



What Is The Real Total Cost Of Ownership (TCO) Of Battery-Powered Rivet Nut Tools?

A Deep Dive Into How The NB08PT-18 From STANLEY Engineered Fastening Combines Reliability With Durability To Minimize TCO

Total cost of ownership (TCO) is a widely used concept across many industries to assess the financial impact of investment on equipment over its entire lifespan. For industrial tooling, TCO is essential. Unlike consumer goods, industrial tools are often subjected to heavy use in harsh environments, and the cost of downtime or equipment failure can be significant. In addition, industrial tooling investments are typically more substantial than consumer purchases, making it crucial to evaluate TCO to ensure a good return on investment. In this context, understanding the TCO of battery-powered rivet nut tools is essential for businesses looking to optimize efficiency and profitability.

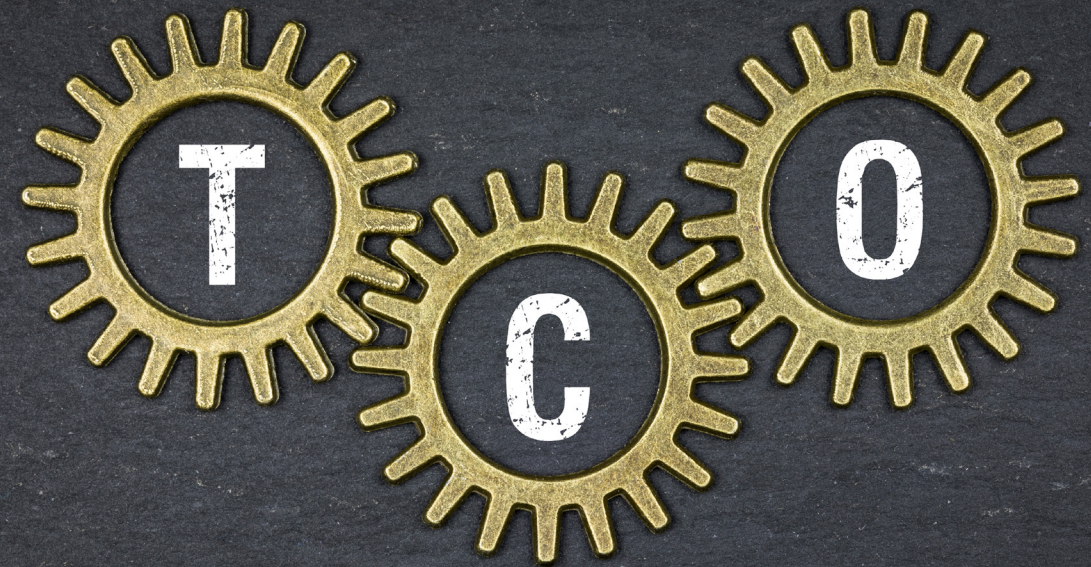
Understanding TCO In The Industrial Tooling Landscape

The industrial tooling sector has long recognized the importance of TCO as a holistic measure of a tool's value over its lifecycle. While the initial purchase price is a crucial consideration, it's only a fraction of the story. TCO encompasses a myriad of factors that affect the customer value of the industrial tool, which include maintenance, operational efficiency, potential downtime, and more.

Taking TCO into consideration is essential while evaluating new industrial tools and fastening solutions for a manufacturing facility. As a metric, TCO combines several factors of owning and operating a piece of machinery to portray a more complete picture of the cost of lifetime ownership.

Although there are several variations of the TCO formula that depend on the industry being considered, a simplistic approach to the concept of TCO for rivet nut tools can be calculated with this simple formula below.

TOTAL COST OF OWNERSHIP (TCO)



Total Cost of Ownership



Purchase Price

The initial costs involved in acquiring a tool, which include the purchase price, shipping, installation, and initial training to operate the tool.



Operating Costs

These are the costs incurred in the day-to-day operation of the tool. It includes energy costs, consumables, and labor costs associated with using the tool.



Maintenance And Repair Costs

These costs are associated with maintaining the tool in a usable condition, including scheduled maintenance, unscheduled repairs, and part replacements. An important part of maintenance and repair costs are the downtime costs which include lost production, overtime labor costs to catch up on production, and potential contractual penalties for late delivery.

Other Indirect Costs

In addition to the direct costs associated with purchasing, maintaining, and repairing an industrial tool, other indirect costs should be taken into account when calculating TCO. For simplicity, we have not included those in the formula presented but these indirect costs may include expenses such as legal compliance, insurance, storage, administration, and disposal costs incurred at the end of the tool's life. Furthermore, TCO calculations typically involve accounting for the remaining value of the tool, which is the amount that needs to be deducted from the total TCO after accounting for the tool's depreciation in value over time. While some formulas also account for the resale value of the tool, this is not typically applicable for battery-powered rivet nut tools, and therefore will not be included in our TCO calculations.

By taking all these factors into consideration, businesses can

accurately evaluate the true cost of owning and operating a battery-powered rivet nut tool over its entire lifespan, enabling them to make informed decisions and optimize their return on investment. The process of calculating TCO involves several steps, beginning with defining the scope and objectives, identifying cost categories, gathering and quantifying cost data, calculating the present value of costs, analyzing and interpreting the TCO data, and finally, making informed decisions and implementing cost-control strategies.

In evaluating the TCO of battery-powered rivet nut tools and fasteners, it's imperative to consider all these cost categories to make well-informed financial decisions and select solutions that offer the best value over the long term. A thorough TCO analysis aids in comparing different tooling options, understanding long-term financial commitments, and ultimately, selecting solutions that align with the operational, financial, and strategic goals of the manufacturing facility.

Minimizing The Total Cost Of Ownership (TCO) With The NB08PT-18 Blind Rivet Nut Tool

The NB08PT-18 Blind Rivet Nut Tool coupled with rivet nuts, developed by STANLEY Engineered Fastening, stands out as a superior tool designed to meet the demanding needs of industrial environments and minimize TCO over the tool's lifespan.

Our engineering teams have undertaken rigorous testing with a dedicated test rig at the Global Engineering Center of Excellence, where tools are tested to failure under maximum specified load and stroke. The NB08PT-18 is highlighted for its robust design, superior performance, and ability to operate efficiently in industrial environments, outlasting competitor tools significantly.

Let's take an in-depth look into the technical aspects, benchmarking, and durability testing of the NB08PT-18, comparing it to low-price point competitors, particularly a \$500 competitor tool.

Methodology

The team conducted rigorous testing on the NB08PT-18 using a dedicated accelerated life test rig, designed to test rivet nut tools to failure under maximum specified load and stroke.

The testing process involved connecting the tools to a bespoke connecting fixture and diagnosing failure where possible.

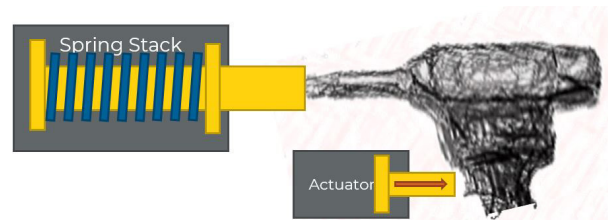
Comparative Analysis

The NB08PT-18 was benchmarked against a \$500 competitor tool, revealing significant disparities in design, durability, and performance over the life of the product.

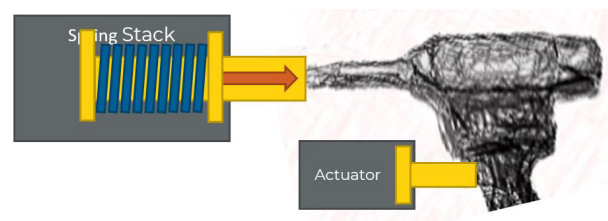
The competitor tool has a lower initial cost but exhibited flimsy handle plastic, inferior driving mechanisms, poor electronic protection safeguards, and inadequate documentation, raising concerns about user safety, reliability, and increased total cost of ownership over the long term.

TEST PROCESS (SIMPLIFIED)

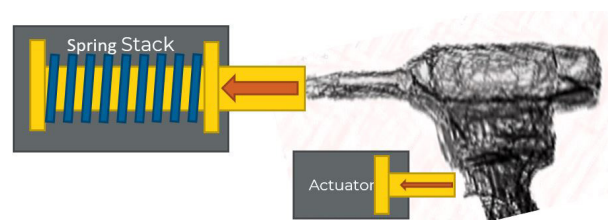
1. Turn on actuator to activate tool trigger



2. Turn on actuator to activate tool trigger. Load applied, spring stack resists tool actuation – gradual load



3. Load applied to tool over time

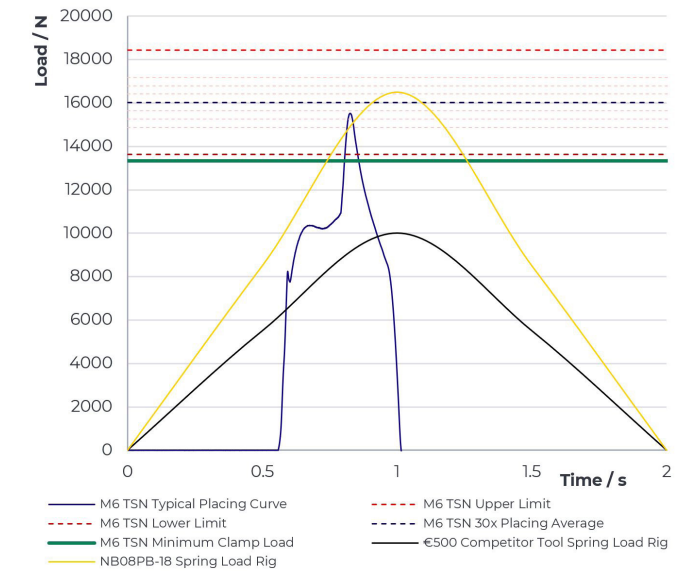


Durability Testing

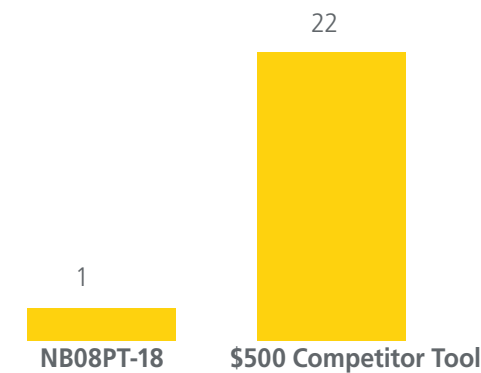
The competitor tool fell short in durability, unable to achieve its stated 25kN specification and exhibiting inadequate performance with the breakdown of parts that could not be easily replaced.

In contrast, the NB08PT-18 demonstrated the ability to continuously pull to the required force for a greater number of cycles, showcasing its robust design and superior performance over the long term.

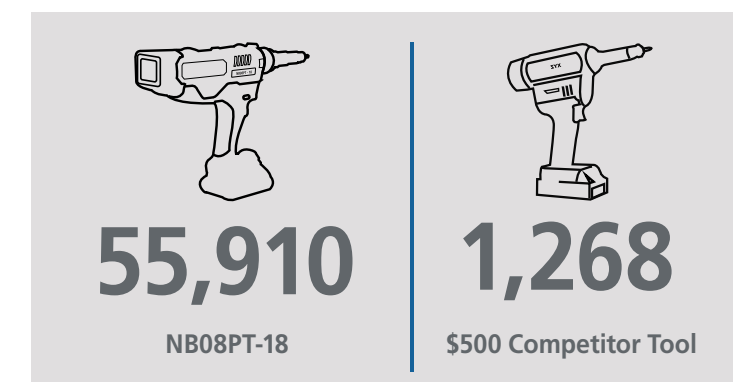
LOAD PROFILE - TEST RIG VS ACTUAL PLACING



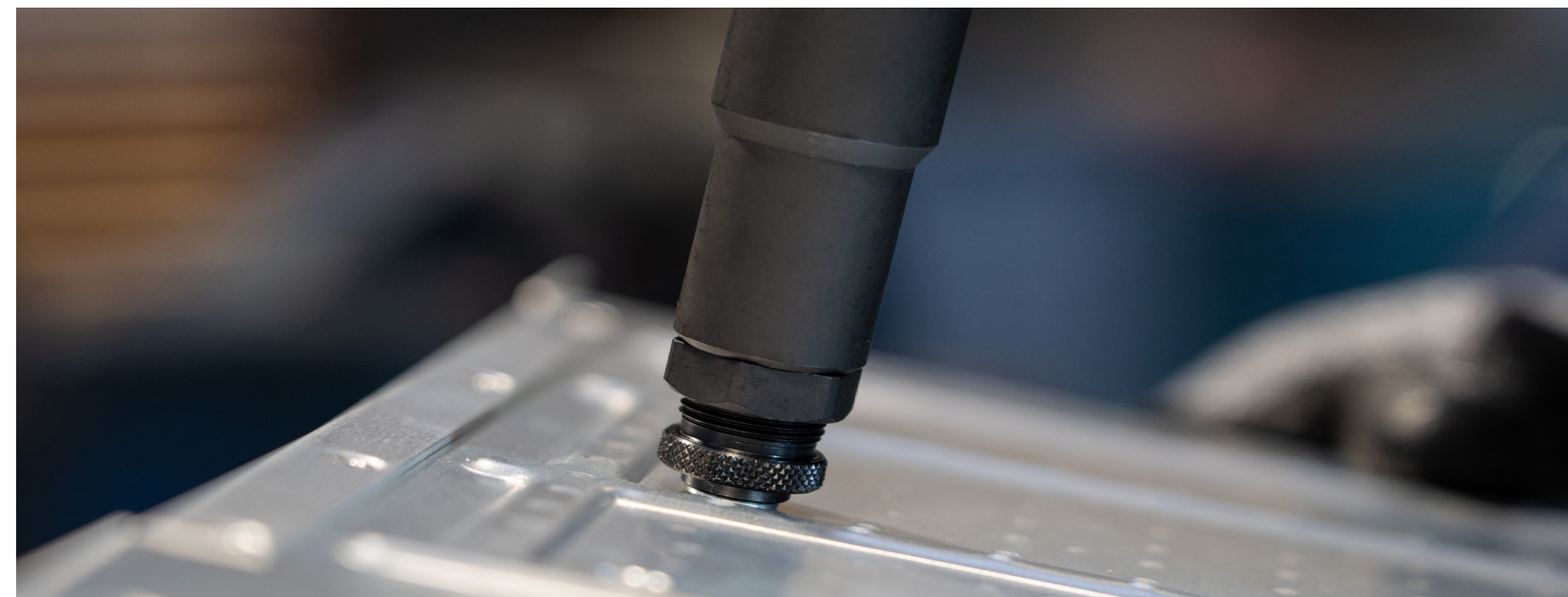
COMPARATIBLE #TOOLS IN DUTY CYCLE



ACCELERATED DUTY LIFE COMPARISON*



*Data collected from accelerated life test rig, conducted May 2023. One test rig cycle is approximately four normal cycles for the tool.

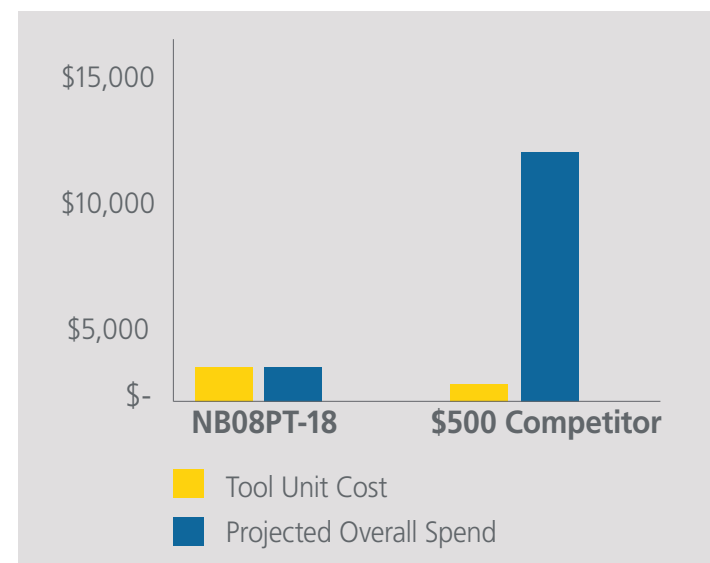


NB08PT-18 VS Competitor Tool - Technical Specifications

The NB08PT-18 boasts advanced technical features, including wireless communication, mobile application support, a USB interface, and a touch panel, distinguishing it from competitors lacking these functionalities. It also excels in pulling force, stroke control, and force control, ensuring optimal performance and reliability in industrial settings.

Model	NB08PT-18	Competitor \$500 Tool
Rivet Nut Capability	M3-M10	M3-M12
Weight (With 2.0AH Battery)	2.3 kg / 5 lb	2.1 kg / 4.6 lb
Pulling force (kN/lb)	18 kN / 4,046 lb	25 kN / 5,620 lb
Stroke (mm/in)	8.5 mm / 0.33 in	10 mm / 0.39 in
Head Length (mm/in)	358 mm / 14 in	252 mm / 9.92 in
Total Height (mm/in)	252 mm / 9.92 in	273 mm / 10.74 in
Battery	18V DC / 20V DC	20V DC
Tool-free Nose Detaching	Yes	Yes
Tool-free Mandrel Exchange	Yes	Yes
Nuts / Charge (M6 Steel)	900	1,500
Cycle Speed (M6,4.7mm)	1.60s	1.40s
Screen	Yes (2.2TFT)	Yes (only numeric)
Switch (Button)	Touch panel	4 buttons
Setting From Screen	Yes	Yes
Stroke Control	Yes	Yes
Force Control	Yes	No
How To Spin On	Push mandrel	Push mandrel
Wireless Communication	Yes (Wi-Fi, Bluetooth)	No
Mobile Application	Yes (Android)	No
USB Interface	Yes	No

REAL TCO NB08PT-18 VS COMPETITOR TOOL



Delivering Value Through Continuous Production Uptime, With Maximum Safety In Mind



The ability to continuously test our designs against competitor products enables STANLEY Engineered Fastening's NB08PT-18 tool to remain at the forefront of rivet nut technology with its robust design. Coupled with STANLEY Engineered Fastening branded rivet nuts, we can proudly support our customers' needs with full system support and implementation.

Tim Cumersdale

STANLEY Engineered Fastening Product Manager





The Initial Cost Of An Industrial Tool Is Only The Tip Of The Iceberg

The testing conducted on the NB08PT-18 and the competitor tool has shown that the blind rivet nut tool developed by STANLEY Engineered Fastening has the lowest TCO. By examining the TCO formula described at the beginning of this white paper, we can see that the tool's design, durability, and other factors play a crucial role in the result of the formula.

The purchase price of an industrial tool is just a small fraction of the TCO formula. The TCO formula also includes operating costs and maintenance and repair costs. As demonstrated in our case study, investing in a high-quality, reliable tool with advanced features, such as the NB08PT-18, can result in a lower TCO over the long term, despite the higher initial cost.

Battery Powered Tools Reduce Operating Costs

To reduce operating costs in blind rivet nut tooling, it is essential to consider the shift towards battery-powered tools. The industry has been experimenting with this technology for several decades, and there are various factors that have contributed to this change. Advanced, energy-efficient, and ergonomic battery-powered tools have proven to be more cost-effective than their pneumatic or hydraulic cord counterparts.

This shift towards battery-powered tools has revolutionized the industrial tooling landscape, improving productivity, reducing energy consumption, and enhancing operator safety as well as setting a precedent

for connected platforms such as data analytics, IoT and Industry 4.0 to pave the way for factories of the future.

How battery powered tools reduce operating costs

Battery-powered tools offer several advantages over pneumatic or hydraulic tools, leading to reduced operating costs in industrial settings. These advantages include:

1. Reduced cost in large-scale operations by eliminating the need for compressed air

Generating compressed air accounts for up to 10% of the total electricity consumption in many production facilities. Considering that on average 30% of the compressed air leaks out before getting to the end-users,

operators lose money every minute that a compressor is running. This plays a pivotal role in minimizing the TCO of industrial tools.

2. Improved productivity

Battery-powered tools are more ergonomic than their air-powered counterparts, as operators do not have to worry about hoses and compressors. This makes it easier for them to maneuver the tools across the factory floor and work in constricted spaces. This leads to increased operator productivity, especially over long shifts.

3. Enhanced safety

Battery-powered tools are inherently safer than pneumatic tools, as they eliminate the risk of hose entanglement or tripping hazards. They may also produce less noise and vibration, which can reduce operator fatigue and improve workplace safety.

4. Technological advancements bring efficiencies to the production line

Battery technology has evolved significantly in recent years, leading to more powerful and longer-lasting batteries. This has made battery-powered tools more practical for a wider range of industrial applications. Modern battery-powered industrial fastening tools are not just cordless versions of their air-powered counterparts. They are also equipped with advanced features such as:

4.1. Digital interfaces

Digital interfaces provide operators with real-time feedback on tool performance, including battery life, counters, and service intervals. This information can help operators to optimize their workflow and identify potential problems early on.

4.2. Advanced battery management systems

Advanced battery management systems help to prolong battery life and protect against overcharging and overheating. They also enable operators to quickly and easily swap out batteries, minimizing downtime.

4.3. Customizable settings

Customizable settings allow operators to tailor the tool to their specific needs, such as setting the desired number of fasteners to place or reconfiguring the operating mode. This can help improve accuracy and efficiency, especially for repetitive tasks.

5. Reduced environmental impact

Battery-powered tools produce zero emissions, making them a more sustainable option than traditional



air-powered tools. They are also more energy efficient over an extended period. These factors make battery-powered options particularly important for manufacturers that are committed to reducing their environmental impact.

Design Integrity & The Quality of The Tool Reduce Maintenance and Repair Costs

Design integrity and the quality of materials used in battery-powered industrial fastening tools play a critical role in their performance, durability, and reducing maintenance and repair costs over the tool's life cycle. For example, a tool with flimsy handle plastic, inferior driving mechanisms, and poor electronic protection safeguards can raise concerns about reliability and user safety.

The design of a battery-powered industrial fastening tool must be carefully considered to ensure that it can withstand the rigors of industrial use with minimum downtime. This includes factors such as:

- Ergonomics: The tool should be lightweight and comfortable to hold, even for extended periods.
- Durability: The tool should be



made from high-quality materials and innovative alloys to withstand repeated use and exposure to harsh environments.

- Heat dissipation: Tools should be thermally efficient and designed to dissipate heat efficiently to prevent overheating and premature wear and tear.
- Safety: Tools with ergonomic designs and safety features help to reduce operator fatigue and the risk of workplace accidents.
- Serviceability: The tool should be robust and able to withstand longer service intervals, thus minimizing downtime.

When selecting a battery-powered industrial fastening solution, it is essential to consider operational efficiency and performance metrics. These metrics can help manufacturers identify the tools and rivet nuts that best meet their needs and optimize their operations. In addition, performance metrics are also crucial when calculating the maintenance and repair cost of the battery tool. By considering these factors, manufacturers can select the most cost-effective and reliable tools for their operations.

Factors affecting the operational efficiency and

performance metrics

Battery life

The amount of time that the tool can operate on a single battery charge.

Durability

The ability of the tool to withstand the rigors of industrial use. An example metric is the accelerated duty life comparison that collects data from the test rig and assesses the number of cycles that tool can be potentially used before it breaks.

Weight and ergonomics

The weight and ergonomics of the tool can affect operator fatigue and productivity.

Preventative maintenance

It is another factor that can contribute to reducing the overall maintenance and repair costs of battery-powered industrial fastening tools. Tool safety features such as auto-shutoff and real-time monitoring can help to reduce the risk of accidents and injuries and minimize the number of repairs needed for the tool. Choosing a manufacturer that provides tool warranty and after-sales support is also crucial to minimize downtime and ensure that the tool is always in good working order. By implementing preventative

maintenance measures and selecting a reliable manufacturer, manufacturers can reduce the maintenance and repair costs of their battery-powered industrial fastening tools and optimize their operations.

Why Choosing Tools that Meet Industry Standards is Key to Minimizing TCO

Industry standards define the minimum requirements for battery-powered tools in terms of safety, performance, and durability. These requirements ensure that tools are safe, reliable, and perform as expected. The tool's specifications typically include information such as battery life, weight, head length, noise level, and additional digital interface features. Independent organizations develop these industry standards, and manufacturers typically adopt them.

At STANLEY Engineered Fastening, the NB08PT-18's compliance with CE and UKCA standards is verified by third-party auditors to ensure that it meets all the criteria. By selecting tools that meet industry standards, manufacturers can ensure the quality, safety, and reliability of their battery-powered industrial fastening tools, leading to lower TCO over the tool's life cycle.

The NB08PT-18 coupled with STANLEY rivet nuts offer unparalleled value with minimum Total Cost of Ownership (TCO) through continuous production uptime, maximum safety, preventative maintenance, easy servicing, and robust design.

It also assures the highest levels of quality with the latest industry certifications, which have been verified by third-party auditors to ensure standardized implementation and compliance.



CONCLUSION

In conclusion, the NB08PT-18 Blind Rivet Nut Tool stands out as a top-performing and reliable option for industrial fastening applications. Its strong design, superior capabilities, and extensive testing have proven its ability to deliver on multiple factors, including reduced cycle times, improved product quality, reduced downtime, and increased profits.

With its advanced technology and superior performance, the NB08PT-18 is the preferred choice for those seeking to enhance safety, quality, and continuous production uptime. In essence, this tool redefines operational efficiency, tool value, and overall TCO, making it an indispensable asset for any industrial operation.

STANLEY
Engineered Fastening



Product Portfolio

AVDEL

Structural Blind
Fasteners

INTEGRA

Plastic
Components

NELSON

Stud
Welding

OPTIA

Threaded
Fasteners

POP

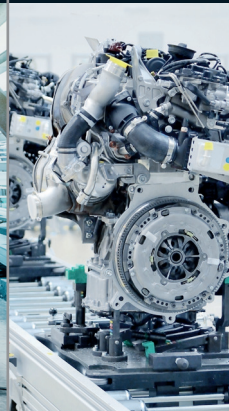
Non-structural
Blind Fasteners

STANLEY
Assembly Technologies

Specialist
Assembly

TUCKER

Automated
Fastener Systems



STANLEY
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