

# **ASB** *type*

Super Ball End Mill ASB

*D type featuring strengthened cutting edge added to range of inserts.*

*Ensures stable cutting for welding materials and hardened steels.*



MOLDINO Tool Engineering, Ltd.

New Product News | No.0918E-3 | 2026-2



When machining mill scale on press dies, there is a large variation in the machining allowance, requires to suppress chatter vibrations and sudden tool damage.



## Proposed solutions

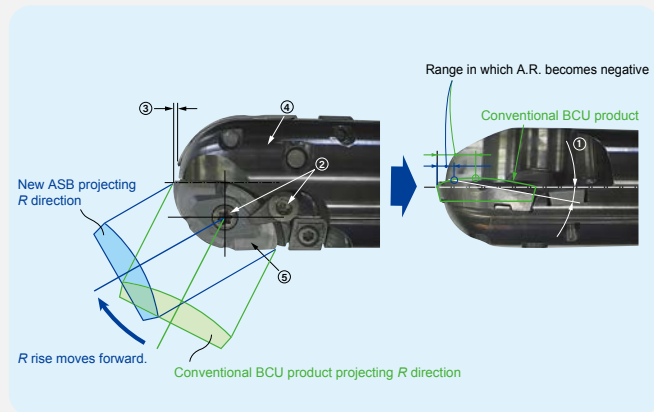
### Less chatter vibration during heavy cutting



**Point!**

Reduced cutting resistance and strong clamping provide high efficiency and long tool life.

- ① Axial rake (A.R.) effect provides a 10 to 20% reduction in cutting force compared to our company's conventional products.



**Comparison of cutting force for  $\phi 50$  ball**

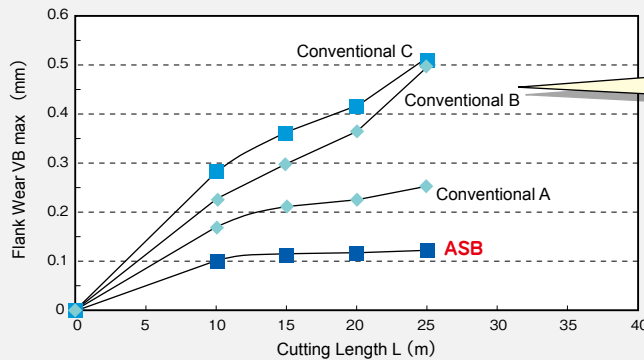
$v_c=141\text{m/min}$  ( $n=900\text{min}^{-1}$ ),  $v_f=300\text{mm/min}$  ( $f_z=0.17\text{mm/t}$ ),  $a_p \times a_e=25 \times 1\text{mm}$  Work: S50C Dry

Product	X	Y	Z	Resultant force
ASB Inserts N	2477N	2827N	1668N	4112N
ASB Inserts N3	2056N	2641N	1578N	3700N
Conventional A	3094N	3195N	2303N	5009N
Conventional B	2323N	2742N	1713N	3980N
Conventional C	2406N	3195N	1828N	4397N

- ② Inserts are firmly fixed in place by the double-clamp system.

**Solves problems which may occur in heavy machining.**

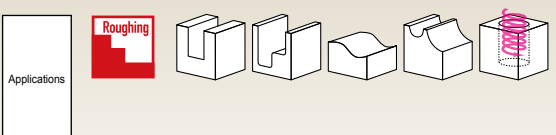
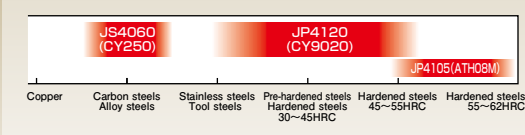
#### Tool life comparison abrasion curves



**Cutting Conditions**  
 Work : SKD11 (annealed, 25HRC or less)  
 Cutting speed :  $v_c=120\text{m/min}$   
 Feed rate per flute :  $f_z=0.4\text{mm/t}$   
 Cutting :  $a_p \times a_e=20 \times 1.0\text{mm}$   
 Coolant : Dry Air Blow

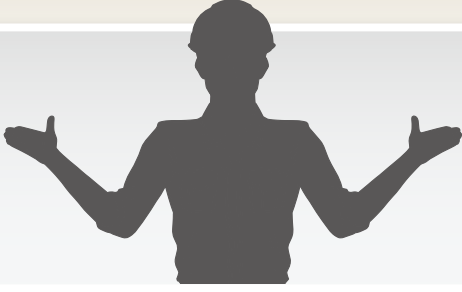
#### Photographs of abrasion after cutting length 25m





Issues in the field  
**No.2**

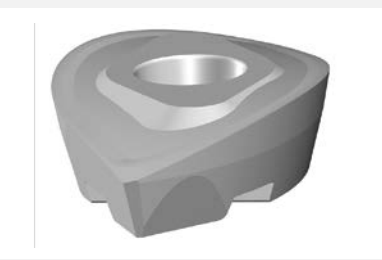
Requires to stabilize rough machining of welding materials and high-hardness steel



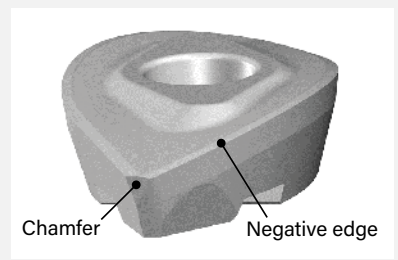
### Proposed solutions

**Achieves stable machining and long tool life even with uneven cutting allowance**

**Point!** Strengthened edge type has significantly improved chipping resistance



Conventional : ZPET250CE

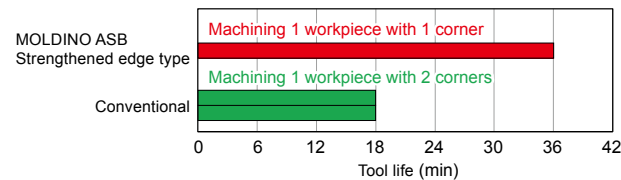


Strengthened edge type : ZPET250CE-D

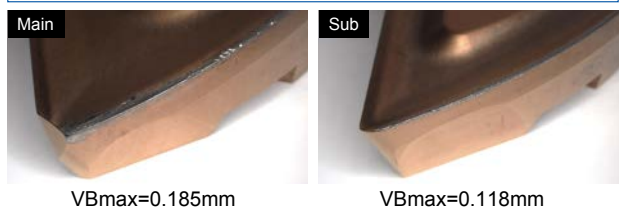
### Cutting examples

#### Welding material TM2000

Cutting conditions	Work : FCD600+TM2000 (Welding material) φ50-2 flutes Tool : ASB5063S42L Insert : <b>Main</b> ZPET250CE-D <b>Sub</b> ZPET250SK-D (JP4120)
	Vc=100m/min n=640min <sup>-1</sup> fz=0.2mm/t Vf=250mm/min ap×ae=4×3mm Overhang=150mm Air Blow



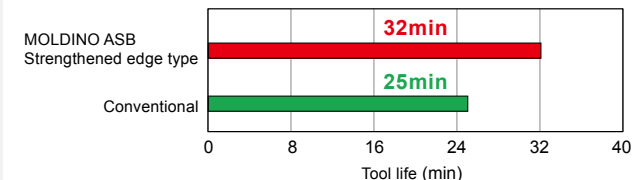
#### Photo of inserts after 18 min machining



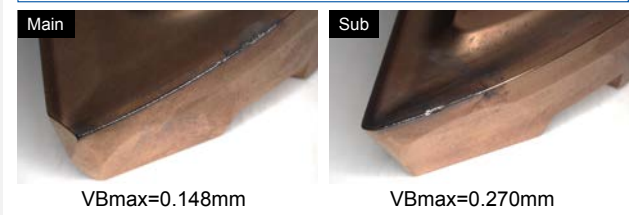
- Improved stability by machining welding materials
- Tool life is twice as long as conventional products

#### SKD11 (60HRC)

Cutting conditions	Work : SKD11 (60HRC) φ50-2 flutes Tool : ASB5063S42L Insert : <b>Main</b> ZPET250CE-D <b>Sub</b> ZPET250SK-D (JP4120)
	Vc=100m/min n=640min <sup>-1</sup> fz=0.125mm/t Vf=160mm/min ap×ae=4.0×5.0mm Overhang=150mm Air Blow



#### Photo of inserts after 24 min machining




- Prevents chipping when machining high-hardness steel
- Tool life is 1.3 times longer than conventional products

# Line Up

## Shank type

### ASB (-LH)

Numeric figure in a circle  and Alphabetical character comes in a square 

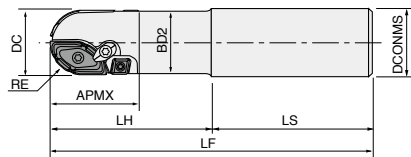


Fig-1

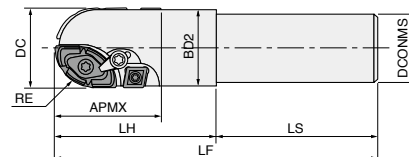


Fig-2

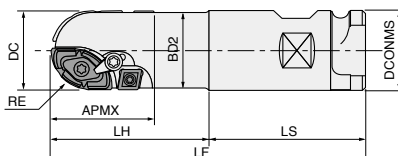


Fig-3

Item code	Stock	Size (mm)								Inserts						Shape
		DC	RE	LF	DCONMS	BD2	APMX	LH	LS	Main insert		Sub insert		Peripheral insert		
										Item code	Flutes	Item code	Flutes	Item code	Flutes	
ASB4050S42S	●	40	20	200	42	38.6	50	100	100	ZPET200CE	1	ZPET200SK	1	CPMT090308	2	Fig-1
ASB4050S42L	●			250				150		ZPET200CE-N		ZPET200SK-N				
ASB5063S42S	●	50	25	200	50.8	47.7	63	100	200	ZPET250CE	1	ZPET250SK	1	CPMT120408	2	Fig-2
ASB5063S42L	●			250				150		ZPET250CE-N		ZPET250SK-N				
ASB5063S42E	●			350				200		ZPET250CE-N2		ZPET250SK-N2				
ASB5063C508S	●	50	25	200	50.8	47.7	63	120	80	ZPET250CE-N3	1	ZPET250SK-N3	1	CPMT120408	2	Fig-3
ASB5063C508L	●			250				170		ZPET250CE-N3		ZPET250SK-N3				

## MT, BT type

### ASB (-M

Numeric figure in a circle  and Alphabetical character comes in a square 

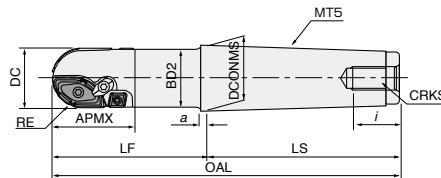


Fig-4

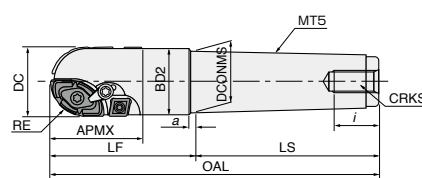


Fig-5

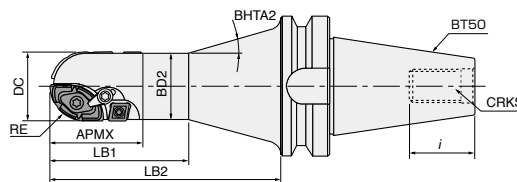
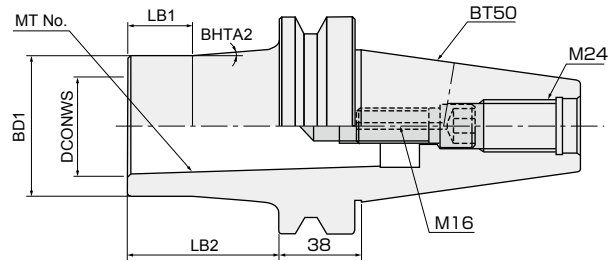


Fig-6

Item code	Stock	Size (mm)												Inserts						Shape		
		DC	RE	APMX	OAL	LB2	LF	LB1	LS	DCONMS	BD2	a	i	CRKS	BHTA2	Main insert		Sub insert			Peripheral insert	
																Item code	Flutes	Item code	Flutes		Item code	Flutes
ASB4050MT5S-M16	●	40	20	50	249.5	120	129.5	44.399	38.6	6.5	32	M16	-	-	ZPET200CE	1	ZPET200SK	1	CPMT090308	2	Fig-4	
ASB4050MT5L-M16	●				299.5										170		ZPET200CE-N					ZPET200SK-N
ASB5063MT5S-M16	●	50	25	63	249.5	120	129.5	44.399	47.7	6.5	40	M20	-	-	ZPET250CE	1	ZPET250SK	1	CPMT120408	2	Fig-5	
ASB5063MT5S-M20	●				299.5										170		ZPET250CE-N					ZPET250SK-N
ASB5063MT5L-M16	●				299.5										170		ZPET250CE-N2					ZPET250SK-N2
ASB5063MT5L-M20	●	50	25	63	170	100	-	-	47.7	-	45	M24	15°	ZPET250CE-N3	1	ZPET250SK-N3	1	CPMT120408	2	Fig-6		
ASB5063BT50S	●				220									150		ZPET250CE-N3					ZPET250SK-N3	
ASB5063BT50L	●	220	150	ZPET250CE-N3	ZPET250SK-N3																	

# MT5 Shank Arbor


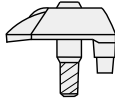
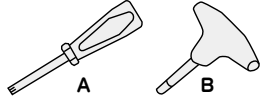

## MT5 Shank



Item code	Stock	Size (mm)						Cutter body
		MT No.	BD1	DCONWS	LB2	LB1	BHTA	
<b>BT50-MTB503-70-65</b>	●	MT5	65	44.399	70	30	5°	ASB5063MT5S-M16 ASB5063MT5L-M16

[Note] Wrench and Tool Clamper are sold separately.

## Parts

Parts	Clamp screw				Clamp piece set	Screw driver / Wrench				Screw anti-seizure agent
Shape										
Cutter body	R insert	Fastening torque (N·m)	Peripheral insert	Fastening torque (N·m)	Item code	R insert	Shape	Peripheral insert	Shape	
ASB4050S42S/L ASB4050MT5S/L-M	571-142	9.8	262-141	2.9	CM5-148	101-T25S	B	104-T15	A	P-37
ASB5063S42S/L/E ASB5063C508S/L ASB5063MT5S/L-M ASB5063BT50S/L	571-141A	9.8	263-143	4.9	CB8-161	105-T30A	B	105-T20	B	P-37

[Note] The clamp screw is a consumable part. Since replacement life depends on the use environment, it is recommended that it be replaced at an early stage.

# Line Up

## Inserts

### Main insert

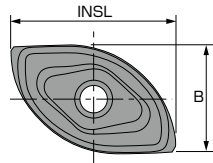


Fig-7 ZPET200CE-D

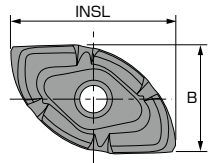


Fig-8 ZPET200CE-N (With nick)

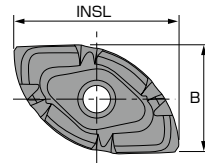


Fig-9 ZPET250CE-N2 (With nick)  
(Low-resistance type)

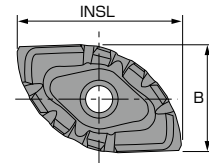


Fig-10 ZPET250CE-N3 (With nick)  
(Low-resistance type)

### Sub insert

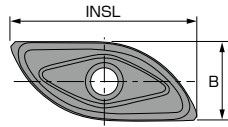


Fig-11 ZPET200SK-D

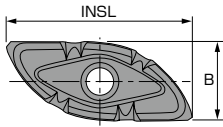


Fig-12 ZPET200SK-N (With nick)

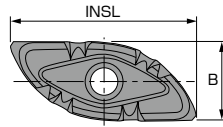


Fig-13 ZPET250SK-N2 (With nick)  
(Low-resistance type)

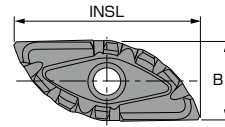


Fig-14 ZPET250SK-N3 (With nick)  
(Low-resistance type)

### Peripheral insert

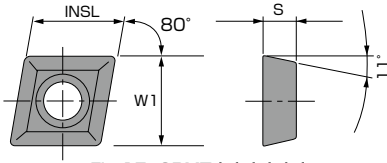


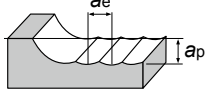
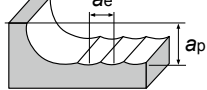
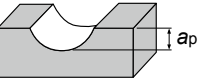
Fig-15 CPMT090308

Item code	Tolerance class	Coating						Size(mm)			Shape	
		AJ Coating	JS Coating	TH Coating	G Coating	C Coating	INSL	B W1	S			
<b>P</b> Carbon steels		■	■	□								
<b>K</b> Cast irons		□	■									
<b>H</b> Hardened steels		■	■	□								
		JP4105	JP4120	JS4060	ATH08M	HC844	CY250	CY9020				
Main insert	ZPET200CE	●		●	●				35.4	20.3	—	Fig-7
	ZPET200CE-N (With nick)		●	●	—			—			—	Fig-8
	ZPET250CE	●		●	●		●		39.3	26	—	Fig-7
	ZPET250CE-D (Strengthened edge type)	—	●		—			—			Fig-7	
	ZPET250CE-N (With nick)		●	●			●	●			—	Fig-8
	ZPET250CE-N2 (With nick)		—	—	—		●	—			—	Fig-9
ZPET250CE-N3 (With nick)			●	—			—	—	Fig-10			
Sub insert	ZPET200SK	●		●	●				39.9	16.1	—	Fig-11
	ZPET200SK-N (With nick)		●	●	—		—	—			Fig-12	
	ZPET250SK	●		●	●		●		44.6	19.2	—	Fig-11
	ZPET250SK-D (Strengthened edge type)	—	●		—			—			Fig-11	
	ZPET250SK-N (With nick)		●	●			●	●			—	Fig-12
	ZPET250SK-N2 (With nick)			—	—		●	—			—	Fig-13
ZPET250SK-N3 (With nick)			●	—			—	—	Fig-14			
Peripheral insert	CPMT090308				—	●	●	—	9.525	9.525	3.18	Fig-15
	CPMT120408				—	●	●	—	12.7	12.7	4.76	

[Note] Please note that the JS Coating does not cause a reaction in conductive touch sensors.

# Recommended Cutting Conditions

※ Red indicates primary recommended grade.

Work material	Recommended grade	Cutting conditions	Side milling	Depth side milling	Slotting
					
Carbon & Alloy steels 30HRC or less	※ JS4060	Cutting speed Vc (m/min)	200 (150~250)	150 (120~200)	150 (120~200)
		Feed rate per flute fz (mm/t)	0.2 (0.1~0.4)	0.15 (0.1~0.3)	0.12 (0.08~0.2)
		Depth of cut ap (mm)	0.3DC	1DC	0.5DC
		Cutting width ae (mm)	0.2DC	0.1DC	1DC
Pre-hardened steels 50HRC or less	JP4120 ATH08M	Cutting speed Vc (m/min)	80 (60~100)	60 (50~80)	60 (50~80)
		Feed rate per flute fz (mm/t)	0.15 (0.05~0.3)	0.1 (0.05~0.2)	0.08 (0.04~0.15)
		Depth of cut ap (mm)	0.3DC	1DC	0.5DC
		Cutting width ae (mm)	0.2DC	0.1DC	1DC
Cast irons 200HB or less	JS4060 JP4120	Cutting speed Vc (m/min)	200 (150~250)	180 (140~220)	180 (140~220)
		Feed rate per flute fz (mm/t)	0.3 (0.2~0.5)	0.2 (0.1~0.4)	0.15 (0.1~0.3)
		Depth of cut ap (mm)	0.3DC	1DC	0.5DC
		Cutting width ae (mm)	0.2DC	0.1DC	1DC
Overlay welding material 44~58HRC	JP4120 (Strengthened edge type)	Cutting speed Vc (m/min)	100 (80~120)		
		Feed rate per flute fz (mm/t)	0.15 (0.1~0.2)		
		Depth of cut ap (mm)	0.1DC		
		Cutting width ae (mm)	0.1DC		
Hardened steels 50~60HRC	JP4105 ATH08M	Cutting speed Vc (m/min)	80 (60~100)		
		Feed rate per flute fz (mm/t)	0.08 (0.04~0.15)		
		Depth of cut ap (mm)	0.1DC		
		Cutting width ae (mm)	0.3DC		

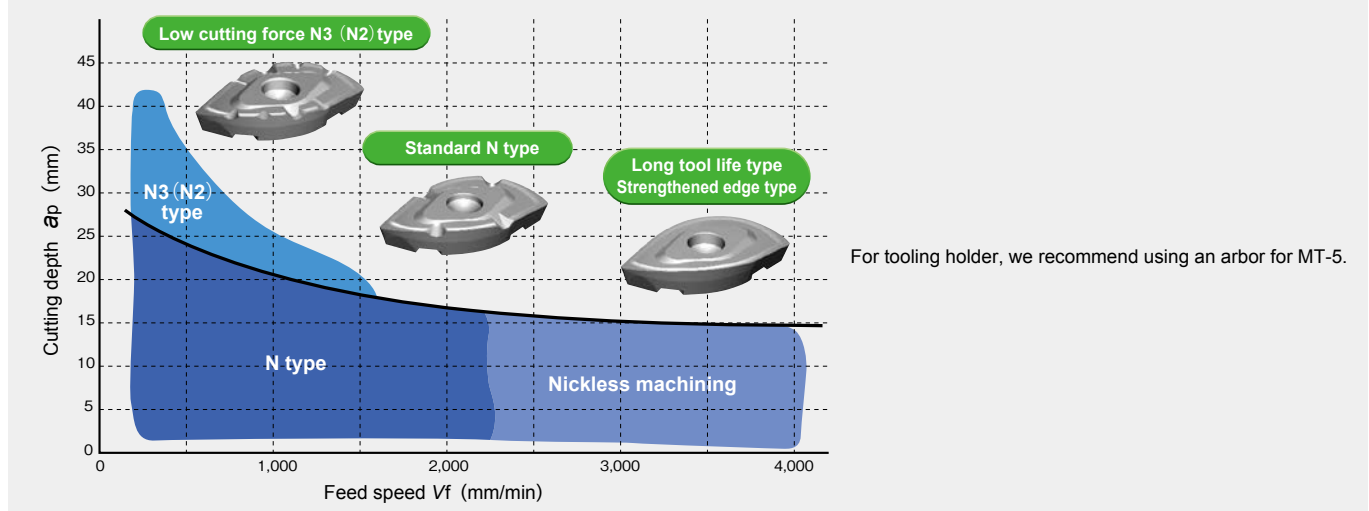
**[Note]**

These conditions are for general guidance; in actual machining conditions adjust the parameters according to your actual machine and work-piece conditions.

- (1) For long type please reduce speed and feed by 70%.
- (2) If using a machine with less than 15kw power reduce data to 60% speed and 35% feed, cutting data listed is based on or over 22kw.
- (3) Please note that the JS Coating does not cause a reaction in conductive touch sensors.
- (4) The following formula shows the chip removal volume (Q) per unit time.  

$$Q(\text{cm}^3/\text{min}) = a_p(\text{mm}) \times a_e(\text{mm}) \times v_f(\text{mm}/\text{min}) / 1000$$

## How to select of inserts (Cutting range of ball $\phi 50$ for FC, FCD)





The diagrams and table data are examples of test results, and are not guaranteed values.  
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## Attentions on Safety

### 1. Attentions regarding handling

- (1) When removing the tool from the case (package), be careful not to drop it on your foot or drop it onto the tips of your bare fingers.
- (2) When actually setting the inserts, be careful not to touch the cutting flute directly with your bare hands.

### 2. Attentions regarding mounting

- (1) When preparing for use, be sure that the inserts are firmly mounted in place and that they are firmly mounted on the arbor, etc.
- (2) If abnormal chattering occurs during use, stop the machine immediately and remove the cause of the chattering.

### 3. Attentions during use

- (1) Before use, confirm the dimensions and direction of rotation of the tool and milling work material.
- (2) The numerical values in the standard cutting conditions table should be used as criteria when starting new work. The cutting conditions should be adjusted as appropriate when the cutting depth is large, the rigidity of the machine being used is low, or according to the conditions of the work material.
- (3) The inserts are made of a hard material. During use, they may break and fly off. In addition, cutting chips may also fly off. Since there is a danger of injury to workers, fire, or eye damage from such flying pieces, a safety cover should be installed and safety equipment such as safety glasses should be worn to create a safe environment for work.
  - Do not use where there is a risk of fire or explosion.
  - Do not use non-water-soluble cutting oils. Such oils may result in fire.
- (4) Do not use the tool for any purpose other than that for which it is intended, and do not modify it.

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