
EzyDrill
Pass
Through!

# CONTENTS

# OVERVIEW

*EzyDrill is a part of a drilling tools manufacturing group that supplies tools to mining, construction, water well and oil and gas industries.*

*Our global product range includes diamond bit coring and non coring, DTH hammer, DTH buttons bit, RC drilling hammer and bits, shank adapters, extension rods and top hammer bits.*

*In a world of massive industrialisation and automation, few items are still made by hand carefully one by one.*
*I wish every worker to be proud of his daily output, it can be meters of core in a box, a black-smith finishing a Damascus blade or a batch of reddish diamond bit cooling down.*

*All those are the results of effort, experience, good technical background and know-how.*

*Day to day on the shop floor, we are talking about "cooking".*
*Shall I explain the link between two disciplines, metallurgy and cuisine, which appear so far from each other ?*

*YES !*
*Both require a neat working place with right temperature and humidity control for production as well as for storage, both require the best ingredients or so called raw material with strict traceability, both require the secret recipe and proper equipment.*

*For finishing, a master-chef is nobody without his motivated and efficient brigade.*

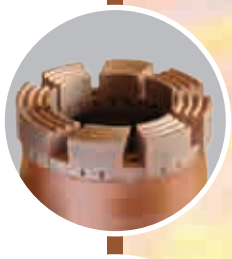
*Welcome to EzyDrill, a team of passionate engineers dedicated to manufacture perfect diamond tools, bit by bit....*

***Mathieu Philippe***
*Managing Director*

*The mining industry is one among many industries closely examining its worldwide impact on environment and putting a lot of effort to reduce it.*

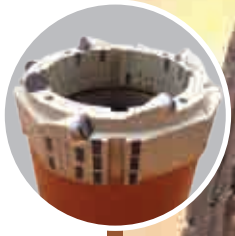
*EzyDrill is really proud to have a zero carbon footprint partnering a solar plant situated 30km from our factory and generating 2 Megawatts.*

# PRODUCT RANGE



***Impregnated Bits***

*Impregnated bit is the last advanced technology used in diamond core drilling. Synthetic diamonds are bound in a metal powder called matrix. During the drilling, the matrix will wear exposing new diamonds layer, the bit will remain sharp.*



***PDC (Polycrystalline Compact Diamond) Bits***

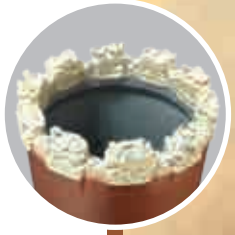
*Polycrystalline Compact Diamonds are brazed on tough wear resistant tungsten carbide matrix body. Technology coming from Oil & Gas application, PDC bits are used in soft to medium sedimentary formations which are homogeneous and competent. PDC cutter can be replaced, extending the total life of the bit.*

***TSD (Thermally Stable Diamond Bits)***

*TSD cutter (cube, cylindrical..) are set in tough wear resistant tungsten carbide matrix body. Thermally Stable Diamond bits are used in soft to medium formation, very good penetration rate in soft and abrasive formation. One particularity is the possibility to drill only with air flow (dry drilling).*

***Surface Set Bits***

*A single layer of natural diamond polished and chemically treated are held in hard tungsten carbide matrix. Used mainly in soft formation for the good penetration rate they allow.*

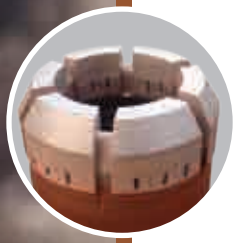


***Krush Bits***

*Crushed tungsten carbide chips are brazed on an heat treated steel body. Very cost effective in soft / loose formation*

***TC (Tungsten carbide) Bits***

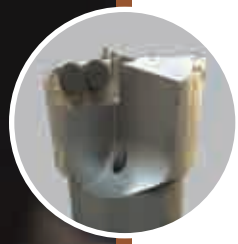
*Octagonal prime are brazed on a heat treated steel body. TC bits are mainly used for geotechnical application in soft formation.*



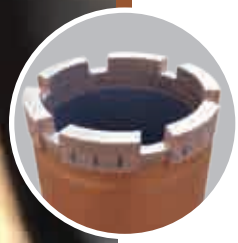
***Wedge Bits***
*Used in directional coring drilling, the taper profile of the wedge bit allows the rods string to follow the wedge giving new hole direction.*

***Reaming Shell***
*Used for stability and reducing the vibration in the drill string, our reaming shell have a spiral design, small and large TSP tips, titanium synthetic diamond and a progressive angle on the segment extending the total life.*

***PDC Non Coring Matrix Body***
*PDC are brazed on wear resistant matrix body. A wide variety of diameter and design are available. PDC bits are used in coal mine, construction and geotechnic.*



***PDC Non Coring Steel Body***
*PDC are brazed on heat treatment high quality steel. A wide variety of diameter and design are available. PDC bits are used in coal mine, construction, geotechnic. A cost effective solution compared to matrix body.*



***Casing shoe***
*Used for casing application in geotechnical or exploration, our casing shoe have very large panel of rock cutting with our special matrix. Large waterway configuration, TSP and TC tips got gage for optimum protection and extending casing shoe's life.*

# BIT SELECTION CHART

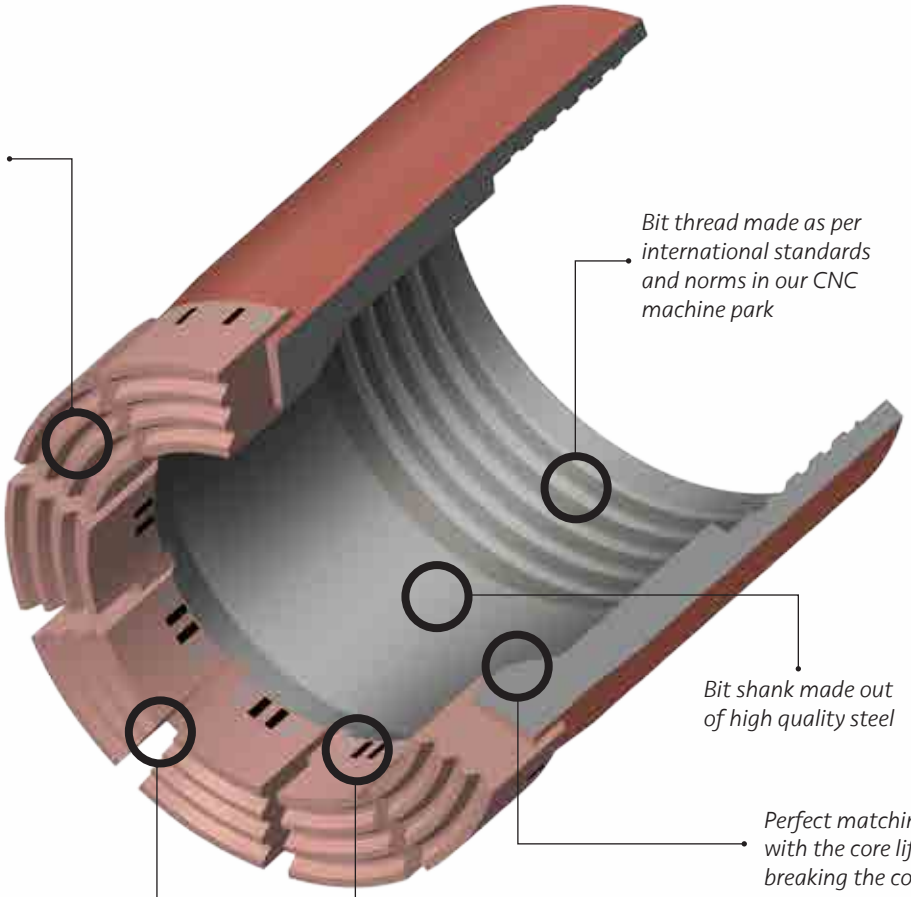
**Make your scratch tests on core samples with simple tooling**

**After selecting the matrix and drilling a couple of hundred of meters, review the bit tags information to evaluate and make adjustment.**

# BIT FEATURES

*The crown is the cutting edge of the bit, from soft to hard matrix from 9 to 16mm height*

*Bit thread made as per international standards and norms in our CNC machine park*



*Bit shank made out of high quality steel*

*Perfect matching angle with the core lifter for breaking the core*

*A large waterway combinations available. Refer to page 9 for exact details*

*All bit gages are reinforced with tungsten carbide and thermally stable diamond tips*

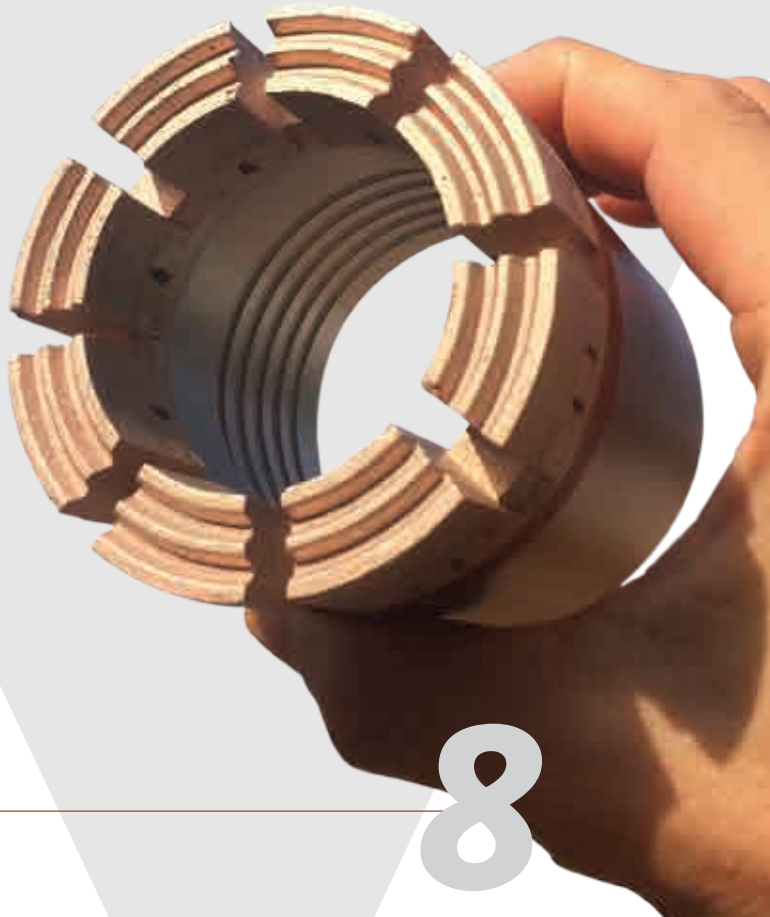
# DIMENSIONS

## BIT / SHOE DIMENSIONS

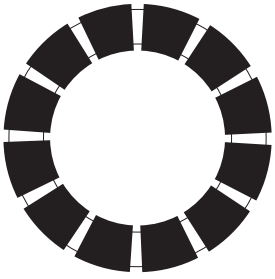
| | SIZE | CORE DIAMETER mm | BIT OD DIAMETER mm | HOLE VOLUME Liters/100m | REAMING SHELLS mm | mm |
|---|---|---|---|---|---|---|
| CORE BITS | BWL | 36.4 | 59.6 | 282 | 59.82 | 60.07 |
| | NWL | 47.6 | 75.3 | 451 | 75.57 | 75.82 |
| | NWL2 / NWTK | 50.7 | | | | |
| | NWL3 | 45.1 | | | | |
| | HWL | 63.5 | 95.6 | 724 | 95.89 | 96.27 |
| | HWL3 | 61.1 | | | | |
| | PWL | 85 | 122 | 1180 | 122.43 | 122.81 |
| | PWL3 | 83 | | | | |
| CASING SHOES | BW | 60.2 | 75.44 | 136.2 | - | - |
| | NW | 75.95 | 91.95 | 202.4 | - | - |
| | HW | 99.82 | 117.6 | 331.1 | - | - |
| | PW | 122.94 | 143.76 | 494.8 | - | - |

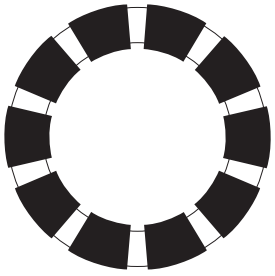
## ROD / CASING DIMENSIONS

| | SIZE | OD mm | ID mm | WEIGHT Kg/3m |
|---|---|---|---|---|
| RODS | BWL | 55.6 | 46 | 18 |
| | NWL | 69.9 | 60.3 | 23.4 |
| | HWL | 88.9 | 77.8 | 34.4 |
| | PWL | 117.5 | 103.2 | 47.2 |
| CASING | BW | 73 | 60.3 | 31.8 |
| | NW | 88.9 | 76.2 | 38.4 |
| | HW | 114.3 | 101.6 | 50.5 |
| | PW | 139.7 | 127 | 64.3 |



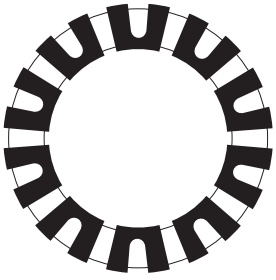
# WATERWAY CONFIGURATION





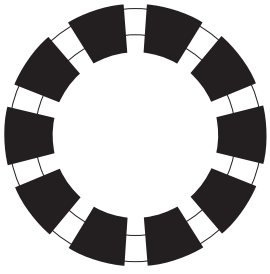
## STANDARD 3 OR 5 MM :

*Most commonly used configuration in the industry.*
*Great fluid flow circulation.*



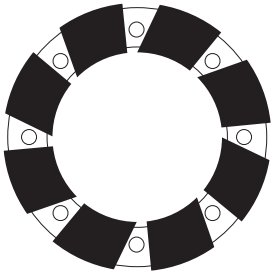
## TURBO :

- *Requires less load on the bit*
- *Greater cutting ejection*
- *Used with higher rotation*



## DD ( DEEP DISCHARGE ) :

- *Excellent performance in loose / broken formation*
- *Best seller in iron ore exploration*
- *Reducing core washing in sand / clay formation*



## TWIST :

- *Our standard in triple tube design*
- *Great flushing design*
- *Face discharge reducing water pressure*
- *Excellent performance in loose / broken formation*

*Rampura-Agucha Zinc mine, INDIA*

# DRILLING PARAMETERS

## QUICK DICTIONARY :

***RPM :*** *Rotation of the bit (Round Per Minute)*
***WOB :*** *Weight On Bit (kN)*
***ROP :*** *Rate Of Penetration (cm)*
***FLOW :*** *Water flow (Liter Per Minute)*
***RPC :*** *The ratio of RPM/ROP (Revolution Per Centimeter)*

*All values bellow are indicative and we are doing our best to produce versatile tools that give the best meters output at cheapest running cost. A professional diamond driller will adjust all these parameters matching the drilling condition.*

## GLOBAL OPERATING PARAMETERS

| BITS | ROTATION (RPM) | FLOW (LPM) | WOB (kN) |
|---|---|---|---|
| BWL | 800-1500 | 25-40 | 15-30 |
| NWL | 700-1200 | 30-55 | 20-40 |
| HWL | 600-1000 | 135-65 | 30-50 |
| PWL | 500-700 | 45-80 | 45-75 |

## ROTATION

*Rotation speed should be adjusted considering*

***# diameter of bit***
***# depth of drilling***
***# vibration of string rod***
***# ROP***
***# deviation issue***

*RPM too high with low ROP can cause polishing of the bit*
*RPM too low may result in faster wear of the bit*

## WATER FLOW

*Fluid flow has very important different functions :*

***# removing cutting***
***# lubricating the bit and rods***
***# cooling the bit***

## ROP

*The rate of penetration is the key parameter during drilling.*
*It results from the right combination of WOB and RPM for a rock type and condition.*

*Well -maintained ROP ensures :*

***# best cost per meter*** ***# smooth operation***
***# best bit life*** ***# sharp bit***

## WOB

*The weight on bit depends on rock and bit type, RPM, ROP and water flow.*
*Try to maintain a constant ROP by increasing or reducing the WOB. Always adjust the hold back pressure while adding rods.*

***# best cost per meter*** ***# smooth operation***
***# best bit life*** ***# sharp bit***

| ***WOB*** | |
|---|---|
| ***Too low*** | ***Too high*** |
| *Premature wear of bit* | *Low productivity* |
| *Rod and barrel damage* | *Risk of polishing the bit* |
| *Hole deviation* | *Low bit life* |
| *Premature wear of rig* | |

## RPC

*Revolution Per Centimeter is an indicator coming from the division RPM / ROP*
*Example of an NWL bit turning @1200 rpm and run @15 cm/min*

*RPC = 1200 / 15 = 80*

***Maintain the RPC within 50 < RPC < 100***

## SHARPENING TECHNIQUES

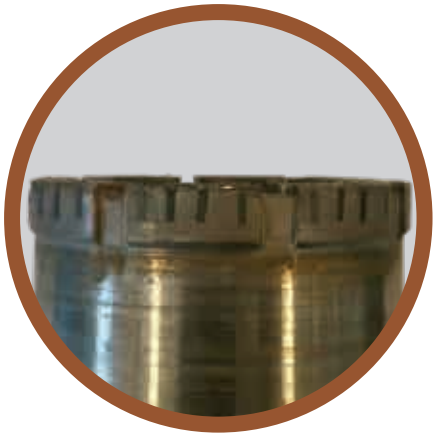
***# Add WOB until torque rises, once ROP increases, reduce WOB to maintain desired ROP***
***# Reduce RPM by half, wait until torque and ROP rise. Return speed to normal operation.***
***# Reduce the water flow***

!

*DO*
*# respect safety rules*
*# wear proper protection*
*# check rod thread from leaks (rod gage)*
*# start fluid circulation before running the bit to bottom*
*# Starting a new bit, don't go full ROP until you drill 20 cm*

*DON'T*
*# drop the bit*
*# start rotation with WOB*
*# collar the hole with new bit*
*# put wrench on diamond portion*

# MATRIX WEAR PATTERN



## OPTIMUM WEAR :

| WHY / TO DO |
|---|
| # Feel sharp |
| # Comet tails |
| # Wear is even |
| # OD / ID within gage |

## OD GAGE LOSS :

| WHY / TO DO |
|---|
| # Vibration |
| # RPM too high |
| # Reaming the hole |
| # Fluid flow too low |

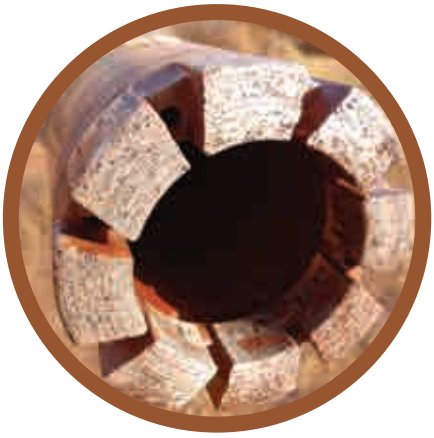
## ID GAGE LOSS :

| WHY / TO DO |
|---|
| # WOB too high |
| # Re-drilling a lost core => check core lifter |
| # Matrix too soft => select lower series |
| # Fluid flow too low |

## BURNT :

| WHY / TO DO |
|---|
| # Drilled without water flow |
| # Check rod's leak |
| # Control core lifter case position in bit |
| # Check your pump |

# MATRIX WEAR PATTERN



## POLISHED :

| WHY / TO DO |
| --- |
| # Matrix to hard => take higher series |
| # Water flow too high |
| # WOB too low |

## OUTSIDE WEAR :

| WHY / TO DO |
| --- |
| # Fractured formation |
| # Reamer undersize |
| # Not enough mud flow |
| # Check source of vibration (rods, reamer) |
| # Change RPM |

## INSIDE WEAR :

| WHY / TO DO |
| --- |
| # WOB too high => increase RPM |
| # Re-drilling a lost core => check core lifter |
| # Broken formation |

# GROUP PRODUCTS

***Complete Range of Rock Drilling Tools:***

- *Down the Hole Tools*
- *Top Hammer Tools*
- *Exploration Tools*
- *Breaker Tools*
- *Horizontal Directional Drilling Tools*

# GROUP PRODUCTS


EzyDrill

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