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Are you sure there are
no loose screws here?



We're sure there are no

The new BT-EXACT cordless drivers with

Monitor & report screw and batch count, shut-off

Introducing the cordless, wireless tool that can see

The ultimate combination of maximum mobility and total control.

loose screws. And we're just getting started. --- 2/5 - NOK - 2 - 150 ms



Bluetooth wireless communication can tell you everything in real time.

of signal, run time, workpiece & direction.



and & receive data to control your assembly process.



Error-proofing for cordless assembly tools: Build it better with Bluetooth EXACT.

Wireless OK/NOK (joint ok or not ok) signals are sent from the BT-EXACT Screwdriver to the EXAConnect controller, which also sends commands back to the tool. A class 2 Bluetooth module guarantees data transfer without compromise using 56-bit encryption and level 3 security in Bluetooth standard 1.2. The tools and controller communicate only with each other. The software can be configured to actively block Bosch Bluetooth signals from disturbing a wireless LAN, preventing data loss in other wireless networks in an assembly plant. An adjustable antenna power output function allows the system to limit electromagnetic "pollution" to virtually nothing.

One EXAConnect controller can run seven tools simultaneously, making the system very cost-effective.



The Bluetooth EXACT Cordless Screwdriving system thinks for itself. The BT-EXACT tool takes its commands from the EXAConnect controller, which stores the work in progress in real time. The system can talk to and take commands from external devices like a PLC, bar code scanner or host network if desired. Improve your assembly process and never miss another fastener.

Bar code scanners, PLC's, stack lights and host network systems can be easily connected to the EXAConnect via a combination of built-in I/O ports, RS 422 ports and Ethernet connections. The system can also run as a stand-alone without additional hardware. An anti-theft system prevents the tool from operating out of range of the EXAConnect.

The system is unique compared to other products; it does not require software to communicate with a network or computer. All information in the EXAConnect controller is accessed by using a web browser. All software and firmware is stored within the EXAConnect controller. The system is completely self-diagnostic.

The Bosch Bluetooth system: **Quality control redefined.**

The EXAConnect can control a BT-EXACT tool by workpiece, fastener and batch count. The OK/NOK signal can be enhanced (if desired) using run time and other parameters to accurately determine cross-threading of fasteners or missing assembly parts; it can detect and limit direction of rotation to prevent fastener removal. Over 50 different counting and work/rework strategies can be programmed.

The system can be set to count a batch of fasteners per job, or report single fastener data. It can control the assembly line to insure that a worker correctly tightens the right fastener on the right part at the right time. Three LED lights on the BT-EXACT tool tell the worker battery status, if the fastener was properly tightened, and if the tool is locked, unlocked or out of range of the EXAConnect. The system collects and reports all this data to insure that your assembly process is always perfect.



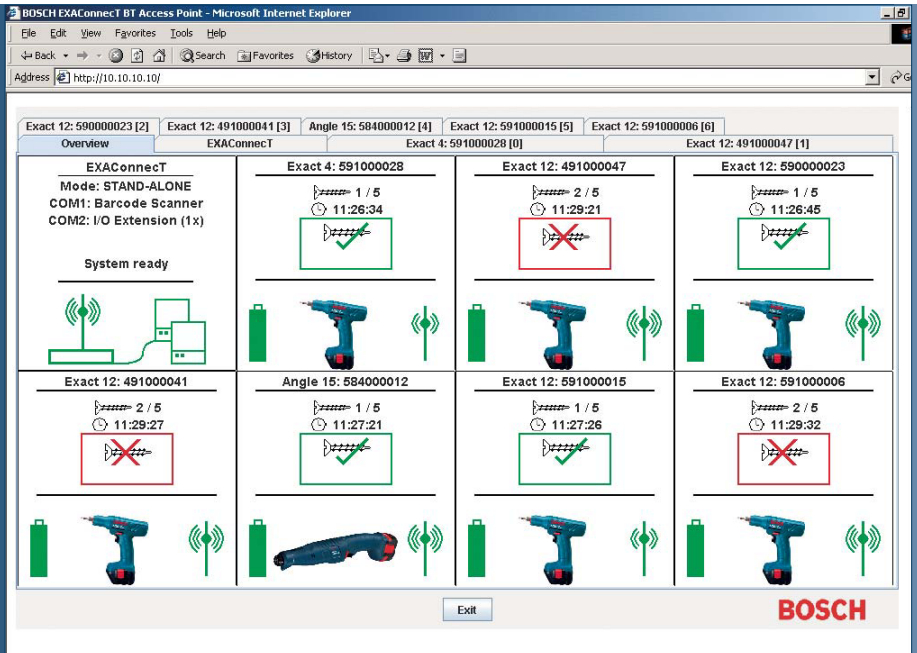
Seven screwdrivers at a single glance: Powerful tool management software

Quality control should be easy, not complicated. Our software combines powerful control, great flexibility and easy-to-use programming to give you the capability to control the BT-EXACT tools, the EXAConnect controller and your assembly line from anywhere.

The system runs in a web browser without the need for expensive user interface software. It can be password-protected to insure process security. Take control of data going to and from the screwdrivers, the controller and your network in a whole new way.

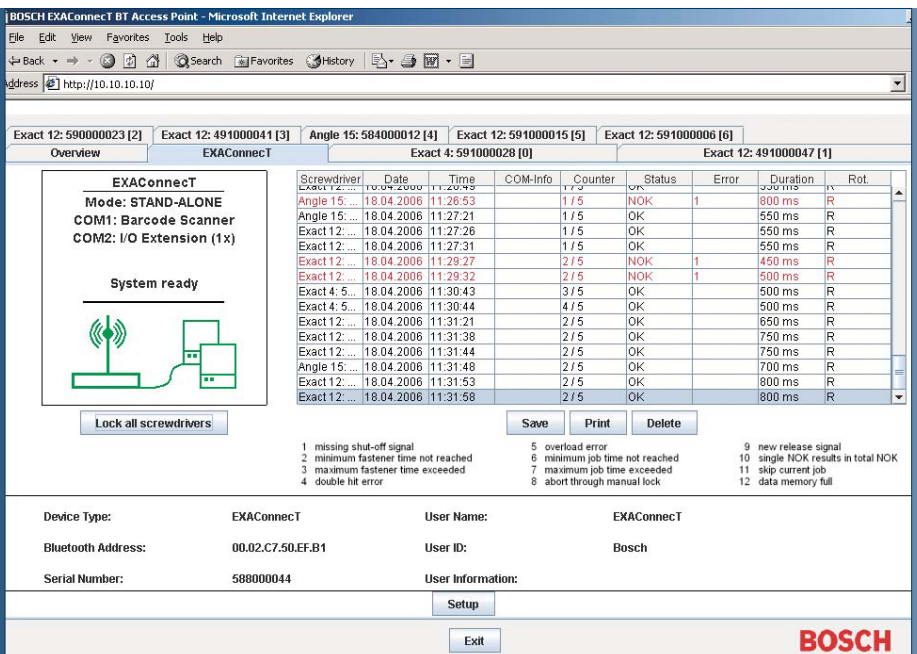
Clicking on the overview tab lets you view & control up to seven BT-EXACT drivers running on one EXAConnect controller. Each tool displays antenna signal strength, battery status, screw count, batch status and joint condition (OK/NOK shown in green or red).

The serial number and name of each tool is also displayed. The name of each tool can be customized for specific applications or locations within the assembly process.



Clicking on the EXAConnect tab shows the detailed data for up to seven tools in real time. The system can display data such as driver name, date, time of event, screw run time, direction of rotation, error messages, screw count, batch count and additional input data (like bar code scans or sequence numbers).

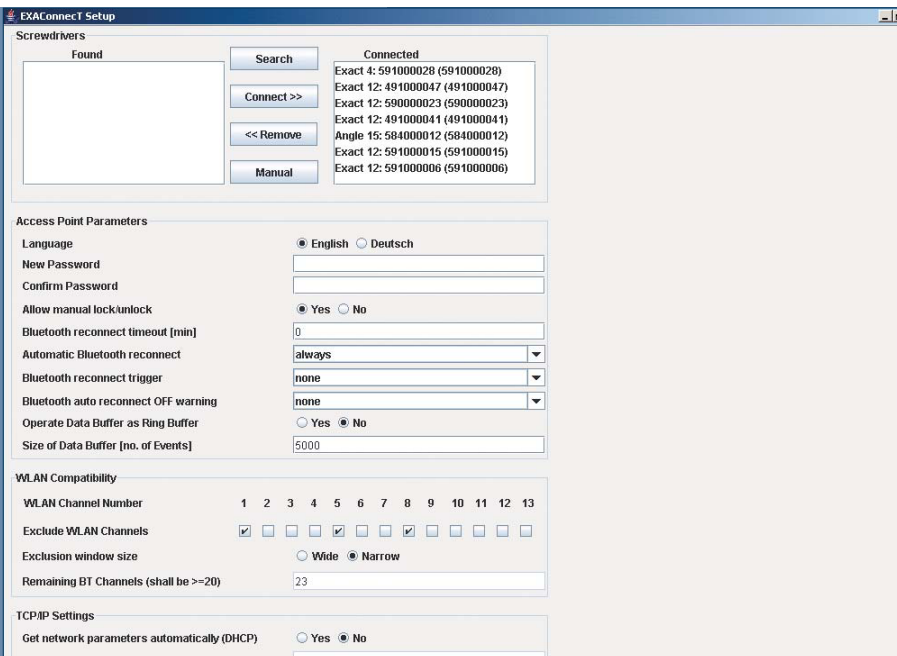
The system also displays the status of the EXAConnect controller and lists the devices that are connected. System error messages are displayed here, along with detailed information about the configuration.



Fine tuning for seven precision instruments: **A symphony of data control**

Setup of the system is easy. All functions of the EXACConnect controller are programmed from only one user-friendly setup screen. Standard protocols including Profibus, Ethernet TC/PIP, DeviceNet, FTP servers, serial ports, stack lights and RS 422 ports are managed in one place.

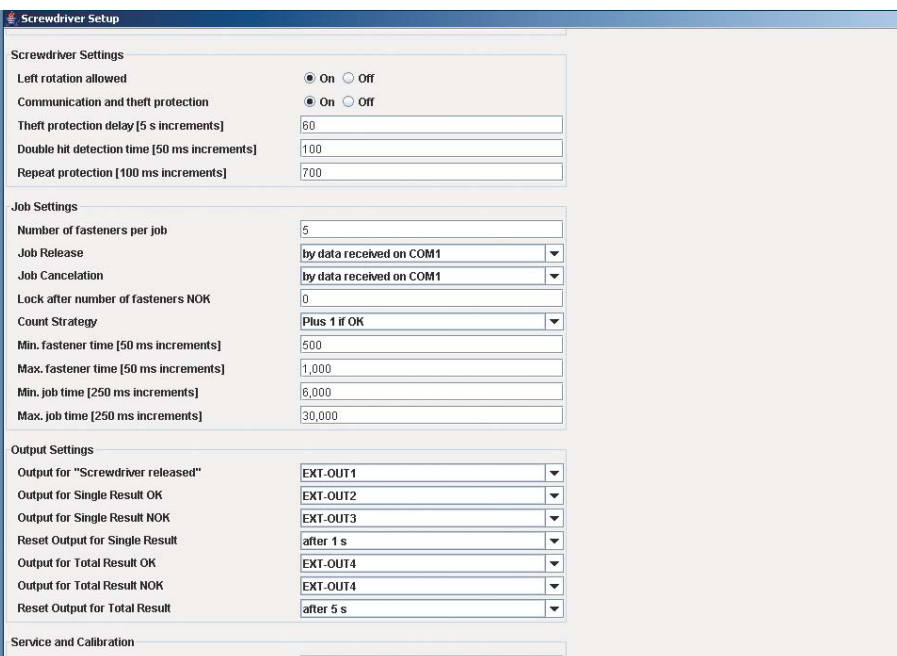
Each individual BT-EXACT tool can be programmed to send data to different outputs simultaneously. Each tool can accept data from a variety of inputs. All this capability is managed by only one setup screen for each BT-EXACT tool.



The system has separate setup screens for the EXACConnect controller and the BT-EXACT tool. The setup screen shows part of the EXACConnect setup menu. The system can be password protected to prevent unauthorized use.

Each BT-EXACT tool must be “found” and connected by the controller only one time; it will remain “connected” until removed by reprogramming.

Our unique system software can be configured to effectively stop the system from interfering with specific Wi-Fi channels to insure that it does not create interference in an assembly plant.



The screwdriver setup menu on the left controls everything from screw count to rework strategy to data output choices.

The tool and controller can be setup to send and receive data from a variety of systems, including a host ethernet system, PLC systems, bar code scanners or our digital I/O module.

The system can also monitor screw run time to accurately determine cross-threading of screws or missing parts.

Rework strategies to evaluate the assembly process can be defined in detail, including customer-specific programming that is created by Bosch.

The EXAConnect wireless controller: The core of the quality control system



The EXAConnect Bluetooth controller packs a lot of firepower in a small, easy to install package. The enclosure is IP 54 (NEMA 12) rated for dust and moisture resistance.

The controller has its own processor, flash memory and operating system, so it can run as a stand-alone unit or connect to a variety of controls.

Various status LED's and a 2-digit display that can be seen through the clear cover alert you of connection status or system errors.

The EXAConnect controller forms the link between your process control network and the Bluetooth equipped BT-EXACT cordless tool. Information about the screwdriving process can be exchanged bidirectionally in real time to insure that each BT-EXACT cordless tool knows exactly what it has to do and when to do it. One EXAConnect controller can run seven tools simultaneously, making it very cost-effective compared to other error-proofing systems.

The EXAConnect controller can easily output data from up to 7 tools via the Ethernet connection, and up to 4 tools to a PLC via the 24 volt I/O switches. When controlling 7 tools via a PLC, an accessory digital I/O module is required. Refer to page 17 for details.

A wide-range power supply insures the system works anywhere in the world without the need for additional power transformers. An internal backup memory and real-time clock insure that critical data is always saved, even in the event of a power loss.

EXAConnect Bluetooth Wireless Controller	
Power supply	100 – 240 V, 50/60 Hz
Standard Interfaces	Ethernet (TCP/IP) 2x RS 422 4x 24 V inputs 4x 24 V outputs
24 Volt power supply (output)	max 4.8 W
Order number	0 602 491 001

System Software Requirements	
Operating system	MS Win 98 SE, 2000, NT, XP
Browser	Internet Explorer Netscape Navigator Mozilla Firefox
Plugin needed (freeware)	Java Runtime Environment 1.4.2 or higher

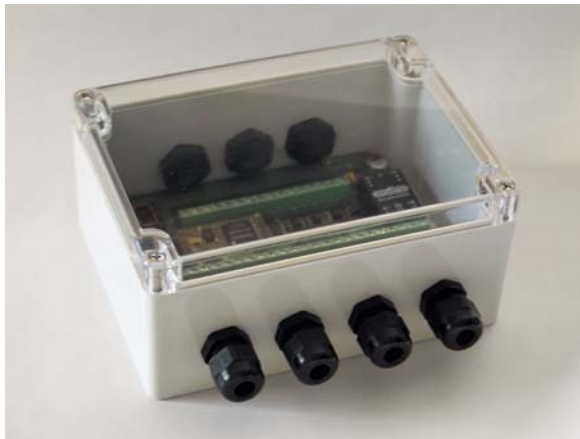
Extend the reach of 7 tools to a PLC: **The digital I/O module**

The digital I/O module takes its power from the EXAConnect controller and receives its tool data from the controller RS 422 port. The box has 16 switched input/output connections for communicating with a PLC. Configuration is done via the EXAConnect software (in a web browser).

The EXAConnect controller is capable of supporting up to 4 tools (via a PLC) with limited I/O data transmission. The digital I/O module is needed when 2 to 7 tools must communicate detailed information with a PLC.

The I/O module is not required when using an Ethernet connection to a host network. There are different possible PLC configurations for any given situation; contact your distributor for details.

Bluetooth digital I/O box	
Power requirement	24 volts
Standard Interfaces	RS 422 16 x 24 V inputs 16 x 24 V outputs
Order number	0 602 491 002

















The digital I/O box is used with the EXAConnect controller. It allows 24 volt I/O signals from up to seven tools to be sent to a PLC. The box is IP 54 (NEMA 12) rated for dust and moisture resistance.

EXACT T-Grip cordless screwdrivers



T-Grip Features

- ▶ Precision Shut-off clutch exceeds ISO tolerance of $\pm 10\%$
- ▶ Lightweight
- ▶ Broad torque range
- ▶ 0.7 sec. trigger repeat protection
- ▶ LED/audible battery charge indicators disable tool when voltage drops below threshold; tool stays “in-process” regardless of battery condition
- ▶ LED/audible shut-off indicator provides operator feedback for clutch signal to confirm good/bad joint status (sent via Bluetooth to controller on BT-EXACT models)
- ▶ Bright LED light for work area illumination
- ▶ All models feature trigger hand forward/reverse control
- ▶ Tools share many common parts
- ▶ Color rings are used to identify joint types on the assembly line
- ▶ Protective rubber cover available for quick-change bit holder
- ▶ Tool holding fixtures available
- ▶ Batteries available with tool, individually or as a 10-pack
- ▶ All models can be hung from balancer using accessory hook (part # 3 601 923 024)
- ▶ Bluetooth models require wireless EXAConnect controller (sold separately)

EXACT		Tool order number	Torque on hard joint per ISO 5393	Torque on soft joint per ISO 5393
EXACT 2 fine torque adjustment		0 602 490 450	0.6 – 2Nm 0.4 – 1.5 ft/lbs	0.6 – 2Nm 0.4 – 1.5 ft/lbs
		0 602 490 460		
BT-EXACT 2 Bluetooth enabled		0 602 491 434	5.3 – 17.7 in/lbs	5.3 – 17.7 in/lbs
		0 602 491 433		
EXACT 4 high speed		0 602 490 451	0.6 – 4Nm 0.4 – 3 ft/lbs	0.6 – 4Nm 0.4 – 3 ft/lbs
		0 602 490 461		
BT-EXACT 4 Bluetooth enabled		0 602 491 438	5.3 – 35.4 in/lbs	5.3 – 35.4 in/lbs
		0 602 491 437		
EXACT 6 good torque & speed		0 602 490 452	1 – 6Nm 0.7 – 4.4 ft/lbs	1 – 6Nm 0.7 – 4.4 ft/lbs
		0 602 490 462		
BT-EXACT 6 Bluetooth enabled		0 602 491 432	8.8 – 53 in/lbs	8.8 – 53 in/lbs
		0 602 491 431		
EXACT 7 great for hose clamps		0 602 490 454	1 – 7Nm 0.7 – 5.2 ft/lbs	1 – 7Nm 0.7 – 5.2 ft/lbs
		0 602 490 464		
BT-EXACT 7 Bluetooth enabled		0 602 491 440	8.8 – 62 in/lbs	8.8 – 62 in/lbs
		0 602 491 439		
EXACT 9 high torque/low weight		0 602 490 453	1 – 9Nm 0.7 – 6.7 ft/lbs	1 – 9Nm 0.7 – 6.7 ft/lbs
		0 602 490 463		
BT-EXACT 9 Bluetooth enabled		0 602 491 436	8.8 – 79.6 in/lbs	8.8 – 79.6 in/lbs
		0 602 491 435		
EXACT 8 good torque & speed		0 602 490 456	1.5 – 8Nm 1.1 – 5.9 ft/lbs	1.5 – 8Nm 1.1 – 5.9 ft/lbs
		0 602 490 466		
BT-EXACT 8 Bluetooth enabled		0 602 491 444	13 – 70.8 in/lbs	13 – 70.8 in/lbs
		0 602 491 443		
EXACT 12 high torque		0 602 490 457	1.5 – 12Nm 1.1 – 9 ft/lbs	1.5 – 12Nm 1.1 – 9 ft/lbs
		0 602 490 467		
BT-EXACT 12 Bluetooth enabled		0 602 491 442	13.3 – 106 in/lbs	13.3 – 106 in/lbs
		0 602 491 441		













No-load speed (rpm)	Bit holder	Battery specifications refer to page 26	Direction of rotation R = right L = left	Weight kg/lbs	Features	Included accessories	Accessory part number
600	1/4" QC	9.6 V / 1.7 Ah	R/L	1.2 / 2.6	0.7 sec. repeat protection	Torque adjustment tool light green color ring	3 607 950 020 3 600 106 008
600	1/4" QC	Not included	R/L	0.8 / 1.76	0.7 sec. repeat protection		
600	1/4" QC	9.6 V / 1.7 Ah	R/L	1.2 / 2.6	Class 2 Bluetooth module		
600	1/4" QC	Not included	R/L	0.8 / 1.76	Class 2 Bluetooth module		
900	1/4" QC	9.6 V / 1.7 Ah	R/L	1.2 / 2.6	0.7 sec. repeat protection	Torque adjustment tool grey color ring	3 607 950 020 3 600 106 016
900	1/4" QC	Not included	R/L	0.8 / 1.76	0.7 sec. repeat protection		
900	1/4" QC	9.6 V / 1.7 Ah	R/L	1.2 / 2.6	Class 2 Bluetooth module		
900	1/4" QC	Not included	R/L	0.8 / 1.76	Class 2 Bluetooth module		
600	1/4" QC	9.6 V / 1.7 Ah	R/L	1.2 / 2.6	0.7 sec. repeat protection	Torque adjustment tool black color ring	3 607 950 020 3 600 106 005
600	1/4" QC	Not included	R/L	0.8 / 1.76	0.7 sec. repeat protection		
600	1/4" QC	9.6 V / 1.7 Ah	R/L	1.2 / 2.6	Class 2 Bluetooth module		
600	1/4" QC	Not included	R/L	0.8 / 1.76	Class 2 Bluetooth module		
150	1/4" QC	9.6 V / 1.7 Ah	R/L	1.2 / 2.6	0.7 sec. repeat protection	Torque adjustment tool white color ring	3 607 950 020 3 600 106 018
150	1/4" QC	Not included	R/L	0.8 / 1.76	0.7 sec. repeat protection		
150	1/4" QC	9.6 V / 1.7 Ah	R/L	1.2 / 2.6	Class 2 Bluetooth module		
150	1/4" QC	Not included	R/L	0.8 / 1.76	Class 2 Bluetooth module		
350	1/4" QC	9.6 V / 1.7 Ah	R/L	1.2 / 2.6	0.7 sec. repeat protection	Torque adjustment tool light blue color ring	3 607 950 020 3 600 106 007
350	1/4" QC	Not included	R/L	0.8 / 1.76	0.7 sec. repeat protection		
350	1/4" QC	9.6 V / 1.7 Ah	R/L	1.2 / 2.6	Class 2 Bluetooth module		
350	1/4" QC	Not included	R/L	0.8 / 1.76	Class 2 Bluetooth module		
650	1/4" QC	12 V / 2.4 Ah	R/L	1.6 / 3.5	0.7 sec. repeat protection	Torque adjustment tool orange color ring	3 607 950 020 3 600 106 009
650	1/4" QC	Not included	R/L	0.9 / 2.0	0.7 sec. repeat protection		
650	1/4" QC	12 V / 2.4 Ah	R/L	1.6 / 3.5	Class 2 Bluetooth module		
650	1/4" QC	Not included	R/L	0.9 / 2.0	Class 2 Bluetooth module		
400	1/4" QC	12 V / 2.4 Ah	R/L	1.6 / 3.5	0.7 sec. repeat protection	Torque adjustment tool red color ring	3 607 950 020 3 600 106 006
400	1/4" QC	Not included	R/L	0.9 / 2.0	0.7 sec. repeat protection		
400	1/4" QC	12 V / 2.4 Ah	R/L	1.6 / 3.5	Class 2 Bluetooth module		
400	1/4" QC	Not included	R/L	0.9 / 2.0	Class 2 Bluetooth module		

Angle EXACT cordless nutrunners



Angle EXACT Nutrunners

- ▶ Precision Shut-off clutch exceeds ISO tolerance of $\pm 10\%$
- ▶ Lightweight
- ▶ Broad torque range
- ▶ 0.7 sec. trigger repeat protection
- ▶ LED/audible battery charge indicator; same as T-grip
- ▶ LED/audible shut-off indicator; same as T-grip (sent via Bluetooth to controller on BT-EXACT models)
- ▶ Bright LED light for work area illumination
- ▶ All models feature trigger hand forward/reverse control
- ▶ Tools share many common parts
- ▶ Color rings are used to identify joint types on the assembly line
- ▶ Protective rubber cover available for angle heads (see page 28)
- ▶ Angle heads & batteries are NOT included (see pages 26 & 28)
- ▶ Uses same batteries/chargers as T-Grip models; available individually or as a 10-pack
- ▶ All models can be hung from balancer using suspension hook
- ▶ Bluetooth models require wireless EXAConnect controller
- ▶ Tool weight with angle head and battery is 1.6kg/3.5 lbs

ANGLE EXACT	Tool order number	Torque on hard joint per ISO 5393	Torque on soft joint per ISO 5393
ANGLE EXACT 2 fine torque adjustment low speed 	0 602 490 647	0.7 – 2Nm 0.5 – 1.5 ft/lbs	0.7 – 2Nm 0.5 – 1.5 ft/lbs
BT-ANGLE EXACT 2 Bluetooth enabled 	0 602 491 647	6.2 – 17.7 in/lbs	6.2 – 17.7 in/lbs
ANGLE EXACT 3 fine torque adjustment 	0 602 490 656	0.7 – 3Nm 0.5 – 2.2 ft/lbs	0.7 – 3Nm 0.5 – 2.2 ft/lbs
BT-ANGLE EXACT 3 Bluetooth enabled 	0 602 491 656	6.2 – 26.5 in/lbs	6.2 – 26.5 in/lbs
ANGLE EXACT 6 high speed 	0 602 490 652	1 – 6Nm 0.7 – 4.4 ft/lbs	1 – 6Nm 0.7 – 4.4 ft/lbs
BT-ANGLE EXACT 6 Bluetooth enabled 	0 602 491 652	8.8 – 53 in/lbs	8.8 – 53 in/lbs
ANGLE EXACT 7 low speed 	0 602 490 669	2 – 7Nm 1.5 – 5.1 ft/lbs	2 – 7Nm 1.5 – 5.1 ft/lbs
BT-ANGLE EXACT 7 Bluetooth enabled 	0 602 491 669	17.7 – 62 in/lbs	17.7 – 62 in/lbs
ANGLE EXACT 8 good torque & speed 	0 602 490 651	1 – 8Nm 0.7 – 5.9 ft/lbs	1 – 8Nm 0.7 – 5.9 ft/lbs
BT-ANGLE EXACT 8 Bluetooth enabled 	0 602 491 651	8.8 – 71 in/lbs	8.8 – 71 in/lbs
ANGLE EXACT 15 high torque/lightweight 	0 602 490 650	2 – 15Nm 1.5 – 11 ft/lbs	2 – 15Nm 1.5 – 11 ft/lbs
BT-ANGLE EXACT 15 Bluetooth enabled 	0 602 491 650	17.7 – 133 in/lbs	17.7 – 133 in/lbs




No-load speed (rpm)	Angle head refer to page 28	Battery specifications refer to page 26	Direction of rotation R = right L = left	Weight kg/lbs	Features	Included accessories	Accessory part number
110	Not included	9.6 V Not included	R/L	1.0 / 2.2	0.7 sec. repeat protection	Torque adjustment tool Housing wrench Suspension hook light green color ring	3 607 950 020 3 601 376 007 3 601 923 024 3 600 106 023
110	Not included	9.6 V Not included	R/L	1.0 / 2.2	Class 2 Bluetooth module		
420	Not included	9.6 V Not included	R/L	1.0 / 2.2	0.7 sec. repeat protection	Torque adjustment tool Housing wrench Suspension hook light green color ring	3 607 950 020 3 601 376 007 3 601 923 024 3 600 106 023
420	Not included	9.6 V Not included	R/L	1.0 / 2.2	Class 2 Bluetooth module		
650	Not included	9.6 V Not included	R/L	1.0 / 2.2	0.7 sec. repeat protection	Torque adjustment tool Housing wrench Suspension hook black color ring	3 607 950 020 3 601 376 007 3 601 923 024 3 600 106 022
650	Not included	9.6 V Not included	R/L	1.0 / 2.2	Class 2 Bluetooth module		
110	Not included	9.6 V Not included	R/L	1.0 / 2.2	0.7 sec. repeat protection	Torque adjustment tool Housing wrench Suspension hook orange color ring	3 607 950 020 3 601 376 007 3 601 923 024 3 600 106 021
110	Not included	9.6 V Not included	R/L	1.0 / 2.2	Class 2 Bluetooth module		
420	Not included	9.6 V Not included	R/L	1.0 / 2.2	0.7 sec. repeat protection	Torque adjustment tool Housing wrench Suspension hook orange color ring	3 607 950 020 3 601 376 007 3 601 923 024 3 600 106 021
420	Not included	9.6 V Not included	R/L	1.0 / 2.2	Class 2 Bluetooth module		
250	Not included	9.6 V Not included	R/L	1.0 / 2.2	0.7 sec. repeat protection	Torque adjustment tool Housing wrench Suspension hook red color ring	3 607 950 020 3 601 376 007 3 601 923 024 3 600 106 020
250	Not included	9.6 V Not included	R/L	1.0 / 2.2	Class 2 Bluetooth module		

Angle EXACT cordless nutrunners




Angle EXACT Nutrunners

- ▶ Precision Shut-off clutch exceeds ISO tolerance of $\pm 10\%$
- ▶ Lightweight
- ▶ Broad torque range
- ▶ 0.7 sec. trigger repeat protection
- ▶ LED/audible battery charge indicator; same as T-grip
- ▶ LED/audible shut-off indicator; same as T-grip (sent via Bluetooth to controller on BT-EXACT models)
- ▶ Bright LED light for work area illumination
- ▶ All models feature trigger hand forward/reverse control
- ▶ Tools share many common parts
- ▶ Color rings are used to identify joint types on the assembly line
- ▶ Protective rubber cover available for angle heads (see page 28)
- ▶ Angle heads & batteries are NOT included (see pages 26 & 28)
- ▶ Uses same batteries/chargers as T-Grip models; available individually or as a 10-pack
- ▶ All models can be hung from balancer using suspension hook
- ▶ Bluetooth models require wireless EXAConnect controller
- ▶ Tool weight with angle head and battery is 2.6kg/5.7 lbs

ANGLE EXACT!	Tool order number	Torque on hard joint per ISO 5393	Torque on soft joint per ISO 5393
ANGLE EXACT 17 high speed			
	0 602 490 675	6 – 17Nm 4.4 – 12.5 ft/lbs	6 – 13Nm 4.4 – 9.6 ft/lbs
BT-ANGLE EXACT 17 Bluetooth enabled	0 602 491 675	53 – 150 in/lbs	53 – 115 in/lbs
ANGLE EXACT 23 good torque & speed			
	0 602 490 673	7 – 23Nm 5.1 – 17 ft/lbs	7 – 20Nm 5.1 – 14.8 ft/lbs
BT-ANGLE EXACT 23 Bluetooth enabled	0 602 491 673	62 – 204 in/lbs	62 – 177 in/lbs
ANGLE EXACT 30 high torque			
	0 602 490 671	8 – 30Nm 5.9 – 22.1 ft/lbs	8 – 28Nm 5.9 – 20.7 ft/lbs
BT-ANGLE EXACT 30 Bluetooth enabled	0 602 491 671	71 – 266 in/lbs	71 – 248 in/lbs

Angle EXACT CF nutrunners

ANGLE EXACT 14 CF high speed		(w/o head)	(w/o head)
	0 602 490 690	1.4 – 10Nm 1 – 7.4 ft/lbs 12 – 89 in/lbs	1.4 – 10Nm 1 – 7.4 ft/lbs 12 – 89 in/lbs
ANGLE EXACT 22 CF good torque & speed		(w/o head)	(w/o head)
	0 602 490 693	5 – 16Nm 3.7 – 12 ft/lbs 44 – 142 in/lbs	5 – 14.3Nm 3.7 – 10.5 ft/lbs 44 – 127 in/lbs
ANGLE EXACT 29 CF high torque		(w/o head)	(w/o head)
	0 602 490 691	5.7 – 21Nm 4.2 – 15.4 ft/lbs 50.4 – 186 in/lbs	5.7 – 20Nm 4.2 – 14.8 ft/lbs 50.4 – 177 in/lbs

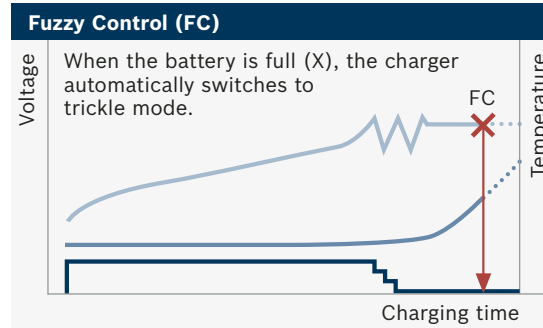
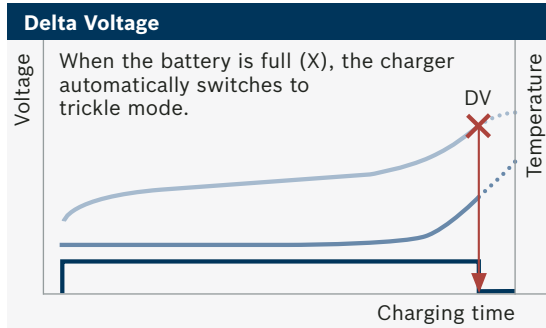
No-load speed (rpm)	Angle head refer to page 28	Battery specifications refer to page 26	Direction of rotation R = right L = left	Weight kg/lbs	Features	Included accessories	Accessory part number
560	Not included	14.4 V Not included	R/L	1.5 / 3.3	0.7 sec. repeat protection	Torque adjustment tool Housing wrench Suspension hook white color ring	3 607 950 020 3 601 376 007 3 601 923 024 3 600 106 033
560	Not included	14.4 V Not included	R/L	1.5 / 3.3	Class 2 Bluetooth module		
320	requires HD angle head Not included	14.4 V Not included	R/L	1.5 / 3.3	0.7 sec. repeat protection	Torque adjustment tool Housing wrench Suspension hook orange color ring	3 607 950 020 3 601 376 007 3 601 923 024 3 600 106 021
320	requires HD angle head Not included	14.4 V Not included	R/L	1.5 / 3.3	Class 2 Bluetooth module		
220	requires HD angle head Not included	14.4 V Not included	R/L	1.5 / 3.3	0.7 sec. repeat protection	Torque adjustment tool Housing wrench Suspension hook red color ring	3 607 950 020 3 601 376 007 3 601 923 024 3 600 106 020
220	requires HD angle head Not included	14.4 V Not included	R/L	1.5 / 3.3	Class 2 Bluetooth module		

The Angle EXACT CF models are designed for specialty crowfoot or tube nut heads not manufactured by Bosch.
The CF models perform the same as standard models in forward, but limit power & run time in reverse to prevent head damage.

350 (w/o head)	Custom head not supplied by Bosch	9.6 V Not included	R/L	1.0 / 2.2	0.7 sec. repeat protection Same specifications as Angle EXACT 15 in forward; reduced power in reverse	Torque adjustment tool Housing wrench Suspension hook red color ring	3 607 950 020 3 601 376 007 3 601 923 024 3 600 106 020
440 (w/o head)	Custom head not supplied by Bosch	14.4 V Not included	R/L	1.5 / 3.3	0.7 sec. repeat protection Same specifications as Angle EXACT 23 in forward; reduced power in reverse	Torque adjustment tool Housing wrench Suspension hook orange color ring	3 607 950 020 3 601 376 007 3 601 923 024 3 600 106 021
300 (w/o head)	Custom head not supplied by Bosch	14.4 V Not included	R/L	1.5 / 3.3	0.7 sec. repeat protection Same specifications as Angle EXACT 30 in forward; reduced power in reverse	Torque adjustment tool Housing wrench Suspension hook red color ring	3 607 950 020 3 601 376 007 3 601 923 024 3 600 106 020

Smart **battery** chargers

Bosch battery chargers use intelligent microprocessors to evaluate and charge batteries efficiently, quickly and carefully.



Delta voltage one hour charger

The Bosch delta voltage charger is a one hour charger that continually regulates itself. If a battery begins to overcharge, the cells recognize a characteristic voltage drop known as negative delta voltage.

This value is used as a control to trigger a drop in the charging current or reduce current to a trickle charge, preventing overcharging.

Battery life using this charger is about 1,400 to 1,500 charge/discharge cycles.



Fuzzy logic 15-minute charger

The Bosch fuzzy logic charger is a 15-minute quick charger that calculates required charge time based on battery voltage and temperature. This process greatly extends battery life, and does not require fully discharging a battery before recharging.

Battery life can be increased to as many as 3,000 charge/discharge cycles.



One hour charger		15 minute charger	
Economically priced one hour charger. Charges all Bosch NTC battery packs from 7.2 to 14.4 V with APT insertion end.		Features fuzzy logic charging technology. The 15-minute charger for all Bosch NTC battery packs from 7.2 to 24 V with APT insertion end. Also provides audible signal that battery is fully charged.	
Part number	2 607 224 445	Part number	2 607 224 489
Charging voltage	7.2 to 14.4 volts	Charging voltage	7.2 to 24 volts
Weight	1.2 kg / 2.6 lbs	Weight	1.0 kg / 2.2 lbs

Constant power for work stations

The 4-EXACT power supply

The 4-EXACT Power supply is designed to provide a constant power source to all EXACT and Angle EXACT tools. The 4-EXACT is ideal for assembly situations where cordless mobility is not needed (or desired). It uses an “empty” battery housing as an adapter connected to a 5 meter cable that plugs directly into the unit.

The system can be used in conjunction with our Bluetooth error-proofing controller. Now you can use the same tool for mobile and stationary applications, while reducing your maintenance and spare parts costs.

- ▶ Automatically detects the correct voltage for the right tool
- ▶ Limits worker movement to 5 meters/16 ft
- ▶ Power supply weight is 13.6 kg/30 lbs
- ▶ Works with all 9.6 V, 12 V and 14.4 V EXACT cordless tools
- ▶ Eliminates need for batteries and chargers

		Order number
110 volt 4-EXACT Power supply		
Available 7/2006		0 602 490 508
220 volt 4-EXACT Power supply		
		0 602 490 507
14.4 V Adapter cable		
		0 602 490 505
12 V Adapter cable		
		0 602 490 504
9.6 V Adapter cable		
		0 602 490 503



A 5 meter/16 foot long cable connects any EXACT or Angle EXACT to the power supply. The cable and adapter allow for easy conversion of a cordless tool to an “electric” tool.

Production batteries






Bosch production tool batteries: not just your average Ni-cad

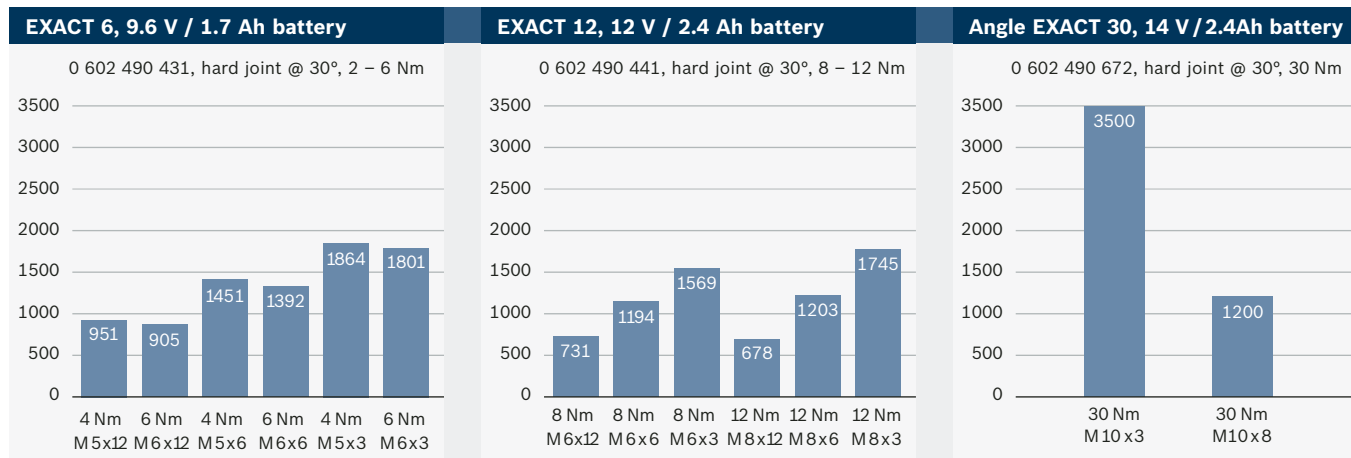
Our batteries may resemble a conventional Bosch battery on the outside, but the cells inside are unique in the world of power tools. We use class “zero” cells to produce the longest-lasting, best performing batteries in the business.













These high-grade battery cells are manufactured in limited batches using improved tolerances and processes over standard Ni-cad cells. Expect up to 3,000 charge cycles using our 15-minute charger.

	Order number	Description	Voltage (V)	Capacity (Ah)	Weight (kg/lbs)
14.4 V Batteries					
	2 607 335 657	Single Battery	14.4	1.7	0.7 / 1.5
	0 602 490 008	Battery 10-pack	14.4	1.7	7 / 15
	2 607 335 655	Single Battery	14.4	2.4	0.8 / 1.8
	0 602 490 007	Battery 10-pack	14.4	2.4	8 / 18
12 V Batteries					
	2 607 335 454	Single Battery	12	1.7	0.6 / 1.3
	0 602 490 003	Battery 10-pack	12	1.7	6 / 13
	2 607 335 455	Single Battery	12	2.4	0.7 / 1.5
	0 602 490 004	Battery 10-pack	12	2.4	7 / 15
9.6 V Batteries					
	2 607 335 453	Single Battery	9.6	1.7	0.4 / 0.9
	0 602 490 002	Battery 10-pack	9.6	1.7	4 / 9
	2 607 335 659	Single Battery	9.6	2.4	0.5 / 1
	0 602 490 009	Battery 10-pack	9.6	2.4	5 / 10















Average number of fasteners per battery charge



C-EXACT & T-grip EXACT accessories

		Order number	Quantity
<p>Protective rubber sleeve for all 1/4" quick change chucks prevents mutilation of work piece</p>		3 605 500 172	5 pack
<p>Snap-in color rings for quick torque range identification fits all C-EXACT straight screwdrivers and all T-grip EXACT cordless drivers</p>	<ul style="list-style-type: none">  black  red  light blue  light green  orange  grey  white 	<ul style="list-style-type: none"> 3 600 106 010 3 600 106 011 3 600 106 012 3 600 106 013 3 600 106 014 3 600 106 017 3 600 106 019 	<ul style="list-style-type: none"> 5 pack 5 pack 5 pack 5 pack 5 pack 5 pack 5 pack
<p>T-grip bench mount tool holder (for all T-grip tools only)</p>		0 602 490 001	10 pack
<p>Protective cover Prevents damage to work piece; Fits all T-grip EXACT cordless drivers will not block motor air vents sold as a 10-pack only</p>		0 602 490 011	10 pack

Angle EXACT accessories

	Order number	Weight (kg/lbs)	Drive	Quantity
Straight head				
	0 607 453 631	0.2 / 0.4	1/4" quick-change	1
Angle head for ANGLE EXACT 2, 3, 6, 7, 8, 15, 17 Gear ratio is 1.4:1				
	0 607 453 617	0.2 / 0.4	1/4" square	1
	0 607 453 618	0.2 / 0.4	1/4" internal hex	1
	0 607 453 620	0.2 / 0.4	3/8" square	1
	0 607 453 630	0.2 / 0.4	1/4" quick-change	1
Heavy-duty angle head required for ANGLE EXACT 23, 30 Gear ratio is 1.4:1				
	0 607 451 618	0.22 / 0.5	3/8" square	1
Protective cover for angle heads				
fits 0 607 453 617, -618, -620, -630	3 605 500 171	-	-	1
	fits 0 607 451 618	3 605 500 175	-	1
Snap-in color rings for quick torque range identification				
 black	3 600 106 027	-	-	5 pack
 red	3 600 106 028	-	-	5 pack
 light blue	3 600 106 029	-	-	5 pack
 light green	3 600 106 030	-	-	5 pack
 orange	3 600 106 031	-	-	5 pack
 grey	3 600 106 032	-	-	5 pack
 white	3 600 106 033	-	-	5 pack

Our right angle heads feature a precision spline which provides a reliable, durable, and simple method of adjusting the position of the angle head using only common wrenches. No shims or special tools are needed to rotate the head to one of 8 different positions in 45 degree increments.