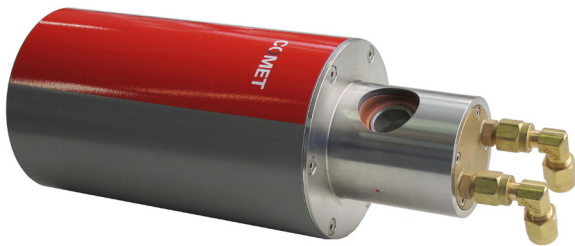


MXR-165



Product Description

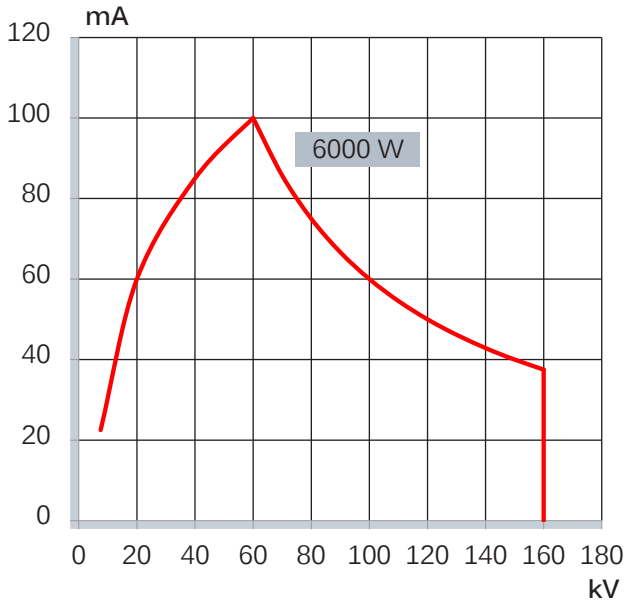
The MXR-165 is an unipolar water-cooled tube assembly with integrated radiation protection. It comprises a single focal spot, a tungsten anode and a directional beam. The tube is specifically designed for non-destructive imaging applications.

Product Specifications

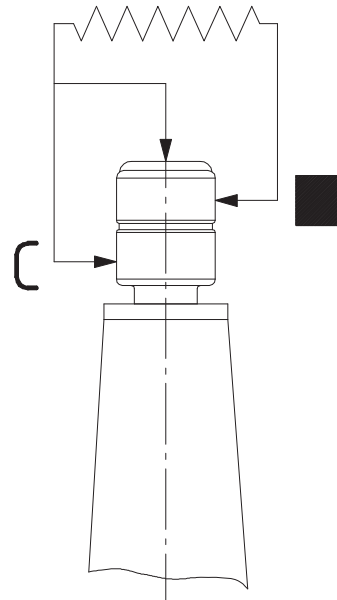
Nominal tube voltage.....	160 kV
Continuous rating.....	6000 W
Focal spot acc. EN 12543.....	d = 5.5 mm
Focal spot acc. ASTM E1165-12.....	N/A
Filament current, max.	4.2 A
Filament voltage, typical.....	5.5 V
Inherent filtration.....	4 + 0.3 / -0 mm Be
Target material.....	W
Target angle.....	30°
Radiation coverage.....	50°
Leakage radiation, max. at loading factors in 1m distance	2.5 mSv/h (160 kV; 37.5 mA)
Weight.....	9.3 kg
Terminal type	R24
Gapping spring-loaded HV-cable.....	2 rings visible (~7 mm)
Gapping non-spring-loaded HV-cable.....	5.5 - 6 mm
Grease quantity for HV-cable terminal.....	1.2 ml

Power rating charts

Power rating at given filament current



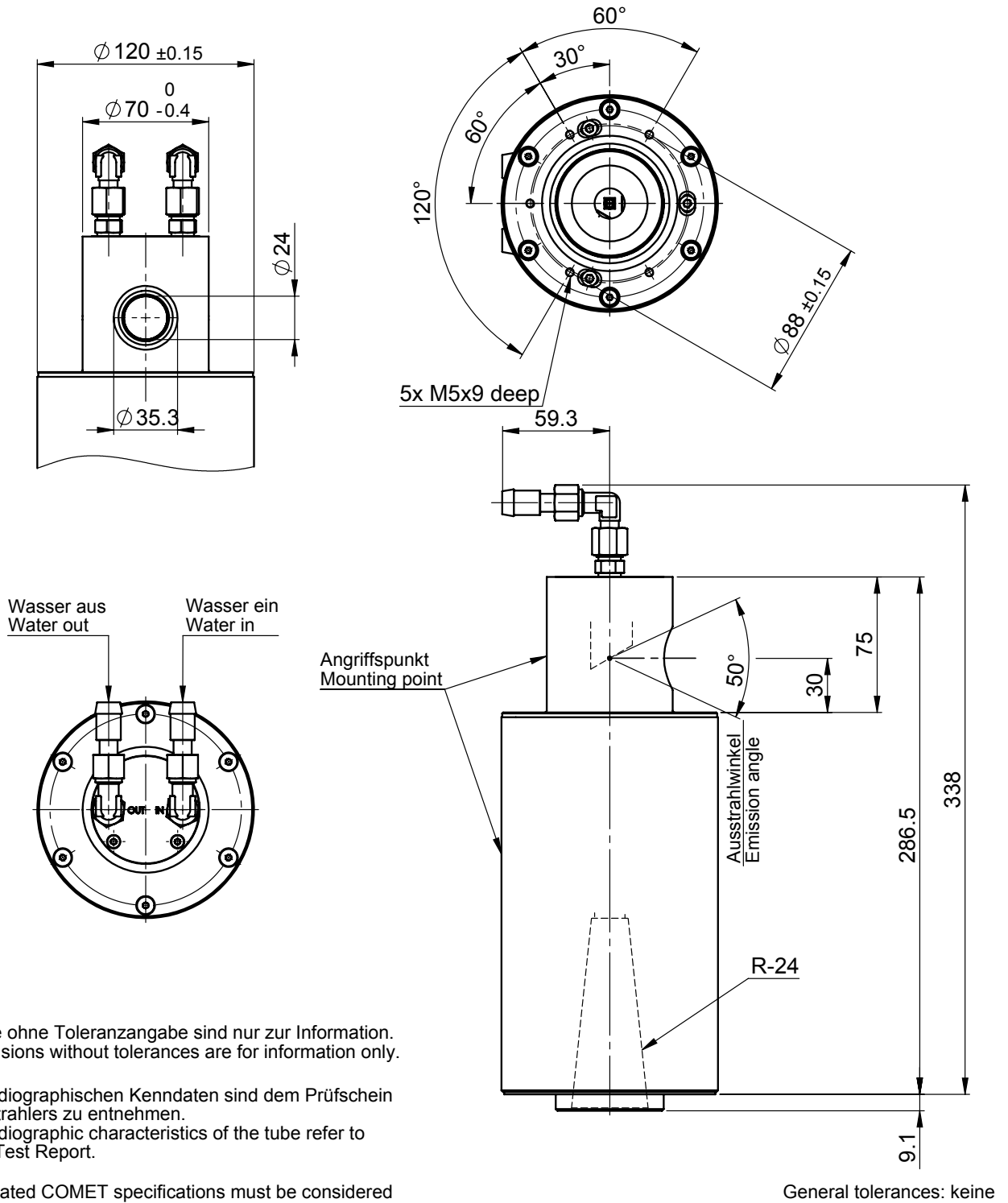
Connection of filament (C = Common)



Cooling

Cooling medium	Water
Cooling medium flow @ 4.5kW.....	> 4 l/min
Cooling medium flow @ 6.0kW.....	> 5 l/min
Cooling medium temperature at inlet, max.	30°C
Pressure at cooling medium inlet, max.	6 bar
Post-cooling time after switchoff, min.	2 min

Outline drawing



Masse ohne Toleranzangabe sind nur zur Information.
Dimensions without tolerances are for information only.

Die radiographischen Kenndaten sind dem Prüfschein des Strahlers zu entnehmen.
For radiographic characteristics of the tube refer to Final Test Report.

All related COMET specifications must be considered

General tolerances: keine

Installation instructions SERTO

Montageanleitung

Messing/Edelstahl/Stahl/
Messing chemisch vernickelt

1. Vorbereiten

Rohr rechtwinklig ablängen und entgraten. Das Rohr muss auf einer Länge von ca. 1,5 d gerade sein und eine unbeschädigte Oberfläche aufweisen. Die Verschraubung ist initia geschmiert. Die Montage und Wiedermontage grösserer Verschraubungen lässt sich durch Schmiermittel wie Öl, MoS₂, Teflon etc. weiter optimieren (Gewinde, Klemmring).

2. Rohr verstärken und einführen

Stützhülse* vorsehen für dünnwandige und/oder weiche Rohre sowie Kunststoffrohre

Kupfer ab d 10 mm mit s < 1.0 mm
ab d 12 mm mit s < 1.5 mm

Edelstahl ab d 6 mm mit s < 0.5 mm
ab d 10 mm mit s < 1.5 mm

Kunststoff alle

Auf sauberes Fluchten von Rohr und Verschraubung achten. Bis zum Anschlag einführen. Details siehe Kapitel **Rohre** im Anhang.

3. Montage

- 3.1 Anschlussmutter bis zum fühlbaren Anschlag von Hand aufschrauben.
Dazu Rohr gegen Grundteile drücken
- 3.2 Anschlussmutter mit Gabelschlüssel **1¼ Umdrehungen** anziehen. (Ein Markierungsstrich kann die Kontrolle der vorgeschriebenen Umdrehungen erleichtern.) Nippel mit einem zweiten Schlüssel gegenhalten.

4. Wiederholte Montage

Bei wiederholter Montage der gleichen Verschraubung, Anschlussmutter von Hand erneut bis zum deutlich fühlbaren Anschlag montieren und mit dem Schlüssel für die endgültige Montage mit ¼ Umdrehung anziehen.

Bei wiederholter Montage Teile schmieren.

5. Kontrolle der Montage

Kontrolle der Verformung. An der Rohrinneisseite muss ein deutlicher Wulst sichtbar sein.

Rohre*

Es sind Rohre mit sauberer, glatter Oberfläche, deren Aussendurchmesser innerhalb von ± 0.1 mm liegen, zu verwenden. (Siehe auch Tabelle «Mindestwandungen» im Anhang.)

Drehbarer Klemmring

Es ist ohne Einfluss für die Güte der Verbindung, wenn sich der Klemmring nach der Montage auf dem Rohr oder das Rohr in der Anschlussmutter drehen lässt.

Montagestützen zur Vormontage

SO 56000, rostfreier Stahl teniferiert für Edelstahl und Messing M-Programme.
SO 6000, CrNi Stahl gehärtet für Stahl.

Instructions de montage

Laiton/Acier inoxydable/Acier/
Laiton nickelé chimiquement

1. Préparation

Couper le tube à longueur et ébarber. La zone du raccord jusqu'à 1,5 d de l'extrémité du tube doit être droite et sans endommagement. Le raccord est déjà lubrifié. Le montage et le remontage des gros raccords est facilité par l'utilisation de lubrifiants comme huile, MoS₂, téflon etc. (filetage, bague de serrage).

2. Renforcer et introduire le tube

Prévoir des douilles d'appui* pour les tubes avec une paroi mince ou pour des tubes en matière plastique

Cuivre à partir de d 10 mm avec s < 1.0 mm
de d 12 mm avec s < 1.5 mm

Acier à partir inoxydable de d 6 mm avec s < 0.5 mm
de d 10 mm avec s < 1.5 mm

Plastique tous

Aligner tube et raccord.
Introduire jusqu'en butée à l'intérieur du raccord. Détails voir chapitre **tubes** dans l'appendice.

3. Déformer, desserrer

- 3.1 Visser l'écrou à la main jusqu'en butée dans le raccord, en poussant le tube.
- 3.2 Serrer l'écrou de **1¼ tours** avec une clef à fourche. (Un trait de repère peut faciliter la vérification de la rotation prescrite.) Maintenir le raccord au moyen d'une seconde clef.

4. Montage répété

Pour un montage répété du même assemblage, visser de nouveau l'écrou à la main jusqu'à ce qu'il soit bien en butée, puis le serrer définitivement de ¼ de tour à l'aide d'une clef à fourche pour obtenir un montage définitif.

Il est essentiel que les pièces soient lubrifiées lors d'assemblage répétés.

5. Contrôle du montage

A l'intérieur du tube, un bourrelet doit être clairement visible.

Tubes*

Utiliser des tubes de surface propre et lisse, avec des tolérances de ± 0.1 mm sur le diamètre extérieur. (Voir aussi le tableau «Épaisseur de paroi minimal» en appendice.)

Bague de serrage tournante

Le fait qu'il soit possible, après le montage, de tourner la bague sur le tube ou le tube au sein de l'écrou n'a aucune influence sur la qualité de l'assemblage.

Pièce de pré-montage

SO 56000, acier inoxydable tenifier, pour acier inoxydable et laiton Programme M.
SO 6000, acier CrNi trempé, pour acier.

Installation instructions

Brass/Stainless Steel/Steel/
Brass chem. nickel-plated

1. Preparation

Cut the tube to length and deburr it. The tube must be straight and free from blemishes for approximately 1,5 d from the end. The union is lubricated. Thus lubrication with lubricating oil, MoS₂, Teflon etc. is recommended for the assembly and reassembly of bigger sized unions (thread, compression ferrule).

2. Reinforcing the tube and pushing it in

Stiffener sleeves* are required to reinforce plastic tubes and thin walled tubes

Copper from d 10 mm with s < 1.0 mm
from d 12 mm with s < 1.5 mm

Stainless steel from d 6 mm with s < 0.5 mm
from d 10 mm with s < 1.5 mm

Plastic all

Align tube and union.
Insert the tube as far as the stop.
Details see chapter **tubes** in the appendix.

3. Compression, stress relieving

- 3.1 Screw on the union nut by hand until finger tight. At the same time, push the tube against the fitting.
- 3.2 Tighten down the union nut **1¼ rotation** using an open ended spanner. (Making a mark will assist in correct rotation.) Hold adaptor from turning with a second wrench.

4. Repeated fitting of the union

When refitting the same tube union, screw the union nut back on by hand until finger tight and tighten down the union nut with an open ended spanner ¼ rotation for the final fit.

In case of repeated assembly, parts must be lubricated.

5. Checking of fit

A distinct bead or deformation must be visible on the inside of the tube.

Tubes*

Tubes with a clean smooth external surface and with an outside diameter within the tolerance ± 0.1 mm should be used. (See also table «Minimum walls» in the appendix.)

Turnable compression ferrule

It is of no detriment to the efficiency of the connection if, after assembly, the ferrule can be turned on the tube, or the tube in the union nut.

Pre-assembly stud

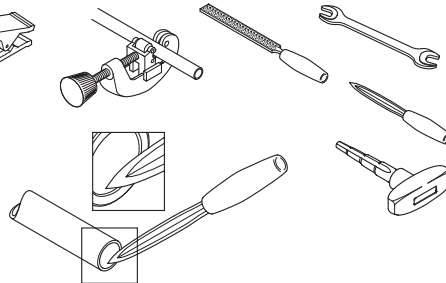
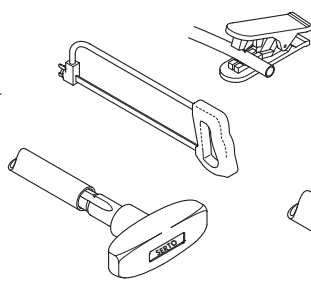
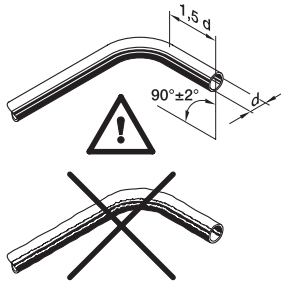
SO 56000, stainless steel, tuffride treatment, for stainless steel and brass M-Programme.
SO 6000, CrNi steel hardened, for steel.

**Montageanleitung
SERTO**

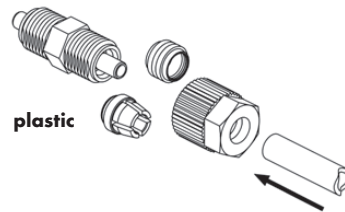
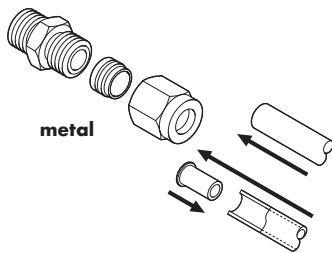
**Instructions de montage
SERTO**

**Installation instructions
SERTO**

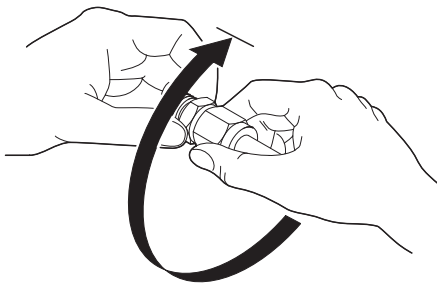
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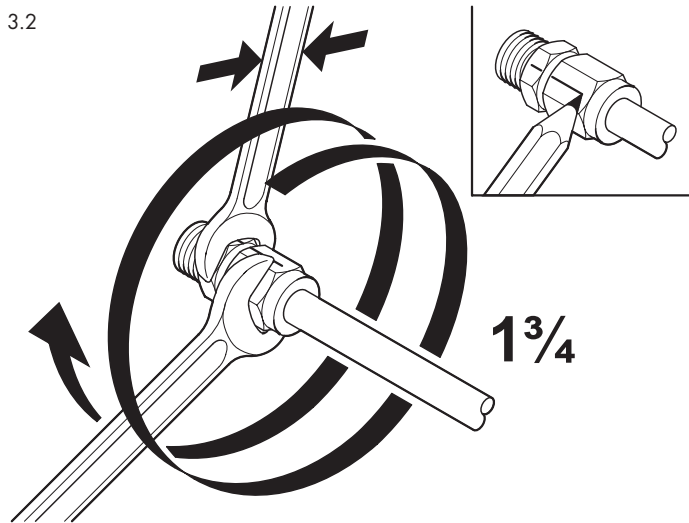
2



3.1

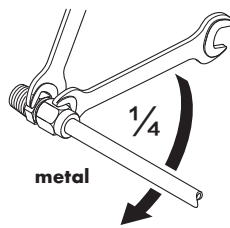
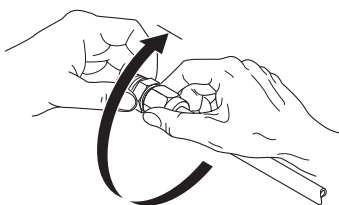


3.2

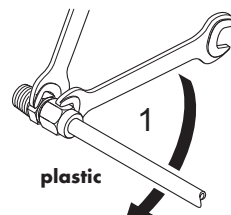


4

Wiederholte Montage
Montage répétée
Repeated fitting of the union



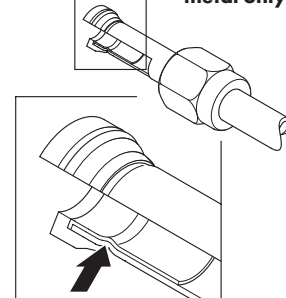
metal



plastic

5

metal only



General information

General

The control of the high voltage and the filament current as well as the design of the cooling system and the radiation protection are within the responsibility of the original equipment manufacturer (OEM). For detailed instructions refer to our „X-Ray Tube Manual“. Provisions in the generator must assure that the X-Ray tube will be protected against overcurrent, over-voltage and lack of cooling. Otherwise the tube and/or the radiation protection may be damaged and become a hazard.

Connection of the X-ray tube

High-voltage cables must be installed by trained personnel only. Please proceed with the installation as follows: Cleaning, gapping & greasing (see values page 1), assembly and maintaining. Detailed instructions can be found in our „X-Ray Tube Manual“

Cooling

The customer is in charge that the cooling circuit is properly connected to the cooling system. Prior to operating the tube, the coolant must be turned on. Make sure that the coolant flow meets the required cooling conditions. When the tube is switched off, the coolant flow must continue for at least 2 minutes in order to protect the anode and the lead protection from overheating.

Radiation protection

When installing an X-ray tube assembly into a X-ray equipment and/or operating an X-ray equipment, the responsibility for radiation protection is with the user. Compliance with local regulatory requirements and limit values must be assured. After each tube exchange, repair, modification or upgrade of the unit a radiation protection integrity should be performed. Do not modify the tube assembly itself!

Return of Goods to COMET

Prior to shipment to COMET a Field Failure Report (FFR) will be required. The completed FFR has to be added to the shipping documents. The FFR can be downloaded from: www.comet-xray.com/Service