Heraeus
SEPATECH

Biofuge® 17 S
Biofuge® 17 RS


Biofuge 17 RS
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The Biofuges 17 S/17 RS

The new high-speed microliter table top centrifuges from Heraeus Sepatech.

Microprocessor controlled by Sepacontrol, the control center for programmable centrifuges.

The Biofuge 17 S (non-refrigerated) and the Biofuge 17 RS (refrigerated) set new standards in solving complex separation tasks in research and routine operations, in life sciences, medicine, pharmacology and chemistry.

These instruments are the result of decades of Heraeus Sepatech centrifugation know-how; Europe's number one manufacturer of laboratory centrifuges.

Accommodating the Heraeus Sepatech high-performance rotor No. 8570 the Biofuges 17 S/17 RS give access to high-speed centrifugation.

Heraeus Sepatech offers a wide range of rotors and accessories with these new table top centrifuges. –
A comprehensive package of top performance, safety and reliability. This package is supported by a globe-spanning network of application consultants and service specialists.

Typical applications

Providing reliable, reproducible and high-speed centrifugation, as well as continuous flow operation.

- Pelleting of protein precipitates
- Enzymatic and other biochemical analyses
- Pelleting of antibodies
- Concentration of algae
- Separation and concentration of cells and cell fragments
- Fractionation of bacteria and yeast cells
- Mini Preps for Plasmid DNA isolation
- Preparation of various immuno assays
- Cytocentrifugation

Features and benefits

Unbeatable performance data
- Max. speed 17000 rpm
- Max. RCF 27790
- Max. capacity 80 x 1,5 ml, 6 x 94 ml, 300 ml sediment (in the continuous flow rotor)

Drive and refrigeration* technology
- Powerful direct drive
- Digital speed control
- Digital temperature regulation*
- Digital automatic temperature compensation*
- The shortest possible, optimized acceleration and braking periods

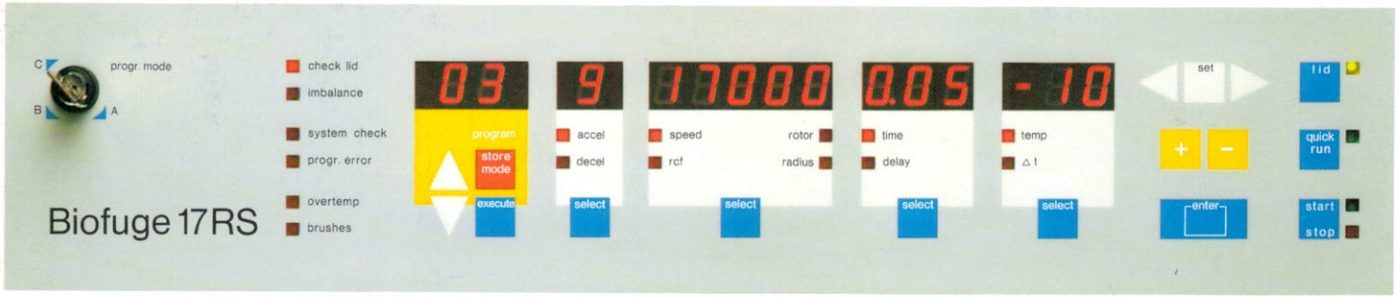
Microcomputer control
- Reproducibility of all operating parameters
- 32 different user programs
- 9 acceleration and deceleration profiles all selectable and freely programmable
- A built-in serial interface
- The highest level of operator convenience
- Automatic computation of RCF

User's best friend
- Optimum operator guidance by Sepacontrol
- Ergonomic panel design
- Quiet and vibration-free run
- Buffered memory for program protection
- Handling ease

Safety
- Diagnostics display
- Temperature limitation*
- Electronic sample protection*
- Complies with international safety standards
- Lid lock and interlock
- Steel-armoured lid and rotor chamber

Service-friendliness
- Modular electronic boards for quick exchange
- Digital system check
- Globe-spanning service network

* Biofuge 17 RS only



Unprecedented operating convenience

The layout of the Sepacontrol panel was made to create instant user confidence. A convenience level that opens a new era in communication-oriented centrifugation.

The optimal user guidance guarantees perfect communication between the operator and the new Biofuges from the first moment.

Sepacontrol, the control center for programmable centrifuges: operates ... monitors ... programs.

The major design focus was on user-friendly, ergonomic arrangement of the particular functional sections:

- diagnostics LEDs
- memory control
- status displays
- programming
- operating buttons.

The key switch

This switch serves to protect the programs from unauthorized manipulations in one of the following three ways.

The first setting permits free access to programming, the second enables call access to any of the 32 different user programs, the third permits only repeat use of the program loaded last.

The diagnostic LEDs

"check lid" lights up when the lid is not properly locked.

"imbalance" alerts you of unbalanced rotor loading. At the same time the drive shuts off automatically.

"system check" signals a defect in the electronic system.

"progr. error" indicates operator programming errors.

"overtemp." means the preselected temperature limit was exceeded*.

"brushes" means commutator brushes are worn and need to be replaced.

The memory control

By means of the storage control handling of previously stored programs is possible. By pressing the arrow keys the complete line of all run parameters of a specific program will be displayed in the status section. The yellow "program" display indicates the number of the program selected.

Any new programs established with the help of the panel dialog may be transferred into the program library.

The status displays

This section is clearly grouped into acceleration and braking, speed and rotor data, time and temperature*. The "select" button serves to call the desired value for each of these parameters into the display, with the additional help of instantly visible LEDs.

Programming

All settings required for programming are done with the keys of the programming section.

The white keys give direct access to the various display items.

The yellow ones serve to change the displayed digits.

The blue "enter" button has to be pressed to bank all entries in the working memory. By means of a brief touch of key "execute" the data will be entered into the program library.

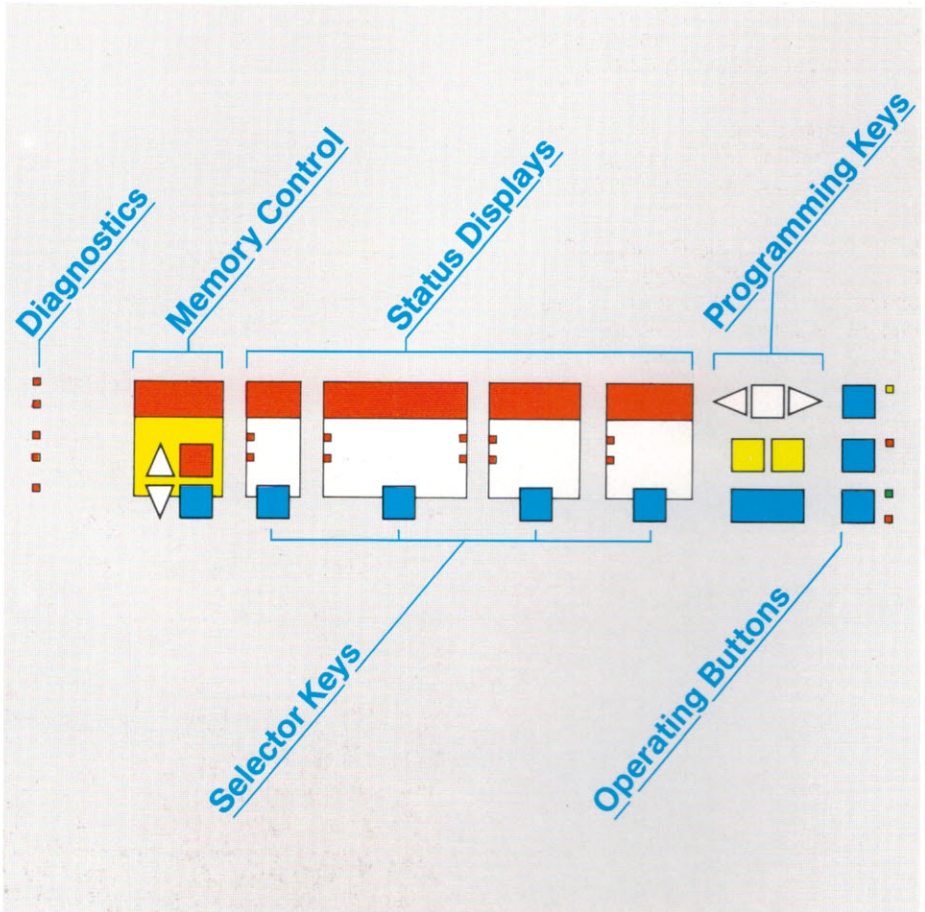
The operating buttons

To open the lid the "lid" button has to be pressed.

By pressing "quick run" the centrifuge accelerates within the shortest time to its maximum speed. As soon as one takes the finger off this button, the run is stopped.

With the "start/stop"-button the Biofuges will be set into operation and it serves also to stop the centrifuge run manually.

* Biofuge 17 RS only



Rotors and Accessories

The adjacent illustration shows a small section of the wide accessory range comprising not less than 13 rotors, which can all be operated in the Biofuges 17 S and 17 RS.

There are fixed angle rotors, swing-out rotors and continuous flow rotors as well as a cyto-rotor. This means that one only "drive" can cope with a multitude of applications – ranging from micro-tube centrifugation to the spinning of large volumes.

Sealed buckets are available for the safe centrifugation of toxic or infectious sample materials.

Accommodating not less than 8 tube racks, the drum rotor enables the operator to spin a very large number of different samples per run.

The colour coding affords an optical means to quickly identify the right tube rack for a given tube size.

Red stands for micro-tubes of 1.5 or 2 ml, blue for 0.3 ml sheathed capillary tubes, green for 0.6 ml Microtainers and yellow for 0.4 or 0.25 ml micro-tubes.

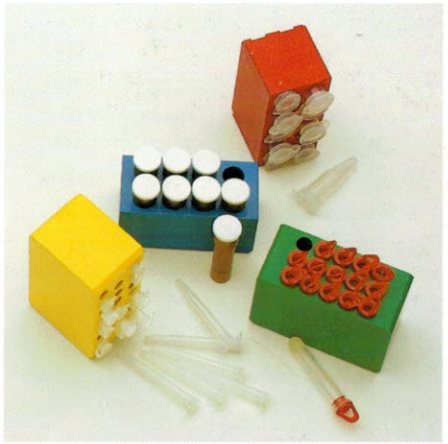
The Cyto-rotor, too, can be operated in the Biofuges 17 S/17 RS. (For further details please refer to the Cyto brochure HS – F 25e).

A further application of the Biofuges 17 S/17 RS is in continuous flow centrifugation. For this process Heraeus Sepatech offer two types of continuous flow rotors, both ensuring continuous separation of solid particles from laboratory-scale volumes of suspension.

They also form the core of the Contifuge 300 MD system. It consists of the Biofuge 17 S or 17 RS, a continuous flow rotor, a pump, two storage vessels and an external cooling device, if required.

The complete equipment is mounted on a trolley making the Contifuge 300 MD mobile and usable wherever it is required.

In cell harvesting the Contifuge 300 MD is an economic and atraumatic alternative to membrane processes or bucket centrifugation. (Further information will be given on request).



Angle Rotors for Micro-Tubes	1379	1387	1389	1397	1400
max. radius (cm)	8.0	7.9	8.4	8.6	5.8
max. capacity (ml)	24 x 1.5	20 x 2	30 x 0.6	40 x 0.4	12 x 1.5
top speed (rpm)	17000	17000	17000	17000	17000
max. RCF (g)	25850	25530	27140	27790	18740
min. temperature (° C)	8	8	8	8	–4
accel. period (s)*1)	20/25*3)	20/25*3)	20/25*3)	20/25*3)	15
braking period (s)*2)	60/66*3)	60/66*3)	60/66*3)	60/66*3)	52/60*3)
weight (kg)	0.54	0.55	0.53	0.54	0.55

Rotor no.
Nom. volume of containers (ml)
No. of tubes per rotor
Max. length of tube (mm)
Dia. of tube cavity (mm)
Cat. no. of standard tube

Angle Rotors	8550	8560
max. radius (cm)	7.6	8.5
max. capacity (ml)	12 x 13	8 x 38
top speed (rpm)	15000	13500
max. RCF (g)	19120	17320
min. temperature (° C)	2	5
accel. period (s)*1)	74/66*3)	130/94*3)
braking period (s)*2)	74/82*3)	120/134*3)
weight (kg)	2.75	4.1

Rotor no.
Nominal volume of containers (
No. of tubes per rotor
Max. length of tube (mm)
Dia. of tube cavity (mm)
Cat. no. of tube
Cat. no. of cap

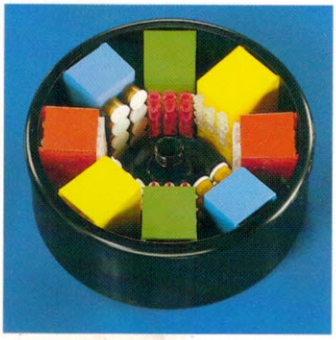
Angle Rotor	8570
max. radius (cm)	9.9
max. capacity (ml)	6 x 94
top speed (rpm)	11400
max. RCF (g)	14390
min. temperature (° C)	6
accel. period (s)*1)	260/158*3)
braking period (s)*2)	192/200*3)
weight (kg)	6.2

Nominal volume of containers (
Adapters for (ml)
No. of tubes per adapter
No. of tubes per rotor
Max. length of tube (mm)
Dia. of tube cavity (mm)
Cat. no. of tube
Cat. no. of adapter
Cat. no. of cap

Nominal volume of containers (
Adapters for (ml)
No. of tubes per adapter
No. of tubes per rotor
Max. length of tube (mm)
Dia. of tube cavity (mm)
Cat. no. of tube
Cat. no. of adapter
Cat. no. of cap

Swing-Out Rotor	2147
max. radius (cm)	14.0
max. capacity (ml)	4 x 100
top speed (rpm)	4300
max. RCF (g)	2894
min. temperature (° C)	–7
accel. period (s)*1)	60/50*3)
braking period (s)*2)	80/70*3)
weight (kg)	1.78

Nom. vol. of containers (ml)	100	100	100	100	100
Adapters for (ml)	7	15	25	50	–
No. of tubes per adapter	4	4	1	1	1
No. of tubes per rotor	16	16	4	4	4
Max. length of tube (mm)	100	100	100	100	100
Dia. of tube cavity (mm)	13.5	17.5	25	36	45
Cat. no. of standard tube22)	1021	1132	1142	1133	1145
Cat. no. of adapter	–	–	2114	2113	–
Cat. no. of bucket	2108	2108	2107	2107	2107



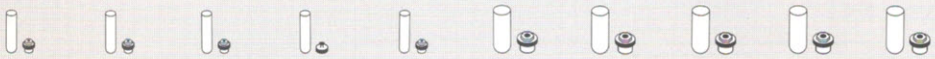
Drum Rotor for Micro-Tubes	1243
max. radius (cm)	8.6
max. capacity (ml)	80 x 1.5
top speed (rpm)	13000
max. RCF (g)	16250
min. temperature (° C)	9
accel. period (s)*1)	98/70*3)
braking period (s)*2)	74/82*3)
weight (kg)	1.75

Nom. vol. of containers (ml)	0.25[7]	0.3[3]	0.4[7]	0.6[5]	0.75[6]
No. of tubes per adapter	20	8	20	15	15
No. of tubes per rotor	160	64	160	120	120
Max. length of tube (mm)	30	40	45	45	30
Dia. of tube cavity (mm)	6.5	11	6.5	8	8
Cat. no. of standard tube22)	1170	1167	1166	1168	1156
Cat. no. of adapter	1248	1246	1248	1247	1247

1379		1387		1389		1397		1400	
1.5[1)]	**1.5**[2)]	**0.3**[3)]	**2.0**[4)]	**0.6**[5)]	**0.75**[6)]	**0.25**[7)]	**0.4**[7)]	**1.5**[1)]	**1.5**[2)]
24	24	20	24	30	30	40	40	12	12
40	40	40	40	45	30	30	45	45	45
11	11	11	11	8.5	8.5	6.5	6.5	11	11
1163	1148	1167	1169	1168	1156	1170	1166	1163	1148

As the material strength of the micro-tubes baries, the top speed may have to be reduced.

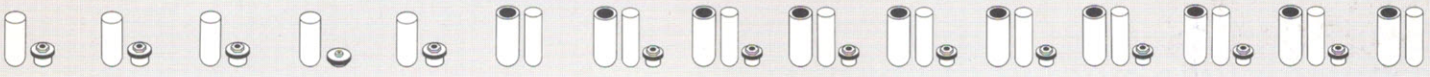
8550					8560				
13	**13**	**13**	**13**	**13**	**38**	**38**	**38**	**38**	**38**
12	12	12	12	12	8	8	8	8	8
76.2	76.2	76.2	76.2	76.2	89	89	89	89	89
16.2	16.2	16.2	16.2	16.2	25.4	25.4	25.4	25.4	25.4
2835[8)]	2870[9)]	2808[10)]	2827[11)]	1578[12)]	2836[8)]	2871[9)]	2809[10)]	2828[11)]	2882[12)]
1509	1508	1508	1557	1564	1529	1528	1528	1547	1529



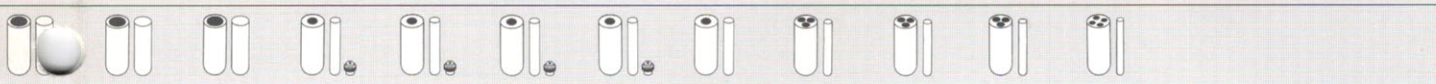
*1) fastest programmable acceleration
*2) shortest programmable braking period
*3) 1st value applies to Biofuge 17 S; 2nd value applies to Biofuge 17 RS

1) Eppendorf type, polyethylene
2) Eppendorf type, with screw cap, polyethylene
3) Micro blood collection tube with sheath, polystyrene
4) Eppendorf type, polypropylene
5) Microtainer for blood collection with separating agent.
6) Vitatron type, polyethylene
7) Beckman type, polyethylene
8) Polyallomer, thin-walled
9) Polyallomer, thick-walled
10) Polycarbonate
11) Polycarbonate, with thread
12) Stainless steel
13) Polyallomer, for Oak Ridge caps
14) Polypropylene
15) Polycarbonate, for Oak Ridge caps
16) Polyethersulphone
17) Polyethersulphone for Oak Ridge cap
18) Polytetra-fluoroethylene for Oak Ridge cap
19) Stainless steel with thread incl. screw cap
20) Corex glass
21) Corex glass with screw cap
22) Borosilicate glass

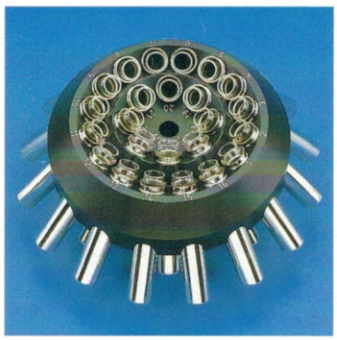
94	94	94	94	94	94	94	94	94	94	94	94	94	94	94
–	–	–	–	–	50	50	50	50	50	50	50	50	50	50
–	–	–	–	–	1	1	1	1	1	1	1	1	1	1
6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
101.6	101.6	101.6	101.6	101.6	104	104	104	104	104	104	104	104	104	104
38.3	38.3	38.3	38.3	38.3	29	29	29	29	29	29	29	29	29	29
2837[8)]	2872[15)]	2810[10)]	2829[11)]	2883[12)]	2960[8)]	2959[9)]	2964[13)]	2961[14)]	2958[10)]	2963[15)]	2962[16)]	2965[17)]	2966[18)]	2968[19)]
–	–	–	–	–	2907	2907	2907	2907	2907	2907	2907	2907	2907	2907
1569	1568	1568	1537	1569	–	2974	2967	2974	2974	2974	2967	2974	2967	–



94	94	94	94	94	94	94	94	94	94	94	94
30	25	15	16	16	16	16	16	3.5	3.5	3.5	1.5
1	1	1	1	1	1	1	1	3	3	3	4
6	6	6	6	6	6	6	6	18	18	18	24
104	104	104	100	100	100	100	100	79	79	79	38
29	29	29	18	18	18	18	18	11	11	11	11
2969[20)]	2970[21)]	2954[22)]	2951[9)]	2952[14)]	2950[10)]	2953[16)]	2955[19)]	2993[10)]	2992[14)]	2994[9)]	1148[14)]
2907	2907	2907	2906	2906	2906	2906	2906	2903	2903	2903	2905
–	–	–	2957	2957	2957	2957	–	–	–	–	–



100
–
1
4
100
45
1145
–
2144



Angle Rotor	3090
max. radius (cm)	12.6
max. capacity (ml)	24 x 15
top speed (rpm)	4300/5500*3)
max. RCF (g)	2605/4260*3)
min. temperature (°C)	5
accel. period (s)*1)	40/50*3)
braking period (s)*2)	55/68*3)
weight (kg)	2.8

Nom. vol. of containers (ml)	15	15
adapters for (ml)	7	–
no. of tubes per adapter	1	–
no. of tubes per rotor	24	24
max. length of tube (mm)	100	100
dia. of tube cavity (mm)	13	17
cat. no. of standard tube[22)]	1021	1032
cat. no. of adapter	3053	–

1.5[1)]	1.5[2)]	2.0[4)]
10	10	10
80	80	80
40	40	40
11	11	11
1148	1148	1169
1244	1244	1244

Continuous Flow Rotors	8537	8575 (HCT 22.300)
max. radius (cm)	6.7	7.5
max. sediment capacity (ml)	300	300
top speed (rpm)	10000	15000
max. RCF (g)	7490	18870
weight (kg)	5.4	9.6

Cytorotor	3399	Rotor no.	3399*)							
max radius (cm)	10	**Container (nom. volume ml)**	**0.25**[7]	**0.3**[3]	**0.4**[8]	**0.6**[5]	**0.75**[6]	**1.5**[1]	**1.5**[2]	**2.0**[4]
max capacity (ml)	40 x 2.0	No. of container per adapter	20	8	20	15	10	10	10	10
max. speed (RPM)	3600	No. of container per rotor	80	32	80	60	40	40	40	40
max RCF	1450	Max. length (mm)	30	40	45	45	30	40	40	40
run up to max. (s)*[1]	30/26*[3]	Dia. of tube cavity (mm)	11	11	6,5	8,5	11	11	11	11
braking period (s)*[2]	46/64*[3]	Cat. no. of standard tubes**)	1170	1167	1166	1168	NN	1163	1148	1169
weight (kg)	2.3	Cat. no. of adapter	1329	1327	1329	1328	1328	1327	1327	1327

*) Special rotor for cyto-centrifugation. The buckets are integral parts of the rotor and do not have a separate Cat. No. The buckets normally accommodate clip carriers 3414 with cyto-containers 3415 or 3416. For the remaining accessories necessary for cyto-centrifugation refer to brochure HS-F 25e.

**) Refer to foot notes on page 7.

Technical Data

Biofuge 17 S
Microliter table-top centrifuge with microprocessor control for 220 V/50 Hz, 3.4 A, without accessories
Cat. No. 2505
Identical model as No. 2505, but for 110 V/60 Hz, 6.2 A
Cat. No. 2506

Biofuge 17 RS
Microliter table-top centrifuge with microprocessor control, refrigerated, for 220 V/50 Hz, 4.9 A, without accessories
Cat. No. 2510
Identical model as No. 2510, but for 110 V/60 Hz, 9.1 A
Cat. No. 2511

Other voltages on request.

Construction	noise- and vibration-damping steel construction, steel-armoured rotor chamber of stainless steel
RCF (g-force)	1 to 27790, selectable depending on radius, 5-digit display
Speed	100 to 17000 RPM, selectable in 10 RPM increments, 5-digit display
Max. Capacity	80 x 1.5 ml, 6 x 94 ml, 300 ml sediment (in the continuous flow rotors)
Drive	direct drive
Acceleration	9 different profiles, microprocessor controlled, 1-digit display
Deceleration	9 different profiles, microprocessor controlled and unbraked deceleration, 1-digit display
Run time	1 min to 99 h and continuous operation (hold), 3-digit display
Start delay	0 min to 99 h, 3-digit display
Program memory	32 different user programs in numerical order, 2-digit display. (In case of power failure all program data are maintained for 3 weeks.)
Dimensions	(H x W x D) 340 x 540 x 500 mm
Weight	Biofuge 17 S: approx. 50 kg, Biofuge 17 RS: approx. 60 kg
Power consumption	Biofuge 17 S: 580 W, Biofuge 17 RS: 850 W

Biofuge 17 RS only

Temperature range	Setting range from –19 to +40°C. Minimum temperature depending on type of rotor and speed. Control tolerance ± 2°C, 2-digit display.
Overtemperature limit	Centrifuge shuts off automatically in case of overtemperature T > 5°C.
Aircooled refrigeration unit	0.24 kW

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