

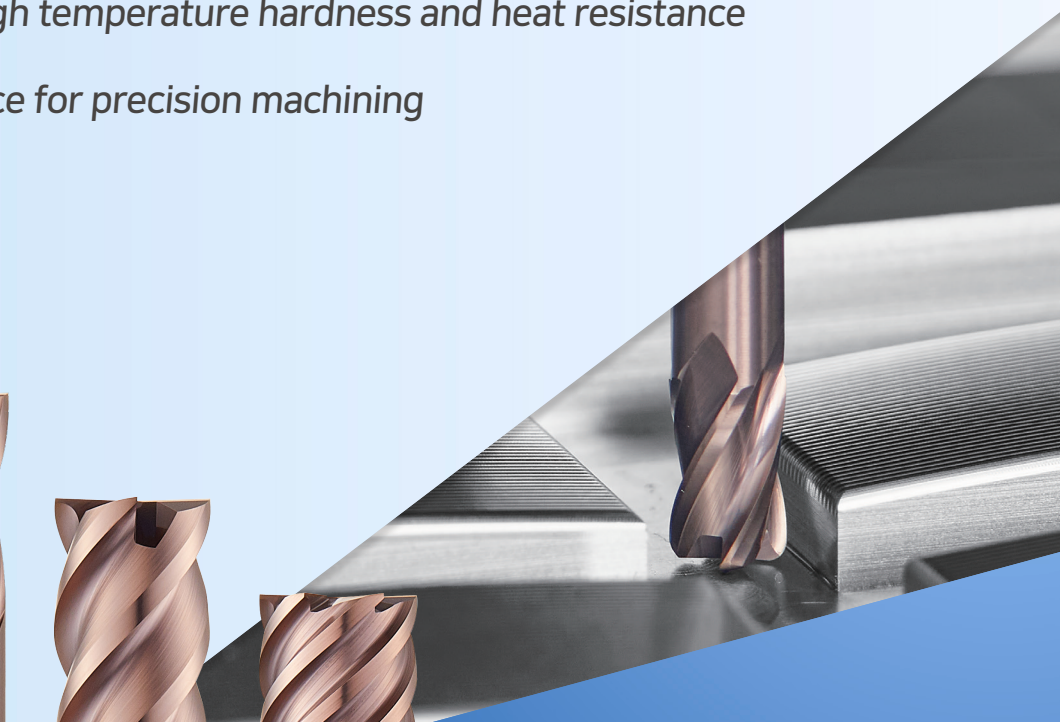


E-STAR

Suitable for High Hardness HRc 50 ~ 63

Excellent Coating in high temperature hardness and heat resistance

High precision tolerance for precision machining

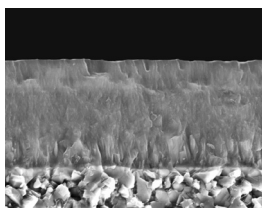


E-STAR SERIES

Special feature

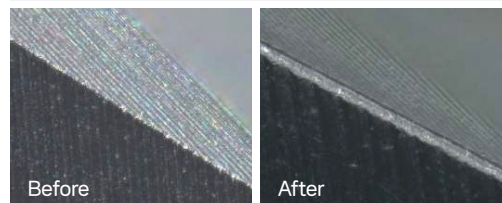
- HRc50~63 Carbide endmill for high hardness steel
- Appropriate for precision machining by applying high precision tolerance on cutting diameter and radius

Adopt a high hardness coating



- Improved wear resistance
- Stability for frictional heat

Treatment of toughness



- Improved chipping resistance
- Improved wear resistance, induce to stable work

Adopt a high hardness raw-material

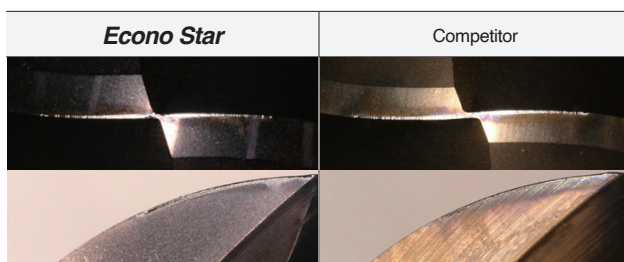
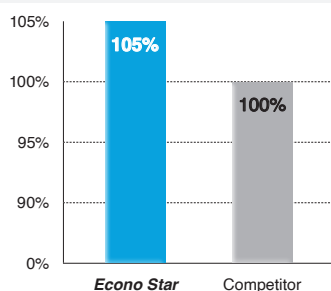


- Formation by ultra-micro WC + Co. 9%
- Expansion of versatility by special toughness

Case study

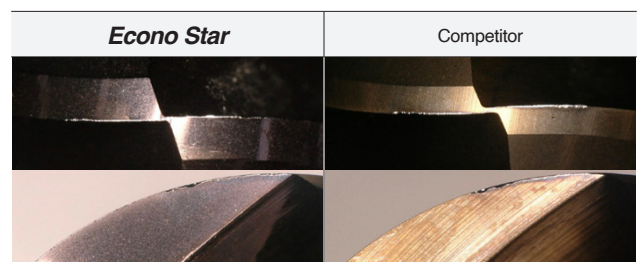
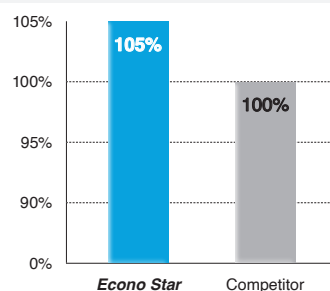
2F D12.0 BALL ENDMILL

STD61 (HRc50~55)



· Cutting condition
rpm : 3,450 / vc : 130 / vf : 828 / fz : 0.06 / ap : 12 / ae : 0.4 / o clant : AIR

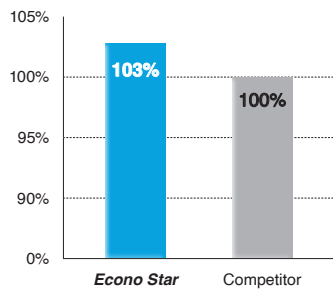
STD11 (HRc60~63)



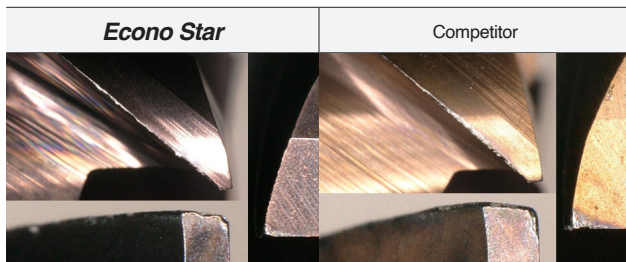
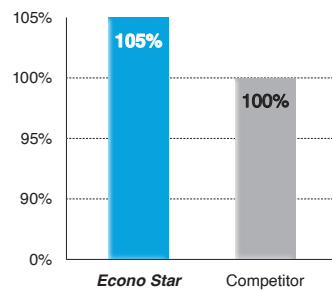
· Cutting condition
rpm : 3,981 / vc : 150 / vf : 955 / fz : 0.12 / ap : 0.4 / ae : 0.6 / o clant : AIR

■ 4F D12.0 SQ ENDMILL

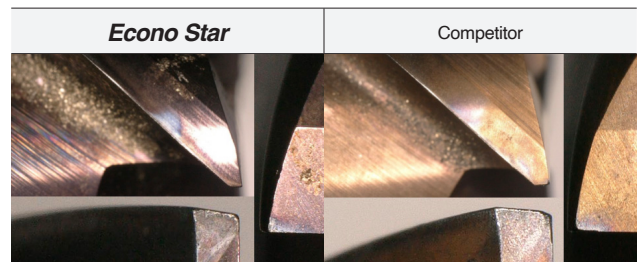
STD61 (HRc50~55)



STD11 (HRc60~63)



- Cutting condition
rpm : 3,450 / vc : 130 / vf : 828 / fz : 0.06 / ap : 12 / ae : 0.4 / o claont : AIR



- Cutting condition
rpm : 1,858 / vc : 70 / vf : 297 / fz : 0.04 / ap : 12 / ae : 0.4 / o claont : AIR

EDP No. System

*If expressed as an integer, the decimal point is omitted.

ES R 7 0 4 100 15 32 10

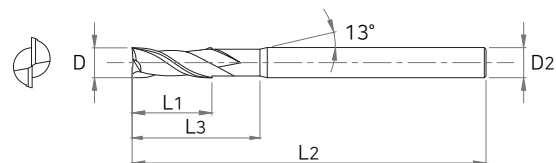
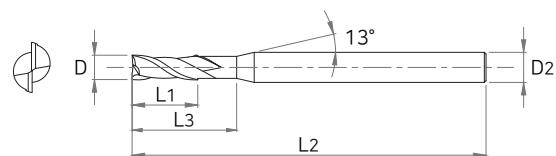
Type	Appearance	Grade	Length / Shank	Flutes	Cutting Dia	Corner R	Effective length	Shank Dia
ES : E-Star	B : Ball	7 : Grade	0 : Neck	2 : 2 Flutes	010 : Ø1.0	05 : R0.5	10 : 10mm	06 : Ø6.0
	E : Square		1 : Straight, Neck	3 : 3 Flutes	060 : Ø6.0	15 : R1.5	12 : 12mm	10 : Ø10.0
	R : Radius		2 : Long Shank Neck	4 : 4 Flutes	065 : Ø6.5	20 : R2.0	32 : 32mm	12 : Ø12.0
	XE : Square (Unequal)		3 : Long Shank	6 : 6 Flutes	100 : Ø10.0			
	XR : Radius (Unequal)							
	PM : Power Mill							
	RB : Rib Ball							
	RE : Rib Square							
	RR : Rib Radius							
	LNB : Long Neck Ball							
	TNB : Taper Neck Ball							
	LNS : Long Neck Square							
	LNR : Long Neck Radius							

Ex) 4 Flutes / Cutting Dia Ø2 / Corner Radius 0.3 / Effective length 6mm / Shank Dia 10 / 70 Grade / Corner Radius Neck Type E-Star Endmill

E-STAR SERIES

Special feature

Section		EDP No.	Geometry	Type	Diameter		Page
Type	Flutes				Min	Max	
Square	2	ESE702		2 FLUTES NECK SQUARE ENDMILL	D0.1	D20.0	5
	2	ESE712		2 FLUTES SQUARE ENDMILL	D1.0	D12.0	6
	4	ESE704		4 FLUTES NECK SQUARE ENDMILL	D1.0	D20.0	7
	4	ESE714		4 FLUTES HIGH HELIX SQUARE ENDMILL	D1.0	D12.0	8
	4&6	ESE724(6)		4&6 FLUTES NECK SQUARE ENDMILL	D1.0	D12.0	9
	4	ESE744		4 FLUTES HIGH HELIX SQUARE ENDMILL	D1.0	D12.0	10
	6	ESE716		6 FLUTES HIGH HELIX SQUARE ENDMILL	D6.0	D20.0	11
	2	ESRE712		2 FLUTES RIB SQUARE ENDMILL	D0.1	D12.0	12
	4	ESRE714		4 FLUTES RIB SQUARE ENDMILL	D0.5	D12.0	15
	4	ESXE704		4 FLUTES NECK SQUARE ENDMILL	D1.0	D12.0	17
	4	ESXE714		4 FLUTES SQUARE ENDMILL	D2.0	D12.0	18
	2	ESLNS20		2 FLUTES LONG NECK SQUARE ENDMILL	D0.1	D5.0	19
	4	ESLNS40		4 FLUTES LONG NECK SQUARE ENDMILL	D1.0	D5.0	23
Radius	2	ESR702		2 FLUTES NECK RADIUS ENDMILL	D1.0	D12.0	25
	2	ESR732		2 FLUTES LONG SHANK RADIUS ENDMILL	D1.0	D12.0	28
	4	ESR704		4 FLUTES NECK RADIUS ENDMILL	D1.0	D12.0	29
	4	ESR714		4 FLUTES RADIUS ENDMILL	D3.0	D12.0	31
	4	ESR724		4 FLUTES NECK RADIUS ENDMILL	D6.0	D12.0	32
	4	ESR734		4 FLUTES LONG SHANK RADIUS ENDMILL	D1.0	D12.0	33
	6	ESR706		6 FLUTES NECK RADIUS ENDMILL	D6.0	D12.0	34
	6	ESR736		6 FLUTES RADIUS ENDMILL	D6.0	D12.0	35
	2	ESRR712		2 FLUTES RIB RADIUS ENDMILL	D0.2	D16.0	36
	4	ESRR714		4 FLUTES RIB RADIUS ENDMILL	D0.5	D2.0	41
	4	ESXR704		4 FLUTES NECK RADIUS ENDMILL	D1.0	D12.0	47
	2	ESLNR20		2 FLUTES LONG NECK RADIUS ENDMILL	D0.2	D3.0	48
	2	ESTNR20		2 FLUTES TAPERED NECK RADIUS ENDMILL	D0.2	D3.0	51
	4	ESPM4		4 FLUTES NECK RADIUS ENDMILL	D3.0	D12.0	53
Ball	2	ESB702		2 FLUTES NECK BALL ENDMILL	R0.5	R6.0	54
	2	ESB712		2 FLUTES BALL ENDMILL	R0.5	R6.0	55
	3	ESB703		3 FLUTES NECK BALL ENDMILL	R1.0	R6.0	56
	4	ESB734		3 FLUTES NECK BALL ENDMILL	R1.0	R5.0	57
	2	ESRB712		2 FLUTES RIB BALL ENDMILL	R0.05	R6.0	58
	2	ESLNB20		2 FLUTES LONG NECK BALL ENDMILL	R0.05	R2.5	62
	2	ESTNB20		2 FLUTES TAPERED NECK BALL ENDMILL	R0.1	R5.0	66
	3	ESTNB30		3 FLUTES TAPERED NECK BALL ENDMILL	R1.0	R2.5	70



Tolerance

D		Shank Dia.
~D6	0 ~ -0.012	h5
D8 ~ 20	0 ~ -0.015	



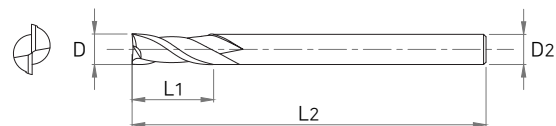
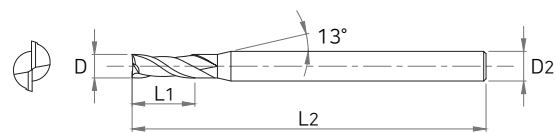
EDP No.	Description (mm)				
	D	L1	L3	L2	D2
ESE702 001	0.1	0.2	-	40	4
ESE702 002	0.2	0.4	-	40	4
ESE702 003	0.3	0.5	-	40	4
ESE702 004	0.4	0.7	-	40	4
ESE702 005	0.5	1	-	40	4
ESE702 006	0.6	1.2	-	40	4
ESE702 007	0.7	1.4	-	40	4
ESE702 008	0.8	1.6	-	40	4
ESE702 009	0.9	2	-	40	4
ESE702 010	1	1.5	-	40	6
ESE702 010S4	1	1.5	-	40	4
ESE702 015	1.5	2.2	-	40	6
ESE702 020	2	3	6	40	6

EDP No.	Description (mm)				
	D	L1	L3	L2	D2
ESE702 020S4	2	3	6	40	4
ESE702 025	2.5	4	6	40	6
ESE702 030	3	4	7	45	6
ESE702 035	3.5	6	9	45	6
ESE702 040	4	6	9	45	6
ESE702 045	4.5	6	10	45	6
ESE702 050	5	6	11	50	6
ESE702 060	6	7	14	50	6
ESE702 080	8	9	18	60	8
ESE702 100	10	12	25	75	10
ESE702 120	12	15	30	75	12
ESE702 160	16	18	38	90	16
ESE702 200	20	24	45	100	20

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D		Shank Dia.
~D6	0 ~ -0.012	h5
D8 ~ 12	0 ~ -0.015	



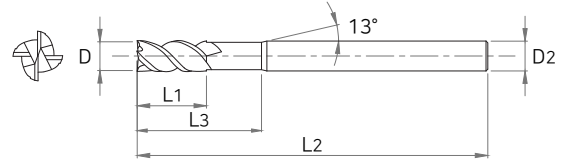
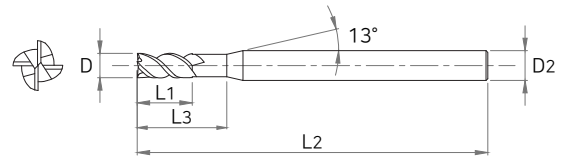
EDP No.	Description (mm)			
	D	L1	L2	D2
ESE712 010	1	3	40	6
ESE712 010-02	1	2	40	6
ESE712 010-02S4	1	2	40	4
ESE712 010-04	1	4	40	6
ESE712 012	1.2	3	40	6
ESE712 015	1.5	4	40	6
ESE712 015S4	1.5	4	40	4
ESE712 015-06	1.5	6	40	6
ESE712 015-08	1.5	8	40	6
ESE712 020	2	5	40	6
ESE712 020S4	2	5	40	4
ESE712 020-08	2	8	40	6
ESE712 020-10	2	10	50	6
ESE712 025	2.5	6	40	6
ESE712 025S4	2.5	6	40	4
ESE712 030	3	8	45	6
ESE712 030S4	3	8	45	4
ESE712 030-10	3	10	50	6

EDP No.	Description (mm)			
	D	L1	L2	D2
ESE712 030-12	3	12	50	6
ESE712 035	3.5	10	45	6
ESE712 040	4	10	45	6
ESE712 040S4	4	10	45	4
ESE712 040-12	4	12	50	6
ESE712 040-16	4	16	60	6
ESE712 045	4.5	11	45	6
ESE712 050	5	13	50	6
ESE712 055	5.5	13	50	6
ESE712 060	6	13	50	6
ESE712 060-15	6	15	60	6
ESE712 065	6.5	16	60	8
ESE712 070	7	18	60	8
ESE712 080	8	19	60	8
ESE712 100	10	22	70	10
ESE712 100-25	10	25	70	10
ESE712 120	12	26	75	12
ESE712 120-30	12	30	75	12

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D		Shank Dia.
~D6	0 ~ -0.012	h5
D8 ~ 20	0 ~ -0.015	

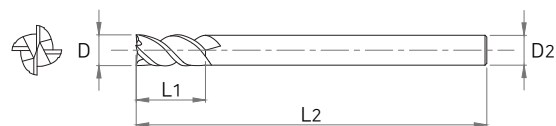
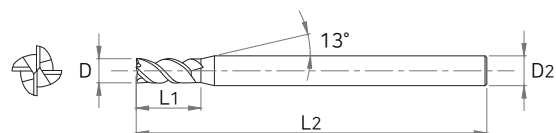


EDP No.	Description (mm)				
	D	L1	L3	L2	D2
ESE704 010	1	1.5	-	40	6
ESE704 010S4	1	1.5	-	40	4
ESE704 015	1.5	2.2	-	40	6
ESE704 015S4	1.5	2.2	-	40	4
ESE704 020	2	3	6	40	6
ESE704 020S4	2	3	6	40	4
ESE704 025	2.5	4	6	40	6
ESE704 025S4	2.5	4	6	40	4
ESE704 030	3	4	7	45	6
ESE704 030S4	3	4	7	45	4
ESE704 035	3.5	5	9	45	6
ESE704 040	4	5	9	45	6
ESE704 040S4	4	5	9	45	4
ESE704 045	4.5	6	10	45	6
ESE704 050	5	6	11	50	6
ESE704 060	6	7	14	50	6
ESE704 080	8	9	18	60	8
ESE704 100	10	12	25	75	10
ESE704 120	12	15	30	75	12
ESE704 160	16	18	38	90	16
ESE704 200	20	24	45	100	20

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D		Shank Dia.
~D6	0 ~ -0.012	h5
D8 ~ 12	0 ~ -0.015	



EDP No.	Description (mm)			
	D	L1	L2	D2
ESE714 010	1	2.5	40	6
ESE714 010S4	1	2.5	40	4
ESE714 012	1.2	3	40	6
ESE714 015	1.5	4	40	6
ESE714 015S4	1.5	4	40	4
ESE714 020	2	5	40	6
ESE714 020S4	2	5	40	4
ESE714 025	2.5	6	40	6
ESE714 025S4	2.5	6	40	4
ESE714 030	3	8	45	6
ESE714 030S4	3	8	45	4
ESE714 035	3.5	9	45	6
ESE714 040	4	10	45	6

EDP No.	Description (mm)			
	D	L1	L2	D2
ESE714 040S4	4	10	45	4
ESE714 050	5	13	50	6
ESE714 060	6	13	50	6
ESE714 060-15	6	15	60	6
ESE714 060-15L	6	15	90	6
ESE714 080	8	19	60	8
ESE714 080L	8	19	100	8
ESE714 100	10	22	70	10
ESE714 100-25	10	25	70	10
ESE714 100-25L	10	25	100	10
ESE714 120	12	26	75	12
ESE714 120-30	12	30	80	12
ESE714 120-30L	12	30	100	12

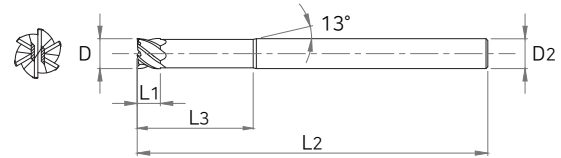
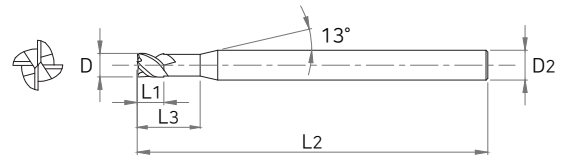
Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRC55	SKD11 HRC55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT

ESE724(6)

4&6 FLUTES NECK SQUARE ENDMILL



Tolerance

D		Shank Dia.
~D6	0 ~ -0.012	h5
D8 ~ 12	0 ~ -0.015	

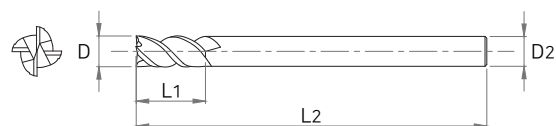
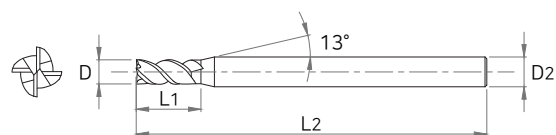


EDP No.	Description (mm)					
	D	L1	L3	L2	D2	Z
ESE724 010	1	1.5	5	45	6	4
ESE724 015	1.5	2.2	6	45	6	4
ESE724 020	2	3	8	45	6	4
ESE724 030	3	4	9	50	6	4
ESE724 040	4	5	12	50	6	4
ESE724 040S4L	4	5	12	75	4	4
ESE724 050	5	6	15	50	6	4
ESE726 060	6	7	20	60	6	6
ESE726 080	8	9	25	70	8	6
ESE726 100	10	12	32	75	10	6
ESE726 120	12	15	38	80	12	6

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRC55	SKD11 HRC55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D		Shank Dia.
~D6	0 ~ -0.012	h5
D8 ~ 12	0 ~ -0.015	



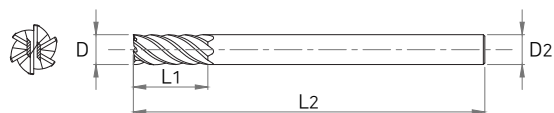
EDP No.	Description (mm)			
	D	L1	L2	D2
ESE744 010S3	1	2.5	40	3
ESE744 010S4	1	2.5	40	4
ESE744 010	1	2.5	40	6
ESE744 012S3	1.2	3	40	3
ESE744 012S4	1.2	3	40	4
ESE744 015S3	1.5	4	40	3
ESE744 015S4	1.5	4	40	4
ESE744 015	1.5	4	40	6
ESE744 020S3	2	6	40	3
ESE744 020S4	2	6	40	4
ESE744 020	2	6	40	6
ESE744 025S3	2.5	8	45	3
ESE744 025S4	2.5	8	45	4
ESE744 025	2.5	8	45	6

EDP No.	Description (mm)			
	D	L1	L2	D2
ESE744 030S3	3	8	50	3
ESE744 030S4	3	8	45	4
ESE744 030	3	8	45	6
ESE744 035	3.5	10	45	6
ESE744 040S4	4	11	45	4
ESE744 040	4	11	45	6
ESE744 045	4.5	11	45	6
ESE744 050	5	13	50	6
ESE744 055	5.5	13	50	6
ESE744 060	6	13	50	6
ESE744 080	8	19	60	8
ESE744 100	10	22	70	10
ESE744 120	12	26	75	12

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



■ Tolerance

D		Shank Dia.
~D6	0 ~ -0.012	h5
D8 ~ 20	0 ~ -0.015	

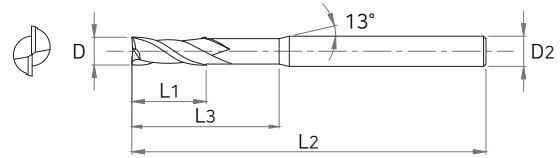
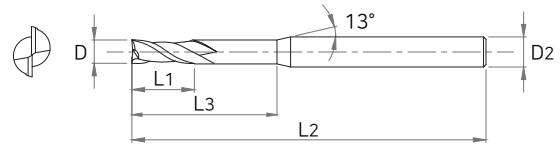


EDP No.	Description (mm)			
	D	L1	L2	D2
ESE716 060	6	13	50	6
ESE716 080	8	18	60	8
ESE716 100	10	22	70	10
ESE716 120	12	26	75	12
ESE716 160	16	35	90	16
ESE716 200	20	44	100	20

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D		Shank Dia.
~D6	0 ~ -0.012	h5
D8 ~ 12	0 ~ -0.015	



EDP No.	Description (mm)				
	D	L1	L3	L2	D2
ESRE712 001003	0.1	0.15	0.3	40	4
ESRE712 001005	0.1	0.15	0.5	40	4
ESRE712 00101	0.1	0.15	1	40	4
ESRE712 002005	0.2	0.3	0.5	40	4
ESRE712 002015	0.2	0.3	1.5	40	4
ESRE712 00201	0.2	0.3	1	40	4
ESRE712 00202	0.2	0.3	2	40	4
ESRE712 003015	0.3	0.5	1.5	40	4
ESRE712 00301	0.3	0.5	1	40	4
ESRE712 003025	0.3	0.5	2.5	40	4
ESRE712 00302	0.3	0.5	2	40	4
ESRE712 00303	0.3	0.5	3	40	4
ESRE712 00304	0.3	0.5	4	40	4
ESRE712 00305	0.3	0.5	5	40	4
ESRE712 004015	0.4	0.6	1.5	40	4
ESRE712 00401	0.4	0.6	1	40	4
ESRE712 004025	0.4	0.6	2.5	40	4
ESRE712 00402	0.4	0.6	2	40	4
ESRE712 00403	0.4	0.6	3	40	4
ESRE712 00404	0.4	0.6	4	40	4
ESRE712 00405	0.4	0.6	5	40	4
ESRE712 00406	0.4	0.6	6	40	4
ESRE712 00408	0.4	0.6	8	40	4
ESRE712 00410	0.4	0.6	10	40	4
ESRE712 005015	0.5	0.7	1.5	45	4
ESRE712 00501	0.5	0.7	1	45	4
ESRE712 005025	0.5	0.7	2.5	45	4
ESRE712 00502	0.5	0.7	2	45	4
ESRE712 00503	0.5	0.7	3	45	4
ESRE712 00504	0.5	0.7	4	45	4
ESRE712 00505	0.5	0.7	5	45	4

EDP No.	Description (mm)				
	D	L1	L3	L2	D2
ESRE712 00506	0.5	0.7	6	45	4
ESRE712 00508	0.5	0.7	8	45	4
ESRE712 00510	0.5	0.7	10	45	4
ESRE712 00512	0.5	0.7	12	45	4
ESRE712 00514	0.5	0.7	14	45	4
ESRE712 00516	0.5	0.7	16	45	4
ESRE712 00602	0.6	0.9	2	45	4
ESRE712 00603	0.6	0.9	3	45	4
ESRE712 00604	0.6	0.9	4	45	4
ESRE712 00605	0.6	0.9	5	45	4
ESRE712 00606	0.6	0.9	6	45	4
ESRE712 00608	0.6	0.9	8	45	4
ESRE712 00610	0.6	0.9	10	45	4
ESRE712 00612	0.6	0.9	12	45	4
ESRE712 00614	0.6	0.9	14	45	4
ESRE712 00616	0.6	0.9	16	45	4
ESRE712 00702	0.7	1.2	2	45	4
ESRE712 00704	0.7	1.2	4	45	4
ESRE712 00706	0.7	1.2	6	45	4
ESRE712 00708	0.7	1.2	8	45	4
ESRE712 00710	0.7	1.2	10	45	4
ESRE712 00712	0.7	1.2	12	45	4
ESRE712 00802	0.8	1.2	2	45	4
ESRE712 00803	0.8	1.2	3	45	4
ESRE712 00804	0.8	1.2	4	45	4
ESRE712 00805	0.8	1.2	5	45	4
ESRE712 00806	0.8	1.2	6	45	4
ESRE712 00808	0.8	1.2	8	45	4
ESRE712 00810	0.8	1.2	10	45	4
ESRE712 00812	0.8	1.2	12	45	4
ESRE712 00814	0.8	1.2	14	45	4

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRC55	SKD11 HRC55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT

EDP No.	Description (mm)					EDP No.	Description (mm)				
	D	L1	L3	L2	D2		D	L1	L3	L2	D2
ESRE712 00816	0.8	1.2	16	45	4	ESRE712 01520	1.5	2.3	20	50	4
ESRE712 00820	0.8	1.2	20	50	4	ESRE712 01522	1.5	2.3	22	60	4
ESRE712 00906	0.9	1.3	6	45	4	ESRE712 01526	1.5	2.3	26	60	4
ESRE712 00908	0.9	1.3	8	45	4	ESRE712 01530	1.5	2.3	30	70	4
ESRE712 00910	0.9	1.3	10	45	4	ESRE712 01608	1.6	2.3	8	50	4
ESRE712 01002	1	1.5	2	50	4	ESRE712 01610	1.6	2.3	10	50	4
ESRE712 01003	1	1.5	3	50	4	ESRE712 01612	1.6	2.3	12	50	4
ESRE712 01004	1	1.5	4	50	4	ESRE712 01616	1.6	2.3	16	50	4
ESRE712 01005	1	1.5	5	50	4	ESRE712 01620	1.6	2.3	20	50	4
ESRE712 01006	1	1.5	6	50	4	ESRE712 01808	1.8	2.7	8	50	4
ESRE712 01007	1	1.5	7	50	4	ESRE712 01810	1.8	2.7	10	50	4
ESRE712 01008	1	1.5	8	50	4	ESRE712 01812	1.8	2.7	12	50	4
ESRE712 01010	1	1.5	10	50	4	ESRE712 01816	1.8	2.7	16	50	4
ESRE712 01012	1	1.5	12	50	4	ESRE712 01820	1.8	2.7	20	50	4
ESRE712 01014	1	1.5	14	50	4	ESRE712 02006	2	3	6	50	4
ESRE712 01016	1	1.5	16	50	4	ESRE712 02008	2	3	8	50	4
ESRE712 01018	1	1.5	18	50	4	ESRE712 02010	2	3	10	50	4
ESRE712 01020	1	1.5	20	50	4	ESRE712 02012	2	3	12	50	4
ESRE712 01022	1	1.5	22	60	4	ESRE712 02014	2	3	14	50	4
ESRE712 01026	1	1.5	26	60	4	ESRE712 02016	2	3	16	50	4
ESRE712 01030	1	1.5	30	70	4	ESRE712 02018	2	3	18	50	4
ESRE712 01040	1	1.5	40	80	4	ESRE712 02020	2	3	20	50	4
ESRE712 01050	1	1.5	50	100	4	ESRE712 02022	2	3	22	60	4
ESRE712 01204	1.2	1.8	4	50	4	ESRE712 02026	2	3	26	60	4
ESRE712 01206	1.2	1.8	6	50	4	ESRE712 02030	2	3	30	70	4
ESRE712 01208	1.2	1.8	8	50	4	ESRE712 02035	2	3	35	70	4
ESRE712 01210	1.2	1.8	10	50	4	ESRE712 02040	2	3	40	80	4
ESRE712 01212	1.2	1.8	12	50	4	ESRE712 02045	2	3	45	90	4
ESRE712 01214	1.2	1.8	14	50	4	ESRE712 02050	2	3	50	100	4
ESRE712 01216	1.2	1.8	16	50	4	ESRE712 02060	2	3	60	110	4
ESRE712 01220	1.2	1.8	20	50	4	ESRE712 02508	2.5	4	8	50	4
ESRE712 01226	1.2	1.8	26	60	4	ESRE712 02510	2.5	4	10	50	4
ESRE712 01230	1.2	1.8	30	70	4	ESRE712 02512	2.5	4	12	50	4
ESRE712 01406	1.4	2.1	6	50	4	ESRE712 02514	2.5	4	14	50	4
ESRE712 01408	1.4	2.1	8	50	4	ESRE712 02516	2.5	4	16	50	4
ESRE712 01410	1.4	2.1	10	50	4	ESRE712 02518	2.5	4	18	50	4
ESRE712 01414	1.4	2.1	14	50	4	ESRE712 02520	2.5	4	20	50	4
ESRE712 01416	1.4	2.1	16	50	4	ESRE712 02522	2.5	4	22	60	4
ESRE712 01420	1.4	2.1	20	50	4	ESRE712 02526	2.5	4	26	60	4
ESRE712 01504	1.5	2.3	4	50	4	ESRE712 02530	2.5	4	30	70	4
ESRE712 01505	1.5	2.3	5	50	4	ESRE712 02535	2.5	4	35	70	4
ESRE712 01506	1.5	2.3	6	50	4	ESRE712 02540	2.5	4	40	80	4
ESRE712 01507	1.5	2.3	7	50	4	ESRE712 02545	2.5	4	45	90	4
ESRE712 01508	1.5	2.3	8	50	4	ESRE712 02550	2.5	4	50	100	4
ESRE712 01510	1.5	2.3	10	50	4	ESRE712 03006	3	4.5	6	50	6
ESRE712 01512	1.5	2.3	12	50	4	ESRE712 03008	3	4.5	8	50	6
ESRE712 01514	1.5	2.3	14	50	4	ESRE712 03010	3	4.5	10	50	6
ESRE712 01516	1.5	2.3	16	50	4	ESRE712 03012	3	4.5	12	50	6
ESRE712 01518	1.5	2.3	18	50	4	ESRE712 03014	3	4.5	14	60	6

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

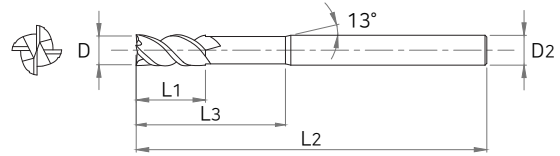
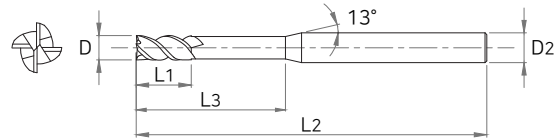
○ : GOOD ◎ : EXCELLENT

EDP No.	Description (mm)					EDP No.	Description (mm)				
	D	L1	L3	L2	D2		D	L1	L3	L2	D2
ESRE712 03016	3	4.5	16	60	6	ESRE712 04050	4	6	50	100	6
ESRE712 03018	3	4.5	18	60	6	ESRE712 04060	4	6	60	100	6
ESRE712 03020	3	4.5	20	60	6	ESRE712 05016	5	8	16	60	6
ESRE712 03022	3	4.5	22	65	6	ESRE712 05020	5	8	20	60	6
ESRE712 03026	3	4.5	26	65	6	ESRE712 05026	5	8	26	65	6
ESRE712 03030	3	4.5	30	70	6	ESRE712 05030	5	8	30	70	6
ESRE712 03035	3	4.5	35	70	6	ESRE712 05035	5	8	35	75	6
ESRE712 03040	3	4.5	40	80	6	ESRE712 05040	5	8	40	80	6
ESRE712 03045	3	4.5	45	90	6	ESRE712 05050	5	8	50	90	6
ESRE712 03050	3	4.5	50	100	6	ESRE712 05060	5	8	60	100	6
ESRE712 03060	3	4.5	60	100	6	ESRE712 06015	6	9	15	60	6
ESRE712 04008	4	6	8	50	6	ESRE712 06020	6	9	20	60	6
ESRE712 04010	4	6	10	50	6	ESRE712 06030	6	9	30	70	6
ESRE712 04012	4	6	12	50	6	ESRE712 06032	6	9	32	90	6
ESRE712 04014	4	6	14	60	6	ESRE712 08025	8	12	25	70	8
ESRE712 04016	4	6	16	60	6	ESRE712 08030	8	12	30	80	8
ESRE712 04018	4	6	18	60	6	ESRE712 08042	8	12	42	100	8
ESRE712 04020	4	6	20	60	6	ESRE712 10030	10	15	30	75	10
ESRE712 04022	4	6	22	65	6	ESRE712 10035	10	15	35	80	10
ESRE712 04026	4	6	26	65	6	ESRE712 10045	10	15	45	100	10
ESRE712 04030	4	6	30	70	6	ESRE712 12035	12	20	35	80	12
ESRE712 04035	4	6	35	70	6	ESRE712 12040	12	20	40	90	12
ESRE712 04040	4	6	40	80	6	ESRE712 12050	12	20	50	110	12
ESRE712 04045	4	6	45	90	6						

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRC55	SKD11 HRC55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D		Shank Dia.
~D6	0 ~ -0.012	h5
D8 ~ 12	0 ~ -0.015	



EDP No.	Description (mm)				
	D	L1	L3	L2	D2
ESRE714 00501	0.5	0.5	1	40	4
ESRE714 00502	0.5	0.5	2	40	4
ESRE714 00503	0.5	0.5	3	45	4
ESRE714 00504	0.5	0.5	4	45	4
ESRE714 00505	0.5	0.5	5	45	4
ESRE714 00506	0.5	0.5	6	45	4
ESRE714 00508	0.5	0.5	8	45	4
ESRE714 00510	0.5	0.5	10	50	4
ESRE714 00601	0.6	0.6	1	45	4
ESRE714 00602	0.6	0.6	2	45	4
ESRE714 00603	0.6	0.6	3	45	4
ESRE714 00604	0.6	0.6	4	45	4
ESRE714 00605	0.6	0.6	5	45	4
ESRE714 00606	0.6	0.6	6	45	4
ESRE714 00608	0.6	0.6	8	45	4
ESRE714 00610	0.6	0.6	10	50	4
ESRE714 00612	0.6	0.6	12	50	4
ESRE714 00702	0.7	0.7	2	45	4
ESRE714 00704	0.7	0.7	4	45	4
ESRE714 00706	0.7	0.7	6	45	4
ESRE714 00708	0.7	0.7	8	45	4
ESRE714 00710	0.7	0.7	10	50	4
ESRE714 00801	0.8	0.8	1	40	4
ESRE714 00802	0.8	0.8	2	40	4
ESRE714 00803	0.8	0.8	3	40	4
ESRE714 00804	0.8	0.8	4	40	4
ESRE714 00805	0.8	0.8	5	40	4
ESRE714 00806	0.8	0.8	6	40	4
ESRE714 00808	0.8	0.8	8	40	4
ESRE714 00810	0.8	0.8	10	50	4
ESRE714 00812	0.8	0.8	12	50	4

EDP No.	Description (mm)				
	D	L1	L3	L2	D2
ESRE714 00816	0.8	0.8	16	50	4
ESRE714 01002	1	1	2	45	4
ESRE714 01003	1	1	3	45	4
ESRE714 01004	1	1	4	45	4
ESRE714 01006	1	1	6	45	4
ESRE714 01008	1	1	8	45	4
ESRE714 01010	1	1	10	50	4
ESRE714 01012	1	1	12	50	4
ESRE714 01014	1	1	14	50	4
ESRE714 01016	1	1	16	50	4
ESRE714 01018	1	1	18	60	4
ESRE714 01020	1	1	20	60	4
ESRE714 01204	1.2	1.2	4	45	4
ESRE714 01206	1.2	1.2	6	45	4
ESRE714 01208	1.2	1.2	8	45	4
ESRE714 01210	1.2	1.2	10	50	4
ESRE714 01212	1.2	1.2	12	50	4
ESRE714 01216	1.2	1.2	16	50	4
ESRE714 01218	1.2	1.2	18	60	4
ESRE714 01220	1.2	1.2	20	60	4
ESRE714 01406	1.4	1.4	6	45	4
ESRE714 01408	1.4	1.4	8	45	4
ESRE714 01410	1.4	1.4	10	50	4
ESRE714 01412	1.4	1.4	12	50	4
ESRE714 01414	1.4	1.4	14	50	4
ESRE714 01416	1.4	1.4	16	50	4
ESRE714 01504	1.5	1.5	4	45	4
ESRE714 01506	1.5	1.5	6	45	4
ESRE714 01508	1.5	1.5	8	45	4
ESRE714 01510	1.5	1.5	10	50	4
ESRE714 01512	1.5	1.5	12	50	4

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

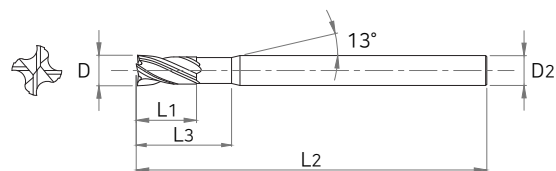
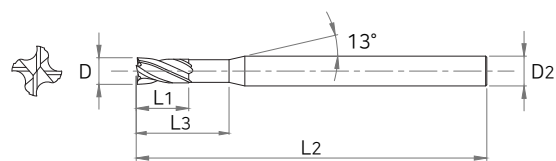
○ : GOOD ◎ : EXCELLENT

EDP No.	Description (mm)					EDP No.	Description (mm)				
	D	L1	L3	L2	D2		D	L1	L3	L2	D2
ESRE714 01516	1.5	1.5	16	50	4	ESRE714 03045	3	3	45	90	6
ESRE714 01518	1.5	1.5	18	60	4	ESRE714 03050	3	3	50	100	6
ESRE714 01520	1.5	1.5	20	60	4	ESRE714 03060	3	3	60	110	6
ESRE714 01525	1.5	1.5	25	60	4	ESRE714 03512	3.5	3.5	12	50	6
ESRE714 01530	1.5	1.5	30	70	4	ESRE714 03516	3.5	3.5	16	55	6
ESRE714 01606	1.6	1.6	6	45	4	ESRE714 03520	3.5	3.5	20	60	6
ESRE714 01608	1.6	1.6	8	45	4	ESRE714 03525	3.5	3.5	25	65	6
ESRE714 01610	1.6	1.6	10	50	4	ESRE714 03530	3.5	3.5	30	70	6
ESRE714 01612	1.6	1.6	12	50	4	ESRE714 03535	3.5	3.5	35	75	6
ESRE714 01614	1.6	1.6	14	50	4	ESRE714 03540	3.5	3.5	40	80	6
ESRE714 01616	1.6	1.6	16	50	4	ESRE714 04006	4	4	6	50	6
ESRE714 01618	1.6	1.6	18	60	4	ESRE714 04008	4	4	8	50	6
ESRE714 01620	1.6	1.6	20	60	4	ESRE714 04010	4	4	10	50	6
ESRE714 01625	1.6	1.6	25	70	4	ESRE714 04012	4	4	12	50	6
ESRE714 01806	1.8	1.8	6	45	4	ESRE714 04016	4	4	16	55	6
ESRE714 01808	1.8	1.8	8	45	4	ESRE714 04020	4	4	20	60	6
ESRE714 01810	1.8	1.8	10	50	4	ESRE714 04025	4	4	25	65	6
ESRE714 01812	1.8	1.8	12	50	4	ESRE714 04030	4	4	30	70	6
ESRE714 01816	1.8	1.8	16	50	4	ESRE714 04040	4	4	40	80	6
ESRE714 01820	1.8	1.8	20	60	4	ESRE714 04045	4	4	45	90	6
ESRE714 01825	1.8	1.8	25	70	4	ESRE714 04050	4	4	50	100	6
ESRE714 02004	2	2	4	45	4	ESRE714 04060	4	4	60	110	6
ESRE714 02006	2	2	6	45	4	ESRE714 04512	4.5	4.5	12	50	6
ESRE714 02008	2	2	8	45	4	ESRE714 04516	4.5	4.5	16	55	6
ESRE714 02010	2	2	10	50	4	ESRE714 04520	4.5	4.5	20	60	6
ESRE714 02012	2	2	12	50	4	ESRE714 04525	4.5	4.5	25	65	6
ESRE714 02014	2	2	14	50	4	ESRE714 04530	4.5	4.5	30	70	6
ESRE714 02016	2	2	16	50	4	ESRE714 04540	4.5	4.5	40	80	6
ESRE714 02018	2	2	18	50	4	ESRE714 05016	5	5	16	60	6
ESRE714 02020	2	2	20	50	4	ESRE714 05020	5	5	20	60	6
ESRE714 02022	2	2	22	60	4	ESRE714 05025	5	5	25	65	6
ESRE714 02025	2	2	25	60	4	ESRE714 05030	5	5	30	70	6
ESRE714 02030	2	2	30	70	4	ESRE714 05040	5	5	40	80	6
ESRE714 02510	2.5	2.5	10	50	4	ESRE714 05050	5	5	50	100	6
ESRE714 02512	2.5	2.5	12	50	4	ESRE714 05060	5	5	60	110	6
ESRE714 02516	2.5	2.5	16	50	4	ESRE714 06020	6	6	20	60	6
ESRE714 02520	2.5	2.5	20	50	4	ESRE714 06030	6	6	30	75	6
ESRE714 02525	2.5	2.5	25	60	4	ESRE714 06040	6	6	40	80	6
ESRE714 02530	2.5	2.5	30	70	4	ESRE714 06050	6	6	50	90	6
ESRE714 03006	3	3	6	45	6	ESRE714 06060	6	6	60	100	6
ESRE714 03008	3	3	8	45	6	ESRE714 08025	8	12	25	65	8
ESRE714 03010	3	3	10	50	6	ESRE714 08040	8	12	40	100	8
ESRE714 03012	3	3	12	50	6	ESRE714 08050	8	12	50	110	8
ESRE714 03016	3	3	16	55	6	ESRE714 10030	10	15	30	70	10
ESRE714 03020	3	3	20	60	6	ESRE714 10050	10	15	50	100	10
ESRE714 03025	3	3	25	65	6	ESRE714 10060	10	15	60	120	10
ESRE714 03030	3	3	30	70	6	ESRE714 12040	12	18	40	80	12
ESRE714 03035	3	3	35	75	6	ESRE714 12060	12	18	60	110	12
ESRE714 03040	3	3	40	80	6	ESRE714 12070	12	18	70	130	12

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D	Shank Dia.
All Sizes	0 ~ -0.02 h5

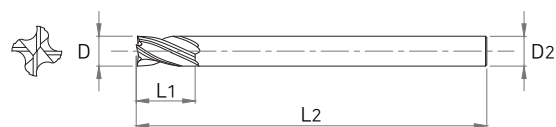
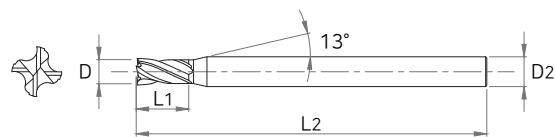


EDP No.	Description (mm)				
	D	L1	L3	L2	D2
ESXE704 010	1	1.5	4	45	4
ESXE704 020	2	3	6	45	4
ESXE704 030	3	4	7	45	6
ESXE704 040	4	5	9	45	6
ESXE704 060	6	7	14	50	6
ESXE704 080	8	9	18	60	8
ESXE704 100	10	12	25	75	10
ESXE704 120	12	15	30	75	12

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



■Tolerance

D	Shank Dia.
All Sizes	0 ~ -0.02 h5

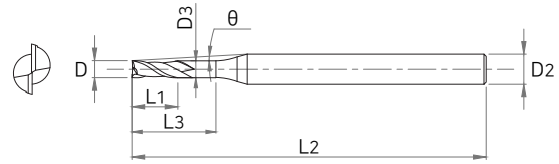


EDP No.	Description (mm)			
	D	L1	L2	D2
ESXE714 020	2	5	45	4
ESXE714 030	3	8	45	6
ESXE714 040	4	10	45	6
ESXE714 040S4	4	10	45	4
ESXE714 060	6	16	50	6
ESXE714 080	8	20	60	8
ESXE714 100	10	25	75	10
ESXE714 120	12	35	85	12

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D	Shank Dia.
All Sizes	0 ~ -0.012 h5

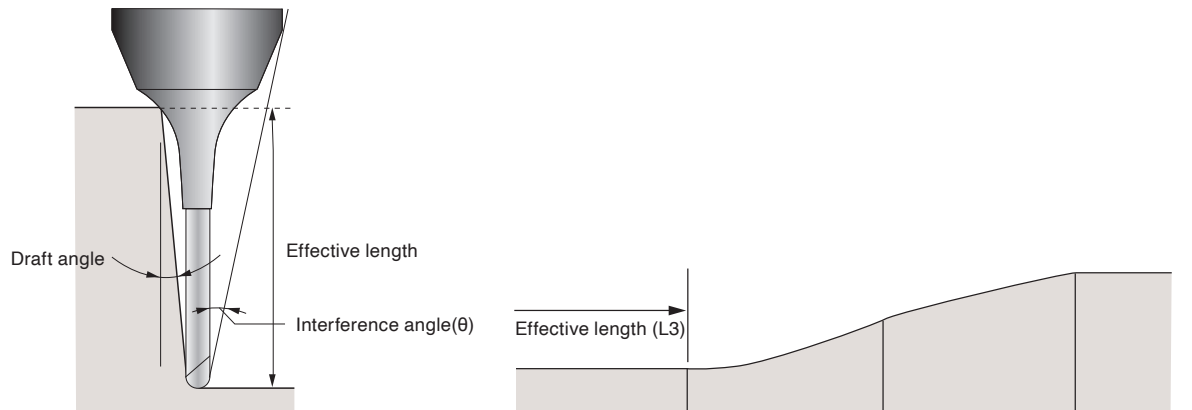


EDP No.	Description (mm)							Effective length from draft angle of Workpiece				
	D	L1	L3	D3	L2	D2	θ	0.5°	1°	1.5°	2°	3°
ESLNS20 01-0.3	0.1	0.15	0.3	0.08	45	4	11.6	0.4	0.4	0.5	0.5	0.5
ESLNS20 01-0.5	0.1	0.15	0.5	0.08	45	4	11.4	0.6	0.7	0.7	0.7	0.8
ESLNS20 01-1	0.1	0.15	1	0.08	45	4	10.9	1.2	1.2	1.2	1.3	1.4
ESLNS20 02-0.5	0.2	0.3	0.5	0.17	50	4	11.3	1.2	1.3	1.5	1.7	2
ESLNS20 02-1	0.2	0.3	1	0.17	50	4	10.8	1.7	1.9	2.2	2.4	2.7
ESLNS20 02-1.5	0.2	0.3	1.5	0.17	50	4	10.3	2.3	2.5	2.8	3	3.4
ESLNS20 03-1	0.3	0.45	1	0.27	50	4	10.8	1.7	1.9	2.2	2.4	2.7
ESLNS20 03-1.5	0.3	0.45	1.5	0.27	50	4	10.3	2.3	2.5	2.8	3	3.4
ESLNS20 03-2	0.3	0.45	2	0.27	50	4	9.8	2.8	3.1	3.4	3.6	4.1
ESLNS20 03-2.5	0.3	0.45	2.5	0.27	50	4	9.4	3.4	3.7	4	4.3	4.7
ESLNS20 03-3	0.3	0.45	3	0.27	50	4	9	3.9	4.3	4.6	4.9	5.4
ESLNS20 04-1	0.4	0.6	1	0.37	50	4	10.7	1.7	1.9	2.2	2.4	2.7
ESLNS20 04-1.5	0.4	0.6	1.5	0.37	50	4	10.2	2.3	2.5	2.8	3	3.4
ESLNS20 04-2	0.4	0.6	2	0.37	50	4	9.7	2.8	3.1	3.4	3.6	4.1
ESLNS20 04-2.5	0.4	0.6	2.5	0.37	50	4	9.3	3.4	3.7	4	4.3	4.7
ESLNS20 04-3	0.4	0.6	3	0.37	50	4	8.9	3.9	4.3	4.6	4.9	5.4
ESLNS20 04-3.5	0.4	0.6	3.5	0.37	50	4	8.6	4.5	4.9	5.2	5.5	6
ESLNS20 04-4	0.4	0.6	4	0.37	50	4	8.2	5	5.4	5.8	6.1	6.6
ESLNS20 04-5	0.4	0.6	5	0.37	50	4	7.6	6.1	6.6	6.9	7.3	7.8
ESLNS20 04-6	0.4	0.6	6	0.37	50	4	7.1	7.2	7.7	8.1	8.4	9
ESLNS20 05-1	0.5	0.75	1	0.47	50	4	10.7	1.7	1.9	2.2	2.4	2.7
ESLNS20 05-1.5	0.5	0.75	1.5	0.47	50	4	10.2	2.3	2.5	2.8	3	3.4
ESLNS20 05-2	0.5	0.75	2	0.47	50	4	9.7	2.8	3.1	3.4	3.6	4.1
ESLNS20 05-2.5	0.5	0.75	2.5	0.47	50	4	9.3	3.4	3.7	4	4.3	4.7
ESLNS2005-3	0.5	0.75	3	0.47	50	4	8.9	3.9	4.3	4.6	4.9	5.4
ESLNS2005-4	0.5	0.75	4	0.47	50	4	8.1	5	5.4	5.8	6.1	6.6
ESLNS2005-5	0.5	0.75	5	0.47	50	4	7.5	6.1	6.6	6.9	7.3	7.8
ESLNS2005-6	0.5	0.75	6	0.47	50	4	7	7.2	7.7	8.1	8.4	9
ESLNS2005-8	0.5	0.75	8	0.47	50	4	6.2	9.3	9.9	10.3	10.7	11.4
ESLNS2006-2	0.6	0.9	2	0.57	50	4	9.6	2.8	3.1	3.4	3.6	4.1
ESLNS2006-4	0.6	0.9	4	0.57	50	4	6.9	7.2	7.7	8.1	8.4	9

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



* Marked effective length is set to prevent interfering in workpiece.
You need to take proper control when machining.

EDP No.	Description (mm)							Effective length from draft angle of Workpiece				
	D	L1	L3	D3	L2	D2	θ	0.5°	1°	1.5°	2°	3°
ESLNS2006-6	0.6	0.9	6	0.57	50	4	6.1	9.3	9.9	10.3	10.7	11.4
ESLNS2006-8	0.6	0.9	8	0.57	50	4	5.4	11.5	12.1	12.6	13	13.7
ESLNS2006-10	0.6	0.9	10	0.57	50	4	9.6	2.8	3.1	3.4	3.6	4.1
ESLNS2007-2	0.7	1.05	2	0.67	50	4	8	5	5.4	5.8	6.1	6.6
ESLNS2007-4	0.7	1.05	4	0.67	50	4	6.9	7.2	7.7	8.1	8.4	9
ESLNS2007-6	0.7	1.05	6	0.67	50	4	6	9.3	9.9	10.3	10.7	11.4
ESLNS2007-8	0.7	1.05	8	0.67	50	4	5.3	11.5	12.1	12.6	13	13.7
ESLNS2007-10	0.7	1.2	10	0.77	50	4	7.9	5	5.4	5.8	6.1	6.6
ESLNS2008-4	0.8	1.2	4	0.77	50	4	6.8	7.2	7.7	8.1	8.4	9
ESLNS2008-6	0.8	1.2	6	0.77	50	4	5.9	9.3	9.9	10.3	10.7	11.4
ESLNS2008-8	0.8	1.2	8	0.77	50	4	5.2	11.5	12.1	12.6	13	13.7
ESLNS2008-10	0.8	1.2	10	0.77	55	4	4.7	13.6	14.2	14.8	15.2	16
ESLNS2008-12	0.8	1.2	12	0.77	55	4	6.7	7.2	7.7	8.1	8.4	9.1
ESLNS2009-6	0.9	1.35	6	0.86	50	4	5.8	9.4	9.9	10.4	10.7	11.4
ESLNS2009-8	0.9	1.35	8	0.86	50	4	5.1	11.5	12.1	12.6	13	13.7
ESLNS2009-10	0.9	1.35	10	0.86	55	4	4.6	13.6	14.3	14.8	15.2	16
ESLNS2009-12	0.9	1.35	12	0.86	55	4	9.4	2.9	3.2	3.4	3.7	4.1
ESLNS2010-2	1	1.5	2	0.96	50	4	7.7	5.1	5.5	5.8	6.1	6.6
ESLNS2010-4	1	1.5	4	0.96	50	4	6.6	7.2	7.7	8.1	8.4	9.1
ESLNS2010-6	1	1.5	6	0.96	50	4	5.7	9.4	9.9	10.4	10.7	11.4
ESLNS2010-8	1	1.5	8	0.96	50	4	5	11.5	12.1	12.6	13	13.7
ESLNS2010-10	1	1.5	10	0.96	55	4	4.5	13.6	14.3	14.8	15.2	16
ESLNS2010-12	1	1.5	12	0.96	55	4	4.1	15.7	16.4	17	17.4	18.7
ESLNS2010-14	1	1.5	14	0.96	60	4	3.8	17.8	18.6	19.1	19.6	21.3
ESLNS2010-16	1	1.5	16	0.96	60	4	3.2	22	22.8	23.5	24	26.6
ESLNS2010-20	1	1.5	20	0.96	60	4	6.3	7.3	7.7	8.1	8.5	9.1
ESLNS2012-6	1.2	1.8	6	1.15	50	4	5.5	9.4	9.9	10.4	10.8	11.4
ESLNS2012-8	1.2	1.8	8	1.15	50	4	4.8	11.5	12.1	12.6	13	13.7
ESLNS2012-10	1.2	1.8	10	1.15	50	4	11.5	12.1	12.6	13	13.7	16
ESLNS2012-12	1.2	1.8	12	1.15	55	4	4.3	13.6	14.3	14.8	15.2	16
ESLNS2012-16	1.2	1.8	16	1.15	55	4	3.6	17.8	18.6	19.2	19.7	21.3

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT

EDP No.	Description (mm)							Effective length from draft angle of Workpiece				
	D	L1	L3	D3	L2	D2	θ	0.5°	1°	1.5°	2°	3°
ESLNS2014-6	1.4	2.1	6	1.34	50	4	6.1	7.3	7.8	8.1	8.5	9.1
ESLNS2014-8	1.4	2.1	8	1.34	50	4	5.3	9.4	10	10.4	10.8	11.5
ESLNS2014-10	1.4	2.1	10	1.34	50	4	4.6	11.6	12.1	12.6	13	13.8
ESLNS2014-12	1.4	2.1	12	1.34	55	4	4.1	13.7	14.3	14.8	15.3	16.1
ESLNS2014-14	1.4	2.1	14	1.34	55	4	3.7	15.8	16.5	17	17.5	18.7
ESLNS2014-16	1.4	2.1	16	1.34	55	4	3.4	17.9	18.6	19.2	19.7	21.4
ESLNS2015-4	1.5	2.25	4	1.44	50	4	7.2	5.2	5.5	5.9	6.2	6.7
ESLNS2015-6	1.5	2.25	6	1.44	50	4	6	7.3	7.8	8.1	8.5	9.1
ESLNS2015-8	1.5	2.25	8	1.44	50	4	5.1	9.4	10	10.4	10.8	11.5
ESLNS2015-10	1.5	2.25	10	1.44	50	4	4.5	11.6	12.1	12.6	13	13.8
ESLNS2015-12	1.5	2.25	12	1.44	55	4	4	13.7	14.3	14.8	15.3	16.1
ESLNS2015-14	1.5	2.25	14	1.44	55	4	3.6	15.8	16.5	17	17.5	18.7
ESLNS2015-16	1.5	2.25	16	1.44	55	4	3.3	17.9	18.6	19.2	19.7	-
ESLNS2015-18	1.5	2.25	18	1.44	60	4	3	20	20.7	21.3	21.9	-
ESLNS2015-20	1.5	2.25	20	1.44	60	4	2.8	22	22.9	23.5	24.1	-
ESLNS2015-25	1.5	2.25	25	1.44	65	4	2.4	27.3	28.1	28.8	30	-
ESLNS2016-6	1.6	2.4	6	1.54	50	4	5.9	7.3	7.8	8.1	8.5	9.1
ESLNS2016-8	1.6	2.4	8	1.54	50	4	5	9.4	10	10.4	10.8	11.5
ESLNS2016-10	1.6	2.4	10	1.54	50	4	4.4	11.6	12.1	12.6	13	13.8
ESLNS2016-12	1.6	2.4	12	1.54	55	4	3.9	13.7	14.3	14.8	15.3	16.1
ESLNS2016-14	1.6	2.4	14	1.54	55	4	3.5	15.8	16.5	17	17.5	18.7
ESLNS2016-16	1.6	2.4	16	1.54	55	4	3.2	17.9	18.6	19.2	19.7	21.4
ESLNS2016-18	1.6	2.4	18	1.54	60	4	2.9	20	20.7	21.3	21.9	-
ESLNS2016-20	1.6	2.4	20	1.54	60	4	2.7	22	22.9	23.5	24.1	-
ESLNS2018-6	1.8	2.7	6	1.73	50	4	5.6	7.4	7.8	8.2	8.5	9.1
ESLNS2018-8	1.8	2.7	8	1.73	50	4	4.8	9.5	10	10.4	10.8	11.5
ESLNS2018-10	1.8	2.7	10	1.73	50	4	4.2	11.6	12.2	12.6	13	13.8
ESLNS2018-12	1.8	2.7	12	1.73	55	4	3.7	13.7	14.3	14.8	15.3	16.1
ESLNS2018-14	1.8	2.7	14	1.73	55	4	3.3	15.8	16.5	17	17.5	18.8
ESLNS2018-16	1.8	2.7	16	1.73	55	4	3	17.9	18.6	19.2	19.7	-
ESLNS2018-18	1.8	2.7	18	1.73	60	4	2.7	20	20.7	21.3	21.9	-
ESLNS2018-20	1.8	2.7	20	1.73	60	4	2.5	22.1	22.9	23.5	24.1	-
ESLNS2020-4	2	3	4	1.92	50	4	6.5	5.3	5.6	5.9	6.2	6.7
ESLNS2020-6	2	3	6	1.92	50	4	5.3	7.4	7.8	8.2	8.5	9.1
ESLNS2020-8	2	3	8	1.92	50	4	4.5	9.5	10	10.4	10.8	11.5
ESLNS2020-10	2	3	10	1.92	50	4	3.9	11.6	12.2	12.7	13.1	13.8
ESLNS2020-12	2	3	12	1.92	55	4	3.4	13.7	14.3	14.9	15.3	16.1
ESLNS2020-14	2	3	14	1.92	55	4	3.1	15.8	16.5	17	17.5	18.8
ESLNS2020-16	2	3	16	1.92	55	4	2.8	17.9	18.6	19.2	19.7	-
ESLNS2020-18	2	3	18	1.92	60	4	2.6	20	20.8	21.4	21.9	-
ESLNS2020-20	2	3	20	1.92	60	4	2.4	22.1	22.9	23.5	24.1	-
ESLNS2020-25	2	3	25	1.92	65	4	2	27.3	28.2	28.9	-	-
ESLNS2020-30	2	3	30	1.92	70	4	1.7	32.5	33.4	34.4	-	-
ESLNS2025-8	2.5	3.75	8	2.4	50	4	3.7	9.6	10.1	10.5	10.9	11.5
ESLNS2025-10	2.5	3.75	10	2.4	50	4	3.1	11.7	12.2	12.7	13.1	13.8
ESLNS2025-12	2.5	3.75	12	2.4	55	4	2.7	13.8	14.4	14.9	15.3	-
ESLNS2025-14	2.5	3.75	14	2.4	55	4	2.4	15.9	16.5	17.1	17.5	-
ESLNS2025-16	2.5	3.75	16	2.4	55	4	2.2	18	18.7	19.2	19.7	-
ESLNS2025-18	2.5	3.75	18	2.4	55	4	2	20.1	20.8	21.4	-	-

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

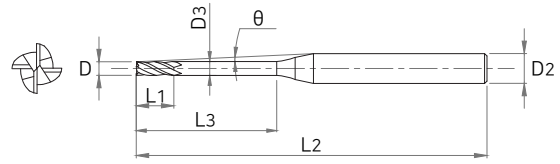
○ : GOOD ◎ : EXCELLENT

EDP No.	Description (mm)							Effective length from draft angle of Workpiece				
	D	L1	L3	D3	L2	D2	θ	0.5°	1°	1.5°	2°	3°
ESLNS2025-20	2.5	3.75	20	2.4	60	4	1.8	22.1	22.9	23.5	-	-
ESLNS2025-25	2.5	3.75	25	2.4	60	4	1.5	27.3	28.2	-	-	-
ESLNS2025-30	2.5	3.75	30	2.4	70	4	1.3	32.6	33.5	-	-	-
ESLNS2030-8	3	4.5	8	2.88	55	6	5.6	9.6	10.1	10.5	10.9	11.5
ESLNS2030-10	3	4.5	10	2.88	55	6	5	11.7	12.3	12.7	13.1	13.8
ESLNS2030-12	3	4.5	12	2.88	60	6	4.5	13.8	14.4	14.9	15.4	16.3
ESLNS2030-14	3	4.5	14	2.88	60	6	4.1	15.9	16.6	17.1	17.6	18.9
ESLNS2030-16	3	4.5	16	2.88	60	6	3.7	18	18.7	19.3	19.8	21.6
ESLNS2030-18	3	4.5	18	2.88	60	6	3.4	20.1	20.8	21.4	21.9	24.2
ESLNS2030-20	3	4.5	20	2.88	65	6	3.2	22.2	23	23.6	24.2	26.9
ESLNS2030-25	3	4.5	25	2.88	70	6	2.7	27.4	28.2	28.9	30.2	-
ESLNS2030-30	3	4.5	30	2.88	75	6	2.4	32.6	33.5	34.5	36.2	-
ESLNS2030-35	3	4.5	35	2.88	80	6	2.1	37.7	38.7	40.2	42.2	-
ESLNS2030-40	3	4.5	40	2.88	90	6	1.9	42.9	43.9	45.9	-	-
ESLNS2040-12	4	6	12	3.85	60	6	3.4	13.9	14.5	15	15.4	16.3
ESLNS2040-16	4	6	16	3.85	60	6	2.8	18.1	18.8	19.3	19.8	-
ESLNS2040-20	4	6	20	3.85	70	6	2.3	22.3	23	23.6	24.3	-
ESLNS2040-25	4	6	25	3.85	70	6	2	27.4	28.3	28.9	-	-
ESLNS2040-30	4	6	30	3.85	80	6	1.7	32.6	33.5	34.6	-	-
ESLNS2040-35	4	6	35	3.85	80	6	1.5	37.8	38.8	-	-	-
ESLNS2040-40	4	6	40	3.85	90	6	1.3	42.9	44	-	-	-
ESLNS2040-45	4	6	45	3.85	90	6	1.2	48.1	49.4	-	-	-
ESLNS2040-50	4	6	50	3.85	100	6	1.1	53.2	54.8	-	-	-
ESLNS2050-16	5	7.5	16	4.85	60	6	1.5	18.1	18.8	-	-	-
ESLNS2050-20	5	7.5	20	4.85	60	6	1.3	22.3	23	-	-	-
ESLNS2050-25	5	7.5	25	4.85	70	6	1.1	27.4	28.3	-	-	-
ESLNS2050-30	5	7.5	30	4.85	70	6	0.9	32.6	-	-	-	-
ESLNS2050-35	5	7.5	35	4.85	80	6	0.8	37.8	-	-	-	-
ESLNS2050-40	5	7.5	40	4.85	90	6	0.7	42.9	-	-	-	-
ESLNS2050-50	5	7.5	50	4.85	100	6	0.6	53.2	-	-	-	-

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRC55	SKD11 HRC55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D	Shank Dia.
All Sizes	0 ~ -0.012 h5

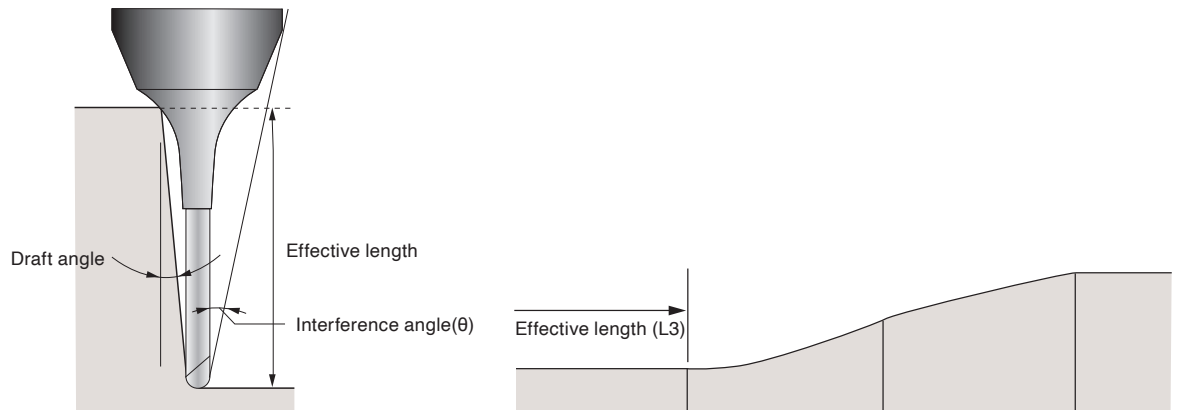


EDP No.	Description (mm)							Effective length from draft angle of Workpiece				
	D	L1	L3	D3	L2	D2	θ	0.5°	1°	1.5°	2°	3°
ESLNS4010-4	1	1.5	4	0.96	50	4	7.7	5.1	5.5	5.8	6.1	6.6
ESLNS4010-6	1	1.5	6	0.96	50	4	6.6	7.2	7.7	8.1	8.4	9.1
ESLNS4010-8	1	1.5	8	0.96	50	4	5.7	9.4	9.9	10.4	10.7	11.4
ESLNS4010-10	1	1.5	10	0.96	50	4	5	11.5	12.1	12.6	13	13.7
ESLNS4015-4	1.5	2.25	4	1.44	50	4	7.2	5.2	5.5	5.9	6.2	6.7
ESLNS4015-6	1.5	2.25	6	1.44	50	4	6	7.3	7.8	8.1	8.5	9.1
ESLNS4015-8	1.5	2.25	8	1.44	50	4	5.1	9.4	10	10.4	10.8	11.5
ESLNS4015-10	1.5	2.25	10	1.44	50	4	4.5	11.6	12.1	12.6	13	13.8
ESLNS4015-12	1.5	2.25	12	1.44	55	4	4	13.7	14.3	14.8	15.3	16.1
ESLNS4015-14	1.5	2.25	14	1.44	55	4	3.6	15.8	16.5	17	17.5	18.7
ESLNS4015-16	1.5	2.25	16	1.44	55	4	3.3	17.9	18.6	19.2	19.7	-
ESLNS4015-18	1.5	2.25	18	1.44	60	4	3	20	20.7	21.3	21.9	-
ESLNS4015-20	1.5	2.25	20	1.44	60	4	2.8	22	22.9	23.5	24.1	-
ESLNS4015-25	1.5	2.25	25	1.44	65	4	2.4	27.3	28.1	28.8	30	-
ESLNS4020-4	2	3	4	1.92	50	4	6.5	5.3	5.6	5.9	6.2	6.7
ESLNS4020-6	2	3	6	1.92	50	4	5.3	7.4	7.8	8.2	8.5	9.1
ESLNS4020-8	2	3	8	1.92	50	4	4.5	9.5	10	10.4	10.8	11.5
ESLNS4020-10	2	3	10	1.92	50	4	3.9	11.6	12.2	12.7	13.1	13.8
ESLNS4020-12	2	3	12	1.92	55	4	3.4	13.7	14.3	14.9	15.3	16.1
ESLNS4020-14	2	3	14	1.92	55	4	3.1	15.8	16.5	17	17.5	18.8
ESLNS4020-16	2	3	16	1.92	55	4	2.8	17.9	18.6	19.2	19.7	-
ESLNS4020-18	2	3	18	1.92	60	4	2.6	20	20.8	21.4	21.9	-
ESLNS4020-20	2	3	20	1.92	60	4	2.4	22.1	22.9	23.5	24.1	-
ESLNS4020-25	2	3	25	1.92	65	4	2	27.3	28.2	28.9	-	-
ESLNS4020-30	2	3	30	1.92	70	4	1.7	32.5	33.4	34.4	-	-
ESLNS4025-8	2.5	3.75	8	2.4	50	4	3.7	9.6	10.1	10.5	10.9	11.5
ESLNS4025-10	2.5	3.75	10	2.4	50	4	3.1	11.7	12.2	12.7	13.1	13.8
ESLNS4025-12	2.5	3.75	12	2.4	55	4	2.7	13.8	14.4	14.9	15.3	-
ESLNS4025-14	2.5	3.75	14	2.4	55	4	2.4	15.9	16.5	17.1	17.5	-
ESLNS4025-16	2.5	3.75	16	2.4	55	4	2.2	18	18.7	19.2	19.7	-
ESLNS4025-18	2.5	3.75	18	2.4	60	4	2	20.1	20.8	21.4	-	-

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



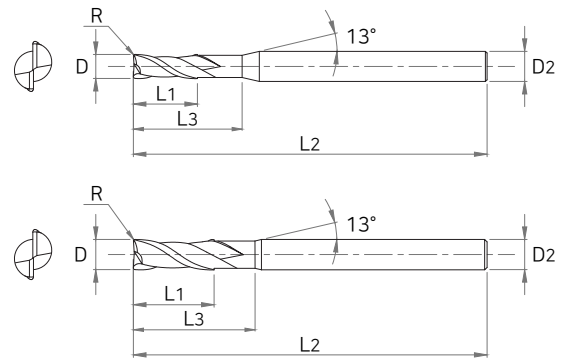
* Marked effective length is set to prevent interfering in workpiece.
You need to take proper control when machining.

EDP No.	Description (mm)							Effective length from draft angle of Workpiece				
	D	L1	L3	D3	L2	D2	θ	0.5°	1°	1.5°	2°	3°
ESLNS4025-20	2.5	3.75	20	2.4	60	4	1.8	22.1	22.9	23.5	-	-
ESLNS4025-25	2.5	3.75	25	2.4	65	4	1.5	27.3	28.2	-	-	-
ESLNS4025-30	2.5	3.75	30	2.4	70	4	1.3	32.6	33.5	-	-	-
ESLNS4030-8	3	4.5	8	2.88	55	6	5.6	9.6	10.1	10.5	10.9	11.5
ESLNS4030-10	3	4.5	10	2.88	55	6	5	11.7	12.3	12.7	13.1	13.8
ESLNS4030-12	3	4.5	12	2.88	60	6	4.5	13.8	14.4	14.9	15.4	16.3
ESLNS4030-14	3	4.5	14	2.88	60	6	4.1	15.9	16.6	17.1	17.6	18.9
ESLNS4030-16	3	4.5	16	2.88	60	6	3.7	18	18.7	19.3	19.8	21.6
ESLNS4030-18	3	4.5	18	2.88	60	6	3.4	20.1	20.8	21.4	21.9	24.2
ESLNS4030-20	3	4.5	20	2.88	65	6	3.2	22.2	23	23.6	24.2	26.9
ESLNS4030-25	3	4.5	25	2.88	70	6	2.7	27.4	28.2	28.9	30.2	-
ESLNS4030-30	3	4.5	30	2.88	75	6	2.4	32.6	33.5	34.5	36.2	-
ESLNS4030-35	3	4.5	35	2.88	80	6	2.1	37.7	38.7	40.2	42.2	-
ESLNS4030-40	3	4.5	40	2.88	90	6	1.9	42.9	43.9	45.9	-	-
ESLNS4040-12	4	6	12	3.85	60	6	3.4	13.9	14.5	15	15.4	16.3
ESLNS4040-16	4	6	16	3.85	60	6	2.8	18.1	18.8	19.3	19.8	-
ESLNS4040-20	4	6	20	3.85	70	6	2.3	22.3	23	23.6	24.3	-
ESLNS4040-25	4	6	25	3.85	70	6	2	27.4	28.3	28.9	-	-
ESLNS4040-30	4	6	30	3.85	80	6	1.7	32.6	33.5	34.6	-	-
ESLNS4040-35	4	6	35	3.85	80	6	1.5	37.8	38.8	-	-	-
ESLNS4040-40	4	6	40	3.85	90	6	1.3	42.9	44	-	-	-
ESLNS4040-45	4	6	45	3.85	90	6	1.2	48.1	49.4	-	-	-
ESLNS4040-50	4	6	50	3.85	100	6	1.1	53.2	54.8	-	-	-
ESLNS4050-16	5	7.5	16	4.85	60	6	1.5	18.1	18.8	-	-	-
ESLNS4050-20	5	7.5	20	4.85	60	6	1.3	22.3	23	-	-	-
ESLNS4050-25	5	7.5	25	4.85	70	6	1.1	27.4	28.3	-	-	-
ESLNS4050-30	5	7.5	30	4.85	70	6	0.9	32.6	-	-	-	-
ESLNS4050-35	5	7.5	35	4.85	80	6	0.8	37.8	-	-	-	-
ESLNS4050-40	5	7.5	40	4.85	90	6	0.7	42.9	-	-	-	-
ESLNS4050-50	5	7.5	50	4.85	100	6	0.6	53.2	-	-	-	-

■ Applicable working material

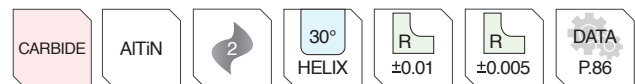
Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D		Shank Dia.
~D6	0 ~ -0.012	h5
D8 ~ 12	0 ~ -0.015	



EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESR702 01000503S4	1	0.05	1.5	3	50	4
ESR702 01000504S4	1	0.05	1.5	4	50	4
ESR702 01000506S4	1	0.05	1.5	6	50	4
ESR702 01000508S4	1	0.05	1.5	8	50	4
ESR702 01000510S4	1	0.05	1.5	10	50	4
ESR702 0100103S4	1	0.1	1.5	3	50	4
ESR702 0100104	1	0.1	1.5	4	50	6
ESR702 0100104S4	1	0.1	1.5	4	50	4
ESR702 0100106	1	0.1	1.5	6	50	6
ESR702 0100106S4	1	0.1	1.5	6	50	4
ESR702 0100108S4	1	0.1	1.5	8	50	4
ESR702 0100110S4	1	0.1	1.5	10	50	4
ESR702 0100203S4	1	0.2	1.5	3	50	4
ESR702 0100204	1	0.2	1.5	4	50	6
ESR702 0100204S4	1	0.2	1.5	4	50	4
ESR702 0100206	1	0.2	1.5	6	50	6
ESR702 0100206S4	1	0.2	1.5	6	50	4
ESR702 0100208S4	1	0.2	1.5	8	50	4
ESR702 0100210	1	0.2	1.5	10	50	6
ESR702 0100210S4	1	0.2	1.5	10	50	4
ESR702 0100212	1	0.2	1.5	12	50	6
ESR702 0100303S4	1	0.3	1.5	3	50	4
ESR702 0100304S4	1	0.3	1.5	4	50	4
ESR702 0100306S4	1	0.3	1.5	6	50	4
ESR702 0100308S4	1	0.3	1.5	8	50	4
ESR702 0100310S4	1	0.3	1.5	10	50	4
ESR702 0120208	1.2	0.2	2	8	50	6
ESR702 0120212	1.2	0.2	2	12	50	6
ESR702 01500504S4	1.5	0.05	2.5	4	50	4
ESR702 01500506S4	1.5	0.05	2.5	6	50	4
ESR702 01500508S4	1.5	0.05	2.5	8	50	4

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESR702 01500510S4	1.5	0.05	2.5	10	50	4
ESR702 01500512S4	1.5	0.05	2.5	12	50	4
ESR702 0150104S4	1.5	0.1	2.5	4	50	4
ESR702 0150106S4	1.5	0.1	2.5	6	50	4
ESR702 0150108S4	1.5	0.1	2.5	8	50	4
ESR702 0150110S4	1.5	0.1	2.5	10	50	4
ESR702 0150112S4	1.5	0.1	2.5	12	50	4
ESR702 0150204	1.5	0.2	2.5	4	50	6
ESR702 0150204S4	1.5	0.2	2.5	4	50	4
ESR702 0150206	1.5	0.2	2.5	6	50	6
ESR702 0150206S4	1.5	0.2	2.5	6	50	4
ESR702 0150208	1.5	0.2	2.5	8	50	6
ESR702 0150208S4	1.5	0.2	2.5	8	50	4
ESR702 0150210	1.5	0.2	2.5	10	50	6
ESR702 0150210S4	1.5	0.2	2.5	10	50	4
ESR702 0150212S4	1.5	0.2	2.5	12	50	4
ESR702 0150215	1.5	0.2	2.5	15	50	6
ESR702 0150304S4	1.5	0.3	2.5	4	50	4
ESR702 0150306S4	1.5	0.3	2.5	6	50	4
ESR702 0150308S4	1.5	0.3	2.5	8	50	4
ESR702 0150310S4	1.5	0.3	2.5	10	50	4
ESR702 0150312S4	1.5	0.3	2.5	12	50	4
ESR702 0150504S4	1.5	0.5	2.5	4	50	4
ESR702 0150506S4	1.5	0.5	2.5	6	50	4
ESR702 0150508S4	1.5	0.5	2.5	8	50	4
ESR702 0150510S4	1.5	0.5	2.5	10	50	4
ESR702 0150512S4	1.5	0.5	2.5	12	50	4
ESR702 0200106S4	2	0.1	3	6	50	4
ESR702 0200108	2	0.1	3	8	50	6
ESR702 0200108S4	2	0.1	3	8	50	4
ESR702 0200110S4	2	0.1	3	10	50	4

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT

EDP No.	Description (mm)						EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2		D	R	L1	L3	L2	D2
ESR702 0200112	2	0.1	3	12	50	6	ESR702 0300210	3	0.2	4.5	10	55	6
ESR702 0200112S4	2	0.1	3	12	50	4	ESR702 0300212	3	0.2	4.5	12	55	6
ESR702 0200116S4	2	0.1	3	16	50	4	ESR702 0300216	3	0.2	4.5	16	55	6
ESR702 0200120S4	2	0.1	3	20	50	4	ESR702 0300220	3	0.2	4.5	20	60	6
ESR702 0200206	2	0.2	3	6	50	6	ESR702 0300308	3	0.3	4.5	8	55	6
ESR702 0200206S4	2	0.2	3	6	50	4	ESR702 0300309	3	0.3	4.5	9	55	6
ESR702 0200208S4	2	0.2	3	8	50	4	ESR702 0300310	3	0.3	4.5	10	55	6
ESR702 0200209	2	0.2	3	9	50	6	ESR702 0300312	3	0.3	4.5	12	55	6
ESR702 0200210S4	2	0.2	3	10	50	4	ESR702 0300314	3	0.3	4.5	14	55	6
ESR702 0200212S4	2	0.2	3	12	50	4	ESR702 0300316	3	0.3	4.5	16	55	6
ESR702 0200216	2	0.2	3	16	50	6	ESR702 0300320	3	0.3	4.5	20	60	6
ESR702 0200216S4	2	0.2	3	16	50	4	ESR702 0300508	3	0.5	4.5	8	55	6
ESR702 0200220S4	2	0.2	3	20	50	4	ESR702 0300509	3	0.5	4.5	9	55	6
ESR702 0200306	2	0.3	3	6	50	6	ESR702 0300510	3	0.5	4.5	10	55	6
ESR702 0200306S4	2	0.3	3	6	50	4	ESR702 0300512	3	0.5	4.5	12	55	6
ESR702 0200308S4	2	0.3	3	8	50	4	ESR702 0300516	3	0.5	4.5	16	55	6
ESR702 0200310S4	2	0.3	3	10	50	4	ESR702 0300520	3	0.5	4.5	20	60	6
ESR702 0200312S4	2	0.3	3	12	50	4	ESR702 0301008	3	1	4.5	8	55	6
ESR702 0200316S4	2	0.3	3	16	50	4	ESR702 0301010	3	1	4.5	10	55	6
ESR702 0200320S4	2	0.3	3	20	50	4	ESR702 0301012	3	1	4.5	12	55	6
ESR702 0200506	2	0.5	3	6	50	6	ESR702 0301016	3	1	4.5	16	55	6
ESR702 0200506S4	2	0.5	3	6	50	4	ESR702 0301020	3	1	4.5	20	60	6
ESR702 0200508S4	2	0.5	3	8	50	4	ESR702 0301025	3	1	4.5	25	60	6
ESR702 0200509	2	0.5	3	9	50	6	ESR702 0400110	4	0.1	6	10	55	6
ESR702 0200510S4	2	0.5	3	10	50	4	ESR702 0400112	4	0.1	6	12	55	6
ESR702 0200512	2	0.5	3	12	50	6	ESR702 0400116	4	0.1	6	16	55	6
ESR702 0200512S4	2	0.5	3	12	50	4	ESR702 0400120	4	0.1	6	20	60	6
ESR702 0200516	2	0.5	3	16	50	6	ESR702 0400125	4	0.1	6	25	60	6
ESR702 0200516S4	2	0.5	3	16	50	4	ESR702 0400210	4	0.2	6	10	55	6
ESR702 0200520S4	2	0.5	3	20	50	4	ESR702 0400212	4	0.2	6	12	55	6
ESR702 0250208S4	2.5	0.2	3.5	8	50	4	ESR702 0400216	4	0.2	6	16	55	6
ESR702 0250210S4	2.5	0.2	3.5	10	50	4	ESR702 0400220	4	0.2	6	20	60	6
ESR702 0250212S4	2.5	0.2	3.5	12	50	4	ESR702 0400225	4	0.2	6	25	60	6
ESR702 0250216S4	2.5	0.2	3.5	16	50	4	ESR702 0400310	4	0.3	6	10	55	6
ESR702 0250308S4	2.5	0.3	3.5	8	50	4	ESR702 0400312	4	0.3	6	12	55	6
ESR702 0250310S4	2.5	0.3	3.5	10	50	4	ESR702 0400316	4	0.3	6	16	55	6
ESR702 0250312S4	2.5	0.3	3.5	12	50	4	ESR702 0400320	4	0.3	6	20	60	6
ESR702 0250316S4	2.5	0.3	3.5	16	50	4	ESR702 0400325	4	0.3	6	25	60	6
ESR702 0250508S4	2.5	0.5	3.5	8	50	4	ESR702 0400510	4	0.5	6	10	55	6
ESR702 0250510S4	2.5	0.5	3.5	10	50	4	ESR702 0400512	4	0.5	6	12	55	6
ESR702 0250512S4	2.5	0.5	3.5	12	50	4	ESR702 0400516	4	0.5	6	16	55	6
ESR702 0250516S4	2.5	0.5	3.5	16	50	4	ESR702 0400520	4	0.5	6	20	60	6
ESR702 0300108	3	0.1	4.5	8	55	6	ESR702 0400525	4	0.5	6	25	60	6
ESR702 0300110	3	0.1	4.5	10	55	6	ESR702 0400530	4	0.5	6	30	70	6
ESR702 0300112	3	0.1	4.5	12	55	6	ESR702 0401010	4	1	6	10	55	6
ESR702 0300116	3	0.1	4.5	16	55	6	ESR702 0401012	4	1	6	12	55	6
ESR702 0300120	3	0.1	4.5	20	60	6	ESR702 0401016	4	1	6	16	55	6
ESR702 0300208	3	0.2	4.5	8	55	6	ESR702 0401020	4	1	6	20	60	6
ESR702 0300209	3	0.2	4.5	9	55	6	ESR702 0401025	4	1	6	25	60	6

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

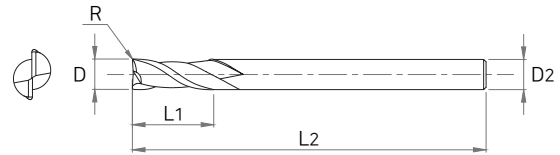
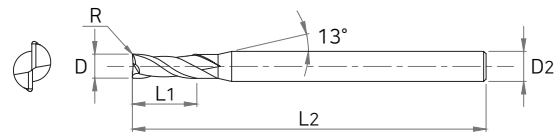
○ : GOOD ◎ : EXCELLENT

EDP No.	Description (mm)						EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2		D	R	L1	L3	L2	D2
ESR702 0401030	4	1	6	30	70	6	ESR702 0801525	8	1.5	12	25	60	8
ESR702 0500318	5	0.3	8	18	60	6	ESR702 1000232	10	0.2	15	32	70	10
ESR702 0600220	6	0.2	9	20	60	6	ESR702 1000332	10	0.3	15	32	70	10
ESR702 0600320	6	0.3	9	20	60	6	ESR702 1000532	10	0.5	15	32	70	10
ESR702 0600520	6	0.5	9	20	60	6	ESR702 1001032	10	1	15	32	70	10
ESR702 0601020	6	1	9	20	60	6	ESR702 1001532	10	1.5	15	32	70	10
ESR702 0601520	6	1.5	9	20	60	6	ESR702 1002032	10	2	15	32	70	10
ESR702 0602020	6	2	9	20	60	6	ESR702 1200338	12	0.3	18	38	80	12
ESR702 0800225	8	0.2	12	25	60	8	ESR702 1200538	12	0.5	18	38	80	12
ESR702 0800325	8	0.3	12	25	60	8	ESR702 1201038	12	1	18	38	80	12
ESR702 0800525	8	0.5	12	25	60	8	ESR702 1201538	12	1.5	18	38	80	12
ESR702 0801025	8	1	12	25	60	8	ESR702 1202038	12	2	18	38	80	12

■ Applicable working material

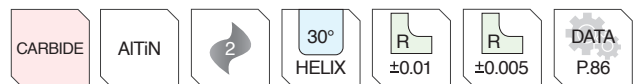
Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D		Shank Dia.
~D6	0 ~ -0.012	h5
D8 ~ 12	0 ~ -0.015	



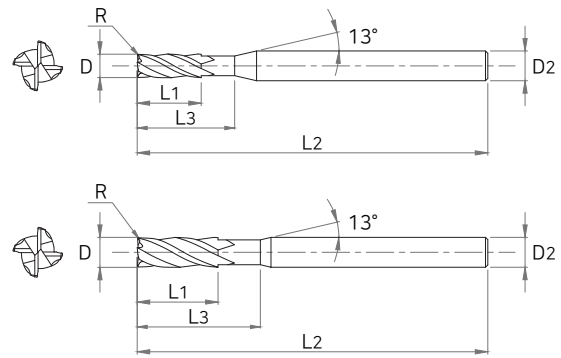
EDP No.	Description (mm)				
	D	L1	L3	L2	D2
ESR732 01001	1	0.1	2	50	6
ESR732 01002	1	0.2	2	50	6
ESR732 01003	1	0.3	2	50	6
ESR732 01501	1.5	0.1	3	50	6
ESR732 01502	1.5	0.2	3	50	6
ESR732 01503	1.5	0.3	3	50	6
ESR732 01505	1.5	0.5	3	50	6
ESR732 02001	2	0.1	5	50	6
ESR732 02002	2	0.2	5	50	6
ESR732 02003	2	0.3	5	50	6
ESR732 02005	2	0.5	5	50	6
ESR732 02501	2.5	0.1	7	60	6
ESR732 02502	2.5	0.2	7	60	6
ESR732 02503	2.5	0.3	7	60	6
ESR732 02505	2.5	0.5	7	60	6
ESR732 03001	3	0.1	8	60	6
ESR732 03002	3	0.2	8	60	6
ESR732 03003	3	0.3	8	60	6
ESR732 03005	3	0.5	8	60	6
ESR732 04001	4	0.1	10	70	6
ESR732 04002	4	0.2	10	70	6
ESR732 04003	4	0.3	10	70	6
ESR732 04005	4	0.5	10	70	6
ESR732 04010	4	1	10	70	6
ESR732 05001	5	0.1	13	80	6

EDP No.	Description (mm)				
	D	L1	L3	L2	D2
ESR732 05002	5	0.2	13	80	6
ESR732 05003	5	0.3	13	80	6
ESR732 05005	5	0.5	13	80	6
ESR732 05010	5	1	13	80	6
ESR732 06001	6	0.1	15	90	6
ESR732 06002	6	0.2	15	90	6
ESR732 06003	6	0.3	15	90	6
ESR732 06005	6	0.5	15	90	6
ESR732 06010	6	1	15	90	6
ESR732 08001	8	0.1	20	100	8
ESR732 08002	8	0.2	20	100	8
ESR732 08003	8	0.3	20	100	8
ESR732 08005	8	0.5	20	100	8
ESR732 08010	8	1	20	100	8
ESR732 08020	8	2	20	100	8
ESR732 10002	10	0.2	25	100	10
ESR732 10003	10	0.3	25	100	10
ESR732 10005	10	0.5	25	100	10
ESR732 10010	10	1	25	100	10
ESR732 10020	10	2	25	100	10
ESR732 12002	12	0.2	30	110	12
ESR732 12003	12	0.3	30	110	12
ESR732 12005	12	0.5	30	110	12
ESR732 12010	12	1	30	110	12
ESR732 12020	12	2	30	110	12

Applicable working material

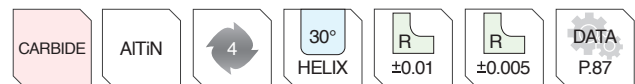
Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRC55	SKD11 HRC55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D		Shank Dia.
~D6	0 ~ -0.012	h5
D8 ~ 12	0 ~ -0.015	



EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESR704 0100103S4	1	0.1	2	3	50	4
ESR704 0100104S4	1	0.1	2	4	50	4
ESR704 0100106S4	1	0.1	2	6	50	4
ESR704 0100203S4	1	0.2	2	3	50	4
ESR704 0100204S4	1	0.2	2	4	50	4
ESR704 0100206S4	1	0.2	2	6	50	4
ESR704 0100303S4	1	0.3	2	3	50	4
ESR704 0100304S4	1	0.3	2	4	50	4
ESR704 0100306S4	1	0.3	2	6	50	4
ESR704 0150104S4	1.5	0.1	2.5	4	50	4
ESR704 0150106S4	1.5	0.1	2.5	6	50	4
ESR704 0150204S4	1.5	0.2	2.5	4	50	4
ESR704 0150206S4	1.5	0.2	2.5	6	50	4
ESR704 0150304S4	1.5	0.3	2.5	4	50	4
ESR704 0150306S4	1.5	0.3	2.5	6	50	4
ESR704 0200106S4	2	0.1	3	6	50	4
ESR704 0200108S4	2	0.1	3	8	50	4
ESR704 0200206S4	2	0.2	3	6	50	4
ESR704 0200208	2	0.2	3	8	50	6
ESR704 0200208S4	2	0.2	3	8	50	4
ESR704 0200210	2	0.2	3	10	50	6
ESR704 0200212	2	0.2	3	12	50	6
ESR704 0200306S4	2	0.3	3	6	50	4
ESR704 0200308S4	2	0.3	3	8	50	4
ESR704 0200506S4	2	0.5	3	6	50	4
ESR704 0200508S4	2	0.5	3	8	50	4
ESR704 0250106S4	2.5	0.1	3.5	6	50	4
ESR704 0300108	3	0.1	4	8	55	6
ESR704 0300110	3	0.1	4	10	55	6
ESR704 0300112	3	0.1	4	12	55	6
ESR704 0300116	3	0.1	4	16	55	6

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESR704 0300120	3	0.1	4	20	60	6
ESR704 0300208	3	0.2	4	8	55	6
ESR704 0300210	3	0.2	4	10	55	6
ESR704 0300212	3	0.2	4	12	55	6
ESR704 0300216	3	0.2	4	16	55	6
ESR704 0300220	3	0.2	4	20	60	6
ESR704 0300308	3	0.3	4	8	55	6
ESR704 0300309	3	0.3	4	9	55	6
ESR704 0300310	3	0.3	4	10	55	6
ESR704 0300312	3	0.3	4	12	55	6
ESR704 0300316	3	0.3	4	16	55	6
ESR704 0300320	3	0.3	4	20	60	6
ESR704 0300508	3	0.5	4	8	55	6
ESR704 0300509	3	0.5	4	9	55	6
ESR704 0300510	3	0.5	4	10	55	6
ESR704 0300512	3	0.5	4	12	55	6
ESR704 0300516	3	0.5	4	16	55	6
ESR704 0300520	3	0.5	4	20	60	6
ESR704 0301008	3	1	4	8	55	6
ESR704 0301010	3	1	4	10	55	6
ESR704 0301012	3	1	4	12	55	6
ESR704 0301016	3	1	4	16	55	6
ESR704 0301020	3	1	4	20	60	6
ESR704 0400110	4	0.1	6	10	55	6
ESR704 0400112	4	0.1	6	12	55	6
ESR704 0400116	4	0.1	6	16	55	6
ESR704 0400120	4	0.1	6	20	60	6
ESR704 0400125	4	0.1	6	25	60	6
ESR704 0400210	4	0.2	6	10	55	6
ESR704 0400212	4	0.2	6	12	55	6
ESR704 0400216	4	0.2	6	16	55	6

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

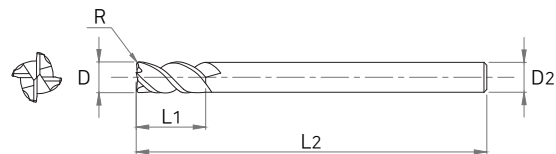
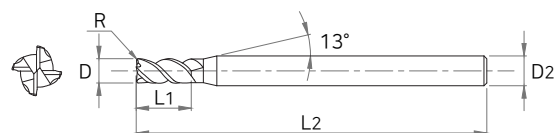
○ : GOOD ◎ : EXCELLENT

EDP No.	Description (mm)						EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2		D	R	L1	L3	L2	D2
ESR704 0400220	4	0.2	6	20	60	6	ESR704 0601020	6	1	9	20	60	6
ESR704 0400225	4	0.2	6	25	60	6	ESR704 0601520	6	1.5	9	20	60	6
ESR704 0400310	4	0.3	6	10	55	6	ESR704 0602020	6	2	9	20	60	6
ESR704 0400312	4	0.3	6	12	55	6	ESR704 0800225	8	0.2	12	25	60	8
ESR704 0400316	4	0.3	6	16	55	6	ESR704 0800325	8	0.3	12	25	60	8
ESR704 0400320	4	0.3	6	20	60	6	ESR704 0800525	8	0.5	12	25	60	8
ESR704 0400325	4	0.3	6	25	60	6	ESR704 0801025	8	1	12	25	60	8
ESR704 0400510	4	0.5	6	10	55	6	ESR704 0801525	8	1.5	12	25	60	8
ESR704 0400512	4	0.5	6	12	55	6	ESR704 0802025	8	2	12	25	60	8
ESR704 0400516	4	0.5	6	16	55	6	ESR704 1000232	10	0.2	15	32	70	10
ESR704 0400520	4	0.5	6	20	60	6	ESR704 1000332	10	0.3	15	32	70	10
ESR704 0400525	4	0.5	6	25	60	6	ESR704 1000532	10	0.5	15	32	70	10
ESR704 0401010	4	1	6	10	55	6	ESR704 1001032	10	1	15	32	70	10
ESR704 0401012	4	1	6	12	55	6	ESR704 1001532	10	1.5	15	32	70	10
ESR704 0401016	4	1	6	16	55	6	ESR704 1002032	10	2	15	32	70	10
ESR704 0401020	4	1	6	20	60	6	ESR704 1200338	12	0.3	18	38	80	12
ESR704 0401025	4	1	6	25	60	6	ESR704 1200538	12	0.5	18	38	80	12
ESR704 0600220	6	0.2	9	20	60	6	ESR704 1201038	12	1	18	38	80	12
ESR704 0600320	6	0.3	9	20	60	6	ESR704 1201538	12	1.5	18	38	80	12
ESR704 0600520	6	0.5	9	20	60	6	ESR704 1202038	12	2	18	38	80	12

■ Applicable working material

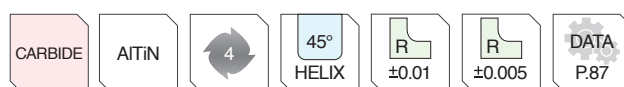
Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRC55	SKD11 HRC55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D		Shank Dia.
~D6	0 ~ -0.012	h5
D8 ~ 12	0 ~ -0.015	



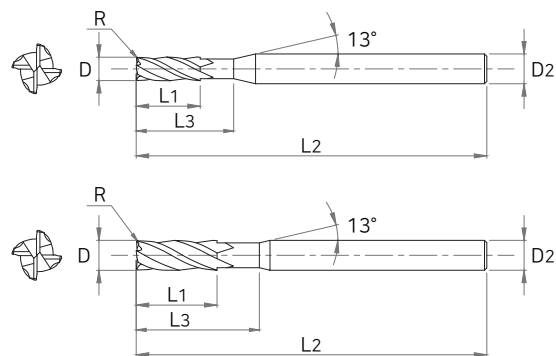
EDP No.	Description (mm)				
	D	L1	L3	L2	D2
ESR714 0303	3	0.3	8	50	6
ESR714 0305S4	3	0.5	8	50	4
ESR714 0305	3	0.5	8	50	6
ESR714 0403	4	0.3	11	50	6
ESR714 0405	4	0.5	11	50	6
ESR714 0405S4	4	0.5	11	50	4
ESR714 0410	4	1	11	50	6
ESR714 0603	6	0.3	15	60	6
ESR714 0605	6	0.5	15	60	6
ESR714 0610	6	1	15	60	6
ESR714 0803	8	0.3	20	60	8
ESR714 0805	8	0.5	20	60	8
ESR714 0810	8	1	20	60	8
ESR714 0815	8	1.5	20	60	8
ESR714 0820	8	2	20	60	8

EDP No.	Description (mm)				
	D	L1	L3	L2	D2
ESR714 1003	10	0.3	25	70	10
ESR714 1005	10	0.5	25	70	10
ESR714 1010	10	1	25	70	10
ESR714 1015	10	1.5	25	70	10
ESR714 1020	10	2	25	70	10
ESR714 1025	10	2.5	25	70	10
ESR714 1030	10	3	25	70	10
ESR714 1203	12	0.3	30	80	12
ESR714 1205	12	0.5	30	80	12
ESR714 1210	12	1	30	80	12
ESR714 1215	12	1.5	30	80	12
ESR714 1220	12	2	30	80	12
ESR714 1225	12	2.5	30	80	12
ESR714 1230	12	3	30	80	12

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

	D	Shank Dia.
~D6	0 ~ -0.012	h5
D8 ~ 12	0 ~ -0.015	

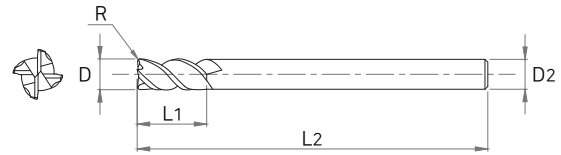
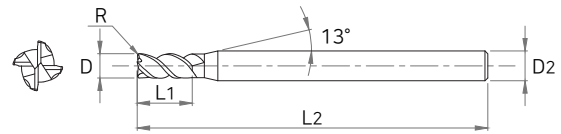


EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESR724 0600520	6	0.5	9	20	90	6
ESR724 0601020	6	1	9	20	90	6
ESR724 0800525	8	0.5	12	25	100	8
ESR724 0801025	8	1	12	25	100	8
ESR724 1000532	10	0.5	15	32	100	10
ESR724 1001032	10	1	15	32	100	10
ESR724 1002032	10	2	15	32	100	10
ESR724 1200538	12	0.5	18	38	110	12
ESR724 1201038	12	1	18	38	110	12
ESR724 1202038	12	2	18	38	110	12

Applicable working material

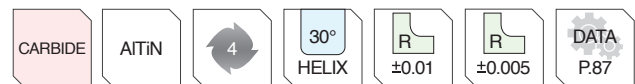
Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRC55	SKD11 HRC55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D		Shank Dia.
~D6	0 ~ -0.012	h5
D8 ~ 12	0 ~ -0.015	



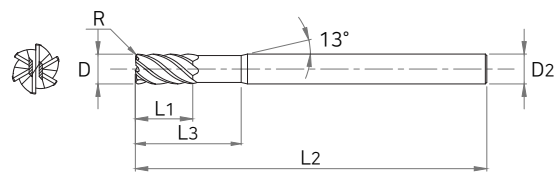
EDP No.	Description (mm)				
	D	R	L1	L2	D2
ESR734 01001	1	0.1	2	50	6
ESR734 01002	1	0.2	2	50	6
ESR734 01003	1	0.3	2	50	6
ESR734 01501	1.5	0.1	3	50	6
ESR734 01502	1.5	0.2	3	50	6
ESR734 01503	1.5	0.3	3	50	6
ESR734 01505	1.5	0.5	3	50	6
ESR734 02001	2	0.1	5	50	6
ESR734 02002	2	0.2	5	50	6
ESR734 02003	2	0.3	5	50	6
ESR734 02005	2	0.5	5	50	6
ESR734 02501	2.5	0.1	7	60	6
ESR734 02502	2.5	0.2	7	60	6
ESR734 02503	2.5	0.3	7	60	6
ESR734 02505	2.5	0.5	7	60	6
ESR734 03001	3	0.1	8	60	6
ESR734 03002	3	0.2	8	60	6
ESR734 03003	3	0.3	8	60	6
ESR734 03005	3	0.5	8	60	6
ESR734 04001	4	0.1	10	70	6
ESR734 04002	4	0.2	10	70	6
ESR734 04002S4	4	0.2	10	70	4
ESR734 04003	4	0.3	10	70	6
ESR734 04005	4	0.5	10	70	6
ESR734 04005S4	4	0.5	10	70	4
ESR734 04010	4	1	10	70	6
ESR734 05001	5	0.1	13	80	6

EDP No.	Description (mm)				
	D	R	L1	L2	D2
ESR734 05002	5	0.2	13	80	6
ESR734 05003	5	0.3	13	80	6
ESR734 05005	5	0.5	13	80	6
ESR734 05010	5	1	13	80	6
ESR734 06001	6	0.1	15	90	6
ESR734 06002	6	0.2	15	90	6
ESR734 06003	6	0.3	15	90	6
ESR734 06005	6	0.5	15	90	6
ESR734 06010	6	1	15	90	6
ESR734 08001	8	0.1	20	100	8
ESR734 08002	8	0.2	20	100	8
ESR734 08003	8	0.3	20	100	8
ESR734 08005	8	0.5	20	100	8
ESR734 08010	8	1	20	100	8
ESR734 08020	8	2	20	100	8
ESR734 10002	10	0.2	25	100	10
ESR734 10003	10	0.3	25	100	10
ESR734 10005	10	0.5	25	100	10
ESR734 10010	10	1	25	100	10
ESR734 10020	10	2	25	100	10
ESR734 12002	12	0.2	30	110	12
ESR734 12003	12	0.3	30	110	12
ESR734 12005	12	0.5	30	110	12
ESR734 12010	12	1	30	110	12
ESR734 12010L	12	1	30	150	12
ESR734 12020	12	2	30	110	12

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D		Shank Dia.
~D6	0 ~ -0.012	h5
D8 ~ 12	0 ~ -0.015	

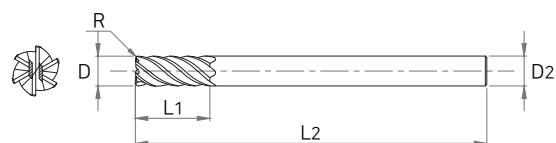


EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESR706 0600314	6	0.3	6	14	50	6
ESR706 0600514	6	0.5	6	14	50	6
ESR706 0800524	8	0.5	8	24	60	8
ESR706 0801024	8	1	8	24	60	8
ESR706 1000530	10	0.5	10	30	70	10
ESR706 1001030	10	1	10	30	70	10
ESR706 1200530	12	0.5	12	30	75	12
ESR706 1201030	12	1	12	30	75	12

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



■ Tolerance

D		Shank Dia.
~D6	0 ~ -0.012	h5
D8 ~ 12	0 ~ -0.015	

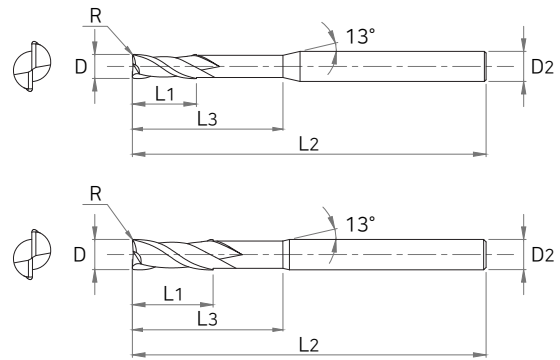


EDP No.	Description (mm)				
	D	R	L1	L2	D2
ESR736 06005	6	0.5	15	90	6
ESR736 06010	6	1	15	90	6
ESR736 08005	8	0.5	20	100	8
ESR736 08010	8	1	20	100	8
ESR736 10005	10	0.5	25	100	10
ESR736 10010	10	1	25	100	10
ESR736 12005	12	0.5	30	110	12
ESR736 12010	12	1	30	110	12

■ Applicable working material

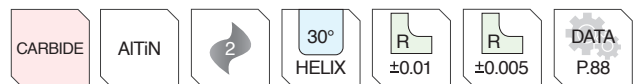
Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D		Shank Dia.
~D6	0 ~ -0.012	h5
D8 ~ 16	0 ~ -0.015	



EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRR712 002002005	0.2	0.02	0.2	0.5	40	4
ESRR712 00200201	0.2	0.02	0.2	1	40	4
ESRR712 002002015	0.2	0.02	0.2	1.5	40	4
ESRR712 002005005	0.2	0.05	0.2	0.5	40	4
ESRR712 00200501	0.2	0.05	0.2	1	40	4
ESRR712 002005015	0.2	0.05	0.2	1.5	40	4
ESRR712 00300201	0.3	0.02	0.3	1	40	4
ESRR712 00300202	0.3	0.02	0.3	2	40	4
ESRR712 00300203	0.3	0.02	0.3	3	40	4
ESRR712 00300501	0.3	0.05	0.3	1	40	4
ESRR712 00300502	0.3	0.05	0.3	2	40	4
ESRR712 00300503	0.3	0.05	0.3	3	40	4
ESRR712 00400201	0.4	0.02	0.4	1	40	4
ESRR712 00400202	0.4	0.02	0.4	2	40	4
ESRR712 00400203	0.4	0.02	0.4	3	40	4
ESRR712 00400204	0.4	0.02	0.4	4	40	4
ESRR712 00400501	0.4	0.05	0.4	1	40	4
ESRR712 00400502	0.4	0.05	0.4	2	40	4
ESRR712 00400503	0.4	0.05	0.4	3	40	4
ESRR712 00400504	0.4	0.05	0.4	4	40	4
ESRR712 00401001	0.4	0.1	0.4	1	40	4
ESRR712 004010015	0.4	0.1	0.4	1.5	40	4
ESRR712 00401002	0.4	0.1	0.4	2	40	4
ESRR712 00401003	0.4	0.1	0.4	3	40	4
ESRR712 00401004	0.4	0.1	0.4	4	40	4
ESRR712 00500201	0.5	0.02	0.5	1	45	4
ESRR712 005002015	0.5	0.02	0.5	1.5	45	4
ESRR712 00500202	0.5	0.02	0.5	2	45	4
ESRR712 005002025	0.5	0.02	0.5	2.5	45	4
ESRR712 00500203	0.5	0.02	0.5	3	45	4
ESRR712 00500204	0.5	0.02	0.5	4	45	4

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRR712 00500205	0.5	0.02	0.5	5	45	4
ESRR712 00500206	0.5	0.02	0.5	6	45	4
ESRR712 00500208	0.5	0.02	0.5	8	45	4
ESRR712 00500210	0.5	0.02	0.5	10	45	4
ESRR712 00500501	0.5	0.05	0.5	1	45	4
ESRR712 005005015	0.5	0.05	0.5	1.5	45	4
ESRR712 00500502	0.5	0.05	0.5	2	45	4
ESRR712 005005025	0.5	0.05	0.5	2.5	45	4
ESRR712 00500503	0.5	0.05	0.5	3	45	4
ESRR712 00500504	0.5	0.05	0.5	4	45	4
ESRR712 00500505	0.5	0.05	0.5	5	45	4
ESRR712 00500506	0.5	0.05	0.5	6	45	4
ESRR712 00500508	0.5	0.05	0.5	8	45	4
ESRR712 00500510	0.5	0.05	0.5	10	45	4
ESRR712 00501001	0.5	0.1	0.5	1	45	4
ESRR712 005010015	0.5	0.1	0.5	1.5	45	4
ESRR712 00501002	0.5	0.1	0.5	2	45	4
ESRR712 005010025	0.5	0.1	0.5	2.5	45	4
ESRR712 00501003	0.5	0.1	0.5	3	45	4
ESRR712 00501004	0.5	0.1	0.5	4	45	4
ESRR712 00501005	0.5	0.1	0.5	5	45	4
ESRR712 00501006	0.5	0.1	0.5	6	45	4
ESRR712 00501008	0.5	0.1	0.5	8	45	4
ESRR712 00501010	0.5	0.1	0.5	10	45	4
ESRR712 00600202	0.6	0.02	0.6	2	45	4
ESRR712 00600203	0.6	0.02	0.6	3	45	4
ESRR712 00600204	0.6	0.02	0.6	4	45	4
ESRR712 00600206	0.6	0.02	0.6	6	45	4
ESRR712 00600208	0.6	0.02	0.6	8	45	4
ESRR712 00600210	0.6	0.02	0.6	10	45	4
ESRR712 00600212	0.6	0.02	0.6	12	50	4

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRR712 00600502	0.6	0.05	0.6	2	45	4
ESRR712 00600503	0.6	0.05	0.6	3	45	4
ESRR712 00600504	0.6	0.05	0.6	4	45	4
ESRR712 00600506	0.6	0.05	0.6	6	45	4
ESRR712 00600508	0.6	0.05	0.6	8	45	4
ESRR712 00600510	0.6	0.05	0.6	10	45	4
ESRR712 00600512	0.6	0.05	0.6	12	50	4
ESRR712 00601002	0.6	0.1	0.6	2	45	4
ESRR712 00601003	0.6	0.1	0.6	3	45	4
ESRR712 00601004	0.6	0.1	0.6	4	45	4
ESRR712 00601006	0.6	0.1	0.6	6	45	4
ESRR712 00601008	0.6	0.1	0.6	8	45	4
ESRR712 00601010	0.6	0.1	0.6	10	45	4
ESRR712 00601012	0.6	0.1	0.6	12	50	4
ESRR712 00701002	0.7	0.1	0.7	2	45	4
ESRR712 00701004	0.7	0.1	0.7	4	45	4
ESRR712 00701006	0.7	0.1	0.7	6	45	4
ESRR712 00701008	0.7	0.1	0.7	8	45	4
ESRR712 00701010	0.7	0.1	0.7	10	45	4
ESRR712 00800202	0.8	0.02	0.8	2	45	4
ESRR712 00800204	0.8	0.02	0.8	4	45	4
ESRR712 00800206	0.8	0.02	0.8	6	45	4
ESRR712 00800208	0.8	0.02	0.8	8	45	4
ESRR712 00800210	0.8	0.02	0.8	10	45	4
ESRR712 00800212	0.8	0.02	0.8	12	50	4
ESRR712 00800502	0.8	0.05	0.8	2	45	4
ESRR712 00800504	0.8	0.05	0.8	4	45	4
ESRR712 00800506	0.8	0.05	0.8	6	45	4
ESRR712 00800508	0.8	0.05	0.8	8	45	4
ESRR712 00800510	0.8	0.05	0.8	10	45	4
ESRR712 00800512	0.8	0.05	0.8	12	50	4
ESRR712 00801002	0.8	0.1	0.8	2	45	4
ESRR712 00801004	0.8	0.1	0.8	4	45	4
ESRR712 00801006	0.8	0.1	0.8	6	45	4
ESRR712 00801008	0.8	0.1	0.8	8	45	4
ESRR712 00801010	0.8	0.1	0.8	10	45	4
ESRR712 00801012	0.8	0.1	0.8	12	50	4
ESRR712 00802002	0.8	0.2	0.8	2	45	4
ESRR712 00802004	0.8	0.2	0.8	4	45	4
ESRR712 00802006	0.8	0.2	0.8	6	45	4
ESRR712 00802008	0.8	0.2	0.8	8	45	4
ESRR712 00802010	0.8	0.2	0.8	10	45	4
ESRR712 00802012	0.8	0.2	0.8	12	50	4
ESRR712 01000204	1	0.02	1	4	45	4
ESRR712 01000206	1	0.02	1	6	45	4
ESRR712 01000208	1	0.02	1	8	45	4
ESRR712 01000210	1	0.02	1	10	50	4
ESRR712 01000212	1	0.02	1	12	50	4
ESRR712 01000214	1	0.02	1	14	50	4

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRR712 01000216	1	0.02	1	16	50	4
ESRR712 01000220	1	0.02	1	20	50	4
ESRR712 01000504	1	0.05	1	4	45	4
ESRR712 01000506	1	0.05	1	6	45	4
ESRR712 01000508	1	0.05	1	8	45	4
ESRR712 01000510	1	0.05	1	10	50	4
ESRR712 01000512	1	0.05	1	12	50	4
ESRR712 01000514	1	0.05	1	14	50	4
ESRR712 01000516	1	0.05	1	16	50	4
ESRR712 01000520	1	0.05	1	20	50	4
ESRR712 01001004	1	0.1	1	4	45	4
ESRR712 01001006	1	0.1	1	6	45	4
ESRR712 01001008	1	0.1	1	8	45	4
ESRR712 01001010	1	0.1	1	10	50	4
ESRR712 01001012	1	0.1	1	12	50	4
ESRR712 01001014	1	0.1	1	14	50	4
ESRR712 01001016	1	0.1	1	16	50	4
ESRR712 01001020	1	0.1	1	20	50	4
ESRR712 01002004	1	0.2	1	4	45	4
ESRR712 01002006	1	0.2	1	6	45	4
ESRR712 01002008	1	0.2	1	8	45	4
ESRR712 01002010	1	0.2	1	10	50	4
ESRR712 01002012	1	0.2	1	12	50	4
ESRR712 01002014	1	0.2	1	14	50	4
ESRR712 01002016	1	0.2	1	16	50	4
ESRR712 01002020	1	0.2	1	20	50	4
ESRR712 01003004	1	0.3	1	4	45	4
ESRR712 01003006	1	0.3	1	6	45	4
ESRR712 01003008	1	0.3	1	8	45	4
ESRR712 01003010	1	0.3	1	10	50	4
ESRR712 01003012	1	0.3	1	12	50	4
ESRR712 01003014	1	0.3	1	14	50	4
ESRR712 01003016	1	0.3	1	16	50	4
ESRR712 01003020	1	0.3	1	20	50	4
ESRR712 01200204	1.2	0.02	1.2	4	45	4
ESRR712 01200206	1.2	0.02	1.2	6	45	4
ESRR712 01200208	1.2	0.02	1.2	8	45	4
ESRR712 01200210	1.2	0.02	1.2	10	50	4
ESRR712 01200212	1.2	0.02	1.2	12	50	4
ESRR712 01200214	1.2	0.02	1.2	14	50	4
ESRR712 01200216	1.2	0.02	1.2	16	50	4
ESRR712 01200220	1.2	0.02	1.2	20	50	4
ESRR712 01200504	1.2	0.05	1.2	4	45	4
ESRR712 01200506	1.2	0.05	1.2	6	45	4
ESRR712 01200508	1.2	0.05	1.2	8	45	4
ESRR712 01200510	1.2	0.05	1.2	10	50	4
ESRR712 01200512	1.2	0.05	1.2	12	50	4
ESRR712 01200514	1.2	0.05	1.2	14	50	4
ESRR712 01200516	1.2	0.05	1.2	16	50	4

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRR712 01200520	1.2	0.05	1.2	20	50	4
ESRR712 01201004	1.2	0.1	1.2	4	45	4
ESRR712 01201006	1.2	0.1	1.2	6	45	4
ESRR712 01201008	1.2	0.1	1.2	8	45	4
ESRR712 01201010	1.2	0.1	1.2	10	50	4
ESRR712 01201012	1.2	0.1	1.2	12	50	4
ESRR712 01201014	1.2	0.1	1.2	14	50	4
ESRR712 01201016	1.2	0.1	1.2	16	50	4
ESRR712 01201020	1.2	0.1	1.2	20	50	4
ESRR712 01202004	1.2	0.2	1.2	4	45	4
ESRR712 01202006	1.2	0.2	1.2	6	45	4
ESRR712 01202008	1.2	0.2	1.2	8	45	4
ESRR712 01202010	1.2	0.2	1.2	10	50	4
ESRR712 01202012	1.2	0.2	1.2	12	50	4
ESRR712 01202014	1.2	0.2	1.2	14	50	4
ESRR712 01202016	1.2	0.2	1.2	16	50	4
ESRR712 01202020	1.2	0.2	1.2	20	50	4
ESRR712 01203004	1.2	0.3	1.2	4	45	4
ESRR712 01203006	1.2	0.3	1.2	6	45	4
ESRR712 01203008	1.2	0.3	1.2	8	45	4
ESRR712 01203010	1.2	0.3	1.2	10	50	4
ESRR712 01203012	1.2	0.3	1.2	12	50	4
ESRR712 01203014	1.2	0.3	1.2	14	50	4
ESRR712 01203016	1.2	0.3	1.2	16	50	4
ESRR712 01203020	1.2	0.3	1.2	20	50	4
ESRR712 01500204	1.5	0.02	1.5	4	45	4
ESRR712 01500206	1.5	0.02	1.5	6	45	4
ESRR712 01500208	1.5	0.02	1.5	8	45	4
ESRR712 01500210	1.5	0.02	1.5	10	50	4
ESRR712 01500212	1.5	0.02	1.5	12	50	4
ESRR712 01500214	1.5	0.02	1.5	14	50	4
ESRR712 01500216	1.5	0.02	1.5	16	50	4
ESRR712 01500220	1.5	0.02	1.5	20	50	4
ESRR712 01500504	1.5	0.05	1.5	4	45	4
ESRR712 01500506	1.5	0.05	1.5	6	45	4
ESRR712 01500508	1.5	0.05	1.5	8	45	4
ESRR712 01500510	1.5	0.05	1.5	10	50	4
ESRR712 01500512	1.5	0.05	1.5	12	50	4
ESRR712 01500514	1.5	0.05	1.5	14	50	4
ESRR712 01500516	1.5	0.05	1.5	16	50	4
ESRR712 01500520	1.5	0.05	1.5	20	50	4
ESRR712 01501004	1.5	0.1	1.5	4	45	4
ESRR712 01501006	1.5	0.1	1.5	6	45	4
ESRR712 01501008	1.5	0.1	1.5	8	45	4
ESRR712 01501010	1.5	0.1	1.5	10	50	4
ESRR712 01501012	1.5	0.1	1.5	12	50	4
ESRR712 01501014	1.5	0.1	1.5	14	50	4
ESRR712 01501016	1.5	0.1	1.5	16	50	4
ESRR712 01501020	1.5	0.1	1.5	20	50	4

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRR712 01502004	1.5	0.2	1.5	4	45	4
ESRR712 01502006	1.5	0.2	1.5	6	45	4
ESRR712 01502008	1.5	0.2	1.5	8	45	4
ESRR712 01502010	1.5	0.2	1.5	10	50	4
ESRR712 01502012	1.5	0.2	1.5	12	50	4
ESRR712 01502014	1.5	0.2	1.5	14	50	4
ESRR712 01502016	1.5	0.2	1.5	16	50	4
ESRR712 01502020	1.5	0.2	1.5	20	50	4
ESRR712 01503004	1.5	0.3	1.5	4	45	4
ESRR712 01503006	1.5	0.3	1.5	6	45	4
ESRR712 01503008	1.5	0.3	1.5	8	45	4
ESRR712 01503010	1.5	0.3	1.5	10	50	4
ESRR712 01503012	1.5	0.3	1.5	12	50	4
ESRR712 01503014	1.5	0.3	1.5	14	50	4
ESRR712 01503016	1.5	0.3	1.5	16	50	4
ESRR712 01503020	1.5	0.3	1.5	20	50	4
ESRR712 01505004	1.5	0.5	1.5	4	45	4
ESRR712 01505006	1.5	0.5	1.5	6	45	4
ESRR712 01505008	1.5	0.5	1.5	8	45	4
ESRR712 01505010	1.5	0.5	1.5	10	50	4
ESRR712 01505012	1.5	0.5	1.5	12	50	4
ESRR712 01505014	1.5	0.5	1.5	14	50	4
ESRR712 01505016	1.5	0.5	1.5	16	50	4
ESRR712 01505020	1.5	0.5	1.5	20	50	4
ESRR712 02000206	2	0.02	2	6	45	4
ESRR712 02000208	2	0.02	2	8	45	4
ESRR712 02000210	2	0.02	2	10	50	4
ESRR712 02000212	2	0.02	2	12	50	4
ESRR712 02000214	2	0.02	2	14	50	4
ESRR712 02000216	2	0.02	2	16	50	4
ESRR712 02000220	2	0.02	2	20	50	4
ESRR712 02000225	2	0.02	2	25	60	4
ESRR712 02000506	2	0.05	2	6	45	4
ESRR712 02000508	2	0.05	2	8	45	4
ESRR712 02000510	2	0.05	2	10	50	4
ESRR712 02000512	2	0.05	2	12	50	4
ESRR712 02000514	2	0.05	2	14	50	4
ESRR712 02000516	2	0.05	2	16	50	4
ESRR712 02000520	2	0.05	2	20	50	4
ESRR712 02000525	2	0.05	2	25	60	4
ESRR712 02001006	2	0.1	2	6	45	4
ESRR712 02001008	2	0.1	2	8	45	4
ESRR712 02001010	2	0.1	2	10	50	4
ESRR712 02001012	2	0.1	2	12	50	4
ESRR712 02001014	2	0.1	2	14	50	4
ESRR712 02001016	2	0.1	2	16	50	4
ESRR712 02001020	2	0.1	2	20	50	4
ESRR712 02001025	2	0.1	2	25	60	4
ESRR712 02001030	2	0.1	2	30	70	4

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRR712 02002006	2	0.2	2	6	45	4
ESRR712 02002008	2	0.2	2	8	45	4
ESRR712 02002010	2	0.2	2	10	50	4
ESRR712 02002012	2	0.2	2	12	50	4
ESRR712 02002014	2	0.2	2	14	50	4
ESRR712 02002016	2	0.2	2	16	50	4
ESRR712 02002020	2	0.2	2	20	50	4
ESRR712 02002025	2	0.2	2	25	60	4
ESRR712 02002030	2	0.2	2	30	70	4
ESRR712 02003006	2	0.3	2	6	45	4
ESRR712 02003008	2	0.3	2	8	45	4
ESRR712 02003010	2	0.3	2	10	50	4
ESRR712 02003012	2	0.3	2	12	50	4
ESRR712 02003014	2	0.3	2	14	50	4
ESRR712 02003016	2	0.3	2	16	50	4
ESRR712 02003020	2	0.3	2	20	50	4
ESRR712 02003025	2	0.3	2	25	60	4
ESRR712 02003030	2	0.3	2	30	70	4
ESRR712 02005006	2	0.5	2	6	45	4
ESRR712 02005008	2	0.5	2	8	45	4
ESRR712 02005010	2	0.5	2	10	50	4
ESRR712 02005012	2	0.5	2	12	50	4
ESRR712 02005014	2	0.5	2	14	50	4
ESRR712 02005016	2	0.5	2	16	50	4
ESRR712 02005020	2	0.5	2	20	50	4
ESRR712 02005025	2	0.5	2	25	60	4
ESRR712 02005030	2	0.5	2	30	70	4
ESRR712 02501010	2.5	0.1	2.5	10	50	4
ESRR712 02501016	2.5	0.1	2.5	16	50	4
ESRR712 02501020	2.5	0.1	2.5	20	50	4
ESRR712 02501025	2.5	0.1	2.5	25	60	4
ESRR712 02501030	2.5	0.1	2.5	30	70	4
ESRR712 02502010	2.5	0.2	2.5	10	50	4
ESRR712 02502016	2.5	0.2	2.5	16	50	4
ESRR712 02502020	2.5	0.2	2.5	20	50	4
ESRR712 02503010	2.5	0.3	2.5	10	50	4
ESRR712 02503016	2.5	0.3	2.5	16	50	4
ESRR712 02503020	2.5	0.3	2.5	20	50	4
ESRR712 02505010	2.5	0.5	2.5	10	50	4
ESRR712 02505016	2.5	0.5	2.5	16	50	4
ESRR712 02505020	2.5	0.5	2.5	20	50	4
ESRR712 03001010	3	0.1	3	10	50	6
ESRR712 03001012	3	0.1	3	12	50	6
ESRR712 03001016	3	0.1	3	16	55	6
ESRR712 03001020	3	0.1	3	20	60	6
ESRR712 03001025	3	0.1	3	25	65	6
ESRR712 03001030	3	0.1	3	30	70	6
ESRR712 03001035	3	0.1	3	35	75	6
ESRR712 03001035	3	0.1	3	35	75	6

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRR712 03001040	3	0.1	3	40	80	6
ESRR712 03002010	3	0.2	3	10	50	6
ESRR712 03002012	3	0.2	3	12	50	6
ESRR712 03002016	3	0.2	3	16	55	6
ESRR712 03002020	3	0.2	3	20	60	6
ESRR712 03002025	3	0.2	3	25	65	6
ESRR712 03002030	3	0.2	3	30	70	6
ESRR712 03002035	3	0.2	3	35	75	6
ESRR712 03002040	3	0.2	3	40	80	6
ESRR712 03003010	3	0.3	3	10	50	6
ESRR712 03003012	3	0.3	3	12	50	6
ESRR712 03003016	3	0.3	3	16	55	6
ESRR712 03003020	3	0.3	3	20	60	6
ESRR712 03003025	3	0.3	3	25	65	6
ESRR712 03003030	3	0.3	3	30	70	6
ESRR712 03003035	3	0.3	3	35	75	6
ESRR712 03003040	3	0.3	3	40	80	6
ESRR712 03005010	3	0.5	3	10	50	6
ESRR712 03005012	3	0.5	3	12	50	6
ESRR712 03005016	3	0.5	3	16	55	6
ESRR712 03005020	3	0.5	3	20	60	6
ESRR712 03005025	3	0.5	3	25	65	6
ESRR712 03005030	3	0.5	3	30	70	6
ESRR712 03005035	3	0.5	3	35	75	6
ESRR712 03005040	3	0.5	3	40	80	6
ESRR712 03010010	3	1	3	10	50	6
ESRR712 03010012	3	1	3	12	50	6
ESRR712 03010016	3	1	3	16	55	6
ESRR712 03010020	3	1	3	20	60	6
ESRR712 03010025	3	1	3	25	65	6
ESRR712 03010030	3	1	3	30	70	6
ESRR712 03010035	3	1	3	35	75	6
ESRR712 03010040	3	1	3	40	80	6
ESRR712 04001012	4	0.1	4	12	50	6
ESRR712 04001016	4	0.1	4	16	55	6
ESRR712 04001020	4	0.1	4	20	60	6
ESRR712 04001025	4	0.1	4	25	65	6
ESRR712 04001030	4	0.1	4	30	70	6
ESRR712 04001035	4	0.1	4	35	75	6
ESRR712 04001040	4	0.1	4	40	80	6
ESRR712 04002012	4	0.2	4	12	50	6
ESRR712 04002016	4	0.2	4	16	55	6
ESRR712 04002020	4	0.2	4	20	60	6
ESRR712 04002025	4	0.2	4	25	65	6
ESRR712 04002030	4	0.2	4	30	70	6
ESRR712 04002035	4	0.2	4	35	75	6
ESRR712 04002040	4	0.2	4	40	80	6
ESRR712 04003012	4	0.3	4	12	50	6
ESRR712 04003016	4	0.3	4	16	55	6

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT

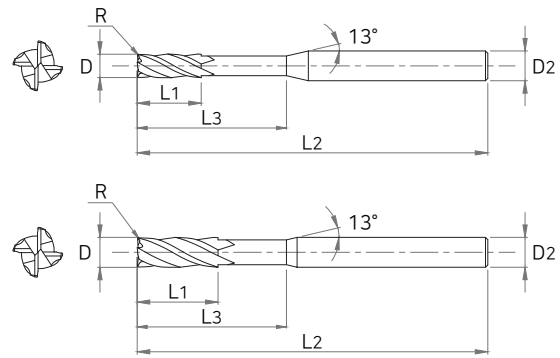
EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRR712 04003020	4	0.3	4	20	60	6
ESRR712 04003025	4	0.3	4	25	65	6
ESRR712 04003030	4	0.3	4	30	70	6
ESRR712 04003035	4	0.3	4	35	75	6
ESRR712 04003040	4	0.3	4	40	80	6
ESRR712 04005012	4	0.5	4	12	50	6
ESRR712 04005016	4	0.5	4	16	55	6
ESRR712 04005020	4	0.5	4	20	60	6
ESRR712 04005025	4	0.5	4	25	65	6
ESRR712 04005030	4	0.5	4	30	70	6
ESRR712 04005035	4	0.5	4	35	75	6
ESRR712 04005040	4	0.5	4	40	80	6
ESRR712 04010012	4	1	4	12	50	6
ESRR712 04010016	4	1	4	16	55	6
ESRR712 04010020	4	1	4	20	60	6
ESRR712 04010025	4	1	4	25	65	6
ESRR712 04010030	4	1	4	30	70	6
ESRR712 04010035	4	1	4	35	75	6
ESRR712 04010040	4	1	4	40	80	6
ESRR712 05002015	5	0.2	6	15	60	6
ESRR712 05002025	5	0.2	6	25	70	6
ESRR712 05002030	5	0.2	6	30	70	6
ESRR712 05002040	5	0.2	6	40	80	6
ESRR712 05005015	5	0.5	6	15	60	6
ESRR712 05005025	5	0.5	6	25	70	6
ESRR712 05005030	5	0.5	6	30	70	6
ESRR712 05005040	5	0.5	6	40	80	6
ESRR712 05010015	5	1	6	15	60	6
ESRR712 05010025	5	1	6	25	70	6
ESRR712 05010030	5	1	6	30	70	6
ESRR712 05010040	5	1	6	40	80	6
ESRR712 06001020	6	0.1	7	20	60	6

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRR712 06001040	6	0.1	7	40	80	6
ESRR712 06002020	6	0.2	7	20	60	6
ESRR712 06002040	6	0.2	7	40	80	6
ESRR712 06003020	6	0.3	7	20	60	6
ESRR712 06003040	6	0.3	7	40	80	6
ESRR712 06005020	6	0.5	7	20	60	6
ESRR712 06005040	6	0.5	7	40	80	6
ESRR712 06010020	6	1	7	20	60	6
ESRR712 06010040	6	1	7	40	80	6
ESRR712 06015020	6	1.5	7	20	60	6
ESRR712 06015040	6	1.5	7	40	80	6
ESRR712 08002022	8	0.2	9	22	65	8
ESRR712 08003022	8	0.3	9	22	65	8
ESRR712 08005022	8	0.5	9	22	65	8
ESRR712 08010022	8	1	9	22	65	8
ESRR712 08015022	8	1.5	9	22	65	8
ESRR712 10002024	10	0.2	11	24	70	10
ESRR712 10003024	10	0.3	11	24	70	10
ESRR712 10005024	10	0.5	11	24	70	10
ESRR712 10010024	10	1	11	24	70	10
ESRR712 10015024	10	1.5	11	24	70	10
ESRR712 10020024	10	2	11	24	70	10
ESRR712 12002026	12	0.2	13	26	80	12
ESRR712 12003026	12	0.3	13	26	80	12
ESRR712 12005026	12	0.5	13	26	80	12
ESRR712 12010026	12	1	13	26	80	12
ESRR712 12015026	12	1.5	13	26	80	12
ESRR712 12020026	12	2	13	26	80	12
ESRR712 12030026	12	3	13	26	80	12
ESRR712 16005035	16	0.5	20	35	110	16
ESRR712 16010035	16	1	20	35	110	16

■ Applicable working material

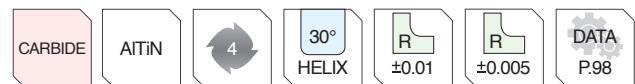
Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRC55	SKD11 HRC55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D		Shank Dia.
~D6	0 ~ -0.012	h5
D8 ~ 20	0 ~ -0.015	



EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRR714 00500502	0.5	0.05	0.5	2	45	4
ESRR714 00500504	0.5	0.05	0.5	4	45	4
ESRR714 00500506	0.5	0.05	0.5	6	45	4
ESRR714 00500508	0.5	0.05	0.5	8	45	4
ESRR714 00501002	0.5	0.1	0.5	2	45	4
ESRR714 00501004	0.5	0.1	0.5	4	45	4
ESRR714 00501006	0.5	0.1	0.5	6	45	4
ESRR714 00501008	0.5	0.1	0.5	8	45	4
ESRR714 00600502	0.6	0.05	0.6	2	45	4
ESRR714 00600504	0.6	0.05	0.6	4	45	4
ESRR714 00600506	0.6	0.05	0.6	6	45	4
ESRR714 00600508	0.6	0.05	0.6	8	45	4
ESRR714 00601002	0.6	0.1	0.6	2	45	4
ESRR714 00601004	0.6	0.1	0.6	4	45	4
ESRR714 00601006	0.6	0.1	0.6	6	45	4
ESRR714 00601008	0.6	0.1	0.6	8	45	4
ESRR714 00700502	0.7	0.05	0.7	2	45	4
ESRR714 00700504	0.7	0.05	0.7	4	45	4
ESRR714 00700506	0.7	0.05	0.7	6	45	4
ESRR714 00700508	0.7	0.05	0.7	8	45	4
ESRR714 00701002	0.7	0.1	0.7	2	45	4
ESRR714 00701004	0.7	0.1	0.7	4	45	4
ESRR714 00701006	0.7	0.1	0.7	6	45	4
ESRR714 00701008	0.7	0.1	0.7	8	45	4
ESRR714 00800202	0.8	0.02	0.8	2	45	4
ESRR714 00800204	0.8	0.02	0.8	4	45	4
ESRR714 00800206	0.8	0.02	0.8	6	45	4
ESRR714 00800208	0.8	0.02	0.8	8	45	4
ESRR714 00800210	0.8	0.02	0.8	10	45	4
ESRR714 00800212	0.8	0.02	0.8	12	50	4
ESRR714 00800502	0.8	0.05	0.8	2	45	4

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRR714 00800504	0.8	0.05	0.8	4	45	4
ESRR714 00800506	0.8	0.05	0.8	6	45	4
ESRR714 00800508	0.8	0.05	0.8	8	45	4
ESRR714 00800510	0.8	0.05	0.8	10	45	4
ESRR714 00800512	0.8	0.05	0.8	12	50	4
ESRR714 00801002	0.8	0.1	0.8	2	45	4
ESRR714 00801004	0.8	0.1	0.8	4	45	4
ESRR714 00801006	0.8	0.1	0.8	6	45	4
ESRR714 00801008	0.8	0.1	0.8	8	45	4
ESRR714 00801010	0.8	0.1	0.8	10	45	4
ESRR714 00801012	0.8	0.1	0.8	12	50	4
ESRR714 01000204	1	0.02	1	4	45	4
ESRR714 01000206	1	0.02	1	6	45	4
ESRR714 01000208	1	0.02	1	8	45	4
ESRR714 01000210	1	0.02	1	10	50	4
ESRR714 01000212	1	0.02	1	12	50	4
ESRR714 01000214	1	0.02	1	14	50	4
ESRR714 01000216	1	0.02	1	16	50	4
ESRR714 01000220	1	0.02	1	20	50	4
ESRR714 01000503	1	0.05	1	3	45	4
ESRR714 01000504	1	0.05	1	4	45	4
ESRR714 01000506	1	0.05	1	6	45	4
ESRR714 01000508	1	0.05	1	8	45	4
ESRR714 01000510	1	0.05	1	10	50	4
ESRR714 01000512	1	0.05	1	12	50	4
ESRR714 01000514	1	0.05	1	14	50	4
ESRR714 01000516	1	0.05	1	16	50	4
ESRR714 01000520	1	0.05	1	20	50	4
ESRR714 01001003	1	0.1	1	3	45	4
ESRR714 01001004	1	0.1	1	4	45	4
ESRR714 01001006	1	0.1	1	6	45	4

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRR714 01001008	1	0.1	1	8	45	4
ESRR714 01001010	1	0.1	1	10	50	4
ESRR714 01001012	1	0.1	1	12	50	4
ESRR714 01001014	1	0.1	1	14	50	4
ESRR714 01001016	1	0.1	1	16	50	4
ESRR714 01001020	1	0.1	1	20	50	4
ESRR714 01002003	1	0.2	1	3	45	4
ESRR714 01002004	1	0.2	1	4	45	4
ESRR714 01002006	1	0.2	1	6	45	4
ESRR714 01002008	1	0.2	1	8	45	4
ESRR714 01002010	1	0.2	1	10	50	4
ESRR714 01002012	1	0.2	1	12	50	4
ESRR714 01002014	1	0.2	1	14	50	4
ESRR714 01002016	1	0.2	1	16	50	4
ESRR714 01002020	1	0.2	1	20	50	4
ESRR714 01003003	1	0.3	1	3	45	4
ESRR714 01003004	1	0.3	1	4	45	4
ESRR714 01003006	1	0.3	1	6	45	4
ESRR714 01003008	1	0.3	1	8	45	4
ESRR714 01003010	1	0.3	1	10	50	4
ESRR714 01003012	1	0.3	1	12	50	4
ESRR714 01003014	1	0.3	1	14	50	4
ESRR714 01003016	1	0.3	1	16	50	4
ESRR714 01003020	1	0.3	1	20	50	4
ESRR714 01200204	1.2	0.02	1.2	4	45	4
ESRR714 01200206	1.2	0.02	1.2	6	45	4
ESRR714 01200208	1.2	0.02	1.2	8	45	4
ESRR714 01200210	1.2	0.02	1.2	10	50	4
ESRR714 01200212	1.2	0.02	1.2	12	50	4
ESRR714 01200214	1.2	0.02	1.2	14	50	4
ESRR714 01200216	1.2	0.02	1.2	16	50	4
ESRR714 01200220	1.2	0.02	1.2	20	50	4
ESRR714 01200503	1.2	0.05	1.2	3	45	4
ESRR714 01200504	1.2	0.05	1.2	4	45	4
ESRR714 01200506	1.2	0.05	1.2	6	45	4
ESRR714 01200508	1.2	0.05	1.2	8	45	4
ESRR714 01200510	1.2	0.05	1.2	10	50	4
ESRR714 01200512	1.2	0.05	1.2	12	50	4
ESRR714 01200514	1.2	0.05	1.2	14	50	4
ESRR714 01200516	1.2	0.05	1.2	16	50	4
ESRR714 01200520	1.2	0.05	1.2	20	50	4
ESRR714 01201003	1.2	0.1	1.2	3	45	4
ESRR714 01201004	1.2	0.1	1.2	4	45	4
ESRR714 01201006	1.2	0.1	1.2	6	45	4
ESRR714 01201008	1.2	0.1	1.2	8	45	4
ESRR714 01201010	1.2	0.1	1.2	10	50	4
ESRR714 01201012	1.2	0.1	1.2	12	50	4
ESRR714 01201014	1.2	0.1	1.2	14	50	4
ESRR714 01201016	1.2	0.1	1.2	16	50	4

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRR714 01201020	1.2	0.1	1.2	20	50	4
ESRR714 01202003	1.2	0.2	1.2	3	45	4
ESRR714 01202004	1.2	0.2	1.2	4	45	4
ESRR714 01202006	1.2	0.2	1.2	6	45	4
ESRR714 01202008	1.2	0.2	1.2	8	45	4
ESRR714 01202010	1.2	0.2	1.2	10	50	4
ESRR714 01202012	1.2	0.2	1.2	12	50	4
ESRR714 01202014	1.2	0.2	1.2	14	50	4
ESRR714 01202016	1.2	0.2	1.2	16	50	4
ESRR714 01202020	1.2	0.2	1.2	20	50	4
ESRR714 01203003	1.2	0.3	1.2	3	45	4
ESRR714 01203004	1.2	0.3	1.2	4	45	4
ESRR714 01203006	1.2	0.3	1.2	6	45	4
ESRR714 01203008	1.2	0.3	1.2	8	45	4
ESRR714 01203010	1.2	0.3	1.2	10	50	4
ESRR714 01203012	1.2	0.3	1.2	12	50	4
ESRR714 01203016	1.2	0.3	1.2	16	50	4
ESRR714 01203020	1.2	0.3	1.2	20	50	4
ESRR714 01500206	1.5	0.02	1.5	6	45	4
ESRR714 01500208	1.5	0.02	1.5	8	45	4
ESRR714 01500210	1.5	0.02	1.5	10	50	4
ESRR714 01500212	1.5	0.02	1.5	12	50	4
ESRR714 01500214	1.5	0.02	1.5	14	50	4
ESRR714 01500216	1.5	0.02	1.5	16	50	4
ESRR714 01500220	1.5	0.02	1.5	20	50	4
ESRR714 01500222	1.5	0.02	1.5	22	60	4
ESRR714 01500504	1.5	0.05	1.5	4	45	4
ESRR714 01500506	1.5	0.05	1.5	6	45	4
ESRR714 01500508	1.5	0.05	1.5	8	45	4
ESRR714 01500510	1.5	0.05	1.5	10	50	4
ESRR714 01500512	1.5	0.05	1.5	12	50	4
ESRR714 01500514	1.5	0.05	1.5	14	50	4
ESRR714 01500516	1.5	0.05	1.5	16	50	4
ESRR714 01500520	1.5	0.05	1.5	20	50	4
ESRR714 01500522	1.5	0.05	1.5	22	60	4
ESRR714 01500526	1.5	0.05	1.5	26	60	4
ESRR714 01501004	1.5	0.1	1.5	4	45	4
ESRR714 01501006	1.5	0.1	1.5	6	45	4
ESRR714 01501008	1.5	0.1	1.5	8	45	4
ESRR714 01501010	1.5	0.1	1.5	10	50	4
ESRR714 01501012	1.5	0.1	1.5	12	50	4
ESRR714 01501014	1.5	0.1	1.5	14	50	4
ESRR714 01501016	1.5	0.1	1.5	16	50	4
ESRR714 01501020	1.5	0.1	1.5	20	50	4
ESRR714 01501022	1.5	0.1	1.5	22	60	4
ESRR714 01501026	1.5	0.1	1.5	26	60	4
ESRR714 01502004	1.5	0.2	1.5	4	45	4
ESRR714 01502006	1.5	0.2	1.5	6	45	4
ESRR714 01502008	1.5	0.2	1.5	8	45	4

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRR714 01502010	1.5	0.2	1.5	10	50	4
ESRR714 01502012	1.5	0.2	1.5	12	50	4
ESRR714 01502014	1.5	0.2	1.5	14	50	4
ESRR714 01502016	1.5	0.2	1.5	16	50	4
ESRR714 01502020	1.5	0.2	1.5	20	50	4
ESRR714 01502022	1.5	0.2	1.5	22	60	4
ESRR714 01502025	1.5	0.2	1.5	25	60	4
ESRR714 01503004	1.5	0.3	1.5	4	45	4
ESRR714 01503006	1.5	0.3	1.5	6	45	4
ESRR714 01503008	1.5	0.3	1.5	8	45	4
ESRR714 01503010	1.5	0.3	1.5	10	50	4
ESRR714 01503012	1.5	0.3	1.5	12	50	4
ESRR714 01503014	1.5	0.3	1.5	14	50	4
ESRR714 01503016	1.5	0.3	1.5	16	50	4
ESRR714 01503020	1.5	0.3	1.5	20	50	4
ESRR714 01503022	1.5	0.3	1.5	22	60	4
ESRR714 01503025	1.5	0.3	1.5	25	60	4
ESRR714 01505004	1.5	0.5	1.5	4	45	4
ESRR714 01505006	1.5	0.5	1.5	6	45	4
ESRR714 01505008	1.5	0.5	1.5	8	45	4
ESRR714 01505010	1.5	0.5	1.5	10	50	4
ESRR714 01505012	1.5	0.5	1.5	12	50	4
ESRR714 01505014	1.5	0.5	1.5	14	50	4
ESRR714 01505016	1.5	0.5	1.5	16	50	4
ESRR714 01505020	1.5	0.5	1.5	20	50	4
ESRR714 01505022	1.5	0.5	1.5	22	60	4
ESRR714 01505025	1.5	0.5	1.5	25	60	4
ESRR714 02000206	2	0.02	2	6	45	4
ESRR714 02000208	2	0.02	2	8	45	4
ESRR714 02000210	2	0.02	2	10	50	4
ESRR714 02000212	2	0.02	2	12	50	4
ESRR714 02000214	2	0.02	2	14	50	4
ESRR714 02000216	2	0.02	2	16	50	4
ESRR714 02000220	2	0.02	2	20	50	4
ESRR714 02000225	2	0.02	2	25	60	4
ESRR714 02000230	2	0.02	2	30	70	4
ESRR714 02000506	2	0.05	2	6	45	4
ESRR714 02000508	2	0.05	2	8	45	4
ESRR714 02000510	2	0.05	2	10	50	4
ESRR714 02000512	2	0.05	2	12	50	4
ESRR714 02000514	2	0.05	2	14	50	4
ESRR714 02000516	2	0.05	2	16	50	4
ESRR714 02000520	2	0.05	2	20	50	4
ESRR714 02000525	2	0.05	2	25	60	4
ESRR714 02000530	2	0.05	2	30	70	4
ESRR714 02001006	2	0.1	2	6	45	4
ESRR714 02001008	2	0.1	2	8	45	4
ESRR714 02001010	2	0.1	2	10	50	4
ESRR714 02001012	2	0.1	2	12	50	4

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRR714 02001014	2	0.1	2	14	50	4
ESRR714 02001016	2	0.1	2	16	50	4
ESRR714 02001020	2	0.1	2	20	50	4
ESRR714 02001022	2	0.1	2	22	60	4
ESRR714 02001025	2	0.1	2	25	60	4
ESRR714 02001030	2	0.1	2	30	70	4
ESRR714 02002006	2	0.2	2	6	45	4
ESRR714 02002008	2	0.2	2	8	45	4
ESRR714 02002010	2	0.2	2	10	50	4
ESRR714 02002012	2	0.2	2	12	50	4
ESRR714 02002014	2	0.2	2	14	50	4
ESRR714 02002016	2	0.2	2	16	50	4
ESRR714 02002020	2	0.2	2	20	50	4
ESRR714 02002022	2	0.2	2	22	60	4
ESRR714 02002025	2	0.2	2	25	60	4
ESRR714 02002030	2	0.2	2	30	70	4
ESRR714 02003006	2	0.3	2	6	45	4
ESRR714 02003008	2	0.3	2	8	45	4
ESRR714 02003010	2	0.3	2	10	50	4
ESRR714 02003012	2	0.3	2	12	50	4
ESRR714 02003014	2	0.3	2	14	50	4
ESRR714 02003016	2	0.3	2	16	50	4
ESRR714 02003020	2	0.3	2	20	50	4
ESRR714 02003022	2	0.3	2	22	60	4
ESRR714 02003025	2	0.3	2	25	60	4
ESRR714 02003030	2	0.3	2	30	70	4
ESRR714 02005006	2	0.5	3	6	45	4
ESRR714 02005008	2	0.5	2	8	45	4
ESRR714 02005010	2	0.5	2	10	50	4
ESRR714 02005012	2	0.5	2	12	50	4
ESRR714 02005014	2	0.5	2	14	50	4
ESRR714 02005016	2	0.5	2	16	50	4
ESRR714 02005020	2	0.5	2	20	50	4
ESRR714 02005022	2	0.5	2	22	60	4
ESRR714 02005025	2	0.5	2	25	60	4
ESRR714 02005030	2	0.5	2	30	70	4
ESRR714 02501008	2.5	0.1	2.5	8	45	4
ESRR714 02501010	2.5	0.1	2.5	10	50	4
ESRR714 02501012	2.5	0.1	2.5	12	50	4
ESRR714 02501014	2.5	0.1	2.5	14	50	4
ESRR714 02501016	2.5	0.1	2.5	16	50	4
ESRR714 02501020	2.5	0.1	2.5	20	50	4
ESRR714 02501025	2.5	0.1	2.5	25	60	4
ESRR714 02501030	2.5	0.1	2.5	30	70	4
ESRR714 02502008	2.5	0.2	2.5	8	45	4
ESRR714 02502010	2.5	0.2	2.5	10	50	4
ESRR714 02502012	2.5	0.2	2.5	12	50	4
ESRR714 02502014	2.5	0.2	2.5	14	50	4
ESRR714 02502016	2.5	0.2	2.5	16	50	4

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRR714 02502020	2.5	0.2	2.5	20	50	4
ESRR714 02502025	2.5	0.2	2.5	25	60	4
ESRR714 02502030	2.5	0.2	2.5	30	70	4
ESRR714 02503008	2.5	0.3	2.5	8	45	4
ESRR714 02503010	2.5	0.3	2.5	10	50	4
ESRR714 02503012	2.5	0.3	2.5	12	50	4
ESRR714 02503014	2.5	0.3	2.5	14	50	4
ESRR714 02503016	2.5	0.3	2.5	16	50	4
ESRR714 02503020	2.5	0.3	2.5	20	50	4
ESRR714 02503025	2.5	0.3	2.5	25	60	4
ESRR714 02503030	2.5	0.3	2.5	30	70	4
ESRR714 02505008	2.5	0.5	2.5	8	45	4
ESRR714 02505010	2.5	0.5	2.5	10	50	4
ESRR714 02505012	2.5	0.5	2.5	12	50	4
ESRR714 02505014	2.5	0.5	2.5	14	50	4
ESRR714 02505016	2.5	0.5	2.5	16	50	4
ESRR714 02505020	2.5	0.5	2.5	20	50	4
ESRR714 02505025	2.5	0.5	2.5	25	60	4
ESRR714 02505030	2.5	0.5	2.5	30	70	4
ESRR714 03001008	3	0.1	3	8	45	6
ESRR714 03001010	3	0.1	3	10	50	6
ESRR714 03001012	3	0.1	3	12	50	6
ESRR714 03001014	3	0.1	3	14	50	6
ESRR714 03001016	3	0.1	3	16	55	6
ESRR714 03001020	3	0.1	3	20	60	6
ESRR714 03001025	3	0.1	3	25	65	6
ESRR714 03001030	3	0.1	3	30	70	6
ESRR714 03001035	3	0.1	3	35	75	6
ESRR714 03001040	3	0.1	3	40	80	6
ESRR714 03001045	3	0.1	3	45	90	6
ESRR714 03002008	3	0.2	3	8	45	6
ESRR714 03002010	3	0.2	3	10	50	6
ESRR714 03002012	3	0.2	3	12	50	6
ESRR714 03002014	3	0.2	3	14	50	6
ESRR714 03002016	3	0.2	3	16	55	6
ESRR714 03002020	3	0.2	3	20	60	6
ESRR714 03002025	3	0.2	3	25	65	6
ESRR714 03002030	3	0.2	3	30	70	6
ESRR714 03002035	3	0.2	3	35	75	6
ESRR714 03002040	3	0.2	3	40	80	6
ESRR714 03002045	3	0.2	3	45	90	6
ESRR714 03003008	3	0.3	3	8	45	6
ESRR714 03003010	3	0.3	3	10	50	6
ESRR714 03003012	3	0.3	3	12	50	6
ESRR714 03003014	3	0.3	3	14	50	6
ESRR714 03003016	3	0.3	3	16	55	6
ESRR714 03003020	3	0.3	3	20	60	6
ESRR714 03003025	3	0.3	3	25	65	6
ESRR714 03003030	3	0.3	3	30	70	6

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRR714 03003035	3	0.3	3	35	75	6
ESRR714 03003040	3	0.3	3	40	80	6
ESRR714 03003045	3	0.3	3	45	90	6
ESRR714 03005008	3	0.5	3	8	45	6
ESRR714 03005010	3	0.5	3	10	50	6
ESRR714 03005012	3	0.5	3	12	50	6
ESRR714 03005014	3	0.5	3	14	50	6
ESRR714 03005016	3	0.5	3	16	55	6
ESRR714 03005020	3	0.5	3	20	60	6
ESRR714 03005025	3	0.5	3	25	65	6
ESRR714 03005030	3	0.5	3	30	70	6
ESRR714 03005035	3	0.5	3	35	75	6
ESRR714 03005040	3	0.5	3	40	80	6
ESRR714 03005045	3	0.5	3	45	90	6
ESRR714 03005050	3	0.5	3	50	100	6
ESRR714 03010008	3	1	3	8	45	6
ESRR714 03010010	3	1	3	10	50	6
ESRR714 03010012	3	1	3	12	50	6
ESRR714 03010014	3	1	3	14	50	6
ESRR714 03010016	3	1	3	16	55	6
ESRR714 03010020	3	1	3	20	60	6
ESRR714 03010025	3	1	3	25	65	6
ESRR714 03010030	3	1	3	30	70	6
ESRR714 03010035	3	1	3	35	75	6
ESRR714 03010040	3	1	3	40	80	6
ESRR714 03010045	3	1	3	45	90	6
ESRR714 03010050	3	1	3	50	100	6
ESRR714 04001010	4	0.1	4	10	50	6
ESRR714 04001012	4	0.1	4	12	50	6
ESRR714 04001013	4	0.1	4	13	55	6
ESRR714 04001016	4	0.1	4	16	55	6
ESRR714 04001020	4	0.1	4	20	60	6
ESRR714 04001025	4	0.1	4	25	65	6
ESRR714 04001030	4	0.1	4	30	70	6
ESRR714 04001035	4	0.1	4	35	75	6
ESRR714 04001040	4	0.1	4	40	80	6
ESRR714 04001045	4	0.1	4	45	90	6
ESRR714 04001050	4	0.1	4	50	100	6
ESRR714 04002010	4	0.2	4	10	50	6
ESRR714 04002012	4	0.2	4	12	50	6
ESRR714 04002013	4	0.2	4	13	55	6
ESRR714 04002016	4	0.2	4	16	55	6
ESRR714 04002020	4	0.2	4	20	60	6
ESRR714 04002025	4	0.2	4	25	65	6
ESRR714 04002030	4	0.2	4	30	70	6
ESRR714 04002035	4	0.2	4	35	75	6
ESRR714 04002040	4	0.2	4	40	80	6
ESRR714 04002045	4	0.2	4	45	90	6
ESRR714 04002050	4	0.2	4	50	100	6

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRR714 04003010	4	0.3	4	10	50	6
ESRR714 04003012	4	0.3	4	12	50	6
ESRR714 04003013	4	0.3	4	13	55	6
ESRR714 04003016	4	0.3	4	16	55	6
ESRR714 04003020	4	0.3	4	20	60	6
ESRR714 04003025	4	0.3	4	25	65	6
ESRR714 04003030	4	0.3	4	30	70	6
ESRR714 04003035	4	0.3	4	35	75	6
ESRR714 04003040	4	0.3	4	40	80	6
ESRR714 04003045	4	0.3	4	45	90	6
ESRR714 04003050	4	0.3	4	50	100	6
ESRR714 04005010	4	0.5	4	10	50	6
ESRR714 04005012	4	0.5	4	12	50	6
ESRR714 04005013	4	0.5	4	13	55	6
ESRR714 04005016	4	0.5	4	16	55	6
ESRR714 04005020	4	0.5	4	20	60	6
ESRR714 04005025	4	0.5	4	25	65	6
ESRR714 04005030	4	0.5	4	30	70	6
ESRR714 04005035	4	0.5	4	35	75	6
ESRR714 04005040	4	0.5	4	40	80	6
ESRR714 04005045	4	0.5	4	45	90	6
ESRR714 04005050	4	0.5	4	50	100	6
ESRR714 04005055	4	0.5	4	55	100	6
ESRR714 04010010	4	1	4	10	50	6
ESRR714 04010012	4	1	4	12	50	6
ESRR714 04010013	4	1	4	13	55	6
ESRR714 04010016	4	1	4	16	55	6
ESRR714 04010020	4	1	4	20	60	6
ESRR714 04010025	4	1	4	25	65	6
ESRR714 04010030	4	1	4	30	70	6
ESRR714 04010035	4	1	4	35	75	6
ESRR714 04010040	4	1	4	40	80	6
ESRR714 04010045	4	1	4	45	90	6
ESRR714 04010050	4	1	4	50	100	6
ESRR714 04010055	4	1	4	55	100	6
ESRR714 05001016	5	0.1	5	16	60	6
ESRR714 05001030	5	0.1	5	30	70	6
ESRR714 05001040	5	0.1	5	40	80	6
ESRR714 05002016	5	0.2	5	16	60	6
ESRR714 05002030	5	0.2	5	30	70	6
ESRR714 05002040	5	0.2	5	40	80	6
ESRR714 05003016	5	0.3	5	16	60	6
ESRR714 05003030	5	0.3	5	30	70	6
ESRR714 05003040	5	0.3	5	40	80	6
ESRR714 05005016	5	0.5	5	16	60	6
ESRR714 05005030	5	0.5	5	30	70	6
ESRR714 05005040	5	0.5	5	40	80	6
ESRR714 05005050	5	0.5	5	50	100	6
ESRR714 05005060	5	0.5	5	60	110	6

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRR714 05010016	5	1	5	16	60	6
ESRR714 05010030	5	1	5	30	70	6
ESRR714 05010040	5	1	5	40	80	6
ESRR714 05010050	5	1	5	50	100	6
ESRR714 05010060	5	1	5	60	110	6
ESRR714 05015015	5	1.5	5	15	60	6
ESRR714 05020015	5	2	5	15	60	6
ESRR714 06001020	6	0.1	7	20	60	6
ESRR714 06001040	6	0.1	7	40	80	6
ESRR714 06001050	6	0.1	7	50	100	6
ESRR714 06002020	6	0.2	7	20	60	6
ESRR714 06002040	6	0.2	7	40	80	6
ESRR714 06002050	6	0.2	7	50	100	6
ESRR714 06003020	6	0.3	7	20	60	6
ESRR714 06003030	6	0.3	7	30	70	6
ESRR714 06003040	6	0.3	7	40	80	6
ESRR714 06003050	6	0.3	7	50	100	6
ESRR714 06005020	6	0.5	7	20	60	6
ESRR714 06005030	6	0.5	7	30	70	6
ESRR714 06005040	6	0.5	7	40	80	6
ESRR714 06005050	6	0.5	7	50	100	6
ESRR714 06005060	6	0.5	7	60	110	6
ESRR714 06010020	6	1	7	20	60	6
ESRR714 06010030	6	1	7	30	70	6
ESRR714 06010040	6	1	7	40	80	6
ESRR714 06010050	6	1	7	50	100	6
ESRR714 06010060	6	1	7	60	110	6
ESRR714 06015020	6	1.5	7	20	60	6
ESRR714 06015040	6	1.5	7	40	80	6
ESRR714 06015050	6	1.5	7	50	100	6
ESRR714 06020020	6	2	7	20	60	6
ESRR714 06020030	6	2	7	30	70	6
ESRR714 06020040	6	2	7	40	80	6
ESRR714 06020050	6	2	7	50	100	6
ESRR714 08001025	8	0.1	9	25	70	8
ESRR714 08002022	8	0.2	9	22	65	8
ESRR714 08002040	8	0.2	9	40	100	8
ESRR714 08003022	8	0.3	9	22	65	8
ESRR714 08003040	8	0.3	9	40	100	8
ESRR714 08005022	8	0.5	9	22	65	8
ESRR714 08005035	8	0.5	9	35	100	8
ESRR714 08005040	8	0.5	9	40	100	8
ESRR714 08005050	8	0.5	9	50	120	8
ESRR714 08005060	8	0.5	9	60	120	8
ESRR714 08010022	8	1	9	22	65	8
ESRR714 08010035	8	1	9	35	100	8
ESRR714 08010040	8	1	9	40	100	8
ESRR714 08010050	8	1	9	50	120	8
ESRR714 08010060	8	1	9	60	120	8

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT

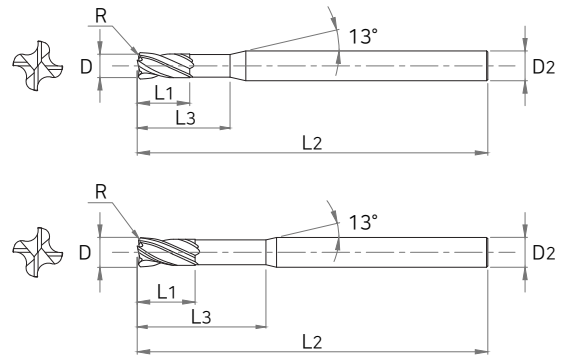
EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRR714 08015022	8	1.5	9	22	65	8
ESRR714 08015040	8	1.5	9	40	100	8
ESRR714 08020022	8	2	9	22	65	8
ESRR714 08020040	8	2	9	40	100	8
ESRR714 08020050	8	2	9	50	120	8
ESRR714 10001030	10	0.1	11	30	75	10
ESRR714 10002024	10	0.2	11	24	70	10
ESRR714 10002040	10	0.2	11	40	100	10
ESRR714 10003024	10	0.3	11	24	70	10
ESRR714 10003040	10	0.3	11	40	100	10
ESRR714 10005024	10	0.5	11	24	70	10
ESRR714 10005040	10	0.5	11	40	100	10
ESRR714 10005050	10	0.5	11	50	120	10
ESRR714 10005060	10	0.5	11	60	120	10
ESRR714 10010024	10	1	11	24	70	10
ESRR714 10010040	10	1	11	40	100	10
ESRR714 10010050	10	1	11	50	120	10
ESRR714 10010060	10	1	11	60	120	10
ESRR714 10015024	10	1.5	11	24	70	10
ESRR714 10015040	10	1.5	11	40	100	10
ESRR714 10020024	10	2	11	24	70	10
ESRR714 10020040	10	2	11	40	100	10
ESRR714 10020050	10	2	11	50	120	10

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRR714 10025024	10	2.5	11	24	70	10
ESRR714 12002032	12	0.2	13	32	80	12
ESRR714 12003026	12	0.3	13	26	80	12
ESRR714 12003045	12	0.3	13	45	110	12
ESRR714 12005026	12	0.5	13	26	80	12
ESRR714 12005040	12	0.5	13	40	110	12
ESRR714 12005060	12	0.5	13	60	130	12
ESRR714 12010026	12	1	13	26	80	12
ESRR714 12010040	12	1	13	40	110	12
ESRR714 12010060	12	1	13	60	130	12
ESRR714 12015026	12	1.5	13	26	80	12
ESRR714 12020026	12	2	13	26	80	12
ESRR714 12020040	12	2	13	40	110	12
ESRR714 12030026	12	3	13	26	80	12
ESRR714 16005035	16	0.5	20	35	100	16
ESRR714 16005050	16	0.5	35	50	150	16
ESRR714 16010035	16	1	20	35	100	16
ESRR714 16010050	16	1	35	50	150	16
ESRR714 20005040	20	0.5	25	40	100	20
ESRR714 20005055	20	0.5	40	55	150	20
ESRR714 20010040	20	1	25	40	100	20
ESRR714 20010055	20	1	40	55	150	20

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRC55	SKD11 HRC55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D	Shank Dia.
All Sizes	0 ~ -0.02 h5



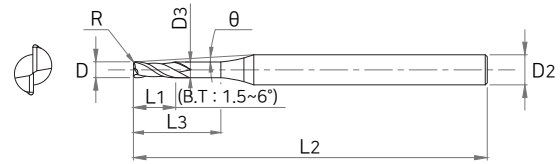
EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESXR704 01000504	1	0.05	1.5	4	45	4
ESXR704 02000506	2	0.05	3	6	45	4
ESXR704 02000507	2	0.05	2.5	7	50	4
ESXR704 0200107	2	0.1	2.5	7	50	4
ESXR704 0300107	3	0.1	4	7	45	6
ESXR704 0300109	3	0.1	4	9	55	6
ESXR704 0300209	3	0.2	4	9	55	6
ESXR704 0300309	3	0.3	4	9	55	6
ESXR704 0300312	3	0.3	4	12	55	6
ESXR704 0300316	3	0.3	4	16	55	6
ESXR704 0400109	4	0.1	5	9	45	6
ESXR704 0400212	4	0.2	5	12	55	6
ESXR704 0400212S4	4	0.2	5	12	55	4
ESXR704 0400312	4	0.3	5	12	55	6
ESXR704 0400316	4	0.3	5	16	55	6
ESXR704 0400320	4	0.3	5	20	55	6
ESXR704 0400512	4	0.5	5	12	55	6
ESXR704 0400516	4	0.5	5	16	55	6
ESXR704 0400516S4	4	0.5	5	16	55	4
ESXR704 0400520	4	0.5	5	20	55	6
ESXR704 0401012	4	1	5	12	55	6
ESXR704 0500116	5	0.1	6	16	60	6
ESXR704 0500216	5	0.2	6	16	60	6
ESXR704 0500316	5	0.3	6	16	60	6
ESXR704 0500516	5	0.5	6	16	60	6
ESXR704 0501016	5	1	6	16	60	6
ESXR704 0600120	6	0.1	7	20	60	6
ESXR704 0600214	6	0.2	7	14	50	6

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESXR704 0600220	6	0.2	7	20	60	6
ESXR704 0600320	6	0.3	7	20	60	6
ESXR704 0600520	6	0.5	7	20	60	6
ESXR704 0601020	6	1	7	20	60	6
ESXR704 0601520	6	1.5	7	20	60	6
ESXR704 0800125	8	0.1	9	25	60	8
ESXR704 0800218	8	0.2	9	18	60	8
ESXR704 0800225	8	0.2	9	25	60	8
ESXR704 0800325	8	0.3	9	25	60	8
ESXR704 0800525	8	0.5	9	25	60	8
ESXR704 0801025	8	1	9	25	60	8
ESXR704 0801525	8	1.5	9	25	60	8
ESXR704 0802025	8	2	9	25	60	8
ESXR704 1000225	10	0.2	12	25	75	10
ESXR704 1000232	10	0.2	11	32	75	10
ESXR704 1000332	10	0.3	11	32	75	10
ESXR704 1000532	10	0.5	11	32	75	10
ESXR704 1001032	10	1	11	32	75	10
ESXR704 1001532	10	1.5	11	32	75	10
ESXR704 1002032	10	2	11	32	75	10
ESXR704 1200238	12	0.2	12	38	75	12
ESXR704 1200330	12	0.3	15	30	75	12
ESXR704 1200338	12	0.3	12	38	75	12
ESXR704 1200538	12	0.5	12	38	75	12
ESXR704 1201038	12	1	12	38	75	12
ESXR704 1201538	12	1.5	12	38	75	12
ESXR704 1202038	12	2	12	38	75	12

Applicable working material

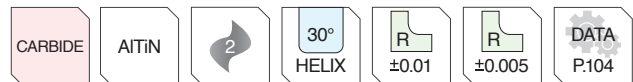
Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRC55	SKD11 HRC55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D	Shank Dia.
All Sizes	0 ~ -0.012 h5

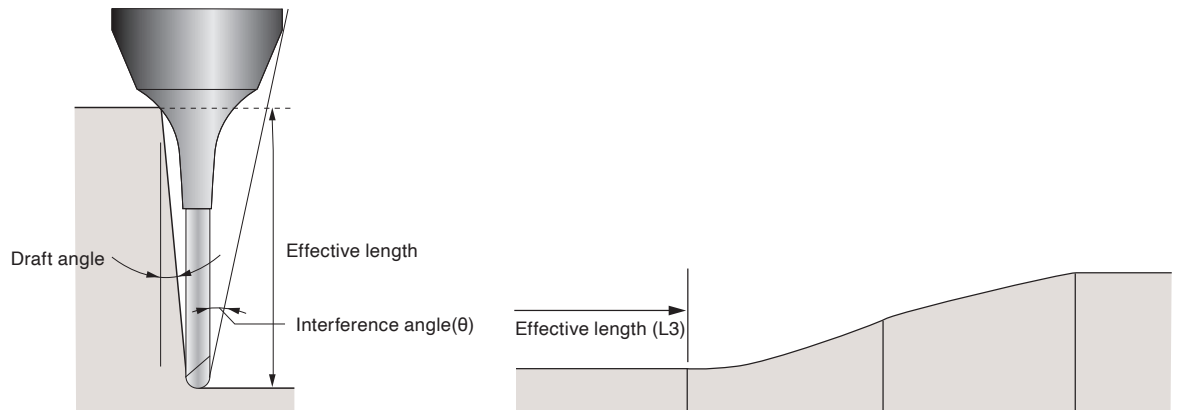


EDP No.	Description (mm)								Effective length from draft angle of Workpiece				
	D	R	L1	L3	D3	L2	D2	θ	0.5°	1°	1.5°	2°	3°
ESLNR2002-0.5-005	0.2	0.05	0.15	0.5	0.17	50	4	11.4	0.9	1	1	1.1	12
ESLNR2002-1-005	0.2	0.05	0.15	1	0.17	50	4	10.9	1.6	1.7	1.9	2	2.3
ESLNR2002-1.5-005	0.2	0.05	0.15	1.5	0.17	50	4	10.3	2.1	2.3	2.5	2.7	3
ESLNR2002-2-005	0.2	0.05	0.15	2	0.17	50	4	9.9	2.8	3.1	3.4	3.6	4.1
ESLNR2003-1-005	0.3	0.05	0.25	1	0.27	50	4	10.8	1.4	1.5	1.6	1.7	1.9
ESLNR2003-1.5-005	0.3	0.05	0.25	1.5	0.27	50	4	10.3	2.1	2.3	2.5	2.7	3
ESLNR2003-2.5-005	0.3	0.05	0.25	2.5	0.27	50	4	9.8	2.7	2.9	3.1	3.3	3.6
ESLNR2003-2-005	0.3	0.05	0.25	2	0.27	50	4	9.4	3.2	3.5	3.7	3.9	4.3
ESLNR2003-3-005	0.3	0.05	0.25	3	0.27	50	4	9	3.9	4.3	4.6	4.9	5.4
ESLNR2004-1-005	0.4	0.05	0.3	1	0.37	50	4	10.8	1.4	1.5	1.6	1.7	1.9
ESLNR2004-1.5-005	0.4	0.05	0.3	1.5	0.37	50	4	10.3	2	2.1	2.2	2.3	2.5
ESLNR2004-2-005	0.4	0.05	0.3	2	0.37	50	4	9.8	2.7	2.9	3.1	3.3	3.6
ESLNR2004-2.5-005	0.4	0.05	0.3	2.5	0.37	50	4	9.4	3.2	3.5	3.7	3.9	4.3
ESLNR2004-3-005	0.4	0.05	0.3	3	0.37	50	4	9	3.8	4	4.3	4.5	4.9
ESLNR2004-3.5-005	0.4	0.05	0.3	3.5	0.37	50	4	8.6	4.3	4.6	4.9	5.1	5.5
ESLNR2004-4-005	0.4	0.05	0.3	4	0.37	50	4	8.3	5	5.4	5.8	6.1	6.6
ESLNR2004-2-01	0.4	0.1	0.3	2	0.37	50	4	9.8	2.7	2.9	3.1	3.3	3.6
ESLNR2004-3-01	0.4	0.1	0.3	3	0.37	50	4	9	3.8	4	4.3	4.5	4.9
ESLNR2004-4-01	0.4	0.1	0.3	4	0.37	50	4	8.3	5	5.4	5.8	6.1	6.6
ESLNR2005-1-005	0.5	0.05	0.35	1	0.47	50	4	10.8	1.4	1.5	1.6	1.7	1.9
ESLNR2005-2-005	0.5	0.05	0.35	2	0.47	50	4	9.7	2.5	2.6	2.8	2.9	3.1
ESLNR2005-3-005	0.5	0.05	0.35	3	0.47	50	4	8.9	3.8	4	4.3	4.5	4.9
ESLNR2005-4-005	0.5	0.05	0.35	4	0.47	50	4	8.2	4.8	5.2	5.4	5.7	6.1
ESLNR2005-5-005	0.5	0.05	0.35	5	0.47	50	4	7.6	6.1	6.6	6.9	7.3	7.8
ESLNR2005-6-005	0.5	0.05	0.35	6	0.47	50	4	7	7.2	7.7	8.1	8.4	9
ESLNR2005-1-01	0.5	0.1	0.35	1	0.47	50	4	10.8	1.4	1.5	1.6	1.7	1.9
ESLNR2005-2-01	0.5	0.1	0.35	2	0.47	50	4	9.8	2.5	2.6	2.8	2.9	3.1
ESLNR2005-3-01	0.5	0.1	0.35	3	0.47	50	4	8.9	3.8	4	4.3	4.5	4.9
ESLNR2005-4-01	0.5	0.1	0.35	4	0.47	50	4	8.2	4.8	5.2	5.4	5.7	6.1
ESLNR2005-5-01	0.5	0.1	0.35	5	0.47	50	4	7.6	6.1	6.5	6.9	7.2	7.8
ESLNR2005-6-01	0.5	0.1	0.35	6	0.47	50	4	7.1	7.2	7.7	8.1	8.4	9

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



* Marked effective length is set to prevent interfering in workpiece.
You need to take proper control when machining.

EDP No.	Description (mm)								Effective length from draft angle of Workpiece				
	D	R	L1	L3	D3	L2	D2	θ	0.5°	1°	1.5°	2°	3°
ESLNR2006-2-01	0.6	0.1	0.4	2	0.57	50	4	9.7	2.5	2.6	2.8	2.9	3.1
ESLNR2006-4-01	0.6	0.1	0.4	4	0.57	50	4	8.1	4.8	5.2	5.4	5.7	6.1
ESLNR2006-6-01	0.6	0.1	0.4	6	0.57	50	4	7	7.2	7.7	8.1	8.4	9
ESLNR2006-8-01	0.6	0.1	0.4	8	0.57	50	4	6.1	9.3	9.9	10.3	10.7	11
ESLNR2006-10-01	0.6	0.1	0.4	10	0.57	50	4	5.5	11.5	12.1	12.5	13	13.7
ESLNR2008-4-01	0.8	0.1	0.5	4	0.77	50	4	8	4.8	5.2	5.4	5.7	6.1
ESLNR2008-6-01	0.8	0.1	0.5	6	0.77	50	4	6.8	7	7.4	7.7	7.9	8.4
ESLNR2008-8-01	0.8	0.1	0.5	8	0.77	50	4	5.9	9.3	9.9	10.3	10.7	11.4
ESLNR2008-12-01	0.8	0.1	0.5	12	0.77	50	4	4.7	13.6	14.2	14.7	15.2	16
ESLNR2008-4-02	0.8	0.2	0.5	4	0.77	50	4	8	4.8	5.1	5.4	5.6	6.1
ESLNR2008-6-02	0.8	0.2	0.5	6	0.77	50	4	6.9	7	7.3	7.7	7.9	8.4
ESLNR2010-4-01	1	0.1	0.8	4	0.94	50	4	7.7	4.7	4.9	5.1	5.2	5.5
ESLNR2010-6-01	1	0.1	0.8	6	0.94	50	4	6.6	7.1	7.4	7.7	8	8.5
ESLNR2010-8-01	1	0.1	0.8	8	0.94	50	4	5.7	9.2	9.6	9.9	10.2	10.8
ESLNR2010-10-01	1	0.1	0.8	10	0.94	50	4	5.1	11.6	12.1	12.6	13	13.7
ESLNR2010-12-01	1	0.1	0.8	12	0.94	55	4	4.5	13.7	14.3	14.8	15.3	16
ESLNR2010-16-01	1	0.1	0.8	16	0.94	60	4	3.8	17.9	18.6	19.2	19.7	21.3
ESLNR2010-20-01	1	0.1	0.8	20	0.94	60	4	3.2	22	22.8	23.5	24	26.7
ESLNR2010-4-02	1	0.2	0.8	4	0.94	50	4	7.8	4.7	4.9	5.1	5.2	5.5
ESLNR2010-6-02	1	0.2	0.8	6	0.94	50	4	6.6	7.1	7.4	7.7	8	8.5
ESLNR2010-8-02	1	0.2	0.8	8	0.94	50	4	5.8	9.2	9.6	9.9	10.2	10.8
ESLNR2010-10-02	1	0.2	0.8	10	0.94	50	4	5.1	11.6	12.1	12.6	13	13.7
ESLNR2010-12-02	1	0.2	0.8	12	0.94	55	4	4.6	13.7	14.3	14.8	15.2	16
ESLNR2010-16-02	1	0.2	0.8	16	0.94	60	4	3.8	17.9	18.6	19.2	19.7	21.3
ESLNR2010-20-02	1	0.2	0.8	20	0.94	60	4	3.2	22	22.8	23.5	24	26.6
ESLNR2010-6-03	1	0.3	0.8	6	0.94	50	4	6.7	7.1	7.4	7.7	8	8.4
ESLNR2010-10-03	1	0.3	0.8	10	0.94	50	4	5.1	11.5	12.1	12.6	13	13.7
ESLNR2010-16-03	1	0.3	0.8	16	0.94	60	4	3.8	17.9	18.6	19.1	19.6	21.3
ESLNR2010-20-03	1	0.3	0.8	20	0.94	60	4	3.2	22	22.8	23.5	24	26.6
ESLNR2015-4-01	1.5	0.1	1.35	4	1.42	50	4	7.2	4.8	4.9	5.1	5.3	5.5
ESLNR2015-8-01	1.5	0.1	1.35	8	1.42	50	4	5.2	9.2	9.6	10	10.3	10.8

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

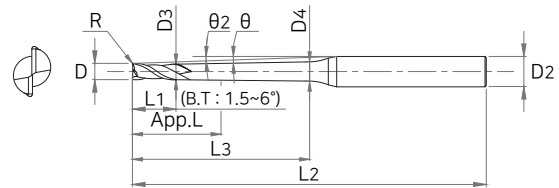
○ : GOOD ◎ : EXCELLENT

EDP No.	Description (mm)								Effective length from draft angle of Workpiece				
	D	R	L1	L3	D3	L2	D2	θ	0.5°	1°	1.5°	2°	3°
ESLNR2015-12-01	1.5	0.1	1.35	12	1.42	55	4	4	13.4	13.9	14.3	14.7	16.1
ESLNR2015-15-01	1.5	0.1	1.35	15	1.42	55	4	3.5	16.9	17.6	18.1	18.6	20.1
ESLNR2015-20-01	1.5	0.1	1.35	20	1.42	60	4	2.8	22.1	22.9	23.5	24.1	-
ESLNR2015-4-02	1.5	0.2	1.35	4	1.42	50	4	7.3	4.7	4.9	5.1	5.3	5.5
ESLNR2015-8-02	1.5	0.2	1.35	8	1.42	50	4	5.2	9.2	9.6	10	10.3	10.8
ESLNR2015-12-02	1.5	0.2	1.35	12	1.42	55	4	4.1	13.4	13.9	14.3	14.7	16.1
ESLNR2015-15-02	1.5	0.2	1.35	15	1.42	55	4	3.5	16.9	17.5	18.1	18.6	20
ESLNR2015-20-02	1.5	0.2	1.35	20	1.42	60	4	2.8	22.1	22.9	23.5	24.1	-
ESLNR2015-8-03	1.5	0.3	1.35	8	1.42	50	4	5.2	9.2	9.6	10	10.3	10.8
ESLNR2015-15-03	1.5	0.3	1.35	15	1.42	55	4	3.5	16.9	17.5	18.1	18.6	20
ESLNR2015-20-03	1.5	0.3	1.35	20	1.42	60	4	2.8	22.1	22.9	23.5	24	-
ESLNR2020-6-02	2	0.2	1.7	6	1.92	50	4	5.4	6.8	7.1	7.3	7.5	8.1
ESLNR2020-8-02	2	0.2	1.7	8	1.92	50	4	4.6	8.9	9.2	9.4	9.7	10.8
ESLNR2020-12-02	2	0.2	1.7	12	1.92	55	4	3.5	13.4	13.9	14.3	14.7	16.1
ESLNR2020-16-02	2	0.2	1.7	16	1.92	55	4	2.8	17.6	18.1	18.6	19.3	-
ESLNR2020-20-02	2	0.2	1.7	20	1.92	60	4	2.4	22.1	22.9	23.5	24.1	-
ESLNR2020-25-02	2	0.2	1.7	25	1.92	65	4	2	27.3	28.2	28.8	-	-
ESLNR2020-30-02	2	0.2	1.7	30	1.92	70	4	1.7	32.5	33.4	34.4	-	-
ESLNR2020-8-03	2	0.3	1.7	8	1.92	50	4	4.6	8.9	9.2	9.4	9.7	10.7
ESLNR2020-16-03	2	0.3	1.7	16	1.92	55	4	2.8	17.6	18.1	18.6	19.3	-
ESLNR2020-20-03	2	0.3	1.7	20	1.92	60	4	2.4	22.1	22.9	23.5	24	-
ESLNR2020-6-05	2	0.5	1.7	6	1.92	50	4	5.5	6.8	7.1	7.3	7.4	8
ESLNR2020-8-05	2	0.5	1.7	8	1.92	50	4	4.7	8.9	9.2	9.4	9.6	10.7
ESLNR2020-12-05	2	0.5	1.7	12	1.92	55	4	3.5	13.4	13.9	14.3	14.6	16
ESLNR2020-16-05	2	0.5	1.7	16	1.92	55	4	2.9	17.6	18.1	18.6	19.2	-
ESLNR2020-20-05	2	0.5	1.7	20	1.92	60	4	2.4	22.1	22.9	23.5	24	-
ESLNR2020-25-05	2	0.5	1.7	25	1.92	65	4	2	27.3	28.1	28.8	-	-
ESLNR2020-30-05	2	0.5	1.7	30	1.92	70	4	1.7	32.5	33.4	34.3	-	-
ESLNR2020-8-08	2	0.8	1.7	8	1.92	50	4	4.8	8.9	9.2	9.4	9.6	10.6
ESLNR2020-16-08	2	0.8	1.7	16	1.92	55	4	2.9	17.6	18.1	18.6	19.2	-
ESLNR2020-20-08	2	0.8	1.7	20	1.92	60	4	2.4	22.1	22.8	23.5	24	-
ESLNR2030-8-02	3	0.2	2.5	8	2.86	55	6	5.7	9	9.3	9.5	9.9	10.9
ESLNR2030-12-02	3	0.2	2.5	12	2.86	60	6	4.5	13.1	13.5	14	14.7	16.2
ESLNR2030-16-02	3	0.2	2.5	16	2.86	60	6	3.8	17.7	18.2	18.7	19.5	21.6
ESLNR2030-20-02	3	0.2	2.5	20	2.86	65	6	3.2	21.8	22.4	23.1	24.2	26.9
ESLNR2030-30-02	3	0.2	2.5	30	2.86	75	6	2.4	32.6	33.5	34.5	36.2	-
ESLNR2030-35-02	3	0.2	2.5	35	2.86	80	6	2.1	37.7	38.7	40.2	42.2	-
ESLNR2030-8-03	3	0.3	2.5	8	2.86	55	6	5.7	9	9.3	9.5	9.9	10.9
ESLNR2030-16-03	3	0.3	2.5	16	2.86	60	6	3.8	17.7	18.2	18.7	19.4	21.5
ESLNR2030-20-03	3	0.3	2.5	20	2.86	65	6	3.2	21.8	22.4	23.1	24.2	26.8
ESLNR2030-30-03	3	0.3	2.5	30	2.86	75	6	2.4	32.6	33.5	34.5	36.2	-
ESLNR2030-8-05	3	0.5	2.5	8	2.86	55	6	5.8	9	9.3	9.5	9.8	10.8
ESLNR2030-12-05	3	0.5	2.5	12	2.86	60	6	4.6	13.1	13.5	13.9	14.6	16.2
ESLNR2030-16-05	3	0.5	2.5	16	2.86	60	6	3.8	17.7	18.2	18.7	19.4	21.5
ESLNR2030-20-05	3	0.5	2.5	20	2.86	65	6	3.2	21.8	22.4	23.1	24.2	26.8
ESLNR2030-30-05	3	0.5	2.5	30	2.86	75	6	2.4	32.6	33.5	34.5	36.1	-
ESLNR2030-35-05	3	0.5	2.5	35	2.86	80	6	2.1	37.7	38.7	40.2	42.1	-

■ Applicable working material

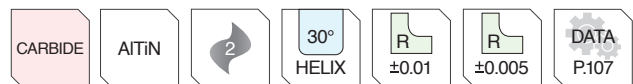
Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D	Shank Dia.
All Sizes	0 ~ -0.012 h5

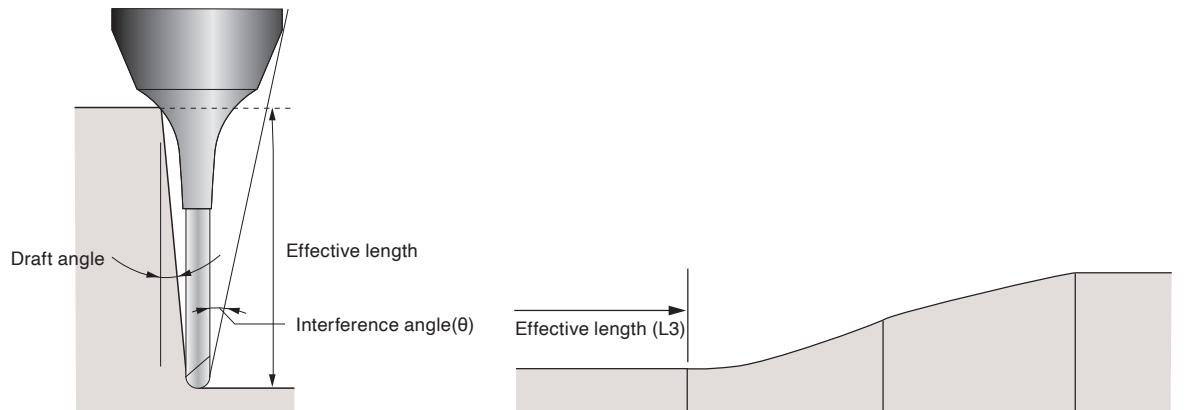


EDP No.	Description (mm)											Effective length from draft angle of Workpiece				
	D	R	L1	L3	θ2	D3	D4	L2	D2	App.L	θ	0.5°	1°	1.5°	2°	3°
ESTNR2002-2-09005	0.2	0.05	0.15	2	0.9	0.17	0.23	50	4	1.1	10	-	2.8	3.1	3.4	3.9
ESTNR2004-4-09005	0.4	0.05	0.3	4	0.9	0.37	0.49	50	4	1.25	8.4	-	4.9	5.3	5.7	6.3
ESTNR2004-5-09005	0.4	0.05	0.3	5	0.9	0.37	0.52	50	4	1.25	7.8	-	5.9	6.4	6.8	7.5
ESTNR2004-4-0901	0.4	0.1	0.3	4	0.9	0.37	0.49	50	4	1.25	8.5	-	4.9	5.3	5.7	6.3
ESTNR2004-5-0901	0.4	0.1	0.3	5	0.9	0.37	0.52	50	4	1.25	7.9	-	5.9	6.4	6.8	7.5
ESTNR2005-5-0901	0.5	0.1	0.35	5	0.9	0.47	0.62	50	4	1.3	7.8	-	5.9	6.4	6.8	7.5
ESTNR2005-8-0901	0.5	0.1	0.35	8	0.9	0.47	0.71	50	4	1.3	6.4	-	9	9.7	10.2	11
ESTNR2005-10-0901	0.5	0.1	0.35	10	0.9	0.47	0.77	55	4	1.3	5.8	-	11	11.8	12.4	13.2
ESTNR2006-12-0901	0.6	0.1	0.4	12	0.9	0.57	0.93	55	4	1.35	5.1	-	13	13.9	14.5	15.5
ESTNR2006-15-0901	0.6	0.1	0.4	15	0.9	0.57	1.3	55	4	1.35	4.5	-	16.1	17.1	17.8	18.8
ESTNR2008-6-0402	0.8	0.2	0.5	6	0.4	0.77	0.85	50	4	2.64	7	6.6	7.1	7.5	7.8	8.3
ESTNR2008-12-0902	0.8	0.2	0.5	12	0.9	0.77	1.13	55	4	1.45	5	-	13	13.9	14.5	15.5
ESTNR2010-8-0402	1	0.2	0.8	8	0.4	0.94	1.4	55	6	5.09	7.4	8.8	9.3	9.7	10.1	10.6
ESTNR2010-10-0902	1	0.2	0.8	10	0.9	0.94	1.23	55	6	5.09	6.8	-	11.2	11.9	12.4	13.3
ESTNR2010-15-0902	1	0.2	0.8	15	0.9	0.94	1.39	60	6	2.7	5.6	-	16.3	17.2	17.8	18.8
ESTNR2010-20-0902	1	0.2	0.8	20	0.9	0.94	1.54	65	6	2.7	4.8	-	21.3	22.4	23.2	24.7
ESTNR2010-25-0902	1	0.2	0.8	25	0.9	0.94	1.7	70	6	2.7	4.1	-	26.4	27.6	28.5	30.9
ESTNR2010-30-0902	1	0.2	0.8	30	0.9	0.94	1.86	75	6	2.7	3.7	-	31.5	32.8	33.7	37
ESTNR2010-35-0902	1	0.2	0.8	35	0.9	0.94	2.2	80	6	2.7	3.3	-	36.5	38	39	43.2
ESTNR2010-8-0403	1	0.3	0.8	8	0.4	0.94	1.4	55	6	2.7	7.4	8.8	9.3	9.7	10	10.6
ESTNR2010-15-0903	1	0.3	0.8	15	0.9	0.94	1.39	60	6	2.7	5.6	-	16.3	17.2	17.8	18.8
ESTNR2010-25-0903	1	0.3	0.8	25	0.9	0.94	1.7	70	6	2.7	4.2	-	26.4	27.6	28.5	30.8
ESTNR2010-30-0903	1	0.3	0.8	30	0.9	0.94	1.86	75	6	2.7	3.7	-	31.5	32.8	33.7	37
ESTNR2015-10-0402	1.5	0.2	1.35	10	0.4	1.42	1.54	55	6	7.07	6.4	11	11.5	11.9	12.3	13
ESTNR2015-15-0902	1.5	0.2	1.35	15	0.9	1.42	1.85	60	6	7.07	5.3	-	16.4	17.3	17.9	18.9
ESTNR2015-20-0902	1.5	0.2	1.35	20	0.9	1.42	2.1	65	6	3.89	4.5	-	21.5	22.5	23.2	24.9
ESTNR2015-25-0902	1.5	0.2	1.35	25	0.9	1.42	2.16	70	6	3.89	3.9	-	26.6	27.7	28.5	31
ESTNR2015-30-0902	1.5	0.2	1.35	30	0.9	1.42	2.32	75	6	3.89	3.4	-	31.6	32.9	33.8	37.1
ESTNR2015-10-0403	1.5	0.3	1.35	10	0.4	1.42	1.54	55	6	3.89	6.4	11	11.5	11.9	12.3	13
ESTNR2015-20-0903	1.5	0.3	1.35	20	0.9	1.42	2.1	65	6	3.89	4.5	-	21.5	22.5	23.2	24.8
ESTNR2015-25-0903	1.5	0.3	1.35	25	0.9	1.42	2.16	70	6	3.89	3.9	-	26.5	27.7	28.5	31

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



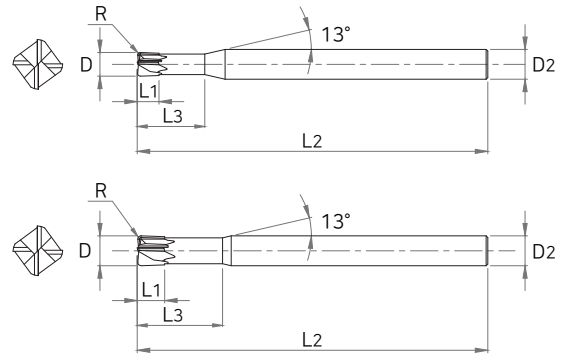
* Marked effective length is set to prevent interfering in workpiece.
You need to take proper control when machining.

EDP No.	Description (mm)											Effective length from draft angle of Workpiece				
	D	R	L1	L3	θ2	D3	D4	L2	D2	App.L	θ	0.5°	1°	1.5°	2°	3°
ESTNR2015-30-0903	1.5	0.3	1.35	30	0.9	1.42	2.32	75	6	3.89	3.4	-	31.6	32.9	33.8	37.1
ESTNR2020-30-0902	2	0.2	1.7	30	0.9	1.92	2.81	70	6	7.42	3.1	-	31.6	32.9	33.8	37.2
ESTNR2020-40-0902	2	0.2	1.7	40	0.9	1.92	3.12	80	6	7.42	2.5	-	41.8	43.3	44.6	-
ESTNR2020-50-0902	2	0.2	1.7	50	0.9	1.92	3.44	90	6	7.42	2.1	-	51.9	53.6	55.7	-
ESTNR2020-12-0403	2	0.3	1.7	12	0.4	1.92	2.06	55	6	7.42	5.5	13	13.6	14.1	14.5	15.6
ESTNR2020-20-0903	2	0.3	1.7	20	0.9	1.92	2.5	65	6	4.24	4.1	-	21.5	22.5	23.2	24.9
ESTNR2020-30-0903	2	0.3	1.7	30	0.9	1.92	2.81	70	6	4.24	3.1	-	31.6	32.9	33.8	37.1
ESTNR2020-40-0903	2	0.3	1.7	40	0.9	1.92	3.12	80	6	4.24	2.5	-	41.7	43.3	44.6	-
ESTNR2020-50-0903	2	0.3	1.7	50	0.9	1.92	3.44	90	6	4.24	2.1	-	51.8	53.6	55.7	-
ESTNR2020-8-0405	2	0.5	1.7	8	0.4	1.92	2.01	50	6	4.24	6.8	8.7	9	9.3	9.5	10.4
ESTNR2020-12-0405	2	0.5	1.7	12	0.4	1.92	2.06	55	6	4.24	5.6	13	13.6	14.1	14.4	15.5
ESTNR2020-16-0405	2	0.5	1.7	16	0.4	1.92	2.12	60	6	4.24	4.7	17	17.8	18.3	18.7	20.7
ESTNR2020-20-0905	2	0.5	1.7	20	0.9	1.92	2.5	65	6	4.24	4.2	-	21.5	22.5	23.2	24.8
ESTNR2020-25-0905	2	0.5	1.7	25	0.9	1.92	2.65	65	6	4.24	3.6	-	26.6	27.7	28.5	30.9
ESTNR2020-30-0905	2	0.5	1.7	30	0.9	1.92	2.81	70	6	4.24	3.1	-	31.6	32.9	33.8	37.1
ESTNR2020-40-0905	2	0.5	1.7	40	0.9	1.92	3.12	80	6	4.24	2.5	-	41.7	43.2	44.6	-
ESTNR2020-50-0905	2	0.5	1.7	50	0.9	1.92	3.44	90	6	4.24	2.1	-	51.8	53.6	55.6	-
ESTNR2030-40-0902	3	0.2	2.5	40	0.9	2.86	4.04	80	6	6.95	2	-	42	43.4	-	-
ESTNR2030-50-0902	3	0.2	2.5	50	0.9	2.86	4.35	90	6	6.95	1.6	-	52.1	53.7	-	-
ESTNR2030-60-0902	3	0.2	2.5	60	0.9	2.86	4.67	100	6	6.95	1.4	-	62.2	-	-	-
ESTNR2030-40-0903	3	0.3	2.5	40	0.9	2.86	4.04	80	6	6.95	2	-	42	43.4	-	-
ESTNR2030-50-0903	3	0.3	2.5	50	0.9	2.86	4.35	90	6	6.95	1.7	-	52.1	53.7	-	-
ESTNR2030-60-0903	3	0.3	2.5	60	0.9	2.86	4.67	100	6	6.95	1.4	-	62.2	-	-	-
ESTNR2030-40-0905	3	0.5	2.5	40	0.9	2.86	4.04	80	6	6.95	2	-	42	43.4	-	-
ESTNR2030-50-0905	3	0.5	2.5	50	0.9	2.86	4.35	90	6	6.95	1.7	-	52.1	53.7	-	-
ESTNR2030-60-0905	3	0.5	2.5	60	0.9	2.86	4.67	100	6	6.95	1.4	-	62.1	-	-	-

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D		Shank Dia.
~D6	0 ~ -0.012	h5
D8 ~ 20	0 ~ -0.015	

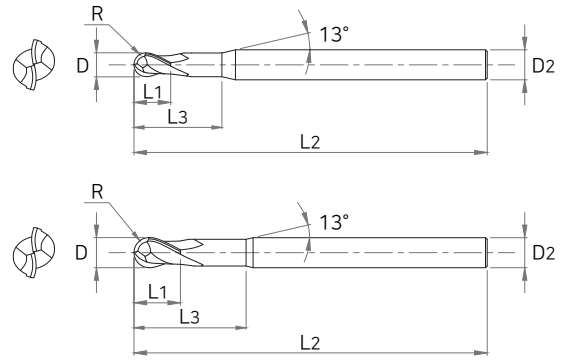


EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESPM4 030-05	3	0.5	1.2	8	50	6
ESPM4 040-05	4	0.5	1.5	10	50	6
ESPM4 060-05	6	0.5	2.5	12	60	6
ESPM4 060-10	6	1	2.5	12	60	6
ESPM4 060-15	6	1.5	2.5	12	60	6
ESPM4 060-15L	6	1.5	2.5	12	90	6
ESPM4 080-10	8	1	3.5	16	60	8
ESPM4 080-20	8	2	3.5	16	60	8
ESPM4 080-20L	8	2	3.5	16	100	8
ESPM4 100-10	10	1	4	20	70	10
ESPM4 100-20	10	2	4	20	70	10
ESPM4 100-20L	10	2	4	20	100	10
ESPM4 120-20	12	2	5	25	80	12
ESPM4 120-30	12	3	5	25	80	12
ESPM4 120-30L	12	3	5	25	110	12

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D		Shank Dia.
~D6	0 ~ -0.012	h5
D8 ~ 12	0 ~ -0.015	



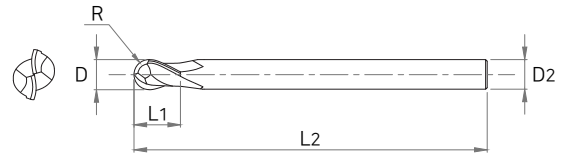
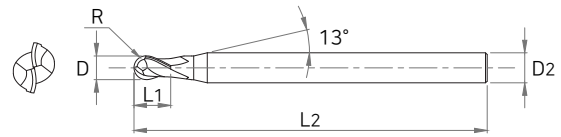
EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESB702 001	0.1	0.05	0.15	-	40	4
ESB702 002	0.2	0.1	0.3	-	40	4
ESB702 003	0.3	0.15	0.5	-	40	4
ESB702 004	0.4	0.2	0.6	-	40	4
ESB702 005	0.5	0.25	0.7	-	40	4
ESB702 006	0.6	0.3	0.9	-	40	4
ESB702 007	0.7	0.35	1.1	-	40	4
ESB702 008	0.8	0.4	1.2	-	40	4
ESB702 009	0.9	0.45	1.4	-	40	4
ESB702 010	1	0.5	1.5	3	50	6
ESB702 010S4	1	0.5	1.5	-	45	4
ESB702 015	1.5	0.75	2	4	50	6
ESB702 015S4	1.5	0.75	2	-	45	4
ESB702 020	2	1	2.5	5	50	6
ESB702 020S4	2	1	2.5	-	45	4
ESB702 025	2.5	1.25	3	7	50	6
ESB702 030	3	1.5	4	10	60	6

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESB702 030S	3	1.5	4	10	50	6
ESB702 030S4	3	1.5	4	-	45	4
ESB702 031	3	1.5	4	10	70	6
ESB702 040	4	2	5	10	60	6
ESB702 040S	4	2	5	10	50	6
ESB702 040S4	4	2	5	-	45	4
ESB702 041	4	2	5	10	70	6
ESB702 050	5	2.5	6	12	60	6
ESB702 060	6	3	7	12	60	6
ESB702 061	6	3	7	12	90	6
ESB702 080	8	4	9	15	70	8
ESB702 081	8	4	9	15	100	8
ESB702 100	10	5	11	25	75	10
ESB702 101	10	5	11	25	100	10
ESB702 120	12	6	12	25	80	12
ESB702 121	12	6	12	25	110	12

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D		Shank Dia.
~D6	0 ~ -0.012	h5
D8 ~ 12	0 ~ -0.015	



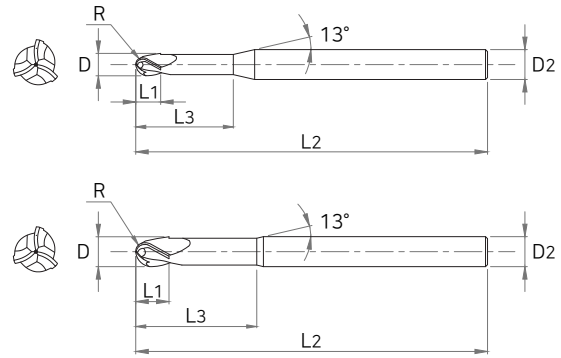
EDP No.	Description (mm)				
	D	R	L1	L2	D2
ESB712 010	1	0.5	2.5	50	6
ESB712 010S	1	0.5	1.5	40	6
ESB712 010S4	1	0.5	2.5	50	4
ESB712 012	1.2	0.6	3	50	6
ESB712 015	1.5	0.75	4	50	6
ESB712 015S	1.5	0.75	2.5	40	6
ESB712 015S4	1.5	0.75	4	50	4
ESB712 020	2	1	5	50	6
ESB712 020S	2	1	3	40	6
ESB712 020S4	2	1	5	50	4
ESB712 025	2.5	1.25	7	60	6
ESB712 030	3	1.5	8	60	6
ESB712 030S	3	1.5	4.5	50	6

EDP No.	Description (mm)				
	D	R	L1	L2	D2
ESB712 030S4	3	1.5	8	60	4
ESB712 040	4	2	8	70	6
ESB712 040S	4	2	6	50	6
ESB712 050	5	2.5	10	80	6
ESB712 050S	5	2.5	7.5	50	6
ESB712 060	6	3	12	90	6
ESB712 060S	6	3	9	50	6
ESB712 080S	8	4	12	50	8
ESB712 081	8	4	14	100	8
ESB712 100	10	5	18	100	10
ESB712 100S	10	5	15	60	10
ESB712 120	12	6	22	110	12
ESB712 120S	12	6	18	60	12

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D		Shank Dia.
~D6	0 ~ -0.012	h5
D8 ~ 12	0 ~ -0.015	

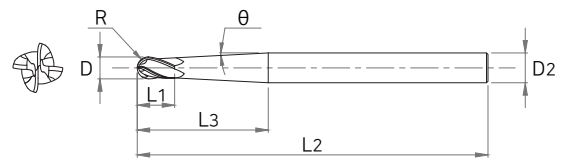


EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESB703 020	2	1	2.5	5	50	6
ESB703 025	2.5	1.25	3	7	50	6
ESB703 030	3	1.5	4	10	60	6
ESB703 030S	3	1.5	4	10	50	6
ESB703 031	3	1.5	4	10	70	6
ESB703 040	4	2	5	10	60	6
ESB703 040S	4	2	5	10	50	6
ESB703 041	4	2	5	10	70	6
ESB703 050	5	2.5	6	12	60	6
ESB703 060	6	3	7	12	60	6
ESB703 061	6	3	7	12	90	6
ESB703 080	8	4	9	15	70	8
ESB703 081	8	4	9	15	100	8
ESB703 100	10	5	11	25	75	10
ESB703 101	10	5	11	25	100	10
ESB703 120	12	6	12	25	80	12
ESB703 121	12	6	12	25	110	12

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



■Tolerance

D	Shank Dia.
All Sizes	0 ~ -0.012 h5

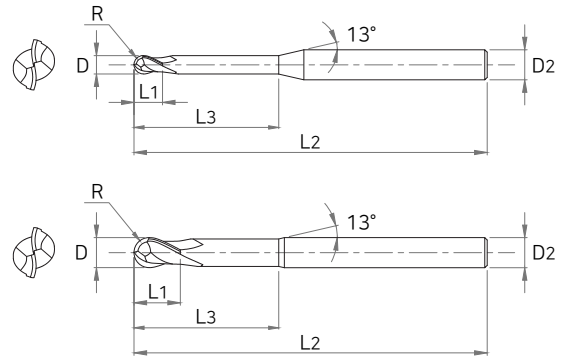


EDP No.	Description (mm)						
	D	R	θ	L1	L3	L2	D2
ESB734 020-2.5	2	1	2.5	2	25	60	4
ESB734 020-3.5	2	1	3.5	2	18	60	4
ESB734 025-2.5	2.5	1.25	2.5	3	20	60	4
ESB734 025-3.0	2.5	1.25	3	3	17	60	4
ESB734 030-2.0	3	1.5	2	3	46	70	6
ESB734 030-2.5	3	1.5	2.5	3	37	70	6
ESB734 040-2.0	4	2	2	4	33	70	6
ESB734 040-2.5	4	2	2.5	4	27	70	6
ESB734 050-2.5	5	2.5	2.5	5	16	70	6
ESB734 060-1.5	6	3	1.5	6	44	100	8
ESB734 060-2.5	6	3	2.5	6	29	100	8
ESB734 080-1.5	8	4	1.5	8	46	100	10
ESB734 080-2.5	8	4	2.5	8	31	100	10
ESB734 100-1.5	10	5	1.5	10	48	110	12
ESB734 100-2.5	10	5	2.5	10	33	110	12

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D		Shank Dia.
~D6	0~-0.012	h5
D8~12	0~-0.015	



EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRB712 001002	0.1	0.05	0.1	0.2	40	4
ESRB712 001003	0.1	0.05	0.1	0.3	40	4
ESRB712 001005	0.1	0.05	0.1	0.5	40	4
ESRB712 00101	0.1	0.05	0.1	1	40	4
ESRB712 002005	0.2	0.1	0.2	0.5	40	4
ESRB712 002015	0.2	0.1	0.2	1.5	40	4
ESRB712 00201	0.2	0.1	0.2	1	40	4
ESRB712 00202	0.2	0.1	0.2	2	40	4
ESRB712 00203	0.2	0.1	0.2	3	40	4
ESRB712 003015	0.3	0.15	0.3	1.5	40	4
ESRB712 00301	0.3	0.15	0.3	1	40	4
ESRB712 003025	0.3	0.15	0.3	2.5	40	4
ESRB712 00302	0.3	0.15	0.3	2	40	4
ESRB712 00303	0.3	0.15	0.3	3	40	4
ESRB712 00304	0.3	0.15	0.3	4	40	4
ESRB712 00305	0.3	0.15	0.3	5	40	4
ESRB712 004015	0.4	0.2	0.4	1.5	40	4
ESRB712 00401	0.4	0.2	0.4	1	40	4
ESRB712 004025	0.4	0.2	0.4	2.5	40	4
ESRB712 00402	0.4	0.2	0.4	2	40	4
ESRB712 00403	0.4	0.2	0.4	3	40	4
ESRB712 00404	0.4	0.2	0.4	4	40	4
ESRB712 00405	0.4	0.2	0.4	5	40	4
ESRB712 00406	0.4	0.2	0.4	6	40	4
ESRB712 00408	0.4	0.2	0.4	8	40	4
ESRB712 00410	0.4	0.2	0.4	10	40	4
ESRB712 005015	0.5	0.25	0.5	1.5	45	4
ESRB712 00501	0.5	0.25	0.5	1	45	4
ESRB712 00501S6	0.5	0.25	0.5	1	45	6
ESRB712 005025	0.5	0.25	0.5	2.5	45	4
ESRB712 00502	0.5	0.25	0.5	2	45	4

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRB712 00502S6	0.5	0.25	0.5	2	45	6
ESRB712 00503	0.5	0.25	0.5	3	45	4
ESRB712 00504	0.5	0.25	0.5	4	45	4
ESRB712 00504S6	0.5	0.25	0.5	4	45	6
ESRB712 00505	0.5	0.25	0.5	5	45	4
ESRB712 00506	0.5	0.25	0.5	6	45	4
ESRB712 00508	0.5	0.25	0.5	8	45	4
ESRB712 00510	0.5	0.25	0.5	10	45	4
ESRB712 00512	0.5	0.25	0.5	12	45	4
ESRB712 00514	0.5	0.25	0.5	14	45	4
ESRB712 00516	0.5	0.25	0.5	16	45	4
ESRB712 00601	0.6	0.3	0.6	1	45	4
ESRB712 00601S6	0.6	0.3	0.6	1	45	6
ESRB712 00602	0.6	0.3	0.6	2	45	4
ESRB712 00602S6	0.6	0.3	0.6	2	45	6
ESRB712 00603	0.6	0.3	0.6	3	45	4
ESRB712 00603S6	0.6	0.3	0.6	3	45	6
ESRB712 00604	0.6	0.3	0.6	4	45	4
ESRB712 00604S6	0.6	0.3	0.6	4	45	6
ESRB712 00605	0.6	0.3	0.6	5	45	4
ESRB712 00605S6	0.6	0.3	0.6	5	45	6
ESRB712 00606	0.6	0.3	0.6	6	45	4
ESRB712 00606S6	0.6	0.3	0.6	6	45	6
ESRB712 00608	0.6	0.3	0.6	8	45	4
ESRB712 00608S6	0.6	0.3	0.6	8	45	6
ESRB712 00610	0.6	0.3	0.6	10	45	4
ESRB712 00610S6	0.6	0.3	0.6	10	45	6
ESRB712 00612	0.6	0.3	0.6	12	45	4
ESRB712 00612S6	0.6	0.3	0.6	12	45	6
ESRB712 00614	0.6	0.3	0.6	14	45	4
ESRB712 00614S6	0.6	0.3	0.6	14	45	6

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~FCD500	Aluminum	Stainless Steel
			SKD61 ~HRC55	SKD11 HRC55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRB712 00616	0.6	0.3	0.6	16	45	4
ESRB712 00616S6	0.6	0.3	0.6	16	50	6
ESRB712 00702	0.7	0.35	0.7	2	45	4
ESRB712 00704	0.7	0.35	0.7	4	45	4
ESRB712 00706	0.7	0.35	0.7	6	45	4
ESRB712 00708	0.7	0.35	0.7	8	45	4
ESRB712 00710	0.7	0.35	0.7	10	45	4
ESRB712 00712	0.7	0.35	0.7	12	45	4
ESRB712 00801	0.8	0.4	0.8	1	45	4
ESRB712 00801S6	0.8	0.4	0.8	1	45	6
ESRB712 00802	0.8	0.4	0.8	2	45	4
ESRB712 00802S6	0.8	0.4	0.8	2	45	6
ESRB712 00803	0.8	0.4	0.8	3	45	4
ESRB712 00803S6	0.8	0.4	0.8	3	45	6
ESRB712 00804	0.8	0.4	0.8	4	45	4
ESRB712 00804S6	0.8	0.4	0.8	4	45	6
ESRB712 00805	0.8	0.4	0.8	5	45	4
ESRB712 00805S6	0.8	0.4	0.8	5	45	6
ESRB712 00806	0.8	0.4	0.8	6	45	4
ESRB712 00806S6	0.8	0.4	0.8	6	45	6
ESRB712 00808	0.8	0.4	0.8	8	45	4
ESRB712 00808S6	0.8	0.4	0.8	8	45	6
ESRB712 00810	0.8	0.4	0.8	10	45	4
ESRB712 00810S6	0.8	0.4	0.8	10	45	6
ESRB712 00812	0.8	0.4	0.8	12	45	4
ESRB712 00812S6	0.8	0.4	0.8	12	45	6
ESRB712 00814	0.8	0.4	0.8	14	45	4
ESRB712 00814S6	0.8	0.4	0.8	14	45	6
ESRB712 00816	0.8	0.4	0.8	16	45	4
ESRB712 00816S6	0.8	0.4	0.8	16	50	6
ESRB712 00820	0.8	0.4	0.8	20	50	4
ESRB712 00820S6	0.8	0.4	0.8	20	55	6
ESRB712 00904	0.9	0.45	0.9	4	45	4
ESRB712 00906	0.9	0.45	0.9	6	45	4
ESRB712 00908	0.9	0.45	0.9	8	45	4
ESRB712 00910	0.9	0.45	0.9	10	45	4
ESRB712 01002	1	0.5	1	2	50	4
ESRB712 01002S6	1	0.5	1	2	50	6
ESRB712 01003	1	0.5	1	3	50	4
ESRB712 01003S6	1	0.5	1	3	50	6
ESRB712 01004	1	0.5	1	4	50	4
ESRB712 01004S6	1	0.5	1	4	50	6
ESRB712 01005	1	0.5	1	5	50	4
ESRB712 01005S6	1	0.5	1	5	50	6
ESRB712 01006	1	0.5	1	6	50	4
ESRB712 01006S6	1	0.5	1	6	50	6
ESRB712 01007	1	0.5	1	7	50	4
ESRB712 01007S6	1	0.5	1	7	50	6
ESRB712 01008	1	0.5	1	8	50	4

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRB712 01008S6	1	0.5	1	8	50	6
ESRB712 01009	1	0.5	1	9	50	4
ESRB712 01009S6	1	0.5	1	9	50	6
ESRB712 01010	1	0.5	1	10	50	4
ESRB712 01010S6	1	0.5	1	10	50	6
ESRB712 01012	1	0.5	1	12	50	4
ESRB712 01012S6	1	0.5	1	12	50	6
ESRB712 01014	1	0.5	1	14	50	4
ESRB712 01014S6	1	0.5	1	14	50	6
ESRB712 01016	1	0.5	1	16	50	4
ESRB712 01016S6	1	0.5	1	16	50	6
ESRB712 01018	1	0.5	1	18	50	4
ESRB712 01018S6	1	0.5	1	18	50	6
ESRB712 01020	1	0.5	1	20	55	4
ESRB712 01020S6	1	0.5	1	20	55	6
ESRB712 01022	1	0.5	1	22	60	4
ESRB712 01022S6	1	0.5	1	22	60	6
ESRB712 01026	1	0.5	1	26	60	4
ESRB712 01026S6	1	0.5	1	26	60	6
ESRB712 01030	1	0.5	1	30	70	4
ESRB712 01030S6	1	0.5	1	30	70	6
ESRB712 01040	1	0.5	1	40	80	4
ESRB712 01050	1	0.5	1	50	100	4
ESRB712 01204	1.2	0.6	1.2	4	50	4
ESRB712 01206	1.2	0.6	1.2	6	50	4
ESRB712 01208	1.2	0.6	1.2	8	50	4
ESRB712 01210	1.2	0.6	1.2	10	50	4
ESRB712 01212	1.2	0.6	1.2	12	50	4
ESRB712 01216	1.2	0.6	1.2	16	50	4
ESRB712 01220	1.2	0.6	1.2	20	50	4
ESRB712 01226	1.2	0.6	1.2	26	60	4
ESRB712 01406	1.4	0.7	1.4	6	50	4
ESRB712 01408	1.4	0.7	1.4	8	50	4
ESRB712 01410	1.4	0.7	1.4	10	50	4
ESRB712 01412	1.4	0.7	1.4	12	50	4
ESRB712 01416	1.4	0.7	1.4	16	50	4
ESRB712 01503	1.5	0.75	1.5	3	50	4
ESRB712 01503S6	1.5	0.75	1.5	3	50	6
ESRB712 01504	1.5	0.75	1.5	4	50	4
ESRB712 01504S6	1.5	0.75	1.5	4	50	6
ESRB712 01505	1.5	0.75	1.5	5	50	4
ESRB712 01506	1.5	0.75	1.5	6	50	4
ESRB712 01506S6	1.5	0.75	1.5	6	50	6
ESRB712 01507	1.5	0.75	1.5	7	50	4
ESRB712 01508	1.5	0.75	1.5	8	50	4
ESRB712 01508S6	1.5	0.75	1.5	8	50	6
ESRB712 01510	1.5	0.75	1.5	10	50	4
ESRB712 01510S6	1.5	0.75	1.5	10	50	6
ESRB712 01512	1.5	0.75	1.5	12	50	4

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRB712 01512S6	1.5	0.75	1.5	12	50	6
ESRB712 01514	1.5	0.75	1.5	14	50	4
ESRB712 01514S6	1.5	0.75	1.5	14	50	6
ESRB712 01516	1.5	0.75	1.5	16	50	4
ESRB712 01516S6	1.5	0.75	1.5	16	50	6
ESRB712 01518	1.5	0.75	1.5	18	50	4
ESRB712 01518S6	1.5	0.75	1.5	18	50	6
ESRB712 01520	1.5	0.75	1.5	20	55	4
ESRB712 01520S6	1.5	0.75	1.5	20	55	6
ESRB712 01522	1.5	0.75	1.5	22	60	4
ESRB712 01522S6	1.5	0.75	1.5	22	60	6
ESRB712 01526	1.5	0.75	1.5	26	60	4
ESRB712 01526S6	1.5	0.75	1.5	26	60	6
ESRB712 01530	1.5	0.75	1.5	30	70	4
ESRB712 01530S6	1.5	0.75	1.5	30	70	6
ESRB712 01535	1.5	0.75	1.5	35	70	4
ESRB712 01535S6	1.5	0.75	1.5	35	70	6
ESRB712 01540	1.5	0.75	1.5	40	80	4
ESRB712 01540S6	1.5	0.75	1.5	40	80	6
ESRB712 01604	1.6	0.8	1.6	4	50	4
ESRB712 01606	1.6	0.8	1.6	6	50	4
ESRB712 01608	1.6	0.8	1.6	8	50	4
ESRB712 01610	1.6	0.8	1.6	10	50	4
ESRB712 01612	1.6	0.8	1.6	12	50	4
ESRB712 01616	1.6	0.8	1.6	16	50	4
ESRB712 01620	1.6	0.8	1.6	20	50	4
ESRB712 01804	1.8	0.9	1.8	4	50	4
ESRB712 01806	1.8	0.9	1.8	6	50	4
ESRB712 01808	1.8	0.9	1.8	8	50	4
ESRB712 01810	1.8	0.9	1.8	10	50	4
ESRB712 01812	1.8	0.9	1.8	12	50	4
ESRB712 01816	1.8	0.9	1.8	16	50	4
ESRB712 01820	1.8	0.9	1.8	20	50	4
ESRB712 02004	2	1	2	4	50	4
ESRB712 02004S6	2	1	2	4	50	6
ESRB712 02006	2	1	2	6	50	4
ESRB712 02006S6	2	1	2	6	50	6
ESRB712 02008	2	1	2	8	50	4
ESRB712 02008S6	2	1	2	8	50	6
ESRB712 02010	2	1	2	10	50	4
ESRB712 02010S6	2	1	2	10	50	6
ESRB712 02012	2	1	2	12	50	4
ESRB712 02012S6	2	1	2	12	50	6
ESRB712 02014	2	1	2	14	50	4
ESRB712 02014S6	2	1	2	14	50	6
ESRB712 02016	2	1	2	16	50	4
ESRB712 02016S6	2	1	2	16	50	6
ESRB712 02018	2	1	2	18	55	4
ESRB712 02018S6	2	1	2	18	55	6

EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2
ESRB712 02020	2	1	2	20	55	4
ESRB712 02020S6	2	1	2	20	55	6
ESRB712 02022	2	1	2	22	60	4
ESRB712 02022S6	2	1	2	22	60	6
ESRB712 02026	2	1	2	26	60	4
ESRB712 02026S6	2	1	2	26	60	6
ESRB712 02030	2	1	2	30	70	4
ESRB712 02030S6	2	1	2	30	70	6
ESRB712 02035	2	1	2	35	70	4
ESRB712 02035S6	2	1	2	35	70	6
ESRB712 02040	2	1	2	40	80	4
ESRB712 02040S6	2	1	2	40	80	6
ESRB712 02045	2	1	2	45	90	4
ESRB712 02045S6	2	1	2	45	90	6
ESRB712 02050	2	1	2	50	100	4
ESRB712 02050S6	2	1	2	50	100	6
ESRB712 02060	2	1	2	60	110	4
ESRB712 02508	2.5	1.25	2.5	8	50	4
ESRB712 02510	2.5	1.25	2.5	10	50	4
ESRB712 02512	2.5	1.25	2.5	12	50	4
ESRB712 02516	2.5	1.25	2.5	16	50	4
ESRB712 02520	2.5	1.25	2.5	20	50	4
ESRB712 02522	2.5	1.25	2.5	22	60	4
ESRB712 02526	2.5	1.25	2.5	26	60	4
ESRB712 02530	2.5	1.25	2.5	30	70	4
ESRB712 02535	2.5	1.25	2.5	35	70	4
ESRB712 02540	2.5	1.25	2.5	40	80	4
ESRB712 02545	2.5	1.25	2.5	45	90	4
ESRB712 02550	2.5	1.25	2.5	50	100	4
ESRB712 03006	3	1.5	3	6	50	6
ESRB712 03008	3	1.5	3	8	50	6
ESRB712 03010	3	1.5	3	10	50	6
ESRB712 03012	3	1.5	3	12	50	6
ESRB712 03014	3	1.5	3	14	60	6
ESRB712 03016	3	1.5	3	16	60	6
ESRB712 03018	3	1.5	3	18	60	6
ESRB712 03020	3	1.5	3	20	60	6
ESRB712 03022	3	1.5	3	22	65	6
ESRB712 03026	3	1.5	3	26	65	6
ESRB712 03030	3	1.5	3	30	70	6
ESRB712 03035	3	1.5	3	35	70	6
ESRB712 03040	3	1.5	3	40	80	6
ESRB712 03045	3	1.5	3	45	90	6
ESRB712 03050	3	1.5	3	50	100	6
ESRB712 03060	3	1.5	3	60	100	6
ESRB712 03510	3.5	1.75	3	10	50	6
ESRB712 03516	3.5	1.75	3	16	60	6
ESRB712 03520	3.5	1.75	3	20	60	6
ESRB712 03526	3.5	1.75	3	26	65	6

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

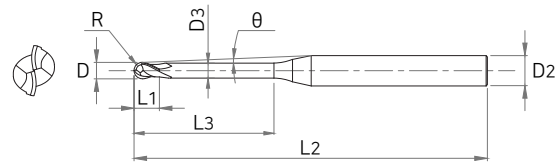
○ : GOOD ◎ : EXCELLENT

EDP No.	Description (mm)						EDP No.	Description (mm)					
	D	R	L1	L3	L2	D2		D	R	L1	L3	L2	D2
ESRB712 03530	3.5	1.75	3	30	70	6	ESRB712 05040	5	2.5	6	40	80	6
ESRB712 04008	4	2	4	8	50	6	ESRB712 05045	5	2.5	6	45	90	6
ESRB712 04010	4	2	4	10	50	6	ESRB712 05050	5	2.5	6	50	100	6
ESRB712 04012	4	2	4	12	50	6	ESRB712 05055	5	2.5	6	55	100	6
ESRB712 04014	4	2	4	14	60	6	ESRB712 05060	5	2.5	6	60	100	6
ESRB712 04016	4	2	4	16	60	6	ESRB712 0602090	6	3	12	20	90	6
ESRB712 04018	4	2	4	18	60	6	ESRB712 06020	6	3	8	20	60	6
ESRB712 04020	4	2	4	20	60	6	ESRB712 0603090	6	3	12	30	90	6
ESRB712 04022	4	2	4	22	65	6	ESRB712 06030	6	3	8	30	60	6
ESRB712 04026	4	2	4	26	65	6	ESRB712 08025100	8	4	14	25	100	8
ESRB712 04030	4	2	4	30	70	6	ESRB712 08025	8	4	10	25	70	8
ESRB712 04035	4	2	4	35	70	6	ESRB712 08035100	8	4	14	35	100	8
ESRB712 04040	4	2	4	40	80	6	ESRB712 08035	8	4	10	35	70	8
ESRB712 04045	4	2	4	45	90	6	ESRB712 10030100	10	5	18	30	100	10
ESRB712 04050	4	2	4	50	100	6	ESRB712 10030	10	5	12	30	75	10
ESRB712 04055	4	2	4	55	100	6	ESRB712 10040100	10	5	18	40	100	10
ESRB712 04060	4	2	4	60	100	6	ESRB712 10040	10	5	12	40	75	10
ESRB712 05015	5	2.5	6	15	60	6	ESRB712 12032110	12	6	22	32	110	12
ESRB712 05020	5	2.5	6	20	60	6	ESRB712 12032	12	6	14	32	80	12
ESRB712 05026	5	2.5	6	26	65	6	ESRB712 12045110	12	6	22	45	110	12
ESRB712 05030	5	2.5	6	30	70	6	ESRB712 12045	12	6	14	45	80	12
ESRB712 05035	5	2.5	6	35	70	6							

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRC55	SKD11 HRC55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D	Shank Dia.
All Sizes	0 ~ -0.012 h5

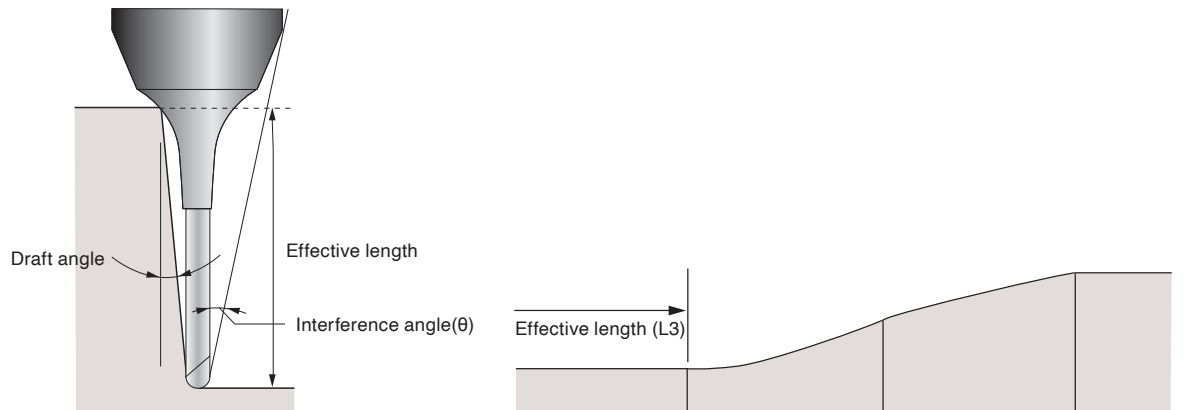


EDP No.	Description (mm)								Effective length from draft angle of Workpiece				
	D	R	L1	L3	D3	L2	D2	θ	0.5°	1°	1.5°	2°	3°
ESLNB2001-0.2	0.1	0.05	0.08	0.2	0.08	45	4	11.8	0.3	0.3	0.3	0.4	0.4
ESLNB2001-0.3	0.1	0.05	0.08	0.3	0.08	45	4	11.7	0.4	0.4	0.5	0.5	0.5
ESLNB2001-0.5	0.1	0.05	0.08	0.5	0.08	45	4	11.4	0.6	0.7	0.7	0.7	0.8
ESLNB2002-0.5	0.2	0.1	0.15	0.5	0.17	50	4	11.5	1.2	1.3	1.5	1.6	2
ESLNB2002-1	0.2	0.1	0.15	1	0.17	50	4	10.9	1.7	1.9	2.1	2.3	2.7
ESLNB2002-1.5	0.2	0.1	0.15	1.5	0.17	50	4	10.4	2.3	2.5	2.8	3	3.4
ESLNB2002-2	0.2	0.1	0.15	2	0.17	50	4	9.9	2.8	3.1	3.4	3.6	4.1
ESLNB2002-2.5	0.2	0.1	0.15	2.5	0.17	50	4	9.5	3.4	3.7	4	4.2	4.7
ESLNB2002-3.0	0.2	0.1	0.15	3	0.17	50	4	9.1	3.9	4.3	4.6	4.9	5.4
ESLNB2003-1	0.3	0.15	0.25	1	0.27	50	4	10.9	1.7	1.9	2.1	2.3	2.7
ESLNB2003-1.5	0.3	0.15	0.25	1.5	0.27	50	4	10.4	2.3	2.5	2.7	3	3.4
ESLNB2003-2	0.3	0.15	0.25	2	0.27	50	4	9.9	2.8	3.1	3.4	3.6	4
ESLNB2003-2.5	0.3	0.15	0.25	2.5	0.27	50	4	9.5	3.4	3.7	4	4.2	4.7
ESLNB2003-3	0.3	0.15	0.25	3	0.27	50	4	9.1	3.9	4.3	4.6	4.8	5.3
ESLNB2004-1	0.4	0.2	0.3	1	0.37	50	4	11	1.7	1.9	2.1	2.3	2.7
ESLNB2004-1.5	0.4	0.2	0.3	1.5	0.37	50	4	10.4	2.3	2.5	2.7	2.9	3.4
ESLNB2004-2	0.4	0.2	0.3	2	0.37	50	4	9.9	2.8	3.1	3.4	3.6	4
ESLNB2004-2.5	0.4	0.2	0.3	2.5	0.37	50	4	9.5	3.4	3.7	4	4.2	4.7
ESLNB2004-3	0.4	0.2	0.3	3	0.37	50	4	9.1	3.9	4.3	4.6	4.8	5.3
ESLNB2004-3.5	0.4	0.2	0.3	3.5	0.37	50	4	8.7	4.5	4.8	5.2	5.4	6
ESLNB2004-4	0.4	0.2	0.3	4	0.37	50	4	8.3	5	5.4	5.7	6	6.6
ESLNB2004-4.5	0.4	0.2	0.3	4.5	0.37	50	4	8	5.6	6	6.3	6.6	7.2
ESLNB2005-1	0.5	0.25	0.35	1	0.47	50	4	11	1.7	1.9	2.1	2.3	2.6
ESLNB2005-2	0.5	0.25	0.35	2	0.47	50	4	9.9	2.8	3.1	3.3	3.6	4
ESLNB2005-3	0.5	0.25	0.35	3	0.47	50	4	9	3.9	4.3	4.6	4.8	5.3
ESLNB2005-4	0.5	0.25	0.35	4	0.47	50	4	8.3	5	5.4	5.7	6	6.6
ESLNB2005-5	0.5	0.25	0.35	5	0.47	50	4	7.7	6.1	6.5	6.9	7.2	7.8
ESLNB2005-6	0.5	0.25	0.35	6	0.47	50	4	7.1	7.2	7.6	8	8.4	9
ESLNB2005-8	0.5	0.25	0.35	8	0.47	50	4	6.3	9.3	9.9	10.3	10.7	11.4
ESLNB2006-1	0.6	0.3	0.4	1	0.57	50	4	11	1.7	1.9	2.1	2.3	2.6
ESLNB2006-2	0.6	0.3	0.4	2	0.57	50	4	9.9	2.8	3.1	3.3	3.6	4

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



* Marked effective length is set to prevent interfering in workpiece.
You need to take proper control when machining.

EDP No.	Description (mm)								Effective length from draft angle of Workpiece				
	D	R	L1	L3	D3	L2	D2	θ	0.5°	1°	1.5°	2°	3°
ESLNB2006-3	0.6	0.3	0.4	3	0.57	50	4	9	3.9	4.3	4.5	4.8	5.3
ESLNB2006-4	0.6	0.3	0.4	4	0.57	50	4	8.3	5	5.4	5.7	6	6.6
ESLNB2006-5	0.6	0.3	0.4	5	0.57	50	4	7.6	6.1	6.5	6.9	7.2	7.8
ESLNB2006-6	0.6	0.3	0.4	6	0.57	50	4	7.1	7.2	7.6	8	8.4	9
ESLNB2006-7	0.6	0.3	0.4	7	0.57	50	4	6.6	8.3	8.8	9.2	9.5	10.2
ESLNB2006-8	0.6	0.3	0.4	8	0.57	50	4	6.2	9.3	9.9	10.3	10.7	11.4
ESLNB2006-9	0.6	0.3	0.4	9	0.57	50	4	5.8	10.4	10.9	11.4	11.8	12.5
ESLNB2006-10	0.6	0.3	0.4	10	0.57	50	4	5.5	11.4	12	12.5	12.9	13.7
ESLNB2006-12	0.6	0.3	0.4	12	0.57	50	4	5	13.6	14.2	14.7	15.2	16
ESLNB2008-2	0.8	0.4	0.5	2	0.77	50	4	9.9	2.8	3.1	3.3	3.5	4
ESLNB2008-4	0.8	0.4	0.5	4	0.77	50	4	8.2	5	5.4	5.7	6	6.5
ESLNB2008-5	0.8	0.4	0.5	5	0.77	50	4	7.5	6.1	6.5	6.9	7.2	7.8
ESLNB2008-6	0.8	0.4	0.5	6	0.77	50	4	7	7.2	7.6	8	8.4	9
ESLNB2008-8	0.8	0.4	0.5	8	0.77	50	4	6.1	9.3	9.8	10.3	10.7	11.3
ESLNB2008-10	0.8	0.4	0.5	10	0.77	50	4	5.4	11.4	12	12.5	12.9	13.7
ESLNB2010-2	1	0.5	0.8	2	0.96	50	4	9.9	2.9	3.1	3.3	3.5	4
ESLNB2010-3	1	0.5	0.8	3	0.96	50	4	8.9	4	4.3	4.5	4.8	5.3
ESLNB2010-4	1	0.5	0.8	4	0.96	50	4	8.1	5	5.4	5.7	6	6.5
ESLNB2010-5	1	0.5	0.8	5	0.96	50	4	7.4	6.1	6.5	6.9	7.2	7.8
ESLNB2010-6	1	0.5	0.8	6	0.96	50	4	6.8	7.2	7.7	8	8.4	9
ESLNB2010-7	1	0.5	0.8	7	0.96	50	4	6.3	8.3	8.8	9.2	9.5	10.2
ESLNB2010-8	1	0.5	0.8	8	0.96	50	4	5.9	9.3	9.9	10.3	10.7	11.3
ESLNB2010-9	1	0.5	0.8	9	0.96	50	4	5.5	10.4	11	11.4	11.8	12.5
ESLNB2010-10	1	0.5	0.8	10	0.96	50	4	5.2	11.5	12	12.5	12.9	13.7
ESLNB2010-12	1	0.5	0.8	12	0.96	55	4	4.6	13.6	14.2	14.7	15.2	15.9
ESLNB2010-14	1	0.5	0.8	14	0.96	55	4	4.2	15.7	16.4	16.9	17.4	18.5
ESLNB2010-16	1	0.5	0.8	16	0.96	55	4	3.8	17.8	18.5	19.1	19.6	21.2
ESLNB2010-18	1	0.5	0.8	18	0.96	60	4	3.5	19.9	20.7	21.3	21.8	23.8
ESLNB2010-20	1	0.5	0.8	20	0.96	60	4	3.3	22	22.8	23.4	24	26.5
ESLNB2012-4	1.2	0.6	1.1	4	1.15	50	4	7.9	5.1	5.4	5.7	6	6.5
ESLNB2012-6	1.2	0.6	1.1	6	1.15	50	4	6.6	7.2	7.7	8	8.4	9

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT

EDP No.	Description (mm)								Effective length from draft angle of Workpiece				
	D	R	L1	L3	D3	L2	D2	θ	0.5°	1°	1.5°	2°	3°
ESLNB2012-8	1.2	0.6	1.1	8	1.15	50	4	5.7	9.4	9.9	10.3	10.7	11.3
ESLNB2012-10	1.2	0.6	1.1	10	1.15	50	4	5	11.5	12.1	12.5	12.9	13.7
ESLNB2012-12	1.2	0.6	1.1	12	1.15	55	4	4.5	13.6	14.2	14.7	15.2	15.9
ESLNB2014-8	1.4	0.7	1.3	8	1.34	50	4	5.5	9.4	9.9	10.3	10.7	11.3
ESLNB2014-12	1.4	0.7	1.3	12	1.34	55	4	4.3	13.6	14.2	14.7	15.2	15.9
ESLNB2014-16	1.4	0.7	1.3	16	1.34	55	4	3.5	17.8	18.5	19.1	19.6	21.2
ESLNB2015-4	1.5	0.75	1.35	4	1.44	50	4	7.7	5.1	5.4	5.7	6	6.5
ESLNB2015-6	1.5	0.75	1.35	6	1.44	50	4	6.4	7.3	7.7	8	8.4	9
ESLNB2015-8	1.5	0.75	1.35	8	1.44	50	4	5.4	9.4	9.9	10.3	10.7	11.3
ESLNB2015-10	1.5	0.75	1.35	10	1.44	50	4	4.7	11.5	12.1	12.5	12.9	13.7
ESLNB2015-12	1.5	0.75	1.35	12	1.44	55	4	4.2	13.6	14.2	14.7	15.2	15.9
ESLNB2015-14	1.5	0.75	1.35	14	1.44	55	4	3.8	15.7	16.4	16.9	17.4	18.5
ESLNB2015-16	1.5	0.75	1.35	16	1.44	55	4	3.4	17.8	18.5	19.1	19.6	21.1
ESLNB2015-20	1.5	0.75	1.35	20	1.44	60	4	2.9	22	22.8	23.4	24	-
ESLNB2016-8	1.6	0.8	1.4	8	1.54	50	4	5.3	9.4	9.9	10.3	10.7	11.3
ESLNB2016-10	1.6	0.8	1.4	10	1.54	55	4	4.6	11.5	12.1	12.5	12.9	13.7
ESLNB2016-12	1.6	0.8	1.4	12	1.54	55	4	4.1	13.6	14.2	14.7	15.2	15.9
ESLNB2016-16	1.6	0.8	1.4	16	1.54	55	4	3.3	17.8	18.5	19.1	19.6	21.1
ESLNB2016-20	1.6	0.8	1.4	20	1.54	60	4	2.8	22	22.8	23.4	24	-
ESLNB2018-8	1.8	0.9	1.6	8	1.73	50	4	5.1	9.4	9.9	10.3	10.7	11.3
ESLNB2018-12	1.8	0.9	1.6	12	1.73	55	4	3.9	13.7	14.3	14.7	15.2	15.9
ESLNB2018-16	1.8	0.9	1.6	16	1.73	55	4	3.1	17.9	18.6	19.1	19.6	21.1
ESLNB2018-20	1.8	0.9	1.6	20	1.73	60	4	2.6	22	22.8	23.4	24	-
ESLNB2020-3	2	1	1.7	3	1.92	50	4	8.3	4.1	4.4	4.6	4.8	5.2
ESLNB2020-4	2	1	3	4	1.92	50	4	7.3	5.2	5.5	5.8	6	6.5
ESLNB2020-6	2	1	3	6	1.92	50	4	5.8	7.3	7.7	8.1	8.4	9
ESLNB2020-8	2	1	3	8	1.92	50	4	4.9	9.5	9.9	10.3	10.7	11.3
ESLNB2020-10	2	1	3	10	1.92	50	4	4.2	11.6	12.1	12.6	12.9	13.6
ESLNB2020-12	2	1	3	12	1.92	55	4	3.7	13.7	14.3	14.8	15.2	15.9
ESLNB2020-14	2	1	3	14	1.92	55	4	3.2	15.8	16.4	16.9	17.4	18.5
ESLNB2020-16	2	1	3	16	1.92	55	4	2.9	17.9	18.6	19.1	19.6	-
ESLNB2020-18	2	1	3	18	1.92	60	4	2.7	20	20.7	21.3	21.8	-
ESLNB2020-20	2	1	3	20	1.92	60	4	2.4	22.1	22.8	23.4	24	-
ESLNB2020-22	2	1	3	22	1.92	60	4	2.3	24.1	24.9	25.6	26.3	-
ESLNB2020-25	2	1	3	25	1.92	65	4	2	27.3	28.1	28.8	-	-
ESLNB2020-30	2	1	3	30	1.92	70	4	1.7	32.4	33.4	34.2	-	-
ESLNB2020-35	2	1	3	35	1.92	75	4	1.5	37.6	38.6	-	-	-
ESLNB2020-40	2	1	3	40	1.92	80	4	1.4	42.8	43.8	-	-	-
ESLNB2025-10	2.5	1.25	4	10	2.4	50	4	3.4	11.6	12.1	12.6	13	13.6
ESLNB2025-16	2.5	1.25	4	16	2.4	55	4	2.3	17.9	18.6	19.1	19.6	-
ESLNB2025-20	2.5	1.25	4	20	2.4	60	4	1.9	22.1	22.8	23.5	-	-
ESLNB2030-8	3	1.5	4	8	2.88	55	6	6.2	9.6	10	10.4	10.7	11.3
ESLNB2030-10	3	1.5	4	10	2.88	55	6	5.5	11.7	12.2	12.6	13	13.6
ESLNB2030-13	3	1.5	4	13	2.88	60	6	4.6	14.8	15.4	15.9	16.3	17.1
ESLNB2030-16	3	1.5	4	16	2.88	60	6	4	18	18.6	19.1	19.6	21.1
ESLNB2030-18	3	1.5	4	18	2.88	60	6	3.6	20	20.7	21.3	21.8	23.7
ESLNB2030-20	3	1.5	4	20	2.88	65	6	3.4	22.1	22.9	23.5	24	26.4
ESLNB2030-25	3	1.5	4	25	2.88	70	6	2.8	27.3	28.2	28.8	29.9	-
ESLNB2030-30	3	1.5	4	30	2.88	75	6	2.2	37.7	38.7	40	41.9	-

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

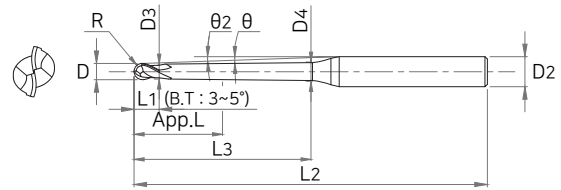
○ : GOOD ◎ : EXCELLENT

EDP No.	Description (mm)								Effective length from draft angle of Workpiece				
	D	R	L1	L3	D3	L2	D2	θ	0.5°	1°	1.5°	2°	3°
ESLNB2030-35	3	1.5	4	35	2.88	80	6	4.5	11.6	12.1	12.5	12.9	13.5
ESLNB2040-10	4	2	5	10	3.9	55	6	3.6	14.7	15.3	15.8	16.2	17
ESLNB2040-13	4	2	5	13	3.9	60	6	3.1	17.9	18.5	19.1	19.5	20.9
ESLNB2040-16	4	2	5	16	3.9	60	6	2.5	22.1	22.8	23.4	23.9	-
ESLNB2040-20	4	2	5	20	3.9	65	6	2.1	27.3	28.1	28.8	29.8	-
ESLNB2040-25	4	2	5	25	3.9	70	6	1.8	32.4	33.4	34.2	-	-
ESLNB2040-30	4	2	5	30	3.9	75	6	1.6	37.6	38.6	39.9	-	-
ESLNB2040-35	4	2	5	35	3.9	80	6	1.4	42.8	43.8	-	-	-
ESLNB2040-40	4	2	5	40	3.9	80	6	1.2	47.9	49.1	-	-	-
ESLNB2040-45	4	2	5	45	3.9	90	6	1.1	53.1	54.5	-	-	-
ESLNB2040-50	4	2	5	50	3.9	100	6	1.4	22	22.8	-	-	-
ESLNB2050-20	5	2.5	6	20	4.9	65	6	1.2	27.2	28.1	-	-	-
ESLNB2050-25	5	2.5	6	25	4.9	70	6	1	32.4	-	-	-	-
ESLNB2050-30	5	2.5	6	30	4.9	75	6	0.8	42.8	-	-	-	-
ESLNB2050-35	5	2.5	6	35	4.9	80	6	0.7	42.8	-	-	-	-
ESLNB2050-40	5	2.5	6	40	4.9	90	6	-	-	-	-	-	-

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D		Shank Dia.
~D6	0~-0.012	h5
D8~12	0~-0.015	

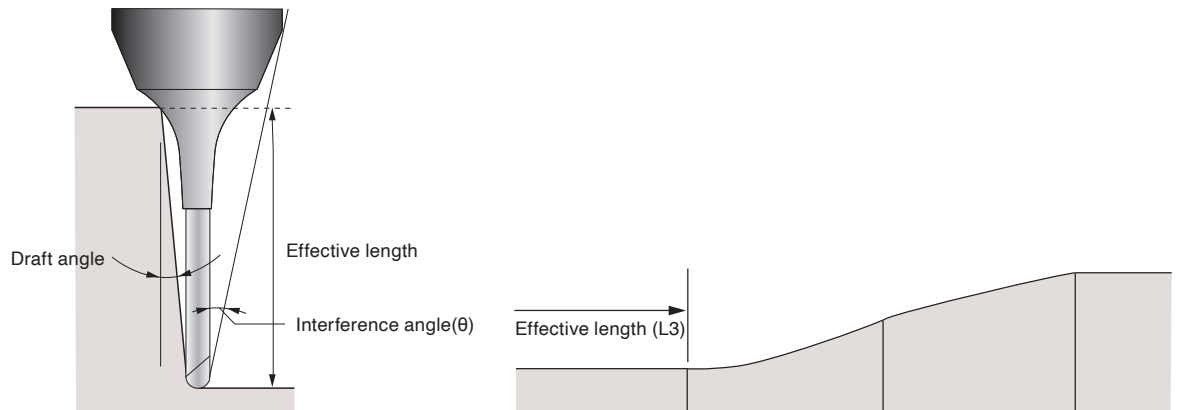


EDP No.	Description (mm)											Effective length from draft angle of Workpiece				
	D	R	L1	L3	θ2	D3	D4	L2	D2	App.L	θ	0.5°	1°	1.5°	2°	3°
ESTNB2002-1-04	0.2	0.1	0.15	1	0.4	0.17	0.18	50	4	1.35	10.9	1.5	1.7	1.8	2	2.3
ESTNB2002-1.5-04	0.2	0.1	0.15	1.5	0.4	0.17	0.19	50	4	1.77	10.4	2	2.2	2.4	2.6	2.9
ESTNB2002-2-09	0.2	0.1	0.15	2	0.9	0.17	0.23	50	4	1.1	10.1	-	2.8	3.1	3.4	3.9
ESTNB2002-2.5-09	0.2	0.1	0.15	2.5	0.9	0.17	0.24	50	4	1.1	9.6	-	3.3	3.7	4	4.5
ESTNB2003-2-04	0.3	0.15	0.25	2	0.4	0.28	0.29	50	4	2.19	10	2.5	2.8	3	3.2	3.5
ESTNB2003-3-09	0.3	0.15	0.25	3	0.9	0.28	0.36	50	4	1.2	9.3	-	3.8	4.2	4.5	5.1
ESTNB2003-4-09	0.3	0.15	0.25	4	0.9	0.28	0.39	50	4	1.2	8.6	-	4.8	5.3	5.7	6.3
ESTNB2004-2-04	0.4	0.2	0.3	2	0.4	0.37	0.39	50	4	2.2	10	2.5	2.8	3	3.2	3.5
ESTNB2004-3-04	0.4	0.2	0.3	3	0.4	0.37	0.41	50	4	2.44	9.1	3.6	3.9	4.1	4.4	4.8
ESTNB2004-4-04	0.4	0.2	0.3	4	0.4	0.37	0.42	50	4	2.44	8.4	4.7	5.2	5.6	5.9	6.5
ESTNB2004-4-09	0.4	0.2	0.3	4	0.9	0.37	0.49	50	4	1.25	8.5	-	4.8	5.3	5.7	6.3
ESTNB2004-5-04	0.4	0.2	0.3	5	0.4	0.37	0.44	50	4	2.44	7.8	5.7	6.3	6.7	7.1	7.7
ESTNB2004-5-09	0.4	0.2	0.3	5	0.9	0.37	0.52	50	4	1.25	7.9	-	5.9	6.4	6.8	7.5
ESTNB2005-4-04	0.5	0.25	0.35	4	0.4	0.47	0.52	50	4	2.49	8.4	4.6	5	5.3	5.5	5.9
ESTNB2005-8-09	0.5	0.25	0.35	8	0.9	0.47	0.71	50	4	1.3	6.5	-	8.9	9.6	10.1	10.9
ESTNB2005-12-09	0.5	0.25	0.35	12	0.9	0.47	0.84	50	4	1.3	5.3	-	13	13.9	14.5	15.4
ESTNB20054-2-04	0.54	0.27	0.37	2	0.4	0.52	0.54	50	4	1.8	10	2.3	2.5	2.7	2.8	3
ESTNB20054-4-04	0.54	0.27	0.37	4	0.4	0.52	0.57	50	4	1.8	8.4	4.5	4.9	5.2	5.5	5.9
ESTNB20054-5-04	0.54	0.27	0.37	5	0.4	0.52	0.59	50	4	1.8	7.8	5.5	6	6.3	6.6	7.1
ESTNB20054-6-04	0.54	0.27	0.37	6	0.4	0.52	0.6	50	4	1.8	7.2	6.7	7.3	7.8	8.2	8.8
ESTNB20054-6.5-04	0.54	0.27	0.37	6.5	0.4	0.52	0.61	50	4	1.8	7	7.2	7.9	8.3	8.7	9.4
ESTNB20054-7-04	0.54	0.27	0.37	7	0.4	0.52	0.61	50	4	1.8	6.8	7.7	8.4	8.9	9.3	10
ESTNB2006-2-04	0.6	0.3	0.4	2	0.4	0.57	0.59	50	4	2.17	10	2.4	2.5	2.7	2.8	3
ESTNB2006-4-04	0.6	0.3	0.4	4	0.4	0.57	0.62	50	4	2.54	8.4	4.6	5	5.2	5.5	5.9
ESTNB2006-6-04	0.6	0.3	0.4	6	0.4	0.57	0.65	50	4	2.54	7.2	6.8	7.4	7.8	8.2	8.8
ESTNB2006-6-09	0.6	0.3	0.4	6	0.9	0.57	0.75	50	4	1.35	7.3	-	6.9	7.5	7.9	8.6
ESTNB2006-8-09	0.6	0.3	0.4	8	0.9	0.57	0.81	50	4	1.35	6.4	-	8.9	9.6	10.1	10.9
ESTNB2006-10-04	0.6	0.3	0.4	10	0.4	0.57	0.7	50	4	2.54	5.6	10.8	11.7	12.2	12.7	13.5
ESTNB2006-10-09	0.6	0.3	0.4	10	0.9	0.57	0.87	50	4	1.35	5.7	-	11	11.8	12.3	13.2
ESTNB2006-12-09	0.6	0.3	0.4	12	0.9	0.57	0.93	55	4	1.35	5.2	-	13	13.9	14.5	15.4
ESTNB2006-15-04	0.6	0.3	0.4	15	0.4	0.57	0.77	55	4	2.54	4.4	15.9	17	17.6	18.2	19.2

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



* Marked effective length is set to prevent interfering in workpiece.
You need to take proper control when machining.

EDP No.	Description (mm)											Effective length from draft angle of Workpiece				
	D	R	L1	L3	θ2	D3	D4	L2	D2	App.L	θ	0.5°	1°	1.5°	2°	3°
ESTNB2006-15-09	0.6	0.3	0.4	15	0.9	0.57	1.03	55	4	1.35	4.5	-	16.1	17.1	17.7	18.8
ESTNB2008-4-04	0.8	0.4	0.5	4	0.4	0.77	0.82	50	4	2.64	8.3	4.6	4.9	5.2	5.5	5.9
ESTNB2008-6-04	0.8	0.4	0.5	6	0.4	0.77	0.85	50	4	2.64	7.1	6.6	7.1	7.5	7.7	8.3
ESTNB2008-8-09	0.8	0.4	0.5	8	0.9	0.77	1.01	50	4	1.45	6.3	-	8.9	9.6	10.1	10.9
ESTNB2008-12-09	0.8	0.4	0.5	12	0.9	0.77	1.13	55	4	1.45	5	-	13	13.9	14.5	15.4
ESTNB2008-16-09	0.8	0.4	0.5	16	0.9	0.77	1.26	55	4	1.45	4.2	-	17.1	18.1	18.8	19.9
ESTNB2009-4-04	0.9	0.45	0.6	4	0.4	0.86	0.91	50	4	3.46	8.2	4.5	4.7	4.9	5.1	5.4
ESTNB2009-8-04	0.9	0.45	0.6	8	0.4	0.86	0.96	55	4	3.46	6.1	8.7	9.3	9.7	10	10.6
ESTNB2009-12-04	0.9	0.45	0.6	12	0.4	0.86	1.02	55	4	3.46	4.8	12.9	13.8	14.4	14.9	15.7
ESTNB2009-16-04	0.9	0.45	0.6	16	0.4	0.86	1.08	60	4	3.46	4	17	18	18.7	19.3	20.5
ESTNB2009-18-04	0.9	0.45	0.6	18	0.4	0.86	1.1	65	4	3.46	3.7	19.1	20.1	20.9	21.5	23.1
ESTNB2009-20-04	0.9	0.45	0.6	20	0.4	0.86	1.13	65	4	3.46	3.4	21.1	22.2	23	23.6	25.6
ESTNB2009-22-04	0.9	0.45	0.6	22	0.4	0.86	1.16	65	4	3.46	3.2	23.1	24.3	25.1	25.8	28.2
ESTNB2009-24-04	0.9	0.45	0.6	24	0.4	0.86	1.19	70	4	3.46	3	25.2	26.4	27.2	27.9	-
ESTNB2010-6-04	1	0.5	0.8	6	0.4	0.94	1.01	50	6	5.09	8.3	6.8	7.2	7.5	7.8	8.3
ESTNB2010-8-04	1	0.5	0.8	8	0.4	0.94	1.04	55	6	5.09	7.5	8.8	9.3	9.7	10	10.6
ESTNB2010-10-04	1	0.5	0.8	10	0.4	0.94	1.07	55	6	5.09	6.8	11	11.7	12.3	12.7	13.5
ESTNB2010-10-09	1	0.5	0.8	10	0.9	0.94	1.23	55	6	2.7	6.9	-	11.2	11.9	12.4	13.2
ESTNB2010-15-09	1	0.5	0.8	15	0.9	0.94	1.39	60	6	2.7	5.7	-	16.2	17.1	17.8	18.8
ESTNB2010-20-04	1	0.5	0.8	20	0.4	0.94	1.21	65	6	5.09	4.7	21.2	22.3	23	23.6	25.7
ESTNB2010-20-09	1	0.5	0.8	20	0.4	0.94	1.54	65	6	2.7	4.8	-	21.3	22.4	23.1	24.6
ESTNB2010-25-09	1	0.5	0.8	25	0.4	0.94	1.7	70	6	2.7	4.2	-	26.4	27.6	28.4	30.8
ESTNB2010-30-04	1	0.5	0.8	30	0.4	0.94	1.35	75	6	5.09	3.6	31.3	32.7	33.6	34.8	38.5
ESTNB2010-30-09	1	0.5	0.8	30	0.9	0.94	1.86	75	6	2.7	3.7	-	31.4	32.8	33.7	36.9
ESTNB2010-35-09	1	0.5	0.8	35	0.9	0.94	2.02	80	6	2.7	3.3	-	36.5	38	39	43.1
ESTNB2010-40-09	1	0.5	0.8	40	0.9	0.94	2.17	85	6	2.7	3	-	41.6	43.2	44.4	-
ESTNB2010-50-09	1	0.5	0.8	50	0.9	0.94	2.49	95	6	2.7	2.5	-	51.7	53.5	55.5	-
ESTNB2010-60-09	1	0.5	0.8	60	0.9	0.94	2.8	105	6	2.7	2.2	-	61.8	63.8	66.6	-
ESTNB2010-70-09	1	0.5	0.8	70	0.9	0.94	3.11	115	6	2.7	1.9	-	71.9	74	-	-
ESTNB2015-8-04	1.5	0.75	1.35	8	0.4	1.42	1.51	55	6	7.07	7.3	8.9	9.4	9.7	10	10.6
ESTNB2015-10-04	1.5	0.75	1.35	10	0.4	1.42	1.54	55	6	7.07	6.6	10.9	11.5	11.9	12.2	12.9

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT

EDP No.	Description (mm)											Effective length from draft angle of Workpiece				
	D	R	L1	L3	Ø2	D3	D4	L2	D2	App.L	θ	0.5°	1°	1.5°	2°	3°
ESTNB2015-12-04	1.5	0.75	1.35	12	0.4	1.42	1.57	55	6	7.07	6	13	13.6	14	14.4	15.4
ESTNB2015-15-09	1.5	0.75	1.35	15	0.9	1.42	1.85	60	6	3.89	5.4	-	16.4	17.2	17.8	18.8
ESTNB2015-20-09	1.5	0.75	1.35	20	0.9	1.42	2.01	65	6	3.89	4.5	-	21.4	22.4	23.2	24.7
ESTNB2015-30-09	1.5	0.75	1.35	30	0.9	1.42	2.32	75	6	3.89	3.4	-	31.5	32.9	33.7	37
ESTNB2018-4-04	1.8	0.9	1.6	4	0.4	1.73	1.76	50	6	4.38	9.2	4.6	4.8	4.9	5.1	5.4
ESTNB2018-8-04	1.8	0.9	1.6	8	0.4	1.73	1.82	50	6	6.61	7.1	8.6	9	9.2	9.4	10.2
ESTNB2018-12-04	1.8	0.9	1.6	12	0.4	1.73	1.88	55	6	6.61	5.8	12.9	13.5	14	14.4	15.4
ESTNB2018-16-04	1.8	0.9	1.6	16	0.4	1.73	1.93	60	6	6.61	4.9	17	17.7	18.3	18.7	20.5
ESTNB2018-20-04	1.8	0.9	1.6	20	0.4	1.73	1.99	65	6	6.61	4.3	21.2	22.3	23	23.6	25.6
ESTNB2018-24-04	1.8	0.9	1.6	24	0.4	1.73	2.04	65	6	6.61	3.8	25.3	26.5	27.3	27.9	30.8
ESTNB2018-28-04	1.8	0.9	1.6	28	0.4	1.73	2.1	70	6	6.61	3.4	29.4	30.6	31.5	32.4	35.9
ESTNB2018-32-04	1.8	0.9	1.6	32	0.4	1.73	2.15	70	6	6.61	3	33.4	34.8	35.7	37.1	-
ESTNB2018-36-04	1.8	0.9	1.6	36	0.4	1.73	2.21	75	6	6.61	2.8	37.5	38.9	39.9	41.7	-
ESTNB2018-38-04	1.8	0.9	1.6	38	0.4	1.73	2.24	80	6	6.61	2.7	39.5	41	42	44	-
ESTNB2018-40-04	1.8	0.9	1.6	40	0.4	1.73	2.27	80	6	6.61	2.6	41.5	43.1	44.2	46.3	-
ESTNB2020-8-04	2	1	1.7	8	0.4	1.92	2.01	50	6	7.42	7	8.7	9	9.2	9.5	10.2
ESTNB2020-12-04	2	1	1.7	12	0.4	1.92	2.06	55	6	7.42	5.7	13	13.6	14	14.4	15.4
ESTNB2020-16-04	2	1	1.7	16	0.4	1.92	2.12	60	6	7.42	4.8	17	17.7	18.3	18.7	20.5
ESTNB2020-20-04	2	1	1.7	20	0.4	1.92	2.18	65	6	7.42	4.1	21.3	22.3	23	23.6	25.6
ESTNB2020-20-09	2	1	1.7	20	0.9	1.92	2.5	65	6	4.24	4.2	-	21.4	22.4	23.2	24.6
ESTNB2020-25-09	2	1	1.7	25	0.9	1.92	2.65	65	6	4.24	3.6	-	26.5	27.7	28.5	30.8
ESTNB2020-30-04	2	1	1.7	30	0.4	1.92	2.32	70	6	7.42	3.1	31.4	32.7	33.6	34.8	38.5
ESTNB2020-30-09	2	1	1.7	30	0.9	1.92	2.81	70	6	4.24	3.2	-	31.6	32.9	33.7	36.9
ESTNB2020-35-09	2	1	1.7	35	0.9	1.92	2.97	75	6	4.24	2.8	-	36.6	38	39	-
ESTNB2020-40-04	2	1	1.7	40	0.4	1.92	2.46	80	6	7.42	2.5	41.5	43.1	44.2	46.3	-
ESTNB2020-40-09	2	1	1.7	40	0.9	1.92	3.12	80	6	4.24	2.6	-	41.7	43.2	44.5	-
ESTNB2020-50-09	2	1	1.7	50	0.9	1.92	3.44	90	6	4.24	2.1	-	51.5	53.5	55.5	-
ESTNB2020-60-09	2	1	1.7	60	0.9	1.92	3.75	100	6	4.24	1.8	-	61.9	63.8	-	-
ESTNB2020-70-09	2	1	1.7	70	0.9	1.92	4.07	110	6	4.24	1.8	-	72	74.1	-	-
ESTNB2030-8-04	3	1.5	2.5	8	0.4	2.86	2.94	50	6	8.5	6.3	8.8	9.1	9.3	9.5	10.3
ESTNB2030-16-04	3	1.5	2.5	16	0.4	2.86	3.05	55	6	12.52	4.1	17.2	17.8	18.3	18.7	20.6
ESTNB2030-20-04	3	1.5	2.5	20	0.4	2.86	3.1	60	6	12.52	3.4	21.2	22	22.6	23.3	25.7
ESTNB2030-30-04	3	1.5	2.5	30	0.4	2.86	3.24	70	6	12.52	2.5	31.6	32.8	33.7	34.9	-
ESTNB2030-30-09	3	1.5	2.5	30	0.9	2.86	3.72	70	6	6.95	2.6	-	31.8	33	33.8	-
ESTNB2030-40-04	3	1.5	2.5	40	0.4	2.86	3.38	80	6	12.52	2	41.7	43.2	44.3	-	-
ESTNB2030-40-09	3	1.5	2.5	40	0.9	2.86	4.04	80	6	6.95	2	-	41.9	43.3	-	-
ESTNB2030-50-09	3	1.5	2.5	50	0.9	2.86	4.35	90	6	6.95	1.7	-	52	53.6	-	-
ESTNB2030-60-09	3	1.5	2.5	60	0.9	2.86	4.67	100	6	6.95	1.4	-	62.1	-	-	-
ESTNB2030-70-09	3	1.5	2.5	70	0.9	2.86	4.98	110	6	6.95	1.2	-	72.1	-	-	-
ESTNB2040-20-10	4	2	8	20	1	3.86	4.28	70	8	12.01	5	20.5	21.6	22.3	22.8	23.5
ESTNB2040-30-10	4	2	8	30	1	3.86	4.63	80	8	12.01	3.51	22	31.6	32.5	33.2	34.16
ESTNB2040-40-10	4	2	8	40	1	3.86	4.98	90	8	12.01	2.7	22	42	43.4	44.3	-
ESTNB2040-50-10	4	2	8	50	1	3.86	5.33	100	8	12.01	2.2	22	52	53.6	54.7	-
ESTNB2040-60-10	4	2	8	60	1	3.86	5.68	110	8	12.01	1.9	22	62	63.8	-	-
ESTNB2050-30-10	5	2.5	10	30	1	4.86	5.56	80	8	14.01	2.8	25.5	31.7	32.6	33.2	-
ESTNB2050-40-10	5	2.5	10	40	1	4.86	5.91	90	8	14.01	2.1	25.5	41.7	42.8	43.5	-
ESTNB2050-60-10	5	2.5	10	60	1	4.86	6.61	110	8	14.01	1.5	25.5	62.1	-	-	-
ESTNB2060-30-10	6	3	12	30	1	5.86	6.49	80	8	16.01	1.9	29	31.8	32.6	-	-
ESTNB2060-40-10	6	3	12	40	1	5.86	6.84	90	8	16.01	1.5	29	41.8	-	-	-

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

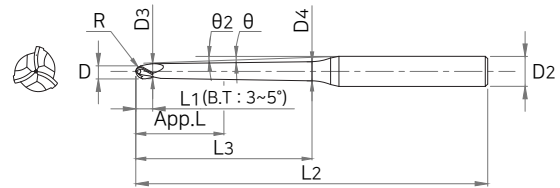
○ : GOOD ◎ : EXCELLENT

EDP No.	Description (mm)											Effective length from draft angle of Workpiece				
	D	R	L1	L3	Ø2	D3	D4	L2	D2	App.L	θ	0.5°	1°	1.5°	2°	3°
ESTNB2060-50-10	6	3	12	50	1	5.86	7.19	100	8	16.01	1.2	29	51.8	-	-	-
ESTNB2060-60-10	6	3	12	60	1	5.86	7.54	110	10	16.01	1.9	29	62.2	63.9	-	-
ESTNB2060-70-10	6	3	12	70	1	5.86	7.89	120	10	16.01	1.7	29	72.2	74.1	-	-
ESTNB2060-80-10	6	3	12	80	1	5.86	8.23	130	10	16.01	1.5	29	82.2	-	-	-
ESTNB2080-50-10	8	4	14	50	1	7.86	9.12	110	10	18.01	1.2	32	51.9	-	-	-
ESTNB2080-60-10	8	4	14	60	1	7.86	9.47	120	10	18.01	1	32	-	-	-	-
ESTNB2080-70-10	8	4	14	70	1	7.86	9.82	130	10	18.01	0.9	32	-	-	-	-
ESTNB2080-80-10	8	4	14	80	1	7.86	10.16	140	12	18.01	1.5	32	82.3	-	-	-
ESTNB2100-60-10	10	5	18	60	1	9.86	11.33	130	12	22.01	1.1	39	62.1	-	-	-
ESTNB2100-75-10	10	5	18	75	1	9.86	11.85	140	12	22.01	0.9	39	-	-	-	-

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRC55	SKD11 HRC55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



Tolerance

D	Shank Dia.
All Sizes	0 ~ -0.015 h5

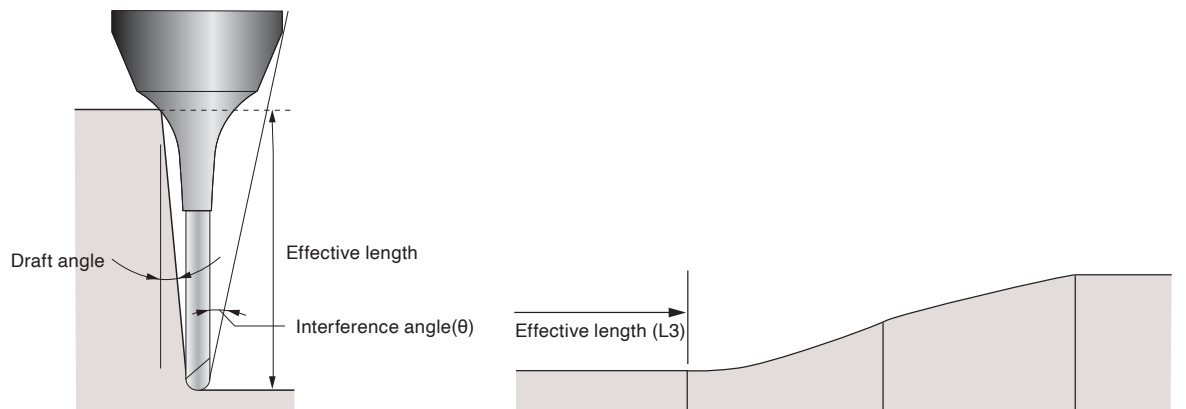


EDP No.	Description (mm)											Effective length from draft angle of Workpiece				
	D	R	L1	L3	θ2	D3	D4	L2	D2	App.L	θ	0.5°	1°	1.5°	2°	3°
ESTNB3020-8-04	2	1	1.7	8	0.4	1.92	2.01	50	6	7.42	7	8.7	9	9.2	9.5	10.2
ESTNB3020-12-04	2	1	1.7	12	0.4	1.92	2.06	55	6	7.42	5.7	13	13.6	14	14.4	15.4
ESTNB3020-16-04	2	1	1.7	16	0.4	1.92	2.12	60	6	7.42	4.8	17	17.7	18.3	18.7	20.5
ESTNB3020-20-04	2	1	1.7	20	0.4	1.92	2.18	65	6	7.42	4.1	21.3	22.3	23	23.6	25.6
ESTNB3020-20-09	2	1	1.7	20	0.9	1.92	2.5	65	6	4.24	4.2	-	21.4	22.4	23.2	24.6
ESTNB3020-25-09	2	1	1.7	25	0.9	1.92	2.65	65	6	4.24	3.6	-	26.5	27.7	28.5	30.8
ESTNB3020-30-04	2	1	1.7	30	0.4	1.92	2.32	70	6	7.42	3.1	31.4	32.7	33.6	34.8	38.5
ESTNB3020-30-09	2	1	1.7	30	0.9	1.92	2.81	70	6	4.24	3.2	-	31.6	32.9	33.7	36.9
ESTNB3020-35-09	2	1	1.7	35	0.9	1.92	2.97	75	6	4.24	2.8	-	36.6	38	39	-
ESTNB3020-40-04	2	1	1.7	40	0.4	1.92	2.46	80	6	7.42	2.5	41.5	43.1	44.2	46.3	-
ESTNB3020-40-09	2	1	1.7	40	0.9	1.92	3.12	80	6	4.24	2.6	-	41.7	43.2	44.5	-
ESTNB3020-50-09	2	1	1.7	50	0.9	1.92	3.44	90	6	4.24	2.1	-	51.8	53.5	55.5	-
ESTNB3020-60-09	2	1	1.7	60	0.9	1.92	3.75	100	6	4.24	1.8	-	61.9	63.8	-	-
ESTNB3020-70-09	2	1	1.7	70	0.9	1.92	4.07	110	6	4.24	1.6	-	72	74.1	-	-
ESTNB3030-8-04	3	1.5	2.5	8	0.4	2.86	2.94	50	6	8.5	6.3	8.8	9.1	9.3	9.5	10.3
ESTNB3030-16-04	3	1.5	2.5	16	0.4	2.86	3.05	55	6	12.52	4.1	17.2	17.8	18.3	18.7	20.6
ESTNB3030-20-04	3	1.5	2.5	20	0.4	2.86	3.1	60	6	12.52	3.4	21.2	22	22.6	23.3	25.7
ESTNB3030-30-04	3	1.5	2.5	30	0.4	2.86	3.24	70	6	12.52	2.5	31.6	32.8	33.7	34.9	-
ESTNB3030-30-09	3	1.5	2.5	30	0.9	2.86	3.72	70	6	6.95	2.6	-	31.8	33	33.8	-
ESTNB3030-40-04	3	1.5	2.5	40	0.4	2.86	3.38	80	6	12.52	2	41.7	43.2	44.3	-	-
ESTNB3030-40-09	3	1.5	2.5	40	0.9	2.86	4.04	80	6	6.95	2	-	41.9	43.3	-	-
ESTNB3030-50-09	3	1.5	2.5	50	0.9	2.86	4.35	90	6	6.95	1.7	-	52	53.6	-	-
ESTNB3030-60-09	3	1.5	2.5	60	0.9	2.86	4.67	100	6	6.95	1.4	-	62.1	-	-	-
ESTNB3030-70-09	3	1.5	2.5	70	0.9	2.86	4.98	110	6	6.95	1.2	-	72.1	-	-	-
ESTNB3040-20-10	4	2	8	20	1	3.86	4.28	70	8	12.01	5	20.5	21.6	22.3	22.8	23.5
ESTNB3040-30-10	4	2	8	30	1	3.86	4.63	80	8	12.01	3.6	22	31.6	32.5	33.2	34.1
ESTNB3040-40-10	4	2	8	40	1	3.86	4.98	90	8	12.01	2.7	22	42	43.4	44.3	-
ESTNB3040-50-10	4	2	8	50	1	3.86	5.33	100	8	12.01	2.2	22	52	53.6	54.7	-
ESTNB3040-60-10	4	2	8	60	1	3.86	5.68	110	8	12.01	1.9	22	62	63.8	-	-
ESTNB3050-30-10	5	2.5	10	30	1	4.86	5.56	80	8	14.01	2.8	25.5	31.7	32.6	33.2	-
ESTNB3050-40-10	5	2.5	10	40	1	4.86	5.91	90	8	14.01	2.1	25.5	41.7	42.8	43.5	-

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

○ : GOOD ◎ : EXCELLENT



* Marked effective length is set to prevent interfering in workpiece.
You need to take proper control when machining.

EDP No.	Description (mm)											Effective length from draft angle of Workpiece				
	D	R	L1	L3	θ2	D3	D4	L2	D2	App.L	θ	0.5°	1°	1.5°	2°	3°
ESTNB3050-60-10	5	2.5	10	60	1	4.86	6.61	110	8	12.52	1.5	25.5	62.1	-	-	-

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Copper	Graphite	Cast iron ~ FCD500	Aluminum	Stainless Steel
			SKD61 ~HRc55	SKD11 HRc55~					
	○	◎	◎	○					

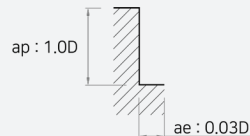
○ : GOOD ◎ : EXCELLENT

Recommended Cutting Condition

□ ESE702 SERIES ▶ Side Cutting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	48,000	1,050	38,000	820	25,500	510	20,500	310	16,000	190	12,500	125
2	33,300	1,200	26,000	970	17,500	600	14,500	370	11,000	230	9,500	165
3	21,800	1,200	17,300	970	11,500	600	9,500	370	7,500	230	6,400	165
4	16,700	1,250	13,200	1,000	8,800	625	7,200	385	5,600	240	4,750	170
5	15,700	1,450	12,500	1,150	8,300	710	6,400	410	5,100	260	4,450	190
6	13,100	1,350	10,350	1,100	6,900	690	5,300	400	4,200	255	3,700	185
8	9,880	1,320	7,800	1,030	5,200	635	4,000	365	3,200	235	2,800	170
10	7,800	1,200	6,150	970	4,100	590	3,200	340	2,550	220	2,200	160
12	6,650	1,200	5,250	970	3,500	590	2,650	340	2,100	220	1,860	160
16	4,900	1,050	3,900	840	2,600	520	2,000	300	1,600	190	1,400	140
20	3,900	950	3,100	750	2,050	475	1,600	275	1,300	175	1,100	125

RPM = rev / min
FEED = mm / min



□ ESE702 SERIES ▶ Slotting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
~0.2	50,000	130	45,000	115	40,000	95	33,000	60	33,000	45	26,400	30
0.3	50,000	190	45,000	140	40,000	115	33,000	70	25,000	50	20,000	35
0.4	50,000	235	45,000	180	40,000	140	33,000	90	25,000	55	20,000	40
0.5	50,000	370	45,000	280	40,000	220	33,000	140	25,000	85	20,000	60
0.6	50,000	470	45,000	360	40,000	285	33,000	160	25,000	105	20,000	75
0.8	50,000	600	40,000	440	30,000	295	25,000	185	19,000	110	15,200	80
0.9	49,000	655	39,000	520	27,800	330	22,700	205	17,500	125	14,000	90
1	48,000	750	38,000	570	25,500	360	20,500	215	16,000	135	12,500	85
2	33,300	850	26,000	680	17,500	420	14,500	260	11,000	160	9,500	115
3	21,800	850	17,300	680	11,500	420	9,500	260	7,500	160	6,400	115
4	16,700	880	13,200	700	8,800	440	7,200	270	5,600	170	4,750	118
5	15,700	1,000	12,500	805	8,300	500	6,400	285	5,100	180	4,450	132
6	13,100	950	10,350	770	6,900	480	5,300	280	4,200	180	3,700	130
8	9,880	930	7,800	720	5,200	445	4,000	255	3,200	165	2,800	120
10	7,800	850	6,150	680	4,100	415	3,200	240	2,550	155	2,200	122
12	6,650	850	5,250	680	3,500	415	2,650	240	2,100	155	1,860	112
16	4,900	730	3,900	580	2,600	365	2,000	210	1,600	135	1,400	95
20	3,900	660	3,100	525	2,050	335	1,600	195	1,300	125	1,100	85

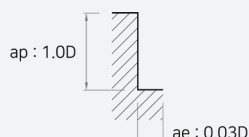
RPM = rev / min
FEED = mm / min



■ ESE712 SERIES ▶ Side Cutting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	48,000	1,050	38,000	820	25,500	510	20,500	310	16,000	190	12,500	125
2	33,300	1,200	26,000	970	17,500	600	14,500	370	11,000	230	9,500	165
3	21,800	1,200	17,300	970	11,500	600	9,500	370	7,500	230	6,400	165
4	16,700	1,250	13,200	1,000	8,800	625	7,200	385	5,600	240	4,750	170
5	15,700	1,450	12,500	1,150	8,300	710	6,400	410	5,100	260	4,450	190
6	13,100	1,350	10,350	1,100	6,900	690	5,300	400	4,200	255	3,700	185
8	9,880	1,320	7,800	1,030	5,200	635	4,000	365	3,200	235	2,800	170
10	7,800	1,200	6,150	970	4,100	590	3,200	340	2,550	220	2,200	160
12	6,650	1,200	5,250	970	3,500	590	2,650	340	2,100	220	1,860	160
16	4,900	1,050	3,900	840	2,600	520	2,000	300	1,600	190	1,400	140
20	3,900	950	3,100	750	2,050	475	1,600	275	1,300	175	1,100	125

RPM = rev / min
FEED = mm / min



■ ESE712 SERIES ▶ Slotting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.2	50,000	130	45,000	115	40,000	95	33,000	60	33,000	45	26,400	30
0.3	50,000	190	45,000	140	40,000	115	33,000	70	25,000	50	20,000	35
0.4	50,000	235	45,000	180	40,000	140	33,000	90	25,000	55	20,000	40
0.5	50,000	370	45,000	280	40,000	220	33,000	140	25,000	85	20,000	60
0.6	50,000	470	45,000	360	40,000	285	30,000	160	25,000	105	20,000	75
0.8	50,000	600	40,000	440	30,000	295	25,000	185	19,000	110	15,200	80
0.9	49,000	655	39,000	520	27,800	330	22,700	205	17,500	125	14,000	90
1	48,000	750	38,000	570	25,500	360	20,500	215	16,000	135	12,500	85
2	33,300	850	26,000	680	17,500	420	14,500	260	11,000	160	9,500	115
3	21,800	850	17,300	680	11,500	420	9,500	260	7,500	160	6,400	115
4	16,700	880	13,200	700	8,800	440	7,200	270	5,600	170	4,750	118
5	15,700	1,000	12,500	805	8,300	500	6,400	285	5,100	180	4,450	132
6	13,100	950	10,350	770	6,900	480	5,300	280	4,200	180	3,700	130
8	9,880	930	7,800	720	5,200	445	4,000	255	3,200	165	2,800	120
10	7,800	850	6,150	680	4,100	415	3,200	240	2,550	155	2,200	112
12	6,650	850	5,250	680	3,500	415	2,650	240	2,100	155	1,860	112
16	4,900	730	3,900	580	2,600	365	2,000	210	1,600	135	1,400	95
20	3,900	660	3,100	525	2,050	335	1,600	195	1,300	125	1,100	85

RPM = rev / min
FEED = mm / min

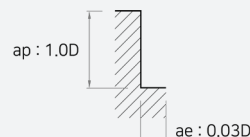
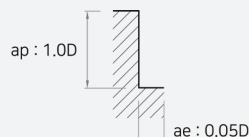


Recommended Cutting Condition

■ ESE704, ESE714, ESE744 SERIES ▶ Side Cutting

Workpiece	Herdened Steels Heat Resistant Steels		Herdened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	48,000	1,480	38,000	1,050	25,500	710	20,500	430	16,000	270	12,500	175
2	33,300	1,750	26,000	1,250	17,500	840	14,500	520	11,000	320	9,500	230
3	21,800	1,750	17,300	1,250	11,500	840	9,500	520	7,500	320	6,400	230
4	16,700	1,800	13,200	1,300	8,800	880	7,200	540	5,600	335	4,750	240
5	15,700	2,000	12,500	1,500	8,300	1,000	6,400	580	5,100	370	4,450	270
6	13,100	1,950	10,350	1,400	6,900	950	5,300	560	4,200	350	3,700	260
8	9,880	1,880	7,800	1,350	5,200	900	4,000	520	3,200	330	2,800	240
10	7,800	1,750	6,150	1,260	4,100	840	3,200	480	2,550	310	2,200	220
12	6,650	1,750	5,250	1,260	3,500	840	2,650	480	2,100	300	1,860	220
16	4,900	1,500	3,900	1,100	2,600	730	2,000	420	1,600	270	1,400	200
20	3,900	1,300	3,100	970	2,050	650	1,600	380	1,300	250	1,100	180

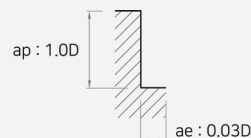
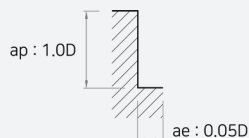
RPM = rev / min
FEED = mm / min



■ ESE724 SERIES ▶ Side Cutting

Workpiece	Herdened Steels Heat Resistant Steels		Herdened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	48,000	1,480	38,000	1,050	25,500	710	20,500	430	16,000	270	12,500	175
2	33,300	1,750	26,000	1,250	17,500	840	14,500	520	11,000	320	9,500	230
3	21,800	1,750	17,300	1,250	11,500	840	9,500	520	7,500	320	6,400	230
4	16,700	1,800	13,200	1,300	8,800	880	7,200	540	5,600	335	4,750	240
5	15,700	2,000	12,500	1,500	8,300	1,000	6,400	580	5,100	370	4,450	270
6	13,100	1,950	10,350	1,400	6,900	950	5,300	560	4,200	350	3,700	260
8	9,880	1,880	7,800	1,350	5,200	900	4,000	520	3,200	330	2,800	240
10	7,800	1,750	6,150	1,260	4,100	840	3,200	480	2,550	310	2,200	220
12	6,650	1,750	5,250	1,260	3,500	840	2,650	480	2,100	300	1,860	220
16	4,900	1,500	3,900	1,100	2,600	730	2,000	420	1,600	270	1,400	200
20	3,900	1,300	3,100	970	2,050	650	1,600	380	1,300	250	1,100	180

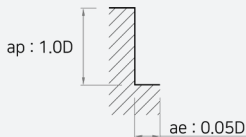
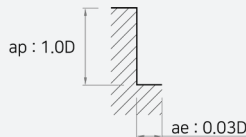
RPM = rev / min
FEED = mm / min



■ ESE726, ESR736 SERIES

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	24,800	5,350	23,500	4,900	16,000	4,900	13,500	3,300	10,500	2,100	8,000	1,450
8	20,000	5,500	19,000	5,000	12,000	4,600	10,000	3,100	8,000	2,000	6,000	1,400
10	16,000	4,900	15,500	4,500	9,500	4,100	8,000	2,900	6,400	1,800	4,800	1,300
12	13,000	4,500	12,500	4,100	8,000	3,800	6,600	2,500	5,300	1,600	4,000	1,150
16	10,000	4,000	9,700	3,700	6,000	3,400	5,000	2,300	4,000	1,250	3,000	870
20	8,000	3,350	7,800	3,400	4,800	3,200	4,000	2,100	3,200	1,020	2,400	690

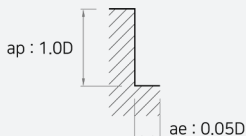
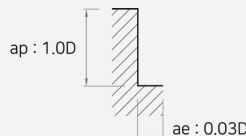
RPM = rev / min
FEED = mm / min

■ ESE716 SERIES ► Side Cutting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	24,800	5,350	23,500	4,900	16,000	4,900	13,500	3,300	10,500	2,100	8,000	1,450
8	20,000	5,500	19,000	5,000	12,000	4,600	10,000	3,100	8,000	2,000	6,000	1,400
10	16,000	4,900	15,500	4,500	9,500	4,100	8,000	2,900	6,400	1,800	4,800	1,300
12	13,000	4,500	12,500	4,100	8,000	3,800	6,600	2,500	5,300	1,600	4,000	1,150
16	10,000	4,000	9,700	3,700	6,000	3,400	5,000	2,300	4,000	1,250	3,000	870
20	8,000	3,350	7,800	3,400	4,800	3,200	4,000	2,100	3,200	1,020	2,400	690

RPM = rev / min
FEED = mm / min

Recommended Cutting Condition

ESRE712 SERIES ▶ Side Cutting

Workpiece		CARBON STEEL, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~HRc35			HRc35~HRc45			HRc45~HRc55		
Strength		~1100N/mm2			1100~1500N/mm2			1500~2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
0.1	0.3	50,000	315	0.009	46,200	230	0.007	40,600	170	0.005
	0.5	50,000	315	0.006	46,200	230	0.005	40,600	170	0.004
	1	45,000	255	0.002	41,580	185	0.002	36,540	140	0.001
0.2	0.5	38,500	380	0.018	36,300	270	0.014	32,100	200	0.01
	1	38,500	380	0.013	36,300	270	0.01	32,100	200	0.007
	1.5	34,650	310	0.007	32,670	220	0.006	28,890	160	0.004
	2	34,650	310	0.005	32,670	220	0.004	28,890	160	0.003
0.3	1	34,200	390	0.019	32,300	270	0.015	28,500	230	0.011
	1.5	34,200	390	0.019	32,300	270	0.015	25,800	230	0.011
	2	30,780	315	0.011	29,070	220	0.008	25,650	185	0.006
	2.5	30,780	315	0.007	29,070	220	0.005	25,650	185	0.004
	3	30,780	315	0.007	29,070	220	0.005	25,650	185	0.004
	4	27,360	250	0.004	25,840	175	0.003	22,800	145	0.002
	5	20,520	165	0.003	19,380	115	0.002	17,100	95	0.002
0.4	1	27,400	540	0.036	25,800	380	0.028	22,800	280	0.02
	1.5	27,400	540	0.025	25,800	380	0.02	22,800	280	0.014
	2	27,400	540	0.025	25,800	380	0.02	22,800	280	0.014
	2.5	24,660	435	0.014	23,220	310	0.011	20,520	225	0.008
	3	24,660	435	0.014	23,220	310	0.011	20,520	225	0.008
	4	24,660	435	0.009	23,220	310	0.007	20,520	225	0.005
	5	21,920	345	0.009	20,640	245	0.007	18,240	180	0.005
	6	21,920	345	0.005	20,640	245	0.004	18,240	180	0.003
	8	16,440	225	0.004	15,480	160	0.003	13,680	120	0.002
	10	8,220	95	0.004	7,740	70	0.003	6,840	50	0.002
0.5	1	27,400	540	0.045	25,800	425	0.035	22,800	285	0.025
	1.5	27,400	540	0.045	25,800	425	0.035	22,800	285	0.025
	2	27,400	540	0.032	25,800	425	0.025	22,800	285	0.018
	2.5	27,400	540	0.032	25,800	425	0.025	22,800	285	0.018
	3	24,660	435	0.018	23,220	345	0.014	20,520	230	0.01
	4	24,660	435	0.018	23,220	345	0.014	20,520	230	0.01
	5	24,660	435	0.011	23,220	345	0.009	20,520	230	0.006
	6	21,920	345	0.011	20,640	270	0.009	18,240	180	0.006
	8	16,440	225	0.007	15,480	180	0.005	13,680	120	0.004
	10	16,440	225	0.005	15,480	180	0.004	13,680	120	0.003
	12	8,220	95	0.005	7,740	75	0.004	6,840	50	0.003
	14	8,220	95	0.005	7,740	75	0.004	6,840	50	0.003
	16	2,740	25	0.005	2,580	20	0.004	2,280	15	0.003
0.6	2	27,400	775	0.038	25,800	545	0.029	22,800	405	0.021
	3	27,400	775	0.038	25,800	545	0.029	22,800	405	0.021
	4	24,660	630	0.022	23,220	440	0.017	20,520	330	0.012
	5	24,660	630	0.014	23,220	440	0.011	20,520	330	0.008
	6	24,660	630	0.014	23,220	440	0.011	20,520	330	0.008
	8	21,920	495	0.008	20,640	350	0.006	18,240	260	0.005

■ ESRE712 SERIES ▶ Side Cutting

Workpiece		CARBON STEEL, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~HRC35			HRC35~HRC45			HRC45~HRC55		
Strength		~1100N/mm2			1100~1500N/mm2			1500~2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
0.6	10	16,440	325	0.005	15,480	230	0.004	13,680	170	0.003
	12	16,440	325	0.005	15,480	230	0.004	13,680	170	0.003
	14	8,220	140	0.005	7,740	100	0.004	6,840	75	0.003
	16	8,220	140	0.005	7,740	100	0.004	6,840	75	0.003
0.7	2	27,400	775	0.063	25,800	545	0.049	22,800	405	0.035
	4	24,660	630	0.025	23,220	440	0.02	20,520	330	0.014
	6	24,660	630	0.016	23,220	440	0.012	20,520	330	0.009
	8	21,920	495	0.016	20,640	350	0.012	18,240	260	0.009
	10	21,920	495	0.009	20,640	350	0.007	18,240	260	0.005
	12	16,440	325	0.009	15,480	230	0.005	13,680	170	0.004
0.8	2	27,400	775	0.072	25,800	605	0.056	22,800	450	0.04
	3	27,400	775	0.05	25,800	605	0.039	22,800	450	0.028
	4	27,400	775	0.05	25,800	605	0.039	22,800	450	0.028
	5	24,660	630	0.029	23,220	490	0.022	20,520	365	0.016
	6	24,660	630	0.029	23,220	490	0.022	20,520	365	0.016
	8	24,660	630	0.018	23,220	490	0.014	20,520	365	0.01
	10	21,920	495	0.018	20,640	385	0.014	18,240	290	0.01
	12	21,920	495	0.011	20,640	385	0.008	18,240	290	0.006
	14	16,440	325	0.007	15,480	255	0.006	13,680	190	0.004
	16	16,440	325	0.007	15,480	255	0.006	13,680	190	0.004
	20	8,220	140	0.007	7,740	110	0.006	6,840	80	0.004
0.9	6	22,140	575	0.032	20,970	440	0.025	18,450	330	0.018
	8	22,140	575	0.02	20,970	440	0.016	18,450	330	0.011
	10	19,680	455	0.02	18,640	350	0.016	16,400	260	0.011
1	2	24,600	1,045	0.09	23,300	890	0.07	20,500	665	0.05
	3	24,600	1,045	0.09	23,300	890	0.07	20,500	665	0.05
	4	24,600	1,045	0.063	23,300	890	0.049	20,500	665	0.035
	5	24,600	1,045	0.063	23,300	890	0.049	20,500	665	0.035
	6	22,140	845	0.036	20,970	720	0.028	18,450	540	0.02
	7	22,140	845	0.036	20,970	720	0.028	18,450	540	0.02
	8	22,140	845	0.036	20,970	720	0.028	18,450	540	0.02
	10	22,140	845	0.023	20,970	720	0.018	18,450	540	0.013
	12	19,680	670	0.023	18,640	570	0.018	16,400	425	0.013
	14	19,680	670	0.014	18,640	570	0.011	16,400	425	0.008
	16	14,760	440	0.014	13,980	375	0.011	12,300	280	0.008
	18	14,760	440	0.009	13,980	375	0.007	12,300	280	0.005
	20	14,760	440	0.009	13,980	375	0.007	12,300	280	0.005
	22	7,380	190	0.009	6,990	160	0.007	6,150	120	0.005
	26	7,380	190	0.009	6,990	160	0.007	6,150	120	0.005
	30	7,380	190	0.009	6,990	160	0.007	6,150	120	0.005
	40	2,460	50	0.009	2,330	45	0.007	2,050	35	0.005
	50	2,460	50	0.006	2,330	45	0.005	2,050	35	0.003
1.2	4	21,900	930	0.076	20,700	720	0.059	18,200	485	0.042

Recommended Cutting Condition

ESRE712 SERIES ▶ Side Cutting

Workpiece		CARBON STEEL, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~HRC35			HRC35~HRC45			HRC45~HRC55		
Strength		~1100N/mm2			1100~1500N/mm2			1500~2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
1.2	6	21,900	930	0.076	20,700	720	0.059	18,200	485	0.042
	8	19,710	755	0.043	18,630	585	0.034	16,380	395	0.024
	10	19,710	755	0.027	18,630	585	0.021	16,380	395	0.015
	12	19,710	755	0.027	18,630	585	0.021	16,380	395	0.015
	14	17,520	595	0.027	16,560	460	0.021	14,560	310	0.015
	16	17,520	595	0.016	16,560	460	0.013	14,560	310	0.009
	20	13,140	390	0.011	12,420	300	0.008	10,920	205	0.006
	26	6,570	165	0.011	6,210	130	0.008	5,460	85	0.006
	30	6,570	165	0.011	6,210	130	0.008	5,460	85	0.006
1.4	6	19,200	815	0.088	18,100	570	0.069	16,000	425	0.049
	8	17,280	660	0.05	16,290	460	0.039	14,400	345	0.028
	10	17,280	660	0.05	16,290	460	0.039	14,400	345	0.028
	14	17,280	660	0.032	16,290	460	0.025	14,400	345	0.018
	16	15,360	520	0.032	14,480	365	0.025	12,800	270	0.018
	20	15,360	520	0.019	14,480	365	0.015	12,800	270	0.011
1.5	4	19,200	905	0.135	18,100	635	0.105	16,000	475	0.075
	5	19,200	905	0.095	18,100	635	0.074	16,000	475	0.053
	6	19,200	905	0.095	18,100	635	0.074	16,000	475	0.053
	7	19,200	905	0.095	18,100	635	0.074	16,000	475	0.053
	8	17,280	735	0.054	16,290	515	0.042	14,400	385	0.03
	10	17,280	735	0.054	16,290	515	0.042	14,400	385	0.03
	12	17,280	735	0.054	16,290	515	0.042	14,400	385	0.03
	14	17,280	735	0.034	16,290	515	0.026	14,400	385	0.019
	16	15,360	580	0.034	14,480	405	0.026	12,800	305	0.019
	18	15,360	580	0.034	14,480	405	0.026	12,800	305	0.019
	20	15,360	580	0.02	14,480	405	0.016	12,800	305	0.011
	22	15,360	580	0.02	14,480	405	0.016	12,800	305	0.011
	26	11,520	380	0.014	10,860	265	0.011	9,600	200	0.008
	30	11,520	380	0.014	10,860	265	0.011	9,600	200	0.008
1.6	8	17,800	840	0.101	16,800	655	0.078	14,800	490	0.056
	10	16,020	680	0.058	15,120	530	0.045	13,320	395	0.032
	12	16,020	680	0.058	15,120	530	0.045	13,320	395	0.032
	16	16,020	680	0.036	15,120	530	0.028	13,320	395	0.02
	20	14,240	540	0.036	13,440	420	0.028	11,840	315	0.02
1.8	8	17,800	840	0.113	16,800	655	0.088	14,800	490	0.063
	10	16,020	680	0.065	15,120	530	0.05	13,320	395	0.036
	12	16,020	680	0.065	15,120	530	0.05	13,320	395	0.036
	16	16,020	680	0.041	15,120	530	0.032	13,320	395	0.023
	20	14,240	540	0.041	13,440	420	0.032	11,840	315	0.023
2	6	14,400	820	0.18	13,600	620	0.14	12,000	475	0.1
	8	14,400	820	0.126	13,600	620	0.098	12,000	475	0.07
	10	14,400	820	0.126	13,600	620	0.098	12,000	475	0.07
	12	12,960	665	0.072	12,240	500	0.056	10,800	385	0.04

ESRE712 SERIES ▶ Side Cutting

Workpiece		CARBON STEEL, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~HRC35			HRC35~HRC45			HRC45~HRC55		
Strength		~1100N/mm2			1100~1500N/mm2			1500~2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
2	14	12,960	665	0.072	12,240	500	0.056	10,800	385	0.04
	16	12,960	665	0.072	12,240	500	0.056	10,800	385	0.04
	18	12,960	665	0.045	12,240	500	0.035	10,800	385	0.025
	20	12,960	665	0.045	12,240	500	0.035	10,800	385	0.025
	22	11,520	525	0.045	10,880	395	0.035	9,600	305	0.025
	26	11,520	525	0.045	10,880	395	0.035	9,600	305	0.025
	30	11,520	525	0.027	10,880	395	0.021	9,600	305	0.015
	35	8,640	345	0.018	8,160	260	0.014	7,200	200	0.01
	40	8,640	345	0.018	8,160	260	0.014	7,200	200	0.01
	45	4,320	150	0.018	4,080	110	0.014	3,600	85	0.01
	50	4,320	150	0.018	4,080	110	0.014	3,600	85	0.01
	60	4,320	150	0.018	4,080	110	0.014	3,600	85	0.01
2.5	8	12,300	970	0.158	11,600	680	0.123	10,300	510	0.088
	10	12,300	970	0.158	11,600	680	0.123	10,300	510	0.088
	12	12,300	970	0.158	11,600	680	0.123	10,300	510	0.088
	14	11,070	785	0.09	10,440	550	0.07	9,270	415	0.05
	16	11,070	785	0.09	10,440	550	0.07	9,270	415	0.05
	18	11,070	785	0.09	10,440	550	0.07	9,270	415	0.05
	20	11,070	785	0.09	10,440	550	0.07	9,270	415	0.05
	22	11,070	785	0.056	10,440	550	0.044	9,270	415	0.031
	26	9,840	620	0.056	9,280	435	0.044	8,240	325	0.031
	30	9,840	620	0.056	9,280	435	0.044	8,240	325	0.031
	35	9,840	620	0.034	9,280	435	0.026	8,240	325	0.019
	40	7,380	405	0.034	6,960	285	0.026	6,180	215	0.019
	45	7,380	405	0.023	6,960	285	0.018	6,180	215	0.013
	50	7,380	405	0.023	6,960	285	0.018	6,180	215	0.013
3	6	10,900	860	0.27	10,300	605	0.21	6,600	450	0.15
	8	10,900	860	0.27	10,300	605	0.21	6,600	450	0.15
	10	10,900	860	0.189	10,300	605	0.147	6,600	450	0.105
	12	10,900	860	0.189	10,300	605	0.147	6,600	450	0.105
	14	10,900	860	0.189	10,300	605	0.147	6,600	450	0.105
	16	9,810	695	0.108	9,270	490	0.084	5,940	365	0.06
	18	9,810	695	0.108	9,270	490	0.084	5,940	365	0.06
	20	9,810	695	0.108	9,270	490	0.084	5,940	365	0.06
	22	9,810	695	0.108	9,270	490	0.084	5,940	365	0.06
	26	9,810	695	0.068	9,270	490	0.053	5,940	365	0.038
	30	9,810	695	0.068	9,270	490	0.053	5,940	365	0.038
	35	8,720	550	0.068	8,240	385	0.053	5,280	290	0.038
	40	8,720	550	0.041	8,240	385	0.032	5,280	290	0.023
	45	8,720	550	0.041	8,240	385	0.032	5,280	290	0.023
	50	6,540	360	0.027	6,180	255	0.021	3,960	190	0.015
	60	6,540	360	0.027	6,180	255	0.021	3,960	190	0.015
4	8	8,000	1,300	0.36	7,600	1,160	0.28	6,700	770	0.2

Recommended Cutting Condition

ESRE712 SERIES ▶ Side Cutting

Workpiece		CARBON STEEL, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~HRC35			HRC35~HRC45			HRC45~HRC55		
Strength		~1100N/mm2			1100~1500N/mm2			1500~2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
4	10	8,000	1,300	0.36	7,600	1,160	0.28	6,700	770	0.2
	12	8,000	1,300	0.36	7,600	1,160	0.28	6,700	770	0.2
	14	8,000	1,300	0.252	7,600	1,160	0.196	6,700	770	0.14
	16	8,000	1,300	0.252	7,600	1,160	0.196	6,700	770	0.14
	18	8,000	1,300	0.252	7,600	1,160	0.196	6,700	770	0.14
	20	8,000	1,300	0.252	7,600	1,160	0.196	6,700	770	0.14
	22	7,200	1,055	0.144	6,840	940	0.112	6,030	625	0.08
	26	7,200	1,055	0.144	6,840	940	0.112	6,030	625	0.08
	30	7,200	1,055	0.144	6,840	940	0.112	6,030	625	0.08
	35	7,200	1,055	0.09	6,840	940	0.07	6,030	625	0.05
	40	7,200	1,055	0.09	6,840	940	0.07	6,030	625	0.05
	45	6,400	830	0.09	6,080	740	0.07	5,360	495	0.05
	50	6,400	830	0.09	6,080	740	0.07	5,360	495	0.05
	60	6,400	830	0.054	6,080	740	0.042	5,360	495	0.03
5	16	6,400	1,155	0.315	6,100	900	0.245	5,400	605	0.175
	20	6,400	1,155	0.315	6,100	900	0.245	5,400	605	0.175
	26	5,760	935	0.18	5,490	730	0.14	4,860	490	0.1
	30	5,760	935	0.18	5,490	730	0.14	4,860	490	0.1
	35	5,760	935	0.18	5,490	730	0.14	4,860	490	0.1
	40	5,760	935	0.18	5,490	730	0.14	4,860	490	0.1
	50	5,760	935	0.113	5,490	730	0.088	4,860	490	0.063
	60	5,120	740	0.113	4,880	575	0.088	4,320	385	0.063
6	15	5,300	1,055	0.54	5,000	820	0.42	4,400	550	0.3
	20	5,300	1,055	0.378	5,000	820	0.294	4,400	550	0.21
	30	5,300	1,055	0.378	5,000	820	0.294	4,400	550	0.21
	32	4,770	855	0.216	4,500	665	0.168	3,960	445	0.12
8	25	4,000	950	0.504	3,800	750	0.392	3,300	500	0.28
	30	4,000	950	0.504	3,800	750	0.392	3,300	500	0.28
	42	3,600	770	0.288	3,400	605	0.224	2,950	405	0.16
10	30	3,200	900	0.9	3,050	680	0.7	2,630	400	0.5
	35	3,200	900	0.63	3,050	680	0.49	2,630	400	0.35
	45	3,200	900	0.63	3,050	680	0.49	2,630	400	0.35
12	35	2,650	800	1.08	2,520	600	0.84	2,180	350	0.6
	40	2,650	800	0.756	2,520	600	0.588	2,180	350	0.42
	50	2,650	800	0.756	2,520	600	0.588	2,180	350	0.42

RPM = rev/min
FEED = mm/min



ESRE714 SERIES

Workpiece		CARBON STEEL, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~HRC35			HRC35~HRC45			HRC45~HRC55		
Strength		~1100N/mm2			1100~1500N/mm2			1500~2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
0.5	1	27,400	756	0.045	25,800	595	0.035	22,800	399	0.025
	2	27,400	756	0.032	25,800	595	0.025	22,800	399	0.018
	3	24,660	609	0.018	23,220	483	0.014	20,520	322	0.01
	4	24,660	609	0.018	23,220	483	0.014	20,520	322	0.01
	5	24,660	609	0.011	23,220	483	0.009	20,520	322	0.006
	6	21,920	483	0.011	20,640	378	0.009	18,240	252	0.006
	8	16,440	315	0.007	15,480	252	0.005	13,680	168	0.004
	10	16,440	315	0.005	15,480	252	0.004	13,680	168	0.003
0.6	1	27,400	1085	0.038	25,800	763	0.029	22,800	567	0.021
	2	27,400	1085	0.038	25,800	763	0.029	22,800	567	0.021
	3	27,400	1085	0.038	25,800	763	0.029	22,800	567	0.021
	4	24,660	882	0.022	23,220	616	0.017	20,520	462	0.012
	5	24,660	882	0.014	23,220	616	0.011	20,520	462	0.008
	6	24,660	882	0.014	23,220	616	0.011	20,520	462	0.008
	8	21,920	693	0.008	20,640	490	0.006	18,240	364	0.005
	10	16,440	455	0.005	15,480	322	0.004	13,680	238	0.003
0.7	2	27,400	1085	0.063	25,800	763	0.049	22,800	567	0.035
	4	24,660	882	0.025	23,220	616	0.02	20,520	462	0.014
	6	24,660	693	0.016	23,220	616	0.012	20,520	462	0.009
	8	21,920	693	0.016	20,640	490	0.012	18,240	364	0.009
	10	21,920		0.009	20,640	490	0.007	18,240	364	0.005
0.8	1	27,400	1085	0.072	25,800	847	0.056	22,800	630	0.04
	2	27,400	1085	0.072	25,800	847	0.056	22,800	630	0.04
	3	27,400	1085	0.05	25,800	847	0.039	22,800	630	0.028
	4	27,400	1085	0.05	25,800	847	0.039	22,800	630	0.028
	5	24,660	882	0.029	23,220	686	0.022	20,520	511	0.016
	6	24,660	882	0.029	23,220	686	0.022	20,520	511	0.016
	8	24,660	882	0.018	23,220	686	0.014	20,520	511	0.01
	10	21,920	693	0.018	20,640	539	0.014	18,240	406	0.01
	12	21,920	693	0.011	20,640	539	0.008	18,240	406	0.006
	16	16,440	455	0.007	15,480	357	0.006	13,680	266	0.004
1	2	24,600	1463	0.09	23,300	1246	0.07	20,500	931	0.05
	3	24,600	1463	0.09	23,300	1246	0.07	20,500	931	0.05
	4	24,600	1463	0.063	23,300	1246	0.049	20,500	931	0.035
	6	22,140	1183	0.036	20,970	1008	0.028	18,450	756	0.02
	8	22,140	1183	0.036	20,970	1008	0.028	18,450	756	0.02
	10	22,140	1183	0.023	20,970	1008	0.018	18,450	756	0.013
	12	19,680	938	0.023	18,640	798	0.018	16,400	595	0.013
	14	19,680	938	0.014	18,640	798	0.011	16,400	595	0.008
	16	14,760	616	0.014	13,980	525	0.011	12,300	392	0.008
	18	14,760	616	0.009	13,980	525	0.007	12,300	392	0.005
	20	14,760	616	0.009	13,980	525	0.007	12,300	392	0.005

Recommended Cutting Condition

ESRE714 SERIES

Workpiece		CARBON STEEL, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~HRc35			HRc35~HRc45			HRc45~HRc55		
Strength		~1100N/mm2			1100~1500N/mm2			1500~2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
1.2	4	21,900	1,302	0.076	20,700	1008	0.059	18,200	679	0.042
	6	21,900	1,302	0.076	20,700	1008	0.059	18,200	679	0.042
	8	19,710	1,057	0.043	18,630	819	0.034	16,380	553	0.024
	10	19,710	1,057	0.027	18,630	819	0.021	16,380	553	0.015
	12	19,710	1057	0.027	18,630	819	0.021	16,380	553	0.015
	16	17,520	833	0.016	16,560	644	0.013	14,560	434	0.009
	18	17,520	833	0.016	16,560	644	0.013	14,560	434	0.009
	20	13,140	546	0.011	12,420	420	0.008	10,920	287	0.006
1.4	6	19,200	1141	0.088	18,100	798	0.069	16,000	595	0.049
	8	17,280	924	0.05	16,290	644	0.039	14,400	483	0.028
	10	17,280	924	0.05	16,290	644	0.039	14,400	483	0.028
	12	17,280	924	0.05	16,290	644	0.039	14,400	483	0.028
	14	17,280	924	0.032	16,290	644	0.025	14,400	483	0.018
	16	15,360	728	0.032	14,480	511	0.025	12,800	378	0.018
1.5	4	19,200	1267	0.135	18,100	889	0.105	16,000	665	0.075
	6	19,200	1267	0.095	18,100	889	0.074	16,000	665	0.053
	8	17,280	1029	0.054	16,290	721	0.042	14,400	539	0.03
	10	17,280	1029	0.054	16,290	721	0.042	14,400	539	0.03
	12	17,280	1029	0.054	16,290	721	0.042	14,400	539	0.03
	16	15,360	812	0.034	14,480	567	0.026	12,800	427	0.019
	18	15,360	812	0.034	14,480	567	0.026	12,800	427	0.019
	20	15,360	812	0.02	14,480	567	0.016	12,800	427	0.011
	25	11,520	532	0.014	10,860	371	0.011	9,600	280	0.008
	30	11,520	532	0.014	10,860	371	0.011	9,600	280	0.008
1.6	6	17,800	1176	0.101	16,800	917	0.078	14,800	686	0.056
	8	17,800	1176	0.101	16,800	917	0.078	14,800	686	0.056
	10	16,020	952	0.058	15,120	742	0.045	13,320	553	0.032
	12	16,020	952	0.058	15,120	742	0.045	13,320	553	0.032
	14	16,020	952	0.058	15,120	742	0.045	13,320	553	0.032
	16	16,020	952	0.036	15,120	752	0.028	13,320	553	0.02
	18	16,020	952	0.036	15,120	752	0.028	13,320	553	0.02
	20	14,240	756	0.036	13,440	588	0.028	11,840	441	0.02
	25	14,240	756	0.036	13,440	588	0.028	11,840	441	0.02
1.8	6	17,800	1176	0.113	16,800	917	0.088	14,800	686	0.063
	8	17,800	1176	0.113	16,800	917	0.088	14,800	686	0.063
	10	16,020	952	0.065	15,120	742	0.05	13,320	553	0.036
	12	16,020	952	0.065	15,120	742	0.05	13,320	553	0.036
	16	16,020	952	0.041	15,120	742	0.032	13,320	553	0.023
	20	14,240	756	0.041	13,440	588	0.032	11,840	441	0.023
	25	14,240	756	0.041	13,440	588	0.032	11,840	441	0.023
2	4	14,400	1148	0.18	13,600	868	0.14	12,000	665	0.1
	6	14,400	1148	0.18	13,600	868	0.14	12,000	665	0.1
	8	14,400	1148	0.126	13,600	868	0.098	12,000	665	0.07

ESRE714 SERIES

Workpiece		CARBON STEEL, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~HRC35			HRC35~HRC45			HRC45~HRC55		
Strength		~1100N/mm2			1100~1500N/mm2			1500~2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
2	10	14,400	1148	0.126	13,600	868	0.098	12,000	665	0.07
	12	12,960	931	0.072	12,240	700	0.056	10,800	539	0.04
	14	12,960	931	0.072	12,240	700	0.056	10,800	539	0.04
	16	12,960	931	0.072	12,240	700	0.056	10,800	539	0.04
	18	12,960	931	0.045	12,240	700	0.035	10,800	539	0.025
	20	12,960	931	0.045	12,240	700	0.035	10,800	539	0.025
	22	11,520	735	0.045	10,880	553	0.035	9,600	427	0.025
	25	11,520	735	0.045	10,880	553	0.035	9,600	427	0.025
	30	11,520	735	0.027	10,880	553	0.021	9,600	427	0.015
2.5	10	12,300	1358	0.158	11,600	952	0.123	10,300	714	0.088
	12	12,300	1358	0.158	11,600	952	0.123	10,300	714	0.088
	16	11,070	1099	0.09	10,440	770	0.07	9,270	581	0.05
	20	11,070	1099	0.09	10,440	770	0.07	9,270	581	0.05
	25	9,840	868	0.056	9,280	609	0.044	8,240	455	0.031
	30	9,840	868	0.056	9,280	609	0.044	8,240	455	0.031
3	6	10,900	1204	0.27	10,300	847	0.21	6,600	630	0.15
	8	10,900	1204	0.27	10,300	847	0.21	6,600	630	0.15
	10	10,900	1204	0.189	10,300	847	0.147	6,600	630	0.105
	12	10,900	1204	0.189	10,300	847	0.147	6,600	630	0.105
	16	9,810	973	0.108	9,270	686	0.084	5,940	511	0.06
	20	9,810	973	0.108	9,270	686	0.084	5,940	511	0.06
	25	9,810	973	0.068	9,270	686	0.053	5,940	511	0.038
	30	9,810	973	0.068	9,270	686	0.053	5,940	511	0.038
	35	8,720	770	0.068	8,240	539	0.053	5,280	406	0.038
	40	8,720	770	0.041	8,240	539	0.032	5,280	406	0.023
	45	8,720	770	0.041	8,240	539	0.032	5,280	406	0.023
	50	6,540	504	0.027	6,180	357	0.021	3,960	266	0.015
	60	6,540	504	0.027	6,180	357	0.021	3,960	266	0.015
3.5	12	9,310	1430	0.236	8,800	1008	0.183	5,640	750	0.131
	16	8,380	1158	0.135	7,920	816	0.105	5,070	608	0.075
	20	8,380	1158	0.135	7,920	816	0.105	5,070	608	0.047
	25	8,380	1158	0.085	7,920	816	0.066	5,070	608	0.047
	30	8,380	1158	0.085	7,920	816	0.066	5,070	608	0.047
	35	7,450	916	0.085	7,040	641	0.066	4,510	483	0.047
	40	7,450	916	0.051	7,040	641	0.04	4,510	483	0.028
4	6	8,000	1820	0.36	7,600	1624	0.28	6,700	1078	0.2
	8	8,000	1820	0.36	7,600	1624	0.28	6,700	1078	0.2
	10	8,000	1820	0.36	7,600	1624	0.28	6,700	1078	0.2
	12	8,000	1820	0.36	7,600	1624	0.28	6,700	1078	0.2
	16	8,000	1820	0.252	7,600	1624	0.196	6,700	1078	0.14
	20	8,000	1820	0.252	7,600	1624	0.196	6,700	1078	0.14
	25	7,200	1477	0.144	6,840	1316	0.112	6,030	875	0.08
	30	7,200	1477	0.144	6,840	1316	0.112	6,030	875	0.08

Recommended Cutting Condition

ESRE714 SERIES

Workpiece		CARBON STEEL, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~HRC35			HRC35~HRC45			HRC45~HRC55		
Strength		~1100N/mm2			1100~1500N/mm2			1500~2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
4	40	7,200	1477	0.09	6,840	1316	0.07	6,030	875	0.05
	45	6,400	1162	0.09	6,080	1036	0.07	5,360	693	0.05
	50	6,400	1162	0.09	6,080	1036	0.07	5,360	693	0.05
	60	6,400	1162	0.054	6,080	1036	0.042	5,360	693	0.03
4.5	12	6,830	2166	0.45	6,490	1933	0.35	5,720	1283	0.25
	16	6,830	2166	0.315	6,490	1933	0.245	5,720	1283	0.175
	20	6,830	2166	0.315	6,490	1933	0.245	5,720	1283	0.175
	25	6,150	1758	0.18	5,840	1566	0.14	5,150	1041	0.1
	30	6,150	1758	0.18	5,840	1566	0.14	5,150	1041	0.1
	40	6,150	1758	0.112	5,840	1566	0.087	5,150	1041	0.062
5	16	6,400	1617	0.315	6,100	1260	0.245	5,400	847	0.175
	20	6,400	1617	0.315	6,100	1260	0.245	5,400	847	0.175
	25	5,760	1309	0.18	5,490	1022	0.14	4,860	686	0.1
	30	5,760	1309	0.18	5,490	1022	0.14	4,860	686	0.1
	40	5,760	1309	0.18	5,490	1022	0.14	4,860	686	0.1
	50	5,760	1309	0.113	5,490	1022	0.088	4,860	686	0.063
	60	5,120	1036	0.113	4,880	805	0.088	4,320	539	0.063
6	20	5,300	1477	0.378	5,000	1148	0.294	4,400	770	0.21
	30	5,300	1,477	0.378	5,000	1,148	0.294	4,400	770	0.21
	40	4,770	1,197	0.216	4,500	931	0.168	3,960	623	0.12
	50	4,770	1,197	0.216	4,500	931	0.168	3,960	623	0.12
	60	4,370	958	0.141	4,171	931	0.11	3,690	623	0.078
8	25	4,000	1,330	0.504	3,800	1,050	0.392	3,300	700	0.28
	40	3,600	1,078	0.288	3,400	847	0.224	2,950	567	0.16
	50	3,600	1,078	0.288	3,400	847	0.224	2,950	567	0.16
10	30	3,200	1,260	0.9	3,050	952	0.7	2,630	560	0.5
	50	3,200	1,260	0.63	3,050	952	0.49	2,630	560	0.35
	60	3,200	1,260	0.63	3,050	952	0.49	2,630	560	0.35
12	40	2,650	1,120	0.756	2,520	840	0.588	2,180	490	0.42
	60	2,360	896	0.472	2,250	672	0.367	1,940	392	0.262
	70	2,360	896	0.472	2,250	672	0.367	1,940	392	0.262

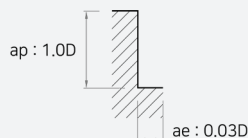
RPM = rev / min
FEED = mm / min



ESXE704, ESXE714, ESXR704 SERIES ▶ Side Cutting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels							
Hardness	HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
4	17,200	1,690	11,440	1,140	9,360	700	7,280	430	6,170	310
6	13,450	1,820	8,970	1,230	6,890	720	5,460	450	4,810	330
8	9,100	1,750	6,760	1,170	5,200	670	4,160	420	3,640	310
10	8,000	1,630	5,330	1,090	4,160	620	3,320	400	2,860	280
12	6,830	1,630	4,550	1,010	3,450	580	2,730	370	2,420	260

RPM = rev / min
FEED = mm / min



ESLNS20, ESLNS40 SERIES

Workpiece	Alloy Steels, Heat Resistant Steels			Hardened Steels			Hardened Steels			Copper, Copper alloy		
Hardness	HRc30~HRc45			HRc45~HRc55			HRc55~HRc65					
Diameter (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
0.4	34,100~50,000	350~590	0.005~0.028	30,500~35,200	295~340	0.003~0.020	18,300~24,600	120~200	0.002~0.012	48,000~50,000	790~920	0.008~0.048
0.5	25,650~33,000	370~470	0.006~0.035	23,750~26,000	285~315	0.004~0.025	14,200~18,000	115~130	0.003~0.015	44,000~50,000	800~1,150	0.010~0.060
0.6	20,900~35,200	330~560	0.007~0.030	19,900~22,000	260~290	0.005~0.021	11,900~15,500	100~120	0.003~0.013	37,500~50,000	770~1,250	0.011~0.051
0.8	16,150~26,400	360~590	0.009~0.040	15,200~16,700	280~310	0.006~0.028	9,000~11,700	110~125	0.004~0.017	28,500~47,000	770~1,300	0.015~0.068
1	12,300~18,700	350~540	0.011~0.028	10,500~11,500	250~280	0.008~0.020	6,300~8,050	100~115	0.005~0.012	22,500~34,000	810~1,300	0.018~0.048
1.2	10,450~17,600	350~590	0.025~0.070	9,100~10,000	250~280	0.015~0.042	5,400~7,000	100~115	0.009~0.026	22,500~31,500	950~1,350	0.036~0.101
1.5	9,100~17,600	430~830	0.017~0.077	7,000~8,000	250~280	0.012~0.055	4,300~5,500	100~115	0.007~0.033	14,500~25,000	770~1,320	0.028~0.132
2	6,350~10,550	340~570	0.021~0.140	6,100~6,700	270~300	0.015~0.100	3,600~4,700	100~120	0.009~0.060	11,500~18,500	770~1,250	0.036~0.240
3	4,300~7,050	550~900	0.056~0.210	3,990~4,600	445~515	0.040~0.150	2,400~3,200	105~310	0.024~0.090	9,000~13,000	1,400~2,110	0.096~0.360
4	3,200~5,300	400~675	0.074~0.280	3,000~3,400	335~380	0.053~0.200	1,800~2,400	75~230	0.032~0.120	6,750~9,750	1,050~1,575	0.128~0.480

RPM = rev / min
FEED = mm / min

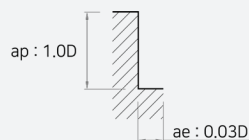


Recommended Cutting Condition

ESR702 SERIES ▶ Side Cutting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	33,300	960	26,000	776	17,500	480	14,500	296	11,000	184	9,500	132
3	21,800	960	17,300	776	11,500	480	9,500	296	7,500	184	6,400	132
4	16,700	1,000	13,200	800	8,800	500	7,200	308	5,600	192	4,750	136
5	15,700	1,160	12,500	920	8,300	568	6,400	328	5,100	208	4,450	152
6	13,100	1,080	10,350	880	6,900	552	5,300	320	4,200	204	3,700	148
8	9,880	1,056	7,800	824	5,200	508	4,000	292	3,200	188	2,800	136
10	7,800	960	6,150	776	4,100	472	3,200	272	2,550	176	2,200	128
12	6,650	960	5,250	776	3,500	472	2,650	272	2,100	176	1,860	128
16	4,900	840	3,900	672	2,600	416	2,000	240	1,600	152	1,400	112
20	3,900	760	3,100	600	2,050	380	1,600	220	1,300	140	1,100	100

RPM = rev / min
FEED = mm / min



ESR702, ESR732 SERIES ▶ Slotting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	33,300	680	26,000	544	17,500	336	14,500	208	11,000	128	9,500	92
3	21,800	680	17,300	544	11,500	336	9,500	208	7,500	128	6,400	92
4	16,700	704	13,200	560	8,800	352	7,200	216	5,600	136	4,750	94
5	15,700	800	12,500	644	8,300	400	6,400	228	5,100	144	4,450	106
6	13,100	760	10,350	616	6,900	384	5,300	224	4,200	144	3,700	104
8	9,880	744	7,800	576	5,200	356	4,000	204	3,200	132	2,800	96
10	7,800	680	6,150	544	4,100	332	3,200	192	2,550	124	2,200	90
12	6,650	680	5,250	544	3,500	332	2,650	192	2,100	124	1,860	90
16	4,900	584	3,900	464	2,600	292	2,000	168	1,600	108	1,400	78
20	3,900	528	3,100	420	2,050	268	1,600	168	1,300	100	1,100	70

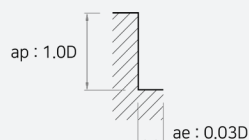
RPM = rev / min
FEED = mm / min



ESR704, ESR714, ESR724, ESR734 SERIES ▶ Side Cutting

Workpiece	Herdened Steels Heat Resistant Steels		Herdened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3	21,800	1,400	17,300	1,000	11,500	672	9,500	416	7,500	256	6,400	184
4	16,700	1,440	13,200	1,040	8,800	704	7,200	432	5,600	268	4,750	192
5	15,700	1,600	12,500	1,200	8,300	800	6,400	464	5,100	296	4,450	216
6	13,100	1,560	10,350	1,120	6,900	760	5,300	448	4,200	280	3,700	208
8	9,880	1,504	7,800	1,080	5,200	720	4,000	416	3,200	264	2,800	192
10	7,800	1,400	6,150	1,008	4,100	672	3,200	384	2,550	248	2,200	176
12	6,650	1,400	5,250	1,008	3,500	672	2,650	384	2,100	240	1,860	176
16	4,900	1,200	3,900	880	2,600	584	2,000	336	1,600	216	1,400	160
20	3,900	1,040	3,100	776	2,050	520	1,600	304	1,300	200	1,100	144

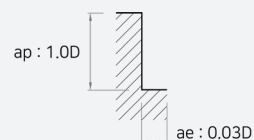
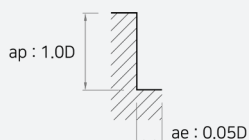
RPM = rev / min
FEED = mm / min



ESR706 SERIES

Workpiece	Herdened Steels Heat Resistant Steels		Herdened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	24,800	5,350	23,500	4,900	16,000	4,900	13,500	3,300	10,500	2,100	8,000	1,450
8	20,000	5,500	19,000	5,000	12,000	4,600	10,000	3,100	8,000	2,000	6,000	1,400
10	16,000	4,900	15,500	4,500	9,500	4,100	8,000	2,900	6,400	1,800	4,800	1,300
12	13,000	4,500	12,500	4,100	8,000	3,800	6,600	2,500	5,300	1,600	4,000	1,150
16	10,000	4,000	9,700	3,700	6,000	3,400	5,000	2,300	4,000	1,250	3,000	870
20	8,000	3,350	7,800	3,400	4,800	3,200	4,000	2,100	3,200	1,020	2,400	690

RPM = rev / min
FEED = mm / min



Recommended Cutting Condition

ESRR712 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
0.2	0.02	0.5	0.016	50,000	258	50,000	205	50,000	180	50,000	160
		1	0.011	50,000	258	50,000	205	50,000	180	50,000	160
		1.5	0.007	42,000	202	36,700	176	36,700	162	36,700	147
	0.05	0.5	0.02	50,000	258	50,000	205	50,000	180	50,000	160
		1	0.014	50,000	258	50,000	205	50,000	180	50,000	160
		1.5	0.008	50,000	240	45,900	202	45,900	170	45,900	153
0.3	0.02	1	0.016	50,000	585	50,000	456	50,000	336	50,000	320
		2	0.011	45,000	530	45,000	420	45,000	300	45,000	290
		3	0.007	35,000	412	35,000	326	30,000	200	30,000	194
	0.05	1	0.021	50,000	585	50,000	456	50,000	336	50,000	320
		2	0.012	45,000	530	45,000	420	45,000	300	45,000	290
		3	0.008	35,000	412	35,000	326	30,000	200	30,000	194
0.4	0.02	1	0.016	50,000	580	50,000	461	40,000	320	36,000	270
		2	0.013	45,000	520	45,000	410	36,000	290	34,000	240
		3	0.01	40,000	410	40,000	330	32,800	240	25,600	200
		4	0.007	30,000	320	30,000	250	21,600	160	19,200	150
	0.05	1	0.025	50,000	580	50,000	461	40,000	320	36,000	270
		2	0.016	45,000	520	45,000	410	36,000	290	34,000	240
		3	0.014	40,000	410	40,000	330	32,800	240	25,600	200
		4	0.008	30,000	320	30,000	250	21,600	160	19,200	150
	0.1	1	0.033	50,000	580	50,000	461	40,000	320	36,000	270
		1.5	0.03	50,000	580	50,000	461	40,000	320	36,000	270
		2	0.028	45,000	520	45,000	410	36,000	290	34,000	240
		3	0.016	40,000	410	40,000	330	32,800	240	25,600	200
		4	0.01	30,000	320	30,000	250	21,600	160	19,200	150
0.5	0.02	1	0.016	50,000	898	40,000	464	30,000	378	28,000	315
		1.5	0.014	50,000	898	40,000	464	30,000	378	28,000	315
		2	0.013	50,000	898	40,000	464	30,000	378	28,000	315
		2.5	0.011	45,000	810	36,000	414	27,000	315	24,500	261
		3	0.01	45,000	810	36,000	414	27,000	315	24,500	261
		4	0.008	40,000	720	32,000	378	24,000	279	20,000	234
		5	0.007	40,000	720	32,000	378	24,000	279	20,000	234
		6	0.006	28,800	480	19,400	260	18,000	250	15,000	200
		8	0.005	28,800	480	19,400	260	18,000	250	15,000	200
		10	0.004	28,800	480	19,400	260	18,000	250	15,000	200
	0.05	1	0.03	50,000	898	40,000	464	30,000	378	28,000	315
		1.5	0.026	50,000	898	40,000	464	30,000	378	28,000	315
		2	0.023	50,000	898	40,000	464	30,000	378	28,000	315
		2.5	0.02	45,000	810	36,000	414	27,000	315	24,500	261
		3	0.017	45,000	810	36,000	414	27,000	315	24,500	261
		4	0.017	40,000	720	32,000	378	24,000	279	20,000	234
		5	0.011	28,800	540	19,400	280	18,000	250	15,000	200
		6	0.008	28,800	480	19,400	260	18,000	250	15,000	200
		8	0.007	28,800	480	19,400	260	18,000	250	15,000	200

ESRR712 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
0.5	0.05	10	0.006	28,800	480	19,400	260	18,000	250	15,000	200
	0.1	1	0.035	50,000	898	40,000	464	30,000	378	28,000	315
		1.5	0.032	50,000	898	40,000	464	30,000	378	28,000	315
		2	0.03	50,000	898	40,000	464	30,000	378	28,000	315
		2.5	0.025	45,000	810	36,000	414	27,000	315	24,500	261
		3	0.02	45,000	810	36,000	414	27,000	315	24,500	261
		4	0.02	40,000	720	32,000	378	24,000	279	20,000	234
		5	0.013	28,800	540	19,400	280	18,000	250	15,000	200
		6	0.013	28,800	480	19,400	260	18,000	250	15,000	200
		8	0.01	28,800	480	19,400	260	18,000	250	15,000	200
		10	0.08	28,800	480	19,400	260	18,000	250	15,000	200
0.6	0.02	2	0.016	50,000	1,159	37,830	600	28,200	390	23,000	320
		3	0.014	40,000	830	27,800	440	23,600	280	21,000	230
		4	0.013	40,000	830	27,800	440	23,600	280	21,000	230
		6	0.01	24,000	490	18,000	300	17,800	240	15,000	210
		8	0.008	24,000	466	18,000	285	17,800	228	15,000	200
		10	0.007	24,000	451	18,000	276	17,800	221	15,000	193
		12	0.006	24,000	451	18,000	276	17,800	221	15,000	193
	0.05	2	0.028	50,000	1,159	37,830	600	28,200	390	23,000	320
		3	0.023	40,000	830	27,800	440	23,600	280	21,000	230
		4	0.019	40,000	830	27,800	440	23,600	280	21,000	230
		6	0.012	24,000	490	18,000	300	17,800	240	15,000	210
		8	0.01	24,000	466	18,000	285	17,800	228	15,000	200
		10	0.007	24,000	451	18,000	276	17,800	221	15,000	193
		12	0.006	24,000	451	18,000	276	17,800	221	15,000	193
	0.1	2	0.035	50,000	1,159	37,830	600	28,200	390	23,000	320
		3	0.03	40,000	830	27,800	440	23,600	280	21,000	230
		4	0.024	40,000	830	27,800	440	23,600	280	21,000	230
		6	0.015	24,000	490	18,000	300	17,800	240	15,000	210
		8	0.013	24,000	466	18,000	285	17,800	228	15,000	200
		10	0.009	24,000	451	18,000	276	17,800	221	15,000	193
		12	0.007	24,000	451	18,000	276	17,800	221	15,000	193
0.7	0.1	2	0.042	49,200	1,054	34,190	558	29,030	355	25,830	292
		4	0.029	40,000	830	27,800	440	23,600	280	21,000	230
		6	0.018	24,000	490	18,000	300	17,800	240	15,000	210
		8	0.015	24,000	490	18,000	300	17,800	240	15,000	210
		10	0.012	24,000	490	18,000	300	17,800	240	15,000	210
0.8	0.02	2	0.016	48,000	1,378	28,000	647	20,000	400	20,000	360
		4	0.016	48,000	1,102	28,000	518	20,000	320	20,000	288
		6	0.013	38,700	800	25,000	461	18,000	288	18,000	256
		8	0.011	29,025	600	20,000	369	16,200	259	16,200	230
		10	0.01	29,025	570	20,000	350	16,200	246	16,200	219
		12	0.09	29,025	570	20,000	350	16,200	246	16,200	219
	0.05	2	0.038	48,000	1,378	28,000	647	20,000	400	20,000	360

Recommended Cutting Condition

ESRR712 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
0.8	0.05	4	0.026	48,000	1,102	28,000	518	20,000	320	20,000	288
		6	0.015	38,700	800	25,000	461	18,000	288	18,000	256
		8	0.012	29,025	600	20,000	369	16,200	259	16,200	230
		10	0.011	29,025	570	20,000	350	16,200	246	16,200	219
		12	0.01	29,025	570	20,000	350	16,200	246	16,200	219
	0.1	2	0.047	48,000	1,378	28,000	647	20,000	400	20,000	360
		4	0.032	48,000	1,102	28,000	518	20,000	320	20,000	288
		6	0.019	38,700	800	25,000	461	18,000	288	18,000	256
		8	0.015	29,025	600	20,000	369	16,200	259	16,200	230
		10	0.013	29,025	570	20,000	350	16,200	246	16,200	219
		12	0.012	29,025	570	20,000	350	16,200	246	16,200	219
	0.2	2	0.081	48,000	1,378	28,000	647	20,000	400	20,000	360
		4	0.056	48,000	1,102	28,000	518	20,000	320	20,000	288
		6	0.032	38,700	800	25,000	461	18,000	288	18,000	256
		8	0.018	29,025	600	20,000	369	16,200	259	16,200	230
		10	0.016	29,025	570	20,000	350	16,200	246	16,200	219
		12	0.015	29,025	570	20,000	350	16,200	246	16,200	219
1	0.02	4	0.013	32,400	1,359	27,540	1,039	24,300	815	22,680	666
		6	0.01	26,244	990	22,307	842	19,683	660	18,371	539
		8	0.008	23,328	880	19,829	748	17,496	587	16,330	479
		10	0.006	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.005	18,144	609	15,422	453	13,608	399	12,701	320
		14	0.004	18,144	533	15,422	420	13,608	342	12,701	266
		16	0.004	18,144	533	15,422	420	13,608	342	12,701	266
		20	0.003	13,608	399	11,567	315	10,206	257	9,526	200
	0.05	4	0.027	32,400	1,359	28,917	1,128	24,300	815	22,680	666
		6	0.017	26,244	990	24,538	928	19,683	660	18,371	539
		8	0.016	23,328	880	19,829	748	17,496	587	16,330	479
		10	0.011	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.01	18,144	609	15,422	453	13,608	399	12,701	320
		14	0.008	18,144	533	15,422	420	13,608	342	12,701	266
		16	0.006	18,144	533	15,422	420	13,608	342	12,701	266
		20	0.004	13,608	399	11,567	315	10,206	257	9,526	200
	0.1	4	0.038	32,400	1,359	27,540	1,039	24,300	815	22,680	666
		6	0.024	26,244	990	22,307	842	19,683	660	18,371	539
		8	0.024	23,328	880	19,829	748	17,496	587	16,330	479
		10	0.015	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.015	18,144	609	15,422	453	13,608	399	12,701	320
		14	0.012	18,144	533	15,422	420	13,608	342	12,701	266
		16	0.009	18,144	533	15,422	420	13,608	342	12,701	266
		20	0.006	13,608	399	11,567	315	10,206	257	9,526	200
	0.2	4	0.07	32,400	1,359	27,540	1,039	24,300	815	22,680	666
		6	0.04	26,244	990	22,307	842	19,683	660	18,371	539
		8	0.04	23,328	880	19,829	748	17,496	587	16,330	479

ESRR712 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
1	0.2	10	0.025	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.025	18,144	609	15,422	453	13,608	399	12,701	320
		14	0.02	18,144	533	15,422	420	13,608	342	12,701	266
		16	0.015	18,144	533	15,422	420	13,608	342	12,701	266
		20	0.01	13,608	399	11,567	315	10,206	257	9,526	200
	0.3	4	0.07	32,400	1,359	27,540	1,039	24,300	815	22,680	666
		6	0.04	26,244	990	22,307	842	19,683	660	18,371	539
		8	0.04	23,328	880	19,829	748	17,496	587	16,330	479
		10	0.025	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.025	18,144	609	15,422	453	13,608	399	12,701	320
		14	0.02	18,144	533	15,422	420	13,608	342	12,701	266
		16	0.015	18,144	533	15,422	420	13,608	342	12,701	266
		20	0.01	13,608	399	11,567	315	10,206	257	9,526	200
1.2	0.02	4	0.013	28,868	1,154	24,538	928	21,651	727	20,208	594
		6	0.01	28,868	1,154	24,538	928	21,651	727	20,208	594
		8	0.008	24,640	962	20,944	791	18,480	620	17,248	506
		10	0.006	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.005	19,278	652	16,386	554	14,458	428	13,494	342
		14	0.004	18,144	533	15,422	453	13,608	342	12,701	266
		16	0.004	18,144	533	15,422	453	13,608	342	12,701	266
		20	0.003	13,608	399	11,567	315	10,206	257	9,526	200
	0.05	4	0.027	28,868	1,154	24,538	928	21,651	727	20,208	594
		6	0.017	28,868	1,154	24,538	928	21,651	727	20,208	594
		8	0.016	24,640	962	20,944	791	18,480	620	17,248	506
		10	0.011	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.01	19,278	652	16,386	554	14,458	428	13,494	342
		14	0.008	18,144	533	15,422	453	13,608	342	12,701	266
		16	0.006	18,144	533	15,422	453	13,608	342	12,701	266
		20	0.004	13,608	399	11,567	315	10,206	257	9,526	200
	0.1	4	0.03	28,868	1,154	24,538	928	21,651	727	20,208	594
		6	0.03	28,868	1,154	24,538	928	21,651	727	20,208	594
		8	0.022	24,640	962	20,944	791	18,480	620	17,248	506
		10	0.015	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.012	19,278	652	16,386	554	14,458	428	13,494	342
		14	0.01	18,144	533	15,422	453	13,608	342	12,701	266
		16	0.01	18,144	533	15,422	453	13,608	342	12,701	266
		20	0.006	13,608	399	11,567	315	10,206	257	9,526	200
	0.2	4	0.05	28,868	1,154	24,538	928	21,651	727	20,208	594
		6	0.05	28,868	1,154	24,538	928	21,651	727	20,208	594
		8	0.037	24,640	962	20,944	791	18,480	620	17,248	506
		10	0.025	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.02	19,278	651	16,386	554	14,458	428	13,494	342
		14	0.016	18,144	533	15,422	453	13,608	342	12,701	266
		16	0.016	18,144	533	15,422	453	13,608	342	12,701	266

Recommended Cutting Condition

ESRR712 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
1.2	0.2	20	0.01	13,608	399	11,567	315	10,206	257	9,526	200
	0.3	4	0.05	28,868	1,154	24,538	928	21,651	727	20,208	594
		6	0.05	28,868	1,154	24,538	928	21,651	727	20,208	594
		8	0.037	24,640	962	20,944	791	18,480	620	17,248	506
		10	0.025	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.02	19,278	651	16,386	554	14,458	428	13,494	342
		14	0.016	18,144	533	15,422	453	13,608	342	12,701	266
		16	0.016	18,144	533	15,422	453	13,608	342	12,701	266
		20	0.01	13,608	399	11,567	315	10,206	257	9,526	200
1.5	0.02	4	0.013	24,930	1,130	20,956	947	18,711	752	17,364	611
		6	0.01	23,779	1,074	20,382	921	17,834	716	16,560	582
		8	0.008	22,680	1,027	19,278	873	17,010	685	15,876	559
		10	0.006	20,412	924	17,350	785	15,309	616	14,288	503
		12	0.005	18,144	822	15,422	698	13,608	548	12,701	447
		14	0.004	14,112	568	11,995	423	10,584	373	9,878	298
		16	0.004	14,112	568	11,995	423	10,584	373	9,878	298
		20	0.003	14,112	568	11,995	423	10,584	373	9,878	298
	0.05	4	0.027	24,930	1,130	20,956	947	18,711	752	17,364	611
		6	0.017	23,779	1,074	20,382	921	17,834	716	16,560	582
		8	0.016	22,680	1,027	19,278	873	17,010	685	15,876	559
		10	0.011	20,412	924	17,350	785	15,309	616	14,288	503
		12	0.01	18,144	822	15,422	698	13,608	548	12,701	447
		14	0.008	14,112	568	11,995	423	10,584	373	9,878	298
		16	0.006	14,112	568	11,995	423	10,584	373	9,878	298
		20	0.004	14,112	568	11,995	423	10,584	373	9,878	298
	0.1	4	0.042	24,930	1,130	20,956	947	18,711	752	17,364	611
		6	0.04	23,779	1,074	20,382	921	17,834	716	16,560	582
		8	0.036	22,680	1,027	19,278	873	17,010	685	15,876	559
		10	0.036	20,412	924	17,350	785	15,309	616	14,288	503
		12	0.036	18,144	822	15,422	698	13,608	548	12,701	447
		14	0.023	14,112	568	11,995	423	10,584	373	9,878	298
		16	0.023	14,112	568	11,995	423	10,584	373	9,878	298
		20	0.018	14,112	568	11,995	423	10,584	373	9,878	298
	0.2	4	0.07	24,930	1,130	20,956	868	18,711	678	17,364	556
		6	0.065	23,779	1,074	20,382	921	17,834	716	16,560	582
		8	0.06	22,680	1,027	19,278	873	17,010	685	15,876	559
		10	0.06	20,412	924	17,350	785	15,309	616	14,288	503
		12	0.06	18,144	822	15,422	698	13,608	548	12,701	447
		14	0.038	14,112	568	11,995	423	10,584	373	9,878	298
		16	0.038	14,112	568	11,995	423	10,584	373	9,878	298
		20	0.03	14,112	568	11,995	423	10,584	373	9,878	298
	0.3	4	0.07	24,930	1,130	20,956	868	18,711	678	17,364	556
		6	0.065	23,779	1,074	20,382	921	17,834	716	16,560	582
		8	0.06	22,680	1,027	19,278	873	17,010	685	15,876	559

ESRR712 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
1.5	0.3	10	0.06	20,412	924	17,350	785	15,309	616	14,288	503
		12	0.06	18,144	822	15,422	698	13,608	548	12,701	447
		14	0.038	14,112	568	11,995	423	10,584	373	9,878	298
		16	0.038	14,112	568	11,995	423	10,584	373	9,878	298
		20	0.03	14,112	568	11,995	423	10,584	373	9,878	298
	0.5	4	0.085	24,930	1,130	20,956	868	18,711	678	17,364	556
		6	0.08	23,779	1,074	20,382	921	17,834	716	16,560	582
		8	0.07	22,680	1,027	19,278	873	17,010	685	15,876	559
		10	0.067	20,412	924	17,350	785	15,309	616	14,288	503
		12	0.065	18,144	822	15,422	698	13,608	548	12,701	447
		14	0.045	14,112	568	11,995	423	10,584	373	9,878	298
		16	0.045	14,112	568	11,995	423	10,584	373	9,878	298
		20	0.035	14,112	568	11,995	423	10,584	373	9,878	298
2	0.02	6	0.013	20,790	1,635	17,672	1,389	15,593	981	14,553	801
		8	0.01	18,900	1,486	16,065	1,263	14,175	892	13,230	728
		10	0.008	17,104	1,284	14,539	1,092	12,828	807	11,973	659
		12	0.006	15,309	1,083	13,013	921	11,482	722	10,716	590
		14	0.005	14,458	1,023	12,290	869	10,844	682	10,121	557
		16	0.004	13,608	963	11,567	818	10,206	642	9,526	524
		20	0.004	11,907	843	10,121	716	8,930	562	8,335	459
		25	0.003	11,907	757	10,121	643	8,930	505	8,335	411
	0.05	6	0.027	20,790	1,635	17,672	1,389	15,593	981	14,553	801
		8	0.017	18,900	1,486	16,065	1,263	14,175	892	13,230	728
		10	0.016	17,104	1,284	14,539	1,092	12,828	807	11,973	659
		12	0.011	15,309	1,083	13,013	921	11,482	722	10,716	590
		14	0.01	14,458	1,023	12,290	869	10,844	682	10,121	557
		16	0.008	13,608	963	11,567	818	10,206	642	9,526	524
		20	0.006	11,907	843	10,121	716	8,930	562	8,335	459
		25	0.004	11,907	757	10,121	643	8,930	505	8,335	411
	0.1	6	0.07	20,790	1,635	17,672	1,389	15,593	981	14,553	801
		8	0.055	18,900	1,486	16,065	1,263	14,175	892	13,230	728
		10	0.042	17,104	1,284	14,539	1,092	12,828	807	11,973	659
		12	0.03	15,309	1,083	13,013	921	11,482	722	10,716	590
		14	0.03	14,458	1,023	12,290	869	10,844	682	10,121	557
		16	0.03	13,608	963	11,567	818	10,206	642	9,526	524
		20	0.025	11,907	843	10,121	716	8,930	562	8,335	459
		25	0.015	11,907	757	10,121	643	8,930	505	8,335	411
		30	0.01	11,312	719	9,615	611	8,484	480	7,918	391
	0.2	6	0.08	20,790	1,635	17,672	1,389	15,593	981	14,553	801
		8	0.07	18,900	1,486	16,065	1,263	14,175	892	13,230	728
		10	0.055	17,104	1,284	14,539	1,092	12,828	807	11,973	659
		12	0.04	15,309	1,083	13,013	921	11,482	722	10,716	590
		14	0.04	14,458	1,023	12,290	869	10,844	682	10,121	557
		16	0.04	13,608	963	11,567	818	10,206	642	9,526	524

Recommended Cutting Condition

ESRR712 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
2	0.2	20	0.035	11,907	843	10,121	716	8,930	562	8,335	459
		25	0.025	11,907	757	10,121	643	8,930	505	8,335	411
		30	0.017	11,312	719	9,615	611	8,484	480	7,918	391
	0.3	6	0.11	20,790	1,635	17,672	1,389	15,593	981	14,553	801
		8	0.09	18,900	1,486	16,065	1,263	14,175	892	13,230	728
		10	0.075	17,104	1,284	14,539	1,092	12,828	807	11,973	659
		12	0.06	15,309	1,083	13,013	921	11,482	722	10,716	590
		14	0.06	14,458	1,023	12,290	869	10,844	682	10,121	557
		16	0.06	13,608	963	11,567	818	10,206	642	9,526	524
		20	0.037	11,907	843	10,121	716	8,930	562	8,335	459
		25	0.03	11,907	757	10,121	643	8,930	505	8,335	411
		30	0.021	11,312	719	9,615	611	8,484	480	7,918	391
	0.5	6	0.17	20,790	1,635	17,672	1,389	15,593	981	14,553	801
		8	0.14	18,900	1,486	16,065	1,263	14,175	892	13,230	728
		10	0.11	17,104	1,284	14,539	1,143	12,828	807	11,973	659
		12	0.08	15,309	1,083	13,013	1,023	11,482	722	10,716	590
		14	0.08	14,458	1,023	12,290	920	1,084	682	10,121	557
		16	0.08	13,608	963	11,567	818	10,206	642	9,526	524
		20	0.05	11,907	843	10,121	716	8,930	562	8,335	459
		25	0.05	11,907	757	10,121	643	8,930	505	8,335	411
		30	0.03	11,312	719	9,615	611	8,484	480	7,918	391
2.5	0.1	10	0.055	18,900	1,486	16,065	1,263	14,175	892	13,230	728
		16	0.042	16,254	1,224	13,816	1,040	12,190	767	11,378	626
		20	0.03	13,608	963	11,567	818	10,206	642	9,526	524
		25	0.022	12,757	860	10,844	730	9,568	573	8,930	467
		30	0.015	11,907	757	10,121	643	8,930	505	8,335	411
	0.2	10	0.07	18,900	1,486	16,065	1,263	14,175	892	13,230	728
		16	0.055	16,254	1,224	1,386	1,040	12,190	767	11,378	626
		20	0.04	13,608	963	11,567	818	10,206	642	9,526	524
	0.3	10	0.09	18,900	1,486	16,065	1,263	14,175	892	13,230	728
		16	0.075	16,254	1,224	1,386	1,040	12,190	767	11,378	626
		20	0.06	13,608	963	11,567	818	10,206	642	9,526	524
	0.5	10	0.14	18,900	1,486	16,065	1,263	14,175	892	13,230	728
		16	0.11	16,254	1,224	1,386	1,040	12,190	767	11,378	626
		20	0.08	13,608	963	11,567	818	10,206	642	9,526	524
3	0.1	10	0.06	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		12	0.05	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		16	0.035	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		20	0.035	11,664	1,146	9,914	974	8,748	687	8,165	561
		25	0.031	10,368	973	8,812	827	7,776	583	7,257	477
		30	0.027	9,072	801	7,711	681	6,804	480	6,350	393
		35	0.02	9,072	801	7,711	681	6,804	480	6,350	393
		40	0.015	9,072	801	7,711	681	6,804	480	6,350	393
	0.2	10	0.08	14,400	1,415	12,240	1,203	10,800	849	10,080	693

ESRR712 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
3	0.2	12	0.07	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		16	0.05	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		20	0.05	11,664	1,146	9,914	974	8,748	687	8,165	561
		25	0.045	10,368	973	8,812	827	7,776	583	7,257	477
		30	0.04	9,072	801	7,711	681	6,804	480	6,350	393
		35	0.035	9,072	801	7,711	681	6,804	480	6,350	393
		40	0.03	9,072	801	7,711	681	6,804	480	6,350	393
	0.3	10	0.115	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		12	0.1	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		16	0.075	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		20	0.075	11,664	1,146	9,914	974	8,748	687	8,165	561
		25	0.067	10,368	973	8,812	827	7,776	583	7,257	477
		30	0.06	9,072	801	7,711	681	6,804	480	6,350	393
		35	0.05	9,072	801	7,711	681	6,804	480	6,350	393
		40	0.04	9,072	801	7,711	681	6,804	480	6,350	393
	0.5	10	0.155	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		12	0.13	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		16	0.1	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		20	0.1	11,664	1,146	9,914	974	8,748	687	8,165	561
		25	0.09	10,368	973	8,812	827	7,776	583	7,257	477
		30	0.08	9,072	801	7,711	681	6,804	480	6,350	393
		35	0.065	9,072	801	7,711	681	6,804	480	6,350	393
		40	0.05	9,072	801	7,711	681	6,804	480	6,350	393
	1	10	0.175	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		12	0.15	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		16	0.12	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		20	0.11	11,664	1,146	9,914	974	8,748	687	8,165	561
		25	0.1	10,368	973	8,812	827	7,776	583	7,257	477
		30	0.09	9,072	801	7,711	681	6,804	480	6,350	393
		35	0.075	9,072	801	7,711	681	6,804	480	6,350	393
		40	0.06	9,072	801	7,711	681	6,804	480	6,350	393
4	0.1	12	0.065	11,213	1,950	9,531	1,658	8,410	1,170	7,849	956
		16	0.06	10,255	1,783	8,697	1,512	7,599	1,057	6,684	814
		20	0.055	10,255	1,783	8,697	1,512	7,599	1,057	6,684	814
		25	0.05	10,255	1,783	7,782	1,293	6,545	872	5,904	687
		30	0.045	10,255	1,783	6,867	1,075	5,491	688	5,124	561
		35	0.04	10,255	1,783	6,867	1,075	5,491	688	5,124	561
		40	0.035	10,255	1,783	6,867	1,075	5,491	688	5,124	561
	0.2	12	0.14	11,213	1,950	9,531	1,658	8,410	1,170	7,849	956
		16	0.13	10,255	1,783	8,697	1,512	7,599	1,057	6,684	814
		20	0.11	10,255	1,783	8,697	1,512	7,599	1,057	6,684	814
		25	0.105	10,255	1,783	7,782	1,293	6,545	872	5,904	687
		30	0.1	10,255	1,783	6,867	1,075	5,491	688	5,124	561
		35	0.08	10,255	1,783	6,867	1,075	5,491	688	5,124	561

Recommended Cutting Condition

ESRR712 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
4	0.2	40	0.07	9,247	1,429	6,225	901	5,217	602	4,621	459
	0.3	12	0.22	11,213	1,950	9,531	1,658	8,410	1,170	7,849	956
		16	0.2	10,255	1,783	8,697	1,512	7,599	1,057	6,684	814
		20	0.18	10,255	1,783	8,697	1,512	7,599	1,057	6,684	814
		25	0.17	10,255	1,783	7,782	1293	6,545	872	5,904	687
		30	0.16	10,255	1,783	6,867	1,075	5,491	688	5,124	561
		35	0.14	10,255	1,783	6,867	1,075	5,491	688	5,124	561
		40	0.13	9,247	1,429	6,225	901	5,217	602	4,621	459
	0.5	12	0.35	11,213	1,950	9,531	1,658	8,410	1,170	7,849	956
		16	0.25	10,255	1,783	8,697	1,512	7,599	1,057	6,684	814
		20	0.2	10,255	1,783	8,697	1,512	7,599	1,057	6,684	814
		25	0.175	10,255	1,783	7,782	1293	6,545	872	5,904	687
		30	0.15	10,255	1,783	6,867	1,075	5,491	688	5,124	5
		35	0.1	10,255	1,783	6,867	1,075	5,491	688	5,124	561
		40	0.075	9,247	1,429	6,225	901	5,217	602	4,621	459
	1	12	0.4	11,213	1,950	9,531	1,658	8,410	1,170	7,849	956
		16	0.29	10,255	1,783	8,697	1,512	7,599	1,057	6,684	814
		20	0.23	10,255	1,783	8,697	1,512	7,599	1,057	6,684	814
		25	0.2	10,255	1,783	7,782	1293	6,545	872	5,904	687
		30	0.17	10,255	1,783	6,867	1,075	5,491	688	5,124	561
		35	0.12	10,255	1,783	6,867	1,075	5,491	688	5,124	561
		40	0.09	9,247	1,429	6,225	901	5,217	602	4,621	459
5	0.2	15	0.16	9,154	1,990	7,781	1,692	6,866	1,194	6,408	975
		25	0.152	8,513	1813	7,236	1541	6,385	1088	5,959	888
		30	0.145	7,872	1637	6,691	1391	5,904	982	5,510	802
		40	0.13	6,590	1,284	5,602	1,091	4,943	770	4,613	629
	0.5	15	0.35	9,154	1,990	7,781	1,692	6,866	1,194	6,408	975
		25	0.296	8,513	1813	7,236	1541	6,385	1088	5,959	888
		30	0.24	7,872	1637	6,691	1391	5,904	982	5,510	802
		40	0.135	6,590	1,284	5,602	1,091	4,943	770	4,613	629
	1	15	0.4	9,154	1,990	7,781	1,692	6,866	1,194	6,408	975
		25	0.337	8,513	1813	7,236	1541	6,385	1088	5,959	888
		30	0.275	7,872	1637	6,691	1391	5,904	982	5,510	802
		40	0.15	6,590	1,284	5,602	1,091	4,943	770	4,613	629
6	0.1	20	0.065	7,630	1,991	6,486	1,692	5,722	1,194	5,342	975
		40	0.05	6,486	1,523	5,513	1,294	4,865	914	4,540	746
	0.2	20	0.14	7,630	1,991	6,486	1,692	5,722	1,194	5,342	975
		40	0.11	6,486	1,523	5,513	1,294	4,865	914	4,540	746
	0.3	20	0.22	7,630	1,991	6,486	1,692	5,722	1,194	5,342	975
		40	0.18	6,486	1,523	5,513	1,294	4,865	914	4,540	746
	0.5	20	0.35	7,630	1,991	6,486	1,692	5,722	1,194	5,342	975
		40	0.24	6,486	1,523	5,513	1,294	4,865	914	4,540	746
	1	20	0.4	7,630	1,991	6,486	1,692	5,722	1,194	5,342	975
		40	0.28	6,486	1,523	5,513	1,294	4,865	914	4,540	746

ESRR712 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
6	1.5	20	0.45	7,630	1,991	6,486	1,692	5,722	1,194	5,342	975
		40	0.3	6,486	1,523	5,513	1,294	4,865	914	4,540	746
8	0.2	22	0.35	5,730	1900	4,524	1483	3,016	914	2,320	584
	0.3	22	0.5	5,730	1900	4,524	1483	3,016	914	2,320	584
	0.5	22	0.6	5,730	1900	4,524	1483	3,016	914	2,320	584
	1	22	0.7	5,730	1900	4,524	1483	3,016	914	2,320	584
	1.5	22	0.8	5,730	1900	4,524	1483	3,016	914	2,320	584
10	0.2	24	0.4	4,524	1728	3,567	1396	2,378	849	1,856	544
	0.3	24	0.5	4,524	1728	3,567	1396	2,378	849	1,856	544
	0.5	24	0.6	4,524	1728	3,567	1396	2,378	849	1,856	544
	1	24	0.7	4,524	1728	3,567	1396	2,378	849	1,856	544
	1.5	24	0.8	4,524	1728	3,567	1396	2,378	849	1,856	544
	2	24	0.9	4,524	1728	3,567	1396	2,378	849	1,856	544
12	0.2	26	0.5	3,857	1728	3,045	1396	2,030	849	1,537	544
	0.3	26	0.6	3,857	1728	3,045	1396	2,030	849	1,537	544
	0.5	26	0.7	3,857	1728	3,045	1396	2,030	849	1,537	544
	1	26	0.8	3,857	1728	3,045	1396	2,030	849	1,537	544
	1.5	26	0.9	3,857	1728	3,045	1396	2,030	849	1,537	544
	2	26	1	3,857	1728	3,045	1396	2,030	849	1,537	544
	3	26	1	3,857	1728	3,045	1396	2,030	849	1,537	544
16	0.5	35	2	2,842	1,512	2,262	1209	1,508	748	1,160	480
	1	35	2	2,842	453	2,262	362	1,508	224	1,160	480

- The above recommendation table may differ from the actual situation, adjust it according to the machine condition, processing type and purpose.
- In the case of low RPM, reduce the feed rate at the same rate.

Recommended Cutting Condition

ESRR714 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
0.5	0.05	2	0.023	50,000	1257	40,000	649	30,000	529	28,000	441
		4	0.017	40,000	1008	32,000	529	24,000	390	20,000	327
		6	0.008	28,800	672	19,400	364	18,000	350	15,000	280
		8	0.007	28,800	672	19,400	364	18,000	350	15,000	280
	0.1	2	0.03	50,000	1257	40,000	649	30,000	529	28,000	441
		4	0.02	40,000	1008	32,000	529	24,000	390	20,000	327
		6	0.013	28,800	672	19,400	364	18,000	350	15,000	280
		8	0.01	28,800	672	19,400	364	18,000	350	15,000	280
0.6	0.05	2	0.028	50,000	1622	37,830	840	28,200	546	23,000	448
		4	0.019	40,000	1,162	27,800	616	23,600	392	21,000	322
		6	0.012	24,000	686	18,000	420	17,800	336	15,000	294
		8	0.01	24,000	652	18,000	399	17,800	319	15,000	280
	0.1	2	0.035	50,000	1622	37,830	840	28,200	546	23,000	448
		4	0.024	40,000	1,162	27,800	616	23,600	392	21,000	322
		6	0.015	24,000	686	18,000	420	17,800	336	15,000	294
		8	0.013	24,000	652	18,000	399	17,800	319	15,000	280
0.7	0.05	2	0.028	49,200	1,475	34,190	781	29,030	497	25,830	408
		4	0.019	40,000	1,162	27,800	616	23,600	392	21,000	322
		6	0.012	24,000	686	18,000	420	17,800	336	15,000	294
		8	0.01	24,000	686	18,000	420	17,800	336	15,000	294
	0.1	2	0.042	49,200	1,475	34,190	781	29,030	497	25,830	408
		4	0.029	40,000	1,162	27,800	616	23,600	392	21,000	322
		6	0.018	24,000	686	18,000	420	17,800	336	15,000	294
		8	0.015	24,000	686	18,000	420	17,800	336	15,000	294
0.8	0.02	2	0.016	48,000	1929	28,000	905	20,000	560	360	504
		4	0.016	48,000	1,542	28,000	725	20,000	448	288	403
		6	0.013	38,700	1,120	25,000	645	18,000	403	256	358
		8	0.011	29,025	840	20,000	516	16,200	362	230	322
		10	0.01	29,025	798	20,000	490	16,200	344	219	306
		12	0.09	29,025	798	20,000	490	16,200	344	219	306
	0.05	2	0.038	48,000	1929	28,000	905	20,000	560	360	504
		4	0.026	48,000	1,542	28,000	725	20,000	448	288	403
		6	0.015	38,700	1,120	25,000	645	18,000	403	256	358
		8	0.012	29,025	840	20,000	516	16,200	362	230	322
		10	0.011	29,025	798	20,000	490	16,200	344	219	306
		12	0.01	29,025	798	20,000	490	16,200	344	219	306
	0.1	2	0.047	48,000	1929	28,000	905	20,000	560	360	504
		4	0.032	48,000	1,542	28,000	725	20,000	448	288	403
		6	0.019	38,700	1,120	25,000	645	18,000	403	256	358
		8	0.015	29,025	840	20,000	516	16,200	362	230	322
		10	0.013	29,025	798	20,000	490	16,200	344	219	306
		12	0.012	29,025	798	20,000	490	16,200	344	219	306
1	0.02	4	0.013	32,400	1902	27,540	1454	24,300	1141	22,680	932
		6	0.01	26,244	1386	22,307	1178	19,683	924	18,371	754

ESRR714 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
1	0.02	8	0.008	23,328	1232	19,829	1047	17,496	821	16,330	670
		10	0.006	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.005	18,144	852	15,422	634	13,608	558	12,701	448
		14	0.004	18,144	746	15,422	588	13,608	478	12,701	372
		16	0.004	18,144	746	15,422	588	13,608	478	12,701	372
		20	0.003	13,608	558	11,567	441	10,206	359	9,526	280
	0.05	3	0.027	32,400	1902	27,540	1454	24,300	1141	22,680	932
		4	0.027	32,400	1902	27,540	1454	24,300	1141	22,680	932
		6	0.017	26,244	1386	22,307	1178	19,683	924	18,371	754
		8	0.016	23,328	1232	19,829	1047	17,496	821	16,330	670
		10	0.011	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.01	18,144	852	15,422	634	13,608	558	12,701	448
		14	0.008	18,144	746	15,422	588	13,608	478	12,701	372
		16	0.006	18,144	746	15,422	588	13,608	478	12,701	372
		20	0.004	13,608	558	11,567	441	10,206	359	9,526	280
	0.1	3	0.038	32,400	1902	27,540	1454	24,300	1141	22,680	932
		4	0.038	32,400	1902	27,540	1454	24,300	1141	22,680	932
		6	0.024	26,244	1386	22,307	1178	19,683	924	18,371	754
		8	0.024	23,328	1232	19,829	1047	17,496	821	16,330	670
		10	0.015	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.015	18,144	852	15,422	634	13,608	558	12,701	448
		14	0.012	18,144	746	15,422	588	13,608	478	12,701	372
		16	0.009	18,144	746	15,422	588	13,608	478	12,701	372
		20	0.006	13,608	558	11,567	441	10,206	359	9,526	280
	0.2	3	0.07	32,400	1902	27,540	1454	24,300	1141	22,680	932
		4	0.07	32,400	1902	27,540	1454	24,300	1141	22,680	932
		6	0.04	26,244	1386	22,307	1178	19,683	924	18,371	754
		8	0.04	23,328	1232	19,829	1047	17,496	821	16,330	670
		10	0.025	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.025	18,144	852	15,422	634	13,608	558	12,701	448
		14	0.02	18,144	746	15,422	588	13,608	478	12,701	372
		16	0.015	18,144	746	15,422	588	13,608	478	12,701	372
		20	0.01	13,608	558	11,567	441	10,206	359	9,526	280
	0.3	3	0.07	32,400	1902	27,540	1454	24,300	1141	22,680	932
		4	0.07	32,400	1902	27,540	1454	24,300	1141	22,680	932
		6	0.04	26,244	1386	22,307	1178	19,683	924	18,371	754
		8	0.04	23,328	1232	19,829	1047	17,496	821	16,330	670
		10	0.025	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.025	18,144	852	15,422	634	13,608	558	12,701	448
		14	0.02	18,144	746	15,422	588	13,608	478	12,701	372
		16	0.015	18,144	746	15,422	588	13,608	478	12,701	372
		20	0.01	13,608	558	11,567	441	10,206	359	9,526	280
1.2	0.02	4	0.013	28,868	1,615	24,538	1,299	21,651	1017	20,208	831
		6	0.01	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831

Recommended Cutting Condition

ESRR714 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
1.2	0.02	8	0.008	24,640	1,346	20,944	1,107	18,480	868	17,248	708
		10	0.006	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.005	19,278	912	16,386	775	14,458	599	13,494	478
		14	0.004	18,144	746	15,422	634	13,608	478	12,701	372
		16	0.004	18,144	746	15,422	634	13,608	478	12,701	372
		20	0.003	13,608	558	11,567	441	10,206	359	9,526	280
	0.05	3	0.027	28,868	1,615	24,538	1,299	21,651	1017	20,208	831
		4	0.027	28,868	1,615	24,538	1,299	21,651	1017	20,208	831
		6	0.017	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		8	0.016	24,640	1,346	20,944	1,107	18,480	868	17,248	708
		10	0.011	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.01	19,278	912	16,386	775	14,458	599	13,494	478
		14	0.008	18,144	746	15,422	634	13,608	478	12,701	372
		16	0.006	18,144	746	15,422	634	13,608	478	12,701	372
		20	0.004	13,608	558	11,567	441	10,206	359	9,526	280
	0.1	3	0.03	28,868	1,615	24,538	1,299	21,651	1017	20,208	831
		4	0.03	28,868	1,615	24,538	1,299	21,651	1017	20,208	831
		6	0.03	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		8	0.022	24,640	1,346	20,944	1,107	18,480	868	17,248	708
		10	0.015	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.012	19,278	912	16,386	775	14,458	599	13,494	478
		14	0.01	18,144	746	15,422	634	13,608	478	12,701	372
		16	0.01	18,144	746	15,422	634	13,608	478	12,701	372
		20	0.006	13,608	558	11,567	441	10,206	359	9,526	280
	0.2	3	0.05	28,868	1,615	24,538	1,299	21,651	1017	20,208	831
		4	0.05	28,868	1,615	24,538	1,299	21,651	1017	20,208	831
		6	0.05	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		8	0.037	24,640	1,346	20,944	1,107	18,480	868	17,248	708
		10	0.025	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.02	19,278	912	16,386	775	14,458	599	13,494	478
		14	0.016	18,144	746	15,422	634	13,608	478	12,701	372
		16	0.016	18,144	746	15,422	634	13,608	478	12,701	372
		20	0.01	13,608	558	11,567	441	10,206	359	9,526	280
	0.3	3	0.05	28,868	1,615	24,538	1,299	21,651	1017	20,208	831
		4	0.05	28,868	1,615	24,538	1,299	21,651	1017	20,208	831
		6	0.05	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		8	0.037	24,640	1,346	20,944	1,107	18,480	868	17,248	708
		10	0.025	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.02	19,278	912	16,386	775	14,458	599	13,494	478
		16	0.016	18,144	746	15,422	634	13,608	478	12,701	372
		20	0.01	13,608	558	11,567	441	10,206	359	9,526	280
1.5	0.02	6	0.01	23,779	1,503	20,382	1,325	17,834	1,052	16,560	855
		8	0.008	22,680	1,437	19,278	1,289	17,010	1,002	15,876	814
		10	0.006	20,412	1,293	17,350	1,222	15,309	959	14,288	782

ESRR714 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
1.5	0.02	8	0.008	24,640	1,346	20,944	1,107	18,480	868	17,248	708
		10	0.006	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.005	19,278	912	16,386	775	14,458	599	13,494	478
		14	0.004	18,144	746	15,422	634	13,608	478	12,701	372
		16	0.004	18,144	746	15,422	634	13,608	478	12,701	372
		20	0.003	13,608	558	11,567	441	10,206	359	9,526	280
	0.05	3	0.027	28,868	1,615	24,538	1,299	21,651	1017	20,208	831
		4	0.027	28,868	1,615	24,538	1,299	21,651	1017	20,208	831
		6	0.017	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		8	0.016	24,640	1,346	20,944	1,107	18,480	868	17,248	708
		10	0.011	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.01	19,278	912	16,386	775	14,458	599	13,494	478
		14	0.008	18,144	746	15,422	634	13,608	478	12,701	372
		16	0.006	18,144	746	15,422	634	13,608	478	12,701	372
		20	0.004	13,608	558	11,567	441	10,206	359	9,526	280
	0.1	3	0.03	28,868	1,615	24,538	1,299	21,651	1017	20,208	831
		4	0.03	28,868	1,615	24,538	1,299	21,651	1017	20,208	831
		6	0.03	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		8	0.022	24,640	1,346	20,944	1,107	18,480	868	17,248	708
		10	0.015	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.012	19,278	912	16,386	775	14,458	599	13,494	478
		14	0.01	18,144	746	15,422	634	13,608	478	12,701	372
		16	0.01	18,144	746	15,422	634	13,608	478	12,701	372
		20	0.006	13,608	558	11,567	441	10,206	359	9,526	280
	0.2	3	0.05	28,868	1,615	24,538	1,299	21,651	1017	20,208	831
		4	0.05	28,868	1,615	24,538	1,299	21,651	1017	20,208	831
		6	0.05	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		8	0.037	24,640	1,346	20,944	1,107	18,480	868	17,248	708
		10	0.025	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.02	19,278	912	16,386	775	14,458	599	13,494	478
		14	0.016	18,144	746	15,422	634	13,608	478	12,701	372
		16	0.016	18,144	746	15,422	634	13,608	478	12,701	372
		20	0.01	13,608	558	11,567	441	10,206	359	9,526	280
	0.3	3	0.05	28,868	1,615	24,538	1,299	21,651	1017	20,208	831
		4	0.05	28,868	1,615	24,538	1,299	21,651	1017	20,208	831
		6	0.05	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		8	0.037	24,640	1,346	20,944	1,107	18,480	868	17,248	708
		10	0.025	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.02	19,278	912	16,386	775	14,458	599	13,494	478
		16	0.016	18,144	746	15,422	634	13,608	478	12,701	372
		20	0.01	13,608	558	11,567	441	10,206	359	9,526	280
1.5	0.02	6	0.01	23,779	1,503	20,382	1,325	17,834	1,052	16,560	855
		8	0.008	22,680	1,437	19,278	1,289	17,010	1,002	15,876	814
		10	0.006	20,412	1,293	17,350	1,222	15,309	959	14,288	782

Recommended Cutting Condition

■ ESRR714 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
1.5	0.3	25	0.02	14,112	795	11,995	592	10,584	522	9,878	417
	0.5	4	0.085	24,930	1,582	20,956	1325	18,711	1052	17,364	855
		6	0.08	23,779	1,503	20,382	1,325	17,834	1,052	16,560	855
		8	0.07	22,680	1,437	19,278	1,289	17,010	1,002	15,876	814
		10	0.067	20,412	1,293	17,350	1,222	15,309	959	14,288	782
		12	0.065	18,144	1,150	15,422	1,099	13,608	862	12,701	704
		14	0.045	14,112	795	11,995	977	10,584	767	9,878	625
		16	0.045	14,112	795	11,995	592	10,584	522	9,878	417
		20	0.035	14,112	795	11,995	592	10,584	522	9,878	417
		22	0.03	14,112	795	11,995	592	10,584	522	9,878	417
		25	0.025	14,112	795	11,995	592	10,584	522	9,878	417
2	0.02	6	0.013	20,790	2289	17,672	1944	15,593	1373	14,553	1121
		8	0.01	18,900	2080	16,065	1768	14,175	1248	13,230	1019
		10	0.008	17104	1797	14539	1528	12828	1129	11973	922
		12	0.006	15,309	1516	13,013	1289	11,482	1010	10,716	826
		14	0.005	14,458	1432	12,290	1216	10,844	954	10,121	779
		16	0.004	13,608	1,348	11,567	1145	10,206	898	9,526	733
		20	0.004	11,907	1180	10,121	1002	8,930	786	8,335	642
		25	0.003	11,907	1059	10,121	900	8,930	707	8,335	575
		30	0.003	11,312	1006	9,615	855	8,484	672	7,918	547
	0.05	6	0.027	20,790	2289	17,672	1944	15,593	1373	14,553	1121
		8	0.017	18,900	2080	16,065	1768	14,175	1248	13,230	1019
		10	0.016	17104	1797	14539	1528	12828	1129	11973	922
		12	0.011	15,309	1516	13,013	1289	11,482	1010	10,716	826
		14	0.01	14,458	1432	12,290	1216	10,844	954	10,121	779
		16	0.008	13,608	1,348	11,567	1145	10,206	898	9,526	733
		20	0.006	11,907	1180	10,121	1002	8,930	786	8,335	642
		25	0.004	11,907	1059	10,121	900	8,930	707	8,335	575
		30	0.003	11,312	1006	9,615	855	8,484	672	7,918	547
	0.1	6	0.07	20,790	2289	17,672	1944	15,593	1373	14,553	1121
		8	0.055	18,900	2080	16,065	1768	14,175	1248	13,230	1019
		10	0.042	17104	1797	14539	1528	12828	1129	11973	922
		12	0.03	15,309	1516	13,013	1289	11,482	1010	10,716	826
		14	0.03	14,458	1432	12,290	1216	10,844	954	10,121	779
		16	0.03	13,608	1,348	11,567	1145	10,206	898	9,526	733
		20	0.025	11,907	1180	10,121	1002	8,930	786	8,335	642
		22	0.02	11,907	1059	10,121	900	8,930	707	8,335	575
		25	0.015	11,907	1059	10,121	900	8,930	707	8,335	575
		30	0.01	11,312	1006	9,615	855	8,484	672	7,918	547
	0.2	6	0.08	20,790	2289	17,672	1944	15,593	1373	14,553	1121
		8	0.07	18,900	2080	16,065	1768	14,175	1248	13,230	1019
		10	0.055	17104	1797	14539	1528	12828	1129	11973	922
		12	0.04	15,309	1516	13,013	1289	11,482	1010	10,716	826
		14	0.04	14,458	1432	12,290	1216	10,844	954	10,121	779

ESRR714 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
2	0.2	16	0.04	13,608	1,348	11,567	1145	10,206	898	9,526	733
		20	0.035	11,907	1180	10,121	1002	8,930	786	8,335	642
		22	0.03	11,907	1059	10,121	900	8,930	707	8,335	575
		25	0.025	11,907	1059	10,121	900	8,930	707	8,335	575
		30	0.017	11,312	1006	9,615	855	8,484	672	7,918	547
	0.3	6	0.11	20,790	2289	17,672	1944	15,593	1373	14,553	1121
		8	0.09	18,900	2080	16,065	1768	14,175	1248	13,230	1019
		10	0.075	17104	1797	14539	1528	12828	1129	11973	922
		12	0.06	15,309	1516	13,013	1289	11,482	1010	10,716	826
		14	0.06	14,458	1432	12,290	1216	10,844	954	10,121	779
		16	0.06	13,608	1,348	11,567	1145	10,206	898	9,526	733
		20	0.037	11,907	1180	10,121	1002	8,930	786	8,335	642
		22	0.033	11,907	1059	10,121	900	8,930	707	8,335	575
		25	0.03	11,907	1059	10,121	900	8,930	707	8,335	575
		30	0.021	11,312	1006	9,615	855	8,484	672	7,918	547
	0.5	6	0.17	20,790	2289	17,672	1944	15,593	1373	14,553	1121
		8	0.14	18,900	2080	16,065	1768	14,175	1248	13,230	1019
		10	0.11	17104	1797	14539	1528	12828	1129	11973	922
		12	0.08	15,309	1516	13,013	1289	11,482	1010	10,716	826
		14	0.08	14,458	1432	12,290	1216	10,844	954	10,121	779
		16	0.08	13,608	1,348	11,567	1145	10,206	898	9,526	733
		20	0.05	11,907	1180	10,121	1002	8,930	786	8,335	642
		22	0.05	11,907	1059	10,121	900	8,930	707	8,335	575
		25	0.05	11,907	1059	10,121	900	8,930	707	8,335	575
		30	0.03	11,312	1006	9,615	855	8,484	672	7,918	547
2.5	0.1	8	0.06	18,900	2,080	16,065	1,768	14,175	1248	13,230	1019
		10	0.055	18,900	2,080	16,065	1,768	14,175	1248	13,230	1019
		12	0.051	18,018	1,958	15,315	1664	13,513	1190	12,613	1019
		14	0.046	17,136	1835	14,566	1560	12,852	1132	11,995	971
		16	0.042	16,254	1,713	13,816	1,456	12,190	1,073	11,378	876
		20	0.03	13,608	1,348	11,567	1,145	10,206	898	9,526	733
		25	0.022	12,757	1204	10,844	1022	9,568	802	8,930	653
		30	0.015	11,907	1,059	10,121	900	8,930	707	8,335	575
	0.2	8	0.08	18,900	2,080	16,065	1,768	14,175	1248	13,230	1019
		10	0.07	18,900	2,080	16,065	1,768	14,175	1248	13,230	1019
		12	0.06	18,018	1,958	15,315	1664	13,513	1190	12,613	1019
		14	0.05	17,136	1835	14,566	1560	12,852	1132	11,995	971
		16	0.055	16,254	1,713	13,816	1,456	12,190	1,073	11,378	876
		20	0.04	13,608	1,348	11,567	1,145	10,206	898	9,526	733
		25	0.03	12,757	1204	10,844	1022	9,568	802	8,930	653
		30	0.02	11,907	1,059	10,121	900	8,930	707	8,335	575
	0.3	8	0.1	18,900	2,080	16,065	1,768	14,175	1248	13,230	1019
		10	0.09	18,900	2,080	16,065	1,768	14,175	1248	13,230	1019
		12	0.085	18,018	1,958	15,315	1664	13,513	1190	12,613	1019

Recommended Cutting Condition

ESLNR20 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
0.2	0.05	0.5	0.02	50,000	258	50,000	205	50,000	180	50,000	160
		1	0.014	50,000	258	50,000	205	50,000	180	50,000	160
		1.5	0.008	50,000	240	45,900	202	45,900	170	45,900	153
		2	0.008	42,000	202	36,700	176	36,700	162	36,700	147
0.3	0.05	1	0.021	50,000	585	50,000	456	50,000	336	50,000	320
		1.5	0.016	50,000	585	45,000	456	45,000	336	45,000	320
		2	0.012	45,000	530	45,000	420	45,000	300	45,000	290
		2.5	0.01	40,000	471	40,000	373	40,000	267	40,000	258
		3	0.008	35,000	412	35,000	326	30,000	200	30,000	194
0.4	0.05	1	0.025	50,000	580	50,000	461	40,000	320	36,000	270
		1.5	0.02	50,000	580	50,000	461	40,000	320	36,000	270
		2	0.016	45,000	520	45,000	410	36,000	290	34,000	240
		2.5	0.015	40,500	480	40,500	370	33,400	270	30,600	220
		3	0.014	40,000	410	40,000	330	32,800	240	25,600	200
		3.5	0.012	36,000	380	36,000	300	29,400	200	22,920	180
		4	0.008	30,000	320	30,000	250	21,600	160	19,200	150
	0.1	2	0.028	45,000	520	45,000	410	36,000	290	34,000	240
		3	0.016	40,000	410	40,000	330	32,800	240	25,600	200
		4	0.01	30,000	320	30,000	250	21,600	160	19,200	150
0.5	0.05	1	0.03	50,000	898	40,000	464	30,000	378	28,000	315
		2	0.023	50,000	898	40,000	464	30,000	378	28,000	315
		3	0.017	45,000	810	36,000	414	27,000	315	24,500	261
		4	0.017	40,000	820	32,000	378	24,000	279	20,000	234
		5	0.011	28,800	540	19,400	280	18,000	250	15,000	200
		6	0.008	28,800	480	19,400	260	18,000	250	15,000	200
	0.1	1	0.035	50,000	898	40,000	464	30,000	378	28,000	315
		2	0.03	50,000	898	40,000	464	30,000	378	28,000	315
		3	0.02	45,000	810	36,000	414	27,000	315	24,500	261
		4	0.02	40,000	720	32,000	378	24,000	279	20,000	234
		5	0.013	28,800	540	19,400	280	18,000	250	15,000	200
		6	0.013	28,800	480	19,400	260	18,000	250	15,000	200
0.6	0.1	2	0.035	50,000	1,159	37,830	600	28,200	390	23,000	320
		4	0.024	40,000	830	27,800	440	23,600	280	21,000	230
		6	0.015	24,000	490	18,000	300	17,800	240	15,000	210
		8	0.013	24,000	466	18,000	285	17,800	228	15,000	200
		10	0.009	24,000	451	18,000	276	17,800	221	15,000	193
2	0.2	6	0.08	20,790	1,635	17,672	1,389	15,593	981	14,553	801
		8	0.07	18,900	1,486	16,065	1,263	14,175	892	13,230	728
		12	0.04	15,309	1,083	13,013	921	11,482	722	10,716	590
		16	0.04	13,608	963	11,567	818	10,206	642	9,526	524
		20	0.035	11,907	843	10,121	716	8,930	562	8,335	459
		25	0.025	11,907	843	10,121	716	8,930	562	8,335	459
		30	0.017	11,312	800	9,615	680	8,484	534	7,918	436
	0.3	8	0.09	18,900	1,651	16,065	1,403	14,175	991	13,230	809

ESLNR20 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
2	0.3	16	0.06	13,608	1,070	11,567	909	10,206	713	9,526	583
		20	0.037	11,907	936	10,121	796	8,930	624	8,335	510
	0.5	6	0.017	20,709	1,635	17,672	1,389	15,593	981	14,553	801
		8	0.014	18,900	1,651	16,065	1,403	14,175	991	13,230	809
		12	0.08	15,309	1,204	13,013	1,023	11,482	802	10,716	655
		16	0.08	13,608	1,070	11,567	909	10,206	713	9,526	583
		20	0.05	11,907	936	10,121	796	8,930	624	8,335	510
		25	0.05	11,907	936	10,121	796	8,930	624	8,335	510
		30	0.03	11,312	889	9,615	756	8,484	593	7,918	484
	0.8	8	0.2	18,900	1,651	16,065	1,403	14,175	991	13,230	809
		16	0.1	13,608	1,070	11,567	909	10,206	713	9,526	583
		20	0.06	11,907	936	10,121	796	8,930	624	8,335	510
3	0.2	8	0.09	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		12	0.07	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		16	0.05	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		20	0.05	11,664	1,146	9,914	974	8,748	764	8,165	624
		30	0.04	9,072	1,146	7,711	974	6,804	764	6,350	624
		35	0.035	9,072	1,146	7,711	974	6,804	764	6,350	624
	0.3	8	0.13	14,400	1,572	12,240	1,337	10,800	943	10,080	771
		16	0.075	14,400	1,572	12,240	1,337	10,800	943	10,080	771
		20	0.075	11,664	1,274	9,914	1,083	8,748	849	8,165	693
		30	0.06	9,072	1,274	7,711	1,083	6,804	849	6,350	693
	0.5	8	0.18	14,400	1,572	12,240	1,337	10,800	943	10,080	771
		12	0.13	14,400	1,572	12,240	1,337	10,800	943	10,080	771
		16	0.1	14,400	1,572	12,240	1,337	10,800	943	10,080	771
		20	0.1	11,664	1,274	9,914	1,083	8,748	849	8,165	693
		30	0.08	9,072	1,274	7,711	1,083	6,804	849	6,350	693
		35	0.065	9,072	1,274	7,711	1,083	6,804	849	6,350	693
0.8	0.1	4	0.032	48,000	1,102	28,000	518	20,000	320	20,000	288
		6	0.019	38,700	800	25,000	461	18,000	288	18,000	256
		8	0.015	29,025	600	20,000	369	16,200	259	16,200	230
		12	0.012	29,025	570	20,000	350	16,200	246	16,200	219
	0.2	4	0.056	48,000	1,102	28,000	518	20,000	320	20,000	288
		6	0.032	38,700	800	25,000	461	18,000	288	18,000	256
1	0.1	4	0.038	32,400	1,359	27,540	1,039	24,300	815	22,680	666
		6	0.024	26,244	990	22,307	842	19,683	660	18,371	539
		8	0.024	23,328	880	19,829	748	17,496	587	16,330	479
		10	0.015	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.015	18,144	609	15,422	453	13,608	399	12,701	320
		16	0.009	18,144	533	15,422	420	13,608	342	12,701	266
		20	0.006	13,608	399	11,567	315	10,206	257	9,526	200
	0.2	4	0.07	32,400	1,359	27,540	1,039	24,300	815	22,680	666
		6	0.04	26,244	990	22,307	842	19,683	660	18,371	539
		8	0.04	23,328	880	19,829	748	17,496	587	16,330	479

Recommended Cutting Condition

ESLNR20 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
1	0.2	10	0.025	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.025	18,144	609	15,422	453	13,608	399	12,701	320
		16	0.015	18,144	533	15,422	420	13,608	342	12,701	266
		20	0.01	13,608	399	11,567	315	10,206	257	9,526	200
	0.3	6	0.04	26,244	990	22,307	842	19,683	660	18,371	539
		10	0.025	20,412	770	17,350	655	15,309	514	14,288	419
		16	0.015	18,144	533	15,422	420	13,608	342	12,701	266
		20	0.01	13,608	399	11,567	315	10,206	257	9,526	200
1.5	0.1	4	0.042	24,930	1,130	20,956	868	18,711	678	17,364	556
		8	0.036	22,680	1,027	19,278	873	17,010	685	15,876	559
		12	0.036	18,144	822	15,422	698	13,608	548	12,701	447
		15	0.023	14,112	568	11,995	423	10,584	373	9,878	298
		20	0.018	14,112	568	11,995	423	10,584	373	9,878	298
	0.2	4	0.07	24,930	1,130	20,956	868	18,711	678	17,364	556
		8	0.06	22,680	1,027	19,278	873	17,010	685	15,876	559
		12	0.06	18,144	822	15,422	698	13,608	548	12,701	447
		15	0.038	14,112	568	11,995	423	10,584	373	9,878	298
		20	0.03	14,112	568	11,995	423	10,584	373	9,878	298
	0.3	8	0.06	22,680	1,027	19,278	873	17,010	685	15,876	559
		15	0.038	14,112	568	11,995	423	10,584	373	9,878	298
		20	0.03	14,112	568	11,995	423	10,584	373	9,878	298

RPM = rev / min
FEED = mm / min



- The above recommendation table may differ from the actual situation, adjust it according to the machine condition, processing type and purpose.
- In the case of low RPM, reduce the feed rate at the same rate.

ESTNR20 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
0.2	0.05	2	0.007	39,660	887	33,660	754	29,700	591	27,720	483
0.4	0.05	4	0.009	30,096	899	25,582	764	22,572	599	21,067	489
		5	0.007	26,752	710	22,739	528	20,064	466	18,726	373
	0.1	4	0.009	31,680	946	26,928	804	23,760	631	22,176	515
		5	0.007	28,160	747	23,936	556	21,120	490	19,712	392
0.5	0.1	5	0.013	30,413	1,090	25,851	753	22,810	562	21,289	453
		8	0.008	24,330	678	20,681	468	18,248	350	17,031	282
		10	0.007	18,248	509	15,511	351	13,686	262	12,773	211
0.6	0.1	12	0.01	20,377	791	17,320	546	15,282	408	14,264	329
		15	0.006	16,727	649	14,218	448	12,545	335	11,709	270
0.8	0.2	6	0.045	31,680	1,084	26,928	921	23,760	723	22,176	590
		12	0.02	28,160	943	23,936	695	21,120	613	19,712	490
1	0.2	8	0.04	28,512	1,463	24,235	1,244	21,384	976	19,958	797
		10	0.035	28,512	1,596	24,235	1,357	21,384	1,064	19,958	869
		15	0.028	25,344	1,261	21,542	938	19,008	828	17,741	662
		20	0.02	19,008	828	16,157	653	14,256	532	13,306	414
		25	0.017	15,840	690	13,464	544	11,880	443	11,088	345
		30	0.017	15,840	690	13,464	544	11,880	443	11,088	345
		35	0.01	15,840	690	13,464	544	11,880	443	11,088	345
	0.3	8	0.04	28,512	1,463	24,235	1,244	21,384	976	19,958	797
		15	0.028	25,344	1,261	21,542	938	19,008	828	17,741	662
		25	0.017	15,840	690	13,464	544	11,880	443	11,088	345
		30	0.017	15,840	690	13,464	544	11,880	443	11,088	345
1.5	0.2	10	0.05	21,683	1,079	18,431	803	16,262	708	15,178	567
		15	0.045	19,712	981	16,755	730	14,784	644	13,798	515
		20	0.042	17,347	863	14,745	642	13,010	567	12,143	453
		25	0.032	14,784	644	12,566	508	11,088	414	10,349	322
		30	0.028	12,320	536	10,472	423	9,240	345	8,624	268
	0.3	10	0.05	21,683	1,079	18,431	803	16,262	708	15,178	567
		20	0.042	17,347	863	14,745	642	13,010	567	12,143	453
		25	0.032	14,784	644	12,566	508	11,088	414	10,349	322
		30	0.028	12,320	536	10,472	423	9,240	345	8,624	268
2	0.2	30	0.045	13,440	1,254	11,424	933	10,080	823	9,408	658
		40	0.035	10,080	823	8,568	650	7,560	529	7,056	412
		50	0.017	8,400	686	7,140	541	6,300	441	5,880	343
	0.3	12	0.088	22,680	1,814	19,278	1,427	17,010	1,191	15,876	1,048
		20	0.054	18,144	1,452	15,422	1,141	13,608	953	12,701	838
		30	0.045	13,440	1,393	11,424	1,036	10,080	914	9,408	732
		40	0.035	10,080	914	8,568	722	7,560	588	7,056	457
		50	0.017	8,400	762	7,140	601	6,300	490	5,880	381
	0.5	8	0.17	22,680	1,814	19,278	1,427	17,010	1,191	15,876	1,048
		12	0.088	22,680	1,814	19,278	1,427	17,010	1,191	15,876	1,048
		16	0.088	19,278	1,542	16,386	1,213	14,459	1,012	13,495	891
		20	0.054	18,114	1,452	15,422	1,141	13,608	953	12,701	838

Recommended Cutting Condition

ESTNR20 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
2	0.5	25	0.054	15,876	1,270	13,495	999	11,907	833	11,113	733
		30	0.045	13,440	1,393	11,424	1,036	10,080	914	9,408	732
		40	0.035	10,080	914	8,568	722	7,560	588	7,056	457
		50	0.017	8,400	762	7,140	601	6,300	490	5,880	381
3	0.2	40	0.07	10,240	956	8,704	711	7,680	627	7,168	502
		50	0.05	7,680	627	6,528	495	5,760	403	5,376	314
		60	0.03	6,400	523	5,440	412	4,800	336	4,480	261
	0.3	40	0.07	10,240	1,062	8,704	790	7,680	697	7,168	557
		50	0.05	7,680	697	6,528	550	5,760	448	5,376	348
		60	0.03	6,400	581	5,440	458	4,800	373	4,480	290
	0.5	40	0.07	10,240	1,062	8,704	790	7,680	697	7,168	557
		50	0.05	7,680	697	6,528	550	5,760	448	5,376	348
		60	0.03	6,400	581	5,440	458	4,800	373	4,480	290

RPM = rev / min
FEED = mm / min



- The above recommendation table may differ from the actual situation, adjust it according to the machine condition, processing type and purpose.
- In the case of low RPM, reduce the feed rate at the same rate.

ESPM4 SERIES ▶ Side Cutting

Workpiece	Hardened Steels									
Hardness	~HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65	
D X R (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3 X R0.5	9,550	6,500	6,900	4,150	4,550	2,750	2,850	1,150	1,900	610
4 X R0.5	7,950	7,000	5,750	4,600	4,000	3,200	2,550	1,350	1,750	700
6 X R0.5	5,800	7,650	4,100	4,900	2,900	3,500	1,850	1,850	1,350	795
6 X R1.0	5,800	7,650	4,100	4,900	2,900	3,500	1,850	1,850	1,350	795
8 X R1.0	4,350	7,650	3,050	4,900	2,200	3,500	1,400	1,850	995	795
8 X R2.0	4,350	7,650	3,050	4,900	2,200	3,500	1,400	1,850	995	795
10 X R1.0	3,500	7,650	2,450	4,900	1,750	3,500	1,100	1,850	795	795
10 X R2.0	3,500	7,650	2,450	4,900	1,750	3,500	1,100	1,850	795	795
12 X R2.0	2,900	7,650	2,050	4,900	1,450	3,500	925	1,850	665	795
12 X R3.0	2,900	7,650	2,050	4,900	1,450	3,500	925	1,850	665	795

RPM = rev / min
FEED = mm / min

ap : 0.2R

ae : 0.5D

*ae shouldn't be over max. 0.5D

ap : 0.1R

ae : 0.5D

*ae shouldn't be over max. 0.5D

ESPM4 SERIES ▶ High Speed Cutting

Workpiece	Hardened Steels									
Hardness	~HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65	
D X R (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3 X R0.5	22,000	16,000	17,000	10,000	12,500	8,000	9,500	4,600	6,900	2,500
4 X R0.5	17,000	17,500	13,000	12,000	11,000	9,200	8,000	5,500	5,600	2,900
6 X R0.5	13,500	18,500	10,500	13,800	9,000	11,000	6,400	6,400	4,500	3,600
6 X R1.0	13,500	18,500	10,500	13,800	9,000	11,000	6,400	6,400	4,500	3,600
8 X R1.0	10,000	18,500	8,000	14,000	6,800	11,000	4,800	6,700	3,400	4,100
8 X R2.0	10,000	18,500	8,000	14,000	6,800	11,000	4,800	6,700	3,400	4,100
10 X R1.0	8,000	18,500	6,400	14,000	5,400	11,000	3,800	6,800	2,700	3,800
10 X R2.0	8,000	18,500	6,400	14,000	5,400	11,000	3,800	6,800	2,700	3,800
12 X R2.0	6,600	18,500	5,300	14,000	4,500	11,000	3,200	7,000	2,250	3,600
12 X R3.0	6,600	18,500	5,300	14,000	4,500	11,000	3,200	7,000	2,250	3,600

RPM = rev / min
FEED = mm / min

ap : 0.1R

ae : 0.5D

*ae shouldn't be over max. 0.5D

ap : 0.05R

ae : 0.3D

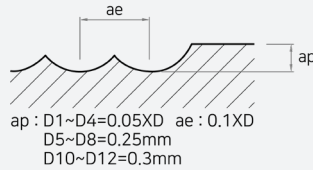
*ae shouldn't be over max. 0.5D

Recommended Cutting Condition

ESB702, ESB712 SERIES

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
~0.2	50,000	1,200	50,000	1,050	45,000	960	40,000	770	35,000	674	31,500	570
0.3	50,000	1,500	50,000	1,350	45,000	1,200	40,000	765	35,000	840	31,500	700
0.4	50,000	1,900	50,000	1,700	45,000	1,500	40,000	1,200	35,000	1,050	31,500	1,100
0.5	50,000	2,400	50,000	2,100	45,000	1,900	40,000	1,500	35,000	1,300	31,500	1,100
0.6	50,000	2,900	50,000	2,500	45,000	2,200	40,000	1,800	35,000	1,600	31,500	1,400
0.8	50,000	3,900	50,000	3,300	45,000	3,000	40,000	2,400	35,000	1,600	31,500	1,800
1	50,000	4,800	50,000	4,200	45,000	3,800	40,000	3,000	35,000	2,600	35,000	2,300
1.5	50,000	5,400	48,000	4,500	43,000	4,000	23,000	3,100	33,000	2,700	29,700	2,300
2	49,700	5,700	47,800	4,800	40,000	4,000	35,000	3,150	32,000	2,800	28,500	2,300
3	33,100	6,000	31,800	5,300	26,500	4,000	23,500	3,150	21,000	28,00	19,000	2,300
4	24,900	6,000	23,900	5,300	20,000	4,000	17,500	3,150	16,000	2,800	14,500	2,300
5	18.6	5,800	17,800	4,900	15,000	3,750	13,500	3,050	11,500	2,550	10,500	2,100
6	13,900	4,850	13,400	4,100	11,000	3,100	10,000	2,500	8,800	2,150	8,000	1,750
8	11,100	4,200	10,700	3,500	9,000	2,700	8,000	2,150	7,000	1,850	6,500	1,550
10	9,300	3,700	8,900	3,100	7,500	2,400	6,600	1,900	5,800	1,650	5,300	1,380
12	6,950	2,950	6,680	2,500	5,600	1,900	5,000	1,550	4,400	1,250	4,000	1,050

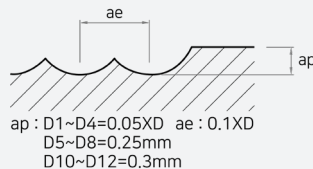
RPM = rev / min
FEED = mm / min



ESB703 SERIES

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	57,000	7,100	55,000	6,000	46,000	5,000	40,300	3,900	36,800	3,500	32,800	2,900
2.5	57,000	7,100	55,000	6,000	46,000	5,000	40,300	3,900	36,800	3,500	32,800	2,900
3	38,000	7,500	36,600	6,600	30,500	5,000	27,000	3,900	24,200	3,500	21,900	2,900
4	28,500	7,500	27,500	6,600	23,000	5,000	20,100	3,900	18,400	3,500	16,700	2,900
5	21,500	7,300	20,500	6,100	17,300	4,700	15,500	3,800	13,200	3,200	12,100	2,600
6	16,000	6,100	15,400	5,100	12,700	3,900	11,500	3,100	10,100	2,700	9,200	2,200
8	12,700	5,300	12,300	4,400	10,400	3,400	9,200	2,700	8,100	2,300	7,500	1,900
10	10,700	4,600	10,200	3,900	8,600	3,000	7,600	2,400	6,700	2,100	6,100	1,700
12	8,000	3,700	7,700	3,100	6,400	2,400	5,800	1,900	5,100	1,600	4,600	1,300

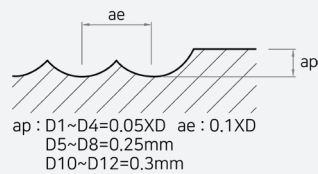
RPM = rev / min
FEED = mm / min



■ ESB734 SERIES

Workpiece	Herdened Steels Heat Resistant Steels		Herdened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	62,100	8,600	59,800	7,200	50,000	6,000	43,800	4,700	40,000	4,200	35,600	3,500
2.5	62,100	8,600	59,800	7,200	50,000	6,000	43,800	4,700	40,000	4,200	35,600	3,500
3	41,400	9,000	39,800	8,000	33,100	6,000	29,400	4,700	26,300	4,200	23,800	3,500
4	31,100	9,000	29,900	8,000	25,000	6,000	21,900	4,700	20,000	4,200	18,100	3,500
5	23,300	8,700	22,300	7,400	18,800	5,600	16,900	4,600	14,400	3,800	13,100	3,200
6	17,400	7,300	16,800	6,200	13,800	4,700	12,500	3,800	11,000	3,200	10,000	2,600
8	13,900	6,300	13,400	5,300	11,300	4,100	10,000	3,200	8,800	2,800	8,100	2,300
10	11,600	5,600	11,100	4,700	9,400	3,600	8,300	2,900	7,300	2,500	6,600	2,100

RPM = rev / min
FEED = mm / min



Recommended Cutting Condition

▣ ESRB712 SERIES

Workpiece		CARBON STEEL, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~HRC35			HRC35~HRC45			HRC45~HRC55		
Strength		~1100N/mm2			1100~1500N/mm2			1500~2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
0.1	0.3	50,000	240	0.009	50,000	215	0.007	50,000	190	0.005
	0.5	50,000	240	0.006	50,000	215	0.005	50,000	190	0.004
	1	45,000	195	0.002	45,000	175	0.002	45,000	155	0.001
0.2	0.5	50,000	335	0.018	50,000	310	0.014	43,200	260	0.01
	1	50,000	335	0.013	50,000	310	0.01	43,200	260	0.007
	1.5	45,000	270	0.007	45,000	250	0.006	38,880	210	0.004
	2	45,000	270	0.005	45,000	250	0.004	38,880	210	0.003
	3	45,000	270	0.003	45,000	250	0.003	38,880	210	0.002
0.3	1	50,000	475	0.019	50,000	430	0.015	42,800	365	0.011
	1.5	50,000	475	0.019	50,000	430	0.015	42,800	365	0.011
	2	45,000	385	0.011	45,000	350	0.008	38,520	295	0.006
	2.5	45,000	385	0.007	45,000	350	0.005	38,520	295	0.004
	3	45,000	385	0.007	45,000	350	0.005	38,520	295	0.004
	4	40,000	305	0.004	40,000	275	0.003	34,240	235	0.002
	5	30,000	200	0.003	30,000	180	0.002	25,680	155	0.002
0.4	1	41,000	490	0.036	38,800	425	0.028	34,200	340	0.02
	1.5	41,000	490	0.025	38,800	425	0.02	34,200	340	0.014
	2	41,000	490	0.025	38,800	425	0.02	34,200	340	0.014
	2.5	36,900	395	0.014	34,920	345	0.011	30,780	275	0.008
	3	36,900	395	0.014	34,920	345	0.011	30,780	275	0.008
	4	36,900	395	0.009	34,920	345	0.007	30,780	275	0.005
	5	32,800	315	0.009	31,040	270	0.007	27,360	220	0.005
	6	32,800	315	0.005	31,040	270	0.004	27,360	220	0.003
	8	24,600	205	0.004	23,280	180	0.003	20,520	145	0.002
	10	12,300	90	0.004	11,640	75	0.003	10,260	60	0.002
0.5	1	34,200	685	0.045	32,300	580	0.035	28,500	515	0.025
	1.5	34,200	685	0.045	32,300	580	0.035	28,500	515	0.025
	2	34,200	685	0.032	32,300	580	0.025	28,500	515	0.018
	2.5	34,200	685	0.032	32,300	580	0.025	28,500	515	0.018
	3	30,780	555	0.018	29,070	470	0.014	25,650	415	0.01
	4	30,780	555	0.018	29,070	470	0.014	25,650	415	0.01
	5	30,780	555	0.011	29,070	470	0.009	25,650	415	0.006
	6	27,360	440	0.011	25,840	370	0.009	22,800	330	0.006
	8	20,520	290	0.007	19,380	245	0.005	17,100	215	0.004
	10	20,520	290	0.005	19,380	245	0.004	17,100	215	0.003
	12	10,260	125	0.005	9,690	105	0.004	8,550	95	0.003
	14	10,260	125	0.005	9,690	105	0.004	8,550	95	0.003
	16	3,420	35	0.005	3,230	30	0.004	2,850	25	0.003
0.6	1	34,200	1,025	0.038	32,300	840	0.029	28,500	685	0.021
	2	34,200	1,025	0.038	32,300	840	0.029	28,500	685	0.021
	3	34,200	1,025	0.038	32,300	840	0.029	28,500	685	0.021
	4	30,780	830	0.022	29,070	680	0.017	25,650	555	0.012
	5	30,780	830	0.014	29,070	680	0.011	25,650	555	0.008

▣ ESRB712 SERIES

Workpiece		CARBON STEEL, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~HRC35			HRC35~HRC45			HRC45~HRC55		
Strength		~1100N/mm2			1100~1500N/mm2			1500~2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
0.6	6	30,780	830	0.014	29,070	680	0.011	25,650	555	0.008
	8	27,360	655	0.008	25,840	540	0.006	22,800	440	0.005
	10	20,520	430	0.005	19,380	355	0.004	17,100	290	0.003
	12	20,520	430	0.005	19,380	355	0.004	17,100	290	0.003
	14	10,260	185	0.005	9,690	150	0.004	8,550	125	0.003
	16	10,260	185	0.005	9,690	150	0.004	8,550	125	0.003
0.7	2	34,200	1,130	0.063	32,300	930	0.049	28,500	765	0.035
	4	30,780	915	0.025	29,070	755	0.02	25,650	620	0.014
	6	30,780	915	0.016	29,070	755	0.012	25,650	620	0.009
	8	27,360	725	0.016	25,840	595	0.012	22,800	490	0.009
	10	27,360	725	0.009	25,840	595	0.007	22,800	490	0.005
	12	20,520	475	0.006	19,380	390	0.005	17,100	320	0.004
0.8	2	34,200	1,230	0.072	32,300	1,035	0.056	28,500	855	0.04
	3	34,200	1,230	0.05	32,300	1,035	0.039	28,500	855	0.028
	4	34,200	1,230	0.05	32,300	1,035	0.039	28,500	855	0.028
	5	30,780	995	0.029	29,070	840	0.022	25,650	695	0.016
	6	30,780	995	0.029	29,070	840	0.022	25,650	695	0.016
	8	30,780	995	0.018	29,070	840	0.014	25,650	695	0.01
	10	27,360	785	0.018	25,840	660	0.014	22,800	545	0.01
	12	27,360	785	0.011	25,840	660	0.008	22,800	545	0.006
	14	20,520	515	0.007	19,380	435	0.006	17,100	360	0.004
	16	20,520	515	0.007	19,380	435	0.006	17,100	360	0.004
0.9	20	10,260	220	0.007	9,690	185	0.006	8,550	155	0.004
	4	29,250	1,120	0.032	27,630	935	0.025	24,390	775	0.018
	6	29,250	1,120	0.032	27,630	935	0.025	24,390	775	0.018
	8	29,250	1,120	0.02	27,630	935	0.016	24,390	775	0.011
1	10	26,000	885	0.02	24,560	740	0.016	21,680	610	0.011
	2	30,800	1,540	0.09	29,100	1,310	0.07	25,700	1,075	0.05
	3	30,800	1,540	0.09	29,100	1,310	0.07	25,700	1,075	0.05
	4	30,800	1,540	0.063	29,100	1,310	0.049	25,700	1,075	0.035
	5	30,800	1,540	0.063	29,100	1,310	0.049	25,700	1,075	0.035
	6	27,720	1,245	0.036	26,190	1,060	0.028	23,130	870	0.02
	7	27,720	1,245	0.036	26,190	1,060	0.028	23,130	870	0.02
	8	27,720	1,245	0.036	26,190	1,060	0.028	23,130	870	0.02
	10	27,720	1,245	0.023	26,190	1,060	0.018	23,130	870	0.013
	12	24,640	985	0.023	23,280	840	0.018	20,560	690	0.013
	14	24,640	985	0.014	23,280	840	0.011	20,560	690	0.008
	16	18,480	645	0.014	17,460	550	0.011	15,420	450	0.008
	18	18,480	645	0.009	17,460	550	0.007	15,420	450	0.005
	20	18,480	645	0.009	17,460	550	0.007	15,420	450	0.005
	22	9,240	275	0.009	8,730	235	0.007	7,710	195	0.005
	26	9,240	275	0.009	8,730	235	0.007	7,710	195	0.005
	30	9,240	275	0.009	8,730	235	0.007	7,710	195	0.005

Recommended Cutting Condition

▣ ESRB712 SERIES

Workpiece		CARBON STEEL, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~HRc35			HRc35~HRc45			HRc45~HRc55		
Strength		~1100N/mm2			1100~1500N/mm2			1500~2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
1	40	3,080	75	0.009	2,910	65	0.007	2,570	55	0.005
	50	3,080	75	0.006	2,910	65	0.005	2,570	55	0.003
1.2	4	26,300	1,375	0.076	24,800	1,150	0.059	21,900	950	0.042
	6	26,300	1,375	0.076	24,800	1,150	0.059	21,900	950	0.042
	8	23,670	1,115	0.043	22,320	930	0.034	19,710	770	0.024
	10	23,670	1,115	0.027	22,320	930	0.021	19,710	770	0.015
	12	23,670	1,115	0.027	22,320	930	0.021	19,710	770	0.015
	16	21,040	880	0.016	19,840	735	0.013	17,520	610	0.009
	20	15,780	580	0.011	14,880	485	0.008	13,140	400	0.006
	26	7,890	245	0.011	7,440	205	0.008	6,570	170	0.006
1.4	6	21,500	1,295	0.088	20,300	1,100	0.069	18,000	935	0.049
	8	19,350	1,050	0.05	18,270	890	0.039	16,200	755	0.028
	10	19,350	1,050	0.05	18,270	890	0.039	16,200	755	0.028
	16	17,200	830	0.032	16,240	705	0.025	14,400	600	0.018
1.5	4	23,900	1,580	0.135	22,600	1,355	0.105	20,000	1,075	0.075
	5	23,900	1,580	0.095	22,600	1,355	0.074	20,000	1,075	0.053
	6	23,900	1,580	0.095	22,600	1,355	0.074	20,000	1,075	0.053
	7	23,900	1,580	0.095	22,600	1,355	0.074	20,000	1,075	0.053
	8	21,510	1,280	0.054	20,340	1,100	0.042	18,000	870	0.03
	10	21,510	1,280	0.054	20,340	1,100	0.042	18,000	870	0.03
	12	21,510	1,280	0.054	20,340	1,100	0.042	18,000	870	0.03
	14	21,510	1,280	0.034	20,340	1,100	0.026	18,000	870	0.019
	16	19,120	1,010	0.034	18,080	865	0.026	16,000	690	0.019
	18	19,120	1,010	0.034	18,080	865	0.026	16,000	690	0.019
	20	19,120	1,010	0.02	18,080	865	0.016	16,000	690	0.011
	22	19,120	1,010	0.02	18,080	865	0.016	16,000	690	0.011
	26	14,340	665	0.014	13,560	570	0.011	12,000	450	0.008
	30	14,340	665	0.014	13,560	570	0.011	12,000	450	0.008
	35	7,170	285	0.01	6,780	245	0.008	6,000	195	0.005
	40	7,170	285	0.01	6,780	245	0.008	6,000	195	0.005
1.6	4	22,200	1,555	0.101	21,000	1,300	0.078	18,500	1,110	0.056
	6	22,200	1,555	0.101	21,000	1,300	0.078	18,500	1,110	0.056
	8	22,200	1,555	0.101	21,000	1,300	0.078	18,500	1,110	0.056
	10	19,980	1,260	0.058	18,900	1,055	0.045	16,650	900	0.032
	12	19,980	1,260	0.058	18,900	1,055	0.045	16,650	900	0.032
	16	19,980	1,260	0.036	18,900	1,055	0.028	16,650	900	0.02
	20	17,760	995	0.036	16,800	830	0.028	14,800	710	0.02
1.8	4	22,200	1,780	0.113	21,000	1,470	0.088	18,500	1,225	0.063
	6	22,200	1,780	0.113	21,000	1,470	0.088	18,500	1,225	0.063
	8	22,200	1,780	0.113	21,000	1,470	0.088	18,500	1,225	0.063
	10	19,980	1,440	0.065	18,900	1,190	0.05	16,650	990	0.036
	12	19,980	1,440	0.065	18,900	1,190	0.05	16,650	990	0.036
	16	19,980	1,440	0.041	18,900	1,190	0.032	16,650	990	0.023

▣ ESRB712 SERIES

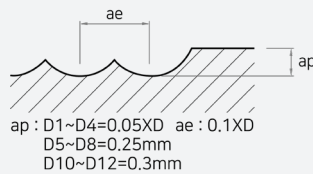
Workpiece		CARBON STEEL, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~HRc35			HRc35~HRc45			HRc45~HRc55		
Strength		~1100N/mm2			1100~1500N/mm2			1500~2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
1.8	20	17,760	1,140	0.041	16,800	940	0.032	14,800	785	0.023
2	6	18,000	1,795	0.18	17,000	1,525	0.14	15,000	1,285	0.1
	8	18,000	1,795	0.126	17,000	1,525	0.098	15,000	1,285	0.07
	10	18,000	1,795	0.126	17,000	1,525	0.098	15,000	1,285	0.07
	12	16,200	1,455	0.072	15,300	1,235	0.056	13,500	1,040	0.04
	14	16,200	1,455	0.072	15,300	1,235	0.056	13,500	1,040	0.04
	16	16,200	1,455	0.072	15,300	1,235	0.056	13,500	1,040	0.04
	18	16,200	1,455	0.045	15,300	1,235	0.035	13,500	1,040	0.025
	20	16,200	1,455	0.045	15,300	1,235	0.035	13,500	1,040	0.025
	22	14,400	1,150	0.045	13,600	975	0.035	12,000	820	0.025
	26	14,400	1,150	0.045	13,600	975	0.035	12,000	820	0.025
	30	14,400	1,150	0.027	13,600	975	0.021	12,000	820	0.015
	35	10,800	755	0.018	10,200	640	0.014	9,000	540	0.01
	40	10,800	755	0.018	10,200	640	0.014	9,000	540	0.01
	45	5,400	325	0.018	5,100	275	0.014	4,500	230	0.01
	50	5,400	325	0.018	5,100	275	0.014	4,500	230	0.01
	60	5,400	325	0.018	5,100	275	0.014	4,500	230	0.01
2.5	8	15,800	1,925	0.158	14,900	1,605	0.123	13,200	1,305	0.088
	10	15,800	1,925	0.158	14,900	1,605	0.123	13,200	1,305	0.088
	12	15,800	1,925	0.158	14,900	1,605	0.123	13,200	1,305	0.088
	16	14,220	1,560	0.09	13,410	1,300	0.07	11,880	1,055	0.05
	20	14,220	1,560	0.09	13,410	1,300	0.07	11,880	1,055	0.05
	22	14,220	1,560	0.056	13,410	1,300	0.044	11,880	1,055	0.031
	26	12,640	1,230	0.056	11,920	1,025	0.044	10,560	835	0.031
	30	12,640	1,230	0.056	11,920	1,025	0.044	10,560	835	0.031
	35	12,640	1,230	0.034	11,920	1,025	0.026	10,560	835	0.019
	40	9,480	810	0.034	8,940	675	0.026	7,920	550	0.019
	45	9,480	810	0.023	8,940	675	0.018	7,920	550	0.013
	50	9,480	810	0.023	8,940	675	0.018	7,920	550	0.013
3	6	13,700	2,050	0.27	12,900	1,730	0.21	11,400	1,435	0.15
	8	13,700	2,050	0.27	12,900	1,730	0.21	11,400	1,435	0.15
	10	13,700	2,050	0.189	12,900	1,730	0.147	11,400	1,435	0.105
	12	13,700	2,050	0.189	12,900	1,730	0.147	11,400	1,435	0.105
	14	13,700	2,050	0.189	12,900	1,730	0.147	11,400	1,435	0.105
	16	12,330	1,660	0.108	11,610	1,400	0.084	10,260	1,160	0.06
	18	12,330	1,660	0.108	11,610	1,400	0.084	10,260	1,160	0.06
	20	12,330	1,660	0.108	11,610	1,400	0.084	10,260	1,160	0.06
	22	12,330	1,660	0.108	11,610	1,400	0.084	10,260	1,160	0.06
	26	12,330	1,660	0.068	11,610	1,400	0.053	10,260	1,160	0.038
	30	12,330	1,660	0.068	11,610	1,400	0.053	10,260	1,160	0.038
	35	10,960	1,310	0.068	10,320	1,105	0.053	9,120	920	0.038
	40	10,960	1,310	0.041	10,320	1,105	0.032	9,120	920	0.023
	45	10,960	1,310	0.041	10,320	1,105	0.032	9,120	920	0.023

Recommended Cutting Condition

▣ ESRB712 SERIES

Workpiece		CARBON STEEL, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~HRC35			HRC35~HRC45			HRC45~HRC55		
Strength		~1100N/mm2			1100~1500N/mm2			1500~2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
3	50	8,220	860	0.027	7,740	725	0.021	6,840	605	0.015
	60	8,220	860	0.027	7,740	725	0.021	6,840	605	0.015
4	8	9,800	1,965	0.36	9,300	1,670	0.28	8,200	1,395	0.2
	10	9,800	1,965	0.36	9,300	1,670	0.28	8,200	1,395	0.2
	12	9,800	1,965	0.36	9,300	1,670	0.28	8,200	1,395	0.2
	14	9,800	1,965	0.252	9,300	1,670	0.196	8,200	1,395	0.14
	16	9,800	1,965	0.252	9,300	1,670	0.196	8,200	1,395	0.14
	18	9,800	1,965	0.252	9,300	1,670	0.196	8,200	1,395	0.14
	20	9,800	1,965	0.252	9,300	1,670	0.196	8,200	1,395	0.14
	22	8,820	1,590	0.144	8,370	1,355	0.112	7,380	1,130	0.08
	26	8,820	1,590	0.144	8,370	1,355	0.112	7,380	1,130	0.08
	30	8,820	1,590	0.144	8,370	1,355	0.112	7,380	1,130	0.08
	35	8,820	1,590	0.09	8,370	1,355	0.07	7,380	1,130	0.05
	40	8,820	1,590	0.09	8,370	1,355	0.07	7,380	1,130	0.05
	45	7,840	1,260	0.09	7,440	1,070	0.07	6,560	895	0.05
	50	7,840	1,260	0.09	7,440	1,070	0.07	6,560	895	0.05
	60	7,840	1,260	0.054	7,440	1,070	0.042	6,560	895	0.03
5	15	7,700	1,845	0.315	7,300	1,455	0.245	6,400	1,285	0.175
	20	7,700	1,845	0.315	7,300	1,455	0.245	6,400	1,285	0.175
	26	6,930	1,495	0.18	6,570	1,180	0.14	5,760	1,040	0.1
	30	6,930	1,495	0.18	6,570	1,180	0.14	5,760	1,040	0.1
	35	6,930	1,495	0.18	6,570	1,180	0.14	5,760	1,040	0.1
	40	6,930	1,495	0.18	6,570	1,180	0.14	5,760	1,040	0.1
	50	6,930	1,495	0.113	6,570	1,180	0.088	5,760	1,040	0.063
	60	6,160	1,180	0.113	5,840	930	0.088	5,120	820	0.063
6	20	6,500	1,900	0.378	6,200	1,600	0.294	5,500	1,330	0.21
	30	6,500	1,900	0.378	6,200	1,600	0.294	5,500	1,330	0.21
8	25	4,850	1,800	0.504	4,600	1,500	0.392	4,000	1,280	0.28
	30	4,850	1,800	0.504	4,600	1,500	0.392	4,000	1,280	0.28
10	30	3,850	1,650	0.9	3,680	1,400	0.7	3,200	1,200	0.5
	40	3,850	1,650	0.63	3,680	1,400	0.49	3,200	1,200	0.35
12	32	3,200	1,520	1.08	3,050	1,300	0.84	2,650	1,100	0.6
	45	3,200	1,520	0.756	3,050	1,300	0.588	2,650	1,100	0.42

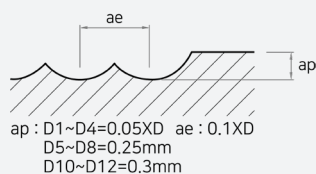
RPM = rev / min
FEED = mm / min



ESLNB20 SERIES

Workpiece	Alloy Steels, Heat Resistant Steels			Herdened Steels			Herdened Steels			Copper, Copper alloy		
Hardness	HRc30~HRc45			HRc45~HRc55			HRc55~HRc65			-		
Diameter (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
0.5	34,100~49,500	600~870	0.007~0.028	31,900~35,200	490~540	0.005~0.023	31,900~35,200	440~480	0.005~0.021	49,000~50,000	1,100~1,400	0.010~0.042
0.6	28,600~40,700	590~850	0.007~0.034	26,400~29,700	480~540	0.006~0.028	26,400~29,700	400~480	0.006~0.025	42,000~50,000	1,100~1,700	0.011~0.050
0.8	22,000~30,800	640~890	0.016~0.064	19,800~22,000	490~550	0.013~0.052	19,800~22,000	440~500	0.012~0.048	31,000~50,000	1,100~2,250	0.024~0.096
1	17,600~24,200	600~850	0.008~0.080	15,400~17,600	470~540	0.007~0.065	15,400~17,600	440~500	0.006~0.060	24,000~49,500	1,100~2,200	0.012~0.120
1.2	14,300~18,700	590~780	0.024~0.032	12,000~14,000	480~540	0.020~0.026	12,000~14,000	420~480	0.018~0.024	28,500~38,500	1,480~1,950	0.036~0.048
1.5	11,000~14,300	580~760	0.031~0.048	10,000~11,500	480~540	0.025~0.039	10,000~11,500	420~480	0.023~0.036	17,000~28,500	1,100~1,950	0.046~0.072
2	8,500~11,000	590~800	0.024~0.160	7,900~8,800	470~530	0.020~0.130	7,900~8,800	440~480	0.018~0.120	12,600~24,000	1,100~2,150	0.036~0.240
3	5,700~8,200	730~1,000	0.064~0.24	5,300~5,800	590~650	0.052~0.195	5,300~5,800	550~620	0.048~0.120	11,900~17,000	1,850~2,700	0.096~0.360
4	4,300~6,200	680~990	0.080~0.320	3,950~4,400	550~620	0.065~0.260	3,850~4,400	530~570	0.060~0.240	6,600~12,500	1,260~2,500	0.120~0.480

RPM = rev / min
FEED = mm / min



Recommended Cutting Condition

ESTNB20 SERIES

Workpiece					Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut					Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Neck Angle (°)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
0.4	0.8	4	0.4	0.062	32,000	2,560	22,400	1,613	20,800	1,331	20,800	1,165
		6	0.4	0.045	32,000	2,560	22,400	1,613	20,800	1,331	20,800	1,165
		8	0.9	0.026	25,600	1,475	17,920	1,032	16,640	852	16,640	745
		12	0.9	0.02	20,800	1,065	14,560	699	13,520	606	13,520	519
		16	0.9	0.018	20,800	932	14,560	612	13,520	530	13,520	454
0.45	0.9	4	0.4	0.063	28,300	2,547	19,810	1,605	18,395	1,324	18,395	1,159
		8	0.4	0.05	28,300	2,547	19,810	1,605	18,395	1,324	18,395	1,159
		12	0.4	0.037	18,400	1,325	12,880	811	11,960	753	11,960	646
		16	0.4	0.024	18,400	1,325	12,880	811	11,960	753	11,960	646
		18	0.4	0.018	18,400	1,325	12,880	811	11,960	753	11,960	646
		20	0.4	0.015	15,850	1,141	11,095	699	10,303	649	10,303	556
		22	0.4	0.012	15,850	1,141	11,095	699	10,303	649	10,303	556
		24	0.4	0.009	14,150	1,019	9,905	624	9,198	579	9,198	497
0.5	1	6	0.4	0.055	25,600	2,560	17,920	1,613	16,640	1,331	16,640	1,165
		8	0.4	0.055	25,600	2,560	17,920	1,613	16,640	1,331	16,640	1,165
		10	0.4	0.032	20,800	1,872	14,560	1,310	13,520	1,082	13,520	946
		10	0.9	0.035	20,800	1,872	14,560	1,310	13,520	1,082	13,520	946
		15	0.9	0.028	16,640	1,331	11,648	874	10,816	757	10,816	649
		20	0.4	0.018	16,640	1,331	11,648	874	10,816	757	10,816	649
		20	0.9	0.02	16,640	1,331	11,648	874	10,816	757	10,816	649
		25	0.9	0.017	14,560	1,165	10,192	764	9,464	662	9,464	568
		30	0.4	0.015	12,480	874	8,736	568	8,112	487	8,112	406
		30	0.9	0.017	12,480	874	8,736	568	8,112	487	8,112	406
		35	0.9	0.01	10,400	728	7,280	473	6,760	406	6,760	338
		40	0.9	0.009	10,000	700	7,000	455	6,500	390	6,500	325
		50	0.9	0.007	9,500	665	6,650	432	6,175	371	6,175	309
		60	0.9	0.005	9,000	630	6,300	410	5,850	351	5,850	293
		70	0.9	0.003	8,500	595	5,950	387	5,525	332	5,525	276
0.75	1.5	8	0.4	0.07	16,960	2,544	11,872	1,603	11,024	1,323	11,024	1,158
		10	0.4	0.07	16,960	2,544	11,872	1,603	11,024	1,323	11,024	1,158
		12	0.4	0.07	16,960	2,544	11,872	1,603	11,024	1,323	11,024	1,158
		15	0.9	0.045	13,568	1,832	9,498	1,282	8,819	1,058	8,819	926
		20	0.9	0.04	11,024	1,323	7,717	810	7,166	752	7,166	645
		30	0.9	0.028	11,024	1,323	7,717	810	7,166	752	7,166	645
0.9	1.8	4	0.4	0.12	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
		8	0.4	0.1	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
		12	0.4	0.08	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
		16	0.4	0.071	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
		20	0.4	0.062	9,230	1,329	6,461	814	6,000	756	6,000	648
		24	0.4	0.053	9,230	1,329	6,461	814	6,000	756	6,000	648
		28	0.4	0.044	9,230	1,329	6,461	814	6,000	756	6,000	648
		32	0.4	0.036	9,230	1,329	6,461	814	6,000	756	6,000	648
		36	0.4	0.028	9,230	1,329	6,461	814	6,000	756	6,000	648
		38	0.4	0.02	8,000	1,152	5,600	706	5,200	655	5,200	562

ESTNB20 SERIES

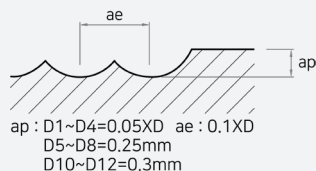
Workpiece					Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut					Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Neck Angle (°)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
0.9	1.8	40	0.4	0.015	8,000	1,152	5,600	706	5,200	655	5,200	562
1	2	8	0.4	0.15	15,200	3,040	10,640	1,915	9,880	1,581	9,880	1,383
		12	0.4	0.09	15,200	3,040	10,640	1,915	9,880	1,581	9,880	1,383
		16	0.4	0.09	15,200	3,040	10,640	1,915	9,880	1,581	9,880	1,383
		20	0.4	0.06	12,160	2,189	8,512	1,532	7,904	1,265	7,904	1,107
		20	0.9	0.07	12,160	2,189	8,512	1,532	7,904	1,265	7,904	1,107
		25	0.9	0.07	9,880	1,581	6,916	968	6,442	899	6,422	771
		30	0.4	0.04	9,880	1,581	6,916	968	6,442	899	6,422	771
		30	0.9	0.045	9,880	1,581	6,916	968	6,442	899	6,422	771
		35	0.9	0.045	9,880	1,581	6,916	968	6,442	899	6,422	771
		40	0.4	0.03	9,880	1,581	6,916	968	6,442	899	6,422	771
		40	0.9	0.035	9,880	1,581	6,916	968	6,442	899	6,422	771
		50	0.9	0.17	8,512	1,192	5,958	775	5,533	664	5,533	553
		60	0.9	0.009	7,235	1,013	5,065	658	4,703	564	4,703	470
		70	0.9	0.005	6,150	861	4,305	560	3,997	480	3,997	400
1.5	3	8	0.4	0.32	12,720	3,816	8,904	2,404	8,268	1,984	8,268	1,736
		16	0.4	0.22	12,720	3,816	8,904	2,404	8,268	1,984	8,268	1,736
		20	0.4	0.15	12,720	3,434	8,904	2,137	8,268	1,736	8,268	1,488
		30	0.4	0.08	10,176	2,748	7,123	1,496	6,614	1,389	6,614	1,191
		30	0.9	0.09	10,176	2,748	7,123	1,496	6,614	1,389	6,614	1,191
		40	0.4	0.06	8,268	1,984	5,788	1,215	5,374	1,129	5,374	967
		40	0.9	0.07	8,268	1,984	5,788	1,215	5,374	1,129	5,374	967
		50	0.9	0.05	8,268	1,984	5,788	1,215	5,374	1,129	5,374	967
		60	0.9	0.03	7,123	1,710	4,986	1,047	4,630	972	4,630	833
		70	0.9	0.02	6,233	1,496	4,363	916	4,051	851	4,051	729
2	4	20	1	0.32	11,900	2,860	9,000	2,050	7,800	1,680	7,800	1,590
		30	1	0.23	11,900	2,570	9,000	1,850	7,800	1,520	7,800	1,430
		40	1	0.14	9,500	1,940	7,200	1,400	6,200	1,140	6,200	1,080
		50	1	0.11	7,800	1,590	5,800	1,120	5,000	920	5,000	870
		60	1	0.07	7,800	1,590	5,800	1,120	5,000	920	5,000	870
2.5	5	30	1	0.34	9,500	2,140	7,200	1,540	6,200	1,260	6,200	1,190
		40	1	0.25	9,500	2,140	7,200	1,540	6,200	1,260	6,200	1,190
		60	1	0.15	6,200	1,320	4,700	950	4,000	770	4,000	720
3	6	30	1	0.45	8,000	2,000	6,000	1,430	5,200	1,170	5,200	1,110
		40	1	0.4	8,000	1,800	6,000	1,280	5,200	1,050	5,200	990
		50	1	0.32	8,000	1,800	6,000	1,280	5,200	1,050	5,200	990
		60	1	0.22	6,400	1,360	4,800	970	4,100	780	4,100	740
		70	1	0.18	5,200	1,110	3,900	790	3,400	650	3,400	610
		80	1	0.14	5,200	1,110	3,900	790	3,400	650	3,400	610
4	8	50	1	0.5	6,000	1,460	4,500	1,040	3,900	850	3,900	810
		60	1	0.43	6,000	1,460	4,500	1,040	3,900	850	3,900	810
		70	1	0.33	6,000	1,460	4,500	1,040	3,900	850	3,900	810
		80	1	0.25	4,800	1,100	3,600	780	3,100	640	3,100	600
5	10	60	1	0.7	4,800	1,300	3,600	920	3,100	750	3,100	710

Recommended Cutting Condition

ESTNB20 SERIES

Workpiece					Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut					Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Neck Angle (°)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
5	10	75	1	0.5	4,800	1,300	3,600	920	3,100	750	3,100	710

RPM = rev / min
FEED = mm / min



- Please try to use 20-30% slow down than recommendation when chips are not evacuated well -Rib machining, slotting, etc.
Ex)ESTNB2040-20-10, HRc 55, Rib machining
ap : 0.32(ap from chart) X 0.65(constant value) X 0.8 = 0.17mm
- The above recommendation table may differ from the actual situation, adjust it according to the machine condition, processing type and purpose.
- In the case of low RPM, reduce the feed rate at the same rate.

ESTNB30 SERIES

Workpiece					Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut					Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Neck Angle (°)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
0.1	0.2	1	0.4	0.017	40,000	800	28,000	504	26,000	416	26,000	364
		1.5	0.4	0.009	40,000	800	28,000	504	26,000	416	26,000	364
		2	0.9	0.007	32,000	461	22,400	323	20,800	266	20,800	233
		2.5	0.9	0.004	26,000	333	18,200	204	16,900	189	16,900	162
0.15	0.3	2	0.4	0.025	40,000	1,200	28,000	756	26,000	624	26,000	546
		3	0.9	0.013	32,000	691	22,400	484	20,800	399	20,800	349
		4	0.9	0.01	26,000	499	18,200	306	16,900	284	16,900	243
0.2	0.4	2	0.4	0.035	40,000	1,600	28,000	1,008	26,000	832	26,000	728
		3	0.4	0.02	40,000	1,600	28,000	1,008	26,000	832	26,000	728
		4	0.4	0.007	32,000	922	22,400	645	20,800	532	20,800	466
		4	0.9	0.009	32,000	922	22,400	645	20,800	532	20,800	466
		5	0.4	0.006	26,000	666	18,200	408	16,900	379	16,900	324
		5	0.9	0.007	26,000	666	18,200	408	16,900	379	16,900	324
0.25	0.5	4	0.4	0.04	40,000	2,000	28,000	1,260	26,000	1,040	26,000	910
		8	0.9	0.01	26,000	728	18,200	446	16,900	414	16,900	355
		12	0.9	0.005	22,400	627	15,680	384	14,560	357	14,560	306
0.27	0.54	2	0.4	0.05	40,000	2,160	28,000	1,361	26,000	1,123	26,000	983
		4	0.4	0.037	40,000	2,160	28,000	1,361	26,000	1,123	26,000	983
		5	0.4	0.031	40,000	1,512	28,000	1,176	26,000	1,040	26,000	832
		6	0.4	0.025	26,000	1,244	18,200	871	16,900	676	16,900	629
		6.5	0.4	0.02	26,000	1,011	18,200	619	16,900	575	16,900	493
		7	0.4	0.015	26,000	899	18,200	585	16,900	543	16,900	465
0.3	0.6	2	0.4	0.055	40,000	2,400	28,000	1,512	26,000	1,248	26,000	1,092
		4	0.4	0.035	40,000	2,400	28,000	1,512	26,000	1,248	26,000	1,092
		6	0.4	0.018	32,000	1,382	22,400	968	20,800	799	20,800	699
		6	0.9	0.02	32,000	1,382	22,400	968	20,800	799	20,800	699
		8	0.9	0.02	26,000	998	18,200	612	16,900	568	16,900	487
		10	0.4	0.013	26,000	874	18,200	535	16,900	497	16,900	426
		10	0.9	0.015	26,000	874	18,200	535	16,900	497	16,900	426
		12	0.9	0.01	26,000	874	18,200	535	16,900	497	16,900	426
		15	0.4	0.005	22,400	753	15,680	461	14,560	367	14,560	367
		15	0.9	0.006	22,400	753	15,680	461	14,560	367	14,560	367
0.4	0.8	4	0.4	0.062	32,000	2,560	22,400	1,613	20,800	1,331	20,800	1,165
		6	0.4	0.045	32,000	2,560	22,400	1,613	20,800	1,331	20,800	1,165
		8	0.9	0.026	25,600	1,475	17,920	1,032	16,640	852	16,640	745
		12	0.9	0.02	20,800	1,065	14,560	699	13,520	606	13,520	519
		16	0.9	0.018	20,800	932	14,560	612	13,520	530	13,520	454
0.45	0.9	4	0.4	0.063	28,300	2,547	19,810	1,605	18,395	1,324	18,395	1,159
		8	0.4	0.05	28,300	2,547	19,810	1,605	18,395	1,324	18,395	1,159
		12	0.4	0.037	18,400	1,325	12,880	811	11,960	753	11,960	646
		16	0.4	0.024	18,400	1,325	12,880	811	11,960	753	11,960	646
		18	0.4	0.018	18,400	1,325	12,880	811	11,960	753	11,960	646
		20	0.4	0.015	15,850	1,141	11,095	699	10,303	649	10,303	556
		22	0.4	0.012	15,850	1,141	11,095	699	10,303	649	10,303	556

Recommended Cutting Condition

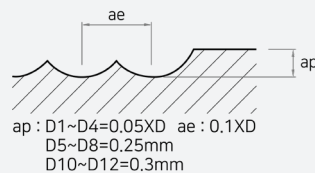
ESTNB30 SERIES

Workpiece					Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut					Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Neck Angle (°)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
0.45	0.9	24	0.4	0.009	14,150	1,019	9,905	624	9,198	579	9,198	497
0.5	1	6	0.4	0.055	25,600	2,560	17,920	1,613	16,640	1,331	16,640	1,165
		8	0.4	0.055	25,600	2,560	17,920	1,613	16,640	1,331	16,640	1,165
		10	0.4	0.032	20,800	1,872	14,560	1,310	13,520	1,082	13,520	946
		10	0.9	0.035	20,800	1,872	14,560	1,310	13,520	1,082	13,520	946
		15	0.9	0.028	16,640	1,331	11,648	874	10,816	757	10,816	649
		20	0.4	0.018	16,640	1,331	11,648	874	10,816	757	10,816	649
		20	0.9	0.02	16,640	1,331	11,648	874	10,816	757	10,816	649
		25	0.9	0.017	14,560	1,165	10,192	764	9,464	662	9,464	568
		30	0.4	0.015	12,480	874	8,736	568	8,112	487	8,112	406
		30	0.9	0.017	12,480	874	8,736	568	8,112	487	8,112	406
		35	0.9	0.01	10,400	728	7,280	473	6,760	406	6,760	338
		40	0.9	0.009	10,000	700	7,000	455	6,500	390	6,500	325
		50	0.9	0.007	9,500	665	6,650	432	6,175	371	6,175	309
		60	0.9	0.005	9,000	630	6,300	410	5,850	351	5,850	293
		70	0.9	0.003	8,500	595	5,950	387	5,525	332	5,525	276
0.75	1.5	8	0.4	0.07	16,960	2,544	11,872	1,603	11,024	1,323	11,024	1,158
		10	0.4	0.07	16,960	2,544	11,872	1,603	11,024	1,323	11,024	1,158
		12	0.4	0.07	16,960	2,544	11,872	1,603	11,024	1,323	11,024	1,158
		15	0.9	0.045	13,568	1,832	9,498	1,282	8,819	1,058	8,819	926
		20	0.9	0.04	11,024	1,323	7,717	810	7,166	752	7,166	645
		30	0.9	0.028	11,024	1,323	7,717	810	7,166	752	7,166	645
0.9	1.8	4	0.4	0.12	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
		8	0.4	0.1	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
		12	0.4	0.08	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
		16	0.4	0.071	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
		20	0.4	0.062	9,230	1,329	6,461	814	6,000	756	6,000	648
		24	0.4	0.053	9,230	1,329	6,461	814	6,000	756	6,000	648
		28	0.4	0.044	9,230	1,329	6,461	814	6,000	756	6,000	648
		32	0.4	0.036	9,230	1,329	6,461	814	6,000	756	6,000	648
		36	0.4	0.028	9,230	1,329	6,461	814	6,000	756	6,000	648
		38	0.4	0.02	8,000	1,152	5,600	706	5,200	655	5,200	562
		40	0.4	0.015	8,000	1,152	5,600	706	5,200	655	5,200	562
1	2	8	0.4	0.15	15,200	3,040	10,640	1,915	9,880	1,581	9,880	1,383
		12	0.4	0.09	15,200	3,040	10,640	1,915	9,880	1,581	9,880	1,383
		16	0.4	0.09	15,200	3,040	10,640	1,915	9,880	1,581	9,880	1,383
		20	0.4	0.06	12,160	2,189	8,512	1,532	7,904	1,265	7,904	1,107
		20	0.9	0.07	12,160	2,189	8,512	1,532	7,904	1,265	7,904	1,107
		25	0.9	0.07	9,880	1,581	6,916	968	6,442	899	6,442	771
		30	0.4	0.04	9,880	1,581	6,916	968	6,442	899	6,442	771
		30	0.9	0.045	9,880	1,581	6,916	968	6,442	899	6,442	771
		35	0.9	0.045	9,880	1,581	6,916	968	6,442	899	6,442	771
		40	0.4	0.03	9,880	1,581	6,916	968	6,442	899	6,442	771
		40	0.9	0.035	9,880	1,581	6,916	968	6,442	899	6,442	771

ESTNB30 SERIES

Workpiece					Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut					Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Neck Angle (°)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
1	2	50	0.9	0.17	8,512	1,192	5,958	775	5,533	664	5,533	553
		60	0.9	0.009	7,235	1,013	5,065	658	4,703	564	4,703	470
		70	0.9	0.005	6,150	861	4,305	560	3,997	480	3,997	400
1.5	3	8	0.4	0.32	12,720	3,816	8,904	2,404	8,268	1,984	8,268	1,736
		16	0.4	0.22	12,720	3,816	8,904	2,404	8,268	1,984	8,268	1,736
		20	0.4	0.15	12,720	3,434	8,904	2,137	8,268	1,736	8,268	1,488
		30	0.4	0.08	10,176	2,748	7,123	1,496	6,614	1,389	6,614	1,191
		30	0.9	0.09	10,176	2,748	7,123	1,496	6,614	1,389	6,614	1,191
		40	0.4	0.06	8,268	1,984	5,788	1,215	5,374	1,129	5,374	967
		40	0.9	0.07	8,268	1,984	5,788	1,215	5,374	1,129	5,374	967
		50	0.9	0.05	8,268	1,984	5,788	1,215	5,374	1,129	5,374	967
		60	0.9	0.03	7,123	1,710	4,986	1,047	4,630	972	4,630	833
2	4	20	1	0.32	11,900	2,860	9,000	2,050	7,800	1,680	7,800	1,590
		30	1	0.23	11,900	2,570	9,000	1,850	7,800	1,520	7,800	1,430
		40	1	0.14	9,500	1,940	7,200	1,400	6,200	1,140	6,200	1,080
		50	1	0.11	7,800	1,590	5,800	1,120	5,000	920	5,000	870
		60	1	0.07	7,800	1,590	5,800	1,120	5,000	920	5,000	870
2.5	5	30	1	0.34	9,500	2,140	7,200	1,540	6,200	1,260	6,200	1,190
		40	1	0.25	9,500	2,140	7,200	1,540	6,200	1,260	6,200	1,190
		60	1	0.15	6,200	1,320	4,700	950	4,000	770	4,000	720
3	6	30	1	0.45	8,000	2,000	6,000	1,430	5,200	1,170	5,200	1,110
		40	1	0.4	8,000	1,800	6,000	1,280	5,200	1,050	5,200	990
		50	1	0.32	8,000	1,800	6,000	1,280	5,200	1,050	5,200	990
		60	1	0.22	6,400	1,360	4,800	970	4,100	780	4,100	740
		70	1	0.18	5,200	1,110	3,900	790	3,400	650	3,400	610
		80	1	0.14	5,200	1,110	3,900	790	3,400	650	3,400	610
4	8	50	1	0.5	6,000	1,460	4,500	1,040	3,900	850	3,900	810
		60	1	0.43	6,000	1,460	4,500	1,040	3,900	850	3,900	810
		70	1	0.33	6,000	1,460	4,500	1,040	3,900	850	3,900	810
		80	1	0.25	4,800	1,100	3,600	780	3,100	640	3,100	600
5	10	60	1	0.7	4,800	1,300	3,600	920	3,100	750	3,100	710
		75	1	0.5	4,800	1,300	3,600	920	3,100	750	3,100	710

RPM = rev/min
FEED = mm/min



- Please try to use 20-30% slow down than recommendation when chips are not evacuated well -Rib machining, slotting, etc.
Ex)ESTNB3040-20-10, HRc 55, Rib machining
ap : 0.32(ap from chart) X 0.65(constant value) X 0.8 = 0.17mm
- The above recommendation table may differ from the actual situation, adjust it according to the machine condition, processing type and purpose.
- In the case of low RPM, reduce the feed rate at the same rate.



Ver.4

WD2023.04-ENG-BO1



HEAD OFFICE & CHANGWON FACTORY

172, Sahwa-ro, Uichang-gu, Changwon-si, Gyeongsangnam-do,
Korea [51389]

TEL. +82-55-286-0905

FAX. +82-55-286-0978



WIDIN VIET NAM(OFFICE & FACTORY)

Lot CN5, Hop Thinh Industrial Zone, Hop Thinh Commune, Hiep Hoa District,
Bac Giang Province, Viet Nam

TEL. +84-20-4248-4883