

Indexable Insert type Drill

New
SumiDrill **GDX** Series

**Balancing rigidity and chip evacuation
Realises deep hole drilling up to L/D=7**



■ Diameter

2D ø15.5mm to 27.0mm

3D ø15.5mm to 27.0mm

4D ø15.5mm to 27.0mm

5D ø15.5mm to 27.0mm

6D ø15.5mm to 27.0mm

7D ø15.5mm to 27.0mm

4-cornered



Peripheral
Insert

Central
Insert



■ Features

The SumiDrill GDX series sharply reduces machining vibration through high-rigidity holder design. Further, the individually optimised design of the peripheral and central inserts achieves excellent cutting balance and chip evacuation. Dramatically improved stability supports deep hole drilling up to $L/D=7$.

■ Product Range

Insert Size	GDXT05	GDXT06	GDXT07
Drilling Depth	Compatible Holders (Dia. mm)		
2D	ø15.5 to 18.0	ø18.5 to 22.0	ø22.5 to 27.0
3D	ø15.5 to 18.0	ø18.5 to 22.0	ø22.5 to 27.0
4D	ø15.5 to 18.0	ø18.5 to 22.0	ø22.5 to 27.0
5D	ø15.5 to 18.0	ø18.5 to 22.0	ø22.5 to 27.0
6D	ø15.5 to 18.0	ø18.5 to 22.0	ø22.5 to 27.0
7D	ø15.5 to 18.0	ø18.5 to 22.0	ø22.5 to 27.0

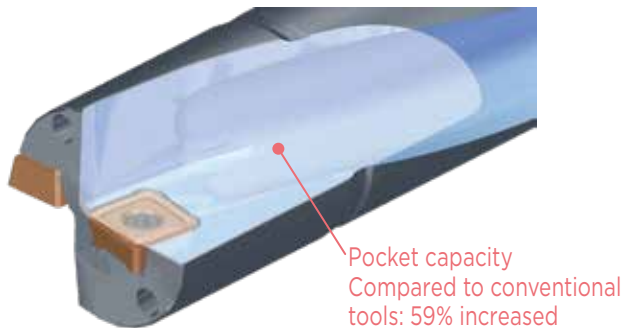
■ High-rigidity Holder Design

Proprietary groove design balances chip evacuation and holder rigidity at a high level. Machining vibration is effectively suppressed and cutting force reduced to realise stable deep hole drilling.

Evacuation groove design



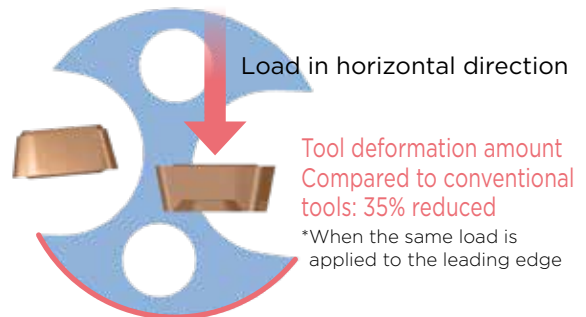
Wide pocket and smooth connection



Pocket capacity, essential for evacuation, increased

Pocket capacity
Compared to conventional
tools: 59% increased

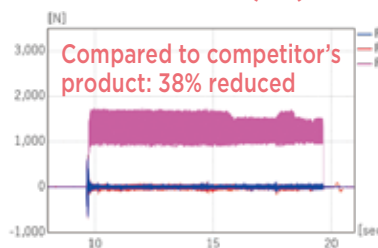
High-rigidity evacuation groove placement



Thickness direction controlled to suppress deformation amount

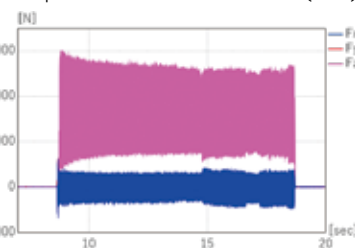
Cutting Force

GDX series (5D)



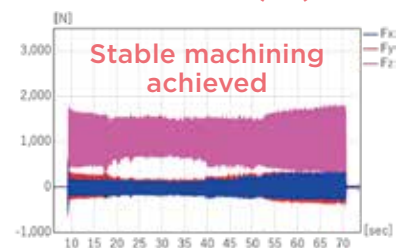
Max. 1,752N

Competitor's Product A (5D)



Max. 3,014N

GDX series (7D)



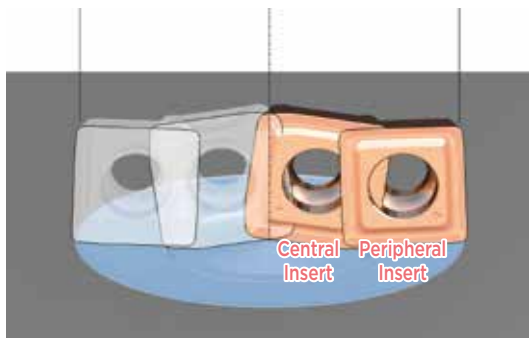
Max. 1,847N

Work Material: S50C Tool: GDXH200D5S25-06 (ø20, 5D) GDXH200D7S25-06 (ø20, 7D) Insert: Peripheral Insert GDXT06T204P-G (ACU2500) Central Insert: GDXT06T206C-G (ACU2500) Cutting Conditions (5D Holder): $V_c = 150\text{m/min}$ $f = 0.10\text{mm/rev}$ $H = 85\text{mm}$ (Stop Hole) Internal Coolant Supply (Water soluble) (7D Holder): $V_c = 150\text{m/min}$ $f = 0.06\text{mm/rev}$ $H = 140\text{mm}$ (Stop Hole) Internal Coolant Supply (Water-soluble)

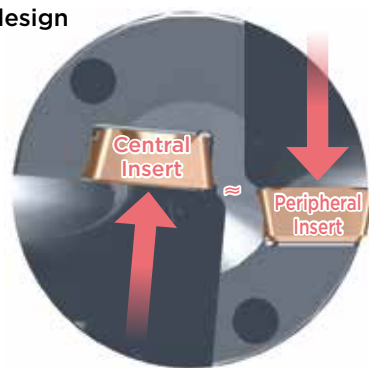
■ Dedicated Insert Design

The central and peripheral insert designs have been individually optimised, improving stability with the optimal shape and relative positioning. Further, the wiper flat shape has been optimised to achieve excellent machined surface quality.

Dedicated insert design



Balanced design



Using simulations to create dedicated designs for the central insert and peripheral insert, cutting force has been rendered uniform

Machined Surface Quality

GDX series



Glossy surface with no scratches



Ra = 0.80µm

Competitor's Product B



Undulating pattern



Ra = 1.04µm

Work Material: S50C Tool: GDXH200D5S25-06 (ø20, 5D) Insert: Peripheral Insert: GDXT06T204P-G (ACU2500) Central Insert: GDXT06T206C-G (ACU2500) Cutting Conditions: Vc = 150m/min f = 0.10mm/rev H = 85mm (Stop Hole) Internal Coolant Supply (Water-soluble)

■ Insert Combinations

With different chipbreakers for the central and peripheral inserts, stainless steel and general structure rolled steel are also supported.

Peripheral Insert

Type	L type	G type
Features	Chip Control	General-purpose
Appearance		
Cross Section		



Central Insert

Type	L type	G type
Features	Chip Control	General-purpose
Appearance		
Cross Section		

SS400 Machining Example

GDX series



Glossy surface with no scratches



Competitor's Product C



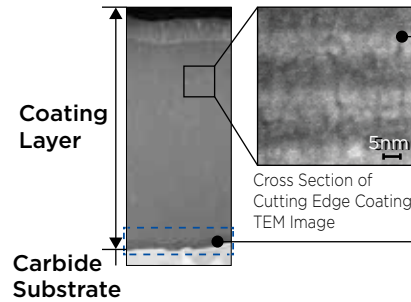
Undulating pattern

Work Material: SS400, Tool: GDXH200D5S25-06 (ø20, 5D) Insert: Peripheral Insert GDXT06T204P-L (ACU2500) Central Insert: GDXT06T206C-L (ACU2500) Cutting Conditions: Vc = 200m/min, f = 0.05mm/rev, H = 85mm (Stop Hole), Internal Coolant Supply (Water-soluble)

■ Insert Grade Features

Longer tool life is achieved through selection among ACU2500, the latest general-purpose grade, and ACP2000 or ACS3000, grades dedicated by work material, for the peripheral insert.

ABSOTECH PVD Applicable Grade: **ACU2500**

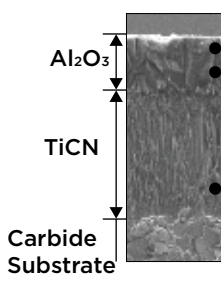


New Super Multi-Layered Structure
Higher hardness and more than the conventional wear resistance due to a fine crystal structure AlTiCrBN-based nano-layered coating

High Adhesion Strength
Significantly improved coating adhesion
More than twice the chipping resistance of conventional coatings

Cross Section of Cutting Edge Coating TEM Image

ABSOTECH CVD Applicable Grade: **ACU2000**

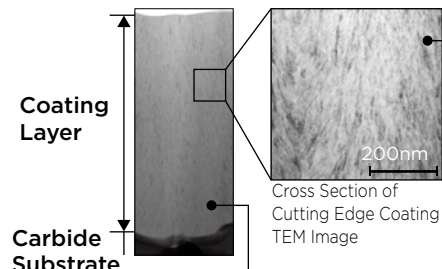


Special Surface Treatment
Suppresses thermal cracking by introducing high compressive stress
More than twice the chipping resistance as conventional coatings

Crystal Orientation Control Al₂O₃
By controlling the growth direction, Al₂O₃ is reinforced for crater wear resistance more than twice as good as conventional types

High Hardness TiCN
Increased TiCN hardness by using a C-rich composition for flank wear resistance more than twice as good as conventional types

ABSOTECH PVD Applicable Grade: **ACS3000**

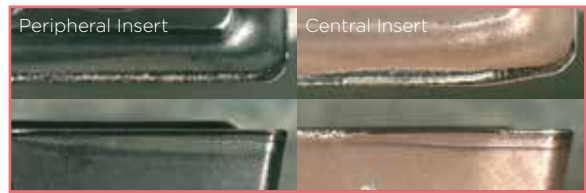
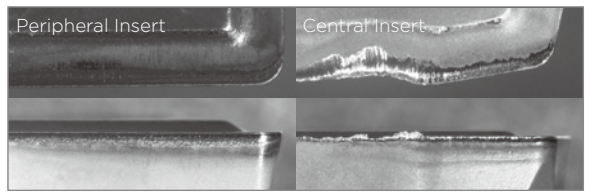


Ultra-fine Grained B Additive
New AlTiBN coating, with an ultra-fine coating structure, achieves high strength and toughness
Outstanding chipping resistance and wear resistance

High Adhesion Strength
Significantly improved coating adhesion
More than twice the conventional chipping resistance

Cross Section of Cutting Edge Coating TEM Image

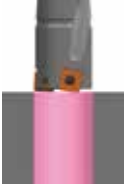
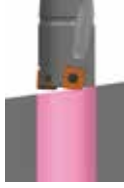
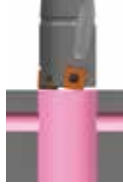
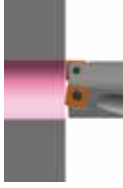
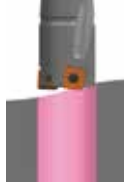
Comparison of Wear Resistance

GDX series (Output: 156 holes)		Competitor's Product A (Output: 156 holes)	
Peripheral Insert	Central Insert	Peripheral Insert	Central Insert
			
Normal wear		Rake face wear/fracture	

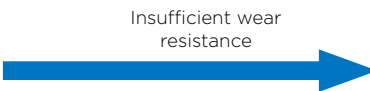
Work Material: S50C, Tool: GDXH200D5S25-06 (ø20, 5D) Insert: Peripheral Insert GDXTO6T204P-G (ACP2000) Central Insert: GDXTO6T206C-G (ACU2500) Cutting Conditions: V_c = 150m/min, f = 0.10mm/rev, H = 38mm (Through Hole), Internal Coolant Supply (Water-soluble)

Compatible Machining Applications/Workpiece Shapes

Depending on the machining application or workpiece shape, set the cutting conditions with reference to the table below.

	OK	OK	OK	OK	OK	OK	NG	NG
Machining Application / Workpiece Shape								
Recommended Holder	See Recommended Cutting Conditions	5D and below	5D and below	5D and below	5D and below	5D and below	—	—
Recommended Cutting Conditions	See Recommended Cutting Conditions	Feed Rate 70%	Feed Rate 50%	Feed Rate 70%	Feed Rate 50%	Feed Rate 50%	—	—

Insert Selection Guide The GDX insert series has a variety of options

ISO	Work Material	1st Recommendation			2nd Recommendation	
		Peripheral Insert	Central Insert		Peripheral Insert	Central Insert
P	Steel/ Carbon Steel					
		G type Chipbreaker ACU2500	G type Chipbreaker ACU2500		L type Chipbreaker ACU2500	L type Chipbreaker ACU2500
	Low Carbon Steel / Structural Steel					
		L type Chipbreaker ACU2500	L type Chipbreaker ACU2500		G type Chipbreaker ACU2500	L type Chipbreaker ACU2500
M	Stainless Steel					
		L type Chipbreaker ACU2500	L type Chipbreaker ACU2500		G type Chipbreaker ACU2500	L type Chipbreaker ACU2500
K	Cast Iron					

*When peripheral insert chips elongate and central insert chip evacuation is poor, leading to crushing and blockages, select an L type chipbreaker.

GDX series Recommended Cutting Conditions (2D/3D/4D)

L/D	Classification	Work Material		Work Material Hardness		Chipbreaker		Recommended Peripheral Insert Grade	Vc Cutting Speed (m/min)	f Feed Rate (mm/rev) (Min. - Optimum - Max.)		
				HB	Peripheral Insert	Central Insert	ø15.5 to ø18.0			ø18.5 to ø22.0	ø22.5 to ø27.0	
2D	P	Steel, Carbon Steel	SS400	125	L	L	ACP2000 ACU2500	160 - 220 - 280 120 - 170 - 220	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08	
			S15C	125	L	L	ACP2000 ACU2500	160 - 220 - 280 120 - 170 - 220	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08	
			S45C	190	G	G	ACP2000 ACU2500	170 - 210 - 250 100 - 160 - 220	0.06 - 0.13 - 0.20	0.06 - 0.13 - 0.20	0.06 - 0.14 - 0.22	
			S45C Hardened	250	G	G	ACP2000 ACU2500	110 - 180 - 250 90 - 140 - 200	0.05 - 0.10 - 0.14	0.05 - 0.10 - 0.14	0.05 - 0.10 - 0.14	
			S75C	270	G	G	ACP2000 ACU2500	110 - 180 - 250 70 - 140 - 200	0.06 - 0.12 - 0.17	0.06 - 0.12 - 0.17	0.06 - 0.12 - 0.17	
			S75C Hardened	300	G	G	ACP2000 ACU2500	100 - 150 - 200 90 - 120 - 150	0.05 - 0.10 - 0.14	0.05 - 0.10 - 0.14	0.05 - 0.10 - 0.14	
		Low-alloy Steel	SCM, SNCM	180	G	G	ACP2000 ACU2500	140 - 180 - 220 110 - 140 - 170	0.05 - 0.10 - 0.14	0.05 - 0.10 - 0.14	0.05 - 0.10 - 0.14	
			SCM, SNCM Hardened	275	G	G	ACP2000 ACU2500	130 - 170 - 210 100 - 130 - 140	0.06 - 0.10 - 0.14	0.06 - 0.10 - 0.14	0.06 - 0.10 - 0.14	
			SCM, SNCM Hardened	300	G	G	ACP2000 ACU2500	120 - 150 - 180 65 - 100 - 135	0.06 - 0.10 - 0.14	0.06 - 0.10 - 0.14	0.06 - 0.10 - 0.14	
			SCM, SNCM Hardened	350	G	G	ACP2000 ACU2500	80 - 120 - 160 50 - 80 - 110	0.06 - 0.10 - 0.14	0.06 - 0.10 - 0.14	0.06 - 0.10 - 0.14	
		High-alloy Steel	SKD, SKT, SKH	200	G	G	ACP2000 ACU2500	150 - 180 - 210 100 - 150 - 180	0.08 - 0.13 - 0.17	0.08 - 0.13 - 0.18	0.08 - 0.13 - 0.18	
			SKD, SKT, SKH Hardened	325	G	G	ACP2000 ACU2500	120 - 150 - 180 60 - 80 - 100	0.06 - 0.11 - 0.15	0.06 - 0.11 - 0.15	0.06 - 0.11 - 0.15	
	M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200	L	L	ACU2500	120 - 160 - 180	0.05 - 0.10 - 0.15	0.05 - 0.10 - 0.15	0.05 - 0.10 - 0.15	
			SUS403 and Others (Martensitic/Hardened)	240	L	L	ACU2500	120 - 150 - 170	0.05 - 0.10 - 0.15	0.05 - 0.10 - 0.15	0.05 - 0.10 - 0.15	
			SUS304, SUS316 (Austenitic)	180	L	L	ACU2500	120 - 180 - 210	0.05 - 0.10 - 0.15	0.05 - 0.10 - 0.15	0.05 - 0.10 - 0.15	
	K	Cast Iron			G	G	ACP2000 ACU2500	150 - 210 - 240 120 - 180 - 210	0.10 - 0.19 - 0.28	0.10 - 0.19 - 0.28	0.09 - 0.21 - 0.32	
		Ductile Cast Iron			G	G	ACP2000 ACU2500	120 - 150 - 180 100 - 125 - 150	0.10 - 0.19 - 0.28	0.10 - 0.19 - 0.28	0.09 - 0.21 - 0.32	
3D	P	Steel, Carbon Steel	SS400	125	L	L	ACP2000 ACU2500	160 - 220 - 280 120 - 170 - 220	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08	
			S15C	125	L	L	ACP2000 ACU2500	160 - 220 - 280 120 - 170 - 220	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08	
			S45C	190	G	G	ACP2000 ACU2500	170 - 210 - 250 100 - 160 - 220	0.06 - 0.12 - 0.18	0.06 - 0.12 - 0.18	0.06 - 0.13 - 0.20	
			S45C Hardened	250	G	G	ACP2000 ACU2500	110 - 180 - 250 90 - 140 - 200	0.05 - 0.09 - 0.13	0.05 - 0.09 - 0.13	0.05 - 0.09 - 0.13	
			S75C	270	G	G	ACP2000 ACU2500	110 - 180 - 250 70 - 140 - 200	0.06 - 0.11 - 0.15	0.06 - 0.11 - 0.15	0.06 - 0.11 - 0.15	
			S75C Hardened	300	G	G	ACP2000 ACU2500	100 - 150 - 200 90 - 120 - 150	0.05 - 0.09 - 0.13	0.05 - 0.09 - 0.13	0.05 - 0.09 - 0.13	
		Low-alloy Steel	SCM, SNCM	180	G	G	ACP2000 ACU2500	140 - 180 - 220 110 - 140 - 170	0.05 - 0.09 - 0.13	0.05 - 0.09 - 0.13	0.05 - 0.09 - 0.13	
			SCM, SNCM Hardened	275	G	G	ACP2000 ACU2500	130 - 170 - 210 100 - 130 - 140	0.06 - 0.09 - 0.13	0.06 - 0.09 - 0.13	0.06 - 0.09 - 0.13	
			SCM, SNCM Hardened	300	G	G	ACP2000 ACU2500	120 - 150 - 180 65 - 100 - 135	0.06 - 0.09 - 0.13	0.06 - 0.09 - 0.13	0.06 - 0.09 - 0.13	
			SCM, SNCM Hardened	350	G	G	ACP2000 ACU2500	80 - 120 - 160 50 - 80 - 110	0.06 - 0.09 - 0.13	0.06 - 0.09 - 0.13	0.06 - 0.09 - 0.13	
		High-alloy Steel	SKD, SKT, SKH	200	G	G	ACP2000 ACU2500	150 - 180 - 210 100 - 150 - 180	0.07 - 0.11 - 0.15	0.07 - 0.12 - 0.16	0.07 - 0.12 - 0.16	
			SKD, SKT, SKH Hardened	325	G	G	ACP2000 ACU2500	120 - 150 - 180 60 - 80 - 100	0.06 - 0.10 - 0.14	0.06 - 0.10 - 0.14	0.06 - 0.10 - 0.14	
	M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200	L	L	ACU2500	120 - 160 - 180	0.05 - 0.09 - 0.14	0.05 - 0.09 - 0.14	0.05 - 0.09 - 0.14	
			SUS403 and Others (Martensitic/Hardened)	240	L	L	ACU2500	120 - 150 - 170	0.05 - 0.09 - 0.14	0.05 - 0.09 - 0.14	0.05 - 0.09 - 0.14	
			SUS304, SUS316 (Austenitic)	180	L	L	ACU2500	120 - 180 - 210	0.05 - 0.09 - 0.14	0.05 - 0.09 - 0.14	0.05 - 0.09 - 0.14	
	K	Cast Iron			G	G	ACP2000 ACU2500	150 - 210 - 240 120 - 180 - 210	0.09 - 0.17 - 0.25	0.10 - 0.18 - 0.25	0.09 - 0.19 - 0.29	
		Ductile Cast Iron			G	G	ACP2000 ACU2500	120 - 150 - 180 100 - 125 - 150	0.09 - 0.17 - 0.25	0.10 - 0.18 - 0.25	0.09 - 0.19 - 0.29	
4D	P	Steel, Carbon Steel	SS400	125	L	L	ACP2000 ACU2500	160 - 220 - 280 120 - 170 - 220	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08	
			S15C	125	L	L	ACP2000 ACU2500	160 - 220 - 280 120 - 170 - 220	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08	
			S45C	190	G	G	ACP2000 ACU2500	170 - 210 - 250 100 - 160 - 220	0.06 - 0.11 - 0.16	0.06 - 0.11 - 0.16	0.06 - 0.12 - 0.18	
			S45C Hardened	250	G	G	ACP2000 ACU2500	110 - 180 - 250 90 - 140 - 200	0.05 - 0.08 - 0.11	0.05 - 0.08 - 0.11	0.05 - 0.08 - 0.11	
			S75C	270	G	G	ACP2000 ACU2500	110 - 180 - 250 70 - 140 - 200	0.06 - 0.10 - 0.14	0.06 - 0.10 - 0.14	0.06 - 0.10 - 0.14	
			S75C Hardened	300	G	G	ACP2000 ACU2500	100 - 150 - 200 90 - 120 - 150	0.05 - 0.08 - 0.11	0.05 - 0.08 - 0.11	0.05 - 0.08 - 0.11	
		Low-alloy Steel	SCM, SNCM	180	G	G	ACP2000 ACU2500	140 - 180 - 220 110 - 140 - 170	0.05 - 0.08 - 0.11	0.05 - 0.08 - 0.11	0.05 - 0.08 - 0.11	
			SCM, SNCM Hardened	275	G	G	ACP2000 ACU2500	130 - 170 - 210 100 - 130 - 140	0.06 - 0.09 - 0.11	0.06 - 0.09 - 0.11	0.06 - 0.09 - 0.11	
			SCM, SNCM Hardened	300	G	G	ACP2000 ACU2500	120 - 150 - 180 65 - 100 - 135	0.06 - 0.09 - 0.11	0.06 - 0.09 - 0.11	0.06 - 0.09 - 0.11	
			SCM, SNCM Hardened	350	G	G	ACP2000 ACU2500	80 - 120 - 160 50 - 80 - 110	0.06 - 0.09 - 0.11	0.06 - 0.09 - 0.11	0.06 - 0.09 - 0.11	
		High-alloy Steel	SKD, SKT, SKH	200	G	G	ACP2000 ACU2500	150 - 180 - 210 100 - 150 - 180	0.06 - 0.10 - 0.14	0.06 - 0.11 - 0.15	0.06 - 0.11 - 0.15	
			SKD, SKT, SKH Hardened	325	G	G	ACP2000 ACU2500	120 - 150 - 180 60 - 80 - 100	0.06 - 0.09 - 0.12	0.06 - 0.09 - 0.12	0.06 - 0.09 - 0.12	
	M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200	L	L	ACU2500	120 - 160 - 180	0.05 - 0.09 - 0.12	0.05 - 0.09 - 0.12	0.05 - 0.09 - 0.12	
			SUS403 and Others (Martensitic/Hardened)	240	L	L	ACU2500	120 - 150 - 170	0.05 - 0.09 - 0.12	0.05 - 0.09 - 0.12	0.05 - 0.09 - 0.12	
			SUS304, SUS316 (Austenitic)	180	L	L	ACU2500	120 - 180 - 210	0.05 - 0.09 - 0.12	0.05 - 0.09 - 0.12	0.05 - 0.09 - 0.12	
	K	Cast Iron			G	G	ACP2000 ACU2500	150 - 210 - 240 120 - 180 - 210	0.09 - 0.16 - 0.23	0.10 - 0.16 - 0.23	0.09 - 0.18 - 0.26	
		Ductile Cast Iron			G	G	ACP2000 ACU2500	120 - 150 - 180 100 - 125 - 150	0.09 - 0.16 - 0.23	0.10 - 0.16 - 0.23	0.09 - 0.18 - 0.26	

· The recommended conditions may not be practical depending on the operating conditions (e.g. machine tool, workpiece shape, clamping system).

*Caution · The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, and other factors.

GDX series Recommended Cutting Conditions (5D/6D/7D)

L/D	Classification	Work Material	Work Material Hardness	Chipbreaker		Recommended Peripheral Insert Grade	Vc Cutting Speed (m/min)	f Feed Rate (mm/rev) (Min. - Optimum - Max.)		
			HB	Peripheral Insert	Central Insert			ø15.5 to ø18.0	ø18.5 to ø22.0	ø22.5 to ø27.0
5D	P	Steel, Carbon Steel SS400	125	L	L	ACP2000 ACU2500	160 - 220 - 280 120 - 170 - 220	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08
		S15C	125	L	L	ACP2000 ACU2500	160 - 220 - 280 120 - 170 - 220	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08
		S45C	190	G	G	ACP2000 ACU2500	170 - 210 - 250 100 - 160 - 220	0.06 - 0.10 - 0.14	0.06 - 0.10 - 0.14	0.06 - 0.11 - 0.15
		S45C Hardened	250	G	G	ACP2000 ACU2500	110 - 180 - 250 90 - 140 - 200	0.05 - 0.07 - 0.10	0.05 - 0.07 - 0.10	0.05 - 0.07 - 0.10
		S75C	270	G	G	ACP2000 ACU2500	110 - 180 - 250 70 - 140 - 200	0.06 - 0.09 - 0.12	0.06 - 0.09 - 0.12	0.06 - 0.09 - 0.12
		S75C Hardened	300	G	G	ACP2000 ACU2500	100 - 150 - 200 90 - 120 - 150	0.05 - 0.07 - 0.10	0.05 - 0.07 - 0.10	0.05 - 0.07 - 0.10
		Low-alloy Steel SCM, SNCM	180	G	G	ACP2000 ACU2500	140 - 180 - 220 110 - 140 - 170	0.05 - 0.07 - 0.10	0.05 - 0.07 - 0.10	0.05 - 0.07 - 0.10
		SCM, SNCM Hardened	275	G	G	ACP2000 ACU2500	130 - 170 - 210 100 - 130 - 140	0.06 - 0.08 - 0.10	0.06 - 0.08 - 0.10	0.06 - 0.08 - 0.10
		SCM, SNCM Hardened	300	G	G	ACP2000 ACU2500	120 - 150 - 180 65 - 100 - 135	0.06 - 0.08 - 0.10	0.06 - 0.08 - 0.10	0.06 - 0.08 - 0.10
		SCM, SNCM Hardened	350	G	G	ACP2000 ACU2500	80 - 120 - 160 50 - 80 - 110	0.06 - 0.08 - 0.10	0.06 - 0.08 - 0.10	0.06 - 0.08 - 0.10
		High-alloy Steel SKD, SKT, SKH	200	G	G	ACP2000 ACU2500	150 - 180 - 210 100 - 150 - 180	0.06 - 0.09 - 0.12	0.06 - 0.09 - 0.12	0.06 - 0.09 - 0.12
		SKD, SKT, SKH Hardened	325	G	G	ACP2000 ACU2500	120 - 150 - 180 60 - 80 - 100	0.06 - 0.08 - 0.10	0.06 - 0.08 - 0.10	0.06 - 0.08 - 0.10
	M	Stainless Steel SUS430 and Others (Martensitic/Ferritic)	200	L	L	ACU2500	120 - 160 - 180	0.05 - 0.08 - 0.10	0.05 - 0.08 - 0.10	0.05 - 0.08 - 0.10
		SUS403 and Others (Martensitic/Hardened)	240	L	L	ACU2500	120 - 150 - 170	0.05 - 0.08 - 0.10	0.05 - 0.08 - 0.10	0.05 - 0.08 - 0.10
		SUS304, SUS316 (Austenitic)	180	L	L	ACU2500	120 - 180 - 210	0.05 - 0.08 - 0.10	0.05 - 0.08 - 0.10	0.05 - 0.08 - 0.10
	K	Cast Iron		G	G	ACP2000 ACU2500	150 - 210 - 240 120 - 180 - 210	0.09 - 0.14 - 0.19	0.10 - 0.15 - 0.19	0.09 - 0.16 - 0.22
		Ductile Cast Iron		G	G	ACP2000 ACU2500	120 - 150 - 180 100 - 125 - 150	0.09 - 0.14 - 0.19	0.10 - 0.15 - 0.19	0.09 - 0.16 - 0.22
6D	P	Steel, Carbon Steel SS400	125	L	L	ACP2000 ACU2500	160 - 200 - 240 120 - 150 - 180	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08
		S15C	125	L	L	ACP2000 ACU2500	160 - 200 - 240 120 - 150 - 180	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08
		S45C	190	G	G	ACP2000 ACU2500	170 - 190 - 210 100 - 140 - 180	0.05 - 0.07 - 0.09	0.05 - 0.07 - 0.09	0.05 - 0.07 - 0.09
		S45C Hardened	250	G	G	ACP2000 ACU2500	110 - 160 - 210 90 - 120 - 160	0.05 - 0.06 - 0.07	0.05 - 0.06 - 0.07	0.05 - 0.06 - 0.07
		S75C	270	G	G	ACP2000 ACU2500	110 - 160 - 210 70 - 120 - 160	0.06 - 0.07 - 0.09	0.06 - 0.07 - 0.09	0.06 - 0.07 - 0.09
		S75C Hardened	300	G	G	ACP2000 ACU2500	100 - 130 - 160 90 - 100 - 110	0.05 - 0.06 - 0.07	0.05 - 0.06 - 0.07	0.05 - 0.06 - 0.07
		Low-alloy Steel SCM, SNCM	180	G	G	ACP2000 ACU2500	140 - 160 - 180 110 - 120 - 130	0.05 - 0.06 - 0.07	0.05 - 0.06 - 0.07	0.05 - 0.06 - 0.07
		SCM, SNCM Hardened	275	G	G	ACP2000 ACU2500	130 - 150 - 170 100 - 110 - 100	0.06 - 0.07 - 0.07	0.06 - 0.07 - 0.07	0.06 - 0.07 - 0.07
		SCM, SNCM Hardened	300	G	G	ACP2000 ACU2500	120 - 130 - 140 65 - 80 - 95	0.06 - 0.07 - 0.07	0.06 - 0.07 - 0.07	0.06 - 0.07 - 0.07
		SCM, SNCM Hardened	350	G	G	ACP2000 ACU2500	80 - 100 - 120 50 - 60 - 70	0.06 - 0.07 - 0.07	0.06 - 0.07 - 0.07	0.06 - 0.07 - 0.07
		High-alloy Steel SKD, SKT, SKH	200	G	G	ACP2000 ACU2500	150 - 170 - 190 100 - 140 - 160	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08
		SKD, SKT, SKH Hardened	325	G	G	ACP2000 ACU2500	120 - 140 - 160 60 - 70 - 80	0.06 - 0.07 - 0.08	0.06 - 0.07 - 0.08	0.06 - 0.07 - 0.08
	M	Stainless Steel SUS430 and Others (Martensitic/Ferritic)	200	L	L	ACU2500	120 - 150 - 160	0.05 - 0.06 - 0.08	0.05 - 0.06 - 0.08	0.05 - 0.06 - 0.08
		SUS403 and Others (Martensitic/Hardened)	240	L	L	ACU2500	120 - 140 - 150	0.05 - 0.06 - 0.08	0.05 - 0.06 - 0.08	0.05 - 0.06 - 0.08
		SUS304, SUS316 (Austenitic)	180	L	L	ACU2500	120 - 170 - 190	0.05 - 0.06 - 0.08	0.05 - 0.06 - 0.08	0.05 - 0.06 - 0.08
	K	Cast Iron		G	G	ACP2000 ACU2500	150 - 200 - 220 120 - 170 - 190	0.09 - 0.12 - 0.14	0.10 - 0.12 - 0.14	0.09 - 0.13 - 0.16
		Ductile Cast Iron		G	G	ACP2000 ACU2500	120 - 140 - 160 100 - 115 - 130	0.09 - 0.12 - 0.14	0.10 - 0.12 - 0.14	0.09 - 0.13 - 0.16
7D	P	Steel, Carbon Steel SS400	125	L	L	ACP2000 ACU2500	160 - 200 - 240 120 - 150 - 180	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08
		S15C	125	L	L	ACP2000 ACU2500	160 - 200 - 240 120 - 150 - 180	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08
		S45C	190	G	G	ACP2000 ACU2500	170 - 190 - 210 100 - 140 - 180	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08	0.04 - 0.06 - 0.08
		S45C Hardened	250	G	G	ACP2000 ACU2500	110 - 160 - 210 90 - 120 - 160	0.05 - 0.06 - 0.07	0.05 - 0.06 - 0.07	0.05 - 0.06 - 0.07
		S75C	270	G	G	ACP2000 ACU2500	110 - 160 - 210 70 - 120 - 160	0.06 - 0.07 - 0.08	0.06 - 0.07 - 0.08	0.06 - 0.07 - 0.08
		S75C Hardened	300	G	G	ACP2000 ACU2500	100 - 130 - 160 90 - 100 - 110	0.05 - 0.06 - 0.07	0.05 - 0.06 - 0.07	0.05 - 0.06 - 0.07
		Low-alloy Steel SCM, SNCM	180	G	G	ACP2000 ACU2500	140 - 160 - 180 110 - 120 - 130	0.05 - 0.06 - 0.07	0.05 - 0.06 - 0.07	0.05 - 0.06 - 0.07
		SCM, SNCM Hardened	275	G	G	ACP2000 ACU2500	130 - 150 - 170 100 - 110 - 100	0.06 - 0.07 - 0.07	0.06 - 0.07 - 0.07	0.06 - 0.07 - 0.07
		SCM, SNCM Hardened	300	G	G	ACP2000 ACU2500	120 - 130 - 140 65 - 80 - 95	0.06 - 0.07 - 0.07	0.06 - 0.07 - 0.07	0.06 - 0.07 - 0.07
		SCM, SNCM Hardened	350	G	G	ACP2000 ACU2500	80 - 100 - 120 50 - 60 - 70	0.06 - 0.07 - 0.07	0.06 - 0.07 - 0.07	0.06 - 0.07 - 0.07
		High-alloy Steel SKD, SKT, SKH	200	G	G	ACP2000 ACU2500	150 - 170 - 190 100 - 140 - 160	0.04 - 0.06 - 0.08	0.04 - 0.07 - 0.08	0.04 - 0.07 - 0.08
		SKD, SKT, SKH Hardened	325	G	G	ACP2000 ACU2500	120 - 140 - 160 60 - 70 - 80	0.06 - 0.07 - 0.08	0.06 - 0.07 - 0.08	0.06 - 0.07 - 0.08
	M	Stainless Steel SUS430 and Others (Martensitic/Ferritic)	200	L	L	ACU2500	120 - 150 - 160	0.05 - 0.06 - 0.08	0.05 - 0.06 - 0.08	0.05 - 0.06 - 0.08
		SUS403 and Others (Martensitic/Hardened)	240	L	L	ACU2500	120 - 140 - 150	0.05 - 0.06 - 0.08	0.05 - 0.06 - 0.08	0.05 - 0.06 - 0.08
		SUS304, SUS316 (Austenitic)	180	L	L	ACU2500	120 - 170 - 190	0.05 - 0.06 - 0.08	0.05 - 0.06 - 0.08	0.05 - 0.06 - 0.08
	K	Cast Iron		G	G	ACP2000 ACU2500	150 - 200 - 220 120 - 170 - 190	0.09 - 0.12 - 0.14	0.10 - 0.12 - 0.14	0.09 - 0.13 - 0.16
		Ductile Cast Iron		G	G	ACP2000 ACU2500	120 - 140 - 160 100 - 115 - 130	0.09 - 0.12 - 0.14	0.10 - 0.12 - 0.14	0.09 - 0.13 - 0.16

· The recommended conditions may not be practical depending on the operating conditions (e.g. machine tool, workpiece shape, clamping system). For 6D and 7D machining, reduce the feed to 75% of recommended conditions at engagement (3mm from entrance).

Use the lower recommended limit feed at the exit of through holes (5mm from exit).

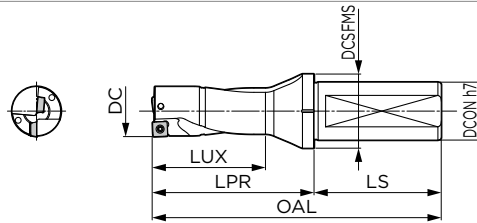
*Caution · The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, and other factors.



Drilling tolerance: -0.05 to +0.15mm

*For h7 tolerance, refer to the General Catalogue.

Fig 1



■ Diameter ø15.5 to 27.0mm

Dimensions (mm)

DC	Stock	Cat. No.	LUX	LPR	OAL	LS	DCSFMS	DCON	Applicable Inserts (Peripheral Inserts)	Applicable Inserts (Central Inserts)	Fig
15.5	●	GDXH 155D2S20-05	36.0	53.75	102.75	49.0	25.0	20.0	GDXT050203P	GDXT050205C	1
16.0	●	160D2S20-05	37.0	55.00	104.00	49.0	25.0	20.0			1
16.5	●	165D2S20-05	38.0	56.25	105.25	49.0	25.0	20.0			1
17.0	●	170D2S20-05	39.0	57.50	106.50	49.0	25.0	20.0			1
17.5	●	GDXH 175D2S25-05	40.0	58.75	113.75	55.0	32.0	25.0			1
18.0	●	180D2S25-05	41.0	60.00	115.00	55.0	32.0	25.0	GDXT06T204P	GDXT06T206C	1
18.5	●	GDXH 185D2S25-06	42.0	61.25	116.25	55.0	32.0	25.0			1
19.0	●	190D2S25-06	43.0	62.50	117.50	55.0	32.0	25.0			1
19.5	●	195D2S25-06	44.0	63.75	118.75	55.0	32.0	25.0			1
20.0	●	200D2S25-06	45.0	65.00	120.00	55.0	32.0	25.0			1
20.5	●	205D2S25-06	46.0	66.25	121.25	55.0	32.0	25.0			1
21.0	●	210D2S25-06	47.0	67.50	122.50	55.0	32.0	25.0			1
21.5	●	215D2S25-06	48.0	68.75	123.75	55.0	32.0	25.0			1
22.0	●	220D2S25-06	49.0	70.00	125.00	55.0	32.0	25.0			1
22.5	●	GDXH 225D2S25-07	50.0	71.25	126.25	55.0	32.0	25.0	GDXT070305P	GDXT070308C	1
23.0	●	230D2S25-07	51.0	72.50	127.50	55.0	32.0	25.0			1
23.5	●	235D2S25-07	52.0	73.75	128.75	55.0	32.0	25.0			1
24.0	●	240D2S25-07	53.0	75.00	130.00	55.0	32.0	25.0			1
24.5	●	245D2S25-07	54.0	76.25	131.25	55.0	32.0	25.0			1
25.0	●	250D2S25-07	55.0	77.50	132.50	55.0	32.0	25.0			1
25.5	●	255D2S25-07	56.0	78.75	133.75	55.0	32.0	25.0			1
26.0	●	GDXH 260D2S32-07	57.0	80.00	139.00	59.0	40.0	32.0			1
26.5	●	265D2S32-07	58.0	81.25	140.25	59.0	40.0	32.0			1
27.0	●	270D2S32-07	59.0	82.50	141.50	59.0	40.0	32.0			1

Recommended Cutting Conditions **ISO P6**

■ Parts

Applicable Holder	Flat Insert Screw	Wrench	Wrench	Anti-seizure Cream
GDXH155D2S20-05- GDXH180D2S25-05	BFTX0204IP	0.5	TRX06IP	—
GDXH185D2S25-06- GDXH220D2S25-06	BFTX02205IP	1.0	—	TRDR07IP
GDXH225D2S25-07- GDXH270D2S32-07	BFTX02506IP	1.5	—	TRDR08IP

■ Identification Code

GDXH 200 D2 S25 - 06

Series Code	Diameter (ø20.0)	L/D (2D)	Shank Dia (ø25.0)	Insert Size
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GDXH type 2D (Internal Coolant Supply)

■ Insert

Dimensions (mm)

Grade Classification		Coated Carbide							
Process	High-speed/Light Cutting								
	Medium Cutting								
	Roughing								
Cat. No.		ACU2500	ACP2000	ACS3000	W1	S	RE	Fig	Applicable Holder
Peripheral Insert	GDXT 050203P-L	●	●	●	5.1	2.56	0.3	1	GDXH155D2S20-05- GDXH180D2S25-05
	050203P-G	●	●	●	5.1	2.51	0.3	2	
	GDXT 06T204P-L	●	●	●	6.3	2.98	0.4	1	GDXH185D2S25-06- GDXH220D2S25-06
	06T204P-G	●	●	●	6.3	2.93	0.4	2	
	GDXT 070305P-L	●	●	●	7.7	3.38	0.5	1	GDXH225D2S25-07- GDXH270D2S32-07
	070305P-G	●	●	●	7.7	3.33	0.5	2	
Central Insert	GDXT 050205C-L	●	—	—	5.6	2.38	0.5	3	GDXH155D2S20-05- GDXH180D2S25-05
	050205C-G	●	—	—	5.6	2.48	0.5	4	
	GDXT 06T206C-L	●	—	—	6.9	2.78	0.6	3	GDXH185D2S25-06- GDXH220D2S25-06
	06T206C-G	●	—	—	6.9	2.88	0.6	4	
	GDXT 070308C-L	●	—	—	8.6	3.18	0.8	3	GDXH225D2S25-07- GDXH270D2S32-07
	070308C-G	●	—	—	8.6	3.31	0.8	4	

Fig. 1 Peripheral insert L type

Fig. 2 Peripheral insert G type

Fig. 3 Central insert L type

Fig. 4 Central insert G type

Fig. 1 Peripheral insert L type

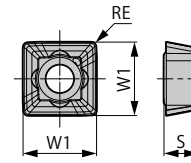


Fig. 2 Peripheral insert G type

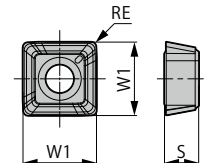


Fig. 3 Central insert L type

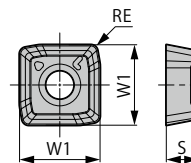
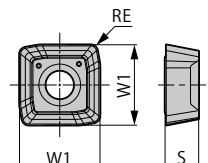


Fig. 4 Central insert G type



Precautions for Mounting and Removing Inserts

■ Identification Code

GDXT 06 T2 04 P - G

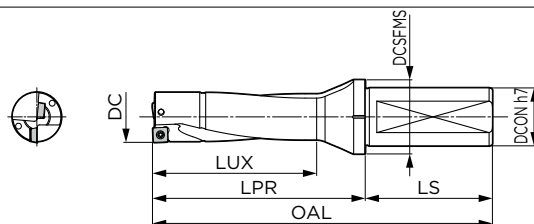
Series Code Insert Size Thickness Corner Radius P: Peripheral Insert Chipbreaker type
C: Central Insert



Drilling tolerance: 0 to +0.20mm

*For h7 tolerance, refer to the General Catalogue.

Fig 1



■ Diameter ø15.5 to 27.0mm

Dimensions (mm)

DC	Stock	Cat. No.	LUX	LPR	OAL	LS	DCSFMS	DCON	Applicable Inserts (Peripheral Inserts)	Applicable Inserts (Central Inserts)	Fig
15.5	●	GDXH 155D3S20-05	51.5	69.25	118.25	49.0	25.0	20.0	GDXT050203P	GDXT050205C	1
16.0	●	160D3S20-05	53.0	71.00	120.00	49.0	25.0	20.0			1
16.5	●	165D3S20-05	54.5	72.75	121.75	49.0	25.0	20.0			1
17.0	●	170D3S20-05	56.0	74.50	123.50	49.0	25.0	20.0			1
17.5	●	GDXH 175D3S25-05	57.5	76.25	131.25	55.0	32.0	25.0			1
18.0	●	180D3S25-05	59.0	78.00	133.00	55.0	32.0	25.0	GDXT06T204P	GDXT06T206C	1
18.5	●	GDXH 185D3S25-06	60.5	79.75	134.75	55.0	32.0	25.0			1
19.0	●	190D3S25-06	62.0	81.50	136.50	55.0	32.0	25.0			1
19.5	●	195D3S25-06	63.5	83.25	138.25	55.0	32.0	25.0			1
20.0	●	200D3S25-06	65.0	85.00	140.00	55.0	32.0	25.0			1
20.5	●	205D3S25-06	66.5	86.75	141.75	55.0	32.0	25.0			1
21.0	●	210D3S25-06	68.0	88.50	143.50	55.0	32.0	25.0			1
21.5	●	215D3S25-06	69.5	90.25	145.25	55.0	32.0	25.0			1
22.0	●	220D3S25-06	71.0	92.00	147.00	55.0	32.0	25.0			1
22.5	●	GDXH 225D3S25-07	72.5	93.75	148.75	55.0	32.0	25.0	GDXT070305P	GDXT070308C	1
23.0	●	230D3S25-07	74.0	95.50	150.50	55.0	32.0	25.0			1
23.5	●	235D3S25-07	75.5	97.25	152.25	55.0	32.0	25.0			1
24.0	●	240D3S25-07	77.0	99.00	154.00	55.0	32.0	25.0			1
24.5	●	245D3S25-07	78.5	100.75	155.75	55.0	32.0	25.0			1
25.0	●	250D3S25-07	80.0	102.50	157.50	55.0	32.0	25.0			1
25.5	●	255D3S25-07	81.5	104.25	159.25	55.0	32.0	25.0			1
26.0	●	GDXH 260D3S32-07	83.0	106.00	165.00	59.0	40.0	32.0			1
26.5	●	265D3S32-07	84.5	107.75	166.75	59.0	40.0	32.0			1
27.0	●	270D3S32-07	86.0	109.50	168.50	59.0	40.0	32.0			1

Recommended Cutting Conditions **IS P6**

■ Parts

Applicable Holder	Flat Insert Screw	Wrench	Wrench	Anti-seizure Cream
GDXH155D3S20-05- GDXH180D3S25-05	BFTX0204IP	0.5	TRX06IP	—
GDXH185D3S25-06- GDXH220D3S25-06	BFTX02205IP	1.0	—	TRDR07IP
GDXH225D3S25-07- GDXH270D3S32-07	BFTX02506IP	1.5	—	TRDR08IP

■ Identification Code

GDXH 200 D3 S25 - 06

Series Code

Diameter
(ø20.0)L/D
(3D)Shank Dia
(ø25.0)Insert
Size

GDXH type 3D (Internal Coolant Supply)

■ Insert

Dimensions (mm)

Grade Classification		Coated Carbide							
Process	High-speed/Light Cutting								
	Medium Cutting								
	Roughing								
Cat. No.		ACU2500	ACP2000	ACS3000	W1	S	RE	Fig	Applicable Holder
Peripheral Insert	GDXT 050203P-L	●	●	●	5.1	2.56	0.3	1	GDXH155D3S20-05- GDXH180D3S25-05
	050203P-G	●	●	●	5.1	2.51	0.3	2	
	GDXT 06T204P-L	●	●	●	6.3	2.98	0.4	1	GDXH185D3S25-06- GDXH220D3S25-06
	06T204P-G	●	●	●	6.3	2.93	0.4	2	
	GDXT 070305P-L	●	●	●	7.7	3.38	0.5	1	GDXH225D3S25-07- GDXH270D3S32-07
	070305P-G	●	●	●	7.7	3.33	0.5	2	
Central Insert	GDXT 050205C-L	●	—	—	5.6	2.38	0.5	3	GDXH155D3S20-05- GDXH180D3S25-05
	050205C-G	●	—	—	5.6	2.48	0.5	4	
	GDXT 06T206C-L	●	—	—	6.9	2.78	0.6	3	GDXH185D3S25-06- GDXH220D3S25-06
	06T206C-G	●	—	—	6.9	2.88	0.6	4	
	GDXT 070308C-L	●	—	—	8.6	3.18	0.8	3	GDXH225D3S25-07- GDXH270D3S32-07
	070308C-G	●	—	—	8.6	3.31	0.8	4	

Fig. 1 Peripheral insert L type

Fig. 2 Peripheral insert G type

Fig. 3 Central insert L type

Fig. 4 Central insert G type

Fig. 1 Peripheral insert L type

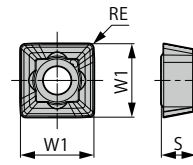


Fig. 2 Peripheral insert G type

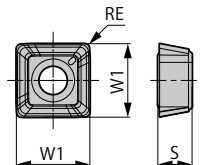


Fig. 3 Central insert L type

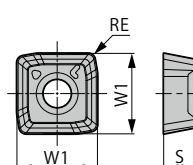
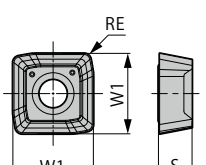


Fig. 4 Central insert G type



Precautions for Mounting and Removing Inserts

■ Identification Code

GDXT 06 T2 04 P - G

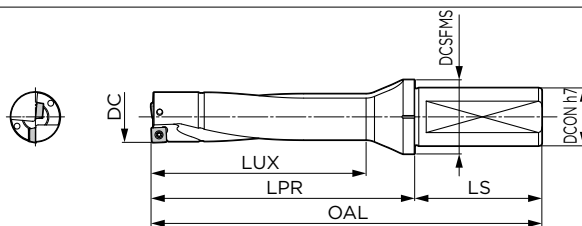
Series Code Insert Size Thickness Corner Radius P: Peripheral Insert C: Central Insert Chipbreaker type



Drilling tolerance: 0 to +0.25mm

*For h7 tolerance, refer to the General Catalogue.

Fig 1



■ Diameter ø15.5 to 27.0mm

Dimensions (mm)

DC	Stock	Cat. No.	LUX	LPR	OAL	LS	DCSFMS	DCON	Applicable Inserts (Peripheral Inserts)	Applicable Inserts (Central Inserts)	Fig
15.5	●	GDXH 155D4S20-05	67.0	84.75	133.75	49.0	25.0	20.0	GDXT050203P	GDXT050205C	1
16.0	●	160D4S20-05	69.0	87.00	136.00	49.0	25.0	20.0			1
16.5	●	165D4S20-05	71.0	89.25	138.25	49.0	25.0	20.0			1
17.0	●	170D4S20-05	73.0	91.50	140.50	49.0	25.0	20.0			1
17.5	●	GDXH 175D4S25-05	75.0	93.75	148.75	55.0	32.0	25.0	GDXT06T204P	GDXT06T206C	1
18.0	●	180D4S25-05	77.0	96.00	151.00	55.0	32.0	25.0			1
18.5	●	GDXH 185D4S25-06	79.0	98.25	153.25	55.0	32.0	25.0			1
19.0	●	190D4S25-06	81.0	100.50	155.50	55.0	32.0	25.0			1
19.5	●	195D4S25-06	83.0	102.75	157.75	55.0	32.0	25.0			1
20.0	●	200D4S25-06	85.0	105.00	160.00	55.0	32.0	25.0			1
20.5	●	205D4S25-06	87.0	107.25	162.25	55.0	32.0	25.0			1
21.0	●	210D4S25-06	89.0	109.50	164.50	55.0	32.0	25.0			1
21.5	●	215D4S25-06	91.0	111.75	166.75	55.0	32.0	25.0	GDXT070305P	GDXT070308C	1
22.0	●	220D4S25-06	93.0	114.00	169.00	55.0	32.0	25.0			1
22.5	●	GDXH 225D4S25-07	95.0	116.25	171.25	55.0	32.0	25.0			1
23.0	●	230D4S25-07	97.0	118.50	173.50	55.0	32.0	25.0			1
23.5	●	235D4S25-07	99.0	120.75	175.75	55.0	32.0	25.0			1
24.0	●	240D4S25-07	101.0	123.00	178.00	55.0	32.0	25.0			1
24.5	●	245D4S25-07	103.0	125.25	180.25	55.0	32.0	25.0			1
25.0	●	250D4S25-07	105.0	127.50	182.50	55.0	32.0	25.0			1
25.5	●	255D4S25-07	107.0	129.75	184.75	55.0	32.0	25.0	GDXT070305P	GDXT070308C	1
26.0	●	GDXH 260D4S32-07	109.0	132.00	191.00	59.0	40.0	32.0			1
26.5	●	265D4S32-07	111.0	134.25	193.25	59.0	40.0	32.0			1
27.0	●	270D4S32-07	113.0	136.50	195.50	59.0	40.0	32.0			1

Recommended Cutting Conditions **ISO P6**

■ Parts

Applicable Holder	Flat Insert Screw	Wrench	Wrench	Anti-seizure Cream
GDXH155D4S20-05 - GDXH180D4S25-05	BFTX0204IP	1.0	TRX06IP	—
GDXH185D4S25-06 - GDXH220D4S25-06	BFTX02205IP	1.0	—	TRDR07IP
GDXH225D4S25-07 - GDXH270D4S32-07	BFTX02506IP	1.5	—	TRDR08IP

■ Identification Code

GDXH 200 D4 S25 - 06

Series Code	Diameter (ø20.0)	L/D (4D)	Shank Dia (ø25.0)	Insert Size
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GDXH type 4D (Internal Coolant Supply)

■ Insert

Dimensions (mm)

Grade Classification		Coated Carbide								
Process	High-speed/Light Cutting									
	Medium Cutting									
	Roughing									
Cat. No.		ACU2500	ACP2000	ACS3000	W1	S	RE	Fig	Applicable Holder	
Peripheral Insert	GDXT 050203P-L	●	●	●	5.1	2.56	0.3	1	GDXH155D4S20-05- GDXH180D4S25-05	
	050203P-G	●	●	●	5.1	2.51	0.3	2		
	GDXT 06T204P-L	●	●	●	6.3	2.98	0.4	1	GDXH185D4S25-06- GDXH220D4S25-06	
	06T204P-G	●	●	●	6.3	2.93	0.4	2		
	GDXT 070305P-L	●	●	●	7.7	3.38	0.5	1	GDXH225D4S25-07- GDXH270D4S32-07	
	070305P-G	●	●	●	7.7	3.33	0.5	2		
Central Insert	GDXT 050205C-L	●	—	—	5.6	2.38	0.5	3	GDXH155D4S20-05- GDXH180D4S25-05	
	050205C-G	●	—	—	5.6	2.48	0.5	4		
	GDXT 06T206C-L	●	—	—	6.9	2.78	0.6	3	GDXH185D4S25-06- GDXH220D4S25-06	
	06T206C-G	●	—	—	6.9	2.88	0.6	4		
	GDXT 070308C-L	●	—	—	8.6	3.18	0.8	3	GDXH225D4S25-07- GDXH270D4S32-07	
	070308C-G	●	—	—	8.6	3.31	0.8	4		

Fig. 1 Peripheral insert L type

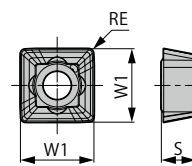


Fig. 2 Peripheral insert G type

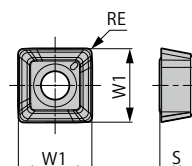


Fig. 3 Central insert L type

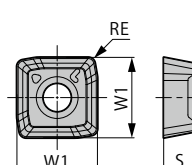
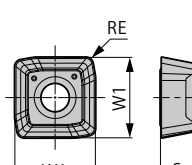


Fig. 4 Central insert G type



Precautions for Mounting and Removing Inserts P21

■ Identification Code

GDXT 06 T2 04 P - G

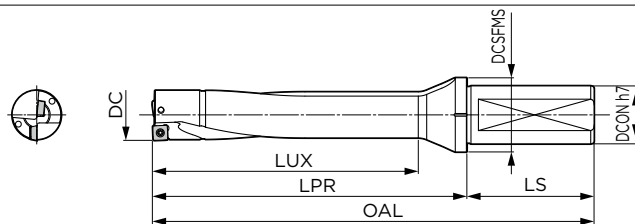
Series Code Insert Size Thickness Corner Radius P: Peripheral Insert C: Central Insert Chipbreaker type



Drilling tolerance: 0 to +0.25mm

*For h7 tolerance, refer to the General Catalogue.

Fig 1



■ Diameter ø15.5 to 27.0mm

Dimensions (mm)

DC	Stock	Cat. No.	LUX	LPR	OAL	LS	DCSFMS	DCON	Applicable Inserts (Peripheral Inserts)	Applicable Inserts (Central Inserts)	Fig
15.5	●	GDXH 155D5S20-05	82.5	100.25	149.25	49.0	25.0	20.0	GDXT050203P	GDXT050205C	1
16.0	●	160D5S20-05	85.0	103.00	152.00	49.0	25.0	20.0			1
16.5	●	165D5S20-05	87.5	105.75	154.75	49.0	25.0	20.0			1
17.0	●	170D5S20-05	90.0	108.50	157.50	49.0	25.0	20.0			1
17.5	●	GDXH 175D5S25-05	92.5	111.25	166.25	55.0	32.0	25.0			1
18.0	●	180D5S25-05	95.0	114.00	169.00	55.0	32.0	25.0	GDXT06T204P	GDXT06T206C	1
18.5	●	GDXH 185D5S25-06	97.5	116.75	171.75	55.0	32.0	25.0			1
19.0	●	190D5S25-06	100.0	119.50	174.50	55.0	32.0	25.0			1
19.5	●	195D5S25-06	102.5	122.25	177.25	55.0	32.0	25.0			1
20.0	●	200D5S25-06	105.0	125.00	180.00	55.0	32.0	25.0			1
20.5	●	205D5S25-06	107.5	127.75	182.75	55.0	32.0	25.0			1
21.0	●	210D5S25-06	110.0	130.50	185.50	55.0	32.0	25.0			1
21.5	●	215D5S25-06	112.5	133.25	188.25	55.0	32.0	25.0			1
22.0	●	220D5S25-06	115.0	136.00	191.00	55.0	32.0	25.0			1
22.5	●	GDXH 225D5S25-07	117.5	138.75	193.75	55.0	32.0	25.0	GDXT070305P	GDXT070308C	1
23.0	●	230D5S25-07	120.0	141.50	196.50	55.0	32.0	25.0			1
23.5	●	235D5S25-07	122.5	144.25	199.25	55.0	32.0	25.0			1
24.0	●	240D5S25-07	125.0	147.00	202.00	55.0	32.0	25.0			1
24.5	●	245D5S25-07	127.5	149.75	204.75	55.0	32.0	25.0			1
25.0	●	250D5S25-07	130.0	152.50	207.50	55.0	32.0	25.0			1
25.5	●	255D5S25-07	132.5	155.25	210.25	55.0	32.0	25.0			1
26.0	●	GDXH 260D5S32-07	135.0	158.00	217.00	59.0	40.0	32.0			1
26.5	●	265D5S32-07	137.5	160.75	219.75	59.0	40.0	32.0			1
27.0	●	270D5S32-07	140.0	163.50	222.50	59.0	40.0	32.0			1

Recommended Cutting Conditions **P7**

■ Parts

Applicable Holder	Flat Insert Screw	Wrench	Wrench	Anti-seizure Cream
GDXH155D5S20-05 - GDXH180D5S25-05	BFTX0204IP 0.5	TRX06IP	—	SUMI-P
GDXH185D5S25-06 - GDXH220D5S25-06	BFTX02205IP 1.0	—	TRDR07IP	
GDXH225D5S25-07 - GDXH270D5S32-07	BFTX02506IP 1.5	—	TRDR08IP	

■ Identification Code

GDXH 200 D5 S25 - 06

Series Code

Diameter
(ø20.0)L/D
(5D)Shank Dia
(ø25.0)Insert
Size

GDXH type 5D (Internal Coolant Supply)

■ Insert

Dimensions (mm)

Grade Classification					Coated Carbide					
Process	High-speed/Light Cutting									
	Medium Cutting									
	Roughing									
Cat. No.		ACU2500	ACP2000	ACS3000	W1	S	RE	Fig	Applicable Holder	
Peripheral Insert	GDXT 050203P-L	●	●	●	5.1	2.56	0.3	1	GDXH155D5S20-05- GDXH180D5S25-05	
	050203P-G	●	●	●	5.1	2.51	0.3	2		
	GDXT 06T204P-L	●	●	●	6.3	2.98	0.4	1	GDXH185D5S25-06- GDXH220D5S25-06	
	06T204P-G	●	●	●	6.3	2.93	0.4	2		
	GDXT 070305P-L	●	●	●	7.7	3.38	0.5	1	GDXH225D5S25-07- GDXH270D5S32-07	
	070305P-G	●	●	●	7.7	3.33	0.5	2		
Central Insert	GDXT 050205C-L	●	—	—	5.6	2.38	0.5	3	GDXH155D5S20-05- GDXH180D5S25-05	
	050205C-G	●	—	—	5.6	2.48	0.5	4		
	GDXT 06T206C-L	●	—	—	6.9	2.78	0.6	3	GDXH185D5S25-06- GDXH220D5S25-06	
	06T206C-G	●	—	—	6.9	2.88	0.6	4		
	GDXT 070308C-L	●	—	—	8.6	3.18	0.8	3	GDXH225D5S25-07- GDXH270D5S32-07	
	070308C-G	●	—	—	8.6	3.31	0.8	4		

Fig. 1 Peripheral insert L type

Fig. 2 Peripheral insert G type

Fig. 3 Central insert L type

Fig. 4 Central insert G type

Fig. 1 Peripheral insert L type

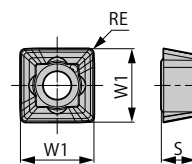


Fig. 2 Peripheral insert G type

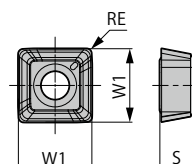


Fig. 3 Central insert L type

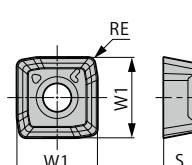
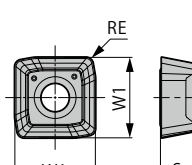


Fig. 4 Central insert G type



Precautions for Mounting and Removing Inserts

■ Identification Code

GDXT 06 T2 04 P - G

Series Code Insert Size Thickness Corner Radius P: Peripheral Insert Chipbreaker type

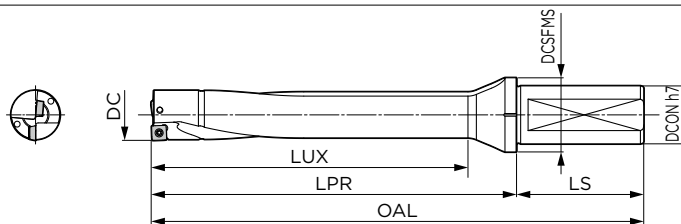
C: Central Insert



Drilling tolerance: 0 to +0.40mm

*For h7 tolerance, refer to the General Catalogue.

Fig 1



■ Diameter ø15.5 to 27.0mm

Dimensions (mm)

DC	Stock	Cat. No.	LUX	LPR	OAL	LS	DCSFMS	DCON	Applicable Inserts (Peripheral Inserts)	Applicable Inserts (Central Inserts)	Fig
15.5	○	GDXH 155D6S20-05	98.0	115.75	164.75	49.0	25.0	20.0	GDXT050203P	GDXT050205C	1
16.0	○	160D6S20-05	101.0	119.00	168.00	49.0	25.0	20.0			1
16.5	○	165D6S20-05	104.0	122.25	171.25	49.0	25.0	20.0			1
17.0	○	170D6S20-05	107.0	125.50	174.50	49.0	25.0	20.0			1
17.5	○	GDXH 175D6S25-05	110.0	128.75	183.75	55.0	32.0	25.0			1
18.0	○	180D6S25-05	113.0	132.00	187.00	55.0	32.0	25.0	GDXT06T204P	GDXT06T206C	1
18.5	●	GDXH 185D6S25-06	116.0	135.25	190.25	55.0	32.0	25.0			1
19.0	●	190D6S25-06	119.0	138.50	193.50	55.0	32.0	25.0			1
19.5	●	195D6S25-06	122.0	141.75	196.75	55.0	32.0	25.0			1
20.0	●	200D6S25-06	125.0	145.00	200.00	55.0	32.0	25.0			1
20.5	●	205D6S25-06	128.0	148.25	203.25	55.0	32.0	25.0			1
21.0	●	210D6S25-06	131.0	151.50	206.50	55.0	32.0	25.0			1
21.5	●	215D6S25-06	134.0	154.75	209.75	55.0	32.0	25.0			1
22.0	●	220D6S25-06	137.0	158.00	213.00	55.0	32.0	25.0	GDXT070305P	GDXT070308C	1
22.5	○	GDXH 225D6S25-07	140.0	161.25	216.25	55.0	32.0	25.0			1
23.0	○	230D6S25-07	143.0	164.50	219.50	55.0	32.0	25.0			1
23.5	○	235D6S25-07	146.0	167.75	222.75	55.0	32.0	25.0			1
24.0	○	240D6S25-07	149.0	171.00	226.00	55.0	32.0	25.0			1
24.5	○	245D6S25-07	152.0	174.25	229.25	55.0	32.0	25.0			1
25.0	○	250D6S25-07	155.0	177.50	232.50	55.0	32.0	25.0			1
25.5	○	255D6S25-07	158.0	180.75	235.75	55.0	32.0	25.0			1
26.0	○	GDXH 260D6S32-07	161.0	184.00	243.00	59.0	40.0	32.0			1
26.5	○	265D6S32-07	164.0	187.25	246.25	59.0	40.0	32.0			1
27.0	○	270D6S32-07	167.0	190.50	249.50	59.0	40.0	32.0			1

Recommended Cutting Conditions **P7**

■ Parts

Applicable Holder	Flat Insert Screw	Wrench	Wrench	Anti-seizure Cream
GDXH155D6S20-05 - GDXH180D6S25-05	BFTX0204IP 0.5	TRX06IP	—	SUMI-P
GDXH185D6S25-06 - GDXH220D6S25-06	BFTX02205IP 1.0	—	TRDR07IP	
GDXH225D6S25-07 - GDXH270D6S32-07	BFTX02506IP 1.5	—	TRDR08IP	

■ Identification Code

GDXH 200 D6 S25 - 06

Series Code

Diameter
(ø20.0)L/D
(6D)Shank Dia
(ø25.0)Insert
Size

GDXH type 6D (Internal Coolant Supply)

■ Insert

Dimensions (mm)

Grade Classification		Coated Carbide							
Process	High-speed/Light Cutting								
	Medium Cutting								
	Roughing								
Cat. No.		ACU2500	ACP2000	ACS3000	W1	S	RE	Fig	Applicable Holder
Peripheral Insert	GDXT 050203P-L	●	●	●	5.1	2.56	0.3	1	GDXH155D6S20-05- GDXH180D6S25-05
	050203P-G	●	●	●	5.1	2.51	0.3	2	
	GDXT 06T204P-L	●	●	●	6.3	2.98	0.4	1	GDXH185D6S25-06- GDXH220D6S25-06
	06T204P-G	●	●	●	6.3	2.93	0.4	2	
	GDXT 070305P-L	●	●	●	7.7	3.38	0.5	1	GDXH225D6S25-07- GDXH270D6S32-07
	070305P-G	●	●	●	7.7	3.33	0.5	2	
Central Insert	GDXT 050205C-L	●	—	—	5.6	2.38	0.5	3	GDXH155D6S20-05- GDXH180D6S25-05
	050205C-G	●	—	—	5.6	2.48	0.5	4	
	GDXT 06T206C-L	●	—	—	6.9	2.78	0.6	3	GDXH185D6S25-06- GDXH220D6S25-06
	06T206C-G	●	—	—	6.9	2.88	0.6	4	
	GDXT 070308C-L	●	—	—	8.6	3.18	0.8	3	GDXH225D6S25-07- GDXH270D6S32-07
	070308C-G	●	—	—	8.6	3.31	0.8	4	

Fig. 1 Peripheral insert L type

Fig. 2 Peripheral insert G type

Fig. 3 Central insert L type

Fig. 4 Central insert G type

Fig. 1 Peripheral insert L type

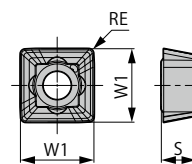


Fig. 2 Peripheral insert G type

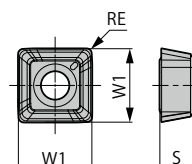


Fig. 3 Central insert L type

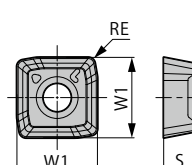
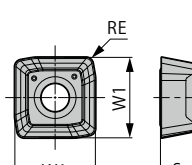


Fig. 4 Central insert G type



Precautions for Mounting and Removing Inserts

■ Identification Code

GDXT 06 T2 04 P - G

Series Code Insert Size Thickness Corner Radius P: Peripheral Insert Chipbreaker type

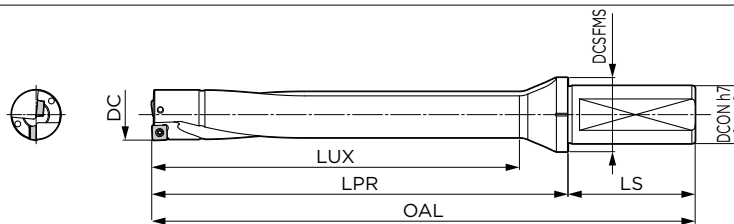
C: Central Insert



Drilling tolerance: 0 to +0.50mm

*For h7 tolerance, refer to the General Catalogue.

Fig 1



■ Diameter ø15.5 to 27.0mm

Dimensions (mm)

DC	Stock	Cat. No.	LUX	LPR	OAL	LS	DCSFMS	DCON	Applicable Inserts (Peripheral Inserts)	Applicable Inserts (Central Inserts)	Fig
15.5	○	GDXH 155D7S20-05	113.5	131.25	180.25	49.0	25.0	20.0	GDXT050203P	GDXT050205C	1
16.0	○	160D7S20-05	117.0	135.00	184.00	49.0	25.0	20.0			1
16.5	○	165D7S20-05	120.5	138.75	187.75	49.0	25.0	20.0			1
17.0	○	170D7S20-05	124.0	142.50	191.50	49.0	25.0	20.0			1
17.5	○	GDXH 175D7S25-05	127.5	146.25	201.25	55.0	32.0	25.0			1
18.0	○	180D7S25-05	131.0	150.00	205.00	55.0	32.0	25.0	GDXT06T204P	GDXT06T206C	1
18.5	●	GDXH 185D7S25-06	134.5	153.75	208.75	55.0	32.0	25.0			1
19.0	●	190D7S25-06	138.0	157.50	212.50	55.0	32.0	25.0			1
19.5	●	195D7S25-06	141.5	161.25	216.25	55.0	32.0	25.0			1
20.0	●	200D7S25-06	145.0	165.00	220.00	55.0	32.0	25.0			1
20.5	●	205D7S25-06	148.5	168.75	223.75	55.0	32.0	25.0			1
21.0	●	210D7S25-06	152.0	172.50	227.50	55.0	32.0	25.0			1
21.5	●	215D7S25-06	155.5	176.25	231.25	55.0	32.0	25.0			1
22.0	●	220D7S25-06	159.0	180.00	235.00	55.0	32.0	25.0	GDXT070305P	GDXT070308C	1
22.5	○	GDXH 225D7S25-07	162.5	183.75	238.75	55.0	32.0	25.0			1
23.0	○	230D7S25-07	166.0	187.50	242.50	55.0	32.0	25.0			1
23.5	○	235D7S25-07	169.5	191.25	246.25	55.0	32.0	25.0			1
24.0	○	240D7S25-07	173.0	195.00	250.00	55.0	32.0	25.0			1
24.5	○	245D7S25-07	176.5	198.75	253.75	55.0	32.0	25.0			1
25.0	○	250D7S25-07	180.0	202.50	257.50	55.0	32.0	25.0			1
25.5	○	255D7S25-07	183.5	206.25	261.25	55.0	32.0	25.0			1
26.0	○	GDXH 260D7S32-07	187.0	210.00	269.00	59.0	40.0	32.0			1
26.5	○	265D7S32-07	190.5	213.75	272.75	59.0	40.0	32.0			1
27.0	○	270D7S32-07	194.0	217.50	276.50	59.0	40.0	32.0			1

Recommended Cutting Conditions **P7**

■ Parts

Applicable Holder	Flat Insert Screw	Wrench	Wrench	Anti-seizure Cream
GDXH155D7S20-05 - GDXH180D7S25-05	BFTX0204IP	0.5	TRX06IP	—
GDXH185D7S25-06 - GDXH220D7S25-06	BFTX02205IP	1.0	—	TRDR07IP
GDXH225D7S25-07 - GDXH270D7S32-07	BFTX02506IP	1.5	—	TRDR08IP

■ Identification Code

GDXH 200 D7 S25 - 06

Series Code

Diameter
(ø20.0)L/D
(7D)Shank Dia
(ø25.0)Insert
Size

GDXH type 7D (Internal Coolant Supply)

■ Insert

Dimensions (mm)

Grade Classification		Coated Carbide							
Process	High-speed/Light Cutting								
	Medium Cutting								
	Roughing								
Cat. No.		ACU2500	ACP2000	ACS3000	W1	S	RE	Fig	Applicable Holder
Peripheral Insert	GDXT 050203P-L	●	●	●	5.1	2.56	0.3	1	GDXH155D7S20-05- GDXH180D7S25-05
	050203P-G	●	●	●	5.1	2.51	0.3	2	
	GDXT 06T204P-L	●	●	●	6.3	2.98	0.4	1	GDXH185D7S25-06- GDXH220D7S25-06
	06T204P-G	●	●	●	6.3	2.93	0.4	2	
	GDXT 070305P-L	●	●	●	7.7	3.38	0.5	1	GDXH225D7S25-07- GDXH270D7S32-07
	070305P-G	●	●	●	7.7	3.33	0.5	2	
Central Insert	GDXT 050205C-L	●	—	—	5.6	2.38	0.5	3	GDXH155D7S20-05- GDXH180D7S25-05
	050205C-G	●	—	—	5.6	2.48	0.5	4	
	GDXT 06T206C-L	●	—	—	6.9	2.78	0.6	3	GDXH185D7S25-06- GDXH220D7S25-06
	06T206C-G	●	—	—	6.9	2.88	0.6	4	
	GDXT 070308C-L	●	—	—	8.6	3.18	0.8	3	GDXH225D7S25-07- GDXH270D7S32-07
	070308C-G	●	—	—	8.6	3.31	0.8	4	

Fig. 1 Peripheral insert L type

Fig. 2 Peripheral insert G type

Fig. 3 Central insert L type

Fig. 4 Central insert G type

Fig. 1 Peripheral insert L type

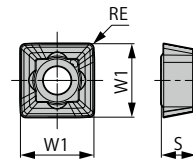


Fig. 2 Peripheral insert G type

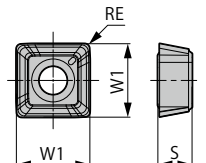


Fig. 3 Central insert L type

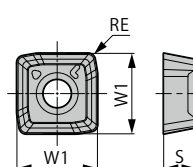
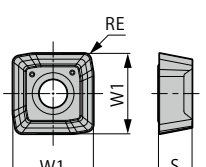


Fig. 4 Central insert G type



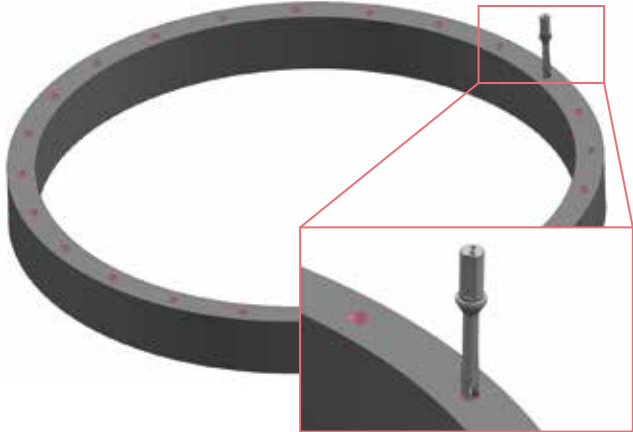
Precautions for Mounting and Removing Inserts P21

■ Identification Code

GDXT 06 T2 04 P - G

Series Code Insert Size Thickness Corner Radius P: Peripheral Insert C: Central Insert Chipbreaker type

Examples



GDX series

68 holes per corner

Competitor's Product A

34 holes per corner

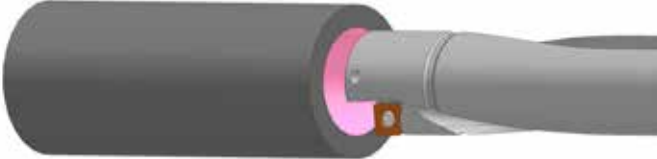
020406080100

Output (Holes)

Work Material: Flange (S48C [230HB])
Tool: GDXH190D5S25-06 (ø19, 5D)
Insert: Peripheral Insert GDXT06T204P-G (ACU2500)
Central Insert: GDXT06T206C-G (ACU2500)
Cutting Conditions: Vc = 120m/min, f = 0.085mm/rev, H = 76mm
(Through), Internal Coolant Supply (Water-soluble)

Realises stable drilling and doubled tool life compared to competitor's products

P



Flipped drilling with deep hole drilling of H75mm from both ends



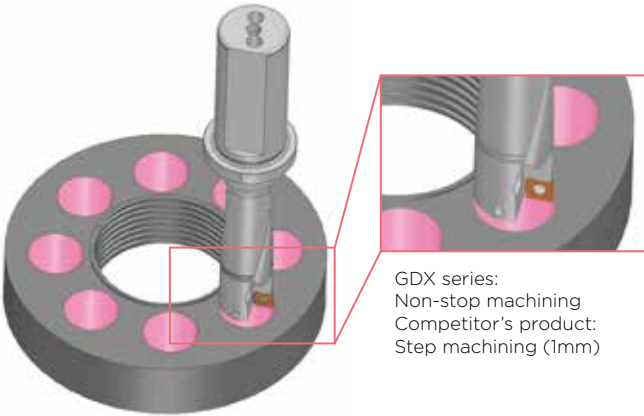
Work Material: Nut (SS400)
Tool: GDXH210D6S25-06 (ø21, 6D)
Insert: Peripheral Insert GDXT06T204P-L (ACU2500)
Central Insert: GDXT06T206C-L (ACU2500)
Cutting Conditions: Vc = 80m/min, f = 0.03→0.05mm/rev, H = 75mm x 2
(Flipped Drilling, Through), Internal Coolant Supply (Water-soluble)

Realises stable drilling with short, divided chips compared to competitor's products

P

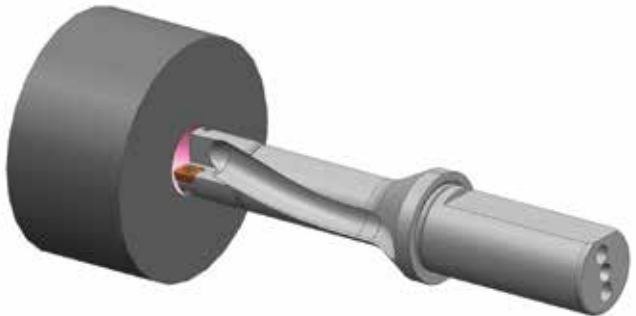
GDX Application

Examples



P

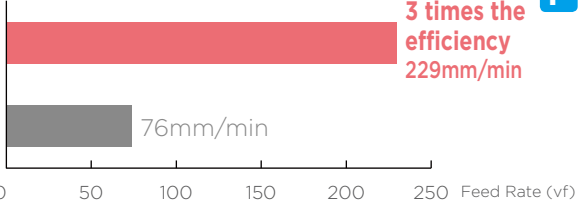
Work Material: Flange (SS400) Tool: GDXH190D3S25-06 (ø19, 3D) Insert: Peripheral Insert GDXT06T204P-L (ACU2500) Central Insert: GDXT06T206C-L (ACU2500) Cutting Conditions: $V_c = 240\text{m/min}$, $f = 0.055\text{mm/rev}$, $H = 22\text{mm}$ (Through), Internal Coolant Supply (Water-soluble)
While the competitor's product used step machining (1mm per step), the GDX series employed non-stop machining and even so achieved thin, divided chips, realising high-efficiency, stable machining



P

GDX series

Competitor's Product B



Product	Feed Rate (vf)
GDX series	229mm/min
Competitor's Product B	76mm/min

3 times the efficiency

Work Material: Flange (S25C, S45C) Tool: GDXH200D3S25-06 (ø20, 3D) Insert: Peripheral Insert GDXT06T204P-G (ACU2500) Central Insert: GDXT06T206C-G (ACU2500) Cutting Conditions: $V_c = 180\text{m/min}$, $f = 0.08\text{mm/rev}$, $H = 38\text{mm}$ (Through), Internal Coolant Supply (Water-soluble)
Chip control was much improved from competitor's product, achieving approx. 3 times the efficiency

Guidelines and Ratings

Lathe Drilling Guidelines

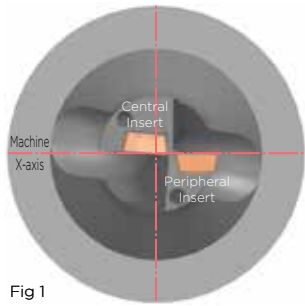


Fig 1



Fig 2

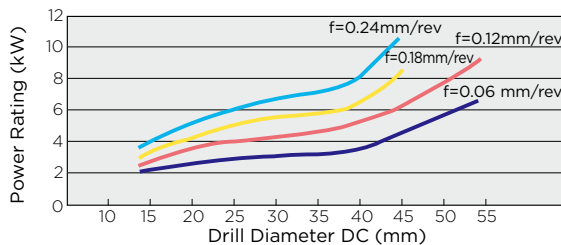
Drill installation

- Set the drill so that the peripheral insert is parallel to the X-axis of the machine. (Fig 1)
We also recommend mounting in an orientation such that the worker can see the peripheral insert. (although usage is possible even at 180° upside down)

Other notes

- When the drill is mounted on a lathe, the centre of the central insert is designed to be 0.1 to 0.2mm below the centre of the spindle.
- If the spindle deviates so far off centre that the centre of the central insert lies above the spindle centre, the central insert will break.
- Also, if the centre falls more than a normal amount below the spindle centre, the pip at the bottom of the hole will grow larger (ø1mm or more) and wall precision will suffer. Take care accordingly.
- Install a cover to prevent injury from possible chip fly-out (see disc-shaped chip in Figure 2) when through boring on a lathe.
- If your lathe has no cover, attach a cover or similar part for your safety.
- Set the depth of cut for external turning or internal boring work to 20% or less of the drill diameter. (Ex.: For ø20.0mm, depth of cut 4mm or below)
- Also, use a feed rate 30% to 70% lower than the recommended rate.

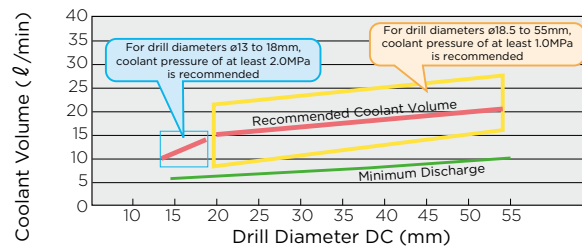
Typical Power Ratings



<CAUTIONS>

- Power ratings are subject to change based on conditions such as work material and cutting speed, and should only be used for reference.
- Cutting Conditions (Reference)
Work Material: S50C (230HB)
Cutting Speed: $V_c = 150\text{m/min}$

Typical Coolant Volume



<CAUTIONS>

- Coolant volume is a factor that affects drilling performance, particularly with respect to chip evacuation and lubricity. This is particularly important for chip evacuation and lubricity.
- Coolant pressure should be set higher for small drills. (Below ø18.0mm)
- Coolant volume is usually adjusted by changing the coolant pressure provided on most CNC machine tools.
- This table provides guideline values only. More coolant may be required depending on the machine, coolant and work material.
- Internal coolant supply is recommended. Dry machining and external coolant supply are not recommended, as chips will not be evacuated.



Precautions and Troubleshooting

■ Precautions for Attaching and Removing Inserts

- Before mounting the insert, remove all traces of foreign matter on the insert seat surface using air or other means.
- When using the wrench, align it to the axis of the screw and press while turning. (Fig 3)
If the wrench is not aligned with the screw, the insert will be insufficiently clamped and the tip of the wrench and/or the torx hole of the screw may become deformed.
- Do not allow clearance between the insert seat and drill when mounting the insert. (Fig 4, A)
Figure 4 shows a properly attached insert.

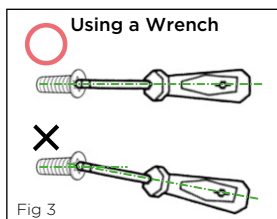


Fig 3

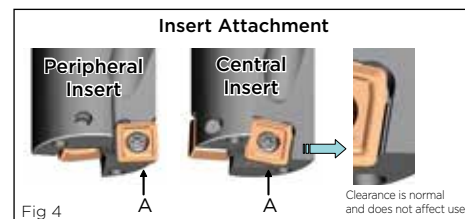


Fig 4

*There is clearance to the outside of the central insert, which is normal, as the insert retaining surface is on the inside and back.

■ Troubleshooting

Problem	Phenomenon	Cause	Countermeasures
Too much variation in hole diameter	Drilled hole diameter is larger than desired	· Deflection of the holder due to high cutting force	· Decrease the feed speed to decrease cutting force · When using the drill on a lathe, adjust by moving in the X-axis direction
	Drilled hole diameter is smaller than desired	· The cutting edge backs off and does not enter the workpiece	· Increase the feed rate · When using the drill on a lathe, adjust by moving in the X-axis direction
	Significant difference in hole diameter at entrance and bottom	· Packing of chips	· Increase the feed rate to improve chip evacuation · Use an L type chipbreaker for chip control
Poor quality machined hole surface	Poor machined surface from entrance to bottom of hole	· High cutting force · Low rigidity of workpiece	· Decrease cutting speed · Review tooling to improve rigidity
	Poor machined surface at bottom of hole	· Machined surfaces damaged by chips	· Increase the feed rate to improve chip evacuation · Use an L type chipbreaker for chip control
	Scratches around hole exit	· Holder is vibrating during through cutting	· Drop cutting speed at hole exit to $vc = 50\text{m/min}$ · Drop feed rate at hole exit to 0.05mm/rev
	Return scratches are generated	· Machining diameter is shrinking	· Increase feed rate
Insert is broken	Breakage on central insert (centre)	· Central insert centre is rising · Insert is not strong enough	· Reconfirm and adjust centre height · When using with a lathe, rotate the drill 180° to mount · Decrease the feed rate to decrease cutting load
	Fracture on peripheral insert	· High cutting load on cutting edge	· Decrease the feed rate to decrease cutting load



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