Planning Document
for Operating Rooms
**Preamble**

As the operating room (OR) is the most important department for generating profit, the perioperative environment is facing the highest value expectations regarding gaining efficiency while increasing patient outcomes.

Our ongoing efforts seek efficiency gains for increasing OR throughput. The workplace set-up allowing best workflow is, hence, as essential as device connectivity and data integration. We aim to avoid adverse outcomes of patients by dedicated measures. Thus, the reduction of surgical site infections by optimal workplace setups can be as important as translating clinical data into information for clinical decisions.

With our innovative and reliable solutions the core business can be focused: patient protection and treatment. Our solutions combine patient-centred technology with comprehensive services and application competencies to support the improvement of patient outcomes.

Our dedicated OR offering is presented in this brochure with a variety of planning examples.
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### DRÄGER WORKPLACE PORTFOLIO

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### CONTACT

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Where we are heading

The healthcare market is developing fast due to many different external and internal influences. Global megatrends like globalization and digitalization are effecting the everyday life in hospitals. Financial ramifications are putting pressure on optimizing workflows. We at Dräger are aware of these trends and provide solutions for the arising challenges.

**AGEING POPULATIONS**
Globally the population of persons older than 60 years is growing by 2%\(^1\) annually putting the health care system under pressure to optimize workflows and procedures in order to stay profitable by reducing time and cost of care.

**INFECTION PREVENTION AND CONTROL**
Increasing numbers of impaired immunity occur due to age, illnesses and treatments allowing more severe and chronic diseases to spread. Thus, infection prevention and control is becoming more and more important in order to avoid the spread of nosocomial diseases.

**PATIENT AND STAFF SATISFACTION**
Satisfied employees deliver improved care providing better patient experiences. In the future, hospitals will have to compete even stronger, for example with ergonomic workplaces, for qualified caregivers.

In addition, trends can be identified specifically for operating rooms.

**DIGITALISATION AND NEW IMAGING METHODS**
Availability of data in the OR is getting increasingly important to provide clinical decision support and enable interoperability between different devices. New imaging methods are used for better diagnosis and therapy options. In order to meet these new demands, an enabling IT infrastructure and different equipment is needed.

**SHORTER OPERATION CYCLES AND OPTIMIZED OCCUPANCIES**
Hospitals are facing the burden of restrictive cost-pressure. As a consequence, processes need to be standardized and optimized to achieve shorter operation cycles and optimized occupancies. Thus, the costs of care can be reduced while patient safety and outcome are simultaneously improved.

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Workplace design

“Design from the inside out”: Starting the planning process with the patient is a proven concept to design sustainable and optimized OR workplaces. Planning from the inside out puts emphasis on the actual needs of patient-centred care and eliminates rash dimensional or technical restrictions.

NEW TECHNOLOGIES, NEW CONCEPTS
Operating room design is changing in order to meet the requirements dictated by new procedures, technologies and developments in the healthcare market. When designing a new operating room, it’s imperative to understand and consider both the present and possible needs of the client in 10–15 years from today.

FUTURE-PROOF DESIGN CONCEPTS
Dräger offers a wide range of products designed with maximum flexibility in mind. This is true both in terms of daily clinical routines as well as long range planning. Our vast array of custom-built design options in combination with our consulting services can solve just about any workplace design challenge, and ensure smooth workflows at your site.
Our project competencies at a glance

Since many decades, we have been successfully planning treatment areas in various projects all over the world. We are well acquainted with the local requirements and carry out projects with a high disciplinary knowledge and experience in hospital planning with our own broad portfolio as well as with additional offerings from third-party providers.

Inform yourself on our core project competencies that we have gathered over the years.

**CONSULTATION**
- Workplace design advice
- Process know-how
- Infrastructure solutions
- Hygiene concept

**3D VISUALIZATION**
- 3D tool
- Renderings
- Virtual Reality

**PROJECT MANAGEMENT**
- Installation expertise
- On-site support
- Logistics management
- 3rd party coordination

**WORKSHOPS AND TRAINING**
- Dräger Design Center and Showrooms
- Expert knowledge on standards, trends and news

**SERVICES**
- Maintenance & Repair
- Upgrades/Updates provider
- Original spare parts provider
Dräger Design Centres and Showrooms

The Dräger Design Center in Lübeck and showrooms all over the world have been created to help you design optimal workplaces for your hospital’s specific needs. Experience your individually designed future workplace before investing in it.

In an 800m² area, Dräger has mapped every hospital process that affects the care of patients in life-threatening situations – from emergency admissions and the operating theatre to the intensive care ward. In the Dräger Design Center in Lübeck and Dräger showrooms all over the world, users and planners can work together with Dräger experts to share knowledge and experience, plan and design medical workplaces under realistic conditions. In a real-life set up, workplaces can be tested and optimized with regards to ergonomics and workflow efficiency.

Watch the following video for further information:
Tailored room designs

MULTI-PURPOSE OR
A multi-purpose OR has to predominantly provide flexibility to enable efficient interventions in various disciplines. A wide variety of positions of the operating table and further infrastructural and medical equipment, like surgical lights and belonging arm systems, need to be considered when defining the space requirements of the surgical suite.

INTEGRATED OR
An integrated OR is the result of the demand to digitalize operating rooms and its workflows. Throughout an integrated OR video management, doors, blinds, lights, table, surgical lights and many other functions are controlled by one central system. A challenge in designing the room is managing a high quantity of devices and their IT interfaces. Additionally special media outlets and cables are required (e.g. fibre optic cables) in order to enable a fully integrated system.
HYBRID OR
A Hybrid OR combines a conventional operating room with an advanced imaging system like C-arms or CT scanners. The imaging system provides the surgeon with intraoperative images. Thus, efficient minimally-invasive surgery can be performed enabling less traumatic interventions for the patient. A sufficient number of large screen monitors is essential. Furthermore, ceiling-mounted rails necessitate long swivel arms in order for them to be able to reach the operating field. Consequently, a Hybrid OR design has to ensure that collisions between arm systems and imaging devices are prevented. Additionally, x-ray protection has to be installed. Mobile and ceiling-based x-ray shielding is needed while walls and windows must contain lead shielding.

RECOVERY UNIT
After an operation, patients are being transferred to a recovery unit close to the operating rooms. In a recovery unit patients are being kept under close surveillance while recovering from anesthesia and interventions. Specialized staff cares for the patients to prevent post-surgical complications.
Aspects of designing an OR

Complex requirements have to be met when designing operating rooms and the respective workplaces. Different aspects have to be considered in order to create optimal and value adding room and workplace designs.

**FUNCTIONALITY**
All clinical needs must be met completely. These include an ergonomic workplace design with versatile lighting options, the easy availability of medical gases, electricity and communication outlets and also the possibility of including further equipment if necessary. Our supply units offer you all the alternatives while keeping in mind the interests of efficiently supporting the daily OR routine.

**VARIABILITY**
Variable solutions allow you to be flexible when adjusting to diverse requirements and structural factors and help you carry out subsequent changes without problems. Our wide portfolio of beam and boom supply units, including diverse workstation components, allow you extensive flexibility in many respects.

**IDEAL WORKING CONDITIONS**
The workplace design has a direct impact on the efficiency of clinical procedures and processes. Create ideal workplaces with regards to design, equipment and accessories to optimize workflows and diminish the hospital staff’s workload. This enables an increasing quality of care which can result in better patient outcomes.

**COST-EFFECTIVENESS**
Today more than ever, hospitals need cost-effective solutions. However, what can seem as the cheapest solution is not the same as the most cost-effective. Dräger impresses with its high quality of fixtures, the possibility of simple assembly and retrofitting as well as standard and exchangeable fittings for all supply units – factors that are significant for total operating costs.
MEDIA ACCESS

REASSURING AVAILABILITY

In order to operate diagnostic and treatment devices properly as well as delivering care to the patient, different media have to be made available throughout the OR. Therefore it is necessary to have the right number of reliable media outlets in the right places. Electricity, video signals and other data as well as gases and vacuum need to be provided accordingly to optimize processes via enabling smoother workflows and enhanced ergonomics.

CONTROL AND INTEGRATION CONCEPT

ENABLING SAFE AND SIMPLE CONTROL

A constant increase in technology around the operating table necessitates a cross-system control and integration concept allowing the personnel to focus on the intervention and care-giving to the patient. Furthermore, constantly changing user processes demand for flexibility in interfacing and equipment positioning possibilities. We ensure multiple cross-platform control through open digital interfacing protocols and have extensive knowledge on requirements for positioning and control of devices in various different operating room types, such as multi-purpose ORs, hybrid ORs and integrated ORs.

INFECTION PREVENTION CONCEPT

DEDICATED INFECTION PREVENTION CONCEPT

With an infection prevention and control program, a hospital can increase patient safety significantly by avoiding nosocomial infections. We at Dräger have taken dedicated countermeasures against nosocomial infections to contribute to patient safety in hospitals. By taking hygiene into consideration during room, workplace and product design, our solutions are easy to clean and disinfect. For the day to day procedures, we provide appropriate lifecycle solutions like breathing air filters that have a direct impact on infection prevention and control.
Dräger Workplace Portfolio for the OR

Safety, precision and efficiency are vital in the OR. Our trend-setting technology allows focusing completely on the intervention. Flexibly configurable anesthesia workstations, multi-functional ceiling supply units or sophisticated surgical lights providing simply good light – all solutions are consequently designed for intuitive usability and optimised workflows.

Thus, interventions can be performed more precisely, safely and efficiently. Innovative hygiene concepts support our customers with significantly reducing the risk of nosocomial infections. Better outcomes and simultaneous improved cost-effectiveness? What sounds like a contradiction, is possible to become the new standard in hospitals thanks to our innovative OR concepts.
Medical Supply Systems

Ceiling Supply Units (CSU)

With our ceiling supply unit portfolio we offer a specialized solution for each application scenario with regards to workplace flexibility, expandability, ergonomics and loading capacity.

GENERAL PLANNING TIPS

- Which anesthesia device (lifting or mobile version)?
- Which surgical devices have to be placed? (size, weight, media connections)
- Is a cart (Mova® Cart) in use which could be docked at the supply unit?
- Are there infusion pumps which have to be mounted?
- What is the most ergonomic placement of devices?
- How many outlets are needed to ensure the supply with gases, electricity and IT?
- Select a long or short column/head/equipment rack (e.g. anesthesia device under or in front of the column)
- Select an arm system (where must the supply unit be placed, where are parking positions?)
- Select height adjustable or non-adjustable system (e.g. different heights for staff)
- Select workplace components (shelves, infusion poles)
- Select handles/grips for brakes/height adjustment (from where will the units be positioned? back, front)
- Select cable management (are many cables and hoses to be expected? How can they be managed? Cable boxes, cable holders, channels?)
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**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Product</th>
<th>Agila®</th>
<th>Movita®</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load capacity media head</td>
<td>120 kg</td>
<td>120 kg</td>
</tr>
<tr>
<td>Load capacity column</td>
<td>120 kg</td>
<td>max. 300 kg</td>
</tr>
<tr>
<td>Load capacity Lift express/Lift/Lift Strong</td>
<td>80 kg/120 kg</td>
<td>80 kg/180 kg/300 kg</td>
</tr>
<tr>
<td>Lift speed</td>
<td>10/20 sec</td>
<td>10/20 sec</td>
</tr>
<tr>
<td>Height adjustment</td>
<td>600 mm</td>
<td>600 mm</td>
</tr>
<tr>
<td>Media outlets</td>
<td>up to 51</td>
<td>up to 102</td>
</tr>
</tbody>
</table>

**Arm system Movita®** (column and head)

**Arm system Agila®** (EasyLift and head)

**Arm system Agila®** (column and column tube)

Agila®
Compact yet expandable supply unit.

Movita®
High-performance supply unit with enhanced loading capacity.

Movita® Lift Strong
Enables lifting of heavy devices with a load capacity of up to 300 kg.
**PRODUCT DESCRIPTION**
Arm systems offer a flexible, large working radius and allow to combine columns, heads and lifting systems. Workplaces can be rearranged in short time in order to adapt to changing requirements and procedures.

**LIFTING AND POSITIONING DEVICES**
Thanks to its modular design featuring a variety of arm lengths, columns and heads, the Agila®/Movita® family offers the flexibility to position medical devices where you need them within a working radius of up to 6 meters.

The high degree of media panel configuration flexibility as well as a complete spectrum of workplace components give you the power to equip the system accordingly to your exact needs.

Integrated cable management for the Movita® and lift functions for Agila®/Movita®, further enhance possibilities for an ideal ergonomic workplace design.

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**LOAD CAPACITY**
Maximum load that can be attached at the end of the arm system

**MAXIMUM LOAD**
Maximum load that can be attached to the media head or column

**NET CARRYING CAPACITY**
Maximum load less dead weight of carriers, drawers etc.

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**Single arm system**
Arm length: 500 mm, 750 mm, 1,000 mm, 1,250 mm
Load capacity: 120 kg – 270 kg

**Double arm system**
Arm length: min. 1,000 mm – max. 2,500 mm
Load capacity: 120 kg – 270 kg

**Lift arm system**
Arm length: min. 1,000 mm (lift arm) – max. 2,500 mm
Load capacity: 80 kg – 180 kg / Lift Strong up to 300 kg

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**Arm types**
For single and double arm systems, you can choose between heavy-duty, medium and lightweight models. Load capacities are defined by the type and length of arm.
SURGICAL WORKPLACES

Movita® with lifting arm, short column and shelf

Movita® with long column and three shelves

Movita® with docked Mova® Cart 3.0 trolley

CSU with media head and tubes for shelves and infusion pumps

ANESTHESIA WORKPLACES

Lifting anesthesia devices off the floor helps to reorganize the workplace with little effort, allowing optimal usage of the space in an operating room. This solution offers flexibility in case requirements with regards to the room design change over time after installation. Furthermore, a precise adjustment to the specific ergonomic needs of an anesthetist is made possible within a short amount of time.

Movita® Lift Strong with mounted anesthesia workstation Perseus A500

Movita® with mounted anesthesia workstation Fabius Tiro

Movita® with mounted anesthesia workstation Primus
Wall Supply Units

After an operation, patients are being transferred to a recovery unit for supervision while recovering from anesthesia and interventions. In a recovery unit wall supply units are being commonly used enabling patient-centred care while additionally being a cost-effective solution.
VERTICAL WALL SUPPLY UNITS

Gemina®DUO
With great flexibility in mind, Dräger Gemina®DUO wall-mounted supply column system lets you choose from a wide range of configurations and options, helping to create a workspace for efficient, patient-centred care. Used in a recovery room, one Dräger Gemina®DUO can serve two beds, providing a very cost-effective solution.

HORIZONTAL WALL SUPPLY UNITS

Linea®
A highly modular media supply solution that can be customized to your specific needs. Combine flexibility and ergonomics with a complete line of custom bedhead units for electrical, gas and IT supply solutions as well as illumination options. With its variable lengths and configurations Linea® can serve one or multiple beds in a recovery room.

TECHNICAL DATA

<table>
<thead>
<tr>
<th>Product</th>
<th>Gemina®DUO</th>
<th>Linea®</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height x depth</td>
<td>240 × 366 mm</td>
<td>174 × 135 – 461 × 135 mm</td>
</tr>
<tr>
<td>Length</td>
<td>1,500 mm</td>
<td>Up to 6 m; freely selectable</td>
</tr>
<tr>
<td>Max. load</td>
<td>150 kg</td>
<td>Standard rails support a max. of 50 kg per metre</td>
</tr>
<tr>
<td>Rows of outlets</td>
<td>2 × 2</td>
<td>1 – 3</td>
</tr>
<tr>
<td>Lighting</td>
<td>Optional indirect light, night light</td>
<td>Optional indirect light, night light, reading light</td>
</tr>
<tr>
<td>Accessories</td>
<td>Cable management, 38 mm pole mounted accessories</td>
<td>Dräger standard rail accessories</td>
</tr>
</tbody>
</table>

*Made by V.T.S. Vision Technology Systems GmbH, Arnsberg, Germany
Medical Lights and Video Systems

GENERAL PLANNING TIPS

- How many light heads are required?
- Which size is necessary?
- Is a central axis possible? (movement of C-Bow) Or a separate mounting on two sides?
- Do you need a third light at foot end? (e.g. for vein harvesting)
- Do you need a small examination light? (e.g. for catheter preparation)
- Do you need an integrated camera?
- Is a connection to the OR-integration system required?
- How will the lights be controlled?
  (at cardanic, wall control panel, remote control, touch screen in integrated OR)
- Where will displays be placed? (size and number is important)
- Select a display holder (e.g. display holder at central axis or holder at supply unit)
SURGICAL AND EXAMINATION LIGHTS

Our lighting and video systems offer excellent illumination for all surgeries as well as examination applications and can be adapted to your specific working environment. For Dräger, top quality and durability are key priorities.

The outstanding feature of our lights is their easy and intuitive handling. Additional functions such as colour markings on the light heads, sterile touch control (STC), or a sync mode make the working day in the OR much more comfortable.

TECHNICAL DATA

<table>
<thead>
<tr>
<th>Product</th>
<th>Polaris® 600</th>
<th>Polaris® 100/200</th>
<th>Polaris® 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
<td>LED</td>
<td>LED</td>
<td>LED</td>
</tr>
<tr>
<td>Light intensity</td>
<td>20,000 – 160,000 lux</td>
<td>40,000 – 120,000 lux / 40,000 – 160,000 lux</td>
<td>60,000 lux</td>
</tr>
<tr>
<td>Endo-light mode</td>
<td>3,000 lux</td>
<td>300 lux</td>
<td>no</td>
</tr>
<tr>
<td>Lightfield diameter</td>
<td>190, 230, 280 mm</td>
<td>200 mm</td>
<td>160 mm</td>
</tr>
<tr>
<td>Colour temperature</td>
<td>3,800, 4,400, 5,000 and 5,600 K</td>
<td>4,400 K or 5,000 K and 5,600 K</td>
<td>4,500 K</td>
</tr>
<tr>
<td>Video options</td>
<td>upgradeable integrated Full HD camera</td>
<td>no</td>
<td>no</td>
</tr>
</tbody>
</table>

INTERFACE

Intelligent and intuitive control
The sterile handle with intuitive touch technology enables surgeons to adjust the light intensity and the light field diameter themselves. The OR team can adjust the light at the control panel or by using the wall panel or the remote control unit.
Find below some of the most often used configurations of surgical lights. Many different combinations are possible in order to create a lighting system tailored to your needs. Besides a reusable handle you can also choose a disposable handle for Dräger surgical lights, or displays.

**CONFIGURATIONS**

Polaris® 600 single head with disposable handle

Polaris® 600 Mobile

Integrated MedView Camera

Polaris® 600 MedView and Polaris® 600 double light combination

Polaris® 600 and Polaris® 100 double light combination

Polaris® 600 and Polaris® 100 combination with display
Central Axis System

For the best working conditions in the OR, our central axis options offer great flexibility for positioning surgical lights, cameras and displays. Options vary from one- up to four-fold axes with standard lengths of 700, 850, 1,000, 1,150 and 1,450 mm.

<table>
<thead>
<tr>
<th>Arm system</th>
<th>Swivel arm length (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-fold central axis (ø 110 mm)</td>
<td>850</td>
</tr>
<tr>
<td></td>
<td>1150</td>
</tr>
<tr>
<td></td>
<td>1450</td>
</tr>
<tr>
<td>AC 2000/3000 1-fold</td>
<td>750</td>
</tr>
<tr>
<td>2-fold central axis</td>
<td>700/850</td>
</tr>
<tr>
<td></td>
<td>700/1150</td>
</tr>
<tr>
<td>3-fold central axis</td>
<td>700/850/1000</td>
</tr>
<tr>
<td></td>
<td>700/850/1150</td>
</tr>
<tr>
<td>4-fold central axis</td>
<td>700/850/1000/1150</td>
</tr>
</tbody>
</table>

All central axes are freely configurable. Display holders, external cameras, X-Ray protection shields or OR lights can be mounted on each position. A display holder must be mounted at either the lowest or highest position.
CENTRAL AXIS SYSTEM FOR THE HYBRID OR

Several axes especially designed for use in Hybrid OR are available. You can choose between a 1 and 2-fold axis. Available lengths: 1,300 to 2,200 mm

These axes are also useful if two mounting points are outside the LAF-field (left and right).

SWIVEL ARMS

<table>
<thead>
<tr>
<th>Arm system</th>
<th>Swivel arm length (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-fold central axis</td>
<td>1300 1400</td>
</tr>
<tr>
<td></td>
<td>2200</td>
</tr>
<tr>
<td>2-fold central axis</td>
<td>1150/1300 1300/1450</td>
</tr>
<tr>
<td></td>
<td>2050/2200</td>
</tr>
</tbody>
</table>

SPRING ARMS

Light heads and display holders are mounted on swivel arms using spring arms. Spring arm length: approx. 910 mm (OR lights)
Display Holders

Today’s hospitals have an increasing demand of imaging systems in operating rooms. Display holders have to be considered accordingly during the planning process.

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Product</th>
<th>Display holder at CSU</th>
<th>Display holder at central axis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Swivel and lift arms mounted on CSU</td>
<td>Display arm at central axis</td>
</tr>
<tr>
<td>Display sizes</td>
<td>approx. 26” (VESA 100 adaptor), max. 15 kg</td>
<td>approx. 32” (larger displays on request)</td>
</tr>
<tr>
<td>Display quantity</td>
<td>depending on column size</td>
<td>1 (19 to 32”) or 2 (19 to 24”)</td>
</tr>
<tr>
<td>Fixation</td>
<td>at CSU Media column</td>
<td>at central axis of OR light or separate</td>
</tr>
</tbody>
</table>
Ceiling fixtures

GENERAL PLANNING TIPS

- Design the ceiling fixture for max. load capacity (upgradeability)
- Select a uni-flange for possible double CSU (upgradeability)
- Design of double CSU: clarify dead swivel range of arm system
  > long distance tubes on rear or front side
- Consider a second anesthesia CSU for TIVA (Total intravenous Anesthesia) or infusion management
- Possible parking positions for supply units for OR change
  > stops in arm systems have to be set accordingly
- Consider possible collisions of pendants with air flow ceiling curtains or other interior fixtures
- Consider room dimensions and the resulting space (clearance height) under arm systems (arm/motor hood) and grips of OR lights, space under columns for cleaning or further devices such as patient warmer or suction systems
TYPES OF CEILING COVERS

Ceiling hood (height: 170 mm)

Flat cover (height: 2 mm)

SINGLE/DUOUBLE/TRIPLE CEILING SUPPLY UNITS

Single CSU

Double CSU

Double CSU with third arm

OPTIONS

<table>
<thead>
<tr>
<th>Single</th>
<th>Double</th>
<th>Triple</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSU</td>
<td>CSU/CSU</td>
<td>CSU/CSU/CSU/Display</td>
</tr>
<tr>
<td>Light</td>
<td>CSU/Light</td>
<td>CSU/CSU/Light</td>
</tr>
<tr>
<td>Display</td>
<td>CSU/Display</td>
<td>CSU/CSU/Display</td>
</tr>
<tr>
<td>X-Ray Protection Shield</td>
<td>CSU/X-Ray Protection Shield</td>
<td>CSU/CSU/X-Ray Protection Shield</td>
</tr>
</tbody>
</table>
CEILING FIXTURES FOR SUPPLY UNITS

PRODUCT DESCRIPTION
The universal Dräger ceiling mount supports the installation of Agila® and Motiva®. They are designed for either anchor (fig. B + D) or bolt-through (fig. A + C) mounting. The ceiling supply can be directly attached to a concrete ceiling (direct mounting, see A1 and B1 in figure below).

A variable fixture kit enables mounting up to 1,200 mm under the concrete ceiling in order to bridge the space between it and a false ceiling. A media flange, located between the raw and false ceilings, offers enough space for connecting supply voltage, medical gas, vacuum and data cables. The installation manuals are included in the delivery.

PLANNING GUIDELINES
Dräger ceiling supply units are tested for use with these ceiling fixtures. This certification is invalidated if non-Dräger ceiling mounting systems are used.

The ceiling mount must meet the following criteria:
- 12,500 Nm of torque at the lower end of the fixture
- 9,000 N tensile force at the ceiling

If the building design is not compatible with a Dräger ceiling mount, a custom design can be substituted. Certification of the two conditions stated above is mandatory. The performance specifications of a Dräger ceiling supply unit cannot be guaranteed if a mounting design is used which does not meet the required criteria listed above. In such cases, any given approvals are automatically invalidated.

Available for:
- Anchor mounting: Anchor mounting is possible if the ceiling is constructed with at least 250 mm of B 25 concrete
- Bolt-through mounting: Bolt-through mounting is required if the ceiling thickness is less than 250 mm or the concrete quality is less than B 25.

TECHNICAL DATA

<table>
<thead>
<tr>
<th>Product</th>
<th>Ceiling fixtures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Span intermediate ceiling distance</td>
<td>up to 1200 mm</td>
</tr>
<tr>
<td>Max. torque</td>
<td>12,500 Nm</td>
</tr>
<tr>
<td>Max. tensile force at the ceiling</td>
<td>9,000 N</td>
</tr>
<tr>
<td>Hole pattern</td>
<td>Ø 470 mm</td>
</tr>
</tbody>
</table>
CEILING FIXTURES FOR SURGICAL LIGHTS AND DISPLAY ARMS

PRODUCT DESCRIPTION
The Dräger ceiling mount supports the installation of lights and display holders (on the central axis). The OR light/display arm can be fixed directly under the concrete ceiling (direct mounting). The distance tube allows mounting at heights of up to 1,200 mm under a concrete ceiling in order to bridge the space above a false ceiling. The installation manuals are included with delivery.

MOUNTING OPTIONS

Direct mount
This system is recommended as a direct mount or for use with a false ceiling up to a distance of 600 mm between the concrete and false ceiling or in combination with a laminar flow system. The suspension tube is available in five standard lengths (220/460/630/800/1,000 mm). For service purposes, it should be considered that the electrical components must be installed in a switch box near the OR (max. 40 m).

Distance tube
This system is recommended for use with distances > 600 mm between the concrete and false ceiling or in combination with a laminar flow system. The distance tube is available in two standard lengths (600/1,200 mm). For service purposes, it should be considered that the electrical components must be installed in a switch box near the OR (max. 40 m).

TECHNICAL DATA

<table>
<thead>
<tr>
<th>Axis system</th>
<th>Arm lengths</th>
<th>Spring load arm lengths</th>
<th>Vertical force (F)</th>
<th>Torque (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-fold axis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1f axis xxx</td>
<td>850 mm</td>
<td>930 mm</td>
<td>960 N</td>
<td>910 N m</td>
</tr>
<tr>
<td>1f axis AC2000 display</td>
<td>700 mm</td>
<td>930 mm</td>
<td>870 N</td>
<td>460 N m</td>
</tr>
<tr>
<td>1f axis AC3000 display</td>
<td>750 mm</td>
<td>930 mm</td>
<td>940 N</td>
<td>700 N m</td>
</tr>
<tr>
<td>1f axis xxx 1150</td>
<td>1,150 mm</td>
<td>930 mm</td>
<td>1,000 N</td>
<td>760 N m</td>
</tr>
<tr>
<td>1f axis xxx 1450</td>
<td>1,450 mm</td>
<td>930 mm</td>
<td>1,030 N</td>
<td>640 N m</td>
</tr>
<tr>
<td>2-fold axis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2f axis xxx/xxx</td>
<td>700/850 mm</td>
<td>930 mm</td>
<td>1,530 N</td>
<td>1,280 N m</td>
</tr>
<tr>
<td>2f axis xxx/xxx 1150</td>
<td>700/1,150 mm</td>
<td>930 mm</td>
<td>1,400 N</td>
<td>1,260 N m</td>
</tr>
<tr>
<td>3-fold axis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3f axis xxx/xxx</td>
<td>700/850/1,000 mm</td>
<td>930 mm</td>
<td>1,920 N</td>
<td>1,850 N m</td>
</tr>
<tr>
<td>4-fold axis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4f axis xxx/xxx</td>
<td>700/850/1,000/1,150 mm</td>
<td>930 mm</td>
<td>2,490 N</td>
<td>2,680 N m</td>
</tr>
</tbody>
</table>
Workstation Components

In order to enable ergonomic workplace design, Dräger offers a wide range of freely configurable workstation components for user-friendly positioning of medical devices. Workplaces in emergency units, operating rooms, intensive care units and in other medical areas can be tailored to the specific needs of medical staff thus enabling patient-centred care.

PATIENT LIFTER

Patient lifter on third arm of CSU
A patient lifter enables a convenient and dignified transfer of patients taking away physical effort from clinical staff. Dräger lets you combine the Guldmann patient lifter module with a ceiling supply unit.

TROLLEYS

Mova® Cart 3.0
A mobile, flexible and safe workplace concept that is also easy to disinfect. The Mova® Cart can be docked to the supply units for greater flexibility and takes physical exposure from a hospital’s staff.
Our shelf portfolio includes a wide range of options. You can choose from different shelf sizes, the number of standard rails or add drawers according to your needs.

The shelving and drawer system is a comprehensive building block featuring more than 1,000 solutions. These can be configured according to the customer’s needs. This modular system makes it possible to design the workstation optimally and entirely according to personal requirements. The configuration of shelves and drawers using this modular system is based on the seven selected criteria:

- Selection of the connection element to the supply unit
- Selection of the desired shelf size
- Selection of the rail system
- Selection of a drawer or a documentation module
- Selection of the cable management system
- Selection drawer light
- Selection of control elements
Mounting arms come in a wide variety of configurations. The monitor arms are available as a lift arm with or without an additional swivel arm and with or without keyboard holder. Swivel arms come in lengths of 200/300/400 mm. All arms are equipped with adjustable friction brakes (ball bearings) and integrated cable management for well organized workplaces.
CABLE MANAGEMENT

Cable channel

Cable boxes

The integrated cable management system, consisting of cable boxes and channels, assists in improving workplace organization by eliminating seldom-used cables from the work area. Furthermore, hygiene is improved by a reduction of contamination risk and reduction of necessary cleaning and disinfection times.

CONTROL CONCEPT

Cable boxes

Handles

The interpretation of functional symbols can be problematic for users. The operating concept of your Dräger ceiling supply units with braking and/or height adjustment functions recognizes this. It supports the user’s cognitive motor skills. Contrasting colour codes on grips, keypads, and swivel arm mounts enable quick, intuitive, and visual assignment of control functions for pneumatic or electromagnetic brakes and height adjustment. Colour concepts such as these have already become established in other industries.

ADDITIONAL COMPONENTS & ACCESSORIES

In addition to the components mentioned above, many others are available. For more information please order our accessories catalogue (90 67 713) at your local Dräger contact person.
**Anesthesia Workplaces**

**GENERAL PLANNING TIPS**

**ELEMENTS OF AN ANESTHESIA WORKPLACE**
- Anesthesia machine (mobile or at CSU)
- Patient monitoring
- Infusion pumps (at CSU or AN-device, separate)
- Supply unit for anesthesia machine
- Anesthesia trolley
- Blood gas analyser
- Cell saver
- Optional sonography device
- Space, about $2 \times 4$ m
- Must ensure easy access and an ergonomic operation of equipment. Specify any meaningful parking position for imaging system
- Standard hose lengths up to $3$ m, special lengths on request

**MONITORING/ANESTHESIA/IT**
- Different workstation configurations are possible
- Positions of control & IT cockpits, patient monitoring and infusion pumps have to be clarified
- Optimize workplace for connection to ceiling supply unit, e.g. select shelf, drawer and small appliances rod
ANESTHESIA WORKSTATIONS

Zeus® Infinity® Empowered
Dräger’s most advanced anesthesia station with regards to automation, monitoring and information management.

Perseus® A500
Combines proven ventilation technology with the latest refinements in ergonomics and system integration.

Primus® Infinity® Empowered
High performance anesthesia station providing seamless integration into the hospital’s information system.

Primus®
Anesthesia workstation for high standard levels of performance, efficiency and patient safety.

Apollo®
Supports clinical decision making through enhanced monitoring capabilities.

Fabius® GS premium
The high performance flagship of the Fabius family.

Fabius® plus XL
Combines a scalable design concept with high performance ventilation therapy.

Fabius® plus
Combines quality ventilation with enhanced flexibility and integration capabilities.

Fabius® Tiro
Compact, space saving yet fully featured anesthesia solution.
SPECIALTIES

**Fabius® MRI**
Specifically designed to be MRI-compatible.
For more information, take a closer look at the brochure for room layout planning with Fabius MRI: Order Nr. 90 66 948.

**Wall mounted anesthesia solutions**
A dedicated solution for induction room settings.

**Perseus® A500 ceiling variant**
Bringing anesthesia machines off the floor decreases necessary hygienic measures and improves ergonomics.

ACCESSORIES

**Vaporizers**
Dräger vaporizers for anesthetic agents: a true benchmark for over 50 years.

**Vamos**
Gas monitor for volatile agents, NO₂ and CO₂ and SpO₂ options.

**Scio**
Gas measurement module for volatile agents, O₂, CO₂ and NO₂.
Monitoring/ IT

CLINICAL IT AND INFRASTRUCTURE SOLUTIONS

Our clinical IT solutions support integrating Dräger patient monitors into the hospital’s IT infrastructure and increase functionality of the system.

SmartPilot View
Displays calculated depth of anesthesia based on pharmacologic models and patient data. Gives an indication for titration of hypnotics and opioid analgesics.

Infinity® Gateway
Enables a secure exchange of patient data between the Infinity® network and hospital systems.

Infinity® OneNet
Enables hospitals to securely move wired and wireless patient data on their existing network.

PATIENT MONITORING

Our patient monitoring solutions are designed to support efficient workflow, enhanced ergonomics and ease of use. In addition, patient safety is improved through continuous patient surveillance without interruption in and out of the OR.

Infinity® Acute Care System
Designed to meet the needs of all care areas both at the bedside and during transport.

Infinity® M540
Follows the patient throughout the entire care pathway for seamless patient monitoring.

Infinity® Delta and Delta XL
Provides continuous monitoring and the same level of care at the bedside and during transport.

Infinity® Kappa
Designed with a built in power supply for fixed monitoring at the bedside or in the OR.

Infinity® Explorer Software
Integrates real-time data from Infinity® monitors and a wide variety of clinical applications at the point of care.

Vista 120 Family
Delivers essential monitoring capabilities at an exceptional value.
Accessories

Each day hospitals are faced with enormous time and cost pressure while taking care of the well-being of patients. In order to unlock the full potential of the installed equipment, medical accessories are needed which work smoothly, guarantee the best possible care of patients and help to improve efficiency of medical procedures. Each original accessory from Dräger doesn't just fulfil the official quality standards. We also measure our accessories against our own strict Dräger quality standards.

WARD EQUIPMENT

E.g. VarioVac®
Variety of versions for different aspiration, drainage or suction applications.

SENSORS

E.g. Flow sensor Infinity® ID
For precise and intelligent flow measurement.

WATERLOCK

WaterLock® 2
Effectively stops water, germs and bacteria from getting into the gas measurement system.
VENTILATION

Breathing Circuits
Reliable, convenient and designed for patient safety.

Breathing Bags
For increased comfort and safety during anesthesia.

Anesthesia masks
Face masks with anatomical fit and stable connection with breathing circuits.

Filters/HME
Bacterial and viral filtration combined with heating and humidification of inspired air.

Catheter mounts, e.g. CombiStar
Combined catheter mount and filter for quicker assembly.

Sets e.g. Pack2go®
A full set of accessories for use with Dräger anesthesia devices.

MONITORING ACCESSORIES

Tcore® sensor
Innovative non-invasive measurement of the patient’s core temperature.

NIBP cuffs
Designed for high accuracy, increased comfort and improved ease of use.

ECG cable solutions
Reusable or single-use ECG leads.
Gas Management Systems

Medical gases play a central role in protecting patient’s lives in various clinical applications. Dräger Gas Management Systems (GMS) are designed to safely and efficiently manage a hospital’s gas supply. Dräger offers complete gas supply systems which include all necessary components and distribution pipelines.

BECAUSE EVERY BREATH IS VITAL
Medical gases (oxygen, compressed air, nitrous oxide, and carbon dioxide) and vacuum must be safely and reliably available at all times. We deliver tailor-made system solutions, so that hospitals always have the right gases available in the right places, quantities and quality.

EVERYTHING FROM ONE SOURCE
From planning consultation to assembly and subsequent after-sales service, we provide complete services from one source regardless of whether a system is newly installed, has to be enlarged or renovated. With over 50 years of experience in planning and manufacturing of Gas Management Systems Dräger is one of the market and technology leaders in Germany as well as in the international market. Our systems, respectively set up and maintained by Dräger installation specialists and Dräger Service technicians, offer premium reliability and safety, above-average durability, and meet or even exceed the latest quality standards.
MEDICAL AIR SYSTEM

Compressed Air System
Turn ambient air into compressed air that is used throughout the hospital e.g. for patient ventilation thus having a direct impact on patient safety.

Medical Air Ensure
Modern and reliable conditioning unit that purifies air to medical grade air that is safe for respiration.

Medical Air Guard
Monitors thresholds for hazardous contaminants ensuring the purity of the vital gases.

CYLINDER MANIFOLDS

Gas Control Station
Provides medical gases such as oxygen and carbon dioxide for medical applications based on a scalable platform concept.

GAS DISTRIBUTION

Distribution System
Pipeline network delivering the medical gases safely throughout the hospital in accordance with international standards.

Terminal Units
Secure solution to provide medical gases where they are needed throughout the hospital.

VACUUM SYSTEM

Vacuum plants
Provides indispensable vacuum for various medical applications like wound area or bronchial suction.

AREA CONTROL UNITS

Area Control Unit
Monitors gas pressures for a certain hospital area and provides fast access to shut-off valves.

ALARM MANAGEMENT SYSTEM

Gas Communication Cockpit 1000
Get an overview on the status and receive alarm signals of the entire gas supply system of the hospital.
When it comes to the safety of patients, purchasing innovative medical technology is merely one element of a whole. A ventilator, for instance, can sustain life only if it functions with absolute reliability. We work hand in hand with you to ensure a consistently high quality of supply. And we want to keep it that way. This is why our services provide you with more than just simple inspections, maintenance and repairs.

**WE WANT TO KEEP YOU UP TO SPEED**
Our comprehensive consulting and support services in medical technology ensure maximum performance for your company. We work with you to understand the needs of your business, so as to provide you with the right services to achieve your objectives. With our experience, flexibility and uncompromising quality standards we are unfailingly by your side supporting your pursuit for excellence.

**WE ARE ALWAYS HERE FOR YOU**
3,200 helping hands worldwide. Our extensive service network includes around 1,600 certified, highly qualified and regularly trained medical technicians in 190 countries. This way we guarantee rapid assistance in the shortest possible time while always taking into account basic country-specific conditions.
AN OVERVIEW OF OUR SERVICES

PRODUCT SERVICE
Our manufacturing services provide for reliable medical technology and contribute to protecting the value of your investments over the long term. They cover installation, inspection, maintenance, repair and remote diagnosis.

FINANCE SERVICE
Together with you, we systematically analyze your specific requirements as well as continuously assessing and evaluating your needs. The result: a personalized offer for innovative medical technology with intelligent financing solutions and Private Finance Initiatives to you.

TRAINING
For over 40 years we have been developing our training courses to address your questions and the challenges of everyday clinical work. We have an appropriate seminar for all medical staff members which we adapt to your own personalized learning approach.

MULTIVENDOR SERVICE
Are you seeking more budget security, greater transparency and less complexity? Then our Multivendor Service is just what you need: only one service agreement and one contact person for your entire technical equipment.

SYSTEM SERVICE
The connection of optimally integrated patient monitoring and/or IT-solutions with hospital information systems represents complex challenges. Our System Service resolves these issues – from planning to smooth implementation, and even includes employee training.
Planning examples
Planning examples

The following pages provide information and ideas for standard OR workplace configurations. These layouts can be used as a starting point for new design concepts. Combine elements of different workplace layouts to create a customer tailored solution.
General Surgery

Example layout for General Surgery

1. Anesthesia
2. Surgery
3. OR lights
1. ANESTHESIA
A single ceiling mount is selected to attach the swiveling and liftable anesthesia supply unit. The anesthesia device stands below the supply unit. The supply unit has a horizontal media head – Movita® head. This unit is equipped with all necessary media.

Additional devices supplied by unit
- Anesthesia device
- Infusions
- Monitoring (often at AN-device)
- IT/Documentation
- Patient warmer
- Endotracheal aspiration (often at AN-device)

2. SURGERY
There is a single ceiling mount to attach a supply unit for surgery. The surgery supply unit is a short, liftable column with one shelf. The column itself is a slim Agila® column.

Devices at supply unit
- HF surgery device

Additional devices supplied by unit
- Surgical suction device

3. OR LIGHTS
A double light solution is optimal. Both lights have an intensity of 160,000 lux.

This setup is an example for general surgery rooms. The configuration is not heavily equipped but flexible for different kinds of interventions.
Vascular Surgery

Example layout for Vascular Surgery

1. Surgery and displays
2. Anesthesia
3. OR lights
This setup is an example for vascular surgery rooms. The configuration is not heavily equipped but flexible for different kinds of interventions. In addition to the standard general surgery room there is a mobile C-Bow in the room for x-ray imaging. X-ray protection is therefore mandatory (lead vests, skirts, leaded glass windows and walls. Images must be displayed on monitors.

1. SURGERY AND DISPLAYS
   There is a double ceiling mount to attach a supply unit for surgery and a display holder. The surgery supply unit is a short, liftable column with one shelf. The column itself is a slim Agila® column.

<table>
<thead>
<tr>
<th>SURGERY</th>
<th>Additional devices supplied by unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devices at supply unit</td>
<td>HF surgery device</td>
</tr>
<tr>
<td></td>
<td>Surgical suction device</td>
</tr>
<tr>
<td></td>
<td>Mobile C-Bow (often with wall socket)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DISPLAYS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devices at supply unit</td>
</tr>
<tr>
<td>Displays (2 x)</td>
</tr>
</tbody>
</table>

2. ANESTHESIA
   A single ceiling mount is selected to attach the swiveling and liftable anesthesia supply unit. The anesthesia device stands below the supply unit. The supply unit has an horizontal media head – Movita® head. This unit is equipped with all necessary media.

<table>
<thead>
<tr>
<th>Additional devices supplied by unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anesthesia device</td>
</tr>
<tr>
<td>Monitoring</td>
</tr>
<tr>
<td>IT/Documentation</td>
</tr>
<tr>
<td>Endotracheal aspiration (often at AN-device)</td>
</tr>
<tr>
<td>Further infusions</td>
</tr>
<tr>
<td>Patient warmer</td>
</tr>
</tbody>
</table>

3. OR LIGHTS
   A double light solution is optimal. Both lights have an intensity of 160,000 lux.
Heart surgery

Example layout for Heart Surgery

1. Anesthesia/Cardio and display
2. Surgery and display
3. OR lights
The room is set up to allow for a large amount of equipment positioned at the patient’s head which must be operated by the anesthetist. As in vascular surgery rooms there is a mobile C-Bow in the room for x-ray imaging. Therefore x-ray protection is mandatory (Protection clothes, lead glass walls). Images, hemodynamic information and other vital parameters must be displayed and be visible from several angles.

### 1. Anesthesia/Cardio

A double ceiling mount is selected to attach the liftable anesthesia supply unit and a display arm. The anesthesia device stands in front of the supply unit. The supply unit has a long column. At this column an infusion pole is mounted. This column supplies the anesthesia and cardio workplace with all necessary media.

<table>
<thead>
<tr>
<th>Devices at supply unit</th>
<th>Additional devices supplied by unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring (or at AN-device)</td>
<td>Anesthesia device</td>
</tr>
<tr>
<td>IT/Documentation (or at AN-device)</td>
<td>Blood gas analysis</td>
</tr>
<tr>
<td>Pacemaker</td>
<td>Endotracheal aspiration (often at AN-device)</td>
</tr>
<tr>
<td>Infusions (or at AN-device)</td>
<td>Further infusions</td>
</tr>
<tr>
<td>Patient warmer</td>
<td>Patient warmer</td>
</tr>
</tbody>
</table>

#### DISPLAY HOLDER

- Display (1 x)

### 2. Surgery and Display

There is a double ceiling mount to attach a supply unit for surgery and a display holder. The surgery supply unit is a long, liftable column with a minimum of 3 shelves. The display is used for surgeon for vital parameters or x-ray imaging.

<table>
<thead>
<tr>
<th>Devices at supply unit</th>
<th>Additional devices supplied by unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>HF surgery device</td>
<td>Surgical suction device</td>
</tr>
<tr>
<td>ECG</td>
<td>Sonographer</td>
</tr>
<tr>
<td>Defibrillator</td>
<td>Further infusions</td>
</tr>
<tr>
<td>Cell saver</td>
<td>Cell saver</td>
</tr>
</tbody>
</table>

#### DISPLAY HOLDER

- Display (1 x)

### 3. OR Lights

A minimum of two light heads are necessary. Both lights have an intensity of 160,000 lux. Preferably, a third light head for a second operating field (vein harvesting) should also be available.
Laparoscopy

Example layout for Laparoscopic Surgery

1. Anesthesia and display
2. Surgery and display
3. OR lights
This setup is organized for laparoscopic interventions. At both sides of the table is a display holder to mount displays. In this configuration, the endoscopic images are well within the surgeons’ field of view.

1. ANESTHESIA AND DISPLAY
A double ceiling mount is selected to attach the lifttable anesthesia supply unit and swivel arm for a display. The anesthesia device is lifted and docked to the supply unit. The supply unit has a long column. At this column, a shelf is mounted.

<table>
<thead>
<tr>
<th>Devices at supply unit</th>
<th>Additional devices supplied by unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anesthesia device</td>
<td>Endotracheal aspiration (often at AN-device)</td>
</tr>
<tr>
<td>Monitoring (or at AN-device)</td>
<td>Patient warmer</td>
</tr>
<tr>
<td>IT/Documentation (or at AN-device)</td>
<td></td>
</tr>
<tr>
<td>Infusions (or at AN-device)</td>
<td></td>
</tr>
</tbody>
</table>

DISPLAY HOLDER
Display (1 x)

2. SURGERY AND DISPLAY
There is a double ceiling mount to attach the surgery supply unit and a display holder. This unit is a long, swiveling column with 5 shelves a large amount of endoscopic equipment.

<table>
<thead>
<tr>
<th>Devices at supply unit</th>
<th>Additional devices supplied by unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>HF surgery device</td>
<td>Surgical suction device</td>
</tr>
<tr>
<td>Endoscopic devices</td>
<td>Ultrasound surgical device</td>
</tr>
<tr>
<td>Control units</td>
<td></td>
</tr>
<tr>
<td>Insufflator</td>
<td></td>
</tr>
<tr>
<td>Light source</td>
<td></td>
</tr>
</tbody>
</table>

DISPLAY HOLDER
Display (1 x)

3. OR LIGHTS
A double light solution is optimal. Both lights have an intensity of 160,000 lux.
Neurosurgery

Example for Neurosurgery

1. Anesthesia
2. Surgery
3. Display holder
4. OR lights
This setup is optimized for a neurosurgery intervention at the patient’s head. To have free access to the head end the anesthesia workplace is located at the feet end. The images from navigation system or microscope can be seen at both sides on screens which are mounted to display holders.

1. **ANESTHESIA**
A single ceiling mount is selected to attach the swiveling and liftable anesthesia supply unit. The anesthesia device stands in front of the supply unit. The supply unit has long Movita® column. This unit is equipped with all necessary media.

<table>
<thead>
<tr>
<th>Devices at supply unit</th>
<th>Additional devices supplied by unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>HF surgery device</td>
<td>Anesthesia device</td>
</tr>
<tr>
<td>Neuro monitoring</td>
<td>Infusions</td>
</tr>
<tr>
<td>Monitoring (or at AN-device)</td>
<td>Patient warmer</td>
</tr>
<tr>
<td>IT/Documentation (or at AN-device)</td>
<td>Endotracheal aspiration</td>
</tr>
</tbody>
</table>

2. **SURGERY**
A single ceiling mount is selected to attach a swiveling surgery supply unit. The supply unit has a long column. On this column, we have three shelves for devices.

<table>
<thead>
<tr>
<th>Devices at supply unit</th>
<th>Additional devices supplied by unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>HF surgery device</td>
<td>Surgical suction device</td>
</tr>
<tr>
<td>Neuro monitoring</td>
<td></td>
</tr>
</tbody>
</table>

3. **DISPLAY HOLDER**
There are to single display holders at each side of the operating table. The staff will have access to all required images in the room.

| DISPLAY HOLDER | 2 x Display (1 x) |

4. **OR LIGHTS**
A double light solution is optimal. Both lights have an intensity of 160,000 lux.
Orthopaedic Surgery

Example for Orthopaedic Surgery

1. Ceiling supply unit for anesthesia device
2. Ceiling supply unit for surgery
3. OR lights
This setup is optimized for an OR with highest hygienic requirements. A laminar air flow ceiling can be used without disturbing arms from supply units. With an OR table with a column a flexible setup of the room is possible.

1. **CEILING SUPPLY UNIT FOR ANESTHESIA DEVICE**
   A single ceiling mount is selected to attach the swiveling and liftable anesthesia supply unit. The anesthesia device is docked on the front of the supply unit.

<table>
<thead>
<tr>
<th>Devices at supply unit</th>
<th>Additional devices supplied by unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anesthesia device</td>
<td>Endotracheal aspiration (often at AN-device)</td>
</tr>
<tr>
<td>Monitoring (or at AN-device)</td>
<td>Patient warmer</td>
</tr>
<tr>
<td>IT/Documentation (or at AN-device)</td>
<td></td>
</tr>
<tr>
<td>Infusions (or at AN-device)</td>
<td></td>
</tr>
</tbody>
</table>

2. **CEILING SUPPLY UNIT FOR SURGERY**
   A single ceiling mount is selected to attach a swiveling surgery supply unit. A short column is used with one shelf.

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<tbody>
<tr>
<td>HF surgery device</td>
<td>C-Bow</td>
</tr>
<tr>
<td>Endoscopic devices</td>
<td>Tourniquet</td>
</tr>
</tbody>
</table>

3. **OR LIGHTS**
   A threefold solution is optimal. The light heads have a light intensity of 160,000 lux.
Phillips Allura Xper

Supply unit arrangement with OR lights and display boom

1. Display holder
2. Cardio
3. Anesthesia
4. OR light
5. Display holder
6. OR light
1. DISPLAY HOLDER
For placing the display holder and the OR light, a double ceiling mount is used. The display holder can carry 8 single displays (size: up to 21”).

2. CARDIO
There is a single ceiling mount to attach a supply unit for cardio. The cardio supply unit is a small liftable column with two separate swiveling display arms (load capacity for each arm: 15 kg) and a shelf.

3. ANESTHESIA
A single ceiling mount is selected to attach a liftable anesthesia supply unit. The anesthesia device is lifted and docked to the supply unit. The supply unit has a long column. On this column, an infusion pole is mounted.

4. OR LIGHT
The light head (160,000 lux) is mounted separately and is brought over the operating field by a long swivel arm.

5. DISPLAY HOLDER
For placing the display holder a single ceiling mount is used. The display holder can carry 8 single displays (size: up to 21”).

6. OR LIGHT
The light head (160,000 lux) is mounted separately and is brought over the operating field by a long swivel arm.

This setup is optimized for a ceiling mounted C-Bow system. All ceiling fixtures are out of the moving range of the C-Bow. In this configuration we have a FlexMove system. This system has an additional movement range (x/y – movement) which has to be taken into consideration during planning. For this additional function there are wide rails at the ceiling. It is not possible to have a central axis for OR lights over the OR table. Therefore you need to have long swivel arms for the OR lights to reach the operating field. This layout offers a basic setup which can be upgraded with further supply units if needed. X-Ray protection shields are not shown in this layout. These can be mounted at the ceiling or mobile lead glass walls can be used.

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<td>Heart lung machine</td>
</tr>
<tr>
<td>HF surgery device</td>
<td>Hypothermia device</td>
</tr>
<tr>
<td>Surgical suction device</td>
<td>Surgical suction device</td>
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<tr>
<td>Contrast agent injector</td>
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<td>Monitoring (or at AN-device)</td>
<td>Blood gas analysis</td>
</tr>
<tr>
<td>IT/Documentation (or at AN-device)</td>
<td>Sonographer</td>
</tr>
<tr>
<td>Pacemaker</td>
<td>Further infusions</td>
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Siemens Artis ZeeGo

Siemens – Artis zeego 30° arrangement – supply unit arrangement with OR lights and display boom

1. OR light
2. Anesthesia and Cardio
3. OR light and X-Ray Protection
4. Surgery
5. Display holder
This setup is optimized for a floor-mounted multi-axis C-Bow system 30° arrangement. All ceiling fixtures are out of the moving range of the C-Bow. Here, it is possible to have a central axis for OR lights over the OR table. In this layout there is a third light head at the foot end. The supply units for surgery should have the same media outlets to enable rapid switching between anesthesia and surgery. This ensures a high degree of flexibility.

1. **OR LIGHT**
A double light solution is used. Both lights have an intensity of 160,000 lux.

2. **ANESTHESIA AND CARDIO**
A double ceiling mount is selected to attach a liftable anesthesia supply unit and a cardio unit. The anesthesia device is lifted and docked to the supply unit. The supply unit has a long column. At this column, an infusion pole is mounted. The cardio supply unit is a small liftable column with 4 separate swiveling display arms (load capacity for each arm: 15 kg).

3. **OR LIGHT AND X-RAY PROTECTION**
At the foot end a double central axis is used for a third OR light (160,000 lux) and an X-ray protection shield.

4. **SURGERY**
There is a single ceiling mount to attach the surgery supply unit. This unit is a long, liftable column to lift a Mova® Cart (trolley with 4 shelves, 1 drawer).

5. **DISPLAY HOLDER**
For placing the display holder a single ceiling mount is used. The display holder can carry 8 single displays (size: up to 21”).

### Devices at supply unit
- Monitoring (or at AN-device)
- IT/Documentation (or at AN-device)
- Pacemaker
- Defibrillator
- Infusions (or at AN-device)

### Additional devices supplied by unit
- Anesthesia device
- Blood gas analysis
- Sonographer
- Cell saver
- Endotracheal aspiration (often at AN-device)
- Further infusions
- Patient warmer

### CARDIO

#### Devices at supply unit
- Displays (4 x)

#### Additional devices supplied by unit
- Heart lung machine HLM
- Hypothermia device

### SURGERY

#### Devices at supply unit
- HF surgery device
- ECG

#### Additional devices supplied by unit
- Surgical suction device
- Contrast agent injector
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