | 64             | 22            |
| 180-1969-10-A    | 5    | 6              | 50             | 12            |
| 180-2165-10-A    | 5.5  | 6              | 50             | 14            |

If you require help or advice on your choice of tool please do not hesitate to call us.

# 180-10-A Series - Vitreo Coated

### Single Flute Router For ACM - Reinforced Shank



#### Description

Solid carbide single flute, upward spiral, 30° helix on reinforced 6mm shank, ideal for reducing number of collet changes, manufactured from Ultra Wear Resistant Micrograin Carbide. Coated for extra life.

#### **Application**

Vitreo coated offers exceptional surface finish and tool life on ACM.

#### Metric Sizes (mm)

| Catalogue No.     |   | Shank Diameter | Overall Length | Length of Cut |
|-------------------|---|----------------|----------------|---------------|
| 180-0787-10J-A    | 2 | 6              | 50             | 7             |
| 180-1181-10J-A-XL | 3 | 6              | 50             | 10            |
| 180-1575-10J-A    | 4 | 6              | 50             | 10            |

### 180-10-A Series - Iridis Coated

Single Flute Router For Aluminium - Reinforced Shank



#### **Application**

Iridis coated offers exceptional surface finish and tool life on aluminium.

#### Metric Sizes (mm)

| Catalogue No.     |   | Shank Diameter | Overall Length | Length of Cut |
|-------------------|---|----------------|----------------|---------------|
| 180-0787-10K-A    | 2 | 6              | 50             | 7             |
| 180-1181-10K-A-XL | 3 | 6              | 50             | 10            |
| 180-1575-10K-A    | 4 | 6              | 50             | 10            |

Tel: +44 (0) 1827 304500 / Email: sales@itc-ltd.co.uk / Website: www.itc-ltd.co.uk

# 180-10-STA Series

### Single Flute Stub Router For Aluminium & Plastics



#### Description

Solid carbide single flute, upward spiral, 30° helix. Manufactured from Ultra Wear Resistant Micrograin Carbide to extremely tight tolerances, with exceptional surface finish. Short overall length combined with useful longer cut length, offer a very robust cutter for most applications.

#### **Application**

Designed for use on both aluminium, acrylics and other soft non-ferrous materials. The single flute design gives excellent swarf clearance.

| Catalogue No.   | Size | Shank Diameter | Overall Length | Length of Cut |
|-----------------|------|----------------|----------------|---------------|
| 180-0787-10-STA | 2    | 3              | 30             | 7             |
| 180-1181-10-STA | 3    | 3              | 30             | 8             |
| 180-1575-10-STA | 4    | 4              | 40             | 10            |
| 180-2362-10-STA | 6    | 6              | 50             | 14            |





### 180-10-STA Series - Vitreo Coated

### Single Flute Stub Router For ACM



#### Description

Solid carbide single flute, upward spiral, 30° helix. Manufactured from Ultra Wear Resistant Micrograin Carbide to extremely tight tolerances, with exceptional surface finish. Short overall length combined with useful longer cut length, offer a very robust cutter for most applications.

#### **Application**

Vitreo coated offers exceptional surface finish and tool life on ACM.

#### Metric Sizes (mm)

| Catalogue No.    | Size | Shank Diameter | Overall Length | Length of Cut |
|------------------|------|----------------|----------------|---------------|
| 180-0787-10J-STA | 2    | 3              | 30             | 7             |
| 180-1181-10J-STA | 3    | 3              | 30             | 8             |
| 180-1575-10J-STA | 4    | 4              | 40             | 10            |
| 180-2362-10J-STA | 6    | 6              | 50             | 14            |

### 180-10-STA Series - Iridis Coated

### Single Flute Router For Aluminium

#### **Application**

Iridis coated offers exceptional surface finish and tool life on aluminium.

| Catalogue No.    |   | Shank Diameter | Overall Length | Length of Cut |
|------------------|---|----------------|----------------|---------------|
| 180-0787-10K-STA | 2 | 3              | 30             | 7             |
| 180-1181-10K-STA | 3 | 3              | 30             | 8             |
| 180-1575-10K-STA | 4 | 4              | 40             | 10            |
| 180-2362-10K-STA | 6 | 6              | 50             | 14            |

# Di-Bond Folding Tool



#### Description

Solid carbide 2 flute, 1/2" head diameter, with a 90° or 135° inclusive angle and a 3mm flat.

#### **Application**

The Di-Bond folding tools enable precise folding of Di-Bond and similar aluminium composite materials typically up to 5mm thick. The following are the most commonly requested types. We can also manufacture to your own specification - for example - alternative angles, varying flats, shanks etc to suit your router.

#### Sizes

| Catalogue No. | Size | Shank Diameter | Inclusive Angle | Width of Flat | Overall Length |
|---------------|------|----------------|-----------------|---------------|----------------|
| 2021-90-6     | 1/2" | 6mm            | 90°             | 3mm           | 2-1/2"         |
| 2021-135-6    | 1/2" | 6mm            | 135°            | 3mm           | 2-1/2"         |
| 2021-90       | 1/2" | 1/4"           | 90°             | 3mm           | 2-1/2"         |
| 2021-135      | 1/2" | 1/4"           | 135°            | 3mm           | 2-1/2"         |

# Di-Bond Folding Tool - Helical Flute



#### **Application**

As above, but tool is helical flute with a more rigid body for improved cuttings speeds.

#### Sizes

| Catalogue No. |    | Shank Diameter | Inclusive Angle | Width of Flat | Overall Length |
|---------------|----|----------------|-----------------|---------------|----------------|
| 2421-90-6     | 10 | 6              | 90°             | 3             | 76             |

# Folding Tool - Mineral Core ACM



#### Description

Solid carbide 2 flute, helical flute, with a 90° or 135° inclusive angle, vitreo coated.

#### **Application**

Mineral core ACM folding tools enable precise folding typically up to 4mm thick.

| Catalogue No. |    | Shank Diameter | Inclusive Angle | Width of Flat | Overall Length |
|---------------|----|----------------|-----------------|---------------|----------------|
| 2321-90-10    | 10 | 10             | 90              | 3             | 70             |
| 2321-135-20   | 20 | 20             | 135             | 2             | 60             |



To demonstrate our continuing commitment to customer service and product development, ITC have installed an AXYZ CNC routing machine.

The machine has been installed to both enhance existing tools and develop new tools. It provides the machine capacity and time to trial, enhance and develop existing product lines, whilst offering an internal testbed for all future product developments, with the facility to put the next generation of cutting tool substrates, coatings and geometries to the test.

For customers witnessing issues with particular materials and jobs, we can take a sample of the material and do in-house testing without disrupting their production. Having this facility avoids inconvenient customer downtime and gives us the opportunity to apply a variety of cutting tools and machining parameters to achieve the best possible result. We have already improved cycle times, tool life and surface finishes for end-users by having the time to offer in-depth investigation and analysis.

We invite any of our customers to contact us to discuss issues they may have with their current machining methods and tooling and to send us samples of their material for testing.

Tel: +44 (0) 1827 304500 Email: sales@itc-ltd.co.uk

# 180-10 Series

### Single Flute Router



#### Description

Solid carbide single flute, upward spiral, 45° helix. Manufactured from Ultra Wear Resistant Micrograin Carbide to extremely tight tolerances, with exceptional surface finish.

#### **Application**

Designed for use on aluminium, acrylics and other soft non-ferrous materials. The single flute design gives excellent swarf clearance, combined with a short cutting length for strength.

#### Metric Sizes (mm)

| Catalogue No.   | Size | Shank Diameter | Overall Length | Length of Cut |
|-----------------|------|----------------|----------------|---------------|
| 180-0394-10     | 1    | 3              | 40             | 3             |
| 180-0591-10     | 1.5  | 3              | 40             | 4             |
| 180-0787-10-STA | 2    | 3              | 30             | 7             |
| 180-0984-10     | 2.5  | 3              | 40             | 7             |
| 180-1181-10     | 3    | 3              | 40             | 8             |
| 180-1575-10     | 4    | 4              | 50             | 11            |
| 180-1969-10     | 5    | 5              | 50             | 13            |
| 180-2362-10     | 6    | 6              | 57             | 13            |
| 180-3150-10     | 8    | 8              | 63             | 19            |
| 180-3937-10     | 10   | 10             | 72             | 22            |
| 180-4724-10     | 12   | 12             | 83             | 26            |

Single flute spiral routers allow the fastest possible cutting speeds.

# 180-10-ST Series

### Single Flute Stub Router



#### Description

Solid carbide single flute, upward spiral, 45° helix, stub length, manufactured from Ultra Wear Resistant Micrograin Carbide.

#### **Application**

Offers exceptional surface finish on aluminium, acrylic and PVC. Stub length gives increased rigidity.

| Catalogue No.  |   | Shank Diameter | Overall Length | Length of Cut |
|----------------|---|----------------|----------------|---------------|
| 180-1181-10-ST | 3 | 3              | 40             | 5             |
| 180-1575-10-ST | 4 | 4              | 50             | 6             |
| 180-1969-10-ST | 5 | 5              | 50             | 7             |
| 180-2362-10-ST | 6 | 6              | 50             | 8             |

# 180-10-LG Series

### Long Series Single Flute Router



#### Description

Solid carbide single flute, upward spiral, 30° helix. Manufactured from Ultra Wear Resistant Micrograin Carbide, to extremely tight tolerances with exceptional surface finish.

#### **Application**

Offers exceptional surface finish on aluminium, acrylic and PVC.

#### Metric Sizes (mm)

| Catalogue No.  |    | Shank Diameter | Overall Length | Length of Cut |
|----------------|----|----------------|----------------|---------------|
| 180-0787-10-LG | 2  | 3              | 38             | 10            |
| 180-1181-10-LG | 3  | 3              | 38             | 10            |
| 180-1575-10-LG | 4  | 4              | 50             | 14            |
| 180-1969-10-LG | 5  | 5              | 60             | 16            |
| 180-2362-10-LG | 6  | 6              | 60             | 20            |
| 180-3150-10-LG | 8  | 8              | 75             | 25            |
| 180-3937-10-LG | 10 | 10             | 100            | 40            |
| 180-4724-10-LG | 12 | 12             | 100            | 50            |

### Imperial Size (inches)

| Catalogue No.  |     | Shank Diameter | Overall Length | Length of Cut |
|----------------|-----|----------------|----------------|---------------|
| 180-2500-10-LG | 1/4 | 1/4            | 2-1/2          | 3/4           |

### 180-10-XL Series

### Extra Long Series Single Flute Router For Aluminium & Plastics

#### Metric Sizes (mm)

| Catalogue No.    |   | Shank Diameter | Overall Length | Length of Cut |
|------------------|---|----------------|----------------|---------------|
| 180-1181-10-XL   | 3 | 3              | 55             | 12            |
| 180-1575-10-XL   | 4 | 4              | 64             | 20            |
| 180-1575-10-A-XL | 4 | 6              | 64             | 22            |
| 180-2362-10-XL   | 6 | 6              | 75             | 26            |
| 180-2362-10-XXL  | 6 | 6              | 75             | 31            |

Tel: +44 (0) 1827 304500 / Email: sales@itc-ltd.co.uk / Website: www.itc-ltd.co.uk

# 180-10-LH Series

### Downward Spiral Single Flute Router



#### Description

Solid carbide single flute, downward spiral, 30° helix. Manufactured from Ultra Wear Resistant Micrograin Carbide, to extremely tight tolerances with exceptional surface finish.

#### **Application**

Designed for use on aluminium, acrylic and other non-ferrous materials. The downward spiral helps to hold the material down whilst cutting. Particularly suitable for thinner sheet.

#### Metric Sizes (mm)

| Catalogue No.  | Size | Shank Diameter | Overall Length | Length of Cut |
|----------------|------|----------------|----------------|---------------|
| 180-0787-10-LH | 2    | 3              | 40             | 10            |
| 180-1181-10-LH | 3    | 3              | 40             | 10            |
| 180-1575-10-LH | 4    | 4              | 50             | 14            |
| 180-2362-10-LH | 6    | 6              | 58             | 14            |

If coolant cannot be used a small amount of compressed air will resolve melting issues and improve surface finish.

# 180 Series - Straight Flute

### 2 Flute Straight Router

### 3 Flute Straight Router





#### Description

Solid carbide, single end, standard length, straight shank, straight flute, right hand cut, plunge style end cut.

#### **Application**

The straight flute router is an excellent tool for routing harder materials and also where a fine finish is required. The 3 flute design offers more strength than the 2 flute router. The 2 flute provides maximum swarf clearance.

#### Metric Sizes (mm)

| Catalogue No.<br>(2 Flute) | Catalogue No.<br>(3 Flute) | Size | Shank Diameter | Overall Length | Length<br>of Cut |
|----------------------------|----------------------------|------|----------------|----------------|------------------|
| 180-1181-20                | 180-1181-30                | 3    | 3              | 40             | 12               |
| 180-1575-20                | 180-1575-30                | 4    | 4              | 50             | 16               |
| 180-1969-20                | 180-1969-30                | 5    | 5              | 50             | 18               |
| 180-2362-20                | 180-2362-30                | 6    | 6              | 58             | 20               |
| 180-3150-20                | 180-3150-30                | 8    | 8              | 64             | 22               |
| 180-3937-20                | 180-3937-30                | 10   | 10             | 70             | 25               |
| 180-4724-20                | 180-4724-30                | 12   | 12             | 76             | 30               |

### 2 Flute Straight Router

#### Application

Suitable for materials up to 55mm thick, especially foam.

| Catalogue No.  |   | Shank Diameter | Overall Length | Length<br>of Cut |
|----------------|---|----------------|----------------|------------------|
| 180-3150-20-XL | 8 | 8              | 100            | 55               |

# 180 Series - Downward Spiral

2 Flute Spiral Router

3 Flute Spiral Router





#### Description

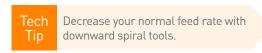
2 flute, solid carbide, single end, standard length, straight shank, downward spiral, 30° helix, right hand cut, plunge style end cut.

#### **Application**

The 2 flute left hand helix down cut router is an excellent tool for cutting materials that are flexible. The left hand helix directs the cutting force downwards holding the material rigid against the bottom template or support. Burrs on the top surface of the work piece are eliminated. Typically used on softer materials.

The 3 flute left hand helix down cut router is best suited for applications requiring good finishes. This router is the best selection for free hand routing where smooth chatterless operation is required.

| Catalogue No.<br>(2 Flute) | Catalogue No.<br>(3 Flute) |    | Shank Diameter | Overall Length | Length<br>of Cut |
|----------------------------|----------------------------|----|----------------|----------------|------------------|
| 180-1181-21                | 180-1181-31                | 3  | 3              | 40             | 12               |
| 180-1575-21                | 180-1575-31                | 4  | 4              | 50             | 16               |
| 180-1969-21                | 180-1969-31                | 5  | 5              | 50             | 18               |
| 180-2362-21                | 180-2362-31                | 6  | 6              | 58             | 20               |
| 180-3150-21                | 180-3150-31                | 8  | 8              | 64             | 22               |
| 180-3937-21                | 180-3937-31                | 10 | 10             | 70             | 25               |
| 180-4724-21                | 180-4724-31                | 12 | 12             | 76             | 30               |



#### 2 Flute Router



#### Description

2 flute, solid carbide, upward spiral, 30° helix.

#### **Application**

A general purpose router. The two flute construction is a multi-purpose tool that can successfully be used to plunge cut. It is an economical tool for routing wood, non-ferrous metals, and plastics.

| Catalogue No. |     | Shank Diameter | Overall Length | Length of Cut |
|---------------|-----|----------------|----------------|---------------|
| 2571-1        | 1   | 3              | 38             | 3             |
| 2571-1.5      | 1.5 | 3              | 38             | 5             |
| 2571-2        | 2   | 3              | 38             | 7             |
| 2571-3        | 3   | 3              | 38             | 9             |
| 2571-4        | 4   | 4              | 51             | 14            |
| 2571-5        | 5   | 5              | 51             | 16            |
| 2571-6        | 6   | 6              | 64             | 19            |
| 2571-8        | 8   | 8              | 64             | 21            |

#### 2 Flute Coated Router - AITIN Coated



#### Description

2 flute solid carbide, upward spiral, 30° helix. Manufactured from Ultra Wear Resistant Micrograin Carbide, AlTiN coated.

#### **Application**

Designed for applications requiring extra tool life, particularly suitable for cutting engraving laminates and fire retardant MDF.

#### Metric Sizes (mm)

| Catalogue No. |     | Shank Diameter | Overall Length | Length of Cut |
|---------------|-----|----------------|----------------|---------------|
| 2011-1.0C     | 1   | 3              | 38             | 3             |
| 2011-1.5C     | 1.5 | 3              | 38             | 5             |
| 2011-2.0C     | 2   | 3              | 38             | 7             |
| 2011-2.5C     | 2.5 | 3              | 38             | 7             |
| 2011-3.0C     | 3   | 3              | 38             | 9             |
| 2011-3.5C     | 3.5 | 4              | 51             | 12            |
| 2011-4.0C     | 4   | 4              | 51             | 14            |
| 2011-4.5C     | 4.5 | 5              | 51             | 14            |
| 2011-5.0C     | 5   | 5              | 51             | 16            |
| 2011-6.0C     | 6   | 6              | 64             | 19            |
| 2011-6.0C-L   | 6   | 6              | 64             | 26            |
| 2011-7.0C     | 7   | 8              | 64             | 19            |
| 2011-8.0C     | 8   | 8              | 64             | 21            |
| 2011-10.0C    | 10  | 10             | 70             | 22            |
| 2011-12.0C    | 12  | 12             | 76             | 25            |
| 2011-16.0C    | 16  | 16             | 89             | 32            |
| 2011-20.0C    | 20  | 20             | 102            | 38            |



Clean collets and locknuts during every tool change.

### 2 Flute Router - TiN Coated



#### Description

2 flute, Ultra Fine Grain solid carbide, upward spiral, 30° helix, titanium nitride coated.

#### **Application**

The 2591 series 2 flute router is a good choice where extra tool life is required.

|               |     |                |                | ,             |
|---------------|-----|----------------|----------------|---------------|
| Catalogue No. |     | Shank Diameter | Overall Length | Length of Cut |
| 2591-2        | 2   | 3              | 38             | 7             |
| 2591-2.5      | 2.5 | 3              | 38             | 7             |
| 2591-3        | 3   | 3              | 38             | 9             |
| 2591-4        | 4   | 4              | 51             | 14            |
| 2591-5        | 5   | 5              | 51             | 16            |
| 2591-6        | 6   | 6              | 64             | 19            |
| 2591-8        | 8   | 8              | 64             | 21            |

### 2 Flute Router for Pocketing Applications



#### Description

2 flute, solid carbide, single end, standard length, square end, straight shank, upward spiral, 55° helix, right hand cut, centre cutting, manufactured from Ultra Wear Resistant Micrograin Carbide.

#### **Application**

Designed to give extremely high performance in the machining of soft non-ferrous materials. The radical flute geometry gives exceptional swarf clearance, whilst the circular land and end teeth "Wipers" combine to give unparalleled surface finish, reducing machining marks especially in pocketing applications.

#### Metric Sizes (mm)

| Catalogue No. |    | Shank Diameter | Overall Length | Length of Cut |
|---------------|----|----------------|----------------|---------------|
| 2041-3        | 3  | 3              | 38             | 12            |
| 2041-4        | 4  | 4              | 50             | 15            |
| 2041-5        | 5  | 5              | 50             | 20            |
| 2041-6        | 6  | 6              | 64             | 20            |
| 2041-8        | 8  | 8              | 64             | 22            |
| 2041-10       | 10 | 10             | 70             | 27            |
| 2041-12       | 12 | 12             | 76             | 27            |
| 2041-14       | 14 | 14             | 90             | 30            |
| 2041-16       | 16 | 16             | 90             | 35            |
| 2041-18       | 18 | 18             | 90             | 35            |
| 2041-20       | 20 | 20             | 100            | 40            |



If you require something you cannot find in this catalogue please call ITC Sales.

### 2 Flute Router - Long Series



#### Description

2 flute, solid carbide, long length, straight shank, upward spiral, 30° helix, right hand cut, centre cutting.

#### **Application**

Suitable for applications where a standard 2 flute tool does not offer sufficient reach. Most commonly used on soft non-ferrous materials.

| Catalogue No. |    | Shank Diameter | Overall Length | Length of Cut |
|---------------|----|----------------|----------------|---------------|
| 2621-3        | 3  | 3              | 64             | 19            |
| 2621-4        | 4  | 4              | 64             | 19            |
| 2621-5        | 5  | 5              | 64             | 20            |
| 2621-6        | 6  | 6              | 75             | 28            |
| 2621-8        | 8  | 8              | 75             | 28            |
| 2621-10       | 10 | 10             | 89             | 32            |
| 2621-12       | 12 | 12             | 100            | 45            |
| 2621-16       | 16 | 16             | 110            | 56            |

### 2 Flute Router - Extra Long Series



#### Description

2 flute, solid carbide, extra long length, square end, straight shank, upward spiral, 30° helix, right hand cut, centre cutting.

#### **Application**

Suitable for applications where extra long reach is required. Most commonly used on soft non-ferrous materials.

#### Metric Sizes (mm)

| Catalogue No. | Size | Shank Diameter | Overall Length | Length of Cut |
|---------------|------|----------------|----------------|---------------|
| 2631-3        | 3    | 3              | 75             | 25            |
| 2631-4        | 4    | 4              | 75             | 28            |
| 2631-5        | 5    | 5              | 100            | 31            |
| 2631-6        | 6    | 6              | 100            | 38            |
| 2631-6-XLS    | 6    | 6              | 80             | 45            |
| 2631-8        | 8    | 8              | 100            | 41            |
| 2631-10       | 10   | 10             | 100            | 45            |
| 2631-12       | 12   | 12             | 150            | 75            |
| 2631-16       | 16   | 16             | 150            | 75            |



ITC can manufacture special styles of tools not shown in this brochure – often in only a few days.

#### XXLS 2 Flute Router



#### Description

2 flute solid carbide, straight shank, upward spiral, 30° helix, manufactured from Ultra Wear Resistant Micrograin Carbide, square end.

#### **Application**

Designed for applications requiring extremely long reach in a variety of materials.

#### Metric Sizes (mm)

| Catalogue No. | Size | Shank Diameter | Overall Length | Length of Cut |
|---------------|------|----------------|----------------|---------------|
| 2121-6        | 6    | 6              | 150            | 38            |
| 2121-8        | 8    | 8              | 150            | 40            |
| 2121-10       | 10   | 10             | 200            | 50            |
| 2121-12       | 12   | 12             | 200            | 75            |
| 2121-16       | 16   | 16             | 200            | 75            |
| 2121-20       | 20   | 20             | 200            | 75            |

When using long and XXL length routers of smaller diameters always use a shorter tool first to avoid or reduce vibration and improve surface finish.

### **Upcut / Downcut Router**



#### Description

Solid carbide router, 30° helix, manufactured from Ultra Wear Resistant Micrograin Carbide. Bottom part of the flute is Right Hand Spiral / Right Hand Cut, top part of flute Left Hand Spiral / Right Hand Cut.

#### **Application**

Specifically designed for the efficient machining of MDF, wood laminates and other similarly abrasive materials. The reverse helix flute design has the effect of pulling the top and bottom of the work piece in towards the centre, eliminating de-lamination.

#### Metric Sizes (mm)

| Catalogue No.   |    |   | Shank Diameter | Overall Length | Length of Cut | Crossover Length |
|-----------------|----|---|----------------|----------------|---------------|------------------|
| 2091-1181-20    | 3  | 2 | 6              | 58             | 10            | 3                |
| 2091-2362-20    | 6  | 2 | 6              | 75             | 22            | 6                |
| 2091-2362-20-C  | 6  | 2 | 6              | 55             | 22            | 3                |
| 2091-3150-20*   | 8  | 2 | 8              | 80             | 26            | 6                |
| 2091-3937-30A*  | 10 | 3 | 10             | 80             | 22            | 6                |
| 2091-3937-30J** | 10 | 3 | 10             | 80             | 22            | 6                |
| 2091-4724-20    | 12 | 2 | 12             | 100            | 55            | 8                |
| 2091-4724-20J** | 12 | 2 | 12             | 100            | 55            | 8                |

<sup>\*</sup> TiN coated for extra life

#### Imperial Sizes (inches)

| Catalogue No. |     |   | Shank Diameter | Overall Length | Length of Cut | Crossover Length |
|---------------|-----|---|----------------|----------------|---------------|------------------|
| 2091-2500-20  | 1/4 | 2 | 1/4            | 90             | 27            | 6                |
| 2091-5000-20  | 1/2 | 2 | 1/2            | 110            | 55            | 8                |



ITC can manufacture special styles of tools not shown in this brochure - often in only a few days.

<sup>\*\*</sup> Vitreo coated

#### 2 Flute Ball Nose Router



#### Description

2 flute solid carbide, single end, standard length, ball nose, straight shank, upward spiral, 30° helix, centre cutting.

#### **Application**

Similar to square end, but with the added advantage of suitability to rout contoured surfaces.

| Catalogue No. | Size | Shank Diameter | Overall Length | Length of Cut |
|---------------|------|----------------|----------------|---------------|
| 2552-1        | 1    | 3              | 38             | 2             |
| 2552-1.5      | 1.5  | 3              | 38             | 3             |
| 2552-2        | 2    | 3              | 38             | 7             |
| 2552-2.5      | 2.5  | 3              | 38             | 7             |
| 2552-3        | 3    | 3              | 38             | 9             |
| 2552-4        | 4    | 4              | 51             | 14            |
| 2552-5        | 5    | 5              | 51             | 16            |
| 2552-6        | 6    | 6              | 64             | 19            |
| 2552-8        | 8    | 8              | 64             | 21            |

### 2 Flute Ball Nose Router - Long Series



#### Description

2 flute, solid carbide, long length, ball nose, straight shank, upward spiral, 30° helix, right hand cut, centre cutting.

#### **Application**

Suitable for use in applications where a standard 2 flute ball nose does not offer sufficient reach.

| Catalogue No. |    | Shank Diameter | Overall Length | Length of Cut |
|---------------|----|----------------|----------------|---------------|
| 2662-3        | 3  | 3              | 55             | 19            |
| 2662-4        | 4  | 4              | 64             | 19            |
| 2662-5        | 5  | 5              | 64             | 20            |
| 2662-6        | 6  | 6              | 75             | 28            |
| 2662-8        | 8  | 8              | 75             | 28            |
| 2662-10       | 10 | 10             | 89             | 32            |
| 2662-12       | 12 | 12             | 100            | 45            |
| 2662-16       | 16 | 16             | 110            | 56            |



### 2 Flute Ball Nose Router - Extra Long Series



#### Description

2 flute, solid carbide, extra long length, ball nose, straight shank, upward spiral, 30° helix, right hand cut, centre cutting.

#### **Application**

Suitable for use in applications where extra long reach is required.

| Catalogue No. |    | Shank Diameter | Overall Length | Length of Cut |
|---------------|----|----------------|----------------|---------------|
| 2632-3        | 3  | 3              | 75             | 25            |
| 2632-4        | 4  | 4              | 75             | 31            |
| 2632-5        | 5  | 5              | 100            | 31            |
| 2632-6        | 6  | 6              | 100            | 38            |
| 2632-8        | 8  | 8              | 100            | 41            |
| 2632-10       | 10 | 10             | 100            | 45            |
| 2632-12       | 12 | 12             | 150            | 75            |
| 2632-16       | 16 | 16             | 150            | 75            |



XXLS 2 Flute Ball Nose Router



#### Description

2 flute solid carbide, ball nose, extra long length, straight shank, upward spiral, 30° helix, manufactured from Ultra Wear Resistant Micrograin Carbide.

#### **Application**

Designed for applications requiring extremely long reach in a variety of materials.

#### Metric Sizes (mm)

| Catalogue No. |    | Shank Diameter | Overall Length | Length of Cut |
|---------------|----|----------------|----------------|---------------|
| 2122-6        | 6  | 6              | 150            | 38            |
| 2122-8        | 8  | 8              | 150            | 40            |
| 2122-10       | 10 | 10             | 200            | 50            |
| 2122-12       | 12 | 12             | 200            | 75            |
| 2122-16       | 16 | 16             | 200            | 75            |
| 2122-20       | 20 | 20             | 200            | 75            |

These tools can be modified to your requirements within our CNC manufacturing facility. Alternatively we can make complete to your specifications.



If you require help or advice on your choice of tool please do not hesitate to call us.

#### 3 Flute Router



#### Description

3 flute, solid carbide, upward spiral, 30° helix.

#### **Application**

A general purpose router, particularly suitable for brass and copper.

| Catalogue No. | Size | Shank Diameter | Overall Length | Length of Cut |
|---------------|------|----------------|----------------|---------------|
| 3551-1        | 1    | 3              | 38             | 3             |
| 3551-1.5      | 1.5  | 3              | 38             | 5             |
| 3551-2        | 2    | 3              | 38             | 7             |
| 3551-2.5      | 2.5  | 3              | 38             | 7             |
| 3551-3        | 3    | 3              | 38             | 9             |
| 3551-4        | 4    | 4              | 51             | 14            |
| 3551-5        | 5    | 5              | 51             | 16            |
| 3551-6        | 6    | 6              | 64             | 19            |
| 3551-7        | 7    | 8              | 64             | 19            |
| 3551-8        | 8    | 8              | 64             | 21            |

#### 3 Flute Router For Stainless Steel



#### Description

3 Flute Solid Carbide, upward spiral with corner chamfer for extra strength, 30° helix. Manufactured from Ultra Micrograin Carbide, TiAIN coated to give extra wear resistance.

#### **Application**

Designed for use on stainless & other steels commonly used in the sign making industry. The special substrate, combined with the hard and lubricious surface coating, gives unbeatable performance.

#### Metric Sizes (mm)

| Catalogue No. | Size | Shank Diameter | Overall Length | Length of Cut | Chamfer |
|---------------|------|----------------|----------------|---------------|---------|
| 3061-3C       | 3    | 6              | 58             | 3             | 0.5     |
| 3061-4C       | 4    | 6              | 58             | 4             | 0.5     |
| 3061-5C       | 5    | 6              | 58             | 5             | 0.5     |
| 3061-6C       | 6    | 6              | 58             | 6             | 0.5     |

### General Instructions For Routing Stainless Steel

Run Machine @ 4000 RPM

Feed @ 2-3 mm/sec

#### Plunge @ 1/2 of feed rate

- Ensure the cutter is all the way through the material before you start traversing.
- Use a sacrificial bed of foamex.
- Glue your stainless steel workpiece to the foamex, you will then remove the foamex when the job is complete. (Spray carpet glue is ideal)
- It is imperative that your material is rigid and firmly stuck down.
- Use plenty of coolant.

Any questions, please do not hesitate to contact us on the number below, alternatively ring Sally on + 44 (0) 1204 303435.

# 164-27 Series

#### 2 Flute Miniature Router



#### Description

2 flute, solid carbide, standard length, square end, 30° helix, upward spiral.

#### **Application**

Designed for precision machining in applications where a particularly small tool is required. The common shank size provides rigidity and the flute design gives sufficient swarf clearance for slotting applications.

#### Metric Sizes (mm)

| Catalogue No. | Size | Shank Diameter | Overall Length | Length of Cut |
|---------------|------|----------------|----------------|---------------|
| 164-0002-27   | 0.2  | 3              | 38             | 0.6           |
| 164-0003-27   | 0.3  | 3              | 38             | 0.9           |
| 164-0004-27   | 0.4  | 3              | 38             | 1.2           |
| 164-0005-27   | 0.5  | 3              | 38             | 1.5           |
| 164-0006-27   | 0.6  | 3              | 38             | 1.8           |
| 164-0007-27   | 0.7  | 3              | 38             | 2.1           |
| 164-0008-27   | 0.8  | 3              | 38             | 2.4           |
| 164-0009-27   | 0.9  | 3              | 38             | 2.7           |
| 164-0010-27   | 1.0  | 3              | 38             | 3.0           |
| 164-0011-27   | 1.1  | 3              | 38             | 3.3           |
| 164-0012-27   | 1.2  | 3              | 38             | 3.6           |
| 164-0013-27   | 1.3  | 3              | 38             | 3.9           |
| 164-0014-27   | 1.4  | 3              | 38             | 4.2           |
| 164-0015-27   | 1.5  | 3              | 38             | 4.5           |
| 164-0016-27   | 1.6  | 3              | 38             | 4.8           |
| 164-0017-27   | 1.7  | 3              | 38             | 5.1           |
| 164-0018-27   | 1.8  | 3              | 38             | 5.4           |
| 164-0019-27   | 1.9  | 3              | 38             | 5.7           |
| 164-0020-27   | 2.0  | 3              | 38             | 6.0           |



ITC can manufacture special styles of tools not shown in this brochure - often in only a few days.

# 164-27ST Series

#### 2 Flute Miniature Stub Router



#### Description

2 flute, solid carbide, stub length, square end, 30° helix, upward spiral.

#### **Application**

Suitable for applications where the standard length tool may lack rigidity. Flute length is typically half that of the standard tool.

#### Metric Sizes (mm)

| Catalogue No. |     | Shank Diameter | Overall Length | Length of Cut |
|---------------|-----|----------------|----------------|---------------|
| 164-0002-27ST | 0.2 | 3              | 38             | 0.4           |
| 164-0003-27ST | 0.3 | 3              | 38             | 0.6           |
| 164-0004-27ST | 0.4 | 3              | 38             | 0.8           |
| 164-0005-27ST | 0.5 | 3              | 38             | 1.0           |
| 164-0006-27ST | 0.6 | 3              | 38             | 1.2           |
| 164-0007-27ST | 0.7 | 3              | 38             | 1.4           |
| 164-0008-27ST | 0.8 | 3              | 38             | 1.6           |
| 164-0009-27ST | 0.9 | 3              | 38             | 1.8           |
| 164-0010-27ST | 1.0 | 3              | 38             | 2.0           |
| 164-0011-27ST | 1.1 | 3              | 38             | 2.2           |
| 164-0012-27ST | 1.2 | 3              | 38             | 2.4           |
| 164-0013-27ST | 1.3 | 3              | 38             | 2.6           |
| 164-0014-27ST | 1.4 | 3              | 38             | 2.8           |
| 164-0015-27ST | 1.5 | 3              | 38             | 3.0           |
| 164-0016-27ST | 1.6 | 3              | 38             | 3.2           |
| 164-0017-27ST | 1.7 | 3              | 38             | 3.4           |
| 164-0018-27ST | 1.8 | 3              | 38             | 3.6           |
| 164-0019-27ST | 1.9 | 3              | 38             | 3.8           |
| 164-0020-27ST | 2.0 | 3              | 38             | 4.0           |



Replace collets regularly. They are a consumable item and will wear with use.

#### Chamfer Tool



#### Description

4 flute solid carbide chamfering tool, 120, 100, 90 and 60 degree inclusive angle with staggered teeth. Manufactured from Ultra Tough Micrograin Carbide. Available uncoated or Cupro coated.

#### **Application**

This tool can be used to chamfer and countersink a variety of materials. The staggered tooth design leads to smoother cutting and better surface finish

#### Metric Sizes (mm)

| Catalogue No. | Catalogue No. Coated | Size | Shank Diameter | Overall Length | Inclusive Angle |
|---------------|----------------------|------|----------------|----------------|-----------------|
| 4071-3-60     | 4071-3F-60           | 3    | 3              | 50             | 60°             |
| 4071-3-90     | 4071-3F-90           | 3    | 3              | 50             | 90°             |
| 4071-4-60     | 4071-4F-60           | 4    | 4              | 50             | 60°             |
| 4071-4-90     | 4071-4F-90           | 4    | 4              | 50             | 90°             |
| 4071-4-100    | 4071-4F-100          | 4    | 4              | 50             | 100°            |
| 4071-4-120    | 4071-4F-120          | 4    | 4              | 50             | 120°            |
| 4071-5-60     | 4071-5F-60           | 5    | 5              | 50             | 60°             |
| 4071-5-90     | 4071-5F-90           | 5    | 5              | 50             | 90°             |
| 4071-5-100    | 4071-5F-100          | 5    | 5              | 50             | 100°            |
| 4071-5-120    | 4071-5F-120          | 5    | 5              | 50             | 120°            |
| 4071-6-60     | 4071-6F-60           | 6    | 6              | 64             | 60°             |
| 4071-6-90     | 4071-6F-90           | 6    | 6              | 64             | 90°             |
| 4071-6-100    | 4071-6F-100          | 6    | 6              | 64             | 100°            |
| 4071-6-120    | 4071-6F-120          | 6    | 6              | 64             | 120°            |
| 4071-8-60     | 4071-8F-60           | 8    | 8              | 64             | 60°             |
| 4071-8-90     | 4071-8F-90           | 8    | 8              | 64             | 90°             |
| 4071-8-100    | 4071-8F-100          | 8    | 8              | 64             | 100°            |
| 4071-8-120    | 4071-8F-120          | 8    | 8              | 64             | 120°            |
| 4071-10-60    | 4071-10F-60          | 10   | 10             | 70             | 60°             |
| 4071-10-90    | 4071-10F-90          | 10   | 10             | 70             | 90°             |
| 4071-10-100   | 4071-10F-100         | 10   | 10             | 70             | 100°            |
| 4071-10-120   | 4071-10F-120         | 10   | 10             | 70             | 120°            |
| 4071-12-60    | 4071-12F-60          | 12   | 12             | 76             | 60°             |
| 4071-12-90    | 4071-12F-90          | 12   | 12             | 76             | 90°             |
| 4071-12-100   | 4071-12F-100         | 12   | 12             | 76             | 100°            |
| 4071-12-120   | 4071-12F-120         | 12   | 12             | 76             | 120°            |

#### **Corner Rounding Cutter**



#### Description

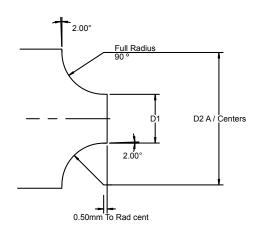
4 flute solid carbide tool with internal radius, manufactured from Ultra Wear Resistant Micrograin Carbide. Includes full 90° radius plus runout. Available uncoated or Cupro coated.

#### **Application**

Designed to produce an external radius on a variety of materials.

#### Metric Sizes (mm)

| Catalogue No. | Catalogue No. Coated | Shank Diameter | Overall Length | D1   | D2     | Corner Radius |
|---------------|----------------------|----------------|----------------|------|--------|---------------|
| 4011-8-0.5R   | 4011-8F-0.5R         | 8              | 64             | 6.00 | 7.035  | 0.5           |
| 4011-8-1.0R   | 4011-8F-1.0R         | 8              | 64             | 5.00 | 7.035  | 1,0           |
| 4011-10-1.5R  | 4011-10F-1.5R        | 10             | 70             | 6.00 | 9.035  | 1.5           |
| 4011-10-2.0R  | 4011-10F-2.0R        | 10             | 70             | 5.00 | 9.035  | 2.0           |
| 4011-12-2.5R  | 4011-12F-2.5R        | 12             | 76             | 6.00 | 11.035 | 2.5           |
| 4011-12-3.0R  | 4011-12F-3.0R        | 12             | 76             | 5.00 | 11.035 | 3.0           |
| 4011-16-3.5R  | 4011-16F-3.5R        | 16             | 89             | 8.00 | 15.035 | 3.5           |
| 4011-16-4.0R  | 4011-16F-4.0R        | 16             | 89             | 7.00 | 15.035 | 4.0           |
| 4011-16-4.5R  | 4011-16F-4.5R        | 16             | 89             | 6.00 | 15.035 | 4.5           |
| 4011-16-5.0R  | 4011-16F-5.0R        | 16             | 89             | 5.00 | 15.035 | 5.0           |
| 4011-20-5.5R  | 4011-20F-5.5R        | 20             | 100            | 8.00 | 19.035 | 5.5           |
| 4011-20-6.0R  | 4011-20F-6.0R        | 20             | 100            | 7.00 | 19.035 | 6.0           |



# D Series Tools for Superior Engraving

#### One Dimensional Engraving Tools



#### Description

The D series is solid carbide and available in three different angles; 30°, 60° and 90° inclusive. Other sizes are available on request.

#### **Application**

Designed to give superior performance when engraving a variety of materials from plastics to steels. This range is for bottom loading engraving and routing machines.

#### One Dimensional

| Catalogue No. | Included Angle | Diameter | Overall Length | Split Length |
|---------------|----------------|----------|----------------|--------------|
| ENG-3.0-30    | 30°            | 3        | 38             | 5            |
| ENG-6.0-30    | 30°            | 6        | 57             | 8            |
| ENG-3.0-60    | 60°            | 3        | 38             | 5            |
| ENG-6.0-60    | 60°            | 6        | 57             | 8            |
| ENG-3.0-90    | 90°            | 3        | 38             | 5            |
| ENG-6.0-90    | 90°            | 6        | 57             | 8            |

#### **Engraving Tools With Flats**

| Catalogue No.   | Included Angle |      | Diameter | Overall Length | Split Length |
|-----------------|----------------|------|----------|----------------|--------------|
| ENG-6.0-60-0.25 | 60°            | 0.25 | 6        | 56             | 8            |
| ENG-6.0-60-0.50 | 60°            | 0.50 | 6        | 56             | 8            |
| ENG-6.0-60-0.75 | 60°            | 0.75 | 6        | 56             | 8            |
| ENG-6.0-60-1.0  | 60°            | 1.0  | 6        | 56             | 8            |
| ENG-6.0-60-1.25 | 60°            | 1.25 | 6        | 56             | 8            |
| ENG-6.0-60-1.5  | 60°            | 1.5  | 6        | 56             | 8            |
| ENG-6.0-60-2.0  | 60°            | 2.0  | 6        | 56             | 8            |

#### **Engraving Tools For Top Loading Machines**

| Catalogue No. | Diameter | Overall Length | Split Length |
|---------------|----------|----------------|--------------|
| ENG-1719-00   | 11/64"   | 6-1/2"         | 1/2"         |
| ENG-2500-00   | 1/4"     | 6-1/2"         | 1/2"         |

# 3 Dimensional Engraving Tools



#### Description

The 3D engraving/carving tool is a 2 flute design with brazed carbide inserts, available in various angles from 90° to 150° inclusive.

#### **Application**

Typically used with prismatic software for 3D engraving and carving, also suitable for chamfering a variety of materials.

#### Metric Sizes (mm)

| Catalogue No. | Included Angle | Diameter | Overall Length | Shank Diameter |
|---------------|----------------|----------|----------------|----------------|
| 150-3D-8      | 150°           | 32       | 50             | 8              |
| 120-3D-8      | 120°           | 32       | 50             | 8              |
| 110-3D-8      | 110°           | 32       | 50             | 8              |
| 90-3D-8       | 90°            | 32       | 50             | 8              |

#### Imperial Sizes (inches)

| Catalogue No. | Included Angle | Diameter | Overall Length | Shank Diameter |
|---------------|----------------|----------|----------------|----------------|
| 120-3D        | 120°           | 1.25     | 2              | 1/4            |
| 90-3D         | 90°            | 1.25     | 2              | 1/4            |

#### Diamond Cut Router for Glass Fibre



#### **Description**

Multiple flute, solid carbide, diamond cut, right hand cut, plunging end cut.

#### **Application**

Designed for use on glass fibre and similar materials. Unique cutting geometry provides an easy cutting action and good surface finish on both hand and CNC operated applications. Also suitable for honeycomb cardboard and rigid paper board.

#### Metric Sizes (mm)

| Catalogue No. |    | Shank Diameter | Overall Length | Length of Cut |
|---------------|----|----------------|----------------|---------------|
| 190-1181-30   | 3  | 3              | 38             | 12.5          |
| 190-1575-30   | 4  | 4              | 50             | 16            |
| 190-1969-30   | 5  | 5              | 50             | 16            |
| 190-2362-30-S | 6  | 6              | 50             | 19            |
| 190-2362-30   | 6  | 6              | 75             | 19            |
| 190-3150-30   | 8  | 8              | 64             | 22            |
| 190-3937-30   | 10 | 10             | 75             | 25            |
| 190-4724-30   | 12 | 12             | 75             | 25            |

#### Imperial Sizes (inches)

| Catalogue No. | Size | Shank Diameter | Overall Length | Length of Cut |
|---------------|------|----------------|----------------|---------------|
| 190-1215-30   | 1/16 | 1/8            | 1-1/2          | 3/16          |
| 190-2345-30   | 1/8  | 1/8            | 1-1/2          | 1/2           |
| 190-5555-30   | 1/4  | 1/4            | 2              | 3/4           |
| 190-6555-30   | 1/4  | 1/4            | 2-1/2          | 3/4           |
| 190-7555-30   | 1/4  | 1/4            | 3              | 1             |
| 190-7625-30   | 5/16 | 5/16           | 2-1/2          | 1             |
| 190-9745-30   | 1/2  | 1/2            | 3              | 1             |

#### Multi-Flute Router



#### Description

Multiple flute, solid carbide, right hand cut, plunging end cut. Available with diamond coating.

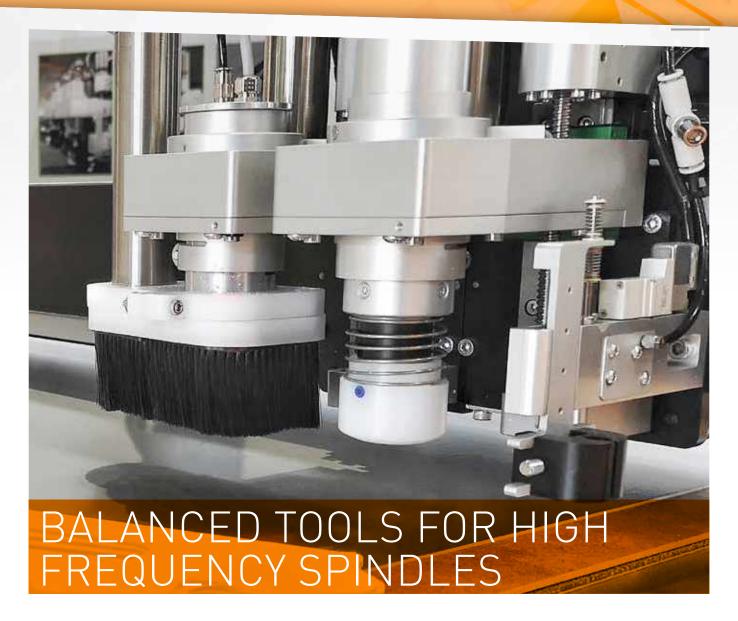
#### **Application**

Designed for use on glass filled and carbon fibre type materials. Diamond coated for extra life on abrasive materials.

#### Metric Sizes (mm)

| Catalogue No. | Catalogue No. Coated |    | Shank Diameter | Overall Length | Length of Cut |
|---------------|----------------------|----|----------------|----------------|---------------|
| 9001-3        | 9001-3E              | 3  | 3              | 64             | 20            |
| 9001-6        | 9001-6E              | 6  | 6              | 75             | 28            |
| 9001-8        | 9001-8E              | 8  | 8              | 75             | 28            |
| 9001-10       | 9001-10E             | 10 | 10             | 100            | 40            |
| 9001-12       | 9001-12E             | 12 | 12             | 100            | 40            |

When using Diamond coated tools on CNC Router Machine always set the tool length manually. Do not use the Tool Length Sensor.



High frequency spindles incorporated into CNC cutting tables by manufacturers including, Zund, Esko, Summa and DYSS are now a common installation in the production areas of Sign Makers, Digital Printers and Graphics companies.

Operating at extremely high spindle speeds, many well in excess of 33,000 rpm, these high frequency spindles require precision, balanced cutting tools in order to operate at their full potential. Without balanced tools the quality of surface and edge finish of components will diminish rapidly. In addition, the cutting process will induce vibration and generate excessive heat, noise and stress in the spindle. As a result, tool and spindle life will be significantly reduced.

ITC manufacture a comprehensive range of balanced carbide tooling specially for these high frequency spindles available ex-stock from our factory. These tools are also available complete with stop rings for use in automatic tool changers.

As one of the largest UK tool manufacturers ITC can also produce special tools to your specific requirements and offer expert technical guidance as to their use.

Tel: +44 (0) 1827 304500 Email: sales@itc-ltd.co.uk

## Clearcut - Balanced

#### Single Flute Router



#### Description

Solid carbide single flute, upward spiral, 15° helix. Manufactured from Ultra Wear Resistant Micrograin Carbide, to extremely tight tolerances with a highly polished flute. **Balanced for use on high frequency spindles, 30,000+ RPM.** 

#### **Application**

Designed to give an exceptional finish on perspex and acrylic materials. In some cases eliminating the need for flame polishing components after cutting. This range of tool also offers exceptional surface finish on foamex and similar materials.

#### Metric Sizes (mm)

| Catalogue No.     | Size | Shank Diameter | Overall Length | Length of Cut |
|-------------------|------|----------------|----------------|---------------|
| 180-0787-10-F-BAL | 2    | 6              | 50             | 7             |
| 180-1181-10-D-BAL | 3    | 3              | 40             | 12            |
| 180-1181-10-E-BAL | 3    | 3              | 40             | 6             |
| 180-1181-10-F-BAL | 3    | 6              | 50             | 10            |
| 180-1575-10-C-BAL | 4    | 4              | 40             | 11            |
| 180-1575-10-D-BAL | 4    | 4              | 50             | 15            |
| 180-1575-10-F-BAL | 4    | 6              | 50             | 10            |
| 180-1969-10-F-BAL | 5    | 6              | 50             | 12            |
| 180-2362-10-C-BAL | 6    | 6              | 58             | 21            |
| 180-2362-10-D-BAL | 6    | 6              | 75             | 26            |
| 180-2362-10-E-BAL | 6    | 6              | 58             | 14            |

#### **Stop Rings**

Stop rings fitted for use in automatic tool changers are available for all our 6mm shank tools.

Please call for details:

Tel: +44 (0) 1827 304500





A minimal amount of coolant often improves the finish when cutting acrylic.

# 180-10-A Series - Balanced

#### Single Flute Router For Aluminium & ACM - Reinforced Shank



#### Description

Solid carbide single flute, upward spiral, 30° helix on reinforced 6mm shank, ideal for reducing number of collet changes, manufactured from Ultra Wear Resistant Micrograin Carbide. **Balanced for use on high frequency spindles, 30,000+ RPM.** 

#### **Application**

Offers exceptional surface finish on aluminium and ACM.

#### Metric Sizes (mm)

| Catalogue No.        | Size | Size Shank Diameter |    | Length of Cut |
|----------------------|------|---------------------|----|---------------|
| 180-0787-10-A-BAL    | 2    | 6                   | 50 | 7             |
| 180-0984-10-A-BAL    | 2.5  | 6                   | 50 | 8             |
| 180-1181-10-A-XL-BAL | 3    | 6                   | 50 | 10            |
| 180-1575-10-A-BAL    | 4    | 6                   | 50 | 10            |
| 180-1575-10-A-XL-BAL | 4    | 6                   | 65 | 22            |
| 180-1969-10-A-BAL    | 5    | 6                   | 50 | 12            |
| 180-2362-10-STA-BAL  | 6    | 6                   | 50 | 14            |

# 180-10-A Series - Vitreo Coated - Balanced

#### Single Flute Router For ACM



#### Description

Solid carbide single flute, upward spiral, 30° helix on reinforced 6mm shank, ideal for reducing number of collet changes, manufactured from Ultra Wear Resistant Micrograin Carbide. Coated for extra life. **Balanced for use on high frequency spindles, 30,000+ RPM.** 

#### **Application**

Vitreo coated offers exceptional surface finish and tool life on ACM.

#### Metric Sizes (mm)

| Catalogue No.        | Size | Shank Diameter | Overall Length | Length of Cut |
|----------------------|------|----------------|----------------|---------------|
| 180-0787-10J-A-BAL   | 2    | 6              | 50             | 7             |
| 180-1181-10J-AXL-BAL | 3    | 6              | 50             | 10            |
| 180-1575-10J-A-BAL   | 4    | 6              | 50             | 10            |
| 180-2362-10J-STA-BAL | 6    | 6              | 50             | 14            |

# 180-10-A Series - Iridis Coated - Balanced

#### Single Flute Router For Aluminium



#### **Application**

Iridis coated offers exceptional surface finish and tool life on aluminium.

#### Metric Sizes (mm)

| Catalogue No.         | Size | Shank Diameter | Overall Length | Length of Cut |
|-----------------------|------|----------------|----------------|---------------|
| 180-0787-10K-A-BAL    | 2    | 6              | 50             | 7             |
| 180-1181-10K-A-XL-BAL | 3    | 6              | 50             | 10            |
| 180-1575-10K-A-BAL    | 4    | 6              | 50             | 10            |
| 180-1969-10K-A-BAL    | 5    | 6              | 50             | 12            |
| 180-2362-10K-STA-BAL  | 6    | 6              | 50             | 14            |

Tel: +44 (0) 1827 304500 / Email: sales@itc-ltd.co.uk / Website: www.itc-ltd.co.uk

#### Single Flute Router For Aluminium & ACM



#### Description

Solid carbide single flute, upward spiral, 30° helix on reinforced 6mm shank, manufactured from Ultra Wear Resistant Micrograin Carbide. Vitreo coated for extra life. **Balanced for use on high frequency spindles, 30,000+ RPM.** 

#### **Application**

Modified tool rake geometry especially suitable for aluminium and aluminium composite materials (ACM). Offers exceptional surface finish at high spindle RPMs.

#### Metric Sizes (mm)

| Catalogue No. | Size | Shank Diameter | Overall Length | Length of Cut |
|---------------|------|----------------|----------------|---------------|
| 1001-2J       | 2    | 6              | 50             | 7             |
| 1001-3J       | 3    | 6              | 50             | 7             |
| 1001-4J       | 4    | 6              | 50             | 7             |
| 1001-6J       | 6    | 6              | 50             | 11            |

# 1001 Series

#### Single Flute Router For Steel Composite Panels



#### **Application**

Cupro coated especially suitable for galvanised steel composite panel and magnetic white board materials.

#### Metric Sizes (mm)

| Catalogue No. |   | Shank Diameter | Overall Length | Length of Cut |
|---------------|---|----------------|----------------|---------------|
| 1001-6F       | 6 | 6              | 50             | 11            |

Recommended to be used at 15,000 RPM, 600mm/min feed rate.

# 180-10-LH Series - Balanced

#### Downward Spiral Single Flute Router For Aluminium & Plastics



#### Description

Solid carbide single flute, downward spiral, 30° helix. Manufactured from Ultra Wear Resistant Micrograin Carbide, to extremely tight tolerances with exceptional surface finish. **Balanced for use on high frequency spindles, 30,000+ RPM.** 

#### **Application**

Designed for use on aluminium, acrylic and other non-ferrous materials. The downward spiral helps to hold the material down whilst cutting. Particularly suitable for thinner sheet.

#### Metric Sizes (mm)

| Catalogue No.      |   | Shank Diameter | Overall Length | Length of Cut |
|--------------------|---|----------------|----------------|---------------|
| 180-1575-10-LH-BAL | 4 | 4              | 50             | 14            |
| 180-2362-10-LH-BAL | 6 | 6              | 58             | 14            |

If coolant cannot be used a small amount of compressed air will resolve melting issues and improve surface finish.

# Di-Bond Folding Tool - Balanced



#### **Description**

Solid carbide 2 flute, 1/2" head diameter, with a 90° or 135° inclusive angle and a 3mm flat.

#### **Application**

The Di-Bond folding tools enable precise folding of Di-Bond and similar aluminium composite materials typically up to 5mm thick. **Balanced for use on high frequency spindles 30,000+ RPM.** 

#### Sizes

| Catalogue No.  |      | Shank Diameter | Inclusive Angle | Width of Flat | Overall Length |
|----------------|------|----------------|-----------------|---------------|----------------|
| 2021-90-6-BAL  | 1/2" | 6mm            | 90°             | 3mm           | 64mm           |
| 2021-135-6-BAL | 1/2" | 6mm            | 135°            | 3mm           | 64mm           |

# Vee Groove Tool - Balanced



#### Description

Solid carbide 2 flute, 1/2" head diameter, with a 90° inclusive angle

#### **Application**

90° vee groove tool suitable for a wide variety of materials. Balanced for use on high frequency spindles 30,000+ RPM.

#### Sizes

| Catalogue No. |      | Shank Diameter | Inclusive Angle | Overall Length |
|---------------|------|----------------|-----------------|----------------|
| 2221-90-6     | 1/2" | 6mm            | 90°             | 63mm           |

# D Series Tools for Superior Engraving - Balanced

One Dimensional Engraving Tools



#### Description

The D series is solid carbide and available in three different angles; 30°, 60° and 90° inclusive. Other sizes are available on request. **Balanced for use on high frequency spindles, 30,000+ RPM.** 

#### Application

Designed to give superior performance when engraving a variety of materials from plastics to steels.

#### One Dimensional

| Catalogue No.  | Included Angle | Diameter | Overall Length | Split Length |
|----------------|----------------|----------|----------------|--------------|
| ENG-6.0-30-BAL | 30°            | 6        | 57             | 8            |
| ENG-6.0-60-BAL | 60°            | 6        | 57             | 8            |
| ENG-6.0-90-BAL | 90°            | 6        | 57             | 8            |

# Flat Drag Knife Blades

#### Description

Solid Carbide Knife Blades, comparable and compatible with OEM (Original Equipment Manufacturer) products.

#### Metric Sizes (mm)

| Part No. | Image    | Cut<br>Angle | Lip<br>Angle | Overall<br>Length | Length<br>of Cut | Width | Material   | Pack<br>Size |
|----------|----------|--------------|--------------|-------------------|------------------|-------|--|--------------|
| BDF-10   |          | 50           | 34           | 50                | 4.8              | 1.5   | Canvas, corrugated plastic, self-adhesive vinyl, folding carton, paper, polycarbonate, tarpaulin                                 | 1            |
| BDF-11   |          | 60           | 24           | 50                | 6.9              | 1.5   | Canvas, corrugated plastic, self-adhesive vinyl, folding carton, polycarbonate, tarpaulin  | 1            |
| BDF-12DE |          | 50           | 34           | 50                | 4.8              | 1.5   | Canvas, corrugated plastic, self-adhesive vinyl, folding carton, polycarbonate, polyester fabric, tarpaulin                      | 1            |
| BDF-13DE |          | 60           | 24           | 50                | 6.9              | 1.5   | Canvas, corrugated plastic, self-adhesive vinyl, folding carton, polycarbonate, polyester fabric, tarpaulin                      | 1            |
| BDF-14DE |          | 30           | 24           | 50                | 2.5              | 1.5   | Canvas, corrugated plastic, self-adhesive vinyl, folding carton, paper, polycarbonate, tarpaulin                                 | 1            |
| BDF-16   |          | 55           | 30           | 25                | 12               | 0.63  | Folding carton, magnetic foils, canvas, self-adhesive vinyl, paper, foam   | 2            |
| BDF-17   |          | 65           | 30           | 25                | 14.3             | 0.63  | Corrugated plastic, corrugated sandwich, foam board, folding carton, rubber, felt, foam  | 2            |
| BDF-30   |          | 50           | 20           | 14.5              | 2                | 0.63  | Passe-partout materials  | 5            |
| BDF-32   |          | 45           | -            | 52                | 2.7/4.9          | 0.63  | Polyester fabric   | 10           |
| BDF-35   |          | 52           | 15           | 26                | 5                | 0.63  | Passe-partout materials  | 2            |
| BDF-44   |          | 60/90        | 30           | 50                | 14               | 1.5   | Carpet, tarpaulin  | 1            |
| BDF-46   |          | 45/90        | 20           | 50                | 20               | 1.5   | Corrugated plastic, foam board, pvc banner, carpet, tarpaulin  | 1            |
| BDF-70   |          | 90           | -            | 43                | 10/15.6          | 0.63  | Corrugated sandwich, corrugated plastic, foam board, carpet  | 1            |
| BDF-71   |          | 90           | -            | 50                | 16/18.4          | 0.63  | Corrugated sandwich, corrugated plastic, foam board, carpet  | 1            |
| BDF-73   | ••••     | 90           | -            | 60                | 16/18.2          | 0.63  | Corrugated sandwich, corrugated plastic, foam board, carpet  | 10           |
| BDF-83   |          | 50           | 17           | 50                | 4.6              | 1     | Magnetic foil, polycarbonate, folding carton, hard foam  | 1            |
| BDF-101  | <b>✓</b> | 60           | -            | 50                | 6.8              | 0.9   | Magnetic foil, polycarbonate, folding carton, hard foam  | 1            |
| BDF-111  |          | 60           | 24           | 50                | 6.9              | 1.5   | Canvas, corrugated plastic, self-adhesive vinyl, folding carton, polycarbonate, tarpaulin  | 2            |
| BDF-112  |          | 50           | 34           | 24.5              | 4.8              | 1.5   | Canvas, self-adhesive vinyl, folding carton, tarpaulin, reflective vinyl, pvc<br>banner, magnetic foil, polyester fabric         | 2            |
| BDF-113  |          | 60           | 24           | 24.5              | 6.9              | 1.5   | Canvas, self-adhesive vinyl, reflective vinyl, folding carton, magnetic foil, pvc<br>banner, polycarbonate, polyester, tarpaulin | 2            |
| BDF-784  |          | -            | -            | 29                | 6.5              | 0.63  | Canvas, folding carton, magnetic foil, paper, polycarbonate, polyester fabric  | 10           |



Please contact us with your OEM part number for our equivalent.

# Round Shank Drag Knife Blades

#### Metric Sizes (mm)

| Part No.  | Image | Cut<br>Angle | Lip<br>Angle | Overall<br>Length | Length<br>of Cut | Shank<br>Diameter | Material  | Pack<br>Size |
|-----------|-------|--------------|--------------|-------------------|------------------|-------------------|---|--------------|
| BDR-1     |       | 35           | 40           | 18.5              | 1                | 3                 | Magnetic foil, masking film, polycarbonate, cardstock   | 10           |
| BDR-2     |       | 35           | 30           | 18.5              | 1                | 3                 | Self-adhesive foils, magnetic foil, reflective vinyl, masking film, polycarbonate, cardstock  | 10           |
| BDR-3     |       | 35           | 40           | 18.5              | 1                | 3                 | Self-adhesive foils, magnetic foil, masking film, polycarbonate,  | 10           |
| BDR-4     |       | 55           | 25           | 18.5              | 2.1              | 3                 | Reflective vinyl, sandblast vinyl, polycarbonate, cardstock, pattern materials  | 10           |
| BDR-5     |       | 60           | 20           | 18.5              | 2.6              | 3                 | Reflective vinyl, polycarbonate, cardstock, pattern materials, tarpaulin  | 10           |
| BDR-111   | 133   | 50           | 12           | 40                | 6.9              | 8                 | Canvas, corrugated plastic, self-adhesive vinyl, folding carton, paper, polycarbonate, tarpaulin  | 1            |
| BDR-116   |       | 60           | 30           | 40                | 13               | 8                 | Gasket materials, forex, solid carton board   | 1            |
| BDR-117   |       | 50           | 30           | 40                | 7                | 8                 | Foam core materials   | 1            |
| BDR-150   | 4     | 60           | 12           | 25                | 5                | 6                 | Adhesive vinyl, display carton, folding carton, flexible plastic sheet  | 1            |
| BDR-212   |       | 60           | 24           | 40                | 6                | 6                 | Clear vinyl pvc, adhesive vinyl, corrugated plastic, display carton, foamed pvc, magnetic foil, polycarbonate                             | 1            |
| BDR-213   |       | 50           | 34           | 40                | 5                | 8                 | Adhesive vinyl, clear vinyl pvc, corrugated plastic, display carton, foamed pvc, magnetic foil, polycarbonate reflex foil (diamond grade) | 1            |
| BDR-214   |       | 60           | 12           | 25                | 5                | 6                 | Adhesive vinyl, corrugated plastic, foam board, folding carton, magnetic foil.  | 1            |
| BDR-223   |       | -            | -            | 40                | 12               | 6                 | Carpet material with rubber backing, corrugated plastic, foam board with paper surface, vinyl banner                                      | 1            |
| BDR-224   |       | -            | -            | 40                | 12               | 6                 | Carpet material with rubber backing, display carton, foam board with paper surface, vinyl banner  | 1            |
| BDR-310   |       | -            | -            | 40                | 20               | 6                 | Carpet material with rubber backing, fluted core board, triple wall corrugated  | 1            |
| BDR-312   |       | -            | -            | 52                | 32               | 6                 | Fluted core board, honeycomb, polyethylene foam   | 1            |
| BDR-1010  |       | 79           | 22           | 36                | 10               | 6                 | Gasket materials, packaging, foamed materials, rubber   | 1            |
| BDR-1015  |       | 70           | 20           | 36                | 15               | 6                 | Gasket materials, packaging, foamed materials, rubber   | 1            |
| BDR-8170  |       | 30           | 12           | 40                | 6.5              | 8                 | Adhesive vinyl, plastics, pvc foam board, folding carton  | 1            |
| BDR-S35D  | -     | 35           | 24           | 20                | 0.25             | 2.5               | Paper, adhesive vinyl, adhesive pvc, banner vinyl   | 5            |
| BDR-S36T  |       | 36           | 21           | 31                | 0.25             | 2.5               | Paper, adhesive vinyl, sandblast material, window film, magnetic foil   | 5            |
| BDR-S36T2 |       | 36           | 26           | 31                | 0.8              | 2.5               | Paper, adhesive vinyl, sandblast material, window film, magnetic foil   | 5            |
| BDR-S45T  |       | 45           | 24           | 31                | 1                | 2.5               | Paper, adhesive vinyl, sandblast material, window film, magnetic foil   | 5            |
| BDR-S60T  |       | 60           | 24           | 31                | 1.2              | 2.5               | Paper, adhesive vinyl, sandblast material, window film, magnetic foil   | 5            |
| BDR-S60D2 | -     | 60           | 29           | 20                | 0.6              | 2.5               | Paper, adhesive vinyl, adhesive pvc, banner vinyl   | 5            |
| BDR-W1    |       | 35           | 40           | 18.5              | 1                | 3                 | Magnetic foil, masking film, polycarbonate, cardstock   | 5            |
| BDR-W5    |       | 30           | 30           | 18.5              | 0.8              | 3                 | Self-adhesive foil, magnetic foil, reflective vinyl, poly carbonate, masking film   | 5            |
| BDR-W9    |       | 45           | 30           | 18.5              | 2.8              | 3                 | Self-adhesive foil, diamond grade foil  | 5            |

Tel: +44 (0) 1827 304500 / Email: sales@itc-ltd.co.uk / Website: www.itc-ltd.co.uk

# Oscillating Blades

#### Metric Sizes (mm)

| Part No. | lmage             | Cut<br>Angle | Lip<br>Angle | Overall<br>Length | Length<br>of Cut | Width | Material   | Pack<br>Size |
|----------|-------------------|--------------|--------------|-------------------|------------------|-------|--|--------------|
| B0P-16   |                   | 55           | 30           | 25                | 7.4              | 0.63  | Canvas, self-adhesive vinyl, folding carton, magnetic foil, paper, polyester, foam   | 2            |
| B0P-17   |                   | 65           | 30           | 25                | 12               | 0.63  | Folding carton, magnetic foil, canvas, self-adhesive vinyl, pvc banner, paper, polyester, foam   | 2            |
| B0P-20   |                   | 63/84        | 30           | 25                | 14.3             | 0.63  | Corrugated plastic, corrugated sandwich, foam board, folding carton, rubber, felt, foam  | 2            |
| B0P-21   |                   | 63/84        | 30           | 28                | 17.2             | 0.63  | Corrugate plastic, corrugated sandwich, foam board, folding carton, polyester, rubber, felt, foam  | 2            |
| B0P-22   |                   | 63/79        | 30           | 25                | 14               | 0.63  | Corrugated plastic, corrugated sandwich, foam board, folding carton, rubber, felt, foam  | 2            |
| B0P-23   |                   | 45/84.5      | 30           | 33                | 22               | 0.63  | Corrugate plastic, corrugated sandwich, foam board, folding carton, foam board, rubber, foam   | 1            |
| B0P-25   |                   | 15/65        | 30           | 25                | 8.7              | 0.63  | Aramid fibre, carbon fibre, corrugated, fabric, felt, glass fibre, nonwoven fabric, nylon fabric, polyester fabric, sandwich board, leather hide, rubber | 2            |
| B0P-26   |                   | 22/63        | 30           | 25                | 8.7              | 0.63  | Aramid fibre, carbon fibre, corrugated fabric, fibreglass, nylon fabric, leather hide, rubber  | 2            |
| B0P-28   |                   | 45/86        | 30           | 38                | 26               | 0.63  | Corrugated, foam board, insulating mat   | 2            |
| B0P-29   |                   | 45/86.3      | 30           | 43                | 31               | 0.63  | Corrugated, foam board, insulating mat   | 2            |
| B0P-41   |                   | 15/80        | 20           | 25                | 11.3             | 0.63  | Aramid fibre, carbon fibre, felt, fibreglass, nonwoven fabric, nylon fabric, leather hide  | 2            |
| B0P-42   |                   | 15/55        | 40           | 28                | 7.8              | 0.63  | Aramid fabric, carbon fibre, corrugated fabric,<br>Felt, fibreglass, nonwoven fabric, nylon fabric, leather hide   | 2            |
| B0P-60   |                   | 55/81.5      | -            | 28                | 16.5             | 1.5   | Corrugated plastic, corrugated sandwich, felt, foam board, folding carton, rubber, leather hide  | 2            |
| B0P-61   |                   | 35/81.5      | 24           | 31.5              | 20               | 1.5   | Corrugated plastic, corrugated sandwich, felt, foam board, folding carton, rubber  | 2            |
| B0P-62   |                   | 15/80        | 20           | 28                | 13.2             | 0.63  | Aramid fibre, carbon fibre, fabric, felt, foam board, folding carton, glass fibre, nylon fabric, leather hide, foam                                      | 2            |
| B0P-63   |                   | 15/83        | 30           | 43                | 25               | 0.63  | Foam, insulating mat   | 2            |
| B0P-66   | <b>**********</b> | 60/87.5      | -            | 67                | 55               | 1.5   | Re-board, x-board, d-board, honeycomb  | 1            |
| B0P-68   |                   | 5/83         | 30           | 41                | 29               | 1.5   | Corrugated sandwich, corrugated plastic  | 2            |
| B0P-175  |                   | 11/70        | 20           | 25                | 11               | 0.63  | Aramid fibre, carbon fibre, felt, fibreglass, nonwoven fabric, nylon fabric, leather hide  | 2            |
| B0P-303  |                   | 3.5/60       | -            | 40                | 20               | 6     | Ejection rubber (for dies), expanded polystyrene, foam board with paper surface, polyethylene foam   | 2            |
| B0P-831  |                   | 12/83        | 28           | 39.2              | 25               | 6     | Double and triple walled cardboard, honeycomb board, re-board, foam board with plastic   | 2            |

Tel: +44 (0) 1827 304500 / Email: sales@itc-ltd.co.uk / Website: www.itc-ltd.co.uk

# Rotation Blades

#### Metric Sizes (mm)

| Part No. |   | Cut<br>Angle | Lip<br>Angle | Overall<br>Length | Length<br>of Cut |     | Material  | Pack<br>Size |
|----------|---|--------------|--------------|-------------------|------------------|-----|---|--------------|
| BRR-25   | 0 | 36           | 20           | 25/8              | 3.5              | 0.6 | Aramid fibre, carbon fibre, felt, fibreglass , leather hide, nylon fabric, paper, polyester | 1            |
| BRR-28   | 0 | 36           | 20           | 28/8              | 5                | 0.6 | Aramid fibre, carbon fibre, felt, fibreglass , leather hide, nylon fabric, paper, polyester | 1            |
| BRR-32   | 0 | 36           | 20           | 32/8              | 7                | 0.6 | Aramid fibre, carbon fibre, felt, fibreglass , leather hide, nylon fabric, paper, polyester | 1            |





General purpose solid carbide drill. AITiN coated.

#### **Application**

Suitable for drilling acrylics, plastics, aluminium and most metallic materials.

#### Metric Sizes (mm)

| Catalogue No. |     | Shank<br>Diameter | Overall<br>Length | Length<br>of Cut |
|---------------|-----|-------------------|-------------------|------------------|
| VDS201A01000  | 1.0 | 4                 | 58                | 5                |
| VDS201A01500  | 1.5 | 4                 | 58                | 6                |
| VDS201A02000  | 2.0 | 4                 | 58                | 10               |
| VDS201A02300  | 2.3 | 4                 | 58                | 10               |
| VDS201A02500  | 2.5 | 4                 | 58                | 12               |
| VDS201A02800  | 2.8 | 4                 | 58                | 12               |
| VDS201A03000  | 3.0 | 6                 | 62                | 14               |
| VDS201A03300  | 3.3 | 6                 | 62                | 14               |
| VDS201A03500  | 3.5 | 6                 | 62                | 14               |
| VDS201A03900  | 3.9 | 6                 | 66                | 17               |
| VDS201A04000  | 4.0 | 6                 | 66                | 17               |
| VDS201A04200  | 4.2 | 6                 | 66                | 17               |
| VDS201A04500  | 4.5 | 6                 | 66                | 17               |
| VDS201A05000  | 5.0 | 6                 | 66                | 20               |
| VDS201A05100  | 5.1 | 6                 | 66                | 20               |
| VDS201A05500  | 5.5 | 6                 | 66                | 20               |
| VDS201A06000  | 6.0 | 6                 | 66                | 20               |

| Catalogue No. |      | Shank<br>Diameter | Overall<br>Length | Length<br>of Cut |
|---------------|------|-------------------|-------------------|------------------|
| VDS201A06100  | 6.1  | 8                 | 79                | 24               |
| VDS201A06500  | 6.5  | 8                 | 79                | 24               |
| VDS201A06600  | 6.6  | 8                 | 79                | 24               |
| VDS201A06800  | 6.8  | 8                 | 79                | 24               |
| VDS201A07000  | 7.0  | 8                 | 79                | 24               |
| VDS201A07500  | 7.5  | 8                 | 79                | 29               |
| VDS201A08000  | 8.0  | 8                 | 79                | 29               |
| VDS201A08500  | 8.5  | 10                | 89                | 35               |
| VDS201A09000  | 9.0  | 10                | 89                | 35               |
| VDS201A09400  | 9.4  | 10                | 89                | 35               |
| VDS201A09500  | 9.5  | 10                | 89                | 35               |
| VDS201A01000  | 10.0 | 10                | 89                | 35               |
| VDS201A10200  | 10.2 | 12                | 102               | 40               |
| VDS201A10500  | 10.5 | 12                | 102               | 40               |
| VDS201A11000  | 11.0 | 12                | 102               | 40               |
| VDS201A11500  | 11.5 | 12                | 102               | 40               |
| VDS201A12000  | 12.0 | 12                | 102               | 40               |

Other sizes available, please call our sales department.

# Hand Taps

#### Description

Material - HSS

Tolerance - 6H - metric

Tolerance - 2B - UNC/UNF

For manual use in all materials

2nd Tap only

Plug Tap only

Tap Set
Taper Tap
2nd Tap
Plug Tap







|           | Catalogue No. | Catalogue No. | Catalogue No. |
|-----------|---------------|---------------|---------------|
| M3        | 14742         | 14743         | 14744         |
| M4        | 14758         | 14759         | 14760         |
| M5        | 14774         | 14775         | 14777         |
| M6        | 14782         | 14783         | 14784         |
| M8        | 14798         | 14799         | 14800         |
| M10       | 14814         | 14815         | 14816         |
| M12       | 14830         | 14831         | 14832         |
| Į.        |               |               |               |
| 4-40 UNC  | 15185         | 15186         | 15187         |
| 6-32 UNC  | 15238         | 15239         | 15234         |
| 8-32 UNC  | 15284         | 15285         | 15278         |
| 10-24 UNC | 15328         | 15329         | 15323         |
| 1/4 UNC   | 14023         | 14024         | 14025         |
| 5/16 UNC  | 14093         | 14094         | 14095         |
| 3/8 UNC   | 14158         | 14159         | 14160         |
| 7/16 UNC  | 14222         | 14223         | 14224         |
| 1/2 UNC   | 14282         | 14283         | 14284         |
|           |               |               |               |
| 10-32 UNF | 15361         | 15362         | 15355         |
| 1/4 UNF   | 14056         | 14057         | 14058         |
| 5/16 UNF  | 14123         | 14124         | 14125         |
| 3/8 UNF   | 14191         | 14192         | 14193         |
| 7/16 UNF  | 14247         | 14248         | 14249         |
| 1/2 UNF   | 14309         | 14310         | 14311         |



Taper tap has 6-8 pitch lead, 2nd tap has 4-5 pitch lead, plug tap has 1-2 pitch lead.

# Edge & Radius Router



#### Description

Solid carbide, straight flute router.

#### **Application**

Designed to produce a radius or chamfer whilst trimming. Ideal for 19mm foam, PVC and similar models.

#### Metric Sizes (mm)

| Catalogue No. |   | Shank Diameter | Overall Length | Pilot Diameter | Pilot Length |
|---------------|---|----------------|----------------|----------------|--------------|
| 2191-12-3     | 3 | 12             | 76             | 5.5            | 16.25        |

# Edge & Chamfer Router



#### Metric Sizes (mm)

| Catalogue No. | Chamfer Size | Shank Diameter | Overall Length | Pilot Diameter | Pilot Length |
|---------------|--------------|----------------|----------------|----------------|--------------|
| 2181-16-5     | 5.25         | 12             | 76             | 5.5            | 14           |

Pilot lengths can be reduced to suit material thickness below 19mm. Please contact us to discuss your requirements.



#### **Bed Skimming Tool**



#### Description

TCT Router for bed skimming application.

#### Sizes

| Catalogue No. |    | Shank Diameter |
|---------------|----|----------------|
| 3071-25       | 25 | 1/4"           |
| 3071-32       | 32 | 1/2"           |
| 3071-50       | 50 | 1/2"           |

# Carbide Tipped Routers

#### For woodworking







Chamfer / V-Groove

Ovolo / Round Over

3 Wing Surfacing Tool

In addition to our comprehensive range of solid carbide router tooling, we are pleased to offer a full range of woodwork tooling for next day delivery.

Other styles including: Dovetail, Ogee, Panel Raiser, Jointing, Trimming & Bearing Mounted Tooling all available for next day delivery.

Please call us with your requirements, we will also advise on cutter selection.

#### ITC are also pleased to be resellers of the brands below:







If you require something you cannot find in this catalogue please call ITC Sales.



#### Sacrificial Sheets

ITC's sacrificial sheets provide a highly porous, sacrificial surface for CNC routing machines, to protect the machine bed and tool and maximise vacuum hold down.

- 1550mm x 1220mm x 3.0mm
- Sold in packs of 5



#### Coolant BUY 5 LITRES BUT PAY FOR ONLY 4

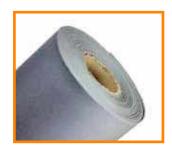
ITC's minimal amount lubricant is designed to give superior performance in signmaking and engraving applications:

- Very economical
- Prolonged tool life
- Improved surface finish
- Biodegradable



#### **Anti-Slip Matting Sheets**

- 1600mm x 1000mm
- Underlay suitable for high speed cutting tables
- Sold individually



#### Anti-Slip Matting Rolls

Available sizes:

- 1.5m x 11m
- 1.5m x 30m
- 1m x 30m

# Router Collets





#### Description

ITC stock a comprehensive range of metric and imperial collets and lock nuts to suit both Perske and Rego-fix motors. Typically the collets requested are Perske VS31 & VS50 plus Rego-fix ER16, ER20, ER25, ER32 & ER40.

#### Sizes (mm)

| Style      | Diameter | Length | Capacity |
|------------|----------|--------|----------|
| ER16       | 17       | 27.5   | 1-10     |
| ER20       | 21       | 31.5   | 1-13     |
| ER25       | 26       | 34     | 1-16     |
| ER32       | 33       | 44     | 2-20     |
| ER40       | 41       | 46     | 3-26     |
| VS31(401E) | 14.5     | 26     | 2-8      |
| VS50(407E) | 20       | 34     | 2-12     |

#### Collet System Care

Collet system locknuts and collets should be treated as consumable items. Over a period of use collets will eventually lose their full gripping capacity and need to be replaced. Ideally at every tool change the collet should be cleaned to remove any build up of waste material on its surface and checked for burrs in the gripping and locating areas. Any collet found to have burrs should be replaced, as this is a prime source of broken cutting tools.

The locknut should be cleaned at every tool change. The clamping surfaces and thread should also be examined for wear and burrs. The locknut should be replaced if there are any signs of wear or burrs, which will prevent the collet running concentrically in use. If the collet is not locating correctly in the locknut there is also a potential for premature failure of the cutting tool in use.

# ITC CAN SUPPLY ALL OF YOUR TOOL HOLDER REQUIREMENTS...

High quality tool holders can be supplied to suit all spindle interfaces, e.g. ISO30, HSK 63F, amongst others.



|                |         |       |                |       |                | <b>1</b>       |          |       |                |           |       | , II             |       |                |
|----------------|---------|-------|----------------|-------|----------------|----------------|----------|-------|----------------|-----------|-------|------------------|-------|----------------|
|                |         |       |                |       |                |                |          |       |                |           |       |                  |       |                |
| .794           | 1/32    | .0312 | 2.383          | 3/32  | .0938          | 4.700          | 13       | .1850 | 7.366          | L         | .2900 | 12.000           | -     | .4724          |
| .800           | -       | .0315 | 2.400          | -     | .0945          | 4.750          | -        | .1870 | 7.400          | -         | .2913 | 12.304           | 31/64 | .4844          |
| .813           | 67      | .0320 | 2.438          | 41    | .0960          | 4.763          | 3/16     | .1875 | 7.493          | М         | .2950 | 12.500           | -     | .4921          |
| .838           | 66      | .0330 | 2.450          | -     | .965           | 4.800          | 12       | .1890 | 7.500          | -         | .2953 | 112.700          | 1/2   | .5000          |
| .851           | -       | .0335 | 2.489          | 40    | .0980          | 4.850          | 11       | .1910 | 7.541          | 19/64     | .2969 | 13.000           | -     | .5118          |
| .889           | 65      | .0350 | 2.500          | -     | .0984          | 4.900          | -        | .1929 | 7.600          | -         | .2992 | 13.096           | 33/64 | .5156          |
| .900           | -       | .0354 | 2.527          | 39    | .0995          | 4.915          | 10       | .1935 | 7.671          | N         | .3020 | 13.492           | 17/32 | .5312          |
| .914           | 64      | .0360 | 2.578          | 38    | .1015          | 4.978          | 9        | .1960 | 7.700          | -         | .3031 | 13.500           | -     | .5315          |
| .940           | 63      | .0370 | 2.600          | -     | .1024          | 5.000          | -        | .1969 | 7.750          | -         | .3051 | 13.891           | 35/64 | .5469          |
| .950           | - (0    | .0374 | 2.642          | 37    | .1040          | 5.055          | 8        | .1990 | 7.800          | -         | .3071 | 14.000           | -     | .5512          |
| .965           | 62      | .0380 | 2.700          | - 2/  | .1063<br>.1065 | 5.100          | -<br>7   | .2008 | 7.900          | -<br>E/1/ | .3110 | 14.287           | 9/16  | .5625          |
| .991<br>1.000  | 61<br>- | .0390 | 2.705<br>2.750 | 36    | .1083          | 5.105<br>5.159 | 13/64    | .2010 | 7.938<br>8.000 | 5/16      | .3125 | 14.500<br>14.684 | 37/64 | .5709<br>.5781 |
| 1.016          | 60      | .0400 | 2.779          | 7/64  | .1063          | 5.182          | 6        | .2040 | 8.026          | 0         | .3160 | 15.000           | -     | .5701          |
| 1.041          | 59      | .0410 | 2.774          | 35    | .1100          | 5.200          | _        | .2047 | 8.100          | -         | .3189 | 15.083           | 19/32 | .5938          |
| 1.049          | -       | .0413 | 2.800          | -     | .1102          | 5.220          | 5        | .2055 | 8.200          | _         | .3228 | 15.479           | 39/64 | .6094          |
| 1.067          | 58      | .0420 | 2.819          | 34    | .1110          | 5.250          | -        | .2067 | 8.204          | Р         | .3230 | 15.500           | -     | .6120          |
| 1.092          | 57      | .0430 | .2870          | 33    | .1130          | 5.300          | _        | .2087 | 8.250          | _         | .3248 | 15.875           | 5/8   | .6250          |
| 1.100          | -       | .0433 | 2.900          | -     | .1142          | 5.309          | 4        | .2090 | 8.300          | -         | .3268 | 16.000           | -     | .6299          |
| 1.151          | -       | .0453 | 2.946          | 32    | .1160          | 5.400          | -        | .2126 | 8.334          | 21/64     | .3281 | 16.271           | 41/64 | .6406          |
| 1.181          | 56      | .0465 | 3.000          | -     | .1181          | 5.410          | 3        | .2130 | 8.400          | -         | .3307 | 16.500           | -     | .6496          |
| 1.191          | 3/64    | .0469 | 3.048          | 31    | .1200          | 5.500          | -        | .2165 | 8.433          | Q         | .3320 | 16.667           | 21/32 | .6562          |
| 1.200          | -       | .0472 | 3.100          | -     | .1220          | 5.558          | 7/32     | .2188 | 8.500          | -         | .3346 | 17.000           | -     | .6693          |
| 1.250          | -       | .0492 | 3.175          | 1/8   | .1250          | 5.600          | -        | .2205 | 8.600          | -         | .3386 | 17.066           | 43/64 | .6719          |
| 1.300          | -       | .0512 | 3.200          | -     | .1260          | 5.613          | 2        | .2210 | 8.611          | R         | .3390 | 17.463           | 11/16 | .6875          |
| 1.321          | 55      | .0520 | 3.250          | -     | .1280          | 5.700          | -        | .2244 | 8.700          | -         | .3425 | 17.500           | -     | .6890          |
| 1.349          | -       | .0531 | 3.264          | 30    | .1285          | 5.750          | -        | .2264 | 8.733          | 11/32     | .3438 | 17.859           | 45/64 | .7031          |
| 1.397          | 54      | .0550 | 3.300          | -     | .1299          | 5.791          | I        | .2280 | 8.750          | -         | .3445 | 18.000           | -     | .7087          |
| 1.400          | -       | .0551 | 3.400          | -     | .1339          | 5.800          | -        | .2283 | 8.800          | -         | .3465 | 18.258           | 13/32 | .7188          |
| 1.450          | -       | .0571 | 3.454          | 29    | .1360          | 5.900          | -        | .2323 | 8.839          | S         | .3480 | 18.500           | -     | .7283          |
| 1.500          | -       | .0591 | 3.500          | -     | .1378          | 5.944          | А        | .2340 | 8.900          | -         | .3504 | 18.654           | 47/64 | .7344          |
| 1.511          | 53      | .0595 | 3.569          | 28    | .1405          | 5.954          | 15/64    | .2344 | 9.000          | -         | .3543 | 19.000           | -     | .7480          |
| 1.550          | -       | .0610 | 3.571          | 9/64  | .1406          | 6.000          | -        | .2362 | 9.093          | Т         | .3580 | 19.050           | 3/4   | .7500          |
| 1.588          | 1/16    | .0625 | 3.600          | -     | .1417          | 6.045          | В        | .2380 | 9.100          | -         | .3583 | 19.446           | 49/64 | .7656          |
| 1.600          | -       | .0630 | 3.658          | 27    | .1440          | 6.100          | -        | .2402 | 9.129          | 23/64     | .3594 | 19.500           | -     | .7677          |
| 1.613          | 52      | .0635 | 3.700          | -     | .1457          | 6.147          | С        | .2420 | 9.200          | -         | .3622 | 19.842           | 25/32 | .7812          |
| 1.650          | -       | .0650 | 7.734          | 26    | .1470          | 6.200          | -        | .2441 | 9.250          | -         | .3642 | 20.000           | -     | .7874          |
| 1.700          |         | .0669 | 3.750          | -     | .1476          | 6.248          | D        | .2460 | 9.300          | - 11      | .3661 | 20.241           | 51/64 | .7969          |
| 1.702          | 51      | .0670 | 3.797          | 25    | .1495          | 6.250          | -        | .2461 | 9.347          | U         | .3680 | 20.500           | 10/1/ | .8071          |
| 1.750          | -       | .0689 | 3.800          | - 2/  | .1496          | 6.300          | -        | .2480 | 9.400          | -         | .3701 | 20.638           | 13/16 | .8125<br>.8268 |
| 1.778<br>1.800 | 50<br>- | .0700 | 3.861<br>3.900 | 24    | .1520<br>.1536 | 6.350<br>6.350 | E<br>1/4 | .2500 | 9.500<br>9.525 | 3/8       | .3740 | 21.000<br>21.034 | 53/64 | .8281          |
| 10850          |         | .0728 | 3.700          | 23    | .1540          | 6.400          | -        | .2520 | 9.576          | 3/6<br>V  | .3770 | 21.433           | 27/32 | .8438          |
| 1.854          | 49      | .0728 | 3.912          | 5/32  | .1540          | 6.500          | -        | .2559 | 9.600          | - V       | .3770 | 21.433           | -     | .8465          |
| 1.900          | -       | .0748 | 3.782          | 22    | .1570          | 6.528          | F        | .2570 | 9.700          |           | .3819 | 21.829           | 55/64 | .8594          |
| 1.930          | 48      | .0760 | 4.000          | -     | .1575          | 6.600          | -        | .2578 | 9.750          | _         | .3839 | 22.000           | -     | .8661          |
| 1.950          | -       | .0768 | 4.039          | 21    | .1590          | 6.629          | G        | .2610 | 9.800          | -         | .3858 | 22.225           | 7/8   | .8750          |
| 1.984          | 5/64    | .0781 | 4.089          | 20    | .1610          | 6.700          | -        | .2638 | 9.804          | W         | .3860 | 22.500           | -     | .8858          |
| 1.994          | 47      | .0785 | 4.100          | -     | .1614          | 6.746          | 17/64    | .2656 | 9.900          | -         | .3898 | 22.261           | 57/64 | .8906          |
| 2.000          | -       | .0787 | 4.200          | -     | .1654          | 6.750          | -        | .2657 | 9.921          | 25/64     | .3906 | 23.000           | -     | .9055          |
| 2.050          | -       | .0807 | 4.216          | 19    | .1660          | 6.756          | Н        | .2660 | 10.000         | -         | .3937 | 23.017           | 29/32 | .9062          |
| 2.057          | 46      | .0810 | 4.250          | -     | .1673          | 6.800          | -        | .2677 | 10.084         | Х         | .3970 | 23.416           | 59/64 | .9219          |
| 2.083          | 45      | .0820 | 4.300          | -     | .1693          | 6.900          | -        | .2717 | 10.262         | Υ         | .4040 | 23.500           | -     | .9252          |
| 2.100          | -       | .0827 | 4.305          | 18    | .1695          | 6.909          | I        | .2720 | 10.317         | 13/32     | .4062 | 23.813           | 15/16 | .9375          |
| 2.150          | -       | .0846 | 4.366          | 11/64 | .1719          | 7.000          | -        | .2756 | 10.490         | Z         | .4130 | 24.000           | -     | .9449          |
| 2.184          | 44      | .0860 | 4.394          | 17    | .1730          | 7.036          | J        | .2770 | 10.500         | -         | .4134 | 24.209           | 61/64 | .9531          |
| 2.200          | -       | .0866 | 4.400          | -     | .1732          | 7.100          | -        | .2795 | 10.716         | 27/64     | .4219 | 24.500           | -     | .9646          |
| 2.250          | -       | .0886 | 4.496          | 16    | .1770          | 7.137          | K        | .2810 | 11.000         | -         | .4331 | 24.608           | 31/32 | .9688          |
| 2.260          | 43      | .0890 | 4.500          | -     | .1772          | 7.142          | 9/32     | 2812  | 11.113         | 7/16      | .4375 | 25.000           | -     | .9843          |
| 2.300          |         | 000/  | / 570          | 15    | .1800          | 7.200          | -        | .2835 | 11.500         | -         | .4528 | 25.004           | 63/64 | .9844          |
| 2.000          | -       | .0906 | 4.572          | 10    | .1000          | 7.200          |          | .2000 |                |           |       |                  | 00/04 | .,,,,,,        |
| 2.350          | -       | .0906 | 4.600          | -     | .1811          | 7.250          | -        | .2854 | 11.509         | 29/64     | .4531 | 25.400           | -     | 1.000          |

# Conversion Tables

#### Imperial to Metric

| Multiply                |        | To Obtain                    |
|-------------------------|--------|------------------------------|
| Inches                  | 25.4   | Millimetres                  |
| Inches                  | 2.54   | Centimetres                  |
| Feet                    | .3048  | Metres                       |
| Inches per minute       | 25.4   | Millimetres per minute       |
| Cubic Inches per minute | 16.387 | Cubic Centimetres per minute |
| Surface Feet per minute | .3048  | Surface Metres per minute    |

#### Metric to Imperial

| Multiply                     |        | To Obtain               |
|------------------------------|--------|-------------------------|
| Millimetres                  | .0394  | Inches                  |
| Centimetres                  | .3937  | Inches                  |
| Metres                       | 3.2808 | Feet                    |
| Millimetres per minute       | .0394  | Inches per minute       |
| Cubic Centimetres per minute | .0610  | Cubic Inches per minute |
| Surface Metres per minute    | 3.2808 | Surface Feet per minute |

#### **Cutting Tool Usage Safety Information**

**Essential Safety Instructions** 

#### Tool Usage Hazards

In use, cutting tools may create sharp edges, vibrations, high temperatures and forces not only within the tool itself but also the work piece and waste produced. This can cause fragmentation of the tool and/or work piece due to excess stress or impact damage.

#### **Avoiding Injury**

When working with, or in the vicinity of cutting tools, all personnel should wear appropriate protective equipment at all times. Machine guards should be in place at all times.

#### Please Note:

It is the user's responsibility to determine the suitability of any tool for their specific application and ensure its safe usage.

and rules of interpretation in this condition apply in these condition

| "Buyer"                    | the person, firm or company who purchases the Goods from ITC;  |
|----------------------------|--|
| "ITC"                      | Industrial Tooling Corporation Limited (Company No. 2573537) the<br>registered office of which is at Cyber House, Unit 1 Kepler, Lichfield Road<br>Industrial Estate, Tamworth, B79 7XE;   |
| "Contract"                 | any contract between ITC and the Buyer for the sale and purchase of the Goods, incorporating these conditions;   |
| "Delivery Point"           | the place where delivery of the Goods is to take place under condition 4;  |
| "Goods"                    | any goods agreed in the Contract to be supplied to the Buyer by ITC (including any part or parts of them);   |
| "Intellectual<br>Property" | any copyrights, letters, patents, know how, inventions, utility models,<br>registered and unregistered designs, trade and service marks, trade<br>names, logos, patent applications, rights in the nature of copyrights<br>and all other similar rights in the Goods and [where applicable] the<br>Services, and |
| "Services"                 | any services agreed in the Contract to be supplied to the Buyer by ITC.  |

- Services in yearvices agreed in the Lontract to be supplied to the Buyer by IIU.

  2. A reference to a particular law is a reference to it is at its in force for the time being taking account of any amendment, extension, application or re-enactment and includes any subordinate legislation for the time being in force made under at.

  1.3. Words in the singular include the plural and in the plural include the singular.

  1.4. A reference to one gender includes a reference to the other gender.

- 1.5. Condition headings do not affect the interpretation of these conditions.

  2. Application of terms
- 2. Apprication in terms
  2.1 Subject to any variation under condition 2.3 the Contract shall be on these conditions to exclusion of all other terms and conditions (including any terms or conditions which the Buyer purports to apply under any purchase order, confirmation of order, specification or other document).
- 2.2. No terms or conditions endorsed on, delivered with or contained in the Buyer's purchase
- 2.2. No terms or conditions endorsed on, delivered with or contained in the Buyer's purch order, confirmation of order, specification or other document shall form part of the Contract simply as a result of such document being referred to in the Contract.
  2.3. These conditions apply to all ITC's sales and any variation to these conditions and any resentations about the Goods or the Services shall have no effect unless expressly agre in writing and signed by a director of ITC. The Buyer acknowledges that it has not relied on any statement, promise or representation made or given by or on behalf of ITC which not set out in the Contract. Nothing in this condition shall exclude or limit ITC's liability fraudulent misrepresentation.
- Each order or acceptance of a quotation for Goods or Services by the Buyer from ITC shall be deemed to be an offer by the Buyer to buy Goods and/or Services subject to these conditions. The Buyer shall ensure that the minimum value of its order is not less than the sum set out in clause 7.2.
- in clause 7.2.

  S. No order placed by the Buyer shall be deemed to be accepted by ITC until a written acknowledgement of order is issued by ITC or lif earlier | ITC delivers the Goods to the Buyer or provides the Services to the Buyer.

  2.6. The Buyer shall ensure that the terms of its order and any applicable specification are complete and accurate.

  2.7. Any quotation is given on the basis that no Contract shall come into existence until ITC despatches an acknowledgement of order to the Buyer. Any quotation is valid for a perior of 80 days only from its date, provided that ITC has not previously withdrawn it.

- 2.8. Acceptance of delivery of the Goods or performance of the Services shall be deemed conclusive evidence of the Buyer's acceptance of these Conditions.

  2.9. Any typographical, clerical or other error or omission in any sales literature, quotation, acceptance of offer, invoice or other document or information issued by ITC shall be subject to correction without any liability on the part of ITC.

- 3. Description
  3.1. The quantity and description of the Goods or the Services to be performed shall be as set out in ITC's quotation or acknowledgment of order.
  3. All samples, drawings, descriptive matter, specifications and advertising issued by ITC and any descriptions or illustrations contained in ITC's catalogues or brochures are issued or published for the sole purpose of giving an approximate idea of the Goods described in them. They shall not form part of the Contract and this is not a sale by sample.
  3.1 If the Goods are to be manufactured or as part of the Services any process is to be applied to the Goods by ITC; or if the Goods or Services are to be provided in accordance with a specification or any other document, data information or materials submitted by the Buyer, the Buyer shall indemnify ITC against all loss, damages, costs and expenses awarded against or incurred by ITC in connection with or paid or agreed to be paid by ITC in settlement of any claim for infringement of any patent, copyright, design, trade mark or other industrial or intellectual property rights of any other person which results from ITC's use of the Buyer's information.
- 3.4. ITC reserves the right to make any changes in the specification of the Goods which are required to conform with any applicable statutory or EC requirements or, where the Goods are to be supplied to ITC's specification, which do not materially affect their quares representations.
- or performance.

  3. No order which has been accepted by JTC may be cancelled by the Buyer except with the agreement in writing of ITC and on terms that the Buyer shall indemnify ITC in full against all loss lincluding without prajudice to the generality of the foregoing loss of profits os sit including without prajudice to the generality of the foregoing the cost of all labour and materials ordered, whether used or un-used), damages, charges and expenses incurred by ITC as a result of cancellation.

- 4.1 Unless otherwise agreed in writing by ITC, delivery of the Goods shall take place at ITC's place of business.

  4.2 The Buyer shall take delivery of the Goods within 7 days of ITC giving it notice that the

- Goods are ready for delivery.

  4.3. Any dates specified by ITC for delivery of the Goods or the performance of the Services are intended to be an estimate and time for delivery shall not be made of the essence by notice. If no dates are so specified, delivery and performance shall be within a reasonable time.

  4.4. Subject to the other provisions of these conditions ITC shall not be liable for any direct, indirect or consequential loss lall three of which terms include, without limitation, pure economic loss, loss of profits, loss of business, depletion of goodwill and similar lossl, costs, damages, charges or expenses caused directly or indirectly by any delay in the delivery of the Goods or the performance of the Services (even if caused by ITC's negligence), nor shall any delay entitle the Usury to the minutes such delay exceeds 180 days.
- exceeds 180 days.

  A.5. If for any reason the Buyer fails to accept delivery of any of the Goods when they are ready for delivery, or ITC is unable to deliver the Goods on time because the Buyer has not provided appropriate instructions, documents, licences or authorisations:

  4.5.1 risk in the Goods shall be deemed to have been delivered;

  4.5.2 the Goods shall be deemed to have been delivered;

  - 4.5.3. ITC may store the Goods until delivery, whereupon the Buyer shall be liable for all related costs and expenses (including, without limitation, storage and insurance);
  - 4.5.4. sell the Goods at the best price readily attainable and (after deducting any costs for storage and other selling expenses) account to the Buyer for the excess over the
- storage and other selling expenses) account to the Buyer for the excess over the price or charge the Buyer for any shortfall below the price under the Contract.

  4.6. The Buyer shall provide at the Delivery Point and at its expense adequate and appropriate equipment and manual labour for loading the Goods.

  4.7. If ITG delivers to the Buyer a quantity of Goods being bespoke, non-stock items) of up to 10% more or less than the quantity accepted by ITG, the Buyer shall not be entitled to object to or reject the Goods or any of them by preason of the surplus or shortfall and shall pay for such goods at the pro rate Contract rate.
- 4.8. ITC may deliver the Goods by separate instalments. Each separate instalment shall be invoiced and paid for in accordance with the provisions of the Contract. 4.9. Each instalment shall be a separate Contract and no cancellation or termination of any one Contract relating to an instalment shall entitle the Buyer to repudiate or cancel any other Contract or instalment.

- 5. Non-delivery
  5. Non-delivery
  5.1. The quantity of any consignment of Goods as recorded by ITC on despatch from ITC's place of business shall be conclusive evidence of the quantity received by the Buyer on delivery unless the Buyer can provide conclusive evidence proving the contrary.
  5.2. ITC shall not be liable for any non-delivery of Goods (even if caused by ITC's negligence) unless the Buyer gives written notice to ITC of the non-delivery within 3 days of the date when the Goods would in the ordinary course of events have been received.
  5.3. Any liability of ITC for non-delivery of the Goods shall be limited to replacing the Goods within a reasonable time or issuing a credit note at the pro rata Contract rate against any invoice raised for such Goods.
- Risk/title

  1. Risk of damage to or loss of the Goods shall pass to the Buye
- 6.1.1. in the case of Goods to be delivered at ITC's premises, at the time when ITC notifies the Buyer that the Goods are available for collection; or
- Buyer that the Goods are available for collection; or
  6.1.2 in the case of Goods to be delivered otherwise than at ITC's premises, at the time of
  delivery or, if the Buyer wrongfully fails to take delivery of the Goods, the time when
  ITC has tendered delivery of the Goods.
  6.1.3. In respect of deliveries made in accordance with clause 6.1(b) above and notwithstanding any other provision contained in these Conditions, a transportation
  insurance policy shall be taken only at the Buyer's written request and at the
  Buyer's expense.
- Buyer's expense. tership of the Goods shall not pass to the Buyer until ITC has received in full (in cash

- or cleared funds) all sums due to it in respect of:
  6.2.1. the Goods; and
  6.2.2. all other sums which are or which become due to ITC from the Buyer on any
- 6.3. Until ownership of the Goods has passed to the Buyer, the Buyer shall:
- 6.3. Until ownership of the Goods has passed to the Buyer, the Buyer shall:
  6.3.1. hold the Goods on a fiduciary basis as ITC's bailee;
  6.3.2. store each consignment of the Goods fall no cost to ITCI separately from all other goods purchased from ITC and those of the Buyer or any third party in such a way that they remain readily identifiable as ITC's property;
  6.3.3. not remove, destroy, deface or obscure any identifying mark or packaging on or relating to the Goods; and
  6.3.4. minitain the Goods in satisfactory condition and keep them insured on ITC's behalf for their full price against all risks to the reasonable satisfaction of ITC. On request the Buyer shall produce the policy of insurance to ITC.
  6.4. The Buyer may resell the Goods before ownership has passed to it solely on the following conditions:
- 6.4.1. any sale shall be effected in the ordinary course of the Buyer's business at full
- 6.4.2. any such sale shall be a sale of ITC's property on the Buyer's own behalf and the Buyer shall deal as principal when making such a sale.
- 6.4.2. any such sale shall be a sale of ITC's property on the Buyer's own behalf and the Buyer shall deal as principal when making such a sale.
  6.5. The Buyer's right to possession of the Goods shall terminate immediately if.
  6.5.1. the Buyer has a bankruptcy order made against him or makes an arrangement or composition with his creditors, or otherwise takes the benefit of any statutory provision for the time being in force for the relied of insolvent debtors, or being a body corporatel convenes a meeting of creditors (whether formal or informal), or enters into liquidation whether voluntary or computsory except a solvent voluntary liquidation for the purpose only of reconstruction or amalgamation, or has a receiver and/or manager, administrator or administrative receiver appointed of its undertaking or any part thereof, or documents are filed with the court for the appointment of an administrator of the Buyer or ordite of intention to appoint an administrator is given by the Buyer or its directors or by a qualifying floating charge holder (as defined in paragraph I of a Schedule B It to the Insolvency Act 1986), or a resolution is given by the Buyer or lot of the Buyer or any proceedings are commenced relating to the insolvency or possible insolvency of the Buyer.
  6.2. the Buyer suffers or allows any execution, whether legal or equitable, to be levied on his/fits property or obtained against himit, for falls to beserve or perform any of his/ its obligations under the Contract or any other contract between ITC and the Buyer, or is unable to pay its debts within the meaning of section 123 of the Insolvency Act 1986 or the Buyer encambers or in any way charges any of the Goods.
  6.5. ITC shall be entitled to recover payment for the Goods or the Services nowithstanding that ownership of any of the Goods has not passed from ITC.
  6.7. The Buyer grants ITC, its agents and employees an irrevocable licence at any time to enter any remains where the Goods are on may b

- ownership of any of the Goods has not passed from ITC.

  6.7. The Buyer grants ITC, its agents and employees an irrevocable licence at any time to enter any premises where the Goods are or may be stored in order to inspect them, or, where the Buyer's right to possession has terminated, to recover them.

  6.8. Where ITC is unable to determine whether any Goods are the goods in respect of which the Buyer's right to possession has terminated, the Buyer shall be deemed to have sold all goods of the kind sold by ITC to the Buyer in the order in which they were invoiced to the Buyer.

  6.9. On termination of the Contract, howsoever caused, ITC's [but not the Buyer's] rights contained in this condition 6 shall remain in effect.

- Price
   1. Unless otherwise agreed by ITC in writing, the price for the Goods shall be the price set out in ITC's price list published on the date of delivery or deemed delivery. The price for the Services shall be an accordance with the quotation provided by ITC to the Buyer in accordance with clauses.
   1.2. The minimum value of the Buyer's order shall be not less than £20.00.
   1.3. The price for the Goods shall be exclusive of any value added tax and all costs or charges in relation to packaging, loading, unloading, carriage and insurance, all of which amounts the Buyer shall pay in addition when it is due to pay for the Goods.
   1.4. In the event that the Buyer's order is to be delivered to the Buyer then the Buyer shall pay for the costs of carriage notlified to the Buyer by ITC from time to time.
   1.5. ITC reserves the right, by giving notice to the Buyer any time before the delivery to increase the price and/or the ancillary costs to reflect any increase in the cost to ITC which is due to any factor beyond the control of ITC lsuch as, without limitation, any foreign exchange (fluctuation, currency regulation, alteration of taxes, levies or duties, significant increase in the costs of abour, materials or other costs of manufacture], any change in delivery dates, quantities or specifications for the Goods or change to the required

- increase in the costs of abour, materials or other costs of manufacturel, any change in delivery dates, quantities or specifications for the Goods or change to the required Services which is requested by the Buyer, or any delay caused by any instructions of the Buyer or failure of the Buyer to give ITC adequate information or instructions. Payment

  1. Subject to condition 8.4, payment of the price for the Goods or the Services is funless otherwise agreed in writing by the parties] due in pounds sterting on the last working day of the month following the month in which the Goods are delivered or deemed to be delivered. ITC reserves the right to request payment for the Goods and/or Services in advance.

  2. Time for payment shall be of the essence.

  3. No payment shall be deemed to have been received until ITC has received cleared funds.

  3. All payments payable to ITC under the Contract shall become due immediately on its termination despite any other provision.

  3. The Buyer shall make all payments due under the Contract in full without any deduction

- termination despite any other provision.

  The Buyer shall make all payments due under the Contract in full without any deduction whether by way of set-off; counterclaim, discount, abatement or otherwise unless the Buyer has a valid court order requiring an amount equal to such deduction to be paid by ITC to the Buyer.

  If the Buyer fails to pay ITC any sum due pursuant to the Contract, the Buyer shall be liable to pay interest to ITC on such sum from the due date for payment at the annual rate of 8% above the base lending rate from time to time of National Westminster Bank plc, accruing on a daily basis until payment is made, whether before or after any ulgoment. ITC reservate the right to claim interest under the Late Payment of Commercial Debts (Interest) Act 1998.

- Where ITC is not the manufacturer of the Goods, ITC shall endeavour to transfer to the Buyer the benefit of any warranty or quarantee given to ITC.
- 9.2. ITC warrants that:-
- 2.1f. Cwarrants that:9.2.1. (subject to the other provisions of these conditions) on delivery that the Goods shall be of satisfactory quality within the meaning of the Sale of Goods Act 1979;
  9.2.2. bought if the Buyer had made known that purpose to ITC in writing and ITC has confirmed in writing that it is reasonable for the Buyer to rely on the skill, and
  9.2.3. that the Services will be provided using reasonable care and skill and, as far as reasonably possible, in accordance with the Contract and at the intervals and within the times referred to in the Contract.
- 9.3. The above warranty is given by ITC subject to the following conditions:
  9.3.1. ITC shall be under no liability if it is established by ITC that some part of the materi

- 9.3.1. It is shall be under no liability in it is established by it to that some part of the mi all used in manufacture was defective;
  9.3.2. ITC shall be under no liability in respect of any defect in the Goods or Services arising from any drawing, design or specification supplied by the Buyer;
  9.3.3. ITC shall be under no liability under the above warranty for any other warranty, condition or guaranteel if the Price and all ancillary costs have not been paid by due date for payment.
  9.4. ITC shall not be liable for a breach of either of the warranties in condition 92 unless
  9.4. It be Durge representation as relief at the defect to ITC and if the defections are

- 9.4. ITC shall not be liable for a breach of either of the warranties in condition 9.2 unless:
  9.4.1 the Buyer gives written notice of the defect to ITC, and, if the defect is as a result of damage in transit to the carrier, within 7 days of the time when the Buyer discovers or ought to have discovered the defect; and
  9.4.2 ITC is given a reasonable opportunity after receiving the notice of examining such Goods and the Buyer I'l asked to do so by ITC) returns such Goods to ITC's place of business at ITC's cost for the examination to take place thered.
  9.5. ITC shall not be liable for a breach of either of the warranties in condition 9.2 if:
  9.5.1 the buyer makes any further use of such Goods after giving such notice; or
  9.5.2, the defect arises because the Buyer failed to follow ITC's or all or written instructions as to the storage, installation, commissioning, use or maintenance of the Goods or [if there are none] good trade practice; or
  9.5.3, the Buyer alters or repairs such Goods without the written consent of ITC.
  9.6. Subject to condition 9.5, if any of the Goods do not conform with either of the warranties in condition 9.2 ITC shall at its option repair or replace such Goods for the defective part] or refund the price of such Goods at the pro rata Contract rate provided that, if ITC so requests, the Buyer shall, all ITC's expense, return the Goods or the part of such Goods
  within is defective to ITC.
  9.7. If ITC complexes with condition 9.6 it shall have no further liability for a breach of either of the
- 9.7. If ITC complies with condition 9.6 it shall have no further liability for a breach of either of the warranties in condition 9.2 in respect of such Goods.
- 10. Limitation of liability
  10.1. Subject to condition 4, condition 5 and condition 9, the following provisions set out the entire financial liability of ITC (including any liability for the acts or omissions of its employees, agents and sub-contractors) to the Buyer in respect of:
  10.1.1. any breach of these conditions;
  10.1.2. any use made or resale by the Buyer of any of the Goods, or of any product incorporating any of the Goods; and
- rating any of the Goods; and

  10.1.3. any representation, statement or tortious act or omission including negligence
  arising under or in connection with the Contract.

  10.2. All warranties, conditions and other terms implied by statute or common law (save for

- the conditions implied by section 12 of the Sale of Goods Act 1979) are, to the fullest extent permitted by law, excluded from the Contract.

  10.3. Nothing in these conditions excludes or limits the liability of ITC:
  10.3.1, for death or personal injury caused by ITC's negligence; or
  10.3.2, under section (23), Consumer Protection Act 1987; or
  10.3.5, for any matter which it would be illegal for ITC to exclude or attempt to exclude its liability; or
- 10.3.4. for fraud or fraudulent misrepresentation
- 10.4. Subject to condition 10.2 and condition 10.3.

  10.4.1. ITC's total liability in contract, tort lincluding negligence or breach of statutory dutyl. Imserpresentation, restitution or otherwise, arising in connection with the performance or contemplated performance of the Contract shall be limited to Contract price; and
- Contract price; and

  10.4.2. If C shall not be liable to the Buyer for loss of profit, loss of business, or depletion
  of goodwill in each case whether direct, indirect or consequential, or any claims for
  consequential compensation whatsoever (howsoever caused) which arise out of or
  connection with the Contract.
- 11. Export terms
  11. Unless the context otherwise requires, any term or expression which is defined in or given a particular meaning by the provisions of INCOTERMS shall have the same meaning in these Conditions, but if there is any conflict between the provisions of INCOTERMS and these Conditions, the latter shall prevail.
  11.2. Where the Goods are supplied for export from the United Kingdom, the provisions of this clause 11 shall subject to any special terms agreed in writing between the Buyer and ITCl apply notwithstanding any other provision of these Conditions.
  11.3. The Buyer shall be responsible for complying with any legislation or regulations governing the importation of the Goods into the country of destination and for the payment of any duties on them.

  11.4. Unless otherwise agreed in writing between the Buyer and ITC, the Goods shall be delicened (fels the super case or any debiament) the super are obligations.

- It. Unless otherwise agreed in writing between the Buyer and ITC, the Goods shall be delivered fig. the Goods are apprenticled by a between the Buyer and ITC, the Goods shall be delivered flot he per or sea part of shipment and the Seller shall be under no obligation to give notice under section 32(3) of the Sale of Goods Act 1979.

  15. The Buyer shall be responsible for arranging for testing and inspection of the Goods at ITC's premises before shipment. ITC shall have no liability for any claim in respect of any defect in the Goods within would be apparent on inspection and which is made after shipment, or in respect of any damage during transit.

  16. Unless otherwise required by ITC, payment of all amounts due to the Seller shall be made by an irrevocable letter of credit, in a form acceptable to ITC, to be opened by the Buyer in favour of ITC and confirmed by a bank in the United Kingdom acceptable to ITC within 14 days after the Contract is concluded.

  17. The Buyer shall not offer the Goods for resale in or any other country notified by ITC to the Buyer at or before the time the Buyer's order is placed, or sell the Goods to any person if the Buyer knows or has reason to believe that that person intends to resell the Goods in any such country.

- 12.1. ITC may assign the Contract or any part of it to any person, firm or company.

  12.2. The Buyer shall not be entitled to assign the Contract or any part of it without the prior written consent of ITC.
- 13. Force majeure
- 13. Force majeure
  13.1. ITC reserves the right to defer the date of delivery or performance or to cancel the Contract or reduce the volume of the Goods ordered by the Buyer (without liability to the Buyer) if it is prevented from or delayed in the carrying on of its business due to circumstances beyond the reasonable control of ITC including, without limitation, acts of God, governmental actions, war or national emergency, acts of terrorism, protests, riot, civil commodion, fire, explosion, flood, epidernic, lock-outs, strikes or other labour disputes (whether or not relating to ether party's workforce), or restraints or o delays affecting carriers or inability or delay in obtaining supplies of adequate or suitable materials, provided that, if the event in question continues for a continuous period in excess of 90 days, the Buyer shall be entitled to give notice in writing to ITC to terminate the Contract.
  14. General

- writing to ITC to terminate the Contract.

  14.1 Each right or remedy of ITC under the Contract is without prejudice to any other right or remedy of ITC whether under the Contract or not.

  14.1 Each right or remedy of ITC whether under the Contract or not.

  14.2 If any provision of the Contract is found by any court, Inhunal or administrative body of competent jurisdiction to be wholly or partly illegal, invalid, violable, unenforceable or unreasonable in stable to the extent of such illegality invalidity, violenses, violability, underforceability or unreasonableness be deemed severable and the remaining provisions of the Contract and the remaining provisions of the Contract and the remaining provision of the Contract and the remaining the construction of the contract of t

- subsequent breach or default and shall in no way affect the other terms of the Contract
  14.5. The parties to the Contract do not intend that any term of the Contract shall be
  enforceable by virtue of the Contracts (Rights of Third Parties) Act 1999 by any person
  that is not a party to it.

  14.6. The formation, existence, construction, performance, validity and all aspects of the
  Contract shall be governed by English taw and the parties submit to the exclusive
  jurisdiction of the English courts.
- 15. Communications

- Communications
   I. All notices sent between the parties relating to the Contract shall be in writing and delivered by hand or sent by pre-paid first class post or sent by fax:
   I.1. I in case of notices to ITO) to its registered office or such changed address as shall be notified to the Buyer by ITO;
   I.2. I in the case of notices to the Buyer) for the registered office of the addressee [if it is a company] or lin any other case to any address of the Buyer set out in any document which forms part of the Contract or such other address as shall be notified to ITO by the Buyer.
   I.5. Notices shall be deemed to have been received:
   I.5.1. if sent by pre-paid first class post, two days [excluding Saturdays, Sundays and bank and public holidays] after posting lexclusive of the day of posting); or
   I.5.2. if sent by fax on a working day prior to 4.00 pm, at the time of transmission and otherwise on the next working day.
   I.5.3. Notices addressed to ITC shall be marked for the attention of Mr P Graves.
   Indemnity

- 16. Indemnity

  16. If any claim is made against the Buyer that the Goods or Services provided infringe or that
  16. If any claim is made against the Buyer that the Goods or Services provided infringe the patent, copyright, design, trade mark or other industrial
  or intellectual property rights of any other person, then unless the claim arises from the
  use of any drawing, design or specification supplied by the Buyer. ITC shall indemnify the
  Buyer ainstall loss, diamages, costs and expenses awarded against or incurred by
  the Buyer in connection with the claim, or paid or agreed to be paid by the Buyer in settlement
  of the claim, provided that.

  16.1.1 the Buyer shall immediately inform ITC of all such claims;
- 16.1.2. ITC is given full control of any proceedings or negotiations in connection with any such claim;
- 16.1.3. the Buyer shall give ITC all reasonable assistance for the purposes of any such proceedings or negotiations;
- proceedings or negotiations;
  16.1.4. except pursuant to a final award, the Buyer shall not pay or accept any such claim,
  or compromise any such proceedings without the consent of ITC (which shall not
  be unreasonably with
- be unreasonably withheld].

  1.5. the Buyer-shall do nothing which would or might vitiate any policy of insurance or insurance cover which the Buyer may have in relation to such infringement, and this indemnity shall not apply to the extent that the Buyer recovers any sums undeal my such policy or cover liwhich the Buyer shall use its best endeavours to do).

  16.1.6. ITC shall be entitled to the benefit of, and the Buyer shall accordingly account to ITC for all damages and costs if any) avareded in favour of the Buyer which
- are payable by, or agreed with the consent of the Buyer (which consent shall not be unreasonably withheld) to be paid by, any other party in respect of any such claim: and

- claim; and

  16.1.7. without prejudice to any duty of the Buyer at common law, ITC shall be entitled to require the Buyer to take such steps as ITC may reasonably require to mitigate or the Buyer under this clause.

  Insolvency of Buyer

  1. This clause applies if:

  17.1.1. the Buyer makes any voluntary arrangement with its creditors or (being an individual or firm) becomes bankrupt or (being a company) becomes subject to an administration order or goes into liquidation (otherwise than for the purposes of amalgamation or reconstruction), or

  17.1.2. an encumbrancer takes possession, or a receiver is appointed, of any of the property or assets of the Buyer; or

  17.1.1. the Buyer casses, or threatens to cease, to carry on business; or

  17.1.1. If ITC reasonably apprehends that any of the events mentioned above is about to occur in

- 17.1.4. ITC reasonably apprehends that any of the events mention relation to the Buyer and notifies the Buyer accordingly. tioned above is about to occur in
- 71.2. If this clause applies then, without prejudice to any other right or remedy available to ITC, ITC shall be entitled to cancel the Contract or suspend any further deliveries or performance of the Services under the Contract or suspend any further deliveries or performance of the Services under the Contract without any liability to the Buyer, and if the Goods have been delivered but not paid for the Price and the Ancillary Costs shall become immediately due and payable notwithstanding any previous agreement or arrangement to the contrary.

