

HyPerforma Single-Use Mixer DS 300

A single-use alternative for traditional stirred-tank mixing

The Thermo Scientific™ HyPerforma™ Single-Use Mixer (S.U.M.) DS 300 offers a single-use alternative for traditional stirred-tank mixing. It is designed using the same mixing principles as those of the Thermo Scientific™ Single-Use Mixer. Both systems operate with a direct drive, where an impeller is linked to an overhead mixing motor with a sealed bearing assembly. This allows the impeller to turn while maintaining the integrity of the system. The HyPerforma S.U.M. DS 300 is intended for powder-to-liquid and liquid-to-liquid mixing while using sterile single-use contact surfaces. Single-use mixers eliminate cross-contamination and the need for cleaning and sterilizing, reducing cycle times. The system is designed for high-throughput applications and increases process efficiency.

The stainless steel docking station is designed for mobility and easy integration with single-use containers, and utilizes a simple operator interface for mixing. It is designed for easy maneuverability, is light in weight, and has a small footprint. Control of the system is managed through a tethered handheld device that manages the agitation speed and manual height adjustment. The mast assembly and electrical box contain the electronic components and the main power switch.

HyPerforma S.U.M. DS 300 system

The docking station is preassembled and made up of the following subassemblies and parts:



- Docking station base with rear locking casters
- Adjustable handle that can be locked in position or stored away
- Tethered handheld control device
- Vertical electronic lift mechanism
- Height indicator for different drum sizes
- Motor mount and motor
- Tools (spanner wrench and torque wrench)
- Adjustable motor head capable of angular adjustments from 0° to 30°
- Drum positioner for holding the drum in the correct position

Hardware features

Controller

The operation of the S.U.M. DS 300 is simple. The handheld device gives the user freedom to move around the mixer with all controls available. It includes a digital rpm display, motor control knob, on/off power to the motor, vertical lift up and down buttons, and emergency stop (e-stop) button. The height is visually indicated in inches on the height indicator bar and labeled for each standard drum size.



Mixing motor

The mixing motor assembly is a directly coupled drive assembly that supplies power to the drive shaft and impeller to initiate the mixing process.



Drum positioner (optional)

The optional drum positioner is designed to be used with the dolly that is supplied with the S.U.M. DS 300. The drum positioner may be utilized to ensure correct placement of the drum with the mixer head.



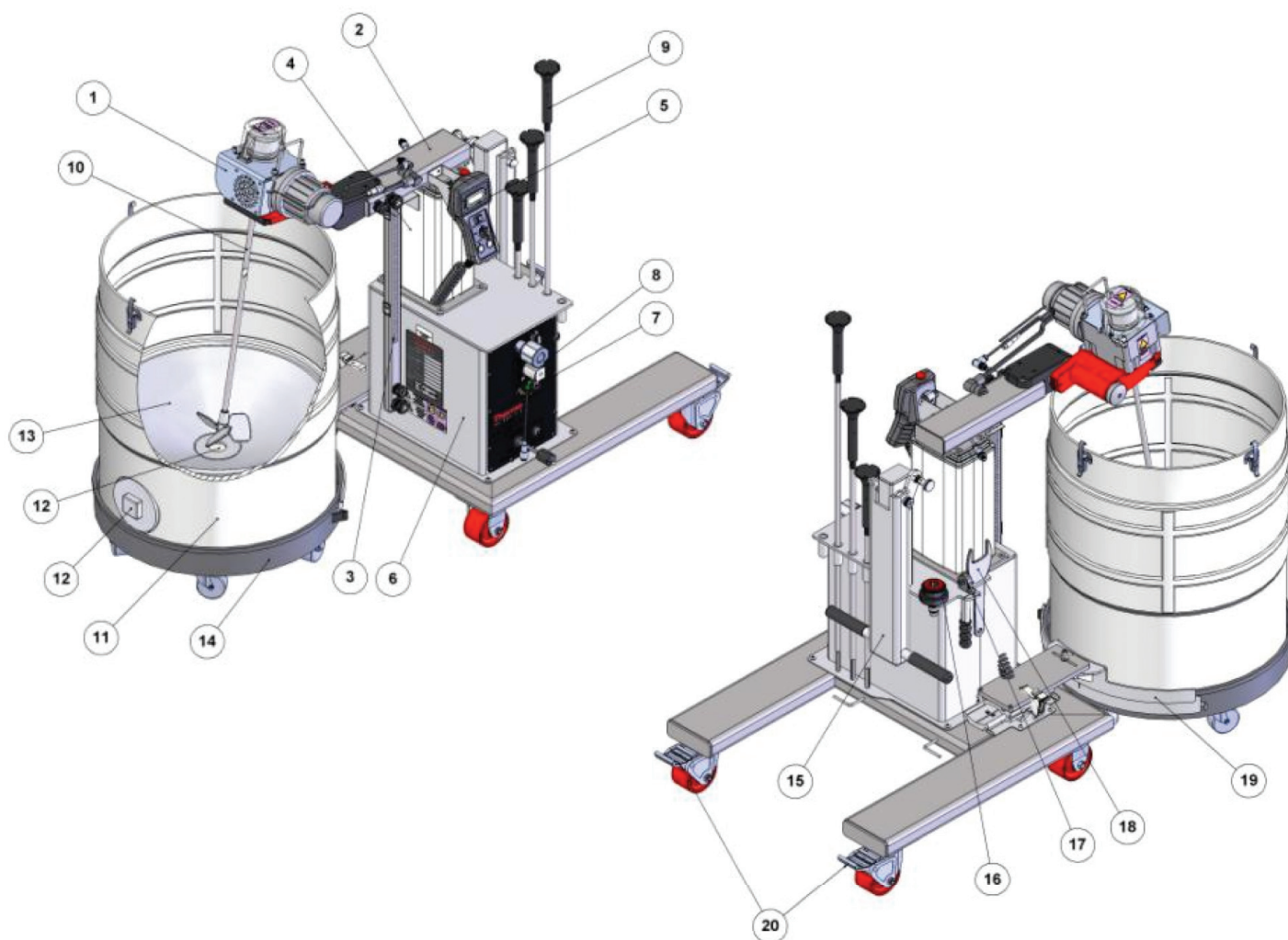
Angled motor assembly (optional)

The adjustable head allows for additional flexibility in locating where the impeller is positioned in the drum. This allows for different mixing characteristics and turndown ratios in the drum.



HyPerforma S.U.M. DS 300 components

1. Motor assembly
2. Horizontal support arm
3. Height indicator and cable management housing
4. Vertical lift
5. Handheld control device
6. Electrical box
7. Main disconnect switch
8. E-stop reset button
9. Drive shaft (stored)
10. Mounted drive shaft, sleeve, and impeller
11. Plastic drum
12. Liquid drain port
13. Conical insert
14. Dolly
15. Adjustable handle (in stored position)
16. Reusable bearing hub (open-top applications only)
17. Square torque wrench
18. Spanner wrench
19. Drum positioner (optional)
20. Locking rear casters



Recommended operating specifications

Power	108–240 VAC, 50–60 Hz
Input amperage	15 A
Operating temperature range	Ambient to 40°C
Motor speed	30–350 rpm
Footprint (L x W)	86 x 76 cm (34 x 30 in.)

Height	122.4–162.3 cm (48.2–63.9 in.)
Weight	180 kg (398 lb.)
Control box	Built to IP65 standards
Flow type	Radial/axial
Hardware material	Stainless steel 304

General mixing specifications: typical open-top mixing with standard impeller sizes

Drum size	50 L	100 L	200 L	300 L
Turndown ratio	5:1	5:1	5:1	4:1**
Minimum working liquid volume	10 L	20 L	40 L	79 L
Minimum hold-up	100 mL	100 mL	100 mL	500 mL
Maximum liquid fill	50 L	100 L	200 L	300 L
Left-to-right offset*	0	0	0	1.3 cm (1/2 in.) left
Front-to-back position*	2.5 cm (1 in.)	5.1 cm (2 in.)	5.4 cm (2 1/8 in.)	6.4 cm (2 1/2 in.)
Lift height*	0.5 cm (3/16 in.)	2.2 cm (7/8 in.)	30.6 (12 1/16 in.)	40.0 cm (15.74 in.)
Motor angle (adjustable motor head models only)	10°	10°	10°	10°
Motor speed (rpm)	350	350	350	350

* Measurements listed are ± 0.16 cm (1/16 in.).

** For the 300 L drum, a 5:1 turndown ratio can be achieved using the adjustable-angle motor head.

Minimum open-top mixing for S.U.M.s with adjustable motor head with standard impeller sizes

Drum size	50 L	100 L	100 L	200 L	200 L	300 L	300 L
Turndown ratio	5.4:1	10:1	6:1	10:1	8.8:1	5:1	5:1
Minimum working liquid volume	9.2 L	9.8 L	16.7 L	20 L	22.5 L	61 L	65 L
Minimum hold up	100 mL	100 mL	100 mL	100 mL	100 mL	500 mL	500 mL
Maximum liquid fill	50 L	100 L	100 L	200 L	200 L	300 L	300 L
Left to right offset*	2.5 cm (1 in.) left	2.5 cm (1 in.) left	2.5 cm (1 in.) left	1.9 cm (3/4 in.) left	1.9 cm (3/4 in.) left	NA (flat bottom)	NA (flat bottom)
Front to back position*	1.3 cm (1/2 in.)	1.3 cm (1/2 in.)	1.3 cm (1/2 in.)	3.2 cm (1 1/4 in.)	3.2 cm (1 1/4 in.)	NA	NA
Lift height*	0	0	2.2 cm (7/8 in.)	28.1 cm (11 1/16 in.)	28.3 cm (11 1/8 in.)	38.7 cm (15.24 in.)	38.7 cm (15.24 in.)
Motor angle (adjustable motor head models only)	5°	5°	5°	5°	5°	5°	5°
Motor rpm	180	205	140	150	140	164	124

* Measurements listed are ± 0.16 cm (1/16 in.).

** All values listed at ± 5 rpm

Drums and dollies

Standard Thermo Scientific™ drums are lightweight drums made of high-density polyethylene (HDPE) and can be reused for mixing or storage. Multiple drums for powder-to-liquid or liquid-to-liquid mixing can be quickly prepared for mixing and storage applications, allowing high throughput in a short time. Drums are available in 50, 100, 200, and 300 L sizes.

Dollies for the drums are available in two sizes: one for 50 to 200 L drums, and one for 300 L drums. These dollies should be used with the corresponding optional drum positioner.

Drum options

Volume range	Description	Dimensions	Bottom drain	Cat. No.
10–50 L	50 L plastic drum with conical insert	60 x 58 cm (23.5 x 23 in.)	10 cm (4 in.)	SH30959.01
20–100 L	100 L plastic drum with conical insert	60 x 76 cm (23.5 x 29.8 in.)	10 cm (4 in.)	SH30959.02
40–200 L	200 L plastic drum	60 x 114 cm (23.5 x 44.8 in.)	10 cm (4 in.)	SH30959.03
60–300 L	300 L plastic drum	61 x 122 cm (24 x 48 in.)	NA	SH30959.04
50–200 L	Optional support plate for bottom drain	12.7 cm (5 in.), diameter split	NA	SV50102.02

Dolly options

Description	Material	Quantity	Cat. No.
Dolly for 50 to 200 L plastic drum	Polyethylene	1	SH30958.01
Dolly for 50 to 200 L plastic drum	Polyethylene	2	SH30958.02
Dolly for 300 L plastic drum	Polyethylene	1	SH30958.03



Mixing BioProcess Containers (BPCs) and tank liners

Two standard Thermo Scientific™ BPC system configurations are available for the S.U.M.: a closed-top configuration, and an open-top configuration with a separate hub and impeller sleeve for mixing.

Both configurations are manufactured using low-density polyethylene film (LDPE), specially designed for biopharmaceutical process usage. All materials are qualified for a range of physical, mechanical, biological, and chemical compatibility requirements. They are presterilized using validated gamma-irradiation processes.

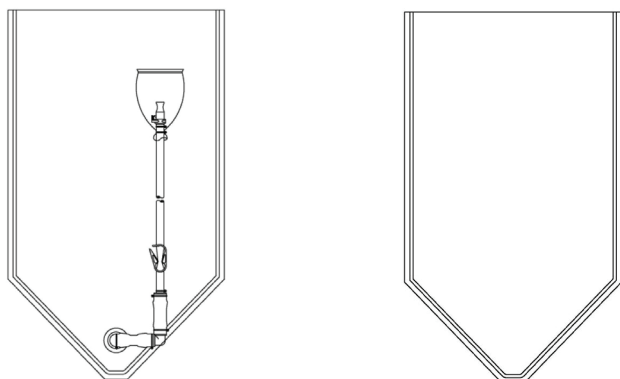
Closed-top BPC system and open-top tank liner specifications

- Impeller material: USP Class VI HDPE
- Impeller to BPC system/tank liner location: 5:1 off center
- Number of impeller blades: 3
- Closed-top BPC system: qualified LDPE
- Open-top BPC tank liner: qualified LDPE

Open-top BPC tank liner configurations

The open-top mixing configuration is a tank liner that also utilizes a separate single-use impeller sleeve and reusable hub. The drive shaft is inserted through the impeller sleeve and provides the strength and support for mixing.

A reusable hub is used for all open-top mixing applications. A “quick-connect” fitting is used to connect the impeller sleeve to the reusable hub.



Bottom-drain BPC tank liner
(50, 100, 200 L)

Top-drain BPC tank liner (300 L)

BPC tank liners

Size	Description	Sterilization	Cat. No.
50 L	Open-top, bottom-drain	Irradiated	SH30646.01
		Nonirradiated	SH30399.01
100 L	Open-top, bottom-drain	Irradiated	SH30646.02
		Nonirradiated	SH30399.02
200 L	Open-top, bottom-drain	Irradiated	SH30646.03
		Nonirradiated	SH30399.03
300 L	Open-top, top-drain	Irradiated	SH30647.06

Impeller sleeve options

For use with the open-top BPC tank liner and reusable hub.

Drum size	Description	Sleeve length	Cat. No.
50 L	Impeller, sleeve, and connector for 66 cm (26 in.) drive shaft	35.3 cm (13.9 in.)	SH30749.11
100 L	Impeller, sleeve, and connector for 84 cm (33 in.) drive shaft	53.1 cm (20.9 in.)	SH30749.12
200 L	Impeller, sleeve, and connector for 108 cm (43 in.) drive shaft	77 cm (30.3 in.)	SH30749.13
300 L	Impeller, sleeve, and connector for 130 cm (51 in.) drive shaft	96 cm (37.8 in.)	SH30749.08

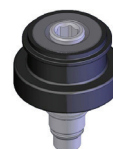


Single-use impeller sleeve

Reusable hub

For use with the open-top BPC tank liner and impeller sleeve.

Drum size	Description	Cat. No.
50 to 300 L	Stainless steel bearing hub	SV50177.77

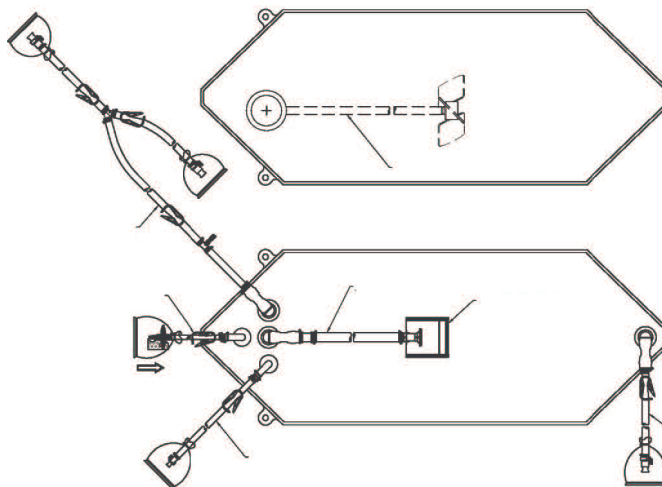


Reusable bearing hub

Closed-top BPC system configuration

The closed-top configuration is a fully integrated BPC system with a bearing hub, impeller sleeve, bottom drain with sample port, inoculation line, and vent filter. Not available for 300 L drums.

Size	Description	Cat. No.
50 L	Closed-top, bottom-drain, irradiated	SH30946.01
100 L	Closed-top, bottom-drain, irradiated	SH30946.02
200 L	Closed-top, bottom-drain, irradiated	SH30946.03



BPC system for 50, 100, and 200 L drums

BPC system specifications

Description	Tubing set (inner diameter x outer diameter x length)	End treatment
Bottom drain line	1.27 x 1.91 x 340.6 cm (1/2 x 3/4 x 134.01 in.)	Polycarbonate quick-connect 12.7 mm (1/2 in.) MPX insert and cap
Additional line 1	0.95 x 1.59 x 61 cm (3/8 x 5/8 x 24.02 in.)	Polycarbonate quick-connect 9.5 mm (3/8 in.) MPC body and plug
Additional line 2	1.91 x 2.54 x 121.9 cm (3/4 x 1 x 47.9 in.)	38.1 mm (1 1/2 in.) tri-clamp with 19.1 mm (3/4 in.) hose barb, SterilEnz™ II/H connector
Vent filter	0.64 x 1.27 x 10.1 cm (1/4 x 1/2 x 0.33 in.)	Hydrophobic vent with Emflon™ II membrane, HB
Recirculation/sample line	1.27 x 1.91 x 91 cm (1/2 x 3/4 x 38.83 in.)	Polycarbonate quick-connect 12.7 mm (1/2 in.) MPX body and plug
	1.27 x 1.91 x 30.5 cm (1/2 x 3/4 x 12.01 in.)	
	1.27 x 1.91 x 61 cm (1/2 x 3/4 x 24.02 in.)	Polycarbonate quick-connect 12.7 mm (1/2 in.) MPX insert and cap

Ordering information

Description	Cat. No.
Hardware	
DS 300 standard unit	SUMDS0300.9000
DS 300 unit with drum positioner	SUMDS0300.9001
DS 300 unit with adjustable motor head	SUMDS0300.9002
DS 300 unit with drum positioner and adjustable motor head	SUMDS0300.9003
Drums	
50 L plastic drum with conical insert	SH30959.01
100 L plastic drum with conical insert	SH30959.02
200 L plastic drum	SH30959.03
300 L plastic drum	SH30959.04
Optional support plate for bottom drain	SV50102.02
Drum dolly: 50 to 200 L (quantity: 1)	SH30958.01
Drum dolly: 50 to 200 L (quantity: 2)	SH30958.02
Drum dolly: 300 L (quantity: 1)	SH30958.03

Find out more at thermofisher.com/sum