



Aluminum Series

Optimum edge treatment and advanced clamping technology

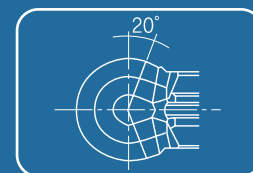
New

Machining Al wheels

Features

- Optimal configurations for aluminum wheel operation.
- Long tool-life by applying new grade.
- Strong clamping of insert by unique clamping mechanism.
- Various insert types for multipurpose.

- Complete radius through out the cutting edge



Various insert style



MRGN-A

(General use)

- High rake angle
- Cutting conditions
vc = 3,300 ~ 8,300sfm
fn = 0.004 ~ 0.031ipr
ap = 0.02 ~ 0.16inch



MRGN-A5

(Copy machining)

- Reinforced clamping
- Cutting conditions
vc = 3,300 ~ 8,300sfm
fn = 0.004 ~ 0.031ipr
ap = 0.02 ~ 0.16inch



MRGN-AM

(Medium finishing)

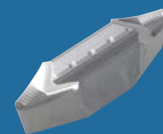
- Medium-finishing cut
- For ductile cast iron
- Cutting conditions
vc = 3,300 ~ 8,300sfm
fn = 0.004 ~ 0.024ipr
ap = 0.02 ~ 0.12inch



MRGN-AP

(PCD insert)

- Improved chip control
- Cutting conditions
vc = 3,300 ~ 9,900sfm
fn = 0.004 ~ 0.024ipr
ap = 0.02 ~ 0.08inch



MVGN-A

(Fine finishing)

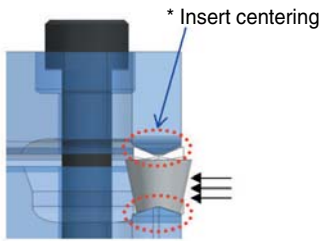
- High rake, high relief angle
- Cutting conditions
vc = 3,300 ~ 8,300sfm
fn = 0.004 ~ 0.031ipr
ap = 0.02 ~ 0.16inch



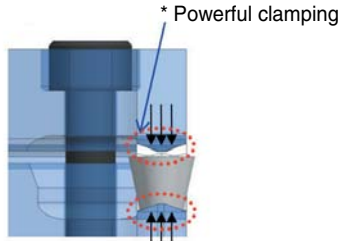
Machining AI Wheels

New clamping system | Application of AI wheel | Insert

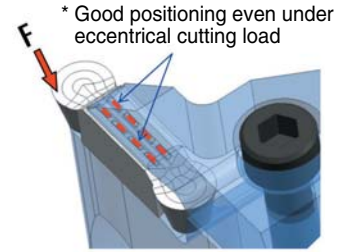
New clamping system



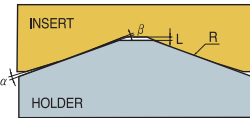
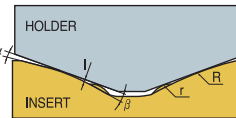
Before tightening



After tightening

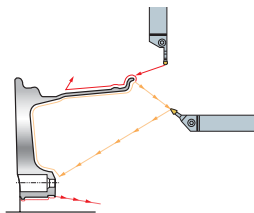


Patent

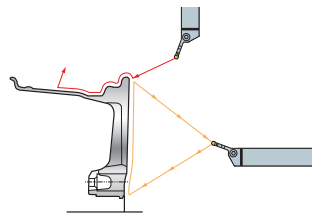


- Radius designed on the top & bottom side of insert reinforcing the clamping force.
- Convex "DOT" put on the top of insert makes it possible to have powerful & even clamping.

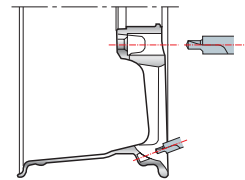
Application of AI wheel



MACHINING A

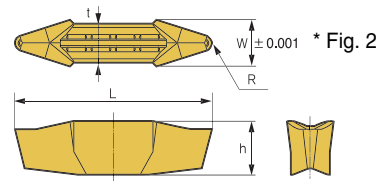
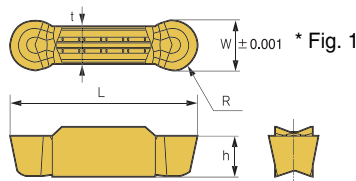


MACHINING B



MACHINING C

Insert



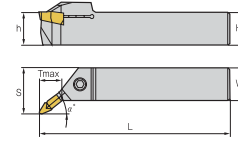
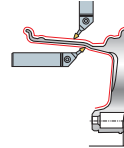
Desingation	Grade			Dimensions (inch)					Fig.	Available holder
	G10	H05	H01	W	R	L	t	h		
MRGN6N-A	●			0.236	0.118	1.024	0.283	0.232	1	MGEHR/L16N-6A
MRGN6N-AM	●			0.236	0.118	1.024	0.283	0.232	1	
MRGN6N-AP	●			0.236	0.118	1.024	0.283	0.232	1	
MRGN6N-A5	●			0.236	0.118	1.024	0.283	0.232	1	MGEHR/L16N-6A5
MRGN8N-A	●			0.315	0.157	1.181	0.315	0.256	1	MGEHR/L20N-8A
MRGN8N-AM	●			0.315	0.157	1.181	0.315	0.256	1	
MRGN8N-AP	●			0.315	0.157	1.181	0.315	0.256	1	
MRGN8N-A5	●			0.315	0.157	1.181	0.315	0.256	1	MGEHR/L20N-8A5
MVGN8N-A-R1.2	●			0.315	0.047	1.181	0.315	0.272	2	MGEXR/L16N-8A-5V MGEXR/L16N-8A-22.5V
MVGN8N-A-R1.6	●			0.315	0.063	1.181	0.315	0.272	2	



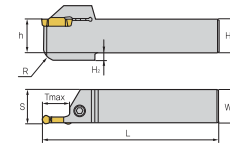
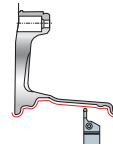
Machining AI Wheels

Holder | Boring bar

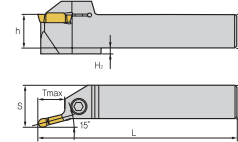
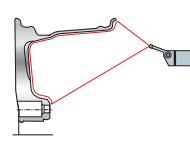
Holder



Designation	Stock		Dimensions(inch)						Available Insert	Screw	Wrench
	R	L	H(h)	W	L	S	T max	α°			
MGEXR/L16N-8A-5V	○		1	1	6.0	1.142	0.93	5	MVGN8N-A-R1.2	BHA0620	HW50L
MGEXR/L16N-8A-22.5V	○		1	1	6.0	1.378	1.06	22.5	MVGN8N-A-R1.6		

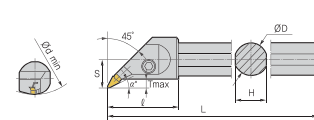
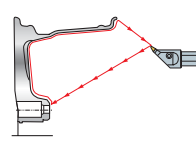


Designation	Stock		Dimensions(inch)							Available Insert	Screw	Wrench
	R	L	H(h)	W	L	S	T max	R	H ₂			
MGEHR/L16N-6A	○		1	1	6.0	1.006	0.93	0.236	0.276	MRGN6N-A MRGN6N-AP MRGN6N-AM	BHA0620	HW50L
MGEHR/L20N-6A	○		1 1/4	1 1/4	6.0	1.281	1.06	0.472	0.315			
MGEHR/L16N-6A5	○		1	1	6.0	1.006	0.93	0.236	0.276			
MGEHR/L20N-6A5	○		1 1/4	1 1/4	6.0	1.281	1.06	0.472	0.315	MRGN6N-A5	BHA0620	HW50L
MGEHR/L16N-8A	○		1	1	6.0	1.006	0.93	0.236	0.276	MRGN8N-A MRGN8N-AP MRGN8N-AM		
MGEHR/L20N-8A	○		1 1/4	1 1/4	6.0	1.281	1.06	0.472	0.315			
MGEHR/L16N-8A5	○		1	1	6.0	1.006	0.93	0.236	0.276	MRGN8N-A5	BHA0620	HW50L
MGEHR/L20N-8A5	○		1 1/4	1 1/4	6.0	1.281	1.06	0.472	0.315			



Designation	Stock		Dimensions(inch)							Available Insert	Screw	Wrench
	R	L	H(h)	W	L	S	T max	R	H ₂			
MGEHR/L16N-6A-15	○		1	1	6.0	1.268	0.79	0.236	0.276	MRGN6N-A MRGN6N-AP MRGN6N-AM	BHA0620	HW50L
MGEHR/L20N-6A-15	○		1 1/4	1 1/4	6.0	1.543	0.98	0.472	0.315			
MGEHR/L16N-6A5-15	○		1	1	6.0	1.268	0.79	0.236	0.276			
MGEHR/L20N-6A5-15	○		1 1/4	1 1/4	6.0	1.543	0.98	0.472	0.315	MRGN6N-A5	BHA0620	HW50L
MGEHR/L16N-8A-15	○		1	1	6.0	1.268	0.79	0.236	0.276	MRGN8N-A MRGN8N-AP MRGN8N-AM		
MGEHR/L20N-8A-15	○		1 1/4	1 1/4	6.0	1.543	0.98	0.472	0.315			
MGEHR/L16N-8A5-15	○		1	1	6.0	1.268	0.79	0.236	0.276	MRGN8N-A5	BHA0620	HW50L
MGEHR/L20N-8A5-15	○		1 1/4	1 1/4	6.0	1.543	0.98	0.472	0.315			

Boring bar

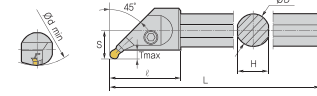
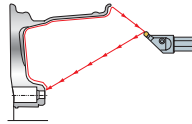


Designation	Stock		Dimensions(inch)							Available Insert	Screw	Wrench	
	R	L	ϕD	ϕd_{min}	L	ℓ	T max	H	α°				S
MGIUR/L4420-8A-MV	○		1 1/4	2 5/8	7.0	2.56	0.315	1.181	27.5	1.023	MVGN8N-A-R1.2 MVGN8N-A-R1.6	BHA0616	HW50L

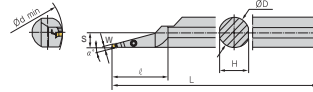
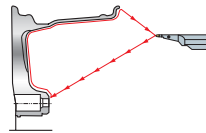


Machining AI Wheels

Machining example | Recommended cutting condition

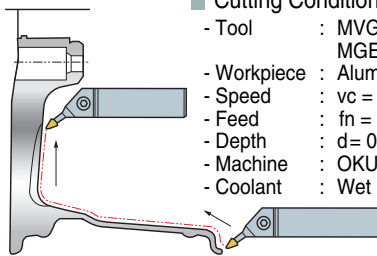


Designation	Stock		Dimensions(inch)							Available Insert	Screw	Wrench
	R	L	øD	ødmin	L	ℓ	T max	H	S			
MGIXR/L4420-8A-MR	○		1 1/4	2 5/8	7.0	2.56	0.315	1.181	1.023	MRGN8N-A MRGN8N-AM MRGN8N-AP	BHA0616	HW50L
MGIXR/L4420-8A5-MR	○		1 1/4	2 5/8	7.0	2.56	0.315	1.181	1.023	MRGN8N-A5	BHA0616	HW50L



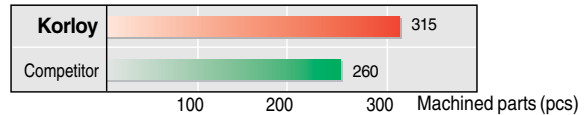
Designation	Stock		Dimensions(inch)								Available Insert	Screw	Wrench
	R	L	øD	ødmin	L	ℓ	W	H	α°	S			
MGIXR/L4632-8A-MR	○		2	2 3/4	14.0	3.15	0.303	1.811	27.5	1.188	MRGN8N-A MRGN8N-AM MRGN8N-AP	BHA0616	HW50L
MGIXR/L4632-8A5-MR	○		2	2 3/4	14.0	3.15	0.303	1.811	27.5	1.188	MRGN8N-A5	BHA0616	HW50L

Machining example



Cutting Condition

- Tool : MVGN8N-A-R1.2
MGEXR16N-8A-5V
- Workpiece : Aluminum alloy(15inch Wheel)
- Speed : $vc = 6255$ sfm
- Feed : $fn = 0.016$ ipr
- Depth : $d = 0.06 \sim 0.08$ inch
- Machine : OKUMA
- Coolant : Wet



Recommended cutting condition

Workpiece		Hardness (HB)	vc(sfm)	fn(ipr)
Aluminum alloy (Forged)	Unhardenable	50 ~ 70	3,300 ~ 8,300	0.004 ~ 0.024
	Hardened	90 ~ 110	1,000 ~ 3,300	0.004 ~ 0.020
Aluminum alloy (Cast)	Unhardenable	70 ~ 80	1,000 ~ 3,300	0.004 ~ 0.020
	Hardened	80 ~ 110	650 ~ 2,000	0.004 ~ 0.016
Copper alloy	Short chipping	90 ~ 110	1,000 ~ 2,600	0.004 ~ 0.020
Magnesium alloy		70 ~ 80	1,000 ~ 3,300	0.004 ~ 0.020



Warning

※ Safety instruction

- Use glasses safely and face cover with protective equipment. If cutting condition and use method are inaccurate, you may be injured by broken tools or scattered chips.
- Excessive cutting load may influence badly on both tool and machine. Make suitable tool replacement for preventing failure of machining.
- After machine stopped, clean remained chips from machine with special cleaning equipment.
- Keep safety distance from acute and hot chip during machining.
- Make precaution for prevention of fire in advance when you use insoluble cutting oil.
- Assembled parts may be scattered at high speed cutting. Please use protective equipment.