

GROOVING

43-2024

JULY 2024

METRIC

NPA

New Product Announcement



Larger Variety



Cost Effective Inserts



High Productivity Inserts



ISCAR CER LINE

New Modular Ceramic Grip Adapters and Ceramic Grooving Inserts for Groove-Turn Operations on HRSA and Cast-Iron



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Highlights

New GCP Inserts and GCPAD Adapters for Machining Heat Resistant Super Alloys and Cast-Iron

ISCAR introduces new Modular Ceramic Grip Inserts and adapters for high pressure coolant assuring a cost-effective solution.

Advantages

GCPAD

- Reduces tooling cost and stock, as each GCPAD adapter can be used with JHP straight, perpendicular square shank, or with a CAMFIX shank.
- The adapters are designed to withstand maximum coolant pressure of up to 340 bars.

GCP/GCP-R

- Grooving ceramic Inserts provide high speed machining capabilities.
- A wide range of grades are available as follows:

Bidemics - High hardness grades for machining at high to very high cutting speeds under stable conditions, primarily used for finishing operations.


Grades: IS05 and IS10.

Whisker Based Ceramic - A versatile grade for roughing and semi-roughing operations at high speeds, which can also be used for scale machining under specific conditions.

Grade: IW10.

SiAION - First choice for HRSA materials for moderate to high-speed machining, suitable for both stable and unstable conditions, as well as scale machining.

Grade: IS15 and IS45.

- GCP – G - Grooving, C - Ceramic, P - Clearance angle. 
- The inserts are provided with a straight cutting edge and a full radius with a flat top rake (no chipbreaker).
- The inserts are available in imperial sizes 3.18 up to 9.52mm.



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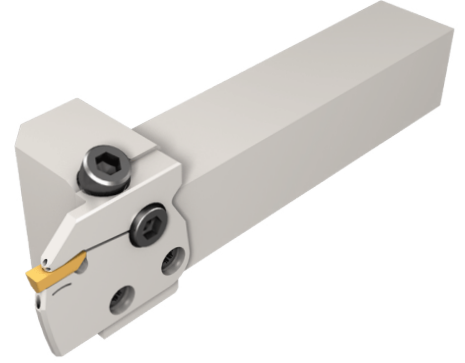
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GCPAD – Modular - Ceramic GRIP Adapters

JET CUT

- 4 coolant inlets - three cooling inlets located on the upper jaw and one on the lower jaw.
- Coolant directed to the cutting edge for increased tool life.



GCP/GCP-R

- Adaptors with high pressure coolant channels on which GCP/GCP-R grooving ceramic inserts are mounted.

High Rigidity

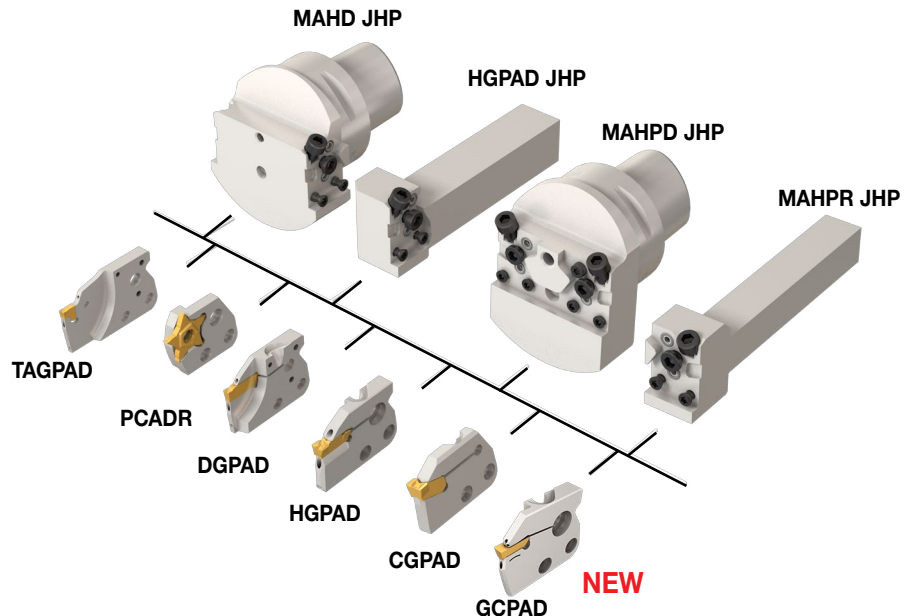
- 4 screws for improved clamping.

Unique Clamping

- The advanced and unique insert seat system allows for an even distribution of clamping and cutting forces on the ceramic cutting insert's base, reducing the likelihood of breakage when compared to inserts or pocket surfaces with recesses.

GCPAD

- Adaptors specifically designed for modular-grip holders, providing a combination of modular-ceramic grip adapters and JHP.
- This offers an economical solution for implementing JHP on CAMFIX shanks.





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Guideline for Grooving HRSA

- **Bidemics** grooving inserts provide high speed capabilities to your process.
- **Whisker** based ceramic inserts are the most versatile option in this category.
- ISCAR also offers **SiALON** grades to assure more productivity and stability.

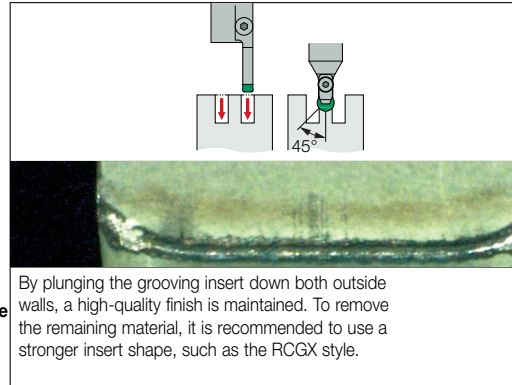
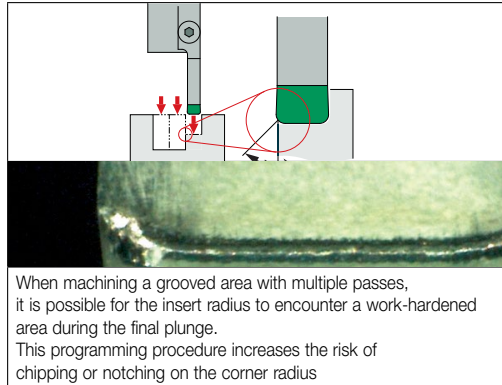
			Speed	Feed	Versatility	Toughness	
bidemics	IS05		•		•		can run at up to 480 m/min double the speed of whisker
	IS10		•		•		
	IS15		•	•	•	•	double the feed of whisker
SiALON	IS45		•	•		•	best for scale and interruption
	IW10		•		•		versatile grade

- 1st choice
- 2nd choice

		Grooving			
Application					
Grade		IS05-IS10	IS15	IS45	IW10
Cutting speed (m/min)	180				
	240				
Feed (mm/rev)	0.05				
	0.1				
Coolant					

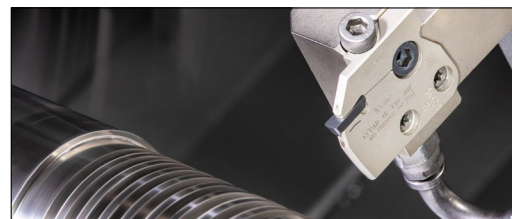
When using IS05/IS10, it is advisable to increase the speed to over 300 m/min.
For IS15/IS45, it is recommended to increase the feed rates by 100% compared to Whisker-based ceramic inserts.

Application Information



Test Report

work material	inconel 718	
operation	grooving	
cutting speed	320 m/min	
feed	0.1 mm/rev	
coolant	wet	
GCPAD 4R-T16-JHP	stable machining for 50 minutes	
competitor	50 minutes of Unstable machining	



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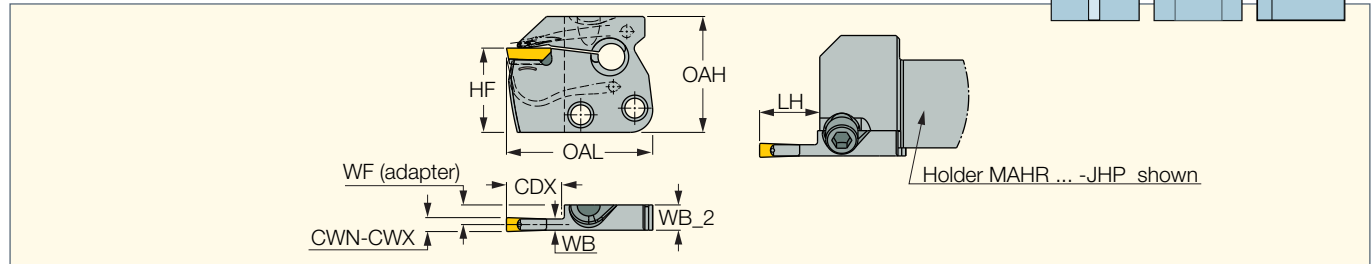
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GCPAD #R/L-T#-JHP

Adapters with High-Pressure Coolant Channels Carrying GCP & CGP-R Ceramic Inserts

<https://www.iscar.com/eCatalog/Family.aspx?fnum=5299&mapp=TG&GFSTYP=M&srch=1>



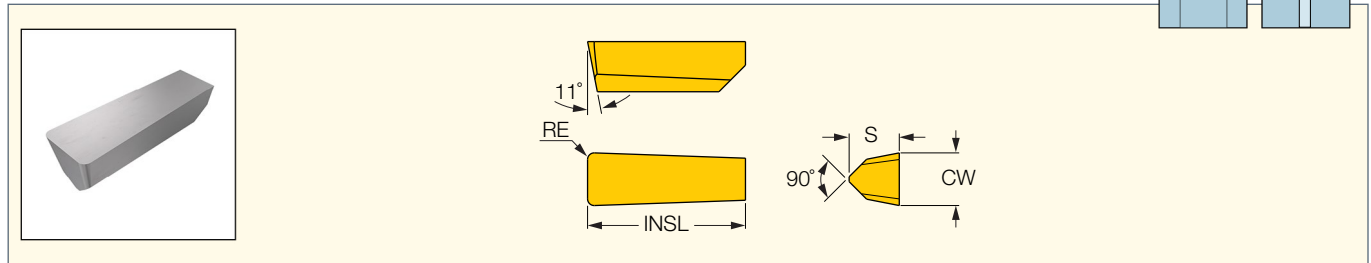
Designation	CWN ⁽¹⁾	CWX ⁽²⁾	CDX ⁽³⁾	LH	WF	WB	WB_2	OAL	OAH	HF
GCPAD 3R/L-T10-JHP	3.18	3.96	10.00	11.0	5.95	2.50	7.2	36.00	33.0	24.0
GCPAD 4R/L-T16-JHP	3.96	4.75	16.00	17.0	5.60	3.20	7.2	42.00	33.0	24.0
GCPAD 6R/L-T16-JHP	6.35	7.13	16.00	17.0	4.60	5.20	7.2	42.00	33.0	24.0
GCPAD 6R/L-T20-JHP	6.35	7.13	20.00	21.0	4.60	5.20	7.2	46.00	33.0	24.0
GCPAD 8R/L-T25-JHP	8.74	9.52	30.00	31.0	4.15	8.30	8.3	56.00	33.0	24.0

- ⁽¹⁾ Minimum cutting width
- ⁽²⁾ Maximum cutting width
- ⁽³⁾ Cutting depth maximum

GCP (CER)

Straight Edge Grooving and Recessing Inserts for Machining Heat-Resistant Alloys

<https://www.iscar.com/eCatalog/Family.aspx?fnum=5112&mapp=TG&GFSTYP=M&srch=1>



Designation	Dimensions						Material					Recommended Machining Data f groove (mm/rev)
	CW	CWTOL ⁽¹⁾	INSL	S	RE	RETOL ⁽²⁾	Bidemics		Whisker	SiAlON		
							IS05	IS10	IW10	IS15	IS45	
GCP 3.18-0.4 E004	3.18	0.025	12.70	4.51	0.40	0.100	●	●	●	●	●	0.02-0.07
GCP 3.18-0.8 E004	3.18	0.025	12.70	4.51	0.80	0.100	●	●	●	●	●	0.02-0.07
GCP 3.96-0.4 E004	3.96	0.025	12.70	4.51	0.40	0.100	●	●	●	●	●	0.02-0.08
GCP 3.96-0.8 E004	3.96	0.025	12.70	4.51	0.80	0.100	●	●	●	●	●	0.02-0.08
GCP 4.75-0.4 E004	4.75	0.025	12.70	4.51	0.40	0.100	●	●	●	●	●	0.02-0.09
GCP 4.75-0.8 E004	4.75	0.025	12.70	4.51	0.80	0.100	●	●	●	●	●	0.02-0.09
GCP 6.35-0.4 E004	6.35	0.025	19.05	6.05	0.40	0.100	●	●	●	●	●	0.03-0.10
GCP 6.35-0.8 E004	6.35	0.025	19.05	6.05	0.80	0.100	●	●	●	●	●	0.03-0.10
GCP 9.52-0.8 E004	9.52	0.025	25.40	8.31	0.80	0.100	●	●	●	●	●	0.05-0.14

- E004 - Honing size 0.04mm
- ⁽¹⁾ Cutting width tolerance (+/-)
- ⁽²⁾ Corner radius tolerance (+/-)

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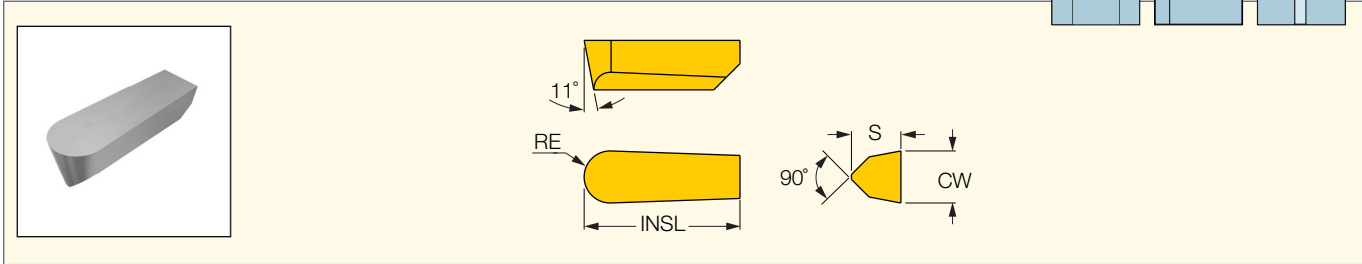
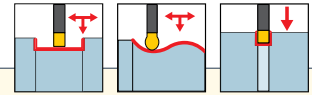
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GCP-R (CER)

Full Radius Grooving & Turning Ceramic Inserts for Machining Heat-Resistant Alloys

<https://www.iscar.com/eCatalog/Family.aspx?fnum=5114&mapp=TG&GFSTYP=M&srch=1>



Designation	Dimensions						Material					Recommended Machining Data		
	CW	CWTOL ⁽¹⁾	INSL	S	RE	RETOL ⁽²⁾	Bidemics		Whisker	SIALON		a _p (mm)	f turn (mm/rev)	f groove (mm/rev)
							IS05	IS10	IW10	IS15	IS45			
GCP 3.18-1.59 E004	3.18	0.025	12.70	4.51	1.59	0.100	●	●	●	●	●	0.10-1.00	0.03-0.15	0.02-0.07
GCP 3.96-1.98 E004	3.96	0.025	12.70	4.51	1.98	0.100	●	●	●	●	●	0.10-1.30	0.04-0.18	0.02-0.08
GCP 4.75-2.38 E004	4.75	0.025	12.70	4.51	2.38	0.100	●	●	●	●	●	0.10-1.50	0.05-0.22	0.02-0.09
GCP 6.35-3.18 E004	6.35	0.025	19.05	6.05	3.18	0.100	●	●	●	●	●	0.10-2.00	0.05-0.25	0.03-0.10
GCP 9.52-4.76 E004	9.52	0.025	25.40	8.31	4.76	0.100	●	●	●	●	●	0.10-3.00	0.05-0.30	0.05-0.14

- E004 - Honing size 0.04mm
- ⁽¹⁾ Cutting width tolerance (+/-)
- ⁽²⁾ Corner radius tolerance (+/-)

Material	H				K							S						
	Hard Materials				Cast Iron							Heat-Resistant Super Alloys						
Grade	IN10	IN16	IN16C	IN20	IN6	IN10	IN18	IW10	IS26	IS45C	IS45	IS05	IS10	IW10	IS14	IS15	IS45	IS55
Interrupted																		
Light interrupted																		
Continuous																		