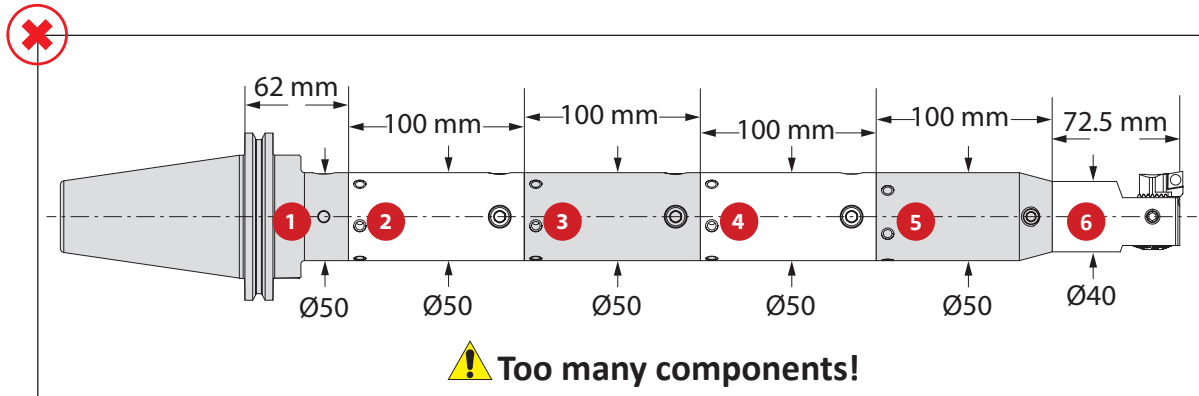


**Guidelines for not Exceeding Recommended Length-to-Diameter Ratio**

To calculate, see graphics below:



**NOTE:** Length-to-diameter ratio is calculated using body diameters not cutting diameter.

**NOTE:** Do not exceed recommended 10xD length-to-diameter ratio or exceed four total components (including shank).

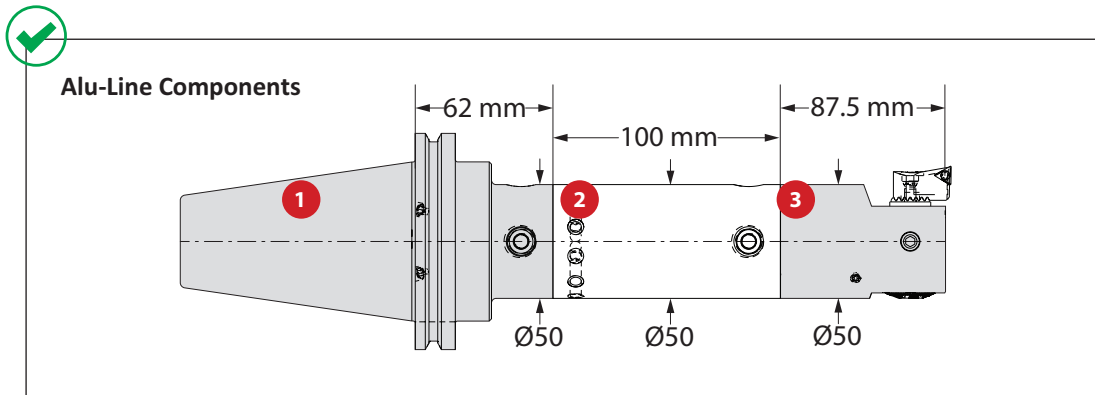
**Step 1: Find L : D by component**

- 1 1.2 = 62/50
- 2 2.0 = 100/50
- 3 2.0 = 100/50
- 4 2.0 = 100/50
- 5 2.0 = 100/50
- 6 1.8 = 72.5/40

**Step 2: Add each L : D Average**

- 1.2
- 2.0
- 2.0
- 2.0
- 2.0
- 2.0
- + 1.8
- 11.0 = L : D ratio**

**Too long with too many components!**



**NOTE:** Length-to-diameter ratio is calculated using body diameters not cutting diameter.

**NOTE:** Do not exceed recommended 5xD length-to-diameter ratio when using Alu-Line (Aluminum) components or exceed four total components (including shank).

**Step 1: Find L : D by component**

- 1 1.2 = 62/50
- 2 2.0 = 100/50
- 3 1.8 = 87.5/50

**Step 2: Add each L : D average**

- 1.2
- 2.0
- + 1.8
- 5.0 = L : D ratio**

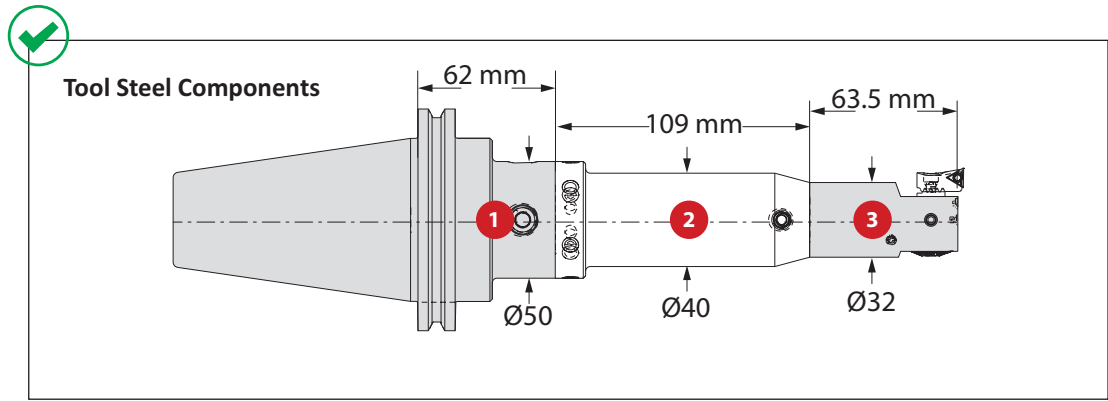
**WARNING** Tool failure can cause serious injury. To prevent:

- Do not exceed recommended 10xD length-to-diameter ratio or exceed four total components (including shank)
- When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
- When using tool steel components, do not exceed recommended 6xD length-to-diameter ratio
- When using a heavy metal components, do not exceed recommended 8xD length-to-diameter ratio
- When using a carbide shank, do not exceed recommended 9xD length-to-diameter ratio
- When using a NOVI<sup>TECH</sup> module, do not exceed recommended 10xD length-to-diameter ratio

Factory technical assistance is available for your specific applications through our Application Engineering department. email: [info@wohlhaupter.com](mailto:info@wohlhaupter.com)

**Guidelines for not Exceeding Recommended Length-to-Diameter Ratio**

To calculate, see graphics below:



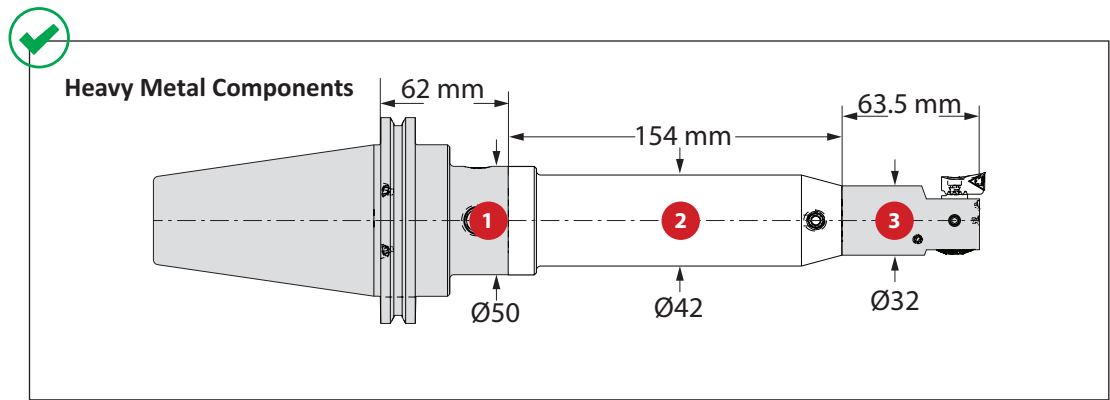
**NOTE:** Length-to-diameter ratio is calculated using body diameters not cutting diameter.  
**NOTE:** When using steel components, do not exceed recommended 6xD length-to-diameter ratio or exceed four total components (including shank).

**Step 1: Find L : D by component**

- 1 1.2 = 62/50
- 2 2.7 = 109/40
- 3 2.0 = 63.5/32

**Step 2: Add each L : D average**

1.2	→	1.2
2.7	→	2.7
2.0	→	+ 2.0
		<hr style="width: 50px; margin-left: 0;"/>
		5.9 = L : D ratio



**NOTE:** Length-to-diameter ratio is calculated using body diameters not cutting diameter.  
**NOTE:** When using a heavy metal component, do not exceed recommended 8xD length-to-diameter ratio or exceed four total components (including shank).

**Step 1: Find L : D by component**

- 1 1.2 = 62/50
- 2 3.6 = 154/42
- 3 2.0 = 63.5/32

**Step 2: Add each L : D average**

1.2	→	1.2
3.6	→	3.6
2.0	→	+ 2.0
		<hr style="width: 50px; margin-left: 0;"/>
		6.8 = L : D ratio

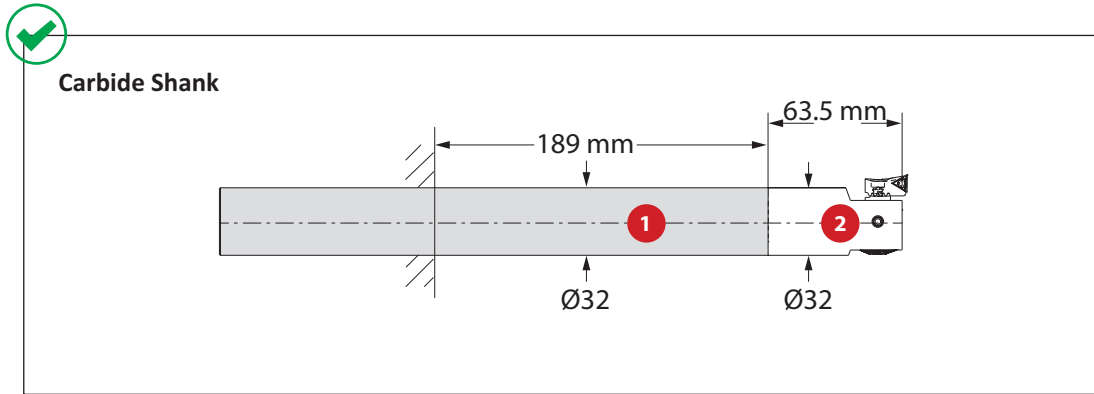
**⚠ WARNING** Tool failure can cause serious injury. To prevent:

- Do not exceed recommended 10xD length-to-diameter ratio or exceed four total components (including shank)
- When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
- When using tool steel components, do not exceed recommended 6xD length-to-diameter ratio
- When using a heavy metal components, do not exceed recommended 8xD length-to-diameter ratio
- When using a carbide shank, do not exceed recommended 9xD length-to-diameter ratio
- When using a NOVI<sup>TECH</sup> module, do not exceed recommended 10xD length-to-diameter ratio

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**Guidelines for not Exceeding Recommended Length-to-Diameter Ratio**

To calculate, see graphics below:



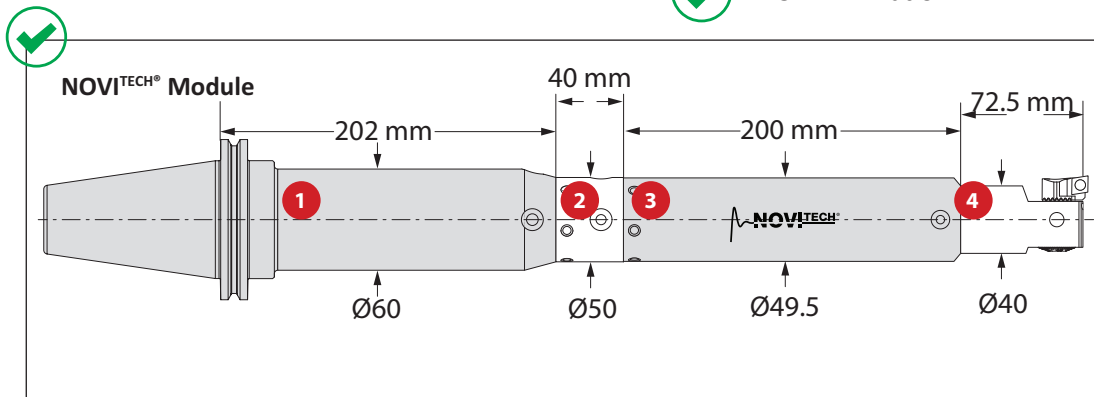
**NOTE:** Length-to-diameter ratio is calculated using body diameters not cutting diameter.  
**NOTE:** When using carbide shank components, do not exceed recommended 9xD length-to-diameter ratio or exceed four total components.

**Step 1: Find L : D by component**

- 1 8.1 = 189/32
- 2 2.0 = 63.5/32

**Step 2: Add each L : D average**

$$\begin{array}{r}
 5.9 \\
 + 2.0 \\
 \hline
 7.9 = L : D \text{ ratio}
 \end{array}$$



**NOTE:** Length-to-diameter ratio is calculated using body diameters not cutting diameter.  
**NOTE:** Do not exceed recommended 10xD length-to-diameter ratio when using NOVI<sup>TECH</sup> intermediate modules or exceed four total components (including shank).  
**NOTE:** The NOVI<sup>TECH</sup> intermediate module should always be assembled as close as possible to the cutting edge (i.e. the next component behind the boring head).

**Step 1: Find L : D by component**

- 1 3.2 = 202/60
- 2 0.8 = 40/50
- 3 4.0 = 200/49.5
- 4 1.8 = 72.5/40

**Step 2: Add each L : D average**

$$\begin{array}{r}
 3.2 \\
 0.8 \\
 4.0 \\
 + 1.8 \\
 \hline
 9.8 = L : D \text{ ratio}
 \end{array}$$

Component	Length to Diameter Ratio
Alu-Line	5xD
Tool Steel	6xD
Heavy Metal	8xD
Carbide	9xD
NOVI <sup>TECH</sup> *	10xD

**⚠ WARNING Tool failure can cause serious injury. To prevent:**

- Do not exceed recommended 10xD length-to-diameter ratio or exceed four total components (including shank)
- When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
- When using tool steel components, do not exceed recommended 6xD length-to-diameter ratio
- When using a heavy metal components, do not exceed recommended 8xD length-to-diameter ratio
- When using a carbide shank, do not exceed recommended 9xD length-to-diameter ratio
- When using a NOVI<sup>TECH</sup> module, do not exceed recommended 10xD length-to-diameter ratio

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