

NPA

June 17th, 2024
NPAI-2401

X-DRILL^{Y/G}

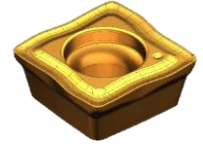


INDEXABLE INSERT

EXPANDED X-DRILL^{Y/G} SERIES

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





New Generation Captive Indexable Drill

New Technology for Drilling

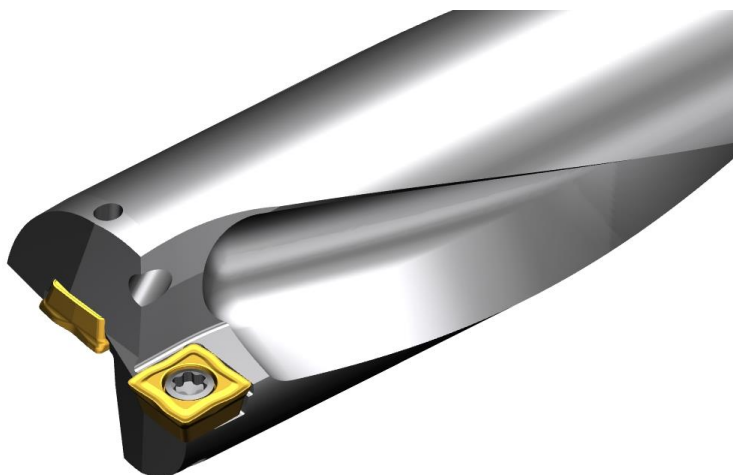
Great Machining performance on Steel & Stainless Steel

YG-1 has expanded 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.

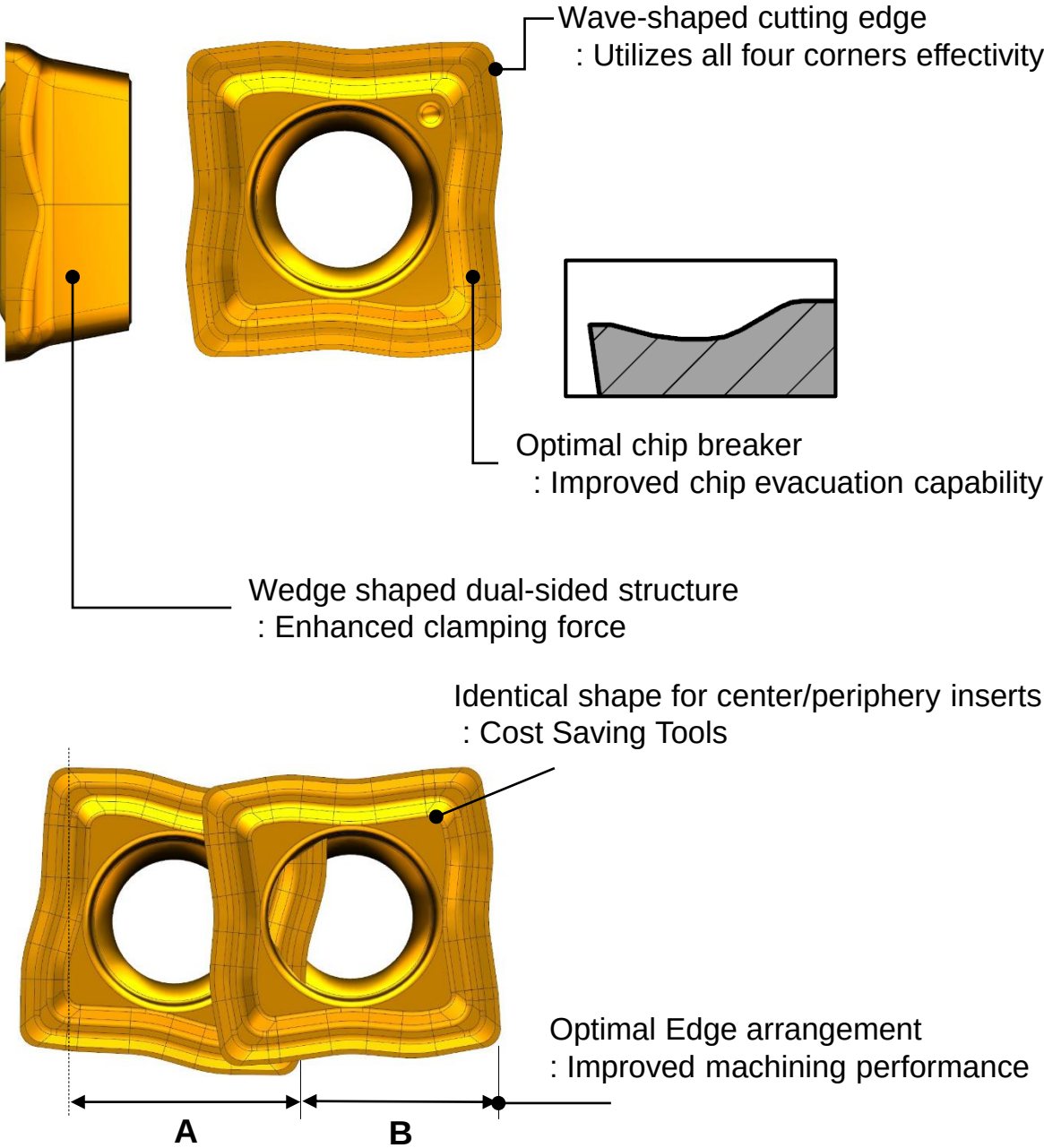
The YG713 grade in the X-Drill is optimized for maximum predictability and performance across a variety of workpiece materials, and it's designed to have a longer tool life compared to the conventional grade during drilling application.

For detailed information about the SYMX inserts, please refer to the previous SYMX NPA.



SYM-X Insert

Key Technology





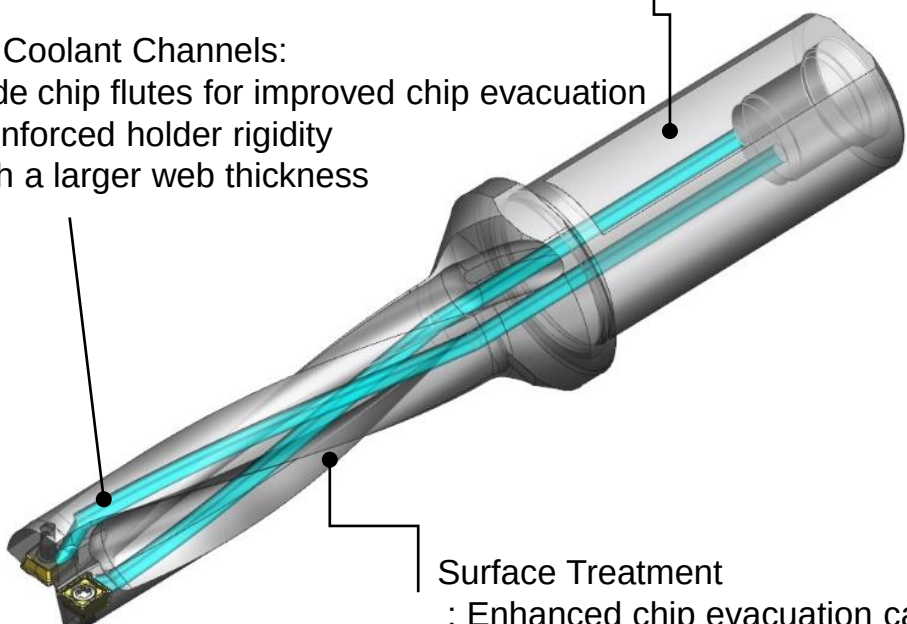
SYMX Holder

Key Technology

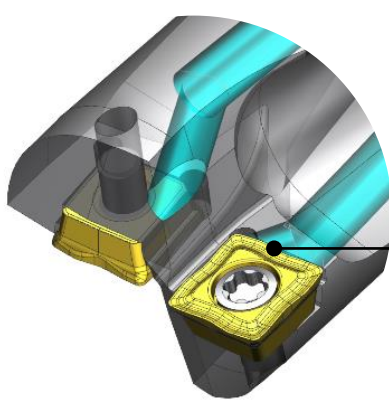
High hardness and optimized material application
: Improved durability of drill body

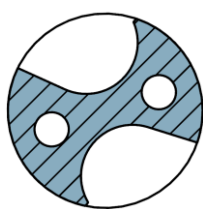
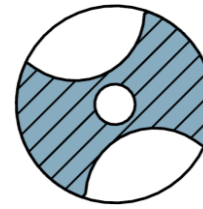
Twisted Coolant Channels:
① Wide chip flutes for improved chip evacuation
② Reinforced holder rigidity with a larger web thickness

Surface Treatment
: Enhanced chip evacuation capability



Enhanced pocket :
Stable cutting with strong clamping

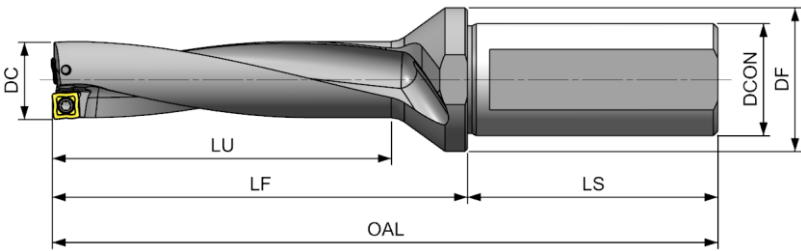


	
Twist Coolant	General Type



Expansion of X-Drill Series

SYMX05 Metric Holder (D14 ~ D16.5)



* EDP : 3700..

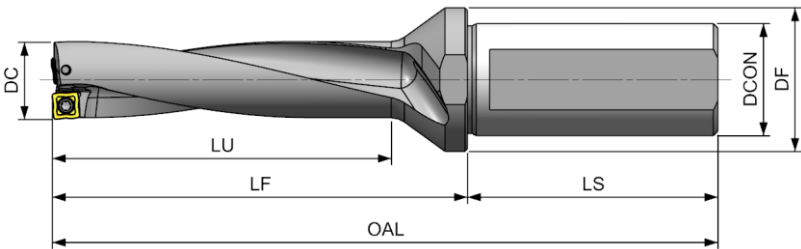
Series	Designation	DC	LU	LF	OAL	DCON	DF	LS	EDP
SYMXX050204	YGSY2-140S20-05	14	28	46	96	20	25	50	1019
	YGSY3-140S20-05		42	60	110				1031
	YGSY4-140S20-05		56	74	124				1043
	YGSY5-140S20-05		70	88	138				1055
	YGSY2-145S20-05	14.5	29	49	99				1134
	YGSY3-145S20-05		43.5	64	114				1149
	YGSY4-145S20-05		58	79	129				1164
	YGSY5-145S20-05		72.5	94	144				1179
	YGSY2-150S20-05	15	30	49	99				1020
	YGSY3-150S20-05		45	64	114				1032
	YGSY4-150S20-05		60	79	129				1044
	YGSY5-150S20-05		75	94	144				1056
	YGSY2-155S20-05	15.5	31	52	102				1135
	YGSY3-155S20-05		46.5	68	118				1150
	YGSY4-155S20-05		62	84	134				1165
	YGSY5-155S20-05		77.5	100	150				1180
	YGSY2-160S25-05	16	32	52	102				1021
	YGSY3-160S20-05		48	68	118				1033
	YGSY4-160S20-05		64	84	134				1045
	YGSY5-160S20-05		80	100	150				1057
	YGSY2-165S20-05	16.5	33	54	104				1136
	YGSY3-165S20-05		49.5	71	121				1151
	YGSY4-165S20-05		66	88	138				1166
	YGSY5-165S20-05		82.5	105	155				1181

SYMXX05	Screw	Wrench	Plug		
Description	TP062004-GS	TPWBTP06	PLUG M12-1/8 (Ø20)	PLUG M14-1/8 (Ø25)	PLUG M22-1/8 (Ø32)
EDP	18000252	18000262	38000001	38000002	38000003



Expansion of X-Drill Series

SYMX06 Metric Holder (D17 ~ D18.5)



* EDP : 3700..

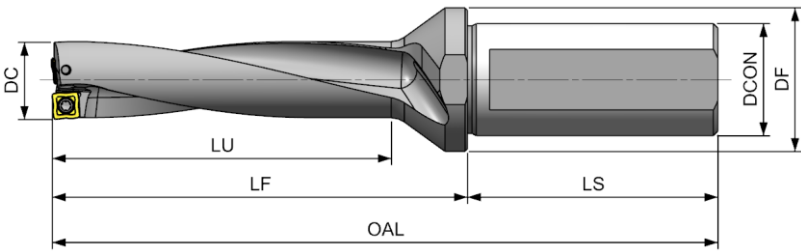
Series	Designation	DC	LU	LF	OAL	DCON	DF	LS	EDP
SYMX 060204	YGSY2-170S25-06	17	34	54	110	25	32	56	0851
	YGSY3-170S25-06		51	71	127				0855
	YGSY4-170S25-06		68	88	144				0859
	YGSY5-170S25-06		85	105	161				0863
	YGSY2-175S25-06	17.5	35	57	113				1137
	YGSY3-175S25-06		52.5	75	131				1152
	YGSY4-175S25-06		70	93	149				1167
	YGSY5-175S25-06		87.5	111	167				1182
	YGSY2-180S25-06	18	36	57	113				0852
	YGSY3-180S25-06		54	75	131				0856
	YGSY4-180S25-06		72	93	149				0860
	YGSY5-180S25-06		90	111	167				0864
	YGSY2-185S25-06	18.5	37	59	115				1138
	YGSY3-185S25-06		55.5	78	134				1153
	YGSY4-185S25-06		74	97	153				1168
	YGSY5-185S25-06		92.5	116	172				1183

SYMX06	Screw	Wrench	Plug		
Description	TP072205-GS	TPWBTP07	PLUG M12-1/8 (Ø20)	PLUG M14-1/8 (Ø25)	PLUG M22-1/8 (Ø32)
EDP	18000253	18000001	38000001	38000002	38000003



Expansion of X-Drill Series

SYMX06 Metric Holder (D19 ~ D20.5)



* EDP : 3700..

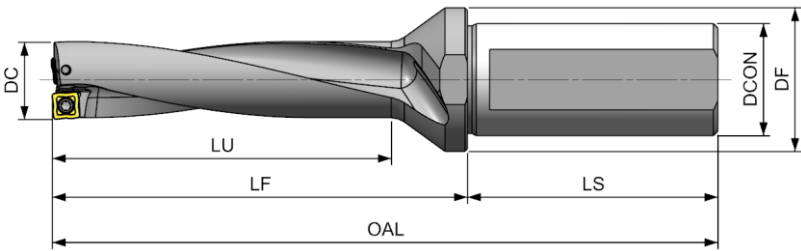
Series	Designation	DC	LU	LF	OAL	DCON	DF	LS	EDP
SYMX 060204	YGSY2-190S25-06	19	38	59	115	25	32	56	0853
	YGSY3-190S25-06		57	78	134				0857
	YGSY4-190S25-06		76	97	153				0861
	YGSY5-190S25-06		95	116	172				0865
	YGSY2-195S25-06	19.5	39	63	119				1139
	YGSY3-195S25-06		58.5	83	139				1154
	YGSY4-195S25-06		78	103	159				1169
	YGSY5-195S25-06		97.5	123	179				1184
	YGSY2-200S25-06	20	40	63	119				0854
	YGSY3-200S25-06		60	83	139				0858
	YGSY4-200S25-06		80	103	159				0862
	YGSY5-200S25-06		100	123	179				0866
	YGSY2-205S25-06	20.5	41	65	121				1140
	YGSY3-205S25-06		61.5	86	142				1155
	YGSY4-205S25-06		82	107	163				1170
	YGSY5-205S25-06		102.5	128	184				1185

SYMX06	Screw	Wrench	Plug		
Description	TP072205-GS	TPWBTP07	PLUG M12-1/8 (Ø20)	PLUG M14-1/8 (Ø25)	PLUG M22-1/8 (Ø32)
EDP	18000253	18000001	38000001	38000002	38000003



Expansion of X-Drill Series

SYMX07 Metric Holder (D21 ~ D23.5)



* EDP : 3700..

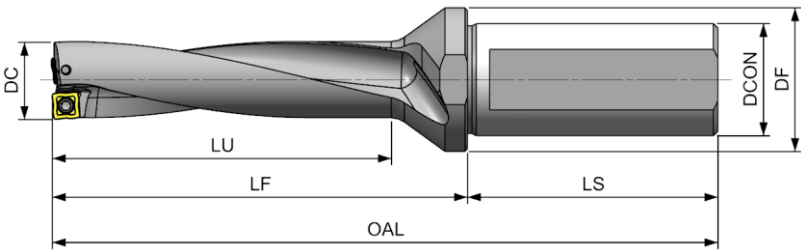
Series	Designation	DC	LU	LF	OAL	DCON	DF	LS	EDP
SYMXX07T206	YGSY2-210S25-07	21	42	65	121	25	32	56	1022
	YGSY3-210S25-07		63	86	142				1034
	YGSY4-210S25-07		84	107	163				1046
	YGSY5-210S25-07		105	128	184				1058
	YGSY2-215S25-07	21.5	43	67	123				1141
	YGSY3-215S25-07		64.5	89	145				1156
	YGSY4-215S25-07		86	111	167				1171
	YGSY5-215S25-07		107.5	133	189				1186
	YGSY2-220S25-07	22	44	67	123				1023
	YGSY3-220S25-07		66	89	145				1035
	YGSY4-220S25-07		88	111	167				1047
	YGSY5-220S25-07		110	133	189				1059
	YGSY2-225S25-07	22.5	45	68	124				1142
	YGSY3-225S25-07		67.5	91	147				1157
	YGSY4-225S25-07		90	114	170				1172
	YGSY5-225S25-07		112.5	137	193				1187
	YGSY2-230S25-07	23	46	68	124				1024
	YGSY3-230S25-07		69	91	147				1036
	YGSY4-230S25-07		92	114	170				1048
	YGSY5-230S25-07		115	137	193				1060
	YGSY2-235S25-07	23.5	47	70	126				1143
	YGSY3-235S25-07		70.5	94	150				1158
	YGSY4-235S25-07		94	118	174				1173
	YGSY5-235S25-07		117.5	142	198				1188

SYMXX07	Screw	Wrench	Plug		
Description	TP072205-GS	TPWBTP07	PLUG M12-1/8 (Ø20)	PLUG M14-1/8 (Ø25)	PLUG M22-1/8 (Ø32)
EDP	18000253	18000001	38000001	38000002	38000003



Expansion of X-Drill Series

SYMX08 Metric Holder (D24 ~ D26.5)



* EDP : 3700..

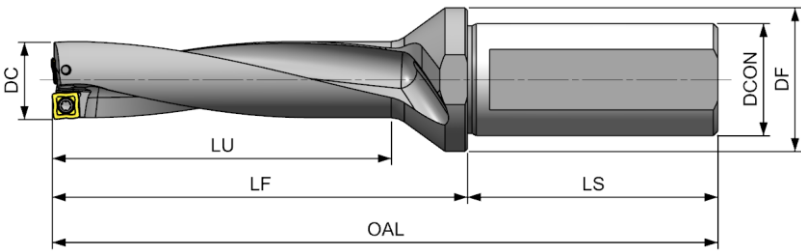
Series	Designation	DC	LU	LF	OAL	DCON	DF	LS	EDP
SYMXX080306	YGSY2-240S32-08	24	48	70	130	32	40	60	1025
	YGSY3-240S32-08		72	94	154				1037
	YGSY4-240S32-08		96	118	178				1049
	YGSY5-240S32-08		120	142	202				1061
	YGSY2-245S32-08	24.5	49	72	132				1144
	YGSY3-245S32-08		73.5	97	157				1159
	YGSY4-245S32-08		98	122	182				1174
	YGSY5-245S32-08		122.5	147	207				1189
	YGSY2-250S32-08	25	50	72	132				1026
	YGSY3-250S32-08		75	97	157				1038
	YGSY4-250S32-08		100	122	182				1050
	YGSY5-250S32-08		125	147	207				1062
	YGSY2-255S32-08	25.5	51	73	133				1145
	YGSY3-255S32-08		76.5	99	159				1160
	YGSY4-255S32-08		102	125	185				1175
	YGSY5-255S32-08		127.5	151	211				1190
	YGSY2-260S32-08	26	52	73	133				1027
	YGSY3-260S32-08		78	99	159				1039
	YGSY4-260S32-08		104	125	185				1051
	YGSY5-260S32-08		130	151	211				1063
	YGSY2-265S32-08	26.5	53	77	137				1146
	YGSY3-265S32-08		79.5	104	164				1161
	YGSY4-265S32-08		106	131	191				1176
	YGSY5-265S32-08		132.5	158	218				1191

SYMXX08	Screw	Wrench	Plug		
Description	TP072506-GS	TPWBTP07	PLUG M12-1/8 (Ø20)	PLUG M14-1/8 (Ø25)	PLUG M22-1/8 (Ø32)
EDP	18000261	18000001	38000001	38000002	38000003



Expansion of X-Drill Series

SYMX08 Metric Holder (D27 ~ D28.5)



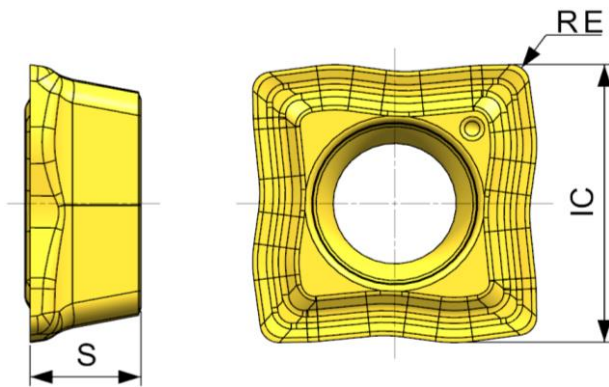
* EDP : 3700..

Series	Designation	DC	LU	LF	OAL	DCON	DF	LS	EDP
SYMXX080306	YGSY2-270S32-08	27	54	77	137	32	40	60	1028
	YGSY3-270S32-08		81	104	164				1040
	YGSY4-270S32-08		108	131	191				1052
	YGSY5-270S32-08		135	158	218				1064
	YGSY2-275S32-08	27.5	55	79	139				1147
	YGSY3-275S32-08		82.5	107	167				1162
	YGSY4-275S32-08		110	135	195				1177
	YGSY5-275S32-08		137.5	163	223				1192
	YGSY2-280S32-08	28	56	79	139				1029
	YGSY3-280S32-08		84	107	167				1041
	YGSY4-280S32-08		112	135	195				1053
	YGSY5-280S32-08		140	163	223				1065
	YGSY2-285S32-08	28.5	57	81	141				1148
	YGSY3-285S32-08		85.5	110	170				1163
	YGSY4-285S32-08		114	139	199				1178
	YGSY5-285S32-08		142.5	168	228				1193

SYMXX08	Screw	Wrench	Plug		
Description	TP072506-GS	TPWBTP07	PLUG M12-1/8 (Ø20)	PLUG M14-1/8 (Ø25)	PLUG M22-1/8 (Ø32)
EDP	18000261	18000001	38000001	38000002	38000003

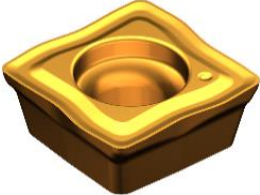
Expansion of X-Drill Series

SYM_X – X-Drill Insert (4 Corners)



Series	IC	S
SYM _X 0502	4.97	2.35
SYM _X 0602	5.99	2.35
SYM _X 07T2	7.01	2.80
SYM _X 0803	8.30	3.2

EDP : 3200..

SYM _X		RE (mm)	YG713	YG613
	SYM _X 050204	0.4	●	●
			0097	0098
	SYM _X 060204	0.4	●	●
			0093	0095
	SYM _X 07T206	0.6	●	●
			0099	0100
	SYM _X 080306	0.6	●	●
			0101	0102

◆ Tolerance

L/D	Ø	Tolerance of Drill	Tolerance of Hole
2D – 3D	Ø14-28	0 ~ +0.1	-0.1 ~ +0.3
4D – 5D	Ø14-28		-0.1 ~ +0.4

Expansion of X-Drill Series

SYMX05 – Recommended Cutting Conditions (Cutting Speed & Feed)

Material	VDI	Vc (m/min)		Feed (mm/rev)			
				L/D 2,3,4xD		L/D 5xD	
		YG713	YG613	Ø14~15	Ø16	Ø14~15	Ø16
Non-alloy steel	1~5	200-300	100-210	0.04-0.08	0.04-0.10	0.04-0.08	0.04-0.10
Low alloy steel	6~9	170-270	70-180	0.04-0.10	0.06-0.12	0.04-0.10	0.06-0.12
High alloy steel	10~11	85-145	40-90	0.04-0.08	0.06-0.10	0.04-0.08	0.06-0.10
Ferritic & Martensitic stainless steel	12~13	140-220	70-180	0.04-0.08	0.06-0.10	0.04-0.08	0.06-0.10
Austenitic stainless steel	14	130-250	70-200	0.04-0.08	0.06-0.10	0.04-0.08	0.06-0.10
Grey cast iron	15~16	120-260	-	0.06-0.12	0.08-0.14	0.06-0.12	0.08-0.14
Nodular cast iron	17~18	130-230	-	0.06-0.12	0.08-0.14	0.06-0.12	0.08-0.14
Malleable cast iron	19~20	-	-	-	-	-	-
Non-ferrous metals (Aluminum)	21~30	-	-	-	-	-	-
Super alloys & Titanium	31~37	-	-	-	-	-	-
Hardened steel	38~41	30-50	20-40	0.04-0.08	0.05-0.09	0.04-0.07	0.05-0.08



Expansion of X-Drill Series

SYM_X06 – 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



Expansion of X-Drill Series

SYM07 – Recommended Cutting Conditions (Cutting Speed & Feed)

Material	VDI	Vc (m/min)		Feed (mm/rev)	
				L/D 2,3,4xD	L/D 5xD
		YG713	YG613	Ø21~23	Ø21~23
Non-alloy steel	1~5	200-300	100-210	0.04-0.16	0.04-0.12
Low alloy steel	6~9	170-270	70-180	0.08-0.20	0.08-0.16
High alloy steel	10~11	85-145	40-90	0.08-0.16	0.08-0.12
Ferritic & Martensitic stainless steel	12~13	140-220	70-180	0.06-0.16	0.06-0.12
Austenitic stainless steel	14	130-250	70-200	0.06-0.16	0.06-0.12
Grey cast iron	15~16	120-260		0.08-0.18	0.08-0.16
Nodular cast iron	17~18	130-230		0.08-0.18	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	0.05-0.1	0.05-0.09

Expansion of X-Drill Series

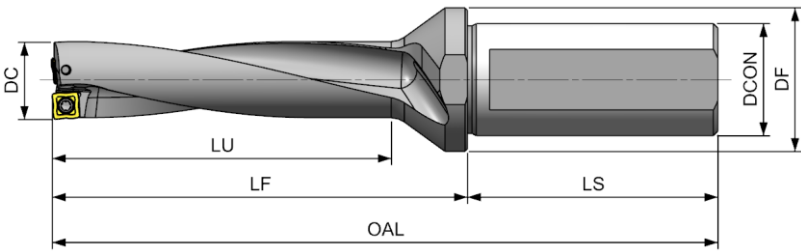
SYMx08 – Recommended Cutting Conditions (Cutting Speed & Feed)

Material	VDI	Vc (m/min)		Feed (mm/rev)	
				L/D 2,3,4xD	L/D 5xD
		YG713	YG613	Ø24~28	Ø24~28
Non-alloy steel	1~5	200-300	100-210	0.04-0.16	0.04-0.12
Low alloy steel	6~9	170-270	70-180	0.08-0.20	0.08-0.16
High alloy steel	10~11	85-145	40-90	0.08-0.16	0.08-0.12
Ferritic & Martensitic stainless steel	12~13	140-220	70-180	0.06-0.16	0.06-0.12
Austenitic stainless steel	14	130-250	70-200	0.06-0.16	0.06-0.12
Grey cast iron	15~16	120-260		0.08-0.18	0.08-0.16
Nodular cast iron	17~18	130-230		0.08-0.18	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	0.05-0.1	0.05-0.09



Expansion of X-Drill Series

SYM05 Inch Holder (D.563 ~ .656)



* EDP : 3700..

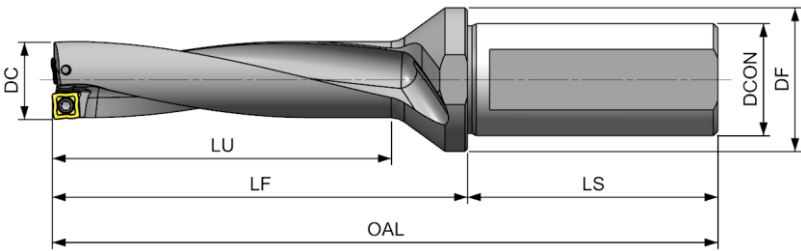
Series	Designation	DC	LU	LF	OAL	DCON	DF	LS	EDP
SYM050204	YGSY2-0.563S0.75-05I	.563	1.126	1.835	3.835	.75	1.125	2.00	1067
	YGSY3-0.563S0.75-05I		1.689	2.398	4.398				1083
	YGSY4-0.563S0.75-05I		2.252	2.961	4.961				1099
	YGSY5-0.563S0.75-05I		2.815	3.524	5.524				1155
	YGSY2-0.594S0.75-05I	.594	1.188	1.935	3.935				1068
	YGSY3-0.594S0.75-05I		1.782	2.529	4.529				1084
	YGSY4-0.594S0.75-05I		2.376	3.123	5.123				1100
	YGSY5-0.594S0.75-05I		2.97	3.717	5.717				1116
	YGSY2-0.625S0.75-05I	.625	1.25	2.037	4.037				1069
	YGSY3-0.625S0.75-05I		1.875	2.663	4.663				1085
	YGSY4-0.625S0.75-05I		2.5	3.287	5.287				1101
	YGSY5-0.625S0.75-05I		3.125	3.913	5.913				1117
	YGSY2-0.656S0.75-05I	.656	1.312	2.099	4.099				1070
	YGSY3-0.656S0.75-05I		1.968	2.756	4.756				1086
	YGSY4-0.656S0.75-05I		2.624	3.411	5.411				1102
	YGSY5-0.656S0.75-05I		3.28	4.067	6.067				1118

SYM05	Screw	Wrench	Plug		
Description	TP062004-GS	TPWBTP06	PLUG M12-1/8 (Ø.75)	PLUG M14-1/8 (Ø1.00)	PLUG M22-1/8 (Ø1.25)
EDP	18000252	18000262	38000001	38000002	38000003



Expansion of X-Drill Series

SYM06 Inch Holder (D.689 ~ .703)



* EDP : 3700..

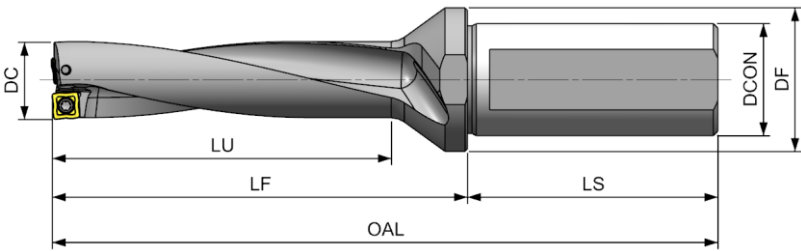
Series	Designation	DC	LU	LF	OAL	DCON	DF	LS	EDP
SYM060204	YGSY2-0.689S1.00-06I	.689	1.378	2.165	5.165	1.00	1.375	3.00	0870
	YGSY3-0.689S1.00-06I		2.067	2.854	5.854				0875
	YGSY4-0.689S1.00-06I		2.756	3.543	6.543				0880
	YGSY5-0.689S1.00-06I		3.445	4.232	7.232				0885
	YGSY2-0.703S1.00-06I	.703	1.406	2.224	5.224				1194
	YGSY3-0.703S1.00-06I		2.109	2.933	5.933				1200
	YGSY4-0.703S1.00-06I		2.812	3.642	6.642				1204
	YGSY5-0.703S1.00-06I		3.515	4.350	7.35				1206
	YGSY2-0.719S1.00-06I	.719	1.438	2.265	5.265				0871
	YGSY3-0.719S1.00-06I		2.157	2.984	5.984				0876
	YGSY4-0.719S1.00-06I		2.876	3.703	6.703				0881
	YGSY5-0.719S1.00-06I		3.595	4.422	7.422				0886
	YGSY2-0.734S1.00-06I	.734	1.468	2.303	5.303				1195
	YGSY3-0.734S1.00-06I		2.202	3.051	6.051				1201
	YGSY4-0.734S1.00-06I		2.936	3.799	6.799				1205
	YGSY5-0.734S1.00-06I		3.67	4.547	7.547				1207

SYM06	Screw	Wrench	Plug		
Description	TP072205-GS	TPWBTP07	PLUG M12-1/8 (Ø.75)	PLUG M14-1/8 (Ø1.00)	PLUG M22-1/8 (Ø1.25)
EDP	18000253	18000001	38000001	38000002	38000003



Expansion of X-Drill Series

SYM06 Inch Holder (D.750 ~ .813)



* EDP : 3700..

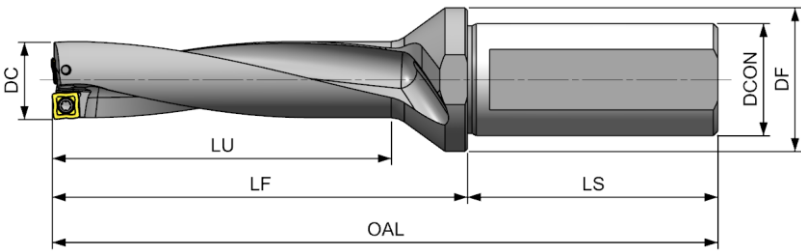
Series	Designation	DC	LU	LF	OAL	DCON	DF	LS	EDP
SYM06 060204	YGSY2-0.750S1.00-06I	.750	1.5	2.327	5.327	1.00	1.375	3.00	0872
	YGSY3-0.750S1.00-06I		2.25	3.077	6.077				0877
	YGSY4-0.750S1.00-06I		3	3.827	6.827				0882
	YGSY5-0.750S1.00-06I		3.75	4.577	7.577				0887
	YGSY2-0.781S1.00-06I	.781	1.562	2.467	5.467				0873
	YGSY3-0.781S1.00-06I		2.343	3.248	6.248				0878
	YGSY4-0.781S1.00-06I		3.124	4.03	7.030				0883
	YGSY5-0.781S1.00-06I		3.905	4.811	7.811				0889
	YGSY2-0.813S1.00-06I	.813	1.626	2.531	5.531				0874
	YGSY3-0.813S1.00-06I		2.439	3.344	6.344				0879
	YGSY4-0.813S1.00-06I		3.252	4.157	7.157				0884
	YGSY5-0.813S1.00-06I		4.065	4.97	7.970				0890

SYM06	Screw	Wrench	Plug		
Description	TP072205-GS	TPWBTP07	PLUG M12-1/8 (Ø.75)	PLUG M14-1/8 (Ø1.00)	PLUG M22-1/8 (Ø1.25)
EDP	18000253	18000001	38000001	38000002	38000003



Expansion of X-Drill Series

SYMX07 Inch Holder (D.843 ~ .906)



* EDP : 3700..

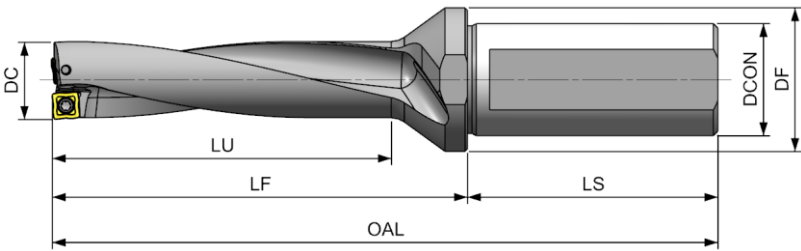
Series	Designation	DC	LU	LF	OAL	DCON	DF	LS	EDP
SYMXX 07T206	YGSY2-0.843S1.00-07I	.843	1.686	2.591	5.591	1.00	1.375	3.00	1071
	YGSY3-0.843S1.00-07I		2.529	3.435	6.435				1087
	YGSY4-0.843S1.00-07I		3.372	4.278	7.278				1103
	YGSY5-0.843S1.00-07I		4.215	5.120	8.120				1119
	YGSY2-0.875S1.00-07I	.875	1.8	2.656	5.656				1072
	YGSY3-0.875S1.00-07I		2.625	3.531	6.531				1088
	YGSY4-0.875S1.00-07I		3.5	4.406	7.406				1104
	YGSY5-0.875S1.00-07I		4.375	5.281	8.281				1120
	YGSY2-0.906S1.25-07I	.906	1.8	2.678	5.678				1073
	YGSY3-0.906S1.25-07I		2.718	3.584	6.584				1089
	YGSY4-0.906S1.25-07I		3.624	4.490	7.490				1105
	YGSY5-0.906S1.25-07I		4.53	5.396	8.396				1121

SYMXX07	Screw	Wrench	Plug		
Description	TP072205-GS	TPWBTP07	PLUG M12-1/8 (Ø.75)	PLUG M14-1/8 (Ø1.00)	PLUG M22-1/8 (Ø1.25)
EDP	18000253	18000001	38000001	38000002	38000003



Expansion of X-Drill Series

SYMX08 Inch Holder (D.937 ~ 1.000)



* EDP : 3700..

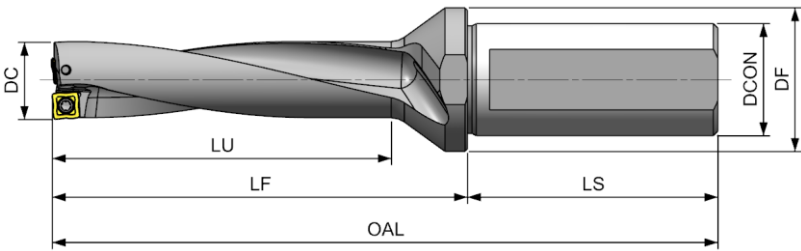
Series	Designation	DC	LU	LF	OAL	DCON	DF	LS	EDP
SYMXX080306	YGSY2-0.937S1.25-08I	.937	1.874	2.740	5.990	1.25	1.625	3.25	1074
	YGSY3-0.937S1.25-08I		2.811	3.677	6.927				1090
	YGSY4-0.937S1.25-08I		3.748	4.614	7.864				1106
	YGSY5-0.937S1.25-08I		4.685	5.551	8.801				1122
	YGSY2-0.969S1.25-08I	.969	1.938	2.804	6.054				1075
	YGSY3-0.969S1.25-08I		2.907	3.773	7.023				1091
	YGSY4-0.969S1.25-08I		3.876	4.742	7.992				1107
	YGSY5-0.969S1.25-08I		4.845	5.711	8.961				1123
	YGSY2-0.984S1.25-08I	.984	1.968	2.834	6.084				1076
	YGSY3-0.984S1.25-08I		2.952	3.818	7.068				1092
	YGSY4-0.984S1.25-08I		3.936	4.802	8.052				1108
	YGSY5-0.984S1.25-08I		4.92	5.786	9.036				1124
	YGSY2-1.000S1.25-08I	1.00	2.000	2.866	6.116				1077
	YGSY3-1.000S1.25-08I		3.000	3.866	7.116				1093
	YGSY4-1.000S1.25-08I		4.000	4.866	8.116				1109
	YGSY5-1.000S1.25-08I		5.000	5.866	9.116				1125

SYMXX08	Screw	Wrench	Plug		
Description	TP072506-GS	TPWBTP07	PLUG M12-1/8 (Ø.75)	PLUG M14-1/8 (Ø1.00)	PLUG M22-1/8 (Ø1.25)
EDP	18000261	18000001	38000001	38000002	38000003



Expansion of X-Drill Series

SYMX08 Inch Holder (D 1.031 ~ 1.125)



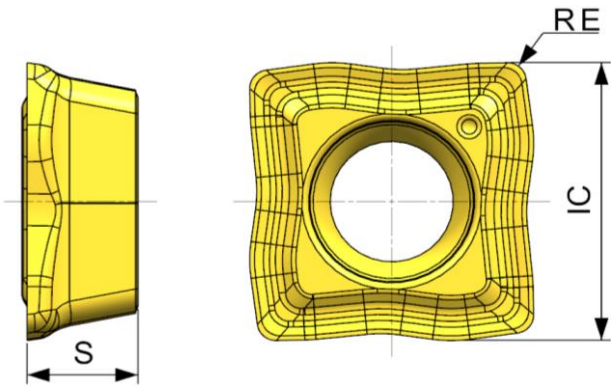
* EDP : 3700..

Series	Designation	DC	LU	LF	OAL	DCON	DF	LS	EDP
SYMXX080306	YGSY2-1.031S1.25-08I	1.031	2.062	2.928	6.178	1.25	1.625	3.25	1078
	YGSY3-1.031S1.25-08I		3.093	3.920	7.170				1094
	YGSY4-1.031S1.25-08I		4.124	4.990	8.240				1110
	YGSY5-1.031S1.25-08I		5.155	6.021	9.271				1126
	YGSY2-1.063S1.25-08I	1.063	2.126	2.992	6.242				1079
	YGSY3-1.063S1.25-08I		3.189	4.094	7.344				1095
	YGSY4-1.063S1.25-08I		4.252	5.118	8.368				1111
	YGSY5-1.063S1.25-08I		5.315	6.181	9.431				1127
	YGSY2-1.094S1.25-08I	1.094	2.188	3.091	6.341				1196
	YGSY3-1.094S1.25-08I		3.282	4.193	7.443				1198
	YGSY4-1.094S1.25-08I		4.376	5.295	8.545				1202
	YGSY5-1.094S1.25-08I		5.47	6.398	9.648				1208
	YGSY2-1.125S1.25-08I	1.125	2.25	3.169	6.419				1197
	YGSY3-1.125S1.25-08I		3.375	4.311	7.561				1199
	YGSY4-1.125S1.25-08I		4.5	5.453	8.703				1203
	YGSY5-1.125S1.25-08I		5.625	6.594	9.844				1209

SYMXX08	Screw	Wrench	Plug		
Description	TP072506-GS	TPWBTP07	PLUG M12-1/8 (Ø.75)	PLUG M14-1/8 (Ø1.00)	PLUG M22-1/8 (Ø1.25)
EDP	18000261	18000001	38000001	38000002	38000003

Expansion of X-Drill Series

SYMX – X-Drill Insert (4 Corners)



Series	IC	S
SYMX0502	.196	.093
SYMX0602	.236	.093
SYMX07T2	.275	.110
SYMX0803	.326	.126

EDP : 3200..

SYMX		RE (mm)	YG713	YG613
	SYMX050204	.016	●	●
			0097	0098
	SYMX060204	.016	●	●
			0093	0095
	SYMX07T206	.024	●	●
			0099	0100
	SYMX080306	.024	●	●
			0101	0102

◆ Tolerance

L/D	Ø	Tolerance of Drill	Tolerance of Hole
2D – 3D	Ø.563-1.063	0 ~ +.004	-.004 ~ +.012
4D – 5D	Ø.563-1.063		-.004 ~ +.016



Expansion of X-Drill Series

SYM05 – Recommended Cutting Conditions (Cutting Speed & Feed)

Material	VDI	SFM (ft/min)		Feed (Inch/rev)			
				L/D 2,3,4xD		L/D 5xD	
		YG713	YG613	Ø14~15	Ø16	Ø14~15	Ø16
Non-alloy steel	1~5	656-984	328-689	.0016- .0040	.0016 - .0047	.0016 - .0047	.0016- .0040
Low alloy steel	6~9	557-885	230-590	.0023 - .0047	.0023 - .0063	.0016- .0040	.0023 - .0047
High alloy steel	10~11	278-475	131-295	.0023 - .0040	.0023 - .0047	.0016 - .0047	.0023 - .0040
Ferritic & Martensitic stainless steel	12~13	459-721	230-591	.0023 - .0040	.0023 - .0047	.0016 - .0047	.0023 - .0040
Austenitic stainless steel	14	426-820	230-656	.0023 - .0040	.0023 - .0047	.0016 - .0047	.0023 - .0040
Grey cast iron	15~16	393-853		.0031 - .0055	.0031 - .0071	.0023 - .0047	.0031 - .0055
Nodular cast iron	17~18	426-754		.0031 - .0055	.0031 - .0071	.0023 - .0047	.0031 - .0055
Malleable cast iron	19~20	-					
Non-ferrous metals (Aluminum)	21~30	-	-				
Super alloys & Titanium	31~37	-	-				
Hardened steel	38~41	98-165	65-148	.0016 - .0031	.0020 - .0035	.0016 - .0028	.0020 - .0031



Expansion of X-Drill Series

SYM_X06 – 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	.0016 - .0047	.0016 - .0063	.0016- .0040	.0016 - .0047
Low alloy steel	6~9	557-885	230-590	.0023 - .0063	.0031 - .0078	.0023 - .0047	.0031 - .0063
High alloy steel	10~11	278-475	131-295	.0023 - .0047	.0031 - .0063	.0023 - .0040	.0031 - .0047
Ferritic & Martensitic stainless steel	12~13	459-721	230-591	.0023 - .0047	.0023 - .0063	.0023 - .0040	.0023 - .0047
Austenitic stainless steel	14	426-820	230-656	.0023 - .0047	.0023 - .0063	.0023 - .0040	.0023 - .0047
Grey cast iron	15~16	393-853		.0031 - .0071	.0031 - .0071	.0031 - .0055	.0031 - .0063
Nodular cast iron	17~18	426-754		.0031 - .0071	.0031 - .0071	.0031 - .0055	.0031 - .0063
Malleable cast iron	19~20	-		-	-	-	-
Non-ferrous metals (Aluminum)	21~30	-	-	-	-	-	-
Super alloys & Titanium	31~37	-	-	-	-	-	-
Hardened steel	38~41	98-165	65-148	.0020 - .0047	.0020 - .0040	.0020 - .0037	.0020 - .0047



Expansion of X-Drill Series

SYM07 – Recommended Cutting Conditions (Cutting Speed & Feed)

Material	VDI	SFM (ft/min)		Feed (Inch/rev)	
				L/D 2,3,4xD	L/D 5xD
		YG713	YG613	Ø21~23	Ø21~23
Non-alloy steel	1~5	656-984	328-689	.0016 - .0063	.0016 - .0047
Low alloy steel	6~9	557-885	230-590	.0031 - .0079	.0031 - .0063
High alloy steel	10~11	278-475	131-295	.0031 - .0063	.0031 - .0047
Ferritic & Martensitic stainless steel	12~13	459-721	230-591	.0023 - .0063	.0023 - .0047
Austenitic stainless steel	14	426-820	230-656	.0023 - .0063	.0023 - .0047
Grey cast iron	15~16	393-853		.0031 - .0071	.0031 - .0063
Nodular cast iron	17~18	426-754		.0031 - .0071	.0031 - .0063
Malleable cast iron	19~20	-		-	-
Non-ferrous metals (Aluminum)	21~30	-	-	-	-
Super alloys & Titanium	31~37	-	-	-	-
Hardened steel	38~41	98-165	65-148	.0020 - .0040	.0020 - .0047



Expansion of X-Drill Series

SYM08 – Recommended Cutting Conditions (Cutting Speed & Feed)

Material	VDI	SFM (ft/min)		Feed (Inch/rev)	
				L/D 2,3,4xD	L/D 5xD
		YG713	YG613	Ø24~28	Ø24~28
Non-alloy steel	1~5	656-984	328-689	.0016 - .0063	.0016 - .0047
Low alloy steel	6~9	557-885	230-590	.0031 - .0079	.0031 - .0063
High alloy steel	10~11	278-475	131-295	.0031 - .0063	.0031 - .0047
Ferritic & Martensitic stainless steel	12~13	459-721	230-591	.0023 - .0063	.0023 - .0047
Austenitic stainless steel	14	426-820	230-656	.0023 - .0063	.0023 - .0047
Grey cast iron	15~16	393-853		.0031 - .0071	.0031 - .0063
Nodular cast iron	17~18	426-754		.0031 - .0071	.0031 - .0063
Malleable cast iron	19~20	-		-	-
Non-ferrous metals (Aluminum)	21~30	-	-	-	-
Super alloys & Titanium	31~37	-	-	-	-
Hardened steel	38~41	98-165	65-148	.0020 - .0040	.0020 - .0047

Expansion of X-Drill Series
SYMX – Grade Information

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								
