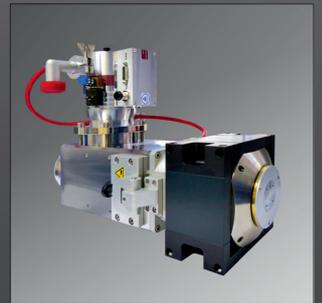




# X-RAY WorX

## Consumables and spare parts



© X-RAY WorX GmbH 2022 • Subject to change without notice

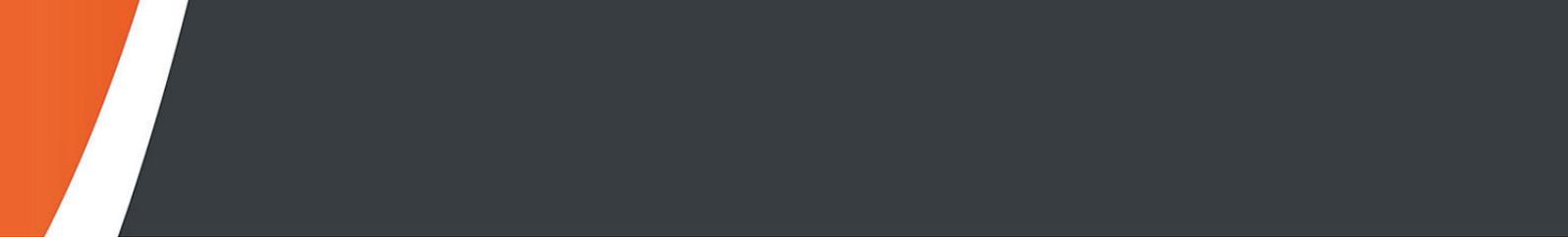
Version 2.1 / April 2022



## Content

<b>X-RAY WorX spare part service</b>	7
<b>X-ray system components</b>	8
<b>Consumables for transmission tubes</b>	10
<b>Consumables for reflection tubes</b>	11
<b>Spare parts for X-ray tubes</b>	12
Targets for transmission tubes	12
Target for reflection tubes	13
Targets for rod anode tubes	13
Measurement amplifiers	15
Grid caps, grid bases, click-in-cathodes	16
Objective	16
O-ring sets	17
Tube windows	17
<b>Spare parts for high voltage components</b>	18
High voltage generators	18
High voltage receptacles	18
High voltage cables	19
Generator test kit	20
Spare parts for high voltage generators	20
<b>Spare parts for vacuum pumps</b>	22
Pre-vacuum diaphragm pump (MVP)	22
Vacuum test set for HiPace80	22
Turbo drag pump HiPace80	23
<b>Spare parts for coolers</b>	24
X-Cooler, cooling pump, cooling agent	24
<b>Spare parts for controller</b>	26
PCBs, power supplies, Pilz PNOZ	26

<b>Maintenance tools</b>	27
Maintenance sets for MVP, IKR, and coolers	27
Diagnostic tools and spare part kits	28



# X-RAY WorX spare part service

High quality industrial equipment is a long-term investment in your business. It needs to be available at any time because it is the core of your industrial production activities and has a direct impact on your company's cash-flow. Careful preventive maintenance and scheduled replacement of consumables help to keep your X-ray machines in perfect operating conditions and guarantee a long lifetime and high availability.

X-RAY WorX offers a wide range of consumables, spare parts, trainings and documentation to help you maintaining your X-ray system in the best possible way. X-RAY WorX also supplies diagnostic tools for all components of your X-ray system, e.g. the high voltage generator test kit or the vacuum test kit. All parts and tools have been optimized for their particular purpose based on X-RAY WorX' long-year experience in microfocus X-ray technology. Please call your service experts at X-RAY WorX service department if you have any questions regarding spare parts, diagnostics or repairs. We will help you to minimize downtime and get you back on the road in next to no time.

We compiled the most frequently used spare parts in this catalogue. Basically every part or component of your X-ray tube is available as a spare part. But most of the parts hardly ever fail or break in practice. If you are looking for a part or a component not listed here, please call your service experts at one of our service partners or directly at X-RAY WorX. We are looking forward to support you.



**Contact our service department:**

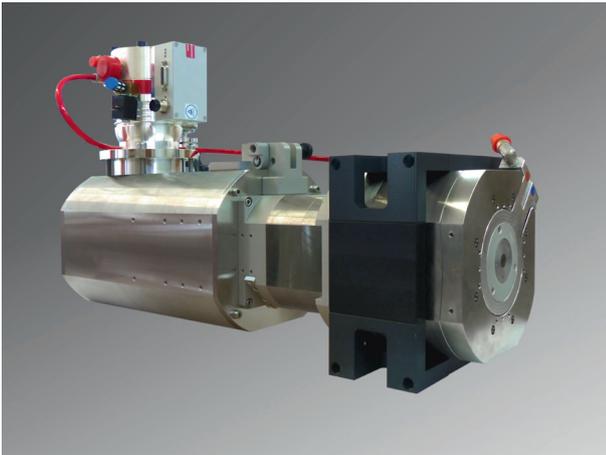
[service@x-ray-worx.com](mailto:service@x-ray-worx.com)

+49 5131 48712-60

# X-ray system components

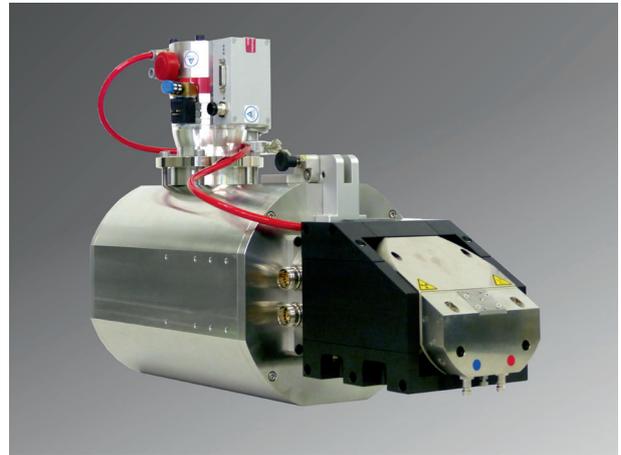
## Spare parts for X-ray tubes

Pages 12 - 17



## Spare parts for X-ray tubes

Pages 12 - 17



## High voltage generators

Page 18



## High voltage cables

Page 19



## Spare parts for coolers

Page 24



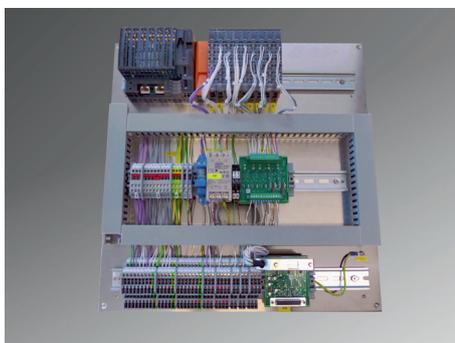
## Spare parts for vacuum pumps

Page 22



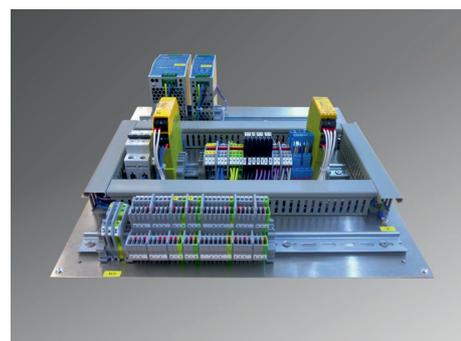
## XCU

Page 26



## XPU

Page 26



## XQA

Page 26



# Consumables for transmission tubes



**High voltage cables**  
Page 19



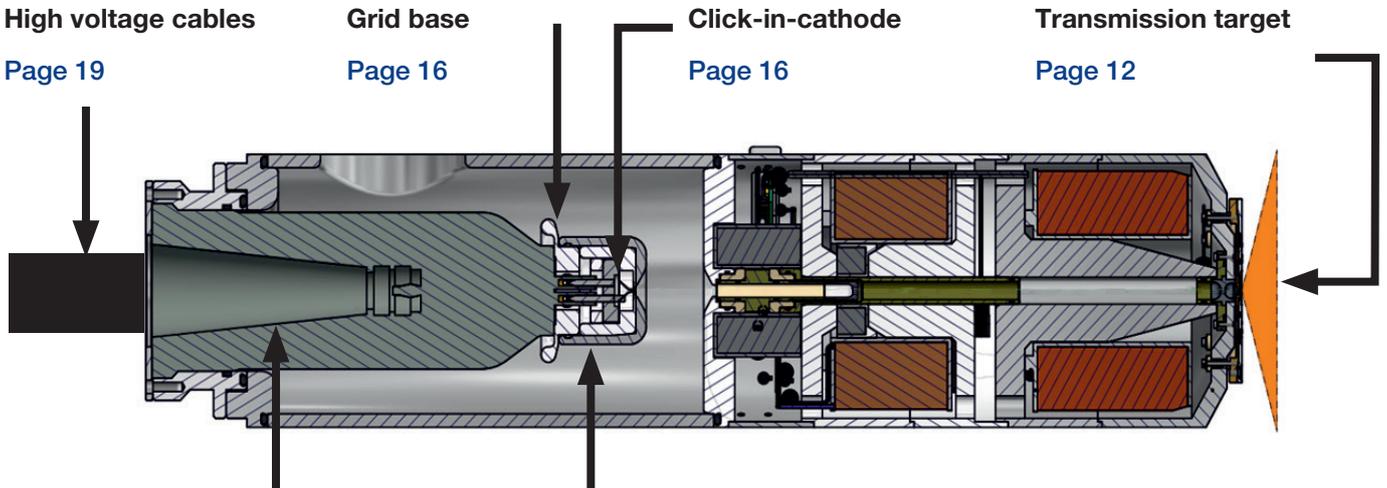
**Grid base**  
Page 16



**Click-in-cathode**  
Page 16



**Transmission target**  
Page 12



**High voltage receptacle**  
Page 18

**Grid cap**  
Page 16

**O-ring sets**  
Page 17



# Consumables for reflection tubes

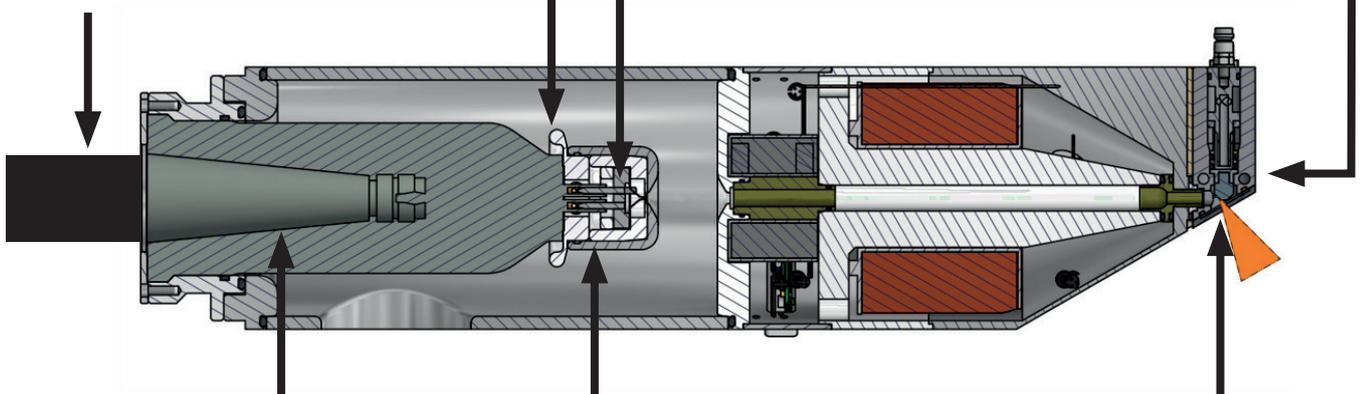


**High voltage cables**  
Page 19

**Grid base**  
Page 16

**Click-in-cathode**  
Page 16

**Reflection target**  
Page 13



**High voltage receptacle**  
Page 18

**Grid cap**  
Page 16

**O-ring sets**  
Page 17

**Tube window**  
Page 17



# Spare parts for X-ray tubes



## Targets for transmission tubes

Description	Item No.
<p><b>High Brightness</b> transmission target for product lines <i>TC</i>, <i>TCHR</i> and <i>TCNF</i></p> <ul style="list-style-type: none"> <li>▶ 6 microns tungsten layer on 250 microns beryllium substrate</li> <li>▶ Target power: max. 10 watt</li> </ul>	401 000 580
<p><b>High Energy</b> transmission target for all transmission tubes</p> <ul style="list-style-type: none"> <li>▶ 6 microns tungsten layer on 300 microns diamond substrate</li> <li>▶ Target power: max. 25 watt</li> <li>▶ Target power: max. 50 watt (with cooling of transmission target)</li> </ul>	401 000 590
<p><b>High Resolution Diamond</b> transmission target for product lines <i>TC</i>, <i>TCHE</i>, and <i>TCNF</i></p> <ul style="list-style-type: none"> <li>▶ 2 microns tungsten layer on 300 microns diamond substrate</li> <li>▶ Target power: max. 25 watt</li> <li>▶ Target power: max. 50 watt (with cooling of transmission target)</li> </ul>	401 000 595
<p><b>High Resolution</b> transmission target for product lines <i>TC</i>, <i>TCHE</i>, and <i>TCNF</i></p> <ul style="list-style-type: none"> <li>▶ 2 microns tungsten layer on 250 microns beryllium substrate</li> <li>▶ JIMA resolution: min. 0.5 micron</li> <li>▶ Target power: max. 10 watt</li> </ul>	401 000 585
Target tool for rotation of transmission targets	409 000 250

## Target for reflection tubes



- ▶ Reflection targets
- ▶ Including set of O-ring sealings: 2 pieces 10.00 x 2.00, 1 piece 12.00 x 2.00

Description	Item No.
Reflection target W (tungsten) for product lines <i>SE</i> and <i>CT</i>	401 000 645
Reflection target W (tungsten) for product line <i>CT Plus</i>	401 000 665

## Targets for rod anode tubes



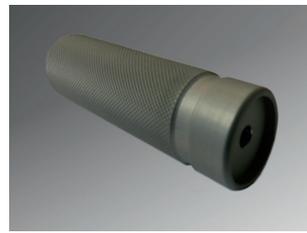
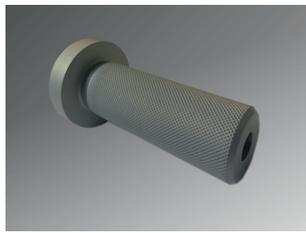
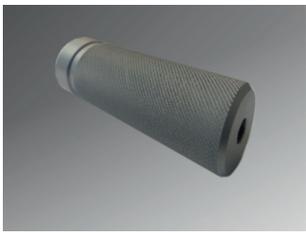
- ▶ Panoramic and reflection targets for rod anode tubes

Description	Item No.
Panoramic target P1 for tubes of product line <i>RAC</i> <ul style="list-style-type: none"> <li>▶ Rod anode with diameter 15 mm</li> <li>▶ Target angle: 20°</li> <li>▶ Including O-ring sealing: 1 piece 10.00 x 1.50 (high temperature)</li> </ul>	401 000 702
Panoramic target P1 for tubes of product line <i>RAC</i> <ul style="list-style-type: none"> <li>▶ Rod anode with diameter 25 mm</li> <li>▶ Target angle: 20°</li> <li>▶ Including O-ring sealing: 1 piece 12.00 x 2.00</li> </ul>	401 000 750
Panoramic target P1 for tubes of product line <i>RAC</i> <ul style="list-style-type: none"> <li>▶ Rod anode with diameter 45 mm</li> <li>▶ Target angle: 20°</li> <li>▶ Including O-ring sealings: 2 pieces 25.00 x 2.00, 1 piece 27.00 x 2.00</li> </ul>	401 000 705
Panoramic target P1 for tubes of product line <i>RAC Superfocus</i> <ul style="list-style-type: none"> <li>▶ Rod anode with 70 mm diameter</li> <li>▶ Target angle: 20°</li> <li>▶ Including O-ring sealings: 1 piece 11.00 x 2.00, 2 pieces 11.00 x 1.50</li> </ul>	401 000 710

## Targets for rod anode tubes

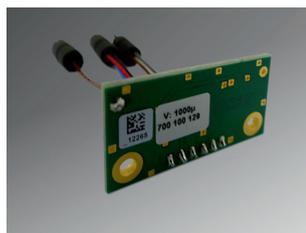
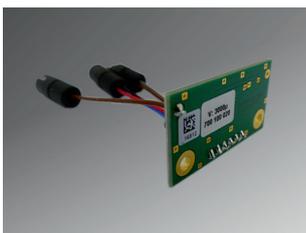
Description	Item No.
Panoramic target P2 for tubes of product line <i>RAC</i> <ul style="list-style-type: none"> <li>▶ Rod anode with diameter 12 mm</li> <li>▶ Including O-ring sealing: 1 piece 8.00 x 1.50 (high temperature)</li> </ul>	401 000 726
Panoramic target P2 (short) for tubes of product line <i>RAC</i> <ul style="list-style-type: none"> <li>▶ Rod anode with diameter 15 mm</li> <li>▶ Including O-ring sealing: 1 piece 10.00 x 1.50 (high temperature)</li> <li>▶ Compatible with P1 target</li> </ul>	401 000 727
Panoramic target P2 for tubes of product line <i>RAC</i> <ul style="list-style-type: none"> <li>▶ Rod anode with diameter 25 mm</li> <li>▶ Including O-ring sealing: 1 piece 12.00 x 2.00</li> <li>▶ Compatible with P1 target</li> </ul>	401 000 733
Panoramic target P2 for tubes of product line <i>RAC</i> <ul style="list-style-type: none"> <li>▶ Rod anode with diameter 45 mm</li> <li>▶ Including O-ring sealings: 2 pieces 25.00 x 2.00, 1 piece 27.00 x 2.00</li> </ul>	401 000 730
Panoramic target P2 for tubes of product line <i>RAC Superfocus</i> <ul style="list-style-type: none"> <li>▶ Rod anode with 70 mm diameter</li> <li>▶ Including O-ring sealings: 2 pieces 11.00 x 1.50, 1 piece 11.00 x 2.00</li> </ul>	401 000 736
Reflection target P3 for tubes of product line <i>RAC</i> <ul style="list-style-type: none"> <li>▶ Rod anode with diameter 15 mm</li> <li>▶ Target angle: 20°</li> <li>▶ Including O-ring sealing: 1 piece 10.00 x 1.50 (high temperature)</li> </ul>	401 000 686
Reflection target P3 for tubes of product line <i>RAC</i> <ul style="list-style-type: none"> <li>▶ Rod anode with diameter 25 mm</li> <li>▶ Target angle: 20°</li> <li>▶ Including O-ring sealing: 1 piece 12.00 x 2.00</li> </ul>	401 000 692
Reflection target P3 for tubes of product line <i>RAC</i> <ul style="list-style-type: none"> <li>▶ Rod anode with diameter 45 mm</li> <li>▶ Target angle: 20°</li> <li>▶ Including O-ring sealing: 2 pieces 25.00 x 2.00, 1 piece 27.00 x 2.00</li> </ul>	401 000 690
Reflection target P3 for tubes of product line <i>RAC Superfocus</i> <ul style="list-style-type: none"> <li>▶ Rod anode with diameter 70 mm</li> <li>▶ Target angle: 10°</li> <li>▶ Including O-ring sealings: 2 pieces 10.00 x 2.00, 1 piece 12.00 x 2.00</li> <li>▶ Suitable for rod anodes with target rotation device</li> </ul>	401 000 696

## Target tools for rod anode tubes



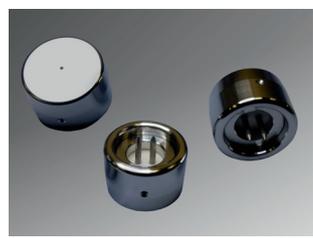
Description	Item No.
Target tool 25 mm for tubes of product line <i>RAC</i> <ul style="list-style-type: none"> <li>▶ Rod anode with diameter 25 mm</li> <li>▶ Special tool to rotate, remove, and align panoramic and reflection targets</li> </ul>	700 000 247
Target tool 45 mm for tubes of product line <i>RAC</i> <ul style="list-style-type: none"> <li>▶ Rod anode with diameter 45 mm</li> <li>▶ Special tool to rotate, remove, and align panoramic and reflection targets</li> </ul>	700 000 261
Target tool 70 mm for tubes of product line <i>RAC Superfocus</i> <ul style="list-style-type: none"> <li>▶ Rod anode with diameter 70 mm</li> <li>▶ Special tool to rotate, remove, and align panoramic targets</li> </ul>	700 000 535

## Measurement amplifiers



Description	Item No.
Measurement amplifier 350 µA for product lines <i>T</i> and <i>RA</i>	700 100 018
Measurement amplifier 350 µA for product lines <i>TC</i> , <i>RAC</i> , and <i>RAC Superfocus</i>	700 100 019
Measurement amplifier 3000 µA for product lines <i>SE</i> and <i>CT</i>	700 100 020
Measurement amplifier 1000 µA for product lines <i>THE</i> and <i>THE Plus</i>	700 100 129
Measurement amplifier 1000 µA for product lines <i>TCHE</i> , <i>TCHE Plus</i> , <i>TCNF</i> , and <i>TCNF Plus</i>	700 100 378

## Grid caps, grid bases, click-in-cathodes



### Description

### Item No.

RTU filament V2 click-in-cathode, 1 piece

401 000 024

RTU filament V2 click-in-cathode, box of 6 pieces

401 000 025

Grid base, revision 4, not compatible with receptacles that were delivered with grid base revision 5

401 000 370

Grid base, revision 5, not compatible with receptacles that were delivered with grid base revision 4 or earlier

401 000 372

Grid base 300 kV for X-RAY WorX tubes with 300 kV

401 000 373

Grid cap for X-RAY WorX tubes up to 240 kV

401 000 371

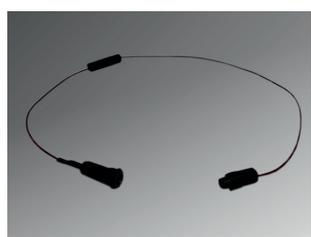
Grid cap for X-RAY WorX tubes with 300 kV

401 000 374

Grid cap type 2 for X-RAY WorX tubes with 300 kV

401 000 376

## Objective



### Description

### Item No.

Maintenance set cables objective

401 000 050

- ▶ For product lines *SE* and *CT*
- ▶ Including target cables: 1 x 15 cm, 1 x 30 cm, and 1 x pair connectors 3-pin

Objective aperture 5 mm

401 000 040

- ▶ For product lines *SE* and *CT*
- ▶ Including O-ring sealings: 2 pieces 14.00 x 2.50

## O-ring sets



- ▶ Set of O-rings, assortment of different sizes for different product lines.
- ▶ **The list below shows the O-ring sets for the most popular models. If you need another O-ring set, please contact our service department. We can provide various sets of O-rings.**

Description	Item No.
O-ring set for <i>XWT-1xx-T/THE</i>	401 000 300
O-ring set for <i>XWT-1xx-TCNF</i>	401 000 324
O-ring set for <i>XWT-1xx-TCHE Plus</i>	401 000 322
O-ring set for <i>XWT-2xx-T/THE</i>	401 000 310
O-ring set for <i>XWT-2xx-SE/CT</i>	401 000 311
O-ring set for <i>XWT-300-THE Plus</i>	401 000 009
O-ring set for <i>XWT-300-SE/CT</i>	401 000 317
Lithelen grease, injector 2 g	403 000 101

## Tube windows



- ▶ Tube windows for tubes with reflection target
- ▶ Diameter: 26 mm
- ▶ Thickness: 1 mm

Description	Item No.
Tube window aluminum for tubes of product lines <i>SE, CT, XC</i> , and <i>RAC Superfocus</i> ▶ Including O-ring sealing: 20.00 x 2.00 (high temperature)	401 000 150
Tube window beryllium for tubes of product lines <i>SE, CT, XC</i> , and <i>RAC Superfocus</i> ▶ Including O-ring sealing: 20.00 x 2.00 (high temperature)	401 000 155
Tube window beryllium for tubes of product line <i>CT Plus</i> ▶ Surface polished ▶ Including C-ring metal sealing	401 000 156

# Spare parts for high voltage components

## High voltage generators



Description	Item No.
High voltage generator, 160 kV, 1 mA	405 000 010
High voltage generator, 160 kV, 3 mA	405 000 011
High voltage generator, 190 kV, 3 mA	405 000 540
High voltage generator, 225 kV, 1 mA	405 000 021
High voltage generator, 225 kV, 3 mA	405 000 020
High voltage generator, 240 kV, 3 mA	405 000 550
High voltage generator, 250 kV, 3 mA	405 000 725
High voltage generator, 300 kV, 3 mA	405 000 557

## High voltage receptacles



- ▶ High voltage receptacles with grid base version 5
- ▶ Compatible with all X-RAY WorX grid caps
- ▶ Cured and dust-proof packed

Description	Item No.
High voltage receptacle, 160 kV, R24	401 000 230
High voltage receptacle, 190 kV, R24	401 000 235
High voltage receptacle, 225 kV, R30	401 000 240
High voltage receptacle, 240 kV, R30	401 000 245
High voltage receptacle, 300 kV, R30	401 000 250

## High voltage cables



- ▶ High voltage (HV-) cables of different lengths and angles
- ▶ **The list below shows the most popular HV-cables. If you need another HV-cable, please contact our service department. We can provide various HV-cables with different lengths and plug angles**
- ▶ **Plugs are listed with generator side / tube side angles**

Description	Item No.
HV-cable 160 kV, 5 m, 90°/180°	406 000 020
HV-cable 160 kV, 5 m, 90°/90°	406 000 010
HV-cable 160 kV, 8 m, 90°/180°	406 000 440
HV-cable 190 kV, 5 m, 90°/180°	406 000 274
HV-cable 190k V, 5 m, 90°/90°	406 000 272
HV-cable 190 kV, 8 m, 90°/180°	406 000 530
HV-cable 225 kV, 5 m, 90°/180°	406 000 230
HV-cable 225 kV, 5 m, 90°/90°	406 000 220
HV-cable 225 kV, 8 m, 90°/180°	406 000 330
HV-cable 225 kV, 10 m, 90°/180°	406 000 260
HV-cable 240 kV, 5 m, R28 180°/R30 90°	406 000 300
HV-cable 240 kV, 8 m, R28 180°/R30 90°	406 000 345
HV-cable 240 kV, 10 m, R28 180°/R30 90°	406 000 430
HV-cable 300 kV, 5 m, 90°/180°	406 000 401
HV-cable 300 kV, 8 m, 90°/180°	406 000 407
Silicon grease for high voltage plugs, 100 g collapsible tube	401 000 100

## Generator test kit



### Description

### Item No.

Generator test kit

405 000 004

- ▶ Equipment for diagnostics and measurement of high voltage generators delivered with X-RAY WorX X-ray tubes
- ▶ Support for all generators of product line Gulmay UC
- ▶ Including generator control box, generator test adapter with measurement box, generator breakout box, and manual in hard-case

Generator dummy plug, R24

405 000 001

- ▶ For measurement of high voltage at generators Gulmay UC160 and UC190

Generator dummy plug, R28

405 000 005

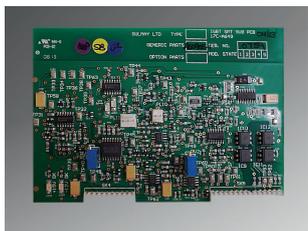
- ▶ For measurement of high voltage at generators Gulmay UC240

Generator dummy plug, R30

405 000 002

- ▶ For measurement of high voltage at generators Gulmay UC225 and UC300

## Spare parts for high voltage generators



### Description

### Item No.

UF control PCB (15C-A394)

405 000 200

IGBT power PCB (17C-A278), UC generator mainboard

405 000 260

IGBT sub PCB (17C-A278)

405 000 240

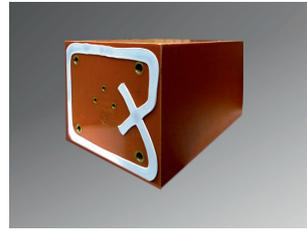
IGBT drive PCB (17C-A300)

405 000 250

UF PSU PCB (15C-A437)

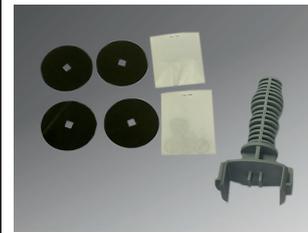
405 000 230

## Spare parts for high voltage generators



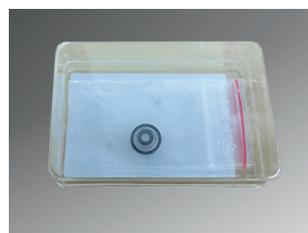
Description	Item No.
Regulated filament PCB (15C-A192A)	405 000 220
Grid drive PCB (15C-A318)	405 000 210
Filament transformer for UC160	405 000 150
Filament transformer for UC190	405 000 170
Filament transformer for UC240	405 000 186
Filament transformer for UC225	405 000 190
Filament transformer for UC300	405 000 196
Grid transformer for UC160	405 000 100
Grid transformer for UC190	405 000 160
Grid transformer for UC225	405 000 180
Grid transformer for UC240	405 000 185
Grid transformer for UC300	405 000 195
Tank gasket for UC160 and UC100	405 000 110
Tank gasket for UC190 and UC225	405 000 360
Tank gasket for UC300	405 000 365

# Spare parts for vacuum pumps

Pre-vacuum diaphragm pump (MVP)			
			
Description			Item No.
Pre-vacuum diaphragm pump MVP			300 000 236
Maintenance set for diaphragm pump MVP, including:			403 000 120
<ul style="list-style-type: none"> <li>▶ Diaphragms, 4 pieces</li> <li>▶ Valve seals, 8 pieces</li> <li>▶ Diaphragm key</li> <li>▶ Sealing ring for silencer</li> </ul>			
Silencer for diaphragm pump MVP			403 000 130
Banjo bolt for diaphragm pump MVP			403 000 140
Usit sealing ring for diaphragm pump MVP			403 000 150
Diaphragm key - service tool for diaphragm pump MVP			403 000 160

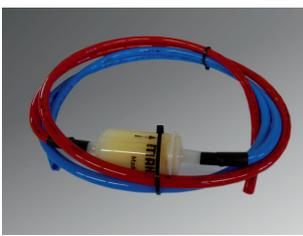
Vacuum test set for HiPace80			
			
Description			Item No.
Vacuum test set, including:			403 000 370
<ul style="list-style-type: none"> <li>▶ Adapter DN 63 to DN 25</li> <li>▶ Centering ring DN 63</li> <li>▶ Double claw clamp, DN 63-250 ISO-K, 4 pieces</li> <li>▶ Centering ring DN 25</li> <li>▶ Clamp DN 25</li> </ul>			

## Turbo drag pump HiPace80



Description	Item No.
Turbo drag pump HiPace80 including electronic drive unit TC110	300 000 100
TC110 controller for HiPace80 including programming	403 000 312
Vacuum gauge IKR for turbo drag pump HiPace80	300 000 103
Repair set for vacuum gauge IKR, including: <ul style="list-style-type: none"> <li>▶ Support ring</li> <li>▶ O-ring FPM75 10.82 x 1.78</li> <li>▶ Set of ignition aids, 3 pieces</li> <li>▶ Anode (complete)</li> </ul>	403 000 280
Extended repair set for vacuum gauge IKR, including: <ul style="list-style-type: none"> <li>▶ Support ring</li> <li>▶ O-ring FPM75 10.82 x 1.78</li> <li>▶ Mounting tool for ignition aid</li> <li>▶ Set of ignition aids, 3 pieces</li> <li>▶ Anode (complete)</li> </ul>	403 000 285
Maintenance set for vacuum gauge IKR, including: <ul style="list-style-type: none"> <li>▶ Support ring</li> <li>▶ O-ring FPM75 10.82 x 1.78</li> <li>▶ Set of ignition aids, 3 pieces</li> </ul>	403 000 281
Set of ignition aids for IKR, 10 pieces	403 000 282
Mounting tool for ignition aid	403 000 283
Operating fluid reservoir for HiPace80	403 000 311
Wrench for operating fluid reservoir for HiPace80	403 000 303
HPU 001 hand-held programming unit <ul style="list-style-type: none"> <li>▶ For turbo drag pump HiPace 80</li> <li>▶ Control and monitoring of pump parameters</li> </ul>	403 000 290

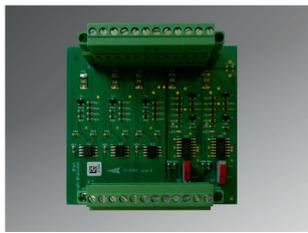
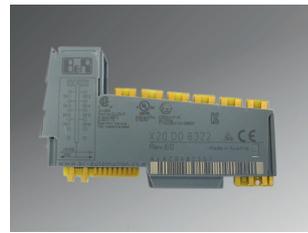
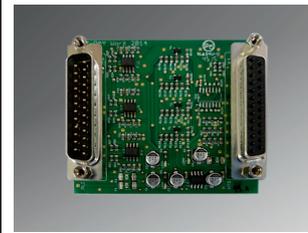
# Spare parts for coolers

X-Cooler, cooling pump, cooling agent			
			
Description	Item No.		
<p>Cooling unit X-Cooler 600</p> <ul style="list-style-type: none"> <li>▶ Support of cooling elements for reflection target, transmission target, tube head, or turbo pump</li> <li>▶ With flow-meter</li> <li>▶ Including hoses, couplings, and cooling agent</li> </ul>	409 000 005		
<p>Cooling unit X-Cooler 1200</p> <ul style="list-style-type: none"> <li>▶ For X-RAY WorX product lines <i>TCNF</i> and <i>TCNF Plus</i></li> <li>▶ Peltier-type chiller with cooling hoses and cooling agent</li> <li>▶ Incl. Warning Lamp Monitor PCB V 4.0, set of connectors, and cables (W1.30 and W1.31)</li> <li>▶ Incl. Short circuit breaker FAZ-C8/2</li> </ul>	409 000 080		
<p>Cooling unit X-Cooler 1500</p> <ul style="list-style-type: none"> <li>▶ For X-RAY WorX product line <i>CT Plus</i></li> <li>▶ Peltier-type chiller with cooling hoses and cooling agent</li> <li>▶ Incl. Warning Lamp Monitor PCB V 4.0, set of connectors, and cables (W1.30 and W1.31)</li> </ul>	409 000 085		
<p>Cooling pump for X-Cooler 600</p>	409 000 160		
<p>Cooling agent 1 liter bottle</p> <ul style="list-style-type: none"> <li>▶ Anti-corrosive cooling agent for X-Cooler 600 and X-Cooler 800</li> <li>▶ Application undiluted</li> </ul>	409 000 180		
<p>Cooling agent 5 liter bottle</p> <ul style="list-style-type: none"> <li>▶ Anti-corrosive cooling agent for X-Cooler 600 and X-Cooler 800</li> <li>▶ Application undiluted</li> </ul>	409 000 183		
<p>Cooling liquid filter for X-Cooler 600 and X-Cooler 800</p>	409 000 015		

## X-Cooler, cooling pump, cooling agent

Description	Item No.
Cooling liquid filter for X-Cooler 600 and X-Cooler 800	409 000 015
Flow-meter for X-Cooler 600 and X-Cooler 800	409 000 010
Maintenance set for X-Cooler 600 and X-Cooler 800 <ul style="list-style-type: none"><li>▶ For cleaning of the cooling circuit</li><li>▶ Hose with filter and connectors</li></ul>	409 000 016
Cooling hoses for tube head cooling or target cooling, 10 m, including standard couplings	409 000 510
Quick coupling for cooling hose	409 000 435

# Spare parts for controller

PCBs, power supplies, Pilz PNOZ			
			
Description	Item No.		
Warning lamp monitor PCB, version 4.0, revision 2, with LED support	402 000 610		
Generator interface PCB, version 1.5 for Gulmay UC	300 000 165		
Generator interface PCB, version 1.5 for Spellman XRF160N80	300 000 387		
Power supply 24 V, 5 A, 120 W, spare part for XPSU1 on XPU	402 000 602		
Power supply 24 V, 10 A, 240 W, spare part for XPSU3 on XPU	402 000 600		
Power supply (focusing and centering) 1.5 A and +/-1.0 A	401 000 030		
Power supply (focusing and centering) 1.8 A and +/-1.0 A	300 000 327		
X20 CP1583 PLC control module ▶ Including CF memory card, I/O modules not included	300 000 231		
X20 DI8371, digital input module for PLC	300 000 130		
X20 DO8322, digital output module for PLC	300 000 129		
X20 AI4622, analogue input module for PLC	300 000 135		
X20 AO4622, analogue output module for PLC	300 000 134		
X20 AO4635, analogue output module for PLC	300 000 133		
Pilz PNOZ s4 - spare part for PNOZ 1 at XPU ▶ 2-channel safety relays, 24 V DC, 3 safety contacts, 1 auxiliary contact	402 000 470		
Pilz PNOZ X.2.8P - spare part for PNOZ 2 at XPU ▶ 2-channel safety relays, 24-240 V AC/DC, 3 safety contacts, 1 auxiliary contact	402 000 030		
Pilz PNOZ s10 - spare part for PNOZ 3 at XPU ▶ Contact expander module 24 V DC, 4 safety contacts, 1 auxiliary contact	300 000 329		
Fine-wire fuses, set	409 000 030		

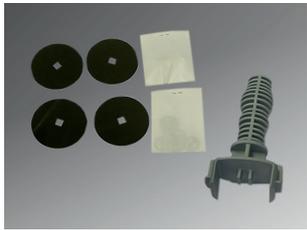
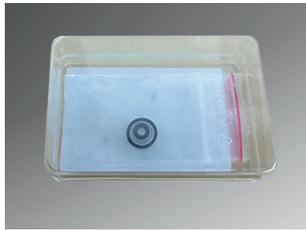
# Maintenance tools

In case of reduced capability or instable operation of your X-ray equipment a careful diagnostics has to be performed. To support your technical staff in finding the root cause reliably and quickly, X-RAY WorX has compiled a couple of efficient diagnostics tools. Diagnostics tools are available for the high voltage components, the vacuum unit, and the cooler.

Efficient maintenance and repair require a carefully selected set of standard replacement parts that is available to your field service engineers at any time. X-RAY WorX offers maintenance kits with recommended spare parts for all components of your X-ray system.

A basic spare parts kit is delivered with every X-ray tube and should reside close it. It should be replenished periodically. Additionally, standard spare parts like O-ring sets, high voltage sockets, or targets should be kept on stock to guarantee availability on short notice.

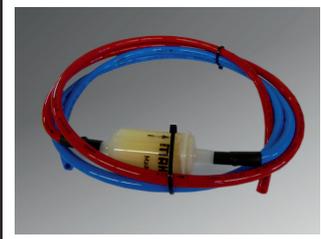
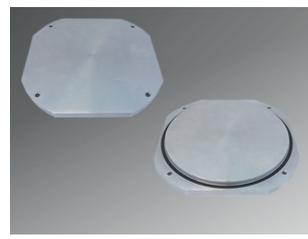
X-RAY WorX maintenance kits are reasonable bundlings of spare parts and required tools to support you in supporting your customers.

Maintenance sets for MVP, IKR, and coolers			
			
Description			Item No.
Maintenance set for diaphragm pump MVP, including: <ul style="list-style-type: none"> <li>▶ Diaphragms, 4 pieces</li> <li>▶ Valve seals, 8 pieces</li> <li>▶ Diaphragm key</li> <li>▶ Sealing ring for silencer</li> </ul>			403 000 120
Repair set for vacuum gauge IKR, including: <ul style="list-style-type: none"> <li>▶ Support ring</li> <li>▶ O-ring FPM75 10.82 x 1.78</li> <li>▶ Set of ignition aids, 3 pieces</li> <li>▶ Anode (complete)</li> </ul>			403 000 280
Extended repair set for vacuum gauge IKR, including: <ul style="list-style-type: none"> <li>▶ Support ring</li> <li>▶ O-ring FPM 10.82 x 1.78</li> <li>▶ Mounting tool for ignition aid</li> <li>▶ Set of ignition aids, 3 pieces</li> <li>▶ Anode (complete)</li> </ul>			403 000 285

## Maintenance sets for MVP, IKR, and coolers

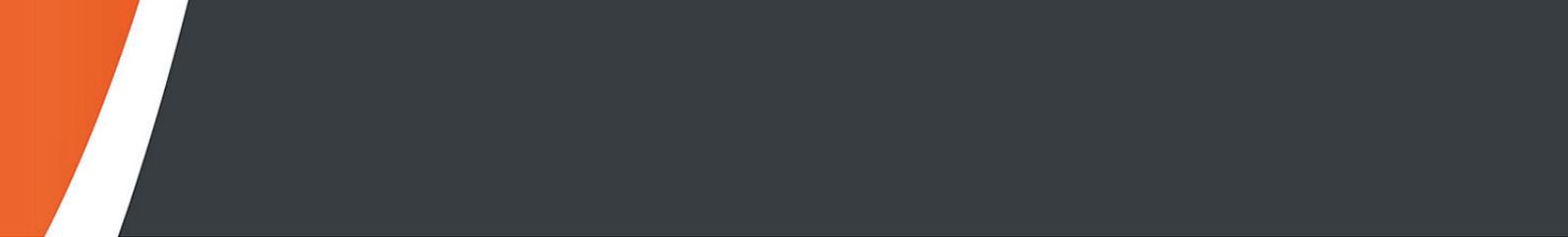
Description	Item No.
Maintenance set X-Cooler ▶ For cleaning the cooling circuit      ▶ Hose with filter and connectors	409 000 016

## Diagnostic tools and spare part kits



Description	Item No.
Anode blind plate for vacuum testing of tubes with 100 kV, 160 kV, or 190 kV	403 000 325
Anode blind plate for vacuum testing of tubes with 225 kV or 240 kV	403 000 320
Anode blind plate for vacuum testing of tubes with 300 kV	403 000 326
Vacuum test set, including: ▶ Adapter DN 63 to DN 25      ▶ Centering ring DN 63 ▶ Double claw clamp, DN 63-250 ISO-K, 4 pieces      ▶ Centering ring DN 25 ▶ Clamp DN 25	403 000 370
Generator test kit, including: ▶ Equipment for diagnostics and measurement of high voltage generators delivered with X-RAY WorX X-ray tubes ▶ Support for all generators of product line Gulmay UC ▶ Including generator control box, generator test adapter with measurement box, generator breakout box, and manual in hard-case	405 000 004
Spare part case for tubes of product lines <i>SE</i> and <i>CT</i> with 225 kV and 240 kV	409 000 502
Spare parts case for tubes of product lines <i>T</i> and <i>THE</i> with 160 kV and 190 kV	409 000 503
Spare parts case for tubes of product lines <i>T</i> and <i>THE</i> with 225 kV and 240 kV	409 000 504









**X-RAY WorX GmbH**

Siemensstraße 26  
D-30827 Garbsen  
Germany

Tel. +49 5131 48712-60

[info@x-ray-worx.com](mailto:info@x-ray-worx.com)

[www.x-ray-worx.com](http://www.x-ray-worx.com)