

## HST-BJ600X Portable Metallurgical Microscope



## HST Group Co.,LTD.

Development Base of Advanced Testing Machine Of China

### Application:

HST-BJ600X portable metallographic microscope is a precision optical microscope used for metallographic analysis and failure analysis of various large workpieces on site. Large workpieces on site do not require cutting and sampling, and can be directly polished and polished on the workpiece to ensure its integrity. After the sample preparation is completed, a portable metallographic microscope can be used to directly

perform tissue analysis on the workpiece. This machine is used in aviation manufacturing, mechanical manufacturing, vehicle manufacturing, boiler and pressure vessel manufacturing and inspection, petrochemical, railway shipbuilding, power plants, power stations, equipment installation, large grinding tools, safety testing, quality supervision, physical and chemical testing and other industries. This machine has a wide range of applications and is easy and fast to operate.

The optional WiFi camera can be connected to a mobile phone or tablet for use, and the image collector can be connected to a microscope with a field of view close to the observation range of the eyepiece. Images can be synchronized for multiple people to observe, download or send; It can achieve multi magnification conversion observation and photography in the same field of view. The wifi camera app can achieve: photography, measurement, browsing, saving, automatic electronic ruler, USB output interface; LED lighting, lithium battery charging can work continuously for 6-8 hours.

#### **Large field flat field eyepiece $\phi$ 20mm field of view**

Configure a large field of view flat field eyepiece to achieve a field of view range  $\phi$  20mm provides a wider and more comfortable visual observation. Adopting advanced light trap technology to prevent glare and improve imaging quality. The eyepiece lens adopts a vertical semi anti coaxial optical path interface.

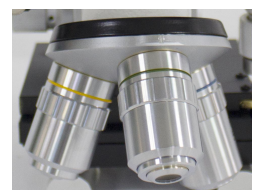


#### **Focusing device: with coarse and fine focusing functions**

##### **PLL identification of long focal length flat field achromatic objective lenses**

Equipped with 3 long-distance plan achromatic objectives, using high refractive index and low dispersion fluorite material and special coating technology, it has the characteristics of high resolution, high contrast and high color reproduction.

Professional optical fluorspar glass is fully stress-relieved, and the objective lens group rings are all metal parts, so that the optical axes of multiple groups of lenses in the objective lens will not shift after long-term use.



**Three-hole nosepiece:**

Equipped with a three-hole converter, 3 objective lenses can be installed at the same time, avoiding the trouble of removing the objective lens back and forth, and it is more convenient to change and zoom the objective lens.

**Independent C interface image digital output:**

The novel lateral light path output design concept enables image collection while observing with the naked eye.

**Fashion LED light source:**

Reflective vertical single high-power white LED lighting, combined with a novel and fashionable micro switch, can trigger constant color temperature and comfortable lighting with one click, and true color imaging requires no adjustment at all.

**Magnetic three-dimensional support:**

Special mechanical on-off magnetic base, suitable for various workpiece surfaces. The special screw shift structure ensures that the magnetic base will not slip when it is adsorbed on the vertical surface. The precision gear-type XY-axis moving platform ensures that it does not move horizontally by itself.

**Compact and precision optical instruments:**

The equipment is small and lightweight, and comes with a portable aluminum alloy packaging box, making it easy to carry and test on site.

**On-site metallographic sample preparation package:**

An angle grinder is used with sandpaper, wool felt, and diamond spray polishing agent for on-site sample preparation. The operation is simple and quick.

Polishing wheel:  $\Phi 100$ , metallographic consumable specifications 320#, 600#, 1000#, 1500#, wool wheel, diamond grinding paste, chuck handle and other tools

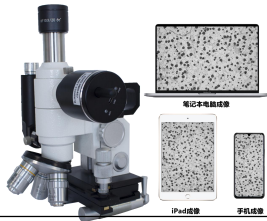


**On-site metallographic image analysis and imaging system:**

Equipped with FMIA2023 genuine metallographic analysis system and Sony chip 5-megapixel camera, connected to a laptop to realize on-site image collection, metallographic structure analysis, metallographic inspection report generation and other functions.

**Main Specifications:**

| Item                                                   | Specification                                                                                                                                                                 | HST-BJ600X |
|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Optical system                                         | Finite distance chromatic aberration correction optical system                                                                                                                | .          |
| Observation tube                                       | Monocular viewing tube                                                                                                                                                        | .          |
| Eyepiece                                               | Flat field wide field eyepiece WF 10X/20mm                                                                                                                                    | .          |
| Camera interface                                       | Standard 0.5X C interface                                                                                                                                                     | .          |
| Long focal length<br>plan achromatic<br>objective lens | PL L 10X/0.25 WD8.90mm                                                                                                                                                        | .          |
|                                                        | PL L 20X/0.40 WD3.75mm                                                                                                                                                        | .          |
|                                                        | PL L 50X/0.70 WD2.02mm                                                                                                                                                        | .          |
| Converter                                              | Three hole converter                                                                                                                                                          | .          |
| Focusing mechanism                                     | Coarse adjustment stroke 30mm, fine adjustment stroke 1mm                                                                                                                     | .          |
| Lighting system                                        | LED portable light source                                                                                                                                                     | .          |
| Magnetic base                                          | X-Y direction travel 10X10mm; on-off magnetic suction iron feet, minimum suction pipe diameter 30mm, suction force 25N/cm <sup>2</sup> , and equipped with a magnetic switch. | .          |
| Options                                                | FMIA2023 genuine metallographic analysis software                                                                                                                             | <b>O</b>   |
| analysis system<br>(for use with a laptop)             | 5 million pixel Sony chip camera device                                                                                                                                       | <b>O</b>   |
|                                                        |                                                                                            |            |
|                                                        | 0.5X adapter mirror interface                                                                                                                                                 | <b>O</b>   |
|                                                        | High precision micrometer                                                                                                                                                     | <b>O</b>   |
| Options                                                | FMIA2023 genuine metallographic analysis software                                                                                                                             | <b>O</b>   |

|                                              |                                                                                         |                                                                                    |
|----------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| analysis system<br>(Connect to mobile phone) | WiFi camera                                                                             |  |
|                                              | 0.5X adapter mirror interface                                                           |                                                                                    |
|                                              | High precision micrometer                                                               |                                                                                    |
| Sample preparation equipment                 | Bosch angle grinder, Bosch special suitcase, sandpaper, wool felt, diamond polish, etc. |                                                                                    |

**Note: "·" is the standard configuration; "O" is the option**

### Introduction to FMIA2023 genuine metallographic analysis software

The FMIA2023 version of the metallographic image analysis software system is designed by our company to improve products based on the current needs of foundry companies, auto parts companies, heat treatment companies, bearing steel industries, power system industries, railway parts industries, and related testing companies for metallographic testing. The pass rate helps improve the inspection level of each laboratory. We collected the needs and opinions of experts and teachers in various industries to develop this set of FMIA2023 version metallographic image analysis software system.

The national standard library of the software system contains about 700 commonly used sub-modules in 150 categories, basically covering commonly used metallographic standards and adapting to the metallographic analysis and inspection requirements of most units. Designate and open relevant categories according to the needs of different industries to meet industry testing requirements. All modules can be called for free for life, and standards can be upgraded for free for life.

In view of the continuous increase in new materials and imported grade materials, materials and evaluation standards that have not yet been entered in the software can be customized and entered.

### Software installation is more intuitive and concise

The new software installation, registration, calibration and boot mode are simple and clear, and can be completed through default prompts.

**Genuine software assurance system**

After the software is installed, first activate the genuine software, and then register the computer hardware ID to ensure customers' genuine rights and interests.

**Demand standards can be customized**

In addition to standard detection modules, special detection modules can be customized according to customer needs, such as corporate standards, special industry standards, etc.

**Quick access to 7 major inspection categories**

Statistics create 7 categories of quick entry: grain size, non-metallic inclusions, microstructure of steel, decarburized layer analysis, gray iron, ductile iron, carbon steel spheroidization, etc., plus a metallographic tutorial.

**Report template can be modified**

Report templates can be tailored for different businesses.

**Genuine software can be upgraded**

According to the National Standardization Committee standard implementation time, the software will be upgraded free of charge.

**Applicable to a wide range of computer systems**

This software can be installed and run under Windows 7 and Windows 10.

**Sample production and operation steps:**

Operation steps: Carry out according to the requirements of GB/T13298-2015 metallographic sample preparation.

Pretreatment: Use an "angle grinder" to rough grind the metallographic parts that need to be detected with the angle grinder grinding wheel: grind off the oxide scale and do surface treatment.



**Rough grinding:** Use an "angle grinder" to replace the sandpaper and perform rough grinding and fine grinding of the pre-treated parts according to the particle size from coarse to fine;



**Sample polishing:** Sample polishing: Use the "angle grinder" to replace the polishing wool felt to the finely ground part, spray the diamond polishing agent to the finely ground part, and use the wool felt to polish the sample.



**Metallographic inspection:** The workpiece polished to a mirror surface is subjected to metallographic corrosion according to the metallographic corrosion method of the material. The corroded sample is placed in a portable metallographic microscope to observe the metallographic structure.

**FBJ-600 Packing List:**



| No | Name                                     | Configuration                                                                                  |
|----|------------------------------------------|------------------------------------------------------------------------------------------------|
| 1  | Metallographic microscope host           | Host: 1                                                                                        |
|    |                                          | Eyepiece WF10X/20mm: 1 piece                                                                   |
|    |                                          | Long-distance plan achromatic objectives: 1 each of PLL10X, PLL20X, and PLL50X                 |
| 2  | Genuine metallographic analysis software | Software encryption lock, driver USB disk, high-precision micrometer: 1 each                   |
| 3  | Industrial camera                        | 5 million pixel Sony chip camera device, etc.                                                  |
|    | WIFI camera (optional)                   | WIFI camera, charging head, data cable: 1 each                                                 |
| 4  | Grinding supporting equipment (optional) | Angle grinder: 1 set (including Bosch original tool box)                                       |
|    |                                          | Sample preparation consumables: sticky plate, wool wheel, sandpaper, some diamond spray polish |



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