inLab 3D

Operator’s manual
Software version 3.6X
# Table of contents

1 Introduction ........................................................................................................ 15
   1.1 Dear Customer, .......................................................................................... 15
   1.2 Copyright and trademark .......................................................................... 15
   1.3 Structure of the documents ........................................................................ 16
      1.3.1 Conventions ...................................................................................... 16
      1.3.2 Formats of the manual ....................................................................... 17

2 Software ............................................................................................................... 18
   2.1 System requirements .................................................................................. 18
   2.2 Installing the software ................................................................................ 18
   2.3 Downloading the software to the milling unit ........................................... 19
   2.4 Uninstalling the software .......................................................................... 19
   2.5 Copy protection (softguard dongle) ........................................................... 20
      2.5.1 Introduction......................................................................................... 20
      2.5.2 Softguard dongle .............................................................................. 20
      2.5.3 Connecting the softguard dongle ....................................................... 20
      2.5.4 Without softguard dongles ................................................................. 21
   2.6 Starting the software ................................................................................... 21

3 User interface ..................................................................................................... 22
   3.1 Description of the user interface ............................................................... 22
   3.2 Tool bar ...................................................................................................... 23
   3.3 View window .............................................................................................. 25
      3.3.1 Introduction......................................................................................... 25
      3.3.2 Standard views .................................................................................. 25
      3.3.3 Zoom tool ......................................................................................... 26
      3.3.4 Showing/hiding the neighboring teeth ................................................ 26
      3.3.5 Showing/hiding the contact to the neighboring tooth (Contact) ....... 26
      3.3.6 Cut tool .............................................................................................. 27
      3.3.7 Showing/hiding the occlusion/articulation ......................................... 28
      3.3.8 Show/hide antagonist ....................................................................... 29
      3.3.8.1 Interocclusal clearance .................................................................. 29
      3.3.8.2 Antagonist .................................................................................... 30
      3.3.8.3 Antagonist surface ....................................................................... 30
      3.3.8.4 Tools subgroup ............................................................................. 31
   3.4 Design window ............................................................................................. 32
      3.4.1 Editing tool (Edit) ............................................................................. 33
      3.4.1.1 Editing a construction line ............................................................. 33
3.4.1 Changing a pontic .......................................................................... 34
3.4.1.2 Changing the abutment coping .................................................. 35
3.4.1.3 Changing connectors .................................................................. 35
3.4.1.4 Bridge design (dental database, reduced) .................................... 36
3.4.2 Form tool (Form) .......................................................... 36
3.4.2.1 Changing the size of the layer to be applied ......................... 37
3.4.3 Wax drop (Drop) ...................................................................... 37
3.4.3.1 Modifying the wax drop size .................................................. 38
3.4.3.2 Applying material ................................................................. 38
3.4.3.3 Removing material ................................................................. 38
3.4.3.4 Blending material .................................................................. 38
3.4.4 Scaling tool (Scale) ............................................................ 39
3.4.4.1 Activating the scaling function ............................................ 39
3.4.4.2 Scaling with inlays, onlays, crowns, veneers and bridge-dental database / reduced ................................................................. 39
3.4.4.3 Scaling with crown framework restorations and abutment copings of the bridge framework ................................................................. 40
3.4.4.4 Scaling with connectors and pontics ...................................... 41
3.4.4.5 Exiting the scaling function ................................................... 43
3.4.5 Shaping tool (Shape) ........................................................... 43
3.4.5.1 Applying material along an open line .................................. 43
3.4.5.2 Applying material inside a closed area .................................. 44
3.4.5.3 Smoothing an area ............................................................... 44
3.4.6 Reduce tool (Reduce) .......................................................... 45
3.4.7 Positioning tool (Position) ................................................... 45
3.4.8 Rotation tool (Rotate) ....................................................... 47
3.5 Status bar .................................................................................. 48
3.6 Design window ........................................................................... 48
3.6.1 Design window (3D viewer) ................................................... 48
3.6.2 Scale .................................................................................... 49
3.6.3 Coordinate system ................................................................. 49
3.7 Menu bar .................................................................................. 49
3.7.1 Restoration menu .................................................................. 50
3.7.1.1 Creating a restoration ......................................................... 51
3.7.1.2 Loading a restoration ........................................................... 52
3.7.1.3 Deleting a restoration ............................................................ 53
3.7.1.4 Exporting a restoration ........................................................ 53
3.7.1.5 Importing a restoration .......................................................... 53
3.7.1.6 Managing patient data ........................................................... 54
3.7.1.7 Sending a restoration .............................................................. 56
3.7.2 Design menu ......................................................................... 57
3.7.2.1 Change ................................................................................. 57
3.7.2.2 Quadrant ............................................................................... 57
3.7.2.3 Centering ............................................................................. 57
3.7.2.4 Insertion axis ................................................................. 58
3.7.2.5 Correcting an optical impression .................................................. 59
3.7.3 Settings menu ................................................................. 59
3.7.3.1 Parameters ................................................................. 59
3.7.3.2 Instruments ................................................................. 66
3.7.3.3 Configuration ............................................................... 68
3.7.3.4 Calibration ................................................................. 77
3.7.4 Window menu ................................................................. 78
3.7.4.1 Display options .......................................................... 78
3.7.4.2 Image catalog ............................................................. 79
3.7.4.3 3D Preview ................................................................. 79
3.7.4.4 Cursor ....................................................................... 79
3.7.4.5 Distance ................................................................. 80
3.7.5 “?” menu ................................................................. 80
3.7.5.1 Help (online help) ....................................................... 80
3.7.5.2 Info options ............................................................... 80
3.7.5.3 Softguard info ............................................................ 80
3.7.5.4 Info about program ..................................................... 81

4 Optical impression ................................................................. 82
4.1 Acquisitions with inEos .......................................................... 82
4.1.1 Top view scan ................................................................. 82
4.1.1.1 Capturing the optical impression ........................................ 82
4.1.1.2 “Puzzle” dialog box ..................................................... 83
4.1.1.3 Missing images .......................................................... 83
4.1.1.4 Completing views ....................................................... 83
4.1.1.5 Terminating the scan .................................................. 83
4.1.2 Rotational scan ............................................................ 83
4.1.2.1 Capturing the optical impression ..................................... 83
4.1.2.2 Terminating the scan .................................................. 83
4.1.3 Detail scan ................................................................. 84
4.1.3.1 Capturing the optical impression ..................................... 84
4.1.3.2 Terminating the scan .................................................. 84
4.1.4 Rotational scan in top view .................................................. 84
4.1.4.1 Increasing the precision ................................................ 84
4.1.4.2 Capturing the optical impression ..................................... 84
4.1.4.3 Further information ..................................................... 85
4.2 Optical impressions with the scanner (inLab, inLab MC XL) .......................... 85
  4.2.1 General information .................................................................................. 85
  4.2.2 15° scanning technique ........................................................................ 86
  4.2.3 45° scanning technique ........................................................................ 86
  4.2.4 Crown framework scanning technique .................................................. 87
  4.2.5 15° scanning technique for quadrant restoration .................................... 87
  4.2.6 Scanning antagonists ............................................................................ 87
  4.2.7 Scanning an occlusion .......................................................................... 88
  4.2.8 Scanning WaxUp .................................................................................. 89

4.3 Optical impressions with the CEREC Bluecam .............................................. 90
  4.3.1 Acquisition control .............................................................................. 90
  4.3.2 Single optical impression ...................................................................... 92
  4.3.3 Supplementary optical impressions ...................................................... 94
  4.3.4 Angled optical impressions .................................................................. 95
  4.3.5 Supplementary and angled optical impressions ..................................... 95
  4.3.6 Optical impressions for quadrant restoration ......................................... 95
  4.3.7 Acquiring end teeth ............................................................................. 96
  4.3.8 Acquiring the antagonist ...................................................................... 96
  4.3.9 Veneer images .................................................................................... 97
  4.3.10 Acquiring bridge preparations ........................................................... 97

4.4 Image fields .................................................................................................. 98
  4.4.1 Image field of the preparation .............................................................. 98
  4.4.2 Image field of the occlusion ................................................................ 98
  4.4.3 Image field of the antagonists ............................................................ 99
  4.4.4 Image field of the articulation ............................................................. 99

4.5 Image catalog ............................................................................................... 99
  4.5.1 General information ............................................................................ 99
  4.5.2 Opening the image catalog ................................................................. 99
  4.5.3 Design of the image catalog ................................................................ 100
  4.5.4 Redefining the reference optical impression ....................................... 101
  4.5.5 Active region ...................................................................................... 101
  4.5.6 Zooming in ......................................................................................... 102
  4.5.7 Changing the assignment .................................................................... 102
  4.5.8 Within an image field (inEos) ............................................................. 102
  4.5.9 Deleting images .................................................................................. 102
  4.5.10 Opening the recycle bin ..................................................................... 102
  4.5.11 "Puzzle" dialog box for top view scan (inEos) .................................... 102
  4.5.12 Rotational image (inEos) .................................................................. 103
  4.5.13 Displaying the height image ............................................................. 103
  4.5.14 Closing the image catalog ............................................................... 103
4.6  3D Preview .......................................................... 103
   4.6.1  General information ........................................ 103
   4.6.2  Opening the 3D Preview .................................... 103
   4.6.3  Design of the 3D Preview .................................. 104
   4.6.4  Symbol for reference optical impression .............. 104
   4.6.5  Numbering of optical impressions ....................... 105
   4.6.6  Passive folder ............................................... 105
   4.6.7  Copying/moving optical impressions .................... 105
   4.6.8  Displaying the date/time in the intensity image .... 106
   4.6.9  Displaying the height image ............................. 106
   4.6.10 Zoom function in the 3D Preview ....................... 107
   4.6.11 Deleting images ........................................... 107
   4.6.12 Opening the recycle bin ................................ 107
   4.6.13 Closing the 3D Preview ................................... 108
   4.6.14 Discarding initial, unsuitable optical impressions ... 108

5  Design ........................................................................ 110
   5.1  Trimming the preparation ..................................... 110
   5.2  Trimming the antagonist ....................................... 111
   5.3  Entering preparation margins, base lines and gingival lines ... 113
       5.3.1  General information ....................................... 113
       5.3.2  Entering the preparation margin ....................... 114
       5.3.3  Base lines for pontics ................................... 114
       5.3.4  Gingival line ............................................... 115
       5.3.5  Entering a preparation margin with unclear edges ... 115
   5.4  Redefining the insertion axis ................................ 116
       5.4.1  Redefining the insertion axis ......................... 117
       5.4.2  Correcting the orientation of bridges ............... 118
   5.5  Deleting and correcting image regions in image fields ... 118
       5.5.1  Example 1: Removing a powder spot ............... 119
       5.5.2  Example 2: Deleting disturbing image regions .... 120

6  Milling ........................................................................ 121
   6.1  Material selection ............................................. 121
   6.2  Milling preview .................................................. 122
       6.2.1  Milling unit selection .................................... 122
       6.2.2  Block visualization ....................................... 123
       6.2.2.1  General information ................................. 123
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.2.3</td>
<td>Change of sprue location</td>
<td>124</td>
</tr>
<tr>
<td>6.2.4</td>
<td>Positioning the restoration in a multicolored block</td>
<td>125</td>
</tr>
<tr>
<td>6.2.5</td>
<td>Sinter support</td>
<td>125</td>
</tr>
<tr>
<td>6.3</td>
<td>Starting the milling process</td>
<td>126</td>
</tr>
<tr>
<td>6.3.1</td>
<td>Milling of zirconia and aluminum oxide</td>
<td>128</td>
</tr>
<tr>
<td>6.4</td>
<td>Stack milling with inLab (or CEREC 3 milling unit)</td>
<td>129</td>
</tr>
<tr>
<td>6.5</td>
<td>Milling test pieces</td>
<td>130</td>
</tr>
<tr>
<td>6.6</td>
<td>Milling a flip block</td>
<td>130</td>
</tr>
<tr>
<td>6.6.1</td>
<td>Prerequisite</td>
<td>130</td>
</tr>
<tr>
<td>6.6.2</td>
<td>Performing the milling process</td>
<td>130</td>
</tr>
<tr>
<td>6.7</td>
<td>Fast grinding</td>
<td>131</td>
</tr>
<tr>
<td>7</td>
<td>Managing/archiving data</td>
<td>132</td>
</tr>
<tr>
<td>7.1</td>
<td>Saving regularly</td>
<td>132</td>
</tr>
<tr>
<td>7.2</td>
<td>Connect database</td>
<td>132</td>
</tr>
<tr>
<td>7.3</td>
<td>Database import</td>
<td>132</td>
</tr>
<tr>
<td>7.4</td>
<td>Database export</td>
<td>132</td>
</tr>
<tr>
<td>7.5</td>
<td>Restoration files</td>
<td>133</td>
</tr>
<tr>
<td>7.6</td>
<td>Consistency check</td>
<td>133</td>
</tr>
<tr>
<td>8</td>
<td>Restoration types and design techniques</td>
<td>134</td>
</tr>
<tr>
<td>8.1</td>
<td>Overview of restoration types and design techniques</td>
<td>134</td>
</tr>
<tr>
<td>8.2</td>
<td>FrameWork</td>
<td>136</td>
</tr>
<tr>
<td>8.2.1</td>
<td>Designing a crown framework</td>
<td>136</td>
</tr>
<tr>
<td>8.2.1.1</td>
<td>Creating a new restoration</td>
<td>136</td>
</tr>
<tr>
<td>8.2.1.2</td>
<td>Acquiring the preparation</td>
<td>137</td>
</tr>
<tr>
<td>8.2.1.3</td>
<td>Hiding image regions</td>
<td>138</td>
</tr>
<tr>
<td>8.2.1.4</td>
<td>Examining the milling preview</td>
<td>139</td>
</tr>
<tr>
<td>8.2.1.5</td>
<td>Milling a framework</td>
<td>139</td>
</tr>
<tr>
<td>8.2.2</td>
<td>Designing abridge framework</td>
<td>140</td>
</tr>
<tr>
<td>8.2.2.1</td>
<td>Orientation of bridges on the model holder</td>
<td>140</td>
</tr>
<tr>
<td>8.2.2.2</td>
<td>Design example: 4-element bridge framework</td>
<td>141</td>
</tr>
</tbody>
</table>
8.3 WaxUp ........................................................................................................ 144
  8.3.1 Preparations and creating the wax model ........................................ 144
  8.3.2 Scanning the object ........................................................................ 144
  8.3.3 Drawing the bottom line ................................................................... 145
  8.3.4 Defining the insertion axis on the screen ........................................ 146
  8.3.5 Editing and checking the restoration .............................................. 146
  8.3.6 Milling the restoration ...................................................................... 146

8.4 Dental database .......................................................................................... 147
  8.4.1 Notes on the Artegral dental database .............................................. 147
    8.4.1.1 Description of the Artegral ImCrown® crown............................... 147
    8.4.1.2 Indications .................................................................................. 147
    8.4.1.3 Applications ............................................................................... 147
    8.4.1.4 Canine crown blanks .................................................................. 147
    8.4.1.5 Incisor crown blanks .................................................................. 148
    8.4.1.6 Selecting a dental database ....................................................... 148
    8.4.1.7 Inserting design tools ............................................................... 148
  8.4.2 Design example of MOD inlay with lingual extension for tooth 27 ... 149
    8.4.2.1 Creating a new restoration ......................................................... 149
    8.4.2.2 Acquiring the preparation ......................................................... 149
    8.4.2.3 Displaying the 3D representation ............................................... 149
    8.4.2.4 Hiding image regions ............................................................... 150
    8.4.2.5 Entering the preparation margin ............................................... 150
    8.4.2.6 Editing the restoration ............................................................. 151
    8.4.2.7 Examining the milling preview .................................................. 152
    8.4.2.8 Milling ....................................................................................... 152
  8.4.3 Design example for MOD inlay with antagonist image on tooth 16 ... 153
    8.4.3.1 Creating a new restoration ......................................................... 153
    8.4.3.2 Acquiring an optical impression of the antagonist and the preparation 153
    8.4.3.3 Displaying the 3D representation ............................................... 153
    8.4.3.4 Hiding image regions ............................................................... 154
    8.4.3.5 Trimming the antagonist ............................................................ 154
    8.4.3.6 Entering the preparation margin ............................................... 155
    8.4.3.7 Making a proximal contact ....................................................... 155
    8.4.3.8 Examining the milling preview .................................................. 156
    8.4.3.9 Milling ....................................................................................... 156
  8.4.4 Design example of partial crown with antagonist image for tooth 17 ... 157
    8.4.4.1 Creating a new restoration ......................................................... 157
    8.4.4.2 Acquiring an optical impression of the antagonist and the preparation 157
    8.4.4.3 Displaying the 3D representation ............................................... 157
    8.4.4.4 Hiding image regions ............................................................... 158
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.4.4.5 Trimming the antagonist</td>
<td>158</td>
</tr>
<tr>
<td>8.4.4.6 Entering the preparation margin</td>
<td>159</td>
</tr>
<tr>
<td>8.4.4.7 Examining the milling preview</td>
<td>160</td>
</tr>
<tr>
<td>8.4.4.8 Milling</td>
<td>160</td>
</tr>
<tr>
<td>8.4.5 Design example of crown with antagonist image for tooth 47</td>
<td>161</td>
</tr>
<tr>
<td>8.4.5.1 Creating a new restoration</td>
<td>161</td>
</tr>
<tr>
<td>8.4.5.2 Acquiring an optical impression of the antagonist and the preparation</td>
<td>161</td>
</tr>
<tr>
<td>8.4.5.3 Displaying the 3D representation</td>
<td>161</td>
</tr>
<tr>
<td>8.4.5.4 Hiding image regions</td>
<td>162</td>
</tr>
<tr>
<td>8.4.5.5 Trimming the antagonist</td>
<td>162</td>
</tr>
<tr>
<td>8.4.5.6 Entering the preparation margin</td>
<td>162</td>
</tr>
<tr>
<td>8.4.5.7 Performing the design</td>
<td>163</td>
</tr>
<tr>
<td>8.4.5.8 Examining the milling preview</td>
<td>164</td>
</tr>
<tr>
<td>8.4.5.9 Milling</td>
<td>164</td>
</tr>
<tr>
<td>8.4.6 Articulation design example</td>
<td>165</td>
</tr>
<tr>
<td>8.4.6.1 Creating a new restoration</td>
<td>165</td>
</tr>
<tr>
<td>8.4.6.2 Acquiring the preparation</td>
<td>165</td>
</tr>
<tr>
<td>8.4.6.3 Acquiring the antagonist</td>
<td>165</td>
</tr>
<tr>
<td>8.4.6.4 Acquiring the dynamic occlusion impression</td>
<td>165</td>
</tr>
<tr>
<td>8.4.6.5 Hiding image regions</td>
<td>165</td>
</tr>
<tr>
<td>8.4.6.6 Trimming the antagonist</td>
<td>165</td>
</tr>
<tr>
<td>8.4.6.7 Entering the preparation margin</td>
<td>166</td>
</tr>
<tr>
<td>8.4.6.8 Performing the design</td>
<td>166</td>
</tr>
<tr>
<td>8.4.6.9 Examining the milling preview</td>
<td>167</td>
</tr>
<tr>
<td>8.4.6.10 Milling</td>
<td>167</td>
</tr>
<tr>
<td>8.4.7 Veneer design example for tooth 21</td>
<td>167</td>
</tr>
<tr>
<td>8.4.7.1 Creating a new restoration</td>
<td>167</td>
</tr>
<tr>
<td>8.4.7.2 Acquiring the preparation</td>
<td>167</td>
</tr>
<tr>
<td>8.4.7.3 Trimming the model and drawing the preparation margin</td>
<td>168</td>
</tr>
<tr>
<td>8.4.7.4 Performing the design</td>
<td>168</td>
</tr>
<tr>
<td>8.4.7.5 Examining the milling preview</td>
<td>169</td>
</tr>
<tr>
<td>8.4.7.6 Milling</td>
<td>169</td>
</tr>
<tr>
<td>8.4.8 Bridge dental database design technique</td>
<td>169</td>
</tr>
<tr>
<td>8.5 Correlation</td>
<td>171</td>
</tr>
<tr>
<td>8.5.1 General information</td>
<td>171</td>
</tr>
<tr>
<td>8.5.2 Manual Correlation</td>
<td>172</td>
</tr>
<tr>
<td>8.5.3 Design example for tooth 16 with extensive fissure caries and proximal caries on both sides</td>
<td>173</td>
</tr>
<tr>
<td>8.5.3.1 Creating a new restoration</td>
<td>173</td>
</tr>
<tr>
<td>8.5.3.2 Taking an occlusal impression</td>
<td>173</td>
</tr>
<tr>
<td>8.5.3.3 Acquiring the preparation</td>
<td>174</td>
</tr>
<tr>
<td>8.5.3.4 Hiding image regions</td>
<td>175</td>
</tr>
<tr>
<td>8.5.3.5 Entering the preparation margin</td>
<td>175</td>
</tr>
<tr>
<td>8.5.3.6 Adapting the suggested proximal contact line</td>
<td>176</td>
</tr>
</tbody>
</table>
8.5.3.7 Adapting the copying line ................................................................. 177
8.5.3.8 Editing the restoration ....................................................................... 178
8.5.3.9 Examining the milling preview .......................................................... 179
8.5.3.10 Milling .......................................................................................... 179
8.5.4 Design example of crown for tooth 26 .............................................. 180
8.5.4.1 Creating a new restoration ............................................................... 180
8.5.4.2 Taking an occlusal impression ......................................................... 180
8.5.4.3 Acquiring the preparation ................................................................. 180
8.5.4.4 Hiding image regions ....................................................................... 181
8.5.4.5 Entering the preparation margin ...................................................... 182
8.5.4.6 Adapting the suggested proximal contact line .................................. 182
8.5.4.7 Accepting a copying line .................................................................. 183
8.5.4.8 Editing the restoration ....................................................................... 184
8.5.4.9 Examining the milling preview .......................................................... 185
8.5.4.10 Milling .......................................................................................... 185
8.5.5 Design example for bridge ................................................................. 186
8.5.5.1 Creating a new restoration ............................................................... 186
8.5.5.2 Taking an occlusal impression ......................................................... 186
8.5.5.3 Acquiring the preparation ................................................................. 187
8.5.5.4 Select the material and set the parameters ...................................... 187
8.5.5.5 Trimming the model ........................................................................... 187
8.5.5.6 Entering the preparation margin and base line ............................... 187
8.5.5.7 Drawing a copying line .................................................................... 188
8.5.5.8 Adapting the suggested proximal contact line .................................. 188
8.5.5.9 Editing the restoration ....................................................................... 189
8.5.5.10 Examining the milling preview ........................................................ 189
8.5.5.11 Milling .......................................................................................... 190
8.6 Replication ............................................................................................ 190
8.6.1 Area of application ............................................................................. 190
8.6.2 Design example for tooth 21 ............................................................... 190
8.6.2.1 Creating a new restoration ............................................................... 191
8.6.2.2 Acquiring optical impressions ......................................................... 191
8.6.2.3 Trimming the model and drawing the preparation margin ............. 192
8.6.2.4 Drawing a copying line .................................................................... 192
8.6.2.5 Positioning and editing the replication ............................................ 193
8.6.2.6 Examining the milling preview ........................................................ 195
8.6.2.7 Milling .......................................................................................... 196
8.7 Reduced ................................................................................................. 196
8.7.1 Reduced crown design technique ..................................................... 196
8.7.1.1 Full reduction .................................................................................. 197
8.7.1.2 Partial reduction ............................................................................... 197
8.7.1.3 Milling preview ............................................................................... 197
8.7.1.4 Example for front tooth crown with cutback using partial reduction 198
# Table of contents

## Operator's manual

8.7.2 Reduced bridge design technique ........................................ 199

8.8 Quadrant restoration .............................................................. 201

8.8.1 Acquiring tooth 16 ............................................................. 201

8.8.2 Tooth 16: Creating the restoration ....................................... 202

8.8.3 Tooth 15: Creating the restoration ....................................... 202

8.8.4 Tooth 14: Creating the restoration ....................................... 203

8.8.5 Tooth 17: Creating the restoration ....................................... 203

## 9 Messages

9.1 Information ............................................................................... 204

9.2 Warnings .................................................................................... 204

9.3 Error messages ........................................................................... 204

9.3.1 Self-explanatory error messages ............................................. 205

9.3.2 Two-stage errors ...................................................................... 205

9.3.3 Errors in connection with determining or managing construction lines ...................................................................... 205

9.3.4 Errors in the reconstruction of the restoration ....................... 206

9.3.5 System errors .......................................................................... 206

9.3.6 Memory allocation errors ....................................................... 207

## 10 Link to Practice Administration

10.1 Parameter interface ................................................................. 208

10.1.1 Patient data as parameter list .............................................. 208

10.1.2 Parameter interface: CerPi.exe .......................................... 208

10.1.3 Generating or preselecting patients ..................................... 208

10.2 SLIDA interface ....................................................................... 209

## 11 Tips and Tricks

11.1 Screenshot/TIF image ................................................................ 210

11.2 Technical notes ......................................................................... 210

11.2.1 Softguard dongle ................................................................. 210

11.2.2 Problems during communication with the milling unit ........... 210

11.2.2.1 Examples with CEREC 3 acquisition unit connected ............ 210

11.2.2.2 For PC/notebook ............................................................... 211
11.2.3 No sleep mode during the milling process ...................................... 212
11.2.4 Changing the font size ................................................................. 212
11.2.5 Screen saver ................................................................................ 212
11.2.6 Task Manager ............................................................................. 212
11.2.7 Correlation quality ..................................................................... 212
11.3 Service program ............................................................................ 213
11.4 Frequently Asked Questions ............................................................ 213
11.4.1 Database connection ................................................................. 213
11.4.2 Minimizing the program ............................................................ 213
12 Producing Straumann implants with inLab 3D ...................................... 214
12.1 How to use the scanbody ................................................................. 214
12.1.1 Scanbody ................................................................................... 214
12.1.2 Explanation of the symbols ......................................................... 214
12.1.3 Preparing a model for inEos ....................................................... 214
12.1.4 Preparing a model for the scanner (inLab) .................................... 214
12.2 General information ........................................................................ 215
12.2.1 Cooperation with the Straumann Company .................................. 215
12.2.2 Indications .................................................................................. 215
12.2.3 Further information ...................................................................... 215
12.3 Mesostructure design technique ...................................................... 216
12.3.1 Creating a new restoration .......................................................... 216
12.3.2 Scanning the antagonist and the preparation (implant situation) .... 216
12.3.3 Select the material and set the parameters ................................... 217
12.3.4 Displaying the 3D representation ................................................. 217
12.3.5 Entering the gingival line ............................................................ 217
12.3.6 Performing the design ................................................................. 218
12.3.7 Viewing the milling simulation .................................................... 219
12.3.8 Positioning the abutment optimally in the dental arch .................. 220
12.3.9 Sending an abutment ................................................................. 220
13 infiniDent Upload tool ......................................................................... 222
13.1 Function of Upload tool .................................................................... 222
13.2 Installing the Upload tool ................................................................. 222
13.3 Description of the user interface ......................................................... 222
13.3.1 Menu bar .................................................................................... 223
13.3.2 Tool bar .................................................................................... 223
13.3.3 Overview window ....................................................................... 224
13.4 Preparing files for uploading ........................................................... 224
Table of contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.5 Confirming the shopping cart</td>
<td>225</td>
</tr>
<tr>
<td>14 CEREC Connect</td>
<td>226</td>
</tr>
<tr>
<td>14.1 Introduction</td>
<td>226</td>
</tr>
<tr>
<td>14.2 E-mail notification of new orders</td>
<td>226</td>
</tr>
<tr>
<td>14.3 Starting the inLab 3D program</td>
<td>226</td>
</tr>
<tr>
<td>14.4 Registration</td>
<td>226</td>
</tr>
<tr>
<td>14.4.1 Registering via the website</td>
<td>226</td>
</tr>
<tr>
<td>14.4.2 Registration via the inLab 3D program</td>
<td>227</td>
</tr>
<tr>
<td>14.5 Connecting to the CEREC Connect portal</td>
<td>227</td>
</tr>
<tr>
<td>14.6 CEREC Connect portal</td>
<td>227</td>
</tr>
<tr>
<td>14.6.1 Introduction</td>
<td>227</td>
</tr>
<tr>
<td>14.6.2 &quot;Order List&quot; tab</td>
<td>228</td>
</tr>
<tr>
<td>14.6.3 &quot;Restoration Data&quot; tab</td>
<td>228</td>
</tr>
<tr>
<td>14.6.4 &quot;Desired Lab&quot; tab</td>
<td>229</td>
</tr>
<tr>
<td>14.6.5 &quot;Additional Notes&quot; tab</td>
<td>229</td>
</tr>
<tr>
<td>14.6.6 &quot;Accept/Reject Order&quot; tab</td>
<td>229</td>
</tr>
<tr>
<td>14.6.7 infiniDent shopping basket</td>
<td>230</td>
</tr>
<tr>
<td>14.7 Reviewing and designing a restoration in the inLab 3D software</td>
<td>231</td>
</tr>
<tr>
<td>14.7.1 Assessing the order</td>
<td>231</td>
</tr>
<tr>
<td>14.7.2 Preparation margin</td>
<td>232</td>
</tr>
<tr>
<td>14.7.3 Designing a restoration</td>
<td>233</td>
</tr>
<tr>
<td>14.8 Preparation margin for infiniDent models</td>
<td>233</td>
</tr>
<tr>
<td>14.9 Administration</td>
<td>234</td>
</tr>
<tr>
<td>Glossar</td>
<td>25</td>
</tr>
<tr>
<td>Index</td>
<td>237</td>
</tr>
</tbody>
</table>
1 Introduction

1.1 Dear Customer,

Thank you for purchasing your inLab 3D software from Sirona.

In connection with inLab / inEos / inLab MC XL, this software enables you to produce dental restorations, e.g. from ceramic material with a natural appearance (CEramic REConstruction).

Improper use and handling can create hazards and cause damage. Therefore, please read and carefully follow this manual and the relevant operating instructions. Always keep them within easy reach.

In order to master the system safely, you should train on the exercise model using the described examples.

To prevent personal injury or material damage it is important to observe all safety information.

To safeguard your warranty claims, please complete the attached Installation Report / Warranty Passport when the system is handed over and send it to the indicated fax number.

Your
inLab 3D Team

1.2 Copyright and trademark

Copyright
© Sirona Dental Systems GmbH 2003. All rights reserved.

The information contained in this manual may be changed without notice.

The software and all related documentation are protected by copyright. You must therefore handle it in the same way as any other protected material.

Anyone who copies this software or this manual to magnetic tape, floppy disk or any other medium for any purpose other than his own personal use without the written permission of Sirona Dental Systems will be liable to prosecution.

Trademarks
Microsoft® and Windows XP® are registered trademarks.

Windows™ is a trademark of Microsoft Corporation.

Windows Vista™ is a trademark of Microsoft Corporation.

Pentium® is a registered trademark.

All other trademarks are the property of their respective holders.

Components of other manufacturers
This software contains components produced by the following manufacturers:

Zlib:
© 1995-2002 Jean-loup Gailly, Mark Adler and Greg Roelofs

PaintLib:
© 1996-2000 Ulrich von Zadow

LibTiff:
© 1988-1997 Sam Leffler

1.3 Structure of the documents

Structure of the documents

The symbols and character formats used in the present manual have the following meaning:

**WARNING**

Identifies warnings where a medium risk of injury to persons exists if they are not observed.

**CAUTION**

Identifies safety information where the following hazards exist if they are not observed: Slight risk of injury to persons, risk of property damage or damage to the product.

**NOTICE**

Assistance

Identifies additional information, hints and tips.

- ✓ Prerequisite
- ➢ Action
  - or
  - ➢ 1., 2., …
- ¶ Result

See chapter on "General information".

- • List
- "Text between quotation marks"

Identifies a reference to another text passage.

Identifies a list.

Identifies commands, menu items or quotations.

### 1.3.1 Conventions

<table>
<thead>
<tr>
<th>Example</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clicking</td>
<td>Pressing once and releasing the left mouse button or the left trackball button on the acquisition unit (or foot switch).</td>
</tr>
<tr>
<td>Double-click</td>
<td>Pressing twice quickly in succession and releasing the left mouse button or the left trackball button on the acquisition unit (or foot switch).</td>
</tr>
<tr>
<td>Moving the mouse in one direction.</td>
<td>On the acquisition unit: Moving the trackball in the corresponding direction.</td>
</tr>
</tbody>
</table>
1.3.2 Formats of the manual

The Operator’s Manual is available on the supplied program DVD in html format. This format is screen-oriented and is well suited for finding terms, e.g. in the index or table of contents.

You can call up this manual via the online help function.

The Operator’s Manual is available on the supplied program DVD in pdf format.

This format is page-oriented and is well suited for printing out the desired pages.

<table>
<thead>
<tr>
<th>Example</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seizing a point</td>
<td>Pressing the left mouse button (left trackball button on the acquisition unit) and keeping it pressed.</td>
</tr>
<tr>
<td>For impressions acquired with 3D camera: Actuate foot switch</td>
<td>The same function as: Pressing the left trackball button on the acquisition unit or the left mouse button.</td>
</tr>
</tbody>
</table>
2 Software

2.1 System requirements

Working without the acquisition unit
An inLab system PC is required to run this software. The hardware version must be **PC Hardware A** or higher.

Working with the acquisition unit
If you work with the acquisition unit, it must have the hardware status **PC Hardware EA** or higher.

2.2 Installing the software

### NOTICE

**Installation only with administrator rights**
You must have administrator rights on the PC on which you want to install the software!

**Installation procedure**

1. The PC is powered up and all programs are terminated.
2. Insert the DVD in the CD/DVD drive.
   - The setup program starts automatically.
3. If this is not the case, execute the "Setup.exe" in the root directory of the DVD.
4. Select the language of the installation and click the button marked "OK".
   - The installation wizard opens.
5. Click the button marked "Next".
   - The license agreement is shown.
6. Accept the license agreement with the button labeled "Yes".
   - The program continues the installation routine.
7. Click the button marked "Standard Installation".
8. To complete the installation, you can register to receive current information on software updates and/or have the "ReadMe" file displayed.

### NOTICE

**Installing DirectX**
If DirectX is not yet installed on your computer, it will be installed now.
Accept the license agreement and decide whether the computer is to be restarted now or later.

2. To complete the installation, you can register to receive current information on software updates and/or have the "ReadMe" file displayed. This file contains the latest information on the software.
   - Select or deselect the corresponding checkbox.
3. Click the button marked "Finish".
4. Decide whether the computer should be restarted now or later and click the button marked "Finish".

**Information about this software version**
You can load a restoration made with an earlier software version with this version as well. However, once this restoration has been saved with the current software version, it can no longer be loaded with the earlier software version. The restoration can be saved according to the following procedures:
● By selecting "Restoration"/ "Save".
● By selecting "Restoration"/ "Save as…".
● Automatically, by confirming the image catalog with the "Next" icon.
● Automatically, by pressing the "Mill" icon.
● Automatically, during virtual seating ("Design"/ "Quadrant…")

2.3 Downloading the software to the milling unit

⚠️ **CAUTION**

Transferring the milling program
Following installation of the new software, the new milling program must be transferred to the milling unit.

**inLab**

✔ The new software is installed on the PC.

➢ Transfer the new milling program to the milling unit as described in the operating instructions for the milling unit.

**inLab MC XL**

The new milling program is automatically transferred to the milling unit.

2.4 Uninstalling the software

✔ The program is closed.

1. Click "Start"/ "Programs"/ "inLab 3D"/ "Deinstallation" to uninstall the software.
   ⚠️ During the uninstall procedure, you will be asked whether you want to delete the patient data or the entries in the registration database (e.g. the calibration data).

2. According to how you decide, click the button marked "Yes" or "No".

⚠️ The software is uninstalled.
2.5 Copy protection (softguard dongle)

2.5.1 Introduction

Whether a given restoration may be milled depends on the softguard dongle connected and the identifier of the milling unit used.

2.5.2 Softguard dongle

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>The CEREC 3D Softguard dongle is not supported by inLab 3D software.</td>
</tr>
</tbody>
</table>

Softguard dongle

The following softguard dongles are available:

- AK x
- AK Unlimited inLab 3D

AK = Activation Key

The AK x softguard dongles have a counter that deducts one unit for each milling operation:

<table>
<thead>
<tr>
<th>Restoration</th>
<th>Debit from AK x</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inlay, onlay, occlusal inlay</td>
<td>1 unit per restoration</td>
</tr>
<tr>
<td>Crown</td>
<td>1 unit per restoration</td>
</tr>
<tr>
<td>Veneer</td>
<td>1 unit per restoration</td>
</tr>
<tr>
<td>Crown framework</td>
<td>1 unit per restoration</td>
</tr>
<tr>
<td>Wax-up, Bridge correlation</td>
<td>1 unit per milling operation</td>
</tr>
<tr>
<td>Bridge framework, anatomical bridge</td>
<td>1 unit bridge element</td>
</tr>
<tr>
<td>Abutment</td>
<td>1 unit per bridge abutment</td>
</tr>
</tbody>
</table>

The AK Unlimited inLab 3D softguard dongles allow unlimited milling of restorations with the inLab 3D software.

2.5.3 Connecting the softguard dongle

AKx

- The PC must have a parallel port.
- 1. Connect the softguard dongle to the parallel port of the PC.
- 2. You may then connect further softguard dongles or e.g. a printer to this softguard dongle.

1. x = Remaining number of units (that can be milled with this activation key)
AK Unlimited inLab 3D or AKx USB softguard dongles

✔ The PC must have a free USB port.
➢ Connect the AK Unlimited inLab 3D or AKx USB softguard dongle to the USB port of the PC.

2.5.4 Without softguard dongles

All restorations can be scanned, designed and saved without a softguard dongle. You need a softguard dongle for milling.

2.6 Starting the software

✔ The inLab 3D software is installed. The inLab 3D button is located on the desktop.
➢ Start the inLab 3D software by double-clicking the inLab 3D button.
   or
   ➢ Click "Start"/"Programs"/"inLab 3D"/"inLab 3D".
3 User interface

3.1 Description of the user interface

Main menu

inLab 3D features a menu-controlled user interface enabling you to scan preparations and then design and mill the required restorations.

Screen displays guide you through the design process and give you a continuous overview of which program step is currently being performed.

The main menu consists of:

- **A**: Tool bar
- **B**: Menu bar
- **C**: Program window title
- **D**: View window
- **E**: Coordinate system
- **F**: Design window
- **G**: Status bar
- **H**: Scale (1 mm)
- **I**: Design window (3D viewer)
You can show or hide the following windows/bars:

- "View"
- "Design"
- "Tool bar"
- "Status bar"

### 3.2 Tool bar

You can display or hide the Tool bar via the menu item "Window"/ "Tool bar". Unavailable functions (e.g. Occlusion) appear dimmed.

**Description of the buttons**

- Create a new restoration
- Load restoration
- Save restoration
- Scan/acquire prepared tooth (preparation)
• Scan/acquire unprepared tooth (occlusion)

• Scan/acquire dynamic occlusion impression (articulation)

• Scan/acquire antagonist/registration

• One design step forward (Next)

• One design step backward (Undo)

• Starting the milling process

• Send restoration to infiniDent

• Establishes a connection to the CEREC Connect Portal.
You can drag the tool bar with the mouse and drop it anywhere on the screen. It can be docked at the left, right, top or bottom edge of the screen, as is usual with Windows programs. Via "Window" / "Reset" ("Ctrl+R") it can be restored to the position it had on delivery (left edge of screen).

3.3 View window

3.3.1 Introduction

You can display or hide this window via the menu item "Window" / "View".

Inactive windows appear dimmed.

You can drag the window with the mouse by grabbing its title bar and drop it at any position on the screen. Via "Window" / "Reset" ("Ctrl+R") it can be restored to the position it had on delivery (right edge of screen).

- A: Standard views
- B: Zoom tool
- C: Showing/hiding the neighboring teeth (Trim)
- D: Showing/hiding the contact to the neighboring tooth (Contact)
- E: Cut tool
- F: Showing/hiding an occlusion/articulation (occlusion)
- G: Show/hide antagonist

3.3.2 Standard views

The objects in the Design window can be displayed in six predefined views by clicking the corresponding arrows:

- "Mesial"
- "Distal"
- "Buccal" / "Labial"
- "Lingual"
- "Cervical"
- "Occlusal" / "Incisal"

When you point to one of these arrows with the mouse cursor, the direction of the view is indicated.

When you click the arrow, the object is turned into this view.

There are two ways to display the "Mesial", "Distal", "Buccal" / "Labial" and "Lingual" views:
If you have changed the display of the objects with the zoom tool, you can reset this change by clicking on the tooth in the View window.

### 3.3.3 Zoom tool

The objects displayed in the Design window can be zoomed in and out as follows:

- step by step, by repeatedly clicking the "+" sign (zoom in) or the "-" sign (zoom out)
- continuously, by pressing and holding down the "+" sign (zoom in) or the "-" sign (zoom out)
- by pressing the center mouse button and moving the mouse:
  - forward, you zoom the 3D view in
  - back, you zoom the 3D view out
- by simultaneously pressing the left mouse button and the Shift key and moving the mouse:
  - forward, you zoom the 3D view in
  - back, you zoom the 3D view out

### 3.3.4 Showing/hiding the neighboring teeth

By clicking the button marked "Trim" you can hide the neighboring teeth.

For the case that parts of the neighboring teeth are disturbing during input of the preparation margin, trimming off the disturbing parts is possible. For this purpose, you can hide parts of the image after acquiring the optical impression (see "Hiding image regions").

By clicking the button marked "Trim" again, you can show the neighboring teeth once again.

#### NOTICE

**Showing and hiding with the Trim button**

If the preparation was not trimmed, you can use the "Trim" button to show and hide the entire preparation, e.g. for editing the proximal surface of the restoration.

### 3.3.5 Showing/hiding the contact to the neighboring tooth (Contact)

By clicking the button marked "Contact" you can show/hide the contact surface to the neighboring tooth.

By clicking the button marked "Contact" you can open the "Contact options" dialog field.

You can have the appropriate proximal contact defined automatically by clicking the corresponding button.

---

1. This option is only applicable for posterior tooth crowns with the restoration type Crown (not with Inlay/Onlay/Partial Crown, Veneer, etc.).
If you click the "Contact" button, a color scheme with the following meaning appears on the contact surfaces:

- **blue**: Clearance 0-1 mm
  Smaller surface – larger clearance
- **green**: Penetration 0-50 µm
- **yellow**: Penetration 50-100 µm
- **red**: Penetration >100µm

Using the "Scale", "Shape", "Form" or "Drop" design tool, you can design the contact surfaces according to your wishes.

### 3.3.6 Cut tool

You can show the "Cut" window via the "Cut" button or via "Ctrl+C".

By clicking the "Cut" tool, you can place a cut plane through the restoration and preparation. The cut plane lies parallel to the screen plane. The cut plane can be moved parallel in two ways:

- step by step, by repeatedly clicking the "+" or "-" Cut semicircles
- continuously, by keeping a semicircle pressed.

When using the WaxUp design technique and for bridges, the cut surface is displayed in the status bar.

**Cut plane**

To exit the "Cut" tool, click the highlighted button marked "Cut".

Close the "Cut" window by clicking the x (Close) or the button marked "Cut"
3.3.7 Showing/hiding the occlusion/articulation

Occlusion
If an image field of the occlusion exists, you can show or hide it with the help of this button.

Articulation
This function can be used only for the following:

- "Restoration": "Crown"
- "Design technique": "Articulation"

If a dynamic occlusion impression (FGP, Functionally Generated Path) exists, it can be shown or hidden with the help of this button.

If you click the "Articulation" button, the 3D model of the dynamic occlusion impression is displayed and an additional dialog box is opened with the "Adapt" button.

Interfering_contact_FGP
If you click the "Adapt" button, all of the interfering contacts of the restoration which "protrude out of" the FGP will be ground virtually so that they disappear.
3.3.8 **Show/hide antagonist**

By clicking the button marked "Antagonist" you can show/hide the Antagonist window.

![Antagonist window](image)

**Antagonist window**

In this window, under "View Options" you can activate or deactivate the following:

- "Interocclusal Clearance"
- "Antagonist"
- "Antagonist surface"

### 3.3.8.1 Interocclusal clearance

When "Interocclusal Clearance" is activated, a color scheme with the following meaning of the colors appears on the restoration:

#### for inlays, crowns and veneers

- **blue**: Clearance 0-1 mm  
  Smaller surface – larger clearance
- **green**: Penetration 0-50 μm
- **yellow**: Penetration 50-100 μm
- **red**: Penetration >100μm

#### For crown and bridge frameworks with an antagonist image

- **red**: Distance from the antagonist is less than the set veneering thickness  
  (see "Veneering thickness" [63])
You may use the "Scale", "Shape", "Form" or "Drop" design tools to adapt the distance.

3.3.8.2 **Antagonist**

If "Antagonist" is activated, the optical impression of the centric bite registration appears above the restoration.

> **Antagonist displayed**

By clicking the buttons next to "Elevate Antagonist" you can elevate or lower the registration. You obtain a better view onto the occlusal surface by elevating the antagonist.

You can view the restoration from all directions and adapt it with the "Design" tools.

3.3.8.3 **Antagonist surface**

If "Antagonist surface" is activated, the occlusal surface of the antagonist/registration appears above the restoration.

> **Antagonist surface displayed**
By clicking the buttons next to “Elevate Antagonist” you can elevate or lower the registration. You obtain a better view onto the occlusal surface by elevating the antagonist.

You can view the restoration from all directions and adapt it with the ‘Design’ tools.

### 3.3.8.4 Tools subgroup

#### Antagonist window

With the button marked “Manual Trim” in the “Antagonist” dialog box, you can also hide image regions at a later point of time.

For posterior tooth crowns with antagonist (dental database or replication design technique), the “Crown Setting”, “Crown cusp settling” and “Virtual grinding” buttons all have the same function as in the automatic crown suggestion (see “Options” in the chapter on “Settings” [73]). You can use these functions if you have changed the suggested crown with the ‘Design’ tools and would like to redefine the occlusal contacts.

For inlays/onlays in the “Dental database” design technique with antagonist, you can automatically set the occlusal contacts with these buttons. Automatic adaptations to the antagonist are performed for the inlay/only initial suggestion.

#### Settling button

With this button, the restoration is adapted to the antagonist so that the resulting contact situation is as stable as possible. The contacts should have as little penetration volume as possible. The morphology of the occlusal surface is not changed.

#### Cusp Settling button

If the restoration features a cusp tip, the “Crown cusp settling” button is automatically enabled. This button triggers automatic adaptation of the individual cusps of the restoration to the antagonist. The cusps are adapted to the antagonist so that the resulting contact situation is as stable as possible. The morphology of the occlusal surface is changed.

#### Virtual Grinding button

This button can be used to virtually grind the existing occlusal contacts. The red contacts which you set under Virtual grinding thickness in the Parameter dialog box are thus removed down to one thickness [60].

When designing inlays/onlays and crowns which are not automatically adapted we recommend that you initially adapt the restoration to the present situation ‘Design’ tools. Then you can finalize the contact situation with the following buttons in this order:
3.4 Design window

You can display or hide this window via the menu item "Window\"Design\". Unavailable functions appear dimmed, e.g. "Position".

You can drag the window with the mouse by grabbing its title bar and drop it at any position on the screen.

When you select "Window\"Reset\", the window returns to its default position (right screen margin).

The following "Design" tools are described in this section:

- **A**: Editing tool (Edit)
- **B**: Form tool
- **C**: Wax drop (Drop)
- **D**: Scaling tool (Scale)
- **E**: Shaping tool (Shape)
- **F**: Positioning tool (Position)
- **G**: Rotation tool (Rotate)

**NOTICE**

**Undoing the last adaptation step**

For crowns and inlays, you can undo the last adaptation step ("Manual Trim", "Crown Settling", "Crown cusp settling" and "Virtual grinding") with the red Undo arrow as long as the corresponding button is still pressed.
3.4.1 Editing tool (Edit)

Click the "Edit" to activate/deactivate the Editing function.

Editing function

The editing function can be applied to all the design lines. The design lines are displayed automatically and have different color coding.

Colors of design lines

<table>
<thead>
<tr>
<th>Design line</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation margin, base line, gingival line</td>
<td>blue</td>
</tr>
<tr>
<td>Proximal contact line</td>
<td>pink</td>
</tr>
<tr>
<td>Marginal ridge, labiolingual line</td>
<td>turquoise</td>
</tr>
<tr>
<td>Fissure, cutting edge or copying line</td>
<td>green</td>
</tr>
<tr>
<td>Connector line</td>
<td>light blue</td>
</tr>
</tbody>
</table>

Editing is effective only in the viewing plane.

3.4.1.1 Editing a construction line

1. Click the button marked "Edit".
2. Double-click a construction line to set the first point of the correction line.
3. Click to set further points of the correction line.
4. Setting the end point of the correction line:
   Closed line (e.g. crown equator)  
   Double-click the construction line  
   Open line (e.g. fissure line)  
   Double click at the desired new end point of the line.

3.4.1.2 Changing a pontic

   Changing a pontic
   Click the "Edit"-tool to hide the selected pontic and neighboring connectors.  
   The base line is offered for editing.  
   Only the area below the proximal contact line is recalculated after closing the "Edit"-tool.

NOTICE
Deleting clicks
You can also undo the last click by right-clicking.

NOTICE
Undoing changes
You can undo the last change made in the line profile by clicking the "Undo"-icon.

NOTICE
Changing the connection to the preparation margin
If you want to change the connection to the preparation margin (red dot), 
grab the red dot with the left mouse button and move it along the preparation margin.
3.4.1.3 Changing the abutment coping

Changing the abutment coping

Click the "Edit" tool to hide the selected abutment coping and neighboring connectors. The preparation margin is offered for editing.

3.4.1.4 Changing connectors

By clicking the "Edit" tool, two light blue lines (A) appear at the transitions to the neighboring elements. You can edit either of these lines by double-clicking them. Double-click the line again to stop editing it.
3.4.1.5 **Bridge design (dental database, reduced)**

In the case of bridge designs (dental database, reduced), click "Edit" to display and edit all the design lines for the selected bridge element. Any other bridge elements are hidden for a better perspective.

3.4.2 **Form tool (Form)**

By clicking the "Form" button, you can activate or deactivate the "Form" tool.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="material" alt="Apply" /></td>
<td><img src="material" alt="Remove" /></td>
<td><img src="material" alt="Blend" /></td>
</tr>
</tbody>
</table>

You can use this function to

- apply material
- remove material
- blend material

Clicking on the symbol activates the corresponding mode.

**NOTICE**

**Alternative**

Using the space bar on the keyboard, you can change functions in the following order:

Apply > Remove > Blend > Apply ...
3.4.2.1 Changing the size of the layer to be applied

When you start this tool, the diameter of the layer to be applied is 1.35mm.

**Slider**

The slider allows you to modify the size of the layer to be applied.

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alternative</strong></td>
</tr>
<tr>
<td>You can also modify the layer size (orange-colored area) by right-clicking the restoration:</td>
</tr>
<tr>
<td><strong>Increase layer size</strong> – push mouse forward while holding down the right mouse button.</td>
</tr>
<tr>
<td><strong>Decrease layer size</strong> – drag mouse backward while holding down the right mouse button.</td>
</tr>
</tbody>
</table>

The next layers will be applied using this size. This size remains active until you change the size again or deactivate the Form tool.

The ratio between material thickness and radius of the applied layer is 1:70.

3.4.3 Wax drop (Drop)

By clicking the "Drop" button, you can activate or deactivate the wax drop function.

<table>
<thead>
<tr>
<th>![Apply material]</th>
<th>![Remove material]</th>
<th>![Blend material]</th>
</tr>
</thead>
</table>

You can use this function to

- apply material
- remove material
- blend material

Clicking on the symbol activates the corresponding mode.

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alternative</strong></td>
</tr>
<tr>
<td>Using the space bar on the keyboard, you can change functions in the following order:</td>
</tr>
<tr>
<td>Apply &gt; Remove &gt; Blend &gt; Apply ...</td>
</tr>
</tbody>
</table>
3.4.3.1 Modifying the wax drop size
When you start this tool, the diameter of the drops is 1.08mm.

Slider
The slider allows you to modify the size of the drops.

NOTICE
Alternative
If you click on the restoration with the right mouse button, you can modify the size of the wax drops:
Increase size of wax drops – push mouse forward while holding down the right mouse button.
Decrease size of wax drops – drag mouse backward while holding down the right mouse button.

The next drops can be applied using this size. This size remains active until you change the size again or deactivate the “Form” tool.
The ratio between material thickness and radius of the drops is 1:70.

3.4.3.2 Applying material
Application can be performed in two ways:
- Drop by drop, by clicking the desired point of the restoration
- Apply a row of drops in material color by holding down the left mouse button and moving the cursor. The density of the drops is controlled by the speed with which you move the cursor.

3.4.3.3 Removing material
Removal can be performed in two ways:
- Drop by drop, by clicking the desired point of the restoration
- Remove a row of orange colored drops by holding down the left mouse button and moving the cursor. The density of the drops is controlled by the speed with which you move the cursor.

3.4.3.4 Blending material
The cursor assumes the shape of a hand and can then be used to blend or smoothen the surface locally; to do so, press and hold down the left mouse button.
3.4.4 Scaling tool (Scale)

3.4.4.1 Activating the scaling function

By clicking the "Scale" tool, you can activate the scaling function. This function enables you to scale a selected region.

3.4.4.2 Scaling with inlays, onlays, crowns, veneers and bridge-dental database / reduced

First select the region to be scaled by clicking one of the lines.

Selecting the scaling region

<table>
<thead>
<tr>
<th>Region to be selected</th>
<th>Click ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restoration half...</td>
<td>Preparation margin...</td>
</tr>
<tr>
<td>lingual/buccal/mesial/distal</td>
<td>lingual/buccal/mesial/distal</td>
</tr>
<tr>
<td>Region between the preparation margin and marginal ridge...</td>
<td>Proximal contact line...</td>
</tr>
<tr>
<td>lingual/buccal/mesial/distal</td>
<td>lingual/buccal/mesial/distal</td>
</tr>
<tr>
<td>Region above the proximal contact line...</td>
<td>Marginal ridge...</td>
</tr>
<tr>
<td>lingual/buccal/mesial/distal</td>
<td>lingual/buccal/mesial/distal</td>
</tr>
<tr>
<td>Occlusal region</td>
<td>Fissure line</td>
</tr>
<tr>
<td>Cusp</td>
<td>Turquoise-colored ball on the marginal ridge</td>
</tr>
</tbody>
</table>

**NOTICE**

For crowns and inlays:
When selecting the preparation margin, proximal contact line and marginal ridge, you can extend the selection by the second half of the selected region by pressing the space bar.
If you then press space bar once again, the original region is selected again.

**NOTICE**

For bridges
Double-click to select a bridge element (dental database or reduced).
The entire bridge element is selected. To select only half an element, press the space bar.
Once you have selected a region, you can modify it as follows:

- step by step, by repeatedly clicking a segment of the circle (e.g. buccal)
- continuously, by keeping a segment of the circle (e.g. buccal) pressed.

3.4.4.3 Scaling with crown framework restorations and abutment copings of the bridge framework

You can select the abutment copings of the bridge framework with a double-click.

You can change the wall thicknesses with the activated Scale tool (even in reduced elements).

### Changing wall thicknesses

<table>
<thead>
<tr>
<th>Click button …</th>
<th>Wall thickness…</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>increases occlusally</td>
</tr>
<tr>
<td>B</td>
<td>decreases occlusally</td>
</tr>
<tr>
<td>C</td>
<td>increases circularly</td>
</tr>
<tr>
<td>D</td>
<td>decreases circularly</td>
</tr>
</tbody>
</table>

The occlusal and circular wall strengths are displayed in the status bar.
3.4.4.4 Scaling with connectors and pontics

You can select connectors and pontics with a double-click and scale them as a whole (even with reduced pontics).

Scaling a pontic

<table>
<thead>
<tr>
<th>Click button …</th>
<th>Pontic…</th>
</tr>
</thead>
<tbody>
<tr>
<td>A or C</td>
<td>becomes larger</td>
</tr>
<tr>
<td>B or D</td>
<td>becomes smaller</td>
</tr>
</tbody>
</table>

Scaling connectors

**NOTICE**

The connectors can be scaled via the buttons or on the connector itself.

<table>
<thead>
<tr>
<th>Click button …</th>
<th>Connector …</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>increases &quot;buccal&lt;-&gt;lingually&quot;</td>
</tr>
<tr>
<td>B</td>
<td>increases &quot;occlusal&lt;-&gt;cervically&quot;</td>
</tr>
<tr>
<td>C</td>
<td>decreases &quot;across the complete diameter&quot;</td>
</tr>
<tr>
<td>D</td>
<td>decreases &quot;occlusal&lt;-&gt;cervically&quot;</td>
</tr>
<tr>
<td>E</td>
<td>decreases &quot;buccal&lt;-&gt;lingually&quot;</td>
</tr>
<tr>
<td>F</td>
<td>increases &quot;across the complete diameter&quot;</td>
</tr>
</tbody>
</table>
The red circle indicates the position of the minimal cross-section area. You can change this cross-section area by left-clicking the red circle and dragging the mouse:

- Mouse forward - minimum cross-section area is enlarged
- Mouse backward - minimum cross-section area is reduced

The connector can also be scaled area-wise via the red balls. If you "drag" a ball, the area (1/4 circle) around the ball changes.

In order to change these areas, you can rotate the balls on the circle (right-click the balls).

Connectors whose cross-section area is less than the minimum area specified by the material manufacturer are highlighted in red.

Connectors may initially be highlighted in red if the design (pontics which are too narrow) prevents you from creating connectors with an adequately large cross-section.
3.4.4.5 Exiting the scaling function

To exit the scaling tool, click the highlighted bar “Scale”.

3.4.5 Shaping tool (Shape)

You can smoothen surfaces and apply or remove material with the “Shape” tool:

- along an open line or
- inside a closed area

To exit the “Shape” tool, click the highlighted button marked “Shape”.

3.4.5.1 Applying material along an open line

1. Start to draw a line by double-clicking the restoration.
2. Draw the line along which you want to apply or remove material by clicking.

**NOTICE**

Starting point and end point
Individual points may lie on the residual tooth, but the starting and end point must be on the restoration.

3. Set the line end by double-clicking.

4. You can raise (+) or lower (-) the line:
   - step by step, by repeatedly clicking the “+” or “-” “Shape” semicircle or
   - continuously, by keeping the “+” or “-” semicircle pressed.
3.4.5.2 **Applying material inside a closed area**

1. Start to draw a line by double-clicking the restoration.
2. Draw the area inside which you want to apply or remove material by clicking.

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Starting point and end point</strong></td>
</tr>
<tr>
<td>Individual points may lie on the residual tooth, but the starting and end point must be on the restoration.</td>
</tr>
</tbody>
</table>

3. Set the line end by double-clicking the starting point.
4. The region inside the area is activated, you can apply (+) or remove (-) material:
   - step by step by clicking the "+" or "-" "Shape" semicircle or
   - continuously, by keeping the "+" or "-" semicircle pressed.

3.4.5.3 **Smoothing an area**

You can also smoothen a previously defined area with the "Shape" tool.

1. Start to draw a line by double-clicking the restoration.
2. Draw the area inside which you want to smoothen the surface by clicking.

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Starting point and end point</strong></td>
</tr>
<tr>
<td>Individual points may lie on the residual tooth, but the starting and end point must be on the restoration.</td>
</tr>
</tbody>
</table>

3. Set the line end by double-clicking the starting point.
4. Activate the smoothing function by pressing the spacebar.
- The surface inside the area is smoothed.
3.4.6 Reduce tool (Reduce)

If the "Reduce" design procedure is selected in the New dialog box, the Design tool "Shape" does not appear, the tool "Reduce" appears instead. Two new designations appear in the status line for "Margin" and "Reduction".

Description of the "Reduce" tool

- Dark blue buttons – change the reduction strength ("Reduced")
- Light blue buttons - change the width of the margin, which remains unreduced ("Margin")
- Black "R" in the center – starts the reduction

3.4.7 Positioning tool (Position)

By clicking the "Position" tool, you can activate the positioning function.

With this function you can move the entire restoration (or the selected element) in the following directions:

- mesio-distal
- bucco-lingual
- occlusal-cervical
The restoration can be positioned in two ways:

- step by step, by repeatedly clicking a segment of the circle
- continuously, by keeping a circle segment pressed.

**Positioning a pontic**

When you select and move the pontic of a framework, any associated connectors are moved accordingly. If a connector was previously changed, its relative position to the pontic remains the same.

The red circle indicates the position of the minimal cross-section area. You can change this position by left-clicking the red circle and dragging the mouse left or right.
To exit the positioning tool, click the highlighted button marked “Position”. When you exit the positioning tool, the connection to the preparation margin (base line) is restored.

### 3.4.8 Rotation tool (Rotate)

By clicking the “Rotate” tool, you can activate the rotation function.

With this function you can rotate the entire restoration (or the selected element) about the following axes:

- mesio-distal
- bucco-lingual
- occlusal-cervical

The restoration can be rotated in two ways:

- step by step, by repeatedly clicking a segment of the circle
- continuously, by keeping a circle segment pressed.

To exit the rotation tool, click the highlighted Rotate button.

When you exit the rotation tool, the connection to the preparation margin (base line) is restored.
3.5 Status bar

A, B C D E

Status bar

**NOTICE**

**Showing/hiding the status bar**
The status bar can be shown or hidden via the menu item "Window"/"Status bar".

The status bar provides you with current information about:
- A: the steps to be performed,
- B: the current activity of the milling unit,
- C: with restoration and preparation displayed, the ceramic thickness at the mouse cursor position
- D: the minimum fissure height
- E: the height of the preparation / occlusion at the mouse cursor position
- the circular wall strength (for crown framework and abutment copings)
- the occlusal wall strength (for crown framework and abutment copings)
- the connector cross section (for bridge framework)
- the cut surface (for WaxUp in the "Cut" window)
- Information for "Margin" and "Reduction" (in the "Reduce" design technique)

3.6 Design window

3.6.1 Design window (3D viewer)
inLab 3D contains a main window (3D viewer) for visualizing and designing a restoration in 3D.

The 3D viewer opens after all image fields have been acquired. The time up to display of the viewer depends upon the number of image fields and the number of single optical impressions.

You can do the following in the Design window:
- view the image fields of the preparation, of the occlusion and of the antagonists as well as the restoration, either individually or in any combination,
- determine a new insertion axis,
- hide an image region by entering an open line mesially and distally,
- enter the preparation margin,
- immediately see the effects caused by applying a tool (e.g. editing, scaling ...)
- view the restoration in the milling simulation before machining,
- rotate the objects arbitrarily.
• To do so, you press and hold down the left mouse button and move the mouse in the desired direction.
• For better orientation the direction is indicated (e.g. mesial, lingual ...).

The objects are displayed centered. You can change the position of the objects with the right mouse button pressed.

3.6.2 Scale
The scale is displayed in the bottom left corner of the 3D viewer. The distance between A and B corresponds to 1 mm.

If the display of the object is zoomed in or out, then the display of the scale changes correspondingly.

3.6.3 Coordinate system
The coordinate system shows you how the object is oriented on the screen. The three arrows point in the following directions:
• red: buccal
• green: mesial
• blue: occlusal

3.7 Menu bar
The menu bar at the top of the window allows you to select further program functions which cannot be accessed via the tool bars.

The following menus are available:
• “Restoration”
• “Design”
• “Settings”
• “Window”
• “?’”

**NOTICE**

Alternatives to the menu bar
Some menu functions can also be activated using the shortcut keys specified in the menu item or the corresponding icons on the tool bar.
3.7.1 Restoration menu

Via the menu you can...

- open a window for a new restoration
  "Restoration"/"New..." or "Ctrl+N"

- load an existing restoration
  "Restoration"/"Load..." or "Ctrl+O"

- delete a restoration
  "Restoration"/"Delete..."

- save a restoration
  "Restoration"/"Save..." or "Ctrl+S"

- save a restoration under another name or assign it to another patient
  "Restoration"/"Save as..."

- export a restoration
  "Restoration"/"Export..."

- import a restoration
  "Restoration"/"Import..."

- administer patient data
  "Restoration"/"Administer patient data..."

- send restoration data by e-mail
  "Restoration"/"Send to..."

- open a previous restoration or

- quit the application with
  "Restoration"/"Exit"
3.7.1.1 Creating a restoration

Selecting an existing patient
1. Select "Restoration"/"New..." or click the "New" icon.
   - The "Select patient for new restoration" dialog box is displayed.

Selecting a patient for a new restoration
2. Select a patient and click the "OK" button.
   - The New dialog appears.

Creating a new patient
1. Select "Restoration"/"New..." or click the "New" icon.
   - The "Select patient for new restoration" dialog box is displayed.

Selecting a patient for a new restoration
2. Click the "New" button.
   - A dialog box then appears.

Creating a new patient
3. Enter the "Dentist", "Patient" and "Scan date" and/or a "Reference number". The suggested scan date is the current date.
4. Click the "OK" button.

   The New dialog appears.

In the data structure, a patient is uniquely identified by one of the following two entries:

- "Dentist", "Patient", "Scan date"
- "Reference number".

If the database connection is used, the "Dentist", "Patient" and "Scan date" must be entered; input of the "Reference number" is optional.

3.7.1.2 Loading a restoration

> Select "Restoration"/"Load...".

   The "Load restoration" dialog box opens.

To display the preview, the "Show Preview" checkbox must be checked.

The preview shows either the preparation impression or the 3D model of the preparation, provided it has already been reconstructed.

**NOTICE**

Rotating a 3D preview

The 3D preview can be rotated with the mouse and viewed from all sides (control the same as for rotating the model in the 3D viewer).
3.7.1.3 Deleting a restoration

Deleting a restoration

1. Select “Restoration”/“Delete...”.
   - The “Delete restoration” dialog box opens.
2. Select the restoration you would like to delete.
3. Click the button marked “Delete”.
   - You will be asked if the restoration should be deleted.
4. Confirm by clicking the button marked “Yes”.
   - The restoration will then be deleted.

To display the preview, the “Show Preview” checkbox must be checked.

The preview shows either the preparation impression or the 3D model of the preparation, provided it has already been reconstructed.

3.7.1.4 Exporting a restoration

Exporting a restoration

✔ You have opened a restoration.
1. Select “Restoration”/“Export...”.
   - A standard Windows file dialog box then opens.
2. Select the target folder to which you want to export the restoration.
3. Assign any name to the restoration.
4. Click the button marked “Save”.
   - The restoration is exported.

File type

The restoration can be saved under any name, but the file type used must be “*.cdt” or “*.idt”!

Sending data to infiniDent

A special data format, “*.idt”, is used to send data to infiniDent. Since this file format is distinctly smaller, it speeds up file transfer.

3.7.1.5 Importing a restoration

✔ An existing restoration is located on your acquisition unit.
1. Select “Restoration”/“Import...”.

NOTICE

Rotating a 3D preview

The 3D preview can be rotated with the mouse and viewed from all sides (control the same as for rotating the model in the 3D viewer).
A standard Windows file dialog box opens in which a file search of all PC drives (hard disks, floppy disks and CDs) can be performed to find compressed inLab restorations.

2. Select the folder where the restoration is located.
3. Select the restoration file.

### NOTICE

**File types**

If the selected file (*.cdt*, *.sdt*, *.idt* or *.dat*) is a inLab restoration, it will open. If not, it will not open, and an error message will be displayed.

4. Click the button marked "Open"
   - A dialog box opens.
5. Assign a name to the restoration.
6. Click the button marked “OK”.
   - The restoration is then imported and opened.

### NOTICE

**Rotating a 3D preview**

The 3D preview can be rotated with the mouse and viewed from all sides (control the same as for rotating the model in the 3D viewer).

Under the preview window the tooth number, the restoration type and the design technique of the selected restoration file are shown.

The thumbnail view additionally shows a preview of the preparation impression in the folder list.

### 3.7.1.6 Managing patient data

#### Managing inLab patient data

➢ Select "Restoration1" Administer patient data..."
   - The "Administer patient data..." dialog box opens.

The "Administer patient data..." dialog box primarily contains a list of all patients.

In addition to dentists and patients, the dialog box also shows the scan date and reference number.

You can sort the entries by clicking the column header.

With the help of the "Search" text box, you can make the list more clear and concise by entering a last name, first name or initial letter.
Example
If you enter the letter "c" in the "Search" text box, a list of all patients whose last name, first name or card index number contains the letter "c" is displayed.

3.7.1.6.1 Creating a new patient

1. Click the "New" button.
   A dialog box appears.
2. Enter the "Dentist", "Patient" and "Scan date" and/or a "Reference number". The suggested scan date is the current date.

3. Click the "OK" button.
   The patient is stored in the patient list.

In the data structure, a patient is uniquely identified by one of the following two entries:
- "Dentist", "Patient", "Scan date"
- "Reference number".

If the database connection is used, the "Dentist", "Patient" and "Scan date" must be entered; input of the "Reference number" is optional.

3.7.1.6.2 Editing patient data

Editing inLab patient data

1. Click the "Edit" button.
   A dialog box appears.
2. Enter the "Dentist", "Patient" and "Scan date" or "Reference number".
3. Click the "OK" button.
   The changes are stored in the patient list.

3.7.1.6.3 Deleting patient data

The patient management also enables you to delete a patient.
### 3 User interface

#### Menu bar

**NOTICE**

**Assigned restorations**
If any inLab or video images are still assigned to a patient, a warning allowing you to cancel the delete operation will appear.

If you confirm the delete process, these images will also be deleted. Patients to whom X-ray images are assigned cannot be deleted.

1. Click the "Delete" button. 
   ≡ A dialog box appears.

2. Click the "OK" button. 
   ≡ The patient data are deleted from the patient list.

Patients who were entered in the database via the SLIDA interface (see "SLIDA interface" [209]) can be deleted, but not edited. The reason for this is that their administration is performed exclusively outside of the inLab 3D application; i.e. the database contains copies of the patient data, but no originals.

If a new restoration is selected (via the tool bar or the Restoration menu) a dialog box very similar to the one for patient administration appears (see "Creating a new restoration" [51]). It is not possible to edit and/or delete patient data.

#### 3.7.1.7 Sending a restoration

If an Internet e-mail connection is configured on your PC, you can send data via e-mail.

#### 3.7.2 Design menu

A tooth restoration must be designed in an exactly defined sequence.

Using the "Design" menu item you can...

- go on to the next design step
  "Design" "Next" or "Return"

- return to the previous design step
  "Design" "Undo" or "Ctrl+Z"

- edit the restoration type, design technique and/or tooth of the opened restoration
  "Design" "Change"

- have virtual seating and the opening of a second program executed, (for quadrant restoration)
  "Design" "Quadrant…"

- redefine the center
  "Design" "Centre..."
● redefine the "Insertion axis...”.
● Correct optical impressions...

3.7.2.1 Change
With the menu item "Change”, you can edit the restoration type, the design
 technique and/or the tooth of the opened restoration.

3.7.2.2 Quadrant

**NOTICE**

**Quadrant restoration**
During a quadrant restoration, the software will not let you switch to a tooth
from the opposite jaw.

When you switch to a tooth in the opposite quadrant of the same jaw, the
model is automatically rotated by 180° to ensure correct direction
designations.

With the menu item "Quadrant..." the virtual seating and opening of a second
program is essentially performed automatically.

After this menu item is selected, the New dialog box for selecting the tooth,
the restoration type and the design technique opens. The patient is accepted.
This is followed by the virtual seating and start of a second inLab 3D program.

In the program running in the foreground, the old restoration is in its original
state and could be milled, for example.

The program with the virtually seated restoration is loaded in the background.
It can be reached e.g. via the task bar or the task selection keys (Alt+Tab). In
this program the dialog for centering ("Centre...") is open.

**NOTICE**

**Setting the insertion axis**
Remember to set the insertion axis correctly after drawing in the
preparation margin ("Design" "Insertion axis...").

Also refer to the example under "Quadrant restoration" [201].

3.7.2.3 Centering
With the menu item "Center...” you can open the “Center” window. In this
window you can define the preparation you want to further work with as
center. This function is especially helpful in quadrant restoration.

**Defining the center**
1. Select “Design” "Center...”.
   - The “Center” window opens.
2. Click the center of the preparation to be edited.

### Defining a new center

3. Click the button marked “Fix”.
   - The preparation appears in the center of the viewer and the “Center” window closes.

### Defining a new center

If you want to define another preparation as center:

1. Select “Design” “Center…”.
2. Click the button marked “Reset”.
3. Click the center of the preparation to be edited.
4. Click the button marked “Fix”.
   - The preparation appears in the center of the viewer and the “Center” window closes.

### 3.7.2.4 Insertion axis

With the help of this function you can redefine the orientation of the preparation (mesial - distal, buccal - lingual) as well as the milling direction (see “Redefining the insertion axis” [116]).
3.7.2.5 Correcting an optical impression

With the help of this function, you can remove artifacts and cut away disturbing marginal information, e.g. on optical impressions from the image fields of the antagonists or of the occlusion (see "Deleting and correcting image regions in image fields" [118]).

3.7.3 Settings menu

Using the menu "Settings" you can adapt and change the following menu items:

- "Parameters..."
- "Instruments"
- "Configuration"
- "Calibration"

3.7.3.1 Parameters

Following reconstruction of the 3D model, a note appears indicating that the changeable parameters which influence the remaining design steps will be displayed in the next dialog box. The remaining parameters are inactive. Confirmation of this note automatically opens the Parameters dialog box. The parameter note (like other warning messages) can be switched off if desired.

A restoration requires some settings with regard to the milling/design process. You can make these settings using the "Settings"/"Parameters..." menu item.

The edited parameter values are saved with the restoration. If a restoration is loaded, the corresponding parameters are automatically loaded along with it and used.

NOTICE

Factory settings
The unit was set up optimally during final testing at the factory.

You can check the following parameters and modify them, if necessary

- "Proximal contacts strength"
- "Occlusal contact strength"
- "Occlusal offset"
- "Minimal Thickness"
- "Margin thickness"
- "Veneer thickness"
- "Adhesive gap"
- "Spacer"
- "Scan step width"
- "Veneering thickness"
- "WaxUp wall thickness"
- "Gingival spacing (bridge framework)"
- "Gingival depth"
3.7.3.1.1 Proximal contacts strength

The inLab 3D software automatically determines the proximal contact thickness. This step is performed before the proximal contact line is displayed. You thus have the possibility of evaluating the result and modifying it, if necessary.

**NOTICE**

No contact to the neighboring tooth
If the neighboring tooth is located at a distance of more than 1mm (e.g. neighboring tooth prepared), no contact is made.

The setting of the parameter “Proximal contacts strength” affects crown, inlay and onlay restorations.

If you find that the contacts proposed by the software are generally too strong or too weak, you can change them via the menu “Settings”/“Parameters...” according to your wishes.

If you set a higher number in the “Proximal contacts strength” text box, correspondingly more material will be applied to the contact points.

The thickness of the contact points can be adjusted in increments of 25µm between -200µm and 200µm.

**NOTICE**

Change only after recalculation
This setting acts only on line suggestions. A change of this setting becomes effective only after recalculation of the proximal contact line.

**NOTICE**

Inadequate suggestions for contact points
The proximal contact points are determined by the software by analyzing your measured data. Poor quality of the acquisition data can lead to inadequate suggestions regarding the contact points.

The setting of the parameter “Proximal contacts strength” has no influence on the design of crown and bridge frameworks.

3.7.3.1.2 Occlusal contacts strength

With this parameter you can set the contact thickness to be produced in connection with “Virtual grinding” (see “Virtual Grinding” under “Configuration”/“Options”).

The thickness of the contact points can be adjusted in increments of 25µm between -200µm and 200µm.

3.7.3.1.3 Occlusal offset

If you find that all of your restorations have too little or too much material in the occlusal direction, you can compensate for this with this parameter.

The occlusal offset can be adjusted in increments of 25µm between -500µm and 500µm.
Increasing the occlusal offset (exaggerated representation)

A z offset
B Restoration

**NOTICE**

Visible only on milling
This setting affects the restoration only on milling. The effect is not visible in the milling preview.

The setting of the parameter "Occlusal offset" has no influence on the design of crown and bridge frameworks.

### 3.7.3.1.4 Minimum thickness

With this parameter you can set the desired minimum material thickness. This is also already visible during the design phase if under "Window"/"Display options" a check mark is placed in front of "Minimal thickness".

The parameter "Minimal Thickness" only influences the minimum wall thickness geometry in VInCrOn restorations.

### 3.7.3.1.5 Margin thickness

Prior to milling of inlays, the margin of the restoration is thickened by the set thickness.

The "Margin thickness" can be adjusted in increments of 25 µm from 0 µm to 200 µm.
3.7.3.1.6 Veneer thickness

This parameter allows you to set the initial veneer thickness (A) for veneer restorations using the following design techniques:

- "Dental database"
- "Replication"

Veneer thickness

The "Veneer thickness" can be adjusted in increments of 100 µm from 0 µm to 2000 µm.

3.7.3.1.7 Adhesive gap

If you find that all of your inlay restorations turn out to be too large, you can compensate for this by modifying the adhesive gap.

If you set a higher number in the "Adhesive gap", the adhesive gap will be enlarged correspondingly. The size of the adhesive gap can be varied in increments of 10 µm from 0 µm to 150 µm.

**NOTICE**

This setting affects the calculation of the restoration.

| Scanner, CAM base model with powder | 50 µm |
| Scanner, CAM base model without powder | 80 µm |

3.7.3.1.8 Spacer

The program enables you to consciously create space for the adhesive bonding of the crown or inlay using the Spacer spin box.
If you increase the value, more space will be created. The setting can be adjusted in increments of 10µm between -100µm and 100µm.

**NOTICE**

This setting affects the calculation of the restoration.

<table>
<thead>
<tr>
<th>When using powder</th>
<th>-60 µm</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAM base model without powder</td>
<td>-30 µm</td>
</tr>
<tr>
<td>(framework)</td>
<td></td>
</tr>
</tbody>
</table>

**Spacer (exaggerated representation), for substructures**

A Spacer  
B Restoration solidly seated

### 3.7.3.1.9 Scan step width

When using the laser scanner to acquire an optical impression, you can set the resolution with "Scan step width".

You can select a resolution of between 3 and 5. Setting the scan step width lower increases the scan time as well as the accuracy of the optical impression data record.

### 3.7.3.1.10 Veneering thickness

This parameter is only used for crown and bridge frameworks with antagonist images. You can set the desired veneering thickness here.
If "Antagonist" the "Interocclusal Clearance" is activated in the window, the positions whose distances from the antagonist are shorter than the set veneering thickness are highlighted in red.

Veneering thickness

The "Veneering thickness" can be adjusted in increments of 0.1 mm between 0.0 mm and 5.0 mm.

3.7.3.1.11 WaxUp wall thickness

You can use this parameter to set the desired thickness of the ceramics in the bridge abutments for wax-up (A). This parameter only works on preparation limits that are drawn in.

Minimum wall thickness

The "WaxUp wall thickness" can be adjusted in increments of 0.1 mm between 0.0 mm and 2.0 mm.
3.7.3.1.12 **Gingival spacing (bridge FrameWork)**

Here you can set the distance from the bottom of the bridge elements to the gingiva.

![Gingival spacing](image)

*Gingival spacing*

The gingival spacing can be adjusted in increments of 0.1 mm between -1.5 mm and 2.5 mm.

3.7.3.1.13 **Gingival depth**

With this parameter, you can set the desired depth of the preparation margin below the gingival margin on the gingival cavity (B) for the design of mesostructures.

The "*Gingival depth*" can be adjusted in increments of 0.1 mm between 0.0 mm and 2.0 mm.

![Gingival depth](image)

*Gingival depth*
3.7.3.2 Instruments

Also refer to the chapter on "Changing milling instruments" in the Operating Instructions.

1. Select the menu item "Settings"/"Instruments".

**NOTICE**

**Multiple milling units connected**

If several milling units are connected, a dialog box will appear from which you must select the desired milling unit and confirm with "OK".

---

2. In inLab MC XL a dialog box is opened in which you can select the milling set in which you want to change a milling instrument.

   - The motors run to the position for changing the milling instruments.

   - The "Change instruments" dialog box opens.

3. Select the milling instrument(s) you would like to change to and click "Start".

---

**Selecting a milling set**
Description of the “Change instruments” dialog box

- **A, B** – The milling instruments selected in lists A’, B’ are displayed here.
- **A’, B’** – You can select the milling instruments you would like to insert here. The milling instrument last inserted is preselected.
- **C** – The milling instruments last used are displayed here. This display remains unchanged even if you click other milling instruments under A’, B’.
- **D** – The calls to action you must implement next are displayed here.
- **E** – You can select whether only the left, only the right or both milling instruments are to be replaced here.
- “Start” – Changes the milling instrument.
- “Cancel” – Operation is canceled

**Changing milling instruments (burs)**
3.7.3.3 Configuration

Under this menu item, you can check and modify the factory-set configurations.

- “Devices…”
- “Acquisition system”
- “Save”
- “Odontogram”
- “Options”

3.7.3.3.1 Devices

Configuring devices

Via the menu item “Settings”/“Configuration”/“Devices…” all connected devices (milling units/inEos) can be displayed and configured. Several milling units and one inEos can be managed.

A green check mark next to a device denotes its active availability, e.g. this milling unit can be selected for milling.

A red cross indicates that this device cannot be selected, e.g. this milling unit is currently performing a milling operation or its calibration data are invalid.

A yellow exclamation mark indicates that the current milling program must be loaded into the milling unit (see Operating Instructions for the milling unit).

3.7.3.3.1.1 Refresh status

Using the “Refresh status” button, you can refresh the status display, e.g. check whether a milling unit has in the meantime finished milling.

3.7.3.3.1.2 Add automatically

The function “Add automatically” detects any and all devices (milling units/inEos) connected to the PC. If a new device is detected, a dialog box for entering the name of the detected device automatically appears.
3.7.3.3.1.3 Add manually

Units which cannot be operated at the maximum speed of 115,200 baud must be entered manually. This normally proves necessary only when longer cable connections or certain radio modules (e.g. Futaba, 19,200 baud) are used. Using the "Add manually" button, you can add these devices and enter the following information in the dialog box which then appears:

- Description
- Interface
- Baud (transmission speed)

3.7.3.3.1.4 Remove

A connected device can be removed by clicking the "Remove" button in the main configuration dialog. The calibration data are not deleted in this case. If the device is added again, the corresponding calibration data will be reloaded and used.

3.7.3.3.1.5 Configuration (inLab)

**inLab device configuration**

Via the "Configure" button, you can subsequently edit the name and connection settings and configure various parameters.

- "inLab gearhead"
- "Large water tank"
- "Scanner"

3.7.3.3.1.5.1 Scanner

A check mark must be placed in front of "Scanner" for inLab.

3.7.3.3.1.5.2 inLab gearhead

If the gearhead looks like the one shown in the figure, a check mark must be set in the box in front of "inLab gearhead installed".

*With inLab gearhead (check mark set)*
Retrofit

If the inLab gearhead (optional) is retrofitted in the milling unit, your service engineer must set a check mark in the box in front of "inLab gearhead installed".

If the inLab gearhead looks like the one shown in the figure, check the box in front of "inLab gearhead installed" to make sure that no check mark is set.

With inLab gearhead (check mark NOT set)

3.7.3.3.1.5.3 Large water tank

If the 25-liter canister (option, Order No. 60 56 217) is connected and the check mark has been placed, you will not be reminded to change the water until a later point in time.

Retrofit

If the 25-liter canister is retrofitted, your service engineer must place a check mark in the box in front of "Large water tank".
3.7.3.3.1.6 Configuration (inLab MC XL)

Configuring devices (inLab MC XL)

Via the "Configure" button, you can subsequently edit the name and IP address.

Deactivating a milling set

It may sometimes prove necessary to deactivate a bur set, e.g. as long as it is not possible to replace a defective chuck or in case a milling motor is defective or cannot be calibrated.

In all such cases, you can deactivate sets 1 and 2 separately in the "Device Configuration" dialog box. A deactivated set will simply be ignored during milling, calibration etc.
3.7.3.3.2 Acquisition system

Acquisition system configuration
Via the menu item "Settings"/"Configuration"/"Acquisition system" you can select the following:
- "3D camera"
- "Scanner"
- "inEos"

3.7.3.3.3 Save

Saving the configuration
Via the menu item "Settings"/"Configuration"/"Save" you can:
- "Connect database"
  An existing SIRONA database is used for patient data and images.

3.7.3.3.4 Odontogram

Odontogram configuration
Via the menu item “Settings”| “Configuration”| “Odontogram” you can select either the US or the international odontogram.

3.7.3.3.5 Options

The “Options” configuration dialog box offers several groups of functions which can be selected and deselected:

- General
- Restoration
- inEos

**General**

In the “General” group, you can select or deselect the following options:

- “Show all warnings and messages”
- “Trim preparation step active”
- “Insertion axis step active”
- “Complete New dialog”

In the “Restoration” group, you can select or deselect the following options:

- “Crown Settling”
- “Crown cusp settling”
- “Prevent full reduction below minimum material strength”

**inEos**

In the inEos group, you can select or deselect the following options:

- “Use marked calibration parts”

3.7.3.3.5.1 Show all warnings and messages

If you have hidden individual warnings (by placing a checkmark in front of “Do not display this warning again.”), you can have them displayed again by placing a check mark in front of “Show all warnings and messages”.
3.7.3.5.2 Preparation trim step active

If a check mark is placed in front of "Trim preparation step active", you can remove image regions before entering the preparation margin (see "Hiding image regions").

If a check mark is placed in front of "Trim preparation step active", this step will be skipped and you can continue with triming the antagonist (if present) or with entering the preparation margin.

3.7.3.5.3 Insertion axis step active

If this option is activated, you will be prompted to set the insertion axis after drawing in the preparation margin.

3.7.3.5.4 Complete New dialog

If a check mark is NOT placed in front of "Complete New dialog", the new dialog box shown below is activated.
Check mark NOT set

If a check mark is placed in front of "Complete New dialog", the new dialog box (complete) shown below is activated.
Check mark set

3.7.3.5.5 Crown Settling

**NOTICE**

Application only for posterior tooth crowns
Applicable only for posterior tooth crowns, crown restoration type, dental database or replication design technique
If this check mark is set, the restoration is automatically adapted to the antagonist during the generation of the initial suggestion for a posterior tooth crown with antagonist. The restoration is adapted to the antagonist so that the resulting contact situation is as stable as possible. The contacts should have as little penetration volume as possible. The morphology of the occlusal surface is not changed.

### 3.7.3.3.5.6 Crown Cusp Settling

**NOTICE**

Application only for posterior tooth crowns
Applicable only for posterior tooth crowns, crown restoration type, dental database technique

If this check mark is set, individual cusps of the restoration are automatically adapted to the antagonist during the generation of the initial suggestion for a posterior tooth crown with antagonist. The cusps are adapted to the antagonist so that the resulting contact situation is as stable as possible. The morphology of the occlusal surface is changed.

**NOTICE**

"Crown Settling" and "Crown cusp settling" activated
If both "Crown Settling" and "Crown cusp settling" are activated under options, first the settling and then the cusp removal are performed in the initial suggestion process.

### 3.7.3.5.7 Prevent reduction below the minimum material thickness

If this option is checked, the minimum thickness of the restoration material will be considered during reduction.

### 3.7.3.5.8 Use marked calibration parts

Tick this option if you use a blue-marked calibration part B and a blue-marked calibration cylinder. After this, perform a complete inEos calibration (see inEos Operating Instructions).

### 3.7.3.4 Calibration

Via the "Calibration" menu item you can...

- calibrate the "3D camera".
  3D camera must be selected as the acquisition system (see chapter on "Calibrating the Bluecam/3D camera" in the Operating Instructions for the acquisition unit).

**NOTICE**

Calibrating the Bluecam/3D camera
The "Bluecam calibration set"/"3D calibration set" is required for calibrating the Bluecam/3D camera.
The "Bluecam calibration set"/"3D calibration set" may not be powdered.

- calibrate the "Scanner" (see chapter "Calibrating the scanner" in the Operating Instructions for the milling unit).
• calibrate the "inEos" device (see chapter on "Calibrating" in the inEos Operating Instructions).
• calibrate the "Milling unit" (see chapter on "Calibrating the milling unit" in the operating instructions for the milling unit).

3.7.4 Window menu

Using the menu "Window", you can change the arrangement of the various viewing windows on the screen and refresh the screen display.

You can restore the default setting for the display of the windows/tool bar on the screen:

"Window" / "Reset" or "Ctrl+R"

The following views and windows are available for assessment and editing purposes:

• "Display options"
• "Image catalog"
• "3D Preview"
• "Cursor"
• "Distance"
• "View"
• "Design"
• "Tool bar"
• "Status bar"

NOTICE

Displayed windows
Displayed windows/bars are identified by a check mark in front of the menu item.

3.7.4.1 Display options

In the "Display options" window the current state of the 3D display is shown and can be adjusted individually.

• Check mark set in front of "ON" – object visible
• Check mark set in front of "OFF" – object not visible
3.7.4.1 Minimum thickness

If this option is checked, a minimum thickness geometry which is set in the parameter dialog box is displayed (see Minimum thickness [61]).

3.7.4.2 Image catalog

Via the "Window"/"Image catalog" menu item you can show or hide the "Image catalog".

In the "Image catalog" window, you can manage the image fields of the preparation, of the occlusion and of the antagonists (see "Image catalog").

3.7.4.3 3D Preview

Via "Window"/"3D Preview" you can show or hide the 3D preview.

In the "3D Preview" window, the image fields of the preparation, the occlusion/articulation and the antagonists are displayed 3-dimensionally (see "3D Preview" [103]).

This function is only available for scanning with the Bluecam/3D camera.

3.7.4.4 Cursor

In the "Cursor" window the current position of the cursor (arrow tip) in the active window is displayed as an absolute value. The zero point of the absolute cursor position is located in the distal and the lingual (or buccal) direction from the model.

The first line shows the x, y value at the cursor position.

The second line shows the height value at the cursor position.

The third line shows the point (x, y value) of the fissure with the minimum distance from the cavity bottom (only for the dental database design technique).

The fourth line specifies the minimum fissure height at this point (only for the dental database design technique).

You can drag the "Cursor" window with the mouse by grabbing its title bar and drop it at any position on the screen.
3.7.4.5 Distance

If you select "Window"/"Distance", the "Distance" window is displayed.

- The "Distance" window opens.
- Left-click to set the desired starting point of the distance to be measured.
- Move the mouse to the desired end point.
- Left-click to set the end point.

Changing the position of the blue line:

1. Drag the red pin at the end of the blue line with the left mouse button pressed.
2. Release it anywhere you want.

The first line shows the 3-dimensional distance between the starting and end points of the blue line.

The second line shows the height difference between the starting and end points of the blue line.

You can drag the Distance window with the mouse by grabbing its title bar and drop it at any position on the screen.

3.7.5 "?" menu

Using the "?" menu you can

- start the Help function (online help) "?"/"Help" or function key "F1"
- display information about the active restoration "?"/"Info Options..."
- display information about the connected Softguard dongle (activation key) "?"/"Softguard info..."
- call up information about the current program version "?"/"Info on inLab..."

3.7.5.1 Help (online help)

The online help function gives you instructions on the steps to be performed.

To start help, call up the menu item "?"/"Help" or "F1".

A dialog box appears that contains a variety of help topics you can select and have displayed.

3.7.5.2 Info options

In the "Options" window you receive information about the active restoration.

You can also see the status of the restoration here.

- "unfinished": Restoration still in progress
- "milled": Restoration was milled with the inLab milling unit
- "sent": Restoration was sent to infiniDent

3.7.5.3 Softguard info

In the "Softguard" window you receive information about the connected Softguard dongle (activation key).
### NOTICE

**Multiple milling units connected**
If several milling units are connected, a dialog box will appear from which you must select the desired milling unit and confirm with "OK".

### NOTICE

**Milling unit not switched on**
If the milling unit is not switched on/connected or the current software has not been downloaded to the milling unit, the following message appears: "Milling unit is not ready". The milling unit name entered during the login in the "Description" field will appear as the "milling unit".

| Identifier 0 | = CEREC 3 milling unit / Scan (serial no. < 5000) |
| Identifier 1 | = inLab milling unit (serial no. >/= 5000) |
| Identifier 2 | = CEREC 3 milling unit / Scan (serial no. >/= 5000) |
| Identifier ?? | = no milling unit detected (check the connection to the milling unit and the communication settings) |
| Identifier 32 | = CEREC MC XL |
| Identifier 48 | = inLab MC XL |

#### 3.7.5.4 Info about program

In the "Info on inLab..." window you receive information about the current program version.

If you have installed an Internet access, you can click the Homepage "Homepage" script nameplate to directly access our web pages.
4 Optical impression

4.1 Acquisitions with inEos

InEos provides three acquisition techniques for each image field.

If you click the "Acquire preparation" button, for example, a dialog box appears in which you can select the following acquisition techniques:

- Top view scan
- Rotational scan
- Detail scan
- You can also combine the top view and the rotational scan (see "Top view rotational scan")

4.1.1 Top view scan

4.1.1.1 Capturing the optical impression

1. Attach the jaw model on the shifting plate provided for that purpose.

2. Place the shifting plate on the XY table so that the guide balls of the plate engage in the longitudinal and transverse grooves of the table.

3. Adjust the height of the camera until the object appears in sharp focus in the live image.

4. Select the "Top view" option button.

5. Click the "Acquire" button to start the top view scan. Start at one end of the region you want to scan and take the next image after engaging the shifting plate in the very next (neighboring) groove on the table.

NOTICE

Focus of the images
If necessary, you may refocus the camera between the individual images.

NOTICE

Alternative
To start the individual images, you may also double-click the blue button located in front of the XY table with displacement grid.

NOTICE

Model preparation
For a detailed description of the model preparation and the individual acquisition techniques, please refer to the inEos Operating Instructions.

NOTICE

Placing plates on the XY table
For top view scans, the shifting plate must always engage in the longitudinal and transverse grooves; otherwise the system is unable to arrange the images properly.
4.1.1.2 “Puzzle” dialog box

If the system is unable to auto-position an image, the “Puzzle” dialog box opens, enabling you to manually fit the image in the right place.

1. Double-click to select the puzzle piece where you want to fit the next image planned. This piece is highlighted by a red marquee.
2. Holding down the left mouse button, drag the next image to the desired position.

4.1.1.3 Missing images

If you have skipped an image which is necessary, you can take it later at any time and put it in the right place with the help of the “Puzzle” dialog box (see ““Puzzle” Dialog” [83]).

4.1.1.4 Completing views

Once you have finished the top view scan, you can complete any areas with deficient scan quality, e.g. areas where teeth appear overlapping in the top view image.

The scan may be completed by one or several additional detail image(s). These images also may be tilted (see "Detail scan" [84]).

The detail images are placed in separate fields. These fields show red arrows in their top left corners. You can grab the arrowheads with the mouse and drag the individual detail images to the matching tooth of the top view image. The arrow color changes to green.

4.1.1.5 Terminating the scan

Once you have completed all image acquisitions in the image field, close the selection dialog box by clicking “Exit”.

Select the next image field or proceed with the program as normal (“Next”) and design the restoration.

4.1.2 Rotational scan

4.1.2.1 Capturing the optical impression

1. Fasten the tooth model in the model holder included in the scope of supply.
2. Fit the model holder onto the inclined motor axle, which is located in the rear hole on the XY table.
   a. The tooth to be scanned appears in the live image.
3. Adjust the height of the camera until the object appears in sharp focus in the live image.
4. Select the “Rotation” option button.
5. Click the “Acquire” button to start the rotational scan.

4.1.2.2 Terminating the scan

Once you have completed image acquisition, you close the selection dialog box by clicking the “Exit” button.

Proceed with the program as usual (“Next”) and design the restoration.
4.1.3 Detail scan

4.1.3.1 Capturing the optical impression

1. Place, fit or hold the tooth below the camera. 🆗 The tooth to be scanned appears in the live image.
2. Adjust the height of the camera until the object appears in sharp focus in the live image.
3. Select the option button marked “Additional image”.
4. Click the button marked “Acquire” to start the detail scan.

**NOTICE**

*One single image for each image field*
In pure detail scan mode, one single image is taken for each image field required.

**NOTICE**

*Combination with top view scan*
All detail images which may be necessary in combination with a top view scan can be taken here. The number of possible detail images depends on the PC configuration.

4.1.3.2 Terminating the scan

Once you have completed all image acquisitions in the image field, close the selection dialog box by clicking “Exit”.

Select the next image field or proceed with the program as normal (“Next”) and design the restoration.

4.1.4 Rotational scan in top view

4.1.4.1 Increasing the precision

You can increase the precision by combining the top view with one or more rotational images instead of with individual detail scans. This applies especially in the vicinity of preparation borders on tooth stumps serving as bridge abutments.

4.1.4.2 Capturing the optical impression

1. Remove the prepared single teeth intended for the rotational scan from the saw-cut model.
2. Place the single teeth in the model holder in succession and align them as coaxial as possible (i.e. ideally the insertion axis would coincide with the rotation axis) as for the individual rotational scan also.
3. Perform the rotational scan (see chapter “Rotational scan”).
4. Reassemble the saw-cut model.
5. Align the complete saw-cut model in the holder just as you would for top view scans without a rotational scan. The saw cuts should be filled (e.g. with powdered wax) to prevent needle artifacts, etc., on the cuts.
6. Take the top view scan (see “Top view scan”).
7. After completing all scans, drag the arrowheads of the rotational scans to the locations in the top view where they belong in order to speed up the reconstructions.

4.1.4.3 Further information

You should insert the model holder with the stump positioned so that the mesio-distal alignment of the single tooth corresponds to the alignment of the complete model (also see “Rotational scan”). This speeds up the calculations.

**NOTICE**

**Take few scans**

Take as few scans as possible: The program is suitable for any typical applications – e.g. for two rotational scans combined with one top view comprising 4-6 individual scans.

Whole-jaw scans combined with more than four rotational scans are possible, however, they are not advisable due to the high memory requirements and long calculating times involved.

4.2 Optical impressions with the scanner (inLab, inLab MC XL)

4.2.1 General information

**NOTICE**

**Supplementary and angled optical impressions**

Supplementary and angled optical impressions are not possible with the scanner.

Preparation of the scan model is described in the Operating Instructions for the milling unit.

The model is scanned from several directions. Several single images appear in the image catalog after scanning.

Reference optical impressions cannot be changed with a double-click.

Based on the selected restoration type, the software decides which scanning technique will be used.
4.2.2 15° scanning technique

This scanning technique is used for inlay and crown preparations. Two scans are performed:
- one from an angle of 15°
- one from an angle of -15°

4.2.3 45° scanning technique

This scanning technique is used for veneers as well as crown and bridge preparations that are fastened to a model holder for bridge framework. Three scans are performed:
- one from an angle of +45°
- one from an angle of -45°
- one from an angle of 0° (occlusal view)
4.2.4 Crown framework scanning technique

This scanning technique is used for crown preparations that are fastened to a model holder for bridge framework. One scan is performed.

**NOTICE**

**Display of assignment**

If you insert the model in the model holder so that \( B \) lies mesially to the left of groove \( A \), the mesial/distal assignment will be displayed correctly in the software.

4.2.5 15° scanning technique for quadrant restoration

**NOTICE**

**Inlay for a quadrant restoration**

If an inlay is also to be supplied in connection with a quadrant restoration, first select Inlay as the restoration type in the New dialog box and begin with this restoration. The quadrant model is then scanned from the 15° direction of view:

- one scan: + 15°
- one scan: -15°

4.2.6 Scanning antagonists

With this scanning technique, one scan is performed from the occlusal view (0°).

**CAUTION**

**Position of model must not be changed**

Make sure that the position of the model is not changed between the scan of the antagonists and the scan of the preparation.

**NOTICE**

**Image regions**

These two image fields do not have to have any corresponding image regions (neighboring teeth).
Preparation model with bite registration

1. Place preparation model A into the milling unit with bite registration B mounted on top. The registration may cover the model over its entire length.

2. Have model A scanned using attached bite registration B as the antagonist.

3. Then remove registration B from model A without removing the model from the milling unit.

4. Have the model scanned as the preparation.

4.2.7 Scanning an occlusion

With this scanning technique, one scan is performed from the occlusal view (0°).

The image field of the occlusion must agree with the image field of the preparation in the mesial and distal region (see also "General information on the optical impression" [171]).

1. Insert the occlusion model in the milling unit.

2. Have the occlusion scanned.

3. Then remove the model from the milling unit.

4. Insert the preparation model in the milling unit.

5. Have the model scanned as the preparation.
4.2.8 Scanning WaxUp

*Scanning WaxUp*

With this scanning technique, the inserted WaxUp model is scanned from 6 different directions.

The top is scanned from angles of +60°, 0° and -60°, while the bottom is scanned from angles of +15°, 0° and -15°.
4.3 Optical impressions with the CEREC Bluecam

NOTICE

inLab 3D software on the CEREC AC acquisition unit
If you use the inLab 3D software on a CEREC acquisition unit, you can also acquire optical impressions with the CEREC Bluecam.

4.3.1 Acquisition control

The acquisition control of the Bluecam functions as follows:

Manual acquisition control

✔️ A window is opened for a new restoration.
1. Position the cursor on the acquisition icon (e.g. "Acquire preparation").

![Image of Bluecam icon]

2. Press the foot control upward and keep it pressed.
   ☺️ A live video image appears with a green cross.
3. Release the foot control.
   ☺️ The optical impression is automatically transferred to the 3D preview (e.g. the Preparation image field).
4. Additional optical impressions can be captured by repeating steps 1 to 3.
5. By positioning the cursor on another acquisition icon (e.g. "Acquire occlusion" or "Acquire antagonist") and repeating steps 2-4, additional optical impressions can be captured in the occlusion or antagonist model.
6. To exit the acquisition mode, click the icon marked "Next".

![Image of preparation icon]
Automatic acquisition control

✔ A window is opened for a new restoration.

1. Position the cursor on the acquisition icon (e.g. "Acquire preparation").

2. Press the foot control upward briefly.
   ✂ As soon as a sharp optical impression can be captured, images are automatically generated and transferred to the 3D preview.

3. Press the foot control upward briefly.
   ✂ The optical impression is completed.

4. By positioning the cursor on another acquisition icon (e.g. "Acquire occlusion" or "Acquire antagonist") and repeating steps 2-3, additional optical impressions can be captured in the occlusion or antagonist model.

5. To exit the acquisition mode, click the icon marked "Next".

Changing from automatic to manual acquisition control

If you press the foot control upward and keep it pressed during an automatic exposure, this changes the program back to manual acquisition control.
4.3.2 Single optical impression

Reference optical impression

As a rule, a single optical impression is sufficient for single tooth restorations. It must be taken in the occlusal direction (insertion axis) and is called reference optical impression.

As soon as you have selected a tooth and a design technique, the "Acquire preparation" icon is activated in the tool bar. The cursor then jumps to this icon.

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Using the Bluecam</strong></td>
</tr>
<tr>
<td>For intra-oral impressions, always use the camera support.</td>
</tr>
<tr>
<td>The Bluecam is a high-precision optoelectronic instrument which requires careful handling. Incorrect handling (impacts, dropping) leads to failure of the Bluecam.</td>
</tr>
<tr>
<td>Do not support the camera head (prism) on a tooth.</td>
</tr>
</tbody>
</table>

Camera support

Using the camera support helps ensure that the scans are not blurred. The camera support prevents damage to the prism and contact with the prepared tooth.

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Using the camera support</strong></td>
</tr>
<tr>
<td>Clean the camera support by wiping or spraying it with disinfectant prior to use. Designed for one-time use only.</td>
</tr>
</tbody>
</table>

Preparing an optical impression

1. Push the camera support onto the camera as illustrated.

<table>
<thead>
<tr>
<th>Pushing on the camera support</th>
</tr>
</thead>
</table>

2. Position the camera over the powdered preparation.
Supporting the 3D camera

3. Support the camera with the front part of the camera support on a tooth so that you can hold it quietly during the acquisition phase.

**NOTICE**

**Powder on the surface of the prism**

If the prism touches powdered surfaces, then powder usually remains on the prism surface and generates dark spots in the image.

The powder can be wiped off from the prism with a soft cloth.

**Taking the scan**

➢ Take the scan as described under “Acquisition control” [90].

**Concluding the optical impression**

➢ To exit the acquisition mode, click the icon marked “Next”.
4.3.3 Supplementary optical impressions

Acquiring images of neighboring teeth

If neighboring teeth are to be completely imaged as well, then the image field can be extended by further optical impressions of these teeth. The overlap area of two neighboring optical impressions should be approx. 8mm.

Overlap area 8mm

✔ You have taken the reference optical impressions as described in the chapter "Single optical impression" under "Preparing the optical impression" and "Performing the optical impression".

1. Click briefly to take the reference optical impression.
2. Repeat the steps described in the section “Capturing the optical impression” of the chapter "Single optical impression" for the mesial neighbor.
3. Click briefly to take an optical impression of the mesial neighbor.
4. Repeat the steps described in the section “Capturing the optical impression” of the chapter "Single optical impression" for the distal neighbor.
5. Click briefly to take an optical impression of the distal neighbor.
6. To exit the exposure process, click the icon marked “Next”.

NOTICE

Insertion axis
The reference optical impression determines the original insertion axis, which can be modified later, if required.
4.3.4 Angled optical impressions

**NOTICE**

**Insertion axis**
The reference optical impression determines the original insertion axis which can be modified later if required (see “Redefining the insertion axis” [116]).

Additional angled optical impressions

Additional angled optical impressions are possible for the preparation. They can be used to acquire impressions of regions that are concealed in the reference optical impression, or to acquire steep walls in more favorable angles.

**CAUTION**

**Proximal undercuts**
Proximal undercuts may make it impossible to seat an inlay.

The maximum permissible tilt angle for capturing an additional optical impression of the same area is 20°.

4.3.5 Supplementary and angled optical impressions

**NOTICE**

**Insertion axis**
The reference optical impression determines the original insertion axis which can be modified later if required (see “Redefining the insertion axis” [116]).

Supplementary optical impressions and additional angled optical impressions

Apart from the reference optical impression, additional supplementary optical impressions and additional angled optical impressions are possible.

4.3.6 Optical impressions for quadrant restoration

**NOTICE**

**Insertion axis**
The reference optical impression determines the original insertion axis which can be modified later if required (see “Redefining the insertion axis” [116]).

For quadrant restoration it is recommended to acquire the prepared teeth as well as an unprepared neighboring tooth in each case. It can be covered by capturing several supplementary optical impressions.
4.3.7 **Acquiring end teeth**

**End tooth at the distal margin**

When end teeth are restored, the end tooth should lie at the distal margin of the image field.

4.3.8 **Acquiring the antagonist**

**Acquiring the centric bite registration**

The interocclusal relation between the prepared tooth and the antagonist in the opposite jaw is recorded with the bite registration.

**Centric bite registration**

1. Place the impression compound on the preparation.
2. Ask the patient to bite on the impression compound (without functional movement)
3. After the impression compound has hardened, trim it so that the proximal surfaces can be seen from the mesial and distal aspect.
4. Acquire the antagonist (see "Single optical impression").

**NOTICE**

**Image field of the antagonists**

The image field of the antagonists must agree with the image field of the preparation in the mesial and distal region.

5. Remove the disturbing marginal information via "Design" "correct optical impressions..." (see "Correcting the orientation of bridges" [118]).
6. To exit the acquisition mode, click the icon marked "Next".
4.3.9 Veneer images

The 3D view of veneer restorations shows the mesial, distal etc. directions.

These displays are correct only if the images were acquired from the labial direction and the tip of the camera was pointing in the distal direction.

4.3.10 Acquiring bridge preparations

To produce bridge frameworks of up to 3 elements, you can acquire the tooth situation with the 3D camera. Make sure there is always dental substance visible in the overlap area of the acquisitions (areas A). Start in the center with the 1st impression (B).

The design of bridge frameworks is described by means of an example under "Designing a bridge framework" [140].

A  Overlap area          C  2. optical impression
B  1. optical impression, central D  3. optical impression
4.4  Image fields

An image field can consist of one or more optical impressions.

We distinguish between the following image field types:

- Image field of the preparation

- Image field of the occlusion

- Image field of the antagonists

- Image field of the articulation

**NOTICE**

**Waiting times**

If a large number of optical impressions is used (>10), longer waiting times may result during reconstruction of the 3D model. The files become very large.

Generally, the following applies: As many optical impressions as necessary, but as few as possible.

4.4.1  Image field of the preparation

Optical impressions can be made of the prepared tooth/teeth in the image field of the preparation.

4.4.2  Image field of the occlusion

In the image field of the occlusion, optical impressions of a previously existing or of a waxed-up occlusion are possible.

The image field of the occlusion must agree with the image field of the preparation in the mesial and distal region.
Even if the "Correlation" design procedure is not used, a mock-up (e.g. set-up teeth) can be scanned in here. This scan can be displayed as a reference image during the design process.

4.4.3 Image field of the antagonists
Optical impressions can be made of a centric bite registration in the image field of the antagonists.

4.4.4 Image field of the articulation
Optical impressions of a dynamic occlusion impression (FGP technique) are possible in the image field of the articulation. These impressions are possible only if you have selected the following in the New dialog box:
- "Restoration": "Crown"
- "Design technique": "Articulation"

4.5 Image catalog

4.5.1 General information

NOTICE
The image catalog can be used only with scanner or inEos optical impressions.

In the "Optical impression" processing stage you can perform the following actions:
- Assign an image group to the active region (see "Active region" [101])
- Assign an image to another image field (see "Changing the assignment")
- Move images between the active and the passive area
- Delete images (see "Deleting images" [102])

NOTICE
Undoing work steps
If the restoration is in an advanced processing status, you can click the "Undo" icon repeatedly until you return to the "Optical impression" processing status. When doing so you must delete the restoration (if present).

4.5.2 Opening the image catalog
The image catalog opens automatically when it is necessary or possible to take an image.
To open the image catalog manually, select "Window"/"Image catalog".

1. Displayed on the status bar at the bottom left.
4.5.3 Design of the image catalog

All three image fields are displayed simultaneously in the image catalog. When you double-click the title bar of an image field, this image field is maximized. The other two image fields remain visible as well.

There are two areas within each image field:
- an active area A
- a passive area B

Button C is used to switch between horizontal and vertical image catalog division (and vice versa).

If there are multiple images, the panes of the relevant image region automatically increase in size.
You can adjust the relevant image region manually by placing the cursor in area D, pressing and holding the left mouse button, and moving the cursor forward or to the rear.

You can fix the optimal position with button E. In the fixed state the size of the current image field does not increase with an increasing number of impressions.

Images which are located in the active region and can be attached to other images are marked with a green check mark.

Images which cannot be attached to each other are marked with a red cross.

Successfully reconstructed models are marked with a green check mark within an image region.

If you drop a scan from the passive area of the image field onto this icon, you can assign the scan to a new active group (detail scan or rotational scan).

With this icon you can hide or show the arrows.

With this icon you can set the zoom factor of the display in the image catalog.

Each image is displayed in the image catalog as a thumbnail (preview).

You can choose a preview format in steps ranging from 1:10 to 1:2.

The first optical impression of the image field is called reference optical impression and is surrounded by a red frame. It must be taken in the occlusal direction (insertion axis).

4.5.4 Redefining the reference optical impression

To define another image as the reference optical impression, double-click the desired image.

4.5.5 Active region

Each time you click another scanning icon, an existing image group¹ is pushed out of the active region (not deleted). The last image group scanned is located in the active region. You can press and hold down the left mouse button to drag an image group located outside of the active region back inside the active region.

¹. All of the images generated by a single scanning operation. They all have the same time stamp.
4.5.6 Zooming in
When you point to an image with the mouse cursor, the image is displayed in its original size.

4.5.7 Changing the assignment

**NOTICE**

**inEos**
Only rotational images and detail images can be moved between the image fields. They always land in the passive area.

1. Holding down the left mouse button, drag the image you want to move to the "other" image field.
2. Release the mouse button.
   - The image is now assigned to "another" image field.
3. In order to activate the image after this, drag the scan onto the icon marked "New group".

4.5.8 Within an image field (inEos)

**NOTICE**

**Moving images**
Only rotational images and detail images can be moved between the active and passive area and the recycle bin within an image field.

4.5.9 Deleting images
You can drag an unusable scan onto this button to discontinue using it.

1. Holding down the left mouse button, drag the image you want to delete to the recycle bin icon.
2. Release the mouse button.
   - The image is deleted.

4.5.10 Opening the recycle bin

1. Click the recycle bin.
   - The recycle bin opens and displays all of the scans it contains.
2. Move the desired scan back to the passive area if necessary.

4.5.11 "Puzzle" dialog box for top view scan (inEos)

1. Double-click a top-view scan
   - The "Puzzle" dialog box opens.
2. Drag the scans to the right location manually if necessary. Place scan in correct location, see ""Puzzle" dialog box". [83]

The "Puzzle" dialog box has a separate recycle bin.

4.5.12 Rotational image (inEos)

When you double-click a rotational image, the display changes between overview image and single optical impression.

4.5.13 Displaying the height image

Right-click the thumbnail image in the image catalog. The height image is displayed. To close the height image, right-click the height image once again.

4.5.14 Closing the image catalog

The image catalog closes automatically when you click the "Next" icon and it is possible to reconstruct a 3D model from all active images.

To open the image catalog manually, select "Window"/"Image catalog" from the menu.

4.6 3D Preview

4.6.1 General information

The 3D Preview can be used only with camera images and not with scanner or inEos images.

In the default setting, the data are displayed from the occlusal direction in the 3D preview. You can freely select the viewing direction of the 3D model in the 3D preview window with the mouse (left-click, hold button pressed and move mouse).

4.6.2 Opening the 3D Preview

The 3D preview opens automatically when it is necessary or possible to acquire an optical impression.

To open the 3D preview manually, select "Window"/"3D Preview".
4.6.3 Design of the 3D Preview

In the 3D Preview, images are displayed in the following three image fields:

- Preparation
- Occlusion/articulation (if present)
- Antagonist (if present)

The design inside the image field is identical.

If images are located in the active region and can be attached to other images, the thumbnails are marked with a green check mark.

 Thumbnails which cannot be attached to each other are marked with a red cross.

The window with the 3D preview and the panes of the individual image fields in the 3D preview can be minimized, maximized and restored to their default size. You can click the following icons at the top right edge of the window:

- Minimize
- Maximize
- Restore

4.6.4 Symbol for reference optical impression

If you move the mouse pointer over the thumbnail (A), a symbol denoting the reference optical impression (green circle with a white dot) appears to the top right of the thumbnail.

To select another image as the reference optical impression, double-click the desired thumbnail. As you can see, the green circle with the white dot is adapted accordingly.
4.6.5 Numbering of optical impressions

If you move the mouse pointer over a thumbnail (A), a symbol with the number (based on the acquisition date) appears to the top left of the thumbnail. All optical impressions/thumbnails in each image field are numbered consecutively according to this principle.

If you move the mouse pointer over the scroll arrow (B), the numbers are displayed on all thumbnails.

If more than 5 thumbnails are present on the docking bar, the scroll arrows to the left and right of the docking bar are activated for scrolling in the corresponding image field.

If you move the mouse pointer over the thumbnail, this causes the corresponding part to be highlighted in the 3D overall display. This part is displayed white.

4.6.6 Passive folder

You also have the option of dragging optical impressions which may be used at a later time from the docking bar to the passive folder (A) and saving them there. The optical impressions in this folder are saved, and not deleted.

If you click the folder icon, the folder is opened and its contents, including all of the optical impressions it contains, are displayed. You can then drag the optical impressions from the folder to the active region of the 3D Preview. The optical impression is recorrelated in the process.

4.6.7 Copying/moving optical impressions

If you drag an optical impression or a thumbnail from one image field to another, a small context menu opens after you release the mouse button. In this menu, you can select whether the optical impression should be copied or moved.
4.6.8 Displaying the date/time in the intensity image

If you move the mouse pointer over a thumbnail in the docking bar and keep it there for at least 2 seconds, the intensity image appears to the left along with the date and time of acquisition in red lettering.

4.6.9 Displaying the height image

If you move the mouse pointer over a thumbnail in the docking bar and right-click it, the height image appears to the left. To close the height image, right-click the thumbnail once again.
4.6.10 **Zoom function in the 3D Preview**

If you move the mouse pointer into the right region of the respective image field, a slider appears which can be used to change the size of the thumbnails.

![Zoom function in the 3D Preview](image)

4.6.11 **Deleting images**

You can drag an unusable scan onto this icon to discontinue using it.

1. Holding down the left mouse button, drag the thumbnail you want to delete to the recycle bin icon.
2. Release the mouse button.

The image is deleted.

If you would like to use a deleted image once again, left-click the recycle bin icon again (see also "Opening the recycle bin [107]").

Images that have been moved to the recycle bin will automatically be deleted as soon as you click the "Next" button after preparing the optical impression.

4.6.12 **Opening the recycle bin**

![Open recycle bin](image)

If you click the recycle bin icon, the recycle bin is opened and its contents, including all of the optical impressions it contains, are displayed. You can then drag the optical impressions from the folder to the active region of the 3D Preview. The optical impression is recorrelated in the process.
4.6.13 Closing the 3D Preview

Closing the 3D Preview

The “3D Preview” automatically closes when you click the “Next” icon and it is possible to reconstruct a 3D model from all active images.

You can close the “3D Preview” manually via the menu “Window/3D Preview”.

4.6.14 Discarding initial, unsuitable optical impressions

If the first optical impressions are unsuitable, e.g. because cotton pellets or a cofferdam were/was scanned, they will automatically be discarded later on once a suitable pair of images has been found.

It is thus possible to continue working quickly even when unsuitable images are scanned at the beginning of automatic acquisition. The following example explains this relationship.

1. and 2nd optical impression

1. optical impression:
   - Cofferdam,
   - unsuitable,
   - green dot,
   - forms the model

2. optical impression:
   - cellulose roll,
   - unsuitable,
   - cannot be registered,
   - red cross
3. optical impression

3. optical impression:
- Tooth 17,
- OK,
- cannot be registered,
- red cross.

4. optical impression

4. optical impression:
- Tooth 16,
- OK,
- matches 3rd optical impression

The first two optical impressions are sorted out (red cross), the 3rd optical impression is used as a reference image. The 3rd and 4th optical impression form the model.
5 Design

5.1 Trimming the preparation

After the 3D model of the preparation is displayed in the viewer and before you enter the preparation margin, you can hide image regions of the preparation, e.g. the mesial and distal neighbors.

If the 3D model is trimmed in this design step, both the side surfaces and the bottom are then displayed complete (illustration on the left). Via the shortcut "Ctrl+B", the model can be displayed without the side surfaces and without the bottom (illustration on the right).

Hiding image regions

1. Enter an open line by double-clicking the starting point of the line on the image field/object.
   
   Distal neighbor hidden

2. Click to set further points of the line, e.g. in the interdental space.
3. Double-click in the image field/object to set the line end.
   - The image region on the side of the line is hidden.

4. To exit this mode, click the icon marked “Next”.

By clicking the button marked “Trim”, you can simultaneously show or hide all image regions.

NOTICE

Switching the image region

If it is the wrong image region, you can switch to the other image region by double-clicking the hidden region.
5.2 Trimming the antagonist

This design step can be used in the following, if an optical impression of the antagonist exists.

<table>
<thead>
<tr>
<th>&quot;Restoration&quot;</th>
<th>&quot;Design technique&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Crown&quot;</td>
<td>• &quot;FrameWork&quot;</td>
</tr>
<tr>
<td></td>
<td>• &quot;Reduced&quot;</td>
</tr>
<tr>
<td></td>
<td>• &quot;Dental database&quot;</td>
</tr>
<tr>
<td></td>
<td>• &quot;Replication&quot;</td>
</tr>
<tr>
<td></td>
<td>• &quot;Articulation&quot;</td>
</tr>
<tr>
<td>&quot;Bridge&quot;</td>
<td>• &quot;FrameWork&quot;</td>
</tr>
<tr>
<td></td>
<td>• &quot;Reduced&quot;</td>
</tr>
<tr>
<td></td>
<td>• &quot;Dental database&quot;</td>
</tr>
<tr>
<td>&quot;Inlay, Onlay, Partial crown&quot;</td>
<td>&quot;Dental database&quot;</td>
</tr>
</tbody>
</table>

After you have trimmed the preparation, you can hide the image regions of the antagonist.

Correct trimming of the antagonist is very important for improvement of the settling results.

This new design step will automatically be skipped if no optical impression has been scanned.

Hiding image regions

Antagonist transparent

In this design step, the antagonist is displayed slightly transparent and the preparation is simultaneously displayed. This makes it easier for you to recognize where it makes the most sense to trim the antagonist.

Draw a closed line (e.g. around the impression of the antagonist/registration):
1. Set the starting point with a double-click.
2. Click to set further points.
3. Set the line end by double-clicking.

The area outside the line is hidden.

It is important to remove any regions which should not touch the occlusion of the new restoration.

Using the "Manual Trim" in the "Antagonist" dialog box, you can also hide image regions at a later point of time.
5.3 Entering preparation margins, base lines and gingival lines

5.3.1 General information

**NOTICE**

Changing the insertion axis and image regions

After entering the preparation margin, you can redefine the insertion axis or delete and correct image regions as required (see Redefining the insertion axis [117] and Deleting and correcting image regions in image fields [118]).

You can enter the preparation margin in the viewer in the 3-dimensional (3D) representation of the preparation.

**NOTICE**

Moving not possible during the drawing process

Since the last “drawing click” can be undone by clicking with the right mouse button, it is not possible to move the 3D model while drawing (since this is done by pressing and holding down the right mouse button).

For bridge framework designs, the status bar will prompt you to enter the preparation margins and the base lines\(^1\) and base lines\(^2\) one after the other. The order followed corresponds to the selection in the New dialog box and always begins with the most distal tooth.

During the entry of the preparation margin and the base line, you can rotate the 3D display of the preparation.

The preparation margin must always form a closed line.

You can edit the preparation margins and base lines after entering the last line.

---

1. for abutments
2. for connectors
5.3.2 Entering the preparation margin

1. Start the entry by double-clicking anywhere on the preparation margin.
2. Move the cursor along the preparation margin.
3. Continue this procedure until you are back at the starting point.
4. Conclude the entry by double-clicking the starting point.

**NOTICE**

**Automatic edge detection**
To support the automatic edge detection, click anywhere near the margin on the raised side. There is an automatic correction when the next point is set.

5.3.3 Base lines for pontics

1. Begin the entry with a double-click.
2. Click to set further points of base line.
3. Conclude the entry by double-clicking the starting point.

When a bridge's (dental database or reduced) preparation margins and base lines have been entered, red dots will appear on the restoration to indicate where the pontics will be located. These dots mark the pontics' center for the initial suggestion. You can move these dots to the desired locations.

**5.3.4 Gingival line**

The gingival line is used to create abutments in the Mesostructure design technique in order to produce restorations on Straumann implants (see also “Producing implants with inLab 3D” [214]).

**Entering the gingival line**

1. Begin the entry with a double-click.

2. Click to set further points of the gingival line.

**NOTICE**

**Automatic edge detection**

The automatic edge detection cannot be used for gingival lines.

3. Conclude the entry by double-clicking the starting point.

**5.3.5 Entering a preparation margin with unclear edges**

If you press the **space bar** while entering the preparation margin, the system switches to the interpolating method (spline function) and you can set individual points by clicking.
If the optical impressions have been made with the CEREC 3D camera or with inEos*, the switch is made to intensity image.

*In the case of inEos optical impressions which contain a rotational scan, or optical impressions made with the scanner, the system does not switch over to intensity image.

In the case of optical impressions made with the CEREC Bluecam, the normal model continues to appear. If you wish to see the intensity image in unclear situations, this can be done by clicking the key combination "Ctrl+H". If you click the "Ctrl+H" key combination once again, the system switches to the normal model display.

When you press the space bar once again, the system switches to the edge detection method.

5.4 Redefining the insertion axis

If under “Settings”/ “Configuration”/ “Options” you have activated the option “Insertion axis step activ”, the tool “Insertion axis” will automatically be activated at the following point of time.

- While the preparation margin can be edited,
- Before the restoration is suggested.
5.4.1 Redefining the insertion axis

✔ The option "Insertion axis step activ" is activated.

1. Once you have entered the preparation margin, click the "Next" button.
   - The "Insertion axis" dialog box opens.
   - Regions within a preparation margin that show an undercut from the viewing direction are marked yellow.

2. Change the position of the preparation such that all yellow markings disappear. If this is not possible, (e.g. in the case of diverging stumps) make sure that all preparation margins are completely visible from the viewing direction and yellow-marked undercuts are as far away as possible from the preparation margin.

3. Then rotate the preparation model so that the model is correctly labeled by the axis designations (mesial<->distal and lingual<->buccal). To do this, rotate the preparation in the occlusal view by grasping the right or left edge of the screen with the mouse pointer and then moving the pointer along the edge of the screen.

4. Click the button marked "Fix".
   - The reference coordinate system for all further design steps is changed.

**NOTICE**

**Bridge frameworks**

In the case of bridge frameworks, "lingual<->buccal" must be labeled correctly at least.

**NOTICE**

**Rotation without effect**

**NOTICE**

**Rotation while scanning a crown framework model holder**

If performed while scanning a crown framework with the model holder, a rotation about the occluso-cervical axis has no effect.
5.4.2 Correcting the orientation of bridges

If, during the scanning process, the model was fastened to the holder in such a way that the orientation is false (mesial<->distal and lingual<->buccal reversed), you can correct this.

1. Select "Design"->"Insertion axis".
   - The "Insertion axis" window opens.

2. Rotate the preparation in the occlusal view by 180° by grasping the right or left edge of the screen with the mouse pointer and then moving the pointer along the edge of the screen. Also make sure that the direction of view corresponds to the new insertion axis.

3. Click the button marked "Fix".

5.5 Deleting and correcting image regions in image fields

Before you enter the preparation margin, you can delete and correct image regions in all image fields (preparation, occlusion, antagonist).

1. Select "Design"->"Correct optical impressions...".
   - The "Correct optical impressions..." dialog box opens.

2. Select the image field type ("optical impression") and "Technique".

Under Technique you can decide:
- whether you want to cut outside or inside a closed line,
- cut to the side of an open line or
- smooth inside a closed line.
5.5.1 Example 1: Removing a powder spot

Drawing a closed line

1. To correct a powder spot on a level surface, select the corresponding image field type under "optical impression".
2. Under "Technique", click "Smooth inside".
3. Draw a closed line.

The surface is smoothed.

Drawing a closed line

1. Set the starting point with a double-click.
2. Click to set further points.
3. Set the line end by double-clicking.
5.5.2 Example 2: Deleting disturbing image regions

Drawing a closed line

1. To remove disturbing regions of the bite registration in the image field of the antagonist, select "optical impression" and the image field type "Antagonist".
2. Under "Technique", click "Cut outside".
3. Draw a closed line (e.g. around the impression of the antagonist/registration).

The area outside the line is deleted.

Drawing a closed line

1. Set the starting point with a double-click.
2. Click to set further points.
3. Set the line end by double-clicking.
6 Milling

6.1 Material selection

When inLab restoration data (FrameWork, WaxUp, Reduced, Bridge, Implant) have been captured, the following dialog will appear when displaying the 3D preparation model:

Material selection

In this dialog box you can choose the material you want to use for milling the restoration. With crown caps and bridge frameworks, the following factors are affected by this selection:

- the initial restoration proposal
- the threshold from which the ceramic thicknesses on the status bar are highlighted in red
  - for connector cross section
  - for cap thicknesses

⚠️ CAUTION

Red fields

Red fields on the status bar mean that components of the CAD model are thinner than recommended by the material manufacturer. Note that the final thickness may differ as a result of milling tolerances and manual reworking.

When ordering via the Internet, the material selection for all inLab restorations is sent to infiniDent (also see http://www.infinident.de).

The ceramic thicknesses / connector cross sections of configurations which are not recommended (e.g. bridges made of spinel) are always highlighted in red.
The chosen material is preselected in the "Select block" dialog box, but may be changed there. If another material is selected there, the shape of the restoration will not change, which can easily result in material thicknesses that are below the minimum.

The shape of the cap margin and the initial ceramic thicknesses of caps and connectors depend on the material.

6.2 Milling preview

After having finished the design of the restoration, you can activate the milling preview by clicking the "Next" icon.

The restoration is shown in the viewer exactly as it will be machined by the milling unit.

You can also use the free form tools "Form", "Drop" and "Shape" in the milling preview.

If you click the "Undo" icon inside of a tool once, this causes all of the changes which have been made with this tool to be reversed or canceled.

If you click the "Undo" icon a second time, you quit the milling preview and return to the design mode.

⚠️ CAUTION

Changes
The changes you have made in the milling preview mode using the "Form", "Drop" and "Shape" tools are then lost.

You can select and change the following:
- Selecting the milling unit
- Block visualization
- Change of sprue location
- "Sinter Support"

6.2.1 Milling unit selection

You can set the following:
- Select the milling unit with which you would like to mill the restoration (button marked "Select"):  
  - MC XL  
  - CEREC 3  
  - inLab  
- The program automatically displays the milling preview according to the milling instruments you have selected for the respective milling unit.
- The Endo mode is automatically activated for crowns in the anterior tooth region and for veneers.
- You can activate the Endo mode for any type of restoration (check box marked "Endo").
- When using an MC XL milling unit with 4 motors, you can select the bur set for which the floor simulation is to be reconstructed and displayed.
6.2.2 **Block visualization**

You can have all of the blocks displayed in the preview.

You can set the following:

- Switch "Block Visualization" option on/off.
- Search for the block you want to mill (button marked "Select").

In addition, you also can select whether or not you would like to have the block holder displayed.

If you select "Show block holder", the restoration in the block is displayed without the block holder.

### 6.2.2.1 General information

In the case of non-VInCrOn restorations (i.e. frameworks and reduced restorations), blocks which are too small can also be selected in the block preview. If a block which is too small is selected and is shown when the "Mill" button is clicked, it can be chosen during the block selection and be used for the processing of the restoration.
If a restoration only fails to fit into the block on account of its height, the "Position" tool can be used to decide which area to prepare (occlusal or cervical). In order to prepare this block, the block which is "too small" must also be selected in the block view.

### 6.2.3 Change of sprue location

"Mill Optimized" is set as the sprue location by default. You can also select another sprue location from the pull-down menu.

The following sprue locations are offered for the specified restoration types by default.

<table>
<thead>
<tr>
<th>Restoration type</th>
<th>&quot;Mill Optimized&quot;</th>
<th>Other possibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inlay/Onlay/Partial Crown</td>
<td>If an extension is available, this applies for the extension. Otherwise the prioritization is as follows: Lingual, buccal, distal, mesial</td>
<td>Mesial, distal, buccal, lingual</td>
</tr>
<tr>
<td>Crown</td>
<td>Lingual</td>
<td>Mesial, distal, buccal, lingual</td>
</tr>
<tr>
<td>Veneer</td>
<td>Distal (1st or 3rd quadrant), Mesial (2nd or 4th quadrant)</td>
<td>Mesial, distal, cervical, incisal</td>
</tr>
<tr>
<td>Crown cap</td>
<td>Side with the deepest point</td>
<td>Mesial, distal, buccal, lingual</td>
</tr>
<tr>
<td>Bridges (not wax-up)</td>
<td>Mesial</td>
<td>Mesial, distal</td>
</tr>
<tr>
<td>Wax-up</td>
<td>Mesial</td>
<td>Mesial</td>
</tr>
</tbody>
</table>
6.2.4 Positioning the restoration in a multicolored block

➢ You can move the restoration with the "Position" tool within the block (occlusal and cervical). The limits are signaled by a beep and a red block.

♭ After clicking the "Mill" icon, the restoration is milled in this position from the block.

### NOTICE

**Check of the layer orientation**
This function is very useful for checking the layer orientation.

You can change the layer orientation by choosing a different sprue location in the "Milling preview" dialog box.

6.2.5 Sinter support

For large bridges (with at least 8 elements), you can decide whether you would like to mill the restoration with sinter support. If, in the "Milling preview" dialog box, a check mark has been placed next to the "Sinter Support" option, the restoration will be machined with these supports. If no check mark has been inserted, the bridge will be machined without these supports.

If the restoration is saved with this option, it also can be milled with sinter support via inLab Stack software.

The option "Sinter Support" is offered only when the material concerned is zirconia.
6.3 Starting the milling process

Once you have completed the design and assessed the restoration in the milling preview, you can mill the restoration.

Selecting the milling unit

NOTICE

Selecting the milling unit
If several milling units are connected, a dialog box will appear when the "Mill" icon is clicked, where you must select the desired milling unit and confirm with "OK".

➢ Click the "Mill" icon.
   ➢ The "Select block" dialog box opens.
      You are then prompted to select a specific block size.
NOTICE

Selecting a block
When you choose a block which is too small, a warning message is displayed.

1. Select a block and confirm with “OK”.
2. Wait until the spindle/workpiece axis has reached the zero position.

CAUTION

Milling chamber door
The milling chamber door must be closed.

3. Open the milling chamber door.

WARNING

Risk of injury on milling instruments!
If you put your hand in the milling chamber, you could injure it on the milling instruments.
Be careful not to brush against the milling instruments with your hand.

4. Insert a ceramic block of the required size and color in the spindle/workpiece axis (also see Operating Instructions of the milling unit).

CAUTION

Error message during touch process!
Always insert the ceramic block that you selected in the “Select block” dialog box. Otherwise an error message will be displayed during the touch process.

5. Close the milling chamber door and start the milling process (click “Start”).

CAUTION

Do not activate the sleep mode
The sleep mode of the PC must not be activated during the milling process.

The instruments are measured automatically and milling starts.

The remaining processing time is displayed continuously.

The number of milled restorations is shown so that the service life of the milling instruments still available can be estimated.

CAUTION

Canceling the milling process
You can cancel the milling process at any time by pressing the “Stop” button.
6.3.1 Milling of zirconia and aluminum oxide

In addition to the VITA In-Ceram ALUMINA, SPINELL and ZIRCONIA materials, yttrium-reinforced **zirconia** and **aluminum oxide** is also available for the fabrication of crown and bridge frameworks as well as inner ceramic telescopes.

- Sirona inCoris ZI
- Sirona inCoris AL
- VITA In-Ceram YZ CUBES
- VITA In-Ceram AL CUBES
- IVOCLAR VIVADENT IPS e.max ZirCAD

**WARNING**

Risk of injury on the remainder of the ceramic block!
The remaining portion of the ceramic block may have sharp edges (e.g. A) that could injury you if it is not removed carefully.
Always grasp the remainder of the ceramic block by its metal holder.

**CAUTION**

Large blocks in CEREC 3 milling units
Blocks that are larger than 28mm may only be used in inLab, inLab MC XL, CEREC MC XL and CEREC 3 milling units with the serial number 5000 and higher.

**CAUTION**

Flip blocks
“Flip blocks” (with two holders) may only be used in inLab and CEREC 3 milling units with the serial number 5000 and higher.
“Flip blocks” may not be used in inLab MC XL or CEREC MC XL!

The restorations are milled with an oversize of approx. 25% (aluminum oxide approx. 18% larger) and shrunk subsequently to the exact fitting final contour in a sintering process. The exact shrinkage data of the respective block are stored in a barcode on the block itself, which is automatically read prior to the milling process.

**NOTICE**

Bar code not detected
If the scanner has been unable to read the bar code, you must enter the 8-digit character string (e.g. *1234XYZ*) which is printed on the block manually in the dialog box.
6.4 Stack milling with inLab (or CEREC 3 milling unit)

Several restorations can be milled from a single large block. Proceed as follows:

1. Have several preparations to be processed via stack milling scanned.

**NOTICE**

**Large model holder**
This can also be done in a single scanning operation on a large model holder for bridge framework.

2. Design the first restoration.

**NOTICE**

**Selecting a block for stack milling**

3. Select a block "... Stack" in the "Select block" dialog box and start the milling process.

4. Start a new inLab 3D program.

5. Load and design the second restoration.

6. Click the "Mill" icon.

   The software displays a message stating that a stack milling process is running. You will be asked if you would like to add this milling operation. If the answer is yes, the application waits until the end of the first milling operation and then starts milling automatically. In the meantime, you can design additional restorations and place them in the queue.

**NOTICE**

**Number of queued applications**

The number of queued applications is limited only by the amount of storage space available (on the PC and graphics card).

If a restoration no longer fits into the remaining block, the corresponding milling operation will not be started.

**CAUTION**

**Damage to VITA YZ**

With VITA YZ, breakage may occur following tapping in rare cases.
6.5 Milling test pieces

You can use the 3D software to mill test pieces, e.g. in order to produce ceramic color samples.

When you load a test piece, it is not displayed in the 3D viewer.

Milling a test piece costs one unit, if no CEREC 3D (VInCrOn) or AK Unlimited inLab 3D softguard dongle is installed.

6.6 Milling a flip block

6.6.1 Prerequisite

To be able to process the flip block, the following must be ensured:

- An inLab gearhead must be installed.
- "inLab gearhead installed" must be checked (see "inLab gearhead installed" [69]).

6.6.2 Performing the milling process

1. Choose a flip block from the block selection and mount it in the milling unit.
   - The bar code is automatically scanned.

2. If it cannot be read correctly, enter it manually.
   - The first half of the restoration is now milled.

3. When prompted by the software, unscrew the setscrew quite a bit and remove the partially milled block carefully from the milling unit.

4. Cut off the rest of the block at the partially milled end manually.
   - This reduces the load on the restoration during the rest of the milling process.

5. Re-insert the partially milled block into the milling unit and continue the milling process.

---

![CAUTION]

**Damage to VITA In-Ceram and VITA YZ**

With VITA In-Ceram and VITA YZ, the work may be destroyed in rare cases if it comes under the gearing while the next restoration is being milled.

---

![CAUTION]

**Flip blocks**

"Flip blocks" (with two holders) may only be used in inLab and CEREC 3 milling units with the serial number 5000 and higher.

"Flip blocks" may not be used in inLab MC XL or CEREC MC XL!
6.7 Fast grinding

Block selection

⚠️ CAUTION

Loss of quality!
Fast grinding may have a negative influence on the quality of the restoration!

If desired, the grinding process can be accelerated for some materials. To do this, simply set a check mark in the corresponding checkbox of the block selection dialog box.

This mode is faster, however the surface of the milled restoration is slightly rougher.
7 Managing/archiving data

7.1 Saving regularly

To create an archive of all finished restorations you should save regularly.

Under "Settings"/"Configuration"/"Save" you can switch the "Connect database" option on and off (see "Saving" in the Chapter on "Configuration" [172]).

7.2 Connect database

If a SIRONA database is installed in your system, it can be used for data archiving and patient management after selecting this option. Once the database has been connected, all patients stored in the database are known to the application. You must enter new patient names in the database. Restorations must also be saved and loaded using the database.

If the database connection is used, all inLab restorations will be saved to the "CEREC" subfolder in the Pdata folder of the database. This folder is usually located on a server which can be accessed from all PCs connected to the network.

S(V)IDEXIS also uses this database. With a database connection, inLab restorations are also visible in S(V)IDEXIS when the All image filter is set. There, they are displayed as a preview and can be opened. The image is then a representative image of the restoration (usually the optical impression of the preparation) in TIF format.

inLab images are assigned the image code VC in the SIRONA database.

7.3 Database import

After the database connection is activated, all locally saved patients and restorations are transferred (imported) to the SIRONA database. A message indicating the successful database import is then displayed.

Patients (and their restorations) cannot be imported to the SIRONA database if they are identified only by a card index number in the local data structure. A message informs the user about this situation during database import.

7.4 Database export

When the database connection is deactivated, a dialog box appears in which you can select whether the restorations stored in the database are to be copied (exported) to the local data structure.

The patient information will in any case be transferred by creating a patient folder in the data structure for each patient in the database. During database export, you are informed of its progress.

A message indicating the successful database export is then displayed.
7.5 Restoration files

In the folder "Programs\"CEREC\"\"Data\"" (in case you have installed the program to "Programs\"CEREC\"), you will find a subfolder for and named after each patient. Each patient folder contains one or more tooth folders in which the individual restoration files are stored.

If the database connection is used, the "PDATA" folder contains a subfolder named "CEREC" (created during the installation of the SIRONA database). Since a unique patient number is assigned to each patient in the database, no patient names are used here under "CEREC"; instead, consecutively numbered folders (e.g. “P_000001”) are listed. The tooth folders and restoration files can be found below them.

7.6 Consistency check

If the database connection is active, a consistency check will be performed when the inLab 3D application is started. The database will be searched for images from earlier inLab 3D versions. Any such old images found will be updated. The user is informed of the progress.

If the list of restorations for a specific patient is displayed for loading or deletion, corrupt restoration files will automatically be recognized and suggested for deletion.

This mechanism always remains active, regardless of whether a database is connected or not.
8 Restoration types and design techniques

8.1 Overview of restoration types and design techniques

Notice

Hiding the Complete New dialog box

If you do not want to have all restorations and design techniques displayed, you can remove the check mark in front of "Complete New dialog" under "Settings"\"Configuration\"\"Options" (see "Options" in the chapter on "Configuration" [73]). In this case, the New dialog box will appear as shown in the figure below.
New dialog box

In the New dialog box, you can select the following and confirm “OK”:

- Restoration
  - Inlay, Onlay, Partial Crown
  - Crown
  - Veneer
  - Bridge
  - Implant

**NOTICE**

**Preparation margin too high**

If the preparation margin of the crown (partial) is so high that it cuts the proximal contact line of the crown suggestion, the system will automatically switch from crown to inlay.

- Design technique
  - Dental database
  - Correlation
  - FrameWork
  - WaxUp
  - Replication
  - Articulation
  - Reduced
  - Mesostructure
- Element
  - A: Crown, shown in dark blue in the odontogram
  - B: Pontic, shown in light blue in the odontogram
  - C: Partially edentulous (missing), shown in brown in the odontogram

Selectable teeth are shown in white and non-selectable (inactive) teeth are shown in yellow in the odontogram.

If you select "Bridge" as the restoration, the "Element" button group appears. You can mark an element (e.g. A: crown) and then select a tooth here. To mark another element, just click the corresponding button (e.g. B: pontic).

_Bridge elements selected_

You can deactivate a selected tooth by clicking this tooth with the right mouse button.

The "OK" button is enabled if:
- a single, consecutive row of buttons is pressed in the odontogram, and
- at least one of the teeth in the row is marked as a crown.

8.2 **FrameWork**

8.2.1 **Designing a crown framework**

8.2.1.1 **Creating a new restoration**

✔ You have selected a patient from the database or created a new patient.

1. Select the following options in the New dialog box.

2. Click "OK".

  The arrow cursor jumps automatically to the icon marked "Acquire preparation".
### 8.2.1.2 Acquiring the preparation

#### inEos

<table>
<thead>
<tr>
<th>Range</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Restoration&quot;</td>
<td>&quot;Crown&quot;</td>
</tr>
<tr>
<td>&quot;Design technique&quot;</td>
<td>&quot;FrameWork&quot;</td>
</tr>
<tr>
<td>Tooth</td>
<td>16</td>
</tr>
</tbody>
</table>

**NOTICE**

**Rotational scan**

For details on fastening the preparation in the model holder and performing a rotational scan, please refer to the inEos Operating Instructions, chapter on "3D image acquisition".

#### inLab

1. Mount the model of the preparation on a model holder for bridge framework or on a model holder for crown framework. The type of model holder is automatically detected during scanning.

2. Start the scanning process (see the Operating Instructions for inLab, "Starting the scanning process").

**NOTICE**

**Image group in the active region**

If you have performed more than one scanning process, make sure before you confirm the optical impression ("Next" button) that there is only one image group in the active area of the image catalog (see "Image catalog").

3. Click the button marked "Next".
8.2.1.3 Hiding image regions

Drawing the trimming line

1. Cut away any unwanted regions by entering a closed line.
2. Click the "Next" icon.

NOTICE

Rotating a view
You can rotate the view as you like in order to obtain a better perspective.
8.2.1.4 Examining the milling preview

The finished restoration is displayed in the milling simulation.

1. Inspect the restoration.
2. If necessary, further corrections can be made to the outer surface of the framework using the free-form tools "Drop" and "Shape".

8.2.1.5 Milling a framework

(inEos: only in conjunction with a milling unit)

1. If you are satisfied with the restoration, click the "Mill" icon.
2. Start the milling process (see also Operating Instructions of the milling unit).
8.2.2 Designing a bridge framework

8.2.2.1 Orientation of bridges on the model holder

The positioning of the scan models on the L-shaped model holder influences the correctness of the labeling designating the sides in the 3D software.

If the procedure explained in the following is not observed, the designations on the 3D model will be incorrect, which can lead to faulty restoration suggestions.

Following the scanning process, the model can be subsequently rotated on screen with the "Design\r\nInsertion axis" menu item (see "Correcting the orientation of bridges" [118]).

Rule of thumb:

![Diagram of model holder with labels A, B, and C]

A Clamping shank
B mesial
C distal

Mesial -> toward clamping shank A

For single-tooth models, this refers to the mesial side of the tooth to be restored.

For bridge frameworks, a distinction must be made between several different cases:

- If a bridge only contains teeth from a single quadrant, the mesial side of the bridge is unambiguous.
- If a bridge contains teeth from 2 quadrants, the "most distal" tooth (incl. partially edentulous) is moved in a "distal" direction (i.e. away from the clamping shank). In this way, buccal and lingual designate the correct side on the 3D model.
- If a bridge contains the same amount of teeth from 2 quadrants, the 1st (3rd) quadrant is moved in a "mesial" direction (i.e. toward the clamping shank). In this way, buccal and lingual designate the correct side on the 3D model.
8.2.2.2 Design example: 4-element bridge framework 43-46

1 abutment coping, 2 pontics, 1 abutment coping

8.2.2.2.1 Creating a new restoration

✔ You have selected a patient from the database or created a new patient.

1. Select the following options in the New dialog box.
2. Click “OK”.
   Ù The arrow cursor jumps automatically to the icon marked “Acquire preparation”.

<table>
<thead>
<tr>
<th>Range</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Restoration&quot;</td>
<td>&quot;Bridge&quot;</td>
</tr>
<tr>
<td>&quot;Design technique&quot;</td>
<td>&quot;FrameWork&quot;</td>
</tr>
</tbody>
</table>

8.2.2.2.2 Acquiring the preparation

inEos

NOTICE

Rotational scan
For details on fastening the preparation in the model holder and performing a rotational scan, please refer to the inEos Operating Instructions, chapter on "3D image acquisition".
inLab

1. Mount the model of the preparation on a model holder for bridge framework or on a model holder for crown framework. The type of model holder is automatically detected during scanning.

2. Start the scanning process (see the Operating Instructions for inLab, "Starting the scanning process").

3. Click the button marked “Next”.

8.2.2.2.3 Hiding image regions

Drawing the trimming line

1. Cut away any unwanted regions by entering a closed line.

2. Click the "Next" icon.

NOTICE

Rotating a view

You can rotate the view as you like in order to obtain a better perspective.

8.2.2.2.4 Entering the preparation margin

1. Enter the preparation margin of the first abutment coping (see "Entering preparation margins, base lines and the gingival line" [113]).

2. Click the button "Next".
3. Enter the base line of the first pontic and confirm with "Next".
4. Enter the base line of the second pontic and confirm with "Next".
5. Enter the preparation margin of the last abutment coping.

**NOTICE**

**Preparation margin and base lines**
You can check the preparation margin and the base lines by rotating the model and edit (see "Editing tool (Edit)").

6. You can correct the insertion axis if necessary.
7. Click the button "Next".
   - The restoration of the crown framework is calculated and then displayed.

**Restoration**

8. When the "Scale" tool is activated, you can change the abutment copings, connectors and pontics (see "Scaling tool (scale)" [39]).
9. The pontics and connectors can be changed with the "Position" and "Rotate" tools.
10. Click the "Next" button.

**8.2.2.2.5 Examining the milling preview**

**Milling simulation: bridge**
The finished restoration is displayed in the milling simulation.

1. Inspect the restoration.
2. If necessary, further corrections can be made to the outer surface of the framework using the free-form tools "Drop" and "Shape".
8.2.2.6 Milling a framework

(inEos: only in conjunction with a milling unit)

1. If you are satisfied with the restoration, click the "Mill" icon.
2. Start the milling process (see also Operating Instructions of the milling unit).

8.3 WaxUp

8.3.1 Preparations and creating the wax model

NOTICE

Observe working instructions for WaxUp
Observe the information and work steps in the document "Working instructions for WaxUp", Order No.: 60 01 361.

8.3.2 Scanning the object

1. Select "WaxUp" in the New dialog and enter your restoration data.
2. Click "OK".
3. Start the scanning process.
   - The object is scanned.
   
   You obtain 6 different scanned images:
   - 3 occlusal images
   - 3 basal images

8.3.3 Drawing the bottom line

This step is necessary in order to enable the software to distinguish between the inner and outer surface of the caps. This is important for ensuring the following:
   - that the Spacer tools works properly,
   - that material is only applied to the outer surface of the caps when automatically strengthening the wall thickness ("WaxUp wall thickness").

**NOTICE**

Draw bottom lines with offset

Draw the bottom line with a slight offset towards the interior, so that the proper fit of the cervical margin is not affected by the spacer.
8.3.4 Defining the insertion axis on the screen

If you have carefully determined the insertion axis of the scan object in a parallelometer, only minor corrections should be necessary at this point. It is essential, though, that you see as much as possible of the inner lateral walls of the scan object. What you can’t see cannot be milled either.

8.3.5 Editing and checking the restoration

In this stage you can make any changes you wish to the object using the existing "Design" tools. In this step you should also use the "Cut" tool to check the cross-section of the connectors and correct it, if necessary.

8.3.6 Milling the restoration

1. Click the "Mill" icon.
2. Select the appropriate material.
3. Place the selected block in the milling unit and mill the object.
8.4 Dental database

8.4.1 Notes on the Artegral dental database

In cooperation with the Merz Dental Company, we offer you the Artegral dental database.

8.4.1.1 Description of the Artegral ImCrown® crown

The Artegral ImCrown® from Merz Dental is a prefabricated, anatomically shaped, color layered and characterized crown. It is not milled out of a single block, but apically fitted to the stump.

The remaining fitting steps can be performed manually. The crown can be fitted immediately after it is polished.

The blank already has a natural looking labial and palatinal surface design.

8.4.1.2 Indications

The indications for the application of Artegral crowns include:

- Insufficiency of other filling therapy
- Discolored, devital tooth
- Profound destruction by caries
- Corrections of the shape and position of crown segments which have been lost due to trauma
- Restoration of proximal contacts

8.4.1.3 Applications

Artegral crowns can be used for the following types of treatment:

- Short-term immediate and interim restorations
- Long-term interim restorations
- Treatment of adolescent patients
- With good oral hygiene and dental supervision, also as a definitive prosthesis

The following blanks are available for restoration of maxillary anterior teeth 13 to 23:

- bilaterally applicable canine crown blanks
- different left and right incisor crown blanks

8.4.1.4 Canine crown blanks

Canine crown blanks
8.4.1.5 **Incisor crown blanks**

<table>
<thead>
<tr>
<th>Size</th>
<th>Mesio-distal extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>7.63 mm</td>
</tr>
<tr>
<td>L</td>
<td>8.44 mm</td>
</tr>
<tr>
<td>XL</td>
<td>9.24 mm</td>
</tr>
</tbody>
</table>

![Incisor crown blanks](image)

8.4.1.6 **Selecting a dental database**

You can select from 5 different Artegral dental databases:
- Artegral L
- Artegral M
- Artegral S
- Artegral XL
- Artegral XS

The selected dental database must be at least as large as the gap where the restoration is to be inserted.

8.4.1.7 **Inserting design tools**

You can insert the *Position* and *Rotate* design tools randomly.

You may use the *Form*, *Drop*, *Scale* and *Shape* design tools only for zooming out, but never for zooming in, the tooth.
8.4.2 Design example of MOD inlay with lingual extension for tooth 27

MOD = Mesio-occluso-distal

8.4.2.1 Creating a new restoration

✔ You have selected a patient from the database or created a new patient.

1. Select the following options in the New dialog box.
2. Click “OK”.
   - The arrow cursor jumps automatically to the icon marked "Acquire preparation".

8.4.2.2 Acquiring the preparation

1. Acquire the preparation (see "Optical impression").
2. If all of the required optical impressions are available, click the button marked "Next".
   - The 3D representation of the preparation is reconstructed and then displayed in the 3D viewer.

8.4.2.3 Displaying the 3D representation

You can rotate the preparation as required by pressing and holding down the left mouse button and moving the mouse in the desired direction.
You can also use the cursor arrows in the "View" window to view the preparation from the desired direction (see "Standard views" [Fig. 25]).

8.4.2.4 Hiding image regions

**Drawing the trimming line**

1. Cut the distal and mesial neighbors away by entering an open line for each of them (see "Hiding image regions").
2. Click the button "Next".

8.4.2.5 Entering the preparation margin

**Entering and checking the preparation margin**
1. Enter the preparation margin (see "Entering the preparation margin" [114]) and check it by rotating the preparation.

**NOTICE**

**Directly editing the preparation margin**

The preparation margin can be edited immediately after having been entered (see "Editing tool (Edit)").

2. Click the button "Next".

   The restoration is calculated and then displayed.

**8.4.2.6 Editing the restoration**

1. Assess the restoration from all directions.

2. Hide the neighboring teeth by clicking the "Trim" button.

3. If required, click the button marked "Edit". You can change all construction lines as required (see "Editing tool (Edit)").

4. Activate the contact surfaces by clicking the "Contact" button (see "Showing/hiding the contact to the neighboring tooth (Contact)" [26]).

5. As required adapt the contact surfaces using the "Form" tool (see "Form tool (Form)" [36]).

   **Changing the contact surfaces**

6. After the design is finished, click the icon marked "Next".

   Using the "Form" tool, you can apply and smooth additional material. Parts of the occlusal surface, the proximal surfaces, or the marginal situations can thus be changed as required.
8.4.2.7 Examining the milling preview

The finished restoration is displayed in the milling preview (see "Milling preview").

1. Inspect the restoration.
2. Select the desired milling mode.
3. Set the sprue location on a flat, convexly curved side.

8.4.2.8 Milling

For inEos
You can perform this step with inEos only if an inLab milling unit is available.

1. If you are satisfied with the restoration, click the "Mill" icon (see "Milling").
2. Start the milling process (see also Operating Instructions of the milling unit).
8.4.3 Design example for MOD inlay with antagonist image on tooth 16

MOD = Mesio-occluso-distal

8.4.3.1 Creating a new restoration

✔ You have selected a patient from the database or created a new patient.

1. Select the following options in the New dialog box.
2. Click “OK”.
   ☰ The arrow cursor jumps automatically to the icon marked "Acquire preparation".

8.4.3.2 Acquiring an optical impression of the antagonist and the preparation

1. Have the antagonist and then the preparation scanned (see "Optical impression").
2. If all of the required optical impressions are available, click the button marked "Next".
   ☰ The 3D representation of the preparation is reconstructed and then displayed in the 3D viewer.

8.4.3.3 Displaying the 3D representation

<table>
<thead>
<tr>
<th>Range</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Restoration&quot;</td>
<td>&quot;Inlay, Onlay, Partial crown&quot;</td>
</tr>
<tr>
<td>&quot;Design technique&quot;</td>
<td>&quot;Dental database&quot;</td>
</tr>
<tr>
<td>Tooth</td>
<td>16</td>
</tr>
</tbody>
</table>
You can rotate the preparation as required by pressing and holding down the left mouse button and moving the mouse in the desired direction.

You can also use the cursor arrows in the "View" window to view the preparation from the desired direction (see "Standard views" [25]).

### 8.4.3.4 Hiding image regions

![Image of dental preparation]

**Drawing the trimming line**

1. Cut the distal and mesial neighbors away by entering an open line for each of them (see "Hiding image regions").
2. Click the button "Next".

### 8.4.3.5 Trimming the antagonist

![Image of trimmed antagonist]

**Trimming the antagonist**

1. Trim the antagonist (see "Trimming the antagonist").
2. Click the button "Next".
8.4.3.6 Entering the preparation margin

Entering and checking the preparation margin

1. Enter the preparation margin (see "Entering the preparation margin" [114]) and check it by rotating the preparation.

NOTICE

Directly editing the preparation margin
The preparation margin can be edited immediately after having been entered (see "Editing tool (Edit)").

2. Click the button "Next".
   ☑ The restoration is calculated and then displayed.

8.4.3.7 Making a proximal contact

Changing the contact surfaces

1. Activate the contact surfaces by clicking the "Contact" button (see "Showing/hiding the contact to the neighboring tooth (Contact)").
2. If red penetration areas are present, they can be eliminated using the "Design" tools (see "Design window" [32]).
3. After the design is finished, click the icon marked "Next".

8.4.3.8 Examining the milling preview

![Milling preview]

The finished restoration is displayed in the milling preview (see "Milling preview").

1. Inspect the restoration.
2. Select the desired milling mode.
3. Set the sprue location on a flat, convexly curved side.

8.4.3.9 Milling

**NOTICE**

For inEos
You can perform this step with inEos only if an inLab milling unit is available.

1. If you are satisfied with the restoration, click the "Mill" icon (see "Milling" [121]).
2. Start the milling process (see also Operating Instructions of the milling unit).
8.4.4 Design example of partial crown with antagonist image for tooth 17

8.4.4.1 Creating a new restoration
✔ You have selected a patient from the database or created a new patient.
1. Select the following options in the New dialog box.
2. Click “OK”.
   ♦ The arrow cursor jumps automatically to the icon marked “Acquire preparation”.

<table>
<thead>
<tr>
<th>Range</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Restoration&quot;</td>
<td>&quot;Inlay, Onlay, Partial crown&quot;</td>
</tr>
<tr>
<td>&quot;Design technique&quot;</td>
<td>&quot;Dental database&quot;</td>
</tr>
<tr>
<td>Tooth</td>
<td>17</td>
</tr>
</tbody>
</table>

8.4.4.2 Acquiring an optical impression of the antagonist and the preparation
1. Have the antagonist and then the preparation scanned (see “Optical impression”).
2. If all of the required optical impressions are available, click the button marked “Next”.
   ♦ The 3D representation of the preparation is reconstructed and then displayed in the 3D viewer.

8.4.4.3 Displaying the 3D representation

3D display
You can rotate the preparation as required by pressing and holding down the left mouse button and moving the mouse in the desired direction.

You can also use the cursor arrows in the “View” window to view the preparation from the desired direction (see “Standard views” [25]).

8.4.4.4 Hiding image regions

1. Cut away the mesial neighbor by entering an open line (see "Hiding image regions").
2. Click the button “Next”.

8.4.4.5 Trimming the antagonist

1. Trim the antagonist (see "Trimming the antagonist").
2. Click the button “Next”.

Trimming the antagonist
8.4.4.6 Entering the preparation margin

Entering and checking the preparation margin

1. Enter the preparation margin (see "Entering the preparation margin" [114]) and check it by rotating the preparation.

**NOTICE**

Directly editing the preparation margin

The preparation margin can be edited immediately after having been entered (see "Editing tool (Edit)").

2. Click the button "Next".

⚠️ The restoration is calculated and then displayed.
Penetration areas

1. If red penetration areas are present, they can be eliminated using the "Design" tools.
2. After the design is finished, click the "Next" icon.

8.4.4.7 Examining the milling preview

Milling simulation

The finished restoration is displayed in the milling preview (see "Milling preview").

1. Inspect the restoration.
2. Select the desired milling mode.
3. Set the sprue location on a flat, convexly curved side.

8.4.4.8 Milling

NOTICE

For inEos
You can perform this step with inEos only if an inLab milling unit is available.

1. If you are satisfied with the restoration, click the "Mill" icon (see "Milling" [121]).
2. Start the milling process (see also Operating Instructions of the milling unit).
8.4.5 Design example of crown with antagonist image for tooth 47

8.4.5.1 Creating a new restoration

✓ You have selected a patient from the database or created a new patient.

1. Select the following options in the New dialog box.
2. Click “OK”.
   - The arrow cursor jumps automatically to the icon marked "Acquire preparation".

8.4.5.2 Acquiring an optical impression of the antagonist and the preparation

1. Have the antagonist and then the preparation scanned (see "Optical impression").
2. If all of the required optical impressions are available, click the button marked "Next".
   - The 3D representation of the preparation is reconstructed and then displayed in the 3D viewer.

8.4.5.3 Displaying the 3D representation

3D display

You can rotate the preparation as required by pressing and holding down the left mouse button and moving the mouse in the desired direction.

You can also use the cursor arrows in the "View" window to view the preparation from the desired direction (see "Standard views" [725]).
8.4.5.4 **Hiding image regions**

![Image](image1.png)

*Drawing the trimming line*

1. Cut the distal and mesial neighbors away by entering an open line for each of them (see "Hiding image regions").
2. Click the button "Next".

8.4.5.5 **Trimming the antagonist**

![Image](image2.png)

*Trimming the antagonist*

1. Trim the antagonist (see "Trimming the antagonist").
2. Click the button "Next".

8.4.5.6 **Entering the preparation margin**

![Image](image3.png)

*Preparation margin*
1. Enter the preparation margin (see "Entering the preparation margin" [114]) and check it by rotating the preparation.

**NOTICE**

Directly editing the preparation margin

The preparation margin can be edited immediately after having been entered (see "Editing tool (Edit)").

2. Click the button "Next".

   - The restoration is calculated and then displayed.

Penetration areas

1. If red penetration areas are present, they can be eliminated using the "Design" tools.
2. After the design is finished, click the "Next" icon.

8.4.5.7 Performing the design

Selecting the dental database

1. Select the desired dental database.

**NOTICE**

Rotating a 3D preview

During selection of the dental database for crowns, a 3D preview appears which can be rotated with the mouse and viewed from all sides (control the same as for rotating the model in the 3D viewer).

2. Confirm with "OK".

   - The restoration is calculated and then displayed.
3. With the "Position" and "Rotate" tools, you can align the restoration if necessary.
4. With the "Design" tools "Scale", "Edit", "Shape", "Form" and "Drop", you can modify the restoration until it fits perfectly into the overall environment.
5. Via the "Antagonist" button, you can show the "Antagonist" window (see "Showing/hiding the antagonist") and, using the "Design" tools, you can adapt the occlusal surface to the antagonist.
6. After the design is finished, click the icon marked "Next".
8.4.5.8 Examining the milling preview

Milling simulation

The finished restoration is displayed in the milling preview (see "Milling preview").

1. Inspect the restoration.
2. Select the desired milling mode.
3. Set the sprue location on a flat, convexly curved side.

8.4.5.9 Milling

NOTICE

For inEos
You can perform this step with inEos only if an inLab milling unit is available.

1. If you are satisfied with the restoration, click the "Mill" icon (see "Milling" [121]).
2. Start the milling process (see also Operating Instructions of the milling unit).
8.4.6 Articulation design example

8.4.6.1 Creating a new restoration

✔ You have selected a patient from the database or created a new patient.

1. Select the following options in the New dialog box.
2. Click "OK".
   ¤ The arrow cursor jumps automatically to the icon marked "Acquire preparation".

---

8.4.6.2 Acquiring the preparation

➢ Acquire the preparation (see "Optical impression").

---

8.4.6.3 Acquiring the antagonist

➢ Acquire the antagonist (static impression).

---

8.4.6.4 Acquiring the dynamic occlusion impression

1. Acquire the dynamic occlusion impression (FGP, Functionally Generated Path).
2. If all of the required optical impressions are available, click the icon marked "Next".
   ¤ The 3D representation of the preparation is reconstructed and then displayed in the 3D viewer.

---

8.4.6.5 Hiding image regions

1. Cut the distal and mesial neighbors away by entering an open line for each of them (see "Hiding image regions").
2. Click the button "Next".

---

8.4.6.6 Trimming the antagonist

1. Cut away the regions which do not belong to the occlusion of the opposite tooth.

---

<table>
<thead>
<tr>
<th>Range</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Restoration&quot;</td>
<td>&quot;Crown&quot;</td>
</tr>
<tr>
<td>&quot;Design technique&quot;</td>
<td>&quot;Articulation&quot;</td>
</tr>
<tr>
<td>Tooth</td>
<td>??</td>
</tr>
</tbody>
</table>
2. Click the button "Next".

8.4.6.7 Entering the preparation margin
1. Enter the preparation margin (see "Entering the preparation margin" [114]) and check it by rotating the preparation.

**NOTICE**

Directly editing the preparation margin
The preparation margin can be edited immediately after having been entered (see "Editing tool (Edit)").

2. Click the button "Next".

   The restoration is calculated and then displayed.

8.4.6.8 Performing the design

Selecting the dental database
1. Select the desired dental database.

**NOTICE**

Rotating a 3D preview
During selection of the dental database for crowns, a 3D preview appears which can be rotated with the mouse and viewed from all sides (control the same as for rotating the model in the 3D viewer).

2. Confirm with "OK".

   The restoration is calculated and then displayed.

3. Now you can modify the crown with all of the tools available (Form, Drop, Scale, Settling,...,) and adapt it to the statics.

4. If you click the "Articulation" button, the 3D model of the dynamic occlusion impression is displayed and an additional dialog box is opened with the "Fit Restoration" button.

5. If you click the "Fit Restoration" button, all of the interfering contacts of the restoration which "protrude out of" the FGP will be ground virtually so that they disappear.

6. After the design is finished, click the icon marked "Next".
8.4.6.9 Examining the milling preview
The finished restoration is displayed in the milling preview (see "Milling preview").
1. Inspect the restoration.
2. Select the desired milling mode.
3. Set the sprue location on a flat, convexly curved side.

8.4.6.10 Milling

NOTICE

For inEos
You can perform this step with inEos only if an inLab milling unit is available.

1. If you are satisfied with the restoration, click the "Mill" icon (see "Milling" [121]).
2. Start the milling process (see also Operating Instructions of the milling unit).

8.4.7 Veneer design example for tooth 21

8.4.7.1 Creating a new restoration
✔ You have selected a patient from the database or created a new patient.
1. Select the following options in the New dialog box.
2. Click “OK”.
   ✟ The arrow cursor jumps automatically to the icon marked "Acquire preparation".

<table>
<thead>
<tr>
<th>Range</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Restoration&quot;</td>
<td>&quot;Veneer&quot;</td>
</tr>
<tr>
<td>&quot;Design technique&quot;</td>
<td>&quot;Dental database&quot;</td>
</tr>
<tr>
<td>Tooth</td>
<td>21</td>
</tr>
</tbody>
</table>

8.4.7.2 Acquiring the preparation
1. Acquire the preparation images from the labial direction. The tip of the camera must point in the distal direction.
2. If all of the required optical impressions are available, click the button marked "Next".
   ✟ The 3D representation of the preparation is reconstructed and then displayed in the 3D viewer.
8.4.7.3 Trimming the model and drawing the preparation margin

Drawing the preparation margin
1. Trim the model (if necessary).
2. Enter the preparation margin (see "Entering the preparation margin" [114]).
3. Click the button "Next".
4. The restoration is calculated and then displayed.

8.4.7.4 Performing the design
1. With the "Position" and "Rotate" tools, you can align the restoration.
2. Use the Edit tool to redraw the shell into the correct size and shape.
3. Use the Smooth tool (wax drop function) to smoothen the transition from the margin to the shell proposal. Avoid moving the Smooth tool over the surface of the veneer as it will flatten the texture which has been created.

NOTICE
Wax drops for small amounts of material
If you have to add small amounts of material in this region, the small drops should be your first choice.

4. After the design is finished, click the button marked "Next".
8.4.7.5 Examining the milling preview

*Milling simulation*

The finished restoration is displayed in the milling preview (see "Milling preview").

**NOTICE**

**Multicolor block**
Positioning of the restoration in a TriLuxe block and selecting the sprue location with TriLuxe blocks is described under "Positioning the restoration in a multicolored block".

1. Inspect the restoration.
2. Select the desired milling mode.

8.4.7.6 Milling

**NOTICE**

**For inEos**
You can perform this step with inEos only if an inLab milling unit is available.

1. If you are satisfied with the restoration, click the "Mill" icon (see "Milling" [121]).
2. Start the milling process (see also Operating Instructions of the milling unit).

8.4.8 Bridge dental database design technique

In the New dialog box, you can select "Bridge" the design procedure "Dental database" during restoration.

You can mark the bridge configuration in the New dialog box as usual. Then you can enter the preparation margins and base lines from the distal in the mesial direction as for a bridge framework.
Once the last line has been entered, it is possible to edit all lines. Furthermore, a red dot appears in each base line. This dot can be randomly displaced on the model and defines the buccolingual position of the subsequent initial suggestion for the pontic. With base lines for a "shifted heart shape", this red dot should thus be shifted slightly in a lingual direction.

As with an anatomical crown, after clicking the 'Next' arrow you can select the dental database to be used for the anatomical bridge.

**Bridge dental database**

You can select the dental database to be used for all teeth on the left side as usual. You can select all of the teeth inside of the bridge in the center in order to check whether the morphology of all elements matches the remaining teeth.

With "OK" you can confirm your dental database selection.

Now each bridge element will be suggested individually starting from the distal side.

**NOTICE**

**Set up elements first**

It is generally advantageous to first set up all elements coarsely in size and position and then make the finishing touches only after all elements have been set up.

All of the tools required to modify the suggestion are already available to you. If you have scanned an antagonist, the occlusion can also be adapted automatically (as for a single anatomical crown).

The design of the crown does not yet have to be definite at this time; it can be corrected at any time until shortly before the milling preview. For this purpose, a double-click on an unselected crown is sufficient to enable its subsequent adaptation.

Each time you click the green "Next" arrow, another element of the bridge appears.

As soon as you are satisfied with the design of the bridge, you can click the green "Next" arrow to change to the milling preview, where you will find the free-forming tools "Form", "Drop" and "Shape" you need to add the finishing touches.

**CAUTION**

**No connectors between crowns**

The user himself is responsible for the coherence of the bridge! Do NOT place any connectors between the crowns!
When using the "Cut" tool, the cut surface is displayed in the status bar. This allows you to verify the thickness of the connection surfaces.

8.5  Correlation

8.5.1  General information

Optical impressions of the preparation and occlusion
- The teeth to be restored should be located in the center of the image in the mesio-distal and in the bucco-lingual direction.
- The preparation and occlusion impressions should cover an almost equally large area.
- Terminal situations are always distally terminal. The image of the tooth to be restored (prepared tooth) must never be acquired so that it lies on the mesial image border. Part of the neighboring tooth is always to be expected at the mesial end.
- For inEos:
  Make sure that the scanning axis and the position of the model are not changed between the between the occlusal and the preparation impressions. The image quadrants must be captured so that they are coincident.

Entering the preparation margin for Inlay, Onlay, Partial crown
If for "Inlay, Onlay, Partial crown" in the design technique "Correlation" (and only in this design technique!), while drawing in the preparation margin, you set segment limits and if needed then change this, this will be taken into account by the software (figure left).

If you set no segment limits, then (as previously in version 3.0x) the software automatically detects the segment limits (figure right).

1. Red balls for the transition from the bottom to the marginal area (double-click).
8.5.2 **Manual Correlation**

If the models of the preparation, the occlusion and the antagonist cannot be correlated, the following message appears.

![](image.png)

**Manual Correlation**

If you want to perform manual correlation, click the Yes button.

Then mark at least 3 points on both models which are correlated \((A - A', B - B', C - C')\).

These points should form as large a triangle as possible \((ABC \text{ or } A'B'C')\).

**NOTICE**

**Unambiguous point pairs**

Additional points will not improve the result! The software can best calibrate the models with three unambiguous pairs of points.

1. Double-click a prominent location (e.g. \(A\)) in a model to set a colored point.
2. Then double-click the corresponding location on the other model (e.g. \(A'\)).
   - This pair of points is marked by a white curve.

**NOTICE**

**Moving points**

The colored points can be moved via drag and drop.

3. Set reference points \(B - B'\) and \(C - C'\) as described under items 1 – 2.
4. Click the button “Next”.
8.5.3 Design example for tooth 16 with extensive fissure caries and proximal caries on both sides

8.5.3.1 Creating a new restoration
✓ You have selected a patient from the database or created a new patient.

1. In the “New” dialog, select the information stated below.
2. Click “OK”.

<table>
<thead>
<tr>
<th>Range</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Restoration”</td>
<td>“Inlay, Onlay, Partial Crown”</td>
</tr>
<tr>
<td>“Design technique”</td>
<td>“Correlation”</td>
</tr>
<tr>
<td>Tooth</td>
<td>16</td>
</tr>
</tbody>
</table>

8.5.3.2 Taking an occlusal impression

**NOTICE**

Observe instructions
The occlusion of the tooth to be restored must be located in the center of the image during the acquisition. Observe the instructions under “General information on the optical impression” [171].

In this example, an only slightly impaired occlusal surface was provisionally reconstructed and the contact situation was also checked.

An ideal “occlusal impression” is thus obtained for the subsequent correlation.

1. Move the arrow cursor to the “Acquire occlusion” icon.
2. Acquire the occlusion.
8.5.3.3 Acquiring the preparation

Image field of the preparation

1. Accept the preparation (see "Optical impression" [82]).

**NOTICE**

Observe instructions

The prepared tooth must be located in the center of the image during the acquisition. Observe the instructions under "General information on the optical impression" [171].

2. If all of the required optical impressions are available, click the button marked “Next”.
   
   The 3D representation of the preparation is reconstructed and then displayed in the 3D viewer.
8.5.3.4 **Hiding image regions**

*Drawing the trimming line*

1. Cut the distal and mesial neighbors away by entering an open line for each of them (see "Hiding image regions").
2. Click the button "Next".

8.5.3.5 **Entering the preparation margin**

1. Enter the preparation margin (see "Entering the preparation margin" [114]) and check it by rotating the preparation.

**NOTICE**

**Directly editing the preparation margin**

The preparation margin can be edited immediately after having been entered.

2. Click the button "Next".
8.5.3.6 Adapting the suggested proximal contact line

A suggested proximal contact line

✔ The program suggests a proximal contact line (pink-colored line).

1. Check the position of the proximal contact line in the proximal regions and change it if required using the "Design" tool "Edit" (see "Editing a construction line" [33]).
2. For enhanced checking, display the neighboring teeth ("Trim").

A neighboring teeth displayed

3. Activate the optical impression of the occlusion by clicking the "Occlusion" button.
4. Adapt the proximal contact line to the occlusion using the "Design" tool "Edit" (see "Editing a construction line" [33]).
5. Click the button "Next".

8.5.3.7 Adapting the copying line

The program suggests a copying line (green line). The end points are marked by red dots.

1. Move the red end points along the preparation margin, if necessary.
2. As required adapt the copying line using the "Design" tool "Edit" (see "Editing a construction line" [33]).
3. After adapting the copying line, click the icon "Next".
4. The restoration is calculated and then displayed.
8.5.3.8 Editing the restoration

1. Assess the restoration from all directions.
2. Hide the neighboring teeth by clicking the "Trim" button.
3. Activate the contact surfaces by clicking the "Contact" button (see "Showing/hiding the contact to the neighboring tooth (Contact)" [26]).
4. As required adapt the contact surfaces using the "Design" tools.

Extending contact surfaces

If the contact proves insufficient, you can extend the entire proximal surface with "Scale" tool (see "Scaling tool (Scale)" [39]).
If the contact is too strong, you can correct it with the "Form" tool (see "Form tool (Form)" [36]).

➢ After the design is finished, click the icon marked "Next".

8.5.3.9 Examining the milling preview

Milling simulation

The finished restoration is displayed in the milling preview (see "Milling preview").

1. Inspect the restoration.
2. Select the desired milling mode.
3. Set the sprue location on a flat, convexly curved side.

8.5.3.10 Milling

NOTICE

For inEos

You can perform this step with inEos only if an inLab milling unit is available.

1. If you are satisfied with the restoration, click the "Mill" icon (see "Milling" [121]).
2. Start the milling process (see also Operating Instructions of the milling unit).
8.5.4 Design example of crown for tooth 26

8.5.4.1 Creating a new restoration
✔ You have selected a patient from the database or created a new patient.
1. In the "New" dialog, select the information stated below.
2. Click "OK".

<table>
<thead>
<tr>
<th>Range</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Restoration&quot;</td>
<td>&quot;Crown&quot;</td>
</tr>
<tr>
<td>&quot;Design technique&quot;</td>
<td>&quot;Correlation&quot;</td>
</tr>
<tr>
<td>Tooth</td>
<td>26</td>
</tr>
</tbody>
</table>

8.5.4.2 Taking an occlusal impression

NOTICE
Observe instructions
The occlusion of the tooth to be restored must be located in the center of the image during the acquisition. Observe the instructions under "General information on the optical impression" [171].

1. Reconstruct the occlusal surface provisionally and check the contact situation.
2. Move the arrow cursor to the "Acquire occlusion" icon.
3. Acquire the occlusion.

8.5.4.3 Acquiring the preparation

1. Accept the preparation (see "Optical impression" [82]).

NOTICE
Observe instructions
The prepared tooth must be located in the center of the image during the acquisition. Observe the instructions under "General information on the optical impression" [171].

2. If all of the required optical impressions are available, click the button marked "Next".
   ✷ The 3D representation of the preparation is reconstructed and then
displayed in the 3D viewer.

8.5.4.4 Hiding image regions

1. Cut the distal and mesial neighbors away by entering an open line for each of them (see “Hiding image regions”).
2. Click the button “Next”.

Drawing the trimming line
8.5.4.5 Entering the preparation margin

Entering and checking the preparation margin

1. Enter the preparation margin (see "Entering the preparation margin" [114]) and check it by rotating the preparation.

NOTICE

Directly editing the preparation margin
The preparation margin can be edited immediately after having been entered.

2. Click the button "Next".

8.5.4.6 Adapting the suggested proximal contact line

Suggested proximal contact line
The program suggests a proximal contact line (pink-colored line).

1. Check the position of the proximal contact line in the proximal regions and change it if required using the "Design" tool "Edit".
2. Activate the optical impression of the occlusion by clicking the "Occlusion" button.
3. Adapt the proximal contact line to the occlusion using the "Design" tool "Edit".
4. Click the button "Next".

8.5.4.7 Accepting a copying line

The program suggests a copying line (green line) for your acceptance.
➢ Click the button "Next".
❖ The restoration is calculated and then displayed.
8.5.4.8 Editing the restoration

1. Assess the restoration from all directions.
2. Hide the neighboring teeth by clicking the "Trim" button.
3. Activate the contact surfaces by clicking the "Contact" button (see "Showing/hiding the contact to the neighboring tooth (Contact)" [26]).
4. As required adapt the contact surfaces using the "Design" tools.

If the contact proves insufficient, you can extend the entire proximal surface with the "Scale" tool (see "Scaling tool (Scale)" [39]).

If the contact is too strong, you can correct it with the "Form" tool (see "Form tool (Form)" [36]).

➢ After the design is finished, click the icon marked "Next".
8.5.4.9 Examining the milling preview

Milling simulation

The finished restoration is displayed in the milling preview (see "Milling preview").

1. Inspect the restoration.
2. Select the desired milling mode.
3. Set the sprue location on a flat, convexly curved side.

8.5.4.10 Milling

NOTICE

For inEos
You can perform this step with inEos only if an inLab milling unit is available.

1. If you are satisfied with the restoration, click the "Mill" icon (see "Milling" [121]).
2. Start the milling process (see also Operating Instructions of the milling unit).
8.5.5 Design example for bridge

8.5.5.1 Creating a new restoration
✔ You have selected a patient from the database or created a new patient.

1. In the "New" dialog, select the information stated below.
2. Click "OK".

<table>
<thead>
<tr>
<th>Range</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Restoration&quot;</td>
<td>&quot;Bridge&quot;</td>
</tr>
<tr>
<td>&quot;Design technique&quot;</td>
<td>&quot;Correlation&quot;</td>
</tr>
<tr>
<td>Tooth</td>
<td>46-48</td>
</tr>
</tbody>
</table>

8.5.5.2 Taking an occlusal impression

**NOTICE**

**Observe information**
The occlusion of the tooth to be restored must be located in the center of the image during the acquisition. Observe the information under "General information on the optical impression" [1 71].

1. Prepare a wax model and attach it to the preparation model.
2. Fasten the preparation model with the wax model to the model holder.
3. Acquire the occlusion.

**CAUTION**

For inEos:
Make sure that the scanning axis and the position of the model are not changed between the occlusal and the preparation impressions. The image quadrants must be captured so that they are coincident.
8.5.5.3 Acquiring the preparation

**NOTICE**

**Preparation in center of image**
The preparation of the tooth to be restored must be located in the center of the image during the acquisition.

1. Remove the wax model from the preparation model.
2. Acquire the preparation.
3. If all of the required optical impressions are available, click the "Next" icon.
   - The "Select material" dialog box appears.

8.5.5.4 Select the material and set the parameters

1. Select the material for the restoration and confirm with "OK".
2. Confirm the Parameter note dialog box with "OK".
3. If necessary, edit the changeable parameters in the Parameter dialog box and confirm with "OK".
   - The 3D representation of the preparation is reconstructed and then displayed in the 3D viewer.

8.5.5.5 Trimming the model

➢ Trim the model if necessary.

8.5.5.6 Entering the preparation margin and base line

1. Enter the preparation margin of the first abutment and click "Next".
Entering the preparation margin

2. Enter the base line of the pontic and click “Next”.
3. Enter the preparation margin of the last abutment.

**NOTICE**

**Checking/editing the preparation margin and base line**
You can check the preparation margin and the base line by rotating the model and edit as required (Design tool). “Edit”.

4. Click the button marked “Next”.

### 8.5.5.7 Drawing a copying line

**Drawing a copying line**

1. Set the desired starting point with a double-click and draw a single, continuous line around the area to be copied.
2. Close the copying line by double-clicking the starting point.
3. Check the copying line from every angle and edit it if necessary.
4. Click the “Next” icon.
   - The program suggests a proximal contact line (pink-colored line).

### 8.5.5.8 Adapting the suggested proximal contact line

**NOTICE**

**Moving the preparation**
You can shift the position of the preparation in order to better evaluate the proximal contact line by pressing and holding the right mouse button.
8.5.5.9 Editing the restoration

1. Assess the restoration from all directions.
2. Click the button marked “Occlusion”.
   - The occlusion is displayed.
3. If necessary, use the tool “Edit” to edit the proximal contact line, the preparation margins and/or base lines.
4. Click the button marked “Next”.
   - The finished restoration is displayed in the milling preview.

8.5.5.10 Examining the milling preview

1. Inspect the restoration.
8 Restoration types and design techniques

Replication

**Milling simulation**

**NOTICE**

**Setting the distance**
You can set the distance from the underside of the bridge elements to the gingiva with the “Gingival spacing” parameter.

2. If necessary, edit the restoration with the free-form tools “Form”, “Drop” and “Shape”.

**8.5.5.11 Milling**

**NOTICE**

**For inEos**
You can perform this step with inEos only if an inLab milling unit is available.

1. If you are satisfied with the restoration, click the "Mill" icon (see "Milling" [121]).
2. Start the milling process (see also Operating Instructions of the milling unit).

**8.6 Replication**

**8.6.1 Area of application**

This design technique can be used for veneer restorations as well as for anterior tooth and posterior tooth crowns.

If antagonist images exist, the “Crown Settling” and "Virtual grinding" options can be used for anterior crowns.

This design mode allows you to copy and optionally mirror any existing tooth surface onto a preparation.

With the “Position”, “Rotate”, “Scale” and “Edit” tools, you can accurately position the "shell" of the copied surface onto the preparation. The advantages of this method include an exact mimicking of existing dentition and minimal intraoral adjustment.

**8.6.2 Design example for tooth 21**

The following example shows how to create a standard veneer for tooth 21 by "mirroring" the existing tooth surface from tooth 11.
8.6.2.1 Creating a new restoration
✔ You have selected a patient from the database or created a new patient.

1. In the "New" dialog, select the information stated below.
2. Click "OK".

<table>
<thead>
<tr>
<th>Range</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Restoration&quot;</td>
<td>&quot;Veneer&quot;</td>
</tr>
<tr>
<td>&quot;Design technique&quot;</td>
<td>&quot;Correlation&quot;</td>
</tr>
<tr>
<td>Tooth</td>
<td>21</td>
</tr>
</tbody>
</table>

8.6.2.2 Acquiring optical impressions

1. Acquire the preparation images from the labial direction.
   - The reference image is the preparation itself.
2. Also include the neighboring tooth, i.e. the tooth to be "mirrored" in the image field of the preparation. This is helpful additional information when positioning the proposal later.

3. Now take optical impressions of the tooth surface you want to "mirror". For these images, use the icon "Acquire occlusion". In this particular case, take optical impressions of tooth 11.
4. Once all optical impressions have been taken and placed in the appropriate fields of the image catalog, click the icon “Next”.

8.6.2.3 Trimming the model and drawing the preparation margin

The 3D representation of the preparation is reconstructed and then displayed in the 3D viewer.

1. Trim the model (if necessary).
2. Enter the preparation margin.
3. Click the button “Next”.

8.6.2.4 Drawing a copying line

The copying line works similar as in correlation. However, in replication mode you need to draw the copying line 100% manually.

1. Double-click to set the desired starting point and draw a single, continuous line enclosing the area you want to “mirror” onto the preparation.

**NOTICE**

Number of exposures

Normally two or three images would be sufficient. However, for a better illustration of this sample case, multiple images were needed.

If the tooth you would like to copy is already located among the preparation impressions, the optical impressions of the “occlusion” can be omitted.

For example, you normally acquire preparation impressions of tooth 12 to tooth 22 for a restoration of tooth 21.

If you do not take any impressions of the “occlusion”, the 3D model of the preparation will automatically be used as the occlusion model as well. You can thus copy the labial surface of tooth 11 without taking optical impressions twice.
Drawing a copying line
2. Close the copying line by double-clicking the starting point.
3. Check the copying line from every angle and edit it if necessary.
4. Click the button "Next".

8.6.2.5 Positioning and editing the replication

Positioning the shell
✔ The software will prompt you whether you want to mirror the area selected by means of the copying line or not.
1. Confirm for our example with "Yes".

NOTICE

Only for optical impressions of the "occlusion"
This dialog box will not appear if you have not taken any optical impressions of the "occlusion".

2. Position the "shell" of the replicated surface onto the preparation.

Positioning the replication
3. Use the "Rotate" and "Position" tools to position the shell correctly.
4. Use the "Scale" tool to adapt the size of the shell precisely to the preparation.
NOTICE

Changing the veneer thickness
You can set the initial veneer thickness (A) under "Settings"/ "Parameters...".

Positioning
The "positioning" image shows the shell after positioning is completed.

Adjusting the size of the shell

1. If the shell is larger than the preparation itself, use the "Edit" tool to redraw the shell into the correct size and shape.
2. If the shell fits properly, click the "Next" icon to have the suggestion reconstructed.

Smoothing transitions
1. Use the Smooth tool (wax drop function) to smoothen the transition from the margin to the shell proposal. Avoid moving the Smooth tool over the surface of the veneer as it will flatten the texture which has been created.
8.6.2.6 Examining the milling preview

Milling simulation
The finished restoration is displayed in the milling preview (see "Milling preview").
8 Restoration types and design techniques

Reduced

NOTICE

Multicolor block
Positioning of the restoration in a TriLuxe block and selecting the sprue location with TriLuxe blocks is described under "Positioning the restoration in a multicolored block".

1. Inspect the restoration.
2. Select the desired milling mode.

8.6.2.7 Milling

NOTICE

For inEos
You can perform this step with inEos only if an inLab milling unit is available.

1. If you are satisfied with the restoration, click the "Mill" icon (see "Milling") [121].
2. Start the milling process (see also Operating Instructions of the milling unit).

8.7 Reduced

8.7.1 Reduced crown design technique
In the New dialog box, you can select the "Reduced" design technique for a "Crown" restoration.

First you can design an anatomical crown including contact design and adaptation to the antagonist.

An additional design step is added between "adaptation of the design" and "milling preview" that permits reduction of the crown.

If the "Reduce" design procedure is selected in the New dialog box, the Design tool "Shape" does not appear, the tool "Reduce" appears instead. Two new designations appear in the status line for "Margin" and "Reduction".
Description of the "Reduce" tool

- Dark blue buttons – change the reduction strength ("Reduced")
- Light blue buttons - change the width of the margin, which remains unreduced ("Margin")
- Black "R" in the center – starts the reduction

8.7.1.1 Full reduction

A click on the black "R" is sufficient to reduce the entire crown. If you are not satisfied with the result, you can undo the reduction with the red "Undo" arrow.

8.7.1.2 Partial reduction

Should you only wish to reduce part of the crown, as with the "Shape" tool you can draw a closed line to the surface of the crown. The yellow model is hidden during the drawing process. This enables you to draw the line up to the cervical margin, in which case it is very helpful to select automatic edge detection (space bar).

When you have finished drawing the line, it can be edited as usual (beginning and ending with a double-click on the line).

As soon as you are satisfied with the position of the line, you can click the black "R" button. Part of the surface appears orange-colored. You can change this orange-colored area by pressing the space bar. If you click the black "R" button again, the orange-colored area will be reduced.

8.7.1.3 Milling preview

If you click the green "Next" arrow, the milling preview appears. The free-form tools "Form", "Drop" and "Shape" are at your disposal here again.
8.7.1.4 Example for front tooth crown with cutback using partial reduction

1. Draw in a circular line for the partial reduction.

2. Click the black "R" button.
3. Click the black "R" button once again.
4. Click the green "Next" arrow to go to the milling preview.

5. Draw a pair of open "Shape" lines in the milling preview straight through the incisal edge and click the "Shape" minus tool to press in the area.

8.7.2 Reduced bridge design technique

In the New dialog box, you can select "Bridge" the design procedure "Reduced".

This involves a combination of the reduced crown and bridge dental database design techniques which can be used to design an anatomical, partially or fully reduced bridge with connectors.

After drawing the preparation margins and base lines, you can position the red dots to determine the rough buccolingual position of the pontics.

Then you can select the dental database and set up the teeth successively starting from the distal side.
Before setting up the next tooth by pressing the green "Next" arrow, check the rough position, orientation and size of the tooth.

Once all of the teeth have been set up, you can make the finishing touches on each tooth. A double-click on an unselected gray tooth selects the tooth and allows you to change the selected tooth using all of the available tools.

A reducer step is commenced the next time you click the green "Next" arrow. The "Form", "Drop" and "Reduce" tools are also at your disposal in the case of selected crowns. Half of the neighboring crowns are hidden on both sides of a selected crown to give you a better overview.

The reduction can be performed separately for each element. In the present example, number 4 is fully reduced, numbers 5 and 6 are partially reduced and number 7 is anatomically unchanged ( ).

If you are satisfied with the crowns and pontics of the bridge, you can click the green "Next" arrow. You will receive a suggestion for connectors.
As for a bridge framework, with the reduction tool switched off, in this step you can select a connector with a double-click and then change it with the usual tools.

As soon as you are satisfied with the design of the bridge, you can click the green "Next" arrow to change to the milling preview, where you will find the free forming "Form", "Drop" and "Shape" tools you need to add the finishing touches.

**NOTICE**

**Checking the material thicknesses**

Use the thickness measurement to check all material thicknesses of the reduction.

When using the "Cut" tool, the cut surface is displayed in the status bar. This allows you to verify the connector thickness.

### 8.8 Quadrant restoration

#### 8.8.1 Acquiring tooth 16

✔ You have selected a patient from the database or created a new patient.

1. Select the following options in the New dialog box.

**NOTICE**

**Start with an inlay if necessary**

If an inlay is also to be provided, then start with this restoration.

2. Click "OK".

✎ The arrow cursor jumps automatically to the button marked "Acquire preparation".

<table>
<thead>
<tr>
<th>Range</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Restoration&quot;</td>
<td>&quot;Inlay, Onlay, Partial crown&quot;</td>
</tr>
<tr>
<td>&quot;Design technique&quot;</td>
<td>&quot;Dental database&quot;</td>
</tr>
<tr>
<td>Tooth</td>
<td>16</td>
</tr>
</tbody>
</table>

**Starting the scanning process**

1. Mount the model of the preparation on a model holder for bridge framework.

2. Start the scanning process (see the Operating Instructions of the milling unit).
8.8.2 Tooth 16: Creating the restoration

Restoration of tooth 16
1. Define tooth 16 as the center (see "Centering" under "Design" [57]).
2. Create a restoration.
3. Save the restoration.
4. Select "Design" "Quadrant..." (see "Quadrant" under "Design" [57]).
   The New dialog box opens. The patient is accepted.
5. In the New dialog box, you can select the following and confirm "OK".
   The virtual seating and the start of a second inLab 3D program then occur.
   In the program running in the foreground, the old restoration is in its original state.

CAUTION
Limitations
Following virtual seating you may no longer perform the following: use the "Undo" button to return to the "Optical impression" work step, remove or add images or change the reference image!


8.8.3 Tooth 15: Creating the restoration

Tooth 16 seated virtually, restoration of tooth 15
The program with the virtually seated restoration is loaded in the background. You can bring the program to the foreground via the task bar or by pressing the task selection keys (Alt+Tab).

The finished design (tooth 16) appears as the tooth in the new display.
1. Click the preparation to be edited (tooth 15).
2. Click the button marked “Fix”.
3. Trim the model.
4. Click the button “Next”.
5. Draw the preparation margin.
6. Select the menu item “Design” “Insertion axis”.
7. Define the insertion axis for tooth 15 (see “Redefining the insertion axis” [116]).

8. Click the button “Next”.
9. Create a restoration (see the design examples in the preceding sections).
10. Save the restoration.
11. Select “Design” “Quadrant…” (see “Quadrant” under “Design” [57]).

This is followed by the virtual seating and the start of another inLab 3D program.
12. Mill the restoration.

8.8.4 Tooth 14: Creating the restoration

Tooth 16 and 15 seated virtually, restoration of tooth 14
1. Create the restoration for tooth 14 analogously to tooth 16 and 15.
2. Save the restoration.
3. Mill the restoration.

8.8.5 Tooth 17: Creating the restoration

Tooth 16, 15 and 14 seated virtually, restoration of tooth 17
1. Create the restoration for tooth 17 analogously to tooth 16 and 15.
2. Save the restoration.
3. Mill the restoration.
9 Messages

Three different types of messages can be distinguished.

- Information
- Warnings
- Error messages

9.1 Information

Description
These messages prompt you to perform a specific operation or inform you that a specific action is not possible at the moment.

Example
Two examples of this are the messages that a milling instrument should be replaced or that the milling unit is busy.

9.2 Warnings

Description
This type of message is also used to remind you of important user actions or to warn you about problems.

9.3 Error messages

Description
An error message means that an action could not be executed. The program and the data are usually restored to the state in which they were prior to the action.

Different variations
The individual error messages may vary. The following variations exist:

- Self-explanatory error messages
- Other types of errors (two-stage errors)
  - Errors in connection with determining or managing construction lines
  - Errors in the reconstruction of the restoration
  - System errors
  - Memory allocation errors
9.3.1 **Self-explanatory error messages**

**Self-explanatory error message**

This type of error message is used whenever the cause of the error is unambiguous. You will be given detailed information on required action whenever possible.

9.3.2 **Two-stage errors**

Other error messages are displayed in two stages. The basic error is displayed first.

You then have the possibility of having further details displayed. If error messages of this type appear repeatedly during a design process, you should forward the design in question to Sirona Dental Systems along with a description of the procedure you have followed.

With the exception of memory allocation errors, you can usually acknowledge the error message and continue working after an error has occurred.

9.3.3 **Errors in connection with determining or managing construction lines**
This type of error typically occurs whenever the construction lines are unsuitable. It may, however, also be caused by a program error.

When you click Yes, a dialog box with further details and hints opens.

The error description, i.e. the ID, is used by the hotline or development team to analyze and eliminate the problem.

In most cases, you can continue to work with the restoration data after acknowledging the error. However, just to make sure, you can create a copy and work with this copy. In this way, you can always recur to the original optical impression in case further problems occur.

9.3.4 Errors in the reconstruction of the restoration

This error may occur if the restoration is to be milled. In this case, the restoration to be milled cannot be calculated with the available construction lines.

As before, you can usually continue to work with the restoration data after acknowledging this error message. For reasons of safety, you may of course work on a copy.

Check and correct all construction lines, if necessary.

9.3.5 System errors

A system error may occur due to an error in the program.
Detailed information

Two different types of detailed information can then follow.

Despite these error messages, you can continue to work with the existing design data, but for reasons of safety, you should always use a copy for doing so.

9.3.6 Memory allocation errors

Memory allocation errors

The occurrence of a memory allocation error means that the program or operating system is in a critical state.

1. Exit the program.
2. Save any available design data under another name.
3. If this error occurs again, terminate all running programs and restart the operating system.
10 Link to Practice Administration

### NOTICE

**Entering the patient data**
If there is an interface to a practice administration program, the patient data should be entered in the practice administration program and edited as required.

10.1 Parameter interface

10.1.1 Patient data as parameter list

Some practice administration programs can be configured so that they can pass on patient data as a parameter list.

10.1.2 Parameter interface: CerPI.exe

With this parameter interface, you can conveniently perform the following:

- Generate new patients in the data structure
  - With database connection
  - Without database connection
- Preselect existing patients in the following dialog boxes
  - "Load restoration"
  - "Delete restoration"
  - "Select patient for new restoration"

10.1.3 Generating or preselecting patients

Launch the CerPI.exe program by entering the following data:

- CerPI.exe
- Minus sign (-)
- Card index number;
- First name;
- Last name;
- Date of birth;

The **date of birth** must be entered in the format specified in the Windows Regional Settings: in the format DD.MM.YYYY (e.g.: 27.03.1964) or MM/DD/YYYY (e.g.: 03/27/1964).

### CAUTION

**Entering the data**

Following the **card index number, first name, last name, date of birth**, you **MUST** always enter a semicolon (;).

**Example**

CerPI.exe -0815;first name;last name;15.11.2000;
Result

<table>
<thead>
<tr>
<th>With database connection</th>
<th>Without database connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>The patient is registered in the SIRONA database.</td>
<td>The patient is generated in the local data structure.</td>
</tr>
</tbody>
</table>

10.2 SLIDA interface

Only with database connection

If the database connection is used, it is possible to send patient data to inLab via the SLIDA interface.

Modifying patient data via the SLIDA interface

You can create new patients, change patient data and activate patients. The mail slot for the SLIDA interface is set up during the installation of the database.

No editing of patient data in inLab

Patients registered in the SIRONA database via the SLIDA interface can be deleted in the inLab 3D application, but not edited. The reason for this is that the SIRONA database contains only copies and no originals.
11 Tips and Tricks

11.1 Screenshot/TIF image

The SIROCAM application is perfectly suitable for exporting TIF images of preparations or forwarding them to a graphics program for further processing.

Generating a screenshot

Since TIF images of preparations do not show any constructions lines, it may be necessary to generate a screenshot:

✔ The desired contents are visible on the screen.

1. Press the key marked "Print".
2. Open a graphics program of your choice (e.g. Paint).
3. In this program, select "Edit" / "Paste".

 türlü The screenshot will then appear there and may be edited and saved.

11.2 Technical notes

11.2.1 Softguard dongle

A device (printer, external drive) connected additionally to the softguard dongle can impair its function.

1. Remove the connection to this device.
2. Check to see whether the parallel port is set to EPP in the BIOS setup of the PC. Use the manual for the motherboard as a reference.

11.2.2 Problems during communication with the milling unit

If no communication can be established with the milling unit, check the port and baud rate settings under "Settings" / "Configuration" / "Devices..." / "Configure".

Under unfavorable radio conditions, problems can arise in the communication with the milling unit. Switch the radio module of the milling unit off (pull out the plug) and then back on and try again.

11.2.2.1 Examples with CEREC 3 acquisition unit connected

<table>
<thead>
<tr>
<th>Cable connection</th>
<th>Port=COM2</th>
<th>Baud rate=115200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable connection, long</td>
<td>Port=COM2</td>
<td>Baud rate=19200</td>
</tr>
<tr>
<td>EU radio link</td>
<td>Port=COM1</td>
<td>Baud rate=115200</td>
</tr>
<tr>
<td>U.S. radio link (Höft&amp;Wessel)</td>
<td>Port=COM1</td>
<td>Baud rate=115200</td>
</tr>
<tr>
<td>U.S. radio link (Futuba)</td>
<td>Port=COM1</td>
<td>Baud rate=19200</td>
</tr>
<tr>
<td>Japan radio link (Futuba)</td>
<td>Port=COM1</td>
<td>Baud rate=19200</td>
</tr>
</tbody>
</table>
11.2.2.2 For PC/notebook

Check the “Communications Port” (interface).

1. Select “Start”/“Settings”/“Control panel”.

System Properties

2. Double-click “System”.

3. In “System Properties”, select the “Hardware” tab card and click “Device Manager”.

Device Manager

4. Double-click “Ports (COM and LPT)”. Here you can see which “Communications Port” (e.g. COM1, COM2) is available.

5. Set the port displayed here via the menu item “Settings”/“Configuration”/“Devices...”/“Configure” (see “Devices” under “Configuration” ).
11.2.3 No sleep mode during the milling process

⚠️ CAUTION

Milling process
The sleep mode of the PC must not be activated during the milling process.

11.2.4 Changing the font size

If the text is not completely visible in a dialog, in the window "Display Properties"/"Large Fonts" must be set. By right-clicking the background, in the window "Display Properties"/"Appearance"/"Font Size" you can set to "Normal".

11.2.5 Screen saver

Display errors can occur when the screen saver opens. If this is the case, deactivate the screen saver.

11.2.6 Task Manager

Display errors can occur when you open the Task Manager (Ctrl+Alt+Del). If this is the case, exit and restart the inLab 3D program.

11.2.7 Correlation quality

You can check the correlation quality by displaying the occlusal impression ("Window"/"Display options"). The preparation area and occlusion area are displayed as a “spotty” pattern in overlapping image regions.
11.3 Service program

✔ The inLab 3D program is installed.
➢ Start the service program in the inLab program group by clicking “Start” “Programs” “inLab” “Service”.
✔ A dialog box containing an input box for the service password and three buttons is displayed.

![Service dialog]

⚠ CAUTION

Service functions
The service functions are exclusively for use by authorized inLab service engineers.

This program area can be accessed only by authorized technical personnel with a service password.

- With the Yes button, you confirm the service password.
- Use the “No” button to quit the service program.
- Using the “Maintenance only” button, you can also perform a water change of the milling unit without having to enter a service password (also see the Operating Instructions for the milling unit).

11.4 Frequently Asked Questions

11.4.1 Database connection
The tooth number specified by the inLab entries (code “VC”) is not converted in S(V)IDEXIS when the U.S. odontogram is used.

11.4.2 Minimizing the program
The inLab 3D program cannot be minimized during the milling process.
12 Producing Straumann implants with inLab 3D

12.1 How to use the scanbody

12.1.1 Scanbody

⚠️ **CAUTION**

Risk of infection for the patient

The scanbody is not delivered in aseptic condition.

Prior to using the scanbody in the patient's mouth, you must disinfect it and attach a thread to prevent the patient from swallowing or inhaling it.

12.1.2 Explanation of the symbols

Protect against direct sunlight.


Intended only for single use.

Month of manufacture

Batch number

12.1.3 Preparing a model for inEos

✓ A master model with manipulation implants is available.

1. If no CAM base was used, prepare the area surrounding each implant situation with powder or scan spray.

2. Plug a scanbody onto each manipulation implant of the master model until it comes to rest on the shoulder of the implant without any gaps. The scanbody is scannable without powder or scan spray.

12.1.4 Preparing a model for the scanner (inLab)

✓ A master model with manipulation implants is available.

1. Plug a scanbody onto each manipulation implant of the master model until it comes to rest on the shoulder of the implant without any gaps.
2. Duplicate a scan model of each implant situation. The scanbody of the scan model must point upward vertically, i.e. must be visible without undercuts.

3. Glue this model onto the model holder in such a way that it points toward the clamping shank A in the mesial → direction.

12.2 General information

12.2.1 Cooperation with the Straumann Company

In cooperation with the Straumann Company, you can design custom abutments with the inLab 3D software and then order them from infiniDent (http://www.infinident.de). They are manufactured at the Straumann production center.

12.2.2 Indications

**NOTICE**

Position of the implant
The implant must be in a circular subgingival location. If the location of the implant is only minimally supragingival, you can fill it up with scan wax.

12.2.3 Further information

- The "Gingival depth" parameter is described under "Parameters, Gingival depth [65].
- For information on Entering the gingival line see "Design, gingival line" [115].
12.3 Mesostructure design technique

Design example of mesostructure with antagonist image for tooth 23

12.3.1 Creating a new restoration

![Image of restoration design](image)

**Implant - New dialog**

✓ You have selected a patient from the database or created a new patient.

1. Select the following options in the New dialog box.
2. Click “OK”.

<table>
<thead>
<tr>
<th>Range</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Restoration&quot;</td>
<td>&quot;Implant&quot;</td>
</tr>
<tr>
<td>&quot;Design technique&quot;</td>
<td>&quot;Mesostructure&quot;</td>
</tr>
<tr>
<td>Tooth</td>
<td>23</td>
</tr>
<tr>
<td>&quot;Implant type&quot;</td>
<td>Straumann RN</td>
</tr>
</tbody>
</table>

12.3.2 Scanning the antagonist and the preparation (implant situation)

1. Have the antagonist and then the preparation scanned (implant situation) (see "Optical impressions with the scanner").

**NOTICE**

Preventing scan artifacts

If a deep pit is located between the scanbody and the gingiva, you can fill it up with scan wax in order to prevent scan artifacts.

2. If all of the required optical impressions are available, click the "Next" icon.

1. This may be a mushbite in the conventional sense or an impression of a waxup as a "virtual silicone key".
12.3.3 Select the material and set the parameters

1. Select the material for the restoration and confirm with “OK”.

   ![Select material dialog box]

   **Material selection**

   2. Confirm the Parameter note dialog box with “OK”.
   3. If necessary, edit the changeable parameters in the Parameter dialog box and confirm with “OK”.

12.3.4 Displaying the 3D representation

The 3D representation of the preparation (implant situation) is reconstructed and then displayed in the 3D viewer.

![3D display]

12.3.5 Entering the gingival line

1. Enter the gingival line (see "Gingival line" [115]) and check it in the 3D viewer. Rotate the preparation for this purpose (implant situation).
Entering the gingival line

**NOTICE**

Directly editing the gingival line
The gingival line can be edited immediately after having been entered (see "Edit tool (edit)" [33]).

2. Click the button marked "Next".
   - The restoration is calculated and then displayed.

12.3.6 Performing the design

The red areas on the surface of the restoration mark the spots where no restoration material will be left later on. Either because the restoration will jut out of the blank there or because the screw channel is located there.

Restoration
The minimum permissible shape of the restoration is marked in blue.
These colored markings are also visible in the cut.
Cut display

With the “Position”, “Rotate” and “Scale” tools, you can align and adapt the restoration if necessary.

With “Edit” you can edit the preparation margin on the gingival cavity. The implant head is visible during editing.

Preparation margin

Using the Antagonist button, you can display the Antagonist window (see "Show/hide antagonist") and adapt the abutment form to the antagonist with the help of the Design tools.

NOTICE

Red marking function switched off

If the interocclusal clearance is activated, the red marking function is switched off.

1. Adjust and align the restoration if necessary.
2. Edit the preparation margin if necessary.
3. After the design is finished, click the button marked "Next".

12.3.7 Viewing the milling simulation

✔ The finished restoration is displayed in the milling simulation. The implant head is visible here too.

1. Inspect the restoration.
Milling simulation

2. If necessary, edit the restoration with the tools “Form”, “Drop” and “Shape”.

12.3.8 Positioning the abutment optimally in the dental arch

Seating the abutment virtually

A completely designed abutment can be seated virtually and used as an aid for designing further abutments (see “Quadrant” in the chapter on “Design” [57]).

Cut display displayed with antagonists

Displaying the abutment

If an impression of a prosthetic tooth/wax-up is acquired as an antagonist, you can readily adjust/align the form and position of the abutment.

12.3.9 Sending an abutment

1. If you are satisfied with the restoration, click the “Send” icon.
   - A message then appears stating that the restoration has been prepared for sending.

2. Click “OK”.

NOTICE

PC without Internet
If the PC on which you are operating the inLab 3D software has no Internet connection, you can export the restoration and send it to infiniDent from another PC.

3. Start the Upload tool to send the restoration to the milling center (see "infiniDent Upload tool" [222]).
13 infiniDent Upload tool

13.1 Function of Upload tool

Using the Upload tool, you can automatically send fully designed restorations to the infiniDent Web Portal. The program runs in the background mode, thus enabling you to continue designing at the same time.

The data are loaded into the shopping cart of the web portal. Then you have to return to the web portal to confirm the shopping cart.

At the same time, you can also check the status of any work you have ordered from infiniDent with the Upload tool. Each time you go online, the program polls the current status of your order.

The chief prerequisite for using the tool is that the computer on which you are operating the inLab 3D software is connected to the Internet.

13.2 Installing the Upload tool

1. Insert the software CD in the CD/DVD drive.
2. If the installation program starts automatically, cancel it.
3. Start the Windows Explorer and select the CD/DVD drive.
4. Open the "infiniDent" folder in the "Misc" directory.
5. Run the infinidentUpload Setup.exe file.
6. Then follow the instructions given by the installation program.
7. After a successful installation, you will find an icon for starting the Upload tool on your desktop.

NOTICE

Starting the tool via the Start menu
You can also start the Upload tool via "Start" "Programs" "inLab" "infiniDent".

13.3 Description of the user interface

The Upload tool is subdivided into three areas:

- A: Menu bar
- B: Tool bar
- C: Overview window
13.3.1 Menu bar

Via the menu option "File" you can select various "Settings" for the Upload tool or close the program.

Settings

If you select "Settings", you can set the following parameters for the Upload tool:

Under "General" you can choose:

- between having all orders ready for shipment sent automatically or just sending them manually whenever you like by clicking the Send icon.
- whether orders with the status "finished" which have been reported by the web portal should automatically be cleared from the overview window.

Under "Internet connection" you can choose:

- the internet connection you work with.
- if you work with a dialed connection, you can automatically connect to and disconnect from the program.

13.3.2 Tool bar

The buttons on the tool bar have the following functionalities:

- "Send" button
  Click here if you would like to send your orders to the web portal.

- "Refresh status" button
  Click here to update the status of your orders.

- "Recycle Bin" button
  Click here to clear all previously marked orders from the overview window.
13.3.3 Overview window

The overview window contains all of the orders you would like to send or are currently being processed by infiniDent.

The columns "First name", "Family name", "Tooth", "Material", "Date" are automatically copied from the data in the restoration file.

In the "Hue" column you can select a color for all the materials for which this is possible (SIRONA inCoris ZI, VITA In-Ceram SPINELL, ALUMINA and ZIRCONIA).

In the "Infiltrate" column you can indicate whether these materials are to be infiltrated or uninfiltrated.

The "Status" column always shows you the current status of your orders at infiniDent. If you have Internet access, you can update the status via the "Refresh status" button.

13.4 Preparing files for uploading

Once you have completed the design, click the "Send" button in the tool bar in the inLab 3D software.

The restoration file is then automatically converted to the idt format and sent to the infiniDent Upload tool. Start the Upload tool.

You will find the restoration file in the overview window of the Upload tool. If you have selected SIRONA inCoris ZI, VITA In-Ceram SPINELL, ALUMINA or ZIRCONIA, you will also be prompted to specify a color and whether you would like to have the work done in infiltrated or uninfiltrated form.

Select the color by clicking the drop-down arrow in the "Hue" column next to the relevant file in the overview window. Now you can select the color from the drop-down menu for the corresponding material.

In the "Infiltrate" column, choose whether you would like to order the work in infiltrated or in uninfiltrated form. If a check mark is placed in the box, the framework will be infiltrated; if no checkmark is placed there, you will receive the framework in uninfiltrated form.
13.5 Confirming the shopping cart

As soon as you have uploaded the restoration with the Upload tool, it is placed in your personal shopping cart at the infiniDent web portal.

Click the "infiniDent" icon for this purpose. You will be guided directly to the home page of the infiniDent web portal. There you can enter your user data. Click the "Shopping cart" in your personal area. Then click the "SEND" button to place the orders.
14 CEREC Connect

14.1 Introduction

This software, used in combination with the CEREC Connect portal, also allows you to have the physical model produced via infiniDent, Sirona's production center. This means that you can now also offer your CEREC dentists veneer crowns and bridges on the basis of the digital impression.

14.2 E-mail notification of new orders

You will be notified by e-mail whenever a CEREC dentist with whom you work via CEREC Connect submits a new digital impression.

14.3 Starting the inLab 3D program

If the inLab 3D program is not open yet, this can be done as follows:

✔ The inLab 3D software is installed. The inLab 3D button is located on the desktop.
➢ Start the inLab 3D software by double-clicking the inLab 3D button.
➢ Click "Start" / "Programs" / "inLab 3D" / "inLab 3D".

14.4 Registration

To enable you to work with your CEREC dentists via CEREC Connect, you have to register on the CEREC Connect portal. You require an e-mail address to register.

NOTICE

Laboratories receive an access code only after they have been authorized by Sirona.

14.4.1 Registering via the website

2. Click the button marked "Laboratory Registration" in the menu navigation. The laboratory registration home page then opens.

NOTICE

Fields marked *
Fields marked with an asterisk (*) must be filled in.

1. Select "User ID" and click "Next".
2. Enter the laboratory data and click "Next".
3. Enter the contact person data and click "Next".
4. Select the "Offerings" / "Services" offered by you and click "Next".

* On completing registration successfully, you will receive an e-mail stating your access data for the portal.
14.4.2 Registration via the inLab 3D program

✔ The inLab 3D program is opened.
1. On the tool bar, click the button marked “Connect”.

2. In the login window click the button marked “Registration”.

ª The laboratory registration home page then opens.

NOTICE
Fields marked *
Fields marked with an asterisk (*) must be filled in.

1. Select “User ID” and click “Next”.
2. Enter the laboratory data and click “Next”.
3. Enter the contact person data and click “Next”.
4. Select the “Offerings”/“Services” offered by you and click “Next”.

ª On completing registration successfully, you will receive an e-mail stating your access data for the portal.

14.5 Connecting to the CEREC Connect portal

✔ The inLab 3D program is opened.
1. On the tool bar, click the button marked “Connect”.

2. Enter the access data, which you received by e-mail following successful registration, in the login window.
3. Click “OK”.

ª The CEREC Connect portal opens.

14.6 CEREC Connect portal

14.6.1 Introduction
The portal has a tab control function in which topics are grouped. It has the following tabs:

- “Order List”,
- “Restoration Data”,
- “Desired Lab”,
- “Additional Notes”,
- “Accept/Reject Order”

Once you have opened an order, you can move freely between tabs by clicking. The portal always opens with the “Order List” tab. You can close the portal and log out automatically by clicking the “Close” button at the end of the page.
14.6.2 "Order List" tab

The "Order List" tab contains all the orders from your dentists.

> Click "View" to start the evaluation of the relevant order.

Drop-down menu Show

You can change or sort how the orders appear in the list via the "Show" drop-down menu:

- "New orders only" - only show new orders
- "Accepted orders only" - only show accepted orders
- "Rejected orders only" - only show rejected orders.

Description of the status icons:

New order

Accepted order

Rejected order

14.6.3 "Restoration Data" tab

The "Restoration Data" tab contains all the information about the restoration. The tab is divided into three sections.

- "Patient"
- "Restoration"
- "US Tooth Number(s)"

Patient

This section contains the first and last names of the patient.

Restoration

This section contains the following:

- "Restoration Type"
- "Material"
- "Stump Shade"
- "Final Shade"

US Tooth Number(s)

This section shows the tooth/teeth being restored in a bridge.

Click the "Next step" arrow to proceed to the next tab.
14.6.4 "Desired Lab" tab

Your laboratory appears in the "Desired Lab" tab as the preferred lab, along with the date and time by which the restoration has to have been returned to the dental practice.

Click the "Next step" arrow to proceed to the next tab.

Click the "Previous step" arrow to go back to the previous tab.

14.6.5 "Additional Notes" tab

The "Additional Notes" tab consists of three sections:

- "Notes"
- "Additional Patient Data"
- "Photos"

Notes

This section contains additional notes and information from the dentist.

Additional Patient Data

This section contains details about the person's gender and age.

Photos

Here you can download additional photos which the dentist has also sent, e.g., taken with an intraoral camera.

Click the "Next step" arrow to proceed to the next tab.

Click the "Previous step" arrow to go back to the previous tab.

14.6.6 "Accept/Reject Order" tab

The "Accept/Reject Order" tab consists of three sections, as well as the "Reject" and "Accept". In order to decide whether to accept or reject the order, you have to review the digital impression first. To do this, download the data record and open it in the inLab 3D software (see "Reviewing and designing a restoration in the inLab 3D software [231]").

NOTICE

Rejected orders can be subsequently accepted at any time and a model can be ordered for this purpose.

Order Data

The details of the order are summarized under "Order Data". You can download the accompanying document and the data record for the digital impression in the "Attachment Preview" column.

If you click the "Work Ticket" link, the Windows Download window opens. You then can view the accompanying sheet and save it to your computer.

For downloading the digital impression and the subsequent design, read "Reviewing and designing a restoration in the inLab 3D software [231]".

Dentist

This box shows the dentist's delivery address.
Your comments
You can enter your comments about the restoration in this box (in case you reject the order, for example.)

"Reject" button
If you reject an order by clicking "Reject", an e-mail is sent to your dentist including your comments as to why you have rejected the order. You then automatically advance to the next page. Click "Go back to your order list" to review the next order.

"Accept" button
If you confirm acceptance of an order by clicking "Accept", an e-mail containing your comments is sent to the dentist. You automatically advance to the next page. Once again, you are given the opportunity here to save the accompanying document and data record on your computer and, if necessary, to order the physical model from infiniDent.

"You accepted the order" page
If you haven't downloaded the accompanying document and the digital impression yet, you can do so once again here under "You accepted the order" (also refer to "Order data [229]").

➢ Download the data for your records here.

If you do not require a model for downloading the restoration, click "Go back to your order list" to review the next order or click "Close" to exit the portal.

If you require a model to produce the restoration, you can order it here by clicking the "Order model" button.

"Forward to infiniDent" page
If you accept the preparation margin drawn by the dentist, you can then click the "Submit" button directly to order the model from infiniDent.

If you still wish to draw the preparation margin or change it during the review of the impression, click "Browse". Browse through the Windows Explorer to the folder where you have saved the file and double-click the file in question. Then click "Submit".

Your infiniDent shopping basket is now opened in a new browser window.

**NOTICE**

Preparation margin
Based on the preparation margin drawn by the dentist or by you, infiniDent can expose the preparation margins in stumps (see also "Preparation margin for infiniDent models [233]").

14.6.7 infiniDent shopping basket
The infiniDent shopping basket contains the details for ordering the models.

Ordering a model
➢ If you would like to order only one model, click the "Submit" to finish ordering.
Ordering more than one model

1. If you would like to order further models, click the button marked "LOGOFF".
2. Then close the browser window.
3. Then open the next order in the "Order List" register.
4. Once you have placed all models in the shopping cart, click "Submit" to finish ordering.

14.7 Reviewing and designing a restoration in the inLab 3D software

Before designing a restoration on the basis of the digital impression received from the dentist, you have to ascertain whether the data available is adequate and free of artifacts, for example. Therefore, you have to open the data record in the inLab 3D software.

14.7.1 Assessing the order

✔ CEREC Connect has been started.
✔ In the register "Accept/Reject Order" the option "Order Data" is selected.

1. Click on the link of the digital impression.
   ✴️ The inLab 3D software automatically starts with the step "Check order". Here you can view the dentist's impressions of the preparation, the partial bite and the antagonist.

2. Now decide whether there is adequate data available, whether the bite is correct, etc. in order to design the restoration.
   ✴️ If the dentist has marked the preparation margin, it appears as a magenta-colored line. If he has not, there no line shown.

3. Click the button marked "Next" to return to the register "Accept/Reject Order" in the CEREC Connect Portal, where you now can accept or reject the order.
   ✴️ The data record remains open in the background, thus enabling you to start designing the restoration as soon as you close the CEREC Connect Portal.

4. Choose a patient from the list or create a new patient by clicking the "New" button.

5. In the next step, "Connect order change", you confirm the restoration type, design technique and tooth number by clicking the "OK" button.

6. If necessary, you also can make changes in the presettings and then confirm them with the "OK" button.
14.7.2 Preparation margin

Applying the preparation margin
✔ The dentist has drawn the preparation margin. It appears in the form of a magenta-colored line.
➢ Double-click the line to confirm and then click the "Next" button to proceed to the next step.

Changing the preparation margin
✔ The dentist has drawn the preparation margin. It appears in the form of a magenta-colored line.
1. If you wish to change the preparation margin, double-click the line.
   ☢ The line is shown in blue.
2. Change the preparation margin as required (see "Entering the preparation margin [114]").
3. Click the "Next" button to proceed to the next step.
Entering a new preparation margin

✔ The dentist has not drawn a preparation margin.

1. Enter the preparation margin (see "Entering the preparation margin [114]").
2. Once you have completed the preparation margin, click the "Next" button to proceed to the next step.

14.7.3 Designing a restoration

➢ Design the restoration by using the "Design" tools (see "Design window [32]").

14.8 Preparation margin for infiniDent models

The preparation margin is very important for crown stumps and bridge abutments. If the preparation margin is drawn, infiniDent can expose the preparation margins when the models are produced.
14.9 **Administration**

If you click the two cogwheels in the top right-hand corner of the inLab 3D portal, you can edit the following user data on the portal:

- Passwords
- Phone numbers
- E-mail addresses
Glossary

3D Preview
After you trigger the optical impression, the measurement data are displayed 3-dimensionally.

3D viewer
Main window

Angled optical impressions
Additional optical impressions of the same area with a maximum permissible tilt angle of 20°.

Antagonist image
Optical impression of the centric bite registration.

Cut
Cut window/tool for placing a cut plane through the restoration/preparation.

Design
Window with design tools used for editing the restoration.

Drop
Tool (button) for activating/deactivating the "wax drop" function with which material can be applied and smoothed drop by drop. Toggling with the space bar.

Edit
Tool (button) for activating/deactivating the editing function which can be used to modify design lines.

Form
Tool (button) for activating/deactivating the "form" function with which material can be applied and smoothed layer by layer. Toggling with the space bar.

Gingival line
The gingival line defines the emergence profile of the implant abutment. It is the final line/transition line to the supraconstruction.

Image catalog
Window for managing the image fields (preparation, occlusion and antagonist)

Image field
One or more optical impressions of the preparation, of the occlusion or of the antagonist impression.
Insertion axis
The direction of view of the camera / scanner (occlusal aspect) must agree with the insertion axis of the restoration.

Intensity image
Window for more accurately drawing the cervical segments of the preparation margin in epigingival areas. You can activate the intensity image with the spacebar while entering the preparation margin.

Occlusal optical impression
Optical impression of an existing or waxed-up occlusion.

Position
Positioning tool for moving the entire restoration in different directions.

Reference optical impression
First optical impression that determines the original insertion axis.

Rotate
Rotation tool for rotating the entire restoration about different axes.

Scale
Tool (button) for activating/deactivating the scaling function which can be used to scale selected regions.

Shape
Tool (button) for activating/deactivating the shaping function which can be used to apply, remove and smooth material.

Single optical impression
A single optical impression that must be taken in the occlusal direction (insertion axis).

Softguard dongle
Plug that is connected to the parallel port or the USB port of the PC and enables different milling options.

Status bar
Bar at the bottom of the screen which displays current information.

Supplementary optical impressions
Several optical impressions that also image the mesial and distal neighbors.

Tool bar
Symbols (“icons”) which can be used to access important program functions.

Trim
Tool (button) which can be used to hide/show previously defined regions.
# Index

## Numerics

<table>
<thead>
<tr>
<th>Term</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3D viewer</td>
<td>22, 48</td>
</tr>
<tr>
<td>3D Preview</td>
<td>79</td>
</tr>
<tr>
<td>Deleting images</td>
<td>107</td>
</tr>
<tr>
<td>Design</td>
<td>104</td>
</tr>
<tr>
<td>inEos</td>
<td>82</td>
</tr>
<tr>
<td>inLab gearhead</td>
<td>69</td>
</tr>
</tbody>
</table>

## A

<table>
<thead>
<tr>
<th>Term</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abutment coping</td>
<td>35</td>
</tr>
<tr>
<td>Administering patient data</td>
<td>54</td>
</tr>
<tr>
<td>Aluminum oxide</td>
<td>128</td>
</tr>
<tr>
<td>Angled optical impressions</td>
<td>95</td>
</tr>
<tr>
<td>Antagonist</td>
<td>30</td>
</tr>
<tr>
<td>Scanning</td>
<td>87</td>
</tr>
<tr>
<td>Showing/hiding</td>
<td>29</td>
</tr>
<tr>
<td>Tools</td>
<td>31</td>
</tr>
<tr>
<td>Trimming</td>
<td>111</td>
</tr>
<tr>
<td>Antagonist surface</td>
<td>30</td>
</tr>
<tr>
<td>Archiving data</td>
<td>132</td>
</tr>
<tr>
<td>Articulation</td>
<td>28</td>
</tr>
<tr>
<td>Artifacts</td>
<td>59</td>
</tr>
</tbody>
</table>

## B

<table>
<thead>
<tr>
<th>Term</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base line</td>
<td>114</td>
</tr>
<tr>
<td>Bluecam</td>
<td></td>
</tr>
<tr>
<td>Acquisition control</td>
<td>90</td>
</tr>
</tbody>
</table>

## C

<table>
<thead>
<tr>
<th>Term</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calibration</td>
<td>77</td>
</tr>
<tr>
<td>Camera support</td>
<td>92</td>
</tr>
<tr>
<td>Configuration</td>
<td>68</td>
</tr>
<tr>
<td>Connect database</td>
<td>132</td>
</tr>
<tr>
<td>Connectors</td>
<td>35</td>
</tr>
<tr>
<td>Consistency check</td>
<td>133</td>
</tr>
<tr>
<td>Construction line</td>
<td>33</td>
</tr>
<tr>
<td>Contact</td>
<td>26</td>
</tr>
<tr>
<td>Contact to neighboring tooth</td>
<td>26</td>
</tr>
<tr>
<td>Coordinate system</td>
<td>49</td>
</tr>
<tr>
<td>Cursor</td>
<td>79</td>
</tr>
<tr>
<td>Cusp settling</td>
<td>31</td>
</tr>
<tr>
<td>Cut</td>
<td>27</td>
</tr>
</tbody>
</table>

## D

<table>
<thead>
<tr>
<th>Term</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database export</td>
<td>132</td>
</tr>
<tr>
<td>Database import</td>
<td>132</td>
</tr>
<tr>
<td>Delete scans</td>
<td>102</td>
</tr>
<tr>
<td>Deleting images</td>
<td>107</td>
</tr>
<tr>
<td>Design</td>
<td>56, 110</td>
</tr>
<tr>
<td>Centering</td>
<td>57</td>
</tr>
<tr>
<td>Change</td>
<td>57</td>
</tr>
<tr>
<td>Drop</td>
<td>37</td>
</tr>
<tr>
<td>Edit</td>
<td>33</td>
</tr>
<tr>
<td>Form</td>
<td>36</td>
</tr>
<tr>
<td>Insertion axis</td>
<td>58</td>
</tr>
<tr>
<td>Quadrant</td>
<td>57</td>
</tr>
<tr>
<td>Scale</td>
<td>39</td>
</tr>
<tr>
<td>Design lines</td>
<td></td>
</tr>
<tr>
<td>Colors</td>
<td>33</td>
</tr>
<tr>
<td>Design window</td>
<td>32</td>
</tr>
<tr>
<td>Display height image</td>
<td>103</td>
</tr>
<tr>
<td>Display options</td>
<td>78</td>
</tr>
<tr>
<td>Distance</td>
<td>80</td>
</tr>
</tbody>
</table>

## E

<table>
<thead>
<tr>
<th>Term</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Editing function</td>
<td>33</td>
</tr>
<tr>
<td>Entering the preparation margin</td>
<td>114</td>
</tr>
</tbody>
</table>

## F

<table>
<thead>
<tr>
<th>Term</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form tool</td>
<td>36</td>
</tr>
</tbody>
</table>

## G

<table>
<thead>
<tr>
<th>Term</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gingival line</td>
<td>115</td>
</tr>
</tbody>
</table>

## H

<table>
<thead>
<tr>
<th>Term</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Help</td>
<td>80</td>
</tr>
</tbody>
</table>

## I

<table>
<thead>
<tr>
<th>Term</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image catalog</td>
<td>79, 99</td>
</tr>
<tr>
<td>Active region</td>
<td>101</td>
</tr>
<tr>
<td>Changing the assignment</td>
<td>102</td>
</tr>
<tr>
<td>Closing</td>
<td>103</td>
</tr>
<tr>
<td>Delete scans</td>
<td>102</td>
</tr>
<tr>
<td>Design</td>
<td>100</td>
</tr>
<tr>
<td>Opening</td>
<td>99</td>
</tr>
<tr>
<td>Zooming in</td>
<td>102</td>
</tr>
</tbody>
</table>
Index

Image field .................................................. 98
Interocclusal Clearance .................................. 29
Occlusion ...................................................... 28
Image regions
Delete .......................................................... 118
Hiding .......................................................... 110
Insertion axis .................................................. 116
Redefining ..................................................... 117

M
Managing patient data
Delete .......................................................... 56
Edit .............................................................. 55
New .............................................................. 55
Manual
html format .................................................. 17
pdf format .................................................. 17
Material selection ............................................. 121
Menu bar ......................................................... 49
Milling ............................................................. 130
Milling preview ............................................... 122
Milling process ................................................ 126

O
Occlusion ........................................................ 28
Scanning ......................................................... 88
Optical impression ............................................. 92
Antagonist ..................................................... 96
End teeth ......................................................... 96
Quadrant restoration ......................................... 95
Veneer ............................................................. 97

P
Pontic ............................................................... 34
Position .......................................................... 45

R
Recycle bin ................................................... 102, 107
Redefining the reference optical impression .......... 101
Reduce .......................................................... 45, 196
Reference optical impression ................................ 92
Restoration .................................................... 50
administer patient data ....................................... 50
delete ............................................................. 50
deletion .......................................................... 53
exit ................................................................. 50
export ............................................................ 50, 53
import ............................................................ 50, 53
load ................................................................. 50
loading ............................................................ 52
save ................................................................. 50
save as ........................................................... 50
send to ............................................................ 50
Administering patient data .................................. 54
New ............................................................... 50
Send to ............................................................ 56
Restoration files ............................................... 133
Rotate ............................................................ 47
Rotational scan ............................................... 103

S
Scale .............................................................. 49
Scanning tool (scale) ......................................... 39
Scanning procedure ........................................... 85
Settings .......................................................... 59
Instruments ..................................................... 66
Parameters ..................................................... 59
Settling ............................................................ 31
Shape ............................................................. 43
Showing/hiding neighboring teeth
Trim ............................................................... 26
Single optical impression .................................... 92
Slider ............................................................. 37, 38
Softguard ......................................................... 80
Softguard dongle .............................................. 20, 210
Software
Installation .................................................... 18
Uninstallation ................................................... 19
Version .......................................................... 18
Stack milling .................................................... 129
Standard views ............................................... 25
Status bar ....................................................... 48
Supplementary optical impressions ....................... 94
SLIDA interface .............................................. 56

T
ToolBar .......................................................... 23
### U
User interface ................................................................. 22

### V
View window ................................................................. 25
Virtual Grinding ......................................................... 31

### W
Wax drop (Drop) .............................................................. 37
WaxUp .......................................................................... 89
Window .......................................................................... 78
  Cursor .......................................................................... 79
  Distance ..................................................................... 80
  Image catalog ........................................................... 79

### Z
Zirconia .......................................................................... 128
Zoom .............................................................................. 26