THE PANTAK THERAPAX DXT 300

the world's only microprocessor-controlled orthovoltage system, offers safety and ease-of-use while it completes your radiation oncology department's range of treatment equipment. Using the DXT 300, the radiation therapist can offer treatment without interrupting patient throughput on expensive and often overbooked accelerators.

A Range of Filters and Applicators

Eight easy-to-install filters determine the correct kV and mA settings automatically. A complete selection of fixed aperture applicator cones up to 20 x 20cm and a variable collimator are available options. Using the Therapax DXT 300, a radiation therapist can...
provide treatment easily and efficiently. Additionally, the solid-state electronics and built-in software-controlled fail-safe features provide backup protection during treatment.

**Easy to Position**

The five-motion, easy-to-position tube head reduces setup time and provides excellent positioning mobility. Electromechanical locks, mechanical rotation of the tube barrel and easy-to-see scale settings allows precise positioning. The scales indicate the tube position, which reduces setup time for repeat treatments.

**Microprocessor Control**

When the radiation therapist enters filter and applied dose into the microprocessor control. A safety dose limit and backup timer are automatically set by the computer. Treatment is initiated with a single button control. Clear and precise digital readouts give the operator dose rate and integrated dose information at all times during treatment. If the integrated dose reaches the safety dose limit, or the backup timer reaches its preset time limit, the treatment is automatically terminated. Automatic termination also occurs in the event of a malfunction of the primary system.

**Constant Potential**

The constant potential X-ray generator
maintains high stability, while the microprocessor-controlled system automatically monitors integrated dose and safety time limits. The state-of-the-art **Therapax DXT 300** can increase patient throughput while enhancing the ease and safety of your orthovoltage treatment. No other system offers this combination of safety features and ease-of-use benefits.

**Features**

- Microprocessor-based control console
- Automatic X-ray tube warm-up
- Clinical, Physics and Service operating modes
- Treatments are either dose or time controlled
- Backup timer safety system
- Encoded filters automatically select kV and mA
- Beryllium window, metal ceramic X-ray tube operates from 20kV to 300kV
- System status continually monitored
- Digital displays of all operating parameter

**Operating Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tube Voltage</td>
<td>Adjustable and displayed in 0.1kV increments</td>
</tr>
<tr>
<td>Tube Voltage Range</td>
<td>20 to 300kV</td>
</tr>
<tr>
<td>Tube Voltage Accuracy</td>
<td>To within +/- 1%</td>
</tr>
<tr>
<td>Tube Voltage Ripple</td>
<td>Less than 0.15%</td>
</tr>
<tr>
<td>Tube Voltage Repeatability</td>
<td>Better than 0.03%</td>
</tr>
<tr>
<td>Tube Current</td>
<td>Adjustable and displayed in 0.1mA increments</td>
</tr>
<tr>
<td>Tube Current Range</td>
<td>1 to 30mA</td>
</tr>
<tr>
<td>Tube Current Accuracy</td>
<td>Better than ± 1%</td>
</tr>
<tr>
<td>Tube Current Repeatability</td>
<td>Better than 0.03%</td>
</tr>
<tr>
<td>Exposure Timer</td>
<td>0 to 90 minutes, in 0.01 minute increments</td>
</tr>
<tr>
<td>Generators (bipolar)</td>
<td>High frequency Cockcroft-Walton circuitry</td>
</tr>
</tbody>
</table>
Generators (bipolar) | High frequency Cockcroft-Walton circuitry
---|---
Filament Supply | Transformer in cathode (neg.) generator supply is DC
System Protection | is provided for: excess kV, excess m, excess watts, excess temperature, coolant flow

**Power Specifications**

| Line Voltage | 208 to 480V, single-phase or phase-to-phase, +/- 10% fluctuation |
| Line Frequency | 47 to 63Hz |
| Input Power | 10kVA maximum |
| Output Power | 3kW |

**Control Console Displays**

| Dose Rate | Delivered monitor units per min. |
| Set Dose | Prescribed monitor units |
| Dose | Accumulated monitor units |
| Set Time | Prescribed treatment time |
| Time | Elapsed treatment time |
| kV | X-ray tube potential |
| mA | X-ray tube current |

**Internal Safety Controls**

| Backup Timer | Stops treatment if elapsed time exceeds set time by 5% |
| Watchdog Timer | Terminates operation if a fault occurs in the microprocessor |

**Standard Tube Specifications**
The extremely rugged X-ray tube is a state-
of-the-art metal ceramic unit consisting of a central metal cylinder with ceramic insulators at each end which support the anode and cathode assemblies. The anode is cooled by oil circulated through an oil-to-water or oil-to-air heat exchanger. The tube, rated at 320kV, is considerably smaller than tubes made from glass, which makes for a lighter and more user-friendly tube head.

<table>
<thead>
<tr>
<th>Focal Spot Size</th>
<th>5mm x 5mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anode Angle</td>
<td>30°</td>
</tr>
<tr>
<td>Inherent Filtration</td>
<td>2mm Beryllium</td>
</tr>
<tr>
<td>Beam Emission Angle</td>
<td>40°</td>
</tr>
<tr>
<td>Anode Power Dissipation</td>
<td>3.2kW maximum</td>
</tr>
<tr>
<td>Tube Dimension</td>
<td>54.6cm long, 15.2cm dia</td>
</tr>
<tr>
<td>Operating Parameters</td>
<td>10 to 100kV, 30mA</td>
</tr>
<tr>
<td></td>
<td>150kV, 20mA</td>
</tr>
<tr>
<td></td>
<td>200kV, 15mA</td>
</tr>
<tr>
<td></td>
<td>300kV, 10mA</td>
</tr>
</tbody>
</table>

### Standard Treatment Filter Set*

<table>
<thead>
<tr>
<th>Filter</th>
<th>kV</th>
<th>mA</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>75</td>
<td>29.5</td>
<td>1.65 Al</td>
</tr>
<tr>
<td>2</td>
<td>90</td>
<td>28.1</td>
<td>2.40 Al</td>
</tr>
<tr>
<td>3</td>
<td>100</td>
<td>28.8</td>
<td>3.10 Al</td>
</tr>
<tr>
<td>4</td>
<td>135</td>
<td>22.5</td>
<td>2.5 Al + 0.1 Cu</td>
</tr>
<tr>
<td>5</td>
<td>180</td>
<td>16.1</td>
<td>1.5 Al + 0.35 Cu</td>
</tr>
<tr>
<td>6</td>
<td>225</td>
<td>13.4</td>
<td>1.0 Al + 0.9 Cu</td>
</tr>
<tr>
<td>7</td>
<td>270</td>
<td>10.5</td>
<td>1.5 Al + 0.5 Cu + 0.35 Sn</td>
</tr>
<tr>
<td>8</td>
<td>300</td>
<td>10.0</td>
<td>1.5 Al + 0.25 Cu + 0.8 Sn</td>
</tr>
<tr>
<td>w.u.</td>
<td>300</td>
<td>10.0</td>
<td>5.0 Pb</td>
</tr>
</tbody>
</table>

*Other HVL values and applicators are available options

### Typical Beam Qualities and Dose Rates

<table>
<thead>
<tr>
<th>kV</th>
<th>mA</th>
<th>HVL (mm)</th>
<th>30cm FSD</th>
<th>50cm FSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>10</td>
<td>3.0 Cu</td>
<td>230</td>
<td>80</td>
</tr>
<tr>
<td>300</td>
<td>10</td>
<td>2.0 Cu</td>
<td>330</td>
<td>120</td>
</tr>
<tr>
<td>300</td>
<td>10</td>
<td>1.0 Cu</td>
<td>550</td>
<td>200</td>
</tr>
<tr>
<td>Thickness (mm)</td>
<td>Density (g/cm³)</td>
<td>Density (g/cm³)</td>
<td>Air Kerma (Gy)</td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>----------------</td>
<td>----------------</td>
<td>----------------</td>
<td></td>
</tr>
<tr>
<td>0.5 Cu</td>
<td>190</td>
<td>65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.0 Al</td>
<td>300</td>
<td>105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.0 Al</td>
<td>440</td>
<td>160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.0 Al</td>
<td>550</td>
<td>200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.0 Al</td>
<td>520</td>
<td>180</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.7 Al</td>
<td>610</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.4 Al</td>
<td>230</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.2 Al</td>
<td>380</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.1 Al</td>
<td>650</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Air kerma. These data are only approximate
The Therapax DXT 300 must be calibrated by a qualified expert before being put into clinical service.