

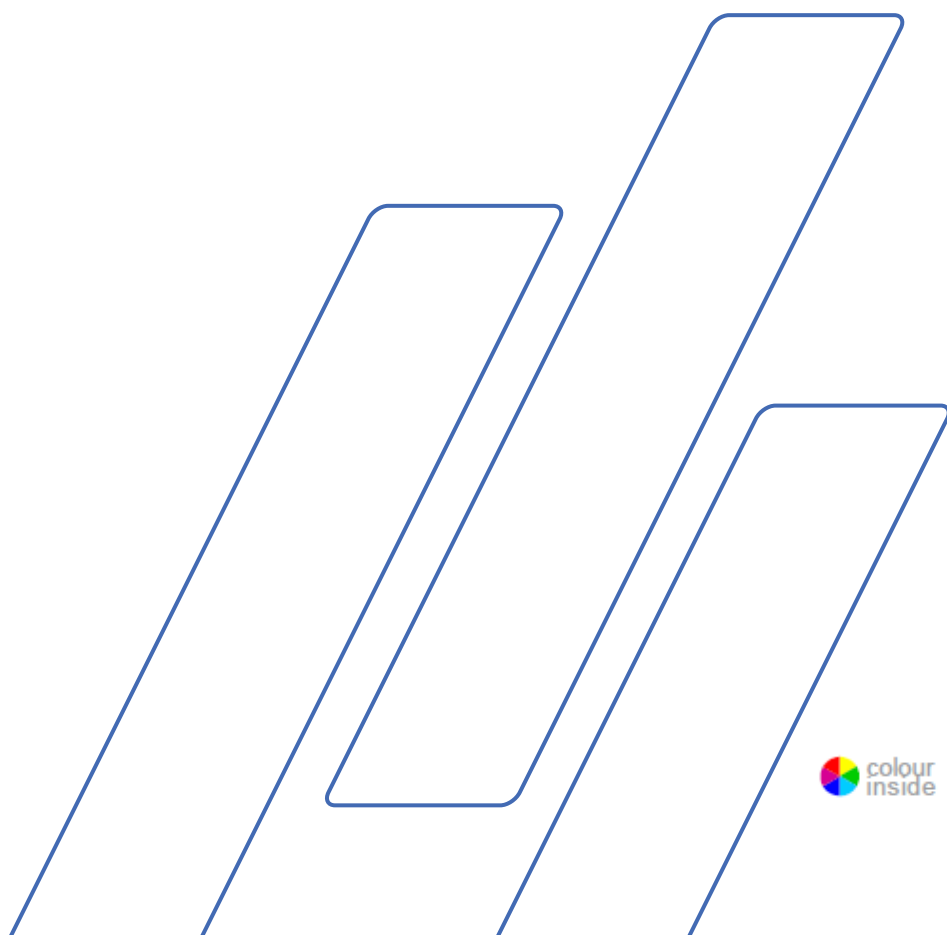
# Exotom-150

## Instruction Manual



Manual No.: 15047001  
Revision A

Date of Release 2018.02.19



***Important***

READ the instruction manual carefully before use.  
Keep a copy of the manual in an easy-to-access place for future reference.

**Intended use:**

For automatic cutting of metallic or other solid materials for further material inspection and only to be operated by skilled/trained personnel. The machine is only designed to be used with abrasive cut-off wheels specially designed for this purpose and this type of machine.

**Do NOT use the machine for:**

Cutting of materials other than solid materials suitable for materialographic studies. In particular, the machine must not be used for cutting any type of explosive and/or flammable material, or materials which are not stable during machining, heating or pressure. The machine may not be used with cutting wheels which are not compatible with the machine requirements (e.g. toothed cutting wheels).

The machine is for use in a professional working environment (e.g. a materialography laboratory).

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Always state *Serial No* and *Voltage/frequency* if you have technical questions or when ordering spare parts. You will find the *Serial No.* and *Voltage* on the type plate of the machine itself. We may also need the *Date* and *Article No* of the manual. This information is found on the front cover.

The following restrictions should be observed, as violation of the restrictions may cause cancellation of Struers legal obligations:

**Instruction Manuals:** Struers Instruction Manual may only be used in connection with Struers equipment covered by the Instruction Manual.

**Service Manuals:** Struers Service Manual may only be used by a trained technician authorised by Struers. The Service Manual may only be used in connection with Struers equipment covered by the Service Manual.

Struers assumes no responsibility for errors in the manual text/illustrations. The information in this manual is subject to changes without notice. The manual may mention accessories or parts not included in the present version of the equipment.

**Original instructions.** The contents of this manual is the property of Struers. Reproduction of any part of this manual without the written permission of Struers is not allowed.

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*Exotom-150*  
*Instruction Manual*



## **Exotom-150**

### **Safety Precaution Sheet**

#### **To be read carefully before use**

1. The machine must be installed in compliance with local safety regulations.
2. The operator(s) must read the Safety and User's Guide sections of this manual and the relevant sections of the manuals for any connected equipment and accessories.  
The operator(s) must read the Instructions for Use and, where applicable, Safety Data Sheets for the applied consumables.
3. Remove the two red transport screws at the rear of the machine. Do not attempt to open the protection hood before the screws have been removed.
4. The machine must be placed on a safe and stable support. All safety functions of the machine must be in working order. The machine must be levelled by means of the adjustable legs provided.
5. Prior to lifting the machine by the built-in truck lifting point, ensure that the boom is properly secured with the locking pins provided. Before transport, secure the cutting arm with the locking system provided.
6. To achieve maximum safety and lifetime of the machine, use only original Struers consumables.
7. Use only intact cut-off wheels. The cut-off wheels must be approved for a spindle speed of min. 1950 rpm / 42 m/s. Do not use sawblades.
8. Do not use the machine for cutting materials that are flammable or unstable during the cutting process (e.g. combustible or explosive materials).  
Do not use the machine for cutting materials that are not suitable for materialographic cutting.
9. The workpiece must be securely clamped in a quick-clamping device or similar. Large or sharp workpieces must be handled in a safe way.
10. Struers recommend the use of an exhaust system as the cutting materials may emit harmful gasses or dust. See the instructions of the cut-off wheel.
11. Use of working gloves is recommended as workpieces may be both very hot and produce sharp edges.
12. Use of safety shoes is recommended when handling large or heavy workpieces.
13. Use of safety goggles is recommended when using the flushing hose.
14. The machine emits only moderate noise. However, the cutting process itself may emit noise, depending on the nature of the workpiece. In such cases, use of hearing protection is recommended.  
Use hearing protection if exposure to noise exceeds levels set by local regulations.

- 15.** Consumables: only use consumables specifically developed for use with this type of materialographic machine.  
Observe the current safety regulations for handling, mixing, filling, emptying and disposal of the additive for cooling fluid.  
Do not use flammable cooling fluid.
- 16.** To achieve maximum safety and lifetime of the machine, use only original Struers consumables.
- 17.** Ensure that the cut-off wheel is secured before working on or around the cutting table.
- 18.** Keep hands clear of the cutting chamber when advancing the cut-off wheel using the joystick.
- 19.** Do not look directly into the laser.
- 20.** If any unusual noise is heard when the protection hood is operated, refrain from further use of the machine, and contact a Struers Service.
- 21.** The machine must be disconnected from the mains prior to any service.

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The equipment should only be used for its intended purpose and as detailed in the Instruction Manual.

The equipment is designed for use with consumables supplied by Struers. If subjected to misuse, improper installation, alteration, neglect, accident or improper repair, Struers will accept no responsibility for damage(s) to the user or the equipment.

Dismantling of any part of the equipment, during maintenance, service or repair, should always be performed by a qualified technician (electromechanical, electronic, mechanical, pneumatic, etc.).

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## Icons and typography

The following icons and typographic conventions are used in this instruction manual:

### Icons and Safety Messages



#### **ELECTRICAL HAZARD**

indicates an electrical hazard which, if not avoided, will result in death or serious injury.



#### **WARNING**

indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

### General Messages



#### ***Important or Note***

indicates a risk of damage to property, or the need to proceed with special care.



#### ***Information or Tip***

indicates additional information and tips.

## Colour Inside Logo



The 'colour inside' logo on the cover page of this Instruction Manual indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

## Typographic conventions

<b>Bold type</b>	indicates button labels or menu options in software programs
<i>Italic type</i>	indicates product names, items in software programs or figure titles
■ Bullets	indicates a necessary work step



# User's Guide

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## 1. Getting Started

### Checking the Contents of Packing

The packing box contains the following items:

- 1 Exotom-150 (Cut-off machine)
- 1 Control Panel for Exotom-150
- 1 Fork spanner (30 mm) for cut-off wheel
- 1 Filter for large particles
- 1 Flange pipe (black)
- 3 Allen screws for flange pipe
- 3 Washers for flange pipe
- 1 Outlet hose 2 m, for connection to external cooling unit
- 1 Fixed Drain for Filter Tube
- 10 Disposable Filter tubes
- 2 Hose clamps
- 4 Elbow pipes
- 1 Set of Instruction Manuals

### Unpacking and Placing Exotom-150

- Unscrew the nuts from the four transport bolts fixing the machine to the pallet.
- Lift the machine from the pallet by means of a forklift truck from the front, and place in a suitable location.
- Remove the safety-springs from the front crossbar, and remove bar.
- Remove the two red transport screws at the rear of the machine. Do not attempt to open the protection hood before the screws have been removed.
- Mount the cabinet doors.



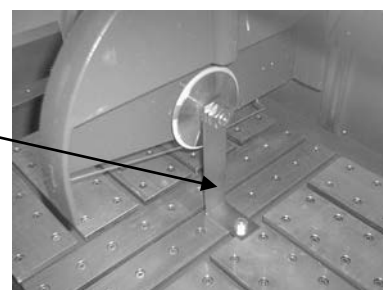
#### **Important**

Turn the adjustable feet so that the machine stands firmly and is level.

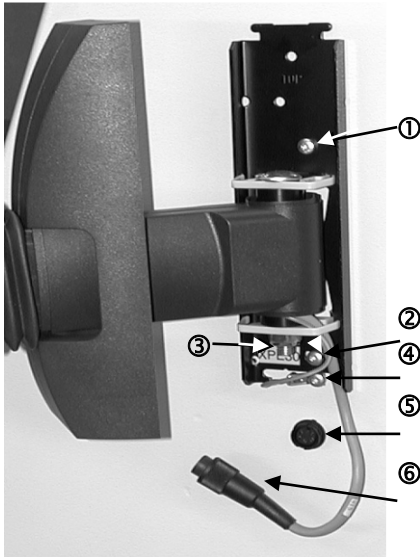


#### **Important**

Please remove the transportation support before use.



## Mounting the Control Panel



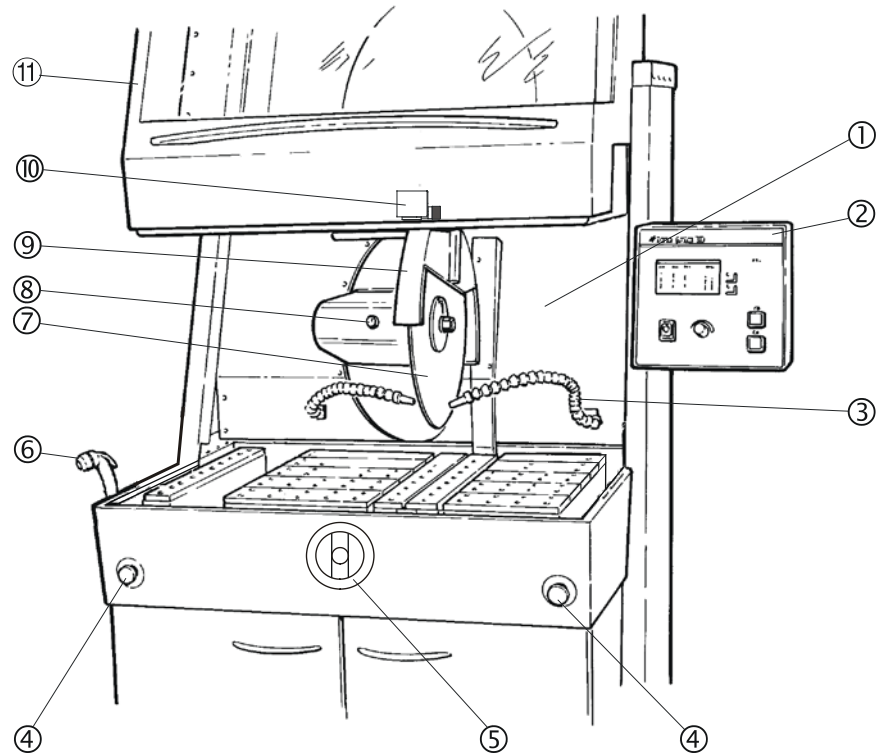
- Unpack the Control Panel and mount on either the right or the left side of the machine using the two 5 mm Allen screws (use holes ① and ② as indicated on drawing).
- Mount the earth wire on the contact ④ below the mounting plate.
- Press cover towards cabinet wall until it snaps onto the mounting plate.
- Connect Control Panel plug ⑥ to socket ⑤.
- The position of the Control Panel is controlled by a friction mounting. After mounting the control panel it is possible to adjust the mobility of the Control Panel this way:
  - Adjust the main joint with the nut ③.
  - The joint just behind the Control Panel may also be adjusted.

### **Information**

When mounting the Control Panel on the left hand side please use the Allen screws and earth wire located on the right side of the machine.

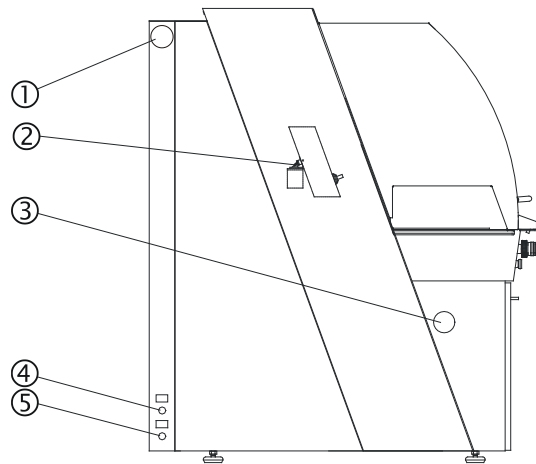
## Getting Acquainted with Exotom-150

Take a moment to familiarise yourself with the location and names of the Exotom-150 components.



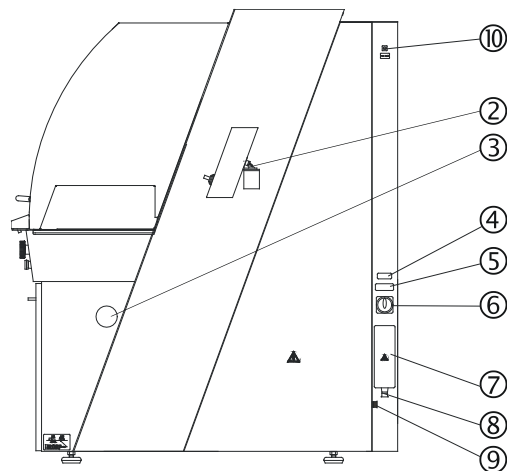
- ① Cutting chamber
- ② Control Panel
- ③ Flexible water jets
- ④ Emergency stops
- ⑤ Positioning wheel for cutting table.  
(only on models with a moveable cutting table)
- ⑥ Flushing hose with flush nozzle
- ⑦ Cut-off wheel
- ⑧ Spindle lock button
- ⑨ Guard for cut-off wheel
- ⑩ Laser
- ⑪ Protection hood

Side view, left



- ① Exhaust flange
- ② Connection for Control Panel
- ③ Outlet for an external Band Filter Unit
- ④ Water inlet
- ⑤ Water outlet

Side view, right



- ② Connection for Control Panel
- ③ Outlet for an external Band Filter Unit
- ④ Name Plate
- ⑤ Type plate
- ⑥ Main Switch
- ⑦ Electrical connection box
- ⑧ Connection for electrical cable for power supply
- ⑨ Cooli Unit connection
- ⑩ Fuse socket for external warning light



**MAIN SWITCH**

The main switch is located at the rear of Exotom.



The EMERGENCY STOP is located on the front of the machine.  
Emergency Stop

- Push the red button to Activate.
- Turn the red button clockwise to Release.



***Important***

Do not use the Emergency stop for operational stop of the machine during normal operation.

BEFORE releasing (disengaging) the Emergency stop, investigate the reason for activating the Emergency stop and take any necessary corrective action.

## Power Supply



### ELECTRICAL HAZARD

- Switch the power off when installing electrical equipment.
- The machine must be earthed (grounded).
- Check that the mains voltage corresponds to the voltage stated on the type plate on the side of the machine.  
Incorrect voltage may result in damage to the electrical circuit.

Open the electric connection box and connect a 4-lead cable\* in the following way:

PE: earth

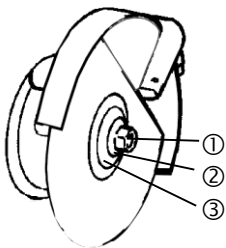
L1: phase

L2: phase

L3: phase

\*Please see the section on [Technical Data](#) for recommended cable specifications.

## Mounting the Cut-off wheel



- ① Nut
- ② Flange
- ③ Washer



- Press the knob for the spindle lock on the left-hand side of the cut-off wheel, while turning the cut-off wheel until the spindle lock clicks.
- Remove the nut with a fork spanner (30mm).
- Remove the flange and the cut-off wheel.
- Mount the new cut-off wheel.

### Important

Conventional cut-off wheels based on  $\text{Al}_2\text{O}_3/\text{SiC}$  abrasives should be placed between two cardboard washers, to protect the cut-off wheel and flanges.

For maximum precision with diamond or CBN cut-off wheels, do not use cardboard washers.

- Mount the flanges and nut. Tighten carefully.

## Direction of the Cut-off Wheel

To check that the cut-off wheel rotates in the direction indicated on the wheel-guard, do the following:

- Close the protection hood.
- Turn Main Switch to On.
- Press START
- Check the rotational direction of the wheel.
- Press STOP

If the direction of rotation is incorrect, turn mains off and switch two of the phases.



## Connection to an External Exhaust System

Struers recommends the use of an exhaust system as workpieces may emit harmful gases when cut. The machine is prepared for connection to an exhaust system via an 80 mm (approx. 3 ¼") fitting on the left hand side of the cabinet.

Recommended capacity for exhaust system: 350m<sup>3</sup>/h / 12360 ft<sup>3</sup>/h at 0mm /0" water gauge.

- Remove the red cap.
- Mount an exhaust hose from your local exhaust system onto the flange.

## Noise Level

Approx. 78<sup>1</sup> dB(A) measured at idle running, at a distance of 1.0 m/39.4" from the machine.

Use hearing protection if exposure to noise exceeds levels set by local regulations.

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<sup>1</sup> "The figures quoted are emission levels and are not necessarily safe working levels. Whilst there is a correlation between the emission and exposure levels, this cannot be used reliably to determine whether or not further precautions are required. Factors that influence the actual level of exposure of the workforce include the characteristics of the workroom and the other sources of noise, i.e. the number of machines and other adjacent processes and the length of time for which an operator is exposed to the noise. Also, the permissible exposure level can vary from country to country. This information, however, will enable the user of the machine to make a better evaluation of the hazard and risk."  
(ref. European standard EN ISO 16089:2015)

## Connecting a Recirculation Cooling Unit

To ensure optimal cooling, Exotom-150 can be fitted with a Recirculation Cooling Unit.

Struers Coolimat-200 is designed for use with large cut-off machines such as Exotom. Coolimat-200 is available as a Band Filter or a Static Filter unit.



### **Note**

Before connecting the Recirculation Cooling Unit to the Exotom, follow the instructions in the Cooling Units Instruction Manual to prepare it for use.

Water Outlet

- Insert the particle filter in the drain hole.



Filter Tube Kit

- Follow the Instructions supplied with the Filter Tube Kit.

### **During the first cutting operation:**

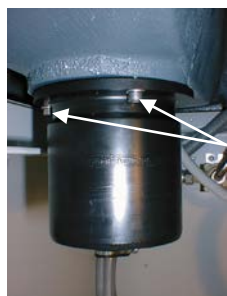
- Check that the filter tube expands along its full length as it fills with water.



### **Important**

If the tube is twisted or has folds, **stop cutting** and reposition the tube. Do NOT use the Filter Tube when dry-cutting.

Other options:



Allen screws

- Mount the black flange pipe underneath the drain hole in the cutting chamber using the 3 Allen screws.
- Fit the two elbow pipes onto the flange pipe and mount the outlet hose so that the outlet slopes downwards into the cooling unit tank. (Lubricate the ends with silicone or grease to facilitate connection).



Quick coupling



To connect the Exotom-150 to a Recirculation Cooling Unit:

- Plug the Cooli control unit's communication cable into the Exotom's control socket.
- Connect the water inlet hose to the Recirculation Cooling Unit pump using the quick coupling.
- Connect the other end of the hose to the quick coupling of the Exotom water inlet.

***Important***

Before connecting, check that the mains voltage corresponds to the voltage stated on the type plate on the side of the machine.

Connecting Other External Filter Units



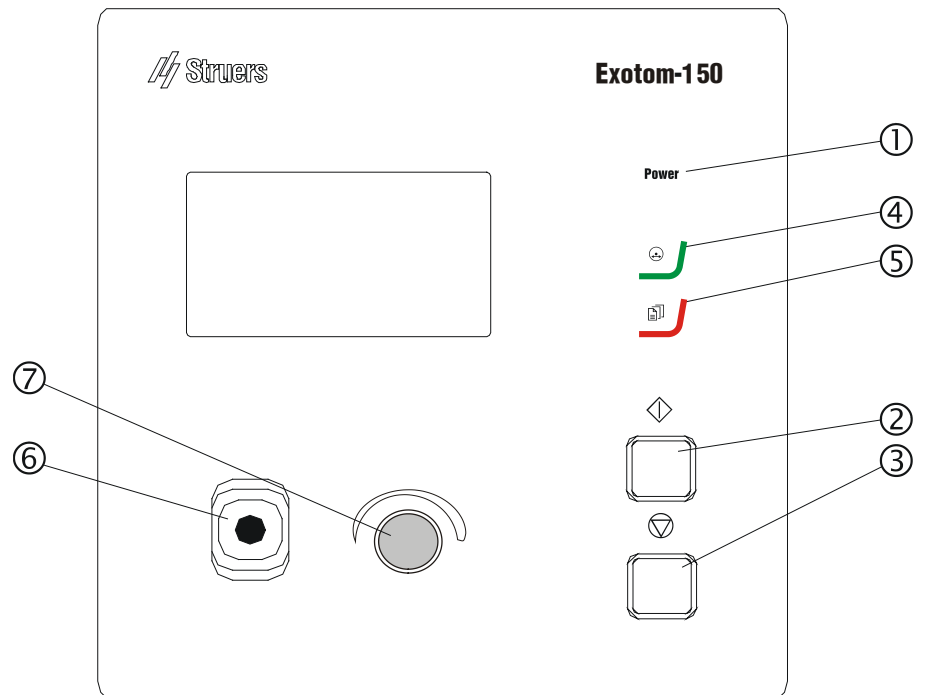
***Important***

Please contact a qualified electrician to verify that the external filter unit can be used with Exotom-150. The electrical diagrams in the Spare Parts section of the manual can be used for identification of the different wires. The pressure of the cooling fluid supplied to Exotom-150 must be max. 2 bar.


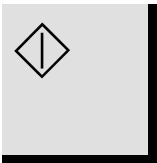

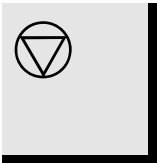
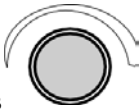
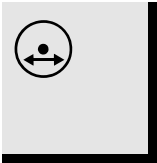
## 2. Operation

### Using the Controls


Control Panel of Exotom-150



## Control Panel Functions


Name	Key	Function	Name	Key	Function
<b>1</b> POWER	<b>Power</b>	Lights when the Main Switch has been turned to ON.	<b>5</b> MENU		Push button to toggle between Cutting menu (daily use) and Configuration menu (basic settings).
<b>2</b> START		Starts the machine and recirculation unit.	<b>6</b> JOYSTICK		Move up- or downwards to position cut-off wheel.
<b>3</b> STOP		Stops the machine and recirculation unit.	<b>7</b> <b>Turn/ Push</b> KNOB		MULTI-FUNCTION KNOB Push knob to select function. Turn knob to adjust settings.
<b>4</b> CUTTING MODE		Push button to select desired cutting mode: Direct cutting, ExciCut, AxioCut/Step, AxioCut/Sweep.			

## Display Types

The Cutting Display will be shown on the Control Panel when turning Exotom-150 on. This display is for everyday use. By pressing the MENU  button once, the CONFIGURATION menu will appear on the display. This menu will normally only be accessed during installation.

## Setting the Language



Press MENU  button once to select CONFIGURATION Menu.



Turn knob to toggle between parameters in the CONFIGURATION Menu.




Push knob to select LANGUAGE. A pop-up menu appears.



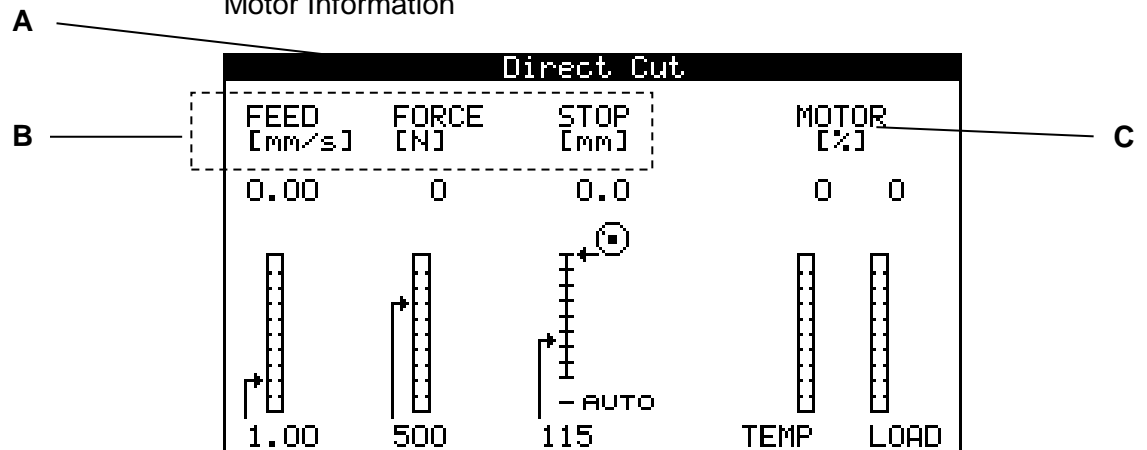
From the pop-up menu, select your preferred language and enter the setting by pushing the knob.



Press MENU  button to move from CONFIGURATION Menu to Cutting Display.

## Reading the Cutting Display

The Cutting Display offers three types of information:  
Cutting Mode  
Cutting Parameters, and  
Motor Information



- A** Cutting Mode.
- B** Cutting Parameters.
- C** Motor Information.

## Cutting Mode

The top bar displays the selected Cutting Mode:  
Direct Cutting, ExciCut, AxioCut/Step or AxioCut/Sweep  
(AxioCut/Step and -/Sweep are optional).

## Cutting Parameters and Motor Information

The large window on the Cutting Display, displays information about the Cutting Parameters (FEED, FORCE, STOP) as well as Motor information (TEMP, LOAD).

The Cutting Parameters (FEED, FORCE and STOP) can be set both prior to and during cutting. The set value is displayed below the column. Actual value is displayed above the bar graph.

The Motor Information columns TEMP and LOAD, inform about the condition of the motor during cutting. Read-out in relative value (%).

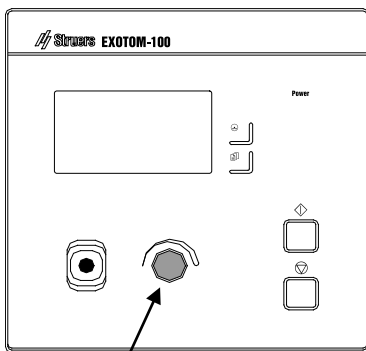
## Changing Cutting Mode and Cutting Parameters

### Changing Cutting Mode

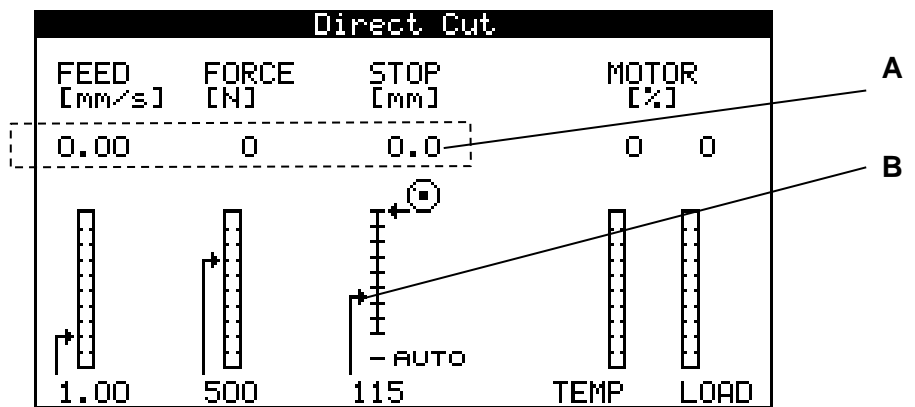
Toggle between the four Cutting Modes, by pressing the CUTTING MODE button. The selected mode, Direct Cutting, ExciCut, AxioCut/Step or AxioCut/Sweep, appears on the top bar of the Cutting Display.


### Changing Cutting Parameters

Toggle between the three Cutting Parameters by turning the knob and to highlight a selected Cutting Parameter. Push the knob to allow editing of the highlighted parameter. Turn the knob to change the value of the parameter.



Turn knob to select Cutting Parameter.  
Push knob to allow editing of Cutting Parameter.  
Turn knob to adjust setting.



Actual values of the Cutting Parameters FEED, FORCE and STOP are displayed on top of the columns (A).  
The actual position of the cut-off wheel (relative its starting position) is displayed graphically by the small icon  to the right of the STOP column.  
Turn the knob to change the setting of the selected Cutting Parameter. The arrow on the left of the column will move to reflect the new setting (B).  
By moving the pointer of the STOP column below the column, AUTO mode is selected.

### Reading the Motor Information

The highlighted area of the bar graphs TEMP and LOAD, shows the status of the cutting motor:

**TEMP.** Temperature indicator of the cutting motor.

**LOAD.** Load indicator of the cutting motor.

### Sleep Mode

To increase the lifetime of the display, the backlight is automatically switched off if Exotom-150 has not been used for 15 min. Push any key on the Control Panel to re-activate the backlight.



## Changing the Cut-off Wheel

- Press the knob for the spindle lock on the left-hand side of the cut-off wheel, while turning the cut-off wheel until the spindle lock clicks.
- Remove the nut with a fork spanner (30 mm).
- Remove the flange and the cut-off wheel.
- Mount the new cut-off wheel.



### **Important**

Conventional cut-off wheels based on  $\text{Al}_2\text{O}_3/\text{SiC}$  abrasives should be placed between two cardboard washers, to protect the cut-off wheel and flanges.

For maximum precision with diamond or CBN cut-off wheels, do not use cardboard washers.

- Mount the flange and nut. Tighten carefully.

## Lining up the Laser Straightedge

- Push the joystick on the Control Panel downwards, to lower the cut-off wheel. The cut-off wheel stops when the joystick is released.
- Check that the laser straightedge is exactly lined up with the blade of the cut-off wheel. If necessary, use the knob on the side of the laser unit to adjust the position of the laser.



### **Note**

Remember to raise the cut-off wheel before working on or around the cutting table.

## Clamping the Workpiece

### Moveable Table Models

#### All Models

- Move the table so far to the left so that the required number of slices or the size of the workpiece to be cut can be managed.
- Position the workpiece on the cutting table so that the laser straightedge is lined up on the place where the cut is to be made.  
Note: The laser is automatically switched off after 3 minutes or when the hood is closed. Open the hood or touch one of the buttons on the control panel to re-activate the laser.
- Clamp the workpiece with the clamping device of your choice e.g. a quick clamping device. Place the workpiece between the clamp and the back stop.
- Push the clamp towards the workpiece, and lock the quick clamping device with the locking handle.
- Check that the laser straightedge marks the correct position of the cut on the clamped workpiece. Re-position the workpiece if necessary.

Ensure that only one of the quick clamping devices is tight, the other device should only press lightly. Use support tools if the geometry of the workpiece makes support necessary.



#### **Important**

When using the AxioCut cutting mode, the cut-off wheel cover may hit the jaw of the Quick Clamping Device, if this is mounted in the forward position; ie using the cross-directional T-slot closest to the front of the machine.

To avoid this situation, place the quick-clamping device as far back as possible, using the front-most T-slot.

Test possible infringement by starting the machine with the cut-off wheel completely clear of the clamping device.

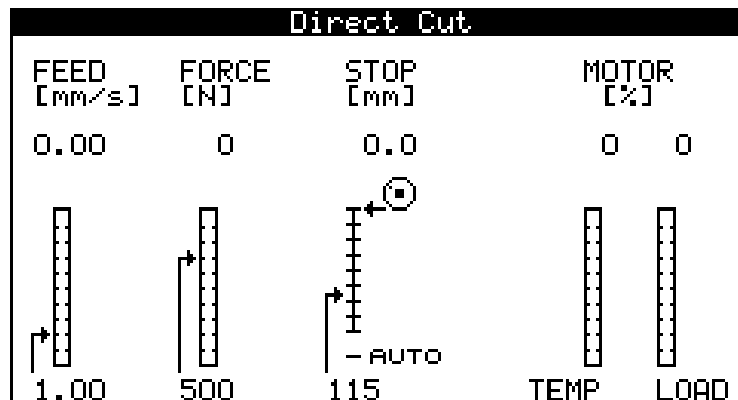
There is however no danger involved should the cut-off wheel accidentally hit the clamping device. Exotom-150 will stop automatically and display the following message: "AxioCut motor blocked".

## QuickPosition

Positioning of the cut-off wheel may be done, by simply pushing the joystick downwards until the cut-off wheel has contact with the workpiece. The force is automatically reduced on contact, preventing damage to the cut-off wheel and the workpiece.

After contact with the workpiece, the cut-off wheel is automatically retracted 2 mm, to be ready for cutting.

## Cutting Parameters



### Feed

The feed speed can be set to values between 0.05-5.00 mm/sec (0.002-0.2 "/s).

### Force

The maximum permitted force between cut-off wheel and workpiece can be set to values between 20-700 N (4-150 lbs). A built-in measuring cell constantly computes the force. If the force limit is reached, the feed speed will automatically be reduced to a value that allows the force to stay just below the set limit. As soon as the force drops below the set limit, the speed will be increased to the original setting.



#### Information

When cutting with a force below 50 N, beware of hysteresis. (actual force applied may differ from selected cutting force).

### Stop

There are two ways to set the stop position: AutoStop and Fixed Stop, explained under Advanced Operations.


#### AutoStop

When the AutoStop function is selected, the machine automatically stops when the workpiece has been cut through. For normal cutting, the AutoStop function is recommended.

## Setting the Cutting Parameters

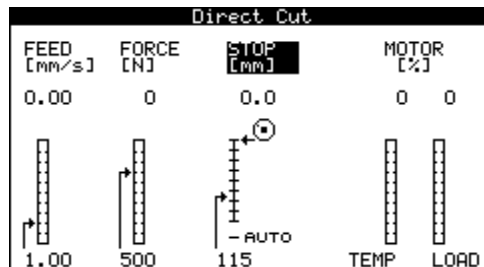
The Cutting Parameters, FEED, FORCE and STOP, are set in the Cutting Menu.



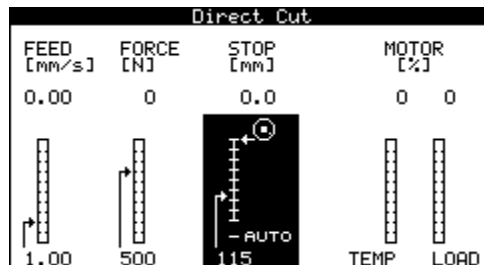
If in CONFIGURATION Menu, press MENU  once to select Cutting Menu.



Turn knob to toggle between parameters in the Cutting Menu.




Push knob to allow editing of the selected parameter (the parameter bar is highlighted). Turn knob to change the value of the Cutting Parameter.



Push knob to enter the new setting.


## Cutting on Exotom-150

### *Starting the Cutting*

- Position the cut-off wheel.
- Close the protection hood.
- Press START . The cut-off wheel starts rotating, the cooling water starts running and the cut-off wheel will slowly move down into the workpiece at the pre-set Feed Rate.

### *Fast advance*



The joystick can be used to rapidly advance the cut-off wheel towards the workpiece (for example, if the cut-off wheel has been changed whilst in the middle of cutting a workpiece).

- Press START  and push the joystick downwards.  
The cut-off wheel will advance towards the workpiece with reduced force and at a maximum speed of 5mm/s.
- Release the joystick when the cut-off wheel has contact with the workpiece. After contact with the workpiece, the cut-off wheel is automatically retracted 2 mm, to be ready for cutting.
- The cut-off wheel will then continue to move down into the workpiece at the pre-set Force and Feed Rate.

The joystick can also be used to lift the cut-off wheel away from the workpiece.

### *Stopping the Cutting (Manual Stop)*

Exotom-150 automatically stops cutting when the workpiece is cut through.

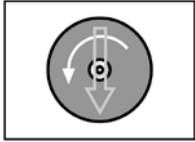
- Press STOP  to manually interrupt the cutting process.  
The machine can be stopped at any time during operation by pressing STOP .

### *Re-starting cutting*

Having interrupted cutting, the cut-off wheel has been automatically moved out of the workpiece.

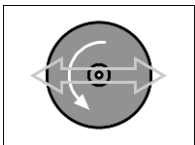
- Press START  to resume cutting.

### Direct Cut



Direct Cutting is the normal cutting mode. The cut-off wheel is moved into the workpiece in a slightly curved, vertical movement. Direct Cutting is intended for ordinary materials.

### ExciCut



ExciCut cutting mode is ideal for cutting of very hard materials (HV >400). The oscillating movement of the cut-off wheel has three main advantages: less wear on the cut-off wheel, less risk of damage to workpiece and less risk of motor overheating.

To select ExciCut, press the CUTTING MODE button, until ExciCut appears in the top bar of the display.

*Cutting irregular workpieces using ExciCut:*

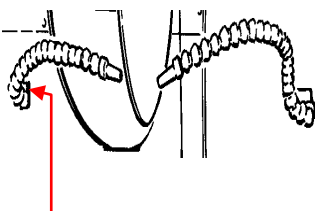
- Start cutting using Direct Cut until a small channel has been made.
- Switch over to ExciCut to continue cutting.

### AxioCut (option)



The AxioCut option permits cutting of extra large workpieces (adding 150mm to max. depth). Two different cutting modes are provided, Step and Sweep. The Sweep-mode offers better cut-off wheel economy than the Step-mode. The latter method, however, is faster. To select AxioCut/Step or AxioCut/Sweep, press the CUTTING MODE button, until the desired mode appears in the top bar of the display.

### Additional cooling



To activate jet, turn valve



When cutting hollow and/or thin workpieces, two flexible water jets are provided for workpiece cooling.

- Position the cooling jets to the left and right of the cutting area.
- Turn the valve on the jet to a position parallel to the hose to activate the cooling jet. The cooling water will flow as soon as the cutting starts.
- When cutting is finished, return the valve on the jet to horizontal.

#### **Information**

When using the flexible water jets, cooling water is diverted from the integrated water jets positioned over the cut-off wheel. The flexible water jets should not be used when cutting workpieces of large diameter as cooling will be less efficient. They are designed to supply a more localized cooling e.g. the internal surface of hollow workpieces.

### 3. Maintenance

Recirculation Cooling Unit

For Maintenance of the *Recirculation Cooling Unit* please refer to the Recirculation Cooling Units Instruction Manual.

#### Daily Maintenance

- Clean the cutting chamber, especially the cutting table and the T-slots.

#### Cleaning the Cutting Chamber

To ensure a longer lifetime for your Exotom-150, Struers strongly recommends daily cleaning of the cutting chamber both automatically and then, if necessary, manually (using the flushing hose)

Automated Cleaning

Exotom-150 has an automated washing function that is used to clean the cutting chamber.



#### Note

Before cleaning, remove sample and tools from the cutting chamber.



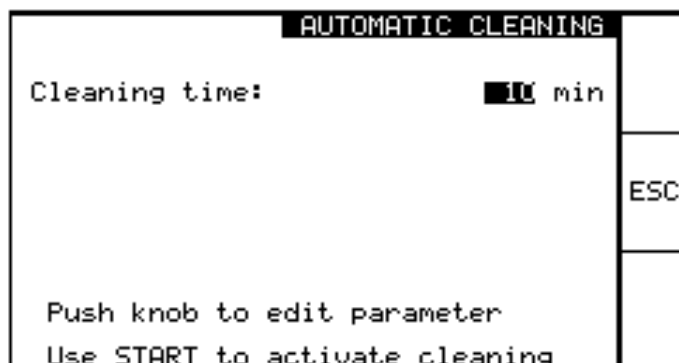
Close the cutting chamber's protection hood.



From the CONFIGURATION menu, turn knob to highlight Function.



Push knob to select activate the AUTOMATIC CLEANING menu.



Push knob then turn it to adjust the AUTOMATIC CLEANING cycle time. Push the knob to confirm the setting.  
Press START to start the cleaning cycle.

## Manual Cleaning

- Lift the flushing hose from its holder. The recirculation pump is activated.
- Point the flushing hose towards the bottom of the cutting chamber.
- Turn on the water by pressing the rear of the nozzle.
- Clean the cutting chamber thoroughly.
- Turn off the water by releasing the rear of the nozzle and return the flushing hose to its holder. The recirculation pump will then stop.



### **Important**

Do **not** clean the lamp glass with alcohol.  
Use a soft, damp cloth.

## Weekly Maintenance

The machine should be cleaned regularly, in order to avoid damaging effects to the machine and the specimens from abrasive grains or metal particles.

- Clean painted surfaces, and the control panel with a soft damp cloth and common household detergents.  
For heavy duty cleaning, use Struers Cleaner (Cat. No. 49900027).
- Clean the cover with a soft damp cloth and a common household anti-static window cleaning agent.  
Do not use harsh or abrasive cleaning agents.



### **Note**

Ensure that no detergent or cleaning agent residue is flushed into the cooling unit tank; excess foaming will occur.

## Cleaning the Cutting Chamber

- Remove the clamping device(s).
  - Thoroughly clean and lubricate the clamping device(s).
  - Store the clamping device(s) in a dry place or replace on the cutting table after cleaning.

- Clean the cutting chamber thoroughly.

## Cooling Unit

- Check the level of the cooling water after 8 hours use or at least every week.



## Monthly Maintenance

### Replacing the Cooling Water

- Replace the cooling water in the Recirculation Cooling Unit at least once a month.

## Yearly Maintenance

### Cleaning the In-line Filter

The in-line filter is mounted on the water inlet hose.

- Unscrew the filter housing and clean the filter.
- Re-assemble the filter.



#### **Tip**

The in-line filter can also be fitted to the quick coupling on the Recirculation Cooling Unit pump. Make sure that the in-line filter is mounted so that the flow arrows indicate the flow of water towards the cut-off machine.

## Inspection of Protection Hood

Part of Struers ServiceGuard

The protective hood consists of a metal frame and a composite material (PETG) screen that protects the operator. In the event of damage, the screen will be weakened and offer less protection.



#### **Important**

Carry out hood inspection at more regular intervals if the Exotom-150 is used for more than one 7 hour shift a day.

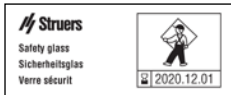
- Visually inspect the hood and the screen for signs of wear or damage (e.g. dents, cracks, damage to edge sealing).
- Standing on a stable surface, look down the channels of the protection hood from above.
- Visually inspect the white guide rollers and the cables for wear or corrosion, whilst carefully raising the hood to its' full extent. (A torch may be required to illuminate the area).
- Check the guide rollers and cables on both sides of the machine.

A pop-up message will appear after the hood has been operated more than 10,000 times. Contact Struers Service for a complete safety check of the hood safety mechanism.

Struers recommends that the cables be replaced after the hood has been operated 50,000 times or after 5 years.

To ensure its intended safety, the PETG screen must be replaced every 5 years<sup>2</sup>. A label on the screen indicates when it is due to be replaced.

<sup>2</sup> Replacement of the screen is required to remain compliant with the safety requirements in the European standard EN 16089.



The hood screen should be **replaced immediately** if it has been weakened by collision with projectile objects or if there are visible signs of deterioration or damage s.  
A label on the hood indicates when the screen is due to be replaced.

Inspection of the hood and replacement of the screen are part of ServiceGuard, the Struers range of service plans.



**Note**

A pop-up message will appear after the hood has been operated more than 10,000 times. Contact Struers Service for a complete safety check of the hood safety mechanism.

Struers recommends that the PETG glass and the cables be replaced after the hood has been operated 50,000 times or after 5 years.

The PETG glass should be replaced immediately if it has been weakened by collision with projectile objects or if there are visible signs of deterioration as a result of using a cooling fluid other than those produced by Struers.

A label on the hood indicates when the hood glass is due to be replaced.

## Testing Safety Devices

The hood has a safety switch system to prevent the cut-off wheel from starting while the hood is open. Furthermore, a locking mechanism prevents the operator from opening the hood until the cut-off wheel stops spinning.

- Start a cutting process.
- Activate the Emergency-stop.  
If cutting does not stop, press STOP ◇ and contact Struers Service.
- Open the cover.
- Press start.  
If cutting starts, press STOP ◇ and contact Struers Service.



**WARNING**

Do NOT use the machine with defective Safety Devices.  
Contact Struers Service.

## Maintenance of Cutting Table

The stainless steel bands forming the cutting table should be replaced if they have become worn or damaged. The bands are available as spare parts.

To allow humidity to escape from the cutting table and chamber, it is recommended to leave the hood open when the machine is not in use.

## Maintenance of Cut-off Wheels

### *Storage of Bakelite Bonded $Al_2O_3$ Cut-off Wheels*

This type of cut-off wheel is sensitive to humidity. Therefore, do not mix new, dry cut-off wheels with used humid ones. Store the cut-off wheels in a dry place, horizontally on a plane support.

### *Maintenance of Diamond and CBN Cut-off Wheels*

The precision of diamond and CBN cut-off wheels (and thus the cut) depends on how carefully the following instructions are observed:

- Never expose the cut-off wheel to overload, such as heavy mechanical load, or heat.
- Store the cut-off wheel in a dry place, horizontally on a plane support, preferably under light pressure.
- A clean and dry cut-off wheel does not corrode. Therefore, clean and dry the cut-off wheel before storing. If possible, use ordinary detergents for the cleaning.

## Maintenance of Clamping Devices



### ***Important***

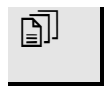
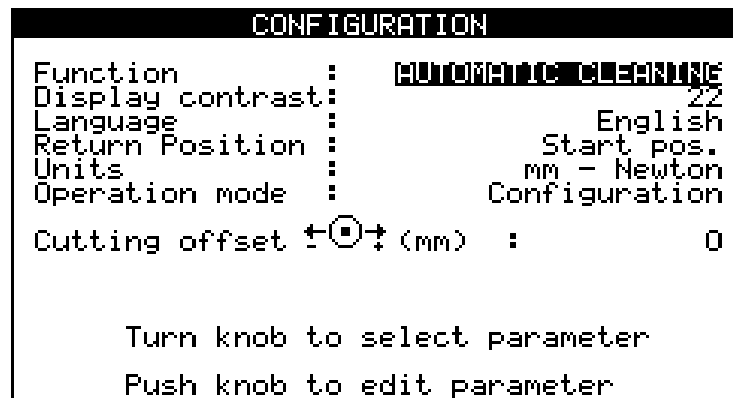
It is recommended to thoroughly clean and lubricate the Quick Clamping Device and Vertical Clamping Device at regular intervals.


# Reference Guide

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## 1. Advanced Operations

### Configuration Menu




Press MENU  button once to select CONFIGURATION Menu.



Turn knob to highlight different parameters in the CONFIGURATION Menu.  
Push knob to allow editing of the chosen parameter.  
Turn knob to the desired setting.  
Push knob to enter the new setting.



Press MENU  button to move from CONFIGURATION Menu to Cutting Display.


### Display contrast


The contrast settings of the display can be adjusted to suit individual preferences (default value: 22, adjustment interval: 0-50).

### Language

The language can be set to English (default), German, French, Spanish or Japanese.

### Return position

After cutting or after pressing STOP , the return movement of the cut-off wheel can be set to three different functions:

- Top:** Exotom-150 automatically retracts the cut-off wheel to the top position.
- Start:** Exotom-150 automatically retracts the cut-off wheel to the original position of the cut-off wheel, at the time you pressed START  (default).
- Stay:** The cut-off wheel stays down.



#### **Important**

Use the Stay function for Bakelite bonded diamond or CBN cut-off wheels, as retraction might destroy the rim of the cut-off wheel.

### Units

The Feed, Force and Stop values in the display panel can be set to displayed in either mm/Newton (default) or inches/pounds force.

### Operation mode

It is possible to select three different operation modes:

- Configuration:** Full functionality
- Development:** No access to parameters in CONFIGURATION menu, except Display contrast
- Production:** Access to START, STOP, Fixed Stop and movement of cut-off wheel, and to Display contrast in the CONFIGURATION menu

To select your own pass code, go to the CONFIGURATION menu. Select Operation mode to get access to CHANGE OPERATION MODE menu.

## New Pass Code

To select your own pass code, go to the CONFIGURATION menu. Select Operation mode to get access to CHANGE OPERATION MODE menu.



### Note

When a pass code is set the operator has 5 attempts to enter the correct pass code after which the Exotom-150 will be locked. Re-start Exotom-150 using the Main Switch then enter the correct Pass Code.



Push knob to select Pass code.

CHANGE OPERATION MODE	
Operation mode:	Configuration
Pass code :	xxx
ESC	
Turn knob to select parameter	
Push knob to edit parameter	



Turn knob until default pass code '176' appears.



Push knob to select default pass code, and a new line (New pass code) appears in the CHANGE OPERATION MODE menu.





Turn knob to move the cursor to New Pass Code.

CHANGE OPERATION MODE	
Operation mode:	Configuration
Pass code :	176
New pass code :	xxx
ESC	
Turn knob to select parameter	
Push knob to edit parameter	



Push knob to select and turn knob to set your own three-digit pass code.




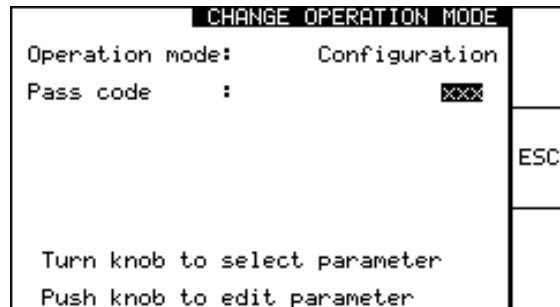
Press Menu button to confirm your unique pass code and exit the CHANGE OPERATION MODE menu.





## Changing Operation Mode

To change the operation mode, highlight the parameter in the CONFIGURATION menu.


 Push knob to move to Change Operation Mode menu.



↓  
 Enter your unique pass code by turning the knob. Confirm by pushing knob.

↓  
 Push knob.  
A pop-up will appear.



↓  
 Select desired operation mode and push knob to confirm.

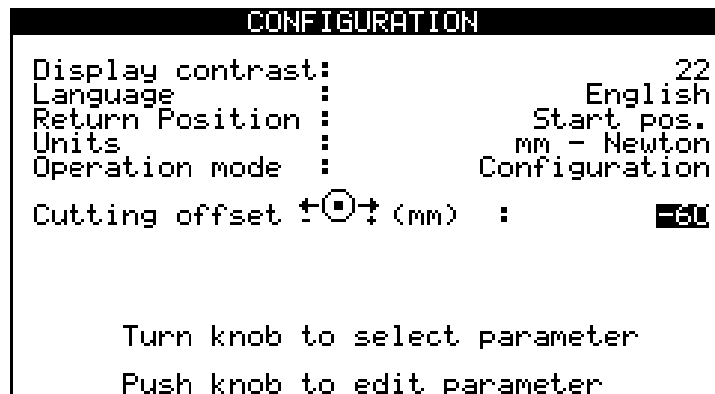
↓  
Press Cutting Mode button to move to CONFIGURATION menu.

## Cutting Offset



### Information

Cutting Offset requires installation of the AxioCut option.



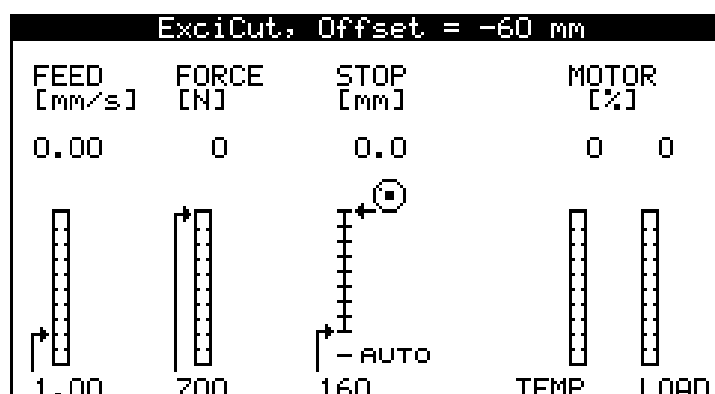
The horizontal position (cutting offset) of the cut-off wheel can be set manually, prior to the cutting. In the ExciCut and Direct Cut cutting modes, the cut-off wheel may be moved 10 mm towards the front and 60 mm towards the back of the cutting chamber ('+10/-60', default value is 0). This allows for greater flexibility in terms of cutting difficult work pieces and clamping.

To change the position:

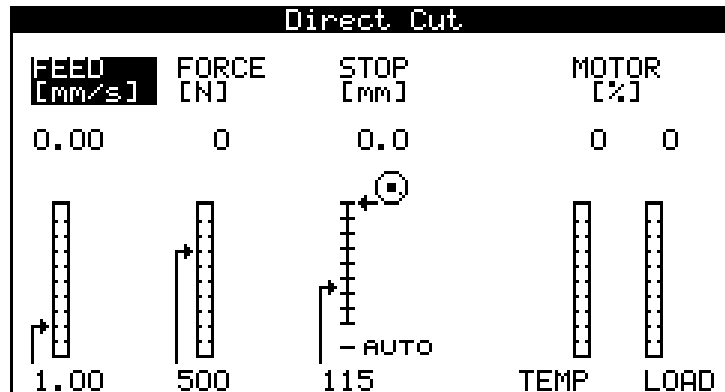
- Highlight Cutting offset by turning the knob.
- Push knob to allow editing of the value.
- Turn knob to change the value.
- Push knob to enter the desired value.

Once the new value has been confirmed, the cut-off wheel moves to the desired position - even if the protection hood is open.

If the cutting offset has been changed (i.e. not the default value of 0), the Cutting Display heading will remind the operator which offset has been selected.




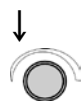
## Cutting Display



The Cutting Display appears on the Control Panel when Exotom-150 is turned on. The Cutting Display is designed as a single-layer user interface, i.e. without sub-menus. Whereas this menu is for everyday use, the CONFIGURATION menu (as described above) will normally only be used at installation.



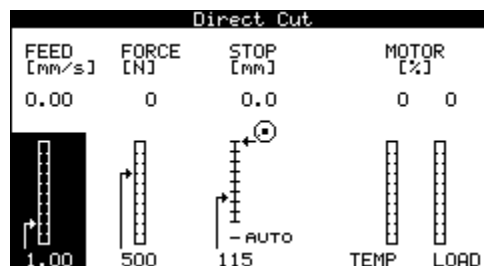
If in CONFIGURATION menu, press MENU  to select Cutting Display.



Turn knob to toggle between parameters in the Cutting Display. (FEED, FORCE, STOP).



Push knob to allow editing of the selected parameter (the parameter bar is highlighted). Turn knob to change the value of the Cutting Parameter.



Push knob to enter the new setting.

## Cutting Modes

The Cutting menu has four cutting modes:

Direct Cut

ExciCut

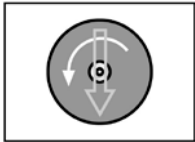
AxioCut/Step (optional)

AxioCut/Sweep (optional)

To select Cutting Mode, press the CUTTING MODE button, until the desired mode appears in the top bar of the Cutting menu.

The latest Cutting Mode used is saved, and will appear in the Cutting Display the next time Exotom-150 is switched on.

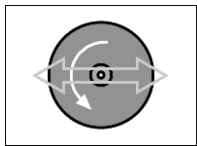
### Direct Cut



Direct Cut is the normal cutting mode. The cut-off wheel is moved into the workpiece in a slightly curved, vertical movement, without any separate movement on the horizontal axis.

Direct Cutting is intended for ordinary materials.

### ExciCut



ExciCut cutting mode is ideal for fast cutting of very hard materials (HV >400). The oscillating movement of the cut-off wheel has three main advantages: less wear on cut-off wheel, less risk of damage to workpiece and less risk of motor overheating.

To select ExciCut, press the CUTTING MODE button, until ExciCut appears in the top bar of the display.

*Cutting Irregular Workpieces  
using ExciCut:*

- Start cutting using Direct Cut until a small channel has been made.
- Switch over to ExciCut to continue cutting.

### AxioCut (option)

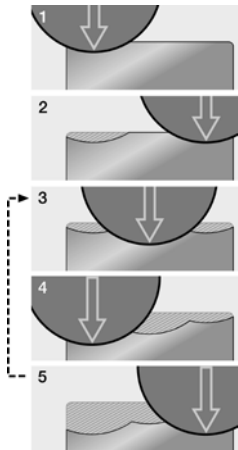


The AxioCut option permits cutting of extra large workpieces (adding 150 mm to max depth).

Two different modes, Step and Sweep, are provided; Step cutting offers faster cutting, whereas Sweep cutting offers better wheel economy.

Both methods are based on the Direct Cutting method, i.e. without oscillation of the cut-off wheel.

### AxioCut/Step



In Step-mode, the cut-off wheel enters the workpiece in three alternating, pre-programmed steps of 10mm.

This method offers fast cutting of even very hard materials.

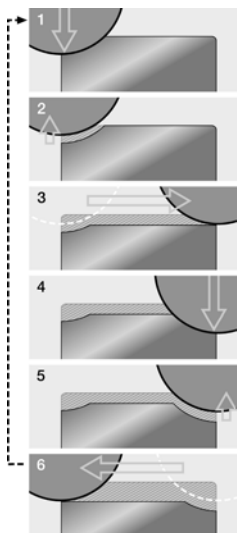
To select AxioCut/Step, press the CUTTING MODE button, until the desired mode appears in the top bar of the display.

Note that the two initial steps of a cycle, 1 & 2, are 5mm only. The cutting depth on steps 3 to 5 is 10mm.

After completing step 5, steps 3 to step 5 are repeated until the workpiece has been cut through.

The arrows on the drawing point towards the position of the cut-off wheel *after* cutting.

### AxioCut/Sweep




Sweep-mode offers better cut-off wheel economy than Step-mode, as a harder cut-off wheel can be used which in turn is more resistant to wear. The latter method, however, is faster.

AxioCut/Step is intended for cutting of large items. Attempting to cut small items in this mode may prove inefficient. Select alternative Cutting Mode.

In Sweep-mode, the cut-off wheel enters the workpiece at a pre-programmed feed speed. A Step column replaces the far-left column in the Cutting Display (Feed) when in Sweep-mode. FORCE is automatically set to maximum (700 N), to ensure utilisation of all available force, no matter which STEP size has been selected.

To select AxioCut/Sweep:

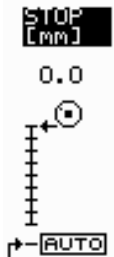
- Press the CUTTING MODE button, until the desired mode appears in the top bar of the display.
- Turn knob until STEP is highlighted and push knob to select STEP parameter.
- Turn knob to set STEP to the desired value (0.1-4.0 mm in steps of 0.1 mm).
- Push knob to enter the new setting.
- Turn knob until STOP is highlighted and push knob to select STOP parameter.
- Turn knob to set the desired STOP position.
- Push knob to enter the new setting.
- Press START .

Note that the first step of a cycle moves the cut-off wheel from the back to the front of the workpiece without touching it.

The arrows on the drawing point towards the position of the cut-off wheel *after* cutting/re-positioning. After completing step 6, steps 1 to 6 are repeated until the workpiece has been cut through.

## Stop Settings

### AutoStop




There are two ways to set the stop position: AutoStop or Fixed Stop.

When the AutoStop function is selected, the machine automatically stops when the workpiece has been cut through. For normal cutting, the AutoStop function is recommended.

In the Cutting Menu, toggle between FORCE/FEED/STOP by turning the knob until STOP is highlighted and select STOP by pushing the knob.


Turn knob to move pointer to setting AUTO at the bottom of the STOP column then push the knob to enter the new setting.

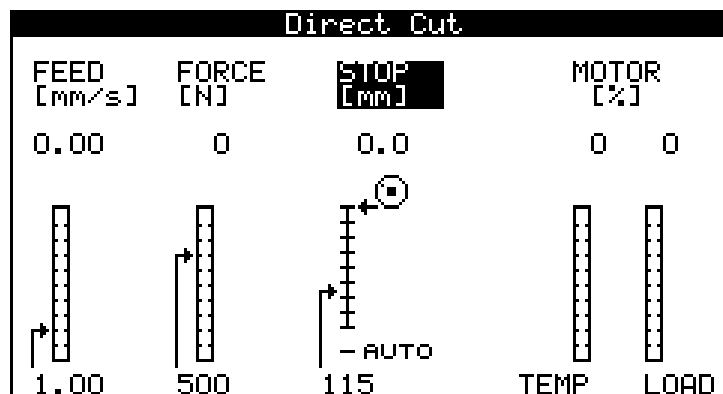
When the pointer in the STOP column is not on AUTO, Exotom-150 will only stop when it reaches the preset stop position or the STOP  key is pressed.

Note: AutoStop acts on sudden load changes. In some cases, eg using very low feed rate and/or low force, subtle load changes may not be detected by the machine, preventing AutoStop from working properly. This may particularly be the case when cutting soft materials, pipes or workpieces with changing cross-section. If AutoStop does not work properly use the Fixed Stop function instead.

### Fixed Stop

Fixed stop is used when a specific stop position is desired. When cutting pipes or other workpieces with changing cross sections, the cut-off wheel may retract before the workpiece has been cut. To overcome this, use the Fixed Stop function.

- Clamp the workpiece and position the cut-off wheel just above the workpiece.  
This position is automatically set to 0 (zero) and indicated by the cut-off wheel icon  to the right of the Stop column. Accordingly, as soon as Start has been pressed, the actual position of the cut-off wheel, becomes a relative starting point (zero), from where the cutting depth is calculated.
- Select the STOP parameter and set the desired stop position using the knob.  
Exotom-150 will now stop when it reaches the pre-set stop position.  
Remember to take the wear of the cut-off wheel into consideration.

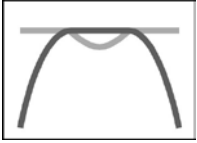


### QuickPosition

Positioning of the cut-off wheel may be done automatically, by simply pushing the joystick downwards until the cut-off wheel is in contact with the workpiece. The force is automatically reduced on contact, preventing damage to the cut-off wheel and the workpiece. After contact with the workpiece, the cut-off wheel is automatically retracted 2mm, to be ready for cutting.



### OptiFeed



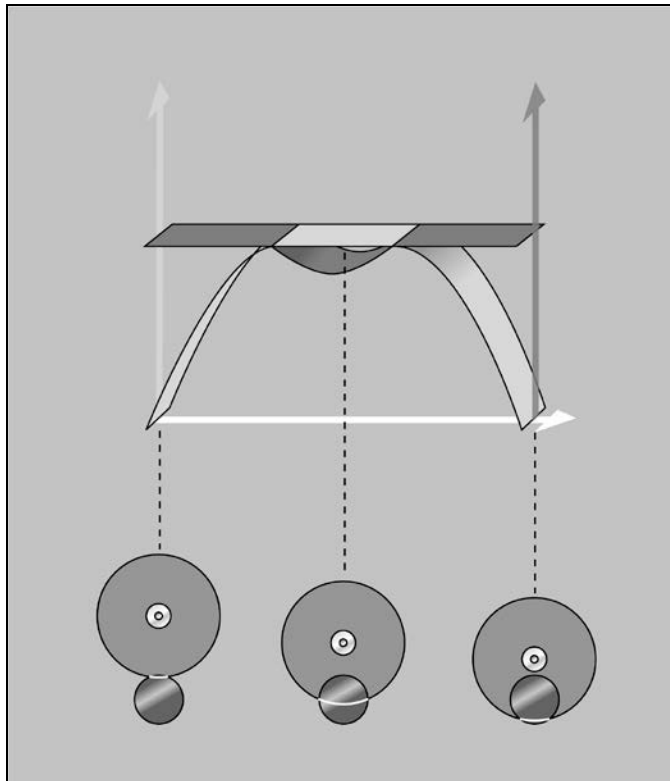
During cutting, Exotom-150 continuously measures the load on the cutting arm.

The pre-set Feed and Force values are interpreted as maximum values. Throughout cutting, Exotom-150 will try to stay as close to these values as possible.

The factors that determine the load, are the shape and properties of the workpiece.

Whenever the set maximum Force limit is reached, Exotom-150 will reduce the Feed rate to be able to maintain the present force.

The figure below illustrates the increase in force as the cut-off wheel gets closer to the centre of a round workpiece.



### Clamping Long, Protruding Workpieces

The side covers of the protection hood can be replaced with specially designed safety box extensions.  
Please contact your Struers dealer for details.

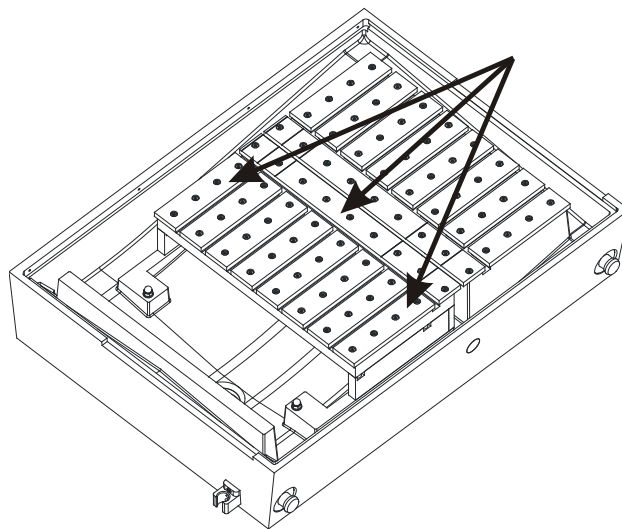
### Clamping Irregular Workpieces

Irregular workpieces without plane clamping surfaces must be clamped using special clamping tools, as the workpieces must not move during cutting. This could result in damage to the cut-off wheel or to the sample itself. Use the T-slots to mount the special clamping tools. Struers offers a kit of Clamping Tools (See Accessories). To achieve faster cutting, position the workpiece so that the wheel will cut the smallest possible cross-section.

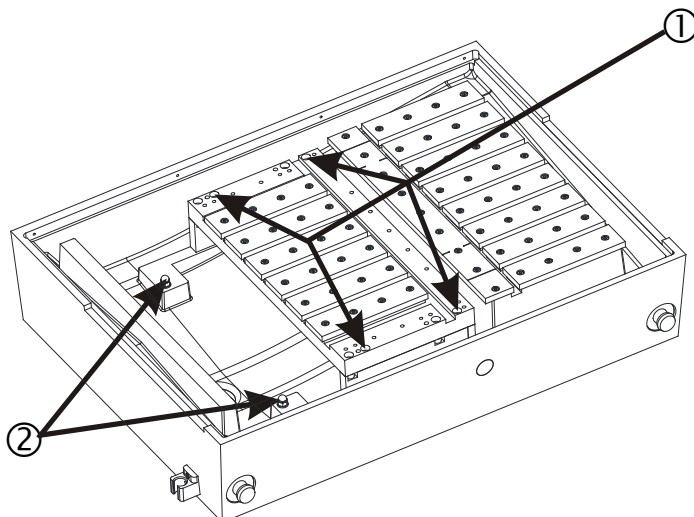
### Removing the Left Cutting Table

The left hand cutting table can be removed completely to make room for custom made clamping tools.

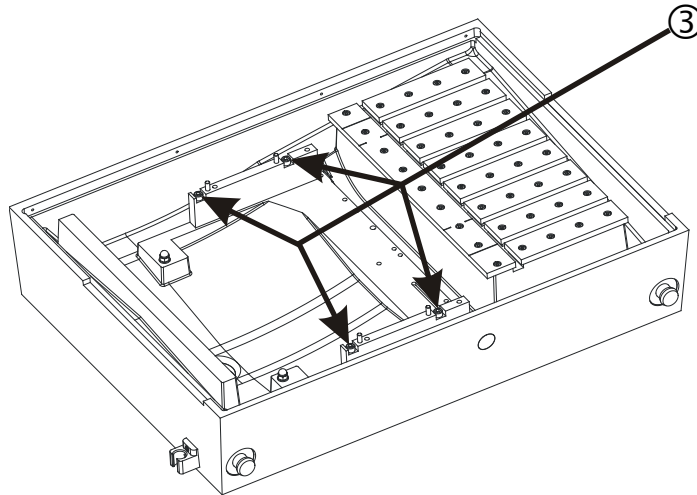
- Remove the 3 bands at the front, rear and side of the fixed cutting table (illustrated below).



- Remove the 4 screws on the top of the table ① (illustrated below).
- Remove the 2 screws from under the table ②.



- Remove the 4 screws securing the shims ③.



**Important**

After replacing the cutting table, check that the table is level and is securely fastened before operation.

## **Safety Features**

The protection hood has a safety switch to prevent the cut-off wheel from starting while the hood is open. Furthermore, a locking mechanism prevents the opening of the protection hood before the cut-off wheel has come to a complete stop.

The motors of Exotom-150 are protected against overload. Should the motors overheat and/or overload, the motors will disengage until a normal temperature has been obtained.

Exotom-150 is prepared for the connection of an external warning light. The connection socket is situated on the right hand side of the machine.

## Optimising Cutting Results

The following table shows possible answers to a number of common questions:

Optimising the Cutting Results	
Question	Answer
How can I avoid discoloration or burning of the sample?	Use a lower Feed Speed.
	Change the cut-off wheel as the hardness of the present cut-off wheel may be inappropriate for the hardness of the sample. *)
How can I avoid burrs?	Use a softer cut-off wheel. *)
	Clamp the workpiece securely at the right hand clamping device. Tighten the left hand clamping device just enough to prevent the workpiece from moving when being cut.
How can I avoid the cut-off wheels wearing too quickly?	Use a lower Feed Speed, a different cutting mode or a harder cut-off wheel. *)
How can I achieve faster cutting?	Position the workpiece so as to cut the smallest possible cross-section. Use a high Feed Speed. If workpiece shape and properties permit, change to ExciCut or AxioCut/Step (optional) Cutting Modes

\*) Please refer to the Selection Guide in the [Struers Cut-off Wheels brochure](#).

## 2. Accessories

Please refer to the [Exotom-150 brochure](#) for details of the range available.

### Clamping Tools

Please refer to the [Struers Clamping Tools brochure](#) for details of the range available.

### Other Accessories

Specification	Cat. No:
<b>T-slot cleaner</b> T-slot cleaner for 10 and 12 mm T-slots	05486910

## 3. Consumables

*The use of Struers consumables is recommended.  
Other products (e.g. coolants) may contain aggressive solvents, which dissolve e.g. rubber seals or cause deterioration of the cover.  
The warranty may not cover damaged machine parts (e.g. seals and tubes), where the damage can be directly related to the use of non-Struers consumables.*

### Cut-off Wheels

Please refer to the Selection Guide in the [Struers Cut-off Wheels brochure](#).

### Other Consumables

Specification	Cat. No:
<b>Corrozip</b> <i>Additive for Cooling Fluid</i> Environment friendly. To protect the machine from corrosion and to improve cutting and cooling qualities. 1 l 5 l	    49900045 49900046

## 4. Trouble-Shooting

Error	Explanation	Action
<b>Machine Problems</b>		
Water leaking.	Leak in recirculation water hose.	Check the hose and tighten the hose clamp.
	Water overflow in the recirculation water tank.	Remove the excess water in the tank.
In-line filter needs cleaning often.	Filter tube needs to be changed.	Change the filter tube.  In some cases, the In-line filter will require more frequent cleaning. To make this process easier, it can be moved to the quick coupling on the Recirculation Cooling Unit pump.  See <a href="#">Cleaning the In-line Filter</a> .
Workpieces or cutting chamber corroded.	Insufficient additive for cooling fluid.	Add Struers Additive for cooling fluid to the cooling water, using the correct concentration. Check with a refractometer. Please follow the instructions in the Recirculation Cooling Unit Instruction Manual.
	The machine is left with closed protection hood.	Leave the protection hood open to let the cutting chamber dry.
Quick-clamping device unable to hold the workpiece.	The quick-clamping device is not in balance.	Adjust the screw underneath the clamping column. Use a 3mm Allen key.
	Clamping heart worn.	Call Struers Service.
Protection Hood will not close	There is an obstruction in the cutting chamber.	Remove the obstruction.
	The cables supporting the Protection Hood are damaged, activating the safety mechanism to lock the hood.	Call Struers Service.
Machine is locked	Incorrect Pass Code used.	Re-start machine using Main Switch. Enter the correct Pass Code. If error remains, contact Struers Service.

Error	Explanation	Action
<b>Cutting Problems</b>		
Discoloration or burning of the sample.	The hardness of the cut-off wheel is inappropriate for the hardness / dimensions of the sample.	Select another wheel. Please refer to the <a href="#">Brochures</a> for details of the range available. Alternatively, reduce rotational speed.
	Inadequate cooling.	Check that there is enough water in the recirculation cooling unit.
	Feed Speed too high.	Reduce the Feed Speed.
Unwanted burrs.	Cut-off wheel too hard.	Select another wheel. Please refer to the <a href="#">Brochures</a> for details of the range available. Alternatively, reduce rotational speed.
	Insufficient support of workpiece.	Add further support to the workpiece.
The cutting quality differs.	Cooling water hose clogged.	Clean the cooling water hose and the cooling tube.
	Insufficient cooling water.	Refill tank with water. Remember to add Struers Additive.
The cut bends to one side.	Feed Speed is too high.	Reduce the Feed Speed.
The cut-off wheel breaks.	Incorrect mounting of the cut-off wheel.	Check that the centre-hole has the correct diameter. Check cardboard washer on both sides of the cut-off wheel. The nut must be tightened properly.
	Incorrect clamping of the workpiece.	Make sure that only one of the quick-clamping devices is tight. The other device should only press lightly. Use support tools if the geometry of the workpiece makes support necessary.
	Wheel too hard.	Select another wheel. Please refer to the <a href="#">Brochures</a> for details of the range available.
	Feed Speed too high.	Reduce the Feed Speed.
	Inadequate cooling.	Check that there is enough water in the recirculation cooling unit. Check the cooling water hoses.
The cut-off wheel wears down too quickly.	Feed Speed too high.	Reduce the Feed Speed.
	Insufficient cooling.	Check that there is enough water in the recirculation cooling unit. Check the cooling water hoses.
	The cut-off wheel is too soft for the task.	Select another wheel. Please refer to the <a href="#">Brochures</a> for details of the range available.
	Exotom-150 vibrates (worn bearings).	Call Struers Service.



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Error	Explanation	Action
The cut-off wheel does not cut through the sample.	Incorrect choice of cut-off wheel.	Select another wheel. Please refer to the <a href="#">Brochures</a> for details of the range available. Alternatively, reduce rotational speed.
	Cut-off wheel worn.	Replace the cut-off wheel.
	The cut-off wheel gets caught in the workpiece.	Move the cutting table backwards to release the cut-off wheel, reduce the feed speed and continue cutting. Support the workpiece and clamp it on both sides of the cut-off wheel in such a way to allow the cut to stay open.
	Incorrect choice of Cutting Mode. AxioCut/Step (option) is intended for large workpieces.	See section on Operation, Cutting Mode.
The workpiece breaks when clamped.	The workpiece is brittle.	Place the workpiece between two polystyrene plates. NB! Always cut brittle workpieces very carefully.
The sample is corroded.	The sample is not resistant to water.	Use a neutral liquid as cooling fluid or cut without using cooling fluid at all. <b>DO NOT USE AN INFLAMMABLE LIQUID</b>
	The sample has been left in the cutting chamber for too long.	Leave the protection hood open, when you leave the machine.
	Insufficient additive for cooling fluid.	Add Struers Additive for cooling fluid to the cooling water in the correct concentration. Check with a refractometer. Please follow the instructions in the Recirculation Cooling Unit Instruction Manual.
AutoStop does not stop the cutting action.	Feed Speed and/or Force is set too low to allow load change to be detected.	If problem persists, contact local Struers service engineer, for adjustment of AutoStop sensitivity.

## Error Messages

Error messages are divided into three classes:

Messages

Errors

Fatal Errors

### Messages

Messages are intended to inform the operator of the machine's progress and advise about minor operational errors.

### Errors

Errors must be rectified before cutting can be continued.

### Fatal Errors

In case of Fatal Errors, cutting cannot continue before an authorised technician has rectified the error. Turn off the machine at the Main Switch immediately. Do not attempt to operate the machine before a technician has rectified the problem.

Message	Explanation	Action
Process in Progress.	Start is not possible as other process in progress e.g. emptying of recirculation tank.	
Process already stopping.	Appears if Stop is pressed repeatedly.	
Water flow too low ! Check level in tank and check pump filter.	Water level in recirculation tank is too low.	Check water level and refill if needed.
	Filter in Recirculation Cooling Unit is clogged.	Check filter. Clean or replace if needed.  For some installations, the In-line filter will require more frequent cleaning. To make this process easier, it can be moved to the quick coupling on the Recirculation Cooling Unit pump.  See <a href="#">Cleaning the In-line Filter</a> .
Water flow sensor not deactivated	Faulty sensor.	Replace the sensor. If this does not help, contact Struers Service
Please remember to order a service visit from Struers. Time since last service:   XXX h Time until next service:   XXX h	See section on Yearly Service.	Contact Struers Service
Regular service interval exceeded by:       XXX h Time since last service:   XXX h	See section on Yearly Service.	Contact Struers Service
Hood inspection required ! Hood operated more than 10,000 times. Number exceeded by XXX. Please call Service Technician	See section on Yearly Service.	Contact Struers Service

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*Instruction Manual*

Message	Explanation	Action
Flush nozzle not parked.	Start not possible. Start was pressed while flush nozzle was out of holder.	Park flush nozzle to continue.
Flushing was interrupted to avoid pump damage. Please park the flush nozzle to continue.	The pump automatically stops after 30 minutes to avoid pump damage.	Park flush nozzle to continue.
Reference position not found.	Stop was pressed during search for reference point.	Press Start again to do new search. If message remains, switch the machine off and on at Main Switch to start new search for reference point.
Cutting stopped by flange guard.	Flange guard next to the cut-off wheel flange will stop the movement of the cutting arm if it meets an obstacle.	Replace cut-off wheel or re-position workpiece.
Searching for reference position.	When the machine is switched on, a reference position process is performed.	Wait until process has stopped.
Reference position not found (Close the hood and press START)"	The hood must be closed as the reference position process is performed.	Close hood properly and press Start.
Protection hood not closed.		Close hood properly.
Emergency stop is active.		Release emergency stop(s).
Out of Cutting Range.	Wheel at bottom position when Start is pressed.	Move cut-off wheel to higher start position.

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Error Message	Explanation	Action
Main supply voltage too low.	Supply voltage insufficient.	Await normalisation of power grid.
Cut-off motor overloaded.	Wait until the motor has cooled down.	Press Start.
ExciCut motor overloaded.	Wait until the motor has cooled down.	Press Start.
Protection hood not locked.	Safety lock has failed to lock hood.	Re-close hood.
Cut-off motor blocked.	Cut-off motor may fail to move the wheel if caught in the workpiece.	Move cut-off wheel clear of workpiece before pressing Start.
Contact K3 not activated.	Contact fails to operate.	Re-start. If error remains, contact Struers Service.
Contact K4 not activated.	Contact fails to operate.	Re-start machine using Start and Stop buttons. Alternatively, re-start using Main Switch If error remains, contact Struers Service.
Step motor or encoder error.	Exotom-150 cannot complete reference point search.	Re-start using Main Switch. If error remains, contact Struers Service.
Reference sensor not activated.	Search for reference point cannot be conducted.	Check whether cutting arm is blocked. Re-start using Main Switch. If error remains, contact Struers Service.
Step motor may be blocked.	Cutting arm cannot move, most likely due to blockage of arm.	Remove blockage. If error remains, contact Struers Service.
AxioCut motor blocked.	Cutting arm cannot move, most likely due to blockage of arm or AxioCut motor may fail to move the wheel if it gets caught in the workpiece.	Move obstacle or move cut-off wheel clear of workpiece before pressing Start.

*Exotom-150*  
*Instruction Manual*

<b>Fatal Error</b>	<b>Explanation</b>	<b>Action</b>
Protection hood lock not released.		Re-start machine using Start and Stop buttons. Alternatively, re-start using Main Switch.
Cut-off motor will not stop.		Turn off the machine at the Main Switch. Contact Struers Service.
Contactor K3 not deactivated.	Error in control system.	
Contactor K4 not deactivated.	Error in control system.	
Safety relay error during cutting.		
Force system uncalibrated.	Force-measuring system is not calibrated.	
No serial communication.	No contact between machine system and Control panel.	
Nominal motor current undefined.	Motor current has not been defined during set-up of machine.	
Program version mismatch.	Conflict between software in machine system and Control panel.	
AxioCut motor driver error.	When machine is switched on, AxioCut motor starts operating.	

## 5. Service

### Service Information

Struers recommends that a regular service check be carried out after every 1500 hours of use.

Struers offers a range of comprehensive maintenance plans to suit the requirements of our customers. This range of services is called **ServiceGuard**.

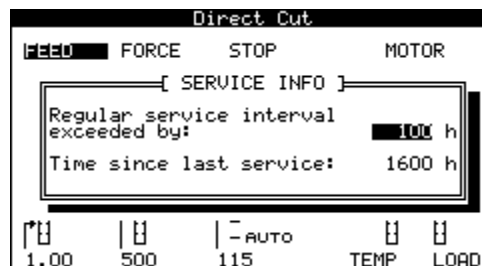
The maintenance plans include equipment inspection, replacement of wear parts, adjustments/calibration for optimal operation, and a final functional test.

Information on total operation time and servicing of the machine is displayed on the screen at start-up:



A pop-up message will appear after 1,000 hours operation time to remind the user that a service check should be scheduled.

After the 1,500 hours operation time has been exceeded the pop-up message will change to alert the user that the recommended service interval has been exceeded.



- Contact Struers Service to service the machine.

## 6. Technical Data

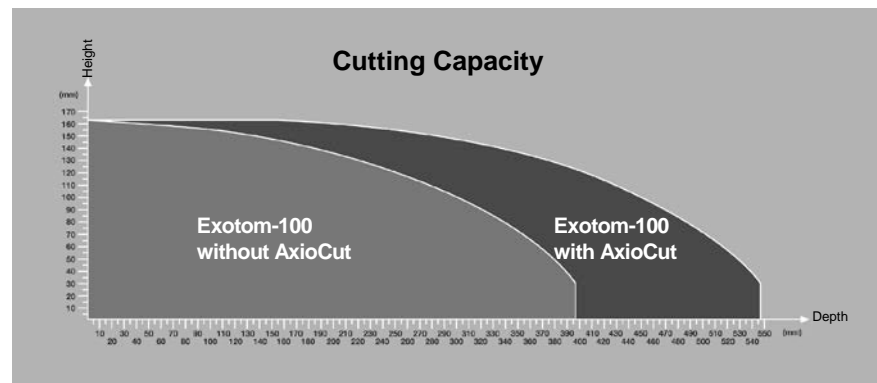
Subject		Specification	
		Metric/International	US
<b>CUTTING SPECIFICATIONS</b>			
<b>Workpiece Dimensions (Max)</b>	Height Width Depth	250 mm 650 mm 550 mm	10" 25.6" 20"
<b>Cutting Capacity (Max)</b> <i>Please refer to Cutting Diagram</i>	Max. workpiece diameter <i>Max. size of cut (with AxioCut option)</i> Height Depth	160 mm  100 mm (100 mm) 300 mm (450 mm)	6.3"  3.9" (3.9") 11.8" (17.7")
<b>PHYSICAL SPECIFICATIONS</b>			
<b>Cutting Motor</b>	Cutting power constant [S1] Cutting power intermittent [S3, 15%] Maximum power	7.5 – 9.0 kW 10.9 – 13.0 kW 15 – 18 kW	10 - 12 HP 14 - 17 HP 20 – 24 HP
<b>Cut-off Wheel</b>	Diameter x Thickness x Centre-hole Rotational speed (running idle)	432 x 3 x 32 mm 1950 rpm	17 x 0.12 x 1.26" 1950 rpm
<b>Positioning &amp; Feed</b>	Positioning range (of cut-off wheel) Max. positioning speed  Feed Speed range (adjustable in steps of) Cutting force	0 – 250 mm 60 mm/s  0.05 – 5 mm/s (0.05mm/s) 50-700 N	0 – 9.8" 2,4"/s  0.002 – 0.2"/s (0.002"/s) 10-150 lbf
<b>Cutting table</b>	Width Depth T-slots	855 mm 550 mm 12 mm	33.6" 21.6" 0.48"
<b>Dimensions and Weight</b>	Height (closed/open hood) Width (ex-/including control panel) Depth Weight (without/ with X-table)	1756/2300 mm 1050/1350 mm 1500 mm 820 kg	69/90.5" 41.3/53.1" 59.1" 1810 lbs
<b>Fume Extraction</b>	Dia. for connecting tube Recommended capacity at 0mm/0" water gauge	80 mm 150 m <sup>3</sup> /h	3¼" 5300 ft <sup>3</sup> /h

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Subject			Specification			
Electrical Data	Voltage / frequency:	Cutting Power		Max. Power	Nom. Load	Max. Load
		constant [S1]	intermittent [S3, 15%]			
	3 x 200 V / 50 Hz	7.5 kW	10.5 kW	15 kW	36 A	69 A
	3 x 200-210 V / 60 Hz	7.5 kW	10.5 kW	15 kW	35 A	67 A
	3 x 220-230 V / 50 Hz	7.5 kW	10.5 kW	15 kW	31 A	60 A
	3 x 220-240 V / 60 Hz	7.5 kW	10.5 kW	15 kW	29 A	55 A
	3 x 380-415 V / 50 Hz	7.5 kW	10.5 kW	15 kW	18 A	34 A
	3 x 380-415 V / 60 Hz	7.5 kW	10.5 kW	15 kW	17 A	32 A
	3 x 460-480 V / 60 Hz	9.0 kW	12.6 kW	18 kW	18 A	34 A
Mains Cable Recommendation		Min. Fuse size	Minimum cable size @ Min. fuse	Max. Fuse size	Minimum cable size @ Max. fuse	
	3 x 200 V / 50 Hz	80 A	3x6,0mm² + PE	80 A	3x6,0mm² + PE	
	3 x 200-210 V / 60 Hz	80 A	3xAWG6 + PE	80 A	3xAWG6 + PE	
	3 x 220-230 V / 50 Hz	80 A	3x6,0mm² + PE	80 A	3x6,0mm² + PE	
	3 x 220-240 V / 60 Hz	80 A	3xAWG6 + PE	80 A	3xAWG6 + PE	
	3 x 380-415 V / 50 Hz	32 A	3x2,5mm² + PE	50 A	3x4,0mm² + PE	
	3 x 380-415 V / 60 Hz	30 A	3xAWG10 + PE	50 A	3xAWG10 + PE	
	3 x 460-480 V / 60 Hz	30 A	3xAWG10 + PE	50 A	3xAWG10 + PE	
	<b>Important:</b> Local standards may overrule the recommendations for the main supply cable. If necessary, please contact a qualified electrician to verify which option is suitable for the local installation setup.					
Residual Current Circuit Breaker	type A, 30 mA (or higher) is recommended.					
EU Directives	Please refer to the Declaration of Conformity					
Operating Environment	Noise level		Approx. 78 dB(A) running idle, at a distance of 1.0 m / 39.4" from the machine.			
	Surrounding temperature		5-40°C / 41-104°F			
	Humidity, non-condensing		0-95% RH			



## Cutting Capacity




The graph shows the projected cutting capacity under the following conditions: A new cut-off wheel. The workpiece is laid directly on the cutting table, with overhang where appropriate. Vertical clamping is used. The actual cutting capacity depends on the sample material, cut-off wheel and clamping technique.

# Quick Reference

## Clamping the Workpiece

- Place the workpiece between the clamp and the back stop on the right hand cutting table.
- Push the clamp towards the workpiece and lock the quick-clamping device with the locking handle.

## Starting the Cutting


- Position the cut-off wheel.
- Close the protection hood.
- Press START . The cut-off wheel starts rotating and the cooling water starts running.

## Stopping the Cutting

### Auto Stop

- In the Cutting Display, set the STOP parameter to AUTO at the bottom of the STOP column.

### Manual Stop

- Press STOP  and the cutting process stops. The cut-off wheel stops rotating and the cooling water stops.

## Setting the Cutting Parameters

- In the Cutting Display, set each of the cutting parameters using the multi function knob

## Changing the Cut-off Wheel

- Press the knob for the spindle lock and turn the cut-off wheel until the spindle lock clicks.
- Remove the nut with a fork spanner (30 mm).
- Remove the flange and the cut-off wheel.
- Mount the new cut-off wheel.
- Mount the flange and nut. Tighten carefully.

## Cleaning the Cutting Chamber

- Point the flushing hose towards the bottom of the cutting chamber.
- Turn on the water by pressing the rear of the nozzle.
- Clean the cutting chamber thoroughly.
- Turn off the water by releasing the rear of the nozzle and returning the flushing hose to its holder.

English

## Declaration of Conformity

**Manufacturer**

Struers ApS  
 Pederstrupvej 84  
 DK-2750 Ballerup, Denmark  
 Telephone +45 44 600 800

**Herewith declares that**

<i>Name:</i>	Exotom-150
<i>Cat. No.:</i>	05046847, 05046835, 05046836, 05046846
<i>Function:</i>	Cut-off machine
<i>Type No.:</i>	504

**fulfils all the relevant provisions of the:**
**Machinery Directive  
2006/42/EC**

according to the following standard(s):  
 EN ISO 12100:2010, EN ISO 13849-1:2015,  
 EN ISO 13850:2008, EN 60204-1:2006/AC:2010.

**and is in conformity with the:**
**EMC Directive  
2014/30/EU**

according to the following standard(s):  
 EN 61000-6-1:2007, EN 61000-6-3:2007/A1:2011.

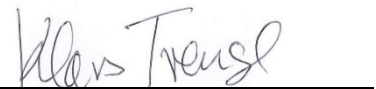
**RoHS Directive  
2011/65/EU**

according to the following standard(s):  
 EN 50581:2012.

**Supplementary Information**

The equipment complies with the following standards:  
 UL508A, UL508, IEC 60204-1, NFPA70:2014, NFPA79:2012, FCC 47 CFR part 15.

The above has been declared according to the global approach, module A.

**Authorized to compile the Technical File:**


Klavs Tvenge  
 Director of Business Development  
 Struers ApS  
 Pederstrupvej 84  
 DK-2750 Ballerup, Denmark

Date of Issue: 2017.10.05



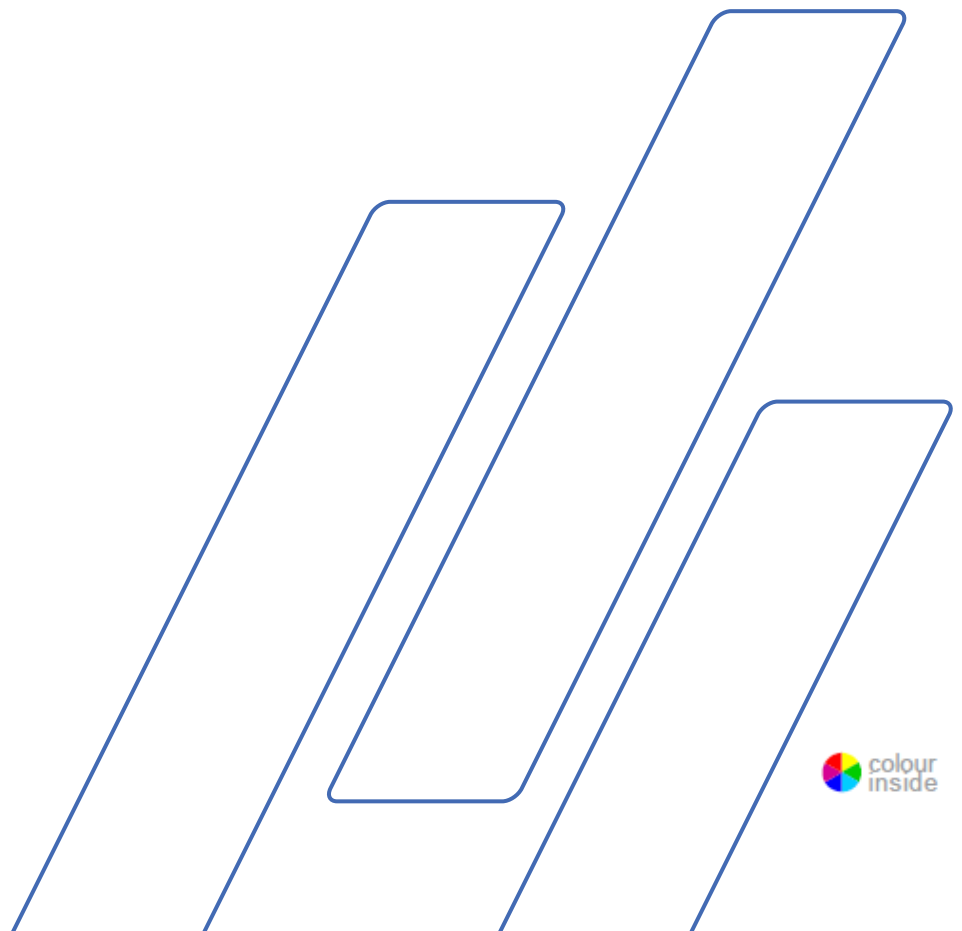
# Exotom-150

## Spare Parts and Diagrams



Manual No.: 15047050  
Revision A

Date of Release 2018.02.19



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**Always state *Serial No* and *Voltage/frequency*  
if you have technical questions or when ordering spare parts.**

The following restrictions should be observed, as violation of the restrictions may cause cancellation of Struers legal obligations:

**Instruction Manuals:** Struers Instruction Manual may only be used in connection with Struers equipment covered by the Instruction Manual.

**Service Manuals:** Struers Service Manual may only be used by a trained technician authorised by Struers. The Service Manual may only be used in connection with Struers equipment covered by the Service Manual.

Struers assumes no responsibility for errors in the manual text/illustrations. The information in this manual is subject to change without notice. The manual may mention accessories or parts not included in the present version of the equipment.

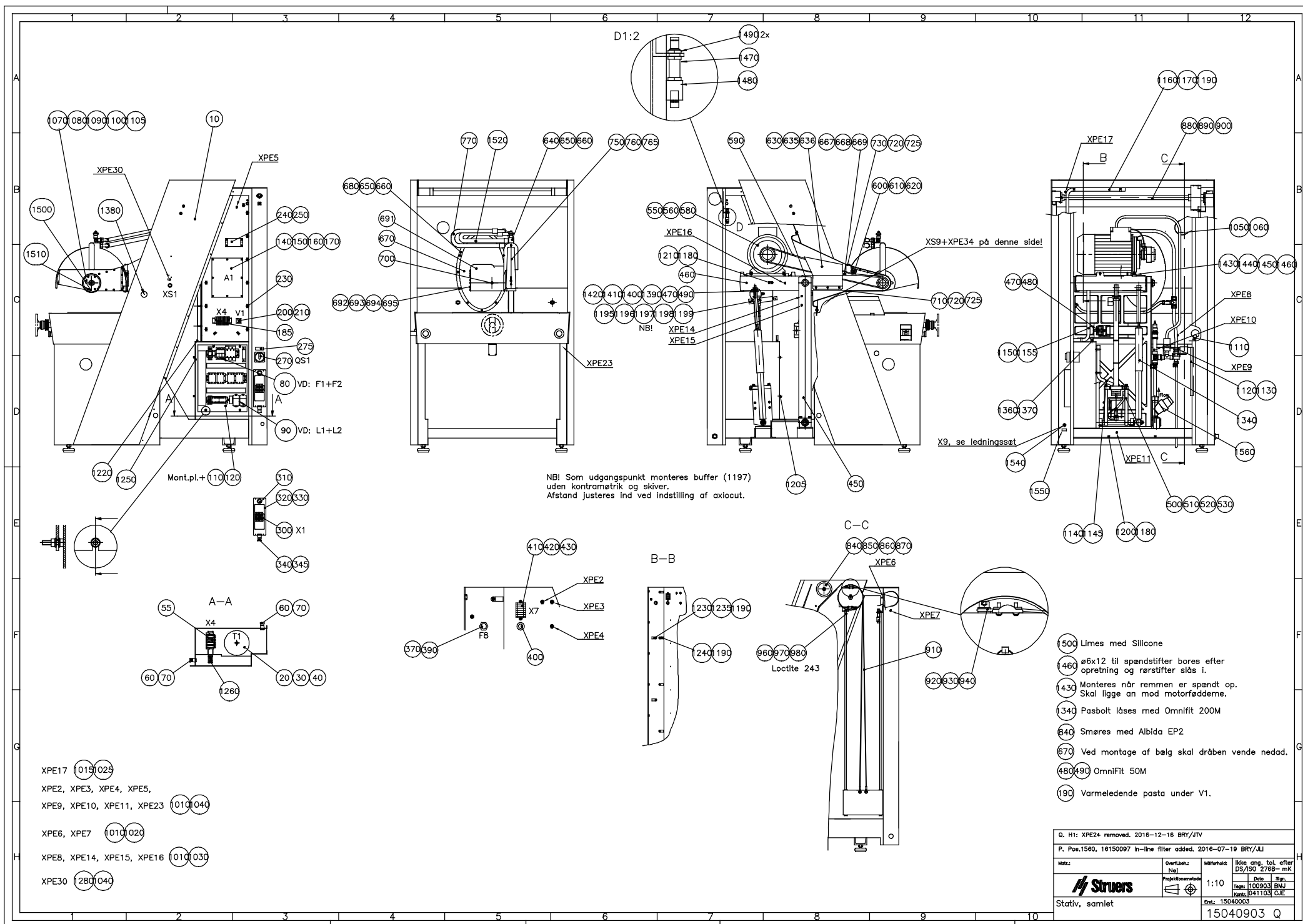
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**Struers**

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Q. H1: XPE24 removed. 2016-12-16 BRY/JTV			
P. Pos.1560, 16150097 In-line filter added. 2016-07-19 BRY/ALI			
Materi:	Overlæbet	Måltolerance	Ikke ang. tol. efter DS/ISO 2768-mK
	Nej		
Projektnummer	1:10	Dato	Sign.
		100903	BMJ
		100903	CJE
Stativ, samlet		Emn.: 15040903	
		15040903 Q	

*Exotom-150*  
*Spare Parts and Diagrams*

*Diagrams*

Exotom-100/-150 Block Diagram .....	15043050A
Exotom-150 Block Diagram.....	15043060A
Exotom-150, Control voltage diagram (5 pages) .....	15043115C
Exotom-150, Main supply circuit.....	15043105C
Exotom-100/-150, Control panel.....	15043200D
Exotom-100/-150, Machine control board, A1 Power supply (8 pages).....	15043210G
Exotom-100/-150, LED circuit board .....	15043220
Exotom-150, Wiring diagram (5 pages).....	15043451C
Primary connections on transformer AA-70951B .....	15043470A

Some of the drawings may contain position numbers not used in connection with this manual.
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*Exotom-150*  
*Spare Parts and Diagrams*

### Spare part list for Exotom-150

Drawing	Pos.	Spare Part	Ref.	Cat no:
		Transport bar w. clips		15040004
		Rough Filter		15040824
		Box nut ¾" CFV		2NG20140
		Fork Spanner 30mm		2GR00230
		Fork Spanner 13mm		2GR00213
		Filter Gasket, ¾"		2IX20410
		Flushing gun, complete		2YH70017
15040901		<b>Exotom-150, complete</b>		
	150	Curtain, back wall		15040315
	680	Flushing gun		2YH70017
	690	Flushing hose		2NU99012
	710	Diode laser 17-LDM		2HL60635
15040903		<b>Chassis, complete</b>		
	20	T1: Transformer 200-460V/ 600VA	T1	2MT70951
	140	PCB A1, Machine control	A1	R5043395
	390	Fuse 4.00AT Glass		2FU14200
	590	PD Eagle Belt W1792		2JT61792
	1090	Cardboard blotters 25 Pcs, ø32.5/120		381MP431
	1100	Loose Flange		R5040160
	1340	Shock Absorber, complete		15040078
15040009		<b>Pump, assembly</b>		
	20	Overhaul kit for impeller pump		15042901
	24	Impeller, Nitrile Rubber		2YP90014
15040905		<b>Chassis, assembly</b>		
	326	Snap Lock hose, complete		15040067
15040013		<b>Wire drum, assembly</b>		
	50-60	Bearing house, complete ø28		15042905
	100	Bearing Flange w. House PFT 25 FM		RBK40025
15040972		<b>Counter weight, assembly</b>		
	20	Glide guides for weight (4 pcs)		RBG00121

*Exotom-150*  
*Spare Parts and Diagrams*

### Spare part list for Exotom-150

Drawing	Pos.	Spare Part	Ref.	Cat no:
15040970		<b>Cutting wheel guard, assembly</b>		
	50	Wear plate for cutting wheel guard		R5040782
	51	Proximity Switch M8 (Namur)		2HQ00024
	52	Proximity Switch cover for sensor strap		15042941
	*60-70	Sensor strap w. screw		R5040792
15040078		<b>Shock Absorber, complete</b>		
	10-60	Shock absorber replacement		15040078
	20	Bearing ø10/16x25		2B31025
15040910		<b>X-Cutting table, complete</b>		
	310	EXOBN Replacement steel bands 225 mm		05046919
	320	EXOBW Replacement steel bands 564 mm		05046920
<i>Remember to grease at assembly and regularly afterwards</i>	410-460*	Bearing house PASE 15, complete with grease		RBS0019
	540	Timing Belt GT-36-5MR-09		2JT20450
15040911		<b>Fixed Cutting table, complete</b>		
	310	EXOBN Replacement steel bands 225 mm		05046919
	320	EXOBW Replacement steel bands 564 mm		05046920
<i>Remember to grease at assembly and regularly afterwards</i>	410-460*	Bearing house PASE 15, complete with grease		RBS0019
	540	Timing Belt GT-36-5MR-09		2JT20450
15040040		<b>Long-cut kit, complete</b>		
	40	Potentiometer		15043401
	100	M5, Long cut motor assembly		15040044
	120	Timing belt, GT 290 3MR09		2JT60270
15040041		<b>Fixed rod</b>		
	20	Vibration damper		2GS41260
	40	Joint bearing GA20		2BL20020

*Exotom-150*  
*Spare Parts and Diagrams*

### Spare part list for Exotom-150

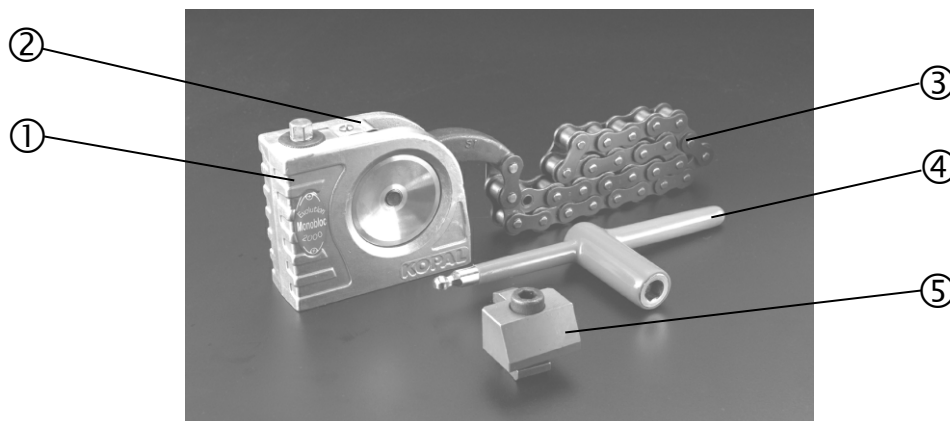
Drawing	Pos.	Spare Part	Ref.	Cat no:
15040044		<b>Long-cut Motor, M5</b>		
	10	M5, Long cut motor assembly	M5	15040044
15040046		<b>Excicut Motor, M3</b>		
	10	M3-Motor 1x230V/24W	M3	15040167
15040011		<b>High power electrical assembly</b>		
F1 (3x200-240V/50-60Hz):	51	6.00 A Midget fuse 10x38 (3 pcs)	F1	RFC10060
F1 (3x380-480V/50-60Hz):	51	4.00 A Midget fuse 10x38 (3 pcs)	F1	RFC10040
F2 (3x200-240V/50-60Hz):	52	6.00 A Midget fuse 10x38 (3 pcs)	F2	RFC10060
F2 (3x380-480V/50-60Hz):	52	4.00 A Midget fuse 10x38 (3 pcs)	F2	RFC10040
F3 (3x200-240V/50-60Hz):	53	6.00 A Midget fuse 10x38 (3 pcs)	F3	RFC10060
F3 (3x380-480V/50-60Hz):	53	4.00 A Midget fuse 10x38 (3 pcs)	F3	RFC10040
15040950		<b>Protection Guard, complete</b>		
	60	Bulb, PL-S 11W/41-827 Deluxe		2HG11041
	80	Lamp Glass E-150		15070057
15040048		<b>Lamp, complete E-100</b>		
	*60	PL-S bulb 11W/41		2HG11041
15040025		<b>Tilting frame, assembly</b>		
	30	Axle bearing ø40, assembly		15040008
	32	Grease Gun, female nipple Shell Albida LX		15332901
	60	Axle bearing ø35, assembly		15040007
	63	Grease Gun, female nipple Shell Albida LX		15332901
	70	Assembly kit for Tilting frame		15042916

## Chain Spanner for Exotom-150

Drawing

### Spare Part list for Chain Spanner for Exotom-150

Pos.		Cat no.
	<b>Chain Spanner for 12 mm T-slots EXOCS</b>	05046912
1	Chain Spanner without key	2GR26910
2	Spring for EXOCS, w. screw	2GR26023
3	Chain, 500 mm	2GR26925
4	Operating key for EXOCS (12 mm T-slots)	2GR26031
5	Anchor block	2GR26930



## Quick Clamping Tools

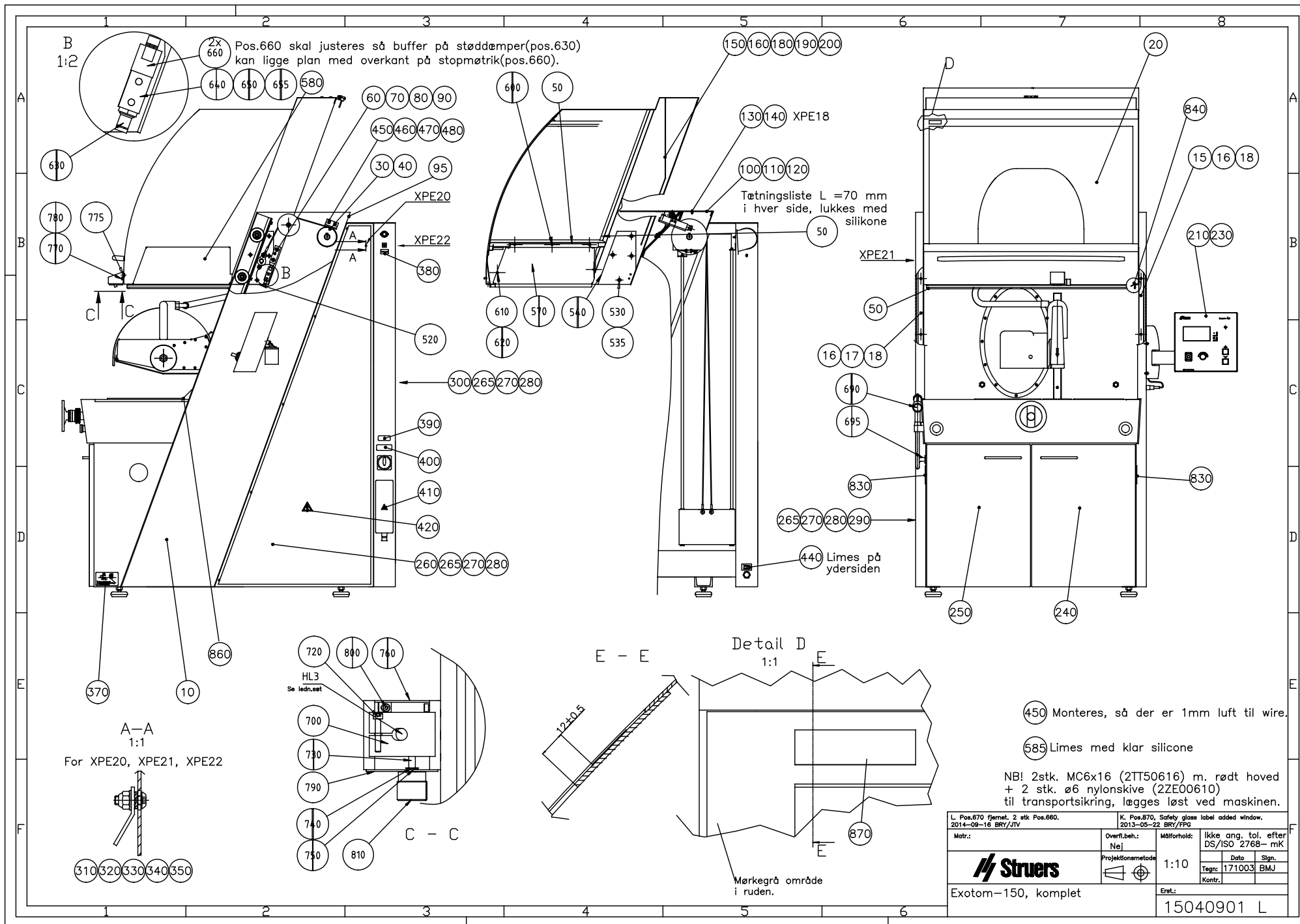
### Drawing

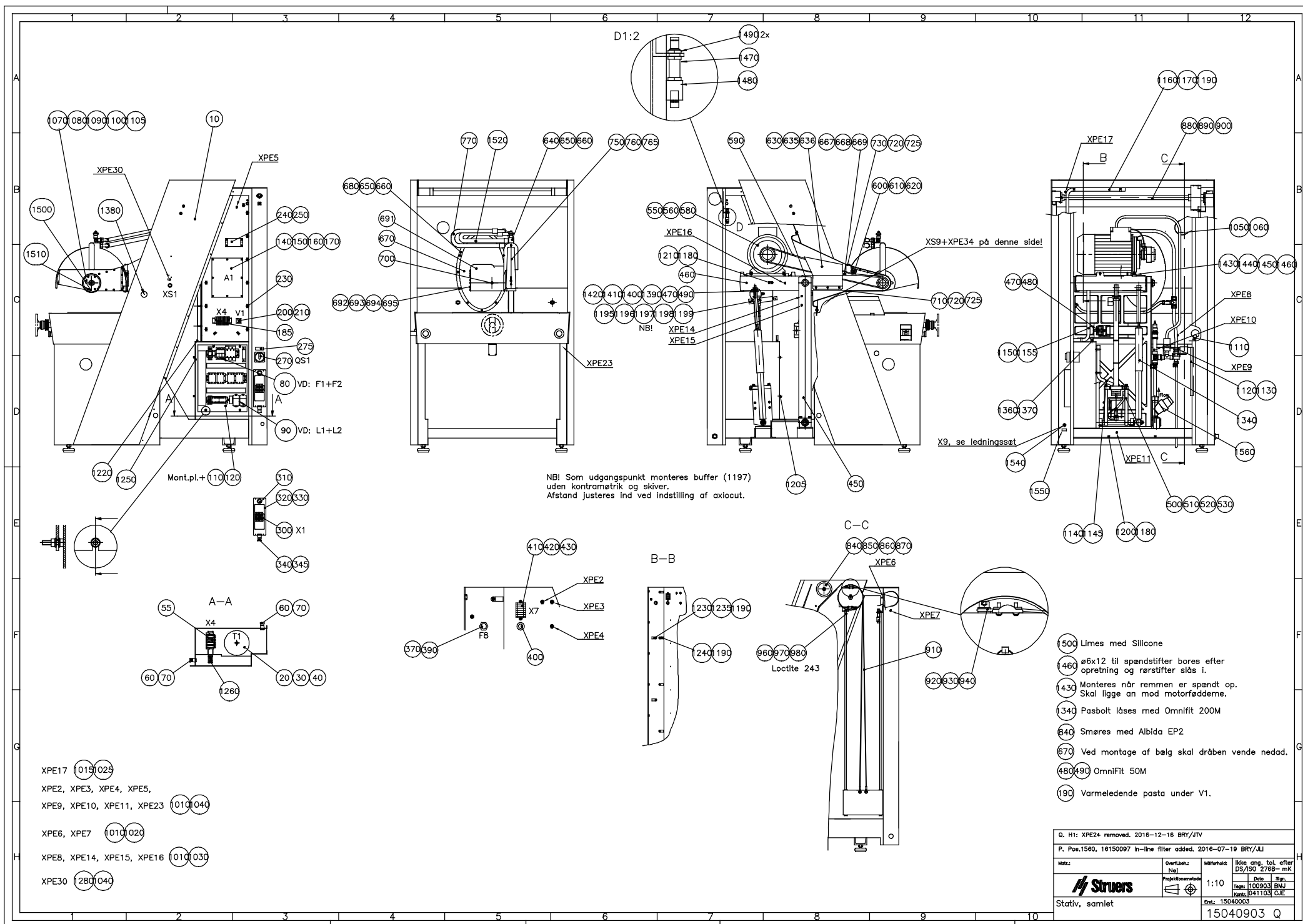
15870050 TWELE  
15870053 TWERI

### Spare Part list for Quick Clamping Tools

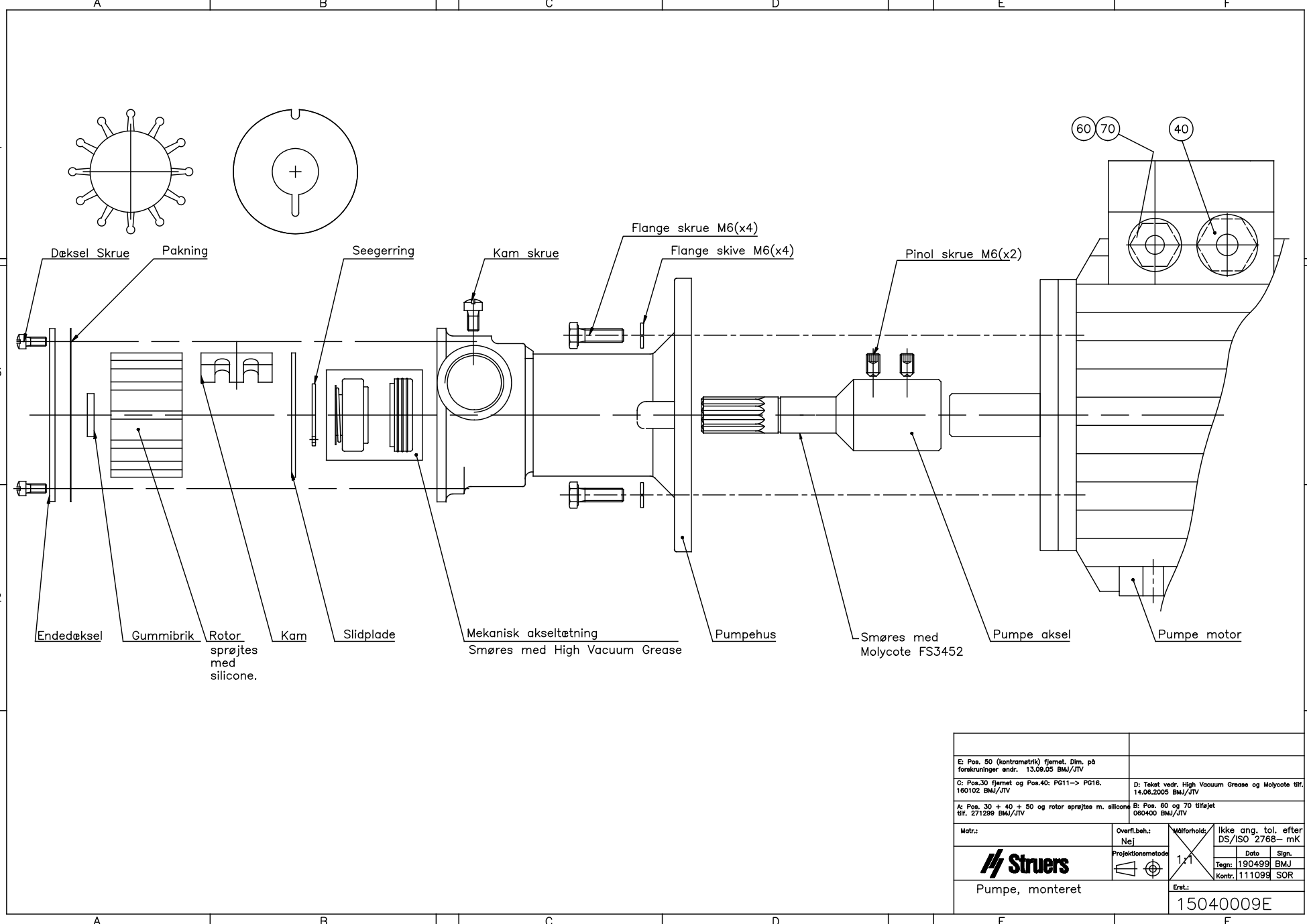
Pos.		Cat no.
	<b>Quick Clamping Tool for 12mm T-slots, assembled</b>	
10	Handle for Quick Clamping Tool	38MP128
20	House Machined Left (TWELE)	15872907
20	House Machined Right (TWERI)	15872901
40	Clamping ring	15870126
70	Handle	15870129
90	Excenter, Left (TWELE)	15870191
90	Excenter, Right (TWERI)	15870190
100	Base Plate 12mm, Left (TWELE)	15872903
100	Base Plate 12mm, Right (TWERI)	15872904
110	Jaw 12mm	15870142
130	Spring, 22x3-20	15870161
170	Lube Nipple M6x1 DIN 71412A Zn	2GN90050
180	Rod Seal 25x18x4.35	2IT20060
190	T-Nut M10_12 DIN 508 A2	2TF41812
240	Allen screw M10X25 KVAL 8.8 FZB	2TT51025
	<b>Quick Clamping Tool Wear Kit</b>	15872905
40	Clamping ring	
130	Spring, 22x3-20	
180	Rod Seal, 25x18x4.35	
	Allen key T-handle kw=8 L=100	2GR01080
	<b>Stopper for 12mm T-slots, assembled,</b>	
10	Base for back stop	15040834
20	Stopper Plate	15870159
30	T-Nut M10_12 DIN 508 A2	2TF41812
40	Allen screw M8x20 A2 DIN912	2TR50820
50	Allen screw M10x90 A2 DIN912	2TR51090



15870051 TWELE  
15870055 TWERI



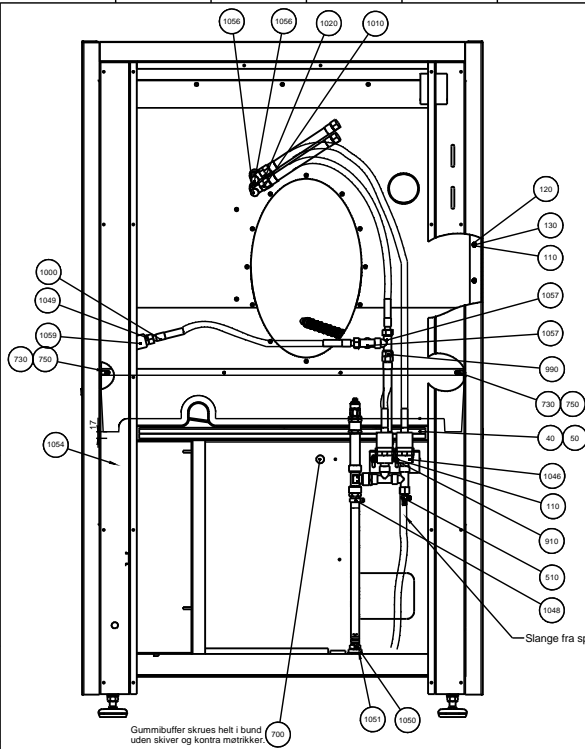


Q. H1: XPE24 removed. 2016-12-16 BRY/JTV			
P. Pos.1560, 16150097 In-line filter added. 2016-07-19 BRY/ALI			
Materi:	Overlæbet Nej	Måltolerance Ikke ang. tol. efter DS/ISO 2768-mK	
Projektnummer	1:10	Dato	Sign.
Stativ, samlet		100903 BMJ	
		100903 CJE	
		15040003	
		15040903 Q	



E. Pos. 50 (kontrametrik) fjernet. Dim. på forekruninger ændr. 13.09.05 BMJ/JTV			
C. Pos.30 fjernet og Pos.40: PG11--> PG16. 160102 BMJ/JTV		D. Tekst vedr. High Vacuum Grease og Molycote tilf. 14.06.2005 BMJ/JTV	
A: Pos. 30 + 40 + 50 og rotor sprøjtes m. silicone tilf. 271298 BMJ/JTV		B: Pos. 60 og 70 tilføjet 060400 BMJ/JTV	
Matr.:	Overf.beh.: Nej	<div><div>Måforhold:</div><div>1:1</div></div>	Ikke ang. tol. efter DS/ISO 2768- mK
	Projektionsmetode: 		
		Tegn: 190499 BMJ	
Pumpe, monteret		Kontr.: 111093 SOR	
		Eret.: 15040009E	

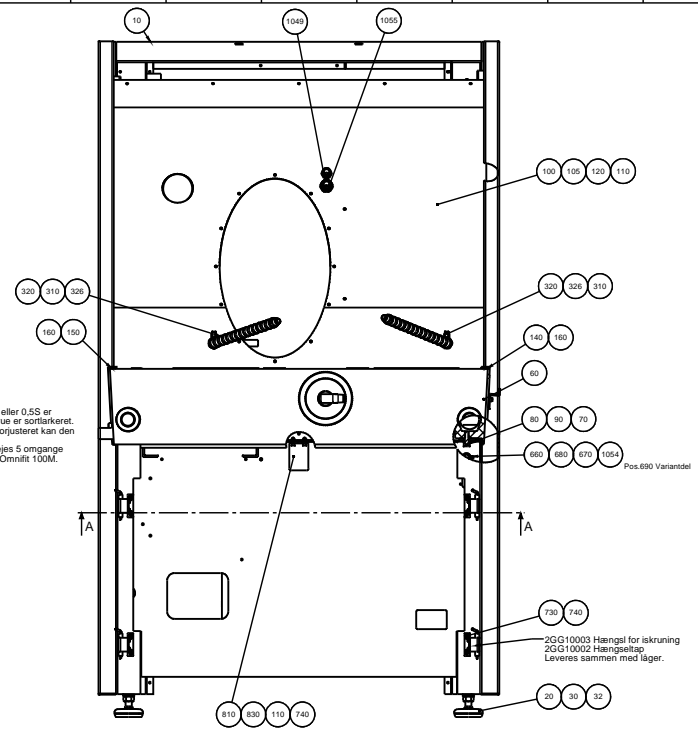
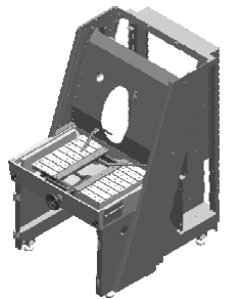




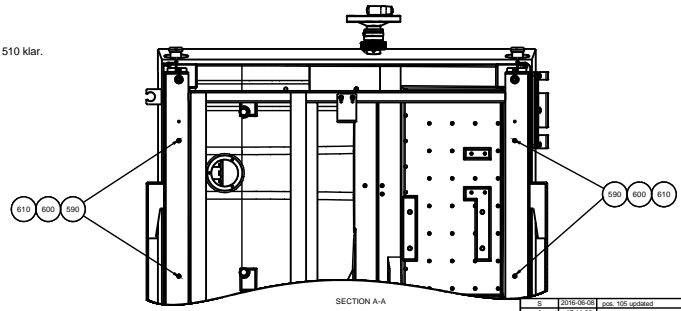
Pressostatér mærket 0,5E eller 0,5S er forjusteret til 0,5 bar og skrue er sortmarkeret. Hvis pressostatén ikke er forjusteret kan den indstilles således:  
Skrue skrues i bund og drejes 5 omgange mod uret. Den sikres med Omnitilt 100M. Provetryk: 0,3-0,6 bar.

Slange fra spulepistol

140 150 "Limes" med universal silicone 510 klar.

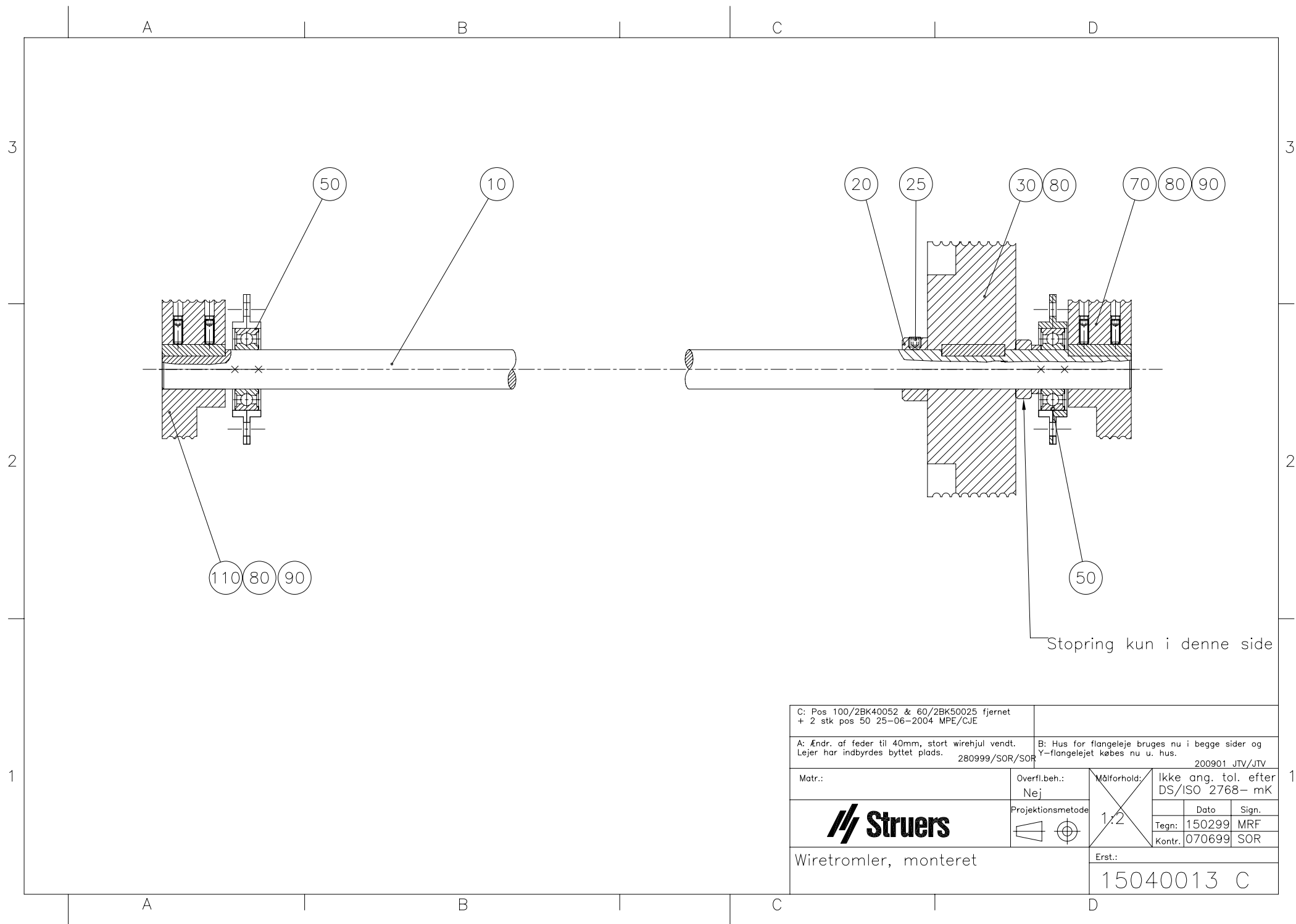


Pos.690 Variamodel

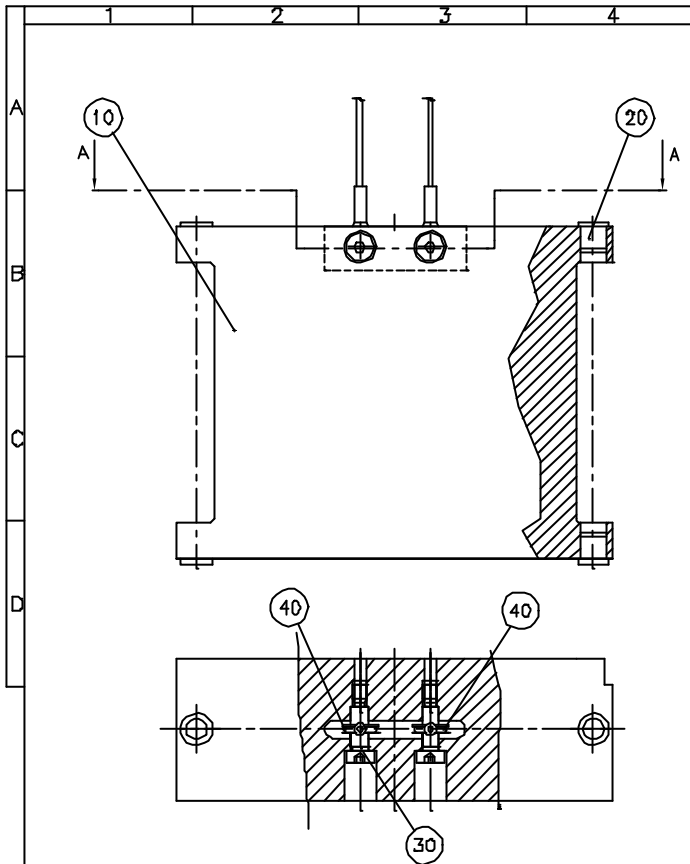




SECTION A-A

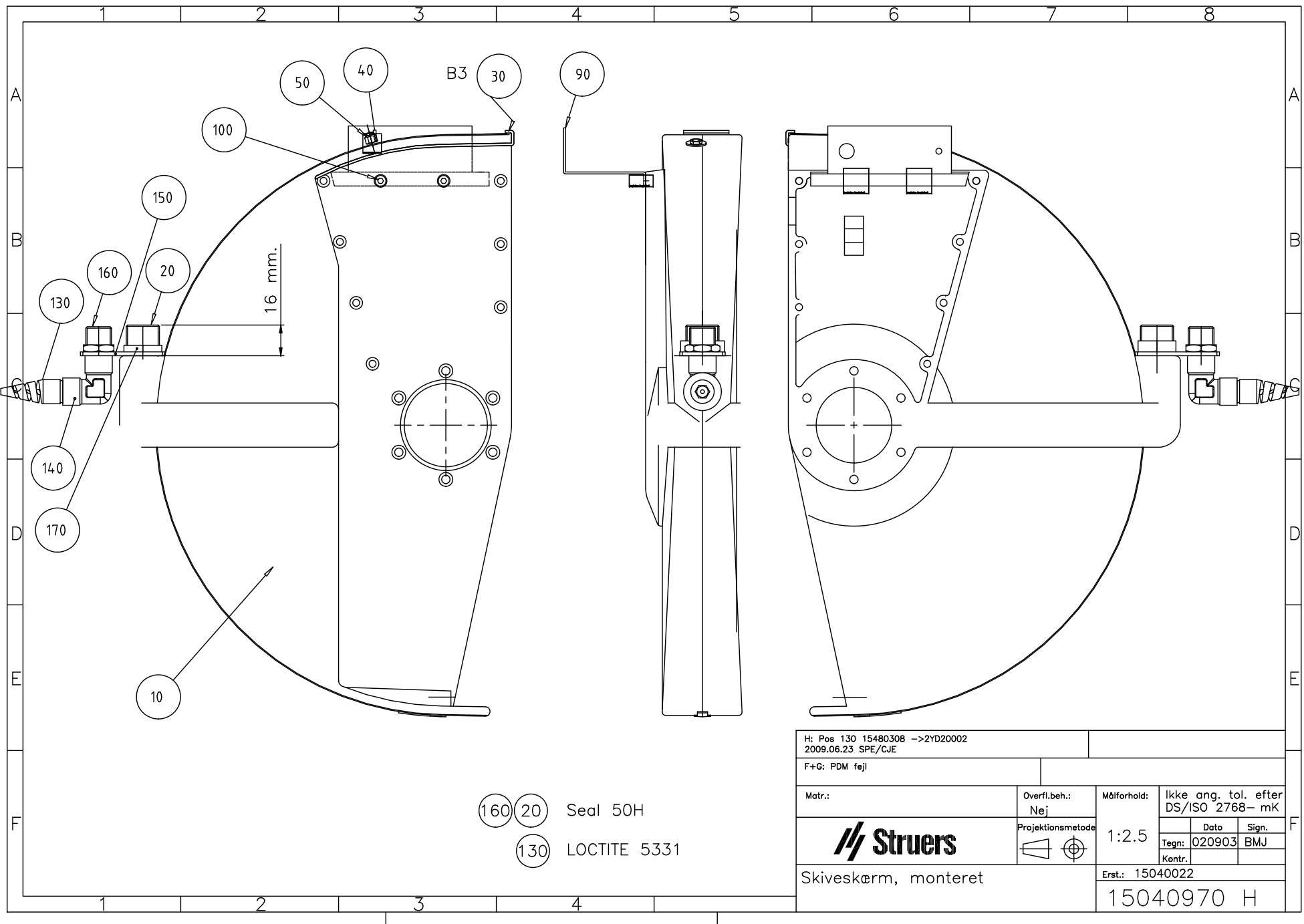
2018-08-08		Rev. 105 updated	QC/C		2018-09-08	ITV
Revision	17-11-08	Revision description	Rev. Int.	Appr. date	Appr. Int.	
Draw. date	17-11-08	Draw. Int.	1:5	1:5	1:5	1:5
15040905 Cabinet, assembled		S				




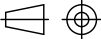
C: Pos 100/2BK40052 & 60/2BK50025 fjernet + 2 stk pos 50 25-06-2004 MPE/CJE			
A: Ændr. af feder til 40mm, stort wirehjul vendt. Lejer har indbyrdes byttet plads. 280999/SOR/SOR		B: Hus for flangeleje bruges nu i begge sider og Y-flangelejet købes nu u. hus. 200901 JTV/JTV	
Matr.:	Overfl.beh.: Nej	Målforhold: 1:2	Ikke ang. tol. efter DS/ISO 2768- mK
	Projektionsmetode 		Dato Tegn: 150299 MRF
			Kontr. 070699 SOR
Wiretromler, monteret		Erst.: 15040013 C	

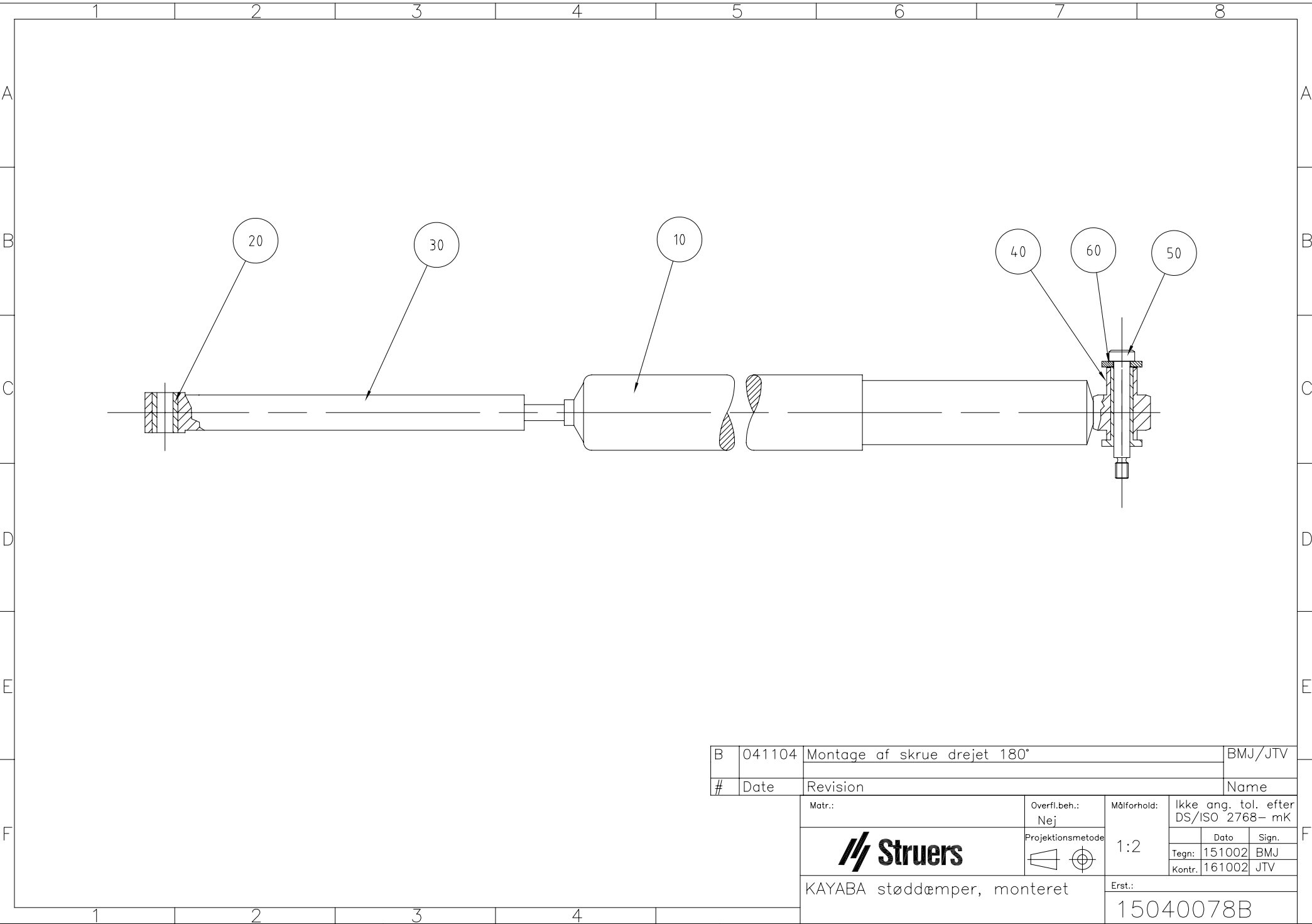




Navn:	Overl. tekn. c. Navn:	Målestok:	Ikke ansg. tol. efter DS/ISO 2768- mK	
	Projekt/Revision: 	1:2	Dato:	Sign.:
			Tegnr.: 030903	BNJ
			Kempe:	
Lød ca. 25kg. monteret		Emne: 15040014 15040972B		

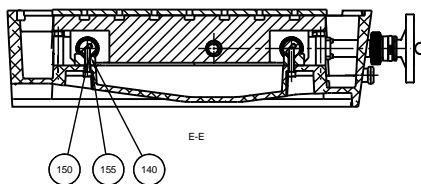
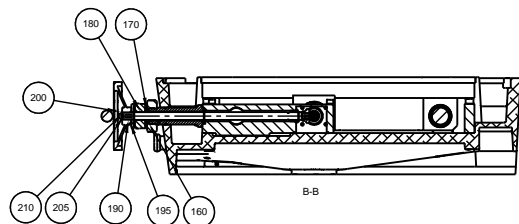
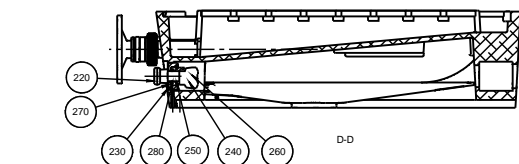


160 20 Seal 50H  
130 LOCTITE 5331

H: Pos 130 15480308 ->2YD20002 2009.06.23 SPE/CJE			
F+G: PDM fejl			
<b>Matr.:</b>  	Overfl.beh.: Nej	Målförhold:  1:2.5	Ikke ang. tol. efter DS/ISO 2768- mK
	Projektionsmetode 		
			Dato Tegn: 020903 BMJ
			Kontr.
Skiveskærm, monteret		Erst.: 15040022	
		15040970 H	

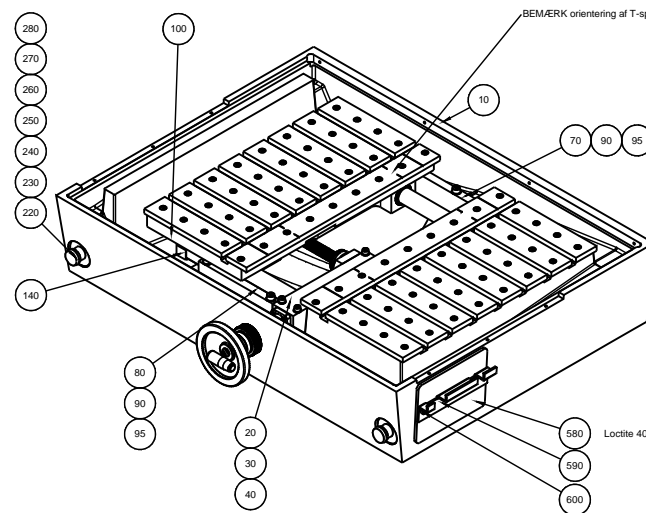
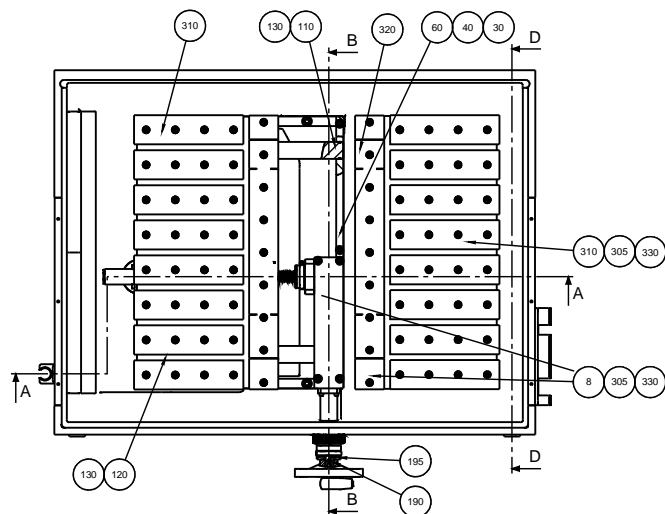
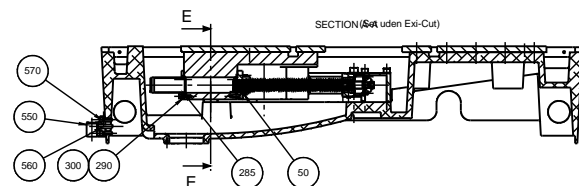
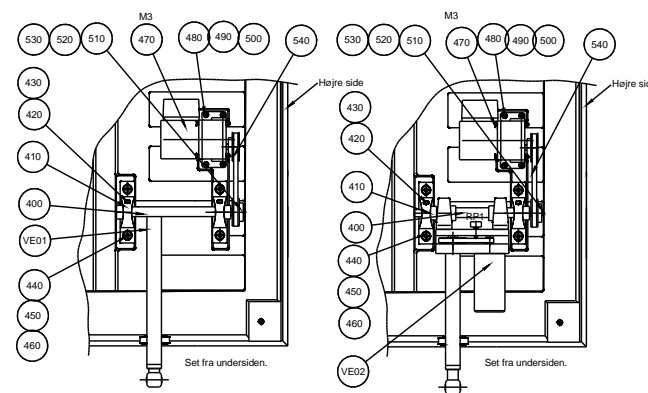


B	041104	Montage af skrue drejet 180°					BMJ/JTV										
#	Date	Revision					Name										
		Matr.:		Overfl.beh.:	Målforhold:	Ikke ang. tol. efter DS/ISO 2768– mK											
				Nej		1:2	<table><tr><td></td><td>Dato</td><td>Sign.</td></tr><tr><td>Tegn:</td><td>151002</td><td>BMJ</td></tr><tr><td>Kontr.</td><td>161002</td><td>JTV</td></tr></table>			Dato	Sign.	Tegn:	151002	BMJ	Kontr.	161002	JTV
									Dato	Sign.							
				Tegn:					151002	BMJ							
Kontr.	161002	JTV															
Projektionsmetode 																	
		KAYABA støddæmper, monteret			Erst.:												
					15040078B												



Bagside af Exotom-150 set uden Long-cut

Bagside af Exotom-150 set med Long-cut



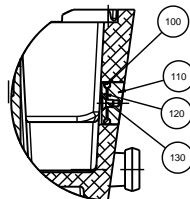
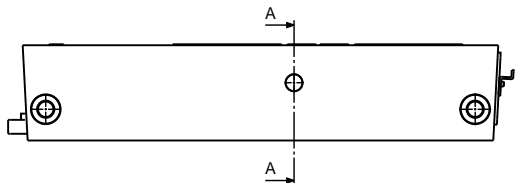
420 Smøres med Albida GreaseEP2

530 Låses med Omnifit 100M

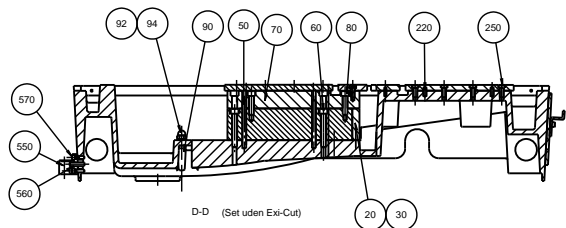
90 NB! Skruhulleme i bund, tætnes med klar silikone

NB! Planet sprøjtes med klar beskyttelse (TP15) Inden T-spor monteres. Skruer smøres med 785 Parting (assembly) lubricant. (2LS40725)

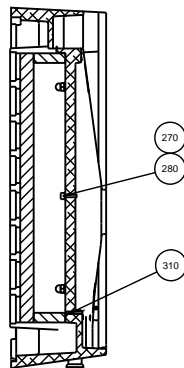
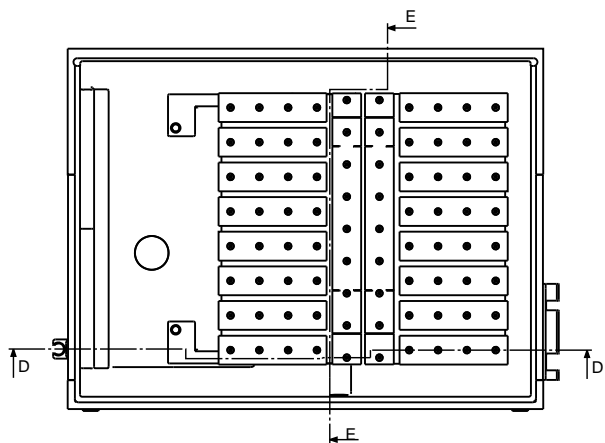
I 2012-10-15		Pos. nr. updated	JJO		
A	12-11-08	Revision description	SPE		
Revision	Crea. date	Revision description	Draw. Init	Appr. date	Appr. Init
Material		Scale	Format	Tolerance: ISO 2768	Surface treat.
1:5		A1	None	None	None
Description					
15040910 skæreplan med x bord samlet					
Rev.					I



A-A (1:2)



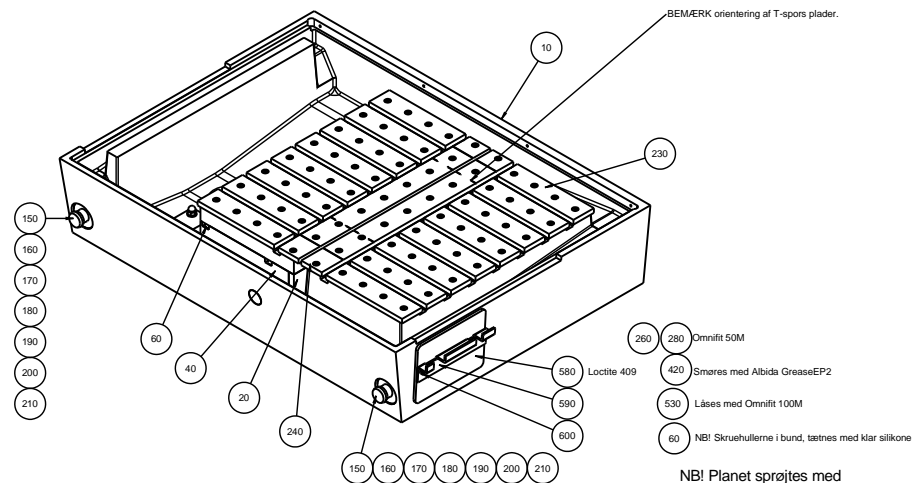
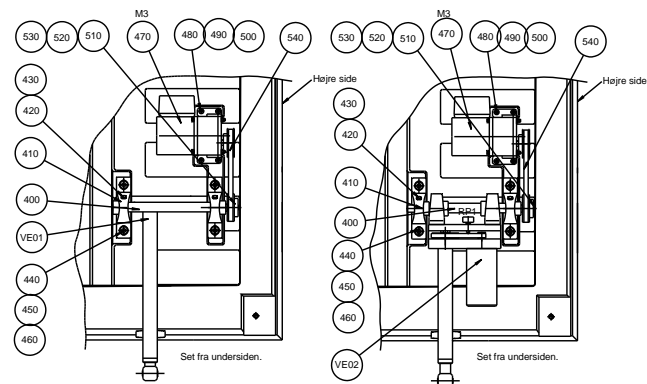
D-D (Set uden Exi-Cut)



E-E

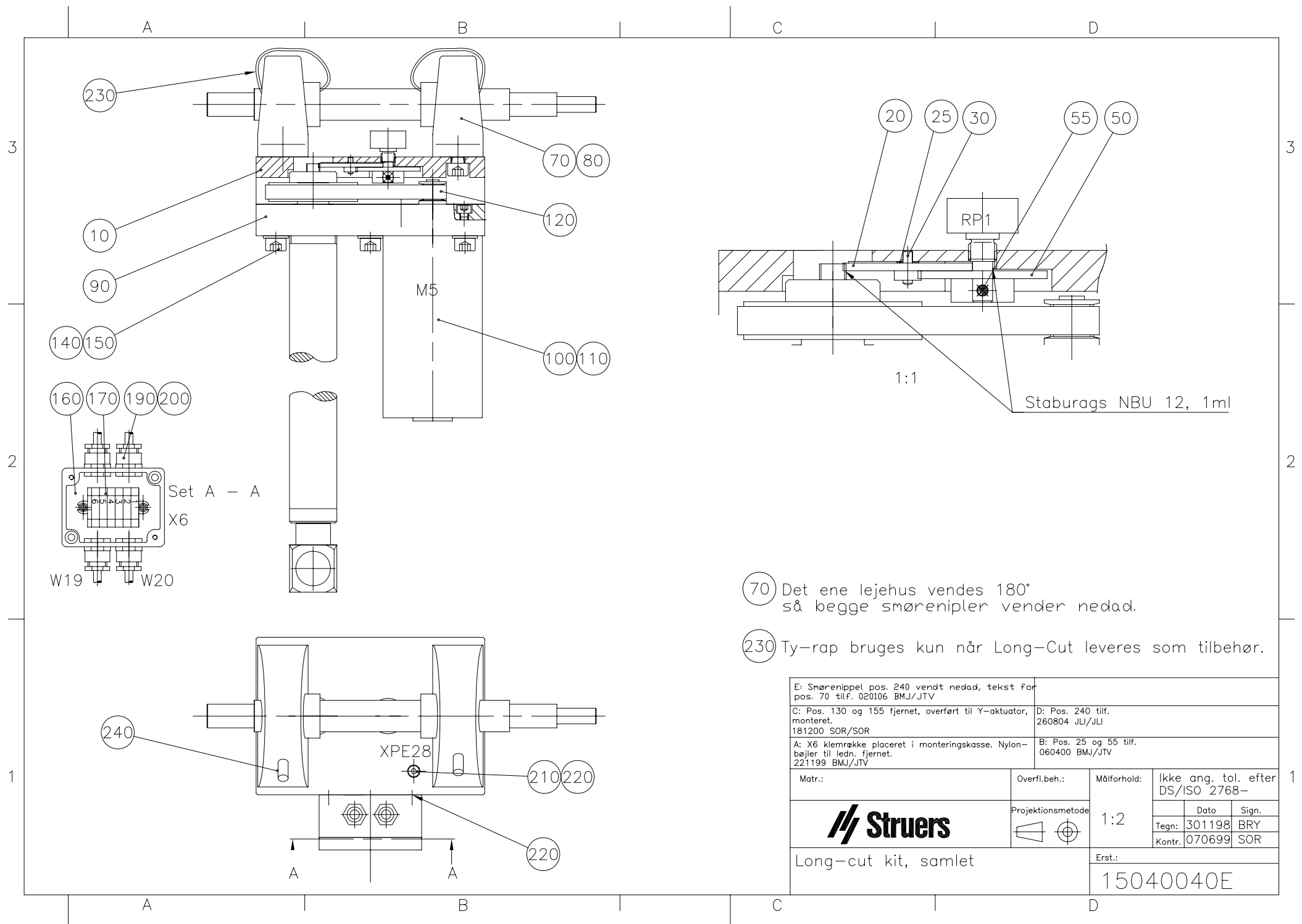
Bagside af Exotom-150 set uden Long-cut

Bagside af Exotom-150 set med Long-cut

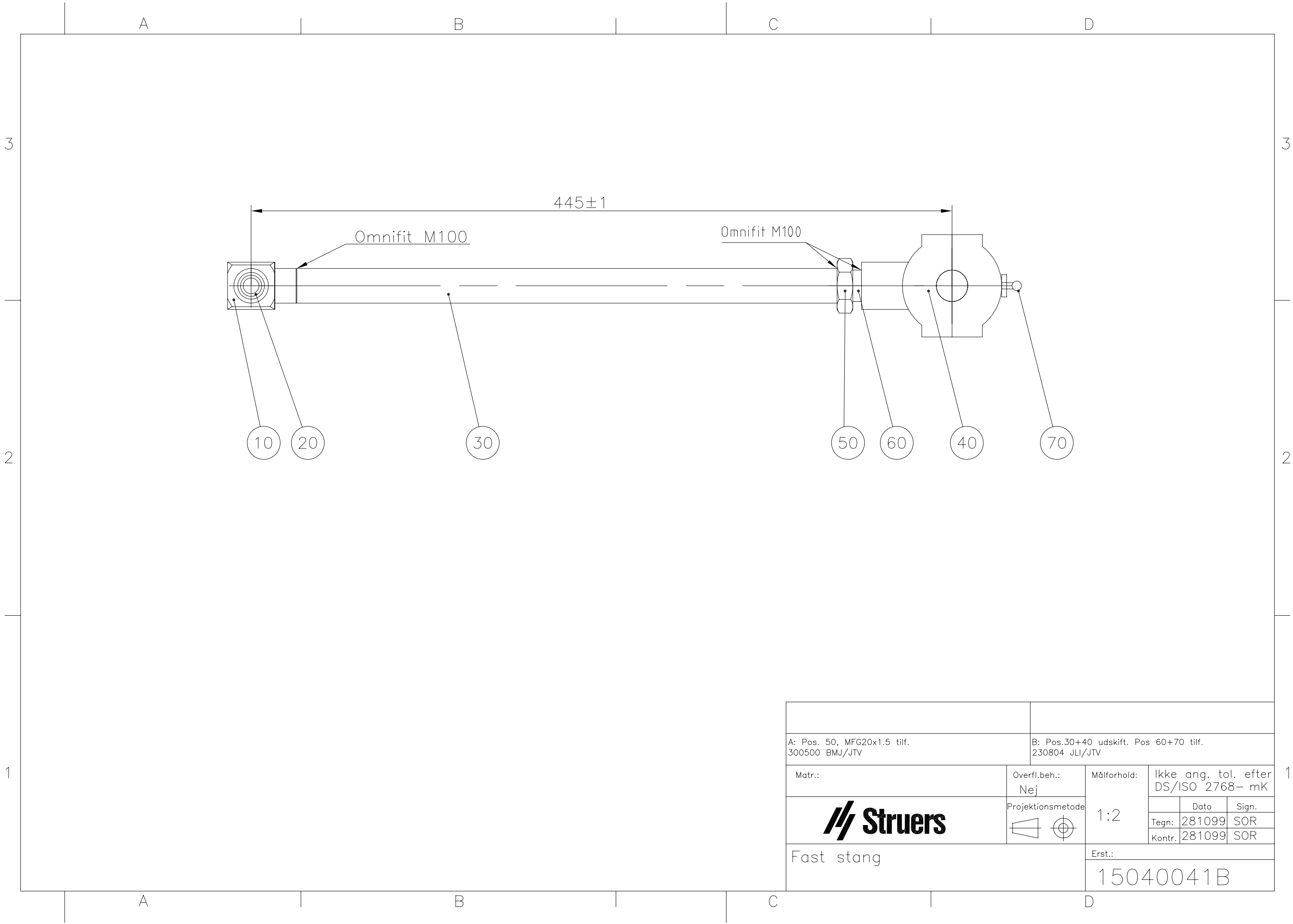


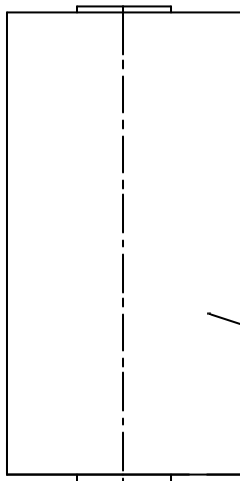
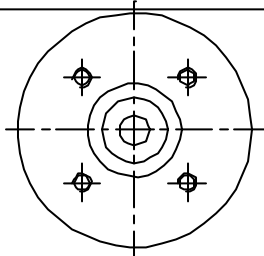
NB! Planet sprøjtes med klar beskyttelse (TP15) Inden T-spør monteres. Skruer smøres med 725 Nickel Anti Seize Compound

F	2009-12-07	Tool holder added	JTV	2009-12-07	JTV
A	11.06.03		CJE		
Revision	Crea. date	Revision description	Draw. Init	Appr. date	Appr. Init
Struers			Scale	Format	Tolerance: ISO/ISO 2168
			1:5	A1	mm
15040911 skæreplan med fast bord samlet			Material	Surface treat	None
			Draw		F









borelære 150415D1

Bores igennem Ø3

10

20 30

Materi:

Overfl. beh.

Wt. forhold

Ikke ang. tol. efter  
DS/ISO 2768-

**Struers**

Projektforskrift



1:1

Date

Sign.

Tegnet 271198 BRY

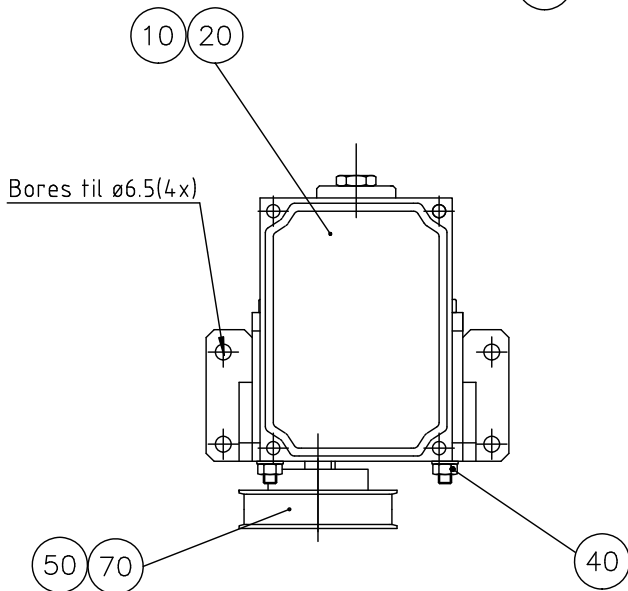
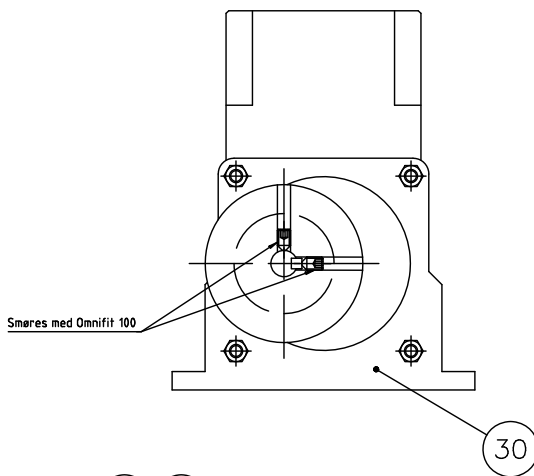
Kontrollert 070898 SCR


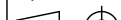
Ac. Mønstret -> Skematisk  
103-118  
1.31.2002: BMJ/STV

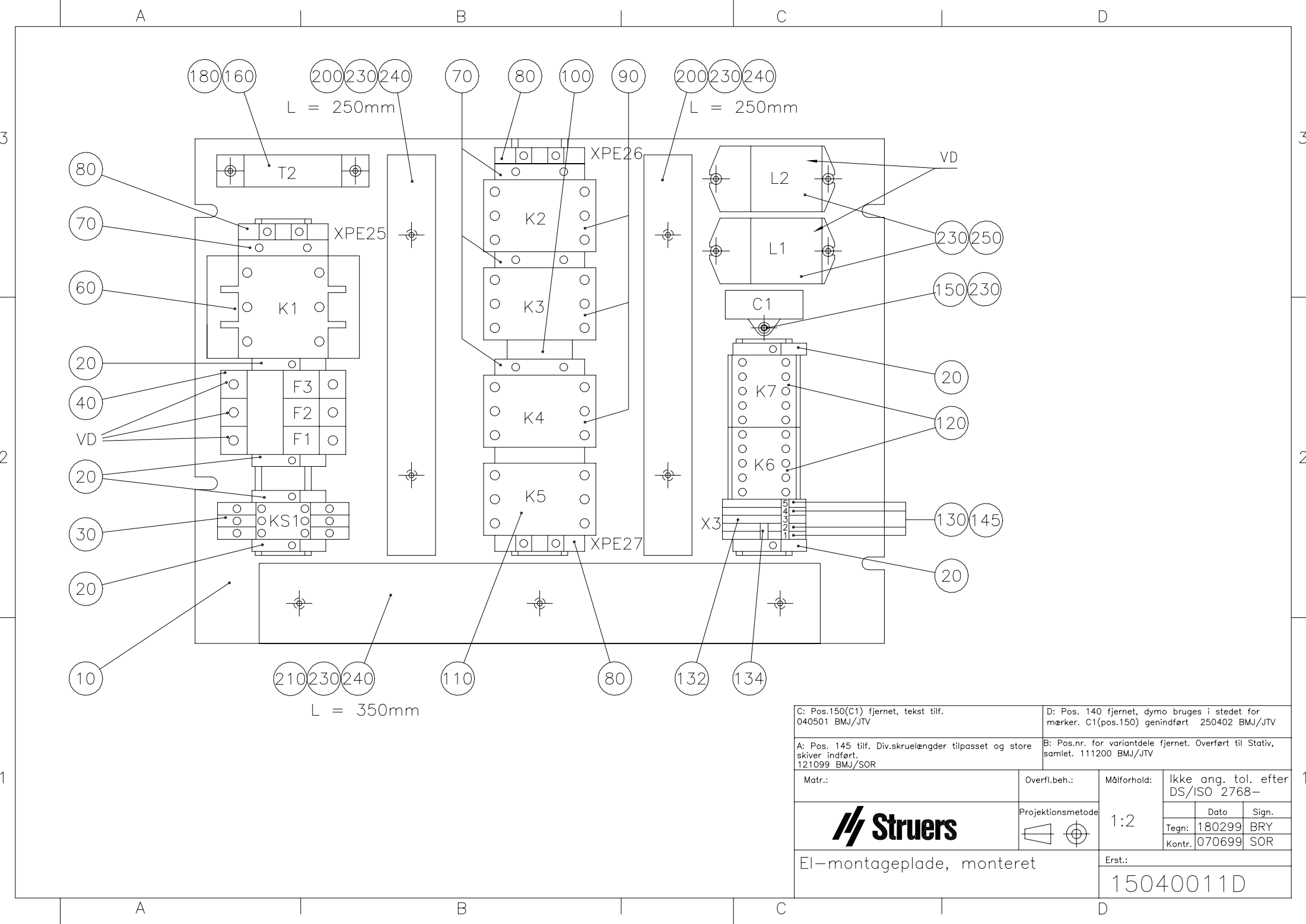
Long-cut motor, monteret

Emne

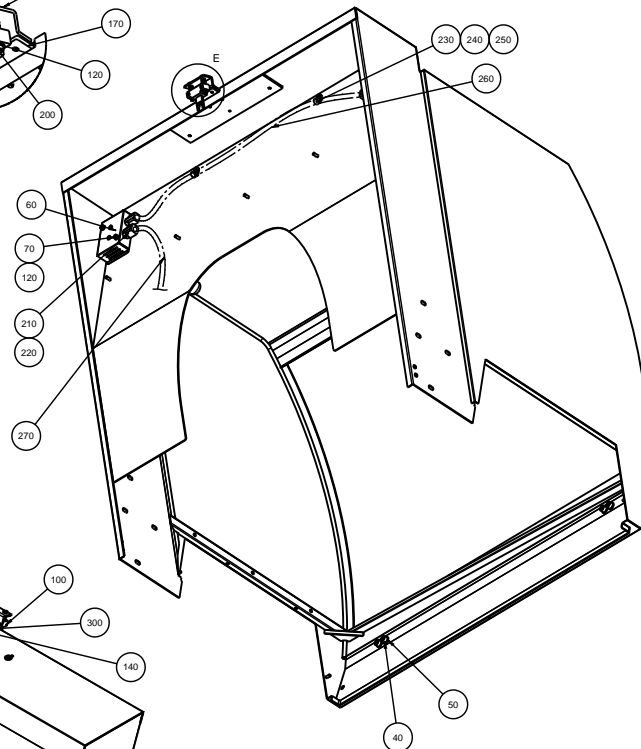
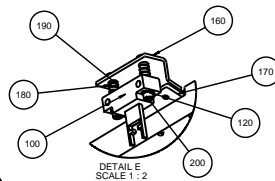
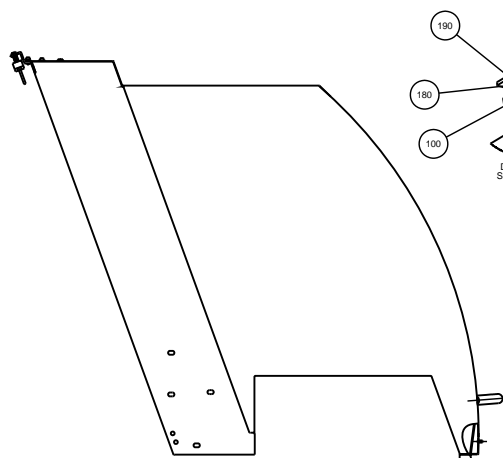
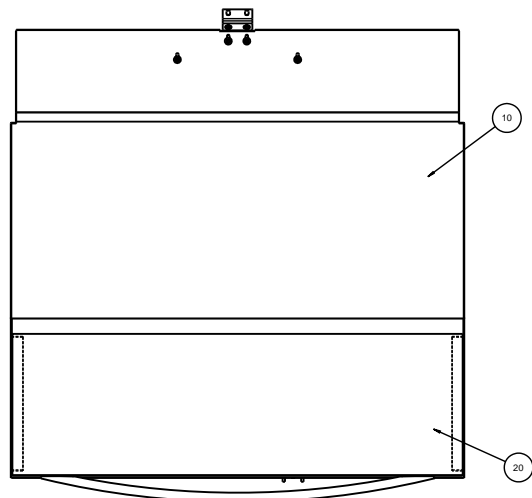
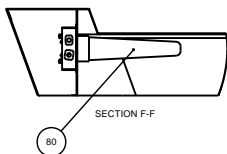
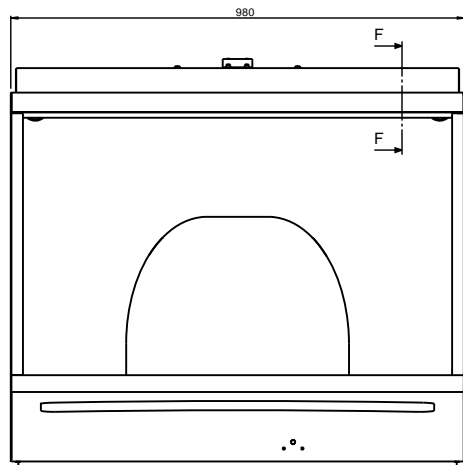
15040044A



D: Indf. M5 pinols. samt smøring med omnifit 100. 280602 HEN	Matr.:	Overfl.beh.:	Målforhold:	Ikke ang. tol. efter DS/ISO 2768-		
C: M5 pinolskrue erstatter M3 pinolskrue. 200602 HEN		Projektionsmetode 	1:2		Dato	Sign.
B: Motor og gear rettet til på tegn. 201101 MNK/JTV				Tegn:	261198 BRY	
A: Børes til ø6.5(4x) tilf. Ny type klemkasse. 050400 BMJ/JTV				Kontr.	070699 SOR	
M3 Excit motor, monteret			Erst.:			
			15040046D			

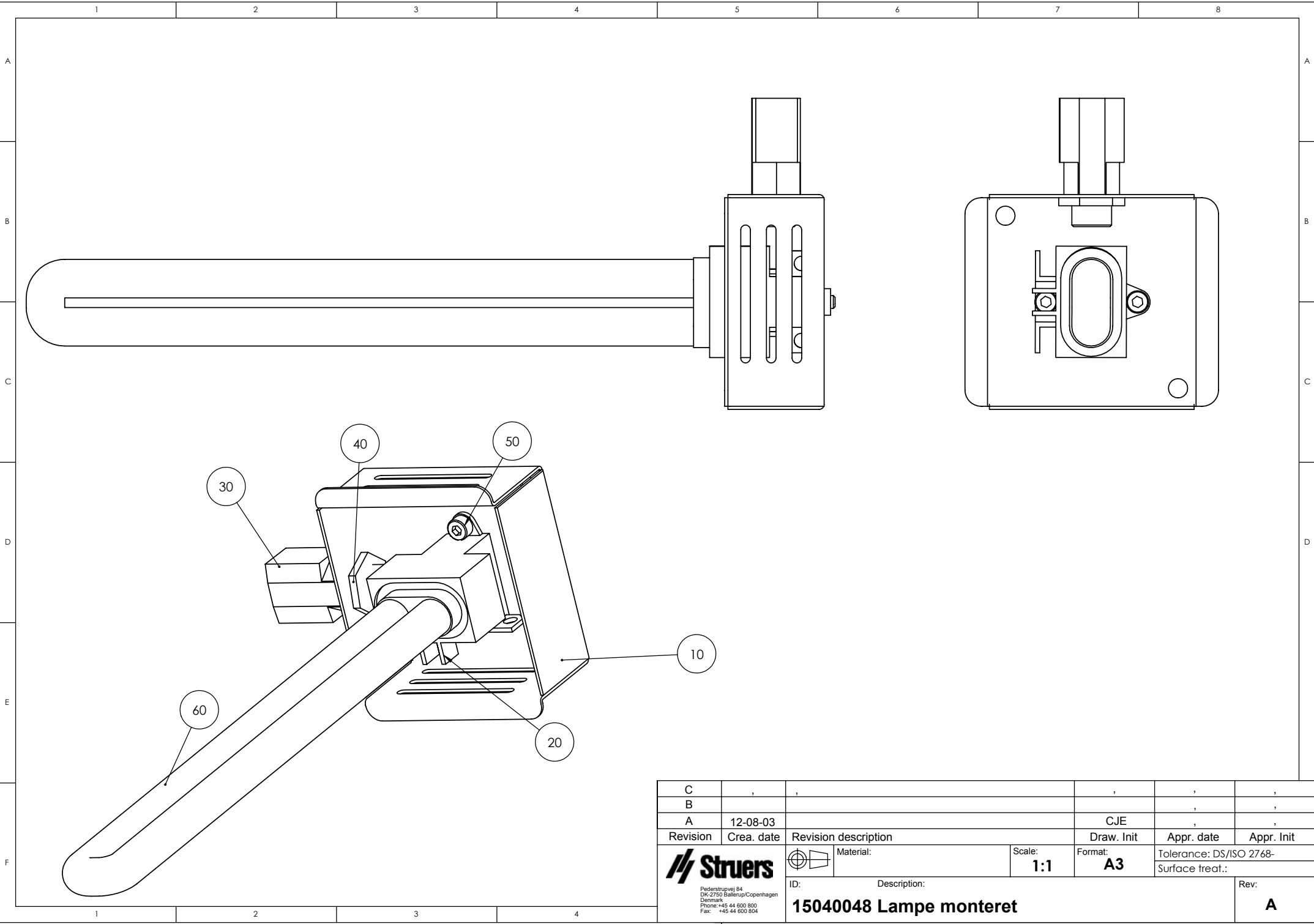


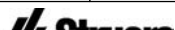

C: Pos.150(C1) fjernet, tekst tilf. 040501 BMJ/JTV		D: Pos. 140 fjernet, dymo bruges i stedet for mærker. C1(pos.150) genindført 250402 BMJ/JTV	
A: Pos. 145 tilf. Div.skruelængder tilpasset og store skiver indført. 121099 BMJ/SOR		B: Pos.nr. for variantdele fjernet. Overført til Stativ, samlet. 111200 BMJ/JTV	
Matr.:	Overfl.beh.:	Målforhold:	Ikke ang. tol. efter DS/ISO 2768-
		Projektionsmetode:	Dato
			Sign.
			Tegn: 180299 BRY
El-montageplade, monteret		Kontr. 070699 SOR	Erst.: 15040011D



300 180 200 Omnit 50M  
80 Glue w. Universal Silicone 512. transp

1	2009-02-12	Text for pos 80 added "Glue w. ..."	JTV	2009-02-12	JTV
A	24-06-2003		GJE		
Revision	Crea. date	Revision description	Draw. Init.	Appr. date	Appr. Init.
Struers		Material	Scale	Format	Tolerance
			1:5	A1	ISO/ISO 2768 - mK
Description		None			Rev
15040950 låge til skærekammer samlet					I



C					
B					
A	12-08-03		CJE		
Revision	Crea. date	Revision description		Draw. Init	Appr. date      Appr. Init
 <small>Pederstrupvej 84 DK-2750 Ballerup/Copenhagen Denmark Phone: +45 44 600 800 Fax: +45 44 600 804</small>		 Material:	Scale: <b>1:1</b>	Format: <b>A3</b>	Tolerance: DS/ISO 2768- Surface treat.:
		ID:			

A

B

C

D

(100) 45Nm

(90)

1:1

(10)

Smøres med Albida Grease EP2

(50)

(60)

(70)

(80)

(20) (100)

Spændes først ved montage i stativ.

(110)

Monteres først ved montage af vippekonsol.


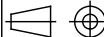
493

(20)

(30)

(40)

(110)

C. 45Nm tilføjet Pos.100. 2013-11-07 BRY/JTV				
A: Ovenbilled og pos. 110 samt tekst herfor tilf. 281299 BMJ/JTV		B: Smørenipler skal smøres med Albida tilf. 22.11.2002 BMJ/JTV		
Matr.:	Overfl.beh.: Nej	Målforhold:	Ikke ang. tol. efter DS/ISO 2768- mK	
	Projektionsmetode 	1:5		
			Dato	Sign.
			Tegn: 280499 BMJ	
Vipperamme, monteret		Kontr. 070699 SOR		
		Erst.:		
		15040025 C		

A

B

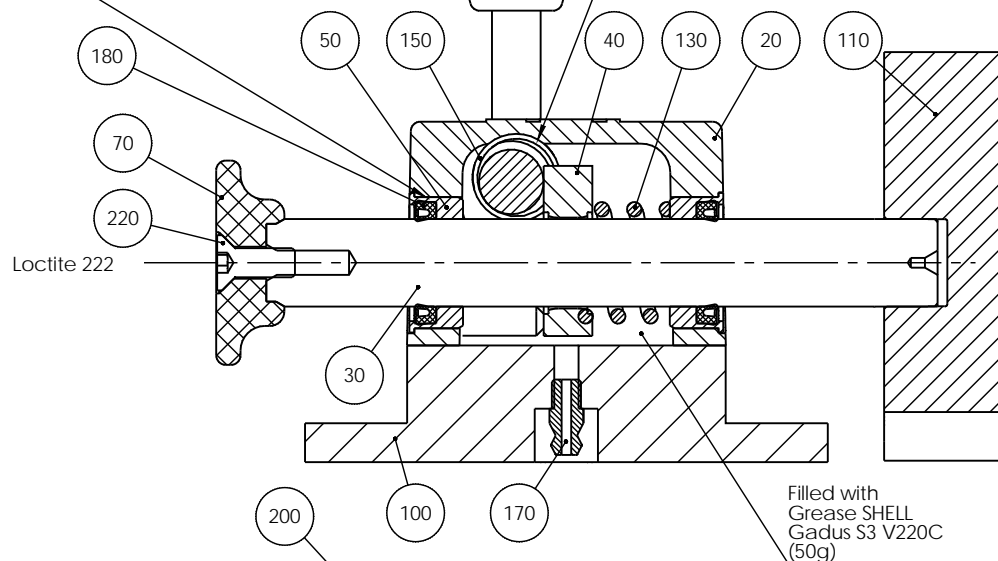
C

D

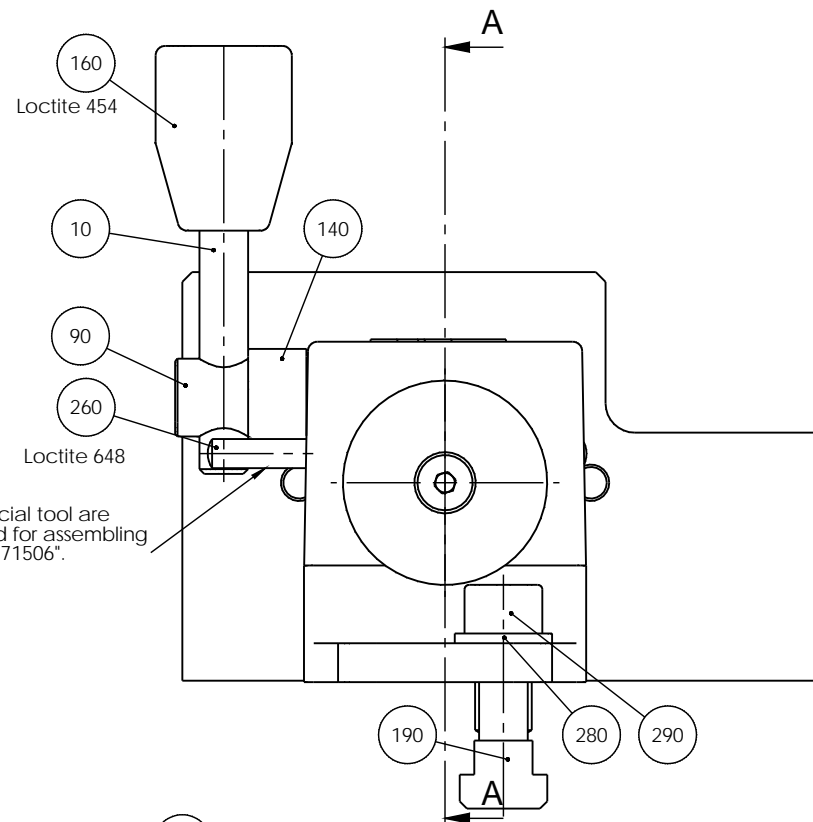
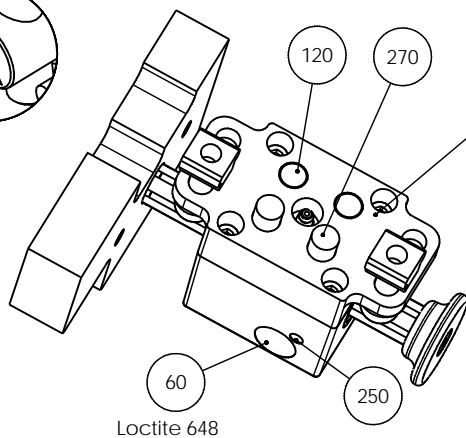
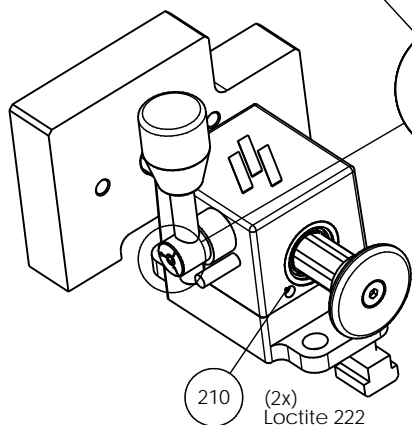
# SECTION A-A

Loctite 648 between house and insert, both parts must be degreased first!

Specila tool are used for assembling "15871505".



## DETAIL B



M	2014-01-24	Pos.270: 2ZS06332->15870212.	BRY		JTV
A	27-04-06		MD	27-04-06	FPG
Revision	Crea. date dd-mm-yy	Revision description	Draw. Init	Appr. date dd-mm-yy	Appr. Init
<b>Struers</b>		Material:	Scale: 1:1	Format: A3	Tolerance: DS/ISO 2768- mK Surface treat.: None
ID:		Description:			Rev:
		<b>15870050 Quick Clamping Tool 12mm Left, Assy</b>			<b>M</b>

Pedersborgvej 84  
DK-2750 Ballerup/Copenhagen  
Denmark  
Phone: +45 44 600 800  
Fax: +45 44 600 804



# SECTION A-A

Special tool are used for assembling "15871505".

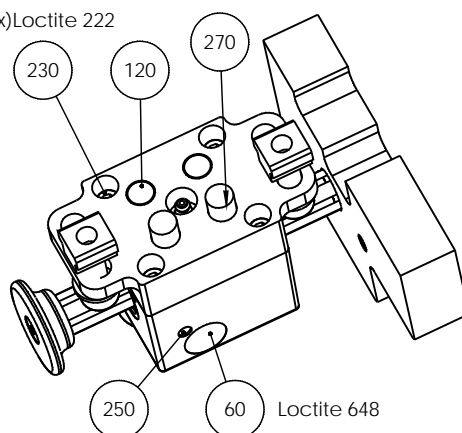
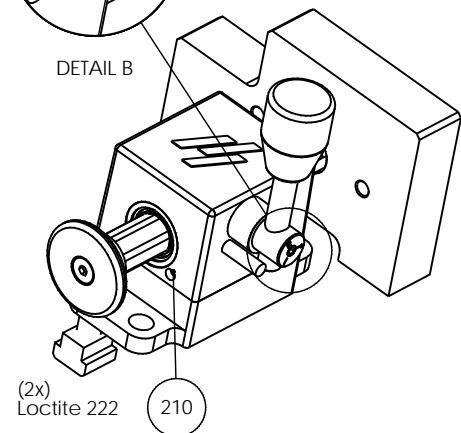
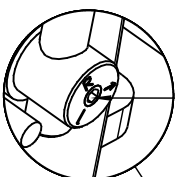
Loctite 648 between house and insert, both parts must be degreased first!

Loctite 222

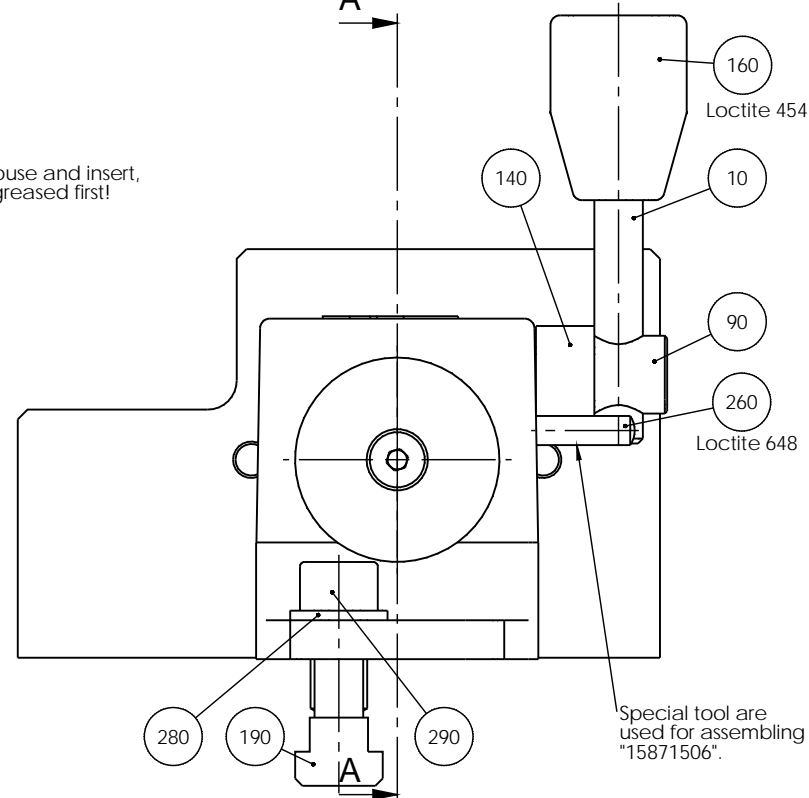
Filled with Grease SHELL  
Gadus S3 V220C  
(50g)

(4x)Loctite 222

DETAIL B



A



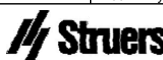
Special tool are used for assembling "15871506".

230 Tightened with torque wrench 12 Nm.

30 110 Use mounting tool to align rod and jaw "15871502".

20 The house is to be given "Stainless steel Polish", after its assembled.

210 Adjust for easy rod - movement and hard clamping.

M	2014-01-24	Pos.270: 2ZS06332->15870212.	BRY	JTV
A	27-04-06		MD	FPG
Revision	Crea. date dd-mm-yy	Revision description	Draw. Init	Appr. date dd-mm-yy
 <p>Struers Pedersbølvej 84 DK-2750 Ballerup/Copenhagen Denmark Phone: +45 44 600 800 Fax: +45 44 600 804</p>		Material:	Scale: 1:1	Format: A3
		Description:	Tolerance: DS/ISO 2768- mK Surface treat.: None	
ID: 15870053 Quick Clamping Tool 12mm Right, Assy				Rev: M

A

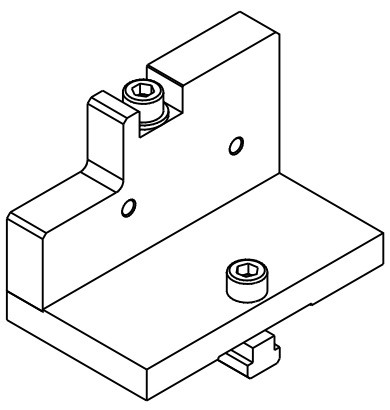
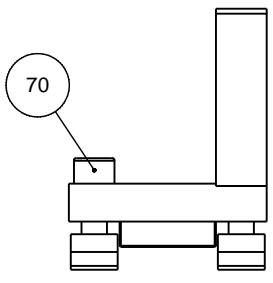
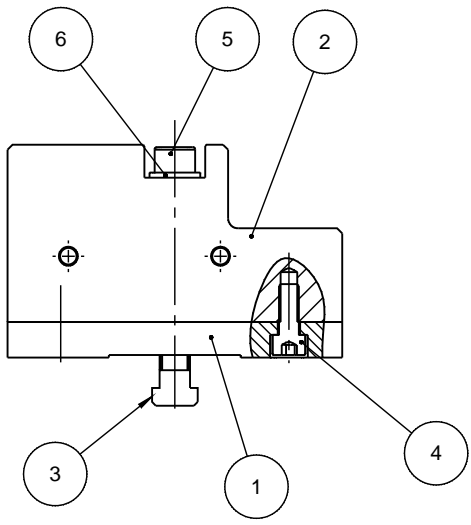
B



C

D

E

F



E	2013-05-25	Pos 60 washer removed at pos 70.			JTV	2013-05-24	JTV
A							
Rev	Crea. date dd-mm-yy	Revision description			Draw. Init	Appr. date dd-mm-yy	Appr. Init
 Pederstrupvej 84 DK-2750 Ballerup Copenhagen Denmark Phone : +45 44600 800 Fax : +45 44600 804			Material:	Scale:	Format:	Tolerance: DS/ISO 2768 - mK	
				1:2	A4	Surface treat.: None	
		ID:	Description:				
15870051 Stopper 12mm Left, Assy						E	

1

2

3

4

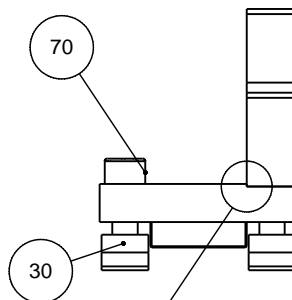
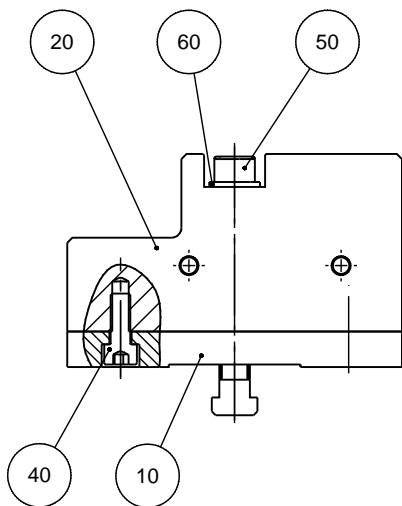
A

B

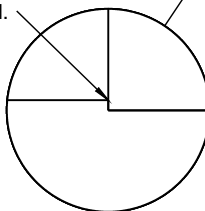
C

D

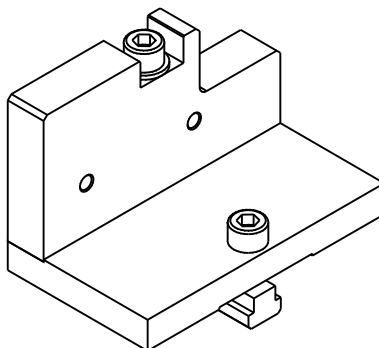
E





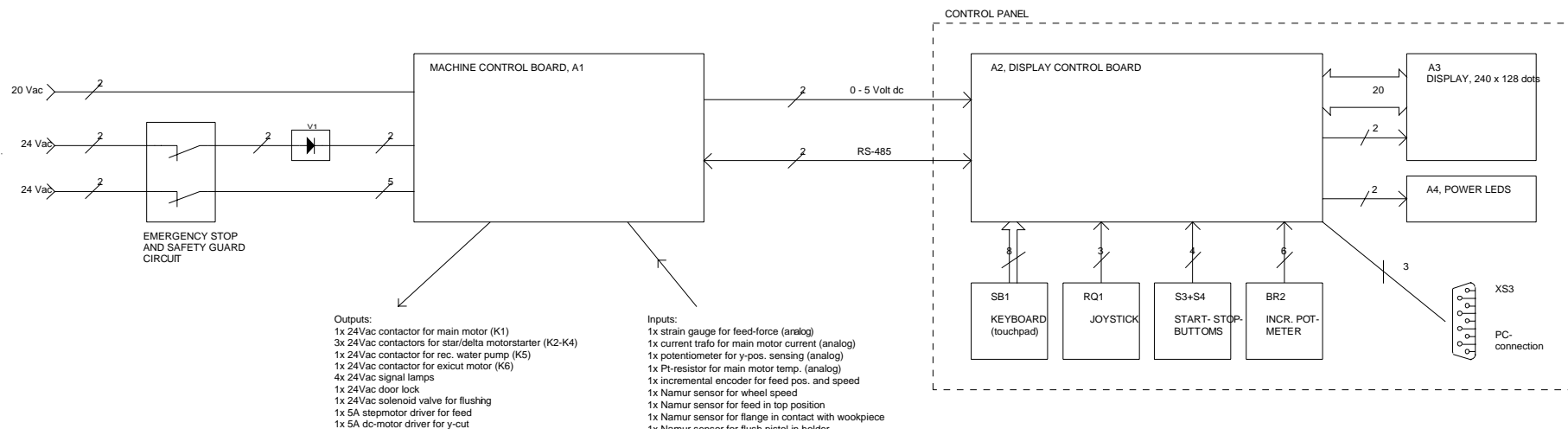
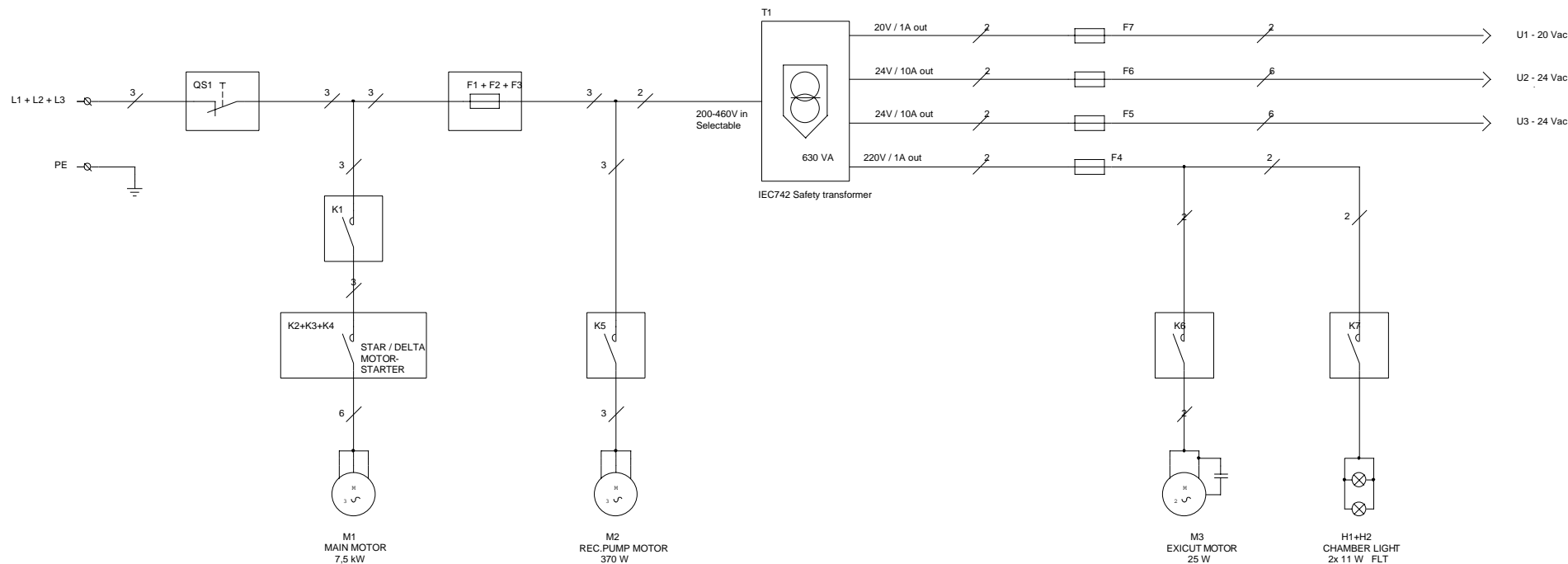
Pos 10 and 20 are to be  
joint together before  
bolts are teghtend.



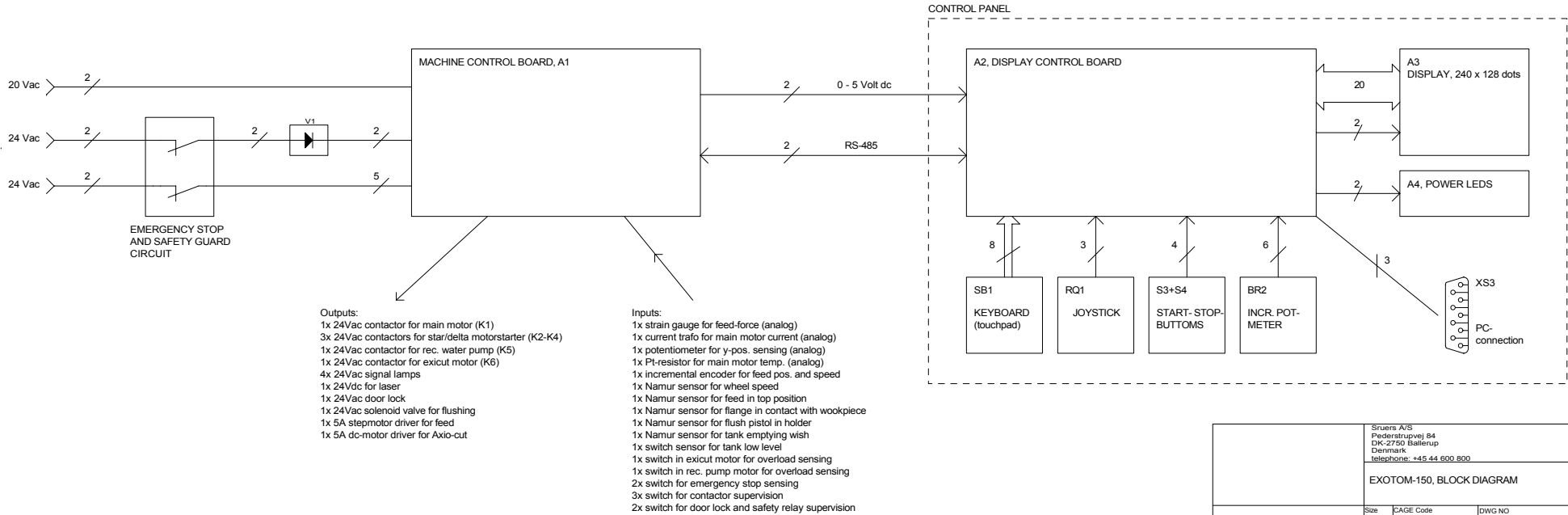
DETAIL A  
SCALE 2 : 1



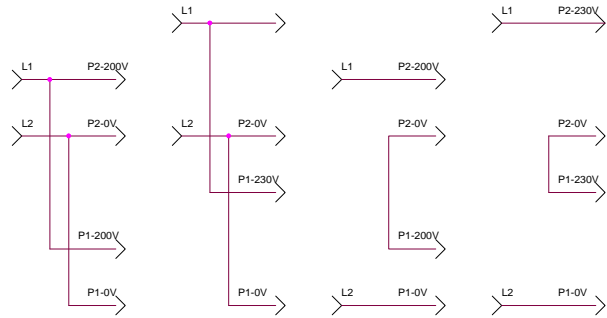
E	2013-05-24	Pos 60 washer removed at pos 70.		JTV	2013-05-24	JTV
A	05-05-06			MD		FPG
Rev	Crea. date dd-mm-yy	Revision description		Draw. Init	Appr. date dd-mm-yy	Appr. Init
 Pederstrupvej 84 DK-2750 Ballerup Copenhagen Denmark Phone : +45 44600 800 Fax : +45 44600 804	 Material:		Scale: 1:2	Format: A4	Tolerance: DS/ISO 2768 - mK	
					Surface treat.: None	
	ID:	Description: <b>15870055 Stopper 12mm Right, Assy</b>				Rev: <b>E</b>



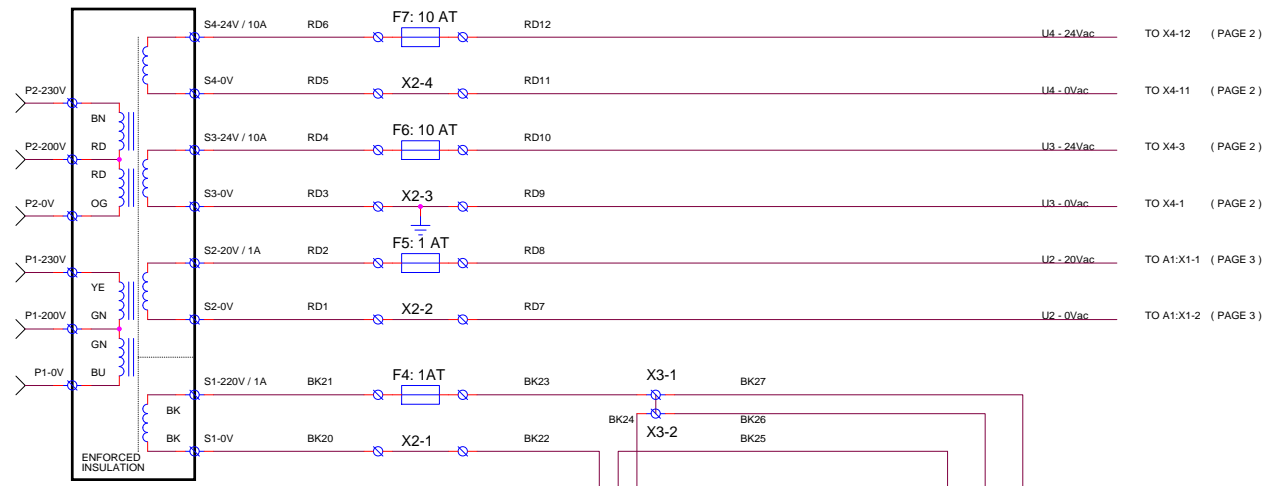
Snierra A/S Valhøjs Allé 1 76 DK-2610 Rødovre Denmark telephone: +45 3670 3500			
EXOTOM-100, BLOCK DIAGRAM			
Size	CAGE Code	DWG NO	Rev
A2		15043050	I
Monday, July 05, 1999	Scale	FTH / FTH	Sheet 1 of 1



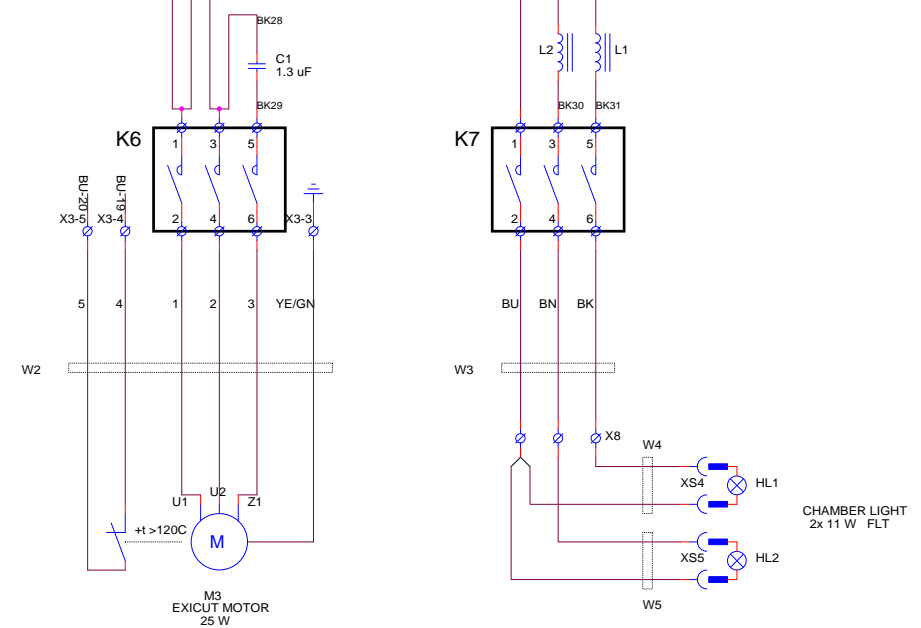
200-210V MODEL    220-240V MODEL    380-420V MODEL    460-480V MODEL



T1    600 VA



IEC742 Safety transformer

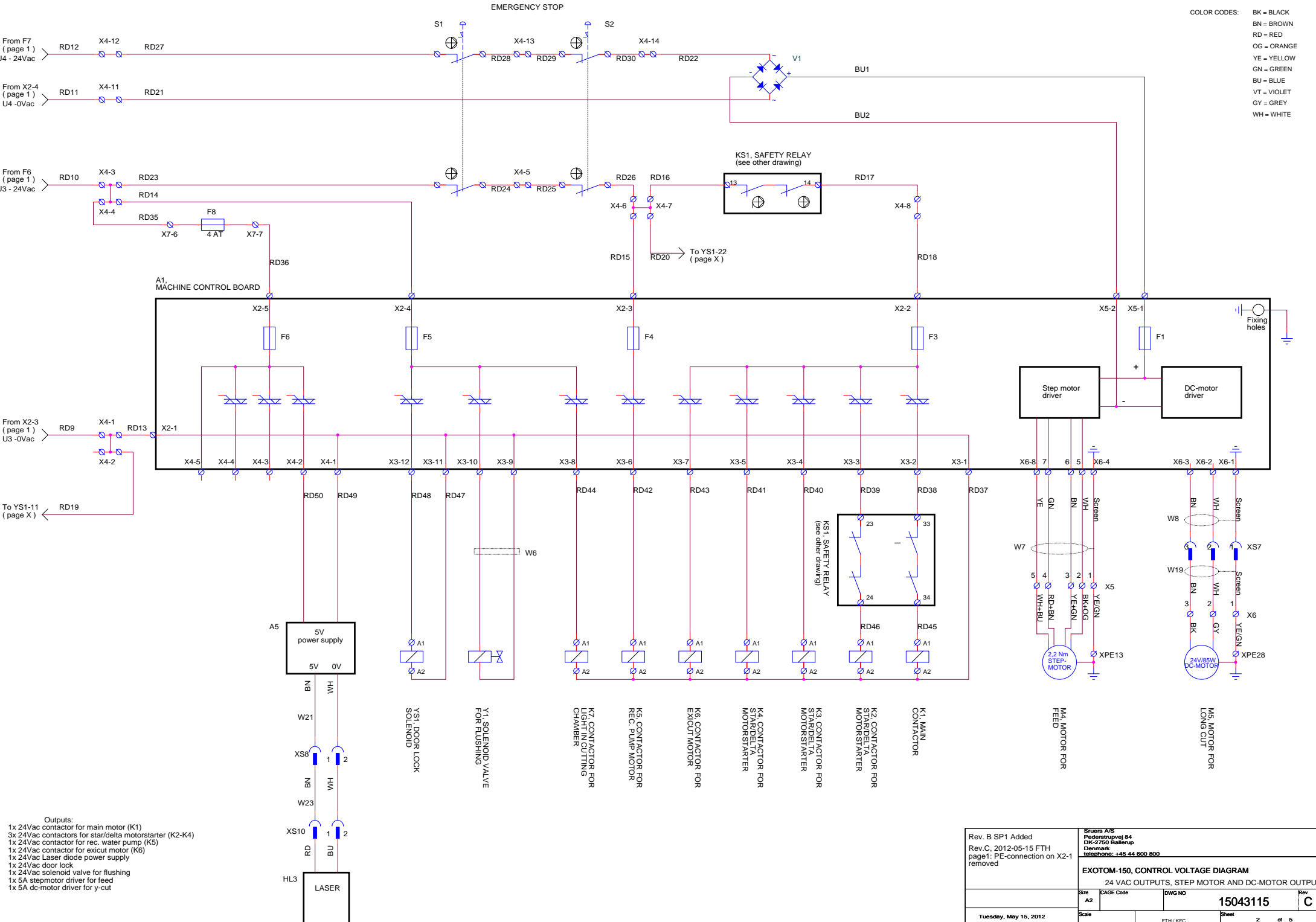


COLOR CODES:

- BK = BLACK
- BN = BROWN
- RD = RED
- OG = ORANGE
- YE = YELLOW
- GN = GREEN
- BU = BLUE
- VT = VIOLET
- GY = GREY
- WH = WHITE

Rev.B, SP1 Added Rev.C, 2012-05-15 FTH page1: PE-connection on X2-1 removed	Sruers A/S Pedestrupvej 84 DK-2750 Ballerup Denmark Telephone: +45 44 600 800		
	EXOTOM-150, CONTROL VOLTAGE DIAGRAM		
	Size A2	CAGE Code	DWG NO  15043115
Tuesday, May 15, 2012	Scale	FTH / KFC	Sheet 1 of 5

COLOR CODES: BK = BLACK  
BN = BROWN  
RD = RED  
OG = ORANGE  
YE = YELLOW  
GN = GREEN  
BU = BLUE  
VT = VIOLET  
GY = GREY  
WH = WHITE

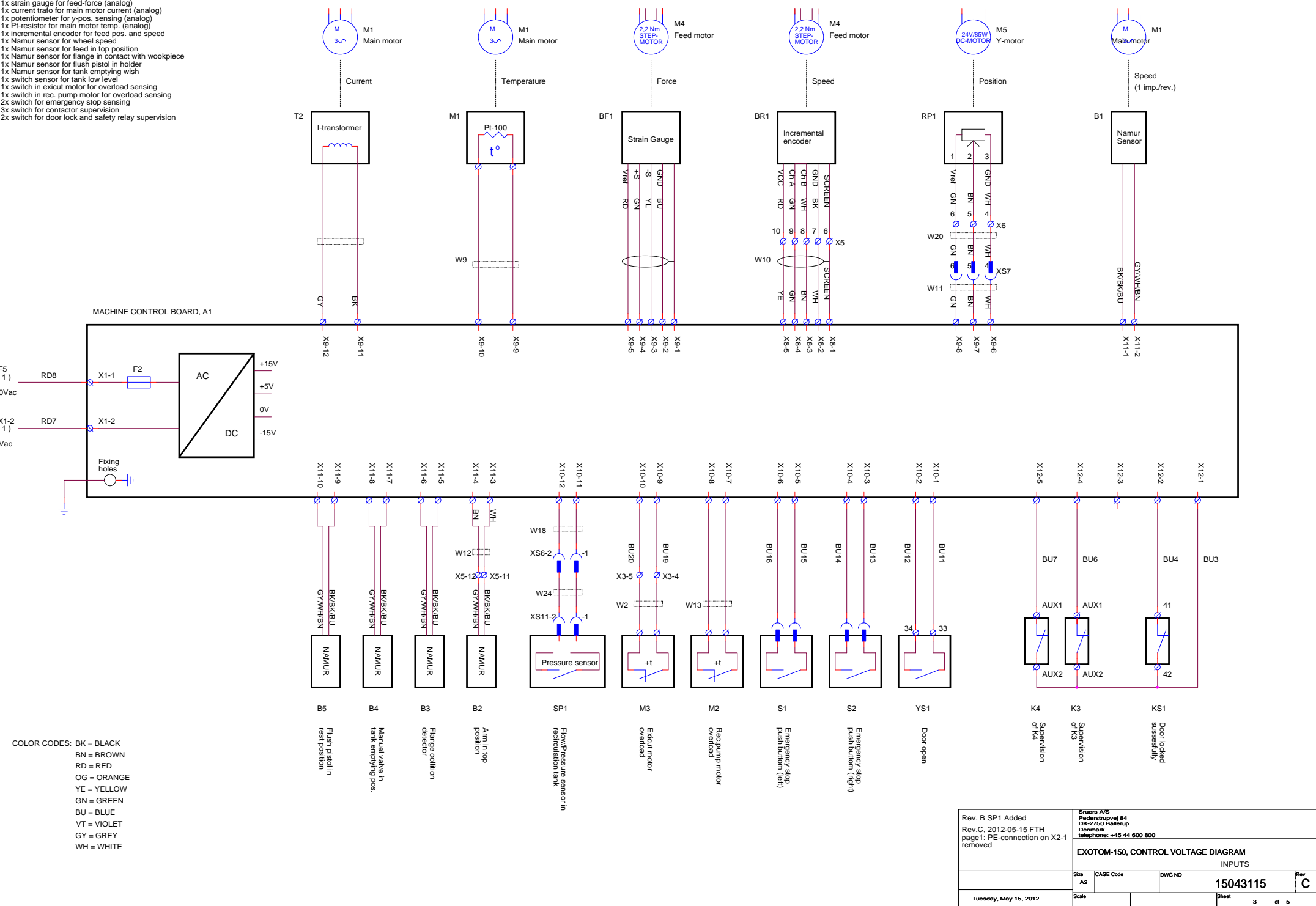


Outputs:

- 1x 24Vac contactor for main motor (K1)
- 3x 24Vac contactors for star/delta motorstarter (K2-K4)
- 1x 24Vac contactor for rec. water pump (K5)
- 1x 24Vac contactor for excut motor (K6)
- 1x 24Vac Laser diode power supply
- 1x 24Vac door lock
- 1x 24Vac solenoid valve for flushing
- 1x 5A stepmotor driver for feed
- 1x 5A dc-motor driver for y-cut

Rev. B SP1 Added		Sruens A/S Pedersstrupvej 84 DK-2750 Ballerup Denmark Telephone: +45 44 600 800	
Rev.C, 2012-05-15 FTH page1: PE-connection on X2-1 removed		EXOTOM-150, CONTROL VOLTAGE DIAGRAM 24 VAC OUTPUTS, STEP MOTOR AND DC-MOTOR OUTPUT	
Size A2	CAGE Code	DWG NO 15043115	Rev C
Tuesday, May 15, 2012	Scale	FTH / KFC	Sheet 2 of 5

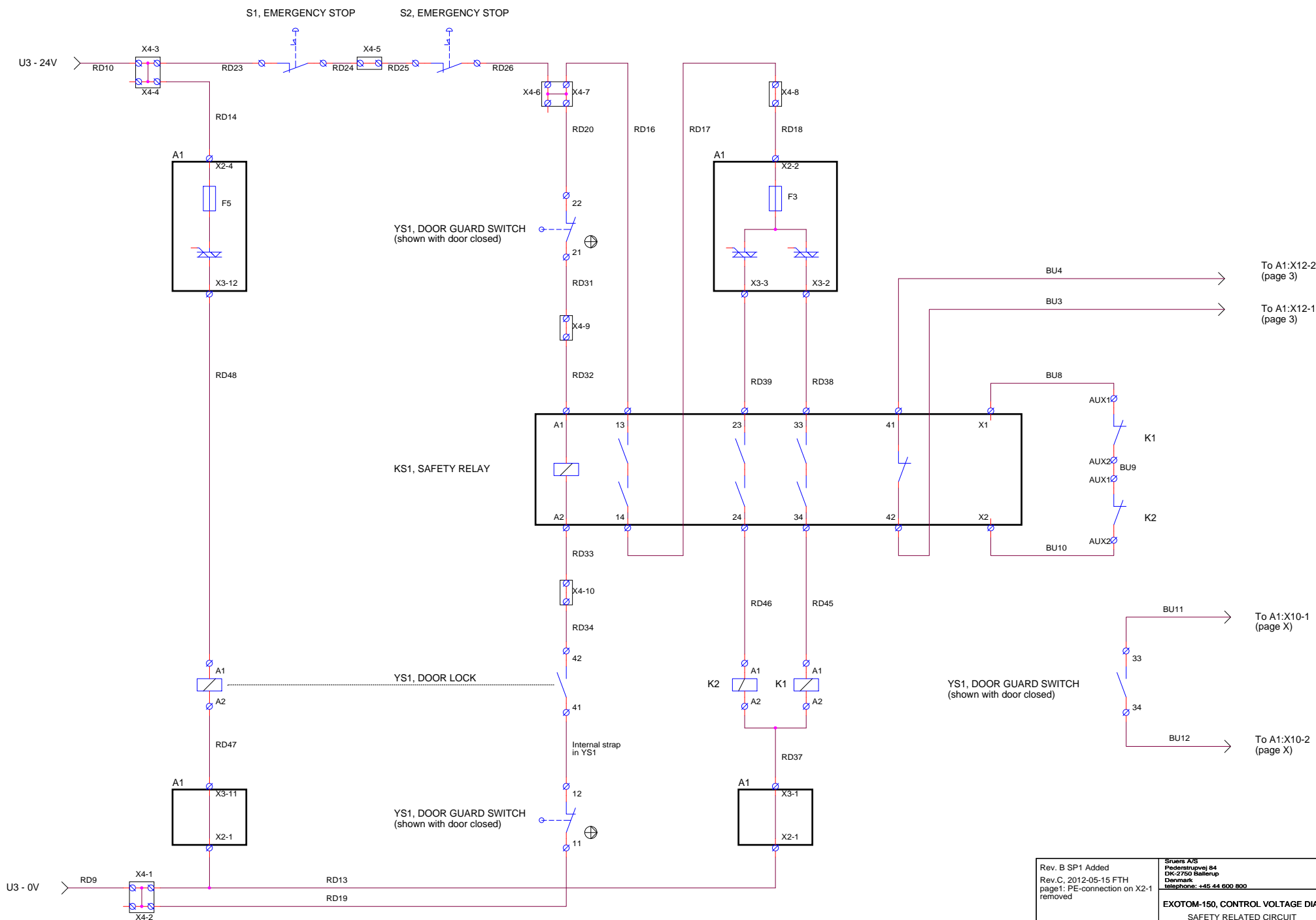
- Inputs:
- 1x strain gauge for feed-force (analog)
  - 1x current trafo for main motor current (analog)
  - 1x potentiometer for y-pos. sensing (analog)
  - 1x Pt-resistor for main motor temp. (analog)
  - 1x incremental encoder for feed pos. and speed
  - 1x Namur sensor for wheel speed
  - 1x Namur sensor for feed in top position
  - 1x Namur sensor for flange in contact with workpiece
  - 1x Namur sensor for flush pistol in holder
  - 1x Namur sensor for tank emptying wish
  - 1x switch sensor for tank low level
  - 1x switch in exit motor for overload sensing
  - 2x switch for emergency stop sensing
  - 3x switch for contactor supervision
  - 2x switch for door lock and safety relay supervision



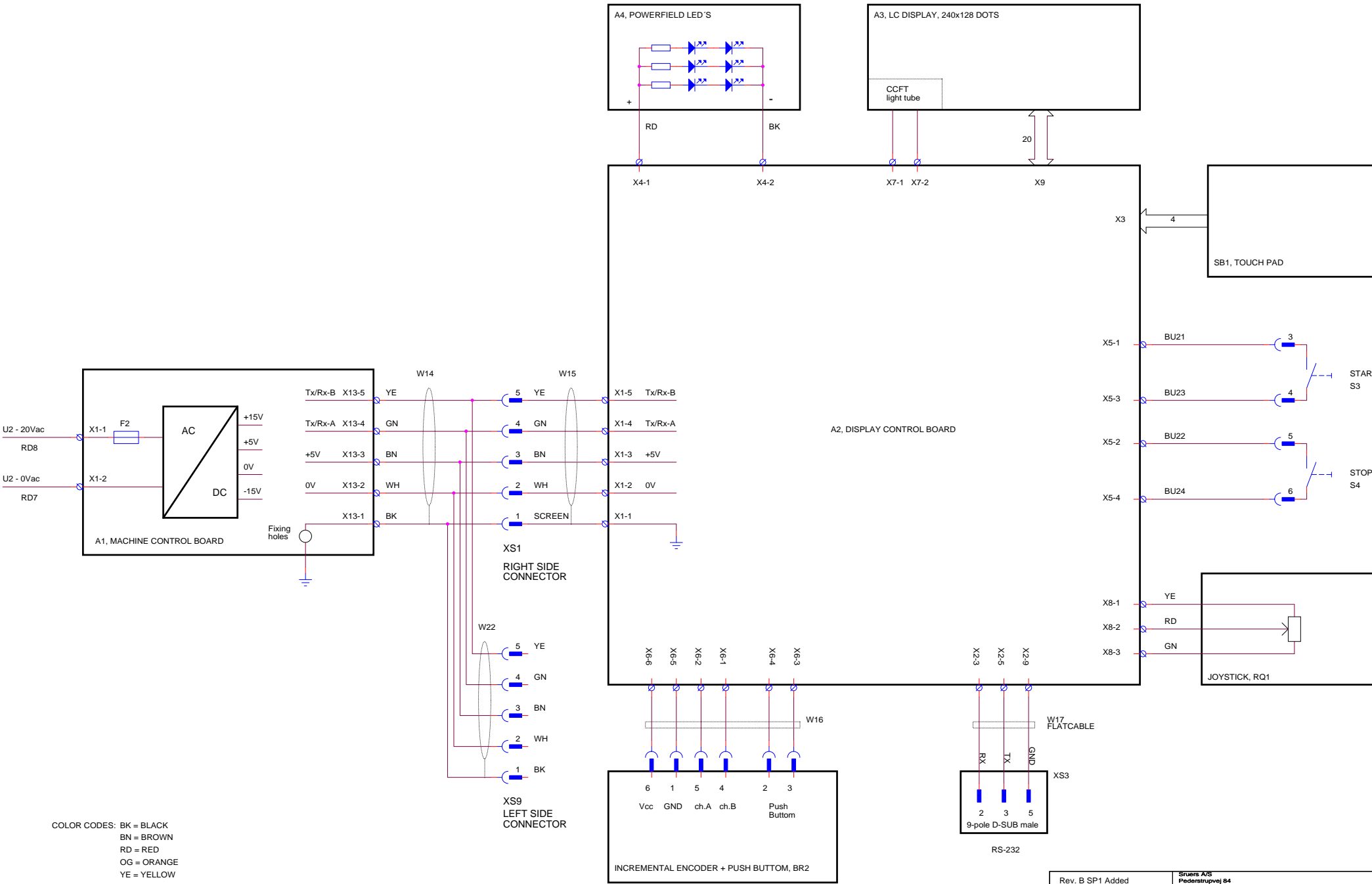


COLOR CODES:

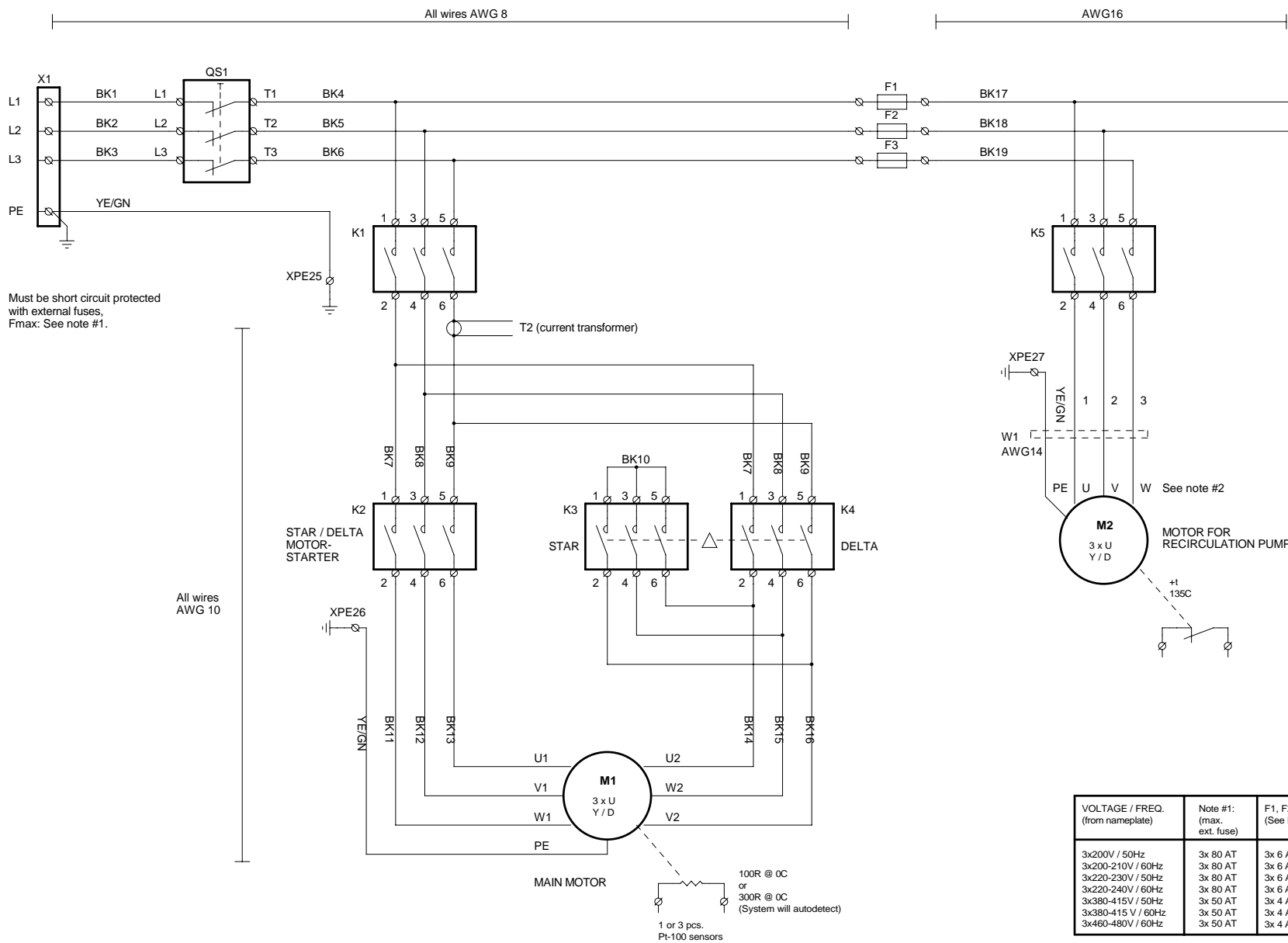
- BK = BLACK
- BN = BROWN
- RD = RED
- OG = ORANGE
- YE = YELLOW
- GN = GREEN
- BU = BLUE
- VT = VIOLET
- GY = GREY
- WH = WHITE



Rev. B SP1 Added		Sruens A/S Pedersstrupvej 84 DK-2750 Ballerup Denmark telephone: +45 44 600 800	
Rev.C, 2012-05-15 FTH page1: PE-connection on X2-1 removed		EXOTOM-150, CONTROL VOLTAGE DIAGRAM SAFETY RELATED CIRCUIT	
Size	CAGE Code	DWG NO	Rev
A2		15043115	B
Tuesday, May 15, 2012	Scale	FTH / KFC	Sheet 4 of 5



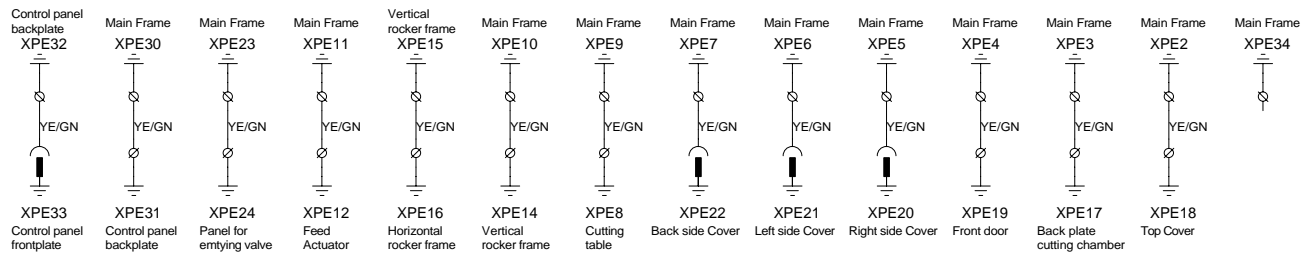
COLOR CODES: BK = BLACK  
BN = BROWN  
RD = RED  
OG = ORANGE  
YE = YELLOW  
GN = GREEN  
BU = BLUE  
VT = VIOLET  
GY = GREY  
WH = WHITE



VOLTAGE / FREQ. (from nameplate)	Note #1: (max. ext. fuse)	F1, F2, F3 (See Note #3)	M1 S1 (nom. power)	M1 S3, 10 min. (cutting power)	M2 (power)	Note #2: (M2-connection)
3x200V / 50Hz	3x 80 AT	3x 6 AT (aM)	7,5 kW	10,5 kW	470 W	Delta
3x200-210V / 60Hz	3x 80 AT	3x 6 AT (CC)	7,5 kW	10,5 kW	390 W	Delta
3x220-230V / 50Hz	3x 80 AT	3x 6 AT (aM)	7,5 kW	10,5 kW	550 W	Delta
3x220-240V / 60Hz	3x 80 AT	3x 6 AT (CC)	7,5 kW	10,5 kW	460 W	Delta
3x380-415V / 50Hz	3x 50 AT	3x 4 AT (aM)	7,5 kW	10,5 kW	550 W	Star
3x380-415 V / 60Hz	3x 50 AT	3x 4 AT (aM)	7,5 kW	10,5 kW	460 W	Star
3x460-480V / 60Hz	3x 50 AT	3x 4 AT (CC)	9,0 kW	12,6 kW	660 W	Star

Note #3:

F1 to F3 are time delay fuses  
(am) = aM-characteristics  
(CC) = class-CC characteristics



Ver.B: 17-05-2004 FTH Connections on M1 changed Ver.C: 06-06-2007 FTH Fuse types specified		Sruers A/S Pederstrupvej 84 DK-2750 Ballerup Denmark telephone: +45 44 600 800	
ExOTOM-150, MAIN SUPPLY CIRCUIT		15043105	
Size A2	CAGE Code	DWG NO	Rev I C
Wednesday, June 06, 2007	Scale	FTH / KFC	Sheet 1 of 1





[illegible][illegible]

		TO / FROM:
<u>RESET1</u>	→ RESET1	page 5
<u>AD-0</u>	← AD-0	page 8
<u>AD-1</u>	← AD-1	page 8
<u>AD-2</u>	← AD-2	page 8
<u>AD-3</u>	← AD-3	page 8
<u>AD-4</u>	← AD-4	page 6
<u>AD-5</u>	← AD-5	page 6
<u>AD-6</u>	← AD-6	page 1
<u>AD-7</u>	← AD-7	page 1
<u>VREF</u>	→ VREF	page 6,8
<u>DA-0</u>	→ DA-0	page 4
<u>DA-1</u>	→ DA-1	page 4
<u>P00</u>	→ P00	page 3
<u>P01</u>	→ P01	page 3
<u>P02</u>	→ P02	page 3
<u>P03</u>	→ P03	page 3
<u>P04</u>	→ P04	page 3
<u>P05</u>	→ P05	page 3
<u>P06</u>	→ P06	page 3
<u>P07</u>	→ P07	page 3
<u>P12</u>	← P12	page 7
<u>P13</u>	← P13	page 7
<u>P14</u>	→ P14	page 5
<u>P15</u>	→ P15	page 5
<u>P16</u>	→ P16	page 5
<u>P17</u>	→ P17	page 5
<u>P22</u>	→ P22	page 4
<u>P23</u>	→ P23	page 4
<u>P24</u>	→ P24	page 3
<u>P25</u>	→ P25	page 3
<u>P26</u>	→ P26	page 3
<u>P27</u>	→ P27	page 3
<u>PT0</u>	← PT0	page 7
<u>PT1</u>	← PT1	page 7
<u>PT2</u>	← PT2	page 7
<u>PT3</u>	← PT3	page 7
<u>PT4</u>	← PT4	page 7
<u>PT5</u>	← PT5	page 7
<u>PT6</u>	← PT6	page 8

**RESET CIRCUIT**

N4  
TL7705

RESN  
RESET  
SENSE

CT REF

C19 22uF/40V

C20 22uF/40V

VCC

GND

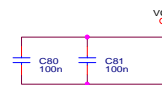
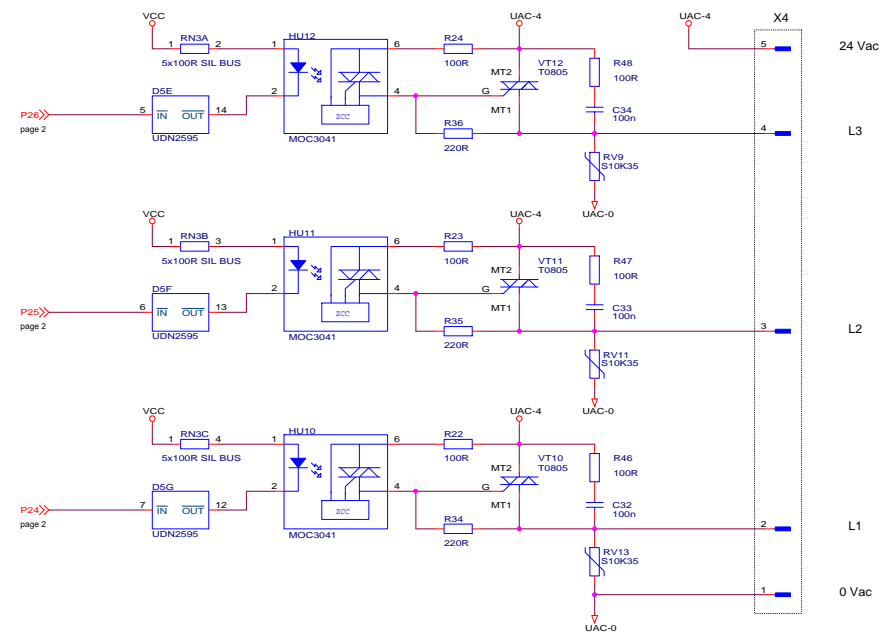
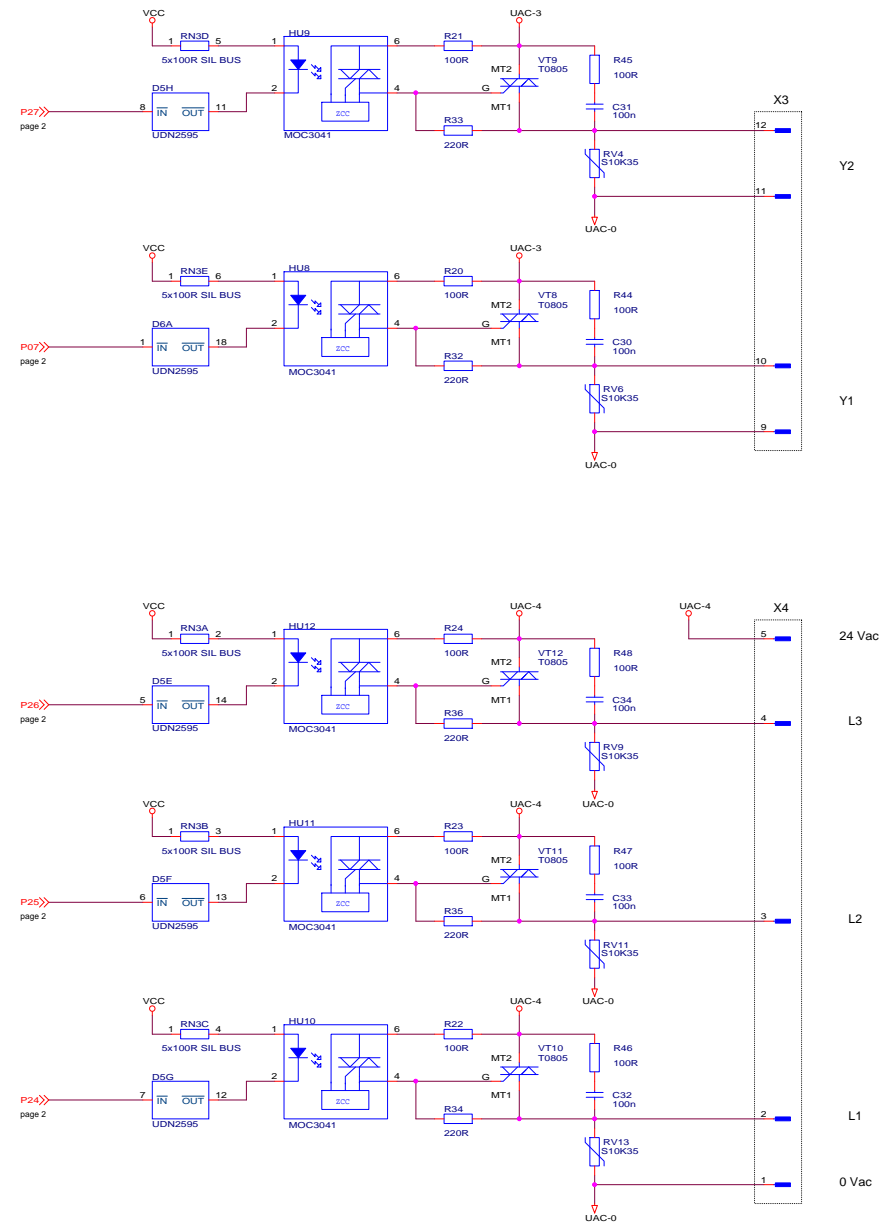
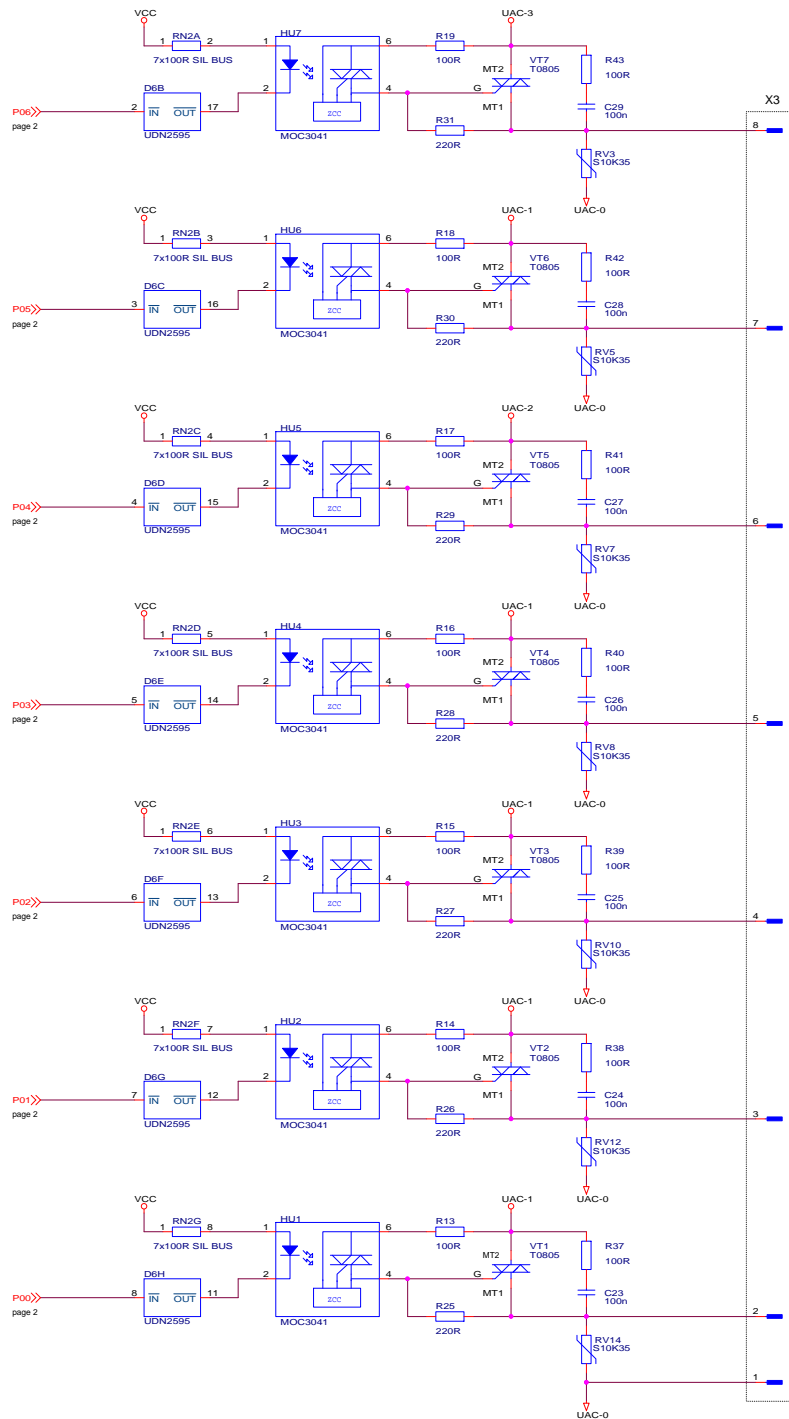
RN1 8x4K7 SIL BUS

RESET

RESET PULS:  
200-300  
msec.

The schematic shows a 12-bit DAC implemented with a resistor ladder. The ladder consists of 12 resistors, each labeled R100n, connected in series between VCC and GND. The nodes between the resistors are connected to a series of 12 capacitors, each labeled C70 100n, C71 100n, C72 100n, C73 100n, C74 100n, C75 100n, C76 100n, C77 100n, C78 100n, C79 100n, C80 100n, and C81 100n. The capacitors are connected to a common output line, which is then connected to a 12-bit digital-to-analog converter (DAC) block. The DAC block has 12 inputs, each connected to one of the capacitors. The DAC block is labeled DAC and has a 12-bit output bus.

<b>STRUERS A/S</b> Pedersbrygge 84 DK-2750 Ballerup Denmark phone +45 44 600 800			
<b>EXOTOM-100/150, MACHINE CONTROL BOARD, A1</b> uP CIRCUIT			
Size	CAGE Code	DWG NO	Rev
A2		15043210	G
Scale		FTH / FTH	Sheet 2 of 8



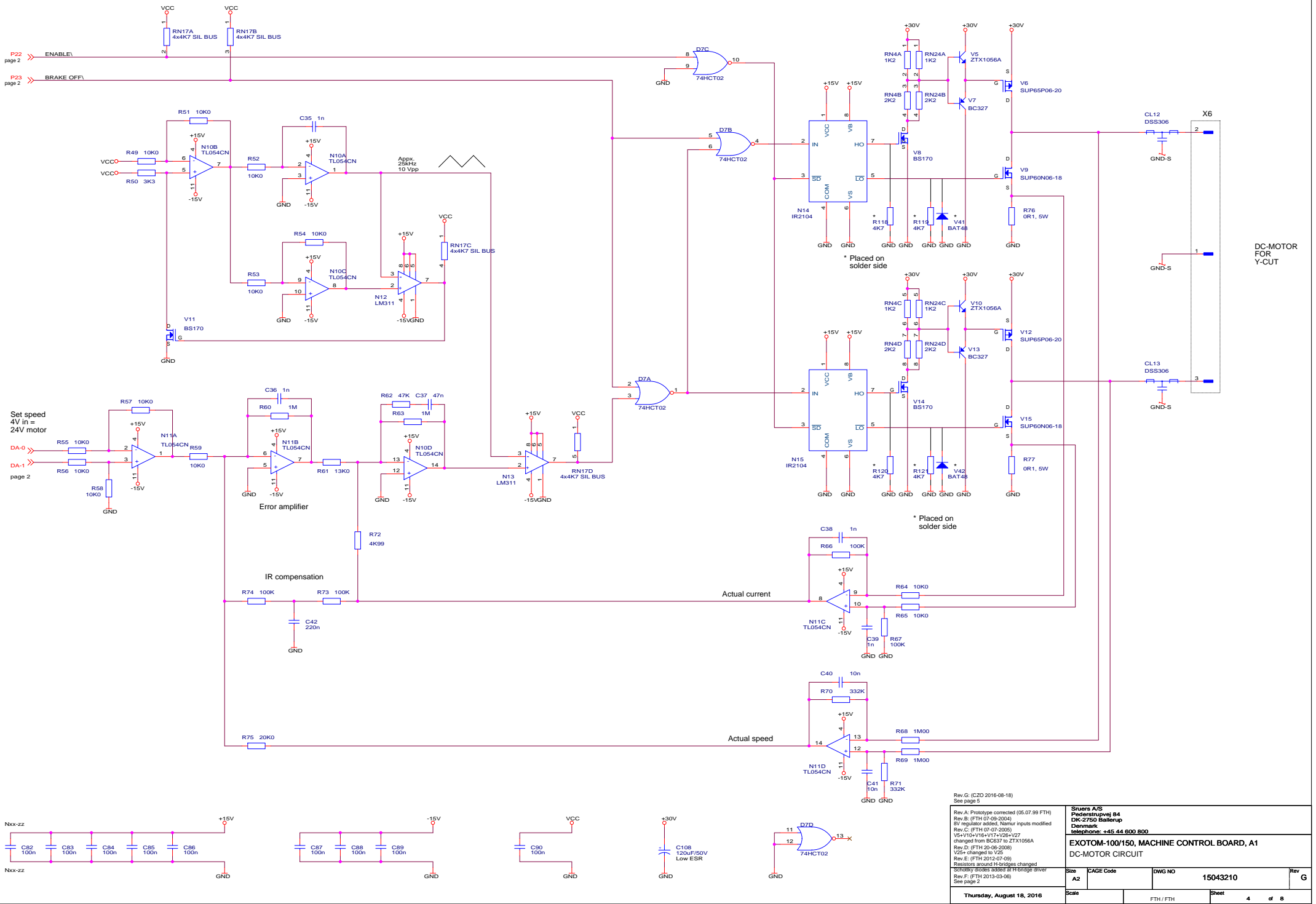
Rev. G: (CZO 2016-08-18)  
See page 5

Rev. A: Prototype corrected (05.07.99 FTH)  
Rev. B: (FTH 07-09-2004)  
BV regulator added, Namur inputs modified  
Rev. C: (FTH 07-07-2005)  
V5+V10+V16+V17+V26+V27  
changed from B0331 to 27X1056A  
Rev. D: (FTH 20-06-2008)  
V25+ changed to V25  
Rev. E: (FTH 2012-07-09)  
Resistors around H-bridges changed  
Schottky diodes added at H-bridge driver  
Rev. F: (FTH 2013-03-06)  
See page 2

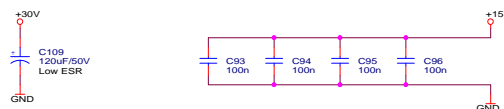
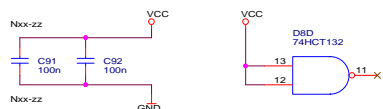
STRUERS A/S  
Fædstrupvej 84  
DK-2760 Ballerup  
Denmark  
phone +45 44 600 800

EXOTOM-100/150, MACHINE CONTROL BOARD, A1  
AC- OUTPUTS

Size	AGE Code	DWG NO	Rev
A2		15043210	G
Scale	Sheet	3 of 8	
Thursday, August 18, 2016	FTH / FTH		

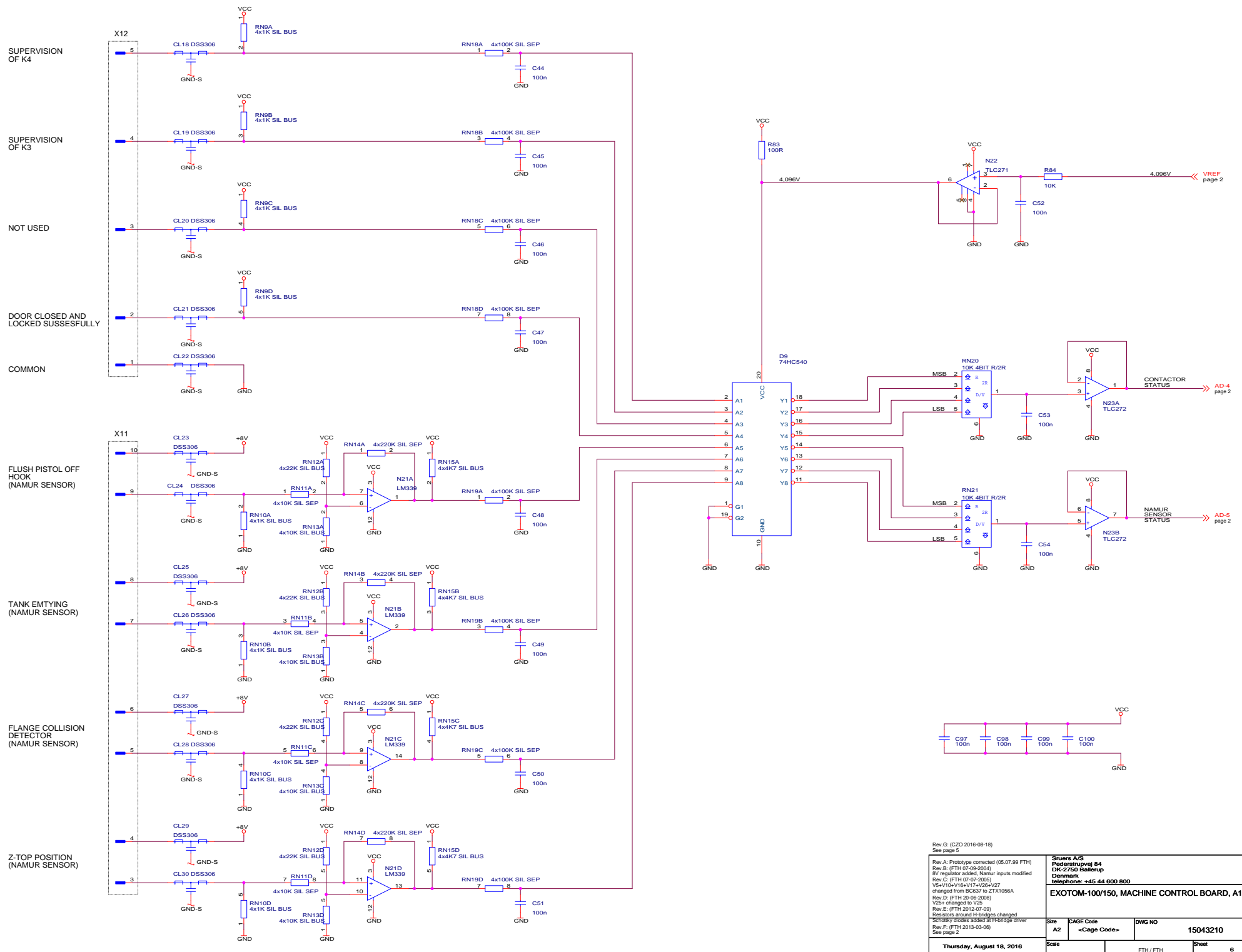






Rev.A: Prototype corrected (05.07.99 FTH)  
Rev.B: (FTH 07-09-2004)  
8V regulator added, Namur inputs modified  
Rev.C: (FTH 07-07-2005)  
V5+V10+V16+V17+V26+V27  
changed from BC637 to ZTX1056A  
Rev.D: (FTH 20-06-2008)  
V25+ changed to V25  
Rev.E: (FTH 2012-07-09)  
Resistors around H-bridges changed  
Schottky diodes added at H-bridge driver  
Rev.F: (FTH 2013-03-06)  
See page 2

Size A2	CAGE Code	DWG NO 15043210	Rev G
Scale	ETM / ETM	Sheet 5 of 8	



Low level switch  
in rec. tank

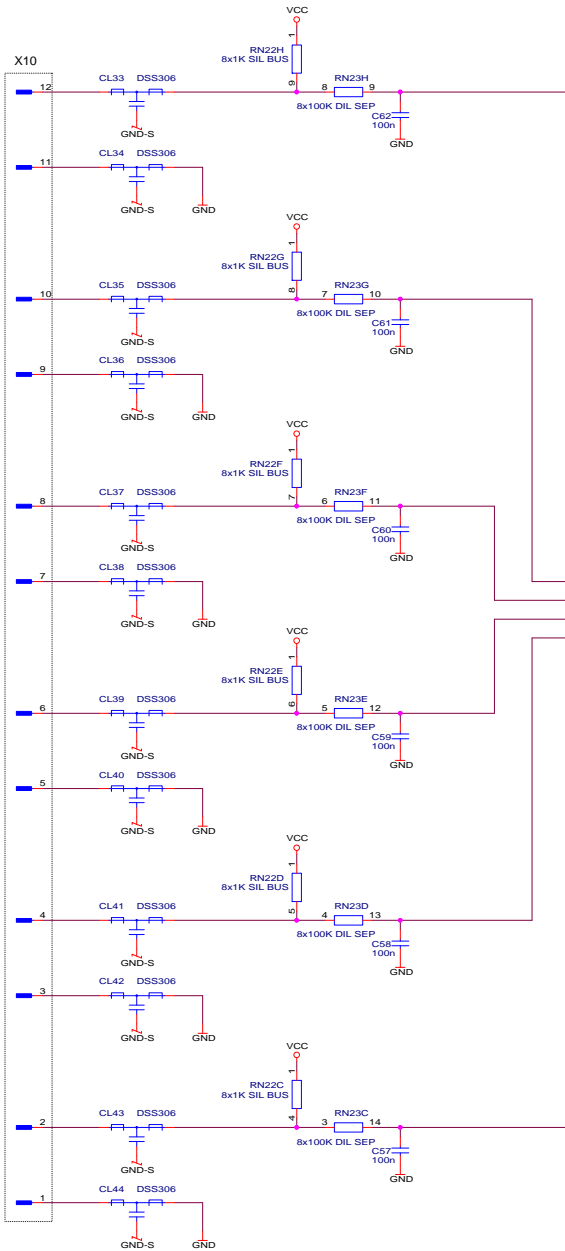
Overload switch  
in excit motor

Overload switch  
in rec.pump motor

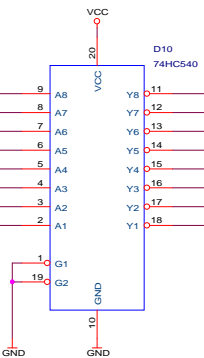
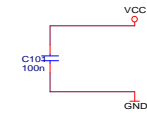
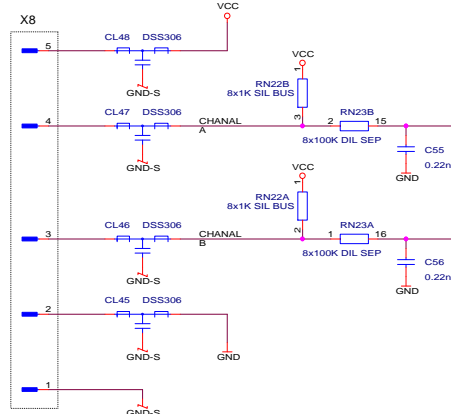
Emergency stop  
switch (left side)

Emergency stop  
switch (right side)

Status from  
door lock switch



Z-POSITION  
(INCR. IMPULSES)



page 2

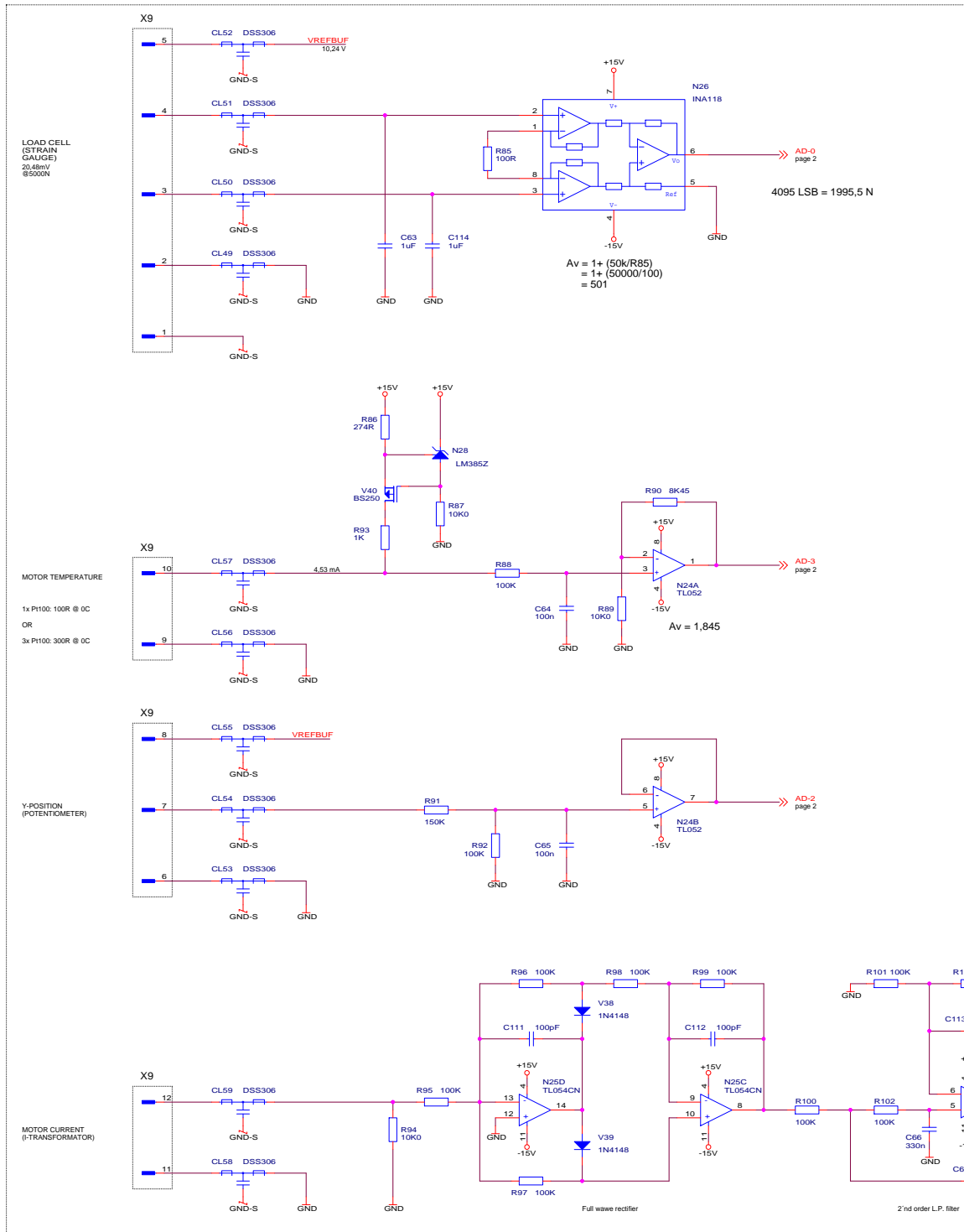
Rev. G: (CZO 2016-08-18)  
See page 5

Rev. A: Prototype corrected (05.07.99 FTH)  
Rev. B: (FTH 07-09-2004)  
BV regulator added, Namur inputs modified  
Rev. C: (FTH 07-07-2005)  
V5+V10+V16+V17+V26+V27  
changed from BC033T to 27X1056A  
Rev. D: (FTH 20-06-2008)  
V25+ changed to V25  
Rev. E: (FTH 2012-07-09)  
Resistors around H-bridges changed  
schroeder diodes added at H-bridge driver  
Rev. F: (FTH 2013-03-06)  
See page 2

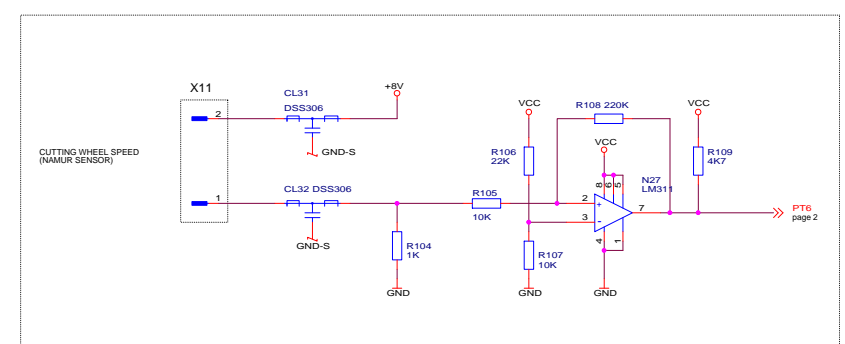
Sruers A/S Pedersstrupvej 84 DK-2760 Ballerup Denmark Telephone: +45 44 600 800			
EXOTOM-100/150, MACHINE CONTROL BOARD, A1			
Size A2	CAGE Code	DWG NO 15043210	Rev G
Scale	FTH / FTH		Sheet 7 of 8

Thursday, August 18, 2016

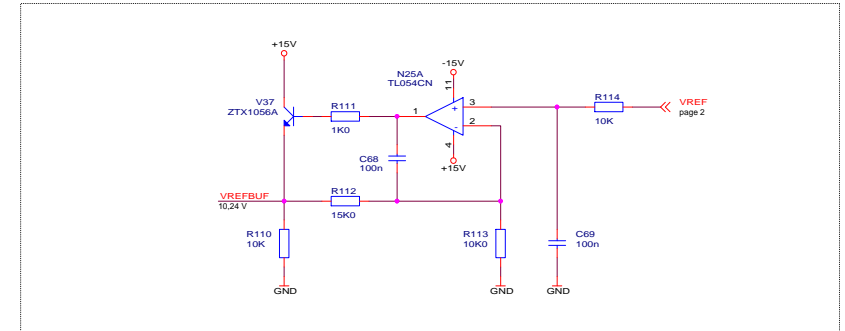
## ANALOG INPUTS



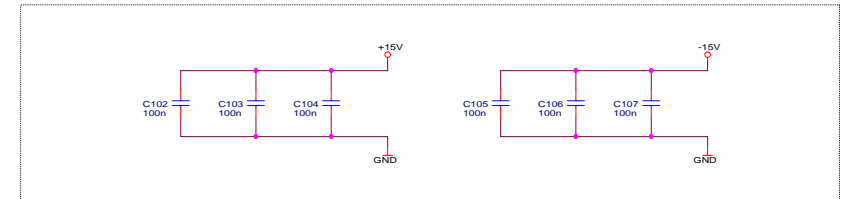
### INPUT FOR WHEEL SPEED DETECTION



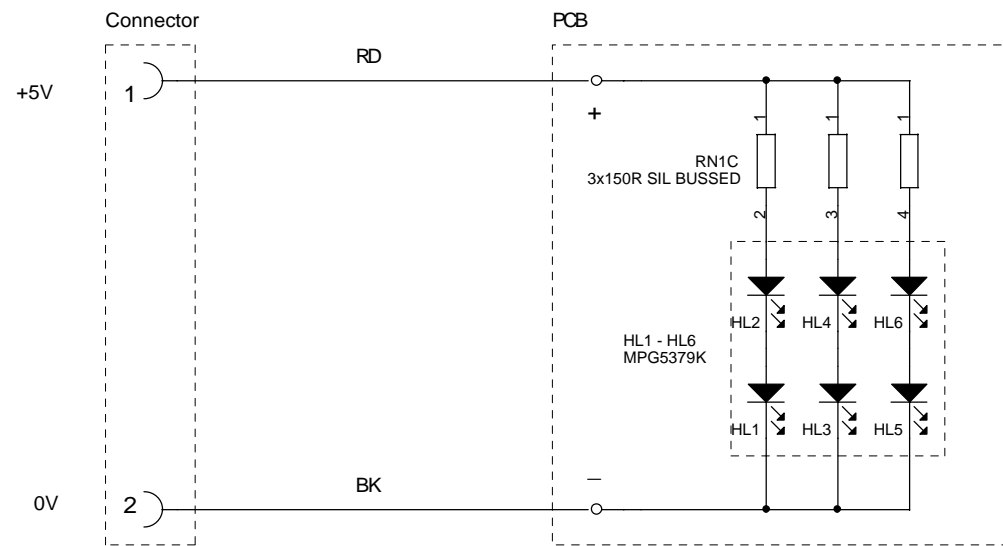
## VREF BUFFER



## DECOUPLING

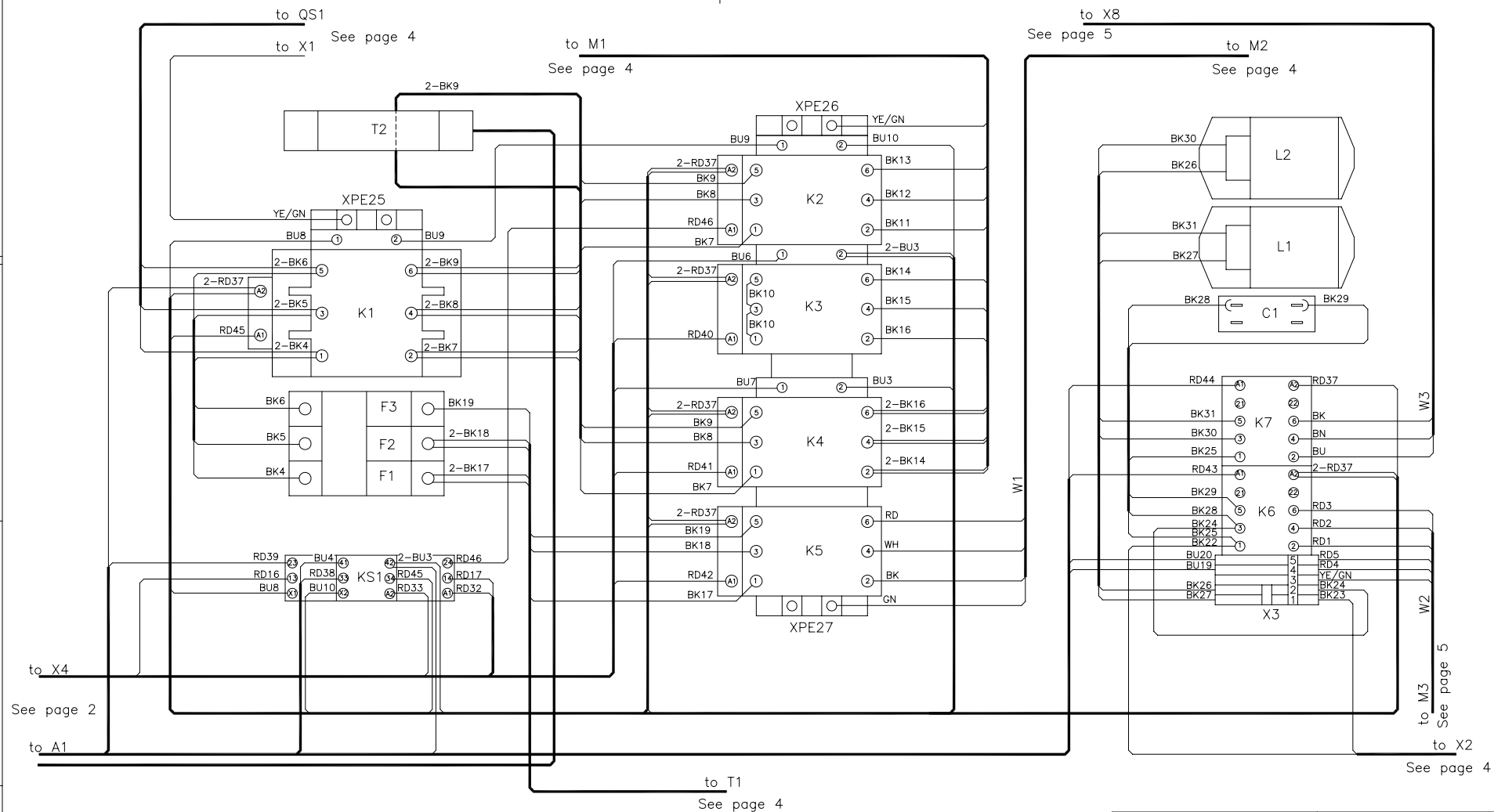


Rev.G: (CZO 2016-08-18) See page 5		<b>Sruens A/S</b> Pedersinsvej 84 DK-2760 Ballerup Denmark telephone: +45 44 600 800		
Rev.A: Prototype corrected (05.07.99 FTH) Rev.B: (FTH 07-09-2004) BY: initiator added, Name: inputs modified Rev.C: (FTH 07-07-2005) V5+V10+V16+V17+V26+V27 changed from IC6237 to TX1056A Rev.D: (FTH 20-06-2008) V16+ changed to V25 Rev.E: (FTH 2012-07-09) Resistors and H-bridges changed Schottky diodes added in H-bridge driver Rev.F: (FTH 2013-03-06) See page 2		<b>EXOTOM-100/150, MACHINE CONTROL BOARD, A1</b>		
<b>Size</b> A2	<b>CAGE CODE</b>	<b>DWG NO</b> 15043210	<b>Rev</b> G	
<b>Scale</b> 1:1	FTH / FTH	Sheet 8 of 8		
<b>Thursday, August 18, 2016</b>				



		STRUERS A/S Valhøjs Allé 176 DK-2610 Rødovre Denmark +45 3670 3500		
		Exotom-100, LED Circuit board		
	Size A4	CAGE Code <Cage Code>	DWG NO  15043220	Rev
Tuesday, August 01, 2000	Scale	FTH/FTH		Sheet 1 of 1

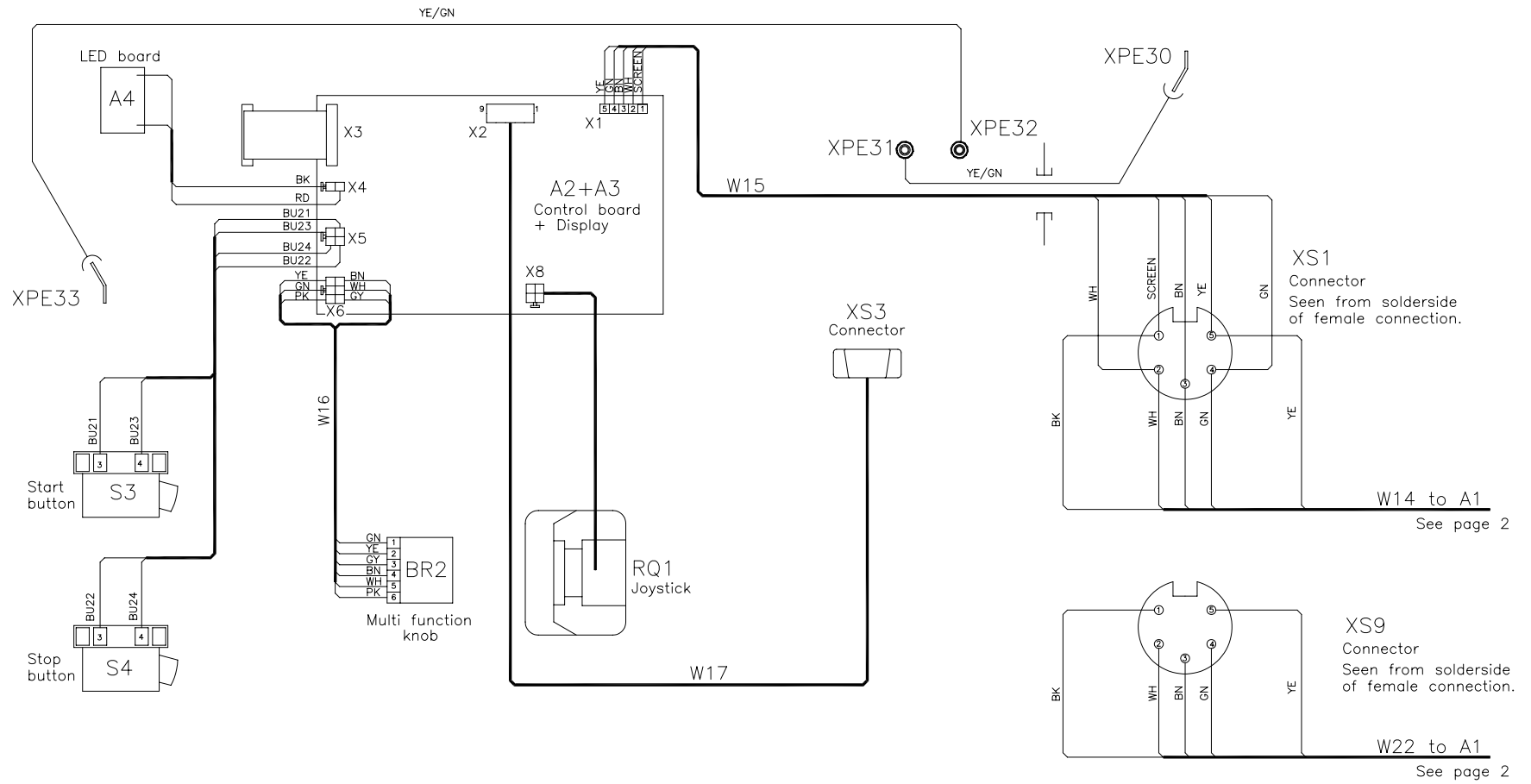
# Contactor plate





Matr.:	Overf. beh.:	Målfors.:	Ikke ang. tol. efter DS/ISO 2768-
<b>Struers</b>	Projektionsmetode	(1:2)	Dato Sign. Teg. 02-12-2011 Kontr. ECU
Wiring Diagram. Contactor plate Exotom-150	Erst.:	Page 1/5	15043451-1A

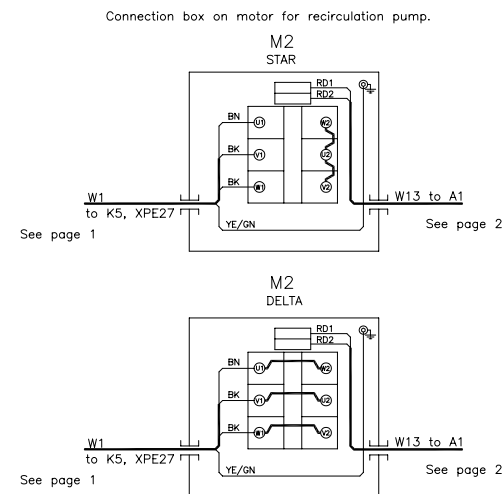
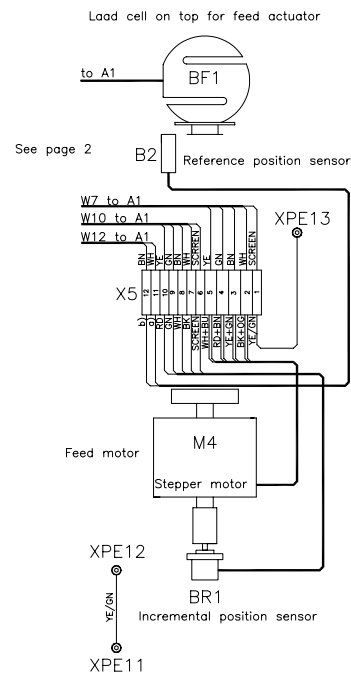
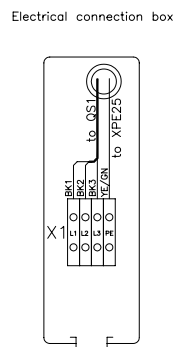
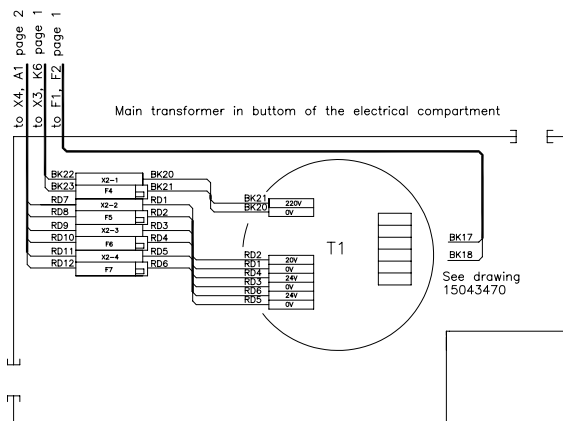
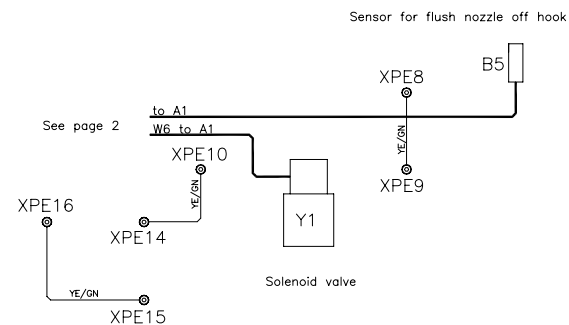
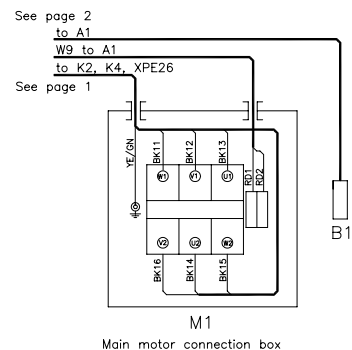
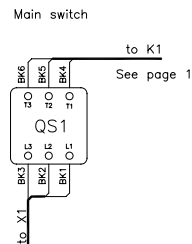
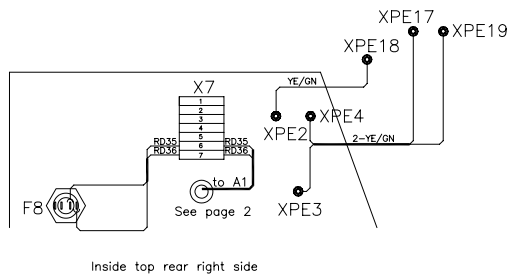


# Control panel



Matr.:		Overf.beh.:	Målförh.:	Ikke ang. tol. efter DS/ISO 2768-	
		Projektionsmetode 	(1:2)	Dato	Sign.
				Tegn. 021203	BMJ
				Kontr.	
Wiring Diagr., Control Panel Exotom-150 Page 3/5			Erst.: 15043451-3A		

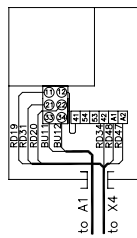




B: Forbindelser p5 M1 ændret. 17-05-04			
Matr.:	Overf. beh.:	Målf. hold:	ikke ang. tol. efter DS/ISO 2768-
Projektskema:		(1:2)	Tag: 021203 BMJ
Wiring Diagram, Various Connects. Exo.-150 Page 4/5		Erst.:	15043451-4B

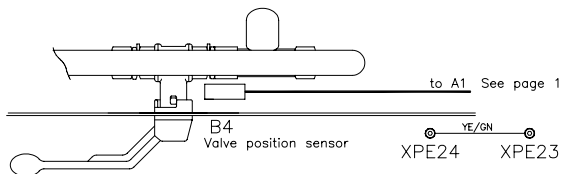
Alternatives			
	or	or	
a)	BK	BK	BU
b)	GY	WH	BN

YS1  
Protection hood switch

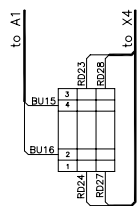


See page 1

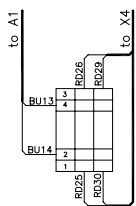
Drain pump handle for tank emptying



See page 1



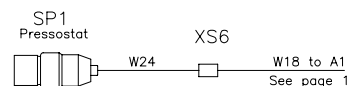
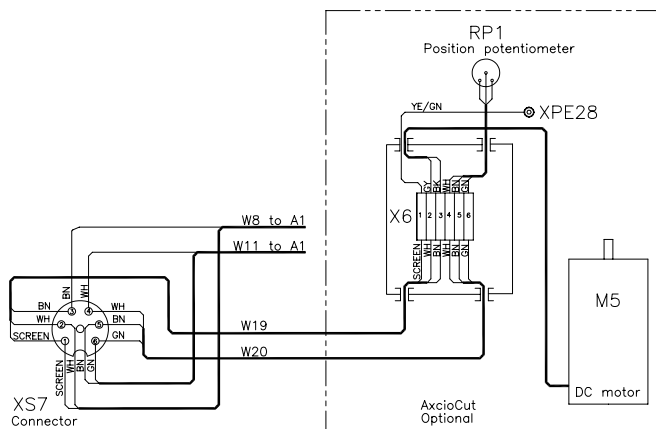
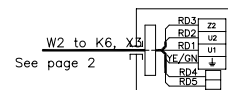
S1  
Emergency stop  
(left side)



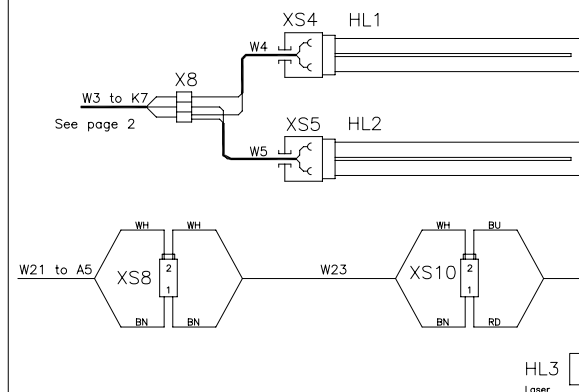
S2  
Emergency stop  
(right side)

M3

Connection box on ExciCut motor

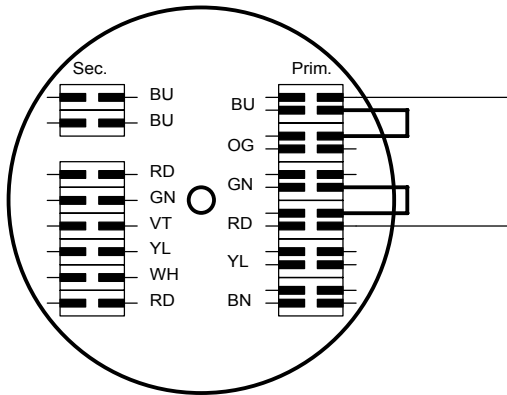


Light in cutting chamber

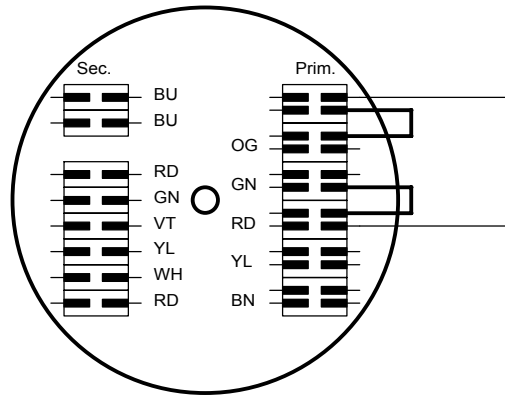


B: Flow switch changed to SP1 pressostat. 13-05-04 BMJ/CJE		C: Cut-off wheel guard with B3 removed. 04-11-2004 BMJ/JTV	
Matr.:	Overfl.beh.:	Måtkontrol:	ikke ang. tol. efter DS/ISO 2768-
Struers		Projektskema:	(1:2)
Wiring Diag. Various Connects. Exo.-150 Page 5/5		Erst.:	
15043451-5C		15043451-5C	

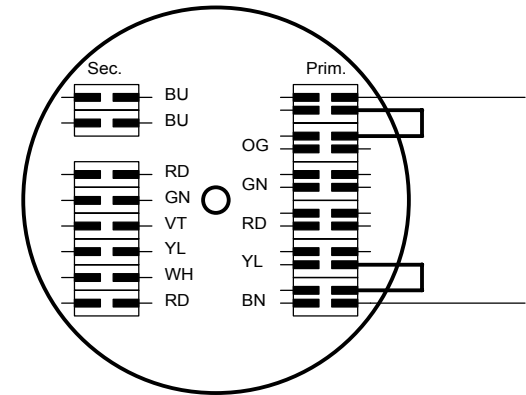
CONNECTION FOR 200V / 50Hz



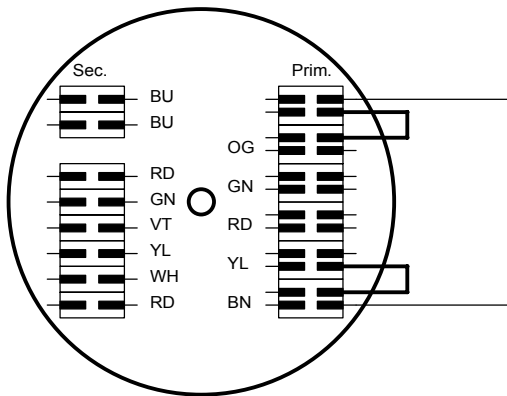
CONNECTION FOR 200-210V / 60Hz



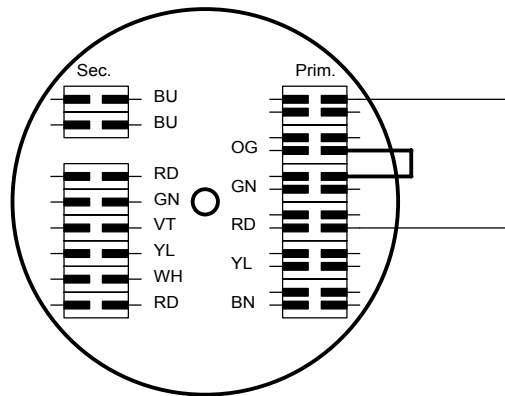
CONNECTION FOR 220-230V / 50Hz



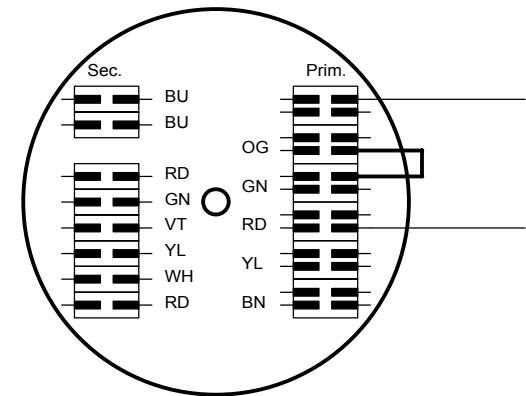
CONNECTION FOR 220-240V / 60Hz



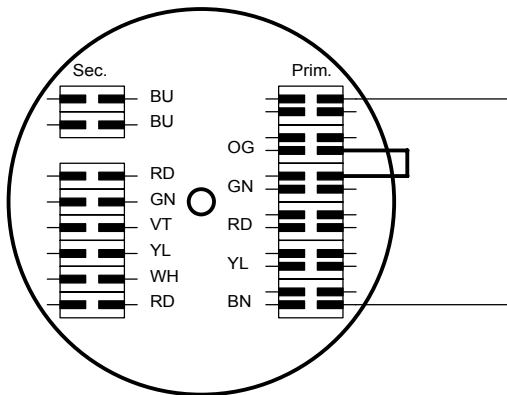
CONNECTION FOR 380-415V / 50Hz



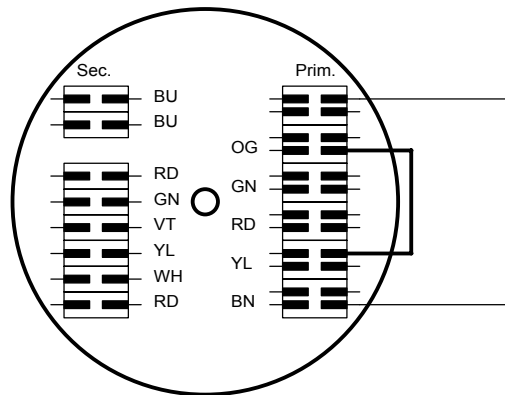
CONNECTION FOR 380-415V / 60Hz



CONNECTION FOR 430-460V / 60Hz



CONNECTION FOR 460-480V / 60Hz



COLOR CODES:

BK = BLACK  
BN = BROWN  
RD = RED  
OG = ORANGE  
YE = YELLOW  
GN = GREEN  
BU = BLUE  
VT = VIOLET  
GY = GREY  
WH = WHITE

Rev.A: Drawing mirrored  
(FTH 22-10-99)

STRUERS A/S  
Valhejs Allé 176  
DK-2610 Rødovre  
Denmark  
+45 3670 3500

PRIMARY CONNECTIONS ON TRAF0 AA-70951B

Size A3	CAGE Code <Cage Code>	DWG NO 15043470A	Rev
Scale	FTH / FTH	Sheet 1 of 1	

Tuesday, August 01, 2000

