



PLARAD[®]

Torque & Tension Systems

Products & Services

| www.plarad.de |

Quality made in Germany



Professional bolting technology

Since 1962 Maschinenfabrik Wagner and its brand „Plarad“ has been the benchmark for quality, innovation and reliability in the field of bolting technology.

SME's and large, globally engaged companies in various industries rely on our competence where tailor-made bolting solutions are concerned. Our customers benefit from our flexibility and our know-how, acquired continuously since the early 1960s.

The new generation of Plarad bolting systems are thinner, more powerful and lighter than the preceding models. Due to continuous development of our products, Plarad is always a step ahead. We are driven by customer's requirements as well as market demands.

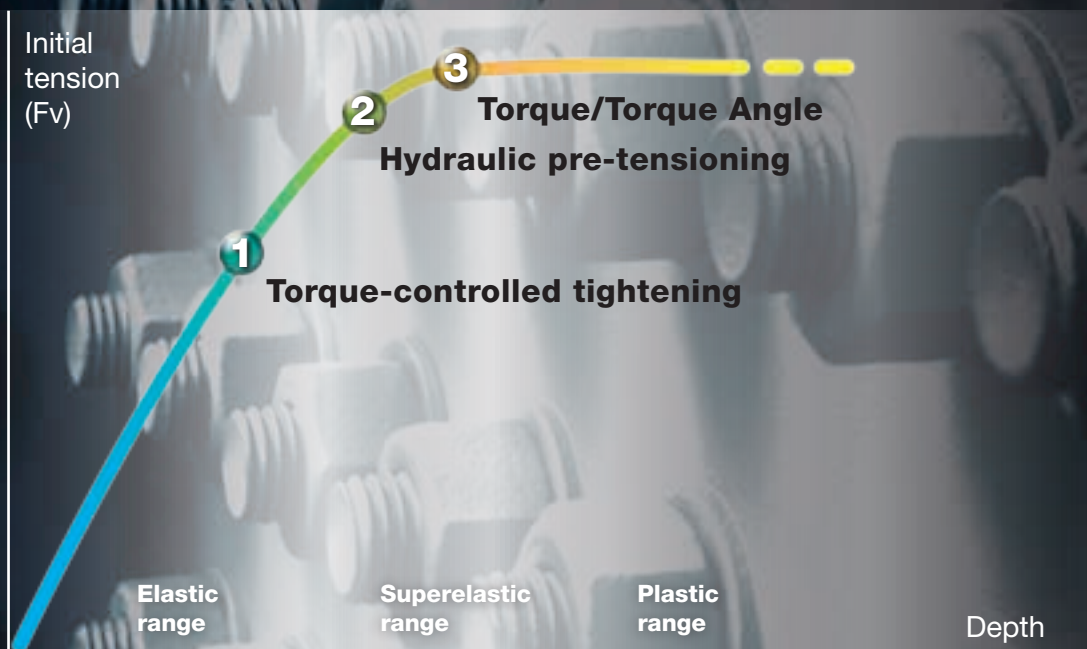
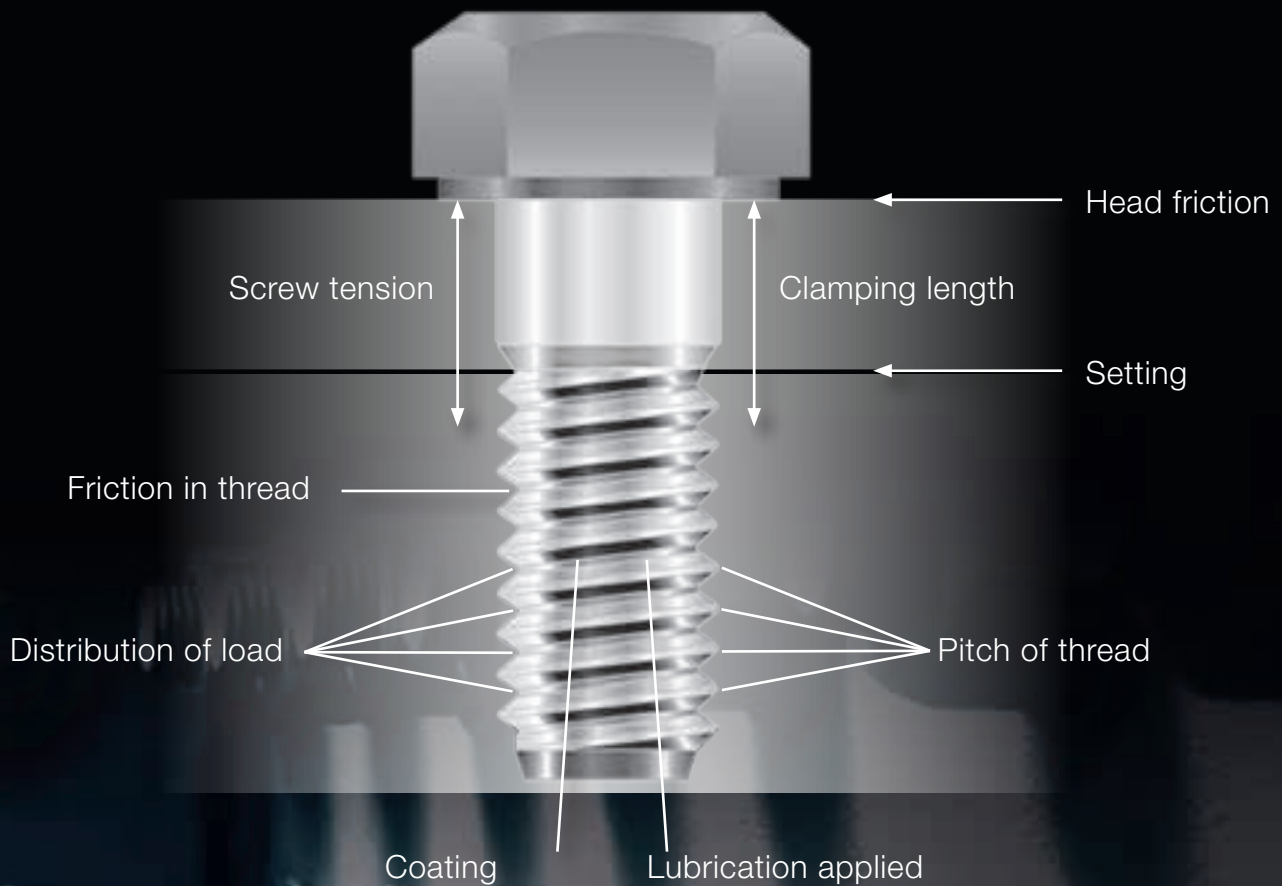
When developing new designs, we do not only focus on achieving a high level of quality, but at the same time we test extensively the function and handling features using our own testing devices. The result is a new generation of products for bolting technology which do not only technically fulfil the highest demands.

With eight product lines, from manual torque multipliers through to completely automatic bolting systems, we can offer you the broadest product range in the market. You benefit from perfectly optimised tooling while all the products for your bolted joints come from a single source.



Bolt joint

Many physical characteristics affect and influence the final bolted joint.

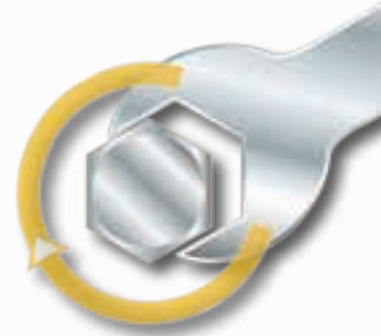


Our solutions

1

Torque-controlled tightening

- In the majority of cases where bolts are used, torque-controlled tightening is the method used to tighten.
- With this method the friction on the thread and head of the bolt act as a precise pre-tensioning force, therefore the use of accurate tools is imperative.
- Effectively the bolt can be tightened quicker.
- This method is more practical and easy.
- Light, compact tools can be used where space is limited.



2

Hydraulic Tensioning

- As the nut is not rotated under load, there is no torsional load on the bolt.
- After achieving the desired applied load, the nut can be tightened without causing stresses on it. The correct applied bolt load is therefore achieved.
- Even different co-efficients (levels) of friction have no effect on the tensioning process.

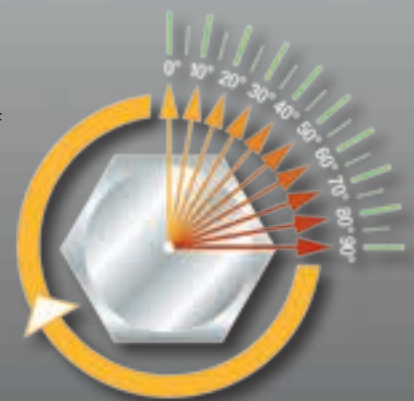


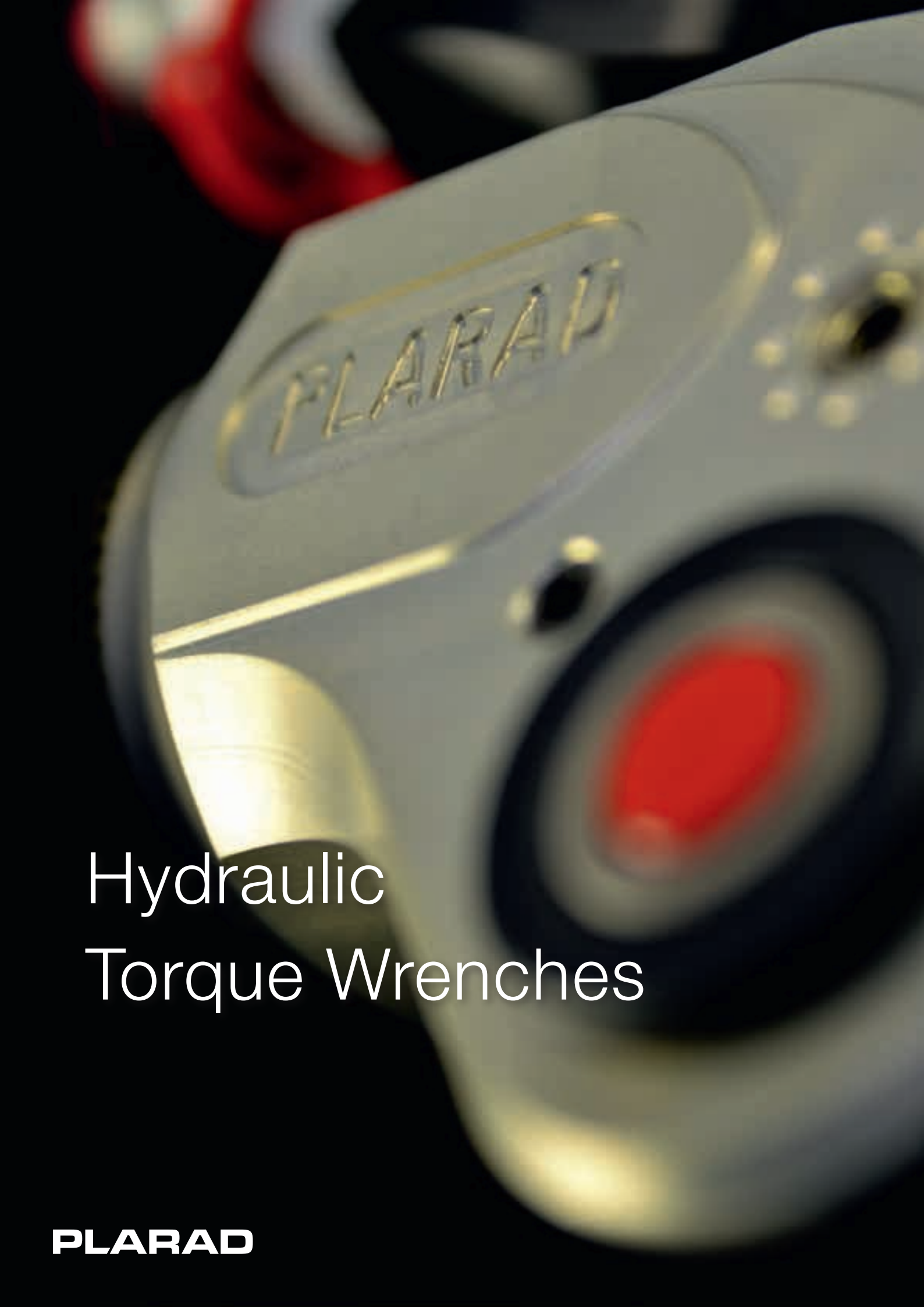
Via the hydraulic cylinder tensioning force is exerted on the bolt causing it to elongate.

3

Torque/torque-angle-controlled tightening

- Torque/torque-angle-controlled tightening is more precise than purely torque-controlled tightening.
- The defined amount of rotation of the bolt (torque angle) provides automatically and accurately the required pretension.
- Control is achieved directly from the power pack, by means of microprocessor technology within the pump.
- Higher quality bolting joints are achieved.
- Results can be stored and used at a later date for documentation required in quality assurance processes.
- The whole control process is achieved without the need of external sensors, hence no need for extra cables from the tool.





PLARAD

Hydraulic
Torque Wrenches

PLARAD

MSX/MX-EC

powerful and variable

Continuous rotation
in every stroke
position! No jamming!



- Long-lasting Plarad quality
- Fast operation thanks to optimum harmonisation with Plarad power packs
- Safety relief valve
- SQS-high-pressure safety cylinder – in case of housing failure – no leakage
- Easy servicing
- Compact dimensions
- Fine-toothed ratchet system offers high torque precision and prevents jamming
- Also available in an ATEX version (II 2 G ck II B T4) for Zone 1G
- Internationally patented technology



The fast-locking device allows quick and simple reversing of the tool and socket



Available with adjustable handle



360° rotatable hose connection, with swivel option

Type	Square socket adapters	Torque range (Nm)
MX-EC 10 TS	3/4"	100 - 1 000
MX-EC 20 TS	1" and 3/4"	210 - 2 100
MX-EC 45 TS	1"	450 - 4 500
MX-EC 75 TS	1 1/2"	750 - 7 500
MX-EC 95 TS	1 1/2"	950 - 9 500
MX-EC 120 TS	1 1/2"	1 200 - 12 000
MX-EC 155 TS	1 1/2"	1 550 - 15 500
MX-EC 200 TS	2 1/2"	2 000 - 20 000
MSX 250 TS	2 1/2"	2 500 - 25 000
MSX 400 TS	2 1/2"	4 000 - 40 000
MSX 650 TS	3 1/2"	6 500 - 65 000



Also available in a singlehose version – for even easier handling and positioning



Lever piston system – in the case of sudden loosening, the piston separates from the lever and reconnects automatically. No part is therefore in danger of being broken.

Extremely slim, lightweight and high-strength aluminium housing.

Pressure safety valve.

Integrated release shock absorber protects the housing from sudden loosening impact damage.



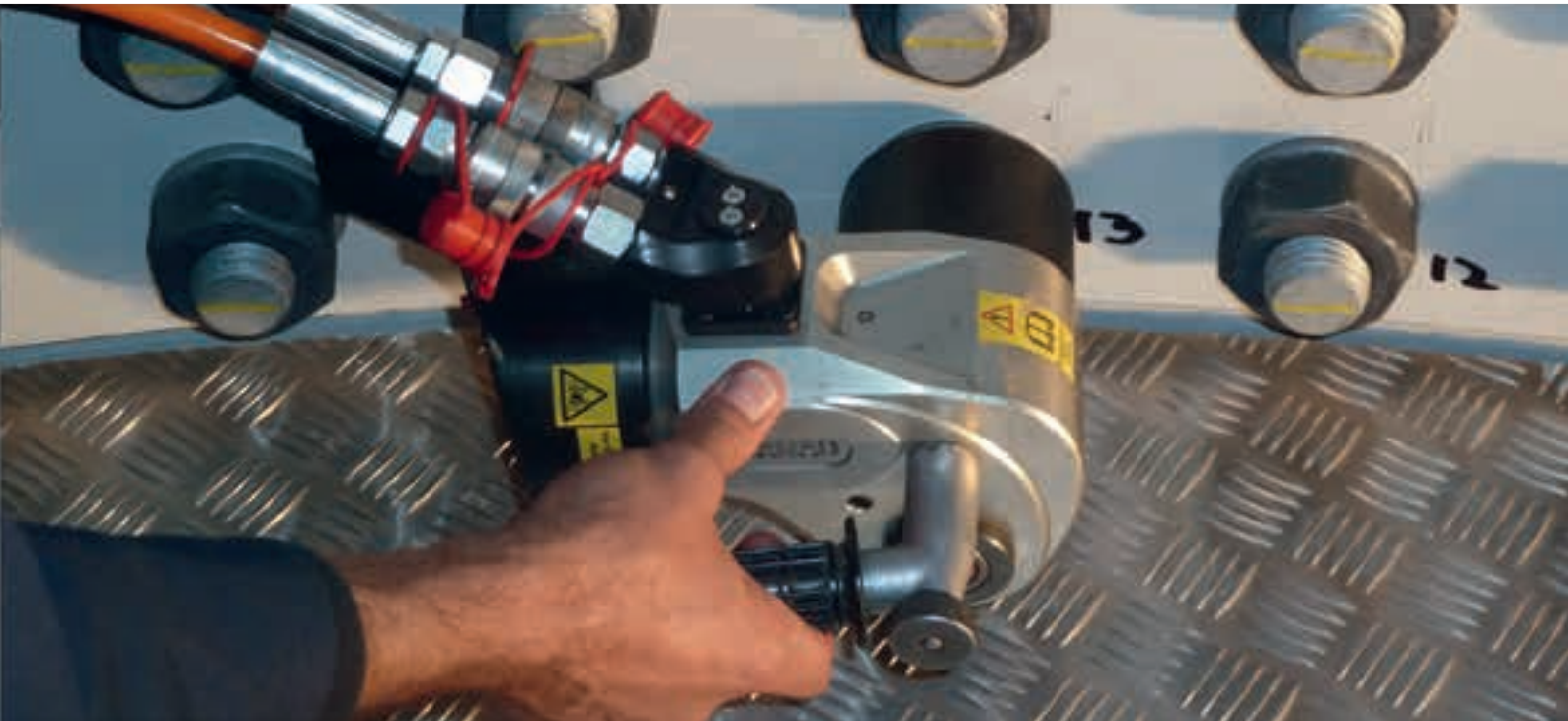
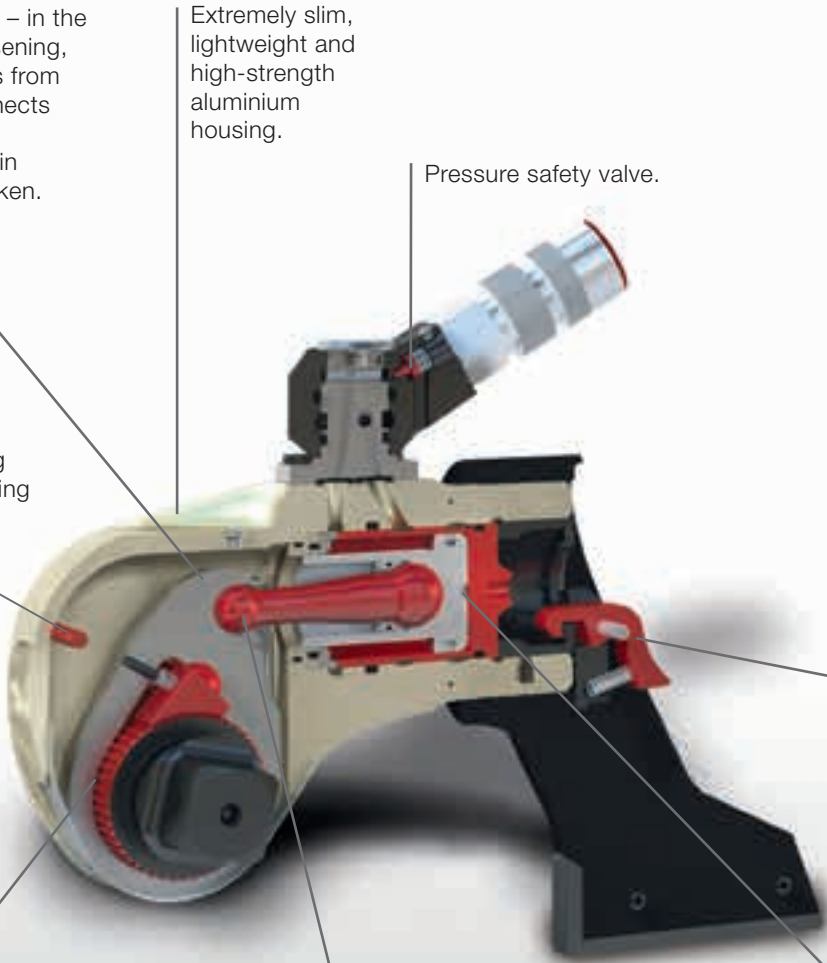
The reaction arm can be rotated quickly and easily through 360°.

Safety ratchet – prevents unintended unlocking of the reaction arm.

Long-lasting fine-toothed ratchet system. Full stroke movement is not always essential.

The connection between lever and ratchet guarantees optimum transfer of the torque generated.

SQS safety cylinder made of high-strength material allows high pressures in a lightweight housing.



Accessories for **MSX/MX-EC**

Standard square drive sockets are available in all dimensions and for all across flats sizes.



Long socket

Double hexagonal socket

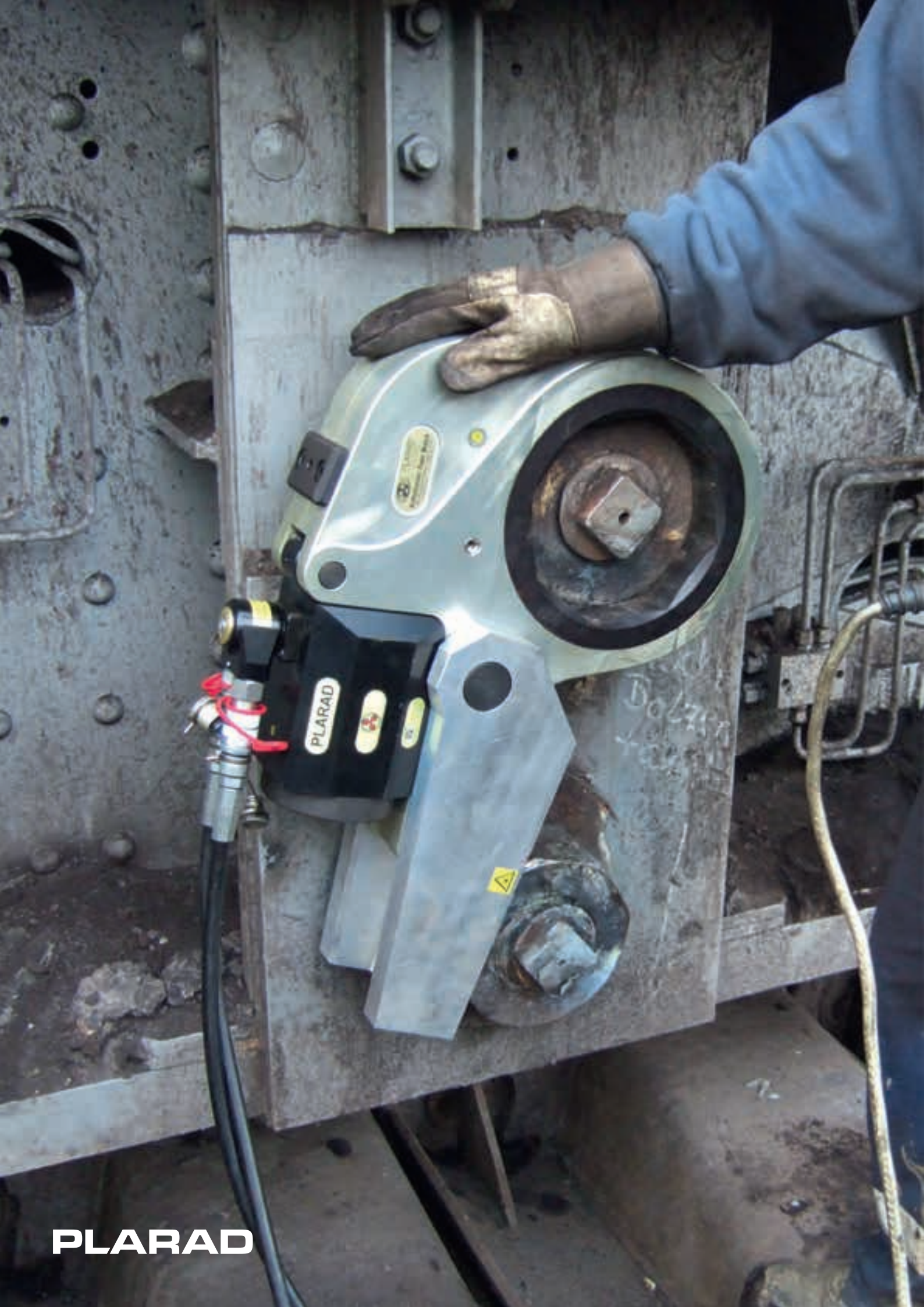
Reduction of height and weight through the use of one-piece splined safety sockets.



Splined safety hex inserts in a variety of sizes.







PLARAD

FSX

slim and precise

Continuous rotation
in every stroke
position! No jamming!



- Fast operation thanks to optimum harmonisation with Plarad power packs
- Safety relief valve
- SQS-high-pressure safety cylinder – in case of housing fracture no leakage
- Easy servicing
- Compact dimensions
- Fine-toothed ratchet system offers high torque precision and prevents jamming
- Also available in an ATEX version (II 2 G ck II B T4) for Zone 1G
- ANSI/API-compatible version available
- Internationally patented technology



Available with adjustable handle



360° rotatable hose connection, with swivel option



ANSI

Also available in an ANSI version for the oil & gas industry

FSX combination	Ratchet heads (AF)	Torque range (Nm)
SX-EC 1 / HSX	27 - 41	100 - 1 000
SX-EC 2 / HSX	20 - 70	250 - 2 500
SX-EC 5 / HSX	27 - 85	500 - 5 500
SX-EC 8 / HSX	46 - 80	800 - 8 500
SX-EC 12 / HSX	50 - 120	1 200 - 12 000
SX-EC 20 / HSX	55 - 145	2 000 - 20 000
SX 30 TST / HSX	95 - 145	3 000 - 30 000
SX 45 TST / HSX	120 - 185	4 500 - 45 000



SX drive unit

HSX ratchet head



Lever piston system – in the case of sudden loosening, the piston separates from the lever and reconnects automatically. No part is therefore in danger of being broken.

Extremely slim profile, lightweight high-strength aluminium housing.

Pressure safety valve

Integrated release shock absorber protects the housing from sudden loosening impact damage.

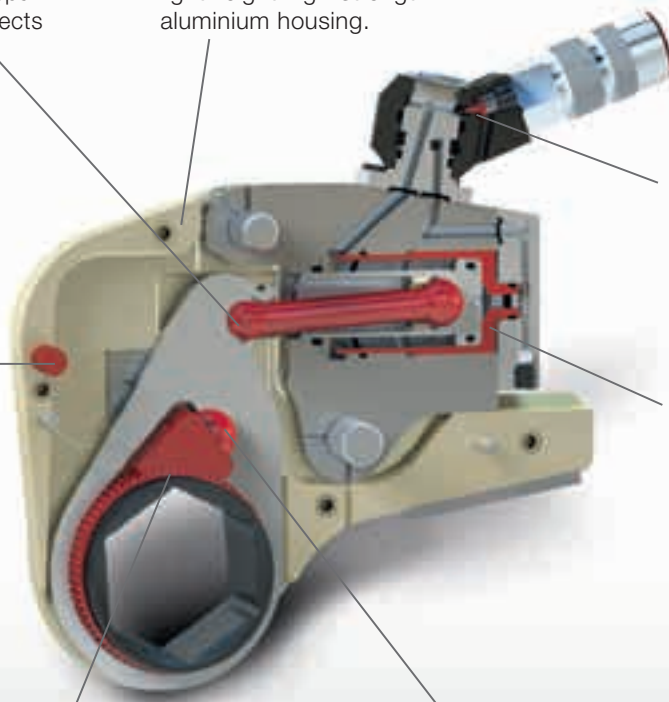
SQS safety cylinder made of high-strength material allows high pressures in a lightweight housing

Also available in single hose version - for even easier handling



Long-lasting fine-toothed ratchet system. Full stroke movement is not essential.

The connection between lever and ratchet guarantees optimum transfer of the torque generated.



Accessories for **FSX**

Interchangeable sockets in different sizes can be quickly changed.

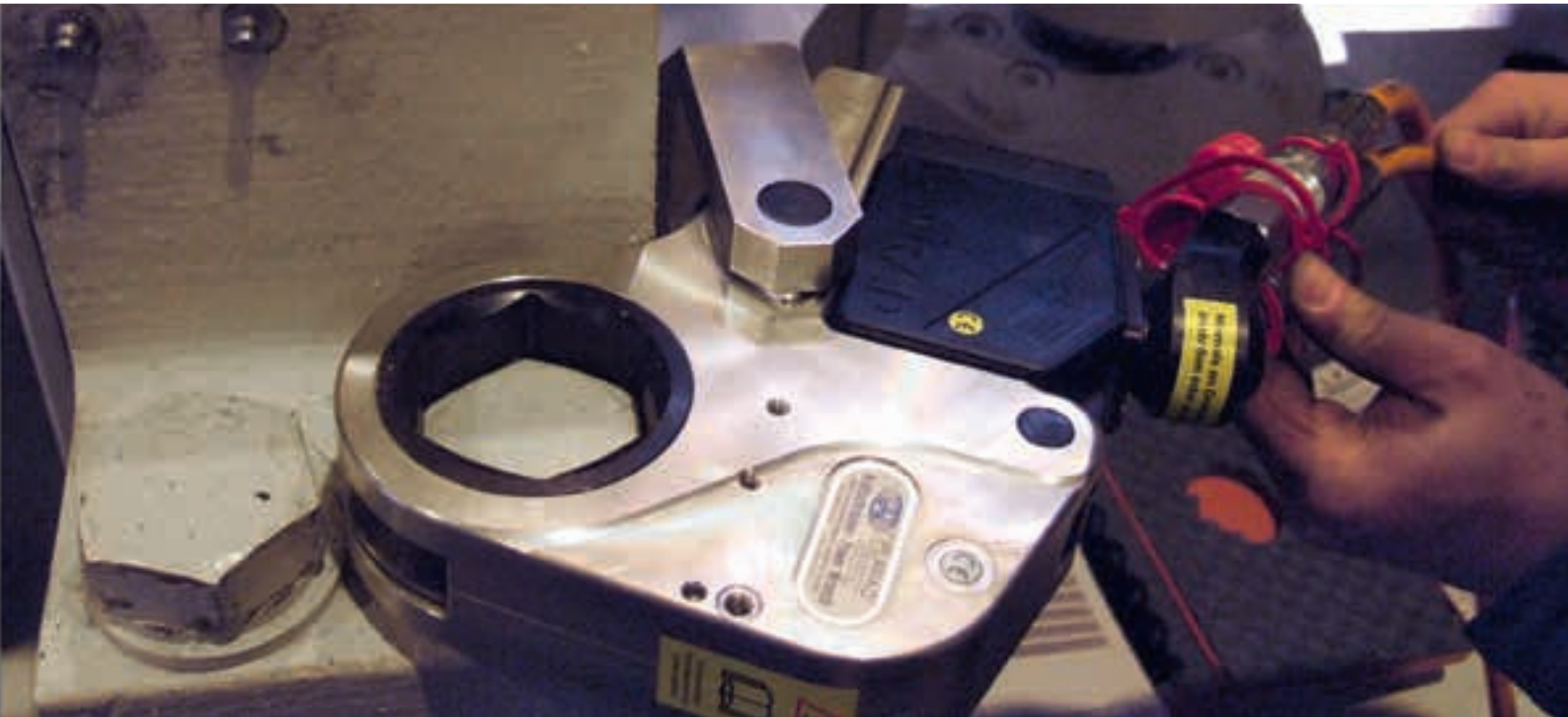


In/out sockets are available in all dimensions and for all wrench sizes.



In exceptional cases, bespoke reaction arms can be designed to match your particular application, ensuring safe and optimum use of the reaction arm against a surface.







PLARAD

K-series

the universal tool for confined spaces



Socket fittings up to 150 mm, also available open and open-able versions



Ratchet heads (up to 105 mm) with exchangeable inserts



Type	Head sizes (mm)	Performance range (Nm)
K 30 TF	24 - 95	300 - 3 000
K 60 TF	24 - 95	660 - 6 600
K 150 TF	27 - 110	1 100 - 11 000
K 200 TF	60 - 135	2 000 - 20 000
K 300 TF	80 - 150	3 000 - 30 000





3332318
3332318
3332318

3332318/EN857 25C

PLARAD

HPR up to 150 000 Nm

- For tightening and loosening large, heavy bolted joints
- Optimised for use in confined spaces where conventional hydraulic wrenches do not fit
- The space required by a ring spanner is enough room for the HPR to operate



CTK 35 EFS
Hydraulic Power Pack



Various ring spanner attachments and the ratchet heads can be changed quickly and easily.

Power unit	Performance range	Max. size, metric (AF)	Max. size, imperial (AF)	Weight
RE 500	5 000 to 50 000 Nm	185 mm	7 1/4"	34 kg
RE 1000	10 000 to 100 000 Nm	230 mm	9 1/8"	45 kg
RE 1500	15 000 to 150 000 Nm	320 mm	12"	76 kg



Comprehensive service

Sustained long-term success will only be possible if you are able to respond to market and customer requirements quickly. With over 50 years' worth of bolting expertise and the broadest product range, we can offer you the most economical solution.

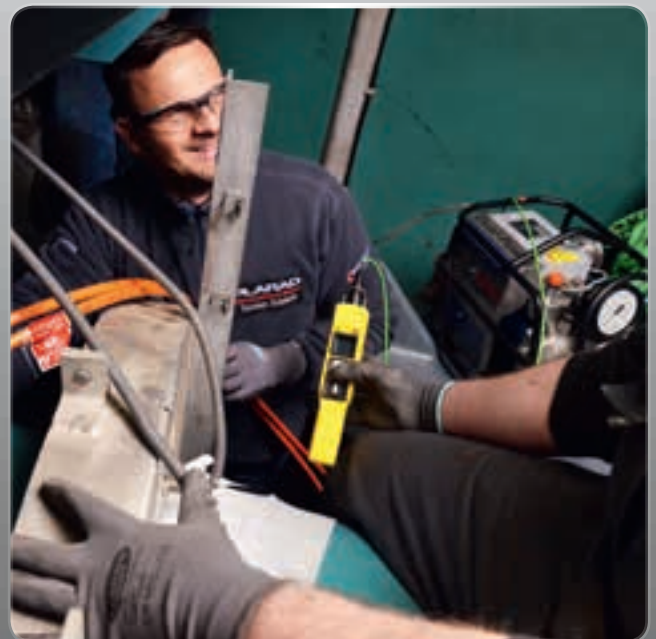
In close cooperation with our clients, we develop tailor-made tools that are perfectly customised to their respective requirements. Extensive support is meanwhile an integral part of our service. This is because we will accompany you before, during and after the project phase.

We are actively involved in various panels and standardisation committees. This enables the accommodation of the latest changes in standards and of future bolting requirements in our competent service portfolio.

- Project Consulting
- Bolting Case Analysis
- 3D-CAD Analysis
- Product Demonstrations
- Trainings/Instructions/Seminars
- Measuring/Testing/Calibrating
- Repair and Spare Part Service
- 24-hour Service
- Renting/Leasing/Financing



Product advice from our specialists on-site



Test equipment and product demonstrations available

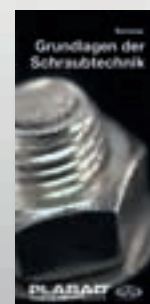
We pass on our knowledge

We continually offer advanced training within the organisation to enhance the know-how of our employees.

We cooperate with PSA Sicherheitstechnik GmbH & Co. KG in operations worldwide, providing detailed support for training and safety instruction (for example, working at height, where this is a risk of falling), both for our own employees and for yours.

Training and seminars for your employees

- Maintenance and repair of torque tools:
 - Relevant maintenance
 - Fault diagnosis
 - Repairs
 - Adjustment, calibration and testing
- User training:
 - Basic bolt fitting and technology
 - Safety aspects
 - Handling and positioning torque tools
 - Equipment settings
- Training courses in colleges and academies:
 - e.g. basic bolting techniques



Special solutions



Offset drive

For nutrunner when space is limited (e.g. plate heat exchangers)



Speedy

Pneumatic speedy nutrunner: fast operation in low torque applications

XB 1

Hydraulic power pack with protective shields and an extra manometer



Threaded column connection mechanism

for pre-stressed concrete reinforcement





Our support service includes financial analysis of your project, instruction on the operation of the equipment, loan equipment, equipment calibration, maintenance and more.



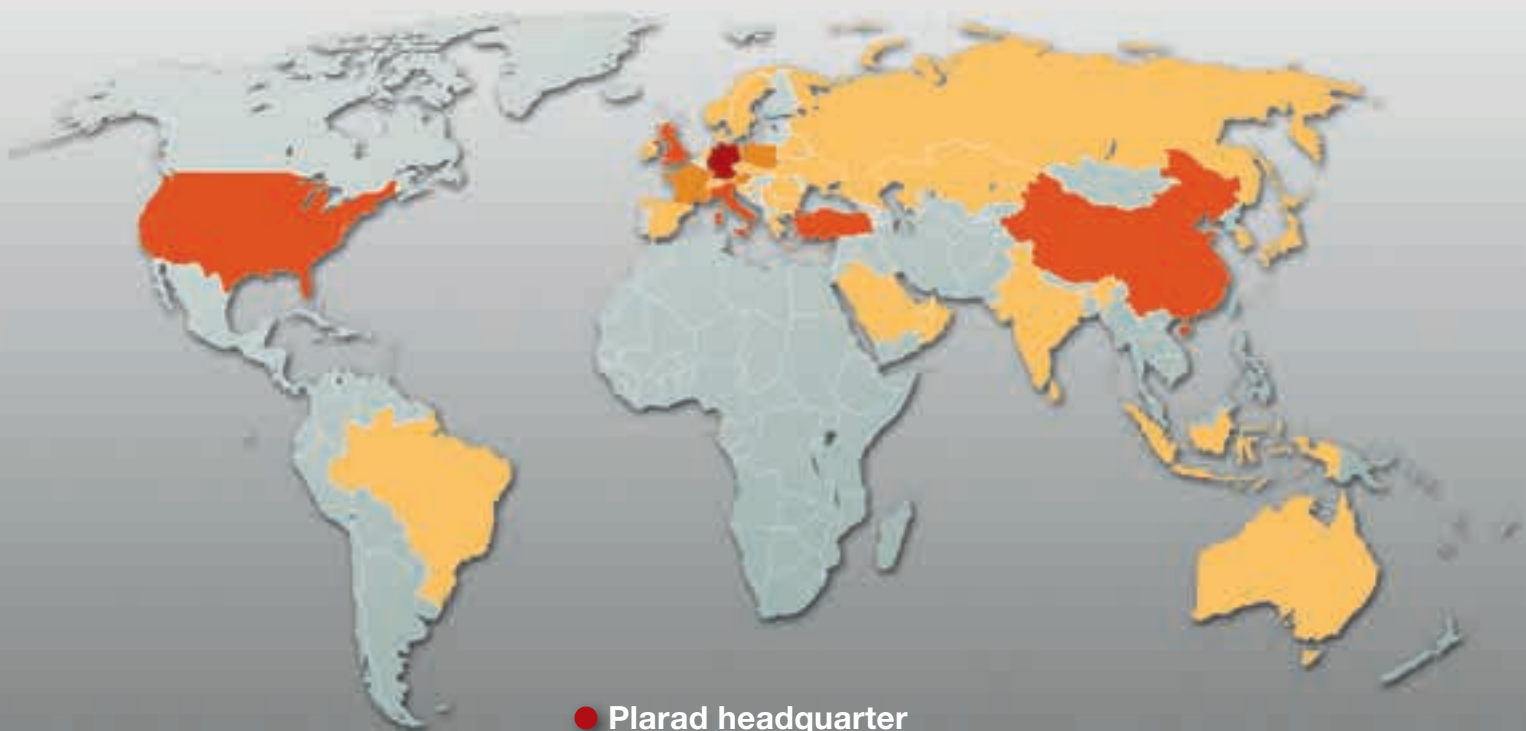
We check your bolting needs by means of precise measurement of torque while bolts are being tightened.

24/7 support and service

Competent expert help available throughout the world, at any time

- Economic and technical security, thanks to expert consultation anywhere in the world.
- We offer provision for service and maintenance, a reliable supply of spares as well as calibration services.
- One call is enough!
Our 24/7-service team will provide clear quick no-nonsense support.

www.plarad.de | info@plarad.de | +49 (0) 172 461 42 79



- Plarad headquarter
- Plarad's foreign subsidiaries
- Plarad staff
- Plarad distributors

Overseas subsidiary companies:

China

PLARAD Bolting Technology (Beijing)
Co., Ltd

Block D, Building No. 3, Yard No. 31
Guangqu Road · Chaoyang District
CN - Beijing 100022, P.R.C

Phone: +86 (0)10 872 160 01-0

Fax: +86 (0)10 872 160 02

E-mail: info-china@plarad.com

Italy

Plarad Italy Srl

Via della Vecchia Chimica, 10
20070 Cerro al Lambro (MI)

Phone: +39 02 983 29 54

Fax: +39 02 98 11 91 73

E-mail: italia@plarad.com

Turkey

Plarad - Tork Anahtarları ve Gerdirme
Sistemleri San. Dış. Tic. Ltd. Şti.

Tekstilkent Ticaret Merkezi
A2 Blok, Kat: Giriş D: 22, Oruçreis
Mah. Barbaros Cad.
34220 Esenler, Istanbul

Phone: +90 (0)212 659 77 76

Fax: +90 (0)212 659 77 81

E-mail: plarad-tork@plarad.com

UK

Plarad UK Ltd.

Parkside Business centre, Unit 4
58/62 Walpole Road,
Bromley, BR2 9SF, London

Phone: +44 (0) 845 643 69 78

Fax: +44 (0) 1294 44 30 60

Mobile: +44 (0) 777-153 30 78

E-mail: UK@plarad.com



... a successful connection!

Maschinenfabrik Wagner GmbH & Co. KG
Birrenbachshöhe · 53804 Much · Germany

Phone national: +49 (0)2245 62-0

Fax national: +49 (0)2245 62-66

Phone international: +49 (0)2245 62-10

Fax international: +49 (0)2245 62-22

info@plarad.de · www.plarad.de

