

Terumo® Advanced Perfusion System 1



SOLID PERFORMANCE



The Terumo® Advanced Perfusion System 1 has been the market leader since its introduction, bringing uncompromised safety, flexibility, and an intuitive platform to the perfusion community.

Now, after years of clinical feedback and engineering improvements, Terumo re-introduces its System 1.

Key Enhancements

- *New Central Control Monitor with a faster processor, higher resolution and updated software*
- *Newly designed metallic components for added durability*
- *Flexible brackets provide options to mount system components*

Its legendary engineering and durable craftsmanship will give you confidence in your new System 1. The best continues to get better.

Basic configuration meets current needs

Terumo System 1 configures quickly and simply to adapt to new protocols or individual patient needs. You can choose exactly how you're going to manage a case, where you'll locate each device, and how you'll configure the display on the Central Control Monitor.

- Choose the number of pumps and safety connections.
- View information on either the pump's local control or the Central Control Monitor.
- Choose the hardware configuration on your base platform.

The Terumo System 1's flexibility addresses all the needs of a perfusionist. Its redundant safety features and integrated battery backup provide a reliable platform.



Safety and monitoring modules plug into base

Terumo System 1's compact safety and monitoring modules can be plugged into any of the slots in the system's base. The ease of access and ability to backup each module enhances safety and provides an uncluttered working environment.

Select as many as 18 modules that monitor or operate up to:

- 1 electronic venous line occluder
- 1 ultrasonic level detector (alert/alarm)
- 4 ultrasonic air bubble detectors
- 4 flow sensors
- 8 pressure sensors
- 8 temperature sensors
- 1 interface module for TLink™ Data Management System
- Interface modules for all CDI™ Monitoring Systems



Roller pumps enhance flexibility

The Terumo Advanced Perfusion System 1 supports up to 8 roller pumps:

- Roller pumps can be controlled from the speed control knob or the Central Control Monitor.
- Available in large and small raceways to adjust to different perfusion protocols.
- Occlusion mechanism with audible feedback can be adjusted while the pump is running.
- Designed to allow choice of base or pole mounting with rotating raceway to allow for optimal circuit length.
- Front panel displays operating status, and alert or alarm messages affecting operation.
- Self-adjusting tube clamp mechanism eliminates the need to change the tube inserts.
- Uni-directional hand crank ensures correct blood flow direction.
- Advanced functions can be performed using any roller pump:

Pulsatile flow operation (arterial pump only)

Servo-regulation to maintain a constant flow or a constant positive or negative pressure setpoint

Master/Follower operation of any two pumps for delivering multi-ratio cardioplegia

Automatic cardioplegia dose delivery by time or volume



PERFUSION



Central Control Monitor

The new Central Control Monitor (CCM) is a high resolution touch screen computer that serves as a safety monitor, and can be used as the central area for controlling the system components. The CCM uses an intuitive graphic interface to organize information and help users quickly and easily view current perfusion parameters on one monitor, without having to look at multiple displays.

Customized configurations

Users can configure up to 12 perfusion screens that can be customized to accommodate different perfusion setups – to help the user move easily between procedures as needed.

Priority messaging area

All safety messages are displayed both on the CCM and the local pump displays. The CCM message area—located at the top of the perfusion screen—displays alarms, alerts, status and error messages in order of priority. The color-coded priority message display eliminates confusion while running a case, and assists in understanding alerts and alarms when they occur.

Intuitive design and central control

The layout of the perfusion screen provides easy navigation through the CCM user interface which centralizes all functions and simplifies system control.

PERFORMANCE



Integrated electronic gas blender

A unique technology allows the gas blender to be integrated into the base and controlled through the Central Control Monitor or locally. It offers added safety and flexibility:

- An integrated oxygen analyzer that measures the oxygen content of the blended gas and displays it on the CCM.
- Settable low FiO_2 alarm which will display on the screen in case of an out-of-range level.
- High and low gas source pressure alarms that will display on the CCM if the gas supply is outside the recommended pressures.
- A multi-colored LED that provides status indications.
- The ability to send gas data for electronic charting to TLink Data Management System.



The system supports up to 2 centrifugal pumps

- Pumps can be controlled from the speed control knob or the CCM.
- Remote-mounted pump motor helps optimize tube lengths.
- Non-invasive flow sensor eliminates need for a disposable flow probe.
- Front panel display shows pump operating status and alarms.
- The centrifugal system is capable of the following advanced functions:

Pulsatile flow operation (arterial pump only)

Servo-regulation to maintain a constant flow or a constant positive or negative pressure

User-selectable Coast™ response that allows more time to react to alerts/alarms

Configurability with advanced functions for an evolving practice

As perfusion techniques evolve, perfusionists can use the advanced functions of the Terumo System 1. It redefines the notion of customization, with quick and simple configurability to easily adapt new protocols for individual patient needs. With many safety features that can be incorporated in every setup, this system becomes the product of choice for an evolving practice.

The same components can be reconfigured to keep pace with the changes in your practice.

Base- or pole-mount options

Pole-mount a pump closer to the patient to minimize the circuit size. Control the pump remotely using the CCM.

Servo-regulation to pressure/flow

Maintain the pump flow setpoint or pressure setpoint (negative or positive) by activating the servo-regulation feature.

Cardioplegia delivery

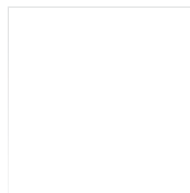
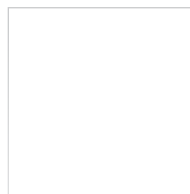
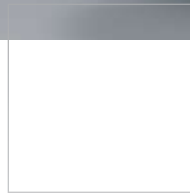
By selecting the Master/Follower operation, any two pumps can be used to deliver cardioplegia to minimize hemodilution and optimize myocardial protection. New bracket options allow users to remote mount the pumps.

More customized safety features

Choose to integrate more safety systems such as additional air detectors and select an individual response for each one.

Integration with venous line occluder

Occluder can respond to events from the primary pump (Open, Close or Go to % Flow).



Ordering Information

System 1 Base

1* 100/120V System 1 or 220/240V System 1	801763 801764
<i>* Shaded items are included with System 1</i>	
Programmed PC card system configuration	803739
2 Hand crank (includes 2 hand cranks)	801016
3 Hand crank bracket	802089
4 Central Control Monitor	816300
39 Central Control Monitor Cover	816261

Base Options

5 Electronic O ₂ blender/analyzer*	801188
6 Pole-mounted blender*	164235

** Each blender requires a hose kit and adaptor set*

Hose kits

U.S. hose kit (3 hoses: green, yellow, black)	814475
Non-U.S. hose kit (3 hoses: blue, yellow, black)	814474

Hose adaptor sets

7 NCG hose adaptor set	144207
8 D.I.S.S. hose adaptor set	144215
9 Ohio Diamond hose adaptor set	144223

Center Poles and accessories

10 Crossbar fitting (required for each additional pole)	145980
11 2 ft (0.6 m) pole	16553301
11 3 ft (0.9 m) pole	131115
11 4 ft (1.2 m) pole	16553401
12 System 1 shelf	816489
40 Metallic sliding back cover panel kit	816370

Flexible Halogen Lamp

13 33 in (83.8 cm) flexible halogen lamp	801238
13 15 in (38.1 cm) flexible halogen lamp	801558

Roller Pumps

14 Roller pump 6 in (15.2 cm) diameter	816571
15 Roller pump 4 in (10.2 cm) diameter	816570
16 Pole mount pump rest with bracket	801093
17 Dual pumps pole mount bracket	816477
18 Descending pole mount pump bracket	816483

Integrated Centrifugal System

19 Drive motor	164267
20 Control unit	816572
Manual drive	164268
Pole mount centrifugal display bracket	804372
21 Flexible mounting arm	816620

TLink Data Management System

Data management software	814850
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Flow Sensing

22 Flow module	802018
23 Non-invasive flow sensor 3/8 in (9.5 mm) ID x 3/32 in (2.4 mm) wall, reusable	6382
24 Mounting bracket (holds 2 modules)	801550

Level Detection

(One each included with System 1)

25 Level detect module	802111
26 Yellow transducer (alert)	195215
26 Red transducer (alarm)	195274
Level sensor pads (60 per box), gel included	195240

Air Bubble Detection

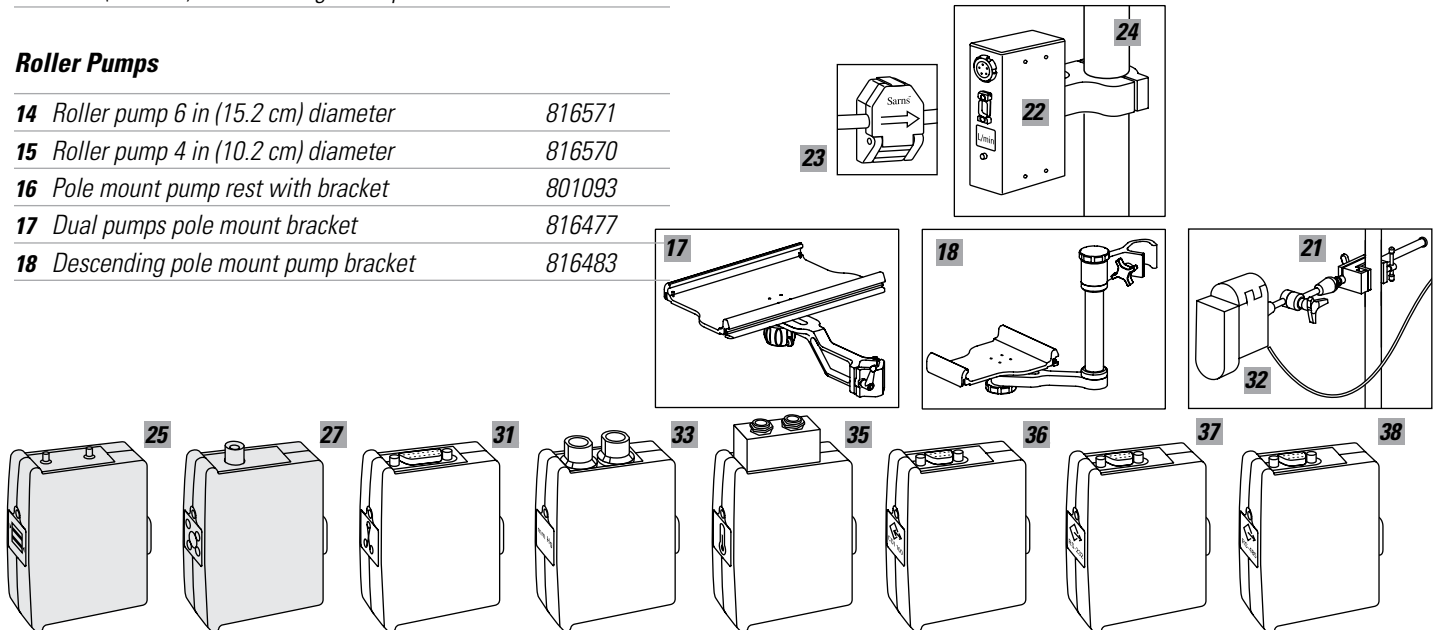
(One each included with System 1)

27 Air bubble detect module	802110
28 Cable assembly	149892
Pole clip sensor holder	149876

** One sensor required per air bubble detection system*

Ultrasonic air sensor (choose 1 of 3)

29 3/8 in x 3/32 in (9.5 mm x 2.4 mm)	5773
29 1/4 in x 3/32 in (6.4 mm x 2.4 mm)	5791
29 1/4 in x 1/16 in (6.4 mm x 1.6 mm)	5785
30 Air sensor bracket (optional)	5793



Venous Occluder

31 Occluder module	803480
32 Occluder head	806455
21 Flexible mounting arm	816620

Pressure Monitoring

33 Pressure module (2 pressures per module)	802112
34 Reusable pressure transducer	16433301
Pressure monitoring kit (10 per case)	16066100
Pressure transducer holder	22300030

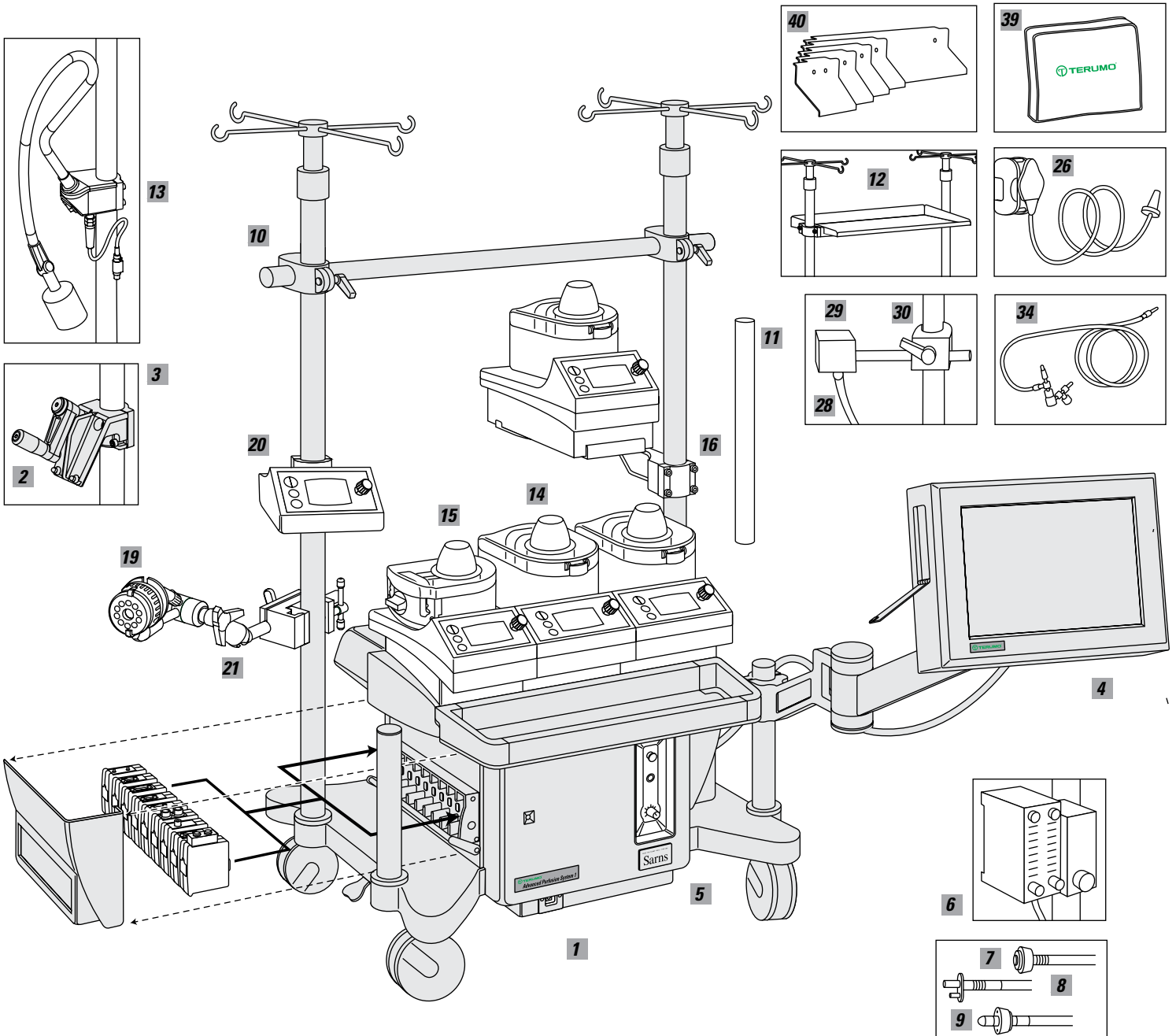
Temperature Monitoring

35 Temperature module, YSI® series 400 compatible (2 temperatures per module)	802114
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YSI® is a registered trademark of Yellow Springs Instruments

Data Interface Modules

36 Interface module for CDI™ System 100	802558
36 Interface module for CDI™ System 500	803479
37 Serial interface module RS-232	802113
38 Serial interface module RS-485	803518



Specifications

System 1 Base

	801763	801764
Voltage	100/115V 50/60 Hz	220/240V 50/60 Hz
Height	22.6 in (57.4 cm)	22.6 in (57.4 cm)
Width	35.2 in (89.4 cm)	35.2 in (89.4 cm)
Depth	26.5 in (67.3 cm)	26.5 in (67.3 cm)
Weight	262 lbs (118.8 kg)	262 lbs (118.8 kg)

Electronic O₂ Blender/Analyzer

	801188
Operating range:	
Flow	0 – 10 L/min
FiO ₂	0.21 – 1.00
Measured O ₂	21% – 100%

Central Control Monitor

	816300
Height	13.7 in (34.8 cm)
Width	15.7 in (39.9 cm)
Depth	3.4 in (8.6 cm)
Weight	15 lbs (6.8 kg)

Roller Pumps

	816570 (small)	816571 (large)
Pumphead diameter	4 in (10.2 cm)	6 in (15.2 cm)
Voltage	24VDC	24VDC
Height	12.5 in (31.8 cm)	12.5 in (31.8 cm)
Width	7.1 in (18.0 cm)	8.5 in (21.6 cm)
Depth	11.8 in (30.0 cm)	13.1 in (33.3 cm)
Weight	21 lbs (9.5 kg)	24 lbs (10.9 kg)
Operating range	0 – 4 L/min	0 – 10 L/min

Centrifugal Control Unit

	816572
Voltage	24VDC
Height	3.1 in (8.0 cm)
Width	7.3 in (18.4 cm)
Depth	8.5 in (21.6 cm)
Weight	2.4 lbs (1.1 kg)
Operating range	0 – 7 L/min

Flexible Halogen Lamps

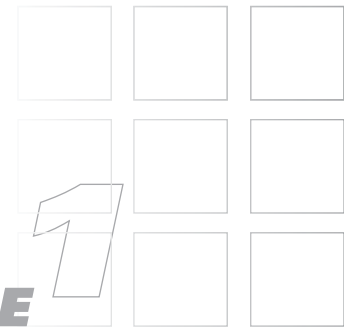
	801238	801558
Size	33 in (83.8 cm)	15 in (38.1 cm)
Voltage	24VDC	24VDC

Functional Modules

	Flow module 802018	Other modules
Height	6.30 in (160.0 mm)	3.54 in (90.0 mm)
Width	3.63 in (92.2 mm)	1.06 in (27.0 mm)
Depth	1.33 in (33.8 mm)	3.03 in (77.0 mm)
Weight	0.95 lbs (0.43 kg)	0.27 lbs (0.12 kg)
Pressure	802112	Two pressure transducers per module Operating range; (-250) mmHg – 900 mmHg Maximum of 8 transducers
Temperature	802114	YSI 400, two temperature sensors per module Operating range; 0 – 50° C Maximum of 8 sensors
Flow	802018	Non-invasive flow measurement, one per module Operating range; (-9.9) L/min to 9.9 L/min Maximum of 4 modules
Ultrasonic Level Detection	802111	One alarm sensor, one alert sensor per module Reservoir: Functions with hardshell reservoirs that have a wall thickness of 0.07 in – 0.15 in (1.8 mm – 3.8 mm) Maximum of 1 module
Ultrasonic Air Bubble Detector	802110	One per module Operating range; 3/8 in – 0.5 cc or larger up to 6 L/min 1/4 in – 0.3 cc or larger up to 3 L/min Maximum of 4 modules
Electronic Venous Occluder	803480	One per module Operating range; 0 – 100% flow on 1/4 in to 1/2 in tubing Maximum of 1 module
Interface Module for CDI System 100	802558	One CDI System 100 monitor per module Maximum of 1 module (either CDI System 100 or CDI System 500)
Interface Module for CDI System 500	803479	One CDI System 500 monitor per module Maximum of 1 module (either CDI System 100 or CDI System 500)
Interface Module for RS-232	802113	One TLink Data Management System per module Maximum of 1 module (either RS-232 or RS-485)
Interface Module for RS-485	803518	One data management system per module Maximum of 1 module (either RS-232 or RS-485)

SYSTEM 1

SOLID PERFORMANCE



Flexible: meets basic needs through easy and simple configurations; evolves as needs change

Durable: new metallic surfaces for added durability

Modular: design ensures each component will function individually and be controlled as needed

Centralized control: Central Control Monitor serves as a safety monitor and central control for system components

Reliable: added safety connections, customized pump responses and integrated electronic gas blender provide a safe and reliable platform



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