



Thread milling cutters series

THREAD MILLS

Volume 2



INDEX

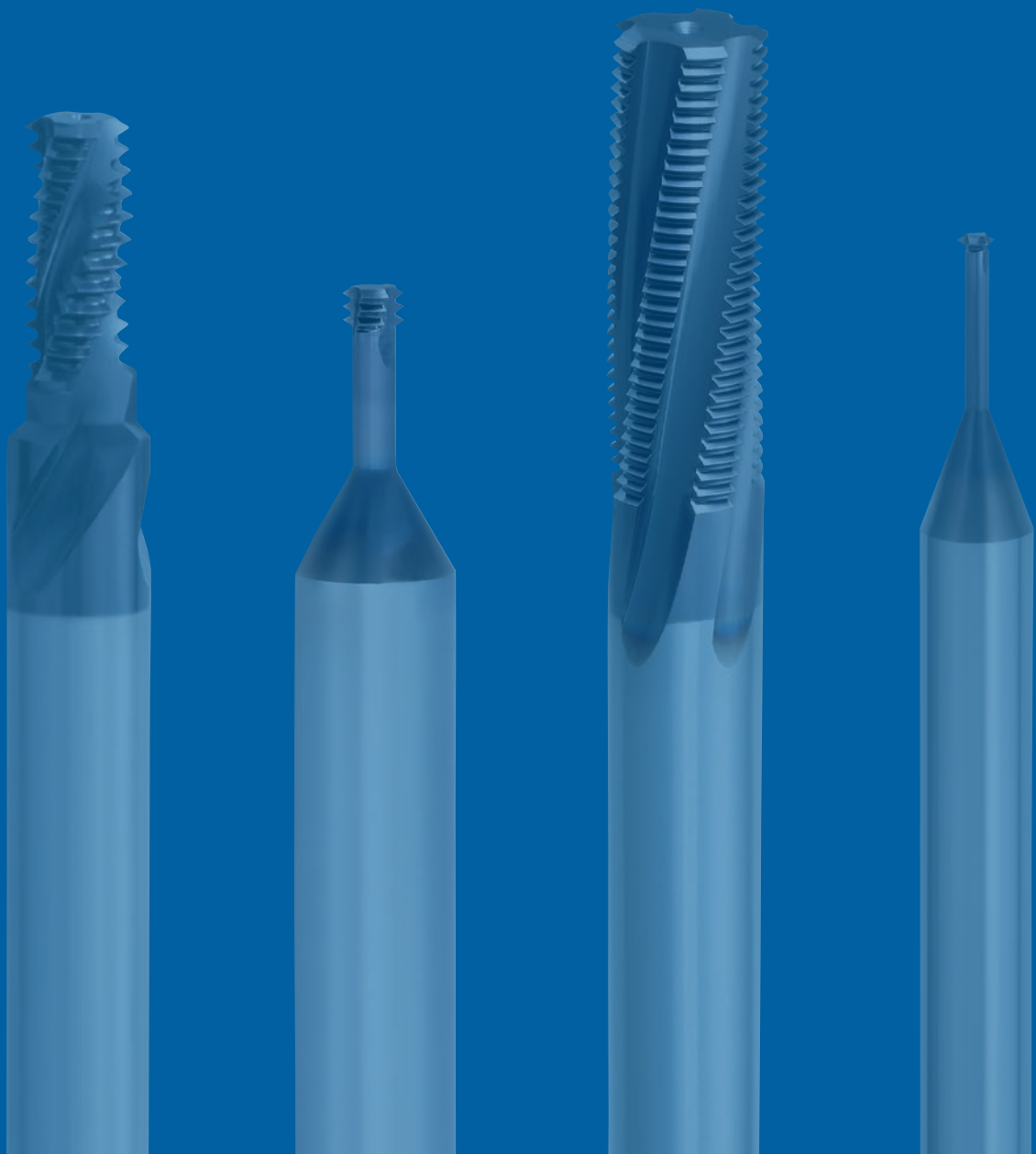


WX-ST-PNC-3P
Thread mill for small size PAGE 10

WH-VM-PNC
Thread mill for small size PAGE 11

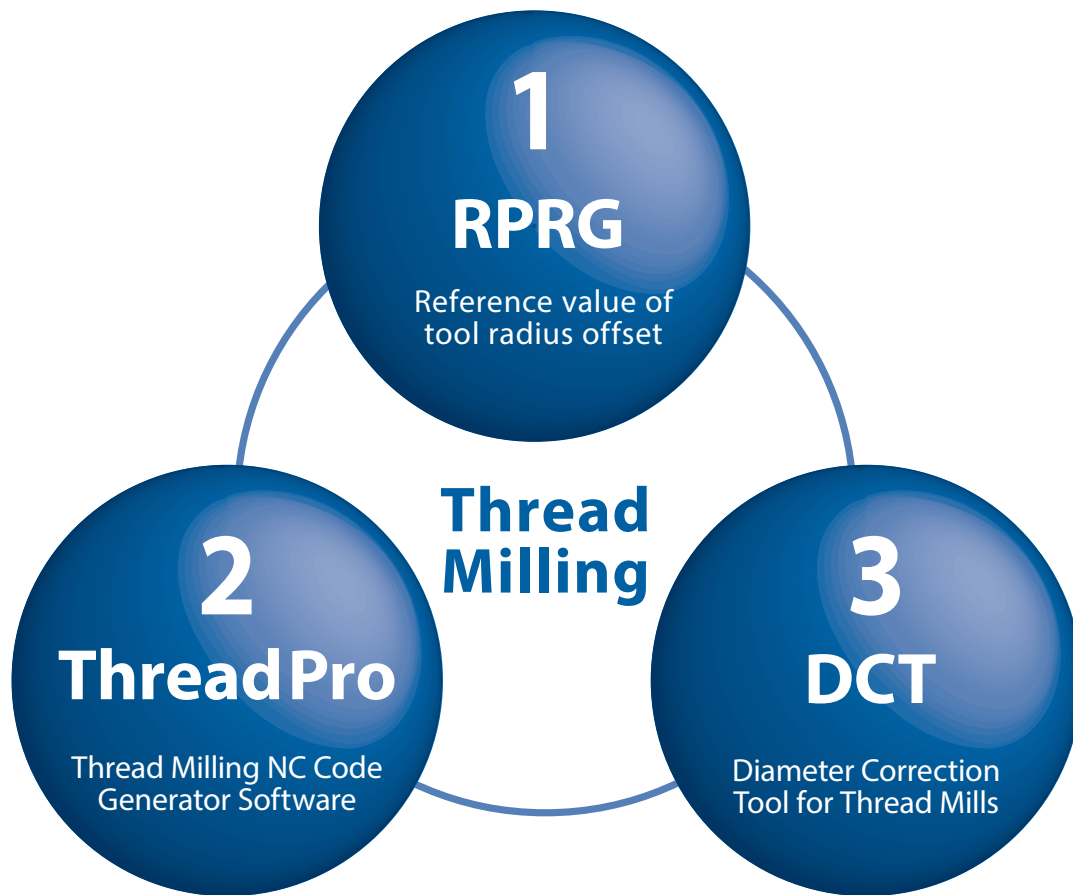
WXO-ST-PNC
Thread mill for steels with internal coolant supply PAGE 12

WX-PNC
Thread mill for nonferrous materials and heat resistant alloys PAGE 13~16



Support tools for your thread milling needs

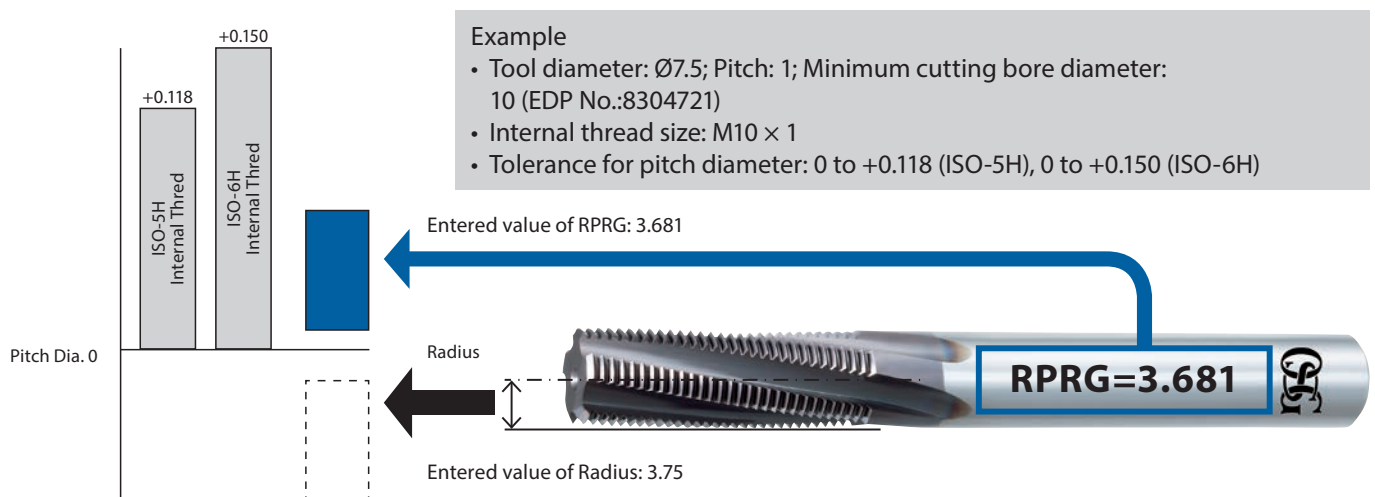
Reduce setup, machining time, and achieve stable tool life with these 3 support tools.



1 RPRG

RPRG is the reference value of tool radius offset

Conventionally, the tool radius was entered during setup as a parameter of the NC system, which was corrected by checking the thread with a gauge. However, it has become possible to reduce the checking and correction simply by entering the RPRG value indicated on the tool shank.

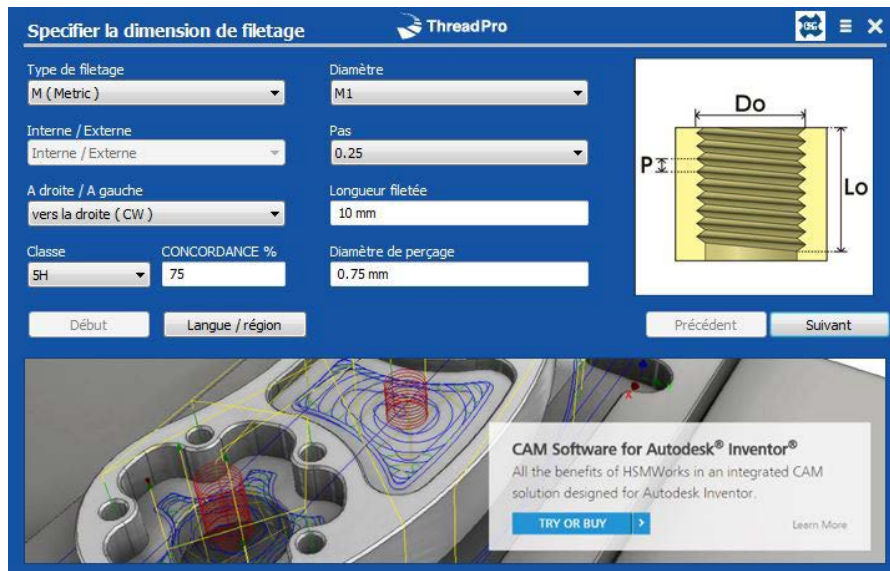


Support tools for your thread milling needs

2 ThreadPro

Revamped thread milling NC Code Generator Software "ThreadPro"

Generate codes for complex machining couldn't be easier. Create machining programs at ease with OSG's revamped NC code generator software ThreadPro.



3 Key Revamped Features

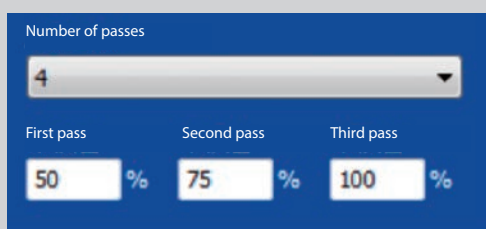
- Available in 12 different languages
- Supports 8 NC programming languages
- Calculates the most appropriate RPRG value

Scan to download ThreadPro.

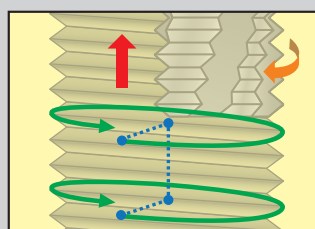


ThreadPro with Comprehensive Features

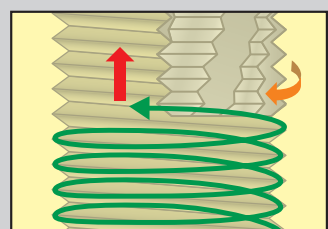
1. Generate programs for zero cut at ease
2. High quality machining by stair passes
3. Capability to review machining trajectory to reduce tool damage



Pass type: continuous

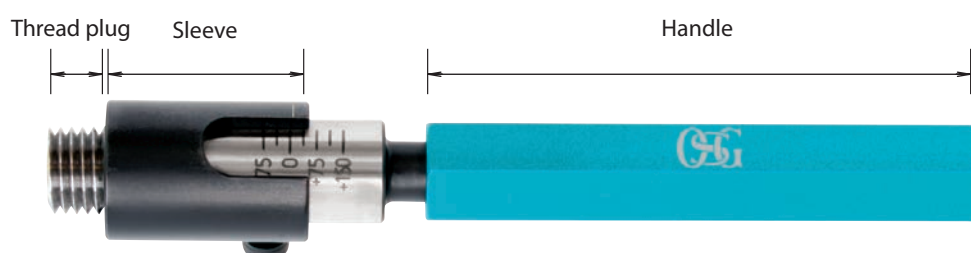


Pass type: stairs








3 Reduce setup & machining time

The internal thread effective diameter, which used to be difficult to determine, can now be measured with readable values.



Tool selection guide by work materials





⊙ Best ○ Good

			WX-ST-PNC-3P	WH-VM-PNC		WXO-ST-PNC	WX-PNC	
								
Type			5 pitch per flute	for small size		for Steels with internal coolant Supply	for non-ferrous and Heat-Resistant Alloy	
Cutting bore dia.			M1~M1,8 G 1/8~2	M1~M5 S1~S1,4 N°8		M6~M27	M6~M27 UNF 1/4~7/8 RC 1/8 ~2 G 1/16 ~ 3/8	
Page			page 10	page 11		page 12	page 13~16	
Work Material	Low Carbon Steel	C0.25%	○	○	○	○	○	
	Medium Carbon Steel	C0.25~0.45%	○	○	○	⊙		
	High Carbon Steel	C0.45%~	○	○	○	⊙		
	Alloy Steel	SCM	○		○	⊙		
	Hardened Steel	25~45HRC		⊙		⊙	⊙	
		45~55HRC		⊙		⊙		
		50~60HRC		⊙		○		
	Stainless Steel	SUS	○	⊙	○	○		
	Tool Steel	SKD						
	Cast Steel	SC	○	○	○	○	○	
	Cast Iron	FC	○	○	○	○	○	
	Ductile Cast Iron	FCD	○	○	○	○	○	
	Copper	Cu					○	
	Brass	Bs					○	
	Brass Casting	BsC	○	⊙	○		○	
	Bronze	PB			○		○	
	Aluminum Rolled	Al	○	⊙	○		⊙	
	Aluminum Alloy Casting	AC, ADC	○	⊙	○		⊙	
	Magnesium Alloy Casting	MC	○	⊙	○		○	
	Zinc Alloy Casting	ZDC	○	⊙	○		○	
Titanium Alloy	Ti-6Al-4V	⊙	○	⊙		⊙		
Ni Nickel Alloy	Inconel [®]	⊙		⊙		⊙		
Thermo Setting Plastic	—	○	○	○	○	⊙		
Thermo Plastic	—	○	○	○	○	⊙		

Tool selection by guide by screw size



Metric screw thread (Internal)

Metric screw thread (internal)


		WX-ST-PNC-3P	WH-VM-PNC	WXO-ST-PNC	WX-PNC
					
Page		page 10	page 11	page 12	page 13~16
Pitch	Min. Cutting Bore Dia.	for Small Dia.	for Small Dia.	for Steels with Internal Coolant Supply	for Nonferrous Metal Heat-Resistant Alloy
0,25	M1		3900495		
	M1,2		3900496		
0,3	M1,4		3900497		
0,35	M1,6		3900498		
	M1,7		3900499		
	M1,8	48216000			
0,4	M2	48216001	3900500		
0,45	M2,5	48216002	3900501		
0,5	M3	48216003	3900502		
	M8			8304710	3900009
	M14			8304740	3900036
0,7	M4	48216004	3900503		
0,75	M6			8304700	3900000
	M14			8304741	3900041
0,8	M5	48216005	3900504		
1,0	M6	48216006		8304701	3900001
	M8			8304711	3900011
	M10			8304721	3900021
	M14			8304742	3900042
	M16			8304752	3900052
	M20				
	M27				
1,25	M8	48216007		8304712	3900012
	M12			8304732	3900032
1,5	M10	48216008		8304723	3900023
	M12			8304733	3900033
	M14			8304743	3900043
	M16	48216009		8304753	3900053
	M20	48216010		8304773	3900073
	M24			8304783	
	M27				3900083
	M34				
	M42				
1,75	M12	48216011		8304734	3900034
2,0	M14			8304744	3900044
	M16	48216012		8304754	3900054
	M20	48216013			
	M24			8304784	
	M27				3900084
	M34				
2,5	M18				3900065
	M20	48216014		8304775	3900075
3,0	M20			8304786	
	M24				
	M27				3900086
	M34				
3,5	M27				

Tool selection by guide by screw size

Metric screw thread (Internal)



		WH-VM-PNC	WX-PNC
			
Page		page 11	page 13~16
T.P.I.	Min. Cutting Bore Dia.	WH-VM-PNC	WX-PNC
32	No.8	3900513	
28	1/4		3900351
24	5/16		3900356
	3/8		3900361
20	1/4		3900350
	7/16		3900366
	1/2		3900371
18	5/16		3900355
	9/16		3900380
16	3/8		3900360
14	7/16		3900365
13	1/2		3900370
12	9/16		3900375
	7/8		3900390
11	5/8		3900382
10	3/4		3900385
9	7/8		3900388
8	1		3900392

R(PT) Rc(PT) Pipe screw thread


		WX-PNC
		
Page		page 13~16
T.P.I.	Min. Cutting Bore Dia.	WX-PNC
28	1/8	3900201
19	1/4 · 3/8	3900211
	3/8	3900212
14	1/2 · 3/4	3900214
	5/8	
	3/4	3900215
	7/8	
11	1	3900218
	1 1/8	
	1 1/4	
	1 1/2	
	1 3/4	
	2	

Tool selection by guide by screw size

Rp(PS) G(PF) Pipe screw thread (Internal)

		WX-ST-PNC-3P	WX-PNC
			
Page		page 10	page 13~16
T.P.I.	Min. Cutting Bore Dia.	WX-ST-PNC-3P	WX-PNC
28	1/16 · 1/8	48216100	3900299
	1/8		3900301
19	1/4 · 3/8	48216101	3900311
	3/8		3900312
14	1/2 · 3/4		3900314
	5/8		
	3/4		3900315
	7/8	48216102	
11	1	48216103	3900318
	1 1/8		
	1 1/4		
	1 1/2		
	1 3/4		
	2		

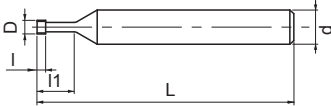
NPT Pipe screw thread (Internal)

		WX-PNC
		
Page		page 13~16
T.P.I.	Min. Cutting Bore Dia.	WX-PNC
27	1/16 · 1/8	3900259
	1/8	
18	1/4 · 3/8	3900261
	3/8	
14	1/2 · 3/4	3900265
	5/8	
	3/4	
	7/8	
11 1/2	1	3900268
	1 1/8	
	1 1/4	
	1 1/2	
	1 3/4	
	2	

WH-VM-PNC



- Thread mill for small size
- M1 - M5
- Gewindefräser für kleine Abmessungen
- M1 - M5
- Micro Frese a filettare
- M1 - M5
- Fraises à fileter de petites dimensions
- M1 - M5
- Küçük ölçüler için diş frezesi
- M1 - M5
- Gevindfräser for små størrelser
- M1 - M5
- Gängfräsar för små diametrar
- M1 - M5
- Fresado de roscas pequeñas
- M1 - M5
- Резьбофреза для малых серий
- M1 - M5
- Frez do małych wymiarów
- M1 - M5



EDP	D	Min. Cutting bore dia.	Thread per flute	P	L	l	l1	d	ZΔ	Price
3900495	0,72	M1	1	0,25	40	0,25	2,75	3	3	
3900496	0,92	M1,2	1	0,25	40	0,25	3,25	3	3	
3900497	1,05	M1,4	1	0,3	40	0,3	3,8	3	3	
3900498	1,2	M1,6	1	0,35	40	0,35	4,35	3	3	
3900499	1,3	M1,7 ~ M1,8	1	0,35	40	0,35	4,85	3	3	
3900500	1,5	M2	3	0,4	40	1,2	4,4	6	3	
3900501	1,9	M2,5 ~ M2,6	3	0,45	40	1,4	5,6	6	3	
3900502	2,4	M3	3	0,5	40	1,5	6,5	6	3	
3900503	3,1	M4	3	0,7	40	2,1	8,7	6	3	
3900504	4	M5	3	0,8	40	2,4	10,8	6	3	



EDP	D	Min. Cutting bore dia.	Thread per flute	P	L	l	l1	d	ZΔ	Price
3900495	0,72	S1	1	0,25	40	0,25	2,75	3	3	
3900496	0,92	S1,2	1	0,25	40	0,25	3,25	3	3	
3900497	1,05	S1,4	1	0,3	40	0,3	3,8	3	3	

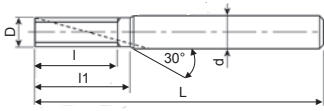


EDP	D	Min. Cutting bore dia.	Thread per flute	P	L	l	l1	d	ZΔ	Price
3900513	3,2	N°8	3	32	40	2,4	9,1	6	3	

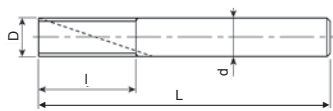
Work material		Milling speed (m/min)		Feed (mm/tooth)	
Low tensile strength steel	C~0,25%	60~90	0,02~0,08		
Medium tensile strength steel	C~0,25% ~ 0,45%	60~90	0,02~0,08		
High tensile strength steel	C0,45%~	60~90	0,02~0,08		
Alloy steel	SCM	30~60	0,01~0,03		
Hardened steel	25~45 HRC	30~60	0,01~0,03		
	45~55 HRC	30~60	0,01~0,03		
	50~60 HRC	-	-		
Stainless steel	SUS	60~90	0,02~0,08		
Tool steel	SKD	-	-		
Cast steel	SC	40~65	0,02~0,09		
Cast iron	FC	50~100	0,03~0,1		
Ductile cast iron	FCD	50~70	0,03~0,1		
Copper	Cu	-	-		
Brass	Bs	-	-		
Brass casting	BsC	50~100	0,02~0,06		
Bronze	PB	50~100	0,02~0,06		
Aluminium rolled steel	AL	50~100	0,02~0,06		
Aluminium alloy casting	AC, ADC	50~100	0,02~0,06		
Magnesium alloy casting	MC	50~100	0,02~0,06		
Zinc alloy casting	ZDC	50~100	0,02~0,06		
Titanium casting	Ti-6AL-4V	20~60	0,01~0,03		
Nickel alloys	Inconel®	20~60	0,01~0,03		
Thermo setting plastic	-	50~100	0,02~0,06		
Thermo plastic	-	50~100	0,02~0,06		

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania													
C<0.2%	0.25<C<0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG	
○ 60~90 m/min	○ 60~90 m/min	○ 60~90 m/min	○ 30~60 m/min	◎ 30~60 m/min	◎ 30~60 m/min	◎ 30~60 m/min		○ 60~90 m/min		○ 40~65 m/min	○ 50~100 m/min	○ 50~70 m/min	
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl		
		○ 50~100 m/min		○ 50~100 m/min	○ 50~100 m/min	○ 50~100 m/min	○ 50~100 m/min	◎ 20~60 m/min	◎ 20~60 m/min	○ 50~100 m/min	○ 50~100 m/min		

- d1 = min. hole diameter
- For use with standard collet chuck
- For making thread until bottom of blind hole
- For internal thread to left and right.
- d1 = min. mil. diameter
- Bruges med standard spændetænger
- Til gevindskæring til bunden af bundhul
- Til indvendigt gevind til højre og venstre
- d1 = min. dia. des Gewindes
- Geeignet für den Einsatz auch mit Spannzangen
- Bearbeitung bis auf Kernlochgrund möglich
- Geeignet für Rechts- und Linksgewinde
- d1 = mil hål diameter
- För användning med standard hylschuckar
- Vid gängning av bottenhål
- Höger och vänster gänga vid invändig gängning
- d1 = diametro minimo di filettatura
- Si utilizza con un mandrino a pinza
- Esecuzione di filetti senza imbocco
- Filettature destre e sinistre
- d1 = diametro de nucleo
- Para usar con porta-pinzas
- Para producir rosca hasta el fondo de agujero ciego
- Para roscado interior a derecha e izquierda
- d1 = diamètre min. de trou
- La fraise à fileter s'utilise dans un mandrin standard à pinces
- Permet de faire un filet jusqu'au fond du trou borgne
- Pour filets intérieurs à gauche et à droite
- d1 - минимальный диаметр отверстия
- Для использования с цанговым патроном
- Для нарезания резьбы до дна глухого отверстия
- Для внутренней, левой и правой резьбы
- d1 = min. delik çapı
- Standart pensli tutucular için
- Kör deliğin sonuna kadar dış açmak için
- İç çap için sol ve sağ diş
- d1 = min. średnica otworu
- Do zastosowania ze standardowymi oprawkami zaciskowymi
- Możliwe wykonanie gwintu do dna otworu
- Do gwintów wewnetrznych prawych i lewych



Type 1



Type 2



Type 1

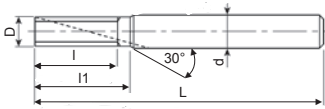
Type 2

EDP	D	Min. Cutting bore dia.	P	L	l	l1	d	ZΔ	Type	Price
8304700	4,5	M6	0,75	60	12,8	15	6	4	1	
8304701	4,5	M6	1	60	13	15	6	4	1	
8304710	6	M8	0,5	65	16,5	-	6	4	2	
8304711	6	M8	1	65	17	-	6	4	2	
8304712	6	M8	1,25	65	17,5	-	6	4	2	
8304721	7,5	M10	1	70	21	26	8	4	1	
8304723	7,5	M10	1,5	70	22,5	26	8	4	1	
8304732	9,5	M12	1,25	85	26,3	28	10	5	1	
8304733	9,5	M12	1,5	85	25,5	28	10	5	1	
8304734	9,5	M12	1,75	85	26,3	28	10	5	1	
8304740	10	M14	0,5	85	28,5	-	10	5	2	
8304741	10	M14	0,75	85	29,3	-	10	5	2	
8304742	10	M14	1	85	29	-	10	5	2	
8304743	10	M14	1,5	85	30	-	10	5	2	
8304744	10	M14	2	85	30	-	10	5	2	
8304752	12	M16	1	95	33	-	12	5	2	
8304753	12	M16	1,5	95	34	-	12	5	2	
8304754	12	M16	2	95	34	-	12	5	2	
8304773	16	M20	1,5	105	42	-	16	5	2	
8304775	16	M20	2,5	105	42,5	-	16	5	2	
8304783	20	M27	1,5	120	49,5	-	20	6	2	
8304784	20	M27	2	120	50	-	20	6	2	
8304786	20	M27	3	120	51	-	20	6	2	

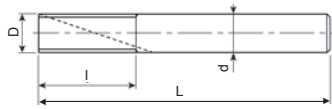
Work material	Milling speed (m/min)	Feed (mm/tooth)	
Low tensile strength steel	C~0,25%	80~120	0,04~0,1
Medium tensile strength steel	C~0,25%~0,45%	80~120	0,04~0,1
High tensile strength steel	C0,45%~	80~120	0,04~0,1
Alloy steel	SCM	80~120	0,02~0,08
Hardened steel	25~45 HRC	60~100	0,02~0,08
	45~55 HRC	-	-
	50~60 HRC	-	-
Stainless steel	SUS	40~80	0,02~0,06
Tool steel	SKD	-	-
Cast steel	SC	40~65	0,02~0,09
Cast iron	FC	50~100	0,03~0,1
Ductile cast iron	FCD	50~65	0,03~0,1
Copper	Cu	65~130	0,03~0,1
Brass	Bs	65~130	0,03~0,1
Brass casting	BsC	65~130	0,03~0,1
Bronze	PB	65~130	0,03~0,1
Aluminium rolled steel	AL	50~70	0,03~0,1
Aluminium alloy casting	AC, ADC	65~130	0,03~0,1
Magnesium alloy casting	MC	65~130	0,03~0,1
Zinc alloy casting	ZDC	65~130	0,03~0,1
Titanium casting	Ti-6AL-4V	20~60	0,02~0,06
Nickel alloys	Inconel*	20~60	0,01~0,03
Thermo setting plastic	-	65~130	0,03~0,13
Thermo plastic	-	65~130	0,03~0,13

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C<=0.2%	0.25<C<=0.4%	C>=0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 80~120 m/min	◎ 80~120 m/min	◎ 80~120 m/min	◎ 80~120 m/min	◎ 60~100 m/min	◎ 60~100 m/min			○ 40~80 m/min		○ 40~65 m/min	○ 50~100 m/min	○ 50~65 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 50~70 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min			○ 65~130 m/min	○ 65~130 m/min	

- d1 = min. hole diameter
- For use with standard collet chuck
- For making thread until bottom of blind hole
- For internal thread to left and right.
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- Bearbeitung bis auf Kernlochgrund möglich
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- Si utilizza con un mandrino a pinza
- Esecuzione di filetti senza imbocco
- Filettature destre e sinistre
- d1 = diamètre min. de trou
- La fraise à fileter s'utilise dans un mandrin standard à pinces
- Permet de faire un filet jusqu'au fond du trou borgne
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- d1 - минимальный диаметр отверстия
- Для использования с цанговым патроном
- Для нарезания резьбы до дна глухого отверстия
- Для внутренней, левой и правой резьбы
- d1 = min. delik çapı
- Standart pensli tutucular için
- Kör deliğin sonuna kadar dış açmak için
- İç çap için sol ve sağ diş
- d1 = min. hul diameter
- Bruges med standard spændetænger
- Til gevindskæring til bunden af bundhul
- Til indvendigt gevind til højre og venstre
- d1 = mil håll diameter
- För användning med standard hytshucklar
- Vid gängning av bottenhål
- Höger och vänster gänga vid invändig gängning
- d1 = diametro de nucleo
- Para usar con porta-pinzas
- Para producir rosca hasta el fondo de agujero ciego
- Para roscado interior a derecha e izquierda
- d1 = min. średnica otworu
- Do zastosowania ze standardowymi oprawkami zaciskowymi
- Możliwe wykonanie gwintu do dna otworu
- Do gwintów wewnetrznych prawych i lewych



Type 1



Type 2

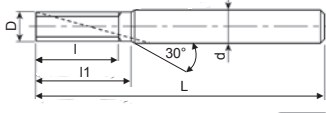


EDP	D	Min. Cutting bore dia.	P	L	l	l1	d	Δ	Type	Price
3900001	4,5	M6	1	60	13	15	6	3	1	
3900011	6	M8	1	65	17	-	6	3	2	
3900012	6	M8	1,25	65	17,5	-	6	3	2	
3900021	7,5	M10	1	70	21	26	8	3	1	
1004470640	7,5	M10	1,25	70	21,3	26	8	3	1	
3900023	7,5	M10	1,5	70	22,5	26	8	3	1	
3900032	9,5	M12	1,25	85	26,3	28	10	4	1	
3900033	9,5	M12	1,5	85	25,5	28	10	4	1	
3900034	9,5	M12	1,75	85	26,3	28	10	4	1	
3900042	10	M14	1	85	29	-	10	4	2	
3900043	10	M14	1,5	85	30	-	10	4	2	
3900044	10	M14	2	85	30	-	10	4	2	
3900052	12	M16	1	95	33	-	12	4	2	
3900053	12	M16	1,5	95	34,5	-	12	4	2	
3900054	12	M16	2	95	34	-	12	4	2	
3900073	16	M20	1,5	105	42	-	16	4	2	
3900075	16	M20	2,5	105	42,5	-	16	4	2	
3900083	20	M27	1,5	120	49,5	-	20	5	2	
3900084	20	M27	2	120	50	-	20	5	2	
3900086	20	M27	3	120	51	-	20	5	2	

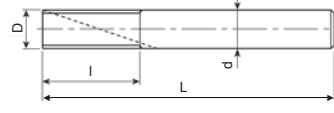
Work material	Milling speed (m/min)	Feed (mm/tooth)	
Low tensile strength steel	C~0,25%	50~75	0,01~0,11
Medium tensile strength steel	C~0,25% ~ 0,45%	40~70	0,01~0,11
High tensile strength steel	C0,45%~	40~70	0,01~0,01
Alloy steel	SCM	15~30	0,01~0,03
Hardened steel	25~45 HRC	15~30	0,01~0,03
	45~55 HRC	-	-
	50~60 HRC	-	-
Stainless steel	SUS	20~40	0,01~0,06
Tool steel	SKD	-	-
Cast steel	SC	40~65	0,02~0,09
Cast iron	FC	50~100	0,03~0,1
Ductile cast iron	FCD	50~65	0,03~0,1
Copper	Cu	65~130	0,03~0,1
Brass	Bs	65~130	0,03~0,1
Brass casting	BsC	65~130	0,03~0,1
Bronze	PB	65~130	0,03~0,1
Aluminium rolled steel	AL	50~70	0,03~0,1
Aluminium alloy casting	AC, ADC	65~130	0,03~0,1
Magnesium alloy casting	MC	65~130	0,03~0,1
Zinc alloy casting	ZDC	65~130	0,03~0,1
Titanium casting	Ti-6AL-4V	20~60	0,02~0,06
Nickel alloys	Inconel	20~60	0,01~0,03
Thermo setting plastic	-	65~130	0,03~0,13
Thermo plastic	-	65~130	0,03~0,13

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 50~75 m/min	○ 40~70 m/min	○ 40~70 m/min	○ 15~30 m/min	○ 15~30 m/min	○ 15~30 m/min			○ 20~40 m/min		○ 40~65 m/min	○ 50~100 m/min	○ 50~65 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 50~70 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	◎ 20~60 m/min	◎ 20~60 m/min	○ 65~130 m/min	○ 65~130 m/min	

- d1 = min. hole diameter
- For use with standard collet chuck
- For making thread until bottom of blind hole
- For internal thread to left and right.
- d1 = min. dia. des Gewindes
- Geeignet für den Einsatz auch mit Spannzangen
- Bearbeitung bis auf Kernlochgrund möglich
- Geeignet für Rechts- und Linksgewinde
- d1 = diametro minimo di filettatura
- Si utilizza con un mandrino a pinza
- Esecuzione di filetti senza imbocco
- Filettature destre e sinistre
- d1 = diamètre min. de trou
- La fraise à fileter s'utilise dans un mandrin standard à pinces
- Permet de faire un filet jusqu'au fond du trou borgne
- Pour filets intérieurs à gauche et à droite
- d1 - минимальный диаметр отверстия
- Для использования с цанговым патроном
- Для нарезания резьбы до дна глухого отверстия
- Для внутренней, левой и правой резьбы
- d1 = min. delik çapı
- Standart pensli tutucular için
- Kör deliğin sonuna kadar dış açmak için
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- d1 = min. hul diameter
- Bruges med standard spændetænger
- Til gevindskæring til bunden af bundhul
- Til indvendigt gevind til højre og venstre
- d1 = mil håll diameter
- För användning med standard hylschuckar
- Vid gängning av bottenhål
- Höger och vänster gänga vid invändig gängning
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Type 1



Type 2

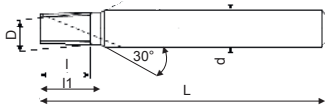


EDP	D	Min. Cutting bore dia.	P	L	l	l1	d	Δl	Type	Price
3900350	4,55	1/4	20	60	10,2	11,4	6	3	1	
3900351	4,55	1/4	28	60	10	10,9	6	3	1	
3900355	6,2	5/16	18	65	12,7	14,1	8	3	1	
3900356	6,2	5/16	24	65	12,7	14,1	8	3	1	
3900360	7,6	3/8	16	65	14,3	-	8	3	2	
3900361	7,6	3/8	24	65	14,8	-	8	3	2	
3900365	8,8	7/16	14	75	18,1	19,9	10	3	1	
3900366	8,8	7/16	20	75	17,8	19,1	10	3	1	
3900370	9,4	1/2	13	75	19,5	21,5	10	4	1	
3900371	9,4	1/2	20	75	19,1	20,4	10	4	1	
3900375	10,9	9/16	12	85	23,3	25,4	12	4	1	
3900380	11,4	9/16	18	85	22,6	24	12	4	1	
3900390	18,9	7/8	12	110	33,9	36	20	4	1	

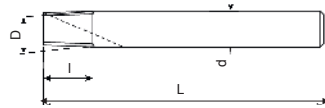
Work material	Milling speed (m/min)	Feed (mm/tooth)	
Low tensile strength steel	C~0,25%	50~75	0,01~0,11
Medium tensile strength steel	C~0,25%~0,45%	40~70	0,01~0,11
High tensile strength steel	C0,45%~	40~70	0,01~0,01
Alloy steel	SCM	15~30	0,01~0,03
Hardened steel	25~45 HRC	15~30	0,01~0,03
	45~55 HRC	-	-
	50~60 HRC	-	-
Stainless steel	SUS	20~40	0,01~0,06
Tool steel	SKD	-	-
Cast steel	SC	40~65	0,02~0,09
Cast iron	FC	50~100	0,03~0,1
Ductile cast iron	FCD	50~65	0,03~0,1
Copper	Cu	65~130	0,03~0,1
Brass	Bs	65~130	0,03~0,1
Brass casting	BsC	65~130	0,03~0,1
Bronze	PB	65~130	0,03~0,1
Aluminium rolled steel	AL	50~70	0,03~0,1
Aluminium alloy casting	AC, ADC	65~130	0,03~0,1
Magnesium alloy casting	MC	65~130	0,03~0,1
Zinc alloy casting	ZDC	65~130	0,03~0,1
Titanium casting	Ti-6AL-4V	20~60	0,02~0,06
Nickel alloys	Inconel*	20~60	0,01~0,03
Thermo setting plastic	-	65~130	0,03~0,13
Thermo plastic	-	65~130	0,03~0,13

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania													
C<=0.2%	0.25<C<=0.4%	C>=0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG	
○ 50~75 m/min	○ 40~70 m/min	○ 40~70 m/min	○ 15~30 m/min	○ 15~30 m/min	○ 15~30 m/min			○ 20~40 m/min		○ 40~65 m/min	○ 50~100 m/min	○ 50~65 m/min	
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl		
○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 50~70 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	◎ 20~60 m/min	◎ 20~60 m/min	○ 65~130 m/min	○ 65~130 m/min		

- d1 = min. hole diameter
- For use with standard collet chuck
- For making thread until bottom of blind hole
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- d1 = min. delik çapı
- Standart pensli tutucular için
- Kör deliğin sonuna kadar dış açmak için
- İç çap için sol ve sağ diş
- d1 = min. średnica otworu
- Do zastosowania ze standardowymi oprawkami zaciskowymi
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- Do gwintów wewnetrznych prawych i lewych



Type 1



Type 2



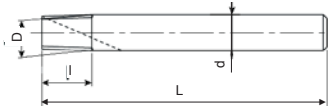
EDP	D	Min. Cutting bore dia.	P	L	l	l1	d	ZΔ	Type	Price
3900201	7,5	1/8	28	60	9,1	12,7	8	3	1	
3900211	10	1/4~3/8	19	75	14,7	-	10	4	2	
3900214	12	1/2~3/4	14	85	20	-	12	4	2	
3900218	20	1~2	11	95	27,7	-	20	5	2	

NEW	EDP	D	Min. Cutting bore dia.	P	L	l	l1	d	ZΔ	Type	Price
	3900299	5,9	1/16 - 1/8	28	60	11,8	-	6	3	2	
	3900301	7,5	1/8	28	65	14,5	15,4	8	3	1	
	3900311	10	1/4 - 3/8	19	75	20,1	-	10	4	2	
	3900312	11	3/8	19	85	25,4	26,7	12	4	1	

Work material	Milling speed (m/min)	Feed (mm/tooth)	
Low tensile strength steel	C~0,25%	50~75	0,01~0,11
Medium tensile strength steel	C~0,25% ~ 0,45%	40~70	0,01~0,11
High tensile strength steel	C0,45%~	40~70	0,01~0,01
Alloy steel	SCM	15~30	0,01~0,03
Hardened steel	25~45 HRC	15~30	0,01~0,03
	45~55 HRC	-	-
	50~60 HRC	-	-
Stainless steel	SUS	20~40	0,01~0,06
Tool steel	SKD	-	-
Cast steel	SC	40~65	0,02~0,09
Cast iron	FC	50~100	0,03~0,1
Ductile cast iron	FCD	50~65	0,03~0,1
Copper	Cu	65~130	0,03~0,1
Brass	Bs	65~130	0,03~0,1
Brass casting	BsC	65~130	0,03~0,1
Bronze	PB	65~130	0,03~0,1
Aluminium rolled steel	AL	50~70	0,03~0,1
Aluminium alloy casting	AC, ADC	65~130	0,03~0,1
Magnesium alloy casting	MC	65~130	0,03~0,1
Zinc alloy casting	ZDC	65~130	0,03~0,1
Titanium casting	Ti-6AL-4V	20~60	0,02~0,06
Nickel alloys	Inconel	20~60	0,01~0,03
Thermo setting plastic	-	65~130	0,03~0,13
Thermo plastic	-	65~130	0,03~0,13

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C<0.2%	0.25<C<0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 50~75 m/min	○ 40~70 m/min	○ 40~70 m/min	○ 15~30 m/min	○ 15~30 m/min	○ 15~30 m/min			○ 20~40 m/min		○ 40~65 m/min	○ 50~100 m/min	○ 50~65 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 50~70 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	◎ 20~60 m/min	◎ 20~60 m/min	○ 65~130 m/min	○ 20~60 m/min	

- d1 = min. hole diameter
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- d1 = min. średnica otworu
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- d1 = min hul diameter
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- Til gevindskæring til bunden af bundhul
- Til indvendigt gevind til højre og venstre
- d1 = mil håll diameter
- För användning med standard hylschuckar
- Vid gängning av bottenhål
- Höger och vänster gänga vid invändig gängning
- d1 = diametro de nucleo
- Para usar con porta-pinzas
- Para producir rosca hasta el fondo de agujero ciego
- Para roscado interior a derecha e izquierda



EDP	D	Min. Cutting bore dia.	P	L	l	d	ZΔ	Price
3900259	5,9	1/16~1/8	27	60	10,3	6	3	
3900261	10	1/4~3/8	18	75	15,5	10	4	
3900265	16	1/2~3/4	14	85	20	16	4	
3900268	20	1~2	11 1/2	95	24,3	20	5	

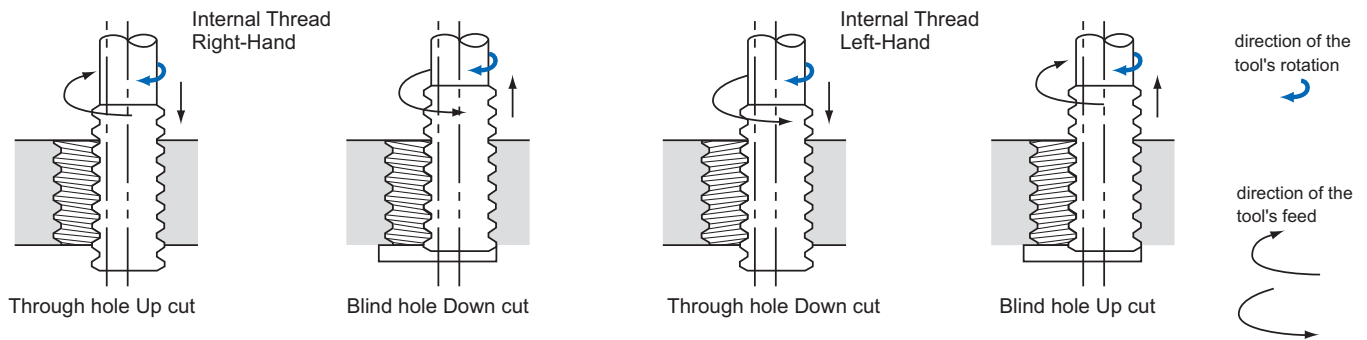
Work material	Milling speed (m/min)	Feed (mm/tooth)	
Low tensile strength steel	C~0,25%	50~75	0,01~0,11
Medium tensile strength steel	C~0,25% ~ 0,45%	40~70	0,01~0,11
High tensile strength steel	C0,45%~	40~70	0,01~0,01
Alloy steel	SCM	15~30	0,01~0,03
Hardened steel	25~45 HRC	15~30	0,01~0,03
	45~55 HRC	-	-
	50~60 HRC	-	-
Stainless steel	SUS	20~40	0,01~0,06
Tool steel	SKD	-	-
Cast steel	SC	40~65	0,02~0,09
Cast iron	FC	50~100	0,03~0,1
Ductile cast iron	FCD	50~65	0,03~0,1
Copper	Cu	65~130	0,03~0,1
Brass	Bs	65~130	0,03~0,1
Brass casting	BsC	65~130	0,03~0,1
Bronze	PB	65~130	0,03~0,1
Aluminium rolled steel	AL	50~70	0,03~0,1
Aluminium alloy casting	AC, ADC	65~130	0,03~0,1
Magnesium alloy casting	MC	65~130	0,03~0,1
Zinc alloy casting	ZDC	65~130	0,03~0,1
Titanium casting	Ti-6AL-4V	20~60	0,02~0,06
Nickel alloys	Inconel [®]	20~60	0,01~0,03
Thermo setting plastic	-	65~130	0,03~0,13
Thermo plastic	-	65~130	0,03~0,13

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania													
C ≤ 0.2%	0.25 < C ≤ 0.4%	C ≥ 0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG	
○ 50~75 m/min	○ 40~70 m/min	○ 40~70 m/min	○ 15~30 m/min	○ 15~30 m/min	○ 15~30 m/min			○ 20~40 m/min		○ 40~65 m/min	○ 50~100 m/min	○ 50~65 m/min	
Cu	BS	BsC	PB	Al	AC, ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl		
○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 50~70 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	◎ 20~60 m/min	◎ 20~60 m/min	○ 65~130 m/min	○ 65~130 m/min		

Technical process

Machining Technique

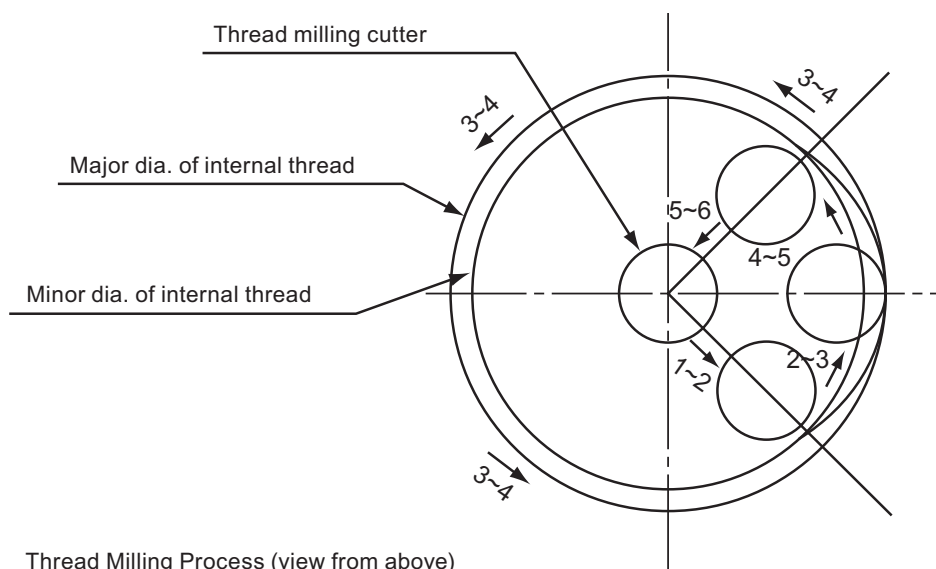
OSG's Thread Mills are developed for thread milling on a 3-Axis CNC controlled machine tool. Threads are produced by advancing one pitch feed per revolution in the axial direction, utilizing the planet-like rotation and revolution movements of the tool. Internal/external and right/left hand threads can all be produced with this one tool by simply changing the direction of rotation and/or feed



Threading Process

- 1-2 Move to edge (maintain clearance)
- 2-3 Cut with helical milling
- 3-4 Mill the circumference of the circle
- 4-5 Pull away from the edge
- 5-6 Remove tool

The transition between the start and finish of the milling operation must be smooth and the appropriate amount of feed is essential for minimizing milling resistance. There are many different methods for using this tool, but our research has shown that this technique provides the most precise and efficient operation.



Machining Data

Machining small diameter internal threads with stainless steel

Tool	WH-VM-PNC 0,72 P0,25	Competitor	Description	Tool Life	
	SUS304			100	200
Work Material	SUS304		WH-VM-PNC	212 Holes → Gauge-Out	
Cutting Speed	80m/min (35.367min ⁻¹)			235 Holes → Gauge-Out	
Feed	594mm/min (0.02mm/t)		Competitor	122 Holes → Gauge-Out	
Internal Thread Size	M1x0.25			198 Holes → Gauge-Out	
Drill Hole Size	φ0.78x2.5mm (Blind)				
Tapping Length	2mm (2D) (Blind)				
Machining Method	Up Cut 2 passes				
Coolant	Water Soluble				
Machine	(HSK-E25) Vertical Machining Center				

The WH-VM-PNC was able to perform stably with water-soluble coolant in stainless steel, a difficult process for cut taps. It was able to achieve long tool life and perform stably when tapping M1 threads. When processing threads with limited tap drill hole depth allowance for tap drill holes, the WH-VM-PNC was able to perform more stably than a conventional cut tap.

Machining small diameter internal threads with Inconel 718

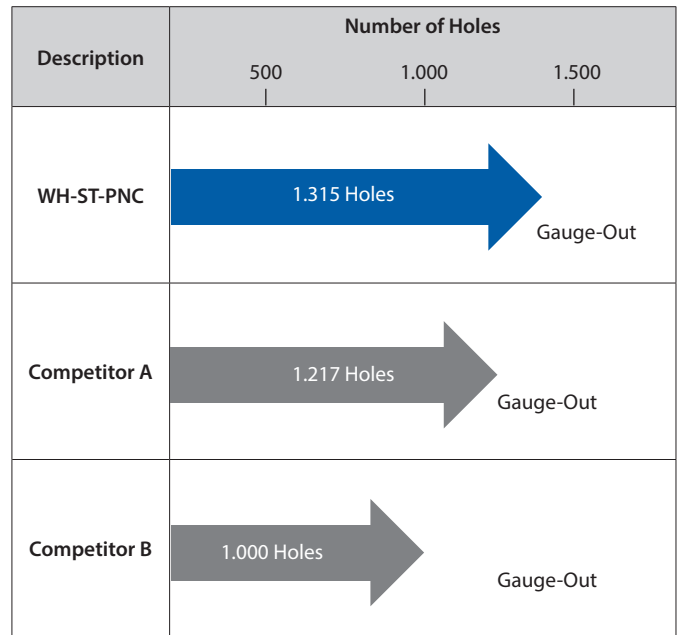
Tool	WH-VM-PNC 3,2 x 2,4 U32		Cutting Speed	N° of Passes	Number of Holes			
	Inconel 718 (40HRC)				20	40	60	80
Work Material	Inconel 718 (40HRC)		40m/min	4	50 Holes → Substantial tool chipping			
Cutting Speed	40m/min (3.980min ⁻¹)	60m/min (5.970min ⁻¹)			60 Holes → Substantial tool chipping			
Feed	120mm/min (0,03mm/t)	180mm/min (0,03mm/t)	60m/min	2	40 Holes → Substantial tool chipping			
Internal Thread Size	N°10~32 UNF							
Drill Hole Size	φ4,1x14mm (Blind)							
Tapping Length	9mm (1,9D) (Blind)							
Machining Method	Down Cut 2-4 passes							
Coolant	Water Soluble							
Machine	(HSK-A40) Vertical Machining Center							

Compared to taps, thread mills have fewer cutting condition limitations. There are no worries about chip management or coolant lubricity, and stable tapping is possible. In this example, we were able to improve the yield rate of small diameter internal threads in a high value workpiece. Further durability improvements and cost reductions can be expected by adjusting the feed rate and number of passes, and changing the cutting fluid.

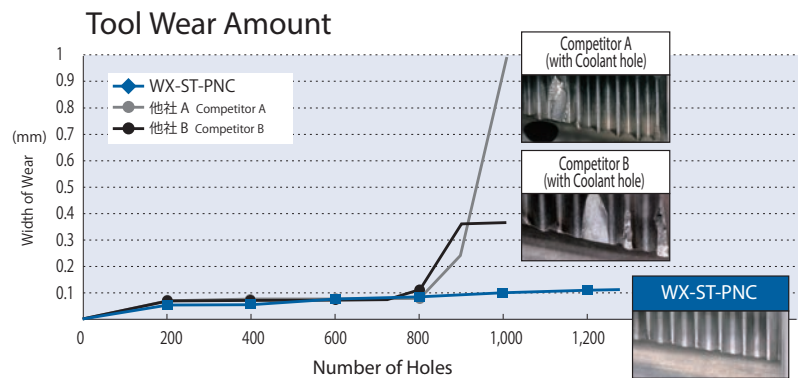
Machining Data

Outstanding Performance in Stainless with Water-Soluble Coolant

Tool	WX-ST-PNC 7,5x9,1RC 28
Work Material	SUS304
Cutting Speed	130m/min (9.970min ⁻¹)
Feed	607mm/min (0,1mm/t)
Internal Thread Size	Rc 1/8-28
Drill Hole Size	φ8,2x9mm (Though)
Tapping Length	6,2 mm
Machining Method	Down Cut
Coolant	Water Soluble
Machine	Vertical Machining Center

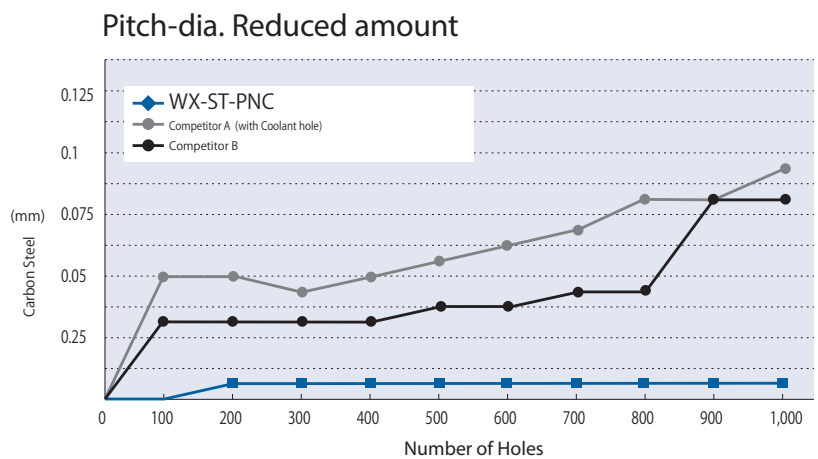


Tool life comparison against other competitors under identical cutting condition in SUS304. The tool life of the WX-ST-PNC was slightly higher than other competitors. Also, in terms of tool wear, it was the only tool that was in fair enough condition for regrinding.



Stable performance in S45C

Tool	WX-ST-PNC 7,5x9,1RC 28
Work Material	S45C
Cutting Speed	100m/min (4.592min ⁻¹)
Feed	327mm/min (0,07mm/t)
Internal Thread Size	Rc 1/8-28
Drill Hole Size	φ8,2x9mm (Though)
Tapping Length	6,2 mm
Machining Method	Down Cut
Coolant	Water Soluble
Machine	Vertical Machining Center (BT30)



Cutting results in S45C. The WX-ST-PNC was able to stably process 1,000 holes with minimal changes in the effective diameter.

Machining Data

Long tool life when high-speed machining hardened steels

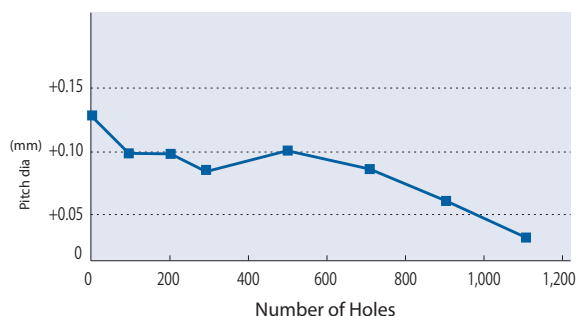
Tool	WXO-ST-PNC 9,5 x 26,3 P1,75
Work Material	SCM440 (40HRC)
Cutting Speed	100m/min (3.351min ⁻¹)
Feed	349mm/min (0.1mm/t)
Internal Thread Size	M12x1,75
Drill Hole Size	φ10,3
Tapping Length	20 mm
Machining Method	Down Cut 2 passes
Coolant	Water Soluble (10%) (Internal)
Machine	Vertical Machining Center

Description	Number of Holes					
	200	400	600	800	1.000	1.200
WXO-ST-PNC						

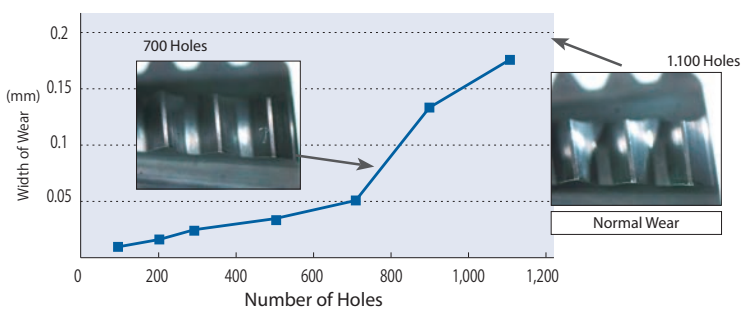
Machined continuously without making tool diameter corrections.

In this example, even when high-speed machining at 100m/min with internally supplied coolant, there was no chipping and long tool life was achieved. The internal threads' pitch diameter measurement was stable, demonstrating the effectiveness of this tool in mass production machining.

Pitch diameter of internal thread



Changes in the extent of wear on the outer circumference



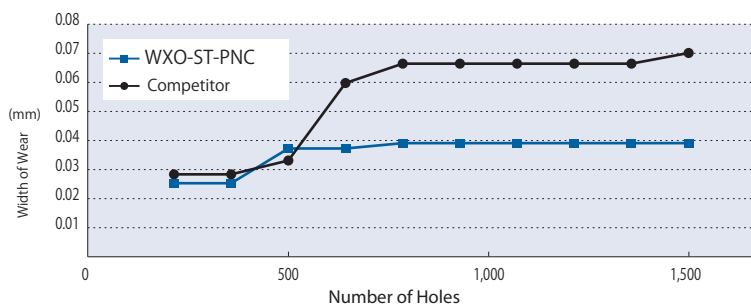
Stable machining in stainless steels, Wear is 40% less than the competitor

Tool	WXO-ST-PNC 9,5 x 26,6 P1,75
Work Material	SUS 304
Cutting Speed	80m/min (2.681min ⁻¹)
Feed	168mm/min (0,06 mm/t)
Internal Thread Size	M12x1,75
Tapping Length	23 mm
Coolant	Water Soluble
Machine	Vertical Machining Center (BT40)

Description	Number of Holes		
	500	1.000	1.500
WXO-ST-PNC			
Competitor			

Even when machining stainless steel at 80m/min, it was possible to machine over 1,500 holes, and tool wear was 40% less than the competitor's product. Low wear, slow wear progression and long, stable machining of internal threads were achieved.

Changes in the extent of wear on the outer circumference



Machining Data

In non-ferrous materials, WX-PNC has excellent durability

Tool	WX-PNC 7,6 x 14,3 U16	Description	Number of Holes			
Work Material	A7075		2.000	4.000	6.000	8.000
Cutting Speed	160m/min (6.701min ⁻¹)	WX-PNC	8.800 Holes			
Feed	650mm/min (0,16 mm/t)		Still Running			
Internal Thread Size	3/8-16	WX-PNC	8.800 Holes			
Tapping Length	12 mm		Still Running			
Coolant	Water Soluble					
Machine	Vertical Machining Center (BT40)					

Even after machining 8,800 holes in A7075 with a cutting speed of 160m/min, tool wear was negligible. It was still possible for the WX-PNC to continue much more, effectively achieving stable machining of internal threads on a machining center.



No.1 (after cutting 8,800 threads)

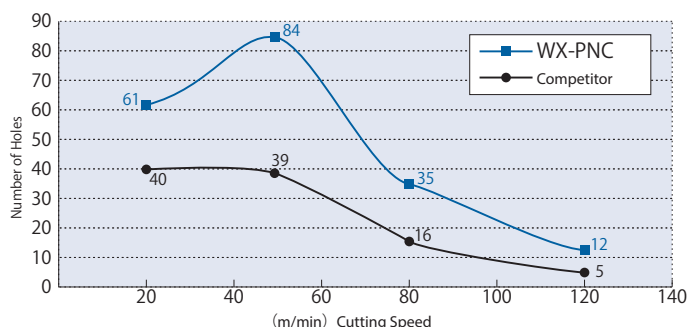


No.2 (after cutting 8,800 threads)

The WX-PNC is also for heat-resistant steels. It achieved twice the tool life of the competitor in Inconel 718

Tool	WX-PNC 4,55 x 10,8 U20
Work Material	Inconel 718 (43HRC)
Internal Thread Size	1/4-20 UNC
Tapping Length	9 mm
Feed per Tooth	0,03 mm/t
Coolant	Water Soluble (10%)
Machine	Horizontal Machining Center

Cutting Speed and Durability Count



These are the test results in Inconel® 718 at various cutting speeds. At cutting speeds under 50m/min, durability is better and this seems to be an effective machining range. The WX-PNC achieves twice the tool life of the competitor, no matter the cutting speed.

Feedback from ThreadPro users

"An increased variety of NC machines to select from has helped me a lot." (User)

"The RPRG is very convenient! Before RPRG, I set the depth of cut on a trial-and-error basis for the first session. Now I can confidently set the depth correctly the first time." (User)

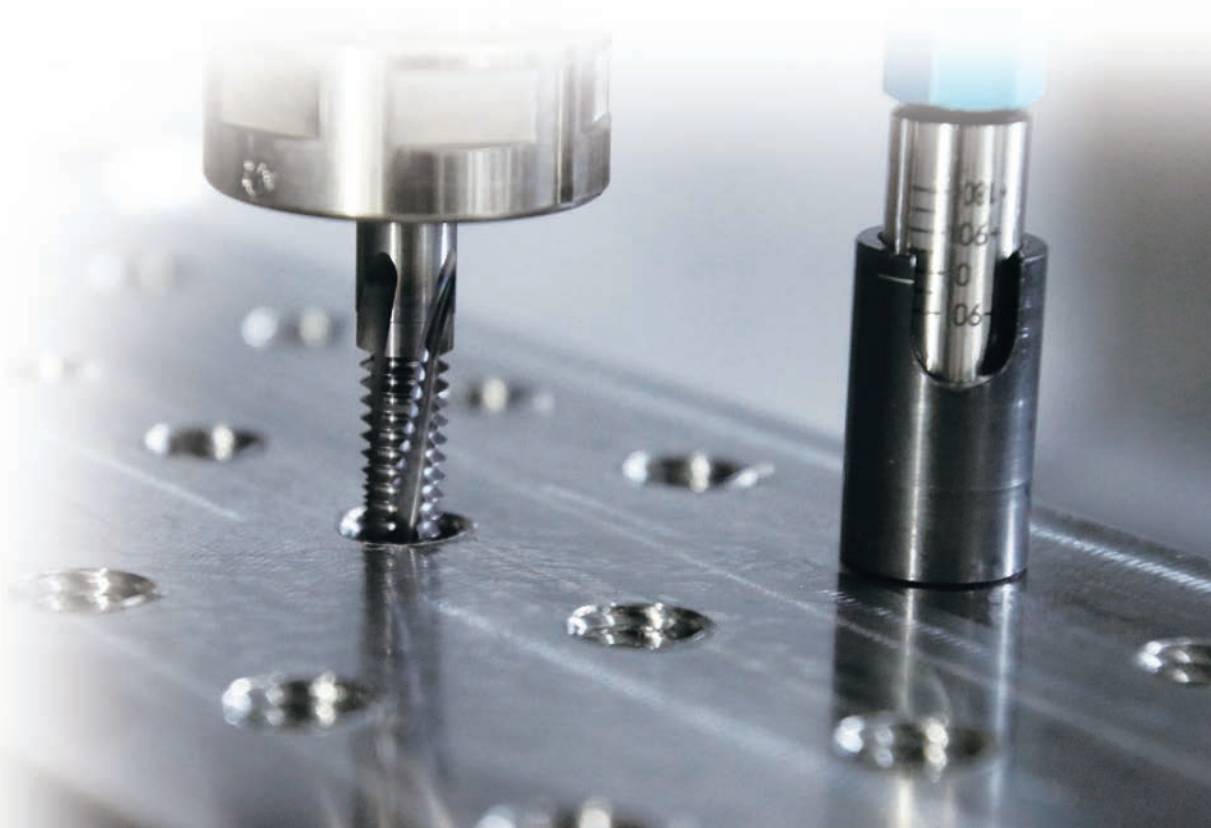
"I have no trouble selecting a tool, although it has been difficult for me to find the right combination of a holder and an insert . (Distributor)

"It is very convenient and easy to select the type of the tool or cutting edge according to the cutting context." (User)

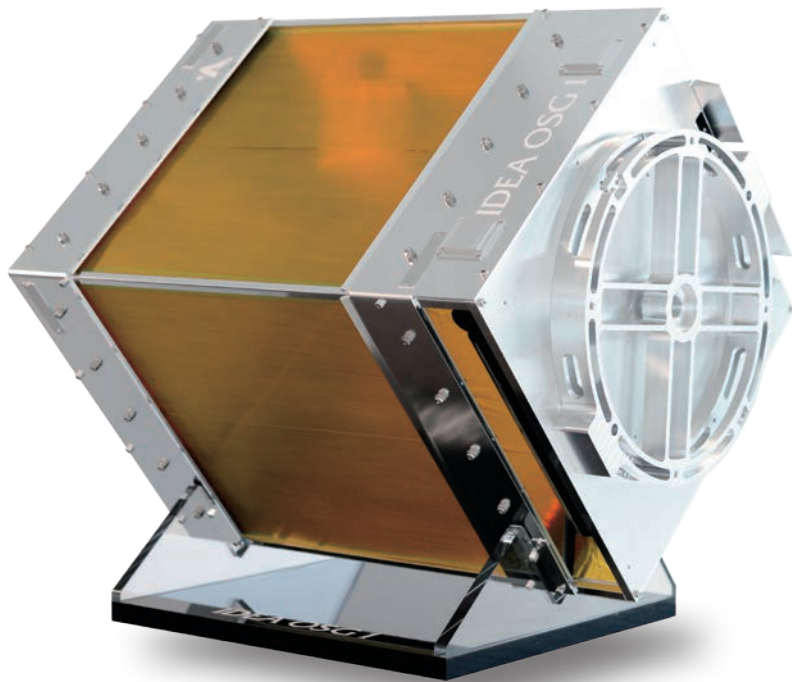
"The search results show relevant tool profiles and dimensions, for which I am glad." (User)

Voice of ThreadPro developer

In recent years, various theories concerning cutting have been proposed for end milling, considering load control and cutting efficiency. This is due to higher flexibility in end milling than in tapping. Thread mill is a thread cutting tool. However, as cutting methods it is closer to end mills than taps. Accordingly, to achieve optimal thread milling, parameters should include the cutting path as well as other cutting conditions. Nevertheless, because the workings of a thread mill are inherently complex, it is very difficult for the user to achieve the proper arrangement. OSG has radically updated the NC program development software to enable users to realize their ideas with increased ease and make more effective use of their tools than before.



OSG Thread Mill & Manufacturing of "IDEA OSG 1"



"IDEA OSG 1" is the world's first in-situ micro satellite scheduled for launch during winter 2016/2017. The objective of the satellite is to collect and monitor data of sub-millimeter sized debris in the most congested Low Earth Orbit (LEO) region in real-time. This data will be essential to refining current debris distribution models and improve the ability of spacecrafts in assessing the collision risk in the high-risk orbits.

To contribute to the sustainable use of the space environment, OSG is actively supporting the project not only as a sponsor, but also by participating in the manufacturing of the satellite flange, which required various types of thread mills.



Shaping your dreams for SPACE

IDEA OSG 1 Visit the official website for mission details!

<http://www.ideaosg1.com>



OSG is the main official sponsor of the "IDEA OSG 1" mission.



shaping your dreams

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