Advances in medicine

The modern approach to turning hip joints with round inserts

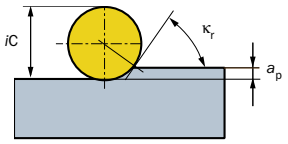
Why Round Inserts?

Round inserts offer you all the best advantages for the machining of cobalt chromium and titanium implants.

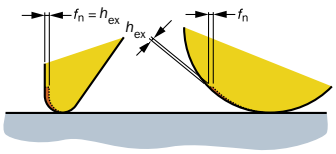
These inserts, when used for internal turning of the spherical cup in a ball and socket hip joint, optimise the roughing process. An excellent balance of security and productivity, in short, they do nothing less than double your productivity and reduce your tooling costs by a third.

How?
Key Benefits

In roughing applications the round shape imparts a strong cutting edge and excellent resistance to excessive notch wear. Choosing round inserts has two clear advantages:

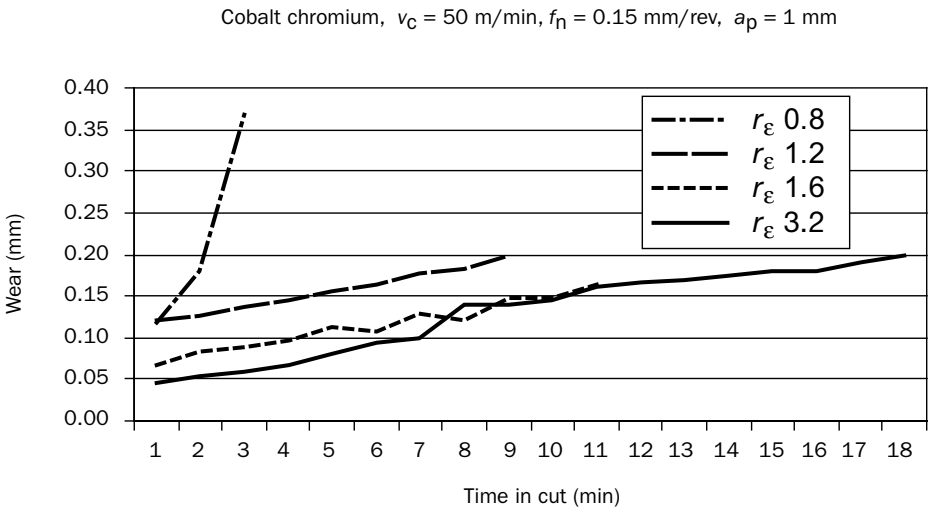


• **Secure, quality, reliable machining**
Applying a round insert with an approach angle of less than κ_r 45° significantly reduces notch wear, a common problem which leads to an inferior quality component and a reduction in productivity.
Apply for reliability and durability, fewer tool changes and trouble free machining.

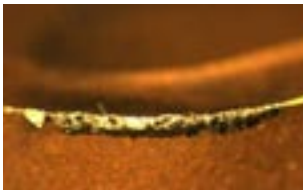


• **Increase feed and speed for maximum productivity**
By using a round insert with the depth of cut well below the radius, the chip thickness h_{ex} is reduced relative to feed and the cutting edge length increased. This results in lower temperatures being generated and the opportunity to increase both feed and speed for maximum production.

Effect of nose radius on wear mechanism



Tool life 3 min



Tool life 18 min

Outstanding performance

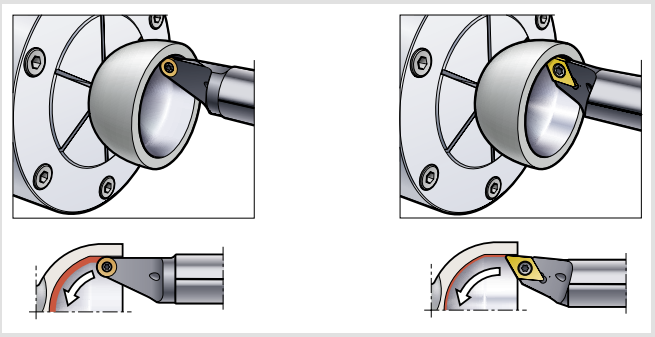
Machining specification

Operation:	Internal sphere turning, dia = 35 mm		
Material:	Cobalt chromium F75		
Machine:	CNC Turning lathe		
Cutting data:	Competitor	Sandvik Coromant	
Toolholder:		A20M-SRXDR 08-R	
Insert:	VBMT11T308	R300-0828E-PL	
Grade:		GC1030	
Cutting speed:	30	50	(m/min)
Feed:	0,08	0,1	(mm/rev)
Depth of cut:	0,5	0,5	(mm)
Time in cut per comp:	9,29	4,46	(min)
Components:	3	10	(pcs)

Result: Doubled productivity and reduction in tooling costs by a third

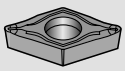
Sandvik Coromant solutions

Cups with small radius requirement and/or unstable fixturing (min. dia=34 mm)



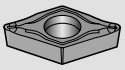
Roughing

Holder: A20M-SRXDR 08-R
Insert: R300-0828E-PL, 1030
Cutting data: v_c = 50-80 m/min,
f_n = 0.1-0.15 mm/rev, a_p = →1mm



Semi finishing

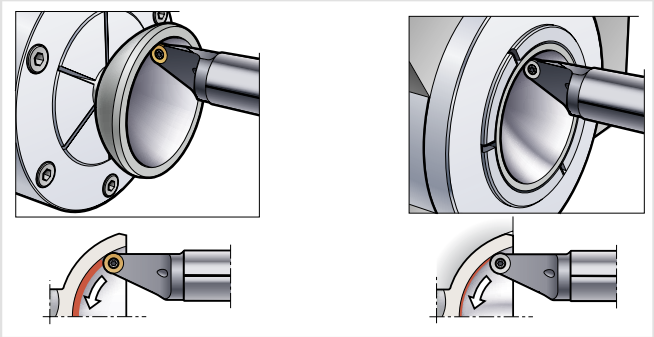
Holder: A20M-SDXCR 11-R
Insert: DCGT11T308-UM, 1105
Cutting data: v_c = 40-60 m/min,
f_n = 0.08-0.1 mm/rev, a_p = 0.1-0.25 mm



Finishing

Holder: A20M-SDXCR 11-R
Insert: DCGT11T308-UM, 1105
Cutting data: v_c = 40-60 m/min,
f_n = 0.08-0.1 mm/rev, a_p = 0.05-0.15 mm

Cups with no radii restrictions and/or stable fixture (min. dia=34 mm)

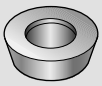


Roughing

Holder: A20M-SRXDR 08-R
Insert: R300-0828E-PL, 1030
Cutting data: v_c = 50-80 m/min,
f_n = 0.1-0.15 mm/rev, a_p = →1 mm

Semi finishing

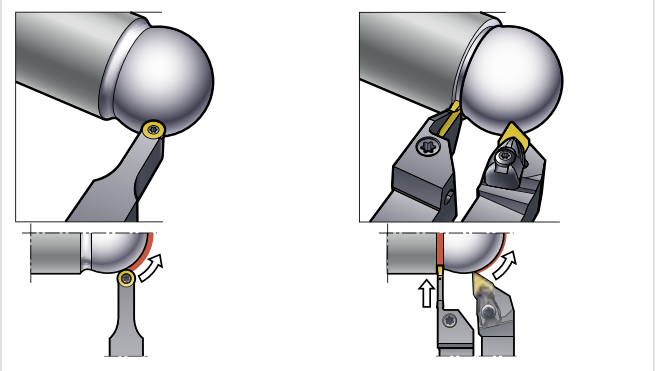
Holder: A20M-SRXDR 08-R
Insert: R300-0828E-PL, 1030
Cutting data: v_c = 50-80 m/min,
f_n = 0.1-0.15 mm/rev, a_p =0.1-0.25 mm

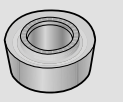


Finishing

Holder: A20M-SRXDR 08-R
Insert: R300-0828E-PM, 530
Cutting data: v_c = 40-60 m/min,
f_n = 0.08-0.12 mm/rev, a_p = 0.05-0.15 mm

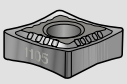
Producing heads from bar material





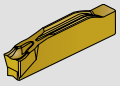
Roughing

Holder: SRDCN 2020K 10-A
Insert: RCMT 10 T3 MO-SM, 1105
Cutting data: v_c = 40-60 m/min,
f_n = 0.1-0.15 mm/rev, a_p = →1mm



Finishing

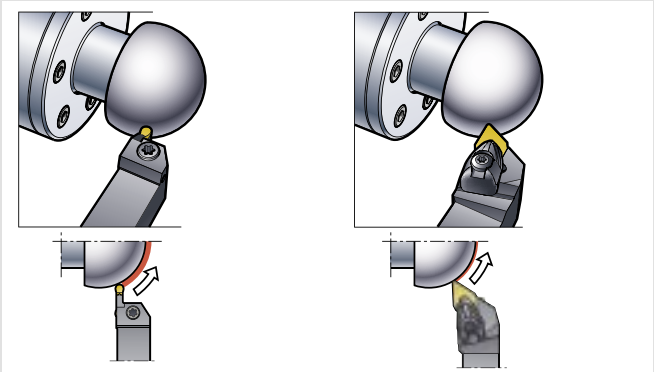
Holder: DDJNR/L 2020K15
Insert: DNGP 15 06 08, 1105
Cutting data: v_c = 40-60 m/min,
f_n = 0.08-0.12 mm/rev, a_p = 0.05-0.25 mm

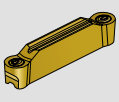


Parting off

Holder: RF123F20-1616B
Insert: N123F2-0250-0002-CM, 4125
Cutting data: v_c = 40-60 m/min,
f_n = 0.05-0.1 mm/rev

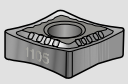
Producing heads from forged material





Roughing

Holder: RF123J13-2525MB
Insert: N123J2-0600-RO,4125
Cutting data: v_c = 40-60 m/min,
f_n = 0.1-0.15 mm/rev, a_p = →1 mm



Finishing

Holder: DDJNR/L 2020K15
Insert: DNGP 15 06 08, 1105
Cutting data: v_c = 40-60 m/min,
f_n = 0.08-0.12 mm/rev, a_p =0.05-0.25 mm

Tool holders

Use these round inserts together with our CoroTurn 107 boring bars; easy to use with EasyFix™ - a simple and quick method to achieve the correct centre height of the cutting edge. To complete the machining process Sandvik Coromant also offer you a range of tool holders especially for finishing (with positive D-style inserts), which can be used not only in spherical turning, but can even be a problem solver in other internal turning applications where accessibility is restricted.

Insert assortment

For round inserts geometries –PL and –KL are periphery ground and give excellent chip control and low cutting forces. For cobalt chromium we recommend grade GC1030 and for titanium H13A.
For D-style inserts we recommend the ground insert DCGT in geometry –UM. For cobalt chromium grade GC1105 is the first choice and for titanium H13A.

Ordering codes

Internal turning

Boring bar	Inserts	EasyFix™
A20M-SRXDL/R 08-R	R300-0828E-PL, 1030 R300-0828E-KL, H13A R300-0828M-PH, 1030 R300-0828M-KH, H13A R300-0828E-PM, 530	132L-3220085-B 132L-4020-B 132L-4020105-B 132L-5020125-B
A20M-SRXDL/R 10-R	R300-1032E-PL, 1030 R300-1032E-KL, H13A R300-1032M-PH, 1030 R300-1032M-KH, H13A R300-1032E-PM, 530	
A20M-SDXCR/L 11-R	DCGT 11 T3 04-UM, 1025, 1105, H13A DCGT 11 T3 08-UM, 1025, 1105, H13A DCMT 11 T3 04-MF, 1025, 1105 DCMT 11 T3 08-MF, 1025	

External turning

Inserts		
Round	CoroCut®	D-style
RCMT 10 T3 M0-SM, S05F, 1105, H13A RCMT 08 03 M0-SM, S05F, 1105, H13A	N123H2-0500-R0, 4125, S05F, 1105 N123J2-0600-R0, 4125, S05F, 1105 N123L2-0800-R0, 4125, S05F, 1105	DNMG150608-MF, S05F, 1105, 1025 DNGP150608, S05F, 1105

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