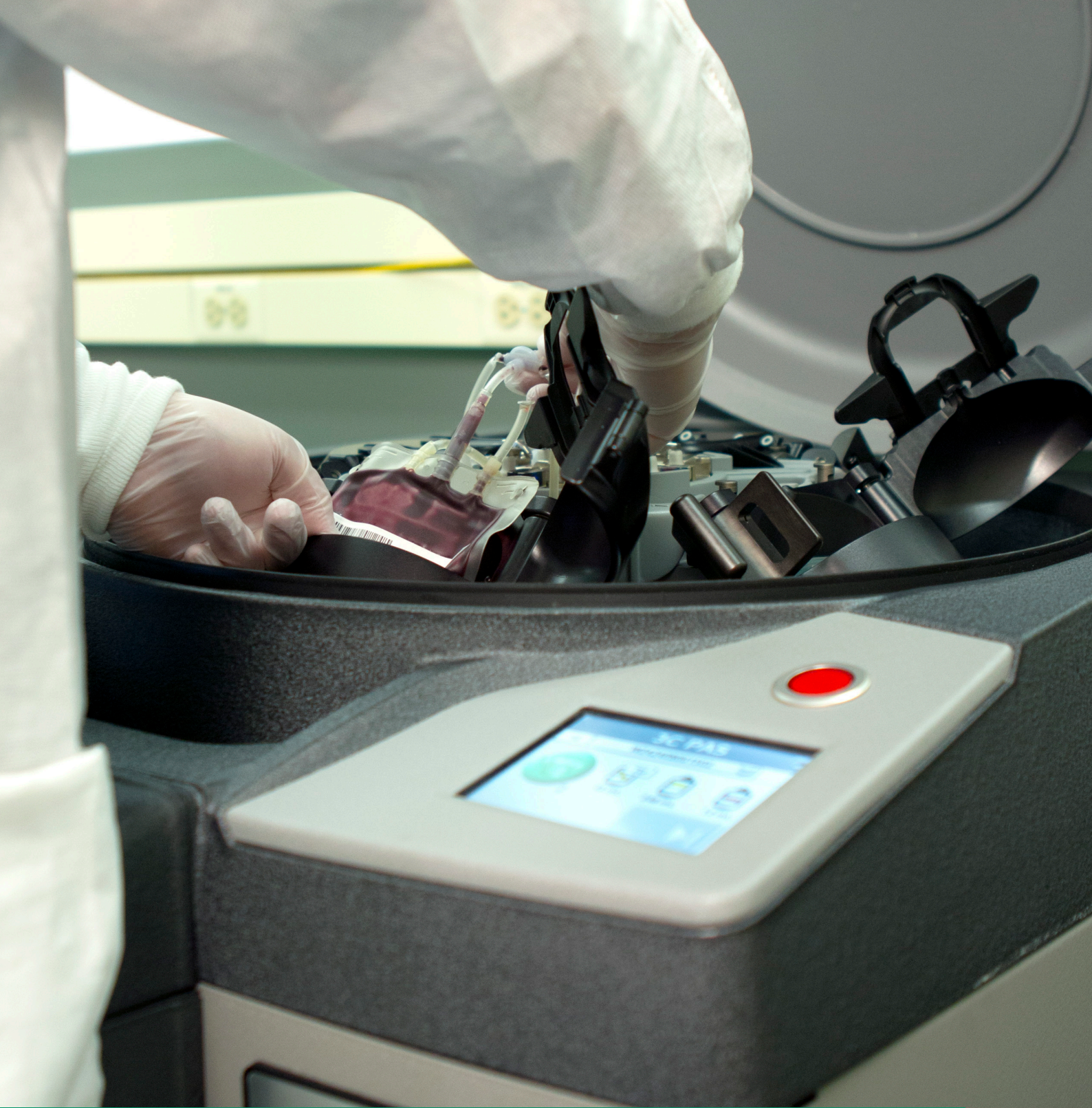




Reveos[®] Automated Blood Processing System
**Advance Efficiency, Quality, and Control
in Whole Blood Processing**



Put Automation to Work for You

Improve your lab efficiency, blood component quality, and process control.

Automated Whole Blood (WB) Processing, Four Units at a Time

The Reveos system is an easy-to-use platform that automates and integrates the manual steps involved in WB processing.

Quick and efficient, the Reveos system processes four units of WB at a time. Use your Reveos system to produce red blood cells (RBCs), leukoreduced plasma, platelets, and residual leukocytes with a single centrifugation step.

Automation Designed for Easy Adoption

The excitement of automation is everywhere. We continue to support a growing number of blood centers in successfully upgrading their operations. Today, blood banks in more than 53 countries have adopted our WB automation technologies. How could we put our knowledge and expertise to work for your WB process?

Let's take a look.



The Value of Automation*

The benefits of automation include improvements in these areas.



Productivity

- The platelet yield index (PYI) feature can help you create more pools of platelets from your daily collections of WB by estimating the platelet yield of platelet pools.
- One shift and four Reveos devices can process approximately 70,000 units of WB annually.**



Flexibility

- Customizable configuration allows you to adapt to your changing environment.
- One disposable set allows both 2 component and 3 component processing.



Quality

- The Reveos system is designed to create consistent products, using fixed-bucket technology and integrated processing steps.
- Plasma is automatically leukoreduced.



Confidence

- Process control, accuracy, and traceability give you peace of mind.
- Ease of use supports workflows and improves performance to achieve the consistent quality you need.



Compliance

- TOMEs (Terumo Operational Medical Equipment Software) automatically records processing steps.



Efficiency

- The Reveos system reduces the need for resources, including staff time, equipment, space, standard operating procedures (SOPs), and training.*
- In a single run, the system integrates the functions of centrifugation, sedimentation, separation, and sealing of four WB units, resulting in multiple blood components.

*As compared with manual processing.

**See the assumptions listed in the improved throughput table on page 9.

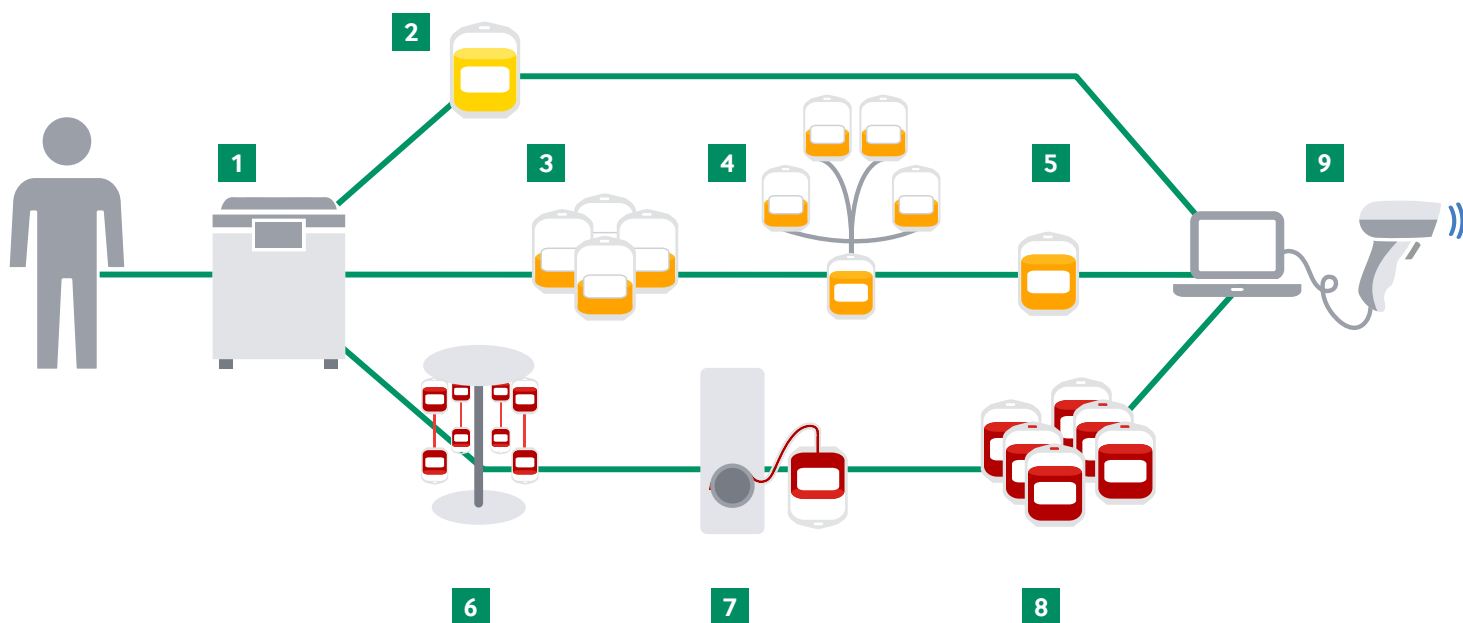
Compare Your Process to the Reveos System Process

Process Four Units of Blood at a Time

The Reveos System Process: 3 Component (3C) Protocol and Platelet Pooling Using the Single Centrifugation Method

The Reveos system process requires far fewer steps than manual processing.

- | | |
|------------------------------------|-------------------------------------------------|
| 1 Operate Reveos system | 6 Leukoreduce red blood cell (RBC) units |
| 2 Leukoreduced plasma units | 7 Seal RBC units |
| 3 Interim platelet units | 8 Store leukoreduced RBC units |
| 4 Pool platelets | 9 Enter data |
| 5 Therapeutic platelet dose | |

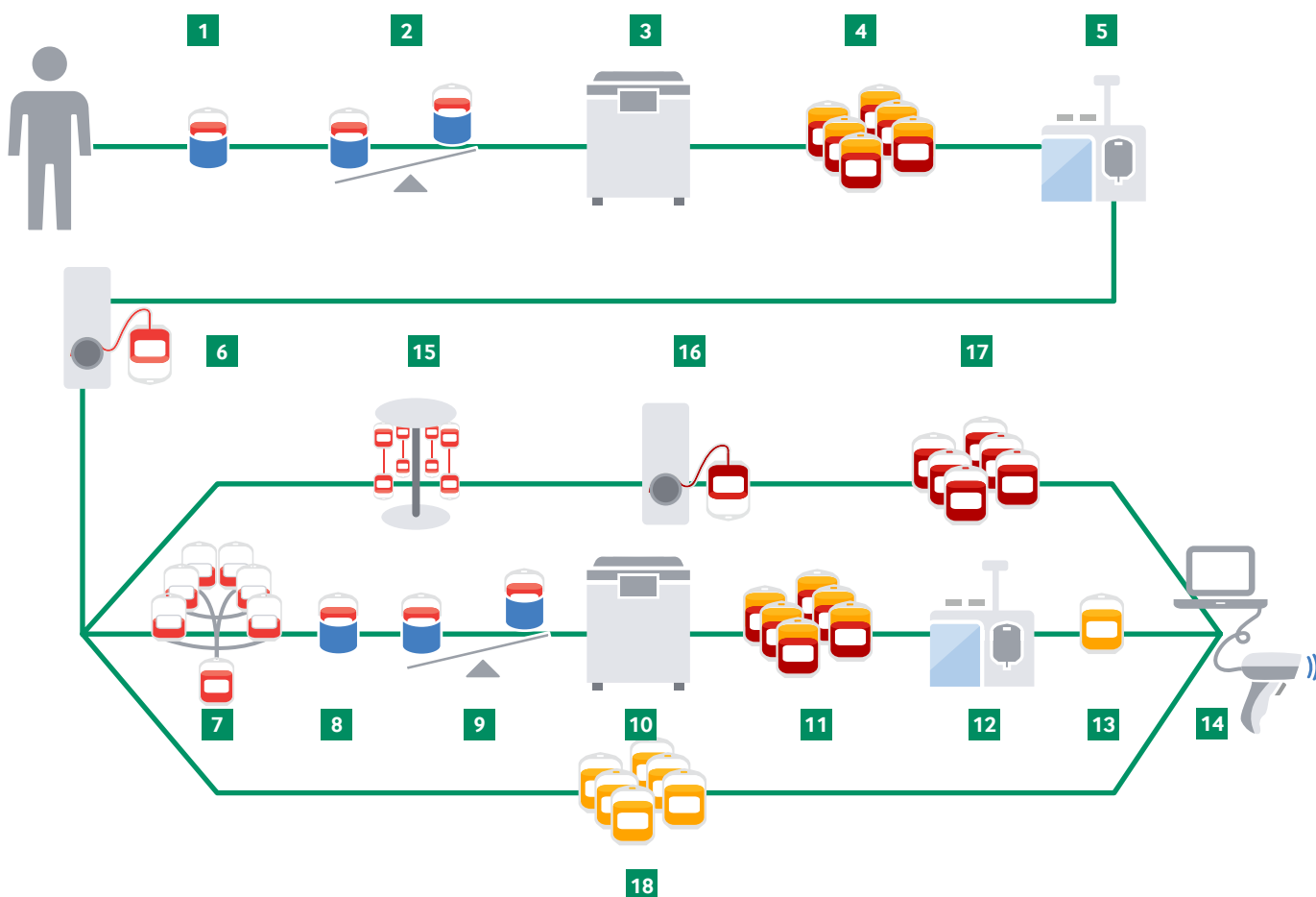


Manual WB Platelet Process

There are many steps in the manual process.
Each one can affect the quality of your final components.

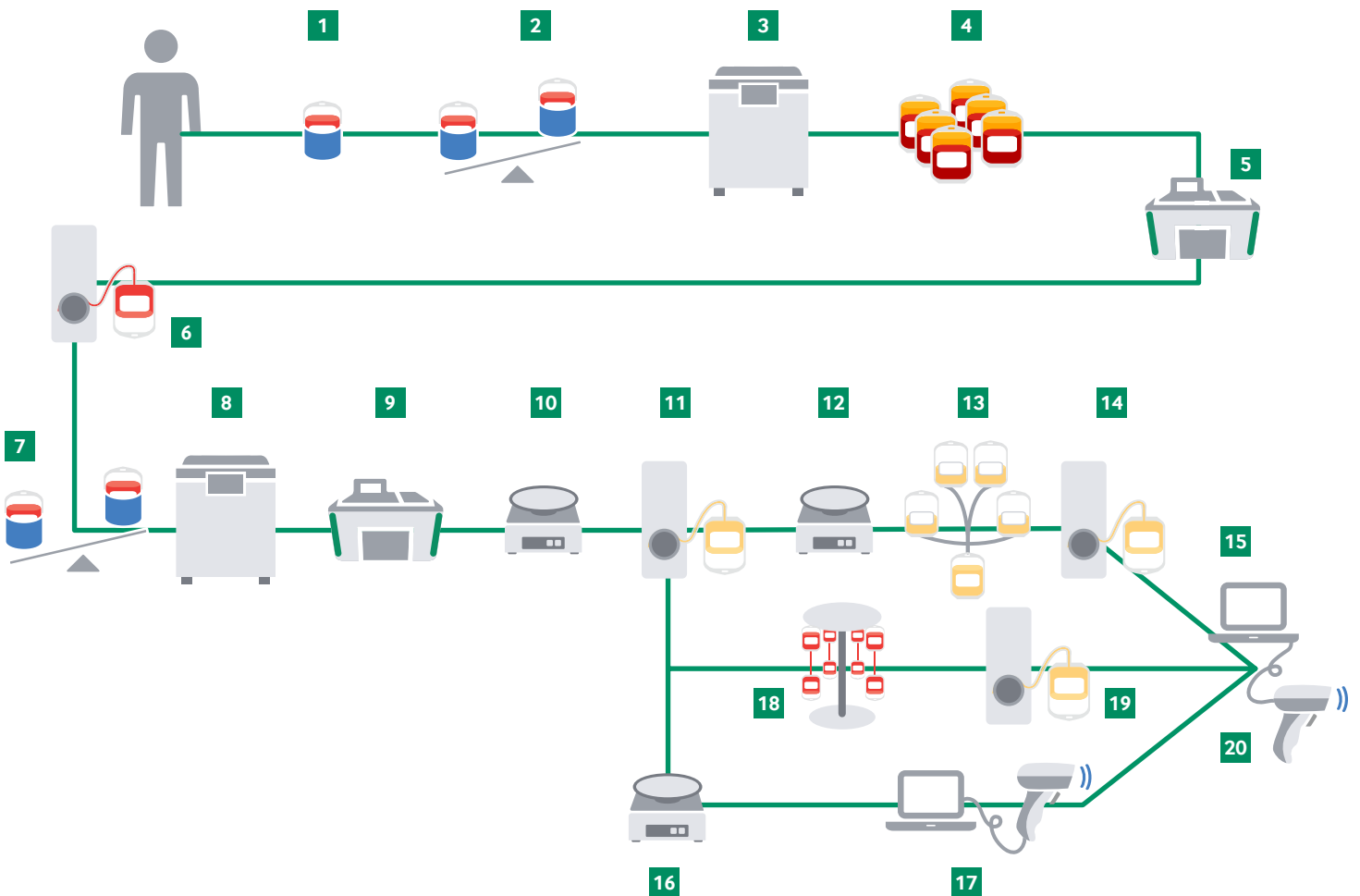
Manual Buffy Coat (BC) Process

- | | | |
|------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------|
| 1 Fold bags and pack in centrifuge cup | 8 Pack for positioning in cup | 15 Leukoreduce RBC units |
| 2 Balance | 9 Balance | 16 Separate RBC units from filter |
| 3 Centrifuge | 10 Centrifuge BC units | 17 Leukoreduced RBC units |
| 4 Transport units | 11 Transport units | 18 Plasma units |
| 5 Separate RBCs and plasma from BC | 12 Separate platelets from BC units | |
| 6 Seal and separate plasma, packed RBC and BC units | 13 Platelet concentrate | |
| 7 Pool and rinse BC units | 14 Enter data; store or additionally process products | |



Manual Platelet-Rich Plasma (PRP) Process

- | | | |
|--------------------------------------------------------|----------------------------------------------|----------------------------------------------------|
| 1 Fold bags and pack in centrifuge cup | 10 Adjust plasma volume in PC | 18 Leukoreduce RBC units |
| 2 Balance WB | 11 Seal and separate plasma from PC | 19 Seal and separate leukoreduced RBC units |
| 3 Centrifuge WB | 12 Weigh PC | 20 Enter leukoreduced RBC data |
| 4 WB is ready for PRP expression | 13 Pool and leukoreduce PC | |
| 5 Express PRP | 14 Seal and separate pooled platelets | |
| 6 Seal and separate PRP from RBCs | 15 Enter pooled platelet data | |
| 7 Balance PRP | 16 Weigh plasma | |
| 8 Centrifuge PRP | 17 Enter plasma data | |
| 9 Express plasma from platelet concentrate (PC) | | |

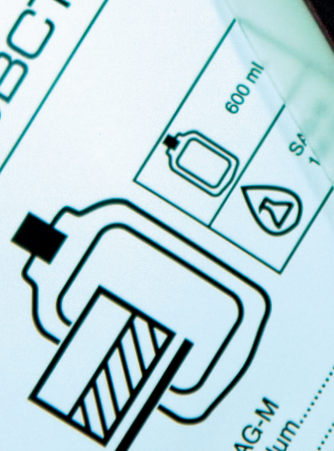


Meet the Reveos System

The Reveos system automates many processing steps, consolidating them into a single run.



TERUMOBCT Reveos



100 mL- CPD
Natrii chloridum.....
Aderininum.....
Dextrosium (anhydr.).....
Mannifolium.....
Aqua ad iniectionabilia q.s.....

STERILE

TERUMOBCT Reveos LR



100 mL- CPD..... 0.299 g
Acidum citricum (anhydr.)..... 2.63 g
Natrii citras (dihydr.)..... 0.222 g
Mononatrii phosphas (monohydr.)..... 2.55 g
Dextrosium (monohydr.)..... 100 mL
Aqua ad iniectionabilia q.s.....

STERILE

TERUMO BCT Ltd.
Old Belfast Road, Millbrook, I

REF 4FG456S0



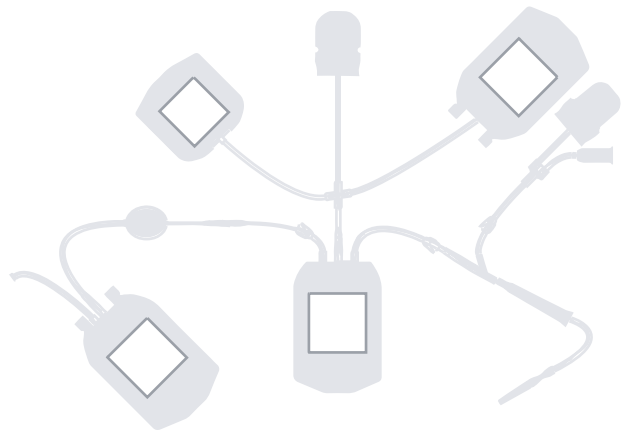
- Balance
- Centrifuge
- Express
- Seal
- Determine product volume and estimate platelet count
- Collect data
- Report data



Reveos System Overview

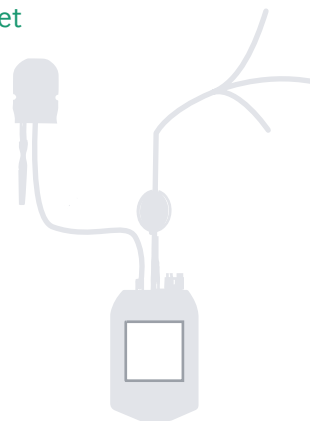
- **Reveos device**
A self-contained automated device that processes up to four units of WB at a time
- **TOMEs (Terumo Operational Medical Equipment Software)**
An enhanced data management system
- **Cadence® Data Collection System**
Allows us to provide enhanced customer service
- **Reveos LR Set, Reveos NLR Set, Reveos LR EXT Set**
One set to collect and process WB into multiple components
(Intended use: The Reveos blood bag set is intended to collect a unit of WB and process that unit on the Reveos device, producing blood components.)
- **Platelet Pooling Set**
Four to six platelet units are pooled and leukodepleted to create a transfusable platelet dose

Reveos LR Set, Reveos NLR Set, Reveos LR EXT Set



Drawing may not represent current configuration.

Platelet Pooling Set



Drawing may not represent current configuration.



The Advantages of the Reveos System

Look what you can do with the right tools.

Improve product consistency*

Achieve consistent quality with fixed-bucket technology and integrated processing steps.

Obtain higher yields*

The Reveos system may help you improve operations in several ways:

- The process is automated and consistent, resulting in fewer mistakes and fewer discarded products.
- The system is highly accurate, enabling operators to obtain a higher volume of components from the same volume of WB.
- The system is flexible and can be customized to your center's unique needs.

The PYI is an exclusive, innovative feature that provides the operator with a prediction of the platelet yield of the processed unit. The PYI value is shown on the device display screen and recorded in TOMEs.

Improve throughput

Throughput Potential in WB Units/Year				
Number of Shifts	1 Reveos System	2 Reveos Systems	3 Reveos Systems	4 Reveos Systems
1	18,000	36,000	54,000	72,000
2	36,000	72,000	108,000	144,000
3	54,000	108,000	162,000	216,000

Assumptions: 25 minutes/cycle, 1 cycle = 4 WB units, 250 working days/year, 7.5 hours/shift

Please contact your Terumo Blood and Cell Technologies representative for a Reveos system value analysis customized for your blood center.

Optimize your workflow:

- Reduce manual steps
- Reduce SOPs
- Reduce hands-on time
- Improve resource management

Process more than 18,000 WB units each year with these benefits: **

- Less space
- Less equipment
- Less labor
- Less time

*As compared with manual processing.

**See the assumptions listed in the table above.

Processing Equipment	Manual Semi-Automated Method	Reveos System
Triage balance	1	0
Reveos system	0	5
Centrifuges	5	0
Expressors	18	0
Sterile connection device	2	2
Component disconnect sealers	3	1
Platelet agitators	4	4
Total	33	12
Savings	64%	

Staff Utilization	Manual Semi-Automated Method	Reveos System	Savings
First-stage separation	10	5	50%
Second-stage separation	2	0	100%
Platelet pooling	2	2	0%
Total	14	7	50%
Assumptions: 100,000 WB units/year, two-stage platelet separation			

Please contact your Terumo Blood and Cell Technologies representative for a Reveos system value analysis customized for your blood center.





Information Technology (IT)

Provides Control and Traceability

Manage information with ease*

Software solutions take your system further.

- For greater control and flexibility, the Reveos system is equipped with TOMEs and compatible with the Cadence Data Collection System.
- TOMEs centralizes device and operator management, and it can interface with your blood bank's IT system.

**As compared with manual processing.*

Manage SOPs and Good Manufacturing Practices (GMP) to strengthen compliance

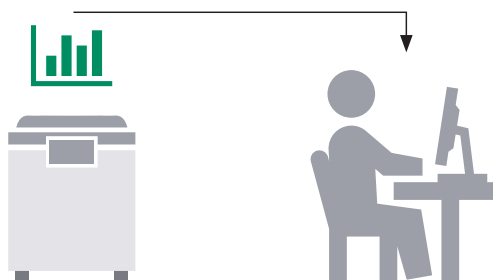
TOMEs lets you customize your Reveos system process flow to guide your operators, capture their actions, and control your processes every step of the way using on-screen prompts, intelligent barcodes, and cross-checks. Plus, you can configure settings and apply programs to connected Reveos devices directly from the TOMEs interface, enabling further control.

- Ensure compliance through SOP enforcement and GMP support.
- Reduce mistakes and simplify training with process guidance.
- Improve productivity and save time with centralized device configuration.

TOMEs Overview

TOMEs, an enhanced IT solution, is designed to effectively manage the Reveos system's day-to-day operations. TOMEs provides access to processing data that improves your process control and provides insight into every procedure performed on the Reveos system.

TOMEs can manage your devices at one site or across multiple facilities.



Data transfer from your Reveos system to TOMEs allows you to generate valuable reports, ensure traceability, track processes, identify areas for improvement, and more.

Data transfer from TOMEs to multiple Reveos systems allows you to customize your Reveos system, manage your procedures and security settings, and more.

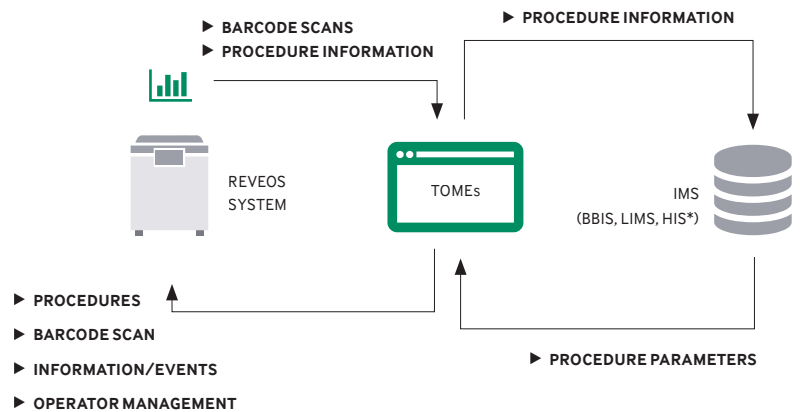
Connectivity between the Reveos system and TOMEs unlocks features that support operational excellence.

Control processes

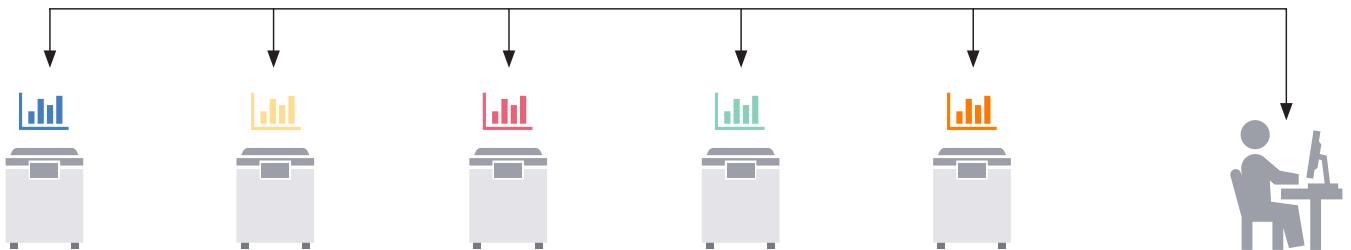
Configure and enforce SOPs and GMP to guide operators, support safety, and improve traceability.

Enhance reporting and traceability

Electronically capture and send complete device, operator, and procedure data, including manual steps, to your blood bank information system (BBIS).



► MULTIPLE DEVICES



*BBIS: blood bank information system, LIMS: lab information management system, HIS: health information system.

TOMEs Searches and Reports

Report generation

- Schedule reports to monitor manufacturing operations.
- Enable traceability of processed units, equipment, and operator actions.
- Identify areas for improvement.
- View, print or export data to other systems for analysis.

Donation ID and search feature

- Find a single unit based on its donation ID.
- View donation ID search results that show processing date, component volumes, operator ID, device name, and alerts or alarms that occurred during processing of the unit.

Power BI

This customizable report provides traceability of processed units, equipment, and operator actions.

Power BI

- Uses Microsoft® Power BI® dashboard templates

Operations

- Number of units processed by each Reveos device
- Average duration of procedures by operator

Production

- Average volume of each component by procedure
- Total number of components produced
- Percentage of units with a PYI within the specific range for 3C procedures

Exceptions

- Details about duplicated units, reprocessed units, and inconclusive sealed units, as well as barcode and centrifuge temperature issues

Alarms and alerts

- Total number of alarms and alerts by operator and by device



Sample Reports



Sample Production Report



Sample Operation Report

One Device, Two Protocols

The Reveos System	2 Component Protocol	3 Component Protocol
4 WB units	4 RBC units	4 RBC units
	4 leukoreduced plasma units	4 leukoreduced plasma units
	4 residual leukocyte units	4 platelet units
		4 residual leukocyte units

Please contact your Terumo Blood and Cell Technologies representative to purchase processing sets.

Device and Operating Environment Specifications

Specification Type	Value
Humidity	10% to 80% RH non-condensing
Operating temperature	Recommended 18 °C to 27 °C (64.4 °F to 80.6 °F)
Storage temperature	0 °C to 60 °C (32 °F to 140 °F)
Environment	Indoor use only
Elevation	Up to 2,000 m
Rated voltage	200 V AC to 240 V AC (± 10%), 50/60 Hz
Main power circuit breaker	Characteristic C, Rated 16 A, 30 mA RCCD (European Union)
Rated input (typical)	1.2 kVA
Rated input (maximum)	6.0 kVA
Power plug	IEC 60309 2P + E, 200 V to 250 V, 50/60 Hz, 16 A, IP44
Ventilation (per device installed)	Adequate to dissipate 1.0 kW in normal operation
Minimum clearance envelope (perimeter around the device)	15.2 cm (6 in)
Minimum floor area needed for installation (D × W)	99.1 cm × 114.3 cm (39 in × 45 in)
Safety standards	IEC 61010-1:2010, IEC 61010-2-20:2006
EMC standard	IEC 61326-1:2006
Ethernet connection	RJ45 CAT 5e ANSI/TIA/EIA 568 B.2
Barcode scanner connection	4-pin LEMO®
Ingress protection rating	Ordinary protection only

Automation Improves Your Current Process

The Reveos system can help you achieve these goals:*

- Improve product consistency
- Obtain higher yields
- Improve throughput
- Optimize your workflow:
 - Reduce manual steps
 - Reduce SOPs
 - Reduce hands-on time:
- Process more than 18,000 WB units a year, with these benefits:
 - Less space
 - Less equipment
 - Less labor
 - Less time
- Manage information with ease
 - Capture processing data electronically to support GMP compliance

*As compared with manual processing.



**For more information about the Reveos system, contact your
Terumo Blood and Cell Technologies representative.**

Availability of products described herein will depend on regulatory clearance in each market.



Terumo Blood and Cell Technologies is a medical technology company. Our products, software, and services enable customers to collect and prepare blood and cells to help treat challenging diseases and conditions. Our employees around the world believe in the potential of blood and cells to do even more for patients than they do today. [TerumoBCT.com](https://www.terumobct.com)

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