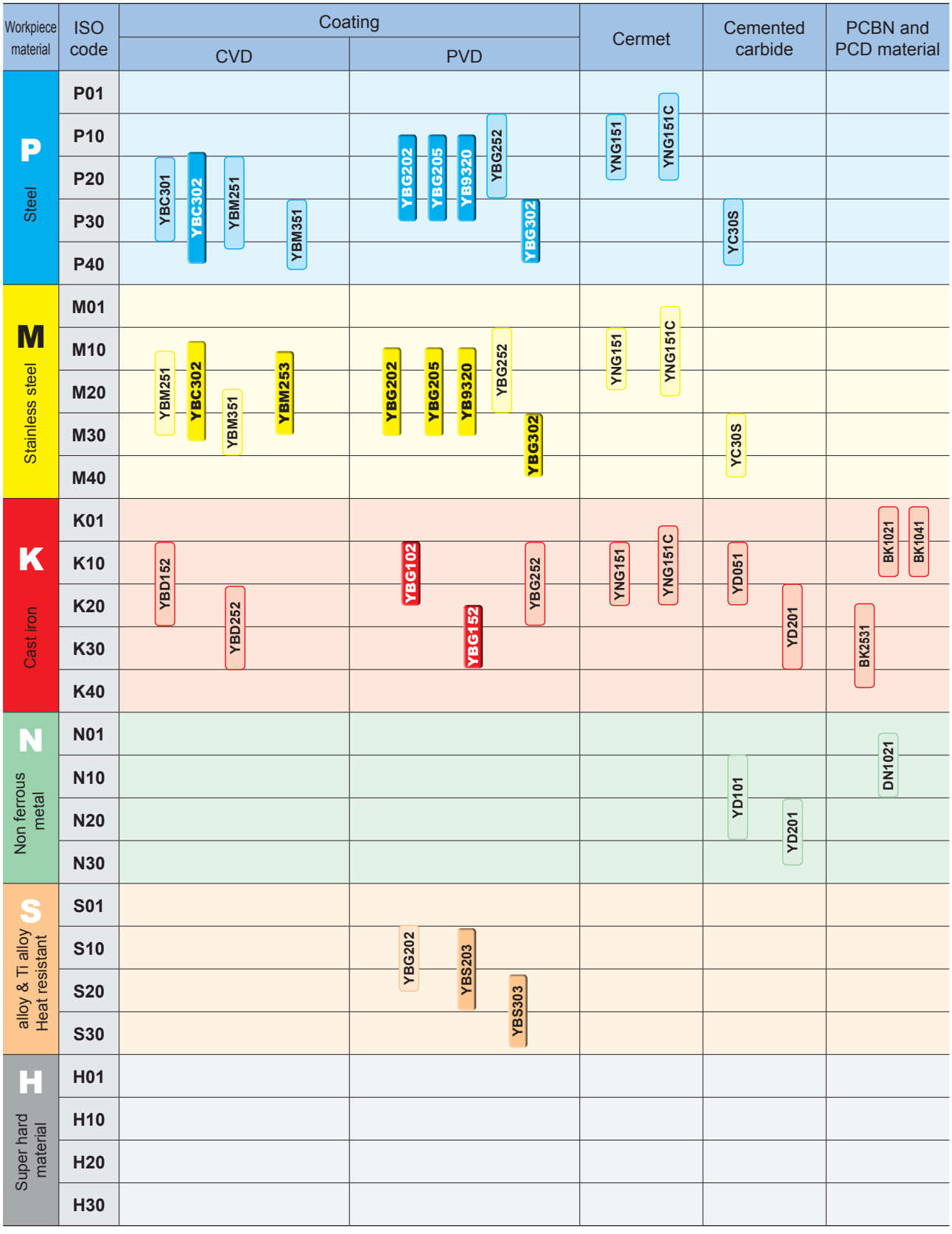
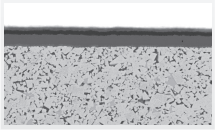
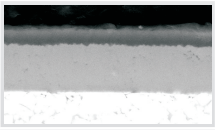
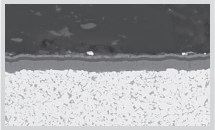
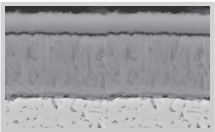
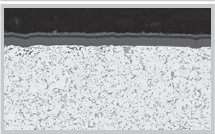
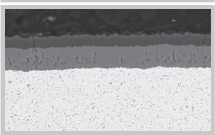
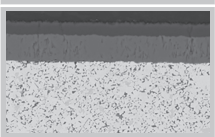
Milling insert grades overview

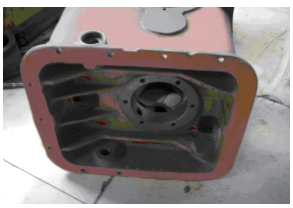
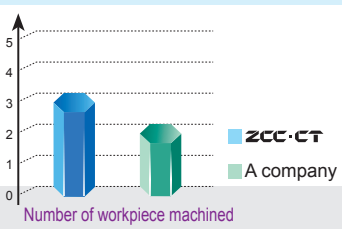
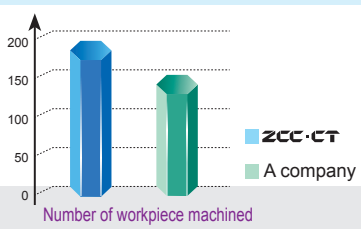


Grade classification for milling inserts

Coated Cemented Carbide CVD

Grade	Coating structure	Micro-structure	ISO applied range	Application field
YBC301	Combination of high-toughness, high-strength substrate and coating compo sed of TiCN、thin Al_2O_3 and TiN		P15~35	Suitable for semi-finish and rough milling of P-type material
YBC302	Combination of high toughness, high strength substrate and coating composed of TiCN, thin Al_2O_3 and TiN		P15~35 M10~30	Suitable for rough and semi-finish milling of P-type, M-type, whose hardness is below HRC45 and under
YBM251	Combination of high-toughness, high-strength substrate and coating compo sed of TiCN、thin Al_2O_3 and TiN		P15~40 M10~30	Suitable for semi-finish and rough milling of P- and M-type material
YBM253	Combination of high-toughness gradient substrate and coating composed of TiCN and ultra fine Al_2O_3		M10~30	Suitable for rough milling of M-type material
YBM351	Combination of high-toughness substrate and coating compoed of TiCN、thin Al_2O_3 and TiN		P25~40 M20~35	Suitable for rough milling of P- and M-type material
YBD152	Good combination of substrate with high wear-resistance and coating composed of TiCN and thick Al_2O_3		K05~25	Suitable for finish and semi-finish milling of K-type material
YBD252	Good combination of substrate with high wear-resistance and coating composed of TiCN and thick Al_2O_3		K15~35	Suitable for rough and semi-finish milling of K-type material

Application case

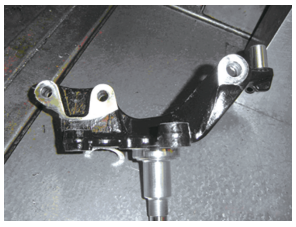
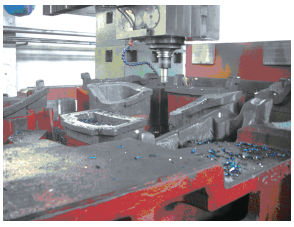
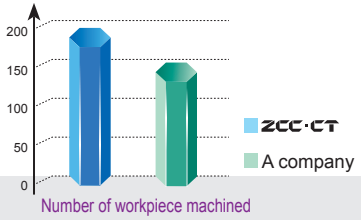
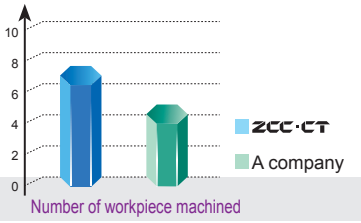
Component shape		
Machine and cooling	Vertical machining center, dry machining	Horizontal machining center, dry machining
Workpiece material and hardness	45# Forged steel HB240-270	HT250 HB220
Type of machining	Milling surface	Milling surface
Applicable tool	FMA01-125-B40-SE12-08	FMP02-100-B32-SE12-07
Applicable insert	YBM351/SEET12T3-DR	YBD252/SEET120308PER-APM
Cutting parameters	Vc=212m/min, fz=0.2mm/z, a_p=3mm	Vc=160m/min, fz=0.2mm/z, a_p=1.5mm
Application results		

Grade classification for milling inserts

Coated Cemented Carbide PVD

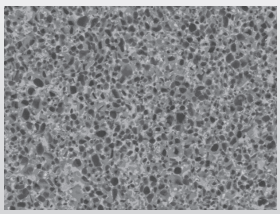
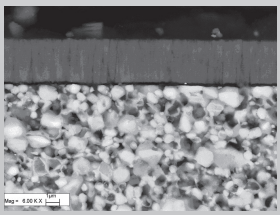
Grade	Coating structure	ISO applied range	Application field
YBG102	fine carbide substrate + Nano coating	K05~K20	Suitable for finish and semi-finish milling of K-type material
YBG202	Substrate with excellent deformation resistance + Nano coating	P10~30 M10~30 S05~20	PVD grade with wide application, widely applied in semi-finish milling of P-, M- and S-type material
YBG205	Ultra fine carbide substrate + Nano coating	P10~30 M10~30	Suitable for finishing and semi-finish milling of P- and M- material
YBG302	Substrate with good toughness and strength + Nano coating	P25~40 M25~40	Suitable for rough milling of P- and M-type material
YBG152	Substrate with moderate hardness and strength + Nano coating	K20~35	Suitable for rough and semi-finish milling of K-type material
YB9320	Substrate with high toughness + TiAlN based multi Nano coating	P10~30 M10~30	PVD grade with wide application, widely applied in finishing and semi-finish milling of P-, M- and S- material
YBS203	The excellent resistance to deformation substract+ Nano coating	S10~20	The general grade for S type machining, suitable for the milling of S type hard-to-cut materials.
YBS303	The great rigidity and strength substract + Nano coating	S20~30	Suitable for milling of titanium alloy materials

Application case

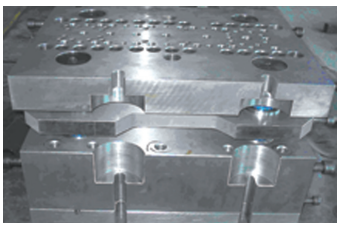
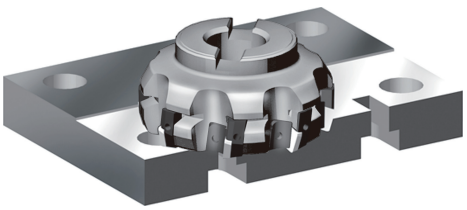
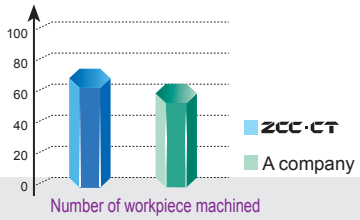
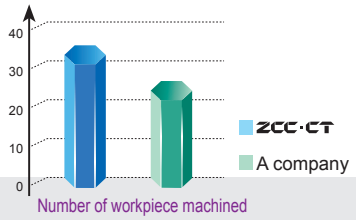
Component shape		
Machine and cooling	Machining center, dry cutting	Plane milling machine, dry cutting
Workpiece material and hardness	Nodular cast iron HB 220	7CrSiMoV HRC25
Type of machining	Milling surface	Cavity milling
Applicable tool	EMP02-050-A22-AP11-06	BMR03-050-MT5-M
Applicable insert	YB9320/APKT11T308-APM	YBG302/XPHT50R2507- GM
Cutting parameters	Vc=235m/min, fz=0.15mm/z, a_p=1~3mm	Vc=120m/min, fz=0.25mm/z, a_p=8mm
Application results		

Grade classification for milling inserts

Cermet

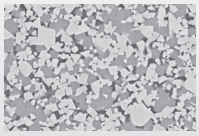
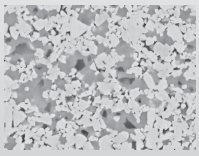
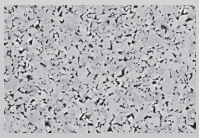
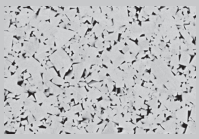
Grade	Coating structure	ISO applied range	Application field
YNG151		P05~20 M05~20 K05~20	Wide application in finish milling of P-, M-, and K-type material
YNG151C		P01~20 M01~20 K01~20	Wide application in finish milling of P-, M-, and K-type material

Application case

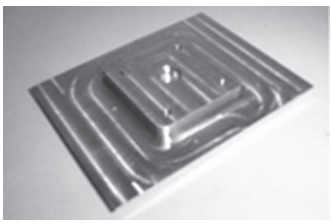
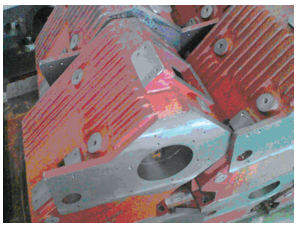
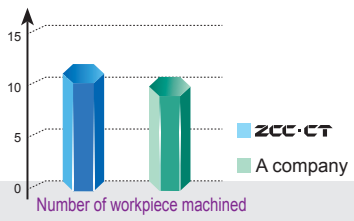
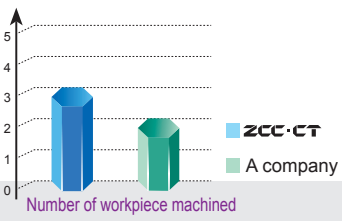
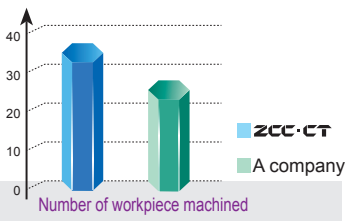
Component shape		
Machine and cooling	Machining center, dry cutting	Machining center, dry cutting
Workpiece material and hardness	45# HB 170~220	NAK80 HRC42~48
Type of machining	Finish milling surface	Finish milling surface
Applicable tool	FMA03-160-B40-SE12-08	FME03-160-B40-SP12-10
Applicable insert	YNG151/SEEN1203AFTN	YNG151C/SPEN1203EDER
Cutting parameters	Vc=400m/min, fz=0.1mm/z, a_p=0.3mm	Vc=420m/min, fz=0.12mm/z, a_p=0.35mm
Application results		

Grade classification for milling inserts

Cemented Carbide

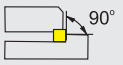
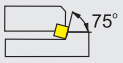
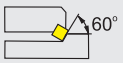
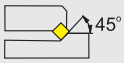
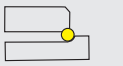
Grade	Coating structure	ISO applied range	Application field
YC30S		P25~40 M25~40	Suitable for rough milling of P- and M-type material
YD051		K05~20	Suitable for finish milling of K-type material
YD101		N05~25	Suitable for rough milling of N-type material
YD201		K15~35 N15~30	Suitable for rough and semi-finish milling of K-type material, and for rough milling of N-type material

Application case

Component shape			
Machine and cooling	Vertical machining center, wet machining	Plane milling machine, wet machining	plane milling machine, dry cutting
Workpiece material and hardness	Aluminum alloy HB100	40CrMnMo HB240	HT250 HB220
Type of machining	Milling surface	Milling surface	Milling surface
Applicable tool	FMA01-100-B32-SE12-07	FMP01-100-B32-TP22-06	FME03-160-B40-SP15-10
Applicable insert	YD101/SEET12T3-LH	YC30S/TPKN2204PDR	YD201/SPKN1504EDTR
Cutting parameters	Vc=300-350m/min, a_p=1~2mm, fz=0.2mm/z	Vc=170m/min, a_p=5~7mm fz=0.3mm/z	Vc=100-130m/min, a_p=7mm, fz=0.35mm/z
Application results			

Indexable milling tools code key

Cutter type	
FM	Face milling
EM	Square shoulder milling
HM	Helical end milling
SM	Side and face milling
BM	Profile milling
CM	Chamfer milling
XM	Special milling
TM	T-slot milling
AM	Aluminum alloy high speed milling

Approach angle		
P	90°	
E	75°	
D	60°	
A	45°	
R		

Series code

Cutting diameter ØD

Side and face milling tool : diameter
X cutting edge width

Coupling structurebe
(see below)

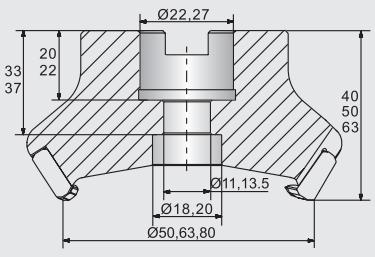
A	A-type coupling	XP	Weldon shank
B	B-type coupling	G	Straight shank
C	C-type coupling	MW	Morse adapter with a conical hole and without a flat tail
D	D-type coupling		

Coupling size(mm)
(see below)

FM E 03 - 100 - B 32

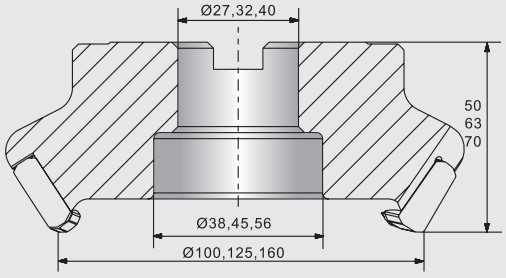
Coupling structure of arbor

A-type coupling



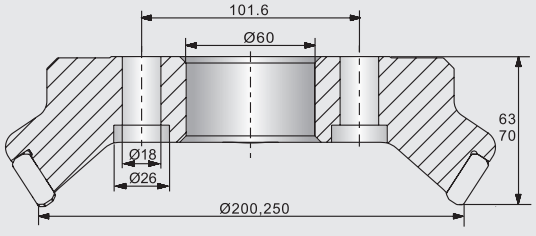
Ø50- Ø80 arbor face milling cutter as per GB5342-96

B-type coupling



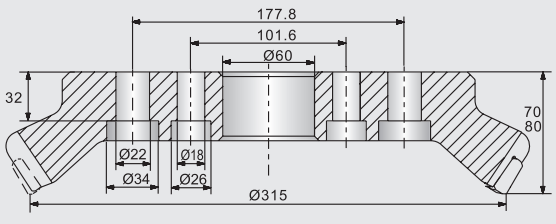
Ø100- Ø160 arbor face milling cutter as per GB5342-96

C-type coupling



Ø200- Ø250 arbor face milling cutter as per GB5342-96

D-type coupling



D≥Ø315 arbor face milling cutter as per GB5342-96

For coupling methods of Weldon shank, straight shank and Morse taper shank, etc., see technical information of tooling systems.