**General Presentation Guide 2015**

Basic S-Value unit is supplied with one test position Sva-42 & with 2 probes, one of each model
Basic unit can support up to **3** test position SvA-50

| Product code with hyperlink | S-Value model *Only one Application software for all the range of apparatus* | Nb of Probe SVA-103 Supplied | Nb of Probe SVA-130 Supplied |
|---|---|---|---|
| Sva-42 | S-Value 1 test position (extendable up to 3) | 1 | 1 |

S-Value 1 test position

Individual Test position, SVa-50, fully equipped with pump, stirrer, probe support, N-Heptane bottle, ready for use.Individual test position Sva-50 are supplied without probes. Probes & tests tubes needs to ordered separately according client needs.

| | | | |
|---|---|---|---|
| Sva-50 | Individual Test Position Unit | Probes & Tests tubes to be ordered separately | Probes & Tests tubes to be ordered separately |

S-Value individual test position

| CONSUMABLES with hyperlink | |
|---|---|
| **Code** | **Description** |
| SVa-101 | Test tube diameter 28 mm – recommended 3 units |
| SVa-102 | Test tube diameter 30 mm – recommended 3 units |

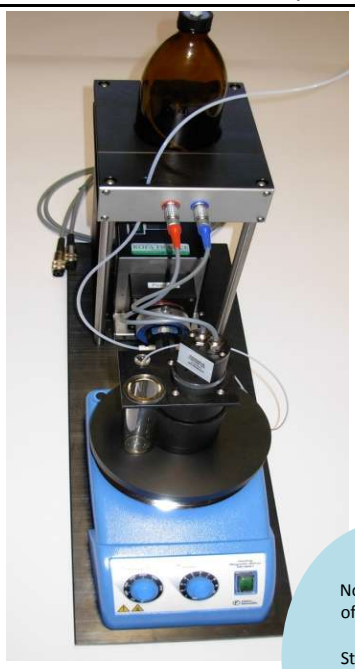
| SPARES PARTS with hyperlink | |
|---|---|
| **Code** | **Description** |
| SVa-104 | Pump + motor supplied calibrated – recommended 1 unit |
| SVa-105 | Special injection tubing – recommended 3 units |
| SVa-112 | Heated Magnetic stirrer for Sample control during tests, |

| PROBES with hyperlink | |
|---|---|
| **Code** | **Description** |
| SVA-103 | Standard Analytical Probe according ASTM 7151 applications. |
| SVA-130 | Probe with linear filter and distance adjustment for ASTM 7151 applications to & covering range of clear samples and crude's oils with low Asphaltenes content. |
| **Options** | |
| SVA-150 | Balance, 210 g, precision 0.01 g |
| SVA-160 | Graduated test tube Class A, 10 ml, by 2 pc, with certificate of conformity |
| SVA-161 | Graduated test tube Class A, 50 ml, by 2 pc, with certificate of conformity |

# Code Sva-50

Items supplied with code Sva-50 Probes &

One Individual test Position system



Easy Installation
Friendly use
No specific maintenance
Quick tests
Versatile applications
Routine & R&D applications
Easy training

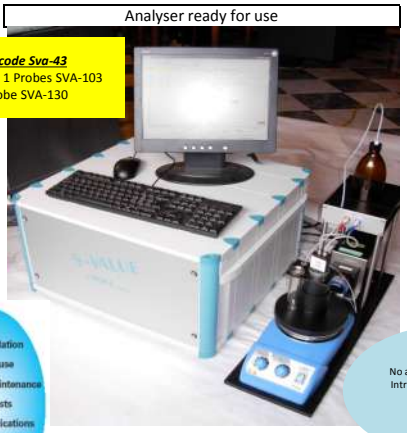
No alteration of basic fuels Intrinsic Stability with Low Temperature Test

## Code Sva-42 S-Value 1 test position (upgradable up to 3)

Items supplied with code Sva-42

Analyser ready for use

***Order code Sva-43***
Supplied with 1 Probes SVA-103
& 1 Probe SVA-130



Easy Installation
Friendly use
No specific maintenance
Quick tests
Versatile applications
Routine & R&D applications
Easy training

No alteration of basic fuels Intrinsic Stability with Low Temperature Test conditions

One Individual Support

Two Probes are supplied

Probe SVA-103 with 3 fix detection areas

Applications

*Routine tests according ASTM D 7157 Definition*

*Probe compatible to work with very dark samples.*

*Probe Less efficient on clear samples end very low asphaltens content*

Probe SVA-130 with one

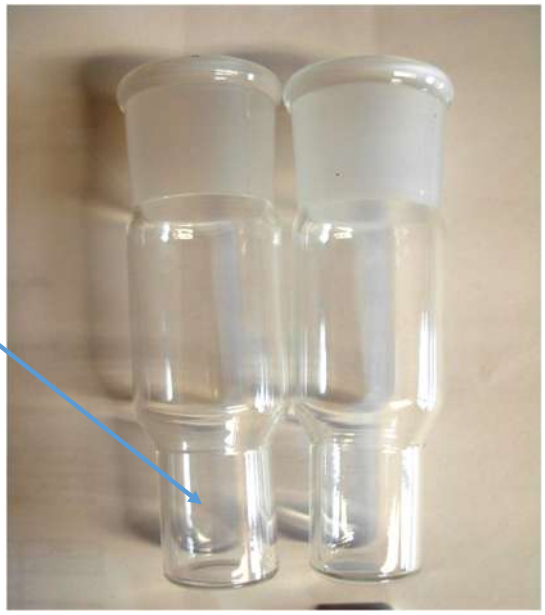
Applications

*Routine tests according ASTM D 7157 Definition &*

2 test tubes Ø 28 mm + 2 test tube Ø 30 mm + 2 magnetic bar

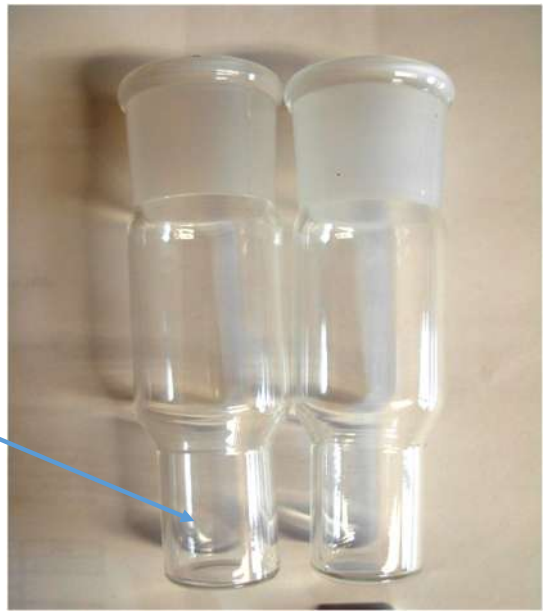
# Test Tubes diameter 28 mm - Code SVa-101

The diameter to consider is the bottom of the test tube. Diameter 28 mm is for standard samples & 30 mm for very visquous samples.



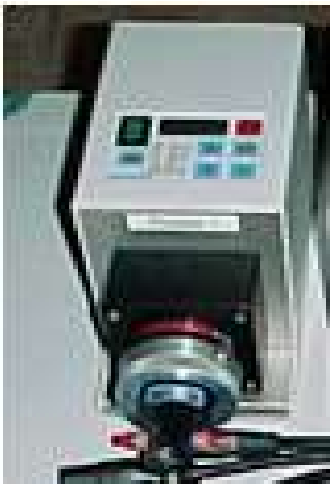
# Test Tubes diameter 30 mm - Code SVa-102

The diameter to consider is the bottom of the test tube. Diameter 28 mm is for standard samples & 30 mm for very visquous samples.



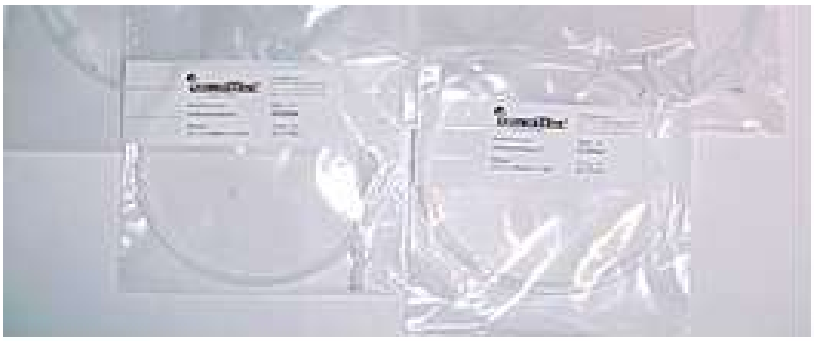
# Model of Injection pump - Code SVa-104

Pump is supplied calibrated and with one 230 VAC power cable. Note that Pump calibration must be checked on pump installation, transport can altered slightly the calibration



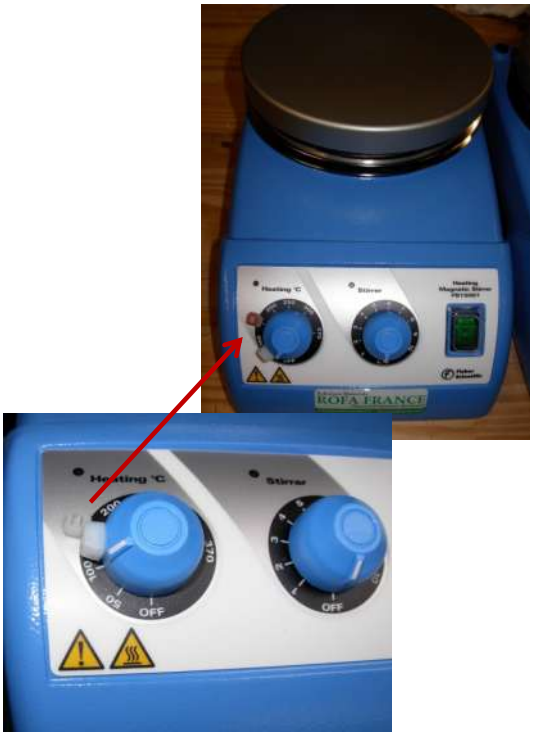
# Special Teflon injection tube with connector - Code Sva-105

Teflon tubing of 50 cm long, 0.8 mm internal diameter and equipped with one connector on one side



# Heated Magnetic Stirrer with stop pin at 90°C - Code SVa-112

Magnetic Stirrer with Heater, is equipped with a stop pin to avoid to select a temperature above 90°C. This is to prevent over heating on black prove support.

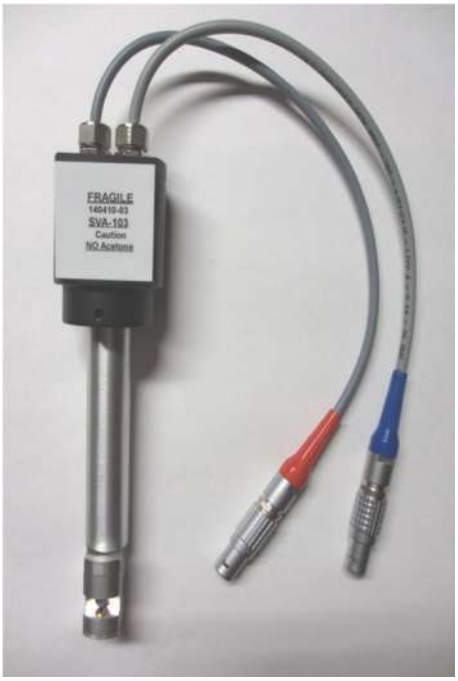






Speed stirrer is adjustable. Caution don't stir to quickly with liquid dilution, because this can generate Venturi in the middle of the test jar and detection area can be affected.

# Probes code SVA-103 with 3 fix detection areas




Applications

*Routine tests according ASTM D 7157 Definition*

**S-Value Fuels Stabitility Analyzers (ASTM D 7157)**

Application: Standard Test Method for the Determination of the Intrinsic Stability of Asphaltene Containing Residues, Heavy Fuel Oils and Crude Oils (n-Heptane Phase Separation; Optical Detection). This method is applicable to residual products from thermal and hydrocracking processes, to products typical of ASTM Specifications D 396 Grades No. 5L, 5H and 6, and D 2880 Grades No. 3-GT and 4-GT, and to crude oils, providing these products contain 0.5 mass % or greater concentration of asphaltenes. Probe SVa-103 is mainly dedicated to these applications.

*Probe compatible to work with very dark samples.*

*Probe Less efficient on clear samples end very low asphaltens content*

# Probe code SVA-130 with one adjustable detection area


Applications

*Routine tests according ASTM D 7157 Definition & R&D tests*

**S-Value Fuels Stabitility Analyzers (ASTM D 7157)**

Application: Standard Test Method for the Determination of the Intrinsic Stability of Asphaltene Containing Residues, Heavy Fuel Oils and Crude Oils (n-Heptane Phase Separation; Optical Detection). This method is applicable to residual products from thermal and hydrocracking processes, to products typical of ASTM Specifications D 396 Grades No. 5L, 5H and 6, and D 2880 Grades No. 3-GT and 4-GT, and to crude oils, providing these products contain 0.5 mass % or greater concentration of asphaltenes. Probe SVa-103 is mainly dedicated to these applications.

*Probe compatible to work with clear samples & low asphaltens content.*

Application extension with new Probe to clear crude oils and products containing below 0.5 mass % concentration of asphaltenes.

*Probe Less efficient on very dark samples*

## Estimation of S, Sa & So on the basis of many samples

| Bunker fuels | S | Sa | So | Sa-So X | Confidence Factor in red means close to floculation | Comments |
|---|---|---|---|---|---|---|
| Bunker 1 | 1,97 | 0,59 | 0,81 | 1,98 | 3,89 | |
| Bunker 2 | 2,35 | 0,61 | 0,92 | 2,36 | 5,54 | |
| Bunker 3 | 1,3 | 0,47 | 0,69 | 1,30 | 1,69 | Low S & Very low So = low capability of the resins to maintain the asphaltenes in solution, confirmed by factor Z in red = close to |
| Bunker 4 | 1,93 | 0,59 | 0,79 | 1,93 | 3,72 | |
| Bunker 5 | 2,28 | 0,61 | 0,9 | 2,31 | 5,26 | |
| Bunker 6 | 1,69 | 0,55 | 0,76 | 1,69 | 2,85 | |
| Bunker 7 | 1,67 | 0,42 | 0,96 | 1,66 | 2,76 | Low Sa, but S is OK and with high S0, then low risk of instability but risk of incompatibility |
| Bunker 8 | 2,23 | 0,4 | 1,35 | 2,25 | 5,02 | Low Sa, but S is OK and with high S0, then low risk of instability but risk of incompatibility |
| Bunker 9 | 1,36 | 0,48 | 0,71 | 1,37 | 1,86 | Low S & Very low So = low capability of the resins to maintain the asphaltenes in solution, confirmed by factor Z in red = close to |
| | 16,78 | 4,72 | 7,89 | | | |
| Average | 2,40 | 0,67 | 1,13 | | | |
| Minimum recommended | >1.55 | >0.45 | >0.8 | | | |

| Crude Oils | S | Sa | So | Sa-So X | Confidence Factor in red means close to floculation | Comments |
|---|---|---|---|---|---|---|
| Besiktas | 3,33 | 0,76 | 0,8 | 3,33 | 11,10 | |
| Iranian heavy | 2 | 0,67 | 0,68 | 2,06 | 4,12 | |
| Seabravery | 2,78 | 0,79 | 0,58 | 2,76 | 7,68 | |
| Laguna | 4,52 | 0,78 | 1,01 | 4,59 | 20,75 | |
| Light Crude oil | 2,34 | 0,74 | 0,61 | 2,35 | 5,49 | |
| Heavy Crude oil | 3,22 | 0,62 | 1,23 | 3,24 | 10,42 | |
| Very Heavy Crude oil | 3,94 | 0,62 | 1,52 | 4,00 | 15,76 | |
| Naphta + Heavy crude oil | 1,39 | 0,83 | 0,24 | 1,41 | 1,96 | Low S & Very low So = low capability of the resins to maintain the asphaltenes in solution, confirmed by factor Z in red = close to |
| Light + Heavy crude oil | 2 | 0,66 | 0,68 | 2,00 | 4,00 | |
| Naphta + light crude oil | 2,71 | 0,62 | 1,03 | 2,71 | 7,35 | |
| Light + Heavy crude oil 2 | 3,51 | 0,62 | 1,33 | 3,50 | 12,29 | |
| Light Crude D | 2,34 | 0,74 | 0,61 | 2,35 | 5,49 | |
| Craqueadu | 2,69 | 0,64 | 0,96 | 2,67 | 7,17 | |
| Crudo | 3,11 | 0,7 | 0,94 | 3,13 | 9,74 | |
| KBT/Azeri | 1,32 | 0,64 | 0,47 | 1,31 | 1,72 | Low S & Very low So = low capability of the resins to maintain the asphaltenes in solution, confirmed by factor Z in red = close to |
| Ural | 4,03 | 0,77 | 0,95 | 4,13 | 16,65 | |
| | 45,23 | 11,2 | 13,64 | | | |
| Average | 3,02 | 0,75 | 0,91 | | | |
| Minimum recommended | >1.4 | >0.5 | >0.6 | | | |

| Vibreak & Residu | S | Sa | So | Sa-So X | Confidence Factor in red means close to floculation | Comments |
|---|---|---|---|---|---|---|
| Flux LCF | 1,38 | 0,44 | 0,78 | 1,39 | 1,92 | S,Sa,So are in the limit but last factor Z is in red = close to floculation |
| Visbreak A | 1,52 | 0,47 | 0,8 | 1,51 | 2,29 | |
| Visbreak B | 1,69 | 0,43 | 0,97 | 1,70 | 2,88 | |
| Visbreak C | 2,28 | 0,44 | 1,27 | 2,27 | 5,17 | |
| RSVR1 | 3,31 | 0,69 | 1,01 | 3,26 | 10,78 | |
| Visbreak D | 1,55 | 0,34 | 1,02 | 1,55 | 2,40 | Low Sa, but S is OK and with high S0, then low risk of instability but risk of incompatibility |
| Visbreak E | 1,68 | 0,38 | 1,04 | 1,68 | 2,82 | Low Sa, but S is OK and with high S0, then low risk of instability but risk of incompatibility |
| Visbreak F | 1,47 | 0,39 | 0,85 | 1,39 | 2,05 | Low Sa, but S is OK and with high S0, then low risk of instability but risk of incompatibility |
| | 14,88 | 3,58 | 7,74 | | | |
| Average | 1,86 | 0,45 | 0,97 | | | |
| Minimum recommended | >1.35 | >0.4 | >0.7 | | | |

**Importantes Notes**

Very low Sa = asphaltenes have no power reserve to remain in colloidal dispersion.

Very low So = low capability of the resins to maintain the asphaltenes in solution.

**Blending of 2 stable products can generate an instable blending**

| Crude oils blending | S | Sa | So | R | Z Factor in red means close to floculation |
|---|---|---|---|---|---|
| **Recommended value** | **>1.35** | **>0.4** | **>0.7** | **>0.98** | |
| **AZERI** | 2,04 | 0,58 | 0,86 | 0,982 | 8,45 |
| **KBR** | 1,62 | 0,62 | 0,62 | 0,986 | 2,64 |
| **KBR/AZERI - % - 80/20** | 1,58 | 0,61 | 0,62 | 1 | 2,54 |
| **KBR/AZERI - % - 70/30** | 1,51 | 0,62 | 0,58 | 0,982 | 2,23 |
| **KBR/AZERI - % - 60/40** | 1,4 | 0,63 | 0,52 | 0,997 | 1,84 |
| **KBR/AZERI - % - 50/50** | 1,32 | 0,64 | 0,47 | 0,999 | 1,59 |
| **KBR/AZERI - % - 40/60** | 1,28 | 0,65 | 0,45 | 0,987 | 1,51 |
| **KBR/AZERI - % - 30/70** | 1,26 | 0,65 | 0,44 | 0,999 | 1,46 |
| **KBR/AZERI - % - 20/80** | 1,22 | 0,69 | 0,38 | 1 | 1,36 |