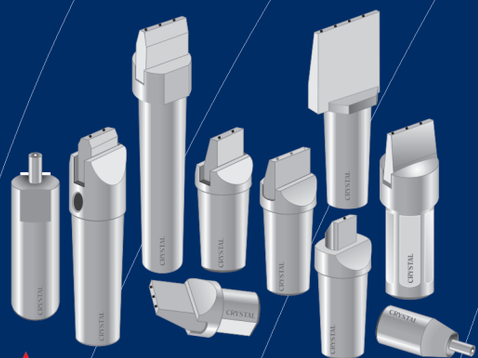
TÜV
Cert No.
85 100 001 06775

NABCB
QMS 010

CRYSTAL
Brand
DIAMOND TOOLS

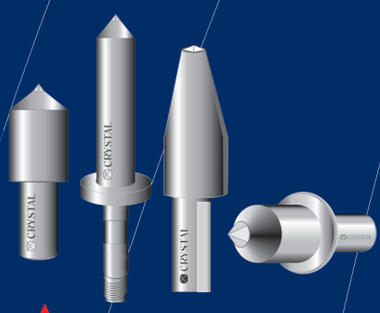
DIAMOND POINTS
& FINGERS



NEEDLE, GRIT, CVD, MCD

MULTIPOINT
DIAMOND DRESSERS

SINGLE POINT
DIAMOND DRESSERS



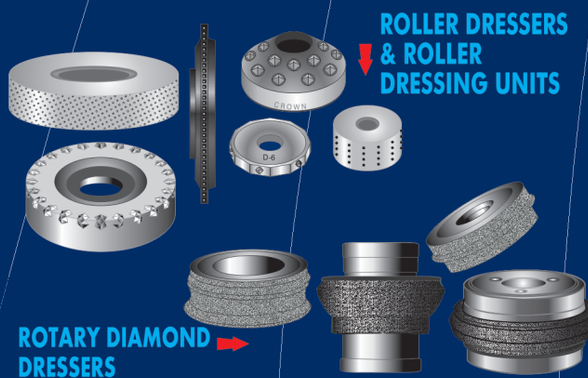
ROCKWELL INDENTERS

MULTI-LAYER FLIESE TOOLS

DIAMOND CHISEL /
FORMING DRESSERS

IMPREGNATED
DIAMOND DRESSERS

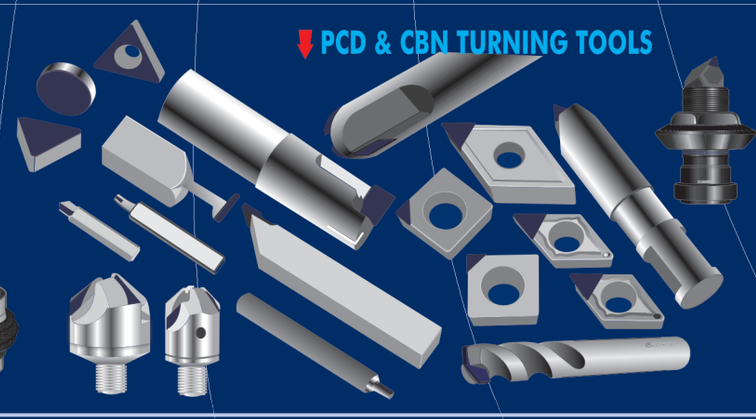
DIAFORM
CHISELS



ROLLER DRESSERS
& ROLLER
DRESSING UNITS

ROTARY DIAMOND
DRESSERS

PCD & CBN TURNING TOOLS



KAMALA ENGINEERING (Diamonds) PVT. LTD.

INNOVATION IS OUR PROFESSION

KAMALA

CRYSTAL Brand DIAMOND TOOLS

The Company

KAMALA ENGINEERING (Diamonds) PVT. LTD. are in existence since last four decades, manufacturing Diamond Tools under **"CRYSTAL BRAND"** for many reputed organisations throughout India and globally. We have created a Goodwill with all customers and suppliers based on **Quality, Technical Know-how, Punctuality and Innovation.**

The team of Directors have profound knowledge in **Engineering, Diamond Assorting** and **Diamond Tool Technology** due to over 41 years of field experience.

Our manufacturing range till date includes the following Diamond Tools:

- **DIAMOND DRESSERS in Natural & Synthetic Diamonds** (Single Point, Multi Point, Bonded, Fliese / Blades & Rollers)
- **DIAMOND FINGERS & GAUGE POINTS**
- **DIAMOND INDENTERS** (Rockwell, Vickers, Knoop etc.)
- **DIAMOND BURNISHING TOOLS**
- **ROTARY DIAMOND DRESSERS**
- **PCD COMPAX SHOES**
- **PCD & CBN CUTTING TOOLS**
- **DIAMOND LAPPING COMPOUNDS**
- **HONING STONES** (Diamond, CBN & Vitrified)
- **SPECIAL PURPOSE DIAMOND TOOLS**

Diamond Dresser is an essential part of every Grinding Machine. It helps in grinding wheel surface preparation to maintain the dimensional accuracy and work efficiency of the wheel. The Diamond Dresser greatly influences the performance of the Grinding Machine. An appropriate selection of a Dresser goes hand in hand apart from the selection of **grinding machine, wheel and the coolant system.** Please fill in our questionnaire so that we can suggest you the right type of dresser.

Instruction charts are available with us to be displayed on the machines for creating awareness amongst operators.

Diamond Dressers are categorised as

- **SINGLE POINT DRESSERS**
- **MULTI POINT DRESSERS**
- **IMPREGNATED DRESSERS**
- **MULTI-LAYER FLIESE/BLADE DRESSERS** (Needle, Grit, CVD & MCD)
- **ROLLER DRESSERS**
- **ROTARY DIAMOND DRESSERS**

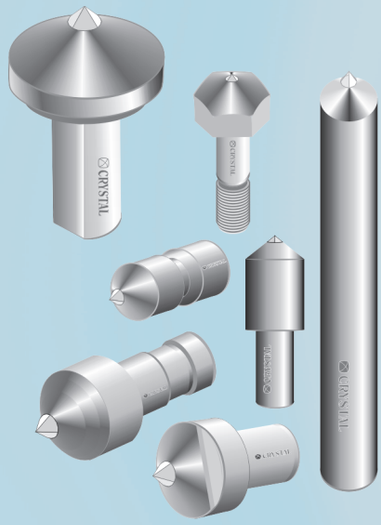
CRYSTAL Brand DIAMOND TOOLS

TÜV Cert No. 85 100 001 06775 NABCB QMS 010

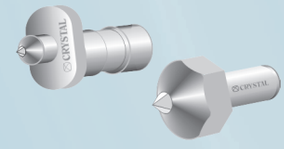
KAMALA

INNOVATION IS OUR PROFESSION

SINGLE POINT DIAMOND DRESSERS



SINGLE POINT DIAMOND DRESSERS



Single Point Diamond Dressers, in which only one Diamond Point works at a time, is correctly oriented in shank and bears complete dressing force.

At **KAMALA**, we scraped the conventional method of calculating carat weight, considering the **Wheel Diameter (D) and Wheel Width (W).** We suggest throw-away type natural Octahedron 0.10 / 0.15 Carat Like **KAMALA CRYSTAL.** This concept was laid after rigorous trials conducted for years together, keeping in mind the parameter such as **Drag angle, Coolant, Periodic indexing and Depth of cut,** conducted under our close supervision with co-operation of our internationally reputed customers. Result proved to be satisfactory and economical. Since we believe in innovation, we are in the process of continuous improvement in existing products as well as continuously update our product range by testing new varieties and grades of Natural Diamonds for different applications.

MULTI POINT DIAMOND DRESSERS

MULTIPOINT DIAMOND DRESSERS

To meet the requirement of heavy dressing, Multipoint Diamond Tools are used. Fine Octahedronal Diamonds are set in a distinguished pattern, where height of all the diamonds are maintained within a close tolerance to achieve superior finish and efficient dressing. The main features which distinguishes this type of tool from Single Point Dresser is that the contact area between the tool and the wheel is divided into several parts. Each Diamond takes a proportion of the infeed. If we consider 5 diamonds with an infeed of 20 microns the individual diamond contributes only to an extent corresponding to 4 microns. This greatly improves the performance of the diamond to stretch life span, it proved to be economical.

CRYSTAL Brand DIAMOND TOOLS

IMPREGNATED DIAMOND DRESSERS

Impregnated Diamond Dressers contains large number of processed Blocky Diamond granules, uniformly distributed. They are manufactured according to the **Grit Size, Concentration** and **application**, where **Surface Finish** is the criterian. These type of dressers are applied in thread grinding with grit specification "f", "ff" , "fff".

The important factors affecting the performance of Diamond Dressers are:

- TYPE OF NATURAL DIAMONDS
- EFFECT OF HEAT ON DIAMOND
- ABRASION RESISTANCE & ORIENTATION

TYPE OF NATURAL DIAMONDS

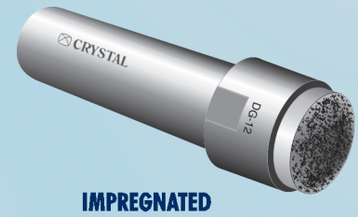
Shape of diamonds vary from **Octahedron, Dodecahedron, Cube, Maccle, Elongated and Twinned Diamonds.** Quality of any Diamond is mainly a matter of structure. If the structure is irregular with inclusions, weak spots, flaws, air pockets and carbon impurities, the diamond is liable to fracture or wear excessively. Most of the good quality Diamonds are mined from South Africa. However, there is no correlation between **Quality, Origin** and **Color**.

EFFECT OF HEAT ON DIAMOND

At higher temperature Diamonds turn into graphite and oxidises. Temperature at which Diamond is damaged depends on its quality. In dressing process, Diamond must be cooled.

ABRASION RESISTANCE AND SPECIFICATION

Resistance to abrasion of Diamond is related to its structure. It varies from one direction to another and from one plane to another. The "ART" of setting a Diamond in a position, so that most wear resistant line of attack is used is called as "**ORIENTATION**".



IMPREGNATED DIAMOND DRESSERS

ROCKWELL DIAMOND INDENTERS

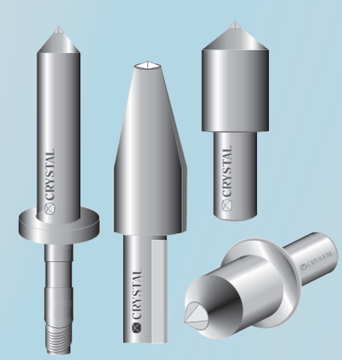
We manufacture, the best quality Rockwell Diamond indenters to determine accurate hardness of hardened metals and as O.E.

CRYSTAL Indenters are manufactured from Superfine quality Dodecahedronal Diamonds precisely assorted and oriented to offer maximum Indentations. Superfine Lapping, Concentricity, Included Angle 120°, tip radius 0.2 mm are closely observed. Our indenters confirm to DIN 50103 and BS 427 and are suitable for A, C, and superficial scales to 15-N, 30-N and 45-N.

We also manufacture Gear Tooth Brell & Briro Case Depth Indenters.

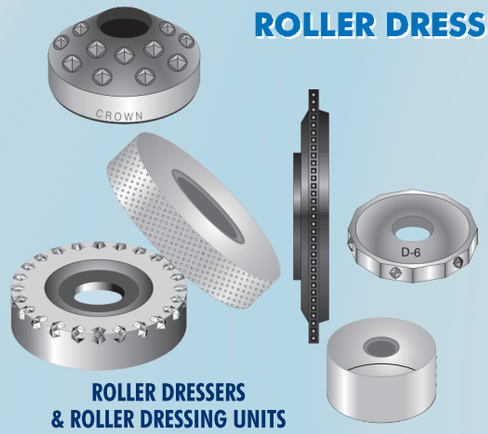
GEAR TOOTH ROOT BRELL is developed to measure the hardness at the root of Gear Tooth and operate under 150 kg. load.

BRIRO CASE DEPTH INDENTER determines the hardness and case depth of case hardened component and operates under 1000 kg. load.



ROCKWELL INDENTERS

ROLLER DRESSERS



ROLLER DRESSERS
& ROLLER DRESSING UNITS

These Roller Dressers form a part of stationary indexable as well as Rotary type dressers. However, the roller consists of several rows of needle diamonds arranged on the periphery of the small rollers. These dressers are very durable and productive.

We produce Straight Rollers from Ø 18 upto Ø 100 mm with CVD, MCD and Needle Diamonds. These rollers are ground on high precision grinders based on the customer requirements to maintain an out of roundness of around ± 0.01 mm on the diameter. Most of the 2007-2008 production grinding machines adopt these rollers on Internal, External or Centreless to enhance productivity and reduce fatigue to the operator. Test results have been excellent and we have come up with a lot of innovative designs based on customer requests.

DIAMOND GAUGING POINTS & FINGERS
for in process & post process gauging

DIAMOND POINTS & FINGERS

"Marposs" have introduced a metrological instrument, used for **in - process** and **post process** gauging for the measurement of diameters. Such gauging systems are employed to monitor I. D. & O. D. during and after precise grinding operations. This facilitates 100% measurement of the component avoiding sampling and resulting in repeatability, precision and confidence in the finished products.

In mass production, it is non-feasible to measure the cylindrical dimensions of each and every ground component by stopping the machine, since the idle time of the machine results loss in production, and ultimately the loss of the organisation.

We manufacture all types of Diamond Fingers and Diamond Gauging points for **Marposs, Tesa** and many other Gauging systems. Difference in the dimensions and shapes of the fingers depends upon the type of grinding machine and dimensions of the component to be measured.

Our Diamond Fingers are made of **GEM quality Diamonds** mounted on non-magnetic stainless steel blanks. Diamond is duly lapped to 120° included angle with a completely blended tip radius to match the angle as per the requirement and specification.

Diamond Gauging Points are also manufactured from GEM quality Diamonds completely lapped to a smooth curve to minimise friction, ensuring consistency, repeatability, longer life and overall economy.

The major application of various types of Diamond Fingers are in **Bearing Industries** for bearing cap I.D. / O.D. and ball races measuring.

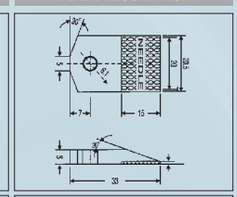
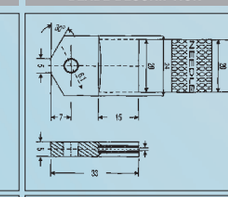
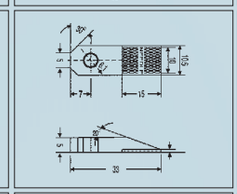
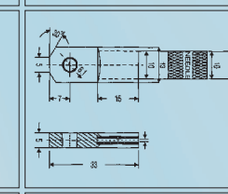
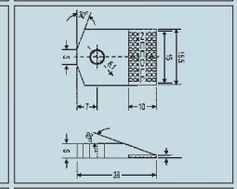
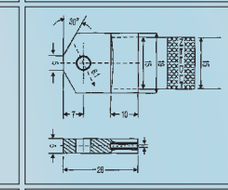
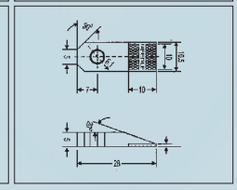
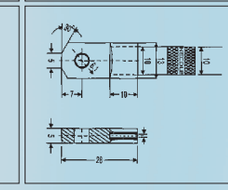
Diamond Gauging Points are used in **Automobile Industries** for crankshafts, camshafts, gearshafts, pins etc. for O.D. Measurements.

CRYSTAL Brand DIAMOND TOOLS

MULTILAYER FLIESE TOOLS (Needle, Grit, CVD & MCD)

In Fliese Dressers the diamonds are arranged in different configuration and sizes depending on the customer drawings and applications. Most common application being **Angular / Radius Grinding** of auto parts like Crankshaft, Camshaft, Connecting rod, Axles, Gears etc.

We produce Fliese tools in natural as well as **Synthetic Diamonds (CVD & MCD)**

SERIAL NO.	BLADE TOOL	BLADE DESCRIPTION	CRYSTAL FLIESE TOOLS	SERIAL NO.	BLADE TOOL	BLADE DESCRIPTION	CRYSTAL FLIESE TOOLS
KFA KFA - 090 KFA - 110 KFA - 140 KFA - GRIT			20 x 15 x X THICKNESS OF BLADE 1.90 mm 1.10 mm 1.40 mm 18 TO 20 GRIT	**KSA** KSA - 090 KSA - 110 KSA - 140 KSA - GRIT			20 x 15 x X THICKNESS OF BLADE 1.90 mm 1.10 mm 1.40 mm 18 TO 20 GRIT
KFB KFB - 075 KFB - 090 KFB - 110 KFB - 140 KFB - GRIT			10 x 15 x X THICKNESS OF BLADE 0.75 mm 1.90 mm 1.10 mm 1.40 mm 18 TO 20 GRIT	**KSB** KSB - 075 KSB - 090 KSB - 110 KSB - 140 KSB - GRIT			10 x 15 x X THICKNESS OF BLADE 0.75 mm 1.90 mm 1.10 mm 1.40 mm 18 TO 20 GRIT
KFC KFB - 075 KFB - 090 KFB - 110 KFB - 140 KFB - GRIT			10 x 10 x X THICKNESS OF BLADE 0.75 mm 1.90 mm 1.10 mm 1.40 mm 18 TO 20 GRIT	**KSC** KSB - 075 KSB - 090 KSB - 110 KSB - 140 KSB - GRIT			10 x 10 x X THICKNESS OF BLADE 0.75 mm 1.90 mm 1.10 mm 1.40 mm 18 TO 20 GRIT
KFD KFB - 075 KFB - 090 KFB - 110 KFB - 140 KFB - GRIT			10 x 10 x X THICKNESS OF BLADE 0.75 mm 1.90 mm 1.10 mm 1.40 mm 18 TO 20 GRIT	**KSD** KSB - 075 KSB - 090 KSB - 110 KSB - 140 KSB - GRIT			10 x 10 x X THICKNESS OF BLADE 0.75 mm 1.90 mm 1.10 mm 1.40 mm 18 TO 20 GRIT

MULTI-LAYER FLIESE TOOLS

NEEDLE, GRIT, CVD, MCD

CRYSTAL Brand DIAMOND TOOLS

TÜV Cert No. 85 100 061 06775 NABCB QMS 010

KAMALA

INNOVATION IS OUR PROFESSION

ROTARY DIAMOND DRESSERS

Industry's increasing demand for high-accuracy, high-speed production has fostered a new branch of engineering technology to ensure grinding wheels are maintained in optimum condition.

Rotary Diamond Dressers are now recognised as the most efficient and economic means of dressing and trueing grinding wheels to the correct form, tolerance and condition. Their use is growing rapidly in the manufacture of components for automotive, aerospace, power generation, machine tool and precision engineering industries.

Specialist techniques need specialist suppliers which is why we established CRYSTAL Diamond Tools , with all our resources dedicated exclusively to developing the finest Rotary Diamond Dressers and support services available.

We design, develop, manufacture, install and maintain Rotary Diamond Dressers,. and we think that gives us a unique commitment to provide our customers with the best technology can offer.

We have the engineering, design, manufacturing and staff resources to supply the highest quality Rotary Diamond Dressers available on the market.

But most important of all, we have the depth of experience to ensure each product we supply is the optimum choice for each individual customer, however demanding and complex the configuration.

If an application calls for a Rotary Diamond Dresser, CRYSTAL Diamond Tools will provide the best tool for the job.

All Rotary Dressers are manufactured within general tolerance of ⊥ 0.003mm to bore // 0.002mm to datum side face ◎ 0.002mm to bore

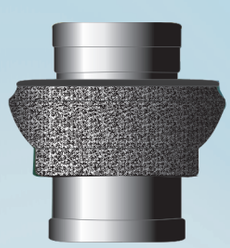
CRYSTAL HANDSET SINTERED DRESSERS

Handset Sintered Dressers are our most commonly used type of Rotary Diamond Dresser, and cover applications where robustness is required and the general tolerance is open.

As the name implies, diamonds are selected and set by hand in a mould, then secured in position by sintering in a tungsten based matrix. Allowances are made for consequential shrinkage to bring the finished dresser within specification tolerances.

TYPICAL ALLPICATIONS

- Turbine Blade
- Automobile Valves
- Crankshafts

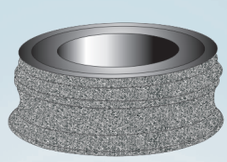


CRYSTAL RANDOM SET SINTERED DRESSERS

Random Set Sintered Dressers are most suitable where openness is required, coupled with a tight form and improved surface finish.

Very often selected diamonds are strategically placed in the mould to support the form in vulnerable areas. The remaining area is then in-filled by centrifugal dispersion of diamonds and sintered.

Random Set Sintered Dressers have the advantage that they can be delivered quickly to meet urgent customer requirements.



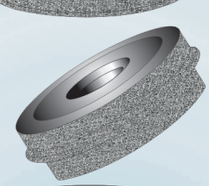
TYPICAL APPLICATIONS

- Automobile Valves
- Turbine Root Forms
- Flute Grinding

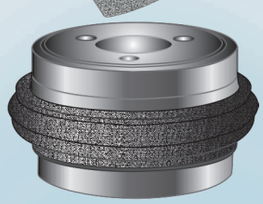
CRYSTAL REVERSE PLATED DRESSERS

Reverse Plated Dressers are selected where high accuracy of profile detail is required together with a correspondingly high quality surface finish on the component.

Accuracy is achieved by centrifugal dispersion of the specially selected diamonds onto the walls of a mould. These are secured by an electro-deposition process , thereby achieving the short lead times so often required by customers.



The electro-deposition process is stable and unaffected by shrinkage, which results in Rotary Diamond Dressers of exceptional accuracy.



TYPICAL APPLICATIONS

- Turbine Blade - Fir Tree Root Form
- Cam Grinding
- Bearing Industry
- Ball Joints
- Needle Injectors

PCD & CBN TOOLS

Polycrystalline Diamonds (PCD) is a synthetic diamond product that is produced by sintering together selected diamond particles with the metal matrix using sophisticated technology.

The **PCD Tools** have **uniform hardness** and **high abrasion resistance** as compared to tungsten carbide or ceramic tools. In certain applications they offer **50 to 100 times** life at just **10 to 15 times** more price than carbide tools.

They are recommended for machining **non ferrous metals** and **abrasive non-metallics** like:-

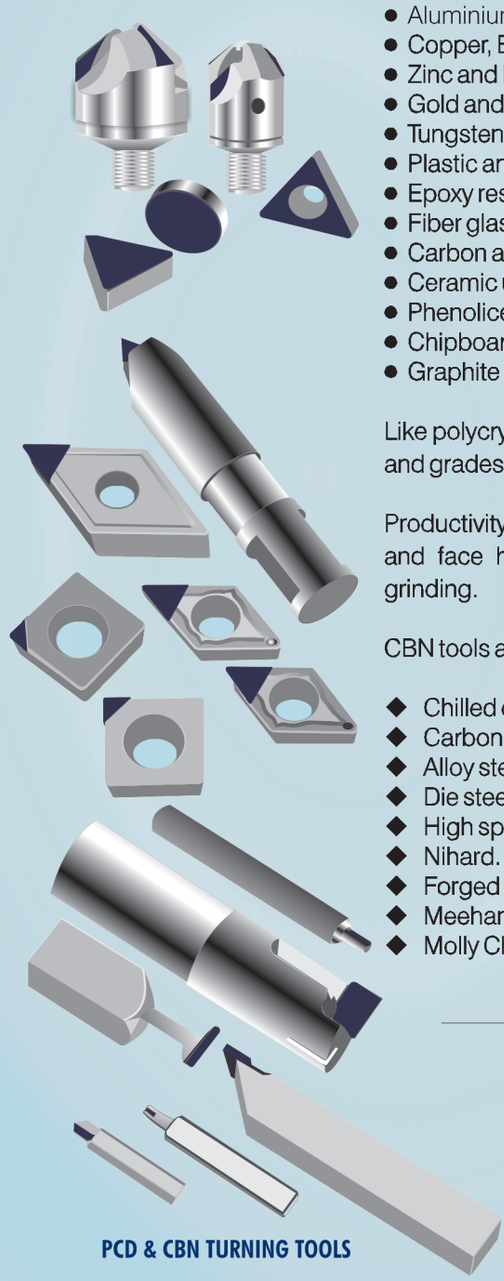
- Aluminium and Aluminium alloys.
- Copper, Brass and Bronze alloys.
- Zinc and Magnesium alloys.
- Gold and Silver.
- Tungsten carbide, presintered and sintered.
- Plastic and Rubber.
- Epoxy resins.
- Fiber glass composites.
- Carbon and Graphite.
- Ceramic unfired.
- Phenolice.
- Chipboard and Fibre Board.
- Graphite composities.

Like polycrystalline diamonds, CBN is available in different shapes, sizes and grades depending upon the application.

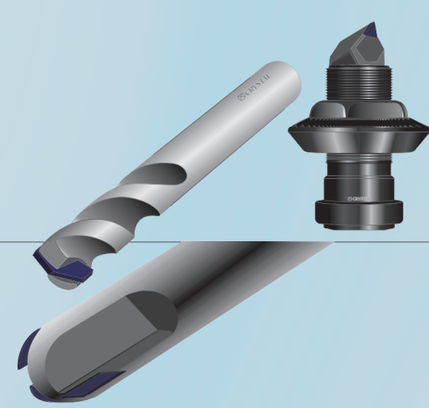
Productivity increases fantastically when CBN Tools are used to turn, bore and face hard materials which previously could be formed only by grinding.

CBN tools are recommended for cutting:-

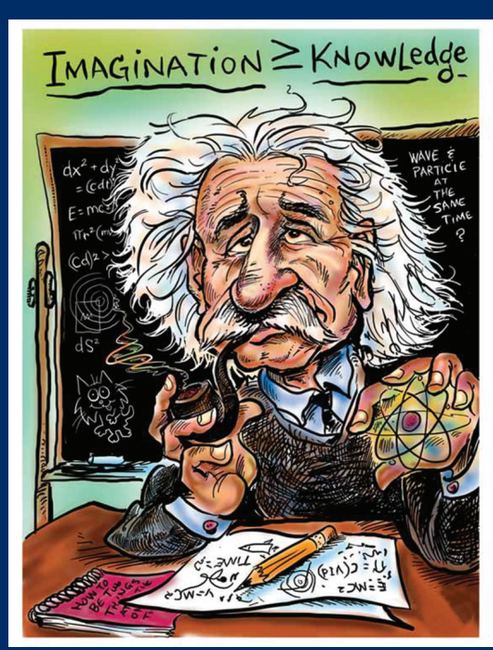
- Chilled cast iron.
- Carbon tool iron.
- Alloy steels.
- Die steel.
- High speed steel.
- Nihard.
- Forged steel.
- Meehanite Iron.
- Molly Chrome steel rolls.



PCD & CBN TURNING TOOLS



Innovation is our profession



and ...

- **DIAMOND DRESSERS**
  in Natural & Synthetic Diamonds
  (Single Point, Multi Point, Bonded, Fliese / Blades & Rollers)
  - **Single Point** (Natural, Conical, Pyramid, Diaform Chisels, CVD & MCD)
  - **Multi Point** (Cluster)
  - **Blade Type** (Fliese - Needle, Grit, CVD & MCD)
  - **Bonded** (Impregnated, DG-12)
- **ROLLER DRESSERS** (Crown & D6)
- **ROTARY DIAMOND DRESSERS**
- **DIAMOND FINGERS & GAUGE POINTS**
- **DIAL POINTS**
- **GLASS CUTTING DIAMONDS**
- **DIAMOND INDENTERS**
  (Rockwell, Vickers, Knoop etc.)
- **DIAMOND BURNISHING TOOLS**
- **PCD COMPAX SHOES**
- **PCD & CBN CUTTING TOOLS**
- **DIAMOND LAPPING COMPOUNDS**
- **CBN VITRIFIED GRINDING WHEELS**
- **HONING STONES** (Diamond, CBN & Vitrified)
- **SPECIAL PURPOSE DIAMOND TOOLS**


Conventional Large Diamond

Octahedronal Small Diamond

CRYSTAL Brand
DIAMOND TOOLS

TÜV Cert No. 85 100 001 06775 NABCB QMS 010

KAMALA ENGINEERING
(Diamonds) Pvt. Ltd.

Mfrs. of : Singlepoint, Multipoint, Impregnated Diamond Dressers & Rotary Diamond Dressers, Rockwell & Vickers Indenters, Import Substitute, **Diamond** Gauging Points, Fingers-Feelers, Fliese / Blade Type Dressers and Shape Tools in Natural & Synthetic Diamonds

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