WILNOS X-ray film markers

Figures (1 set 0 to 9 = 10 figures)  Letters (1 set A to Z = 26 letters)  Symbols (1 set = 5 symbols): full stop (.), oblique (/), hyphen (-), multiplication sign (x) and arrow (Δ).

All WILNOS X-ray Film Markers are available individually or in sets in the following designs:

a) Of fluorescent, coloured **Plexiglass with slot** for fixing onto the carrier strip.
b) Of fluorescent, coloured **Plexiglass without slot**.

<table>
<thead>
<tr>
<th>Material</th>
<th>Symbol height</th>
<th>4 mm</th>
<th>7.5 mm</th>
<th>10 mm (Standard design)</th>
<th>15 mm for energies above 1 MV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Plexiglas with slot</strong></td>
<td>List No.</td>
<td>List No.</td>
<td>List No.</td>
<td>List No.</td>
<td>List No.</td>
</tr>
<tr>
<td>10 01 12</td>
<td></td>
<td>10 01 22</td>
<td>10 01 32</td>
<td>10 01 42</td>
<td></td>
</tr>
<tr>
<td><strong>Plexiglas without slot</strong></td>
<td>List No.</td>
<td>List No.</td>
<td>List No.</td>
<td>List No.</td>
<td>List No.</td>
</tr>
<tr>
<td>10 03 12</td>
<td></td>
<td>10 03 22</td>
<td>10 03 32</td>
<td>10 03 42</td>
<td></td>
</tr>
</tbody>
</table>

When ordering, just quote the Li.-No. in order to identify symbol height and marker design.

10 01 52 **Arrow**, movable, for weld definition after grinding, of fluorescent, coloured plexiglass.

10 01 62 **Company Logo according to original**, of fluorescent, coloured plexiglass, minimum purchase quantity 3, plus non-recurring costs for manufacture of an engraving pattern.

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**Accessories for radiograph identification**

10 06 12 **Carrier Frame** of spring steel, with 4 special fixing magnets*), for assembling all the requisite film markers, symbols and I.Q.I. holder, Li.-No. 10 07 12, for films up to 10 x 48 cm.

10 06 22 **Carrier Frame** of spring steel, with 4 special fixing magnets*), for assembling all the requisite film markers, symbols and I.Q.I. holder, Li.-No. 10 07 12, for films up to 10 x 24 cm.

10 06 32 **Carrier Strip** of spring steel with 2 special fixing magnets*), dimensions 3 cm x 21 cm.

10 07 12 **Holder for EN Wire-type** image quality indicators, suitable for carrier frames Li.-Nos. 10 06 12 and 10 06 22.

10 07 22 **Holder for EN Wire-type** image quality indicators, with magnetic rubber adhesion.

10 07 41 **Holder for EN Wire-type** image quality indicators, for round shaped objects, with magnetic rubber adhesion.

10 08 12 **Carrier Strip** of flexible plastics, dimensions 3 x 50 cm.

10 08 22 **Carrier Strip** of flexible plastics, 3 x 40 cm, with **magnetic rubber adhesion**.

10 08 32 **Carrier Material** 3 cm wide with **magnetic rubber adhesion**, in any lengths, priced per 5 cm, max. 60 cm long.

*) All special fixing magnets are pot magnets with sintered alnico core. They are temperature resistant and feature unbeatable adhesion on all ferromagnetic workpieces.
10 09 12 Special Fixing Magnet*) for affixing to carrier material Li.-No. 10 08 12.

10 10 12 Storage Box for WILNOS markers and accessories. Dimensions 60.5 x 18.5 x 5 cm (handle not included), suitable for storing a 48 cm carrier frame Li.-No. 10 06 12.

10 20 12 Special X-ray Film marking Outfit for weld radiographs, with WILNOS X-ray markers of fluorescent, coloured Plexiglass, symbol height 10 mm.

The special outfit contains:
- 10 sets figures 0-9, 3 sets letters A-Z, 5 of each of the following: full stop, oblique, hyphen, multiplication sign and arrow (totalling 203 symbols Li.-No. 10 01 32);
- 5 movable arrows Li.-No. 10 01 52;
- 1 carrier frame Li.-No. 10 06 12;
- 2 holders for EN wire-type I.Q.I.´s Li.-No. 10 07 12;
- 1 carrier strip Li.-No. 10 08 12;
- 1 carrier strip Li.-No. 10 08 22;
- 2 special magnets Li.-No. 10 09 12*); 1 storage box Li.-No. 10 10 12.

10 20 22 Special Outfit with WILNOS X-ray markers of fluorescent, coloured Plexiglass, symbol height 7.5 mm, contents as under Li.-No. 10 20 12.

10 25 02 Storage Box for WILNOS X-ray film markers and accessories. Dimensions 48 x 31.5 x 5 cm, with 36 compartments for the orderly storage of a complete set of letters and figures. The compartments of the smooth plastics insert are shaped so that even small markers or lead symbols can be removed individually from the box without effort. The box also contains 3 additional compartments of a size suitable for storing carrier strips Li.-No. 10 06 32, EN wire-type I.Q.I.´s and their holders.

10 25 12 Standard X-ray Film Marking Outfit for weld radiographs. The standard outfit contains inside of a storage box, Li.-No. 10 25 02: X-ray marker of fluorescent coloured Plexiglass, symbol height 10 mm; 10 sets figures 0-9; 3 sets letters A-Z; 5 of each of the following: full stop, oblique, hyphen, multiplication sign, arrow, and movable arrow, totalling 208 symbols; 2 special fixing magnets*) Li.-No. 10 09 12; 2 carrier strips of flexible plastics, dimension 3 x 30 cm (similar to Li.-No. 10 08 12); 1 carrier strip of spring steel with 2 special fixing magnets*) Li.-No. 10 06 32; 1 holder for EN wire-type I.Q.I.´s with magnetic rubber adhesion Li.-No. 10 07 22.

10 25 22 Standard X-ray Film Marking Outfit for weld radiographs. The standard outfit contains inside of a storage box, Li.-No. 10 25 02: X-ray marker of fluorescent coloured plexiglass, symbol height 7.5 mm; 10 sets figures 0-9, 3 sets letters A-Z, 5 of each of the following: full stop, oblique, hyphen, multiplication sign, arrow and movable arrow, totalling 208 symbols; 2 special fixing magnets List No. 10 09 12; 2 carrier strips of flexible plastics, dimension 3 x 30 cm (similar to List No. 10 08 12); 1 carrier strip of spring steel with 2 special fixing magnets List No. 10 06 32; one holder for EN wire-type I.Q.I.´s with magnetic rubber adhesion List No. 100722.

10 30 02 Storage Box for WILNOS X-ray film markers. Dimensions 39 x 26.5 x 5 cm, with 36 compartments for the orderly storage of a complete set of letters and figures. The compartments of the smooth plastics insert are shaped so that even small markers or lead symbols can be removed individually from the box without effort.

**Lead Symbols**, cast, simple design.

**Figures and letters**, available individually or in sets, **arrows**.

10 50 11 Symbol height 6 mm, 1.5 mm thick
10 50 21 Symbol height 8 mm, 1.5 mm thick
10 50 31 Symbol height 10 mm, 1.7 mm thick
10 50 41 Symbol height 13 mm, 1.8 mm thick
10 50 51 Symbol height 20 mm, 2.2 mm thick
10 50 61 Arrow 20 mm long

10 60 11 Zero Point marking Punch (O➔) with rounded bezel as per ASME for identifying the origin and direction of film numeration.

10 70 11 "Colorboy" marking Pen (tube with hardened ball point) for marking surfaces of all kinds: smooth, rough, rusty, wet, greasy. Acid-resistant, heat and weather resistant. **Colours: white, yellow, and red.**

*) All special fixing magnets are pot magnets with sintered alnico core. They are temperature resistant and feature unbeatable adhesion on all ferromagnetic workpieces.
Lead intensifying screens

**WILNOS Lead Intensifying Screens**, lead foil, laminated to flexible card backing, lead thickness **0.02 mm**, surface tinted blue in accordance with Federal German patent No. 935 707. Recommended range of application: 80 kV and 250 kV X-rays and gamma radiation of a similar energy range.

11 01 12 **Packed in pairs** in film protection envelopes of polyethylene Li.-No. 27 04 11.

<table>
<thead>
<tr>
<th>Size</th>
<th>Size</th>
<th>Size</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 x 24 cm</td>
<td>6 x 72 cm</td>
<td>10 x 48 cm</td>
<td>24 x 30 cm</td>
</tr>
<tr>
<td>6 x 36 cm</td>
<td>10 x 24 cm</td>
<td>10 x 72 cm</td>
<td>15 x 40 cm</td>
</tr>
<tr>
<td>6 x 48 cm</td>
<td>10 x 40 cm</td>
<td>18 x 24 cm</td>
<td>30 x 40 cm</td>
</tr>
</tbody>
</table>

11 01 22 **Packed in pairs** in Wilnofix radiographic cassettes Li.-No. 12 03 22.

<table>
<thead>
<tr>
<th>Size</th>
<th>Size</th>
<th>Size</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 x 24 cm</td>
<td>6 x 48 cm</td>
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<td>10 x 48 cm</td>
</tr>
<tr>
<td>6 x 36 cm</td>
<td>6 x 72 cm</td>
<td>10 x 40 cm</td>
<td>10 x 72 cm</td>
</tr>
</tbody>
</table>

11 01 32 **In Packs of 25 pairs.**

<table>
<thead>
<tr>
<th>Size</th>
<th>Size</th>
<th>Size</th>
<th>Size</th>
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<tbody>
<tr>
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</tr>
<tr>
<td>6 x 48 cm</td>
<td>10 x 40 cm</td>
<td>18 x 24 cm</td>
<td>30 x 40 cm</td>
</tr>
<tr>
<td>14 x 17&quot;</td>
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</tbody>
</table>

**WILNOS Lead Intensifying Screens**, lead foil, laminated to flexible card backing, lead thickness **0.10 mm**, surface tinted blue in accordance with Federal German patent No. 935 707. Recommended range of application: 250 kV to 420 kV X-rays and Ir 192.

11 02 12 **Packed in pairs** in film protection envelopes of polyethylene Li.-No. 27 04 11*).

<table>
<thead>
<tr>
<th>Size</th>
<th>Size</th>
<th>Size</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 x 24 cm</td>
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<td>10 x 72 cm</td>
<td>15 x 40 cm</td>
</tr>
<tr>
<td>6 x 48 cm</td>
<td>10 x 40 cm</td>
<td>18 x 24 cm</td>
<td>30 x 40 cm</td>
</tr>
</tbody>
</table>

11 02 22 **Packed in pairs** in Wilnofix radiographic cassettes Li.-No. 12 03 22*).

<table>
<thead>
<tr>
<th>Size</th>
<th>Size</th>
<th>Size</th>
<th>Size</th>
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</thead>
<tbody>
<tr>
<td>6 x 24 cm</td>
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<td>10 x 24 cm</td>
<td>10 x 48 cm</td>
</tr>
<tr>
<td>6 x 36 cm</td>
<td>6 x 72 cm</td>
<td>10 x 40 cm</td>
<td>10 x 72 cm</td>
</tr>
</tbody>
</table>

11 02 32 **In Packs of 25 pairs.**

<table>
<thead>
<tr>
<th>Size</th>
<th>Size</th>
<th>Size</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 x 24 cm</td>
<td>6 x 72 cm</td>
<td>10 x 48 cm</td>
<td>24 x 30 cm</td>
</tr>
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<td>10 x 72 cm</td>
<td>15 x 40 cm</td>
</tr>
<tr>
<td>6 x 48 cm</td>
<td>10 x 40 cm</td>
<td>18 x 24 cm</td>
<td>30 x 40 cm</td>
</tr>
<tr>
<td>14 x 17&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*) Lead thicknesses **0.02 mm /0.10 mm** packed in pairs also available at the same prices on enquiry.

**In addition to the lead intensifying screens listed here, other lead thicknesses such as 0.125, 0.15, 0.20 and 0.25 mm are available.**
11 10 12 WILNOS Intensifying Screens for Gamma Radiography with Co 60, packed in pairs. Screens of special steel, 0.5 mm thick, to be used as front and back screens or, in the case of duplicating film techniques, as front, middle and back screens. With a steel thickness of 120 mm, the image quality is increased to the extent that approx. 2 more EN image quality indicator wires become visible than in the case of lead screens. Image quality is also improved by approx. 2 steps with other EN-approved I.Q.I.’s.

<table>
<thead>
<tr>
<th>Size</th>
<th>6 x 24 cm</th>
<th>10 x 24 cm</th>
<th>13 x 18 cm</th>
<th>15 x 40 cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 x 48 cm</td>
<td>10 x 48 cm</td>
<td>18 x 24 cm</td>
<td>30 x 40 cm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>24 x 30 cm</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Other sizes and further information upon request.

11 20 11 Fluorescent Intensifying Screens, for High Intensification, on black flexible plastics backing, packed in pairs.

<table>
<thead>
<tr>
<th>Size</th>
<th>6 x 24 cm</th>
<th>10 x 24 cm</th>
<th>10 x 72 cm</th>
<th>15 x 40 cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 x 48 cm</td>
<td>10 x 40 cm</td>
<td>18 x 24 cm</td>
<td>30 x 40 cm</td>
<td></td>
</tr>
<tr>
<td>6 x 72 cm</td>
<td>10 x 48 cm</td>
<td>24 x 30 cm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11 20 21 Fluorescent Intensifying Screens, for High Definition, on black flexible plastics backing, packed in pairs.

<table>
<thead>
<tr>
<th>Size</th>
<th>6 x 24 cm</th>
<th>10 x 24 cm</th>
<th>10 x 72 cm</th>
<th>15 x 40 cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 x 48 cm</td>
<td>10 x 40 cm</td>
<td>18 x 24 cm</td>
<td>30 x 40 cm</td>
<td></td>
</tr>
<tr>
<td>6 x 72 cm</td>
<td>10 x 48 cm</td>
<td>24 x 30 cm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11 32 01 Fluorometallic Intensifying Screens, Type Structurix RCF, 30 x 40 cm packed in pairs.
X-ray film cassettes

12 02 11 Metal Cassettes
6 x 24 cm 10 x 24 cm 18 x 24 cm 30 x 40 cm
6 x 48 cm 10 x 40 cm 24 x 30 cm 35 x 35 cm
6 x 72 cm 10 x 48 cm 15 x 40 cm 35 x 43 cm
10 x 72 cm

12 02 21 Metal Cassettes of special design for inserting X-ray films in daylight pack. When ordering, quote the exact desired clear internal dimension of the cassette.

12 03 12 Wilnofix Cassettes of 0.2 mm thick PVC sheeting.
(inner envelopes without adhesive tape fastener)
6 x 24 cm 6 x 72 cm 10 x 40 cm 10 x 72 cm
6 x 48 cm 10 x 24 cm 10 x 48 cm

12 03 22 Wilnofix Cassettes of 0.2 mm thick PVC sheeting.
(inner envelopes with adhesive tape fastener)
6 x 24 cm 6 x 72 cm 10 x 40 cm 10 x 72 cm
6 x 48 cm 10 x 24 cm 10 x 48 cm

12 03 32 Wilnofix Cassettes of 0.2 mm thick PVC sheeting.
(outer envelopes with adhesive tape fastener)
6 x 24 cm 6 x 72 cm 10 x 40 cm 10 x 72 cm
6 x 48 cm 10 x 24 cm 10 x 48 cm

12 03 42 Wilnofix Cassettes of 0.2 mm thick PVC sheeting.
(outer envelopes without adhesive tape fastener)
6 x 24 cm 10 x 24 cm
6 x 48 cm 10 x 48 cm

12 04 12 Wilnofix Cassettes, of 0.4 mm thick PVC sheeting with VELCRO fastener.
6 x 24 cm 10 x 24 cm 10 x 72 cm 15 x 40 cm
6 x 48 cm 10 x 40 cm 18 x 24 cm 30 x 40 cm
6 x 72 cm 10 x 48 cm 24 x 30 cm

12 04 22 WILNOS Cassettes with self-sealing VELCRO fastener, heavy duty type for use in extreme climates. Exceptionally robust light-proof cassette design.
10 x 24 cm 10 x 48 cm

12 05 12 WILNOS Double-envelope Type Cassettes of 0.4 mm thick PVC sheeting.
6 x 24 cm 10 x 24 cm 13 x 18 cm 15 x 40 cm
6 x 48 cm 10 x 48 cm 18 x 24 cm 30 x 40 cm
24 x 30 cm

WILNOS Strap-type Cassettes
with 5 pockets for films 10 x 48 cm in daylight pack or Wilnofix cassette, film overlap 5 cm, for tubes up to 230 cm external circumference, i.e. approx. O/D 28 inch.

12 06 12 Design without X-ray marker tape.
12 06 22 Design with inserted X-ray marker tape, lead figures at 10 cm intervals.
12 07 01 Evacuation and Sealing Machine Vacumat VC 51, absolutely uniform film-screen contact over the entire surface (even in the case of large-area film formats), increased image definition and contrast, weather- and water-resistant welded film-screen combination. **Handy table unit with separately positionable, extremely quiet vacuum pump. The unit is therefore also suitable for mobile applications in darkroom vehicles.** Substantial savings possible by repeated use of the welded cassettes and high re-usability of the radiographic screens. The sealing equipment accommodates a total width of up to 35 cm, i.e. for example 3 cassettes of 10 x 48 cm can be simultaneously evacuated. The entire evacuating and welding procedure is initiated by pushing down the cover and runs automatically. Lengths of over 48 cm can be evacuated and sealed by attaching the cassettes from outside. Useful internal dimensions of the unit: 38 x 52 cm.

Power supply 230 V a.c., 50 Hz, max. 1100 Watt.

12 07 21 **Cassette Material for Vacumat VC 51,** of special polyethylene sheeting, light-tight, watertight, reusable. **Only available in complete rolls.**

<table>
<thead>
<tr>
<th>Film Format</th>
<th>Material Width</th>
<th>Approx. Length per Roll</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 x 24 cm</td>
<td>70 mm</td>
<td>approx. 400 m</td>
</tr>
<tr>
<td>6 x 48 cm</td>
<td>70 mm</td>
<td>approx. 400 m</td>
</tr>
<tr>
<td>10 x 24 cm</td>
<td>110 mm</td>
<td>approx. 400 m</td>
</tr>
<tr>
<td>10 x 48 cm</td>
<td>110 mm</td>
<td>approx. 400 m</td>
</tr>
<tr>
<td>18 x 24 cm</td>
<td>210 mm</td>
<td>approx. 450 m</td>
</tr>
<tr>
<td>24 x 30 cm</td>
<td>265 mm</td>
<td>approx. 400 m</td>
</tr>
<tr>
<td>30 x 40 cm</td>
<td>320 mm</td>
<td>approx. 350 m</td>
</tr>
</tbody>
</table>

13 01 02 **WILNOS Cassette Holder,** comprising 2 special magnets with particularly high adhesion, and a cassette hold-down device.

13 01 12 **Spare Spring Plate.**

13 01 22 **Spare Magnet** 40 mm diameter.

13 02 02 **WILNOS Cassette Holder** for working on non-ferromagnetic surfaces, with 2 powerful suckers and cassette hold-down device. Suitable for all flat, concave and convex surfaces of sufficiently smooth condition.

13 03 12 **WILNOS Rubber Strap** with buckle in any length **up to 1.40 m,** width 20 mm.

13 03 22 **WILNOS Rubber Strap** with buckle in any length **from 1.50 m,** width 25 mm.
Exposure accessories

Adhesive Tape (plastics coated fabric tape) in rolls of 50 m.

<table>
<thead>
<tr>
<th>Code</th>
<th>Color</th>
<th>Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 04 41</td>
<td>Grey</td>
<td>19 mm</td>
</tr>
<tr>
<td>13 04 51</td>
<td>Orange</td>
<td>19 mm</td>
</tr>
<tr>
<td>13 04 71</td>
<td>Black</td>
<td>19 mm</td>
</tr>
<tr>
<td>13 04 61</td>
<td>Red</td>
<td>9 mm</td>
</tr>
</tbody>
</table>

13 04 81 WILNOS Adhesive Tape, white (Plastics coated), 19 mm wide, 50 m long.

13 05 51 Regudess Adhesive Tape, black, 13 mm wide, 25 m long, for light-tight sealing of films cut to size in daylight pack.

Other adhesive tapes on enquiry.

13 06 12 WILNOS Film Holding Device with special magnets for X-ray films in daylight pack.

<table>
<thead>
<tr>
<th>Size</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6 x 24 cm</td>
<td>6 x 48 cm</td>
<td>10 x 24 cm</td>
</tr>
</tbody>
</table>

13 07 12 WILNOS flexible Magnetic Cassettes for X-ray films in daylight pack, of cold-resistant flexible PVC 0.5 mm thick, with magnetic rubber adhesion.

<table>
<thead>
<tr>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 x 48 cm</td>
</tr>
<tr>
<td>10 x 48 cm</td>
</tr>
</tbody>
</table>

Scattered radiation filters

14 01 12 WILNOS Scattered Radiation backing Sheets, lead thickness 1 mm, with spring steel insert for mechanical stiffening.

<table>
<thead>
<tr>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 x 24 cm</td>
</tr>
<tr>
<td>6 x 48 cm</td>
</tr>
<tr>
<td>10 x 24 cm</td>
</tr>
<tr>
<td>10 x 72 cm</td>
</tr>
</tbody>
</table>

14 02 12 WILNOS Scattered Radiation Filter of Lead, 0.5 mm thick.

<table>
<thead>
<tr>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 x 24 cm</td>
</tr>
<tr>
<td>6 x 48 cm</td>
</tr>
<tr>
<td>6 x 72 cm</td>
</tr>
<tr>
<td>10 x 24 cm</td>
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<tr>
<td>10 x 40 cm</td>
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<tr>
<td>10 x 48 cm</td>
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<td>13 x 18 cm</td>
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<td>18 x 24 cm</td>
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<td>24 x 30 cm</td>
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<tr>
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<td>15 x 40 cm</td>
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<tr>
<td>30 x 40 cm</td>
</tr>
<tr>
<td>35,6 x 35,6 cm</td>
</tr>
<tr>
<td>35,6 x 43,2 cm</td>
</tr>
</tbody>
</table>

14 03 12 WILNOS Scattered Radiation Filter of Lead, 1.0 mm thick.

Sizes as under Li.-No. 14 02 12.

14 04 12 WILNOS Scattered Radiation Filter of Tin, 0.5 mm thick.

<table>
<thead>
<tr>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 x 24 cm</td>
</tr>
<tr>
<td>6 x 48 cm</td>
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<tr>
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<tr>
<td>15 x 40 cm</td>
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<tr>
<td>30 x 40 cm</td>
</tr>
<tr>
<td>35,6 x 35,6 cm</td>
</tr>
<tr>
<td>35,6 x 43,2 cm</td>
</tr>
</tbody>
</table>

14 05 12 WILNOS Scattered Radiation Filter of Tin, 1.0 mm thick.

Sizes as under Li.-No. 14 04 12.

14 10 12 WILNOS Thickness Compensation Plasticine "WILNOPLAST".

This kneadable plasticine is used, for example, to compensate for considerable differences in thickness on specimens or to fill bores. This prevents undercutting or impermissible differences in density, and costly two-film or repeated radiographs may be avoided in many cases. Available in 1/2 Kg packs.
X-ray marker tapes

15 01 02 WILNOS X-ray Marker Tapes in any length, lead figures at 5 cm intervals, fixed price up to 0.5 m length.
15 01 12 Total length of the tape more than 0.5 m, price per 10 cm.

15 02 02 WILNOS X-ray Marker Tapes in any length, lead figures at 10 cm intervals, fixed price up to 0.7 m length.
15 02 12 Total length of the tape more than 0.7 m, price per 10 cm.

15 03 02 WILNOS X-ray Marker Tapes in any length, lead figures at 20 cm intervals, fixed price up to 1.0 m length.
15 03 12 Total length of the tape more than 1.0 m, price per 10 cm.

15 04 02 WILNOS X-ray Marker Tapes in any length, lead figures at 25 cm intervals, fixed price up to 1.0 m length.
15 04 12 Total length of the tape more than 1.0 m, price per 10 cm.

15 07 12 Buckle for Marker Tapes.
15 07 22 Furnishing of the Tape with VELCRO Fastener.

Cases with Brass Crank for WILNOS X-ray marker tapes, including tape buckle.

<table>
<thead>
<tr>
<th></th>
<th>5 cm Intervals</th>
<th>10 cm Intervals</th>
<th>20 cm Intervals</th>
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<tbody>
<tr>
<td>Size 1</td>
<td>up to 4 m</td>
<td>up to 6 m</td>
<td>up to 9 m</td>
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<tr>
<td>Size 2</td>
<td>4 - 9 m</td>
<td>6 - 12 m</td>
<td>9 - 15 m</td>
</tr>
<tr>
<td>Size 3</td>
<td>9 - 15 m</td>
<td>12 - 15 m</td>
<td>15 - 25 m</td>
</tr>
</tbody>
</table>

15 08 52 Reel for very long marker tapes, including buckle for tape.
Reel capacity: Marker tape lengths up to 30 m with figure intervals of 5 cm.
Marker tape lengths up to 40 m with figure intervals of 10 cm.
Marker tape lengths up to 45 m with figure intervals of 20 cm.

15 13 12 WILNOS X-ray Marker Tape, length 3 m, lead figures at 20 cm intervals, with buckle, without case.
15 13 22 WILNOS X-ray Marker Tape, length 6 m, lead figures at 20 cm intervals, with buckle and case.
15 13 32 WILNOS X-ray Marker Tape, length 12 m, lead figures at 20 cm intervals, with buckle and case.

Miniature Marker Tapes, 8 mm wide, translucent polyester tape with inserted lead figures at 1 cm intervals.
15 14 01 Length 0.5 m
15 14 11 Length 1.0 m

Miniature Marker Tapes, 8 mm wide, translucent polyester tape with inserted lead figures at 2 cm intervals.
15 14 21 Length 0.5 m
15 14 31 Length 1.0 m

WILNOS X-ray Marker Tapes are also available at short notice in other lengths and with other figure intervals.
16 03 51 Wire-type I.Q.I.'s, in accordance with standard EN 462-1, with declaration of conformity, wire length 50 mm.

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<thead>
<tr>
<th>1</th>
<th>FE</th>
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</table>

16 03 61 Wire-type I.Q.I.'s, in accordance with standard EN 462-1, with declaration of conformity, wire length 25 mm.

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16 03 71 Wire-type I.Q.I.'s, in accordance with standard EN 462-1, with declaration of conformity, wire length 10 mm.

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<td>TI</td>
<td>13</td>
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</tr>
</tbody>
</table>

16 03 81 Step hole type I.Q.I.'s, in accordance with standard EN 462-2, with declaration of conformity, material steel.

EN 462 H 1 FE
EN 462 H 5 FE
EN 462 H 9 FE
EN 462 H 13 FE

AFNOR-type I.Q.I.'s, material steel

16 04 21 Type H3 for wall thicknesses of 5 - 15 mm Fe (hexagonal)
16 04 31 Type HA for wall thicknesses of 10 - 30 mm Fe (hexagonal)
16 04 41 Type HB for wall thicknesses of 20 - 60 mm Fe (hexagonal)
16 04 51 Type C for wall thicknesses of 40 - 180 mm Fe (strip)

16 05 01 ASME Stainless Steel Penetrameters, in accordance with US standard ASTM E 1025, the usual set includes the following penetrameter numbers: 5, 7, 10, 12, 17, 20, 25, 30, 35, 40, 45, 50, 60, 80, 100, 120, 160, 200. In addition, intermediate numbers are also available - for example the numbers 8, 9 and 14 - which may reduce the difficulties in attaining the 2-2T sensitivity for small wall thicknesses.

ASME penetrameters for materials others than ASME materials group 1 (steel, stainless steel) on enquiry.

16 06 01 Wire-type I.Q.I.'s in accordance with ASTM E 747, Stainless Steel, each with 6 wires with diameters in a geometric sequence (R10), length of the wires 2 in.

Set A 0.08 - 0.25 mm  Set C 0.81 - 2.5 mm
Set B 0.25 - 0.81 mm  Set D 2.50 - 8.0 mm

Apart from the image quality indicators listed here, other designs are available on enquiry.

17 01 11 Exposure Calculator, type AGFA, for determining the exposure time for Ir 192 and Co 60 radiographs, with case.

17 02 01 Universal Exposure Calculator for gamma radiography with Ir 192, Co 60, and Yt 169, with scale for film density and film sensitivity. Conversion factors for numerous other materials such as bronze, aluminium and concrete can be calculated as steel equivalents with the calculator.

17 05 01 Stop Watch (winding button type), manufacturer Hanhart, robust stainless steel case. Shock-, dust- and water-resistant, 1/5 second intervals, timing capacity 30 min.

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Film viewing equipment and accessories

20 03 02 Film Viewing Unit with Iris Diaphragm "WILNOS-electronic", 5 to 70 mm diam., up to D = 3.1¹, with infinitely variable luminosity control, for 230 V a.c.

20 03 11 Spare Lamp 100 W / 230 V, for "WILNOS-electronic" iris lamp.

20 06 02 WILNOS Film Viewing Unit Wilnosol H "Universal", luminance approx. 45 000 cd/m², for densities up to D = 3.7¹ in accordance with EN 25 580, illuminated area 8.5 x 22 cm, with cooling fan for continuous operation, heat filters, foot switch, switchable to foot switch mode or continuous light mode, with infinitely variable electronic luminosity control and adjustable background luminosity in the case of foot switch mode. Complete with 2 additional masks, aperture sizes 5.0 x 22 cm for 6 cm wide films and 4 cm diameter for glare-free viewing of film sections. With 3 halogen lamps 24 V / 150 W, for connection to 230 V a.c. / 50 Hz². The heavy duty heat filter is easy to be changed against a normal filter, also in viewers of earlier "Universal" series.

20 06 06 Spare Halogen Lamp 24 V / 150 W, suitable for "Universal", "Universal-plus", "Langfeld" and "Langfeld-S" ³.

20 06 22 Supplementary Price for Chemical-Resistant Plastic Coating of Front Panel and Masks, for Wilnosol H "Universal".

20 06 42 Protective Transparent Cover for Viewing Wet Films, made of thick acryl glass, for Wilnosol H "Universal", Wilnosol HI "Super", and Wilnosol "Universal-plus".

20 06 62 Special Heat Filter (Heavy Duty Type) for Wilnosol H "Universal" recommended if the viewing equipment is used under severe working conditions, such as high environmental temperature or in training courses, when the viewers are running with nearly 100 % switch-on time. Final temperature of the film will be diminished by about 15 °C to 20 °C. The heavy duty heat filter is easy to be changed against a normal filter, also in viewers of earlier "Universal" series.


20 03 02 WILNOS Film Viewing Unit Wilnosol "Universal-plus", luminance approx. 200 000 cd/m², for densities up to D = 4.3¹ as per EN 25 580, with cooling fan and two heavy duty heat filters for practically unlimited viewing without the danger of permanent deformation of films at full luminance. Other technical properties similar to the Wilnosol H "Universal" (Li.-No. 20 06 02). Illuminated area 12 x 18 cm, completely flat front panel with two powerful sintered magnets to fix the additional masks for viewing weld radiographs (apertures 5 x 18 cm, 8.5 x 18 cm, and 12 x 18 cm). With 3 halogen lamps 24 V / 150 W (Li.-No. 20 06 11), for connection to 230 V a.c.³.


20 06 12 Iris Diaphragm Unit, 6 to 120 mm Diameter, for Wilnosol "Universal-plus". May be fixed to and removed from the front panel within seconds. The diaphragm plane is positioned very near behind the covering glass sheet, resulting in sharp borders of the illuminated area of the radiograph.

20 08 02 WILNOS Film Viewing Unit Wilnosol H "Langfeld", luminance approx. 40 000 cd/m², for densities up to D = 3.6¹ in accordance with EN 25 580. Illuminated area 8.5 x 45 cm, with twin cooling fans for continuous operation, heat filters, foot switch, switchable to foot switch or continuous light mode, with infinitely variable electronic luminosity control and adjustable background luminosity with the foot switch mode, complete with mask for 6 cm wide films. With 10 halogen lamps 24V / 150W, for connection to 230 V a.c.³.


20 08 12 Special Heat Filter (Heavy Duty Type) for Wilnosol H "Langfeld", recommendations similar as described under Li.-No. 20 06 62. This heat filter consists of two separate glass sheets. It reduces the final temperature of the film as described above. May be inserted also into "Langfeld" units of earlier series.

Notes:

1) Sometimes claims are made with regard to similar equipment, whereby the viewable film density is quoted as being D = 1 (or more) higher than the density values listed here which comply with EN 25 5280 and others.

2) Some of the units described on this page are also available for mains-supply versions other than 230 V/50 Hz. We will be pleased to send you further information and a quotation on enquiry.

3) On behalf of the high switching frequency in film viewing units, there exist differences in the suitability for some halogen lamps. We only deliver lamp types which have been tested by us.

4) According to EN 25 580, ISO 5580, and ASTM E 1390-90, a radiograph with D = 2.0 must not be damaged by a one minute viewing period after the unit has been used for a total of one hour with 50 % switch-on time, with 15 seconds full light periods each time, at an environmental temperature of 20°C. Already in the standard version WILNOS film viewing units are much better than claimed above.

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Film viewing equipment and accessories

20 14 02 WILNOS Film Viewing Unit Wilnosol "Langfeld-S", luminance approx. 120 000 cd/m², for densities up to $D = 4.1^{(1)}$ in accordance with EN 25 580, illuminated area $8.5 \times 45$ cm. Its general technical data are very similar to the Wilnosol H "Langfeld" (Li.-No. 20 08 02) film viewing unit, but it is equipped with a single sheet special heat filter and an acryl glass scattering screen. By these variations the Wilnosol "Langfeld-S" offers an improved heat protection (see Li.-No. 20 06 62 and comment) and a three times higher luminosity, compared to the Wilnosol H "Langfeld".

20 06 11 Spare Halogen Lamp 24 V / 150 W, suitable for "Universal", "Universal-plus", "Langfeld" and "Langfeld-S".

20 14 12 Set of Special Heat Filter (single sheet type) and acryl glass scattering sheet, to vary a Wilnosol H "Langfeld" into a Wilnosol "Langfeld-S" viewing unit $(^{4})$. May be inserted also into "Langfeld" viewers of earlier series.

20 09 02 WILNOS Film Viewing Unit Wilnosol HI "Super", luminance approx. 470 000 cd/m², for densities up to $D = 4.7^{(1)}$ in accordance with EN 25 580. With iris diaphragm 5 to 75 mm diameter, foot switch, switchable to foot switch mode or continuous light mode, with infinitely variable electronic luminosity control and adjustable background luminosity in the case of foot switch mode, with cooling fan and dual heat filters, suitable for continuous operation. With halogen lamp 24 V / 250 W, for connection to 230 V a.c.$^{(2)}$.

20 09 11 Spare Halogen Lamp 24 V / 250 W for Wilnosol HI "Super".

20 10 21 WILNOS Film Viewing Unit Wilnolux 48/46, for densities up to $D = 3.1^{(1)}$ in accordance with EN 25 580. For table top or wall-mounting, illuminated area $48 \times 46$ cm, with 4 individual internal shutters adjustable over the full area down to a minimum area of $10 \times 10$ cm, with infinitely variable control between approx. 50 % and 100 %, complete with 12 fluorescent lamps. For connection to 230 V a.c., 2.75 A, 300 W.

20 10 11 Spare Fluorescent Lamp 230 V / 18 W, for Wilnolux 42/48 and 48/46.

20 11 02 WILNOS Film Viewing Unit Wilnolux 10/48 T (table unit), luminance approx. 12 000 cd/m², an especially bright fluorescent lamp unit for densities up to $D = 3.1^{(1)}$ in accordance with EN 25 580. Illuminated area $10 \times 48$ cm, with infinitely variable electronic luminosity control, with hinged stay for inclined set-up, complete with fluorescent lamps, for connection to 230 V a.c.


20 12 02 WILNOS Film Viewing Unit Wilnolux 10/48 W (wall unit), luminance approx. 12 000 cd/m², an especially bright wall unit for viewing wet films in the darkroom, for densities up to $D = 3.1^{(1)}$ in accordance with EN 25 580. Illuminated area $10 \times 48$ cm, the entire film format can be viewed at a glance. With water-tight front screen mounting, interconnecting cable with non-fused earthing contact, complete with fluorescent lamps, for connection to 230 V a.c.

20 12 12 Switch Socket Combination, humid room design, for surface mounting, wired ready to use, for connecting film viewing unit Wilnolux 10/48 W.

Notes:

1) Sometimes claims are made with regard to similar equipment, whereby the viewable film density is quoted as being $D = 1$ (or more) higher than the density values listed here which comply with EN 25 5280 and others.

2) Some of the units described on this page are also available for mains-supply versions other than 230 V/50 Hz. We will be pleased to send you further information and a quotation on enquiry.

3) On behalf of the high switching frequency in film viewing units, there exist differences in the suitability for some halogen lamps. We only deliver lamp types which have been tested by us.

4) According to EN 25 580, ISO 5580, and ASTM E 1390-90, a radiograph with $D = 2.0$ must not be damaged by a one minute viewing period after the unit has been used for a total of one hour with 50 % switch-on time, with 15 seconds full light periods each time, at an environmental temperature of 20°C. Already in the standard version WILNOS film viewing units are much better than claimed above.
Head-band Magnifier, binocular lenses, Zeiss-Winkel, magnification 2.25x.

Wide Field Hand Magnifier Glass, 120 mm diameter, magnification 2x, extremely clear and distortion-free image.

Cotton Gloves to avoid finger prints on the radiographs during viewing procedure, 6 pairs pack.

Eyesight Testing Chart for ascertaining the near-visus value (30 cm viewing distance), reading text (German) for visus 0.2 to 1.5; figures for visus 0.1.

Eyesight Testing Chart, permanently welded in astralon, for ascertaining the near-visus value (30 cm viewing distance). Page 1: figures and Landolt rings for visus 0.1 to 1.0 Page 2: reading text (German) for visus 0.2 to 1.5; figures for visus 0.1

The above-listed eyesight testing charts are recommended in German standard DIN 54 116, part 1, for periodically testing the eyesight of film evaluators.

Catalogues with reference radiographs

ASTM-Reference Catalogues

ASTM E 446, ring binders each with 34 radiographs of steel castings up to 2 in. thickness. With exposure data, examples of typical flaws and their interpretation.

Volume 1, reference radiographs for medium voltage (nominal 250 kVp) X-rays.

Volume 2, reference radiographs for 1 MV X-rays and Ir 192.

Volume 3, reference radiographs for 2 MV to 4 MV X-rays and Co 60.

ASTM E 186, ring binders each with 28 radiographs of heavy-walled (2 to 4 1/2 in.) steel castings. With exposure data, examples of typical flaws and their interpretation.

Volume 1, reference radiographs for 1 MV X-rays and Ir 192.

Volume 2, reference radiographs for 2 MV X-rays and Co 60.

Volume 3, reference radiographs for 4 MV to 30 MV X-rays.

ASTM E 280, ring binders each with 28 radiographs of heavy-walled (4 1/2 to 12 in.) steel castings. With exposure data, examples of typical flaws and their interpretation.

Volume 1, reference radiographs for 2 MV X-rays and Co 60.

Volume 2, reference radiographs for 4 MV to 30 MV X-rays.

ASTM E 155, collections of radiographs of light alloy castings with wall thicknesses up to 2 in. Graduated examples of typical flaws and their interpretation.

Volume 1, 23 radiographs, divided into aluminium-alloy and magnesium-alloy.

Volume 2, 4 cards with radiographs of magnesium-alloy castings. Each card with 8 grades of severity for the discontinuities.

ASTM E 192, 16 reference radiographs for investment steel castings for aerospace applications, up to 1 in. thickness.

ASTM E 272, 45 reference radiographs for high-strength, copper-base and nickel-copper alloy castings. Wall thicknesses 1 in. and 2 to 6 in.

ASTM E 310, 22 reference radiographs for tin bronze castings, 3/4 in. and 1 in. thicknesses.

ASTM E 390, reference radiographs for steel fusion welds. Volume 1, 16 radiographs up to 1/4 in. thickness. Volume 2, 29 radiographs over 1/4 in. and up to 3 in. thickness. Volume 3, 32 radiographs over 3 in. and up to 8 in. thickness.

ASTM E 505, reference radiographs for inspection of aluminium and magnesium die castings.

Volume 1, 136 radiographs up to 1 in. thickness. Volume 2, 64 radiographs over 1 in. and up to 2 in. thickness.

IIW and DVS Reference Catalogues


IIW Reference Catalogue in accordance with EN 25 817 / ISO 5817. Contents very similar to the DVS reference catalogue Li.-No. 22 07 11.


Film reading aids
23 01 21 **Calibrated Density Reference Scale, BAM-tested density step tablet**, for checking and calibrating densitometers. Density range 0.3 to 4.6; approx. 10 measuring fields within the density range, tolerance +/- 0.05. The density step tablet has been exposed by X-radiation on commercial, double-layered industrial X-ray film. The density step tablet comes in a special black PVC cover, which protects it against light when stored. Also supplied is the original BAM certificate plus a copy, which are kept in a transparent pocket of the cover for daily use. References of the density step tablet: "PTB-Normal" and "Standard Reference Material 1001, X-ray film step tablet" (NIST; National Institute of Standards and Technology, USA, formerly NBS).

BAM = Bundesanstalt für Materialprüfung und -forschung, Berlin)

23 01 31 **Recalibration charges** for BAM-tested density step tablet, including BAM-certificate.

23 08 21 **Macbeth Densitometer TD 932**, with digital display for black and white transmission density measurement. Measuring range 0 to 4.0; with measuring apertures in diameters 1, 2, and 3 mm. Semi-automatic push-button zeroing. The measuring range may be extended beyond the quoted range of \( D < 4.0 \) if a calibrated density reference scale as per List No. 230121 is used, and the instrument is adjusted accordingly. Insensitive to mains fluctuations thanks to the reference light intensity principle. For 230 V, 50 Hz, other mains-supply versions on request.

23 10 02 **WILNOS LCD 201 Hand-held Probe Densitometer** with digital LED readout for industrial X-ray film density measurement. Standard probe with 2 mm aperture diameter. Measuring range 0 to 5.0; measuring accuracy +/- 0.05 absolute across entire measuring range, repeatability accuracy of instrument +/- 0.01. The hand-held probe, in slimline-pen format, is interchangeably connected to the control unit by means of a highly flexible 1.30 meter long cable. Can be stored in a mounting on the control unit when not in use. **Semi-automatic push-button zeroing.** Excess and inadequate brightness levels indicated by means of a flashing LED on the display. Trimmer for density calibration on front panel. For 230 V, 50 Hz power supplies, ready for operation immediately. No warm-up time.

23 11 02 **WILNOS LCD 51 Hand-held Probe Densitometer** with digital LCD readout for industrial X-ray film density measurement. Probe with 2 mm aperture diameter. Measuring range 0 to 5.0; measuring accuracy +/- 0.05 absolute across entire measuring range, repeatability accuracy of instrument +/- 0.01. The hand-held probe, in slimline-pen format, is connected to the control unit by means of a highly flexible 1.30 meter long cable. **Semi-automatic push-button zeroing.** Trimmer for density calibration on front panel. The instrument is supplied ready for operation, complete with a commercially available 9V battery. Extremely low power consumption (less than 1 mA); immediately ready for operation - no warm-up time. **Automatic battery check;** warning appears in display well before battery expires.

23 11 12 **Carrying Case for LCD 51**, very handy, especially recommended for site work.

23 11 21 **Spare Battery** for LCD 51, 9V E-Block.

27 02 11 **Film Marking Pencils**, each 3 red and 3 yellow.

27 02 31 **Film Marker Pen**, colour: permanent-white.

27 03 11 **Film Storage Envelopes** of semi-transparent parchment paper, open at the narrow end, with thumb grip recesses.

- 6 x 24 cm 10 x 24 cm 13 x 18 cm 30 x 40 cm
- 6 x 48 cm 10 x 48 cm 18 x 24 cm 35,6 x 35,6 cm
  24 x 30 cm

27 03 21 **Film Storage Envelopes** of semi-transparent parchment paper, with individual company imprint. Formats available: as for Li.-No. 27 03 11.
The following tank processing equipment consists of robust, chemical resistant PVC. The smooth, non-porous surfaces are easily cleaned.

**30 01 02 Tank Processing Unit WILNOS 90/4** for X-ray films up to 10 x 48 cm, for 9 litres tank fill.

Complete unit with 4 individual tanks.

The unit comprises the following components:

- **30 01 12** Tank 125 x 125 x 600 mm, capacity 9 litres (unit includes 3 tanks).
- **30 01 22** Lid.
- **30 01 42** Final rinsing tank 155 x 125 x 600 mm, capacity 12 litres, with support frame and overflow siphon.
- **30 01 62** Support trough 950 x 265 x 100 mm inside, 970 x 325 x 200 mm outside. Adjustable 90° drain plug in the center of the back side.

**30 02 02 Tank Processing Unit WILNOS 135/4** for X-ray films up to 10 x 48 cm, for 13.5 litres tank fill.

Complete unit with 4 individual tanks.

The unit comprises the following components:

- **30 02 12** Tank 125 x 190 x 600 mm, capacity 13.5 litres (unit includes 3 tanks).
- **30 02 22** Lid.
- **30 02 42** Final rinsing tank 310 x 190 x 600 mm, capacity 35 litres, with two-row support frame and overflow siphon.
- **30 02 62** Support trough 1000 x 290 x 100 mm inside, 1020 x 350 x 200 mm outside. Adjustable 90° drain plug in the center of the back side.

**30 03 02 Tank Processing Unit WILNOS 225/5** for X-ray films up to 10 x 48 cm and 30 x 40 cm, for 22.5 litres tank fill, complete unit with 5 individual tanks.

The unit comprises the following components:

- **30 03 12** Tank 125 x 320 x 600 mm, with drain plug, capacity 22.5 litres. The unit includes 4 tanks.
- **30 03 22** Lid.
- **30 03 42** Final rinsing tank 310 x 350 x 600 mm, with two-row support frame, overflow siphon and drain plug, capacity 60 litres.
- **30 03 62** Support trough 1000 x 490 x 100 mm inside, 1020 x 550 x 200 mm outside. Adjustable 90° drain plug in the center of the back side.

Optional available:

- **30 08 52** Splash Guard of light grey PVC for 1000 mm trough.

**30 06 02 Tank Processing Unit WILNOS 225/4** for X-ray films up to 10 x 48 cm and 30 x 40 cm, for 22.5 litres tank fill. Complete unit with 4 individual tanks.

The unit comprises the following components:

- **30 06 12** Tank 125 x 320 x 600 mm, with drain plug, capacity 22.5 litres. The unit includes 3 tanks.
- **30 06 22** Lid.
- **30 06 42** Final rinsing tank 310 x 350 x 600 mm, with two-row support frame, overflow siphon and drain plug, capacity 60 litres.
- **30 06 62** Support trough 860 x 490 x 100 mm inside, 880 x 550 x 200 mm outside. Adjustable 90° drain plug in the center of the back side.

Optional available:

- **30 09 12** Splash guard of light grey PVC for 860 mm trough.
**X-ray film processing equipment**

**30 08 02**  
Tank Processing Unit WILNOS 225/5 automatic with automatic temperature control and developer circulation, for X-ray films up to 10 x 48 cm and 30 x 40 cm, for 22.5 litres tank fill. Complete unit with 5 individual tanks.

The unit comprises the following components:

- **30 08 12**  
  Developer tank, inside dimensions 125 x 320 x 600 mm, with lid, flanged-on pump and temperature control unit with heating element 500W, 230V, and cooling serpent, with drain plug, capacity approx. 30 l.

- **30 08 22**  
  Thermostat with temperature probe.

- **30 08 32**  
  Solenoid valve 230V/50 Hz, complete with water stopcock.

- **30 08 42**  
  Switch-socket combination with check lights, mounted ready for connection.

- **30 03 12**  
  Tank 125 x 320 x 600 mm, with drain plug, capacity 22.5 litres.

  The unit includes 3 tanks.

- **30 03 22**  
  Lid.

- **30 03 42**  
  Final rinsing tank 310 x 350 x 600 mm, with two-row support frame, overflow siphon and drain plug, capacity 60 litres.

- **30 03 62**  
  Support trough 1000 x 490 x 100 mm inside, 1020 x 550 x 200 mm outside. Adjustable 90° drain plug in the center of the back side.

- **30 08 52**  
  Splash Guard of light grey PVC for 1000 mm trough.

**30 09 02**  
Tank Processing Unit WILNOS 225/4 automatic with automatic temperature control and developer circulation, for X-ray films up to 10 x 48 cm and 30 x 40 cm, for 22.5 litres tank fill. Complete unit with 4 individual tanks.

The unit comprises the following components:

- **30 08 12**  
  Developer tank, inside dimensions 125 x 320 x 600 mm, with lid, flanged-on pump and temperature control unit with heating element 500W, 230V, and cooling serpent, with drain plug, capacity approx. 30 l.

- **30 08 22**  
  Thermostat with temperature probe.

- **30 08 32**  
  Solenoid valve 230V/50 Hz, complete with water stopcock.

- **30 08 42**  
  Switch-socket combination with check lights, mounted ready for connection.

- **30 03 12**  
  Tank 125 x 320 x 600 mm, with drain plug, capacity 22.5 litres.

  The unit includes 2 tanks.

- **30 03 22**  
  Lid.

- **30 03 42**  
  Final rinsing tank 310 x 350 x 600 mm, with two-row support frame, overflow siphon and drain plug, capacity 60 litres.

- **30 06 42**  
  Support trough 860 x 490 x 100 mm inside, 880 x 550 x 200 mm outside. Adjustable 90° drain plug in the center of the back side.

- **30 09 12**  
  Splash guard of light grey PVC for 860 mm trough.

Also available:

**30 14 02**  
Water Filtering and Pressure Regulating Device, recommended for all film processing units. The supplied water is filtered down to 20 µm particle size, the pressure is regulated and surveyed by manometers. The filter can be cleaned without being disconnected from pressure water input. The unit may remarkably extend the life-time of filter cartridges in processing machines.
Film Processing Unit WILNOS TF 2000 for mobile applications, for installation in darkroom vehicles, laboratories built in containers and site vehicles. Outer case and individual tanks of highly impact-resistant, grey PVC. No outer paint coat, therefore resistant to all chemicals and cleaning agents used in the darkroom. The inside surfaces of the case are extremely smooth and therefore ideal for cleaning, thus eliminating odours which can otherwise result from fungoid growth due to residual water.

5 tanks each with a capacity of 22.5 litres, individually removable, seal-tight lid; wall fastenings and hinges of highly corrosion-resistant stainless steel, central drain on case side can be shifted to the left or right.

Dimensions of bottom 50 x 97 cm, height 70 cm.

Mounting Frame with 2 quick-snap fasteners for installation in a darkroom vehicle.

Jacket Cooling on all tanks by means of overflow system with water level limitation (supplementary equipment).

Rubber Seal for the pressure lid to WILNOS TF 2000 and TF 2000 W. The pressure lid is furnished with 5 seals.

PVC Tank 22.5 litres for WILNOS TF 2000 and TF 2000 W.

Lid of PVC for chemical tanks.

Rinsing Water Unit, optional for TF 2000, with 4 ball cocks, piping and 3 immersion tubes, ready-mounted on light grey PVC base.

Dimensions: 970 x 200 x 5 mm.

Film Processing Unit WILNOS TF 2000 W, design and dimensions identical to TF 2000, equipped with 3 tanks with deep-lying, aligned spray tube for rinsing (Li.-No. 30 18 12) and 2 normal tanks (Li.-No. 30 16 52). The pressure lid can be closed for transport of the WILNOS TF 2000 W in the same way as the lid of the TF 2000.

PVC Tank with deep-lying, aligned spray tube, 22.5 litres, for WILNOS TF 2000 W.

X-ray Film Processing Machine "Structurix NDT 1", microprocessor-controlled processing machine for industrial X-ray films, programmed for 8 min. and 12 min. processing time, suitable for all the usual film formats from 10 cm long and up to 43.2 cm wide. Uniform and economical infrared film drying system, automated with built-in economy control, electronically controlled regeneration of chemicals according to the area of the processed films.

Dimensions: Length 74 cm (with feed table and film chute 132 cm), Width 70 cm, height approx. 120 cm.

Weight 120 kg empty, 290 kg full.

Hourly capacity approx. 315 films of 6 x 24 cm, approx. 210 films of 10 x 24 cm, approx. 115 films of 10 x 48 cm or approx. 46 films of 30 x 40 cm, assuming an 8-minute process in each case.

Plug connection 230 V / 50 Hz, max. power requirement 3.3 kW. Scope of supply includes 2 regenerator tanks of 55 l each, filters and filter cartridges, cooling system for the developing bath and guide rails for the feed table.

X-ray Film Processing Machine "Structurix NDT E", a very economical processing machine for industrial X-ray films. Two processing speeds may be used: 25 cm / min. = 8 min. processing time, and 17 cm / min. = 12 min. processing time. The regeneration of chemicals is controlled by measuring the total length of inserted films. Uniform and economical infrared film drying system.

Film formats: min. 12 cm long in input direction, max. 43.2 cm wide.

Dimensions: Length 73 cm (with feed table and film chute 150 cm), Width 68 cm, height approx. 105 cm.

Weight 175 kg empty, 250 kg full.

Hourly capacity approx. 320 films of 6 x 24 cm, approx. 215 films of 10 x 24 cm, approx. 115 films of 10 x 48 cm, assuming an 8-minute process in each case.

Plug connection 230 V / 50 Hz, fuse 16 A. Scope of supply includes 1 set of regenerator tanks of 30 l each, 1 water filter with filter cartridge, and cooling system for the developing bath.

X-ray Film drying Machine "Structurix DR" is described under Li.-No. 34 05 01.
Silver recovery equipment

30 60 31 Silver Indicator Strips for determining the silver concentration in fixing baths, package with 100 strips.

30 70 01 Silver Recovery Unit "DUO" for machine processing (flow through system), electrolytically working, maintenance free. Tank capacity 8 litres, performed for max. 3 g silver / h. Plug connection 230 V / 50 Hz, 20 Watt.

30 71 01 Silver Recovery Unit "DUO" for tank processing. Similar to Li.-No. 30 70 01, but equipped with air injection device for bath circulation.

30 70 11 Silver Collecting Net for the "DUO" units to gather the separated silver from tank bottom.

30 72 01 Silver Recovery Unit "EL-1" to be used with both machine and tank processing. Performed for max. 12 g silver / h, tank capacity 35 litres. Plug connection 230 V / 50 Hz, 30 Watt.

30 72 11 Silver Collecting Net for "EL-1" unit for gathering the separated silver.

Darkroom accessories

31 01 11 X-ray Film Hangers with corner clips of stainless steel for WILNOS tanks (transversely suspended),

   top-bar length 15.5 cm, only of single design = 1 film per hanger.

   Sizes as listed under Li.-No. 31 01 21.

31 01 21 X-ray Film Hangers with corner clips, of stainless steel, 46 cm top bar length.

   6 x 24 cm, 1-3 -on 10 x 48 cm, 1-3 -on 13 x 18 cm, 1+2 -on 18 x 24 cm, 1+2 -on 30 x 40 cm

   6 x 72 cm 10 x 72 cm 24 x 30 cm

31 01 31 X-ray Film Channel Hangers of stainless steel for WILNOS tanks, (transversely suspended),

   top-bar length 15.5 cm, only of single design = 1 film per hanger.

   Sizes as listed under Li.-No. 31 01 41.

31 01 41 X-ray Film Channel Hangers, top-bar length according to customer requirements (standard length 46 cm).

   6 x 24 cm, 1-5 -on 6 x 48 cm, 1-5 -on 10 x 24 cm, 1-3 -on 10 x 48 cm, 1-3 -on

   6 x 72 cm 10 x 72 cm

31 01 51 Rubber Bushing, black, for mounting on the top-bar ends.
Darkroom accessories

**EWEM Film Clips**, for suspending the films in the drying cabinet, stainless steel,

- 31 02 11 10 mm wide.
- 31 02 21 20 mm wide.
- 31 03 31 30 mm wide with weight.

- 31 04 11 **Drip Rail** for suspending of 12 film hangers.
- 31 04 31 **Hanger Storage Bracket** of plastic, for up to 15 film hangers.

- 31 05 21 **Developing Tray** 24 x 30 x 6 cm
- 31 05 31 **Developing Tray** 30 x 40 x 6 cm
- 31 05 41 **Developing Tray** 40 x 50 x 10.5 cm

- 32 01 11 **Agitating Paddle** 68 cm long
- 32 02 11 **Film Wiper Tongs**

- 32 03 11 **Tank Emptier** of PVC, automatic operation, capacity 5 litres / min., with hose 1 m long.

- 32 04 11 **Tank Immersion Heater**, 600 W, 230 V, 50 cm long, of stainless steel, with safety plug and suspension yoke.
- 32 04 21 **Tank Immersion Heater**, 600 W, 230 V, 50 cm long, of stainless steel, with safety plug and top-bar for WILNOS tanks.

- 32 05 11 **Thermometer** in plastic tube for tank suspension.
- 32 05 21 **Thermometer** with top-bar for WILNOS tanks.

- 32 06 11 **Combined Thermometer Hydrometer** to check developer and fixer concentrations.

- 32 08 41 **Darkroom Timer** (Junghans), range 0-15 min, with individually adjustable stop for precise and reliable darkroom timing, can be used as both wall-mounted and desk top unit.
- 32 08 51 **Darkroom Timer** (Junghans), range 0-30 min, with individually adjustable stop for precise and reliable darkroom timing, can be used as both wall-mounted and desk top unit.

**Darkroom lamps / safelights**

- 33 02 51 **PTW Darkroom Lamp** (safelight), Type 50 001, for connection to 230 V a.c., with mains lead 2 m long and plug switch, adjustable Krypton lamp, for indirect light, with built-in special Schott filter for industrial X-ray films, mounting bracket for wall and ceiling. The PTW lamp ensures unusually bright darkroom illumination without danger of fogging the films.

- 33 02 61 **PTW Darkroom Lamp** (safelight), type 50 001, with chain suspension for ceiling mounting.

- 33 02 71 **Spare Bulb** for PTW darkroom lamp, Krypton 25 W / 230 V.
- 33 02 41 **Spare Bulb** for PTW darkroom lamp (former type s), special mercury vapour lamp bulb HQL 50 W.

- 33 03 01 **Darkroom Lamp ALU X** (safelight) with 11 Watt fluorescent tube and special filter combination for the usual types of X-ray films used for NDT applications; for indirect lighting and a high degree of light intensity without danger of fogging the films. Robust dark bronze anodized aluminium case with wall bracket, including plug with ON/OFF switch and 1.5 m flex for connection to 230 V / a.c.

- 33 03 11 **Spare Fluorescent Tube** for ALU X.
34 01 11 X-ray Film Drying Cabinet, Type TSCH, flow through system without air circulation. Approx. 400 m³/h (14,000 cu ft/hr) air flow and 1200 Watt heating capacity guarantee good drying results also in humid atmosphere. Cabinet equipped with thermostat and 90 min. time switch. White steel body with unbreakable glass front door, 8 feet long cable with earthed connector. Capacity about 28 films 35.6 x 42.3 cm. Effective internal dimensions 54.3 x 26.7 x 22.8 in. Overall dimensions 61 (h) x 26.8 (w) x 23.6 (d) in. Plug connection 230 V / 50 Hz.

34 01 21 X-ray Film Drying Cabinet, Type TSCH E, is easily disassembled for transportation purpose. Same specification applies as for type TSCH, Li-No. 34 01 11.

34 03 21 Dukalit Drying Chest 16, for 16 film hangers up to 40 x 48 cm, top-bar length 46 cm, with lid hinged on one side, thermostat, heater, automatic overheating trip. Outside dimensions: 480 x 680 x 650 mm. Top-loading type, for 230 V a.c. / 500 W.

34 04 11 Darkroom Work Table, all three visible side panels of Resopal, table top linoleum-covered to prevent electrostatic loading, 4 cm high hardwood strip along the back and sides of the work top. Cabinet draw combination with light-tight tiltable film magazine for all common film formats; please quote desired divisions. Lateral paper disposal slot with waste bin in cabinet. Cabinet sections with adjustable intermediate bottoms. Dimensions: Total depth 540 mm, height to top edge of work top 950 mm. The following widths available:

- 900 mm
- 1000 mm
- 1200 mm

Apart from the widths listed above, intermediate sizes are also available on request.

34 04 21 Supplementary price for design with film magazine running on telescopic rails.

34 04 31 Supplementary price for cut-out for film scribor.

34 05 01 X-ray Film Drying Machine "Structurix DR". This handy desk-top unit operates with a system of film rollers facilitating hot air drying on both sides, and is able to deliver the dried film within just a few minutes. The preceding film processing must include a hardening and fixing bath (e.g. G 335) or a fixing bath with a hardening additive (e.g. G 321 + Aditan). It should also be ensured that the films are thoroughly rinsed before drying. The drying unit can be used for all the usual film formats from 10.5 cm in length and up to 36 cm in width. Dimensions: Length 60 cm, with extended tray 83 cm, Width 63 cm, Height with water bottle 46 cm. Weight: 24 kg empty. For connection to 230-240 V / 50-60 Hz, 10 A fuse. Max. power requirement 1600 W.

35 05 01 Darkroom Fan, Type "TX-6DR", for light proof air intake and extraction, to be mounted in windows or walls up to approx. 14 in., with electronically controlled shutter. For 230 V / 50 Hz. Further information on request.

35 05 11 Darkroom Fan, Type "TL-6DR", similar to Li.-No. 35 05 01, but without automatically acting shutter. For 230 V / 50 Hz.

35 05 21 Three Stage Regulating Switch for air flow levels of 156, 227 and 270 m³/hr, switchable to air intake or extraction, for on-wall mounting.

35 05 41 Light Proof Grid for a 300 x 300 mm Opening. This “second opening” must not be forgotten for effective air exchange in the darkroom.
50 03 01 Graetz Dose Rate Meter X 5 E, calibratable, measurement of gamma and X-radiation (d.c. units) in the 48 kV to 2 MV energy range, with 9 measuring ranges: 0.5 - 10 µSv/h; 5 - 100 µSv/h; 0.05 - 2 mSv/h and 1 - 50 mSv/h for the internal counter tube, 4 measuring ranges for probe 18 550 E as per Li.-No. 50 03 31, and 1 measuring range for probe 18 509 as per Li.-No. 50 03 41. Unit ready for operation with two 1.5 V batteries.

50 03 11 Calibration Costs for X 5 E, including official certificate. Validity of calibration 24 months.

50 03 21 Calibration Costs for X 5 E, including official calibration certificate with a validity of 6 years. In this case, a PS 9 reference source (see "Note" below) is required for the first and subsequent calibration of the X 5 E. The price is for calibration of one X 5 E in combination with a PS 9 reference source. After calibration, you receive your calibrated measuring instrument, your reference source and a calibration certificate with an appendix sheet. Enter the results obtained by yourselves in this appendix sheet after each half-yearly check. In this way, you will be able to extend the validity of calibration from 2 to 6 years. The check measurements must be carried out with the same reference source used for the initial calibration.

Note: If you already possess a PS 9 reference source, please send it to us for the purpose of calibration (in the case of realignment of calibration, together with one or several X 5 E). Otherwise, you can obtain a PS 9 reference source from us under Li.-No. 50 20 31. With one PS 9 reference source, you can have an unlimited number of X 5 E meters calibrated.

50 03 31 Gamma Probe 18 550 E, external probe for X 5 E, calibratable.

50 03 51 Battery Container for 2 mono-cells, for external power supply to all X units.

50 03 81 Testing Device PV 18 550 for extending calibration validity of probe 18 550 E to 6 years.

50 03 91 Calibration Costs for one X 5 E with probe. Validity of calibration 6 years.

50 06 01 Calibration Costs for one X 5 E with probe, reference source PS 9 and checking device PV 18 550. Validity of calibration 6 years.

50 07 01 Graetz Dose Rate Meter X 5 DE, calibratable, for measurements of gamma and X-radiation (d.c. units) in the 48 kV to 2 MV energy range. Dose rate display digital, and/or semi-analog in form of a segmental arc beam on the liquid crystal display. Five automatically selected measuring ranges from nSv to µSv to 19.99 mSv/h for the internal built-in counter tube and up to 9.99 Sv/h for the 18 529 probe (not included). Instrument supplied ready for use complete with 9 V battery (6 LF 22). Further accessories available.

50 07 11 Wall Mounting Unit "D" with mains power connector, including 18 550 DE Probe and 10 m cable for mounting of one X 5 DE or one X 50 DE Digital Dose Rate Meter, for stationary room monitoring. Adjustable alarm trip threshold, with visual and audible alarm, potential free relay outputs for connection of sirens and alarm lamps.
50 08 01 Graetz X 50 DE Dose Rate Meter, calibratable, for measurement of gamma and X-radiation (d.c. units) in the 48 kV to 2 MV energy range. Dose rate display digital, and/or semi-analog in the form of a segmental arc beam on the liquid crystal display. Automatically selected measuring ranges from 0 to 999 mSv/h. Range of accessories similar to that for X 5 DE. Instrument supplied ready for use complete with 9 V battery (6LF 22).

50 08 11 Calibration Costs for X 50 DE, including official certificate. Validity of calibration 24 months.

50 07 51 Leather Ever-ready Bag “D” for X 5 DE and X 50 DE, with side pocket for accessories.

50 09 01 Graetz Personal Dosimeter GPD 100, calibratable, for measurement of gamma and X-radiation (d.c. units) in the 50 kV to 2 MV range. Dose and dose rate are together shown digitally in the display. Measuring ranges: dose from 1 µSv to 10 Sv; dose rate from 5 µSv/h to 1 Sv/h. Four warning thresholds for both dose and dose rate may be set by the customer. Acoustic single pulse function switchable. Dose value and the warning thresholds are stored when battery is changed. Dimensions 120 x 65 x 22 mm (clip not included), weight 160 g complete with 2 mignon batteries.

50 09 11 Calibration Costs for GPD 100, including issue of official certificate. Validity of calibration 24 month.

50 09 21 Calibration Costs for GPD 100, including issue of official calibration certificate with a validity of 6 years. Reference source PS 9 (Li.-No. 50 20 31) and testing device PV-GPD (Li.-No. 50 09 31) according to “further explanations” (Li.-No. 50 03 21) must be used.

50 09 31 Testing Device PV-GPD, to adjust reference source PS 9 and GPD 100 for calibration measurements. PV-GPD is unavoidably necessary for achieving the 6 years validity period of calibration certificate for GPD 100.

50 08 61 Gamma 200 m Dose Rate Meter, non-calibratable, with digital display, for measurement of gamma and X-radiation (d.c. units) in the 48 kV to 2 MV energy range. Measuring range 0 to 1999 µSv/h, approx. seven seconds stabilization time under heavy radiation intensity fluctuation. Instrument supplied ready for use complete with 9 V battery. Available accessories: earphone, carrying case.

50 01 01 Graetz Dose Rate Meter X 50 B, not calibratable, with built-in Geiger-Müller counter tube, for measuring gamma and X-radiation (d.c. units) in the 83 kV - 2 MV energy range. 4 selectable measuring ranges: 5-100 µSv/h, 50-1000 µSv/h, 0.5-10 mSv/h, 10-500 mSv/h. Unit ready for operation with two 1.5 V batteries.

50 01 91 Spare Battery, 1.5 V, suitable for X 5 E, X 50 B, Gammatest 30 m and GPD 100. 2 batteries required per unit.

50 01 41 Spare Mallory Battery TR 232 (for units of earlier design).

50 01 71 Probe Cable, 1.25 m long. Longer cables available up to max. 100 m.

50 01 21 Leather Ever-ready Bag “X” for X 5 E and X 50 B, with side pocket for accessories.

50 01 31 Miniature Earphone for audible pulse check.

50 01 61 Small Set of Accessories for X 50 B, comprising: Leather ever-ready bag, universal probe 18 504, probe cable 1.25 m long, probe data card, earphone and battery holder.

50 02 01 Dose Rate Meter GAMMA 100 m, not calibratable, for measuring gamma and X-radiation (d.c. units) in the 48 kV - 2 MV energy range, with 2 measuring ranges: 0 - 100 µSv/h and 0 - 1mSv/h. On request also with R/h-scale available. Unit ready for operation with 4.5 V flat battery.

50 02 21 Miniature Earphone for GAMMA 100 m.

50 02 31 Flat Battery 4.5 V for GAMMA 100 m.

50 04 41 X-ray Gamma Dosimeter 27 060, calibratable, complete with probe, for measurements of dose rate in the 6 kV to 2 MV energy range. The ionisation chamber probe can be separated from the unit, and probe cables (see below) may be used. 6 dose measuring ranges: 1 / 3 / 10 / 30 / 100 / 300 µSv. 12 dose rate measuring ranges: 10 / 30 / 100 / 300 / 1000 / 3000 µSv/h and the same values for mSv/h. Dosimeter complete with batteries, bag, probe cable 1.5 m, integrated reference source Sr 90, 0.26 MBq (7 µCi).

50 04 51 Calibration Costs for Dosimeter 27 060, validity 6 years.

50 04 61 Probe Cable 15 m long.

50 04 71 Probe Cable 50 m long.
50 10 11 Direct-view Pocket Dosimeter, calibratable, for gamma and X-radiation between 40 kV and 1.3 MV (gamma dosimeter) in accordance with German standard DIN 44 425, pen-type, for dose measurement of personnel, indicating range 0 - 2000 µSv.

50 11 11 Direct-view Pocket Dosimeter, calibratable, for gamma and X-radiation between 18 kV and 1.3 MV (soft or X-radiation dosimeter), in accordance with German standard DIN 44 425, pen-type, for dose measurement of personnel, indicating range 0 - 2000 µSv.

50 10 21 Calibration Costs for pocket dosimeters, calibration validity 2 years.

50 10 31 Dosimeter Charger for charging all pocket dosimeters (for zero reset) in accordance with DIN 44 425, battery operated, with two 1.5 Volt batteries.

50 10 41 Spare Battery for charger.

50 12 01 Dosimeter Calibration Checker DT 800 without reference source, qualification approved, for simultaneous checking of 1 to 8 pocket dosimeters of the type STE A 02. With a calibrated checker, the calibration validity of the above mentioned pen-type dosimeters can be extended for an unlimited period if you perform half-yearly checks and duly record the results. In Germany these records must be archived for a minimum of 30 years. The purchase of a checker eliminates the necessity to send the pocket dosimeters away for calibration (every 2 years), thus ensuring continuous availability. A complete set of checking equipment includes a PS 9 reference source, Li.-No. 5020 31.

50 12 11 Calibration Cost for DT 800 (Li.-No. 50 12 01) in combination with a reference source PS 9 (Li.-No. 50 20 31).

50 20 31 Reference Source PS 9, 333 kBq (9 µCi) Caesium 137, qualification approved, complete with protective container, suitable as reference source for extending the calibration validity of the dose rate meter types X 5 E, X 5 S and FH 40 E, and also as a reference source for calibration checker DT 800. Also suitable for checking the functions of all survey meters and warning devices. In Germany each company site can have reference sources without the need for official approval; the authorities concerned must merely be informed of its existence.

50 23 01 Dose Rate Warning Device Gammatest 30 m, attachable audible radiation warning device for gamma and X-radiation (d.c. units) in the energy range between 48 kV and 2 MV, with selectable warning threshold 7.5 µSv/h, 25 µSv/h, 40 µSv/h and 300 µSv/h. Three switch positions: OFF, TEST, ON. The switch position OFF can be blocked by screwing in the stud screw in order to prevent the unit from being switched off unintentionally. In addition, readiness for operation is indicated by a conspicuous LED. Once the warning threshold has been exceeded, a loud, almost penetrating, continuous, audible alarm is emitted which can be heard above high levels of ambient noise. An additional visual radiation alarm is provided by the LED flashing, the frequency of which increases with radiation intensity. Dimensions: 125 x 72 x 26 mm. Weight: 230 g with battery.

50 01 91 Spare Battery, 1.5 V, suitable for X 5 E, X 50 B, Gammatest 30 m and GPD 100. 2 batteries required per unit.

50 28 01 Personal Radiation Monitor Raytronic G 6 K, a light audible pocket-sized radiation monitor with a permanent stainless steel clip plus an additional safety chain. Energy-compensated Geiger-Müller counter tube with an energy detection range of 50 kV to 2 MV gamma and X-radiation. The audible signal is repeated at a rate proportional to the radiation field, at 60 µSv/h (6 mR/h) approx. 1 beep per second - also easily audible in surroundings where there are high levels of background noise. Insensitive to electrical noise. Simple push button battery test mode. Additional functional check in form of a beep every 2 - 10 minutes. Battery life more than 1 year under normal operating conditions. Unit cannot be switched off. Dimensions: 25 x 50 x 100 mm. Weight 145 g with battery.

50 28 21 Spare Battery for Raytronic G 6 K.

50 28 11 Personal Radiation Monitor Raytronic G 6 K LX, intrinsically safe, for use in hazardous areas (e.g. chemical plants, refineries). Specification identical to G 6 K.

51 01 01 Lead Glass, ground and polished on both sides, with ground edges, available in any size and thickness.
52 02 52 **WILNOS Folding Stand** for warning signs 210 x 297 mm, strong stainless steel construction. Use of warning signs on self-adhesive foil is recommended.

52 04 32 **Radiation warning sign WS 111** " Kontrollbereich Vorsicht Strahlung", for WILNOS barrier cord List No. 52 14 32, of glass fibre-reinforced PVC, size 105 x 148 mm (DIN A6).

52 14 32 **WILNOS barrier cord of perlon**, 10 m long, with warning signs WS 111, List No. 52 04 32, at 60 cm intervals. Other length available if required.

52 15 01 **Radiation Barrier Tape Dispenser**. Robust fabric-reinforced plastic tape, width 4 cm, length 50 m, with attached lug at end. Continuous legend on one side:

\[ \text{KEIN ZUTRITT KONTROLLBEREICH VORSICHT STRAHLUNG} \]

52 03 02 NV!
52 03 12 Of 2 mm thick resopal
52 03 22 Of aluminium

52 03 52 NV!
52 03 62 Of 2 mm thick resopal
52 03 72 Of aluminium

52 04 02 NV!
52 04 22 Of aluminium

52 05 02 NV!
52 05 22 Of aluminium

52 06 01 NV!
52 06 41 NV!
52 06 12 NV!
52 06 31 NV!

52 08 02 NV!
52 08 42 NV!
52 08 52 NV!

52 01 02 **WILNOS Radiation Warning Sign** in accordance with DIN 25 400 of 1 mm polystyrene with radiation warning symbol and inscription "RADIOACTIVE", size 10.5 x 12 cm.

52 01 12 **WILNOS barrier cord of perlon**, 10 m long with warning signs List No. 52 01 02 at intervals of 50 cm. Other length also available if required.

52 02 22 **WILNOS Radiation Warning Sign** of 2 mm thick yellow polystyrene, with radiation warning symbol and the inscription "RADIATION KEEP OUT", size 33 x 36 cm. In Germany normally warning signs in accordance with DIN 25 430 are required. Warning signs for the hazard area and for X-ray facilities, inscription and symbols in accordance with DIN 25 430, August 1980 edition. These signs show the radiation warning symbol in accordance with DIN 25 400 as well as additional inscriptions. Our normal range of signs covers a series of inscriptions in German. Inscriptions in other languages are available upon request. The signs are available on resopal or aluminium base or as self-adhesive foil, in different sizes, e.g. 105 x 148 mm or 210 x 297 mm. Please ask for our range.
Dye Penetrant, System RED-WHITE, available in aerosol cans and large tins.

60 01 11 **Diffusion red**, washable in water, red penetrant, Type BDR-L.

60 02 11 **Cleaner** (dye remover), Type BRE for removing excess penetrant from the workpiece. In the case of cracks or flaws wider than 0.2 mm, it is recommended that water be used instead of the cleaner.

60 03 11 **Developer** (white), removable by wiping, Type BEA.

60 04 11 **Developer** (white), cannot be removed by wiping, Type BEW, for permanent indication of flaws. Can be removed with cleaner Li.-No. 60 02 11.

Owing to inspection and acceptance regulations, certain penetrant systems are specified as binding for many applications owing to their temperature-resistance, environmental factors, lack of halogen and sulphur contents, of their fluorescent indicating properties. Please ask for our range.

61 11 01 **Alternating Current Hand Magnet TWM 220 N**, handy, robust magnetic yoke for direct connection to 230 V a.c. In conjunction with moving poles as per Li.-No. 61 11 11, the magnet can also be used for inspecting uneven surfaces, pipe elbows, angles etc. The unit has the German GS symbol meaning that it has been passed completely safe.

- Electrical connection: 230 V / 50 Hz.
- Weight: 3.2 kg
- Distance between poles without adapter poles: 170 mm
- Field strength without adapter poles: 7.7 kA / m, measured on a steel bar 50 x 20 x 400 mm.

The hand magnet is supplied complete with a carrier case and various sample penetrants.

61 11 11 **Movable Adapter Poles**, suitable for hand magnets TWM 220 N and TWM 42 N.

61 11 21 **45° Adapter Poles**, suitable for hand magnets TWM 220 N and TWM 42 N.

61 11 31 **Protective Poles**, for hand magnets TWM 220 N and TWM 42 N, recommended for protecting the poles of the hand magnet in the case of frequent changing of adapter poles.

61 12 01 **Alternating Current Hand Magnet TWM 42 N**, yoke magnetizing unit for connecting to an isolating transformer which is also supplied. The hand magnet is supplied by the isolating transformer with a safety voltage of 42 V. The normal length of the cable connecting magnet and transformer is 3.5 m, longer cables on request. The isolating transformer is connected to 230 V a.c. The device corresponds to the safety regulations of the German VDE i.e. the TWM 42 N can be used for inspection inside boilers, tubes and closed vessels.

- Suitable for adapter poles as per Li.-No. 61 11 11 to 61 11 31.
- Electrical connection, hand magnet: 42 V / 50 Hz
- Electrical connection, isolating transformer: 230 V/50 Hz.
- Weight, hand magnet: 3.3 kg.
- Weight, isolating transformer: 6.5 kg.
- Distance between poles: 170 mm.
- Field strength without adapter poles: 6.6 kA / m, measured on a steel bar 50 x 20 x 400 mm.

The hand magnet is supplied complete with isolating transformer, a carrier case and various sample penetrants.
**Magnetic flaw detection equipment**

61 13 01 *Alternating Current Cross Magnet KWM 42/30.*

By means of two a.c. yokes arranged in a cross, it is possible to detect longitudinal and transverse cracks in one operation. Two running wheels on each magnetic pole keep the air gap constant and enable the magnet to be easily moved along the surface under inspection.

- **Electrical connection, hand magnet:** 42 V / 50 Hz
- **Electrical connection, isolating transformer:** 3 x 380 V / 42 V
- **Weight, cross magnet:** 9.2 kg
- **Weight, isolating transformer:** 16.4 kg
- **Field strength:** 4.3 kA / m, measured on a steel plate
- **Duty factor:** 30 %

The unit is supplied complete with isolating transformer.

61 13 11 *Alternating Current Cross Magnet KWM 42/60.*

Same unit as KWM 42/30, but with 60 % duty factor.

**Weight of the isolating transformer:** 30 kg.

61 21 01 *UV Hand Lamp, spot-focused,*

with approx. 3.75 m interconnecting cable. Lamp power 100 Watt.

- **UV intensity at 300 mm distance:** 10 000 µW / cm.

The lamp is suitable for visual checks in connection with fluorescent inspection liquids in magnetic particle and penetrant inspection work.

For operating the hand lamp, a **choke** as per Li.-No. 61 22 01 is required.

61 22 01 **Choke** for UV hand lamps as per Li.-No. 61 21 01

**Electrical connection:** 230 V / 50 Hz.

61 22 11 **Isolating Transformer with Choke** for UV hand lamps as per Li.-No. 61 21 51. Suitable for using the lamps in boilers, tubes and closed vessels.

61 21 51 **UV Hand Lamp, spot-focused,** technical data as per Li.-No. 61 21 01, but prepared to be connected to an **isolating transformer with choke** (Li.-No. 61 22 11), which is not included. Cables to connect isolating transformer and UV lamp 5 to 25 m long in steps of 5 m, on request.

61 21 21 **Spare Lamp 100 Watt**, for UV hand lamps as per Li.-No. 61 21 01 and 61 21 51.

61 21 41 **Spare Filter Glass** for hand lamps as per Li.-No. 61 21 01 and 61 21 51.

61 23 01 **UV Light Meter J 221** with removable probe.

- **Measuring ranges:** 0 - 1200 µW / cm² and 1000 to 6000 µW / cm².

61 24 01 **Field Strength Meter MP 3 Z** for measuring tangential field strengths in magnetic particle inspection work.

- **3 measuring ranges with analog display:** 0 - 10, 0 - 100, and 0 - 1000 A / cm.

Suitable for measuring a.c. and d.c. field intensity.

Scope of supply: meter with 1.5 V baby battery, tangential field probe and carrying case.

61 24 31 **WILNOS Magnetic Field Meter MFM 200** for measuring all magnetic fields, both a.c. and d.c. components. Digital display 0 to 200 A / m.

61 24 51 **Berthold Reference Block**, a simple device for the determining of magnetizing efficiency, penetration and quality of the fluorescent oil suspension; in addition, the direction of the magnetic field can be ascertained.

61 30 01 **White Coating, TYPE DPM,** to prepare dark or non smooth surfaces for magnetic particle test with non-fluorescent liquids. Free of corrosive components, may be washed off with cleaner as per Li.-No. 60 02 11.

61 31 01 **Magnetic Particle Liquid, TYPE MPS-S,** non fluorescent, **black,** average particle size about 0.2 µm.

61 32 01 **Magnetic Particle Liquid, TYPE MPS-F,** **orange coloured,** fluorescent, to be used with UV lamps. Average particle size about 0.4 µm.