



CATALOGUE INDEX

MACHINE ACCESSORIES & TOOLS

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TOOLING SYSTEM

<p>C1 ER Spring Collet Chuck System ER彈性筒夾</p>	<p>C2 ER Spring Collet Chuck System ER彈性筒夾</p> <p>ER-8Ø1~5mm, ER-11Ø1~7mm ER-16Ø1~10mm, ER-20Ø2~13mm ER-25Ø2~16mm, ER-32Ø3~20mm ER-40Ø4~26mm, ER-50Ø12~34mm</p>	<p>C4 NT-Collet Chuck Kits ER-NT型套裝銑刀夾具組</p>	<p>C4 Collet Chuck Kit With ISO Taper Shank ER-NT型主體</p>		
<p>ER-8, 11, 16, 20, 25, 32, 40, 50</p>		<p>NT30-ER32 6PCS/SET NT40-ER32 6PCS/SET</p>		<p>NT30-ER32-55L, NT40-ER40-55L</p>	
<p>C5 Collet Chuck Kits ER-NT套裝銑刀夾具組</p>	<p>C5 Extended Collet Holder With ISO Shank ER-NT加長主體</p>	<p>C6 R-8 Collet Chuck kits ER-R8套裝夾具組</p>	<p>C6 Collet Holders With R-8 Shank ER-R8主體</p>		
<p>NT30-ER1610PCS/SET NT40-ER2010PCS/SET</p>		<p>NT30-ER16-76L, NT40-ER20-76L</p>		<p>R8-ER32 6PCS/SET, R8-ER40 7PCS/SET</p>	
<p>C7 Collet Holders With Morse Taper Shank ER-MT套裝夾具組</p>		<p>C7 Collet Holders ER-MT ER-MT主體</p> <p>HOLDER&SETS</p>	<p>C8 Collet Chuck Kit With Straight Shank ER-直柄小徑套裝夾具組</p> <p>HOLDER & SETS</p>	<p>C8 Collet Holders With Straight Shank ER-直柄小徑主體 Ø-ER</p>	
<p>MT3-ER32 6PCS/SET MT4-ER32 6PCS/SET</p>		<p>MT3-ER32-70L, MT4-ER32-60L</p>		<p>R8-ER32 6PCS/SET, R8-ER40 7PCS/SET</p>	
<p>C9 Mini Type Collet Holders Kit With Straight Shank ER-M型直柄小徑套裝夾具組</p>	<p>C9 Mini Type Straight Shank Holder ER-M型直柄小徑主體</p> <p>Mini Holder & sets</p>	<p>C10 ER Clamping Nut System ER-筒夾螺母 WITH BEARING</p> <p>ER20M ER16M ER11MS ER40KM ER40UM ER16UM</p>		<p>C10 ER Wrenchs System DIN 6499 ER筒夾螺母扳手</p> <p>ER25, 32, 40, 50 ERM ERUMS ERUM</p>	
<p>ER16M-ST20-50L 10PCS/SET ER20M-ST20-50L 12PCS/SET</p>		<p>ER16M-ST20-50L, ER20M-ST20-50L</p>		<p>V-800~810C</p>	
<p>C11 Collet Holders With BT Taper Shank (For CNC Machine Center) ER-32 ER-40 ER-BT夾具主體</p>		<p>C11 Collet Holders With Extension Type BT Taper Shank ER-16, ER-20 ER-BT加長型主體</p>	<p>C12 Collet Chuck Kit With BT Taper Shank ER-BT套裝夾具組</p>	<p>C13 Collet Chuck Kit With SK-Shank DIN 69871 ER-SK套裝夾具組</p>	
<p>BT30-ER32-60L, BT40-ER40-80L BT50-ER40-150L</p>		<p>BT40-ER20-70L, BT50-ER32-150L BT50-ER40-100L</p>		<p>BT40-ER20-100L 12PCS/SET BT40-ER32-70L 6PCS/SET BT40-ER40-80L 7PCS/SET</p>	
<p>C13 Collet Holder With SK-Shank DIN 69871 ER-SK夾具主體</p>	<p>C14 Collet Chuck kit With Cat-Shank ER-CAT夾具套裝夾具組</p>	<p>C14 Collet Holder With CAT-Shank ER-CAT夾具主體</p>	<p>C15 Milling Collet Chuck Kit OZ-25立銑刀夾具組</p>		
<p>ER20-SK40-100L ER32-SK40-60L</p>		<p>ER32-CAT40-2 1/2" 6PCS/SET ER40-CAT40-3" L 7PCS/SET</p>		<p>ER32-CAT40-2 1/2", ER40-CAT40-3"</p>	
<p>C15 Collet Holder With #25 Collet Chuck DIN 6388 Type A OZ-25 OZ-25立銑刀夾具主體</p>		<p>C16 Milling Clamping Nuts & Wrench OZ筒夾. 筒夾螺母. 筒夾扳手</p>	<p>C17 Milling Collet Chuck Kit BT-OZ-25 BT-OZ-25套裝夾具組</p>	<p>C17 OZ-25 Collet Holder With BT-Shank BT-OZ-25主體</p>	
<p>VB-MT3, R8, NT30, NT40 OZ-25-NT30, OZ-25-NT40</p>		<p>OZ-16Ø2~16, OZ-25Ø3~25, OZ32Ø6~32 OZ-16N, 25N, 32N, OZ-25W, 32W</p>		<p>BT40-OZ25 7PCS, 15PCS/SET BT50-OZ25 7PCS, 15PCS/SET</p>	

TOOLING SYSTEM

C18 Milling Collet Chuck Kit OZ-32 DIN 6388 OZ-32-NT套裝組 	C18 Collet Holder With ISO-Shank OZ-32 OZ-32-NT主體 	C19 Collet Holder With BT-Shank OZ-32 MAS 403 OZ32-BT型套裝夾具組 	C19 Collet Holder With BT-Shank OZ-32 MAS 403 OZ32-BT型主體 
OZ32-NT40 8PCS, 15PCS/SET OZ32-NT50 8PCS, 15PCS/SET	OZ32-NT40, OZ32-NT50	OZ32-BT40 8PCS, 15PCS/SET OZ32-BT50 8PCS, 15PCS/SET	BT40-0832-90L, BT50-OZ32-100L
C20 Milling Collet Chuck Kit DIN 69871A & CAT TYPE OZ-25/32-SK/CAT套裝夾具組 	C20 Collet Holder With DIN 69871A & Cat Type OZ-25/32-SK/CAT夾具主體 	C21 Multi-Lock Milling Chuck Kit DIN 2080 NT-Shank MAS 403BT-Shank DIN 69871A SK-Shank 直筒夾銑刀 套裝夾具組 	C21 Collet Holder With ISO, BT & SK TAPER Shank Straight Collet Type C-32 C-42 C型直筒夾主體 
SK40-OZ25-80L 8PCS, 15PCS/SET SK40-OZ32-90L 8PCS, 15PCS/SET	SK40-OZ25-80L, CAT40-OZ25-3"L SK40-OZ32-80L	NT40-MC32-95L 7PCS/SET BT40-MC32-105L 7PCS/SET	NT40-MC32-95L, BT40-MC32-105L
C22 C-20,25,32,42 Collet C型直筒夾 	C22 Milling-Quick Change System Kit 快速交換 銑床夾具組 	C22 Milling-Quick Change Holder 快速交換夾具主軸 	C23 POSI-LOCK Milling Collet Chuck Kit POSI-LOCK套裝組 
C2006~16MM, C2506~20MM C3206~25MM, C4206~32MM	NT30QC NT30 15PCS/SET NT40QC NT40 15PCS/SET	NT30QC NT30, NT40QC NT40	VC-MT3 4PCS, 8PCS/SET VC-NT30, NT40, 4PCS, 8PCS/SET
C23 POSI-LOCK Milling Collet Chuck Kit POSI-LOCK主體 	C24 TG100 Collet System TG筒夾 TG100Ø1/8"-63/64" 	C25 5C & R8 Collet System 5C筒夾 R8筒夾 	C26 U2 & MT2, MT3 Collet System U2筒夾 MT2/3筒夾 
VC-MT3, R8, NT30, NT40	TG10-01~57	5CØ3~25MM / R8Ø3~20MM	U2Ø3~16MM / MT2Ø4~12MM U2Ø18~25MM / MT3Ø4~20MM
C27 Drill Chucks Arbor R8, MT, CØ鑽帽心軸 	C27 Morse Taper Sleeve 精密鑽頭套筒 	C27 R8 With Morse Taper Sleeve R8型鑽頭套筒 	C28 Face Mill Arbor 平面銑刀柄 
R8-JT6/ MT3-JT6, MT4-JT6/ C20-JT6 C32-JT6	MT2XMT3, MT3XMT4, MT4XMT5	R8-MT2, R8-MT3	VF-101~117, 120~137 NT30, NT40-FMA25.4, 38.1 NT30, NT40-FMB22.27
C29 Morse Taper Adapter With Straight Shank 直柄式鑽頭套筒, 斜柄鑽頭刀桿 	C29 Jacobs Taper Drill Chuck Arbor 鑽帽刀桿 NT30,40,50-JT&B 	C30 Sidelock END Mill Holder 側固式立銑刀刀桿 	C30 Oil-Feed Holder Slo BT-TYPE 油路刀把筒夾 油路刀把 
NT30, 40, NT50, R8, MT3, MT4	NT30-JT6, NT40-JT6, NT50-JT6	NT30-SLA12-55L, NT40-SLA12-55L	BT40SLO32-150, 40-150, BT50SLO32-150, 40-150 OC32-20,25, OC40-25,32
C31 Face Mill Arbor BT-FM A,B,C BT平面銑刀架 	C32 Face Mill Arbor BT平面銑刀架 	C32 Drill Chuck Holder / APU BT連體鑽帽心軸 	C33 Morse Taper Adaptor BT-Type BT型斜柄鑽頭刀桿 
BT30, BT40-FMA25.4, 38.1 BT30, BT40-FMB22, FMB27	BT40-FMC22-90, BT50-FMC22-45	BT30-APU13-100, BT40-APU13-110	BT30-MTB2-60, BT40-MTB3-75 BT30-MT3-90, BT40-MT3-75

TOOLING SYSTEM

C33 Jacobs Taper Arbor BT-Type BT型鑽帽心軸 BT30,40,50 JT&B 	C34 Sidelock End Mill Holder BT-Type 側固式立銑刀刀桿 WELTON TYPE 	C35 Pull Studs 刀架拉頭螺絲 (BT30-45°, BT40-90°) 	C36 Complete NC Tooling Set 刀具建議組合組 
BT30-JT6-45, BT40-JT6-45 BT50-JT6-45	BT30-SLA6-60, BT40-SLA6-75 BT50-SLA6-90	P401-A, P501-A	
C39 Holder For Face Mill Cutter. DIN 69871A DIN平面銑刀桿 	C40 Holder For Morse Taper Shank With Tang. DIN 69871A DIN莫式刀桿 	C41 Sidelock END Mill Holder DIN 69871A DIN側固式刀桿 	C42 Drill Chuck Holder/ APU DIN 69871A DIN連體鑽帽心軸 
SK40-FM22-40, SK50-FM22-40	SK30-MT2-60, SK40-MT3-70 SK50-MT3-65	SK30-EM6-50 SK40-EM6-50 SK50-EM6-63	SK40-APU13-110, SK50-APU13-120 SK-511-514
C42 Drill Chuck Holder DIN 69871A DIN鑽頭夾柄 	C43 HSK - A63 (DIN-69893) Tool Holder HSK高速夾具主軸 HSK側固式主軸 HSK平面銑刀桿 	C44 DC High Speed Slim Chuck System DC夾具軸 30000PRM 	C45 Cylindrical Shank Of DC Slim Chuck 直柄式DC筒夾柄 30000PRM 
SK40-B16-32L, SK50-B16-43L SK-521-524	HSK-A63.022-ER16-ER40 HSK-A63.020-ER16-ER40 HSK-A63.030-SL6-32	NEW	NEW
C45 Set Of DC Collects And Collet Chuck DC 小徑夾頭套裝組 30000PRM 	C45 Small Collet Of Slim Collet Chuck DC小徑筒夾 	C45 For End Mill Shank 端銑刀用E型筒夾 	C46 High Speed Chuck UC高速夾頭主體 15000RPM 
SST12-DC6-120E, SST16-DC6-150E SST20-DC6-200E, SST25-DC6-250E	DC6-2~6MM	DC6-3E,4E,5E,6E	BT30-UC10-70, BT40-UC10-90 BT40-UC16-90, BT50-UC10-110 BT50-UC16-120
C47 3D-TASTER M/C-3D量表 	C47 Sidelock End Mill Holder 直柄側固式刀桿 	C48 Integrated Type Keyless Drill Chucks 直柄R8/MT/NT/BT連體鑽帽心軸 	C49 Keyless Drill Chucks 自動鑽夾 
ACCURACY:0.01mm		INT-8-MT2,JC20 INT13-R8,MT3,MT4,NT30,NT40,BT40,BT50 INT16-NT30,NT40 JC20,JC25,JC32,BT40	TYPE:XHSP
V-3D	C20-SL6-150, C32-SL12-150	C50 Keys 有鑰式鑽夾把手 	13XHSP-JT6, 16XHSP-JT6
C49 Keyless Drill Chucks 自動鑽夾 (一般型) TYPE:H 	C50 Keyless Drill Chucks 自動鑽夾 TYPE:S 		C51 Key Type Drill Chucks 超強力有鑰式鑽夾 TYPE:G 
6H,8H-J1,10H-B12,13H,16H-J6	10S-JT2,13S-JT6,16S-JT6	13MM-JT6 16MM-JT6	G-10XH-J2,G-13XH-J6,G-16XH-J3
C51 Ball Bearing Key Type Super Chucks 鋼珠有鑰式鑽夾 TYPE:H 	C52 Key Type Drill Chucks 滾珠有鑰式鑽夾 	C53 Key Type Drill Chucks 美式有鑰式鑽夾 	C54 Adjustable Balance Cutter /ACK/BST 搪孔夾 搪孔刀桿 
10BXH1-10MM,13BXH1-13MM, 16BXH1-16MM	13H-J6,16H-J6,10H-J2	13H.S 13XH.S COLLAR H XH	BT40-ACK2-80, BT50-ACK2-125

TOOLING SYSTEM

C55 Universal Boring And Facing Master Head 萬能自動搪孔器套裝組  Ø5~250m/m	C57 Boring Head Sets 搪孔器 (標準型)  Ø5~250m/m	C57 Boring Head Set C-Type C型套裝搪孔器  VBHC-R8,MT3,MT4,NT30,NT40-BC-2 VBHC-R8,MT3,MT4,NT30,NT40,NT50-VBC-3	C58 Shank For C-Type Boring Head C型搪孔柄 
VBHU-202~209,MT3,MT4,MT5,R8,NT30,NT40,NT50,BT40	VBH-101~109,MT2,MT3,MT4,R8,NT30,NT40,NT50,BT40	VBHC-R8,MT3,MT4,NT30,NT40,NT50-VBC-3	VBC-R8,NT30,NT40,MT3,MT4,MT5
C58 C-Type Boring Head C型搪孔頭  VBC-2 Ø10-Ø100 VBC-3 Ø10-Ø220 VBC-4 Ø10-Ø250	C59 Touch Point Sensor 光電式尋邊器 有聲尋邊器  VPS-20 BEEPER VPS-20B	C59 Mechanical Type & Deluxe Type 機構式尋邊器  Ø10XØ5X78L Ø10XØ5X76L Ø100X6X67L 401 201	C60 Touch Point Sensor 迴轉式尋邊器  Ø4XØ20X90L VPS-302 Ø10XØ20X83L VPS-301
VBC-2~4(I),(M)	VPS-20,32,20B,32B	VPS-201,401	VPS-301,302,301S,302S
C60 Centering Indicator 中心找尋規 	C60 Height Presetter Z軸高度設定器 對刀器  H:50m/m	C61 Height Presetter (For Machining Center) 附錶磁座高度設定器 對刀器  H:100m/m	C61 Z-Zero-Setter (HP-50A & HP-50B) A型Z軸設定器 B型Z軸設定器 對刀器  H:50m/m
VCI-170	HP-50Z,HP-50ZM	HP-100	HP-50A,50B, HP-50AM,50BM
C61 Electronic Tool Length Setter 光電式Z軸設定器-磁性對刀器  HEIGHT 50m/m 100m/m	C62 Reversible Tapping Attachment For Drilling & Milling Machine 可逆轉攻牙器 	C62 Drill Taper 旋臂鑽床攻牙器組 	C63 Reversible Tapping Attachments 正逆轉攻牙器 
HP-50EM,HP-100EM	K2-MT2,K3-MT3	VDT-33-MT3,MT4,MT5 VDT-24-MT3,MT4,MT5	VTA7-JT6,VTA12-JT6
C63 Expansible Tapping Holder ER伸縮式攻牙器 	C63 Expansible Tapping Holder ER伸縮式攻牙器含筒夾套裝組 	C64 Quick Change Tapping Chucks 快速扭力攻牙器 	C70 Mini Type Arm Type Air Tapping Unit 迷你旋臂攻牙機 
ER16Ø20-80,ER20Ø20-80	ER16Ø20-80 10PCS ER20Ø20-80 10PCS	BT40,BT50-WF12 BT40,BT50-WF20 BT40,BT50-WF33	VAT-708,712,716
C70 Small Arm Type Air Tapping Unit 短臂式攻牙機 	C71 Arm Type Air Tapping Unit 氣動式攻牙機 	C73 Deluxe Type Tool Setting Stand 豪華型 刀具固定架  30#,40#,50#	C73 Simple Type Tool Setting Stand 簡易型 刀具固定架  30#,40#,50#
VAT-1408,1412,1416	VAT-1608,1612,1616	VTD-1 BT40,VTD-2 BT50	VTS-BT30,BT40,BT50
C74 Tool Holder Locking Device 軌道式鎖刀座 	C74 Tool Holder Locking Device 迷你可傾式鎖刀座 	C74 Tool Holder Locking Fixtares 側立式鎖刀座 	C74 Tilting Tool Locking Device 可傾斜式鎖刀座 
VTG-BT30,BT40,BT50	VTL-BT30,BT40,BT50	VTF-BT30,BT40,BT50	VTU-BT30,BT40,BT50

TOOLING SYSTEM

<p>C75 End Mill Sheath Rack 立銑刀具整理盒</p> <p>CAPACITY RANGE Ø6~Ø42</p> 	<p>C75 Spindle Taper Wiper 主軸清潔棒</p>  <p>BT-30 40 50</p>	<p>C75 Tooling Trolleys 刀具車</p>  <p>VTT-2 VTT-5</p>	<p>C75 Tooling Sheath Rack 刀具架</p>  <p>595X143X225mm</p>
<p>VMS-2</p>	<p>VTW-30,40,50</p>	<p>VTT-2-BT30,BT40,BT50 VTT-5-BT30,BT40,BT50</p>	<p>VTTR-BT30,BT40,BT50</p>
<p>C75 Tooling Sheath 刀套</p> <p>BT30:48X138X65mm BT40:63X138X74mm BT50:93X138X104mm</p> 	<p>C76 TP-3040E Economical-Type ToolPresetter 經濟型刀具 設定儀</p> 	<p>C76 TP-3040 Deluxe-Type Tool Presetter 豪華型刀具 設定儀</p> 	<p>C77 TP-3040Q OPTICAL Type Presetter 光電尺刀具 設定儀</p> 
<p>VTTS-BT30,BT40,BT50</p>	<p>TP-3040E</p>	<p>TP-3040</p>	<p>TP - 3040Q</p>
<p>C77 TP-3040P Digital Readout Type Tool Presetter 數值式刀具 設定儀</p> 	<p>C78 Tool Cabinet 工具車</p> 	<p>C79 Workbench & Workstation 工作桌</p> <p>1500WX700DX1500Hmm 1500WX700DX800Hmm</p> 	<p>C80 Parts Cabinet 資料櫃</p> 
<p>TP-3040P</p>	<p>VTC-263PX,VTC-265PX, VTC-265X,VTC-283PX</p>	<p>VWB-59B,VWB-590</p>	<p>VA6-212H,330H,VA7-324P,448P</p>
<p>C80 Tool Box 工具箱</p> <p>VTB-203 VTB-901 VTB-102</p> 			
<p>VTB-102,901,203</p>			

MACHINING CENTER ACCESSORIES

<p>D1 NC-Rotary Table 數值控制分度盤(橫立式)</p> <p>VNCM - 150,220,250,320,400</p>	<p>D3 NC-Rotary Table 數值控制分度盤(橫立式)</p> <p>VNCM - 150, 250</p>	<p>D4 NC-Rotary Table 數值控制分度盤(立式)</p> <p>TABLE DIAMETEY 250 VNCX - 10</p>	<p>D5 Optional accessories (For NC ROTARY TABLE) 三菱伺服馬達加控制器</p>
<p>D5 Optional accessories (For NC ROTARY TABLE) 頂針軸</p>	<p>D5 Optional accessories (For NC ROTARY TABLE) 法蘭空壓轉油壓缸</p> <p>VHR - 20</p>	<p>D5 Optional accessories (For NC ROTARY TABLE) 油壓單元</p> <p>VHR - 10</p>	<p>D5 Optional accessories (For NC ROTARY TABLE) 油壓爪</p> <p>N - 206A5, 28A5</p>
<p>D5 Optional accessories (For NC ROTARY TABLE) 超薄三爪夾頭</p> <p>VNBK - 6, 8, 10, 12</p>	<p>D6 Tailstock For NC Rotary Table NC分度盤尾座</p> <p>頂針型 內孔斜度型</p> <p>TS - 135, 160, 210, 255</p>	<p>D7 DC Servo Controller 伺服控制器</p>	<p>D8 Stepping Controller 步進控制器</p>
<p>D9 NC Tilting Rotary Table 第五軸可傾斜CNC數控分度盤</p> <p>VTNC - 201</p>	<p>D10 programmable Precision Indexer 程控精密分度盤</p> <p>VPX - 6A, 8A</p>	<p>D11 Hirth Coupling Type Super Cutting Index Table 精密數控齒式分割盤</p> <p>VNCS-250,320,400,500</p>	<p>D12 Super Horizontal Hydraulic Feed Indexer 齒式單一等分 油壓自動分割盤</p> <p>VNCI-340,470,600,800</p>
<p>D13 Super Hydraulic Feed Indexer 齒式單一等分油壓 自動分割盤</p> <p>VNCT-250,320A,320B</p>	<p>D15 Mechanical Power Vise 倍力增壓式虎鉗</p> <p>JAW WIDTH 100,125,160</p> <p>VMC - 4Q, 5Q, 6Q</p>	<p>D17 Double Clamp Vise 複合虎鉗</p> <p>JAW WIDTH 102,152</p> <p>VMC - 4D, 6D</p>	<p>D19 Hydraulic / Super Power M/C Vise 可立式油壓虎鉗</p> <p>VMC - 5HU, 6HU</p>
<p>D19 Hydraulic / Super Power M/C Vise 並列式油壓虎鉗</p> <p>VMC - 5H, 6H</p>	<p>D21 Hydraulic / Super Power M/C Vise With Right Angle Base 可立式油壓虎鉗</p> <p>HU-TYPE WITH RIGHT ANGLE BASE</p> <p>VMC - 5HUR, 6HUR</p>	<p>D21 Hydraulic / Super Power M/C Vise With Sub Base 並列式油壓虎鉗</p> <p>VMC-5H-2S, 5H-3S, 5H-4S VMC-6H-2S, 6H-3S, 6H-4S</p>	<p>D22 Base Plate Series T槽副工作台 SUB TABLE T-SLOT TYPE</p> <p>TBP-6040, 6050, 6060, 8040,9045, 10050, 6040D, 6050D, 6060D, 8040D, 9045S, 10050DF</p>
<p>D22 Base Plate Series 方形副工作台</p> <p>DIS T-SLOT</p> <p>SBP-4040, 5050, 6363, 8080, 4040A, 5050A, 6363A, 8080A</p>	<p>D22 Base Plate Series 螺牙型副工作台 SUB TABLE THERAD TYPE</p> <p>HBP-4060, 5060, 6060, 4080, 4590, 50100, 4060T, 5060T, 6060T, 4080T, 4590T, 50100T</p>	<p>D23 M/C Angle Plate 90° T槽MC直角基座</p> <p>BP22-30, 22-40, 22-50, 22-60, 22-80, 22-830, 22-840, 22-850, 22-860</p>	<p>D23 M/C Angle Plate 90° MC直角基座</p> <p>BP-20-30, 20-40, 20-50, 20-60, 20-80</p>

LATHE MACHINE ACCESSORIES

E1 Light Duty Live Center 普通型頂針  ACCURACY:0.005mm VPC - MT1, MT2, MT3, MT4, MT5	E1 Live Lathe Center 高速活動頂針 A-TYPE B-TYPE  ACCURACY:0.005mm VLC - 212, 213, 214, 215, 213B, 214B	E2 High-Speed NC Live Center NC高速活動頂針 A-TYPE B-TYPE  ACCURACY:0.005mm VLC - MT3A, MT4A, MT5A, MT6A VLC - MT3B, MT4B, MT5B	E2 High-load NC Live Center 重負荷頂針 A-TYPE NEW B-TYPE  ACCURACY:0.003mm VCF - MT3A, MT4A, MT5A VCF - MT3B, MT4B, MT5B
E3 Inter-Changeable Points Live Center 替換式活動頂針  ACCURACY-0.008mm VLC - 312 MT2, VLC - 313 MT3 VLC - 314 MT4	E3 High Speed NC Interchangeable Points Live Center 替換式高速頂針  ACCURACY-0.008mm VCS - MT3, MT4, MT4P, MT5P	E3 High Load Interchangeable Points Live Center 替換式重負荷頂針  ACCURACY-0.005mm VCP - MT4, MT5	E4 Bull Nose Center 傘型迴轉頂針 VLC-443 MT4x3" VLC-446 MT4x6" VLC-445 MT5x5" 
E17 Tool Post Grinder ON Lathe 車床精密研磨機  VGR - 185, 175, 165, 150, 125, 100	E4 Work-Driving Center 傳動頂針MT4  VDK-15 Ø16-Ø25 VDK-23 Ø23-Ø32 VDK-32 Ø32-Ø45 VDK-15-MT4, VDK-23-MT4, VDK-32-MT4	E5 3-Jaw Scroll Chuck 普通型三爪夾頭  VSC - 3, 4, 5, 6, 7, 8, 9, 10, 12, 16	E5 4-Jaw Scroll Chuck 普通形四爪夾頭  VLC - 433, 434, 443, 444, 445, 446, 448, 455, 456, 458
E6 3-Jaw Powerful Scroll Chuck 強力型三爪夾頭  VSK - 6, 7, 8, 9, 10, 12, 15, 16	E6 4-Jaw Powerful Scroll Chuck 強力型四爪夾頭  VPSK - 7, 9, 12, 16	E7 3-Jaw Strong Scroll Chucks D1Camlock Direct Mounting D1型強力三爪  KD4-6", 5-8", 5-10", 6-8", 6-10", 6-12"	E7 4-Jaw Independent Chuck Plain Back 普通四爪單動夾頭  VKC - 4, 5, 6, 8, 10, 12A, 12B, 14, 16, 20, 25, 32
E8 3-Jaw Self Centering Chuck 經濟型普通三爪夾頭  VSC - 3C, 4C, 5C, 6C, 7C, 8C, 9C, 10C	E8 3-Jaw Powerful Self Centering Chuck 經濟型強力三爪夾頭  VSK - 6C, 7C, 8C, 10C, 13C, 15C, 16C	E9 Machining Jaw Chuck 超薄四方卡盤  VMJ - 6, 8, 10	E9 Super Thin Chucks 強力型超薄三爪夾頭  VNBK - 6, 8, 10, 12
E10 Soft Jaw For SK-Type Chuck 軟爪(強力型用)3PCS/SET  VSJ - 6, 7, 8, 9, 10, 12, 16	E10 Soft Jaw Hydraulic Power Chucks 油壓生爪3PCS/SET  VHC - 05, 06, 08, 10, 12, 15, 12-1, 15-1	E11 Soft Jaw Forming Ring 油壓生爪成型圈 NEW  VFR - 05, 06, 08, 010, 012	E11 Hard Jaws For Hydraulic Power Chucks 油壓硬爪3PCS/SET 
E12 3-Jaw Wedge Type Through-hole Power Chuck (Without Adaptor) 三爪高速中空油壓夾頭  N - 205A4, 206A5, 208A5, 208A6, 210A6, 212A8, 215A8, 215A11	E13 2-Jaw Wedge Type Through-hole Power Chuck (Without Adaptor) 二爪中空油壓夾頭  NT - 205, 206, 208, 210, 212, 215	E14 3-Jaw Wedge Type Non Through-hole Power Chuck (Without Adaptor) 三爪中空油壓夾頭  V - 206A5, 208A6, 210A6, 210A8, 212A8, 215A8, 215A11	E15 Super High Speed Through-hole Rotary Hydraulic Cylinder M高速中空迴轉油壓缸  M - 1036, 1236, 1246, 1546, 1552, 1868, 1875, 2091, 2511

CUTTING TOOL

F1 Face Milling Cutter 45° 平面銑刀45° 	F1 Face Milling Cutter 65° 平面銑刀65° 	F2 Face Milling Cutter 75° 平面銑刀75° 	F2 Face Milling Cutter 90° 直角平面銑刀90° 
SE545-3~6,8,10,12 SE445-3~6,8,10,12	SP435-3~6,8,10,12 SP535-3~6,8,10,12	FP - 3, 4, 5, 6, 8, 10, 12	TP-63,80,100,125,160,200,250,300
F3 Round insert End Mills 圓刀刃端銑刀 	F3 Round Insert Milling Cutter 圓刀刃銑刀 	F4 Drilling & Milling Cutter 鑽銑共用型銑刀 	F5 High Speed Shoulder Mills 高速直角端銑刀 
C20-4R20-150 C25-5R25-150	RM - 5R - 50, 63 RM - 8R - 50, 63	C16-DM16-120, C20-DM20-130 C25-DM25-130, C32-DM32-170	C16-SS16-120H, C20-SS20-120H C25-SS25-130H, C32-SS32-150H
F5 Ball End Mills 球形端銑刀 	F5 Ball End Mills 球形端銑刀 	F5 Shoulder End Mills 直柄端銑刀 	F6 High Speed End Mills 快削型短銑刀 
C25-BR10-200, C25-BR12.5-200, C32-BR15-200	C20 - AR8 - 160, C25 - AR10 - 180, C32 - AR12.5 - 200, C32 - AR15 - 220	SAE - 20, 25, 30, 35, 40, 45, 50, 63	CAP400R-2525~5032
F6 Round Insert End Mills R角短銑刀 	F6 FACE End Mills 平面端銑刀 	F6 Shoulder Face Milling Cutter 90° 直角平面銑刀 	F7 45° Chamfering End Mills 45° 倒角銑刀  Ø3-Ø25
CRT-6R32-150,CRT-6R35-150	C-32-SE445-50, C-32-SE445-63	SFM - 50, 63	TC12
F7 Cutting Holder 切斷刀 	F7 Cutting Blocks 切斷刀刀架 	F14 Tool Holders 外徑車刀 	
CGIH26-3, CGIH32-3	SBU20 - 26, 32 SBU25 - 30		

SPECIAL USAGE MACHINE ACCESSORIES

<p>G1 Shock Absorber 防震台TK型</p>  <p>TK - 90, 120, 160, 200</p>	<p>G1 Shock Absorber 防震台SB型</p>  <p>SB - 4, 6, 8, 10 SC - 1, 2, 3</p>	<p>G2 Arbor Press 手動壓床</p>  <p>VAR - 0, 1, 2, 3, 5</p>	<p>G2 Arbor Press 有棘齒式手動沖床</p>  <p>VARR - 3, 5</p>
<p>G3 Multi-Spindle Drill Head 多軸鑽座</p>  <p>V33C - T7, 10, 12</p>	<p>G4 Portable Magnetic Drilling & Tapping Machine 手提磁性鑽台</p>  <p>TC-3S, 12W</p>	<p>G5 Wet & Dry Vacuum Cleaner 乾溼工業用強力吸塵器</p>  <p>CE - 2020, 2032</p>	<p>G6 Economic H Type Slide Table 經濟型工字滑台</p>  <p>160X200mm 200X300mm</p> <p>STB-1630,1640,2040,2060,2080,20100</p>
<p>G6 Power H Type Slide Table 強力型工字滑台</p>  <p>200X300mm 300X350mm</p> <p>STC-2040,2050,2060,3050,3070,3080</p>	<p>G7 One Way Acme Thread Slide Table 單面角牙滑座</p>  <p>ST-75 75X180mm ST-125 125X300mm STA-160 160X200mm STA-165 165X200mm</p> <p>ST-75, 125, STA-160, 165</p>	<p>G7 Vertical Dovetail Slide Table 立式鳩尾滑座</p>  <p>SE-100, 150, 200, 250</p>	<p>G8 Precision Boring/Milling Spindle Head 搪銑主軸頭</p>  <p>SH30, 40, 50</p>
<p>G8 Precision Boring/Milling Spindle Head 搪銑主軸頭</p>  <p>SH30A, 40A</p>	<p>G9 Drilling Head Units 臥式鑽孔機</p>  <p>DH5-85M, DH6-130M</p>	<p>G11 Tapping Head Units 攻牙主軸頭</p>  <p>TH - 50M, 65M, 85M, 90M</p>	

SMALL TYPE MACHINE

<p>H1 Drill Tap & End Mill Gtinder 鑽頭刀具研磨機</p> 	<p>H1 Drill & End Mill Grinder 鑽頭刀具研磨機</p> 	<p>H2 Universal Drill & Cutter Grinder 立銑刀鑽頭 刀具研磨機</p> 	<p>H2 Universal Drill & Tap Grinder 萬能立銑刀鑽頭 刀具研磨機</p> 
<p>VEG - 300</p>	<p>VEG - 1200</p>	<p>VDG - 32N</p>	<p>VDG - 60N</p>
<p>H3 Multi-Purpose Milling & Drilling Machine 鑽銑複合機</p> 	<p>H4 Horizontal Band Saws 臥式帶鋸機</p> 	<p>H4 Horizontal Band Saws 臥式帶鋸機</p> 	
<p>MD - 30N, 30B</p>	<p>HBS - 7</p>	<p>HBS - 9</p>	
<p>H5 Precision Drill Grinder 精密鑽頭研磨機</p>  <p>FOR DRILL RESHARPING Specification Precision, Efficient, Easy Operation, Reasonable Price</p> <ol style="list-style-type: none"> 1. High Efficiency, High Quality Grinding Slip, Good Grinding Results 2. Peerless, Super Function, Durable 3. Quality Assurance 4. Easy Operation, For Urgent Need 5. Considerable Design, Invisible Tool Box, Delicate & Friendly Use <p>鑽頭直徑 Drill Diameter: $\phi 2.0 \sim \phi 13.0$ 先端角 Point Angle: $118^\circ \sim 135^\circ$ 電源 Power Supply: AC - 110 or 220 單相1PH 回轉數 R.P.M. of Motor: 5100 R.P.M. 鑽石砂輪 Grinding Wheel: CBN #170 重量 Net Weight: AC - 110, 8.5kgs AC - 220, 9.5kgs 外型尺寸 Overall Dimensions: W282 X D185 X H110 標準附件 Standard Accessories · 夾夾 ER-20 Collet X 11pcs · 夾頭 Collet holder X 1 unit · 六角板手 4mm Hexagon wrench 4x1</p>			
<p>VDG-13</p>			
<p>H6 Precision Surface Grinder 精密平面磨床</p> 	<p>H8 Geared Head Milling & Boring Machine GMB-450G全齒輪式 鑽銑床 GMB-500G II 齒輪式 搪銑床</p> 	<p>H9 All Geared Head Drill Press 齒輪式鑽床</p> 	<p>H10 Vertical Band Sawing Machine 立式帶鋸機</p> 
<p>SG-614, SG-618/B, SG-818B, SG-1A618/2A618</p>	<p>GMB - 450G, 500G II</p>	<p>GMB - 400GS</p>	<p>Y - 310, 360, 400, 500</p>
<p>H11 Penumatic Tools 氣動刻磨機 V-601A 54,000R.P.M V-701A 70,000R.P.M</p>  <p>VSW-8241 22,000R.P.M</p>	<p>H12 Magnetic De-Burring & Polishing Machine 磁力研磨拋光機</p> 	<p>H16 Universal Tool & Cutter Grinder 刀具磨床</p> 	<p>H16 Universal Tool & Cutter Grinder 刀具磨床</p> 
<p>V-601A, 701A, VSW-8241</p>	<p>VDB-175, 716, 728</p>	<p>VDG-205</p>	<p>VDG-305</p>
<p>H16 Universal Tool & Cutter Grinder 刀具磨床</p> 			
<p>VDG-457</p>			



射梢頭部規格表

英制 INCH			公制 MM		日規 JIS		德規 DIN	
D	H x T		D	H x T	D	H x T	D	H x T
1/32	0.793	6.35 x 3.17	1.0	6 x 4	1.0	3 x 4	1.0	3 x 1.5
3/64	1.190	6.35 x 3.17	1.2	6 x 4	1.1	3 x 4	1.5	3 x 1.5
1/16	1.587	6.35 x 3.17	1.5	6 x 4	1.2	3 x 4	1.6	3 x 1.5
5/64	1.984	6.35 x 3.17	2.0	6 x 4	1.3	3 x 4	2.0	4 x 2
3/32	2.381	6.35 x 3.17	2.5	6 x 4	1.4	3 x 4	2.2	4 x 2
7/64	2.778	6.35 x 3.17	3.0	6 x 4	1.5	3 x 4	2.5	5 x 2
1/8	3.175	6.35 x 3.17	3.5	8 x 5	1.6	4 x 4	2.7	5 x 2
9/64	3.571	6.35 x 3.17	4.0	8 x 5	1.7	4 x 4	3.0	6 x 3
5/32	3.968	7.14 x 3.96	4.5	8 x 5	1.8	4 x 4	3.2	6 x 3
11/64	4.365	8.73 x 4.76	5.0	8 x 5	1.9	4 x 4	3.5	7 x 3
3/16	4.762	9.52 x 4.76	5.5	10 x 6	2.0	4 x 4	3.7	7 x 3
13/64	5.159	9.52 x 4.76	6.0	10 x 6	2.5	5 x 4	4.0	8 x 3
7/32	5.556	10.31 x 4.76	6.5	10 x 6	3.0	6 x 4	4.2	8 x 3
15/64	5.953	10.31 x 4.76	7.0	10 x 6	3.5	7 x 4	4.5	8 x 3
1/4	6.350	11.11 x 4.76	8.0	13 x 8	4.0	8 x 6	5.0	10 x 3
17/64	6.746	11.11 x 6.35	9.0	14 x 8	4.5	8 x 6	5.2	10 x 3
9/32	7.143	11.11 x 6.35	10.0	15 x 8	5.0	9 x 6	5.5	10 x 3
19/64	7.540	12.7 x 6.35	11.0	16 x 8	5.5	9 x 6	6.0	12 x 5
5/16	7.937	12.7 x 6.35	12.0	17 x 8	6.0	10 x 6	6.2	12 x 5
21/64	8.334	14.28 x 6.35	14.0	19 x 8	6.5	10 x 6	6.5	12 x 5
11/32	8.731	14.28 x 6.35	15.0	20 x 8	7.0	11 x 6	7.0	12 x 5
23/64	9.128	15.87 x 6.35	16.0	21 x 8	8.0	13 x 8	8.0	14 x 5
3/8	9.525	15.87 x 6.35	18.0	23 x 8	9.0	13 x 8	8.5	14 x 5
13/32	10.318	17.46 x 6.35	20.0	25 x 8	10.0	15 x 8	9.0	14 x 5
7/16	11.112	17.46 x 6.35	25.0	30 x 8	11.0	15 x 8	10.0	16 x 5
15/32	11.906	19.05 x 6.35			12.0	17 x 8	11.0	16 x 5
1/2	12.700	19.05 x 6.35					12.0	20 x 7
9/16	14.287	20.63 x 6.35					12.5	20 x 7
5/8	15.875	22.22 x 6.35					14.0	22 x 7
9/16	17.462	23.81 x 6.35					16.0	22 x 7
3/4	19.050	25.40 x 6.35					18.0	26 x 7
7/8	22.225	28.57 x 6.35					20.0	26 x 8
1	25.400	31.75 x 6.35					25.0	32 x 10

CONVERSION TABLE OF HARDNESS EXCERPT FROM SAE J417

Conversion table approximate values for steel according to Rockwell hardness C scale⁽¹⁾

Rockwell hardness C scale (HRC)	Vickers hardness (HV)	Brinell hardness(HB) Ball:10mm in diameter/ Load:3,000kgf		Rockwell hardness ⁽⁵⁾			Rockwell superficial hardness Diamond conical penetrator			Shore hardness (HS)	Tensile strength (Approximate value) Mpa (kgf/mm ²) (2)	Rockwell hardness C scale ⁽³⁾ (HRC)
		Standard ball	Tungsten carbide ball	A scale(HRA) Load:60kgf Diamond conical penetrator	B scale(HRB) Load:100kgf Ball of 1.6mm (1/16") dia.	D scale(HRD) Load:100kgf Diamond conical penetrator	15-N Scale Load:15kgf	30-N Scale Load:30kgf	45-N Scale Load:45kgf			
68	940	—	—	85.6	—	76.9	93.2	84.4	75.4	97	—	68
67	900	—	—	85.0	—	76.1	92.9	83.6	74.2	95	—	67
66	865	—	—	84.5	—	75.4	92.5	82.8	73.3	92	—	66
65	832	—	(739)	83.9	—	74.5	92.2	81.9	72.0	91	—	65
64	800	—	(722)	83.4	—	73.8	91.8	81.1	71.0	88	—	64
63	772	—	(705)	82.8	—	73.0	91.4	80.1	69.9	87	—	63
62	746	—	(688)	82.3	—	72.2	91.1	79.3	68.8	85	—	62
61	720	—	(670)	81.8	—	71.5	90.7	78.4	67.7	83	—	61
60	697	—	(654)	81.2	—	70.7	90.2	77.5	66.6	81	—	60
59	674	—	(634)	80.7	—	69.9	89.8	76.6	65.5	80	—	59
58	653	—	615	80.1	—	69.2	89.3	75.7	64.3	78	—	58
57	633	—	595	79.6	—	68.5	88.9	74.8	63.2	76	—	57
56	613	—	577	79.0	—	67.7	88.3	73.9	62.0	75	—	56
55	595	—	560	78.5	—	66.9	87.9	73.0	60.9	74	2075(212)	55
54	577	—	543	78.0	—	66.1	87.4	72.0	59.8	72	2015(205)	54
53	560	—	525	77.4	—	65.4	86.9	71.2	58.5	71	1950(199)	53
52	544	(500)	512	76.8	—	64.6	86.4	70.2	57.4	69	1880(192)	52
51	528	(487)	496	76.3	—	63.8	85.9	69.4	56.1	68	1820(186)	51
50	513	(475)	481	75.9	—	63.1	85.5	68.5	55.0	67	1760(179)	50
49	498	(464)	469	75.2	—	62.1	85.0	67.6	53.8	66	1695(173)	49
48	484	451	455	74.7	—	61.4	84.5	66.7	52.5	64	1635(167)	48
47	471	442	443	74.1	—	60.8	83.9	65.8	51.4	63	1580(151)	47
46	458	432	432	73.6	—	60.0	83.5	64.8	50.3	62	1530(156)	46
45	446	421	421	73.1	—	59.2	83.0	64.0	49.0	60	1480(151)	45
44	434	409	409	72.5	—	58.5	82.5	63.1	47.0	58	1435(146)	44
43	423	400	400	72.0	—	57.7	82.0	62.2	46.7	57	1385(141)	43
42	412	390	390	71.5	—	56.9	81.5	61.3	45.5	56	1340(136)	42
41	402	381	381	70.9	—	56.2	80.9	60.4	44.3	55	1295(132)	41
40	392	371	371	70.4	—	55.4	80.4	59.5	43.1	54	1250(127)	40
39	382	362	362	69.9	—	54.6	79.9	58.6	41.9	52	1215(124)	39
38	372	353	353	69.4	—	53.8	79.4	57.7	40.8	51	1180(120)	38
37	363	344	344	68.9	—	53.1	78.8	56.8	39.6	50	1160(118)	37
36	354	336	336	68.4	(109.0)	52.3	78.3	55.9	38.4	49	1115(114)	36
35	345	327	327	67.9	(108.5)	51.5	77.7	55.0	37.2	48	1080(110)	35
34	336	319	319	67.4	(108.0)	50.8	77.2	54.2	36.1	47	1055(108)	34
33	327	311	311	66.8	(107.5)	50.0	76.6	53.3	34.9	46	1025(105)	33
32	318	301	301	66.3	(107.0)	49.2	76.1	52.1	33.7	44	1000(102)	32
31	310	294	294	65.8	(106.0)	48.4	75.6	51.3	32.7	43	980(100)	31
30	302	286	286	65.3	(105.5)	47.7	75.0	50.4	31.3	42	950(97)	30
29	294	279	279	64.7	(104.5)	47.0	74.5	49.5	30.1	41	930(95)	29
28	286	271	271	64.3	(104.0)	46.1	73.9	48.6	28.9	41	910(93)	28
27	279	264	264	63.8	(103.0)	45.2	73.3	47.7	27.8	40	880(90)	27
26	272	258	258	63.3	(102.5)	44.6	72.8	46.8	26.7	38	860(88)	26
25	266	253	253	62.8	(101.5)	43.8	72.2	45.9	25.5	38	840(86)	25
24	260	247	247	62.4	(101.0)	43.1	71.6	45.0	24.3	37	825(84)	24
23	254	243	243	62.0	100.0	42.1	71.0	44.0	23.1	36	805(82)	23
22	248	237	237	61.5	99.0	41.6	70.5	43.2	22.0	35	785(80)	22
21	243	231	231	61.0	98.5	40.9	69.9	42.3	20.7	35	770(79)	21
20	238	226	226	60.5	97.8	40.1	69.4	41.5	19.6	34	760(77)	20
(18)	230	219	219	—	96.7	—	—	—	—	33	730(75)	(18)
(16)	222	212	212	—	95.5	—	—	—	—	32	705(72)	(16)
(14)	213	203	203	—	93.8	—	—	—	—	31	675(69)	(14)
(12)	204	194	194	—	92.3	—	—	—	—	29	650(66)	(12)
(10)	196	187	187	—	90.7	—	—	—	—	28	620(63)	(10)
(8)	188	179	179	—	89.5	—	—	—	—	27	600(61)	(8)
(6)	180	171	171	—	87.1	—	—	—	—	26	580(59)	(6)
(4)	173	165	165	—	85.5	—	—	—	—	25	550(56)	(4)
(2)	166	158	158	—	83.5	—	—	—	—	24	530(54)	(2)
(0)	160	152	152	—	81.7	—	—	—	—	24	515(53)	(0)

※ Notes (1) The figures in blue are based on Table 1 of ASTM E 140 (adjusted by SEA, ASM and ASTM in collaboration)

(2) The values and units parentheses have been converted from psi based on conversion tables of JIS Z 8413 and Z 8438. 1Mpa=1N/mm²

(3) The figures in parentheses are less frequently used values and are for reference only.

EXCERPT FROM JIS B 0601 AND JIS B 0031 SURFACE ROUGHNESS

1. Categories of surface roughness

Definitions and indications for surface roughness parameters(for industrial products)are specified.They are arithmetical mean roughness (Ra), maximum height(Ry),ten-point mean roughness(Rz), mean spacing of profile irregularities(Sm),mean spacing of local peaks of the profile(S)and profile bearing length ratio(tp).Surface roughness is given as the arithmetical mean value for a randomly sampled area. [Mean center line roughness(Ra75)is defined in the annexes of JIS B0031 and JIS B(0061)] .

Table 1 Typical ways for obtaining surface roughness

<p>Arithmetical mean roughness (Ra)</p> <p>A section of standard length is sampled from the mean line on the roughness chart.The mean line is laid on a Cartesian coordinate system wherein the mean line runs in the direction of the x-axis and magnification is the Y-axis.The value obtained with the formula on the right is expressed in micrometer(μ m) when y=1(X)</p>	
<p>Maximum peak(Ry)</p> <p>A section of standard length is sampled from the mean line on the roughness chart.The distance between the peaks and valleys of the sampled line is measured in the y direction .The value is expressed in micrometer(μ m).</p> <p>Notes: To obtain Ry,sample only the standard length .The part, where peaks and valleys are wide enough to be interpreted as scratches,should be avoided.</p>	
<p>Ten-point mean roughness (Rz)</p> <p>A section of standard length is sampled from the mean line on the roughness chart,The distance between the peaks and valleys of the sampled line is measured in the y direction. Then , the average peak is obtained among 5 tallest peaks (Yp), as is the average valley between 5 lowest valleys (Yv), The sum of these two values is expressed in micrometer(μ m).</p>	

Reference:Relationship between arithmetical mean roughness(Ra)and conventional symbols

Arithmetical mean roughness Ra			Max.Height Ry	Ten-point mean roughness Rz	Standard length of Ry · Rz l (mm)	Triangular indication
Preferred number series	Cut-off value.C(mm)	Indication of surface texture on drawings	Preferred number series			
0.012 a	0.08	0.012/ ~ 0.2/	0.05s	0.05 z	0.08	
0.025a			0.1 s	0.1 z		
0.05 a			0.2 s	0.2 z		
0.1 a			0.4 s	0.4 z	0.25	
0.2 a			0.8 s	0.8 z		
0.4 a	0.8	0.4/ ~ 1.6/	1.6 s	1.6 z	0.8	
0.8 a			3.2 s	3.2 z		
1.6 a			6.3 s	6.3 z		
3.2 a	0.25	3.2/ ~ 6.3/	12.5s	12.5 z	0.25	
6.3 a			25 s	25 z		
12.5 a	8	12.5/ ~ 25/	50 s	50 z	8	
25 a			100s	100 z		
50 a	-	50/ ~ 100/	200s	200 z	-	
100 a			400	400 z		

※ The interdependence for 3 classes is not strictly enforced.
 ※ The evaluation lengths of Ra, Ry and Rz: Five times the cut –off value and standard length respectively.

EXCERPT FROM JIS B 0021 INDICATIONS OF GEOMETRICAL TOLERANCE ON DRAWINGS

Kinds and symbols of geometrical tolerances

Kinds of tolerance		Symbol	Definition of tolerance zone	Examples of diagrammatical indication and its interpretation
Form tolerance	Straightness tolerance		Where symbol ϕ is attached before the numerical value indicating a tolerance zone, this tolerance zone is a zone in a cylinder of diameter t .	Where a tolerance frame is connected to the dimension showing the diameter of a cylinder, the axis of the cylinder shall be contained a cylinder of 0.08mm diameter.
	Flatness tolerance		The tolerance zone is a zone held between two parallel planes a distance t apart.	This surface shall be contained between two parallel planes 0.08mm apart.
	Circularity tolerance		The tolerance zone in the considered plane is a zone between two concentric circles a distance t apart.	The circumference in any section normal to the axis shall be contained between two concentric circles 0.1mm apart on the same plane.
	Cylindricity tolerance		The tolerance zone is a zone contained between two coaxial cylinder surfaces a distance t apart.	The considered surface shall be contained between two coaxial cylinder surfaces 0.1mm apart.
	Profile tolerance of line		The tolerance zone is a zone held between two lines enveloping circles of diameter t , the centers of which are situated on a theoretically exact profile line.	In any cross section parallel to the projection plane the considered profile shall be contained between two lines enveloping circles of 0.04mm in diameter, the centers of which are situated on a line having the theoretically exact profile.
	Profile tolerance of surface		The tolerance zone is a zone held between the two surfaces enveloping the spheres of diameter t , the centers of which are situated on a theoretically exact profile surface.	The considered surface shall be contained between two surfaces enveloping the spheres of diameter 0.02mm, the centers of which are situated on a surface having the theoretically exact profile.
Orientation tolerance	Parallelism tolerance		The tolerance zone is a zone held between two parallel planes parallel to the datum plane and a distance t apart from each other.	The surface shown by the arrow of the leader line shall be contained between two planes parallel to the datum plane A and 0.01mm apart from each other in the direction of the arrow of the leader line.
	Perpendicularity tolerance		Where symbol \perp is attached before the numerical value indicating the tolerance, the tolerance zone is a zone within a cylinder of diameter t perpendicular to the datum plane.	The axis of the cylinder shown by the arrow of the leader line shall be contained within a cylinder of diameter 0.01mm perpendicular to the datum plane A.
	Angularity tolerance		The tolerance zone is a zone held between two parallel planes inclined at the specified angle to the datum plane and distance t apart from each other.	The surface shown by the arrow of the leader line shall be contained between two parallel planes which are inclined at 40° with theoretical exactness to the datum plane A and which are 0.08mm apart from each other in the direction of the arrow of the leader line.
Location tolerance	Positional tolerance		The tolerance zone is a zone within a circle or sphere of diameter t having its center at the theoretically exact location, hereinafter referred to as the true location.	The point shown by the arrow of the leader line shall be contained within a circle of 0.03mm diameter having its center at the true location 60mm and 100mm apart, respectively, from the datum straight line A and from the datum straight line B.
	Coaxiality tolerance of concentricity tolerance		Where symbol ϕ is attached before the numerical value indicating the tolerance, the tolerance zone is a zone within a cylinder of diameter t whose axis agrees with the datum axial straight line.	The axis shown by the arrow of the leader line shall be contained within a cylinder of 0.01mm diameter whose axis agrees with the datum axial straight line A.
	Symmetry tolerance		The tolerance zone is a zone held between two parallel planes a distance t apart from each other and arranged symmetrically about the datum median plane.	The median surface shown by the arrow of the leader line shall be contained between two parallel planes 0.08mm apart from each other and arranged symmetrically about the datum median plane A.
Run-out tolerance	Circular run-out tolerance		The tolerance is a zone between two concentric circles whose centers agree with the datum axial straight line on any measuring plane normal to the datum axial straight line and which are a distance t apart from each other in the radial direction.	The run-out in the radial direction of the cylinder surface shown by the arrow of the leader line shall not exceed 0.1mm on any measuring plane normal to the datum axial straight line when the cylinder is rotated by one rotation about the datum axial straight line A-B.
	Total run-out tolerance		The tolerance zone is a zone between two coaxial cylinders having axes agreeing with the datum axial straight line and a distance t apart from each other in the radial direction.	The total radial run-out of the cylinder surface shown by the arrow of the leader line shall not exceed 0.1mm at any point on the cylinder surface when the cylinder part is rotated about the datum axial straight line A-B with a relative movement in the axial direction.

Lines used in the drawing in the column of "definition of tolerance zone" indicate the following meanings:

Thick solid line or broken line: Feature

Thin alternate long and short dash line: Datum

Thin solid line or broken line: Tolerance zone

Thin alternate long and short dash line: Center line

Thin alternate long and two short dashes line: Supplementary projection plane or sectional plane

Thin alternate long and two short dashes line: Projection of a feature to Supplementary Projection plane or sectional plane



TOLERANCES OF COMMONLY USED HOLE FITS EXCERPT FROM JIS B 0401

Deviations of Hole to be used in commonly used fits

Basic size step (mm)	Tolerance zone class of Hole																				Unit: μ m																		
	Over	OR less	B10	C9	C10	D8	D9	D10	E7	E8	E9	F6	F7	F8	G6	G7	H6	H7	H8	H9		H10	JS6	JS7	K6	K7	M6	M7	N6	N7	P6	P7	R7	S7	T7	U7	X7		
3	+180	+140	+100	+60	+24	+28	+39	+12	+16	+20	+8	+12	+6	+10	+14	+25	+40	0	0	0	0	± 3	± 5	0	0	-2	-4	-4	-6	-10	-14	-18	-20	-18	-20	-20	-30		
6	+188	+140	+100	+60	+78	+32	+50	+18	+22	+28	+12	+16	+8	+12	+18	+30	+48	+2	+3	-1	0	± 4	± 6	+2	+3	-1	0	-4	-8	-11	-15	-19	-24	-19	-24	-19	-24	-31	-36
10	+208	+150	+116	+80	+70	+47	+61	+22	+28	+35	+14	+20	+9	+15	+22	+36	+58	+2	+5	-3	0	± 4.5	± 7	+2	+10	-12	-15	-16	-19	-21	-24	-28	-32	-37	-42	-48	-56		
14	+220	+150	+138	+95	+77	+59	+75	+27	+34	+43	+17	+24	+11	+18	+27	+43	+70	+2	+6	-4	0	± 5.5	± 9	+2	+6	-4	0	-5	-11	-16	-21	-26	-34	-44	-51	-56			
18	+244	+160	+124	+84	+61	+73	+92	+33	+41	+53	+20	+28	+13	+21	+33	+52	+84	+2	+6	-4	0	± 6.5	± 10	+2	+6	-4	0	-7	-14	-20	-27	-34	-44	-51	-56				
24	+270	+180	+130	+90	+65	+85	+105	+38	+46	+60	+25	+34	+16	+25	+39	+62	+100	+3	+7	-4	0	± 8	± 12	+3	+7	-4	0	-8	-17	-25	-34	-44	-51	-56					
30	+300	+200	+140	+100	+75	+95	+115	+41	+50	+64	+25	+34	+16	+25	+39	+62	+100	+4	+9	-5	0	± 9.5	± 15	+4	+9	-5	0	-9	-26	-36	-46	-56	-66	-76	-86				
40	+330	+220	+150	+110	+80	+100	+120	+46	+56	+70	+30	+40	+20	+30	+44	+74	+120	+4	+9	-5	0	± 11	± 17	+4	+10	-6	0	-10	-20	-30	-40	-50	-60	-70	-80				
50	+360	+240	+160	+120	+90	+110	+130	+51	+61	+75	+35	+45	+25	+35	+49	+79	+130	+4	+10	-6	0	± 12.5	± 20	+4	+12	-8	0	-12	-24	-34	-44	-54	-64	-74	-84				
65	+400	+260	+180	+140	+100	+120	+140	+56	+66	+80	+40	+50	+30	+40	+54	+84	+140	+4	+10	-6	0	± 14.5	± 23	+5	+13	-8	0	-14	-28	-38	-48	-58	-68	-78	-88				
80	+440	+280	+200	+160	+120	+140	+160	+61	+71	+85	+45	+55	+35	+45	+59	+89	+150	+4	+10	-6	0	± 16	± 26	+5	+13	-8	0	-14	-28	-38	-48	-58	-68	-78	-88				
100	+480	+300	+220	+180	+140	+160	+180	+66	+76	+90	+50	+60	+40	+50	+64	+94	+160	+4	+10	-6	0	± 18	± 28	+5	+13	-8	0	-14	-28	-38	-48	-58	-68	-78	-88				
120	+520	+320	+240	+200	+160	+180	+200	+71	+81	+95	+55	+65	+45	+55	+69	+99	+170	+4	+10	-6	0	± 20	± 30	+5	+13	-8	0	-14	-28	-38	-48	-58	-68	-78	-88				
140	+560	+340	+260	+220	+180	+200	+220	+76	+86	+100	+60	+70	+50	+60	+74	+104	+180	+4	+10	-6	0	± 22.5	± 33	+5	+13	-8	0	-14	-28	-38	-48	-58	-68	-78	-88				
160	+600	+360	+280	+240	+200	+220	+240	+81	+91	+105	+65	+75	+55	+65	+79	+109	+190	+4	+10	-6	0	± 25	± 36	+5	+13	-8	0	-14	-28	-38	-48	-58	-68	-78	-88				
180	+640	+380	+300	+260	+220	+240	+260	+86	+96	+110	+70	+80	+60	+70	+84	+114	+200	+4	+10	-6	0	± 27.5	± 39	+5	+13	-8	0	-14	-28	-38	-48	-58	-68	-78	-88				
200	+680	+400	+320	+280	+240	+260	+280	+91	+101	+115	+75	+85	+65	+75	+89	+119	+210	+4	+10	-6	0	± 30	± 42	+5	+13	-8	0	-14	-28	-38	-48	-58	-68	-78	-88				
225	+720	+420	+340	+300	+260	+280	+300	+96	+106	+120	+80	+90	+70	+80	+94	+124	+220	+4	+10	-6	0	± 33	± 46	+5	+13	-8	0	-14	-28	-38	-48	-58	-68	-78	-88				
250	+760	+440	+360	+320	+280	+300	+320	+101	+111	+125	+85	+95	+75	+85	+99	+129	+230	+4	+10	-6	0	± 36	± 50	+5	+13	-8	0	-14	-28	-38	-48	-58	-68	-78	-88				
280	+800	+480	+400	+360	+320	+340	+360	+106	+116	+130	+90	+100	+80	+90	+104	+134	+240	+4	+10	-6	0	± 39	± 54	+5	+13	-8	0	-14	-28	-38	-48	-58	-68	-78	-88				
315	+840	+500	+420	+380	+340	+360	+380	+111	+121	+135	+95	+105	+85	+95	+109	+139	+250	+4	+10	-6	0	± 42	± 58	+5	+13	-8	0	-14	-28	-38	-48	-58	-68	-78	-88				
350	+880	+540	+460	+420	+380	+400	+420	+116	+126	+140	+100	+110	+90	+100	+114	+144	+260	+4	+10	-6	0	± 45	± 62	+5	+13	-8	0	-14	-28	-38	-48	-58	-68	-78	-88				
400	+920	+580	+500	+460	+420	+440	+460	+121	+131	+145	+105	+115	+95	+105	+119	+149	+270	+4	+10	-6	0	± 48	± 66	+5	+13	-8	0	-14	-28	-38	-48	-58	-68	-78	-88				
450	+960	+600	+520	+480	+440	+460	+480	+126	+136	+150	+110	+120	+100	+110	+124	+154	+280	+4	+10	-6	0	± 51	± 70	+5	+13	-8	0	-14	-28	-38	-48	-58	-68	-78	-88				

Note: This table shows that the upper figures are the upper deviation and the lower figures are the lower deviation.



TOLERANCES OF COMMONLY SHAFT DOLE FITS EXCERPT FROM JIS B 0401

Deviations of shafts to be used in commonly used fits

Basic size step (mm)	Tolerance zone class of shaft																				Unit: μm															
	Over	or less	b9	c9	d8	d9	e7	e8	e9	f6	f7	f8	f9	g5	g6	h5	h6	h7	h8	hg	js5	js6	js7	k5	k6	m5	m6	n5*	n6	p6	r6	s6	t6	u6	x6	
3	-	-140	-60	-20	-14	-14	-14	-14	-6	-6	-6	-6	-2	-2	0	0	0	0	0	0	± 2	± 3	± 5	0	0	+2	+8	+8	+10	+12	+16	+20	+24	+26	+26	
3	3	-165	-85	-34	-20	-12	-10	-10	-4	-4	-4	-4	-4	-4	0	0	0	0	0	-25	± 3	± 4	± 6	+6	+9	+9	+12	+13	+16	+20	+23	+27	+31	+36	+36	
6	6	-170	-100	-48	-30	-20	-10	-10	-8	-12	-22	-28	-4	-12	0	0	0	0	0	-30	± 4	± 5	± 6	+1	+1	+4	+4	+8	+8	+12	+15	+19	+23	+28	+32	+43
10	10	-186	-116	-62	-40	-25	-13	-13	-5	-5	-13	-13	-5	-5	0	0	0	0	0	-36	± 4.5	± 5	± 7	+7	+10	+12	+15	+16	+19	+24	+28	+32	+37	+43	+43	
14	14	-193	-138	-77	-50	-32	-16	-16	-8	-8	-16	-16	-6	-6	0	0	0	0	0	-43	± 4	± 5.5	± 9	+9	+12	+15	+18	+20	+23	+29	+34	+39	+44	+40	+51	
18	18	-212	-162	-98	-65	-40	-20	-20	-9	-9	-20	-20	-7	-7	0	0	0	0	0	-52	± 4.5	± 6.5	± 10	+11	+15	+17	+21	+24	+28	+35	+41	+48	+54	+67	+54	
24	24	-242	-192	-124	-80	-50	-25	-25	-11	-11	-25	-25	-9	-9	0	0	0	0	0	-62	± 5.5	± 8	± 12	+13	+18	+20	+25	+28	+33	+42	+50	+59	+66	+87	+87	
30	30	-264	-214	-140	-100	-60	-30	-30	-13	-13	-30	-30	-10	-10	0	0	0	0	0	-74	± 6.5	± 9.5	± 15	+15	+21	+24	+30	+33	+39	+51	+60	+72	+85	+106	+106	
40	40	-284	-234	-160	-120	-80	-40	-40	-15	-15	-40	-40	-10	-10	0	0	0	0	0	-87	± 7.5	± 11	± 17	+18	+25	+28	+35	+38	+45	+59	+71	+91	+124	+124	-	
50	50	-307	-257	-174	-134	-94	-54	-54	-19	-19	-54	-54	-12	-12	0	0	0	0	0	-97	± 8.5	± 12.5	± 20	+21	+28	+33	+40	+43	+52	+68	+90	+125	+159	+159	-	
65	65	-327	-277	-194	-154	-114	-74	-74	-25	-25	-74	-74	-14	-14	0	0	0	0	0	-100	± 9	± 14.5	± 23	+23	+33	+40	+46	+52	+68	+90	+125	+159	+159	-		
80	80	-355	-305	-214	-174	-134	-94	-94	-31	-31	-94	-94	-15	-15	0	0	0	0	0	-110	± 10	± 16	± 26	+27	+36	+43	+52	+59	+79	+109	+159	+159	-			
100	100	-380	-330	-240	-200	-160	-120	-120	-39	-39	-120	-120	-17	-17	0	0	0	0	0	-120	± 11.5	± 18	± 28	+29	+36	+43	+52	+60	+79	+109	+159	+159	-			
120	120	-410	-360	-270	-230	-190	-150	-150	-49	-49	-150	-150	-21	-21	0	0	0	0	0	-130	± 12.5	± 20	± 31	+32	+40	+47	+56	+66	+96	+136	+176	+176	-			
140	140	-440	-390	-300	-260	-220	-180	-180	-61	-61	-180	-180	-25	-25	0	0	0	0	0	-140	± 14.5	± 23	± 34	+34	+42	+49	+58	+69	+99	+139	+179	+179	-			
160	160	-470	-420	-330	-290	-250	-210	-210	-75	-75	-210	-210	-31	-31	0	0	0	0	0	-150	± 16	± 26	± 37	+37	+45	+52	+61	+72	+102	+142	+182	+182	-			
180	180	-500	-450	-360	-320	-280	-240	-240	-89	-89	-240	-240	-37	-37	0	0	0	0	0	-160	± 16.5	± 27	± 38	+38	+46	+53	+62	+73	+103	+143	+183	+183	-			
200	200	-530	-480	-390	-350	-310	-270	-270	-105	-105	-270	-270	-45	-45	0	0	0	0	0	-170	± 18	± 28	± 39	+39	+47	+54	+63	+74	+104	+144	+184	+184	-			
225	225	-560	-510	-420	-380	-340	-300	-300	-121	-121	-300	-300	-53	-53	0	0	0	0	0	-180	± 19	± 29	± 40	+40	+48	+55	+64	+75	+105	+145	+185	+185	-			
250	250	-590	-540	-450	-410	-370	-330	-330	-137	-137	-330	-330	-61	-61	0	0	0	0	0	-190	± 20	± 30	± 41	+41	+49	+56	+65	+76	+106	+146	+186	+186	-			
280	280	-620	-570	-480	-440	-400	-360	-360	-153	-153	-360	-360	-71	-71	0	0	0	0	0	-200	± 21	± 31	± 42	+42	+50	+57	+66	+77	+107	+147	+187	+187	-			
315	315	-650	-600	-510	-470	-430	-390	-390	-169	-169	-390	-390	-81	-81	0	0	0	0	0	-210	± 22	± 32	± 43	+43	+51	+58	+67	+78	+108	+148	+188	+188	-			
355	355	-680	-630	-540	-500	-460	-420	-420	-185	-185	-420	-420	-91	-91	0	0	0	0	0	-220	± 23	± 33	± 44	+44	+52	+59	+68	+79	+109	+149	+189	+189	-			
400	400	-710	-660	-570	-530	-490	-450	-450	-201	-201	-450	-450	-101	-101	0	0	0	0	0	-230	± 24	± 34	± 45	+45	+53	+60	+69	+80	+110	+150	+190	+190	-			
450	450	-740	-690	-600	-560	-520	-480	-480	-217	-217	-480	-480	-111	-111	0	0	0	0	0	-240	± 25	± 35	± 46	+46	+54	+61	+70	+81	+111	+151	+191	+191	-			
500	500	-770	-720	-630	-590	-550	-510	-510	-233	-233	-510	-510	-121	-121	0	0	0	0	0	-250	± 26	± 36	± 47	+47	+55	+62	+71	+82	+112	+152	+192	+192	-			

Note: This table shows that the upper figures are the upper deviation and the lower figures are the lower deviation.