

## WIDIA™ Value

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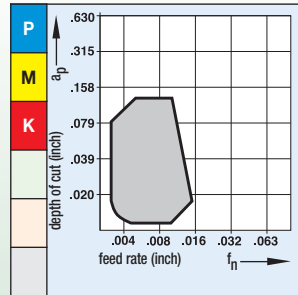


## Double-Sided, Negative Inserts

22



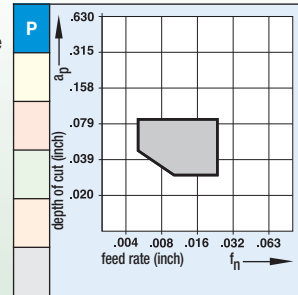
For finish turning, producing smooth, accurate surfaces. Very good chip control, especially at low depths of cut.



FL



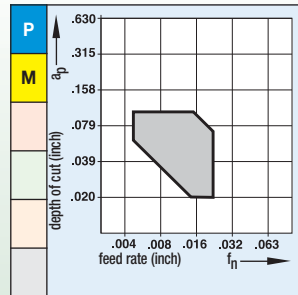
Double-sided insert with adjusted inclination angle for good chip control at low depths of cut.



FM



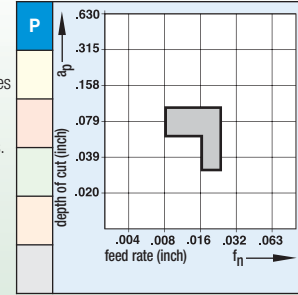
For medium-duty turning operations. Soft-cutting chipbreaker. Used in applications producing varying chip sections, such as profile or copy turning. Good dimensional accuracy. For soft steel materials and stainless steels.



FR



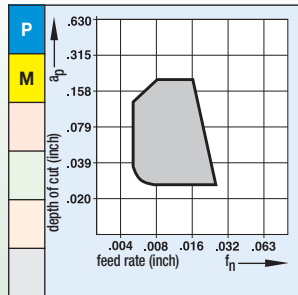
Double-sided insert with medium positive geometry. Adjusted inclination angle. Reduces cutting forces. Provides good chip control over wide range of feed rates.



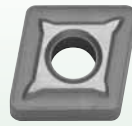
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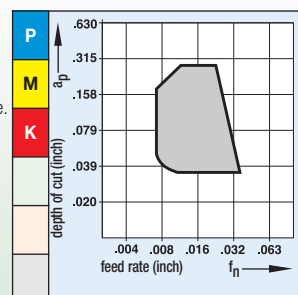
For medium to rough turning. Outstanding chip control due to specially configured chipbreaker element in corner area. Good chip forming with low depths of cut.



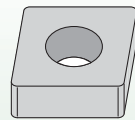
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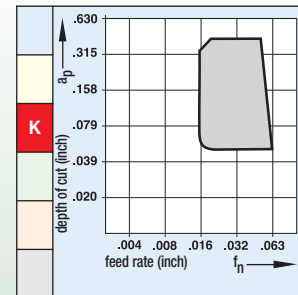
For medium-duty to roughing. Outstanding chip control. High edge strength for interrupted cuts, forging skin or scale. Preferred for all cast iron such as gray, malleable, and nodular.



..MA



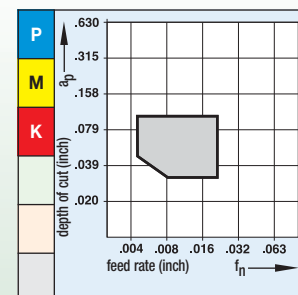
Flat top geometry for machining cast iron. For finishing to roughing applications.



..MG



For light machining to light roughing.



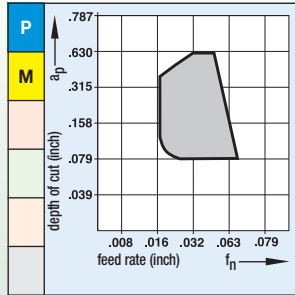
P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

**Single-Sided, Negative Inserts**

**8**

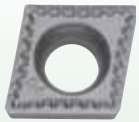


Stable cutting edge for heaviest chip sections and highest metal removal rates. For interrupted cuts and applications involving high cutting edge loading. Depths of cut up to .630", feeds up to .063".

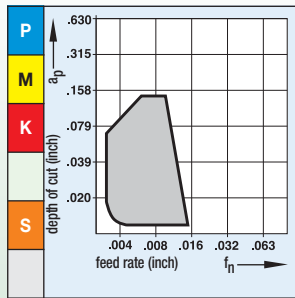


**Single-Sided, Positive Inserts**

**MU**



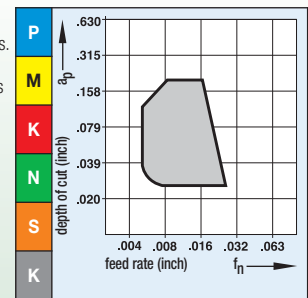
Medium universal turning includes rough machining with medium chip loads and finish machining with low chip loads.



**..MT**



Stabilized cutting edge for medium chip sections. Effective in operations that make high demands on toughness or involve interrupted cuts.

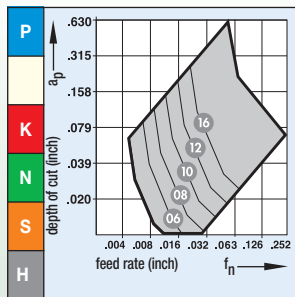


**Round, Positive Inserts**

**RCMT/RCMX**



For straight turning, facing, and profile turning. Used at small depths of cut and high feeds up to 0.1 x D.



<b>P</b>	Steel
<b>M</b>	Stainless Steel
<b>K</b>	Cast Iron
<b>N</b>	Non-Ferrous Materials
<b>S</b>	High-Temp Alloys
<b>H</b>	Hardened Materials



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Whether your operation is turning, milling, or holmaking, WIDIA brands are the high-performance tooling you need. We offer standard and custom solutions for the general engineering market.

# Speed and Feed Chart

Negative Inserts • Inch



DIN ISO 513	VDI 3323	A • Finishing (ap x f = .0394 x .0039)			B • Medium (ap x f = .0787 x .0079)			C • Roughing (ap x f = .1575 x .0098)								
Material Group		Cutting Speed • vc SFM														
		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
		- / -FL / -FR			-22 / -49 / - / -FR / -FM / -5			-49 / - / -5 / -8								
ap [inch]		.0315-.0787			.0118-.0984			.0118-.0984								
f [inch]		.0020-.0137			.0039-.0157			.0039-.0157								
P		TN1000			TN1000			TN2000			TN2000			TN4000		
	1	1115	1605	1935	915	1310	1570	820	1180	1410	655	950	1145	590	850	1015
	2	1115	1570	1900	850	1210	1440	785	1115	1345	620	885	1045	425	620	750
	3	950	1375	1640	590	850	1015	555	785	950	520	750	915	425	590	720
	4	850	1210	1440	620	885	1045	590	820	980	425	620	750	360	490	590
	5	655	915	1115	455	655	785	425	620	750	295	425	520	245	360	425
	6	885	1275	1540	655	950	1145	620	885	1045	455	655	785	360	520	620
	7	850	1210	1440	620	885	1045	590	820	980	425	620	750	360	490	590
	8	720	1045	1245	520	750	915	490	685	820	360	490	590	275	390	455
	9	655	915	1115	455	655	785	425	620	750	295	425	520	245	360	425
	10	885	1275	1540	655	950	1145	620	885	1045	455	655	785	360	520	620
	11	655	915	1115	425	620	750	390	555	655	295	425	520	245	360	425
	12	490	720	850	455	655	785	425	590	720	390	555	655	360	520	620
	13.1	425	620	750	390	555	655	360	490	590	325	455	555	295	425	520
13.2	210	310	375	195	275	325	180	245	295	160	225	275	145	210	260	
K		-22														
	ap [inch]	.0079-.0787														
	f [inch]	.0020-.0079														
		HK1500														
	15	590	850	1015												
	16	455	655	785												
	17	590	820	980												
18	490	685	820													
19	785	1115	1345													
20	590	850	1015													
N		.0394-.1575			.0394-.1575						.0394-.1575					
	ap [inch]	.0394-.1575			.0394-.1575						.0394-.1575					
	f [inch]	.0039-.0157			.0039-.0157						.0039-.0157					
		THM-X			THM-X						THM-X					
	21	2620	3280	9840	1640	3280	8200				980	3280	6560			
	22	1310	3280	6560	980	3280	5905				980	3280	4920			
	23	1965	3280	4920	1640	2620	4265				655	2295	3935			
	24	1965	3280	4920	1640	2620	4265				655	2295	3935			
	25	1310	2295	3280	980	1965	2620				655	1640	2295			
	26	1310	1640	1965	980	1310	1640				820	1145	1310			
	27	1310	1640	1965	980	1310	1640				655	980	1310			
	28	655	980	1310	490	820	1145				325	655	980			
29	325	490	655	325	455	590				260	390	490				
30	490	655	820	390	590	720				325	490	655				

WIDIA Value • Speed and Feed Chart

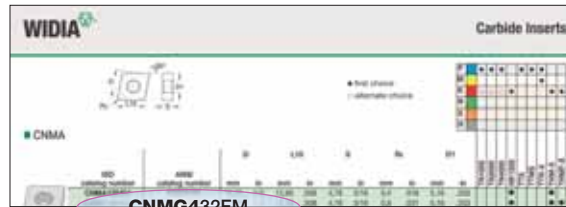


DIN ISO 513	VDI 3323	A • Finishing (ap x f = .0394 x .0039)			B • Medium (ap x f = .0787 x .0079)			C • Roughing (ap x f = .1575 x .0098)								
Material Group		Cutting Speed • vc SFM														
		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
P	ap [inch]	- / -R / -MU .0118-.0787			- / - 2 / -MU .0118-.0984			- / -MU .0276-.1969								
	f [inch]	.0020-.1378			.0039-.0157			.0047-.0157								
		TN1000			TN1000			TN2000			TN2000			TN4000		
	1	1115	1605	1935	280	400	480	915	1310	1570	655	950	1145	590	850	1015
	2	1115	1570	1900	260	370	440	850	1210	1440	620	885	1045	425	620	750
	3	950	1375	1640	180	260	310	590	850	1015	520	750	915	425	590	720
	4	850	1210	1440	190	270	320	620	885	1045	425	620	750	360	490	590
	5	655	915	1115	140	200	240	455	655	785	295	425	520	245	360	425
	6	885	1275	1540	200	290	350	655	950	1145	455	655	785	360	520	620
	7	850	1210	1440	190	270	320	620	885	1045	425	620	750	360	490	590
	8	720	1045	1245	160	230	280	520	750	915	360	490	590	275	390	455
	9	655	915	1115	140	200	240	455	655	785	295	425	520	245	360	425
	10	885	1275	1540	200	290	350	655	950	1145	455	655	785	360	520	620
	11	655	915	1115	130	190	230	425	620	750	295	425	520	245	360	425
12	490	720	850	140	200	240	455	655	785	390	555	655	360	520	620	
13.1	425	620	750	120	170	200	390	555	655	325	455	555	295	425	520	
13.2	210	310	375	60	85	100	195	275	325	160	225	275	145	210	260	
K	ap [inch]	- / -MU .0079-.0787			- / -MU .0118-.1772											
	f [inch]	.0020-.0079			.0031-.0138											
		HK1500			HK1500											
	15	950	1345	1605	750	1080	1310									
	16	750	1080	1310	590	820	980									
	17	820	1180	1410	685	980	1180									
	18	785	1115	1345	620	885	1045									
19	1115	1605	1935	950	1345	1605										
20	950	1345	1605	750	1080	1310										
N	ap [inch]	.0394-.1575			.0394-.1575			1.0394-.1575								
	f [inch]	.0039-.0079			.0039-.0079			.0039-.0157								
		THM-X			THM-X			THM-X								
	21	2620	3280	9840	1640	3280	8200	980 3280 6560								
	22	1310	3280	6560	980	3280	5905	980 3280 4920								
	23	1965	3280	4920	1640	2620	4265	655 2295 3935								
	24	1965	3280	4920	1640	2620	4265	655 2295 3935								
	25	1310	2295	3280	980	1965	2620	655 1640 2295								
	26	1310	1640	1965	980	1310	1640	820 1145 1310								
	27	1310	1640	1965	980	1310	1640	655 980 1310								
	28	655	980	1310	490	820	1145	325 655 980								
29	325	490	655	325	455	590	260 390 490									
30	490	655	820	390	590	720	325 490 655									

WIDIA Value • Speed and Feed Chart

### How Do Catalog Numbers Work?

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



#### C

Insert Shape

**H** Hexagon  
120°

**O** Octagon  
135°

**P** Pentagon  
108°

**R** Round

**S** Square  
90°

**T** Triangular  
60°

**C** Rhomboid  
80°  
**D** 55°  
**E** 75°  
**M** 86°  
**V** 35°

**W** Trigon  
80°  
with enlarged  
corner angles

**L** Rectangular  
90°

**A** Parallelogram  
85°  
**B** 82°  
**N/K** 55°

#### N

Insert Clearance Angle

**A** 3°

**B** 5°

**C** 7°

**D** 15°

**E** 20°

**F** 25°

**G** 30°

**N** 0°

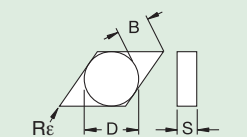
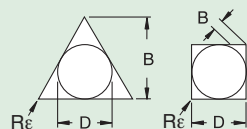
**P** 11°

**O** Indicated for other clearance angles requiring descriptions.

#### M

Tolerance Class

Tolerances apply prior to edge prep and coating



D: Theoretical diameter of the insert inscribed circle  
S: Thickness  
B: See figures below

#### G

Insert Features



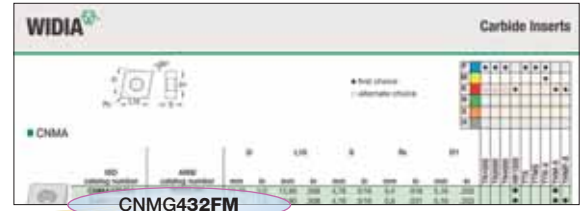
#### 4

Size

		Code for metric cutting edge length "L10"								
		"D"		C	D	R	S	T	V	W
inch	inch									
1.2 (5)	5/32	S4	04	03	03	06	—	—	—	—
1.5 (6)	3/16	04	05	04	04	08	08	S3	—	—
1.8 (7)	7/32	05	06	05	05	09	09	03	—	—
—	.236	—	—	06	—	—	—	—	—	—
2	1/4	06	07	06	06	11	11	04	—	—
2.5	5/16	08	09	07	07	13	13	05	—	—
—	.315	—	—	08	—	—	—	—	—	—
3	3/8	09	11	09	09	16	16	06	—	—
—	.394	—	—	10	—	—	—	—	—	—
3.5	7/16	11	13	11	11	19	19	07	—	—
—	.472	—	—	12	—	—	—	—	—	—
4	1/2	12	15	12	12	22	22	08	—	—
4.5	9/16	14	17	14	14	24	24	09	—	—
5	5/8	16	19	15	15	27	27	10	—	—
—	.630	—	—	16	—	—	—	—	—	—
5.5	11/16	17	21	17	17	30	30	11	—	—
6	3/4	19	23	19	19	33	33	13	—	—
—	.787	—	—	20	—	—	—	—	—	—
7	7/8	22	27	22	22	38	38	15	—	—
—	.984	—	—	25	—	—	—	—	—	—
8	1	25	31	25	25	44	44	17	—	—
10	1-1/4	32	38	31	31	54	54	21	—	—
—	1.260	—	—	32	—	—	—	—	—	—

tolerance class	tolerance on "D"	tolerance on "B"	tolerance on "S"
C	±.0010"	±.0005"	±.001"
H	±.0005"	±.0005"	±.001"
E	±.0010"	±.0010"	±.001"
G	±.0010"	±.0010"	±.005"
M	See table in size column		±.005"
U	See table in size column		±.005"

By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



**3**

Thickness  
shown as "S"

symbol inch	thickness inch
.5 (1)	1/32
.6	.040
1 (2)	1/16
1.2	5/64
1.5 (3)	3/32
2	1/8
2.5	5/32
3	3/16
3.5	7/32
4	1/4
5	5/16
6	3/8
7	7/16
18	1/2

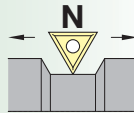
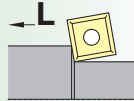
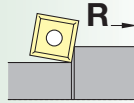
**2**

Corner Radius  
shown as "Rε"

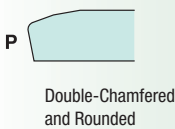
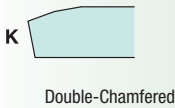
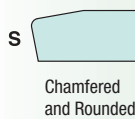
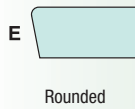
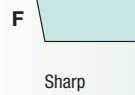
symbol inch	corner radius inch
X0	.0015
0	.004
.5	.008
1	1/64
2	1/32
3	3/64
4	1/16
5	5/64
6	3/32
7	7/64
8	1/8
—	round insert

Hand of Insert  
(optional)

R = Right hand  
L = Left hand  
N = Neutral



Cutting Edge  
(optional)



**FM**

Chipbreaker  
(optional)

- 5** Medium Roughing
- 8** Heavy Roughing
- 22** Finishing
- 49** Medium Stainless
- FL** Finish Light
- FM** Finish Medium
- FR** Finish Rough
- MU** Medium Universal























