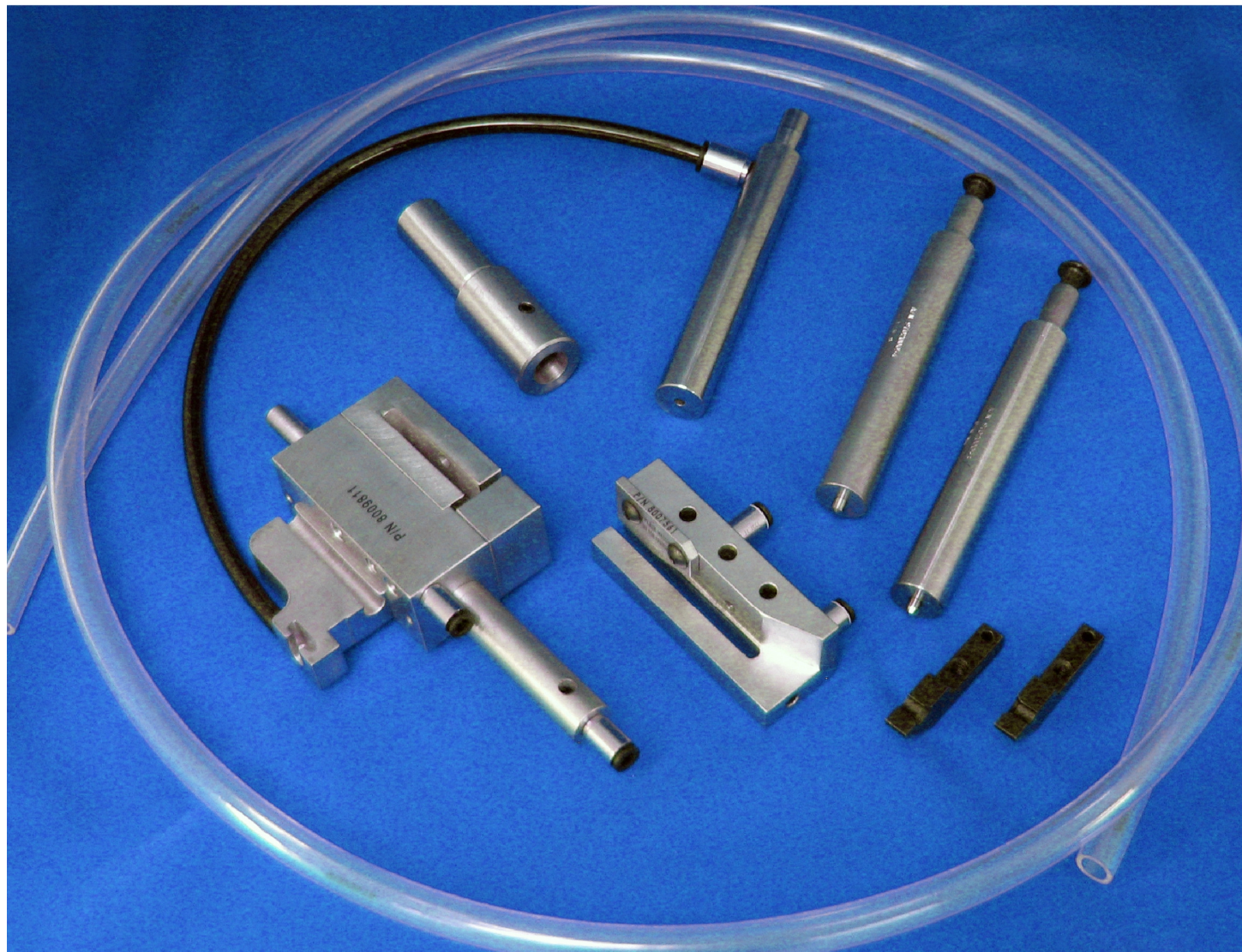


AUTOMATIC TOOLING GUIDE

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Automatic Tooling Guide

For Series 2000®, Series 3000®, and Series 3000MB®

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How To Select Automatic Tooling

Fastener Specifications

Type Code – Look up the type of fastener in the Table of Contents. This will direct you to a section of the tooling guide. Be sure that the exact type code is listed. Do not assume that if the type is close that the tooling is the same. For instance, CLA tooling is different from S and CLS tooling because of slight outside dimensional differences between the fasteners.

Material – Typically, the fastener material is specified in the type code, so if the type code is listed then the material is also covered. However, look for special package variations and notes for certain material type codes. For instance, SOS fasteners run through standard SO fastener tooling but will wear the tooling faster because of the difference in material hardness and machine finish of the fasteners.

Thread Code – Look up the specific thread code on each chart. Be sure the exact thread code is listed. Look for special notes for certain thread codes. Some tooling will run multiple thread codes either as is or by exchanging one component such as a punch. For instance the top feed tooling that runs S-440/M3 fasteners will run the S-256, M2, 348 and M2.5 fasteners with a different punch.

Dash Length – Look up the specific dash length on each chart also. Be sure the exact dash length is within the range of the tooling you select. Longer and shorter dash length fasteners may present unique requirements for tooling. For some fasteners even mid-range dash lengths may present unique requirements. For instance, certain mid-range SO fasteners require special escapements and a different tooling package.

Y-Numbers (Specials) – Penn Engineering and Manufacturing Y-numbers or Special design fasteners are often based on standard fasteners with some variation. Variations may be insignificant enough, that standard tooling will feed and install Y-number parts. Consult the factory for a review and quote for Y-number tooling.

Non-PEM Parts – PennEngineering® does offer tooling for Non-PEM® and non-self-clinching fasteners. However, PennEngineering® offers no assurances regarding the performance of provided tooling to feed fasteners parts, outside of provided samples. Production parts not manufactured to PennEngineering® quality standards may affect tooling performance.

How To Select Automatic Tooling

Tooling Types

Top Feed – This is the most common type of tooling available for nuts, studs and standoffs and other types of fasteners. Fasteners are fed to the Top Feed Hanger Assembly. The Top Feed Hanger Assembly feeds the fastener to the punch. The punch brings the fastener down to the workpiece located on the anvil. The operator typically has a clear line of site to locate the workpiece hole and confirm the installation.

Bottom Feed – This type of tooling is available only for nut type of fasteners. The fasteners are fed to a Bottom Feed Module, mounted on the anvil holder. A different module is provided with each tooling package. The Bottom Feed Module presents the fastener, install side up. The operator places the workpiece hole over the shank of the fastener and the punch comes down to perform the installation. This type of tooling is used for workpieces with features that would block a Top Feed Punch from bringing a fastener to the hole, such as a double bend.

Double Stroke – This type of tooling is available only for nut type of fasteners. The fasteners are fed to the Top Feed Hanger System and picked-up by the punch like the Top Feed type of system, except that the installation side of the fastener is facing up, not down. The press moves the punch with the fastener down to the anvil and drops the fastener onto the anvil, shank up. The operator places the workpiece hole over the shank of the fastener and the punch comes back down a second time to perform the installation. This type of tooling is used for workpieces with features that would block a Top Feed Punch and interfere with a Bottom Feed Module or the lower part of the press frame. This type of tooling is uncommon and only used for very specific workpiece requirements.



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How To Select Automatic Tooling

Special Workpiece Requirements

Material Thickness – Check material thickness, for some fasteners, thin material can be used, if a special anvil and/or punch is used. For instance, small FH stud fasteners can be installed into sheet thickness down to .040”(1mm). But in the range of .040”(1mm) to less than .060(1.5mm) a special countersunk anvil is required. Some thinner material may require oversized punches and anvils to prevent workpiece distortion during installation. For automatic installation, it is against safety standards to setup on material thickness and fastener clinch height totaling greater than .25” (6mm). With typical fastener clinch heights, material with thickness greater than .20” (5mm) should be done with fixtures and a hands clear operation.

Bends – To accommodate bends in the workpieces, anvils and punches may be shaped to avoid close hole to edge distances. Tool strength safety factors must be maintained. PennEngineering® custom tools are engineered with sufficient safety factors to insure safe operation.

Double Bends – To accommodate double bends in workpieces, anvils may be lengthened or shortened or cut-away to account for second bends. Tool strength safety factors must be maintained. PennEngineering® custom tools are engineered with sufficient safety factors to insure safe operation.

Deep Flanges – To accommodate deep flanges or walls, punches and the Top Feed Hanger System may be extended.



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Top and Bottom Feed Nut Tooling for S & CLS

S, CLS PEM® Self-Clinching Nuts Unified and Metric Combined

Size	-0,-1,-2	Top Feed	Bottom Feed	Color
256/M2		8000751*	8000571	Bright Yellow
348/M2.5		8000751**	8000571	Bright Yellow
440/M3		8000751	8000571	Bright Yellow
440/M3 -3 only		[8013850]	NA	Bright Yellow
632/M3.5		8000752	8000572	Bright Red
832/M4		8000753	8000573	Orange
832/M4 -3 only		[8017251]	NA	Orange
024/032/M5		8000754	8000574	Metallic Brown
032/M5 -3 only		[8017252]	NA	Metallic Brown
1224 -2 only		[8015672]	NA	Black
0420/M6		8000755	8000575	Blue
0518/M8 -1, -2 only		8001982	[8002243]***	Metallic Blue
0616 -1, -2 only		[8006395]	NA	Copper
M10 -1, -2 only		[8005883]	NA	Copper

* For 256/M2 fasteners, purchase additional Pin Punch, Part No. 8003312, Top Feed Only

** For 348/M2.5 fasteners, purchase additional Pin Punch Part No. 8003273, Top Feed Only

***Requires special software. Please contact factory for instructions.

S, CLS PEM® Self-Clinching Nuts Unified Sizes Only

Size	-0,-1,-2	Top Feed	Bottom Feed	Color
0420 -0,-1,-2 only		8001751	8001761	Blue
0420 -3 only		8004482	NA	Blue
0616 -1, -2 only		[8006395]	NA	Copper

S, CLS PEM® Self-Clinching Nuts Metric Sizes Only

Size	-0,-1,-2	Top Feed	Bottom Feed	Color
M6		8001715	8001727	Blue
M10 -1, -2 only (For Models 2000A thru 2008A)		[8005883]	NA	Copper
M10 -1, -2 only (For Model 2009A)		[8012472]	NA	Copper

NOTE: SS and CLSS fasteners feed in S and CLS fastener tooling. For CLA fasteners see next page

[] These Tooling Packages are non-standard, consult factory for availability.



Automatic Tooling Guide

For Series 2000®, Series 3000®, and Series 3000MB®

Double Stroke Nut Anvils for S, CLS

S, CLS PEM® Self-Clinching Nuts Unified and Metric Combined

Size	-0,-1,-2	DS Anvil – 4” Long	DS Anvil – 3” Long
440/M3		975200148	975200148300
632/M3.5		975200149	975200149300
832/M4		975200150	975200150300
024/032/M5		975200151	975200151300
0420/M6		975200153	975200153300

NOTE: For S,SS, CLS CLSS ONLY Double Stroke Automatic Feed Tooling use standard S & CLS Top Feed tooling package with special anvil listed above. When installing the Top Feed tooling the feed tube is inverted and the half-twist removed. This feeds the nuts into the jaws shank-up for Double Stroke.

Top Feed Nut Tooling for CLA & SP

CLA PEM® Aluminum Self-Clinching Nuts Unified and Metric Sizes

Size	-1,-2	Top Feed	Color
256/M2		[8005909]	Black
M2.5		[8005910]	Black
440		[8006861]	Bright Yellow
M3		[8005859]	Bright Yellow
632/M3.5-1		[8021594]	Bright Red
632/M3.5-2		[8005911]	Bright Red
832/M4		[8005860]	Orange
032/024/M5		[8005861]	Metallic Brown
0420/M6		[8005912]	Blue

NOTE: CLA Automatic Tooling Packages are different from S, CLS packages because of the different outside dimensions of the fasteners.

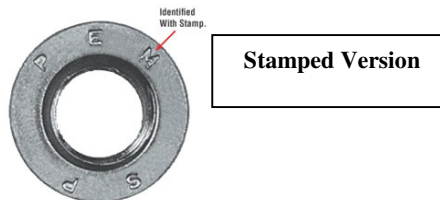
[] These Tooling Packages are non-standard, consult factory for availability

SP PEM 300® Self-Clinching Nuts for SS

Unified and Metric Combined

Size	-0,-1,-2	Top Feed (Stamped Version)	Color
440/M3		8012966	Black
632/M3.5		8012967	Black
832/M4		8012968	Black
032/M5		8012969	Black
0420/M6		8012970	Blue

NOTE: SP Automatic Tooling Packages are different from S, CLS packages because they contain special counter-bored punches for maximum clinch performance into hard material.



Top Feed Nut Tooling for SMPS and F

SMPS PEM® Miniature Self-Clinching Nuts

Unified and Metric Sizes

Size	Top Feed	Color
256	[8004307]	Black
440	[8004308]	Black
632	[8004399]	Black
M2.5	[8004365]	Black
M3	[8004309]	Black
M3.5	[8004401]	Black

F PEM® Self-Clinching Flush Nuts

Unified and Metric Combined

Size	-1,-2	Top Feed (Models 2000A – 2008A)	Top Feed (Model 2009)	Color
440/M3		8001098	8012540	Ocean Blue
632/M3.5		8001099	8012541	Bright Red
832/M4		8005307	8012542	Teal Pearl
032/M5		[8005550]	[8012543]	Buckskin
0420-3		Contact Factory	[8019538]	Black



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Top Feed Tooling for B, BS

B,BS PEM® Self-Clinching Blind Fasteners Unified and Metric Combined

Size	-1,-2	Top Feed	Color
440/M3		[8005322]	Ocean Blue
632/M3.5		[8005320]	Bright Red
832/M4		[8005321]	Teal Pearl
032/M5		[8005234]	Buckskin
0420/M6		[8006075]	Burgundy

NOTE: Software Requirement – Consult Factory whether a software upgrade is necessary for your press to run B, BS tooling.

[] These Tooling Packages are non-standard, consult factory for availability

Top Feed Tooling for AC Nuts

AC PEM® Self-Clinching Floating Fasteners Metric

Size	Top Feed	Color
M3 -2	[8012056]	Black
M4 -2	[8009979]	Black



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Top Feed Stud Tooling for FH & FHS

FH, FHS PEM® Self-Clinching Flush Studs Unified and Metric Combined

Size	Top Feed Vacuum	Color
256 -8 to -12	8006770	Red Metallic
M2.5 -12 to -18	8006775	Red Metallic
440 -4 to -16/M3 -6 to -25	8006765	Green
632 -5 to -24/M3.5 -8 to -30	8006766	Gray
**832 -4 to -24/M4 -8 to -35	8006767	Beige
**032 -6 to -24/M5 -8 to -35	8006768 *	Metallic Light Blue
***0420 -6 to -24	8006774 *♦	White
***M6 -10 to -35	8006779 *♦	White
0518 -8 to -24/M8 -12 to -35	8002211 *∇	Violet

♦ To Use Tooling Package 8006774 to feed M6 fasteners, must purchase Anvil Assembly 970200058 & Jaw Assembly 8010200

♦ To Use Tooling Package 8006779 to feed 0420 fasteners, must purchase Anvil Assembly 970200059 & Jaw Assembly 8009408

NOTE: SEE FOLLOWING PAGES FOR OTHER DASH LENGTHS, THIN SHEET APPLICATIONS AND 400 SERIES STAINLESS FASTENERS

* These Tooling Packages require a 25 mm diameter Stud-In-Tube Sensor P/N 8002494 installed on the press, to accommodate the larger diameter feed tubing.

◇ Injector Tooling Packages require a non-rotating safety assembly installed on the press for safe operation. Presses with Serial Numbers 2000-001 to 2003/13-134 may require a new non-rotating safety assembly, P/N 8000373, Revision C or higher of the threaded-mount style safety assembly.

∇ These Tooling Packages require higher flow tooling valves. Presses with Serial Numbers 2000-001 to 2000-045 require upgraded tooling valves for larger/heavier fasteners. Upgrade Kit P/N 8002958.

[] These Tooling Packages are non-standard, consult factory for availability

**These Tooling Packages were updated in January, 2005 to feed a greater range of fastener dash lengths. NOTE: For use on Serial Numbers 2009/2019-1093 & up and using the unified -24 or metric -35 lengths, must purchase sweeper assembly p/n 8002937 in addition to the tooling package.

***These Tooling Packages were updated in August, 2005 to feed a greater range of fastener dash lengths. NOTE: For use on Serial Numbers 2009/2019-1093 & up and using the unified -24 or metric -35 lengths, must purchase sweeper assembly p/n 8002937 in addition to the tooling package.

Check Shuttle Assembly against chart below to verify that it is Version 2 assembly that can feed this range. Check Tooling Package box for reference label.

Shuttle Assembly Chart

Fastener Size	Shuttle Assembly Version 1	Shuttle Assembly Version 2
440/M3	8000432	8010308
832/M4	8000434	8009809
032/M5	8000136	8009861
0420/M6	8000435	8009980



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Top Feed Stud Tooling for FH & FHS (Other Dash Lengths)

FH, FHS PEM® Self-Clinching Flush Studs Unified and Metric Combined

Size	Shorter From		Longer up to		Top Feed Vacuum	Color
	Unified	Metric	Unified	Metric		
M2.5	N/A	-6 to 10	N/A	N/A	[8006458]	Red Metallic
0420/M6	N/A	N/A	-24	-35	[8006463*]	White

[] These Tooling Packages are non-standard at the time this guide was released, consult factory for availability or orders before release.

FH PEM® Flush Head Stud

Size	Top Feed	Color
540 -8	[8013841]	Black
M2 -10	[8013820]	Black

[] These Tooling Packages are non-standard, consult factory for availability.

Top Feed Stud Tooling for FHL & TPS

FHL PEM® Low Displacement Head Studs Metric Sizes Only

Size	Top Feed Vacuum	Color
632 -6 to -24	[8023910]	Dove Grey
M2.5 -12 to -18	8006780	Red Metallic
M3 -6 to -25	8001992	Green
M4 -6 to -25	8001993	Beige
M5 -10 to -35	8009960	Silver Blue Metallic

TPS, TP4 PEM® Self-Clinching Pilot Pins Unified and Metric Sizes

Size	Top Feed Vacuum	Color
125 -6 to -12	[8005607]	Gray
187 -8 to -16	[8008490]	Metallic Light Blue
250 -8 to -16	[8004287*]	White
280 -8 to -16	[8004163*]	Violet
3MM -8 to -16	[8015654]	Green
4MM -8 to -16	[8005608]	Beige
5MM -10 to -20	[8005609*]	Metallic Light Blue
6MM -12 to -20	[8004594*]	White

* These Tooling Packages require a 25 mm diameter Stud-In-Tube Sensor P/N 8002494 installed on the press, to accommodate the larger diameter feed tubing.

[] These Tooling Packages are non-standard, consult factory for availability.



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Special FH-Type Automatic Anvils

FH, FHS PEM® Self-Clinching Flush Studs – Thin Sheet Automatic Anvils Unified and Metric Sizes

Size	4" Anvil Assy	Sheet Thickness
256 -8 to -12	8005774	less than .060"/1.51mm
440 -4 to -16	8005776	less than .060"/1.51mm
632 -8 to -20	8005778 *	less than .060"/1.51mm
832 -6 to -24	8005779	less than .060"/1.51mm
032 -6 to -20	8005780	less than .060"/1.51mm
0420 -6 to -24	8005782	less than .093/2.40mm
M2.5 -12 to -18	8005775	less than .060"/1.51mm
M3 -6 to -25	8005777	less than .060"/1.51mm
M3.5 -12 to -30	8005778 *	less than .060"/1.51mm
M4 -8 to -35	8005686	less than .060"/1.51mm
M5 -8 to -35	8005472	less than .060"/1.51mm
M6 -10 to -35	8005690	less than .093/2.40mm

*FH-632/M3.5 Thin Sheet Applications use the same anvil assembly 8005778.

NOTE: For FH Automatic Feed Thin Sheet Applications use standard FH & FHS tooling package with countersunk anvils listed above.

FH4 PEM® Self-Clinching Studs for Stainless Steel

Unified and Metric Sizes	4" Anvil Assy
440 -4 to -16	8003150
632 -8 to -20	8003151*
832 -8 to -24	8003152
024/032 -6 to -24	8003153
0420 -6 to -24	8003154
M3 -6 to -25	8003155
M3.5 -12 to -30	8003151*
M4 -8 to -35	8003156
M5 -8 to -35	8003157
M6 -10 to -35	8003158

*FH4-632/M3.5 use the same anvil assembly 8003151.

NOTE: For FH4 Automatic Feed Tooling use standard FH & FHS tooling package with special raised ring anvils listed above.



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Top Feed Stud Tooling for HFH & HFHS

HFH, HFHS PEM® High Strength Studs Unified and Metric Combined

Size	Top Feed Vacuum	Color
032 -8 to -20/M5 -15 to -30	8006783 *	Metallic Light Blue
0420 -8 to -20/M6 -15 to -30	8006784 *	White
0518 -8 to -20/M8 -15 to -30	8002912 *∇	Violet

HFH, HFHS PEM® High Strength Studs Metric Sizes Only

Size	Top Feed Vacuum	Color
M10 -20 to -30	[8006159]**	Aruba Blue
(For Models 2000A thru 2008A)		
M10 -20 to -30	[8012425]**	Aruba Blue
(For Model 2009A)		

** These Tooling Packages require a 45mm diameter Stud-In-Tube Sensor P/N 8004547, including a mounting bracket.

HFE PEM® High Strength Studs Metric Sizes Only

Size	Top Feed Vacuum	Color
M5 -12 to -30	[8006197]*	Metallic Light Blue
M6 -12 to -20	[8006198]*	White
M8 -12 to -20	[8006913] *∇	Violet

* These Tooling Packages require a 25 mm diameter Stud-In-Tube Sensor P/N 8002494 installed on the press, to accommodate the larger diameter feed tubing.

∇ These Tooling Packages require higher flow tooling valves. Presses with Serial Numbers 2000-001 to 2000-045 require upgraded tooling valves for larger/heavier fasteners. Upgrade Kit P/N 8002958.

TFH, TFHS PEM® Self-Clinching Flush Studs

Size	Top Feed Vacuum	Color
M4 -8 to -35	[8021768]	Sandstone

[] These Tooling Packages are non-standard, consult factory for availability



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Top Feed Panel Fastener Tooling for PF11

PF11 PEM® Panel Fastener Assembly

Unified and Metric Combined

Size	-0,-1, -2	Top Feed Vacuum	Color
440/M3		[8003954] *	Aqua Blue
632/M3.5		[8003899] *	Smoke Metallic
832/032/M4/M5		[8003909] *	Fawn
0420/M6		[8003929] *	White Pearl

* These Tooling Packages require a 25 mm diameter Stud-In-Tube Sensor P/N 8002494 installed on the press, to accommodate the larger diameter feed tubing.

[] These Tooling Packages are non-standard, consult factory for availability

Note: For Existing Presses ONLY, To run PF11 Tooling on:

Series 2000 Presses with Serial Numbers beginning with 2001-046 to 2006/16-478, a Large Head Fastener upgrade kit will need to be purchased and installed on the press if it has not been previously. The Upgrade Kit is P/N 8004179.

Series 2000 Presses with Omron PLC's, (Serial Numbers 2001-046 to 2005/15-328), the press must be running Ver 15 Software or higher. Contact service department to arrange an upgrade.

Note: Series 2001-2006 presses Ver 15 Software use Custom 1 Tooling Selection button.

Note: Series 2000 Presses with Allen Bradley PLC's (Serial Numbers 2000-001 to 2000-045) contact engineering department.



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Top Feed Right Angle Fastener Tooling for RA

RAA PEM® Right Angle Fastener Aluminum Unified and Metric Sizes

Size	Top Feed Vacuum	Color
440-9-6	[8006506]	
440-9-8	[8006507]	
632-10-8	[8006508]	
632-10-10	[8006509]	
832-12-9	[8006510]	
832-12-12	[8006511]	
M3-7-4	[8006512]	
M3-7-6	[8006513]	
M4-9-7	[8006514]	
M4-9-9	[8006515]	

RAS PEM® Right Angle Fastener Steel Unified and Metric Sizes

Size	Top Feed Vacuum	Color
440-9-4	[8006516]	
440-9-6	[8006517]	
440-9-8	[8006518]	
632-10-4	[8006519]	
632-10-8	[8006520]	
632-10-10	[8006521]	
832-12-6	[8006522]	
832-12-9	[8006523]	
832-12-12	[8006524]	
M3-7-3	[8006525]	
M3-7-4	[8006526]	
M3-7-6	[8006527]	
M4-9-4	[8006528]	
M4-9-7	[8006529]	
M4-9-9	[8006530]	

Note: R'angle tooling is equipped with a special escapement.

Note: For Existing Presses ONLY, To run R'angle Tooling on:

Series 2000 Presses with Serial Numbers beginning with 2000-001 to 2006/16-478, a Universal Tooling Adapter, P/N 8004480 or Universal Escapement Adapter P/N 8002501 will need to be purchased and installed on the press if it has not been previously. The ramp escapements included in tooling packages contain a longer clamp assembly (P/N 8006359) for use with the universal adapter.

IMPORTANT: Because of variations between older vibratory bowls, the dimensions of existing bowls must be checked against drawing A-8005927 (See Page 16) for compatibility with this tooling. [] These Tooling Packages are non-standard, consult factory for availability



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Top Feed Tooling for SO, SOS, SOA

SO, SOS, SOA PEM® Self Clinching Standoffs – Short Dash Lengths

Size – Unified and Metric Combined	Top Feed Pin	Top Feed Pin	Color
440-3 to –4 /M3-3	8000818 (Models 2000-2008)	8021015 (Models 2009 & 3000)	Yellow
632-3 to –4 /M3.5-3	8000819	N/A	Teal
832/032-3 to –4 /M4/M5-3	8000820	N/A	Dark Gray

Note: Above tooling is nut-style with a nutgate.

SO, SOS, SOA PEM® Self Clinching Standoffs – Middle Dash Lengths

Size – Unified and Metric Combined	Top Feed Pin	Color
440-5 /M3-4	8001426	Gold Metallic
632-5 to –6 /M3.5-4 to –5	8002102	Lavender
832/032-5 to –8 /M4/M5-4 to –6	8002574	Black Metallic

Note: Above tooling is nut-style with a ramp escapement.

Note: For Existing Presses ONLY, To run SO Middle Dash Length Tooling on:

Series 2000 Presses with Serial Numbers beginning with 2000-001 to 2006/16-478, a Universal Tooling Adapter, P/N 8004480 or Universal Escapement Adapter P/N 8002501 will need to be purchased and installed on the press if it has not been previously. The ramp escapements included in tooling packages contain a longer clamp assembly (P/N 8006359) for use with the universal adapter.

IMPORTANT: Because of variations between vibratory bowls, the dimensions of existing bowls must be checked against drawing A-8005927 (Next Page) for compatibility with this tooling.

SO, SOS, SOA PEM® Self Clinching Standoffs – Longer Dash Lengths

Size – Unified and Metric Combined	Top Feed Pin	Color
440-8 to 24 /M3-6 to 18	8001655	Magenta
6440-10 to –34 /3.5M3-8 to –18	8006781 *	Aqua Green
632-8 to –34 /M3.5-8 to –25	8006782 *	Aqua Green
832/032-10 to 34 /M4/M5-8 to –25	8001656 *	Bronze Metallic

Note: Above tooling is stud-style with pin punch pick-up.

* These Tooling Packages require a 25 mm diameter Stud-In-Tube Sensor P/N 8002494 installed on the press, to accommodate the larger diameter feed tubing.

Note: For Existing Presses ONLY, To Run SO Longer Dash Lengths on:

Series 2000 Presses with Omron PLC's, (Serial Numbers 2001-046 to 2002/12-114), the press must be running Ver 4 Software or higher. Contact service department to arrange an upgrade.

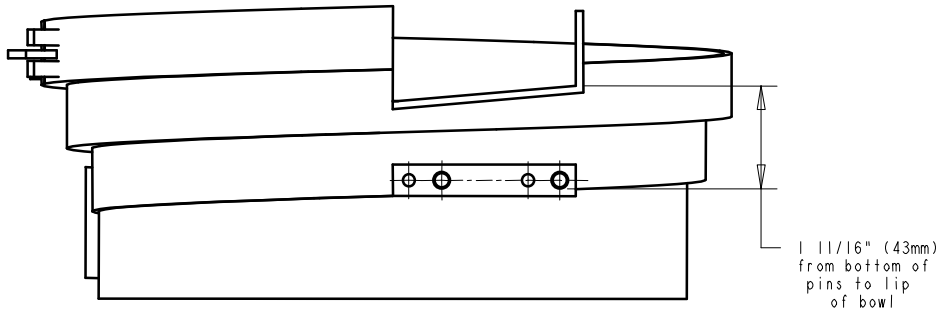
Series 2000 Presses with Allen Bradley PLC's (Serial Numbers 2000-001 to 2000-045) contact engineering department.

Note: For 6440 and 3.5M3 thread codes use 632/M3.5 tooling set with 440/M3 Pin Punch P/N 8006699.

For 8632 thread codes use 832/M4 tooling set with 632/M3.5 Pin Punch P/N 8006130.

Note: SOS fasteners may wear feed tubing faster due to sharp machined edges of fastener.

REFERENCE DRAWING FOR MAX BOWL LIP HEIGHT



Bowl Dimension Check for use with special ramp escapements (Such as for middle dash length SO's and some R'Angle tooling packages).

Top Feed Tooling for BSO, BSOS, BSOA

BSO, BSOS, BSOA PEM® Self Clinching Standoffs – Longer Dash Lengths

Size – Unified and Metric Combined	Top Feed Vacuum	Color
440-10 to -30 /M3-8 to -22	8005786	Magenta
632-10 to -34 /M3.5-8 to -18	8005787 *	Aqua Green
832/032-10 to -34 /M4/M5-8 to -25	8005788 *	Bronze Metallic

Note: BSO Automatic Tooling Packages are different from SO-packages because they contain a vacuum punch instead of a pin punch.

*These Tooling Packages require a 25 mm diameter Stud-In-Tube Sensor P/N 8002494 installed on the press, to accommodate the larger diameter feed tubing.

Note: For 6440 and 3.5M3 thread codes use 632/M3.5 tooling set.
For 8632 thread codes use 832/M4 tooling set.

Note: SOS fasteners may wear feed tubing faster due to sharp machined edges of fastener.



Automatic Tooling Guide

For Series 2000®, Series 3000®, and Series 3000MB®

Top Feed Tooling for Unified TSO, TSOS, TSOA

TSO, TSOS, TSOA PEM® Self Clinching Standoffs for Thin Sheets

Size – Unified	Basic SO Package	Add Punch	Chamfered Anvil for Sheet .025” to .032” / 0.63 to 0.81 mm Thick
256-090 to 125	8000818	8003312 (pin)	8005644
256-250 to 375	8001655 +		
256-437 to 750	8001655		
6256-090 to 125	8000819	8003312 (pin)	8005645
6256-187	8002102		
6256-250 to 375	8006782 *+		
6256-437 to 750	8006782 *	8000668 (vac)	
440-090 to 125	8000818	Included w/ package	8005644
440-250 to 437	8001655 +		
440-500 to 750	8001655		
6440-090 to 125	8000819	8006699 (pin)	8005645
6440-187	8002102		
6440-250 to 437	8006781 *+		
6440-500 to 750	8006782 *	8000668 (vac)	
632-090 to 125	8000819	Included w/ package	8005645
632-187	8002102		
632-250 to 500	8006782 *+		
632-562 to 750	8006782 *	8000668 (vac)	

* These Tooling Packages require a 25 mm diameter Stud-In-Tube Sensor P/N 8002494 installed on the press, to accommodate the larger diameter feed tubing.

+ These Tooling Packages are run in a stud tooling system with a pin punch pick-up. (See note below)

Note: For Existing Presses ONLY, To Run TSO marked with + on:

Series 2000 Presses with Omron PLC’s, (Serial Numbers 2001-046 to 2002/12-114), the press must be running Ver 4 Software or higher. Contact service department to arrange an upgrade.

Series 2000 Presses with Allen Bradley PLC’s (Serial Numbers 2000-001 to 2000-045) contact engineering department.



Automatic Tooling Guide

For Series 2000®, Series 3000®, and Series 3000MB®

Top Feed Tooling for Metric TSO, TSOS, TSOA

TSO, TSOS, TSOA PEM® Self Clinching Standoffs for Thin Sheets

Size – Metric	Basic SO Package	Add Punch	Chamfered Anvil for Sheet .025” to .032” / 0.63 to 0.81 mm Thick
M25-300	8000818	8003273 (pin)	8005644
M25-400	8001426		
M25-600 to 800	8001655 +		
M25-1000 to 1900	8001655		
6M25-300	8000819	8003273	8005645
6M25-400 to 500	8002102		
6M25-800	8006782 *+		
6M25-1000 to 1900	8006782 *		
M3-300	8000818	Included w/ package	8005644
M3-400	8001426		
M3-600 to 800	8001655 +		
M3-1000 to 1900	8001655		
6M3-300	8000819	8000546 (pin)	8005645
6M3-400 to 500	8002102		
6M3-800	8006781 *+		
6M3-1000 to 1900	8006782 *		
M35-300	8000819	Included w/ package	8005645
M35-400 to 500	8002102		
M35-800 to 1200	8006782 *+		
M35-1400 to 1900	8006782 *		

* These Tooling Packages require a 25 mm diameter Stud-In-Tube Sensor P/N 8002494 installed on the press, to accommodate the larger diameter feed tubing.

+ These Tooling Packages are run in a stud tooling system with a pin punch pick-up. (See note below)

Note: For Existing Presses ONLY, To Run TSO marked with + on:

Series 2000 Presses with Omron PLC’s, (Serial Numbers 2001-046 to 2002/12-114), the press must be running Ver 4 Software or higher. Contact service department to arrange an upgrade.

Series 2000 Presses with Allen Bradley PLC’s (Serial Numbers 2000-001 to 2000-045) contact engineering department.



Automatic Tooling Guide

For Series 2000®, Series 3000®, and Series 3000MB®

Top Feed Tooling for SKC, SSA, SSS, SSC

SKC PEM® Keyhole Standoffs

Unified and Metric Combined

Size		Top Feed	Color
6060-8 to 32	/61.5-8 to 25	8002566 *	Buckskin

SSA, SSS, SSC PEM® Snap-Top Standoffs

Unified and Metric Sizes

Size		Top Feed	Color
156-8 to 32	4mm-8 to 25	8002566 *	Buckskin

* These Tooling Packages require a 25 mm diameter Stud-In-Tube Sensor P/N 8002494 installed on the press, to accommodate the larger diameter feed tubing.

Top Feed Tooling for SpotFast™ Fasteners

SF PEM® Spotfast™

Size	Top Feed Vacuum	Color
3-0.8	[8012740] ***	Aqua Blue
3-1.0	[8012741] ***	Smoke Metallic
3-1.2	[8012742] ***	Fawn
3-1.6	[8012743] ***	Burgundy
5-0.8	[8012744] ***	Purple
5-1.0	[8012745] ***	White Pearl
5-1.2	[8012746] ***	Dark Gray
5-1.6	[8012747] ***	Silver Metallic

[] These Tooling Packages are non-standard, consult factory for availability

***Requires special software. Please contact factory for instructions.



Automatic Tooling Guide

For Series 2000®, Series 3000®, and Series 3000MB®

Special Tooling

PennEngineering Fastening Technologies® Engineering department is constantly developing Special Tooling outside of the standard tooling product lines. Consult the factory for availability for your needs.

CFHC PEM® Concealed-Head Stud

Size	Double Stroke	Color
M3 -6 to -12	[8006900]	Green
M4 -6 to -12	[8006901]	Camel Beige

FEO PEM® Miniature Fastener

Size	Top Feed	Color
M3	[8009974]	Black
632	[8011056]	Black
M4	[8006161]	Black

H PEM® Self-Locking Fastener

Size	Top Feed	Color
M10-1	[8006170]	Black

HNL PEM® Hex Self-Locking Fastener

Size	Top Feed	Color
M6-CI	[8006158]	Black

KFS2 PEM® Broaching Nut

Size	Top Feed	Color
#4/M3	[8006183]	Black

LKS PEM® Hex Self-Locking Fastener

Size	Double Stroke	Color
440-1,2	[8005319]	Black
	Top Feed	
632-1	[8013829]	Black

PL PEMHEX® Self-Locking Fastener

Size	Top Feed	Color
1032	[8006151]	Black

[] These Tooling Packages are non-standard, consult factory for availability



Automatic Tooling Guide

For Series 2000®, Series 3000®, and Series 3000MB®

Tooling for Y Fasteners

PennEngineering Fastening Technologies® Engineering department is constantly developing Special Tooling for Non-standard fasteners. Consult the factory for availability for your needs.

Y-Nut Type Fasteners

Number	Description	Top Feed	Bottom Feed
YBR-12398-BN	KF2-M2 with smaller outer diameter		[8004021]
Y-12753-ZI	Nut-M6 with extended shank	[8004521]	N/A
Y-7893	Nut-M2.5 with extended shank	[8005818]	
YC3-12155	F-Nut with .235 thru hole	[8005551]	
YE-13947-ZI	Mini Rivet Bushing M5	[8008493]	
YQSS-53852	SS-M5-0 (Head Height)	[8023787]	

Y-Stud Type Fasteners

Number	Description	Top Feed
Y-11108-X88-Q2	HFHD-M5-17	[8006948]
Y-11556-ZI	TPS-5mm-10 with tapered point	[8001826]
Y-11656-ZC	HFED-M5-18 with extra large head	[8002066]
Y-11699-B	Stud-M6-45 with top hat, dogpoint, nylon patch	[8002543]
Y-11779-X	HFHD-M6-28 with shoulder and larger clinch area	[8001923]
Y-12334-ZI	HFHD-M5-16 with larger head	[8003568]
Y-12745-ZC	HFE-M10-16.6	[8004519]
Y-12991-ZI	TPS-5mm-15 with sharp point	[8006420]
Y-7240-2ZC	HFH-M6-22 with larger head	[8002906]
Y-7586-2	TFHD-032-12	[8001985]
Y-9203-ZC	HFH-M6 for thin sheet	[8001380]
Y-9647	FH-5mm-14	[8002065]
YC4-13619-NT	FH4-M8-20	[8008094]
YQ-12972-1	HFE-M6-21 with 16 mm head and coned shoulder	[8005730]
YQFH-40524	FH-X5-15.2	[8021817]
YQE-21056	FH-X5-21.5	[8020517]

Y-Standoff & Other Type Fasteners

Number	Description	Top Feed
Y-11981-ZC	SO with round head and 7mm thru hole	[8001994]
YC3-11342	BSO with male M3 thread and broach	[8005296]
YC3-7696	SO-M3-5.5	[8005467]
YC3-3190	CSO-632 with thru tap, not blind	[8004450]
YC3-10927-ES	BS-M3 with thru tap, not blind	[8000665]

[] These Tooling Packages are non-standard, consult factory for availability



Automatic Tooling Guide

For Series 2000®, Series 3000®, and Series 3000MB®

Rectangular Tubing

(Order Qty by Length)

S, CLS Nuts	Rectangular Tubing	Top Feed Length Req.	Bottom Feed Length Req.
440/M3, 632/M3.5	8000441	2.5 FT (.76m)	4.5 FT (1.37m)
832/M4, 032/M5	8000442	2.5 FT (.76m)	4.5 FT (1.37m)
0420/M6	8001340	2.5 FT (.76m)	4.5 FT (1.37m)
0518/M8	8001332	2.5 FT (.76m)	4.5 FT (1.37m)
0616	8006398	7.5 FT (.76m)	N/A
M10	8006263	3 FT (.91m)	

F Nuts	Rectangular Tubing	Top Feed Length Req.
440/M3, 632/M3.5	8000831	2.5 FT (.76m)
832/M4, 032/M5	8000832	2.5 Ft (.76m)
0420	8000832	2.5 Ft (.76m)

SO – Standoffs, Short	Rectangular Tubing	Top Feed Length Req.
440-3,-4/M3 -3	8000831	2.5 FT (.76m)
440-5/M3-4	8000831	3.5 FT (1.07m)
632-3,-4/M3.5-3	8000831	2.5 FT (.76m)
632-5,-6/M3.5-4,-5	8001415	3.5 FT (1.07m)
832-3,-4 /M4-3	8000832	2.5 FT (.76m)
832 -5 to -8/M4 -10 to-16	8001583	3.5 FT (1.07m)
032 -3,-4/M5 -3	8000832	2.5 FT (.76m)

SMPS – Miniature Nuts	Rectangular Tubing	Top Feed Length Req.
256/M2.5	8000831	2.5 FT (.76m)
440/M3	8000831	2.5 FT (.76m)
632/M3.5	8000441	2.5 FT (.76m)



Automatic Tooling Guide

For Series 2000®, Series 3000®, and Series 3000MB®

Round Tubing (Order Qty by Length)

FH Studs	Round Tubing	Top Feed Length Req.
256/M2.5	8001446	4.5 FT (1.37m)
440/M3	8000416	4.5 FT (1.37m)
632/M3.5	8000417	4.5 FT (1.37m)
832/M4	8000418	4.5 FT (1.37m)
032/M5	8000766	4.5 FT (1.37m)
0420/M6	8000421	4.5 FT (1.37m)
0518/M8	8002368	4.5 FT (1.37m)

FHL Studs	Round Tubing	Top Feed Length Req.
632	8000417	4.5 FT (1.37m)
M2.5	8003133	4.5 FT (1.37m)
M3	8000416	4.5 FT (1.37m)
M4	8000418	4.5 FT (1.37m)
M5	8000766	4.5 FT (1.37m)

HFH Studs	Round Tubing	Top Feed Length Req.
032/M5	8001155	4.5 FT (1.37m)
0420/M6	8002368	4.5 FT (1.37m)
0518/M8	8002816	4.5 FT (1.37m)

HFE Studs	Round Tubing	Top Feed Length Req.
M5	8002368	4.5 FT (1.37m)
M6	8002816	4.5 FT (1.37m)
M8	8002369	4.5 FT (1.37m)

PF11 Panel Fasteners	Round Tubing	Top Feed Length Req.
440/M3	8002278	4.5 FT (1.37m)
632/M3.5	8002278	4.5 FT (1.37m)
832/032/M4/M5	8003735	4.5 FT (1.37m)
0420/M6	8002369	4.5 FT (1.37m)



Automatic Tooling Guide

For Series 2000®, Series 3000®, and Series 3000MB®

Round Tubing (Order Qty by Length)

SO Standoffs	Round Tubing	Top Feed Length Req.
440-7 to-24/M3-6 to -18	8000417	4.5 FT (1.37m)
632-10 to-34/M3.5 to -18	8000766	4.5 FT (1.37m)
832 -12 to-22/M4 -10 to-16	8000421	4.5 FT (1.37m)
032 -12 to-22/M5 -10 to-16	8000421	4.5 FT (1.37m)

Spare Auto Punches and Anvils

S/CLS Nuts	Top Feed Pin Punch	Top Feed Anvil-4" Long	Top Feed Anvil-3" Long	Double Stroke Anvil-4" Long	3000 Multi Bowl Anvil-3" Long
256/M2	8003312	975200203	975200203300	975200148	Contact Factory
348/M2.5	8003273	975200203	975200203300	975200148	Contact Factory
440/M3	8000546	975200203	975200203300	975200148	8016440
632/M3.5	8000258	975200205	975200205300	975200149	8016491
832/M4	8000547	975200208	975200208300	975200150	8016425
024/032/M5	8000548	975200212	975200212300	975200151	8016426
0420/M6	8000549	975200221	975200221300	975200153	975200221300
0518/M8	8001972	8001976	8011084	NA	0518-8023083 M8-8023081
0616	8006382	8006373	Contact Factory	NA	NA
M10	8006143	8006141	8012587	NA	NA

*S/CLS Nut – All sizes use Bottom Feed Punch # 975200048600.

Stamped Version

SP Nuts	Top Feed Pin Punch	Top Feed Anvil - 4" Long	Top Feed Anvil - 3" Long
440/M3	8013925	8012960	Contact Factory
632/M3.5	8013926	8012961	Contact Factory
832/M4	8013927	8012962	Contact Factory
032/M5	8013928	8012963	Contact Factory
0420/M6	8013929	8015883	8020218

F Nuts	Top Feed Pin Punch	Top Feed Anvil - 4" Long	Top Feed Anvil - 3" Long
440/M3	8000546	975200204	975200204300
632/M3.5	8000258	8005875	Contact Factory
832/M4	8003084	975200217	975200217300
0420	8000549	8019539	Contact Factory



Automatic Tooling Guide

For Series 2000®, Series 3000®, and Series 3000MB®

SMPS Miniature Nuts	Top Feed Pin Punch	Top Feed Anvil – 4” Long	Top Feed Anvil – 3” Long
256	8003273	8004343	Contact Factory
440	8000546	975200203	975200203300
632	8000258	975200205	975200205300
M2.5	8003273	8004366	Contact Factory
M3	8000546	975200203	975200203300
M3.5	8000258	975200205	975200205300

FH Studs	Top Feed Vacuum Punch	Top Feed Anvil – 4” Long	Top Feed Anvil – 3” Long
256	8003203	970200046	970200046300
440	8000668	970200048	970200048300
632	8000669	970200052	970200052300
832	8000669	970200054	970200054300
032	8000669	970200055	970200055300
0420	8000670	970200059	970200059300
0518	8004345	8004184	8011028
M2.5	8003203	970200047	970200047300
M3	8000668	970200049	970200049300
M3.5	8000669	970200052	970200052300
M4	8000669	970200053	970200053300
M5	8000669	970200056	970200056300
M6	8000670	970200058	970200058300
M8	8004345	8004181	8010742



Automatic Tooling Guide

For Series 2000®, Series 3000®, and Series 3000MB®

Spare Auto Punches and Anvils (Continued)

FH Studs (Continued)	Top Feed Anvil (For Thin Sheet Applications) – 4” Long	Top Feed Anvil (For Thin Sheet Applications) – 3” Long	Top Feed Anvil (For FH4 only) – 4” Long	Top Feed Anvil (For FH4 only) – 3” Long
256	8005774	8010720	N/A	N/A
440	8005776	8010722	8003150	8010945
632	8005778	8010724	8003151	8010946
832	8005779	8010725	8003152	8010947
032	8005780	8010727	8003153	8010948
0420	8005782	8010729	8003154	8010949
0518	N/A	N/A	N/A	N/A
M2.5	8005775	8010721	N/A	N/A
M3	8005777	8010723	8003155	8010950
M3.5	8005778	8010724	8003151	8010946
M4	8005686	8010726	8003156	8010951
M5	8005472	8010728	8003157	8010952
M6	8005690	8010730	8003158	8010953
M8	N/A	N/A	N/A	N/A

FHL Studs	Top Feed Vacuum Punch	Top Feed Anvil – 4” Long	Top Feed Anvil – 3” Long
632	8000669	970200052	970200052300
M2.5	8003203	970200047	970200047300
M3	8000668	970200049	970200049300
M4	8000669	970200053	970200053300
M5	8000669	970200056	970200056300

HFH Studs	Top Feed Vacuum Punch	Top Feed Anvil – 4” Long	Top Feed Anvil – 3” Long
032	8005309	970200055	970200055300
0420	8005312	970200059	970200059300
0518	8004172	8004184	8011028
M5	8005309	970200056	970200056300
M6	8005312	970200058	970200058300
M8	8004172	8004181	8010742



Automatic Tooling Guide

For Series 2000®, Series 3000®, and Series 3000MB®

Spare Auto Punches and Anvils (Continued)

HFE Studs	Top Feed Vacuum Punch	Top Feed Anvil – 4” Long	Top Feed Anvil – 3” Long
M5	8007507	8005472	8010728
M6	8006889	970200058	970200058300
M8	8007948	8004181	8010742

PF11 Panel Fasteners	Top Feed Vacuum Punch	Top Feed Anvil – 4” Long	Top Feed Anvil – 3” Long
440/M3	8003964	8003971	Contact Factory
632	8003801	8003807	Contact Factory
832/032/M4/M5	8003919	8003926	Contact Factory
0420/M6	8003937	8003944	Contact Factory

SO Standoffs	Top Feed Pin Punch	Top Feed Anvil – 4” Long	Top Feed Anvil – 3” Long	3000 Multi Bowl Anvil – 3” Long
440/M3	8000546 (3/8dia)	970200486	970200486300	8016431
632/M3.5	8000258 (3/8dia)	970200057	970200057300	8016432
832/M4	8003084 (1/2dia)	8004301	8009917	8016495
032/M5	8003092 (1/2dia)	8004301	8009917	8016495

Other diameter pin punches available:

SO Standoffs	Top Feed Pin Punch
440/M3/6440/3.5M3	8006699 (1/2dia)
632/M3.5/8632/4M3.5	8006130 (1/2dia)
632/M3.5/8632/4M3.5	8006135 (5/8dia)

BSO-Blind Standoffs	Top Feed Vacuum Punch	Top Feed Anvil – 4” Long	Top Feed Anvil – 3” Long
440/M3	8000668	970200486	970200486300
632/M3.5	8000668	970200057	970200057300
832/M4	8000669	8004301	8009917
032/M5	8000669	8004301	8009917



Automatic Tooling Guide

For Series 2000®, Series 3000®, and Series 3000MB®

Spare Auto Punches and Anvils (Continued)

TPS Self-Clinching Pilot Pins	Top Feed Vacuum Punch	Top Feed Anvil – 4” Long	Top Feed Anvil – 3” Long
125 –6 to –12	8000668	8006230	8011123
187 –8 to –16	8000669	8009758	8010169
250 –8 to –16	8000670	8004289	8011125
280 –8 to –16	8000670	8004209	Contact Factory
4MM –8 to –16	8000669	8006468	8011127
5MM –10 to –20	8000669	970200056	970200056300
6MM –12 to –20	Contact Factory	Contact Factory	Contact Factory

Replacement Pin Assemblies for Standard Nut Punches

Standard Nut Punches	Punch Assembly	Pin Assembly With Wire	Pin dia.	Pilot Pin	Wire by foot 25 ft min.	Wire Dia
#3/M2.5	8003273	975200066	.062 dia.	975350065	980039426	.010
#4/M3	8000546	975200067	.077 dia.	975350066	980039426	.010
#6/M3.5	8000258	975200068	.092 dia.	975350067	980039426	.010
#8/M4 (before 5/96)	8000547-REL	975200069	.124 dia.	975350068	980039426	.010
#8/M4 (after 5/96)	8000547-A+	8002738	.114 dia.	8002737	980039426	.010
#10/M5 (before 5/96)	8000548-REL	975200070	.139 dia.	975350069	980039426	.010
#10/M5 (after 5/96)	8000548-A+	8002735	.144 dia.	8001323	980039426	.010
04/M6 (before 5/96)	8000549-REL	975200072	.186 dia.	975350071	980039427	.014
04/M6 (after 5/96)	8000549-A+	8002736	.182 dia.	8001324	980039426	.010
05/M8	8001972-A	8001974	.240 dia.	8001975	980039428	.020
06	8006382	8006381	.278 dia.	8006380	980039428	.020
M10	8006143	8006381	.144 dia.	8006380	980039428	.020



Automatic Tooling Guide

For Series 2000®, Series 3000®, and Series 3000MB®

PS3000 MB TOOLING

S, CLS PEM® Self-Clinching Nuts Unified and Metric Combined

Size	-0,-1,-2	PS3000MB	Color
440/M3		8015244	Bright Yellow
632/M3.5		8015245	Bright Red
832/M4		8015246	Orange
024/032/M5		8015247	Metallic Brown
0420/M6		8015248	Blue
0518/M8	-1, -2 only	8015249	Metallic Blue

S, CLS PEM® Self-Clinching Nuts Unified Sizes Only

Size	-0,-1,-2	PS3000MB	Color
0420	-0,-1,-2 only	8015291	Blue

S, CLS PEM® Self-Clinching Nuts Metric Sizes Only

Size	-0,-1,-2	PS3000MB	Color
M6		8015292	Blue

FH, FHS PEM® Self-Clinching Flush Studs Unified and Metric Combined

Size	PS3000MB	Color
440 -4 to -16/M3 -6 to -25	8015250	Green
632 -8 to -20/M3.5 -12 to -30	8015251	Gray
832 -8 to -20/M4 -8 to -30	8015252	Beige
032 -6 to -20/M5 -8 to -30	8015253	Metallic Light Blue
0420 -6 to -20	8015254	White
M6 -10 to -30	8015255	White
0518 -8 to -20/M8 -12 to -30	8015256	Violet

FH4 PEM® SERIES 400 STAINLESS FLUSH STUDS

Size	PS3000MB	Color
832 -4 to -20/M4 -8 to -30	8021166	Green

HFH, HFHS PEM® High Strength Studs Unified and Metric Combined

Size	PS3000MB	Color
032 -8 to -20/M5 -15 to -30	8015257	Metallic Light Blue
0420 -8 to -20/M6 -15 to -30	8015258	White
0518 -8 to -20/M8 -15 to -30	8015259	Violet



Automatic Tooling Guide

For Series 2000®, Series 3000®, and Series 3000MB®

PS3000 MB TOOLING (continued)

HFE PEM® High Strength Studs

Metric Sizes Only

Size	PS3000MB	Color
M5 -12 to -30	8015260	Metallic Light Blue
M6 -12 to -20	8015261	White

SO, SOS, SOA PEM® Self Clinching Standoffs – Short Dash Lengths

Size – Unified and Metric Combined	PS3000MB	Color
440-3 to -4 /M3-3	8015263	Yellow
632-3 to -4 /M3.5-3	8015264	Teal
832/032-3 to -4 /M4/M5-3	8015265	Dark Gray

SO, SOS, SOA PEM® Self Clinching Standoffs – Middle Dash Lengths

Size – Unified and Metric Combined	PS3000MB	Color
440-5 /M3-4	8015266	Gold Metallic
632-5 to -6 /M3.5-4 to -5	8015267	Lavender
832/032-5 to -8 /M4/M5-4 to -6	8015268	Black Metallic

SO, SOS, SOA, BSO, BSOS, BSOA PEM® Self Clinching Standoffs – Longer Dash Lengths

Size – Unified and Metric Combined	PS3000MB	Color
440-8 to 24 /M3-6 to 18	8015269	Magenta
6440-10 to -34 /3.5M3-8 to -18	8015270	Aqua Green
632-8 to -34 /M3.5-8 to -25	8015271	Aqua Green
832/032-10 to 34 /M4/M5-8 to -25	8015272	Bronze Metallic



Automatic Tooling Guide

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Universal Tooling Components

Part Number	Description	Function
8002494	Stud-In-Tube Sensor (25 mm)	Required for larger fasteners with major head diameter greater than .300 (7.6mm)0
8000191	Stud-In-Tube Sensor (15mm)	Required for smaller fasteners and aluminum fasteners
8002958	Tooling Valve Upgrade Kit	Required for 2000* and 2001-2004✕ presses for large mass fasteners increases flow performance of blower 1, blower 2, and vacuum valves to .70 cv rating *increases 2000 press tooling valve flow 5.8 times ✕increases 2001-2004 press tooling valve flow 2.8 times
8000373 – REV C	Threaded Non-Rotating Safety Housing	Required for injector tooling on 2000 presses, unless the hanger assembly is removed.
8004300	Top Mount Anvil Holder Kit	Allows fastener insertion for difficult installation applications, maximum insertion force is 9,000 lbs (kN) for Series 2005-2006 only. Presses 2006-409 and lower require drill kit 8004615 and Version 15 of software or higher. Presses 2006-410 & up do not require drill kit, holes included in press frame. Service must install on Series 2005-2006 presses.
8006100	Top Mount Anvil Holder Kit For Series 2000® Models 2007 and up only.	Allows fastener insertion for difficult installation applications, maximum insertion force is 9,000 lbs (40kN). For Series 2007 & up. Kit does not include sensor 8004388 since it is no longer required due to new PLC.
8005643	Adjustable and Removable Hanger Upgrade and Hardware	Allows height adjustment for improved vacuum pick-up performance. Allows hanger assembly to be removed and replaced without realignment.
8000374 – REV A	Jaw Bracket Thumbscrews	Replaces worn thumbscrews that do not remain tight.
8002937	Bowl Sweeper Assembly	Allows for higher quantities of fasteners in bowl. Attaches to side of bowl to sweep off stacked parts before entering the escapement.
8012636	Bowl Sweeper Assembly (Model 2009 Press)	Allows for higher quantities of fasteners in bowl. Attaches to side of bowl to sweep off stacked parts before entering the escapement.



Automatic Tooling Guide

For Series 2000®, Series 3000®, and Series 3000MB®

Universal Tooling Components (Continued)

Part Number	Description	Function
8002501	Universal Escapement Adapter	Adapts new style of stud and long standoff ramp escapements. Eliminates need to remove T-Handles to install new stud/long standoff escapements
8004481	Universal escapement nut adapter plate	Used with 8002501 to adapt nutgates Replaces nutgate adapter 8000012 or 8003223
8004480	Universal tooling adapter assembly	Package includes 8002501 and 8004481 (see above) Presses with Serial Number 2007/2017 & Up shipped with adapter assembly. Presses with Serial Number 2000 thru 2006/2016 will require adapter assembly for use with one-piece escapement assemblies.
8003223	New revision of nutgate adapter	Improved puffer geometry which improves feed rate of nut and short standoff nutgates
8004598	Top feed slide flow control kit Kit includes: 8002072, 8002842 and 8003130	Allows adjustment of top feed slide speed for improved top feed pick-up control included with current long standoff packages
8004179	Jaw bracket upgrade kit for large head fasteners (also includes shuttle guard upgrade)	Required for 2001-2006 presses for large head fasteners like PF11
8004599	Omron program update version 15	Program for PF11 tooling and top mount anvil holder program



Automatic Tooling Guide

For Series 2000®, Series 3000®, and Series 3000MB®

Press Accessories

Part Number	Description	Features and Benefits
8005538 (120V) (US) 8005539 (220V) (EUROPE)	Industrial Work Light	<ul style="list-style-type: none"> • Flexible, Efficient Coverage of Working Area • Bright 20W Halogen Bulb • Magnetic Base Mounts to Frame • 120V/220V models available
8005534	Coalescing Filter	<ul style="list-style-type: none"> • Higher Level of Filtration - removes 93% of 0.01 micron Particles • Automatic Drain with Sight-glass for Monitoring Fluid Levels • Built-in Differential Pressure Indicators • 1/4 Turn Quick Release Bowl for Easy Maintenance
8005537	Anti-Fatigue Work Mat	<ul style="list-style-type: none"> • Solid polyurethane nodule design increases blood circulation and reduces cumulative trauma disorders associated with prolonged standing. • Chemical Resistant • Durable and easy to clean • Shock absorbent with Tapered Edges • 24" by 36" • Two Year Wear Warranty
8005531	Industrial Work Seat	<ul style="list-style-type: none"> • Ergonomic design improves comfort and increases worker productivity • Four Easy to use Height (16" to 32") and Tilt Adjustments • Durable Polyurethane Seat • Foot Rest Step Rail • Built tough for industrial environment • Swivel Stop Feature makes getting on and off the chair easy and safe • Five Year, Three shift Warranty



Automatic Tooling Guide

For Series 2000®, Series 3000®, and Series 3000MB®

Fastener Length Monitoring (FLM) System

Option for Series 2000® Only

The PEMSERTER® Fastener Length Monitoring (FLM) System is a system that attaches to the Series 2000® Automatic Feed Press and checks the length of studs as they are being fed and only inserts one specific length stud that the operator sets-up for.

The system accomplishes this by using photoelectric sensors to detect studs that are too short, too long, or the correct length down to accuracy of 1/16” or 2 mm.

The Press Software guides the operator through setup. In run mode the system only installs the specific length stud and rejects longer and shorter studs, notifies the operator and re-seeks a part of the correct length.

The purpose of this system is to install studs of only one length, despite whatever may happen on the shop floor that causes parts to become mixed.

Part Number	Description	Required
8006400	Fastener Length Monitoring (FLM) System – Sensor Package	1 for Each Press
8006401	Small FLM Sensor Ring Holder – FH-M2.5 to FH-0420/M6	1 for Smaller Fasteners and/or 1 for Larger Fasteners
8006402	Large FLM Sensor Ring Holder – HFH-0420/M6 to HFH-0518/M8	
8019022	FLM Vacuum Upgrade Kit	1 for Each Press

Part Number	Description	Required
Stud Shuttle Chambers for Shuttle Version 2 (Current Design)		
8010420	FH-M2.5	1 for each size of fastener to feed. Assembles on to PEMSERTER® Automatic Stud Feeding Shuttle, in place of existing chamber.
8010421	FH 440/M3	
8010422	FH-632	
8010423	FH-832/M4	
8010424	FH-032/M5	
8010425	FH-0420	
8010426	FH-M6	
8006409	FH-0518/M8 (Large Ring)	
8016173	HFH-032/M5	
8009797	HFH-04/M6	
8006412	HFH-0518/M8	
8006958	HFE-0420	
8010143	HFE-M6	
8014415	SO-632/M3.5	
8014480	FHL-M3	
8014481	FHL-M4	



Automatic Tooling Guide

For Series 2000®, Series 3000®, and Series 3000MB®

Fastener Length Monitoring (FLM) System for Series 2000® Only (Continued)

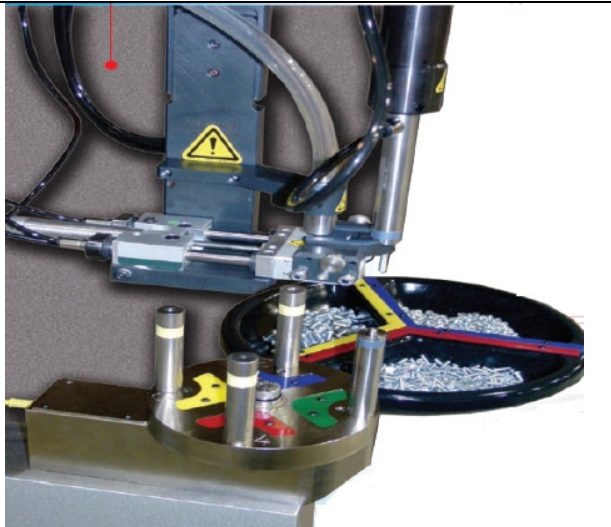
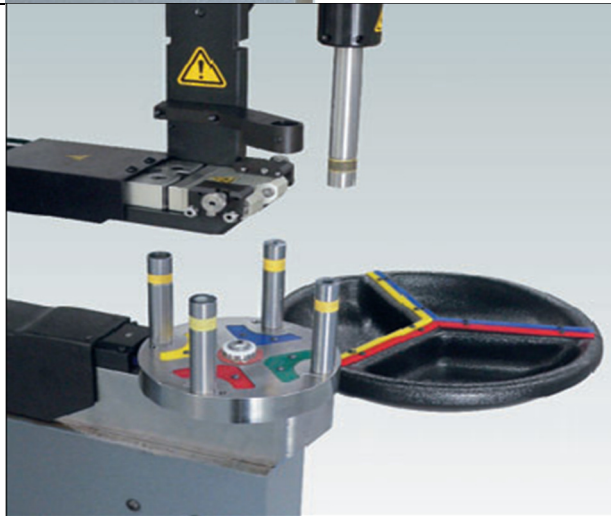
Part Number	Description	Required
Stud Shuttle Chambers for Shuttle Version 1 (Original Design – See previous page for current design shuttle chambers)		
8006403	Stud Shuttle Chambers: FH-M2.5	1 for each size of fastener to feed. Assembles on to PEMSERTER® Automatic Stud Feeding Shuttle, in place of existing chamber.
8006404	FH 440/M3	
8006405	FH-632	
8006406	FH-832/M4	
8006407	FH-032/M5	
8006408	FH-0420	
8010141	FH-M6	
8006411	HFH-04/M6	
8006410	HFH-032/M5 (Small Ring)	
8006635	SO-440/M3	
8006636	SO-632/M3.5	
8006637	SO-832/032/M4/M5	
8006638	FHL-M2.5	
8006639	FHL-M3	
8006745	FHL-M4	

QX™ Turret Tool System Option

The PEMSERTER® QX™ Turret Tool System for use on the Series 2000® Models 2007 & up (Pt # **8009000**) provides a quick and efficient method to quickly change between anvil tools while handling the work piece to install different fasteners.

The PEMSERTER® QX™ Turret Tool & Drive System for the Series 3000® (Pt # **8014002**) provides a quick and efficient method to **Automatically** change between anvil tools while handling the work piece to install different fasteners.

The QX™ Turret Tool System has color coded locations and can install four different fasteners; one in automatic feed mode, and three in manual feed mode. System may be upgraded to auto feed additional stations, please contact your local representative or factory direct at 800-523-5321 (in U.S.) or 215-766-8853.

	<p>KIT 8009000 INCLUDES:</p> <p>Anvil Holder, QX Table and Color Coded Parts Tray Assembly.</p>
	<p>KIT 8014002 INCLUDES:</p> <p>Anvil Holder, QX Table, Color Coded Parts Tray Assembly & Drive Motor.</p>



Automatic Tooling Guide

For Series 2000®, Series 3000®, and Series 3000MB®

Type of Autofeed Tools that can be used with the QX Turret Tool System

The QX Turret Tool can be used with Standard Automatic Top Feed Tooling. This includes Manual Modes, Top Feed Nut, Top Feed Stud, Top Feed Standoff, and Double Stroke Bottom Install Nut.

Selecting the proper tooling

The QX Turret Tool is designed to use:

- Standard PEMSERTER® 3”(76.2mm) tall manual anvils and
- Special 3” (76.2mm) tall automatic feed anvils.

(See Spare Punch & Anvil Section for compatible automatic anvil part numbers).

The anvils must be appropriate for the fasteners being installed.

The punch to be used is specific to each combination of applications; it is especially specific to the automatic feed tooling being used. The general rule to follow; to determine if an automatic punch can be used for a manual installation is:

The hole in the punch, vacuum hole for studs, pin hole for nuts.	Must be smaller than	The major thread dimension of internally threaded fasteners like nuts. or The minor thread dimension of externally threaded fasteners like studs.
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