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DATE: 2004-01-05  
UPDATE:

# FLOW SORT (PTY) LTD

## **CORRECT SEIFERT X-RAY TUBE CONNECTION PROCEDURE REVISED 2004**

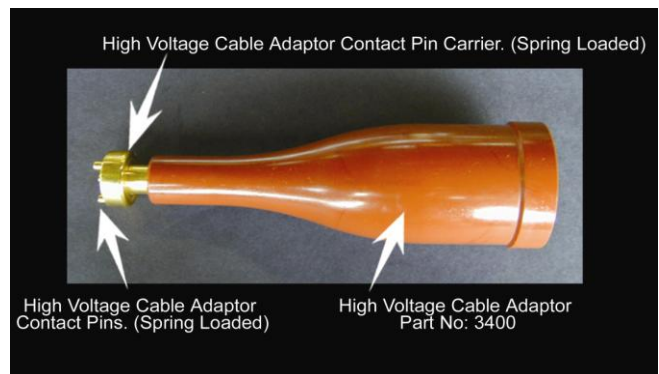
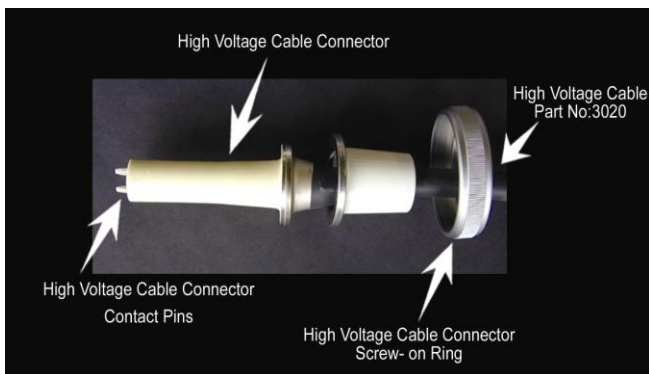
**ONLY PERSONNEL PROPERLY TRAINED AND QUALIFIED IN THE HANDLING AND MAINTENANCE OF HIGH VOLTAGE EQUIPMENT AND X-RAY GENERATING EQUIPMENT MAY CARRY OUT THE WORK HEREAFTER DESCRIBED.**

The high voltage connection from the x-ray generator to the x-ray tube is made via a high voltage cable and a special high voltage cable adaptor.

### **Rule No. 1 ABSOLUTE CLEANLINESS OF ALL HT CONNECTION PARTS**

All HT connection parts must be kept absolutely clean. For cleaning (removing “old” silicone grease), use only pure (99.9%) Alcohol applied with a flint-free cloth.

DO NOT touch High Voltage Connectors, High Voltage Cable Adaptors or X-ray tubes with your fingers – wear surgical gloves!



**Rule No. 2 ENSURE TOTAL DISPLACEMENT OF AIR BETWEEN HIGH VOLTAGE CONNECTOR AND HIGH VOLTAGE CONNECTOR ADAPTOR WITH SILICONE GREASE.**

Do NOT apply any High Voltage Silicone Grease to the outside of the High Voltage Cable Adaptor. Any silicone grease dripping onto the glass envelope of the X-ray tube will lead to premature X-ray tube failure!

Do NOT apply any grease to the High Voltage Cable Adaptor Contact Pin Carrier or to the High Voltage Cable Adaptor Contact Pins (the metal part of the High Voltage Cable Adaptor).

Silicone grease on these parts of the adaptor leads to bad connections between the High Voltage Cable Adaptor and the X-Ray Tube Contacts which in turn causes arcing and excessive heat which causes X-Ray Tube failure and High Voltage Cable Adaptor burn-out!

Use High Voltage grease ONLY on the High Voltage Cable Connector that plugs into the inside of the High Voltage Cable Adaptor. Do NOT apply any silicone grease to the inside of the High Voltage Cable Adaptor.

To ensure that the correct amount of High Voltage Silicone Grease is used we supply this grease in pre-packed accurately dosed syringes.

**Rule No. 3 Make sure that you use a total of 6 cm<sup>3</sup> (six cubic centimeters) of High Voltage Silicone Grease per High Voltage Cable / High Voltage Cable Adaptor.**

**USE ONLY SILICONE GREASE TYPE P8 SUPPLIED BY FLOW SORT (Flow Sort Part No. 3650).** Should you have been supplied previously with any other product kindly destroy it. **Flow Sort will replace it at no charge!**

**WARNING : The use of any other product will void all guarantee for x-ray tube, high voltage cable adaptor and high voltage cable!**

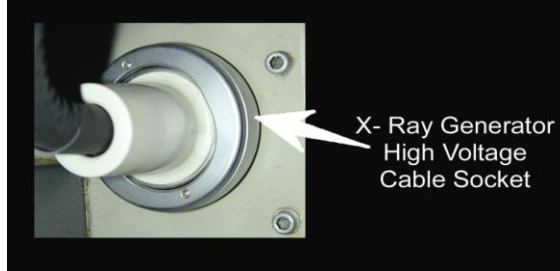
DO NOT put High Voltage Silicone Grease directly onto the High Voltage Cable Connector Pins. Ensure that there is a thick layer of silicone grease smeared around the (thin) end of the high voltage cable connector, as the excess silicone grease is automatically pushed backwards when the high voltage cable connector is plugged into the high voltage cable adaptor! Excess silicone grease is pushed out into the gap between high voltage cable connector and high voltage cable adaptor.

Ensure that the high voltage cable connector contact pins connect properly to the connection sockets inside the high voltage cable adaptor! (Align pins before pushing the high voltage cable connector into the high voltage cable adaptor).

Remember that whenever you pull a high voltage cable connector out of its high voltage cable adaptor you MUST REDO the above procedure, especially the cleaning of the inside of the high voltage cable adaptor. Simply re-inserting the high voltage cable connector would force silicone grease, now attached to the inside of the high voltage cable adaptor, down

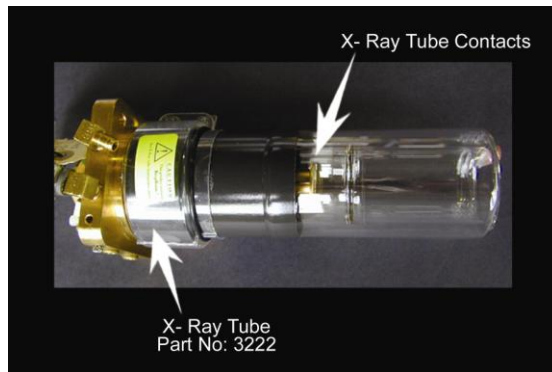
directly onto the electric contacts of the high voltage cable adaptor, which must be avoided at all costs!

On the X-ray generator side of the High Voltage Cable observe Rule No.1, then pour 10cm<sup>3</sup> of transformer oil (Shell DIALA) into the High Voltage connector socket of the X-ray generator and then plug **clean, ungreased** High Voltage Cable connector into Socket! (Excess oil will overflow and can be wiped away.)



TAKE NOTE THAT THE HIGH VOLTAGE CONNECTOR, ADAPTOR AND X-RAY TUBE CONTACTS AS WELL AS THE X-RAY GENERATOR EHT SOCKET MUST BE CLEANED AND RE-GREASED EVERY TIME THAT SUCH A CONNECTION IS UNDONE!

**Rule No. 4 SETUP THE CORRECT CONTACT PRESSURE BETWEEN THE HIGH VOLTAGE CABLE ADAPTOR AND THE X-RAY TUBE.**



The correct contact pressure of the High Voltage Cable Adaptor against the contacts of the X-ray tube is most important!

Too much pressure will lead to contact spring fatigue. This will not only destroy the High Voltage Cable Adaptor but also cause damage to the X-ray tube itself!

Too little pressure will lead to contact arcing (generating excessive heat). This will cause the contact materials to burn-out thus causing irreparable damage to the High Voltage Cable Adaptor and premature X-ray tube failure.



The correct contact pressure is obtained when the High Voltage Cable Connector Screw-On Ring is tightened to the point where the High Voltage Cable can still be pushed **3mm to 5mm** into the X-ray tube housing before the connection becomes “rigid” i.e. there is a 3mm to 5mm spring compression left in the High Voltage Cable Adaptor!  
**CAREFULLY CHECK AND RE-CHECK THIS SETTING.**

**Note:** No fixed “END-STOP-POSITION” can be set for the correct High Voltage Cable Connector Screw-On Ring. The correct position depends on the varying physical dimension of the High Voltage Cable Connectors of individual HT cables. **It is however most desirable to tighten the High Voltage Cable Connector Screw-On Ring completely against the X-ray tube housing!**

EACH CONNECTION MUST BE SET UP INDIVIDUALLY TO ENSURE THE REQUIRED **3mm to 5mm** FREE CONTACT SPRING MOVEMENT!

Only after the high voltage cable connection to the X-ray tube has been completed may the high voltage cable be fastened against the X-ray high voltage cable support bracket (Flow Sort Part No. 3224)

**Peter Wolf**