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RPV-3 SYSTEMS

DILUTE SOLUTION VISCOSITY

CATALOGUE 2026

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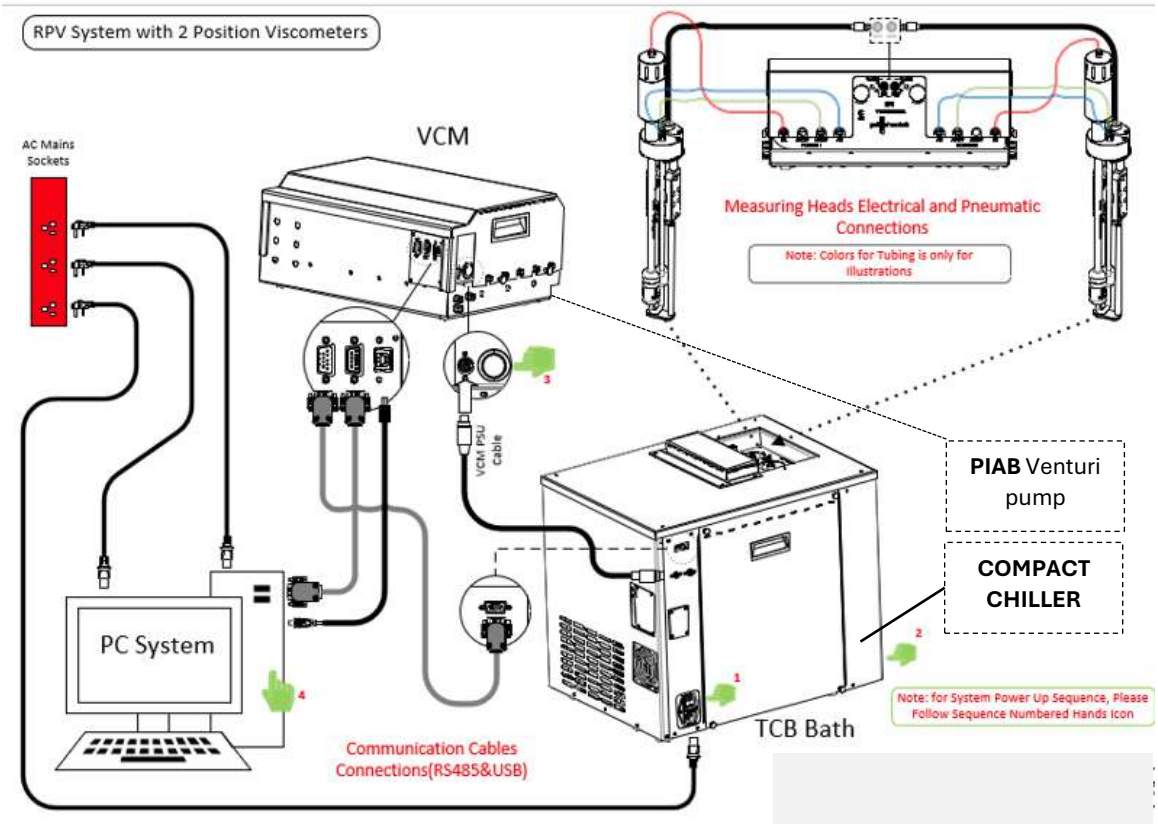
2 RPV-3 SYSTEM OVERVIEW



A standard RPV-3 Polymer Viscometer System consists of:

- **Industrial PC System** – RPV-3-PC-CONF – configured with the RPV-3 software and database.
- **Viscometer Control Module** – (VCM) – for 1 or 2 positions (additional VCM can be added for positions 3 and 4)
- **Measuring heads** – EVS-MH-100 – for nIR meniscus detection
- **Temperature Control Module** – (EVS-TCB Bath) - viscometer bath for use at temperatures close to ambient.
- **PIAB venturi type pump** (requires compressed air)

Options:

- **Compact chiller** (background cooling at temperatures close to ambient)

(OPTIONAL) diaphragm vacuum pump (instead of PIAB pump)

Note all drawings, photos and specifications in this catalogue are for illustration purposes only and are subject to technical change.

2.1 SYSTEM ACCESSORIES

System accessories include:

- Integrated sample preparation

  Including:

  iSP-1 KIT comprising of a dispensing syringe pump, solvent bottle, needle and top plate (for balance) and software.

  iSP-2 KIT for pulp and other two solvent applications.

  Precision balance (SP057-XPR)

- **Reaction blocks**

  For heating and stirring with optional quenching bath or bypass chiller for cooling

2.2 OTHER SYSTEM OPTIONS

The following items are examples of system options:

- **Chemistry diaphragm vacuum pump** (instead of the PIAB Ventura pump)

  Note. The PIAB pump requires a source of clean and dry compressed air. If this is not available, then the optional diaphragm pump should be selected. The PIAB offers the best flow rate.

- **Quenching bath** – for cooling samples (stand-alone mode)

- **Bypass chiller** – for cooling the reaction block – suitable for use in stand-alone mode as well as integrated cooling in *Auto* configurations.

3 RPV-3 STANDARD **POLYMER** SYSTEMS

Suitable for Polymer applications close to ambient temperature e.g. 25 or 30°C – typical applications include PA, PET, PVC and bio-polymers.

The modular system configuration includes: EVS-TCB Viscometer bath, Viscometer Control and Cleaning Module (VCM), nIR measuring head (s) and filling stations, RPV3-PC system (Industrial CPU, screen, keyboard and mouse), solvent and waste bottles. Also included is a Venturi (PIAB) vacuum pump (requires compressed air but no electrical connection). An optional solid state (stand-alone) chiller is also required. ***See Appendix 20.1 for generic system modules****.*

RPV-3 Polymer Viscometer System with two measurement positions.

System includes: EVS-TCB-5 bath, Viscometer Control Module, two measuring heads, two sample filling stations, PC control module and Solid-State chiller

System also includes optional iSP-1 sample preparation

Typical system configurations:

RPV-3 (2) – 2S plus iSP-1 *(e.g. ASTM D4603 PET) – as shown above*

RPV-3 (2) – 3S-ACC plus iSP-1 *(e.g. ISO307 PA in sulphuric acid)*

RPV-3 (4) - 2S *(e.g. ASTM D789 PA)*

3.1 RPV-3 STANDARD POLYMER SYSTEMS - MODELS

Model (One position)	Model (two positions)	Model (four positions)	Description
RPV-3 (1) – 2S	RPV-3 (2) – 2S	RPV-3 (4) - 2S	RPV-3 system with one, two or four measuring positions – **2 solvent cleaning with Peek valves and manifolds**
RPV-3 (1) – 3S	RPV-3 (2) – 3S	RPV-3 (4) - 3S	RPV-3 system with one, two or four measuring positions – **3 solvent cleaning with Peek valves and manifolds**
RPV-3 (1) – 2S-ACC	RPV-3 (2) – 2S-ACC	RPV-3 (4) - 2S-ACC	RPV-3 system with one, two or four measuring positions – **2 solvent cleaning with Peek valves and anti-corrosive option – DCA applications**
RPV-3 (1) – 3S-ACC	RPV-3 (2) – 3S-ACC	RPV-3 (4) - 3S-ACC	RPV-3 system with one, two or four measuring positions – **3 solvent cleaning with PTFE valves with anti-corrosive option – sulphuric acid applications**

Notes:

Peek valves are mounted on Peek manifolds – suitable for most solvents except sulphuric acid.
PTFE valves are suitable for all solvents at temperatures close to ambient including sulphuric acid. PTFE valves are mounted on brackets and connected via PTFE tubing.

ACC refers to anti-corrosive coating to the bath lid, motor cover, inner viscometer lid, and internal drip tray, as well as the top plate of the measuring head.

System Options

Required:

Chiller – for ambient temperature control:
Part Ref: 20470/A (230V) Compact chiller
Part Ref: 20470/B (230V) Compact chiller

Upgrade:
Chemistry diaphragm vacuum pump (instead of PIAB)
Part Ref: 50030U-1 (230
Part Ref: 50030U-2 (100/115V)

Other:

Sample Preparation:
iSP-1 integrated sample preparation System including:
iSP-1/KIT
SP057 XPR Precision balance

Reaction block (s):

SD-BM-1 Heating stirring block, 8 positions
RPV172 Quenching bath
20460/ UK/EU/ or US
Chiller with bypass for cooling block

4 RPV-3 STANDARD **KINEMATIC VISCOSITY** SYSTEMS

ISO1628 Part 1, ASTM D445, ISO 3104. Typical applications polymers (e.g. solution viscosity of rubber in styrene (styrene-butadiene polymers), fuels - distillates, diesel, bio-diesel, oils - base oils, formulated oils, residual fuels, other transparent and opaque liquids.

Reported results include kinematic viscosity (mm^2/s, cSt) and dynamic viscosity (mPa.s, cP).

The modular system configuration includes: EVS-TCB Viscometer bath, Viscometer Control and Cleaning Module (VCM), nIR measuring head (s) and filling stations, RPV3-PC system (Industrial CPU, screen, keyboard and mouse), solvent and waste bottles.

See Appendix 20.2 for generic system.

RPV-3 Kinematic Viscometer System with two measurement positions.

System includes: EVS-TCB-5 bath, Viscometer Control Module, two measuring heads, two sample filling stations and PC control module

Typical system configurations:

RPV-3 (2) – KV/2S *(e.g. ASTM D445 diesel/biofuel and 40 deg. C)*

RPV-3 (4) KV/2S *(e.g. styrene-butadiene polymers at 25 deg. C)*

RPV-3 (4) -KV/2S/DB *(e.g. ASTM D445 base oils at 40 and 100 deg. C)*

4.1 RPV-3 STANDARD KINEMATIC VISCOSITY SYSTEMS

Note: The RPV-3 KV system is available as a semi-automated system or fully automated (with cleaning and drying).

Part Ref.	Semi-Automated KV Systems	Part Ref.	Fully Automated KV systems
RPV-3 (1) – KV/SA	RPV-3 – Semi-Automated ISO3104, ASTM D445 glass capillary kinematic Viscometer with ONE measurement position. System includes: Viscometer Bath, Viscometer Control Module, one nIR measuring head and tubing kit, Industrial PC system (CPU, screen, keyboard and mouse).	**RPV-3 (1) – KV/2S**	RPV-3 – Fully Automated ISO3104, ASTM D445 glass capillary kinematic Viscometer with ONE measurement position, two cleaning solvents and safe-vacuum cleaning system (requires optional vacuum pump or Venturi (Piab pump). Configuration includes: Viscometer Bath, Viscometer Control Module, one nIR measuring head and filling station, Industrial PC system (CPU, screen, keyboard and mouse), solvent and waste bottles.
RPV-3 (2) – KV/SA	RPV-3 – Semi-Automated ISO3104, ASTM D445 glass capillary kinematic Viscometer with TWO measurement positions, System includes: Viscometer Bath, Viscometer Control Module, two nIR measuring heads and tubing kits, Industrial PC system (CPU, screen, keyboard and mouse).	**RPV-3 (2) – KV/2S**	RPV-3 – Fully Automated ISO3104, ASTM D445 glass capillary kinematic Viscometer with TWO measurement positions, two cleaning solvents and safe-vacuum cleaning system (requires optional vacuum pump or Venturi (Piab) pump. Configuration includes: Viscometer Bath, Viscometer Control Module, two nIR measuring heads and filling stations, Industrial PC system (CPU, screen, keyboard and mouse), solvent and waste bottles.
RPV-3 (4) – KV/2S	RPV-3 -Semi- Automated ISO3104, ASTM D445 glass capillary kinematic Viscometer with FOUR measurement positions. System includes: Viscometer Bath, two Viscometer Control Modules, four nIR measuring heads and tubing kits, Industrial PC system (CPU, screen, keyboard and mouse).	**RPV-3 (4) – KV/2S**	RPV-3 – Fully Automated ISO3104, ASTM D445 glass capillary kinematic Viscometer with FOUR measurement positions, two cleaning solvents and safe-vacuum cleaning system (requires optional vacuum pump or Venturi (Piab) pump. Configuration includes: Viscometer Bath, two Viscometer Control Modules, four nIR measuring heads and filling stations, Industrial PC system (CPU, screen, keyboard and mouse), solvent and waste bottles.

System options:

Solid state chiller:

20470/A Solid state chiller – 220-240V, 50/60Hz
20470/B Solid state chiller – 100/127V, 60Hz

Additional bath:

EVS-TCB-5-SW For use at ambient to 50°C

EVS-TCB-SHW For use from ambient to 100°C

PIAB pump

RPV048/K/C: PIAB vacuum pump (requires compressed air)

Diaphragm vacuum pump upgrade (and manifold kit):

50030-1 vacuum pump 230V
50030-2 vacuum pump 100/127V, 50/60Hz

5 STANDARD RPV-3 PULP & CELLULOSE SYSTEMS

Typical applications include ISO5351, ASTM D1795 Tappi T230 & electrical papers.

The modular system configuration includes: EVS-TCB Viscometer bath, Viscometer Control and Cleaning Module (VCM), nIR measuring head (s) and filling stations, RPV3-PC system (Industrial CPU, screen, keyboard and mouse), solvent and waste bottles. Also included is a Venturi (PIAB) vacuum pump (requires compressed air but no electrical connection). An optional solid state (stand-alone) chiller is also required. ***See Appendix 20.3 for generic system****.*

RPV-3 Pulp Viscometer System with two measurement positions.

System includes: EVS-TCB-5 bath, Viscometer Control Module, two measuring heads, two sample filling stations, PC control module and optional Solid-State chiller

Optional:

iSP-2 Pulp Sample preparation system – with two syringe pumps – one for water dilution and one for solvent (CED) dilution.

Part Ref: iSP-2/Pulp Kit

Part Ref: SP057-XPR balance

5.1 STANDARD RPV-3 PULP & CELLULOSE SYSTEMS

Model (One position)	Model (two positions)	Model (four positions)	Description
RPV-3 (1) – Pulp	RPV-3 (2) – Pulp	RPV-3 (4) – Pulp	**RPV-3 system for Tappi T230** or **ASTM D1795** with one, two or four measuring positions – **2 solvent cleaning plus N2 purge with Peek valves and manifolds (standard measuring heads)** **Viscometer type: AKV Ubbelohde (Tappi – tube size determined by viscosity range (cP)**
n/a	RPV-3 (2) – ISO5351	RPV-3 (4) – ISO5351	**RPV-3 system for ISO5351** with two or four measuring positions – **2 solvent cleaning plus N2 purge with Peek valves and manifolds & ISO5351 measuring heads** Note: ISO5351 uses LONG measuring heads – one measuring position is dedicated to the Solvent tube **Viscometer type: AKV ISO5351 "C" and "T" tubes**
n/a	RPV-3 (2+1) – ISO5351	RPV-3 (4+1) – ISO5351	**RPV-3 system for ISO5351** with 2+1 or 4+1 heads. (+1 indicates additional head that can be plugged in for solvent)
RPV-3 (1) – 3S-EP	RPV-3 (2) – 3S-EP	RPV-3 (4) - 3S-EP	**RPV-3 system for Electrical Paper** with one, two or four measuring positions – **2 solvent cleaning plus N2 purge with Peek valves and manifolds (standard measuring heads)** ***Systems quoted with optional 300W chiller for use at 20°C** **Viscometer type: AKV Ubbelode Size** 1

RPV-3 (3) ISO5351	**RPV-3 system for ISO5351 with three measuring positions.** System includes two VCM's (one with two positions and one with one position). Configuration includes two auto "T" tubes and one "C" tube.

System Options

Required:

Chiller – for ambient temperature control:
Part Ref: 20470/A (230V) Compact chiller
Part Ref: 20470/B (230V) Compact chiller

Chemistry diaphragm vacuum pump (instead of PIAB):
Part Ref: 50030U-1 (230
Part Ref: 50030U-2 (100/115V)

Sample Preparation:

iSP-2 Pulp integrated sample preparation module with two syringe pumps and precision balance

Typical System configurations:

RPV-3 (4) Pulp – for Tappi T230

RPV-3 (4+1) – for ISO5351
RPV-3 (2) – 3S- EP plus iSP-2 Pulp (Electrical Papers IEC 60450, ASTM D4243)

Pulp & Cellulose Options

Pulp applications require dry matter % and the use of a moisture analyzer is highly recommended. This allows the operator to obtain a quick and accurate determination of dry matter to ensure the correct weight of sample preparation.

Moisture determination

SP074 Moisture analyzer complete with temperature calibration kit, calibration certificate and disposable sample pans (250 pcs).

SP074/115V as above for 115V

Specifications:

Capacity: 50g
Repeatability (S.D.) 0.001g
Linearity (+/-) 0.002g

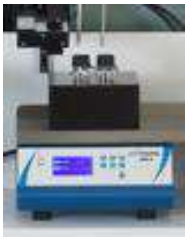
Stirring block

Stirring block with 8 positions.

Part Ref: SD-1BM-STIR

Consumables:

RP00310 Magnetic stir bar
RSS040 glass vial (40ml); RSS041 open hole cap



Wrist action shaker

Holds up to 8 flasks – maximum speed 800 rpm.

Part Ref: WAS-1 Wrist action shaker

Consumables:

RPVS008/15mm/10 Copper rods 3mm (PK 10 pcs)
RPV135 HDPE bottle, 60mL (PK 72 pcs)

Additional Measuring, Filling Station & tubing connections

This can be used to accommodate the ISO5351 “C” tube viscometer for measuring solvent. The head is situated in the bath and can be plugged in to a measuring position when required.

Part Ref: RPV-MH-150

Additional Viscometer Control Module (VCM)

An additional one position VCM can also be used to automate the ISO5351 “C” tube viscometer for measuring solvent.

6 RPV-3 SYSTEM – QUOTATION EXAMPLE

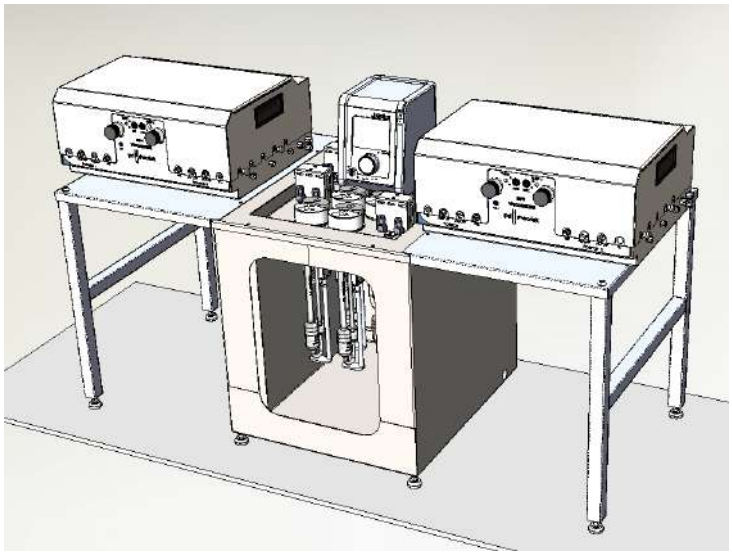
Standard two position system with iSP-1 sample preparation and SD-1BM reaction block for dissolution.

Item	Part Ref	Description	Qty
1	RPV-3 (2) – 2S	**RPV-3 system** (2) two measuring positions (2S) two solvent cleaning *Complete with EVS-TCB-5 viscometer bath, Viscometer Control Module (VCM), two measuring heads, two filling stations, PIAB venturi pump, solvent and waste lines and bottles.*	1
2	20470/A 20470/B	**Solid state chiller (**230V), or Solid state chiller (115V)	1
3	RPV-3 (APP)	**Generic Software APP setup for RPV-3 - PC**. Includes configuration of drives, software APP, database and the ability to configure multiple polymer methods. ***Select method required.***	1
4	50030U	Optional Upgrade to chemistry diaphragm pump (if compressed air is not available)	1
5	20000	AKV Ubbelohde viscometers *Select size (s) according to method*	2
6	20417/1	PAO bath oil, 5L (20L required for standard EVS-TCB-5-SW bath)	4
7	RPV-3/SPK-STD	Standard spares kit	1
8	iSP-1/KIT	iSP-1 Sample Preparation kit	1
9	SP057-XPR	XPR204E balance	1
10	SD-1BM-1	Heating and stirring reaction block	1
11	RPV172	Quenching bath	1
12	RPVS010	Starter kit with vials, caps and stir bars	1
13	ST-1/2	Installation and training – two days on-site	1

7 RPV-3 HIGH TEMPERATURE SYSTEMS (AT 135°C)

Typical applications include PP, PE, UHMWPE

Systems are suitable for determining the relative viscosity, reduced viscosity (viscosity number), inherent viscosity and intrinsic viscosity of polyethylenes and polypropylenes at 135 deg. C in dilute solution in accordance with ASTM D2857, ISO 1628 Part 3 or ASTM D1601 - or as specified in ASTM D4020 (Ultra High Molecular Weight PE). **See Appendix 20.4 for generic system**.



RPV-3 (4) PP/PE Viscometer System

System includes: TCB-7 HT bath, HT Viscometer Control Modules, External "C&A" valve modules, four HT measuring heads, four HT filling stations, and PC control module.

Model (One position)	Model (two positions)	Model (four positions)	Description
RPV-3 (1) – PP/PE	RPV-3 (2) – PP/PE	RPV-3 (4) – PP/PE	RPV-3 system with one, two or four measuring positions **– 2 solvent cleaning with PTFE and stainless-steel valves (mounted externally for C&A).** Systems are supplied with TCB-7 Dyneo (HT bath) and high temperature measuring heads. **Power specification: 220-240V, 50/60Hz**

Model (One position)	Model (two positions)	Model (four positions)	Description
RPV-3 (1) – PP/PE.2	RPV-3 (2) – PP/PE.2	RPV-3 (4) – PP/PE.2	RPV-3 system with one, two or four measuring positions – **2 solvent cleaning with PTFE and stainless-steel valves (mounted externally for C&A).** Systems are supplied with TCB-7 Dyneo (HT bath) and high temperature measuring heads. **Power specification: 100-115V, 50/60Hz**

System options:

Diaphragm vacuum pump upgrade (and manifold kit):

50030-1 vacuum pump 230V

50030-2 vacuum pump 100/127V, 50/60Hz

Sample Preparation:

iSP-1LM - integrated sample preparation module with syringe pump and precision balance – suitable for low and medium density PP

iSP-1PP/H - integrated sample preparation module with syringe pump and 5 place precision balance – suitable for high density PP (subject to availability)

HT Accessories:

RPV127 PSL HT glass filling funnels (pack of 6)

Typical System Configuration:

RPV-3 (4) – PP/PE (ASTM D1601)

8 RPV-3 AUTO SAMPLER SYSTEMS (RSS)

RPV-3 ***RSS*** systems are configured with the Rheotek Smart Sampler (RSS). The RSS loads samples on a continuous basis, providing consistent repeatability and minimising operator time and exposure to chemicals.

Typical applications include PA, PET, PVC, biopolymers

RSS systems accommodate racks of 14 samples each (multiple racks can be used) and if necessary urgent samples can be prioritised from any rack position.

Typically, samples are prepared in the iSP-1, then solubilised in the SD-1BM reaction block and then placed in the auto sampler rack. **See Appendix 20.5 for generic system**.

RPV-3 RSS Polymer Viscometer System with two measurement positions.

System includes: EVS-TCB-5SW bath, Viscometer Control Module, standard auto sampler, two measuring heads, two auto sample filling stations, PC control module and optional Solid-State chiller

System also includes optional ISP-1 sample preparation and diaphragm vacuum pump

8.1 RPV-3 AUTO SAMPLER SYSTEMS (RSS) - MODELS

Model (One position)	Model (two positions)	Model (four positions)	Description
RPV-3 (1) RSS/2S	RPV-3 (2) RSS/2S	RPV-3 (4) RSS/2S	RPV-3 system with one, two or four measuring positions – **2 solvent cleaning with Peek valves and manifolds.** **Standard auto sampler.** *Note: systems are also suitable for determining the solution viscosity of Microcrystalline cellulose (MCC).*
RPV-3 (1) RSS/3S	RPV-3 (2) RSS/3S	RPV-3 (4) RSS/3S	RPV-3 system with one, two or four measuring positions – **3 solvent cleaning with Peek valves and manifolds.** **Standard auto sampler.**
RPV-3 (1) RSS/2S/ACC	RPV-3 (2) RSS/2S/ACC	RPV-3 (4) RSS/2S/ACC	RPV-3 system with one, two or four measuring positions – **2 solvent cleaning with PEEK valves & anti-corrosive coatings on bath & measuring head – DCA applications** **Standard auto sampler**
RPV-3 (1) RSS/3S/ACC	RPV-3 (2) RSS/3S/ACC	RPV-3 (4) RSS/3S/ACC	RPV-3 system with one, two or four measuring positions **– 3 solvent cleaning with PTFE valves – sulphuric acid applications** **Standard auto sampler**

System Options

Required:

Chiller – for ambient temperature control:

Part Ref: 20470/A (230V) Compact chiller

Part Ref: 20470/B (230V) Compact chiller

Upgrade:

Chemistry diaphragm vacuum pump (instead of PIAB)

Part Ref: 50030U-1 (230V)
Part Ref: 50030U-2 (100/115V)

Other:

Sample Preparation:

iSP-1 integrated sample preparation System including:
iSP-1 Kit
SP057-XPR Precision balance

Reaction block (s):

SD-BM-1 Heating stirring block, 8 positions
RPV172 Quenching bath
20460/ UK/EU/ or US
Chiller with bypass for cooling block

Typical System configurations:

RPV-3 (2) RSS/2S plus iSP-1 plus SD-1BM plus RPV172 Quenching bath (or bypass chiller) – recommended for ASTM D4603 PET.

9 RPV-3 AUTO SAMPLER SYSTEMS (AUTO)

RPV-3 Auto systems provide the highest level of automation. Systems are configured with the Rheotek Custom Sampler which has an enlarged base and raised X-Y axis to accommodate one or two reaction blocks. Solutions are prepared on the iSP-1 and then the closed vials can be placed in a reaction block. Each block can hold up to 8 samples. On completion of solubilisation, samples are automatically loaded from the reaction blocks into the viscometers. Suitable for polymer applications close to ambient temperature e.g. 25 or 30°C – typical applications include PA, PET, PVC, biopolymers.

RPV-3 Auto Polymer Viscometer with two measurement positions and single reaction block (with heating, stirring and cooling). See Appendix 20.6.

System includes: EVS-TCB-5 bath, Viscometer Control Module, custom auto sampler, single reaction block two measuring heads, two auto sample filling stations, PC control module and Solid-State chiller

Above system also includes optional iSP-1 sample preparation and diaphragm vacuum pump

RPV-3 Auto Polymer Viscometer with two measurement positions and dual reaction blocks (with heating, stirring and cooling). See Appendix 20.7.

System includes: EVS-TCB-5 bath, Viscometer Control Module, custom auto sampler, reaction block (single or dual) two measuring heads, two auto sample filling stations, PC control module and Solid-State chiller

Above system also includes optional iSP-1 sample preparation and diaphragm vacuum

9.1 RPV-3 AUTO SAMPLER SYSTEMS (AUTO) - MODELS

Model (One position)	Model (two positions)	Model (four positions)	Description
RPV-3 (1) – AUT/2S/S	RPV-3 (2) – AUT/2S/S	RPV-3 (4) – AUT/2S/S	RPV-3 Auto system with one, two or four measuring positions – 2 solvent cleaning with Peek valves and manifolds. **Custom auto sampler with a single reaction block and bypass chiller**
n/a	RPV-3 (2) – AUT/2S/D	RPV-3 (4) – AUT/2S/D	RPV-3 Auto system with two or four measuring positions – 2 solvent cleaning with Peek valves and manifolds. **Custom auto sampler with dual reaction blocks and bypass chiller.**
RPV-3 (1) – AUT/3S/S	RPV-3 (2) – AUT/3S/S	RPV-3 (4) – AUT/3S/S	RPV-3 system with one, two or four measuring positions – 3 solvent cleaning with Peek valves and manifolds. **Custom auto sampler with single reaction block and bypass chiller**.
n/a	RPV-3 (2) – AUT/3S/D	RPV-3 (4) – AUT/3S/D	RPV-3 system with two or four measuring positions – 3 solvent cleaning with Peek valves and manifolds. **Custom auto sampler with dual reaction blocks and bypass chiller**.

Required:

Chiller – for ambient temperature control:
Part Ref: 20470/A (230V) Compact chiller
Part Ref: 20470/B (230V) Compact chiller

Upgrade:

Chemistry diaphragm vacuum pump (instead of PIAB)
Part Ref: 50030U-1 (230V)
Part Ref: 50030U-2 (100/115V)

Other:

Sample Preparation:

iSP-1 integrated sample preparation System including:

iSP-1 Kit

SP057 XPR Precision balance

20460/ UK/EU/ or US

Chiller with bypass for cooling block

Typical system configurations:

RPV-3 (2) AUT/2S/S plus ISP-1 – Auto system with single reaction block, bypass chiller and custom auto sampler – ASTM D4603 PET

RPV-3 (2) AUT/2S/D plus ISP-1 – Auto system with dual reaction blocks, bypass chiller and custom auto sampler – ISO307 PA diluted in m-Cresol.

10 RPV-3 AUTOPULP IVA

The RPV-3 AutoPulpIVA system fully automate the **Intrinsic Viscosity** (IV) determination of cellulose samples solubilised in Cupri Ethylene Diamine (CED).

Systems are configured with the Rheotek Custom Sampler which has an enlarged base and raised X-Y axis to accommodate a stirring block. Pulp and water solutions are prepared on the iSP-2 and then the foil sealed vials are placed in the stirring block. On the completion of water stirring, CED solvent is added automatically to the vials under nitrogen. On completion of CED solubilisation, samples are automatically loaded from the stirring block into the viscometers. Suitable for determining the intrinsic viscosity of pulp and cellulose applications, in accordance with ASTM D1795 and ISO5351.

RPV-3 AutoPulp IVA
Intrinsic Viscosity Viscometer with two measurement positions, stirring block and auto CED solvent delivery. See Appendix 20.8.

System includes: EVS-TCB-5 bath, Viscometer Control Module, custom auto sampler, stirring block two measuring heads, integrated sample preparation, two auto sample filling stations, PC control module and Solid-State chiller. Above photo also shows optional diaphragm vacuum pump.

Model	Description
RPV-3 (2) APIVA	AutoPulpIVA system includes: iSP-2 APIVA sample preparation/CED dispensing Custom auto sampler with stirring block APIVA needle assembly, for sample introduction, CED dispensing and N2 purging. Gen. 3 Viscometer Control system with two measuring positions – 2 solvent cleaning with Peek valves and manifolds. EVS-TCB-5 bath PIAB venturi pump and manifold Industrial PC control module with RPV-1 Gen.3 software.
Required option	Chiller – for ambient temperature control: Part Ref: 20470/A (230V) Compact chiller Part Ref: 20470/B (230V) Compact chiller
Option	50003U Diaphragm vacuum pump: Part Ref: 50030U-1 (230V) Part Ref: 50030U-2 (100/115V)

11 RPV-3 - INK

The RPV-3 INK viscometer system fully automates the **Viscosity** (cP) determination of inks and pigments.

The modular system configuration includes: EVS-TCB Viscometer bath, Viscometer Control and Cleaning Module (VCM), nIR measuring head (s) and Ink filling stations, RPV3-PC system (Industrial CPU, screen, keyboard and mouse), solvent and waste bottles. Also included is a Venturi (PIAB) vacuum pump (requires compressed air but no electrical connection). An optional solid state (stand-alone) chiller is also required.

RPV-3 (4) INK Viscometer

System includes: EVS-TCB-5 bath, 2 x Viscometer Control Modules, four measuring heads, four INK sample filling stations and PC control module

Model	Description
RPV-3 (2) - INK	RPV-3 – INK system with two measuring positions – 3 solvent cleaning with Peek valves and manifolds and Ink filling station.
RPV-3 (4) - INK	RPV-3 – INK system with four measuring positions – 3 solvent cleaning with Peek valves and manifolds and Ink filling station.

Required Option:

Chiller – for ambient temperature control:

Part Ref: 20470/A (230V) Compact chiller

Part Ref: 20470/B (230V) Compact chiller

Upgrade:

Chemistry diaphragm vacuum pump (instead of PIAB)

Part Ref: 50030U-1 (230V)
Part Ref: 50030U-2 (100/115V)

12 RPV-3 STANDARD OPTIONS (ALL SYSTEMS)

12.1 DIAPHRAGM VACUUM PUMPS

Part	Module	
50030U-1	Optional upgrade to diaphragm vacuum pump – 220-240V, 50/60Hz	
50030U-2	Optional upgrade to diaphragm vacuum pump – 100-127V, 50/60Hz	
VACS.PUMP3	Vacuum manifolds for dual head pump	

12.2 SAMPLE PREPARATION OPTIONS

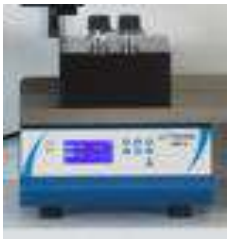
iSP-1

iSP-2

ISP-2 Pulp

Part	Module
iSP-1	Integrated sample preparation module with one syringe pump This can be ordered as: **iSP-1 Kit** comprising of a dispensing syringe pump, solvent bottle, needle and top plate (for balance) and software **Precision balance** (as specified by PSL Rheotek)
iSP-2	Integrated sample preparation module with two syringe pumps This can be ordered as: **iSP-2 Kit** comprising of a dispensing syringe pump, solvent bottle, needle and top plate (for balance) and software **Precision balance** (as specified by PSL Rheotek)
iSP-2 Pulp	Integrated sample preparation for pulp solutions, with two syringe pumps This can be ordered as: **iSP-2 Pulp Kit** comprising of a dispensing syringe pump, solvent bottle, needle and top plate (for balance) and software for pulp **Precision balance** (as specified by PSL Rheotek)

12.3 **REACTION BLOCKS,** QUENCHING BATH AND HOT PLATE



SD-1BM-STIR
Stirring block

SD-1BM-1
Heating &
Stirring block

RPV172
Quenching Bath

RP00142
Hot plate for
Phenol/TCE

20460/ Bypass
chiller for cooling
SD-1BM

RSS040 Glass vial
RSS041 Black Cap
RP00310-1 Stir bar

Part	**Module**
SD-1BM-STIR	Stirring block (only), 8 positions. 115-230V, 50/60Hz
SD-1BM-1	Stirring and heating block, with cooling coil. 220-240V, 50/60Hz
SD-1BM-T	Transformer for SD-1BM-1 for 100V/127V
RPV172	Quenching bath and vial rack
20460/EU or US	Bypass chiller for cooling SD-1BM stirring and heating block EU (230V), US (115V)
RP00142	Hot plate for Phenol/TCE
RPV173	Giant magnetic stir bar (for stirring Phenol/TCE)
RSS040	40 ML glass vial
RSS041	Black cap with hole (for foil septa)
RSS042	PSL Rheotek stir bar for 40mL vials (pk 10)
RPVS010	RPV starter kit – glass vials (144pcs), caps (200 pcs) and stir bars (20 pcs)

13 RPV-3 SOFTWARE OPTIONS

Part	Description
RPV-3 (APP)	RPV-3 standard systems will be pre-configured with the selected standard method, viscometer tubes, database and K-drive: - 1.0 Generic set up (for named method) - 2.0 ISO5351 - 2.1 ASTM D1795 - 2.3 TAPPI T230 - 3.0 PET ASTM D4603 - 3.5 PET in DCA ISO1628 P5 - 3.6 PET in DBA - 3.7 PET in Phenol dichlorobenzene IS 1628 P5 - 4.0 PA ASTM D789 - 4.2 PA in formic acid ISO307 - 4.3 PA in sulphuric acid ISO307 - 4.4 PA in m-Cresol ISO307 - 5.0 Electrical Papers (IEC) - 6.0 Electrical Papers (ASTM) - 7.0 HA - 8.0 Custom DV - 9.0 PVC ISO1628 Part 2 - 9.1 PVC ASTM D1243 - 10 Diesel & Biofuel (ASTM D445) - 11 PP/PE ISO 1628/P3 - 11.1 PP/PE ASTM D1601 Other methods available on request.
RPV-3 (APP) - ESO	Extended security option (for CFR)
RPV-3 (IQ/OQ) - HW	IQ/OQ hardware modules
RPV-3 (IQ/OQ) - SW	IQ/OQ software modules

Software updates

Note: RPV-3 software updates are available on request.

14 OTHER SYSTEM ACCESSORIES

14.1 BATH OIL

20414/1

Part	Module
20414/1	PAO bath oil, 5L
20415/1	Silicone bath oil (20cSt) for use up to 100°C, 5L
20416/1	Silicone bath oil (50cSt) for use at 101 to 135°C, 5L

14.2 START-UP KITS

Part	Description
RPVS010	RPV polymer start up kit vials, plastic caps and stir bars
RPVS011	RPV pulp starter kit
RPV135	60mL plastic bottles (for shaking)

RPVS010

RPV135

14.3 RPV-3 SPARES KITS

Part	Description
RPV-3/SPK-STD	Spares kit for standard two position system
RPV-3/SPK-SP	Spares kit for standard system plus sample preparation
RPV-3/SPK-STD/T	Spares kit for standard two position system (PTFE valves)
RPV-3/SPK-4P	Spares kit for four position system
RPV-3/SPK-4P/T	Spares kit for four position system
RPV-3/SPK-HT	Spares kit for high temperature PP/PE system
RPV-TOOLS	RPV essential tools (only)
RPV-3/SPK-BAS	RPV basic standard spares only (no tools)
RPV-3/SPK-BAS/T	RPV basic spares for PTFE valves only (no tools)
RPVS007/ISP	iSP spares kit for sample preparation system

15 COMMUNICATION CABLES

Part	Description
RS485/CABLE-A-1M	RS485 cable 1m length
RS485/CABLE-A-2M	RS485 cable 2m length
RPV3-407	USB cable, 2m
RPV3-407/3M	USB cable, 3m
RSS013	Auto sampler serial cable

16 GLASSWARE

16.1 AKV VISCOMETERS

Glass capillary Viscometers (AKV) – Suspended-Level type ASTM Ubbelohde – nominal filling volume 18mL. Calibration data suitable for use between 20 to 100 deg. C.

Part	Description	Constant	Recommended range (mm^2/S, cSt
20004	AKV Ubbelohde, size 1, calibrated	0.01	1 to 6
20005	AKV Ubbelohde, size 1C, calibrated	0.03	3 to 18
20006	AKV Ubbelohde, size 1B, calibrated	0.05	5 to 30
20007	AKV Ubbelohde, size 2, calibrated	0.1	10 to 60
20008	AKV Ubbelohde, size 2C, calibrated	0.3	30 to 180
20009	AKV Ubbelohde, size 2B, calibrated	0.5	50 to 300
20010	AKV Ubbelohde, size 3, calibrated	1.0	60 to 600
200011	AKV Ubbelohde, size 3C, calibrated	3.0	150 to 900
200012	AKV Ubbelohde, size 3B, calibrated	5.0	250 to 1,000

16.2 RPVM VISCOMETERS

Glass capillary Viscometers (RPVm) – Suspended-Level type/Ubbelohde – nominal filling volume 14mL. Calibration data suitable for use between 20 to 40 deg. C.

Part	Description
RPVm0.005	RPVm Ubbelohde, size 0B, calibrated
RPVm0.01	RPVm Ubbelohde, size 1, calibrated
RPVm0.01HAC	RPVm Ubbelohde, size 1, calibrated (hot acid clean)
RPVm0.03	RPVm Ubbelohde, size 1C, calibrated
RPVm0.05	RPVm Ubbelohde, size 1B, calibrated
RPVm0.1	RPVm Ubbelohde, size 2, calibrated
RPVm0.3	RPVm Ubbelohde, size 2C, calibrated
RPVm0.5	RPVm Ubbelohde, size 2B, calibrated
RPVm1.0	RPVm Ubbelohde, size 3, calibrated
RPVm1.0HAC	RPVm Ubbelohde, size 3, calibrated (hot acid clean)

16.3 ISO5351 VISCOMETERS

Glass capillary viscometer with capillary ID and length as specified in ISO5351

Part	Description
ISO5351-C-AKV	ISO5351 test viscometer for solvent solution
ISO5351-T-AKV	ISO5351 test viscometer for pulp solutions

16.4 INK VISCOMETER

Part	Description
21007	PSL Ink viscometer

17 REPLACEMENT SYSTEM MODULES

17.1 VISCOMETER CONTROL MODULES

Variants include:

- Peek valves and manifolds
- PTFE valves mounted on bases – for corrosive applications
- PTFE valves & stainless-steel valves – for HT applications (PP/PE)
- One or two measuring positions

VCM one position systems

Part	Description
RPV3-3S-018/A	1 position/2 solvents, Peek valves
RPV3-3S-018/B	1 position/3 solvents, Peek valves
RPV3-3S-018/C	1 position/2 solvents/Auto sampler Peek valves
RPV3-3S-018/D	1 position/3 solvents/Auto sampler Peek valves
RPV3-3S-018/E	1 position/3 solvents/Auto sampler/N2 valves
RPV3-3S-019/A	1 position/2 solvents, PTFE valves
RPV3-3S-019/B	1 position/3 solvents, PTFE valves
RPV3-3S-019/C	1 position/2 solvents/Auto sampler PTFE valves
RPV3-3S-019/D	1 position/3 solvents/Auto sampler PTFE valves
RPV3-3S-019/E	1 position/3 solvents/Auto sampler/N2 PFFE valves
RPV3-3S-019/F	1 position/2 solvents, PTFE valves - HT
RPV3-3S-021/G	External C&A valve module with stainless steel valves – HT (per module)

VCM two position systems

Part	Description
RPV3-3S-020/A	2 positions/2 solvents, Peek valves
RPV3-3S-020/B	2 positions/3 solvents, Peek valves
RPV3-3S-020/C	2 positions/2 solvents/Auto sampler Peek valves
RPV3-3S-020/D	2 positions/3 solvents/Auto sampler Peek valves
RPV3-3S-020/E	2 positions/3 solvents/Auto sampler/N2 valves
RPV3-3S-021/A	2 positions/2 solvents, PTFE valves
RPV3-3S-021/B	2 positions/3 solvents, PTFE valves
RPV3-3S-021/C	2 positions/2 solvents/Auto sampler PTFE valves
RPV3-3S-021/D	2 positions/3 solvents/Auto sampler PTFE valves
RPV3-3S-021/E	2 positions/3 solvents/Auto sampler/N2 PTFE valves
RPV3-3S-021/F	2 positions/2 solvents, PTFE valves - HT
RPV3-3S-021/G	External C&A valve module with stainless steel valves – HT (per module)

Accessories

Part	Description
RPV996	Waste line with fittings
RPV997-S1	Solvent lines with fittings (and large glass filter)
RPV997-S2	(Optional) Solvent lines with fittings (and small glass filter)

Note Vacuum can be supplied to the Viscometer Control Module via a PIAB venturi pump or diaphragm vacuum pump.

PIAB pump with manifolds
RPV048/K/C

Diaphragm pump with manifolds
50030-1 (230V); 50030-2 (100-115V)

17.2 VISCOMETER CONTROL MODULE (VCM) SPARES

Part	Description
PSL03800/CONF	Main viscometer control board
PSL02000/CONF	Signal processing board (front board)
PSL00301/ASS	USB interface board
JV264-ASS	2 port Peek valve
JV263-ASS	3 port Peek valve
RPV289-REP	Mini pump
RPV003-ASS	PTFE 3-way valve (small)
RPV004-ASS	PTFE 2-way valve (small)
VC008	3-way stainless steel valve (int)
VC007	2-way stainless steel valve (ext)
RPV001	Needle valve
RPV001/V2	Needle valve with flat side
RPV002	PTFE tubing 3mm OD (Filling station tubing)
AV1028	PTFE tubing 4mm OD (Waste lines)

RPV289-REP

JV263-ASS

RPV001

RPV003-ASS

Tools

Part	Description
RPV041	Flanging kit
TOOL14-R	Red tube cutter

RPV041

TOOL14-R

17.3 Vacuum Pump Spares

Part	Description
RPV055	Vacuum manifold M25 M8
VC006	6mm nylon tubing
RPV137	PTFE pump adapter
VACS.TRAP	Solvent trap for VACS.PUMP - includes glass jar, cap and fittings.
VACS.PUMP2	Dual head manifold system for RSS/Auto system
VACS.PUMP3	Dual head manifold system for 2 position standard system
VACS.PUMP4	Dual head manifold system for 4 position standard system

17.4 PIAB Pump

Part	Description	
RPV048/K/C	PIAB pump complete with inlet and outlet manifolds	 RPV048/K/C
RPV055/A	Manifold for PIAB 1/4	
VACS.PIAB	PIAB manifold kit	
RPV051/K	Spares kit for PIAB – Kalrez seal kit	

17.5 Miscellaneous Parts

Part	Description
RPV077	Small glass filter (for solvent bottle tubing)
RPV078	Large glass filter (for solvent bottle tubing)
RPV129	Stainless steel service tray for 4 (square) waste bottles
RPV3-090	RPV-3 shelf – to accommodate two x VCM's
RPV3-125-3H	Measuring head/bath cover with 3 holes
RSS220	Safety cover for auto sampler

17.6 MEASURING HEADS

Part	Description
EVS-MH-100	Standard measuring head
EVS-MH-150	ISO5351 measuring head (with long legs)
EVS-MH-100/AC	Measuring head with PFA coated top plate and PTFE cover – for corrosive applications
EVS-MH-100/HT	Measuring head for high temperature with Peek cover
MH-SER	Factory refurbishment of measuring head (all types)

EVS-MH-100

EVS-FS-100/G3 with RPV400 (retaining collar and tab

RPV255

RPV254

RPV045

17.7 FILLING STATIONS

Part	Description
EVS-FS-100/G3	Standard filling station
EVS-FS-110/G3	Auto filling station
EVS-FS-100/G3/HT	High temperature filling station
EVS-FS-INK/G3	Ink type filling station
RPV400	Filling station – retaining collar, tab and chain
RPV254	Spare filling station cap
RPV255	Spare filling station barrel
RPV045	Nylon screw for securing filling station base to measuring head
RPV045/PVDF	PVDF screw for securing filling station base to measuring head

17.8 CONFIGURED RPV-3 PC

Part	Description	
RPV-3-PC-CONF	RPV-3 configured PC Industrial PC with Windows 11 IOT.	

17.9 AUTO SAMPLER SPARES

Part	Description
RSS010	Generic auto sampler (for RSS systems) – with standard base and riser
RSS010-SP	Custom auto sampler (for auto systems) – with larger base and dimples to locate reaction blocks
RSS007	Standard rack, 14 holes
RSS011	Black tray
RSS012	Tray spacers (pair)
RSS024/A	RSS needle assembly with filters
RP00027	260mm needle

RSS010-SP

RP00027

17.10 MANUALS

Part	Description
MAN/GEN3/060	RPV-3 Operating (software) manual
MAN/GEN3/010	EVS-TCB-5 manual
MAN/GEN3/030	Gen. 3 VCM Manual
MAN/GEN3/055	Measuring Head Manual

18 VISCOMETER BATHS

18.1 EVS-TCB-5 BATHS

The EVS-TCB-5 viscometer bath is available in two models.

The **EVS-TCB-5-SW** is the model normally supplied with RPV-3 systems for use at temperature set-points close to ambient.

A chiller should be quoted with this option.

The **EVS-TCB-5-SHW** includes an extra booster heater and is for use at temperature set-points between 60 to 100 deg. C.

Part	Description
EVS-TCB-5-SW	EVS-TCB-5 ambient temperature range (ambient to +60°C) with external cooling connections for optional chiller. Tank size – nominal 20L. Up to 5 viscometer positions.
EVS-TCB-5-SW/ACC	EVS-TCB-5 ambient temperature range (ambient to +60°C) with external cooling connections for optional chiller. **This version of the bath is supplied with an anti-corrosive coating on the top lid, viscometer lid, motor cover and internal drip tray in the tank.** Tank size – nominal 20L. Up to 5 viscometer positions
EVS-TCB-5-SHW	Viscometer bath for RPV-3 with 18.5L tank, up to 5 measuring positions, suitable for use between 50 to 100 deg. C (with booster heater) Tank size – nominal 20L. Up to 5 viscometer positions
*The anti-corrosive coating can also be quoted as an option (EVS-TCB-ACC)	

18.1.1 EVS TCB bath Accessories and Spare parts

Accessories

Part	Description
RPV3-097	D-shaped cover plate with ball knob
RPV3-108A	3-hole D shaped viscometer lid
RPV3-108A/PFA	3-hole D shaped viscometer lid– with anti-corrosive coating
RPV3-107A	4-hole D shaped lid
RPV3-105A	5-hole D shaped lid
RPV3-210/PFA	Drip tray (tank) for EVS bath – with anti-corrosive coating

Spare Parts

Part	Description
PSL00067/ASS/CONF	Main viscometer bath control board
PSL01600/ASS/CONF	Front board (PT100 temperature control)
REP00038	Motor, 50W
REP00330	Float switch
REP00810/1000	PSU 1000W power supply

18.2 TCB-7 VISCOMETER BATH

The TCB-7 viscometer bath is available with two types of circulators – Corio or Dyneo.

The standard TCB-7 is configured with the Corio circulator and is suitable for use at temperatures at close to ambient – combined with a chiller.

The TCB-7 configured with the Dyneo offers the advantage of displaying temperatures to 2 decimal places from 100.00 to 135.00 deg. C.

18.2.1 TCB-7 with Corio circulator:

Part	Description
20402/230V/4	TCB-7 standard Viscometer bath with Corio controller, 40L tank, 4 measuring positions. Complete with cooling coil. Recommended for use at temperatures close to ambient. 230V, 50/60Hz. See optional chillers.
20402/230V/4/PFA	TCB-7 standard Viscometer bath with Corio controller, 40L tank, 4 measuring positions. Complete with cooling coil. Supplied with anti-corrosive coating. Recommended for use at temperatures close to ambient. 230V, 50/60Hz. See optional chillers.
20402/110V/4	TCB-7 standard Viscometer bath with Corio controller, 40L tank, 4 measuring positions. Complete with cooling coil. Recommended for use at temperatures close to ambient. 110V,60Hz. See optional chillers.
20402/110V/4/PFA	TCB-7 standard Viscometer bath with Corio controller, 40L tank, 4 measuring positions. Complete with cooling coil. Recommended for use at temperatures close to ambient. 110V, 50/60Hz. Supplied with anti-corrosive coating. See optional chillers.

18.2.2 TCB-7 with Dyneo circulator

Part	Description
20402-100-HT	TCB-7 standard High temperature Viscometer bath with Dyneo controller, 40L tank, 7 measuring positions, suitable for use at 90 to 135 deg. C. 230V, 50/60Hz.
20402-100-HT/AUT	TCB-7 for use with the RPV-3 PP/PE High temperature Viscometer systems – supplied with Dyneo controller, 40L tank, 4 measuring positions, suitable for use at 90 to 135 deg. C. 230V, 60Hz.
20402-102-HT	TCB-7 standard High temperature Viscometer bath with Dyneo controller, 40L tank, 7 measuring positions, suitable for use at 90 to 135 deg. C. 100-115V, 60Hz.
20402-102-HT/AUT	TCB-7 for use with the RPV-3 PP/PE High temperature Viscometer systems – supplied with Dyneo controller, 40L tank, 4 measuring positions, suitable for use at 90 to 135 deg. C. 100-115V, 60Hz.

18.2.2.1 TCB-7 - Replacement circulators

Part	Description
20404/US-REP	Replacement Corio circulator with temperature test certificate, 230V, 50/60Hz
20404/US-REP	Replacement Corio circulator with temperature test certificate, 115V, 60Hz
20404/DYN-EU-REP	Replacement Dyneo circulator with temperature test certificate, 230V, 50/60Hz
20404/DYN-EU-REP	Replacement Dyneo circulator with temperature test certificate, 115V, 60Hz

18.2.2.2 Back light for TCB-7 bath

Part	Description
20425-1	LED back light 230V, 50/60Hz
20425-3	LED back light 230V, 50/60Hz

19 CHILLERS

19.1.1 Compact Chiller

Note the Compact Chiller is the standard RPV-3 chiller.

Part	Description
20470/A	Compact solid-state chiller, 220W, 230V, 50/60Hz
20470/B	Compact solid-state chiller, 220W, 230V, 50/60Hz
20471	Spare AC adapter for compact chiller 100-240V
20472	Spare power cable for compact chiller 100-115V
20473	Spare power cable for compact chiller 220-240V
20474	Filter for compact chiller
20475/EVS	Chiller connection kit with filter

19.1.2 Bench top chiller (300W)

Part	Description
20450	300W Solid-state chiller, 100-240V, 230V, 50/60Hz Recommended for use with the TCB-7 and for EVS-TCB-5 applications at 20 deg. C.
20452	Chiller connection kit to TCB-7
20452/EVS	Chiller connection kit to EVS-TCB-5

19.1.3 Bypass chiller

The chiller has a bypass to allow circulation when the solenoid valve to the SD-1BM block is closed.

Part	Description
20460/UK	F250 type bypass chiller, supplied with UK plug. Recommended for use with the SD-1BM reaction block.
20460/EU	F250 type bypass chiller, supplied with EU plug. Recommended for use with the SD-1BM reaction block.
20460/US	F250 type bypass chiller, supplied with US plug. Recommended for use with the SD-1BM reaction block.

19.1.3.1 Connection kits for Bypass chiller

SD-CON-KIT	Connection kit chiller to singe reaction block
SD-IN/D	Inflow connection tubing for dual reaction blocks
SD-OUT/D	Outflow connection tubing for dual reaction blocks

19.1.4 EcoCool Chiller

The 250W EcoCool chiller has the ability to cool and heat.
Alternative to benchtop chiller.

Part	Description
20480-1	Eco cool chiller, 250W at 20 deg. C Suitable for use with the TCB-7 and EVS-TCB-5

20 APPENDIX

20.1 GENERIC RPV-3 SYSTEM MODULES & PARTS

Example: RPV-3 (2) – 2S			
Part No.	**System module**		**Qty**
RPV-3-PC-CONF	Configured RPV-3 industrial PC with software, database and RS485 communication port		1
RPV-3 (APP)	The RPV-3 software will be configured with a suitable method for the customer's application. (This is supplied as part of the PC configuration)		1
RPV3-3S-030	System cable bundle – includes 2 x RS475 cables and USB cable		1
RPV3-3S-020/A	Viscometer Control Module		1
EVS-TCB-5-SW	Temperature Control Module		1
20470A (230V) 20470/B (100-115V)	Compact solid-state chiller	**Required options**	1
20475/EVS	Chiller connection kit		1
EVS-MH-100	Measuring head, nIR for meniscus detection		2
EVS-FS-100/G3	PTFE sample Filling station		2
RPV048/K	PIAB pump	See upgrade option (50030U) to diaphragm pump below	1
VACS.PIAB	PIAB assembly with manifolds		1
RPV998/2	Double vacuum gauge assembly		1
RPV997-S1	Solvent lines with glass filter		2
RPV996	Waste lines		2
RPV106	Solvent bottles		6
RP00139	Breather kit for 2 positions		1

System Options

Part No.	**Option**	
50003U	Upgrade to a diaphragm vacuum pump (if compressed air is not available)	1
iSP-1	Integrated sample preparation	1
iSP-1/KIT	iSP-1 system comprising of syringe pump, solvent container and lines, top lid, dispensing needle and software. (Balance is not included).	1
SP057-XPR	Precision balance – 4 d.p	1
SD-1BM-1	Reaction block	1
RPV172	Quenching bath	1
20460/UK/EU/US	Bypass chiller	1

20.2 GENERIC RPV-3 KV SYSTEM BUILD

Example: RPV-3 (2) – KV/2S		
Part No.	**Part Description**	**Qty**
RPV-3-PC-CONF	Configured RPV-3 industrial PC with software, database and RS485 communication port	1
RPV-3 (APP)	The RPV-3 software will be configured with a suitable method for the customer's application. (This is supplied as part of the PC configuration)	1
RPV3-3S-030	System cable bundle – includes 2 x RS475 cables and USB cable	1
RPV3-3S-020/A	Viscometer Control Module	1
EVS-TCB-5-SW	Temperature Control Module	1
EVS-MH-100	Measuring head, nIR for meniscus detection	2
EVS-FS-100/G3	PTFE sample Filling station	2
RPV998/2	Double vacuum gauge assembly	1
RPV997-S1	Solvent lines with glass filter	2
RPV996	Waste lines	2
RPV106	Solvent bottles	6
RP00139	Breather kit for 2 positions	1

Note: For KV systems it is necessary to select a PIAB or a vacuum pump as well as a chiller if required.

Part No.	**System Options**
RPV048/K/C	PIAB pump complete with manifolds (requires compressed air)
500030	Two stage diaphragm vacuum pump (if compressed air is not available) 50030-1 (230V, 50/60Hz), 50030-2 (100-115V, 50/60Hz)
20470	Compact solid-state chiller 20470/A = 230V, 20470/B = 100-115V
20475/EVS	Chiller connection kit

20.3 GENERIC RPV-3 PULP SYSTEM BUILD

Example: RPV-3 (2) – Pulp			
Part No.	**Part Description**		**Qty**
RPV-3-PC-CONF	Configured RPV-3 industrial PC with software, database and RS485 communication port		1
RPV-3 (APP) –	The RPV-3 software will be configured with a suitable method for the customer's application (i.e. Tappi T230 or ISO 5351). (This is supplied as part of the PC configuration)		1
RPV3-3S-030	System cable bundle – includes 2 x RS475 cables and USB cable		1
RPV3-3S-020/B	Viscometer Control Module – with N2 purge		1
EVS-TCB-5-SW	Temperature Control Module		1
20470	Compact solid-state chiller 20470/A = 230V, 20470/B = 100-115V	**Required Options**	1
20475/EVS	Chiller connection kit		1
EVS-MH-100	Measuring head, nIR for meniscus detection		2
EVS-FS-100/G3	PTFE sample Filling station		2
RPV048/K	PIAB pump	See upgrade option (50030U) to diaphragm pump below	1
VACS.PIAB	PIAB assembly with manifolds		1
RPVS002	Nitrogen purge kit		1
RPV998/2	Double vacuum gauge assembly		1
RPV997-S1	Solvent lines with glass filter		2
RPV996	Waste lines		2
RPV106	Solvent bottles		6
RP00139	Breather kit for 2 positions		1

System Options for RPV-3 Pulp

Part No.	Option
50003U	Upgrade to a diaphragm vacuum pump (if compressed air is not available)
iSP-2 Pulp	Integrated sample preparation with two syringe pumps (for water and CED)
SP074 SP074/115V	Moisture analyzer
WAS-1	Wrist action shaker
RPVS011	RPV Pulp Start up kit for wrist action or orbital shaker - includes HDPE sample bottles (72 pcs) and copper stir rods (30pcs).
RPVS008	Copper rods (pack of 10)
SD-1BM-STIR	Stirring block
RPVS010	RPV start up kit including 40mL glass vials (144 pcs, part ref. RSS040), plastic caps with holes (2 x 100 pcs, part ref RSS041) and magnetic stir bars (2 x 10pcs, part ref RSS042) - for use with the iSP-1, RSS and reaction stirring blocks.

Note iSP-1 can be quoted as:

iSP-2 - Kit	iSP-2 system comprising of two syringe pumps, solvent container and lines, top lid, dispensing needles and software. (Balance is not included).
SP057-XPR	Precision balance – 4 d.p.

20.4 GENERIC RPV-3 PP/PE SYSTEM BUILD

Example: RPV-3 (2) – PP/PE			
Part No.	**System module**		**Qty**
RPV-3-PC-CONF	Configured RPV-3 industrial PC with software, database and RS485 communication port		1
RPV-3 (APP)	The RPV-3 software will be configured with a suitable method for the customer's application. (This is supplied as part of the PC configuration)		1
RPV3-3S-030	System cable bundle – includes 2 x RS475 cables and USB cable		1
RPV3-3S-30/M	Additional cables for HT system		
RPV3-3S-021/F	Viscometer Control Module		1
RPV3-3S-021/G	External high temperature Valve Modules (per position)		2
20401-102-HT/AUT2P	Temperature Control Module for HT system		1
TCB4006/SL-ASS	Gen.3 shelf with slot – for TCB type bath		1
EVS-MH-100/G3/HT	Measuring head, nIR for meniscus detection		2
EVS-FS-100/G3	PTFE sample Filling station		2
RPV048/K	PIAB pump	See upgrade option (50030U) to diaphragm pump below	1
VACS.PIAB	PIAB assembly with manifolds		1
RPV998/2	Double vacuum gauge assembly		1
RPV997-S1	Solvent lines with glass filter		2
RPV996	Waste lines		2
RPV120	1L square waste bottles		6
RPV129	Stainless steel service tray for waste bottles		1
RPV106	Solvent bottles		6
RP00139	Breather kit for 2 positions		1

System Options

Part No.	**Option**	
50003U	Upgrade to a diaphragm vacuum pump (if compressed air is not available)	1

20.5 GENERIC RPV-3 RSS BUILD

Example: RPV-3 (2) – RSS/2S			
Part No.	**Part Description**		**Qty**
RPV-3-PC-CONF	Configured RPV-3 industrial PC with software, database and RS485 communication port		1
RPV-3 (APP) –	The RPV-3 software will be configured with a suitable method for the customer's application (i.e. Tappi T230 or ISO 5351). (This is supplied as part of the PC configuration)		1
RPV3-3S-030	System cable bundle – includes 2 x RS475 cables and USB cable		1
RPV3-3S-020/C	Viscometer Control Module – with auto sampler valves		1
EVS-TCB-5-SW	Temperature Control Module		1
20470	Compact solid-state chiller 20470/A = 230V, 20470/B = 100-115V	**Required options**	1
20475/EVS	Chiller connection kit		1
EVS-MH-100	Measuring head, nIR for meniscus detection		2
EVS-FS-110/G3	PTFE auto sample Filling station		2
RSS002	Auto sampler – standard configuration		1
RPV048/K	PIAB pump	See upgrade option (50030U) to diaphragm pump below	1
VACS.PIAB	PIAB assembly with manifolds		1
RPVS002	Nitrogen purge kit		1
RPV998/2	Double vacuum gauge assembly		1
RPV997-S1	Solvent lines with glass filter		2
RPV996	Waste lines		2
RPV106	Solvent bottles		6
RP00139	Breather kit for 2 positions		1

RPV-3 (2) – RSS/2S System Options

Part No.	Option	
50003U	Upgrade to a diaphragm vacuum pump (if compressed air is not available)	1
iSP-1	Integrated sample preparation	1
SD-1BM-1	Reaction block	1
RPV172	Quenching bath	1
20460/UK/EU/US	Bypass chiller	1

Note iSP-1 can be quoted as:

iSP-1 - KIT	iSP-1 system comprising of syringe pump, solvent container and lines, top lid, dispensing needle and software. (Balance is not included).
SP057-XPR	Precision balance – 4 d.p.

20.6 GENERIC RPV-3 AUTO SYSTEM BUILD – SINGLE REACTION BLOCK

Example: RPV-3 (2) – AUT/2S/S			
Part No.	**Part Description**		**Qty**
RPV-3-PC-CONF	Configured RPV-3 industrial PC with software, database and RS485 communication port		1
RPV-3 (APP) –	The RPV-3 software will be configured with a suitable method for the customer's application (i.e. Tappi T230 or ISO 5351). (This is supplied as part of the PC configuration)		1
RPV3-3S-030	System cable bundle – includes 2 x RS475 cables and USB cable		1
RPV3-3S-020/C	Viscometer Control Module – with auto sampler valves		1
EVS-TCB-5-SW	Temperature Control Module		1
20470	Compact solid-state chiller 20470/A = 230V, 20470/B = 100-115V	Required options	1
20475/EVS	Chiller connection kit		1
EVS-MH-100	Measuring head, nIR for meniscus detection		2
EVS-FS-110/G3	PTFE auto sample Filling station		2
RSS002-AUTO	Auto sampler – auto configuration		1
SD-1BM-1	Reaction block		1
20460/EU or US	Bypass chiller for reaction block		1
SD-CON-KIT	Connection kit for chiller to reaction block		1
RPV048/K	PIAB pump	See upgrade option to diaphragm pump below	1
VACS.PIAB	PIAB assembly with manifolds		1
RPVS002	Nitrogen purge kit		1
RPV998/2	Double vacuum gauge assembly		1
RPV997-S1	Solvent lines with glass filter		2
RPV996	Waste lines		2
RPV106	Solvent bottles		6
RP00139	Breather kit for 2 positions		1

RPV-3 (2) – AUT/2S System Options

Part No.	Option	
50003U	Upgrade to a diaphragm vacuum pump (if compressed air is not available)	1
iSP-1	Integrated sample preparation	1

Note iSP-1 can be quoted as:

iSP-1 - KIT	iSP-1 system comprising of syringe pump, solvent container and lines, top lid, dispensing needle and software. (Balance is not included).
SP057-XPR	Precision balance – 4 d.p.

20.7 GENERIC RPV-3 AUTO SYSTEM BUILD – DUAL REACTION BLOCKS

Example: RPV-3 (2) – AUT/2S/S			
Part No.	**Part Description**		**Qty**
RPV-3-PC-CONF	Configured RPV-3 industrial PC with software, database and RS485 communication port		1
RPV-3 (APP) –	The RPV-3 software will be configured with a suitable method for the customer's application (i.e. Tappi T230 or ISO 5351). (This is supplied as part of the PC configuration)		1
RPV3-3S-030	System cable bundle – includes 2 x RS475 cables and USB cable		1
RPV3-3S-020/E	Viscometer Control Module – with auto sampler valves		1
EVS-TCB-5-SW	Temperature Control Module		1
20470	Compact solid-state chiller 20470/A = 230V, 20470/B = 100-115V	Required options	1
20475/EVS	Chiller connection kit		1
EVS-MH-100	Measuring head, nIR for meniscus detection		2
EVS-FS-110/G3	PTFE auto sample Filling station		2
RSS002-AUTO	Auto sampler – auto configuration		1
SD-1BM-1	Reaction block		2
20460/EU or US	Bypass chiller for reaction block		1
SD-IN/D	Inflow tubing for kit for chiller to reaction block		1
SD-OUT/D	Outflow tubing kit for reaction block to chiller		1
RPV048/K	PIAB pump	See upgrade option (5003oU) to diaphragm pump below	1
VACS.PIAB	PIAB assembly with manifolds		1
RPVS002	Nitrogen purge kit		1
RPV998/2	Double vacuum gauge assembly		1
RPV997-S1	Solvent lines with glass filter		2
RPV996	Waste lines		2
RPV106	Solvent bottles		6
RP00139	Breather kit for 2 positions		1

RPV-3 (2) – AUT/2D System Options

Part No.	Option	
50003U	Upgrade to a diaphragm vacuum pump (if compressed air is not available)	1
iSP-1	Integrated sample preparation	1

Note iSP-1 can be quoted as:

iSP-1 - KIT	iSP-1 system comprising of syringe pump, solvent container and lines, top lid, dispensing needle and software. (Balance is not included).
SP057-XPR	Precision balance – 4 d.p.

20.8 AUTOPULPIVA SYSTEM BUILD

Example: RPV-3 (2) – AUTOPulpIVA			
Part No.	**Part Description**		**Qty**
RPV-1-PC-CONF	Configured RPV-3 industrial PC with software, database and RS485 communication port		1
RPV3-3S-030	System cable bundle – includes 2 x RS475 cables and USB cable		
RPV3-3S-020/C	Viscometer Control Module – with auto sampler valves and nitrogen valves		1
RPVS001	N2 purge module assembly for AutoPulpIVA with flow meter		1
EVS-TCB-5-SW	Temperature Control Module		1
20470	Compact solid-state chiller 20470/A = 230V, 20470/B = 100-115V	Required options	1
20475/EVS	Chiller connection kit		1
EVS-MH-100	Measuring head, nIR for meniscus detection		2
EVS-FS-110/G3	PTFE auto sample Filling station		2
RSS002-AUTO	Auto sampler – auto configuration		1
SD-1BM-STIR	Stirring block		1
RSS077	Drip tray shelf for stirring block		
RSS078	Vial bracket (for drip tray)		
RPV048/K	PIAB pump	See upgrade option to diaphragm pump below	1
VACS.PIAB	PIAB assembly with manifolds		1
SP015	Dispensing syringe pump (water)		
SP037	CED dispensing syringe pump with dual solvent lines		
SP057/XPR	Precision balance		
RPV998/2	Double vacuum gauge assembly		1
RPV997-S1	Solvent lines with glass filter		2
RPV996	Waste lines		2
RPV106	Solvent bottles		6
RP00139	Breather kit for 2 positions		1

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