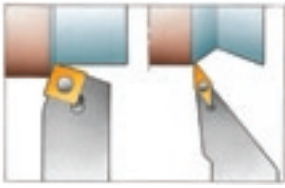


Toolholder selection



The **clamping system** of the insert in the toolholder should be selected first. Toolholders have been designed to provide optimum performance in different applications and usually over a broad area. The type of operation and, to some extent, size of workpiece determines the selection of toolholding system. Roughing operations on large workpieces make considerably different demands to that of finishing of small components.

As a basis the selection of clamping system should be taken from with the table on the following pages. It is impossible to pin-point every type of application, especially as the systems overlap at some stage. However, the general purpose is indicated for each system. An over-riding recommendation is to use the more modern systems:

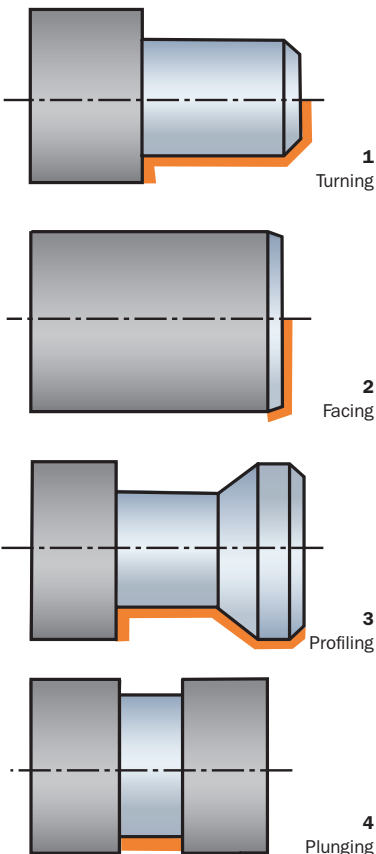
CoroTurn RC and CoroTurn 107



Secure insert and toolholder clamping is an essential factor in turning for stability.



The effective entering angle (κ_1) should also be considered for satisfactory machining when the operation involves copying or profiling. The maximum in-copying angle (β) is recommended for each tool type and treated more thoroughly in the part on Copying.



When the edge clamping system is established, the **toolholder size and type** should be established. The selection is influenced by feed directions, size of cuts, workpiece and toolholding in machines as well as accessibility required. The shape of the workpiece is decisive if contour turning is involved.

Composite operations should be divided into basic cuts for assessment of which toolholder type is most suitable: longitudinal turning (1), facing (2), profiling (3) and plunging (4). There is also contouring involving round shapes but this can be seen as being similar to profiling.

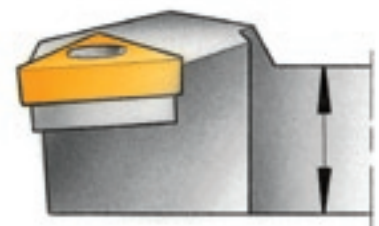
Toolholder types are defined by the entering angle and the point angle the shape of the insert used. The selection process at this stage involves cutting forces, edge strength and accessibility of tool.

The effective entering angle (κ_1) should also be considered for satisfactory machining when the operation involves copying or profiling. There is a maximum in-copying angle (β) recommended for each tool type.

This information should be combined with general insert shape recommendations and that of the influence of cutting forces.

The guiding rule is to select the largest toolholder size (h) possible for the machine. This is in order to reduce the tool overhang ratio and to provide the most rigid base for the edge.

The **toolholder size** should then also be coordinated with the subsequent selection of insert size, where the effective cutting edge length is determined. Generally, the smallest entering angle that the operations will allow should be selected. This is in accordance with the advantages discussed on the effect of the entering angle.



Tool selection for internal turning

- Select T-Max P or CoroTurn RC boring bars for large hole diameters

Select CoroTurn 107 boring bars for small and medium sized holes with positive inserts giving smaller cutting forces

- Select CoroTurn 111 boring bars as problem-solvers for small dimensions, long overhangs or when using tuned boring bars.

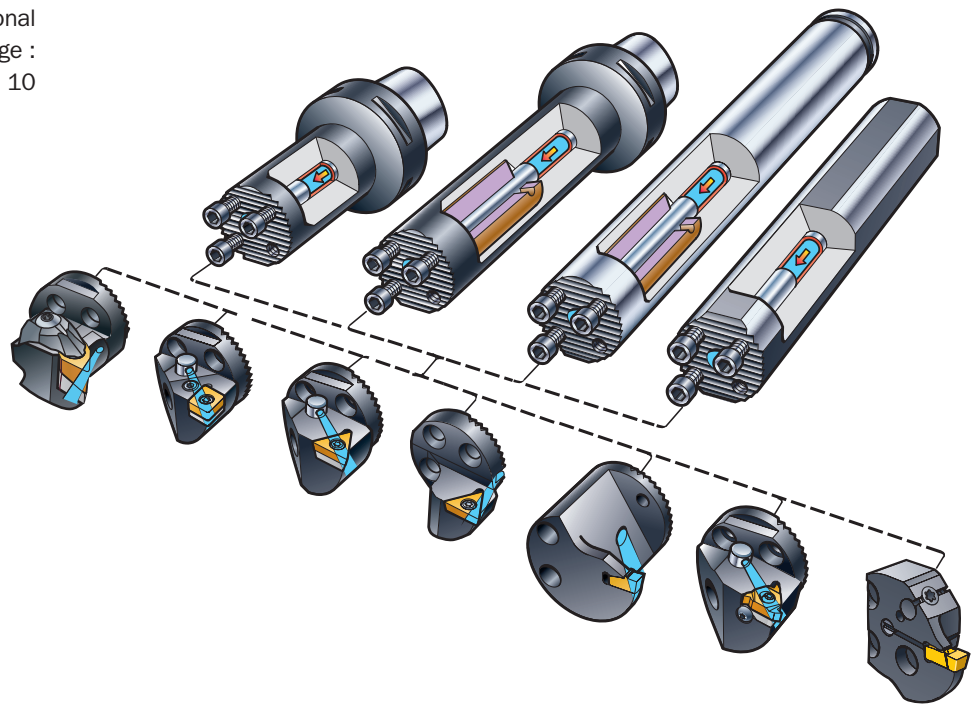
- CoroTurn XS for smaller hole diameters

- Consider the use of boring bars with exchangeable cutting heads type CoroTurn SL (570), as an efficient modular system for most types of machining applications, where Coromant Capto or conventional tool holding are options. Diameter range : 10 – 100 mm, overhangs of up to 10 times the diameter with tuned bars.

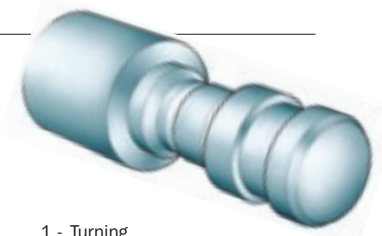
For large diameter hole (minimum diameter 100 mm), CoroTurn SL with quick-changing function reduces tool changing times and has a radial adjustable setting for the cutting edge (f1 dimension). Adaptors provide broad programme of 40 mm diameter tool range within CoroTurn SL range, 580-system range and for shank tool solutions

- For large diameter-boring (often performed in flat-bed machines) consider the use of tuned boring bars and adapt-

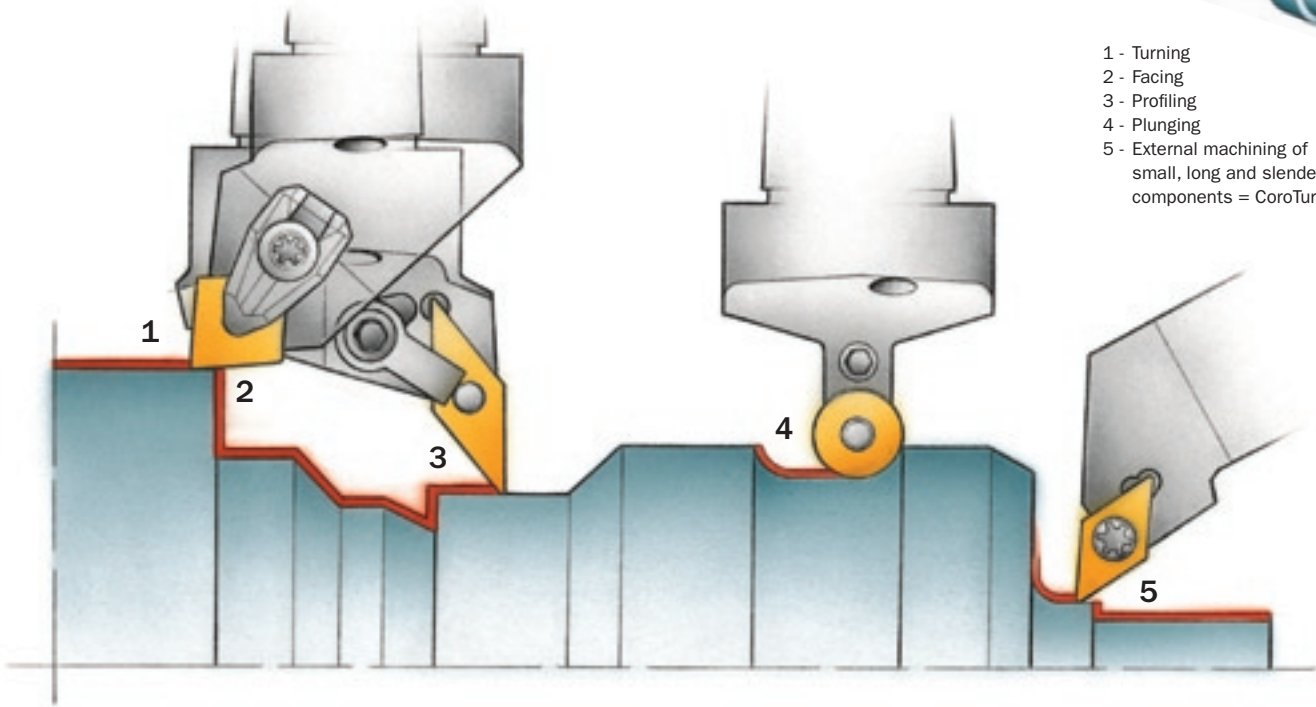
ers using the 580-coupling. Tuned bars ranging from 100 to 300 mm in diameter for overhangs of up to 10 times the diameter with Coromant Capto, CoroTurn SL (570) cutting heads and square shank tools.



Toolholders for external turning



- 1 - Turning
- 2 - Facing
- 3 - Profiling
- 4 - Plunging
- 5 - External machining of small, long and slender components = CoroTurn 107

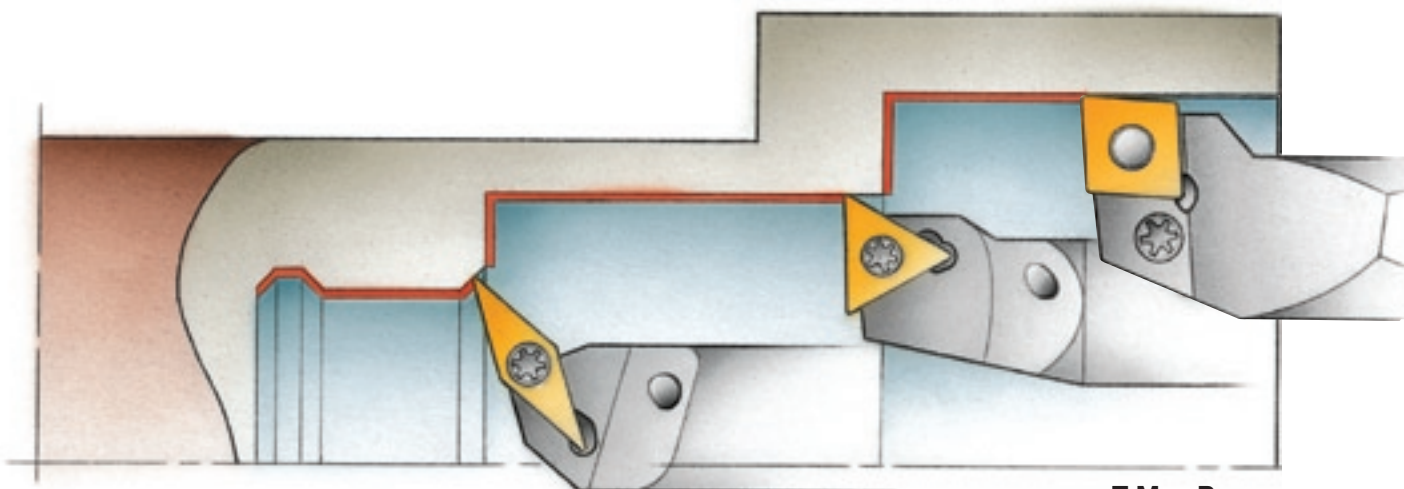
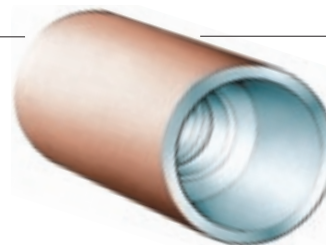


| | Negative inserts | | | Positive inserts | Ceramic and CBN inserts | |
|------------------------|---------------------------------|------------------|------------------------|------------------------|-------------------------|----------------------|
| | CoroTurn RC | T-MAX P | | CoroTurn 107 | CoroTurn RC | T-MAX |
| Tooling system | | | | | | |
| Clamping system | Rigid clamp design | Lever design | Wedge clamp design | Screw clamp design | Rigid clamp design | Top clamp design |
| | | | | | | |
| Operation | Longitudinal turning/facing | ●● | ● | ● | ●● | ● |
| | Profiling | ●● | ● | ●● | ●● | ● |
| | Facing | ●● | ● | ● | ●● | ● |
| | Plunging | | ● | ●● | | ●● |

●● = Recommended toolholder system

● = Alternative

Toolholders for internal turning



CoroTurn XS

Internal machining of extra small hole diameters, starting at 1 mm diameters (Small part machining)



CoroTurn 107

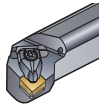
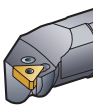
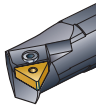

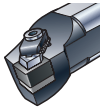





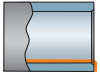
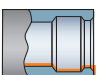
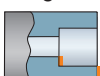
First choice for internal machining of small and medium holes from 8 mm diameter.

CoroTurn 111

For optimization of internal turning operations requiring small cutting forces when machining with long tool overhangs.

T-Max P

Internal turning of holes from 20 mm in diameter with short tool overhangs and stable conditions.

| | Negative inserts | | | Positive inserts | | Ceramic and CBN inserts | |
|------------------------|---|---|---|---|---|-------------------------|---|
| | CoroTurn RC | T-MAX P | | CoroTurn 107 | CoroTurn 111 | T-MAX | |
| Tooling system | | | | | | | |
| Clamping system |  Rigid clamp design |  Lever clamp design |  Wedge clamp design |  Screw clamp design |  Top clamp design | | |
| |  |  |  |  |  | | |
| Operation | Longitudinal turning/ facing  | ●● | ●● | ● | ●● | ●● | ● |
| | Profiling  | ● | ● | | ●● | ●● | |
| | Facing  | ● | ● | | ●● | ● | ● |

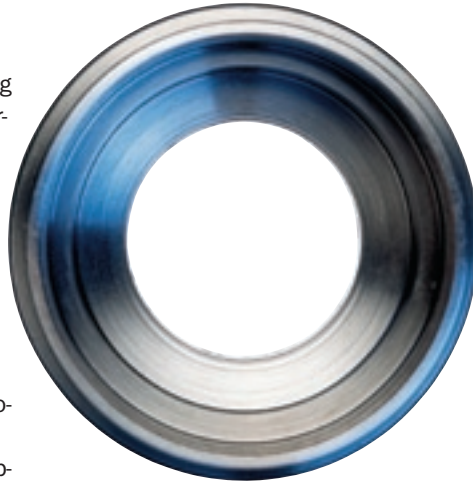
●● = Recommended toolholder system

● = Alternative

Tools for Internal Turning

CoroTurn 107 and CoroTurn 111 Boring bars

Pretuned and easy to use cylindrical boring bars with carbide shaft. Optimum performance in a split sleeve holder. Shank diameter 10 and 12 mm for minimum hole $\varnothing 13$ and $\varnothing 16$ mm, respectively. Recommended tool overhang from 6-10 times the bar diameter. Integrated tip-seat pocket designed for T or D style inserts.



CoroTurn SL Boring bars

Pretuned and easy to use cylindrical boring bars.

Coolant through the centre and SL coupling in front.

Optimum performance when combined with a split sleeve holder.

Designed for exchangeable SL cutting heads.

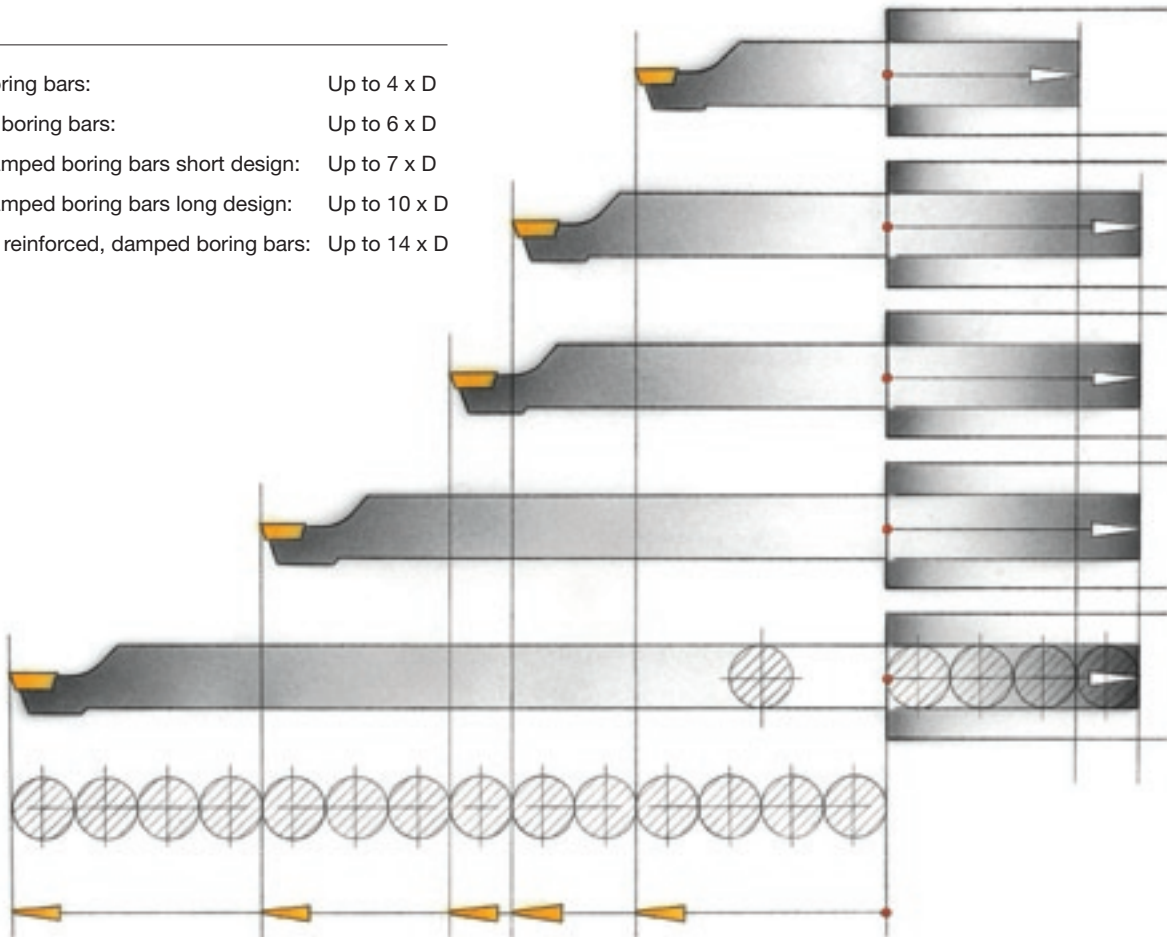
Recommended tool overhang from 4-10 times the bar diameter.

centre and SL coupling in front. Carbide reinforced for increased static stiffness (three times the stiffness of steel). Optimum performance when combined with a split sleeve holder. Recommended tool overhang from 10-14 times the bar diameter.

CoroTurn SL Carbide Reinforced Boring bars

Pretuned and easy to use carbide reinforced cylindrical boring bars. Coolant through the

- | | |
|--|--------------|
| 1. Steel boring bars: | Up to 4 x D |
| 2. Carbide boring bars: | Up to 6 x D |
| 3. Steel damped boring bars short design: | Up to 7 x D |
| 4. Steel damped boring bars long design: | Up to 10 x D |
| 5. Carbide reinforced, damped boring bars: | Up to 14 x D |



CoroTurn SL Coromant Capto Boring bars

Steel and Silent Tools are easy to use with Coromant Capto boring bars. Coolant through the centre and SL coupling in front. Rigid clamping and very short set up time. Sizes C3-C8 for back end coupling.

CoroTurn SL quick change Boring bars

BAR DIAM: 80-100mm

Pretuned and easy to use cylindrical boring bars. Coolant through the centre and SL quick change coupling at front end. Optimum performance when combined with a split sleeve holder. Designed for exchangeable SL quick change cutting heads or 40 mm diameter SL cutting heads. Recommended tool overhang up to 10 times the bar diameter.

For flat and slant bed machines.

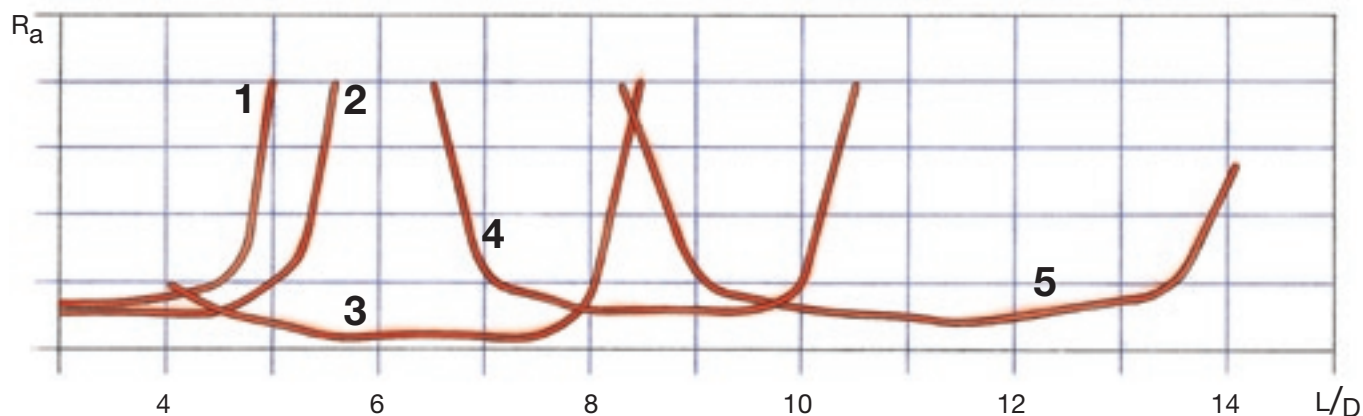
580 Boring bars

Tuned cylindrical boring bars. Coolant through the centre and 580 coupling at front end. Shank diameter range : 120 - 300 mm. Recommended tool overhang 5-10 times the bar diameter. Especially suitable for flat bed machines. Special solutions available. Reduction adapter at front end makes it possible to use a wide range of cutting units, even the CoroTurn SL quick change system.



1. Solid steel bar
2. Carbide bar
3. Short, damped bar
4. Long, damped bar
5. Extra long, damped bar

Surface finish (microns)



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