

Control No. ZNSXLSE-09

INSTRUCTION MANUAL

**LIQUID AUTO SAMPLER
MODEL ASC-150L**

MITSUBISHI CHEMICAL ANALYTECH

THE NATIONAL FOUNDATION FOR THE PROMOTION OF THE ARTS

THE NATIONAL FOUNDATION FOR THE PROMOTION OF THE ARTS
1000 PENNSYLVANIA AVENUE, N.W.
WASHINGTON, D.C. 20004
TEL. (202) 462-1200
FAX (202) 462-1201

EC DECLARATION OF CONFORMITY

We hereby declare that the following equipment complies with the essential requirements of:

EC Electromagnetic Compatibility Directive: 89/336/EEC
Electrical Equipment Designed for Use within Certain Voltage Limits : 73/23/EEC

Model Name : Liquid Auto Sampler Model ASC-150L

Standard to which Conformity is Declared:

EN55011(1991) Class B

EN50082-1(1997)

EN61010-1/A2 (1995)

Name of Manufacturer : MITSUBISHI CHEMICAL ANALYTECH CO., LTD

Manufacturer's Address : 370, Enzo Chigasaki, Kanagawa, Japan

EU Office Address : Prinzenallee 13 40549 Duesseldorf Germany

Type of Equipment : Laboratory Equipment

Month and year of CE Marking : February, 1998

Name : Toshio Kaneko
Position : General Manager

Date

: 29 Oct. 2008
DD.MMM.YYYY

ANALISIS KUALITAS AIR (KUALITAS AIR) (KUALITAS AIR)

Analisis kualitas air dilakukan untuk mengetahui kondisi lingkungan air yang ada di sekitar lokasi penelitian.

Analisis kualitas air dilakukan dengan menggunakan metode analisis kimia dan fisika.

Analisis kualitas air dilakukan dengan menggunakan metode analisis kimia dan fisika.

Analisis kualitas air dilakukan dengan menggunakan metode analisis kimia dan fisika.

Analisis kualitas air dilakukan dengan menggunakan metode analisis kimia dan fisika.

Analisis kualitas air dilakukan dengan menggunakan metode analisis kimia dan fisika.

Analisis kualitas air dilakukan dengan menggunakan metode analisis kimia dan fisika.

Analisis kualitas air dilakukan dengan menggunakan metode analisis kimia dan fisika.

Analisis kualitas air dilakukan dengan menggunakan metode analisis kimia dan fisika.

Analisis kualitas air dilakukan dengan menggunakan metode analisis kimia dan fisika.

Analisis kualitas air dilakukan dengan menggunakan metode analisis kimia dan fisika.

Analisis kualitas air dilakukan dengan menggunakan metode analisis kimia dan fisika.

Analisis kualitas air dilakukan dengan menggunakan metode analisis kimia dan fisika.

Analisis kualitas air dilakukan dengan menggunakan metode analisis kimia dan fisika.

INTRODUCTION

Thank you for your purchase of our auto sample changer Model ASC-150L.

This sample changer is an option for our analyzers. By connecting the unit to our analyzer, 50 bottles of samples can be measured automatically at most.

This instruction manual describes each part name, installation, operation, troubleshooting, and specifications.

To use Model ASC-150L efficiently and safely, read this manual and understand functions and operation fully. **READ INSTRUCTION MANUAL OF OUR ANALYZER, TOO.**

Appoint the operator at first for the safety use.

ANALYZER

The installation, operation, displayed contents depend on analyzer electric furnace direction.

Table 1 shows analyzer and electric furnace direction.

No.	Electric furnace direction	Indication	Model	Analyzer name	Indication at system program
1	Horizontal	Horizontal Furnace	TOX-100	Total Sulfur/Chlorine Analyzer Total Organic Halogen Analyzer	L-ASC
2			TN-110	Total Nitrogen Analyzer	
3			AQF-100	Automated Sample Combustion System	
4			TS-100	Trace Sulfur Analyzer	
5	TS-100V				
6	Vertical	Vertical Furnace	TCL-100	Trace Chlorine/Sulfur Analyzer	ASC-150L
7			TN-100	Total Nitrogen Analyzer	

Table 1. Analyzer and electric furnace direction

IMPORTANT SAFEGUARDS AND PRECAUTIONS

In installation

CAUTION

INSTALL THE UNIT IN THE PLACE WHERE ROOM TEMPERATURE IS 15~35°C. BY INSTALLING THE UNIT IN THE PLACE OF SEVERE TEMPERATURE, A FIRE MAY BE CAUSED AND OPERATION IS UNSTABLE.

CAUTION

INSTALL THE UNIT IN THE PLACE FREE FROM DIRECT SUNLIGHT. BY INSTALLING THE UNIT IN THE PLACE WITH DIRECT SUNLIGHT, A FIRE IS CAUSED.

CAUTION

INSTALL THE UNIT IN THE PLACE FREE FROM STRONG VIBRATION OR CONTINUOUS WEAK VIBRATION NOT TO CAUSE INSTABLE OPERATION.

CAUTION

INSTALL THE UNIT IN THE PLACE FREE FROM STRONG ELECTROMAGNETIC FIELD NOT TO CAUSE ERROR OPERATION.

CAUTION

INSTALL THE UNIT IN THE PLACE WHERE HUMIDITY IS UNDER 80% NOT TO CAUSE A FIRE AND AN ELECTRIC SHOCK.

CAUTION

DO NOT INSTALL THE UNIT IN DUSTY PLACE NOT TO CAUSE A FIRE AND AN ELECTRIC SHOCK.

CAUTION

INSTALL THE UNIT IN THE PLACE FREE FROM FIRE NOT TO CAUSE A FIRE. HIGH TEMPERATURE ELECTRIC FURNACE IS USED AT THIS UNIT.

CAUTION

INSTALL THE UNIT VERTICALLY. UNLESS INSTALLING THE UNIT VERTICALLY, THE UNIT FALLS AND IT CAUSES AN INJURY.

When using the unit

WARNING

USE SPECIFIED MICROSYPHINGE FOR SAMPLE INJECTION.

WARNING

DO NOT EXPOSE DIRECTLY COMBUSTIBLES AND COMBUSTIBLE GAS TO THE UNIT NOT TO CAUSE A FIRE. HIGH TEMPERATURE ELECTRIC FURNACE IS USED AT THIS UNIT.

In measurement by using the unit, observe the following instructions necessarily.

WARNING (EXPLOSION)

DO NOT ATTEMPT TO INJECT ORGANIC SUBSTANCES IN THE FLOW OF OXYGEN OR AIR IN THE PYROLYSIS TUBE AT HIGH TEMPERATURES. NEVER INJECT ORGANIC SUBSTANCES IN THE STAGNANT GAS FLOW.

CAUTION

DECIDE THE OPERATOR BEFORE OPERATION.
LIMIT THE OPERATOR AND THE PERSON IN CHARGE OF USE SHOULD MANAGE AND DIRECT THE USE.

CAUTION

DO NOT TOUCH POWER PLUG WITH WET HANDS. BY TOUCHING IT WITH WET HANDS, YOU CAN GET AN ELECTRIC SHOCK.

Table of Contents

4-3-2-1. Edit of Injection Position	4-7
4-3-2-2. H/W Test	4-9
4-3-2-3. Memory Initialization	4-10
4-3-3. Syringe position check function [NDL-S]	4-11
4-4. Manual Operation	4-13
4-4-1. Manual operation edit	4-13
4-4-2. Manual run	4-15

Section 5 : Operation

5-1. Start	5-1
5-2. System Setup	5-3
5-3. Setting the Analysis Parameters	5-4
5-4. Automatic Measurement	5-9
5-4-1. Automatic measurement flow	5-9
5-4-2. Automatic measurement method edit	5-10
5-4-3. Automatic measurement start	5-16
5-4-4. Automatic measurement	5-17
5-4-5. Spike Standard	5-23
5-4-6. Editing method during measurement	5-24
5-4-7. End	5-25

Section 6 : Troubleshooting

Section 7 : ASC-150L Error Messages

Section 8 : Maintenance

8-1. Inspection	8-1
8-1-1. Daily inspection	8-1
8-1-2. Periodical inspection	8-4
8-2. Maintenance	8-5
8-2-1. Power voltage and fuse change	8-5
8-3. Safekeeping of Unit	8-6

Section 9 : Specifications

Section 10 : Consumable Spare Parts

10-1. ASC-150L Spare Parts	10-1
10-2. Analyzer Spare Parts	10-2
10-3. Parts Pictures	10-3

ILLUSTRATION

Illustration 1-1. Front view of Model ASC-150L	1-1
Illustration 1-2. Rear view of Model ASC-150L	1-3
Illustration 1-3. ASC-150L operation panel	1-4
Illustration 3-1. Setting of vertical furnace	3-2
Illustration 3-2. Setting of horizontal furnace	3-2
Illustration 3-3. Syringe setting (1)	3-4
Illustration 3-4. Syringe setting (2)	3-5
Illustration 3-5. Setting sample in vial bottle	3-6
Illustration 3-6. ASC-150L tray unit	3-6
Illustration 3-7. Setting the tray unit to ASC-150L	3-6
Illustration 3-8. Connection of analyzer of horizontal furnace to Model ASC-150L	3-7
Illustration 3-9. Connection of analyzer of vertical furnace to Model ASC-150L	3-8
Illustration 3-10. Setting the flange fixing plate	3-9
Illustration 4-1. X axis adjustment	4-8
Illustration 4-2. Y axis adjustment	4-8
Illustration 4-3. Check of syringe position X and Y axis	4-11
Illustration 4-4. Syringe position check	4-12
Illustration 5-1. Air segment	5-6

TABLE

Table 1. Analyzer and electric furnace direction	Introduction-1
Table 1-1. Names and functions of Model ASC-150L front view	1-1~1-2
Table 1-2. Names and functions of Model ASC-150L rear panel	1-3
Table 1-3. Names and functions of Model ASC-150L operation panel	1-4~1-5
Table 2-1. Model ASC-150L standard accessories	2-1
Table 2-2. Parts for horizontal furnace	2-1
Table 2-3. Parts for vertical furnace	2-2
Table 2-4. Parts for TN-100	2-2
Table 4-1. Input range	4-14
Table 5-1. ASC-150L parameter setting contents	5-8
Table 5-2. ASC-150L program setting contents	5-12
Table 5-3. ASC-150L setting examples	5-19
Table 5-4. ASC-150L operation examples	5-20
Table 7-1. ASC-150L error messages	7-1
Table 7-2. ASC-150L LCD error messages	7-2
Table 8-1. Daily maintenance	8-1
Table 8-2. Periodical maintenance	8-4
Table 8-3. Power voltage setting value	8-5
Table 10-1. ASC-150L spare parts	10-1
Table 10-2. Analyzer spare parts	10-2
Table 10-3. ASC-150L part pictures	10-3~10-4

1-1-3. ASC-150L operation panel

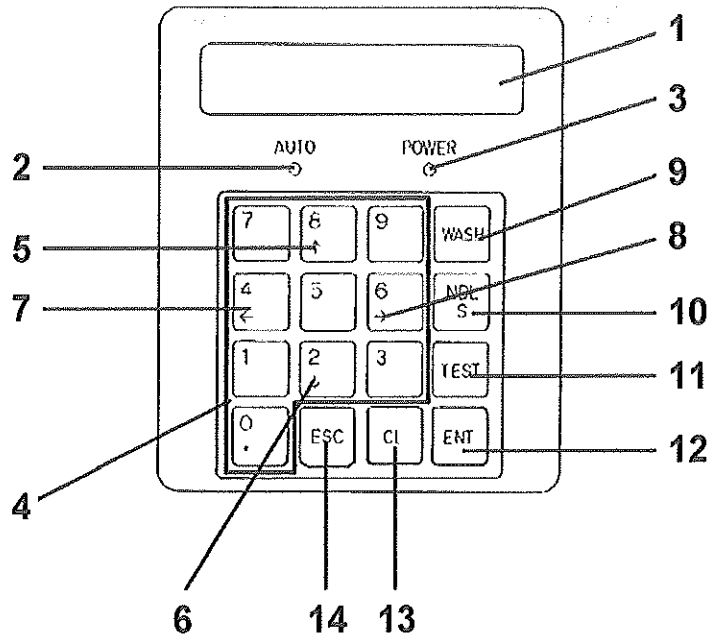


Illustration 1-3. ASC-150L operation panel

Illustration 1-3. shows Model ASC-150L operation panel and Table 1-3. shows the names and functions.

No.	Name	Symbol	Function
1	LCD		For displaying ASC-150L condition and information
2	Automatic operation indication	AUTO	It lights during the automatic operation.
3	Power switch light	POWER	It lights when power is supplied.
4	Numeral keys	0~9	For inputting numbers
5	Up arrow key	↑	During setting : Cursor moves to upper item. During manual operation : Syringe moves up.
6	Down arrow key	↓	During setting : Cursor moves to lower item. During manual operation : Syringe moves down.
7	Left arrow key	←	During setting : Cursor moves to the left item. During manual operation : Syringe tower moves to the left.
8	Right arrow key	→	During setting : Cursor moves to the right item. During manual operation : Syringe tower moves to the right.
9	Wash key	WASH	For washing syringe
10	Needle S key	NDL S	For checking the position of syringe injection

11	Test key	TEST	For checking syringe position (left and right and up and down directions) or testing hardware
12	Enter key	ENT	For deciding inputted number
13	Clear key	CL	For canceling inputted number
14	Escape key	ESC	For ending input condition or the setting

Table 1-3. Names and functions of Model ASC-150L operation panel

2-3. Parts for Vertical Furnace

Table 2-3. shows parts for vertical furnace.
The parts are not attached to horizontal furnace.

Description	Quantity	Check
1. Septum For Sample Injection Port*	100 pcs/set	
2. Sample inlet port for TSV/ ASC-150L	1 pc	
3. Fixing metal for TSV/ ASC-150L	1 set	

Table 2-3. Parts for vertical furnace

* Septum for sample injection port: TN5SIS

2-4. Parts for TN-100

Table 2-4. shows parts for TN-100.
The parts are only for TN-100.

Description	Quantity	Check
1. Septum For Sample Injection Port	100 pcs/set	
2. L-ASC Sample Injection Port	1 pc	
3. L-ASC Fixing Plate for TN-100	1 set	
4. Flange Fixing Plate	1 pc	

Table 2-4. Parts for TN-100

Section 3 : Installation Overview

This section tells you an installation overview and the installation requirements of Model ASC-150L.

3-1. Analyzer Environment

Install Model ASC-150L as the following conditions.

- Room temperature should be 15~35°C.
- Free from direct sunlight
- No strong vibration and continuous weak vibration
- No strong electromagnetic field
- The humidity should be under 80%.
- No corrosive gas
- Dust amount should be small.
- Fire must not be used.
- No combustibles
- The surface of installation should be horizontal.

We can't guarantee the troubles or damages caused by neglecting the above conditions.

3-2. Installation Space

Model ASC-150L size is as follows.

To install ASC-150L, the following space plus analyzer's space is required.

- Model ASC-150L size is 460(W)×320(D)×470(H) mm. The weight is 16kg.
- Rack size is 550(W)×360(D)×19(H) mm. The weight is 7kg. For only horizontal furnace, place it on ABC. Prepare 300mm space for the maintenance of pyrolysis tube.
- Do not place things in front of fan of the rear to ventilate.
- Prepare more than 150mm space between the unit and the back wall.
- For vertical furnace, place it on analyzer as illustration 3-1.
- For horizontal furnace, place it above ABC as illustration 3-2.

* All analyzers are connected to personal computer or printer.
The space is required separately.

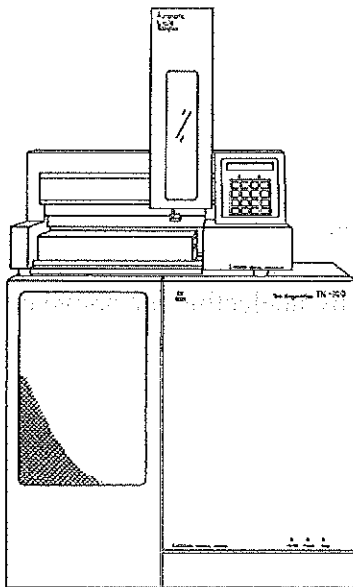


Illustration 3-1. Setting of vertical furnace

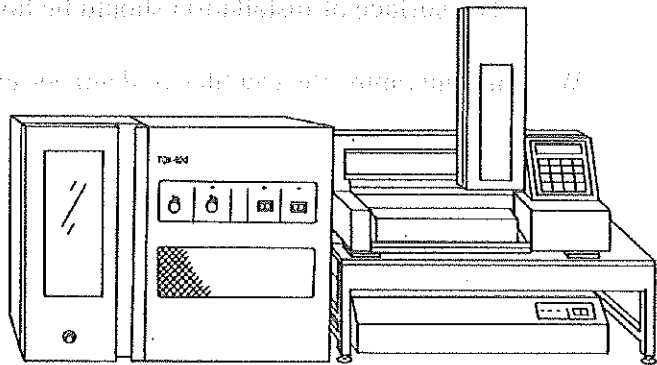


Illustration 3-2. Setting of horizontal furnace

3-3. Power Preparation

3-3-1. Power

Power voltage of Model ASC-150L is AC100/115/230/240V.

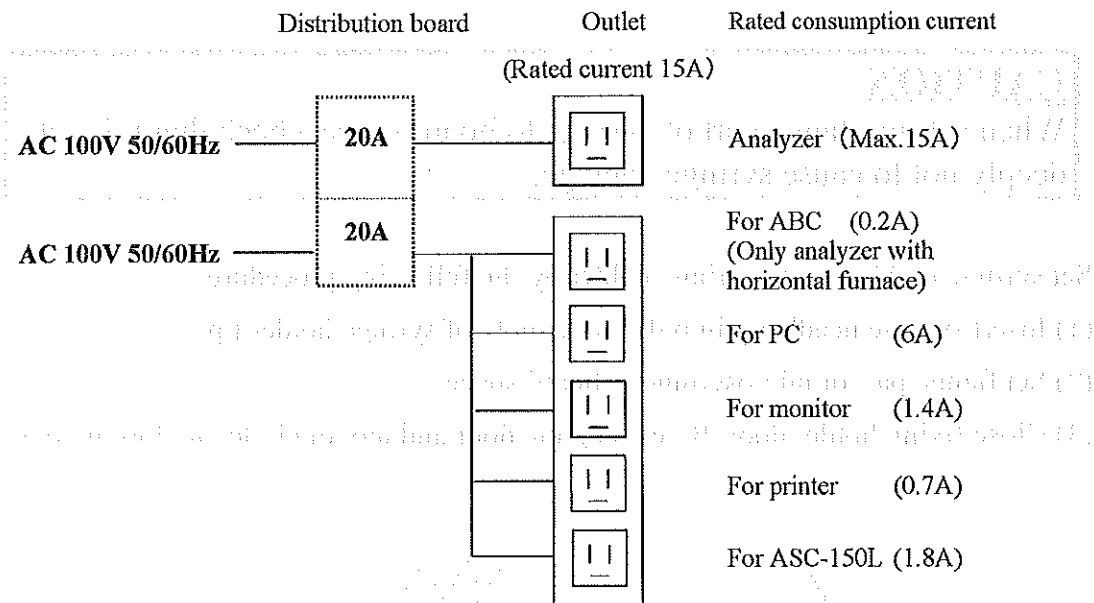
Consumption power is 180VA.

When voltage fluctuation is over 10%, arrange a voltage stabilizer.

3-3-2. Grounding

Wiring

Wiring example is as follows. Separate one for analyzer from distribution board.



The cable length is as follows.

- Power cable for Model ASC-150L : 2m

3-4. Preparation for Model ASC-150L

3-4-1. Syringe setting

CAUTION

When setting or removing syringe, turn off the power switch of Model ASC-150L.

By setting or removing syringe when the power switch is on, error operation is caused.

CAUTION

Remove syringe and wash it every day.

CAUTION

When setting flange part of syringe to board space, check that it is set deeply not to cause syringe damage.

Set syringe to ASC-150L syringe holder by the following procedure.

- (1) Insert syringe needle tip into the guide hole of syringe holder tip.
- (2) Set flange part of microsyringe to board space.
- (3) Close fixing holder door. By closing the door and moving it down, door is fixed.

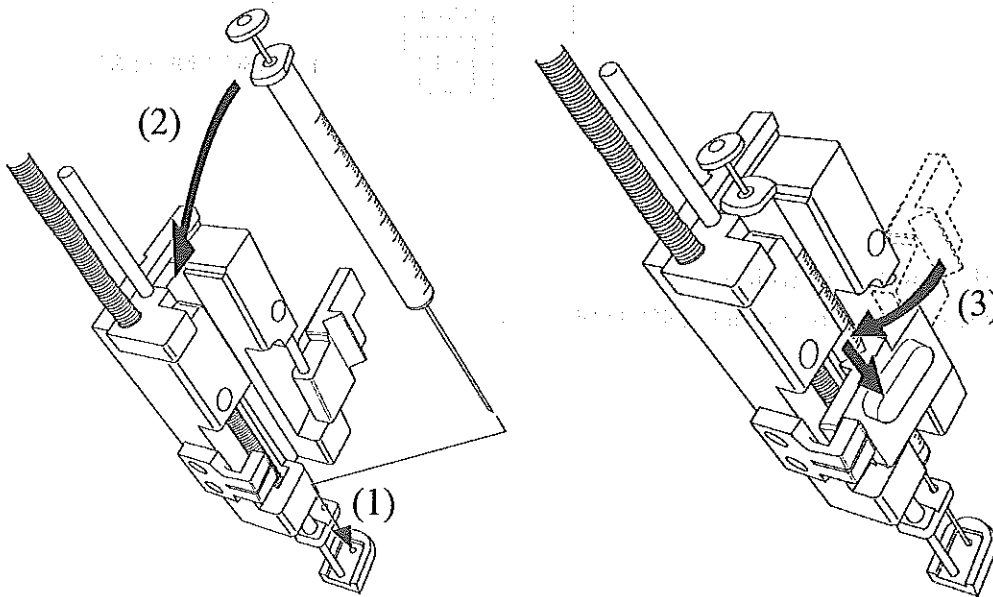


Illustration 3-3. Syringe setting (1)

- (4) Raise plunger holder slightly and rotate plunger holder. Plunger is locked.
- (5) Fix syringe holder to syringe tower by screws.
- (6) Move down plunger holder. Rotate it slightly to move stopper to the ditch. Plunger holder moves down.

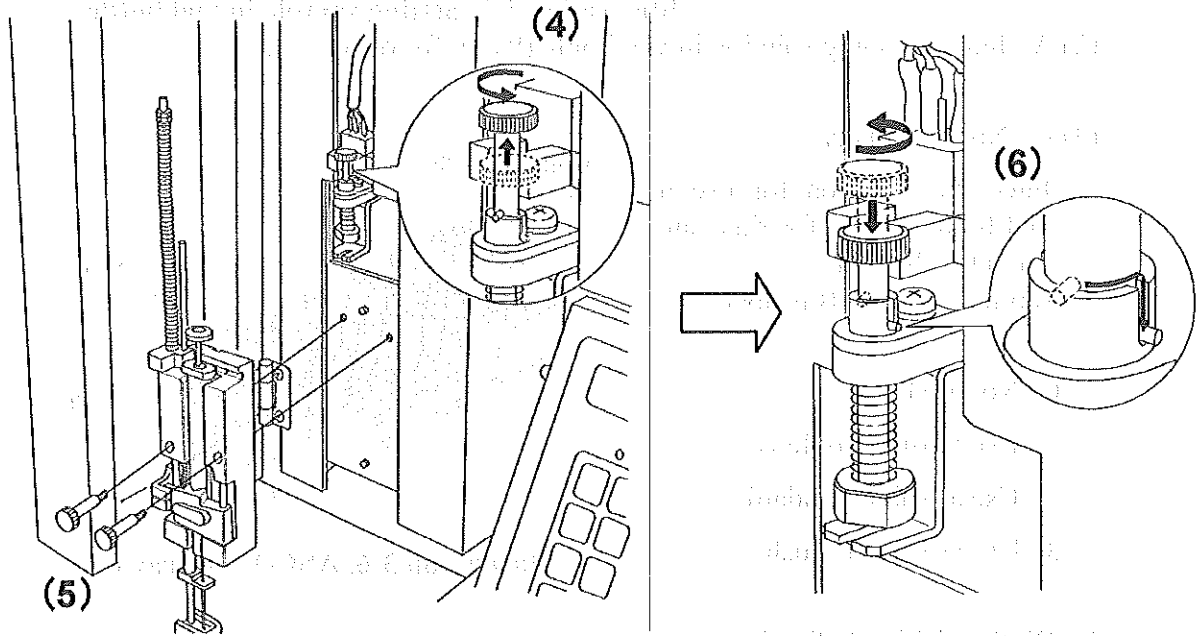


Illustration 3-4. Syringe setting (2)

3-4-2. Preparation for tray unit

- (1) 1~50 : Inject samples in vial bottle (small) for samples up to 80 percent and set.



Illustration 3-5. Setting sample in vial bottle

- (2) A : Inject washing solution in vial bottle (large) for rinse and set.

- (3) B : No use usually.

Inject the solution for use in vial bottle (large) for rinse and set only when the setting for using B is done.

0 : Not used

1 : Use as rinse bottle B.

2 : Use as spike standard.

3 : Use as solvent flush.

1. Vial No.1~50.

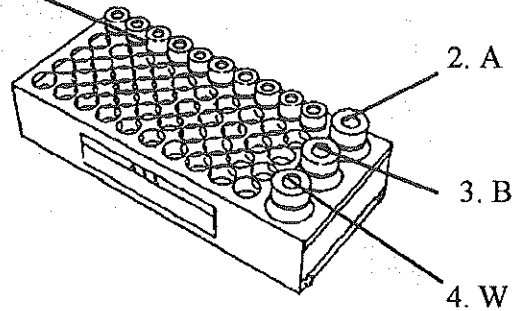


Illustration 3-6. ASC-150L tray unit

- (4) W: Set vial bottle for rinse (for waste liquid) in empty condition.

CAUTION

Replace the septum every day. Rinse vial must be empty before operation. Replace the washing solvent every day.

- (5) Carefully set the tray unit.

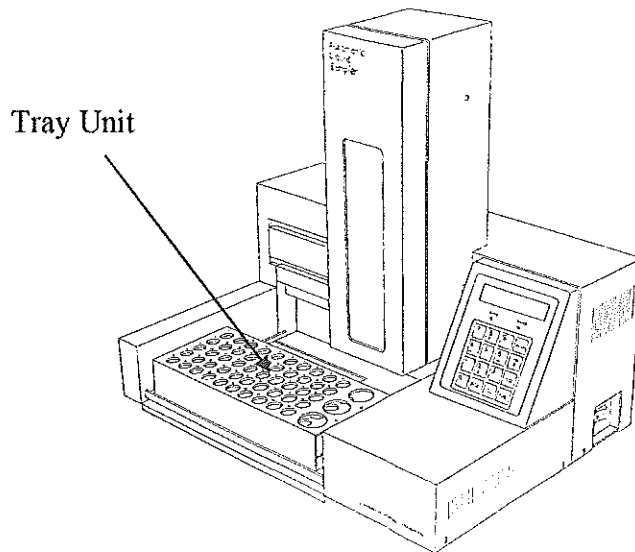


Illustration 3-7. Setting the tray unit to ASC-150L

3-4-3. Connection of analyzer to Model ASC-150L

Connection of analyzer of horizontal furnace to Model ASC-150L

Connect Model ASC-150L as the following procedure.

Illustration 3-8 shows the connection of analyzer of horizontal furnace to Model ASC-150L.

- (1) Remove knurled screws connecting Model ABC-100 with analyzer.
- (2) Let connecting board for rack pass and under pyrolysis tube fix it with knurled screws.
- (3) Rotate rack adjuster foot to adjust the height.
- (4) Fix rack connecting board from analyzer side (left from the rack front) with knurled screws.
- (5) Put Model ASC-150L on rack and place Model ASC-150L feet into holes.

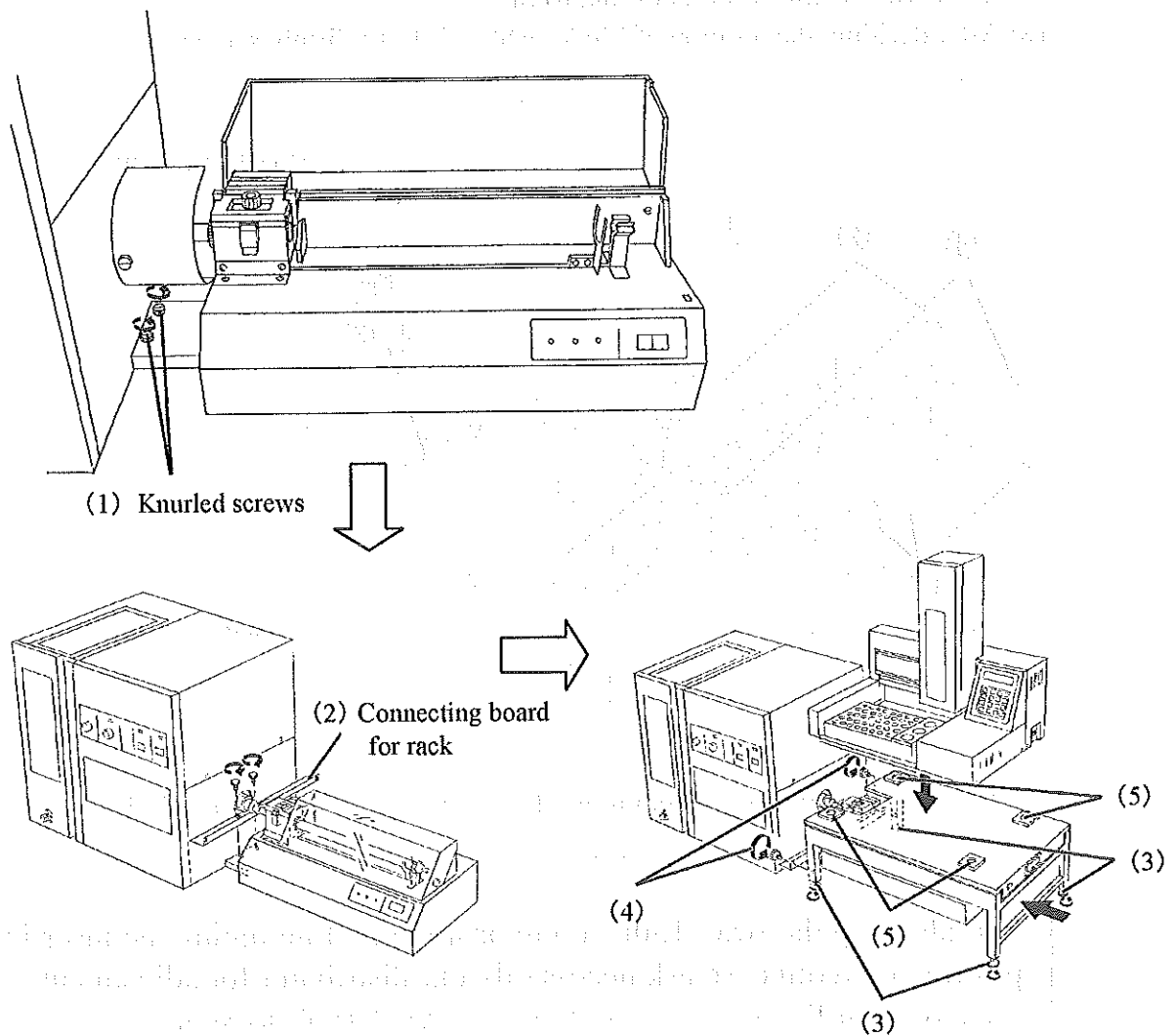


Illustration 3-8. Connection of analyzer of horizontal furnace to Model ASC-150L

Connection of analyzer of vertical furnace to Model ASC-150L

Connect Model ASC-150L as the following procedure.

Illustration 3-9 shows the connection of analyzer of vertical furnace to Model ASC-150L.

- (1) Remove screws ① of analyzer rear top (The screw number depends on analyzer type. For TN-100, remove 2 screws of the right.)
- (2) Set fixing metal A to the analyzer rear with attached screws ① as illustration 3-9.
- (3) Set temporarily fixing metal B to fixing metal A with attached screws ② as Illustration 3-9.
- (4) Remove screws ③ of Model ASC-150L rear bottom both sides.
- (5) Put Model ASC-150L on analyzer top.
- (6) Fix Model ASC-150L to fixing metal B with knurled screws ④.
- (7) Adjust the injection position of syringe injection. To adjust Z direction (back and forth), move Model ASC-150L back and forth.
- (8) After deciding the position of Model ASC-150L, fix firmly screws ②.

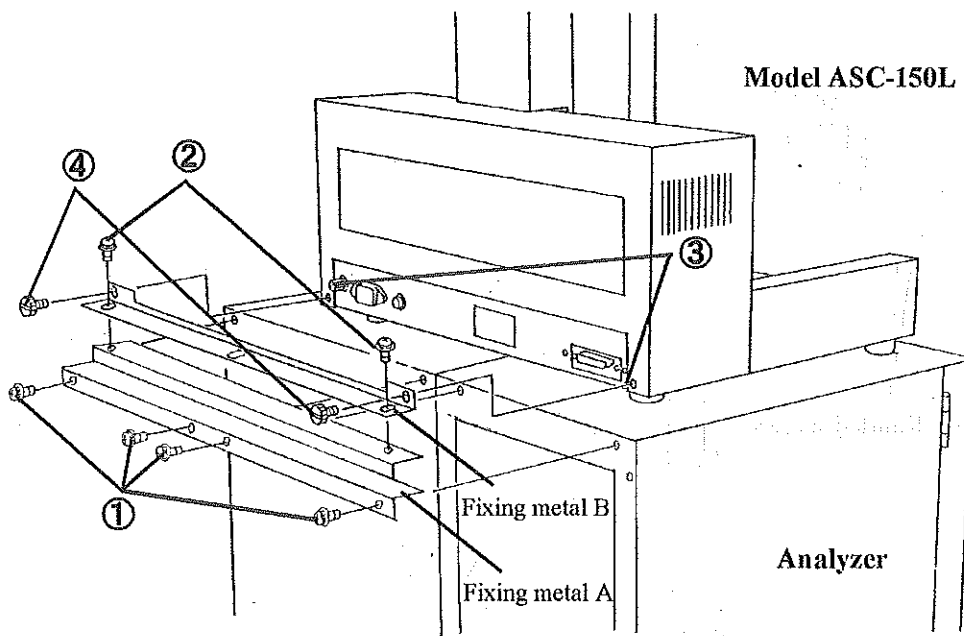


Illustration 3-9. Connection of analyzer of vertical furnace to Model ASC-150L

CAUTION

For adjusting the ASC-150L fixing position by fine-tuning the insertion position of syringe, so ask necessarily our distributor for adjustment.

Take off knurling screw ④ and remove ASC-150L to remove ASC-150L decided the mechanical position. (Don't take off the fixing bar. When removing fixing bar, readjust the fixing position.)

When fixing ASC-150L again, conduct (5) and (6).

3.5 Sample Inlet Port Setting

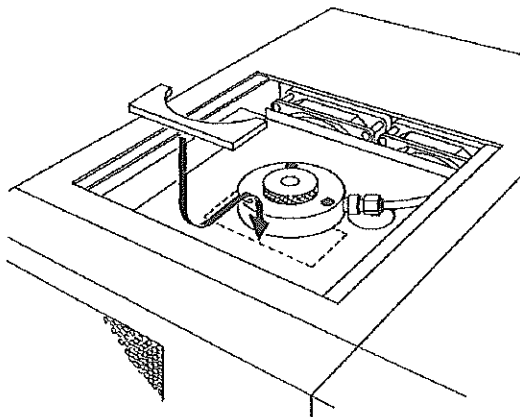
3-5-1. Replacing the sample inlet port

For TS-100V or TCL-100, replace sample inlet port for TSV/150L with new one.
For TN-100, replace L-ASC sample injection port with new one.

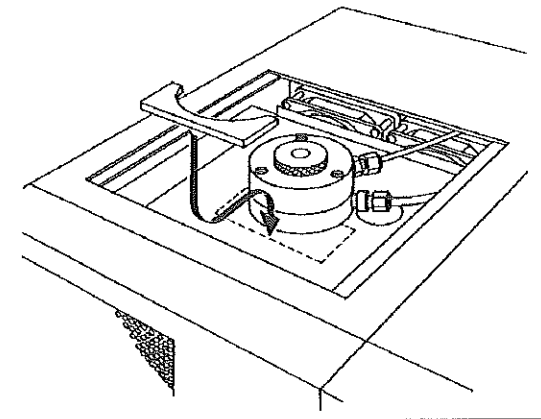
3-5-2. Setting the flange fixing plate

Only when connecting ASC-150L to TN-100, use flange fixing plate.
Flange fixing plate is a guide to fit the flange in a correct position.
Take off the protective tape and fix as follows.

Flange Fixing Plate : P/N TX3LS7



For water sample



For nonaqueous sample

Illustration 3-10. Setting the flange fixing plate

3.6 Cable Connection

3-6-1. Connection of communication cable

Connect analyzer communication connector (OPTION 1 or OPTION) with ASC-150L cable (MAIN UNIT) by RS-232C cable. To connect other communication cables, refer to their instruction manuals.

3-6-2. Connection of power cable

Connect power cable to ASC-150L power connector (AC POWER or a.c. POWER). To connect analyzer cable, refer to each instruction manual.



Section 4 : ASC-150L Function

This section describes Model ASC-150L functions.

4-1. Function Type

ASC-150L functions are as follows.

(1) Special function

<WASH> key

Syringe washing function : For washing syringe inside

<TEST> key

Edit of Inj Pos.: Syringe injection position adjustment function

For deciding the position of syringe injection

Edit of Value : Syringe capacity correction function

(Do not use this function except serviceman.)

H/W Test : Hardware test function (Refer to 4-4-1. Manual operation edit.)

Memory Initial : For initializing unit memory to set it to the contents on delivery

<NDLS> key : For checking syringe injection position

CAUTION

Use Model ASC-150L under the condition set by serviceman in installation.

(2) Manual operation

For setting operation program exclusively for ASC-150L (syringe size, bottle No., injection, and washing) and checking ASC-150L operation

(3) Automatic measurement

For measuring sample automatically under the condition set at PC side
Refer to 5.Operation.

CAUTION

Before automatic measurement, check necessarily the conditions of measurement, combustion, and sample changer.

Set appropriate conditions not to cause error operation and explosive combustion.

4-2. ASC-150L Start

Start Model ASC-150L.

- (1) Turn on the power switch of Model ASC-150L.
 →ROM Version check screen is displayed.
 Model ASC-150L checks home position.

<Display>

ROM Version (V*.*)
 Home

- (2) The unit checks home position and waits for
 command from personal computer.
 The right is displayed.

Command Waiting
 <ESC> key

For automatic titration, leave the condition as it is.
 For using special function in the next page,
 press <ESC> key.
 →Initial screen is displayed.

1. Auto
 2. Manual

4-3. Special Function

4-3-1. Syringe washing function [WASH]

(1) Press <WASH> key when initial screen is displayed.

<Display>

- | |
|------------------------|
| ■ 1. Auto
2. Manual |
|------------------------|

→Washing function select screen is displayed.

(2) Screen has two items.

1. Edit : WASH function editing
2. Run : WASH function running

- | |
|----------------------------|
| ■ 1. Edit (Wash)
2. Run |
|----------------------------|

Set washing time at first.

Select "1. Edit" and press <ENT> key.

→Washing function edit screen (**Wash**) is displayed.

(3) Select syringe size by pressing <←> or <→> key.

Syringe type : 25, 50, 100 μ l

50 μ l is standard.

WASH Syringe Type 50

(4) Press <ENT> key.

→The following item is displayed.

(5) By pressing <←> or <→> key to select "R Fill Rate".

R Fill Rate : 2, 5, 10, 20 μ l/sec

20 μ l/sec is standard.

WASH R Fill Rate : μ l/s 20
--

(6) Press <ENT> key.

→The following item is displayed.

- (7) By pressing <←> or <→> key to select “R Inj Rate”.

R Inj Rate : 10, 20, 30, 40, 50 μ l/s
40 μ l is standard.

WASH R Inj Rate : μ l/s 40

- (8) Press <ENT> key.

→The following item is displayed.

- (9) Press <←> or <→> key to select number of times.

Washing time : 0~5 times
2 times is standard.

** WASH** R Times 2

- (10) Press <ENT> key.

→Setting ends and the item returns to the first.

- (11) Press <ESC> key.

Washing function select screen is displayed.

- (12) Press <↓> key and select “2. Run” to start washing. Press <ENT> key.

1. Edit (Wash) ■ 2. Run

→Washing starts.

** WASH** [Rinse 2/1]

- (13) After washing, syringe tower returns to home position.

1. Edit (Wash) ■ 2. Run

- (14) Press <ESC> key to return to initial screen.

■ 1. Auto 2. Manual

4-3-2. Syringe injection position adjustment function [TEST]



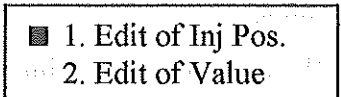
(1) Press <TEST> key when initial screen is displayed.

→The next screen is displayed.



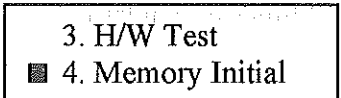
(2) Test items are as follows.

1. Edit of Inj Pos. : Injection position adjustment



2. Edit of Value : Volume Calibration

(Only authorized serviceman can operate.)



3. H/W test : Hardware test

4. Memory Initial : Memory initialization

Select item by <↓> key and press <ENT> key.

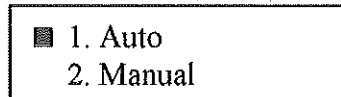
Refer to the next page and after for setting

(3) Press <ESC> key after setting.

Syringe tower returns to home position.



(4) Initial screen is displayed.



4-3-2-1. Edit of Injection Position

Adjust syringe injection position.

(1) Select 1. Edit of Inj Pos. and press <ENT> key.

■ 1. Edit of Inj Pos.
2. Edit of Value

(2) Select analyzer furnace type.
Select 1. Horizontal furnace or 2. Vertical furnace with <←> or <→> key. Press <ENT> key.

■ 1. Horizontal furnace
2. Vertical furnace

* Select "1. Horizontal furnace" as an indication example. **When using vertical furnace, replace 1. Horizontal furnace with 2. Vertical furnace.**

* For electric furnace type, refer to Table 1. Analyzer and electric furnace direction of Introduction.

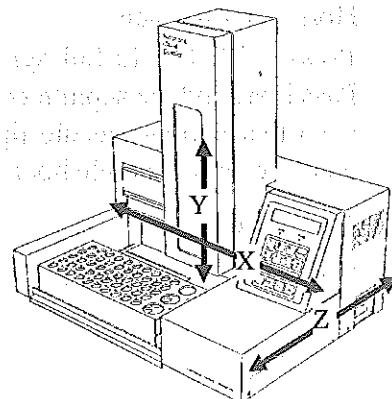
(3) Select Syringe Type with <←> or <→> key.

Syringe type : 25, 50, 100 μ l
50 μ l is standard.

Horizontal furnace
Syringe type 50

(4) Press <ENT> key. The ASC-150L display shows the current injection position.

Horizontal furnace
X=213.5mm Y=105.5mm



(5) Press <CL> key to indicate initial value.

Horizontal furnace : X=212.5mm
Y=103.5mm
Vertical furnace : X=146.5mm
Y=143.5mm

Horizontal furnace
X=212.5mm Y=130.0mm

- (6) Press <ENT> key to move syringe tower as follows.

Horizontal furnace : X=212.5mm

Y=70.0mm

Vertical furnace : X=146.5mm

Y=83.5mm

Horizontal furnace X=212.5mm Y=70.0mm
--

- (7) Adjust X axis and Z axis so that the tip of the syringe should be in the septum center of the injection port.

X axis : Press <←> or <→> key to adjust X axis every 0.5mm step.

Z axis : Move ASC-150L forward or backward to adjust the position.

For horizontal furnace, move a rack.

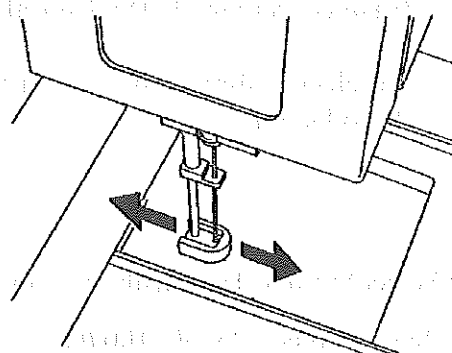


Illustration 4-1. X axis adjustment

- (8) Press <ENT> key. Syringe needle moves to injection port for check.

Horizontal furnace : Y=103.0mm

Vertical furnace : Y=88.5mm

Horizontal furnace X=212.5mm Y=103.0mm

- (9) Press <↑> or <↓> key to adjust Y axis every 0.5mm step.

Horizontal furnace :

Press <↓> key to fall syringe gradually.

Pass it around the septum center and adjust it so that syringe needle tip should touch quartz wool of sample boat.

Vertical furnace :

Set Y axis at 130mm.(TN-100: 140mm)

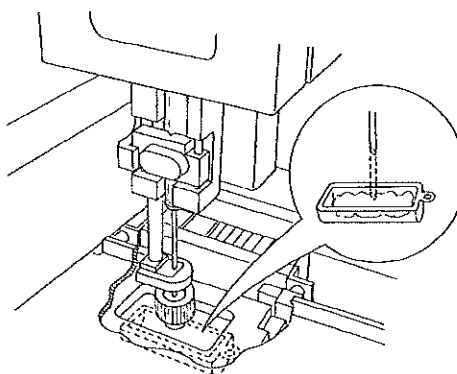


Illustration 4-2. Y axis adjustment

- (10) After adjusting X axis, Y axis, and Z axis, press <ESC> key to memorize X axis and Y axis values. Syringe tower returns to the home position.

Home

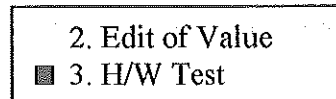
<input checked="" type="checkbox"/> 1. Auto <input type="checkbox"/> 2. Manual

4-3-2-2. H/W Test

- (1) Check that cursor is at "3. H/W Test" and press <ENT> key.

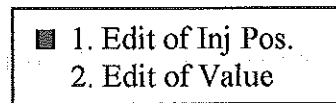
Operation start message is displayed and operation starts by set contents.

Press <ESC> key to stop operation.



- (2) After closing the set contents, the screen returns to the condition when <TEST> key is pressed.

When pressing <ESC> key to stop operation, the screen turns to initial condition.

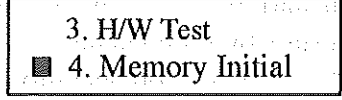


4-3-2-3. Memory Initialization

Use this function when changing ROM or when battery is run out.

- (1) Check that cursor is at "4. Memory Initial" and press <ENT> key.

Memory initialization screen is displayed.

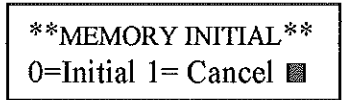


- (2) Input value to select initialization.

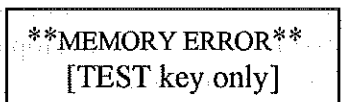
For initialization, input 0 and press <ENT> key.

Without initialization, input 1 and press <ENT> key.

When pressing 1, the screen turns to the initial condition.



- (3) In initialization (when pressing 0), only <TEST> key is available. Press <TEST> key.

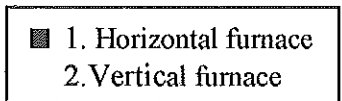
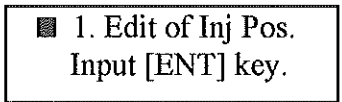


- (4) Press <ENT> key.

The screen for selecting furnace type is displayed.

1. Edit of Inj Pos. :

Refer to item after (2) of "4-3-2-1. Edit of Injection Position" and adjust syringe injection position.



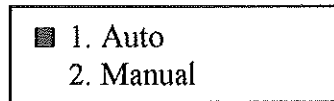
4-3-3. Syringe position check function [NDL-S]

CAUTION

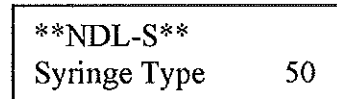
After adjusting injection position at 4-3-2-1. Editing of Injection Position, use this function. Without adjustment, microsyringe needle can break when syringe position is off the position.

<Display>

(1) Press <NDL-S> key when initial screen is displayed. Syringe position check screen is displayed.



(2) Select syringe type with <<-> or <->> key.
Syringe type is 25, 50, 100, 250 μ l.
* 50 μ l is standard.



(3) Press <ENT> key. Syringe tower moves to injection position.

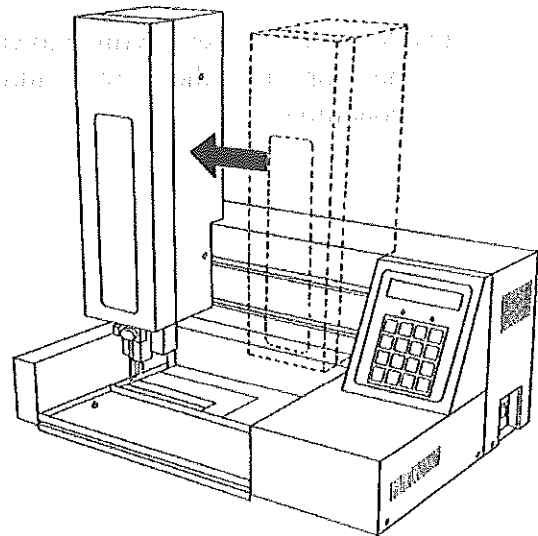


Illustration 4-3. Check of syringe position X and Y axis

(4) Press <ENT> key. Syringe sticks in injection port.

****NDL-S****
Press ENT to inject.

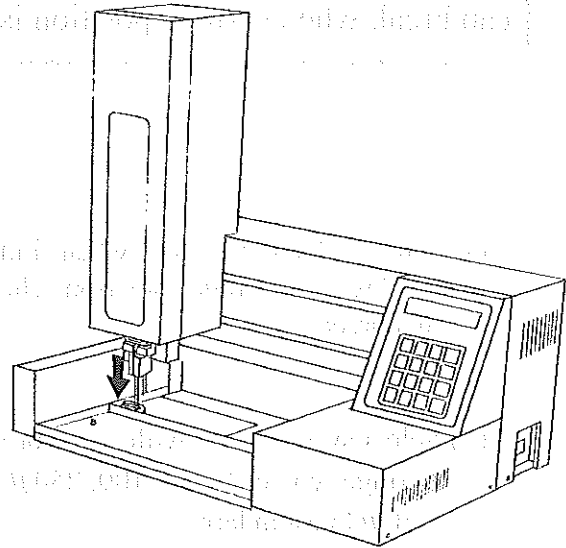


Illustration 4-4. Syringe position check

(5) Press <ESC> key. Syringe tower returns to home position and the screen turns to the initial condition.

****NDL-S****
Press ENT to home ...

Home

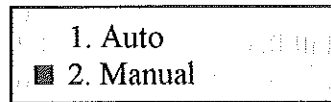
- 1. Auto
- 2. Manual

4-4. Manual Operation

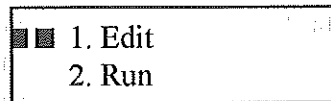
4-4-1. Manual operation edit

<Display>

- (1) Select "2. Manual" with <↓> key when initial screen is displayed and press <ENT> key. Manual operation selection screen is displayed.



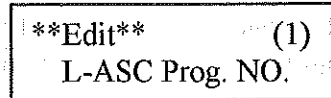
- (2) The screen has two items.



1. Edit : Manual operation editing
2. Run : Manual operation running

When editing unit setting, select "1. Edit" and press <ENT> key. ****Edit**** is displayed.

- (3) Input the number for registering program with numeric keypad.



L-ASC Prog NO. : 1~9

* Hardware test contents are set at L-ASC Prog NO.10.

Therefore only value can be edited.

Refer to 4-3-2-2. H/W Test.

Setting way

The number in the above brackets is the present setting value.

Input directly from numeric keypad to change number.

[←] [→] key : For changing the value

[↓] key : For moving to the next item (Movable only after decision)

[ENT] key : For deciding the present setting

Refer to Table 4-1. "Input range".

Input methods are as follows.

1. Input with numerical keypad.
2. Change the value (microsyringe size) with <←> or <→> key.

- (4) Press <ENT> key and <↓> key. The following item is displayed.

- (5) Input each item by referring to Table 4-1. Input range.

Available items depend on setting contents of Btl B item.

- (6) By inputting all items, the item returns to the first. Press <ESC> key.

Manual operation selection screen is displayed.

No.	Parameter	Input Range	Unit
1	Program No.	1~10	
2	Syringe Type	25, 50, 100 Standard is 50 μ l.	[μ l]
3	Start Btl	1~50	
4	End Btl	1~50 (No. after Start Btl)	
5	S Fill Rate	2, 5, 10, 20	[μ l/sec]
6	Post Fill Delay	0, 2, 5, 10	[sec]
7	S Inj Rate	0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 1.8, 2.0, 10, 20, 30, 40, 50	[μ l/sec]
8	S Inj Vol	25 μ l : 1~20 50 μ l : 1~40 100 μ l : 1~80 (Setting every 1 μ l)	[μ l]
9	Post Inj Delay	0, 2, 5, 10	[sec]
10	S Inj Times	1~30	[times]
11	Multi Inj Times	1~10	[times]
12	Flush Times	1~10	[times]
13	F Fill Rate	1.6, 1.8, 2.0, 10, 20, 30, 40, 50	[μ l/sec]
14	F Inj Rate	10, 20, 30, 40, 50, 70	[μ l/sec]
15	F Inj Vol	(Same as S Inj Vol)	[μ l]
16	R Fill Rate	2, 5, 10, 20	[μ l/sec]
17	R Inj Rate	10, 20, 30, 40, 50	[μ l/sec]
18	Initial Rinse	0~5	[times]
19	S Rinse Times	0~5	[times]
20	R Times	0~5	[times]
21	Btl B	0 : Not used 1 : Use as washing bottle B. 2 : Use as Spike Standard. 3 : Use as Solvent Flush.	
22	Pre Fill Air	25 μ l : 0, 1, 2, 3	
23	Mid Fill Air	50 μ l : 0, 2, 4, 6	[μ l]
24	Post Fill Air	100 μ l : 0, 2, 4, 6, 8	
25	Std. Spike	25 μ l : 1~12 50 μ l : 1~25 100 μ l : 1~50	[μ l]
26	Ini R Times	0~5	[times]
27	S Rinse Times	0~5	[times]
28	Solvent Flush Times	25 μ l : 1~12 50 μ l : 1~25 100 μ l : 1~50	[μ l]

Table 4-1. Input range

4-4-2. Manual run

<Display>

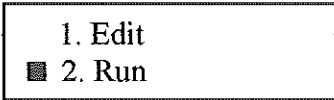
(1) Select "2. Manual" with <↓> key when initial screen is displayed and press <ENT> key. Manual operation selection screen is displayed.



(2) The screen has two items.

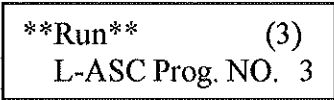
- 1. Edit : Manual operation editing
- 2. Run : Manual operation running

When running manual operation, select "2. Run" and press <ENT> key. "***Run***" is displayed.



(3) Input program No. (example : 3) with numeric keypad.

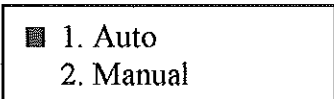
L-ASC Prog NO. : 1~10



(4) Press <ENT> key. Operation starts by set contents.

* Refer to Table 4-1. Input range for set contents.

(5) Set operation ends and initial screen is displayed.



<p>1. The function of the ASC-150L is to provide a means of measuring the amount of material that is being processed by the system.</p>	<p>The function of the ASC-150L is to provide a means of measuring the amount of material that is being processed by the system. This is done by using a flowmeter to measure the flow of material through the system. The flowmeter is connected to the system and provides a signal to the ASC-150L, which then displays the amount of material processed.</p>
<p>2. The function of the ASC-150L is to provide a means of measuring the amount of material that is being processed by the system.</p>	<p>The function of the ASC-150L is to provide a means of measuring the amount of material that is being processed by the system. This is done by using a flowmeter to measure the flow of material through the system. The flowmeter is connected to the system and provides a signal to the ASC-150L, which then displays the amount of material processed.</p>
<p>3. The function of the ASC-150L is to provide a means of measuring the amount of material that is being processed by the system.</p>	<p>The function of the ASC-150L is to provide a means of measuring the amount of material that is being processed by the system. This is done by using a flowmeter to measure the flow of material through the system. The flowmeter is connected to the system and provides a signal to the ASC-150L, which then displays the amount of material processed.</p>
<p>4. The function of the ASC-150L is to provide a means of measuring the amount of material that is being processed by the system.</p>	<p>The function of the ASC-150L is to provide a means of measuring the amount of material that is being processed by the system. This is done by using a flowmeter to measure the flow of material through the system. The flowmeter is connected to the system and provides a signal to the ASC-150L, which then displays the amount of material processed.</p>

Section 5: Operation

Measurement is described with TS-100 system program. When using another system program, window contents are partly different. Therefore, replace TS-100 with your analyzer name.

5-1. Start

CAUTION

When starting Model ASC-150L, adjust syringe injection position and measure automatically not to cause unit or syringe damage.

(1) Start Model ASC-150L.

Turn on the power switch of
Model ASC-150L : ON

After Model ASC-150L checks home position, the right screen is displayed. It waits for command from personal computer.

Command Waiting
<ESC> key ■

Turn on the power switches of

Analyzer power switch (Front panel)	: ON
Analyzer heater switch (Front panel)	: ON
Personal computer	: ON
Monitor	: ON
Printer (If connected)	: ON
Other options (If connected)	: ON

- (2) Start analyzer system program.

POINT

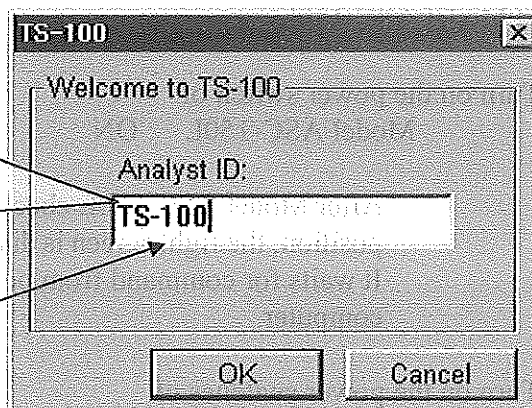
In this section, analyzer system program is described in TS-100 system program. When using other analyzers, replace TS-100 with your analyzer model name.

- ① Click [Start] button, [Programs], and [TS-100 System].
TS-100 system Program starts.
- ② After the start window of TS-100 System is indicated, Analyst ID input window is indicated.
- ③ Input Analyst ID.
- ④ Click [OK] button.
- ⑤ TS-100 System Program status screen is shown.

What is Analyst ID?

Register Analyst ID to limit the present software user(s) according to Product Liability Law.

“TS-100” is ID to open at any time.

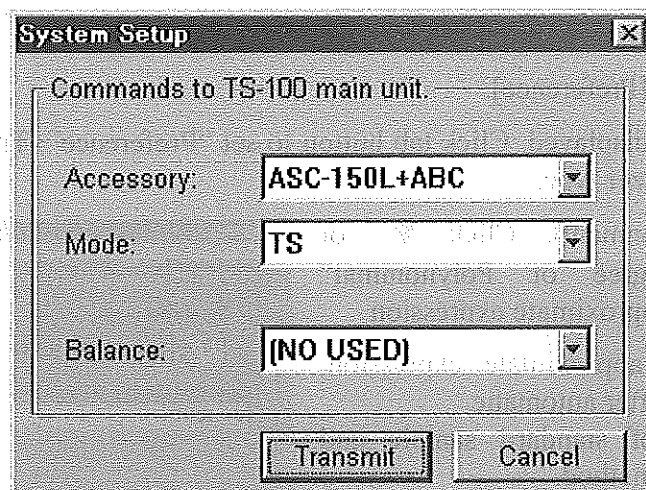


5-2. System Setup

POINT

Run "System Setup" before measurement. Setting items depend on analyzer type.

- (1) Press <F5> key or click [System], [System Setup]. "System Setup" window is displayed. Displayed setting items are different every analyzer.



- (2) Select Accessory.

For vertical furnace, select "ASC-150L".

For horizontal furnace, select "ASC-150L +ABC or "L-ASC+ABC".

- (3) Select Mode.

- (4) Some analyzers have the following items. Set them.

[Titration Current (mA)] : Select titration current.

[Sample Type] : Select sample type.

[Balance] : Select balance maker. (Only when connected)

- (5) With balance, select balance maker. Without balance, select "NO USED".

- (6) Click [Transmit] button. "System Setup" contents are kept and "System Setup" is ended. Communication between analyzer system program and analyzer starts.

CAUTION

Do not choose a wrong Accessory and Mode. This may cause an error.

5-3. Setting the Analysis Parameters

In preference, set basic environment and automatic operation function of analyzer system program.

POINT

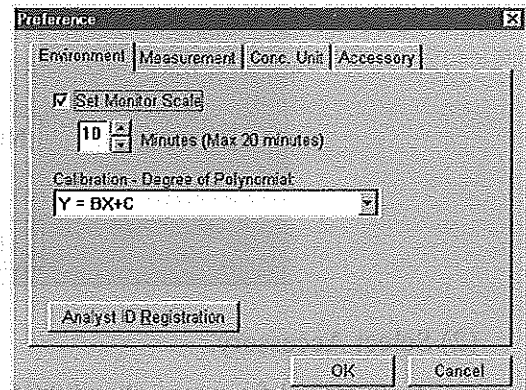
Set preference if necessary.

- (1) Click [System], [Preference].

“Preference” is displayed. Click tab button to set “Preference”. The displayed contents depend on analyzer type.

- (2) Click [Environment]. Click ▼ of “Calibration-Degree of Polynomial” right to select approximate expression.

By presetting approximate expression, edit goes well after automatic measurement of standard sample and sample by one method.



- (3) Click [Measurement].

Click setting item.

[ASC-When all measurement is finished.]

After automatic measurement of ASC-150L, set automatic operation.

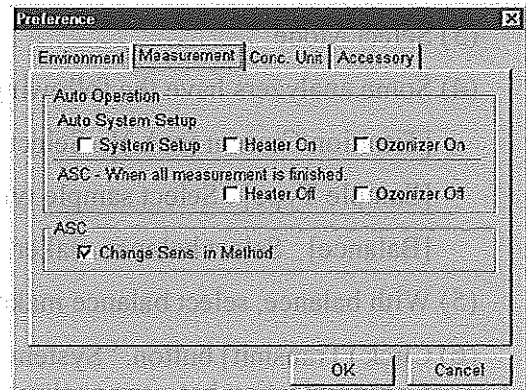
Heater Off

Ozonizer Off

[Change Sens. in Method]

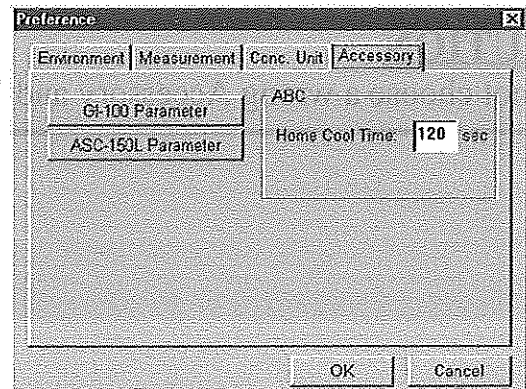
For using some Sens. at one method

“Change Sens.” is indicated in “Target” at method.



- (4) Click [Accessory] and, [ASC-150L] or [ASC-150L Parameter].

“ASC-150L Parameter” is displayed. Measurement method when ASC-150L is used can be set.



* Some analyzers have “Prepare the next measurement not to wait for the end of the measurement.” By checking the right box, ASC-150L prepares for the next measurement by set contents. (ASC-150L runs syringe washing and rinse. Syringe tower moves to sample fill position and waits for next measurement.)

(5) Set each item.

* Refer to table 5-1 for setting contents.

① Click ▼ of “Syringe Type” and select syringe size. 50 μ l is standard.
Syringe size depends on unit and measurement.

② Click ▼ of “Bottle B” and select bottle use and the purpose.

Rinse

For double rinse such as different solvent

Spike Standard

For checking no influence of matrix in sample

When adding standard sample to sample and added standard sample volume can be measured, the sample has no interference.

Solvent Flush

For removing sample of the needle tip

Take solvent or distilled water into syringe, take sample, and push it with taken solvent or distilled water.

POINT

When “S Rinse (time)” is set at ASC-150L program, rinse with solvent Flush. For ASC-150L program, refer to table 5-2.

③ Input values in each item. Refer to table 5-1 for input contents.

Air Flush

When taking solution into syringe, small bubble comes in by pulling up plunger. For discharging the bubble from syringe

* Fill volume is same as sample injection volume.

Air Segment: For sample separation

For not touching solution to plunger tip or mixing sample with solvent and distilled water used for Solvent Flush

Air segment
For pushing sample completely with air
Use this function together with Solvent Flush.

Combination example:
* Pre Fill Air + Sample
Standard setting for horizontal furnace
* Solvent Air + Solvent Flush + Pre Fill Air + Sample
Setting when pushing oil with solvent

When setting all items. (Solvent Air+Solvent Flush+Pre Fill Air +Sample+Post Fill Air)

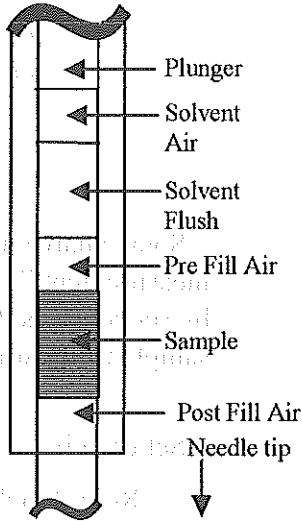


Illustration 5-1. Air segment

POINT
Set sample size by method. Set ASC-150L parameter not to be over selected syringe size.
Sample maximum size=Syringe size-(Air segment+Solvent Flush)

Multi Injection (Repeat discharge times)

This function is used only for the mode "TRU-100+ASC-150L".
When inputting repeat times, the set times are indicated in the method right.

- (6) Click [OK] button after setting each item. Parameter is kept and "ASC-150L Parameter" is ended.
 - * When changing set contents every syringe size and keeping them, click [Apply] button every time.
 - * To return to main window without updating setting, click [Cancel] button. When [Apply] button is previously pressed, the contents are kept.
- (7) Click [OK] button. "Preference" contents are kept and "Preference" is ended.

Item	Contents	Input range	Unit	
Syringe Type *1	Syringe size	25, <u>50</u> , 100, 250	μ l	
Bottle B	B bottle use and the purpose	NO USED Rinse Use it as B bottle. Use for double rinse such as different solvent. Spike Standard Use it for standard addition recovery. Set standard solution for standard addition. Solvent Flush *1 Use it for injecting solvent by pushing out. Set solvent for pushing out.		
Air Flush	Flush	Air removal times	0~10	Times
	Fill Rate	Fill speed	25 μ l : 2, 5, <u>10</u> , 15, 20, 25 50 μ l : 5, 10, <u>20</u> , 30, 40, 50 100 μ l : 10, 20, <u>40</u> , 60, 80, 100 250 μ l : 25, 50, <u>100</u> , 150, 200, 250	μ l/sec
	Inj. Rate	Injection speed	25 μ l : 5, 10, 20, 30, <u>40</u> , 50 50 μ l : 10, 20, 40, 60, <u>80</u> , 100 100 μ l : 20, 40, 80, 120, <u>160</u> , 200 250 μ l : 50, 100, 200, 300, <u>400</u> , 500	μ l/sec
Rinse	Fill Rate	Fill speed	25 μ l : 2, 5, <u>10</u> , 15, 20, 25 50 μ l : 5, 10, <u>20</u> , 30, 40, 50 100 μ l : 10, <u>20</u> , 40, 60, 80, 100 250 μ l : <u>25</u> , 50, 100, 150, 200, 250	μ l/sec
	Inj. Rate	Injection speed	25 μ l : 5, 10, 20, <u>30</u> , 40, 50 50 μ l : 10, 20, 40, <u>60</u> , 80, 100 100 μ l : 20, 40, <u>80</u> , 120, 160, 200 250 μ l : 50, <u>100</u> , 200, 300, 400, 500	μ l/sec
	Initial Rinse	Initial rinse times at method measurement start	0, <u>1</u> , 2, 3, 4, 5	Times

Table 5-1. ASC-150L parameter setting contents (Continued)

* Underlined values are defaults. Set values by liquid sample quality. For thick samples, the motor is sometimes locked at air bubbles entry or discharge. Set appropriate "Fill rate" or "Inj. Rate".

*1 Syringe sizes (capacity) depend on units. For the vertical furnace, "Solvent Flush" is selected for "Bottle B" and "10 μ l" is initialized. When using a 250 μ l syringe for the vertical furnace, set "Bottle B" to "No Used" so that samples don't mix with "Solvent Flush" solution. In addition, set "Pre Fill Air" to 0 μ l.

Item	Contents	Input range	Unit
Air segment	Solvent Air Use it when taking air before Solvent Flush.	25 μ l : <u>0</u> , 1, 2, 3 50 μ l : <u>0</u> , 2, 4, 6 100 μ l : <u>0</u> , 4, 8, 12 250 μ l : <u>0</u> , 5, 10, 20	μ l
	Pre Fill Air Use it when taking air before Sample.	25 μ l : 0, 1, 2, <u>3</u> 50 μ l : 0, 2, 4, <u>6</u> 100 μ l : 0, 4, <u>8</u> , 12 250 μ l : 0, 5, 10, <u>20</u> *1	μ l
	Post Fill Air Use it when taking air after Sample.	25 μ l : <u>0</u> , 1, 2, 3 50 μ l : <u>0</u> , 2, 4, 6 100 μ l : <u>0</u> , 4, 8, 12 250 μ l : <u>0</u> , 5, 10, 20	μ l
Solvent Flush	Solvent Flush Fill volume	Valid only when "Solvent Flush" is selected at [Bottle B]. 1~110% of syringe size	μ l
Multi Injection	Repetitive injection times	Fixed at 1 *2	Times

Table 5-1. ASC-150L parameter setting contents

_ parts in the table are standard values.

* 1 Syringe size depends on units.

Only for a vertical furnace, "Bottle B " or "Solvent Flush" is selected and 10 μ l is initialized.

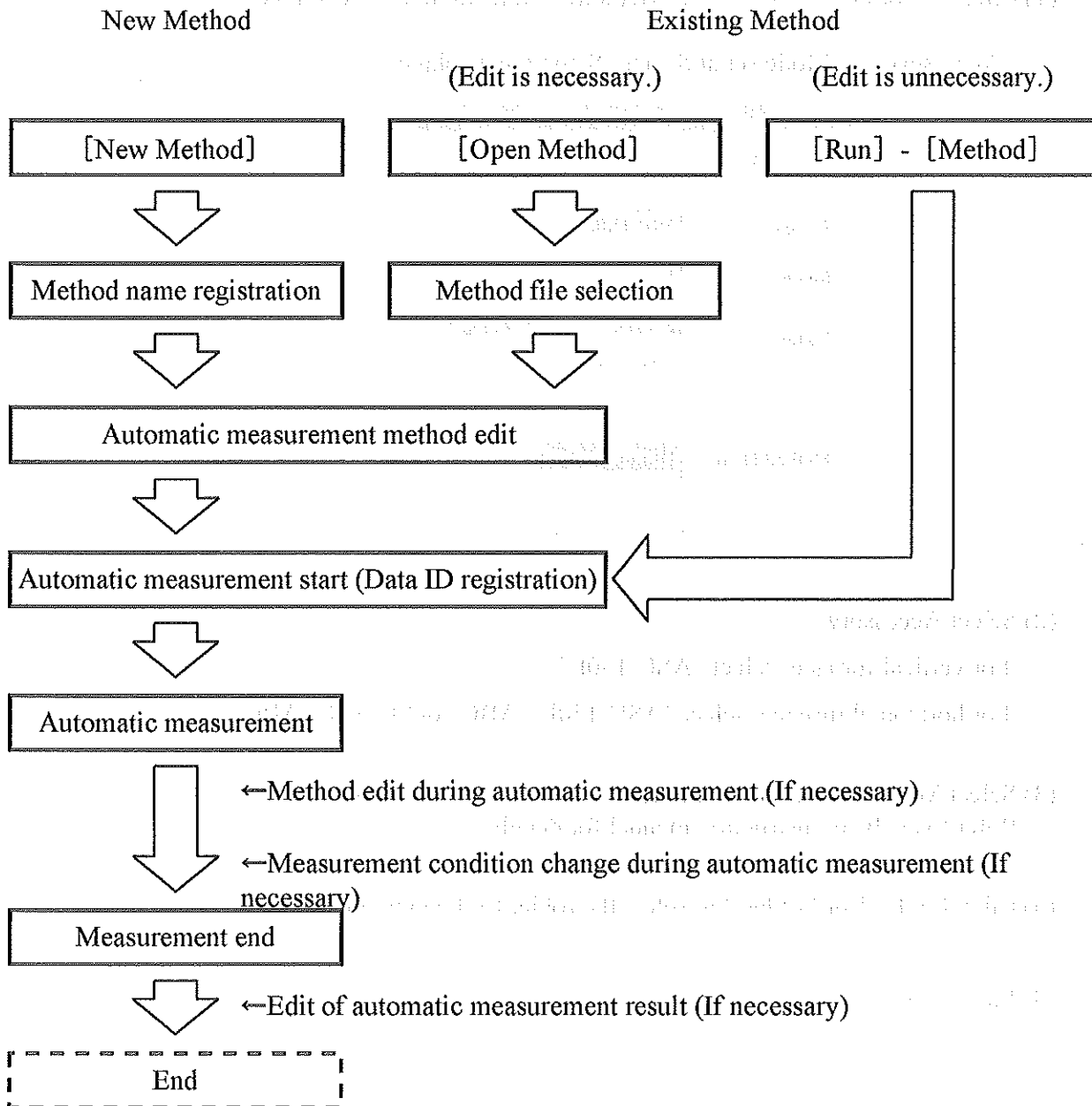
When using a 250 μ l syringe for the vertical furnace, set "Bottle B" to "No Used" so that samples don't mix with "Solvent Flush" solution. In addition, set "Pre Fill Air" to 0 μ l.

* 2 It can be set to 1~4 at the mode "TRU-100+ASC-150L".

5-4. Automatic Measurement

Model ASC-150L can measure different types of samples continuously.

5-4-1. Automatic measurement flow




5-4-2. Automatic measurement method edit

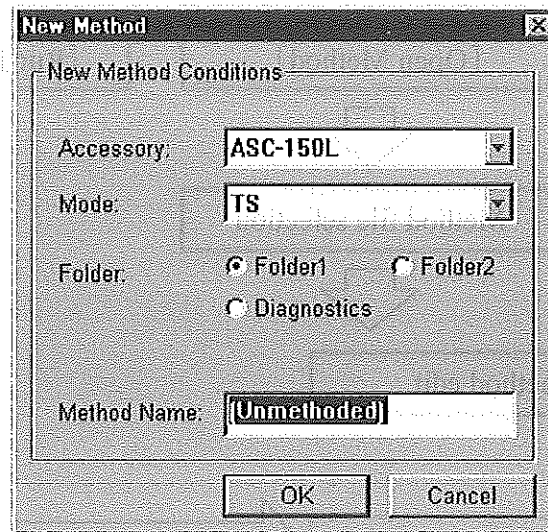
Edit a method for automatic measurement.

Only ASC-150L setting when preparing and editing new method is describe in this section.

* Existing method can be opened and edited. Refer to analyzer instruction manual for details.

(1) Click  or click [File], [New Method]. “New Method” is displayed.

* Accessory and Mode set at System Setup are displayed.



(2) Select Accessory.

For vertical furnace, select “ASC-150L”.

For horizontal furnace, select “ASC-150L +ABC” or “L-ASC+ABC”.

(3) Select Mode. Measurement modes are different every analyzer.
Refer to analyzer instruction manual for details.

(4) Click Folder 1 or Folder 2 to select the folder for keeping method file.

(5) Input Method Name.


- (6) Click [OK] button.

“New Method” is displayed. Screen contents are different every analyzer.

Refer to analyzer instruction manual for method contents.

Only ASC-150L setting is described here.

- (7) Edit vertical furnace (“ASC-150L”) or horizontal furnace (“ASC-150L+ABC” or “L-ASC+ABC”). Click ▼▲ in the right to set Btl. No.

- (8) Set ASC-150L program No. Click  in “150L” right.

“ASC-150L programs” is displayed.

* If you know program No., input it into “150L” directly and proceed to (11).

- (9) Click ASC-150L program to select.

To add or edit ASC-150L program, click [Constant] button.

Refer to [Constant] button use.

* The displayed value is different every syringe size and unit.

No.	Program (Syringe: 50ul)	Sampling		Injection		Rinse		Total
		Std. Vol. (ul/sec)	PostF. Delay (sec)	Std. Vol. (ul/sec)	PostF. Delay (sec)	Rinse (times)	S.Rinse (times)	

Table 5-2 shows ASC-150L program setting contents.

Item	Display	Contents		Input range
Sampling	S Fill Rate (µl/sec)	Sample fill speed		25µl : 2, 5, <u>10</u> , 15, 20, 25
				50µl : 5, 10, <u>20</u> , 30, 40, 50
				100µl : 5, 10, <u>20</u> , 40, 60, 80
				250µl : 5, 10, <u>25</u> , 50, 100, 150
	Post Fill Delay (sec)	Waiting time after sample fill		0, 1, <u>2</u> , 5, 10
Injection	S Inj. Rate (µl/sec)	Sample injection speed *	Low speed	0.4, 0.6, 0.8, <u>1.0</u> , 1.2, 1.4, 1.6, 1.8, 2.0
			High speed	25µl : 5, 10, 20, <u>30</u> , 40, 50
				50µl : 10, 20, 40, 60, <u>80</u> , 100
				100µl : 20, 40, 60, <u>80</u> , 120, 160
		250µl : 20, 40, 60, <u>80</u> , 120, 160		
	Post Inj. Delay (sec)	Waiting time after sample injection		0, 1, <u>2</u> , 5, 10
Rinse	Rinse (time)	Washing times		0, <u>1</u> , 2, 3, 4, 5
	S Rinse (time)	Rinse times		0, <u>1</u> , 2, 3, 4, 5

Table 5-2 ASC-150L program setting contents

parts in the table are setting values on delivery. Set the values by sample quality and condition. They are standard value. For some analyzers, initial setting value sometimes is different.

* The setting range of sample injection speed is automatically changed by analyzer type. For aqueous sample of vertical furnace, horizontal furnace, high speed input range is displayed. For nonaqueous sample of vertical furnace, low speed input range is displayed.

(10) Click [OK] button.

Method edit dialog box returns. Selected program No. is displayed in "150L".

(11) Click [Add] button by measurement times or click [Constant] button.

[Constant] button is described in [Constant] button use.

Clicked times of the same measurement contents are added to bottom list.

(12) For other settings, add contents to list by procedure (7)~(11).

* For some analyzers, plural Sens. can be used at one method. Refer to next "Setting of Change Sens. during method measurement".

* Refer to analyzer instruction manual for measurement addition and deletion.

No.	Blk.	Type	S.Sz	N.Sz	Elev	Sample ID	Bl.Vol	S.Mass	N.Mass	S.Size	Density	Dilutor	1 St	ABQ
1	1	Sample			S	0809				20.00 ul	0.8000		1	2
2	1	Sample			S	0808				20.00 ul	0.8000		1	2
3	1	Sample			S	0809				20.00 ul	0.8000		1	2
4	2	Sample			S	0801				20.00 ul	0.8000		1	2
5	2	Sample			S	0801				20.00 ul	0.8000		1	2
6	2	Sample			S	0801				20.00 ul	0.8000		1	2

- (13) To end method edit and start measurement, click [Run Method] button. “Method” is displayed. Proceed to 5-4-3. Automatic measurement start.



Setting of Change Sens. during method measurement

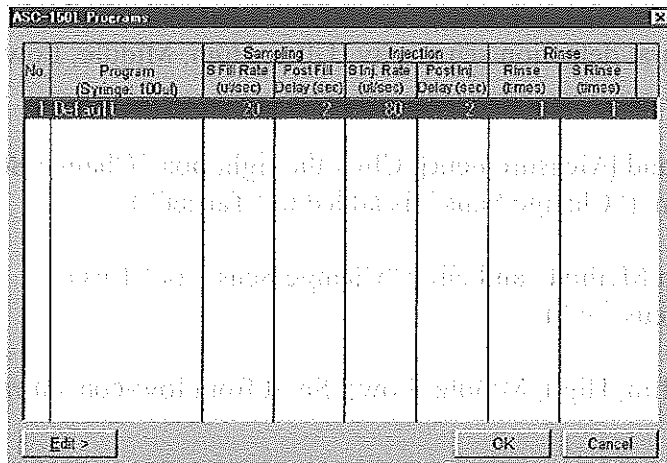
For setting sensitivity (Sens.) of plural detection sensitivity (Ultra, High, Middle, Low) at one method

- (1) Click [System], [Preference], and [Measurement]. Click the right box “Change Sens. in Method” and click [OK] button. (“Change Sens.” is added to “Target”.)
- (2) Open “New Method” or “Open Method” and click “Change Sens.” of “Target”. The screen turns to “Change Sens.” edit.
- (3) Select detection sensitivity (Ultra, High, Middle, Low). Set it from low-concentration sample.
- (4) Click [Add] button. Sens. changed contents are indicated in the bottom list.
- (5) Select “Blank” or “Calibration” as “Target” and make method.
When changing detector sensitivity again, repeat (2)~(4) and change detection sensitivity.

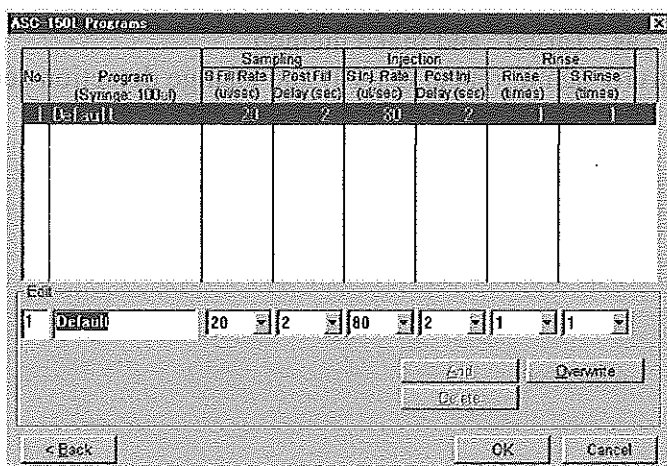
[Edit] button use

By clicking [Edit] button, ASC-150L program can be made.

- (1) Click  or click [System], [Accessory] and click  in “150L” right. Method also can be edited in “Open Method”. “ASC-150L Programs” is displayed.



- (2) Click [Edit] button. The part for editing “ASC-150L Programs” is displayed.



- (3) Select registered ASC-150L program and reflect it in “Edit”.

- (4) Edit “Edit” contents.

1. Input program No. (1~30) For some analyzers, input range is sometimes different.
2. Input program name. (Up to 16 characters)
3. Set the value by referring to Table 5-2. ASC-150L program setting contents.

- (5) Click [Add] or [Overwrite] button to reflect ASC-150L program list.

[Add] For changing program No. and keeping it again

[Overwrite] For changing only contents without changing program No.

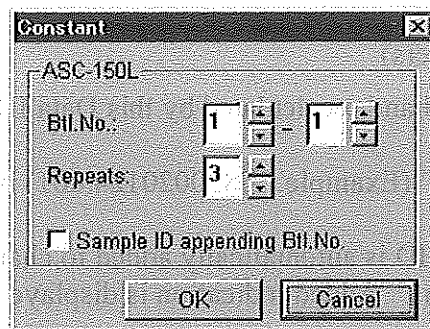
- (6) Click [OK] button.

* To use ASC-150L program made or edited again for measurement, set it at method.

[Constant] button use

By clicking [Constant] button, the same edit condition can be inputted once.

- (1) Click [Constant] button when “Target” and measurement conditions are set.
“Constant” is displayed.
- (2) The setting for measuring bottle No.1~5 under the same condition three times is as follows.
Click ▲▼ of “Btl. No.” and set bottle No. (Example : 1~5).



- (3) Click ▲▼ of “Repeats” and set times (Example : three times).
- (4) When “Target” is sample, click [Sample ID appending Btl. No.] so that bottle No. should be added to Sample ID automatically.
- (5) Click [OK] button. Method edit dialog box returns. Set contents are once added to the bottom list.

No.	Btl.	Type	S.Se	N.Si	Fler	Sample ID	Bl.V	S.Mass	N.Mass	S.Size	Densit	Dilutor	150	AB
1	1	Sample			S+N	0801 (1)				20.00 ul	1.0000		1	2
2	1	Sample			S+N	0801 (1)				20.00 ul	1.0000		1	2
3	1	Sample			S+N	0801 (1)				20.00 ul	1.0000		1	2
4	2	Sample			S+N	0801 (2)				20.00 ul	1.0000		1	2
5	2	Sample			S+N	0801 (2)				20.00 ul	1.0000		1	2
6	2	Sample			S+N	0801 (2)				20.00 ul	1.0000		1	2
7	3	Sample			S+N	0801 (3)				20.00 ul	1.0000		1	2
8	3	Sample			S+N	0801 (3)				20.00 ul	1.0000		1	2
9	3	Sample			S+N	0801 (3)				20.00 ul	1.0000		1	2

5-4-3. Automatic measurement start

Register Data ID as measurement data name and start measurement.

POINT

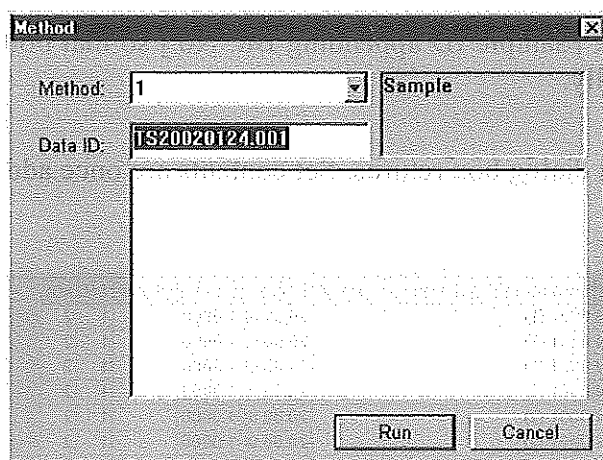
By using existing method, measurement can start without method edit. By selecting [Run] and [Method], "Method" is displayed. In this case, click ▼ of "Method" to select method.

(1) Input Data ID. (Up to 20 characters)

Measurement data can be printed and recalculated by this Data ID.

- * "TS+ measurement date + No." (Example : TS20020124.001) is displayed, but this can be changed.
- * For some analyzers, new Data ID is automatically added to changed measurement data when setting "Change Sens." Added indication is displayed in the main window title bar.

(Example : TS20020124.001.1)



(2) Click [Run] button.

Main window returns. "ASC-150L Home Moving" or "ASC-150L+ABC Home Moving" is displayed.

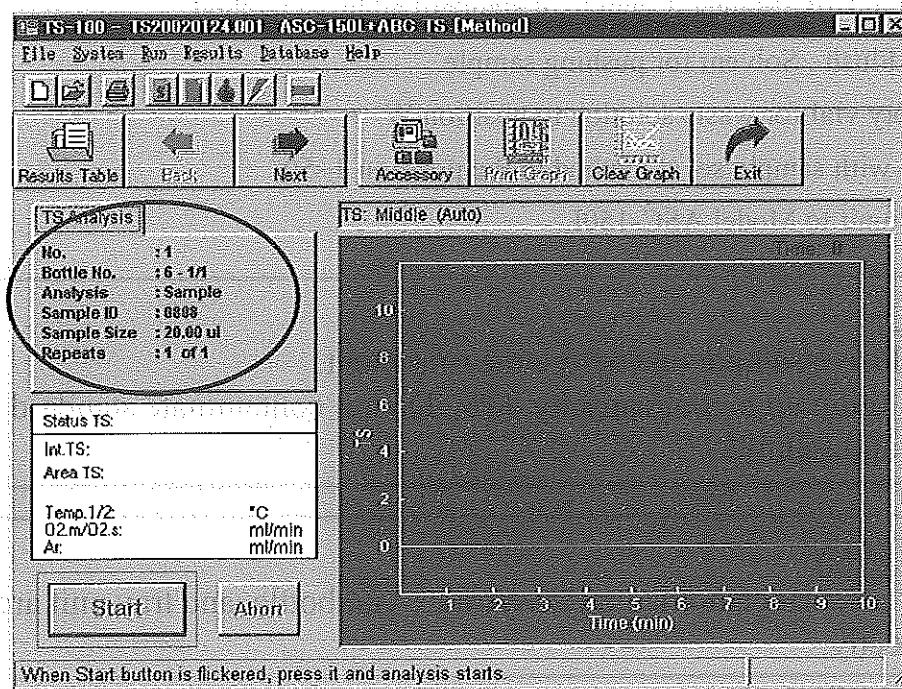
- * For some analyzers, blank value or calibration coefficient can be inputted manually. Input manually after this operation. (Refer to Default Blank and Default Calibration Curve.)
- * For some analyzers, when setting "Change Sens." at method, "Sens. is changing. Click start." is displayed. Click [OK] button.

Measurement can start. Proceed to automatic measurement.

5-4-4. Automatic measurement

Measurement contents set at method is indicated in "Analysis" of main window from No.1. Check the indication and measure.


* Displayed contents are different every analyzer.



- (1) When the unit is stable and measurement can start, red "Ready" is indicated in "Status" and [Start] button flickers.

Status indication and contents depend on analyzer type.
 Ready : Measurement is ready.
 Wait : Waiting before peak detection after measurement start
 Sampling : In signal processing
 End : Measurement end
 Busy : Measurement can not be done and ASC-150L is not ready.

POINT

By clicking  accessory (ASC-150L) condition can be indicated. For horizontal furnace, the contents of L-ASC+ABC are indicated. Red part is sample boat position.

Section 5: Operation

(2) Set washing solution and samples.

1. Pour washing solution into vial for rinse and set it to the position A.
2. When Bottle B is set, pour appropriate solution into vial for rinse and set it to the position B.

Rinse : Second solution for washing

Spike Standard : Standard sample of standard addition method

Solvent Flush : Solvent for pushing sample

3. Set empty vial for waste solution to position W.
4. Set vial with sample set at method to the position 1~50.
5. Set tray unit to Model ASC-150L.

POINT

Set explosive sample just before measurement.

Pour solution up to vial capacity 80%. Do not contaminate standard sample and sample.

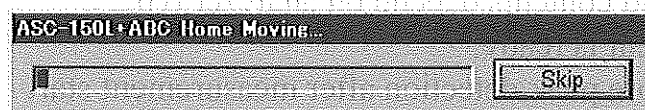
CAUTION

Check that syringe holder, microsyringe, vial bottle, and tray unit are set correctly.

(3) After sample setting, click [Start] button or press <Enter> key.

“Ready” turns to “Wait” in “Status”. Measurement starts and peak is indicated in graph.

(4) “ASC-150L+ABC Home Moving...” is displayed.



Model ASC-150L operates by ASC-150L program and method.

(5) Model ASC-150L operation

The example of Model ASC-150L setting and operation in measurement with 50 μ l microsyringe

	Setting item	Setting contents	Setting value	Operation No.
ASC-150L parameter	Bottle B	Bottle B use and purpose	Solvent Flush	
	Initial Rinse	Initial rise times at method start	1 time	①~②
	Pre Fill Air	Use it when taking air before Sample.	6 μ l	⑧
	Solvent Flush	Solvent Flush Fill volume	10 μ l	⑦
ASC-150L program	Rinse	Washing times	2 times	⑩~⑭
	S Rinse	Sample rinse times	2 times	③~⑥
Method	Std. Volume or Sample Size	Standard sample or sample volume	20 μ l	⑨

Table 5-3. ASC-150L setting examples

POINT

When setting "Solvent Flush" in ASC-150L Parameter and setting "S Rinse (time)" in ASC-150L Program, rinse with Solvent Flush of Bottle B.

No.	Operation	Contents
①	Filling of washing solution from vial (position A)	<u>Initial washing</u>
②	Injection of washing solution into waste solution vial (position W)	Only at method measurement start
③	Filling of Solvent Flush solution from vial (position B)	<u>Rinse</u>
④	Injection of sample into waste solution vial (position W)	Without setting Solvent Flush, rinse sample.
⑤	Filling of Solvent Flush solution from vial (position B)	(Refer to the above points.)
⑥	Injection of sample into waste solution vial (position W)	
⑦	Filling of 10 μ l Solvent Flush solution from vial (position B)	<u>Sampling</u>
⑧	Filling of 6 μ l Pre Fill Air	
⑨	Filling of 20 μ l standard sample or sample from the first sample bottle	
⑩	Injection of sample to sample boat or pyrolysis tube	<u>Injection</u>
⑪	Filling of washing solution from vial (position A)	<u>Washing</u>
⑫	Injection of washing solution into waste solution vial (position W)	
⑬	Filling of washing solution from vial (position A)	
⑭	Injection of washing solution into waste solution vial (position W)	
⑮	Returning to home position	<u>Waiting for next instruction</u>

Table 5-4. ASC-150L operation examples

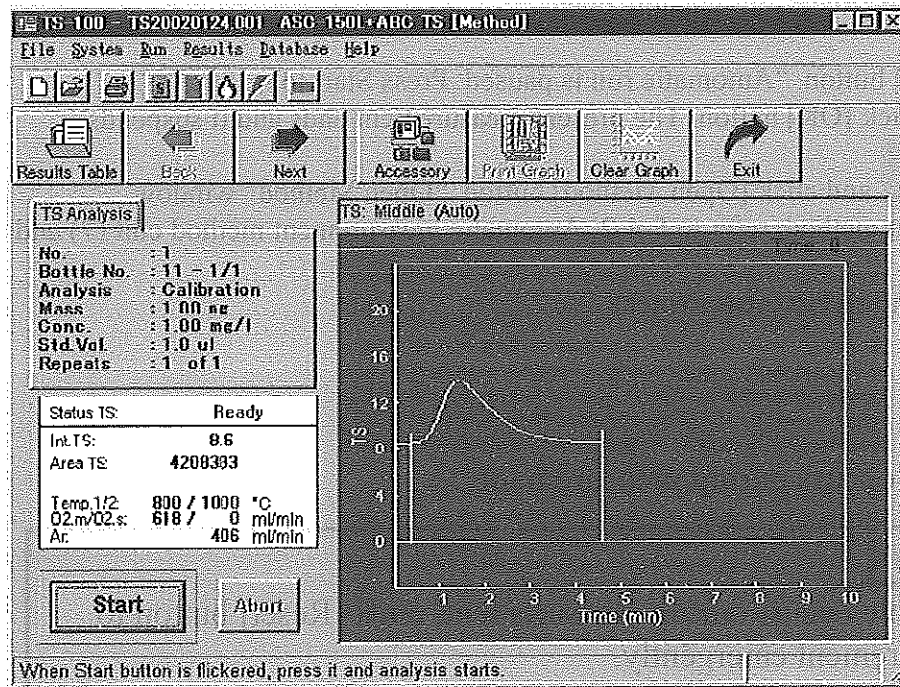
Measurement starts and the peak is indicated in graph.


Omit ① and ② (Initial Rinse) on and after the second measurement.

POINT

Setting of Accessory (For some analyzers, measurement time can be shortened.)
 By checking "Prepare the next measurement not to wait for the end of the measurement." of ASC-150L Parameter, ③~⑥ procedures are run to prepare for the next measurement during the present measurement.
 By this operation, measurement time can be shortened.
 Refer to 5-3. Setting the Analysis Parameters for the setting.

- (6) At peak start and end, ASC-150L beeps and the result is indicated in “Analysis” after measurement.
- * When the condition is stable, red “Ready” is displayed in “Status” and [Start] button flickers.
 - * Display is different every analyzer. TS-100 is used as an example here.

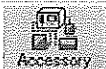



- (7) For measurement on and after No.2, (5) is repeated automatically.
- (8) After all measurements, “Completed” is indicated in “Status”.
- (9) By clicking  after method measurement or clicking [Run] [Exit Run] to end measurement.

* Even during measurement, it can be ended.

Pause during measurement

To edit method, pause measurement.

- (a) Click . Accessory window opens.
- (b) Click [Pause] button. “Automatic run is paused. Press Start to restart.” is displayed. Click [OK] button. The present measurement ends and it suspends.
- (c) Click  and click [Open Method] button. “Open Method” window opens. To edit method, refer to 5-4-2. Automatic measurement method edit (7) and after.
- (d) Click [Start] to restart measurement.

When trouble occurs during measurement

CAUTION

When trouble occurs during measurement, click [Reset] button to stop measurement emergently.

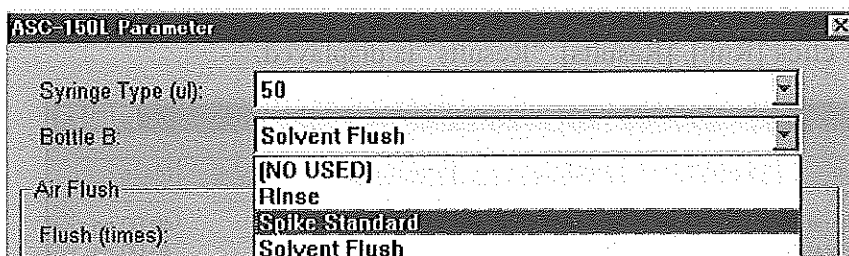
Take countermeasure against the cause of emergency stop and check no unit defect. Measurement can't be continued. Therefore, restart measurement with the same method from the beginning.

5-4-5. Spike Standard

To check no influence of matrix in sample, add standard sample to sample.
If added standard sample volume can be measured, sample has no interference.

(1) Set bottle B for spike standard by the following procedure.

- ① To use bottle B for spike standard, set standard sample to bottle B.
- ② Click [System], [Preference] of system program menu.
- ③ Click [Accessory] in "Preference".
- ④ Click [ASC-150L]. "ASC-150L parameter" is displayed.
- ⑤ Click ▼ of Bottle B to select "Spike Standard".



⑥ Set other items and click [OK] button. Refer to Table 5-1. for input contents

(2) Edit method as follows.

- ① Click ▼ of "Target" to select "Sample". Click ▼ of "Type" to select "Spike Standard".

POINT

Without setting sample measurement, "Spike Standard" can't be set.

- ② Set standard sample concentration and injection for spike standard with Sample ID same as sample measurement. Click [Add] button.

(3) When automatic measurement starts, spike standard measurement is run.

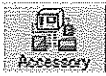

(4) Standard sample recovery can be checked by the following procedure.

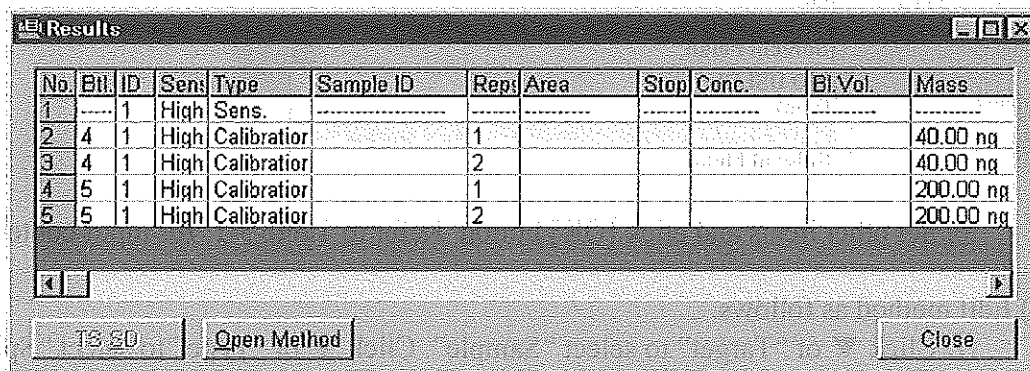
During measurement : Click  or click [Run], [Results].

After measurement : Click [Database], [Browse Results], [ASC-150L Spike] to check the result.

5-4-6. Editing method during measurement

By editing method during measurement, measurement can be added and deleted.

- (1) Click  or click [System], [Accessory] during measurement to display "Accessory".
- (2) Click [Pause] button to stop after the present measurement.
- (3) Click [Close] button. Main window returns.
- (4) Click  or click [Run], [Results]. "Results" is displayed.



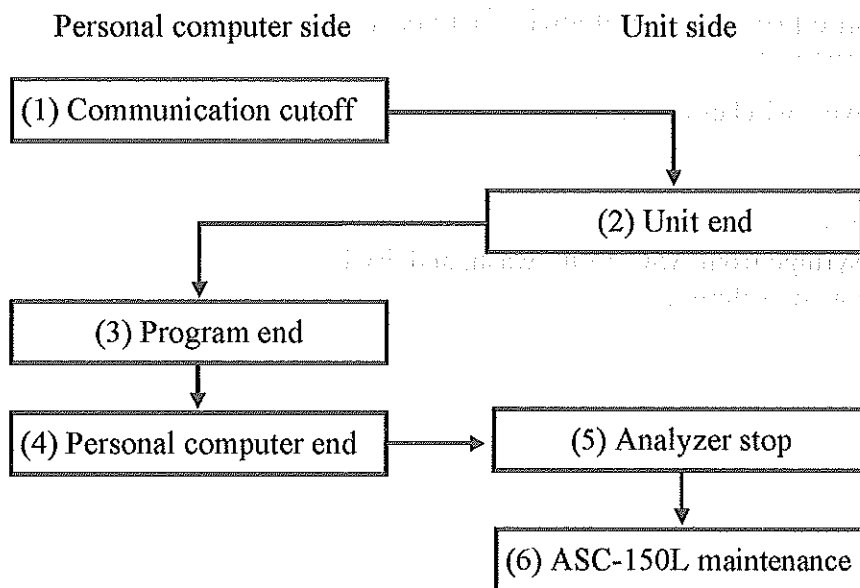
No.	Bl.	ID	Sens	Type	Sample ID	Reps	Area	Stop	Conc.	Bl. Vol.	Mass
1	---	1	High	Sens.	-----	-----	-----	-----	-----	-----	-----
2	4	1	High	Calibrator		1					40.00 ng
3	4	1	High	Calibrator		2					40.00 ng
4	5	1	High	Calibrator		1					200.00 ng
5	5	1	High	Calibrator		2					200.00 ng

Buttons:

- (5) Click [Open Method]. "Open Method" is displayed.
- (6) Add and delete method by the same procedure as method preparation.
- (7) Click [Run Method] in "Open Method". "Results" returns.
- (8) Click [Close] button in "Results". Main window returns.
- (9) Click [Start] button to restart measurement.

5-4-7. End

When measurement ends, stop the unit and end program by the following procedures.



(1) Communication cutoff

Press <F5> key while pressing <Shift> key or click [File], [Exit].

Heater switch in personal computer side is OFF and communication between analyzer and system program is cut off.

(2) Unit stop

Turn off the following power switch.

Power switch of ASC-150L side

Power switches of other accessories

(3) Program end

Click [×] in the right top of main window or click [File], [Exit]. Analyzer system program ends.

(4) Personal computer end

① Click [Start] button of taskbar.

② Click [Shut Down].

Windows end page is indicated. Shut down Windows.

③ Confirm "Shut down the computer?" is selected, and click [Yes].

The computer power is off.

④ Turn off the power switch of monitor and printer.

Section 5: Operation

(5) Analyzer stop

CAUTION

Turn off the power switch of analyzer after 30 minutes or more from communication cutoff to cool electric furnace with cooling fan.

- ① Turn off all power switches of analyzer.
- ② Close gas valve.

(6) ASC-150L maintenance

- ① Remove microsyringe from ASC-150L, wash, and dry it.
- ② Dispose of vial waste solution.

Section 6 : Troubleshooting

When using ASC-150L and system program, countermeasures against hardware or software troubles are described in this section.

* Only ASC-150L troubleshooting is described here. For analyzer troubles, refer to the instruction manual.

CAUTION

Take care when testing power. Keep your hands dry.

No power of ASC-150L

Cause	Countermeasure
Is the power switch of ASC-150L side ON?	Turn on the power switch.
Is the power connector in the rear of ASC-150L connected?	Connect power connector firmly.
Is the power plug inserted in the outlet?	Insert the power plug firmly.
Is the power supplied to the outlet on the laboratory table?	Supply power.
Is ASC-150L power fuse broken?	<ol style="list-style-type: none"> (1) Take off the fuse holder on the rear panel with a screwdriver. (2) Check the conduction with tester. (3) Without conduction, exchange it for new one.

No peak

Cause	Countermeasure
Is sample injected correctly?	Check a syringe.
Does carrier gas leak?	Check gas leakage. Refer to analyzer instruction manual.
Is sample concentration low for sensitivity (Sens.)?	Check the peak with standard sample. Refer to analyzer instruction manual.

No automatic start even by connecting ASC-150L to analyzer

Cause	Countermeasure
Is the power switch of ASC-150L side ON?	Turn on the power switch.
Is the communication cable to analyzer disconnected?	Insert firmly signal connector of ASC-150L rear. Insert firmly option connector of analyzer rear.
Is "System Setup" run from personal computer?	Check system setting by the following procedure. (1) When main window of analyzer system program is displayed, press <F5> key. "System Setup" dialog box is displayed. (2) Click ▼ of "Accessory" to select "ASC-150L" or "ASC-150L+ABC". (3) Click [Transmit] button.
Is ASC-150L operation panel AUTO?	When ASC-150L operation panel is "Command Waiting", automatic measurement is available. For operation panel setting, refer to 5-1. Start.

Memory error

When ASC-150L memory error occurs, "MEMORY ERROR" [TEST KEY ONLY] is displayed.

Cause	Countermeasure
By not using the unit for more than 1 month, battery discharges and inside data are deleted.	(1) Press [TEST] key to reset syringe injection position. (Refer to 4-3-2-1. Editing of Injection Position.) (2) Charge it for more than 8 hours. When error still occurs, contact our agency.

Section 7 : ASC-150L Error Messages

When error occurs, the message is displayed in personal computer monitor and ASC-150L LCD.

Table 7-1 shows the error messages of ASC-150L connected to each analyzer.

Table 7-2 shows ASC-150L LCD error messages.

* Only ASC-150L messages are described here. For analyzer error messages, refer to each instruction manual.

NO.	ERROR NAME	DESCRIPTIONS AND REMEDY
501	CABLE CONNECTION ERROR	The cable between analyzer and ASC-150L is not connected or ASC-150L power is off. Check the cable connection. Turn off the power switches of ASC-150L and analyzer. End all systems and restart the system.
723	OPTION PORT SEND ERROR (SEND INTERRUPT TIME OVER)	
732	OPTION COMMUNICATION ERROR (CTS Off)	
551	PARAMETER ERROR	Parameter setting value is wrong. Check the setting.
552	S SENSOR ERROR	Microsyringe is out of the regular position. Stop measurement, set microsyringe correctly, and restart system.
553	X SENSOR ERROR	Syringe tower is out of the regular position (right and left direction). Turn off the power switch, remove syringe holder, and turn on the power switch again. Check that the unit returns to the home position. To resume measurement, restart system.
554	Z SENSOR ERROR	Sample tray is out of the regular position. Stop measurement, set sample tray correctly, and restart system.
555	Y SENSOR ERROR	Syringe tower driving part is out of the regular position (up and down direction). Turn off the power switch, remove syringe holder, and turn on the power switch again. Check that the unit returns to the home position. To resume measurement, restart system.

Table 7-1. ASC-150L error messages

When ASC-150L error occurs, error message is displayed in operation panel LCD.
 Table 7-2 shows ASC-150L LCD error messages.

ERROR NAME	DESCRIPTIONS AND REMEDY
ERROR-Y (7E)	It occurs when Y axis declines during ASC-150L operation or when ASC-150L operation is disturbed and Y axis can't decline to the regular position. Turn off ASC-150L power switch and turn on it again.
ERROR-Y (7F)	It occurs when Y axis previously declined to the regular position before ASC-150L operation. Turn off ASC-150L power switch and turn on it again.
MEMORY ERROR [TEST KEY ONLY]	By not using the unit for more than 1 month, battery discharges and inside data are deleted. (1) Press [TEST] key to reset syringe injection position. (Refer to 4-3-2-1. Editing of Injection Position.) (2) Charge it for more than 8 hours.

Table 7-2. ASC-150L LCD error messages

Section 8 : Maintenance

8-1. Inspection

8-1-1. Daily inspection

CAUTION

Maintain the unit every day before use. If you skip the procedures, the unit doesn't perform successfully and there is the probability of serious accident.

No.	Parts name	Item	Contents
1	Syringe	Washing	Wash syringe inside and plunger after measurement.
		Needle tip	Inspect and repair needle tip necessarily before measurement.
2	Vial for sample	Septum change	Change septum necessarily before measurement.
3	Vial for rinse	Septum change	Change septum necessarily before measurement.
		Washing solution change	Change washing solution necessarily before measurement.
4	Vial for waste solution	Septum change	Change septum necessarily before measurement.
		Waste solution disposal	Dispose of waste solution necessarily after measurement.
5	Syringe holder	Driving part washing	When contamination stands out and movement is wrong, clean syringe holder.
6	Sample boat (Only for horizontal furnace)	Quartz wool change	Check the softness of quartz wool on sample boat and no contamination.

Table 8-1. Daily maintenance

Syringe washing

Wash syringe and keep it after measurement.

CAUTION

By leaving syringe without washing, plunger adheres to syringe and it is a load on the unit at plunger operation. The unit may break.

- (1) Wash syringe inside with solvent soluble for syringe sample. Wipe plunger contamination with paper wiper.
- (2) Dry the inside with alcohol after washing.
- (3) To protect needle tip, keep syringe in the case.
- (4) Replace syringe with new one in the following cases. Refer to 3-4-1. Syringe setting.
 - Syringe plunger movement is dull.
 - Plunger tip PTFE part gets thin and plunger is loose.

Syringe needle tip check

Check syringe tip necessarily before measurement. Repair and change it if necessary.

- (1) Repair syringe needle tip with sandpaper or a file in the following case.
 - Needle tip is curved.
 - Foreign matter sticks to needle.
- (2) When the needle is curved, replace it with new syringe. Refer to 3-4-1. Syringe setting.

Syringe filled volume check

Check syringe filled volume every month with water. Measure the weight by balance.

Tray unit washing

Check tray unit contamination every week and clean it if necessary.

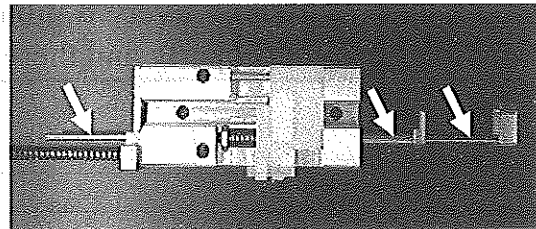
CAUTION

When tray unit is contaminated by sample, clean it immediately. By leaving tray unit without cleaning, vial is not stored to syringe holder and it collides with syringe holder. The unit may break.

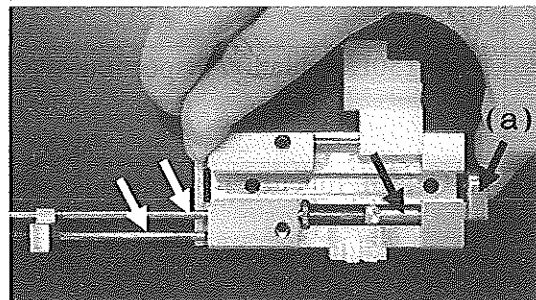
Syringe holder washing

When contamination stands out or movement is wrong, clean syringe holder.

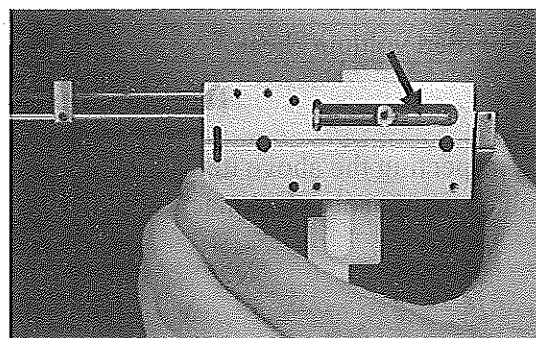
- (1) Apply ethanol to a swab and wipe the part indicated by arrow.



- (2) Push vial holder (arrow a) as the right illustration and wipe the part indicated by arrow.



- (3) Wipe the part indicated by arrow of the syringe holder rear.



Quartz wool change

When using the unit with horizontal furnace, check that quartz wool on sample boat is soft and not contaminated before measurement. When quartz wool is contaminated and not soft, replace it with new one.

- (1) Take 20mg quartz wool into sample boat with tweezers and pack it.
- (2) After changing quartz wool, prebake sample boat necessarily. (3 times)

8-1-2. Periodical inspection

CAUTION

Maintain the unit necessarily every 6 months. If you skip a periodical maintenance, the unit doesn't perform properly and there is the probability of serious accident.

No.	Item	Contents
1	Unit visual inspection	Contamination and dust Parts fixing condition Connector connection and fitting condition
2	ASC-150L insulation inspection	Measure the insulation between power terminal and chassis earth terminal It should be over 2M Ω .
3	ASC-150L function inspection	Display Key
4	Total operation inspection	Connect Model ASC-150L to analyzer and operate it for measurement.
5	Tray unit washing	Check the contamination every week. When it is contaminated by sample, wash it.
6	Filled volume check	Check filled volume every month.

Table 8-2. Periodical maintenance

When inspecting the above items and detect is found, repair and recheck it.
If problem is not solved, contact our agency.

8-2. Maintenance

8-2-1. Power voltage and fuse change

Table 8-3. shows power voltage setting. Remove a fuse holder cap in the rear and replace it with new one.

AC (V)	Power voltage (V)	Fuse (A)	Frequency (Hz)
115	100~130	4	50~60
230	200~240	2	
240	220~260		

Table 8-3. Power voltage setting value

8-3. Safekeeping of Unit

If you do not use Model ASC-150L for long time, keep it as follows.
For analyzer safekeeping, refer to the instruction manual.

For safekeeping the unit on the laboratory table

- Disconnect the power cable.
- Disconnect the cable to analyzer.
- Remove Model ASC-150L from analyzer or ASC-150L stand.

Caution about safekeeping place

- Room temperature should be under 45°C.
- No direct sunlight
- No strong vibration and continuous weak vibration
- No strong electromagnetic field
- Humidity should be under 80%.
- No corrosive gas
- No fire
- No much dust

Section 9 : Specifications

Name	Liquid Auto Sample Changer
Model	ASC-150L
Target sample	Liquid sample
Injection method	Microsyringe or gastight microsyringe 50 μ l (Standard) 25, 100, 250 μ l (Option)
Sample container	Vial with a septum (For 16ml)
Sample bottle	50 bottles
Washing container	Vial bottle with a septum (For 28ml)
Washing bottle	2 bottles
Washing solution	Distilled water, pure water, ion exchange water or organic solvent
Power Supply	AC 100/115/230/240V, 50/60 Hz, 180VA
Dimensions	Approx. 460(W) \times 320(D) \times 470(H) mm
Weight	Approx. 16 kg
Operation	Analyzer (Refer to Introduction for analyzer type.) Automatic operation (Start the unit from analyzer side.) Manual operation (By operation panel)

Section 9 : Specifications

<p>(1) The work shall include the design, fabrication, and installation of the following items:</p> <p>(a) A complete set of shop drawings, including but not limited to:</p> <ul style="list-style-type: none"> (i) Fabrication drawings for all structural members, including connections and details. (ii) Erection drawings showing the assembly sequence, bracing, and temporary supports. (iii) Material specifications and mill certificates for all steel components. (iv) Welding specifications and procedures, including weld maps and quality control requirements. (v) Paint specifications and application methods. 	<p>(b) The Contractor shall provide all necessary permits, approvals, and inspections for the work, including but not limited to:</p> <ul style="list-style-type: none"> (i) Fabrication permits from the manufacturer of all steel components. (ii) Erection permits from the local authority having jurisdiction. (iii) Material certifications and test reports from the mill. (iv) Welding procedure qualifications and welder certifications. (v) Paint certifications and application records.
<p>(2) The Contractor shall ensure that all work is performed in accordance with the following specifications:</p> <p>(a) All steel components shall be fabricated to the dimensions and tolerances specified in the drawings.</p> <p>(b) All connections shall be fabricated and installed in accordance with the applicable provisions of the American Institute of Steel Construction, Inc. (AISC) Specification for Structural Steel Buildings (13th Edition), including all amendments and addenda.</p> <p>(c) All welds shall be made in accordance with the applicable provisions of the AWS D1.1 Structural Steel Welding Code (9th Edition), including all amendments and addenda.</p> <p>(d) All steel components shall be coated with a minimum of two coats of paint, unless otherwise specified in the drawings.</p> <p>(e) The Contractor shall maintain accurate records of all materials used, including but not limited to:</p> <ul style="list-style-type: none"> (i) Material certifications and test reports. (ii) Welding procedure qualifications and welder certifications. (iii) Paint certifications and application records. 	<p>(3) The Contractor shall ensure that the work is completed within the specified schedule and budget. The Contractor shall provide a detailed construction schedule and cost breakdown at the time of award.</p> <p>(4) The Contractor shall be responsible for the safety of all personnel and the public during the construction process. The Contractor shall implement and maintain a comprehensive safety program, including but not limited to:</p> <ul style="list-style-type: none"> (i) Safety training and education for all personnel. (ii) Regular safety meetings and inspections. (iii) Clear signage and barriers to protect the work area. (iv) Proper use of personal protective equipment (PPE) by all personnel. (v) Safe handling and storage of materials.

Section 10 : Consumable Spare Parts

10-1. ASC-150L Spare Parts

Table 10-1 shows ASC-150L spare parts.

No.	Description	Part Number	Quantity
1	L-ASC rinse vial	TX3LSW	20 pcs/set
2	L-ASC rinse vial septum	TX3LS3	100 pcs/set
3	L-ASC syringe holder (25 μ l, 50 μ l, 100 μ l, 250 μ l)	TX3LSS	1 pc
4	L-ASC microsyringe SGE 25 μ l	MSSG02	1 pc
5	L-ASC microsyringe SGE 50 μ l	MSSG05	1 pc
6	L-ASC microsyringe SGE 100 μ l	MSSG10	1 pc
7	L-ASC gastight microsyringe SGE 25 μ l	MSSGG2	1 pc
8	L-ASC gastight microsyringe SGE 50 μ l	MSSGG5	1 pc
9	L-ASC gastight microsyringe SGE 100 μ l	MSSGG1	1 pc
10	L-ASC gastight microsyringe SGE 250 μ l	MSSGGQ	1 pc
11	Fuse (4A or 2A)	FU04MS or FU02MS	2 pcs/set

Table 10-1. ASC-150L spare parts

Syringe size is different every analyzer. Available sizes are as follows.
The unit is μ l.

- TOX-100 : 50
- TN-110 : 50
- TS-100 : 25, 50, 100
- TCL-100 : 25, 50, 100, 250
- TS-100V : 25, 50, 100, 250
- TN-100 : 25, 50, 100
- AQF-100 : 50

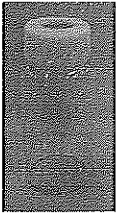
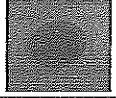
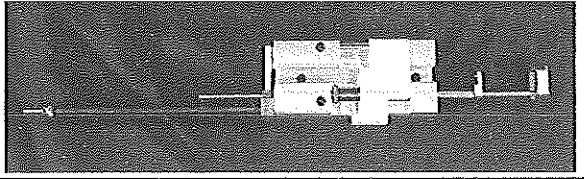
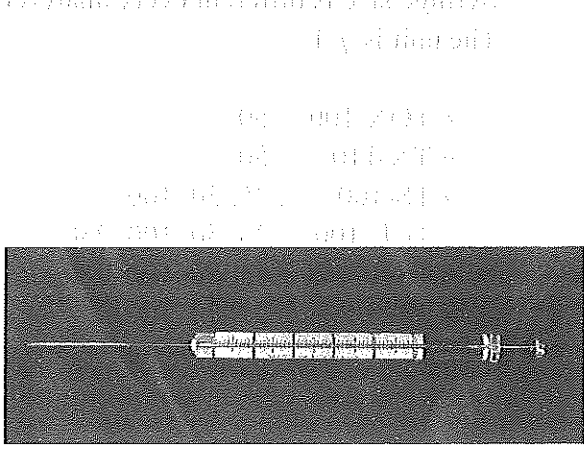
10-2. Analyzer Spare Parts

Table 10-2 shows analyzer spare parts.

No.	Description	Part Number	Quantity	Connected analyzer
1	Septum for sample inlet port	TN5SIS	100 pcs/set	TS-100V, TCL-100
2	Sample inlet port for TSV/ASC-150L	TS7SIL	1 pc	TS-100V, TCL-100
3	L-ASC sample injection port	TX3LS6	1 pc	TN-100

Table 10-2. Analyzer spare parts

10-3. Parts Pictures

No.	Part Number	Picture
1	TX3LSW L-ASC rinse vial	
2	TX3LS3 L-ASC rinse vial septum	
3	TX3LSS L-ASC syringe holder	
4	MSSG02 L-ASC microsyringe SGE 25 μl	
5	MSSG05 L-ASC microsyringe SGE 50 μl	
6	MSSG10 L-ASC microsyringe SGE 100 μl	
7	MSSGG2 L-ASC gastight microsyringe SGE 25 μl	
8	MSSGG5 L-ASC gastight microsyringe SGE 50 μl	
9	MSSGG1 L-ASC gastight microsyringe SGE 100 μl	
10	MSSGGQ L-ASC gastight microsyringe SGE 250 μl	

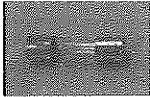
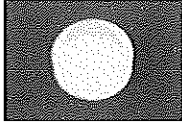
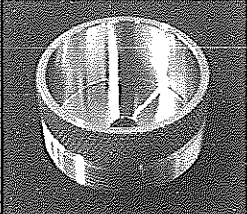
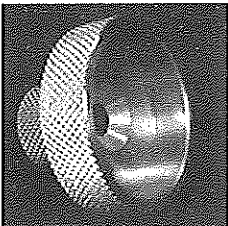
No.	Part Number	Picture
11	FU04MS Fuse 4A	
	FU02MS Fuse 2A	
12	TN5SIS Septum for sample inlet port	
13	TS7SIL Sample inlet port for TSV/ASC-150L	
14	TX3LS6 L-ASC sample inlet port	

Table 10-3. ASC-150L part pictures

Section 10 : Consumable Spare Parts

<p>10-101</p>	<p>10-101</p>	<p>10-101</p>
<p>10-102</p>	<p>10-102</p>	<p>10-102</p>
<p>10-103</p>	<p>10-103</p>	<p>10-103</p>
<p>10-104</p>	<p>10-104</p>	<p>10-104</p>
<p>10-105</p>	<p>10-105</p>	<p>10-105</p>
<p>10-106</p>	<p>10-106</p>	<p>10-106</p>
<p>10-107</p>	<p>10-107</p>	<p>10-107</p>
<p>10-108</p>	<p>10-108</p>	<p>10-108</p>
<p>10-109</p>	<p>10-109</p>	<p>10-109</p>
<p>10-110</p>	<p>10-110</p>	<p>10-110</p>
<p>10-111</p>	<p>10-111</p>	<p>10-111</p>
<p>10-112</p>	<p>10-112</p>	<p>10-112</p>
<p>10-113</p>	<p>10-113</p>	<p>10-113</p>
<p>10-114</p>	<p>10-114</p>	<p>10-114</p>
<p>10-115</p>	<p>10-115</p>	<p>10-115</p>
<p>10-116</p>	<p>10-116</p>	<p>10-116</p>