

MICRO (MACRO) VICKERS HARDNESS TESTER

# SwissVick<sup>®</sup> SERIES



## SV20

FULLY AUTOMATIC HARDNESS TESTER

**GNEHM<sup>®</sup>**  
A Swiss premium brand

# INTRODUCTION

The SwissVick SV20 seamlessly integrates a highly precise load application system with exceptional quality optics, enabling manual, automatic, or fully automated testing of Micro and Macro Vickers, Knoop, and Brinell hardness measurements.

Offering a versatile range of test force configurations to meet virtually any testing requirement, the SwissVick SV20 can be equipped with integrated hardware options tailored to the specific needs of your industry. At the forefront of mechanical design, the unit's load cell and closed-loop system can be further complemented with either manual or digital micrometers, or for enhanced testing convenience, with motorized CNC stages.

The distinctive motorized ball bearing Z-axis ensures precise height adjustment and rapid autofocus capabilities. The user interface supports both manual and automatic measurement modes, alongside a wide array of standard and optional testing applications. It also features a high-definition (HD) camera and an optional second camera for full-stage work area visualization.

## TURRET

A 6 position motorized turret is installed as a standard feature on all models and has room to install indenter for Vickers, Knoop and Brinell (balls 1mm 2.5mm & 5mm) testing.

The SwissVick SV20 has four objective positions with standard pre-installed objectives 5X, 10X, 20X, 50X magnification. Other objectives can be ordered as accessories.

The objectives and indenters are protected against damage by a electronic collision detection system.

## DYNAMIC Z-AXIS CONTROL & COLLISION DETECTION

The precision ball bearing Z-axis spindle is a key feature, offering micron-level displacement accuracy for ultra-fast autofocus. The Z-axis can be controlled in various ways: via a CNC test program, touchscreen indicators, mouse scroll wheel, quick up-and-down buttons, or the front-mounted scroll wheel. To prevent collisions between the turret and the workpiece, the Z-axis is safeguarded by a sophisticated collision detection system, ensuring that both the workpiece and the tester are protected from any damage.

## MOTORIZED X-Y STAGE

Save time and enhance efficiency with the **(AV-Pack 4)** high-speed, precision motorized XY stage. It enables automated sequencing for multiple samples. The exceptional accuracy and repeatability ensure precise indent positioning, allowing for the re-evaluation of measurement points in both batch and single views.

## KEY FEATURES

Achieving perfect geometry in Vickers indents requires exceptional rigidity and precise perpendicular indenter positioning. Our excellent force actuators ensure smooth, maintenance-free force application, through a system of load cells which are closed loop controlled.

Generate a magnified sample overview using the 2th standard on-board autofocus camera (AV-Pack 4) with digital zoom capabilities.

This advanced full-color camera system offers a flexible field of view, allowing zoom ranges from 40 x 30 mm to 150 x 110 mm, eliminating the need for time-consuming scan and stitch processes.

The overview camera also includes a user-friendly "click and go" feature: simply select a designated area and press "start" to initiate automatic testing.

The pattern video overlay function assists in positioning multiple test rows or patterns across the specimen, automatically scaling with each magnification as the zoom camera adjusts the overview size.





# POWERED WITH EYEdentify™ TECHNOLOGY

EYEdentify™ software is designed to enhance user experience and streamline operations by providing a wide array of standard features that ensure ease of use and efficiency. These include essential functionalities such as auto measurement, auto-focus, automated reporting, test program storage, and many others, which can be easily accessed and utilized.

Whether you are performing routine tasks or complex measurements, the software is designed to provide convenience and reliability for both novice and experienced users alike.

# EYEdentify™ IMPROVE YOUR WORKFLOW & SPEED

For users with more advanced requirements, EYEdentify™ goes above and beyond by offering a unique level of customization. In addition to its standard functionality, the software provides a selection of optional “apps” that can be installed as plugins whenever needed. This means that users can begin with the basic features and then expand their system as their needs evolve.

During the initial purchase, you can choose the features that suit your current requirements, but at any point in the future, you can easily expand the software’s capabilities by simply sending an email and clicking a few buttons. The process is as straightforward and intuitive as installing an app on a mobile phone.

# EFFICIENT, SMART SOFTWARE FOR HARDNESS TESTING



EXAMPLE SCREEN  
MEASURING MODE

EXAMPLE SCREEN  
OVERVIEW CAMERA



# SMARTER SOLUTIONS WITH EYEidentif<sup>TM</sup>

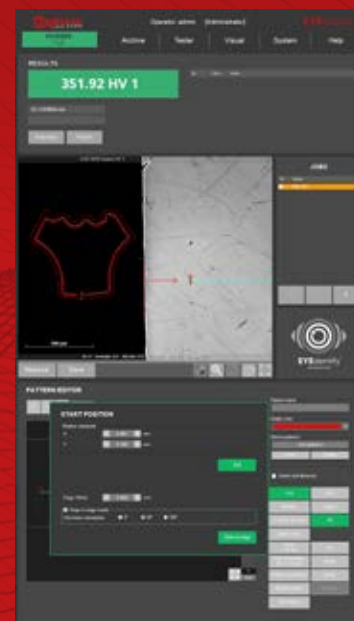
TEST PATTERN GENERATOR



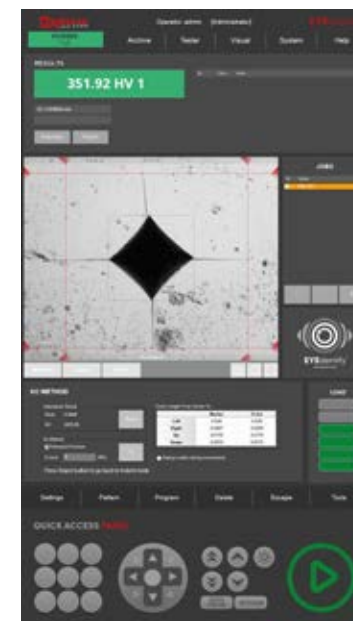
CHD | NHD | SHD FUNCTION



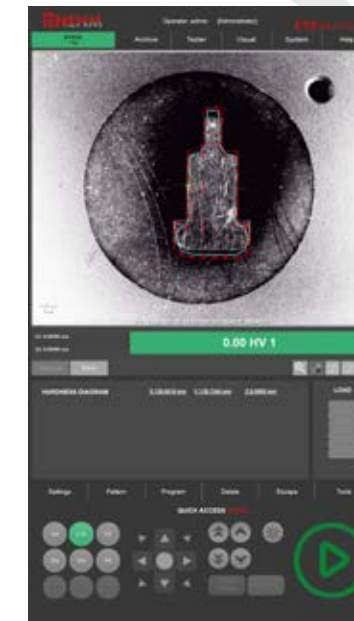
AUTOMATIC EDGE DETECTION



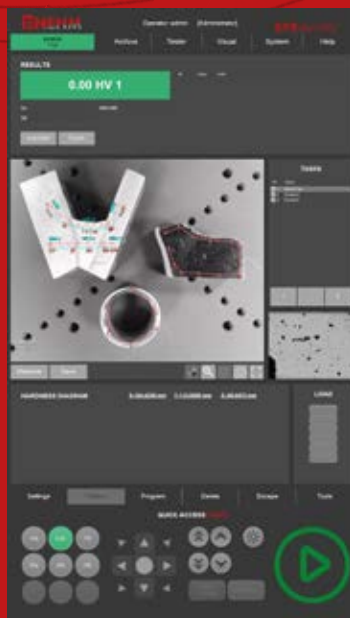
K<sub>IC</sub> | CRACK PALMQVIST & MEDIAN /  
RADIAL FRACURE TOUGHNESS



EXPANDED VIEW



STAGE OVERVIEW CAMERA



GEOMETRIC MEASURING FUNCTION



SELECTABLE USER RIGHTS



The software's design focuses on keeping the learning curve simple and manageable, minimizing unnecessary complexity. It enables users to focus only on the essential features that are required for their specific tasks, allowing for a "need to have" and "need to know" approach.

For more sophisticated use cases, EYEidentif<sup>TM</sup> integrates seamlessly with industry-standard quality control systems, such as QDAS, and supports a wide range of data export formats including CSV, XML, and other common file types. Should your needs be outside the scope of standard integrations, the EYEidentif<sup>TM</sup> software team is always ready to work with you.

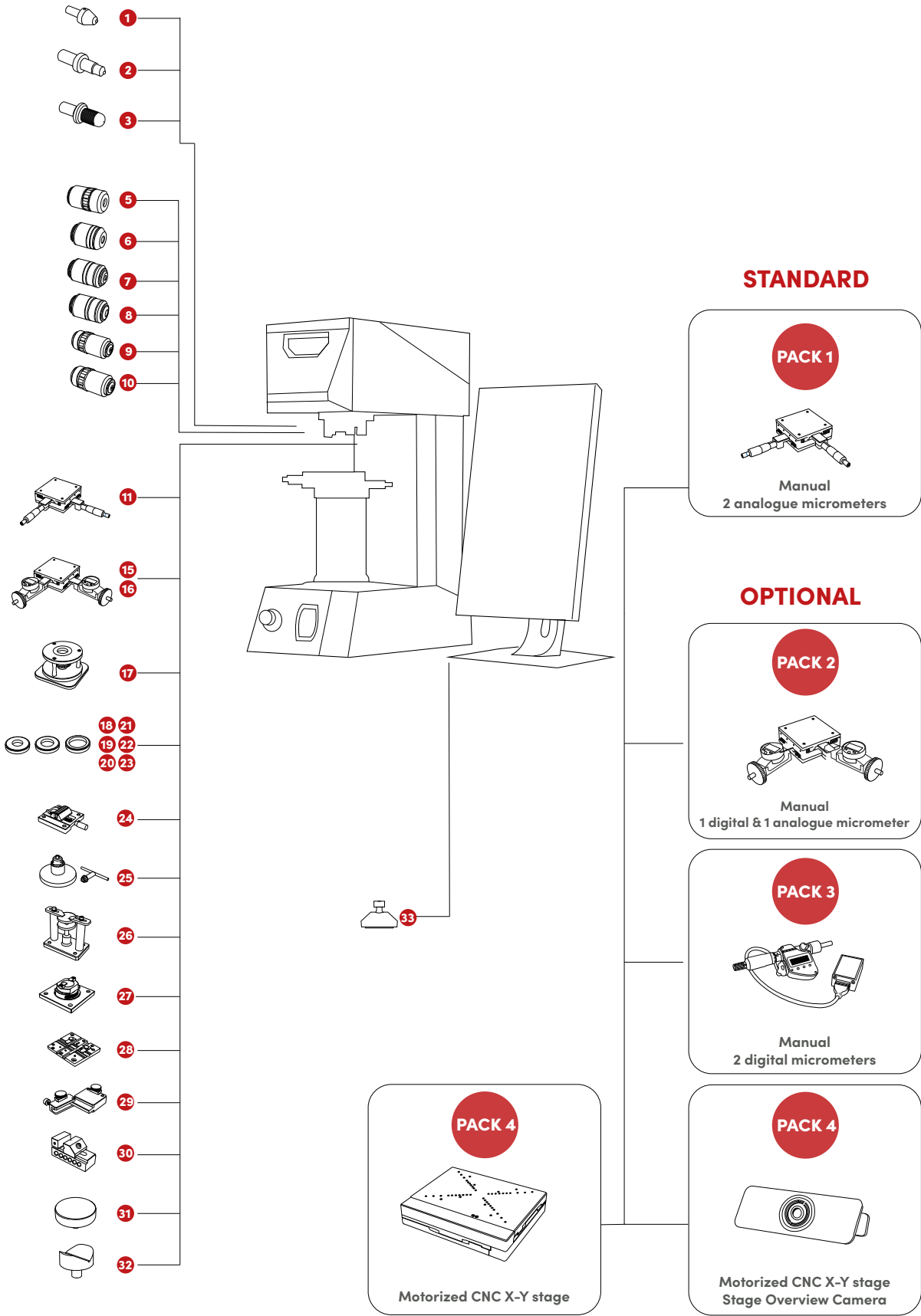
Overall, EYEidentif<sup>TM</sup> provides a revolutionary and adaptable system that grows with your needs, ensuring that your measurement processes remain efficient, flexible, and fully optimized as your business or project evolves.

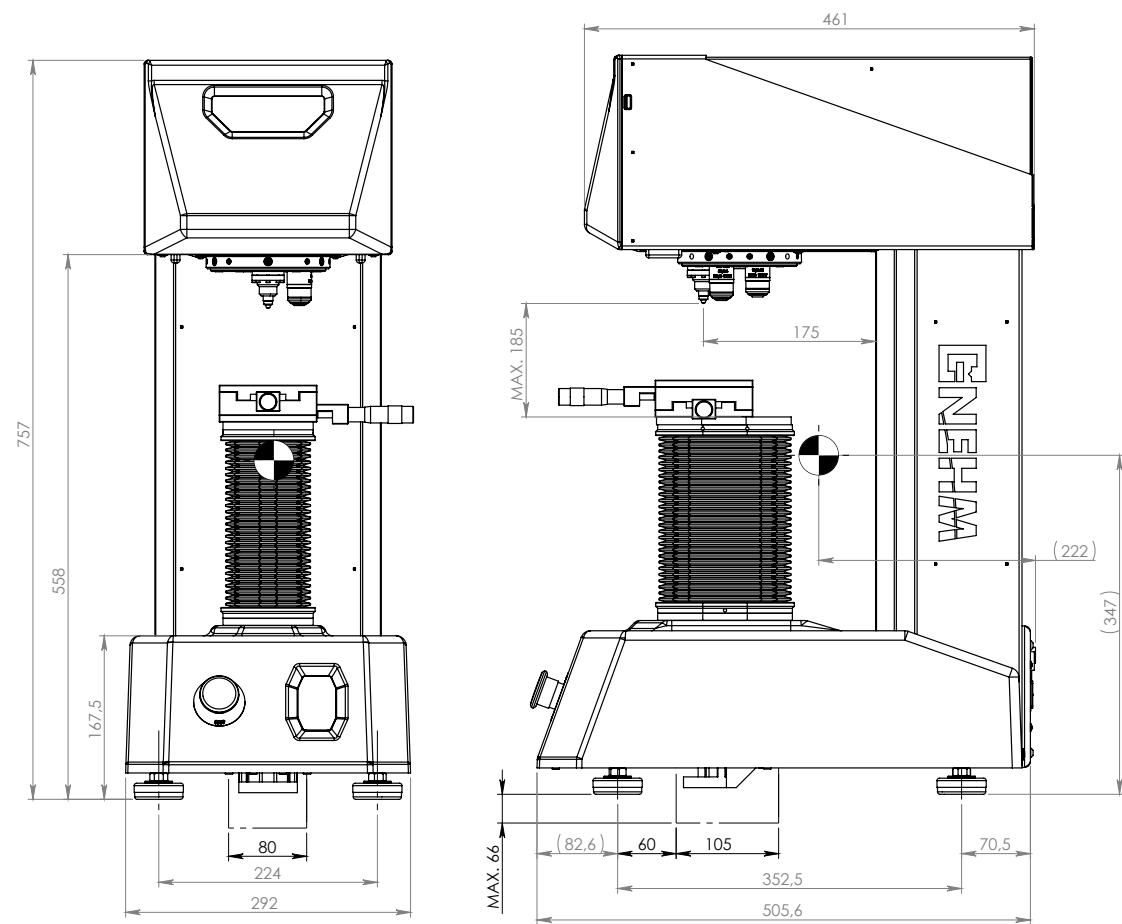
Tester model	SV20   A (2)	SV20   B (2)	SV20   C (2)	SV20   D (2)
Load system				
Test load range	10gf - 2kgf	10gf - 10kgf	200gf - 62.5kgf	10gf - 62.5kgf
Load steps	11	16	19	25
Loads in gf	10, 15, 20, 25, 50, 100, 200, 300, 500, 1000, 2000	10, 15, 20, 25, 50, 100, 200, 300, 500, 1000, 2000, 2500, 3000, 4000, 5000, 10000	200, 300, 500, 1000, 2000, 2500, 3000, 4000, 5000, 10000, 15625, 20000, 25000 30000, 31250, 40000, 50000, 60000, 62500	10, 15, 20, 25, 50, 100, 200, 300, 500, 1000, 2000, 2500, 3000, 4000, 5000, 10000, 15625, 20000, 25000 30000, 31250, 40000, 50000, 60000, 62500
Optional loads within range	On request			
Load application system	Electronic   Closed Loop			
Force control	Load Cell Transducer			
Load operation sequence	Fully automatic - Approach   Load   Dwell   Unload   (Objective)			
Load application speed	60µm/sec (Compliant standards: JIS B 7725, ISO 6507-2, ASTM E92: 15 to 70µm/sec)			
Load dwell time	1-999 seconds			
Parameters & settings				
Scales	HV / HK / HB compliant to ISO / ASTM / JIS			
Optional scales	Kc (JIS R1607 / IF Method) Kc (JIS R1607 / IF Method)			
Conversion to other methods	All hardness scale conversions compliant to ISO & ASTM			
Cylindrical and spherical	Offset available			
Turret & Optical system				
Turret mechanics	6 position, Motorized, Manual & Automatic			
Security	Anti crash   Collision detection system			
Indenters vs Objectives (2)	(A model) 1 indenter, 4 objectives   (A2 model ) 2 indenters, 4 objectives			
Indenters	Vickers (HV)   Knoop   Brinell 1mm/2,5mm ball			
Optical system	Simultaneous Dual Channel system   Camera			
Objectives (6)	2,5X - 5X - 10X - 20X - 50X - 100X			
Objectives LED ringlights	For enhanced Brinell viewing 2,5X and 5X			
TTL Light source	High Power long life LED   adjustable			
Camera system	5mpx   High Definition   Digital Camera System with zoom function			
Stage overview camera	2mpx   High Definition   Digital Camera System with zoom function			
Z-axis & stage				
Z-Axis	ZERO tolerance - ball bearing slide			
Maximum speciment height	210mm(from X-Y stage top)			
Depth from center (throat)	170mm (from spindle middle)			

Manual X-Y stage	100x100mm, precision polished, displacement 25x25mm   Ananlogue Micrometer heads included			
Motorized CNC X-Y stage	Displacement 120x120mm, position accuracy 0,003mm, repeatability 0,005mm, max load 200kgf			
Electronics system				
Screen	Full colour screen 22"   Portrait mode			
Integrated controller	MS Windows / Industrial Controller, high performance i7			
Connectivity	HDMI, LAN, W-LAN, Blue Tooth, RS-232, USB-3			
Storage	On integrated SSD disk 500gb – or via LAN network on drive			
Display information	Scale, test load setting, D1 & D2, test result (hardness value), Go-No go settings (limits), results list, output channel, load progress indicator, objective, dwelltime, light source intensity, results list selection, limit settings, conversion scales, turret postion indicator, start/stop button. Extra functions: motorized stage control, test program settings, test pattern settings, user rights setting etc. (See software manual for all details).			
Self diagnosis	Motors, switches, power supplies			
Machine settings	Password control settings system			
Calibration	Password control settings system			
Compliance				
Measuring system & operation	Comform to ASTM E-92   ISO 6507-2   JIS B-7725   JIS B-7734			
Certification	Factory certificate or ISO 17025 accredited ILAC-MRA certificate			
Electronic system	Meeting general global safety & European CE standards			
General data				
Electric connectivity	Single phase AC100 ~ 240V 50/60Hz			
Dimensions	W283 x D480 x H620mm			
EYIdentify™	AV-PACK 1 STANDARD	AV-PACK 2 OPTION	AV-PACK 3 OPTION	AV-PACK 4 OPTION
Software system	EYIdentify™ Indentation Vision & Measuring System			
XY-Stage	Manual, 2 analogue micrometers	Manual, 1 Digital, 1 analogue micrometer	Manual, 2 digital micrometers	Motorized CNC X-Y stage, 120x120mm / 200kg load
Free test pattern generator	Standard, for analogue head	Standard, for (1) digital head	Standard, for (2) digital head	For fully automatic testing
CHD   NHD   SHD function	Manual			Fully automatic
Stage overview camera	No			Yes
Automatic edge detection	No			Yes
Applies to	All SV20 models			
Hardness scales	Vickers   Knoop   Brinell			
Autofocus	Standard			
Auto measure / Manual measure	Standard			
Optical	Integrated, built inside microscope, with high resolution camera system			
Geometric measuring function	Yes			
KiC   Crack Palmqvist & Median / Radial fracture toughness	Yes			
Selectable user rights / PW protected	Yes			

SV20 STANDARD ACCESSORIES			
	100.SV1020.ACC	1	IND-V3FC   Vickers diamond Indenter, 3mm, Factory Certified
		8	HTB-HV1.400   Test block +/- 400HV, Factory certified
		8	100.OL.FS4   Objective lens 5X, 10X, 20X, 50X installed
		33	LVLDLMP4   4 Level Dampers
			PWCBL1   Powercable EU / Powercable US
			ACCBOX1   Accesories packing Box
			INSMANENG   English Instruction Manual, USB stick
			900.PB.40   Standard packing box for air/seafreight

SV20 OPTIONAL ACCESSORIES		
1	IND-V3IA	Vickers indenter 3mm - ISO/ASTM certified
2	IND-K3IA	Knoop indenter 3mm - ISO/ASTM certified
3	IND-B31IA	Brinell 1mm ball indenter 3mm - ISO/ASTM certied
4	IND-B325IA	Brinell 2,5 mm ball indenter 3mm - ISO/ASTM certified
5	FINOBJ2.5X	Objective lens 2,5X
6	FINOBJ5X	Objective lens 5X
7	FINOBJ10X	Objective lens 10X
8	FINOBJ20X	Objective lens 20X
9	FINOBJ50X	Objective lens 50X
10	FINOBJ100X	Objective lens 100X
11	XYSTAGE100	Manual X-Y stage 100 x100mm, travel 25x25mm
12	XYSTAGE150	Manual X-Y stage 150 x150mm, travel 50x50mm
13	AMHEAD25	Analogue micrometer head 25mm
14	AMHEAD50	Analogue micrometer head 50mm
15	DMHEAD25	Digital micrometer head for X-Y stage 25mm
16	DMHEAD50	Digital micrometer head for X-Y stage 50mm
17	SAHO1	Sample holder for 1 embedded sample, 50mm
18	SAHOR25	Reduction sample holder 25mm
19	SAHOR30	Reduction sample holder 32mm
20	SAHOR40	Reduction sample holder 40mm
21	SAHOR100	Reduction sampleholder 1"
22	SAHOR114	Reduction sample holder 1 1/4"
23	SAHOR150	Reduction sample holder 1,5"
24	SELCENTV1	Small universal vice self centering
25	ACHK1	Axle chuck dia. 0.4mm to 5mm
26	UCLAMP1	Universal Clamp & Leveling Device
27	THINCLAMP1	Thin metal clamp
28	VCLAMP1	V groove clamp for diameter 0.8-5mm
29	WFIX1	Wire Testing Fixture for diameter 0.8-3.5mm
30	PPV3642	Precision polished vice, W36mm, D42mm
31	FA60	Flat Anvil 60mm
32	VA63	V-Anvil 63mm





All dimensions in these drawings are approximate and in millimeters. Working heights and workpiece accommodation may vary based on the stages and accessories used.

For more details, please contact our sales department.

Catalogue SV20 V1.1

Product specifications may evolve with new technologies and ongoing development.

We reserve the right to update or modify product specifications without prior notice. For the most current information, please contact our sales office.



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## **DEALER**