

SHOPMASTER

PRO-LINE DRO TM

DIGITAL READOUT SYSTEM

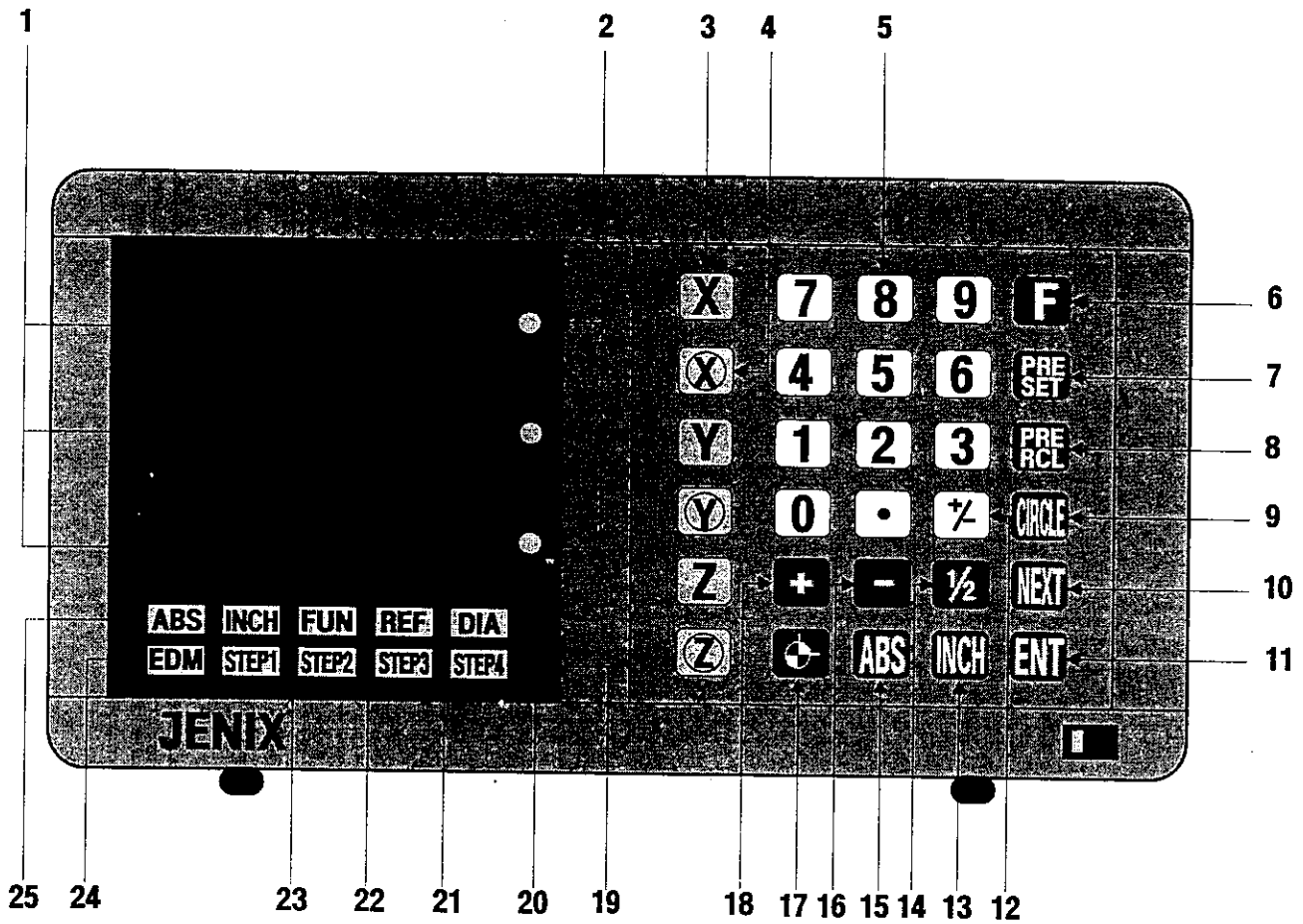
OPERATIONS MANUAL

SHOPMASTER MANUFACTURING INC. 2005

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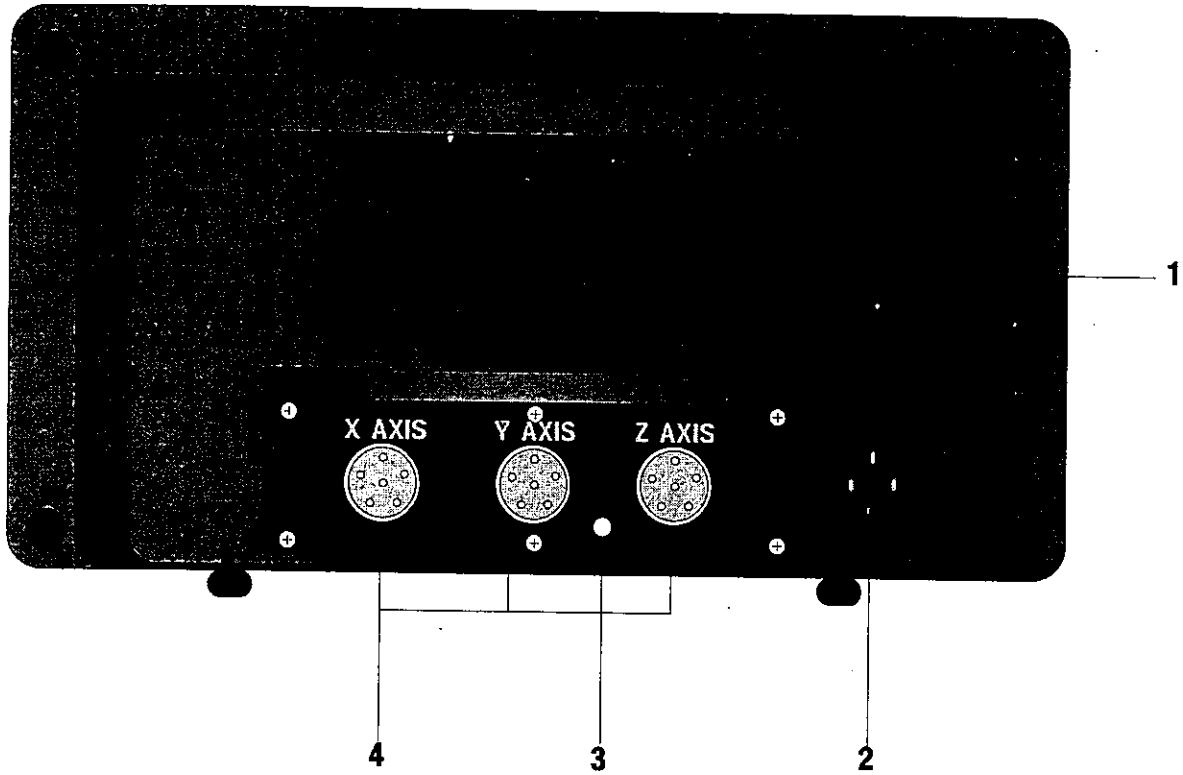
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- 1. Displaying Area
- 2. Axis indication lamp
- 3. Axis selection
- 4. Axis zero key
- 5. Number key
- 6. Function
- 7. Preset
- 8. Preset Recall
- 9. Bolt hole Circle
- 10. Next
- 11. Enter
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- 13. MM/INCH Selection
- 14. Half divide
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- 17. Reference
- 18. Add key
- 19. Step lamps in EDM mode
- 20. DIA/RAD lamp
- 21. Reference lamp
- 22. Function lamp)
- 23. INCH lamp
- 24. EDM lamp
- 25. Absolute Position lamp






1. Warning Label
2. Fuse and Power source
3. Ground Terminal
4. Connectors for Scale

1. Basic Operation







Operate by following sequence:


- ① Select Axis
- ② Select Function to be used
- ③ Input numerals(or value)
- ④ Push "Enter" button

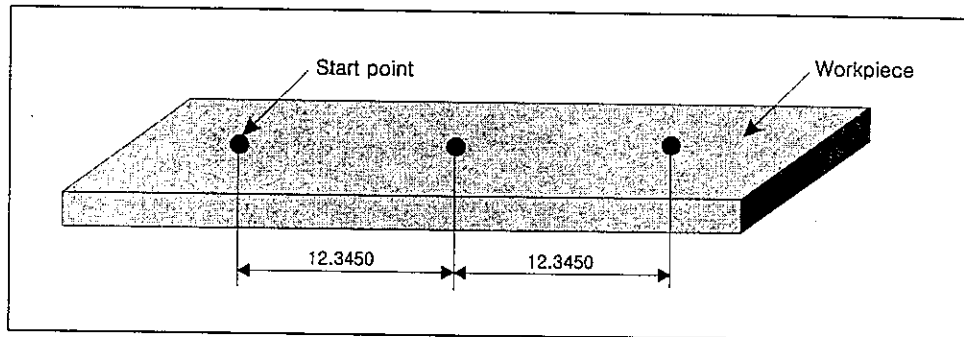
INDICATION		
 Input	 Key operation	 Example

2. How to preset











Use this when you input some numerals and process workpiece all the same length in succession

Key Operation				
				
				

 After inputting 12.3450, and use this value continuously.







<Dwg.1>

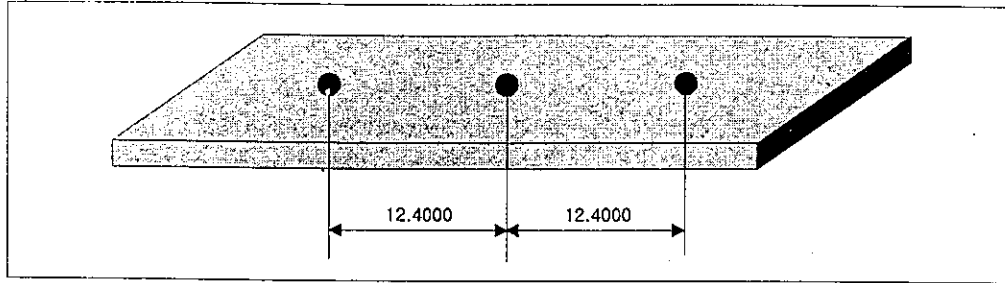
Example									
Input "12.3450"									
        									
	<table border="1"> <tr> <td>X</td> <td>12.3450</td> </tr> <tr> <td>Y</td> <td>00000</td> </tr> <tr> <td>Z</td> <td>00000</td> </tr> <tr> <td></td> <td>INCH</td> </tr> </table>	X	12.3450	Y	00000	Z	00000		INCH
X	12.3450								
Y	00000								
Z	00000								
	INCH								

3. Preset Recall

Use this when you use the value continuously after recalling pre-inputted coordinate.

Key Operation	
	
	

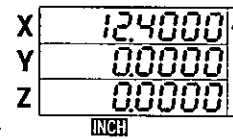
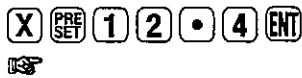
 Boring 3 holes, by the intervals of 12.4000



<Dwg.2>

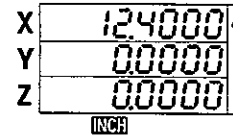
Example

1 Input "12.4000"



2 Move table of machine until X axis displays 0.0000

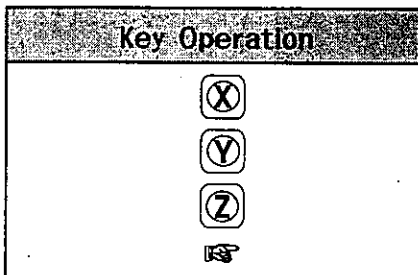
3 Try to recall the inputted value, "12.4000"



※ This function helps you use same values continuously

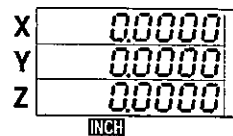
4. Display Zero

To make X, Y and Z axis displaying 0.0000

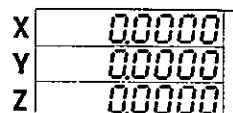


Example

1 To display all axis "0.0000"

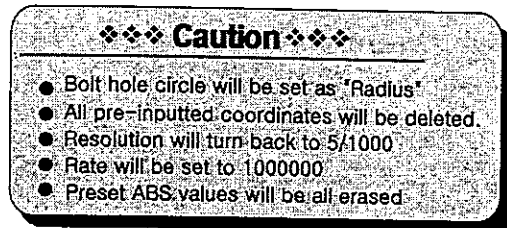
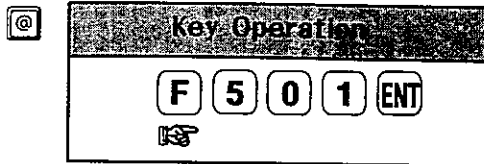


2 To display one axis "0.0000"



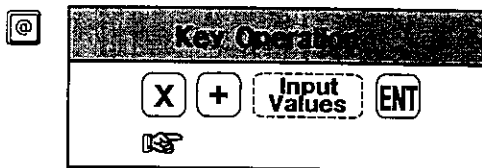
5. Initialization

If initializing is conducted, rate will be reset to 1000000 (means 1.0) which is the same status of shipping at the factory.



6. Addition

To add some value to the present displayed one.



To add 13.0000 to the present displayed 12.3450

Example

Displayed 12.3450

Plus(+) 13.0000

X + 1 3 ENT

Hand icon pointing to the keys.

→

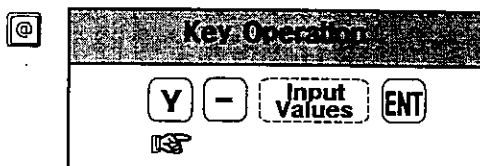
X	12.3450
Y	00000
Z	00000
	INCH

→

X	25.3450
Y	00000
Z	00000
	INCH

7. Subtraction

To deduct some value from the present displayed one.



To deduct 14.0000 from the present displayed 32.7450

Example

Displayed 32.7450

Subtract 14.0000

Y - 1 4 ENT

Hand icon pointing to the keys.

→

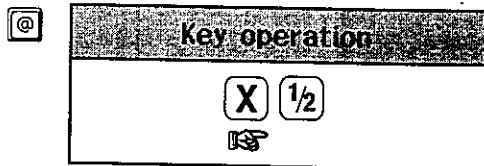
X	00000
Y	32.7450
Z	00000
	INCH

→

X	00000
Y	18.7450
Z	00000
	INCH

8. Dividing into 1/2

To find the middle point of the distance from one point to another, and to process at the point.



Trying to process at the middle point of 12.4000

Example

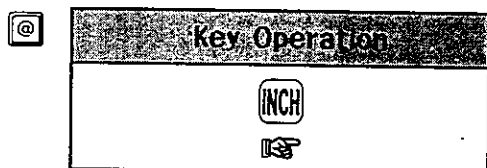
Displaying 12.4000 to which table has been moved

Dividing 12.4000 into 1/2




9. MM/INCH Conversion

To convert the unit of "MM" to "INCH".

- ▶ The status of "INCH" button is in un-pushed (INCH lamp off).
- ▶ By pushing "INCH" button, it is converted into INCH (INCH lamp on).
- ▶ By pushing one more time, it goes back to "MM".

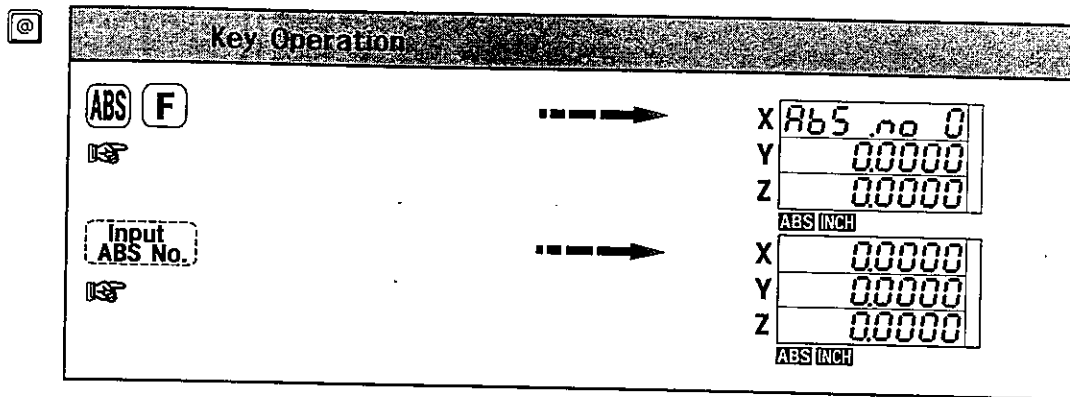


10. ABS/INCR Conversion

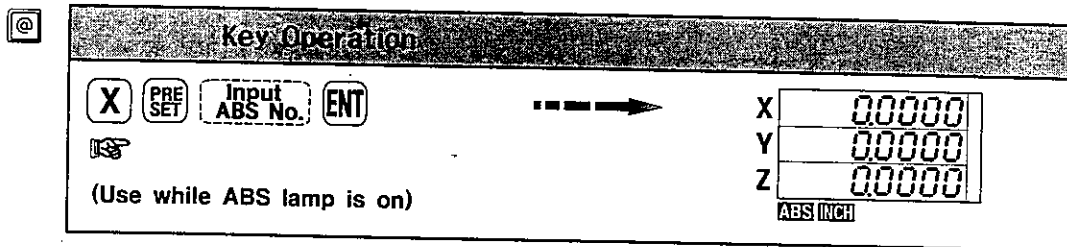
- ▶ Use this when we input the coordinate of a point as an absolute position.
- ▶ Can be saved up to 10 points, available ABS number from 0 to 9.
- ▶ Un-pushed "ABS" button means that the present mode is INCR.
- ▶ By pushing "ABS" button, it is converted to ABS function (ABS lamp on).
- ▶ When you use ABS function, other function keys don't work except for , , .

1) How to input ABS number & Values

(1) How to input ABS number



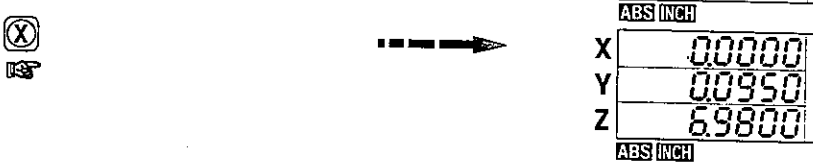
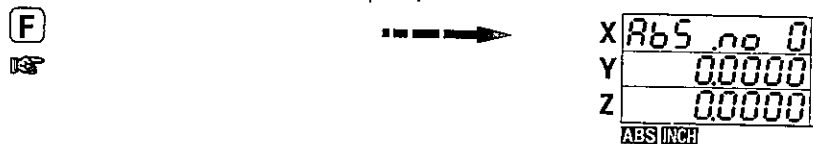
(2) How to input each coordinate



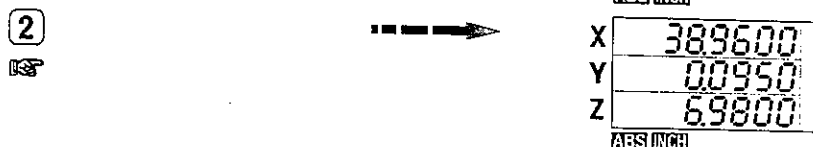
- ①. In ABS No.2, input 0.0000 to X axis
- ②. In ABS No.2, input 15.0000 to X-axis

Example

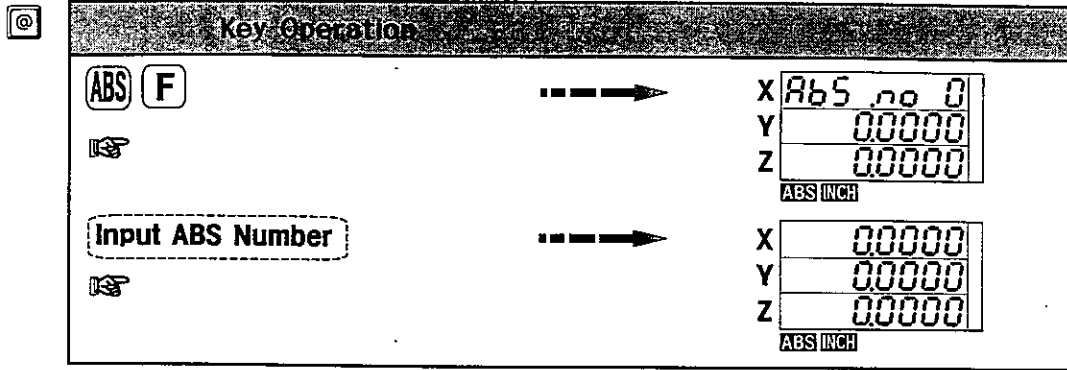
1 Input 0.0000 to X-axis. (ABS lamp on)



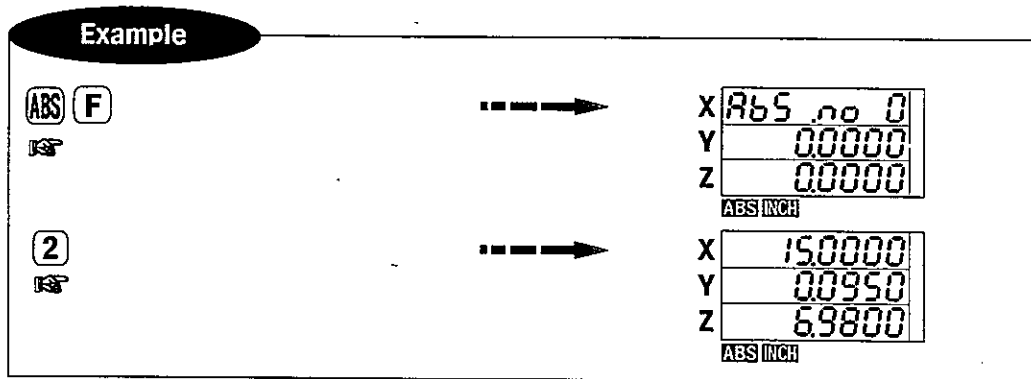
2 Input 15.0000 to A-axis (ABS lamp on)



2) Recalling pre-inputted ABS values



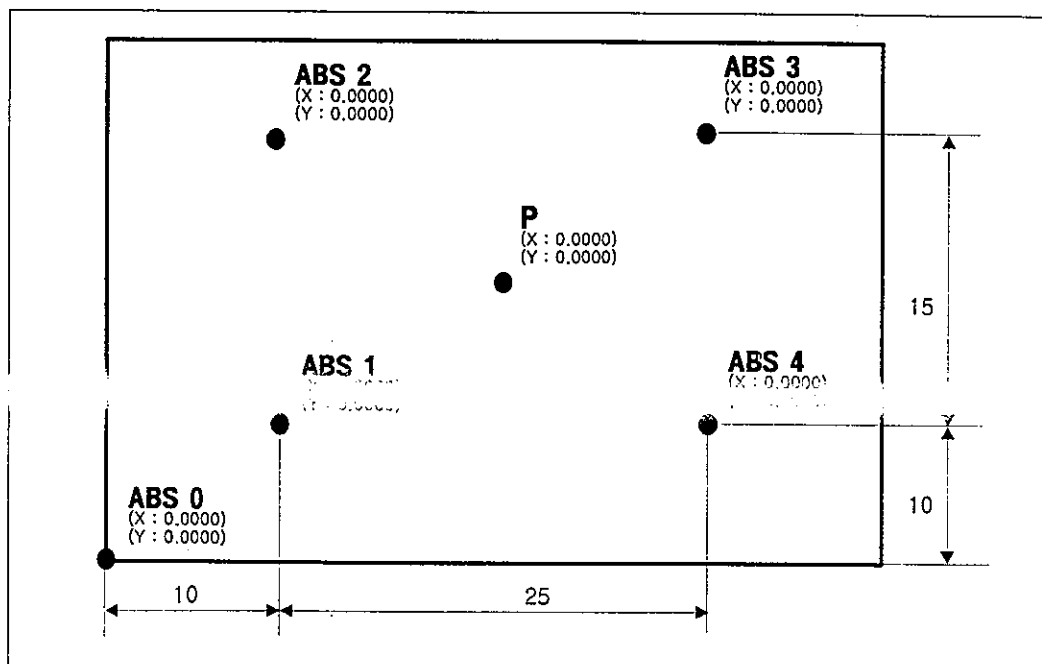
Recalling the X-axis value "15.0000" which is assigned to ABS No.2



3) Absolute Positioning (ABS)

(1) How to set absolute position

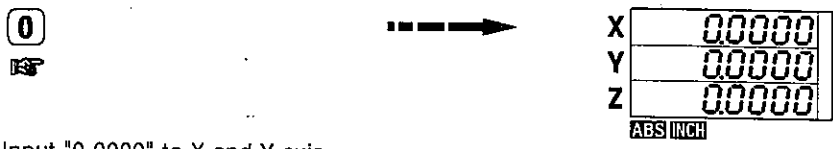
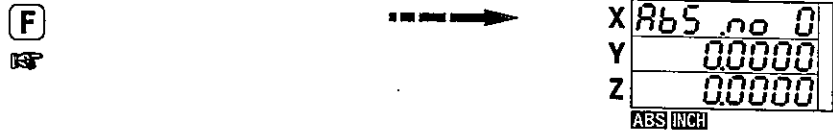
Setting 5 ABS positions



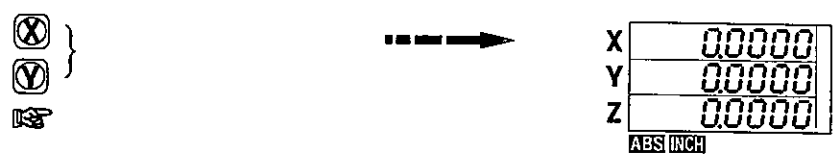
Example

- The sequence to set ABS is as follows:
(The status of ABS lamp should be in "on")

1 Assigning ABS No. 0 (Input "0" while the ABS lamp is on)

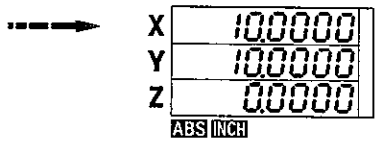


▶ Input "0.0000" to X and Y axis.

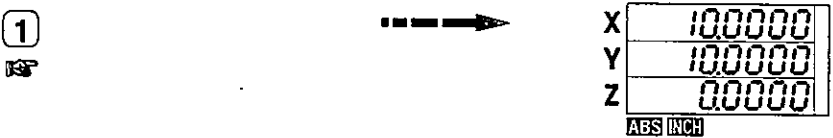
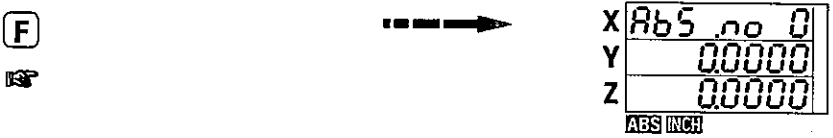


2 Assigning ABS no.1

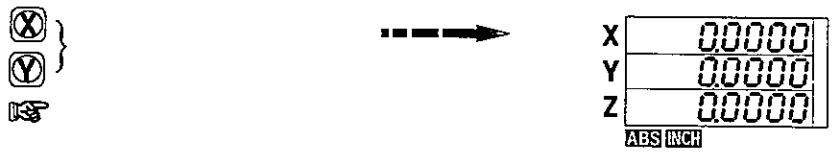
- ▶ Move X and Y table until "10.0000" display on both X and Y area of a counter, and assign it ABS No.1
- Move X, Y table until "10.0000" displays.



▶ Input "F" and "1" while ABS lamp is on.



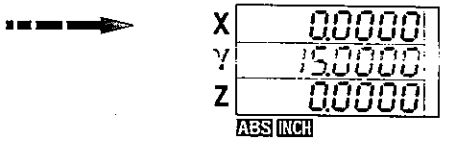
▶ Make the display "0.0000" each by pushing Zero button.



3 Assigning ABS no.2

- ▶ Move Y-axis table until "15.0000" display, and assign it ABS no.2

Move Y-axis table to the value of "15.0000".



Example

▶ Input "F" and "2" while ABS lamp is on.



X	AbS no 1
Y	00000
Z	00000
ABS INCH	



X	00000
Y	150000
Z	00000
ABS INCH	

▶ Input "0.0000" by pushing Zero-set button.



X	00000
Y	00000
Z	00000
ABS INCH	

4 Assigning ABS no. 3

▶ Move X-axis table until "25.0000" displays, and assign it ABS No.3

Move X-axis table until "25.0000" displays.



X	250000
Y	00000
Z	00000
ABS INCH	

▶ Input "F" and "3" while ABS lamp is on.



X	AbS no 2
Y	00000
Z	00000
ABS INCH	



X	250000
Y	00000
Z	00000
ABS INCH	

▶ Input "0.0000" by pushing Zero-set button.



X	00000
Y	00000
Z	00000
ABS INCH	

5 Assigning ABS no. 4

▶ Move Y-axis table until "-15.0000" displays, and assign it ABS No.4.

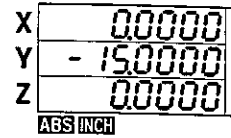
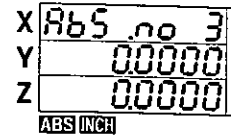
Move Y-axis table until "-15.0000" displays.



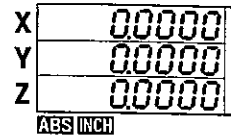
X	00000
Y	-150000
Z	00000
ABS INCH	

Example

▶ Input "F" and "4" while ABS lamp is on.



▶ Input "0.0000" by pushing Zero-set button.



Like upper examples, up to ABS no.10 can be assigned.

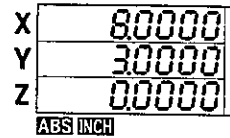
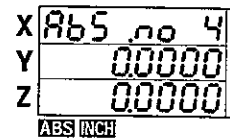
(2) Recalling pre-inputted ABS Number



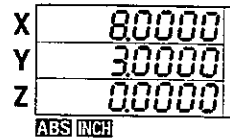
Ex.) <Dwg. 3> Recalling ABS No.1 while the position of a tool is at the "P".
(When ABS lamp is off, position of "P" is random)

Example

▶ Push ABS button (lamp on) and push "F" and "1".



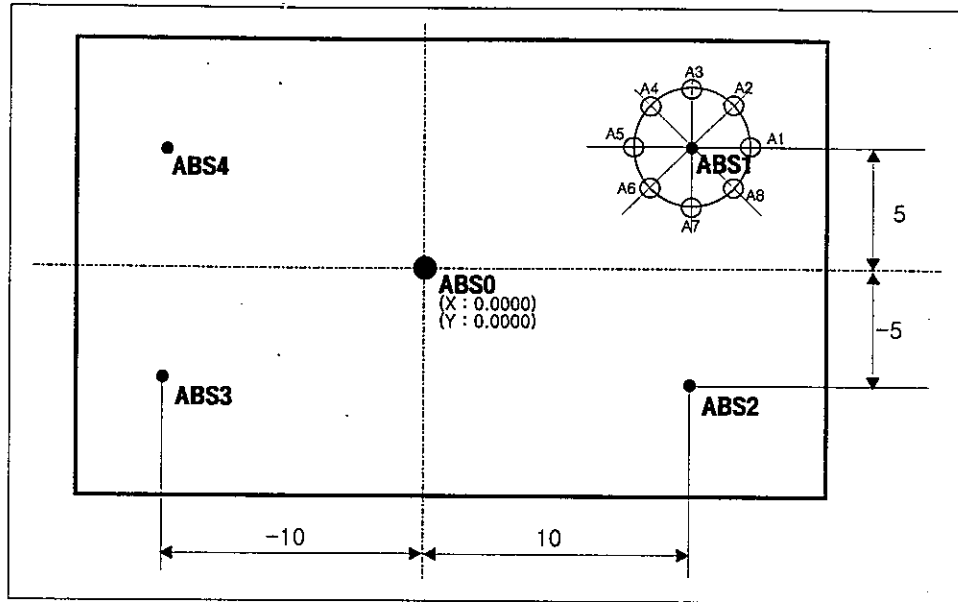
▶ "8.0000" and "3.0000" display each X and Y area.



When you move X and Y-axis until the displays come down to "0.0000", the position of pre-inputted ABS No.1 can be found easily like this. You can recall the rest inputted ABS numbers in this way.

(3) Assigning sub points(ABS1~4) which apart from a central point(ABS0).

Ex.) Sub point ABS1 is another central point for small holes of A1~A8. <Dwg.4>



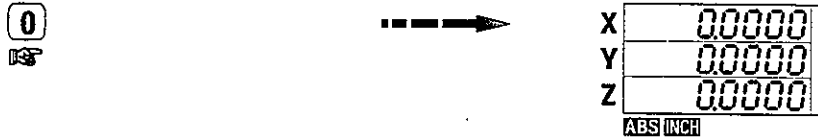
<Dwg.4>

Example

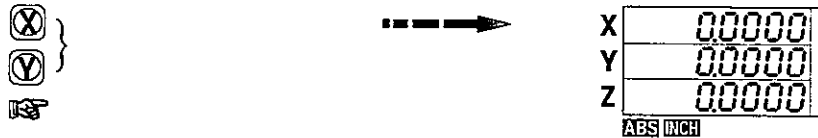
- The followings show the sequence to assign sub points(ABS1~4).
(Only available while ABS lamp is on.)

1 Assigning ABS 0

▶ Input "F" and "0" while ABS lamp is on.

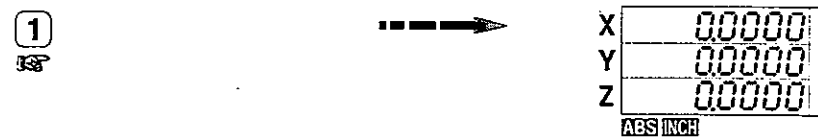
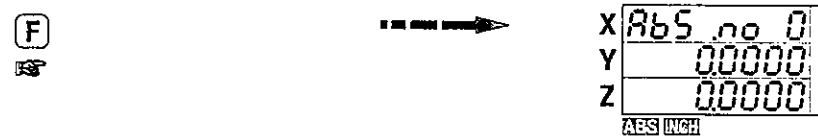


▶ Input "0.0000" to X and Y-axis by using zero-set key.



2 Assigning ABS No 1

▶ Input "F" and "1" while ABS lamp is on.



Example

▶ Input "-10.0000" to X-axis, "-5.0000" to Y-axis.

X **PRE SET** 1 0 +/- **ENT**
 Y **PRE SET** 5 +/- **ENT**




X	- 10.0000
Y	- 5.0000
Z	00000
ABS INCH	

3 Assigning ABS No.2

▶ Input "2" while ABS lamp is on.

F




X	AbS no 1
Y	00000
Z	00000
ABS INCH	

2




X	00000
Y	00000
Z	00000
ABS INCH	

▶ Input "-10.0000" to X-axis , "5.0000" to Y-axis.

X **PRE SET** 1 0 +/- **ENT**
 Y **PRE SET** 5 **ENT**




X	- 10.0000
Y	5.0000
Z	00000
ABS INCH	

4 Assigning ABS No.3.

▶ Input "3" while ABS lamp is on.

F




X	AbS no 2
Y	00000
Z	00000
ABS INCH	

3




X	00000
Y	00000
Z	00000
ABS INCH	

▶ Input "10.0000" to X-axis, "5.0000" to Y-axis.

X **PRE SET** 1 0 **ENT**
 Y **PRE SET** 5 **ENT**




X	10.0000
Y	5.0000
Z	00000
ABS INCH	

5 Assigning ABS No.4.

▶ Input "4" while ABS lamp is on.

F




X	AbS no 3
Y	00000
Z	00000
ABS INCH	

4




X	00000
Y	00000
Z	00000
ABS INCH	

Example

▶ Input "10.0000" to X-axis, "-5.0000" to Y-axis.

X PRE SET 1 0 ENT
 Y PRE SET 5 +/- ENT
 ⏏



X	10.0000
Y	-5.0000
Z	0.0000

ABS INCH

※ Assigning ABS No.0 and ABS 1 ~ ABS 4 can be made like this way.

(4) Recalling pre-inputted sub points(ABS1~4) which apart from a central point(ABS0).

Ex.) < Dwg.4 > Finding the position of pre-inputted ABS No.1

Example

▶ Recall ABS No.1 by pushing "F" and "1".

F
 ⏏



X	ABS no 0
Y	0.0000
Z	0.0000

ABS INCH

1
 ⏏



X	0.0000
Y	0.0000
Z	0.0000

ABS INCH

▶ "-10.0000", "-5.0000" display as below.

X	-10.0000
Y	-5.0000
Z	0.0000

ABS INCH

▶ Move X and Y-table until "0.0000" is displayed each area.

Move tables and make display "0.0000".

X	0.0000
Y	0.0000
Z	0.0000

ABS INCH




The rest sub points (ABS 2 ~ ABS 4) can be easily recalled and the points of A1 ~ A8 can also be recalled as the same way.

11. Function Key

Function key has 11 features as shown below.

- ① Zero Setting of Display ("0.0000")
- ② Memory in /out
- ③ Delete Memory
- ④ Lathe (Addition of two axis value)
- ⑤ Double Counting (Lathe - DIA)
- ⑥ Initializing
- ⑦ Bolt hole circle and Converting Axis direction.
- ⑧ Converting Resolution
- ⑨ (+),(-) Direction Conversion
- ⑩ Rate (Error Compensation)
- ⑪ FND(display) Checking

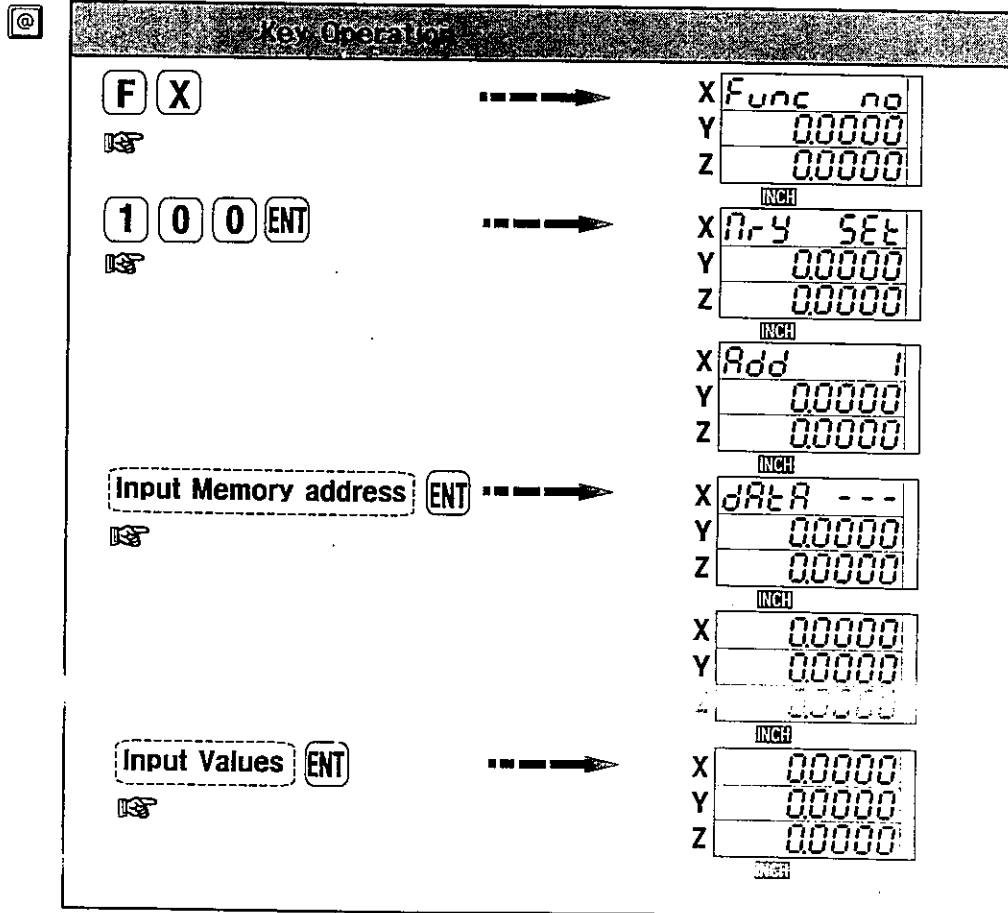
1) Display Zero : same as page 6

Zero set button :   

2) Memory in / out

- Memorizing the coordinate of a tool beforehand, repeated processing can be made easily with it.
- Up to 50 memories per axis can be inputted.

(1) Memory Setting



<Ref.> When you need to input several memory addresses at a time, press **F** key twice after previous inputting completion. After finishing all memory assigning works, don't forget to push **ENT** key to finish all procedure normally. (Example : see the next page)

- How to input several memory addresses continuously.

Key Operation

F X ☞	----->	X Func no Y 00000 Z 00000 INCH
1 0 0 ENT ☞	----->	X nry SEt Y 00000 Z 00000 INCH
Input Memory address ENT ☞	----->	X Rdd 1 Y 00000 Z 00000 INCH
Input Values ☞	----->	X dAtA --- Y 00000 Z 00000 INCH
NEXT NEXT ☞	----->	X 00000 Y 00000 Z 00000 INCH
	----->	X Rdd 2 Y 00000 Z 00000 INCH

☞ Ex.) Memory address to be assigned is 25 and the value is "10.1250"

Example

F X ☞	----->	X Func no Y 00000 Z 00000 INCH
1 0 0 ENT ☞	----->	X nry SEt Y 00000 Z 00000 INCH
2 5 ENT ☞	----->	X Rdd 1 Y 00000 Z 00000 INCH
1 0 . 1 2 5 ENT ☞	----->	X dAtA --- Y 00000 Z 00000 INCH
	----->	X 10.1250 Y 00000 Z 00000 INCH

Ex.) Memory address of X-axis is 25 , its value is "3.1310"
and input X-axis 26, the value of "3.2320" continuously.

Example

F X
[F] [X]



X Func no
Y 00000
Z 00000

1 0 0 ENT
[1] [0] [0] [ENT]



INCH
X PrY SEt
Y 00000
Z 00000

2 5 ENT
[2] [5] [ENT]



INCH
X Add 1
Y 00000
Z 00000

3 . 1 3 1
[3] [.] [1] [3] [1]



INCH
X dAtA ---
Y 00000
Z 00000

NEXT NEXT
[NEXT] [NEXT]



INCH
X 00000
Y 00000
Z 00000

ENT
[ENT]



INCH
X 3.1310
Y 00000
Z 00000

3 . 2 3 2 ENT
[3] [.] [2] [3] [2] [ENT]



INCH
X Add 26
Y 00000
Z 00000

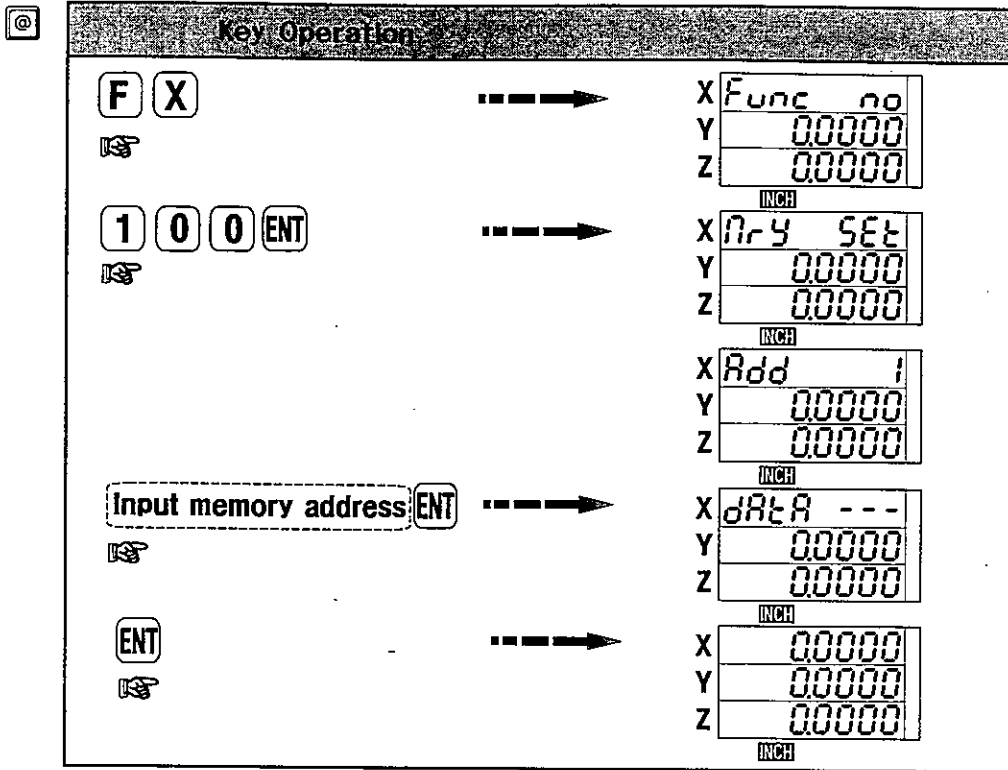
INCH
X dAtA ---
Y 00000
Z 00000

INCH
X 3.2320
Y 00000
Z 00000

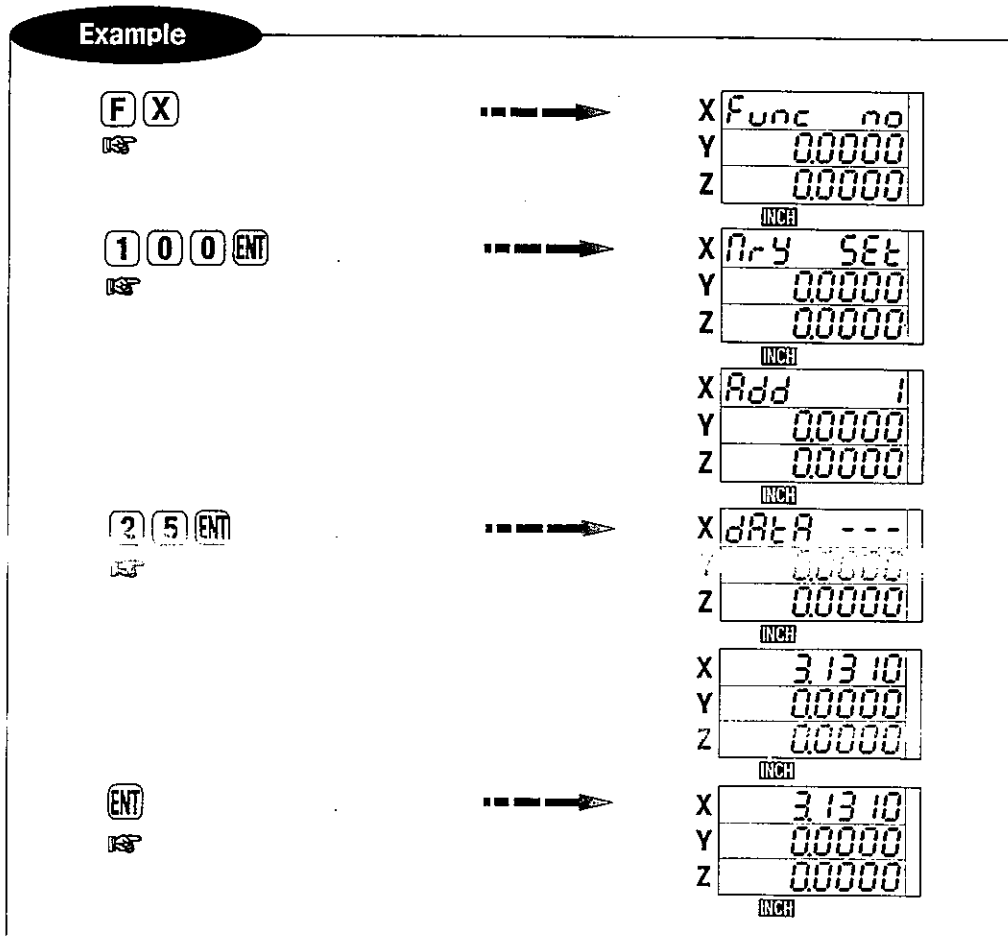
INCH

(2) Memory Recall

Recalling the value which is assigned to the memory.

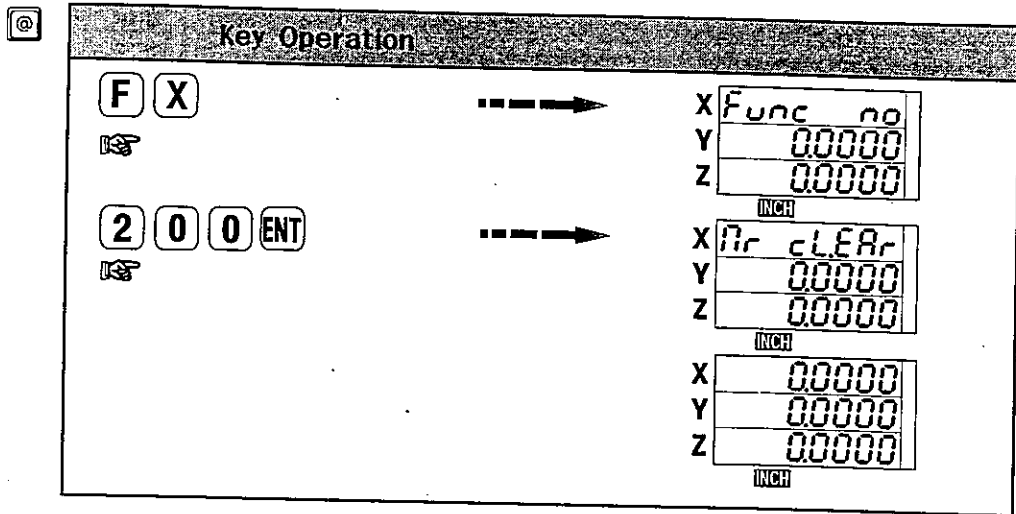


Ex.) Recall the memory no.25 of which value is "31.310"



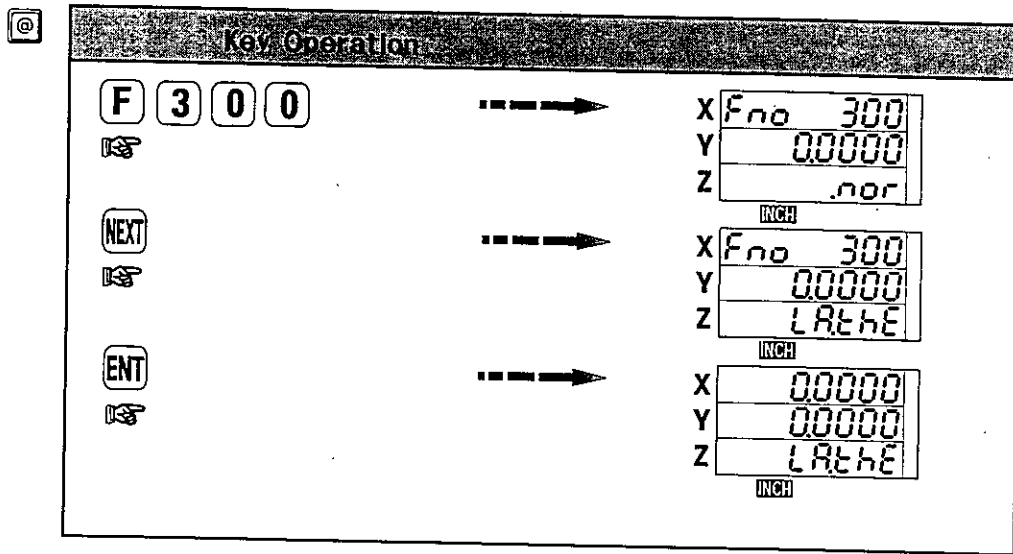
3) Clearing Memory

It is used to clear all data of memory.
 (Caution: whole data from 0 through 49 will be deleted by this function)



< Ref.> When you want to delete only one value in a certain memory address, use " Memory set " and input "0.0000" over the value.

4) Addition of two(Y&Z) axis value (Lathe Function)



- The values of Y and Z-axis are summed to display at on Y-axis panel, and automatically, Z- axis doesn't work.
- In sum-up mode, using (NEXT) key is available for Y-axis, and turn back to normal status, "0.0000" appear in the Z-axis.
- In this status, if Z-axis is moved, the moved digital value will be summed to display at Y-axis.
- in the same status, ABS function is available.

Ex.) If Y=12.3400, Z=1.2350, the summed up value to be displayed at Y-axis is as below.

Example

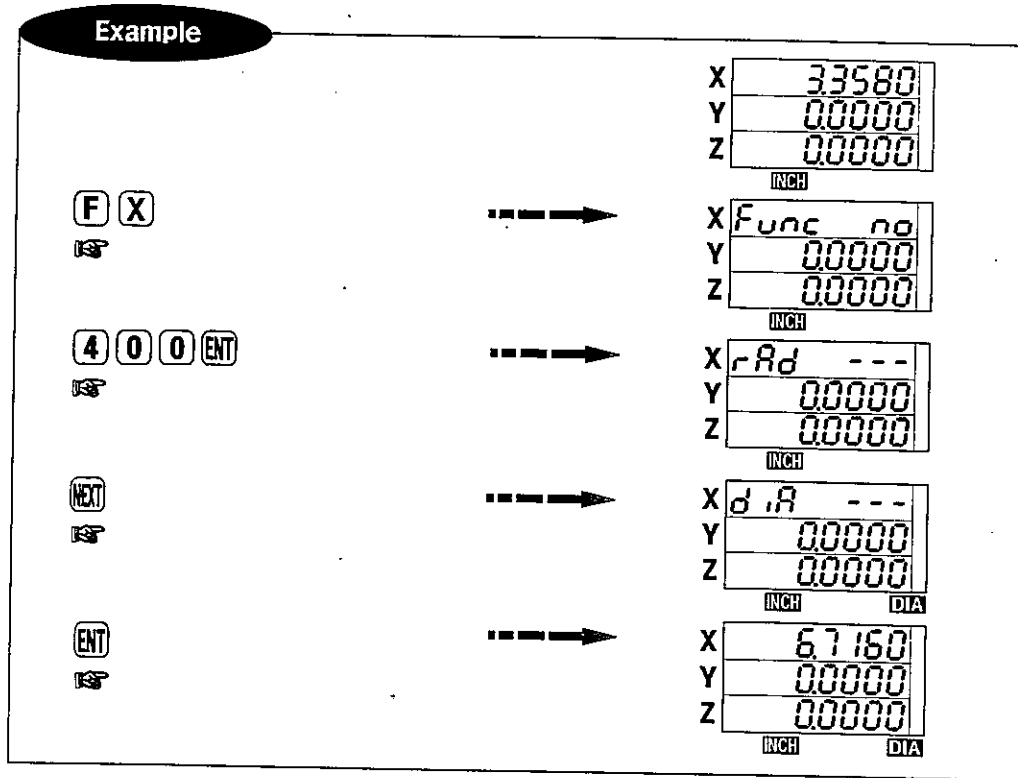
F 3 0 0	→	X 00000 Y 123400 Z 12350 INCH
NEXT	→	X Fno 300 Y 123400 Z .nor INCH
ENT	→	X Fno 300 Y 123400 Z LAtHe INCH
ENT	→	X 00000 Y 135750 Z LAtHe INCH

5) Double Counting (for Lathe function - DIA)

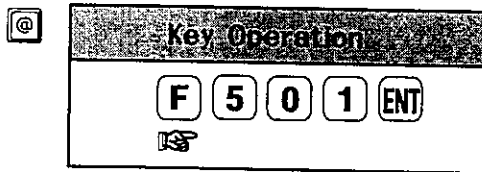
Key Operation

F X	→	X Func no Y 00000 Z 00000 INCH
4 0 0 ENT	→	X rAd --- Y 00000 Z 00000 INCH
NEXT	→	X d .R --- Y 00000 Z 00000 INCH DIA
ENT	→	X 00000 Y 00000 Z 00000 INCH DIA

Ex.) In "RAD" mode, if X-axis value is "3.3580" and we change the mode "DIA", then double value of "3.3580" will be displayed.



6) Initialization : same as page 7.



❖❖❖ Caution ❖❖❖

- Bolt hole circle will be set as "Radius".
- All pre-inputted coordinates will be deleted.
- Resolution will turn back to 5/1000.
- Rate will be set to 1000000.
- Preset ABS values will be all erased.

7) Bolt Hole Circle and Base axis changing

There are 4 details function as below.

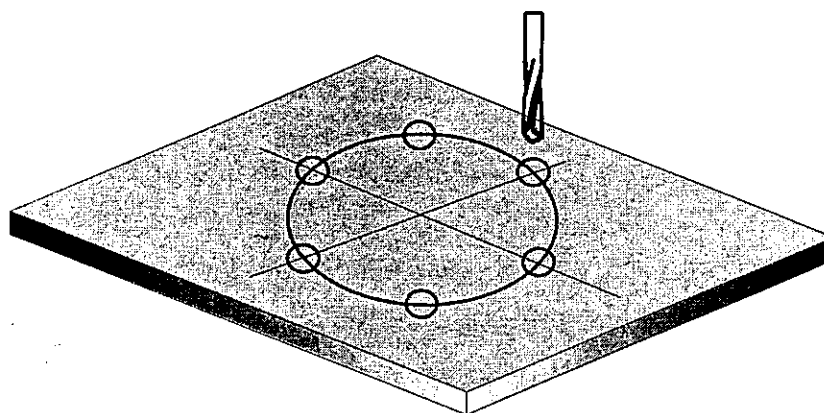
- ① Set base direction as X and Y-axis.
- ② Set base direction as X and Z-axis.
- ③ Set base direction as Y and Z-axis.
- ④ Set bolt hole circle as diameter or radial (DIA/RAD).

(1) Set direction as X and Y-axis.

Key Operation

F 6 0 0	→	X Fno 600
		Y c ir PArA
		Z 00000
		INCH
ENT	→	X c ir cLE
		Y PArA SEt
		Z 00000
		INCH

- If you input **CIRCLE**, axis-setting lamp will be "ON".
- Maximum division is up to 10,000.
- Below is shown bolt hole circling in a plane.

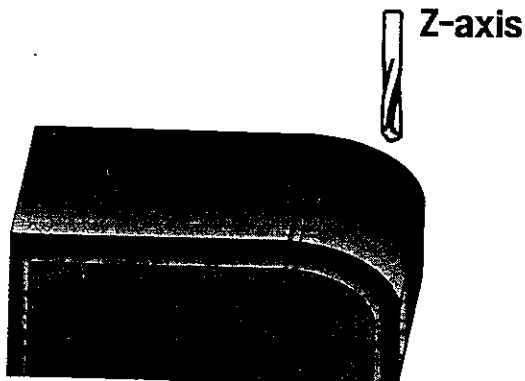


(2) Set direction as X and Z-axis.

Key Operation

F 6 0 1	→	X Fno 601
		Y c ir PArA
		Z 0000
		INCH
ENT	→	X c ir cLE
		Y 0000
		Z PArA SEt
		INCH

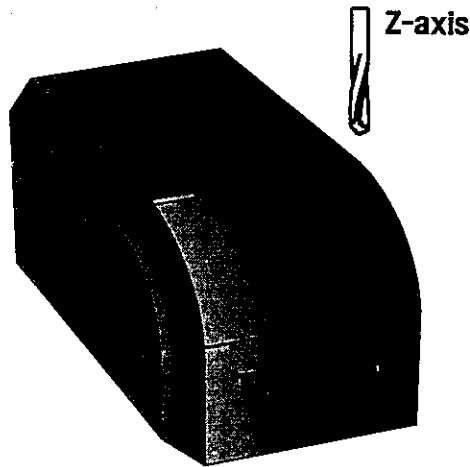
- The lamp of X, Z-axis are "ON" if you press **CIRCLE** key like the above.
- The number of maximum bolt hole circle is 10,000.
- You can set axis direction as X, Z-axis as below.



(3) Set direction as Y and Z-axis.

Key Operation		
F 6 0 2	→	X Fno 602 Y c ir PArA Z 00000 INCH
ENT	→	X 00000 Y c ir cLE Z PArA SEt INCH

- The lamps of X, Y axis is "ON" if you press **CIRCLE** key like the above.
- The number of maximum bolt hole circle is 10,000.
- You can set axis direction as Y, Z as below.

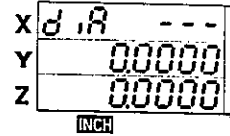


(4) Set bolt hole circle as diameter or radial (DIA/RAD).

Key Operation		
F 6 0 3	→	X Fno 603 Y c ir PArA Z 00000 INCH
ENT	→	X c ir cLE Y d IArA dEr Z 00000 INCH

Example

① Set by diameter (DIA)



② Set by radial (RAD)



▶ RAD mode is preset from the factory

(5) Bolt Hole Circle

▶ To process bolt hole circle, 4 factors below are needed:

- ① Radial: **r** (or diameter: **d**)
- ② Numbers of hole: **d-no**
- ③ Start angle: **Sp**
- ④ Finish angle: **Ep**

▶ Maximum range is as below:

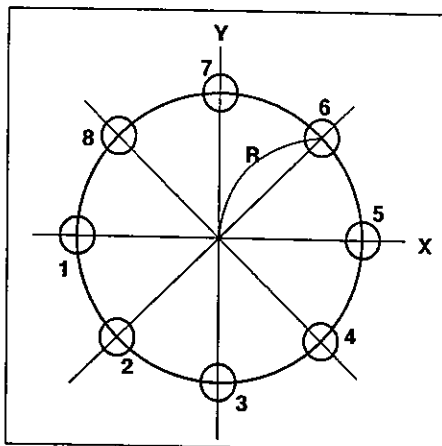
- ① Radial (or diameter): 80 inch
- ② Maximum hole number: up to 9999
- ③ Start and finish angle are available up to the 3rd decimal point.
ex) 10.5405 -> x 25.450 -> o

Key Operation

	Input (r) or (d)			X r.Rd --- Y 00000 Z 00000 INCH
	Input (d-no)			X 00000 Y d-no Z 00000 INCH
	Input (Sp)			X 00000 Y Sp 0000 Z 00000 INCH
	Input (Ep)			X 00000 Y Ep 0000 Z 00000 INCH

Ex.) Here is an example of bolt hole circle.

Radial(r) = 10.0
 Holes number (d-no) = 8
 Start angle (Sp) = 0.0°
 Finish angle (Ep) = 360.0°
 Axis set = X and Y



❖❖❖ **Caution** ❖❖❖

- Before beginning, axis direction should be set firstly.
- Move X, Y table until X and Y indicate 0.0000.
- For the next hole, push **NEXT** key, and repeat the same.

Example

1. The key operating sequence as follows:

CIRCLE IS	➡	X rRd --- Y 00000 Z 00000 [NEXT]
1 0 ENT IS	➡	X 100000 Y d-no Z 00000 [NEXT]
8 ENT IS	➡	X 100000 Y SP 0000 Z 00000 [NEXT]
0 ENT IS	➡	X 100000 Y EP 0000 Z 00000 [NEXT]
3 6 0 ENT IS	➡	X 100000 Y 00000 Z 00000 [NEXT]

2. Bolt hole circle

① The process position of the first hole

➡	X 100000 Y 00000 Z 00000 [NEXT]
---	--

- Move X-table until it shows "0.0000", and make a hole at the point.

② For the second hole, push next key twice.

NEXT NEXT IS	➡	X -29290 Y 70710 Z 00000 [NEXT]
------------------------	---	--

- Move X and Y table until they show "0.0000" each, and make a hole at the point.

Example

③ For the third hole, push next key twice.



X	- 707 10
Y	29290
Z	00000

INCH

- Move X and Y table until 0.0000 display

④ For the fourth hole, push next key twice.



X	- 707 10
Y	- 29290
Z	00000

INCH

- Move X and Y table until 0.0000 display

⑤ For the fifth hole, push next key twice.



X	- 29290
Y	- 707 10
Z	00000

INCH

- Move X and Y table until 0.0000 display

⑥ For the sixth hole, push next key twice.



X	29290
Y	- 707 10
Z	00000

INCH

- Move X and Y table until 0.0000 display

⑦ For the seventh hole, push next key twice.



X	707 10
Y	- 29290
Z	00000

INCH

- Move X and Y table until 0.0000 display

⑧ For the eighth hole, push next key twice.



X	707 10
Y	29290
Z	00000

INCH

- Move X and Y table until 0.0000 display

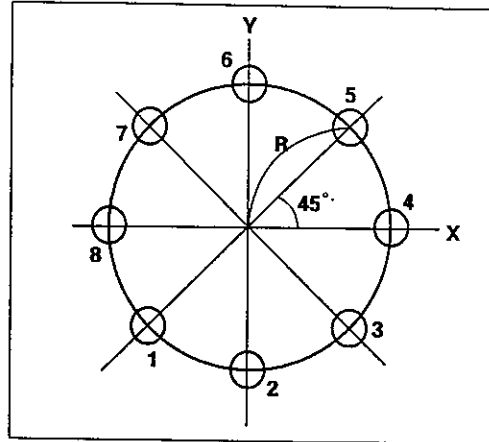
- Bolt hole circling direction is counter-clockwise
- If Sph is bigger than 0.0 and it is a circle of 360(=range angle)
Eph can be calculated as below.
(But, except for a circle of which range angle is smaller than 360°)

$$\text{Finishing angle (Eph)} = \text{range angle}(360^\circ) + \text{Starting angle (Eph)}$$

Ex.) Bolt hole circle with below factors.

Radial(r) = 20.0
 Holes number ($d-no$) = 8
 Start angle (Sp) = 45.0°
 Finish angle (Ep) = 360.0°+45.0°
 Axis setting = X and Y-axis

※ For finish angle,
 360 should be always added to
 start angle, if it is a complete circle.



Example

1. The key operating sequence is as follows:

	→	X rAd --- Y 00000 Z 00000 <small>INCH</small>
1 0 ENT	→	X 100000 Y $d-no$ Z 00000 <small>INCH</small>
8 ENT	→	X 100000 Y SP 0000 Z 00000 <small>INCH</small>
4 5 ENT	→	X 100000 Y EP 0000 Z 00000 <small>INCH</small>
4 0 5 ENT	→	X 70710 Y 70710 Z 00000 <small>INCH</small>

2. Bolt hole circle

① The process position of the first hole.

→	X 70710 Y 70710 Z 00000 <small>INCH</small>
---	--

● Move X and Y table until they show "0.0000" each, and make a hole at the point.

② For the second hole, push next key twice.

NEXT NEXT	→	X -70710 Y 29290 Z 00000 <small>INCH</small>

● Move X and Y table until they show "0.0000" each, and make a hole at the point.

Example

③ For the third hole, push next key twice.



X	- 707 10
Y	- 29290
Z	00000

INCH

• Move X and Y table until 0.0000 display

④ For the fourth hole, push next key twice.



X	- 29290
Y	- 707 10
Z	00000

INCH

• Move X and Y table until 0.0000 display

⑤ For the fifth hole, push next key twice.



X	29290
Y	- 707 10
Z	00000

INCH

• Move X and Y table until 0.0000 display

⑥ For the sixth hole, push next key twice.



X	707 10
Y	- 29290
Z	00000

INCH

• Move X and Y table until 0.0000 display

⑦ For the seventh hole, push next key twice.



X	707 10
Y	29290
Z	00000

INCH

• Move X and Y table until 0.0000 display

⑧ For the eighth hole, push next key twice.



X	29290
Y	707 10
Z	00000

INCH

• Move X and Y table until 0.0000 display

8. Converting Resolution

There are 4 selectable resolutions

- ① 0.0002 inch (5/1000 mm)
- ② 0.00004 inch (1/1000 mm)
- ③ 0.002 inch (5/100 mm)
- ④ 0.0004 inch (1/100 mm)

(1) 0.0002 inch (5/1000 mm)

Key Operation

F X → X Func no
Y 00000
Z 00000
INCH

7 0 0 ENT → X ScALE ch
Y 00000
Z 00000
INCH

5 ENT → X 0
Y 00000
Z 00000
INCH

X 00000
Y 00000
Z 00000
INCH

(2) 0.00004 inch (1/1000 mm)

Key Operation

F X → X Func no
Y 00000
Z 00000
INCH

7 0 0 ENT → X ScALE ch
Y 00000
Z 00000
INCH

1 ENT → X 1
Y 00000
Z 00000
INCH

X 00000
Y 00000
Z 00000
INCH

(3) 0.002 inch (5/100 mm)

Key Operation

F X ☞	→	X Func no Y 00000 Z 00000 INCH
7 0 0 ENT ☞	→	X ScALe ch Y 00000 Z 00000 INCH
		X 0 Y 00000 Z 00000 INCH
5 0 ENT ☞	→	X 50 Y 00000 Z 00000 INCH
		X 00000 Y 00000 Z 00000 INCH

(4) 0.0004 inch (1/100 mm)

Key Operation

F X ☞	→	X Func no Y 00000 Z 00000 INCH
7 0 0 ENT ☞	→	X ScALe ch Y 00000 Z 00000 INCH
		X 0 Y 00000 Z 00000 INCH
1 0 ENT ☞	→	X 10 Y 00000 Z 00000 INCH
		X 00000 Y 00000 Z 00000 INCH

9) Converting Counting Direction

You can convert counting direction from +(-) to -(+)

Key Operation		
F X ↓	→	X Func no Y 00000 Z 00000 INCH
8 0 0 ENT ↓	→	X dir +--- Y 00000 Z 00000 INCH
NEXT ↓	→	X dir ---+ Y 00000 Z 00000 INCH
ENT ↓	→	X 00000 Y 00000 Z 00000 INCH

10) Using Rate-correction Function

- It can be displayed according to magnification you require against actual length.
- It also can be applied to rotary encoder.
- Usually, the rate to be set is "1.000000" (it shows as 1000000).
- Allowable range is from 0.000001 to 9.999999 and have accuracy under 6th of decimal point.
- If the rate is set as "0.000000", nothing displays but 0.000000.

Key Operation		
F X ↓	→	X Func no Y 00000 Z 00000 INCH
9 0 0 ENT ↓	→	X RATE SET Y 00000 Z 00000 INCH
Input value ↓	→	X 1000000 Y 00000 Z 00000 INCH
ENT ↓	→	X 00000 Y 00000 Z 00000 INCH

< Note > If the rate is "0.000000", the value does not change and shows as it was, even though we move a certain axis.