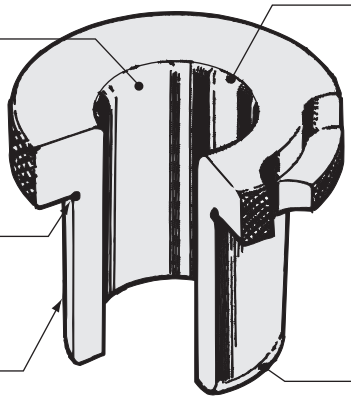
BUSHING AND CHAMFERING DRILL

Drill Jig Bushing



I.D.
Bushings are made in 3 different types for precise drilling, drilling and reaming. Available in increments of 0.1 mm according to size of drill or reamer.

UNDERCUT
Two-way undercut allows bushings to fit flush on top of jig.

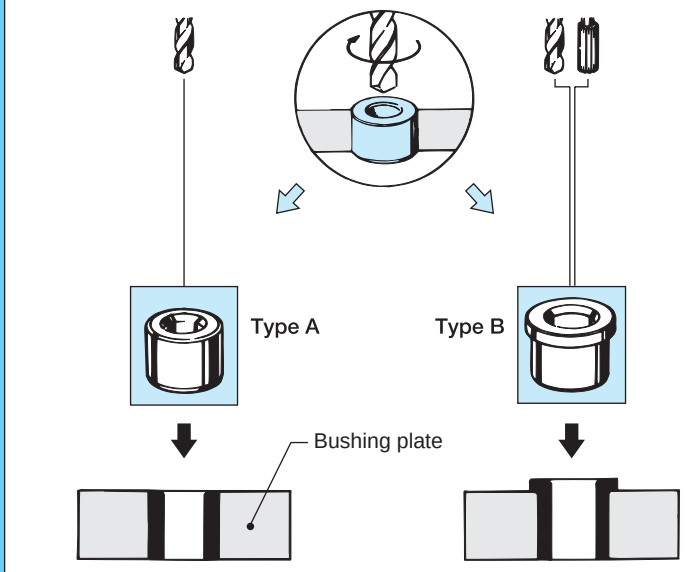
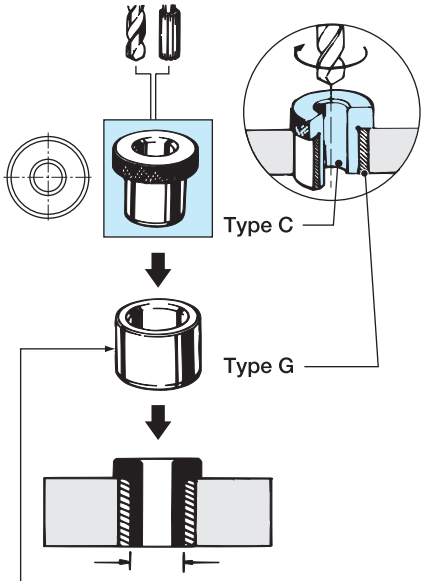
O.D.
Highly precise finish based on I.D.

RADIUS
Blended and polished for smooth entry of cutting tool.

HARDNESS
H.R.C60° ~ 64°for long wear free.

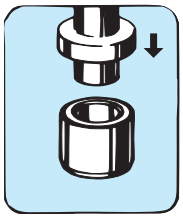
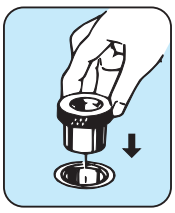
MATERIAL
JIS SK-5 or selected steel.

CHAMFERS
Chamfers on Bushings permit easy insertion.

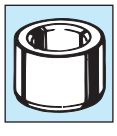
Type	PRESS FIT BUSHING		RENEWABLE BUSHING
Designation	HEADLESS Type A	HEADED Type B	ROUND Type C
Tool applied / Shape and sequence of fitting-in / Sectional view			

Bushings that have the same O.D. are interchangeable with each other.

HOW TO INSTALL A JIG BUSHING

PRESS FIT BUSHING Type A, B, G	RENEWABLE BUSHING Type C, D, E, F
How to press-fit 	
Press the bushing correctly into the bush plate.	Renewable bushing can be inserted by hand.

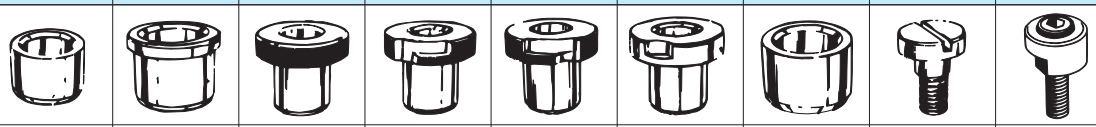
LINER BUSHING Type G



This Guides the renewable bushing for smoothe insertion or replacement.

Inch to Metric (mm) → Inch × 25.4
Metric (mm) to Inch → Metric ÷ 25.4 or Metric × 0.03937

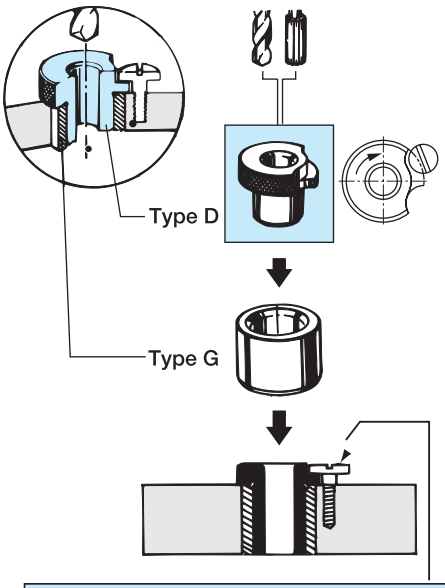
Special / Custom Sizes on request

Name	Press fit bushing		Renewable bushing				Headless liner bushing	Lock screw	Round clamp
	Headless	Headed	Round	Right slip	Left slip	Fixed			
Shape									
Higher accuracy	SA	SB	SC	SD	SE	SF	G	T	R
Standard accuracy	A	B	C	D	E	F			
Reaming	—	BR	CR	DR	ER	FR			

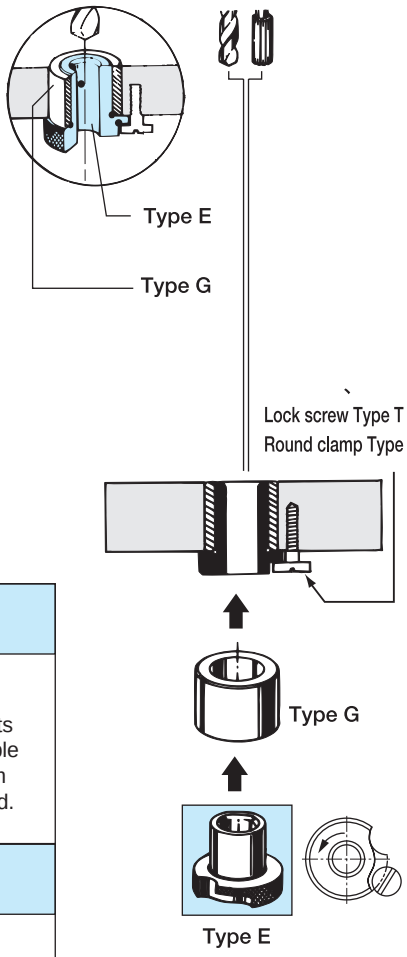
S···for higher accuracy R···for reaming

RENEWABLE BUSHING

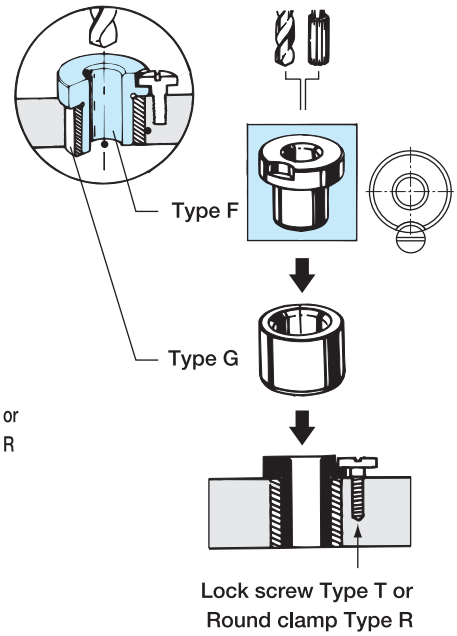
(R)SLIP RENEWABLE Type D



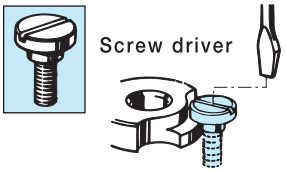
(L)SLIP RENEWABLE Type E



FIXED RENEWABLE Type F

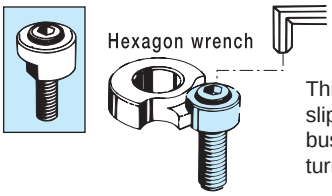


LOCK SCREW Type T



This Prevents slip renewable bushing from turning round.

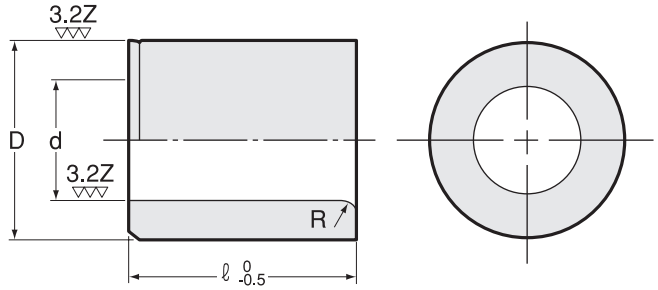
ROUND CLAMP Type R



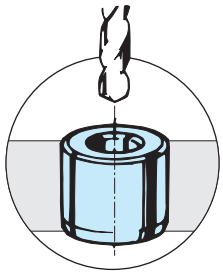
This Prevents slip renewable bushing from turning round.

Type A

Headless Press Fit Bushing Type A



Example



※ 1.Bushing with I.D. size smaller than 3.0mm uses 30 degreed chamfered radius (R).

Tolerance of I.D.

d	0.8 ~ 1.5	1.6 ~ 3.0	3.1 ~ 6.0	6.1 ~ 10.0	10.1 ~ 18.0	18.1 ~ 30.0	30.1 ~ 50.0	50.1 ~ 55.0
SA（G6）	–	+0.008 +0.002	+0.012 +0.004	+0.014 +0.005	+0.017 +0.006	+0.020 +0.007	+0.025 +0.009	+0.029 +0.010
A	+0.025 +0.002	+0.025 +0.002	+0.030 +0.004	+0.036 +0.005	+0.043 +0.006	+0.052 +0.007	+0.062 +0.009	+0.074 +0.010

Concentric runout (T.I.R.) of O.D.to I.D.

d	0.8 ~ 1.5	1.6 ~ 18.0	18.1 ~ 50.0	50.1 ~ 55.0
SA	–	0.005 or less	0.008 or less	0.010 or less
A	0.012 or less	0.012 or less	0.020 or less	0.025 or less

1.Renewable bushing cannot be used together with headless press fit bushing, which can be used only with headless liner bushing (Type G).
2.Bore a hole in bushing plate at H7 for bushing with O.D. (D) p6.Tolerance of hole bored by reamer with O.D. m5 is H7.

I.D.(d) of hole in bushing plate	0.8 ~ 3.0	3.1 ~ 6.0	6.1 ~ 10.0	10.1 ~ 18.0	18.1 ~ 30.0	30.1 ~ 50.0	50.1 ~ 55.0
Tolerance H7	+0.010 0	+0.012 0	+0.015 0	+0.018 0	+0.021 0	+0.025 0	+0.030 0

Inch to Metric (mm) → Inch × 25.4
Metric (mm) to Inch → Metric ÷ 25.4 or Metric × 0.03937

Special / Custom Sizes on request

SA····· For higher accuracy
A····· For standard accuracy

d	D (p6)	R	Grade	ℓ										
				6	8	10	12	16	20	25	30	35	45	55
0.8 ~ 1.0	3 +0.012 +0.006	※1												
			A	○	○									
1.1 ~ 1.5	4 +0.020 +0.012	※1												
			A	○	○									
1.6 ~ 2.0	5 +0.020 +0.012	※1	SA		○	○	○							
			A		○	○	○							
2.1 ~ 3.0	7 +0.024 +0.015	※1	SA		○	○	○							
			A		○	○	○							
3.1 ~ 4.0	8 +0.024 +0.015	1	SA			○	○	○						
			A			○	○	○						
4.1 ~ 6.0	10 +0.024 +0.015	1	SA			○	○	○						
			A			○	○	○						
6.1 ~ 8.0	12 +0.029 +0.018	2	SA				○	○	○					
			A				○	○	○					
8.1 ~ 10.0	15 +0.029 +0.018	2	SA				○	○	○					
			A				○	○	○					
10.1 ~ 12.0	18 +0.029 +0.018	2	SA					○	○	○				
			A					○	○	○				
12.1 ~ 15.0	22 +0.035 +0.022	2	SA					○	○	○				
			A					○	○	○				
15.1 ~ 18.0	26 +0.035 +0.022	2	SA						○	○	○			
			A						○	○	○			
18.1 ~ 22.0	30 +0.035 +0.022	3	SA						○	○	○			
			A						○	○	○			
22.1 ~ 26.0	35 +0.042 +0.026	3	SA							○	○	○		
			A							○	○	○		
26.1 ~ 30.0	42 +0.042 +0.026	3	SA							○	○	○		
			A							○	○	○		
30.1 ~ 35.0	48 +0.042 +0.026	4	SA								○	○	○	
			A								○	○	○	
35.1 ~ 42.0	55 +0.051 +0.032	4	SA								○	○	○	
			A								○	○	○	
42.1 ~ 48.0	62 +0.051 +0.032	4	SA									○	○	○
			A									○	○	○
48.1 ~ 55.0	70 +0.051 +0.032	4	SA									○	○	○
			A									○	○	○

Ordering Example

SA - 6.0 × 10
d ℓ

Code

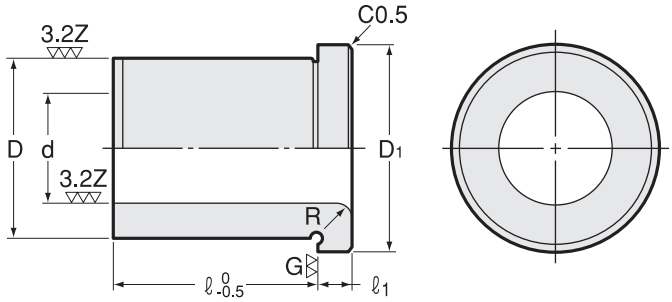
0000 012 060 12
Code (A:011, SA:012) d ℓ

Inch to Metric (mm) → Inch × 25.4
Metric (mm) to Inch → Metric ÷ 25.4 or Metric × 0.03937

Special / Custom Sizes on request

Type B

Headed Press Fit Bushing Type B



※ 1.Bushing with I.D. size smaller than 3.0mm uses 30 degreed chamfered radius (R).

Tolerance of I.D.

d	1.6 ~ 3.0	3.1 ~ 6.0	6.1 ~ 10.0	10.1 ~ 18.0	18.1 ~ 30.0	30.1 ~ 50.0	50.1 ~ 55.0
SB（G6）	+0.008 +0.002	+0.012 +0.004	+0.014 +0.005	+0.017 +0.006	+0.020 +0.007	+0.025 +0.009	+0.029 +0.010
B	+0.025 +0.002	+0.030 +0.004	+0.036 +0.005	+0.043 +0.006	+0.052 +0.007	+0.062 +0.009	+0.074 +0.010
BR	+0.014 +0.008	+0.020 +0.012	+0.024 +0.015	+0.029 +0.018	+0.034 +0.021	+0.041 +0.025	+0.049 +0.030

Concentric runout (T.I.R.) of O.D.to I.D.

d	1.6 ~ 18.0	18.1 ~ 50.0	50.1 ~ 55.0
SB/BR	0.005 or less	0.008 or less	0.010 or less
B	0.012 or less	0.020 or less	0.025 or less

1.Headed press fit bushing cannot be used together with renewable bushing, which can be used only with headless liner bushing (Type G).
2.Bore a hole in bushing plate at H7 for bushing with O.D. (D) p6.Tolerance of hole bored by reamer with O.D. m5 is H7.

I.D.(d) of hole in bushing plate	0.8 ~ 3.0	3.1 ~ 6.0	6.1 ~ 10.0	10.1 ~ 18.0	18.1 ~ 30.0	30.1 ~ 50.0	50.1 ~ 55.0
Tolerance H7	+0.010 0	+0.012 0	+0.015 0	+0.018 0	+0.021 0	+0.025 0	+0.030 0

Inch to Metric (mm) → Inch × 25.4
Metric (mm) to Inch → Metric ÷ 25.4 or Metric × 0.03937

Special / Custom Sizes on request

SB ····· For higher accuracy
B····· For standard accuracy
BR····· For reaming

d	D (p6)	D1	ℓ1	R	Grade	ℓ									
						8	10	12	16	20	25	30	35	45	55
1.6 ~ 2.0	5 +0.020 +0.012	9	2.5	※1	SB	○	○	○							
					B	○	○	○							
2.1 ~ 3.0	7 +0.024 +0.015	11	2.5	※1	SB	○	○	○							
					B	○	○	○							
3.1 ~ 4.0	8 +0.024 +0.015	12	3	1	SB		○	○	○						
					B		○	○	○						
4.1 ~ 6.0	10 +0.024 +0.015	14	3	1	SB		○	○	○						
					B		○	○	○						
6.1 ~ 8.0	12 +0.029 +0.018	16	4	2	SB			○	○	○					
					B			○	○	○					
8.1 ~ 10.0	15 +0.029 +0.018	19	4	2	SB			○	○	○					
					B			○	○	○					
10.1 ~ 12.0	18 +0.029 +0.018	22	4	2	SB				○	○	○				
					B				○	○	○				
12.1 ~ 15.0	22 +0.035 +0.022	26	5	2	SB				○	○	○				
					B				○	○	○				
15.1 ~ 18.0	26 +0.035 +0.022	30	5	2	SB					○	○	○			
					B					○	○	○			
18.1 ~ 22.0	30 +0.035 +0.022	35	6	3	SB					○	○	○			
					B					○	○	○			
22.1 ~ 26.0	35 +0.042 +0.026	40	6	3	SB						○	○	○		
					B						○	○	○		
26.1 ~ 30.0	42 +0.042 +0.026	47	6	3	SB						○	○	○		
					B						○	○	○		
30.1 ~ 35.0	48 +0.042 +0.026	55	8	4	SB							○	○	○	
					B							○	○	○	
35.1 ~ 42.0	55 +0.051 +0.032	62	8	4	SB							○	○	○	
					B							○	○	○	
42.1 ~ 48.0	62 +0.051 +0.032	69	8	4	SB								○	○	○
					B								○	○	○
48.1 ~ 55.0	70 +0.051 +0.032	77	8	4	SB								○	○	○
					B								○	○	○

List prices of type BR are identical to those of type SB.

Ordering Example

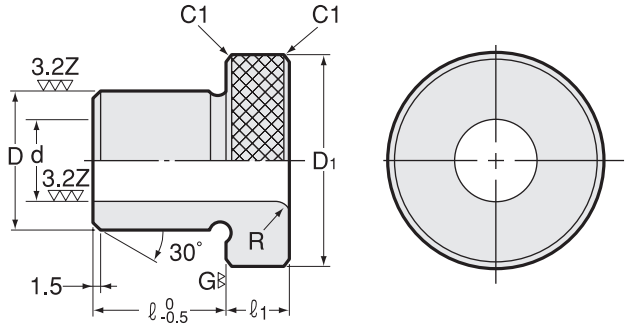
SB - 6.0 × 10
d ℓ

Code

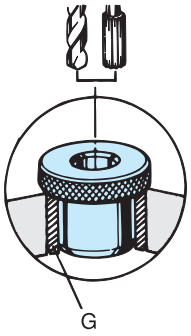
0000 022 060 12
Code (B:021, SB:022, BR:023) d ℓ

Type C

Round Renewable Bushing Type C



Example



※ 1.Bushing with I.D. size smaller than 3.0mm uses 30 degreed chamfered radius (R).

Application

Round renewable bushing can be frequently used in following cases.

1.Hole size differs from one workpiece to another.

2.Drilling requires two or more different drills, or reaming is necessary after being drilled.

Tolerance of I.D.

d	1.6 ~ 3.0	3.1 ~ 6.0	6.1 ~ 10.0	10.1 ~ 18.0	18.1 ~ 30.0	30.1 ~ 42.0
SC（G6）	+0.008 +0.002	+0.012 +0.004	+0.014 +0.005	+0.017 +0.006	+0.020 +0.007	+0.025 +0.009
C	+0.025 +0.002	+0.030 +0.004	+0.036 +0.005	+0.043 +0.006	+0.052 +0.007	+0.062 +0.009
CR	+0.014 +0.008	+0.020 +0.012	+0.024 +0.015	+0.029 +0.018	+0.034 +0.021	+0.041 +0.025

Concentric runout (T.I.R.) of O.D.to I.D.

d	1.6 ~ 18.0	18.1 ~ 42.0
SC/CR	0.005 or less	0.008 or less
C	0.012 or less	0.020 or less

1.Round renewable bushing can be used in combination with headless liner bushing (Type G).

2.O.D.(D) of round renewable bushing must coincide with I.D.(d) of headless liner bushing.

Inch to Metric (mm) → Inch × 25.4
Metric (mm) to Inch → Metric ÷ 25.4 or Metric × 0.03937

Special / Custom Sizes on request

SC····· For higher accuracy
C····· For standard accuracy
CR····· For reaming

d	D (m5)	D1	ℓ1	R	Grade	ℓ						
						12	16	20	25	30	35	45
1.6 ～ 2.0	8 +0.012 +0.006	16	8	※1	SC	○						
					C	○						
2.1 ～ 3.0	8 +0.012 +0.006	16	8	※1	SC	○						
					C	○						
3.1 ～ 4.0	8 +0.012 +0.006	16	8	1	SC	○	○					
					C	○	○					
4.1 ～ 6.0	10 +0.012 +0.006	19	8	1	SC	○	○					
					C	○	○					
6.1 ～ 8.0	12 +0.015 +0.007	22	8	2	SC		○	○				
					C		○	○				
8.1 ～ 10.0	15 +0.015 +0.007	26	9	2	SC		○	○				
					C		○	○				
10.1 ～ 12.0	18 +0.015 +0.007	30	9	2	SC			○	○			
					C			○	○			
12.1 ～ 15.0	22 +0.017 +0.008	35	12	2	SC			○	○			
					C			○	○			
15.1 ～ 18.0	26 +0.017 +0.008	40	12	2	SC				○	○		
					C				○	○		
18.1 ～ 22.0	30 +0.017 +0.008	47	12	3	SC				○	○		
					C				○	○		
22.1 ～ 26.0	35 +0.020 +0.009	55	15	3	SC					○	○	
					C					○	○	
26.1 ～ 30.0	42 +0.020 +0.009	62	15	3	SC					○	○	
					C					○	○	
30.1 ～ 35.0	48 +0.020 +0.009	69	15	4	SC						○	○
					C						○	○
35.1 ～ 42.0	55 +0.024 +0.011	77	15	4	SC						○	○
					C						○	○

List prices of type CR are identical to those of type SC.

Ordering Example

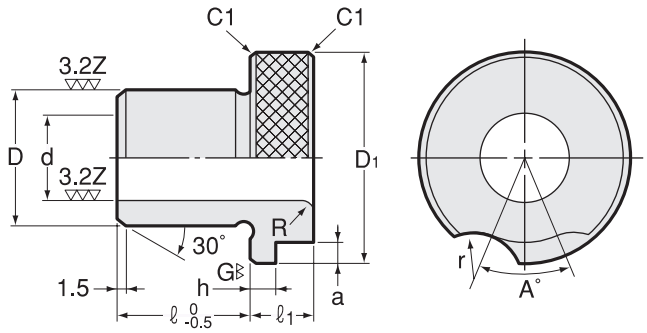
SC - 6.0 × 12
d ℓ

Code

0000 032 060 12
Code (C:031, SC:032, CR:033) d ℓ

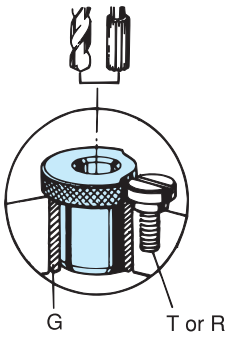
Type D

Right Slip Renewable Bushing Type D



※ 1.Bushing with I.D. size smaller than 3.0mm uses 30 degreed chamfered radius (R).

Example



Application

Right slip renewable bushing can be frequently used in the following cases.

1.Same products are made in quantity for long period.
2.Hole size differs from one workpiece to another.
3.Drilling requires two or more different drills, or reaming is necessary after being drilled.

Tolerance of I.D.

d	1.6 ~ 3.0	3.1 ~ 6.0	6.1 ~ 10.0	10.1 ~ 18.0	18.1 ~ 30.0	30.1 ~ 42.0
SD（G6）	+0.008 +0.002	+0.012 +0.004	+0.014 +0.005	+0.017 +0.006	+0.020 +0.007	+0.025 +0.009
D	+0.025 +0.002	+0.030 +0.004	+0.036 +0.005	+0.043 +0.006	+0.052 +0.007	+0.062 +0.009
DR	+0.014 +0.008	+0.020 +0.012	+0.024 +0.015	+0.029 +0.018	+0.034 +0.021	+0.041 +0.025

Concentric runout (T.I.R.) of O.D.to I.D.

d	1.6 ~ 18.0	18.1 ~ 42.0
SD/DR	0.005 or less	0.008 or less
D	0.012 or less	0.020 or less

1.Right slip renewable bushing must be used in combination with headless liner bushing (Type G).
2.O.D.(D) of right slip renewable bushing must coincide with I.D.(d) of headless liner bushing.
3.Bushing is held in place by a lock screw or a round clamp fitted into a milled recess in the head of bushing.

Inch to Metric (mm) → Inch × 25.4
Metric (mm) to Inch → Metric ÷ 25.4 or Metric × 0.03937

Special / Custom Sizes on request

SD····· For higher accuracy
D····· For standard accuracy
DR····· For reaming

d	D (m5)		D1	ℓ1	h	a	R	A°	r	Lock screw Round clamp	Grade	ℓ						
												12	16	20	25	30	35	45
1.6 ~ 2.0	8	+0.012 +0.006	16	8	3.5	3	※1	60	7	T-5	SD	○						
										R-5	D	○						
2.1 ~ 3.0	8	+0.012 +0.006	16	8	3.5	3	※1	60	7	T-5	SD	○						
										R-5	D	○						
3.1 ~ 4.0	8	+0.012 +0.006	16	8	3.5	3	1	60	7	T-5	SD	○	○					
										R-5	D	○	○					
4.1 ~ 6.0	10	+0.012 +0.006	19	8	3.5	3	1	60	7	T-5	SD	○	○					
										R-5	D	○	○					
6.1 ~ 8.0	12	+0.015 +0.007	22	8	3.5	3	2	60	7	T-5	SD		○	○				
										R-5	D		○	○				
8.1 ~ 10.0	15	+0.015 +0.007	26	9	3.5	3	2	60	7	T-5	SD		○	○				
										R-5	D		○	○				
10.1 ~ 12.0	18	+0.015 +0.007	30	9	3.5	3	2	45	7	T-5	SD			○	○			
										R-5	D			○	○			
12.1 ~ 15.0	22	+0.017 +0.008	35	12	5	4	2	45	9	T-6	SD			○	○			
										R-6	D			○	○			
15.1 ~ 18.0	26	+0.017 +0.008	40	12	5	4	2	45	9	T-6	SD				○	○		
										R-6	D				○	○		
18.1 ~ 22.0	30	+0.017 +0.008	47	12	5	4	3	40	9	T-6	SD				○	○		
										R-6	D				○	○		
22.1 ~ 26.0	35	+0.020 +0.009	55	15	6	5	3	40	10	T-8	SD					○	○	
										R-8	D					○	○	
26.1 ~ 30.0	42	+0.020 +0.009	62	15	6	5	3	35	10	T-8	SD					○	○	
										R-8	D					○	○	
30.1 ~ 35.0	48	+0.020 +0.009	69	15	6	5	4	35	10	T-8	SD						○	○
										R-8	D						○	○
35.1 ~ 42.0	55	+0.024 +0.011	77	15	6	5	4	35	10	T-8	SD						○	○
										R-8	D						○	○

List prices of type DR are identical to those of type SD.

Ordering Example

SD - 6.0 × 12
d ℓ

Code

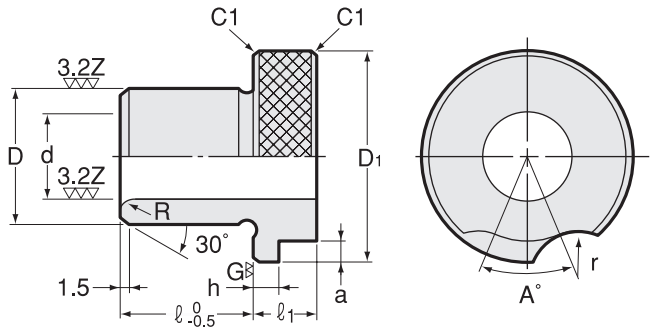
0000 042 060 12
Code (D:041, SD:042, DR:043) d ℓ

Inch to Metric (mm) → Inch × 25.4
Metric (mm) to Inch → Metric ÷ 25.4 or Metric × 0.03937

Special / Custom Sizes on request

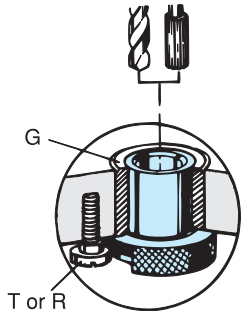
Type E

Left Slip Renewable Bushing Type E



※ 1.Bushing with I.D. size smaller than 3.0mm uses 30 degreed chamfered radius (R).

Example



Application

Left slip renewable bushing can be frequently used in the following cases.

1.Same products are made in quantity for long period.
2.Hole size differs from one workpiece to another.
3.Drilling requires two or more different drills, or reaming is necessary after being drilled.

Tolerance of I.D.

d	1.6 ~ 3.0	3.1 ~ 6.0	6.1 ~ 10.0	10.1 ~ 18.0	18.1 ~ 30.0	30.1 ~ 42.0
SE（G6）	+0.008 +0.002	+0.012 +0.004	+0.014 +0.005	+0.017 +0.006	+0.020 +0.007	+0.025 +0.009
E	+0.025 +0.002	+0.030 +0.004	+0.036 +0.005	+0.043 +0.006	+0.052 +0.007	+0.062 +0.009
ER	+0.014 +0.008	+0.020 +0.012	+0.024 +0.015	+0.029 +0.018	+0.034 +0.021	+0.041 +0.025

Concentric runout (T.I.R.) of O.D.to I.D.

d	1.6 ~ 18.0	18.1 ~ 42.0
SE/ER	0.005 or less	0.008 or less
E	0.012 or less	0.020 or less

1.Left slip renewable bushing must be used in combination with headless liner bushing (Type G).
2.O.D.(D) of left slip renewable bushing must coincide with I.D.(d) of headless liner bushing.
3.Bushing is held in place by a lock screw or a round clamp fitted into a milled recess in the head of bushing.

Inch to Metric (mm) → Inch × 25.4
Metric (mm) to Inch → Metric ÷ 25.4 or Metric × 0.03937

Special / Custom Sizes on request

SE·····For higher accuracy
E·····For standard accuracy
ER·····For reaming

d	D (m5)	D1	ℓ1	h	a	R	A°	r	Lock screw Round clamp	Grade	ℓ						
											12	16	20	25	30	35	45
1.6 ~ 2.0	8 +0.012 +0.006	16	8	3.5	3	※1	60	7	T-5	SE	○						
									R-5	E	○						
2.1 ~ 3.0	8 +0.012 +0.006	16	8	3.5	3	※1	60	7	T-5	SE	○						
									R-5	E	○						
3.1 ~ 4.0	8 +0.012 +0.006	16	8	3.5	3	1	60	7	T-5	SE	○	○					
									R-5	E	○	○					
4.1 ~ 6.0	10 +0.012 +0.006	19	8	3.5	3	1	60	7	T-5	SE	○	○					
									R-5	E	○	○					
6.1 ~ 8.0	12 +0.015 +0.007	22	8	3.5	3	2	60	7	T-5	SE		○	○				
									R-5	E		○	○				
8.1 ~ 10.0	15 +0.015 +0.007	26	9	3.5	3	2	60	7	T-5	SE		○	○				
									R-5	E		○	○				
10.1 ~ 12.0	18 +0.015 +0.007	30	9	3.5	3	2	45	7	T-5	SE			○	○			
									R-5	E			○	○			
12.1 ~ 15.0	22 +0.017 +0.008	35	12	5	4	2	45	9	T-6	SE			○	○			
									R-6	E			○	○			
15.1 ~ 18.0	26 +0.017 +0.008	40	12	5	4	2	45	9	T-6	SE				○	○		
									R-6	E				○	○		
18.1 ~ 22.0	30 +0.017 +0.008	47	12	5	4	3	40	9	T-6	SE				○	○		
									R-6	E				○	○		
22.1 ~ 26.0	35 +0.020 +0.009	55	15	6	5	3	40	10	T-8	SE					○	○	
									R-8	E					○	○	
26.1 ~ 30.0	42 +0.020 +0.009	62	15	6	5	3	35	10	T-8	SE					○	○	
									R-8	E					○	○	
30.1 ~ 35.0	48 +0.020 +0.009	69	15	6	5	4	35	10	T-8	SE						○	○
									R-8	E						○	○
35.1 ~ 42.0	55 +0.024 +0.011	77	15	6	5	4	35	10	T-8	SE						○	○
									R-8	E						○	○

List prices of type ER are identical to those of type SE.

Ordering Example

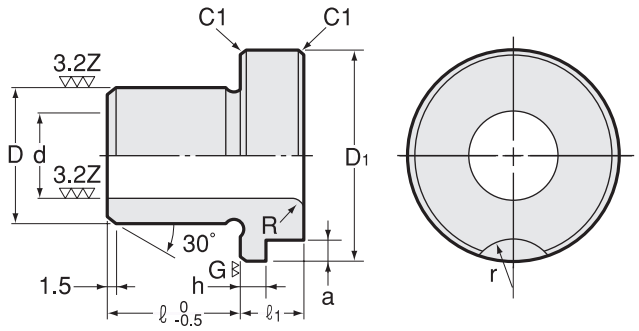
SE - 6.0 × 12
d ℓ

Code

0000 052 060 12
Code (E:051, SE:052, ER:053) d ℓ

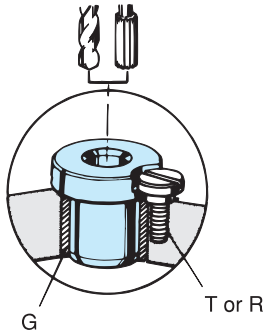
Type F

Fixed Renewable Bushing Type F



※ 1.Bushing with I.D. size smaller than 3.0mm uses 30 degreed chamfered radius (R).

Example



Application

Fixed renewable bushing can be used continuously when products are made in high volume.

Tolerance of I.D.

d	1.6 ~ 3.0	3.1 ~ 6.0	6.1 ~ 10.0	10.1 ~ 18.0	18.1 ~ 30.0	30.1 ~ 42.0
SF（G6）	+0.008 +0.002	+0.012 +0.004	+0.014 +0.005	+0.017 +0.006	+0.020 +0.007	+0.025 +0.009
F	+0.025 +0.002	+0.030 +0.004	+0.036 +0.005	+0.043 +0.006	+0.052 +0.007	+0.062 +0.009
FR	+0.014 +0.008	+0.020 +0.012	+0.024 +0.015	+0.029 +0.018	+0.034 +0.021	+0.041 +0.025

Concentric runout (T.I.R.) of O.D.to I.D.

d	1.6 ~ 18.0	18.1 ~ 42.0
SF/FR	0.005 or less	0.008 or less
F	0.012 or less	0.020 or less

1.Fixed renewable bushing must be used in combination with headless liner bushing (Type G).
2.O.D.(D) of fixed renewable bushing must coincide with I.D.(d) of headless liner bushing.

Inch to Metric (mm) → Inch × 25.4
Metric (mm) to Inch → Metric ÷ 25.4 or Metric × 0.03937

Special / Custom Sizes on request

SF·····For higher accuracy
F·····For standard accuracy
FR·····For reaming

d	D (m5)		D1	ℓ1	h	a	R	r	Lock screw Round clamp	Grade	ℓ						
											12	16	20	25	30	35	45
1.6 ~ 2.0	8	+0.012 +0.006	16	8	3.5	3	※1	7	T-5	SF	○						
									R-5	F	○						
2.1 ~ 3.0	8	+0.012 +0.006	16	8	3.5	3	※1	7	T-5	SF	○						
									R-5	F	○						
3.1 ~ 4.0	8	+0.012 +0.006	16	8	3.5	3	1	7	T-5	SF	○	○					
									R-5	F	○	○					
4.1 ~ 6.0	10	+0.012 +0.006	19	8	3.5	3	1	7	T-5	SF	○	○					
									R-5	F	○	○					
6.1 ~ 8.0	12	+0.015 +0.007	22	8	3.5	3	2	7	T-5	SF		○	○				
									R-5	F		○	○				
8.1 ~ 10.0	15	+0.015 +0.007	26	9	3.5	3	2	7	T-5	SF		○	○				
									R-5	F		○	○				
10.1 ~ 12.0	18	+0.015 +0.007	30	9	3.5	3	2	7	T-5	SF			○	○			
									R-5	F			○	○			
12.1 ~ 15.0	22	+0.017 +0.008	35	12	5	4	2	9	T-6	SF			○	○			
									R-6	F			○	○			
15.1 ~ 18.0	26	+0.017 +0.008	40	12	5	4	2	9	T-6	SF				○	○		
									R-6	F				○	○		
18.1 ~ 22.0	30	+0.017 +0.008	47	12	5	4	3	9	T-6	SF				○	○		
									R-6	F				○	○		
22.1 ~ 26.0	35	+0.020 +0.009	55	15	6	5	3	10	T-8	SF					○	○	
									R-8	F					○	○	
26.1 ~ 30.0	42	+0.020 +0.009	62	15	6	5	3	10	T-8	SF					○	○	
									R-8	F					○	○	
30.1 ~ 35.0	48	+0.020 +0.009	69	15	6	5	4	10	T-8	SF						○	○
									R-8	F						○	○
35.1 ~ 42.0	55	+0.024 +0.011	77	15	6	5	4	10	T-8	SF						○	○
									R-8	F						○	○

List prices of type FR are identical to those of type SF.

Ordering Example

SF - 6.0 × 12
d ℓ

Code

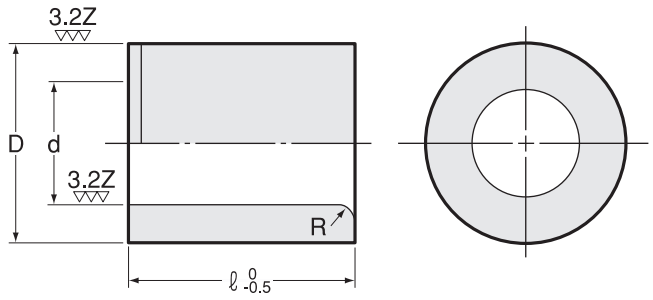
0000 062 060 12
Code (F:061, SF:062, FR:063) d ℓ

Inch to Metric (mm) → Inch × 25.4
Metric (mm) to Inch → Metric ÷ 25.4 or Metric × 0.03937

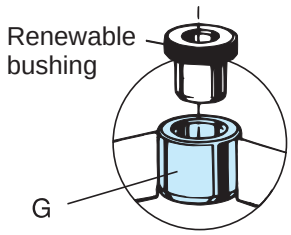
Special / Custom Sizes on request

Type G

Headless Liner Bushing Type G



Example



Concentric runout (T.I.R.) of O.D.to I.D.

d	8.0 ~ 18.0	18.1 ~ 50.0	50.1 ~ 55.0
G	0.005 or less	0.008 or less	0.010 or less

1. Headless liner bushing is used for guide of renewable bushing. (Not for guide of drill or reamer)
2. Tolerance of Liner Bushing O.D. (D) is p6.
   Press fit the Liner Bushing in H7 tolerance bored hole on bushing plate.

I.D.(d) of hole in bushing plate	12	15	18	22	26	30	35	42	48	55	62	70
Tolerance H7	+0.018 0			+0.021 0			+0.025 0			+0.030 0		

d		D (p6)		R	ℓ						
					12	16	20	25	30	35	45
8	+0.032 +0.023	12	+0.029 +0.018	2	○	○					
10	+0.032 +0.023	15	+0.029 +0.018	2	○	○					
12	+0.036 +0.025	18	+0.029 +0.018	2		○	○				
15	+0.036 +0.025	22	+0.035 +0.022	2		○	○				
18	+0.037 +0.026	26	+0.035 +0.022	2			○	○			
22	+0.040 +0.027	30	+0.035 +0.022	3			○	○			
26	+0.040 +0.027	35	+0.042 +0.026	3				○	○		
30	+0.041 +0.028	42	+0.042 +0.026	3				○	○		
35	+0.045 +0.029	48	+0.042 +0.026	4					○	○	
42	+0.045 +0.029	55	+0.051 +0.032	4					○	○	
48	+0.045 +0.029	62	+0.051 +0.032	4						○	○
55	+0.053 +0.034	70	+0.051 +0.032	4						○	○

Ordering Example

G - 8.0 × 12
d ℓ

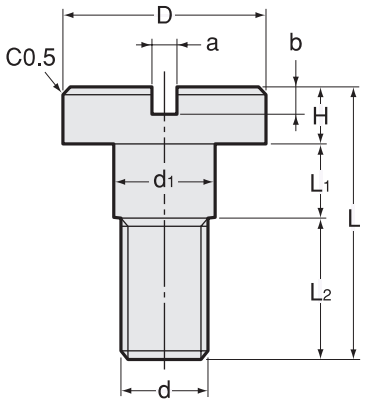
Code

0000 071 060 12
Code d ℓ

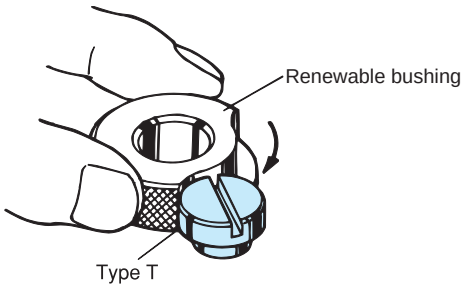
Inch to Metric (mm) → Inch × 25.4
Metric (mm) to Inch → Metric ÷ 25.4 or Metric × 0.03937

Special / Custom Sizes on request

Lock Screw Type T

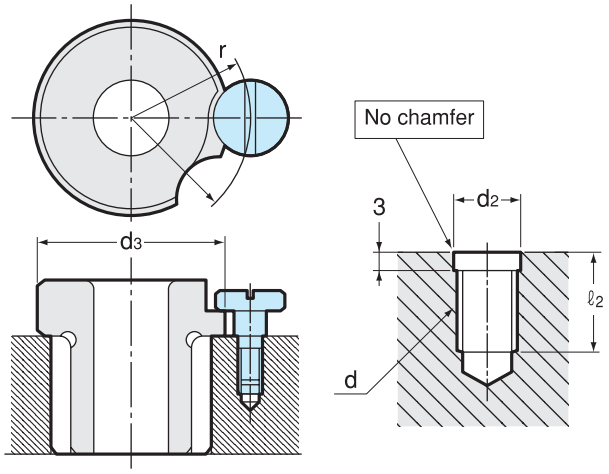


Example



Model	d		d1	D	a	b	H	L1	L2	L
	Size	Pitch								
T-5	5	0.8 (0.9)	6 ±0.2	12 ±0.2	1.6	1.5	3	4 ±0.1	9	16
T-6	6	1	7 ±0.2	15 ±0.2	1.6	2	4	5.5 ±0.2	10.5	20
T-8	8	1.25	9 ±0.2	18 ±0.3	2	2.5	5	6.5 ±0.2	12.5	24

Position and dimension of lock screw internal thread



d3	d	r		d2	ℓ2
		Std size	Tolerance		
16	5	12	±0.2	5.2	11
19	5	13.5	±0.2	5.2	11
22	5	15	±0.2	5.2	11
26	5	17	±0.3	5.2	11
30	5	19	±0.3	5.2	11
35	6	22	±0.3	6.2	14
40	6	24.5	±0.3	6.2	14
47	6	28	±0.3	6.2	14
55	8	33	±0.3	8.2	16
62	8	36.5	±0.3	8.2	16
69	8	40	±0.3	8.2	16
77	8	44	±0.3	8.2	16

Ordering Example

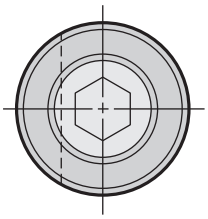
T - 5(0.9)
d Pitch

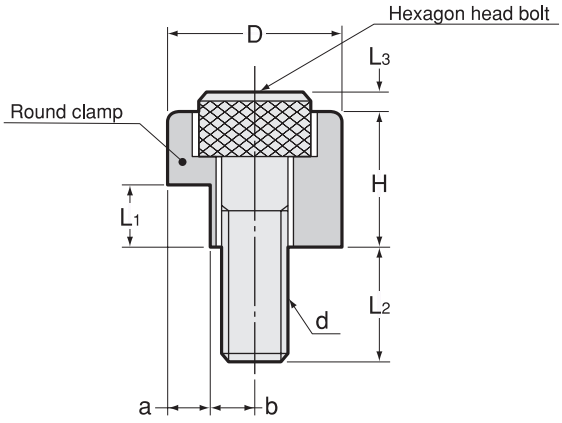
Code

T-5 (0.8) : 0003 00000508
T-5 (0.9) : 0003 00000509
T-6 : 0003 00000600
T-8 : 0003 00000800

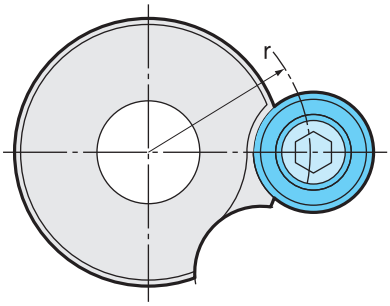
T-5 is avalable in P = 0.8 (ISO) and P = 0.9 (JIS) .When ordering, please specify P (pitch) 0.8 or 0.9.

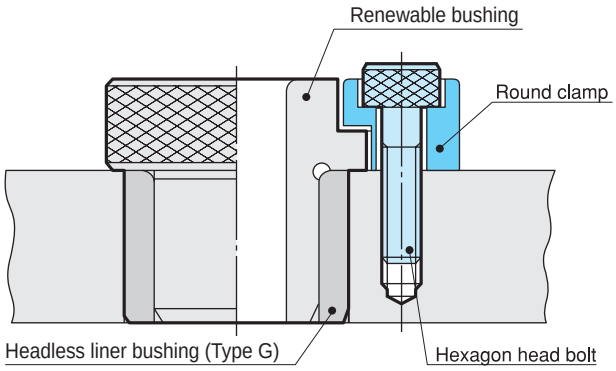
Round Clamp Type R





Example





Application

Round clamp can be used in following cases.
1.Heavier round load is put on renewable bushing.
2.Round clamp can be used to prevent rotating of renewable bushing (Type D, E and F)

Model	d		D	a	b	H	L1	L2	L3	Hexagon headed bolt	Size of hexagon wrench
	Size	Pitch									
R-5	5	0.8	12.3 ±0.05	$3^{0}_{-0.1}$	3.15	8	4	9	3	M5 × 15	4
R-6	6	1	15.5 ±0.05	$4^{0}_{-0.1}$	3.75	12	5.5	8	2	M6 × 16	5
R-8	8	1.25	19.5 ±0.05	$5^{0}_{-0.1}$	4.75	15	6.5	10.5	2.5	M8 × 20	6

Hexagon headed bolt is included in round clamp.

Position and dimension of lock screw internal thread

Round clamp has the same position and dimension as those of T type lock screw.

Code

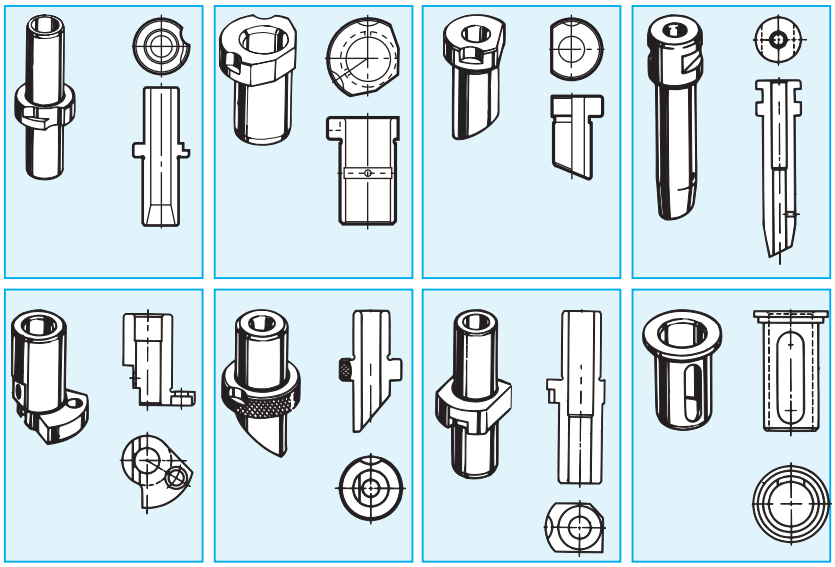
R-5 : 0007 00000005
R-6 : 0007 00000006
R-8 : 0007 00000008

Inch to Metric (mm) → Inch × 25.4
Metric (mm) to Inch → Metric ÷ 25.4 or Metric × 0.03937

Special / Custom Sizes on request

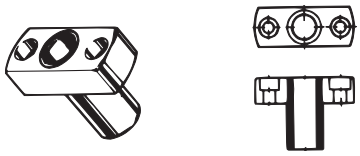
Special steel bushing

- Made to order with specifications supplied. (Shape, size , precision, material etc.)
- Quantity :1 pc.or more.
- Delivery :As arranged.
- Price :Available upon request.



Carbide bushing and ceramic bushing

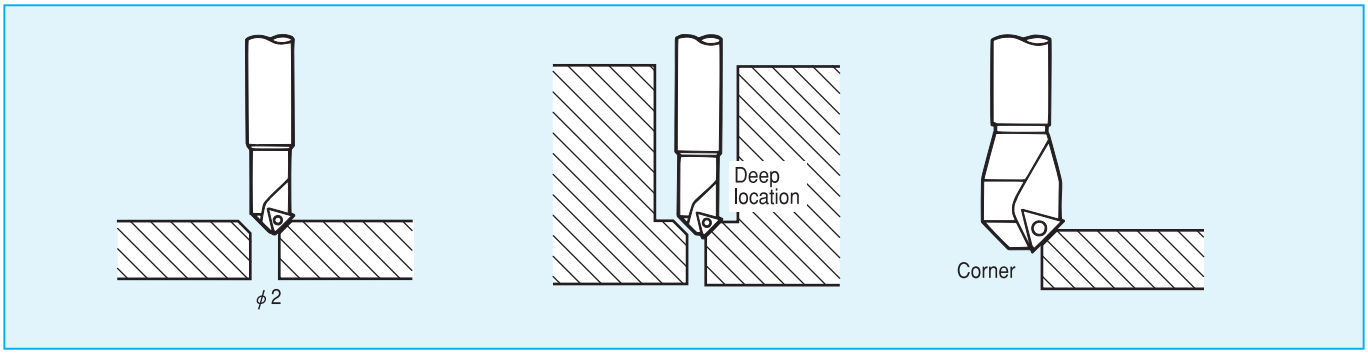
- Made to order with specifications supplied.
- Quantity :1 pc.or more.
- Delivery :As arranged.
- Price :Available upon request.

TYPE	PRESS FIT BUSHING	RENEWABLE BUSHING
SOLID TYPE		
		
LINER TYPE		
		

Non-standard bushing can be made upon request. In such a case, a drawing must be attached to your request for quote without fail.

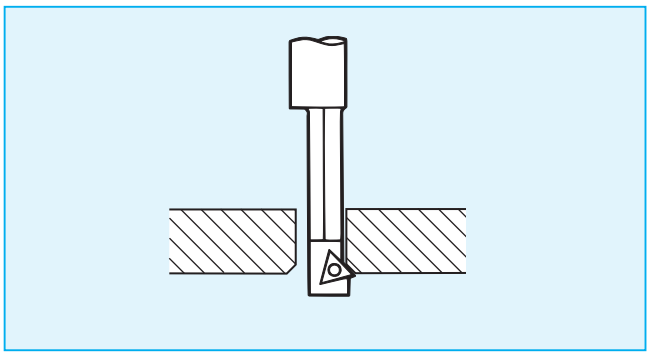
Chamfering Cutter Series

FM
Chamfering cutter



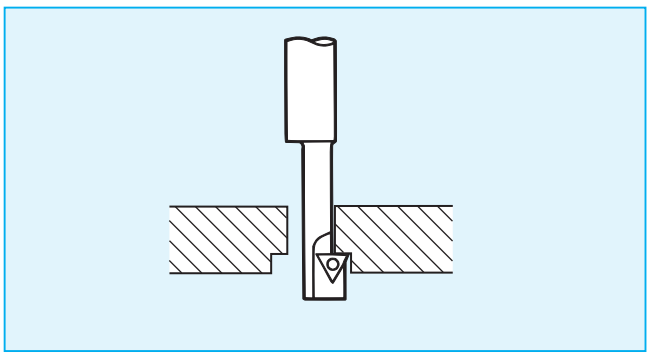
Chamfering, countersinking and corner rounding with machining center and milling machine.

BM
Back chamfering cutter



Back spot-facing with axially adjustable machines such as machining center and milling machine.

BZ
Back spot-facing cutter



Back chamfering with axially adjustable machines such as machining center and milling machine.

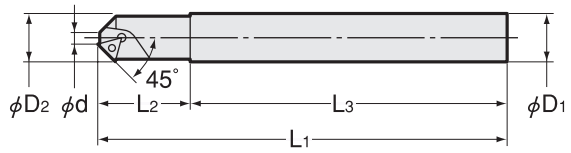
Inch to Metric (mm) → Inch × 25.4
Metric (mm) to Inch → Metric ÷ 25.4 or Metric × 0.03937

Special / Custom Sizes on request

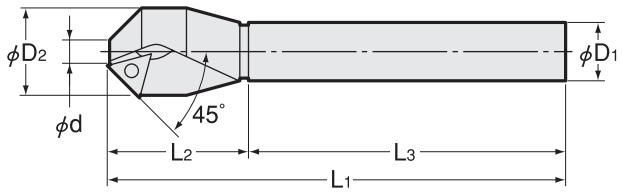
FM

Chamfering Cutter

Type1



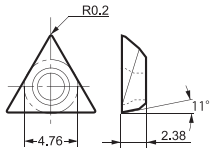
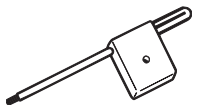
Type2



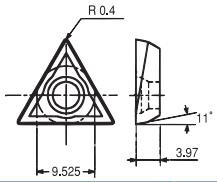
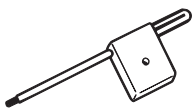
Code	Model	Type	Chamfering dia	ϕ D1	ϕ D2	L1	L2	L3	kg	Insert No.
2820 00000209	FM0209	1	2 ~ 9	12	12	140	40	100	0.12	No.520
2820 00000514	FM0514	1	5 ~ 14	16	16	160	60	100	0.23	No.520
2820 00001030	FM1030	2	10 ~ 30	20	32	167	47	120	0.41	No.504

Insert for chamfering cutter is specially designed and available only from NT. (1set=10pcs.)
Other commercialized products cannot be used.
Wrench and screw are included.

Accessories

Insert	Wrench	Clamp screw
		

Code	Model	Code	Model	Code	Model
2824 00052010	**No.520**	2825 00000006	**LT-6**	2825 12004306	**CB1-20043-T6**

Insert	Wrench	Clamp screw
		

Code	Model	Code	Model	Code	Model
2624 00050410	**No.504**	2625 00000015	**LT-15**	6041 00115672	**CB1-3507**

Recommended cutting conditions

Cutter	Workpiece					
	S45C		FC250		A2017 (Aluminum)	
	Revolution (min^{-1})	Feed/rev. (mm/rev)	Revolution (min^{-1})	Feed/rev. (mm/rev)	Revolution (min^{-1})	Feed/rev. (mm/rev)
FM0209	2100	0.1	2100	0.1	3000	0.1
FM0514	1300	0.1	1300	0.1	1800	0.1
FM1030	1000	0.15	1000	0.15	1300	0.15

Ordering Example

FM 02 09

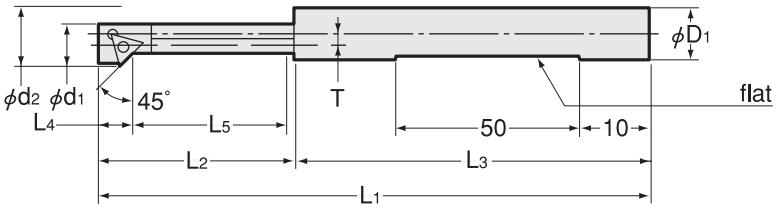
Min. hole dia / Max. hole dia

Inch to Metric (mm) → Inch × 25.4
Metric (mm) to Inch → Metric ÷ 25.4 or Metric × 0.03937

Special / Custom Sizes on request

BM

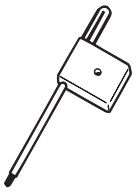
Back Chamfering Cutter



Code	Model	ϕ d1	ϕ d2	T	ϕ D1	L1	L2	L3	L4	L5	kg	Insert No.
2840 01068095	**BM068095**	6.8	9.5	1.8	12.0	109	39	70	5	32	0.07	TBGT060102R
2840 01085115	**BM085115**	8.5	11.5	2.1	12.0	119	49	70	5	42	0.07	TBGT060102R
2840 01100140	**BM100140**	10.0	14.0	2.8	16.0	131	61	70	7	52	0.13	TPMT090202
2840 01120160	**BM120160**	12.0	16.0	2.8	16.0	136	66	70	7	57	0.14	TPMT090202
2840 01140185	**BM140185**	14.0	18.5	3.2	20.0	142	72	70	8	62	0.21	TPGT110202R
2840 01160205	**BM160205**	16.0	20.5	3.2	20.0	152	82	70	8	72	0.24	TPGT110202R

Indexable inserts are not included and not available from us. Wrench and clamp screw are included.

Accessories

Wrench	Code	Model	Insert No.
	2825 00000006	**LT-6**	TBGT060102R
	2825 00000007	**LT-7**	TPMT090202
	2625 00000008	**LT-8**	TPGT110202R

Clamp screw	Code	Model	Insert No.
	2825 12004306	**CB1-20043-T6**	TBGT060102R
	2625 12204607	**CB1-22046-T7**	TPMT090202
	2625 12504808	**CB1-25048-T8**	TPGT110202R

Recommended cutting conditions

Cutter	Workpiece					
	S45C		FC250		A2017（Aluminum）	
	Revolution (min-1)	Feed/rev. (mm/rev)	Revolution (min-1)	Feed/rev. (mm/rev)	Revolution (min-1)	Feed/rev. (mm/rev)
BM068095	1450	0.05	1450	0.05	1450	0.10
BM085115	1250	0.05	1250	0.07	1250	0.10
BM100140	1250	0.07	1250	0.07	1500	0.10
BM120160	1000	0.07	1000	0.10	1300	0.10
BM140185	750	0.07	750	0.10	1100	0.10
BM160205	670	0.15	670	0.15	1000	0.15

ご注文例 Ordering Example

BM 068 095

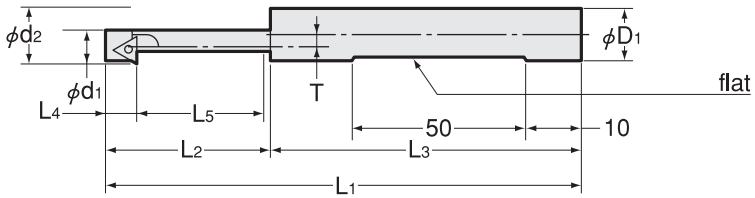
最小加工径 Min. hole dia
最大加工径 Max. hole dia

Inch to Metric (mm) → Inch × 25.4
Metric (mm) to Inch → Metric ÷ 25.4 or Metric × 0.03937

Special / Custom Sizes on request

BZ

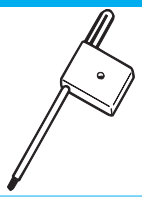
Back Spot-Facing Cutter



Code	Model	ϕ d1	ϕ d2	T	ϕ D1	L1	L2	L3	L4	L5	kg	Insert No.
2840 00070110	**BZ070110**	7.0	11	2.6	12	106	36	70	7	27	0.07	EPGT040102R
2840 00085140	**BZ085140**	8.5	14	3.3	12	111	41	70	8	32	0.07	TBGT060102R
2840 00105170	**BZ105170**	10.5	17	3.8	16	116	46	70	8	37		TBGT060102R
2840 00130190	**BZ130190**	13.0	19	3.8	16	122	52	70	9	42		TPGT080202R
2840 00170250	**BZ170250**	17.0	25	4.8	20	135	65	70	12	52		TPGT110202R
2840 00210310	**BZ210310**	21.0	31	5.8	25	155	85	70	12	72		TPGT110202R

Indexable inserts are not included and not available from us. Wrench and clamp screw are included.

Accessories

Wrench	Code	Model	Insert No.
	2825 00000006	LT-6	EPGT040102R
			TBGT060102R
			TPGT080202R
	2625 00000008	LT-8	TPGT110202R

Clamp screw	Code	Model	Insert No.
	2825 12003306	CB1-20033-T6	EPGT040102R
	2825 12004306	CB1-20043-T6	TBGT060102R
			TPGT080202R
	2625 12504808	CB1-25048-T8	TPGT110202R

Recommended cutting conditions

Cutter	Workpiece					
	S45C		FC250		A2017 (Aluminum)	
	Revolution (min-1)	Feed/rev. (mm/rev)	Revolution (min-1)	Feed/rev. (mm/rev)	Revolution (min-1)	Feed/rev. (mm/rev)
BZ 070110	1160	0.03	950	0.06	1400	0.05
BZ 085140	830	0.05	750	0.08	1350	0.06
BZ 105170	750	0.05	750	0.08	1100	0.08
BZ 130190	670	0.07	600	0.12	1000	0.10
BZ 170250	550	0.08	550	0.12	760	0.12
BZ 210310	400	0.11	400	0.16	600	0.16

Ordering Example

BZ 070 110

Min. hole dia / Max. hole dia

Inch to Metric (mm) → Inch × 25.4
Metric (mm) to Inch → Metric ÷ 25.4 or Metric × 0.03937

Special / Custom Sizes on request

Chamfering Series

Application	Chamfering drill	Gold chamfering drill	New chamfering drill	Chamfering holder
Deburring and chamfering for soft and ductile material.	Yes	Yes		Yes
Deburring, chamfering and countersinking for hard and in-ductile material			Yes	Yes
Chamfering and deburring with drilling machines.	Yes	Yes	Yes	Yes

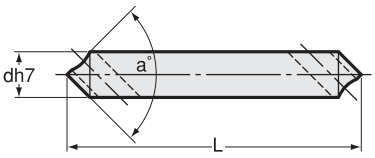
Features	Chamfering drill	Gold chamfering drill	New chamfering drill	Chamfering holder
Various chamfering diameters with only one tool.	Yes	Yes	Yes	Yes
Smooth finish without chatter.	Yes	Yes	Yes	Yes
Easy positioning	Yes	Yes	Yes	Yes
Special gold coating		Yes		
Cobalt high speed steel used			Yes	
Indexable inserts reduces cutting tool costs. (No need for re-grinding.)				Yes
2 types (for hard and soft material) are available.				Yes

Inch to Metric (mm) → Inch × 25.4
Metric (mm) to Inch → Metric ÷ 25.4 or Metric × 0.03937

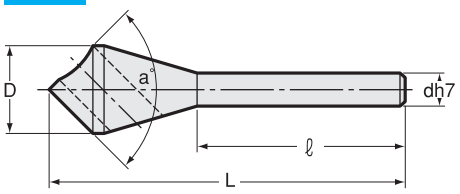
Special / Custom Sizes on request

Chamfering Drill

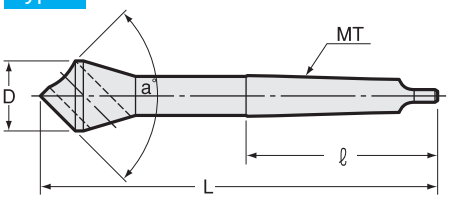
Type1



Type2



Type3



Application

For soft and ductile material. When machining hard and inductile material, please use “NEW CHAMFERING DRILL”

ST

Code	Model	a° Angle	Chamfering dia.	Type	d h7	D	ℓ	L
0030 00004490	04 -ST4 -90°	90°	2 ~ 4	1	4	—	—	50
0030 00006690	06 -ST6 -90°	90°	3 ~ 6	1	6	—	—	50
0030 00008890	08 -ST8 -90°	90°	4 ~ 8	1	8	—	—	50
0030 00009690	09 -ST6 -90°	90°	4 ~ 9	2	6	10	42	55
0030 00014890	14 -ST8 -90°	90°	6 ~ 14	2	8	15	50	70
0030 00181090	18 -ST10 -90°	90°	8 ~ 18	2	10	20	70	100
0030 00231290	23 -ST12 -90°	90°	10 ~ 23	2	12	25	73	110
0030 00281290	28 -ST12 -90°	90°	12 ~ 28	2	12	30	70	120
0030 00009660	09 -ST6 -60°	60°	4 ~ 9	2	6	10	40.5	55
0030 00014860	14 -ST8 -60°	60°	6 ~ 14	2	8	15	48.5	70
0030 00181060	18 -ST10 -60°	60°	8 ~ 18	2	10	20	71	100
0030 00231260	23 -ST12 -60°	60°	10 ~ 23	2	12	25	74	110
0030 00281260	28 -ST12 -60°	60°	12 ~ 28	2	12	30	78	120
0030 00096120	09 -ST6 -120°	120°	4 ~ 9	2	6	10	40.5	55
0030 00148120	14 -ST8 -120°	120°	6 ~ 14	2	8	15	48.5	70
0030 01810120	18 -ST10 -120°	120°	8 ~ 18	2	10	20	71	100
0030 02312120	23 -ST12 -120°	120°	10 ~ 23	2	12	25	74	110
0030 02812120	28 -ST12 -120°	120°	12 ~ 28	2	12	30	78	120

Ordering Example

14 - ST 8 - 90°

- 14: Max. chamfering dia.
- ST: Straight shank
- 8: Shank size
- 90°: Angle

MT

Code	Model	a ° Angle	Chamfering dia.	Type	D	ℓ	L	MT
0030 00009190	09 -MT1 -90°	90°	4 ~ 9	3	10	65.5	106	1
0030 00014190	14 -MT1 -90°	90°	6 ~ 14	3	15	65.5	120	1
0030 00014290	14 -MT2 -90°	90°	6 ~ 14	3	15	80	143	2
0030 00018190	18 -MT1 -90°	90°	8 ~ 18	3	20	65.5	130.5	1
0030 00018290	18 -MT2 -90°	90°	8 ~ 18	3	20	80	153	2
0030 00023190	23 -MT1 -90°	90°	10 ~ 23	3	25	65.5	140.5	1
0030 00023290	23 -MT2 -90°	90°	10 ~ 23	3	25	80	167	2
0030 00028290	28 -MT2 -90°	90°	12 ~ 28	3	30	80	174	2
0030 00028390	28 -MT3 -90°	90°	12 ~ 28	3	30	99	199	3
0030 00033290	33 -MT2 -90°	90°	14 ~ 33	3	35	80	180	2
0030 00033390	33 -MT3 -90°	90°	14 ~ 33	3	35	99	205	3
0030 00038290	38 -MT2 -90°	90°	16 ~ 38	3	40	80	185	2
0030 00038390	38 -MT3 -90°	90°	16 ~ 38	3	40	99	210	3
0030 00009160	09 -MT1 -60°	60°	4 ~ 9	3	10	65.5	106	1
0030 00014160	14 -MT1 -60°	60°	6 ~ 14	3	15	65.5	120	2
0030 00014260	14 -MT2 -60°	60°	6 ~ 14	3	15	80	143	2
0030 00018160	18 -MT1 -60°	60°	8 ~ 18	3	20	65.5	130.5	1
0030 00018260	18 -MT2 -60°	60°	8 ~ 18	3	20	80	153	2
0030 00023160	23 -MT1 -60°	60°	10 ~ 23	3	25	65.5	140.5	1
0030 00023260	23 -MT2 -60°	60°	10 ~ 23	3	25	80	167	2
0030 00028260	28 -MT2 -60°	60°	12 ~ 28	3	30	80	174	2
0030 00028360	28 -MT3 -60°	60°	12 ~ 28	3	30	99	199	3
0030 00033260	33 -MT2 -60°	60°	14 ~ 33	3	35	80	180	2
0030 00033360	33 -MT3 -60°	60°	14 ~ 33	3	35	99	205	3
0030 00038260	38 -MT2 -60°	60°	16 ~ 38	3	40	80	185	2
0030 00038360	38 -MT3 -60°	60°	16 ~ 38	3	40	99	210	3
0030 00091120	09 -MT1 -120°	120°	4 ~ 9	3	10	65.5	106	1
0030 00141120	14 -MT1 -120°	120°	6 ~ 14	3	15	65.5	120	1
0030 00142120	14 -MT2 -120°	120°	6 ~ 14	3	15	80	143	2
0030 00181120	18 -MT1 -120°	120°	8 ~ 18	3	20	65.5	130.5	1
0030 00182120	18 -MT2 -120°	120°	8 ~ 18	3	20	80	153	2
0030 00231120	23 -MT1 -120°	120°	10 ~ 23	3	25	65.5	140.5	1
0030 00232120	23 -MT2 -120°	120°	10 ~ 23	3	25	80	167	2
0030 00282120	28 -MT2 -120°	120°	12 ~ 28	3	30	80	174	2
0030 00283120	28 -MT3 -120°	120°	12 ~ 28	3	30	99	199	3
0030 00332120	33 -MT2 -120°	120°	14 ~ 33	3	35	80	180	2
0030 00333120	33 -MT3 -120°	120°	14 ~ 33	3	35	99	205	3
0030 00382120	38 -MT2 -120°	120°	16 ~ 38	3	40	80	185	2
0030 00383120	38 -MT3 -120°	120°	16 ~ 38	3	40	99	210	3

Ordering Example

14 - MT 1 - 90°

- 14: Max. chamfering dia.
- MT: Morse taper shank
- 1: MT1
- 90°: Angle

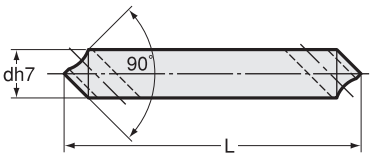
Inch to Metric (mm) → Inch × 25.4
Metric (mm) to Inch → Metric ÷ 25.4 or Metric × 0.03937

Special / Custom Sizes on request

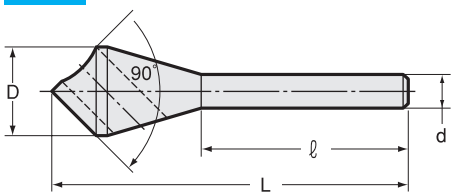
Gold Chamfering Drill

Coated

Type1



Type2



Application

For soft and ductile material. When machining hard and inductile material, please use “NEW CHAMFERING DRILL”

Code	Model	a° Angle	Chamfering dia.	Type	d h7	D	ℓ	L
0020 00004490	**G04 -ST4 -90°**	90°	2 ~ 4	1	4	—	—	50
0020 00006690	**G06 -ST6 -90°**	90°	3 ~ 6	1	6	—	—	50
0020 00008890	**G08 -ST8 -90°**	90°	4 ~ 8	1	8	—	—	50
0020 00009690	**G09 -ST6 -90°**	90°	4 ~ 9	2	6	10	42	55
0020 00014890	**G14 -ST8 -90°**	90°	6 ~ 14	2	8	15	50	70
0020 00181090	**G18 -ST10 -90°**	90°	8 ~ 18	2	10	20	70	100
0020 00231290	**G23 -ST12 -90°**	90°	10 ~ 23	2	12	25	73	110
0020 00281290	**G28 -ST12 -90°**	90°	12 ~ 28	2	12	30	70	120

Ordering Example

G14 - ST 8 - 90°

- G14: Max. chamfering dia.
- ST: Straight shank
- 8: Shank size
- 90°: Angle

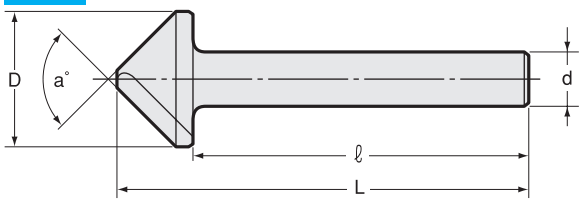
Inch to Metric (mm) → Inch × 25.4
Metric (mm) to Inch → Metric ÷ 25.4 or Metric × 0.03937

Special / Custom Sizes on request

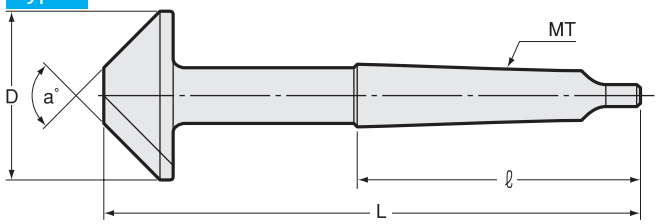
NEW Chamfering Drill

Type1

Type2



Type3



Application

For hard and inductile material. When machining soft and ductile material (such as aluminum alloy and copper alloy), please use "CHAMFERING DRILL"

ST

Code	Model	a° Angle	Chamfering dia.	Type	d h7	D	ℓ	L
0010 00007890	**07 -ST8 -90°**	90°	1.5 ~ 7	1	8	—	—	55
0010 00015890	**15 -ST8 -90°**	90°	2 ~ 15	2	8	16	54	65
0010 00251090	**25 -ST10 -90°**	90°	6 ~ 25	2	10	26	65	80
0010 00351290	**35 -ST12 -90°**	90°	11 ~ 35	2	12	36	74	90
0010 00451290	**45 -ST12 -90°**	90°	16 ~ 45	2	12	46	76	95
0010 00007860	**07 -ST8 -60°**	60°	1.5 ~ 7	1	8	—	—	55
0010 00015860	**15 -ST8 -60°**	60°	6 ~ 15	2	8	16	53	65
0010 00251060	**25 -ST10 -60°**	60°	12 ~ 25	2	10	26	64	80
0010 00351260	**35 -ST12 -60°**	60°	20 ~ 35	2	12	36	73	90
0010 00451260	**45 -ST12 -60°**	60°	26 ~ 45	2	12	46	74	95
0010 00078120	**07 -ST8 -120°**	120°	1.5 ~ 7	1	8	—	—	55
0010 00158120	**15 -ST8 -120°**	120°	2 ~ 15	2	8	16	52	60
0010 02510120	**25 -ST10 -120°**	120°	6 ~ 25	2	10	26	65	75
0010 03512120	**35 -ST12 -120°**	120°	11 ~ 35	2	12	36	74	85
0010 04512120	**45 -ST12 -120°**	120°	16 ~ 45	2	12	46	73	85

MT

Code	Model	a° Angle	Chamfering dia.	Type	MT	D	ℓ	L
0010 00015190	**15 -MT1 -90°**	90°	2 ~ 15	3	1	16	65	120
0010 00015290	**-MT2 -90°**	90°	2 ~ 15	3	2	16	80	140
0010 00025190	**25 -MT1 -90°**	90°	6 ~ 25	3	1	26	65	125
0010 00025290	**-MT2 -90°**	90°	6 ~ 25	3	2	26	80	145
0010 00035290	**35 -MT2 -90°**	90°	11 ~ 35	3	2	36	80	145
0010 00035390	**-MT3 -90°**	90°	11 ~ 35	3	3	36	100	180
0010 00045290	**45 -MT2 -90°**	90°	16 ~ 45	3	2	46	80	150
0010 00045390	**-MT3 -90°**	90°	16 ~ 45	3	3	46	100	185

Ordering Example

15 - ST 8 - 90°

- 15 — Max. chamfering dia.
- ST — Straight shank
- 8 — Shank size
- 90° — Angle

Ordering Example

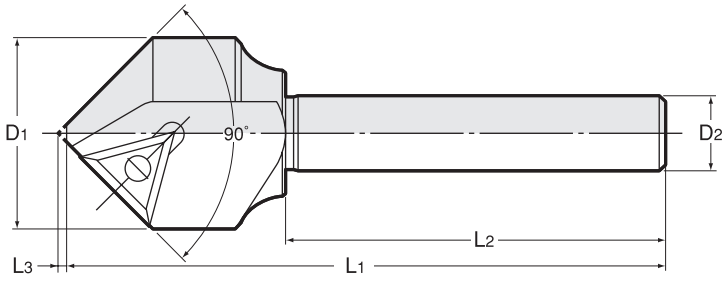
15 - MT 1 - 90°

- 15 — Max. chamfering dia.
- MT — Morse taper shank
- 1 — MT1
- 90° — Angle

Inch to Metric (mm) → Inch × 25.4
Metric (mm) to Inch → Metric ÷ 25.4 or Metric × 0.03937

Special / Custom Sizes on request

Chamfering Holder

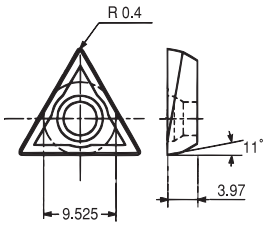


Code	Model	(ϕ) Chamfering dia	Dimensions						Insert No.
			D1	D2	L1	L2	L3	kg	
2620 00251290	**C25 -ST12 -90°**	5 ~ 25	25	12	95	60	1.6	0.11	No.504 No.510
2620 00401290	**C40 -ST12 -90°**	20 ~ 40	40	12	95	60	8.4	0.24	
2620 00501290	**C50 -ST12 -90°**	30 ~ 50	50	12	95	60	13.9	0.38	

Insert for chamfering cutter is specially designed and available only from NT. (1set=10pcs.)
Other commercialized products cannot be used.
Wrench and screw are included.

Accessories

Indexable inserts



Steel, Cast iron

Code	Model
2624 00050410	**No.504**

Aluminum, Mild steel

Code	Model
2624 00050510	**No.510**

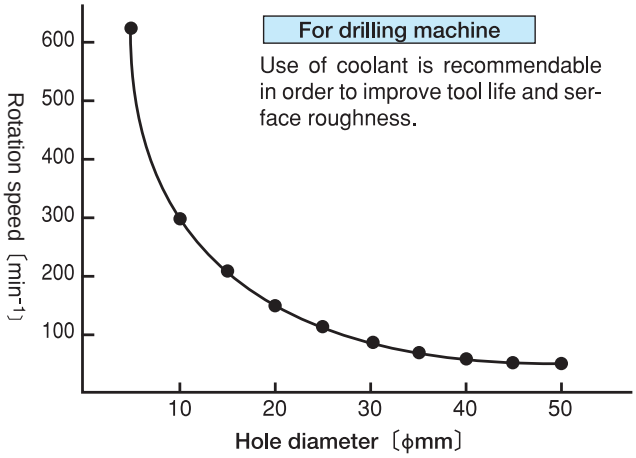
Wrench

Code	Model
2625 00000015	**LT-15**

Clamp screw

Code	Model
2625 00115672	**CB1-3507**

Recommended cutting conditions



For drilling machine

Use of coolant is recommendable in order to improve tool life and surface roughness.

When using this insert with machining center,
please adjust cutting speed between 40 and 100m/min.

Ordering Example

C25 - ST 12 - 90°

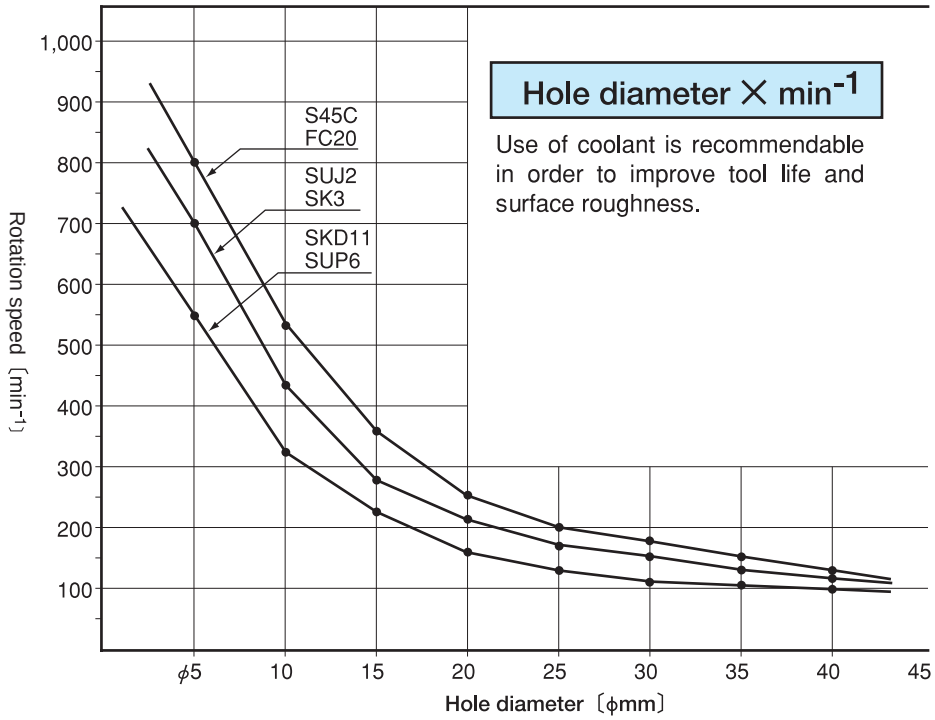
- C25: Max. chamfering dia.
- ST: Straight shank
- 12: Shank size
- 90°: Angle

Guide Line For Rotation Speed

NEW CHAMFERING DRILL

For hard and inductile material

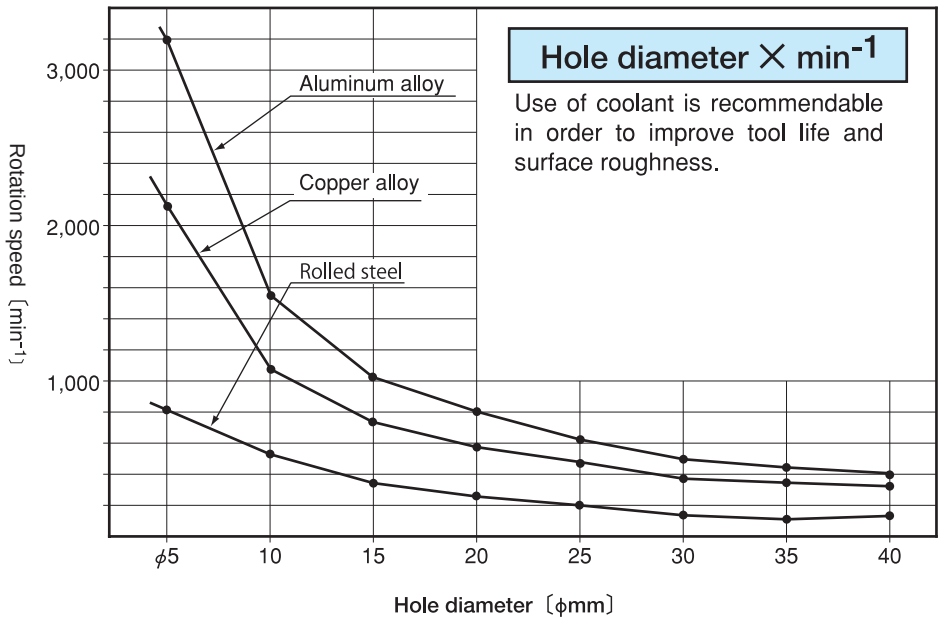
- S45C
- FC20
- SUJ2
- SK3
- SKD11
- SUP6



CHAMFERING DRILL

For soft and ductile material

- Aluminum alloy
- Copper alloy
- Rolled steel



Inch to Metric (mm) → Inch × 25.4
Metric (mm) to Inch → Metric ÷ 25.4 or Metric × 0.03937

Special / Custom Sizes on request