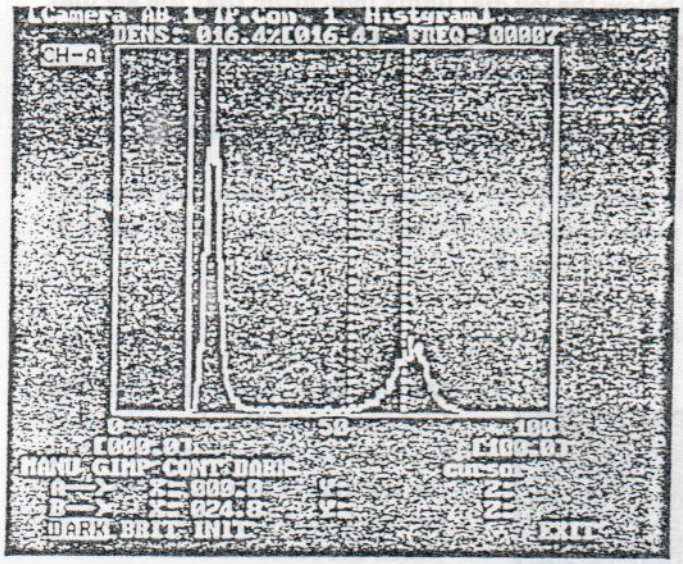
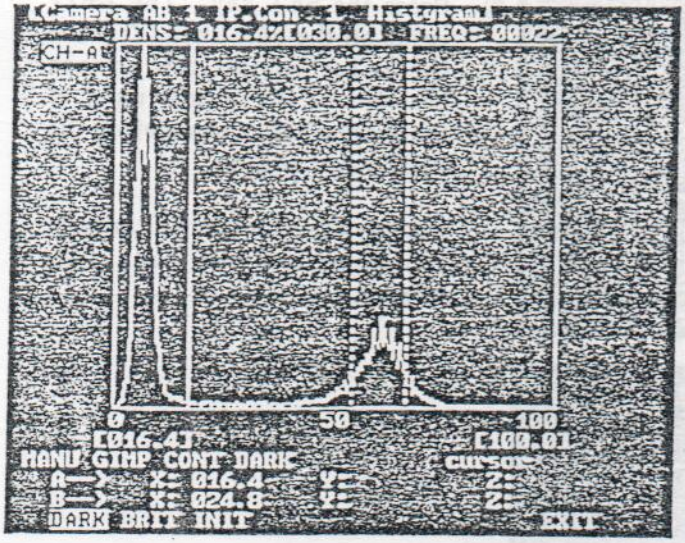
(5) Cursor Mode Setting





1) Move the cursor on the histogram to the lowest level position to be converted using the jog dial. The DIGIT keys can be used to vary the speed at which the cursor moves.

2) Press the SET key. The DARK value on the edit lines (X:) and the value inside the square brackets at the bottom left of the graph change completing DARK value setting.

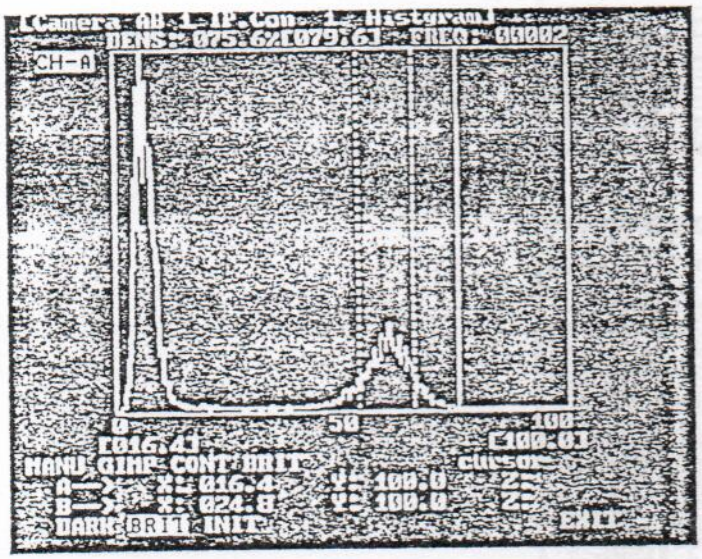
Display the histogram after dark compensation has been performed.

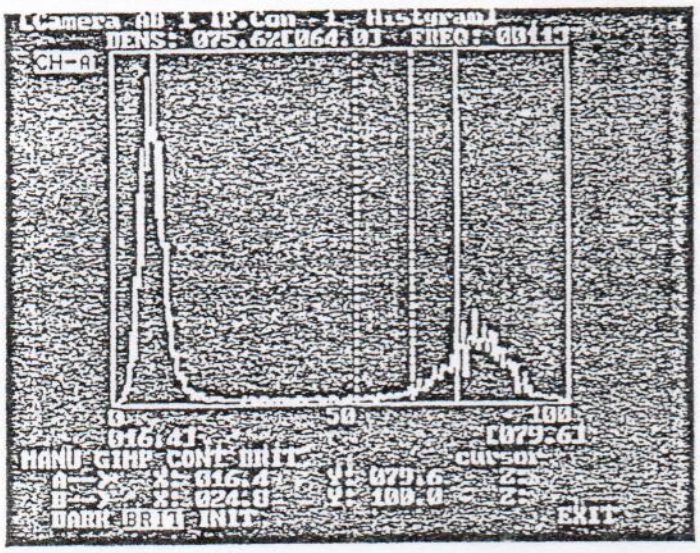
(6) Entry Mode Setting

The ENTRY LED below the jog dial lights indicating that the jog dial can be used for setting numerical values. Turn the jog dial to increment or decrement the DARK value on the edit lines and thereby change the multivalue image contrast. The DARK compensation value when the SET key is pressed is registered.

(7) If function key 2 is pressed, BRIT will be highlighted indicating that the BRIT setting mode is entered. Select the entry or cursor mode in the same way as in step (4) above.

(8) Cursor Mode Setting





1) Move the cursor on the histogram to the lowest level position to be converted using the jog dial. The DIGIT keys can be used to vary the speed at which the cursor moves.

2) Press the SET key. The BRIT value on the edit lines (Y:) and the value inside the square brackets at the bottom right of the graph change completing the BRIT value setting.

Display the histogram after dark compensation has been performed.

(9) Entry Mode Setting

Turn the jog dial to increment or decrement the BRIT value on the edit lines and thereby change the multivalue image contrast. The BRIT compensation value when the SET key is pressed is registered.

(10) Switch the specified channel by the operation in (1) above. Repeat steps (4) to (9) to make the settings for the channel selected. (Settings can be made for both channels A and B together.)

5.4.9 Table Mode Setting

This section describes setting methods for the parameters at the last level of the tree structure with the letter t attached. Numerical values are specified using the jog dial.

- Example 1. END Setting (Possible in both entry and table modes)

(1) Press the following function keys in the order specified, 5 TABL, 1 TBL1, 2 LCAT, and then 1 2ND. The following display will appear at the bottom of the CRT screen. See Fig. 5-4-8 for Table 1.

```
MANU TABL TBL1 LCAT 2ND          table
  A-->   X: 0001.750 Y: 003.205  Z: 003.677
  B-->   X:          Y:          Z:
  2ND  P1   P2   P3   P4   P5          EXIT
```

```
MANU TABL TBL1 LCAT 2ND          entry
  A-->   X: 0001.750 Y: 003.205  Z: 003.677
  B-->   X:          Y:          Z:
  2ND  P1   P2   P3   P4   P5          EXIT
```

The prompt alternates between table and entry when function key 1 is pressed. Select the required mode. Note that the table mode can only be selected if the display mode is IMAGE.

(2) Select the desired axis with the AXIS keys. All three axes X, Y and θ can be selected together.

(3) The TABLE LED below the jog dial will light if the table mode is selected. The table of the axis selected at (2) will move as the jog dial is turned. The DIGIT keys can be used to vary the speed at which the table moves. After moving the table to the desired position, press the SET key. This position will be registered as the 2ND point for the axis selected above with the AXIS keys.

(4) If the entry mode is selected, the values of the axes selected at (2) on the edit lines will be incremented or decremented as the jog dial is turned. Once the desired values are reached, press the SET key. These valuess will be registered as the 2ND points for the axes selected above with the AXIS keys.

5.5 AUTO SET

This is an automatic setting mode in which the parameter values are learned.

If the AUTO switch of the SET group of MODE switches is pressed twice, the following display will appear at the bottom of the CRT screen.

```
AUTO                                  f_key
  A-->   X:          Y:          Z:
  B-->   X:          Y:          Z:
  CMB1 CMB2 CMB3 SHAD COMP WIND 2ND  EXIT
```

Select one of the required parameters using function keys 1 to 7. Press the START key to initiate learning of the selected parameter. (The channel image processing condition selected with the SELECT keys.)

5.5.1 CMB1 to CMB3

The display at the bottom of the CRT screen will change to the following when one of function keys 1 to 3 is pressed.

```
AUTO CMB1                             start
  A-->   X:          Y:          Z:
  B-->   X:          Y:          Z:
  LAMP CONT OVTC SL  SENS AREA POSP EXIT
```

Select the required parameter from LAMP to POSP with the function keys. The parameters selected will be highlighted indicated that their values are to be learned. The specified parameter values will be learned sequentially by combined learning commands when the START key is pressed. Once the specified commands are stored as CMB1, CMB2, and CMB3, these settings remain valid until they are changed. Parameter settings can be deleted by pressing the parameter function key. When this is done the highlighting on the parameters is canceled.

```
AUTO CMB1 POSP                        start
  A-->   X:          Y:          Z:
  B-->   X:          Y:          Z:
  LAMP CONT OVTC SL  SENS AREA POSP EXIT
```

- LAMP

  LAMP brightness values for both channels A and B can be set to the optimal brightness levels.

- CONT (CONTrast)

  Contrast compensation values can be set to the optimal values for both channels A and B together.

- OVTC (OVer Tone Contrast)

  This provides extra contrast compensation.

- SL (Slice Levels)

  These are optimal threshold values for the different modes.

  Depending on the SEGM (segment division conditions), the following relations exist.

BMD1	→	SL1
BMD2	→	SL2
TMD1, 2	→	SL1, SL2

  OGRY (object density) and BGRY (background density) can also be set together.

- SENS (SENSor)

  MAG (optical magnification), ANGL (coordinate axis rotation angle), and CPOS (sensor position coordinates) are learned when this is specified.

- AREA

  The current mark is specified as the standard area.

- POSP (POSitioning Point)

  The center of the current mark is specified as the positioning point.

Specify the above seven parameters for learning for both channels A and B with the actual workpiece placed within the camera field of view.

5.5.2 SHAD

The shading compensation values are learned, with six values set up for POT1 to POT6.

Use a workpiece with uniform brightness (such as white paper) for both channels A and B.

This learning function must be executed before all other learning functions.

5.5.3 COMP (COMmon Positioning point)

This parameter is handled in the same way as POSP, but the POSP values for the image processing condition POSP values have to be the same.

5.5.4 WIND (WINDow)

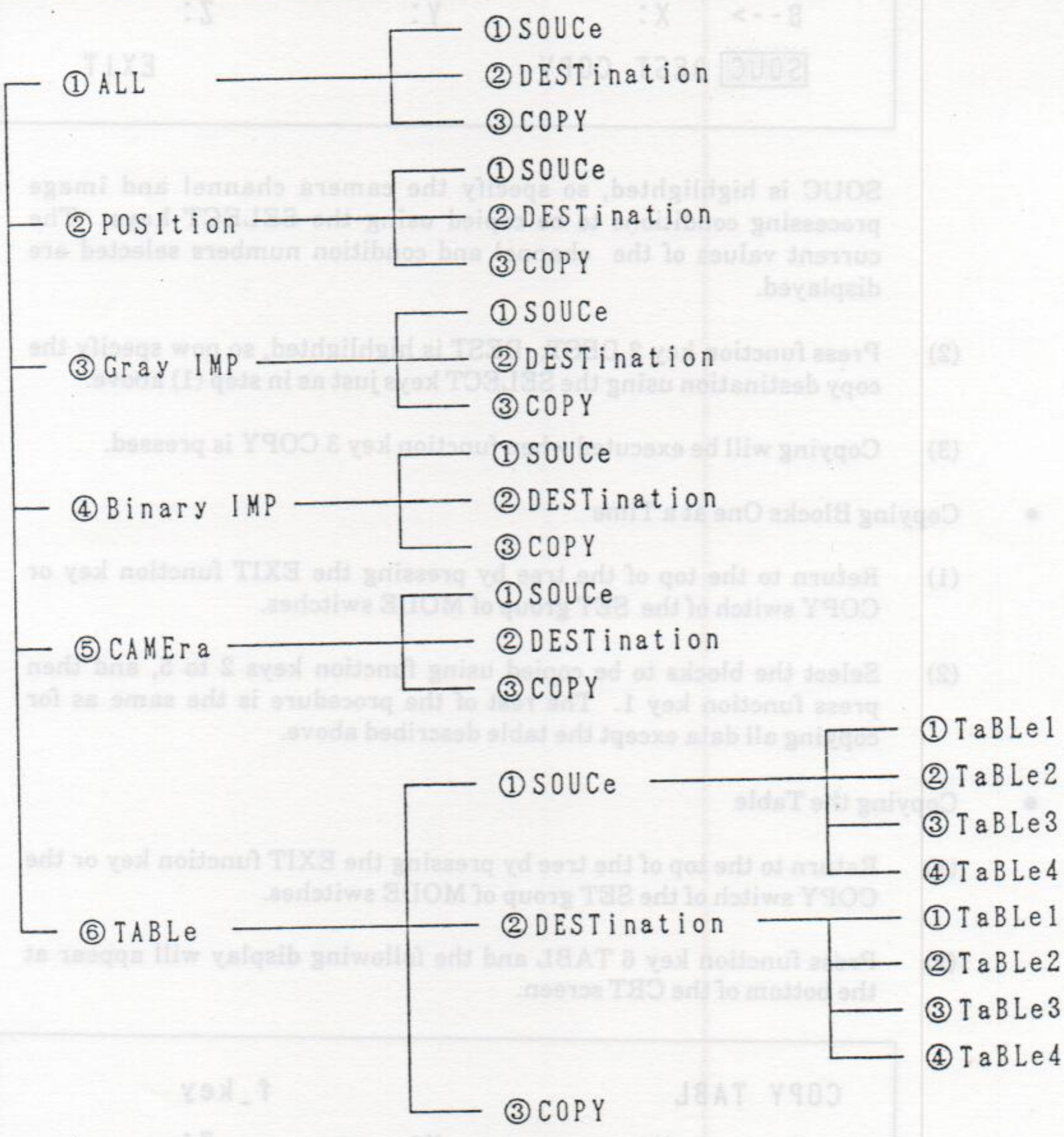
The window center is moved to the current mark center position.

5.5.5 2ND

Handled in the same way s the table-mode 2ND setting, the current table position is set as the 2ND point. Settings are made for all three axes independent of the AXIS setting.

5.6 COPY

This mode is used to copy the parameter settings as channel or image-processing-condition data. It has the following tree structure.



Press the COPY key twice to produce the following display at the bottom of the CRT screen above the function keys.

```
COPY                                f_key
   A-->   X:          Y:           Z:
   B-->   X:          Y:           Z:
   ALL  POSI GIMP BIMP CAME TABL        EXIT
```

Select the parameters to be copied using the function keys.

- Copying All Data Except Table

(1) Press function key 1 ALL, and then 1 SOUC. the following display will appear at the bottom of the CRT screen.

```
COPY ALL  SOUC CH-1 IP-1      select
  A-->   X:          Y:         Z:
  B-->   X:          Y:         Z:
  SOUC DEST COPY                    EXIT
```

SOUC is highlighted, so specify the camera channel and image processing conditions to be copied using the SELECT keys. The current values of the channel and condition numbers selected are displayed.

(2) Press function key 2 DEST. DEST is highlighted, so now specify the copy destination using the SELECT keys just as in step (1) above.

(3) Copying will be executed when function key 3 COPY is pressed.

- Copying Blocks One at a Time

(1) Return to the top of the tree by pressing the EXIT function key or COPY switch of the SET group of MODE switches.

(2) Select the blocks to be copied using function keys 2 to 5, and then press function key 1. The rest of the procedure is the same as for copying all data except the table described above.

- Copying the Table

(1) Return to the top of the tree by pressing the EXIT function key or the COPY switch of the SET group of MODE switches.

(2) Press function key 6 TABL and the following display will appear at the bottom of the CRT screen.

```
COPY TABL                     f_key
  A-->   X:          Y:         Z:
  B-->   X:          Y:         Z:
  SOUC DEST COPY                    EXIT
```

(3) Press function key 1 SOUC and the display at the bottom of the CRT screen will change to the following. Select the source table using the function keys. The table selected is displayed in the history.

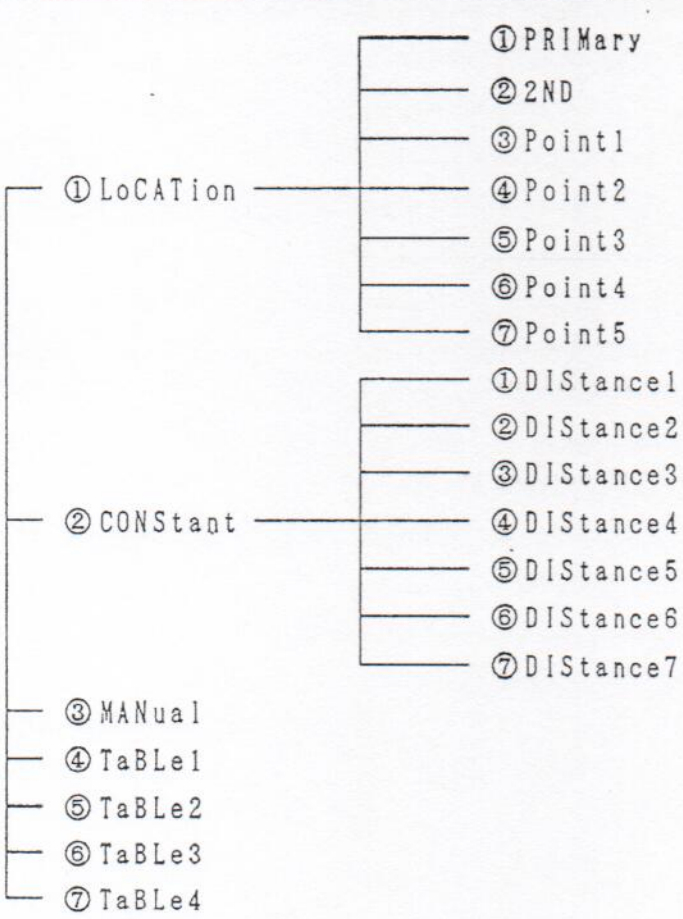
```
COPY TABL SOUC TBL1                        f_key
  A-->    X:              Y:                  Z:
  B-->    X:              Y:                  Z:
  [TBL1] TBL2 TBL3 TBL4                        EXIT
```

(4) Press the EXIT function key to return to the state in (2), press function key 2 DEST and set the destination in the same way as the source was set.

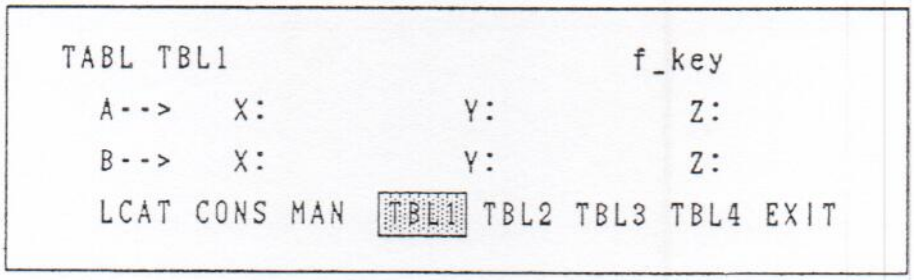
(5) Press the EXIT function key to return to the state in (2), and press function key 3 COPY to execute copying.

5.7 Table Operations

This section describes table moving operations. The following tree structure is used.



Press the TABLE switch of the OPERATION group twice to produce the following function key display at the bottom of the CRT screen.



This is the first level of the table operation tree. There are three table moving operations, LCAT (location movement), CONS (constant distance movement), and MAN (manual movement). Select the required operation by pressing function keys 1, 2, or 3. Then use function keys 4 to 7 to specify which table is to be moved.

5.7.1 Moving LCAT

(1) Select the table to be moved using function keys 4 to 7. The selected table is highlighted.

(2) Select the required axis using the AXIS keys.

(3) Press function key 1. The following display will appear at the bottom of the CRT screen

```
TABL TBL1 LCAT                           f_key
     A-->    X:          Y:         Z:
     B-->    X:          Y:         Z:
     PRIM 2ND  P1   P2   P3   P4   P5   EXIT
```

(4) Select the point to be moved using function keys 1 to 7. The selected point will be highlighted.

(5) Press the START key. The values set up for the stage conditions are used to execute table movement.

PRIM movement means movement to the negative limit point and is performed at the minimum frequency set in the stage conditions.

5.7.2 CONS Movement

(1) At the first level of the tree, select the tree to be moved using function keys 4 to 7. The selected tree will be highlighted.

(2) Select the axis with the AXIS keys.

(3) Press function key 2. The following display will appear at the bottom of the CRT screen.

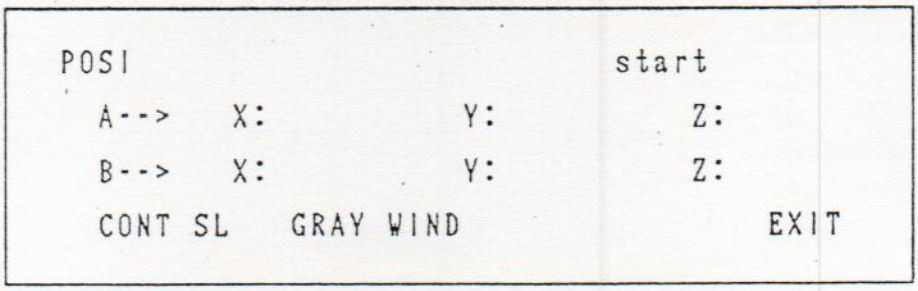
```
TABL TBL1 CONS                           f_key
     A-->    X:          Y:         Z:
     B-->    X:          Y:         Z:
     DIS1 DIS2 DIS3 DIS4 DIS5 DIS6 DIS7 EXIT
```

(4) Select the distance to be moved (specified values) with function keys 1 to 7. The selected distance will be highlighted.

(5) Press the START key to initiate execution with the parameter values set in the stage conditions.

5.9 POSI OPERATION

Press the POSI key of the OPERATION group and the following display will appear at the bottom of the CRT screen.



See Section 5.8 above for explanation of function keys 1 to 4 (CONT, SL, GRAY, WIND).

Press the START key to initiate positioning.

5.7.3 MANU Movement

(1) At the first level of the tree, select the tree to be moved using function keys 4 to 7. The selected tree will be highlighted.

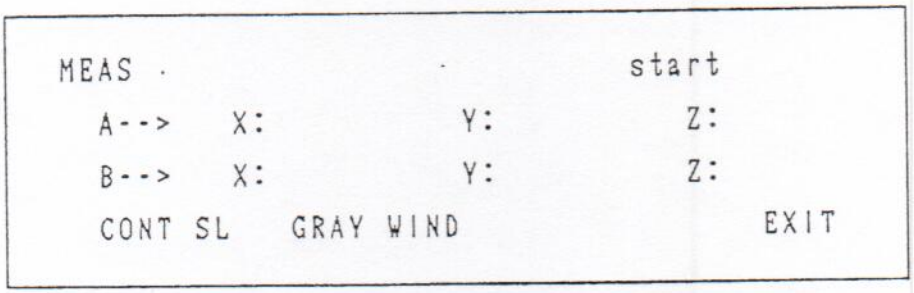
(2) Select the axis with the AXIS keys.

(3) Press function key 3. The MAN function will be highlighted, and the TABLE LED below the jog dial will light.

(4) Turn the jog dial to move the table. Use the DIGIT keys to vary the speed of movement.

5.8 MEAS OPERATION

Press the MEAS key of the OPERATION group and the following display will appear at the bottom of the CRT screen.



Select the required functions using function keys 1 to 4 for the learning switches executed each time measurement operation is performed. The learning parameters have the following meanings.

CONT	Learn contrast compensation value
SL	Learn threshold value
GRAY	Learn grating
WIND	Move window to mark center.

Press the START key to initiate measurement. The display measured values (histogram, center coordinates, etc.) are held until the next measurement operation execution.

Note

In the set and table operation modes, the measured value display is updated approximately every 0.5 s (for the histogram, approximately 2.5 s).

ONO SOKKI
ELECTRO-MACHINERY DIVISION
531-1 HAKUSAN-CHO, MIDORI-KU, YOKOHAMA 226 JAPAN
PHONE 045-935-3811 FAX 045-935-3815

Version1 – 2 1990.5 Printed in Japan O02 – 0Eb1 – 2