



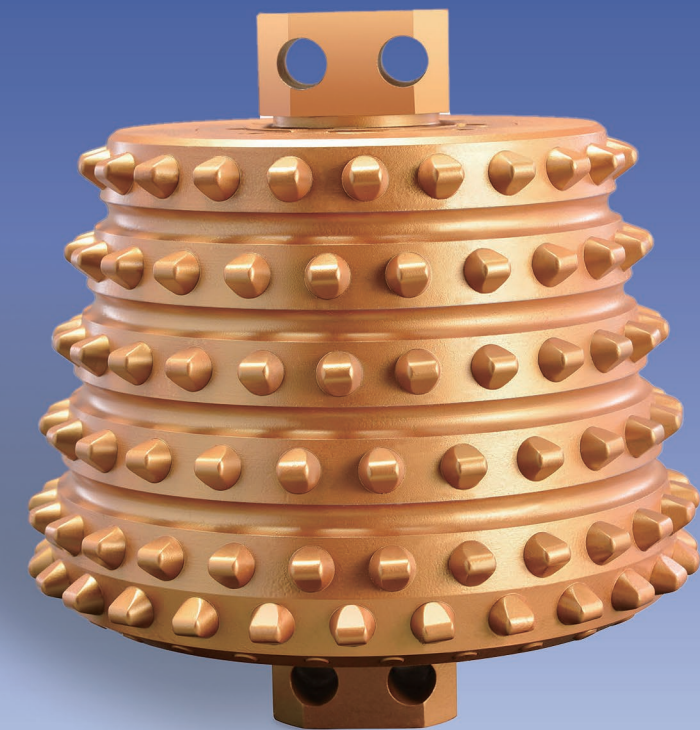
CONTACT US

Phone : +86 0512-62850656

Address : No.6, Weixi Road, Suzhou Industrial Park

Email : info@shareate.com

www.shareate.com



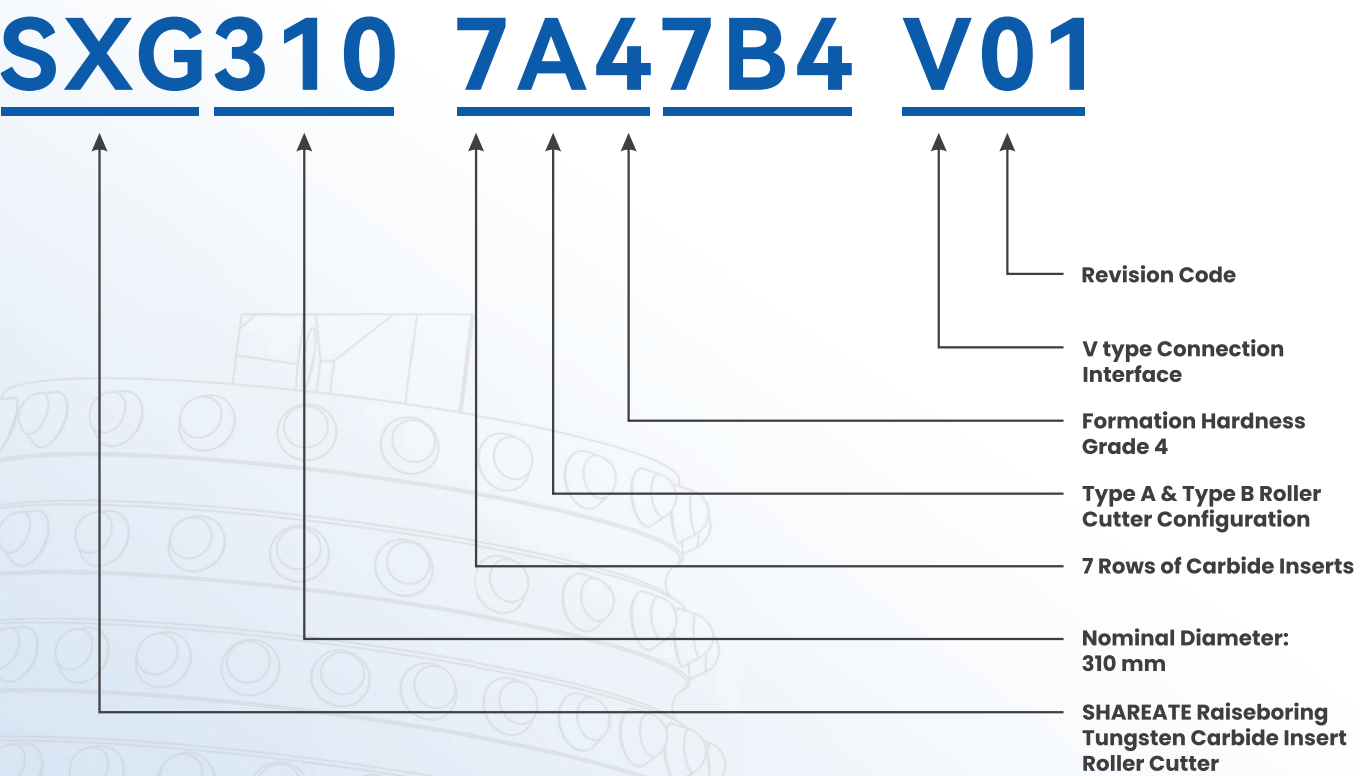
Roller Cutter Products

Shareate Tools Ltd.

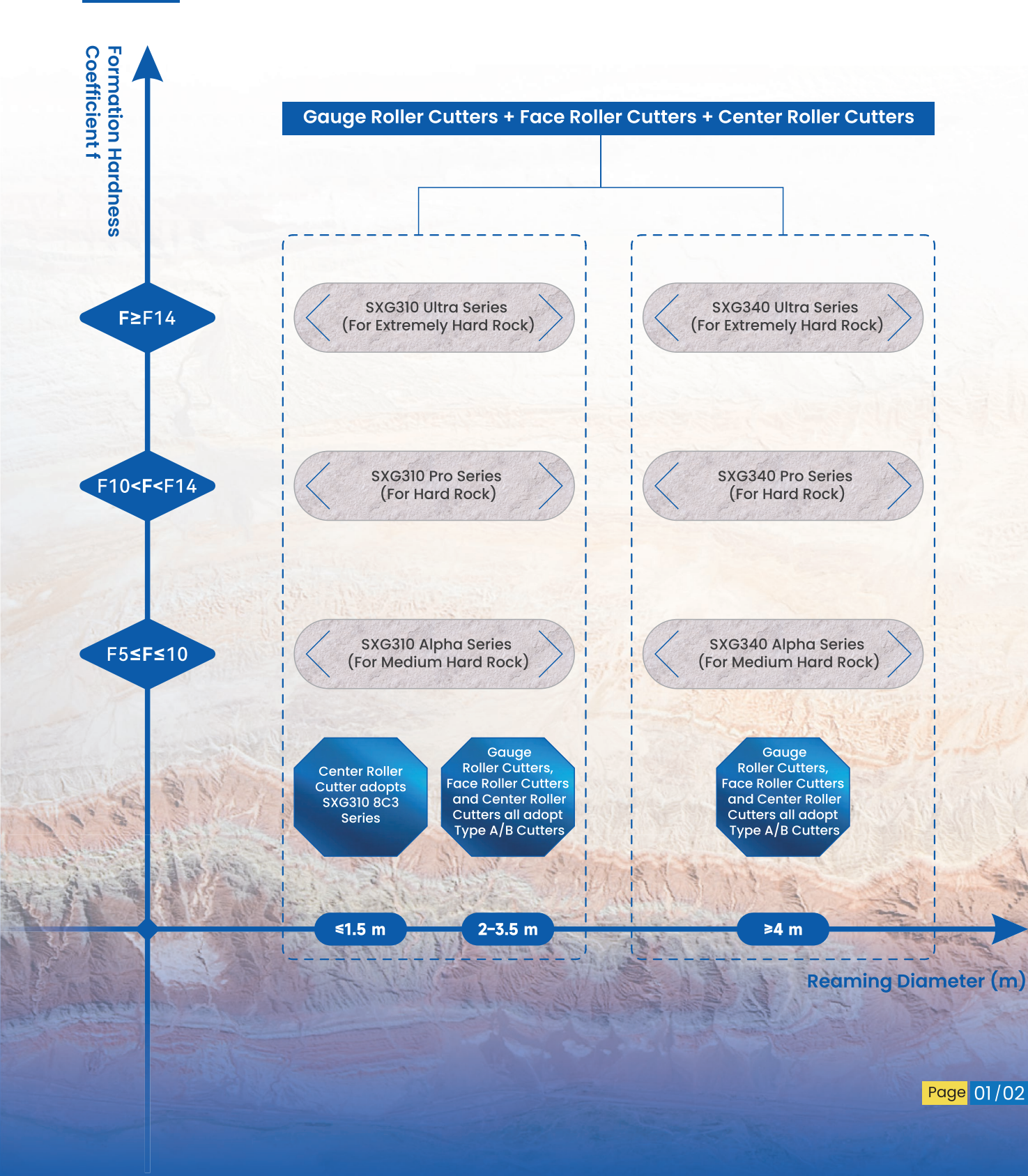
Roller Cutter Nomenclature Rules

Roller cutters are divided into two categories: tungsten carbide insert roller cutters and steel tooth roller cutters. Each model number consists of six segments: product code, diameter code (mm), number of carbide insert rows, cutter type, formation hardness grade and connection type.

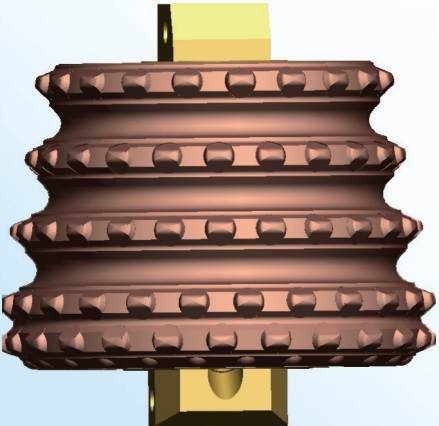
Product Code	SXG (Tungsten Carbide Insert Roller Cutter), SGG ((Steel Tooth Roller Cutter)
Diameter Code (mm)	Maximum outer diameter of roller cutter, e.g. 250, 310, 320, 340
Number of Insert Rows	Common specifications: 4, 5, 6, 7, 12 rows of carbide inserts and random insert layout
Cutter Type	A (Double row inserts on large end), B (Double row inserts on small end), C (Random insert layout), Z (Center Roller Cutter)
Formation Hardness Grade	1 – Soft Strata, 2 – Medium-Soft Strata, 3 – Medium-Hard Strata, 4 – Hard Strata, 5 – Extremely Hard Strata
Connection Type	Letter Code (S – Single Hole, D – Double Hole, R – Single & Double Hole, V – V-face Single Hole, Z – Non perforated.....) + Numeral (Revision Number, e.g. 01, 02, ...



Tungsten Carbide Insert Roller Cutter Product Spectrum Diagram



Ultra Series Roller Cutters for Extremely Hard Rock



- Product Selection** SXG5A5 + SXG5B5, customized design available
- Applicable Working Condition** Rock hardness $f \geq 14$ (For cutterheads with reaming diameter over 3.5m, select model per product selection spectrum)
- Selection Features** Suitable for extremely hard rock and highly abrasive strata

Bearing Structure

Seal Structure

Cutting Structure

Ball lock bearing with high load capacity, built in pressure balance system

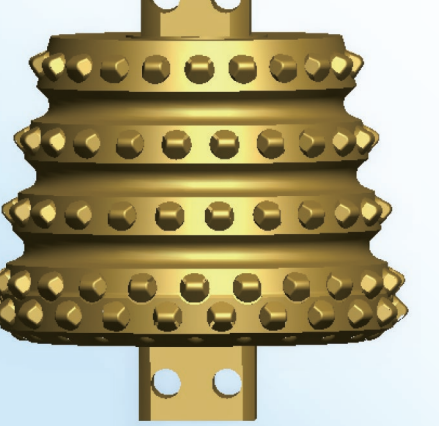
Double metal sealed bearing assembly

Customized carbide insert with special strengthened treatment and cutting structure for hard to extremely hard or highly abrasive strata, scientific full ring layout of Type A+B roller cutters (double row at large end + double row at small end). On the premise of effectively mitigating carbide insert breakage, it improves carbide insert wear resistance and thus penetration efficiency, widely applicable to hard to extremely hard rock formations.

Recommended Operating Parameters

No.	Operating Parameter	SXG5A5	SXG5B5
1	Applicable Rock Hardness	$f \geq 14$	$f \geq 14$
2	Recommended Single Roller Cutter Thrust Force	160KN~240KN	160KN~240KN
3	Maximum Allowable Thrust Force Per Cutter	270KN	270KN
4	Recommended Cutterhead Rotation Speed	4~8 RPM	4~8 RPM
5	Maximum Cutting Linear Speed	75M/min	75M/min

Pro Series Roller Cutters for Hard Rock



- Product Selection** SXG5A4 + SXG5B4, customized design available
- Applicable Working Condition** Rock hardness $10 < f < 14$, or cutterhead with reaming diameter $\phi 1.5 \sim \phi 3.0m$
- Selection Features** Suitable for medium hard to hard rock strata (conventional homogeneous strata)

Bearing Structure

Seal Structure

Cutting Structure

Ball lock bearing with built in pressure balance system

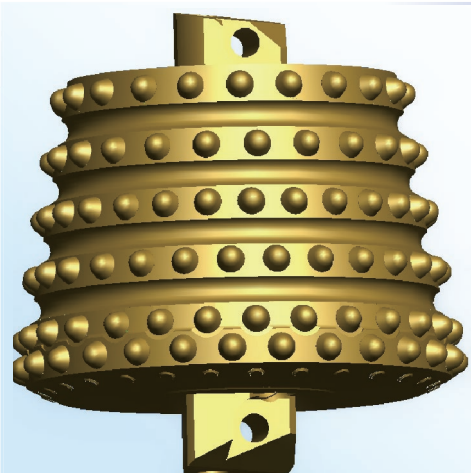
Double metal sealed bearing assembly

Customized carbide insert and cutting structure for medium hard to hard strata, scientific full ring layout of Type A+B roller cutters (double row at large end + double row at small end), which improves penetration efficiency, widely applicable to medium hard to hard rock formations.

Recommended Operating Parameters

No.	Operating Parameter	SXG5A4	SXG5B4
1	Applicable Rock Hardness	$10 < f < 14$	$10 < f < 14$
2	Recommended Single Roller Cutter Thrust Force	100KN~180KN	100KN~180KN
3	Maximum Allowable Thrust Force Per Cutter	200KN	200KN
4	Recommended Cutterhead Rotation Speed	8~15 RPM	8~15 RPM
5	Maximum Cutting Linear Speed	90 m/min	90 m/min

Alpha Series Roller Cutters for Medium-Hard Rock



◆ **Product Selection**

SXG6A3 + SXG6B3, customized design available

◆ **Applicable Working Condition**

Rock hardness $5 \leq f \leq 10$, cutterhead with reaming diameter $\varphi 1.5 \sim \varphi 3.0\text{m}$

◆ **Selection Features**

Suitable for soft to medium hard strata

Bearing Structure

Ball lock bearing with built in pressure balance system

Seal Structure

Double metal sealed bearing assembly

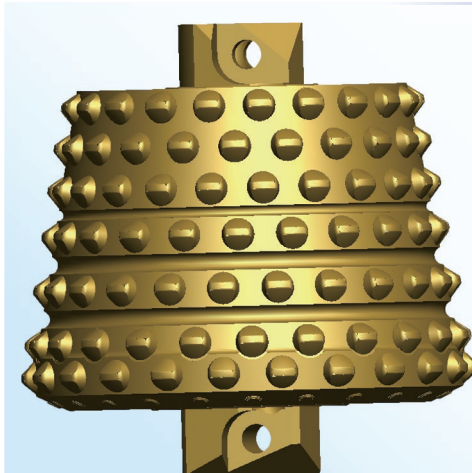
Cutting Structure

Customized carbide insert and cutting structure for soft to medium hard strata, scientific full ring layout of Type A+B roller cutters (double row at large end + double row at small end), which reduces carbide insert breakage risk and improves penetration efficiency, widely applicable to soft to medium hard rock formations.

Recommended Operating Parameters

No.	Operating Parameter	SXG6A3	SXG6B3
1	Applicable Rock Hardness	$5 \leq f \leq 10$	$5 \leq f \leq 10$
2	Recommended Single Roller Cutter Thrust Force	80KN~150KN	80KN~150KN
3	Maximum Allowable Thrust Force Per Cutter	180KN	180KN
4	Recommended Cutterhead Rotation Speed	10~18 RPM	10~18 RPM
5	Maximum Cutting Linear Speed	90 M/min	90 M/min

Recommended Cases for Complex Formations



◆ **Product Selection**

SXG7A47B4, customized design available

◆ **Applicable Working Condition**

Rock hardness $f \geq 12$, cutterhead with reaming diameter $\geq \varphi 3.5\text{m}$

◆ **Selection Features**

Multi row insert structure suitable for hard strata, high quartz content and large diameter cutterheads

Bearing Structure

Ball lock bearing with built in pressure balance system

Seal Structure

Double metal sealed bearing assembly

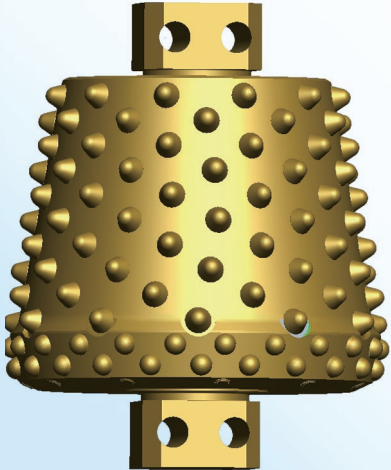
Cutting Structure

6 row and 7 row multi row carbide insert layout design, scientific full ring alternating layout of Type A+B roller cutters (double row at large end + double row at small end), which reduces carbide insert breakage risk and improves penetration efficiency, widely applicable to medium hard to hard rock formations.

Recommended Operating Parameters

No.	Operating Parameter	SXG7A4	SXG7B4
1	Applicable Rock Hardness	$f \geq 12$	$f \geq 12$
2	Recommended Single Roller Cutter Thrust Force	160KN~240KN	160KN~240KN
3	Maximum Allowable Thrust Force Per Cutter	270KN	270KN
4	Recommended Cutterhead Rotation Speed	4~8 RPM	4~8 RPM
5	Maximum Cutting Linear Speed	90 M/min	90 M/min

Recommended Selection of Center Cutters



Product Selection SXG12C4, customized design available

Applicable Working Condition Raiseboring cutterhead equipped with only one center roller cutter

Selection Features Widely applicable to raiseboring cutterheads with one center cutter installed; It is also widely used in reverse circulation engineering bridge cutters and double wheel milling cutters.

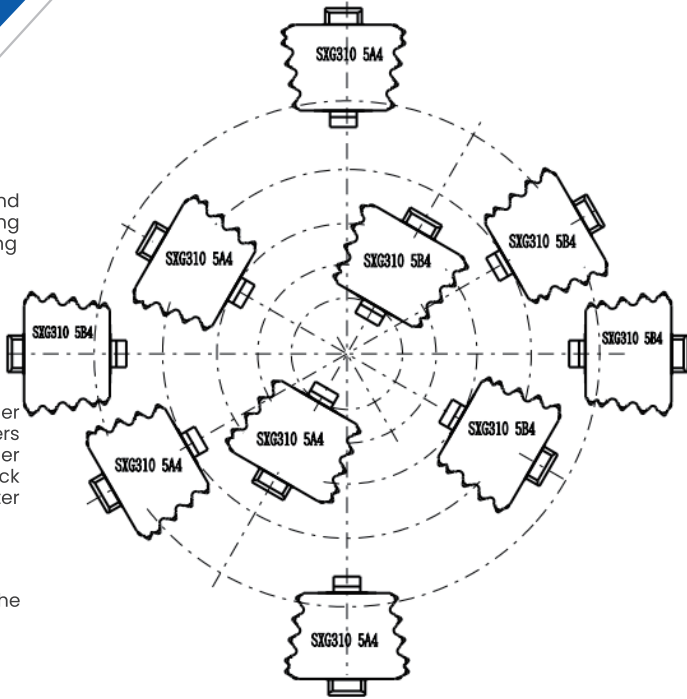
Bearing Structure	Ball lock bearing with built in pressure balance system
Seal Structure	Double metal sealed bearing assembly
Cutting Structure	Multi row random carbide insert layout with optimized full ring arrangement, which reduces carbide insert breakage risk and improves penetration efficiency, widely applicable to cutterheads fitted with a single center roller cutter.

Recommended Cutter Layout for Typical Cutterheads (I)

Installation Drawing of Roller Cutters for 1.5m Raiseboring Cutterhead

Installation Instructions

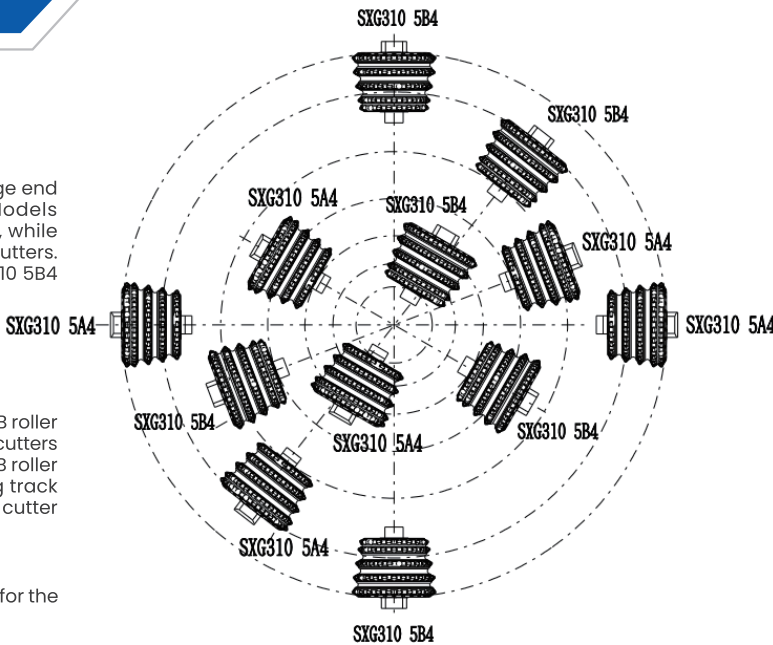
- The roller cutter model number is printed on the large end of each roller cutter and outer package. Models containing letter A are Type A Roller Cutters, and models containing letter B are Type B Roller Cutters.
□□SXG310 5A4□A□□
SXG310 5B4□B□□
- Layout specification for alternating Type A and Type B roller cutters: On the outer gauge cutters, two Type A roller cutters shall be installed oppositely, together with two Type B roller cutters installed oppositely. Each remaining cutting track shall be fitted with one Type A and one Type B roller cutter installed oppositely. Misarrangement is forbidden.
- The cutter layout illustrated above is recommended for the 1.5 m raiseboring cutterhead.



Installation Drawing of Roller Cutters for 2m Raiseboring Cutterhead

Installation Instructions

- The roller cutter model number is printed on the large end of each roller cutter and its outer package. Models containing letter A represent Type A Roller Cutters, while those marked with letter B represent Type B Roller Cutters. Example: SXG310 5A4 is a Type A Roller Cutter; SXG310 5B4 is a Type B Roller Cutter.
□□SXG310 5A4□A□□
SXG310 5B4□B□□
- Layout specification for alternating Type A and Type B roller cutters: On the outer gauge cutters, two Type A roller cutters shall be installed oppositely, together with two Type B roller cutters installed oppositely. Each remaining cutting track shall be fitted with one Type A and one Type B roller cutter installed oppositely. Misarrangement is forbidden.
- The cutter layout illustrated above is recommended for the 2 m raiseboring cutterhead.



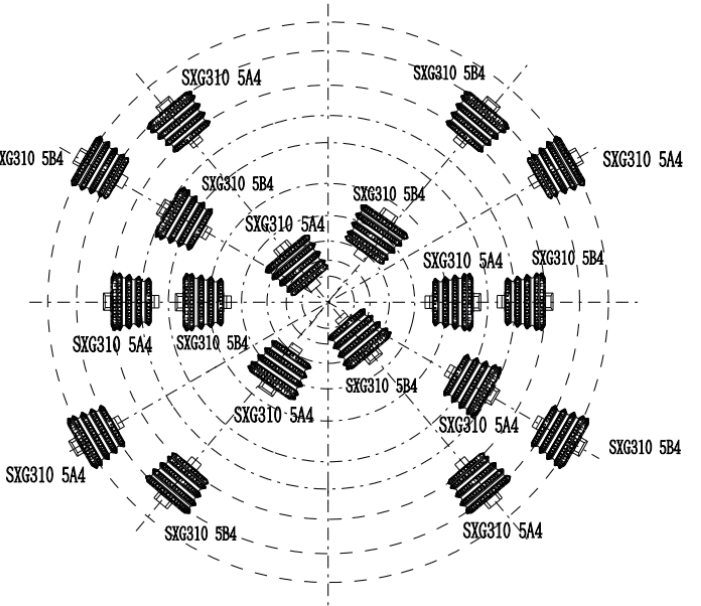


Recommended Cutter Layout for Typical Cutterheads (II)

Installation Drawing of Roller Cutters for 3m Raiseboring Cutterhead

Installation Instructions

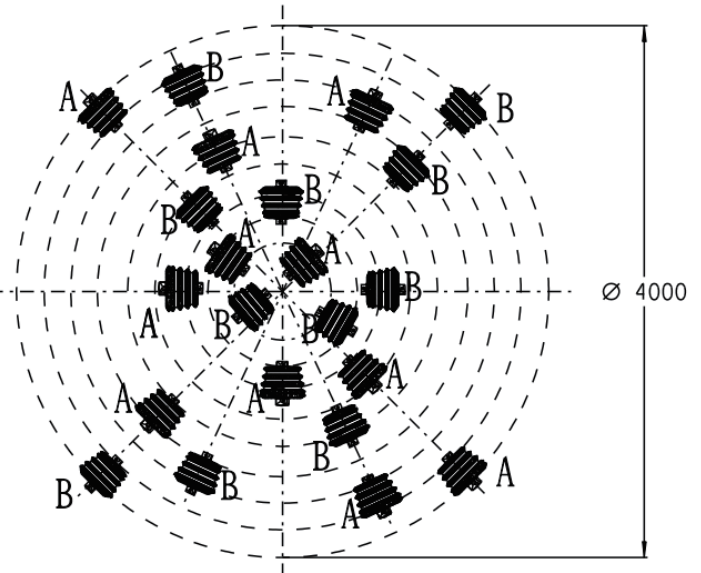
- The roller cutter model number is printed on the large end of each roller cutter and outer package. Models containing letter A are Type A Roller Cutters, and models containing letter B are Type B Roller Cutters.
□ □ SXG310 5A4 □ A □ □
□ □ SXG310 5B4 □ B □ □
- Layout specification for alternating Type A and Type B roller cutters. To guarantee cutting performance, two Type A Roller Cutters and two Type B Roller Cutters shall be installed oppositely on outer gauge cutters. Each remaining cutting track shall be fitted with one Type A and one Type B roller cutter. Misarrangement is forbidden.
- The cutter layout illustrated above is recommended for the 3 m raiseboring cutterhead.



Installation Drawing of Roller Cutters for 4m Raiseboring Cutterhead

Installation Instructions

- The recommended cutter layout shown in the right drawing applies to the 4 m raiseboring cutterhead. All gauge roller cutters, face roller cutters and center roller cutters shall adopt alternating Type A / Type B layout.
- Layout specification for alternating Type A and Type B roller cutters: On the outer gauge cutters, two Type A Roller Cutters shall be installed oppositely, together with two Type B Roller Cutters installed oppositely. Each remaining cutting track shall be fitted with one Type A and one Type B roller cutter installed oppositely. Misarrangement is forbidden.
- The roller cutter model number is printed on the large end of each roller cutter and its outer package. Models containing letter A represent Type A Roller Cutters, while those marked with letter B represent Type B Roller Cutters. Example: SXG340 5A3 is a Type A Roller Cutter: double inserts on large end; SXG340 5B3 is a Type B Roller Cutter: double inserts on small end.
- Roller cutters from different manufacturers, different specifications and models, as well as new and worn roller cutters shall not be mixed for assembly and operation.

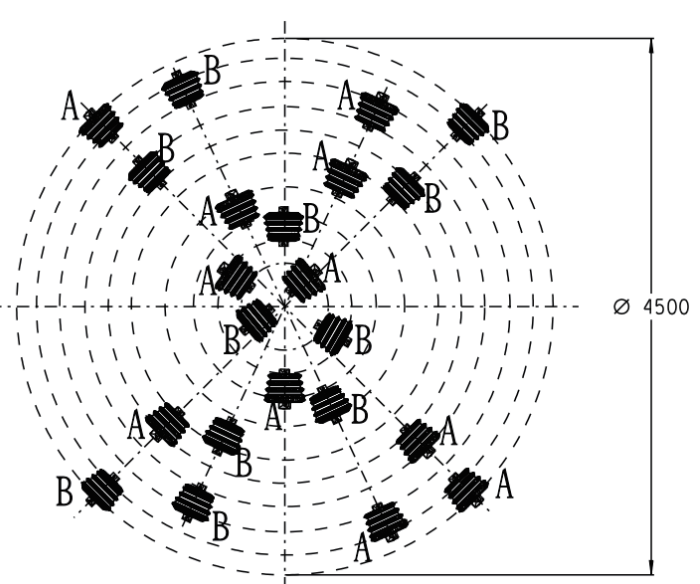


Recommended Cutter Layout for Typical Cutterheads (III)

Installation Drawing of Roller Cutters for 4.5m Raiseboring Cutterhead

Installation Instructions

- The recommended cutter layout shown in the right drawing applies to the 4.5 m raiseboring cutterhead. All gauge roller cutters, face roller cutters and center roller cutters shall adopt alternating Type A / Type B layout.
- Layout specification for alternating Type A and Type B roller cutters: On the outer gauge cutters, two Type A Roller Cutters shall be installed oppositely, together with two Type B Roller Cutters installed oppositely. Each remaining cutting track shall be fitted with one Type A and one Type B roller cutter installed oppositely. Misarrangement is forbidden.
- The roller cutter model number is printed on the large end of each roller cutter and its outer package. Models containing letter A represent Type A Roller Cutters, while those marked with letter B represent Type B Roller Cutters. Example: SXG340 5A3 is a Type A Roller Cutter: double inserts on large end; SXG340 5B3 is a Type B Roller Cutter: double inserts on small end.
- Roller cutters from different manufacturers, different specifications and models, as well as new and worn roller cutters shall not be mixed for assembly and operation.



Cutter Layout Precautions:

- The cutter layout schemes recommended herein are designed for mainstream standard cutterheads on the market.
- For cutterheads with different structures, the cutter layout shall be adjusted according to actual requirements.
- The cutter layout shall be adjusted according to actual requirements for different strata and raiseboring rigs.



If you have any questions, please contact our technical personnel for reasonable cutter layout recommendations tailored to your actual demands!

