

MULTI-TASK MACHINING

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For technical information, see Metalcutting
Technical guide.

Multi-Task Machining - tooling possibilities

Coromant Capto® – the connecting link to Multi-Task machining

A tool system for multi-task machines has to transmit satisfactory torque levels, be capable of high spindle speeds, have high bending strength and have high precision couplings for repeatability accuracy with pre-measurement or setting outside the machine.

Coromant Capto® has a proven record of fulfilling all the requirements for the large variation of operational demands in these machines involving stationary and rotating tools. With its broad program of turning, milling and drilling tools, using the same self-centering tool-coupling for a very broad application area, the system has been successfully equipped in all the major multi-task machines.



Clamping units for turning

Standard turret heads for lathes can easily be converted to Coromant Capto® modular quick-change system by using standard clamping units. See page G10.

CoroPlex™ – Innovative multifunctional tools

For getting advantage of versatile multitask machine tools and to optimize their efficiency, there is now a demand for running them with dedicated tooling. The CoroPlex™ tools are invented for multi-task machining giving:

- accessibility, stability and higher productivity
- reduced tool changing time
- saved tool pocket in tool magazine
- cost reduction - one tool replace many tools

CoroPlex™ MT – one milling and four turning tools in one

CoroPlex™ MT is a combination of two winning concepts in one – CoroMill® 390 and CoroTurn® 107. It is either applied rotating as an effective tool for milling applications – or indexed in a number of optional positions for stationary turning, external and internal, using two different CoroTurn® 107 inserts. See page H4.



CoroPlex™ TT twin tools – two turning tools in one

CoroPlex™ TT twin tool is a rational solution with two turning inserts in one holder allowing for the quick changing of tooling operations by a quick indexing of the tool.

CoroPlex™ SL mini-turret – four turning tools in one

Build your own multi-functional tool by using Coromant Capto® tool adaptor and apply a CoroPlex™ SL mini turret adaptor plate to be combined with four cutting heads and blades for turning, threading and grooving operations. See page H18.

Multi-Task Machining - tooling possibilities

Turning tools

For general turning the T-Max P system with negative inserts and CoroTurn® 107 with positive inserts form the basis for high productivity turning. In parting and grooving the first choice is the CoroCut® system and in threading the best option is the T-Max U-Lock® system. See page A3, B14, C9.



Milling tools

In the CoroMill® family there is always a milling cutter to fit your needs perfectly. The CoroMill® family is a multi-purpose milling system for use in applications such as face, shoulder, slot and profile milling. See page G6.

Holemaking tools

The drilling and boring programme, CoroDrill® and CoroBore®, offers a wide range of high performance holemaking products. Regardless of the hole style – we can offer you the right tool for the best productivity in a wide diameter range. See page E4.



Tool holders and tool adaptors

Modern machines and tools put greater demands on toolholders. Low run-out is required to achieve long tool life. CoroGrip® and HydroGrip® fulfill all the demands on a toolholder. Different types of tool adaptors are available to help in building a correct tool length. See page G6.

Accessories

Sandvik Coromant offers a range of accessory tools for the various coupling sizes, which are strongly recommended for setting important parameters such as spindle orientation, clamping forces etc. See page G85.

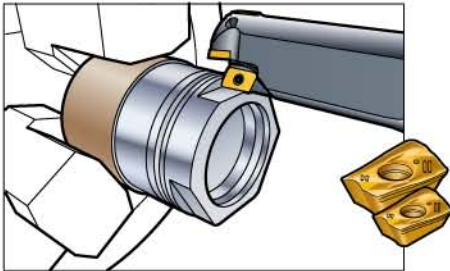


CoroPlex™ MT

Multifunctional milling and turning tool

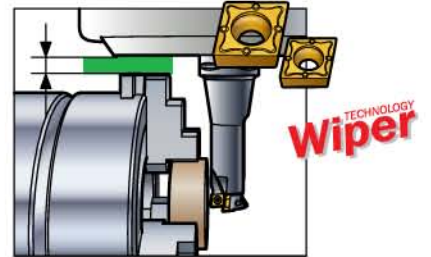
Many optimized tools in one solution dedicated for multi-task machining...

... as a CoroMill® 390 cutter

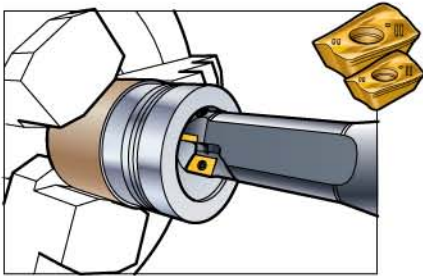


Shoulder milling

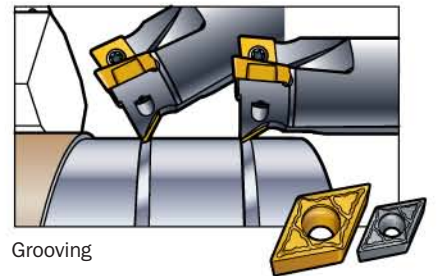
...as a CoroTurn® 107 tool



Face and longitudinal turning



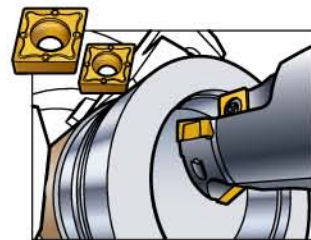
Circular interpolation in helix



Grooving



Turn milling



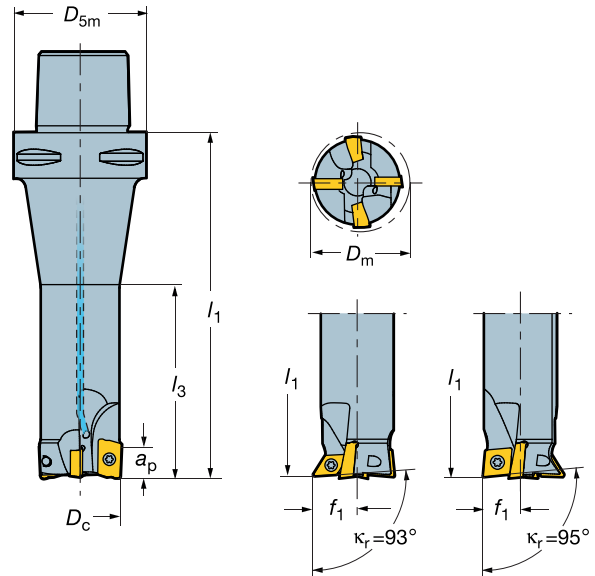
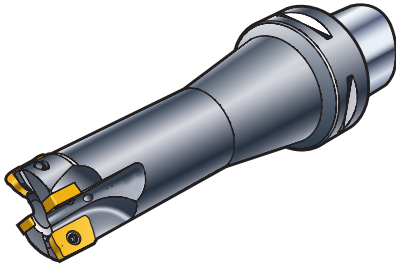
Internal turning

ISO application areas:



Multi-functional tools CoroPlex™ MT

for milling and turning in Multi-Task machines

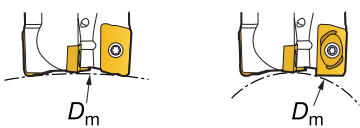


Insert size		Capto	D_c mm	Ordering code	z_n	Dimensions, mm								Gauge insert		
D_m min	D_{5m}					l_1	l_3	f_1	a_p	γ°	λ°	n_{max}	ρ_{K6}			
11	-	-	C5	M-32C5-39011C09D07	2	-	50	130	78.5	-	10	-	-	R390-11	12000	1.0
-	09	-			1	35	50	129.3	77.8	15.4	-	0°	-5°	CCMT 09 T3 08	-	
-	-	07			1	35	50	128.9	77.4	15.4	-	0°	-5°	DCMT 07 02 04	-	
11	-	-	C6	M-32C6-39011C09D07	2	-	63	165	78.5	-	10	-	-	R390-11	12000	1.7
-	09	-			1	35	63	164.3	77.8	15.4	-	0°	-5°	CCMT 09 T3 08	-	
-	-	07			1	35	63	163.9	77.4	15.4	-	0°	-5°	DCMT 07 02 04	-	
18	-	-	C6	M-40C6-39018C12D11	2	-	63	165	90.1	-	10	-	-	R390-18	10000	1.7
-	12	-			1	43	63	164.4	89.5	19.0	-	0°	-5°	CCMT 12 04 08	-	
-	-	11			1	43	63	163.9	89.0	19.2	-	0°	-5°	DCMT 11 T3 04	-	
18	-	-	C8	M-40C8-39018C12D11	2	-	80	200	90.1	-	10	-	-	R390-18	10000	3.3
-	12	-			1	43	80	199.4	89.5	19.0	-	0°	-5°	CCMT 12 04 08	-	
-	-	11			1	43	80	198.9	89.0	19.2	-	0°	-5°	DCMT 11 T3 04	-	

Ordering example: 10 pieces M-32C5-39011C09D07

Limitation on workpiece diameter

When turning axially and using the CCMT insert, it may be that the R390 inserts, because of their position in the tool, limit the work piece diameter. See illustration below.



TECHNOLOGY
Wiper

Tool diameter, D_c mm	Max workpiece diameter, d_m			
	Insert type	R390-11	R390-18	Wiper R390-11
32		150	-	100
40		-	380	-

R390

.CMT



A42



G6

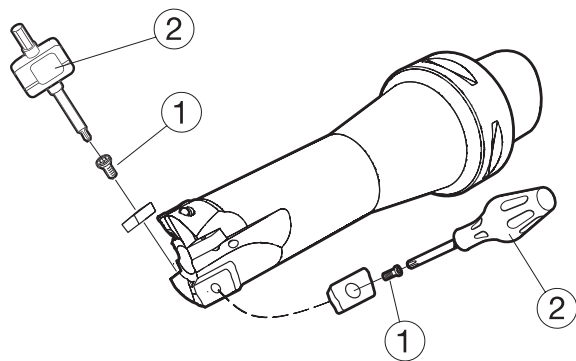


H5



G6

Multi-functional tools CoroPlex™ MT



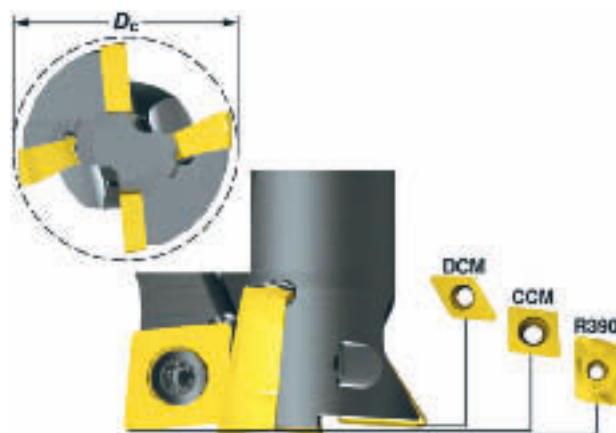
Spare parts

Insert

Type/size	1 Insert screw	2 Key (Torx Plus)	Torque value Nm
CCMT 09 ...	5513 020-09	5680 046-02 (15IP)	3.0
CCMT 12 ...	5513 020-07	5680 046-06 (20IP)	3.9
DCMT 07 ...	5513 020-03	5680 046-03 (7IP)	0.9
DCMT 11 ...	5513 020-09	5680 046-02 (15IP)	3.9
R390-11 ...	5513 020-35	5680 046-01 (15IP)	1.2
R390-18 ...	5513 020-29	5680 046-02 (15IP)	3.0

One and the same tool for both rotating and stationary use

The CoroMill® 390 inserts are positioned a little ahead of the CoroTurn® inserts – axially as well as radially – to guarantee that turning inserts are not in cut when the tool is applied rotating. This means that turning of an available blind hole – using the CoroTurn function of the tool – must be stopped before the CoroMill® 390 inserts get in contact with bottom face.



Tool length optimized for accessibility in multi-tasking

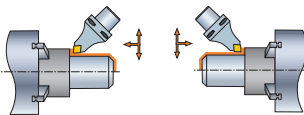
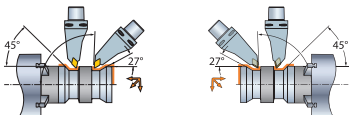
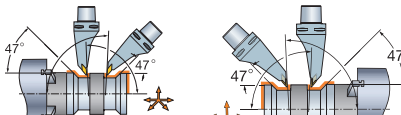






The tool bodies are extended by 65 mm compared with a corresponding conventional tools – to allow freer use of the working positions possible in multi-tasking – without any need for extensions.

Length and design of the tool body is optimized by each Coromant Capto size to provide best accessibility relative to the most common chuck sizes. The tool is designed with all inserts positioned on the centre line of the tool, to be easy to use together with the standard program cycles in the machine tools.

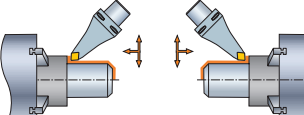
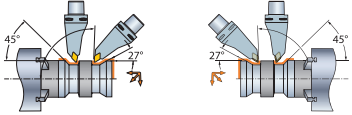
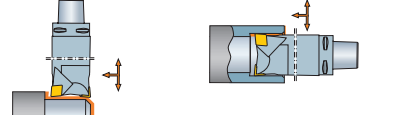








Coromant Capto® cutting units for Multi-Task machining

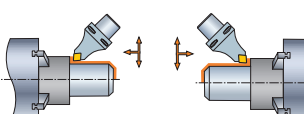

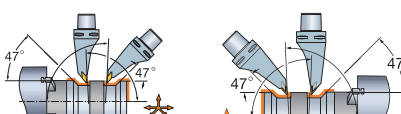






CoroTurn® RC rigid clamp design

	Entering angle $\kappa_r 95^\circ (50^\circ)$ 		$\kappa_r 93^\circ (48^\circ)$ 		$\kappa_r 95^\circ (50^\circ)$ 	
						
Insert size	DCMNN 12-16	DCMNN 12-16	DDNML 15	DDNML 15	DVMNL 16	DVMNL 16
Coromant Capto® size	C5-C8	C5-C8	C5-C8	C5-C8	C8	C8
Page	H13	H13	H14	H14	H14	H14

CoroPlex™ TT Twin tool, rigid clamp design

	Entering angle $\kappa_r 95^\circ (50^\circ)$ 				$\kappa_r 95^\circ$ 	
						
Insert size	T- 12-16	T-DCMxxDDMxx 12-16	T-DCMxxDDMxx 15	T-DCMxxDDMxx 15	T-DCL.xxDCLxx 12-16	T-DCL.xxDCLxx 12-16
Coromant Capto® size	C5-C8	C5-C8	C5-C8	C5-C8	C5-C8	C5-C8
Page	H10	H10	H10	H10	H11	H11

CoroTurn® 107 screw clamp design

	Entering angle $\kappa_r 95^\circ (50^\circ)$ 		- 		$\kappa_r 95^\circ (50^\circ)$ 	
						
Insert size	SCMCN 12	SCMCN 12	SRDCN 10-16	SRDCN 10-16	SVMBL 16	SVMBL 16
Coromant Capto® size	C6	C6	C6	C6	C5-C6	C5-C6
Page	H15	H15	H15	H15	H16	H16

CoroPlex™ TT

Multifunctional turning tool

Two turning tools in one dedicated for multi-task machining...

CoroPlex™ TT twin tool combines two tool holders in one:

- Reduced tool changing time.
- Saving tool pockets in the tool magazine.
- Flexible tool holders optimized in length, stability and coolant solution for multi-task machines.
- CoroTurn® RC insert clamping system with wide flexibility.
- One holder replaces two - cost reduction.



With CoroPlex™ TT twin tool you have two tools in one to save space in the tool magazine.

Flexibility with Multi-Task machining

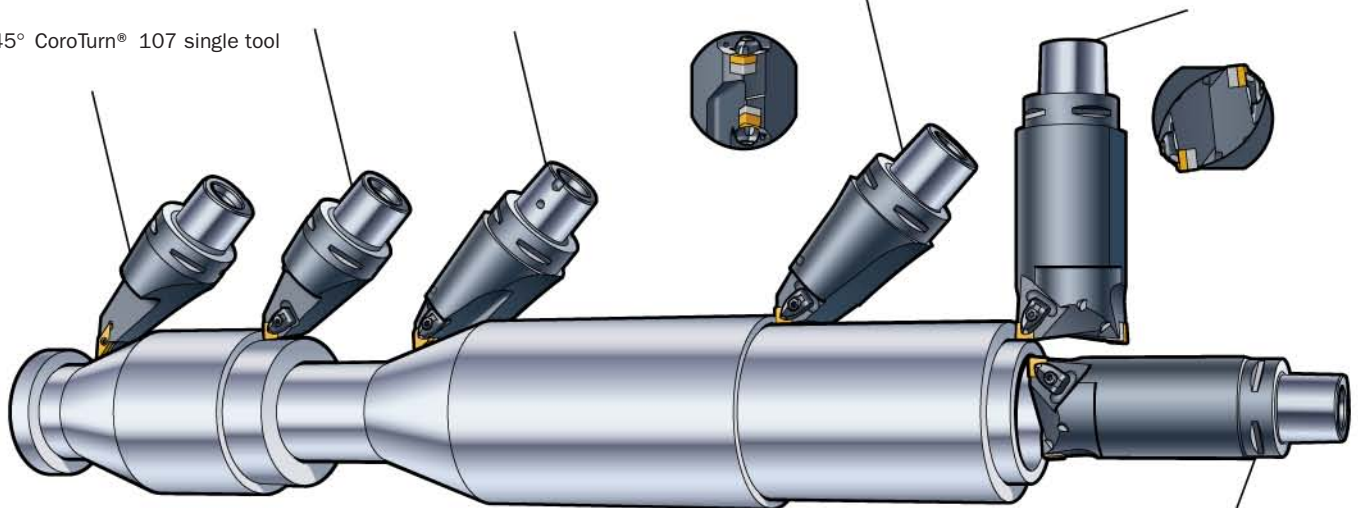
45° CoroPlex™ TT twin tool

45° CoroPlex™ TT twin tool

90° CoroPlex™ TT twin tool

45° CoroTurn® RC single tool

45° CoroTurn® 107 single tool



90° CoroPlex™ TT twin tool

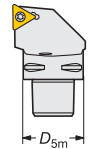
Code key for CoroTurn® RC twin tools

C6	-	T	-	D	C	M	12	D	D	M	15	L	130
1		2		3	4	5	6	7	8	9	10	11	12

1 Coupling size, mm

C = Coromant Capto®
 D_{5m} = Coupling size

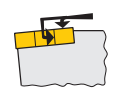
C3	$D_{5m} = 32$
C4	$D_{5m} = 40$
C5	$D_{5m} = 50$
C6	$D_{5m} = 63$
C8	$D_{5m} = 80$



Coromant Capto®

2 and 6
Clamping system


D




Top and hole clamping (RC)

3 and 7
Insert shape

C




D



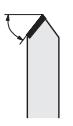
4 and 8
Holder style

L




95°

M



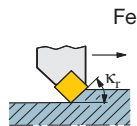
50°

5 and 9
Cutting edge length, l mm



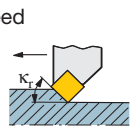
10 Hand of tool

R



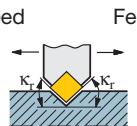
Feed

L



Feed

N



Feed

Feed

11 Tool length, l_1 mm



Multifunctional tools CoroPlex™ TT twin tool

For turning in Multi-Task machines



CNMM, CNGP

DNMM, DNGP,

CNMG

DNMX

CNMA, CNGA

DNMG

DNMA, DNGA

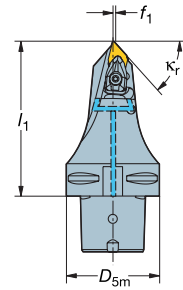
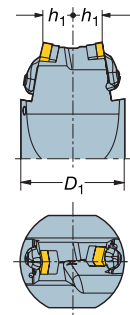
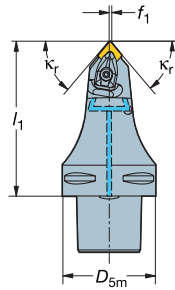
Side of tool/type of insert

Entering angle:

DCM
κ_r 50° (95°)

Cx-T-DCMxxDDMxx

DDM
κ_r 48° (93°)



Left hand style shown

κ _r	Main application	Alternative use	□	□	Ordering code	Dimensions, mm										Gauge inserts	Nm
						D _{5m}	D _{m1} min	D _{m2} min	f ₁	h ₁	l ₁	l ₃	γ	λ _s			
95° (50°)			12	15	C5-T-DCM12DDM15L115	50		0.5	20	115	-6°	-6°	CNMG 12 04 08	3.9			
					C6-T-DCM12DDM15L105	63		0.5	20	105	-6°	-6°	DNMG 15 06 08	3.9			
					C6-T-DCM12DDM15L130	63		0.5	20	130	-6°	-6°	CNMG 12 04 08	3.9			
														DNMG 15 06 08	3.9		
93° (48°)			16	15	C8-T-DCM16DDM15L160	80		0.5	24	160	-6°	-6°	CNMG 16 06 12	6.4			
														DNMG 15 06 08	3.9		

¹⁾ γ = Rake angle (valid with flat insert).

²⁾ λ = Angle of inclination.

³⁾ Insert tightening torque Nm

Ordering example: 2 pieces C5-T-DCM12DDM15L115

L = Left hand

Main spare parts

Insert size		Shim			Shim screw		Key (Torx Plus)		Complete clamp set		Key (Torx Plus)	
□	□											
12	15	5322 234-01	5513 020-02	5680 049-01 (15IP)	5412 028-021 ¹⁾	5680 049-01 (15IP)						
		5322 266-02	5513 020-02	5680 049-01 (15IP)	5412 028-021 ¹⁾	5680 049-01 (15IP)						
		5322 234-03	5513 020-07	5680 043-14 (20IP)	5412 028-031 ¹⁾	5680 043-14 (20IP)						

¹⁾ To modify CoroTurn® RC holders for other inserts, see clamp sets on page A281.



A9



H12



G6



A2

Multifunctional tools CoroPlex™ TT twin tool

CoroTurn® RC rigid clamp design

Side of tool/type of insert

Cx-T-DCL.xxDCCLxx

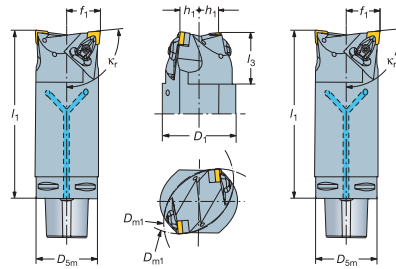
Entering angle:

DCL...
κ_r 95°

DCL...
κ_r 95°



- CNMM, CNGP
- CNMG
- CNMA, CNGA



Left hand style shown

κ _r	Main application	Alternative use	□	Ordering code	Dimensions, mm							Gauge inserts	Nm ³⁾	
					D _{5m}	D _{m1} min	D _{m2} min	f ₁	h ₁	l ₁	l ₃			γ ¹⁾
95°			12	C5-T-DCL12DCL12L130	50	110	26.	20	130	50	-6°	-6°	CNMG 12 04 08	3.9
				C6-T-DCL12DCL12L165	63	110	33.	20	165	50	-6°	-6°	CNMG 12 04 08	3.9
				C7-T-DCL12DCL12L190	76	110	33.	20	190	50	-6°	-6°	CNMG 12 04 08	3.9
				C8-T-DCL16DCL16L200	80	115	33.	20	200	50	-6°	-6°	CNMG 16 06 12	6.4
												CNMG 12 04 08	6.4	

¹⁾ γ = Rake angle (valid with flat insert).

²⁾ λ = Angle of inclination.

³⁾ Insert tightening torque Nm

Ordering example: 2 pieces C5-T-DCL12DCL12L130

L = Left hand

Main spare parts

Insert size				Complete clamp set	
	Shim	Shim screw	Key (Torx Plus)	set	Key (Torx Plus)
12	5322 234-01	5513 020-02	5680 049-01 (15IP)	5412 028-021 ¹⁾	5680 049-01 (15IP)
16	5322 234-03	5513 020-07	5680 043-14 (20IP)	5412 028-031 ¹⁾	5680 043-14 (20IP)

¹⁾ To modify CoroTurn® RC holders for other inserts, see clamp sets on page A281.



A9



H12



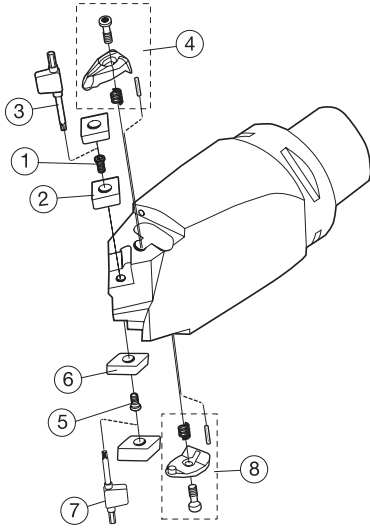
G6



A2

Spare parts

CoroPlex™ TT with CoroTurn RC rigid clamp design



	1	2	3	4	4 ¹⁾²⁾	4 ¹⁾²⁾
	Shim screw	Shim (For insert thickness)	Key (Torx Plus)	Complete clamp set	Clamp sets for ceramic inserts without hole	Clamp sets for ceramic inserts with hole
C5-T-DCL12DCL12L130	5513 020-02	5322 234-01 (4.76)	5680 049-01	5412 028-021	5412 034-021	5412 032-021
C6-T-DCL12DCL12L165		5322 234-02 (7.94) ²⁾				
C8-T-DCL16DCL16L200	5513 020-07	5322 234-03 (6.35)	5680 043-14	5412 028-031	5412 034-031	5412 032-031
C8-T-DCL16DCL16L200	5513 020-07	5322 234-04 (7.94) ²⁾				
C5-T-DCM12DDM15L115	5513 020-02	5322 234-01 (4.76)	5680 049-01	5412 028-021	5412 034-021	5412 032-021
C6-T-DCM12DDM15L105		5322 234-02 (7.94) ²⁾				
C6-T-DCM12DDM15L130						
C8-T-DCM16DDM15L150	5513 020-07	5322 234-03 (6.35)	5680 043-14	5412 028-031	5412 034-031	5412 032-031
C8-T-DCM16DDM15L150		5322 234-04 (7.94) ²⁾				
	5	6	7	8	8 ¹⁾²⁾	8 ¹⁾²⁾
	Shim screw	Shim (For insert thickness)	Key (Torx Plus)	Complete clamp set	Clamp sets for ceramic inserts without hole	Clamp sets for ceramic inserts with hole
C5-T-DCL12DCL12L130	5513 020-02	5322 234-01 (4.76)	5680 049-01	5412 028-021	5412 034-021	5412 032-021
C6-T-DCL12DCL12L165		5322 234-02 (7.94) ²⁾				
C8-T-DCL16DCL16L200	5513 020-07	5322 234-03 (4.76)	5680 043-14	5412 028-031	5412 034-031	5412 032-031
C8-T-DCL16DCL16L200		5322 234-04 (7.94) ²⁾				
C5-T-DCM12DDM15L115	5513 020-02	5322 266-02 (6.35)	5680 049-01	5412 028-021	5412 034-021	5412 032-021
C6-T-DCM12DDM15L105		5322 266-01 (4.76) ²⁾				
C6-T-DCM12DDM15L130						
C8-T-DCM16DDM15L150	5513 020-02	5322 266-02 (4.76)	5680 049-01	5412 028-021	5412 034-021	5412 032-021
C8-T-DCM16DDM15L150		5322 266-01 (4.76) ²⁾				

1) For clamp set parts, see page A281.

2) Optional part delivered to separate order

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