

2. Tubes, caps, and adapters

2.1 Types of tubes, caps, and adapters

● Tubes

⚠ CAUTION

When using tubes on the market, perform the operation under the allowable RCF specified by the manufacturer. Otherwise the tube may be broken during operation. Before using tubes/bottles on the market, test them by filling them with water instead of sample, and run them at the intended speed to ensure that there is no abnormality.

○ Tubes (thin walled tubes)

Tubes are used in swing rotor without caps. It is necessary to fill the tubes up to within 3-10mm from the top of tubes with the sample. These tubes (thin walled tubes) with cap can be used in the S50A, S58A, or S110AT rotor. When using the S50A or S58A rotor, you must fill up these tubes (thin walled tubes) with the sample.

However, stainless steel tubes and titanium alloy tubes can be used with optional volume less than net volume without caps.

○ Thick-walled tubes

Thick-walled tubes are used in angle rotors and swing rotor without caps. For angle rotors, these can be used with optional volume less than net volume. For swing rotor, fill the tubes up to within 3-10mm from the top of tubes with the sample.

○ Seal tubes

Seal tubes are sealed by heating and used with space caps in angle rotors, neo-angle rotors and vertical rotor.

For some sealed tube and rotor combinations, a float spacer must be set before setting the space cap.

These tubes must be filled up the sample. The tube sealer, model STF3/STF2/STF-1, and tube rack are necessary to seal tubes.

○ Micro tubes on the market

The micro tube is the tube with the cap and conical shape. 1.5mL micro tubes made of polypropylene can be used with the S110AT, S100AT4, and S80AT3 rotor with Adapters.

The S55A2 rotor is used without Adapters.

Micro Tube (Part No.S308892A) and Sampling Tube (84710901) are recommended when using micro tubes in the rotor manufactured by us.

Maximum RCF of Micro Tube (Part No.S308892A) is 201,000xg.

Maximum RCF of Sampling Tube (84710901) is 125,000xg.

Refer to the appendix 2 for the maximum speed of each rotor.

○ Bottle (only for the S50A or S58A rotor)

This bottle is used with screw cap for the S50A or S58A rotor. It can be used with any volume less than the net volume. (However, when a 20PA Bottle (C) is used at more than 100,000xg (maximum RCF), liquid should be over the shoulder of the bottle.)

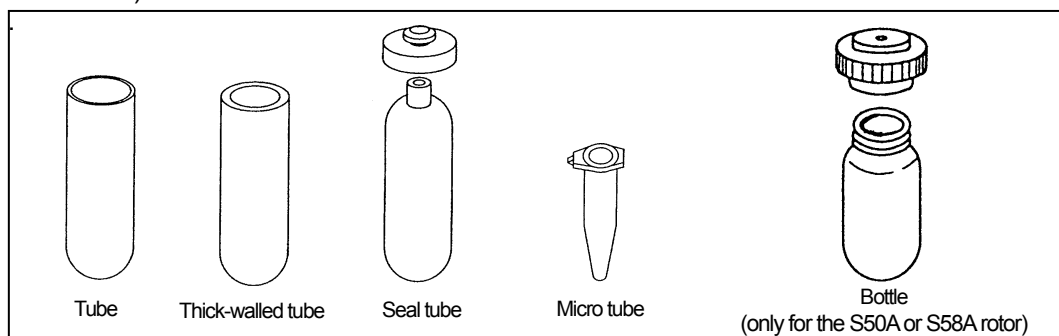


Fig. 2-1 Appearance of tubes

● Caps, adapters, and float spacers

○ Space caps (for seal tubes)

Space caps prevent deformation of seal tubes during operation and are made from aluminum alloy or modified polyphenylene ether. Be careful that different rotors use different space caps.

○ Float spacers (for some seal tubes)

Float spacers prevent deformation of seal tubes during operation and are made from modified polyphenylene ether. Be sure to use float spacers with space caps. Be careful that different rotors use different float spacers.

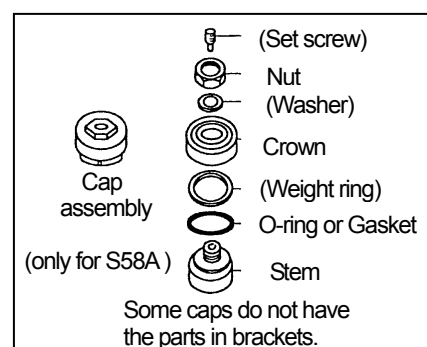
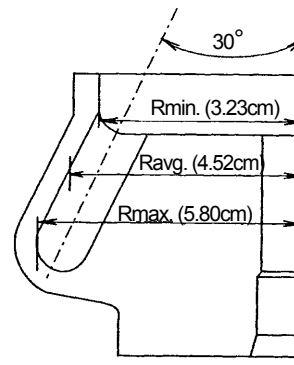


Fig. 2-2 Caps

S80AT3 Angle rotor

Max. speed	80,000 rpm
Max. RCF	415,000 × g
Nominal rotor capacity	48mL=8 × 6.0mL
k factor	23



(1) Summary of tubes

Tube				Adapter/Float spacer		Space cap		Maximum speed (rpm)	Maximum RCF (× g)
Part No.	Name	Size (φ × L cm)	Actual capacity (mL)	Part No.	Name	Part No.	Name		
S408829A	6 PC Thick-walled tube	1.6×5.9	5.3	—	—	—	—	80,000	415,000
S408833A	6 PA Thick-walled tube	1.6×5.9	5.3	—	—	—	—	60,000	233,000
S408831A	8 PA Seal tube	1.6×5.3	8.3	—	—	S408835	Space cap (C5)	80,000	415,000
S311555A	6 PA Seal tube	1.6×5.0	6.5	S413978	C8-6 Float spacer	S408835	Space cap (C5)	80,000	415,000
S308892A	Micro tube 1.5mL	1.09×4.0	1.3	—	—	—	—	45,000	106,000
84710901	Sampling tube 1.5mL	1.08×4.2	1.3	—	—	—	—	45,000	106,000
—	1.5mL Micro tube	1.1×4.2	1.0	—	—	—	—	45,000	106,000

(2) Standard accessories

Part No.	Name	Qty
S408829A	6 PC Thick-walled tube	2 (50pcs./box)
8062260	O-ring	2
8062216	O-ring	2
452701	Tweezers	1
S410705A	Cover opener 3	1
Common accessories of all rotors (see Appendix 3)		1

NOTE : When using Seal tubes or 1.5mL Micro tubes, the following optional accessories are required.

- 8 PA Seal tube kit (part no. S311562A)
 - (a) S408831A 8 PA Seal tube 2(50pcs./box)
 - (b) S408835 Space cap(C5)..... 8
 - (c) S407157 Tube setter 1

*If you do not have a Tube sealer, the following parts are also necessary.

- STF3 Tube sealer
- Tube rack (C2) (S201778L)

(3) Characteristics table

Speed (rpm)	RCF (× g)			k factor
	Rmin. (3.23cm)	Ravg. (4.52cm)	Rmax. (5.80cm)	
10,000	3,610	5,050	6,480	1,483
20,000	14,400	20,200	25,900	371
30,000	32,500	45,500	58,400	165
40,000	57,800	80,900	104,000	93
50,000	90,300	126,000	162,000	59
60,000	130,000	182,000	233,000	41
70,000	177,000	248,000	318,000	30
80,000	231,000	323,000	415,000	23

- 6 PA Seal tube kit (part no. S311557B)
 - (a) S311555A 6 PA Seal tube 1(50pcs./box)
 - (b) S408835 Space cap(C5) 8
 - (c) S413978 C8-6 Float spacer 8
 - (d) S407157 Tube setter 1

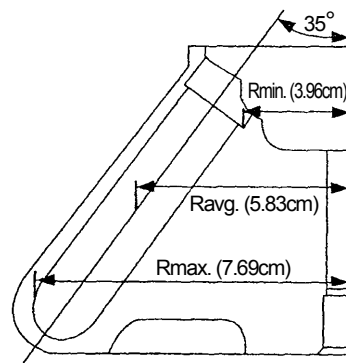
*If you do not have a Tube sealer, the following parts are also necessary.

- STF3 Tube sealer
- Tube rack (C4) (S206017A)

- 1.5mL micro tube
 - (a) S408939 1.5A8 Adapter 8

S58A Angle rotor

Max. speed	58,000 rpm
Max. RCF	289,000 × g
Nominal rotor capacity	108mL=8 × 13.5mL
k factor	50



(1) Summary of tubes

Tube/Bottle					Adapter/Float Spacer		Cap		Maximum speed (rpm)	Maximum RCF (× g)
Nominal capacity	Part No.	Name	Size (φ × L cm)	Actual Capacity (mL)	Part No.	Name	Part No.	Name		
13.5	345320A	12PA Seal tube	1.6×7.8	13.5	—	—	486582	C2 space cap	58,000	289,000
12	329606A	12PA Tube	1.6×7.6	10.5	—	—	463577A	C-TI Cap Ass'y	58,000	289,000
				10.2			S410542A	S-12AL Cap Ass'y	58,000	289,000
	325470A	12PE Tube	1.6×7.5	10.5	—	—	463577A	C-TI Cap Ass'y	58,000	289,000
				10.0			S410542A	S-12AL Cap Ass'y	58,000	289,000
	325751A	12PC Tube	1.6×7.6	10.5	—	—	463577A	C-TI Cap Ass'y	58,000	289,000
	S413604A	12TI Tube	1.6×7.6	9.5	—	—	—	—	40,000	138,000
326010A	12SS Tube	1.6×7.6	10.5	—	—	463577A	C-TI Cap Ass'y	30,000	77,400	
			9.5	—	—	—	—	35,000	105,000	
10	338455A	10PC Thick-walled tube	1.6×7.7	7.3	—	—	—	—	58,000	289,000
	338456A	10PA Thick-walled tube	1.6×7.6	7.2	—	—	—	—	50,000	215,000
	S303922A	10PC Bottle (B) Ass'y	1.6×8.2	9.0	—	—	—	—	58,000	289,000
	325952A	10PC Bottle Ass'y	1.6×8.2	8.5	—	—	—	—	55,000	260,000
	334105A	10PA Bottle Ass'y	1.6×8.2	8.0	—	—	—	—	50,000	215,000
8	S408831A	8PA Seal tube	1.6×5.3	8.3	S413976	C12-8 Float Spacer	486582	C2 space cap	58,000	289,000
6.5	329445A	6.5PA Tube	1.3×6.4	5.8	336687A	6.5A12 Adapter	414429A	B-AL Cap Ass'y	38,000	114,000
	326415A	6.5PC Tube	1.3×6.4	5.8	336687A	6.5A12 Adapter	414429A	B-AL Cap Ass'y	38,000	114,000
6	S311555A	6PA Seal tube	1.6×4.2	6.5	S413977	C12-6 Float Spacer	486582	C2 space cap	58,000	289,000
5	332245A	5PA Tube	1.3×5.2	5	336686A	5A12 Adapter	414429A	B-AL Cap Ass'y	38,000	107,000
4.7	S303141A	4.7PC Thick-walled tube	1.3×6.4	3.4	336687A	6.5A12 Adapter	—	—	38,000	114,000
4	329561A	4PA Tube	1.1×6.0	4	336685A	4A12 Adapter	336711A	A3-AL Cap Ass'y	38,000	117,000
3	336708A	3PA Tube	1.1×4.7	3	336684A	3A12 Adapter	336711A	A3-AL Cap Ass'y	38,000	109,000
	S301599A	3PC Tube	1.3×5.1	2.6	336686A	5A12 Adapter	—	—	38,000	107,000
0.9	S304296A	0.9PC Thick-walled tube	0.8×5.0	0.9	336683A	2A12 Adapter	—	—	42,000	151,000

(2) Standard accessories

Part No.	Name	Qty
338455A	10PC Thick-walled tube	2 boxes (10 tubes/box)
8062270	O-ring	2
8062014	O-ring	2
452701	Tweezers	1
Common accessories of all rotors (see Appendix 3)		1

⚠ WARNING

Do not run the rotor with samples whose average density is over 1.2 g/mL at the maximum speed.

⚠ CAUTION

Note that this quick setting type rotor can be used only with the CS150NX and CS-FNX/CS-GX II /CS-GXL/CS-GX series centrifuges.

(3) Characteristics table

Speed (rpm)	RCF(*g)			k factor
	Rmin. (3.96cm)	Ravg. (5.83cm)	Rmax. (7.69cm)	
10,000	4,430	6,520	8,600	1,681
15,000	9,960	14,700	19,300	747
20,000	17,700	26,100	34,400	420
25,000	27,700	40,700	53,700	269
30,000	39,800	58,700	77,400	187
35,000	54,200	79,800	105,000	137
40,000	70,800	104,000	138,000	105
45,000	89,700	132,000	174,000	83
50,000	111,000	163,000	215,000	67
55,000	134,000	197,000	260,000	56
58,000	149,000	219,000	289,000	50

When using 8PA Seal tube, the following parts are required.

● 8PA Seal tube kit (part no. S311562B)

[Components]

- (a) S408831A 8PA Seal tube × 2 boxes (50 pcs./box)
- (b) 486582 C2-space cap × 4
- (c) S413976 C12-8 Float spacer × 4
- (d) S407157 Tube setter × 1
- (e) 435823A Tube setter (B) ass'y × 1

*If you do not have a Tube sealer, the following parts are also necessary.

- STF3 Tube sealer
- Tube rack (C2) (S201778L)

When using 6PA Seal tube, the following parts are required.

● 6PA Seal tube kit (part no. S311557A)

[Components]

- (a) S311555A 6PA Seal tube × 2 boxes (50 pcs./box)
- (b) 486582 C2-space cap × 4
- (c) S413977 C12-6 Float spacer × 4
- (d) S407157 Tube setter × 1
- (e) 435823A Tube setter (B) ass'y × 1

*If you do not have a Tube sealer, the following parts are also necessary.

- STF3 Tube sealer
- Tube rack (C4) (S206017A)

When using 12PA Seal tube, the following parts are required.

● 12PA Seal tube kit (D) (part no. S304991D)

[Components]

- (a) 345320A 12PA Seal tube × 2 boxes (50 pcs./box)
- (b) 486582 C2-space cap × 8
- (c) S407157 Tube setter × 1

*If you do not have a Tube sealer, the following parts are also necessary.

- STF3 Tube sealer
- Tube rack (C) (S201778B)

When using 12PA Tube, the following parts are required.

● 12PA Tube kit (C) (part no. S304986C)

[Components]

- (a) 329606A 12PA Tube × 2 boxes (50 pcs./box)
- (b) 463577A C-TI cap × 8
- (c) S401803A Packing for cap × 2 boxes (10 pcs./box)
- (d) 333885A Tube vice (C2) × 1
- (e) 469283 Torque wrench × 1
- (f) 435823A Tube setter (B) ass'y × 1

When using C-TI caps for 12PE Tubes or 12PC Tubes or 12SS Tubes, the following parts are required.

● Tool set (C2) (part no. 341109A)

[Components]

- (a) 333885A Tube vice (C2) × 1
- (b) 469283 Torque wrench × 1

● Tube setter (C) (part no. 481056A)

When using S-12AL Caps for 12PA Tubes or 12PE Tubes, the following parts are required.

A S-12AL Cap can not be used for a 12PC Tube.

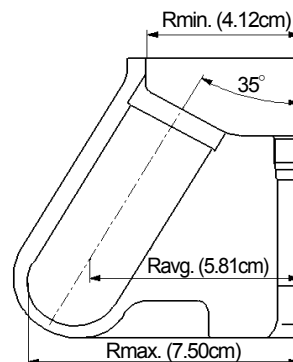
● S-12AL Cap tool set (part no. S308626A)

[Components]

- (a) S410542A S-12AL Cap × 8
- (b) S204591A Hand press × 1
- (c) S411487 Tube holder (C) × 1
- (d) S411486 Tube holder (E) × 1
- (e) 481056A Tube setter (C) × 1

S50A Angle rotor

Max. speed	50,000 rpm
Max. RCF	210,000 × g
Nominal rotor capacity	180mL = 6 × 30.0mL
k factor	61



(1) Summary of tubes

Nominal capacity	Tubes • Bottles				Adapters/Float Spacers		Caps		Maximum speed (rpm)	Maximum RCF (× g)
	Part No.	Name	Size (φ×L cm)	Actual capacity (mL)	Part No.	Name	Part No.	Name		
30	S309154A	30 PA Tube	2.6×7.2	25.4	—	S410532A	S-40AL Cap Ass'y	50,000	210,000	
				26.8	—	S305231A	E3-AL Cap Ass'y	50,000	210,000	
	S311568A	30PA Seal tube	2.6×7.5	31.7	—	485649	E Space Cap	50,000	210,000	
25	S309140A	25 PC Thick-walled tube	2.6×7.6	19.8	—	—	—	50,000	210,000	
	S309155A	25 PA Thick-walled tube	2.6×7.6	19.8	—	—	—	30,000	76,000	
20	S309156A	20 PC Bottle (C)	2.6×8.0	20.3	—	—	—	50,000	210,000	
	S310163A	20 PA Bottle (C)*	2.6×8.0	19.0	—	—	—	50,000	210,000	
	S311569A	20PA Seal tube	2.6×5.5	22.2	S413979	E40-30 Float Spacer	485649	E Space Cap	50,000	210,000

*When a 20PA Bottle (C) is used at more than 100,000xg (maximum RCF), liquid should be over the shoulder of the bottle.

(2) Standard accessories

Part No.	Name	Qty
S309140A	25 PC Thick-walled tube	2 (10pcs./box)
8062285	O-ring	2
8062014	O-ring	2
452701	Tweezers	1
Common accessories of all rotors (see Appendix 3)		1

(3) Characteristics table

Speed (rpm)	RCF(×g)			k factor
	Rmin. (4.12cm)	Ravg. (5.81cm)	Rmax. (7.50cm)	
5,000	1,150	1,620	2,100	6,070
10,000	4,610	6,500	8,390	1517
15,000	10,400	14,600	18,900	674
20,000	18,400	26,000	33,500	379
25,000	28,800	40,600	52,400	243
30,000	41,500	58,500	75,500	169
35,000	56,400	79,600	103,000	124
40,000	73,700	104,000	134,000	95
45,000	93,300	132,000	170,000	75
50,000	115,000	162,000	210,000	61

⚠ WARNING

Do not run the rotor with samples whose average density is over 1.2 g/mL at the maximum speed.

⚠ CAUTION

Note that this quick setting type rotor can be used only with the CS150NX and CS-FNX/CS-GX II /CS-GXL/CS-GX series centrifuges.

When using S-40AL Caps for 30PA Tubes, the following parts are required.

● S-30AL Cap tool set (part no.S309145A)

[Components]

- (a) S410532A S-40AL Cap × 6
- (b) S204591A Hand press × 1
- (c) S412292 Tube holder(D) × 1
- (d) 481056A Tube setter(C) × 1

When using E3-AL Caps for 30PA Tubes, the following parts are required.

● 30PA Tube kit (part no.S309245A)

[Components]

- (a) S309154A 30PA Tube × 2 boxes (50 pcs./box)
- (b) S305231A E3-AL cap × 6
- (c) S401787A Packing for cap× 2 boxes (10 pcs./box)
- (d) S309247A Tube vice (D) × 1
- (e) 477706 Socket adapter × 1
- (f) 477705 Torque wrench× 1
- (g) 483539A 17mm Socket × 1
- (h) 435823A Tube setter × 1

When using 30PA Seal tube, the following parts are required.

- 30 PA Seal tube kit (part no. S311570A)
 - (a) S311568A 30 PA Seal tube 2(50pcs./box)
 - (b) 485649 E Space cap..... 6
 - (c) S407157 Tube setter 1

*If you do not have a Tube sealer, the following parts are also necessary.

- STF3 Tube sealer
- Tube rack (E3) (S206017B)

When using 20PA Seal tube, the following parts are required.

- 20 PA Seal tube kit (part no. S311571B)
 - (a) S311569A 20 PA Seal tube2(50pcs./box)
 - (b) 485649 E Space cap6
 - (c) S413979 E40-30 Float spacer.....6
 - (d) S407157 Tube setter 1
 - (e) 435823A Tube setter (B) ass'y 1

*If you do not have a Tube sealer, the following parts are also necessary.

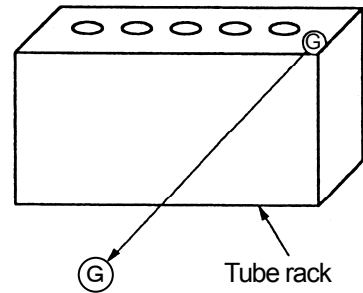
- STF3 Tube sealer
- Tube rack (E4) (S206017C)

The tube sealer, model STF-1, model STF2, or model STF3, and the tube rack are necessary to seal the tube.

Applicable seal tubes	Tube racks	Part No.	Tube sealer			Remarks			
			STF-1	STF2	STF3				
1.5PA Seal tubes	Tube rack (G2)	S201778G	○	○	○				
2PA Seal tubes	Tube rack (G)	S201778F							
3.5PA Seal tubes	Tube rack (B2)	S201778E							
4PA Seal tubes	Tube rack (B3)	S201778H							
5PA Seal tubes	Tube rack (B)	S201778A							
6PA Seal tubes	Tube rack (C4)	S206017A					×	○	○
6.5PA Seal tubes	Tube rack (B4)	S201778J					○	○	○
8PA Seal tubes	Tube rack (C2)	S201778L					○	○	○
10PA Seal tubes	Tube rack (D)	S206017E					×	○	○
12PA Seal tubes	Tube rack (C)	S201778B					○	○	○
15PA Seal tubes	Tube rack (C3)	S206017F	×	○	○				
20PA Seal tubes	Tube rack (E4)	S206017C							
30PA Seal tubes	Tube rack (E3)	S206017B							
33PA Seal tubes	Tube rack (E2)	S206017D							
40PA Seal tubes	Tube rack (E)	S201778C	○	○	○				
94PA Seal tubes	Tube rack (F)	S201778D	○	×	×				
	Tube rack (F2)	S201778M	×	○	○				
2PA,4PA,5PA,6.5PA,12PA , and 40PA Seal tubes	Multi-rack	S201778K	○	○	○	Multi-rack can be used with 2PA,4PA,5PA,6.5PA, 12PA, and 40PA seal tubes only.			

○ : Compatible × : Not compatible

Type of tube rack is stamped on top of the tube rack.
e.g.) In case of Tube rack (G), "G" is stamped on top of the tube rack.



● Seal Tube Kit

Parts Kits	SEAL TUBE		SPACE CAP		FLOAT SPACER		TUBE SETTER		TUBE SETTER	
	Part No. / Name	**	Part No. / Name	**	Part No. / Name	**	Part No. / Name	**	Part No. / Name	**
S304989A 5PA Seal Tube Kit (A)	345319A 5PA Seal Tube	2 (100)	488101 B2 - Space Cap	8	/	/	S407157 Tube Setter	1	/	/
S304989B 5PA Seal Tube Kit (B)	345319A 5PA Seal Tube	2 (100)	488101 B2 - Space Cap	18	/	/	S407157 Tube Setter	1	/	/
S304990A 6.5PA Seal Tube Kit (A)	S304238A 6.5PA Seal Tube	2 (100)	S407828 B5 - Space Cap	8	/	/	S407157 Tube Setter	1	/	/
S304991A 12PA Seal Tube Kit (A)	345320A 12PA Seal Tube	2 (100)	486582 C2 - Space Cap	12	/	/	S407157 Tube Setter	1	/	/
S304991B 12PA Seal Tube Kit (B)	345320A 12PA Seal Tube	2 (100)	484285 C - Space Cap	12	/	/	S407157 Tube Setter	1	/	/
S304991C 12PA Seal Tube Kit (C)	345320A 12PA Seal Tube	2 (100)	S402310 C4 - Space Cap	10	/	/	S407157 Tube Setter	1	/	/
S304991D 12PA Seal Tube Kit (D)	345320A 12PA Seal Tube	2 (100)	486582 C2 - Space Cap	8	/	/	S407157 Tube Setter	1	/	/
S304992A 40PA Seal Tube Kit (A)	345321A 40PA Seal Tube	2 (100)	485649 E - Space Cap	12	/	/	S407157 Tube Setter	1	/	/
S304992B 40PA Seal Tube Kit (B)	345321A 40PA Seal Tube	2 (100)	S402525 E3 - Space Cap	8	/	/	S407157 Tube Setter	1	/	/
S304993A 94PA Seal Tube Kit (A)	S304301A 94PA Seal Tube	4 (100)	S408969 F - T1 Space Cap	6	/	/	S407157 Tube Setter	1	/	/
S311572A 4PA Seal Tube Kit (A)	S303694A 4PA Seal Tube	2 (100)	S407828 B5 - Space Cap	6	/	/	S407157 Tube Setter	1	/	/
S311572B 4PA Seal Tube Kit (B)	S303694A 4PA Seal Tube	2 (100)	S407828 B5 - Space Cap	4	S413975 B6.5-4 Float Spacer	4	S407157 Tube Setter	1	435823A Tube Setter (B)	1
S304989E 5PA Seal Tube Kit (E)	345319A 5PA Seal Tube	2 (100)	S407828 B5 - Space Cap	4	S413974 B6.5-5 Float Spacer	4	S407157 Tube Setter	1	/	/
S311557A 6PA Seal Tube Kit (A)	S311555A 6PA Seal Tube	2 (100)	486582 C2 - Space Cap	4	S413977 C12-6 Float Spacer	4	S407157 Tube Setter	1	435823A Tube Setter (B)	1
S311557B 6PA Seal Tube Kit (B)	S311555A 6PA Seal Tube	2 (100)	S408835 C5 - Space Cap	8	S413978 C8-6 Float Spacer	8	S407157 Tube Setter	1	/	/
S311562A 8PA Seal Tube Kit (A)	S408831A 8PA Seal Tube	2 (100)	S408835 C5 - Space Cap	8	/	/	S407157 Tube Setter	1	/	/
S311562B 8PA Seal Tube Kit (B)	S408831A 8PA Seal Tube	2 (100)	486582 C2 - Space Cap	4	S413976 C12-8 Float Spacer	4	S407157 Tube Setter	1	435823A Tube Setter (B)	1
S311532A 10PA Seal Tube Kit (A)	S311530A 10PA Seal Tube	2 (100)	S413981 D - Space Cap	6	/	/	S407157 Tube Setter	1	/	/
S311535A 15PA Seal Tube Kit (A)	S311533A 15PA Seal Tube	2 (100)	S413982 C6 - Space Cap	6	/	/	S407157 Tube Setter	1	/	/
S311571A 20PA Seal Tube Kit (A)	S311569A 20PA Seal Tube	2 (100)	485649 E - Space Cap	4	S413980 E40-20 Float Spacer	4	S407157 Tube Setter	1	435823A Tube Setter (B)	1
S311571B 20PA Seal Tube Kit (B)	S311569A 20PA Seal Tube	2 (100)	485649 E - Space Cap	6	S413979 E40-30 Float Spacer	6	S407157 Tube Setter	1	435823A Tube Setter (B)	1
S311570A 30PA Seal Tube Kit (A)	S311568A 30PA Seal Tube	2 (100)	485649 E - Space Cap	6	/	/	S407157 Tube Setter	1	/	/
S311570B 30PA Seal Tube Kit (B)	S311568A 30PA Seal Tube	2 (100)	485649 E - Space Cap	4	S413979 E40-30 Float Spacer	4	S407157 Tube Setter	1	435823A Tube Setter (B)	1
S311546A 33PA Seal Tube Kit (A)	S311544A 33PA Seal Tube	2 (100)	S413983 E4 - Space Cap	6	/	/	S407157 Tube Setter	1	/	/

** Q'ty (pcs/box)

The tube sealer, model STF-1, model STF2, or model STF3 and the tube rack are separately necessary for using seal tubes. See appendix 3 for the part No. of the tube rack.