



Yokota YS-e Battery System Wrench

2019 Launch Presentation

In the pursuit of
improved **ERGONOMICS** in critical assembly
applications,

Accept No Compromises...



Excellent Ergonomics
Higher productivity
Superior Traceability



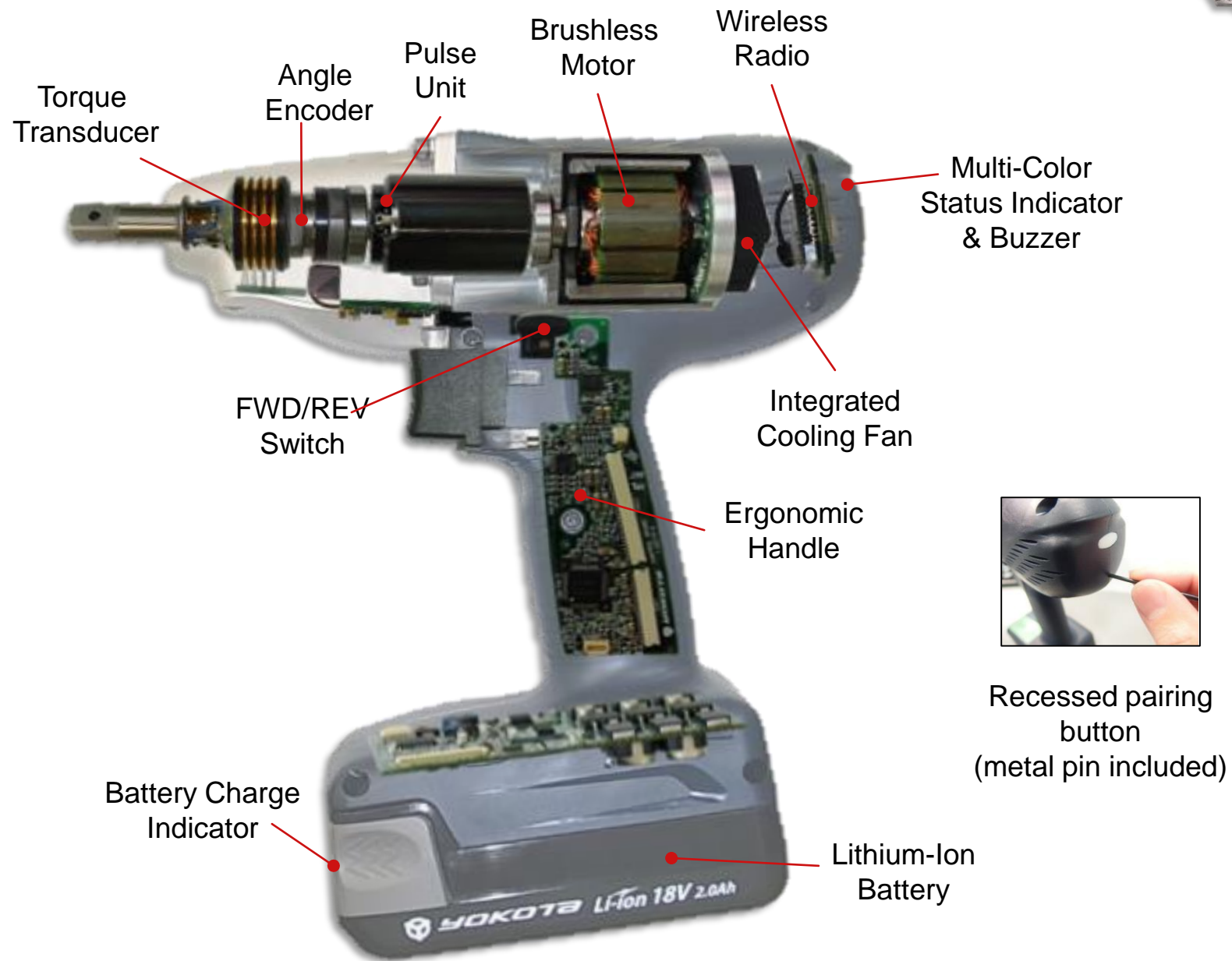


SYSTEM COMPONENTS:

- Tool Overview & Features
- Wireless Unit Overview
- Programming Console Overview
- Display Screen Overview
- Basic & Advanced System Layout

YS-E TOOL

Features



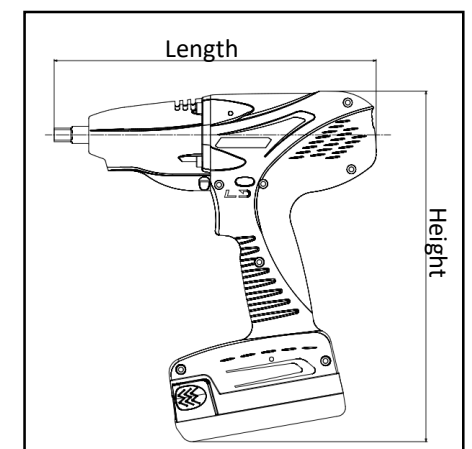
YS-E TOOL

Models Overview

Tool Model	YS-e600	YS-e600A	YS-e800	YS-e800A	YS-e900	YS-e950
Torque Range (Nm) ††	7 - 20	5 – 18	15 – 35	10 – 30	30 – 50	40 - 60
Weight with / (without) Battery (kg)	1.75 (1.34)	1.75 (1.34)	1.80 (1.39)	1.80 (1.39)	1.90 (1.49)	1.94 (1.53)
Recommended Fastenings per Minute	10	10	8	8	6	5
Recommended Bolt Size	M6	M6	M8	M6 ~ M8	M8 ~ M10	M8 ~ M10
Fastenings / Charge	1300	1300	800	800	700	650
Vibration (m/s ²)	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Noise (dB)	72	72	76	76	78	79
Overall Length (mm)	214	214	219	219	226	226
Overall height (mm)	244	244	244	244	244	244
Drive Output Size ‡	3/8 " Square	1 / 4 " Hex	3/8 " Square	1 / 4 " Hex	3/8 " Square	3/8 " Square
Free Speed (RPM)	4,800	4,800	4,800	4,800	4,800	4,800

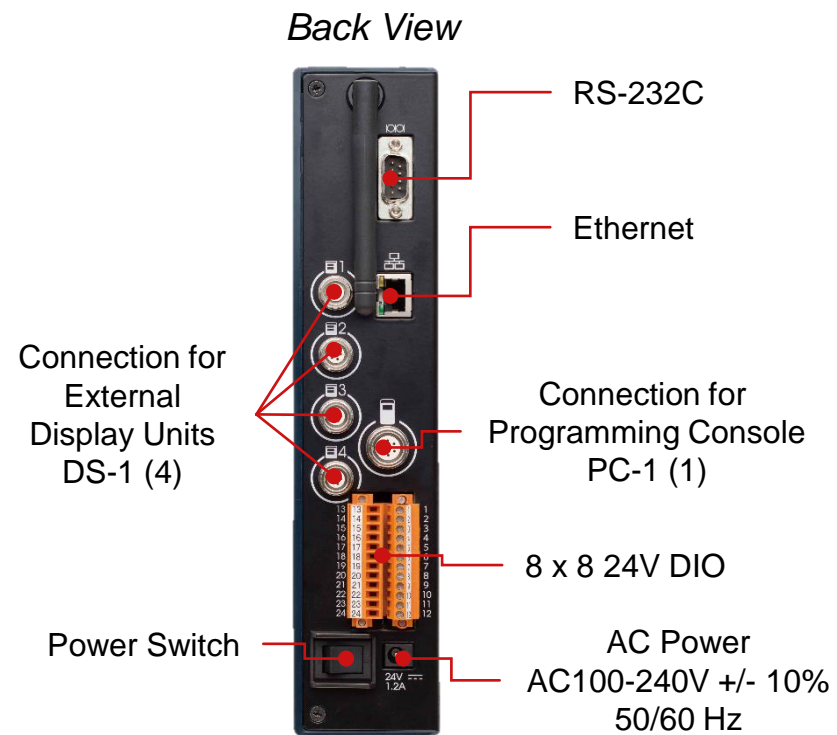
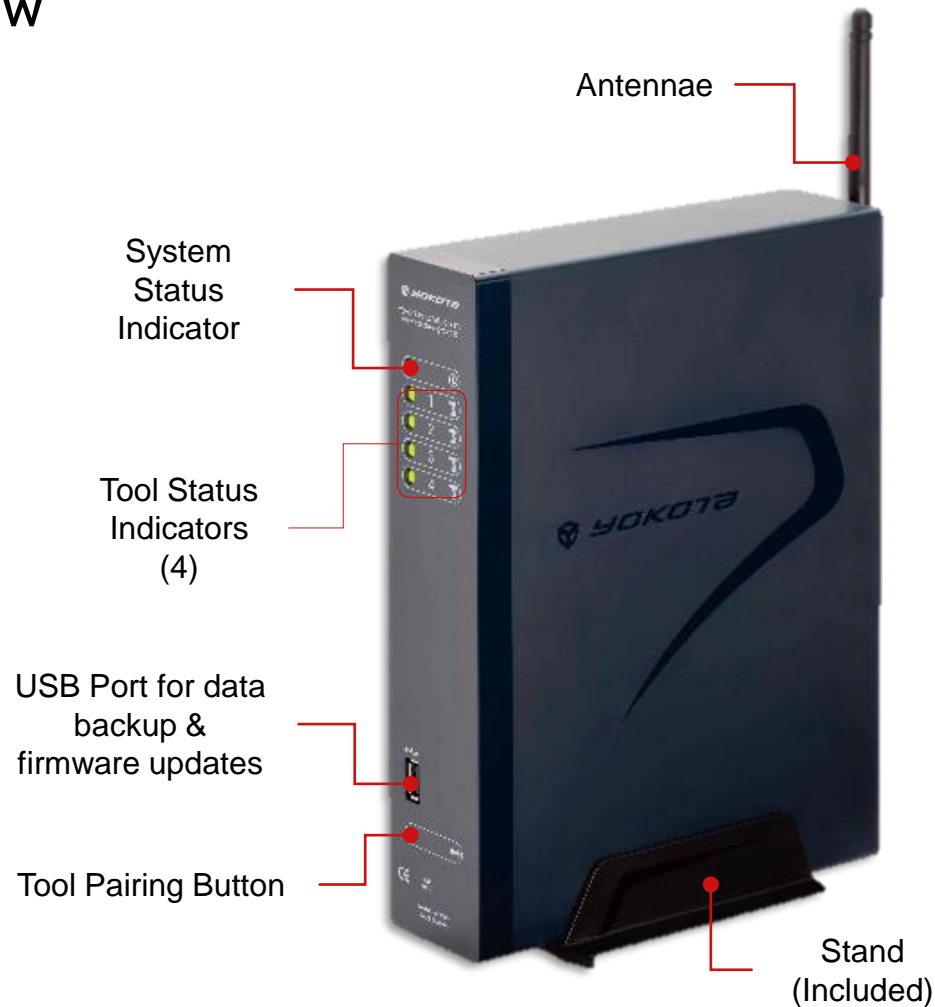
††The max torque values provided in above torque ranges were measured on a hard joint. Actual results may vary based on specific joint characteristics.

‡ The square drive does not have a spring detent. It is a through-hole type. A retaining pin must be used to properly hold the socket on the tool



Wireless Unit (WU-1)

Overview



Model	WU-1
Purpose	Physical connection point for programming, data collection, and line integration for the system; local data storage
Required or Optional	Required
External Dimensions (mm)	249 x 188 x 54
Max Cable Length (M)	10
Weight (g)	420

Wireless Unit (WU-1)

Features

Simultaneous wireless communication with up to 4 TOOLS

Store and output tool settings and tightening results

- 10,000 tightening results locally stored – accessible via USB
- Rundown data, dynamic torque, and tightening trace data all available for output
- Built-in battery for keeping date/time current up to 6 years

Integration with PLC and/or MES systems

- 24VDC, 8 inputs 8 outputs
- RS-232 Serial
- Open protocol option
- TOHO protocol option

Quick Pairing Button for Instantaneous pairing

Web-based programming via Ethernet

- No Software Licenses!
- Any device or PC



YOKOTA YOKOTA INDUSTRIAL CO., LTD. TOOL 1 SETTING SCREEN				
Tool 1 Settings				
QTY CONTROL	ON			
START CONDITION	WORK_S			
WAITING	STOP			
AUTO CLEAR	OFF			
END CONDITION	END_LS			
TOOL BUZZER	ON			
TOOL LAMP	ON			
WORK SEL	DIT			
WAVE DATA OUTPUT	OFF			
SLEEP TIME	0			min
LIMT WORK	0			
ID SETTING	0000			
	WORK a	WORK b	WORK c	WORK d
START TRQ	0.0	0.0	0.0	0.0 Nm
SWITCH TRQ	10.0	10.0	10.0	10.0 Nm
MIN. TRQ	10.0	10.0	10.0	10.0 Nm
CUT TRQ	30.0	30.0	30.0	30.0 Nm
MAX TRQ	40.0	40.0	40.0	40.0 Nm
FREERUNNING ANG MIN	0	0	0	0 deg
FREERUNNING ANG MAX	30000	30000	30000	30000 deg
FINAL ANG MIN	0	0	0	0 deg
FINAL ANG MAX	9999	9999	9999	9999 deg
STOP ABORT TIME	0.10	0.10	0.10	0.10 sec
MOTOR LOW SPEED	1200	1200	1200	1200 rpm
MOTOR MID SPEED	2000	2000	2000	2000 rpm
MOTOR HIGH SPEED	2300	2300	2300	2300 rpm
JUDGE TIME	0.50	0.50	0.50	0.50 sec
BOLT CO-EFFICIENT	1.00	1.00	1.50	1.00
AVERAGE NUM	3	3	3	3
AVERAGE MODE	CONT	CONT	CONT	CONT
SKIP NUM	2	2	2	2
SLOWER NO.	10	10	10	10
COMPENIC NUM	0	0	0	0
FREERUNNING NG STOP	OFF	OFF	OFF	OFF
FINAL ANG. NG STOP	OFF	OFF	OFF	OFF
BOLT NUMBER	3	3	3	3
<input type="checkbox"/> read <input type="checkbox"/> write <input type="button" value="EXECUTE"/>				

Web Based Programming

Programming Console (PC-1)

Overview

Optional system component

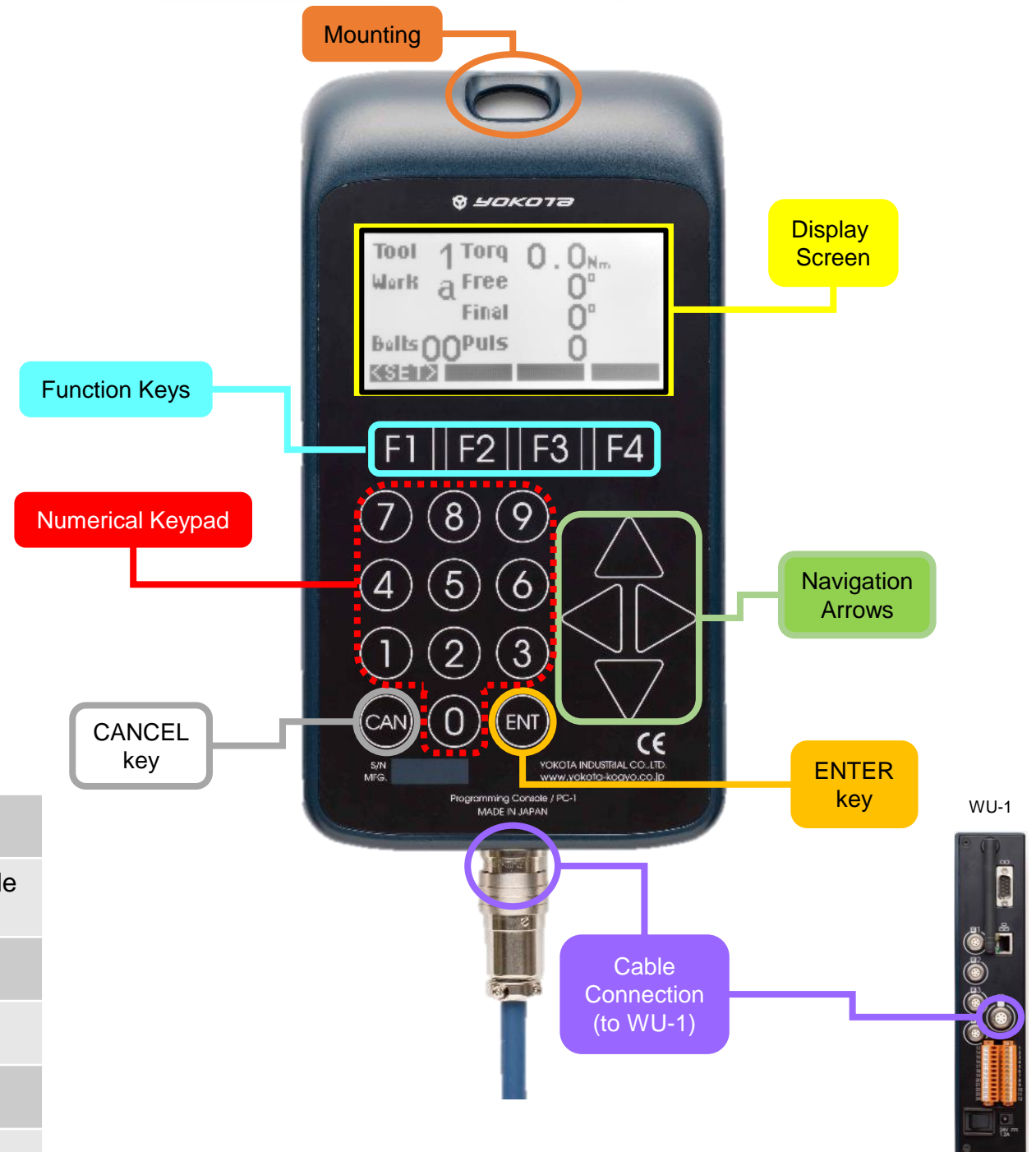
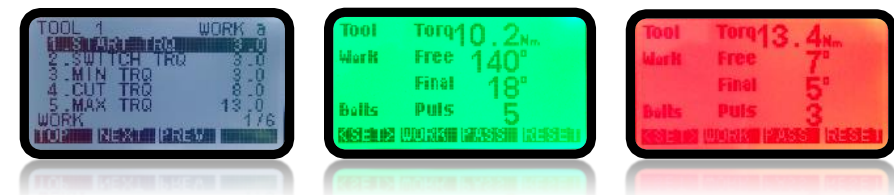
The same PC-1 can be used with any **Wireless Unit**

→ Used like a 'key' for programming

Simple navigation using arrow keys and intuitive menu structure

Informative display screen provides critical information

Display screen backlight illuminates green or red, depending on tightening result, for **quick feedback** when setting up the system



Model	PC-1
Purpose	Display and edit all programmable parameters
Required or Optional	Optional
External Dimensions (mm)	112 x 150 x 38
Max Cable Length (M)	10
Weight (g)	420

Display Screen (DS-1)

Overview

Simple mounting to wherever quantitative and/or visual feedback is desired

Can be set up to display the following:

- Tool / Work #
- Tightening Result Torque
- Overall Tightening Status
- Freerunning Angle
- Final Angle
- # of fasteners remaining in batch count
- # of pulses for the tightening

Can connect up to 4 x Display Screens for each wireless unit



Model	DS-1
Purpose	Display of tightening results, tool / work name, and batch count status
Required or Optional	Optional
External Dimensions (mm)	165 x 130 x 38
Max Cable Length (M)	10
Weight (g)	400

Battery & Charger

Overview



BATTERY

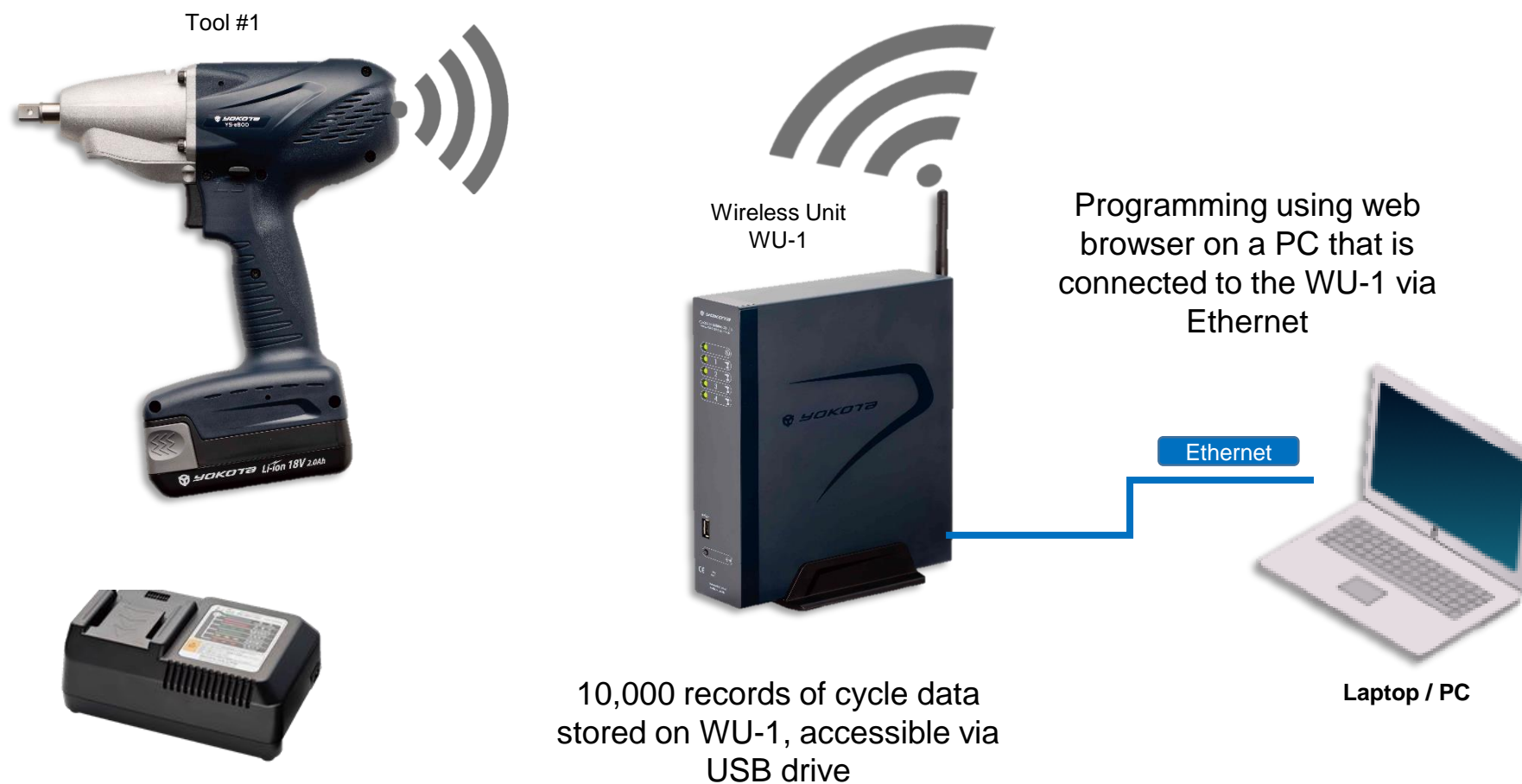
Model	BPL-1820
Battery Technology	Lithium - Ion
Nominal Voltage	18V
Rated Capacity	2.0 Ah
Onboard Charge Level Indicator	YES
External Dimensions (mm)	76(W) x 119(D) x 45(H)
Weight (kg)	0.41
Ambient Operating Temperature (°C)	0° ~ 40°
Battery Cover Available?	YES

Battery Charger

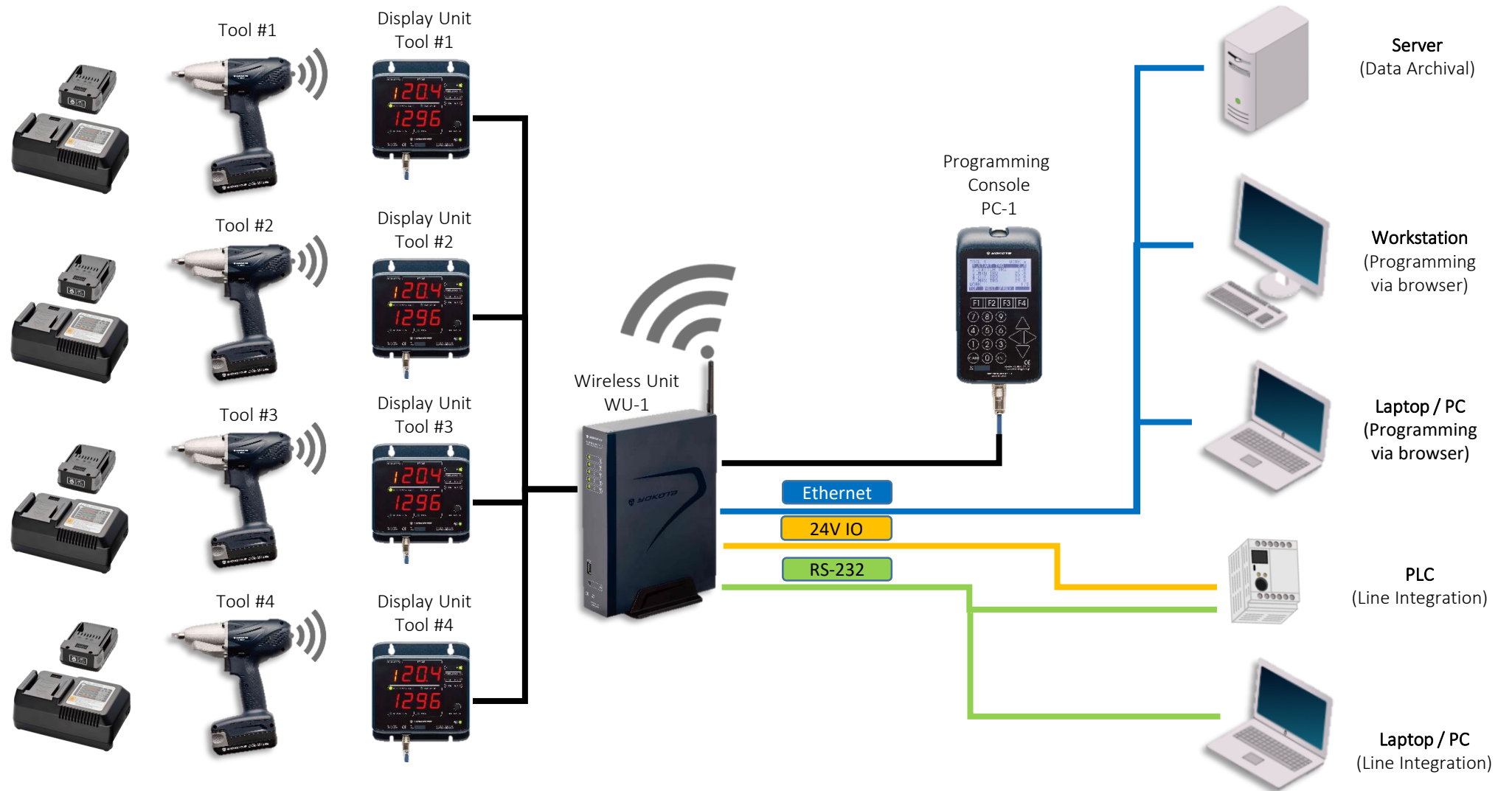
Model	BC0075G
Rated Input Voltage	AC100~240V±10% 50/60Hz
Rated Charging Current	2.0 Ah
External Dimensions	200(W) x 130(D) x 84(H)
Weight (kg)	0.84
Recharge Time	80% Charged : 60 minutes Fully Charged: 70 minutes
Ambient Operating Temperature (°C)	0° ~ 40°

System Layout

Basic Setup



System Layout Advanced Setup



System Value:

- Why YS-E?
 - Better Ergonomics
 - Higher Productivity
 - Superior Traceability

WHY YS-e?



Excellent Ergonomics

-
-
-
-

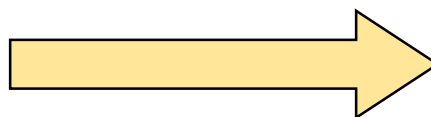
Superior Traceability

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Higher Productivity

-
-
-
-

WHY YS-e?



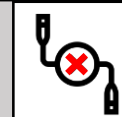
SYSTEM FEATURES

- Li-Ion Battery Platform
- No hoses or cables
- Wireless communication
- Extremely lightweight
- Balanced design makes it easy to hold all day with one hand
- UNIQUE design of the motor & hydraulic pulse unit
- Low Vibration & Noise



SYSTEM BENEFITS

REMOVE trip hazards from hoses and cables in and around the assembly line, improving safety



ELIMINATE torque reaction experienced by the operator on fastening applications up to 60 Nm



REDUCE operator fatigue throughout the work day, increasing productivity



MINIMIZE need for costly suspension and support systems on the assembly line



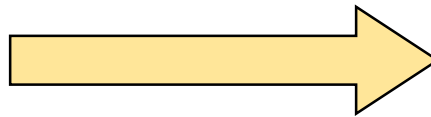
SYSTEM VALUE



Excellent Ergonomics



WHY YS-e?



SYSTEM FEATURES

- Durable brushless motor design
- 4,800 RPM free speed
- Cordless & Wireless freedom
- Untethered from support structures
- Single handed operation
- Long-lasting Li-Ion battery



SYSTEM BENEFITS

INCREASE operator agility & flexibility by removing hoses & cables, improving productivity



EMPOWER more productivity from operators by helping them get more work done in less time



ENGAGE fasteners more quickly with single hand operation, improving productivity



ELIMINATE restrictions caused by unnecessary suspension systems on the assembly line



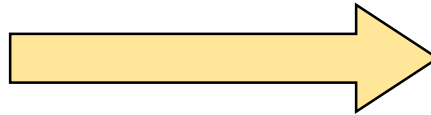
SYSTEM VALUE



Higher Productivity



WHY YS-e?



SYSTEM FEATURES

- Patented strain-gauge type torque transducer
- Patented angle encoder
- Onboard storage of cycle data results
- Real-time transmission of cycle data via Ethernet or Serial
- Tightening trace can be accessed and stored
- Capable of integration with plant networks, PLCs, data archival and MES systems



SYSTEM BENEFITS

CONTROL the tightening process with a traceable transducer that can be calibrated & validated



RECORD tightening results for short-term and long-term assurance that the **work was done RIGHT**



REPLICATE the desired tightening result so that the work is done the same way every time



ENSURE that when abnormal situations are present, abnormal situations are detected using torque & angle control



SYSTEM VALUE



Superior Traceability

Competitive Positioning

- Target Verticals
- Competitive Comparison
- Why It's Better: Performance Differentiators

TARGET VERTICALS

ERGONOMICS + PRODUCTIVITY + TRACEABILITY = VALUE

Classification	Market Vertical	MVI Final Assembly	MVI Tiers	Truck & Bus	Heavy Equipment / Rail	Rec Transport	Appliance	Electronics	Other GI
No Control		No Control				No Control			
Class C		Class C				Class C			
Class B		Class B				Class B		Class B	
Class A		Class A				Class A		Class A	

PRIMARY	Class A & Class B Applications where ergonomics, productivity, and traceability are important, hold value and can easily justify the best solution in the ROI calculation. This is the PRIMARY target.
POSSIBLE	POSSIBLE opportunity depending on the customer's needs & requirements. With the right application and customer need – this could be a great solution. Class C Applications is a good example, or a Class A application at an appliance customer.
PROBABLY NOT	If torque control is not important and/or holds no value for the application, this solution is PROBABLY NOT the best solution.

YOKOTA YS-E

Accept No Compromises

Compared to the competition shown:

✓ Average of **31% MORE TORQUE RANGE**

✓ Average of **19% LIGHTER**

✓ **71% FASTER**
than comparable Estic model

✓ **TRIED & TRUE**
transducer control

	Yokota YS-e	Estic	Atlas Copco TBP	Uryu
Pulse Type	Oil Pulse	Mechanical Pulse	Oil Pulse	Oil Pulse
Torque Measurement	Strain Gauge Transducer ✓	Strain Gauge Transducer ✓	Rotary Encoder ✗	Magnetic Transducer ✗
Torque Range (Nm)	5 – 60 ✓	1 – 26 (-54%) ✗	12 – 60 (-12%) ✗	5 – 45 (-27%) ✗
Avg. Weight Across Range (incl. battery)	1.84 kg ✓	1.95 kg (+6%) ✗	1.9 kg (+3.3%) ✓	2.15 kg (+16.8%) ✗
Max Speed (RPM)	4800 (-4%) ✓	1440 (-71%) ✗	5000 ✓	4800 (-4%) ✓
Torque Accuracy	✓	✓	✗	✗
Kickback / vibration	✓	✗	✓	✗

Legend	
✓	Criteria Leader
✓	Relatively Close to Criteria Leader
✗	Inferior to Criteria Leader

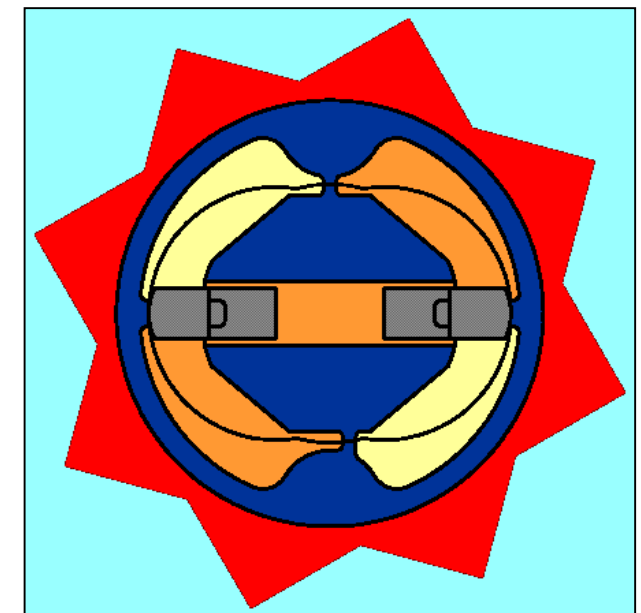
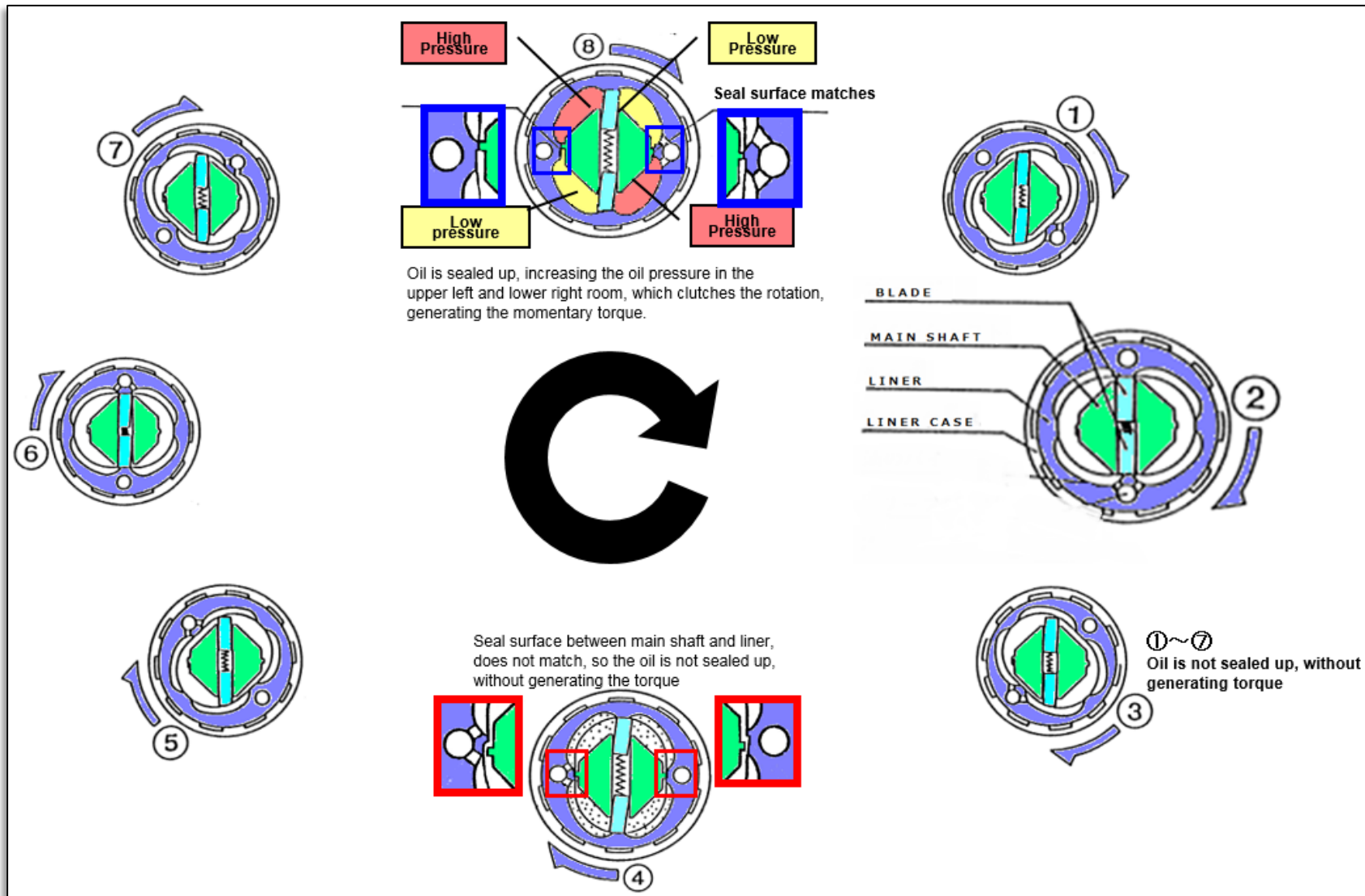
‡Claim made using advertised catalog specs:

<http://www.estic.co.jp/>
<https://www.atlascopco.com/en-us/itba/products/assembly-solutions/>
<http://www.uryu.co.jp/english/index.html>

WHY IT'S BETTER

Oil Pulse Mechanism

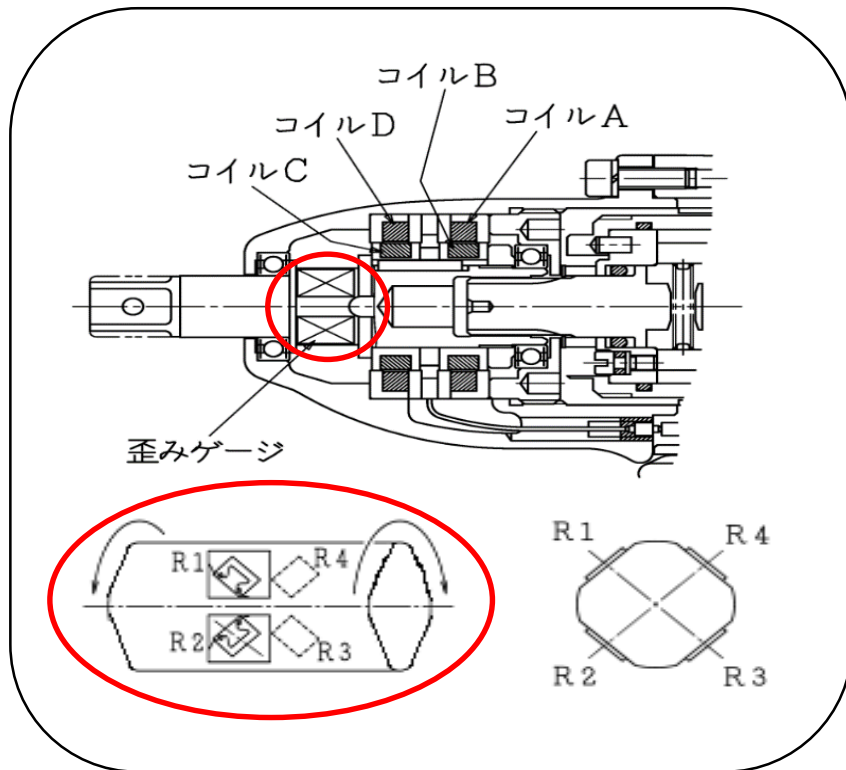
How It Works



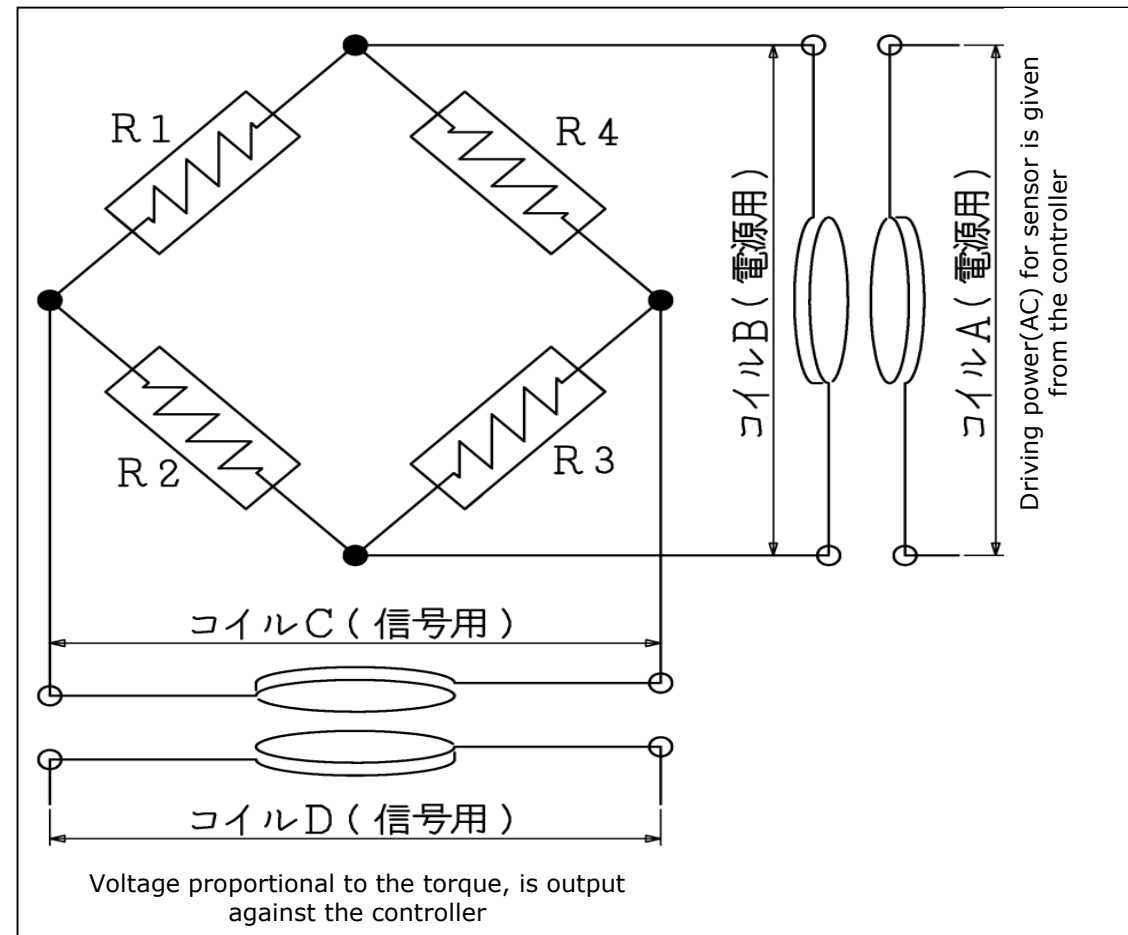
WHY IT'S BETTER

Strain Gauge Transducer

How It Works



- **When torsional load is applied to the output shaft during tightening:**
 - R1 & R3: compression stress is given, making the gauge thicker and shorter -causing the resistance gets smaller.
 - R2 & R4: tension stress is given, making the gauge thinner and longer – causing the resistance to get larger



WHY IT'S BETTER

Strain Gauge Transducer

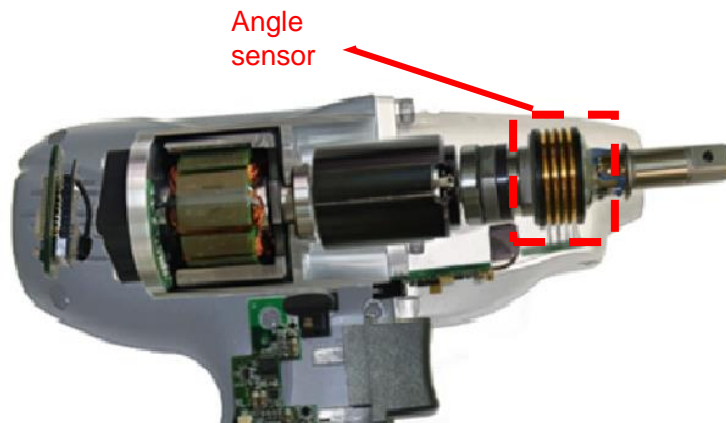
Accept No Compromises

	Strain Gauge	Magnetic	Rotary Encoder
Diagram	<p>Wheatstone Bridge</p>	<p>Magnetic Transducer</p>	<p>Encoder</p> <p>Angle reduction speed : α Angle speed : ω Rotating angle : θ moment of inertia : I $\alpha = d\omega/dt = d^2\theta/dt^2$</p> <p>Calculate the angle reduction speed for each pulse and convert it to torque</p>
Features	<ul style="list-style-type: none"> Adopting the Wheatstone Bridge transducer, the tool can detect precise torque. Calibrated by length x weight on to the shaft. 	<ul style="list-style-type: none"> Converting the torque from the current difference caused when the shaft has twisted. The detection result can be heavily affected if the socket has a magnet on it. 	<ul style="list-style-type: none"> Unable to truly calibrate, only validate Uncertainty if the declared torque is accurate or not
Torque Reliability	✓	!	✗
Calibration	✓	!	✗

WHY IT'S BETTER

Rotary Encoder

How It Works



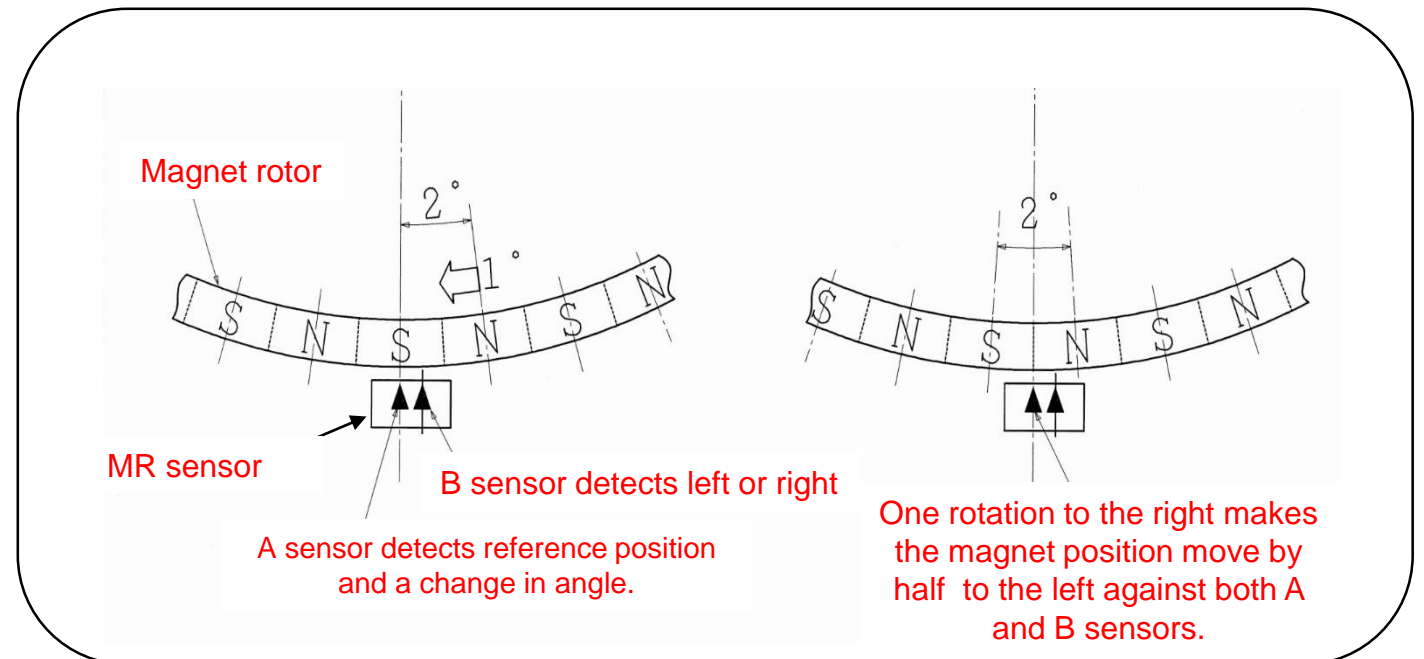
- Rotary encoder consists of **MAGNET ROTOR** and **MR SENSOR**

- **MAGNET ROTOR:**

- A magnet with North pole and South pole alternatively placed in a circle. North and South Poles are placed every 2 degrees, 180 locations in total.

- **MR SENSOR:**

- Sensor that reads out angle change every 1 degree and spindle rotation direction by measuring magnetic force



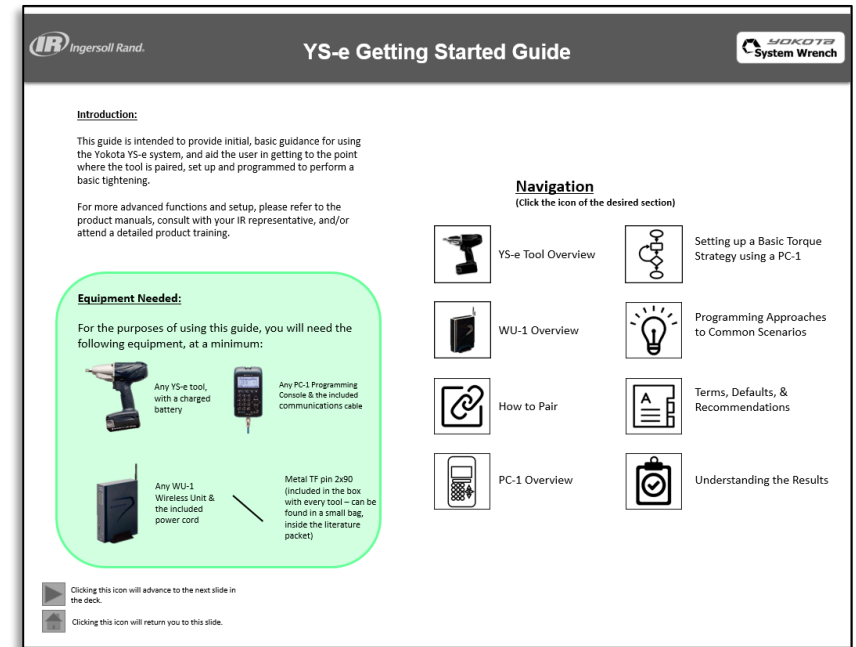
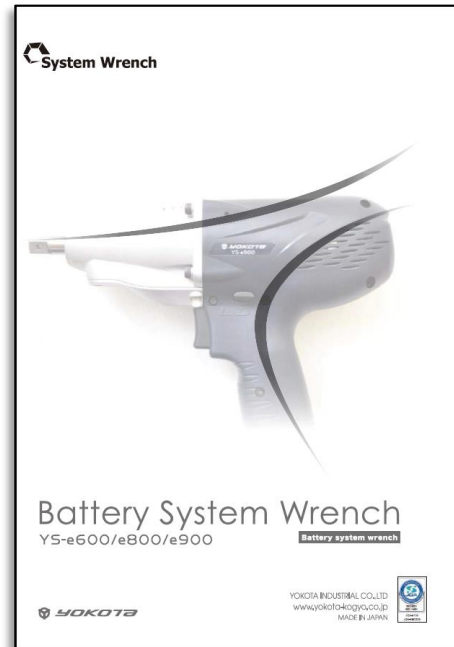


Sales & Service Support

- Sales collateral
- Market Activation & Trade Shows
- Stocking Strategy
- Service Strategy
- Warranty

Sales Collateral

- Multi-page Product Brochure
- Digital Marketing Campaign
- Getting Started Guide
- 24/7 On Demand Webinar
- Demo Tool Programs
- Hands on Training Opportunities
- How To Videos
- Competitive StreetFighters
- IR SharePoint Resource (Internal)
- Application and Product Images
- Website
- Target Accounts with Yokota Support



Yokota YS-e Battery System Wrench

YS-e Tool / System Specifications

Model	Torque Range (Nm)	Weight with / (without battery) (kg)	Fastenings / minute	Fastenings / charge	Vibration (m/s ²)	Noise (dB)	Overall Length (mm)	Overall Height (mm)	Drive Size	RPM (at no load)
YS-e800	7 - 20	1.75 (1.34)	10	1300	<2.5	72	214	244	3/8" Square	4800
YS-e800A	5 - 18	1.75 (1.34)	10	1300	<2.5	72	214	244	1/4" Hex	4800
YS-e800	15 - 35	1.80 (1.39)	8	800	<2.5	76	219	244	3/8" Square	4800
YS-e800A	10 - 30	1.80 (1.39)	8	800	<2.5	76	219	244	1/4" Hex	4800
YS-e900	30 - 50	1.90 (1.49)	6	700	<2.5	78	226	244	3/8" Square	4800
YS-e950	40 - 60	1.94 (1.53)	5	650	<2.5	79	226	244	3/8" Square	4800

YS-e Presentations

- battery system presentation english .pdf [OK TO DIS]
- YS-e presentation.pptx [OK TO DISTRIBUTE]
- Yokota YSE Launch Deck 10292018_unreleased.pptx

YS-e Brochures & Catalogs

- YS-e battery system wrench leaflet (A4size).pdf

YS-e Competitive Reference

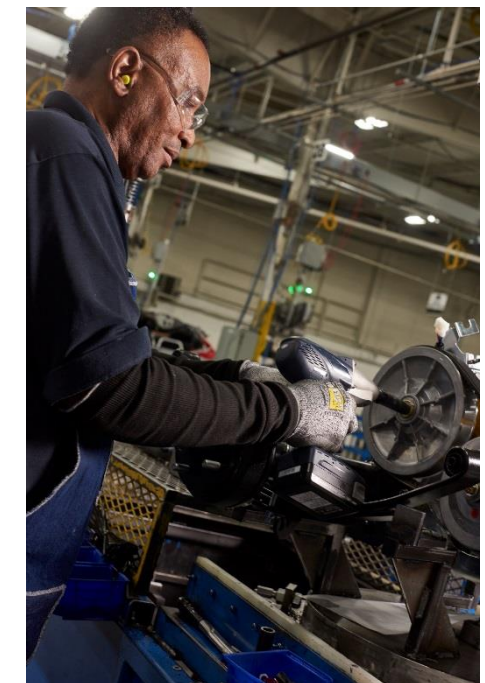
- Battery Tool Comparison.pptx
- Atlas Copco LRT_low-reaction-tools.pdf
- Uryu_udbp-a#60(pl)_kit_with-display_1.jpg

YS-e Pictures & Video

- YS-e images.tif.zip
- Yokota yse vs Uryu.jpg
- yokota yse vs qx vs dewalt.jpg

YS-e Technical Reference

- YS-eGettingStarted_Sew1_2_Approved.pdf
- Yokota YS-e Tool Instruction Manual.pdf
- YS-e_Durability_Test.pdf
- PartsBreakdown_YS-e800.pdf
- PartsBreakdown_YS-e800.pdf
- PartsBreakdown_YS-e900.pdf
- PartsBreakdown_YS-e950.pdf
- Wireless Unit (WU-1)
 - Yokota WU-1 Wireless Unit Instruction Manual



Domestic Stocking Strategy

- Stock of parts & completes
 - IR DLC in Charlotte, NC
 - Target: of 3 Months inventory at all times of key components



Domestic Repair Strategy

- Key service locations trained by Yokota on-site in Osaka, Japan
 - IR NASC – Detroit

Manufacturer's Warranty

- Yokota Industrial is the manufacturer of these products, and their product warranty is:
 - One (1) year warranty against any defects that are determined to be caused by Yokota in the manufacturing process. Yokota reserves the right to evaluate any failure and determine root cause and applicability of warranty.
 - Yokota will be training and authorizing several key Ingersoll Rand service centers in the US and Canada to make immediate warranty determination for most cases.
 - In the event of a warranty that cannot be satisfied at these service center, or any other repairs with extended lead time –a loaner tool, or other support means, will be provided to ensure **uptime** for the customer
 - *Contact your service center for details*





2019 Ordering Information

- **Models Available**
- **2019 US List Prices**
- **Pricing Example**

Pricing Example

Single vs. Multiple Tool System



Single Tool System

Model	Unit List Price	Quantity	Unit Extended List Price
YS-e900 Tool	\$8,251	1	\$8,251
WU-1 Wireless Unit	\$6,154	1	\$6,154
BPL-1820 Battery	\$541	2	\$1,082
BC0075G Battery Charger	\$441	1	\$441
		Total	\$15,928
		List Price Per System	\$15,928 ea.

Multiple Tool System

Model	Unit List Price	Quantity	Unit Extended List Price
YS-e900 Tool	\$8,251	4	\$33,004
WU-1 Wireless Unit	\$6,154	1	\$6,154
BPL-1820 Battery	\$541	8	\$4,328
BC0075G Battery Charger	\$441	4	\$1,764
		Total	\$45,250
		List Price Per System (Total / 4)	\$11,312 ea.