Atlas Engineering

a PennEngineering® company

Bulletin **AEPT**

Installation Tools

TOOLS

AEPT-403

INSTALLATION METHODS

There are two basic types of Atlas blind threaded inserts: standard and heavy duty. The standard types are used for most applications where strong threads are required for blind applications. Most commonly known as "blind threaded inserts", they are installed from one side using a "**spin/spin**" technique. A pneumatic tool is used to draw the fastener in, compressing the unthreaded portion of the fastener wall. The bulge that is created presses against the panel creating a clamping force which tightly grips the sheet. In addition to high thread strength and torque-out, these fasteners have minimal inventory requirements since each size can accommodate many grip ranges.

The heavy duty types, most commonly known as "blind threaded rivet nuts" are designed for the most demanding applications. They are installed from one side using a "**spin/pull**" technique. A hydraulic/pneumatic tool is used to draw the fastener in, creating the bulge and clamping force as described above.

Atlas Engineering provides the tooling required for easily installing both fastener types.

Series 800 Spin/Spin Tool

Atlas Series 800 tools provide totally pneumatic, spin/spin operation to easily install all Atlas SpinTite® fasteners. These tools are lightweight, economical, low maintenance, ergonomically designed, and portable. They are also versatile, since one tool can install a fastener into multiple material thicknesses.

AE 40 Spin/Pull Tool

The Atlas AE 40 portable tool provides a hydraulic/pneumatic action to install Atlas MaxTite® products for those heavy-duty applications. It is a powerful, efficient, and quiet tool, designed to provide long life and trouble free service.

Hex Wrench Installation Tool

The Atlas Hex Wrench Tool is designed for installing MaxTite fasteners. This tool is ideal for field installations, repair work, and prototype applications.

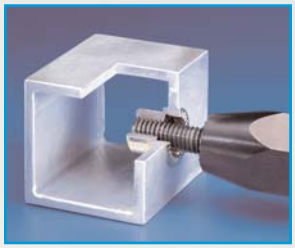
L6000 Installation Tool

The Atlas hand operated L6000 tool installs SpinTite fasteners in most types and sizes and is also suitable for light production requirements.

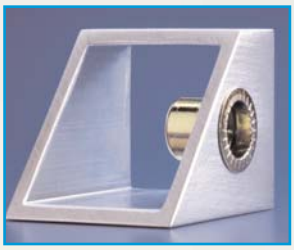
Installation

1) Prepare properly sized hole in the sheet.
2) Thread the fastener partially onto the tool mandrel. Insert the fastener completely into the hole, and then press the forward trigger. Hold the trigger until the tool stops and the fastener is fully installed.
3) Withdraw the tool by pressing the reverse trigger.

STEP 1



STEP 2



STEP 3

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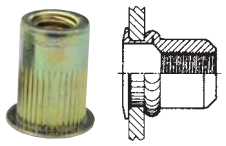
SpinTite™ AND MaxTite™ BLIND THREADED INSERT TYPES

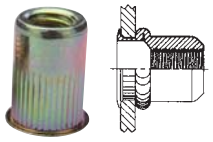
Type AEL



SpinTite RIB-WALL LOW-PROFILE HEAD SERIES

- Features a large diameter, low-profile head and knurled shank.
- Offers highest all around strength.
- Can be installed after finish.

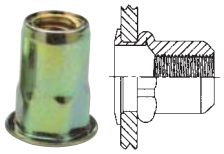
Type AEK



SpinTite RIB-WALL MINIMIZED-PROFILE HEAD SERIES

- Same as the AEL but with a minimized head profile.
- Allows near flush installations with no need for special hole preparations such as countersinking or dimpling.
- Can installed after finish.

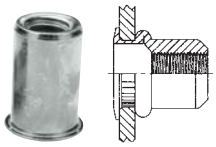
Type AEH



SpinTite HALF-HEX SHANK LOW-PROFILE HEAD SERIES

- Features a hex body design.
- Highest torque-out resistance.
- Easy to install using spin/spin tooling.
- Can be installed after finish.

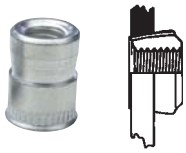
Type AEO



SpinTite THIN-WALL LOW-PROFILE HEAD SERIES

- Features low-profile head design.
- Achieves near-flush installations with no need for countersink drilling or dimpling of the parent material.
- Can be installed after finish.

Type AET



SpinTite 360° SWAGING LOW-PROFILE HEAD SERIES

- Works in any thickness over .029” / 0.76 mm including blind holes.
- Minimal backside protrusion for restricted space applications.
- Especially useful in soft materials.

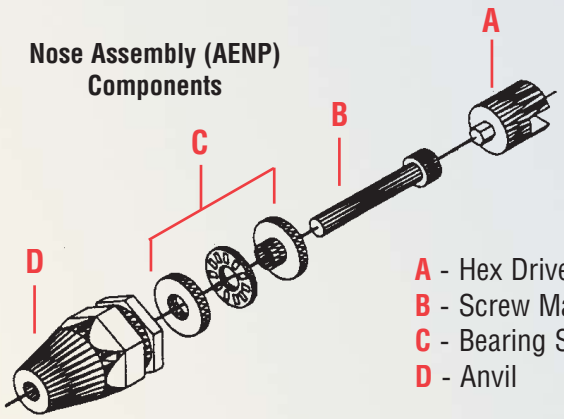
Type AE

MaxTite BLIND THREADED NUTS

- Designed for high load applications.
- Thread sizes 440 thru 1/2” and M3 thru M12.
- Countersunk feature allows fastener to be installed flush with the surface of the sheet.
- Available with rib or key features for high torque application.
- Can be installed after finish.

SERIES 800 SPIN/SPIN TOOLS

- Totally pneumatic.
- Installs SpinTite fasteners into various material thickness.
- Lightweight, easy to handle.



A - Hex Driver
B - Screw Mandrel
C - Bearing Set
D - Anvil

Installs Types AEK, AEL, AEH, AEO, and AET

Thread Size	Complete Tool Part No.	Tool RPM	Air Settings — Fastener Material — Steel and Brass: Dynamic Air Pressure Settings (PSI - Bars)	Air Settings — Fastener Material — Aluminum: Dynamic Air Pressure Settings (PSI - Bars)	Air Settings — Fastener Material — Monel: Dynamic Air Pressure Settings (PSI - Bars)	Nose Assembly Component Part Numbers: Part No. For Complete Nose Assembly	A Hex Driver	B Mandrel Socket Head Cap Screw (10 Per Bag)	C Bearing Set	D Anvil
4-40	AE801-440	3000	35 - 45	30 - 40	35 - 45	AENP-440	AEHD-4	AE440-150SH	AEPB-4	ANSS-4
6-32	AE801-632	3000	70 - 80	60 - 80	70 - 80	AENP-632	AEHD-6	AE632-150SH	AEPB-6	ANSS-6
8-32	AE801-832	3000	70 - 90	50 - 70	70 - 90	AENP-832	AEHD-8	AE832-150SH	AEPB-8	ANSS-8
10-24	AE802-1024	1500	60 - 90	40 - 70	60 - 90	AENP-1024	AEHD-10	AE1024-175SH	AEPB-10	ANSS-10
10-32	AE802-1032	1500	60 - 90	40 - 70	60 - 90	AENP-1032	AEHD-10	AE1032-175SH	AEPB-10	ANSS-10
1/4-20	AE803-2520	600	70 - 90	60 - 80	70 - 95	AENP-2520	AEHD-25	AE420-150SH	AEPB-25	ANSS-25
1/4-28	AE803-2528	600	70 - 90	60 - 80	70 - 95	AENP-2528	AEHD-25	AE428-150SH	AEPB-25	ANSS-25
5/16-18	AE804-3118	400	70 - 110	60 - 90	70 - 110	AENP-3118	AEHD-31	AE518-200SH	AEPB-31	ANSS-31
5/16-24	AE804-3124	400	70 - 110	60 - 90	70 - 110	AENP-3124	AEHD-31	AE524-200SH	AEPB-31	ANSS-31
3/8-16	AE804-3716	400	70 - 110	60 - 90	70 - 110	AENP-3716	AEHD-37	AE616-200SH	AEPB-37	ANSS-37
3/8-24	AE804-3724	400	70 - 110	60 - 90	70 - 110	AENP-3724	AEHD-37	AE624-200SH	AEPB-37	ANSS-37
1/2-13	AE808-5013	275	75 - 120	60 - 90	75 - 110	AENP-5013	AEHD-50	AE813-250SH	AEPB-50	ANSS-50
1/2-20	AE808-5020	275	75 - 120	60 - 90	75 - 110	AENP-5020	AEHD-50	AE820-250SH	AEPB-50	ANSS-50
M3	AE801-M3	3000	2.4 - 3.1	2.1 - 2.7	2.4 - 3.1	AENP-M3	AEHD-M3	AEM3-40SH	AEPB-M3	ANSS-M3
M4	AE801-M4	3000	2.4 - 3.1	3.4 - 4.8	4.8 - 6.2	AENP-M4	AEHD-M4	AEM4-40SH	AEPB-M4	ANSS-M4
M5	AE802-M5	1500	4.8 - 5.5	2.7 - 4.8	4.1 - 6.2	AENP-M5	AEHD-M5	AEM5-45SH	AEPB-M5	ANSS-M5
M6	AE803-M6	600	4.1 - 5.5	4.1 - 5.5	4.8 - 6.5	AENP-M6	AEHD-M6	AEM6-40SH	AEPB-M6	ANSS-M6
M8	AE804-M8	400	4.8 - 6.2	4.1 - 6.2	4.8 - 7.5	AENP-M8	AEHD-M8	AEM8-50SH	AEPB-M8	ANSS-M8
M10	AE804-M10	400	4.1 - 7.5	4.1 - 6.2	4.8 - 7.5	AENP-M10	AEHD-M10	AEM10-50SH	AEPB-M10	ANSS-M10
M12	AE808-M12	275	4.1 - 7.5	4.1 - 6.2	5.1 - 7.5	AENP-M12	AEHD-M12	AEM12-60SH	AEPB-M12	ANSS-M12

NOTE: *The air supplied to the 800 series tools should be dry and free of contamination to prevent premature wear and tear of the internal components. We suggest use of a filter, pressure regulator, and oiler system, which are available through Atlas, to be located in close proximity to the tool. All available thread sizes may not be listed. Contact Atlas Engineering for availability. Optional mandrel lengths are also available for all product families.*

PREVENTIVE MAINTENANCE REQUIREMENTS: *The bearing set must be kept in a well lubricated condition to assure proper tool operation. We suggest the use of a high temperature bearing grease such as SUPER BLUE 442. The tool mandrel should be periodically inspected for thread wear and damage. When the fastener will no longer thread onto the mandrel freely from the shank end, the mandrel is worn and needs to be replaced. We recommend using UNBRAKO®, BLUE DEVIL®, or HOLO-KROME® brand socket head cap screws. Last dash number in part number denotes length, example: -150 is 1.5" in length.*

800 Series Tool Specifications				
Model No.	Weight* (lbs. / kg)	Air Inlet (NPT)	Air Use (CFM)	Minimum Hose Size
801	3.0 / 1.4	1/4”	5	3/8 / 9.5mm
802	3.0 / 1.4	1/4”	5	3/8 / 9.5mm
803	3.0 / 1.4	1/4”	5	3/8 / 9.5mm
804	3.5 / 1.6	1/4”	5	3/8 / 9.5mm
808	4.0 / 1.8	1/4”	5	3/8 / 9.5mm

** With nose piece.*

OPERATING INSTRUCTIONS
801, 802, 803, 804, and 808 tools.

With the tool disconnected from the air source, check to see that the socket head cap screw extends beyond the face of the anvil far enough to allow at least one thread of the screw to extend beyond the end of the insert. If the screw is not long enough, measure what is required and obtain a socket head cap screw that is long enough.

If you set up a first grip fastener and you are going to install second grip inserts in the same work area, obtain a screw that is long enough to extend at least one thread beyond the end of the longest fastener.

Now, connect the air line to the tool. Hold the threaded insert to the tool mandrel. Actuate position “F” of the trigger (top rocker) and start engagement of the insert threads on the mandrel (Fig.1).

Insert the fastener into the installation hole of a test plate, that is the same material and thickness as the actual application (Fig.2).

Actuate position “F” of the trigger and let the mandrel drive through the fastener and clinch it securely into the test plate and allow the air tool to stall.

Actuate position “R” of the trigger (the bottom rocker) to disengage the mandrel from the installed fastener.

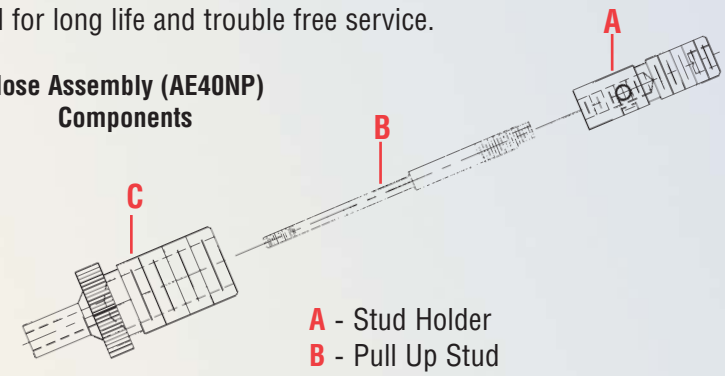
Figure 1

Figure 2

AE 40 SPIN/PULL TOOL

- Provides powerful spin/pull action to easily install MaxTite fasteners.
- Quiet operation.
- Designed for long life and trouble free service.

Nose Assembly (AE40NP) Components



A - Stud Holder
B - Pull Up Stud
C - Anvil

Thread Size	Complete Tool Part No.	Dynamic Air Pressure (PSI - Bars)	Part No. For Complete Nose Assembly	Nose Assembly Component Part Numbers		
				A Stud Holder	B Pull Up Stud	C Anvil
4-40	AE40-440	60 - 90	AE40NP-440	SH-1	L-70-440	AN-1-4
6-32	AE40-632	60 - 90	AE40NP-632	SH-1	L-70-632	AN-1-6
8-32	AE40-832	60 - 90	AE40NP-832	SH-1	L-70-832	AN-1-8
10-24	AE40-1024	60 - 90	AE40NP-1024	SH-1	L-70-1024	AN-1-10
10-32	AE40-1032	60 - 90	AE40NP-1032	SH-1	L-70-1032	AN-1-10
1/4-20	AE40-2520	60 - 90	AE40NP-2520	SH-2	L-99-2520	AN-1-25
1/4-28	AE40-2528	60 - 90	AE40NP-2528	SH-2	L-99-2528	AN-1-25
M3	AE40-M3	4.1 - 6.2	AE40NP-M3	SH-1	L-142-M3	AN-1-M3
M4	AE40-M4	4.1 - 6.2	AE40NP-M4	SH-1	L-142-M4	AN-1-M4
M5	AE40-M5	4.1 - 6.2	AE40NP-M5	SH-2	L-143-M5	AN-1-M5
M6	AE40-M6	4.1 - 6.2	AE40NP-M6	SH-2	L-143-M6	AN-1-M6

NOTE: *The air supplied to the AE 40 tool should be dry and free of contamination to prevent premature wear and tear of the internal components. We suggest use of a filter, pressure regulator, and oiler system, which are available through Atlas, to be located in close proximity to the tool.*

AE 40 Series Tool Specifications							
Model No.	Thread Sizes	Weight* (lbs./kg)	Air (PSI - Bars)	Air Use (cu in./ liters)	Minimum Hose Size	Max. Axial Pulling Load	Minimum CFM
AE 40	#4 to 1/4" and M3 to M6(1)	6.5 / 7.95	80-100 - 6.1 to 6.8	530 / 8.7	3/8 / 9.5m	5200 lbs / 23.4 kN	3/8 / 9.5mm

** With nose piece.*

(1) Will install aluminum fasteners up to 3/8" / M10.

OPERATING INSTRUCTIONS

With the tool disconnected from the air source, adjust the pull-up stud extension from the anvil face by loosening the anvil lock-nut. Thread a rivet nut onto the pull-up stud…and allow approximately one (1) thread of the pull-up stud to extend beyond the end of the insert (Fig. 1). (When setting up on a closed end part, bottom the pull-up stud in the fastener and back off one turn). Snug the anvil face against the head of the fastener and tighten the anvil lock-nut to maintain this setting. Unthread the insert from the pull-up stud.

Now, connect the air line to the tool. When you hold the rivet nut threads against the pull-up stud, it will automatically thread into the insert until the fastener head seats securely against the anvil face.

Make sure the stroke adjustment ring is set to provide minimum pull-up.

Actuate position 2 (bottom) of the trigger and observe the pull-up stroke of the tool. Notice that the pull-up stud is pulled into the front housing of the tool, with no rotation of the stud.

The tool will stall when it meets the pre-adjusted internal stop.

Actuation of position 1 (top) of the trigger, provides reverse rotation of the stud, and disengages the stud from the installed fastener.

Now you are ready to set the stroke of the tool. You must provide the proper pull-up of the fastener, to ensure proper installations.

Use the special spanner wrench that is provided to engage the holes in the stroke adjusting ring (Fig. 2). Turning the ring in a counterclockwise (when nose is towards you) direction increases the stroke. Turning the ring in a clockwise direction reduces the stroke.

To determine the amount of pull-up required, measure the overall length of the fastener, as shown in (Fig. 3). Refer to the pull-up factor chart and select the thread size of the fastener to be installed.

Each fastener is designed to perform in a specific grip range. 1) Determine the recommended maximum grip of the fastener (refer to Bulletin AE). 2) Measure the material thickness in which you will be installing the fastener. 3) Subtract the measured thickness from the published max. grip of your fastener. 4) Add the difference calculated in step 3 to the applicable pull-up factor in the chart.

EXAMPLE: AES10-80 (10/M5) to be installed in .060” /1.52mm thick material.

1. Max. Grip .080” / 2mm
2. Grip (Material) Thickness .060” / 1.52mm
3. Difference (.080-.060) .020” / 0.51mm
4. Add Pull-up Factor (.080+.020) to determine Pull-up or Shortening req’d .100” / 2.54mm

Measure the overall length of a test fastener and run it through a tool cycle. Then measure the overall length after you have pulled it. Compare the results with the calculated shortening required as determined in step 4. To increase pull-up with the AE 40 Tool, turn the stroke adjustment ring counterclockwise. To decrease the pull-up, turn the stroke adjustment ring clockwise. Slight differences of ±.005/0.13mm may not require further adjustments. Install several fasteners in sample material, the same as the grip you will be using, to ensure that all settings are adequate.

Figure 1

Figure 2

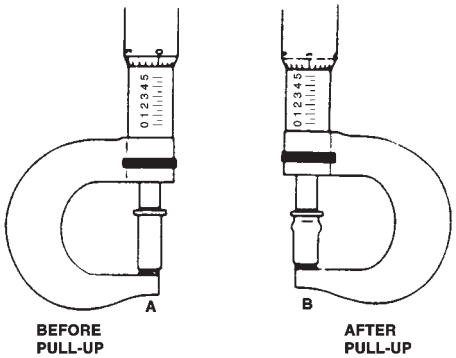


Figure 3

Pull-up Factor Chart

Fastener Thread Size	Pull-up Factor
4 / M3	.055” / 1.4mm
6	.065” / 1.63mm
8 / M4	.065” / 1.63mm
10 / M5	.080” / 2mm
1/4 / M6	.095” / 2.41mm

HEX WRENCH INSTALLATION TOOL

- Designed for installing MaxTite fasteners.
- Great for field installations or repair work.
- Ideal for prototype applications.

Model L-845 - Installs MaxTite Rivet nuts 440 to 1/4" and M3 to M6
Model L-722 - Installs MaxTite Rivet nuts 5/16" to 1/2" and M8 to M12

OPERATING INSTRUCTIONS

1) Engage all threads of the fastener on the pull-up stud. Advance anvil until it is tight on head of fastener (Fig. 1). Insert fastener into installation hole.

2) Place hex wrench in socket of jackscrew and hold stationary. Turn hex nut in clockwise direction with a wrench while holding tool at right angle to the work.

3) Turn nut until firm resistance indicates a complete upset of the fastener (Fig. 2).

4) Break nut loose with counter clockwise movement. Remove both wrenches from the tool

5) Remove tool from fastener by revolving entire tool in counter clockwise direction.

Thread Size	Complete Tool Part Number
4-40	L-845-440
6-32	L-845-632
8-32	L-845-832
10-24	L-845-1024
10-32	L-845-1032
1/4-20	L-845-2520
1/4-28	L-845-2528
5/16-18	L-722-3118
5/16-24	L-722-3124
3/8-16	L-722-3716
3/8-24	L-722-3724
1/2-13	L-722-5013
1/2-20	L-722-5020
M3	L-845-M3
M4	L-845-M4
M5	L-845-M5
M6	L-845-M6
M8	L-722-M8
M10	L-722-M10
M12	L-722-M12

Figure 1

Figure 2

L6000 INSTALLATION TOOL

- Ideal for light production requirements.
- Installs most SpinTite fastener types and sizes.

OPERATING INSTRUCTIONS

Pull knob completely out and place fastener onto pull-up stud (Fig. 1). Holding fastener with fingers, push knob until it is all the way into the barrel (Fig. 2). Fastener should now have all the threads engaged onto the pull-up stud. Hold tool at a 90-degree angle to work, and place fastener in hole. Squeeze handle toward barrel until resistance is felt (Fig. 3). The handle will not touch the barrel. DO NOT apply excessive force or threads may be stripped. Release handle and pull knob completely out, this will release pull-up stud from fastener.

Thread Size	Complete Tool Part Number
4-40	L-6000-440
6-32	L-6000-632
8-32	L-6000-832
10-24	L-6000-1024
10-32	L-6000-1032
1/4-20	L-6000-2520
1/4-28	L-6000-2528
M3	L-6000-M3
M4	L-6000-M4
M5	L-6000-M5
M6	L-6000-M6

Figure 1

Figure 2

Figure 3

ROBOTIC SYSTEM CAPABILITIES

- Operates for long periods without worker involvement.
- Reduced “total cost of installation”.
- Consistent, quality installations.
- Requires minimal work area.
- Production flexibility.

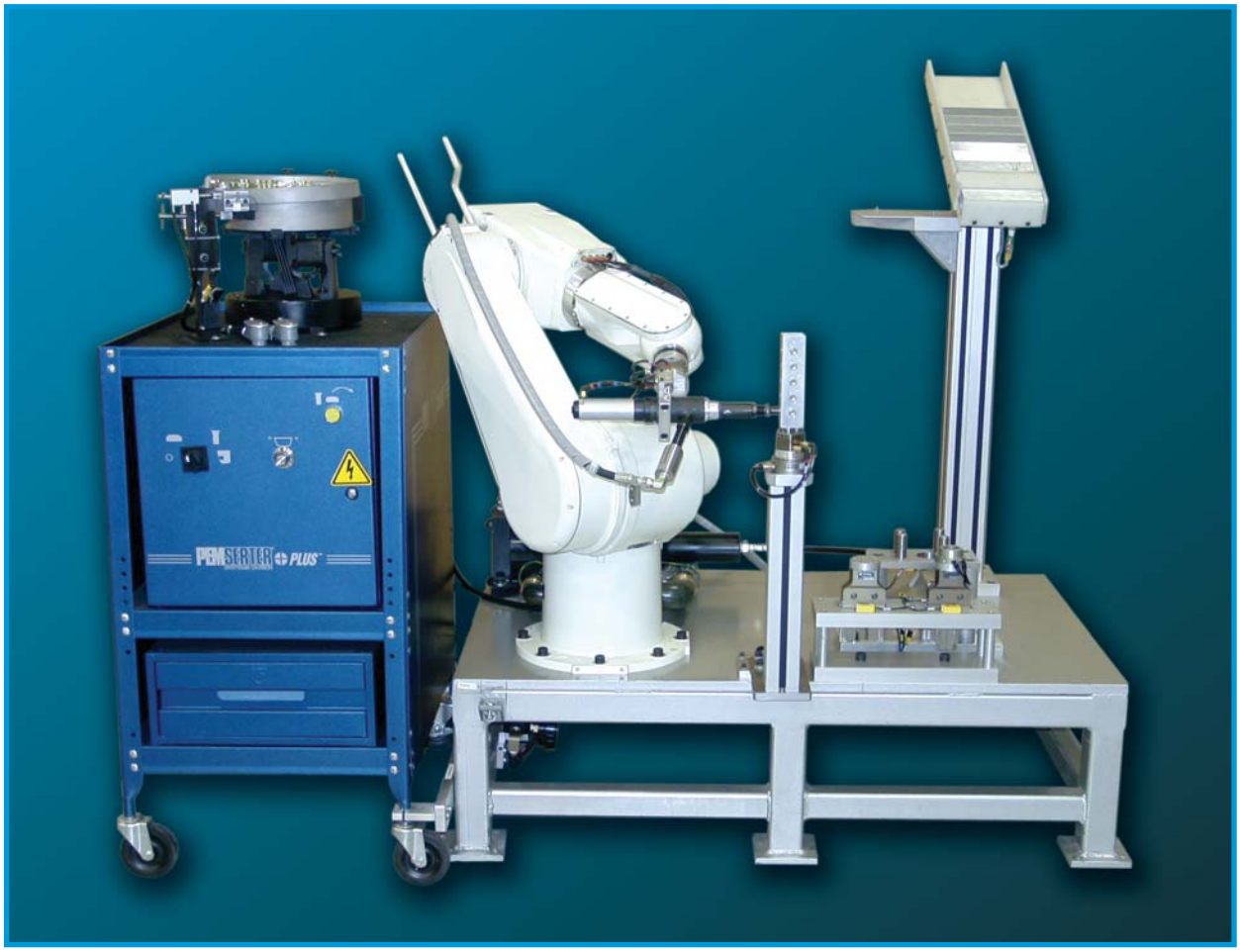
Atlas Engineering Robotic technology offers a completely automated and intelligent system for worker-free part handling and fastener installation. The robotic assembly system can reduce installed fastener costs, increase quality installations, improve job productivity, and reduce floor-space requirements. We can provide the components or the entire system based on your needs.

1

We provide the fastener feed module and the installation tool . . .

2

. . . that works with your robot. We can also provide the entire system . . .



. . . shown here. The robot positions a workpiece into a holding fixture utilizing an interchangeable end-of-arm (EOA) tooling hand. The system automatically switches to the installation tool and then installs the fasteners in a pick-and-place format.

The workpiece can remain stationary while the six-axis articulated robot performs installations. This enables multiple fastener insertions at different surface angles without a need for workpiece repositioning.

System components and capabilities can be configured to meet your specific assembly needs.

Visit our web site at:

www.atlas-eng.com

Specifications subject to change without notice.

For the name of the authorized Atlas distributor nearest you, call one of the numbers below or visit our web site.

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