The Formwork Experts.

Tie rod system Monotec
Framed formwork Framax Xlife

User Information
Instructions for assembly and use (Method statement)
Contents

4 Product description
5 Tie rod system Monotec
6 Fitting the nuts to the holding formwork
7 Adjusting the Monotec tie
8 Tying / stripping the Framax Xlife panels
9 Variant with Tie rod system 15.0 / 20.0
10 Closing off the form-tie point
12 Practical examples

16 Framax Xlife with Tie rod system Monotec
16 Length adjustment using closures
18 90 degree corners
20 Wall junctions
21 Shaft formwork

23 Component overview
**Product description**

**Fast tying with the Monotec tying system**

- formwork can be tied by just 1 man working from one side only
- no time-consuming fitting of jacket tubes
- exact pre-setting of the desired wall thickness on the Monotec tie
- form-tie nut integrated in the connector component
- enhances your Framax Xlife framed formwork with no need to invest in a new formwork system
- particularly ergonomic where space is tight, as the tie can be installed from the accessible side
- long lifespan, as the tie is operated using a ratchet, minimising wear-and-tear on the equipment
- the Monotec ties are easy to unscrew, so the formwork can be stripped out faster

---

**NOTICE**

This document is only valid in conjunction with the following underlying document(s): 'Framed formwork Framax Xlife' User Information booklet.
**Tie rod system Monotec**

- can be operated from one side
- for wall thicknesses from 15 cm to 35 cm
- no expendable jacket tubes

<table>
<thead>
<tr>
<th>Wall thicknesses in 1 cm increments</th>
<th>Monotec tie 15.0 B 15-25cm Framax</th>
<th>Monotec tie 15.0 B 25-35cm Framax</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 to 25 cm</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>25 to 35 cm</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

If the tie is placed through a universal waling, this reduces the max. wall thickness by 5 cm.

Choosing the right tie-length

<table>
<thead>
<tr>
<th>Wall thickness</th>
<th>Monotec tie 15.0 B 15-25cm</th>
<th>25-35cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 - 20 cm</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>21 - 24 cm</td>
<td>✓</td>
<td>✓ 1)</td>
</tr>
<tr>
<td>25 cm</td>
<td>✓</td>
<td>✓ 2)</td>
</tr>
<tr>
<td>26 - 30 cm</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>31 - 35 cm</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

1) Only on closures with universal walings.

2) Closure with universal waling not possible.

Inclined and height-mismatched positioning

Thanks to their large, conical form-tie sleeves, the panels can be inclined on one or both sides, and/or height-mismatched.

Monotec tie 15.0 B:
Permitted capacity, allowing a 1.6 : 1 factor of safety against failure: 120 kN
Permitted capacity to DIN 18216: 90 kN

NOTICE

Do not bend or drop Monotec ties!

WARNING

Sensitive rod steel!

- Never weld or heat tie rods.
- Tie rods that are damaged or have been weakened by corrosion or wear must be withdrawn from use.

Space required (dimension ‘a’)

<table>
<thead>
<tr>
<th>Monotec combination nut 15.0 Framax</th>
<th>Framax combination nut 20.0</th>
<th>Monotec form-tie nut 15.0 Framax</th>
<th>Framax form-tie nut 20.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.0 cm</td>
<td>10.5 cm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Conical on 1 side

<table>
<thead>
<tr>
<th>Conical on both sides</th>
<th>Height mismatch</th>
</tr>
</thead>
<tbody>
<tr>
<td>max. 4°</td>
<td>max. 1.0 cm per 15 cm of wall thickness</td>
</tr>
</tbody>
</table>

Lateral mismatch

max. 0.5 cm per 15 cm of wall thickness

Note:

Secure all inclined panels against uplift. Inclined and mismatched positioning are not possible with panels that have been placed on their sides.
Fitting the nuts to the holding formwork

### Combination nut

The combination nut is used on the joint between Framax Xlife panels.

The combination nut is used instead of the Framax quick acting clamp RU as the panel connector.

➤ Position the combination nut on the form-tie hole of the Framax Xlife panel, and tighten it.

### Form-tie nut

The form-tie nut is used for tying extra-large panels.

➤ Position the form-tie nut on the form-tie hole of the extra-large panel and fix it to the panel with a safety pin.

➤ Secure the safety pin with a spring pin.

---

**NOTICE**

Ties in the corners of panels (i.e. corner ties) must always be made using tie rods and super plates.

---

A Safety pin

B Spring pin
Adjusting the Monotec tie

Adapting to the wall thickness
➤ Pull out the spring cotter.
➤ Position the adjusting ring.
➤ Fix the adjusting ring back on again with the spring cotter.
➤ Screw the wing-nut tightly back onto the adjusting ring.

Wall thicknesses without universal waling

<table>
<thead>
<tr>
<th>Position of adjusting ring and spring cotter</th>
<th>Monotec tie 15.0 B 15-25cm</th>
<th>25-35cm</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="9764-410-01" alt="Image" /></td>
<td>25 cm</td>
<td>35 cm</td>
</tr>
<tr>
<td><img src="9764-410-03" alt="Image" /></td>
<td>24 cm</td>
<td>34 cm</td>
</tr>
<tr>
<td><img src="9764-410-04" alt="Image" /></td>
<td>23 cm</td>
<td>33 cm</td>
</tr>
<tr>
<td><img src="9764-410-02" alt="Image" /></td>
<td>etc.</td>
<td>etc.</td>
</tr>
<tr>
<td><img src="9764-410-06" alt="Image" /></td>
<td>15 cm</td>
<td>25 cm</td>
</tr>
</tbody>
</table>

Even-numbered wall thicknesses (24 cm, 22 cm, 20 cm, etc.) Spring cotter is in the adjusting ring

Odd-numbered wall thicknesses (25 cm, 23 cm, 21 cm, etc.) Spring cotter is outside the adjusting ring

Wall thicknesses with universal waling

<table>
<thead>
<tr>
<th>Position of adjusting ring and spring cotter</th>
<th>Monotec tie 15.0 B 15-25cm</th>
<th>25-35cm</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="9764-410-07" alt="Image" /></td>
<td>20 cm</td>
<td>30 cm</td>
</tr>
<tr>
<td><img src="9764-410-09" alt="Image" /></td>
<td>19 cm</td>
<td>29 cm</td>
</tr>
<tr>
<td><img src="9764-410-10" alt="Image" /></td>
<td>18 cm</td>
<td>28 cm</td>
</tr>
<tr>
<td><img src="9764-410-08" alt="Image" /></td>
<td>etc.</td>
<td>etc.</td>
</tr>
<tr>
<td><img src="9764-410-11" alt="Image" /></td>
<td>15 cm</td>
<td>15 cm</td>
</tr>
</tbody>
</table>

Even-numbered wall thicknesses (24 cm, 22 cm, 20 cm, etc.) Spring cotter is in the adjusting ring

Odd-numbered wall thicknesses (25 cm, 23 cm, 21 cm, etc.) Spring cotter is outside the adjusting ring
Tying / stripping the Framax Xlife panels

Holding formwork:
➤ Install a Monotec combination nut 15.0 or a Monotec form-tie nut 15.0.
➤ Press Monotec sealing plugs Framax into the tie-holes that will be needed on the Framax Xlife panels.

Opposing formwork:
➤ Set up the opposing formwork and close with Monotec ties (by screwing them in with the Monotec ratchet until they are fully engaged).

Pressure bracing at top
The Monotec ties do not need any jacket tubes. For this reason, the top of the formwork must be braced apart with a field-built pressure brace (wooden spacer).

Design variants

Squared timber: min. 4 x 4 cm
Distance between pressure braces: max. 2.70 m

Removing the Monotec ties
➤ Unscrew the Monotec ties using the Monotec ratchet.

Cleaning
➤ When cleaning the formwork, always remove any dried concrete residues from the form-tie sleeves of the opposing formwork.

Spraying the conical parts of the form ties with release agent makes it easier to detach them from the concrete.
Minor adjustments to the wall thickness (e.g. to pull the formwork tight at wall junctions, box-outs etc.) are possible by tightening the super plate on the Monotec tie.

Loosening the form ties sooner rather than later after pouring the concrete makes them easier to remove at a later time.
Variant with Tie rod system 15.0 / 20.0

The Doka tie rod system 15.0

Both the combination nut and the form-tie nut have an integrated stopper plate for the tie rod.

Tie rod 15.0mm:
Permitted capacity, allowing a 1.6 : 1 factor of safety against failure: 120 kN
Permitted capacity to DIN 18216: 90 kN

The Doka tie rod system 20.0

For high formwork pressures of up to 80 kN/m², use the Tie rod system 20.0.

Both the combination nut and the form-tie nut have an integrated stopper plate for the tie rod.

Tie rod 20.0mm:
Permitted capacity, allowing a 1.6 : 1 factor of safety against failure: 220 kN
Permitted capacity to DIN 18216: 150 kN
Closing off the form-tie point

Monotec plug

- fire-resistant
- for tie-holes of diam. 20 to 23 mm

Fitted flush with wall (shadow gap)

➤ Press a Monotec plug into the tie-hole, by hand (using a piece of wood makes it easier to fit the plug flush with the wall).

Fitted deeper in tie-hole (filled and smoothed)

➤ Press the Monotec plug approx. 10 mm into the tie-hole, by hand.
➤ Trowel off the tie hole with mortar.

Water-impermeable form-tie point

➤ Press a Monotec plug into the tie-hole, flush with the wall.
➤ Use the backfilling syringe to inject the form-tie hole with sufficient moulding mortar that this is at least 5 cm long when compressed.

Using a Tie rod 15.0mm plus Super plate 15.0 makes it easier to fit the second plug.
To prevent the super plate from turning, fix it to the tie rod using adhesive tape (E).

➤ Using the tie rod, press a second Monotec plug into the tie-hole and compress the moulding mortar with it.

b ... M-Bed moulding mortar, min. 5 cm
x ... when there is a gap between the concrete and the super plate, the moulding mortar has been compressed to a length of min. 5 cm
Combi-plug 22 and Monotec combi-plug 20

- water-impermeable

**Note:**
No mortar is needed for installing Combi plugs 22 or Monotec combi-plugs 20.

Using a Tie rod 15.0mm plus Super plate 15.0 makes it easier to fit the plugs flush with the wall.
To prevent the super plate from turning, fix it to the tie rod using adhesive tape (E).  

Fitted flush with wall (shadow gap)

➤ Moisten a Monotec combi-plug 20 with water and push it into the form-tie hole with the tie rod.

➤ Push in the combi-plug by hand as far as the first sealing lip, and hammer it into the form-tie hole with a rubber mallet until it is flush with the wall.
Practical examples

**Framax Xlife panel 2.70m**

Formwork height: 270 cm

Formwork height: 405 cm

**Framax Xlife universal panel 2.70m**

On universal panels, the top combination nut must be positioned ‘upside-down’ (i.e. turned 180°).
Framax Xlife panel 2.40x2.70m

Formwork height: 270 cm

Formwork height: 405 cm

Formwork height: 540 cm
Ties in the corners of panels (i.e. corner ties) must always be made using tie rods and super plates.

Ties at the edges of panels must always be made using tie rods and super plates.
Framax Xlife with Tie rod system Monotec

Length adjustment using closures

Framax Xlife with Tie rod system Monotec

Closed: 3 - 15 cm

Monotec joint plate 0.75m Framax:
Permitted moment: 5.2 kNm

Tie through frame profile

Closed: 0 - 3 cm

Closures: 3 - 15 cm

Monotec joint plate 0.75m Framax
Framax universal waling
Framax wedge clamp
Monotec tie 15.0 B
Framax Xlife panel (max. width 60cm)
Framax Xlife panel

Closures: 17 - 30 cm

Monotec joint plate 0.75m Framax
Framax universal waling
Framax wedge clamp
Monotec tie 15.0 B
Framax Xlife panel

A Fitting timber
B Framax multi function clamp
C Framax universal waling
D Framax wedge clamp
E Monotec joint plate 0.75m Framax
F Monotec tie 15.0 B
G Framax Xlife panel (max. width 60cm)
H Framax Xlife panel

A Framax moulded timber
B Squared timber
C Formwork sheet
D Framax universal waling
E Framax wedge clamp
F Monotec combination nut 15.0 Framax
G Framax quick acting clamp RU
H Monotec tie 15.0 B
I Framax Xlife panel
Ties through fitting timber

Hole in the fitting timber for Monotec joint plate:

- a ... diam. 21 mm
- b ... diam. 32 mm
- c ... min. 50 mm

Closures: 3 - 6 cm

Closures: 6 - 15 cm

a ... max. 30 cm (Monotec tie passes through universal waling)
90 degree corners

Note:
For details on extra inter-panel connections near outside corners (for increased tensile loads), see the 'Framed formwork Framax Xlife' User Information booklet.

Ties operated on the outside formwork only

Closure on inside

Example:

a ... 15 cm to 35 cm
b ... 15 cm to 30 cm (Monotec tie passes through universal waling)

A Framax Xlife universal panel
B Framax Xlife inside corner
C Framax Xlife panel 0.45m
D Fitting timber
E Framax universal fixing bolt + Super plate 15.0
F Framax quick acting clamp RU
G Framax multi function clamp
H Monotec combination nut 15.0 Framax
I Framax universal waling
J Framax wedge clamp
K Monotec tie 15.0 B
Ties operated on both outside and inside formwork

Closure on inside

Example:

Example: T-junction

Closures on inside and outside

Example:
Wall junctions

Right-angled connections

| A | Framax Xlife panel |
| B | Squared timber (min. 5 cm up to max. 20 cm) |
| C | Framax universal waling |
| D | Framax wedge clamp |
| E | Monotec joint plate 0.75m Framax |
| F | Monotec tie 15.0 B |
| G | In-place timber brace |

Corner connections

| A | Framax Xlife panel |
| B | Squared timber (min. 5 cm up to max. 20 cm) |
| C | Framax Xlife panel 0.30m |
| D | Framax universal waling |
| E | Framax wedge clamp |
| F | Monotec combination nut 15.0 Framax |
| G | Monotec tie 15.0 B |
| H | In-place timber brace |

In-line connections

| A | Framax Xlife panel 2.40x2.70m |
| B | Monotec form-tie nut 15.0 Framax |
| C | Monotec tie 15.0 B |

| A | Framax Xlife panel |
| B | Squared timber 6 cm |
| C | Monotec combination nut 15.0 Framax |
| D | Framax quick acting clamp RU |
| E | Monotec tie 15.0 B |
Shaft formwork

Closures beside the stripping corner

Inside closure, on one side

Inside closure, on both sides

A Framax stripping corner I
B Fitting-timber
C Framax multi function clamp
D Monotec combination nut 15.0 Framax
E Monotec joint plate 0.75m Framax
F Monotec tie 15.0 B
### Tie rod system Monotec

<table>
<thead>
<tr>
<th>Article n°</th>
<th>kg</th>
<th>Description</th>
<th>Article n°</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monotec tie 15.0 B 15-25cm Framax</td>
<td>3.9</td>
<td>Monotec-Anker 15,0 Framax Width: 27 cm</td>
<td>588930500</td>
</tr>
<tr>
<td>Monotec tie 15.0 B 25-35cm Framax</td>
<td>4.1</td>
<td>Monotec-Anker 15,0 Framax Width: 19 cm</td>
<td>588931500</td>
</tr>
<tr>
<td>Monotec tie 15.0 15-25cm Framax</td>
<td>3.9</td>
<td>Galvanised</td>
<td>588930000</td>
</tr>
<tr>
<td>Monotec tie 15.0 25-35cm Framax</td>
<td>4.2</td>
<td>Galvanised</td>
<td>588931000</td>
</tr>
<tr>
<td>Monotec-Anker 15,0 Framax</td>
<td></td>
<td>Galvanised Width: 27 cm</td>
<td></td>
</tr>
<tr>
<td>Monotec-Anker 15,0 Framax</td>
<td></td>
<td>Galvanised Width: 19 cm</td>
<td></td>
</tr>
<tr>
<td>Monotec combination nut 15.0 Framax</td>
<td>5.2</td>
<td>Framax-Kombimutter 20,0 Galvanised Width: 27 cm</td>
<td>588681000</td>
</tr>
<tr>
<td>Monotec form-tie nut 15.0 Framax</td>
<td>2.7</td>
<td>Framax-Ankermutter 20,0 Galvanised Width: 19 cm</td>
<td>588684000</td>
</tr>
<tr>
<td>Monotec ratchet 3/4” SW17</td>
<td>1.6</td>
<td>Framax-Knarre 3/4” SW17 Galvanised Width: 27 cm</td>
<td>588933000</td>
</tr>
<tr>
<td>Monotec sealing plug Framax</td>
<td>0.005</td>
<td>Framax-Dichtstopfen Framax Yellow Diameter: 2.9 cm</td>
<td>588932000</td>
</tr>
<tr>
<td>Monotec joint plate 0.75m Framax</td>
<td>9.9</td>
<td>Framax-Ausgleichsschiene 0.75m Framax Painted blue</td>
<td>588934000</td>
</tr>
<tr>
<td>Combi-plug 22</td>
<td>0.03</td>
<td>Kombistopfen 22 Grey Length: 5 cm</td>
<td>588928000</td>
</tr>
<tr>
<td>Monotec combi-plug 20</td>
<td>0.02</td>
<td>Monotec-Kombistopfen 20 Grey Length: 5 cm</td>
<td>588929000</td>
</tr>
</tbody>
</table>

### M-Bed moulding mortar

<table>
<thead>
<tr>
<th>Article n°</th>
<th>kg</th>
<th>Description</th>
<th>Article n°</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-Bed quelling mortar</td>
<td>25.0</td>
<td>M-Bed Quellvergussmörtel</td>
<td>588938000</td>
</tr>
</tbody>
</table>

### Backfilling syringe 600ml

<table>
<thead>
<tr>
<th>Article n°</th>
<th>kg</th>
<th>Description</th>
<th>Article n°</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backfilling syringe 600ml</td>
<td>0.98</td>
<td>Verfüllspitze 600ml</td>
<td>588939500</td>
</tr>
</tbody>
</table>

### Framax combination nut 20.0

<table>
<thead>
<tr>
<th>Article n°</th>
<th>kg</th>
<th>Description</th>
<th>Article n°</th>
</tr>
</thead>
<tbody>
<tr>
<td>Framax combination nut 20.0</td>
<td>6.1</td>
<td>Framax-Kombimutter 20,0 Galvanised Width: 27 cm</td>
<td>588683000</td>
</tr>
</tbody>
</table>

### Framax form-tie nut 20.0

<table>
<thead>
<tr>
<th>Article n°</th>
<th>kg</th>
<th>Description</th>
<th>Article n°</th>
</tr>
</thead>
<tbody>
<tr>
<td>Framax form-tie nut 20.0</td>
<td>3.6</td>
<td>Framax-Ankermutter 20,0 Galvanised Width: 19 cm</td>
<td>588687000</td>
</tr>
</tbody>
</table>
Near to you, worldwide

Doka is one of the world leaders in developing, manufacturing and distributing formwork technology for use in all fields of the construction sector. With more than 160 sales and logistics facilities in over 70 countries, the Doka Group has a highly efficient distribution network which ensures that equipment and technical support are provided swiftly and professionally. An enterprise forming part of the Umdasch Group, the Doka Group employs a worldwide workforce of more than 6000.

www.doka.com/framax-xlife