



# PLARAD<sup>®</sup>

Torque & Tension Systems

Products & Services

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# 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.

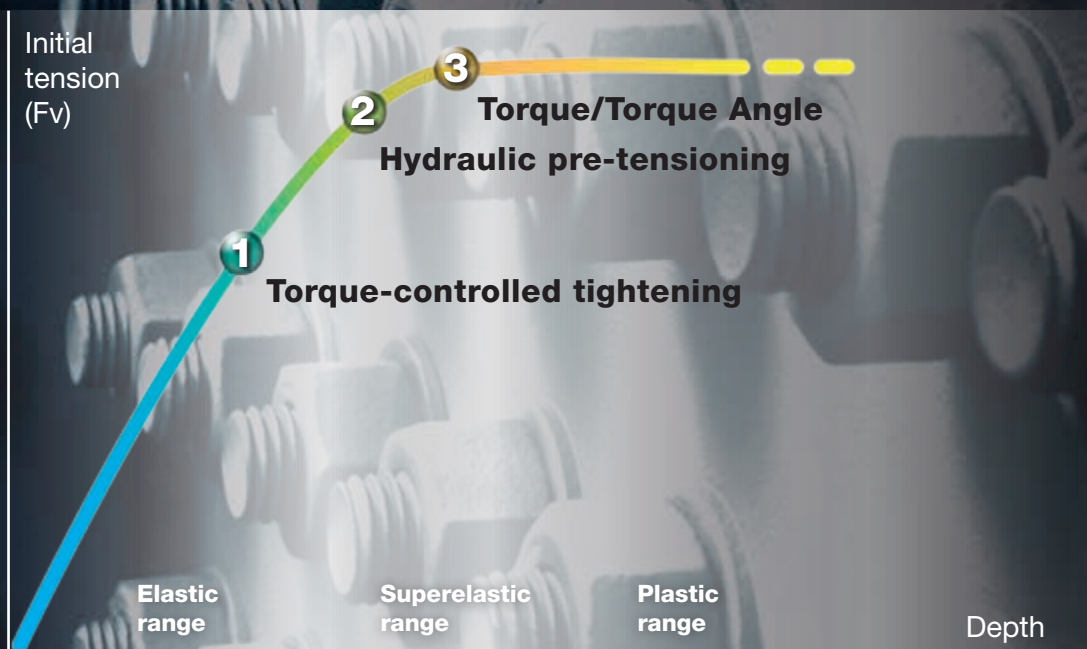
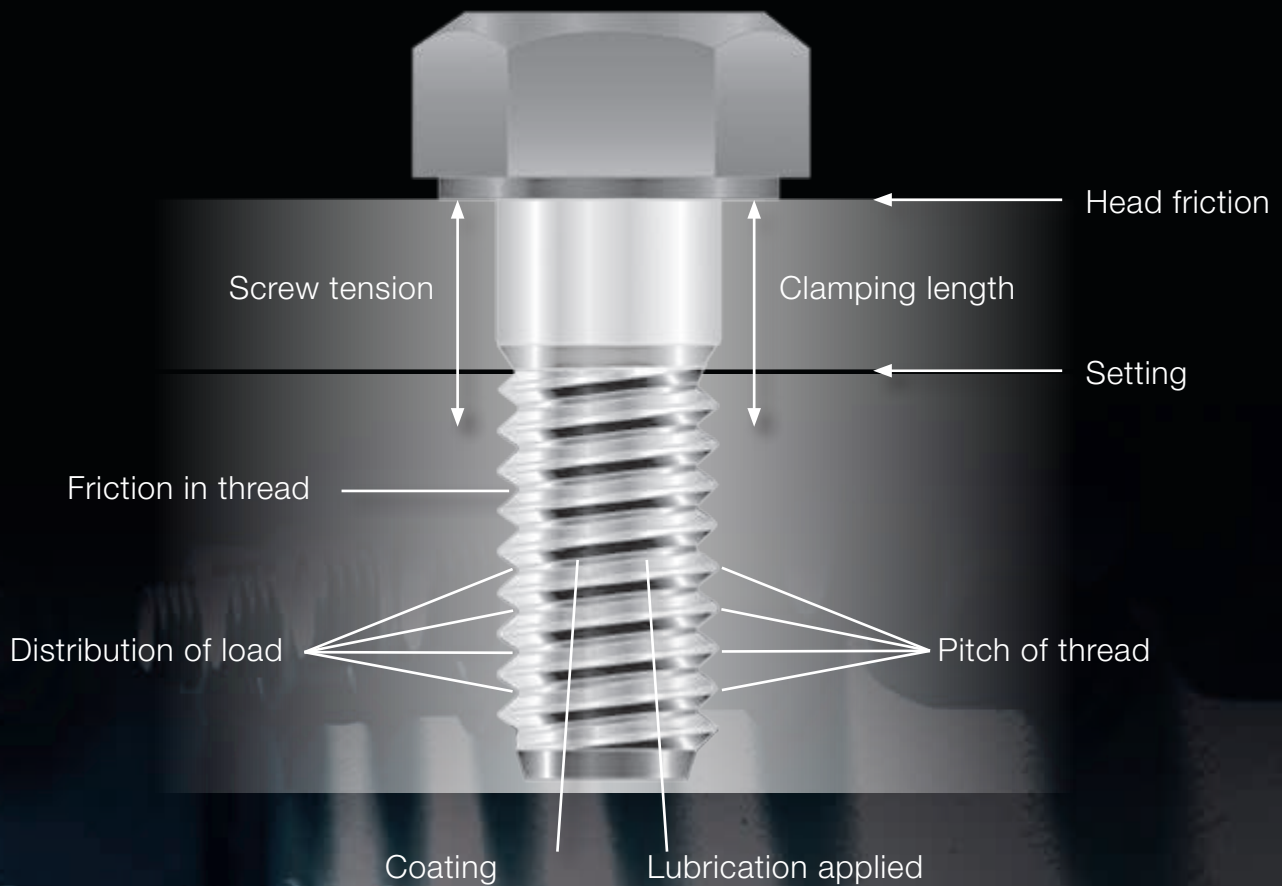
When developing new designs, we do not only focus on achieving a high level of quality, but at the same time we test extensively the function and handling features using our own testing devices. The result is a new generation of products for bolting technology which do not only technically fulfil the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

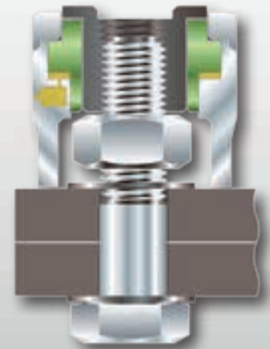
- In the majority of cases where bolts are used, torque-controlled tightening is the method used to tighten.
- With this method the friction on the thread and head of the bolt act as a precise pre-tensioning force, therefore the use of accurate tools is imperative.
- Effectively the bolt can be tightened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





# Nutrunners

**PLARAD**



# DE1 & DE1*plus*

## the new generations

The basic features of the DE1 and the DE1*plus*:

- New gearbox – slimmer, shorter, lighter
- New control system – for even more precise bolting results
- New display with added features: comfortable operation and comprehensive information
- PreSet function, 50 storage spaces
- **New:** Optional with documentation up to 10 000 bolting cases. Transmission via Wifi.

Thanks to the innovative software, the DE1*plus* is equipped with additional features:

- Torque mode
- Angle mode
- Torque/angle mode
- Angle counting mode
- Test mode

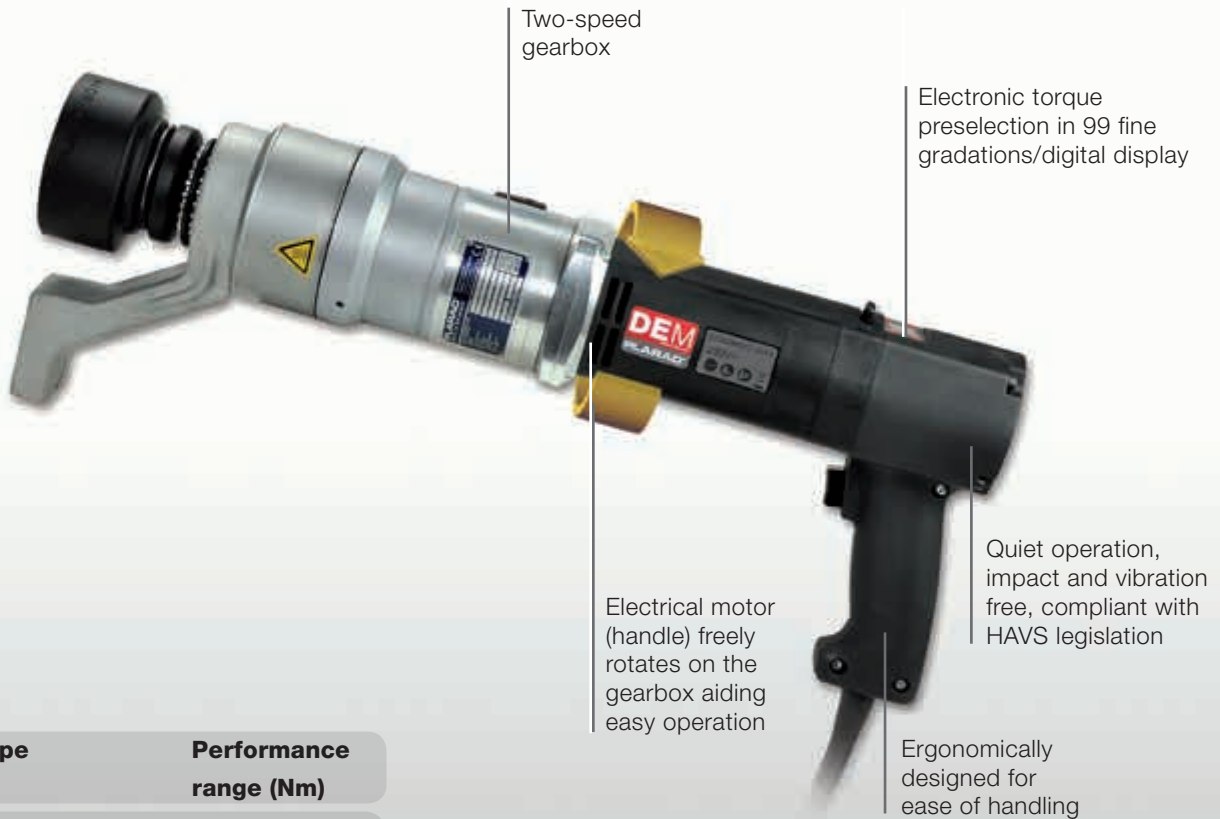
The multi function display of the DE1*plus*



Type	Performance range (Nm)
DE1-10 / DE1 <i>plus</i> -10	up to 1 000
DE1-20 / DE1 <i>plus</i> -20	up to 2 000
DE1-30 / DE1 <i>plus</i> -30	up to 3 000
DE1-36 / DE1 <i>plus</i> -36	up to 3 600
DE1-48 / DE1 <i>plus</i> -48	up to 4 800
DE1-80 / DE1 <i>plus</i> -80	up to 8 000

# DEA/DEM

automatic/manually operated

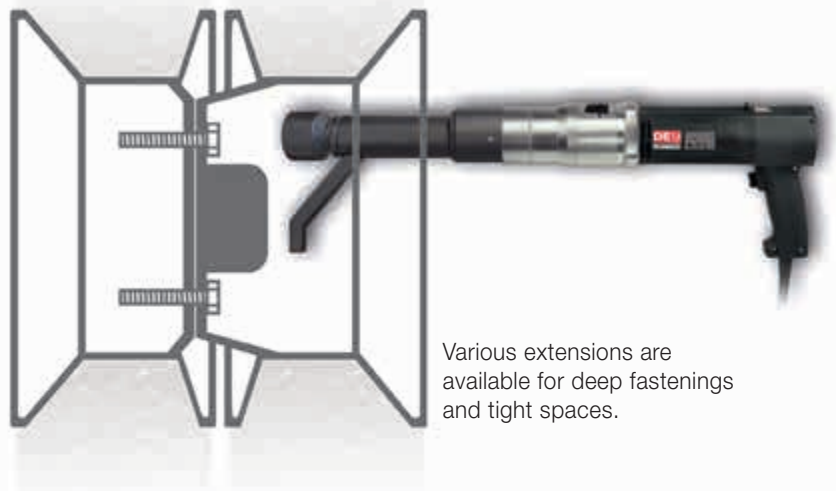


Type	Performance range (Nm)
DEA/DEM 65	up to 6 500
DEA/DEM 80	up to 8 000
DEA/DEM 120	up to 12 000

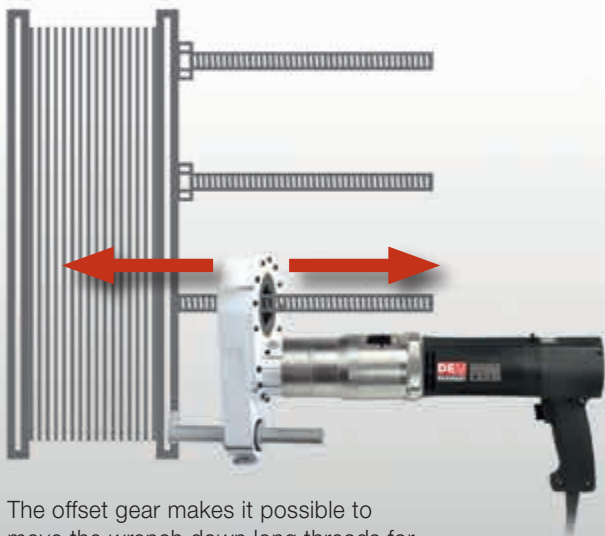
## Torque range up to 12 000 Nm

- For continuous use in assembly, repair and production
- Plarad DEM with manual and Plarad DEA with automatic 2-speed gearbox
- The low-vibration technology protects the user's muscles and joints, effectively preventing the onset of HAVS (hand-arm-vibration syndrome)
- The light weight and sophisticated ergonomic profile enable optimal handling

# DE accessories



Various extensions are available for deep fastenings and tight spaces.



The offset gear makes it possible to move the wrench down long threads for nut sizes up to AF 150 mm.



The motor drive can rotate 360°

DE1-W with angle drive: easy to use even in otherwise inaccessible places thanks to its low height. The electric motor and handle freely rotate on the gearbox.





# DA2 Battery Nutrunner



## Redefined mobile bolting

As soon as the desired set torque value is acquired the unit automatically stops, it is also immediately ready for the next bolt tightening etc.

The continually active 2 step LED display of the battery charge prevents inaccurate torque tightenings when the capacity of the battery is too low.

The operation trigger is not variable but binary – thus preventing an inaccurate torque being applied, especially useful during extended operation or when wearing gloves.

Type	Performance range (Nm)
<b>DA2-05</b>	130 - 550
<b>DA2-10</b>	180 - 1 000
<b>DA2-20</b>	220 - 2 000
<b>DA2-30</b>	330 - 3 000
<b>DA2-36</b>	380 - 3 600
<b>DA2-48</b>	500 - 4 800
<b>DA2-80</b>	900 - 8 000





Includes a battery powered LED torch



Includes two 6.0 Ah lithium ion battery packs

## Reliable Plarad quality up to 4 800 Nm

- Ergonomically optimised handling
- Even slimmer and lighter than its predecessor
- Automatic locking
- Integrated feature that allows free rotation of the motor and handle
- Active battery charge indicator
- Available in 7 sizes up to 8 000 Nm
- Optional: Diagnostic Setting Software (DSS) to lock the power settings and provide tool diagnosis

# Track construction battery nutrunner **DA1**

## Track construction - easier than ever

- Mobile and suited for universal use
- Low weight
- Easy handling
- Powerful and precise
- Active battery charge indicator prevents inaccurate torque tightening due to low battery capacity
- Working lamps can be placed in any position
- Including two 6.0 Ah Li-Ion batteries
- Including quick charger (230 V, 50/60 Hz or US version 110 V, 50/60 Hz)





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# DP1 the new generation

- Shorter and slimmer than the previous model
- 5 models covering a torque range from 125 – 3 600 Nm
- Vibration reducing technology protects the users muscles and joints during continuous operation in assembly/maintenance and production environments
- Lightweight and ergonomic making the tool easy to use
- Pneumatic drive rotates 360° on the gearbox

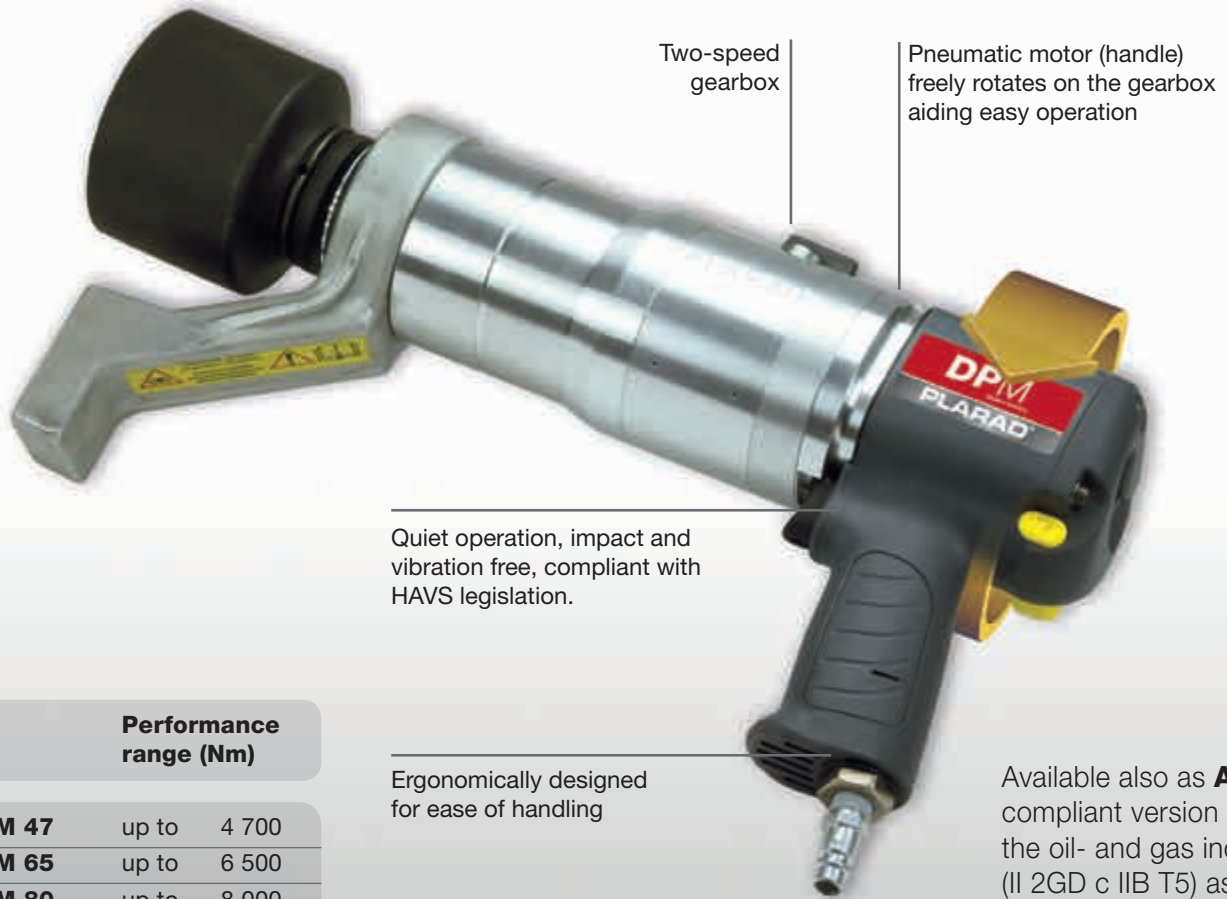


Type	Performance range (Nm)	
DP1-05	up to	500
DP1-10	up to	1 000
DP1-20	up to	2 000
DP1-30	up to	3 000
DP1-36	up to	3 600



# DPA/DPM

automatic/manually operated



Quiet operation, impact and vibration free, compliant with HAVS legislation.

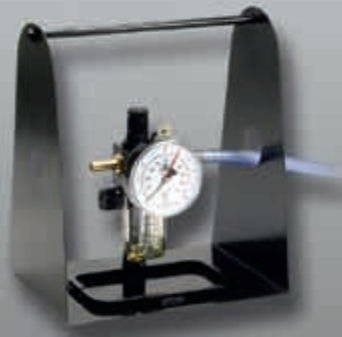
Ergonomically designed for ease of handling

Available also as **ATEX** compliant version for the oil- and gas industry (II 2GD c IIB T5) as well as mining industry (I M2 c)



Type	Performance range (Nm)
DPA/DPM 47	up to 4 700
DPA/DPM 65	up to 6 500
DPA/DPM 80	up to 8 000

Up to 12,000 Nm available on request.

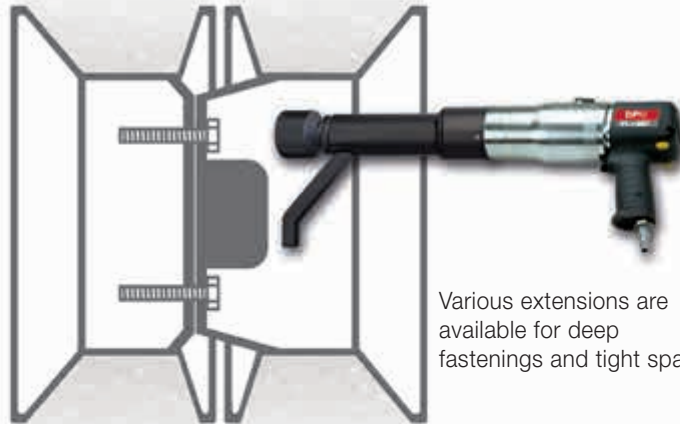


Fine adjustment is achieved via a pressure regulation unit

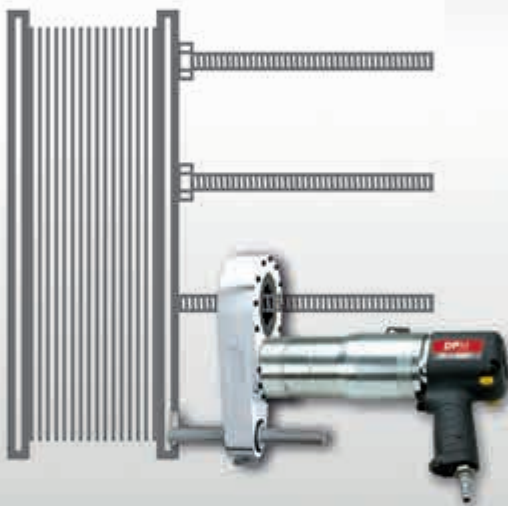
## Torque range up to 12 000 Nm

- For continuous use in assembly, maintenance and production
- Plarad pneumatic nutrunners are specifically designed for a variety of tasks, including “Ex” environments prevalent in the oil, gas, and mining industry
- Plarad DPM with manual 2-speed gearbox and Plarad DPA with automatic two-speed gearbox
- The low-vibration technology protects the user’s muscles and joints, effectively preventing the development of HAVS (hand-arm-vibration syndrome)
- Their extremely light weight and sophisticated ergonomic profile enables ease of use

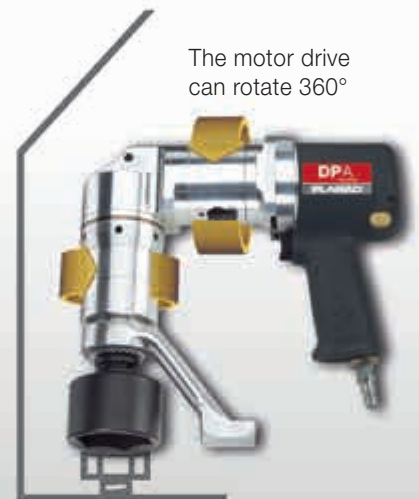
# DP accessories



Various extensions are available for deep fastenings and tight spaces.



The offset gear makes it possible to move the wrench down long threads for nut sizes of up to AF 150 mm.



The motor drive can rotate 360°

DP with angle drive: easy to use even in otherwise inaccessible places thanks to its low height. The pneumatic motor and handle freely rotate on the gearbox.





A close-up photograph of a hydraulic power pack. In the upper left, a pressure gauge is visible with a white face and black markings, showing a needle pointing to approximately 400. The gauge has two scales: an outer scale from 0 to 800 and an inner scale from 0 to 100. The main body of the power pack is a light-colored metal block with various ports and fittings. Two prominent red safety caps are attached to the front of the unit. The background is dark and out of focus.

# Hydraulic Power Packs

**PLARAD**



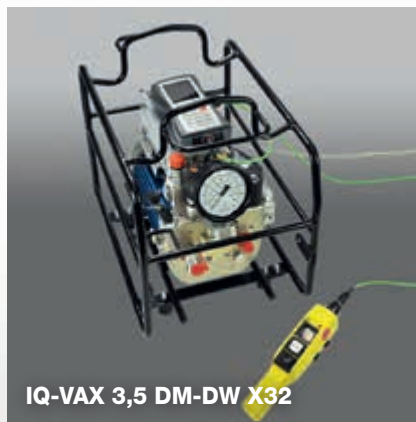
# Hydraulic Power Packs

## for every bolting situation

Our robust and long-lived hydraulic power packs are distinguished by a constant volume of oil (litres) up to the final pressure of 800 bar and have proven their mettle in heavy continuous use. From light-weight standard versions via microprocessor-controlled, fully automatic designs through to special power packs – Plarad has the correct power pack for every need, electric or pneumatic drive.



IQ-VAX 2 WZ X32



IQ-VAX 3,5 DM-DW X32



IQ-VAX 2 Z-X32 110V



XB 1



XB 2 Z



XB 2



X2 P-Z



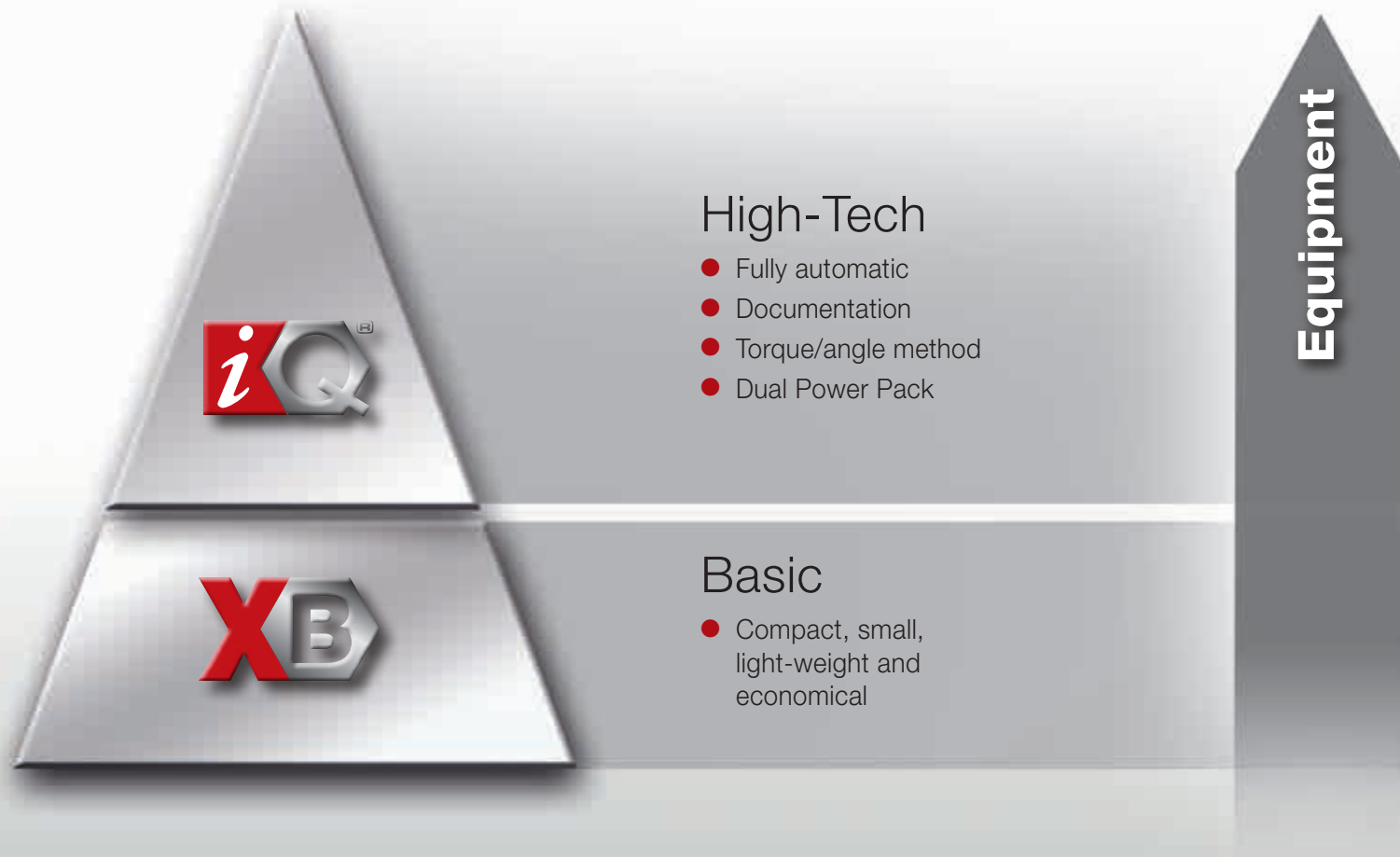
TAX



IQ VAX 2 WZ Dual

# Power Pack Overview

## electric



### Fast

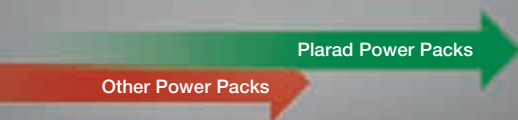
- More bolts can be tightened in the same amount of time: Plarad products are up to 3 times faster than other products.

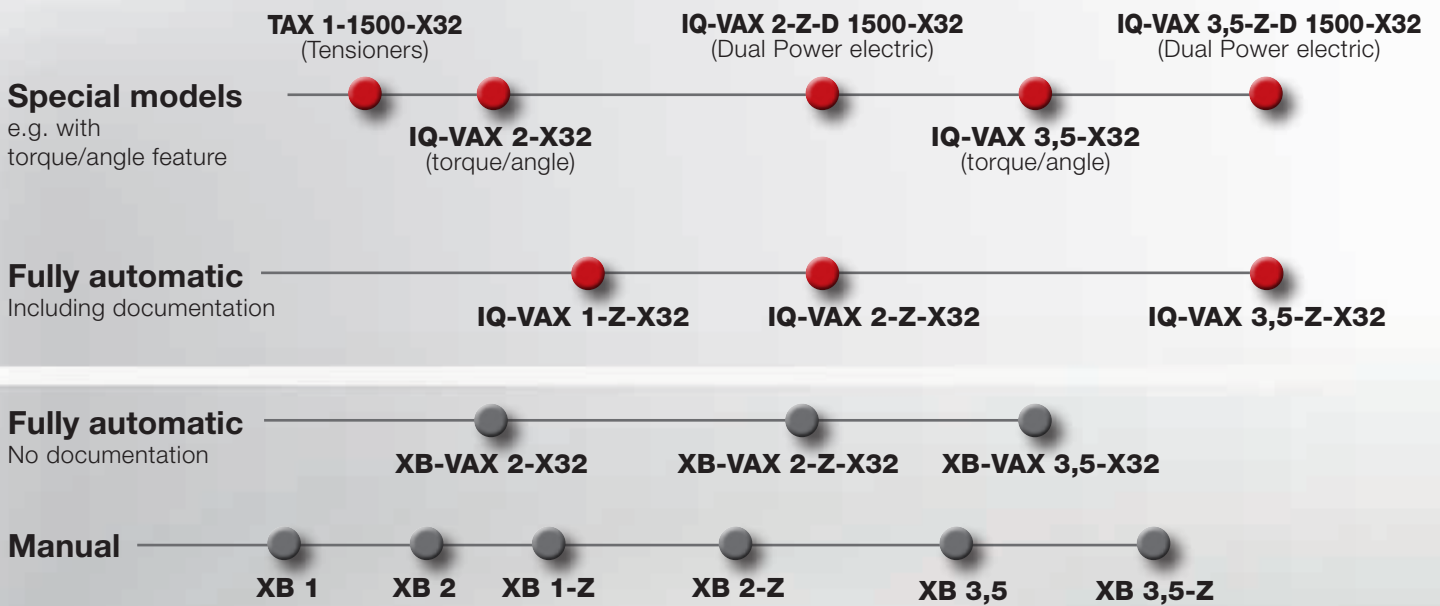
### Reliable

- Accurate, safe results as the application is controlled and monitored completely automatically by an internal microprocessor.

### Safe

- The Plarad documentation system makes it possible to record and illustrate the results of every bolted joint. For this reason the documentation is very useful in the field of product liability.





## Fast operation

### Lightweight

- Optimal power to weight ratio. The oil-filled electrical motor technology guarantees optimum weight and maximum output.



### Can be operated almost continuously

- The power packs do not over-heat thanks to their special oil-filled motor design. The oil tank is part of the motor itself and no other tank is necessary. The motor, the pump unit and the oil are all cooled at the same time.



### It runs and runs and runs!

- Innovative, patented technologies and design features, plus the use of high-quality materials ensure the pump has an extremely long lifespan.







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# **iQ** Power Packs

high-tech models



Our rugged and durable power packs are characterised by the constant volume they output right up to their pressure limits, and have proved themselves through their long life in the toughest applications. The oil-filled motor prevents overheating. The design also ensures optimum performance to weight ratio.

## **IQ-VAX**

- Fully automatic for accurate, reliable bolting joints
- Documentation
- Instrumentation and control systems
- Torque-angle method

Fully automatic VAX technology keeps users perfectly safe



Power Pack	Flow rate	Weight *
<b>IQ-VAX 3,5-X32</b>	3.5 l/min	35 kg
<b>IQ-VAX 1-Z-X32</b>	5.4 / 0.8 l/min	26 kg
<b>IQ-VAX 2-Z-X32</b>	8.0 / 1.2 l/min	32 kg
<b>IQ-VAX 3,5-Z-X32</b>	13.2 / 3.0 l/min	36 kg

Extracts of the specifications

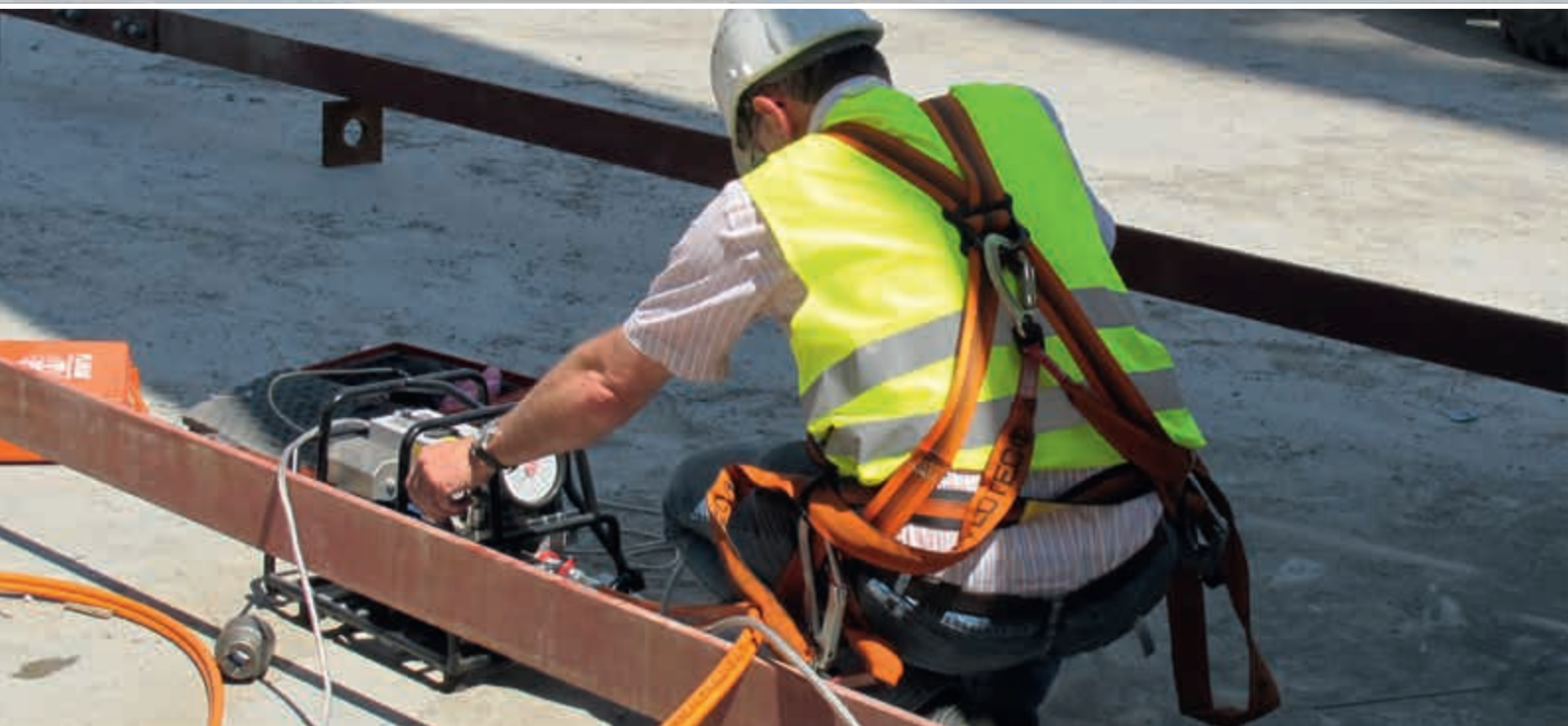
\* ready for use

Each individual bolting case (tightening – loosening) is controlled via the pump's microprocessor control unit utilising different processes

Rugged cage which protects the unit, even on building sites

Pressure indication displayed, assessment of the bolting case via a status indicator

Low noise while operating



## VAX – Genuine full automation function

- Straight to work at the touch of a button: the VAX automatic controls and finishes the bolted joint automatically and accurately, even when handling multiple bolts, as well as indicating progress to the operator via the remote-control.
- Pressure is taken off the operator, hence errors are eliminated.



## Documentation

- The Plarad “Documentation” add-on saves all torque or torque angles conducted into the control unit.
- Once uploaded to a computer, the bolting data can be used for traceability purposes on each bolt joint.

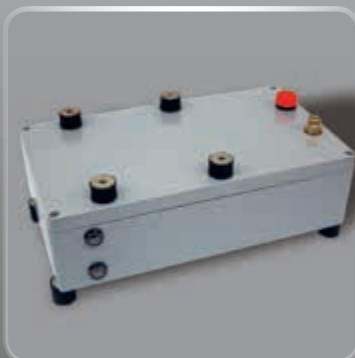
## Multiple bolting technologies

- The torque/angle function, for example, means that differing friction coefficients of bolts no longer play a role. The required tightening torque will always be achieved.

## Synchronised operation

- Synchronised operation using two or more units (MX-EC or FSX).
- The automatic function ensures that synchronised bolted joints are handled quickly and reliably, ensuring an optimal seal.

## Optional accessories



There is an extensive range of accessories, e.g. auxiliary oil tanks, to extend the unit's range of applications



Hydraulic couplings – adaptors and hoses are available in many sizes etc.



Optimal storage in a professional Plarad storage trolley





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# **XB** Power Packs

setting high standards



## **XB 1**

for mobile service work

- **XB 1**

The lightweight design of the XB 1 makes this power pack ideal for mobile service applications.

- **XB 2**

The all-rounder in the XB range is the XB 2, famous for its high speed.

- **XB 3,5**

As the quickest power pack the XB 3,5 is a powerful package particularly suitable for complex bolting jobs.

## **XB 2** for universal use

Guide to wind  
the cables around

Rugged industrial  
cage for tough  
environments

The main valve is  
within a protected  
non exposed area  
on the pump

Outward-facing oil filters (on XB 1 and  
XB 3,5) and maintenance friendly  
design, for easier maintenance

Improved valve  
technology

One or more hydraulic  
tools can be used  
with one or twin hose  
technology

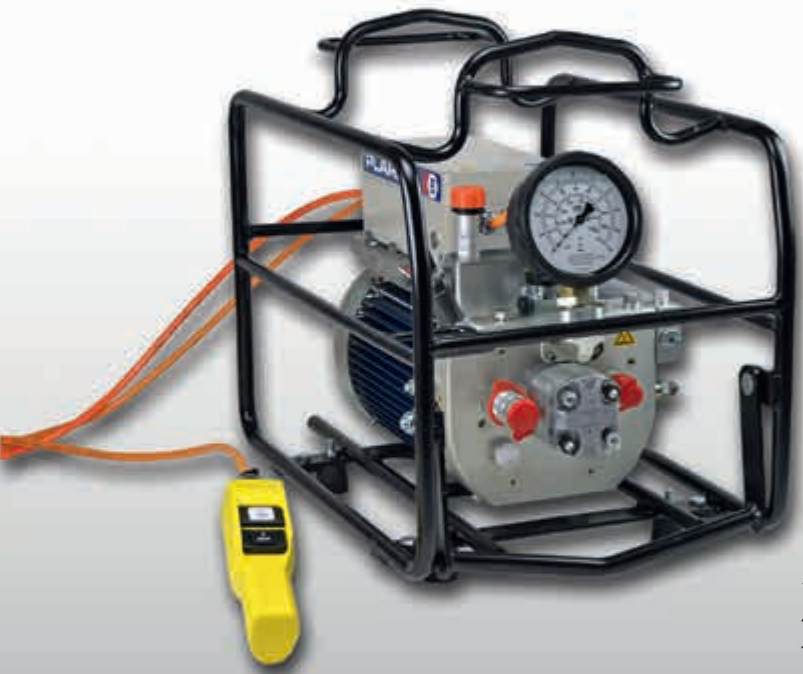




Power Pack	Flow rate	Weight*
<b>XB 1</b>	0.8 l/min	20 kg
<b>XB 2</b>	1.2 l/min	29 kg
<b>XB 3,5</b>	3.5 l/min	33 kg
<b>XB 1-Z</b>	5.4 / 0.8 l/min	24 kg
<b>XB 2-Z</b>	8.0 / 1.2 l/min	31 kg
<b>XB 3,5-Z</b>	13.2 / 3.0 l/min	35 kg
<b>XB-VAX 2</b>	1.2 l/min	32 kg
<b>XB-VAX 2-Z X32</b>	8.0 / 1.2 l/min	32 kg
<b>XB-VAX 3,5</b>	3.5 l/min	35 kg

Extract from technical data (values apply to 230 V/50 Hz or 400 V/50 Hz versions. (other voltages are available), e.g. 110 V.

\* ready for use



## **XB 3,5**

for use in manufacturing plants







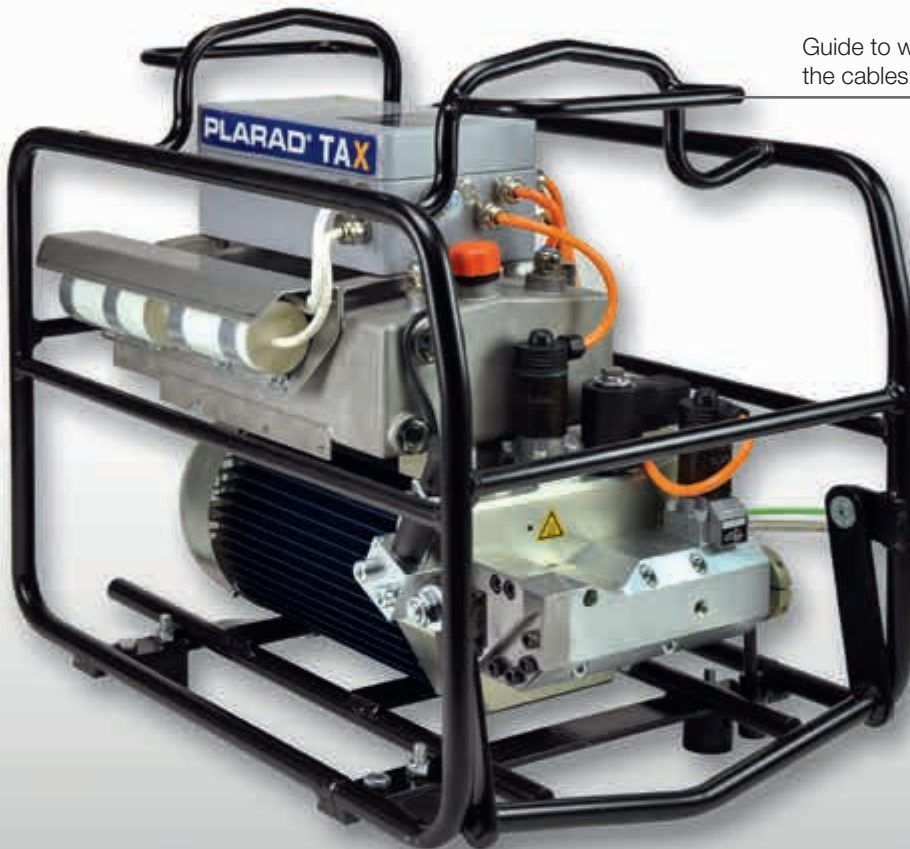
**PLARAD**



# TAX

the pump for tensioners

Guide to wind  
the cables around



Power Pack	Flow rate	Weight*
<b>TAX 1-1500-X32</b>	0.4 l/min (1 500 bar)	31 kg
<b>TAX 2-1500-X32</b>	0.6 l/min (1 500 bar)	40 kg
<b>TAX 3,5-1500-X32</b>	1.0 l/min (1 500 bar)	40 kg

Extracts of the specifications

\* ready for use

- Dedicated pump specially for tensioning applications up to 1 500 bar (optional to 2 100 bar)
- Pressure indication in the display screen
- Compactly built with special principles being utilised to build up the pressure

# Dual Power



Hydraulic Torque Tools

Power Pack	Flow rate	Weight *
<b>IQ-VAX 2-Z-D 1500-X32</b>	8.0 / 1.2 l/min (at 800 bar) 8.0 / 0.4 l/min (at 1500 bar)	40 kg
<b>IQ-VAX 3,5-Z-D 1500-X32</b>	13.2 / 3.0 l/min (at 800 bar) 13.2 / 1.0 l/min (at 1500 bar)	42 kg

Extracts of the specifications

\* ready for use

**800 bar**



The IQ Dual Power Pack can power both hydraulic torque tools and hydraulic tensioners.

**1 500 bar**  
(optional up to 2100 bar)



Tensioners



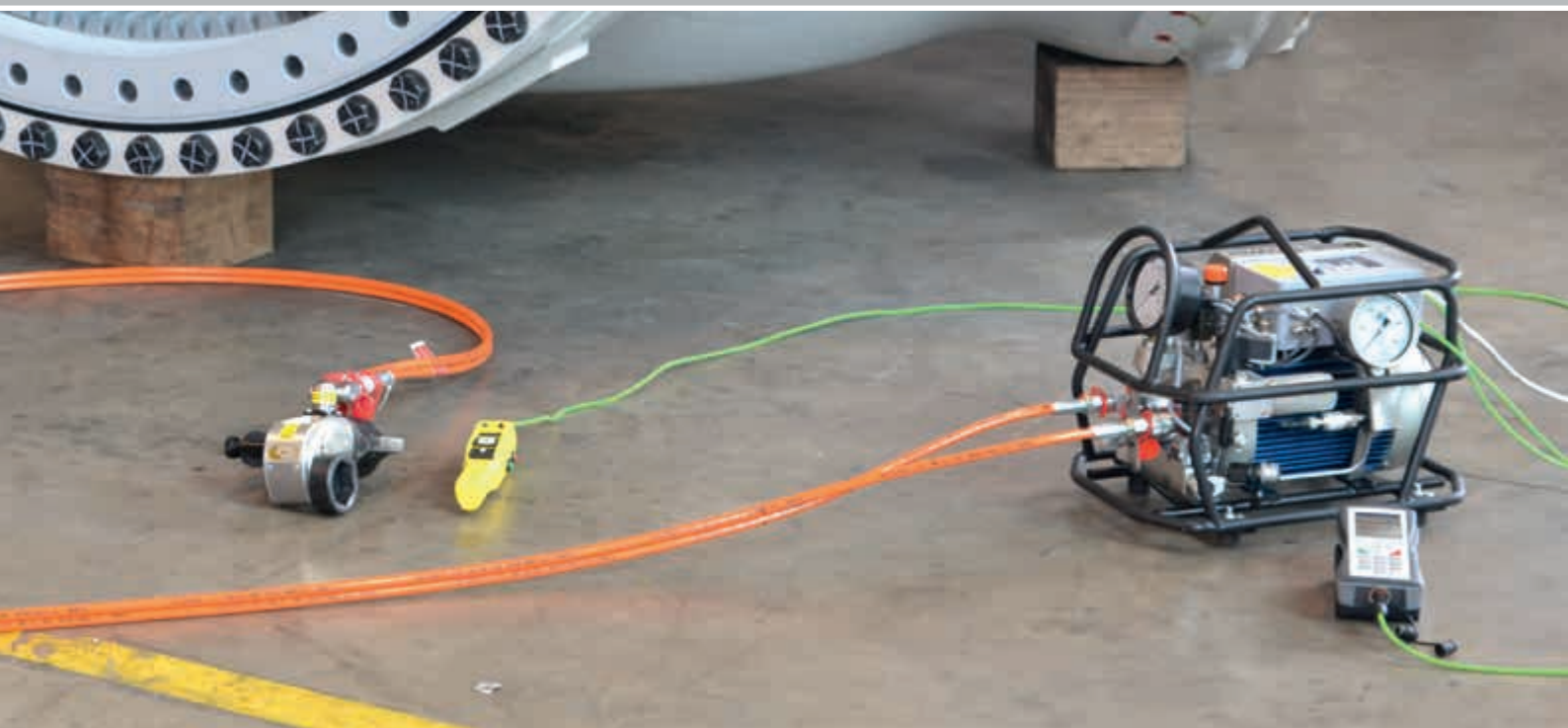
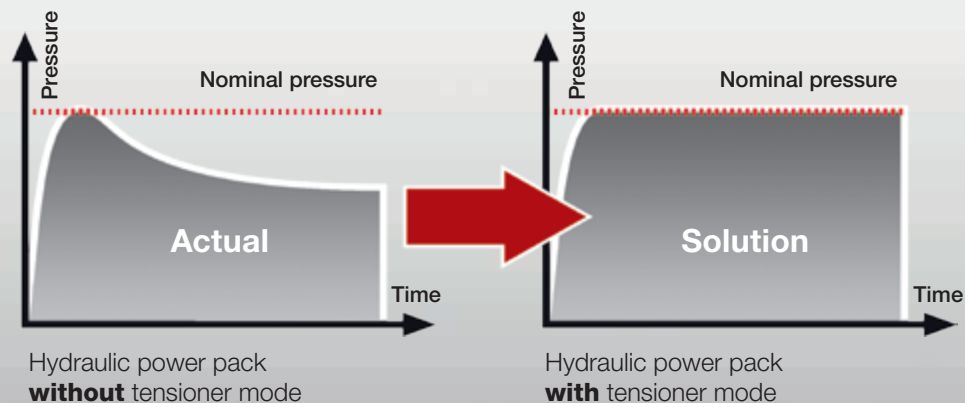
As well as a variety of bolting techniques and lifting processes in 800 bar mode, the Dual Power VAX unit can also be used for tensioning applications up to 1500 bar (optional up to 2100 bar). This universal hydraulic Power Pack saves you having to invest in additional high-pressure units.

- 2-in-1, one less unit to buy
- Fully automatic pumping of hydraulic tensioners
- Automatic limit-stop
- Pumping performance accross the range
- User-friendly – a remote control with identical functions. Users can easily familiarise themselves with the operation of the units easily
- All of the upgrades and enhancements on conventional IQ Power Packs are also available for the Dual Power

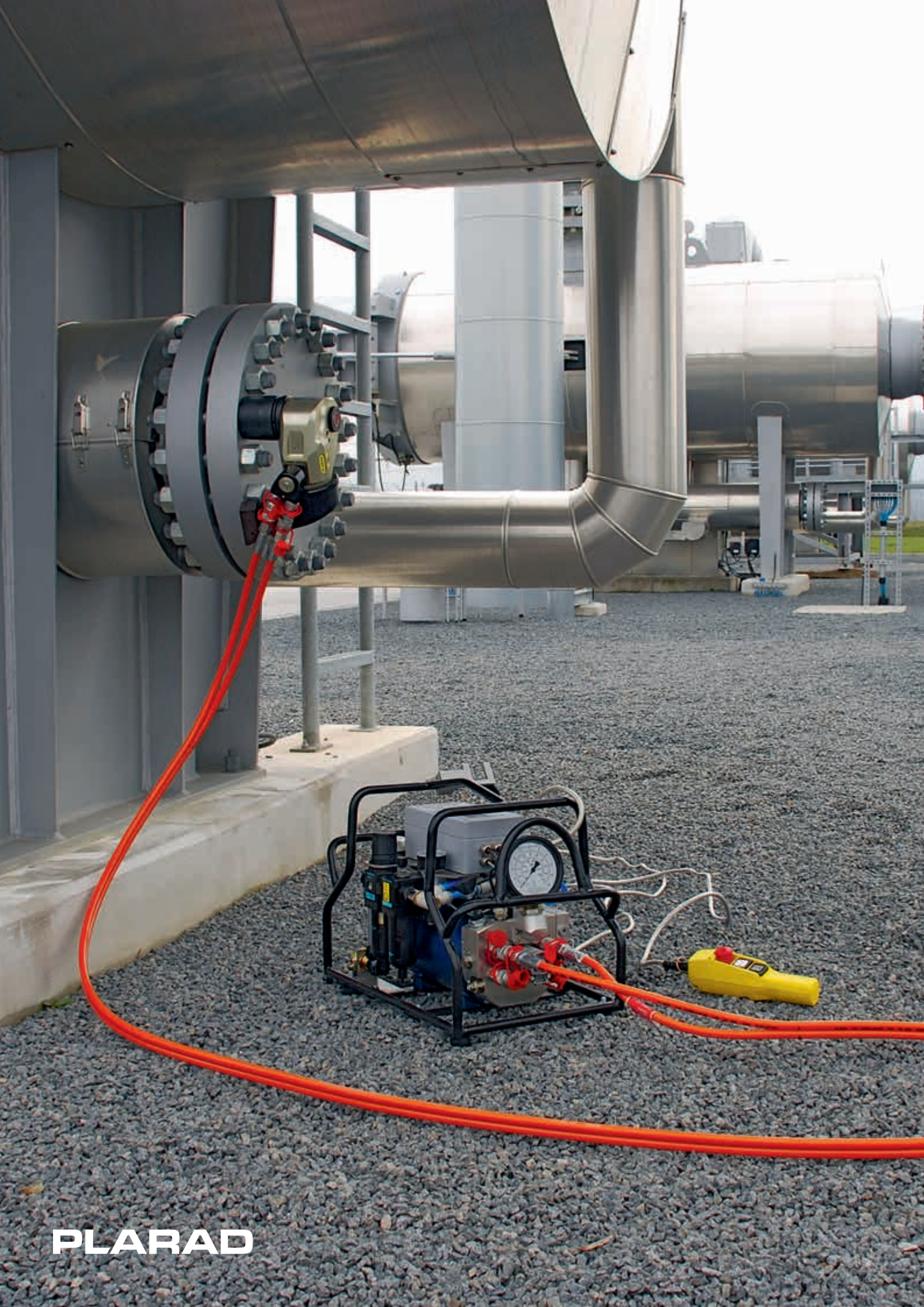
## Controlled tensioning force in tensioner mode

When initially tensioning, there is a risk that oil pressure decreases due to the settling of the object during the actual stretching process or due to stretching of the attached hydraulic hoses.

Plarad IQ Power Packs tensioner mode monitors the pressure and pump as required, ensuring that the required tension is achieved.



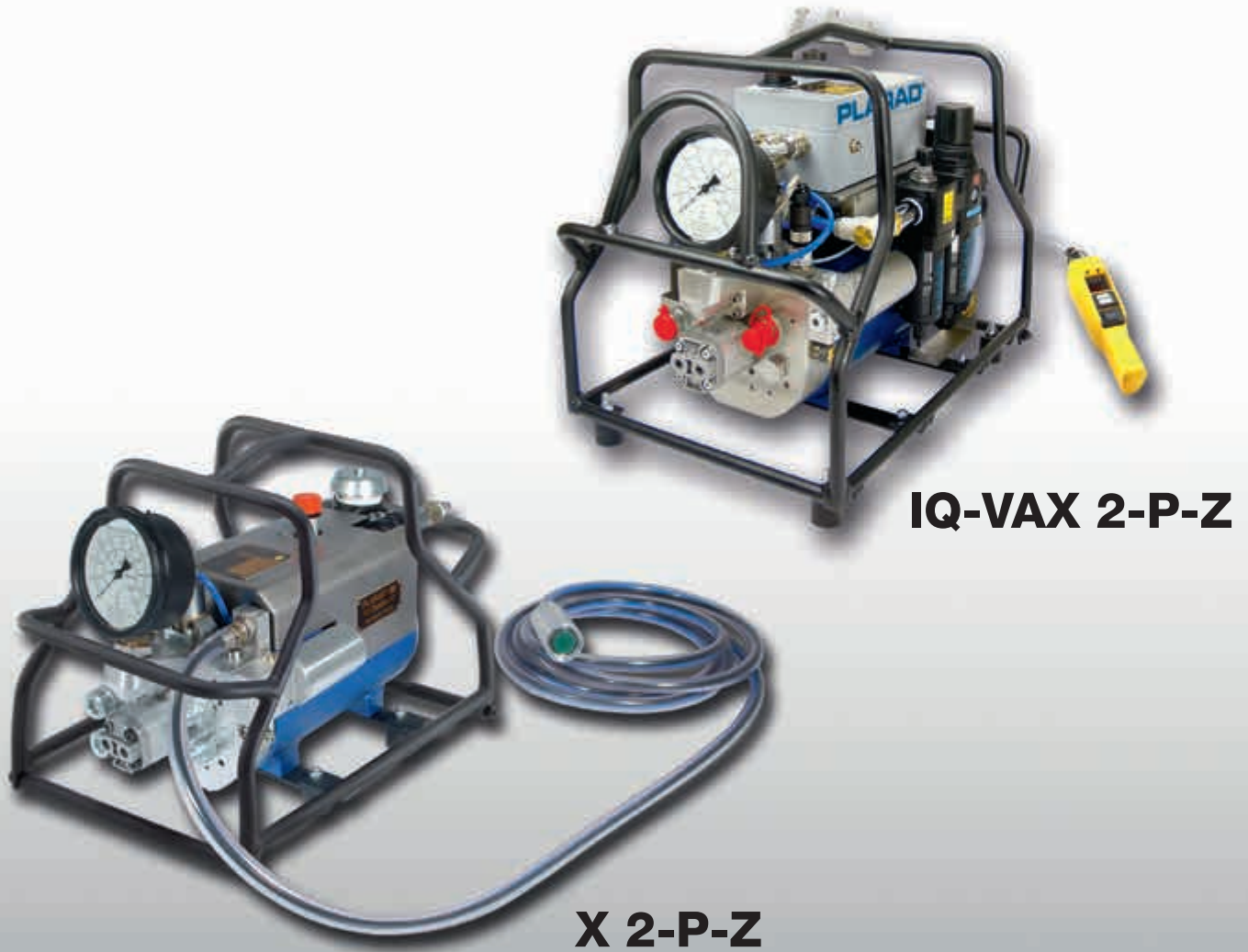




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# Pneumatic Hydraulic Power Packs



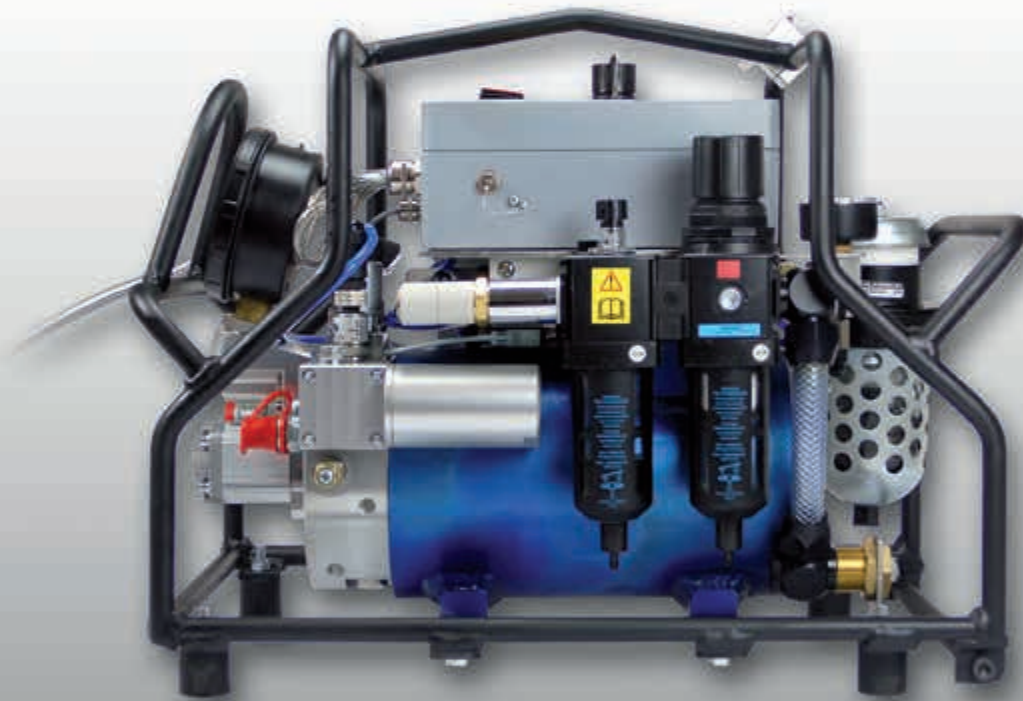
Just like our electrically powered hydraulic units, our pneumatic hydraulic power packs are characterised by their ruggedness, long life and their constant throughput right up to their pressure limits. The pneumatic motor is integrated into the oil tank, preventing seizure while simultaneously cooling the hydraulic fluid.



# IQ VAX

## pneumatic

The first pneumatic VAX unit:  
 The new, fully automatic pneumatic power pack uses the latest microprocessor technology. This eliminates user errors since operators simply start a fully automatic, controlled procedure at the push of a button. The machinery shuts off automatically when the required torque is achieved and informs the operator via the remote control.



**IQ-VAX 2-P-Z**



**For the full functionality of IQ technology**

Power Pack	Flow rate	Weight*
X 1-P	0.8 l/min	24 kg
X 2-P	1.6 l/min	31 kg
X 2-P-Z	7.0 / 1.6 l/min	32 kg
X 2-P-Z ATEX	7.0 / 1.6 l/min	32 kg
IQ-VAX 2-P-Z	7.0 / 1.6 l/min	35 kg

Extracts of the specifications

\* ready for use

# **ATEX**

approved

X 2 P-Z ATEX: Approved for operation in Zone 2G.  
Certified for use in areas containing materials with  
a minimum flame point of 0.082 mJ



**X 2-P-Z**



**PLARAD**



# HP Hydraulic Pump

## light and handy

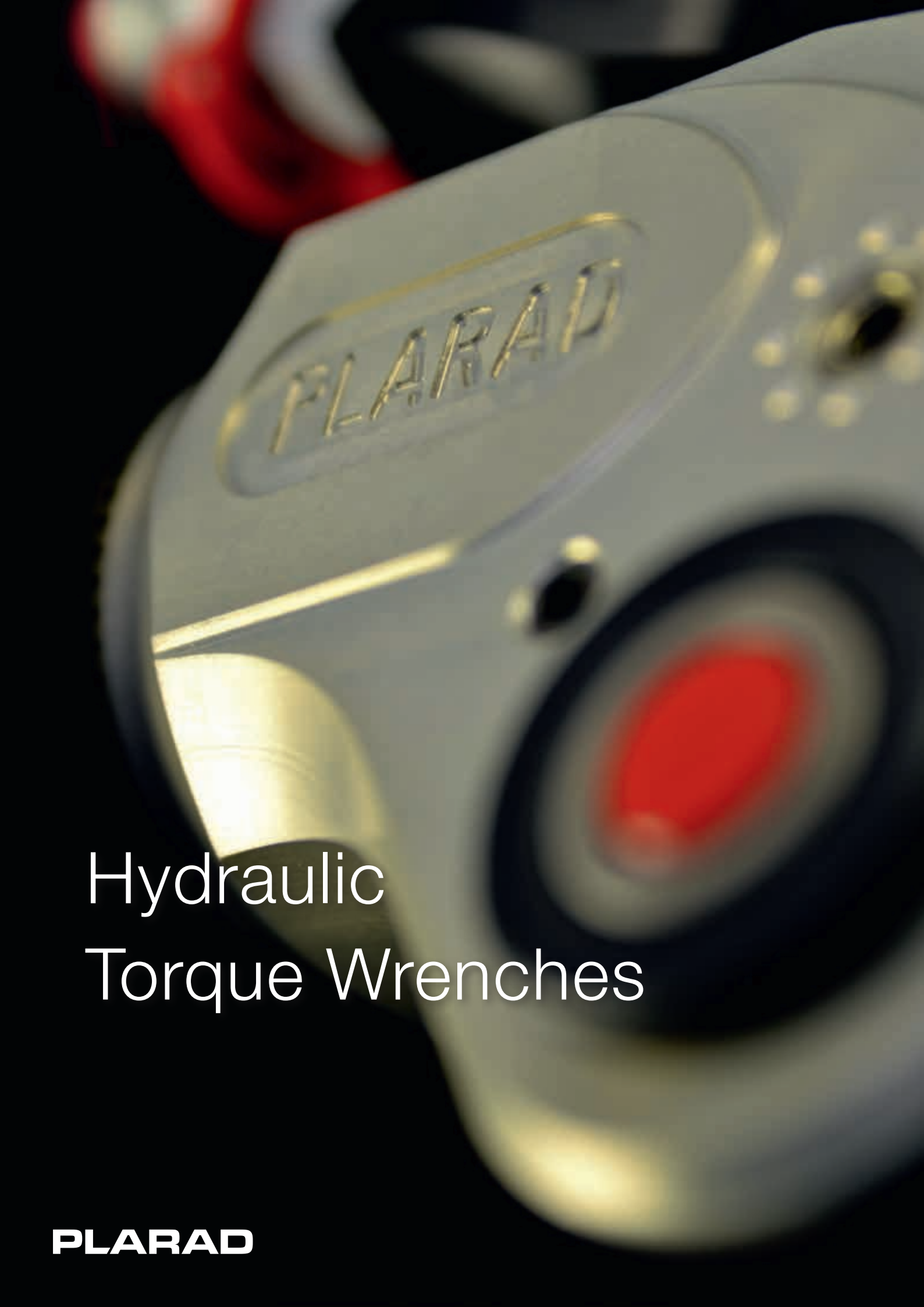
Plarad's manual hydraulic pumps are characterised by their high performance and low weight.

The use of very rigid light metal saves more than 50% in weight compared to conventional steel pumps.

35% less power required to achieve mechanical leverage, extremely low weight, and considerably higher pumping performance than conventional products, means that HP Power Packs are a welcome tool for everyday use in the workplace. Plarad HP Power Packs are also available in a variety of sizes.



- For occasional use
- Ideal for tensioners
- Extremely light
- High throughput
- More than 50% lighter than conventional steel pumps
- High throughput thanks to clever design
- Low setting down to 385 N
- Pressure limiting valve factory-provided adjustable
- Carrying handle and stabilising feet
- Available with two sizes of tank, 2 l and 4 l
- Available in 800-bar and 1 600-bar models



# 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

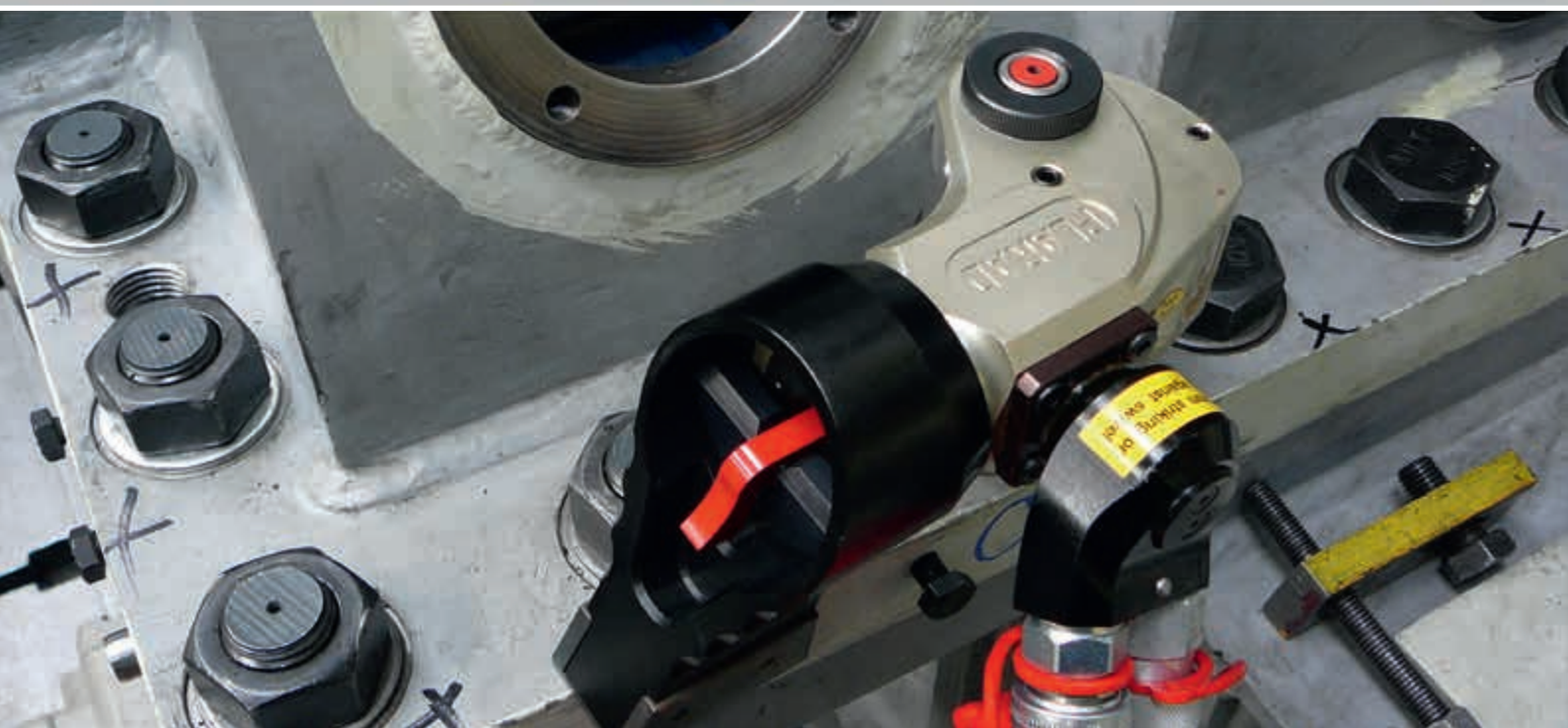


360° rotatable hose connection, with swivel option

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



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



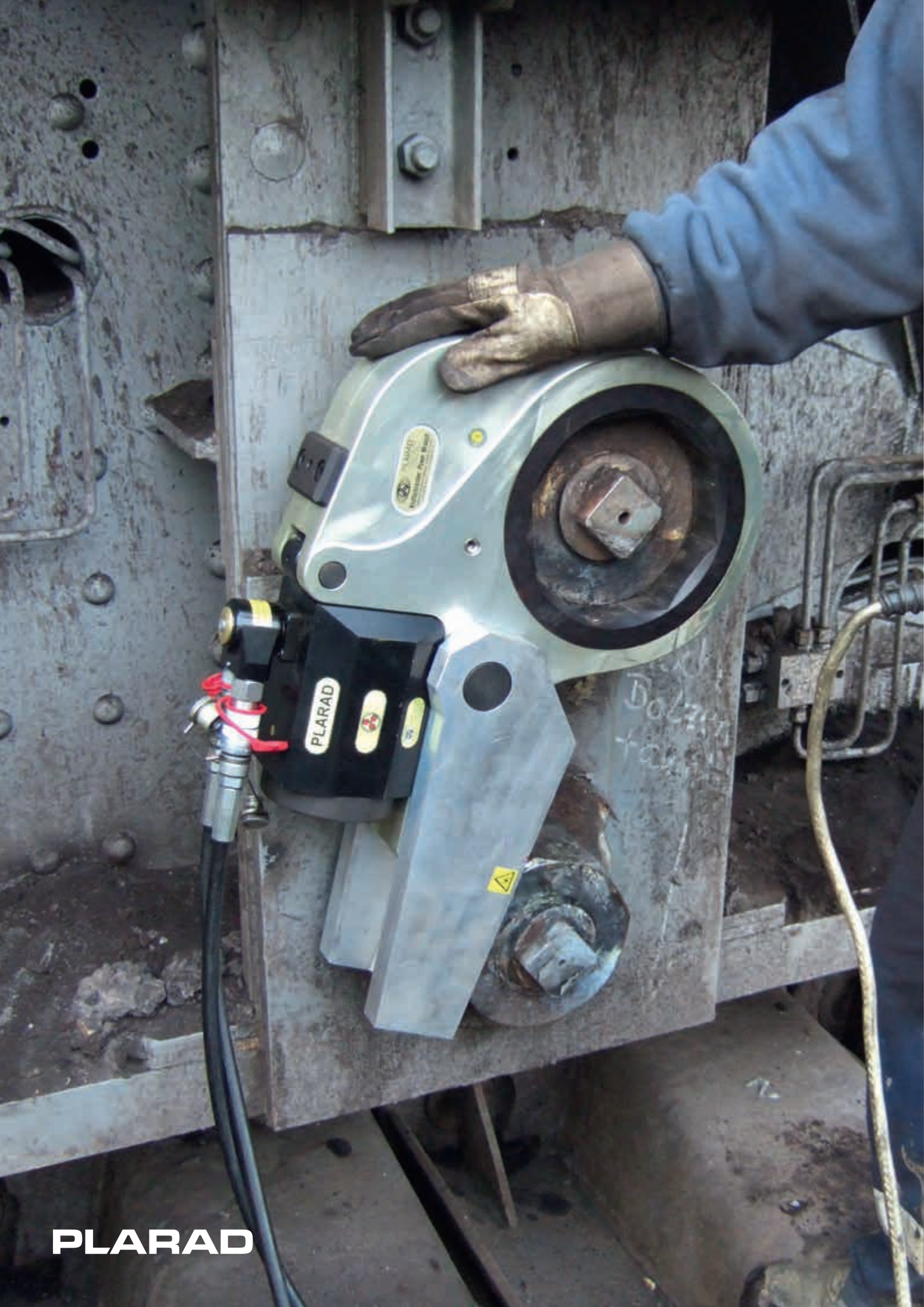
Splined safety hex inserts in a variety of sizes.











**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

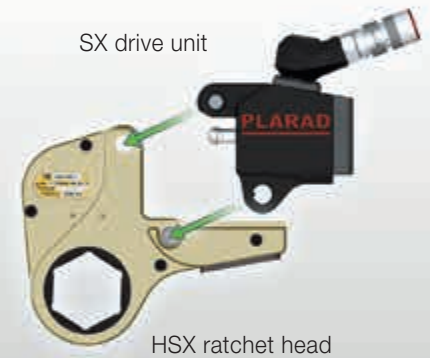


360° rotatable hose connection, with swivel option



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

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

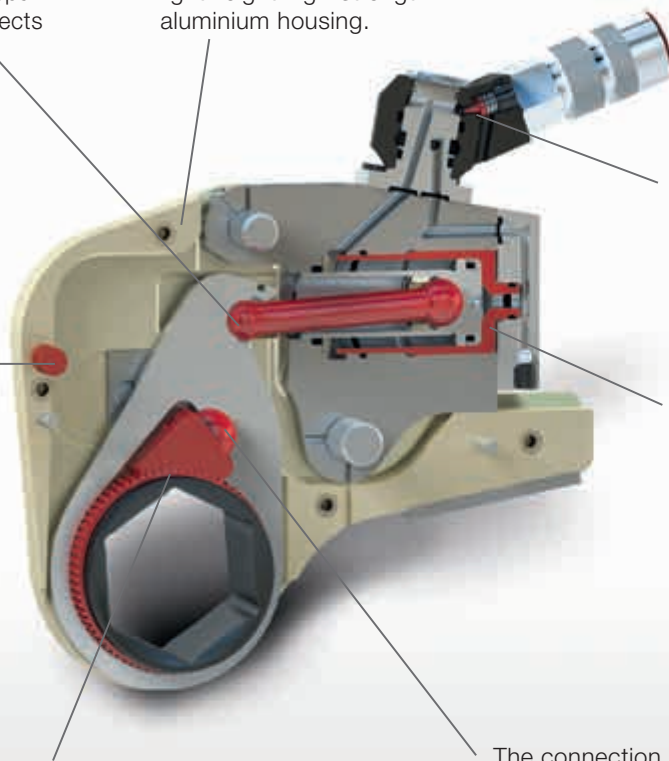
SQS safety cylinder made of high-strength material allows high pressures in a lightweight housing

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.



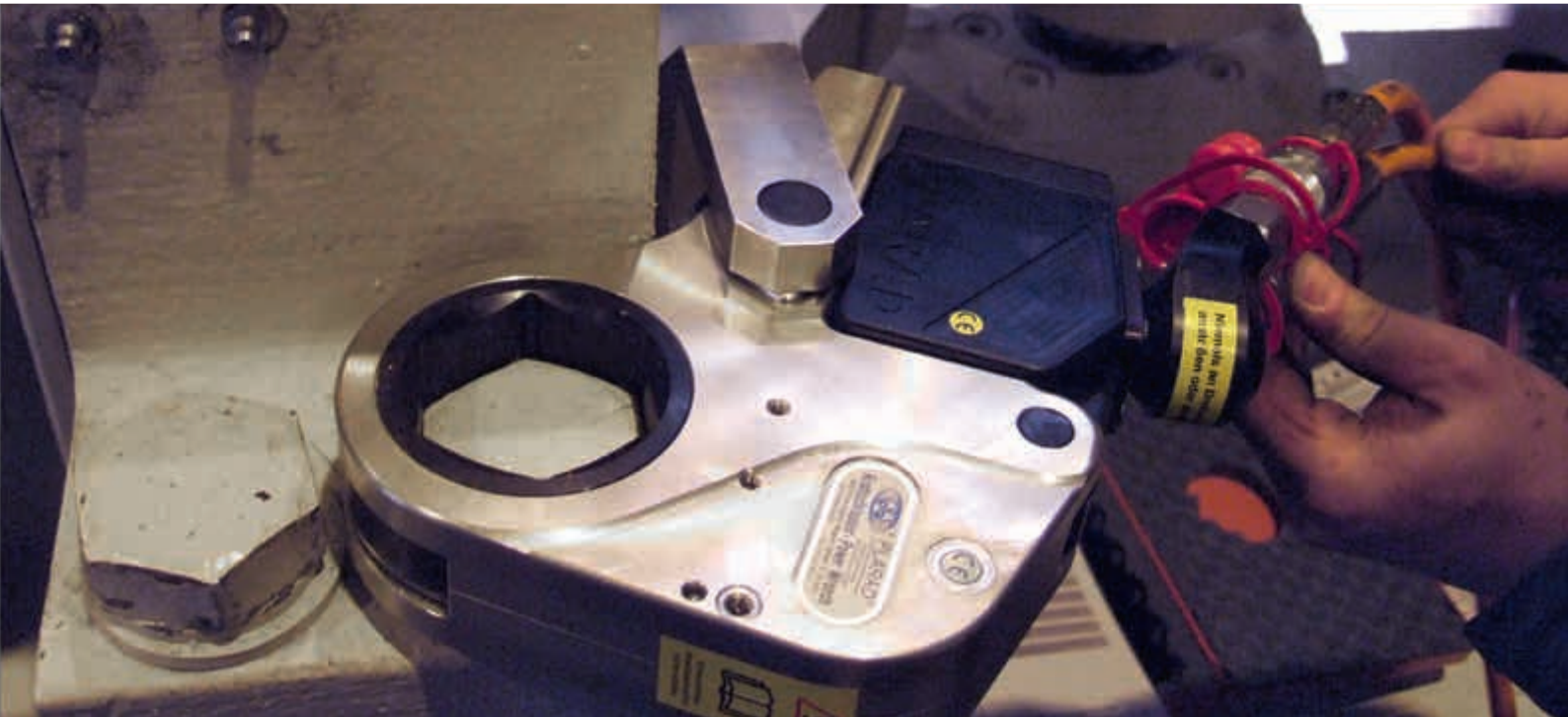
In/out sockets are available in all dimensions and for all wrench sizes.



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)
<b>K 30 TF</b>	24 - 90	300 - 3 000
<b>K 60 TF</b>	24 - 90	660 - 6 600
<b>K 150 TF</b>	27 - 110	1 100 - 11 000
<b>K 200 TF</b>	60 - 135	2 000 - 20 000
<b>K 300 TF</b>	80 - 150	3 000 - 30 000







**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







**PLARAD**



# ATEX products

Terminology conforms to EU machine guidelines 98/37/EU and 94/9 EU



## X 2-P-Z

Pneumatic Power Pack

II 2G ck IIB T4  
-10°C ≤ Ta ≤ +50°C



## FSX

Hydraulic Torque Wrench

II 2G ck IIB T4  
-10°C ≤ Ta ≤ +50°C



## MX-EC

Hydraulic Torque Wrench

II 2G ck IIB T4  
-10°C ≤ Ta ≤ +50°C



## DP

Nutrunner (pneumatic)  
for mining

I M2 c  
-10°C ≤ Ta ≤ +50°C

Nutrunner (pneumatic) for  
oil and gas industries

II 2GD c IIB T5  
-10°C ≤ Ta ≤ +50°C



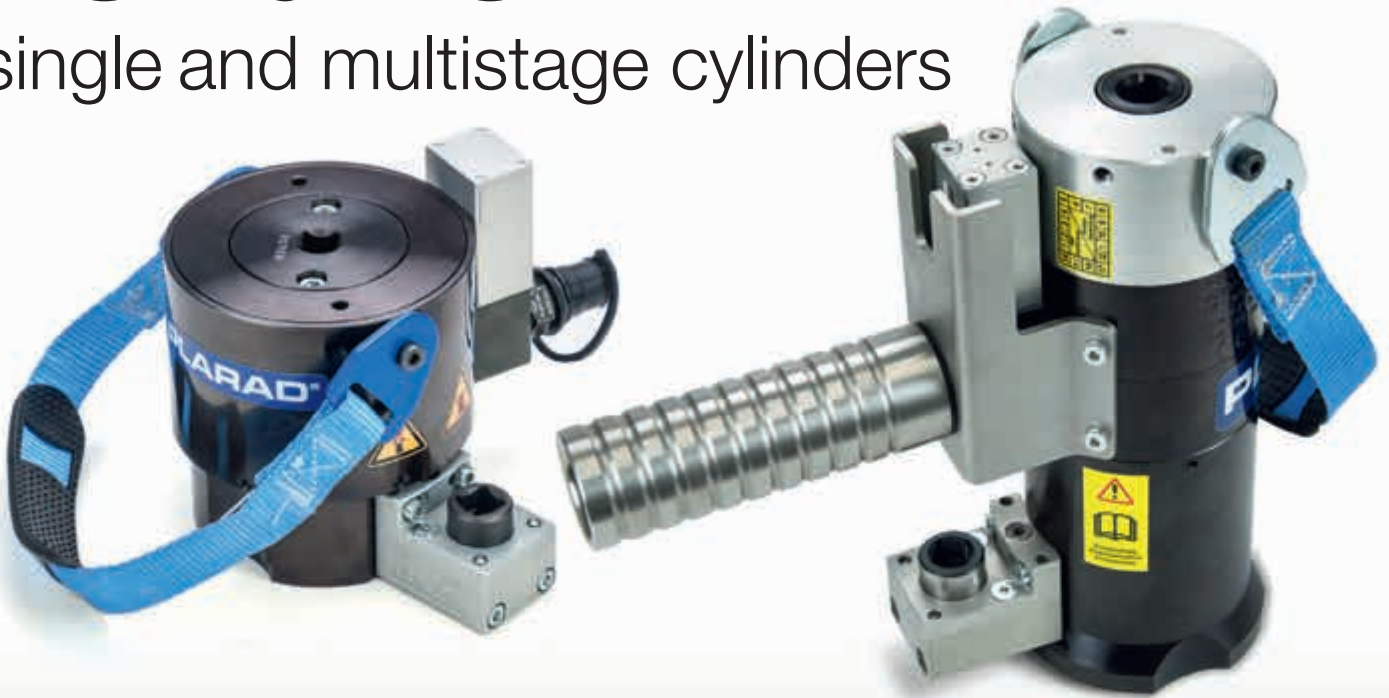
# Hydraulic Tensioners



**PLARAD**

# PSE & PSD

single and multistage cylinders



- Bolted joint assembly and disassembly without inducing torsional stress in the bolt
- Applied load precisely adjustable
- Individual adjustment for every bolting need
- Available in single stage and multi stage versions
- 1 500 bar maximum operating pressure
- Available in a range of sizes



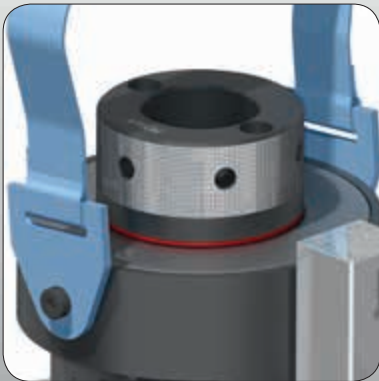


# PSE single stage

Its flat design makes the single stage tensioner particularly advantageous in axially restricted spaces. The knurled attachment additionally included will also ensure successful tensioner application with bolt protrusions of excessive length. Furthermore the PSE also includes all market relevant features of the PSD (see cross sectional 3d model).



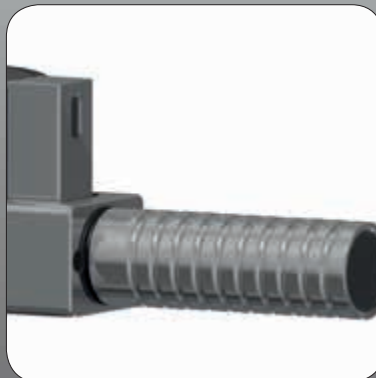
Standard attachment



Knurled attachment for long bolt protrusions



Spacer rings and washers for different bolting cases



Handle



Hose coupling can be positioned for optimum use

Type	Maximum force applied load (kN)	AF (mm)
<b>PSE 24-305</b>	305	36
<b>PSE 30-482</b>	482	46
<b>PSE 36-681</b>	681	55
<b>PSE 42-980</b>	980	65
<b>PSE 48-1235</b>	1 235	75
<b>PSE 52-1458</b>	1 458	80
<b>PSE 56-1676</b>	1 676	85
<b>PSE 64-2259</b>	2 259	95

Other sizes and dimensions on request.

# PSD two stage

The two stage hydraulic tensioner PSD enables screw joint assembly and disassembly without torsional stress for the bolt. The pre-tensioning power is precisely adjustable.

## Safety indicator – green (optional)

Safe controlled operation: Verification of sufficient engagement of the bolt/stud.

## Maximum stroke indicator

Optical safety: Visual indication of maximum stroke (max distance piston can move out of the tensioner body).

## Automatic piston return

Swift operation: The puller is automatically returned to its original position once the pressure has been released.

## Stroke limiter – mechanical

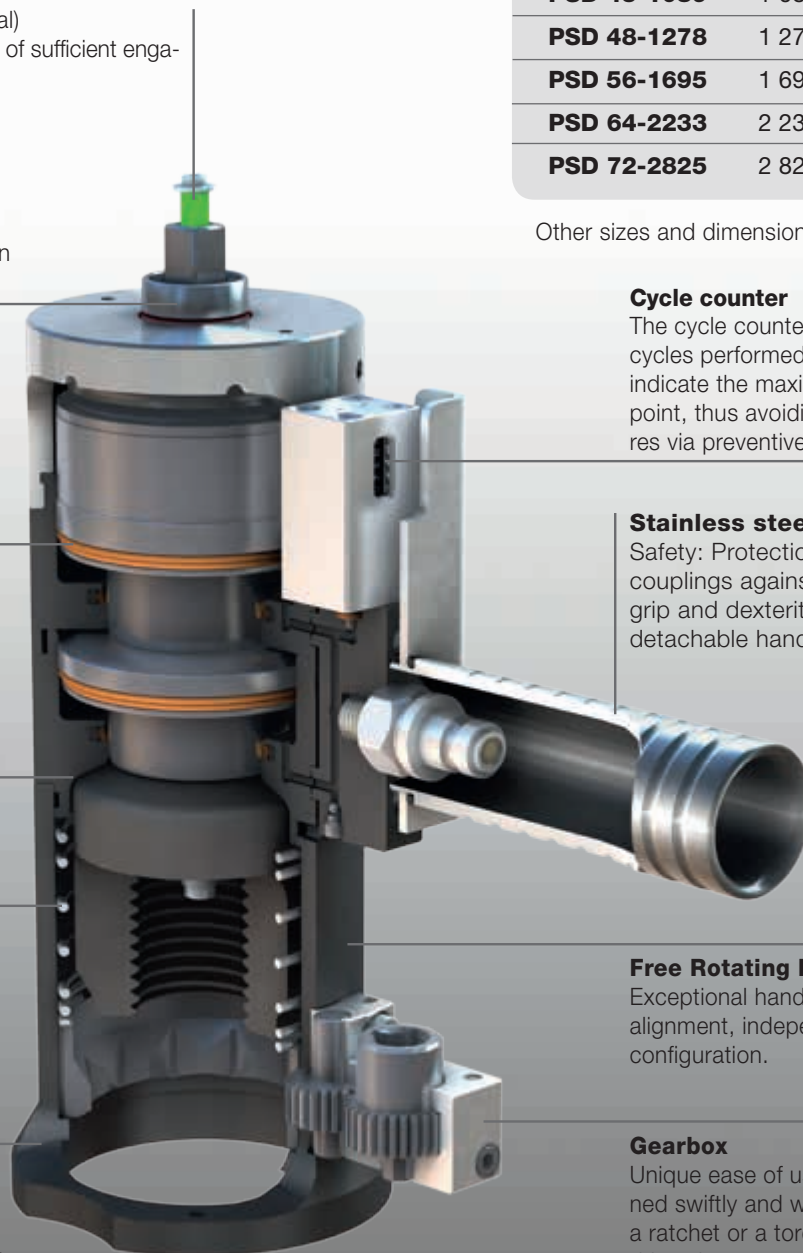
Ultimate safety: The mechanical end stop prevents the over extension of the piston (even under maximum load).

## Rotating socket – spring-loaded

Prevention of installation damage during the positioning of the tensioner: The spring affords the rotating socket axial flexibility.

## Supporting surface – optimized

Outstanding versatility in any environment: The tensioner is especially well suited for use in tight spaces thanks to its optimal shape.



Type	Maximum force applied load (kN)	AF (mm)
------	---------------------------------	---------

PSD 30-471	471	46
------------	-----	----

PSD 33-581	581	50
------------	-----	----

PSD 36-678	678	55
------------	-----	----

PSD 39-808	808	60
------------	-----	----

PSD 42-937	937	65
------------	-----	----

PSD 45-1089	1 089	70
-------------	-------	----

PSD 48-1278	1 278	75
-------------	-------	----

PSD 56-1695	1 695	85
-------------	-------	----

PSD 64-2233	2 233	95
-------------	-------	----

PSD 72-2825	2 825	105
-------------	-------	-----

Other sizes and dimensions on request.

## Cycle counter

The cycle counter indicates number of cycles performed and will consequently indicate the maximum cycle service point, thus avoiding damage and failures via preventive maintenance.

## Stainless steel handle

Safety: Protection of the hose couplings against damage. Optimal grip and dexterity provided by the detachable handle of the tensioner.

## Free Rotating Bridge

Exceptional handling: Straightforward alignment, independent of the bolt configuration.

## Gearbox

Unique ease of use: The nut can be turned swiftly and with perfect ease using a ratchet or a torque wrench that is driven by a gear drive (maximum input torque: < M36=40 Nm, > M36=80 Nm).



# Manual Torque Multipliers



**PLARAD**

# XVR/XVK

- Manually operated torque multiplier
- Ideal for use with no external power supply
- Available for use anywhere and at any time

Torque multiplier	Height (mm)	Ø (mm)	Performance range (Nm)	Weight (kg)
<b>XVK 15</b>	172	81	220 - 1 700	2.6
<b>XVR 25</b>	302	81	440 - 2 300	5.2
<b>XVR 35</b>	273	81	510 - 3 600	5.0
<b>XVR 40</b>	238	95	560 - 4 000	6.1
<b>XVR 65</b>	244	114	820 - 6 200	8.4
<b>XVR 70</b>	302	128	980 - 6 800	11.4
<b>XVR 90</b>	300	172	1 780 - 8 600	21.8
<b>XVR D 45</b>	310	128	1 000 - 10 100	16.0

All weights are without reaction arm/subject to amendment.

Compatible torque wrenches

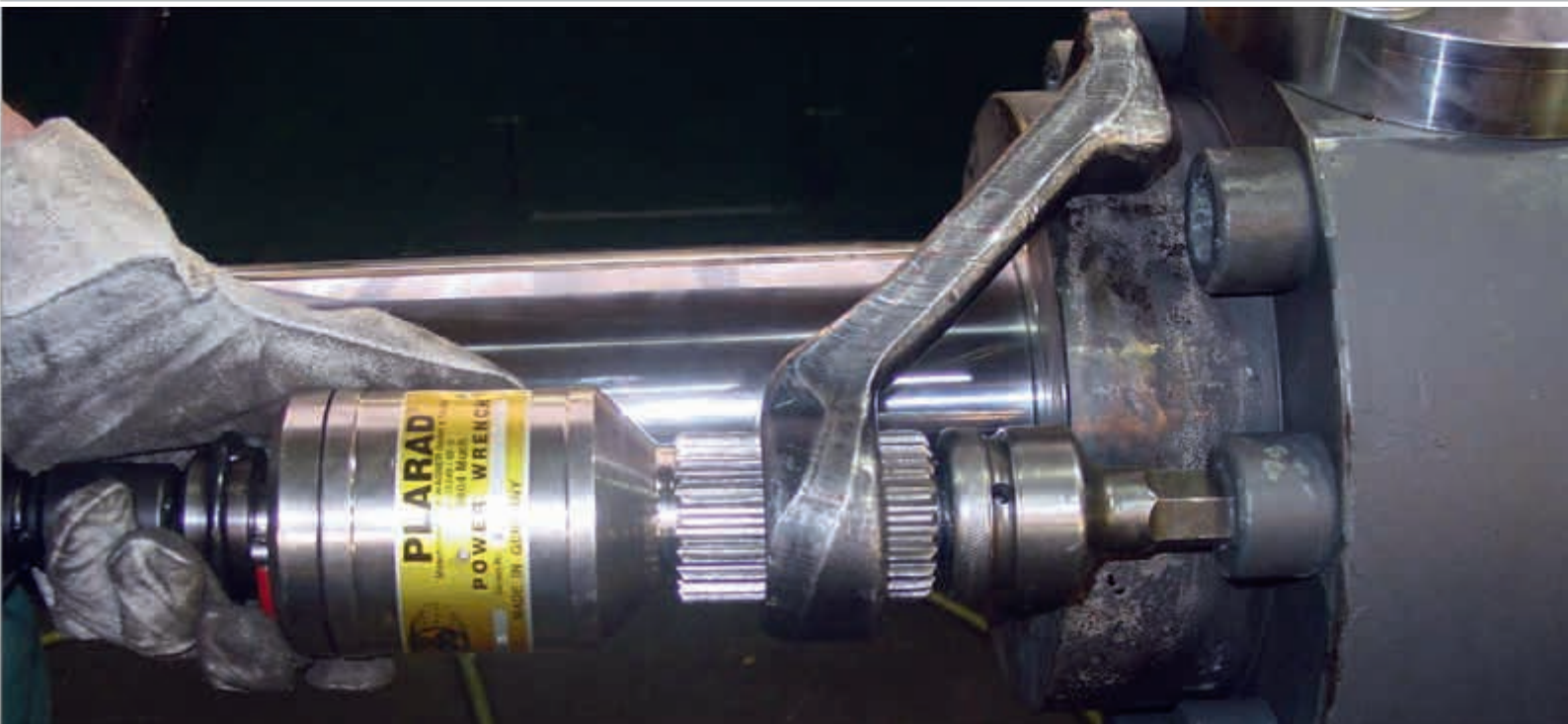


**PH 36 Z** (60 - 360 Nm)  
**PH 50 Z** (200 - 500 Nm)

**XVK**  
Single stage torque multiplier

**XVR**  
Multi stage torque multiplier with reversing safety mechanism ensures extra safety for users

Flexibility thanks to height-adjustable reaction arm





# General accessories

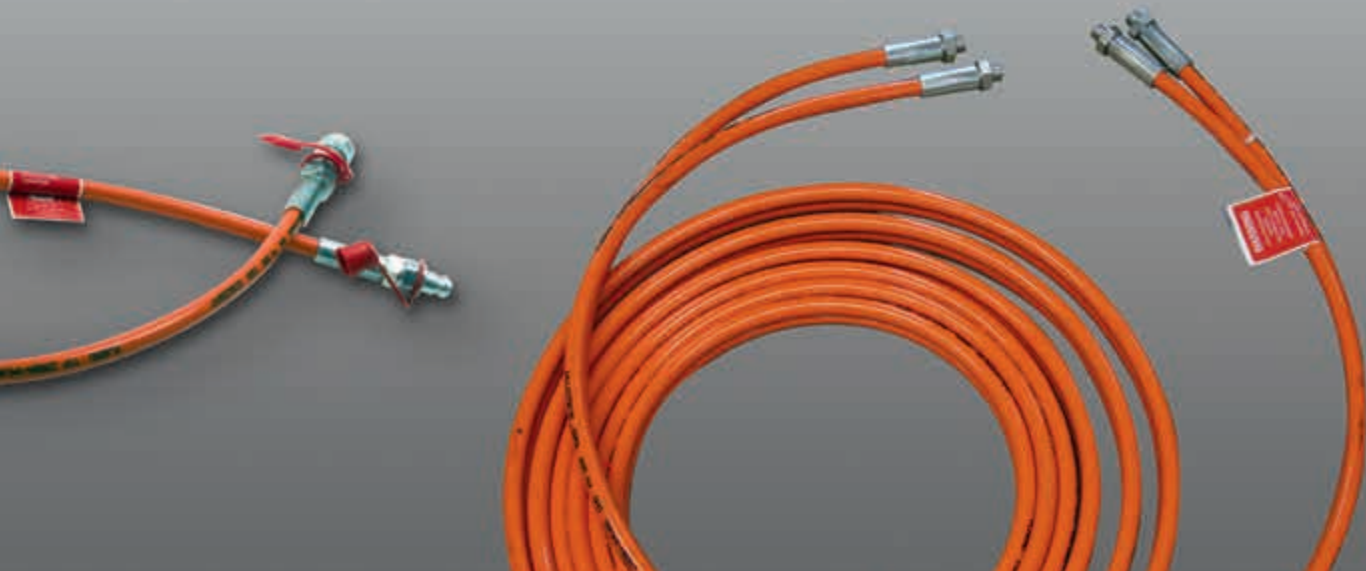
## Trolley for hydraulic power packs – for mobility in plants and workshops

Aluminum frame, 2 integrated handles, lockable quick-lock, rollers with solid rubber tires and roller bearings, brake and caster wheels



## Assortment of hoses and coupling adapters

Plarad hoses with a fourfold safety factor up to 800 bar (bursting pressure 3 200 bar)





Lubricants



Various reaction arms

Valve wheel driver for valves



Various sockets and fittings



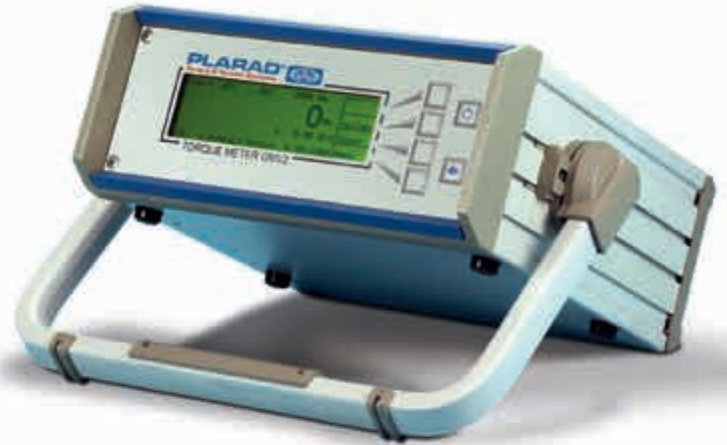
# GMV 2 & PH

## torque measuring device

## Checking bolting joints

The microprocessor controlled GMV 2 unit is our key test instrument.

Used in conjunction with a transducer, it enables precision measurement of torque while bolts are being done up. The values can be saved, along with the date and time, and can then be printed out by the instrument itself or uploaded to a PC for further evaluation.



## Equipment testing

The PH test system, used with the GMV 2, is the ideal combination for testing and setting up hydraulic tools.

Combining the DRT reaction torque sensor with the GMV 2 enables static testing of impact tools, electric torque tools and other equipment of various designs.

	Verschraubungs-Nr	Datum	Zeit	Schraubfeld	Modus	Null-Nm	Min-Nm	Max-Nm	Null*	Ergebnis	Null-Nm
1	10	17.08.2008	13:42:25	010	MM	440	1000	2000	40	Schraube fest	0/0
2	24	17.08.2008	10:44:12	010	MM	440	1000	2000	40	OK	1276
3	35	17.08.2008	10:48:10	010	MM	440	1000	2000	40	OK	1244
4	86	17.08.2008	10:49:30	010	MM	2000	10000	20000	0	Schraube fest	2750
5	27	17.08.2008	10:50:27	010	MM	2000	10000	20000	0	Schraube fest	1020
6	38	17.08.2008	11:53:05	010	MM	1000	1000	1000	100	Schraube fest	1000
7	39	17.08.2008	11:53:17	010	MM	1000	1000	1000	100	Schraube fest	770
8	40	17.08.2008	11:54:07	010	MM	1000	1000	1000	100	Schraube fest	1000
9	47	17.08.2008	11:54:17	010	MM	2200	2000	2000	120	OK	3401
10	42	17.08.2008	12:08:06	010	MM	2200	2000	2000	120	OK	3470
11	43	17.08.2008	13:42:25	010	MM	700	700	2000	40	OK	1037
12	44	17.08.2008	10:07:45	010	MM	700	700	2000	40	OK	1037
13	45	17.08.2008	10:11:30	010	MM	700	700	2000	40	OK	1039
14	46	17.08.2008	10:24:08	010	MM	700	700	2000	40	Wart. M	2520
15	47	18.08.2008	10:11:30	010	MM	700	700	2000	40	Schraube fest	1000
16	48	18.08.2008	10:17:23	010	MM	700	700	2000	40	Schraube fest	1000
17	49	18.08.2008	10:20:04	010	MM	700	700	2000	40	Wart. M	2520
18	50	18.08.2008	11:24:41	010	MM	700	700	2000	40	Wart. M	2510
19	51	18.08.2008	11:27:01	010	MM	700	700	2000	40	OK	1020
20	52	18.08.2008	11:50:24	010	MM	700	700	2000	40	OK	1000
21	53	18.08.2008	12:08:42	010	MM	700	700	2000	40	Wart. M	2520
22	54	18.08.2008	12:08:49	010	MM	700	700	2000	40	OK	1000

Bolting joints can be evaluated on a PC



# TC1

## mobile measuring unit

The TC1 measuring unit is an innovation in the field of mobile measuring equipment. It measures the applied torque, and hence the bolting process, directly where it happens. The system works wirelessly in the bolting process and can simply be attached to the nutrunner.

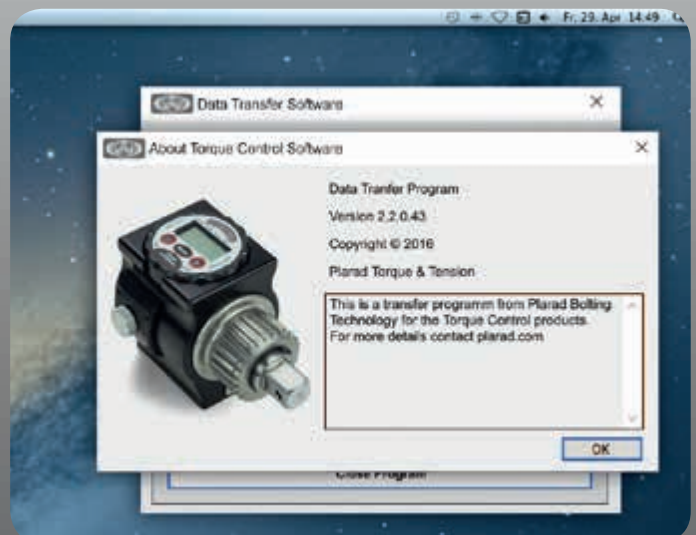
- Measures the applied torque directly at the point of application
- Measuring range up to 5 500 Nm
- Torque is shown in the sensor display
- Acoustic warning signal if the defined tolerance is exceeded
- An LED display provides information about the torque result
- Integrated memory for 250 values
- Transfer and analysis to the PC
- Appliances are compatible with the current Plarad nutrunner range and virtually maintenance-free
- Including transport box, Data-Trans software, power cable and USB cable



Type	Measurement range (Nm)	Square drive	Spline teeth quantity	Weight (kg)
<b>TC1 - 11</b>	110 - 1 100	3/4"	26	2.60
<b>TC1 - 31</b>	310 - 3 100	1"	45	4.80
<b>TC1 - 41</b>	410 - 4 100	1"	26	2.70
<b>TC1 - 55</b>	550 - 5 500	1 1/2"	45	5.00

## Torque Control Software

- Documentation from: Screw connection date, time, OK/NO OK result
- Storage of screw connection data
- Evaluation/statistics/archive
- Optimised documentation and process security
- Quality assurance guarantee







Plarad support during the construction of a wind plant in China



Consultation and assistance for use of equipment in Russia



Demonstration of equipment by Plarad employees in Italy



# 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.

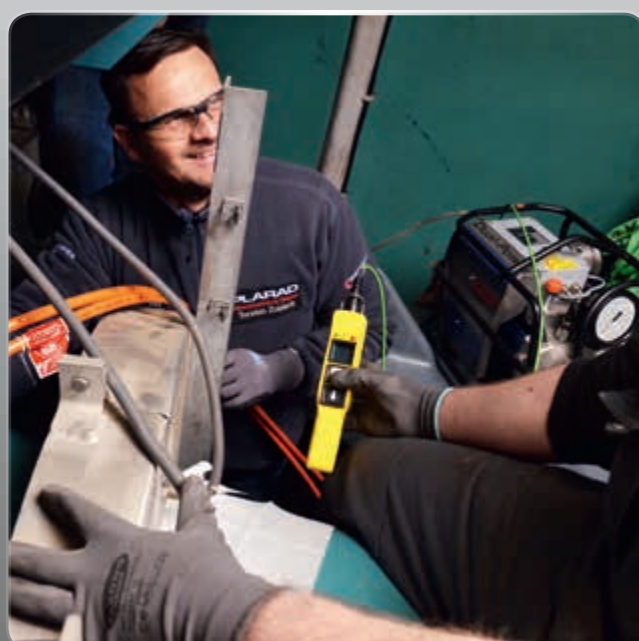
In close cooperation with our clients, we develop tailor-made tools that are perfectly customised to their respective requirements. Extensive support is meanwhile an integral part of our service. This is because we will accompany you before, during and after the project phase.

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





**PLARAD**

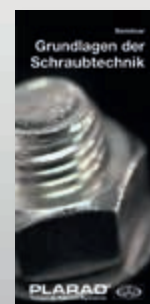
# We pass on our knowledge

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





# 3D CAD analysis

Give us the data on your bolting joints in whatever format you want:

E.g. hand-drawn sketch, with the aid of our bolting survey or as a CAD file.



We will use your information to create a 3D model on our own CAD system. This enables us to recommend the optimum tools for your needs. Where appropriate, we can customise a bolting system for your individual needs.



You will receive our recommended solution in the form of a printout and a 3D animation (use "Autodesk" dwf viewer).



Our wide range of products enables us to find the most economical solution for you.

# 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.



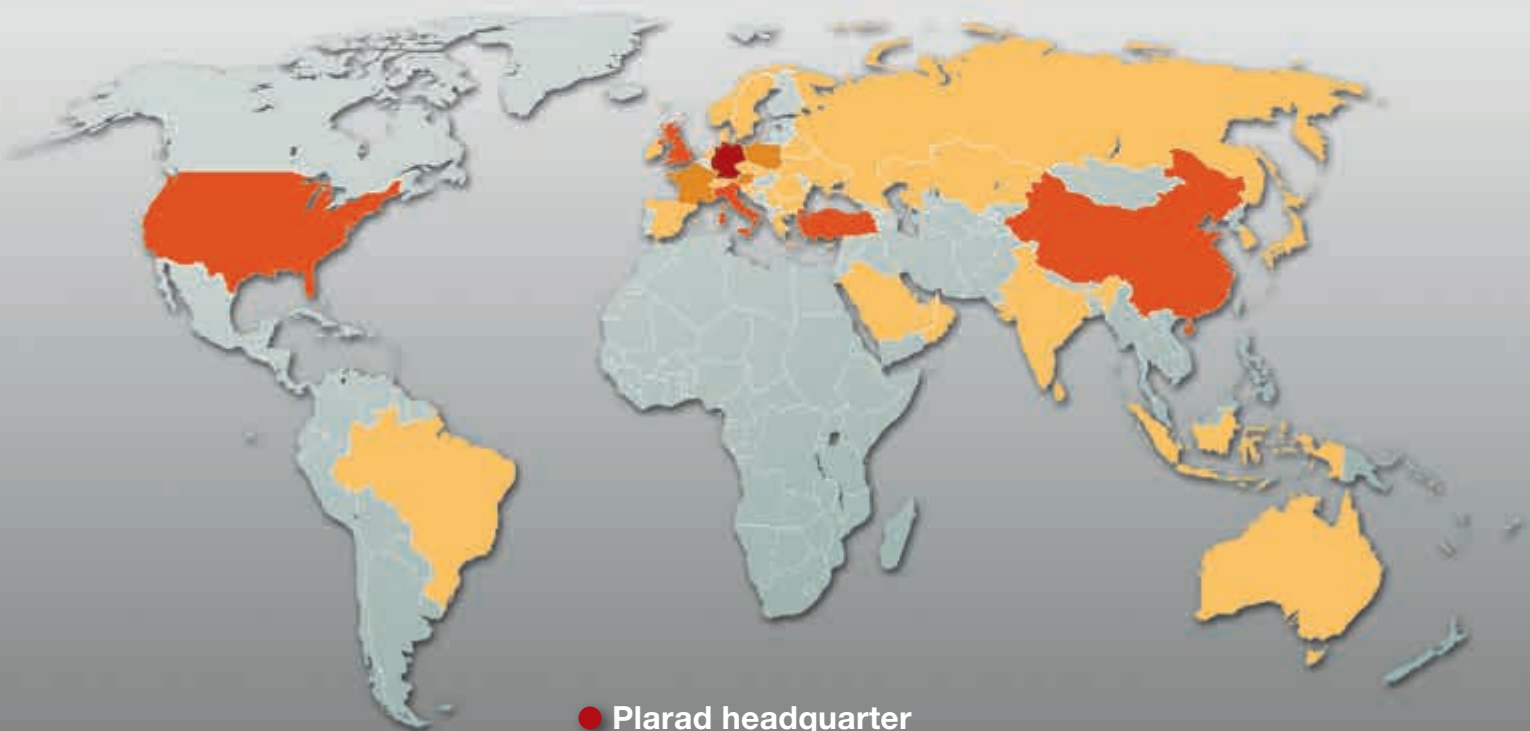
We check your bolting needs by means of precise measurement of torque while bolts are being tightened.

# 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](http://www.plarad.de) | [info@plarad.de](mailto: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

**PLARAD**<sup>®</sup>  
Torque & Tension Systems



... 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

