

GENERAL TURNING

How to choose your turning tool

1 Overview of tooling alternatives

Choose Coromant Capto® or shank tool, depending on clamping possibilities in turret/spindle. See chapter G, page G5

2 Identify your operation, tooling and clamping system

Define your type of operation

- Longitudinal turning
- Profiling
- Facing
- Plunging

Define tooling systems

Negative: - CoroTurn® RC
- T-Max P

Positive: - CoroTurn® 107
- CoroTurn® 111

3 Select your insert

- Shape
- Size
- Geometry
- Type of operation
- Grade

4 Cutting data

Starting values for cutting speeds and feeds are given on the insert dispensers.



For more technical information, see our Metalcutting Technical guide

Symbols for page references:



External machining



Coromant Capto® unit



Inserts



How to choose tool, overview



Internal machining



Conventional holder



Spare parts/accessories



Grade descriptions



Build-in tools



Conventional bar



Sleeves



Cutting data



Tooling systems



CoroTurn® SL adapters

GENERAL TURNING

Choosing tools and inserts

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Inserts

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Build-in tools

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Spare parts

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Cutting data

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For Heavy turning tools see our website www.coromant.sandvik.com

For technical information see our Metal Cutting
Technical guide

External machining

CoroTurn® RC

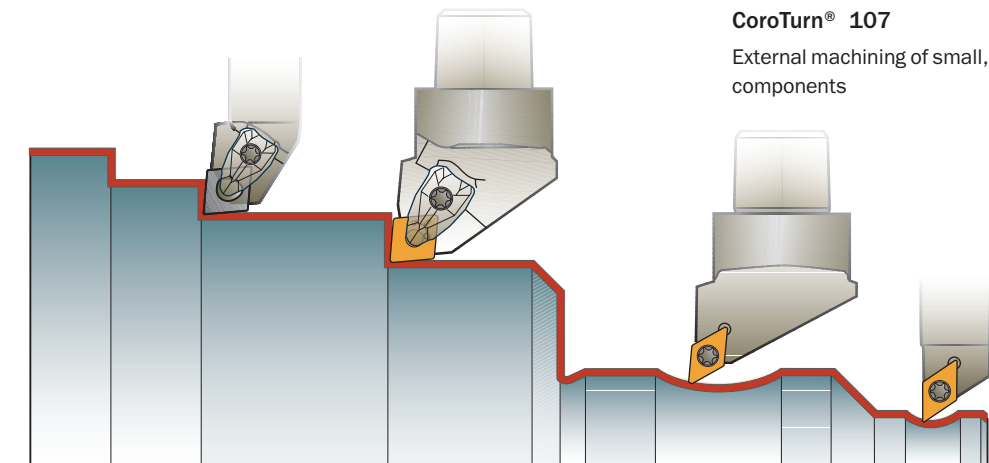
External machining, from roughing to finishing

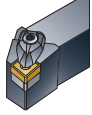
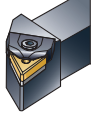
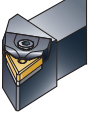
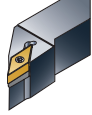
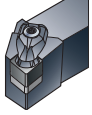
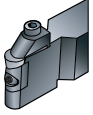






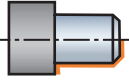
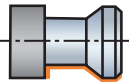


CoroTurn® 107

External machining of small, long and slender components

General points to consider

1. Use an entering angle of less than 90°, if possible, to reduce impact and forces.
2. First recommendation is to use Coromant Capto® cutting units.
3. When using conventional tools, use of the largest toolholder shank possible provides maximum stability.



Tooling system	Negative basic-shape inserts			Positive basic-shape inserts	Ceramic and CBN inserts	
	CoroTurn® RC	T-Max P		CoroTurn® 107	CoroTurn® RC	T-Max®
Coromant Capto® Shank holder	A85 A98	A93 A106	A96 A113	A118 A124	A133 A141	A139 A147
	 Rigid clamp design	 Lever design	 Wedge clamp design	 Screw clamp design	 Rigid clamp design	 Top clamp design
						
Longitudinal turning/ facing	• •	•	•	•	• •	•
						
Profiling	• •	•	•	• •	• •	•
						
Facing	• •	•	•	•	• •	•
						
Plunging		•		• •		• •
						

• • = Recommended tooling system

• = Alternative tooling system

External machining

Choosing insert shape, size, nose radius, geometry and grade

Insert shape depending on operation

The insert shape should be selected to the required entering angle and the accessibility or versatility required of the tool.

The largest suitable point angle on the insert should be selected for strength and economy

Insert size

For selecting insert size, see page A8.

Insert geometries

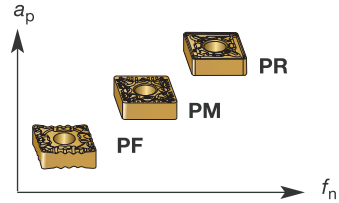
Dedicated for:

- Different feed and depth of cut areas
- Different work piece materials

See page A19 or for more detailed information see our Metalcutting Technical guide.

Practical tips when selecting geometry

- The Wiper geometry gives the best surface finish quality.
- Select the largest possible nose radius to obtain a strong cutting edge.
- Select a smaller radius if there is a tendency to vibrate.



See page A18.



Insert grades

Modern productive coated and uncoated grades for all ISO material areas, see page A350.

Recommended cutting speed see page A346.

	Insert page							
Negative basic-shape inserts	A20	A25	A28	A29	A33	A38	A37	A40
T-Max P								
Positive basic-shape inserts	A42	A45	A47	A48	A49	-	A52	-
CoroTurn® 107								
Ceramic, CBN and PCD	A60	A63	A64	A65	A67	A68	A73	-
Insert shape	80° 	55° 	- 	90° 	60° 	80° 	35° 	55°
Longitudinal turning/ facing 	• •	•	•	•	•	•		•
Profiling 		• •	•		•		•	•
Facing 	•	•	•	• •	•	•		•
Plunging 			• •		•			

• • = Recommended insert shape

• = Alternative insert shape

Internal machining

CoroTurn® 107

Internal machining of small and medium hole dimensions (Ø 16 - 75 mm) and in cases of long overhang

CoroTurn® 111

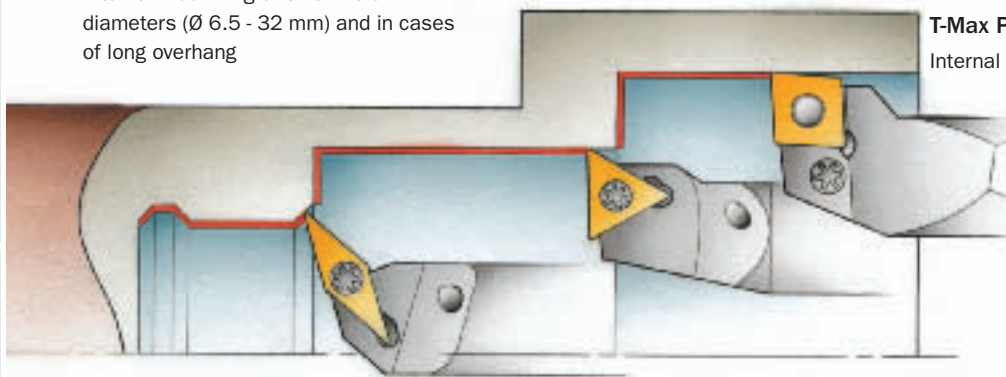
Internal machining of small hole diameters (Ø 6.5 - 32 mm) and in cases of long overhang















T-Max P

Internal machining of large bores

General points to consider

1. Use an entering angle close to 90° but never less than 75°. Reduces the impact and the forces.
2. Use the largest bar size and smallest possible bar overhang. Provides maximum stability.



Tooling system	Negative basic-shape inserts				Positive basic-shape inserts		Ceramic and CBN inserts
	CoroTurn® RC	T-Max P			CoroTurn® 107	CoroTurn® 111	T-Max®
External machining - Coromant Capto® cutting	-	A163	A166	A168	A178	-	-
Shank holder	A169	A171	A173	A175	A183	A190	A198
	 Rigid clamp design	 Lever design	 Wedge clamp design	 Screw and top clamp design	 Screw clamp design	 Screw clamp design	 Top clamp design
							
Longitudinal turning/ facing	• •	• •	•		• •	• •	•
Profiling	•	•		•	• •	• •	
Facing	•	•			• •	•	•

• • = Recommended insert shape

• = Alternative insert shape

Internal machining

Choosing insert shape, size, nose radius, geometry and grade

Insert shape depending on operation

The insert shape should be selected to the required entering angle and the accessibility or versatility required of the tool.

The largest suitable point angle on the insert should be selected for strength and economy

Insert size

For selecting insert size, see page A8.

Insert geometries

Dedicated for:

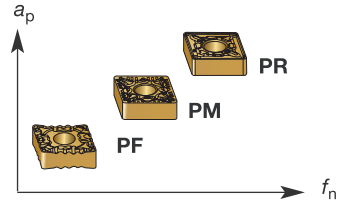
- Different feed and depth of cut areas
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Practical tips when selecting geometry

The Wiper geometry gives the best surface finish quality.

Select the largest possible nose radius to obtain a strong cutting edge. Select a smaller radius if there is a tendency to vibrate.



See page A18.



Insert grades

Modern productive coated and uncoated grades for all ISO material areas, see page A350.

Recommended cutting speed see page A346.

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CoroTurn® 107								
Positive basic-shape inserts	A54	A55	-	-	A56	A58	A57	-
CoroTurn® 111								
Ceramic, CBN and PCD	A60	A63	A64	-	A67	A68	A73	-
Insert shape	80° 	55° 	- 	90° 	60° 	80° 	35° 	55°
Longitudinal turning/ facing 	•	•	•	•	••	•		
Profiling 		••			•		•	••
Facing 	••	•	•		•	•		

•• = Recommended insert shape

• = Alternative insert shape

Selecting the insert size

Finishing

Operations at light depths of cut and feeds

$f_n = 0.1 - 0.3 \text{ mm/r}$

Medium

Operations at medium to light roughing depths of cut and feeds

$f_n = 0.2 - 0.5 \text{ mm/r}$

Roughing

Operations for huge stock removal and feeds

$f_n = 0.5 - 1.5 \text{ mm/r}$

Insert shape	Insert size	Cutting depth (a_p), mm													
		Finishing					Roughing								
		Medium													
		1	2	3	4	5	6	7	8	9	10	11	12	13	
80°	06	█	█	█											
	09	█	█	█	█										
	12	█	█	█	█	█									
	16		█	█	█	█	█								
	19		█	█	█	█	█	█							
	25			█	█	█	█	█	█						
55°	07	█	█	█											
	11	█	█	█	█										
	15	█	█	█	█	█									
R	05	█	█												
	06	█	█	█											
	08	█	█	█	█										
	10	█	█	█	█	█									
	12	█	█	█	█	█	█								
	15	█	█	█	█	█	█	█							
	16	█	█	█	█	█	█	█							
	19	█	█	█	█	█	█	█	█						
	20	█	█	█	█	█	█	█	█	█					
	25	█	█	█	█	█	█	█	█	█	█				
32	█	█	█	█	█	█	█	█	█	█	█				
90°	09	█	█	█											
	12	█	█	█	█										
	15		█	█	█	█									
	19		█	█	█	█	█								
	25			█	█	█	█	█	█						
60°	06	█	█												
	09	█	█	█											
	11	█	█	█	█										
	16	█	█	█	█	█									
	22	█	█	█	█	█	█								
	27		█	█	█	█	█	█							
33			█	█	█	█	█	█							
55°	11	█	█	█											
	16	█	█	█	█										
	22	█	█	█	█	█									
80°	02	█													
	04	█	█												
	06	█	█	█											
	08	█	█	█	█										
55°	16	█	█	█	█	█									

Note: Depth of cut on CBN and PCD inserts determined by tip size. See ordering page for details.

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