

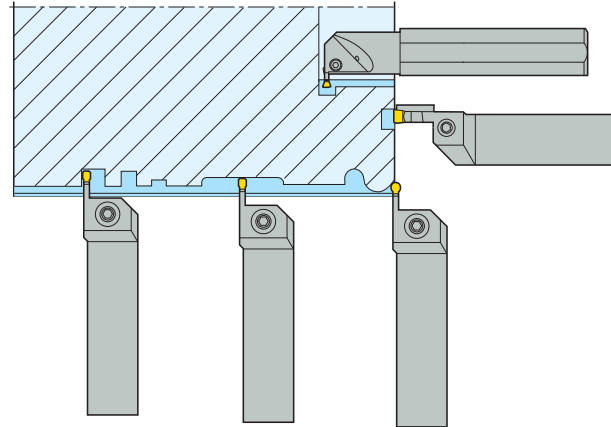
MDT - Multi Directional Turning	Page
General information	299
Code keys	300 - 304
Toolholder selection	305 - 307
Insert selection and grades	308 - 310
Special applications	312 - 313
Application technique	314 - 319
Cutting data	321 - 325
Troubleshooting	327 - 328

The Seco MDT (Multi Directional Turning) system consists of holders and inserts for external radial, external axial and internal machining.

The system can be used for

- Turning
- Profiling
- Grooving
- Cutting off
- Threading

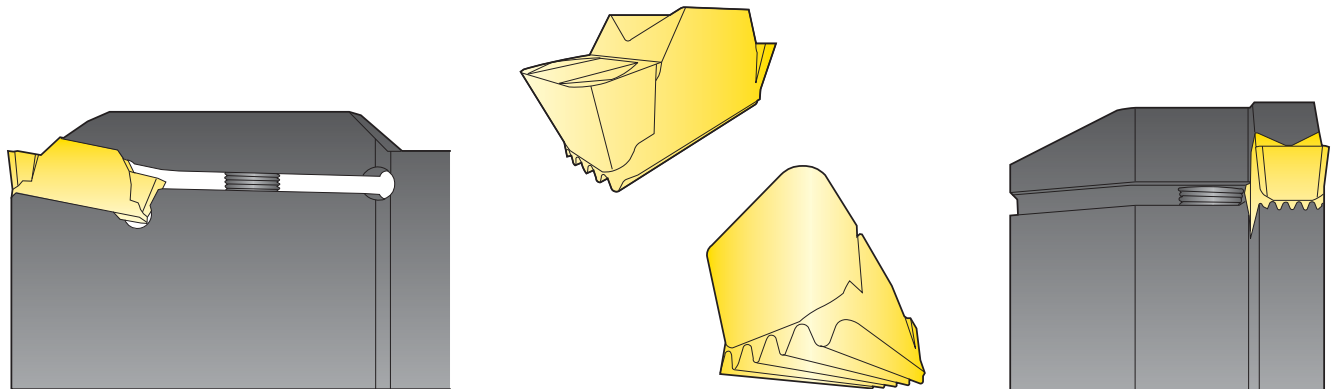
Suitable applications are turning of parts with many different diameters, complicated profiles and grooves. For complex parts of this type several standard and special tools can be replaced by one Seco MDT tool. Savings can be achieved through fewer toolchanges and reduced tool stock.



Seco MDT has a unique insert clamping method. A combination of v top clamp and serrated contact surfaces between the insert bottom and toolholder offers superb stability. The relatively long inserts also increase the stability.

The excellent stability gives a number of benefits

- Improved safety
- Increased cutting data
- Good surface finish
- Less risk of vibrations
- Good repeatability (+/- .001)



External toolholders



C	F	I	R	-	100	-	04	D	-	R	4.00	2.75
1	2	3	4		5		6	7		8	9	10

1. Insert clamping

Clamp

2. Toolholder setting angle

$\alpha =$	
G = 0°	K = 75°
R = 15°	F = 90°
T = 30°	B = 105°
S = 45°	E = 120°
W = 60°	D = 135°

I = 90° (no offset)

3. Maximum grooving/turning depth

E = 1.0 x a_p	J = 3.5 x a_p
F = 1.5 x a_p	K = 4.0 x a_p
G = 2.0 x a_p	L = 4.5 x a_p
H = 2.5 x a_p	M = 5.0 x a_p
I = 3.0 x a_p	N = 5.5 x a_p

X = Special

4. Version

R L

5. Shank height/width

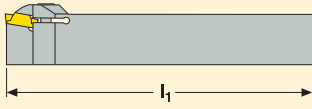
050 = .50"	100 = 1.00"
063 = .625"	125 = 1.25"
075 = .75"	150 = 1.50"

6. Seat size

Seat Size	Metric Insert	Inch Insert
03	3 mm	.125"
04	4 mm	-
05	5 mm	.187"
06	6 mm	.250"
08	8 mm	-

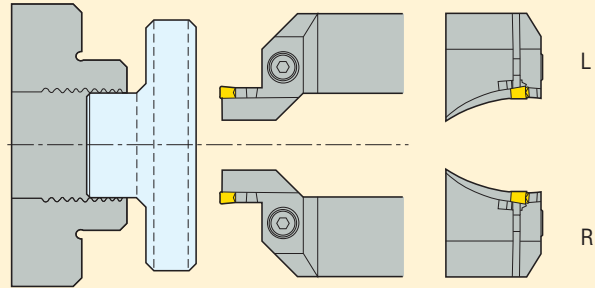
External toolholders

7. Tool length



- A = 4"
- B = 4.5"
- C = 5"
- D = 6"
- E = 7"

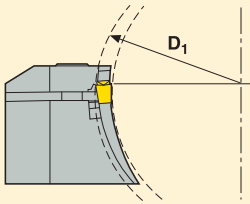
8. Tang curvature direction



Additional information for axial machining

9. Maximum diameter

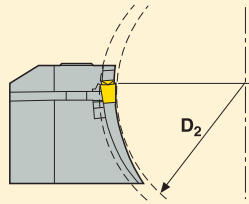
4.00 = 4.00 in (D_1)



Additional information for axial machining

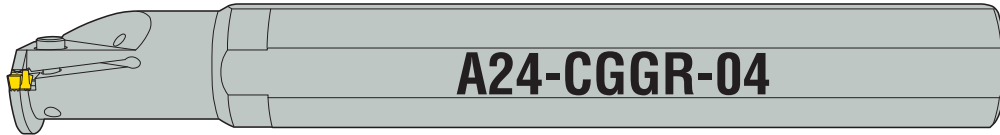
10. Minimum diameter

2.75 = 2.75 in (D_2)



Additional information for axial machining

Internal toolholders



A	24	-	C	G	G	R	-	04
1	2		3	4	5	6		7

1. Toolholder type

A = Steel with coolant passage
S = Solid steel

2. Shank diameter

d_{mm}

10 = .625"
12 = .75"
16 = 1.0"
20 = 1.25"
24 = 1.5"

3. Insert clamping

C

Clamp

4. Toolholder setting angle

$\alpha =$

G = 0°	K = 75°
R = 15°	F = 90°
T = 30°	B = 105°
S = 45°	E = 120°
W = 60°	D = 135°

5. Maximum grooving/turning depth

E = 1.0 x a_p	J = 3.5 x a_p
F = 1.5 x a_p	K = 4.0 x a_p
G = 2.0 x a_p	L = 4.5 x a_p
H = 2.5 x a_p	M = 5.0 x a_p
I = 3.0 x a_p	N = 5.5 x a_p

X = Special

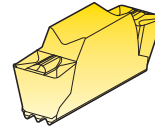
6. Version

R L

7. Seat size

Seat Size	Metric Insert	Inch Insert
03	3 mm	.125"
04	4 mm	—
05	5 mm	.187"
06	6 mm	.250"

Inserts, inch



L	C	M	F	16	05	05	-	A	187	-	MT
1	2	3	4	5	6	7		8	9		10

1. Shape

L

Rectangular

2. Front clearance angle

A = 3°
B = 5°
C = 7°
D = 15°
E = 20°

3. Tolerances

Tol. class	Tolerance ± inch					For insert width b ₁ inch		
	b ₁	d	r	m	l	.125	.187	.250
M	.002	.002	.002	.003	.004	•	•	•

4. Insert type

R Single Ended with Chipbreaker

F Double Ended with Chipbreakers

N Single Ended without Chipbreaker

A Double Ended without Chipbreakers

6. Insert gauge width

03 = 3.0 mm
04 = 4.0 mm
05 = 5.0 mm
06 = 6.0 mm

7. Corner radius

02 = .008 (0.2 mm)
05 = .020 (0.5 mm)

8. Inch Size

5. Insert gauge length

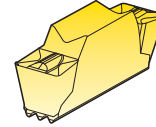
9. Insert width

125 = .125"
187 = .187"
250 = .250"

10. Insert type code

- FT = Chipbreaker for Fine turning
- MC = Chipbreaker for deep grooving and parting off
- MG = Chipbreaker for Medium grooving
- MP = Chipbreaker for Medium profiling
- MT = Chipbreaker for Medium turning
- FG = For lockrings
- DY = For dynamic o-rings
- ST = For static o-rings
- R = For radius
- D76 = For thread undercuts
- MCR/L = Right or left hand version with a specified setting angle

Inserts, metric



L	C	M	F	16	04	08	-	0400		-	MT
1	2	3	4	5	6	7	8	9	10	11	

1. Shape

L

Rectangular

2. Front clearance angle

$C = 7^\circ$

3. Tolerances

Tol. class	Tolerance ± mm				For insert width b ₁ mm				
	b ₁	d	r	l	3	4	5	6	8
G	0.025	0.025	0.025	0.040	•	•	•	•	•
M	0.05	0.05	0.05	0.08	•	•	•	•	•

4. Insert type

R Single ended with chipbreaker

F Double ended with chipbreaker

N Single ended without chipbreaker

A Double ended without chipbreaker

6. Insert gauge width

Seat size

7. Corner radius

M0,00 = Round 06 = .024"
 02 = .008" 08 = .031"
 04 = .016" 10 = .039"
 05 = .020" 12 = .047"

5. Insert gauge length

9. Insert width

0300 = .118" (3 mm)
 0400 = .157" (4 mm)
 0500 = .197" (5 mm)
 0600 = .236" (6 mm)
 0800 = .315" (8 mm)

8. Side clearance radius

L R

10. Version

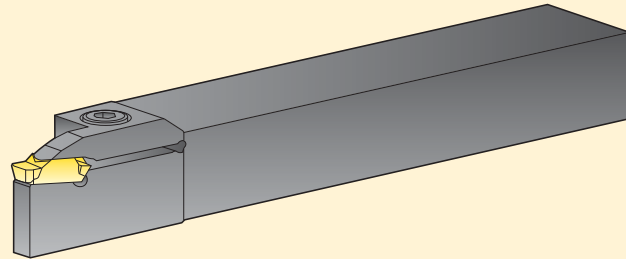
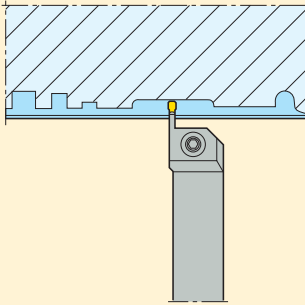
R L

11. Insert type code

FT = Chipbreaker for Fine turning
 MC = Chipbreaker for deep grooving and parting off
 MG = Chipbreaker for Medium grooving
 MP = Chipbreaker for Medium profiling
 MT = Chipbreaker for Medium turning
 FG = For lockrings
 DY = For dynamic o-rings
 ST = For static o-rings
 R = For radius
 D76 = For thread undercuts
 MCR/L = Right or left hand version with a specified setting angle

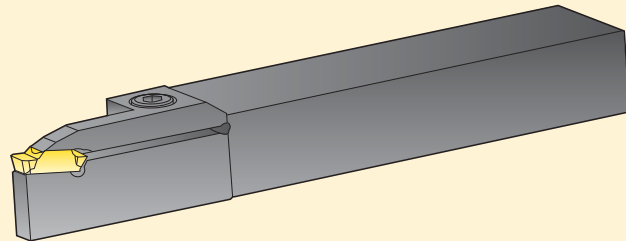
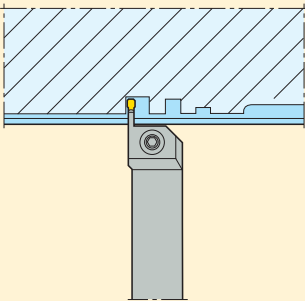
CFIR/L – Basic choice

- For external turning, profiling and grooving
- Maximum working depth 3 x the insert width (can be limited by double ended inserts)
- Size 16 – For general machining
- Size 30 – For heavy machining



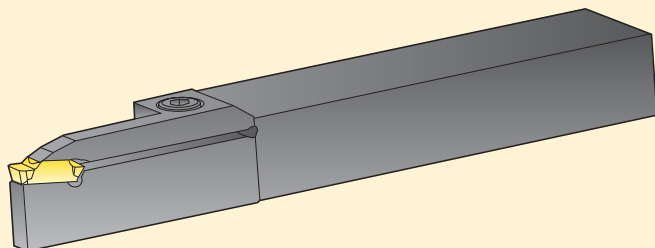
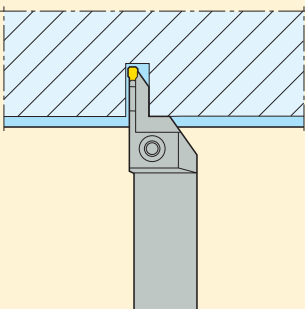
CFMR/L – Long reach

- For external turning, profiling and grooving
- Maximum working depth 5 x the insert width
- Single ended inserts should be used
- Size 16 – For general machining
- Size 30 – For heavy machining



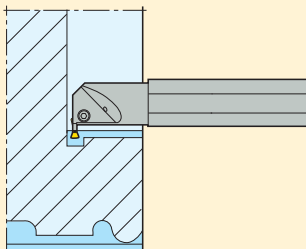
CFOR/L, CFPR/L, CFTR/L – Extra long reach, 6 x insert width up to 8.5 x insert width (3 and 4 mm inserts).

- For grooving and cut-off
- Maximum grooving depth is 1.00"
- Single ended inserts should be used
- Size 16 – For general machining

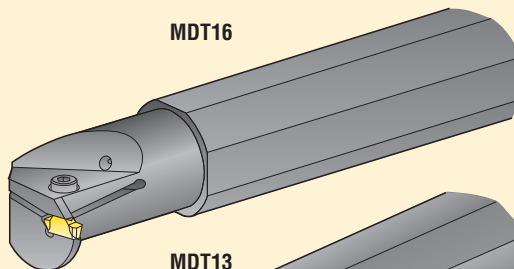


CG_R/L Internal machining

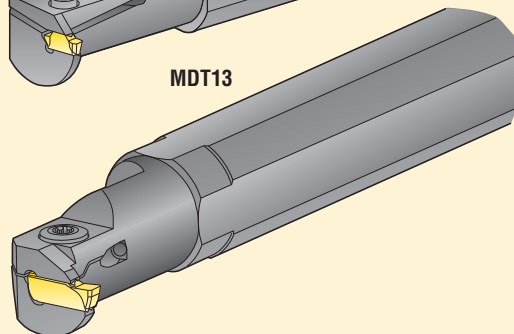
- For internal turning, profiling and grooving
- Maximum working depth 1–3.5 x the insert width for size 13
- Maximum working depth 2 x the insert width for size 16
- For 'through' coolant supply
- Size 13 – For machining in small bore sizes
- Size 16 – For general machining



MDT16

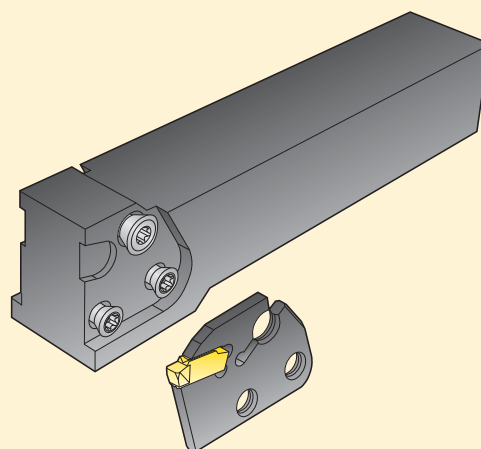
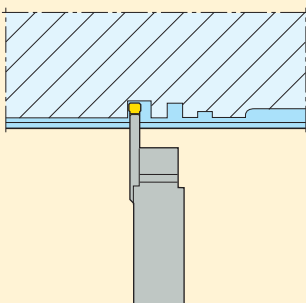


MDT13



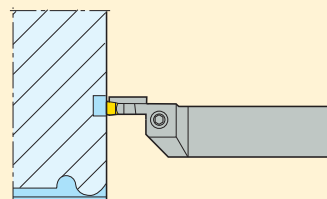
Single ended blades

- Mainly for tailor made applications
- Holder with both right and left hand blade mounting available
- Size 16 – For general machining

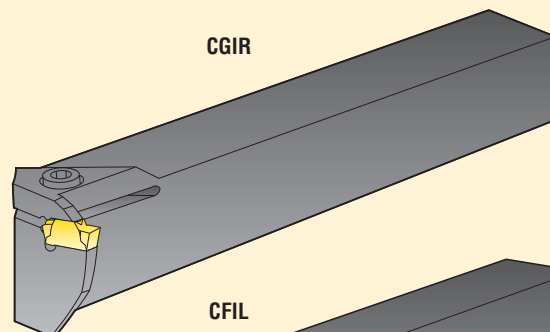


C_IR/L – Axial machining

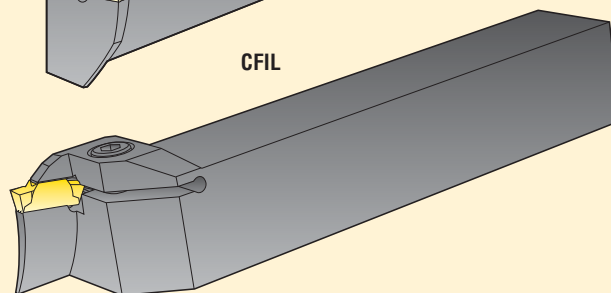
- For axial turning, profiling and grooving
- Maximum working depth 3 x the insert width (can be limited by double ended inserts)
- These toolholders demand that the first cut must be made between two specified diameters (see code key)
- Size 16 – For general machining
- Size 30 – For heavy machining



CGIR

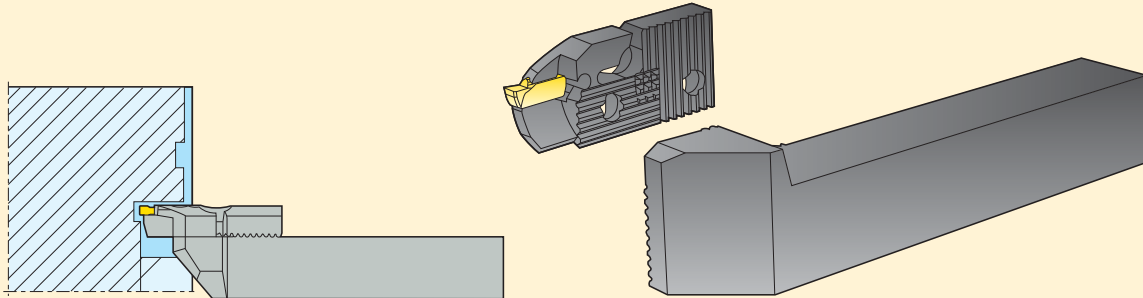


CFIL



Modular holders

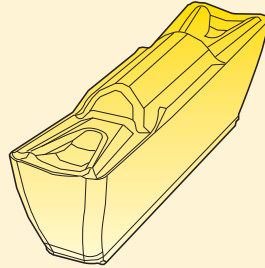
- For axial turning, profiling and grooving
- Maximum working depth up to 3x the insert width
- These toolholders demand that the first cut must be made between two specified diameters (see code key)
- Size 13 – For axial machining at small diameters



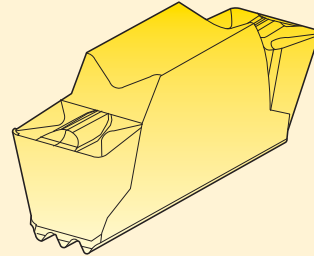
LCMF – Basic choice

- Double-ended
- Economy (cutting edges at both ends)
- Size 13 – For machining in small bore sizes and axial machining at small diameters
- Size 16 – For general machining
- Size 30 – For heavy machining

MDT13



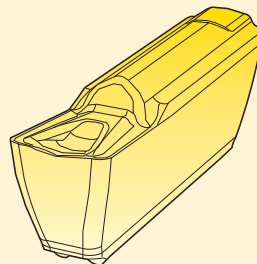
MDT16
MDT30



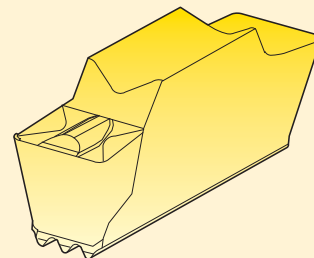
LCMR

- Single-ended
- Flexibility
- Reach (full length clearance)
- Size 13 – For machining in small bore sizes and axial machining at small diameters
- Size 16 – For general machining
- Size 30 – For heavy machining

MDT13



MDT16
MDT30

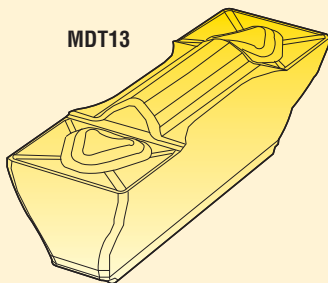


LCG_

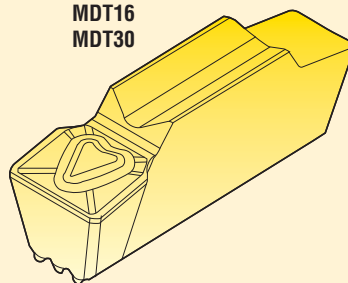
- Special applications
- Standard and (customer specified) tailor made profiles
- Double or single ended
- With or without chipbreaker

- Size 13 – For machining in small bore sizes and axial machining at small diameters
- Size 16 – For general machining
- Size 30 – For heavy machining

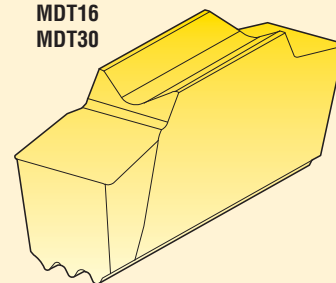
MDT13



MDT16
MDT30



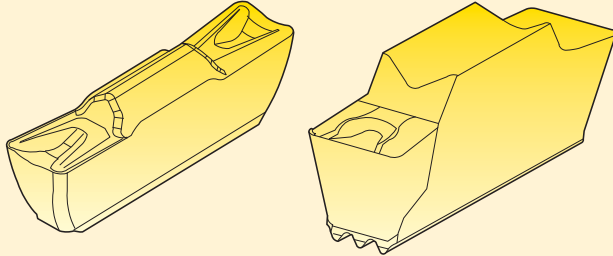
MDT16
MDT30



Select narrow inserts if small cutting depths and feed rates are to be used.
Select wide inserts if large cutting depths and feed rates are to be used.

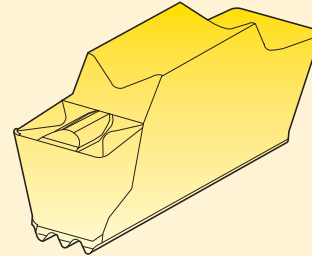
FT (Fine Turning)

- For fine turning
- For deep grooving



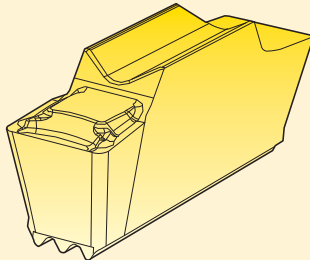
MT (Medium Turning)

- For medium turning
- For shallow grooving



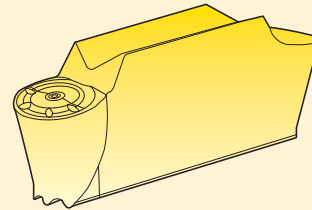
MG (Medium Grooving)

- For deep grooving
- For parting off
- For medium turning
- Improves the chipbreaking



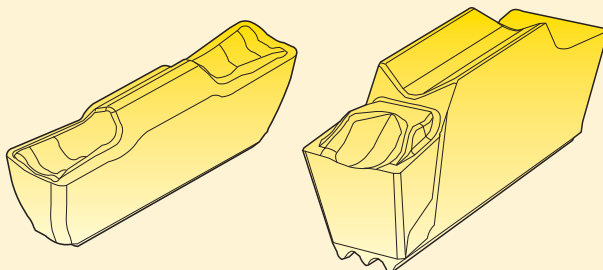
MP (Medium Profiling)

- For medium profiling
- For medium turning
- For medium grooving
- Good accessibility



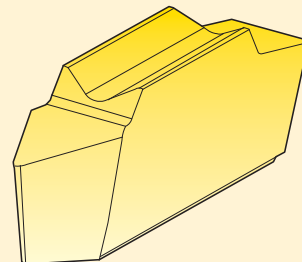
MC (Medium Cutoff)

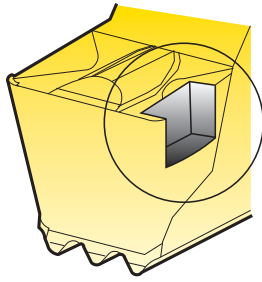
- For parting off thin walled pipes and small diameter workpieces
- For deep grooving
- For turning
- Reduces vibration risk



A55/A60 G55/G60

- For threading applications





Grades

	CP200	First choice for high-strength steel, martensitic stainless steel, cast iron with low hardness and aerospace alloys. First choice for high cutting speeds. Hard micrograin with sharp edge, highly resistant to plastic deformation. PVD-coated grade. (Ti, Al) N + TiN
	CP500	Basic choice. PVD -coated micrograin grade. (Ti, Al) N + TiN
	CP600	First choice for general machining in steel and stainless steel with MC chipbreaker. Also suitable for superalloys. PVD-coated grade. (Ti, Al) N + TiN
	TP200	For higher cutting speeds. CVD-coated grade. Ti (C, N) + Al ₂ O ₃ + TiN
	883	For roughing operations in superalloys.
	890	For machining in superalloys. Also suitable for hardened steel and cast iron.
	TK150	Basic choice for grey cast iron and nodular cast iron. Ti (C, N) + Al ₂ O ₃

The application area for each grade is shown in the chart below.

Grades	P					M				K				N				S				H						
	P01	P10	P20	P30	P40	P50	M01	M10	M20	M30	M40	K01	K10	K20	K30	K40	N01	N10	N20	N30	S01	S10	S20	S30	H01	H10	H20	H30
TP200																												
TK150																												
CP200																												
CP500																												
CP600																												
890																												
883																												

MDT – Secolor

Grooving	
Easy conditions	Difficult conditions
FT CP500	MC CP600
FT CP500	MC CP600
MT TK150	MT TP200
MT 883	MT CP500
MT 883	MT CP500
S-LF CBN10	S-LF CBN200

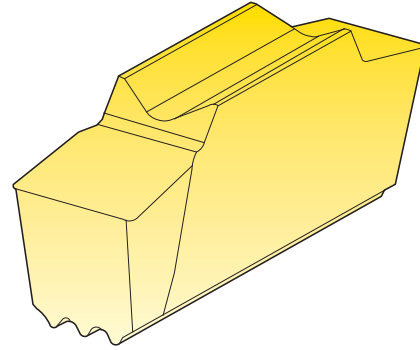
Easy conditions: pre-machined surface, shallow grooves etc.
Difficult conditions: raw surface, deep grooves etc.






Turning	
Easy conditions	Difficult conditions
MT TP200	MT TP200
MT TP200	MT TP200
MT TK150	MT TP200
MT 883	MT CP500
MT 883	MT CP500
S-LF CBN10	S-LF CBN200



Special applications

- Standard program
- LCGN (MDT 16)
- LCGA (MDT 13)



<p>FG – For locking rings</p> 	<p>DY – For dynamic o-rings</p> 	<p>ST – For static o-rings</p> 
<p>R – For full radius grooving</p> 	<p>D76 – For thread undercuts</p> 	

Remember to check the toolholder clearance before using these inserts.

Special applications

- Tailor made inserts
- LCG_

Special inserts can easily be produced in the styles below.

They are made from blanks, single or double ended, with or without chipbreaker.

(Contact your Seco representative for a special order form to define the required insert.)

<p>Style A</p> <p style="text-align: center;">N N A B</p> <p style="text-align: center;">Standard or special widths with corner radii</p>	<p>Style B</p> <p style="text-align: center;">N</p> <p style="text-align: center;">Standard or special widths with corner and crest radii</p>	
<p>Style C</p> <p style="text-align: center;">N A B</p> <p style="text-align: center;">Standard or special widths with full radius</p>	<p>Style D</p> <p style="text-align: center;">A B</p> <p style="text-align: center;">Standard or special widths with front angle and corner radii</p>	<p>Style E</p> <p style="text-align: center;">A B</p> <p style="text-align: center;">Special widths with front angle and corner radii</p>
<p>Style F</p> <p style="text-align: center;">N</p> <p style="text-align: center;">Special widths with double front angles and corner radii</p>	<p>Style G</p> <p style="text-align: center;">N</p> <p style="text-align: center;">Special widths with double front angles and corner radii</p>	<p>Style H</p> <p style="text-align: center;">N</p> <p style="text-align: center;">Special widths with radii and wipers</p>
<p>Style I</p> <p style="text-align: center;">N</p> <p style="text-align: center;">Special widths with radii</p>	<p>Style J</p> <p style="text-align: center;">N</p> <p style="text-align: center;">Special widths with radii and chamfers</p>	<p>Style K</p> <p style="text-align: center;">N</p> <p style="text-align: center;">Special widths with radii, chamfers and angles</p>

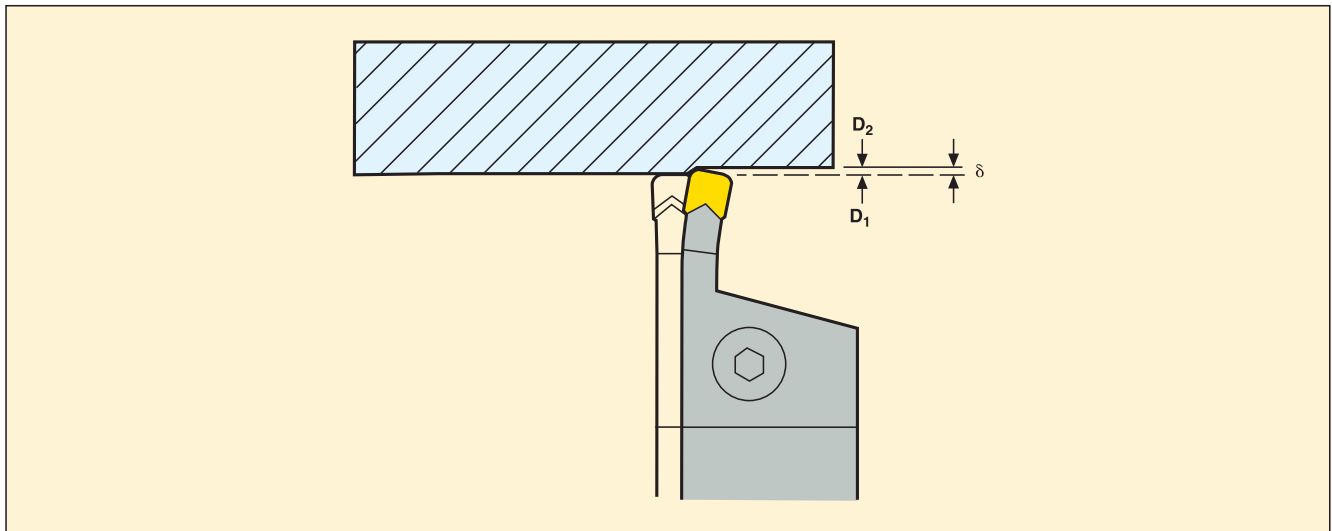
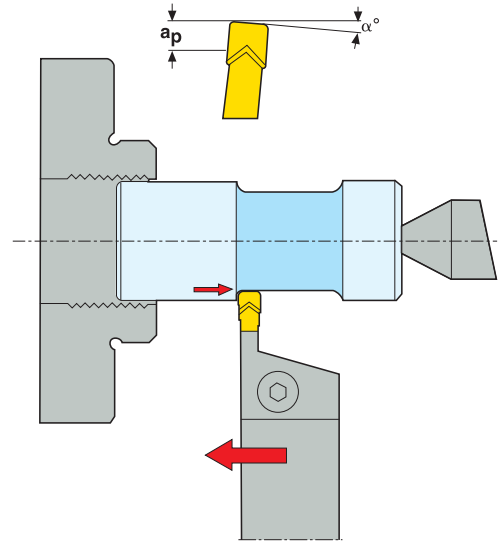
Remember to check the toolholder clearance before using these inserts.

Principles

During turning the axial forces deflect the tool generating a necessary trailing edge clearance angle.

This angle depends on

- Feed
- Depth of cut
- Tool overhang
- Insert width
- Cutting speed
- Workpiece material



The deflection arising during turning causes a minor change of the actual tool length. This influences the received diameter on the workpiece. The exact amount can be figured by running a test piece. First make a groove and then a turning operation to the same diameter with the selected cutting data. Compare the two different diameters and use the formula to calculate a compensation measure.

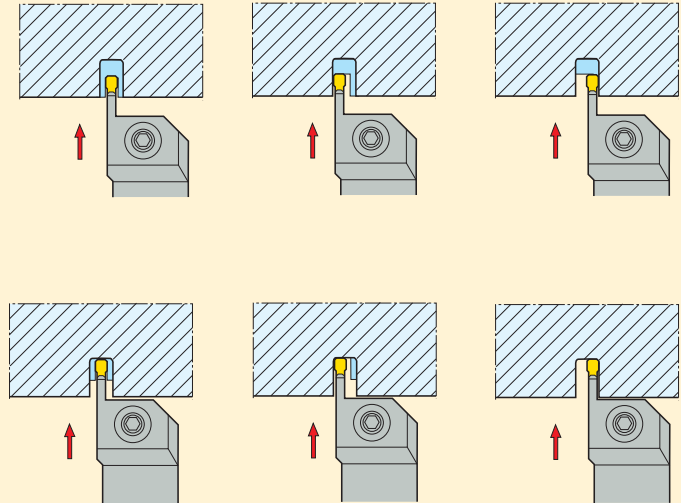
$$\delta = \frac{D_1 - D_2}{2}$$

Technical tips

Use the following technical tips for a favorable cutting process considering chipbreaking, cutting forces and tool life.

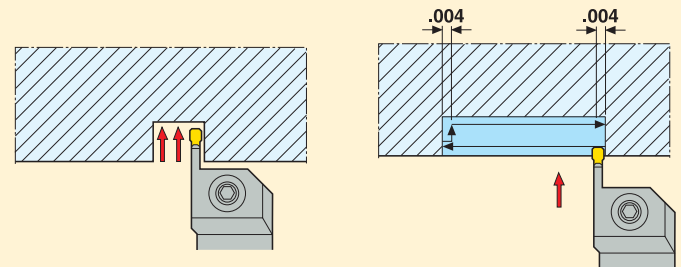
Machining a deep groove

- Make a central groove to half of the total depth.
- Make infeeds at both sides to the same depth.
- Machine a central groove to full depth.
- Make infeeds at both sides to the full depth.
- Always outfeed, do not rapid traverse.



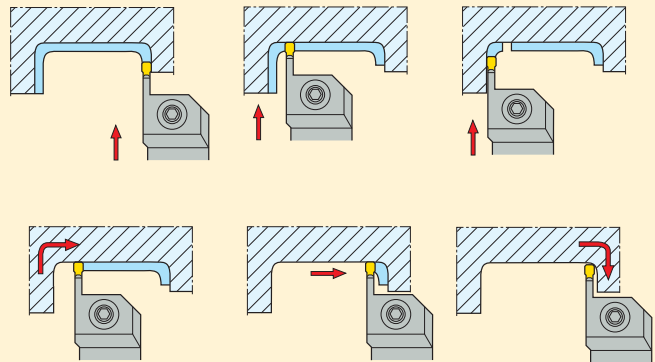
Roughing a recess

- If the depth is larger than the width
- Use successive infeeds to requested diameter.
 - Increment a distance of the insert width – 2 x the insert corner radius to get a flat bottom surface.
 - Always outfeed, do not use rapid traverse.
- If the width is larger than the depth
- Start with a infeed at one end.
 - Use successive alternating turning with infeeds at the end.
 - Release the tool deflection after turning before infeeding (reverse feed and reposition the insert before infeed – .004”).



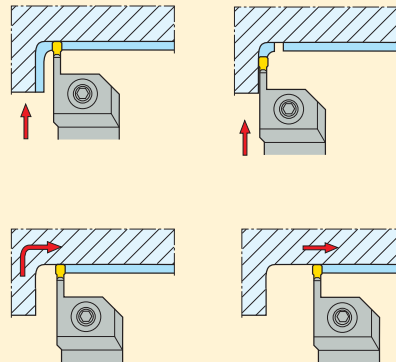
Finishing a recess with corner radius or chamfer

- Machine the face down to the end point of the radius or chamfer.
- Make a groove to the required depth at the end point of the radius or chamfer.
- Machine down to the end point of the radius or chamfer.
- Machine the radius or chamfer.
- Machine the diameter until the end point of the radius or chamfer is reached (remember to compensate for the deflection).
- Machine the radius or chamfer.



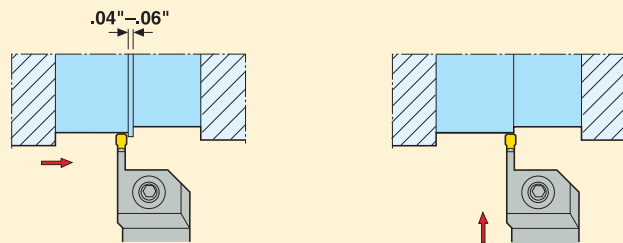
Machining a large corner radius or chamfer

- Make a groove to the required depth at the end point of the radius or chamfer.
- Machine the face down to the end point of the radius or chamfer.
- Machine the radius or chamfer.
- Continue with turning starting from the groove (remember to compensate for the deflection).



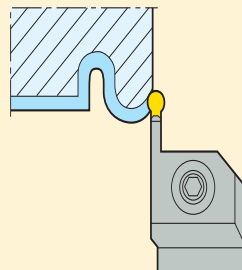
Eliminating a hanging ring

- Turning towards the end of a component or towards a recess sometimes causes a hanging ring.
- To avoid this
- Stop the turning operation .04"–.06" before the end of the component or the recess.
 - Plunge down to the turned diameter.



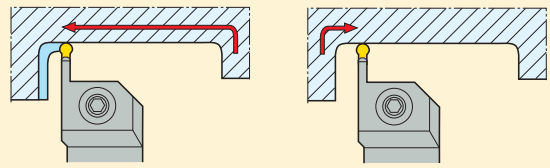
Profiling with round inserts

- The cutting depth should be maximum .4 x the insert diameter.
- There is no requirement to generate a trailing edge clearance angle as the geometry will provide that.



Roughing a recess with round inserts

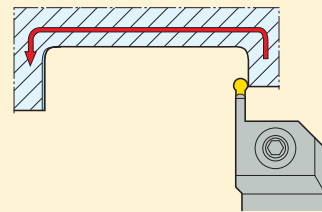
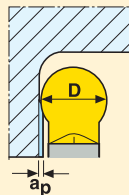
- Machine the face down to the end point of the radius or chamfer.
- Track around the radius.
- Turn to the end point of the radius or chamfer on the other side.
- Machine down the other side and track around the radius or chamfer.



Finishing a recess with round inserts

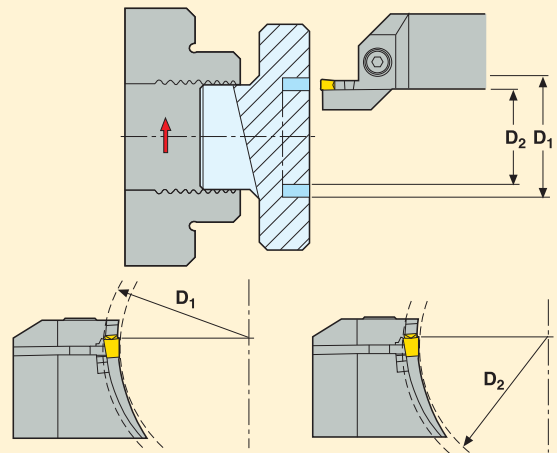
- Make the cut in one continuous movement.
- Notice the maximum cutting depth allowed during outfeeding (see table).

D inch	a_p inch
3 (.125)	.006
4	.008
5 (.187)	.009
6 (.250)	.010
8	.016



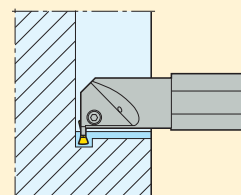
Axial machining

- In axial grooving operations the tool must be adapted to the radius of the groove.
- The toolholder code tells the maximum and minimum diameters that can be handled (see code key).
- The diameter measured on the outside of the blade (D_1) determines the largest diameter that can be made.
- The diameter measured on the inside of the blade (D_2) determines the smallest diameter that can be made.
- This applies to the initial groove only. Changing to turning means no general restrictions besides collision risk if machining towards center.



Internal machining

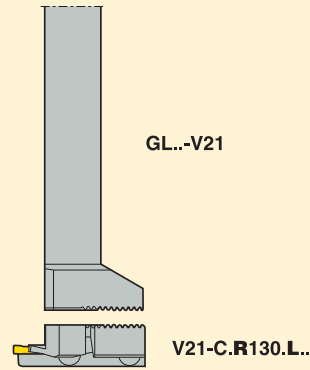
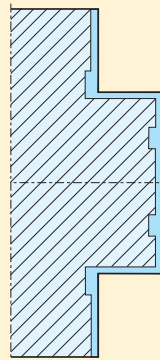
- Generally the same technique as for external machining should be used.
- In blind holes problems can occur with chip evacuation. To avoid that start with making a groove at the inner wall and turn towards the outside.



Modular holders, calculation of dimensions after mounting

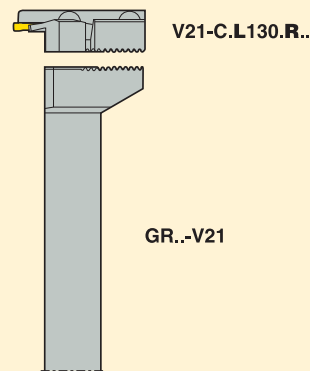
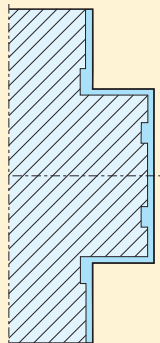
Example, left hand version (L)

- Blade holder GL (alternative Seco Capto GL).
- Blade type V21-C.R130.L..
 $l_1 = l_1 \text{ holder} + f_1 \text{ blade}$
 $f_1 = f_1 \text{ holder} + l_1 \text{ blade}$



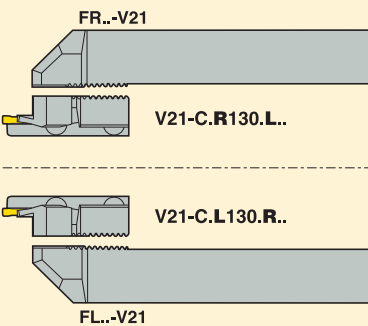
Example, right hand version (R)

- Blade holder GR (alternative Seco Capto GR).
- Blade type V21-C.L130.R..
 $l_1 = l_1 \text{ holder} + f_1 \text{ blade}$
 $f_1 = f_1 \text{ holder} + l_1 \text{ blade}$



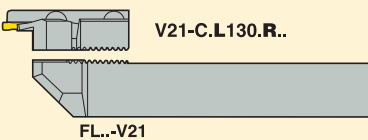
Example, right hand version (R)

- Blade holder FR (alternative Seco Capto FR).
- Blade type V21-C.R130.L..
 $l_1 = l_1 \text{ holder} + l_1 \text{ blade}$
 $f_1 = f_1 \text{ holder} + f_1 \text{ blade}$



Example, left hand version (L)

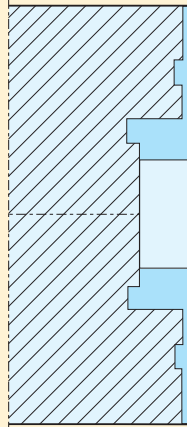
- Blade holder FL (alternative Seco Capto FL).
- Blade type V21-C.L130.R..
 $l_1 = l_1 \text{ holder} + l_1 \text{ blade}$
 $f_1 = f_1 \text{ holder} + f_1 \text{ blade}$



Modular holders, calculation of dimensions after mounting

Example, left hand version (L)

- Blade holder FL (alternative Seco Capto FL).
- Blade type V21-C.L130.L..
- $l_1 = l_1 \text{ holder} + l_1 \text{ blade}$
- $f_1 = f_1 \text{ holder} + f_1 \text{ blade}$

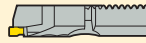


V21-C.L130.L..



FL.-V21

FR.-V21



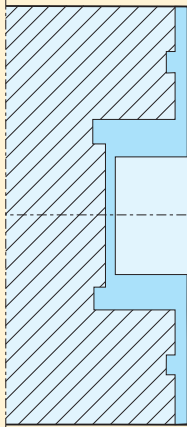
V21-C.R130.R..

Example, right hand version (R)

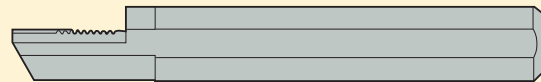
- Blade holder FR (alternative Seco Capto FR).
- Blade type V21-C.R130.R..
- $l_1 = l_1 \text{ holder} + l_1 \text{ blade}$
- $f_1 = f_1 \text{ holder} + f_1 \text{ blade}$

Example, left hand version (L)

- Blade holder A..FL (alternative Seco Capto A..FL).
- Blade type V21-C.L130.L..
- $l_1 = l_1 \text{ holder} + l_1 \text{ blade}$
- $f_1 = f_1 \text{ holder} + f_1 \text{ blade}$

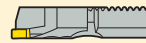
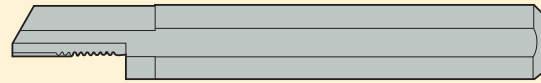


V21-C.L130.L..



A...-FL-V21

A...-FR-V21

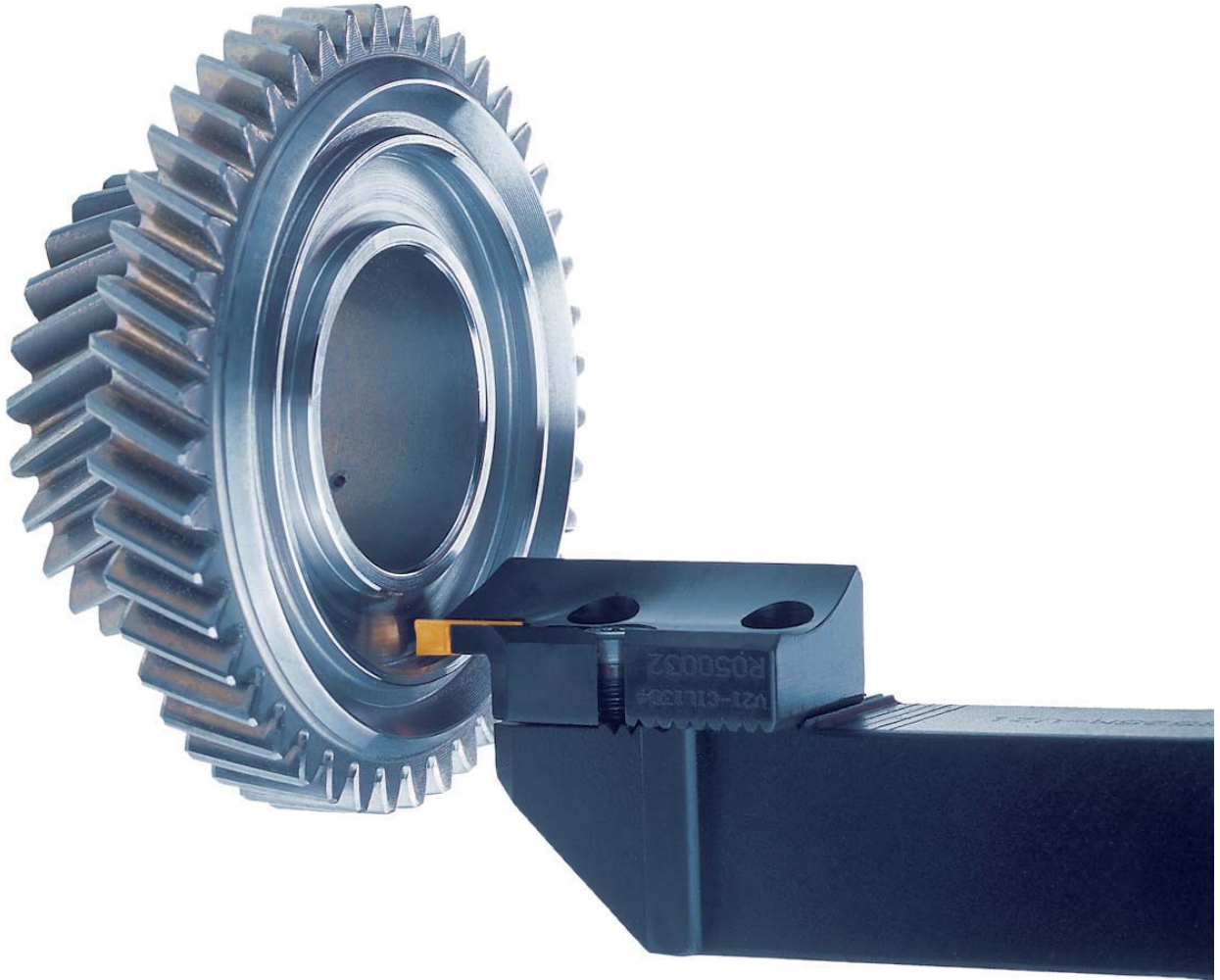


V21-C.R130.R..

Example, right hand version (R)

- Blade holder A..FR (alternative Seco Capto A..FR).
- Blade type V21-C.R130.R..
- $l_1 = l_1 \text{ holder} + l_1 \text{ blade}$
- $f_1 = f_1 \text{ holder} + f_1 \text{ blade}$



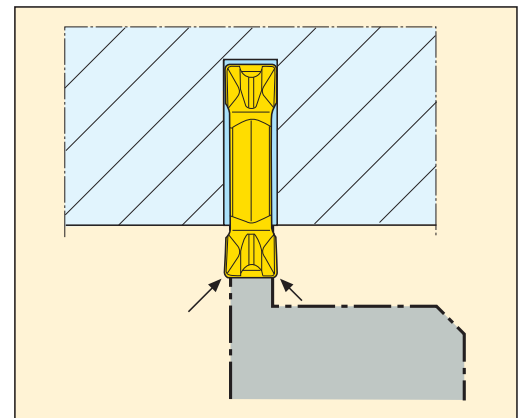


Working depths

CFIR/L	CFMR/L	CFOR/L, CFTR/L, CFPR/L	CFIR/L	CGGR/L
3 x insert width	5 x insert width	CFOR/L 6 x insert width CFTR/L 8.5 x insert width CFPR/L 6.5 x insert width	3 x insert width	1–3.5 x insert width for size 13 2 x insert width for size 16

Maximum working depths for the different toolholder models.

These working depths can be limited when using double ended inserts because of their design. (Maximum total working depth with LCMF 16 inserts is .55" and with LCMF30 inserts 1.10".)



Torque values for clamping screws

Screw	Nm	in/lbs
L85011	5	44
MC6S4..	4	35
MC6S5..	6	53
TCEI05..	6	53
TCEI06..	8	70
TCEI08..	10	88
TCEI10..	15	132

Dynamomentic keys, see page 21.

General recommendations

- Use medium to high feeds for general grooving.
- Use medium to low feeds for precision grooving.
- Always use reverse feed instead of rapid traverse out of grooves.
- Do not use too low cutting depths and feed rates for finishing and semi-finishing turning operations. The appropriate deflection must be achieved. Minimum cutting depths and feed rates are shown in the table below.
- When profiling with round inserts do not use cutting depths over .4 x the insert diameter.
- Lower the cutting data when using the CFMR/L holders because the extra length makes them deflect more.
- Maximum overhang with CGGR/L holders should be 3 x the tool diameter.

Minimum cutting depth (ap) and feed rate (f)

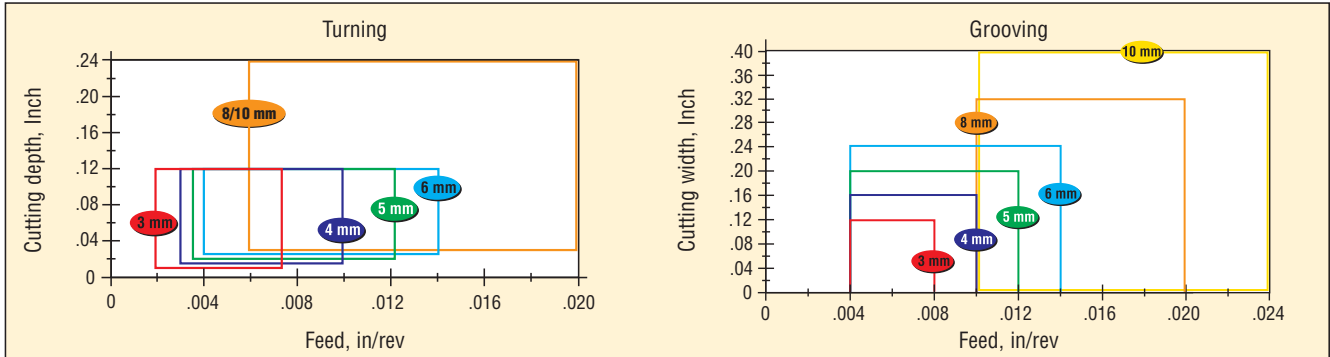
Insert	Min ap	Min f	Insert	Min ap	Min f
3-FT	.012	.002	5-FT	.020	.0035
3-MT	.012	.004	5-MT	.020	.007
3-MG	.020	.002	5-MG	.020	.004
3-MC	.020	.002	5-MC	.020	.002
4-FT	.016	.003	6-FT	.024	.004
4-MT	.016	.006	6-MT	.024	.008
4-MG	.020	.004	6-MG	.024	.004
4-MC	.020	.002	6-MC	.020	.004
			8-FT	.030	.010

MDT 16-30 Cutting depth and feed rate recommendations

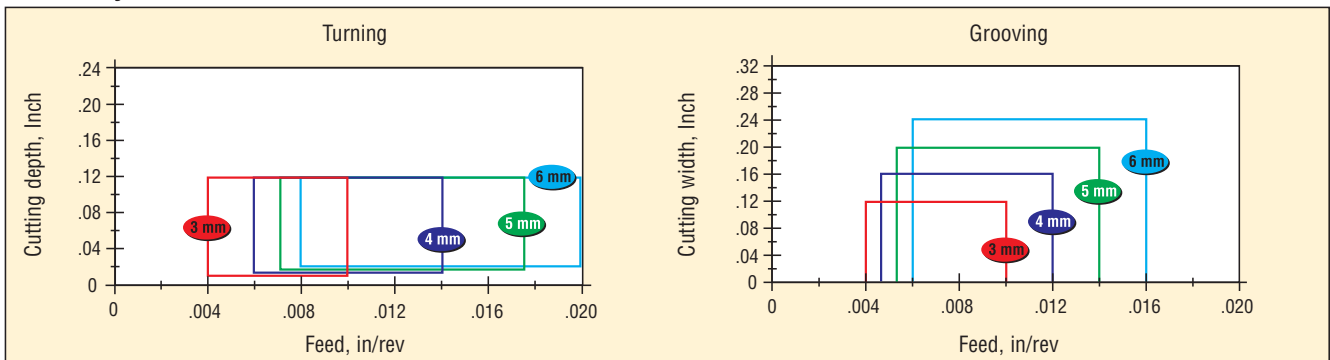
- Size 16 and 30

Recommended cutting depths and feed rates for the different insert geometries are found in the charts below.

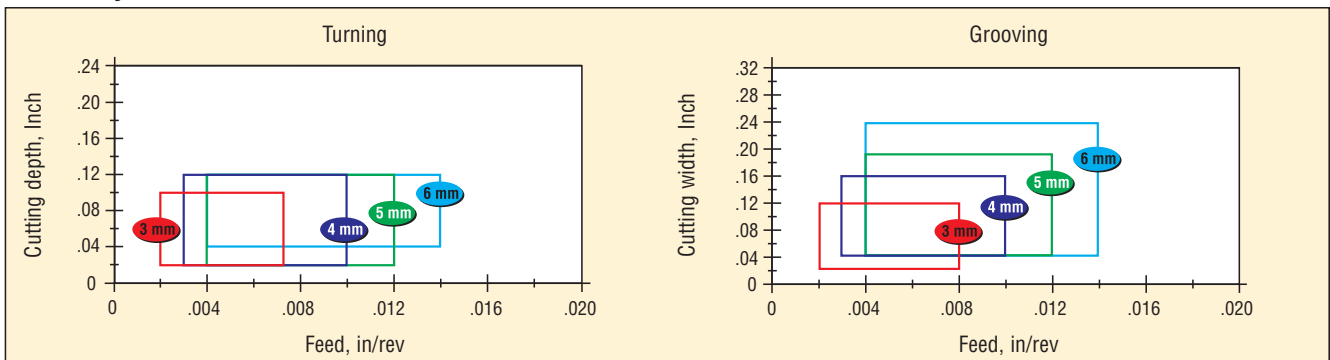
Geometry FT



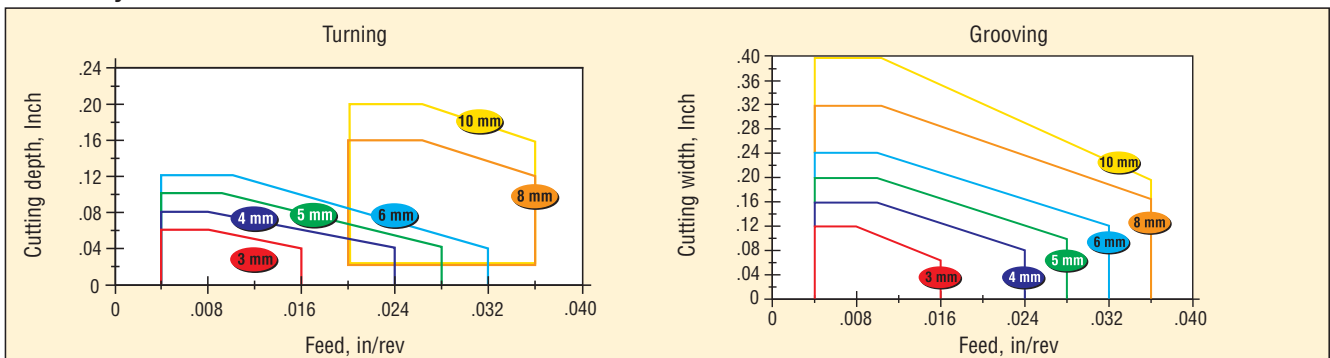
Geometry MT



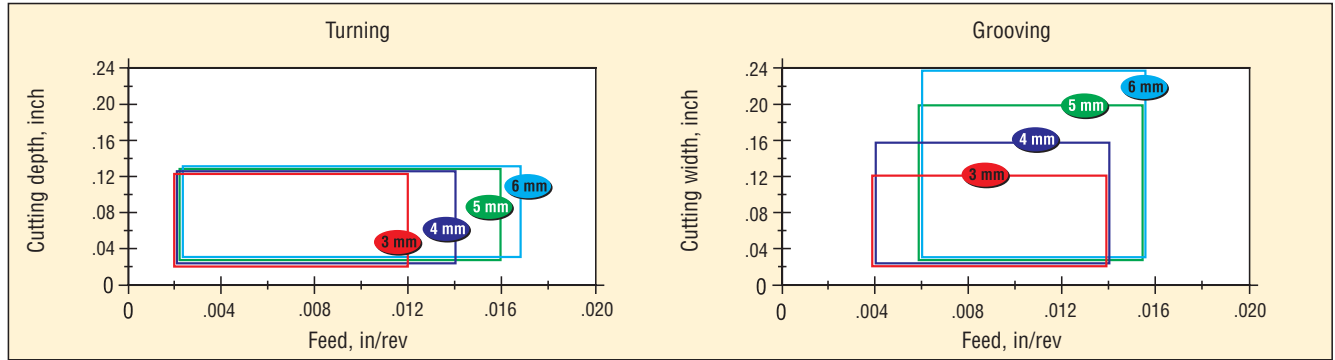
Geometry MG



Geometry MP



Geometry MC

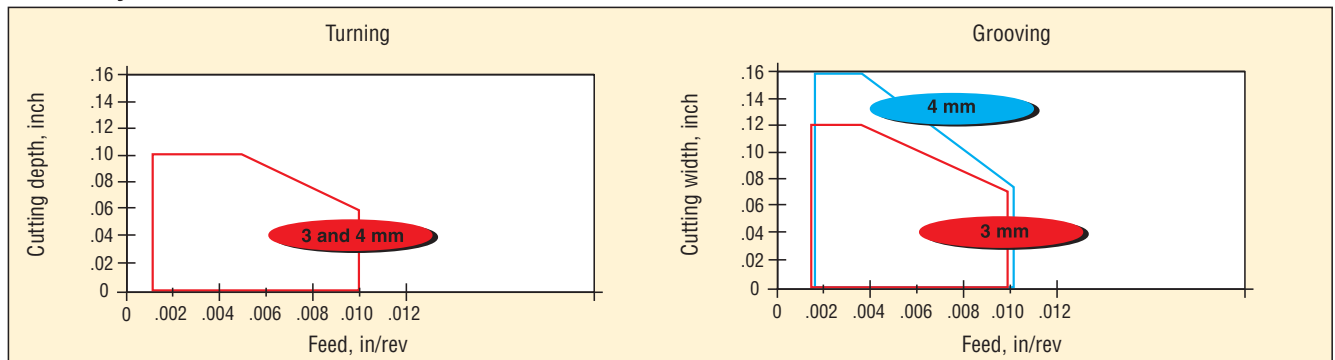


MDT 13 – Cutting depth and feed rate recommendations

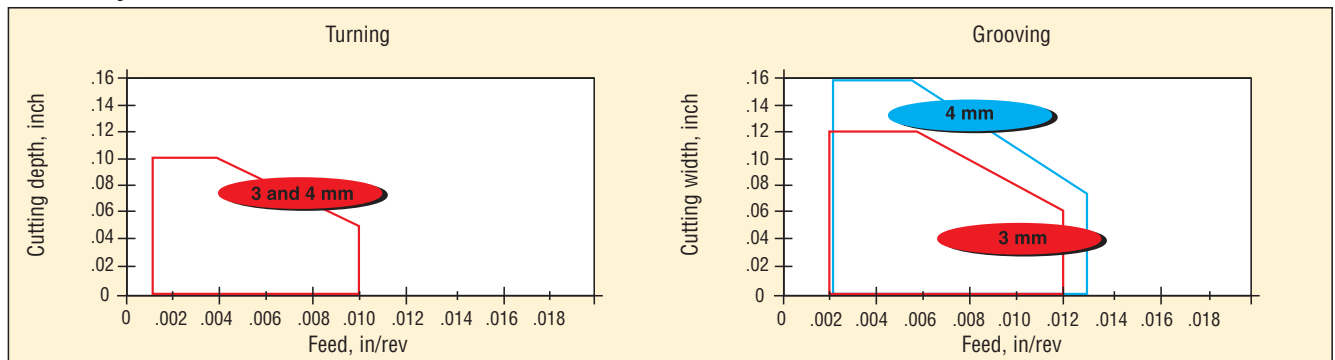
- Size 13

Recommended cutting depths and feed rates are found in the charts below.

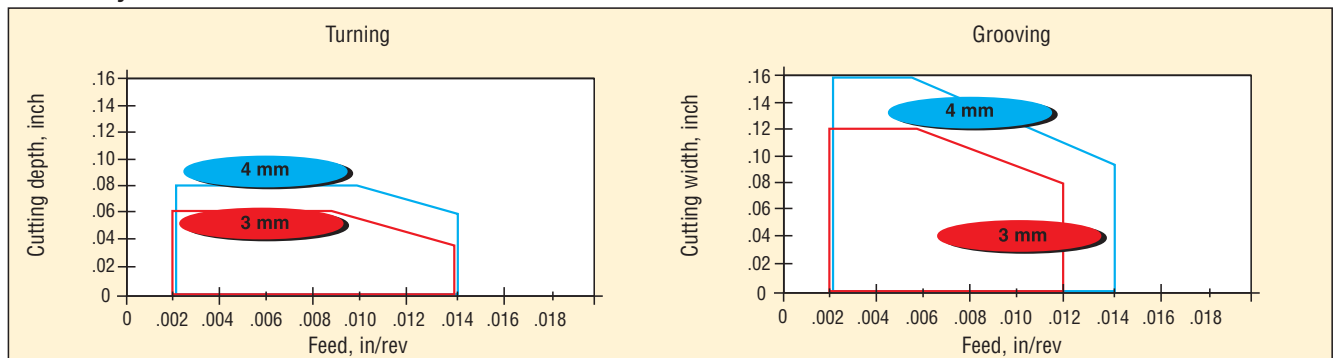
Geometry FT



Geometry MC



Geometry MP



Cutting speed

Classify the workpiece material into a Seco material group to get a cutting speed recommendation based on

- workpiece material
- insert width and grade
- feed rate

For workpiece material classification see page 481-485.

Seco Material Group No.	Cutting speed, v_c (sf/min)										Feed f in/rev
	CP500			CP600	TP200/CP200			TP400	883/890	TK150	
	Insert width, a_p (mm)										
	3,0-4,0	4,5-6,0	8,0-10,0	-	3,0-4,0	4,5-6,0	8,0-10,0	-	3,0-10,0	3,0-8,0	
1	790	690	-	720	920	850	-	770	-	950	.004
	690	620	520	660	890	790	670	690	-	920	.008
	620	560	490	570	820	720	620	620	-	870	.012
	520	460	410	490	790	670	570	520	-	820	.016
	-	390	330	-	-	640	520	-	-	790	.020
2	690	620	-	660	790	690	-	690	-	820	.004
	620	560	490	570	690	640	570	620	-	740	.008
	560	490	430	510	640	570	510	560	-	660	.012
	480	430	390	430	560	510	480	480	-	590	.016
	-	390	330	-	-	460	410	-	-	560	.020
3	640	560	-	590	750	670	-	640	-	790	.004
	570	510	460	540	690	640	570	570	-	740	.008
	490	440	410	480	620	570	520	490	-	660	.012
	430	390	360	410	560	510	480	430	-	590	.016
	-	360	330	-	-	480	430	-	-	560	.020
4	520	480	-	490	740	670	-	540	-	750	.004
	480	390	340	430	670	640	590	480	-	690	.008
	410	360	330	390	620	570	520	410	-	620	.012
	360	330	300	340	570	520	490	360	-	560	.016
	-	310	260	-	-	490	460	-	-	520	.020
5	460	410	-	410	660	620	-	460	-	690	.004
	410	340	300	360	620	560	490	410	-	660	.008
	340	310	260	330	560	510	480	360	-	590	.012
	330	280	230	300	520	480	410	330	-	560	.016
	-	250	200	-	-	430	390	-	-	520	.020
6	430	360	-	410	570	510	-	430	-	620	.004
	360	330	300	340	510	480	430	360	-	560	.008
	330	300	250	310	480	430	390	330	-	510	.012
	300	260	210	260	430	390	340	300	-	480	.016
	-	230	180	-	-	360	330	-	-	440	.020
7	260	230	-	250	430	390	-	260	-	480	.004
	250	210	160	230	390	360	340	250	-	430	.008
	230	180	150	210	360	340	330	230	-	410	.012
	210	160	110	180	340	330	310	210	-	390	.016
	-	-	100	-	-	310	300	-	-	360	.020
8	590	520	-	560	660	610	-	590	-	-	.004
	520	480	410	490	610	560	490	520	-	-	.008
	480	410	360	430	560	490	430	480	-	-	.012
	430	360	310	390	510	430	360	430	-	-	.016
	-	310	260	-	-	390	310	-	-	-	.020
9	510	480	-	480	570	520	-	510	-	-	.004
	480	410	360	430	520	480	410	480	-	-	.008
	410	380	330	390	480	430	390	410	-	-	.012
	380	330	280	360	430	380	330	380	-	-	.016
	-	280	230	-	-	330	300	-	-	-	.020

Cutting speed

Seco Material Group No.	Cutting speed, v_c (sf/min)										Feed f in/rev
	CP500			CP600	TP200			TP400	883/890	TK150	
	Insert width, a_p (mm)										
	3,0-4,0	4,5-6,0	8,0-10,0	-	3,0-4,0	4,5-6,0	8,0-10,0	-	3,0-8,0	3,0-8,0	
10	490	430	-	460	560	490	-	490	-	-	.004
	430	390	360	410	490	460	410	430	-	-	.008
	390	330	300	380	460	390	380	390	-	-	.012
	360	300	250	330	410	360	300	360	-	-	.016
	-	280	210	-	-	310	260	-	-	-	.020
11	310	310	-	300	-	-	-	310	160	-	.004
	280	280	280	260	-	-	-	280	130	-	.008
	260	260	260	230	-	-	-	260	110	-	.012
	230	230	230	210	-	-	-	230	-	-	.016
	-	-	210	-	-	-	-	-	-	-	.020
12	440	410	-	-	590	560	-	440	330	660	.004
	410	360	330	-	560	510	480	410	280	620	.008
	340	310	260	-	510	440	390	340	260	570	.012
	310	260	230	-	480	410	340	310	250	540	.016
	-	250	210	-	-	390	330	-	-	490	.020
13	360	330	-	-	490	460	-	360	330	560	.004
	330	300	250	-	460	410	360	330	280	510	.008
	280	260	230	-	410	390	340	280	250	480	.012
	250	230	200	-	360	340	330	250	210	430	.016
	210	210	200	-	-	330	310	210	-	390	.020
14	340	310	-	-	430	390	-	340	300	520	.004
	310	260	230	-	390	340	310	310	250	490	.008
	260	250	210	-	340	330	300	260	210	430	.012
	230	210	180	-	310	300	280	230	160	390	.016
	-	180	160	-	-	250	230	-	-	360	.020
15	340	310	-	-	430	390	-	340	250	490	.004
	310	260	230	-	390	340	310	310	210	460	.008
	260	250	210	-	340	330	300	260	160	410	.012
	230	210	180	-	310	300	280	230	130	380	.016
	-	180	160	-	-	250	230	-	-	330	.020

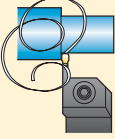
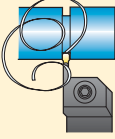
Cutting data for grade 883 and 890

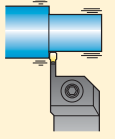
The machinability of the workpiece material expressed in percent is given on page 486.

Machinability %	Type of application	Initial values		Cutting speed, v_c (sf/min)											
		D.O.C a_p (in)	Feed f (in/rev)	Machinability (%)											
				60	55	50	45	40	35	30	25	20	15	10	5
40-60	F	.010-.059	.003-.008	490	460	440	430	390	-	-	-	-	-	-	-
	M	.039-.118	.004-.010	380	360	330	310	300	-	-	-	-	-	-	-
	R	.059-.197	.008-.016	250	230	210	200	160	-	-	-	-	-	-	-
21-35	F	.008-.059	.004-.010	-	-	-	-	-	250	250	210	-	-	-	-
	M	.039-.118	.006-.012	-	-	-	-	-	200	180	160	-	-	-	-
	R	.059-.197	.008-.016	-	-	-	-	-	150	130	110	-	-	-	-
11-20	F	.008-.059	.004-.010	-	-	-	-	-	-	-	200	180	-	-	-
	M	.039-.118	.006-.012	-	-	-	-	-	-	-	150	130	-	-	-
	R	.059-.197	.008-.016	-	-	-	-	-	-	-	110	80	-	-	-
5-10	F	.008-.059	.004-.010	-	-	-	-	-	-	-	-	-	-	110	70
	M	.039-.118	.006-.012	-	-	-	-	-	-	-	-	-	-	80	50
	R	.059-.197	.008-.016	-	-	-	-	-	-	-	-	-	-	70	30

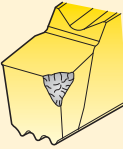
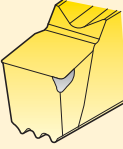
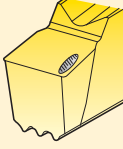
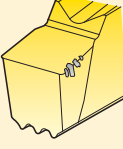
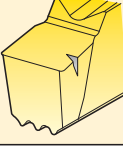


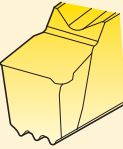
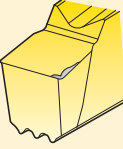
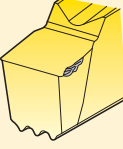
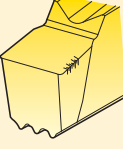
Machining problems

<p>Chipbreaking problems/ turning</p> 	<ul style="list-style-type: none"> • Increase feed rate or cutting depth. • Use narrower insert with smaller radius.
<p>Chipbreaking problems/ grooving</p> 	<ul style="list-style-type: none"> • Reduce the cutting speed. • Increase the feed rate. • Use interrupted feed.


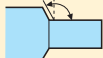
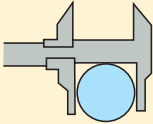
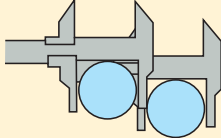
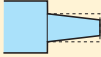
<p>Vibrations</p> 	<ul style="list-style-type: none"> • Reduce the cutting speed. • Increase the feed rate. • Reduce the cutting depth. • Improve the stability of the tool and workpiece. • Select an insert with smaller radius.
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Tool life problems

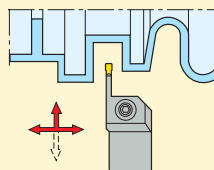
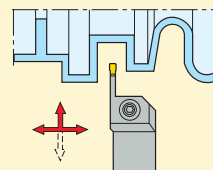
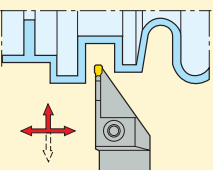
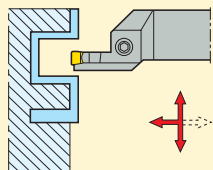
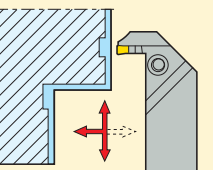
<p>Breakage</p> 	<ul style="list-style-type: none"> • Reduce the feed rate. • Reduce the cutting depth. • Select a tougher grade. • Select an insert with larger radius.
<p>Rapid flank wear</p> 	<ul style="list-style-type: none"> • Reduce the cutting speed. • Select a more wear resistant grade.
<p>Rapid crater wear</p> 	<ul style="list-style-type: none"> • Reduce the cutting speed. • Reduce the feed rate. • Use coolant. • Select a more wear resistant grade.
<p>Chipping</p> 	<ul style="list-style-type: none"> • Increase the cutting speed. • Reduce the feed rate. • Select a tougher grade.
<p>Notch wear</p> 	<ul style="list-style-type: none"> • Reduce the cutting speed. • Reduce the feed rate.

<p>Plastic deformation</p> 	<ul style="list-style-type: none"> • Reduce the cutting speed. • Reduce the feed rate. • Use coolant. • Select a more wear resistant grade. • Select an insert with larger radius.
<p>Built-up edge</p> 	<ul style="list-style-type: none"> • Increase the cutting speed. • Increase the feed rate. • Do not use coolant.
<p>Chip hammering</p> 	<ul style="list-style-type: none"> • Change the feed rate. • Change the cutting depth.
<p>Comb cracks</p> 	<ul style="list-style-type: none"> • Reduce the cutting speed. • Reduce the feed rate. • Use abundant coolant flow or no coolant at all.

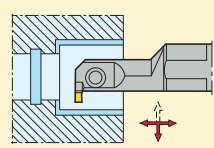
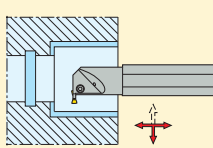
Workpiece out of tolerance

<p>Poor surface finish</p> 	<ul style="list-style-type: none"> • Reduce the feed rate. • Increase the cutting speed. • Reduce the cutting depth. • Use coolant. • Improve the stability of the tool and workpiece. 	<p>Inaccurate square facing</p> 	<ul style="list-style-type: none"> • Final facing should be made as radial machining from outside to center.
<p>Diameter out of tolerance</p> 	<ul style="list-style-type: none"> • Check the tool length compensation measure. • Reduce the cutting speed. • Select a more wear resistant grade. 	<p>Repeatability problems</p> 	<ul style="list-style-type: none"> • Keep machining conditions constant. • Check the insert wear.
<p>Diameter variation</p> 	<ul style="list-style-type: none"> • After grooving the tool must be retracted in accordance with the compensation measurement before proceeding with turning. • Keep machining conditions constant during turning operation. 		

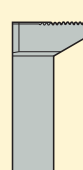
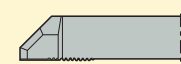
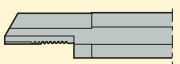
External toolholders

<p>CFIR/L CIIR/L (Swiss)</p>  <p>pages 330-331, 340</p>	<p>CFMR/L</p>  <p>pages 332-333</p>	<p>CFPR/L CFTR/L</p>  <p>page 334</p>	<p>CFIR/L</p>  <p>pages 335-337</p>	<p>CGIR/L</p>  <p>pages 338-339</p>
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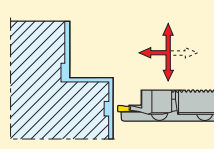
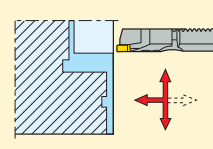
Internal toolholders

<p>A...-CG.R/L</p>  <p>page 341</p>	<p>A...-CGGR/L</p>  <p>page 342</p>			
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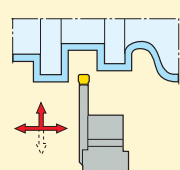
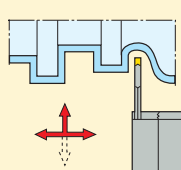
Holders for modular blades

<p>GR/L Ext.</p>  <p>page 343</p>	<p>FR/L Ext.</p>  <p>page 343</p>	<p>A...-FR/L Int.</p>  <p>page 344</p>		
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Blades, modular

 <p>page 345</p>	 <p>page 346</p>			
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Holder and blades

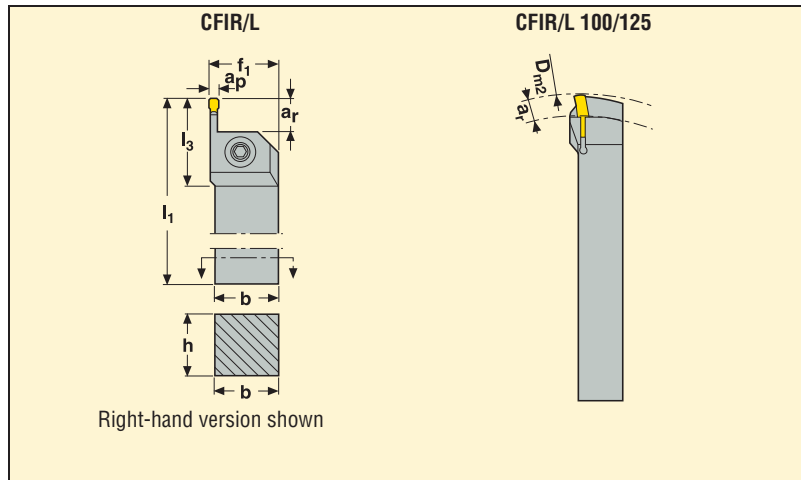
<p>SFN/CF.N</p>  <p>page 347</p>	<p>CF.N (150.10)</p>  <p>page 348</p>			
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
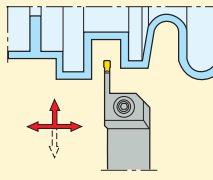
Toolholders for inserts LCMF, LCMR and LCGN







• Inserts, please see pages 352-359, 361

Standard reach toolholders



Application		Part No.	Dimensions in inch								Seat size	.eps
			h	b	l ₁	f ₁	l ₃	a _r	D _{m2}			
	3	CFIR 063 03B	.625	.625	4.5	.875	1.12	.430	—	0.5	3	LC..1603..
		075 03B	.750	.750	4.5	1.00	1.14	.430	—	1.3	3	LC..1603..
		100 03D	1.00	1.00	6	1.25	1.14	.430	7.70	1.7	3	LC..1603..
		125 03D	1.25	1.25	6	1.50	1.61	.430	7.70	2.7	3	LC..1603..
		CFIL 063 03B	.625	.625	4.5	.875	1.12	.430	—	0.5	3	LC..1603..
		075 03B	.750	.750	4.5	1.00	1.14	.430	—	1.3	3	LC..1603..
		100 03D	1.00	.750	6	1.25	1.14	.430	7.70	1.7	3	LC..1603..
		125 03D	1.25	1.25	6	1.50	1.61	.430	7.70	2.7	3	LC..1603..
	4	CFIR 075 04B	.750	.750	4.5	1.00	1.22	.530	—	0.7	4	LC..1604..
		100 04D	1.00	1.00	6	1.25	1.22	.530	7.70	1.7	4	LC..1604..
		125 04D	1.25	1.25	6	1.50	1.61	.530	7.70	2.7	4	LC..1604..
		CFIL 075 04B	.750	.750	4.5	1.00	1.22	.530	—	0.7	4	LC..1604..
		100 04D	1.00	1.00	6	1.25	1.22	.530	7.70	1.7	4	LC..1604..
		125 04D	1.25	1.25	6	1.50	1.61	.530	7.70	2.7	4	LC..1604..

Spare Parts, Parts included in delivery

Toolholder/ Insert dimension	Clamp screw/ Key (old version)		Clamp screw/ Key (new version)	
				
..03	MC6S 4x18	3 SMS795	TCEI0513	4 SMS795
..04	MC6S 5x18	4 SMS795	TCEI0613	5 SMS795

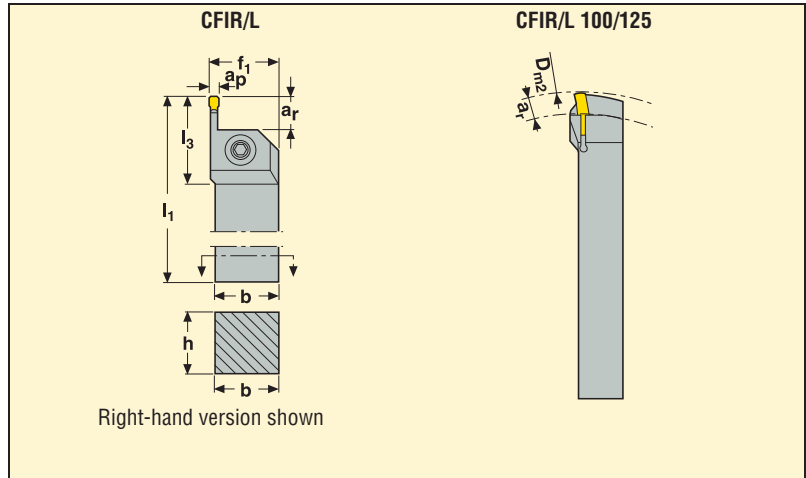
Please check availability in current price and stock-list




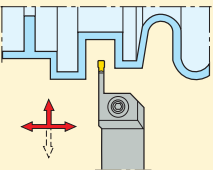
Toolholders for inserts LCMF, LCMR and LCGN



• Inserts, please see pages 352-358, 361





Standard reach toolholders



Application		Part No.	Dimensions in inch									Seat size	
			h	b	l ₁	f ₁	l ₃	a _r *	D _{m2}				
	5	CFIR 075 05B	.750	.750	4.5	1.00	1.42	.610	—	0.7	5	LC..1605..	
		100 05D	1.00	1.00	6	1.25	1.42	.610	7.70	1.7	5	LC..1605..	
		125 05D	1.25	1.25	6	1.50	1.61	.610	7.70	2.7	5	LC..1605..	
		CFIL 075 05B	.750	.750	4.5	1.00	1.42	.610	—	0.7	5	LC..1605..	
		100 05D	1.00	1.00	6	1.25	1.42	.610	7.70	1.7	5	LC..1605..	
		125 05D	1.25	1.25	6	1.25	1.61	.610	7.70	2.7	5	LC..1605..	
	6	CFIR 100 06D	1.00	1.00	6	1.25	1.61	.800	7.70	1.7	6	LC..1606..	
		125 06D	1.25	1.25	6	1.50	1.61	.800	7.70	2.7	6	LC..1606..	
		CFIL 100 06D	1.00	1.00	6	1.25	1.61	.800	7.70	1.7	6	LC..1606..	
		125 06D	1.25	1.25	6	1.50	1.61	.800	7.70	2.7	6	LC..1606..	
	8	CFIR 100 08D	1.00	1.00	6	1.25	1.98	1.00	7.70	1.7	8	LC..3008..	
		125 08E	1.25	1.25	7	1.50	1.98	1.00	7.70	2.7	8	LC..3008..	
CFIL 100 08D		1.00	1.00	6	1.25	1.98	1.00	7.70	1.7	8	LC..3008..		
125 08E		1.25	1.25	7	1.50	1.98	1.00	7.70	3.0	8	LC..3008..		

*Max depth of cut for LCMF16.. = .550 in., LCMF30.. = 1.100 in.

Spare Parts, Parts included in delivery

Toolholder/ Insert dimension	Clamp screw/ Key (old version)		Clamp screw/ Key (new version)	
				
..05	MC6S 5x18	4 SMS795	TCEI0613	5 SMS795
..06	MC6S 6x20	5 SMS795	TCEI0815	6 SMS795
..08	TCEI 0825	6 SMS795	TCEI1020	6 SMS795

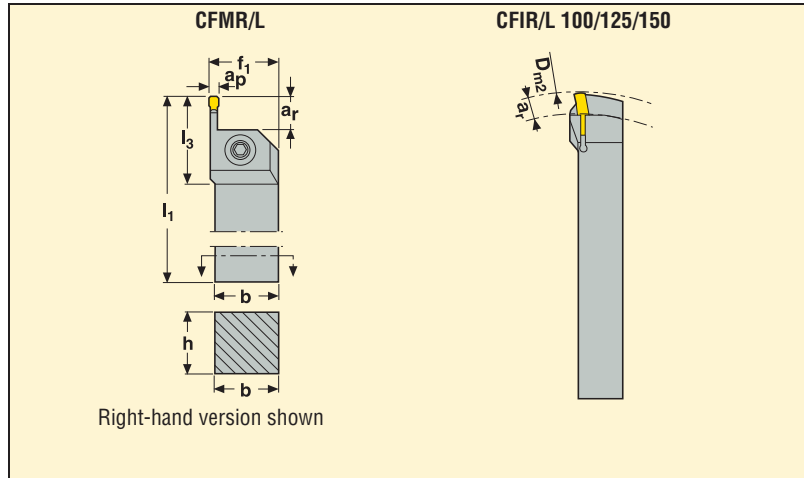
Please check availability in current price and stock-list

Toolholders for inserts LCMF, LCMR and LCGN

Long reach toolholders



• Inserts, please see pages 352-359, 361



Application	Part No.	Dimensions in inch								lbs	Seat size	Insert
		h	b	l ₁	f ₁	l ₃	a _r *	D _{m2}				
	3	CFMR 075 03B	.750	.750	4.5	1.00	1.14	.680	7.70	0.7	3	LC..1603..
		100 03D	1.00	1.00	6	1.25	1.44	.680	7.70	1.4	3	LC..1603..
		125 03D	1.25	1.25	6	1.50	1.14	.680	7.70	2.2	3	LC..1603..
		150 03E	1.50	1.50	7	2.00	1.62	.680	7.70	3.6	3	LC..1603..
		CFML 075 03B	.750	.750	4.5	1.00	1.14	.680	7.70	0.7	3	LC..1603..
		100 03D	1.00	1.00	6	1.25	1.44	.680	7.70	1.4	3	LC..1603..
		125 03D	1.25	1.25	6	1.50	1.14	.680	7.70	2.2	3	LC..1603..
		150 03E	1.50	1.50	7	2.00	1.62	.680	7.70	3.6	3	LC..1603..
	4	CFMR 075 04B	.750	.750	4.5	1.00	1.22	.787	7.70	0.7	4	LC..1604..
		100 04D	1.00	1.00	6	1.25	1.54	.787	7.70	1.4	4	LC..1604..
		125 04D	1.25	1.25	6	1.50	1.22	.787	7.70	2.2	4	LC..1604..
		150 04E	1.50	1.50	7	2.00	1.97	.787	7.70	3.6	4	LC..1604..
		CFML 075 04B	.750	.750	4.5	1.00	1.22	.787	7.70	0.7	4	LC..1604..
		100 04D	1.00	1.00	6	1.25	1.54	.787	7.70	1.4	4	LC..1604..
		125 04D	1.25	1.25	6	1.50	1.22	.787	7.70	2.2	4	LC..1604..
		150 04E	1.50	1.50	7	2.00	1.97	.787	7.70	3.6	4	LC..1604..

*Max depth of cut for LCMF16.. = .550 in.

Spare Parts, Parts included in delivery

Toolholder/ Insert dimension	Clamp screw/ Key (old version)		Clamp screw/ Key (new version)	
..03	MC6S 4x18	3 SMS795	TCEI0513	4 SMS795
..04	MC6S 5x18	4 SMS795	TCEI0613	5 SMS795

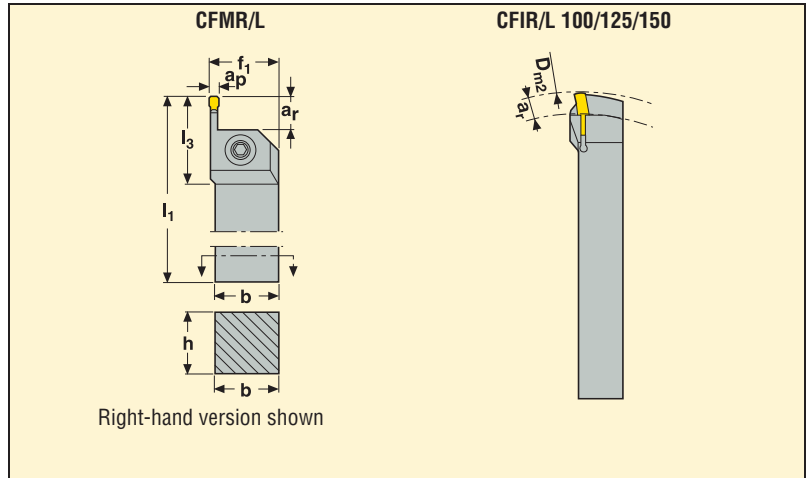
Please check availability in current price and stock-list




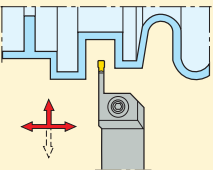
Toolholders for inserts LCMF, LCMR and LCGN

Long reach toolholders







• Inserts, please see pages 352-358, 361



Application		Part No.	Dimensions in inch									Seat size	
			h	b	l ₁	f ₁	l ₃	a _r *	D _{m2}				
	5	CFMR 100 05D	1.00	1.00	6	1.25	1.70	.984	7.70	1.5	5	LC..1605..	
		125 05D	1.25	1.25	6	1.50	1.42	.984	7.70	2.2	5	LC..1605..	
		150 05E	1.50	1.50	7	2.00	2.25	.984	7.70	3.6	5	LC..1605..	
		CFML 100 05D	1.00	1.00	6	1.25	1.70	.984	7.70	1.5	5	LC..1605..	
		125 05D	1.25	1.25	6	1.50	1.42	.984	7.70	2.2	5	LC..1605..	
		150 05E	1.50	1.50	7	2.00	2.25	.984	7.70	3.6	5	LC..1605..	
	6	CFMR 100 06D	1.00	1.00	6	1.25	2.05	1.300	7.70	1.5	6	LC..1606..	
		125 06D	1.25	1.25	6	1.50	1.61	1.300	7.70	2.3	6	LC..1606..	
		150 06E	1.50	1.50	7	2.00	2.61	1.300	7.70	3.6	6	LC..1606..	
		CFML 100 06D	1.00	1.00	6	1.25	2.05	1.300	7.70	1.5	6	LC..1606..	
		125 06D	1.25	1.25	6	1.50	1.61	1.300	7.70	2.3	6	LC..1606..	
		150 06E	1.50	1.50	7	2.00	2.61	1.300	7.70	3.6	6	LC..1606..	
	8	CFMR 100 08D	1.00	1.00	6	1.25	1.98	1.620	7.70	1.5	8	LC..3008..	
		125 08E	1.25	1.25	7	1.50	1.98	1.620	7.70	2.3	8	LC..3008..	
		150 08E	1.50	1.50	7	2.00	3.28	1.620	7.70	3.6	8	LC..3008..	
		CFML 100 08D	1.00	1.00	6	1.125	1.98	1.620	7.70	1.5	8	LC..3008..	
		125 08E	1.25	1.25	7	1.50	1.98	1.620	7.70	2.3	8	LC..3008..	
		150 08E	1.50	1.50	7	2.00	3.28	1.620	7.70	3.6	8	LC..3008..	

*Max depth of cut for LCMF16.. = .550 in., LCMF30.. = 1.100 in.

Spare Parts, Parts included in delivery

Toolholder/ Insert dimension	Clamp screw/ Key (old version)		Clamp screw/ Key (new version)	
				
..05	MC6S 5x18	4 SMS795	TCEI0613	5 SMS795
..06	MC6S 6x20	5 SMS795	TCEI0815	6 SMS795
..08	TCEI 0825	6 SMS795	TCEI1020	6 SMS795

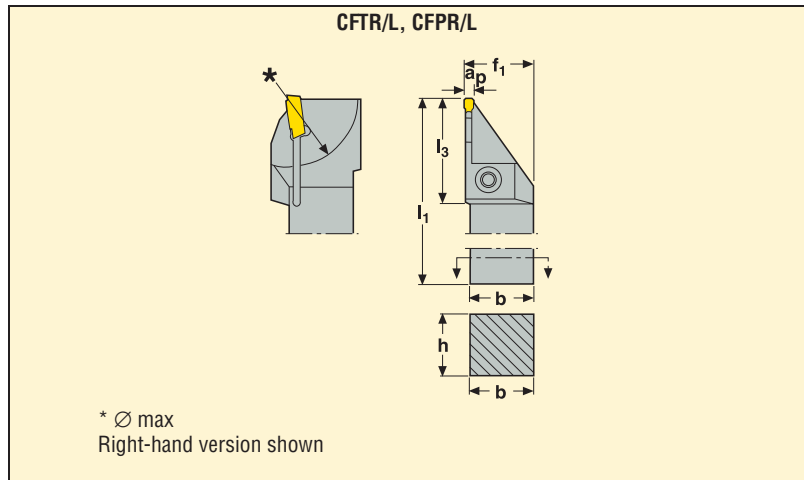
Please check availability in current price and stock-list

Toolholders for inserts LCMR



• Inserts, please see pages 352-359, 361

Deep grooving/Cut-off toolholders



Application	 a_p	Part No.	Dimensions in inch					 lbs	Seat size		
			h	b	l_1	f_1	l_3				Ø max*
	3	CFTR 075 03C	.75	.75	5.00	1.00	1.65	2.00	.88	3	LC..1603..
		CFTR 100 03D	1.00	1.00	6.00	1.25	1.65	2.00	1.54	3	LC..1603..
		CFTL 075 03C	.75	.75	5.00	1.00	1.65	2.00	.88	3	LC..1603..
		CFTL 100 03D	1.00	1.00	6.00	1.25	1.65	2.00	1.54	3	LC..1603..
	4	CFPR 075 04C	.75	.75	5.00	1.00	1.65	2.00	.88	4	LC..1604..
		CFPR 100 04D	1.00	1.00	6.00	1.25	1.65	2.00	1.54	4	LC..1604..
		CFPL 075 04C	.75	.75	5.00	1.00	1.65	2.00	.88	4	LC..1604..
		CFPL 100 04D	1.00	1.00	6.00	1.25	1.65	2.00	1.54	4	LC..1604..

*Due to the design, grooving depth is limited.

Spare Parts, Parts included in delivery

Toolholder/ Insert dimension	Clamp screw	Key
CFT..	TCEI0513	4 SMS795
CFP..	TCEI0613	5 SMS795

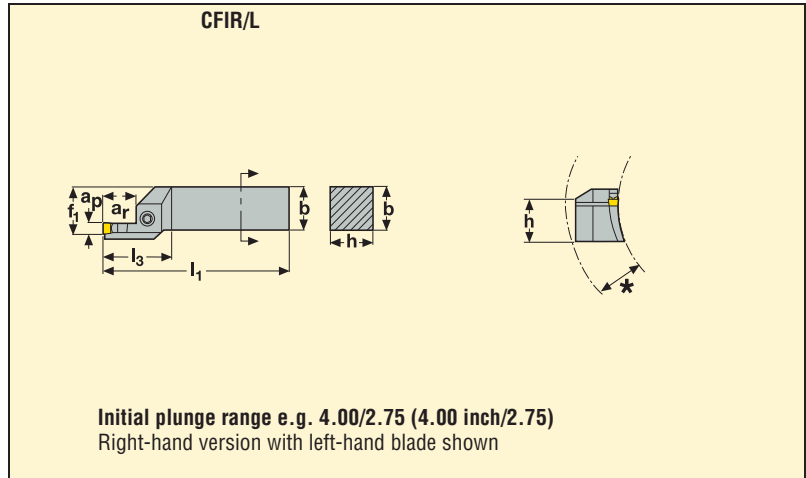
Please check availability in current price and stock-list

Toolholders for inserts LCMF, LCMR and LCGN

Face machining toolholders



• Inserts, please see pages 352-359, 361



Application	Initial plunge*	Part No.	Dimensions in inch						lbs	Seat size	
			h	b	l ₁	f ₁	l ₃	a _r			
	3	4.00/2.75 CFIR 100 03D-L4.00 2.75	1.00	1.00	6	1.25	1.10	.430	1.7	3	LC..1603..
		5.00/3.50 100 03D-L5.00 3.50	1.00	1.00	6	1.25	1.10	.430	1.7	3	LC..1603..
		6.70/4.30 100 03D-L6.70 4.30	1.00	1.00	6	1.25	1.10	.430	1.7	3	LC..1603..
		4.00/2.75 CFIL 100 03D-R4.00 2.75	1.00	1.00	6	1.25	1.10	.430	1.7	3	LC..1603..
		5.00/3.50 100 03D-R5.00 3.50	1.00	1.00	6	1.25	1.10	.430	1.7	3	LC..1603..
		6.70/4.30 100 03D-R6.70 4.30	1.00	1.00	6	1.25	1.10	.430	1.7	3	LC..1603..
	4	4.00/2.75 CFIR 100 04D-L4.00 2.75	1.00	1.00	6	1.25	1.22	.530	1.7	4	LC..1604..
		5.00/3.50 100 04D-L5.00 3.50	1.00	1.00	6	1.25	1.22	.530	1.7	4	LC..1604..
		9.00/5.50 100 04D-L9.00 5.50	1.00	1.00	6	1.25	1.22	.530	1.7	4	LC..1604..
		4.00/2.75 CFIL 100 04D-R4.00 2.75	1.00	1.00	6	1.25	1.22	.530	1.7	4	LC..1604..
		5.00/3.50 100 04D-R5.00 3.50	1.00	1.00	6	1.25	1.22	.530	1.7	4	LC..1604..
		9.00/5.50 100 04D-R9.00 5.50	1.00	1.00	6	1.25	1.22	.530	1.7	4	LC..1604..

*Initial plunge relates to face groove diameter

Spare Parts, Parts included in delivery

Toolholder/ Insert dimension	Clamp screw/ Key (old version)		Clamp screw/ Key (new version)		
..03	MC6S 4x18	3 SMS795	TCEI0513	4 SMS795	
..04	MC6S 5x18	4 SMS795	TCEI0613	5 SMS795	

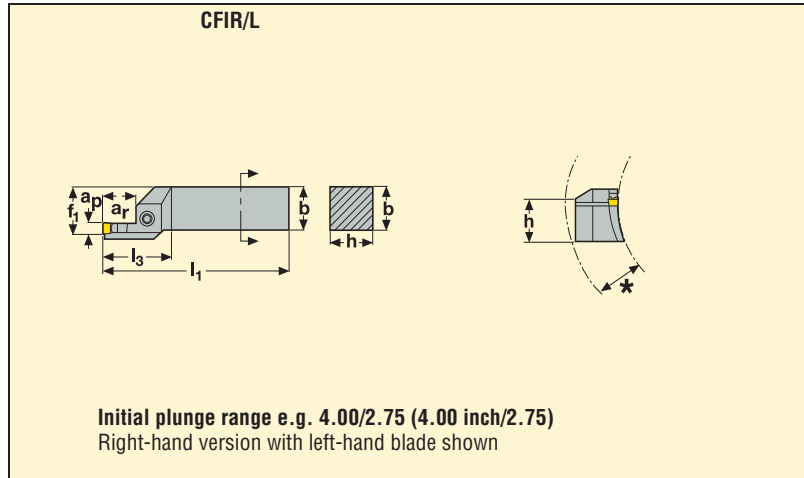
Please check availability in current price and stock-list

Toolholders for inserts LCMF, LCMR and LCGN

Face machining toolholders



• Inserts, please see pages 352-358, 361



Application	Initial plunge* ap	Part No.	Dimensions in inch						lbs	Seat size	
			h	b	l ₁	f ₁	l ₃	a _r *			
	5	CFIR 100 05D-L4.00 2.75	1.00	1.00	6	1.25	1.42	.610	1.7	5	LC..1605..
		100 05D-L5.00 3.50	1.00	1.00	6	1.25	1.42	.610	1.7	5	LC..1605..
		100 05D-L6.70 4.30	1.00	1.00	6	1.25	1.42	.610	1.7	5	LC..1605..
		100 05D-L9.00 5.50	1.00	1.00	6	1.25	1.42	.610	1.7	5	LC..1605..
		CFIL 100 05D-R4.00 2.75	1.00	1.00	6	1.25	1.42	.610	1.7	5	LC..1605..
		100 05D-R5.00 3.50	1.00	1.00	6	1.25	1.42	.610	1.7	5	LC..1605..
		100 05D-R6.70 4.30	1.00	1.00	6	1.25	1.42	.610	1.7	5	LC..1605..
		100 05D-R9.00 5.50	1.00	1.00	6	1.25	1.42	.610	1.7	5	LC..1605..
		6	CFIR 100 06D-L4.00 2.75	1.00	1.00	6	1.25	1.57	.800	1.7	6
	100 06D-L5.00 3.50	1.00	1.00	6	1.25	1.57	.800	1.7	6	LC..1606..	
	100 06D-L6.70 4.30	1.00	1.00	6	1.25	1.57	.800	1.7	6	LC..1606..	
	100 06D-L9.00 5.50	1.00	1.00	6	1.25	1.57	.800	1.7	6	LC..1606..	
	CFIL 100 06D-R4.00 2.75	1.00	1.00	6	1.25	1.57	.800	1.7	6	LC..1606..	
	100 06D-R5.00 3.50	1.00	1.00	6	1.25	1.57	.800	1.7	6	LC..1606..	
	100 06D-R6.70 4.30	1.00	1.00	6	1.25	1.57	.800	1.7	6	LC..1606..	
	100 06D-R9.00 5.50	1.00	1.00	6	1.25	1.57	.800	1.7	6	LC..1606..	

*Initial plunge relates to face groove diameter

Spare Parts, Parts included in delivery

Toolholder/ Insert dimension	Clamp screw/ Key (old version)		Clamp screw/ Key (new version)	
..05	MC6S 5x18	4 SMS795	TCEI0613	5 SMS795
..06	MC6S 6x20	5 SMS795	TCEI0815	6 SMS795

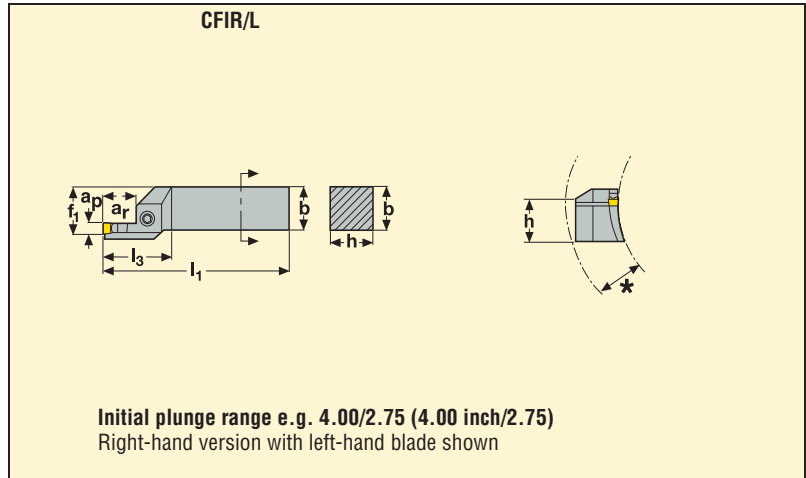
Please check availability in current price and stock-list

Toolholders for inserts LCMF, LCMR and LCGN

Face machining toolholders



• Inserts, please see pages 352-354



Application	Initial plunge*	Part No.	Dimensions in inch						lbs	Seat size	
			h	b	l ₁	f ₁	l ₃	a _r *			
	8	CFIR 100 08D-L5.00 3.50	1.00	1.00	6	1.25	2.06	1.00	1.7	8	LC..3008..
		100 08D-L6.70 4.30	1.00	1.00	6	1.25	2.06	1.00	1.7	8	LC..3008..
		100 08D-L9.00 5.50	1.00	1.00	6	1.25	2.06	1.00	1.7	8	LC..3008..
		100 08D-L19.7 8.00	1.00	1.00	6	1.25	2.06	1.00	1.7	8	LC..3008..
		CFIL 100 08D-R5.00 3.50	1.00	1.00	6	1.25	2.06	1.00	1.7	8	LC..3008..
		100 08D-R6.70 4.30	1.00	1.00	6	1.25	2.06	1.00	1.7	8	LC..3008..
		100 08D-R9.00 5.50	1.00	1.00	6	1.25	2.06	1.00	1.7	8	LC..3008..
		100 08D-R19.7 8.00	1.00	1.00	6	1.25	2.06	1.00	1.7	8	LC..3008..

*Initial plunge relates to face groove diameter

Spare Parts, Parts included in delivery

Toolholder/ Insert dimension	Clamp screw/ Key (old version)		Clamp screw/ Key (new version)	
..08	MC6S 6x20	5 SMS795	TCEI0815	6 SMS795

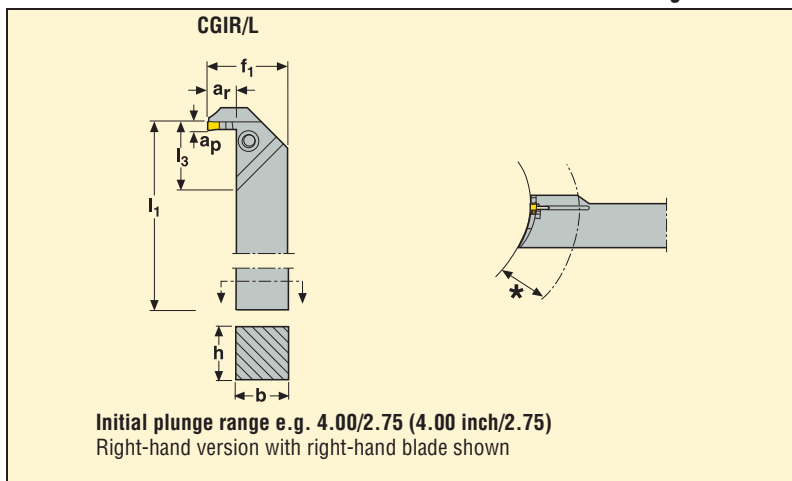
Please check availability in current price and stock-list

Toolholders for inserts LCMF, LCMR and LCGN

Face machining toolholders



• Inserts, please see pages 352-359, 361



Application		Initial plunge*	Part No.	Dimensions in inch							Seat size		
				h	b	l ₁	f ₁	l ₃	a _r *				
	3	4.00/2.75	CGIR 100 03D-R4.00 2.75	1.00	1.00	6.00	1.42	1.26	.430	1.5	3	LC..1603..	
		5.00/3.50	100 03D-R5.00 3.50	1.00	1.00	6.00	1.42	1.26	.430	1.5	3	LC..1603..	
		4.00/2.75	CGIL 100 03D-L4.00 2.75	1.00	1.00	6.00	1.42	1.26	.430	1.5	3	LC..1603..	
		5.00/3.50	100 03D-L5.00 3.50	1.00	1.00	6.00	1.42	1.26	.430	1.5	3	LC..1603..	
	4	4.00/2.75	CGIR 100 04D-R4.00 2.75	1.00	1.00	6.00	1.51	1.26	.530	1.5	4	LC..1604..	
		5.00/3.50	100 04D-R5.00 3.50	1.00	1.00	6.00	1.51	1.26	.530	1.5	4	LC..1604..	
		4.00/2.75	CGIL 100 04D-L4.00 2.75	1.00	1.00	6.00	1.51	1.26	.530	1.5	4	LC..1604..	
		5.00/3.50	100 04D-L5.00 3.50	1.00	1.00	6.00	1.51	1.26	.530	1.5	4	LC..1604..	

*Initial plunge relates to face groove diameter

Spare Parts, Parts included in delivery

Toolholder/ Insert dimension	Clamp screw/ Key (old version)		Clamp screw/ Key (new version)		
..03	MC6S 4x18	3 SMS795	TCEI0513	4 SMS795	
..04	MC6S 5x18	4 SMS795	TCEI0613	5 SMS795	

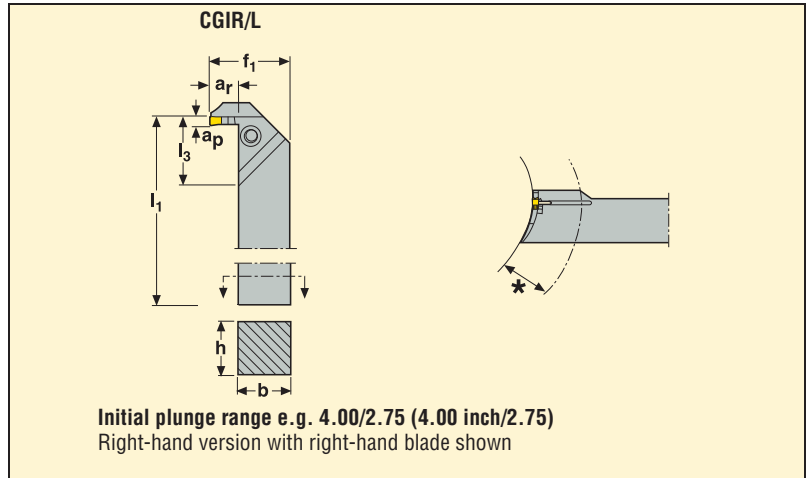
Please check availability in current price and stock-list

Toolholders for inserts LCMF, LCMR and LCGN

Face machining toolholders



- Inserts, please see pages 352-356, 358, 361



Application	ap	Initial plunge*	Part No.	Dimensions in inch						lbs	Seat size	Insert
				h	b	l ₁	f ₁	l ₃	a _r *			
	6	5.00/3.50	CGIR 100 06D-R5.00 3.50	1.00	1.00	6.00	1.79	1.26	.800	1.5	6	LC..1606..
		6.70/4.30	100 06D-R6.70 4.30	1.00	1.00	6.00	1.79	1.26	.800	1.5	6	LC..1606..
		9.00/5.50	100 06D-R9.00 5.50	1.00	1.00	6.00	1.79	1.26	.800	1.5	6	LC..1606..
		5.00/3.50	CGIL 100 06D-L5.00 3.50	1.00	1.00	6.00	1.79	1.26	.800	1.5	6	LC..1606..
		6.70/4.30	100 06D-L6.70 4.30	1.00	1.00	6.00	1.79	1.26	.800	1.5	6	LC..1606..
		9.00/5.50	100 06D-L9.00 5.50	1.00	1.00	6.00	1.79	1.26	.800	1.5	6	LC..1606..
	8	5.00/3.50	CGIR 100 08D-R5.00 3.50	1.00	1.00	6.00	2.00	1.26	1.0	1.5	6	LC..3008..
		6.70/4.30	100 08D-R6.70 4.30	1.00	1.00	6.00	2.00	1.26	1.0	1.5	6	LC..3008..
		9.00/5.50	100 08D-R9.00 5.50	1.00	1.00	6.00	2.00	1.26	1.0	1.5	6	LC..3008..
		19.7/8.00	100 08D-R19.7 8.00	1.00	1.00	6.00	2.00	1.26	1.0	1.5	6	LC..3008..
		5.00/3.50	CGIL 100 08D-L5.00 3.50	1.00	1.00	6.00	2.00	1.26	1.0	1.5	6	LC..3008..
		6.70/4.30	100 08D-L6.70 4.30	1.00	1.00	6.00	2.00	1.26	1.0	1.5	6	LC..3008..
		9.00/5.50	100 08D-L9.00 5.50	1.00	1.00	6.00	2.00	1.26	1.0	1.5	6	LC..3008..
		19.7/8.00	100 08D-L19.7 8.00	1.00	1.00	6.00	2.00	1.26	1.0	1.5	6	LC..3008..

*Initial plunge relates to face groove diameter

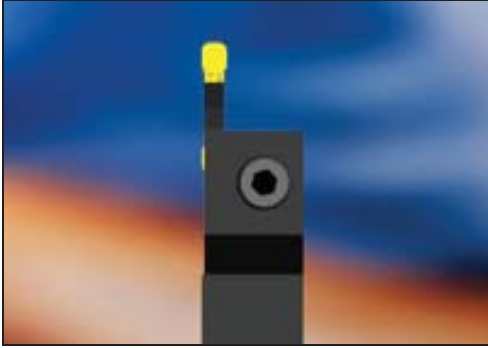
Spare Parts, Parts included in delivery

Toolholder/ Insert dimension	Clamp screw/ Key (old version)		Clamp screw/ Key (new version)		
..06	MC6S 6x20	5 SMS795	TCEI0815	6 SMS795	
..08	TCEI0825	6 SMS795	TCEI1020	6 SMS795	

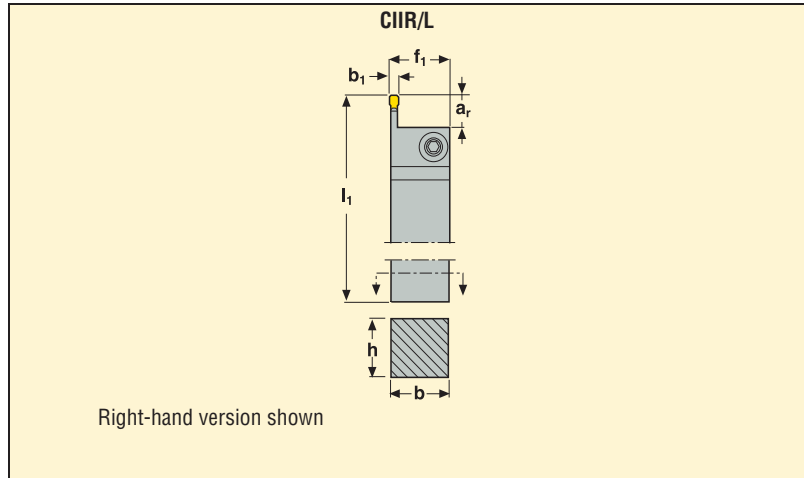
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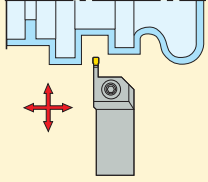
Toolholders for inserts LCMF, LCMR and LCGN

Swiss toolholders




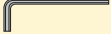

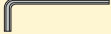
• Inserts, please see pages 352-359, 361



Application	 a_p	Part No.	Dimensions in inch						Seat size	
			h	b	l_1	f_1	a_r^*			
	3	CIIR 050 03D	.500	.500	6	.500	.430	.4	3	LC..1603..
		0625 03B	.625	.625	4.5	.625	.430	.5	3	LC..1603..
		CIIL 050 03D	.500	.500	6	.500	.430	.4	3	LC..1603..
		0625 03B	.625	.625	4.5	.625	.430	.5	3	LC..1603..

*Max depth of cut for LCMF16.. = .550 in.

Spare Parts, Parts included in delivery

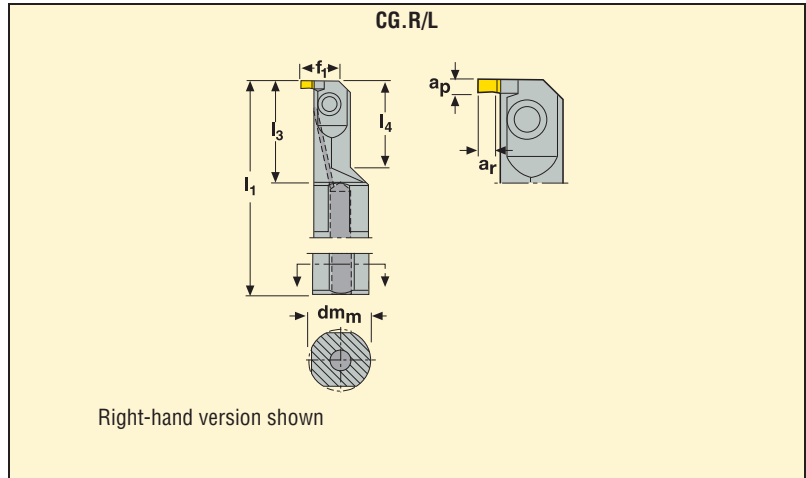
Toolholder/ Insert dimension	Clamp screw/ Key (old version)		Clamp screw/ Key (new version)	
				
050 03D	MC6S 4x18	3 SMS795	TCEI0513	4 SMS795
0625 03B	MC6S 4x18	3 SMS795	TCEI0613	5 SMS795

Please check availability in current price and stock-list

Toolholders for inserts LCMF and LCMR



- Inserts, please see pages 349-351, 360



Application	Part No.	Dimensions in inch								lbs	Seat size	
		dm _m	l ₁	l ₃	l ₄	f ₁	a _r	∅ min				
	03	A10-CGER 1303	.625	7.00	1.62	.98	.40	.118	.630	.44	3	LC..1303..
		A10-CGEL 1303	.625	7.00	1.62	.98	.40	.118	.630	.44	3	LC..1303..
		A12-CGFR 1303	.75	8.00	2.01	1.18	.57	.216	.790	.88	3	LC..1303..
		A12-CGFL 1303	.75	8.00	2.01	1.18	.57	.216	.790	.88	3	LC..1303..
		A16-CGHR 1303	1.00	10.00	2.60	1.57	.75	.295	.985	1.54	3	LC..1303..
		A16-CGHL 1303	1.00	10.00	2.60	1.57	.75	.295	.985	1.54	3	LC..1303..
		A20-CGJR 1303	1.25	12.00	3.09	1.97	1.00	.413	1.26	3.3	3	LC..1303..
		A20-CGJL 1303	1.25	12.00	3.09	1.97	1.00	.413	1.26	3.3	3	LC..1303..
	04	A12-CGFR 1304	.75	8.00	2.01	1.18	.57	.216	.790	.88	4	LC..1304..
		A12-CGFL 1304	.75	8.00	2.01	1.18	.57	.216	.790	.88	4	LC..1304..
		A16-CGFR 1304	1.00	10.00	2.60	1.57	.75	.295	.985	1.54	4	LC..1304..
		A16-CGFL 1304	1.00	10.00	2.60	1.57	.75	.295	.985	1.54	4	LC..1304..
		A20-CGHR 1304	1.25	12.00	3.09	1.97	1.00	.413	1.26	3.3	4	LC..1304..
		A20-CGHL 1304	1.25	12.00	3.09	1.97	1.00	.413	1.26	3.3	4	LC..1304..

Spare Parts, Parts included in delivery

Toolholder/ Insert dimension	Clamp screw	Key	Coolant adaptor*
A10-..	L85011-T15P	T15P-7	SEAL16
A12-..	L85011-T15P	T15P-7	SEAL20
A16-..	L85011-T15P	T15P-7	SEAL25
A20-..	L85011-T15P	T15P-7	SEAL32

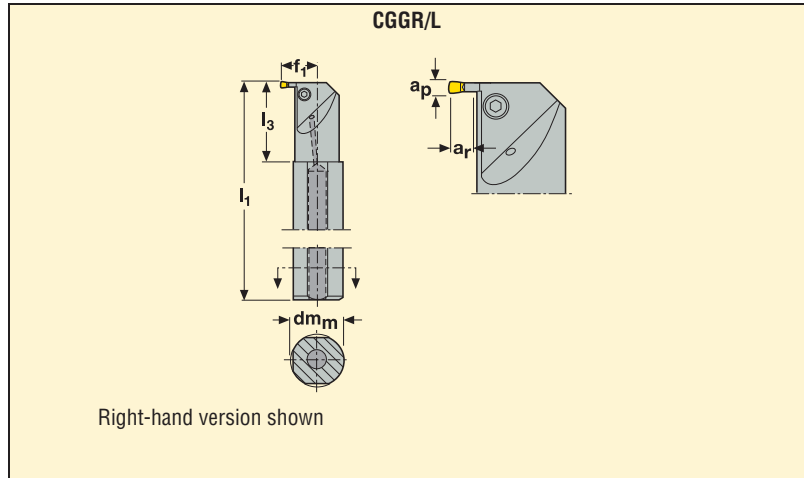
Please check availability in current price and stock-list

*To be ordered separately

Toolholders for inserts LCGN, LCMF and LCMR



• Inserts, please see pages 352-359, 361



Application	a_p	Part No.	Dimensions in inch						lbs	Seat size	
			d_{m_m}	l_1	l_3	f_1	a_r	\varnothing min			
	03	A24-CGGR 03	1.50	12	2.36	1.125	.440	1.80	5.5	3	LC..1603..
		A24-CGGL 03	1.50	12	2.36	1.125	.440	1.80	5.5	3	LC..1603..
	04	A24-CGGR 04	1.50	12	2.36	1.125	.440	1.80	5.5	4	LC..1604..
		A24-CGGL 04	1.50	12	2.36	1.125	.440	1.80	5.5	4	LC..1604..
	05	A24-CGGR 05	1.50	12	2.36	1.091	.440	1.80	5.5	5	LC..1605..
		A24-CGGL 05	1.50	12	2.36	1.091	.440	1.80	5.5	5	LC..1605..
	06	A24-CGGR 06	1.50	12	2.36	1.130	.515	1.80	5.5	6	LC..1606..
		A24-CGGL 06	1.50	12	2.36	1.130	.515	1.80	5.5	6	LC..1606..

Spare Parts, Parts included in delivery

Toolholder/ Insert dimension	Clamp screw 	Key 	Coolant adaptor*
A24T-...03	MC6S 4x14	3 SMS795	SEAL40
A24T-...04	MC6S 5x14	4 SMS795	SEAL40
A24T-...05	MC6S 5x14	4 SMS795	SEAL40
A24T-...06	TCEI0614	5 SMS795	SEAL40

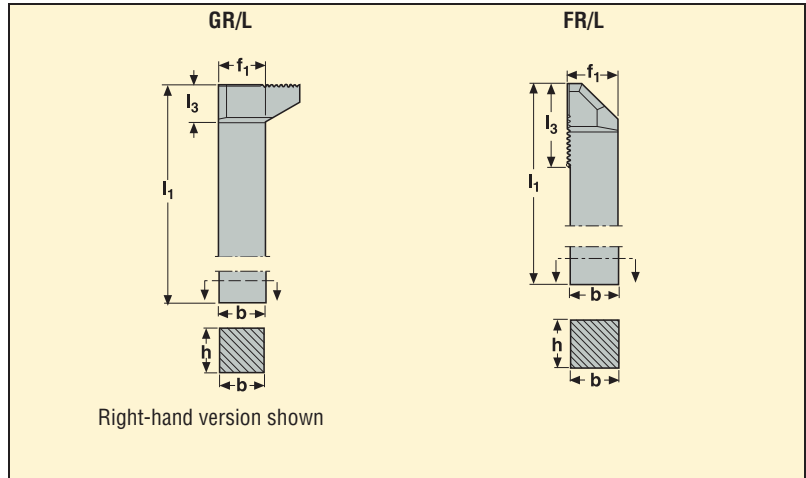
Please check availability in current price and stock-list

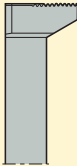
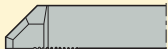
*To be ordered separately



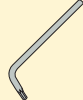
Toolholders



- Blades, please see pages 345-346
- How to assemble, see pages 318-319
- Note that in photo above, tool **GR/L** is shown on the left and tool **FR/L** is shown on the right.



Application	Part No.	Dimensions in inch					lbs
		h	b	l ₁	f ₁	l ₃	
	GR063B-V21	.63	.63	4.5	.63	.630	.44
	GL063B-V21	.63	.63	4.5	.63	.630	.44
	GR075B-V21	.75	.75	4.5	.75	.630	.88
	GL075B-V21	.75	.75	4.5	.75	.630	.88
	GR100D-V21	1.00	1.00	6.00	1.00	.630	1.76
	GL100D-V21	1.00	1.00	6.00	1.00	.630	1.76
	GR125D-V21	1.25	1.25	6.00	1.25	.630	2.43
	GL125D-V21	1.25	1.25	6.00	1.25	.630	2.43
	FR063B-V21	.63	.63	4.5	.67	1.33	.44
	FL063B-V21	.63	.63	4.5	.67	1.33	.44
	FR075B-V21	.75	.75	4.5	.80	1.33	.88
	FL075B-V21	.75	.75	4.5	.80	1.33	.88
	FR100D-V21	1.00	1.00	6.00	1.05	1.33	1.54
	FL100D-V21	1.00	1.00	6.00	1.05	1.33	1.54
	FR125D-V21	1.25	1.25	6.00	1.60	1.33	2.43
	FL125D-V21	1.25	1.25	6.00	1.60	1.33	2.43

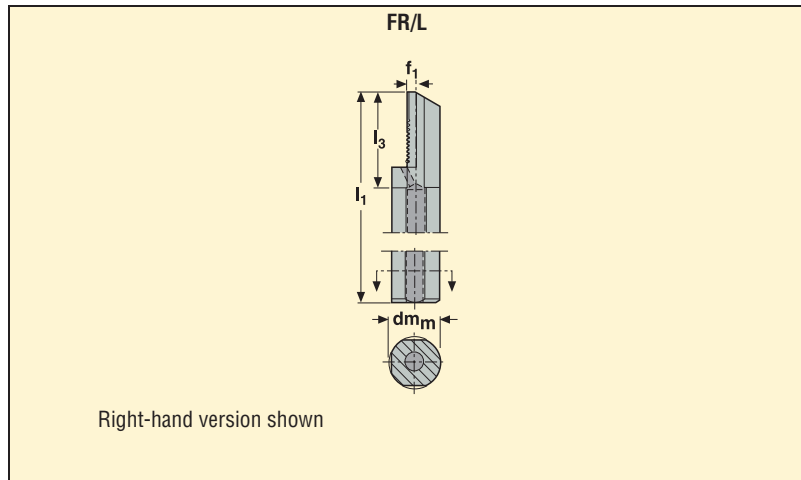
Toolholder/ Insert dimension	Locking screw	Screw	Key
..-V21	 C46017-T20P	 F85015-T20P	 T20P-7L

Please check availability in current price and stock-list

Toolholders



- Blades, please see pages 345-346
- How to assemble, see pages 318-319



Application	Part No.	Dimensions in inch				lbs
		dm _m	l ₁	l ₃	f ₁	
	A16-FR-V21	1.00	8	1.81	.170	1.32
	A16-FL-V21	1.00	8	1.81	.170	1.32
	A20-FR-V21	1.25	10	1.77	.294	2.87
	A20-FL-V21	1.25	10	1.77	.294	2.87
	A24-FR-V21	1.50	12	1.77	.420	5.29
	A24-FL-V21	1.50	12	1.77	.420	5.29

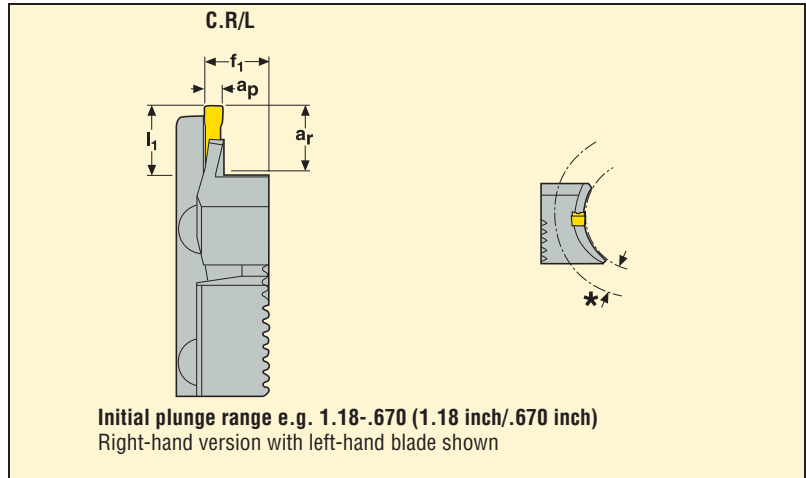
Toolholder/ Insert dimension	Locking screw	Screw	Key	Coolant adaptor*
A16-	C46017-T20P	F85015-T20P	T20P-7L	SEAL25
A20-	C46017-T20P	F85015-T20P	T20P-7L	SEAL32
A24-	C46017-T20P	F85015-T20P	T20P-7L	SEAL40

Please check availability in current price and stock-list

Blades



- Holders, please see pages 343-344
- How to assemble, see pages 318-319
- Inserts, please see pages 349-351, 360



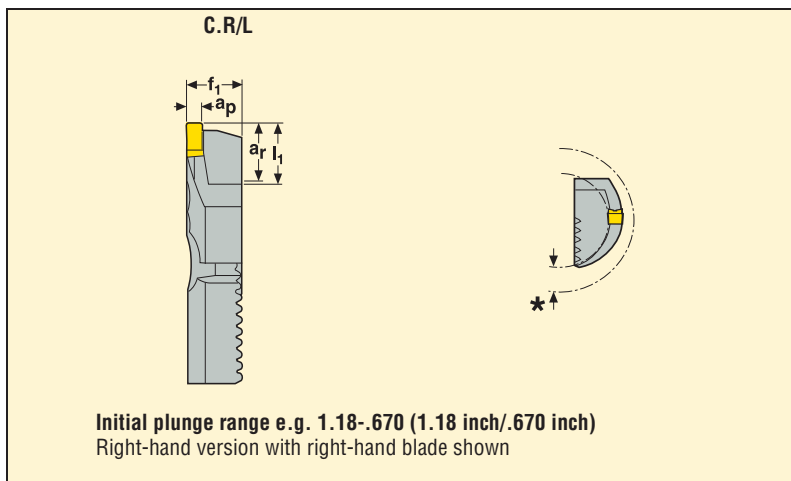
Application		Initial plunge*	Part No. Inch	Part No. Metric	Dimensions in inch				
					l ₁	f ₁	a _r		
	3	1.18/.670	V21-CJR 1303L1.18-.670	1303L030017	.413	.362	.374	.09	LC..1303..
		1.54/.950	1303L1.54-.950	1303L039024	.413	.362	.374	.11	LC..1303..
		1.97/1.30	V21-CKR 1303L1.97-1.30	1303L050033	.472	.362	.433	.13	LC..1303..
		2.36/1.70	1303L2.36-1.70	1303L060043	.472	.362	.433	.13	LC..1303..
		3.00/2.09	1303L3.00-2.09	1303L076053	.472	.362	.433	.15	LC..1303..
		1.18/.670	V21-CJL 1303R1.18-.670	1303R030017	.413	.362	.374	.09	LC..1303..
		1.54/.950	1303R1.54-.950	1303R039024	.413	.362	.374	.11	LC..1303..
		1.97/1.30	V21-CKL 1303R1.97-1.30	1303R050033	.472	.362	.433	.13	LC..1303..
		2.36/1.70	1303R2.36-1.70	1303R060043	.472	.362	.433	.13	LC..1303..
	3.00/2.09	1303R3.00-2.09	1303R076053	.472	.362	.433	.15	LC..1303..	
	4	1.18/.670	V21-CHR 1304L1.18-.670	1304L030017	.413	.362	.374	.09	LC..1304..
		1.34/.826	1304L1.34-.826	1304L034021	.413	.362	.374	.11	LC..1304..
		1.57/1.02	V21-CIR 1304L1.57-1.02	1304L040026	.472	.362	.433	.13	LC..1304..
		1.97/1.26	1304L1.97-1.26	1304L050032	.472	.362	.433	.13	LC..1304..
		2.36/1.65	1304L2.36-1.65	1304L060042	.472	.362	.433	.13	LC..1304..
		2.96/2.05	1304L2.96-2.05	1304L075052	.472	.362	.433	.15	LC..1304..
		3.94/2.64	1304L3.94-2.64	1304L100067	.472	.362	.433	.18	LC..1304..
		1.18/.670	V21-CHL 1304R1.18-.670	1304R030017	.413	.362	.374	.09	LC..1304..
		1.34/.826	1304R1.34-.826	1304R030421	.413	.362	.374	.11	LC..1304..
		1.57/1.02	V21-CIL 1304R1.57-1.02	1304R040026	.472	.362	.433	.13	LC..1304..
1.97/1.26		1304R1.97-1.26	1304R050032	.472	.362	.433	.13	LC..1304..	
2.36/1.65	1304R2.36-1.65	1304R060042	.472	.362	.433	.13	LC..1304..		
2.96/2.05	1304R2.96-2.05	1304R075052	.472	.362	.433	.15	LC..1304..		
3.94/2.64	1304R3.94-2.64	1304R100067	.472	.362	.433	.18	LC..1304..		

Please check availability in current price and stock-list

Blades



- Holders, please see pages 343-344
- How to assemble, see pages 318-319
- Inserts, please see pages 349-341, 360



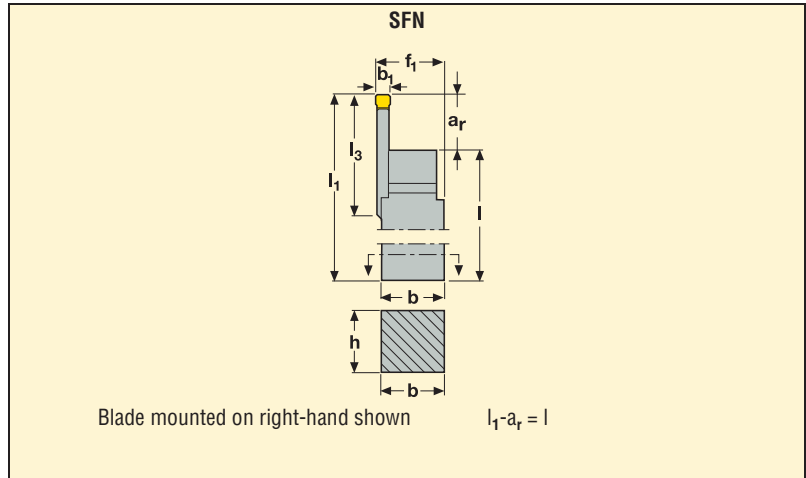
Application		Initial plunge*	Part No.	Part No. Metric	Dimensions in inch				
					l ₁	f ₁	a _r		
	3	1.18/.670	V21-CJR 1303R1.18-.670	1303R030017	.413	.362	.374	.09	LC..1303..
		1.54/.950	1303R1.54-.950	1303R039024	.413	.362	.374	.11	LC..1303..
		1.97/1.30	V21-CKR 1303R1.97-1.30	1303R050033	.472	.362	.433	.13	LC..1303..
		2.36/1.70	1303R2.36-1.70	1303R060043	.472	.362	.433	.13	LC..1303..
		3.00/2.09	1303R3.00-2.09	1303R076053	.472	.362	.433	.15	LC..1303..
		1.18/.670	V21-CJL 1303L1.18-.670	1303L030017	.413	.362	.374	.09	LC..1303..
		1.54/.950	1303L1.54-.950	1303L039024	.413	.362	.374	.11	LC..1303..
		1.97/1.30	V21-CKL 1303L1.97-1.30	1303L050033	.472	.362	.433	.13	LC..1303..
		2.36/1.70	1303L2.36-1.70	1303L060043	.472	.362	.433	.13	LC..1303..
		3.00/2.09	1303L3.00-2.09	1303L076053	.472	.362	.433	.15	LC..1303..
	4	1.18/.670	V21-CHR 1304R1.18-.670	1304R030017	.413	.362	.374	.09	LC..1304..
		1.34/.826	1304R1.34-.826	1304R034021	.413	.362	.374	.11	LC..1304..
		1.57/1.02	V21-CIR 1304R1.57-1.02	1304R040026	.472	.362	.433	.13	LC..1304..
		1.97/1.26	1304R1.97-1.26	1304R050032	.472	.362	.433	.13	LC..1304..
		2.36/1.65	1304R2.36-1.65	1304R060042	.472	.362	.433	.13	LC..1304..
		2.96/2.05	1304R2.96-2.05	1304R075052	.472	.362	.433	.15	LC..1304..
		3.94/2.64	1304R3.94-2.64	1304L100067	.472	.362	.433	.18	LC..1304..
		1.18/.670	V21-CHL 1304L1.18-.670	1304L030017	.413	.362	.374	.09	LC..1304..
		1.34/.826	1304L1.34-.826	1304L034021	.413	.362	.374	.11	LC..1304..
		1.57/1.02	V21-CIL 1304L1.57-1.02	1304L040026	.472	.362	.433	.13	LC..1304..
1.97/1.26	1304L1.97-1.26	1304L050032	.472	.362	.433	.13	LC..1304..		
2.36/1.65	1304L2.36-1.65	1304L060042	.472	.362	.433	.13	LC..1304..		
2.96/2.05	1304L2.96-2.05	1304L075052	.472	.362	.433	.15	LC..1304..		
3.94/2.64	1304L3.94-2.64	1304L100067	.472	.362	.433	.18	LC..1304..		

Please check availability in current price and stock-list

MDT - Toolholder and blades for inserts LCGN, LCMF and LCMR



• Inserts, please see pages 352-359, 361



Application	Part No. Holder	Dimensions in inch					lbs	Seat size	
		b	h	l ₁	f ₁	a _r			
	SFN100N	1.00	1.00	—	—	—	1.54	—	—
	Part No. Blade								For Insert
	CFLN-03	—	—	6.681	.976	.511	.022	3	LC..1603..
	CFKN-04	—	—	6.768	1.015	.590	.044	4	LC..1604..
	CFNN-04	—	—	7.020	1.015	.866	.044	4	LC..1604..
	CFIN-05	—	—	6.768	1.055	.591	.044	5	LC..1605..
	CFLN-05	—	—	7.020	1.055	.866	.044	5	LC..1605..
	CFHN-06	—	—	6.768	1.094	.591	.066	6	LC..1606..
	CFJN-06	—	—	7.020	1.094	.866	.088	6	LC..1606..

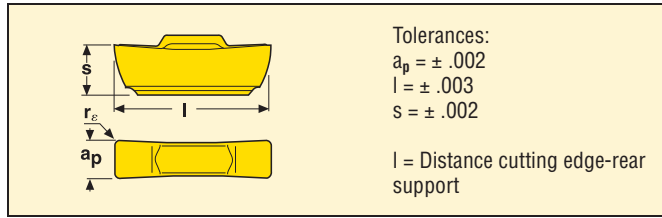
*Max. depth of cut for LCMF16..= .551 in.

Spare Parts, Parts included in delivery

Toolholder/ Insert dimension	Locking screw	Screw	Key
SFN100N	C46017-T20P	C45013-T20P	T20P-7

Please check availability in current price and stock-list

LCMF and LCMR



Size	Dimensions in inch			
	a_p (mm)	l	s	r_ϵ
1303..-FT	.118 (3)	.486	.157	.008-.016
1303..-MP	.118 (3)	.486	.157	.059
1304..-FT	.157 (4)	.486	.157	.008-.016
1304..-MP	.157 (4)	.486	.157	.079

Inserts	Part No.	Grades					
		Coated					
		TP200	CP500	CP600			
LCMF-FT 	LCMF 130302-0300-FT		■				
	130304-0300-FT	■	■				
	LCMF 130402-0400-FT		■				
	130404-0400-FT	■	■				
LCMF-MP 	LCMF 1303M0-0300-MP	■	■				
	LCMF 1304M0-0400-MP	■	■				
LCMR-FT 	LCMR 130304-0300-FT		■				
	LCMR 130404-0400-FT		■				
LCMR-MP 	LCMR 1303M0-0300-MP		■				
	LCMR 1304M0-0400-MP		■				

■ Stock standard
 Subject to change refer to current price and stock-list

LCMF and LCMR

Tolerances:
 $a_p = \pm .002$
 $l = \pm .003$
 $s = \pm .0015$




l = Distance cutting edge-rear support

Size	Dimensions in inch			
	a_p (mm)	l	s	r_ϵ
mm-version				
1603	.118 (3)	.630	.177	.008-.016
1604	.157 (4)	.630	.177	.008-.031
1605	.197 (5)	.630	.177	.016-.031
1606	.236 (6)	.630	.177	.016-.039
3008-08	.315 (8)	1.150	.219	.016-.047
3008-10	.393 (10)	1.150	.219	.031-.047
inch-version				
1603	.125	.630	.177	.008
1605	.187	.630	.177	.020
1606	.250	.630	.177	.020

Inserts	Part No.	Grades								
		Coated				Uncoated				
		TP200	CP200	CP500	TK150	883	890			
LCMF-FT 	LCMF 160302-0300-FT	■	■	■						
	160304-0300-FT	■	■	■						
	LCMF 160402-0400-FT			■						
	160404-0400-FT	■	■	■						
	160408-0400-FT	■		■						
	LCMF 160504-0500-FT	■	■	■						
	160508-0500-FT	■		■						
	LCMF 160604-0600-FT	■		■						
	160608-0600-FT	■	■	■			■			
	160610-0600-FT	■		■						
	LCMF 300804-0800-FT	■		■		■				
	300808-0800-FT	■		■	■					
	300808-1000-FT			■						
	300812-0800-FT	■		■						
	300812-1000-FT			■						
inch-version										
LCMF 160302-A125-FT			■							
160505-A187-FT		■	■							
160605-A250-FT		■	■		■					
LCMF-MT 	LCMF 160302-0300-MT	■		■						
	160304-0300-MT	■		■	■					
	LCMF 160404-0400-MT	■		■	■					
	160408-0400-MT	■		■	■					
	LCMF 160504-0500-MT	■		■	■					
	160508-0500-MT	■		■						
	LCMF 160604-0600-MT	■		■						
	160608-0600-MT	■		■	■					
	160610-0600-MT	■		■						
	inch-version									
	LCMF 160302-A125-MT			■						
	160505-A187-MT			■						
	160605-A250-MT			■		■				

■ Stock standard
 Subject to change refer to current price and stock-list

LCMF and LCMR

Inserts	Part No.	Grades							
		Coated				Uncoated			
		TP200	CP200	CP500	TK150	883	890		
LCMF-MG 	LCMF 160304-0300-MG	■		■					
	LCMF 160404-0400-MG	■		■					
	LCMF 160504-0500-MG	■		■					
	LCMF 160608-0600-MG	■		■					
LCMR-FT 	LCMR 160304-0300-FT	■	■	■					
	LCMR 160402-0400-FT	■		■					
	LCMR 160404-0400-FT	■	■	■					
	LCMR 160504-0500-FT	■	■	■					
	LCMR 160608-0600-FT	■	■	■					
	LCMR 300808-0800-FT	■		■		■			
	LCMR 300808-1000-FT			■					
	LCMR 300812-0800-FT	■		■					
LCMR 300812-1000-FT			■						
LCMR-MT 	LCMR 160304-0300-MT	■		■		■			
	LCMR 160404-0400-MT	■		■					
	LCMR 160408-0400-MT					■			
	LCMR 160504-0500-MT	■		■					
	LCMR 160508-0500-MT					■			
	LCMR 160608-0600-MT	■		■		■			
LCMR 160610-0600-MT					■				

■ Stock standard

Subject to change refer to current price and stock-list

LCMF and LCMR

Tolerances:
 $a_p = \pm .002$
 $l = \pm .003$
 $s = \pm .0015$

l = Distance cutting edge-rear support

Size	Dimensions in inch			
	a_p (mm)	l	s	r_E
mm-version				
1603M0	.118 (3)	.674	.177	.059
1604M0	.157 (4)	.679	.177	.079
1605M0	.197 (5)	.699	.177	.098
1606M0	.236 (6)	.714	.177	.118
3008M0-08	.315 (8)	1.183	.216	.157
3008M0-10	.393 (10)	1.183	.216	.197
inch-version				
160300	.125	.683	.177	.063
160500	.187	.722	.177	.094
160600	.250	.719	.177	.125

Inserts	Part No.	Grades							
		Coated				Uncoated			
		TP200	CP200	CP500	TK150	883	890		
LCMF-MP 	LCMF 1603M0-0300-MP	■		■	■				
	1604M0-0400-MP	■		■	■				
	1605M0-0500-MP	■		■	■				
	1606M0-0600-MP	■		■	■		■		
	3008M0-0800-MP	■		■	■				
	3008M0-1000-MP	■		■					
	inch-version								
	160300-A125-MP		■	■		■			
	160500-A187-MP		■	■					
	160600-A250-MP		■	■		■			
LCMR-MP 	LCMR 1603M0-0300-MP	■	■	■		■			
	1604M0-0400-MP	■	■	■		■			
	1605M0-0500-MP	■	■	■		■			
	1606M0-0600-MP	■	■	■		■			
	3008M0-0800-MP	■		■		■			
	3008M0-1000-MP	■		■					

■ Stock standard
 Subject to change refer to current price and stock-list

LCMF and LCMR

Tolerances:
 $a_p = \pm .002$
 $l = \pm .003$
 $s = \pm .0015$

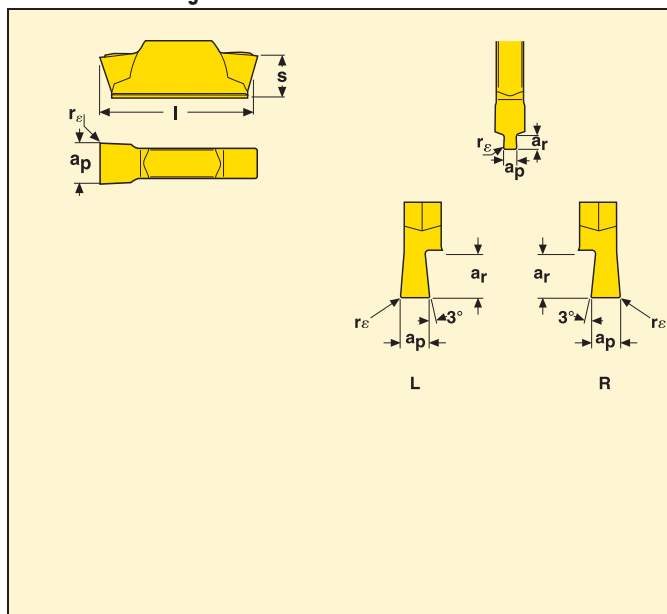
l = Distance cutting edge-rear support

Size	Dimensions in inch			
	a_p (mm)	l	s	r_ϵ
1603	.118 (3)	.630	.177	.008-.016
1604	.157 (4)	.630	.177	.008-.016
1605	.197 (5)	.630	.177	.016
1606	.236 (6)	.630	.177	.016-.032

Inserts	Part No.	Lead Angle (κ)	Grades							
			Coated							
			TP200	CP500	CP600					
 LCMF-MC	LCMF 160302-0300-MC	–			■					
	160304-0300-MC	–	■	■	■					
	160302-0300-MCR6	6			■					
	160302-0300-MCL6	6			■					
	160302-0300-MCR15	15			■					
	160302-0300-MCL15	15			■					
	LCMF 160402-0400-MC	–			■					
	160402-0400-MCR6	6			■					
	160402-0400-MCL6	6			■					
	160402-0400-MCR15	15			■					
	160402-0400-MCL15	15			■					
	160404-0400-MC	–		■	■	■				
	LCMF 160504-0500-MC	–		■	■	■				
	LCMF 160604-0600-MC	–		■	■	■				
160608-0600-MC	–		■	■						
 LCMR-MC	LCMR 160302-0300-MC	–			■					
	160404-0400-MC	–			■					
	160504-0500-MC	–			■					
	160604-0600-MC	–			■					

■ Stock standard
 Subject to change refer to current price and stock-list

LCG.-FG - Radial grooves



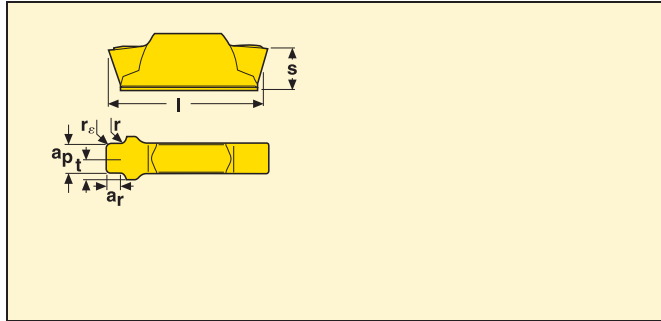
Size	Dimensions in inch				
	a_p	l	s	r_e	a_r
0115	.045	.630	.177	—	.045
0135	.053	.630	.177	—	.053
0165	.065	.630	.177	.004	.065
0190	.075	.630	.177	.004	.075
0215	.085	.630	.177	.006	.085
0265	.104	.630	.177	.008	—
0300	.118	.630	.177	.008	—
0320	.126	.630	.177	.008	—
0340	.134	.630	.177	.008	—
0400	.157	.630	.177	.008	—
0420	.165	.630	.177	.008	—
0440	.173	.630	.177	.008	—
0500	.197	.674	.177	.008	—
0520	.205	.674	.177	.008	—
0600	.236	.693	.177	.008	—
0635	.250	.693	.177	.008	—
A031	.031	.630	.177	.004	.050
A063	.063	.630	.177	.008	.125
A094	.094	.630	.177	.008	.180

Inserts	Standard	For lock-ring	Part No.	Note	Grades					
					Coated					
					CP500					
LCGN-FG 	DIN 471 DIN 472 SMS 1581 SMS 1582	1.0 mm	LCGN 160300-0115-FG	*	■					
		1.2 mm	160300-0135-FG	*	■					
		1.5 mm	160301-0165-FG	*	■					
		1.75 mm	160301-0190-FG	*	■					
		2.0 mm	160301-0215-FG	*	■					
		2.5 mm	160302-0265-FG		■					
		—	160302-0300-FG		■					
		3.0 mm	160302-0320-FG		■					
		—	160302-0340-FG		■					
		—	160402-0400-FG		■					
		4.0 mm	160402-0420-FG		■					
		—	160402-0440-FG		■					
		—	160502-0500-FG		■					
		5.0 mm	160502-0520-FG		■					
—	160602-0600-FG		■							
—	160602-0635-FG		■							
LCGF-FG 		—	LCGF 160301-0300-FG		■					
LCGN-FG Right hand shown		—	LCGN 160301-A031RH-FG	*	■					
		—	160301-A031LH-FG	*	■					
		—	160302-A063RH-FG	*	■					
		—	160302-A063LH-FG	*	■					
		—	160302-A094RH-FG	*	■					
		—	160302-A094LH-FG	*	■					



■ Stock standard
 Subject to change refer to current price and stock-list

*Note! Toolholders have to be modified

LCGN - O-ring

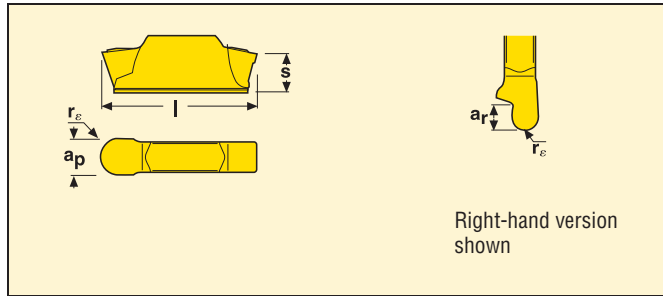


Size	Dimensions in inch						
	a _p	l	s	t	r _e	r	a _r
0240-DY	.130	.654	.177	.090	.009	.010	.079
0300-DY	.161	.654	.177	.090	.039	.010	.098
0180-DY	.094	.654	.177	.070	.019	.010	.061
0265-DY	.142	.654	.177	.090	.016	.012	.090
0160-ST	.094	.654	.177	.070	.020	.010	.047
0240-ST	.126	.654	.177	.070	.020	.010	.075
0300-ST	.150	.654	.177	.090	.039	.012	.094
0355-ST	.189	.673	.177	.112	.029	.012	.110


Inserts	Standard	For O-ring mm	For O-ring inch	Part No.	Grades			
					Coated			
					CPS00			
LCGN-DY  O-ring, dynamic	SMS 1588 BS 4518	2.4	.094	LCGN 160405-0240-DY	■			
		3.0	.118	160410-0300-DY	■			
	ISO 3601 DIN 3771 BS 1806	1.8	.070	LCGN 160305-0180-DY	■			
		2.6	.103	160405-0265-DY	■			
LCGN-ST  O-ring, static	SMS 1588 BS 4518	1.6	.063	LCGN 160305-0160-ST	■			
		2.4	.094	160305-0240-ST	■			
		3.0	.118	160410-0300-ST	■			
	ISO 3601 DIN 3771 BS 1806	3.5	.139	LCGN 160507-0355-ST	■			

■ Stock standard
 Subject to change refer to current price and stock-list

LCGN - Full radius grooving

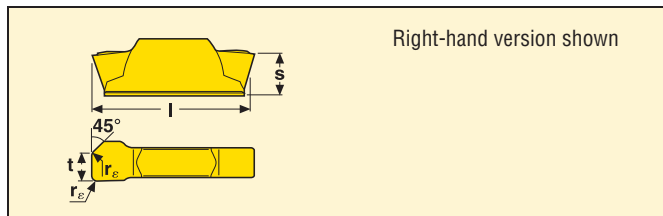


Size	Dimensions in inch			
	l	s	r _ε	a _r
0100	.654	.177	.039	.094
0120	.654	.177	.047	.094
0150	.654	.177	.059	-
0200	.654	.177	.079	-
0300	.693	.177	.118	-


Inserts	For radius inch (mm)	Part No.	Grades				
			Coated				
			CP500				
 LCGN-R	.039 (1.0 mm)	LCGN 1603M0-0100R-R*	■				
	.039 (1.0mm)	1603M0-0100L-R*	■				
	.047 (1.2 mm)	1603M0-0120R-R*	■				
	.047 (1.2mm)	1603M0-0120L-R*	■				
	.059 (1.5 mm)	1603M0-0150-R	■				
	.079 (2.0 mm)	1604M0-0200-R	■				

*Note! Toolholders have to be modified.

LCGN - DIN 76



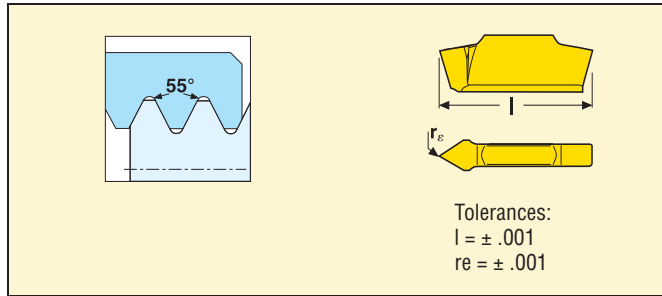
Size	Dimensions in inch			
	t	l	s	r _ε
0100	.086	.654	.177	.024
0150	.126	.673	.177	.030
0200	.181	.693	.177	.039

Inserts	For Max T.P.I. (mm)	Part No.	Grades				
			Coated				
			CP500				
 LCGN-D76	24 (1.0)	LCGN 160306-0100R-D76*	■				
	16 (1.5)	160507-0150R-D76	■				

■ Stock standard
 Subject to change refer to current price and stock-list

*Note! Toolholders have to be modified

LCGN - Partial profile 55°

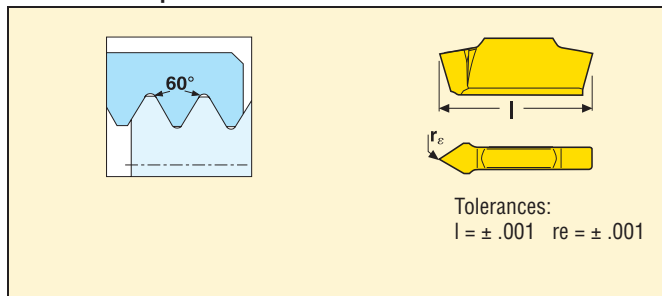


Size	Dimensions in inch		
	l	s	re
1603-A	.654	.177	.003
1603-G	.654	.177	.007

Inserts	TPI	Pitch mm	Part No.	Grades				
				Coated				
				CP500				
LCGN...-55 	48-16	0,5-1,5	LCGN 1603-A55*	■				
	14-8	1,75-3,0	LCGN 1603-G55*	■				

*Note! Toolholders have to be modified.

LCGN - Partial profile 60°



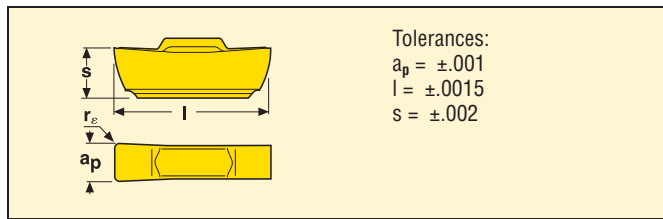
Size	Dimensions in inch		
	l	s	re
1603-A	.654	.177	.003
1603-G	.654	.177	.007

Inserts	TPI	Pitch mm	Part No.	Grades				
				Coated				
				CP500				
LCGN...-60 	48-16	0,5-1,5	LCGN 1603-A60*	■				
	14-8	1,75-3,0	LCGN 1603-G60*	■				


■ Stock standard
 Subject to change refer to current price and stock-list

*Note! Toolholders have to be modified

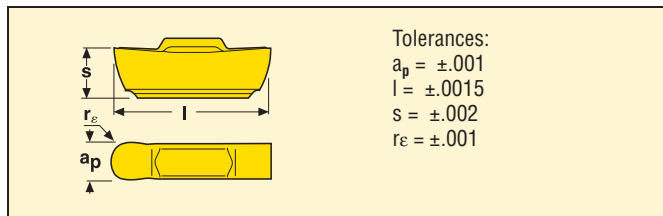
LCGN




Size	Dimensions in inch			
	a_p	l	s	r_e
1303	.118 (3)	.485	.157	.016
1304	.157 (4)	.485	.157	.016

Inserts	Part No.	Grades			
		CBN10	CBN200		
 E = Honed S = Chamfered and honed LF = Complete top layer Tip sizes: See page 62	LCGN 130304-0300E-LF	■			
	130304-0300S-LF	■	■		
	LCGN 130404-0400E-LF	■			
	130404-0400S-LF	■	■		

LCGN

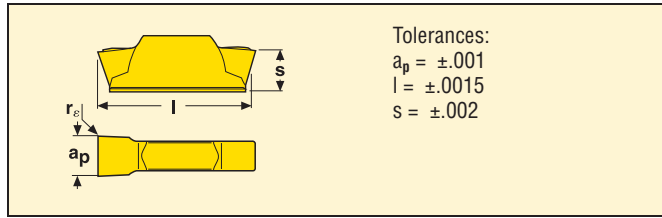


Size	Dimensions in inch			
	a_p (mm)	l	s	r_e
1303	.118 (3)	.485	.157	.059
1304	.157 (4)	.485	.157	.079

Inserts	Part No.	Grades			
		CBN10	CBN200		
 E = Honed S = Chamfered and honed LF = Complete top layer Tip sizes: See page 62	LCGN 1303M0-0300E-LF	■			
	1303M0-0300S-LF	■	■		
	1304M0-0400S-LF	■	■		

■ Stock standard
 Subject to change refer to current price and stock-list

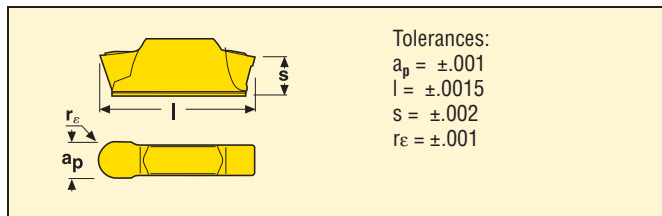
LCGN



Size	Dimensions in inch			
	a_p (mm)	l	s	r_e
1603	.118 (3)	.626	.177	.016
1604	.157 (4)	.626	.177	.016
1605	.197 (5)	.626	.177	.016
1606	.236 (6)	.626	.177	.016

Inserts	Part No.	Grades			
		CBN10	CBN200		
<p>E = Honed S = Chamfered and honed LF = Complete top layer</p> <p>Tip sizes: See page 62</p>	LCGN 160304-0300E-LF	■			
	160304-0300S-LF	■	■		
	LCGN 160404-0400E-LF	■			
	160404-0400S-LF	■	■		
	LCGN 160504-0500E-LF	■			
	160504-0500S-LF	■	■		
	LCGN 160604-0600E-LF	■			
	160604-0600S-LF	■	■		

LCGN



Size	Dimensions in inch			
	a_p	l	s	r_e
1603	.118	.654	.173	.059
1604	.157	.654	.171	.079
1605	.197	.677	.169	.098
1606	.236	.677	.165	.118

Inserts	Part No.	Grades			
		CBN10	CBN200		
<p>E = Honed S = Chamfered and honed LF = Complete top layer</p> <p>Tip sizes: See page 62</p>	LCGN 1603M0-0300E-LF	■			
	1603M0-0300E25-LF	■			
	1603M0-0300S-LF	■	■		
	LCGN 1604M0-0400E25-LF	■			
	1604M0-0400S-LF	■	■		
	LCGN 1605M0-0500E25-LF	■			
	1605M0-0500S-LF	■	■		
	LCGN 1606M0-0600E25-LF	■			
	1606M0-0600S-LF	■	■		

■ Stock standard
 Subject to change refer to current price and stock-list