

# YAMAZEN

## High Performance Flash Columns



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**YAMAZEN CORPORATION**

# Universal Columns

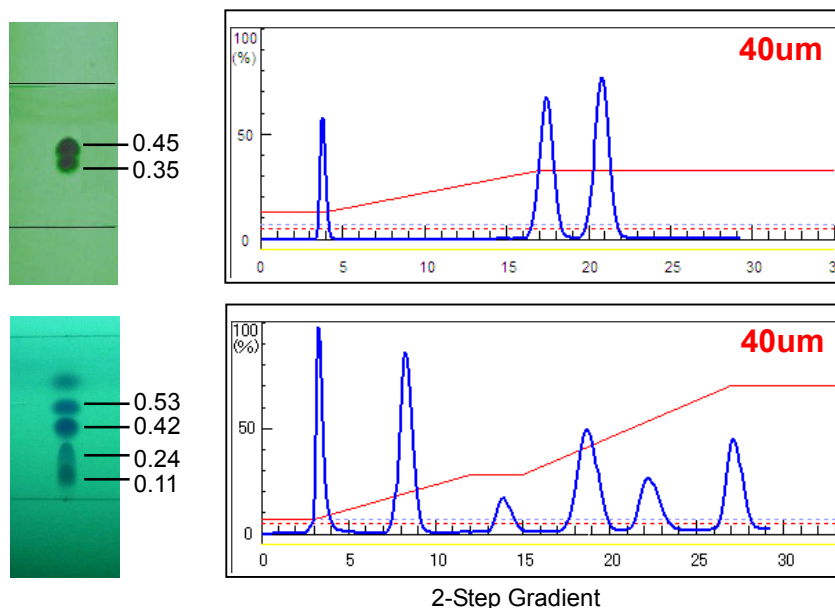
## Yamazen's High Performance disposable Polypropylene Flash Columns with High Throughput Purifications



### Offering High Theoretical Plate Numbers to Ensure Better Separations

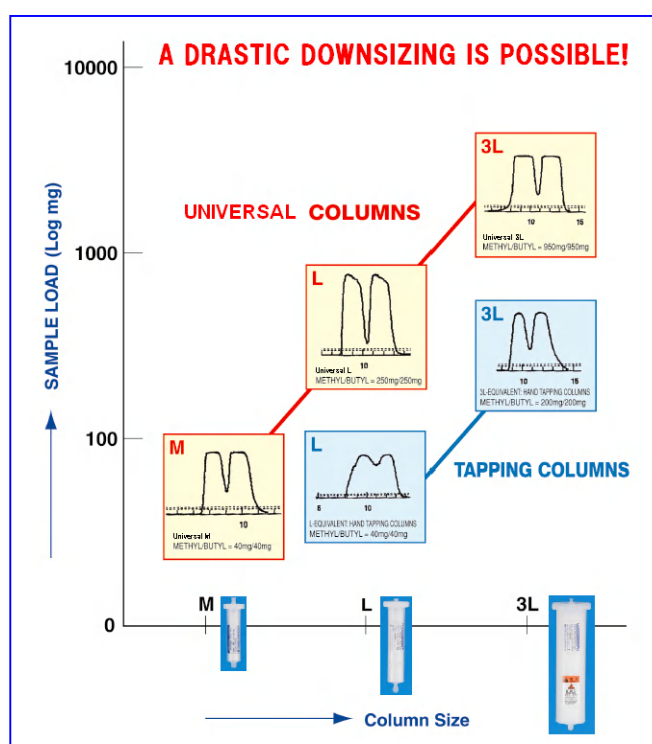
- Disposable plastic cartridges of high number of theoretical plates, high resolution without leading and tailing, and high efficiency and consistent quality due to Yamazen's proprietary design and packing technology
- Universal columns can handle larger amount of samples than other makes, due to uniformly tight packed columns.

## High Resolution, No leading and No Tailing

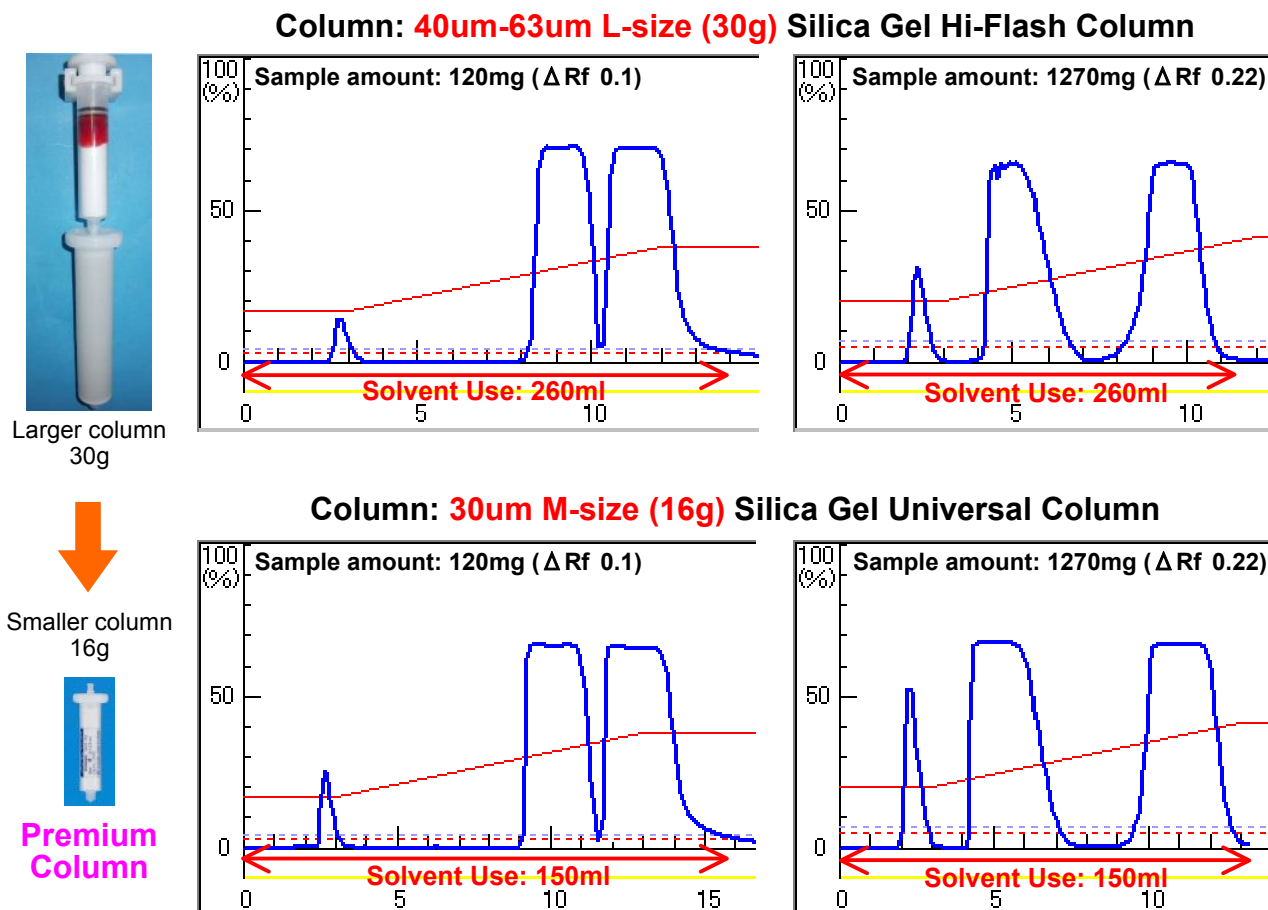


Universal columns are available in Normal Phase (Silica, Amino) and in Reverse Phase (ODS (C18)). Universal columns are available, packed with irregular silica gel of Pore Size 60 Å, Particle Size 40-63 micron and also in Pore Size 60 Å and Particle Size 25-40 micron (Premium).

Yamazen columns can take much bigger size samples than the equivalent size columns of other brand. In other words, a size smaller Universal column is able to take the same size sample that a bigger size column of other brand can take. The result is same or even better than a size bigger column of other brand.



## A Drastic Column Downsizing Is Possible With Use of 25-40um Silica Gel Packed Universal Column.

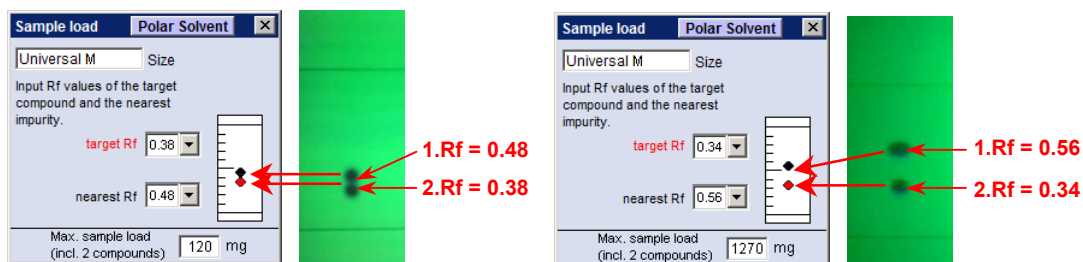


Column Downsizing → Less Solvent Use → Save Laboratory Cost

Yamazen Smart Flash software calculates maximum sample load for each column.

1. Butyl-P-hydroxybenzoate
2. Methyl-P-hydroxybenzoate

1. diethyl phthalate
2. Methyl-P-hydroxybenzoate



Our sample loading software has been designed to give the accurate number of maximum sample load for each column, assuring the resolution of  $R_s=1.0$ , based on  $\Delta R_f$  (distance between the target compound and its nearest impurity).

**■ Disposable Polypropylene Column with High Throughput Purification Performance  
Packed with High Performance Silica Gel, Pore Size 60A, Luer Lock Type**

Size Code	O.D. x Overall Length (cm)	Weight Packed Material	Article No. 40-63 micron	Order Scale (pcs)	Scale Price	Article No. 25/40 um	Order Scale (pcs)	Scale Price
S	1.8 x 11.4	7g	UW009-02	20		UW109-01	10	
			UW009-05	50		UW109-05	50	
			UW009-25	250		UW109-25	250	
M	2.3 x 12.3	16g	UW002-01	10		UW102-01	10	
			UW002-05	50		UW102-05	50	
			UW002-25	250		UW102-25	250	
L	3.0 x 16.5	40g	UW003-01	10		UW103-01	10	
			UW003-05	50		UW103-05	50	
			UW003-25	250		UW103-25	250	
2L	3.0 x 20.0	55g	UW004-01	10		UW104-01	10	
			UW004-05	50		UW104-05	50	
			UW004-25	250		UW104-25	250	
5L-S8	6.4 x 12.0	110g	UW007-01	10		—	10	
			UW007-05	50			50	
			UW007-25	250			250	
3L	5.0 x 19.0	135g	UW008-01	10		UW108-01	10	
			UW008-05	50		UW108-05	50	
			UW008-25	250		UW108-25	250	
4L	5.2 x 23.0	200g	UW005-01	10		UW105-01	10	
			UW005-05	50		UW105-05	50	
			UW005-25	250		UW105-25	250	
5L	6.4 x 24.0	300g	UW006-06	5		UW106-06	5	
			UW006-01	10		UW106-01	10	
			UW006-05	50		UW106-05	50	

**■ Disposable Polypropylene Column with High Throughput Purification Performance  
Packed with C-18-derivatized, Pore Size 120A, Particle size 40/60 microns, Luer Lock Type**

Size Code	O.D. x Overall Length (cm)	Weight Packed Material	Article No.	Order Scale (pcs)	Scale Price
S	1.8 x 11.4	7g	UW119-02	20	
			UW119-05	50	
			UW119-10	100	
M	2.3 x 12.3	14g	UW112-01	10	
			UW112-05	50	
			UW112-10	100	
L	3.0 x 16.5	37g	UW113-01	10	
			UW113-05	50	
			UW113-10	100	
2L	3.0 x 20.0	51g	UW114-06	5	
			UW114-01	10	
			UW114-05	50	
3L	5.0 x 19.0	140g	UW118-00	1	
			UW118-06	5	
			UW118-01	10	
4L	5.2 x 23.0	184g	UW115-00	1	
			UW115-06	5	
			UW115-01	10	
5L	6.4 x 24.0	313g	UW116-00	1	
			UW116-06	5	
			UW116-01	10	

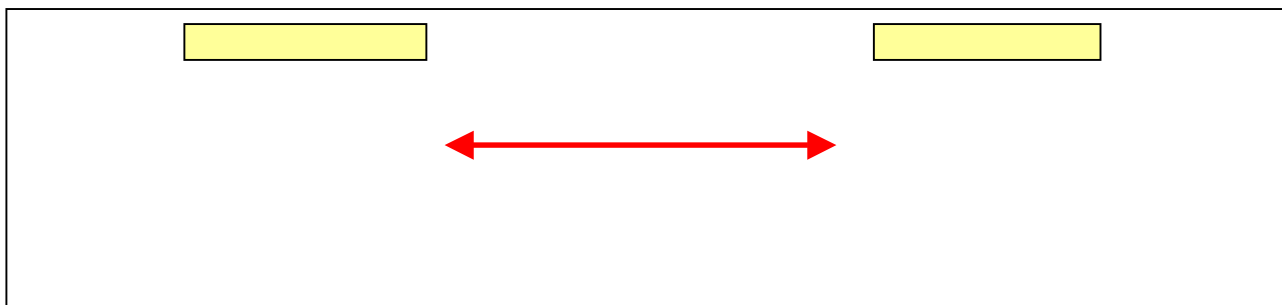
**■ Disposable Polypropylene Column with High Throughput Purification Performance  
Packed with Amino (NH<sub>2</sub>), Pore Size 60A, Luer Lock Type**

Size Code	O.D. x Overall Length (cm)	Weight Packed Material	Article No. 40-63 micron	Order Scale (pcs)	Scale Price	Article No. 25/40 um	Order Scale (pcs)	Scale Price
S	1.8 x 11.4	7g	UW099-02	20		UW199-02	20	
			UW099-05	50		UW199-05	50	
			UW099-25	250		UW199-25	250	
M	2.3 x 12.3	16g	UW092-01	10		UW192-01	10	
			UW092-05	50		UW192-05	50	
			UW092-25	250		UW192-25	250	
L	3.0 x 16.5	40g	UW093-01	10		UW193-01	10	
			UW093-05	50		UW193-05	50	
			UW093-25	250		UW193-25	250	
2L	3.0 x 20.0	55g	UW094-01	10		UW194-01	10	
			UW094-05	50		UW194-05	50	
			UW094-25	250		UW194-25	250	
3L	5.0 x 19.0	135g	UW098-01	10		UW198-01	10	
			UW098-05	50		UW198-05	50	
			UW098-25	250		UW198-25	250	
4L	5.2 x 23.0	200g	UW095-01	10		UW195-01	10	
			UW095-05	50		UW195-05	50	
			UW095-25	250		UW195-25	250	
5L	6.4 x 24.0	300g	UW096-06	5		UW196-06	5	
			UW096-01	10		UW196-01	10	
			UW096-05	50		UW196-05	50	

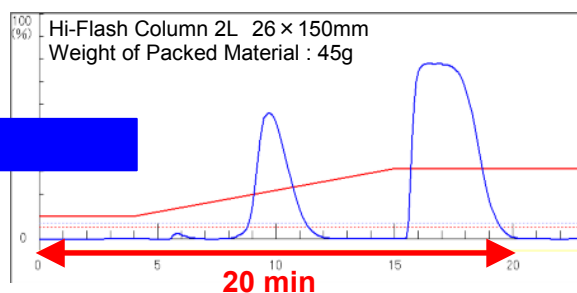
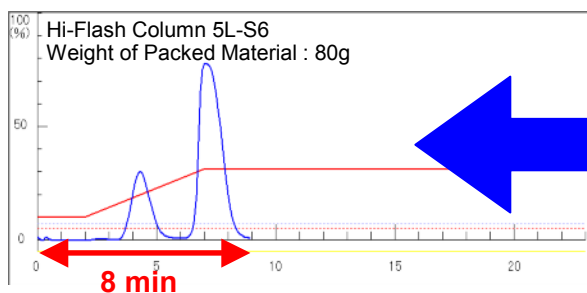
## Evenly and Tightly Packed “Short Column” 5L-S Series



	Adsorbent	I.D. x Packed Length	Weight of Packed Material	Order Scale	Article No.	Scale Price
<b>Hi-Flash Column 5L-S6</b>	Silica Gel SiOH	60 x 60 mm	80 g	10 pcs	W009-01	
				50 pcs	W009-05	
<b>Universal Column 5L-S8</b>	Particle size 40-63 micron	60 x 80 mm (64 O.D. x 120mm L)	110 g	10 pcs	UW007-01	
				50 pcs	UW007-05	



- Drastically reduces run time.
- Can make a quick separation of a large amount (in grams) of the relatively easy-to-separate sample as per Data 1.
- Makes a quick separation of easily crystallizing sample.
- No or little performance decrement with use of polar solvent to dissolve a sample as per Data 2.



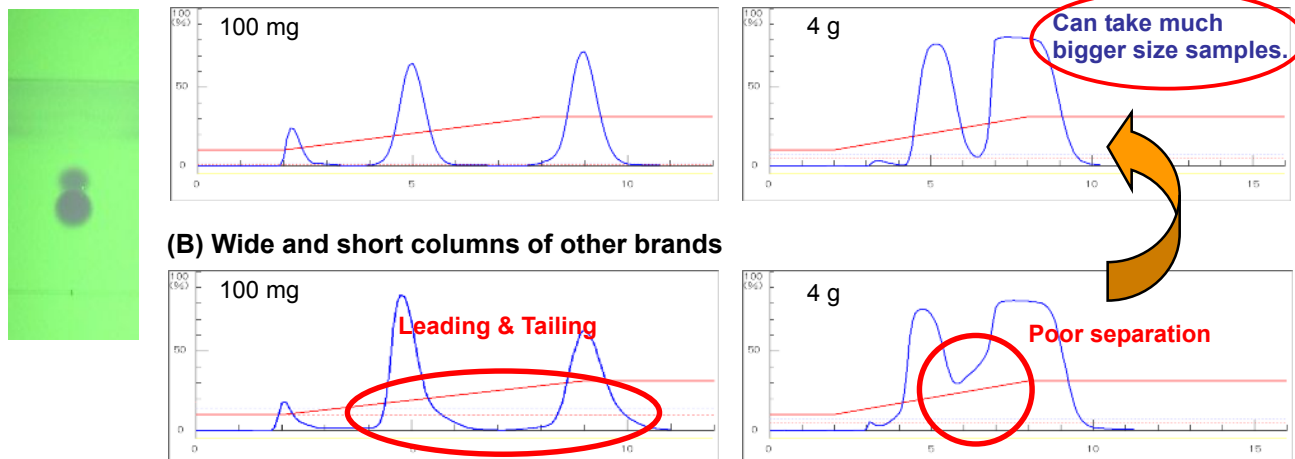
<Approximate Max.  
Sample Load >

$\Delta R_f$		0.15	0.2	0.3
<b>Max. Sample Load</b>	5L-S6	500 mg	4 g	10 g
	5L-S8	700 mg	8 g	20 g

## High Performance “Short Columns” are Designed and Manufactured with Yamazen’s Proprietary Tight Packing Technology

Generally wide and short columns are likely to result in leading and tailing of the peak and cannot take a large size sample as per chromatogram (B) below. However, Yamazen’s high performance short columns, which are uniformly and tightly packed, are free of leading and tailing of the peak and can take large size samples as per chromatogram (A) below.

**(A) Tightly Packed Hi-Flash Column 5L-S6**

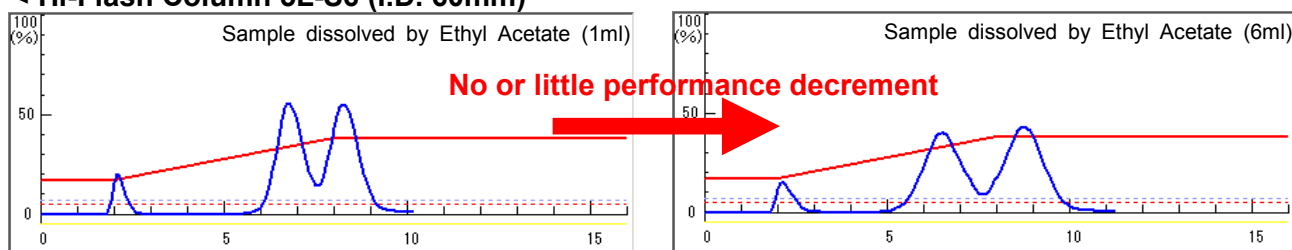


Yamazen columns are free of leading and tailing of peak. Compared to other brands of short columns, Yamazen columns can take much larger size samples.

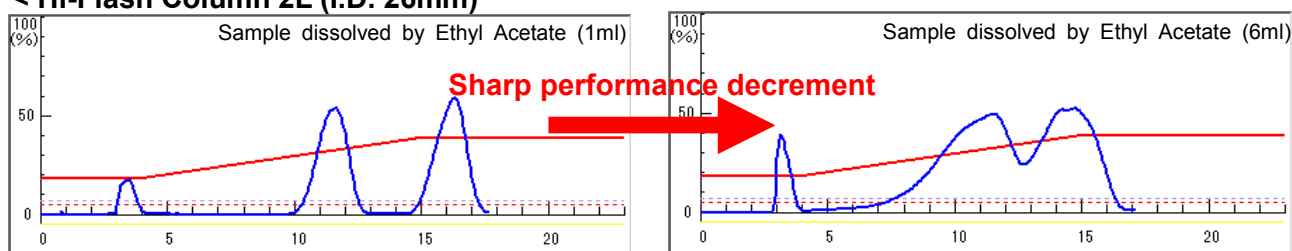
### Works well on Samples Dissolved in Polar Solvent

Generally a sample dissolved in polar solvent results in the rough peaks and poor separation. However, Hi-Flash Column 5L-S minimizes the effects of polar solvent due to its large diameter, therefore achieving good chromatography. See Data 2.

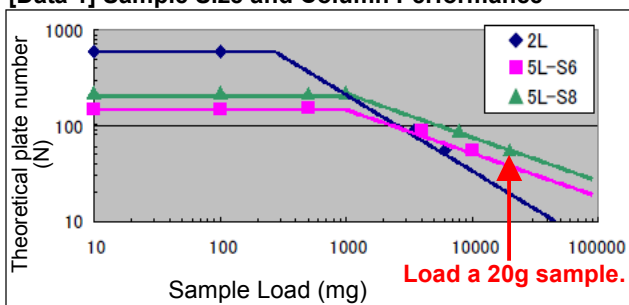
#### < Hi-Flash Column 5L-S6 (I.D. 60mm)



#### < Hi-Flash Column 2L (I.D. 26mm)

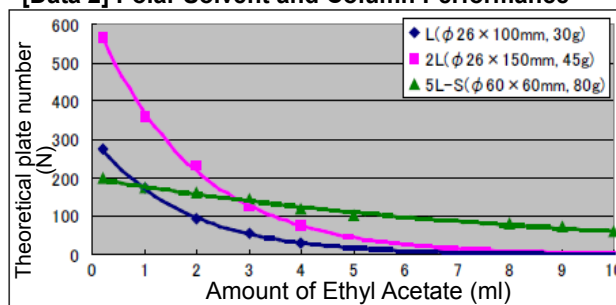


**[Data 1] Sample Size and Column Performance**



When loading samples in the gram scale, the 5L-S Series show higher theoretical plate numbers than the 2L.

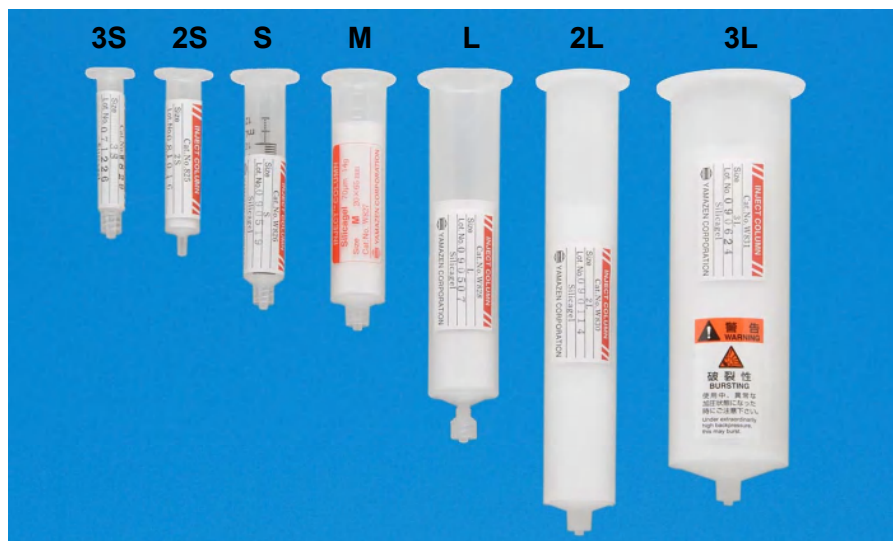
**[Data 2] Polar Solvent and Column Performance**



If the sample is dissolved in polar solvent like ethyl acetate, the performance of 5L-S Series columns remain nearly unaffected.

# Inject Columns

## Columns for Sample Loading



Inject columns are exclusively used for sample loading and are used with main separation columns such as Universal columns, Ultra Pack columns, etc.

Packed Inject columns and empty Inject columns are available and are to be used with column adaptor, column holder.

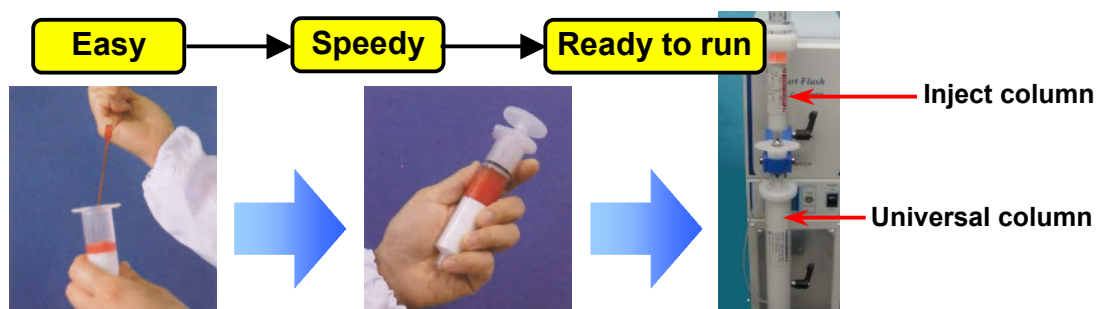
### Packed Inject column

Column adaptor, column holder are required for use.

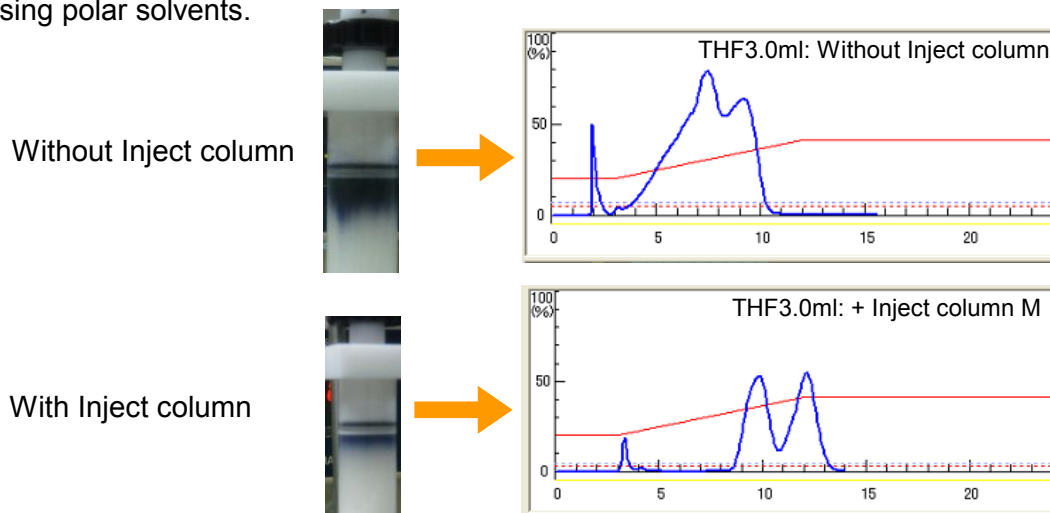


### Empty Inject column

Column adaptor, column holder and Teflon filter are required for use.



Inject column helps to make sample bands narrower and prevents sample peaks from broadening when using polar solvents.

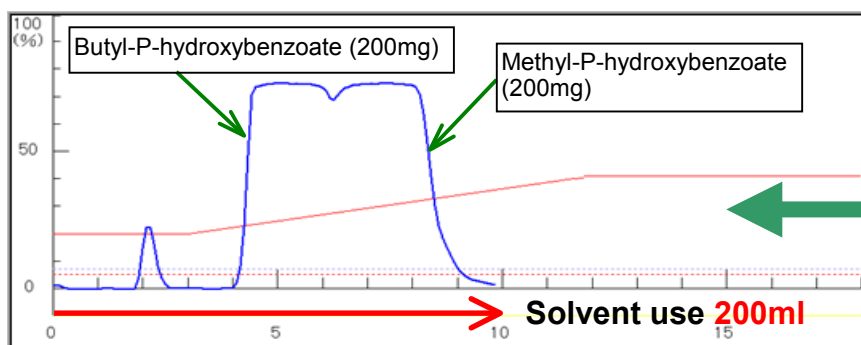


## Benefit of Using Yamazen Inject Column

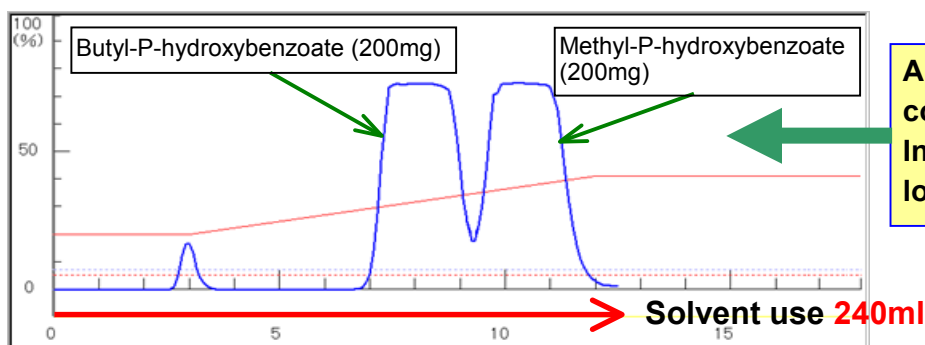
### Drastic Column Downsizing Is Possible

- If a small separation column is used with an Inject column, this can purify a sample as well as a large separation column used alone.
- A drastic reduction in solvent use

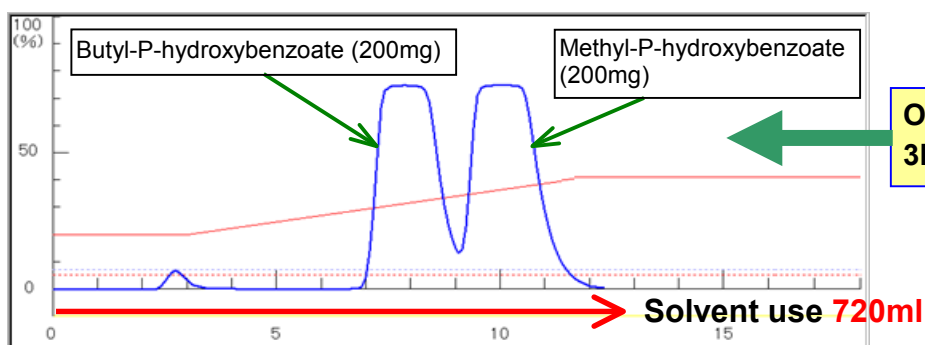
Sample: Butyl-P-hydroxybenzoate (200mg)  
Methyl-P-hydroxybenzoate (200mg)



Only an Universal column L (40g) is used.



A pair of an Universal column L (40g) and an Inject column M for sample loading are used.



Only an Universal column 3L (133g) is used.

A pair of an Universal column L (40g) and a M size Inject column can purify a sample as well as an Universal column 3L (133g) is used alone.

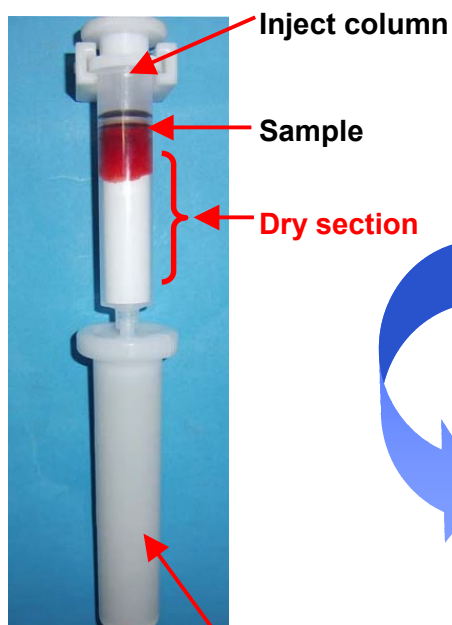
# Method to Achieve Good Separation of Sample Dissolved in Highly Polar Solvent

## - Benefit of Using an Inject Column for Sample Loading -

Highly polar solvent used to dissolve the sample often causes poor sample separation in flash chromatography. It is, therefore, advisable to use low polar solvent to dissolve the sample. Many times, however, it is necessary to use highly polar solvent when dissolving the tough-to-dissolve sample. Yamazen's Inject Column eliminates the harmful effect caused by highly polar solvent used to dissolve the sample, by trapping the highly polar solvent. By using Inject column together with main separation column such as Universal column, Hi-Flash column, etc. available from Yamazen, good sample separation can be achieved.

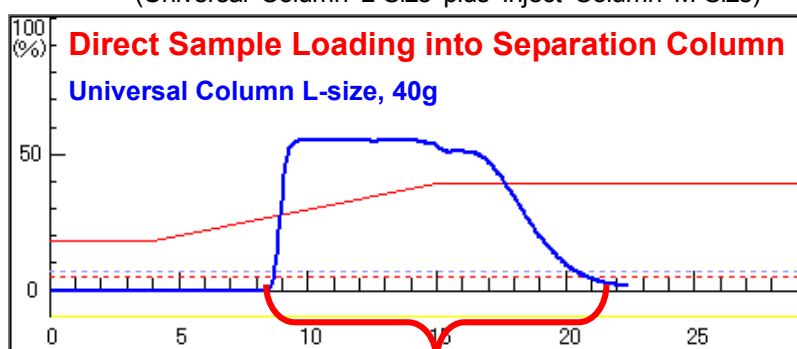
### < Benefit of Using Inject Column for Separation of the Sample Dissolved in DMSO >

(Universal Column L-Size plus Inject Column M-Size)

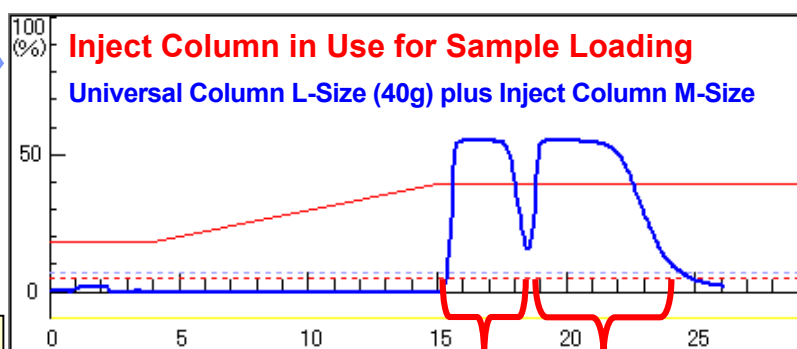


**Main separation column (Universal column)**  
(Note: Column should be equilibrated.)

Sample:  
Bu-HO-benzoate acid & Me-HO-benzoate acid 200mg each dissolved in 2ml of DMSO



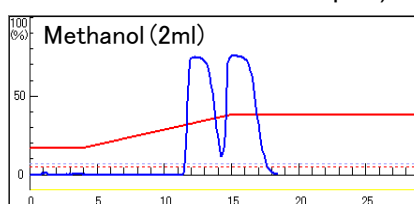
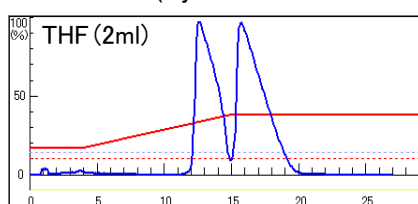
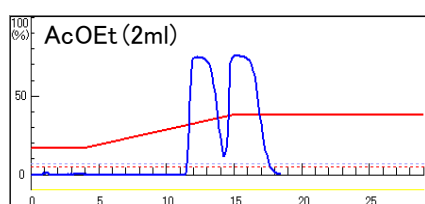
Two compounds eluted together, not separated by using DMSO to dissolve the sample.



Two compounds were separated well with use of Inject column together with Universal column.

### < Benefit of Using Inject Column for the Sample Dissolved in Highly Polar Solvents >

(Inject column and Universal column were used in pair.)



**Not Affected by Highly Polar Solvent in Sample At All!**

## ■ Silica Gel Packed Inject Column

Size Code	I.D. x Packed Length (mm)	Overall Length (mm)	To be used with	Article No.	Order Scale (pcs)	Scale Price
3S	10 x 30	60	Hi-Flash Column: S Universal Column: S Ultra Pack: A	W829-02 W829-05 W829-10	20 50 100	
2S	13 x 31	60	Hi-Flash Column: S, M Universal Column: S, M Ultra Pack: A	W825-02 W825-05 W825-10	20 50 100	
S	15 x 44	85	Hi-Flash Column: M, L, 2L Universal Column: M, L Ultra Pack: B	W826-02 W826-05 W826-10	20 50 100	
M	20 x 75	95	Hi-Flash Column: L, 2L, 3L Universal Column: L, 2L Ultra Pack: B	W827-02 W827-05 W827-10	20 50 100	
L	26 x 80	135	Hi-Flash Column: L, 2L, 3L Universal Column: L, 2L, 5L-S8, 3L Ultra Pack: C	W828-02 W828-05 W828-10	20 50 100	
2L	26 x 150	180	Hi-Flash Column: 2L, 3L, 4L, 5L Universal Column: 2L, 5L-S8, 3L, 4L, 5L Ultra Pack: C	W830-02 W830-05 W830-10	20 50 100	
3L	46 x 130	160	Hi-Flash Column: 3L, 4L, 5L Universal Column: 5L-S8, 3L, 4L, 5L Ultra Pack: C, D	W831-02 W831-05 W831-10	20 50 100	
4L	48 x 170	200	Hi-Flash Column: 4L, 5L Universal Column: 4L, 5L Ultra Pack: D, E	W832-02 W832-05 W832-10	20 50 100	
5L	60 x 180	210	Hi-Flash Column: 5L Universal Column: 5L Ultra Pack: D, E	W833-02 W833-05 W833-10	20 50 100	

## ■ ODS (C18) Packed Inject Column

Size Code	I.D. x Packed Length (mm)	Overall Length (mm)	To be used with	Article No.	Order Scale (pcs)	Scale Price
3S	10 x 30	60	Hi-Flash Column: S Universal Column: S Ultra Pack: A	W914-01 W914-05 W914-10	10 50 100	
2S	13 x 31	60	Hi-Flash Column: S, M Universal Column: S, M Ultra Pack: A	W915-01 W915-05 W915-10	10 50 100	
S	15 x 44	85	Hi-Flash Column: M, L, 2L Universal Column: M, L Ultra Pack: B	W916-01 W916-05 W916-10	10 50 100	
M	20 x 75	95	Hi-Flash Column: L, 2L, 3L Universal Column: L, 2L Ultra Pack: B	W917-01 W917-05 W917-10	10 50 100	
L	26 x 80	135	Hi-Flash Column: L, 2L, 3L Universal Column: L, 2L, 5L-S8, 3L Ultra Pack: C	W918-01 W918-05 W918-10	10 50 100	
2L	26 x 150	180	Hi-Flash Column: 2L, 3L, 4L, 5L Universal Column: 2L, 5L-S8, 3L, 4L, 5L Ultra Pack: C	W920-01 W920-05 W920-10	10 50 100	
3L	46 x 130	160	Hi-Flash Column: 3L, 4L, 5L Universal Column: 5L-S8, 3L, 4L, 5L Ultra Pack: C, D	W921-01 W921-05 W921-10	10 50 100	
4L	48 x 170	200	Hi-Flash Column: 5L Universal Column: 5L Ultra Pack: D, E	W922-01 W922-05 W922-10	10 50 100	
5L	60 x 180	210	Hi-Flash Column: 5L Universal Column: 5L Ultra Pack: D, E	W923-01 W923-05 W923-10	10 50 100	

## ■ Amino Packed Inject Column

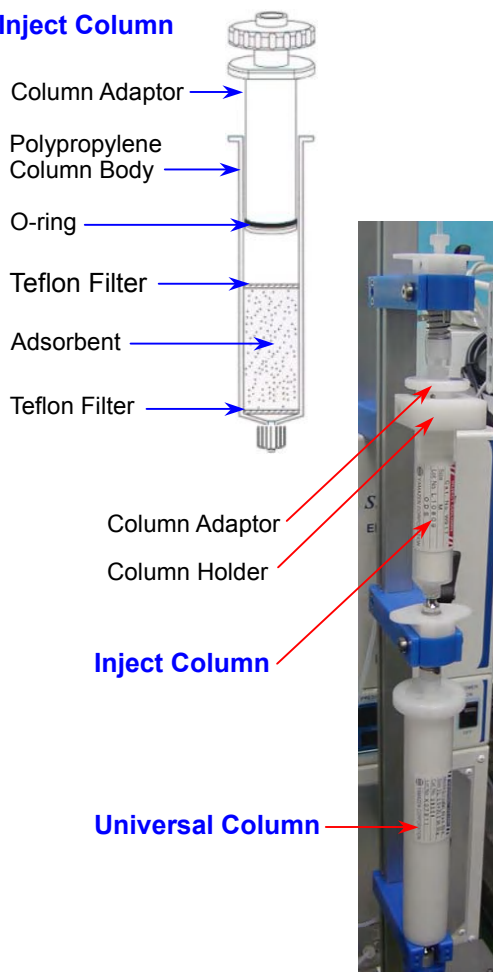
Size Code	I.D. x Packed Length (mm)	Overall Length (mm)	To be used with	Article No.	Order Scale (pcs)	Scale Price
3S	10 x 30	60	Hi-Flash Column: S Universal Column: S Ultra Pack: A	W899-01 W899-05 W899-10	10 50 100	
2S	13 x 31	60	Hi-Flash Column: S, M Universal Column: S, M Ultra Pack: A	W895-01 W895-05 W895-10	10 50 100	
S	15 x 44	85	Hi-Flash Column: M, L, 2L Universal Column: M, L Ultra Pack: B	W896-01 W896-05 W896-10	10 50 100	
M	20 x 75	95	Hi-Flash Column: L, 2L, 3L Universal Column: L, 2L Ultra Pack: B	W897-01 W897-05 W897-10	10 50 100	
L	26 x 80	135	Hi-Flash Column: L, 2L, 3L Universal Column: L, 2L, 5L-S8, 3L Ultra Pack: C	W898-01 W898-05 W898-10	10 50 100	
2L	26 x 150	180	Hi-Flash Column: 2L, 3L, 4L, 5L Universal Column: 2L, 5L-S8, 3L, 4L, 5L Ultra Pack: C	W885-01 W885-05 W885-10	10 50 100	
3L	46 x 130	160	Hi-Flash Column: 3L, 4L, 5L Universal Column: 5L-S8, 3L, 4L, 5L Ultra Pack: C, D	W886-01 W886-05 W886-10	10 50 100	
4L	48 x 170	200	Hi-Flash Column: 4L, 5L Universal Column: 4L, 5L Ultra Pack: D, E	W887-01 W887-05 W887-10	10 50 100	
5L	60 x 180	210	Hi-Flash Column: 5L Universal Column: 5L Ultra Pack: D, E	W888-01 W888-05 W888-10	10 50 100	

## ■ Empty Inject Column

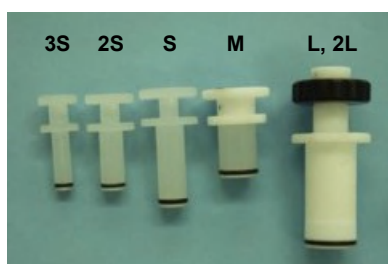
Size Code	I.D. x Packed Length (mm)	Overall Length (mm)	To be used with	Article No.	Order Scale (pcs)	Scale Price
3S	10 x 30	60	Hi-Flash Column: S Universal Column: S	W909-02 W909-05 W909-10	20 50 100	
2S	13 x 31	60	Hi-Flash Column: S, M Universal Column: S, M	W905-02 W905-05 W905-10	20 50 100	
S	15 x 44	85	Hi-Flash Column: M, L, 2L Universal Column: M, L	W906-02 W906-05 W906-10	20 50 100	
M	20 x 75	95	Hi-Flash Column: L, 2L, 3L Universal Column: L, 2L	W907-02 W907-05 W907-10	20 50 100	
L	26 x 80	135	Hi-Flash Column: 3L Universal Column: 5L-S8, 3L	W908-02 W908-05 W908-10	20 50 100	
2L	26 x 150	180	Hi-Flash Column: 3L, 4L, 5L Universal Column: 3L, 4L, 5L	W910-02 W910-05 W910-10	20 50 100	
3L	46 x 130	160	Hi-Flash Column: 4L, 5L Universal Column: 4L, 5L	W911-02 W911-05 W911-10	20 50 100	
4L	48 x 170	200	Hi-Flash Column: 5L Universal Column: 5L Ultra Pack: D, E	W912-02 W912-05 W912-10	20 50 100	
5L	60 x 180	210	Hi-Flash Column: 5L Universal Column: 5L Ultra Pack: D, E	W913-02 W913-05 W913-10	20 50 100	

## ■ Assembly & Fittings of Inject Columns

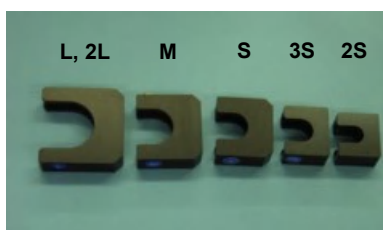
### Inject Column



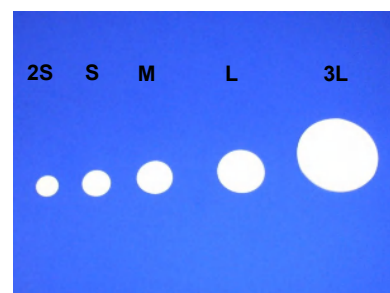
Product	Column Size	Article No.	Price
Column Adaptor	3S	B069	
	2S	B065	
	S	B066	
	M	B062	
	L, 2L	B068	
	3L	B070	
	4L	B080	
	5L	B090	
Column Holder	3S	A989	
	2S	A985	
	S	A986	
	M	A981	
	L, 2L	A988	
	3L, 4L	A984	
	5L	A991	
Upper Filter (Package of 100ea)	3S	W999-T	
	2S	W995-T	
	S	W996-T	
	M	W997-T	
	L, 2L	W998-T	
	3L	W994-T	
	4L	W992-T	
Bottom Filter (Package of 100ea)	5L	W993-B	
	3S	W999-B	
	2S	W995-B	
	S	W996-B	
	M	W997-B	
	L, 2L	W998-B	
	3L	W994-B	
	4L	W992-B	
	5L	W993-B	



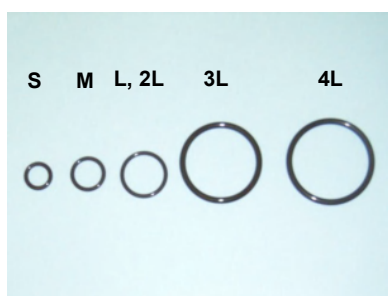
Column Adaptor



Column Holder



Filter



O-ring for Column Adaptor

### ■ O-ring for Column Adaptor

Used with	Article No.	Price
Inject 3S	B048	
Inject 2S	B049	
Inject S	B050	
Inject M	B051	
Inject L/2L	B052	
Inject 3L	B054	
Inject 4L	B055	
Inject 5L	B056	



L021



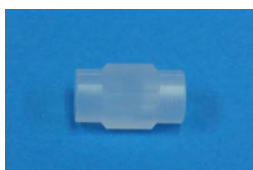
L033



B064



L011



B490



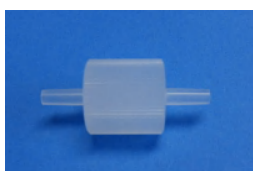
L034



L004


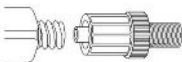

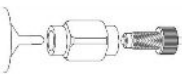
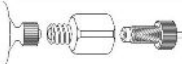



L012

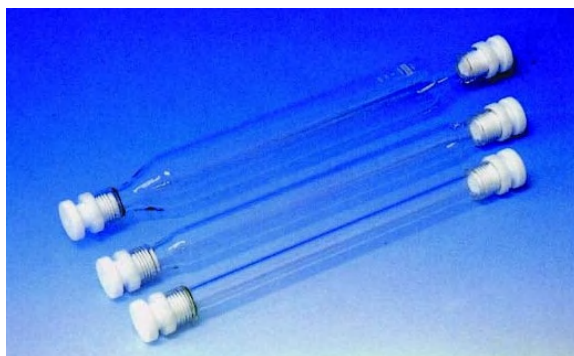


L025

## ■ Fittings to Use for Column Setting

Article No.	Product	Spec. / Application	Price
L021	Luer joint – male (Material: plastic)	To use with Inject Column  1/4-28UNF	
L033	Luer lock joint – female (Material: stainless steel) Note: L033 and B064 are the same except material.	Luer Lock  1/4-28UNF	
B064	Luer lock joint – female (Material: plastic)	Same as L033	
L011	Luer lock joint – male (Material: plastic)	Luer Lock  1/4-28UNF	
B490	Syringe joint	 1/4-28UNF	
L034	Luer lock joint – female (Intermediate connector, material: stainless steel) Note: L034 and L004 are the same except material.	Luer Lock  1/4-28UNF	
L004	Luer lock joint – female (Intermediate connector, material: plastic)	Same as L034	
L012	Luer lock joint – male (Intermediate connector, material: plastic)	Luer Lock  1/4-28UNF	
L025	Male luer coupler		

## MM Column (Empty Glass Column)



- Pressure-proof – up to 20 bar (285 psi) per square cm
- Eliminate dead space with simple Teflon inner screw, and easy dry packing of adsorbent without apparatus. (See page 17 for dry-packing procedure.)
- Suitable for packing Silica Gel (30um, 40-63um), ODS (40-60um), Chiral separation gel (20um, 40um).
- Column to include Teflon adapter (plug) with lock nut and filters

Article No.	Neck I.D. (mm)	Column I.D. (mm)	Length (mm)	Price
MM-1515-50	15	15	50	
MM-1515-100	15	15	100	
MM-1515-150	15	15	150	
MM-1515-200	15	15	200	
MM-1515-300	15	15	300	
MM-1515-600	15	15	600	
MM-1515-900	15	15	900	
MM-1520-150	15	20	150	
MM-1520-200	15	20	200	
MM-1520-250	15	20	250	
MM-1520-300	15	20	300	
MM-1520-500	15	20	500	
MM-1520-600	15	20	600	
MM-1520-1000	15	20	1000	
MM-1530-100	15	30	100	
MM-1530-150	15	30	150	
MM-1530-200	15	30	200	
MM-1530-250	15	30	250	
MM-1530-300	15	30	300	
MM-1530-400	15	30	400	
MM-1530-500	15	30	500	
MM-1540-100	15	40	100	
MM-1540-150	15	40	150	
MM-1540-300	15	40	300	
MM-1540-500	15	40	500	
MM-1550-50	15	50	50	
MM-1550-100	15	50	100	
MM-1550-150	15	50	150	
MM-1550-300	15	50	300	

Article No.	Neck I.D. (mm)	Column I.D. (mm)	Length (mm)	Price
MM-1550-350	15	50	350	
MM-1550-500	15	50	500	
MM-1550-1000	15	50	1000	
MM-1560-300	15	60	300	
MM-1560-500	15	60	500	
MM-1560-700	15	60	700	
MM-1570-150	15	70	150	
MM-1570-250	15	70	250	
MM-1580-300	15	80	300	
MM-1580-500	15	80	500	

MM-2020-100	20	20	100	
MM-2020-150	20	20	150	
MM-2020-200	20	20	200	
MM-2020-300	20	20	300	
MM-2020-500	20	20	500	
MM-2020-1000	20	20	1000	
MM-2030-50	20	30	50	
MM-2030-150	20	30	150	
MM-2030-200	20	30	200	
MM-2030-300	20	30	300	
MM-2030-400	20	30	400	
MM-2030-500	20	30	500	
MM-2040-150	20	40	150	
MM-2040-300	20	40	300	
MM-2040-500	20	40	500	
MM-2040-600	20	40	600	
MM-2040-800	20	40	800	
MM-2050-300	20	50	300	
MM-2050-400	20	50	400	
MM-2050-500	20	50	500	
MM-2060-150	20	60	150	
MM-2060-300	20	60	300	
MM-2060-500	20	60	500	
MM-2060-600	20	60	600	
MM-2060-1000	20	60	1000	
/MM-2070-450	20	70	450	
MM-2080-300	20	80	300	
MM-2080-500	20	80	500	
MM-2080-600	20	80	600	
MM-2080-1000	20	80	1000	

### Spare Accessories:

Glass filter (a pair of 2 pieces):

for MM-15

for MM-20

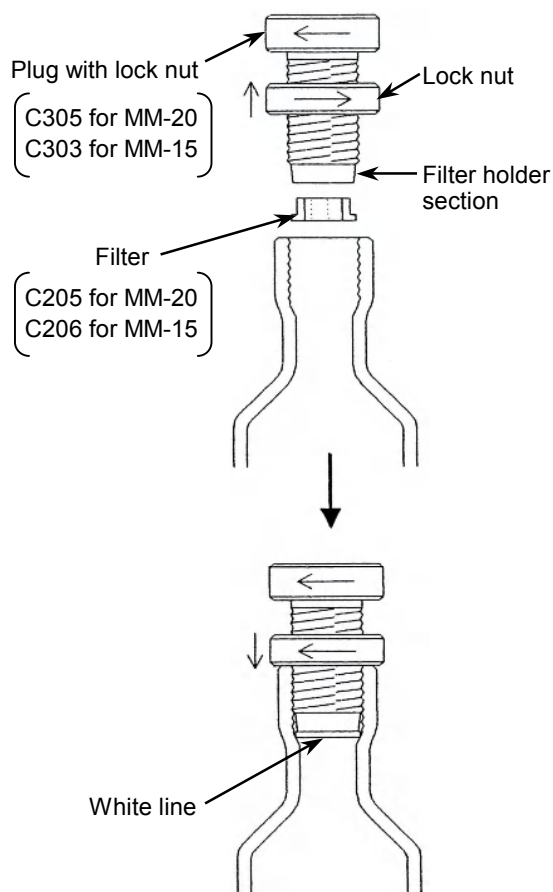
Teflon adapter (plug) with lock nut:

for MM-15

for MM-20

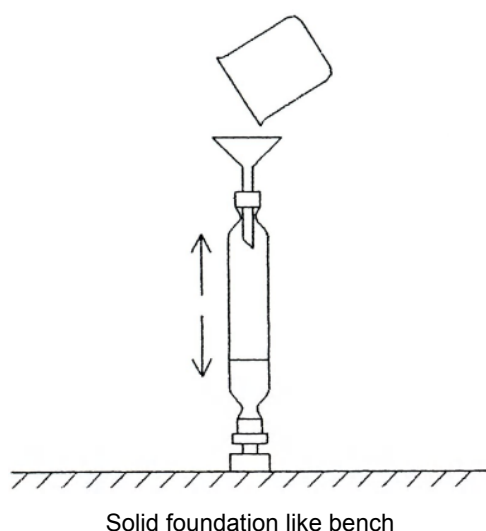
## Dry-Packing Procedure of Yamazen MM Column (Empty Glass Column)

### (1) - (2) How to tighten adaptor

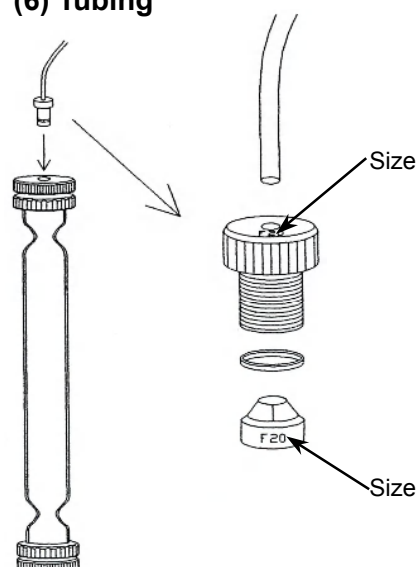


- (1) Keep the lock nut positioned all the way up to the head of the plug.
- (2) A white line will show as the plug is screwed into the glass column. Stop tightening the plug when the white line appears on the column as illustrated and tighten the lock nut against the column to lock the plug in position.
- (3) Place the column upside down on the bench (solid foundation), and pore adsorbent into the column from the other side. Pore adsorbent as much as 1/10 of the whole volume at a time, and gently tap the column up and down. Repeat until column is fully packed. Pack the adsorbent only up to the white line and no more.
- (4) It is very important that any adsorbent that is stuck on the threaded area inside of the neck section of the column be thoroughly washed away with solvent. Any adsorbent left on at the threaded section could cause a leak.
- (5) Screw the plug into the column and lock it in position as explained above (1) and (2). If the white line does not show when the plug is tightened, too much adsorbent is packed in the column. In which case, excess adsorbent needs to be removed. Take the plug off the column and remove the excessive amount of adsorbent.
- (6) Set the tubing as illustrated. Screw the fitting at the end of the tubing into the plug on the column perpendicular to the plug to avoid any damage to the threads.

### (3) - (4) Pore adsorbent as illustrated.



### (6) Tubing



## **Important Notice When Using MM Column**

### **Things to check:**

- 1) Make sure that plug is not loose on the column. If it is loose, tighten it securely, however, not too hard, Tightening too hard could cause damage to the threads, resulting in solvent leakage.
- 2) Make sure that tubing is properly connected to the column.
- 3) MM column can withstand the pressures up to 1.0 MPa if it is not damaged or cracked. Make sure to preset the pressure limiter on the solvent delivery pump below 1.0 MPa.
- 4) Make certain that there is no leakage from the fitting area when line pressure goes up and stabilizes when delivering solvent.
- 5) If there is any leak, check the fitting for its proper setting on the column or column filter may wear off and needs to be replaced.

### **Note:**

- 1) If the filter is loose in the filter holding section of the plug, check to see if the filter is worn or is damaged. If the filter is worn or is damaged, replace the filter with new ones. If the filter is OK, the filter holding section may be too wide. In that case, remove the plug from the column, remove the filter from the filter holding section of the plug. Screw the plug into the column to narrow the gap in the filter holding section of the plug. Then, insert the filter into the filter holding section of the plug.
- 2) Glass column is fragile. Do not place it on any hard surfaces. Place it in the cushion to avoid any damage to the column.

### **How to store the column when not in use:**

- 1) If the column is not used for many days, remove adsorbent, wash the column well and clean, and remove the plug.
- 2) If the column is set on the system overnight, remove the tubing from the column at one end to avoid the pressure build up inside the column.

## Ultra Pack (Premium Grade Prepacked Glass Column)



With slurry packing column (left-side of photo), the peak appears broad and tailing, indicating incomplete purification with poor purity and low recovery, and therefore low sample loading capacity.

On the contrary, the Ultra Pack (right of photo) shows very clear and good symmetric separation, and less tailing.

This proves that Ultra Pack is a highly efficient column with excellent purification capability of large-scale samples.

Adsorbent: Silica Gel      60 Å, 40/63um  
Sample Dye Mixture

### ■ Variety of Media and their Characteristics (Please inquire about the details.)

Media for Normal Phase Chromatography	
<b>Silica Gel (Si-OH)</b>	Sample purification is done by interaction with hydrogen bonds between silanol on silica gel and sample. Silica gel can be used for high to medium polarity compounds that are easily dissolved in organic solvent.
<b>Amino</b>	Aminopropyl bonded phase silica gel. Amino group, propyl side chains and remaining silanol on silica gel contribute to the sample separation. Organic solvent and water can be used with amino. Amino columns can be used to purify those compounds that interact too strongly with silica gel, basic compounds, nucleotide and sugar.
<b>Diol</b>	Diol functionalized silica gel is less polar and has a higher retention time than normal phase silica gel. Diol columns offer an alternative to normal phase columns for difficult-to-separate low to medium polarity samples. Diol will work well with acidic samples like carboxylic acid that often tail with a silica gel column.
Media for Reverse Phase Chromatography	
<b>ODS (C18)</b>	C18 bonded phase on spherical silica gel. This is typically used for reverse phase partition chromatography. Hydrophobic characteristic works in sample separation. It works well on highly polar compounds that will not move on a silica gel TLC even in highly polar solvent, or those that move too fast on TLC but do not get separated, even in non-polar solvent like hexane. The aqueous C18 bonded phase works well with 100% water as solvent, and it is best suited for purifying hydrophilic samples such as sugar, peptide and Chinese traditional medicine.
<b>Octyl (C8)</b>	In comparison, octyl (C8) is less hydrophobic than octadecyl (C18). It works well with those samples that interact too strongly with C18, and those that have relatively high hydrophobic characteristic like peptide, protein, etc.

## ■ Silica Gel

Adsorbent	Particle Size (um)	Pore Size (A)	Column Size	I.D. x L (mm)	Article No.	Order Scale (pcs)	Scale Price
Silica Gel (SiOH)	40/63	60	A	11 x 300	Si-40A	1 5 10	
			B	26 x 300	Si-40B	1 5 10	
			C	37 x 300	Si-40C	1 5 10	
			D	50 x 300	Si-40D	1 5 10	
			E	80 x 300	Si-40E	1 5 10	

## ■ Chemically-Bonded Phase

Adsorbent	Particle Size (um)	Pore Size (A)	Column Size	I.D. x L (mm)	Article No.	Order Scale (pcs)	Scale Price
Octadecyl  C18	Standard (End capped) Carbon Content $\geq$ 15.5%	40/60	120	A	11 x 300	ODS-SM-50A	1 5 10
				B	26 x 300	ODS-SM-50B	1 5 10
				C	37 x 300	ODS-SM-50C	1 5 10
				D	50 x 300	ODS-SM-50D	1 5 10
	C18 Aqua (End Capped) Carbon Content $\leq$ 15.5%	40/60	120	A	11 x 300	ODS-A-40A	1 5 10
				B	26 x 300	ODS-A-40B	1 5 10
				C	37 x 300	ODS-A-40C	1 5 10
				D	50 x 300	ODS-A-40D	1 5 10

■ Chemically-Bonded Phase

Adsorbent	Particle Size (um)	Pore Size (A)	Column Size	I.D. x L (mm)	Article No.	Order Scale (pcs)	Scale Price
Amino NH <sub>2</sub>	40/63	60	A	11 x 300	NH-40A	1 5 10	
			B	26 x 300	NH-40B	1 5 10	
			C	37 x 300	NH-40C	1 5 10	
			D	50 x 300	NH-40D	1 5 10	
			E	80 x 300	NH-40E	1 5 10	
Octyl C <sub>8</sub>	40	60	A	11 x 300	C <sub>8</sub> -40A	Non stocking item Price shall be quoted upon request.	
			B	26 x 300	C <sub>8</sub> -40B		
			C	37 x 300	C <sub>8</sub> -40C		
			D	50 x 300	C <sub>8</sub> -40D		
			E	80 x 300	C <sub>8</sub> -40E		
Diol OH	40	60	A	11 x 300	DIOL-40A	Non stocking item Price shall be quoted upon request.	
			B	26 x 300	DIOL-40B		
			C	37 x 300	DIOL-40C		
			D	50 x 300	DIOL-40D		
			E	80 x 300	DIOL-40E		
Cyano CN	40	60	A	11 x 300	CN-40A	Non stocking item Price shall be quoted upon request.	
			B	26 x 300	CN-40B		
			C	37 x 300	CN-40C		
			D	50 x 300	CN-40D		
			E	80 x 300	CN-40E		

## ■ ALUMINA

Adsorbent		Particle Size (um)	Pore Size (A)	Column Size	I.D. x L (mm)	Article No.	Order Scale (pcs)	Scale Price
Alumina AL <sub>2</sub> O <sub>3</sub>	Neutral	40	60	A	11 x 300	AL-N-40A	Non stocking item Price shall be quoted upon request.	
				B	26 x 300	AL-N-40B		
				C	37 x 300	AL-N-40C		
				D	50 x 300	AL-N-40D		
	Acid	40	60	A	11 x 300	AL-A-40A	Non stocking item Price shall be quoted upon request.	
				B	26 x 300	AL-A-40B		
				C	37 x 300	AL-A-40C		
				D	50 x 300	AL-A-40D		
	ALKali	40	60	A	11 x 300	AL-B-40A	Non stocking item Price shall be quoted upon request.	
				B	26 x 300	AL-B-40B		
				C	37 x 300	AL-B-40C		
				D	50 x 300	AL-B-40D		



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