

FRANK | formwork accessories and trennfit



technologies for the construction industry





Max Frank GmbH & Co. KG | Technologies for the construction industry

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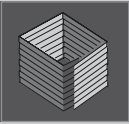

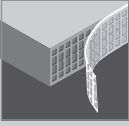
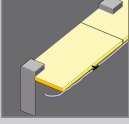
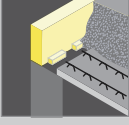




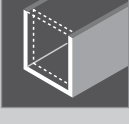
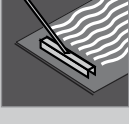
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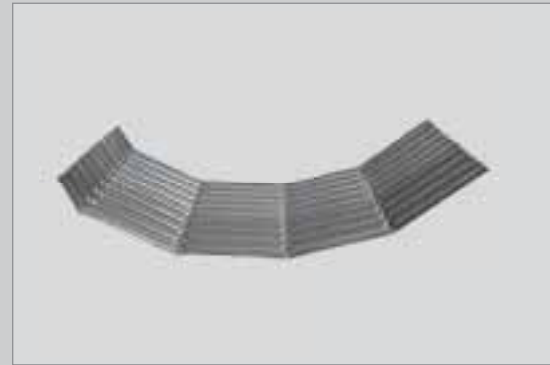
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Folding and right-angle versions of our metal box outs offer many advantages:

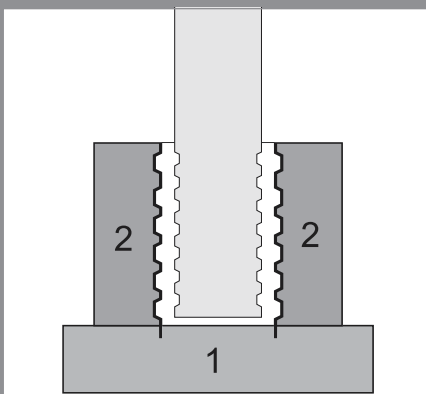
- Low freight costs
- Space saving storage
- Simple on-site handling
- Simple and fast assembly



Box out, pre installation –
Folding version



Box out, pre installation –
right-angle version
Large size



Installation:

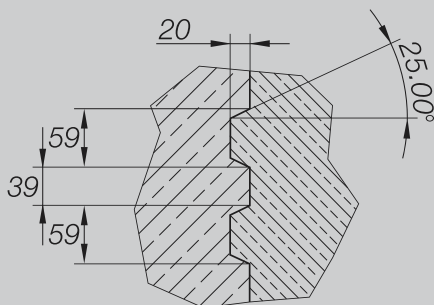
The box out foundation is completed in two concreting steps:

Step 1:

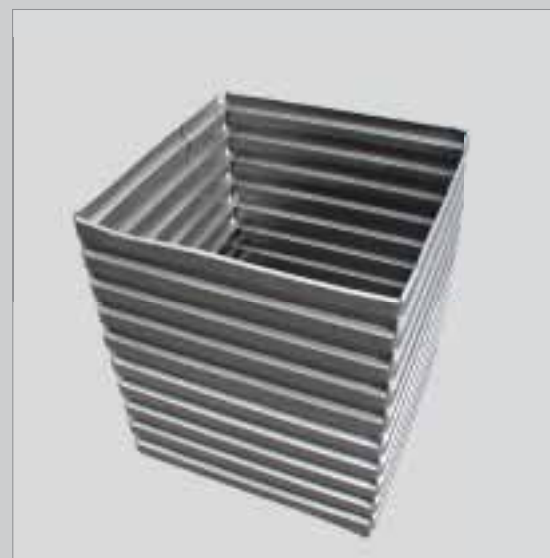
The box out is pressed approx. 2 cm into the freshly concreted foundation plate.

Step 2:

The box out shaft is concreted.



The box out profile corresponds to the “Dovetail” category as in DIN 1045



Box out shuttering installed

box out shutters | installation

Ordering:

- The internal dimensions are used as a reference when ordering
- Manufacturing tolerances ± 2 cm
- Box out heights available in 5 cm increments



Frank box out shutters are made from strong trapezoidal corrugated sheet metal. Therefore additional reinforcement is often not necessary.

Box out shutters with large dimensions (see Stiffening Table) must be stiffened and are identified with a special label (factory applied stiffening is available).

Installation:

Simple and fast installation with self-tapping screws in pre-drilled holes.



Stiffening table

The values in the table are reference values, which do not take account of site conditions and concreting speeds.

| Shuttering width [cm] | Shuttering height [cm] | | | | | | | | | | | | | | | | | |
|-----------------------|------------------------|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | |
| 45/45 | | | | | | | | | | | | | | | | | | |
| 50/50 | | | | | | | | | | | | | | | | | | |
| 55/55 | | | | | | | | | | | | | | | | | | |
| 60/60 | | | | | | | | | | | | | | | | | | |
| 65/65 | | | | | | | | | | | | | | | | | | |
| 70/70 | | | | | | | | | | | | | | | | | | |
| 75/75 | | | | | | | | | | | | | | | | | | |
| 80/80 | | | | | | | | | | | | | | | | | | |
| 85/85 | | | | | | | | | | | | | | | | | | |
| 90/90 | | | | | | | | | | | | | | | | | | |
| 95/95 | | | | | | | | | | | | | | | | | | |
| 100/100 | | | | | | | | | | | | | | | | | | |

□ Box out self-supporting

■ Box out stiffened on site

box out forms | for floor box outs

Box out forms for floor box outs – economical, efficient, value-for-money



Box out forms in various sizes
enable combinations that cater for
almost all box out sizes

- High quality, coated cardboard with dimensions clearly marked
- Very stable due to internal stiffening
- Integral cover prevents accidental filling with concrete
- Supplied in a standard 24 cm height
- Height can be adjusted by cutting on site
- Easily stripped by removing the cover with hand tools
- For large box outs we recommend our sheet metal box out shutters

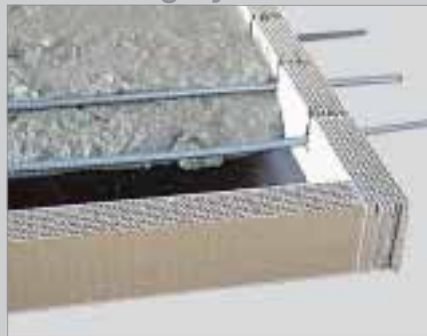
flexi shuttering | for individual formwork shapes

Flexi shuttering



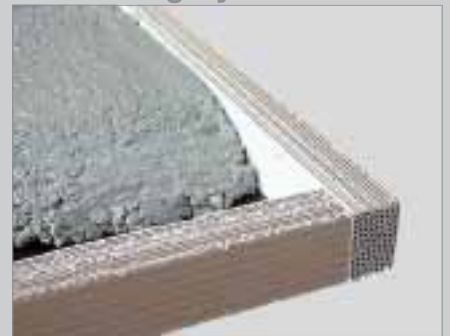
- Can be formed into almost any shape
- Simple shaping by hand without saws or other tools
- Can be easily formed on site
- Provides clean cut edge to shuttering
- No disposal problems - made from recyclable waste paper

Vertical shuttering system



- Particularly suitable for recesses and curved formwork
- For rebar continuity, simply push the bars into the flexi shuttering to the required position

Longitudinal shuttering system



- Particularly suitable for longer, straight formwork and linear recesses

joint profiles | for the transfer of shear forces at joints

- Provides concrete with the optimum structure for absorption of shear forces at construction joints between adjacent precast units, between components one of which is precast and the other cast in-situ and also been successive cast in-situ sections
- Replaces traditional trapezoidal strips
- Simple fixing using nails or screws
- Material consists of plastic which is easily removed from the concrete
- Can be easily cut to size on site
- Can be used repeatedly
- The joint profile satisfies the requirements of DIN 1045-1:2001-07 for the highest interlock category.

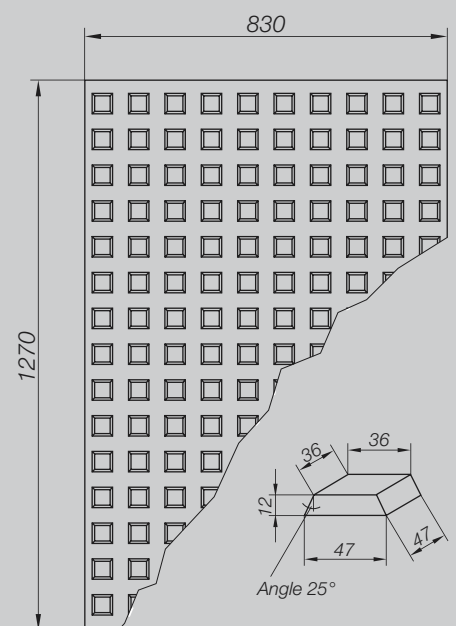
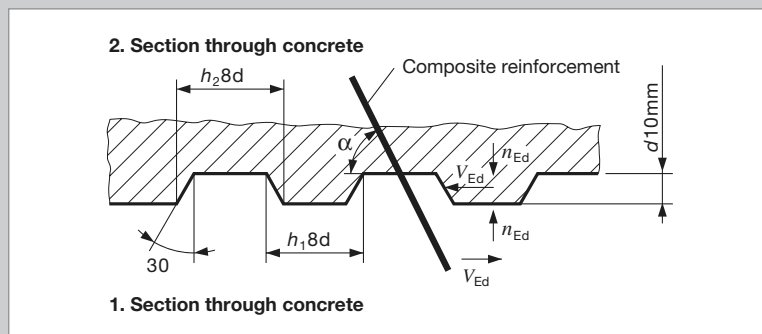


Rated values

for computed sustainable shear loading (kN/m²) at joints in standard concrete

| Compressive strength class standard concrete | Sustainable shear loading [kN/m ²] | Compressive strength class standard concrete | Sustainable shear loading [kN/m ²] |
|--|--|--|--|
| C12/15 | 213 | C35/45 | 306 |
| C16/20 | 232 | C40/50 | 320 |
| C20/25 | 254 | C45/55 | 333 |
| C25/30 | 274 | C50/60 | 345 |
| C30/37 | 291 | | |

Corrugation acc. to DIN 1045-1:2001-07. Section 10.3.6



frank void former | designed void formation

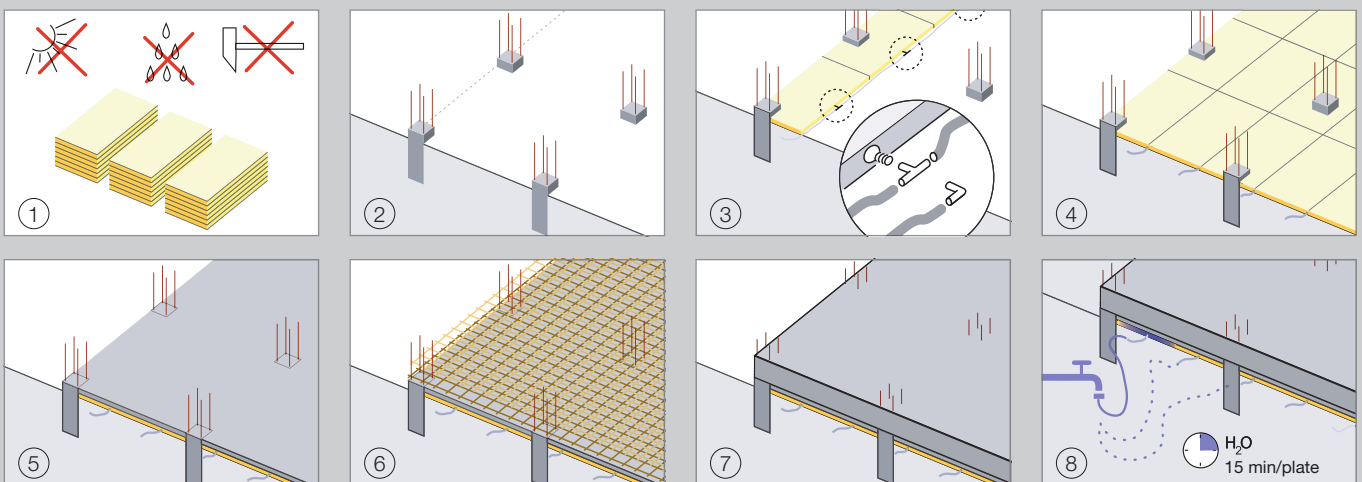
The Frank Void Former is used to create a designed void beneath any concrete element to separate it from the underlying substrate. Situations which may require the use of a void former include:

- Ensuring that all foundation and floor loadings are transferred to piles by separating floor slabs and pile cap beams from the substrate
- Where existing underground services, such as sewers, manholes, pipes, tunnels, shafts, etc., are situated directly under the floor slab and any imposed loadings on the substrate would place additional stress on them.
- As part of an acoustic and vibration uncoupling system between floor slab and substrate, used in conjunction with additional structural bearings
- In areas of unstable substrates where expansive soils can impose upward pressure upon the structure or when

groundwater levels rise after dewatering during construction causing swelling of clay soils

- Permanent separation of a structure in front of steel sheet pile preventing any transfer of loads
- As a separation layer between old and new foundations ensuring that there is no uncontrolled transmission of loads due to friction

Manufactured from corrugated cardboard (designed to withstand an imposed loading of 40 kN/m²) and shrink wrapped with a protective polyethylene sheath, the void former also has an integral irrigation system, which can connect individual void formers. Thus, each individual void former can be quickly connected together. After the concrete element has been constructed and achieved design strength, the void formers are injected with water for approximately 10 minutes. The corrugated cardboard then collapses leaving a designed void of known dimensions.



1. Prior to installation, protect from the effects of weather, direct sunlight and potential damage.
2. Bearing surfaces must be kept clean and free from surface water and impurities.
3. FRANK void formers must be laid without gaps. Connect them into a row with sections of hose, valves and connector fittings (supplied as accessories). A connecting hose should lead outwards from each row.
4. Install the FRANK void formers with an accurate fit around any localized obstructions. Trim with usual site tools. Carefully cut into and fold back the protective film, trim the void formers, fold the film back again and secure with FRANK special repair tape to achieve water tightness. Gaps/faults should be closed with PUR foam. It is recommended that the void former joints should be sealed off with repair tape (accessory).
5. Cover the plates with a minimum 5.0 cm layer of clean/protective concrete. Avoid damaging the film and the void former. FRANK void formers can withstand a maximum loading of 40 kN/m² in the as-built condition.
6. Lay the lower and upper reinforcing layer of the concrete element. Take account of the size of the resulting void in sizing the floor slab or foundation.
7. Place and compact the concrete element.
8. Carry out the watering of the FRANK void formers via the connection hoses.

Void formers on existing tunnel floor
Void forming layer for the new floor slab to be constructed on



Range of applications

Void formation under any type of concrete element:

- Preventing expansive soils imposing loads on underside of concrete elements
- Ensuring that all structural loads are transferred to pile foundations
- Preventing transference of floor slab loads to the subsoil overlying underground construction work
- As part of a sound/vibration decoupling system separating the concrete element from the subsoil

Separation layer/lost shuttering

- Lost, smooth shuttering in front of foundation walls
- Vertical separation layer between new and existing foundations



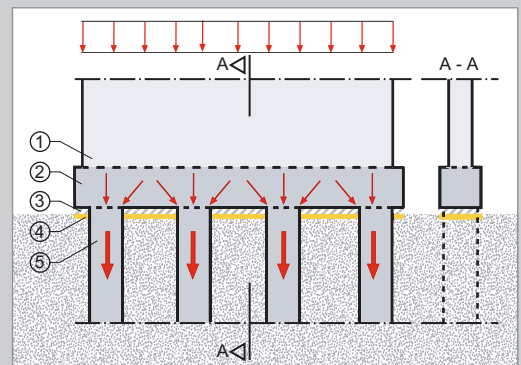
Bridge piles on a highway flyover



Pile head beam for central column



Void former (yellow) under pile head beam



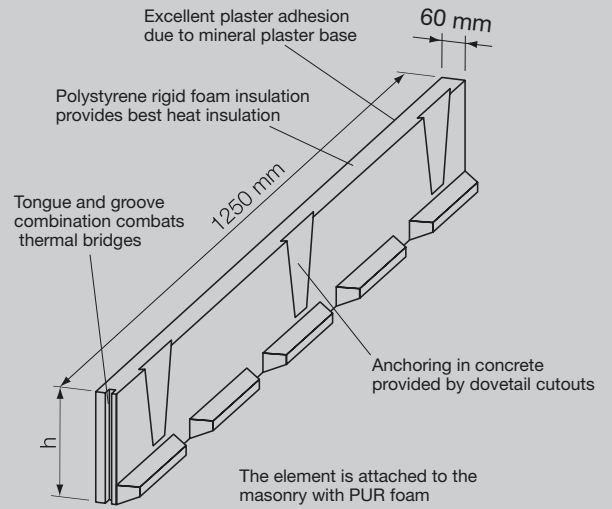
Schematic diagram: 1. Structure
2. Pile head beam
3. Clean/protective layer
4. **Void Former**
5. Piles

Loads from the structure are transferred to the piles via the pile head beams. Soil pressure build-up under the pile head beams is prevented by the void formed by the Frank void formers.

DIS | floor edge insulating forms

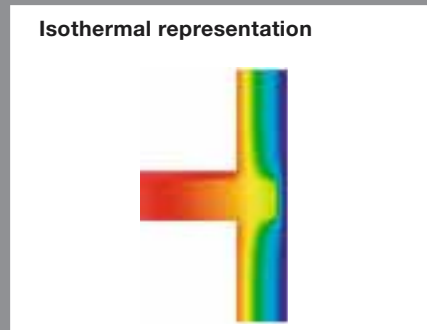
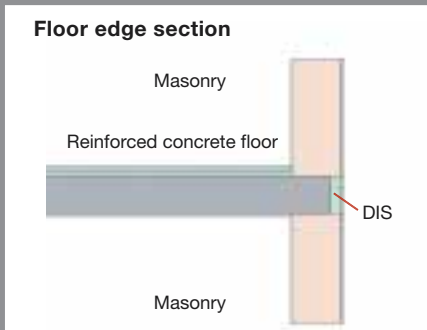
The advantages of DIS:

- Avoids the need for conventional shuttering
- Reduces time consuming site work
- Prevents thermal bridges



Heat losses due to thermal bridges

“Thermal bridges are zones in the outer structural components through which particularly high heat losses occur.” These heat losses can be minimised by using DIS floor edge insulating forms.



RIS | ring beam insulating forms



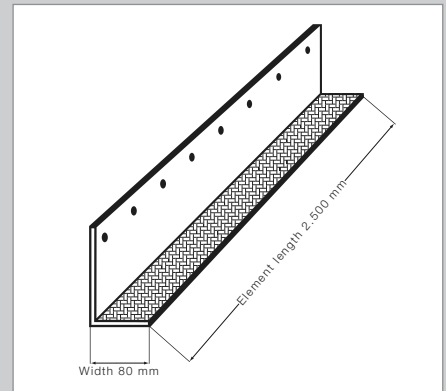
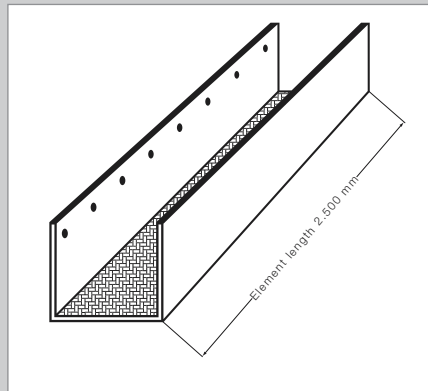
By combining a 60 mm thick element on the outside with a 30 mm thick element on the inside, this provides the formwork for ring beam manufacture.

The requisite stability is provided by reusable anchoring straps.

Lintel forms are made from cement bound particle boards. Their use on the construction site makes the shuttering and concreting of ring beams and lintels much faster and easier.



Formwork for lintel construction and floor edge forms made from highly pressure tight, cement bound particle board, with DIBt approval, are provided on the inside with an anchoring system to ensure a good bond with the site mixed concrete.

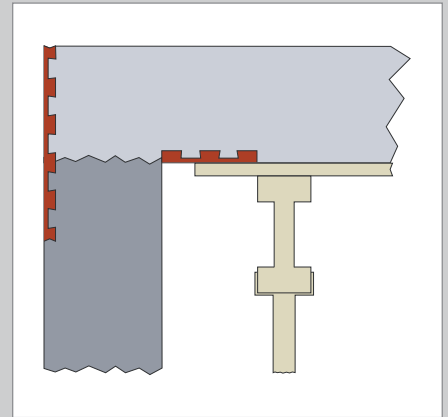
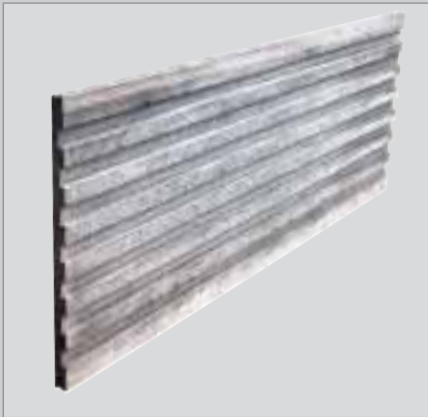


Material thicknesses:

Side panels 10 mm
 Base panel 14 mm
 Building material class: B1 – heavy
 Flammable (DIN4102-B1)

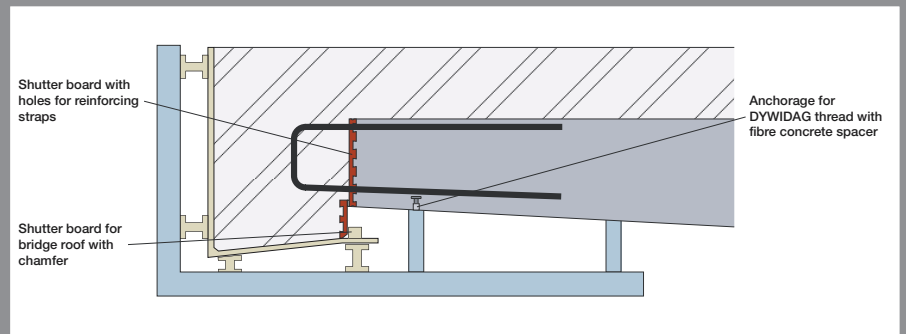
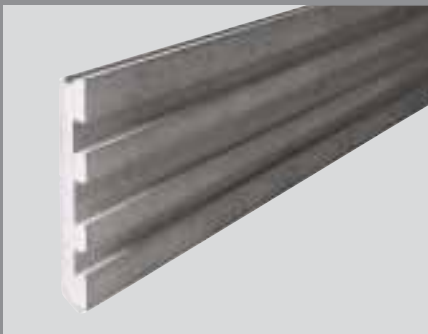
- From a height of 20 cm, secure the lintel with 5 reusable anchorage straps.
- Formwork for lintel construction can also be used for ring beam shuttering – in this case the base plate of the lintel formwork is merely set out at regular spacing intervals.
- Simply fit with 2-component PUR foam.
- Concreting can take place approx. 2 hours after installation.
- From a height of 20 cm back-secure floor edge form with binding wire to the rear anchors.

Shuttering boards



- Standard length: 1.20 m
 - No formwork dismantling work
 - Ideal adhesion with site-mixed concrete
 - Dimensionally stable
 - Impervious to water
 - Fire resistant
- Prevents escape of concrete laitance at unclean formwork joints
 - Holes for reinforcement and nails, cutouts and slots, can be quickly provided
- Shuttering boards in fibre concrete are used in concrete construction as floor edge forms and to cover joints in shuttering

Strip-off profiles with chamfer for bridge roofs



Fibre concrete joint sealing strips



- Concrete coloured – light grey
- Can be nailed – simple to fasten
- Chamfered
- For covering formwork joints
- Good bond with concrete
- Upper side slightly roughened

edging formwork

wall and ceiling edge shuttering for precast concrete parts

For use in precast work

Edging ready for use for window and door applications on triple walls

Optimum alignment when used for the edging in the manufacture of precast parts for balconies



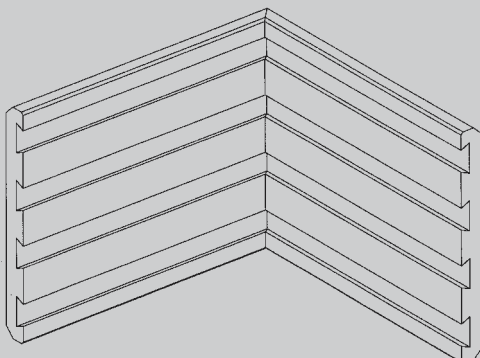
Internal application

Installation without drip profile provides a smooth under surface



External application

Installation with drip profile provides drip trap on the underside



Precast 90° corners – a clean and rational solution for prefabricated construction

For the secure adhesion of reinforcing rods and anchoring rods in concrete, masonry and rock.



■ **Jointing mortar case showing contents** – for simple handling on the construction site.



■ **Jointing mortar cartridge – VMK**
incl. 2 piece static mixer,
contents: 380 ml



■ **Jointing mortar cartridge – VMK-SF**
incl. 2 piece static mixer with
European DIBt approval in
combination with anchor rods,
contents: 280 ml

hammer cartridge | safe and quick anchoring of reinforcing steel

Low installation costs due to the fast, simple anchoring and no need for expensive special tools.

The glass cartridge is destroyed due to striking in the reinforcing rods. This activates the special adhesive, which then hardens quickly.



Cement bound panels with high strength

Application:

- Building panels for cladding structures
- Underlay strips for prefabricated installation
- Lost shuttering in bridge construction

Available:

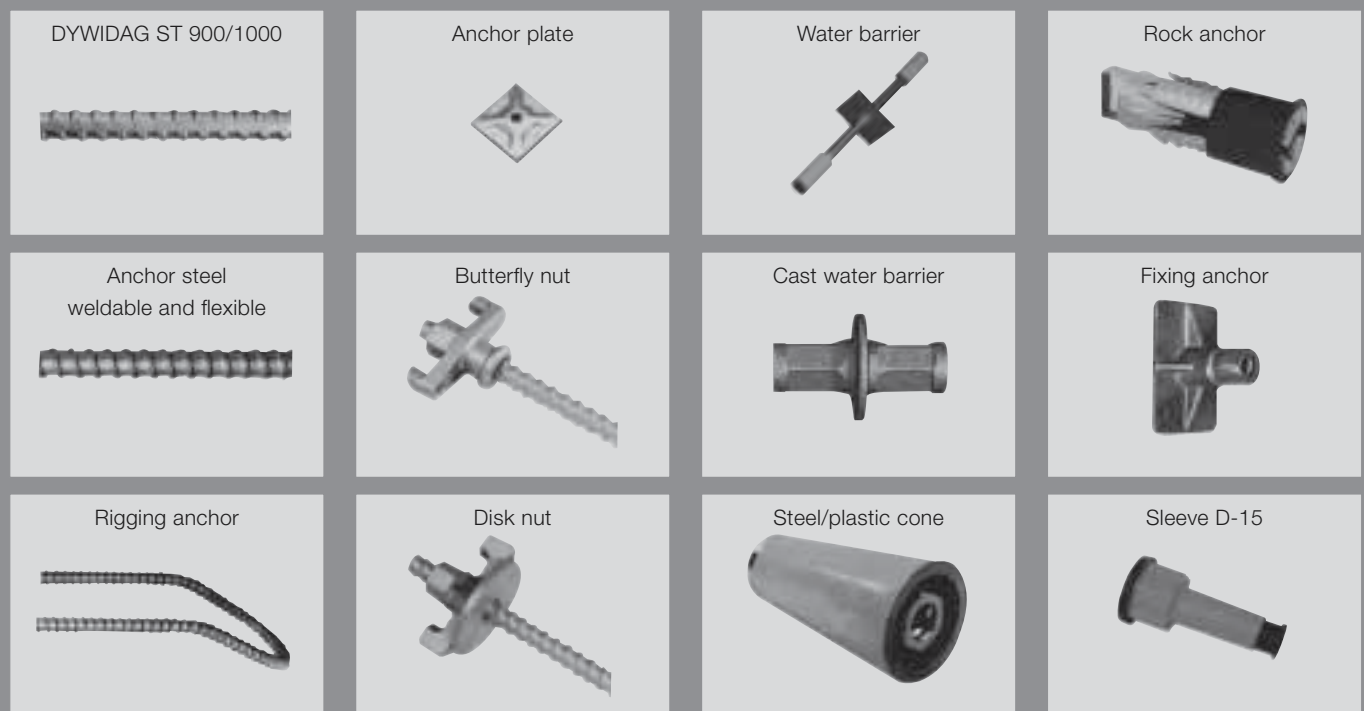
- As complete panels
- As cut sections
- As assembled box out bodies



FRANK | accessories for threaded steel components

DYWIDAG anchor steel and weldable and flexible anchor steel with extensive accessory range.

The following represents a small selection from our range:



Release agents for all applications and for all types of formwork.



Principle

- Works due to the chemical reaction of the release agent additives with the reactive components of the cement paste and physically through the formation of a water-repellent separating film between the cement paste and the formwork.
- Reduces shrinkage due a light dispersion of the air and water bubbles.

Result

- Reduces the adhesion of the concrete on the formwork by up to 95% (on steel forms)
- No plaster adhesion impairment
- Minimal work required in preparation and cleaning of the formwork
- No residues left on the concrete surface
- No deterioration of the concrete hardening process
- No erosion of the concrete surface

Characteristics

- Water repellent – is not washed away from the formwork by rain
- Low viscosity, i.e. very liquid
- Minimal odour
- Resistant to frost – can be stored outside without problem

Safety and protection of the environment

- No requirement for special identification in accordance with the hazardous substances regulations
- Non dangerous goods in accordance with UN, IMO, ADR/RID and IATA/ICAO
- Water contamination classification 1, i.e. mild contamination
- Flash point PM > 100°C
- Gls code: BTM 10
- Disposal code:
 - Trennfit concrete release agent: 130205
 - Trennfit B2: 130207
 - Empty steel container: 150104



Trennfit B2

Biodegradable release agent

Application

- For all concrete work
- For exposed concrete
- For applications where concrete is subsequently coated
- For concrete in groundwater preservation areas
- For polystyrene foam formwork
- For biodegradable uses



Trennfit Super

Physical/chemical release agent for the most demanding tasks

Application

- For all concrete structures
- For exposed and white concrete
- For applications where concrete is subsequently coated
- For use with heated and unheated formwork
- For conservation of steel formwork and machinery due to outstanding rust protection characteristics



Trennfit

Value-for-money release agent for all conventional types of concrete

Application

- For all general concrete structures except exposed and white concrete
- On plaster and stucco work





Trennfit Deactivator

Prevents and removes concrete deposits on machines and equipment

Application

- Preservation of equipment and formwork
- Prevents soiling on moving machine parts
- Prevents the hardening of fresh concrete
- Removal of concrete deposits on formwork and equipment
- Reduces cleaning costs for equipment and formwork



Special spray unit

Long life units for Trennfit

Application

- Specially developed and manufactured for the application of release agent
- Special nozzle to give a very fine spray
- More than double the spray coverage of normal spraying devices
- Unit manufactured from corrosion and chemical resistant stainless steel
- All spare parts are available from stock at short notice
- Release agent can be applied 3 to 4 times faster than other methods

Special Filler

Repair filler for formwork repair

Application

- Repair of damaged formwork surfaces
- Repair and smoothing of concrete surfaces
- Sealing of cracks prior to crack injection work
- As a glue for broken concrete edges



Collector tray

with drum holder

Application

- Prevents potential contamination of the ground and ground water
- Facilitates the decanting of the release agent into the spray unit



Special hand pump

for Trennfit

Application

- Prevents spillage and discharge of the release agent
- Aids tidiness and cleanliness on the construction site





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