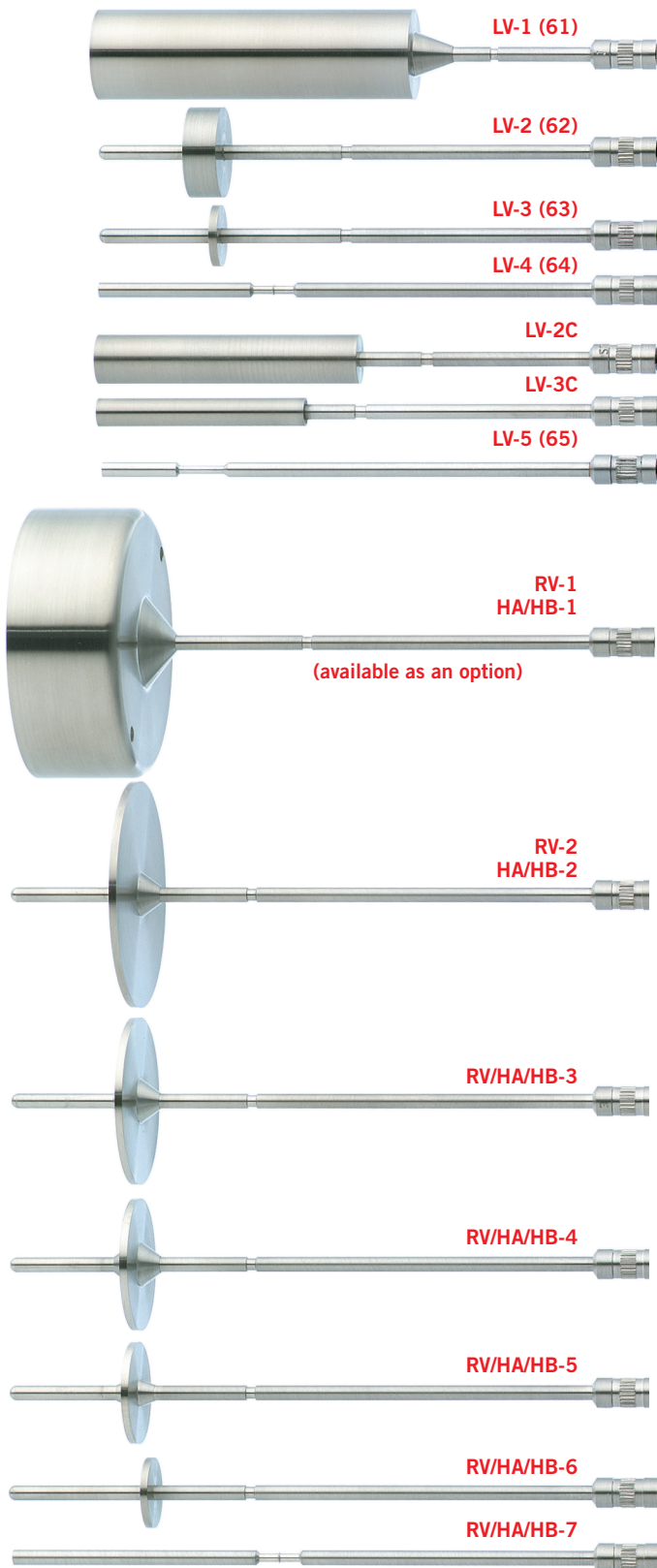


# Spindles



LV Spindles cP(mPa•s)	
SPINDLE	RANGE*
LV-1 (61)	15 - 20K
LV-2 (62)	50 - 100K
LV-3 (63)	200 - 400K
LV-4 (64)	1K - 2M

LV-5 (65)	2K - 4M	LV-5 is an optional spindle designed to increase measuring range.
LV-2C	50 - 100K	
LV-3C	200 - 400K	

\* Based on Standard LV speeds .3 - 60 rpm M = 1 million K = 1 thousand

Note: LV-1 through LV-4 are supplied with LV instruments.

LV-2C & LV-3C are optional "cylindrical spindles" offering geometry for calculating shear rates.

LV and RV/HA/HB spindles are supplied in 302 stainless steel.

Optional 316 stainless or teflon coated spindles are available

RV/HA/HB Spindles cP(mPa•s)			
SPINDLE	RANGE* RV SERIES	RANGE* HA SERIES	RANGE* HB SERIES
RV-1 **	100 - 20K	200 - 40K	800 - 160K
HA/HB-1 **	100 - 20K	200 - 40K	800 - 160K
RV-2	100 - 80K	200 - 160K	800 - 640K
HA/HB-2	100 - 80K	200 - 160K	800 - 640K
RV/HA/HB-3	100 - 200K	200 - 400K	800 - 1.6M
RV/HA/HB-4	200 - 400K	400 - 800K	1.6K - 3.2M
RV/HA/HB-5	400 - 800K	800 - 1.6M	3.2K - 6.4M
RV/HA/HB-6	1K - 2M	2K - 4M	8K - 16M
RV/HA/HB-7	4K - 8M	8K - 16M	32K - 64M

\* Based on standard RV/HA/HB speeds .5-100 RPM.

Note: LV and RV/HA/HB spindles are supplied in 302 stainless steel.

Optional 316 stainless or teflon coated spindles are available

\*\* This spindle available as an option

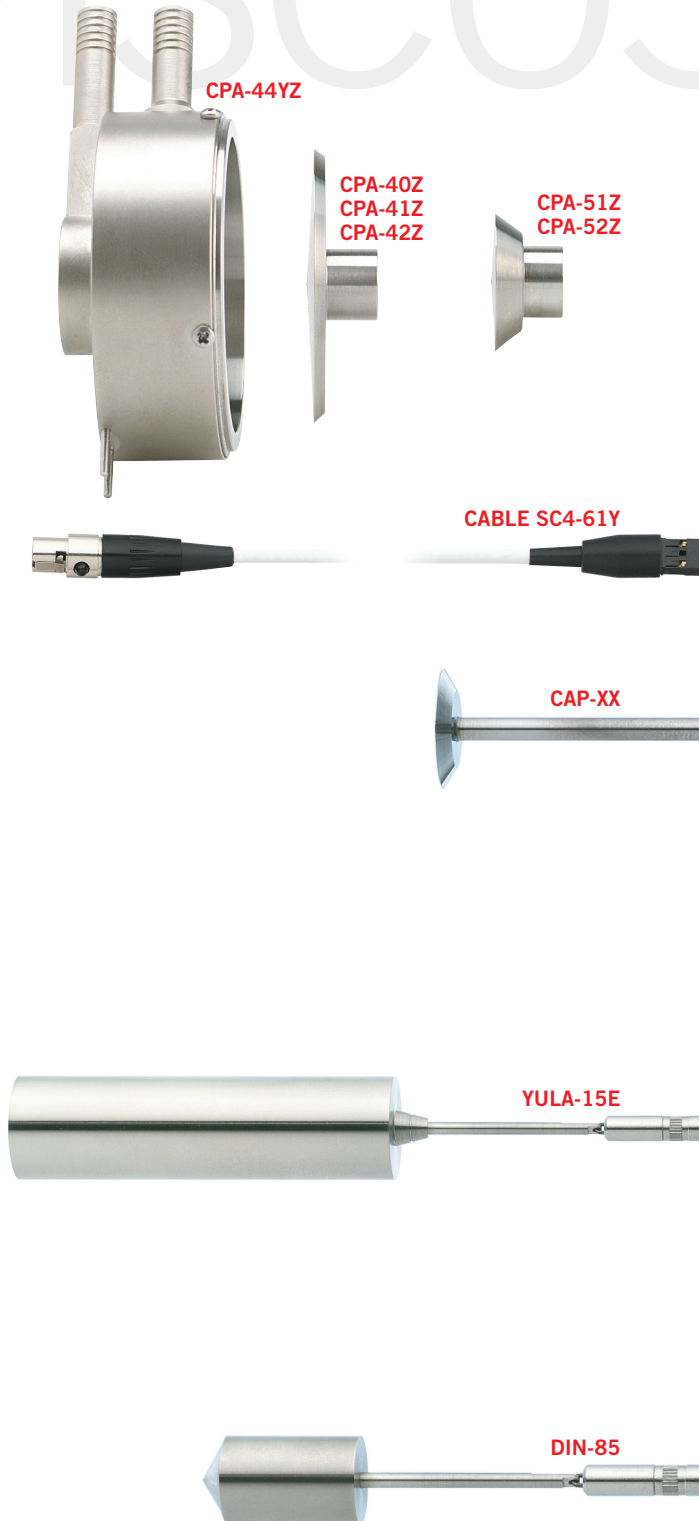


RV/HA/HB Spindle Set includes spindles #2 - #7 and is supplied with standard Brookfield Viscometers and Rheometers.

Spindle #1 is available as an option.

Spindle Rack is also available as an option with both LV and RV/HA/HB spindle sets.

# Spindles



Wells/Brookfield Spindles & Cups				
SPINDLE	SHEAR RATE	SAMPLE VOLUME	CONE ANGLE	CONE RADIUS
CPA-40Z	7.50N sec <sup>-1</sup>	.5mL	.8°	2.4cm
CPA-41Z	2.00N sec <sup>-1</sup>	2.0mL	3°	2.4cm
CPA-42Z	3.84N sec <sup>-1</sup>	1.0mL	1.5°	2.4cm
CPA-51Z	3.84N sec <sup>-1</sup>	.5mL	1.5°	1.2cm
CPA-52Z	2.00N sec <sup>-1</sup>	.5mL	3°	1.2cm
CUP				
CPA-44YZ	Standard cup without temperature probe			
CPA-44PYZ	Standard cup with RTD temperature probe			
PCPA-3YZ	Cup with 1 purge fitting			
PCPA-6YZ	Cup with luer fitting and 1 purge fitting			
PCPA-4YZ	Cup with luer fitting and 2 purge fittings			
PCPA-7YZ	Cup with luer fitting and 4 purge fittings			

Note: 1. Wells-Brookfield cones and cups are calibrated at the factory.  
 Cones ordered after shipment require cups to be returned for calibration to new cone.  
 2. CPA cups and spindles are compatible with CPE cups and spindles

CAP Spindles				
SPINDLE	SHEAR RATE	SAMPLE VOLUME	CONE ANGLE	CONE RADIUS
CAP-01	13.3N sec <sup>-1</sup>	67 µL	0.45°	1.511cm
CAP-02	13.3N sec <sup>-1</sup>	38 µL	0.45°	1.200cm
CAP-03	13.3N sec <sup>-1</sup>	24 µL	0.45°	0.953cm
CAP-04	3.3N sec <sup>-1</sup>	134 µL	1.8°	1.200cm
CAP-05	3.3N sec <sup>-1</sup>	67 µL	1.8°	0.953cm
CAP-06	3.3N sec <sup>-1</sup>	30 µL	1.8°	0.702cm
CAP-07	2.0N sec <sup>-1</sup>	1700 µL	3.0°	2.399cm
CAP-08	2.0N sec <sup>-1</sup>	400 µL	3.0°	1.511cm
CAP-09	2.0N sec <sup>-1</sup>	100 µL	3.0°	0.953cm
CAP-10	5.0N sec <sup>-1</sup>	170 µL	1.2°	1.511cm

Note: 1. Recommend ordering calibration fluids specific to cone for field calibration

UL Spindles & Chambers			
SPINDLE	TYPE	SAMPLE VOLUME	SHEAR RATE
YULA-15(E)	Spindle - 304 stainless steel		1.224N
YULA-15(E)Z	Spindle - 316 stainless steel		1.224N
ULA-31(E)Y	Sample Chamber - 304 stainless steel	6mL	
ULA-31(E)YZ	Sample Chamber - 316 stainless steel	6mL	

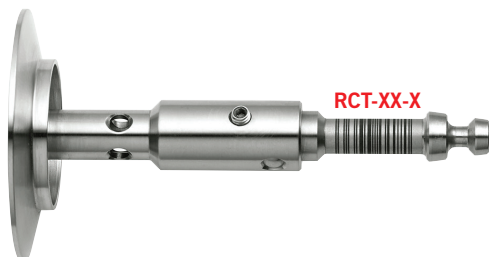
Note: (E) represents enhanced UL version (introduced Jan. 2006)

N = rpm

DIN Spindles		
SPINDLE	SHEAR RATE	SAMPLE VOLUME
ULA-DIN-85	1.29N	17.0mL
ULA-DIN-86	1.29N	6.5mL
ULA-DIN-87	1.29N	2.0mL
HT-DIN-81 for Thermosel	1.29N	7.0mL
SC4-DIN-82 for SSA	1.29N	1.5mL
SC4-DIN-83 for SSA	1.29N	1.5mL
CHAMBER		
ULA-DIN-6Y	for use with ULA-DIN-86 and 87	
DAA-1	for use with ULA-DIN-85	



CCT-XX



RCT-XX-X



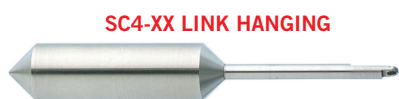
VT-80-40



RSS-90Y (1-4000BU)



SC4-XXBS SOLID SHAFT\*



SC4-XX LINK HANGING



HT-2



HT-2DB-100



CHAMBER RACK HT-54

### RST Spindles

SPINDLE	VISCOSITY RANGE	SHEAR RATE	MAX. SHEAR STRESS	SAMPLE VOLUME
COAXIAL	Pa*s	sec <sup>-1</sup>	Pa	mL
CCT-DG	0.00005-4.07K	0.043-5.64K	177	15.7
CCT-40	0.0003-27.6K	0.0215-2.79K	594	68.5
CCT-25	0.002-177K	0.013-1.67K	2.28K	16.8
CCT-14	0.012-1M	0.013-1.68K	13K	3.4
CCT-8	0.065-5.41M	0.013-1.672K	69.6K	1.0
CONE				
RCT-25-1	0.005-407K	0.06-7.8K	24.4K	0.1
RCT-25-2	0.01-814K	0.03-3.9K	24.4K	0.2
RCT-50-1	0.0006-50.9K	0.06-7.8K	3.05K	1.0
RCT-50-2	0.0012-101K	0.03-3.9K	3.05K	2.0
RCT-75-1*	0.0002-15K	0.06-7.8K	905	2.5
RCT-75-2*	0.0004-30K	0.03-3.9K	905	5.0
PLATE				
RPT-25	0.03-2.49M	0.013-1.7K	32.6K	0.5
RPT-50	0.002-155K	0.027-3.4K	4.07K	2.0
RPT-75*	0.0004-30.7K	0.04-5.1K	1.2K	4.5

\*For use with water bath version only 1 Pa\*s = 1,000 cP K = 1 thousand M = 1 million  
 Note: Values based on minimum speed of 1 RPM and maximum speed of 1000 RPM

### RST Vane Spindles

SPINDLE	VANE LENGTH	VANE DIAMETER	SHEAR STRESS
	mm	mm	Pa
VT-10-5	10	5	330-210K
VT-20-10	20	10	41-27K
VT-20-20	20	20	9-5.9K
VT-30-15	30	15	12-8K
VT-40-20	40	20	5.2-3.4K
VT-40-40	40	40	1.2-740
VT-50-25	50	25	2.7-1.7K
VT-60-8	60	8	24-15K
VT-60-15	60	15	7-4.3K
VT-60-30	60	30	1.6-1K
VT-80-40	80	40	0.7-420
VT-80-70	80	70	0.2-120

Values based on minimum speed of 1 RPM and maximum speed of 1000 RPM K = 1 thousand

### Thermosel Spindles and Chambers

Link hanging configuration is standard

SPINDLE	SHEAR RATE	SAMPLE VOLUME
SC4-18	1.32N	8.0mL
SC4-31	.34N	10.0mL
SC4-34	.28N	9.5mL
SC4-21	.93N	8.0mL
SC4-27**	.34N	10.5mL
SC4-28	.28N	11.5mL
SC4-29	.25N	13.0mL
HT-DIN-81	1.29N	7.0mL

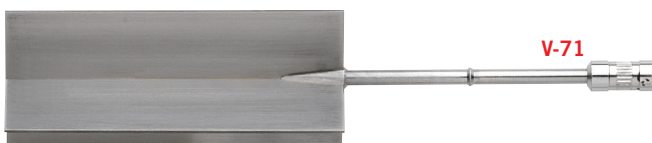
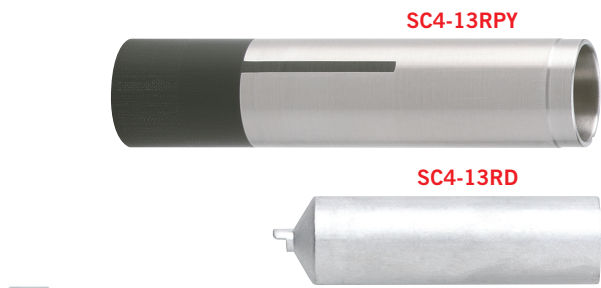
\*SC4-XXBS = Solid Shaft. Not available for SC4-18 and SC4-21 spindles  
 \*\*Also available as SC4-27D-100 = Disposable spindle, 100 units • SC4-DSY Chuck/Closer is required

CHAMBER	TYPE
HT-2	Sample Chamber - Reuseable, stainless steel
HT-2DB-100	Sample Chamber - Disposable, aluminum, 100 units

# Spindles



Required for SC4-27D disposable spindles: **SC4-DSY CHUCK/CLOSER**



## Small Sample Spindles and Chambers

SPINDLE	SAMPLE CHAMBER	SHEAR RATE	SAMPLE VOLUME
SC4-18	13R	1.32N	6.7 mL
SC4-31	13R	0.34N	9.0 mL
SC4-34	13R	0.28N	9.4 mL
SC4-16	8R	0.29N	4.2 mL
SC4-25Z <small>(316 s/s only)</small>	13R	0.22N	16.1 mL
SC4-21†	13R	0.93N	7.1 mL
SC4-27*†	13R	0.34N	10.4 mL
SC4-15	7R	0.48N	3.8 mL
SC4-28	13R	0.28N	11.0 mL
SC4-29	13R	0.25N	13.5 mL
SC4-14	6R	0.40N	2.1 mL
SC4-DIN-82	-	1.29N	1.5 mL
SC4-DIN-83	-	1.29N	1.5 mL
CHAMBER	TYPE		
SC4-13R	Sample Chamber w/o temperature probe		
SC4-13RPY	Sample Chamber w/RTD temperature probe & c		
SC4-8R	Sample Chamber w/o temperature probe		
SC4-8RPY	Sample Chamber w/RTD temperature probe & c		
SC4-7R	Sample Chamber w/o temperature probe		
SC4-7RPY	Sample Chamber w/RTD temperature probe & c		
SC4-6R	Sample Chamber w/o temperature probe		
SC4-6RPY	Sample Chamber w/RTD temperature probe & c		
SC4-13RD-100‡	Sample Chamber - Disposable, aluminum, 100 u		

‡ Requires the use of special water jacket SC4-45YD

\* Also available as SC4-27D-100 = Disposable spindle, 100 units

† Solid shaft option available for spindles SC4-21 (Part No. SC4-21SD) and SC4-27 (Part No. SC4-27SD).

## KU-2 Spindles

SPINDLE	TYPE
KU1-10	Standard Krebs Spindle
KU1-75Y	Optional Paste Spindle

## T-Bar Spindles cP(mPa•s)

SPINDLE	LV	RV	HA	HB
T-A	156 - 62.5K	2K - 400K	4K - 800K	16K - 3.2M
T-B	312 - 124.8K	4K - 800K	8K - 6M	24K - 6.4M
T-C	780 - 312K	10K - 2M	20K - 4M	80K - 16M
T-D	1.5K - 624K	20K - 4M	40K - 8M	160K - 32M
T-E	3.9K - 1.5M	50K - 10M	100K - 20M	400K - 80M
T-F	7.8K - 3.1M	100K - 20M	200K - 40M	800K - 160M

M = 1 million K = 1 thousand

## Spiral Adapter Spindle

SPINDLE	CHAMBER
SA-70	SA-1Y

Note: See page 44 for ranges

## Vane Spindles

SPINDLE	VANE LENGTH (in)	VANE DIAMETER (in)
V-71	2.708	1.354
V-72	1.706	.853
V-73	.998	.499
V-74	.463	.232
V-75	.632	.316

Note: Container diameter should be twice (2x) the vane diameter when possible.

# Options & Specialty Items



MV1Y

## MV1Y Flag Impeller Spindle

Use with the Small Sample Adapter to help keep sample materials in suspension



4B2

## 4B2 Spindle

Required for viscosity testing in accordance with ASTM D2983 (Low Temperature Viscosity Measurement of Automotive Fluid Lubricants)



ABZ

## ABZ Spindle

Used for viscosity testing of thick film pastes. Short spindle length is suitable for immersion into shallow depth containers. Sensing length of spindle is less than 1-inch (2.54cm).

### ABZ Spindle

RV	HA	HB
8K-16M	16K-32M	64K-138M

## Custom Spindles

Custom spindles can be developed to meet your particular test requirements. Contact Brookfield or an authorized dealer for details.



SP1-UC-Y

YDX-1

### Type D Extension Link with Hook Coupling

YDX-1	Male coupling nut; attaches to spindle
SP1-UC-Y	Female coupling nut; attaches to viscometer
SXV-XX	Extension link; see below for lengths



SXL-X

SP1-UC-Y

SXR-X

### Type S Spindle with one SP1-UC-Y coupling

SPINDLE	
SXL-X	Type S LV spindle (1-4)
SXR-X	Type S RV/HA/HB spindle (1-7)



EXTENSION LINK SXV-XX

### Extension

LINK	LENGTH	USED WITH
SXV-08	1"	UL Adapter
SXV-09	1.12"	Small Sample Adapter
SXV-24	3"	Thermosel
SXV-32	4"	Type D/S Extension
SXV-48	6"	Type D/S Extension
SXV-80	10"	Type D/S Extension
SXV-96	12"	Type D/S Extension

Note: Other lengths available; call for details



SP-7Y QUICK CONNECT COUPLING

SP-4

SP-3

SP-5

### Quick Connect Coupling (SP-7Y)

PART	
SP-3	Coupling to viscometer/rheometer
SP-4	Coupling to spindle
SP-5	Sleeve (to hold together)