Terumo® Advanced Perfusion System 1

Proven Technology | Increased Safety | Reduced Risk | Advanced Functionality | Unrivaled Support



Technology inspired for life.™

TERUMO CARDIOVASCULAR

Comprehensive Perfusion Management Solutions and Patient Care



The Heart-Lung Machine of Choice

As the global leader in perfusion technology, clinicians and surgical teams rely on Terumo Cardiovascular to help them deliver the highest quality care while achieving the best possible patient outcomes. To maintain this standard of excellence, we use proven technologies to offer a robust, customizable perfusion management system that increases safety while reducing risk; ensuring reliable and consistent performance while allowing the clinicians' focus to stay where it should be — on the patient.

Safe and Intuitive

Fast Access and Centralized Control

Fourteen-inch LED screen features a sophisticated design, coupled with a user-friendly graphic interface, enhancing the clinical experience. The interface centralizes crucial patient data and perfusion management functions, utilizing clear and intuitive language and icons. This streamlined design enables clinicians to easily navigate alerts and alarms with just one to two screen touches.

Redundant Controls

Roller pumps, centrifugal pumps, and Electronic Patient Gas System (EPGS) may be controlled locally and on the Central Control Monitor (CCM); providing system redundancy and options for speed adjustment as well as gas flow and FIO_2 settings.

Flexibility

From the base model to complex configurations, the system evolves as clinician needs change.

Modular

Components may be configured to meet practice variability and flexibility.

"On the Fly" Occlusion Adjustments

Roller pump's occlusion mechanism with audible feedback allows for setting adjustments while the pump is running without the need to stop the roller pump.

Self-Adjusting Tube Clamp Mechanism

The up to date design eliminates the need for changing tubing clamp inserts.

Extended Battery Life

60-minute minimum internal battery backup with remaining time displayed on the CCM.

Uni-Directional Roller Pump Hand Crank

Hand crank supports forward flow only; cannot be rotated in the wrong direction.

Advanced Functions

Added safety connections and pump response features may be activated at any time.

Terumo® Advanced Perfusion System 1





Roller and Centrifugal Pumps

- Supports up to eight pumps, including two centrifugal pumps.
- 4" and 6" roller pumps adapt to different protocols and maximize flexibility.
- Fast power-on pumps allow for quick response in emergent situations.
- Redundancy in control systems: locally and/or from the CCM with status/safety messages viewable on both.
- Arterial pump displays alert and alarm messages which affect operation.
- Base- and/or pole-mounted roller pumps with rotating raceways help reduce circuit length and hemodilution.
- Remote-mounted centrifugal pump motor reduces tubing lengths.
- Roller pump's occlusion mechanism with audible feedback may be adjusted while running.
- Uni-directional roller pump hand crank ensures correct blood flow direction.
- Self-adjusting tube clamp mechanism eliminates the need to change tube inserts.
- Durable metal-hinged lids improve accessibility to the pump raceway.
- Color-/graphic-coded caps make operation more intuitive when changing occlusion levels.
- Non-invasive flow sensor eliminates the need for a disposable flow probe.
- Up-to-date software optimizes pumping performance.

Advanced Functionality

- Pulsatile flow operation on arterial pumps.
- User-selectable Coast™ response on centrifugal pumps.
- Servo-Regulation activation maintains pump flow/pressure setpoints (- or +).
- Master/Follower pump operation—any two roller pumps may be used to deliver multi-ratio cardioplegia to minimize hemodilution and optimize myocardial protection.

Modular Design and Clinician-Centric Customization



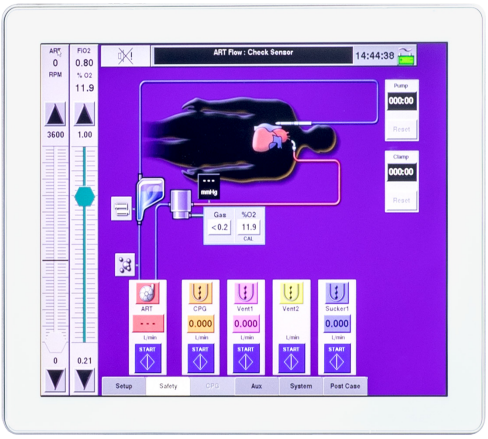
Safety and Monitoring Modules

- Clinicians may integrate up to 18 safety and monitoring modules, selecting individual responses, with options to add/change as needed.
- Modules are available for ultrasonic level (alert/alarm) and air bubble detectors; flow, pressure, and temperature sensors; electronic venous line occluder, and CDI® Blood Parameter Monitoring Systems.
- Modules plug into any of the system's base slots and are easily accessed.

Electronic Patient Gas System (EPGS)

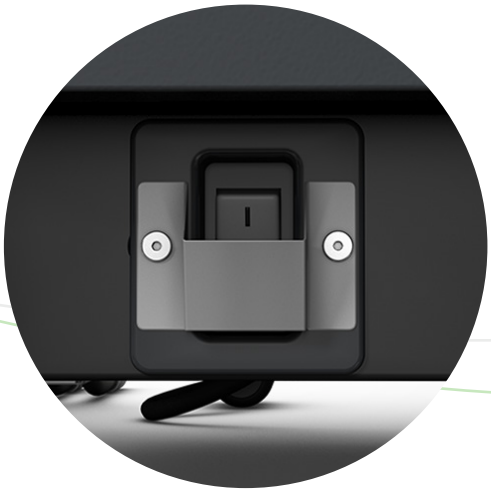
- Unique technology allows the gas blender to be integrated into the base with redundancy in control systems: locally and/or from the CCM.
- Integrated oxygen analyzer measures oxygen content of the blended gas and is displayed on the CCM.
- Settable low FiO_2 alarm displays on the CCM in the event of an out-of-range level.
- High/low gas source pressure alarms display on the CCM if outside recommended pressures.
- Multi-colored LED on the base provides status indications.
- Up-to-date software streamlines the EPGS calibration process.
- Increased messaging to the CCM informs clinicians of gas blender status.





Central Control Monitor (CCM) and Mounting Arm

- Fast processing, high-resolution LED touchscreen serves as the central interface for operating components and a safety monitor.
- The intuitive, sleek graphic interface facilitates information organization and enables users to view current perfusion parameters on a single screen.
- Clinicians may create up to 12 customized perfusion screens.
- Messaging area prioritizes and displays color-coded alarms, alerts, status, and errors.
- Critical patient/system information may be viewed and rapidly responded to in one or two screen touches.
- USB removable storage of configurations/perfusion screens.
- Robust 12-year service life (minimum preventative maintenance: air filter, coin cell battery, hard drive).
- Easy serviceability: no fans, less cables and circuit boards.



Protective plate on power switch

Internal Battery Backup and Power

- Provides a minimum 60 minutes of internal battery backup.
- Up-to-date circuitry and software algorithms enhance battery performance. Charge level display increases accuracy.
- Reporting and A/C visual indicators on the CCM during power up improve battery status communication.
- System generated battery health test reminders.
- Durable sealed power switch with protective plate prevents inadvertent power downs.

Terumo® Advanced Perfusion System 1 Components

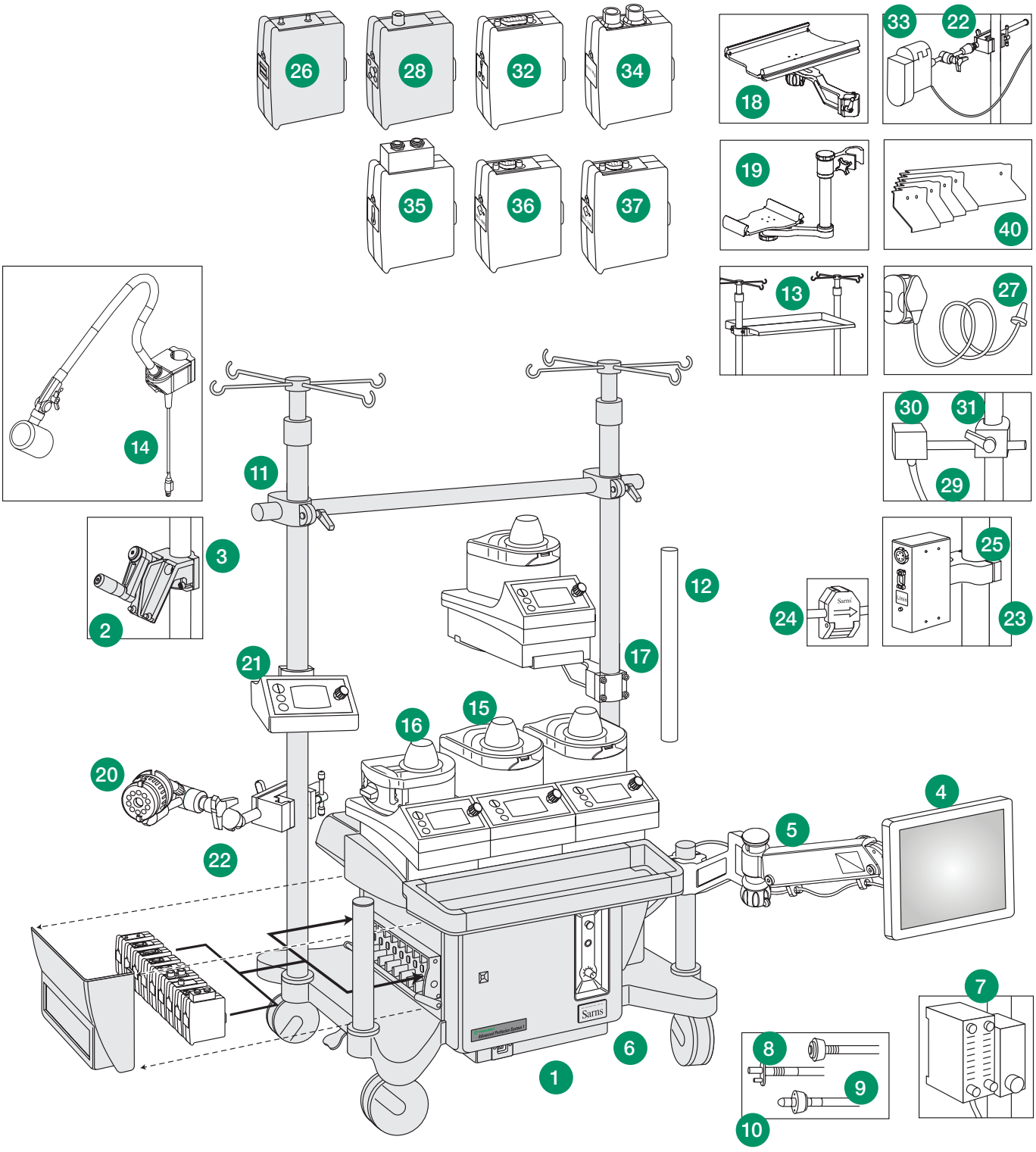
Catalog #	Description	Diagram #
Terumo System 1 Base*		
801763	100/120V Base	1
801764	220/240V Base	1
801016	Hand Crank (includes two hand cranks)	2
802089	Hand Crank Bracket	3
90000143	Programmed USB Flash Drive System Configuration	4
Base Options (Each blender requires a hose kit and adaptor set.)		
890500	Central Control Monitor (CCM)	4
90000746	CCM Mounting Arm Bracket	5
801188	Electronic O_2 Blender/Analyzer	6
3500CP-G21	Pole-Mounted Blender	7
	Hose Kits	
814475	U.S. Hose Kit (three hoses: green, yellow, grey)	
814474	Non-U.S. Hose Kit (three hoses: white, white/black, grey)	
	U.S. Hose Adaptor Sets	
144207	NCG Hose Adaptor Set	8
144215	D.I.S.S. Hose Adaptor Set	9
144223	Ohio Diamond Hose Adaptor Set	10
	Non-U.S. Hose Adaptor Sets	
815459	NCG Hose Adaptor Set	8
815457	D.I.S.S. Hose Adaptor Set	9
815461	Ohio Diamond Hose Adaptor Set	10
Center Poles and Accessories		
145980	Crossbar Fitting (required for each additional pole)	11
16553301	2' (0.6 m) Pole	12
131115	3' (0.9 m) Pole	12
16553401	4' (1.2 m) Pole	12
816489	Shelf	13
816370	Metallic Sliding Back Cover Panel Kit	40
Flexible LED Lamp		
893479	25" (63.5 cm) Flexible LED Lamp	14
Roller Pumps		
816571	Roller Pump, 6" (15.2 cm) Diameter	15
816570	Roller Pump, 4" (10.2 cm) Diameter	16
801093	Pole Mount Pump Rest with Bracket	17
816477	Dual Pumps Pole Mount Bracket	18
816483	Descending Pole Mount Pump Bracket	19

Catalog #	Description	Diagram #
Integrated Centrifugal System		
164267	Drive Motor	20
816572	Control Unit	21
164268	Manual Drive	Included with 21
804372	Pole Mount Centrifugal Display Bracket	Included with 21
816620	Flexible Mounting Arm	22
Flow Sensing		
802018	Flow Module	23
6382	Non-Invasive Flow Sensor, 3/8" (9.5 mm) ID x 3/32" (2.4 mm) Wall, Reusable	24
801550	Mounting Bracket (holds two modules)	25
Level Detection (One each included.)		
802111	Level Detect Module	26
195215	Yellow Transducer (alert)	27
195274	Red Transducer (alarm)	27
195240	Level Sensor Pads (60 per box), Gel Included	
Air Bubble Detection (One each included.) One sensor required per air bubble detection system.		
802110	Air Bubble Detect Module	28
822763	Cable Assembly	29
149876	Pole Clip Sensor Holder	
	Ultrasonic Air Sensor (choose one of three)	
5773	3/8" x 3/32" (9.5 mm x 2.4 mm)	30
5791	1/4" x 3/32" (6.4 mm x 2.4 mm)	30
5785	1/4" x 1/16" (6.4 mm x 1.6 mm)	30
5793	Air Sensor Bracket (optional)	31
Venous Occluder		
803480	Occluder Module	32
806455	Occluder Head	33
816620	Flexible Mounting Arm	22
Pressure Monitoring		
893607	Pressure Module (two pressures/module)	34
Temperature Monitoring		
884660	Temperature Module, YSI™ Series 400 Compatible (two temperatures/module)	35
Data Interface Modules		
802113	Serial Interface Module RS-232	36
803479	Interface Module for CDI® Systems	37

* Shaded grey items in the component diagram are included with the Terumo Advanced Perfusion System 1.

Terumo® Advanced Perfusion System 1 Component Diagram

Shaded grey items in diagram are included with the Terumo Advanced Perfusion System 1.



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Terumo® Advanced Perfusion System 1 Specifications

Terumo System 1 Base		
	801763	801764
Voltage	100/120V, 50/60 Hz	220/240V, 50/60 Hz
Height	22.6" (57.4 cm)	22.6" (57.4 cm)
Width	35.2" (89.4 cm)	35.2" (89.4 cm)
Depth	26.5" (67.3 cm)	26.5" (67.3 cm)
Weight	262 lb (118.8 kg)	262 lb (118.8 kg)

Electronic O_2 Blender/Analyzer	
	801188
Operating Range	
Flow	0 – 10 L/min
FiO_2	0.21 – 1.00
Measured O_2	21% – 100%

Central Control Monitor*	
	890500
Height	11.0" (28.0 cm)
Width	14.3" (36.3 cm)
Depth	3.2" (8.1 cm)
Weight	12 lb (5.4 kg)

Central Control Monitor Mounting Arm Bracket*
90000746

Roller Pumps		
	816570 (Small)	816571 (Large)
Pumphead Diameter	4" (10.2 cm)	6" (15.2 cm)
Weight	21 lb (9.5 kg)	24 lb (10.9 kg)
Operating Range	0 – 4 L/min	0 – 10 L/min

Centrifugal Control Unit	
	816572
Operating Range	0 – 3,600 RPM

Flexible LED Lamp	
	893479
Size	25" (63.5cm)
Voltage	24VDC

Pressure Module
802112
Two Pressure Transducers per Module
Operating Range: (-250) mmHg – 900 mmHg
Maximum of Eight Transducers

Temperature Module
802114
Temperature Module, YSI™ Series 400 Compatible (two temperatures/module)
Operating Range: 0–50 °C
Maximum of Eight Sensors

Flow Module
802018
Non-invasive Flow Measurement, One per Module
Operating Range: (-9.9) L/min to 9.9 L/min
Maximum of Four Modules

Ultrasonic Level Detection Module
802111
One Alarm Sensor, One Alert Sensor per Module
Reservoir: Functions with Hardshell Reservoirs that Have a Wall Thickness of 0.07" – 0.15" (1.8 mm – 3.8 mm)
Maximum of One Module

Ultrasonic Air Bubble Detector Module
802110
Operating Range
3/8" : 0.5 cc or larger up to 6 L/min
1/4" : 0.3 cc or larger up to 3 L/min
Maximum of Four Modules

Electronic Venous Occluder Module
803480
Operating Range
0 – 100% Flow on 1/4" to 1/2" Tubing
Maximum of One Module

Interface Module for CDI® System 550
803479
One CDI System per Module
Maximum of One Module

Interface Module for RS-232
802113
Data Output Module
Maximum of One Module

* Central Control Monitor & Mounting Arm Bracket must be ordered separate from the base (801763 & 801764)

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Design that Evolves with the Clinician

Customizable System Configurations

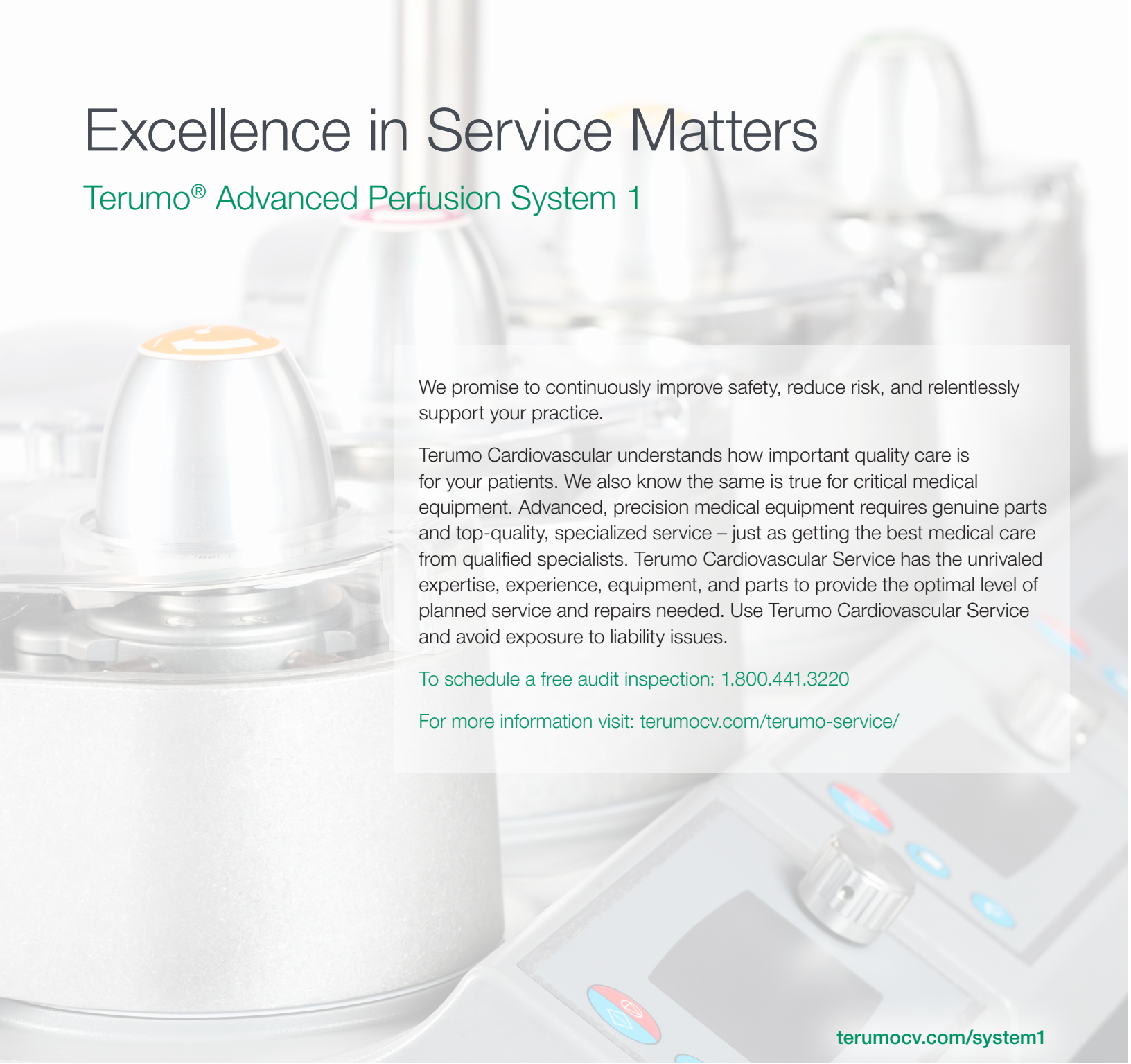




Terumo® Advanced Perfusion System 1 is intuitive, with quality and technology features that address perfusion practices and ensure feasibility. As techniques evolve, the versatile system configures simply and quickly to adapt to new protocols and leading-edge practices with a focus on improving efficiency, quality of care, and patient outcomes.

Excellence in Service Matters

Terumo® Advanced Perfusion System 1



We promise to continuously improve safety, reduce risk, and relentlessly support your practice.

Terumo Cardiovascular understands how important quality care is for your patients. We also know the same is true for critical medical equipment. Advanced, precision medical equipment requires genuine parts and top-quality, specialized service – just as getting the best medical care from qualified specialists. Terumo Cardiovascular Service has the unrivaled expertise, experience, equipment, and parts to provide the optimal level of planned service and repairs needed. Use Terumo Cardiovascular Service and avoid exposure to liability issues.

To schedule a free audit inspection: 1.800.441.3220

For more information visit: terumocv.com/terumo-service/

terumocv.com/system1

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