

# Pulse Nutsetters



ARO Pulse and ARO Pulse Plus nutrunners meet the demands of assembly operations with high speed rundown of fasteners, exceptional accuracy and consistency in torque delivery, and operator oriented design. A unique hydraulic impulse mechanism — driven by an air motor — applies torque to fasteners with a degree of control not possible in conventional tools. The result is precision fastening, with virtually no over-torquing in critical applications. Tool users benefit from the added advantages of reduced transmission of torque reaction and vibration, as well as improved balance and quiet operation.

## About Pulse Tools

The impulse mechanism operates by means of a pressure differential, which is developed through the mechanism's rotation around the drive shaft and blade.

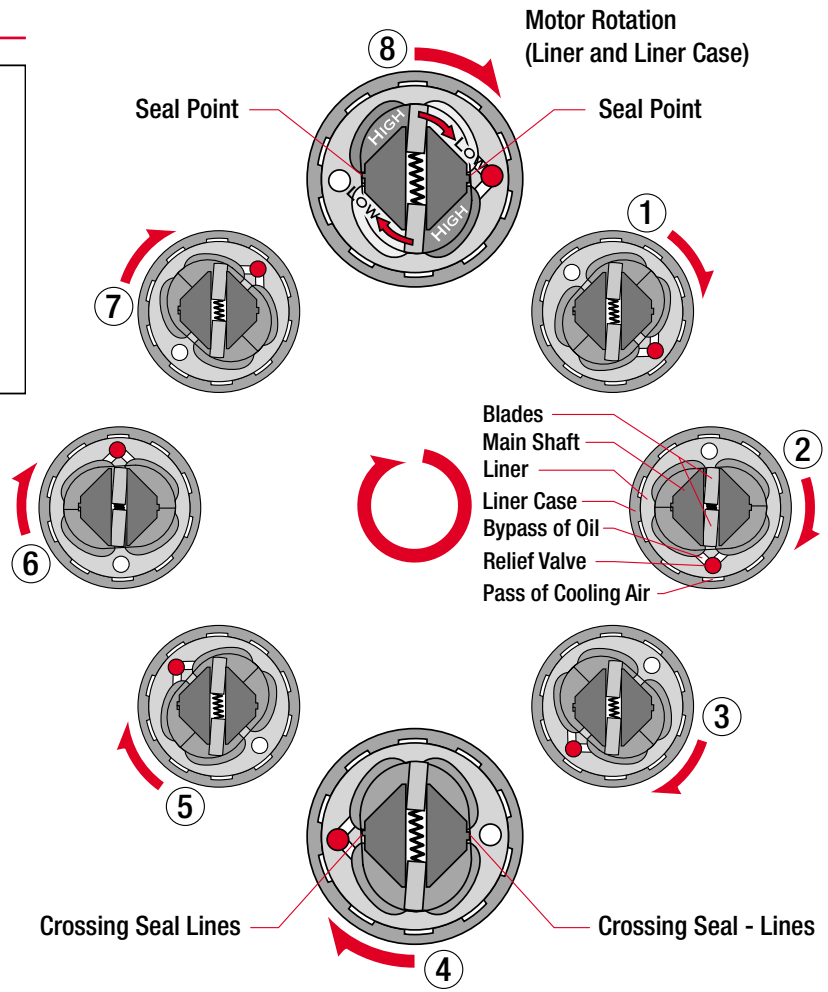
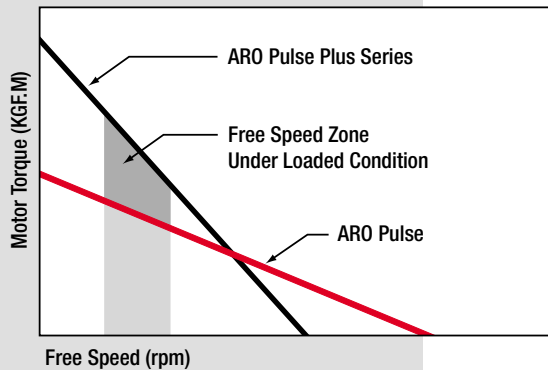
When the pulse cycle begins, the blade maintains constant contact with the inner wall of the cylinder during the rotation of the outer mechanism.

The fluid pressure is equal on each side of the drive shaft. By the time the mechanism has rotated 90°, both the blade and the front face of the drive shaft are in contact with the inner wall of the cylinder. At this point, the fluid on the right side of the drive shaft is becoming compressed by the mechanism's rotation. The compression is what converts the inertia of the rotating mechanism into a torque impulse on the drive shaft, and ultimately to the fastener.

The degree of compression and impulse is controlled by the hex adjustment screw. The adjustment of this screw controls the amount of hydraulic fluid that is allowed to bypass the compression stage, thus increasing or decreasing the inertia transferred, and consequently the tool's torque output as well.

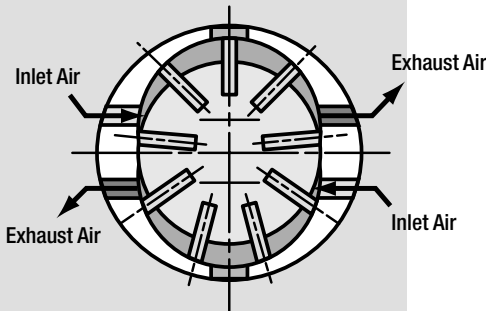
Air pressure can move the torque up or down. Decreasing the air pressure not only lowers the torque range but also increases the life of the pulse mechanism. Air pressure should not be lowered to any less than 50-60 psi, as levels below this can decrease the torque accuracy. Increasing the air pressure to above 100 psi is also not recommended. This can decrease the life of the mechanism and the motor.

## Motor Torque Comparison



## ARO Pulse Plus Dual Lobe Motor

### Air Flow



# Pulse Nutsetters

## ARO Pulse Models

ARO offers seven ARO Pulse models in pistol-grip and straight configurations, covering a torque range of 3-26 Nm. Together, they comprise a full line of precision fastening problem solvers from ARO.

### Twin-Blade Mechanism

Delivers two instantaneous, balanced pulses for higher output and faster rundown speed.

### Two Speed Trigger

Provides slow speed for precise, gradual starts as well as high speed for fast rundown.

### Excellent Power-To-Weight Ratios

For more comfortable, convenient operation.

### External Torque Adjustments

Easy external hex wrench torque adjustments, without disassembling the tool or removing it from the production line.

### Efficient Air Cooling System

For long mechanism life.



PG087A-A5



PS087A-A5

## Pulse Series Nutrunner

Model Number	Free Speed rpm	Soft Joint Torque Range			Hard Joint Torque Range			Weight lbs	Length in.	Side to Center in.	Drive Size	
		ft-lb	Nm	Kgf-cm	ft-lb	Nm	Kgf-cm				in.	cfm
PG087A-A5	9,300	3-6	4-8	41-83	3-8	4-11	4-111	1.6	5.6	0.7	1/4" Q.C.	12
PG227A-A5	10,500	6-11	8-15	83-152	14-22	19-30	194-304	2.2	6.5	0.9	1/4" Q.C.	12
PG267A-A5	9,500	10-16	14-22	138-221	16-26	22-35	221-360	2.5	7.0	0.9	1/4" Q.C.	11
PG287A-B1	9,500	12-18	16-24	138-221	18-28	24-38	249-387	2.5	7.0	0.9	3/8" SQ.	11
PS087A-A5	10,000	3-6	4-8	45-83	4-9	5-12	60-120	1.8	8.9	0.8	1/4" Q.C.	12
PS227A-A5	9,000	6-11	8-15	83-152	12-22	16-30	166-304	2.0	8.7	0.9	1/4" Q.C.	9
PS267A-A5	8,000	7-14	10-19	97-194	13-26	18-35	180-360	2.1	9.0	0.9	1/4" Q.C.	11

Note:

Torque ranges are provided as a guide only.

Actual torque output will depend on joint type, air pressure, and type of accessories used.

# Pulse Nutsetters

## ARO Pulse Plus...

### for even greater productivity.

The ARO Pulse Plus series features an innovative dual lobe and nine-vane motor, coupled with a proven two-blade pulse mechanism. This power source delivers more torque and faster rundown speeds on soft joints, and minimizes torque spikes due to inertia effects on hard joints. You can choose from eight models covering a torque range of 22-97 Nm. All feature refined ergonomics, with a more compact size, lighter weight, and easy, comfortable controls... a real plus for productivity.

The efficient packaging of the ARO Pulse Plus models achieves proper balance in the operator's hand. The rubber grip surface on the handle provides insulation from cold, and further minimizes the already low vibration levels. The forward/reverse control is easy to use for right or left-handed operators, and also allows one-handed operation. Virtually no torque reaction reaches the operator's hand... and the ARO Pulse Plus nutrunners are extremely quiet.

## External Features

### Smaller and Lighter

The new ARO Pulse Plus models are smaller and lighter, creating a more comfortable fit to the operator and therefore increasing productivity.

### New and Improved Grip

The handles of the new ARO Pulse Plus models are covered in an easy-to-grip black rubber material with special no-slip indentations. This feature requires less grip pressure and improves control.

### Minimal Vibration

Operators will also appreciate the extremely low vibration levels of these new tools.

### Easy One-Handed Forward / Reverse

The one-handed forward / reverse control allows any user easy access, increases operator comfort and saves valuable time in applications requiring a frequent change of direction. The control is positioned ideally for a right-handed operator, but can also be adjusted for optimum use by a left-handed operator.

### Tease Throttle

Two speed throttle with "tease" control provides slow speed for precise, gradual starts as well as high speed for fast rundown.

### Quiet Operation

The two-bladed pulse mechanism provides a smooth, quiet transmission of torque.

## Internal Features

### Nine-Vane Motor

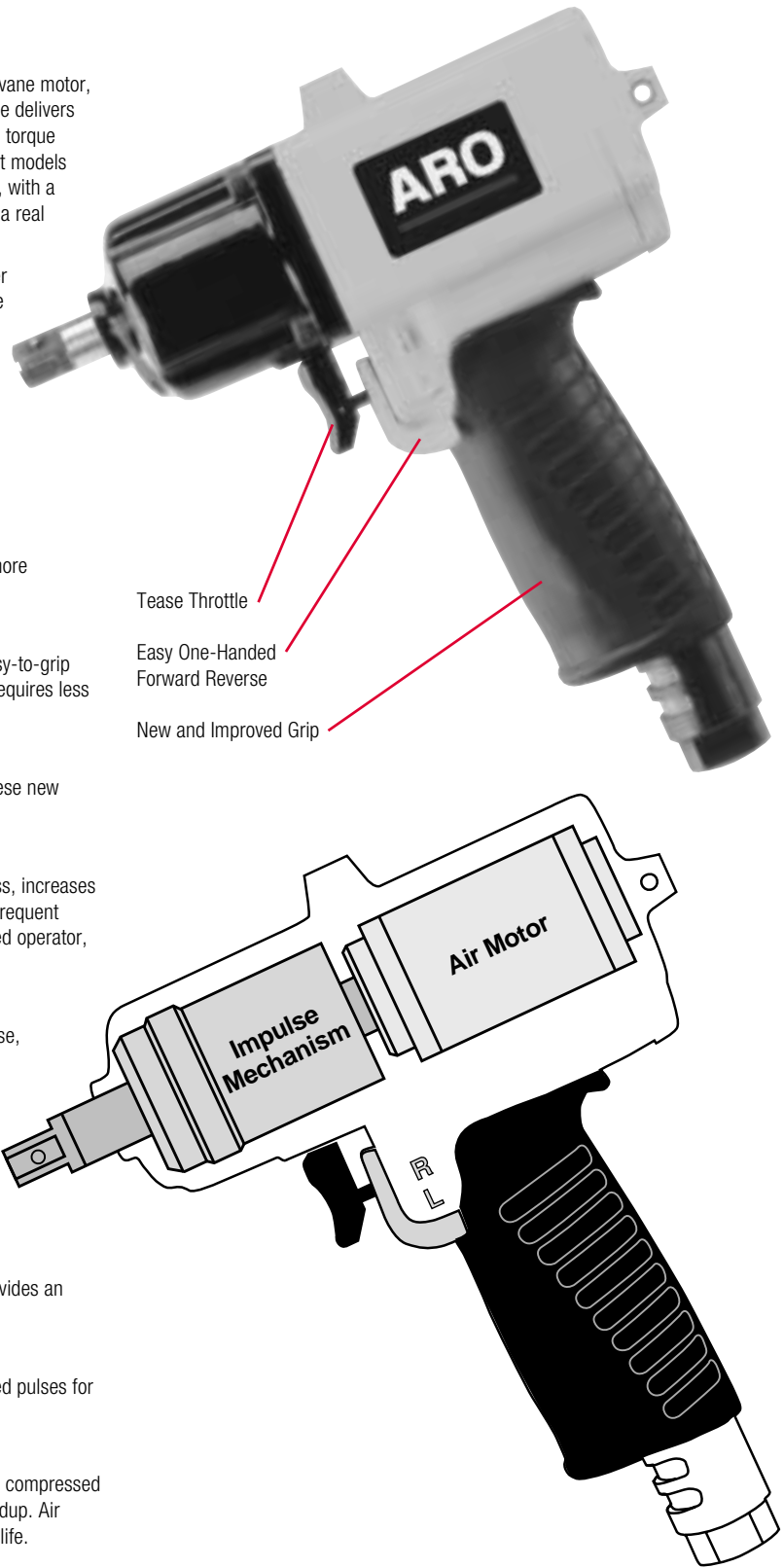
Powerful, dual-lobe nine-vane motor increases torque output and provides an impressive power-to-weight ratio.

### Twin-Blade Pulse Mechanism

The twin-blade pulse mechanism delivers two instantaneous, balanced pulses for higher output torque and faster rundown speeds.

### Air Cooled Mechanism

The new ARO Pulse Plus tools feature an air-cooled mechanism, with compressed air flowing over the pulse or hydraulic mechanism to reduce heat buildup. Air cooling allows for longer service intervals and provides extended tool life.



# Pulse Nutsetters

## Pulse Plus Series Nutrunner

Model Number	Soft Joint Torque Range			Soft Joint Torque Range			Speed rpm	Weight lbs	Length in.	Side to Center in.	Drive Size in.
	ft-lb	Nm	Kgf-cm	ft-lb	Nm	Kgf-cm					
PG247A-A5	16-24	20-32	202-330	17-25	23-34	239-349	8,000	2.10	5.70	1.86	1/4" Hex
PG307A-A5	19-30	25-41	257-413	20-30	27-41	275-413	6,000	2.20	6.50	1.86	1/4" Hex
PG347A-B1	16-27	22-36	220-370	19-28	26-3	270-390	8,000	2.10	5.70	1.86	3/8"
PG397A-B1	21-33	28-45	290-460	22-33	30-45	310-460	6,600	2.20	6.50	1.86	3/8"
PG537A-B1	35-52	47-70	480-710	33-50	45-68	460-690	7,000	3.10	7.00	1.96	3/8"
PG857A-D1	50-65	68-88	690-900	50-71	68-96	690-980	6,000	4.00	7.20	2.31	1/2"

Note:

Torque ranges are provided as a guide only.

Actual torque output will depend on joint type, air pressure, and type of accessories used.

## ARO Cordless Pulse Models

### Torque Range

- 6 to 14 ft.-lb.

### Accessories

- BP10P3-951-UL 1-hour Charger
- BP10P3-952-UL 90-minute Charger
- PBG147A-K2-UL 3/8" Square Drive Kit
- PBG147A-QK2-UL 1/4" Hex Quick Change Kit

### Kit Includes:

PGB147, extra battery pack (BP10P3-950), 1-hour Charger (BP10P3-951-UL) and Boot (BP10P-32).



PBG147A-A5

## Pulse Plus Series Nutrunner

Model Number	Soft Joint Torque Range			Soft Joint Torque Range			Speed rpm	Weight lbs	Length in.	Side to Center in.	Drive Size in.
	ft-lb	Nm	Kgf-cm	ft-lb	Nm	Kgf-cm					
PBG147A-A5	6-11	8-14	83-147	7-13	10-17	101-174	2,200	3.8 <sup>1</sup>	8.1	1.0	1/4" Hex
PBG147A-B1	7-12	9-16	90-160	8-14	11-19	110-190	2,200	3.8 <sup>1</sup>	8.1	1.0	3/8"

(1) Weight includes battery

Note:

Torque ranges are provided as a guide only.

Actual torque output will depend on joint type, air pressure, and type of accessories used.

# ETT Expert™ Torque Tester

## Features and Benefits

- Recommended for most hand screwdrivers, wrenches, or power tools
- Ideal for testing output torque of assembly tools in the calibration lab, repair crib, or on the production line
- Six different languages (English, French, German, Italian, Spanish, Swedish) standard on all units
- Nine units of measurement for compatibility with global standards
- Charger is equipped with different adaptors to make it easy to use in most of the world
- Four operation modes: Peak, Click, Impulse and Track modes
- High/Pass/Low LED's
- Auto and manual reset function
- Data transfer function to a PC or Printer via the RS232 port
- Diagnostics keep track of past and future calibration dates and current software release
- 8 hours of battery time under normal use
- Auto power down timer keeps unit charged longer
- Quick-Clamp mounts integrated into housing
- Quick-Disconnect plate available for convenient mounting structure
- Certificate of calibration to National Institute of Standards and Technology (NIST) included with every unit



## Torque Testers

Model	Torque Range				Accuracy FSD	Weight		Dimensions	
	Minimum in.-lbs	Nm	Maximum in.-lbs	Nm		lbs	kg	in.	mm
ETT-1	0.88	0.1	8.8	1	0.5%	5.0	2.7	9¼ x 8¼ x 2¾	213 x 238 x 70
ETT-4	3.50	0.4	35.0	4	0.5%	5.0	2.7	9¼ x 8¼ x 2¾	213 x 238 x 70
ETT-12	10.60	1.2	106	12	0.5%	5.0	2.7	9¼ x 8¼ x 2¾	213 x 238 x 70
ETT-30	26.50	3.0	265	30	0.5%	5.0	2.7	9¼ x 8¼ x 2¾	213 x 238 x 70

## ETA Unit includes:

Model No.	Item
ETT-1/ETT-4/ETT-12/ETT-30	Torque Analyzer
ETT-BC-US/ETT-BC-UK/ETT-BC-EU	Battery Charger
ETT-RA	Rundown Adaptor
ETA2-PC99	PC Connector (RS232)
ETT-CASE	Carrying Case
ETT-P7574	Operating Manual
ETA2-99	Certificate of Calibration

## Available Accessories:

Model No.	Item
ETA2-P925	Printer Connector Cable
ETT-QD	Quick-Disconnect Plate

# Screwdriver Clutches, Bits and Finders

## Screwdrivers and Nutsetters

### Positive Clutch Options

Tool Series	Bit Holder Driven Jaw Number	Drive Jaw Number	Clutch Housing Number
000 QRT's Models 8683, 8684 <sup>2</sup>	1/4" Female Hex with 25° Jaws – 37022 <sup>1</sup>	25° Jaw Assy. – 37018 <sup>1</sup>	with finder adapter – 37024 or with guide – 37026 <sup>1</sup>
	1/4" Female Hex with 90° Jaws – 36518	90° Jaw Assy. – 37020	with finder adapter – 37024 or with guide – 37026
	1/4" Sq. Drive with 25° Jaws – 38814-3	37018	37026-1
0 QRT's Models 8506, 8509, 8515, 8521 <sup>2</sup>	1/4" Sq. Drive with 90° Jaws – 38814-4	37020	37026-1
	1/4" Female Hex with 25° Jaws – 37021 <sup>1</sup>	25° Jaw Assy. – 37017	with finder adapter – 37023 or with guide – 37025 <sup>1</sup>
	1/4" Female Hex with 90° Jaws – 36322	90° Jaw Assy. – 37019	with finder adapter – 37023 or with guide – 37025
	3/8" Sq. Drive with 25° Jaws – 38815-3	37017	37025-1
	3/8" Sq. Drive with 90° Jaws – 38815-4	37019	37025-1

(1) Standard on positive clutch models. (2) See page 10

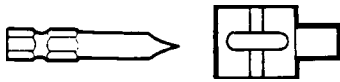
### Adjustable Ball Clutch Options

Tool Series	Bit Holder Driven Jaw Number	Clutch Number	Clutch Housing Number
000 QRT's <sup>2</sup>	1/4" Female Hex – 36518 <sup>1</sup>	with Standard Spring Internal Adj. – 36511 <sup>1</sup> or with Heavy-Duty Spring, Internal Adj. – 36511-1	with finder adapter – 45630 or with guide – 45630 <sup>1</sup> 45630
	3/8" Sq. Drive – 38814-4		
0 QRT's <sup>2</sup>	1/4" Female Hex – 36322 <sup>1</sup>	with Standard Spring – 36310 <sup>1</sup> or with Heavy-Duty Spring – 36310-2 or with Light-Duty Spring – 36310-2	with finder adapter – 36786 or with guide – 36788 <sup>1</sup> 36788-1
	3/8" Sq. Drive – 38815-4		

(1) Standard on adjustable ball clutch models. (2) See page 10

# Bits and Finders

## Screwdrivers and Nutsetters



### 1/4" Hex Shank Bladed Bits and Standard Finders

Screw Size No.		1 <sup>5</sup> / <sub>16</sub> " (49mm) Length Bits	Finder Number for		
Flat Head	Round Head		Series 20 & 50 Screwdrivers <sup>1</sup>	3 <sup>1</sup> / <sub>2</sub> " (89mm) Length Bits	Series 20 & 50 Screwdrivers <sup>1</sup>
1	2	F164	46343-1	F164	46344-1
2	3	F1645	46343-2	F1645	46344-2
3	4	XF165	46343-3	XF165	46344-3
4	5	XF166	46343-4	XF166	46344-4
5	6	XF167	46343-5	XF167	46344-5
6	8	XF168	46343-6	XF168	46344-6
8	10	XF169	46343-8	XF169	46344-8
10	12	XF1610	46343-10	XF1610	46344-10
12	14	XF16	46343-12	XF16	46344-12

(1) Includes 46325 Finder Spring.



### 1/4" Hex Shank Allen Head Drivers

Hex Size		1 <sup>5</sup> / <sub>16</sub> " (49mm) Length Bits	Adapter/Guide No.
in.	Series 20 & 50 Screwdrivers <sup>1</sup>		Series 20 & 50 Screwdrivers <sup>1</sup>
3/32		HX133	46884(-1)
1/8		HX134	46884(-1)
5/32		HX135	46884(-1)
3/16		HX136	46884(-1)
7/32		HX137	46884(-1)
1/4		HX138	46884(-1)
9/64		HX1345	46884(-1)

(1) 46884 for use with direct drive and automatic shut-off clutches.  
46884-1 for use with adjustable ball and positive clutches.



### 1/4" Hex Shank Phillips Bits

Screw Point Size	1 <sup>5</sup> / <sub>16</sub> " (49mm) Length Bits	2 <sup>3</sup> / <sub>4</sub> " (70mm) Length Bits	Adapter/Guide No. Series 20 & 50 Screwdrivers <sup>1</sup>
1	XP161	XP221	46884(-1)
2	XP162	XP222	46884(-1)
3	XP163	XP223	46884(-1)

(1) 46884 for use with direct drive and automatic shut-off clutches.  
46884-1 for use with adjustable ball and positive clutches.

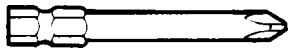


### 1/4" Hex Shank Integral Bit and Finder

Screw Size No.		2 <sup>3</sup> / <sub>32</sub> " (94mm) Length Bits	Adapter/Guide No.
Flat Head	Round Head		Series 20 & 50 Screwdrivers <sup>1</sup>
5	6	XR306	46884(-1) <sup>1</sup>
6	8	XR308	46884(-1) <sup>1</sup>
8	10	XR3010	46884(-1) <sup>1</sup>
10	12	XR3012	46884(-1) <sup>1</sup>

(1) 46884 for use with direct drive and automatic shut-off clutches.  
46884-1 for use with adjustable ball and positive clutches.

# Screwdrivers and Nutsetters



### 1/4" Hex Shank Reed and Prince Bits

Screw Point Size	1 <sup>15</sup> / <sub>16</sub> " (49mm) Lengh Bits	Adapter/Guide No. Series 20 & 50 Screwdrivers <sup>1</sup>
1	XP161	46884(-1)

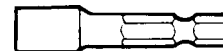
(1) 46884 for use with direct drive and automatic shut-off clutches.  
46884-1 for use with adjustable ball and positive clutches.



### 1/4" Hex Shank Pozidriv Bits

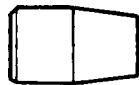
Screw Point Size	1 <sup>15</sup> / <sub>16</sub> " (49mm) Length Bits	Adapter/Guide No. Series 20 & 50 Screwdrivers <sup>1</sup>
1	XP161	46884(-1)
2	XP162	46884(-1)
3	XP163	46884(-1)

(1) 46884 for use with direct drive and automatic shut-off clutches.  
46884-1 for use with adjustable ball and positive clutches.



### 1/4" Hex Shank Bit Holders

Apex Mag. Bit Holder No.	Length	Adapter/Guide No. Series 20 & 50 Screwdrivers
40259	2 <sup>31</sup> / <sub>32</sub> " (75mm)	46885(-1)



### Sq. Drive Adapters for 5/16" Sq. Bit Inserts<sup>1</sup>

Adapter No.	Sq. Drive Mounting Size in.	Sq. Drive Size in.
2U-812	3/8	5/16

(1) 46884, 46885, 46886 for use with direct drive and automatic shut-off clutches.  
46884-1, 46885-1, 46886-1 for use with adjustable ball and positive clutches.



### 1/4" Hex Bit Inserts

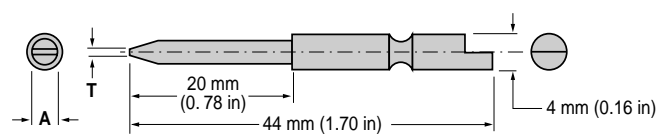
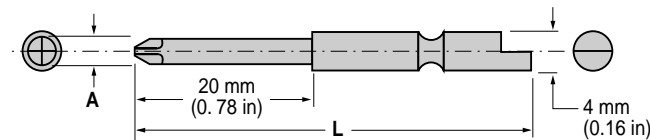
Screw Point Size	Phillips 1" (25mm) Length Bits	Pozidriv 1" (25mm) Length Bits
1	XPB07	XPZB071
2	XPB07	XPZB072
3	XPB073	XPZB073

## Accessories

# SE Series Screwdrivers and Nutsetters

## Electric Accessories

### Screwdriver Bits for SLE01A-9-W



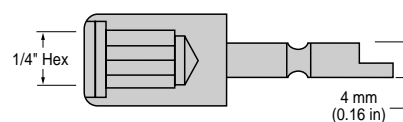
### Phillips Head for Phillips Head Screws

Bit (Qty 10) Part No.	Point Size	"A" - Dia. in.	mm	Dim. L in.	mm	Screw Size Range
DLB2120-10	0	.071	1.8	1.7	38	0 to 1
DLB2121-10	0	.071	1.8	2.5	64	0 to 1
DLB2122-10	00	.079	2.0	1.7	38	00 to 0
DLB2123-10	00	.079	2.0	2.5	64	00 to 0
DLB2124-10	0	.098	2.5	1.7	38	0 to 1
DLB2125-10	0	.098	2.5	2.5	64	0 to 1
DLB2126-10	1	.118	3.0	1.7	38	2 to 4
DLB2127-10	1	.118	3.0	2.5	64	2 to 4
DLB2128-10	1	.157	4.0	1.7	38	2 to 4
DLB2129-10	1	.157	4.0	2.5	64	2 to 4
DLB2130-10	2	.157	4.0	1.7	38	5 to 10
DLB2131-10	2	.157	4.0	2.5	64	5 to 10
DLB2132-10	3	.236	6.0	1.7	38	10 to 1/4

### Slotted Head for Slotted Head Screws

Bit (Qty 10) Part No.	Dim. T in.	"A" - Dia. in.	mm	Screw Size Range
DLB2220-10 <sup>1</sup>	.012	.079	2.0	00 to 0
DLB2221-10 <sup>1</sup>	.012	.098	2.5	00 to 0
DLB2222-10 <sup>1</sup>	.016	.118	3.0	0 to 2
DLB2223-10 <sup>1</sup>	.020	.157	4.0	2 to 4
DLB2224-10 <sup>1</sup>	.026	.197	5.0	3 to 5

(1) Only Phillips Bits are meant to be used with Vacuum Pickup Systems.  
Slotted Bits may sometimes be used by undersizing the Bits for the Vacuum Sleeves.

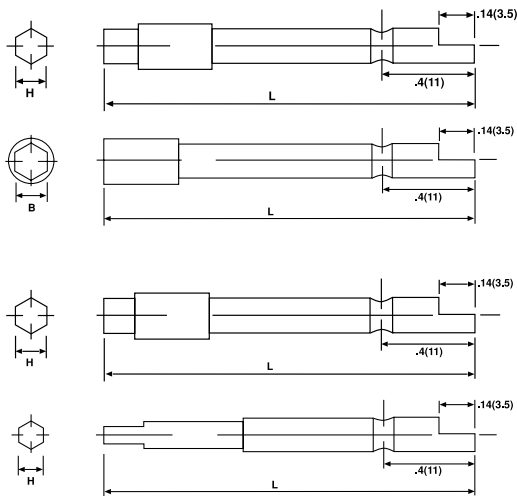


• **Insert Bit Holder Adapter (DLW-4100)**  
For use with 1/4" Hex Insert Bits

# SE Series Screwdrivers and Nutsetters

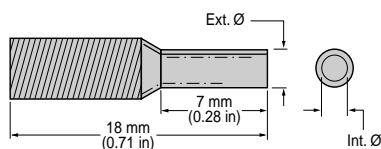
## Hexagon - Male and Female

Part No.	Dim. H/B		Dim. L		Screw Size	
	in.	mm	in.	mm	in.	mm
DLB2321-10	0.06	1.5	1.7	44	0.12	3
DLB2322-10	0.08	2	1.7	44	0.16	4
DLB2323-10	0.12	3	1.7	44	0.24	6
DLB2324-10	0.16	4	1.7	44	0.31	8
DLB2420-10	0.09	2.3	1.7	44	-	-
DLB2421-10	0.10	2.5	1.7	44	-	-
DLB2422-10	0.12	3	1.7	44	-	-
DLB2423-10	0.16	4	1.7	44	0.08	2
DLB2424-10	0.18	4.5	1.7	44	0.09	2.3
DLB2425-10	0.20	5	1.7	44	0.01	2.6
DLB2426-10	0.22	5.5	1.7	44	0.12	3



## Vacuum Pickup Sleeves (For use with SLE04A-10-QC & SLE10A-7-QC)

Bit Part No.	Inside Dia.		Outside Dia.	
	in.	mm	in.	mm
DLS2120	.079	2.0	.138	3.5
DLS2121	.087	2.2	.138	3.5
DLS2122	.098	2.5	.138	3.5
DLS2123	.106	2.7	.138	3.5
DLS2124	.122	3.1	.177	4.5
DLS2125	.130	3.3	.177	4.5
DLS2126	.138	3.5	.177	4.5
DLS2127	.146	3.7	.177	4.5
DLS2128	.158	4.0	.212	5.5
DLS2129	.165	4.2	.212	5.5
DLS2130	.177	4.5	.212	5.5
DLS2131	.185	4.7	.212	5.5
DLS2132	.201	5.1	.256	6.5
DLS2133	.209	5.3	.256	6.5
DLS2134	.221	5.6	.256	6.5
DLS2135	.240	6.1	.276	7.0



## SE Electric Accessories

### Attachable Pistol-Grip Handle (EP4007N-48)

For use with all high torque models. Lever and push to start.



Attachable Pistol-Grip Handle

### Torque Adjusting Wrench (EP4007N-516)

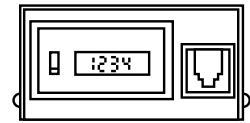
Used to externally adjust the high torque models without removing the flange.



Torque Adjusting Wrench

### Digital Counter (EC24-DC)

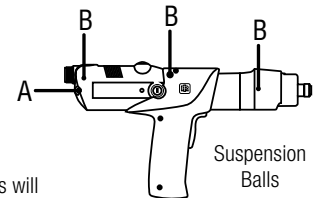
Used with low torque models. Digital display shows number of cycles. Includes modem cord to attach to controller.



Digital Counter

### Suspension Bails

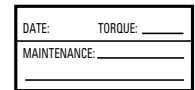
- High Torque
  - A-Vertical – EP4007N-365
  - B-Horizontal – EP4007N-366
- Low Torque Vertical – EL0109B-365



Suspension Balls

### Calibration / Maintenance Labels (EP4007N-302)

Adhesive labels to be placed on tools. This will help with scheduling maintenance or calibration.



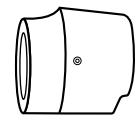
Calibration / Maintenance Labels

### Low Profile Flange (EP4007N-123)

Smaller dimension flange (standard for Pistol and Angle models).

### Mounting Bracket (EC24-MB)

Used to mount controller.



Low Profile Flange

### Spring (Low Torque) (VDS-511)

- 1.5-7 in.-lbs. – EP1510
- 2.0-9 in.-lbs. – EP1520

### Additional Cords (High Torque)

- 6 ft. Coiled – EP4007N-239-C6A
- 12 ft. Straight – EP4007N-239-12A
- 8 ft. Straight – EP4007N-239-8A (Standard)
- 25 ft. Straight – EP4007N-239-25A

### Torque Adjustment Cover

- For use on VersaTec low torque models
- EL0410BC-46