

New Product Announcement

May. 26th, 2023_NPAI2305

NEW Generation High Productivity Indexable Drill



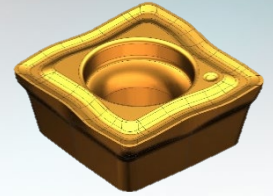
YG
X-DRILL

YG-1 has developed New Captive type 4 corner Drill with highly efficient hole making solution

YG



New Generation Captive Indexable Drill



New Technology for Indexable Drill



YG-1 newly launched X-Drill achieves excellent machining process and high productivity for drilling applications.

The new X-Drill allows use of all 4 corners and can use both as center and periphery for best-in-class cost-efficiency. In addition, the drill insert is designed with our proprietary technology to achieve optimal chip evacuation, and the twisted coolant channels and surface-treated flutes are designed for smooth chip evacuation, providing a highly stable process and precise machining dimensions.

The YG713 grade in the X-Drill is optimized for maximum predictability and performance across a variety of workpiece materials, and it's designed to have a longer tool life compared to the conventional grade during drilling application.

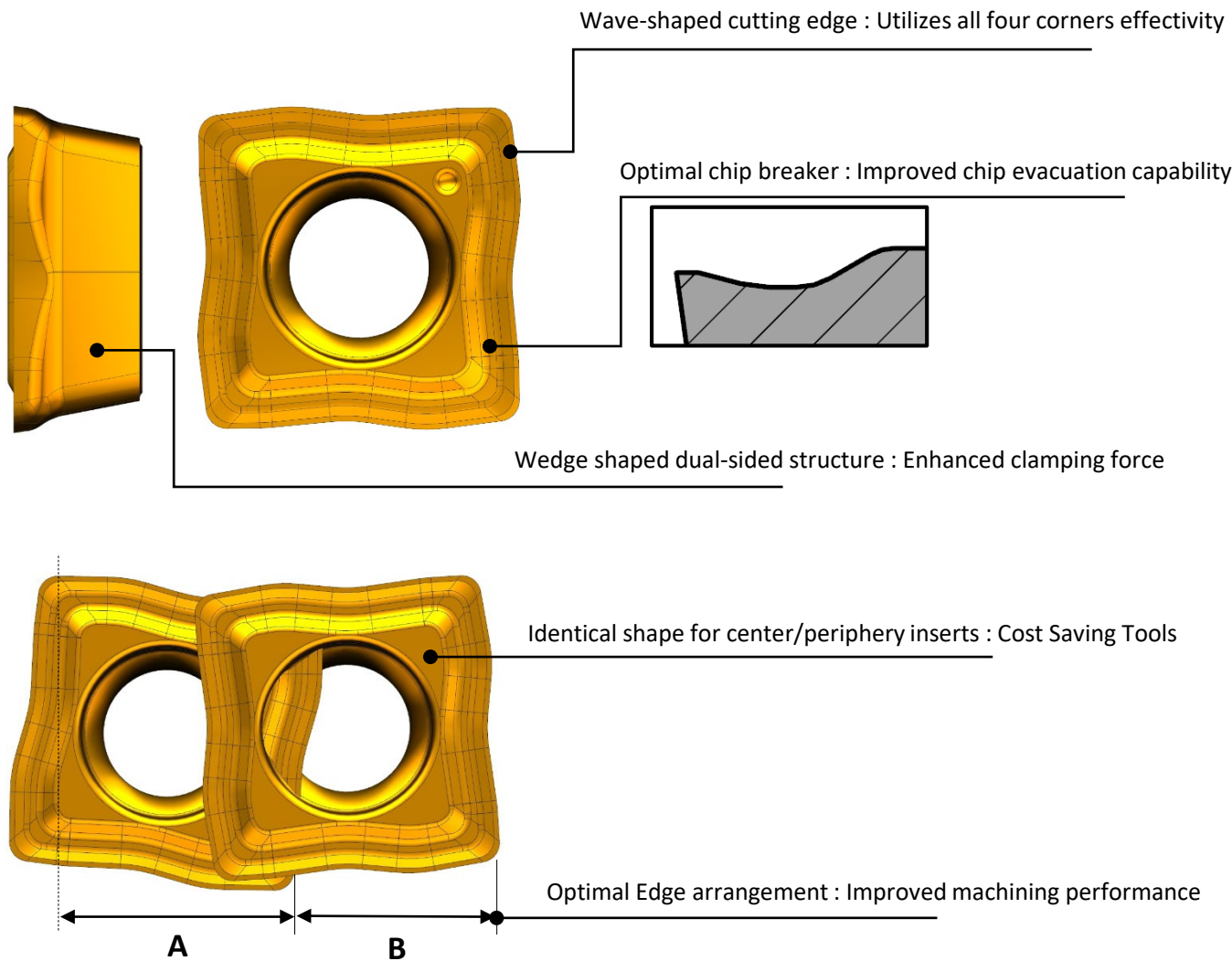
The new X-Drill will provide customers with high efficiency and market leading performance.

New Generation Captive Indexable Drill

Insert & Holders



Key Technology

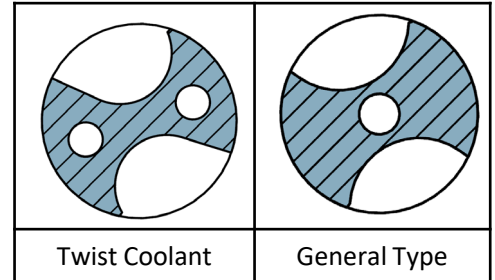
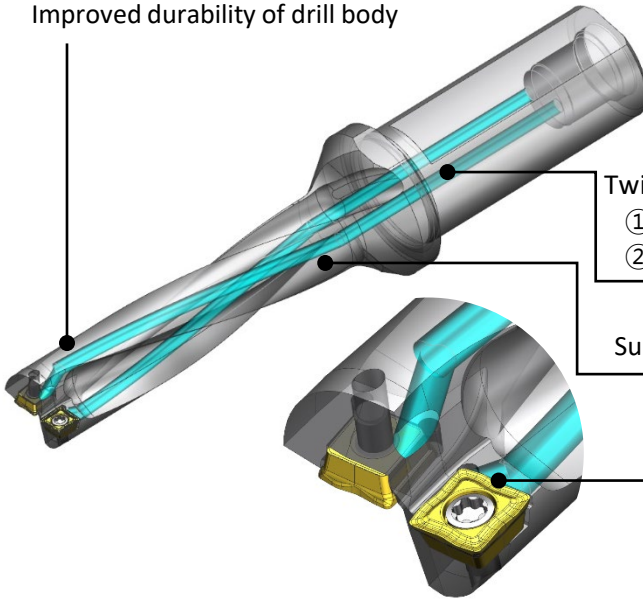


Drill Holder



Key Technology

High hardness and optimized material application :
Improved durability of drill body



Twist Coolant

General Type

Twisted Coolant Channels:

- ① Wide chip flutes for improved chip evacuation
- ② Reinforced holder rigidity with a larger web thickness

Surface Treatment : Enhanced chip evacuation capability

Enhanced pocket : Stable cutting with strong clamping

Description	Chip evacuation	Machine Load	Vibration	Productivity
X-Drill	○	○	○	○
General Drill	X	△	X	△

	X-Drill	General Drill
Chip Curl		<p>Narrow and loose chip tangled on the body can make big trouble</p>
Hole surface		<p>Tangled chip can make big vibration</p>

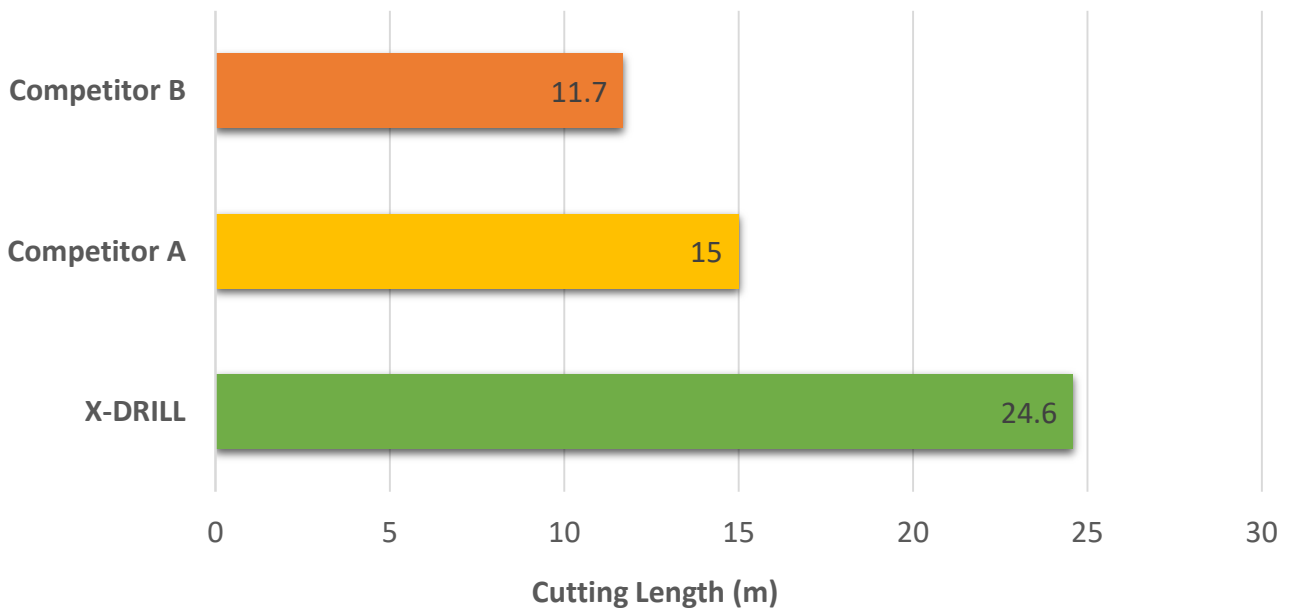


Internal Test Result



Test of Internal machining performance

- Test method: Wear resistance
- Work-piece material: Alloy Steel (AISI 4140)
- Cutting condition
 - Cutting speed(V_c) : 180m/min (591SFM)
 - Feed(F_n) : 0.12mm/rev (.0047")
 - Hole Depth : 70mm (2.76")
 - Coolant : Wet
- Used tool
 - Insert:: SYMX060204-YG713
 - Cutter: YGSP4-180S25-06
- **Test result**





SYMX 06



Success Story

Case 1

- Component Name: Bush (General Machining)
- Work-Piece Material: 8620 Alloy steel
- Existing Insert: SPMG 060204-DG, PVD Coating
- Test Insert: SYMX060204 YG713
- Test Holder : YGSP4-180S25-06
- Test Result



Vc	fn	ap	Diameter	Coolant	Tool Life (pcs/edge)	
					X-drill	Competitor
180m/min	0.1 mm/rev	38mm	18mm	Wet	1,150	1,053
591SFM	.004 inch/rev	1.496"	.709"			



SYMX 06



Success Story

Case 2

- Component Name: Gear
- Work-Piece Material: Alloy Steel
- Existing Insert: SPMG060204-DG, PVD Coating
- Test Insert: SYMX060204 YG713
- Test Holder : YGSP4-190S25-06
- Test Result



Vc	fn	ap	Diameter	Coolant	Tool Life (pcs/edge)	
					X-drill	Competitor
110m/min	0.1 mm/rev	60mm	20mm	Wet	66	60
361SFM	.004 inch/rev	2.362"	.788"		10% Better	

SYMX 06



Success Story

Case 3

- Component Name: Mold Base
- Work-Piece Material: S355 Carbon steel
- Existing Insert: SOEX 060306, PVD Coating
- Test Insert: SYMX060204 YG713
- Test Holder : YGSP4-200S25-06
- Test Result



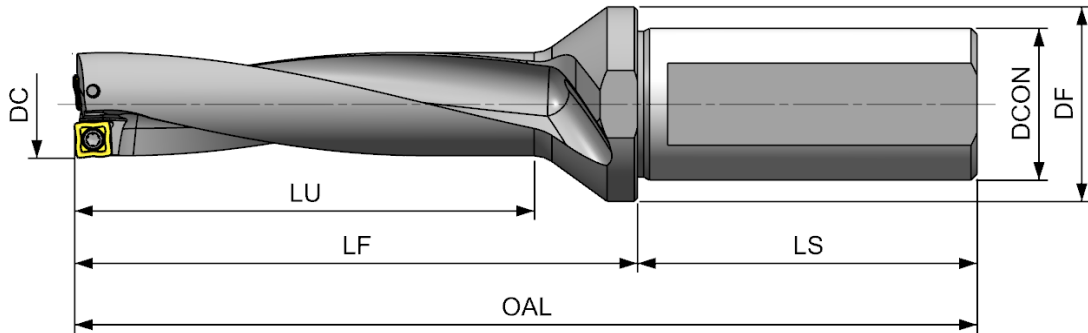
Vc	fn	ap	Diameter	Coolant	Tool Life (pcs/edge)	
					X-drill	Competitor
250m/min	0.1 mm/rev	28mm	19mm	Wet	150	100
240m/min	0.07 mm/rev					
820SFM	.004" inch/rev	1.102"	.748"			
787SFM	.003" inch/rev					



SYMX 06



Drill Holders (Metric)



L/D	EDP NO.	Designation	Dimensions(mm)							Insert
			DC	DCON	DF	LU	LF	LS	OAL	
2D	37000851	YGSY2-170S25-06	17	25	32	34	54	56	110	SYMx06
	37000852	YGSY2-180S25-06	18	25	32	36	57	56	113	
	37000853	YGSY2-190S25-06	19	25	32	38	59	56	115	
	37000854	YGSY2-200S25-06	20	25	32	40	63	56	119	
3D	37000855	YGSY3-170S25-06	17	25	32	51	71	56	127	
	37000856	YGSY3-180S25-06	18	25	32	54	75	56	131	
	37000857	YGSY3-190S25-06	19	25	32	57	78	56	134	
	37000858	YGSY3-200S25-06	20	25	32	60	83	56	139	
4D	37000859	YGSY4-170S25-06	17	25	32	68	88	56	144	
	37000860	YGSY4-180S25-06	18	25	32	72	93	56	149	
	37000861	YGSY4-190S25-06	19	25	32	76	97	56	153	
	37000862	YGSY4-200S25-06	20	25	32	80	103	56	159	
5D	37000863	YGSY5-170S25-06	17	25	32	85	105	56	161	
	37000864	YGSY5-180S25-06	18	25	32	90	111	56	167	
	37000865	YGSY5-190S25-06	19	25	32	95	116	56	172	
	37000866	YGSY5-200S25-06	20	25	32	100	123	56	179	

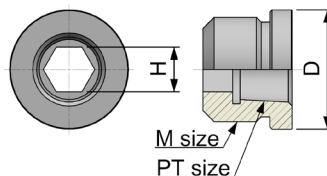
* 5D Holder will ready to 15th, June in your region

Spare Parts

	EDP No.	Description
Screw	18000253	TP072205-GS
Wrench	18000001	TPWFTP07
Plug*	38000002	PLUGM14-1/8

* Plug should be ordered separately

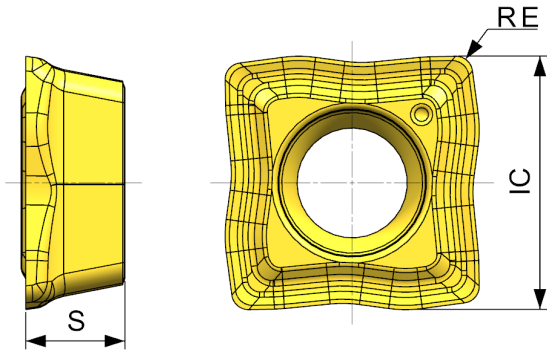
Plug dimension



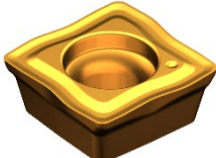
ØD	M size	PT size	H
16	M14x1.0	PT 1/8	6

SYMX 06

Inserts (Metric)



(mm)			
Insert	IC	S	RE
SYM06	5.99	2.35	0.4

Insert	Designation	Grades				
		YG613	YG713			
	SYM060204	● 093	● 095			

EDP 3200..
● Stock

Tolerance

L/D	ØD	Tolerance of Drill	Tolerance of Hole
2-5	Ø17-20	0 ~ +0.1	-0.1 ~ +0.4

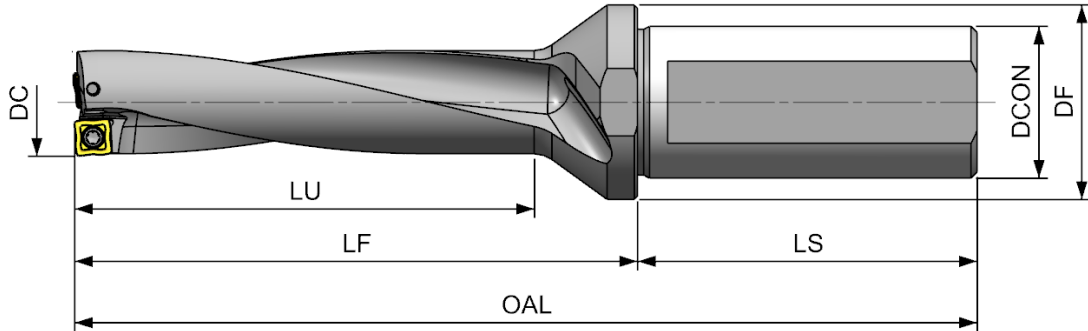
SYM X 06

Recommended Cutting Conditions (Cutting Speed & Feed)

Material	VDI	Vc (m/min)		Feed (mm/rev)			
				L/D 2,3,4xD		L/D 5xD	
		YG713	YG613	Ø17~19	Ø20	Ø17~19	Ø20
Non-alloy steel	1~5	200-300	100-210	0.04-0.12	0.04-0.16	0.04-0.10	0.04-0.12
Low alloy steel	6~9	170-270	70-180	0.06-0.16	0.08-0.20	0.06-0.12	0.08-0.16
High alloy steel	10~11	85-145	40-90	0.06-0.12	0.08-0.16	0.06-0.10	0.08-0.12
Ferritic & Martensitic stainless steel	12~13	140-220	70-180	0.06-0.12	0.06-0.16	0.06-0.10	0.06-0.12
Austenitic stainless steel	14	130-250	70-200	0.06-0.12	0.06-0.16	0.06-0.10	0.06-0.12
Grey cast iron	15~16	120-260		0.08-0.18	0.08-0.18	0.08-0.14	0.08-0.16
Nodular cast iron	17~18	130-230		0.08-0.18	0.08-0.18	0.08-0.14	0.08-0.16
Malleable cast iron	19~20	-		-	-	-	-
Non-ferrous metals (Aluminum)	21~30	-	-	-	-	-	-
Super alloys & Titanium	31~37	-	-	-	-	-	-
Hardened steel	38~41	30-50	20-40	0.05-0.09	0.05-0.1	0.05-0.08	0.05-0.09

SYMX 06

Drill Holders (Inch)



L/D	EDP NO.	Designation	Dimensions(inch)							Insert
			DC	DCON	DF	LU	LF	LS	OAL	
2D	37000870	YGSY2-0.689S1.00-06I	.689	1.00	1.375	1.378	2.165	3.00	5.165	SYMX06
	37000871	YGSY2-0.719S1.00-06I	.719	1.00	1.375	1.438	2.265	3.00	5.265	
	37000872	YGSY2-0.750S1.00-06I	.750	1.00	1.375	1.5	2.327	3.00	5.327	
	37000873	YGSY2-0.781S1.00-06I	.781	1.00	1.375	1.562	2.467	3.00	5.467	
	37000874	YGSY2-0.813S1.00-06I	.813	1.00	1.375	1.626	2.531	3.00	5.531	
3D	37000875	YGSY3-0.689S1.00-06I	.689	1.00	1.375	2.067	2.854	3.00	5.854	
	37000876	YGSY3-0.719S1.00-06I	.719	1.00	1.375	2.157	2.984	3.00	5.984	
	37000877	YGSY3-0.750S1.00-06I	.750	1.00	1.375	2.25	3.077	3.00	6.077	
	37000878	YGSY3-0.781S1.00-06I	.781	1.00	1.375	2.343	3.248	3.00	6.248	
	37000879	YGSY3-0.813S1.00-06I	.813	1.00	1.375	2.439	3.344	3.00	6.344	
4D	37000880	YGSY4-0.689S1.00-06I	.689	1.00	1.375	2.756	3.543	3.00	6.543	
	37000881	YGSY4-0.719S1.00-06I	.719	1.00	1.375	2.876	3.703	3.00	6.703	
	37000882	YGSY4-0.750S1.00-06I	.750	1.00	1.375	3.0	3.827	3.00	6.827	
	37000883	YGSY4-0.781S1.00-06I	.781	1.00	1.375	3.124	4.030	3.00	7.030	
	37000884	YGSY4-0.813S1.00-06I	.813	1.00	1.375	3.252	4.157	3.00	7.157	
5D	37000885	YGSY5-0.689S1.00-06I	.689	1.00	1.375	3.445	4.232	3.00	7.232	
	37000886	YGSY5-0.719S1.00-06I	.719	1.00	1.375	3.595	4.422	3.00	7.422	
	37000887	YGSY5-0.750S1.00-06I	.750	1.00	1.375	3.75	4.577	3.00	7.577	
	37000888	YGSY5-0.781S1.00-06I	.781	1.00	1.375	3.905	4.811	3.00	7.811	
	37000889	YGSY5-0.813S1.00-06I	.813	1.00	1.375	4.065	4.970	3.00	7.970	

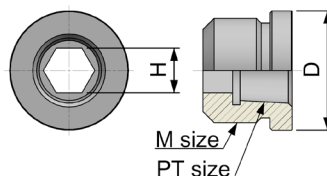
** 5D Holder will ready to 15th, June in your region

Spare Parts

Part name	EDP No.	Description
Screw	18000253	TP072205-GS
Wrench	18000001	TPWFTP07
Plug*	38000002	PLUGM14-1/8

* Plug should be ordered separately

Plug dimension

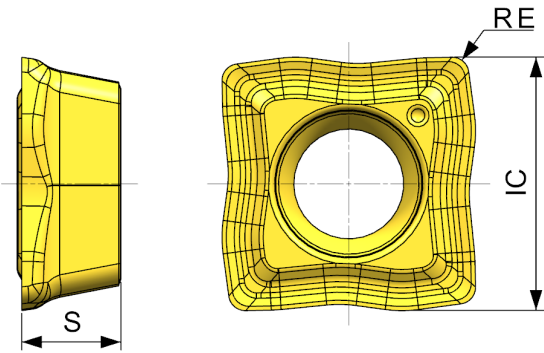


ØD	M size	PT size	H
16	M14x1.0	PT 1/8	6

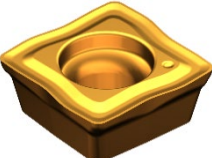
SYMX 06



Inserts (Inch)



(inch)			
Insert	IC	S	RE
SYMX06	.236	.093	.016

Insert	Designation	Grades				
		YG613	YG713			
	SYMX060204	● 093	● 095			

EDP 3200..
● Stock

Tolerance

(inch)

L/D	ØD	Tolerance of Drill	Tolerance of Hole
2-5	Ø17-20	0 ~ +0.004	-0.004 ~ +0.015



SYMX 06



Recommended Cutting Conditions (Cutting Speed & Feed)

Material	VDI	SFM (ft/min)		Feed (Inch/rev)			
				L/D 2,3,4xD		L/D 5xD	
		YG713	YG613	Ø17~19	Ø20	Ø17~19	Ø20
Non-alloy steel	1~5	656-984	328-689	0.04-0.12	0.04-0.16	0.04-0.10	0.04-0.12
Low alloy steel	6~9	557-885	230-590	0.06-0.16	0.08-0.20	0.06-0.12	0.08-0.16
High alloy steel	10~11	278-475	131-295	0.06-0.12	0.08-0.16	0.06-0.10	0.08-0.12
Ferritic & Martensitic stainless steel	12~13	459-721	230-591	0.06-0.12	0.06-0.16	0.06-0.10	0.06-0.12
Austenitic stainless steel	14	426-820	230-656	0.06-0.12	0.06-0.16	0.06-0.10	0.06-0.12
Grey cast iron	15~16	393-853		0.08-0.18	0.08-0.18	0.08-0.14	0.08-0.16
Nodular cast iron	17~18	426-754		0.08-0.18	0.08-0.18	0.08-0.14	0.08-0.16
Malleable cast iron	19~20	-		-	-	-	-
Non-ferrous metals (Aluminum)	21~30	-	-	-	-	-	-
Super alloys & Titanium	31~37	-	-	-	-	-	-
Hardened steel	38~41	98-165 tnwjd	65-148 tnwjd	0.05-0.09	0.05-0.1	0.05-0.08	0.05-0.09



SYMX 06



Grade

Materials	P		M		K		H	
	Central	Peripheral	Central	Peripheral	Central	Peripheral	Central	Peripheral
1 st Choice Grade	YG713	YG713	YG613	YG613	YG713	YG713	YG713	YG713
2 nd Choice Grade	YG613	YG613	YG713	YG713	YG613	YG613	-	-

✓ YG613 is alternative grade when fixture and machine conditions are unstable

If you need further information or questions, please contact Headquarter PM :

Mr. Kevin Shin(sooyong.shin@yg1.co.kr), Mr. Chris Lee(hwasu.lee@yg1.co.kr),
Mr. George Cho(junho.cho@yg1.co.kr), Mr. Sean Cha(soohyun.cha@yg1.co.kr)

And also your Global PM Dr. Robert Damaschek(damaschek@yg-1.de) for EMEA,
Mr. Jan Andersson(janandersson@yg1usa.com) for America.