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## NINGBO ICHE TOOLS CO. LTD

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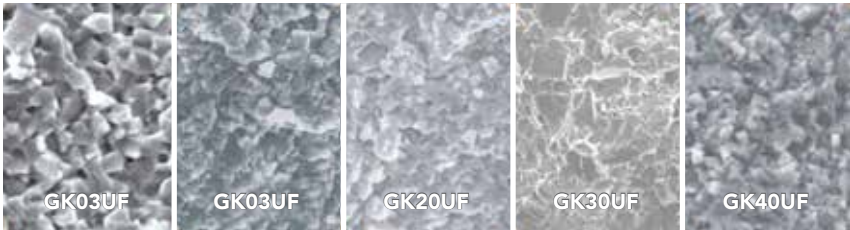


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## HIGH PERFORMANCE HARD METAL



### SELECT FROM VARIOUS GRAIN SIZES

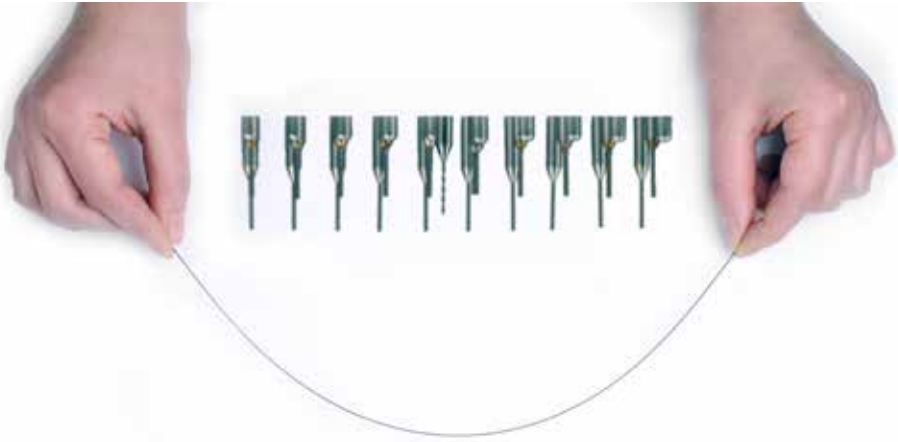
Based on refined raw materials and blended powders, we sinter the products through a combination of advanced vacuum and HIP technologies to prevent defects and preserve uniform structure and

consistency. Products are optimized through balancing wear resistance, impact resistance, and high strength in our materials to satisfy wide range applications and tough conditions.

Optimized Carbide Grades: GK10UF, GK10A, GK20UF, GK20A, GK30UF, GK40UF, GM50S, reflect our design philosophy and are widely used in various precision milling and tough applications. We continue to exceed performance standards tool industries by focusing on customers' needs.

# GRADES MATERIAL APPLICATION

CARBIDE GRADES	ROUTER	DRILL	REAMER	PCB DRILL	PCB ROUTER	MILD STEEL	STEEL	HARD STEEL	STAINLESS STEEL
GK03UF					○				
GK05UF			○	○	○				
GK10UF	○	○	○	○	○			●	●
GK10A	○			○	○			●	●
GK10	○		○			○	○	●	●
GK20UF	○	○	○	○		●	●	○	●
GK20A		○	○	○		●	●	○	●
GK33UF	○		○	○		●	●	○	○
GK30UF	○	○				○	○	●	●
GK40UF	○	○	○			○	○	●	○
GK44UF	○	○	○			○	○	○	○



	TITANIUM ALLOY	NICKEL-BASE ALLOY	CASTING IRON	ALUMINIUM ALLOY	COPPER ALLOY	WOOD	COMPOSITE	ACRYLICS	GRAPHITE
				○	○	○	○	○	
				○	○	○	○	○	
	○	○	●	○	○	○	○	○	
	○	○	●	○	○	○	○	○	
	○	○	○	●	●	●	○	○	○
	●	●		●	●				
	●	●		●	●				
	●	●	○	●	●	●	●	●	
	●	●	○	●	●	●	●	●	
	○	○	●	○	○	●	○	○	
	○	○	●	○	○	●	○	○	



# GRADES MATERIAL PROPERTY

CARBIDE GRADES	ISO Class	CO (%)	WC+ OTHER	Density (g/cm)			Bending strength (N/mm <sup>2</sup> )	WC Grain Size (μm)	
GK03UF	K01	3.0	97.0	15.10	2020	94.5	2700	0.8	
GK05UF	K05/K10	5.0	95.0	14.82	2000	94.0	3600	0.4	
GK10UF	K05/K10	6.0	94.0	14.74	1900	93.6	3800	0.4	
GK10A	K05/K10	6.0	94.0	14.75	2080	94.5	3600	0.4	
GK10	K20	6.0	94.0	14.90	1500	91.0	3200	1.0	
GK20UF	K05/K30	8.0	92.0	14.65	1850	93.1	4000	0.4	
GK20A	K05/K20	8.0	92.0	14.60	1890	93.6	3800	0.4	
GK33UF	K20/K30	10.0	90.0	14.35	1750	93.0	4000	0.4	
GK30UF	K20/K30	10.0	90.0	14.45	1570	91.9	3800	0.7	
GK40UF	K30/K40	12.0	88.0	14.10	1680	92.4	4100	0.4	
GK44UF	K30/K40	12.0	88.0	14.05	1700	93.0	4100	0.4	

NOTES	RECOMENDED APPLICATIONS
Excellent abrasive. Wear resistance. Good toughness	Appropriate for rotating tools in machining of hard woods, plastics, fiber reinforced composites and casting aluminium alloys.
Excellent wear resistance. Very good strength and toughness	Recommended for rotating tools for high speed machining hardening steels, plastics, fiber reinforced materials, and aluminium alloys. Highly recommended to be used in PCB router for routing difficult boards.
Very good wear resistance. Excellent balance of strength and toughness.	Recommended for rotating tools for high speed machining plastics, fiber reinforced materials, and hardening aluminium alloys. Highly recommend using in PCB router and larger PCB drill (>0.6mm dia.) applications.
Ultra wear resistance with the highest hardness balanced by great toughness.	Recommend for rotating tools for high speed machining hardening steels, plastics, fiber reinforced materials, and hardening aluminium alloys. Highly recommend using in PCB router routing very difficult boards.
Excellent toughness with very good wear resistance.	Recommend using rotating tools for milling, drilling and reaming at high speed. Appropriate for machining of gray cast irons, chilled cast irons, steels, high silica aluminum alloys and graphite. Specially recommend using in diamond coated cutting tools.
Super balanced hardness and strength.	Recommend for rotating tools for high speed machining hardening steels, plastics, fiber reinforced materials, and aluminum alloys. Specially recommend using in smal PCB dril (0.25-0.4mm in dia.)
Extremely high hardness supported with excellent strength and toughness.	Recommend for rotating tools for high speed machining hardening steels, plastics, fiber reinforced materials, and aluminum alloys. Specially recommend using in smal PCB dril (0.25-0.6mm in dia.) for difficult boards..
Extremely high hardness supported with excellent strength and toughness.	Recommend for rotating tools for high speed machining. Appropriate for machining hard steels, carbon steels, stainless steels, nickel-base alloys, titanium alloys, heat resistant alloys, casting irons and the hard steels with HRC between 45-65.
Good toughness and hardness.	Recommend using in rotating tools for general milling and drilling at a moderate speed. Appropriate for machining carbon steels, alloy steels, stainless steels, nickel-base alloys, titanium alloys, casting irons and the steels with HRC between 30-45..
Excellent strength and toughness supporting excellent wear resistance.	Recommend using in rotating tools for high speed machining. Appropriate for machining glass, fiber reinforced materials, carbon steels, stainless steels, nickel-base alloys, titanium alloys, composite and the hard steels with HRC between 45-58.
Excellent strength and toughness supporting excellent wear resistance.	Highly recommend using in rotating tools for high speed machining. Appropriate for machining glass, fiber reinforced materials, carbon steels, stainless steels, nickel-base alloys, titanium alloys, composite and the hard steels with HRC between 55-60 and the impact resistance needed.



# SOLID CARBIDE RODS



## PCB DRILL APPLICATIONS

Part No.	D (mm)	Tol (mm)		L (mm)	Tol (mm)	
GR0.8-330A	0.80	+0.25	+0.10	330	+10.0	0
GR1.15-330A	1.15	+0.10	0	330	+14.0	+4.0
GR1.35-330A	1.35	+0.05	-0.07	330	+14.0	+4.0
GR1.55-330A	1.55	+0.07	-0.05	330	+14.0	+4.0
GR2.0-330A	2.00	+0.20	0	330	+6.0	0
GR2.5-330A	2.50	+0.20	0	330	+6.0	0





## PCB ROUTER APPLICATIONS

Part No.	D (mm)	Tol (mm)		L (mm)	Tol (mm)	
GF3.24-38.5	3.24	+0.25	-0.25	38.5	+0.1	-0.1
GF3.24-13.1	3.24	+0.25	-0.25	13.1	+0.7	0
GF3.24-330C	3.24	+0.25	-0.25	330	+5.0	+2.0
GFH3.175-38.5L	3.175	-0.001	-0.006	38.5	+0.1	-0.1



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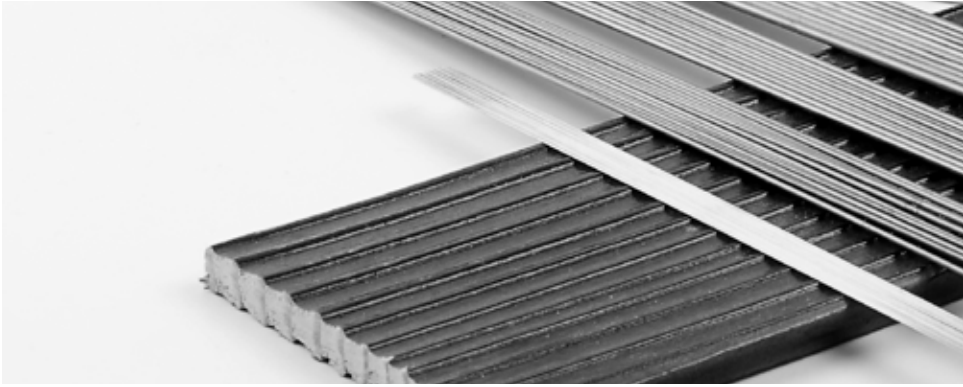
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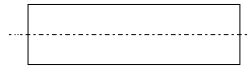
**SOLID CARBIDE  
RODS**



# SOLID CARBIDE RODS



**STANDARD LENGTH**  
**310-316mm/330-336mm**



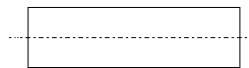
Part No.	D (mm)	Tol (mm)	
GR1.0-310/330	1	+0.30	+0.12
GR12.0-310/330	1.2	+0.30	+0.12
GR26.0-310/330	1.5	+0.30	+0.12
GR1.2-310/330	2	+0.30	+0.12
GR27.0-310/330	2.5	+0.40	+0.20
GR12.5-310/330	3	+0.40	+0.20
GR1.5-310/330	3.5	+0.40	+0.20
GR13.0-310/330	4	+0.40	+0.20
GR28.0-310/330	4.5	+0.40	+0.20
GR2.0-310/330	5	+0.40	+0.20
GR29.0-310/330	5.5	+0.40	+0.20
GR13.5-310/330	6	+0.50	+0.20
GR30.0-310/330	6.5	+0.50	+0.20
GR2.5-310/330	7	+0.50	+0.20
GR14.0-310/330	7.5	+0.50	+0.20
GR3.0-310/330	8	+0.50	+0.20

Part No.	D (mm)	Tol (mm)	
GR31.0-310/330	8.5	+0.50	+0.20
GR14.5-310/330	9	+0.50	+0.20
GR3.5-310/330	9.5	+0.50	+0.20
GR15.0-310/330	10	+0.60	+0.20
GR32.0-310/330	10.5	+0.60	+0.20
GR4.0-310/330	11	+0.60	+0.20
GR33.0-310/330	11.5	+0.60	+0.20
GR15.5-310/330	12	+0.65	+0.20
GR4.5-310/330	12.5	+0.65	+0.20
GR16.0-310/330	13	+0.65	+0.20
GR34.0-310/330	13.5	+0.65	+0.20
GR5.0-310/330	14	+0.65	+0.20
GR16.5-310/330	14.5	+0.65	+0.20
GR35.0-310/330	15	+0.65	+0.20
GR5.5-310/330	15.5	+0.65	+0.20
GR17.0-310/330	16	+0.65	+0.20



## SOLID CARBIDE RODS

**STANDARD LENGTH**  
**310-316mm/330-336mm**

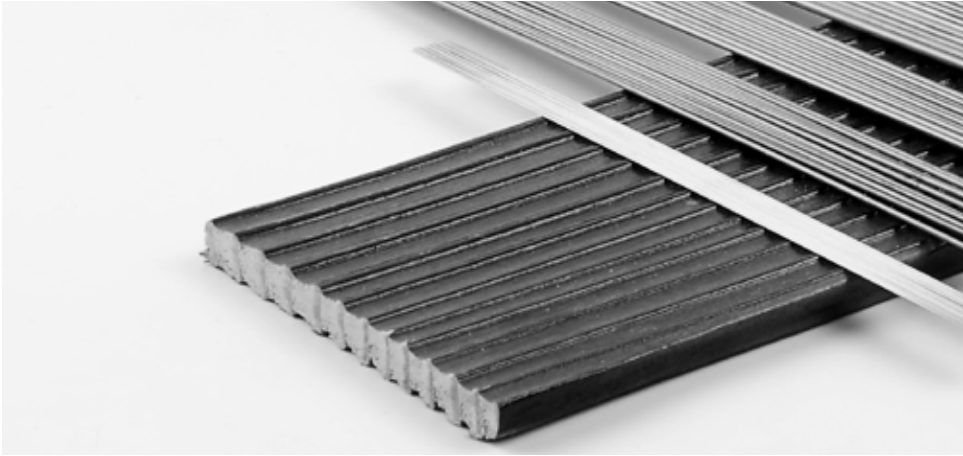


Part No.	D (mm)	Tol (mm)	
GR36.0-310/330	16.5	+0.65	+0.20
GR6.0-310/330	17	+0.65	+0.20
GR17.5-310/330	17.5	+0.65	+0.20
GR37.0-310/330	18	+0.65	+0.20
GR6.5-310/330	18.5	+0.65	+0.20
GR18.0-310/330	19	+0.65	+0.20
GR38.0-310/330	19.5	+0.65	+0.20
GR7.0-310/330	20	+0.65	+0.20
GR18.5-310/330	20.5	+0.70	+0.30
GR39.0-310/330	21	+0.70	+0.30
GR7.5-310/330	21.5	+0.70	+0.30
GR19.0-310/330	22	+0.70	+0.30
GR40.0-310/330	22.5	+0.70	+0.30
GR8.0-310/330	25	+0.70	+0.30
GR19.5-310/330	26	+0.80	+0.30
GR41.0-310/330	27	+0.80	+0.30

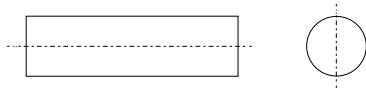
Part No.	D (mm)	Tol (mm)	
GR8.5-310/330	28	+0.80	+0.30
GR20.0-310/330	29	+0.80	+0.30
GR42.0-310/330	30	+0.80	+0.30
GR9.0-310/330	31	+0.80	+0.30
GR20.5-310/330	32	+0.80	+0.30
GR9.5-310/330	33	+0.80	+0.30
GR21.0-310/330	34	+0.80	+0.30
GR10.0-310/330	35	+0.80	+0.30
GR21.5-310/330	36	+0.80	+0.30
GR10.5-310/330	37	+0.90	+0.30
GR22.0-310/330	38	+0.90	+0.30
GR11.0-310/330	39	+0.90	+0.30
GR22.5-310/330	40	+0.90	+0.30
GR11.5-310/330	41	+0.90	+0.30
GR25.0-310/330	42	+0.90	+0.30



# SOLID CARBIDE RODS



## SPECIAL LENGTH



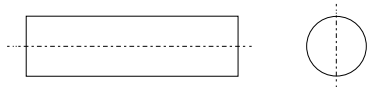
Part No.	D (mm)	Tol (mm)		L (mm)
GR3.0-38U	3.0	+0.40	+0.20	38
GR3.0-40U	3.0	+0.40	+0.20	40
GR3.0-46U	3.0	+0.40	+0.20	46
GR3.0-49U	3.0	+0.40	+0.20	49
GR3.0-50U	3.0	+0.40	+0.20	50
GR3.0-52U	3.0	+0.40	+0.20	52
GR3.0-61U	3.0	+0.40	+0.20	61
GR3.0-65U	3.0	+0.40	+0.20	65
GR3.0-70U	3.0	+0.40	+0.20	70
GR3.0-75U	3.0	+0.40	+0.20	75
GR3.0-100U	3.0	+0.40	+0.20	100
GR3.5-55U	3.5	+0.40	+0.20	55
GR3.5-70U	3.5	+0.40	+0.20	70
GR3.5-100U	3.5	+0.40	+0.20	100
GR4.0-40U	4.0	+0.40	+0.20	40
GR4.0-50U	4.0	+0.40	+0.20	50
GR4.0-55U	4.0	+0.40	+0.20	55

Part No.	D (mm)	Tol (mm)		L (mm)
GR4.0-58U	4.0	+0.40	+0.20	58
GR4.0-75U	4.0	+0.40	+0.20	75
GR4.0-80U	4.0	+0.40	+0.20	80
GR4.0-100U	4.0	+0.40	+0.20	100
GR4.5-58U	4.5	+0.40	+0.20	58
GR4.5-62U	4.5	+0.40	+0.20	62
GR4.5-80U	4.5	+0.40	+0.20	80
GR4.5-86U	4.5	+0.40	+0.20	86
GR4.5-100U	4.5	+0.40	+0.20	100
GR5.0-50U	5.0	+0.40	+0.20	50
GR5.0-62U	5.0	+0.40	+0.20	62
GR5.0-66U	5.0	+0.40	+0.20	66
GR5.0-75U	5.0	+0.40	+0.20	75
GR5.0-86U	5.0	+0.40	+0.20	86
GR5.0-93U	5.0	+0.40	+0.20	93
GR5.0-100U	5.0	+0.40	+0.20	100
GR5.5-66U	5.5	+0.40	+0.20	66



## SOLID CARBIDE RODS

### SPECIAL LENGTH

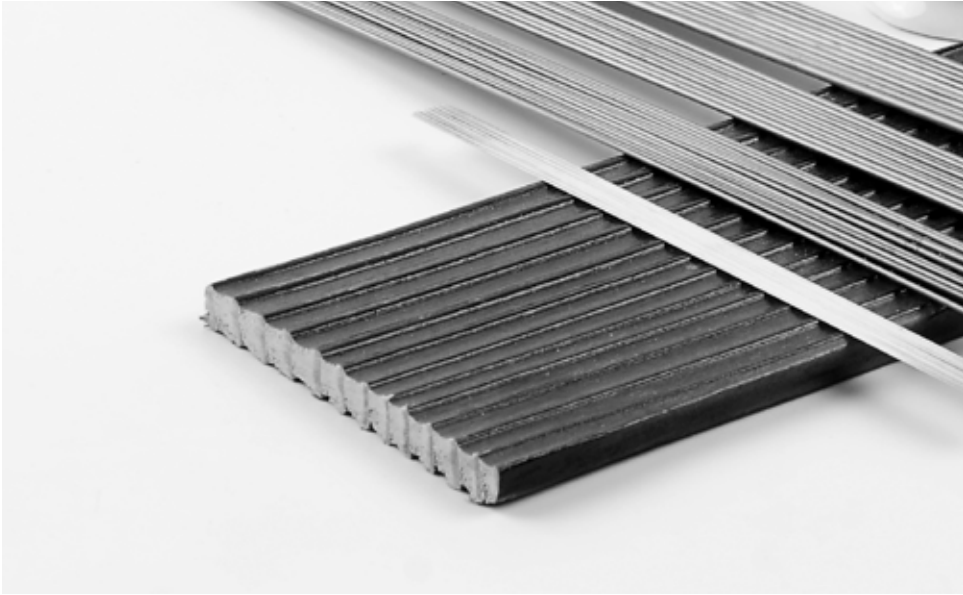


Part No.	D (mm)	Tol (mm)		L (mm)
GR5.5-93U	5.5	+0.40	+0.20	93
GR5.5-100U	5.5	+0.40	+0.20	100
GR6.0-50U	6.0	+0.50	+0.20	50
GR6.0-54U	6.0	+0.50	+0.20	54
GR6.0-60U	6.0	+0.50	+0.20	60
GR6.0-66U	6.0	+0.50	+0.20	66
GR6.0-75U	6.0	+0.50	+0.20	75
GR6.0-80U	6.0	+0.50	+0.20	80
GR6.0-93U	6.0	+0.50	+0.20	93
GR6.0-100U	6.0	+0.50	+0.20	100
GR6.0-150U	6.0	+0.50	+0.20	150
GR6.5-70U	6.5	+0.50	+0.20	70
GR6.5-74U	6.5	+0.50	+0.20	74
GR6.5-100U	6.5	+0.50	+0.20	100
GR7.0-60U	7.0	+0.50	+0.20	60
GR7.0-80U	7.0	+0.50	+0.20	80
GR7.0-100U	7.0	+0.50	+0.20	100

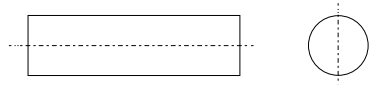
Part No.	D (mm)	Tol (mm)		L (mm)
GR7.5-74U	7.5	+0.50	+0.20	74
GR7.5-100U	7.5	+0.50	+0.20	100
GR8.0-60U	8.0	+0.50	+0.20	60
GR8.0-63U	8.0	+0.50	+0.20	63
GR8.0-75U	8.0	+0.50	+0.20	75
GR8.0-80U	8.0	+0.50	+0.20	80
GR8.0-100U	8.0	+0.50	+0.20	100
GR8.5-79U	8.5	+0.50	+0.20	79
GR8.5-100U	8.5	+0.50	+0.20	100
GR9.0-67U	9.0	+0.50	+0.20	67
GR9.0-84U	9.0	+0.50	+0.20	84
GR9.0-100U	9.0	+0.50	+0.20	100
GR9.5-84U	9.5	+0.50	+0.20	84
GR9.5-100U	9.5	+0.50	+0.20	100
GR10.0-66U	10.0	+0.60	+0.20	66



# SOLID CARBIDE RODS



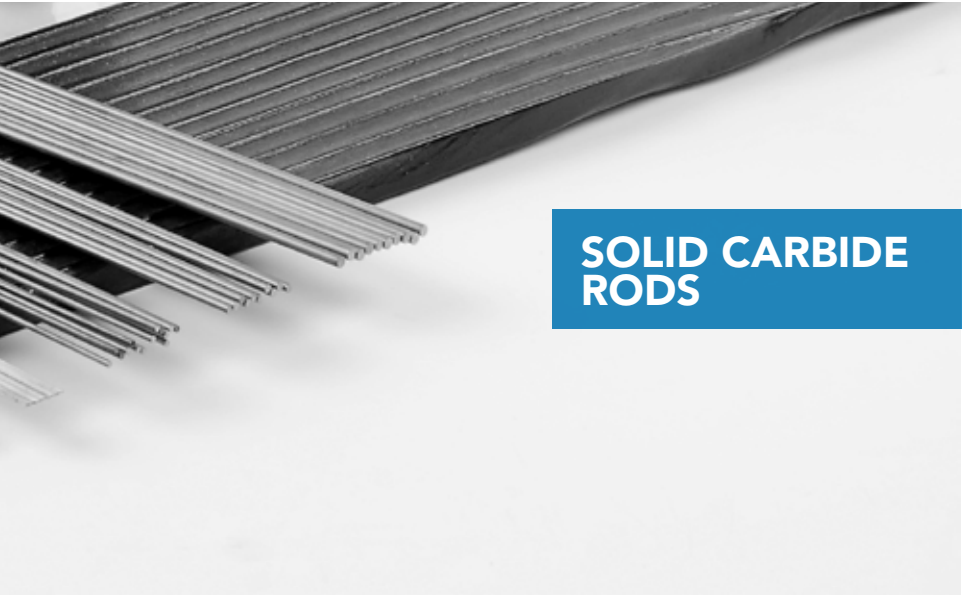
## SPECIAL LENGTH



Part No.	D (mm)	Tol (mm)		L (mm)
GR10.0-70U	3.0	+0.40	+0.20	38
GR10.0-72U	3.0	+0.40	+0.20	40
GR10.0-75u	3.0	+0.40	+0.20	46
GR10.0-89U	3.0	+0.40	+0.20	49
GR10.0-100U	3.0	+0.40	+0.20	50
GR10.0-110U	3.0	+0.40	+0.20	52
GR10.5-89U	3.0	+0.40	+0.20	61
GR10.5-95U	3.0	+0.40	+0.20	65
GR10.5-100U	3.0	+0.40	+0.20	70
GR11.0-95U	3.0	+0.40	+0.20	75
GR11.0-100U	3.0	+0.40	+0.20	100
GR11.5-100U	3.5	+0.40	+0.20	55
GR12.0-73U	3.5	+0.40	+0.20	70
GR12.0-75U	3.5	+0.40	+0.20	100

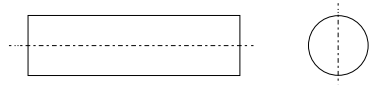
Part No.	D (mm)	Tol (mm)		L (mm)
GR12.0-100U	4.0	+0.40	+0.20	40
GR12.0-110U	4.0	+0.40	+0.20	50
GR12.0-150U	4.0	+0.40	+0.20	55
GR12.5-100U	4.0	+0.40	+0.20	58
GR13.0-100U	4.0	+0.40	+0.20	75
GR13.5-100U	4.0	+0.40	+0.20	80
GR14.0-75U	4.0	+0.40	+0.20	100
GR14.0-82U	4.5	+0.40	+0.20	58
GR14.0-85U	4.5	+0.40	+0.20	62
GR14.0-92U	4.5	+0.40	+0.20	80
GR14.0-100U	4.5	+0.40	+0.20	86
GR14.0-110U	4.5	+0.40	+0.20	100
GR14.0-150U	5.0	+0.40	+0.20	50
GR14.5-100U	5.0	+0.40	+0.20	62





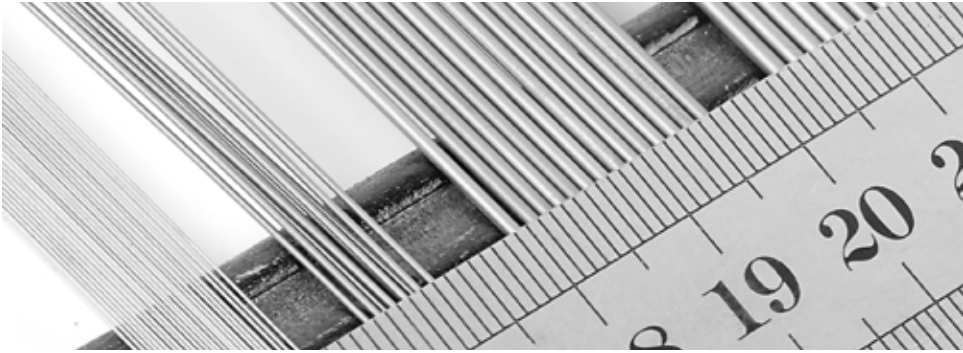
## SOLID CARBIDE RODS

### SPECIAL LENGTH



Part No.	D (mm)	Tol (mm)		L (mm)
GR15.0-92U	5.0	+0.40	+0.20	66
GR15.0-100U	5.0	+0.40	+0.20	75
GR15.0-130U	5.0	+0.40	+0.20	86
GR15.5-100U	5.0	+0.40	+0.20	93
GR16.0-82U	5.0	+0.40	+0.20	100
GR16.0-89U	5.5	+0.40	+0.20	66
GR16.0-92U	5.5	+0.40	+0.20	93
GR16.0-100U	5.5	+0.40	+0.20	100
GR16.0-110U	6.0	+0.50	+0.20	50
GR16.0-150U	6.0	+0.50	+0.20	54
GR16.5-100U	6.0	+0.50	+0.20	60
GR17.0-100U	6.0	+0.50	+0.20	66
GR17.5-100U	6.0	+0.50	+0.20	75
GR18.0-84U	6.0	+0.50	+0.20	80

Part No.	D (mm)	Tol (mm)		L (mm)
GR18.0-92U	6.0	+0.50	+0.20	93
GR18.0-100U	6.0	+0.50	+0.20	100
GR18.0-110U	6.0	+0.50	+0.20	150
GR18.0-130U	6.5	+0.50	+0.20	70
GR18.0-150U	6.5	+0.50	+0.20	74
GR18.5-100U	6.5	+0.50	+0.20	100
GR19.0-100U	7.0	+0.50	+0.20	60
GR19.5-100U	7.0	+0.50	+0.20	80
GR20.0-92U	7.0	+0.50	+0.20	100
GR20.0-100U	7.5	+0.50	+0.20	74
GR20.0-110U	7.5	+0.50	+0.20	100
GR20.0-130U	8.0	+0.50	+0.20	60
GR20.0-150U	8.0	+0.50	+0.20	63



## SPECIAL LENGTH

Part No.	D (mm)	Tol (mm)		L (mm)
GFH3.0-40D	3.0	+0.40	+0.20	38
GFH6.0-60D	3.0	+0.40	+0.20	40
GFH3.0-50D	3.0	+0.40	+0.20	46
GFH6.0-75D	3.0	+0.40	+0.20	49
GFH3.0-70D	3.0	+0.40	+0.20	50
GFH6.0-83D	3.0	+0.40	+0.20	52
GFH3.0-100D	3.0	+0.40	+0.20	61
GFH6.0-1 000	3.0	+0.40	+0.20	65
GFH3.0-150D	3.0	+0.40	+0.20	70
GFH6.0-150D	3.0	+0.40	+0.20	75
GFH4.0-40D	3.0	+0.40	+0.20	100
GFH8.0-60D	3.5	+0.40	+0.20	55
GFH4.0-50D	3.5	+0.40	+0.20	70
GFH8.0-63D	3.5	+0.40	+0.20	100
GFH4.0-55D	4.0	+0.40	+0.20	40
GFH8.0-75D	4.0	+0.40	+0.20	50
GFH4.0-58D	4.0	+0.40	+0.20	55
GFH8.0-80D	4.0	+0.40	+0.20	58
GFH4.0-60D	4.0	+0.40	+0.20	75

Part No.	D (mm)	Tol (mm)		L (mm)
GFH8.0-90D	4.0	+0.40	+0.20	80
GFH4.0-70D	4.0	+0.40	+0.20	100
GFH8.0-100D	4.5	+0.40	+0.20	58
GFH4.0-75D	4.5	+0.40	+0.20	62
GFH8.0-150D	4.5	+0.40	+0.20	80
GFH4.0-100D	4.5	+0.40	+0.20	86
GFH9.0-60D	4.5	+0.40	+0.20	100
GFH4.0-150D	5.0	+0.40	+0.20	50
GFH9.0-84D	5.0	+0.40	+0.20	62
GFH5.0-50D	5.0	+0.40	+0.20	66
GFH10.0-50D	5.0	+0.40	+0.20	75
GFH5.0-55D	5.0	+0.40	+0.20	86
GFH10.0-60D	5.0	+0.40	+0.20	93
GFH5.0-60D	5.0	+0.40	+0.20	100
GFH10.0-700	5.5	+0.40	+0.20	66
GFH5.0-70D	5.5	+0.40	+0.20	93
GFH10.0-750	5.5	+0.40	+0.20	100
GFH5.0-80D	6.0	+0.50	+0.20	50
GFH10.0-900	6.0	+0.50	+0.20	54



## RODS GROUND H6

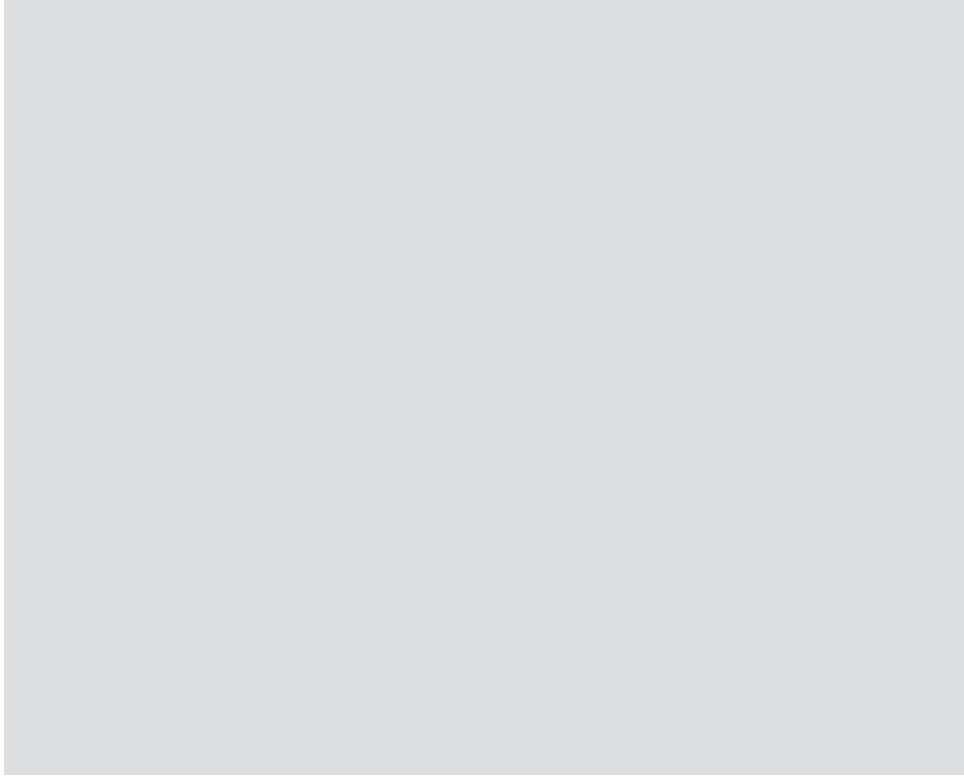
### SPECIAL LENGTH

Part No.	D (mm)	Tol (mm)		L (mm)
GFH5.0-100D	6.0	+0.50	+0.20	60
GFH10.0-100D	6.0	+0.50	+0.20	66
GFH5.0-150D	6.0	+0.50	+0.20	75
GFH10.0-125D	6.0	+0.50	+0.20	80
GFH6.0-50D	6.0	+0.50	+0.20	93
GFH10.0-150D	6.0	+0.50	+0.20	100
GFH11.0-110D	3.0	+0.40	+0.20	38
GFH12.0-60D	3.0	+0.40	+0.20	40
GFH12.0-70D	3.0	+0.40	+0.20	46
GFH12.0-75D	3.0	+0.40	+0.20	49
GFH12.0-80D	3.0	+0.40	+0.20	50
GFH12.Q-90D	3.0	+0.40	+0.20	52
GFH12.0-100D	3.0	+0.40	+0.20	61
GFH12.0-120D	3.0	+0.40	+0.20	65
GFH12.0-150D	3.0	+0.40	+0.20	70
GFH14.0-S0D	3.0	+0.40	+0.20	75
GFH14.0-75D	3.0	+0.40	+0.20	100
GFH14.0-84D	3.5	+0.40	+0.20	55
GFH14.0-110D	3.5	+0.40	+0.20	70

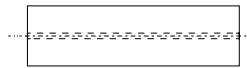
Part No.	D (mm)	Tol (mm)		L (mm)
GFH14.0-125D	3.5	+0.40	+0.20	100
GFH15.0-50D	4.0	+0.40	+0.20	40
GFH15.0-60D	4.0	+0.40	+0.20	50
GFH16.0-70D	4.0	+0.40	+0.20	55
GFH16.0-92D	4.0	+0.40	+0.20	58
GFH16.0-100D	4.0	+0.40	+0.20	75
GFH16.0-125D	4.0	+0.40	+0.20	80
GFH18.0-70D	4.0	+0.40	+0.20	100
GFH18.0-100D	4.5	+0.40	+0.20	58
GFH18.0-120D	4.5	+0.40	+0.20	62
GFH18.0-150D	4.5	+0.40	+0.20	80
GFH20.0-100D	4.5	+0.40	+0.20	86
GFH20.0-120D	4.5	+0.40	+0.20	100
GFH20.0-150D	5.0	+0.40	+0.20	50
GFH22.0-1020	5.0	+0.40	+0.20	62
GFH25.0-50D	5.0	+0.40	+0.20	66
GFH25.0-60D	5.0	+0.40	+0.20	75
GFH25.0-100D	5.0	+0.40	+0.20	86
GFH25.0 1500	5.0	+0.40	+0.20	93



# SOLID CARBIDE RODS



**STANDARD LENGTH**  
**310-316mm/330-336mm**



Part No.	D (mm)	Tol (mm)		L (mm)	Tol (mm)	
GH1-3.3-0.7-310/330						
GH1-3.3-1.6-310/330						
GH1-4.3-1.0-310/330						
GH1-4.3-2.0-310/330						
GH1-6.3-1.0-310/330						
GH1-6.3-3.0-310/330						
GH1-7.3-1.2-310/330						
GH1-8.3-1.2-310/330						
GH1-8.3-4.0-310/330						



## SOLID CARBIDE RODS THROUGH COOLANT

**STANDARD LENGTH**  
**310-316mm/330-336mm**

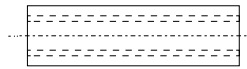


Part No.	D (mm)	Tol (mm)	L (mm)	Tol (mm)
GH1-9.3-1.6-310/330				
GH1-10.3-1.6-310/330				
GH1-10.3-5.0-310/330				
GH1-12.3-2.0-310/330				
GH1-12.3-6.0-310/330				
GH1-14.3-2.5-310/330				
GH1-16.3-3.0-310/330				
GH1-18.3-3.0-310/330				
GH1-20.3-3.0-310/330				



## RODS WITH 2 STRAIGHT COOLANT DUCTS

**STANDARD LENGTH**  
**310-316mm/330-336mm**

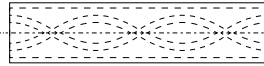


Part No.	D (mm)	Tol (mm)		d (mm)	Tol (mm)	TK (mm)	Tol (mm)
GH2-4.3-1.8--0.80-310/330	4.3	+0.30	0	0.80	+0.15 -0.15	1.8	0 -0.20
GH2-5.3-2.0-0.80-310/330	5.3	+0.30	0	0.80	+0.15 -0.15	2.0	0 -0.20
GH2-6.3-2.0-1.00-310/330	6.3	+0.30	0	1.00	+0.15 -0.15	2.0	0 -0.20
GH2-8.3-1.00.80-310/330	8.3	+0.30	0	0.80	+0.15 -0.15	1.5	0 -0.20
GH2-8.3-2.0-0.80-310/330	8.3	+0.30	0	0.80	+0.15 -0.15	2.0	0 -0.20
GH2-8.3-2.6-1.00-310/330	8.3	+0.30	0	1.00	+0.15 -0.15	2.6	0 -0.30
GH2-8.3-4.0-1.00-310/330	8.3	+0.30	0	1.00	+0.15 -0.15	4.0	0 -0.30
GH2-10.3-2.6-1.00-310/330	10.3	+0.40	0	1.00	+0.15 -0.15	2.6	0 -0.30
GH2-10.3-5.0-1.40-310/330	10.3	+0.40	0	1.40	+0.15 -0.15	5.0	0 -0.30
GH2-12.3-6.0-1.75-310/330	12.3	+0.40	0	1.75	+0.15 -0.15	6.0	0 -0.35
GH2-16.4-5.0-1.50-310/330	16.4	+0.40	0	1.50	+0.15 -0.15	5.0	0 -0.35
GH 2-16.4-8.0-2.00-310/330	16.4	+0.40	0	2.00	+0.20 -0.20	8.0	0 -0.40
GH2-20.4-6.2-2.00-310/330	20.4	+0.50	0	2.00	+0.20 -0.20	6.2	0 -0.40
GH2-20.4-10.0-2.50-310/330	20.4	+0.50	0	2.50	+0.20 -0.20	10.0	0 -0.40



## RODS WITH 2 COOLANT DUCTS - 30° RIGHT HELIX

**STANDARD LENGTH**  
**310-316mm/330-336mm**



Part No.	D (mm)	Tol (mm)		d (mm)	Tol (mm)		TK (mm)	Tol (mm)		P (mm)
GL230-6.3-2.0-0.70-32.6-310/330	6.3	+0.35	0	0.70	+0.15	-0.15	2.0	+0.2	-0.2	32.6
GL230-8.3-3.5-1.10-40.0-310/330	8.3	+0.40	0	1.10	+0.15	-0.15	3.5	+0.2	-0.2	40.0
GL230-10.3-5.0-1.50-54.4-310/330	10.3	+0.40	0	1.50	+0.20	-0.20	5.0	+0.4	-0.4	54.4
GL230-12.3-6.0-1.60-65.3-310/330	12.3	+0.40	0	1.60	+0.20	-0.20	6.0	+0.4	-0.4	65.3
GL230-14.3-7.0-2.00-76.2-310/330	14.3	+0.40	0	2.00	+0.20	-0.20	7.0	+0.4	-0.4	76.2
GL230-16.3-8.2-2.2-89.2-310/330	16.3	+0.50	0	2.20	+0.25	-0.25	8.2	+0.4	-0.4	89.2
GL230-20.3-10.0-2.50-108.8-310/330	20.3	+0.50	0	2.50	+0.25	-0.25	10.0	+0.4	-0.4	108.8



# SOLID CARBIDE BLANKS

**STANDARD LENGTH**  
**310-316mm/320-326mm**



Part No.	W (mm)	Tol (mm)		T (mm)	Tol (mm)	
GP3.0-2.0-310/320	3	+0.50	+0.20	2	+0.35	+0.12
GP4.0-2.0-310/320	4	+0.50	+0.20	2	+0.35	+0.12
GP5.0-2.0-310/320	5	+0.50	+0.20	2	+0.35	+0.12
GP6.0-2.0-310/320	6	+0.50	+0.20	2	+0.35	+0.12
GP5.0-2.0-310/320	8	+0.50	+0.20	2	+0.35	+0.12
GP10.0-2.0-310/320	10	+0.50	+0.20	2	+0.35	+0.12
GP12.0-2.0-310/320	12	+0.50	+0.20	2	+0.35	+0.12
GP14.0-2.0-310/320	14	+0.50	+0.20	2	+0.35	+0.12
GP15.0-2.0-310/320	15	+0.50	+0.20	2	+0.35	+0.12
GP16.0-2.0-310/320	16	+0.60	+0.25	2	+0.35	+0.12
GP18.0-2.0-310/320	18	+0.60	+0.25	2	+0.35	+0.12
GP19.0-2.0-310/320	19	+0.60	+0.25	2	+0.35	+0.12
GP3.0-3.0-310/320	3	+0.50	+0.20	3	+0.35	+0.12
GP4.0-3.0-310/320	4	+0.50	+0.20	3	+0.35	+0.12
GP5.0-3.0-310/320	5	+0.50	+0.20	3	+0.35	+0.12
GP6.0-3.0-310/320	6	+0.50	+0.20	3	+0.35	+0.12
GP5.0-3.0-310/320	8	+0.50	+0.20	3	+0.35	+0.12
GP9.0-3.0-310/320	9	+0.50	+0.20	3	+0.35	+0.12
GP10.0-3.0-310/320	10	+0.50	+0.20	3	+0.35	+0.12
GP11.0-3.0-310/320	11	+0.50	+0.20	3	+0.35	+0.12
GP12.0-3.0-310/320	12	+0.50	+0.20	3	+0.35	+0.12
GP13.0-3.0-310/320	13	+0.50	+0.20	3	+0.35	+0.12





## RECTANGULAR BLANKS WITHOUT COOLANT

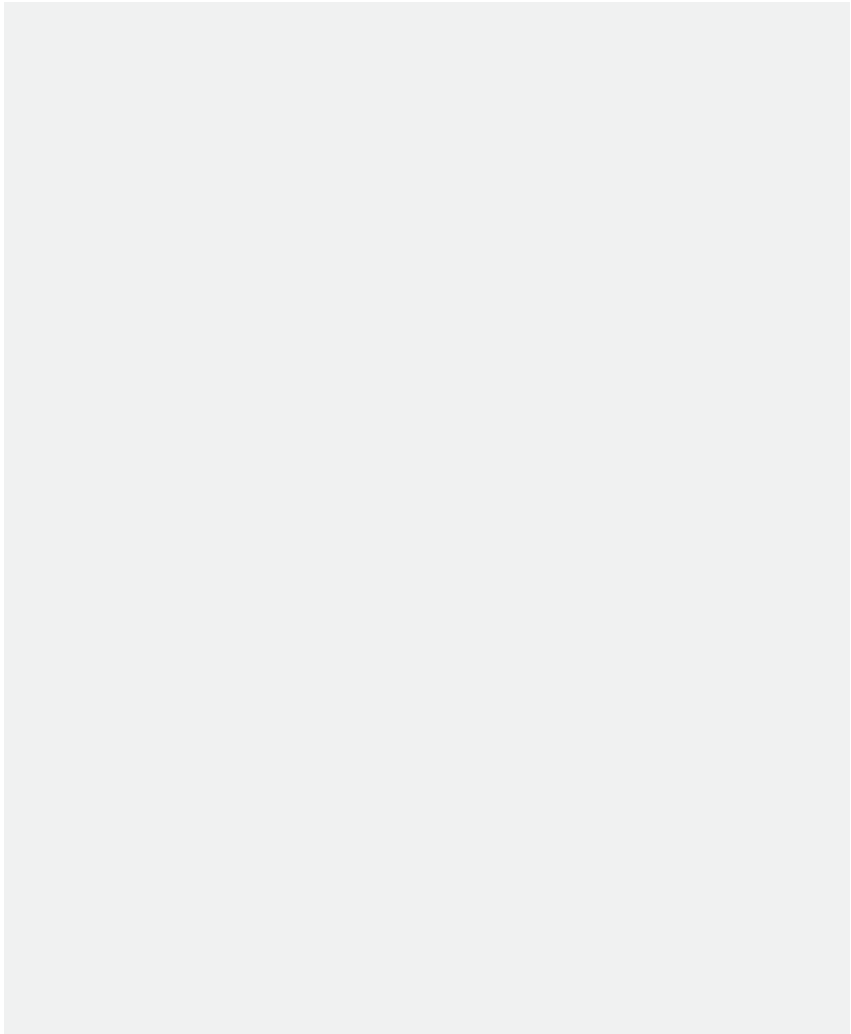
**STANDARD LENGTH**  
**310-316mm/320-326mm**



Part No.	W (mm)	Tol (mm)		T (mm)	Tol (mm)	
GP15.0-3.0-310/320	15	+0.50	+0.20	3	+0.35	+0.12
GP16.0-3.0-310/320	16	+0.60	+0.25	3	+0.35	+0.12
GP18.0-3.0-310/320	18	+0.60	+0.25	3	+0.35	+0.12
GP20.0-3.0-310/320	20	+0.60	+0.25	3	+0.35	+0.12
GP22.0-3.0-310/320	22	+0.60	+0.25	3	+0.35	+0.12
GP25.0-3.0-310/320	25	+0.60	+0.25	3	+0.35	+0.12
GP28.0-3.0-310/320	28	+0.60	+0.25	3	+0.35	+0.12
GP31.0-3.0-310/320	31	+0.60	+0.25	3	+0.35	+0.12
GP5.0-4.0-310/320	5	+0.50	+0.20	4	+0.35	+0.12
GP6.0-4.0-310/320	6	+0.50	+0.20	4	+0.35	+0.12
GP5.0-4.0-310/320	8	+0.50	+0.20	4	+0.35	+0.12
GP10.0-4.0-310/320	10	+0.50	+0.20	4	+0.35	+0.12
GP12.0-4.0-310/320	12	+0.50	+0.20	4	+0.35	+0.12
GP13.0-4.0-310/320	13	+0.50	+0.20	4	+0.35	+0.12
GP15.0-4.0-310/320	15	+0.50	+0.20	4	+0.35	+0.12
GP16.0-4.0-310/320	16	+0.60	+0.25	4	+0.35	+0.12
GP18.0-4.0-310/320	18	+0.60	+0.25	4	+0.35	+0.12
GP20.0-4.0-310/320	20	+0.60	+0.25	4	+0.35	+0.12
GP22.0-4.0-310/320	22	+0.60	+0.25	4	+0.35	+0.12
GP25.0-4.0-310/320	25	+0.60	+0.25	4	+0.35	+0.12
GP30.0-4.0-310/320	30	+0.60	+0.25	4	+0.35	+0.12



# SOLID CARBIDE RODS



## MILLING INSERTS & WEAR PARTS

Carbide Grade	Co (OA>)	WC + other (%)	Denslty (g/cm <sup>3</sup> )	HV30	HRA	TRS (MPa)	WC Grain Size μ m
GM50S	16.0	84.0	13.95	1050	86.5	2500	1.0-4.0
GM30C	11.0	89.0	14.35	920	85.0	2500	6.0-9.0



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