PS3™

Peptide Synthesizer QUICK START GUIDE

Protein Technologies, Inc.

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QUICK START GUIDE

Protein Technologies, Inc.

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WARNING THIS INSTRUMENT CONTAINS SOLVENTS AND CHEMICALS THAT SHOULD BE HANDLED CAREFULLY. MANY ARE EASILY ABSORBED THROUGH THE SKIN AND CAN CAUSE ADVERSE HEALTH EFFECTS. WEAR SAFETY GLASSES, PROTECTIVE CLOTHING AND RUBBER GLOVES AT ALL TIMES. FOLLOW MSDS HANDLING GUIDELINES PROVIDED WITH THE INDIVIDUAL REAGENTS. RESPIRATORS AND ABSORBENT SHOULD BE AVAILABLE IN THE EVENT OF A SPILL.

WARNING DO NOT ATTEMPT TO MOVE THE PS3 WHILE ANY OF THE SOLVENT OR WASTE CONTAINERS CONTAIN LIQUIDS.

Contents

Introduction

Thank you for purchasing your new PS3™ from Protein Technologies, Inc. The PS3™ is a fully automated microprocessor-controlled instrument for synthesizing peptides using solid phase synthesis principles. It is designed for users with minimal experience with peptide synthesis. The PS3™ allows for total flexibility in choosing synthesis scale, coupling conditions, deprotection conditions, wash steps, and reagent volumes. Standard chemical protocols are included in the software, and pre-weighed reagents for these protocols are provided in convenient disposable containers.

I.1 About This Book

This book helps you to get started with the PS3™

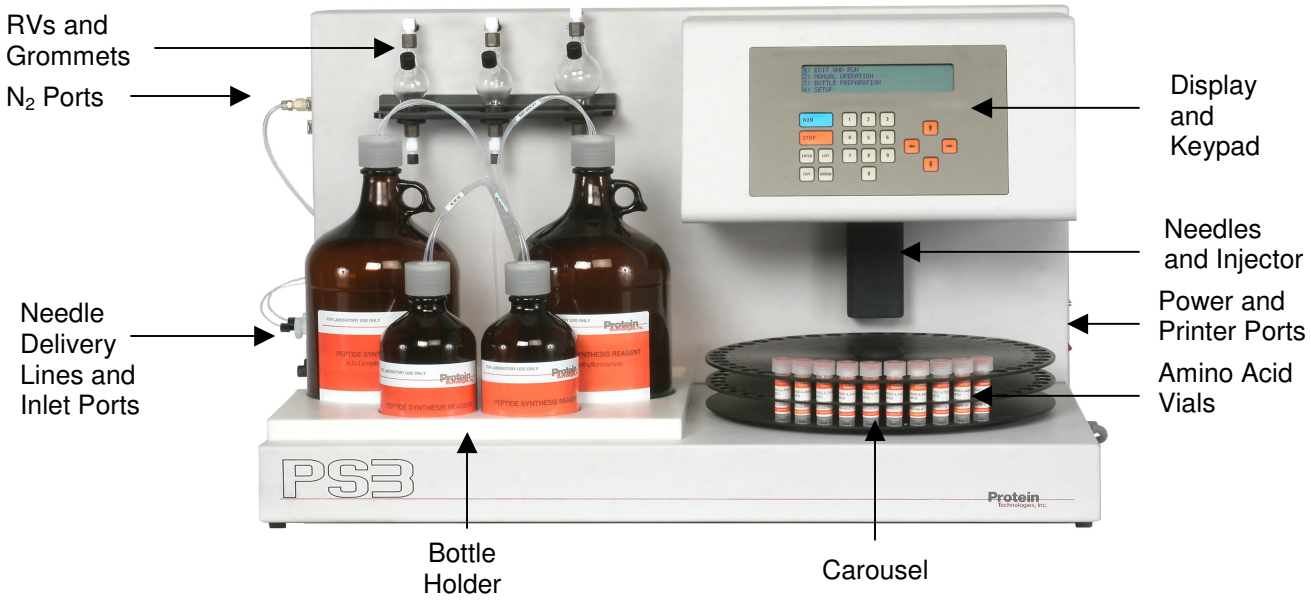
- Chapter 1, **Instrument Layout**, introduces you to the basic layout of the PS-3™
- Chapter 2, **Accessories**, introduces you to the accessories offered on the PS-3™.
- Chapter 3, **Basic Synthesis Setup**, introduces you to the basic software and procedures required to set up a synthesis on the PS3™.

I.2 About The Company

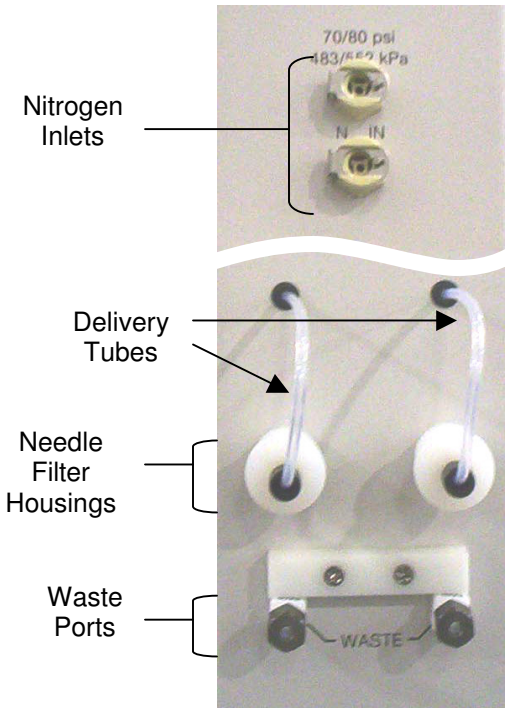
Protein Technologies, Inc. (PTI) is a private company based in Tucson, Arizona. Founded in 1985 by researchers affiliated with the University of Arizona, PTI has a long history of developing and manufacturing high quality peptide synthesizers. Our instruments are used in major universities, pharmaceutical companies and biotechnology companies worldwide. We support our products with a dedicated field service team and are proud of our reputation for reliability. We value the trust our customers and partners have placed in PTI. Today, we continue to grow and innovate to serve the needs of the solid-phase synthesis market.

Chapter 1: Instrument Layout

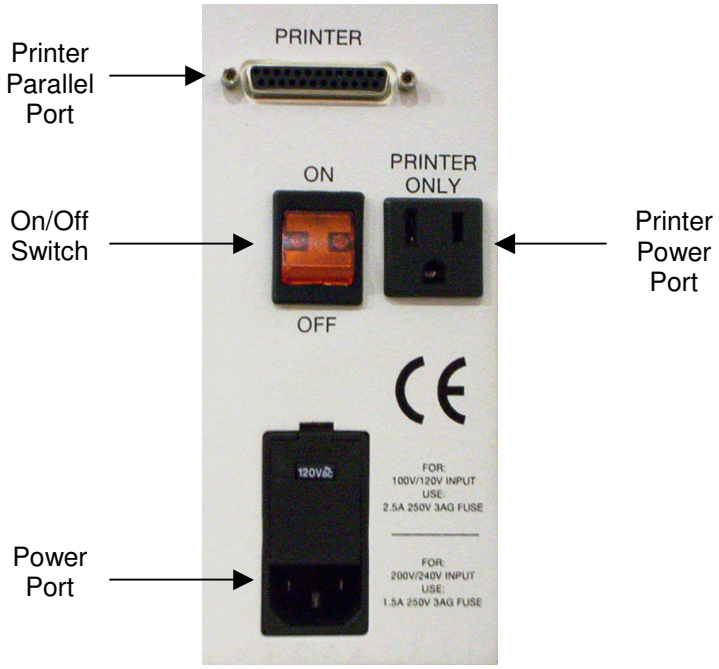
1.1 PS3™ Front



1.2 PS3™ Left Side



1.3 PS3™ Right Side



Chapter 2: Accessories

2.1 Reaction Vessels

30 mL
Cat#: PS3-300001, 1 ea.

75 mL
Cat#: PS3-300005, 1 ea.

2.2 Empty Amino Acid Vial

Vial with Cap & Septa
Cat#: PS3-VX-010, Pkg. of 10
Cat#: PS3-VX-100, Pkg. of 100

2.3 Pre-Packed Amino Acid Vials & Reagents for Peptide Synthesis

Protein Technologies, Inc. supplies high quality, pre-tested N-Fmoc-protected amino acids preweighed with equimolar amounts of HBTU activator in 1.0 mmol and 0.4 mmol quantities in pre-packed vials (see Appendix A.1 for listings). PTI also supplies bulk N-Fmoc-protected amino acids preweighed in 25 g and 100 g quantities (See Appendix A.2 for listings) and reagents for peptide synthesis on

the PS3™ (See Appendix A.3 for listings). We recommend using our amino acids and reagents for all of your synthesis needs.

2.4 Replacement Parts/Accessories

Protein Technologies, Inc. supplies replacement parts for the PS3™, as well as various accessories, including solvent/reagent bottles and waste containers. A partial listing of replacement parts and accessories is located in Appendix A.4. For additional part and accessory information, please call our support desk at 1-800-477-6834.

Chapter 3: Basic Synthesis Setup

3.1 Startup & Instrument Check

To startup the PS3™ Peptide Synthesizer:

1. Turn on the power switch located on the right side of the instrument. The synthesizer will go through its self-check by moving the carousel around to home or position 1. It will display the message:

   FINDING CAROUSEL HOME POSITION…
   PLEASE WAIT

2. After the carousel has stopped at the home position, the screen will display:

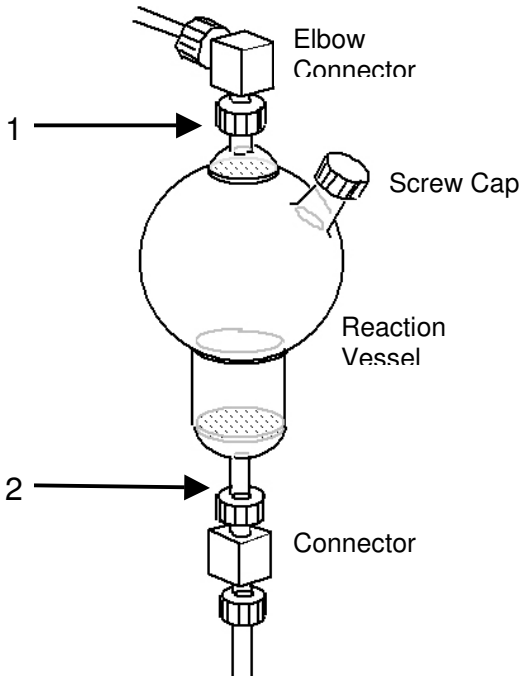
   1) EDIT AND RUN
   2) MANUAL OPERATION
   3) BOTTLE PREPARATION
   4) SET UP

3. Check the nitrogen supply, waste level, and inline solvent and injector filters. The nitrogen pressure should be greater than 70 psi, and there should be enough nitrogen in the tank for the synthesis. The waste tank should be empty, and the inline solvent and injector filters should be cleaned and replaced after each synthesis.

IMPORTANT The filters for the injector needles should be cleaned or replaced after each synthesis. Particles may cause valve malfunction and may damage the synthesizer (See Section 3.5).

3.2 Instrument Setup

3.2.1 Reaction Vessel Installation

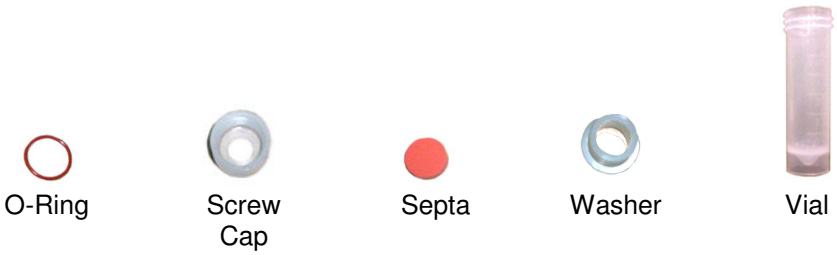


1. Place RV top flush into top connector. Tighten connector hand tight.
2. Place RV bottom flush into bottom connector. Tighten connector hand tight.

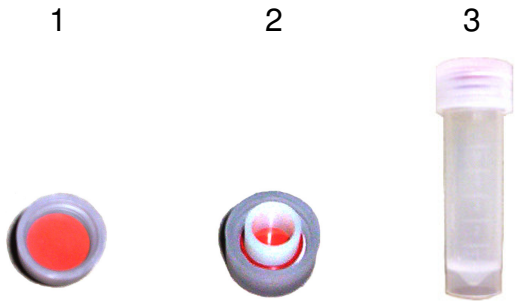
To remove, loosen connectors one at a time and remove the RV.

3.2.2 Amino Acid Vial Installation

The capped amino acid vial contains five parts:



To assemble the capped vial:



1. Place the septa into the cap.

2. Put the o-ring over the washer and drop the washer into the cap on top of the septa.

3. Screw the cap onto the vial tightly.

Place filled amino acid vials into the carousel in the order of the peptide sequence from the C-terminus to the N-terminus. The first amino acid to couple should be placed in position 1. Check to make sure each vial fits under the injector port. Repeat for up to three peptides. Make sure the amino acids are in order for each peptide. Do not skip carousel positions.

NOTE The PS3™ can use one, two or three RVs, but they must be in order. An example is RV 2 then RV 3 or RV 2 only. The PS3™ cannot synthesize on RV 1 and then RV 3.

If double coupling will be performed, place two vials of the given amino acid in the sequence. For example, if a peptide with the sequence, PEPTIDE, is going to be synthesized, and double coupling is desired for "D," the amino acid vials should be placed in the carousel as follows:

Position	Amino Acid Vial
1	E
2	D
3	D
4	I
5	T
6	P
7	E
8	P

The carousel has room for 45 amino acid vials. If more positions are required, the instrument must be reloaded and restarted as a new synthesis.

If final deprotection is desired, place an empty amino acid vial after the last amino acid in a peptide.

If capping is desired after a coupling, add acetic anhydride to a clean, empty vial and put it in the carousel following the coupled amino acid. For a 0.4 mmol scale synthesis use 2 mL of acetic anhydride.

3.3 Software Setup

3.3.1 Bottle Preparations

1. Install the two SOLV bottles, ACT bottle and DEP bottle on the instrument. Each bottle should contain the following reagents:

   SOLV: 4 L of DMF
   ACT: 0.9 L of 0.4 M N-methylmorpholine in DMF (Cat #: PS3-MM-L)
   DEP: 0.9 L of 20% piperidine in DMF (Cat #: PS3-PPR-L)

2. From the main menu, press 3 or use the arrow buttons to move to BOTTLE PREPARATION then press ENTER.

BOTTLE PREPARATION				
PRESSURE	SOLV	DEP	ACT	ALL
PRIME	SOLV	DEP	ACT	ALL
VENT	SOLV	DEP	ACT	ALL

3. Use the right arrow button to move the cursor to the ALL column for PRESSURE and press RUN. The bottles will pressurize starting with SOLV then DEP and ACT.

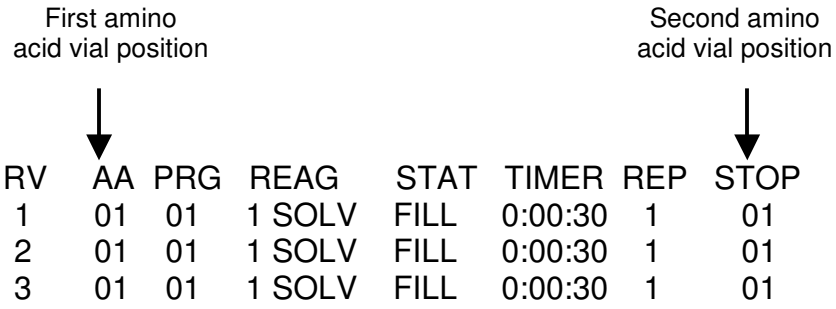
4. SOLV will take approximately 1 minute to pressurize. DEP and ACT will take approximately 30 seconds each.

5. Move the cursor down to the PRIME row then use the right arrow button to move to the ALL column and press RUN.

6. Press the EXIT button to return to the MAIN MENU.

3.3.2 Set Amino Acid Vial Positions

1. From the MAIN MENU, press 1 to open the EDIT AND RUN menu.



RV	AA	PRG	REAG	STAT	TIMER	REP	STOP
1	01	01	1 SOLV	FILL	0:00:30	1	01
2	01	01	1 SOLV	FILL	0:00:30	1	01
3	01	01	1 SOLV	FILL	0:00:30	1	01

2. Under the AA column, enter the carousel position number that contains the first amino acid to be coupled to the resin (C-terminus). Enter 2 digits such as 03 instead of 3.

3. Use the right arrow button to move the cursor to the STOP column.

4. Enter the carousel position number that contains the last amino acid vial (N-terminus) for that RV.

NOTE For final deprotection, add an empty vial after the last amino acid of a peptide and enter the empty vial position in the STOP column.

5. Repeat steps 2-4 for each RV.

3.3.3 Edit Programs

The standard programs for single coupling, double coupling, final deprotect, and capping are as follows:

Program 3 (Single Coupling)

STEP	REAG	TIMER	REP	COMMENTS
1	SOLV	0:00:30	3	Washes resin
2	DEP	0:05:00	2	Deprotects N terminus
3	SOLV	0:00:30	6	Washes resin
4	ACT	0:00:30	1	Dissolves AA/HBTU with base
5	AA	0:20:00	1	AA coupling
6	SOLV	0:00:30	3	Washes resin

Program 4 (Double Coupling)

STEP	REAG	TIMER	REP	COMMENTS
1	SOLV	0:00:30	3	Washes resin
2	DEP	0:05:00	2	Deprotects N terminus
3	SOLV	0:00:30	6	Washes resin
4	ACT	0:00:30	1	Dissolves AA/HBTU with base
5	AA	0:20:00	1	AA coupling
6	ACT	0:00:30	1	Dissolves AA/HBTU with base
7	AA	0:20:00	1	AA coupling
8	SOLV	0:00:30	3	Washes resin

Program 5 (Final Deprotect)

STEP	REAG	TIMER	REP	COMMENTS
1	SOLV	0:00:30	3	Washes resin
2	DEP	0:05:00	2	Deprotects N terminus
3	SOLV	0:00:30	6	Washes resin

Program 6 (Capping)

STEP	REAG	TIMER	REP	COMMENTS
1	SOLV	0:00:30	3	Washes resin
2	ACT	0:00:30	1	Mixes Capping Reagent
3	AA	0:20:00	1	Caps resin
4	SOLV	0:00:30	3	Washes resin

IMPORTANT During an AA step, ACT solution is first delivered to the amino acid vial, then the dissolved mixture is transferred to the RV. The amino acid vial is then rinsed with an equal volume of SOLV, which is also transferred to the RV before the mixing begins.

If different reaction times or repetitions are desired, you may edit the programs as follows:

1. In the EDIT AND RUN screen, press the EDIT button. A screen will open:

   EDIT WHICH PROGRAM?
   1, 2, 3, 4, 5,
   CAP 6

2. Select the program to edit by pressing the number on the keypad then ENTER. If single couplings will be used, edit program 3. If double couplings will be used, edit program 4. If a final deprotect will be performed, edit program 5. If capping will be used, edit program 6.

3. The screen will display the first line of the program in the RV 1 line, and the cursor will be in the TIMER column.

Program steps will be displayed in this line only →

RV	AA	PRG	REAG	STAT	TIMER	REP	STOP
1	01	01	1 SOLV	FILL	0:00:30	1	01
2	01	01	1 SOLV	FILL	0:00:30	1	01
3	01	01	1 SOLV	FILL	0:00:30	1	01

4. Use the left or right arrows to move between the TIMER and REP columns. Use the up or down arrows to scroll through the steps. Use the keypad to enter different times or repetitions.

NOTE Amino acid vials have a capacity of 5 mL. 3 mL is the default ACT delivery volume resulting in 6 mL total coupling solution being delivered to the RV during an AA step (3 mL ACT and 3 mL SOLV). If a larger volume is needed, the REP can be changed in the AA step to deliver another volume of ACT to the same AA vial and transfer it to the RV prior to the SOLV rinse.

5. When finished making changes, press the EXIT button. A new screen will display:

STORE AS PROGRAM
7, 8, 9, 10
11, 12, 13, 14, or 15?
OR ENTER 0 FOR NO CHANGE

6. Enter the number of a program file to save the changes. There are 9 program files available for use (7-15). Press 0 if the program is not to be saved.

7. The STORE AS PROGRAM screen will close and the EDIT AND RUN screen will open.

Be sure to create a swelling program to swell the resin before a synthesis. Do this by editing the first step of the program that will be used for the first coupling so that SOLV is mixed for 0:10:00 instead of 0:00:30.

3.3.4 Assign Programs

Each amino acid position must have a program assigned to it. To assign programs in the EDIT AND RUN screen:

1. Use the arrow keys to move the cursor to the designated RV and press the ASSIGN button.

2. The cursor will move to the PRG column. Use the keypad to type in the two-digit program for the first amino acid position.

NOTE Be sure to assign a swelling program to the first amino acid for each RV (Section 3.3.3).

3. Press the down arrow button to change to the next amino acid position (indicated in the AA column) and type in the two digit program for the second amino acid position. Continue until all amino acid positions have a selected program.

4. Press the EXIT button to exit the assign a program section. The cursor will return to the AA column.

5. Repeat steps 1-4 to assign programs to different RVs.

6. Press the EXIT button to return to the MAIN MENU.

NOTE Double coupling programs automatically use the assigned amino acid position and the following position. The double coupling program automatically overwrites any program assigned to the second amino acid position, but for clarity it is suggested that the same program be assigned to the first and second coupling positions.

NOTE If capping is desired, add acetic anhydride to a clean, empty vial and put it in the carousel following the amino acid. For a 0.4 mmol scale synthesis use 2 mL of acetic anhydride. The capping program will add an aliquot of ACT reagent to the vial, then transfer the mixed solution to the RV. (Program 4 or 6)

NOTE If a final deprotect is desired, place an empty amino acid vial after the last vial for a peptide, and assign a final deprotect program to that position. (Program 5)

3.3.5 Set Universal Times

To determine the volume of fluid and drain time necessary for the synthesis, add the amount of resin for the synthesis to an RV and adjust the fill and disposal times using MANUAL OPERATIONS.

NOTE Each RV should have the same synthesis scale to ensure the proper volume of solvent/reagent is added to saturate the resin.

1. From the MAIN MENU, press 2 to open MANUAL OPERATIONS then press 3 to open REACTION VESSEL CONTROL.

	FILL	MIX	DISP	REP
RV 1	SOLV 07	0:00:30	14	1
RV 2	SOLV 05	0:00:30	10	1
RV 3	SOLV 05	0:00:30	10	1

2. Move the cursor to theFILL column and press enter until SOLV is displayed. Move the cursor to the two-digit number to the right of SOLV and change the fill time (in seconds) then move the cursor to the DISP column to change the drain time (in seconds). Set the MIX time to 0:00:30. Always have the DISP time greater then the SOLV to drain all the fluid.

NOTE One second of fill time equals approximately 1 mL of fluid.

NOTE The DISP time should typically be twice as long as the FILL time.

3. Press RUN. Check the volume of fluid in the RV. If necessary, repeat with different times.

4. Once you have determined the proper FILL and DISP times, press EXIT twice and press 4 for SETUP and then press 1 for SET UNIVERSAL TIMES.

REAG	WASH	07	SOLV	FILL	07	CLEAR	10
RV	WASH	05	DEP	FILL	07	DISPOSE	14
VENT	WASH	05	ACT	FILL	3	MIX ON	01
AA	WASH	05	MX RV	VOL	35	MIX OFF	10

5. Change REAG WASH, SOLV FILL, and DEP FILL times to the new FILL time determined in MANUAL OPERATION. Change DISPOSE to the new time for DISP determined in MANUAL OPERATION.

6. Press EXIT twice to return to the MAIN MENU.

3.3.6 Turn on Printer

Turn on the printer to record the steps in the synthesis. It will also report error messages.

1. From the MAIN MENU press 4 then press 2 to open PRINTER OPERATIONS.

1) PRINTER ON
2) PRINT USER PROGRAMS
3) PRINT FIXED PROGRAMS
4) PRINT ALL PROGRAMS

2. Press 1 or press ENTER to turn the printer on.

NOTE If line 1 reads PRINTER OFF than the printer is already on.

3. Press EXIT twice to return to the MAIN MENU.

3.3.7 Start A Synthesis

After all RV(s) have been loaded with resin, amino acids positions and programs have been assigned, the carousel loaded, and the bottles pressurized and primed, the synthesis may be started.

1. Press 1 or ENTER in the MAIN MENU to open the EDIT AND RUN screen.

RV	AA	PRG	REAG	STAT	TIMER	REP	STOP
1	01	01	1 SOLV	FILL	0:00:30	1	10
2	11	01	1 SOLV	FILL	0:00:30	1	20
3	21	01	1 SOLV	FILL	0:00:30	1	30

2. The cursor will be under the AA column for RV 1. Move the cursor to the RV row to start, then press **RUN**.

3. The synthesis will start.

3.4 Post-Synthesis Procedures

After a synthesis is complete:

1. Remove the RVs from the PS3™ and move them to a fume hood for cleavage. Replace with empty RVs. Remove used amino acid vials.

2. Place an empty, fully assembled amino acid vial in the carousel. Move the vial under the injector as follows:

    a. Press EXIT to return to the MANUAL OPERATION screen. Press 2 to enter the AMINO ACID SYSTEM CONTROL screen.

1) ADVANCE CAROUSEL
2) GO TO CAROUSEL POSITION #__
3) INJECT POSITION
4) UP POSITION

b. Press 2 to select GO TO CAROUSEL POSITION #__

c. Type in the position number of the empty amino acid vial and press RUN to move it under the injector. Use two digits when entering in position number.

CAUTION Needle can cause serious damage. Keep hands away from the needle.

3. Perform an AA INJECTOR wash as follows:

   a. Press EXIT to return to MANUAL OPERATION screen, then press 1 to select WASH PROGRAMS.

   b. Press 6 for AA INJECTOR wash.

4. When complete, clear bottle lines as follows:

   a. Vent all bottles using the BOTTLE PREPARATION screen. (Press EXIT twice to return to the MAIN MENU, then press 3 to select BOTTLE PREPARATION.)

BOTTLE PREPARATION

PRESSURE	SOLV	DEP	ACT	ALL
PRIME	SOLV	DEP	ACT	ALL
VENT	SOLV	DEP	ACT	ALL

   b. Use the arrow buttons to move the cursor to the ALL column for VENT and press RUN. The bottles will vent starting with SOLV then DEP and ACT.

5. Discard or store used chemicals.

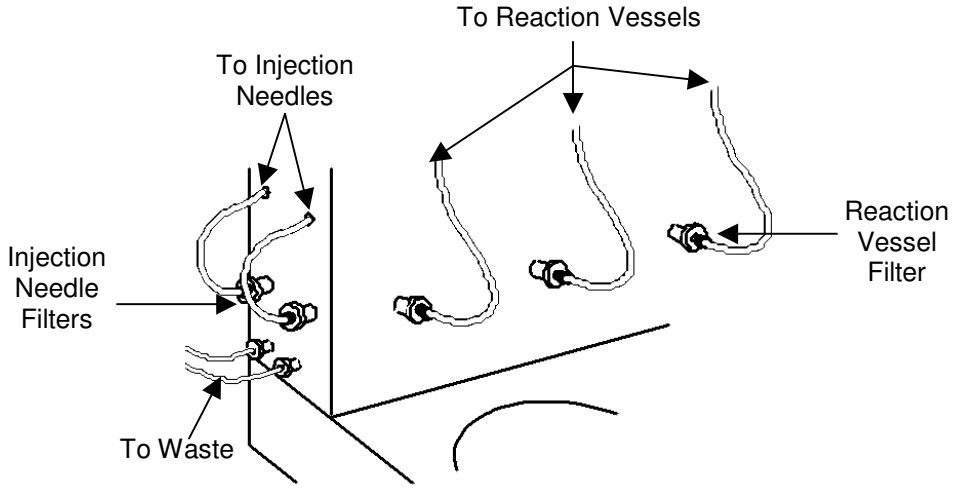
6. Empty the waste container.

7. Turn off synthesizer.

NOTE The PS3™ bottles must be vented when not in use. If nitrogen pressure is lost while the bottles are pressurized, bottles may leak, causing damage to the instrument.

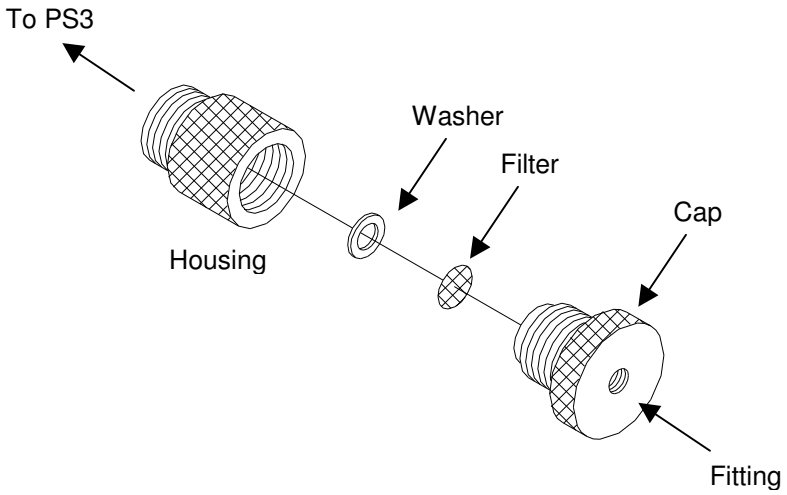
3.5 Cleaning and Replacement of Inline Filters

There are five inline filters on the PS3™. One for each of the three reaction vessels and one for each of the two injection needles.



To check inline filters for particulates:

1. Unscrew the fitting from the cap, then unscrew the cap from the housing.



2. If the filter is dirty, remove the washer and filter from the cap and wash with ethanol to remove particulate matter.

3. Place a new or clean filter in the cap with the washer over the filter and screw the cap back into the PS3™ housing.

4. Screw the fitting with the tube into the cap. Do not use tools to tighten the fittings and cap. Avoid over-tightening.

To check for leaks:

1. Turn on PS3™.

2. From the MAIN MENU, press 3 to select BOTTLE PREPARATION. Pressurize and prime SOLV and ACT by making the appropriate selection and pressing RUN.

3. Press EXIT to return to the MAIN MENU. Press 2 then press 3 to open REACTION VESSEL CONTROL.

4. Under the FILL column, press ENTER until SOLV is displayed in each row. Press RUN for each row to deliver SOLV to all 3 RVs. Check for leaks.

5. Under the FILL column in row 1, press ENTER until ACT is displayed. Press RUN to deliver ACT to the empty amino acid cartridge. Check for leaks.

Appendix

A.1: PS3™ Pre-Packed N-Fmoc-Protected Amino Acids and HBTU, Preweighed

Catalog No.	Description	Quantity
PS3-H1-A PS3-H5-A	FMOC-L-Ala/HBTU	0.4 mmol 1.0 mmol
PS3-H1-RBF PS3-H5-RBF	FMOC-L-Arg(Pbf)/HBTU	0.4 mmol 1.0 mmol
PS3-H1-NT PS3-H5-NT	FMOC-L-Asn(Trt)/HBTU	0.4 mmol 1.0 mmol
PS3-H1-DB PS3-H5-DB	FMOC-L-Asp(OtBu)/HBTU	0.4 mmol 1.0 mmol
PS3-H1-CT PS3-H5-CT	FMOC-L-Cys(Trt)/HBTU	0.4 mmol 1.0 mmol
PS3-H1-EB PS3-H5-EB	FMOC-L-Glu(OtBu)/HBTU	0.4 mmol 1.0 mmol
PS3-H1-QT PS3-H5-QT	FMOC-L-Gln(Trt)/HBTU	0.4 mmol 1.0 mmol
PS3-H1-G PS3-H5-G	FMOC-L-Gly/HBTU	0.4 mmol 1.0 mmol
PS3-H1-HT PS3-H5-HT	FMOC-L-His(Trt)/HBTU	0.4 mmol 1.0 mmol
PS3-H1-I PS3-H5-I	FMOC-L-Ile/HBTU	0.4 mmol 1.0 mmol
PS3-H1-L PS3-H5-L	FMOC-L-Leu/HBTU	0.4 mmol 1.0 mmol
PS3-H1-KBC PS3-H5-KBC	FMOC-L-Lys(Boc)/HBTU	0.4 mmol 1.0 mmol
PS3-H1-M PS3-H5-M	FMOC-L-Met/HBTU	0.4 mmol 1.0 mmol
PS3-H1-F PS3-H5-F	FMOC-L-Phe/HBTU	0.4 mmol 1.0 mmol
PS3-H1-P PS3-H5-P	FMOC-L-Pro/HBTU	0.4 mmol 1.0 mmol
PS3-H1-SB PS3-H5-SB	FMOC-L-Ser(tBu)/HBTU	0.4 mmol 1.0 mmol
PS3-H1-TB PS3-H5-TB	FMOC-L-Thr(tBu)/HBTU	0.4 mmol 1.0 mmol
PS3-H1-WBC PS3-H5-WBC	FMOC-L-Trp(Boc)/HBTU	0.4 mmol 1.0 mmol
PS3-H1-YB PS3-H5-YB	FMOC-L-Tyr(tBu)/HBTU	0.4 mmol 1.0 mmol
PS3-H1-V PS3-H5-V	FMOC-L-Val/HBTU	0.4 mmol 1.0 mmol

A.2: Bulk N-Fmoc-Protected Amino Acids, Preweighed

Catalog No.	Description	Quantity
B-25-A B-100-A	FMOC-L-Ala	25 g 100 g
B-25-RP B-100-RP	FMOC-L-Arg(Pmc)	25 g 100 g
B-25-RBF B-100-RBF	FMOC-L-Arg(Pbf)	25 g 100 g
B-25-NT B-100-NT	FMOC-L-Asn(Trt)	25 g 100 g
B-25-DB B-100-DB	FMOC-L-Asp(OtBu)	25 g 100 g
B-25-CT B-100-CT	FMOC-L-Cys(Trt)	25 g 100 g
B-25-EB B-100-EB	FMOC-L-Glu(OtBu)	25 g 100 g
B-25-QT B-100-QT	FMOC-L-Gln(Trt)	25 g 100 g
B-25-G B-100-G	FMOC-L-Gly	25 g 100 g
B-25-HT B-100-HT	FMOC-L-His(Trt)	25 g 100 g
B-25-I B-100-I	FMOC-L-Ile	25 g 100 g
B-25-L B-100-L	FMOC-L-Leu	25 g 100 g
B-25-KBC B-100-KBC	FMOC-L-Lys(Boc)	25 g 100 g
B-25-M B-100-M	FMOC-L-Met	25 g 100 g
B-25-F B-100-F	FMOC-L-Phe	25 g 100 g
B-25-P B-100-P	FMOC-L-Pro	25 g 100 g
B-25-SB B-100-SB	FMOC-L-Ser(tBu)	25 g 100 g
B-25-TB B-100-TB	FMOC-L-Thr(tBu)	25 g 100 g
B-25-W B-100-W	FMOC-L-Trp	25 g 100 g
B-25-WBC B-100-WBC	FMOC-L-Trp(Boc)	25 g 100 g
B-25-YB B-100-YB	FMOC-L-Tyr(tBu)	25 g 100 g
B-25-V B-100-V	FMOC-L-Val	25 g 100 g

A.3: Reagents & Kits

Catalog No.	Description	Quantity
PS3-PPR-L	20% Piperidine/DMF (Dep)	0.9 L
PS3-MM-L	0.4 N-Methylmorpholine/DMF (Act)	0.9 L
B-100-HBTU B-500-HBTU B-1KG-HBTU	HBTU	100 g 500 g 1 kg
B-100-HCTU B-500-HCTU B-1KG-HCTU	HCTU	100 g 500 g 1 kg
PS3-HK5	Pack of H5 (1.0 mmol) amino acids: includes various quantities of the 20 amino acids.	1 ea.
PS3-HK1	Pack of H1 (0.4 mmol) amino acids: includes various quantities for the 20 amino acids.	1 ea.
PS3-STARTKIT	Fmoc Amino Acid Start-up Kit for the PS3™. Contains: 5 each of H1 amino acids; 0.9 L Deprotectant; 0.9 L 0.4M NMM; 100 g HBTU; 3 of 0.1 mmol scale Rink amide resin, 1 of 0.1 mmol scale Fmoc-Gly-Wang resin.	1 ea.

A.4: Replacement Parts & Accessories

Catalog No.	Description	Quantity
PS3-002	Teflon tubing (25 ft)	1 ea.
2700066	Membrane, Valve Manifold	1 ea.
3000001	Reaction Vessel (small scale 30 mL)	1 ea.
3000005	Reaction Vessel (large scale 85 mL)	1 ea.
SMP-20056	RV Cap	1 ea.
0100040	Filter/Washer Set	1 ea.
2700042	O-Ring, SOLV, 4 L bottle	1 ea.
2700041	O-Ring, NMM & PIP (ACT & DEP, 1 L bottles)	1 ea.
2700021	O-Ring Schott (1 & 2 L bottles)	1 ea.
3500024	Reducing elbow connector, reaction vessel	1 ea.
3500032	Reducing straight connector, reaction vessel	1 ea.
PS3-VX-010	Reagent vial, cap & septa	Pkg. of 10
PS3-VX-100	Reagent vial, cap & septa	Pkg. of 100
PS3-VX-500	Reagent vial, cap & septa	Pkg. of 500
PS3-SEP100	Vial Septa	Pkg. of 100
PS3-SEP500	Vial Septa	Pkg. of 500
SMP-300007	Bottle amber, 4 L	1 ea.
SMP-300008	Bottle amber, 1 L	1 ea.
SMP-260205	Cap, SOLV and ACT/DEP (new style)	1 ea.
SMP-260207	ACT/DEP (old style)	1 ea.
SMP-RF-100	Bottle Filter	Pkg. of 100
SMP-260187	Filter Housing, Bottle	1 ea.

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