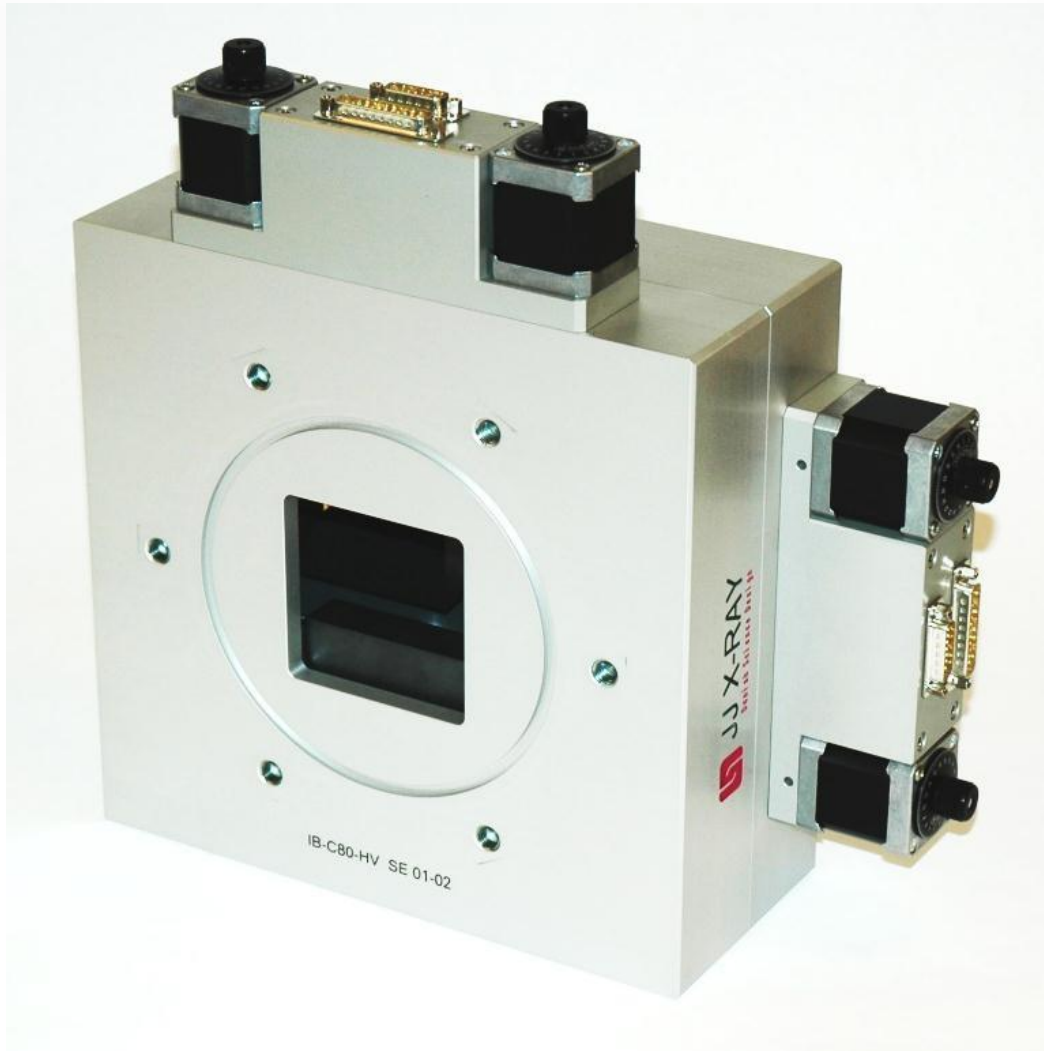


BRIEF INSTRUCTIONS

IB-C80-HV



JJ X-RAY

Danish Science Design

IB-C80-HV

Our most IB-C80-HV slit system features an 80 mm x 80 mm aperture and a slit housing compatible with vacuum application of the slit ($\sim 1E^{-5}$ mbar).

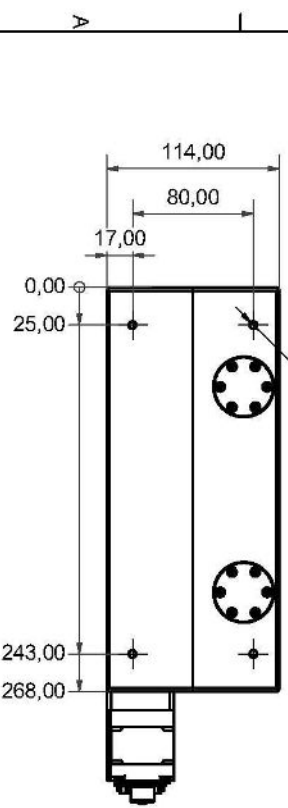
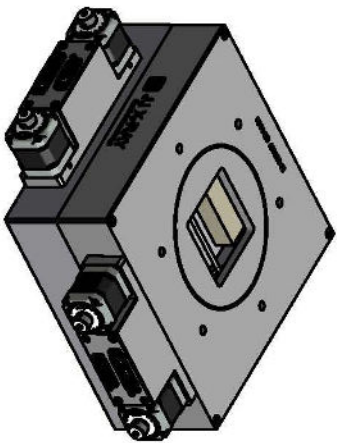
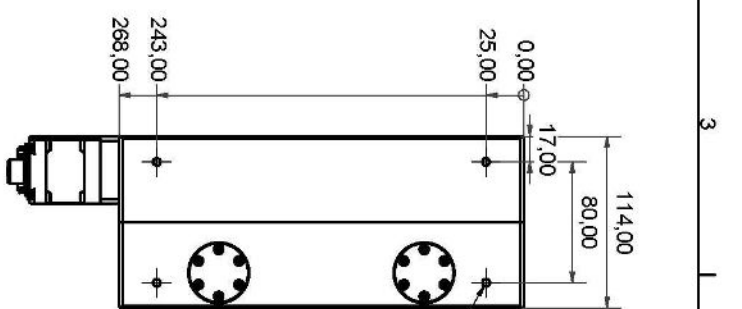
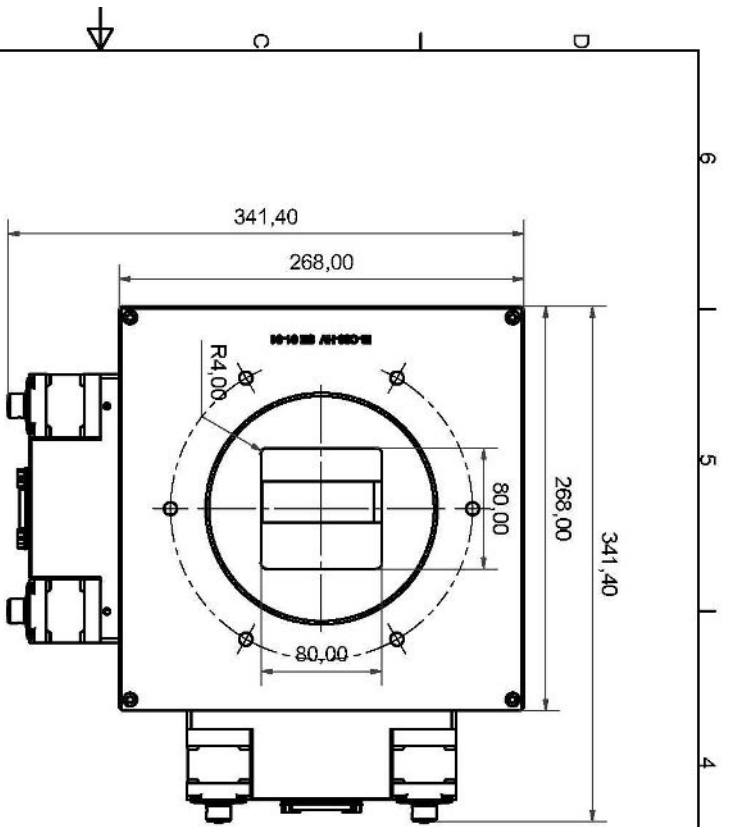
As with our IB-C80-AIR slit, this slit features four individually movable blades providing a large 80 mm x 80 mm opening with fully overlapping blades.

Special care has been taken to ensure that the forces generated by the vacuum do not adversely affect the operation and precision of the blade motion.

For standard synchrotron application, we provide tungsten carbide blades. For neutron applications, the customer will often provide their own blades, or we will provide B4C blades. A maximum blade thickness of 20 mm can be accommodated without alteration of the slit system.

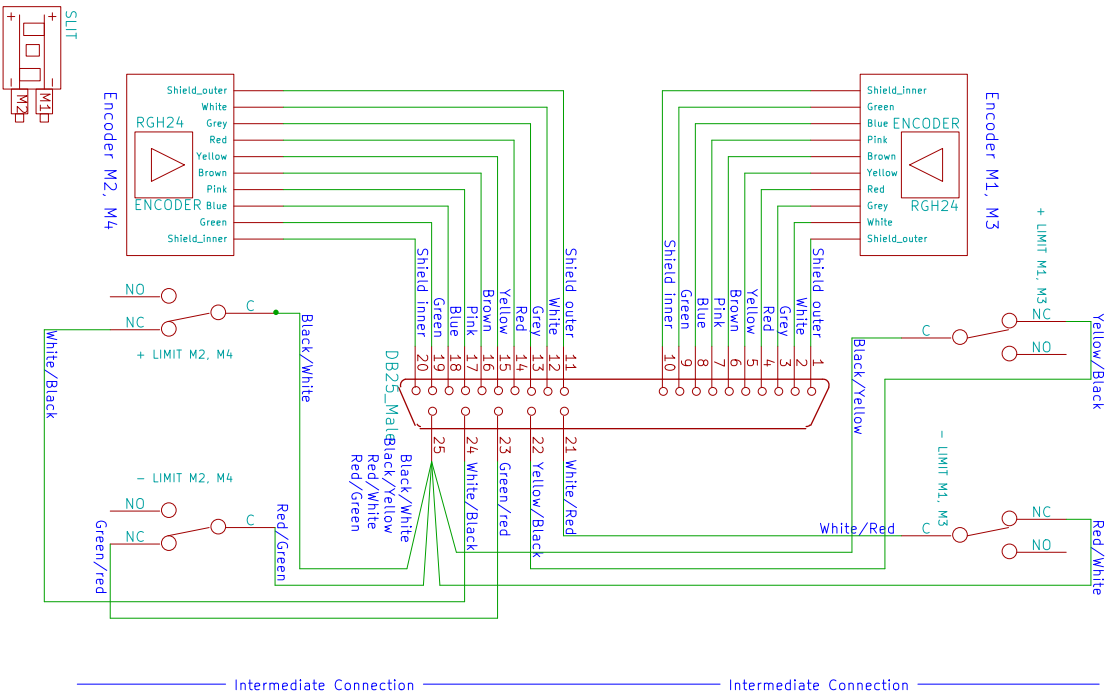
Technical Specifications

IB-C80-HV	
Aperture size	Maximum: 80 mm x 80 mm Minimum: Full overlap
Resolution	1 micron per full step
Repeatability	< 2 micron
Accuracy	± 10 micron over full range ± 1 micron or better with encoders
Vacuum	O-ring sealed, high vacuum 10-5 mbar, low outgassing materials
Mechanical dimension	341 mm x 341 mm x 118 mm 268 mm x 268 mm x 114 mm (housing only)
Mechanical connections	M6-threaded holes on the sides as shown on the drawing. LF-160 flange connections are provided on the body of both sides of the slit
Limit switches (end-of-travel)	Included as standard on all motions
Weight	≈ 12 kg
Outer surface	Anodized aluminum in color nature
Guiding	High precision internal rails and carriages
Electrical connections	Microswitches coupled to 2 motor connectors (SUB-D 15 pins male)
Motors	2 phase stepping motors

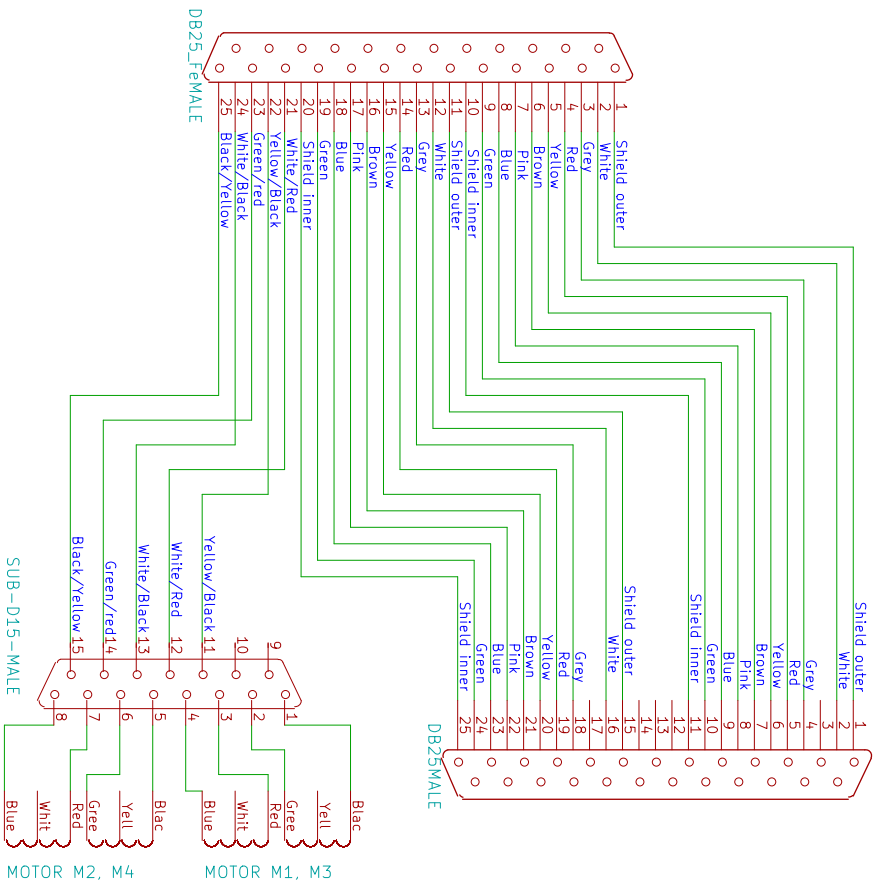


All dimensions are in mm. All Tolerances are according with ISO 2700 - 2001 unless otherwise specified. Information: Project: RC 2 mm. File: JJ-XRAY-IB-C80-HV-Silt.dwg Scale: 1:1 Date: 02.10.2012		Site: 02.10.2012 For: 0 Qty: 1 Material:	Project Name: JJ X-RAY IB-C80-HV Silt Title: IB-C80-HV Silt	Reference:
JJ X-RAY RADIATION SERVICES		Sales: A3 Drawing Number: Complete IB-C80-HV		

Neutron slit house



Motor house



JJ X. RAY Michael Andersen	
File: IB-C80-HV_V11.sch	
Sheet: /	
Title: IB-C80HV	
Size: A4	Date: 5 aug 2016
Kicad E.D.A. eschema (2013-05-16 BZR 4016) -stable	Rev 1.1
	Id: 1/1

Motor Specifications

Motor Specifications	
Number of motors	4
Motor type	2-phase stepping motor
Manufacturer	Oriental Motors
Motor make	PK245M-01B
Step angle	0.9°
Connection type	Bipolar (Serial)
Current per phase	0.85 A/phase
Resistance	6.6 Ω/phase
Inductance	15.6 mH/phase
Limit switches	'+' and '-' end of travel

Motion Mechanism	
Type of motion	Translation
Guidance	In vacuum rails and carriages
Motor step angle	0.9°/step
Motor gear	None
Lead screw pitch	0.4 mm/rev
Scale factor	1000 steps/mm
Mechanical resolution	1 μm/step
Translation calibration	1 μm/step

Recommended Driver Settings	
The motors should be run <u>at 0.85 A per phase.</u> The motors have been tested at:	
Running speeds	1000 steps/second
Starting speeds	300 steps/second
Ramp times	0,1 second

Always use “backlash correction” if available (i.e. the motor always approaches the final position from the same side). A useful backlash parameter could be 0.1 mm.

Warning:

If you are using systems/detectors that can be damaged by overexposure, where the slits are used to remove a lot of the intensity, be careful when changing aperture size since the backlash correction may result in the slit being opened significantly more than you anticipated during adjustment.

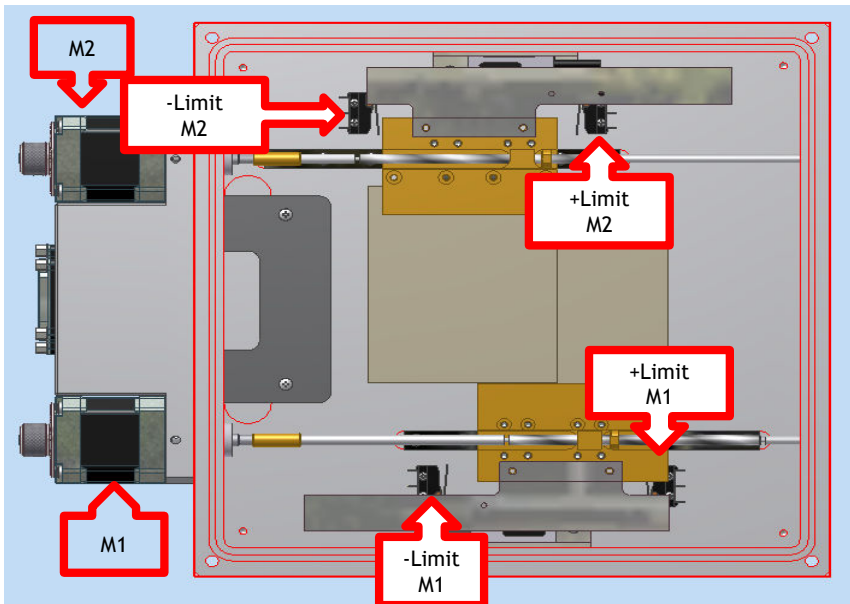
Manual Control

If for some reason, you need to move the slit blades manually it is possible to use the scale wheel attached to the backend of the motor. It is probably easiest, if this operation is done with an open cover so you can see what is going on.

The manual control is not possible at slit-versions with motor shaft encoders or slit versions mounted with IMS motors

Limit Switches

The limit switches should be wired up, if at all possible. There is always some ambiguity in the definition of the travel direction. The first time you test the slits and cables you should therefore open up the slit and test the actual functioning of the limit switches. Below we show an image that may help you in determining the appropriate limit switch setup.



Mechanical overview of limit switch position

Trouble Shooting

The most common issues and their resolutions are:

- ❏ The motor does not move when it should (it can be silent, be jittering or be making a noise).
 - The motor is not receiving enough current. Try setting the current a bit higher (for example 10%). If problems persist check with an amp-meter to see that your driver is working properly.
 - The wiring is bad. Check cabling.
 - One of the motors' phases is burnt. Check that the resistance on all phases is the same. If not, contact us to have the slit sent for repair.
 - The motor is stuck against a limit switch. Un-stick it, using the scale wheel or, if an AT-slit, open the slit (see manual control), and fix the limit switch issue.
- ❏ Restart the controller and the controller program.
- ❏ The blade system shows irreproducibility during operation.
 - The rail system may have become loose. Open the slit. Check if the rail-system is tight. Tighten screws if you need to.

Common Options

Blade options: 2, 4, 5, 10 or 20 mm.

Motors: Custom high resolution stepping motors, including IMS motors.

Encoders: Back-axle rotary encoders or internal Renishaw linear encoders.

Connectors: Adaptors to other flanges can be provided
Special preparation for enabling vacuum $<10^{-6}$ mbar

The JJ X-Ray Product Range

- ☒ Slit Systems (AIR, HV, UHV)
- ☒ Complete Beamline Solutions
- ☒ Spectrometers
- ☒ Refractive Optics (CRL)
- ☒ Foil Collimators
- ☒ Positioning

Contact JJ X-Ray A/S

If you have any questions, concerns, request for quotations or need general advice, please feel free to contact us:

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