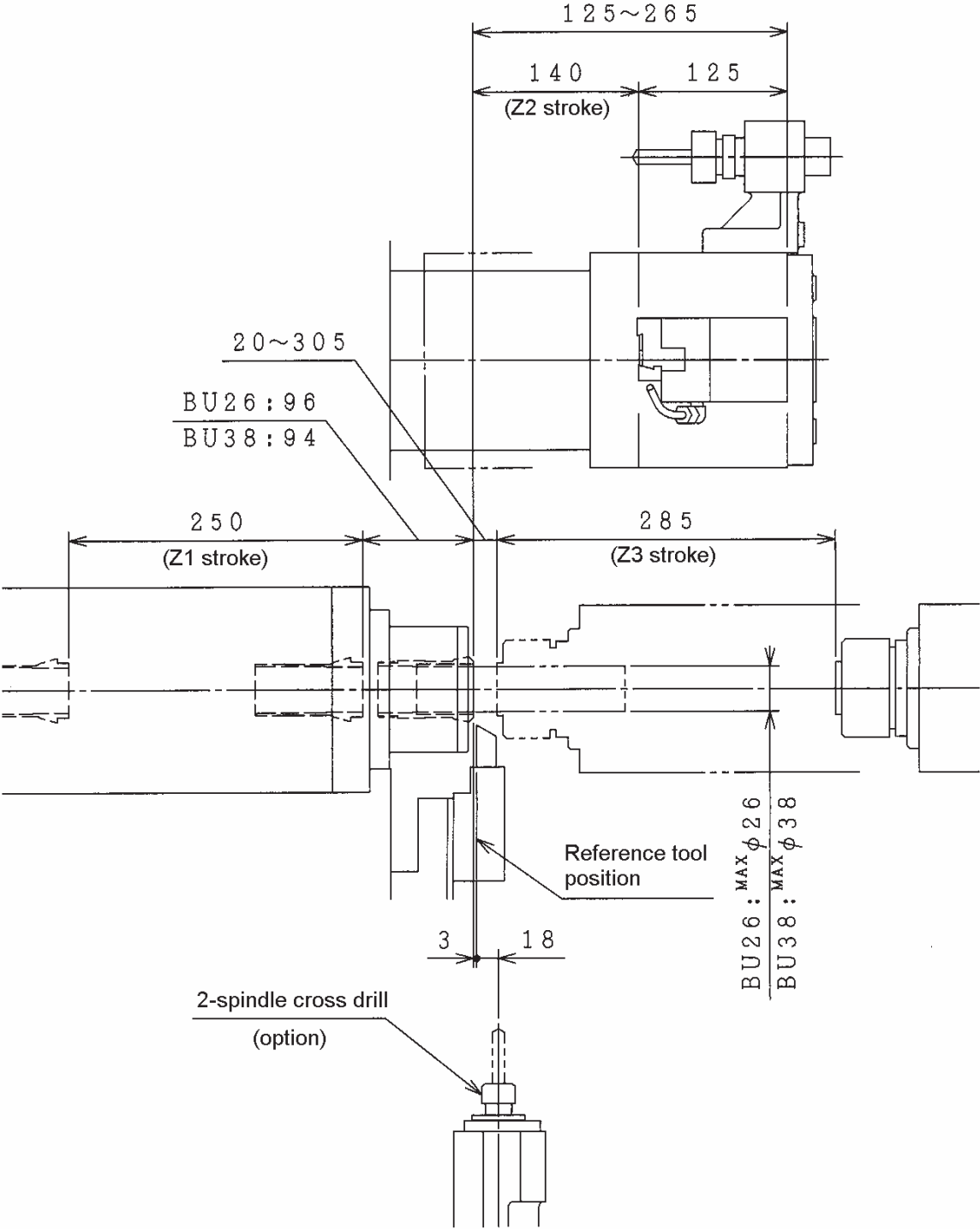
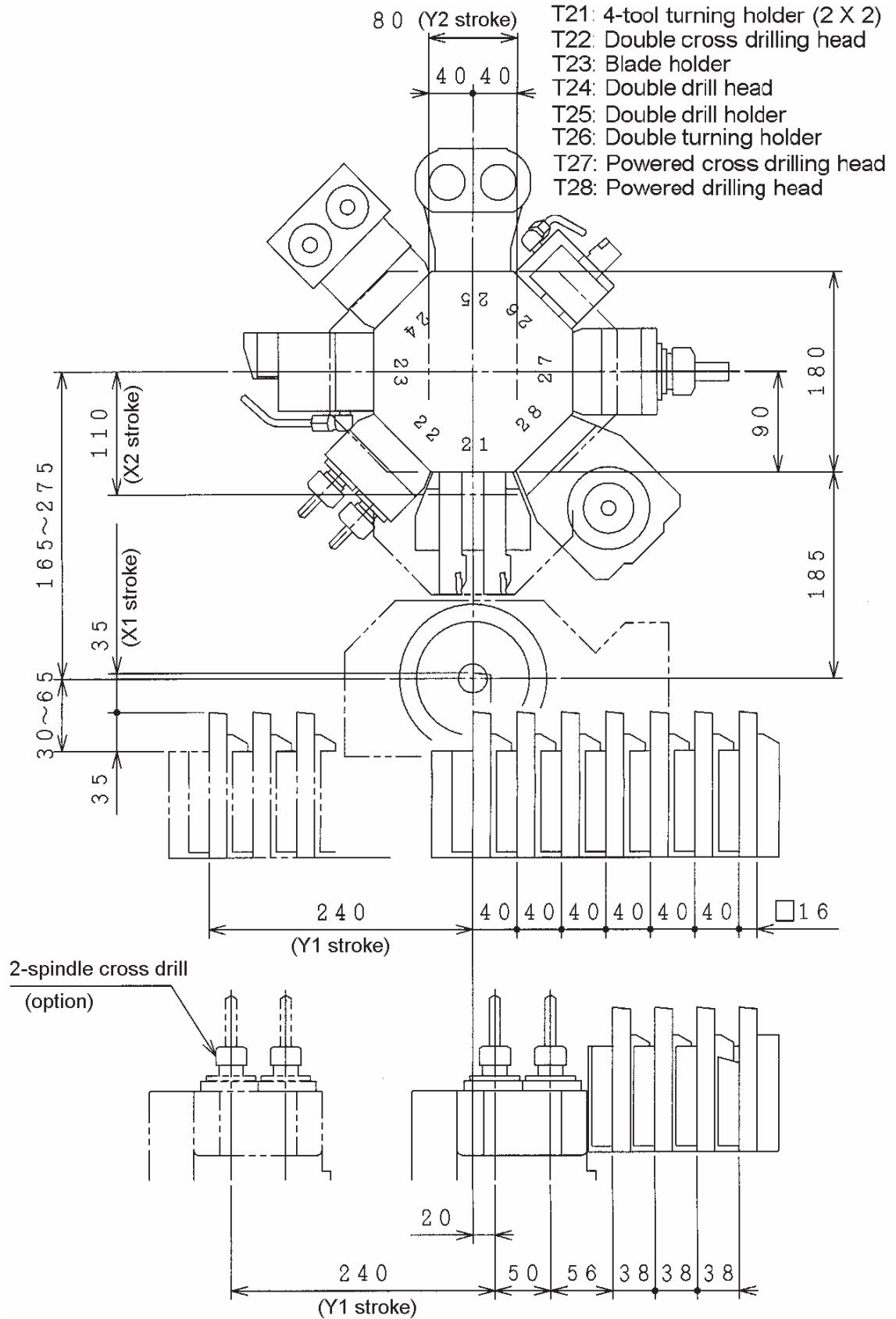


2.2 Tooling Zone





## 2.3 Tooling System

In this section an overview of holders and rotary tools, tool selection guidelines and machining examples are described. The following symbols show whether applicable or not for the machine type.



Indicates a holder can be used on BU26/38-S type machine

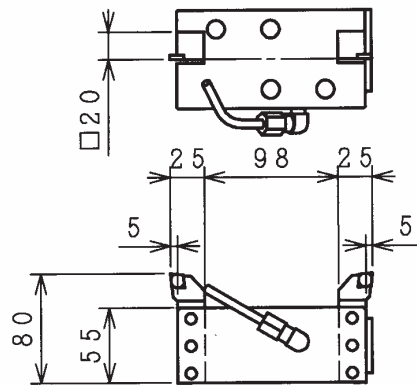


Indicates a holder can be used on BU26/38-SY type machine

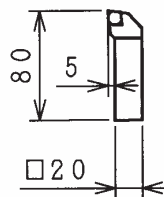


Indicates a holder cannot be used on BU26/38-S type machine

### (1) Double turning holder (3233-H010)



#### 1) OD turning-1



#### 2) OD turning-2 (Included square tool: Option)

3231-Y211 (Square tool holder): for main spindle

3233-Y213 (Square tool holder): for main spindle



Tool size: 20mm square

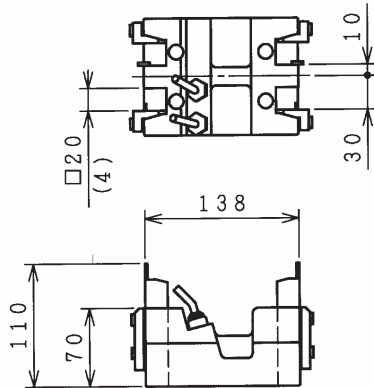
Mountable tool number: 2

(1 for main and 1 for back)

Turning tool for main spindle is right hand.

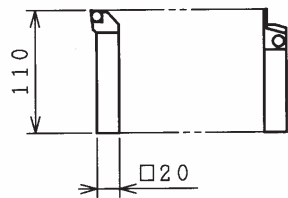
Turning tool for back spindle is left hand.

(2) 4-tool turning holder (3233-H040)



Tool size: 20mm square

Mountable tool number: 4 (2 for main and 2 for back)



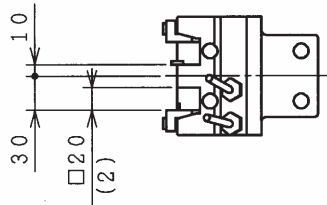
Turning tool for main spindle is right hand.

Turning tool for back spindle is left hand.

(Turning)

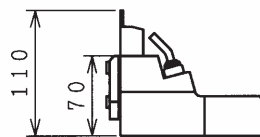
(Grooving)

(3) 2-tool turning holder (3233-H050)



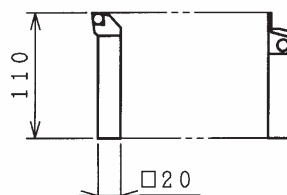
Tool size: 20mm square

Mountable tool number: 2 (2 for main)



OD turning

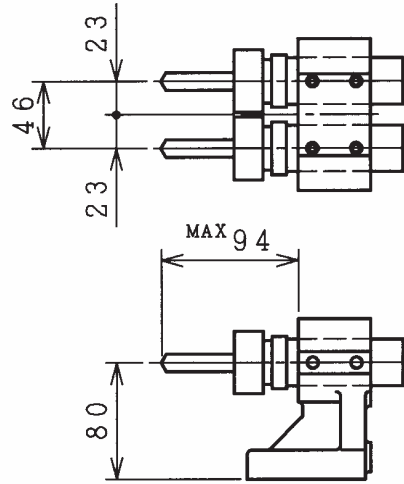
Right hand turning tool



(Turning )

(Grooving)

(4) Double drilling holder (3233-H060)



Maximum holder gripping dia.: Ø32

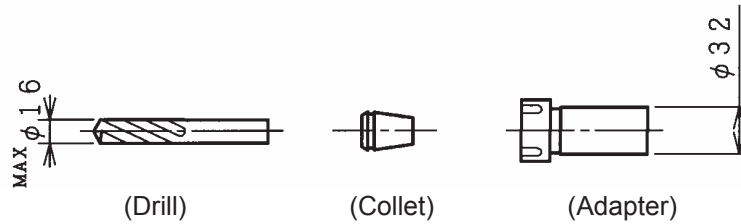
Maximum drilling dia.: Ø16

Number of drills : 2 (fixed)

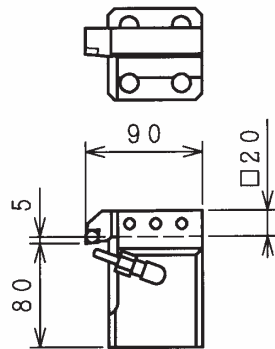
Tool geometric offset value

in the X direction of drill center: X-210.0

Drilling



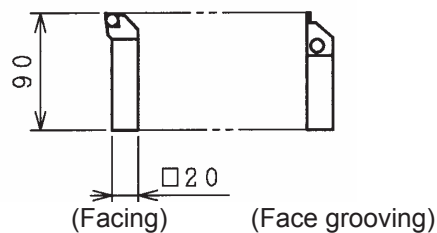
(5) Frontal tool holder (3233-H080)



Tool square size: 20

Holder for face grooving

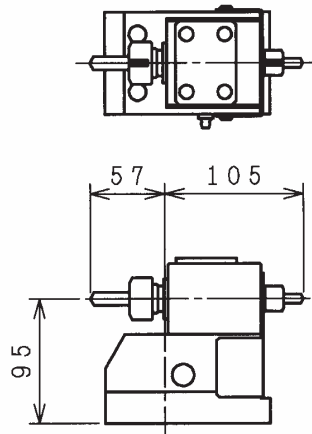
Facing



(6) Drilling head (3233-Y310)



(back)



Maximum shank diameter:  $\varnothing 10$  (main),  $\varnothing 7$

Applicable collets:

ESX16 (Schaublin) or equivalent (main),

ESX12 (Schaublin) or equivalent (back)

Number of drills: 2 (1 for main and 1 for back)

Drill spindle speed:  $4400 \text{ min}^{-1}$  max.

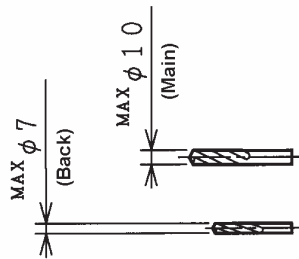
Gear ratio: Drill spindle /driving shaft =

0.82/1.0 (27/33)

Tool geometric offset value

in the X direction of drill center: X-180.0

1) Drilling

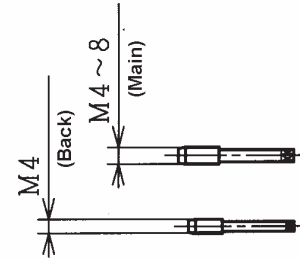


(Drill / End mill)



(Collet)

2) Tapping



(Tap)



(Tap collet)

(7) Cross drilling head (3233-Y320)



Maximum shank diameter:  $\varnothing 10$

Applicable collets:

ESX16 (Schaublin) or equivalent

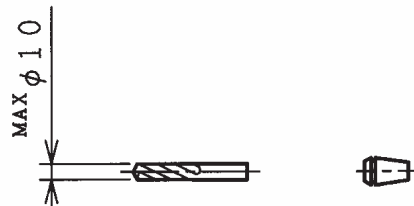
Number of drills: 1 (1 for main)

Drill Spindle speed:  $6500 \text{ min}^{-1}$  max.

Gear ratio: Drill spindle /driving shaft =

1.22 / 1.0 (22/18)

1) Drilling (Cross)

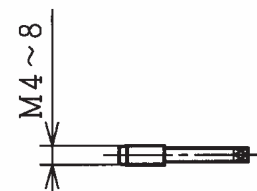


(Drill / End mill)



(Collet)

2) Tapping (Cross)



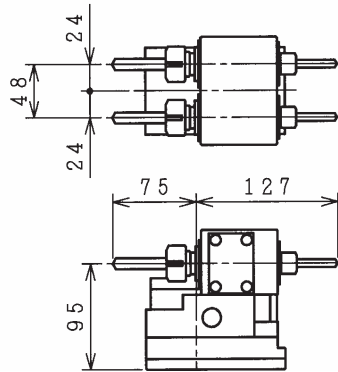
(Tap)



(Tap collet)

(8) Double drilling head (3233-Y330)

(back)



Maximum shank diameter:  $\varnothing 10$  (main),  $\varnothing 7$

Applicable collets:

ESX16 (Schaublin) or equivalent (main),

ESX12 (Schaublin) or equivalent (back)

Number of drills: 4 (2 for main and 2 for back)

Drill Spindle speed:  $5000 \text{ min}^{-1}$  max.

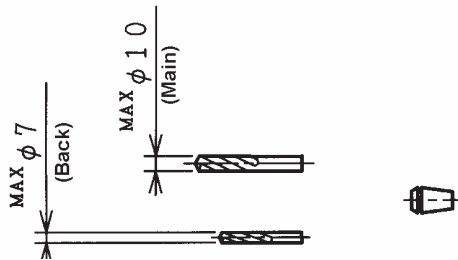
Gear ratio: Drill spindle /driving shaft =

$$0.93 / 1.0 (27/29)$$

Tool geometric offset value

in the X direction of drill center : X-180.0

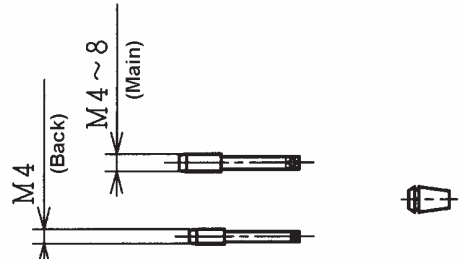
1) Drilling



(Drill / End mill)

(Collet)

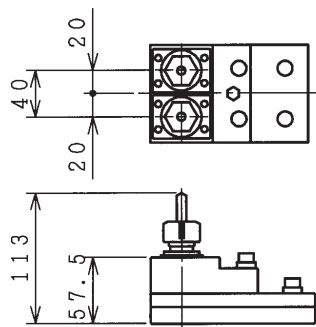
2) Tapping



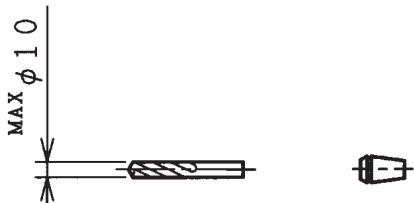
(Tap)

(Tap collet)

(9) Double cross drilling head (3233-Y340)



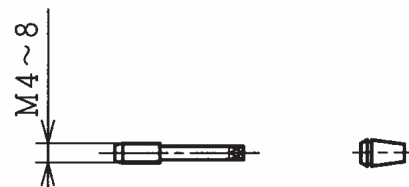
1) Drilling (Cross)



(Drill / End mill)

(Collet)

2) Tapping (Cross)



(Tap)

(Tap collet)



Maximum shank diameter:  $\varnothing 10$

Applicable collets:

ESX16 (Schaublin) or equivalent

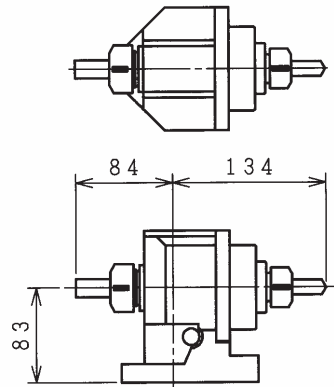
Number of drills: 2 (2 for main)

Drill Spindle speed:  $6200 \text{ min}^{-1}$  max.

Gear ratio: Drill spindle /driving shaft =

$$1.16 / 1.0 (22/19)$$

(10) Powered drilling head (3233-Y350)



Maximum shank diameter:  $\varnothing 16$  (main),  $\varnothing 13$ (back)

Applicable collets:

ESX25 (Schaublin) or equivalent (main),

ESX20 (Schaublin) or equivalent (back)

Number of drills: 2 (1 for main and 1 for back)

Drill Spindle speed:  $1800 \text{ min}^{-1}$  max.

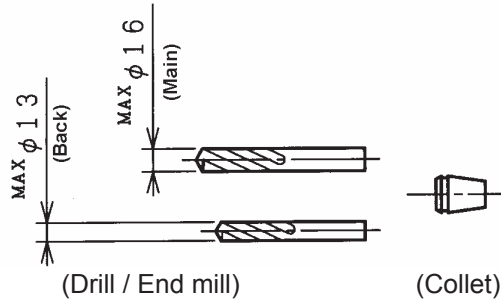
Gear ratio: Drill spindle/driving shaft =

0.33 / 1.0 (1/3)

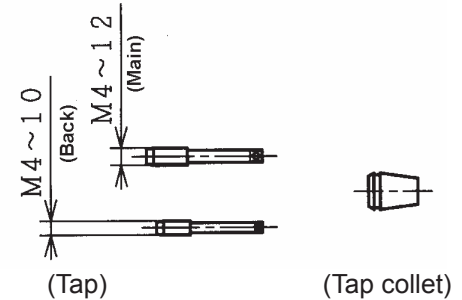
Tool geometric offset value

in the X direction of drill center: X-204.0

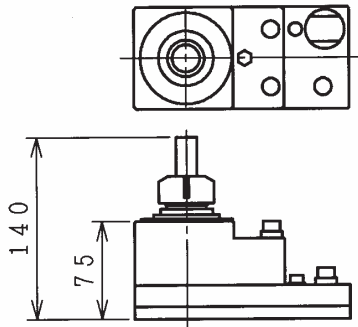
1) Drilling



2) Tapping



(11) Powered cross drill (3233-Y360)



Maximum shank diameter:  $\varnothing 16$

Applicable collets:

ESX25 (Schaublin) or equivalent

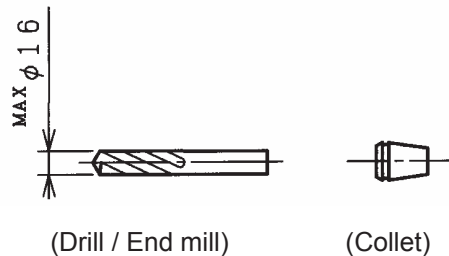
Number of drills: 1 (1 for main)

Drill Spindle speed:  $1800 \text{ min}^{-1}$  max.

Gear ratio: Drill spindle/driving shaft =

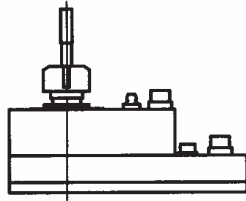
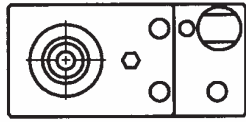
0.33 / 1.0 (1/3)

Drilling (Cross)

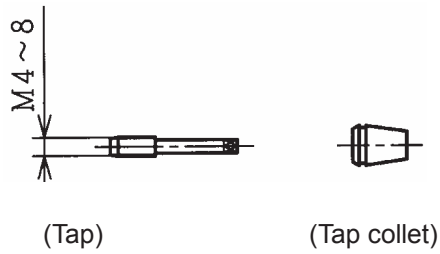




(12) Powered cross tap (3233-Y370)



Tapping (Cross)



Maximum shank diameter:  $\text{Ø}6.8$  (M8)

Applicable collets: ET-1-16 (PCM)

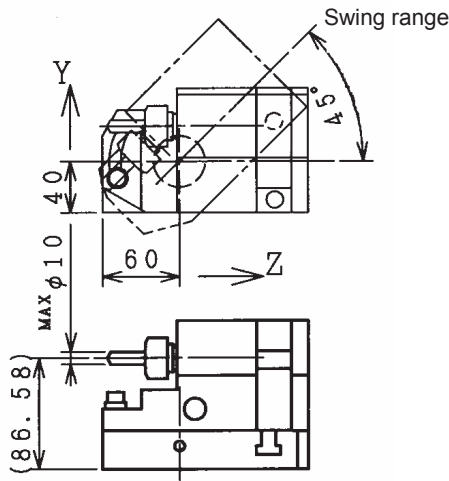
Number of taps: 1 (1 for main)

Drill Spindle speed:  $1800 \text{ min}^{-1}$  max.

Gear ratio: Tap spindle/driving shaft =

$0.33 / 1.0$  (1/3)

(13) Angular drilling head (3233-Y380)



Maximum shank diameter: Ø10 (main)

Applicable collets:

ESX16 (Schaublin) or equivalent (main),

AR16 (ALPS)

ER16 (REGO-FIX)

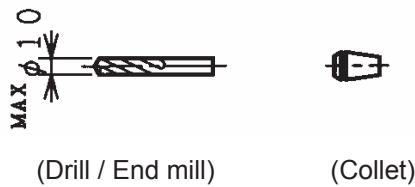
Drill spindle speed: 5400 min<sup>-1</sup> max.

Swing range of drill spindle: 45°

Gear ratio: Drill spindle/driving shaft = 1 / 1

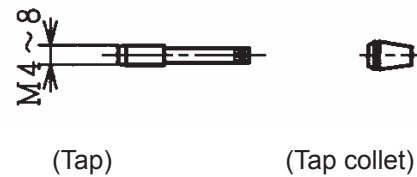
1) Drilling

2) Tapping



(Drill / End mill)

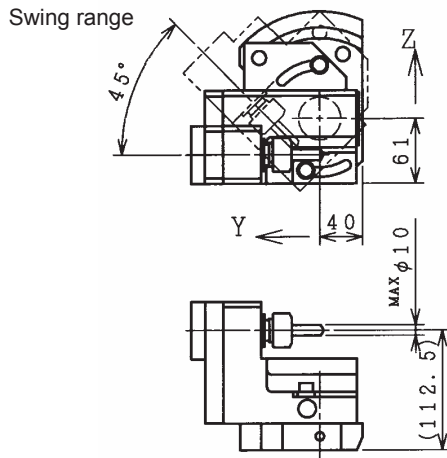
(Collet)



(Tap)

(Tap collet)

(14) Angular drilling head (3233-Y390)



Maximum shank diameter: Ø10 (main)

Applicable collets:

ESX16 (Schaublin) or equivalent (main),

AR16(ALPS)

ER16(REGO-FIX)

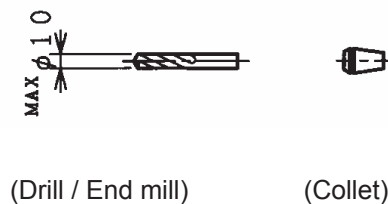
Drill spindle speed: 5400 min<sup>-1</sup> max.

Swing range of tool spindle: 45°

Gear ratio: Drill spindle/driving shaft = 1 / 1

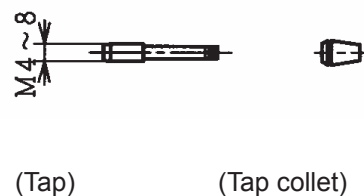
1) Drilling (Cross)

2) Tapping(Cross)



(Drill / End mill)

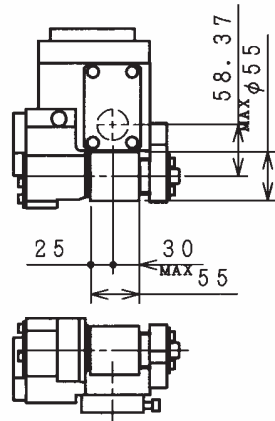
(Collet)



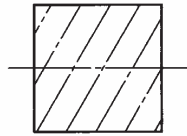
(Tap)

(Tap collet)

(15) Hobbing head (3233-Y400)



Hobbing



(Hob)



Hob dimension (ID × OD × length)

∅ 22 × ∅ 55 × 55 (MAX)

Max. machining module : 1.75

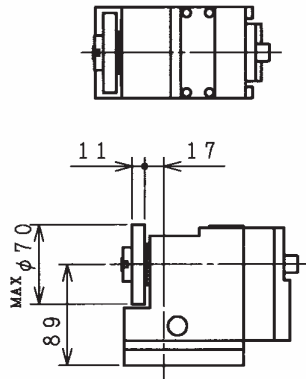
Max. angle of inclination : ±2°

Drill spindle speed: 1500 min<sup>-1</sup> max.

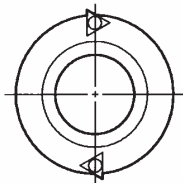
Gear ratio: Drill spindle/driving shaft =

0.5 / 1.0 (1/2)

(16) Polygon milling head (3233-Y410)



Polygon milling



(Polygon cutter)



Tap spindle dimension (OD × width)

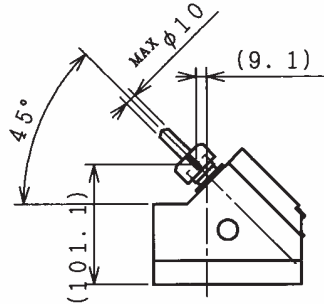
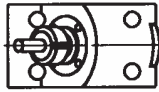
∅ 70 × 11 (MAX)

Drill spindle speed: 3000 min<sup>-1</sup> max.

Gear ratio: Drill spindle/driving shaft =

0.55 / 1

(17) 45° cross drilling head (3233-Y420)



Maximum shank diameter: Ø10

Applicable collets:

ESX16 (Schaublin)

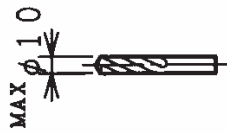
AR16 (ALPS)

ER16 (REGO-FIX) or equivalent

Drill spindle speed: 5400 min<sup>-1</sup> max.

Gear ratio: Drill spindle/driving shaft = 1 / 1

1) Drilling



(Drill / End mill)



(Collet)

2) Tapping

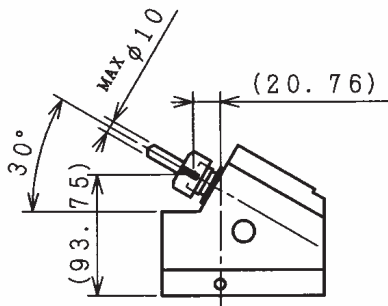
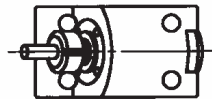


(Tap)



(Tap collet)

(18) 30° cross drilling head (3233-Y430)



Maximum shank diameter: Ø10

Applicable collets:

ESX16 (Schaublin)

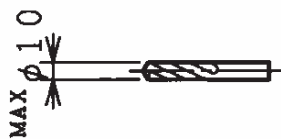
AR16 (ALPS)

ER16 (REGO-FIX) or equivalent

Drill spindle speed: 5400 min<sup>-1</sup> max.

Gear ratio: Drill spindle/driving shaft = 1 / 1

1) Drilling



(Drill / End mill)



(Collet)

2) Tapping

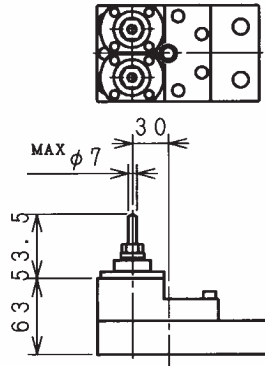


(Tap)



(Tap collet)

(19) High-speed cross drilling head (3233-Y440)



Maximum shank diameter:  $\varnothing 7$

Applicable collets:

AR11 (ALPS)

ER11 (REGO-FIX)

Drill spindle speed:  $10800 \text{ min}^{-1}$  max.

Gear ratio: Drill spindle/driving shaft=2 / 1

1) Drilling

2) Tapping



(Drill / End mill)

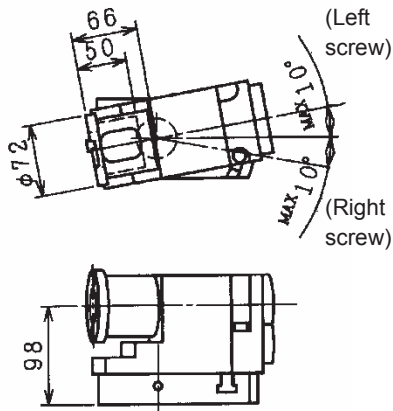
(Collet)



(Tap)

(Tap collet)

(20) Thread whirling head (3233-Y480)



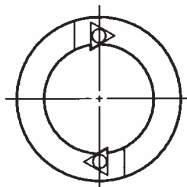
Max. machining dia.:  $\varnothing 30$

Max. angle of inclination :  $10^\circ$

Drill spindle speed:  $5400 \text{ min}^{-1}$  max.

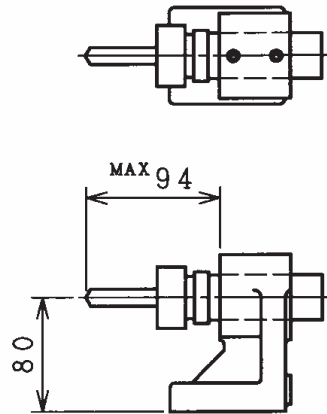
Gear ratio: Drill spindle/driving shaft =1 / 1

Threading



(Whirling cutter)

(21) Drill holder (3231-H010)



Maximum holder gripping dia.: Ø32

Max. drilling dia.: Ø12

Number of drills: 1 (fixed)

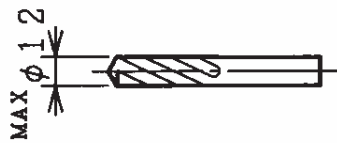
Tool geometric offset value

in the X direction of drill center:

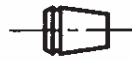
T1: X-150.0

T2: X-210.0

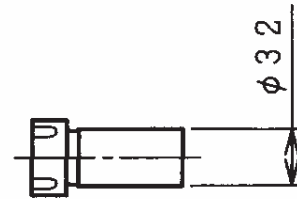
Drilling



(Drill)

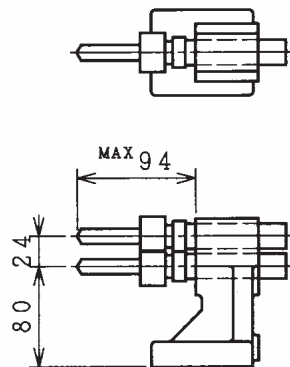


(Collet)



(Adapter)

(22) 2-drill holder (3231-H020)



Drilling

Max. holder gripping dia.: Ø20

Max. drilling dia. of drill : Ø12

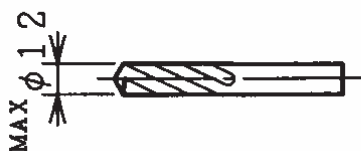
Number of drills : 2 (fixed)

Tool geometric offset value

in the X direction of drill center

T1 { Outer tool : X-102.0  
Inner tool : X-150.0

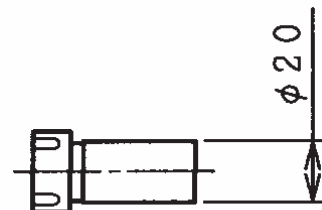
T2 { Outer tool : X-162.0  
Inner tool : X-210.0



(Drill)

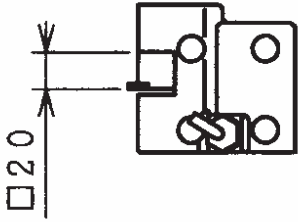


(Collet)

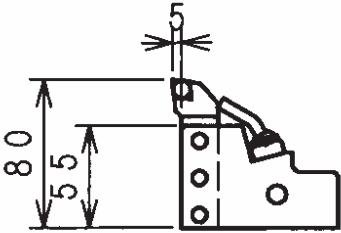


(Adapter)

(23) Tuning holder (3231-H030)

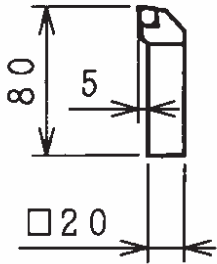


Tool size: 20mm square  
Mountable tool number: 1 (1 for main)



1) OD turning-1

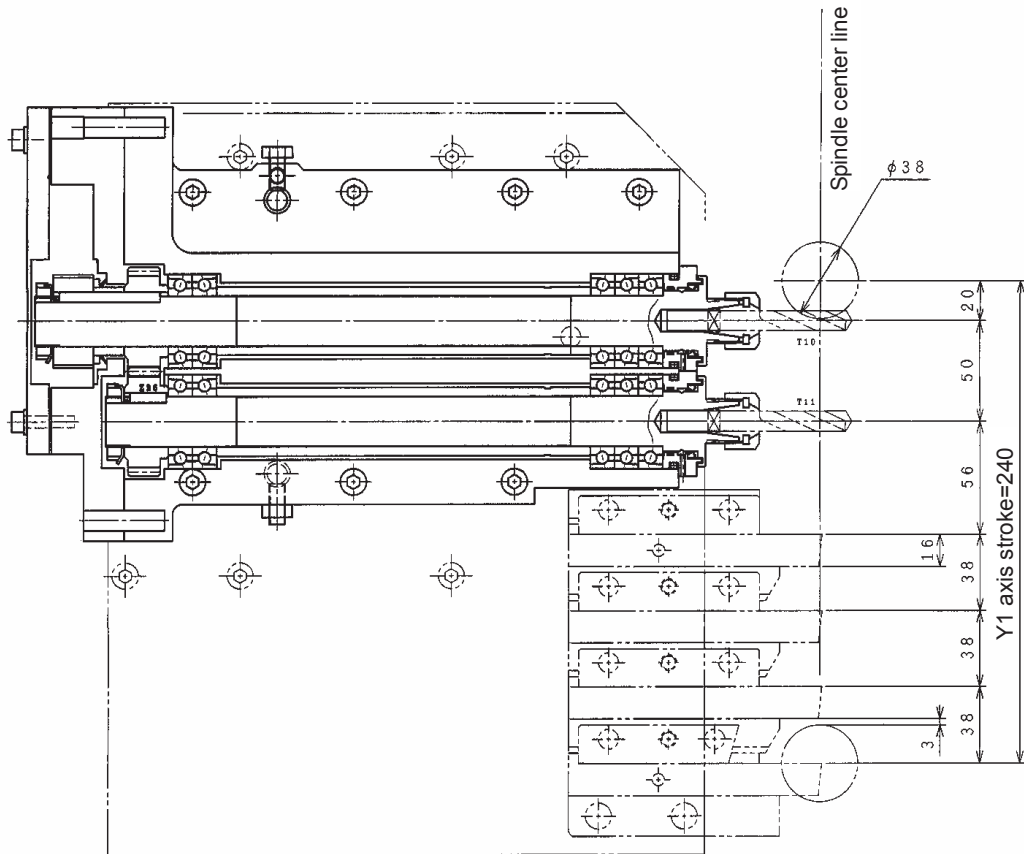
Turning tool for main spindle is right hand.  
Turning tool for back spindle is left hand.



2) OD turning-2 (Included square tool: Option)

- 3231-Y211 (Square tool holder): for main spindle
- 3233-Y213 (Square tool holder): for main spindle

(24) 2 spindle cross drill (3234-Y331)



Specifications	
X1 axis stroke	35
Y1 axis stroke	240
Maximum holder gripping dia.	Ø10
Max. drill speed	5,400min <sup>-1</sup>
Pulley ratio	1:1.8(speed ratio)
Max. motor speed	3,000min <sup>-1</sup>
Motor output	0.9kW
Rated torque	3Nm
Max. theoretical torque	27Nm
Applicable collet	AR16····· (ALPS) ESX16····· (Schaublin) ER16····· (REGO-FIX)