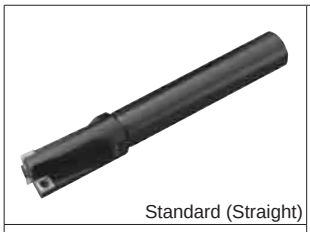
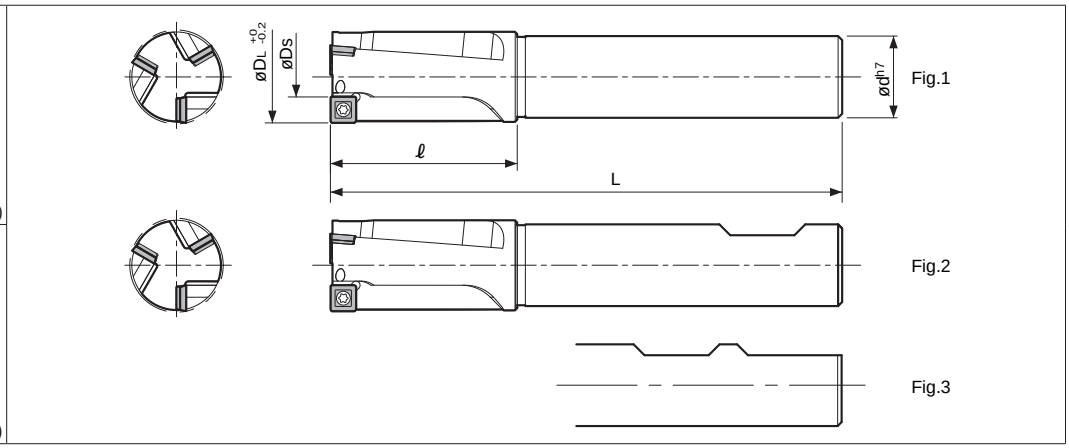
MEF Bolt Countersink Endmill

MEF


Standard (Straight)


Standard (Weldon)

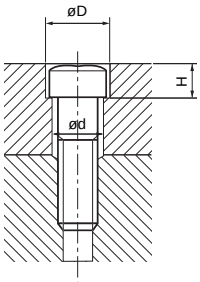


Toolholder Dimensions

Description		Std.	No. of Inserts	Dimension (mm) øDL	øDs	ød	L	ℓ	Std. Corner-R(rε)	Rake Angle (°) A.R.	R.R.	Drawing	Objective Bolt Size	Spare Parts: Clamp Screw	Spare Parts: Wrench	Applicable Inserts ⇒M15
Cylindrical	MEF 11-S10	●	1	11	3.0	10	103	23	0.4	+5°	-13°	Fig.1	M6	SB-2250TR	DT-7	SPMT060204E-Z 060208E-Z
	14-S12	●		14	4.5	12	108	28					M8	SB-2260TR		
	17-S16	●	2	17.5	7.3	16	115	35					M10			
	18-S16	●		18	7.7		117	38					-			
	20-S16	●		20	9.5		120	0.4			-12°		M12			
	22-S20	●		22	11.4	20	124	44					-			
	23-S20	●		23	12.4		126	46					M14			
	24-S20	●		24	13.4		128	48					-			
	25-S20	●		25	14.4		130	50					-			
	25-S25	●				25							-			
	26-S25	●	3	26	9.8	25	132	52	0.8		-13°		M16	SB-3080TR	DT-10	SPMT090304E-Z 090308E-Z
	27-S25	●		27	10.6		134	54					-			
	28-S25	●		28	11.5		136	56					-			
	29-S25	●		29	12.6		138	58					M18			
	30-S25	●		30	13.5		140	60					-			
	32-S25	●		32	15.5		144	64					M20			
	35-S32	●		35	18.4	32	150	70					M22			
	39-S32	●		39	22.5		158	78					M24			
	43-S32	●	4	43	26.2		166	86			-12°		M27			
	48-S32	●		48	31.3		176	96					M30			
Weldon	MEF 15-S12-80W	●	1	15	4.6	12	80	30			-13°	Fig.2	M8	SB-2260TR	DT-7	SPMT060204E-Z 060208E-Z
	18-S16-90W	●	2	18	7.5	16	90	36					M10			
	20-S16-90W	●		20	8.3			40			-12°		M12			
	26-S25-120W	●	3	26	9.8	25	120	52			-13°	Fig.3	M16	SB-3080TR	DT-10	SPMT090304E-Z 090308E-Z
	33-S25-140W	●		33	16.5		140	66					M20			
	40-S32-160W	●	4	40	23.3	32	160	80					M24			

- Before cutting, the workpiece must have a hole with diameter larger than øDs.
- Although Corner R(rε) pertains to MEF11-S10, ø Ds=3.0mm.

Bolt Counter Sink (Hexagon Socket Head Cap Screw)



Nominal Screw Size	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24	M27	M30
øD (mm)	11	14	17.5	20	23	26	29	32	35	39	43	48
H (mm)	6.5	8.6	10.8	13	15.2	17.5	19.5	21.5	23.5	25.5	29	32
ød (mm)	6.6	9	11	14	16	18	20	22	24	25	30	33
Applicable Endmill	MEF11	MEF14	MEF17	MEF20	MEF23	MEF26	MEF29	MEF32	MEF35	MEF39	MEF43	MEF48

Diameter Adjustment using the Eccentric Sleeves (SHE / SHEM) ⇒ See page F81

- When using with a MEF counterboring endmill
  - Adjustment of counterbore diameter (If in use with single blade, the diameter can be adjusted within the range of diameter allowed by the eccentric sleeve).
  - Broadening of counterbore diameter (If in use with 2 or more blades, only broadening is possible for the diameter). Although multiple blades are used, Feed should be input as single blade.

● : Std. Item □ : Check Availability

◆ Recommended Cutting Conditions

Workpiece Material	fz (mm/t)	Insert Grade (Cutting Speed Vc: m/min)											
		Cermet			MEGACOAT		PVD Coated Carbide					Carbide	
		TN60	TN100M	TC60	PR1225	PR1210	PR630	PR730	PR830	PR660	PR905	PW30	KW10
Stainless Steel	0.05~0.1				★ 80~180	-		☆ 60~120		☆ 60~120	-		-
Carbon Steel	0.1~0.15				★ 120~220	-		☆ 80~150		☆ 60~130	-		-
Alloy Steel	0.1~0.15				★ 120~220	-		☆ 80~150		☆ 60~130	-		-
Mold Steel	0.05~0.1				★ 100~180	-		☆ 70~120		☆ 70~120	-		-
Cast Iron	0.1~0.2				-	★ 100~220		-		-	☆ 100~180		☆ 80~120
Non-ferrous Metals	0.1~0.2				-	-		-		-	-		★ 100~300

★ : 1st Recommendation ☆ : 2nd Recommendation

◆ Points on Bolt Counter Sink Milling

① Carbon Steel

Increase the feed rate to **fz=0.1~0.15 mm/t** for preventing long chips at low feed rates.
Chip control is good when setting **Vc=80m/min** for **MEF11~MEF25**, and **Vc=120m/min** for **MEF26~MEF48**.

Description	Cutting Speed Vc (m/min)	Feed Rate fz (mm/t)
MEF11~MEF25	80	0.1~0.15
MEF26~MEF48	120	0.1~0.15

② Sticky Materials

Step feed is recommended for good chip control
Increase the feed rate to **fz=0.1~0.15 mm/t** for preventing long chips at low feed rate **(fz=0.05mm/t)**.
Use cover to prevent accidents or injury by thick chips at higher feed rates.

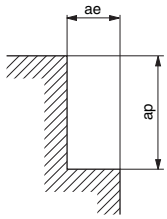
Description	Cutting Speed Vc (m/min)	Feed Rate fz (mm/t)	Step Feed (mm)
MEF11~MEF48	80~150	0.1~0.15	0.5~1.5

③ Stainless Steel

Use a lower Cutting Speed. High Cutting Speeds cause chattering.

◆ Cutting Performance when Shouldering

MEF Bolt Countersink Endmill is also recommended for shouldering.



Vc=80~120m/min
C55 (S55C)
DRY
Overhang Length: Same as ℓ in the dimension table

- When shouldering, side edges and bottom edges cut the workpiece. Both edges wear at the same time depending on ap. The insert uses 2 edges instead of 4. (See Fig.1)
- MEF type's side edge is designed to have a slight clearance for the countersink milling. Therefore, worked side wall is approx. 1° inclined against the vertical face. (See Fig.2)

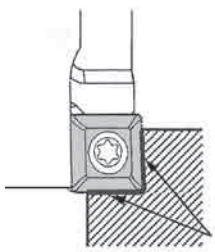


Fig.1

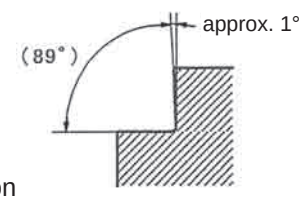
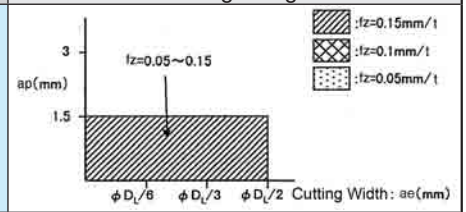
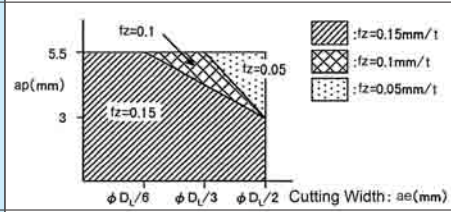
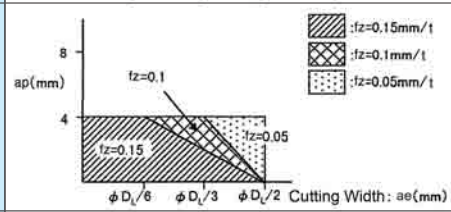


Fig.2

Description	Cutting Range
MEF11-S12 **MEF14-S12** **MEF17-S16** **MEF18-S16**	
MEF20-S16 **MEF22-S20** ⟆ **MEF25-S25**	
MEF26-S25 ⟆ **MEF32-S25** **MEF35-S32**	
MEF39-S32 **MEF43-S32** **MEF48-S32**