



DEDICATED TO THE TRUE  
PIONEERS OF SURGERY.

NEUROSURGERY

# SEE MORE. STAND TALL.

Aesculap Aeos®  
DIGITAL SURGICAL MICROSCOPE PLATFORM

# SEE MORE

WITH THE Aesculap Aeos<sup>®</sup>.



# TRUE PIONEERS

# DESERVE A BETTER VIEW.

In neurosurgery, where a few millimeters can decide between health and disability, proper vision means everything. Conventional optical microscopes have supported the work of surgeons for many decades and continue to fulfill this important task in the neurosurgical operating room. The hands of a neurosurgeon can't treat what his

eyes can't see, therefore a microscope which provides good vision is key to success in neurosurgery. Neurosurgeons should however not be content with solutions that are just "good", with limitations such as a relatively shallow depth of field, rather small field of view, or illumination challenges.

## Challenges of the current technology in terms of vision



### VISION

Small depth of field and field of view



### LIGHT

Illumination challenges (1)



### FLUORESCENCE

Inconvenient fluorescence imaging



### WORKFLOW

Teamwork and teaching difficult

#### References

- (1) Kalani MY, Yagmurlu K, Martirosyan N, Cavalcanti D, Spetzler R: Approach selection for intrinsic brainstem pathologies. *Journal of Neurosurgery*. 2016;125:1-12



# SEE MORE

TRUE PIONEERS DESERVE A BETTER VIEW.

## READY FOR A NEW LEVEL OF VISION?

In order to perform their outstanding tasks with high precision, neurosurgeons deserve to literally see more, supported by advanced imaging equipment.

## SEEING MORE THANKS TO IMPROVED DIGITAL IMAGING

The Aesculap Aeos® can provide the solution to many challenges of conventional optical technology. As a partner of neurosurgeons all over the world, we are committed to introduce groundbreaking Digital Surgical Microscopy technology to neurosurgical operating rooms. Every day, neurosurgeons give their best in the operating room to help patients – and we give our best to support their delicate and precise work with the development of valuable products.





## » MORE INFORMATION AT A GLANCE

- Superior depth of field
- Wider field of view
- Superior illumination
- Backlight illuminated 3D fluorescence modes
- Improved teamwork and teaching

## » FIND OUT MORE

We believe that neurosurgeons deserve to have superior vision. Find out how neurosurgeons can see more with our Digital Surgical Microscope Platform – visit [www.bbraun.com/aesculapaeos-seemore](http://www.bbraun.com/aesculapaeos-seemore)



16:9 WIDE VIEW



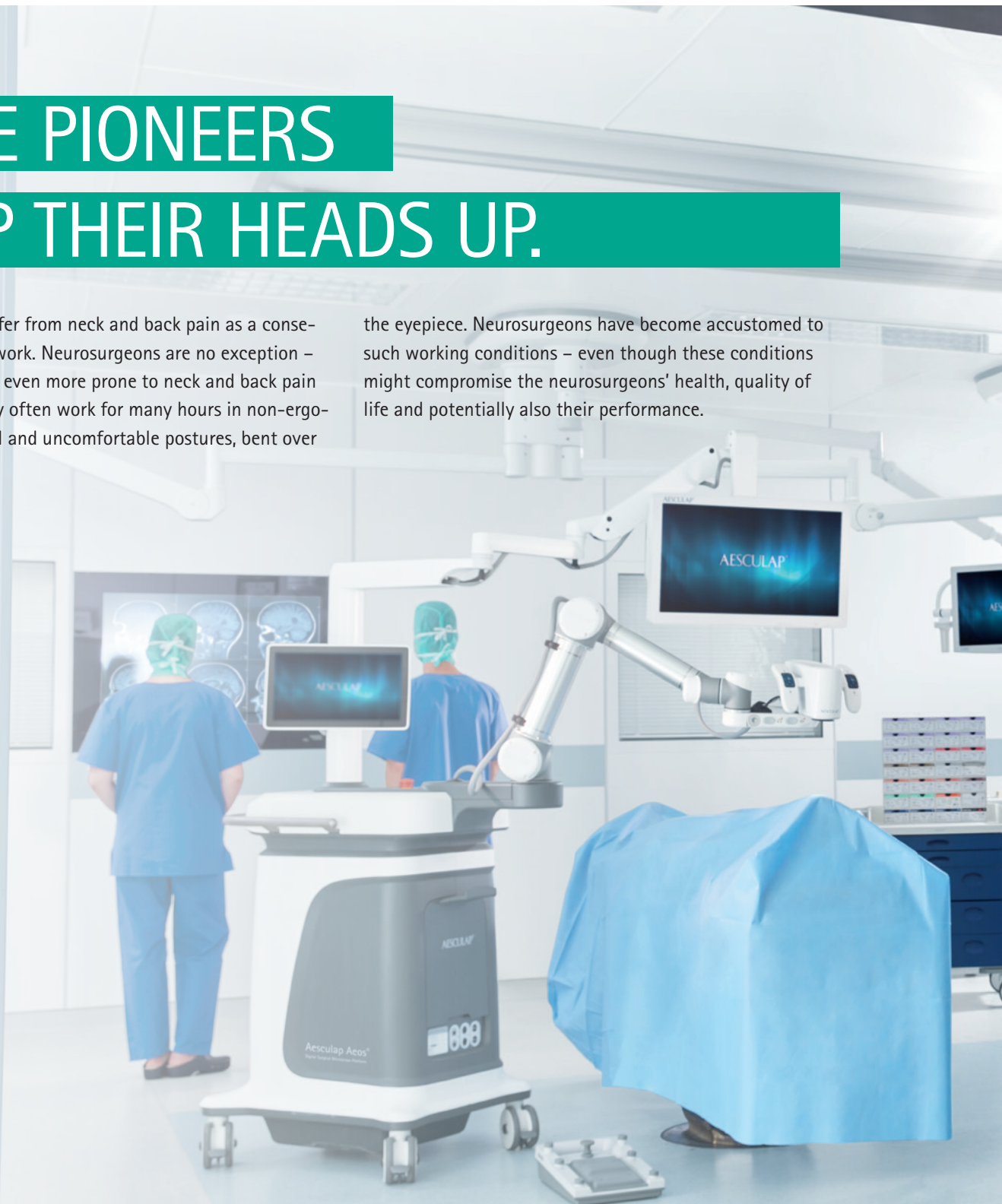
# STAND TALL

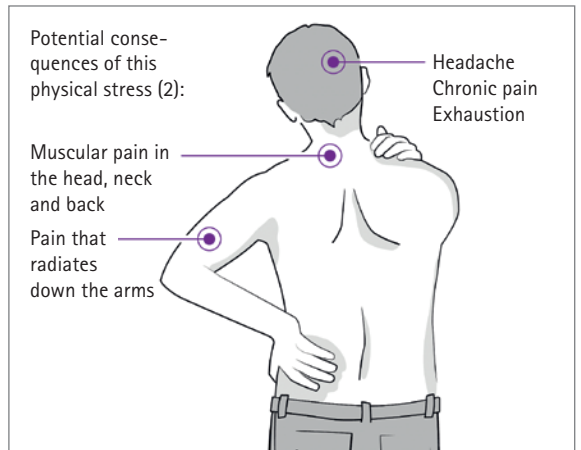
WITH THE Aesculap Aeos®.

## TRUE PIONEERS KEEP THEIR HEADS UP.

Many people suffer from neck and back pain as a consequence of their work. Neurosurgeons are no exception – and they may be even more prone to neck and back pain than others. They often work for many hours in non-ergonomic, unnatural and uncomfortable postures, bent over

the eyepiece. Neurosurgeons have become accustomed to such working conditions – even though these conditions might compromise the neurosurgeons' health, quality of life and potentially also their performance.





### Challenges of the current technology in terms of ergonomics



**4 in 5**

neurosurgeons report pain after a day of surgery (3).



**83 %**

of these had musculoskeletal pain (3).



**1 in 2**

surgeons confirm a negative effect on their performance (4).



For every inch the head moves forward, the head, neck and upper muscles must support an additional

**10 pounds** of weight (5).

#### References

- (2) Pingel K, Ludescher J for Leica Science Lab: Ergonomically Designed Surgical Microscope Support Performance (2013).
- (3) Pingel K for Leica Science Lab: 7 Tips For Better Ergonomics in Neurosurgery (2014).
- (4) Davis WT, Fletcher SA, Guillaumondegui OD: Musculoskeletal occupational injury among surgeons: effects for patients, providers, and institutions. J Surg Res. 2014 in "Shape Shifters". Surgeon News. September 2017:28-30
- (5) Kapandji A. The Physiology of the Joints. Volume 3. 6th ed. London: Churchill Livingstone; 2008.



# STAND TALL

TRUE PIONEERS KEEP THEIR HEADS UP.

## READY FOR A NEW LEVEL OF COMFORT?

Don't you think that neurosurgeons should have everything they need to execute their demanding, high-precision work under favorable ergonomic conditions? We believe that neurosurgeons deserve to be able to stand tall and work more smoothly in an upright position.

## STANDING TALL THANKS TO IMPROVED ERGONOMICS

The Aesculap Aeos® provides remarkable vision quality on one or several 3D screens and therefore enables the neurosurgeons to maintain an ergonomically comfortable posture while performing the surgery.





## » ENHANCED WORKING COMFORT

- Look-over 3D heads-up surgery allows to work in an ergonomically comfortable posture
- Robotic-assisted features allow to position camera conveniently

## » FIND OUT MORE

Find out more about robotic-assisted 3D heads-up surgery and how neurosurgeons can stand tall with our Digital Surgical Microscope Platform – visit [www.bbraun.com/aesculapaeos-standtall](http://www.bbraun.com/aesculapaeos-standtall)



# BE EFFICIENT

WITH THE Aesculap Aeos®.

## PIONEERING ROBOTIC-ASSISTED DIGITAL PLATFORM.

In neurosurgery, millimeters and seconds can change everything. It is therefore of utmost importance that neurosurgeons can perform their sophisticated work under ideal conditions. The surgical microscope has been key to the neurosurgeons' success – however, there are some challenges with respect to efficiency.

A significant amount of the neurosurgeons' time during surgery is spent on constant repositioning, refocusing and readjustments of the microscope, which can prolong surgery by up to 10% (5). This is not ideal – fewer of these interruptions would make the workflow much more efficient.

### Challenges of the current technology in terms of efficiency



#### VISION

Small depth of field and field of view



#### PAIN

Neck and back pain



#### ADJUSTMENTS

Manual repositioning

#### HEAT



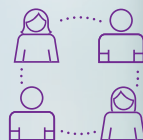
Risk of burns through xenon light

#### HIGH COSTS



Replacement of xenon lamps

#### WORKFLOW



Teamwork and teaching difficult

#### References

- (5) Eivazi S, Afkari H, Bednarik R, Leinonen V, Tukiainen M, E Jääskeläinen J: Analysis of disruptive events and precarious situations caused by interaction with neurosurgical microscope. Acta neurochirurgica. 2015;157:1147–1154.







# BE EFFICIENT

PIONEERING ROBOTIC-ASSISTED PLATFORM.

## IMPROVED WORKFLOW

The Aesculap Aeos® allows for a more efficient workflow thanks to robotic-assisted features along with a remarkable vision quality. Assisted or automated positioning, superior depth of field and wider field of view are only some aspects that contribute to reduce interaction with the microscope and allow to completely focus on the task at hand.

## IMPROVED WORKING CONDITIONS

Long hours in uncomfortable, non-ergonomic postures, bent over the eyepiece likely causes neck and back pain. Such pain may compromise the neurosurgeons' performance, with a potential economic impact for the department. With our Digital Surgical Microscope Platform, however, neurosurgeons work heads-up in an upright and ergonomic posture.







## » BETTER EFFICIENCY

- More information at a glance
- Enhanced working comfort
- Facilitated workflows
- Forward-looking digital platform
- Reduced running cost due to LED illumination

## » FIND OUT MORE

Discover even more ways in which the AESCULAP® Digital Surgical Microscope Platform can help to improve efficiency.

Visit [www.bbraun.com/aesculapaeos-beefficient](http://www.bbraun.com/aesculapaeos-beefficient)



# THE AESCULAP® SERVICE OFFER

FOR THE Aesculap Aeos®.

## Aesculap Aeos® TECHNICAL SERVICE COMPETENCE. SUPPORT. SOLUTIONS.

Neurosurgeons have many responsibilities. Therefore, disruptions of the neurosurgeon's routine are more than just an inconvenience - they interrupt the workflow, reduce the efficiency, and increase the neurosurgeon's stress level.

At AESCULAP®, we have a whole team of skilled service technicians that can take care of your equipment. Our long-standing experience allows us to anticipate and prevent many potentially disruptive situations, ensuring your equipment is always available and ready when needed.

Our comprehensive service portfolio contributes to a trouble-free and smooth daily routine – and allows neurosurgeons to focus entirely on their high-precision work.







## » OUR SERVICE OFFER

- Installation exclusively by competent service technicians ensures secure use and full functionality of the system right from the start
- Transparent and comprehensive service portfolio at good value for money guarantees full system functionality at a fixed cost
- Prevention services to ensure functionality and long system life (included in all levels of service contracts)
- Complete service solution to provide operational and legal certainty. Hotline and on-site service for unexpected service cases.
- Education and consulting services to increase user confidence

# ORDER INFORMATION

FOR THE Aesculap Aeos®.



PV010

Aesculap Aeos®

Please note: PV008 and PV011 not included

6

PV014



## 1

### CAMERA

- | 10 x Optical zoom
- | Working distance 200 – 450 mm
- | HDR imaging
- | Coaxial direct LED illumination
- | 3D backlight illuminated fluorescence (optional)

## 2

### ROBOTIC ARM

- | 6-axis robotic arm
- | Manual positioning
- | Automatic / Robotic-assisted positioning
  - | Lock-on-target
  - | Waypoints

## 3

### 3D SURGICAL SCREEN

- | 26", 31", 32" and 55" models\*
- | Full HD and 4K UHD models\*
- | Passive 3D technology

\*not all models integratable in base

## 4

### CONTROL SCREEN

- | 15.6" display size
- | Touchscreen

## 5

### BASE

- | 3D surgical screen integratable (optional)
- | 3D recording
- | Video outputs: HDMI, DP
- | Video inputs: HDMI, 6G-SDI to integrate external sources such as endoscopic cameras
- | Other interfaces: USB, Gigabit-LAN
- | DICOM (optional)

## 6

### FOOTSWITCH

- | Wireless / Cabled
- | Programmable buttons
- | Joystick

## PRODUCT OVERVIEW

### PV010

Aesculap Aeos®

### PV014

Footswitch, wireless

### PV012SU

Sterile Drape, single-use  
PAK = Package of 5 pieces

## SURGICAL SCREENS AND MONITOR STANDS

### PV011

Upgrade kit for integration of 3D monitor (PV008)

### PV008

26" Full HD 3D monitor

### PV016

Mobile monitor stand (for PV015)

### PV015

55" 4K UHD 3D monitor

### PV818

Mobile monitor stand (for PV644 & PV008)

### PV644

31" 4K UHD 3D monitor

### PV648

32" Full HD 3D monitor

## SOFTWARE MODULES

### PV022

Software module DUV 400

### PV023

Software module DIR 800

### PV024

Software module DICOM

## ACCESSORIES

### PV030

White balance cards  
PAK = Package of 5 pieces

### PV031

Keyboard, wireless

### PV032SU

Test card for DUV 400, single-use

### PV033SU

Test card for DIR 800, single-use

### PV034

Locking HDMI cable, 5 m

### PV969

HDMI to DVI video signal cable, 3 m

### PV621

3D polarization glasses  
PAK = Package of 15 pieces

### PV622

3D anti-fog glasses  
PAK = Package of 5 pieces

### PV623

3D polarization glasses clip

### PV624

3D eye shield glasses kit

# AESCULAP® – a B. Braun brand

Aesculap AG | Am Aesculap-Platz | 78532 Tuttlingen | Germany  
Phone +49 7461 95-0 | Fax +49 7461 95-2600 | [www.aesculap.com](http://www.aesculap.com)



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