

ITH Bolting Solutions for MP-TP Foundations

First experience with large diameter bolts such as M80 / M90 / M100

Mr. Colin Schroder | ITH Bolting Technology UK

Offshore Wind conference, Bristol UK, 10 May 2022

Foundation Ex 2022

Explore innovation. Exchange ideas. Expand minds.

ITH
Bolting Technology

What ITH and IHF deliver:




ITH Bolting Technology



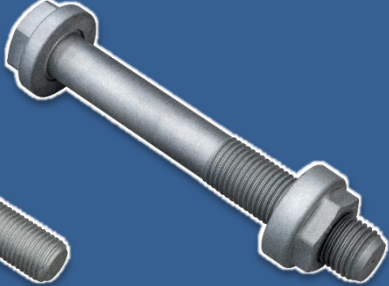
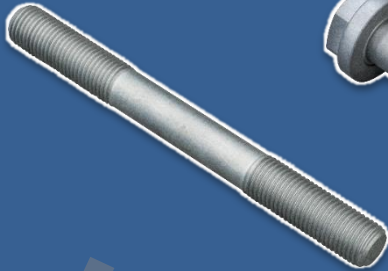
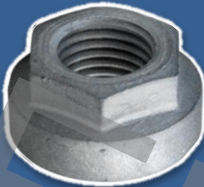
ITH BTC **ITH Nut Runners** **ITH Torque Wrenches**



Tools **Engineering** **Fasteners** **Service**



IHF Fastener Systems

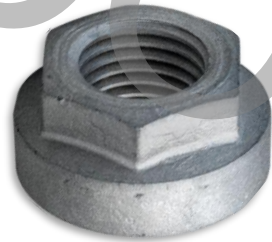


IHF Round Nut **IHF Stud Bolt** **IHF Stretch Bolt**

**IHF – Fastener System
Maintenance Free Bolting System**

Overview IHF Fasteners

IHF Round Nut



IHF Stud Bolt



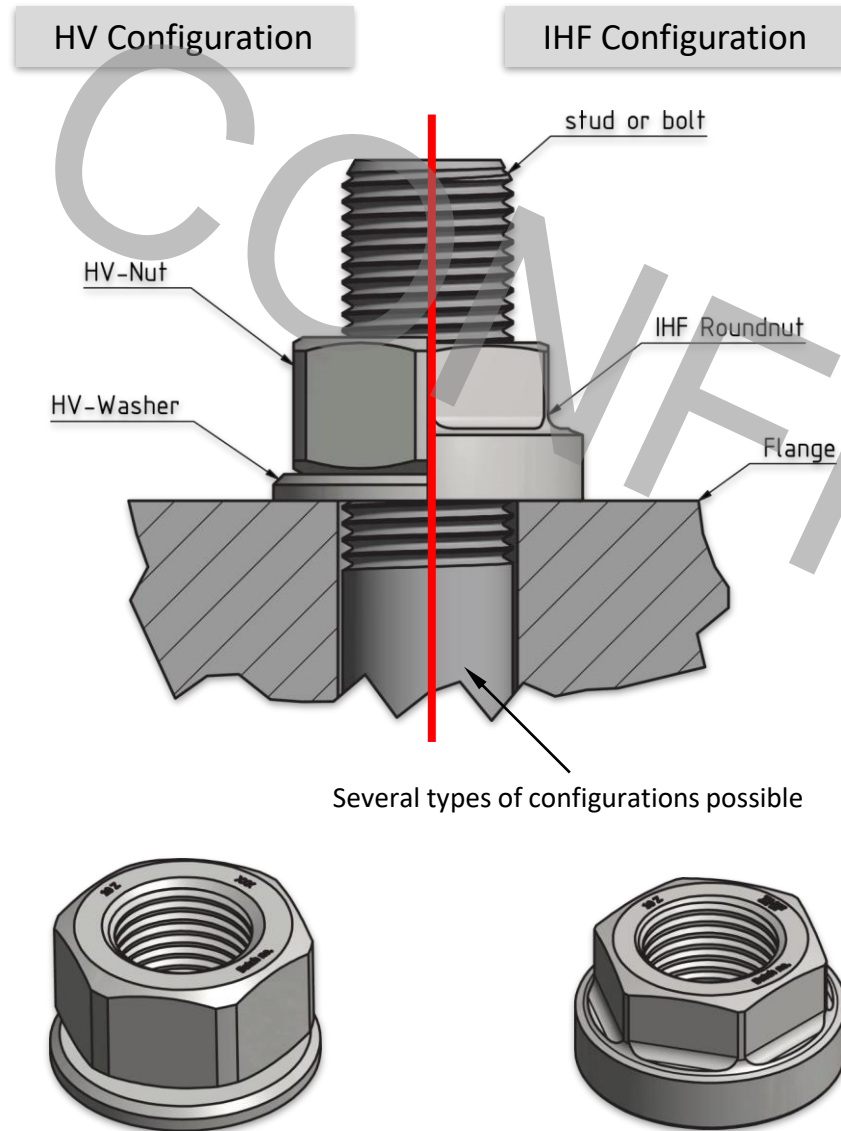
IHF Stretch Bolt



| Data | Note |
|-----------------------|---|
| Thread size | M20 to M100 (larger possible) |
| Mechanical properties | Quality class 10 |
| Surface coatings | <ul style="list-style-type: none"> Galvanizing methods Hot-dip galvanizing Zink-lamella PTFE Flour polymer coatings and more |

| Data | Note |
|-----------------------|---|
| Thread size | M20 to M100 (larger possible) |
| Mechanical properties | Quality class 10.9 |
| Surface coatings | <ul style="list-style-type: none"> Galvanizing methods Hot-dip galvanizing Zink-lamella PTFE Flour polymer coatings and more |

| Data | Note |
|-----------------------|---|
| Thread size | M20 to M72 |
| Mechanical properties | Quality class 10.9 |
| Surface coatings | <ul style="list-style-type: none"> Galvanizing methods Hot-dip galvanizing Zink-lamella PTFE Flour polymer coatings and more |



Proven concept:

1. IHF production, fasteners and the IHF Stretch System received **European Technical Approval** (ETA-13/0243) by the German Institute for Constructions **DIBt** („Deutsches Institut für Bautechnik).
2. Two IHF field projects on onshore wind turbines were **certified** to be „**Maintenance Free**“ by **TÜV** and **DNV GL**.
3. Successful existing **reference projects** in the North Sea for ITH Bolting Concept for **MP-TP connection**.



DIBt – AbZ (National Technical Approval) and ETA (European Technical Assessment)



Deutsches Institut für Bautechnik

Zulassungsstelle für Bauprodukte und Bauarten
Bautechnisches Prüfamt

Eine vom Bund und den Ländern gemeinsam getragene Anstalt des öffentlichen Rechts
Mitglied der EOTA, der UEAtc und der WFTAQ

Datum: 22.03.2021 Geschäftszeichen: I 88-1.14.4-82/20

Algemeine bauaufsichtliche Zulassung/ Allgemeine Bauartgenehmigung

Nummer:
Z-14.4-800

Antragsteller:
IHF-GmbH
Steinwiese 8
59872 Meschede

Geltungsdauer
vom: 22. März 2021
bis: 22. März 2026


Gegenstand dieses Bescheides:
IHF Schraubsysteme

Der oben genannte Regelungsgegenstand wird hiermit allgemein bauaufsichtlich zugelassen/genehmigt.
Dieser Bescheid umfasst elf Seiten und zwei Anlagen.
Der Gegenstand ist erstmals am 14. Dezember 2017 allgemein bauaufsichtlich zugelassen worden.




DIBt

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Deutsches Institut für Bautechnik



Member of
ETA
www.eta.eu

Approval body for construction products and types of construction
Bautechnisches Prüfamt
An institution established by the Federal and Lander Governments



Designated according to Article 29 of Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment)



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Current situation AbZ and ETA:
 Certification up to M80

For the future:
 Extension to M100

Excerpt ETA – Annex A

A.1.2 Suitability for preloading

The minimum clamping length ratio is 1 : 3 or 1 : 2.5 if the increased preload force according to Table 1, column 3 shall be applied and the designer has informed the executer in written form about this (e.g. on the shop drawing).

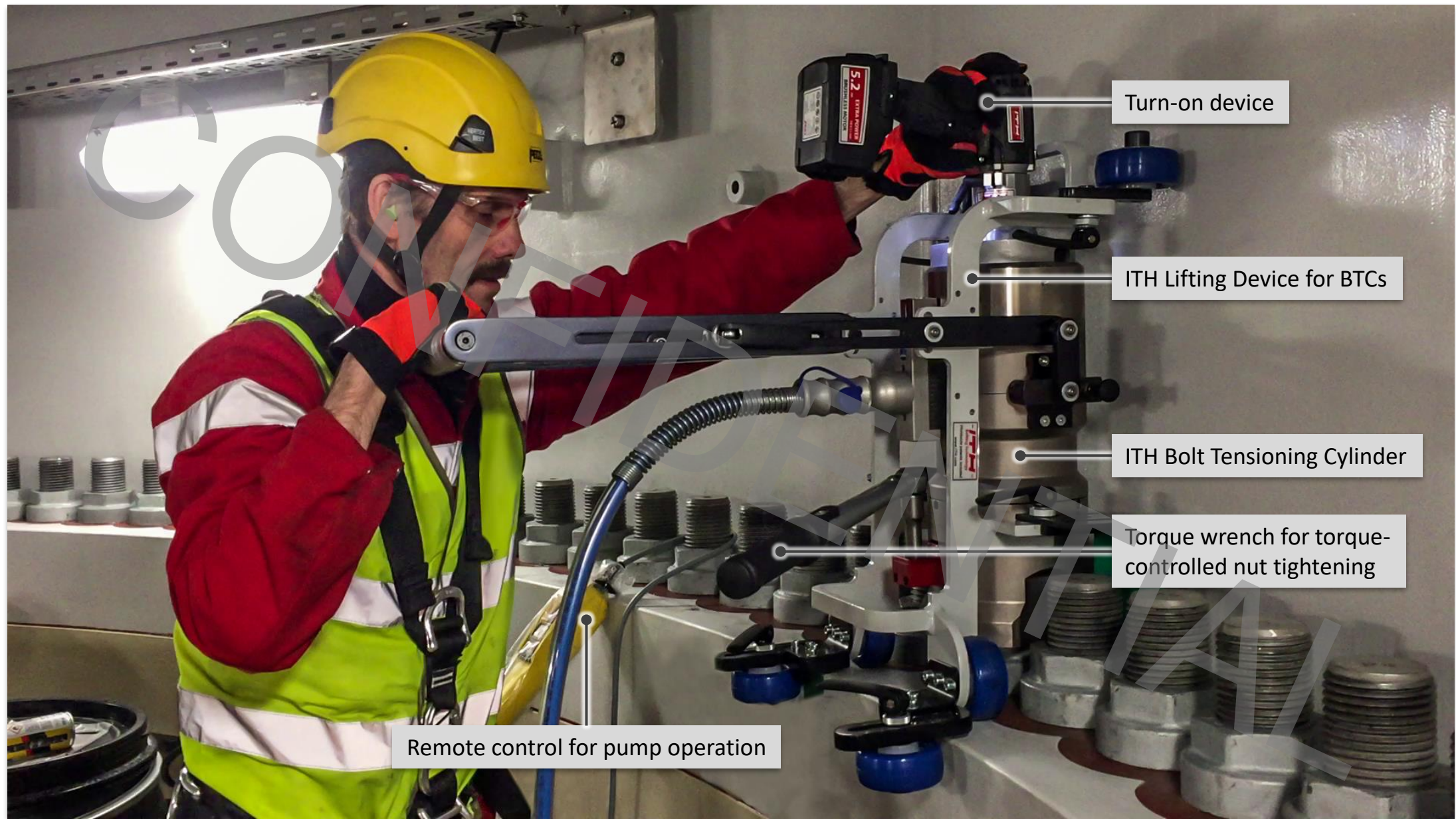
Table A.1 Preload force to be applied to achieve the design preload force

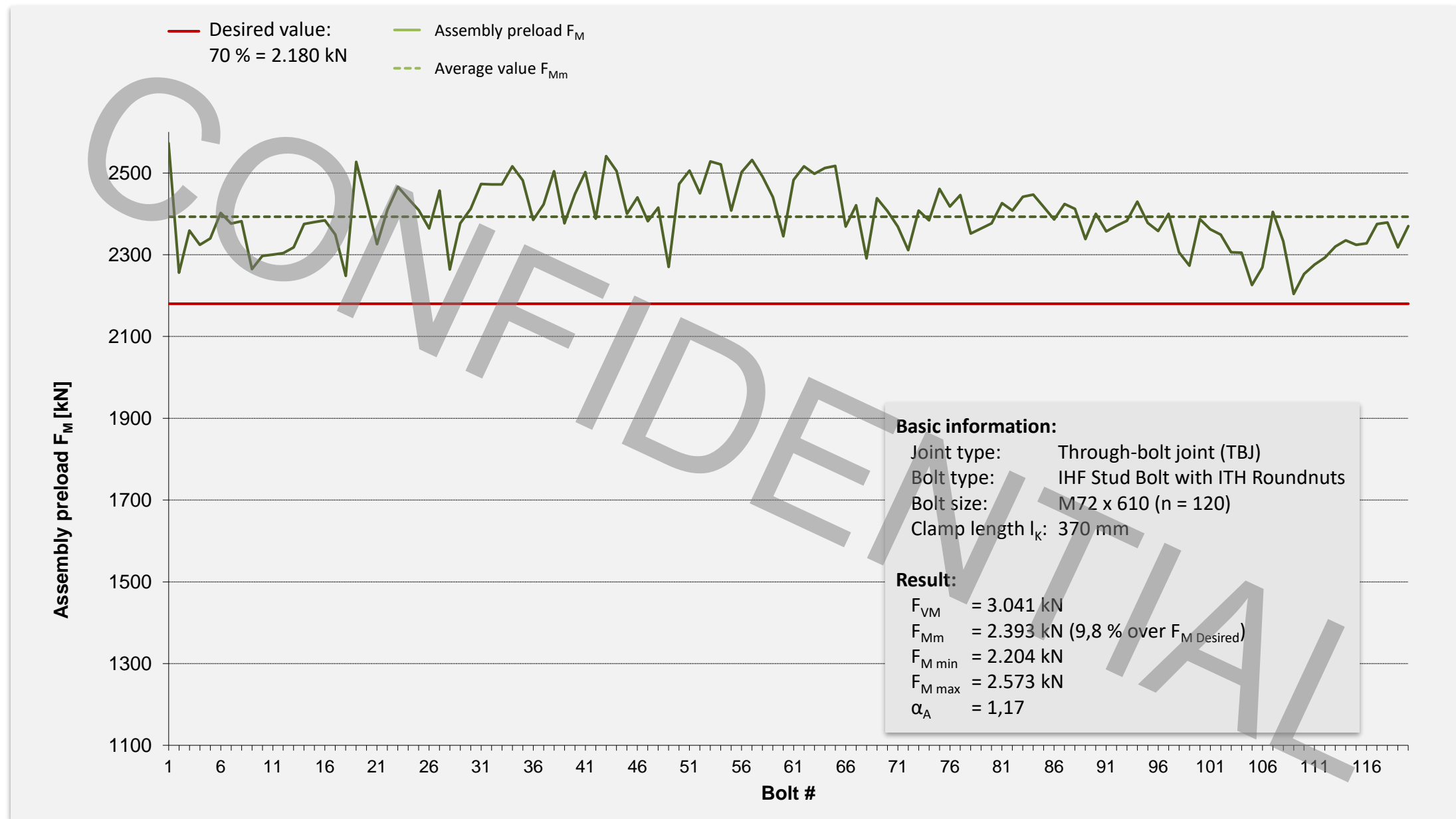
| 1 Nominal size | 2 Preload force to be applied | | 4 Design nominal preload force $F_{p,c,d}$ [kN] |
|-------------------|----------------------------------|------------------------------|--|
| | Normal preload force [kN] | Increased preload force [kN] | |
| M 27 | 410 | 420 | 320 |
| M 30 | 500 | 520 | 390 |
| M 36 | 730 | 750 | 570 |
| M 39 | 870 | 900 | 680 |
| M 42 | 1000 | 1030 | 790 |
| M 45 | 1170 | 1200 | 910 |
| M 48 | 1320 | 1360 | 1030 |
| M 56 | 1810 | 1870 | 1420 |
| M 64 | 2390 | 2470 | 1880 |
| M 72 | 3090 | 3190 | 2420 |
| M 80 | 3880 | 4010 | 3040 |

M90
 M100

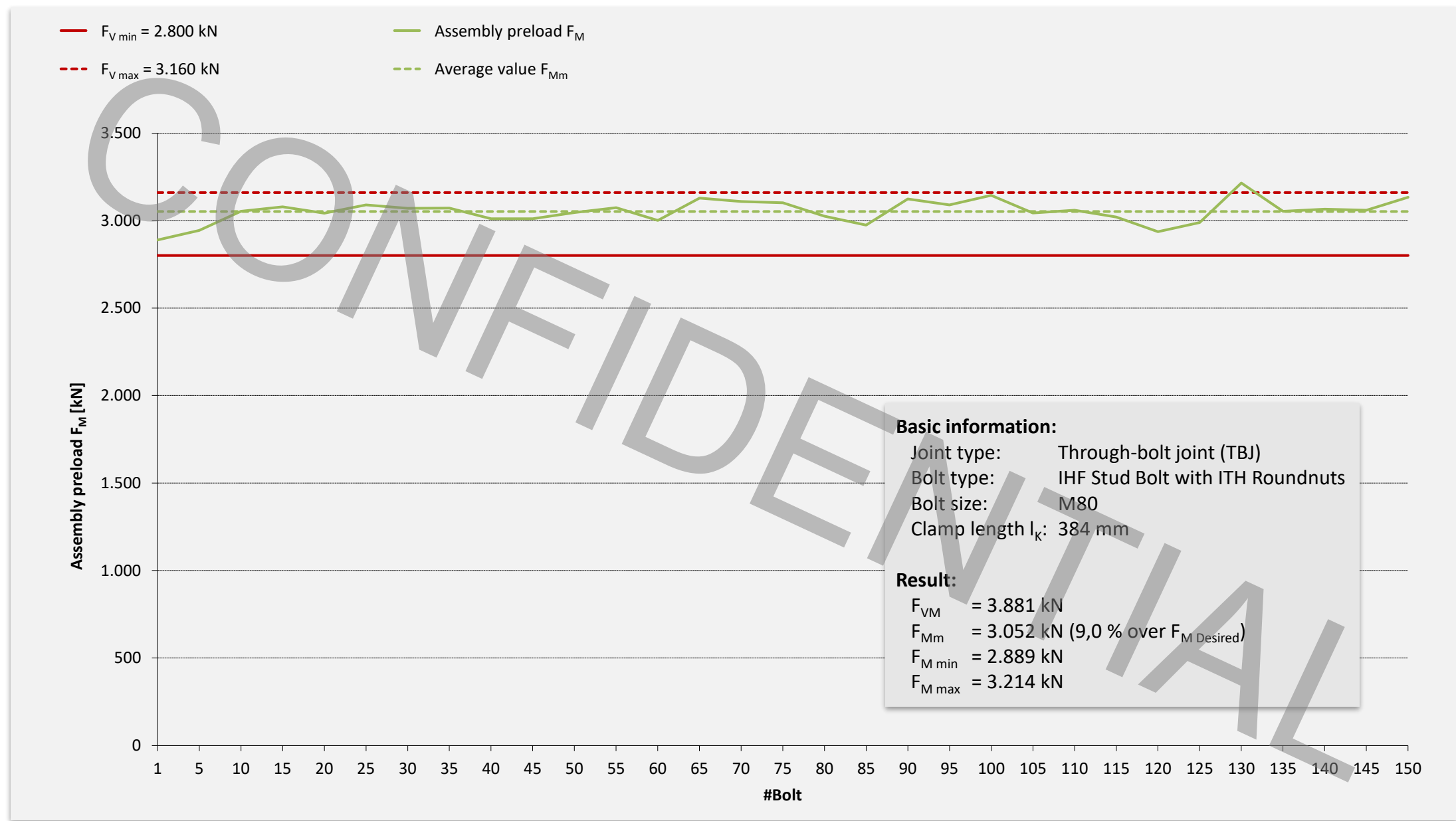
ITH Bolting Concept for MP-TP Connection

Example project with ITH Lifting Device for BTCs - Bolting from above

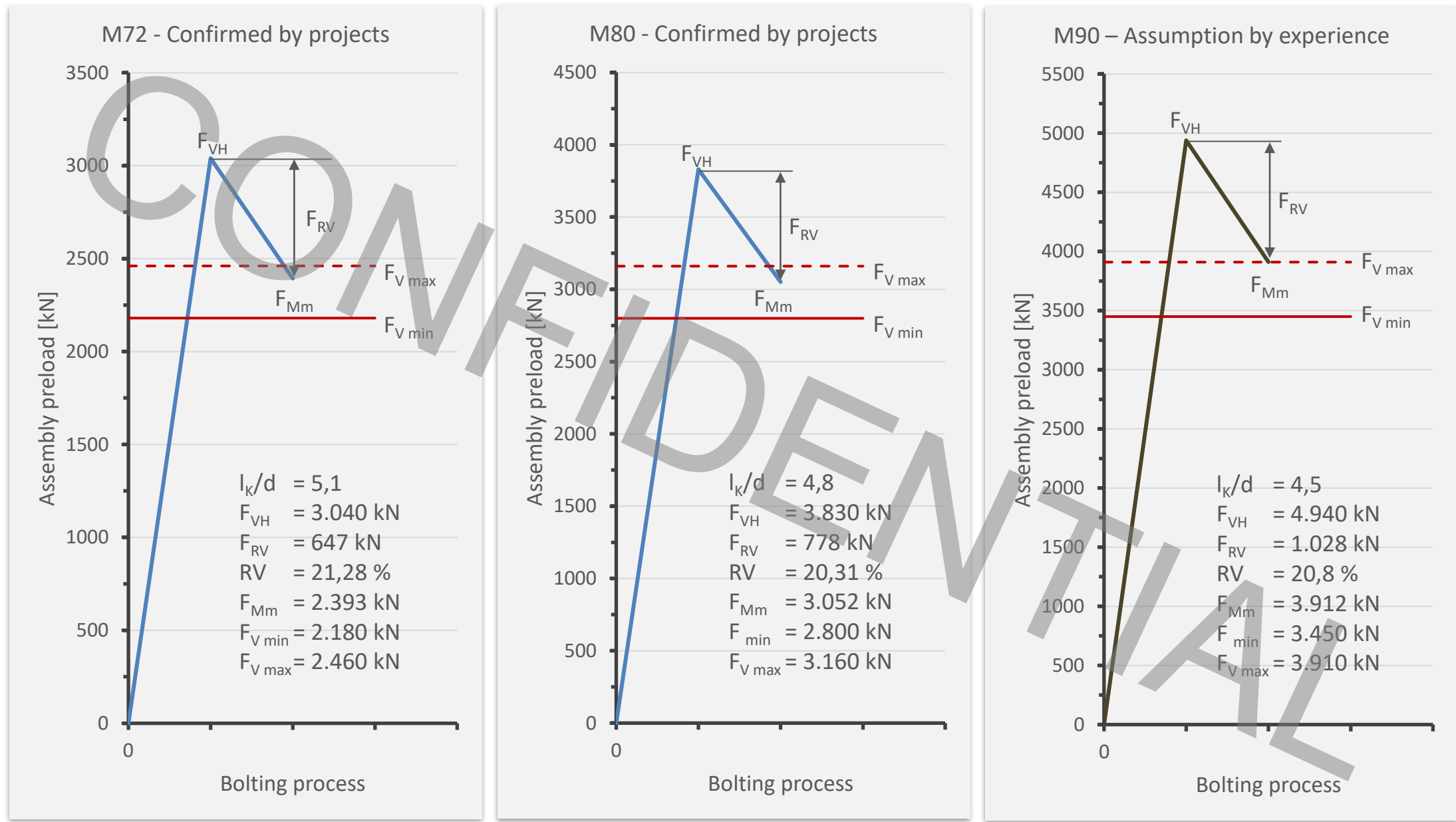




Assembly preload F_M – Measurement values – Project M80, $l_K/d = 4,8$



Project Conclusion



Thank you for your attention!

Contact us regarding technical questions –
we would be happy to give support.

Find more ITH bolting solutions and application examples on our websites:

www.ITH.com

www.maintenance-free-bolting.com