Centrifugation

DynaSpin Single-Use Centrifuge

Introduction

The Thermo Scientific™ DynaSpin™ Single-Use Centrifuge provides a solution the industry needs. The specially designed ergonomic hardware, consumable, and simple software reduce the number of process and facility requirements for harvest unit operation. The DynaSpin centrifuge is a truly scalable solution that allows process volumes ranging from 50 to 5,000 L with great efficiency, especially at larger scales.

Advantages of the DynaSpin centrifuge

- Set up and operate the user-friendly, plug-and-play hardware in minutes
- Reduce traditional depth filtration surface area across all scales
- Mitigate process risk and increase efficiency using a closed system
- Reduce unit operation footprint to support process sustainability

This data sheet provides information on the complete DynaSpin Single-Use system, which includes the centrifuge hardware and consumables. The single-use consumable is composed of a rotor designed with disc stack technology and three line sets, an inlet line where cell culture fluid is supplied to the rotor and two outlet lines that carry the separated product and waste streams. Each line set contains appropriate sensors that enable fully automated control. The sensors communicate with the hardware via the software on the built-in touchscreen.

Components of the DynaSpin centrifuge

- Stainless steel hardware that arrives fully assembled and mobile, with locking casters and three handles
- Single-use rotor and line set consumable
- Ergonomic touchscreen with built-in software

Single-use consumable for the DynaSpin centrifuge

- Gamma-irradiated and ready-to-use rotor with line sets
- Inlet, centrate, and concentrate line sets with built-in sensors:
  - Reflectance sensor on concentrate line
  - Absorbance sensor on centrate line
  - Pressure sensors on all lines

DynaSpin Single-Use Centrifuge hardware design elements (Figure 1)

1. Lid with safety window
2. Emergency stop (E-stop) button
3. Reset button
4. Alarm speaker
5. USB ports
6. HMI touchscreen
7. Handle and bumper
8. Magnetic rotor hub with retaining elements
9. Locking casters
10. Line set bulkhead
11. Flow meter
12. Centrate outlet pressure sensor
13. Concentrate pressure sensor
14. Absorbance sensor
15. Reflectance sensor
16. Centrate pump
17. Inlet pressure sensor
18. Concentrate pump
19. Inlet pinch clamp
20. Centrate downstream pressure sensor
21. Concentrate waste and recycle clamps
22. Inlet pump
23. Centrate downstream and recycle clamps

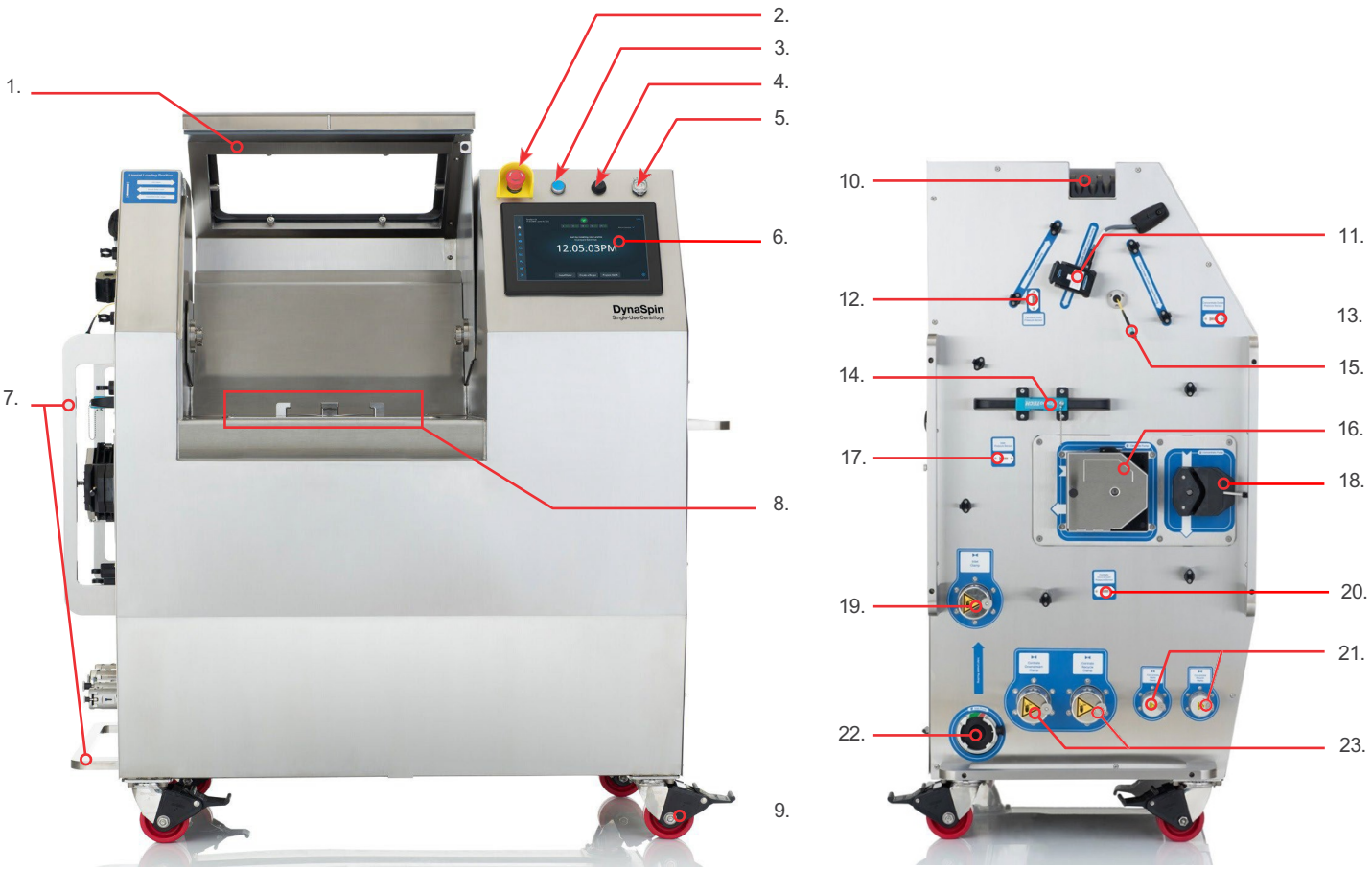

Figure 1. Front and side views of the DynaSpin Single-Use Centrifuge hardware components.

DynaSpin Single-Use Centrifuge hardware dimensions (Figure 2)

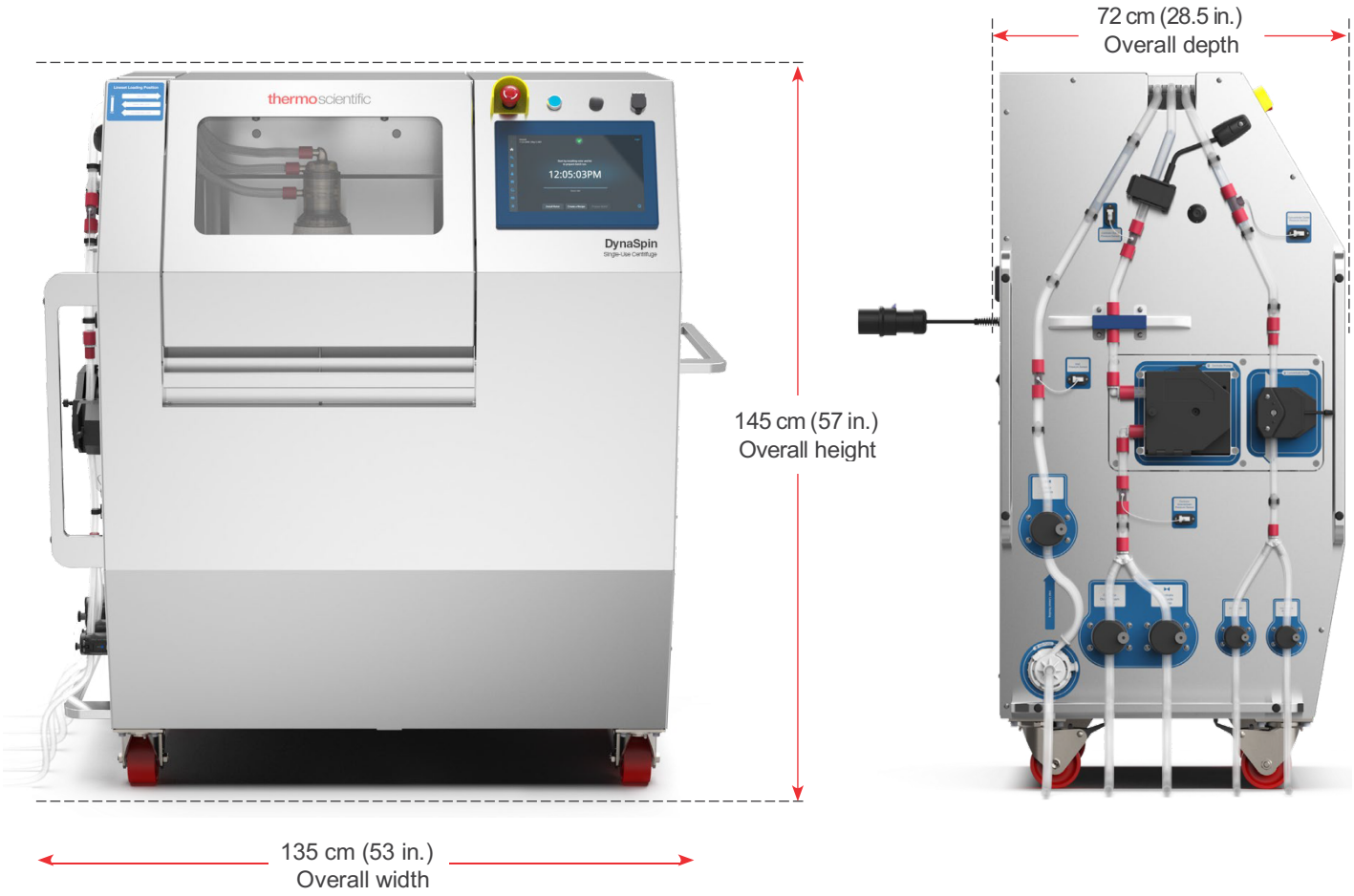

Figure 2. DynaSpin Single-Use Centrifuge hardware dimensions.

Table 1. DynaSpin Single-Use Centrifuge specifications.

Category	Specification
General specifications and process recommendations	
Room operating temperature range (non-condensing humidity)	5°C to 30°C ± 0.5°C (41°F to 86°F)
Recommended processing total flow rates	3.5–11 lpm
Maximum RCF (at 3,600 rpm)	1,700 x *g* ± 1%
Operational rpm range	1,500–3,600 rpm
Electrical power supply requirement (voltage, phase, amperage)	220–240 VAC, single phase, 15 A, see User's Guide for additional guidance
Electrical plug connection type	IEC 60309 32A pin and sleeve
Pneumatic supply	Not required
Noise level	<60 dB at 1.5 m
Process connections (1/2 in. inlet and centrate, 3/8 in. concentrate)	AseptiQuik™ G genderless connectors
Maximum centrate downstream pressure output	15 psig
Maximum packed cell/solid volume	Cell culture inlet: >15% PCV Concentrate outlet: >95% PCV
Materials of construction (hardware)	304 stainless steel, anodized aluminum, acetal polymer
IP rating	IP54
Bowl hold-up volume	3.05 L
Touchscreen/HMI interface	12 in., 1,280 x 800 pixels, capacitive touchscreen
SCADA networking communication options	OPC UA
Centrifuge motor rating	2 hp (1,490 W)
Maximum recommended distance from harvest vessel (without priming pump)	1/2 in. line at <15 ft
Pumps	
Inlet pump type and speed (min. to max.)	Integrated Levitronix™ Puralev™ i100SU pump: 0,100–10,000 rpm (governor- and pressure-limited)
Inlet pump maximum pressure downstream of the inlet pump	15 psig (pressure-limited)
Centrate pump type and speed (min. to max.)	Masterflex™ I/P™ High-Performance pump head with I/P™ 88 PharMed™ BPT tubing: 0, 20–600 rpm
Centrate pump minimum to maximum flow rate	0.4 LPM–15 lpm(24–900 lph)
Concentrate pump type and speed (min. to max.)	Masterflex™ L/S™ Easy-Load II pump head with L/S™ 36 PharMed™ BPT tubing: 0, 30–600 rpm
Concentrate pump minimum to maximum flow rate	0.15–3 lpm (9–180 lph)
DynaSpin Hardware	
Overall width	135 cm (53 in.)
Overall depth	72 cm (28.5 in.)
Overall height	145 cm (57 in.)
Dry skid weight	390 kg (860 lb)
Wet skid weight	400 kg (882 lb)
Bioprocess sensors (operating range, tolerance)	
Absorbance sensor (centrate stream)	PendoTECH™ Photometer, 880 nm emission, 1 cm path length, 0–3.0 AU
Reflectance sensor (concentrate stream)	Aber™ Instruments Optura™ Spy Reflectometer, 1,330 nm emission/reflectance monitor
Pressure sensor (inlet, concentrate, centrate, centrate downstream)	0–30 psi, PendoTECH™ single-use pressure sensor
Flow sensor (centrate stream)	0–20 lpm, Levitronix™ LEVIFLOW™ LFSC-i19X ultrasonic flow meter
Wetted materials	
Disc, disc holder, and bottom plate	Glass-filled liquid crystal polymer
Molded rotor	Glass-filled liquid crystal polymer
Mechanical seals	Alumina oxide, 316 stainless steel, carbon, nitrile rubber
O-ring	Silicone (VMQ)
Centrifuge outer housing	Polyphenylsulfone (PPSU)
Lubricant	Simethicone-based

DynaSpin single-use rotor and line sets with Thermo Scientific™ BioTitan™ fittings (Figure 3)

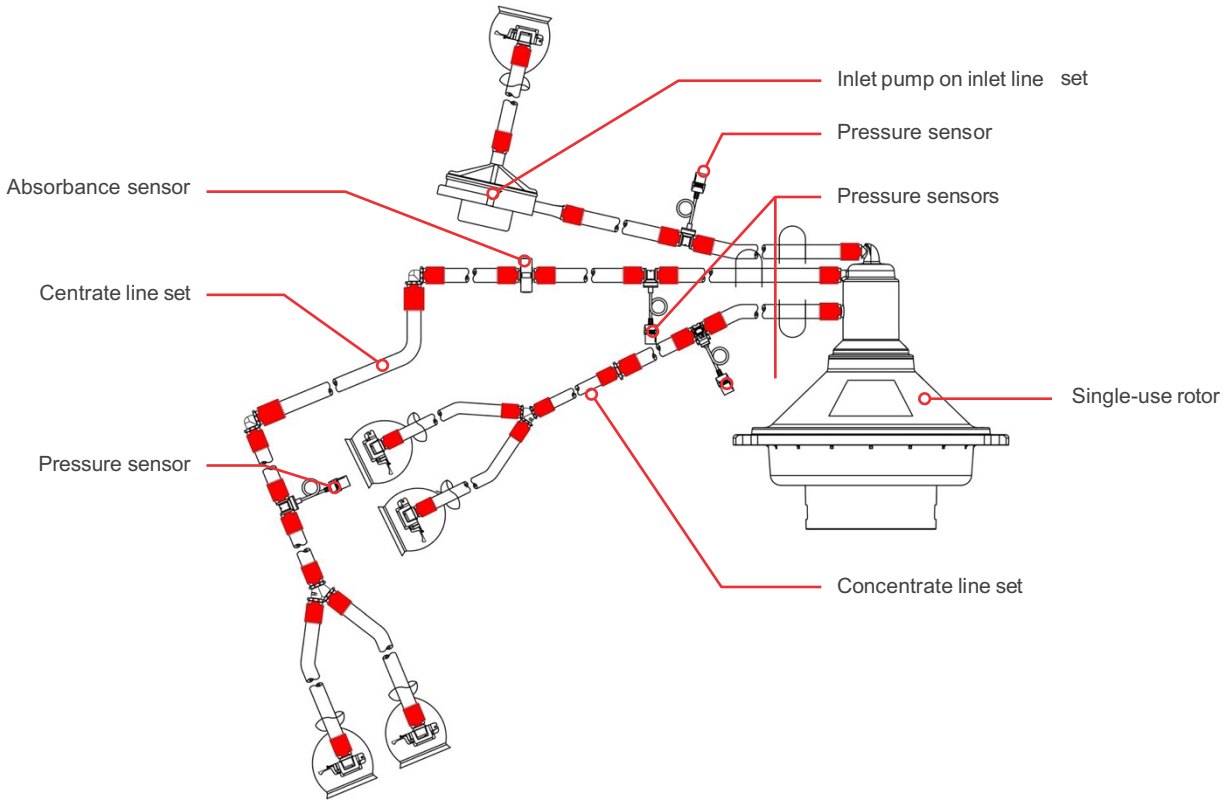

Figure 3. Side view of DynaSpin single-use rotor and line sets.

Ordering information

Product	Quantity	Cat. No.
DynaSpin™ Single-Use Centrifuge hardware unit	1	DSPIN.9000
DynaSpin™ Single-Use Rotor - harvest	1	SUT00056
Concentrate calibration line set	1	SUT00093

Learn more at **thermofisher.com/dynaspin**