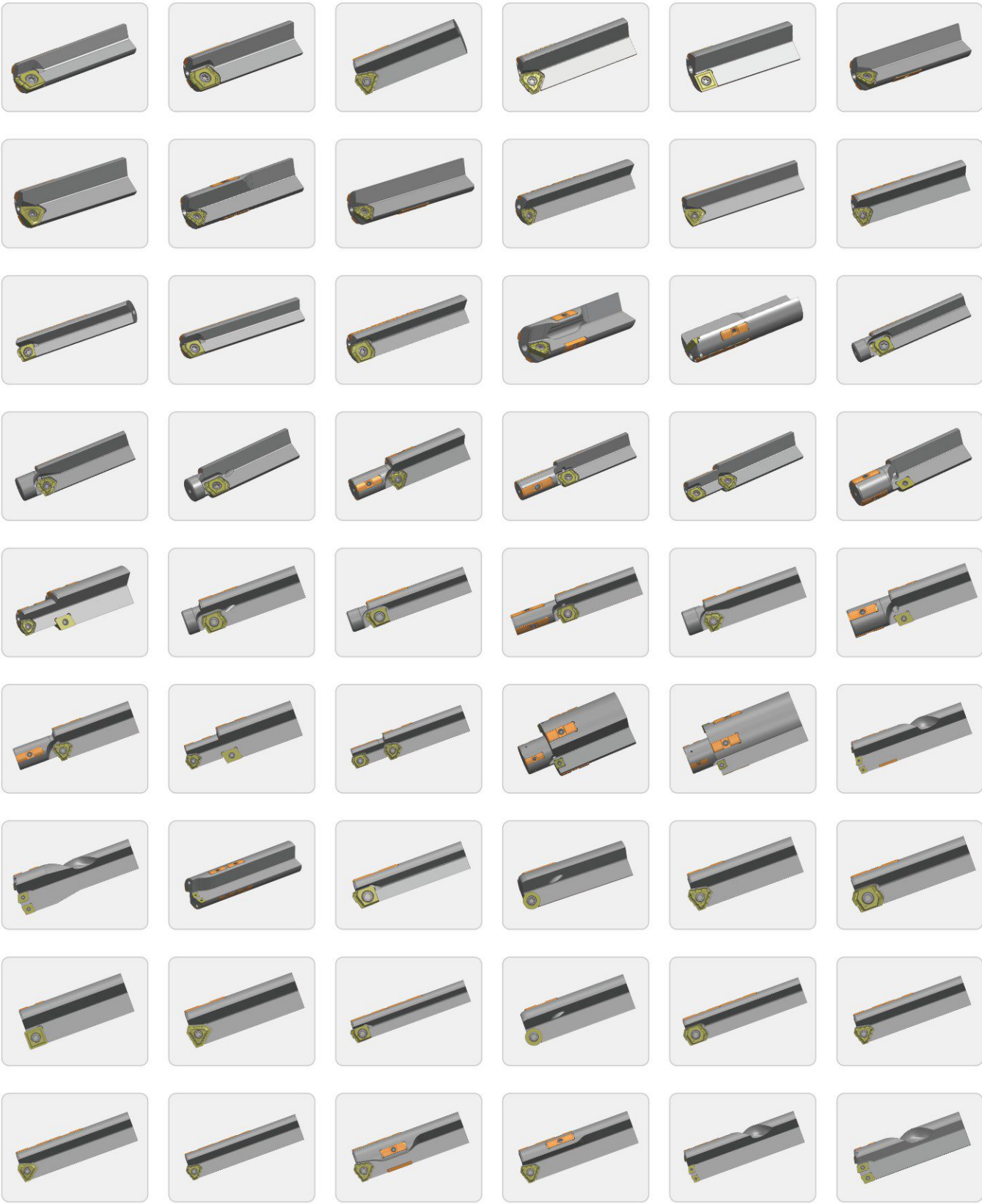
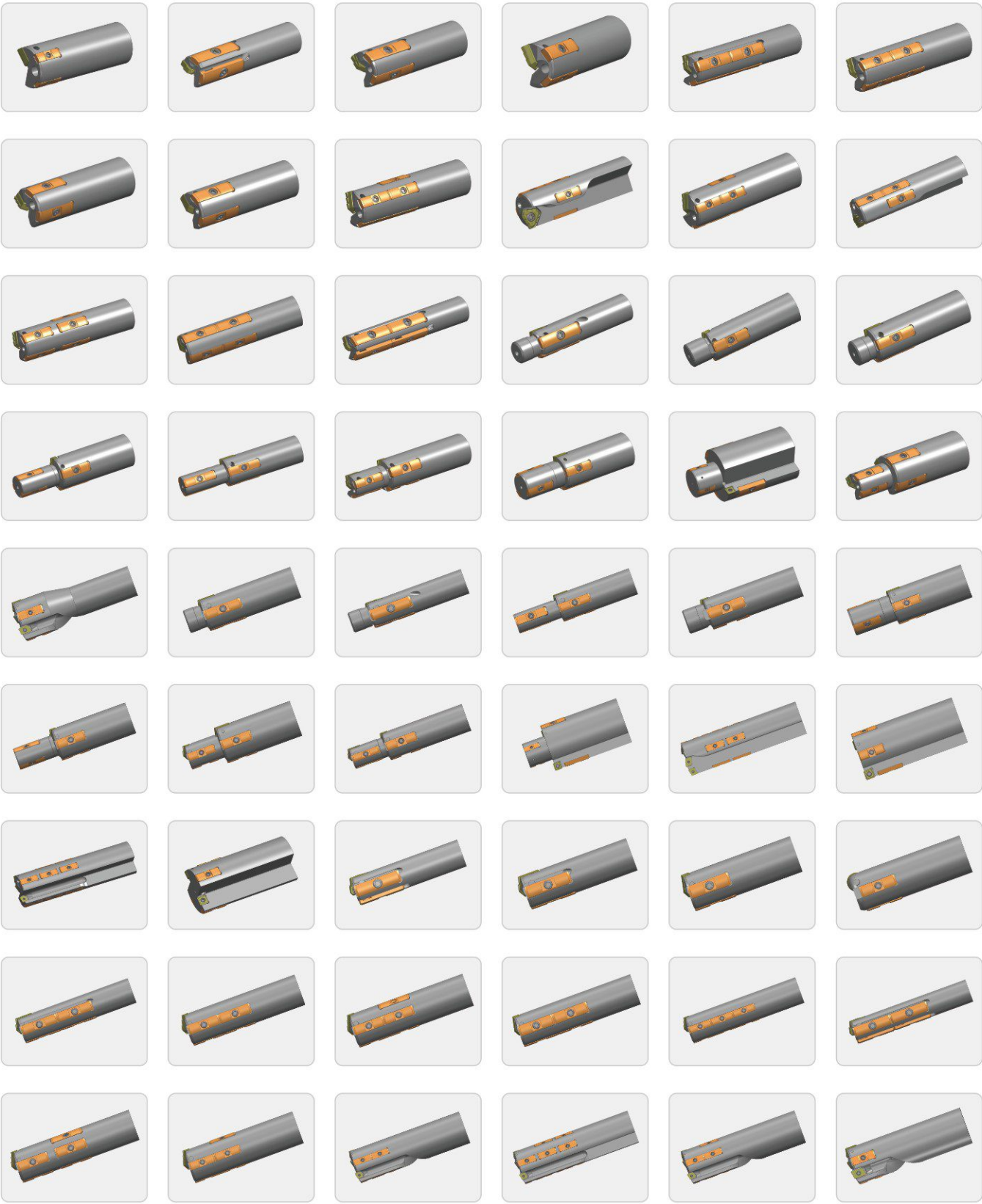


非标定制机夹式枪钻刀头



Non-standard Customized Clamped Gun Drill Head



机夹式枪钻头

Clamp-type Gun Drill Bit

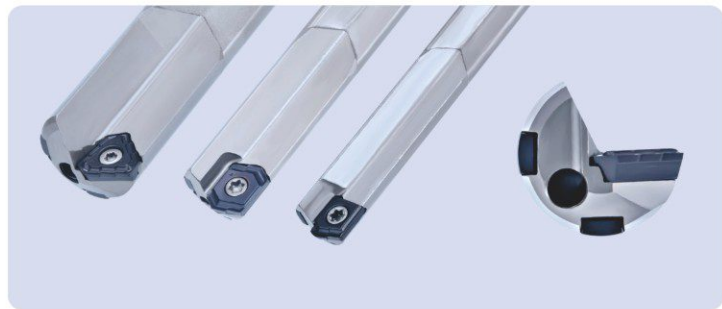
产品简介 Product Introduction

Ø8.0-Ø80mm

刀头规格（接受非标定制）
Blade head specifications (Non-standard customization accepted)

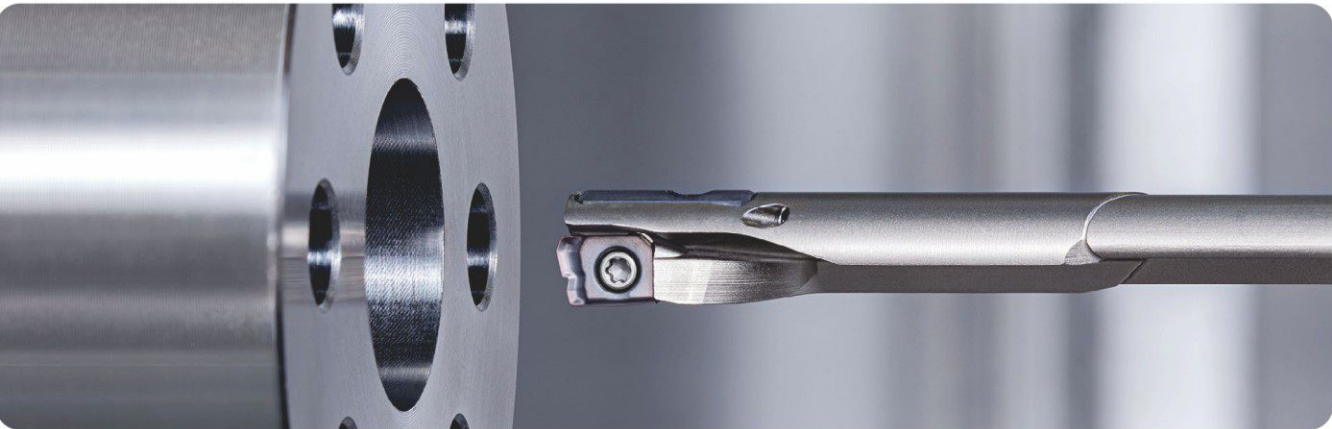
刀头类型有：双导条单刀片、三刀片双导条、四导条单刀片、五导条单刀片、台阶式刀头等等。
元昌镶刀粒枪钻头具有加工效率高，比如：钛合金、不锈钢、铝合金、铸件等等，切削速度比普通合金枪钻高两倍以上，光洁度好

The types of cutter head are: double guide single blade, three blade double guide bar, four guide strip single blade, five guide strip single blade, step type cutter head and so on.
Yuanchang inlaid grain gun drill head has the advantages of high machining efficiency, good finish, stable service life and convenient clamping. It can be processed only by replacing the blade, thus saving more welding time.



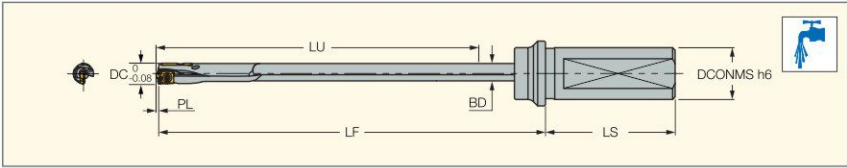
机夹式枪钻

Clamp-on Gun Drill



GD-DH (8.00-9.00)

配备可转位刀片，具有单芯片分裂切削刃和修光刃，可实现高孔表面质量
Carrying Indexable Inserts with Single Chip Splitting Cutting Edge and a Wiper for High Hole Surface Quality



公制METRIC								
Designation	DC	LU	BD	LF	PL	LS	DCONMS	MID
GD-DH 07.94-25D-10.75-04	7.94	211.20	7.70	234.00	1.200	50.0	19.05	ZSGT 0401..
GD-DH 08.00-20D-M20-04	8.00	169.20	7.70	192.00	1.200	50.0	20.00	ZSGT 0401..
GD-DH 08.00-25D-M20-04	8.00	211.20	7.70	234.00	1.200	50.0	20.00	ZSGT 0401..
GD-DH 08.50-25D-M20-04	8.50	218.70	8.00	242.50	1.200	50.0	20.00	ZSGT 0401..
GD-DH 08.73-25D-10.75-04	8.73	226.20	8.00	250.00	1.200	50.0	19.05	ZSGT 0401..
GD-DH 09.00-25D-M20-05	9.00	236.10	8.60	261.00	1.100	50.0	20.00	ZSGT 0501..
GD-DH 09.53-25D-10.75-05	9.53	243.60	8.60	268.50	1.100	50.0	19.05	ZSGT 0501..

注意：可根据需求提供长度高达1650毫米的枪钻。刀片和导向垫需单独订购（不包含在工具中）
预防措施：在接合导向孔之前，切勿全速操作深孔钻。应以50-100转/分的速度缓慢进入导向孔
Note: Gundrills supplied with up to 1650 mm length on request. Inserts and guide pads to be ordered separately (not included with the tools).
Preventative measures: Do NOT operate the deep hole drill at full speed before engaging the guide hole. Enter the guide hole slowly at a speed of 50 - 100 rpm.

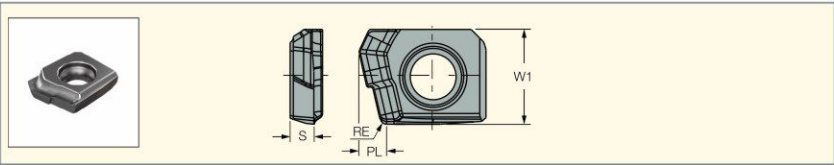
Spare Parts

Tool Diameter		Insert			Guide Pad		
Min	Max	Insert	Screw	Wrench	GP x 2pcs	Screw X 2pcs	Wrench
7.94	8.49	ZSGT 040104R-DT	CSPB-2FL3.1	IP-6/5	GPS-03-12-035-DC	CSPB-2FL2.7-LH	T-6/5
8.50	8.99				GPS-03-12-040-DC	CSPB-2FL3.1	
9.00	9.99	ZSGT 050104R-DT	CSPB-2FL3.1				

推荐拧紧扭矩：CSPB-2FL2.7-LH、CSPB-2FL3.1=0.6 Nm Recommended tightening torque: CSPB-2FL2.7-LH. CSPB-2FL3.1=0.6 Nm

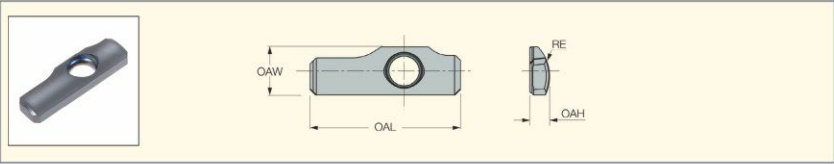


ZSGT
配备单片分切刃和修光刃的深孔钻削刀片
Deep Drilling Inserts with Single Chip Splitting Cutting
Edge and a Wiper



Designation	Dimensions				IC948
	W1	RE	PL	S	
ZSGT 040104R-DT	4.80	0.40	1.200	1.24	•
ZSGT 050104R-DT	5.30	0.40	1.100	1.35	•

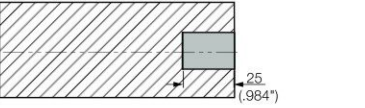
GPS
深孔钻削整体硬质合金导向垫
Deep Drilling Solid Carbide Guide Pads



Designation	Dimensions				IC908
	W1	RE	PL	S	
GPS-03-12-035-DC	3.90	12.00	1.60	3.50	•
GPS-03-12-040-DC	3.90	12.00	1.60	4.00	•

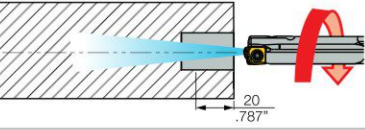
1

钻一个25毫米（0.984英寸）的平底导向孔
Drill a 25 mm (0.984") pilot hole flat bottom



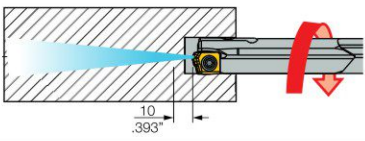
2

在进入预孔时，启动冷却液，低速旋转并进给，直至达到20毫米（.787英寸）的深度
Activate coolant, slow rotation and feed while entering to the prehole up to 20 mm (.787") depth



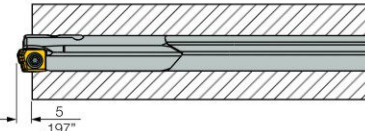
3

前10毫米（.393英寸）深度，进给率为80%
First 10 mm (.393") depth with 80% feed rate



4

钻一个深度为+5mm（.197英寸）的通孔
Drill +5mm (.197") depth through hole



加工中心和车床上的钻孔工艺

- 1.钻一个直径为25毫米（0.984英寸）的平底导向孔 $D_{+0.05}^{+0.019}$ （ $D_{+0.004}^{+0.019}$ ）
- 2.启动冷却液，将刀具缓慢放入导向孔中，深度达到20毫米（.787英寸）。切削速度Vc=5–10米/分钟（16–35英尺/分钟），进给量f=0.5–1.0毫米/转（.020–.039英寸/齿）。停止刀具，以全加工速度开始旋转。
注意：在钻入导向孔之前，不要以全加工速度旋转钻头。
- 3.在完全激活加工速度后，前10毫米（.393英寸）应以80%的进给速度完成。此后，逐渐增加进给至100%，精钻至所需深度。
- 4.如遇通孔，需将整个孔钻至+5毫米（.197英寸）的深度。
注意：在加工低碳钢等韧性材料时，在即将离开材料之前，需将进给速度降至正常水平的70%，以防止切屑飞散。
- 5.停止旋转并冷却，然后收回刀具。

Drilling Process on Machining CentersAnd Lathe Machines

- 1.Drill a 25 mm (.984") pilot hole $D_{+0.05}^{+0.019}$ ($D_{+0.004}^{+0.019}$) flat bottom
- 2.Activate coolant and slowly set the tool into the pilot hole up to 20 mm (.787") depth.Vc=5–10 m/min (16–35 SFM) f=0.5–1.0 mm/rev (.020–.039 IPR) Stop the tool, start rotation at full machining speed.
Note: Do not rotate the drill at full machining speed before engaging the pilot hole.
- 3.After a full machining speed activation, the first 10 mm (.393") should be done at 80% feed rate. Thereafter, by gradual increase in feed up to 100% finish drilling to the required depth.
- 4.In case of through hole, drill the full hole to a depth of +5 mm (.197").
Note: When machining gummy materials such as low carbon steel, reduce the feed rate to 70% of the normal level right before exiting the material to prevent chips from scattering.
- 5.Stop the rotation and coolantRetract the tool.

GD–DH（7.94–9.99）(公制)的切削条件 Cutting Conditions for GD–DH (7.94–9.99) (METRIC)

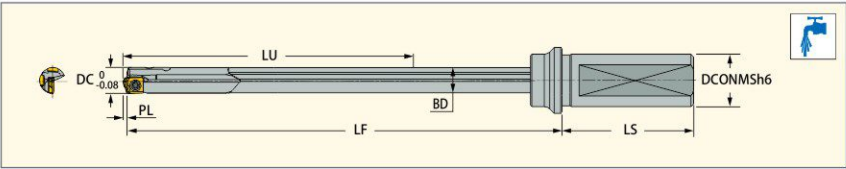
ISO	Material（材料）		Condition（条件）	Material No. 材料编号	Cutting Speed 切削速度 Vc [m/min]	ZSGT 04-05 进给量 Feed [mm/rev]
P	Non-alloy steel and cast steel, free cutting steel (非合金钢和铸钢、易切削钢)	<0.25%C	Annealed(退火)	1	60-100	0.05-0.14
		≥0.25%C	Annealed(退火)	2		
		<0.55%C	Quenched and tempered（淬火和回火）	3		
		≥0.55%C	Annealed(退火)	4		
			Quenched and tempered（淬火和回火）	5		
	Low alloy steel and cast steel (less than 5% of alloying elements) 低合金钢和铸钢 (低于合金元素的5%)		Annealed(退火)	6	60-100	0.05-0.08
			Quenched and tempered（淬火和回火）	7		
				8		
				9		
	High alloyed steel, cast steel, and tool steel (高合金钢、铸钢和工具钢)		Annealed(退火)	10	60-100	0.05-0.14
			Quenched and tempered（淬火和回火）	11		
	stainless steel and cast steel（不锈钢和铸钢）		Ferritic/martensitic（铁素体/马氏体）	12	60-100	0.05-0.08
			Martensitic（马氏体不锈钢）	13		
M	stainless steel and cast steel（不锈钢和铸钢）		Austenitic, duplex(奥氏体，双相)	14	60-80	0.05-0.08
K	Grey cast iron (GG) 灰铸铁（GG）		Ferritic/pearlitic（铁素体/珠光体）	15	60-100	0.05-0.20
			Pearlitic/martensitic(珠光体/马氏体)	16		
	Nodular cast iron (GGG) 球墨铸铁（GGG）		Ferritic（铁素体）	17		
			Pearlitic(珠光体)	18		
	Malleable cast iron（可锻铸铁）		Ferritic（铁素体）	19		
			Pearlitic(珠光体)	20		
N	Aluminum-wrought alloys(铝锻造合金)		Not hardenable（不可硬化）	21	60-100	0.05-0.18
			Hardenable（可硬化）	22		
	Aluminum-cast alloys (铝铸造合金)	<=12% Si	Not hardenable（不可硬化）	23		
			Hardenable（可硬化）	24		
		>12% Si	High temperature（高温）	25		
		Copper alloys (铜合金)	>1% Pb	Free cutting（自由切割）		
	Brass（黄铜）			27		
	Electrolitic copper（化学铜）			28		
	Non-metallic（非金属）			Duroplastics, fiber plastics(硬塑性塑料、纤维塑料)		
			Hard rubber（硬橡胶）	30		
S	High temperature alloys (高温合金)	Fe based (铁基)	Annealed（退火）	31	20-50	0.04-0.06
			Hardenable（可硬化）	32		
		Ni or Co based (镍基或钴基)	Annealed（退火）	33		
			Hardenable（可硬化）	34		
			Cast（铸造）	35		
	Titanium Ti alloys（钛合金）		Pure（纯净）	36	30-60	0.04-0.10
			Alpha+beta alloys hardened（α+β合金硬化）	37		
H	Hardened steel 淬火钢		Hardened(硬化)	38	20-50	0.04-0.06
			Hardened(硬化)	39		
	Chilled cast iron 冷硬铸铁		Cast（铸造）	40		
	Cast iron 铸铁		Hardened(硬化)	41		

Clamp-on Gun Drill

GD-DH(10.00-11.50)

带可转位刀片的钻头，带有单片式切削刃和刮水器，可实现高孔表面质量

Gundrills Carrying Indexable Inserts with Single Chip Splitting Cutting Edge and a Wiper for High Hole Surface Quality



Designation	DC	LU	LF	PL	DCONMS	BD	LS	MID
GD-DH 10.00-15D-M20-06	10.00	159.30	184.50	1.8	20.00	9.60	50.00	ZSGT 06
GD-DH 10.00-20D-M20-06	10.00	211.80	237.00	1.8	20.00	9.60	50.00	ZSGT 06
GD-DH 10.00-25D-M20-06	10.00	264.30	289.50	1.8	20.00	9.60	50.00	ZSGT 06
GD-DH 10.50-15D-M20-06	10.50	166.80	193.00	1.8	20.00	10.0	50.00	ZSGT 06
GD-DH 10.50-20D-M20-06	10.50	221.80	248.00	1.8	20.00	10.0	50.00	ZSGT 06
GD-DH 10.50-25D-M20-06	10.50	276.80	303.00	1.8	20.00	10.0	50.00	ZSGT 06
GD-DH 11.00-15D-M20-06	11.00	181.80	209.00	1.8	20.00	10.6	50.00	ZSGT 06
GD-DH 11.00-20D-M20-06	11.00	241.80	269.00	1.8	20.00	10.6	50.00	ZSGT 06
GD-DH 11.00-25D-M20-06	11.00	301.80	329.00	1.8	20.00	10.6	50.00	ZSGT 06
GD-DH 11.50-15D-M20-06	11.50	181.80	209.00	1.8	20.00	11.1	50.00	ZSGT 06
GD-DH 11.50-20D-M20-06	11.50	241.80	269.00	1.8	20.00	11.1	50.00	ZSGT 06
GD-DH 11.50-25D-M20-06	11.50	301.80	329.00	1.8	20.00	11.1	50.00	ZSGT 06

Spare Parts



Tool Diameter		Insert			Guide Pad		
Min	Max	Insert	Screw	Wrench	GP x 2pcs	Screw X 2pcs	Wrench
10.00	10.99	ZSGT 060204R-DT	SR-M2.5X0.35L3.8	T-7/5	GPS-04-16-045-DC	CSTB-2	T6/5
11.00	11.80				GPS-04-16-050-DC		
11.81	11.99	LOGT 060204R-DT	SR 10503833L040				

推荐拧紧力矩：SR-m2.5 x0.35 l3.8=1.1 Nm, SR 10503833L040=1.3 Nm, CSTB-2-0.6 Nm

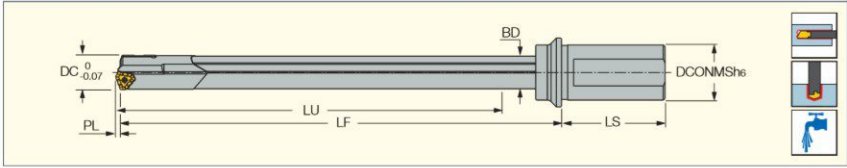
Recommended tightening torque: SR-M2.5x0.35L3.8=1.1 Nm,SR 10503833L040=1.3 Nm, CSTB-2-0.6 Nm



GD-DH

枪钻携带三角形刀片，具有3个切屑分切刃和一个用于高孔表面质量的刮片

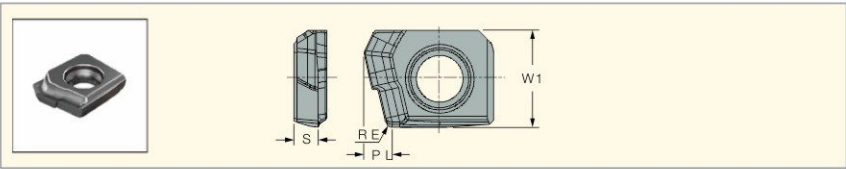
Gundrills Carrying Triangular Inserts with 3 Chip Splitting Cutting Edges and a Wiper for High Hole Surface Quality



Designation	DC	LU	DCONMS	BD	LF	PL	LS
GD-DH 14.00-15D-M25-07	14.00	255.00	25.00	13.50	261.00	1.95	56.00
GD-DH 14.00-20D-M25-07	14.00	300.00	25.00	13.50	336.00	1.95	56.00
GD-DH 14.00-25D-M25-07	14.00	375.00	25.00	13.50	411.00	1.95	56.00
GD-DH 14.50-15D-M25-07	14.50	225.00	25.00	14.00	262.00	1.95	56.00
GD-DH 14.50-20D-M25-07	14.50	300.00	25.00	14.00	337.00	1.95	56.00
GD-DH 14.50-25D-M25-07	14.50	375.00	25.00	14.00	412.00	1.95	56.00
GD-DH 15.00-15D-M25-07	15.00	240.00	25.00	14.50	278.00	1.95	56.00
GD-DH 15.00-20D-M25-07	15.00	320.00	25.00	14.50	358.00	1.95	56.00
GD-DH 15.00-25D-M25-07	15.00	400.00	25.00	14.50	438.00	1.95	56.00
GD-DH 16.00-10D-M25-08	16.00	170.00	25.00	15.50	209.00	2.20	56.00
GD-DH 16.00-15D-M25-08	16.00	225.00	25.00	15.50	294.00	2.20	56.00
GD-DH 16.00-25D-M25-08	16.00	425.00	25.00	15.50	464.00	2.20	56.00
GD-DH 16.50-10D-M25-08	16.50	170.00	25.00	15.50	209.00	2.20	56.00
GD-DH 16.50-15D-M25-08	16.50	225.00	25.00	15.50	294.00	2.20	56.00
GD-DH 16.50-25D-M25-08	16.50	425.00	25.00	15.50	464.00	2.20	56.00
GD-DH 17.00-10D-M25-08	17.00	180.00	25.00	16.20	220.00	2.20	56.00
GD-DH 17.00-15D-M25-08	17.00	270.00	25.00	16.20	310.00	2.20	56.00
GD-DH 17.00-25D-M25-08	17.00	450.00	25.00	16.20	490.00	2.20	56.00
GD-DH 17.50-25D-M25-08	17.50	450.00	25.00	16.20	490.00	2.20	56.00
GD-DH 18.00-10D-M25-08	18.00	190.00	25.00	16.20	232.00	3.00	56.00
GD-DH 18.00-15D-M25-08	18.00	285.00	25.00	17.20	327.00	3.00	56.00
GD-DH 18.00-25D-M25-08	18.00	475.00	25.00	17.20	517.00	3.00	56.00
GD-DH 18.50-15D-M25-09	18.50	285.00	25.00	17.20	327.00	3.00	56.00
GD-DH 18.50-25D-M25-09	18.50	475.00	25.00	17.20	517.00	3.00	56.00
GD-DH 19.00-10D-M25-09	19.00	200.00	25.00	18.20	243.00	3.00	56.00
GD-DH 19.00-15D-M25-09	19.00	300.00	25.00	18.20	343.00	3.00	56.00
GD-DH 19.00-25D-M25-09	19.00	500.00	25.00	18.20	543.00	3.00	56.00
GD-DH 19.50-15D-M25-09	19.50	300.00	25.00	18.20	343.00	3.00	56.00
GD-DH 19.50-25D-M25-09	19.50	500.00	25.00	18.20	543.00	3.00	56.00
GD-DH 20.00-10D-M32-09	20.00	210.00	32.00	19.00	255.00	3.20	60.00
GD-DH 20.00-15D-M32-09	20.00	315.00	32.00	19.00	360.00	3.20	60.00
GD-DH 20.00-25D-M32-09	20.00	525.00	32.00	19.00	570.00	3.20	60.00
GD-DH 21.00-10D-M32-10	21.00	220.00	32.00	20.00	266.00	3.20	60.00
GD-DH 21.00-15D-M32-10	21.00	330.00	32.00	20.00	376.00	3.20	60.00
GD-DH 21.00-25D-M32-10	21.00	550.00	32.00	20.00	596.00	3.20	60.00
GD-DH 22.00-10D-M32-11	22.00	230.00	32.00	21.00	278.00	3.40	60.00
GD-DH 22.00-15D-M32-11	22.00	345.00	32.00	21.00	393.00	3.40	60.00
GD-DH 22.00-25D-M32-11	22.00	575.00	32.00	21.00	623.00	3.40	60.00
GD-DH 23.00-10D-M32-11	23.00	240.00	32.00	22.00	289.00	3.40	60.00
GD-DH 23.00-15D-M32-11	23.00	360.00	32.00	22.00	409.00	3.40	60.00
GD-DH 23.00-25D-M32-11	23.00	600.00	32.00	22.00	649.00	3.40	60.00
GD-DH 24.00-10D-M32-11	24.00	250.00	32.00	23.00	301.00	3.40	60.00
GD-DH 24.00-15D-M32-11	24.00	375.00	32.00	23.00	426.00	3.40	60.00
GD-DH 24.00-25D-M32-11	24.00	625.00	32.00	23.00	676.00	3.40	60.00
GD-DH 25.00-10D-M32-11	25.00	260.00	32.00	24.00	321.00	3.60	60.00
GD-DH 25.00-15D-M32-11	25.00	390.00	32.00	24.00	442.00	3.60	60.00
GD-DH 25.00-25D-M32-11	25.00	650.00	32.00	24.00	702.00	3.60	60.00
GD-DH 26.00-10D-M40-12	26.00	270.00	40.00	25.00	324.00	3.60	70.00
GD-DH 26.00-15D-M40-12	26.00	405.00	40.00	25.00	459.00	3.60	70.00
GD-DH 26.00-25D-M40-12	26.00	675.00	40.00	25.00	729.00	3.60	70.00
GD-DH 27.00-10D-M40-12	27.00	280.00	40.00	26.00	335.00	3.60	70.00
GD-DH 27.00-15D-M40-12	27.00	420.00	40.00	26.00	475.00	3.60	70.00
GD-DH 27.00-25D-M40-12	27.00	700.00	40.00	26.00	755.00	3.60	70.00
GD-DH 28.00-10D-M40-12	28.00	280.00	40.00	27.00	377.00	3.60	70.00
GD-DH 28.00-15D-M40-12	28.00	420.00	40.00	27.00	477.00	3.60	70.00
GD-DH 28.00-25D-M40-12	28.00	700.00	40.00	27.00	757.00	3.60	70.00

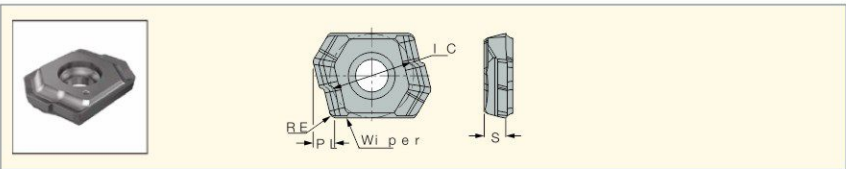
Mechanically Clamped Gun Drill Insert

ZSGT
带单片切削刃和刮刀的深钻刀片
Deep Drilling Inserts with Single Chip
Splitting Cutting Edge and a Wiper



Designation	W1	Dimensions			IC948
ZSGT 060204R-DT	6.00	RE	PL	S	•

LOGT
深钻刀片2芯片分裂切削刃，
积极耙芯片断路器和刮水器
Deep Drilling Inserts with 2 Chip Splitting Cutting Edges,
Positive Rake Chipbreaker and a Wiper



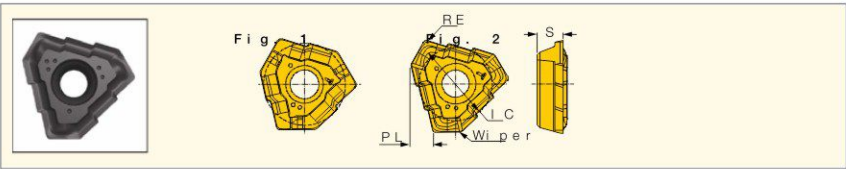
Designation	IC	Dimensions			IC908
LOGT 060204R-DT	7.00	RE	PL	S	•

Spare Parts



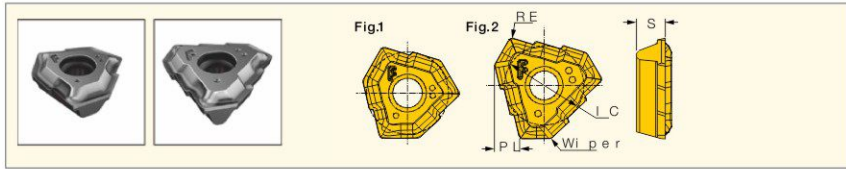
Designation	Insert screw	Insert key	N · m
LOGT 060204R-DT	SR 10503833L040	T-7F	0.9

TOGT-DT
深钻刀片与3切屑分裂切削刃，
一个积极的耙切屑断路器和一个雨刷
Deep Drilling Inserts with 3 Chip Splitting Cutting Edges,
a Positive Rake Chip breaker and a Wiper



Designation	IC	Dimensions			Fig.	IC908
TOGT 070304-DT	7.69	RE	PL	S	1	•
TOGT 080305-DT	8.55	0.50	2.20	2.80	1	•
TOGT 090305-DT	8.32	0.50	3.00	3.00	2	•
TOGT 100305-DT	9.23	0.50	3.20	3.30	2	•
TOGT 110405-DT	10.40	0.50	3.40	3.80	2	•
TOGT 120405-DT	11.59	0.50	3.60	4.30	2	•
TOGT 130408-DT	12.85	0.80	4.57	4.76	2	•
TOGT 140510-DT	16.85	1.00	5.43	5.26	2	•

TOGT-GF
深钻刀片与3切屑分裂切削刃，
一个积极的耙切屑断路器和一个雨刷
Deep Drilling Inserts with 3 Chip Splitting Cutting Edges,
a Positive Rake Chip breaker and a Wiper



Designation	IC	Dimensions			Fig.	IC908
TOGT 070304-GF	7.69	RE	PL	S	1	•
TOGT 080305-GF	8.55	0.50	2.20	2.80	1	•
TOGT 090305-GF	8.32	0.50	3.00	3.00	2	•
TOGT 100305-GF	9.23	0.50	3.20	3.30	2	•
TOGT 110405-GF	10.40	0.50	3.40	3.80	2	•
TOGT 120405-GF	11.59	0.50	3.60	4.30	2	•
TOGT 130408-GF	12.85	0.80	4.57	4.76	2	•

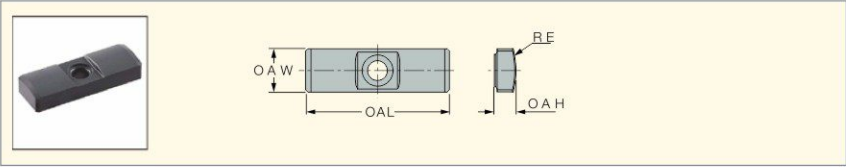
断屑槽外观 Chipbreaker Appearances

		GF	DT
1	前倾角 rake angle a°		
2	ID标记 ID mark	F	T

机夹式枪钻导条

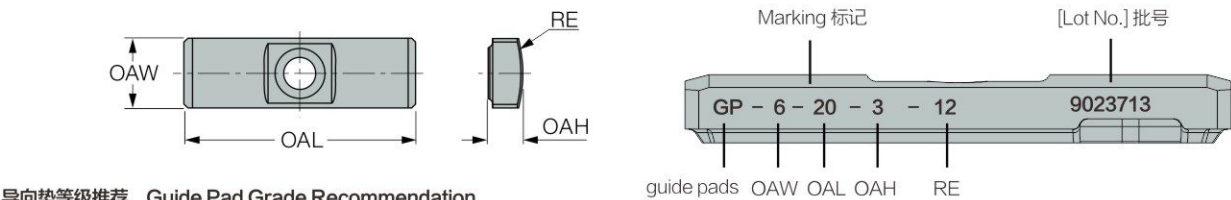
Mechanically Clamped Gun Drill Guide Bar

GPS
深孔钻削整体硬质合金导向垫
Deep Drilling Solid Carbide Guide Pads



Designation	Dimensions				Tough $\rightarrow$ Hard		
	OAW	OAL	OAH	RE	IC928	IC950	IC908
GPS-04-16-045-DC	4.00	16.00	1.80	4.50	•	•	•
GPS-04-16-050-DC	4.00	16.00	1.80	5.00	•	•	•
GPS-04-16-055-DC	4.00	16.00	2.00	5.50	•	•	•
GPS-05-18-060-DC	5.00	18.00	2.50	6.00	•	•	•
GPS-05-18-075-DC	5.00	18.00	2.50	7.50	•	•	•
GPS-06-20-075-DC	6.00	20.00	3.00	7.50	•	•	•
GPS-06-20-085-DC	6.00	20.00	3.00	8.50	•	•	•
GPS-06-20-085	6.00	20.00	3.00	8.50	•	•	•
GPS-06-20-100-DC	6.00	20.00	3.00	10.00	•	•	•
GPS-06-20-100	6.00	20.00	3.00	10.00	•	•	•
GPS-06-20-120-DC	6.00	20.00	3.00	12.00	•	•	•
GPS-06-20-120	6.00	20.00	3.00	12.00	•	•	•
GPS-07-20-120-DC	7.00	20.00	3.50	12.00	•	•	•
GPS-07-20-120	7.00	20.00	3.50	12.00	•	•	•
GPS-08-25-155-DC	8.00	25.00	4.50	15.50	•	•	•
GPS-08-25-155	8.00	25.00	4.50	15.50	•	•	•
GPS-10-30-200-DC	10.00	30.00	4.50	20.00	•	•	•
GPS-10-30-200	10.00	30.00	4.50	20.00	•	•	•
GPS-10-35-200-DC	10.00	35.00	6.00	20.00	•	•	•
GPS-10-35-200	10.00	35.00	6.00	20.00	•	•	•
GPS-12-35-250-DC	12.00	35.00	5.50	25.00	•	•	•
GPS-12-35-250	12.00	35.00	5.50	25.00	•	•	•
GPS-14-40-250-DC	14.00	40.00	7.50	25.00	•	•	•
GPS-14-40-250	14.00	40.00	7.50	25.00	•	•	•
GPS-18-40-300-DC	18.00	40.00	9.00	30.00	•	•	•

深孔钻具通用标记 Universal Marking for Deep Drilling Tools



导向垫等级推荐 Guide Pad Grade Recommendation

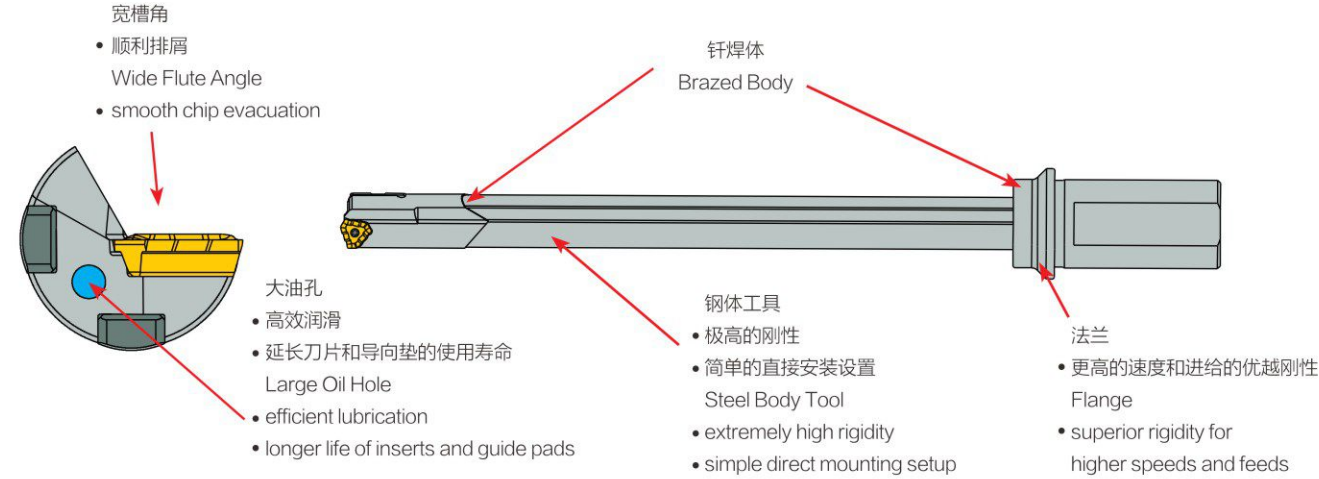
优先级 Priority	油冷却剂 Oil Coolant			水基冷却液 Water Based Coolant		
	1	2	3	1	2	3
ISO-P	IC950	IC908	IC928	IC928	IC908	-
ISO-K	IC950	IC908	IC928	IC928	IC908	-
ISO-M	IC928	IC908	IC950	IC928	IC908	-
ISO-S	IC928	IC908	IC950	IC928	IC908	-

在订购导向垫夹紧螺钉时，在选择螺钉尺寸之前，请先根据所示程序确认钻头本体设计。
When ordering guide pad clamping screws, below before choosing the screw size, first confirm the drill body design according to the procedure shown.

如果钻头有保护器：使用新设计中的螺钉 if the drill head has the protector: use a screw in the new design	如果钻头没有保护器：使用之前设计中的螺钉 if the drill head has no protector: use a screw in the previous design
新设计 New design	传统设计 Conventional design
配有导向垫保护器 with guide pad protector	无导向垫保护器 without guide pad protector

机夹式枪钻加工步骤

Machining Steps Of Machine-clamped Gun Drill



1 钻一个15毫米的导孔平底 Drill a 15 mm pilot hole flat bottom

2 进入预孔时缓慢旋转和进给 Slow rotation and feed while entering to the pre-hole

3 保持2-3秒，启动冷却系统 Maintain for 2-3 seconds and activate the cooling system

4 钻+5mm深度通孔 Drill +5mm depth through hole

- 机械加工中的钻孔工艺
中心和车床
- 钻15mm导孔D₁₅平底孔
 - 将TRIDEEP钻头送入导孔
(深度10mm) Vc=5-10 m/min f=0.5-1.0 mm/rev
 - 初始切削量为25mm DOC (80%进给率);
验证活化冷却剂 (Vc=100%)
 - 如有通孔，请钻满
钻孔深度为+ 5mm
 - 收放慢速旋转 (5-10米/分钟)
- Drilling Process on Machining
Centers and Lathe Machines
- Drill a 15 mm pilot hole D₁₅ flat bottom
 - Set the TRIDEEP drill into the pilot hole
(10 mm depth). Vc=5-10 m/min f=0.5-1.0 mm/rev
 - Initial cutting at a 25 mm DOC (80% feed rate),
verify activated coolant (Vc=100%)
 - In case of through hole, drill the full
hole to a depth of +5 mm
 - Retract with slow rotation (5-10 m/min)

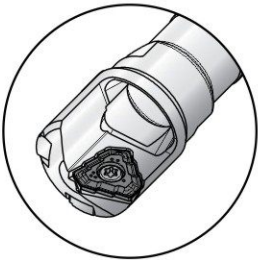
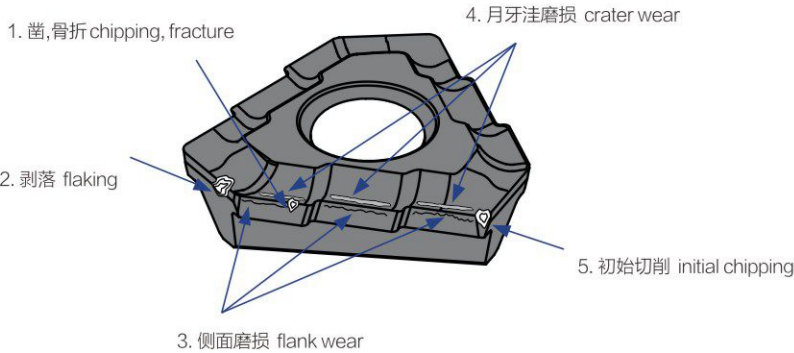
机夹式枪钻刀片失效图

Failure Diagram Of Machine-clamped Gun Drill Blade

磨损失效参考 Reference for Wear failure

Spare Parts							
直径范围 Diameter Range	插入 Insert	夹紧螺钉 Insert Clamping Screw	关键 Key	N*m	硬质合金导向垫 Solid Carbide Guide Pad	导垫夹紧螺钉 Guide Pad Clamping Screw	关键 Key
14.00-15.99	TOGT 070304-DT/GF	SR 14-560/S M2.5X0.45	T-8/5	1.2	GPS-05-18-060-DC	SR 34-508 M2.2X0.45	T-7/5
16.00-18.00	TOGT 080305-DT/GF		T-8/5	1.2	GPS-05-18-075-DC		
18.01-20.00	TOGT 090305-DT/GF		T-8/5	1.2	GPS-06-20-085-DC		
20.01-21.00	TOGT 100305-DT/GF		T-9/5	2.0	GPS-06-20-085-DC		
21.01-21.99	TOGT 100305-DT/GF	SR 34-506 M3X0.5	T-9/5	2.0	GPS-06-20-100-DC	SR 34-508 M2.2X0.45	T-7/5
22.00-25.00	TOGT 110405-DT/GF	SR 14-571/S M3.5X0.6	T-10/5	4.8	GPS-06-20-100-DC		
25.01-28.00	TOGT 120405-DT/GF	SR 14-506 M4X0.7	T-15/5	4.8	GPS-06-20-120-DC		
28.01-29.99	TOGT 130408-DT/GF	SR 16-212/L10 M5X0.8	T-20/5	10	GPS-06-20-120-DC		
30.00-32.00	TOGT 130408-DT/GF				GPS-07-20-120-DC	CSTB-3L065 M2.2X0.45	T-9/5
32.01-39.00	TOGT 140510-DT/GF				GPS-07-20-120-DC		
39.01-40.00	TOGT 140510-DT/GF				GPS-08-25-155-DC		

插入损坏的故障排除 Troubleshooting for Insert Damage



问题Problem	原因Cause	解决方案Solution	
		等级Grade	切削条件/其他Cutting Conditions / Other
1. 碎裂，断裂 Chipping, Fracture	过度振动或冲击 excessive vibration or impact 撕掉堆积的边缘 torn away built-up edge	使用坚固的等级 use a tough grade	降低进给速度 reduce the feed rate 消除振动 eliminate the vibration
2. 剥落 Flaking	过度振动或冲击 excessive vibration or impact	使用强韧的等级 use a tough grade	降低进给速度 reduce the feed rate 消除振动 eliminate the vibration
3. 侧翼磨损 Flank Wear	切削速度过高 cutting speed too high 刀具韧性不足 inadequate tool toughness	使用耐磨性高的材料 use a grade with high wear resistance 使用涂层级材料 use a coated grade	降低切削速度 reduce the cutting speed 降低进给速度 reduce the feed rate 正确使用冷却液 use coolant properly
4. 弹坑磨损 Crater Wear	切削速度过高 cutting speed too high 进给速度过高 feed rate too high 刀具韧性不足 inadequate tool toughness	使用耐磨性高的材料 use a grade with high wear resistance 使用涂层级材料 use a coated grade	降低切削速度 reduce the cutting speed 降低进给速度 reduce the feed rate 正确使用冷却剂 use coolant properly
5. 初始碎裂 Initial Chipping	不合适的导向衬套或导向孔 inappropriate guide bush or pilot hole 错位 misalignment	使用严格的标准 use a tough grade	调整或更换导向套或导向孔 adjust or change guide bushing or pilot hole 降低进给速度 reduce the feed rate 纠正错位 correct the misalignment

机夹式枪钻导条失效图

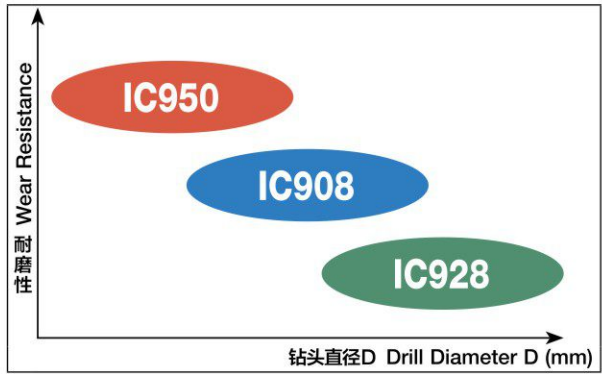
Failure Diagram Of Guide Strip of Machine-clamped Gun Drill

导向垫和刀片一样，也会磨损。

- ① 每个导向垫均可双面使用。当导向垫的一角磨损达到宽度的70%时，可将其翻转，使用另一角。
- ② 当第二个角磨损时，更换新的导向垫。

Guide pads are subject to wear, like inserts.

- ① Each guide pad can be used on two sides. When the first corner wears out 70% of the width, reverse the guide pad to use the second corner.
- ② Replace with a new guide pad when the second corner wears out.



为了获得更高的耐磨性 For higher wear resistance

高耐磨等级 High wear-resistant grade.

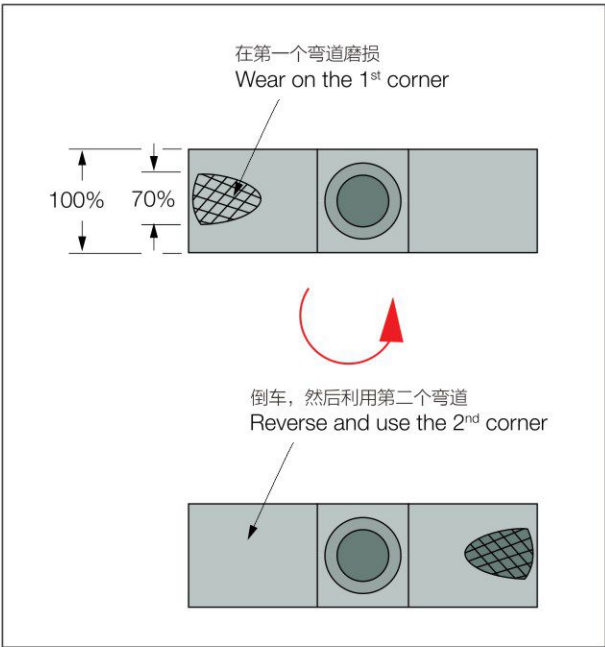
第一项建议 First recommendation

适用于各种工件材料 Suitable for various workpiece materials.

独特的基材和涂层赋予了刀具更长的使用寿命。 Long tool life due to unique substrate and coating.

为了获得更高的抗断裂性能 For higher fracture resistance

高抗断裂等级 High fracture-resistant grade.

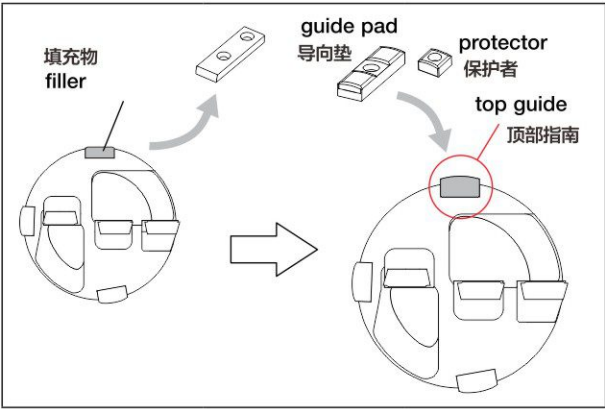


在以下情况下，请用顶部导向垫替换填料：

- ① 要求孔位精度高。
- ② 孔长与直径之比（L/D）大于50:1。
- ③ 对带有尾座孔的工件进行钻孔。
- ④ 所需的钻孔深度（DOC）大于周边插入件用于扩孔的范围。*见下表。

Please replace the filler with the top guide pad when:

- ① High hole accuracy is required.
- ② L/D (hole length-to-diameter) ratio is greater than 50:1.
- ③ Drilling a workpiece which has a tail stock hole.
- ④ The DOC required is greater than the range of the peripheral insert for counterboring. *See chart below.



*外围插件的最大DOC。Maximum DOC of peripheral insert.

墨盒 Cartridge	DOC (mm)	导向垫Guide pad
CAOD-0845	6.4	GPS-08../GPS-10...
CAOD-103	7.2	GPS-10../GPS-14...
CAOD-142	10.4	GPS-14../GPS-18...
CAOD-170	12.0	GPS-18...

对于直径小于92毫米的工件，钻头为半标准型，使用顶部导向垫。如需更多信息，请联系您的经销商。

For diameter less than 92 mm, the drill head is semi-standard using the top guide pad. Please contact your dealer for further information.

导向垫 Guide Pad

	螺丝钉 Screw	键值Key
GPS-05	SR 34-508 M2.2X0.45	T-7/5
GPS-06	SR 11201753-1	T-7/5
GPS-07	SR 11201753-4	T-9/5
GPS-08	SR 11201753-4	T-9/5
GPS-10	SR 11201753-8	T-15/5
GPS-12	SR 11201753-8	T-15/5
GPS-14	SR 11201752-2	T-15/5
GPS-18	SR 11201756-7S	T-15/5

Standard Cutting Conditions

GD–DH（10.00–11.50）(公制)的切削条件 Cutting Conditions for GD–DH (10.00–11.50) (METRIC)

ISO	Material（材料）		Condition（条件）
P	Non–alloy steel and cast steel, free cutting steel (非合金钢和铸钢、易切削钢)	<0.25%C	Annealed(退火)
		≥0.25%C	Annealed(退火)
		<0.55%C	Quenched and tempered（淬火和回火）
		≥0.55%C	Annealed(退火)
	Low alloy steel and cast steel (less than 5% of alloying elements) 低合金钢和铸钢 （低于合金元素的5%）		Quenched and tempered（淬火和回火）
			Annealed(退火)
	High alloyed steel, cast steel, and tool steel （高合金钢、铸钢和工具钢）		Quenched and tempered（淬火和回火）
			Annealed(退火)
	stainless steel and cast steel（不锈钢和铸钢）		Ferritic/martensitic（铁素体/马氏体）
			Martensitic（马氏体不锈钢）
M	stainless steel and cast steel（不锈钢和铸钢）		Austenitic, duplex(奥氏体，双相)
K	Grey cast iron (GG) 灰铸铁（GG）		Ferritic/pearlitic（铁素体/珠光体）
			Pearlitic/martensitic(珠光体/马氏体)
	Nodular cast iron (GGG) 球墨铸铁（GGG）		Ferritic（铁素体）
			Pearlitic(珠光体)
	Malleable cast iron（可锻铸铁）		Ferritic（铁素体）
			Pearlitic(珠光体)
N	Alumin–umwrought alloy(铝变形合金)		Not hardenable（不可硬化）
			Hardenable（可硬化）
	Aluminum cast alloyed （铝合金）	<=12% Si	Not hardenable（不可硬化）
		>12% Si	Hardenable（可硬化）
	Copper alloys （铜合金）	>1% Pb	High temperature（高温）
			Free cutting（自由切割）
	Non–metallic（非金属）		Brass（黄铜）
			Electrolitic copper（化学铜）
			Duroplastics, fiber plastics（硬塑性塑料、纤维塑料）
			Hard rubber（硬橡胶）
S	High temp. alloys (高温合金)	Fe based(铁基)	Annealed（退火）
			Hardenable（可硬化）
		Ni or Co based （镍基或钴基）	Annealed（退火）
			Hardenable（可硬化）
	Titanium Ti alloys（钛合金）		Cast（铸造）
			Pure（纯净）
			Alpha+beta alloys cured（α+β合金固化）
H	Hardened steel 淬火钢		Hardened(硬化)
			Hardened(硬化)
	Chilled cast iron 冷硬铸铁	Cast（铸造）	
Cast iron 铸铁		Hardened(硬化)	

* 钻削不锈钢时的冷却液推荐：①油基冷却液是首选 ②水溶性冷却液需要至少20%的油浓度

GD–DH（10.00–11.50）(公制)的切削条件 Cutting Conditions for GD–DH (10.00–11.50) (METRIC)

Tensile Strength [N/mm2] （抗拉强度[牛顿/平方毫米]）	Hardness HB （硬度HB）	Material No. （材料编号）	Cutting Speed 切削速度（m/min）	ZSGT 06 进给量[毫米/转] Feed [mm/rev]
420	125	1	80–140	0.05–0.08
650	190	2		
850	250	3		
750	220	4		0.05–0.14
1000	300	5		
600	200	6	80–120	0.05–0.08
930	275	7		
1000	300	8		
1200	350	9		0.05–0.14
680	200	10		
1100	325	11		
680	200	12	60–100	0.05–0.08
820	240	13		
600	180	14	60–100	0.05–0.08
	180	15	80–140	0.05–0.2
	260	16		
	160	17		
	250	18		
	130	19		
	230	20		
	60	21	100–200	0.05–0.18
	100	22		
	75	23		
	90	24		
	130	25		
	110	26		
	90	27		
	100	28		
		29		
		30		
	200	31	20–50	0.04–0.06
	280	32		
	250	33		
	350	34		
	320	35		
400		36	30–60	0.04–0.1
1050		37		
	55 HRC	38	50–100	0.04–0.06
	60 HRC	39		
	400	40		
	55 HRC	41		

* Coolant recommendations for drilling stainless steel: ① Oil coolant is first choice ② Water soluble coolant requires at least 20% oil concentration

Standard Cutting Conditions

GD-DH (12.00–32.00) (公制)的切削条件 Cutting Conditions for GD-DH (12.00–32.00) (METRIC)

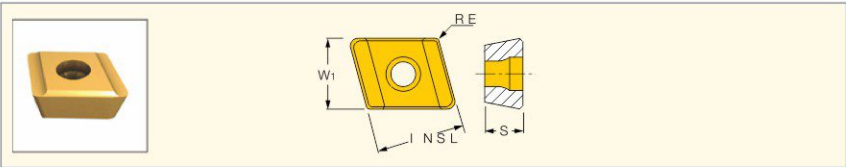
ISO	Material（材料）		Condition（条件）	Tensile Strength [N/mm2] （抗拉强度 [牛顿/平方毫米]）	Hardness HB （硬度HB）
P	Non-alloy steel and cast steel, free cutting steel (非合金钢和铸钢、易切削钢)	<0.25%C	Annealed(退火)	420	125
		≥0.25%C	Annealed(退火)	650	190
		<0.55%C	Quenched and tempered（淬火和回火）	850	250
		≥0.55%C	Annealed(退火)	750	220
			Quenched and tempered（淬火和回火）	1000	300
	Low alloy steel and cast steel (less than 5% of alloying elements) 低合金钢和铸钢 （低于合金元素的5%）		Annealed(退火)	600	200
				930	275
			Quenched and tempered（淬火和回火）	1000	300
				1200	350
	High alloyed steel, cast steel, and tool steel （高合金钢、铸钢和工具钢）		Annealed(退火)	680	200
			Quenched and tempered（淬火和回火）	1100	325
	stainless steel and cast steel（不锈钢和铸钢）		Ferritic/martensitic（铁素体/马氏体）	680	200
Martensitic（马氏体不锈钢）			820	240	
M	stainless steel and cast steel（不锈钢和铸钢）		Austenitic, duplex(奥氏体，双相)	600	180
K	Grey cast iron (GG) 灰铸铁（GG）		Ferritic/pearlitic（铁素体/珠光体）		180
			Pearlitic/martensitic(珠光体/马氏体)		260
	Nodular cast iron (GGG) 球墨铸铁（GGG）		Ferritic（铁素体）		160
			Pearlitic(珠光体)		250
	Malleable cast iron（可锻铸铁）		Ferritic（铁素体）		130
			Pearlitic(珠光体)		230
N	Alumin-umwrought alloy(铝变形合金)		Not hardenable（不可硬化）		60
			Hardenable（可硬化）		100
	Aluminum cast alloyed （铝合金）	<=12% Si	Not hardenable（不可硬化）		75
			Hardenable（可硬化）		90
		>12% Si	High temperature（高温）		130
			Copper alloys （铜合金）	>1% Pb	Free cutting（自由切割）
	Brass（黄铜）				90
	Electrolitic copper（化学铜）				100
	Non-metallic（非金属）		Duroplastics, fiber plastics（硬塑性塑料、纤维塑料）		
			Hard rubber（硬橡胶）		
S	High temp. alloys (高温合金)	Fe based(铁基)	Annealed（退火）		200
			Hardenable（可硬化）		280
		Ni or Co based (镍基或钴基)	Annealed（退火）		250
			Hardenable（可硬化）		350
			Cast（铸造）		320
	Titanium Ti alloys（钛合金）		Pure（纯净）	400	
			Alpha+beta alloys cured（α+β合金固化）	1050	
H	Hardened steel 淬火钢		Hardened 55 HRC (硬度为55 HRC)		
			Hardened 60 HRC (硬度为60 HRC)		
	Chilled cast iron 冷硬铸铁		Cast（铸造）		400
	Cast iron 铸铁		Hardened 55 HRC (硬度为55 HRC)		

GD-DH (12.00–32.00) (公制)的切削条件 Cutting Conditions for GD-DH (12.00–32.00) (METRIC)

Material No. (材料编号)	GF和DT尺寸插件的LOGT/TOGT进给量 LOGT / TOGT Feed per insert size "GF" & "DT"								
	V m/min	06	07	08	09	10	11	12	13
1	80-120 80-120	0.04-0.08 0.08-0.14				0.04-0.10 0.08-0.16	0.06-0.10 0.08-0.16	0.06-0.10 0.08-0.16	0.06-0.12 0.08-0.18
2									
3									
4		0.04-0.12 0.06-0.20							
5									
6									
7									
8									
9		0.04-0.12 0.06-0.20							
10									
11									
12									
13									
14	50-100 50-100	0.02-0.06 0.04-0.12				0.02-0.06 0.04-0.12	0.02-0.06 0.04-0.12	0.02-0.06 0.04-0.12	0.02-0.06 0.04-0.12
15	50-100 80-120	0.03-0.15 0.08-0.25				0.03-0.15 0.08-0.25	0.05-0.18 0.08-0.25	0.05-0.18 0.08-0.30	0.05-0.18 0.08-0.30
16									
17									
18									
19									
20									
21	80-160 80-160	0.03-0.15 0.08-0.20				0.03-0.15 0.08-0.20	0.03-0.18 0.08-0.20	0.05-0.18 0.08-0.20	0.05-0.18 0.08-0.20
22									
23									
24									
25									
26									
27									
28									
29									
30									
31	20-50 20-50	0.04-0.08 0.08-0.14				0.04-0.10 0.08-0.16	0.06-0.10 0.08-0.16	0.06-0.10 0.08-0.16	0.06-0.12 0.08-0.18
32									
33									
34									
35									
36									
37									
38	20-50 20-50	0.04-0.08 0.08-0.14				0.04-0.10 0.08-0.16	0.06-0.10 0.08-0.16	0.06-0.10 0.08-0.16	0.06-0.12 0.08-0.18
39									
40									
41									

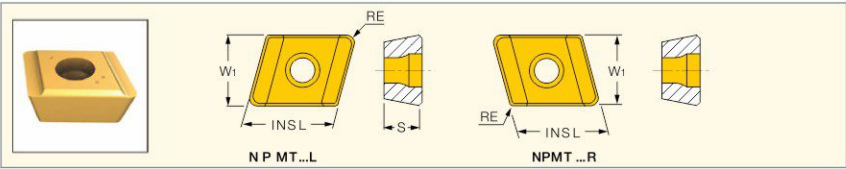
Mechanically Clamped Gun Drill Insert

NPHT
钻头DSD-EF-FB / DDD-EF-FB /
DSD-IF-FB的外围精密插件
Peripheral Precision Inserts for Drilling Heads
DSD-EF-FB / DDD-EF-FB / DSD-IF-FB



Designation	Dimensions				Tough → Hard		
	W1	INSL	S	RE	IC908	IC948	IC806
NPHT 060304R-G-P	6.00	8.00	3.00	0.40	●	●	●
NPHT 070404R-G-P	7.50	10.00	4.00	0.40	●	●	●
NPHT 090404R-G-P	9.00	10.00	4.00	0.40	●	●	●
NPHT 110404R-G-P	11.00	10.00	4.00	0.40	●	●	●
NPHT 130404R-G-P	13.00	10.00	4.00	0.40	●	●	●
NPHT 060308R-G-P	6.00	8.00	3.00	0.80	●	●	●
NPHT 070408R-G-P	7.50	10.00	4.00	0.80	●	●	●
NPHT 090408R-G-P	9.00	10.00	4.00	0.80	●	●	●
NPHT 110408R-G-P	11.00	10.00	4.00	0.80	●	●	●
NPHT 130408R-G-P	13.00	10.00	4.00	0.80	●	●	●
NPHT 060308R-HF-P	6.00	8.00	3.00	0.80	●	●	●
NPHT 070408R-HF-P	7.50	10.00	4.00	0.80	●	●	●
NPHT 090408R-HF-P	9.00	10.00	4.00	0.80	●	●	●
NPHT 110408R-HF-P	11.00	10.00	4.00	0.80	●	●	●
NPHT 130408R-HF-P	13.00	10.00	4.00	0.80	●	●	●

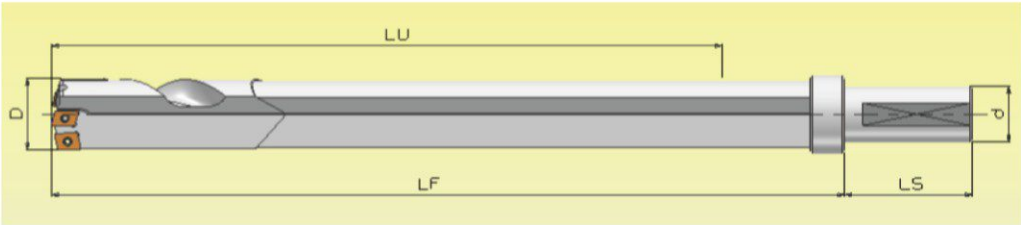
NPMT
钻头DSD-EF-FB / DDD-EF-FB
的内部和中央插件
Internal and Central Inserts for Drilling Heads
DSD-EF-FB / DDD-EF-FB



Designation	Dimensions				Tough → Hard		
	W1	INSL	S	RE	IC908	IC948	IC806
NPMT 050304R-G-I	5.50	8.00	3.00	0.40	●	●	●
NPMT 060404R-G-I	6.50	10.00	4.00	0.40	●	●	●
NPMT 080404R-G-I	8.00	10.00	4.00	0.40	●	●	●
NPMT 090404R-G-I	9.50	10.00	4.00	0.40	●	●	●
NPMT 120404R-G-I	12.50	10.00	4.00	0.40	●	●	●
NPMT 050304R-HF-I	5.50	8.00	3.00	0.40	●	●	●
NPMT 060404R-HF-I	6.50	10.00	4.00	0.40	●	●	●
NPMT 080404R-HF-I	8.00	10.00	4.00	0.40	●	●	●
NPMT 090404R-HF-I	9.50	10.00	4.00	0.40	●	●	●
NPMT 120404R-HF-I	12.50	10.00	4.00	0.40	●	●	●
NPMT 050308L-G-C	5.50	8.00	3.00	0.80	●	●	●
NPMT 060408L-G-C	6.50	10.00	4.00	0.80	●	●	●
NPMT 080408L-G-C	8.00	10.00	4.00	0.80	●	●	●
NPMT 090408L-G-C	9.50	10.00	4.00	0.80	●	●	●
NPMT 120408L-G-C	12.50	10.00	4.00	0.80	●	●	●
NPMT 050308L-HF-C	5.50	8.00	3.00	0.80	●	●	●
NPMT 060408L-HF-C	6.50	10.00	4.00	0.80	●	●	●
NPMT 080408L-HF-C	8.00	10.00	4.00	0.80	●	●	●
NPMT 090408L-HF-C	9.50	10.00	4.00	0.80	●	●	●
NPMT 120408L-HF-C	12.50	10.00	4.00	0.80	●	●	●

Clamp-on Gun Drill

机夹式枪钻加工参数
Machining parameters
for machine-clamped
gun drill



序号	直径 (D)	外刀片	内刀片	中心刀片	导向条	刀片螺丝	导向条螺丝	扳手	LF	LS	LU	d
1	D29.02	NPHT070404R	NPMT060404R	NPMT060408L	GP06	M2.5x6.5	M2.5x6	T8	200-2500	70	20-2500	25/32
2	D30.02	NPHT070404R	NPMT060404R	NPMT060408L	GP07	M2.5x6.5	M3x6.5	T8	200-2500	70	20-2500	25/32
3	D31.02	NPHT070404R	NPMT060404R	NPMT060408L	GP07	M2.5x6.5	M3x6.5	T8	200-2500	70	20-2500	25/32
4	D32.02	NPHT070404R	NPMT060404R	NPMT060408L	GP07	M2.5x6.5	M3x6.5	T8	200-2500	70	20-2500	25/32
5	D33.02	NPHT070404R	NPMT060404R	NPMT060408L	GP07	M2.5x6.5	M3x6.5	T8	200-2500	70	20-2500	25/32
6	D34.02	NPHT070404R	NPMT060404R	NPMT060408L	GP07	M2.5x6.5	M3x6.5	T8	200-2500	70	20-2500	25/32
7	D35.02	NPHT070404R	NPMT060404R	NPMT080408L	GP07	M2.5x6.5	M3x6.5	T8	200-2500	70	20-2500	25/32
8	D36.02	NPHT070404R	NPMT060404R	NPMT080408L	GP07	M2.5x6.5	M3x6.5	T8	200-2500	70	20-2500	25/32
9	D37.02	NPHT070404R	NPMT060404R	NPMT080408L	GP07	M2.5x6.5	M3x6.5	T8	200-2500	70	20-2500	25/32
10	D38.02	NPHT090404R	NPMT060404R	NPMT080408L	GP07	M2.5x6.5	M3x6.5	T8	200-2500	70	20-2500	25/32
11	D39.02	NPHT090404R	NPMT060404R	NPMT080408L	GP08	M2.5x6.5	M3x8	T8/T10	200-2500	70	20-2500	25/32
12	D40.02	NPHT090404R	NPMT060404R	NPMT080408L	GP08	M2.5x6.5	M3x8	T8/T10	200-2500	70	20-2500	25/32
13	D41.02	NPHT090404R	NPMT080404R	NPMT080408L	GP08	M2.5x6.5	M3x8	T8/T10	200-2500	70	20-2500	25/32
14	D42.02	NPHT090404R	NPMT080404R	NPMT080408L	GP08	M2.5x6.5	M3x8	T8/T10	200-2500	70	20-2500	25/32
15	D43.02	NPHT090404R	NPMT080404R	NPMT080408L	GP08	M2.5x6.5	M3x8	T8/T10	200-2500	70	20-2500	25/32
16	D44.02	NPHT090404R	NPMT080404R	NPMT090408L	GP08	M2.5x6.5	M3x8	T8/T10	200-2500	70	20-2500	25/32
17	D45.02	NPHT090404R	NPMT080404R	NPMT090408L	GPS-10	M2.5x6.5	M3.5x9	T8/T15	200-2500	70	20-2500	25/32
18	D46.02	NPHT090404R	NPMT080404R	NPMT090408L	GPS-10	M2.5x6.5	M3.5x9	T8/T15	200-2500	70	20-2500	25/32
19	D47.02	NPHT110404R	NPMT080404R	NPMT090408L	GPS-10	M2.5x6.5	M3.5x9	T8/T15	200-2500	70	20-2500	25/32
20	D48.02	NPHT110404R	NPMT080404R	NPMT090408L	GPS-10	M2.5x6.5	M3.5x9	T8/T15	200-2500	70	20-2500	25/32
21	D49.02	NPHT110404R	NPMT080404R	NPMT090408L	GPS-10	M2.5x6.5	M3.5x9	T8/T15	200-2500	70	20-2500	25/32
22	D50.02	NPHT110404R	NPMT080404R	NPMT090408L	GPS-10	M2.5x6.5	M3.5x9	T8/T15	200-2500	70	20-2500	25/32
23	D51.02	NPHT110404R	NPMT090404R	NPMT090408L	GPS-10	M2.5x6.5	M3.5x9	T8/T15	200-2500	70	20-2500	25/32
24	D52.02	NPHT110404R	NPMT090404R	NPMT090408L	GPS-10	M2.5x6.5	M3.5x9	T8/T15	200-2500	70	20-2500	25/32
25	D53.02	NPHT110404R	NPMT090404R	NPMT090408L	GPS-10	M2.5x6.5	M3.5x9	T8/T15	200-2500	70	20-2500	25/32
26	D54.02	NPHT110404R	NPMT090404R	NPMT120408L	GPS-10	M2.5x6.5	M3.5x9	T8/T15	200-2500	70	20-2500	25/32
27	D55.02	NPHT110404R	NPMT090404R	NPMT120408L	GPS-10	M2.5x6.5	M3.5x9	T8/T15	200-2500	70	20-2500	25/32
28	D56.02	NPHT110404R	NPMT090404R	NPMT120408L	GPS-10	M2.5x6.5	M3.5x9	T8/T15	200-2500	70	20-2500	25/32
29	D57.02	NPHT110404R	NPMT090404R	NPMT120408L	GP-12	M2.5x6.5	M3.5x9	T8/T15	200-2500	70	20-2500	25/32
30	D58.02	NPHT110404R	NPMT090404R	NPMT120408L	GP-12	M2.5x6.5	M3.5x9	T8/T15	200-2500	70	20-2500	25/32
31	D59.02	NPHT110404R	NPMT090404R	NPMT120408L	GP-12	M2.5x6.5	M3.5x9	T8/T15	200-2500	70	20-2500	25/32
32	D60.02	NPHT130404R	NPMT090404R	NPMT120408L	GP-12	M2.5x6.5	M3.5x9	T8/T15	200-2500	70	20-2500	25/32
33	D61.02	NPHT130404R	NPMT090404R	NPMT120408L	GP-12	M2.5x6.5	M3.5x9	T8/T15	200-2500	70	20-2500	25/32
34	D62.02	NPHT130404R	NPMT090404R	NPMT120408L	GP-12	M2.5x6.5	M3.5x9	T8/T15	200-2500	70	20-2500	25/32
35	D63.02	NPHT130404R	NPMT090404R	NPMT120408L	GP-12	M2.5x6.5	M3.5x9	T8/T15	200-2500	70	20-2500	25/32
36	D64.02	NPHT130404R	NPMT120404R	NPMT120408L	GP-12	M2.5x6.5	M3.5x9	T8/T15	200-2500	70	20-2500	25/32
37	D65.02	NPHT130404R	NPMT120404R	NPMT120408L	GP-12	M2.5x6.5	M3.5x9	T8/T15	200-2500	70	20-2500	25/32
38	D66.02	NPHT130404R	NPMT120404R	NPMT120408L	GP-12	M2.5x6.5	M3.5x9	T8/T15	200-2500	70	20-2500	25/32

Standard Cutting Conditions

GD-DH (29.00-66.00) (公制)的切削条件 Cutting Conditions for GD-DH (29.00-66.00) (METRIC)

ISO	Material (材料)		Condition (条件)	Tensile Strength [N/mm2] 抗拉强度[牛顿/平方毫米]	Hardness HB 硬度HB
P	Non-alloy steel and cast steel, free cutting steel (非合金钢和铸钢、易切削钢)	<0.25%C	Annealed(退火)	420	125
		≥0.25%C	Annealed(退火)	650	190
		<0.55%C	Quenched and tempered (淬火和回火)	850	250
		≤0.55%C	Annealed(退火)	750	220
			Quenched and tempered (淬火和回火)	1000	300
	Low alloy steel and cast steel (less than 5% of alloying elements) 低合金钢和铸钢 (低于合金元素的5%)		Annealed(退火)	600	200
			Quenched and tempered (淬火和回火)	930	275
				1000	300
				1200	350
	High alloyed steel, cast steel and tool steel (高合金钢、铸钢和工具钢)		Annealed(退火)	680	200
			Quenched and tempered (淬火和回火)	1100	325
	Stainless steel and cast steel (不锈钢和铸钢)		Ferritic/martensitic (铁素体/马氏体)	680	200
			Martensitic (马氏体不锈钢)	820	240
M	Stainless steel and cast steel (不锈钢和铸钢)		Austenitic, Duplex(奥氏体,双)	600	180
K	Grey cast iron (GG) 灰铸铁 (GG)		Ferritic/pearlitic (铁素体/珠光体)		180
			Pearlitic/martensitic(珠光体/马氏体)		260
	Nodular cast iron (GGG) 球墨铸铁 (GGG)		Ferritic (铁素体)		160
			Pearlitic(珠光体)		250
	Malleable cast iron (可锻铸铁)		Ferritic (铁素体)		130
			Pearlitic(珠光体)		230
N	Alumin-umwrought alloy(铝变形合金)		Not hardenable (不可硬化)		60
			hardenable (可硬化)		100
	aluminum cast alloys (铝合金)	≤12% Si	Not hardenable (不可硬化)		75
			hardenable (可硬化)		90
		>12% Si	high temperature (高温)		130
	Copper alloys (铜合金)	>1% Pb	Free cutting (自由切割)		110
			Brass (黄铜)		90
			Electrolitic copper (化学铜)		100
S	High temp. alloys (高温,合金)		Fe based(铁基)	Annealed (退火)	200
				hardenable (可硬化)	280
			Ni or Co based (镍基或钴基)	Annealed (退火)	250
				hardenable (可硬化)	350
			Titanium alloys (钛合金)		Cast (铸造)
	Pure (纯)	400			
	alpha+beta alloys hardened (α + β 合金硬化)		1050		
H	hardened steel 淬火钢 ≥ 40HRC		Hardened (硬化)		

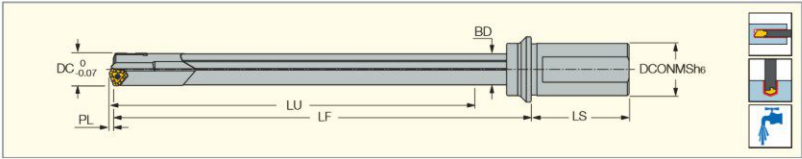
GD-DH (29.00-66.00) (公制)的切削条件 Cutting Conditions for GD-DH (29.00-66.00) (METRIC)

Material No. (材料编号)	Chipbreaker 断屑槽	Cutting Speed 切削速度 (m/min)	进给Feed:f (mm/rev) 钻径 Drill Dia. (毫米)	
			25.00 - 43.00	43.01 - 89.00
1	HF	70-130	0.11-0.41	0.14-0.45
	G	70-130	0.10-0.30	0.12-0.35
2	HF	70-130	0.11-0.41	0.14-0.45
	G	70-130	0.10-0.30	0.12-0.35
3	HF	70-130	0.11-0.41	0.14-0.45
	G	70-130	0.10-0.30	0.12-0.35
4	HF	70-130	0.11-0.41	0.14-0.45
	G	70-130	0.10-0.30	0.12-0.35
5	HF	70-130	0.11-0.41	0.14-0.45
	G	70-130	0.10-0.30	0.12-0.35
6	HF	70-120	0.11-0.41	0.20-0.45
	G	70-120	0.10-0.30	0.12-0.35
7	HF	55-110	0.11-0.41	0.20-0.45
	G	60-120	0.10-0.30	0.12-0.35
8	HF	55-110	0.11-0.41	0.20-0.45
	G	60-120	0.10-0.30	0.12-0.35
9	HF	55-110	0.11-0.41	0.20-0.45
	G	60-120	0.10-0.30	0.12-0.35
10	HF	55-110	0.11-0.38	0.20-0.40
	G	70-130	0.10-0.30	0.12-0.35
11	HF	55-110	0.11-0.38	0.20-0.40
	G	70-130	0.10-0.30	0.12-0.35
12	HF	40-110	0.11-0.41	0.20-0.45
	G	70-130	0.10-0.30	0.12-0.35
13	HF	40-110	0.11-0.41	0.20-0.45
	G	70-130	0.10-0.30	0.12-0.35
14	HF	40-110	0.11-0.41	0.20-0.45
	G	70-130	0.10-0.30	0.12-0.35
15	HF	50-110	0.11-0.38	0.24-0.41
	G	50-110	0.10-0.25	0.12-0.35
16	HF	50-110	0.11-0.38	0.24-0.41
	G	50-110	0.10-0.25	0.12-0.35
17	HF	50-110	0.11-0.38	0.24-0.41
	G	50-110	0.10-0.25	0.12-0.35
18	HF	50-110	0.11-0.38	0.24-0.41
	G	50-110	0.10-0.25	0.12-0.35
19	HF	50-110	0.11-0.38	0.24-0.41
	G	50-110	0.10-0.25	0.12-0.35
20	HF	50-110	0.11-0.38	0.24-0.41
	G	50-110	0.10-0.25	0.12-0.35
21	HF	65-150	0.09-0.33	0.24-0.35
	G	65-130	0.10-0.25	0.12-0.35
22	HF	65-150	0.09-0.33	0.24-0.35
	G	65-130	0.08-0.23	0.12-0.27
23	HF	65-150	0.09-0.33	0.24-0.35
	G	65-130	0.08-0.23	0.12-0.27
24	HF	65-150	0.09-0.33	0.24-0.35
	G	65-130	0.08-0.23	0.12-0.27
25	HF	65-150	0.09-0.33	0.24-0.35
	G	65-130	0.08-0.23	0.12-0.27
26	HF	65-150	0.09-0.33	0.24-0.35
	G	65-130	0.08-0.23	0.12-0.27
27	HF	65-150	0.09-0.33	0.24-0.35
	G	65-130	0.08-0.23	0.24-0.35
28	HF	65-150	0.09-0.33	0.24-0.35
	G	65-130	0.08-0.23	0.12-0.27
31	HF	20-55	0.09-0.30	0.20-0.33
	G	20-50	0.08-0.23	0.12-0.27
32	HF	20-55	0.09-0.30	0.20-0.33
	G	20-50	0.08-0.23	0.12-0.27
33	HF	20-55	0.09-0.30	0.20-0.33
	G	20-50	0.08-0.23	0.12-0.27
34	HF	20-55	0.09-0.30	0.20-0.33
	G	20-50	0.08-0.23	0.12-0.27
35	HF	20-55	0.09-0.30	0.20-0.33
	G	20-50	0.08-0.23	0.12-0.27
36	HF	30-60	0.09-0.30	0.20-0.33
	G	30-60	0.08-0.23	0.12-0.27
37	HF	30-60	0.09-0.30	0.20-0.33
	G	30-60	0.08-0.23	0.12-0.27
38	HF	30-60	0.09-0.30	0.20-0.33
	G	30-60	0.08-0.23	0.12-0.27

GD-DH

枪钻携带三角形刀片，具有3个切屑面，用于扩孔、模具、铸铁铸件

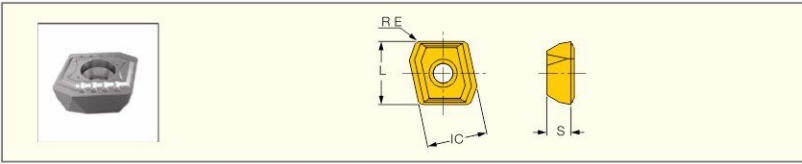
The gun drill is equipped with triangular blades and has three cutting surfaces, and is used for reaming, molds, and cast iron castings.



NPMX 0803 RB/RG

钻孔头刀片 DSD-EC / DDD-EC / DSD-IC

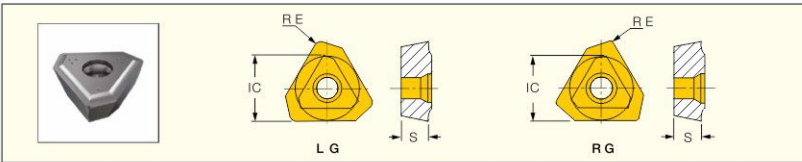
Inserts for Drilling Heads DSD-EC / DDD-EC / DSD-IC



TPMX

用于钻孔/反钻孔/钻削工具的刀片

Inserts for Drilling / Counterboring / Trepanning Tools



名称 Designation	Dimensions 尺寸				Tough • Hard			
	IC	S	RE	L	IC8355	IC908	IC948	C806
TPMX 140304R-B	8.45	3.50	0.40			•		•
TPMX 140308L-G	8.45	3.50	0.80			•		
TPMX 140308R-B	8.45	3.50	0.80				•	•
TPMX 140308R-DT	8.45	3.50	0.80			•	•	
TPMX 140308R-G	8.45	3.50	0.80		•	•	•	•
TPMX 170404L-BG	10.30	4.00	0.40			•		
TPMX 170404R-B	10.30	4.00	0.40			•		•
TPMX 170408L-DT	10.30	4.00	0.80			•		
TPMX 170408L-G	10.30	4.00	0.80			•	•	
TPMX 170408R-B	10.30	4.00	0.80				•	•
TPMX 170408R-BG	10.30	4.00	0.80			•	•	•
TPMX 170408R-DT	10.30	4.00	0.80			•	•	
TPMX 170408R-G	10.30	4.00	0.80		•	•	•	•
TPMX 240504L-BG	14.20	5.50	0.40			•		
TPMX 240504R-B	14.20	5.50	0.40			•		•
TPMX 240512L-DT	14.20	5.50	1.20			•		
TPMX 240512L-G	14.20	5.50	1.20			•	•	
TPMX 240512R-B	14.20	5.50	1.20			•	•	•
TPMX 240512R-BG	14.20	5.50	1.20			•	•	•
TPMX 240512R-DT	14.20	5.50	1.20			•	•	
TPMX 240512R-G	14.20	5.50	1.20		•	•	•	•
TPMX 280708L-BG	17.00	7.50	0.80			•		
TPMX 280708R-B	17.00	7.50	0.80			•		•
TPMX 280716L-G	17.00	7.50	1.60			•	•	
TPMX 280716R-B	17.00	7.50	1.60				•	•
TPMX 280716R-BG	17.00	7.50	1.60			•	•	•
TPMX 280716R-DT	17.00	7.50	1.60			•	•	
TPMX 280716R-G	17.00	7.50	1.60		•	•	•	•

驱动器 Drivers

驱动器可用于专用和数控机床，适用于任何指定的直径和长度。以下

是驾驶员代码和技术数据。

Drivers are available for dedicated and CNC machines, for any specified diameter and length. Below are the driver codes and technical data.

Driver Type (驱动程序类型)	Drawing(绘图)	DxL	Driver Code (驱动程序代码)
Cylindrical DIN1835A DIN6535HA (圆柱形 DIN1835A DIN6535HA)		.75x2.03"	95
		25x50	10
		25x56	11
		1.00x2.28"	96
		1.25x2.28"	97
		32x60	12
Weldon DIN1835B DIN6535HB (焊件 DIN1835B DIN6535HB)		40x70	13
		.75x2.03"	99
		20x50	22
		25x56	23
		1.00x2.28"	100
		1.25x2.28"	101
Whistle Notch DIN1835E (口哨形 DIN1835E)		32x60	24
		40x70	25
		20x50	34
		25x56	35
		32x60	36
		40x70	37

用于加工中心、车床等的标准

枪钻驱动器。

Standard Gundrill Drivers for
Machining Centers, Lathes,
etc.

枪钻的标准驱动器

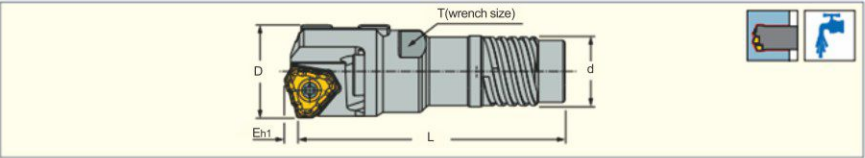
Standard Drivers for Gundrill Machines

Driver Type (驱动程序类型)	Drawing(绘图)	DxL	Driver Code (驱动程序代码)
DIN228AK		CM1	45
		CM2	46
		CM3	47
		CM4	48
DIN228BK		CM1	49
		CM2	50
		CM3	51
		CM4	52
Central Clamping Surface 15° (中心夹 紧面15°)		.750x2.75	56
		25x70	57
		1.00x2.75"	58
		1.25x2.75"	59
		1.50x2.75"	60
Frontal Clamping Surface 15° (正面夹 紧面15°)		16x50	61
Cylindrical with Thread (圆柱螺纹)		25x100 M16x1.5	66
		36x120 M24x1.5	67
VDI Design (VDI设计)		25x112 M16x1.5	70
		36x135 M24x1.5	71
Central Clamping Hexagonal (中心夹 紧六角形)		25x70	72
		32x70	73
Central Clamping Tapered (中心夹 紧锥)		.75x2.75"	76
		20x70	77
Frontal Clamping Surface 2° (正面夹 紧面2°)		1.00x2.75"	80
		1.00x3.94"	81
		1.25x2.75"	82
		1.25x3.94"	83
		1.50x2.75"	84
		1.50x3.94"	85
Trapezoidal Thread (梯形 螺纹)		28x126 Tr 28x2	88
		36x162 Tr 36x2	89
Spraymist Driver (喷雾 驱动柄)		25x50	91
		35x60	92

Internal Chip Evacuation Gun Drill

DSD-EF-FT

带三角形镶件的外部4螺纹连接的深单管钻头
Deep Single Tube Drills with External 4 Start Thread Connection Carrying Triangular Inserts



Designation	Dmin	Dmax	L	Eht	d	Ts ⁽¹⁾
DSD-EF 16.00-16.70-FT	16.00	16.70	55.00	2.20	12.60	TS-I0
DSD-EF 16.71-17.70-FT	16.71	17.70	55.00	2.20	13.60	TS-I1
DSD-EF 17.71-18.90-FT	17.71	18.90	56.00	3.00	14.50	TS-I2
DSD-EF 18.91-20.00-FT	18.91	20.00	56.00	3.00	15.50	TS-I3
DSD-EF 20.01-21.80-FT	20.01	21.80	60.00	3.20	16.00	TS-I4
DSD-EF 21.81-21.99-FT	21.81	21.99	63.50	3.20	18.00	TS-I5
DSD-EF 22.00-24.10-FT	22.00	24.10	65.50	3.40	18.00	TS-I5
DSD-EF 24.11-25.00-FT	24.11	25.00	65.50	3.40	19.50	TS-I6
DSD-EF 25.01-26.40-FT	25.01	26.40	67.50	3.60	19.50	TS-I6
DSD-EF 26.41-28.00-FT	26.41	28.00	67.50	3.60	21.00	TS-I7

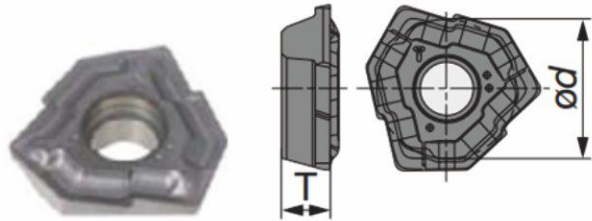
- 注意：附加目录页中的每个项目代表一个直径范围 Note:Each item in the attached catalog page represents a diameter range
- 备件请参见616,630-647页，插入信息和用户指南 For spare parts,insert information and user guide,see pages 616,630-647
- 插入件和导向垫应单独订购 Inserts and guide pads shoule be ordered separately
- 订购示例：DSD-EF016.50-FT Ordering example:DSD-EF016.50-FT
管设计 Tube designation



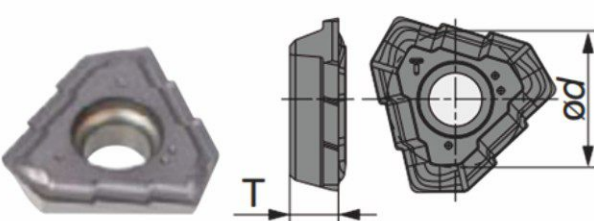
For inserts,see pages:TOGT(650)

For holders,see pages:TS-I**(626)

刀片 Blade



TOGT-DT(080...)

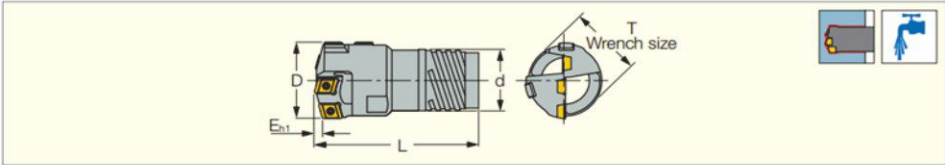


TOGT-DT(090...-120...)

Designation	ØDc	AH725	Ød	T
TOGT 080305-DT	16-18	●	8.55	2.8
TOGT 090305-DT	18.01-20	●	8.32	3
TOGT 100305-DT	20.01-21.99	●	9.23	3.3
TOGT 110405-DT	22-25	●	10.4	3.8
TOGT 120405-DT	25.01-28	●	11.59	4.3

DSD-EF-FB

用于高进给量的外置4螺纹深单管钻头
Deep Single Tube Drills with External 4 Start Thread for High Feed



Designation	Dmin	Dmax	L	Eht	d	T	Ts ⁽¹⁾
DSD-EF 25.00-26.40-FB	25.00	26.40	70.00	3.00	19.5	19.0	TS-I6
DSD-EF 26.41-28.70-FB	26.41	28.70	70.00	3.00	21.00	21.0	TS-I7
DSD-EF 28.71-31.00-FB	28.71	31.00	75.00	3.00	23.5	24.0	TS-I8
DSD-EF 31.01-33.30-FB	31.01	33.30	78.00	3.00	25.5	26.0	TS-I9
DSD-EF 33.31-36.20-FB	33.31	36.20	80.00	3.00	28.00	28.0	TS-I10
DSD-EF 36.21-39.60-FB	36.21	39.60	90.00	4.00	30.00	30.0	TS-I11
DSD-EF 39.61-43.00-FB	39.61	43.00	95.00	4.00	33.00	32.0	TS-I12
DSD-EF 43.01-47.00-FB	43.01	47.00	100.00	4.00	36.00	36.0	TS-I13
DSD-EF 47.01-51.70-FB	47.01	51.70	100.00	4.00	39.00	38.0	TS-I14
DSD-EF 51.71-56.20-FB	51.71	56.20	110.00	4.00	43.00	46.0	TS-I15
DSD-EF 56.21-60.60-FB	56.21	60.60	115.00	5.00	47.00	50.0	TS-I16
DSD-EF 60.61-65.00-FB	60.61	65.00	115.00	5.00	51.00	54.0	TS-I17

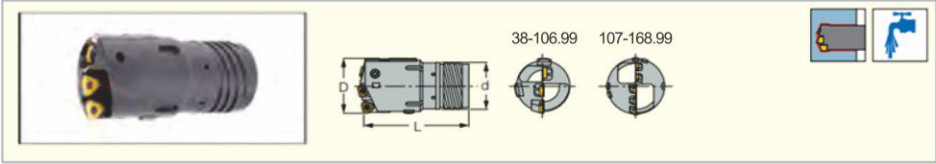
DSD-EF-FB/DDD-EF-FB/DSD-IF-FB

Drill Diameter	Insert									Guide Pad		
	① Peripheral Insert	Screw	Key	② Inner Insert	Screw	Key	③ Center Insert	Screw	Key	④	Screw	Key
25.00-28.00	NPHT 06003RG SR 11201753-2 T-7/5			NPMT 05503R2 SR 11201753-2 T-7/5			NPMT 05503L2 SR 11201753-2 T-7/5			GPS06 SR 11201753-1 T-7/5		
28.01-29.99	NPHT 06003RG SR 11201753-2 T-7/5			NPMT 05503R2 SR 11201753-2 T-7/5			NPMT 06504L2 SR 11201753-2 T-8/5			GPS06 SR 11201753-1 T-7/5		
30.00-35.00	NPHT 07504RG SR 11201753-3 T-8/5			NPMT 06504R2 SR 11201753-3 T-8/5			NPMT 06504L2 SR 11201753-3 T-8/5			GPS07 SR 11201753-4 T-9/5		
35.01-38.00	NPHT 07504RG SR 11201753-3 T-8/5			NPMT 06504R2 SR 11201753-3 T-8/5			NPMT 0804L2 SR 11201753-3 T-8/5			GPS07 SR 11201753-4 T-9/5		
38.01-39.00	NPHT 09004RG SR 11201753-3 T-8/5			NPMT 06504R2 SR 11201753-3 T-8/5			NPMT 0804L2 SR 11201753-3 T-8/5			GPS07 SR 11201753-4 T-9/5		
39.01-41.00	NPHT 09004RG SR 11201753-3 T-8/5			NPMT 06504R2 SR 11201753-3 T-8/5			NPMT 0804L2 SR 11201753-3 T-8/5			GPS08 SR 11201753-4 T-9/5		
41.01-44.00	NPHT 09004RG SR 11201753-3 T-8/5			NPMT 0804R2 SR 11201753-3 T-8/5			NPMT 0804L2 SR 11201753-3 T-8/5			GPS08 SR 11201753-4 T-9/5		
44.01-45.00	NPHT 09004RG SR 11201753-3 T-8/5			NPMT 0804R2 SR 11201753-3 T-8/5			NPMT 09504L2 SR 11201753-3 T-8/5			GPS08 SR 11201753-4 T-9/5		
45.01-47.00	NPHT 09004RG SR 11201753-3 T-8/5			NPMT 0804R2 SR 11201753-3 T-8/5			NPMT 09504L2 SR 11201753-3 T-8/5			GPS10 SR 11201753-6 T-15/5		
47.01-51.00	NPHT 11004RG SR 11201753-3 T-8/5			NPMT 0804R2 SR 11201753-3 T-8/5			NPMT 09504L2 SR 11201753-3 T-8/5			GPS10 SR 11201753-6 T-15/5		
51.01-54.00	NPHT 11004RG SR 11201753-3 T-8/5			NPMT 09504R2 SR 11201753-3 T-8/5			NPMT 09504L2 SR 11201753-3 T-8/5			GPS10 SR 11201753-6 T-15/5		
54.01-57.00	NPHT 11004RG SR 11201753-3 T-8/5			NPMT 09504R2 SR 11201753-3 T-8/5			NPMT 12504L2 SR 11201753-3 T-8/5			GPS10 SR 11201753-6 T-15/5		
57.01-60.00	NPHT 11004RG SR 11201753-3 T-8/5			NPMT 09504R2 SR 11201753-3 T-8/5			NPMT 12504L2 SR 11201753-3 T-8/5			GPS12 SR 11201753-6 T-15/5		
60.01-64.00	NPHT 13004RG SR 11201753-3 T-8/5			NPMT 09504R2 SR 11201753-3 T-8/5			NPMT 12504L2 SR 11201753-3 T-8/5			GPS12 SR 11201753-6 T-15/5		
64.01-65.00	NPHT 13004RG SR 11201753-3 T-8/5			NPMT 12504R2 SR 11201753-3 T-8/5			NPMT 12504L2 SR 11201753-3 T-8/5			GPS12 SR 11201753-6 T-15/5		

Internal Chip Evacuation Gun Drill

DDD-EC
Deep Double Tube Drills with
External 4 Start Thread and Cartridges

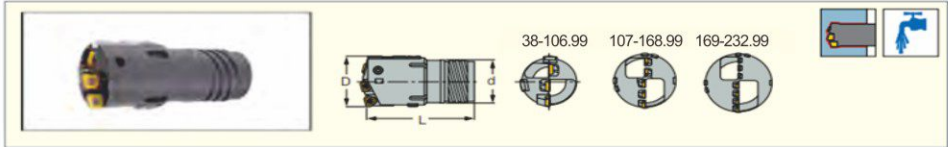
DDD-EC
深双管钻；外部4起始螺纹和药筒



Designation	Dmin	Dmax	L	d	TS(1)	Tsi(2)
DDD-EC 38.00-39.60	38.00	39.60	85.00	33.00	TDO-I8	TDI-N8
DDD-EC 39.61-43.00	39.61	43.00	85.00	36.00	TDO-I9	TDI-N9
DDD-EC 43.01-47.00	43.01	47.00	95.00	39.00	TDO-I10	TDI-N10
DDD-EC 47.01-51.70	47.01	51.70	100.00	43.00	TDO-I11	TDI-N11
DDD-EC 51.71-56.20	51.71	56.20	100.00	47.00	TDO-I12	TDI-N12
DDD-EC 56.21-65.00	56.21	65.00	110.00	51.00	TDO-I13	TDI-N13
DDD-EC 65.01-66.99	65.00	66.99	150.00	52.00	TDO-I14	TDI-N14
DDD-EC 67.00-72.99	67.00	72.99	150.00	58.00	TDO-I15	TDI-N15
DDD-EC 73.00-79.99	73.00	79.99	150.00	63.00	TDO-I16	TDI-N16
DDD-EC 80.00-86.99	80.00	86.99	180.00	70.00	TDO-I17	TDI-N17
DDD-EC 87.00-99.99	87.00	99.99	180.00	77.00	TDO-I18	TDI-N18
DDD-EC 100.00-106.99	100.00	106.99	180.00	89.00	TDO-I19	TDI-N19
DDD-EC 107.00-111.99	107.00	111.99	180.00	89.00	TDO-I20	TDI-N20
DDD-EC 112.00-123.99	112.00	123.99	205.00	101.00	TDO-I21	TDI-N21
DDD-EC 124.00-135.99	124.00	135.99	205.00	113.00	TDO-I22	TDI-N22
DDD-EC 136.00-147.99	136.00	147.99	205.00	125.00	TDO-I23	TDI-N23
DDD-EC 148.00-159.99	148.00	159.99	225.00	137.00	TDO-I24	TDI-N24
DDD-EC 160.00-168.99	160.00	168.99	225.00	149.00	TDO-I25	TDI-N25

DSD-EC
Deep Single Tube Drills withExternal
4 Start Thread and;Cartridges

DSD-EC
深单管钻；外部4起始螺纹和滤芯



Designation	Dmin	Dmax	L	d	TS(1)
DSD-EC 38.00-39.60	38.00	36.90	85.00	30.00	TS-I11
DSD-EC 39.60-43.00	39.61	43.00	85.00	33.00	TS-I12
DSD-EC 43.01-47.00	43.01	47.00	95.00	36.00	TS-I13
DSD-EC47.01-51.70	47.01	51.70	95.00	39.00	TS-I14
DSD-EC51.71-56.20	51.71	56.20	100.00	43.00	TS-I15
DSD-EC56.21-60.60	56.21	60.60	110.00	47.00	TS-I16
DSD-EC60.61-64.99	60.61	64.99	110.00	51.00	TS-I17
DSD-EC65.00-66.99	65.00	66.99	150.00	52.00	TS-I18
DSD-EC67.00-72.99	67.00	72.99	150.00	58.00	TS-I19
DSD-EC73.00-79.99	73.00	79.99	150.00	63.00	TS-I20
DSD-EC80.00-86.99	80.00	86.99	180.00	70.00	TS-I21
DSD-EC87.00-99.99	87.00	99.99	180.00	77.00	TS-I22
DSD-EC100.00-111.99	100.00	106.99	180.00	89.00	TS-I23
DSD-EC107.00-111.99	107.00	111.99	180.00	89.00	TS-I23
DSD-EC112.00-123.99	112.00	123.99	205.00	101.00	TS-I24
DSD-EC124.00-135.99	124.00	135.99	205.00	113.00	TS-I25
DSD-EC136.00-147.99	136.00	147.99	205.00	125.00	TS-I26
DSD-EC148.00-159.99	148.00	159.99	225.00	137.00	TS-I27
DSD-EC160.00-168.99	160.00	168.99	225.00	149.00	TS-I28
DSD-EC169.00-171.99	169.00	171.99	230.00	149.00	TS-I28
DSD-EC172.00-183.99	172.00	183.99	230.00	161.00	TS-I29
DSD-EC184.00-195.99	184.00	195.99	250.00	173.00	TS-I30
DSD-EC196.00-207.99	196.00	207.99	250.00	185.00	TS-I31
DSD-EC208.00-219.99	208.00	219.99	250.00	197.00	TS-I32
DSD-EC220.00-231.99	220.00	231.99	270.00	208.00	TS-I33
DSD-EC232.00-232.99	232.00	232.99	270.00	220.00	TS-I34

DSD-EC/
DDD-EC/
DSD-IC



Pg. 622



Pg. 622



Pg. 625



Pg. 624



Pg. 625



Pg. 621



Pg. 621

Diameter	Peripheral	Qty	Inner/ Central	Qty	Guide Pad	Qty	Guide Pad Protectors	Qty	Sub Guide Pad	Qty	Peripheral Insert	Qty	Inner/Central Insert	Qty
38.00-9.99	CAOD-080	1	CAID-080	2	GPS-08-25-155	2	GPP-06	2	SGP-02	1	NPMX 0803RG	1	NPMX 0803RG	2
40.00-44.99	CAOD-0845	1	CAID-080	2	GPS-08-25-155	2	GPP-06	2	SGP-02	1	NPMX 1403RG	1	NPMX 0803RG	2
45.00-47.99	CAOD-0845	1	CAID-080 CAID-0845	1 1	GPS-10-35-200	2	GPP-07	2	SGP-02	1	NPMX 1403RG	1	NPMX 0803RG NPMX 1403RG	1 1
48.00-51.99	CAOD-0845	1	CAID-0845	2	GPS-10-35-200	2	GPP-07	2	SGP-02	1	NPMX 1403RG	1	NPMX 1403RG	2
52.00-54.99	CAOD-103	1	CAID-0845	2	GPS-10-35-200	2	GPP-07	2	SGP-02	1	NPMX 1704RG	1	NPMX 1403RG	2
55.00-57.99	CAOD-103	1	CAID-0845 CAID-103	1 1	GPS-10-35-200	2	GPP-07	2	SGP-02	1	NPMX 1704RG	1	NPMX 1403RG NPMX 1704RG	1 1
58.00-59.99	CAOD-103	1	CAID-103	2	GPS-10-35-200	2	GPP-07	2	SGP-02	1	NPMX 1704RG	1	NPMX 1704RG	2
60.00-63.99	CAOD-103	1	CAID-103	2	GPS-14-40-250	2	GPP-08	2	SGP-02	1	NPMX 1704RG	1	NPMX 1704RG	2
64.00-67.99	CAOD-142	1	CAID-103	2	GPS-14-40-250	2	GPP-08	2	SGP-03	1	NPMX 2405RG	1	NPMX 1704RG	2
68.00-77.99	CAOD-103	1	CAID-142	2	GPS-14-40-250	2	GPP-08	2	SGP-03	1	NPMX 1704RG	1	NPMX 2405RG	2
78.00-84.99	CAOD-142	1	CAID-142	2	GPS-14-40-250	2	GPP-08	2	SGP-03	1	NPMX 2405RG	1	NPMX 2405RG	2
85.00-91.99	CAOD-170	1	CAID-142	2	GPS-14-40-250	2	GPP-08	2	SGP-03	1	NPMX 2807RG	1	NPMX 2405RG	2
92.00-98.99	CAOD-142	1	CAID-170	2	GPS-14-40-250	2	GPP-08	2	SGP-03	1	NPMX 2405RG	1	NPMX 2807RG	2
99.00-106.99	CAOD-170	1	CAID-170	2	GPS-18-40-300	2	GPP-09	2	SGP-04	1	NPMX 2807RG	1	NPMX 2807RG	2
107.00-117.99	CAOD-142	1	CAID-103 CAID-142	3 1	GPS-18-40-300	2	GPP-09	2	SGP-04	1	NPMX 2405RG	1	NPMX 1704RG NPMX 2405RG	3 1
118.00-135.99	CAOD-142	1	CAID-142	4	GPS-18-40-300	2	GPP-09	2	SGP-04	1	NPMX 2405RG	1	NPMX 2405RG	4
136.00-144.99	CAOD-142	1	CAID-142 CAID-170	3 1	GPS-18-40-300	4	GPP-09	4	SGP-04	1	NPMX 2405RG	1	NPMX 2405RG NPMX 2807RG	3 1
145.00-150.99	CAOD-142	1	CAID-142 CAID-170	2 2	GPS-18-40-300	4	GPP-09	4	SGP-04	1	NPMX 2405RG	1	NPMX 2405RG NPMX 2807RG	2 2
151.00-156.99	CAOD-170	1	CAID-142 CAID-170	2 2	GPS-18-40-300	4	GPP-09	4	SGP-04	1	NPMX 2807RG	1	NPMX 2405RG NPMX 2807RG	2 2
157.00-162.99	CAOD-170	1	CAID-142 CAID-170	1 3	GPS-18-40-300	4	GPP-09	4	SGP-04	1	NPMX 2807RG	1	NPMX 2405RG NPMX 2807RG	1 3
163.00-168.99	CAOD-170	1	CAID-170	4	GPS-18-40-300	4	GPP-09	4	SGP-04	1	NPMX 2807RG	1	NPMX 2405RG	4
169.00-188.99	CAOD-142	1	CAID-142	6	GPS-18-40-300	4	GPP-09	4	SGP-04	1	NPMX 2405RG	1	NPMX 2807RG	6
189.00-196.99	CAOD-142	1	CAID-142 CAID-170	5 1	GPS-18-40-300	4	GPP-09	4	SGP-04	1	NPMX 2405RG	1	NPMX 2405RG NPMX 2807RG	5 1
197.00-202.99	CAOD-142	1	CAID-142 CAID-170	4 2	GPS-18-40-300	4	GPP-09	4	SGP-04	1	NPMX 2405RG	1	NPMX 2405RG NPMX 2807RG	4 2
203.00-208.99	CAOD-142	1	CAID-142 CAID-170	3 3	GPS-18-40-300	4	GPP-09	4	SGP-04	1	NPMX 2405RG	1	NPMX 2405RG NPMX 2807RG	3 3
209.00-214.99	CAOD-170	1	CAID-142 CAID-170	3 3	GPS-18-40-300	4	GPP-09	4	SGP-04	1	NPMX 2807RG	1	NPMX 2405RG NPMX 2807RG	3 3
215.00-220.99	CAOD-170	1	CAID-142 CAID-170	2 4	GPS-18-40-300	4	GPP-09	4	SGP-04S	1	NPMX 2807RG	1	NPMX 2405RG NPMX 2807RG	2 4
221.00-226.99	CAOD-170	1	CAID-142 CAID-170	1 5	GPS-18-40-300	4	GPP-09	4	SGP-04	1	NPMX 2807RG	1	NPMX 2405RG NPMX 2807RG	1 5

CAOD
镗孔头外围筒
Boring Head Peripheral Cartridge



Designation	Adjustment Screw	Key	Locking Screw	Key	Insert	Insert Clamping Screw
CAOD-080	SR11201755-7	H1.5	SR11201756-11	HW2.0	NPMX 0803RG	SR 11201753-2
CAOD-0845	SR11201755-6	H2.0	SR11201756-10	HW2.5	TPMX 1403RG	SR 11201753-3
CAOD-085	SR11201755-7	H2.0	SR11201756-10	HW2.5	TPMX 1403RG	SR 11201753-3
CAOD-103	SR11201755-8	H2.5	SR11201756-12	HW3.0	TPMX 1704RG	SR 11201753-7
CAOD-142	SR11201755-9	H2.5	SR11201756-15	HW4.0	TPMX 2405RG	SR 11201753-9
CAOD-170	SR11201755-11	H3.0	SR11201756-15	HW4.0	TPMX 2807RG	SR 11201753-10

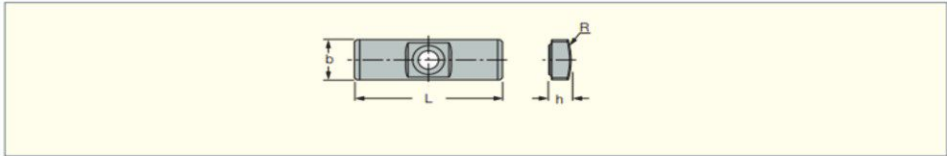
Internal Chip Removal Blade

CAID
镗孔头内筒
Boring Head Inner Cartridge



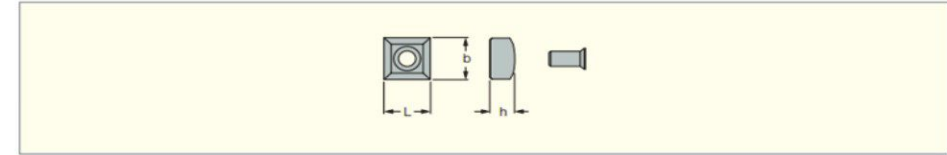
Designation	Key	Locking Screw	Key	Insert	Insert Clamping Screw
CAID-080	HW1.5	SR11201753-5	T-9/51	NPMX 0803RG	SR 11201753-2
CAID-0845	HW2.0	SR11201753-5	T-15/51	TPMX 1403RG	SR 11201753-3
CAID-085	HW2.0	SR11201753-5	T-15/51	TPMX 1403RG	SR 11201753-3
CAID-103	HW2.5	SR11201752-1	T-15/51	TPMX 1704RG	SR 11201753-7
CAID-142	HW2.5	SR11201756-7	HW 3.0	TPMX 2405RG	SR 11201753-9
CAID-170	HW2.5	SR11201756-7	HW 3.0	TPMX 2807RG	SR 11201753-10

GPS
深钻头硬质合金导向垫
Deep Drilling Head Solid Carbide Guide Pads



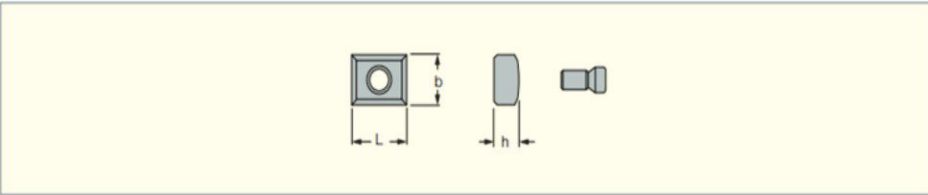
Designation	Dimensions				Tough ↔ Hard	
	b	R	L	h	IC950	IC908
GPS-05-18-060	5.0	6.00	18.00	2.5		•
GPS-06-20-075	6.0	7.50	20.00	3.0	•	•
GPS-06-20-085	6.0	8.50	20.00	3.0	•	•
GPS-06-20-100	6.0	10.00	20.00	3.0	•	•
GPS-06-20-120	6.0	12.00	20.00	3.0	•	•
GPS-07-20-120	7.0	12.00	20.00	3.5	•	•
GPS-08-25-155	8.0	15.50	25.00	4.5	•	•
GPS-10-30-200	10.0	20.00	30.00	4.5	•	•
GPS-10-35-200	10.0	20.00	35.00	6.0	•	•
GPS-12-35-250	12.0	25.00	35.00	5.5	•	•
GPS-14-40-250	14.0	25.00	40.00	7.5		•
GPS-18-40-300	18.0	30.00	40.00	9.0		•

GPP
钻孔头导向垫保护器
Boring Head Guide Pad Protectors



Designation	L	b	h	Clamping Screw	Key
GPP-01	6.00	6.0	3.3	SR 11201753-1	T-7/15
GPP-02	6.00	6.0	3.8	SR 11201753-1	T-7/15
GPP-03	6.00	6.0	3.9	SR 11201753-1	T-7/15
GPP-04	8.00	8.0	4.4	SR 11201753-4	T-9/15
GPP-05	8.00	8.0	3.5	SR 11201753-4	T-9/15
GPP-06	8.00	8.0	4.5	SR 11201753-4	T-9/15
GPP-07	10.00	10.0	6.0	SR 11201753-8	T-15/51
GPP-08	14.00	14.0	7.5	SR 11201752-2	T-15/51
GPP-09	18.00	18.0	9.0	SR 11201756-15	HW 3.0

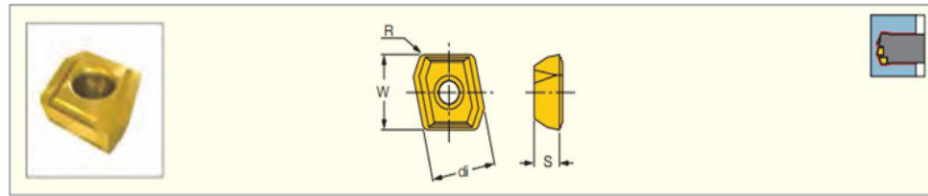
SGP
钻孔头副导向垫
Boring Head Sub-Guide Pads



Designation	L	b	h	Clamping Screw	Key
SGP-01	10.00	6.0	3.0	SR 11201753-1	T-7/15
SGP-02	10.00	8.0	4.5	SR 11201753-4	T-9/15
SGP-03	10.00	10.0	5.0	SR 11201753-4	T-9/15
SGP-04	20.00	14.0	7.0	SR 11201752-2	T-15/51

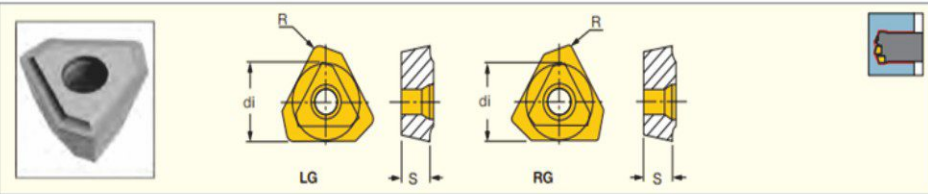
Select an outer cartridge and pad for the required enlarged diameter.

NPMX 0803 RB/RG
钻头DSD-EC/DDD-EC/DSD-IC
Inserts for Drilling Heads
DSD-EC/DDD-EC/DSD-IC



Designation	Dimensions				Tough ↔ Hard		
	di	S	R	W	IC950	IC908	IC520
NPMX 0803RB	8.00	3.18	0.40	8.36	•	•	•
NPMX 0803RG	8.00	3.18	0.80	8.36	•	•	•

TPMX
钻头 Inserts Drilling Heads DSD-EC/
DDD-EC/DSD-IC/DSC-EC/DSC-IC

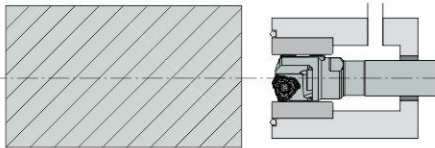
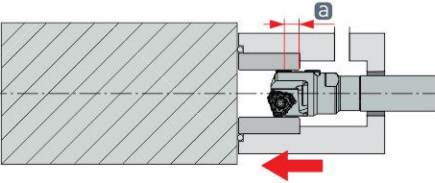
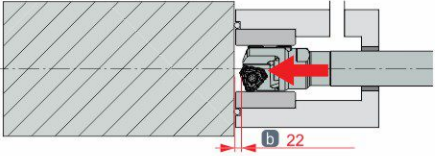


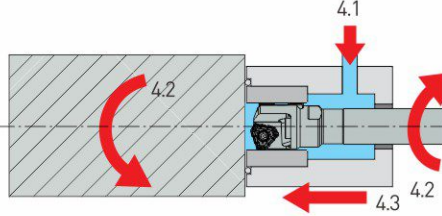
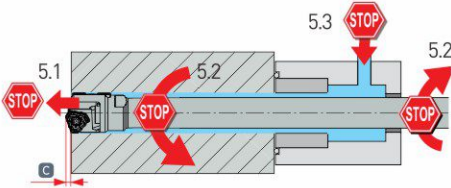
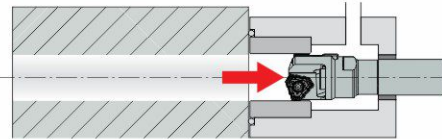
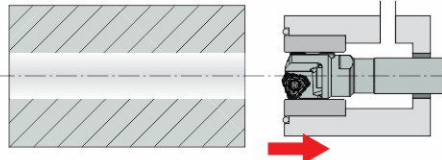
Designation	Dimensions			Tough ↔ Hard			
	di	S	R	IC9025	IC508	IC908	IC520
TPMX 1403R/LG	8.45	3.50	0.80	•	•	•	•
TPMX 1403R-DT	8.45	3.50	0.80			•	•
TPMX 1403RB	8.45	3.50	0.40	•		•	•
TPMX 1704R/LBG	10.30	4.00	0.80	•		•	•
TPMX 1704R/LG	10.30	4.00	0.80	•	•	•	•
TPMX 1704R-DT	10.30	4.00	0.80			•	•
TPMX 1704RBG	10.30	4.00	0.80			•	•
TPMX 2405R/LBG	14.20	5.50	1.20	•		•	•
TPMX 2405R/LG	14.20	5.50	1.20	•	•	•	•
TPMX 2405R-DT	14.20	5.50	1.20	•			•
TPMX 2405RBG	14.20	5.50	1.20	•		•	•
TPMX 2807R/LG	17.00	7.50	1.60	•		•	•
TPMX 2807R-DT	17.00	7.50	1.60			•	•
TPMX 2807RB	17.00	7.50	0.80	•		•	
TPMX 2807RBG	17.00	7.50	1.60			•	•

Suggestions For Machining Methods Using Internal Chip Removal Gun Drill

数控钻孔循环作业 CNC Drilling Cycle Operations

按照下面的说明使用CNC钻孔循环，以安全优化刀具性能
Use the CNC drilling cycle as instructed below in order to optimize the tool performance safely

	1. 开始CNC循环操作 Start the CNC cycle operation
	2. 移动油压头并牢固地密封在工件表面上 Move the oil pressure head and securely seal onto the face of the workpiece a 当压力头朝向工件表面移动时，确保定位钻头使导向垫保持在导向衬套内 Make sure to position the drill so that the guide pads remain inside the guide bushing when the pressure head is moved towards the workpiece face
	3. 将BTA钻头移向工件 Move the BTA drill toward the workpiece b 保持钻头3 - 5毫米*远离工件表面。 *如果机器允许第1步中的钻孔设置，请转到第4步 Keep the drill 3 - 5 mm* off the face of the workpiece. * If the machine allows this drill setting in Step 1, move on to Step 4

	4. 开始切割 Start the Cutting 4.1启动冷却剂供应 Activate the coolant supply 4.2开始旋转（钻头、工件或钻头+工件） Start the rotation (of the drill, the workpiece, or the drill+workpiece) 4.3启动钻头进给 Start the drill feed
	5. 停止切割 Stop the Cutting 5.1停止进给钻头 Stop the drill feed 5.2停止旋转 Stop the rotation 5.3停止冷却液供应 Stop the coolant supply C 当钻肩完全穿过工件端面时停止切削 Stop the cutting when the drill shoulder is completely through the end face of the workpiece
	6. 把钻头放回起点 Return the drill to the starting point
	7. 将油压头放回起点 Return the oil pressure head to the starting point

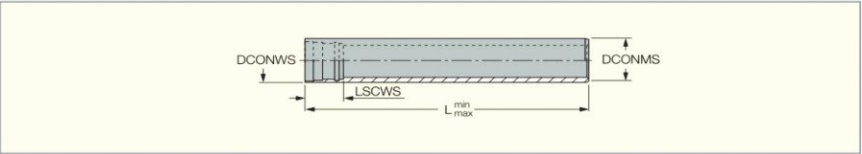
Inner Chip Removal Gun Drill Shank

TS-I**

Drill Tubes – STS System – Inner
4 Start Thread Connection

TS-I** 型

钻杆–STS系统–内部；4开始螺纹连接



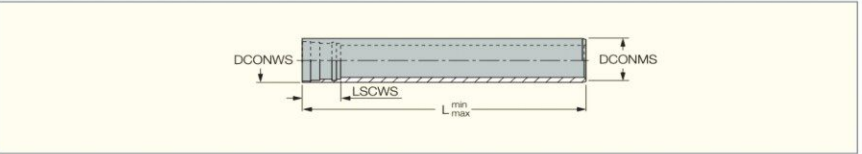
Designation	d Range	DCONMS	DCONMS	LSCWS	Lmin	Lmax
TS-I01 L=(0-1749)MM	12.60-13.60	11.00	9.60	22.00	0.0	1749.0
TS-I01 L=(1750-2600)MM	12.60-13.60	11.00	9.60	22.00	1750.0	2600.0
TS-I02 L=(0-1749)MM	13.61-14.60	12.00	10.60	22.00	0.0	1749.0
TS-I02 L=(1750-2600)MM	13.61-14.60	12.00	10.60	22.00	1750.0	2600.0
TS-I03 L=(0-1749)MM	14.61-15.59	13.00	11.60	22.00	0.0	1749.0
TS-I03 L=(1750-2600)MM	14.61-15.59	13.00	11.60	22.00	1750.0	2600.0
TS-I0 L=(0-1749)MM	15.60-16.70	14.00	12.60	21.00	0.0	1749.0
TS-I0 L=(1750-2600)MM	15.60-16.70	14.00	12.60	21.00	1750.0	2600.0
TS-I1 L=(0-1749)MM	16.61-17.70	15.00	13.60	21.00	0.0	1749.0
TS-I1 L=(1750-2600)MM	16.61-17.70	15.00	13.60	21.00	1750.0	2600.0
TS-I2 L=(0-1749)MM	17.71-18.90	16.00	14.50	22.00	0.0	1749.0
TS-I2 L=(1750-2600)MM	17.71-18.90	16.00	14.50	22.00	1750.0	2600.0
TS-I3 L=(0-1749)MM	18.91-20.00	17.00	15.50	22.00	0.0	1749.0
TS-I3 L=(1750-2600)MM	18.91-20.00	17.00	15.50	22.00	1750.0	2600.0
TS-I4 L=(0-1749)MM	20.01-21.80	18.00	16.00	27.50	0.0	1749.0
TS-I4 L=(1750-2600)MM	20.01-21.80	18.00	16.00	27.50	1750.0	2600.0
TS-I5 L=(0-1749)MM	21.81-24.10	20.00	18.00	30.00	0.0	1749.0
TS-I5 L=(1750-2600)MM	21.81-24.10	20.00	18.00	30.00	1750.0	2600.0
TS-I6 L=(0-1749)MM	24.11-26.40	22.00	19.50	30.00	0.0	1749.0
TS-I6 L=(1750-2600)MM	24.11-26.40	22.00	19.50	30.00	1750.0	2600.0
TS-I7 L=(0-1749)MM	26.41-28.70	24.00	21.00	30.00	0.0	1749.0
TS-I7 L=(1750-2600)MM	26.41-28.70	24.00	21.00	30.00	1750.0	2600.0
TS-I8 L=(0-1749)MM	28.71-31.00	26.00	23.50	33.00	0.0	1749.0
TS-I8 L=(1750-2600)MM	28.71-31.00	26.00	23.50	33.00	1750.0	2600.0
TS-I9 L=(0-1749)MM	31.01-33.30	28.00	25.50	33.00	0.0	1749.0
TS-I9 L=(1750-2600)MM	31.01-33.30	28.00	25.50	33.00	1750.0	2600.0
TS-I10 L=(0-1749)MM	33.31-36.20	30.00	28.00	33.00	0.0	1749.0
TS-I10 L=(1750-2600)MM	33.31-36.20	30.00	28.00	33.00	1750.0	2600.0
TS-I11 L=(0-1749)MM	36.21-39.60	33.00	30.00	40.00	0.0	1749.0
TS-I11 L=(1750-2600)MM	36.21-39.60	33.00	30.00	40.00	1750.0	2600.0
TS-I12 L=(0-1749)MM	39.61-43.00	36.00	33.00	40.00	0.0	1749.0
TS-I12 L=(1750-2600)MM	39.61-43.00	36.00	33.00	40.00	1750.0	2600.0
TS-I13 L=(0-1749)MM	43.01-47.00	39.00	36.00	40.00	0.0	1749.0
TS-I13 L=(1750-2600)MM	43.01-47.00	39.00	36.00	40.00	1750.0	2600.0
TS-I14 L=(0-1749)MM	47.01-51.70	43.00	39.00	40.00	0.0	1749.0
TS-I14 L=(1750-2600)MM	47.01-51.70	43.00	39.00	40.00	1750.0	2600.0
TS-I15 L=(0-1749)MM	51.71-56.20	47.00	43.00	44.00	0.0	1749.0
TS-I15 L=(1750-2600)MM	51.71-56.20	47.00	43.00	44.00	1750.0	2600.0
TS-I16 L=(0-1749)MM	56.21-60.60	51.00	47.00	44.00	0.0	1749.0
TS-I16 L=(1750-2600)MM	56.21-60.60	51.00	47.00	44.00	1750.0	2600.0
TS-I17 L=(0-1749)MM	60.61-64.99	56.00	51.00	44.00	0.0	1749.0
TS-I17 L=(1750-2600)MM	60.61-64.99	56.00	51.00	44.00	1750.0	2600.0
TS-I18 L=(0-1749)MM	65.00-66.99	56.00	52.00	75.00	0.0	1749.0
TS-I18 L=(1750-2600)MM	65.00-66.99	56.00	52.00	75.00	1750.0	2600.0
TS-I19 L=(0-1749)MM	67.00-72.99	62.00	58.00	75.00	0.0	1749.0
TS-I19 L=(1750-2600)MM	67.00-72.99	62.00	58.00	75.00	1750.0	2600.0

TS-I**

Drill Tubes – STS System – Inner
4 Start Thread Connection

TS-I** 型

钻杆–STS系统–内部；4开始螺纹连接



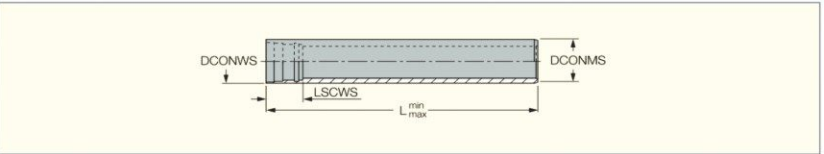
Designation	d Range	DCONMS	DCONMS	LSCWS	Lmin	Lmax
TS-I20 L=(0-1749)MM	73.00-79.99	68.00	63.00	75.00	0.0	1749.0
TS-I20 L=(1750-2600)MM	73.00-79.99	68.00	63.00	75.00	1750.0	2600.0
TS-I21 L=(0-1749)MM	80.00-86.99	75.00	70.00	97.00	0.0	1749.0
TS-I21 L=(1750-2600)MM	80.00-86.99	75.00	70.00	97.00	1750.0	2600.0
TS-I22 L=(0-1749)MM	87.00-99.99	82.00	77.00	97.00	0.0	1749.0
TS-I22 L=(1750-2600)MM	87.00-99.99	82.00	77.00	97.00	1750.0	2600.0
TS-I23 L=(0-1749)MM	100.00-111.99	94.00	89.00	97.00	0.0	1749.0
TS-I23 L=(1750-2600)MM	100.00-111.99	94.00	89.00	97.00	1750.0	2600.0
TS-I24 L=(0-1749)MM	112.00-123.99	100.00	101.00	118.00	0.0	1749.0
TS-I24 L=(1750-2600)MM	112.00-123.99	100.00	101.00	118.00	1750.0	2600.0
TS-I25 L=(0-1749)MM	124.00-135.99	118.00	113.00	118.00	0.0	1749.0
TS-I25 L=(1750-2600)MM	124.00-135.99	118.00	113.00	118.00	1750.0	2600.0
TS-I26 L=(0-1749)MM	136.00-147.99	130.00	125.00	118.00	0.0	1749.0
TS-I26 L=(1750-2600)MM	136.00-147.99	130.00	125.00	118.00	1750.0	2600.0
TS-I27 L=(0-1749)MM	148.00-159.99	142.00	137.00	139.00	0.0	1749.0
TS-I27 L=(1750-2600)MM	148.00-159.99	142.00	137.00	139.00	1750.0	2600.0
TS-I28 L=(0-1749)MM	160.00-171.99	154.00	149.00	139.00	0.0	1749.0
TS-I28 L=(1750-2600)MM	160.00-171.99	154.00	149.00	139.00	1750.0	2600.0

TS-I**(continued)

Drill Tubes – STS System – Inner
4 Start Thread Connection

TS-I**型（续）

钻杆–STS系统–内部；4开始螺纹连接



Designation	d Range	DCONMS	DCONMS	LSCWS	Lmin	Lmax
TS-I29 L=(0-1749)MM	172.00-183.99	166.00	161.00	139.00	0.0	1749.0
TS-I29 L=(1750-2600)MM	172.00-183.99	166.00	161.00	139.00	1750.0	2600.0
TS-I30 L=(0-1749)MM	184.00-195.99	178.00	173.00	144.00	0.0	1749.0
TS-I30 L=(1750-2600)MM	184.00-195.99	178.00	173.00	144.00	1750.0	2600.0
TS-I31 L=(0-1749)MM	196.00-207.99	190.00	185.00	144.00	0.0	1749.0
TS-I31 L=(1750-2600)MM	196.00-207.99	190.00	185.00	144.00	1750.0	2600.0
TS-I32 L=(0-1749)MM	208.00-219.99	202.00	197.00	144.00	0.0	1749.0
TS-I32 L=(1750-2600)MM	208.00-219.99	202.00	197.00	144.00	1750.0	2600.0
TS-I33 L=(0-1749)MM	220.00-231.99	214.00	208.00	164.00	0.0	1749.0
TS-I33 L=(1750-2600)MM	220.00-231.99	214.00	208.00	164.00	1750.0	2600.0
TS-I34 L=(0-1749)MM	232.00-243.99	226.00	220.00	164.00	0.0	1749.0
TS-I34 L=(1750-2600)MM	232.00-243.99	226.00	220.00	164.00	1750.0	2600.0

整体硬质合金枪钻

Solid Carbide Gun Drill

产品简介 Product Introduction



1-50mm

刃部直径范围 Diameter range of the cutting edge

550mm

制作长度 Production length

整体硬质合金枪钻是由钻身(钻尖与钻杆一体)钻柄两部分通过焊接成一个整体,也可以为全部整体硬质合金制做而成(钻尖、钻杆、钻柄一体),它的稳定性、效率以及寿命均优于焊接式。这种设计能够保证更高的可靠性和切削性能,同时它较高的刚性和较低的扭曲振动可以使刀具寿命更长。

The solid carbide gun drill is composed of two parts: the drill body (drill tip and drill pipe are integrated) and the drill shank, which are welded into one piece. It can also be made entirely of solid carbide (drill tip, drill pipe and drill shank are integrated). Its stability, efficiency and service life are all superior to the welded type. This design can ensure higher reliability and cutting performance. Meanwhile, its higher rigidity and lower torsional vibration can extend the tool life.

整体硬质合金枪钻库存表 Inventory list of solid carbide gun drills			L : TIALN
Φ1.52*160-10*55	Φ2.0*250-10*135	Φ3.8*185-4*38/50-L	
Φ1.80*160-10*55	Φ2.2*170-4*38/50	Φ3.8*240-10*100-L	
Φ2.02*160-10*55	Φ2.5*175-4*38/50-1	Φ3.8*275-10*135-L	
Φ2.02*180-10*55	Φ2.5*230-10*100-L	Φ4.0*185-4*38/50-L	
Φ2.02*180-10*55-L	Φ2.5*265-10*135-L	Φ4.0*240-10*100-L	
Φ2.02*200-10*55	Φ2.6*175-4*38/50-L	Φ4.0*275-10*135-L	
Φ2.02*200-10*55-L	Φ2.6*265-10*135-L	Φ4.2*185-4*38/50-L	
Φ2.52*180-10*55	Φ2.8*175-4*38/50-L	Φ4.2*240-10*100-L	
Φ2.52*180-10*55-L	Φ2.8*265-10*135-L	Φ4.2*275-10*135-L	
Φ3.02*180-10*55	Φ3.0*175-4*38/50	Φ4.5*285-10*135-L	
Φ3.02*200-10*55	Φ3.0*230-10*100-L	Φ4.8*250-10*100-L	
Φ3.02*200-10*55-L	Φ3.0*265-10*135-L	Φ5.0*250-10*100-L	
Φ2.8*170-2.9*30-L	Φ3.2*180-4*38/50-L	Φ5.0*260-10*100-L	
Φ3.0*170-2.9*30-L	Φ3.2*230-10*100-L	Φ6.0*260-10*100-L	
Φ3.2*170-3.1*30-L	Φ3.2*265-10*135-L	Φ6.0*295-10*135-L	
Φ1.80*200-10*100	Φ3.5*180-4*38/50-L	Φ7.0*280-10*100-L	
Φ2.0*170-4*38/50	Φ3.5*230-10*100-L	Φ9.0*280-10*100-L	
Φ2.0*220-10*100	Φ3.5*265-10*135-L	Φ10.0*280-10*100-L	

整体硬质合金枪钻刀柄

Solid Carbide Gun Drill Shank

整体硬质合金枪钻标准刀柄表 Solid carbide gun drill standard tool holder table

规格 Specification	外形尺寸 Overall dimensions mm	简图 Simple diagram	刀具长度计算 Tool length calculation		定位槽 Positioning slot X	螺纹规格 Thread specification M
			L1	L		
YC6-03	6		30	45	17	
YC10-15	10		55	70		M6x0.5
YC10-37	10		40	55	32.7	M6x0.5
YC10-42	10		40	55	24	
YC12.7-01	12.7		38	48	25.4	
YC12.7-09	12.7		51	65		M6x0.5
YC16-75	16		80	105	37	M10x1
YC4-08	4		34	46		
YC6-12	6		36	50		
YC10-51	10		40	55		
YC12-27	12		45	60		
YC16-86	16		48	63		
YC6-13	6		36	50	20	
YC10-47	10		40	55	23.5	
YC12-30	12		45	60	26.5	
YC16-78	16		48	63	29	
YC6-01	6		36	50	25	
YC10-49	10		40	55	28	
YC12-28	12		45	60	33	
YC16-84	16		48	63	36	

Standard Cutting Conditions

整体硬质合金枪钻加工参数表 Integral carbide gun drilling processing parameter table

工件材质 Material of the workpiece	弹簧钢 Spring steel	不锈钢 Stainless steel	马氏不锈钢 Martensitic stainless steel	合金钢 Alloy steel
	淬硬钢 Hardened steel		铁素体不锈钢 Ferritic stainless steel	调质钢 Quenched and tempered steel
	耐热钢 Heat-resistant steel		(普通不锈钢 Common stainless steel	表面硬化钢 Surface-hardened steel
	铸钢 Cast steel		或不锈钢 Or stainless cast steel)	氮处理钢 Nitrogen-treated steel
	冷硬铸铁 Chilled cast iron		13~25%Cr	工具钢 Tool steel
	钛合金 Titanium-titanium alloy		易切削钢 Free-cutting steel	(>900N/mm²)
	特殊合金 Special alloy		硫化钢 Sulfurized steel	
	镍基耐热合金 Nickel-based heat-resistant alloy			
	镍合金等 Nickel alloys, etc.			
切削速度 m/min Cutting speed m/min	25-60	30-60	40-70	60-80
直径 Φ	进给速度:毫米/转 mm/rev.			
0.7-0.79	0.0004-0.0012	0.0005-0.0012	0.0007-0.0012	0.0005-0.0012
0.8-0.89	0.0006-0.0016	0.0007-0.0015	0.0011-0.0014	0.0006-0.0015
0.9-0.99	0.0009-0.0020	0.0011-0.0019	0.0014-0.0017	0.0009-0.0019
1.0-1.09	0.0013-0.0024	0.0014-0.0022	0.0019-0.0022	0.0010-0.0023
1.1-1.19	0.0017-0.0028	0.0017-0.0025	0.0022-0.0026	0.0013-0.0029
1.2-1.29	0.0020-0.0033	0.0020-0.0027	0.0024-0.0028	0.0015-0.0035
1.3-1.39	0.0023-0.0036	0.0022-0.0029	0.0031-0.0035	0.0020-0.0041
1.4-1.49	0.0026-0.0038	0.0023-0.0031	0.0034-0.0037	0.0021-0.0047
1.5-1.59	0.0029-0.0042	0.0024-0.0035	0.0035-0.0042	0.0021-0.0051
1.6-1.79	0.0035-0.0054	0.0036-0.0049	0.0040-0.0051	0.0024-0.0066
1.8-1.99	0.0040-0.0065	0.0040-0.0065	0.0050-0.0065	0.0030-0.0075
2.0-2.49	0.0050-0.0075	0.0050-0.0075	0.0050-0.0075	0.0030-0.0095
2.5-2.99	0.0060-0.0095	0.0060-0.0095	0.0060-0.0110	0.0040-0.0110
3.0-3.49	0.0080-0.0110	0.0080-0.0010	0.0080-0.0130	0.0050-0.0140
3.5-3.99	0.0090-0.0125	0.0100-0.0160	0.0090-0.0160	0.0070-0.0160
4.0-4.49	0.0100-0.0135	0.0110-0.0180	0.0100-0.0190	0.0080-0.0190
4.5-4.99	0.0110-0.0160	0.0140-0.0220	0.0110-0.0220	0.0110-0.0210
5.0-5.99	0.0130-0.0220	0.0150-0.0240	0.0130-0.0250	0.0120-0.0250
6.0-7.99	0.0150-0.0300	0.0180-0.0290	0.0150-0.0370	0.0150-0.0330
8.0-12.0	0.0180-0.0380	0.0210-0.0330	0.0170-0.0410	0.0180-0.0380

切削速度和进给量取決与: 刀具直径、刀具长度、切削液、工件材质、机床组件的稳定性和工装夹紧情况，以上表格中的加工参数为标准参考值，以现场实际工况为准。

整体硬质合金枪钻加工参数表 Integral carbide gun drilling processing parameter table

铸铁 Cast iron	铸铁 Cast iron	结构钢 Structural steel	黄铜 Brass	铝 aluminum	铝 aluminum
	灰口铸铁 Gray cast iron (<300N/mm²)	调质钢 Quenched tempered steel			
	球墨铸铁 Ductile iron (<400N/mm²)	高碳低合金钢 High-carbon low-alloy steel			
	可锻铸铁 Malleable cast iron	表面硬化钢 Surface-hardened steel			
	白心可锻铸铁 White core malleable cast iron	氮处理钢 Nitrogen-treated steel			
	黑心可锻铸铁 Black-hearted malleable cast iron	工具钢 Tool steel (<900N/mm²)			
		易切削钢 Free-cutting steel			
60-90	70-100	70-100	80-150	80-160	100-300
进给速度:毫米/转 mm/rev.					
0.0009-0.0014	0.0007-0.0018	0.0004-0.0018	0.0005-0.0012	0.0007-0.0012	0.0005-0.0009
0.0012-0.0018	0.0010-0.0023	0.0004-0.0022	0.0008-0.0015	0.0012-0.0014	0.0008-0.0012
0.0015-0.0024	0.0014-0.0028	0.0007-0.0026	0.0011-0.0019	0.0017-0.0020	0.0011-0.0017
0.0019-0.0029	0.0018-0.0032	0.0010-0.0032	0.0015-0.0024	0.0020-0.0024	0.0015-0.0024
0.0025-0.0035	0.0022-0.0038	0.0014-0.0038	0.0019-0.0029	0.0022-0.0029	0.0019-0.0034
0.0031-0.0041	0.0030-0.0048	0.0018-0.0041	0.0024-0.0034	0.0024-0.0034	0.0024-0.0041
0.0040-0.0051	0.0039-0.0060	0.0020-0.0050	0.0028-0.0039	0.0026-0.0045	0.0026-0.0044
0.0047-0.0060	0.0049-0.0079	0.0021-0.0054	0.0031-0.0047	0.0028-0.0055	0.0032-0.0048
0.0053-0.0068	0.0056-0.0100	0.0021-0.0067	0.0032-0.0053	0.0035-0.0066	0.0038-0.0059
0.0064-0.0095	0.0065-0.0150	0.0028-0.0075	0.0035-0.0095	0.0040-0.0085	0.0040-0.0075
0.0070-0.0130	0.0070-0.0220	0.0030-0.0095	0.0040-0.0130	0.0050-0.0110	0.0050-0.0110
0.0100-0.0220	0.0090-0.0330	0.0040-0.0120	1.0040-0.0180	0.0050-0.0200	0.0070-0.0130
0.0130-0.0320	0.0110-0.0430	0.0050-0.0160	0.0050-0.0250	0.0060-0.0360	0.0080-0.0170
0.0150-0.0390	0.0140-0.0530	0.0080-0.0180	0.0060-0.0370	0.0080-0.0540	0.0100-0.0200
0.0180-0.0480	0.0180-0.0620	0.0090-0.0230	0.0070-0.0490	0.0110-0.0750	0.0100-0.0250
0.0200-0.0560	0.0200-0.0690	0.0120-0.0260	0.0080-0.0600	0.0120-0.0950	0.0130-0.0300
0.0230-0.0640	0.0230-0.0780	0.0140-0.0280	0.0090-0.0690	0.0140-0.1300	0.0160-0.0360
0.0250-0.0760	0.0250-0.0950	0.0150-0.0380	0.0100-0.0800	0.0150-0.1550	0.0200-0.0470
0.0300-0.1100	0.0300-0.1250	0.0180-0.0490	0.0120-0.0960	0.0180-0.0250	0.0260-0.0660
0.0330-0.1190	0.0350-0.1360	0.0210-0.0570	0.0140-0.1100	0.0210-0.2080	0.0290-0.0780

The cutting speed and feed rate depend on: tool diameter, tool length, cutting fluid, workpiece material, the stability of machine tool components and the clamping condition of the fixture. The processing parameters in the above table are standard reference values, and the actual working conditions on site shall prevail.

Standard Cutting Conditions

焊接式单刃枪钻加工参数表 Welding single-edge gun drilling processing parameter table

工件材质 Material of the workpiece	弹簧钢 Spring steel	不锈钢 Stainless steel	马氏不锈钢 Martensitic stainless steel	合金钢 Alloy steel
	淬硬钢 Hardened steel		铁素体不锈钢 Ferritic stainless steel	调质钢 Quenched and tempered steel
	耐热钢 Heat-resistant steel		(普通不锈钢 Common stainless steel	表面硬化钢 Surface-hardened steel
	铸钢 Cast steel		或不锈钢铸钢 Or stainless cast steel)	氮处理钢 Nitrogen-treated steel
	冷硬铸铁 Chilled cast iron		13~25%Cr	工具钢 Tool steel
	钛合金 Titanium-titanium alloy		易切削钢 Free-cutting steel	(>900N/mm²)
	特殊合金 Special alloy		硫化钢 Sulfurized steel	
	镍基耐热合金 Nickel-based heat-resistant alloy			
	镍合金等 Nickel alloys, etc.			
切削速度 m/min Cutting speed m/min	25-60	30-60	40-70	60-80
进给速度:毫米/转 mm/rev.				
直径 Φ				
2.0-2.49	0.001-0.002	0.002-0.005	0.002-0.006	0.002-0.005
2.5-2.99	0.001-0.005	0.004-0.007	0.004-0.007	0.004-0.006
3.0-3.49	0.002-0.007	0.006-0.008	0.005-0.009	0.005-0.007
3.5-3.99	0.004-0.008	0.008-0.009	0.007-0.011	0.007-0.010
4.0-4.49	0.006-0.009	0.009-0.010	0.008-0.013	0.008-0.012
4.5-4.99	0.008-0.011	0.010-0.013	0.009-0.017	0.011-0.015
5.0-5.99	0.010-0.014	0.012-0.015	0.013-0.019	0.013-0.018
6.0-6.99	0.012-0.016	0.014-0.017	0.015-0.023	0.015-0.022
7.0-7.99	0.015-0.018	0.016-0.019	0.018-0.025	0.018-0.025
8.0-8.99	0.018-0.021	0.018-0.021	0.020-0.031	0.020-0.027
9.0-9.99	0.021-0.025	0.020-0.028	0.023-0.034	0.023-0.030
10.0-11.99	0.025-0.030	0.025-0.033	0.025-0.041	0.025-0.038
12.0-13.99	0.027-0.033	0.030-0.044	0.030-0.045	0.029-0.044
14.0-15.99	0.029-0.040	0.035-0.044	0.035-0.052	0.035-0.050
16.0-17.99	0.033-0.044	0.041-0.050	0.042-0.060	0.039-0.053
18.0-19.99	0.037-0.049	0.045-0.062	0.045-0.067	0.044-0.060
20.0-23.99	0.041-0.054	0.049-0.071	0.050-0.079	0.049-0.069
24.0-27.99	0.045-0.057	0.052-0.083	0.054-0.090	0.054-0.077
28.0-31.99	0.049-0.062	0.057-0.091	0.059-0.098	0.059-0.085
32.0-40.00	0.052-0.065	0.063-0.098	0.065-0.107	0.063-0.098

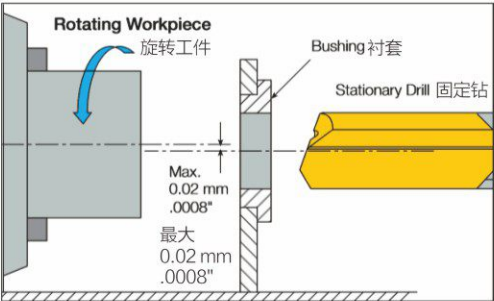
切削速度和进给量取决与: 刀具直径、刀具长度、切削液、工件材质、机床组件的稳定性和工装夹紧情况，以上表格中的加工参数为标准参考值，以现场实际工况为准。

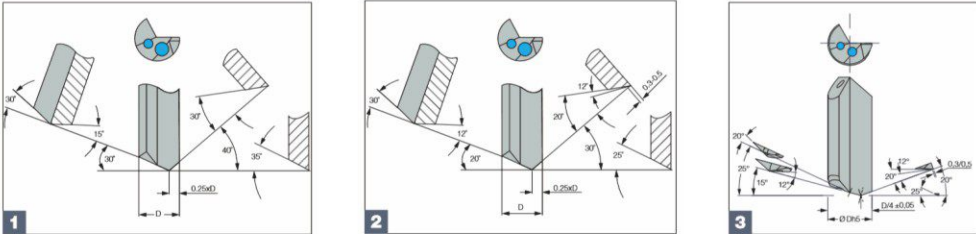
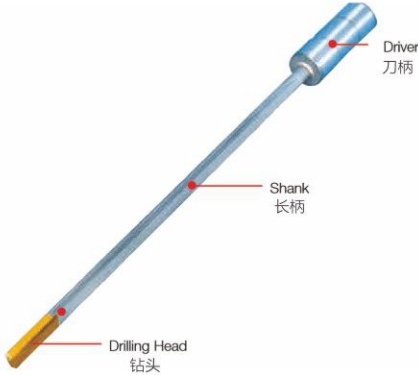
整体硬质合金枪钻加工参数表 Integral carbide gun drilling processing parameter table

铸铁 Cast iron	铸铁 Cast iron	结构钢 Structural steel	黄铜 Brass	铝 aluminum	铝 aluminum
	灰口铸铁 Gray cast iron ($<300\text{N/mm}^2$)	调质钢 Quenched tempered steel			
	球墨铸铁 Ductile iron ($<400\text{N/mm}^2$)	高碳低合金钢 High-carbon low-alloy steel			
	可锻铸铁 Malleable cast iron	表面硬化钢 Surface-hardened steel			
	球墨铸铁 Ductile iron ($<400\text{N/mm}^2$)	氮处理钢 Nitrogen-treated steel			
灰口铸铁 Gray cast iron ($<300\text{N/mm}^2$)	白心可锻铸铁 White core malleable cast iron	工具钢 Tool steel ($<900\text{N/mm}^2$)	青铜 Bronze	铸铝 Cast aluminum	铸铝 Cast aluminum
	黑心可锻铸铁 Black-hearted malleable cast iron	易切削钢 Free-cutting steel			
	紫铜 Red copper	Si>5%			
球墨铸铁 Ductile iron ($<400\text{N/mm}^2$)	易加工铝 Easily processable aluminum	非淬硬铝 Non-hardened aluminum	塑料 Plastic	易加工铝 Easily processable aluminum	非淬硬铝 Non-hardened aluminum
60-90	70-100	70-100	80-150	80-160	100-300
进给速度:毫米/转 mm/rev.					
0.005-0.018	0.005-0.019	0.003-0.007	0.003-0.015	0.002-0.012	0.005-0.005
0.008-0.028	0.008-0.020	0.005-0.010	0.005-0.020	0.004-0.026	0.004-0.008
0.009-0.038	0.009-0.038	0.007-0.012	0.006-0.030	0.006-0.037	0.006-0.012
0.011-0.042	0.110-0.046	0.009-0.015	0.007-0.045	0.007-0.055	0.007-0.025
0.012-0.047	0.012-0.050	0.012-0.019	0.008-0.050	0.008-0.071	0.008-0.026
0.016-0.052	0.016-0.057	0.014-0.020	0.009-0.057	0.009-0.094	0.009-0.028
0.018-0.065	0.018-0.068	0.016-0.026	0.010-0.069	0.010-0.190	0.010-0.036
0.024-0.071	0.024-0.074	0.018-0.028	0.012-0.079	0.012-0.125	0.012-0.045
0.028-0.084	0.028-0.085	0.021-0.035	0.014-0.092	0.018-0.130	0.014-0.049
0.032-0.092	0.032-0.096	0.024-0.036	0.016-0.101	0.020-0.144	0.016-0.056
0.036-0.110	0.036-0.114	0.027-0.040	0.018-0.113	0.023-0.158	0.018-0.034
0.045-0.116	0.050-0.120	0.030-0.040	0.020-0.139	0.025-0.174	0.020-0.074
0.051-0.126	0.060-0.138	0.036-0.060	0.024-0.156	0.030-0.182	0.024-0.087
0.057-0.138	0.070-0.154	0.042-0.071	0.028-0.179	0.035-0.194	0.028-0.099
0.062-0.158	0.079-0.170	0.048-0.079	0.033-0.199	0.050-0.209	0.033-0.108
0.066-0.173	0.090-0.191	0.054-0.091	0.036-0.244	0.054-0.228	0.036-0.130
0.069-0.189	0.106-0.207	0.060-0.107	0.040-0.249	0.060-0.254	0.040-0.146
0.076-0.210	0.120-0.221	0.069-0.117	0.048-0.291	0.072-0.295	0.048-0.169
0.079-0.212	0.140-0.237	0.079-0.134	0.056-0.327	0.084-0.360	0.056-0.194
0.086-0.228	0.160-0.245	0.085-0.154	0.064-0.380	0.096-0.455	0.064-0.221

The cutting speed and feed rate depend on: tool diameter, tool length, cutting fluid, workpiece material, the stability of machine tool components and the clamping condition of the fixture. The processing parameters in the above table are standard reference values, and the actual working conditions on site shall prevail.

Alloy Welded Gun Drill

名称 Name	枪钻使用说明 Instructions for Using the gun drill
偏差 Deviation	钻孔衬套和工件中心线之间的最大偏差不应超过0.02 mm (.0008”)。 The maximum misalignment between the drill bushing and the workpiece center line should not exceed 0.02 mm (.0008”). 
单槽枪钻 Single Flute Gundrill	ISCAR的枪钻由一个整体硬质合金头、一个流线型柄和一个驱动器组成，冷却液通过该驱动器流向最需要的工作端。切屑沿V形外槽排出。 ISCAR's gundrill consists of a single piece carbide head, a streamlined shank and a driver through which coolant flows to the working end where it is most needed. Chips are evacuated along the V-shaped external flute.
钻头 Drilling Head	硬质合金头部在其长度上呈锥形以减少摩擦。锥角取决于要钻孔的材料类型。对于高精度钻孔，锥度应减小到最小。注意，当头部重新刻划时，钻头的直径会改变，从而影响孔的公差。 The carbide head is tapered on its length to reduce friction. The taper angle depends on the type of material to be drilled. For high precision drilling, the taper should be reduced to a minimum. Note that when the head is resharpened, the diameter of the drill changes, affecting the hole tolerance.
长柄 Shank	柄的横截面为V形，带有冷却孔。它是由高抗扭的硬化钢制成的。该截面为扭转阻力、冷却液流量和排屑提供了最佳条件。 The cross-section of the shank is V-shaped with coolant holes. It is made of hardened steel that is highly resistant to twisting. This cross-section provides the optimal conditions for twist resistance, coolant flow and chip evacuati.
刀柄 Driver	刀柄确保枪钻和机床之间的连接 The driver ensures the connection between the gundrill and the machine tool 优势 Advantages ① 钻孔精度可达到IT7至IT9公差 ② 良好的直线度和同心度 ③ 保持高精度孔中心对准 ④ 表面粗糙度R0.4-R1.6很容易获得 ⑤ 通常不需要重新启动操作 ① Drilling precision of IT7 to IT9 tolerances can be reached ② Excellent straightness and concentricity ③ Maintains high precision hole center alignment ④ Surface roughness of R0.4 ~ R1.6 is easily obtained ⑤ Reboring operations are often unnecessary

名称 Name	枪钻使用说明 Instructions for Using the gun drill										
单槽硬质合金实心钻 Single Flute Solid Carbide Gundrills	另一种类型的枪钻是用整体式的刀尖和刀柄制成的，由固体硬质合金制成，带有钢或硬质合金驱动器。这些钻头是为传统机器、加工中心和车床设计的。这种类型的枪钻可从0.9–16毫米，可用于各种材料。它提供卓越的刚性和最佳的冷却液流量。由于它的刚性，可以达到高达100%的进给率。使用小直径钻头时，必须严格遵守推荐的钻孔参数。 Another type of gundrill is made with integral tip and shank, made of solid carbide with either a steel or a carbide driver. These drills are designed for conventional machines, machining centers and lathes. This style of gundrill is available from 0.9–16 mm and can be used on various types of materials. It provides superior rigidity and optimal coolant flow rates. As a result of its rigidity, up to 100% higher feed rate can be reached. When using the small diameter drills, it is crucial to adhere closely to the recommended drilling parameters.										
标准枪钻头 锐化角 Standard Gundrill Head Sharpening Angles	据所需的公差、切割性能和所需的切屑形状，建议采用以下标准锐化角度（如图1和图2所示） Subject to the required tolerance, cutting performance and desired chip shape, the following standard sharpening angles are recommended (shown in figures 1 and 2).  直径为0.9至4 mm的钻头的标准锐化 Standard sharpening for 0.9 to 4 mm drill diameters 4–32mm钻头直径的标准锐化 Standard sharpening for 4 to 32 mm drill iameters 32到40毫米钻头直径的标准锐化 Standard sharpening for 32 to 40 mm drill diameters 注：对于特殊或半标准炮眼钻，将提供与应用相匹配的特殊几何形状。 Note: For special or semi-standard gundrills, special geometries will be offered to match the application.										
硬质合金枪钻靶场 Carbide Tipped Gundrill Range	总长度=凹槽长度+驱动器长度 Overall length=flute length+driver length <table><tr><th>钻头直径 Drill Diameter</th><th>最大凹槽长度 Max.Flute Length</th></tr><tr><td>2.50 to 3.09</td><td>1100</td></tr><tr><td>3.10 to 5.99</td><td>2500</td></tr><tr><td>6.00 to 11.39</td><td>3000</td></tr><tr><td>11.40 to 40.00</td><td>3500</td></tr></table>	钻头直径 Drill Diameter	最大凹槽长度 Max.Flute Length	2.50 to 3.09	1100	3.10 to 5.99	2500	6.00 to 11.39	3000	11.40 to 40.00	3500
钻头直径 Drill Diameter	最大凹槽长度 Max.Flute Length										
2.50 to 3.09	1100										
3.10 to 5.99	2500										
6.00 to 11.39	3000										
11.40 to 40.00	3500										
硬质合金枪机靶场 Solid Carbide Gundrill Range 带或不带钎焊钢驱动器 with or without brazed steel driver	<table><tr><th>钻头直径 Drill Diameter</th><th>最大凹槽长度 Max.Flute Length</th></tr><tr><td>0 9 to 16 00</td><td>300mm</td></tr></table> 	钻头直径 Drill Diameter	最大凹槽长度 Max.Flute Length	0 9 to 16 00	300mm						
钻头直径 Drill Diameter	最大凹槽长度 Max.Flute Length										
0 9 to 16 00	300mm										
	ISCAR先进的炮眼钻技术为深钻和浅钻提供了卓越的几何和尺寸质量。钻头的可用范围为2.5至40毫米。 ISCAR' s advanced gundrill technology provides superior geometric and dimensional quality for both deep and shallow drilling. The drills are available in the range of 2.5 to 40 mm.										

总图 General Sketch

所有截面轮廓参数，如：P、La，必须与工件材料特性精确匹配。
All cross section profile parameters such as:P,La and must be precisely matched to the workpiece material properties.

剖面图G(通用) Profile G(Universal)

大多数材料类型的标准形式，特别是有收缩倾向的材料。推荐用于高精度孔公差和直线度。保持精确的出口孔尺寸。建议在需要额外抛光时使用。
Standard form for most material types, particularly for materials with a tendency to shrink. Recommended for high precision bore tolerance and straightness. Maintains precise exit hole size. Recommended when extra burnishing is required.

剖面图A Profile A

适用于铸铁（通常有涂层）和铝合金。可用于交叉钻孔、角度进入或退出以及间断切割。衬垫之间存在较大的冷却液间隙。
Suitable for cast iron (usually coated) and aluminum alloys. Can be used for cross drilling, angular entry or exit and for interrupted cut. Large coolant gaps between pads.

剖面图B Profile B

卓越的尺寸控制，高精度的孔公差。用于铸铁和铝合金。
Excellent size control,for high precision hole tolerance.Used for cast iron and aluminum alloys.

剖面图C Profile C

用于有角度的入口或出口。大的后锥度，用于收缩材料，如合金和不锈钢。衬垫之间存在较大的冷却液间隙。
Used for angled entry or exit.Large back taper,for shrinking materials such as types of alloys and stainless steel.Large coolant gaps between pads.

剖面图A Profile A

仅适用于铸铁。对灰铸铁非常有效（通常有涂层）。
Suitable for cast iron only.Very effective in grey cast iron(usually coated).

剖面图E Profile E

一般用途，用于合金和不锈钢。这种轮廓消除了在外角变钝后工具卡在孔中的问题。特别适用于曲轴等锻造材料。推荐用于精确的孔直线度。
General use,for alloys and stainless steel .This profile eliminates the problem of the tool sticking in the hole after the outer corner dulls.Especially suitable for crankshaft and other forged materials. Recommended for accurate hole straightness.

剖面图H Profile H

建议用于直径大于5 mm的所有有色金属和铸铁材料。有时用于大锥度的木材和塑料。
Recommended for all monferrous and cast iron materials up 5 mm diameter.Sometimes used for wood and plastic with larger back taper.

剖面图I Profile I

用于铝和青铜，以获得最佳的孔光洁度。用于交叉孔和间断切割或需要额外外径支撑和抛光时。
Used for aluminum and brass for best hole finish. For intersecting holes and interrupted cut or when extra outer diameter support and burnishing is required.

深度钻孔公差 Deep Drilling Tolerances

在推荐条件下使用时，炮钻配置可产生公差为IT8–IT9的孔。
Gundrill configurations when used under recommended conditions can produce holes with tolerances of IT8–IT9.

当在最佳条件下运行时，甚至可以获得更好的公差。
When operating under optimal conditions, even better tolerances can be achieved.

金属材料	金属切削性能	IT	13	12	11	10	9	8	7	6	5
有色金属材料 Nonferrous materials	金属切削性能 Machinability of Matal	铝 Aluminum									
工具钢 Tool steel											
铸铁 Cast iron											
高合金钢>800N/mm2 High alloy steel>800N/mm2											
淬火钢 Hardened steel											
低合金钢<800N/mm2 Low alloy steel<800N/mm2											
碳钢 Carbon steel											
烧结钢 Sintered steel											
钻孔质量 Drilling quality											

正常条件下的公差范围
Tolerance range under normal conditions

最佳条件下的公差范围
Tolerance range under optimal conditions

表面质量 Surface Quality

在推荐条件下使用枪钻可获得0.2 Ra的表面质量。Surface quality of 0.2 Ra can be achieved when using gundrills under recommended conditions.

	N12	N11	N10	N9	N8	N7	N6	N5	N4	N3	N2	N1	
可转位钻头 Indexable Drills													
铰孔 Reaming													
珩磨 Honing													
深钻 Deep drilling													
粗糙度 Degree of roughness (Ra粗糙度指数) (Ra roughness index)	μ m	50	25	12.5	6.30	3.20	1.60	0.80	0.40	0.20	0.10	0.05	0.025
	μ in	2000	1000	500	250	125	63	32	16	8	4	2	1

正常条件下的公差范围
Tolerance range under normal conditions

最佳条件下的公差范围
Tolerance range under optimal conditions

同心度和直线度 Concentricity and Straightness

结果质量取决于不同的因素，例如：
• 钻孔深度和直径 • 加工类型和切削参数
• 工件材料的质量和均匀性 • 机床状况 炮眼支架
The resulting quality depends on different factors such as:
• Drilling depth and diameter • Type of machining and cutting parameters
• Quality and uniformity of the workpiece material • Machine tool conditions
• Gundrill support

Concentricity 同心度

Stationary workpiece – rotating tool 固定工件–旋转工具
Rotating workpiece – stationary tool 旋转工件–固定刀具

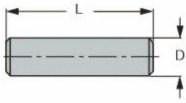
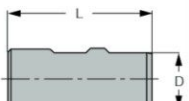
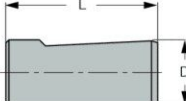
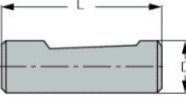
圆度 Circularity

深孔钻头钻孔的几何质量明显高于麻花钻。可以获得偏差小于4 μ m的精度。
The geometric quality of bores obtained from deep hole drill bits is clearly higher than that obtained with the use of twist drills. It is possible to obtain precision with deviations of less than 4 μ m.

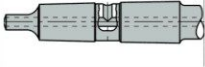
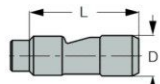
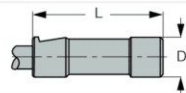
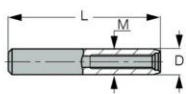
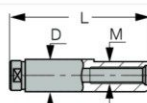
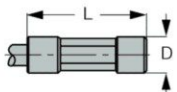
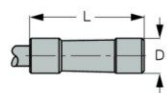
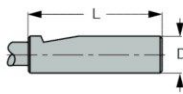
Straightness 直线度

Alloy Welded Gun Drill Shank

用于加工中心、车床等的标准枪钻刀柄。Standard Gundrill Drivers for Machining Centers, Lathes, etc.

驱动程序类型 Driver Type	绘图 Drawing	DXL	驱动程 序代码 Driver code				
				钎焊枪钻 BRAZED GUNDRILL			硬质合金牙钻 SOLID CARBIDE GUNDRILL
				最大切削 直径 Max. cutting diameter	F=圆柱管 F=CYLINDRICAL TUBE		
					等于或小于最大 切削直径 Equal or less than max. cutting diameter	大于最大 直径 More than max. diameter	F=矫直加长件 F=Straightening extension
圆柱形 DIN1835A DIN6535HA Cylindrical DIN1835A DIN6535HA		4x28	N° 1	2.749	10	20	18
		5x28	N° 2	3.249	10	20	15
		6x36	N° 3	4.249	10	20	14
		8x36	N° 4	5.749	10	20	14
		10x40	N° 5	7.299	10	20	15
		12x45	N° 6	8.999	10	20	15
		.50x1.78"	N° 94	9.699	10	20	15
		14x45	N° 7	10.999	10	20	15
		16x48	N° 8	12.399	10	20	15
		18x48	N° 9	14.399	10	20	15
		.75x2.03"	N° 95	14.899	10	20	15
		20x50	N° 10	15.899	10	20	
		25x56	N° 11	19.509	10	25	
		1.00x2.28"	N° 96	19.509	10	25	
		1.25x2.28"	N° 97	25.609	10	25	
		32x60	N° 12	25.609	10	25	
		40x70	N° 13	32.609	10	25	
焊件DIN1835B DIN6535HB Weldon DIN1835B DIN6535HB	 	6x36	N° 16	2.749	10	20	15
		8x36	N° 17	3.249	10	20	15
		10x40	N° 18	7.299	10	20	15
		12x45	N° 19	8.999	10	20	15
		.50x1.78"	N° 98	9.699	10	20	15
		16x48	N° 20	12.399	10	20	15
		18x48	N° 21	14.399	10	20	15
		.75x2.03"	N° 99	14.899	10	20	15
		20x50	N° 22	15.899	10	20	15
		25x56	N° 23	19.509	10	25	
		1.00x2.28"	N° 100	19.509	10	25	
		1.25x2.28"	N° 101	25.609	10	25	
		32x60	N° 24	25.609	10	25	
		40x70	N° 25	32.609	10	25	
		50x80	N° 26	40	10	25	
		63x90	N° 27	40	10	25	
		口哨音 DIN1835E Whistle Notch DIN1835E		6x36	N° 28	2.749	10
8x36	N° 29			3.249	10	20	
10x40	N° 30			7.299	10	20	15
12x45	N° 31			8.999	10	20	15
16x48	N° 32			12.399	10	20	15
18x48	N° 33			14.399	10	20	15
20x50	N° 34			15.899	10	20	15
25x56	N° 35			19.509	10	25	
32x60	N° 36			25.609	10	25	
40x70	N° 37			32.609	10	25	
口哨缺口 DIN6535HE Whistle Notch DIN6535HE		6x36	N° 38	2.749	10	20	15
		8x36	N° 39	3.249	10	20	15
		10x40	N° 40	7.299	10	20	15
		12x45	N° 41	8.999	10	20	15
		16x48	N° 42	12.399	10	20	15
		18x48	N° 43	14.399	10	20	15
		20x50	N° 44	15.899	10	20	15

枪械钻床用标准驱动器 Standard Drivers for Gundrill Machines

驱动程序类型 Driver Type	绘图 Drawing	DXL	驱动程 序代码 Driver code				
				钎焊枪钻 BRAZED GUNDRILL			
				最大切削 直径 Max. cutting diameter	F=圆柱管 F=CYLINDRICAL TUBE		
					等于或小于最大 切削直径 Equal or less than max. cutting diameter	大于最大 直径 More than max. diameter	
				硬质合金牙钻 SOLID CARBIDE GUNDRILL			
				F=矫直加长件 F=Straightening extension			
DIN228AK		CM1	Nº 45	9.599	10	20	
		CM2	Nº 46	14.599	10	20	
		CM3	Nº 47	21.499	10	25	
		CM4	Nº 48	29.499	10	25	
DIN228BK		CM1	Nº 49	9.599	10	20	20
		CM2	Nº 50	14.599	10	20	15
		CM3	Nº 51	21.499	10	25	
		CM4	Nº 52	29.499	10	25	
中心夹紧面15° Central Clamping Surface 15°		6x30	Nº 53	2.749	10	20	
		10x40	Nº 54	7.299	10	20	
		16x45	Nº 55	12.399	10	20	
		.750x2.75"	Nº 56	14.899	10	20	
		25x70	Nº 57	19.509	10	25	
		1.00x2.75"	Nº 58	19.509	10	25	
		1.25x2.75"	Nº 59	25.609	10	25	
		1.50x2.75"	Nº 60	32.609	10	25	
正面夹紧面15° Frontal Clamping Surface 15°		16x50	Nº 61	12.399	10	20	
圆柱螺纹 Cylindrical with Thread		10x50 M6X0.5	Nº 62	7.299	10	20	15
		10x50 M6X0.5	Nº 63	7.299	10	20	
		.50x1.97" M6x0.5	Nº 64	8.999	10	20	15
		16x80 M10X1	Nº 65	12.399	10	20	15
		25x100 M16x1.5	Nº 66	19.509	10	25	
		36x120 M24x1.5	Nº 67	30.609	10	25	
VDI Design		10x68 M6x0.5	Nº 68	6.749	10	20	
		16x90 M10x1	Nº 69	10.799	10	20	15
		25x112 M16x1.5	Nº 70	19.509	10	25	
		36x135 M24x1.5	Nº 71	30.609	10	25	
中心夹紧六角形 Central Clamping Hexagonal		25x70	Nº 72	19.509	10	25	
		32x70	Nº 73	25.609	10	25	
中心夹紧锥 Central Clamping Tapered		.50x1.50"	Nº 74	8.599	10	20	15
		16x70	Nº 75	12.099	10	20	15
		.75x2.75"	Nº 76	14.099	10	20	
		20x70	Nº 77	16.099	10	20	15
正面夹紧面2° Frontal Clamping Surface 2°		.50x1.50"	Nº 78	9.699	10	20	
		.75x2.75"	Nº 79	14.899	10	20	
		1.00x2.75"	Nº 80	19.509	10	25	
		1.00x3.94"	Nº 81	19.509	10	25	
		1.25x2.75"	Nº 82	25.609	10	25	
		1.25x3.94"	Nº 83	25.609	10	25	
		1.50x2.75"	Nº 84	32.609	10	25	
		1.50x3.94"	Nº 85	32.609	10	25	
梯形螺纹 Trapezoidal Thread		16x112 Tr 16x1.5	Nº 86	13.599	10	20	
		20x126 Tr 20x2	Nº 87	17.099	10	20	
		28x126 Tr 28x2	Nº 88	25.599	10	25	
		36x162 Tr 36x2	Nº 89	32.599	10	25	
Spraymist Driver		16x40	Nº 90	12.399	10	20	
		25x50	Nº 91	19.509	10	25	
		35x60	Nº 92	26.599	10	25	

名称 Name

用户指南
User Guide

主要
钻探方法
Main Drilling
Methods

排屑和
冷却液流动
Chip Evacuation and
Coolant Flow

枪钻应用 Application of gun drill

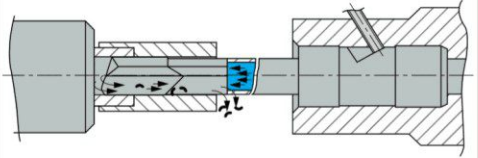
枪钻不是自动定心工具。因此必须使用外部手段将其引导至进入工件的点。建议机床配备引导炮钻的装置，最好是在整个钻孔过程中。

另一种方法是预钻导向孔（图2），这是加工中心常见的方法。一旦钻头完全进入该孔，它将继续自动导向。导向垫有助于实现高度校准，并为钻孔提供抛光。

The gundrill is not a self-centering tool. Therefore an external means must be used to guide it to the point of entry into the workpiece. It is recommended that the machine tool be equipped with a means for guiding the gundrill, preferably during the entire drilling process.

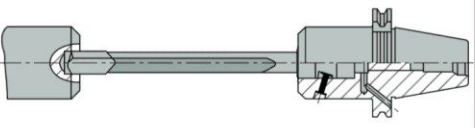
An alternative method is a pre-drilled guide hole (figure 2), which is common for machining centers. Once the drill has been fully engaged into this hole, it continues to be self-guided. The guide pads contribute to the high degree of calibration and provide burnishing of the drilled hole.

Figure 1 图1



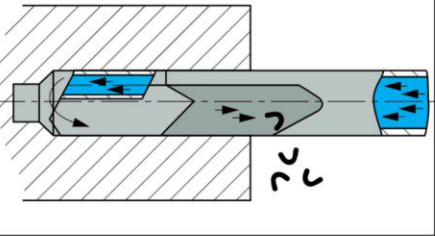
Guide Barrel 导向筒体

Figure 2 图2



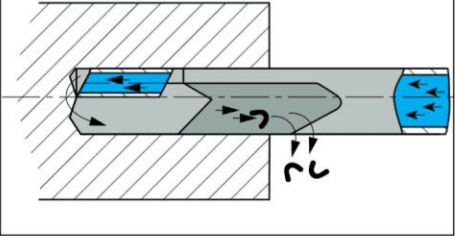
Pre-Drilled Guide Hole 预钻导向孔

Figure 3 图3



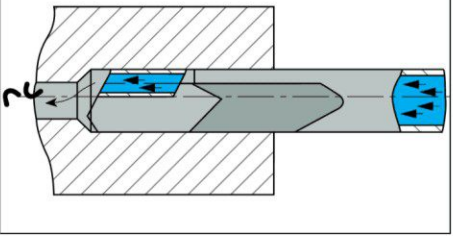
Boring with chip evacuation and coolant flowing opposite the boring direction
排屑和冷却液与钻孔方向相反的钻孔

Figure 4 图4



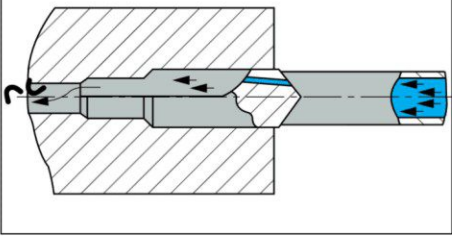
Drilling of solid material with chip evacuation and coolant flow opposite the drilling direction
固体材料的钻孔，排屑和冷却剂流动与钻孔方向相反

Figure 5 图5



Boring with chip evacuation in the boring direction
在钻孔方向用排屑器钻孔

Figure 6 图6



Boring with a staged tool
Chip evacuation and coolant flow in the boring direction
采用分级刀具排屑和冷却液沿钻孔方向流动进行钻孔

枪钻故障排除指南

Gun Drill Troubleshooting Guide

Possible Causes 可能的原因	Hole Problems 孔洞问题										Drill Problems 枪钻问题									
	Curved hole axis 弯曲孔轴	Contact entrance Runout 锥形入口	Runout 偏摆	Rough surface finish 表面光洁度粗糙	Undersize 尺寸过小	Oversize 特大号					Cratering 缩孔	Built-up edge 堆积边缘	Damaged wear pad 磨损垫损坏	Flute bending 长笛弯曲	Drill heat 钻头加热	Excessive flank wear 侧面过度磨损	Excessive corner wear 拐角过度磨损	Excessive margin wear 边缘过度磨损	Poor drill life 钻头寿命差	Chipping 剥蚀
Poor clamping 夹紧不良	+		+			+												+		+
Insufficient coolant flow 冷却液流量不足					+	+									+	+		+		+
Low coolant pressure 冷却液压力低					+	+												-		+
Incorrent coolant type 冷却液类型不正确					+							+	+	+		+	+	+		
Feed fluctuations 进料波动	+		+	+								+		+				+	+	+
Tool high feed 进料过高	+	+	+	+		+						+		+	+	+		+		+
Tool low feed 进料过低												+						+	+	
Spindle speed too high 主轴转速过高													+	+	+	+	+	+		+
Spindle speed too low 主轴转速过低					+	+					+	+								
Material structure 材料结构	+	+									+	+	+				+	+	+	+
Material shrinking due to heat 材料受热收缩			+	+	+								+		+		+			+
Workpiece thin wall section 工件薄壁截面	+	+																		
Misalignment 未对准	+	+				+							+	+		+	+	+		+
Undersized hole 尺寸过小的孔					+									+	+	+	+	+		+
Rough cutting edge finish 切削刃光洁度粗	+	+									+	+					+	+	+	+
Built up edge 堆积边缘						+											+	+	+	+
Worn out edge 磨损边缘	+	+	+								+	+					+	+	+	+
Interrupted chip flow 中断芯片流	+	+	+			+							+	+		+	+	+		+
Tool small flute clearance 凹槽间隙太小	+	+										+		+	+	+	+	+		+
Incorrect drill profile 钻孔剖面不正确	+		+	+	+	+					+	+	+	+			+	+	+	+
Incorrect head angles 头部角度不正确	+	+	+	+	+	+					+	+		+	+	+	+	+	+	+
Vibrations 振动	+	+	+	+		+					+	+	+	+		+	+	+	+	+
Oversized bushing 超大衬套	+	+	+			+												+		+
A gap between bushing and workpiece 衬套与工件之间的间隙	+	+	+	+	+	+										+		+		+
Bushing undersize 衬套尺寸过小			+		+							+	+	+		+	+	+		+
Loss of coolant pressure 冷却液压力损失		+		+	+							+	+	+	+			+		+
High coolant pressure 冷却液压力高	+					+														
Overheating coolant 冷却液过热					+										+	+	+	+		
Insufficient coolant 冷却液不足	+	+	+		+							+	+	+	+			+		+
Head inside angle excessive wear 头部内角过度磨损			+	+		+								+	+			+		
Head outside angle excessive wear 头部外角过度磨损			+	+	+							+		+			+			
Too short carbide head 硬质合金头太短	+	+	+	+	+	+						+	+	+	+	+	+	+	+	+
Too heal drag 工具治疗拖动	+	+	+		+								+	+	+	+	+	+		+
Worn supporting pads 支撑垫磨损			+			+						+	+	+		+		+		+

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元昌深孔钻胶套-自主开模定制

Yuanchang Deep Hole Drilling rubber Sleeve - Self-developed mold customization

产品简介 Product Introduction

元昌深孔钻采用更优质的橡胶自主开模生产、制造而成、好用耐磨、规格齐全、为深孔钻钻头专用固定减阻作用，通用各种深孔钻加工机床的橡胶套，外径50mm、40mm、30mm、25mm、20mm、15mm、8mm,内径从2.0-44.0mm,甚至更大内径如下图。货源充足，规格齐全，广泛使用于规格不一的钻头。

Yuanchang deep hole drill is produced and manufactured by using higher quality rubber. It is easy to use and wear-resistant, with complete specifications. It is a special fixed drag reducing function for deep hole drill bit. It is the rubber sleeve of all kinds of deep hole drilling machine tools. Its outer diameter is 50mm 40mm, 30mm, 25mm, 20mm, 15mm, 8mm, and its inner diameter is from 2.0 to 25.0mm, or even larger, as shown in the figure. Sufficient supply, complete specifications, widely used in different specifications of drill bit.

外径 Outer diameter
50mm、40mm、
30mm、25mm、
20mm、15mm、
8mm



外径8mm胶套
Outer diameter of rubber
sleeve: 8mm

内径2.0-4.9mm
Inner diameter range:
2.0-4.9mm



外径15mm胶套
Outer diameter of rubber
sleeve: 15mm

内径4.9-10.6mm
Inner diameter range:
4.9-10.6mm



外径20mm胶套
Outer diameter of
rubber sleeve: 20mm

内径10.6-12.30mm
Inner diameter range:
10.6-12.3mm



外径25mm胶套
Outer diameter of
rubber sleeve: 25mm

内径2-16mm
Inner diameter range:
2-16mm



外径30mm胶套
Outer diameter of
rubber sleeve: 30mm

内径2-20mm
Inner diameter range:
2-20mm



外径40mm胶套
Outer diameter of
rubber sleeve: 40mm

内径3-32mm
Inner diameter range:
3-32mm



外径50mm胶套
Outer diameter of
rubber sleeve: 50mm

内径3-44mm
Inner diameter range:
3-44mm



元昌深孔钻导向套

Guide Sleeve For Yuanchang Deep Hole Drilling

产品简介 Product Introduction

元昌深孔钻导向套是自主生产加工，制作经过车床加工，线割，热处理，内、外圆无心研磨多个工艺制作而成，具有精度高，耐用。深孔钻导向套是装在卡工件位置和装卡钻头之间做装夹导向套支架，用此支持和导向钻头的方向。

Yuanchang deep hole drilling guide sleeves are independently produced and processed. They are made through multiple processes such as lathe processing, wire cutting, heat treatment, and inner and outer cylindrical centerless grinding. They feature high precision and durability. The deep hole drilling guide sleeve is installed between the position of the workpiece to be clamped and the clamped drill bit as a clamping guide sleeve support, which is used to support and guide the direction of the drill bit.



使用的材质是轴承钢；轴承钢的特点是具有高而均匀的硬度和耐磨性，以及高的弹性极限。

The material used is bearing steel. Bearing steel is characterized by high and uniform hardness and wear resistance, as well as a high elastic limit.

规格 Specification

2-60

我司长期供应的导向套，规格在2.0-60.0 货源充足，可成套购买或者批量购买！

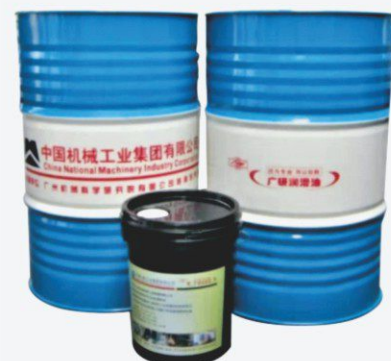
Our company has been supplying guide sleeves for a long time, with specifications ranging from 2.0 to 60.0. We have an abundant supply and can purchase them in sets or in bulk!



切削油 Cutting oil

专业配方为深孔钻研发的切削油，有效提高加工光洁度及精度，为加工深孔长期稳定性提高必需条件。

The professional formula is the cutting oil developed for deep hole drilling, which effectively improves the processing finish and precision, and is a necessary condition for improving the long-term stability of processing deep holes.



枪钻磨刀机 Gun drill sharpener

本机适用于修磨枪钻，最小能研磨 $\phi 1\text{mm}$ 钻头，标准化修模刀刃，确保枪钻加工的稳定性，本机设计独特，操作简易，便于现代化管理。

This machine is suitable for grinding gun drills. The smallest drill bit can be 1mm . The standardized cutting edge ensures the stability of gun drill processing. The machine is unique in design, easy to operate, and convenient for modern management.



铁屑甩油机 Scraping oil machine

采用强力马达，稳固机身设计，大量减少被铁屑带走的切削油，使切削油能够循环使用，降低切削油损失，节约成本，提高能源环保作用。

It adopts powerful motor and stable body design, which greatly reduces the cutting oil carried away by iron filings, enables the cutting oil to be recycled, reduces cutting oil loss, saves costs, and improves energy and environmental protection.



磨刀机工装 re-sharpening machine&fixture

枪钻使用过程中客户需自主修磨，我们不提倡手工随意修磨角度，事实证明采用正确规范的修磨方式方法使得枪钻耐用性比随意修磨提高20%以上。

Gun drills re-sharp must use grinding fixtures, not only by hand, it was proved to prolong gun drills life by the right re-sharpening.



加长杆 supporting pin

① 图一加长杆应用在枪钻加工到极限深度后延长枪钻加工的一种方法。

② 图二加长杆则是元昌转为小规格枪钻研制的，它减短了小规格枪钻的刀杆长度，将主轴油压向刀头方向移动了350-500甚至更长的距离，从而保证了小规格枪钻也可以高速进给而不至于排屑不畅。加长杆的应用，大大增强了支撑刚性，而且装夹更为简单经济。元昌已库存有一定量的小规格短枪钻（含超硬枪钻），对于硬度（HRC）达48-52度的超硬材料可以有效克服。

① Pic 1 is the application of prolong drilling depth, after gun drill reach its drilling length capacity.

② Pic 2 was developed for Yuanchang small size drills, the supporting pin shorten the length of drill tubes, resulted in higher oil pressure, and chips removal smooth. The application increase drilling rigidity, resulted in high drilling efficiency. Yuanchang stocks some small size gun drills and supporting pins, it all can apply on hard materials like 48-52 HRC.

