STANLEY
Engineered Fastening

Software manual

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1   About this manual

1.1   Purpose of the manual

The purpose of this software manual is to provide users with comprehensive instructions and guidance on how to effectively use and configure the touchscreen interface of BRF30PB-20 smart rivet tool.

1.2   Audience

This manual is for technicians, engineers, and other qualified personnel who are responsible for operating, maintaining, or troubleshooting the BRF30PB-20 smart rivet tool.

1.3   Presentation conventions

1.3.1   Definitions: Safety signal words and alert symbols

This instruction manual uses the following safety alert symbols and words to alert you to hazardous situations and your risk of personal injury or property damage.

Warnings at the beginning of a section

> ⚠ **CAUTION**
>
> **Type and source of hazard**
> Consequences if ignored
> ⇒ Action to prevent hazard

Warning within a section

CAUTION! Hazard type and source Consequences if ignored. Action to prevent a hazard

Warning triangle

The warning triangle ⚠ indicates death or injury hazards for people. Warnings without a warning triangle indicate property damage.

Signal word

The signal word indicates the severity of the hazard:

Signal word	Meaning
⚠ DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury
⚠ WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury

Signal word	Meaning
⚠ CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury
NOTE	Indicates a practice not related to personal injury which, if not avoided, may result in property damage.

Type and source of hazard

This paragraph describes the type of hazard and what causes it.

Consequences if ignored

This paragraph explains what happens if the hazard is not prevented.

Action to prevent hazard

These paragraphs indicate how the hazard can be prevented. These measures absolutely must be taken!

2 Configuring methods

The BRF30PB-20 Smart Rivet tool can be configured by the following methods.

Touch screen

The tool has a built-in touch screen display on the rear side. The tool can be configured using this touch screen.

USB Type-C

The tool can be configured by connecting it to a computer via a USB Type-C port. Once connected, open a web browser, and enter the IP address http://172.23.169.1 or http://atb.qpm to access the Alpha Toolbox. This will allow the tool to be configured using the portal on the computer.

Pairing with smart devices

The tool can also be configured wirelessly by pairing it with computer, smartphone, or tablet by enabling the wireless communication from the tool.

Stanley controllers:

The tool can also be configured wirelessly by pairing it with a Wireless STANLEY Controller. The Controller operating manual provides instructions on how to connect the tool and controller and program the tool from the controller's built-in screen.
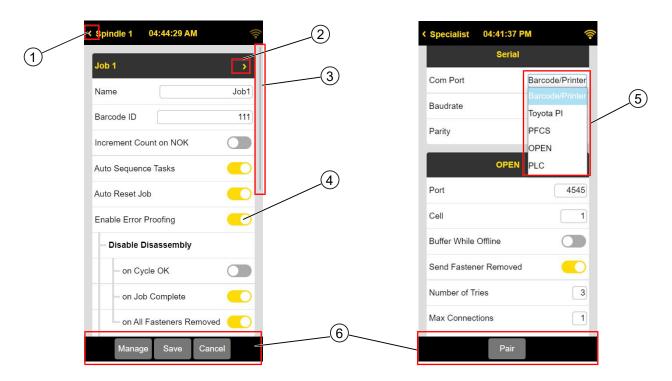
3 Getting started

3.1 Powering on the device

This tool can be powered on by inserting the battery at the bottom of the tool and press the trigger button to power on the device. Touch screen will be on approximately in 30 seconds.

3.2 Navigation

The tool have touch screen display at the back of the tool used to facilitate menu navigation, make selections, and input data.

Item	Name	Description
1	Go Back arrow	The symbol for "go back" is typically an arrow pointing to the left.
2	Go Forward arrow	The Go Forward symbol usually indicates that you can proceed to the next step or move forward to the next page, screen, or section of content.
3	Scrollbar	It appears on the right side of a window or frame, and it can be dragged up or down (or left or right) to reveal more of the content that is currently hidden.
4	Toggle button	switching between two options (such as on/off, or show/hide) with a single click
5	Dropdown	The list of options is displayed in a dropdown menu that appears below the button.
6	Menu bar	The menu bar may also contain additional menus, depending on the button and its features. Each menu may contain submenus and options that can be accessed by clicking on them.

● The on-screen alpha numeric keypad facilitates to input data.

- Click the input fields for modifying parameters, enable or disable toggle buttons.

4   Pairing mode

USB

1. Connect the tool using a USB Type-C cable by inserting it into the USB port.
2. Open the browser and enter the address http://atb.qpm or http://172.23.169.1 to access the alpha tool box.
3. Use this pairing mode to easily set up parameters.

Wireless create:

Go to Setup > Communications > Wireless > 802.11 Dual Band

1. Select "Create".
2. Choose the region and channel, set the network name (SSID) and select security options.
3. Use this pairing mode to join the network easily by clicking the "Join Network" option, which generates a QR code for mobile device connection.

Wireless join:

Go to Setup > Communications > Wireless > 802.11 Dual Band

1. Select "Join".
2. Enter the network parameters. Use the "IP Address" field to access the network through another device's browser.

5   Configuration

> ⚠ **WARNING**

Excessive Force condition

To Avoid Injury:

⇒ Programming of the product should only be performed by trained and qualified personnel.

⇒ Control limits should never be set above the maximum force rating of the tool.

⇒ Higher force settings will result in higher tool reaction forces. Proper care should be taken to protect the operator from resultant force reaction.

⇒ Always test the tool for proper operation after programming the controller.

This guide provides instructions for programming the BRF30PB-20 smart rivet tool using its touch screen display. The tool features three main menus that display information and enable configuration:

1. Setup
2. Service
3. Analyze

5.1   Setup

This Setup menu helps to configure the tool strategy. Users must have SETUP or ADMINISTRATOR access level to modify values in this area.

Setup menu:

Menu Item	Description
Jobs	Use to perform tool strategy programming such as 'Force' and 'Distance' parameters.
Communication	Use to program Ethernet, wireless (Wi-Fi), serial port, fieldbus and network protocol options.
I/O	Use to program discrete outputs, discrete inputs, Modbus outputs, Modbus inputs, Ethernet/IP outputs and Ethernet/IP inputs.
Fieldbus	Use to program the fieldbus such as Ethernet/ IP, Profibus, ProfiNet and DeviceNet.
PLC	Use to program PLC.
Users	Use to add or delete users, provide administrative permissions for the users and to provide access for setup, tool, diagnostic, statics and communications.
Others	Use to set parameters for all other features, including general functions, triggers, lights, tones, tool, statistics and regional.

5.1.1   Jobs

Setup > Jobs > Job [X]

Name

Name the Job to define the operation performed (15-character maximum). Name field is visible in many external applications.

Barcode ID

This is a mask that when equal to an incoming PART ID (barcode scan) this Job is selected as the active Job. The PART ID can come from the USB port, serial port, a network protocol, a fieldbus input, the internal PLC or the keypad itself. Use periods (.) to mask the negligible portions of the PART ID; use the exact characters in their exact PART ID positions to select the Job.

Example

If a PART ID is 123ABC and if the 3A determines when this Job is to run (the third and fourth positions), then enter "..3A.." as the parameter value. Notice that the periods (.) match the length of the expected PART ID.

Increment Count on NOK

Setting this parameter to Yes will allow the selected Job's rivet count to increment on both OK and NoK rivet pulls. If set to No the Job's rivet count will increment only on Ok rivet pulls.

Auto Sequence Tasks

When set to Yes, the application automatically increments or decrements from the selected task to the completion of the job after the fastener count in each Task is complete.

Auto Reset Job

When enabled, the job resets between batches instead of waiting for an external job reset.

Enable Error Proofing

Enables the error-proofing features with additional parameter options settings. Additionally, disables tool when batch count is met.

- Disable Assembly

  This identifies whether the tool disables after each Task has completed. This requires a Reset Job, Task Select or Task Select Bit input to select an incomplete Task which enables the tool for an incomplete Task only. If Auto Sequence Task is used, the tool reenables when the active Task switches to an incomplete Task.

  - On Task Complete

    If enabled, disables the tool when the active Task is complete.

Enable Job Timer

If enabled, it invokes the Job Timer. The Job Timer starts when the first rivet of the batch count exceeds Threshold Force (In Cycle) and stops when the programmed number of seconds has elapsed. If the timer times out before the batch count is complete the Job is set to complete, the tool is disabled, and the Job Complete output is energized.

- Job Timer

  Input the field with job time in seconds.

5.1.1.1   Jobs menu

Manage

1. Navigate to the menu bar and locate the "**Manage**" button.
2. Touch the "**Manage**" button.
3. "**Manage**" tab will appear, presenting a list of actions such as add, delete, copy, paste and cancel.
4. Tap the "**Add**" option to include a new job in the tool. Select the job number and tap "**Ok**". The Wizard begins for easy setup of parameters.
5. Provide the necessary input parameters.
6. Tap "**Ok**" to confirm.
   ⇨ Adds the new job to the tool.
7. Tap the "**Delete**" option to delete an existing job in the tool. Select the job number and tap "**Ok**".
   ⇨ Deletes the selected job from tool.
8. Tap the "**Copy**" option to copy a job in the tool. Select the job number and tap "**Ok**".
   ⇨ Copies the selected job parameters.
9. Tap the "**Paste**" option to paste a job in the tool. Select the job number and tap "**Ok**".
   ⇨ Pastes the copied job parameters.
10. Tap on **"Cancel"** to cancel the "**Manage**" tab.
    ⇨ Cancels the "**Manage**" tab.

Import

1. Touch the "**Import"** button.
2. Allow user to select a job parameter file for import from USB storage medium.
   ✓ Imports the chosen job file into the tool.

Export

1. Touch the "**Export"** button.
2. Allow user to export a job parameter file to USB storage medium.
   ✓ Saves a job backup file to a selected storage medium.

Save

⇒ Touch the "**Save**" button to save the changes.

Cancel

⇒ Touch the "**Cancel**" button to cancels the changes.

5.1.1.2   Task

Setup > Jobs > Job [X] > Task [X]

Name

Name the Task to define the operation performed (15-character maximum).

Batch count

The required number of rivets to complete the task.

Units

Operating force units is kN. Task values are not recalculated on unit change.

Cycle Lock-Out

This is a timer, in seconds, that activates after the tool has reached its target. While active, the tool is disabled.

Threshold Force

The Force level during the rivet pull when the In-Cycle output transitions high. Data is not stored, or available to Alpha Toolbox, unless Threshold force is exceeded during the rivet pull. The default value is 0.

Statistical Force

The force level required to be exceeded before the rivet cycle data is included into Statistics or sent via a network protocol. The default value is 0.

Modified

A value that is changed by the controller to indicate the date and time parameter values were last changed in this Task or associated Steps.

5.1.1.2.1   Task menu

Manage

1. Navigate to the menu bar and locate the "**Manage**" button.
2. Touch the "**Manage**" button.
3. "**Manage**" tab will appear, presenting a list of actions such as add, delete, copy, paste and cancel.
4. Tap the "**Add**" option to include a new task in the tool. Select the task number and tap "**OK**". The Wizard begins for easy setup of parameters.
5. Provide the necessary input parameters.
6. Tap "OK" to confirm.
   ⇨ Adds the new task to the tool.
7. Tap the "**Delete**" option to delete an existing task in the tool. Select the task number and tap "**OK**".
   ⇨ Deletes the selected task from tool.
8. Tap the "**Copy**" option to copy a task in the tool. Select the task number and tap "**OK**".
   ⇨ Copies the selected task parameters.
9. Tap the "**Paste**" option to paste a task in the tool. Select the task number and tap "**OK**".
   ⇨ Pastes the copied task parameters.
10. To copy or move a task, start by creating a new task in the desired location. Next, copy the task that needs to be moved and paste it into the newly created task.
11. Tap the "Cancel" to cancel the "**Manage**" tab.

⇨ Cancels the "**Manage**" tab.

Save

⇒ Touch the "Save" button to save the changes.

Cancel

⇒ Touch the "Cancel" button to cancels the changes.

5.1.1.2.2   Set

Setup > Jobs > Job [X] > Task [X] > Set

Below is the list of Blind Rivet Tool parameters

Snug force

The point in the step when the controller begins to monitor the tool's output distance. Should be greater than 0 and less than Low force. Units are the selected force units(kN).

The point in the set when the controller begins to monitor the tool's output distance. Should be greater than 0 and less than Low force. Units are the selected force units(kN).

High force

The maximum peak force for an acceptable rivet pull (required for all steps). If the actual force exceeds this limit the rivet pull will be flagged as NOK and the RED LED on the front panel and tool illuminates. Units are the selected force units(kN).

Low force

The minimum peak force for an acceptable rivet pull. If the actual force does not reach this limit, the rivet pull is flagged as NOK and the YELLOW LED on the front panel and tool illuminates. Units are the selected force units(kN).

High Distance

The maximum peak distance for an acceptable rivet pull (required for all steps). If the actual distance exceeds this limit the rivet pull will be flagged as NOK and the RED LED on the front panel and tool illuminates. Must be greater than Low Distance. Units are in mm.

Low Distance

The minimum peak distance for an acceptable rivet pull. If the achieved distance does not reach this limit the rivet pull will be flagged as a NOK and the YELLOW LED on the front panel and tool illuminates. Must be less than High Distance. Units are in mm.

Travel past Break

The amount of distance the tool's jaws must travel past the force drop. A higher value increases cycle time.

Monitor force window

If enabled, provides a force window during the rundown phase of the rivet pull into which achieved force must pass through. This window looks back from the Snug force of the step over the distance interval defined. If achieved force is outside the window the rivet pull is ended with the Shutoff Code of [T].

1. Upper force

   Defines the high force limit for the window.
2. Lower force

   Defines the low force limit for the window.
3. Upper distance

   Defines the low distance limit for the window referenced from when the Snug force value.
4. Lower distance

   Defines the high Distance limit for the window referenced from when the Snug force value.

5.1.2 Communications

Under **Setup** card header ->Select **Communications** card

This area changes the setting of the Ethernet, Serial and fieldbus Communications port(s) located on the bottom of the Alpha. Users must have Communication, Setup or Administrator access level to modify values in this area.

Touch **'Communications'** option to open communications side menu.

5.1.2.1 Wireless

Setup > Communications > Wireless

Use these parameters to setup the access point to connect QPM Cordless tools to Wireless STANLEY Controller.

802.11 Dual Band

To enable wireless communications for the cordless tool, input the SSID value and PASSWORD.

● Off

   Disables the wireless communications in the cordless tool.
● Create

   Enables the wireless communications in the cordless tool.
● Join

   Enables the wireless communications in the cordless tool to connect computers or other devices with browsers.

Region

Select from the drop-down list the region of the world where the tool is operating.

Channel

Selects the desired frequency channels from the drop-down allowed by that region.

Name

This parameter sets the Service Set Identifier (SSID) for the wireless router the tool will be connecting to. The maximum number of case sensitive, alphanumeric (ASCII) characters is 32.

Security

- None

  Enable wireless access point protocol, this mode is an encryption-free.

- WPA2

  Enable WPA2 wireless security (encryption) protocol. An 8-character minimum length password is required and must follow the WPA2 security protocol password specification. If no password is entered, no wireless connections will be accepted.

Password

This parameter sets the encryption key needed to connect to a wireless device access point requiring a password. This parameter can be left blank unless a security protocol is selected.

Join Network

The join network generates a QR code used to connect computers or other devices with browsers to Alpha Toolbox.

5.1.2.2   OPEN

Under **Setup** Card header -> Select **Communications** Card -> **OPEN**

The plant's IT department must provide these values to allow the SC controller to communicate on the OPEN protocol network.

Port

The required virtual port on which the Alpha will communicate to the plant network. Normally 4545.

Cell

Type the cell number where this Alpha controller resides.

Buffer While Offline

Enable causes the SC controller to buffer data for 100 fastening cycles when the server connection is lost. Upon reconnection, the buffered data transmits to the server. Disable does not buffer any data when the server connection is lost.

Send Fastener Removed

Enable sends the Fastener removed message when the SC controller detects a tightened fastener is removed. Disable stops the message from transmitting.

Number of Tries

This is the number of times the Alpha controller sends a message to the server when no ACK message is received.

Max Connections

The maximum number of connections the Alpha controller allows the server. The SC controller cannot have more than 10 connections.

Wait for Ack

The time in seconds to wait for an Ack before retransmitting information.

Save the changes.

5.1.2.3   PFCS

Under **Setup** Card header -> Select **Communications** Card -> **PFCS**

For Controllers with PFCS, the plant's System group must provide these values to allow the SC controller to communicate on the PFCS or NPL network. If using the NPL network there is a setup per spindle, even in a multiple. Be sure to select each spindle that needs to report to the NPL and setup these parameters.

Type

Choose which type of PFCS communications to be used.

- PFCS (Basic)

   This is the standard protocol used at Chrysler facilities.
- Basic NPL

   This is the enhanced protocol used at Fiat facilities. The controller is enabled by the network, performs many operations until disabled by the network.
- Smart NPL

   This is the enhanced protocol used at Fiat facilities. The controller is enabled for a specific Job by the network, after successfully completing the job the controller disables itself.
- Siemens

   This is the enhanced protocol used at Kamaz facilities. The controller is enabled by the network, performs many operations until disabled by the network.

Server IP

Input the IP Address of the PFCS server on the network.

Solicited Port

This port is used to send fastening cycle status and data to the PFS system. Enable or Disable this port as required. When enabled input the port number.

● Port Number

    The required virtual port on which the controller will communicate to the plant network. Starts with 10,000.

Unsolicited Port

This port is used by the PFS system to select the Job number on the Alpha controller. Enable or Disable this port as required. When enabled type the port number.

● Port Number

    The required virtual port on which the Alpha will communicate to the plant network. Must be a different port number than the Solicited Port.

● Machine ID

    Required for Smart or Basic NPL. May be used for Basic PFCS. The Machine ID for the port.

● Wait to Connect

    Time in seconds between a disconnect and an attempt to reconnect.

● Wait for Data

    The time in seconds where the controller waits for a reply to a request sent to the server.

● Wait for Ack

    The time to wait between when the controller sends data to the server and it should receive an acknowledgment. If no Ack in this time, the data sent again 3 times.

● Keep Alive

    The time in seconds for an inactivity timeout between messages when the controller sends a KEEP ALIVE message to ensure cable integrity.

Rundown Data

Specify the PART ID as Vin or Avi.

● Vin

    Vehicle identification number

● Avi

    Automated vehicle identifier

Buffer While Offline

Enable will allow the tool to buffer the rivet pull data while the controller is offline (disconnected from the network). When disable the tool will not buffer data for network retrieval.

Version

This is the installed version of the PFCS protocol. Check with the Chrysler's Systems group to determine if this has been approved for use in the facility.

Save the changes.

5.1.2.4   TOOLSNET

Setup > Communications > TOOLSNET

For controllers with TOOLSNET, the plant's IT department must provide these values to allow the SC controller to communicate on the TOOLSNET protocol network. The One Box controller will communicate only with a TOOLSNET server that employs a PIM server (i.e., World Version 7).

Server IP

Type the IP Address of the TOOLSNET server on the network.

Port

The required virtual port on which to communicate this protocol. For the SC controller it is normally 6575.

System

Type the cell number where this SC controller resides.

System Name

Type the system number where this SC controller resides

Trace

Selects the types of traces that are sent to the server.

- None

    No traces are sent to the server.
- All

    All traces are sent to the server.
- OK

    Only OK fastening cycle traces are sent to the server.
- NOK

    Only NOK fastening cycle traces are sent to the server.

Save the changes.

5.1.2.5   XML

Under **Setup** Card Header -> Select **Communications** Card -> **XML**

For controller with XML, the plant's IT department must provide these values to allow the SC controller to communicate on the XML protocol network.

XML Communications

Enable or Disable XML communications as required. Once enabled select the correct software and results server and ports.

- Version

  Now supports version 2.0, 2.1 and 2.2. Choose the correct one for the facility.

- Results Server

  Input the IP Address of the Results Server on the network.

- Results Port

  The virtual port on the XML protocol network server where the SC controller transmits messages.

- Command Port

  The virtual port where the SC controller receives commands from the XML protocol network server.

Save the changes.

5.1.3　　PLC

Under **Setup** Card header -> Select **Other** Card -> PLC

If a PLC logic file is running, the Name, Version and Length parameters are identified. If a PLC file is not running, the Name, Version and Length are blank.

PLC menu has interactive buttons such as Import, Export or Delete a PLC file and Pallet to include PLC functions. Connect a USB memory stick in the USB port for Importing and Exporting.

Ladder logic for the embedded PLC can be created or edited using Alpha Toolbox. "PLC Editor".

Save the changes.

5.1.4　　Users

Setup > Users

1. A maximum of eight users with unique passwords can be added. Passwords can contain any character, symbol or number combination written by the keypad (maximum length of 16).
2. If users are assigned, one must be an Administrator. The first user assigned will be an Administrator by default.
3. When a user is trying to modify a parameter and the tool is locked, or the user has insufficient privileges, the **"Login"** Wizard screen appears.
4. Select the appropriate user from the drop-down and then type in the correct password for the selected user. The parameter value will be modified if the logged in user has sufficient privileges. Otherwise the controller will display the Insufficient Privileges screen and the parameter value will not be modified.
5. Press OK to acknowledge and the modifying operation.
6. When a user is logged in the tool is unlocked at that user's access level. The unlocked icon appears and "Save" and "Cancel" button appears on the menu bar.
7. Tool automatically relocks the system 1 minute after the last user input.

Add user

1. To add a user, navigate to the menu bar and locate the **"Add"** button.
2. Touch the **"Add"** button.
3. A **"Add"** wizard screen will open to input the username.
4. Enter the desired username using the on-screen keyboard.
5. Tap **"Ok"** to add the user.
6. Touch the **"Save"** button to save changes.

Setup Password

1. Select the desired user from the list.
2. From the menu bar, touch the **"Password"** button.
3. The **"Login"** Wizard screen will open for password input. Since the default password is empty, leave the "**Password**" field empty and tap **"Ok"** to Continue. (Note: To reset the password using the old password, enter the current password in the **"Password"** field before proceeding.)
4. The **"PASSWORD"** Wizard screen will appear with options **"Old"**, **"New"**, and **"Verify"**.
5. Leave the **"Old"** field empty and enter the desired password in both the **"New"** and **"Verify"** fields. (Note: While resetting password, enter the current password in the **"Old"** field.)
6. Tap **"Ok"** to confirm and touch the **"Save"** button to save the changes.

Delete User

1. To delete a user, navigate to the menu bar and touch the "**Delete**" button.
2. The **"Delete"** wizard screen will appear. From the **"User"** field select the desired user without administration access.
3. Tap **"Ok"** to confirm the user selection and enter the admin password in the **"Login"** wizard screen.
4. Tap **"Ok"** to confirm and touch the **"Save"** button to save the changes.

Import

1. Users can be added by importing the JSON file via Wi-Fi or when the tool is connected to a computer with a USB port.
2. Locate the **"Import"** button on the menu bar
3. Touch the **"Import"** button.
4. Select the desired JSON file, then click **"Open"** to import.
5. The **"Login"** wizard screen will appear if the there is an existing admin user. Enter the admin password.
6. Tap **"Ok"** to confirm and touch the **"Save"** button to save the changes.

Export

1. To backup user's data, Touch the **"Export"** button on the menu bar.
2. JSON file will be downloaded to the connected device.

5.1.4.1　　　User configuration

Setup > Users > [User]

1. Select the user, then navigate to the user page.
2. Locate the dropdown menu for Administrator option.
3. Choose "Yes" for administrator or "No" for non-administrator.
4. Touch the "Save" button to save changes.

Note: At least one user must be an Administrator. Administrator rights grant full access to the tool, including privileges such as restoring factory defaults, deleting logs and adding users.

Options include:

There is no overlap between areas. Select more than one area for access if required.

Setup	Users at this level can modify all parameters in the Job area. They may also modify parameters in the Other area except in the Users, Tool and Stats tabs.
Tool	Users at this level can modify parameters under the Tool tab in the Other area, as well as set Preventive Maintenance Threshold and reset the PM and Cycle counters in the SERVICE menu.
Diagnostics	Users at this level can force Inputs or Outputs ON or OFF and REMOVE forces in the I/O tab of ANALYZE.
Statistics	Users at this level can modify parameters under the Stats tab in the Other area.
Communications	Users at this level can modify all parameters in the Communications area.

Access options

NONE	Denies access.
LOCAL	Allows access from the keypad.
REMOTE	Allows access from a computer via Alpha Toolbox.
BOTH	Allows access from the keypad and a computer.

5.1.5   Other

Setup > Other

This area sets the parameters for all other product features, including General functions, Triggers, Lights, Tones, Tool functions, Statistics, Regional. Each category is represented by its own menu.

Users must have ADMINISTRATOR or SETUP access level to modify values in this area.

5.1.5.1   General

Setup > Other > General

Lock Keypad

Option available only in Alpha Toolbox. When enabled the product keypad cannot be used to edit any parameters. It will allow the user to navigate through the system and view any parameters. If the keypad is locked and it is desired for it to be unlocked one must connect to Alpha Toolbox on the product and disable this parameter. If set to disable the keypad on the product can be used to edit parameters.

Name

A name distinguishes this product from other products on the same plant floor. Use the numeric keypad to type numbers. This is also the main Machine ID for PFCS protocol. This value will also be used to label any files exported via the USB port or Alpha Toolbox. There is a 15 character limit for this parameter.

Keypad Mode

During normal operation, the keypad on the face of the controller can be used to select Jobs (Job Select) or Tasks (Task Select). It can also write a PART ID for storing with rivet pull data or these functions can be disabled. If Job Select, Task Select or PART ID mode is enabled, simply type a number or letter on the keypad when on the run screen to select the Job, Task or Part ID, then press the Enter key.

Touch area for changing

Job, Task, Part ID

Count Mode

⇒ Choose Count Up to indicate the fasteners that have been completed OK. Choose Count Down to indicate the number of fasteners yet to be completed. This affects the count in the box on the run screen.

Stop within Limits

1. Choose "Ok" to mark the rivet pull as Ok, even if the rivet pull is stopped when the achieved Force and Distance are within limits.
2. Choose "Nok" to mark the rivet pull as Nok when the rivet pull is stopped, and the achieved force and distance values are within limits. When event occurs, this option illuminates the red and yellow LEDs on the tool and controller.

Enable Inactivity Timer

1. Enable the toggle for **"Enable Inactivity Timer"** to activate the power saving mode.
2. Disabling the toggle will deactivate the power saving mode.
3. Once the **"Enable Inactivity Timer"** toggle is enabled, a sub-option for setting the **"Inactivity Time"** Will appear below.
4. Input the desired time in minutes from the last operation when the power saving mode will turn off the product screen.
5. Ensure the input time falls within the rage of 1 to 60 minutes, with the default value set to 10 minutes.
6. Touch the **"Save"** button to save the changes.
7. Running a tool or touch a screen, connecting with Alpha Toolbox, changing the state of I/O are all operations that will wake up the controller.
8. Press the start trigger switch on the cordless tool to recover from power saving mode.

5.1.5.2   In-station verification

In station verification is available on tools connected directly over a network created by a STANLEY Controller, such as the SC or QB series controllers. It is not available when connected directly to a plant network without a controller, or over the plant network to a controller.

Never

Disable In-Station Verification

On Wake

When the tool is woken up by pressing the start trigger it looks to see if it is in the In-Station Verification zone. If it is, it will enable the tool until it goes to sleep again or until the battery pack is removed. If it is not in the In-Station Verification zone, then it will remain disabled until it does get into the zone while awake.

On Job Reset

When the tool finishes the batch count of the selected Job it will disable. If a Job is Reset or Selected, then the tool will enable if it passes through the In-Station Verification zone. If it does not pass through the In-Station Verification zone, then it will remain disabled until it does get into the zone after a Job Reset or Selection.

On Time

When the tool moves beyond the In-Station Verification zone a timer will start. If the timer ends before the tool returns to the In-Station Verification zone it will disable until it returns to the zone.

5.1.5.3   Triggers

Setup > Other > Triggers

Pressure switch

1. When **"Pressure switch"** toggle is enabled, requires that both the tool trigger and pressure switch must be activated to start the tool.
2. When disabled only the trigger switch is required to start the tool.
3. Touch the **"Save"** button to save the changes.

5.1.5.4   Lights

Setup > Other > Lights

Lights (1, 2)

Defines whether the lights indicate a Job or Task.

Headlight Timer

Sets the time the tool's headlights remain on, in seconds, after the trigger is pressed.

Enable Tool Light Timer

1. If enabled the timer and the tool's Red, Green and Yellow status lights will illuminate for the period of time specified after a rivet pull and then extinguish.
2. If disabled the time is disabled and the tool's Red, Green and Yellow status lights will remain illuminated after a rivet pull until the tool is started again. They will only extinguish while the tool is running.
- Tool Light Timer
  The time in seconds the Red, Green and Yellow status lights will remain on after a rivet pull.

5.1.5.5   Tones

Setup > Other > Tones

The alarm in the tool handle can emit different tones based on the status of the rivet pull.

1.   Choose an Accept Tone for an OK rivet pull and a Reject Tone for a NOK rivet pull.
2.   Touch the "Save" button to save the changes.

5.1.5.6   Tool

Setup > Other > Tool

Values modified under this tab are saved to the tool not the controller. Users must have TOOL or ADMINISTRATOR access level to modify these values. The "Update tool" exit window appears anytime changes are made in this tab.

PM Limit

When the PM Counter in the tool exceeds this threshold, the preventive maintenance indicator on the front panel illuminates indicating it is time to perform maintenance on the attached tool.

See also
   📄 Triggers [▶ 26]

5.1.5.7   Statistics

Setup > Other > Statistics

Sets values required to calculate the statistics on the stored rivet pull data.

Display

Sets the default screen under statistical analysis in the ANALYZE area. It has three different statistical representation such as Capability, Performance and Cam.

Population

Sets the number of rivet pulls included in statistical analysis.

Subgroup Size

Sets the size of the subgroups for the population.

Alarms

Alarms contains job, task, Cpk < and X trending.

Max Rundowns

The maximum rundowns created.

5.1.5.8   Regional

Setup > Other > Regional

Sets the values for the region of the world in which the product is used.

Date Format

Selects the Date format for the product. Options include M/D/Y, D/M/Y, Y/M/D.

24-Hour

Toggle on for 24 HR format, toggle off for 12 HR format.

Daylight Saving Time

Auto adjusts the clock by the appropriate amount.

Time Zone

Selects the time zone for the product referenced to GMT (Greenwich Mean Time).

Clock

Local Date and Time can be set here. These will be stored with the events and files.

1. Touch the **"Clock"** option to open the **"Clock"** wizard screen.
2. Set the product time and date and tap **"Ok"**.
3. Tap on **"Sync"** button in wizard screen to set the product to the connected computer's date and time.

5.2   Service area

In this area the user can view information about the tool, reset tool counters, adjust tool calibration values and upgrade the firmware in the tool.

Users must have TOOL or ADMINISTRATOR access level to modify parameters.

5.2.1   Tool

Service > Tool

All tool parameters are stored in the tool memory board in the tool's handle. This area reads/writes values to the tool memory board, not to the controller. Updating the tool's configuration and firmware is managed here.

5.2.1.1   About

Service > Tool > About

This tab displays information about the tool currently attached to the controller such as Type, Version, Model, Serial, Max force, Max Speed.

5.2.1.2   Counters

Service > Tool > Counter

Each of the three counter increments at the same time after an OK and NOK rivet pull.

Odometer – Cannot be reset. Indicates the total number of OK and NOK rivet pulls the attached tool has performed over its lifetime.

PM Counter – Causes the preventive maintenance indicator to illuminate (on front panel and tool) when this value exceeds the PM Threshold.

Trip Counter – Counts the number of OK and NOK rivet pulls between resets.

Reset - Resets the PM counter and Trip Counter.

5.2.1.3   Calibration

Service > Tool > Calibration

This area is used to set the calibration value(s) for the attached tool.

Nominal Cal

This is a calculated value based on the Force output of the motor, the gear ratios and efficiencies. This is a reference value only and cannot be modified.

Force Cal

This is the specific Force calibration value for the tool. Enter a new value after performing a lab certification. The Force Cal should not deviate from the Nominal Cal value by more than 20%.

Modified

A value that is changed by the controller to indicate the date and time the tool was last calibrated.

Touch the **"Save"** button to save the changes.

5.2.1.4   Update interactive menu button

Under **Service** Card header -> Select **Tool** Card -> Select **Update** menu button -> Select the software -> Cycle OK -> Reboot the tool

Use this button to change the tool configuration or to update the firmware in the tool.

Change the tool configuration

Download a configuration INI file from the Internet and transfer it to a USB memory stick. Insert the USB memory stick into the USB port. Press the UPDATE interactive menu button to open the file browse window. Select the folder path and press the OK interactive menu button.

Change the tool firmware

Download a software BIN file from the Internet and transfer it to a USB memory stick. Insert the USB memory stick into the USB port. Press the UPDATE interactive menu button to open the file browse window.

Select the desired BIN file and press the OK interactive menu button.

Save the changes.

5.3 Analyze area

Analyze area displays tool diagnostic information such as Rundowns, Logs, Statistics and Sensors. Analyze menu allow user to perform diagnostics on the tool, look at rivet pull traces, perform statistical process control analysis, or to download error log data.

5.3.1 Rundowns

Analyze > Rundowns

The cordless tool stores resultant audit data for 30,000 rivet pulls on a first in/ first out basis.

⇒ Touch the **"Rundowns"** option in Analyze menu to display the rundowns.

✓ A list of rundowns appears on screen.

5.3.1.1 Rundowns menu

Analyze > Rundowns

Rundowns contains all the generated rivet pull data and traces.

Details

1. Touch the **"Details"** button on menu bar.
2. "Details" wizard screen will appear on screen. Displays the information about the selected rivet pull.

Detail	Description
ID	Indicates the unique rundown number for the rivet pull.
Date	The date the rivet pull occurred.
Time	The time the rivet pull occurred.
Job	The Job in which the rivet pull occurred.
Task	The Task in which the rivet pull occurred.
Status	Overall status of the rivet pull.
SOC	Shutoff Code, see relevant section for more information.
Job Count	The working rivet of the Job during this rivet pull.
Task Count	The working rivet of the Task during this rivet pull.
Tool Model	The model number of the tool performing the rivet pull.
Tool Serial	The serial number of the tool performing the rivet pull.
Temperature	The temperature of the tool at the tool shutoff.
Part ID	The value in the Part ID buffer when the rivet pull occurred.
Units	The operating units of Force.
Force	The force value achieved in the current step.
Distance	The distance value achieved in the current step.

Detail	Description
Current	The Current value achieved in the current step.
Set	The sets performed during the rivet pull.

Clear

The Clear button clears all the rundowns.

1. Touch the **"Clear"** button, "Are you Sure?" wizard appears.
2. Tap **"Ok"** to confirm and clear all the rundowns.

Import

The Import button imports the rundowns and their traces from the selected CSV file.

1. Touch the **"Import"** button to import the rundowns from a backup file.
2. Select the desired CSV file from the connected storage medium.
3. Click **"Open"** to import the rundowns.

Export

The export button saves the selected rivet pull rundowns along with traces as backup file in CSV format.

1. Touch the **"Export"** button on menu bar.
2. **"Rundowns"** wizard screen appears with export field having options **"Rundowns"** and **"Step Results"**.
3. Choose **"Rundowns"** and tap **"Ok"** to save the Rundowns CSV file in the connected storage medium.
4. Choose **"Step Results"** and tap **"Ok"** to download the step results.
5. **"Step Results"** wizard screen appears with export field having options **"Population"** and **"All"**.
6. If **"Population"** is selected the appropriate number of traces are exported.
7. If **"All"** is selected, all traces are exported in to CSV file.

5.3.1.2   Analyzing traces

The Trace screen in Alpha Toolbox makes it easy to view, analyze, export for sharing, and import saved trace files.

The selected rivet pull graph (plot) is drawn in the window of the Trace screen. There are two Y axes and one X axis. The values for the axes can be selected. By default, the Y1 axis is Force while the Y2 Axis is None and the X axis is Distance. The value selected on one Y axis is not available to the other. The Distance value is not available if the X axis has Distance selected.

Data for the trace is collected every millisecond from start to finish of the rivet pull. Once the number of data points exceeds ~2000 the graph is automatically scaled between event points for graph and file manageability while ensuring a high resolution around the event points.

The X axis zero point for Time is when the achieved Force reaches or exceeds Task's Threshold Force value. The X axis zero point for Distance is when the achieved Force reaches or exceeds the audit step's Snug Force value. Time and Distance values between start and the zero point are negative.

Slide the bottom scroll button to move the graph to right or left.

Slide the right scroll button to move the graph to up or down.

5.3.1.2.1   Points on graph

Crosshairs and a point information box appear at the point where the mouse hovers over the graph. The X and Y axes information is presented in the point information box. Move the mouse on the X and Y axes and the values change in the point information box.

5.3.1.2.2   Events

The dots on the graphs indicate events that occurred during the rivet pull. Events are things such as Threshold Exceeded, ATC Active and Control Point strategy functions (target achieved). The event is indicated when the mouse hovers over the event point on the graph.

5.3.1.2.3   Overlay

Multiple rivet pull graphs can be layered on top of one another. Touch on the "Rundown" button and then tap on the miniature trace box to lock the trace for viewing. More than one trace may be pinned. Each pinned trace will draw on the right and overlay on top of each other. They will be represented by dotted lines rather than a solid line.

The zero point of the X axis of Time for each graph in overlay view is the programmed Threshold Force. Change the X axis from Time to Distance and the zero-point changes to the programmed Snug Force.

Selected and locked rivet pulls will move down the list as new ones come into the list. Use the scroll bar to view or unlock older traces.

5.3.1.2.4   Trace menu

5.3.1.2.4.1   Details

1. Touch on the **"Details"** button to display information about the selected rivet pull.
2. **"Details"** wizard screen will appear on screen with below data.

Date – The date the rivet pull occurred.

Time – The time the rivet pull occurred.

Job – The Job in which the rivet pull occurred.

Task – The Task in which the rivet pull occurred.

Status – Overall status of the rivet pull.

Job Count – The job used for this rivet pull.

Task Count - The task assigned for this rivet pull.

Tool Model – The model number of the tool performing the rivet pull.

Tool Serial – The serial number of the tool performing the rivet pull.

Tool Temperature – The temperature of the tool at the tool shutoff.

Part Id: The value in the Part ID buffer when the rivet pull.

Set- The sets performed during the rivet pull. The sets strategy type, peak Force, Distance, Current, Distance, and Deviation achieved during the set is displayed. The audit set is indicated by blue font. Smart sets are indicated by name rather than by strategy type.

Click on the set name and the graph on the right will highlight that individual set.

5.3.1.2.4.2   Trace

1. Touch the **"Trace"** button from menu bar.
2. **"Trace"** wizard screen will appear on screen with below points.
3. Toggle on and off these parameters to select additional data to graph about the selected rivet pull.

- Time – The time in milliseconds the point occurred in the rivet pull from start.
- Force - The force achieved at the mouse hover point.
- Distance - The distance achieved at the mouse hover point.
- Speed Command – The commanded speed at the mouse hover point.
- Speed – The actual tool speed achieved at the mouse hover point.
- Bus Voltage – The actual DC Bus voltage achieved at the mouse hover point.
- Current Command – The commanded current at the mouse hover point.
- Current – The actual tool current achieved at the mouse hover point.

5.3.1.2.4.3   Export

Export button saves the selected rivet pull trace file to the connected storage medium.

1. Touch the **"Export"** button.
2. **"Trace"** wizard screen will appear on the screen
3. On the trace wizard screen you will see Export field options labelled "**Pinned**", "**Population**" and "**All**".
4. If **"Pinned"** is selected it exports the pinned trace as CSV file. If **"Population"** is selected the appropriate number of traces are placed into a zip file before exporting. If **"All"** is selected, then all traces are placed into a zip file before exporting.
5. Tap **"Ok"** to confirm.

The exported trace file is a comma separated values file and contains four sections. They are the identifier section, the step values sections, the trace values section, and the events section.

The identifier section repeats some of the same information from the rundown log, so it can be correlated with the trace file.

The step values section provides the Force, Distance and current values for each step in the rivet pull. The rivet pull file has only the audit step for each record. If the values for each individual step are required, this is the place from which to parse the information.

The trace values section provides the captured X and Y axes information to draw the graph.

The events section marks the time at which the events occur, so they can be entered on the graph.

5.3.1.2.4.4   Import

The import button imports the traces from the saved trace file for analysis.

1. Touch the "Import" button to import a saved trace file for analysis
2. Click Open after choosing the file.

3. The file is placed at the top of the rivet pull list and be treated as if it were just received from the controller. It will travel down there list as new rivet pulls are received.

5.3.2   Log

This product stores up to 1000 Events in the log.

The logs display all the events occurred followed by its own respective date and time.

Date:

The date at which the event occurs in the format selected in the Regional tab. The date can be changed by navigating to Setup > Other > Regional > Clock. The date format can be changed by navigating to Setup > Other > Regional > Date Format.

Time:

The time at which the event occurs in the format HH: MM: SS AM/PM. The time and time zone can be changed by navigating to Setup > Other > Regional > Clock.

5.3.2.1   Log menu

Analyze > Logs

Clear

It clears all the logs. Touch the clear interactive button a popup wizard appears "Are you Sure?". Tap "Ok" to clear all the logs.

Import

Touch the **"Import"** button and Click "Open" after selecting the file to import the logs CSV file from the connected storage medium.

Export

Touch the "Export" button to export the log data, and the CSV file will be saved to the connected storage medium.

5.3.3   Statistics

Analyze > Statistics

Wireless STANLEY Controllers maintain both sample and population statistics. Sample statistics are calculated using the last completed subgroup of rivet pulls for a given Task. The subgroup size is set using Subgroup Size. Population statistics are calculated using all of the rivet pulls for a given Task up to the population.

To be included in sample or population statistics, a rundown must exceed the Task's Threshold Force and Statistical Force and the rivet pull must Not be marked as a STOP or ABORT shutoff code.

The statistics are calculated for Force and Distance. Data is filtered by Task. Press the **"Job1.1"** interactive menu button and choose the Job and Task under analysis.

Values are recalculated each time a tab is selected.

5.3.3.1   Results

Analyze > Statistics > Results

This section shows a summary of the rivet pull data results stored in the tool.

n – Shows the number of rundowns included in the population size.

n OK – Identifies the number of OK rundowns.

n NoK – Identifies the number of NoK rundowns.

n ˆ – Displays the number of rivet pulls that exceeded the high limit.

n ˇ – Displays the number of rivet pulls that did not achieve the low limit.

n Abr – Displays the number of rivet pulls that were aborted.

n Stp – Shows the number of rivet pulls that were stopped.

R – Shows the subgroup range (highest minus lowest value).

ˆ – Identifies the highest value of all the rivet pulls in the population

ˇ – Identifies the lowest value of all the rivet pulls in the population

The Display parameter under Setup > Other > Statistics tab determines which of the following sections are displayed after the Results.

5.3.3.2   Capability

This section shows the capability statistics for the selected Job and Task.

Cp – Displays the capability index for a stable process.

Cpk – Displays the capability index for a stable process, typically defined as the minimum of CPU or CPL.

CR – Displays the capability ratio for a stable process and is simply the reciprocal of Cp.

CPL – Shows the lower capability index.

CPU – Shows the upper capability index.

R bar – Identifies the average range of a constant size subgroup series.

3 sigma – Displays the sample estimated Standard Deviation times three.

X bar – Displays the value's average (mean).

5.3.4   Sensors

Analyze > Sensor

Sensors

The Sensors tab displays the value of various tool sensors for troubleshooting purposes.

When Heatsink temperature value exceeds the limit asserts the Heatsink Temperature Fault.

When Motor temperature value exceeds the limit asserts the Temperature Fault.

Triggers

Trigger display the status of Pressure switch.

Force

The force displays the current load cell values.

Distance

The Distance display the current value of tool position and motor speed.

6 Troubleshooting

6.1 Fault guide

Use the following Fault Code guides to identify, isolate, and diagnose both mechanical and software issues.

Fault	Possible cause	Probable solution	Major consideration that led to solution	To Clear/Reset from Fault Condition
Battery Pack Fault	Battery temperature too hot/cold, or Bluetooth battery disabled	Replace the battery and check the heating issue	Rest the tool to cold down the battery if no other battery replacement	Buy new battery if necessary. Contact SEF
Low Battery	The Battery voltage is too low to complete the next rundown	Re-charge the battery or change the battery	Battery voltage down too fast or battery cannot re-charge	Buy new battery or charger. Contact SEF
Position Feedback Fault	Faulty motor position circuit	Check internal hardware issues		Contact application engineer
Transducer Fault	Load-cell circuit not capable of measuring Max rating	Replace the Load Cell Sub-assembly	Transducer/Load cell or wiring or PCB board defect	Send to certified service center for service and replacement
	Force Cal set to a non-standard value (i.e. greater than 20% variance from Nominal Cal)	Set Force Cal. to the specific torque calibration value for the tool		
	Wrong tool parameters in tool memory board	Download correct tool INI file to tool		Contact application engineer
Transducer Current Fault	Faulty Load-cell circuit	Replace the Load Cell Sub-assembly	Transducer/Load cell or wiring or PCB board defect	Send to certified service center for service and replacement
Transducer Zero Fault	Load-cell zero offset out of spec	Replace the Load Cell Sub-assembly	Transducer/Load cell or wiring or PCB board defect	Send to certified service center for service and replacement
Unsupported Tool	Controller does not support connected tool	Use supported controller		Change controller to a type of the tool can run. Contact application engineer
	Wrong tool.ini file loaded in tool	Download correct tool INI file to tool		Contact application engineer
Servo Connection Fault	Servo not detected	Update the right firmware		Contact application engineer
Heatsink Temperature	Heatsink Temperature too hot	Rest tool to decrease heatsink temperature	Consider one time operation speed and time	Rest tool to decrease heatsink temperature
Voltage Fault	Buss voltage too high/low	Check internal hardware issues		Contact application engineer
Tool Jammed	Mechanical fault or electronic fault	Check for damage mechanical part or wrong mechanical setup	Mechanical part wear or damage that it cannot working as usual anymore	Contact application engineer

Fault	Possible cause	Probable solution	Major consideration that led to solution	To Clear/Reset from Fault Condition
		Check for damage electronic module	Electronic part damage that it cannot working as usual anymore	Contact application engineer

Fault	Possible cause	Probable solution	Major consideration that led to solution	To Clear/Reset from Fault Condition

7 Appendix

This section provides additional information with setting up, programming, data interpretation, and using a BRF30PT-20 smart rivet tool.

The easiest way to determine the job parameter values is to first create a default job, that means leave all the default parameters in the setup wizard, second pull a rivet on the production application, finally use the trace to determine each program parameter value. Follow the below hints on what to look for in the trace data.

7.1 Rivet seek setup and helpful hints

Rivet seek is the first step of the BRF30PB-20 smart rivet tool program setup. Rivet seek detects if a rivet is present and prevents jaw slippage by requiring a programmable force to be exceeded prior to the tool moving onto the next step.

Rivet seek can also reduce wear on the jaws, if setup correctly, by slowly moving the jaws until they are clamped on the rivet mandrel before increasing the speed of the tool to finish the rivet pull process. By default, the rivet seek step speed is set to 15 mm/sec and the final step, DM/FM, is set to a speed of 47 mm/sec. These default parameters give an optimized speed and jaw life.

Below are some helpful hints on some of the other setup parameters that can be optimized based on specific applications.

7.1.1 Distance target parameter

Distance target cannot be set to anything less than 6mm as it takes at least this distance for the jaws to clamp the rivet mandrel.

The force the BRF30PB-20 tool measures is 0kN until the jaws become clamped on the rivet mandrel.

7.1.2 Grip force parameter

Grip Force Parameter should be set lower than the required force to pull the mandrel into the rivet body, typically depicted by the first spike in force on the trace.

If Grip Force is set to zero, the Slow Seek step will be ignored. It is recommended to not set the Grip Force to zero.

Grip force should also be set below or equal to the Snug Force parameter in the DM/FM step.

7.2 DM/FM setup and helpful hints

Distance Monitor / Force Monitor is a monitoring step only, as long as the BRF30PB-20 tool start trigger is held until the program stops the tool, the rivet tool will break the rivet. There is no configuration that will shut off the tool for high/low distance, or high/low force. The high and low parameters will only make a judgment of OK or NoK after the tool completes the cycle. Follow the below hints on what to look for in the trace data when setting up the DM/FM step.

7.2.1 Snug force parameter

Snug Force parameter should be set higher than or equal to grip force. If Snug Force is set lower than Grip Force, the start distance point, 0mm, will be set at Grip Force instead of the intended Snug Force value.

Snug Force should be set at roughly 70% to 80%, and NEVER above the required force to pull the mandrel into the rivet body, typically depicted by the first spike in force on the trace.

7.2.2 Distance past break parameter

This value can be setup to pull a rivet mandrel a certain distance after the mandrel and body separate. This value should not be set greater than the max travel of the tool minus the required distance to separate the rivet mandrel and body, including the distance to clamp the jaws onto the mandrel. If this value is set too high, an "MT" Max- travel shutoff code will be displayed.

Notes

BRF30PB-20 Smart Rivet Tool

STANLEY
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Product Portfolios

AVDEL.	INTEGRA	NELSON	OPTIA	POP	STANLEY Assembly Technologies	TUCKER
Structural Blind Fasteners	Plastic Components	Stud Welding	Threaded Fasteners	Non-structural Blind Fasteners	Specialist Assembly	Automated Fastener Systems

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