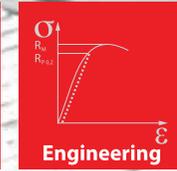
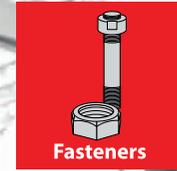




Tools



Engineering



Fasteners



Service

## Nut Runners

Electric, battery-driven, pneumatic, manual

[www.ITH.com](http://www.ITH.com)



SCAN ME

# Content

Innovation 3

## Nut Runners

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## More than 40 years of continuous development

Continuity, quality and a high vertical range of manufacture are the prerequisites to offer our customers the technically and economically best solution for their bolting needs. Since 1979, all bolting tools have been developed and produced at ITH Bolting Technology's headquarters in Meschede, Germany.

All options - including documentation or angle-controlled tightening - can be selected according to your requirements. Personal contact is essential - contact our team for individual technical advice. All contact information can be found on our website [www.ith.com](http://www.ith.com).

We are looking forward to working with you,

**Dipl.-Ing. Frank Hohmann**  
Managing owner | CEO

**Dipl.-Ing. Jörg Hohmann**  
Managing owner | CEO



1979 Innovation and development



Innovation

\*ALPHA-version: angle-controlled tightening, digital control.

# Type ADS Battery Nut Runner



Find product details and videos on our website:  
Scan the QR code with your smartphone.



## Application examples



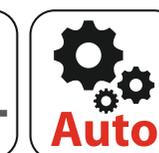
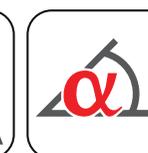
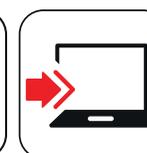
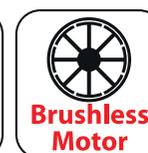
## Battery Nut Runner

# Type ADS

## Functions & advantages

- ✓ Best power-to-weight ratio Nm / kg in its class.
- ✓ Safety turning knuckle: Gentle on the wrist, reaction moments that occur are not passed on to the user. Easy and fast positioning of the gearbox (the support) in 360°.
- ✓ Automatic shut-off and free-run: After reaching the torque, the ADS switches off automatically and rotates freely. This prevents the socket or support from jamming.
- ✓ Accuracy of  $\pm 4\%$  referred to the final value\*.
- ✓ Flexible, fast, handy work due to cordless system.
- ✓ Expandable application possibilities with customized supports, ITH Extensions and ITH Side-drives.
- ✓ Choice of batteries (Li-Ion and Li-HD) according to your requirements: 5.2 Ah, 8.0 Ah or 10 Ah. The ITH ADS is officially part of the Cordless Alliance System CAS. Read more on our website.

\*Comparable bolting conditions



# Type ADS Battery Nut Runner



**Compact high performance planetary gearbox**

**Fine-toothed spline**

to individually adjust the support in 360°. See page 24 for all supports.

**Square drive**

for individual power wrench sockets including fixation mechanism.

**Pistol grip**

non-slip.

**High-technology 18V-Li-Ion batteries**

ITH ADS is part of the CAS cordless alliance system and offers 3 capacities:

18 V; **5.2 Ah**, Li-Ion Power (standard up to ADS 400)

18 V; **8.0 Ah**, Li-HD high-performance (standard for ADS 600)

18 V; **10.0 Ah**, Li-HD high-performance

**Safety turning knuckle**

**Slide switch**

gear selection between load or high gear.

**Motor LED**

offers ongoing user feedback.

**Powerful brushless motor**

brushless, therefore particularly low wear.

**Ergonomically positioned**

**On / Off switch** and **directional switch** for Loosen / Tighten.

**Version ADS Digital**

Torque adjustment and application management with the "ITH Smart Control", which controls the ADS Digital wirelessly.



# Type ADS Technical data



## Scope of delivery

Standard:

1. 1 x ITH Battery Nut Runner
2. 2 x Li-Ion batteries
3. 1 x quick charging station
4. 1 x support
5. 1 x calibration certificate
6. 1 x instruction manual
7. 1 x plastic case (optional)
8. 1 x hard case (optional)
9. 1 x power wrench socket (optional)

The scope of delivery can be personalized.

Illustration with optional accessories.

## Technical data

ITH type	ITH order no.	Max. torque (gear 1)		Max. rpm (gear 2)	Square-drive A	Gearbox diameter d		ADS, straight				ADSw, 90° angle			
								Length L		Weight*		Length L		Weight*	
		[Nm]	[ft·lbs]	[R/min]	["]	[mm]	["]	[mm]	["]	[kg]	[lbs]	[mm]	["]	[kg]	[lbs]
<b>ADS-50</b>	2x.310.0050-yyz7	500	369	36	3/4	55	2.17	251	9.88	3.1	6.83	211	8.31	4.0	8.82
<b>ADS-100</b>	2x.310.0100-yyz7	1,000	738	15	3/4	70	2.76	266	10.47	4.1	9.04	224	8.82	5.0	11.02
<b>ADS-150</b>	2x.310.0150-yyz7	1,500	1,106	11	1	70	2.76	289	11.38	4.5	9.92	249	9.80	5.4	11.90
<b>ADS-230</b>	2x.310.0230-yyz7	2,300	1,696	8.2	1	72	2.83	302	11.89	5.1	11.24	261	10.28	6.0	13.23
<b>ADS-320</b>	2x.310.0320-yyz7	3,200	2,360	4.5	1	78	3.07	315	12.41	6.1	13.45	277	10.91	7.0	15.43
<b>ADS-400</b>	2x.310.0400-yyz7	4,000	2,950	3.8	1 1/2	90	3.54	337	13.27	7.9	17.42	290	11.42	8.8	19.40
<b>ADS-600</b>	2x.310.0600-yyz7	6,000	4,425	2.5	1 1/2	100	3.94	351	13.82	10.0	22.05	309	12.17	10.9	24.03

ADS, straight: x = 4  
 ADSw, angle: x = 3  
 ADS Digital  
 ADS Digital with option ALPHA:  
 ADS Standard:  
 ADS Basic:  
 y = 0  
 y = 1  
 y = 2  
 y = 3  
 Quick Charging Station  
 230 V (50 + 60 Hz): zz = 23  
 110 V: zz = 11

\*Weight without support and power wrench socket.

# Type ADS CAS



## 100 % Compatibility

## ITH extends CAS

### 1 battery for more than 300 tools

- ✓ More than 30 brands and over 300 machines but only 1 battery system: The Cordless Alliance System (CAS) is a cross-manufacturer battery pack system with 100 % compatibility for tools with 18 volt class batteries.
- ✓ Latest Li-Ion battery high-performance technology from Metabo.
- ✓ Read the official news on [www.ith.com](http://www.ith.com)

#### Available battery packs:

1. 18 V; **5.2 Ah**, Li-Ion Power (standard up to ADS 400)
2. 18 V; **8.0 Ah**, Li-HD, high-performance (standard for ADS 600)
3. 18 V; **10.0 Ah**, Li-HD, high-performance

Every standard delivery contains 2 batteries.



One battery, many solutions. Cross-brand. 100% Compatibility.

metabo ROTHENBERGER Collomix steinel PREBENA MONTIPOWER SCANGRIP TRUMPF  
mafell EISENBLÄTTER EIBENSTOCK ROKAMAT haaga JOST BAIER ITH Lamello  
starmix fischer BIRCHMEIER edding GESIPA Pressfit CEMBRE SPEWE CEMO



# Type ADS Hybrid Battery Nut Runner



**Hybrid adapter**  
easy interchange between battery use and wired power supply.

**Control unit**  
with inner power adapter and cooling, ergonomic handle.

**Power supply cable**  
available power plugs:  
230 V EU, 110 V USA and more.

**Supply line length**  
5 m each as a standard.

## Technical data

ITH type	ITH order no.*	L		B		H		Weight	
		[mm]	["]	[mm]	["]	[mm]	["]	[kg]	[lbs]
ADS-Hybrid**	78.00063-1400-x	340	13.39	295	11.61	152	5.98	6.5	14.33

\*230 V EU (50 + 60 Hz): x = 230-DE  
110 V US: x = 110-US

\*\*without ITH Battery Nut Runner.

## Documentation of torque values and rotation angles

ITH documentation software Docu offers easy digital management and data logging of all bolting job parameters such as:

- ✓ Torque and angle of rotation (option ALPHA).
- ✓ Bolt dimension and bolt quality.
- ✓ Application, bolt or worker identification numbers.
- ✓ Creation of Excel- or PDF protocols.
- ✓ Docu-Software usable on Windows or Android devices.

### Process:

1. Create a bolting job.
2. Data transfer to the ITH ADS by wireless Bluetooth connection.
3. Start the job.
4. Save the results.
5. Data read-out and automatic creation of protocols.

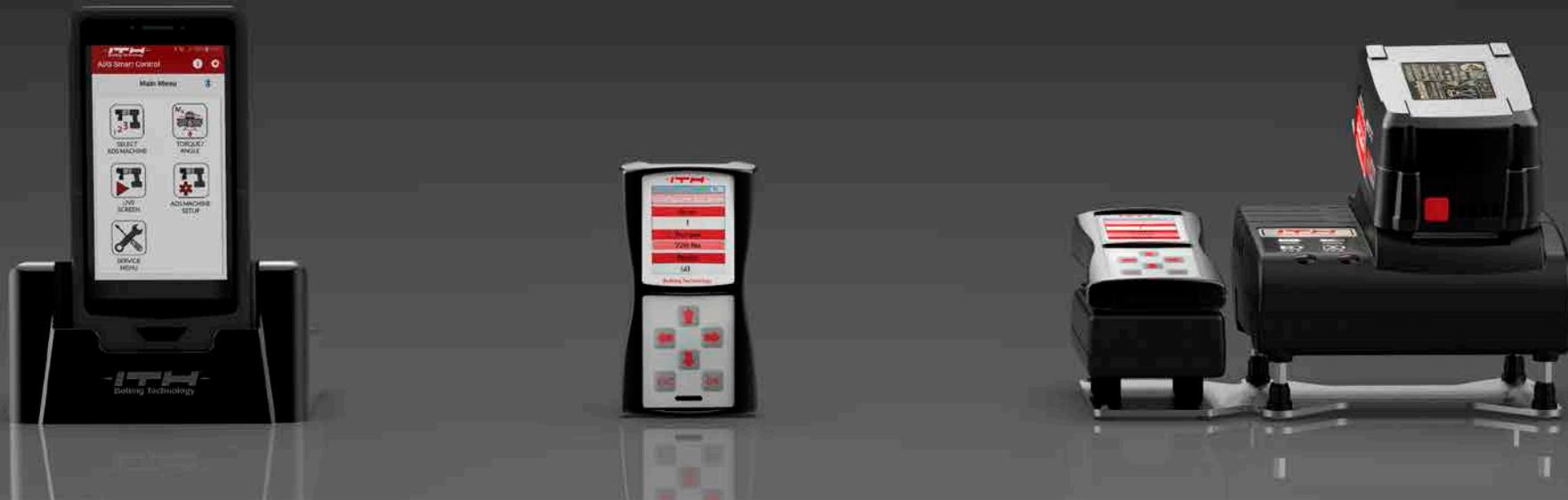
## 100 % Traceability



### Functions of the Docu-Software:

Scan the QR code and watch the demo video on your smartphone.





## Smart Control Plus

- ✓ For the use of ADS Docu Software, wireless Bluetooth connection to the ADS.
- ✓ Robust industry-ready hand-held device with large 6" display.
- ✓ Fall protection from up to 1.2 meters height by hardened rubber cover, IP67 protection class.
- ✓ Integrated 1D / 2D barcode scanner, up to 25° inclination.
- ✓ Battery runtime: 8 hours.

## Smart Control

- ✓ Handheld "ITH Smart Control" for wireless control of the ADS.
- ✓ High-definition colour display offers easy setup of torque, load or speed gear, and rotation angle (option ALPHA only) and more.
- ✓ Clear status display of the battery charge level, the radio connection and the bolting progress. Users can easily control the bolting process.
- ✓ One ADS Smart Control can run several ITH ADS
- ✓ Once the bolting parameters have been entered, the data can no longer be changed by the worker. This has a positive effect on process reliability.

## Quick charging station

- ✓ 1 x high performance quick charging station, air-cooled.
- ✓ Available versions:
  - 230 V EU
  - 110 V USA
  - 240 V United Kingdom
  - 230 V Australia

The picture on the right shows quick charging station of the version ADS Digital with ADS Smart Control and 5.2 Ah Li-Ion battery. Other versions come without the charging slot for the ITH Smart Control.

## TWIN Safety Button

### Functions & advantages

- ✓ The two-hand control requires users to push the yellow marked topside button and pull the trigger at the pistol grip simultaneously to start the torquing process.
- ✓ This keeps the hands in a safe position and promotes safe working environments.
- ✓ Visibly and ergonomic positioned: ideal for both horizontal and vertical applications.

## Two-hand control



# Type ADS **Application examples**



Find application examples  
and videos on construction  
machines on our website:  
Scan the QR code with your  
smartphone.



**SCAN ME**

# Type EDS Electric Nut Runner



# Application examples



## Electric Nut Runner

# Type EDS

## Functions & advantages

- ✓ ITH Soft Turn Automatic: The bolting process is constantly measured. The software automatically adjusts the RPM due to the current load.
- ✓ Automatic free-run: After reaching the preset torque, the EDS shuts off automatically and runs free. This prevents the socket from jamming on the screw head.
- ✓ Site suitability: Automatic indication of fluctuations in the power supply due to operation on generators.
- ✓ Optimal for international tool centers: Automatic detection and adjustment to 50 Hz or 60 Hz.
- ✓ 2-speed gearbox for changing between fast and load gear (automatic change with "Auto-Shift" option).
- ✓ High reproducibility and precision of  $\pm 4\%$ .
- ✓ The safety swivel joint always guarantees optimum positioning of the ITH EDS.

\*Under comparable bolting conditions



# Type EDS Electric Nut Runner

## Rotary switch

for load or high gear  
(not available with Auto-Shift).

## Compact high performance planetary gearbox

## Fine-toothed spline

to individually adjust the support  
in 360°.  
See page 24 for all supports.

## Square drive

for individual power wrench  
sockets including  
fixation mechanism.

## User-friendly multi-function display

only for version "EDS Digital".

## Directional switch

for Tighten / Loosen,  
construction site friendly  
positioning.

## Ergonomically positioned On / Off switch and lock switch

## Ergonomic and comfortable spade-handle

## Strong 1,300 W-Motor

Motor and housing stand for  
quality made in Germany.



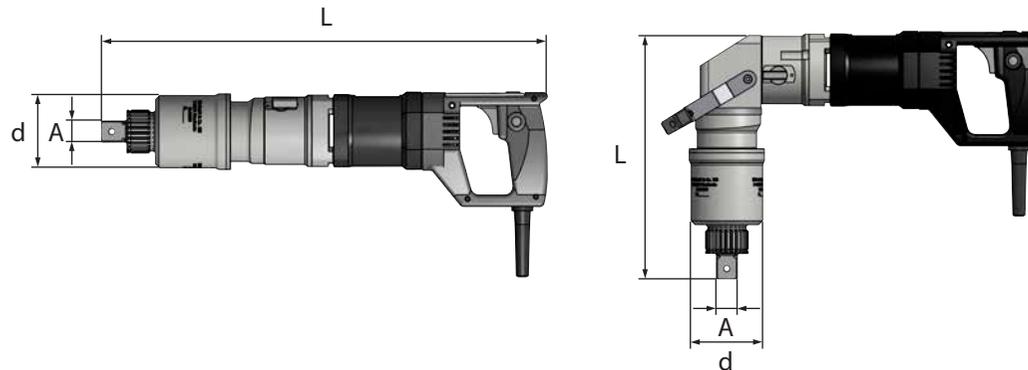
## Multi-function display

**Easy and convenient:** Input of all relevant application parameters by multi-function display.  
**Control:** the parameters can be read continuously on the display during operation.

### Clear display:

- ✓ Process status indication.
- ✓ Tighten / Loosen.
- ✓ Angle of rotation (optional with ALPHA).
- ✓ Torque.
- ✓ Load gear or high gear (not available for Auto-Shift option)

# Type EDS Technical data



## Technical data

ITH type	ITH order no.	Max. torque (gear 1)		Max. rpm (gear 2)	Square-drive A	Gearbox diameter d		EDS, straight				EDSw, 90° angle			
								Length L		Weight*		Length L		Weight*	
		[Nm]	[ft·lbs]	[R/min]	["]	[mm]	["]	[mm]	["]	[kg]	[lbs]	[mm]	["]	[kg]	[lbs]
<b>EDS-40</b>	2x30040-yzz7	400	295	30	3/4	70	2.76	468	18.42	5.2	11.46	243	9.57	6.2	13.67
<b>EDS-400</b>	2x30400-yzz7	4,000	2,960	3	1 1/2	93	3.66	568	22.36	9.1	20.06	342	13.47	10.1	22.27
<b>EDS-600</b>	2x30600-yzz7	6,000	4,440	3	1 1/2	105	4.13	590	23.23	14.7	32.41	364	14.33	15.7	34.61
<b>EDS-800</b>	2x30800-yzz7	8,000	5,900	1.4	1 1/2	125	4.92	644	25.35	21.0	46.30	417	16.41	22.0	48.50
<b>EDS-1000</b>	2x31000-yzz7	10,000	7,350	1.4	1 1/2	127	5.00	644	25.35	21.0	46.30	417	16.41	22.0	48.50
<b>EDS-1300</b>	2x31300-yzz7	13,000	9,550	0.9	2 1/2	180	7.09	700	27.56	44.0	97.00	495	19.49	28.0	61.73

EDS, straight:  
EDSw, angle:

x = 8  
x = 9

EDS Digital: y = 0  
EDS Digital with option ALPHA: y = 1  
EDS Standard: y = 2  
EDS Basic: y = 3

Power plugs:  
230 V (50 + 60 Hz): zz = 23  
110 V: zz = 11

\*Weight without support and power wrench socket.

# Type PDS Pneumatic Nut Runner



**Find product details and videos on our website:**

Scan the QR code with your smartphone.



## Application examples

### Pneumatic Nut Runner

# Type PDS

### Functions & advantages

- ✓ No electric power supply required: Pneumatic air motor can be powered by standard air compressors.
- ✓ The required torque is set via the compressed air precision control valve at idling according to the tabular data.
- ✓ The change gear (high and low gear) enables a higher range of rotational speed (optional) and faster work.
- ✓ The safety turning knuckle always guarantees optimum positioning of the ITH PDS.



# Type PDS Pneumatic Nut Runner

**Directional switch for load- or high gearbox**

**Compact high performance planetary gear**

**Square drive**

for individual power wrench sockets including fixation mechanism.

**Fine-toothed spline**

to individually adjust the support in 360°. See page 24 for all supports.



**Air-powered pneumatic motor**

**4-step rotary switch**  
to set-up the torque.

**Directional switch**  
for Tighten / Loosen,  
positioning suitable for  
construction sites.

**Pistol grip**  
impact resistant and  
non-slip.



## Maintenance unit with compressed air precision control valve

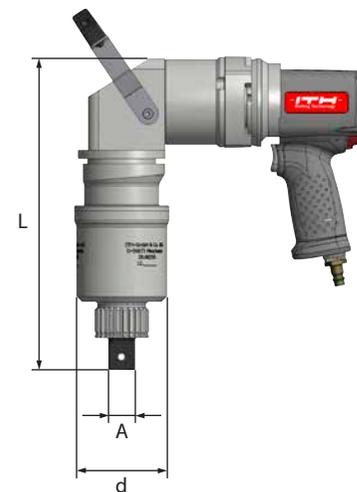
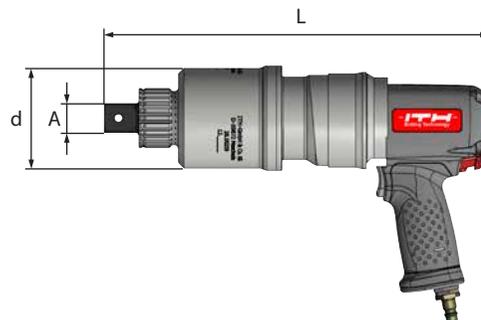
Included in every delivery.

For setting the required torque. Including lubricator, water separator, inlet air pressure gauge and pneumatic hose line (3 m as per standard).

ITH order no.: 74.08450-7000

Coupling nominal diameter 7.2 mm

# Type PDS Technical data



## Technical data

ITH type	ITH order no.	Max. torque (gear 1)		Square-drive	Gearbox diameter		PDS, straight				PDSw, 90° angle			
							Length L		Weight*		Length L		Weight*	
		[Nm]	[ft-lbs]	["]	[mm]	["]	[mm]	["]	[kg]	[lbs]	[mm]	["]	[kg]	[lbs]
<b>PDS-25</b>	2x.y0025	250	184	3/4	83	3.27	246	9.69	3.3	7.28	216	8.50	4.3	9.48
<b>PDS-40</b>	2x.y0040	400	295	3/4	83	3.27	271	10.67	3.8	8.38	238	9.37	4.8	10.59
<b>PDS-75</b>	2x.y0075	750	553	3/4	83	3.27	283	11.14	4.2	9.26	259	10.20	5.2	11.46
<b>PDS-150</b>	2x.y0150	1,500	1,106	1	90	3.54	307	12.09	4.5	9.92	280	11.02	5.5	12.13
<b>PDS-250</b>	2x.y0250	2,500	1,844	1	90	3.54	334	13.15	6.5	14.33	305	12.01	7.5	16.53
<b>PDS-400</b>	2x.y0400	4,000	2,950	1 1/2	90	3.74	372	14.65	8.3	17.42	338	13.31	9.3	20.50
<b>PDS-600</b>	2x.y0600	6,000	4,425	1 1/2	105	4.13	394	15.51	13.5	29.76	371	14.61	14.5	31.97
<b>PDS-800</b>	2x.y0800	8,000	5,900	1 1/2	127	5.00	447	17.60	16.8	37.04	417	16.42	17.8	39.24
<b>PDS-1000</b>	2x.y1000	10,000	7,376	1 1/2	127	5.00	447	17.60	16.8	37.04	417	16.42	17.8	39.24
<b>PDS-1400</b>	2x.y1400	14,000	10,326	2 1/2	180	7.09	503	19.80	42.0	92.59	480	18.90	45.0	99.21

PDS, straight: x = 6  
PDSw, angle: x = 7

Without change gear: y = 0  
With change gear: y = 1

\*Weight without support and power wrench socket.

# Type MDS Mechanical Nut Runner

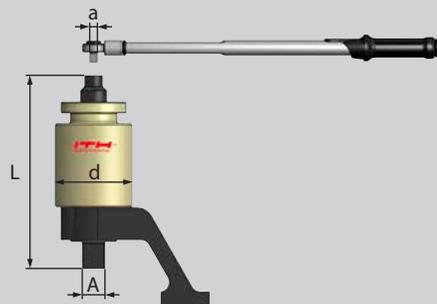


# Mechanical Nut Runner

## Type MDS

### Features

- ✓ Backstop, reversible for Tighten or Loosen.
- ✓ Overload protection by shear pin.
- ✓ Planetary gearbox.
- ✓ Square-drive A 1" or 1 1/2" for common power wrench sockets.



### Technical data MDS

ITH type	ITH order no.	Max. torque	Gear reduction ratio	Technical data				
				A	a	D	L	m*
				["]	["]	[mm]	[mm]	[kg]
<b>MDS-150-4</b>	30.10150	1,500	1:4	1	1/2	85	190	3,4
<b>MDS-320-18</b>	30.10320	3,200	1:18	1	1/2	88	230	5,2
<b>MDS-420-16</b>	30.10420	4,200	1:16	1 1/2	1/2	88	244	5,9
<b>MDS-600-18</b>	30.10600	6,000	1:18	1 1/2	1/2	102	257	7,0
<b>MDS-800-22**</b>	30.10800	8,000	1:22	1 1/2	1/2	130	279	10,5
<b>MDS-1000-62**</b>	30.11000	10,000	1:62	1 1/2	1/2	130	315	15,7

\*without support, power wrench sockets and manual torque wrench.  
 \*\*MDS-800 and MDS-1000 include double backstop.

### Accessories

## Manual Torque Wrench

### Features

- ✓ Inserts can be interchanged; delivery includes ratchet head.
- ✓ Precise torque adjustment by fine adjustment scale.



### Technical data Manual Torque Wrench

ITH order no.	Technical data						
	Torque range		a	D		L	
	[Nm]	[ft*lbs]	["]	[mm]	["]	[mm]	["]
31.10016-5012	10 - 50	7.4 - 36.9	1/2	35	1.38	320	12.6
31.10021-5012	20 - 100	14.8 - 73.7	1/2	35	1.38	370	15.6
31.10022-5012	40 - 200	29.5 - 147.5	1/2	47	1.85	470	18.5
31.10024-5012	60 - 360	44.2 - 265.5	1/2	47	1.85	560	22.0
31.10026-5019	200 - 850	147.5 - 626.9	3/4	68	2.68	1.480	58.27
31.10028-5019	300 - 1.250	221.7 - 922	3/4	68	2.68	1.650	65.0

# Accessories **Supports, Extensions and Side-drives**

**Support type ATS**  
curved for wheel bolts,  
(adjustable).



**Support type ATS**  
square-drive,  
(adjustable).



**Support type ATS**  
inner hexagon,  
(adjustable).



**Support type ATS**  
outer hexagon,  
(adjustable).



**Customized**  
individual supports  
possible.

**Supports**  
standard and custom-  
ized supports.

**Side-drive type ST**  
for axial limited spaces  
or long projecting  
threads.



**Extension type TE**  
for radial limited  
spaces



## Side-drive Type ST

- ✓ Fine-toothed socket and inner square drive input – matching the ITH Nut Runner output.
- ✓ Individual hexagonal output A / F, application-specific
- ✓ Support
- ✓ Use for axial limited spaces or long projecting threads (e.g. heat exchangers) or other support options in radial environments.



### Technical data Side-drive

ITH type	ITH order no.	Technical Data			
		Drive A	Min. output A / F	Max. output A / F	Max. Torque
		["]	[mm]	[mm]	[Nm]
ST - 55	78.00700-2055	1	36	55	2,000*
ST - 65	78.00700-2565	1	46	65	2,500*
ST - 75	78.00700-4075	1 1/2	55	75	4,000**
ST - 85	78.00700-4085	1 1/2	65	85	4,000**

\*Fine-toothed spline input matches EDS / ADS / PDS 75 - 250.  
 \*\*Fine-toothed spline input matches EDS / ADS / PDS 400 and bigger.  
 Further designs upon request.

## Extension Type TE

- ✓ Ideal for applications with radially limited space or deep-lying bolts
- ✓ Swivel foot on support (optional).



### Technical data Extension

ITH type	ITH order no.	Max. Torque	L	Input A1	Output A2	D1	D2
		[Nm]	[mm]	["]	["]	[mm]	[mm]
TE - 75	31.00802-2-200	750	200	3/4	3/4	64	46
	31.00802-2-300		300	3/4	3/4	64	46
	31.00802-2-400		400	3/4	3/4	64	46
TE - 250	31.00803-3-250	2,500	250	1	1	64	56
	31.00803-3-350		350	1	1	64	56
	31.00803-3-450		450	1	1	64	56
TE - 400	31.00804-4-250	4,000	250	1 1/2	1 1/2	90	70
	31.00804-4-450		450	1 1/2	1 1/2	90	70

## Accessories

### Power Wrench Socket



#### Order example

ITH order no. **31.000 04 - 0046**

inch sockets

Power Wrench Socket version

- short
- 02 = drive 1/2"
  - 03 = drive 3/4"
  - 04 = drive 1"
  - 05 = drive 1 1/2"
  - 06 = drive 2 1/2"
- long
- 08 = drive 1/2"
  - 09 = drive 3/4"
  - 10 = drive 1"
  - 11 = drive 1 1/2"
  - 12 = drive 2 1/2"

A/F-width SW 46

### Inner Hexagon Socket



#### Order example

ITH order no. **31.00128 - 0024**

inch sockets

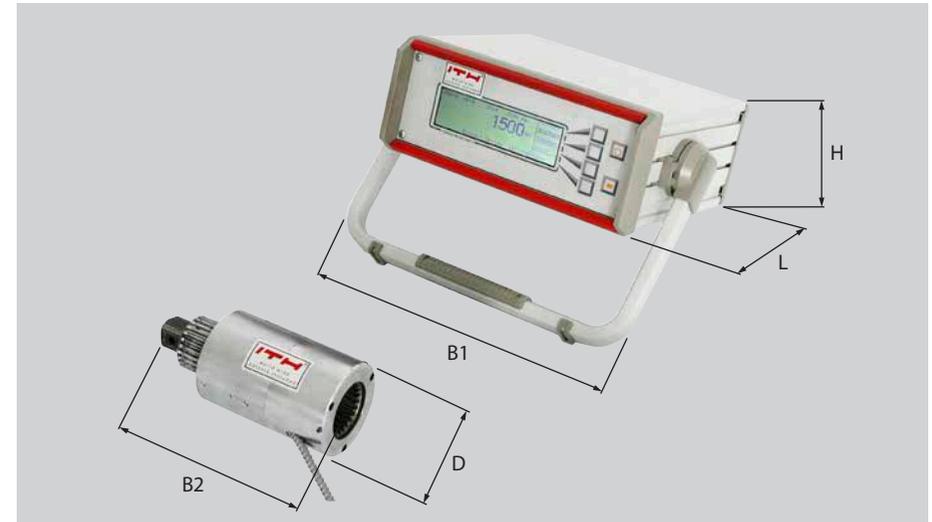
Inner Hexagon Socket version

- 126 = drive 3/4"
- 128 = drive 1"
- 130 = drive 1 1/2"

A/F-width SW 24

\*Special dimensions on request

## Measurement



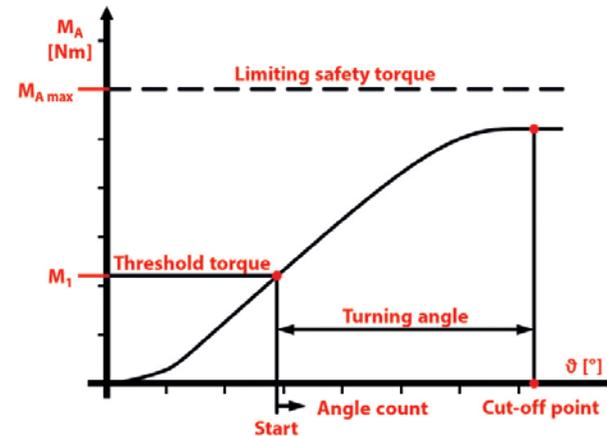
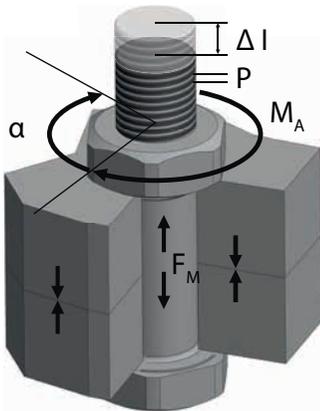
### ITH Torquemeter

- ✓ **Control during bolting procedures:**  
Measuring, testing and applied torque values and rotation angles are displayed and documented during the bolting procedure.
- ✓ **Features**
  1. On-site ready by robust design, internal battery for flexible, wireless use.
  2. Available versions are 110 V or 230 V. Digital display shows measurement results clearly.
- ✓ **Certified precision**  
Accredited by the strict regulations of the German Accreditation Body (DAkkS).

ITH type	ITH order no.	Range	L	B1	H	B2	D	Weight*	
		[Nm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]	[lbs]
DMW-75	20.00245	75 - 750	290	315	116	230	89	5.0	11.02
DMW-250	20.00241	125 - 2,500	290	315	116	230	89	5.7	12.57
DMW-600	20.00242	300 - 6,000	290	315	116	264	115	11.4	25.13
DMW-1000	20.00243	1,000 - 10,000	290	315	116	295	115	14.0	30.86

\*Weight of the sensor unit,  
Weight of the control unit: 4,8 kg

# System ALPHA Angle-controlled tightening



## Introduction

Angle-controlled tightening is a method, where the achieved bolt elongation  $\Delta l$  is measured indirectly.

$\Delta l$  is calculated from the (theoretical) relation between bolt pitch  $P$  and rotation angle  $\alpha$

$$\text{Simplistic: } \Delta l = \text{bolt pitch } P \cdot \frac{\text{rotation angle } \alpha}{360^\circ}$$

From achieved bolt elongation  $\Delta l$  you can gain insights about the reached assembly preload  $F_M$ , which is your target value when tightening bolt connections (cf. VDI 2230).

## Process

- 1. Torque range:** One pre-defined torque  $M_1$  is applied on the bolt connection until all gaps between all components are closed. That is the point where the threshold torque is reached.
- 2. Angle range:** After threshold torque the angle range begins: An angle of rotation  $\alpha$  is applied on the bolt connection.
- 3. ITH ALPHA sensor controls** torque  $M_1$  and  $\alpha$ .
- 4. Tightening process ends** after reaching  $\alpha$ .
- 5. ITH ALPHA software** offers process evaluation, for example automatically generated Excel-or PDF-protocols.

## Advantage of less affection by friction: higher precision

- ✓ **Angle range is not affected by friction values:** The angle range is not affected from friction variables, which could be occurring. This leads to higher precision and higher repeatability of the bolting procedure.
- ✓ **Digital ITH application software:** Easy set-up and management of all relevant application parameters.
- ✓ **Low tightening factors  $\alpha_A$ :** When designing bolted joints, it can be calculated with small tightening factors from 1.2 to 1.4 in most cases (cf. VDI 2230).

$$*\alpha_A = \frac{F_{M \max}}{F_{M \min}}$$

# Technical Information **Assembly preload $F_M$ and tightening torque $M_A$**

Bolt size			Strength grade DIN EN ISO 898 - 1					
			8.8		10.9		12.9	
d [mm]	P	A/F	$F_M$ [kN]	$M_A$ [Nm]	$F_M$ [kN]	$M_A$ [Nm]	$F_M$ [kN]	$M_A$ [Nm]
M16	2	24	79	228	112	324	131	379
M20	2.5	30	123	446	176	635	205	743
M22	2.5	34	154	613	220	873	257	1,022
M24	3	36	178	768	253	1,094	296	1,281
M27	3	41	234	1,133	333	1,613	390	1,888
M30	3.5	46	285	1,551	406	2,209	475	2,585
M33	3.5	50	355	2,105	506	2,998	592	3,508
M36	4	55	417	2,706	594	3,853	696	4,509
M39	4	60	502	3,512	715	5,002	836	5,853
M42	4.5	65	575	4,339	819	6,179	959	7,231
M45	4.5	70	673	5,426	959	7,728	1,122	9,044
M48	5	75	758	6,563	1,079	9,347	1,263	10,938
M52	5	80	909	8,447	1,295	12,031	1,516	14,079
M56	5.5	85	1,049	10,524	1,494	14,989	1,749	17,540
M60	5.5	90	1,226	13,076	1,746	18,623	2,044	21,793
M64	6	95	1,388	15,749	1,977	22,430	2,313	26,248
M68	6	100	1,590	19,082	2,265	27,177	2,651	31,803
M72	6	105	1,807	23,149	2,573	32,970	3,011	38,582
M80	6	115	2,281	32,140	3,248	45,775	3,801	53,566
M90	6	130	2,950	46,505	4,202	66,234	4,917	77,508
M100	6	145	3,706	64,782	5,278	92,266	6,176	107,970
M110	6	155	4,547	86,375	6,476	123,019	7,579	143,958
M120	6	170	5,475	113,235	7,798	161,274	9,125	188,725

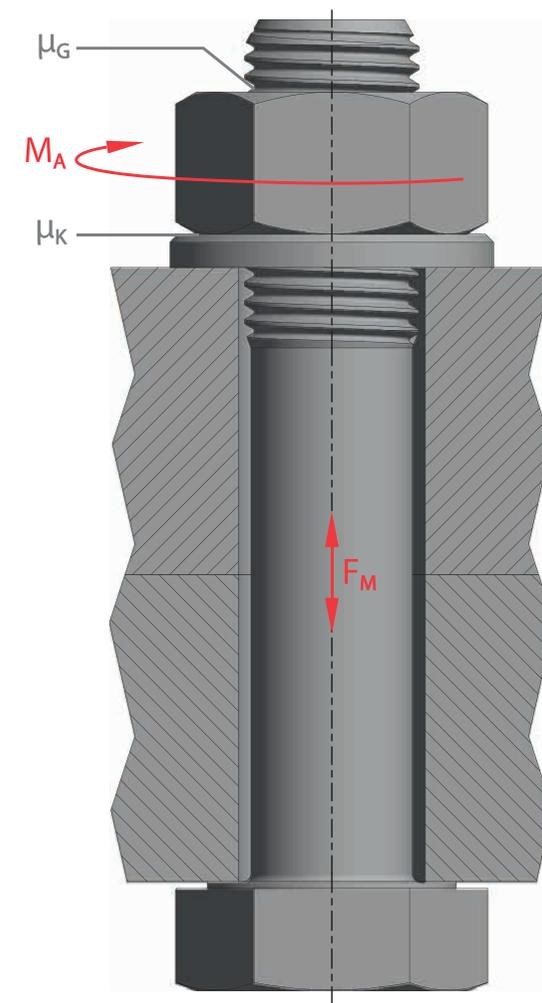
ITH reference: 09.80053

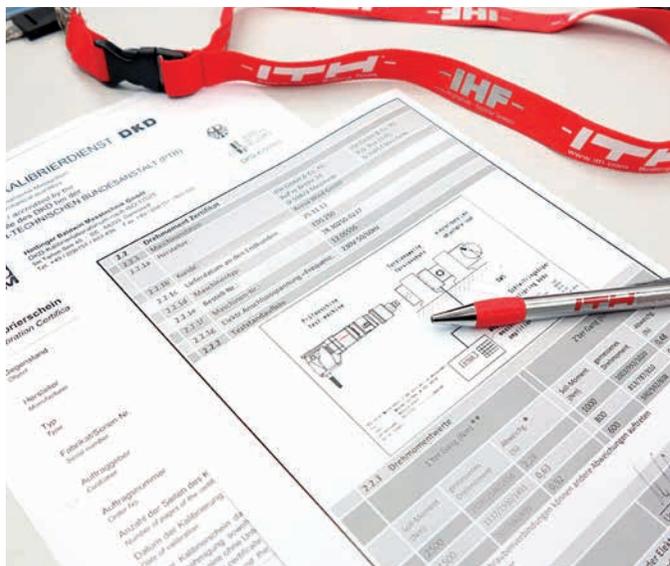
## Calculation basis

Utilisation factor of the yield stress  $v = 0,9$  for shank bolts with metric standard thread acc. to DIN 13-20 (minimum dimensions) resp. calculated acc. to DIN 13-19, tolerance class 6g; diameter of the bearing face  $d_w$  acc. to DIN EN ISO 4014 resp. DIN EN ISO 4032 up to M64, from M72 acc. to. DIN 2510-5 ( $d_2$ ); Clearance hole "medium" acc. to DIN EN 20273. Friction coefficients  $\mu_G = \mu_K = 0,14$ .

The friction coefficient depends on material/surface and used lubricant.  $d$  = nominal diameter of thread,  $P$  = pitch,  $s$  = width across flats.

All values and data are calculated and checked prudently. However, we accept no responsibility for the correctness, completeness and topicality. Technical modifications reserved.





## ITH quality management

Before first delivery and after maintenance all ITH Nut Runners are tested and calibrated on dynamic torque measurement units (DAkks-certified). Measured values are recorded on an ITH calibration certificate.

All ITH business procedures – including development, production and distribution of bolting tools and testing equipment – are certified according to the strict quality management directive ISO 9001 – as a pioneer in the market since 1995.



## Qualification in bolting technology

The ITH training courses in reference to **VDI/VDE-MT 2637** combine theory and practice efficiently – independent of the bolting tools you use:

- Level A - ITH On-site Training** - Tool instruction on-site
- Level B - ITH Tool Training** - Safety and tool operation
- Level C - ITH Service Training** - Maintenance and service

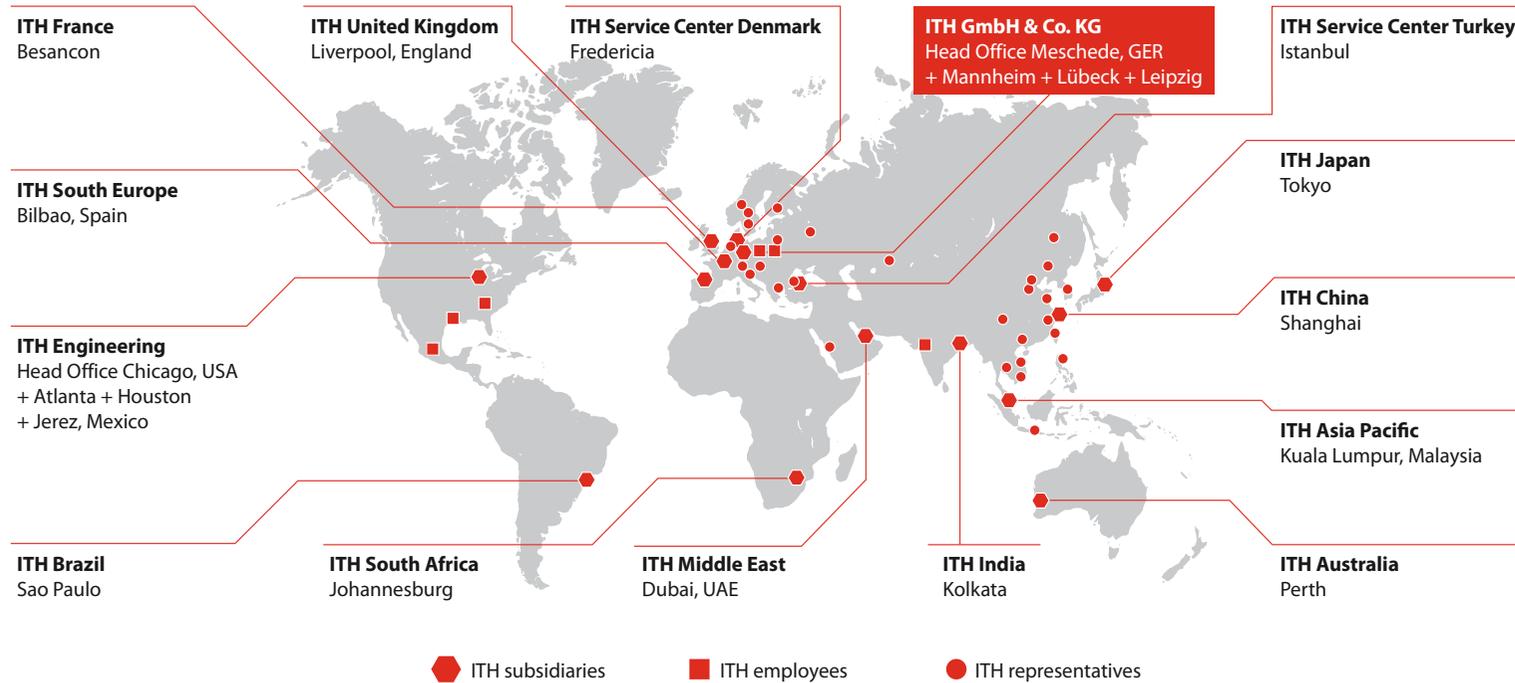
In cooperation with you we create an individual training course according to your requirements. By its modular design, ITH training contents can be adapted easily.

We mediate bolting competencies in terms of safety, technical physical fundamentals, maintenance, service and bolting tool operation. After the theory courses, learned contents will be applied practically to guarantee most efficient learning success. Participants receive a certification after passing a final test.

## Service, rental and bolting service

- ✓ **Service on-site**  
ITH offers global, qualified tool maintenance and calibration performed locally by the global ITH network. These services can be carried out on-site by ITH Calibration Centers or ITH Service-Vans.
- ✓ **Fast & traceable**  
All services are handled quickly, reliably and are recorded internally. Tool calibrations are certified.
- ✓ **Customer-oriented, qualified and flexible**  
Experienced ITH bolting service teams have successfully performed a various number of bolting jobs worldwide fast and safely. All ITH bolting tools are available for rent.

# Contact **Global leading system supplier in bolting technology**



## ITH drives innovation

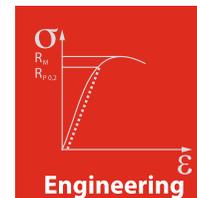
With more than 40 years in the bolting industry, ITH continuously invests experience and know-how into new technical developments. More than 200 national and international patents prove the innovative capabilities of ITH. Many of these developments have become standards of bolting technology.

- ✓ Global technical sales & service network.
- ✓ Qualified, flexible service and fast spare parts availability.
- ✓ Individual industry- or branch specific customer solutions.
- ✓ Synergy effects being a whole system supplier.
- ✓ Competent advice in all bolting cases.
- ✓ Lean Production & certified quality management according to DIN ISO 9001 - as a pioneer since 1995.

## ITH offers synergy

The technical and economic efficiency of a bolted connection is decisively determined by the design, the fasteners, the bolting tools and the assembly.

As a whole system supplier, ITH combines the expertise of these 4 sub-divisions (Tools, Engineering, Fasteners, Service) and configures the components with each other to achieve the best technical and economic result for our business partners.





## Global ITH network

Individual consultation is important for us. Visit the contact section on the ITH website to find the contact information of the local person in your country. We will be happy to advise you.

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