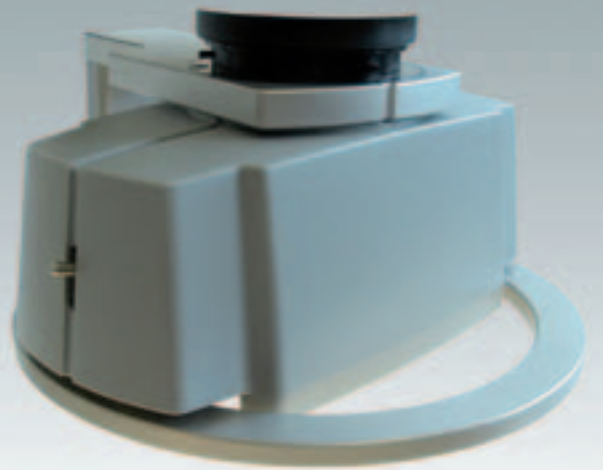


Inspection Equipment

High Precision
Optical Quality Control

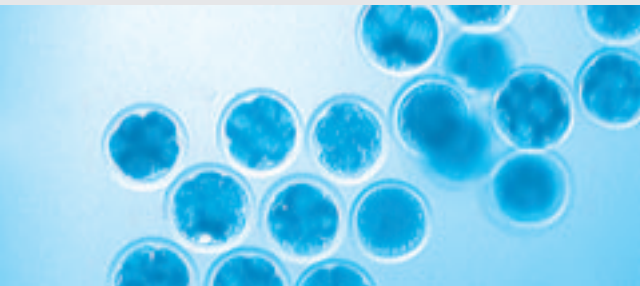
Solutions in Optics



Welcome to Opto's Catalogue for Inspection Equipment.

In this catalogue you'll find unique accessories, products and complete solutions which help you achieve your microscopic tasks all with a focus on flexibility, precision and ergonomics. Opto was founded in 1980 and since then has become a leading supplier of specialist optical inspection systems. We take pride in having built our reputation on designing the highest quality optical inspection equipment exactly to fit the application, in as short a lead time as possible, and of course, within budget! In close collaboration with other leading manufacturers we continuously offer our customers the highest levels of product quality, service and innovation.

We recognize that the needs of every customer are different. To us, every one of them is special and so are their requirements. The products we offer are unique. No 'one size fits all' or 'off the shelf'. We guarantee a better performance for the same or at an even more competitive price. With quality at the pinnacle of our business, we care for our customers solutions all the way from development, through production, assembly and after delivery. We are proud to maintain a long list of repeat customers spanning many years. In many cases, the solutions we develop are our clients unique selling points for many product generations.



Opto is your experienced partner for:

- a selection of optical and mechanical components for machine vision and microscopy
- complete microscopes with emphasis on display (TV)-microscopy and stereo microscopy
- development of custom optical and mechanical systems and solutions
- counsel and advices in all optical matters

Contact your nearest Partner

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74000 ANNECY

Tel: +33 450 605822
Mail: info@opto-france.com
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Quotation, Ordering & Terms

We are pleased to provide you with a solution tailored to your specific requirement. Simply contact your local representative for technical details or quotation.

Terms of business can be found on our webpage. Specifications in this catalogue are current at the time of publication but we reserve the right to change these specifications without prior notice. Pictures may show different or alternative specifications.

Technical information and guidance provided in this catalogue is intended to be useful in the application of Opto products but we do not accept responsibility for its use.

Terms and conditions of sale are specific to each country in which Opto operates and are supplied with all quotations and invoices. Please contact us for additional copies. Nothing in the foregoing statements modifies the Terms and Conditions in effect for each country of operation.

What do you wanna do?



Page 4
Oblique Viewing

Rotate the field of view around your sample



Page 6
Inclined Inspection

Position and tilt your object flexibly



Page 8
Mobile Examination

Take the microscope to your sample



Page 10
Portable Microscopy

Perform inspection and measurements on location



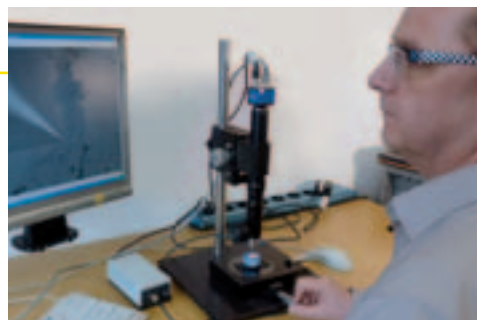
Page 12
Flexible Inspection

Unique foldaway, heavy-duty microscope stands



Page 14
Quick and Easy Viewing

Setup a flexible and robust inspection solution

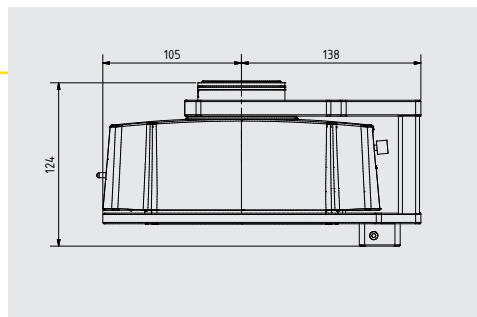


Page 16
Simple Measurements

Build a reliable inspection and measurement workstation

Page 18
Dimensional Information and Technical Data

Additional information



Oblique Viewing Module

360° viewing – this module fits to all major stereo microscopes and enables normal and oblique inspection with the push of a lever. Perfect for SMT inspection without moving the object.

Key Features

- Includes integrated 0.3x Objective
- High performance variable LED-Ring Light
- Large working distance of 100/115 mm (oblique/straight view)
- Oblique and direct view mode

Your Benefit

- Compact, easy to use fully integrated unit
- 360° inspection without moving the object
- Adapts to all major microscope brands
- Perfect for SMT-Repair Works



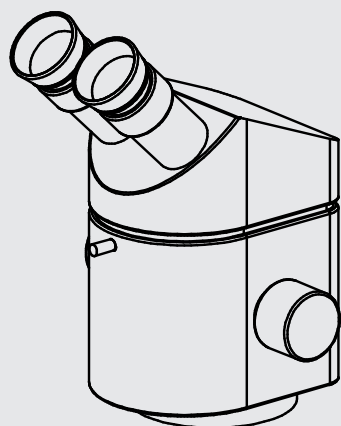
Inspection of Surface Mounted Devices and other soldered Items



Assuring Perfect Image Quality: Integrated Objective and LED-Ring Light



LED-Spot indicating the centre of the oblique field of view

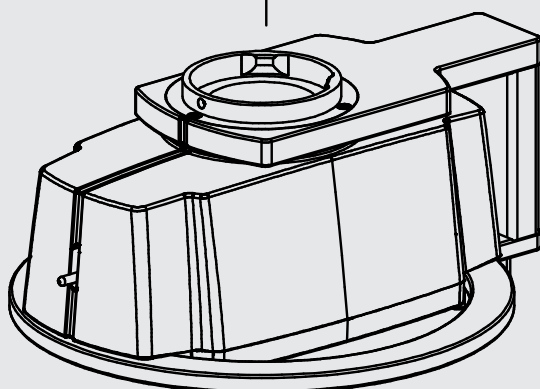


Stereo Microscope
(Without Objective)



Adapter Ring

- 043-112108-200 Leica M50
- 043-112108-201 Leica M60-80
- 043-112108-202 Leica M205-160-125
- 043-112108-203 Zeiss Discovery
- 043-112108-204 Leica M3-MS5-MZ6
- 043-112108-205 Olympus SZX7-SZX10
- 043-112108-206 Nikon SMZ800-SMZ1000-SMZ1500



- 043-112108
- Oblique and Direct View Module
- incl. 3 Core Power Cord - EU; 2m
- incl. Objective 0.3x
- incl. LED-Ring Light

3 Core Power Cord

- 044-700101 -UK; 2.5m
- 044-700102 -CH; 2m
- 044-700103 -US; 2m

Tilting Stand

Three dimensional objects often benefit from a specific angle of view in order to reveal key details. With our Tilting Stand, it is possible to position your microscope securely at an angle or to tilt and fix your samples at the desired positions.

Key Features

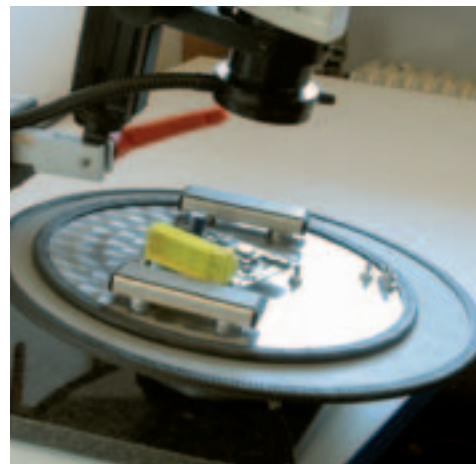
- Rock solid stand for many types of inspection
- Inclined viewing
- Easy positioning of objects

Your Benefit

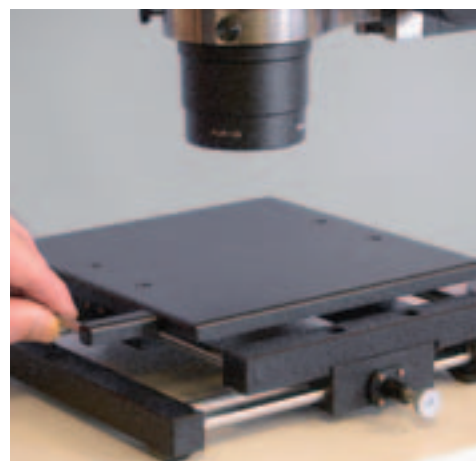
- Highly ergonomic inspection stand
- Quick and easy full 360° inspection
- Compatible with all major microscope brands
- Perfect for Electronic Board Repair



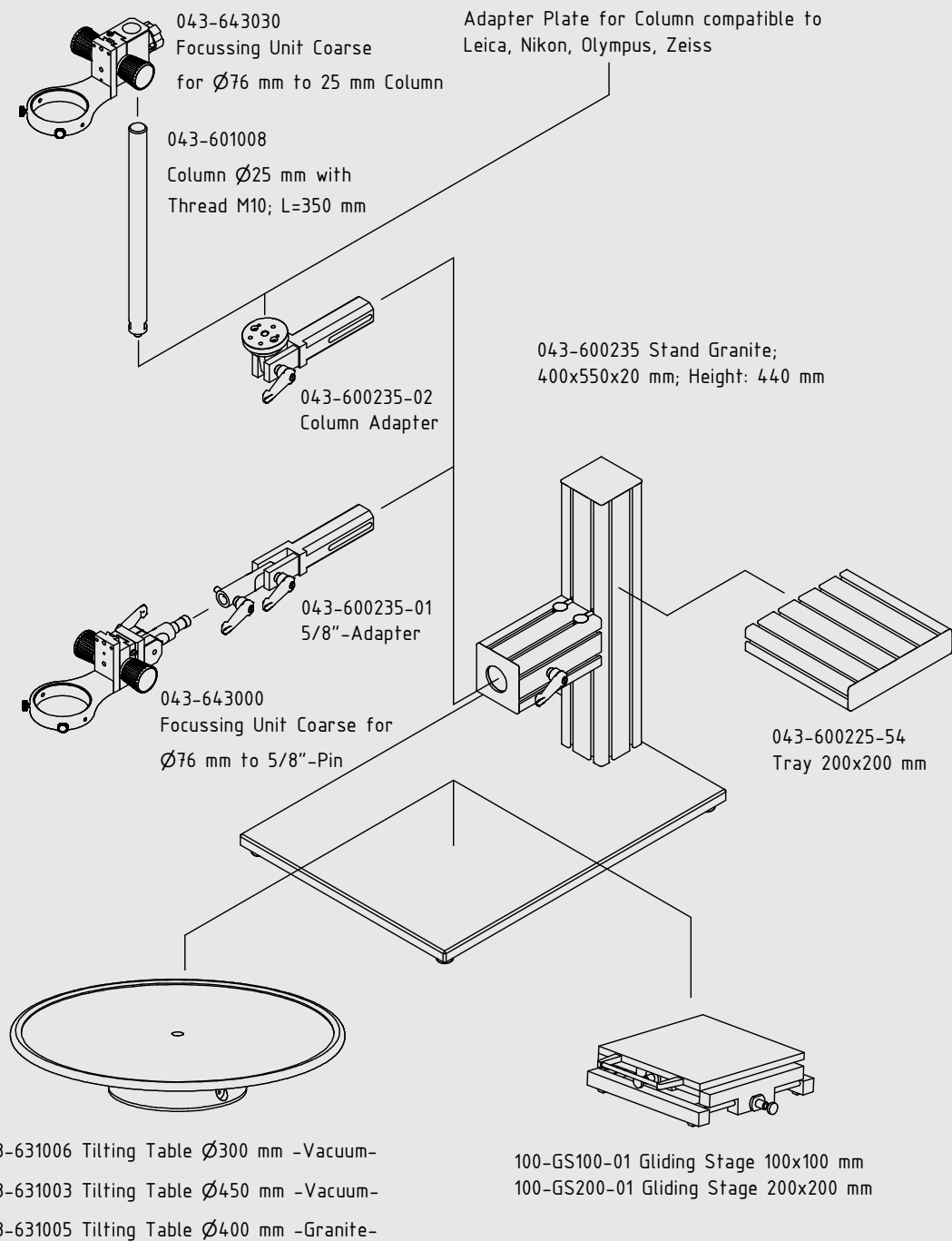
Ideal for inspection of difficult objects at varying angles



Angle of tilting table can be vacuum locked by a foot pedal



Gliding stage option for quick and easy movement of samples



Mobile Floor Stand

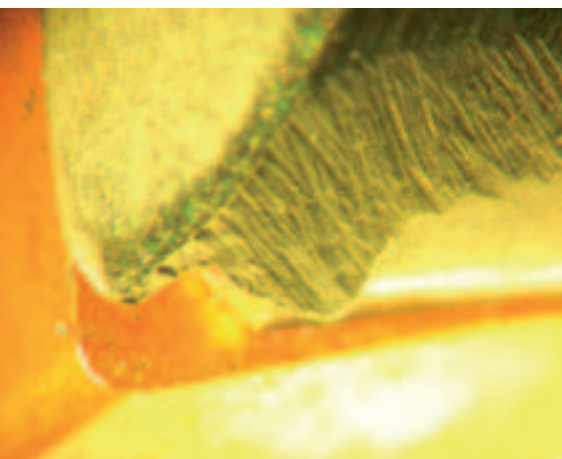
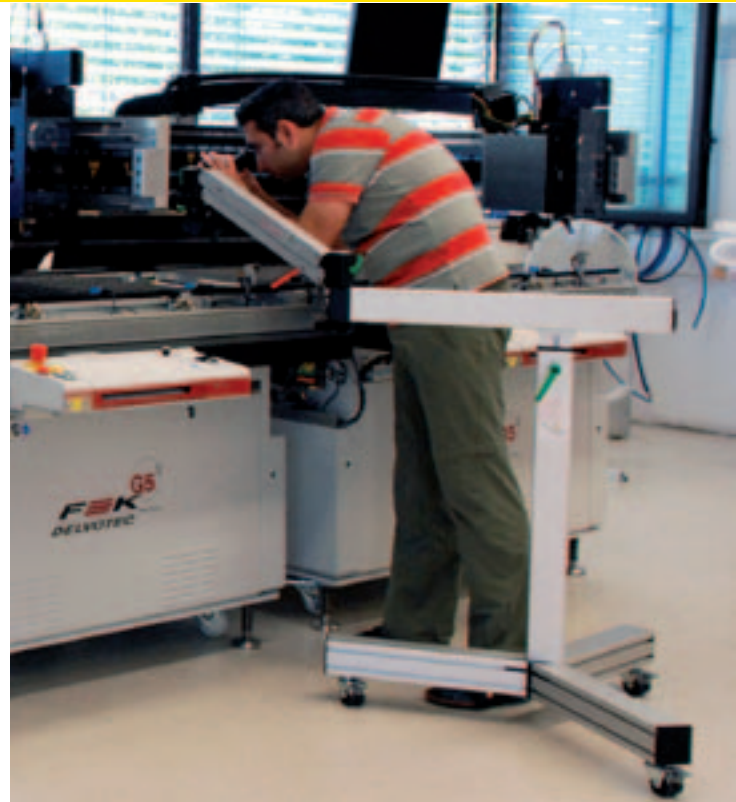
For very large samples, or where samples cannot be easily moved, the Microscope needs to be portable. Our Mobile Floor Stand perfectly combines mobility and stability even at high magnifications and long working distances.

Key Features

- Stable mobile stand for difficult inspection tasks
- Quick and easy 360° positioning of the microscope
- Lockable wheels and arms
- 4-axis adjustable microscope mount enabling any orientation

Your Benefit

- Flexible and save handling of the microscope
- Use same equipment at different locations
- Table for Light Source completes all in one inspection system
- Compatible with most stereo and video microscopes



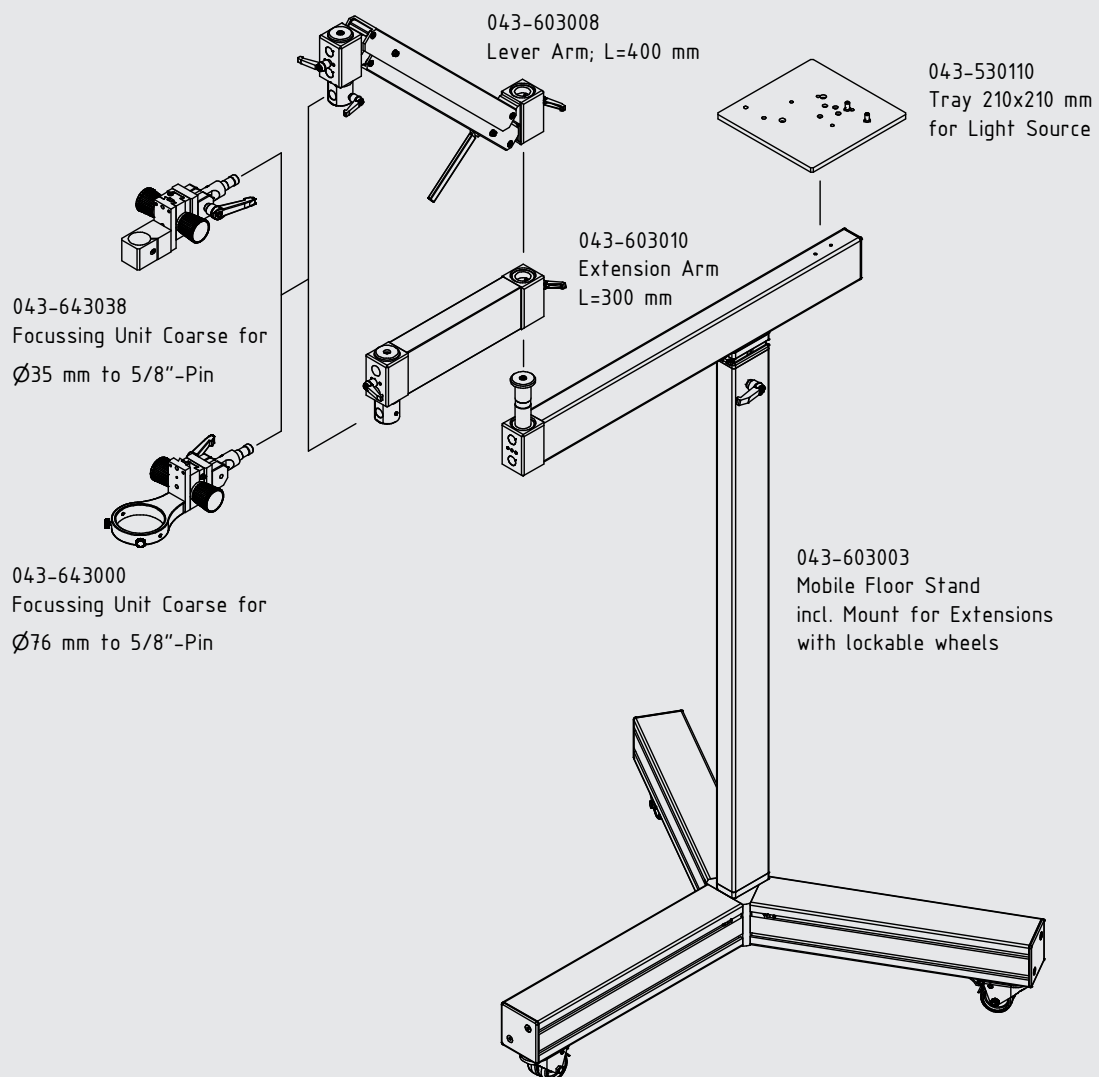
Perfect for conservation works or cases where the sample can't be moved



4-axis adjustable microscope carrier



360° movement and even full inversion of microscope



Portable Microscope

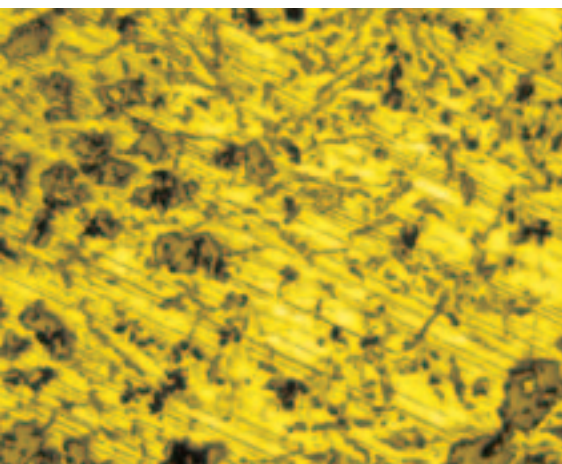
This portable measurement microscope with its ergonomic carrying handle can be used for a wide range of field inspections anywhere. The system can also be upgraded with a measuring gauge for non-contact height measurement of thicknesses up to 2 mm.

Key Features

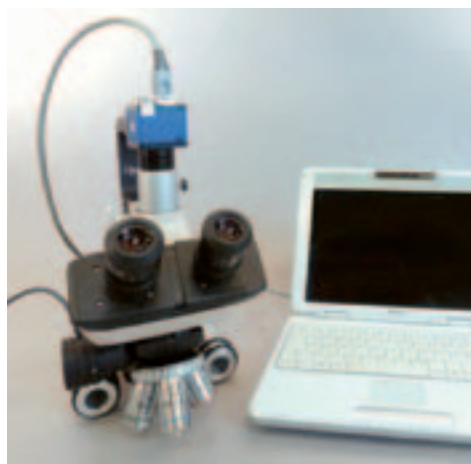
- Objective nosepiece with 4 magnifications
- Integrated coaxial illumination
- Graticule for measurements

Your Benefit

- Highly stable chassis for high magnifications
- Easy to carry - Inspection to go
- Ideal in-field measurement and inspection solution



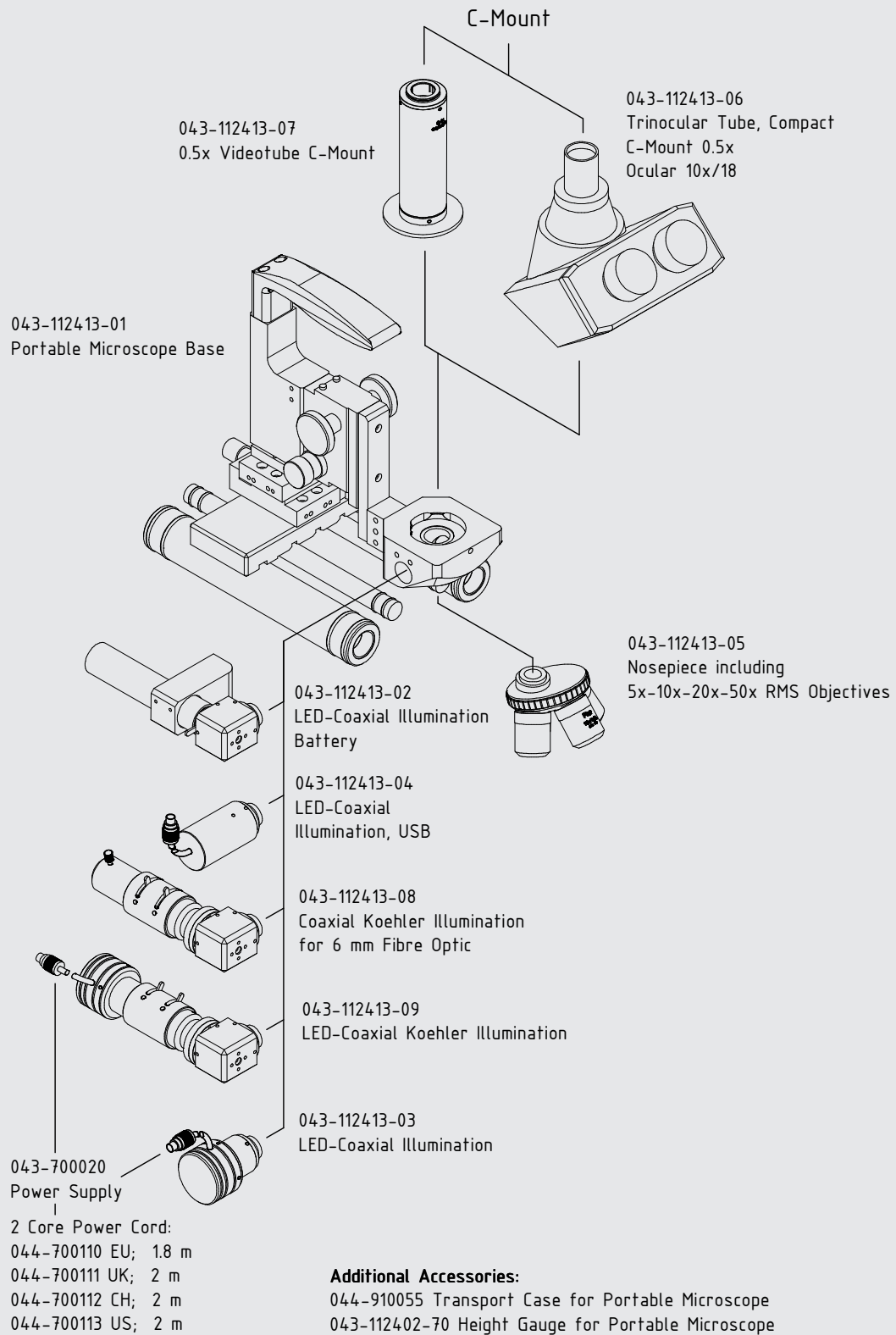
For metallurgical observation, height and distance measurement and many other



Together with a laptop it forms a fully mobile documentation system



Optional Height Gauge enables precision measurement of layer thickness



..

Heavy Duty Stand

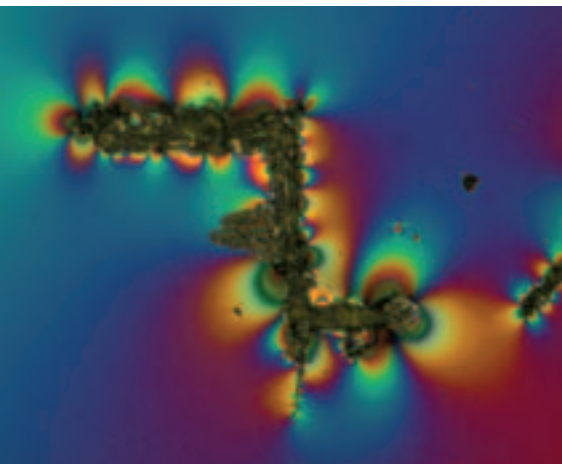
Our unique Heavy Duty Stands serve two main purposes: In combination with the folding extension arms, it enables a completely clear bench to be maintained, whilst also giving the capability to position your microscope anywhere over your bench area! Using the Heavy Duty Focussing Unit it creates a rock-solid, ultra precise microscopy setup.

Key Features

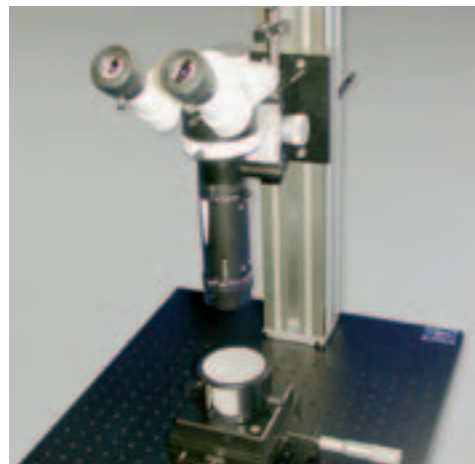
- Table, wall or board mounting
- Extremely robust construction
- Easy height adjustment

Your Benefit

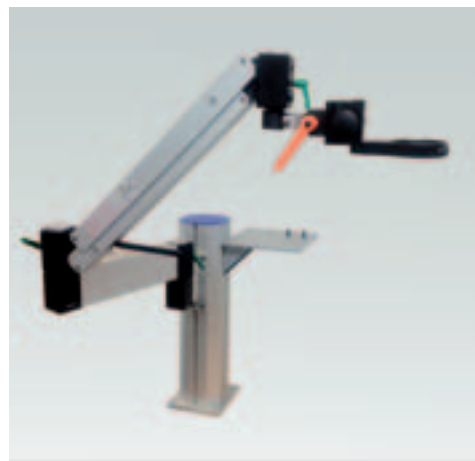
- Useable with high magnification microscopes
- Heavy Duty Focus handles safely equipment up to 20 kg
- Modular setup for laboratories and test stations



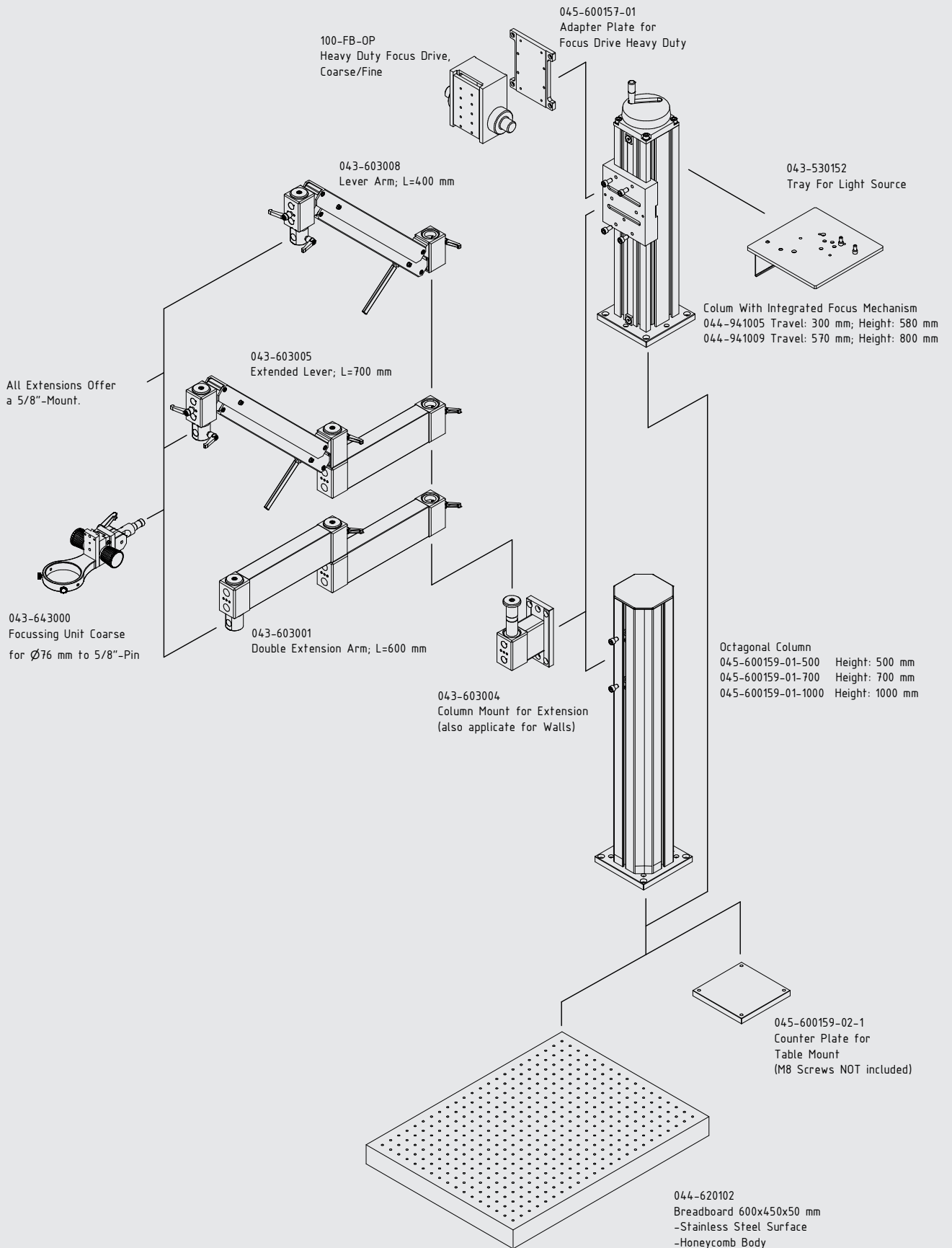
Stress measurements using polarization and DIC techniques require extremely stable stand setups



Perfect fit with Heavy Duty focus drive for high magnifications



Extension arm gives quick access to object and easy height adjustment for changing samples



25 mm Column Stand

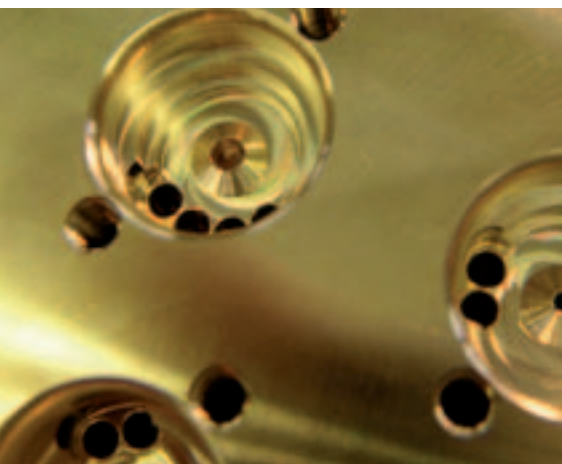
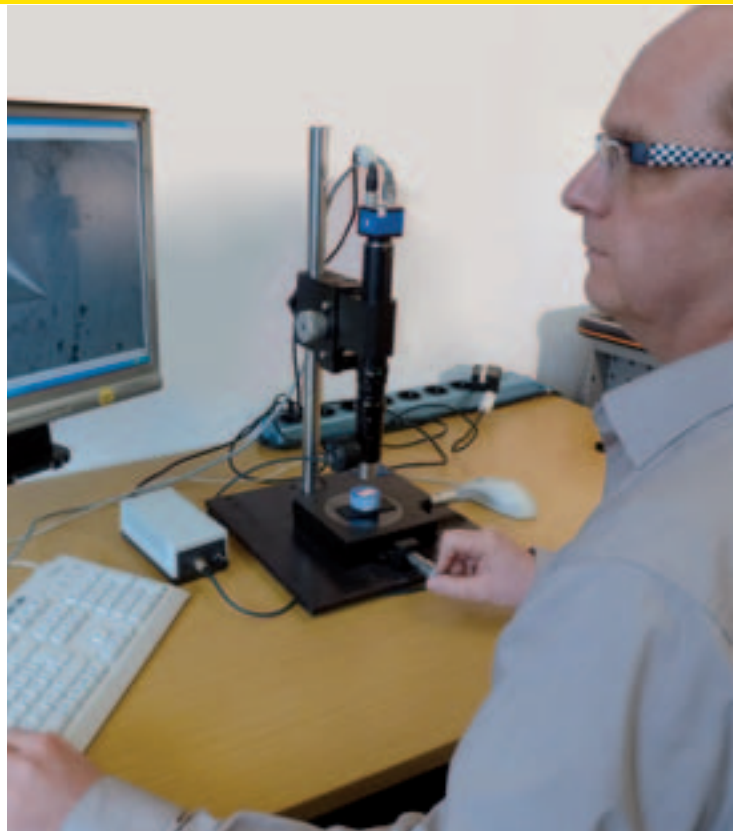
For reliable, economic instrument mounting look no further. Our most popular modular stand system is easy configurable to fit almost any need.

Key Features

- 25 mm column as centrepiece
- Aluminium- or ESD Safe-Base, alternatively Table and Wall Mount
- Mounts 1/4" Camera Threads, 35 mm TV- or 76 mm Stereo-Microscopes

Your Benefit

- Quick yet robust setup
- Simple adjustments and coarse focusing drive
- Easy to upgrade and adept, e.g. with coarse/medium focusing (→ page 17)



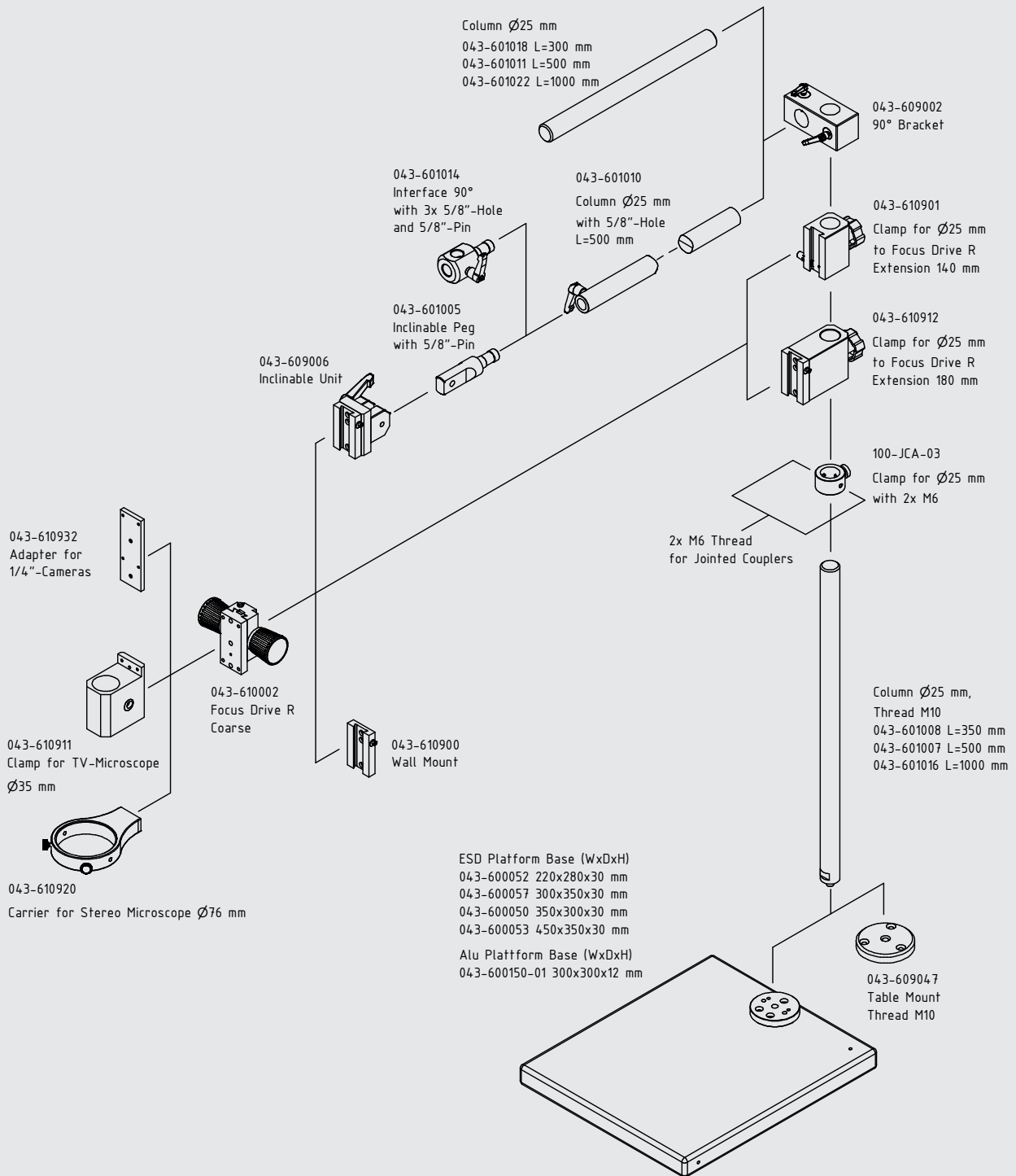
Perfect for quick and easy inspection and documentation



Tiltable 35 mm Microscope Holder with ESD-Base and Spot Illuminator



Stereo Microscope Holder with Coarse Focus Drive and tiltable 5/8"-Pin Adapter



Measurement Stand

This solution enables precise measurements for reliable microscopic analysis. The combined coarse/medium focus mechanism and the robust stand enable the use of micro objectives up to 50x magnification.

Key Features

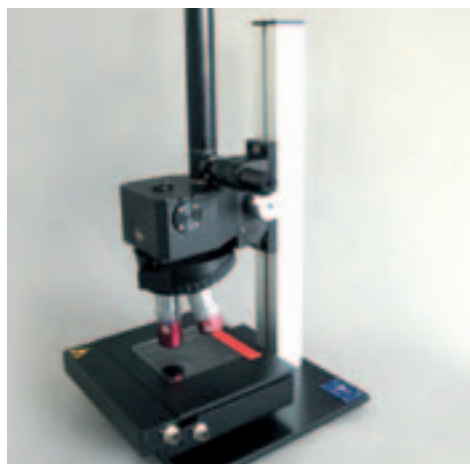
- Column height up to 1000 mm
- 70 mm focus travel
- Sturdy, high precision design

Your Benefit

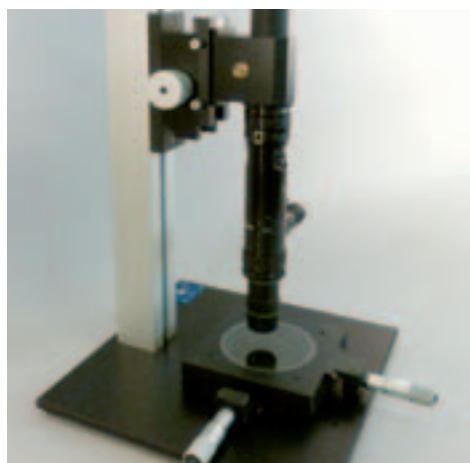
- Rock solid stand for reliable measurements
- Easy to adjust
- Modular system with compact footprint



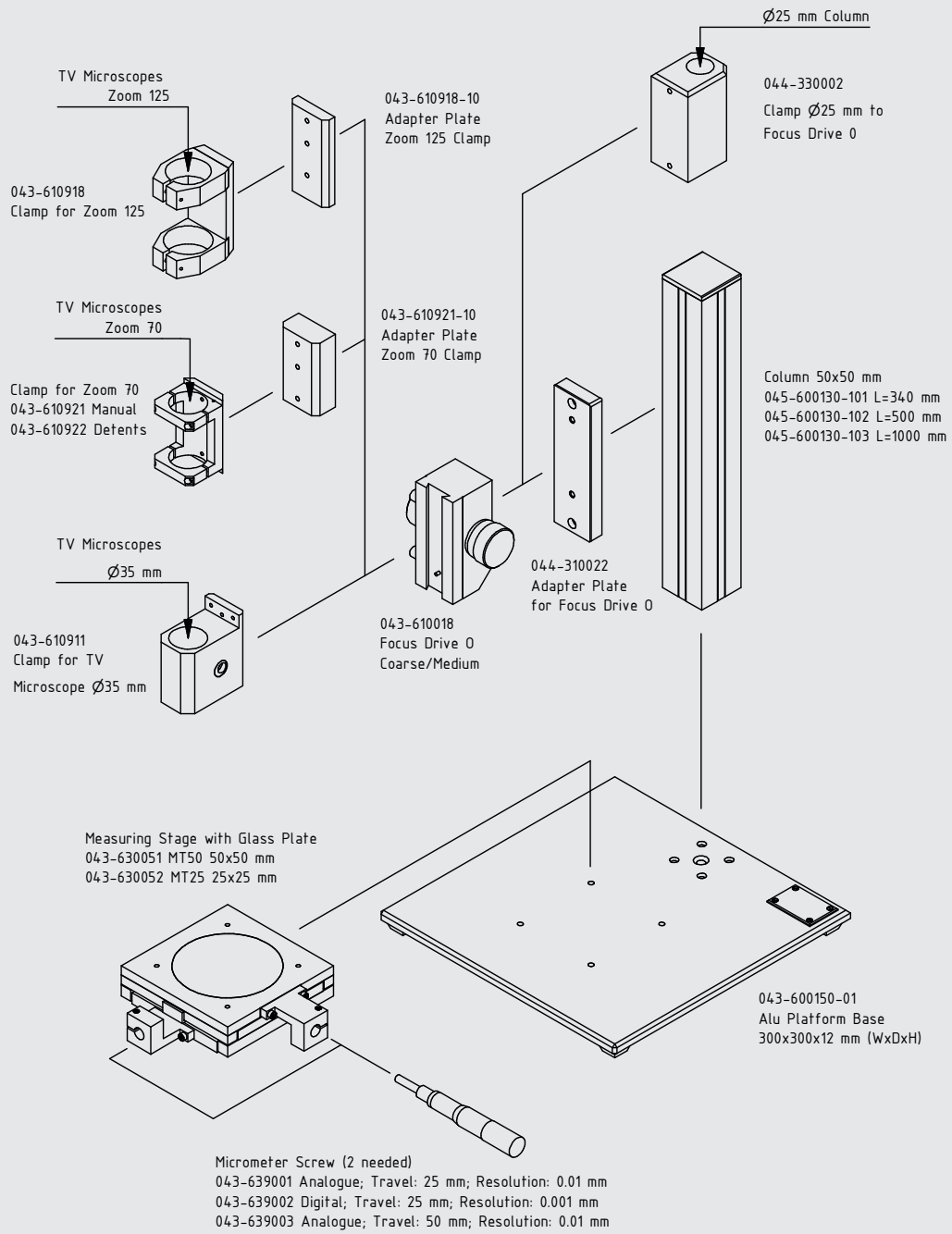
Commonly used for metallurgical measurements like hardness testing



Measuring stage allows optical measurements to sub μm precision

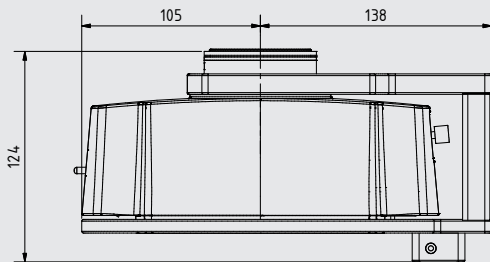


Centerpiece is a high precision combined coarse/medium focus drive

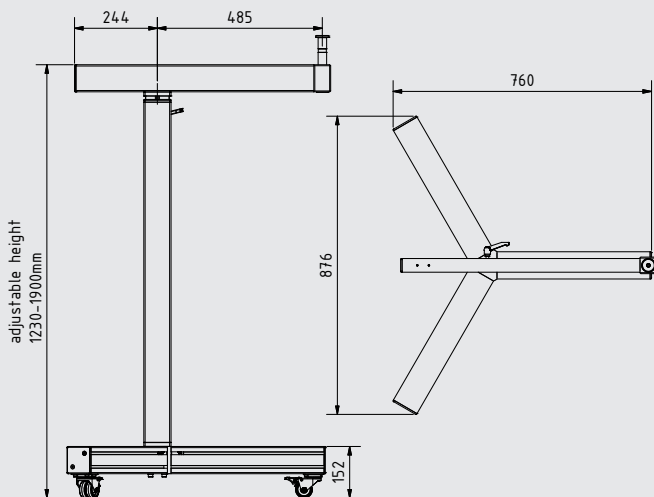


Important Dimensions

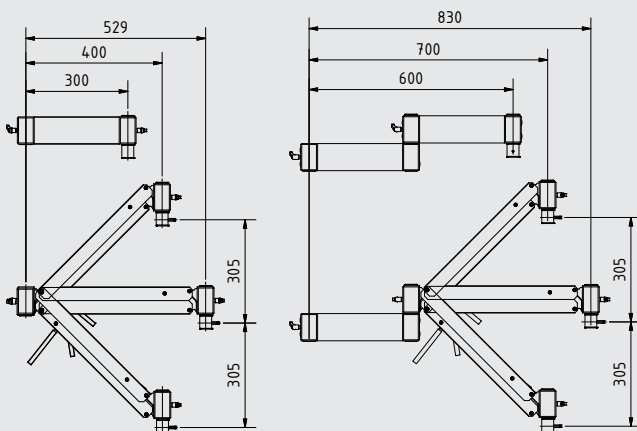
Oblique Viewing Module



Mobile Floor Stand



Extension Arms



Basic Knowledge

Sensor dimension:

Sensor	Photosensitive area	Diagonal
1"	12.8 x 9.6 mm ²	16 mm
2/3"	8.8 x 6.6 mm ²	11 mm
1/2"	6.4 x 4.8 mm ²	8 mm
1/3"	4.8 x 3.6 mm ²	6 mm

Width to height proportion is normally 4 : 3.
The real measurements can vary between manufacturers and models, so please refer to the datasheet of your camera.

Dark Field vs. Bright Field Illumination



Darkfield Illumination
This illumination technique is mainly used for detecting surface defects, scratches or engravings on reflective objects. Light is introduced at very flat angles resulting in strong shadows.



Bright Field Illumination
This is the most common type of illumination and is created Coaxially, or with Ring Lights or Spotlights. It is used to inspect details on plain surfaces. Light is introduced at a very steep angle.

Important optical Terms:

- **Focal Length (f)**
Distance between middle of lens and focus of collimated light
- **Depth Of Field (DOF)**
The range which appears to be in focus
- **Distortion**
Deviation from rectilinear projection
- **Field Of View (FOV)**
Area of an object displayed on chip
- **F-Number**
Defines the amount of light which can pass through an imaging system - high F-Number means less light and large DOF and vice versa
- **Magnification**
Ratio between object and image
- **Magnification on screen**
$$\text{Magnification of the optical system} \times \frac{\text{screen diagonal}}{\text{camera diagonal}}$$
- **Resolution**
Closest distance of two points which can be separated
- **Working Distance (WD)**
Distance between mechanical end of lens and object

Our Custom Solutions and Standard Products are integrated innovatively in medical, industrial and scientific vision applications

Opto develops and manufactures client driven optomechatronic Modules, Components and Systems in quantities ranging from one-off prototypes to full scale production. Our vision is to be a leading supplier of the most innovative vision solutions to the most demanding inspection applications.

Optical Components

for Machine Vision and Microscopy



Inspection Equipment

for Quality Control and Measurement

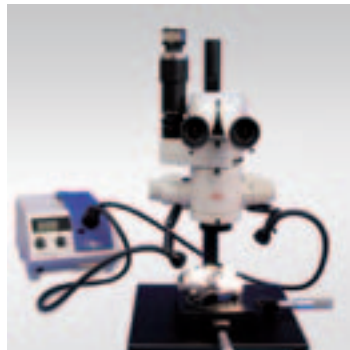
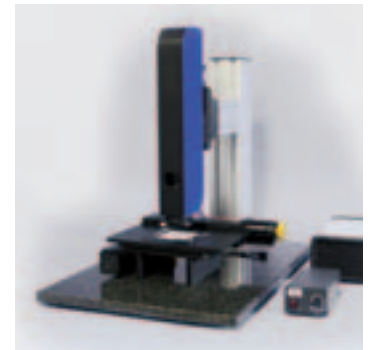
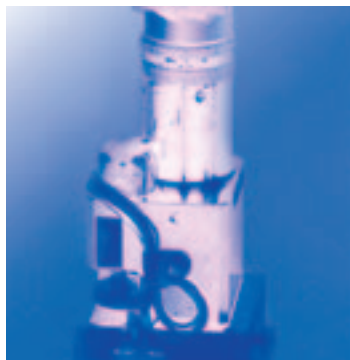


Image Analysis Systems

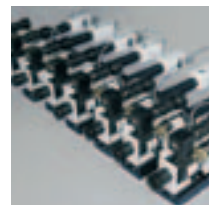
for Industrial Material Science



Custom Solutions



Opto develops and manufactures in quantities ranging from one-off prototypes to full scale production



OEM Modules

Plug and Play Imaging Modules for Machine Builders consisting of Optics, Mechanics, Illumination and Sensors



Customised Machines

Development and Production of complete Inspection / Vision Systems in partnership with Customers



Custom Production

Design and Build to print of Mechanics and Optics

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