Automatic Tooling Catalog

January 2024

For your convenience, this Automatic Tooling Catalog contains clickable hyperlinks to help you navigate to the correct tooling set for your machine model. For more information, or to place an order, go to www.haeger.com

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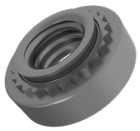
PEM®: S™, SS™, CLS™, CLSS™

HP6, 618™, 824™ & 824™ PLUS

Shuttle Nut Tooling



Notes:
1. A one time purchase of a Shuttle Nut Controller, T-Bracket, and Vacuum Generator is required for Shuttle Nut Tooling. (See page 3 for part #'s)
2. Haeger recommends purchasing a T-Bracket for each Shuttle Nut Mechanism for faster changeover and setup times.
3. Please specify machine model and serial number when ordering a vacuum generator as a retrofit item. (see page 3)
4. PEM® CLA™ Aluminum nuts require custom tooling.

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	SHUTTLE NUT MECHANISM	VACUUM PUNCH	AUTO ANVIL
NUTS			Included with set					
4-40-0,-1,-2	H-588-250	CLEAR	H-407-250-72	H-512-250	H-915-250	H-581-250	H-398-084	H-442-166S
6-32-0,-1,-2	H-588-280	RED	H-407-280-72	H-512-280	H-915-280	H-581-280	H-398-105	H-442-187S
8-32-0,-1,-2	H-588-310	BLUE	H-407-310-72	H-512-310	H-915-310	H-581-310	H-398-129	H-442-213S
10-32-0,-1,-2	H-588-340	GREEN	H-407-340-72	H-512-340	H-915-340	H-581-340	H-398-155	H-442-250S
1/4-20-0,-1,-2	H-588-440	YELLOW	H-407-440-72	H-512-440	H-915-440	H-581-440	H-398-195	H-442-344S

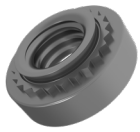
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	SHUTTLE NUT MECHANISM	VACUUM PUNCH	AUTO ANVIL
NUTS			Included with set					
M3-0,-1,-2	H-588-250M	CLEAR	H-407-250-72	H-512-250M	H-915-250	H-581-250	H-398-093	H-442-166S
M3.5-0,-1,-2	H-588-280M	RED	H-407-280-72	H-512-280M	H-915-280	H-581-280	H-398-114	H-442-187S
M4-0,-1,-2	H-588-310M	BLUE	H-407-310-72	H-512-310M	H-915-310	H-581-310	H-398-122	H-442-213S
M5-0,-1,-2	H-588-340M	GREEN	H-407-340-72	H-512-340M	H-915-340	H-581-340	H-398-161	H-442-250S
M6-0,-1,-2	H-588-440M	YELLOW	H-407-440-72	H-512-440M	H-915-440	H-581-440	H-398-186	H-442-344S

PEM®: S™, SS™, CLS™, CLSS™

HP6, 618™, 824™ & 824™ PLUS

Shuttle Nut Tooling
(Shank Code 3)



Notes:
1. A one time purchase of a Shuttle Nut Controller, T-Bracket, and Vacuum Generator is required for Shuttle Nut Tooling. (See below for part #'s)
2. Haeger recommends purchasing a T-Bracket for each Shuttle Nut Mechanism for faster changeover and setup times.
3. Please specify machine model and serial number when ordering a vacuum generator as a retrofit item. (see below)
4. The below tooling are available as MADE TO ORDER
5. PEM® CLA™ Aluminum nuts require custom tooling.

Inch Sizes Only

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	SHUTTLE NUT MECHANISM	VACUUM PUNCH	AUTO ANVIL
NUTS			Included with set					
4-40-3	H-588-250-3	CLEAR	H-407-250-72	H-512-250-3	H-915-250-3	H-581-250-3	H-398-084	H-442-166S
6-32-3	H-588-280-3	RED	H-407-280-72	H-512-280-3	H-915-280-3	H-581-280-3	H-398-105	H-442-187S
8-32-3	H-588-310-3	BLUE	H-407-310-72	H-512-310-3	H-915-310-3	H-581-310-3	H-398-129	H-442-213S
10-32-3	H-588-340-3	GREEN	H-407-340-72	H-512-340-3	H-915-340-3	H-581-340-3	H-398-155	H-442-250S
1/4-20-3	H-588-440-3	YELLOW	H-407-440-72	H-512-440-3	H-915-440	H-581-440-3	H-398-195	H-442-344S

Shuttle Nut Tooling Components

15-01179 Composite T-Bracket

15-01245 Shuttle Nut Controller

Vacuum Generators

10-00895 Vacuum Generator for HP6-B

10-00212 Vacuum Generator for HP6-C, HP2.5, Non-Universal 824

10-00142 Vacuum Generator for Non-Universal 618

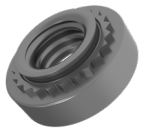
10-00789 Vacuum Generator for 618-1, 824-1 & 618PLUS

15-00913 Vacuum Generator for 824PLUS & 824 Window Touch

PEM®: S™, SS™, CLS™, CLSS™

HP6, 618™, 824™, 824™ PLUS & WT-3

Bottom Feed Nut Tooling



Notes:

PEM® CLA™ Aluminum nuts require custom tooling.

Inch Sizes

FASTENER SIZE	ABFT SET	COLOR CODE	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	ABFT ASSEMBLY
NUTS			Included with set			
2-56 & 4-40 0,-1,-2 2-56 & 4-40 (-3)	H-410-250 H-410-250-3	CLEAR	H-407-250-72	H-512-250 H-512-250-3	H-915-250 H-915-250-3	H-908-250 H-908-250-3
6-32-0,-1,-2 6-32-3	H-410-280 H-410-280-3	RED	H-407-280-72	H-512-280 H-512-280-3	H-915-280 H-915-280-3	H-908-280 H-908-280-3
8-32-0,-1,-2 8-32-3	H-410-310 H-410-310-3	BLUE	H-407-310-72	H-512-310 H-512-310-3	H-915-310 H-915-310-3	H-908-310 H-908-310-3
10-32-0,-1,-2 10-32-3	H-410-340 H-410-340-3	GREEN	H-407-340-72	H-512-340 H-512-340-3	H-915-340 H-915-340-3	H-908-340 H-908-340-3
1/4-20-0,-1,-2 1/4-20-3	H-410-440 H-410-440-3	YELLOW	H-407-440-72	H-512-440 H-512-440-3	H-915-440 H-915-440	H-700-440 H-700-440-3

Metric Sizes

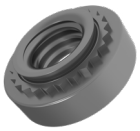
FASTENER SIZE	ABFT SET	COLOR CODE	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	ABFT ASSEMBLY
NUTS			Included with set			
M2, M2.5, & M3 -0, -1, -2	H-410-250M	CLEAR	H-407-250-72	H-512-250M	H-915-250	H-908-250
M3.5-0,-1,-2	H-410-280M	RED	H-407-280-72	H-512-280M	H-915-280	H-908-280
M4-0,-1,-2	H-410-310M	BLUE	H-407-310-72	H-512-310M	H-915-310	H-908-310
M5-0,-1,-2	H-410-340M	GREEN	H-407-340-72	H-512-340M	H-915-340	H-908-340
M6-0,-1,-2	H-410-440M	YELLOW	H-407-440-72	H-512-440M	H-915-440	H-700-440

Additional ABFT accessories available (see next page)

PEM®: S™, SS™, CLS™, CLSS™

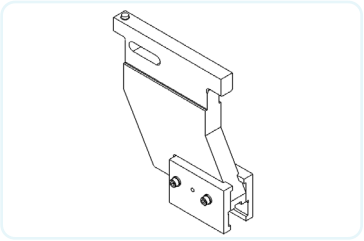
HP6, 618™, 824™, 824™ PLUS & WT-3

Bottom Feed Nut Tooling



ABFT J-frame:

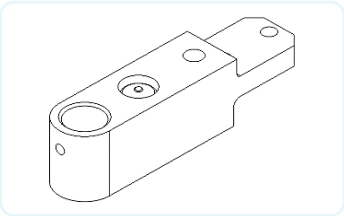
H-172-1 ABFT J-frame, fits up to 032/M5 nut size



ABFT adapters for use on TIS-2 (2 components required):

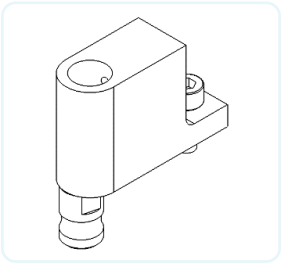
Arm (component 1):

15-02239 ABFT ARM



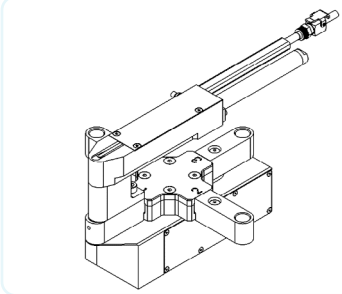
Adapter assembly per ABFT size (component 2):

15-02390	ABFT Adapter ASSY 4-40 / M3 Nut
15-02391	ABFT Adapter ASSY 6-32 / M3.5 Nut
15-02392	ABFT Adapter ASSY 8-32 / M4 Nut
15-02393	ABFT Adapter ASSY 10-32 . M5 Nut
15-02934	ABFT Adapter ASSY 1/4-20 / M6 Nut



To feed multiple sizes with one adapter, the following 2 components may be used:

15-02239 ABFT Arm (component 1)
15-02945 ABFT Adapter Assy, M3-M5 & 440-1032 (component 2)



PEM®: FH™, FHS™, FHA™

HP6, 618™, 824™ & 824™ PLUS

Shuttle Stud Tooling

Notes:
1. A one time purchase of a T-Bracket, Dual Guided Shuttle, and Vacuum Generator is required for shuttle style stud Tooling. (see page 7 for part #'s)
2. Please specify machine model and serial number when ordering a vacuum generator as a retrofit item. (see page 7)

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	VACUUM PUNCH	PIVOT ARMS & ADAPTER	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS		Included with set						
4-40 -5 to -16	10-00600	H-309-218-72	H-524-218	H-525-218	H-388-067	10-00534	H-344-113	H-346-113
6-32 -5 to -20	10-00601	H-309-234-72	H-524-234	H-525-234	H-388-067	10-00535	H-344-139	H-346-139
8-32 -6 to -20	10-00602	H-309-250-72	H-524-250	H-525-250	H-388-093	10-00536	H-344-166	H-346-166
10-32 -6 to -20 10-24 -6 to -20	10-00603	H-309-281-72	H-524-281	H-525-281	H-388-093	10-00538	H-344-191	H-346-191
1/4-20 -8 to -20	10-00604	H-309-375-72	H-524-344	H-525-344	H-388-093	10-00540	H-344-250	H-346-250

Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	VACUUM PUNCH	PIVOT ARMS & ADAPTER	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS		Included with set						
M3 -6 to -25	10-00606	H-309-218-72	H-524-218	H-525-218	H-388-067	10-00534	H-344-121	H-346-121
M3.5 -6 to -30	10-00601	H-309-234-72	H-524-234	H-525-234	H-388-067	10-00535	H-344-139	H-346-139
M4 -10 to -30	10-00608	H-309-250-72	H-524-250	H-525-250	H-388-093	10-00536	H-344-160	H-346-160
M5 -10 to -30	10-00609	H-309-281-72	H-524-281	H-525-281	H-388-093	10-00538	H-344-199	H-346-199
M6 -12 to -30	10-00610	H-309-375-72	H-524-344	H-525-344	H-388-093	10-00540	H-344-236	H-346-236

Auto Anvils For FH4™ Studs

H-345-113	MTO, ASSY, LOWER TOOL, FH4-#4
H-345-139	MTO, ASSY, LOWER TOOL, FH4-#6
H-345-166	MTO, ASSY, LOWER TOOL, FH4-#8
H-345-191	MTO, ASSY, LOWER TOOL, FH4-#10
H-345-121	MTO, ASSY, LOWER TOOL, FH4-M3
H-345-160	MTO, ASSY, LOWER TOOL, FH4-M4
H-345-199	MTO, ASSY, LOWER TOOL, FH4-M5

PEM®: SO™, SOA™, SOS™

HP6, 618™, 824™ & 824™ PLUS

Shuttle Standoff Tooling

Notes:
1. A one time purchase of a T-Bracket, Dual Guided Shuttle, and Vacuum Generator is required for shuttle style stud Tooling. (see below for part #'s)
2. Please specify machine model and serial number when ordering a vacuum generator as a retrofit item. (see below)

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	VACUUM PUNCH	PIVOT ARMS & ADAPTER	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STANDOFFS		Included with set						
4-40 -8 to -34	10-00582	H-309-250-72	H-524-265	H-525-265	H-398-084	10-00537	H-344-169	H-346-169
64-40 -10 to -34	10-00583	H-309-296-72	H-524-296	H-525-296	H-398-084	10-00539	H-344-216	H-346-216
6-32 -10 to -34	10-00584	H-309-296-72	H-524-296	H-525-296	H-398-105	10-00539	H-344-216	H-346-216
86-32- 12 to -34	10-00585	H-309-410-72	H-524-375	H-525-375	H-398-105	10-00541	H-344-284	H-346-284
8-32 -12 to -34	10-00586	H-309-410-72	H-524-375	H-525-375	H-398-129	10-00541	H-344-284	H-346-284
10-32 -12 to -34	10-00587	H-309-410-72	H-524-375	H-525-375	H-398-155	10-00541	H-344-284	H-346-284

Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	VACUUM PUNCH	PIVOT ARMS & ADAPTER	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STANDOFFS		Included with set						
M3 -6 to -30	10-00591	H-309-250-72	H-524-265	H-525-265	H-398-093	10-00537	H-344-169	H-346-169
3.5M3 -8 to -30	10-00592	H-309-296-72	H-524-296	H-525-296	H-398-093	10-00539	H-344-216	H-346-216
M4 -8 to -30	10-00593	H-309-410-72	H-524-375	H-525-375	H-398-122	10-00541	H-344-284	H-346-284
M5 -8 to -30	10-00594	H-309-410-72	H-524-375	H-525-375	H-398-161	10-00541	H-344-284	H-346-284

Shuttle Stud & Standoff Tooling Components:

15-01179	Composite T-Bracket
15-01173	Dual Guided Shuttle

Vacuum Generators:

10-00895	Vacuum Generator for HP6-B
10-00212	Vacuum Generator for HP6-C, HP2.5, Non-Universal 824
10-00142	Vacuum Generator for Non-Universal 618
10-00789	Vacuum Generator for 618-1, 824-1 & 618PLUS
15-00913	Vacuum Generator for 824PLUS & 824 Window Touch

PEM®: BSO™, BSOA™, BSOS™

HP6, 618™, 824™ & 824™ PLUS

Shuttle Blind Standoff Tooling

Notes:
1. A one time purchase of a T-Bracket, Dual Guided Shuttle, and Vacuum Generator is required for shuttle style stud Tooling. (see page 7 for part #'s)
2. Please specify machine model and serial number when ordering a vacuum generator as a retrofit item. (see page 7)

Inch Sizes

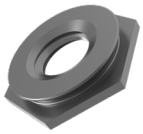
FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	VACUUM PUNCH	PIVOT ARMS & ADAPTER	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
BLIND STANDOFFS		Included with set						
4-40 -8 to -34	10-00588	H-309-250-72	H-524-265	H-525-265	H-388-067	10-00537	H-344-169	H-346-169
64-40 -10 to -34 6-32 -10 to -34	10-00589	H-309-296-72	H-524-296	H-525-296	H-388-067	10-00539	H-344-216	H-346-216
86-32 -12 to -34 8-32 -12 to -34 10-32 -12 to -34	10-00590	H-309-410-72	H-524-375	H-525-375	H-388-093	10-00541	H-344-284	H-346-284

Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	VACUUM PUNCH	PIVOT ARMS & ADAPTER	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
BLIND STANDOFFS		Included with set						
M3 -6 to -30	10-00595	H-309-250-72	H-524-265	H-525-265	H-388-067	10-00537	H-344-169	H-346-169
3.5M3 -8 to -30	10-00596	H-309-296-72	H-524-296	H-525-296	H-388-067	10-00539	H-344-216	H-346-216
M4 -8 to -30 M5 -8 to -30	10-00590	H-309-410-72	H-524-375	H-525-375	H-388-093	10-00541	H-344-284	H-346-284

PEM®: F™

HP6, 618™, 824™ & 824™ PLUS
Shuttle Flush Nut Tooling



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3. Please specify machine model and serial number when ordering a vacuum generator as a retrofit item. (see page 3)
4. The below tooling are available as MADE TO ORDER
5. PEM® CLA™ Aluminum nuts require custom tooling.

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	MAS 9 MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
FLUSH NUTS		Included with set				
440-1	H-588-230-1	14-00220	14-00039	H-581-230-1	H-398-084	H-442-230S
440-2	H-588-230-2	14-00220	14-00040	H-581-230-2	H-398-084	H-442-230S
6-32-1	H-588-295-1	14-00221	14-00041	H-581-295-1	H-398-105	H-442-295S
6-32-2	H-588-295-2	14-00221	14-00042	H-581-295-2	H-398-105	H-442-295S
8-32-1	H-588-375-1	14-00222	14-00159	H-581-375-1	H-398-129	H-442-375S
8-32-2	H-588-375-2	14-00222	14-00160	H-581-375-2	H-398-129	H-442-375S
10-32-1	H-588-405-1	14-00223	14-00161	H-581-405-1	H-398-155	H-442-405S
10-32-2	H-588-405-2	14-00223	14-00162	H-581-405-2	H-398-155	H-442-405S

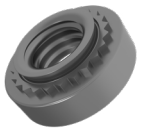
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	MAS 9 MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
FLUSH NUTS		Included with set				
M-3-1	H-588-230M-1	14-00220	14-00039	H-581-230-1	H-398-093	H-442-230S
M-3-2	H-588-230M-2	14-00220	14-00040	H-581-230-2	H-398-093	H-442-230S
M-3.5-1	H-588-295M-1	14-00221	14-00041	H-581-295-1	H-398-114	H-442-295S
M-3.5-2	H-588-295M-2	14-00221	14-00042	H-581-295-2	H-398-114	H-442-295S
M-4-1	H-588-375M-1	14-00222	14-00159	H-581-375-1	H-398-122	H-442-375S
M-4-2	H-588-375M-2	14-00222	14-00160	H-581-375-2	H-398-122	H-442-375S
M-5-1	H-588-405M-1	14-00223	14-00161	H-581-405-1	H-398-161	H-442-405S
M-5-2	H-588-405M-2	14-00223	14-00162	H-581-405-2	H-398-161	H-442-405S

PEM®: S™, SS™, CLS™, CLSS™

824™ WindowTouch® -3
618™/824™ MSPe with MAS-9

Shuttle Nut Tooling



Notes:
1. PEM® CLA™ Aluminum nuts require custom tooling.
2. For Bottom Feed tooling see page 5

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
NUTS			Included with set					
4-40-0,-1,-2	370-250	CLEAR	H-407-250-72	H-512-250	H-915-250	15-01844	H-598-084	H-442-166S
6-32-0,-1,-2	370-280	RED	H-407-280-72	H-512-280	H-915-280	15-01845	H-598-105	H-442-187S
8-32-0,-1,-2	370-310	BLUE	H-407-310-72	H-512-310	H-915-310	15-01846	H-598-129	H-442-213S
10-32-0,-1,-2	370-340	GREEN	H-407-340-72	H-512-340	H-915-340	15-01847	H-598-155	H-442-250S
1/4-20-0,-1,-2	370-440	YELLOW	H-407-440-72	H-512-440	H-915-440	15-01848	H-598-195	H-442-344S

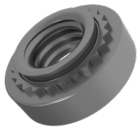
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
NUTS			Included with set					
M3-0,-1,-2	371-250	CLEAR	H-407-250-72	H-512-250M	H-915-250	15-01844	H-598-093	H-442-166S
M3.5-0,-1,-2	371-280	RED	H-407-280-72	H-512-280M	H-915-280	15-01845	H-598-114	H-442-187S
M4-0,-1,-2	371-310	BLUE	H-407-310-72	H-512-310M	H-915-310	15-01846	H-598-122	H-442-213S
M5-0,-1,-2	371-340	GREEN	H-407-340-72	H-512-340M	H-915-340	15-01847	H-598-161	H-442-250S
M6-0,-1,-2	371-440	YELLOW	H-407-440-72	H-512-440M	H-915-440	15-01848	H-598-186	H-442-344S

PEM®: S™, SS™, CLS™, CLSS™

824™ WindowTouch® -3
618™/824™ MSPe with MAS-9

Shuttle Nut Tooling
(Shank Code 3)



Notes:
1. The below tooling are available as MADE TO ORDER
2. PEM® CLA™ Aluminum nuts require custom tooling.
3. For Bottom Feed tooling see page 5

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
NUTS			Included with set					
4-40-3	373-250	CLEAR	H-407-250-72	H-512-250-3	H-915-250-3	15-01862	H-598-084	H-442-166S
6-32-3	373-280	RED	H-407-280-72	H-512-280-3	H-915-280-3	15-01863	H-598-105	H-442-187S
8-32-3	373-310	BLUE	H-407-310-72	H-512-310-3	H-915-310-3	15-01864	H-598-129	H-442-213S
10-32-3	373-340	GREEN	H-407-340-72	H-512-340-3	H-915-340-3	15-01865	H-598-155	H-442-250S
1/4-20-3	373-440	YELLOW	H-407-440-72	H-512-440-3	H-915-440	15-01866	H-598-195	H-442-344S

PEM®: FH™, FHS™, FHA™

824™ WindowTouch™ -3
618™/824™ MSPe with MAS-9

Shuttle Stud Tooling

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	VACUUM PUNCH	PIVOT ARMS & ADAPTER	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS		Included with set						
4-40 -5 to -16	380-218	H-309-218-72	H-524-218	H-525-218	15-01854	H-388-067	H-344-113	H-346-113
6-32 -5 to -20	380-234	H-309-234-72	H-524-234	H-525-234	15-01855	H-388-067	H-344-139	H-346-139
8-32 -6 to -20	380-250	H-309-250-72	H-524-250	H-525-250	15-01856	H-388-093	H-344-166	H-346-166
10-32 -6 to -20 10-24 -6 to -20	380-281	H-309-281-72	H-524-281	H-525-281	15-01857	H-388-093	H-344-191	H-346-191
1/4-20 -8 to -20	380-344	H-309-375-72	H-524-344	H-525-344	15-01858	H-388-093	H-344-250	H-346-250

Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	VACUUM PUNCH	PIVOT ARMS & ADAPTER	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS		Included with set						
M3 -6 to -25	381-218	H-309-218-72	H-524-218	H-525-218	15-01854	H-388-067	H-344-121	H-346-121
M3.5 -6 to -30	380-234	H-309-234-72	H-524-234	H-525-234	15-01855	H-388-067	H-344-139	H-346-139
M4 -10 to -30	381-250	H-309-250-72	H-524-250	H-525-250	15-01856	H-388-093	H-344-160	H-346-160
M5 -10 to -30	381-281	H-309-281-72	H-524-281	H-525-281	15-01857	H-388-093	H-344-199	H-346-199
M6 -12 to -30	381-344	H-309-375-72	H-524-344	H-525-344	15-01858	H-388-093	H-344-236	H-346-236

Auto Anvils For FH4™ Studs

H-345-113	MTO, ASSY, LOWER TOOL, FH4-#4
H-345-139	MTO, ASSY, LOWER TOOL, FH4-#6
H-345-166	MTO, ASSY, LOWER TOOL, FH4-#8
H-345-191	MTO, ASSY, LOWER TOOL, FH4-#10
H-345-121	MTO, ASSY, LOWER TOOL, FH4-M3
H-345-160	MTO, ASSY, LOWER TOOL, FH4-M4
H-345-199	MTO, ASSY, LOWER TOOL, FH4-M5

PEM®: SO™, SOA™, SOS™

824™ WindowTouch® -3
618™/824™ MSPe with MAS-9

Shuttle Standoff Tooling

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STANDOFFS		Included with set						
4-40 -8 to -34	390-265	H-309-250-72	H-524-265	H-525-265	15-01859	H-398-084	H-344-169	H-346-169
64-40 -10 to -34	391-296	H-309-296-72	H-524-296	H-525-296	15-01860	H-398-084	H-344-216	H-346-216
6-32 -10 to -34	390-296	H-309-296-72	H-524-296	H-525-296	15-01860	H-398-105	H-344-216	H-346-216
86-32- 12 to -34	391-375	H-309-410-72	H-524-375	H-525-375	15-01861	H-398-105	H-344-284	H-346-284
8-32 -12 to -34	392-375	H-309-410-72	H-524-375	H-525-375	15-01861	H-398-129	H-344-284	H-346-284
10-32 -12 to -34	390-375	H-309-410-72	H-524-375	H-525-375	15-01861	H-398-155	H-344-284	H-346-284

Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STANDOFFS		Included with set						
M3 -6 to -30	393-265	H-309-250-72	H-524-265	H-525-265	15-01859	H-398-093	H-344-169	H-346-169
3.5M3 -8 to -30	393-296	H-309-296-72	H-524-296	H-525-296	15-01860	H-398-093	H-344-216	H-346-216
M4 -8 to -30	393-375	H-309-410-72	H-524-375	H-525-375	15-01861	H-398-122	H-344-284	H-346-284
M5 -8 to -30	394-375	H-309-410-72	H-524-375	H-525-375	15-01861	H-398-161	H-344-284	H-346-284

PEM®: BSO™, BSOA™, BSOS™

824™ WindowTouch® -3
618™/824™ MSPe with MAS-9

Shuttle Blind Standoff Tooling

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	VACUUM PUNCH	PIVOT ARMS & ADAPTER	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
BLIND STANDOFFS		Included with set						
4-40 -8 to -34	395-265	H-309-250-72	H-524-265	H-525-265	15-01859	H-388-067	H-344-169	H-346-169
64-40 -10 to -34 6-32 -10 to -34	395-296	H-309-296-72	H-524-296	H-525-296	15-01860	H-388-067	H-344-216	H-346-216
86-32 -12 to -34 8-32 -12 to -34 10-32 -12 to -34	395-375	H-309-410-72	H-524-375	H-525-375	15-01861	H-388-093	H-344-284	H-346-284

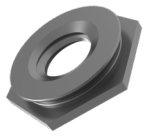
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	VACUUM PUNCH	PIVOT ARMS & ADAPTER	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
BLIND STANDOFFS		Included with set						
M3 -6 to -30	395-265	H-309-250-72	H-524-265	H-525-265	15-01859	H-388-067	H-344-169	H-346-169
3.5M3 -8 to -30	395-296	H-309-296-72	H-524-296	H-525-296	15-01860	H-388-067	H-344-216	H-346-216
M4 -8 to -30 M5 -8 to -30	395-375	H-309-410-72	H-524-375	H-525-375	15-01861	H-388-093	H-344-284	H-346-284

PEM®: F™

824™ WindowTouch® -3
618™/824™ MSPe with MAS-9

Shuttle Flush Nut Tooling



Notes:
The below tooling are available as MADE TO ORDER

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
FLUSH NUTS		Included with set				
440-1	H-688-230-1	14-00220	14-00039	15-02019	H-398-084	H-442-230S
440-2	H-688-230-2	14-00220	14-00040	15-02020	H-398-084	H-442-230S
6-32-1	H-688-295-1	14-00221	14-00041	15-02021	H-398-105	H-442-295S
6-32-2	H-688-295-2	14-00221	14-00042	15-02022	H-398-105	H-442-295S
8-32-1	H-688-375-1	14-00222	14-00159	15-02023	H-398-129	H-442-375S
8-32-2	H-688-375-2	14-00222	14-00160	15-02024	H-398-129	H-442-375S
10-32-1	H-688-405-1	14-00223	14-00161	15-02025	H-398-155	H-442-405S
10-32-2	H-688-405-2	14-00223	14-00162	15-02026	H-398-155	H-442-405S

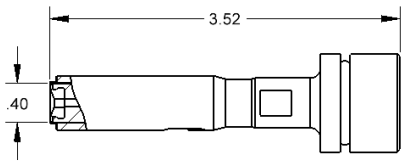
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
FLUSH NUTS		Included with set				
M-3-1	H-688-230M-1	14-00220	14-00039	15-02019	H-398-093	H-442-230S
M-3-2	H-688-230M-2	14-00220	14-00040	15-02020	H-398-093	H-442-230S
M-3.5-1	H-688-295M-1	14-00221	14-00041	15-02021	H-398-114	H-442-295S
M-3.5-2	H-688-295M-2	14-00221	14-00042	15-02022	H-398-114	H-442-295S
M-4-1	H-688-375M-1	14-00222	14-00159	15-02023	H-398-122	H-442-375S
M-4-2	H-688-375M-2	14-00222	14-00160	15-02024	H-398-122	H-442-375S
M-5-1	H-688-405M-1	14-00223	14-00161	15-02025	H-398-161	H-442-405S
M-5-2	H-688-405M-2	14-00223	14-00162	15-02026	H-398-161	H-442-405S

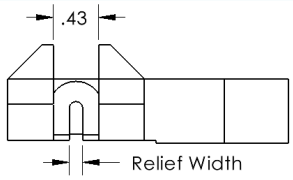
Identifying 824™ OneTouch™ -3 Tip Holder/Punch & Tip Pocket size

824OT-3 machines may use one of 3 generations of Tip Holder/Punch and Tip Pockets.
Measure and identify the correct size before selecting tools

First Generation 824™ OneTouch™ -3 with .5 Dia. Vacuum Tips



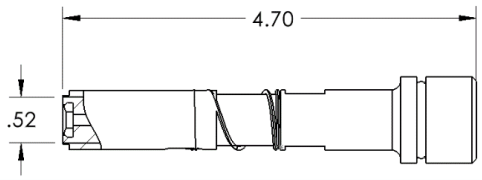
.40 Dia Vacuum Tip Holder Part# 15-01764



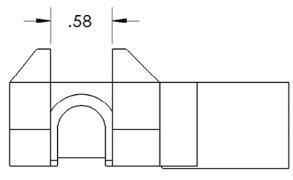
1st Gen. Tip Pockets Below According to Fastener Size

Part Number	Description (width X depth)	Standoffs	Nuts & Anchors
15-01578	OT Tip Pocket, .125 X .125 Relief	#4, #6, M3	#4, #6, M3, M3.5
15-01579	OT Tip Pocket, .150 X .150 Relief	#8, M3.5, M4	#8, M4
15-01580	OT Tip Pocket, .175 X .150 Relief	#10, M5	#10, M5
15-01581	OT Tip Pocket, .225 X .150 Relief	1/4, M6	1/4, M6
15-01582	OT Tip Pocket, No Relief	Studs & Blind Standoffs	

Second Generation 824™ OneTouch™ -3 with .663 Dia. Vacuum Tips

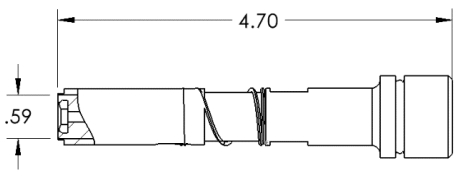


.52 Dia Vacuum Tip Holder Part# 15-03042

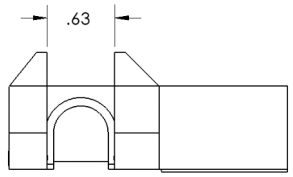


2nd Gen. Tip Pocket Part# 15-02237

Third Generation 824™ OneTouch™ -3 with .663 Dia. Vacuum Tips



.59 Dia Vacuum Tip Holder Part# 15-03047

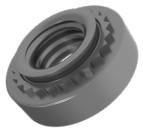


3rd Gen. Tip Pocket Part# 15-02949

PEM®: S™, SS™, CLS™, CLSS™

824™ OneTouch™ -3 with .5 Dia Vacuum Tips

Shuttle Nut Tooling



Notes:

PEM® CLA™ Aluminum nuts require custom tooling.

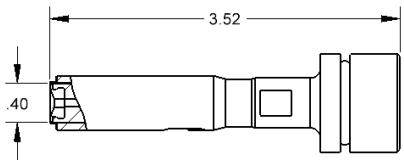
Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	.5 VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
NUTS		Included with set						
4-40-0,-1,-2	320-250	H-407-250-72	H-512-250	H-915-250	15-01778	15-01818	15-00650	15-02370
6-32-0,-1,-2	320-280	H-407-280-72	H-512-280	H-915-280	15-01779	15-01819	15-00651	15-02371
8-32-0,-1,-2	320-310	H-407-310-72	H-512-310	H-915-310	15-01780	15-01820	15-00652	15-02372
10-32-0,-1,-2	320-340	H-407-340-72	H-512-340	H-915-340	15-01781	15-01821	15-00653	15-02373
1/4-20-0,-1,-2	320-340	H-407-440-72	H-512-440	H-915-440	15-01782	15-01822	15-00654	N/A

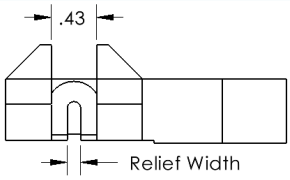
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	.5 VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
NUTS		Included with set						
M3-0,-1,-2	321-250M	H-407-250-72	H-512-250M	H-915-250	15-01778	15-01823	15-00650	15-02370
M3.5-0,-1,-2	321-280M	H-407-280-72	H-512-280M	H-915-280	15-01779	15-01824	15-00651	15-02371
M4-0,-1,-2	321-310M	H-407-310-72	H-512-310M	H-915-310	15-01780	15-01825	15-00652	15-02372
M5-0,-1,-2	321-340M	H-407-340-72	H-512-340M	H-915-340	15-01781	15-01826	15-00653	15-02373
M6-0,-1,-2	321-440M	H-407-440-72	H-512-440M	H-915-440	15-01782	15-01827	15-00654	N/A

First Generation 824™ OneTouch™ -3 with .5 Dia. Vacuum Tips



.40 Dia Vacuum Tip Holder Part# 15-01764

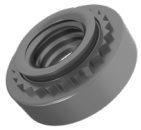


See page 17 or 19 for Replacement Tip Pockets

PEM®: S™, SS™, CLS™, CLSS™

824™ OneTouch™ -3 with .5 Dia Vacuum Tips

Shuttle Nut Tooling
(Shank Code 3)

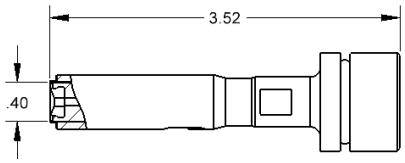


Notes:
1. The below tooling are available as MADE TO ORDER
2. PEM® CLA™ Aluminum nuts require custom tooling.

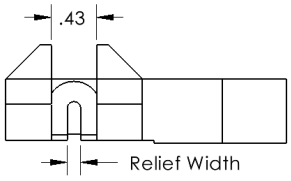
Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	.5 VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
NUTS		Included with set						
4-40-3	320-250-3	H-407-250-72	H-512-250-3	H-915-250-3	15-02346	15-02225	15-00650	15-02370
6-32-3	320-280-3	H-407-280-72	H-512-280-3	H-915-280-3	15-02347	15-02226	15-00651	15-02371
8-32-3	320-310-3	H-407-310-72	H-512-310-3	H-915-310-3	15-02348	15-02227	15-00652	15-02372
10-32-3	320-340-3	H-407-340-72	H-512-340-3	H-915-340-3	15-02349	15-02228	15-00653	15-02373
1/4-20-3	320-340-3	H-407-440-72	H-512-440-3	H-915-440-3	15-02350	15-02229	15-00654	N/A

First Generation 824™ OneTouch™ -3 with .5 Dia. Vacuum Tips



.40 Dia Vacuum Tip Holder Part# 15-01764



1st Gen. Tip Pockets Below According to Fastener Size

Part Number	Description (width X depth)	Standoffs	Nuts & Anchors
15-01578	OT Tip Pocket, .125 X .125 Relief	#4, #6, M3	#4, #6, M3, M3.5
15-01579	OT Tip Pocket, .150 X .150 Relief	#8, M3.5, M4	#8, M4
15-01580	OT Tip Pocket, .175 X .150 Relief	#10, M5	#10, M5
15-01581	OT Tip Pocket, .225 X .150 Relief	1/4, M6	1/4, M6

PEM®: FH™, FHS™, FHA™

824™ WindowTouch® -3
618™/824™ MSPe with MAS-9

Shuttle Stud Tooling

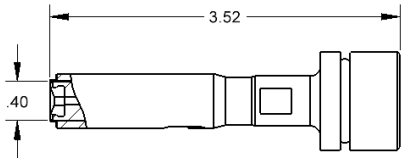
Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	.5 VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS		Included with set						
4-40 -5 to -16	322-218	H-309-218 -72	H-524-218	H-525-218	15-01788	15-01643	15-00655	15-02375
6-32 -5 to -20	322-234	H-309-234-72	H-524-234	H-525-234	15-01789	15-01643	15-00656	15-02376
8-32 -6 to -20	322-250	H-309-250-72	H-524-250	H-525-250	15-01790	15-01643	15-00657	15-02377
10-32 -6 to -20 10-24-6 to -20	322-281	H-309-281-72	H-524-281	H-525-281	15-01791	15-01643	15-00658	15-02378
1/4-20 -8 to -20	322-344	H-309-375-72	H-524-344	H-525-344	15-01792	15-01643	15-00659	15-02379

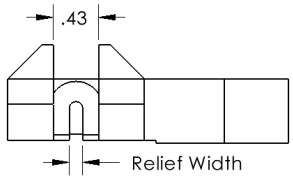
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	.5 VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS		Included with set						
M3 -6 to -25	322-218M	H-309-218-72	H-524-218	H-525-218	15-02362	15-02216	15-00670	15-02380
M3.5 -6 to -30	322-234	H-309-234-72	H-524-234	H-525-234	15-02363	15-02216	15-00656	15-02381
M4 -10 to -30	322-250M	H-309-250-72	H-524-250	H-525-250	15-02364	15-02216	15-00672	15-02382
M5 -10 to -30	353-281M	H-309-281-72	H-524-281	H-525-281	15-02365	15-02216	15-00673	15-02383
M6 -12 to -30	353-344M	H-309-375-72	H-524-344	H-525-344	15-02366	15-02216	15-00674	15-02384

First Generation 824™ OneTouch™ -3 with .5 Dia. Vacuum Tips



.40 Dia Vacuum Tip Holder Part# 15-01764

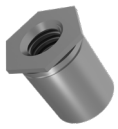


1st Gen. Tip Pocket for Studs/Standoffs Part#15-01842

PEM®: SO™, SOA™, SOS™

824™ OneTouch™ -3 with .5 Dia Vacuum Tips

Shuttle Standoff Tooling



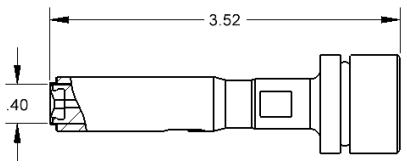
Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	.5 VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STANDOFFS		Included with set						
4-40 -8 to -34	323-236	H-309-250-72	H-524-265	H-525-265	15-01793	15-01814	15-00675	15-02385
64-40 -10 to -34	323-296	H-309-296-72	H-524-296	H-525-296	15-01794	15-01814	15-00676	15-02386
6-32 -10 to -34	324-296	H-309-296-72	H-524-296	H-525-296	15-01794	15-01815	15-00676	15-02386
86-32 -12 to -34	323-296	H-309-410-72	H-524-375	H-525-375	15-01795	15-01815	15-00677	15-02387
8-32 -12 to -34	324-296	H-309-410-72	H-524-375	H-525-375	15-01795	15-01816	15-00677	15-02387
10-32 -12 to -34	325-375	H-309-410-72	H-524-375	H-525-375	15-01795	15-01817	15-00677	15-02387

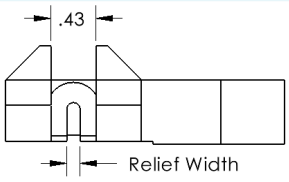
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	.5 VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STANDOFFS		Included with set						
M3 -6 to -30	323-265M	H-309-250-72	H-524-265	H-525-265	15-01793	15-01810	15-00675	15-02385
3.5M3 -8 to -30	323-296M	H-309-296-72	H-524-296	H-525-296	15-01794	15-01811	15-00676	15-02386
M4 -8 to -30	323-375M	H-309-410-72	H-524-375	H-525-375	15-01795	15-01812	15-00677	15-02387
M5 -8 to -30	324-375M	H-309-410-72	H-524-375	H-525-375	15-01795	15-01813	15-00677	15-02387

First Generation 824™ OneTouch™ -3 with .5 Dia. Vacuum Tips



.40 Dia Vacuum Tip Holder Part# 15-01764

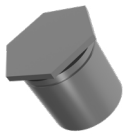


See page 16 or 18 for Replacement Tip Pockets

PEM®: BSO™, BSOA™, BSOS™

824™ OneTouch™ -3 with .5 Dia Vacuum Tips

Shuttle Blind Standoff Tooling



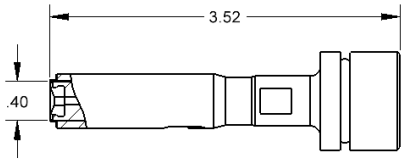
Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	.5 VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
BLIND STANDOFFS		Included with set						
4-40 -8 to -34	326-265	H-309-250 -72	H-524-265	H-525-265	15-01793	15-01643	15-00675	15-02385
64-40 -10 to -34 6-32 -10 to -34	326-296	H-309-296-72	H-524-296	H-525-296	15-01794	15-01643	15-00676	15-02386
86-32 -12 to -34 8-32 -12 to -34 10-32 -12 to -34	326-375	H-309-410-72	H-524-375	H-525-375	15-01795	15-01643	15-00677	15-02387

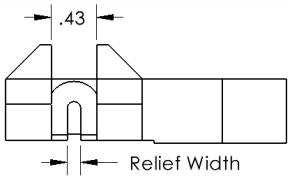
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	.5 VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
BLIND STANDOFFS		Included with set						
M3 -6 to -30	326-265	H-309-250-72	H-524-265	H-525-265	15-01793	15-01643	15-00675	15-02385
3.5M3 -8 to -30	326-296	H-309-296-72	H-524-296	H-525-296	15-01794	15-01643	15-00676	15-02386
M4 -8 to -30 M5 -8 to -30	326-375	H-309-410-72	H-524-375	H-525-375	15-01795	15-01643	15-00677	15-02387

First Generation 824™ OneTouch™ -3 with .5 Dia. Vacuum Tips



.40 Dia Vacuum Tip Holder Part# 15-01764

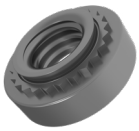


1st Gen. Tip Pocket for Studs/Standoffs Part#15-01842

PEM®: S™, SS™, CLS™, CLSS™

824™ OneTouch™ -3 with Medium Tip Pocket 15-02237

Shuttle Nut Tooling



Notes:

PEM® CLA™ Aluminum nuts require custom tooling.

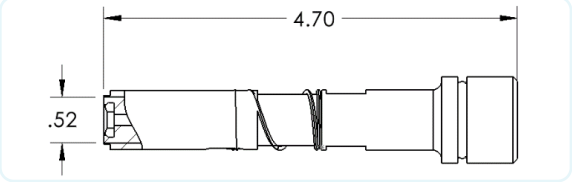
Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
NUTS		Included with set						
4-40-0,-1,-2	350-250	H-407-250-72	H-512-250	H-915-250	15-02346	15-02225	15-00650	15-02370
6-32-0,-1,-2	350-280	H-407-280-72	H-512-280	H-915-280	15-02347	15-02226	15-00651	15-02371
8-32-0,-1,-2	350-310	H-407-310-72	H-512-310	H-915-310	15-02348	15-02227	15-00652	15-02372
10-32-0,-1,-2	350-340	H-407-340-72	H-512-340	H-915-340	15-02349	15-02228	15-00653	15-02373
1/4-20-0,-1,-2	350-440	H-407-440-72	H-512-440	H-915-440	15-02350	15-02229	15-00654	N/A

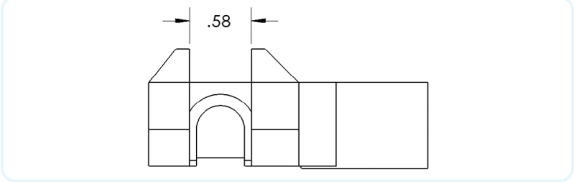
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
NUTS		Included with set						
M3-0,-1,-2	351-250M	H-407-250-72	H-512-250M	H-915-250	15-02346	15-02225	15-00650	15-02370
M3.5-0,-1,-2	351-280M	H-407-280-72	H-512-280M	H-915-280	15-02347	15-02226	15-00651	15-02371
M4-0,-1,-2	351-310M	H-407-310-72	H-512-310M	H-915-310	15-02348	15-02227	15-00652	15-02372
M5-0,-1,-2	351-340M	H-407-340-72	H-512-340M	H-915-340	15-02349	15-02228	15-00653	15-02373
M6-0,-1,-2	351-440M	H-407-440-72	H-512-440M	H-915-440	15-02350	15-02229	15-00654	N/A

Second Generation 824™ OneTouch™ -3 with .663 Dia. Vacuum Tips



.52 Dia Vacuum Tip Holder Part# 15-03042

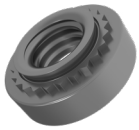


2nd Gen. Tip Pocket Part# 15-02237

PEM®: S™, SS™, CLS™, CLSS™

824™ OneTouch™ -3 with Medium Tip Pocket 15-02237

Shuttle Nut Tooling
(Shank Code 3)

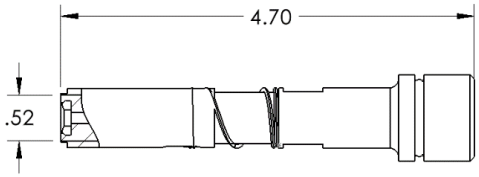


Notes:
1. The below tooling are available as MADE TO ORDER
2. PEM® CLA™ Aluminum nuts require custom tooling.

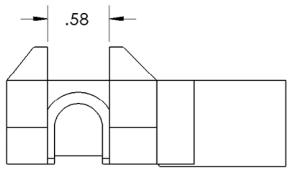
Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
NUTS		Included with set						
4-40-3	350-250-3	H-407-250-72	H-512-250-3	H-915-250-3	15-03021	15-02225	15-00650	15-02370
6-32-3	350-280-3	H-407-280-72	H-512-280-3	H-915-280-3	15-03027	15-02226	15-00651	15-02371
8-32-3	350-310-3	H-407-310-72	H-512-310-3	H-915-310-3	15-03028	15-02227	15-00652	15-02372
10-32-3	350-340-3	H-407-340-72	H-512-340-3	H-915-340-3	15-03029	15-02228	15-00653	15-02373
1/4-20-3	350-440-3	H-407-440-72	H-512-440	H-915-440	15-02989	15-02229	15-00654	15-00654

Second Generation 824™ OneTouch™ -3 with .663 Dia. Vacuum Tips



.52 Dia Vacuum Tip Holder Part# 15-03042



2nd Gen. Tip Pocket Part# 15-02237

PEM®: FH™, FHS™, FHA™

824™ OneTouch™ -3 with Medium Tip Pocket 15-02237

Shuttle Stud Tooling

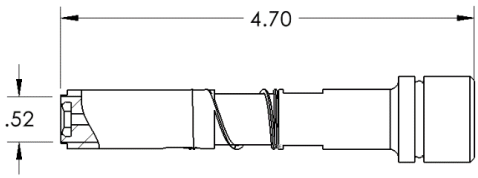
Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS		Included with set						
4-40 -5 to -16	352-218	H-309-218 -72	H-524-218	H-525-218	15-02362	15-02216	15-00655	15-02375
6-32 -5 to -20	352-234	H-309-234-72	H-524-234	H-525-234	15-02363	15-02216	15-00656	15-02376
8-32 -6 to -20	352-250	H-309-250-72	H-524-250	H-525-250	15-02364	15-02216	15-00657	15-02377
10-32 -6 to -20 10-24-6 to -20	352-281	H-309-281-72	H-524-281	H-525-281	15-02365	15-02216	15-00658	15-02378
1/4-20 -8 to -20	352-344	H-309-375-72	H-524-344	H-525-344	15-02366	15-02216	15-00659	15-02379

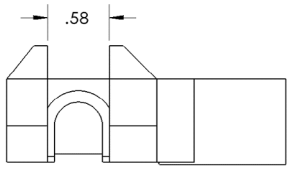
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS		Included with set						
M3 -6 to -25	353-218M	H-309-218-72	H-524-218	H-525-218	15-02362	15-02216	15-00670	15-02380
M3.5 -6 to -30	352-234	H-309-234-72	H-524-234	H-525-234	15-02363	15-02216	15-00656	15-02376
M4 -10 to -30	353-250M	H-309-250-72	H-524-250	H-525-250	15-02364	15-02216	15-00672	15-02382
M5 -10 to -30	353-281M	H-309-281-72	H-524-281	H-525-281	15-02365	15-02216	15-00673	15-02383
M6 -12 to -30	353-344M	H-309-375-72	H-524-344	H-525-344	15-02366	15-02216	15-00674	15-02384

Second Generation 824™ OneTouch™ -3 with .663 Dia. Vacuum Tips



.52 Dia Vacuum Tip Holder Part# 15-03042



2nd Gen. Tip Pocket Part# 15-02237

PEM®: SO™, SOA™, SOS™

824™ OneTouch™ -3 with Medium Tip Pocket 15-02237

Shuttle Standoff Tooling

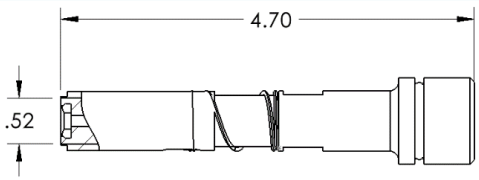
Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STANDOFFS		Included with set						
4-40 -8 to -34	354-265	H-309-250-72	H-524-265	H-525-265	15-02359	15-02221	15-00675	15-02385
64-40 -10 to -34	360-296	H-309-296-72	H-524-296	H-525-296	15-02360	15-02221	15-00676	15-02386
6-32 -10 to -34	354-296	H-309-296-72	H-524-296	H-525-296	15-02360	15-02222	15-00676	15-02386
86-32 -12 to -34	354-375	H-309-410-72	H-524-375	H-525-375	15-02361	15-02222	15-00677	15-02387
8-32 -12 to -34	355-375	H-309-410-72	H-524-375	H-525-375	15-02361	15-02223	15-00677	15-02387
10-32 -12 to -34	356-375	H-309-410-72	H-524-375	H-525-375	15-02361	15-02224	15-00677	15-02387

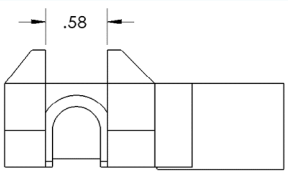
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STANDOFFS		Included with set						
M3 -6 to -30	357-265	H-309-250-72	H-524-265	H-525-265	15-02359	15-02217	15-00675	15-02385
3.5M3 -8 to -30	358-296	H-309-296-72	H-524-296	H-525-296	15-02360	15-02862	15-00676	15-02386
6-32 -10 to -34	358-375	H-309-410-72	H-524-375	H-525-375	15-02361	15-02219	15-00677	15-02387
86-32 -12 to -34	359-375	H-309-410-72	H-524-375	H-525-375	15-02361	15-02220	15-00677	15-02387

Second Generation 824™ OneTouch™ -3 with .663 Dia. Vacuum Tips



.52 Dia Vacuum Tip Holder Part# 15-03042

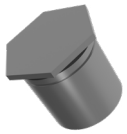


2nd Gen. Tip Pocket Part# 15-02237

PEM®: BSO™, BSOA™, BSOS™

824™ OneTouch™ -3 with Medium Tip Pocket 15-02237

Shuttle Blind Standoff Tooling



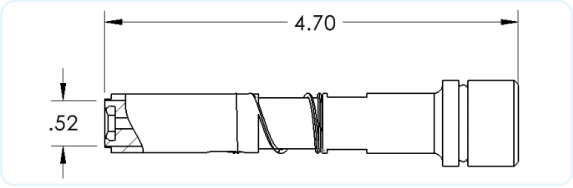
Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	.5 VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
BLIND STANDOFFS		Included with set						
4-40 -8 to -34	361-265	H-309-250 -72	H-524-265	H-525-265	15-02359	15-02216	15-00675	15-02385
64-40 -10 to -34 6-32 -10 to -34	362-296	H-309-296-72	H-524-296	H-525-296	15-02360	15-02216	15-00676	15-02386
86-32 -12 to -34 8-32 -12 to -34 10-32 -12 to -34	363-375	H-309-410-72	H-524-375	H-525-375	15-02361	15-02216	15-00677	15-02387

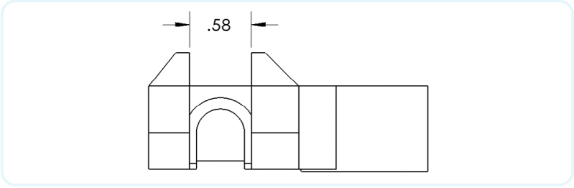
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	.5 VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
BLIND STANDOFFS		Included with set						
M3 -6 to -30	326-265	H-309-250-72	H-524-265	H-525-265	15-02359	15-02216	15-00675	15-02385
3.5M3 -8 to -30	326-296	H-309-296-72	H-524-296	H-525-296	15-02360	15-02216	15-00676	15-02386
M4 -8 to -30 M5 -8 to -30	326-375	H-309-410-72	H-524-375	H-525-375	15-02361	15-02216	15-00677	15-02387

Second Generation 824™ OneTouch™ -3 with .663 Dia. Vacuum Tips



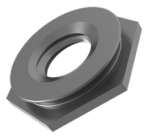
.52 Dia Vacuum Tip Holder Part# 15-03042



2nd Gen. Tip Pocket Part# 15-02237

PEM®: F™

824™ OneTouch™ -3 with Medium Tip Pocket 15-02237
Shuttle Flush Nut Tooling



Notes:
The below tooling are available as MADE TO ORDER

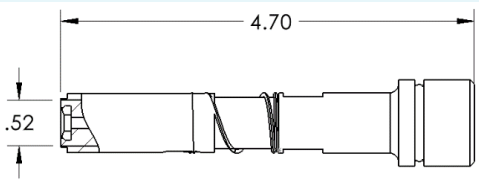
Inch Sizes

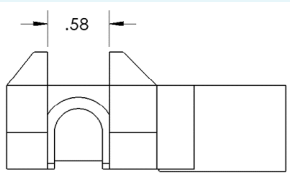
FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL
FLUSH NUTS		Included with set				
440-1	H-788-230M-1	14-00220	14-00039	15-02351	15-03675	15-02670
440-2	H-788-230M-2	14-00220	14-00040	15-02352	15-03675	15-02670
6-32-1	H-788-295M-1	14-00221	14-00041	15-02353	15-03676	15-02671
6-32-2	H-788-295M-2	14-00221	14-00042	15-02354	15-03676	15-02671
8-32-1	H-788-375M-1	14-00222	14-00159	15-02355	15-03677	15-02672
8-32-2	H-788-375M-2	14-00222	14-00160	15-02356	15-03677	15-02672
10-32-1	H-788-405M-1	14-00223	14-00161	15-02357	15-03678	15-02673
10-32-2	H-788-405M-2	14-00223	14-00162	15-02358	15-03678	15-02673

Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL
FLUSH NUTS		Included with set				
M3-1	H-788-230M-1	14-00220	14-00039	15-02351	15-03679	15-02670
M3-2	H-788-230M-2	14-00220	14-00040	15-02352	15-03679	15-02670
M3.5-1	H-788-295M-1	14-00221	14-00041	15-02353	15-03680	15-02671
M3.5-2	H-788-295M-2	14-00221	14-00042	15-02354	15-03680	15-02671
M4-1	H-788-375M-1	14-00222	14-00159	15-02355	15-03681	15-02672
M4-2	H-788-375M-2	14-00222	14-00160	15-02356	15-03681	15-02672
M5-1	H-788-405M-1	14-00223	14-00161	15-02357	15-03682	15-02673
M5-2	H-788-405M-2	14-00223	14-00162	15-02358	15-03682	15-02673

Second Generation 824™ OneTouch™ -3 with .663 Dia. Vacuum Tips

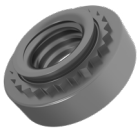




PEM®: S™, SS™, CLS™, CLSS™

824™ OneTouch™ -3 with Large Tip Pocket 15-02949

Shuttle Nut Tooling



Notes:

PEM® CLA™ Aluminum nuts require custom tooling.

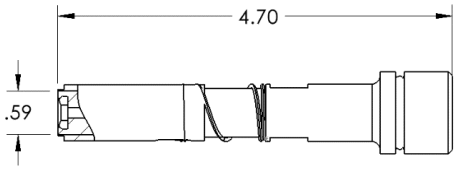
Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
NUTS		Included with set						
4-40-0,-1,-2	350-250-L	H-407-250-72	H-512-250	H-915-250	15-02346	15-02225	15-00650	15-02370
6-32-0,-1,-2	350-280-L	H-407-280-72	H-512-280	H-915-280	15-02347	15-02226	15-00651	15-02371
8-32-0,-1,-2	350-310-L	H-407-310-72	H-512-310	H-915-310	15-02348	15-02227	15-00652	15-02372
10-32-0,-1,-2	350-340-L	H-407-340-72	H-512-340	H-915-340	15-02349	15-02228	15-00653	15-02373
1/4-20-0,-1,-2	350-440-L	H-407-440-72	H-512-440	H-915-440	15-02350	15-02229	15-00654	N/A

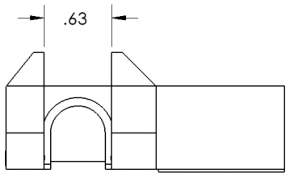
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
NUTS		Included with set						
M3-0,-1,-2	351-250M-L	H-407-250-72	H-512-250M	H-915-250	15-02346	15-02225	15-00650	15-02370
M3.5-0,-1,-2	351-280M-L	H-407-280-72	H-512-280M	H-915-280	15-02347	15-02226	15-00651	15-02371
M4-0,-1,-2	351-310M-L	H-407-310-72	H-512-310M	H-915-310	15-02348	15-02227	15-00652	15-02372
M5-0,-1,-2	351-340M-L	H-407-340-72	H-512-340M	H-915-340	15-02349	15-02228	15-00653	15-02373
M6-0,-1,-2	350-440M-L	H-407-440-72	H-512-440M	H-915-440	15-02350	15-02229	15-00654	N/A

Third Generation 824™ OneTouch™ -3 with .663 Dia. Vacuum Tips



.59 Dia Vacuum Tip Holder Part# 15-03047

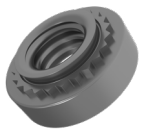


3rd Gen. Tip Pocket Part# 15-02949

PEM®: S™, SS™, CLS™, CLSS™

824™ OneTouch™ -3 with Large Tip Pocket 15-02949

Shuttle Nut Tooling
(Shank Code 3)

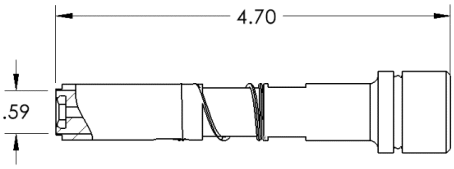


Notes:
1. The below tooling are available as MADE TO ORDER
2. PEM® CLA™ Aluminum nuts require custom tooling.

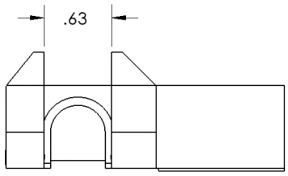
Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
NUTS		Included with set						
4-40-0,-1,-2	350-250-3-L	H-407-250-72	H-512-250-3	H-915-250-3	15-03542	15-02225	15-00650	15-02370
6-32-0,-1,-2	350-280-3-L	H-407-280-72	H-512-280-3	H-915-280-3	15-03543	15-02226	15-00651	15-02371
8-32-0,-1,-2	350-310-3-L	H-407-310-72	H-512-310-3	H-915-310-3	15-03544	15-02227	15-00652	15-02372
10-32-0,-1,-2	350-340-3-L	H-407-340-72	H-512-340-3	H-915-340-3	15-03545	15-02228	15-00653	15-02373
1/4-20-0,-1,-2	350-440-3-L	H-407-440-72	H-512-440-3	H-915-440-3	15-03546	15-02229	15-00654	N/A

Third Generation 824™ OneTouch™ -3 with .663 Dia. Vacuum Tips



.59 Dia Vacuum Tip Holder Part# 15-03047



3rd Gen. Tip Pocket Part# 15-02949

PEM®: FH™, FHS™, FHA™

824™ OneTouch™ -3 with Large Tip Pocket 15-02949

Shuttle Stud Tooling

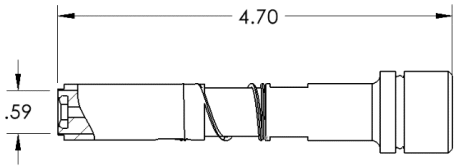
Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS		Included with set						
4-40 -5 to -16	352-218-L	H-309-218 -72	H-524-218	H-525-218	15-03124	15-02216	15-00655	15-02375
6-32 -5 to -20	352-234-L	H-309-234-72	H-524-234	H-525-234	15-03125	15-02216	15-00656	15-02376
8-32 -6 to -20	352-250-L	H-309-250-72	H-524-250	H-525-250	15-03126	15-02216	15-00657	15-02377
10-32 -6 to -20 10-24 -6 to -20	352-281-L 352-344-L	H-309-281-72	H-524-281	H-525-281	15-03127	15-02216	15-00658	15-02378
1/4-20 -8 to -20	352-344-L	H-309-375-72	H-524-344	H-525-344	15-01328	15-02216	15-00659	15-02379

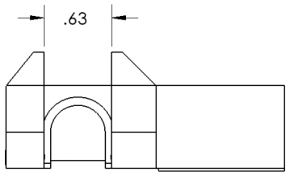
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS		Included with set						
M3 -6 to -25	353-281M-L	H-309-218-72	H-524-218	H-525-218	15-03124	15-02216	15-00670	15-02380
M3.5 -6 to -30	352-234-L	H-309-234-72	H-524-234	H-525-234	15-03125	15-02216	15-00656	15-02376
M4 -10 to -30	353-250M-L	H-309-250-72	H-524-250	H-525-250	15-03126	15-02216	15-00672	15-02382
M5 -10 to -30	353-281M-L	H-309-281-72	H-524-281	H-525-281	15-03127	15-02216	15-00673	15-02383
M6 -12 to -30	353-344M-L	H-309-375-72	H-524-344	H-525-344	15-03128	15-02216	15-00674	15-02384

Third Generation 824™ OneTouch™ -3 with .663 Dia. Vacuum Tips



.59 Dia Vacuum Tip Holder Part# 15-03047



3rd Gen. Tip Pocket Part# 15-02949

PEM®: SO™, SOA™, SOS™

824™ OneTouch™ -3 with Large Tip Pocket 15-02949

Shuttle Standoff Tooling

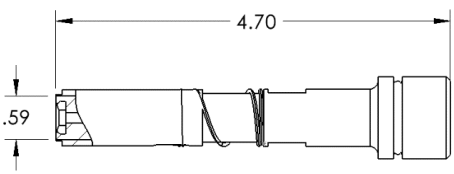
Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STANDOFFS		Included with set						
4-40 -8 to -34	354-265-L	H-309-250-72	H-524-265	H-525-265	15-03130	15-02221	15-00675	15-02385
64-40 -10 to -34	360-296-L	H-309-296-72	H-524-296	H-525-296	15-03131	15-02221	15-00676	15-02386
6-32 -10 to -34	354-296-L	H-309-296-72	H-524-296	H-525-296	15-03131	15-02222	15-00676	15-02386
86-32 -12 to -34	354-375-L	H-309-410-72	H-524-375	H-525-375	15-03132	15-02222	15-00677	15-02387
8-32 -12 to -34	355-375-L	H-309-410-72	H-524-375	H-525-375	15-03132	15-02223	15-00677	15-02387
10-32 -12 to -34	356-375-L	H-309-410-72	H-524-375	H-525-375	15-03132	15-02224	15-00677	15-02387

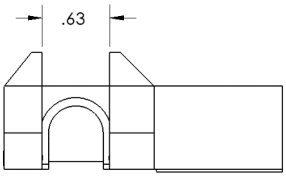
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STANDOFFS		Included with set						
M3 -6 to -30	357-265-L	H-309-250-72	H-524-265	H-525-265	15-03130	15-02217	15-00675	15-02385
3.5M3 -8 to -30	358-296-L	H-309-296-72	H-524-296	H-525-296	15-03131	15-02862	15-00676	15-02386
M4 -8 to -30 M5 -8 to -30	358-375-L	H-309-410-72	H-524-375	H-525-375	15-03132	15-02219	15-00677	15-02387
	359-375-L	H-309-410-72	H-524-375	H-525-375	15-03132	15-02220	15-00677	15-02387

Third Generation 824™ OneTouch™ -3 with .663 Dia. Vacuum Tips



.59 Dia Vacuum Tip Holder Part# 15-03047



3rd Gen. Tip Pocket Part# 15-02949

PEM®: BSO™, BSOA™, BSOS™

824™ OneTouch™ -3 with Large Tip Pocket 15-02949

Shuttle Blind Standoff Tooling

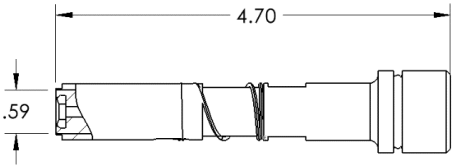
Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	.5 VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
BLIND STANDOFFS		Included with set						
4-40 -8 to -34	361-265-L	H-309-250 -72	H-524-265	H-525-265	15-03130	15-02216	15-00675	15-02385
64-40 -10 to -34 6-32 -10 to -34	362-296-L	H-309-296-72	H-524-296	H-525-296	15-03131	15-02216	15-00676	15-02386
86-32 -12 to -34 8-32 -12 to -34 10-32 -12 to -34	363-375-L	H-309-410-72	H-524-375	H-525-375	15-03132	15-02216	15-00677	15-02387

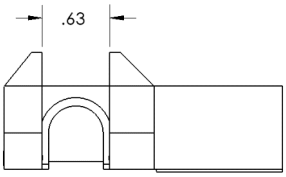
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	.5 VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
BLIND STANDOFFS		Included with set						
M3 -6 to -30	326-265-L	H-309-250-72	H-524-265	H-525-265	15-03130	15-02216	15-00675	15-02385
3.5M3 -8 to -30	326-296-L	H-309-296-72	H-524-296	H-525-296	15-03131	15-02216	15-00676	15-02386
M4 -8 to -30 M5 -8 to -30	326-375-L	H-309-410-72	H-524-375	H-525-375	15-03132	15-02216	15-00677	15-02387

Third Generation 824™ OneTouch™ -3 with .663 Dia. Vacuum Tips



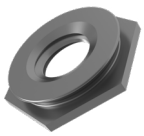
.59 Dia Vacuum Tip Holder Part# 15-03047



3rd Gen. Tip Pocket Part# 15-02949

PEM®: F™

824™ OneTouch™ -3 with Large Tip Pocket 15-02949
Shuttle Flush Nut Tooling



Notes:
The below tooling are available as MADE TO ORDER

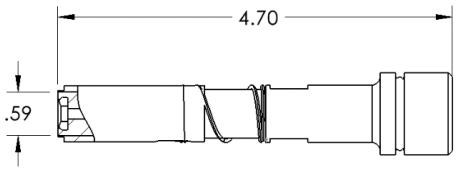
Inch Sizes

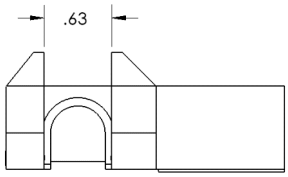
FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL
FLUSH NUTS		Included with set				
440-1	H-788-230-1-L	14-00220	14-00039	15-42351	15-03675	15-02670
440-2	H-788-230-2-L	14-00220	14-00040	15-42352	15-03675	15-02670
6-32-1	H-788-295-1-L	14-00221	14-00041	15-42353	15-03676	15-02671
6-32-2	H-788-295-2-L	14-00221	14-00042	15-42354	15-03676	15-02671
8-32-1	H-788-375-1-L	14-00222	14-00159	15-42355	15-03677	15-02672
8-32-2	H-788-375-2-L	14-00222	14-00160	15-42356	15-03677	15-02672
10-32-1	H-788-405-1-L	14-00223	14-00161	15-42357	15-03678	15-02673
10-32-2	H-788-405-2-L	14-00223	14-00162	15-42358	15-03678	15-02673

Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL
FLUSH NUTS		Included with set				
M3-1	H-788-230M-1-L	14-00220	14-00039	15-42351	15-03679	15-02670
M3-2	H-788-230M-2-L	14-00220	14-00040	15-42352	15-03679	15-02670
M3.5-1	H-788-295M-1-L	14-00221	14-00041	15-42353	15-03680	15-02671
M3.5-2	H-788-295M-2-L	14-00221	14-00042	15-42354	15-03680	15-02671
M4-1	H-788-375M-1-L	14-00222	14-00159	15-42355	15-03681	15-02672
M4-2	H-788-375M-2-L	14-00222	14-00160	15-42356	15-03681	15-02672
M5-1	H-788-405M-1-L	14-00223	14-00161	15-42357	15-03682	15-02673
M5-2	H-788-405M-2-L	14-00223	14-00162	15-42358	15-03682	15-02673

Third Generation 824™ OneTouch™ -3 with .663 Dia. Vacuum Tips

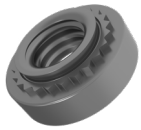




PEM®: S™, SS™, CLS™, CLSS™

824™ WindowTouch® -4e, -5e
618™ MSPe & 824™ MSPe

Shuttle Nut Tooling



Notes:
PEM® CLA™ Aluminum nuts require custom tooling.

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
NUTS			Included with set				
4-40-0,-1,-2	470-250	CLEAR	H-407-250-72	35N-MOD-4	15-01844	H-598-084	H-442-166S
6-32-0,-1,-2	470-280	RED	H-407-280-72	35N-MOD-6	15-01845	H-598-105	H-442-187S
8-32-0,-1,-2	470-310	BLUE	H-407-310-72	35N-MOD-8	15-01846	H-598-129	H-442-213S
10-32-0,-1,-2	470-340	GREEN	H-407-340-72	35N-MOD-10	15-01847	H-598-155	H-442-250S
10-24-0,-1,-2	470-341	GREEN	H-407-340-72	35N-MOD-10	15-01847	H-598-144	H-442-250S
1/4-20-0,-1,-2	470-440	YELLOW	H-407-440-72	35N-MOD-04	15-01848	H-598-195	H-442-344S
5/16-18 -1,-2	470-500	ORANGE	H-407-500-72	35N-MOD-05	15-03113	H-598-251	H-442-413S
3/8-16 -1,-2	470-560	CLEAR	H-407-687-96	35N-MOD-06	15-03123	H-598-306	H-442-500S

Metric Sizes

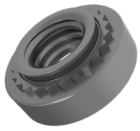
FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
NUTS			Included with set				
M2.5-0,-1,-2	470-251M	CLEAR	H-407-250-72	35N-MOD-M3	15-01844	H-598-078	H-442-166S
M3-0,-1,-2	470-250M	CLEAR	H-407-250-72	35N-MOD-M3	15-01844	H-598-093	H-442-166S
M3.5-0,-1,-2	470-280M	RED	H-407-280-72	35N-MOD-M3.5	15-01845	H-598-114	H-442-187S
M4-0,-1,-2	470-310M	BLUE	H-407-310-72	35N-MOD-M4	15-01846	H-598-122	H-442-213S
M5-0,-1,-2	470-340M	GREEN	H-407-340-72	35N-MOD-M5	15-01847	H-598-161	H-442-250S
M6-0,-1,-2	470-440M	YELLOW	H-407-440-72	35N-MOD-M6	15-01848	H-598-186	H-442-344S
M8-0,-1,-2	470-500M	CLEAR	H-407-500-72	35N-MOD-M8	15-03113	H-598-261	H-442-413S
M10-0,-1,-2	471-683M	CLEAR	H-407-750-96	15-03652	15-03653	15-03633	H-598-326

Notes:
A one time purchase of a Singulation Stand is required for M10 nut tooling
15-42362 Assembly, Singulation Stand, MAS 350

PEM®: S™, SS™, CLS™, CLSS™

824™ WindowTouch® -4e, -5e
618™ MSPe & 824™ MSPe

Shuttle Nut Tooling
(Shank Code 3)



Notes:
1. The below tooling are available as MADE TO ORDER
2. PEM® CA Aluminum nuts require custom tooling.

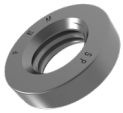
Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
NUTS			Included with set				
4-40-3	473-250	CLEAR	H-407-250-72	35N-MOD-4-3	15-01862	H-598-084	H-442-166S
6-32-3	473-280	RED	H-407-280-72	35N-MOD-6-3	15-01863	H-598-105	H-442-187S
8-32-3	473-310	BLUE	H-407-310-72	35N-MOD-8-3	15-01864	H-598-129	H-442-213S
10-32-3	473-340	GREEN	H-407-340-72	35N-MOD-10-3	15-01865	H-598-155	H-442-250S
10-24-3	437-341	GREEN	H-407-340-72	35N-MOD-10-3	15-01865	H-598-144	H-442-250S
1/4-20-3	473-440	YELLOW	H-407-440-72	35N-MOD-04-3	15-01866	H-598-195	H-442-344S

PEM®: SP™

824™ WindowTouch® -4e, -5e
618™ MSPe & 824™ MSPe

Shuttle SP™ Nut Tooling



Notes:
The below tooling are available as MADE TO ORDER

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
NUTS			Included with set				
4-40-0,-1,-2	400-250	CLEAR	H-407-250-72	35N-MOD-4	15-43010	H-698-084	H-442-166S
6-32-0,-1,-2	400-280	RED	H-407-280-72	35N-MOD-6	15-43011	H-698-105	H-442-187S
8-32-0,-1,-2	400-310	BLUE	H-407-310-72	35N-MOD-8	15-43012	H-698-129	H-442-213S
10-32-0,-1,-2	400-340	GREEN	H-407-340-72	35N-MOD-10	15-43013	H-698-155	H-442-250S
1/4-20-0,-1,-2	400-440	YELLOW	H-407-440-72	35N-MOD-04	15-43014	H-698-195	H-442-344S

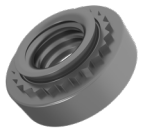
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
NUTS			Included with set				
M3-0,-1,-2	400-250M	CLEAR	H-407-250-72	35N-MOD-M3	15-43010	H-698-093	H-442-166S
M4-0,-1,-2	400-310M	BLUE	H-407-310-72	35N-MOD-M4	15-43012	H-698-122	H-442-213S
M5-0,-1,-2	400-340M	GREEN	H-407-340-72	35N-MOD-M5	15-43013	H-698-161	H-442-250S
M6-0,-1,-2	400-440M	YELLOW	H-407-440-72	35N-MOD-M6	15-43014	H-698-186	H-442-344S

PEM®: S™, SS™, CLS™, CLSS™

824™ WindowTouch® -4e, -5e
618™ MSPe & 824™ MSPe

Bottom Feed Nut Tooling



Notes:
PEM® CLA™ Aluminum nuts require custom tooling.
A one time purchase of a Singulation Stand is required for M10 nut tooling.
15-42362 Assembly, Singulation Stand, MAS 350

Inch Sizes

FASTENER SIZE	ABFT SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	ABFT ASSY
NUTS			Included with set		
2-56 & 4-40 0,-1,-2	411-250	CLEAR	H-407-250 -72	35N-MOD-4	H-908-250
2-56 & 4-40 (-3)	413-250	CLEAR	H-407-250 -72	35N-MOD-4-3	H-908-250-3
6-32-0,-1,-2	411-280	RED	H-407-280-72	35N-MOD-6	H-908-280
6-32-3	413-280	RED	H-407-280-72	35N-MOD-6-3	H-908-280-3
8-32-0,-1,-2	411-310	BLUE	H-407-310-72	35N-MOD-8	H-908-310
8-32-3	413-310	BLUE	H-407-310-72	35N-MOD-8-3	H-908-310-3
10-32-0,-1,-2	411-340	GREEN	H-407-340-72	35N-MOD-10	H-908-340
10-32-3	413-340	GREEN	H-407-340-72	35N-MOD-10-3	H-908-340-3
1/4-20-0,-1,-2	411-440	YELLOW	H-407-440-72	35N-MOD-04	H-700-440
1/4-20-3	413-440	YELLOW	H-407-440-72	35N-MOD-04-3	H-700-440-3
5/16-0,-1,-2	411-500	ORANGE	H-407-500-72	35N-MOD-05	H-700-500
5/16-3	413-500	ORANGE	H-407-500-72	35N-MOD-05-3	H-700-500-3

Metric Sizes

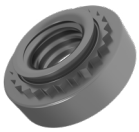
FASTENER SIZE	ABFT SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	ABFT ASSY
NUTS			Included with set		
M2, M2.5, M3 -0,-1,-2	411-250M	CLEAR	H-407-250-72	35N-MOD-M3	H-908-250
M3.5-0,-1,-2	411-280M	RED	H-407-280-72	35N-MOD-M3.5	H-908-280
M4-0,-1,-2	411-310M	BLUE	H-407-310-72	35N-MOD-M4	H-908-310
M5-0,-1,-2	411-340M	GREEN	H-407-340-72	35N-MOD-M5	H-908-340
M6-0,-1,-2	411-440M	YELLOW	H-407-440-72	35N-MOD-M6	H-700-440
M8-0,-1,-2	411-500M	ORANGE	H-407-500-72	35N-MOD-M8	H-700-500

FASTENER SIZE	ABFT SET	COLOR CODE	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	ABFT ASSY
NUTS			Included with set			
M10-0,-1,-3	415-683M	CLEAR	H-407-750-96	15-03652	15-03653	H-700-683

PEM®: S™, SS™, CLS™, CLSS™

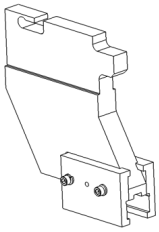
824™ WindowTouch® -4e, -5e
618™ MSPe & 824™ MSPe

Bottom Feed Nut Tooling



ABFT J-frame:

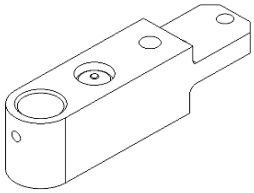
15-41870 ABFT J-FRAME ASSEMBLY, WT/OTLITE-4e, -5e FITS ABFT SIZES 4-40/M3 THRU 10-32/M5



ABFT adapters for use on TIS-2 (2 components required):

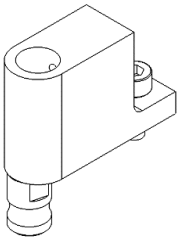
Arm (component 1):

15-02239 ABFT ARM



Adapter assembly per ABFT size (component 2):

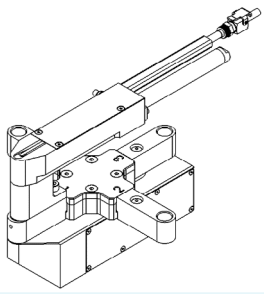
15-02390 ABFT Adapter ASSY 4-40 / M3 Nut
15-02391 ABFT Adapter ASSY 6-32 / M3.5 Nut
15-02392 ABFT Adapter ASSY 8-32 / M4 Nut
15-02393 ABFT Adapter ASSY 10-32 . M5 Nut
15-02934 ABFT Adapter ASSY 1/4-20 / M6 Nut



To feed multiple sizes with one adapter, the following 2 components may be used:

Adapter assembly 15-02945

15-02239 ABFT Arm (component 1)
15-02945 ABFT Adapter Assy, M3-M5 & 440-1032 (component 2)



PEM®: FH™, FHS™, FHA™

824™ WindowTouch® -4e, -5e
618™ MSPe & 824™ MSPe

Shuttle Stud Tooling

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS			Included with set					
4-40 -5 to -16	480-218	RED	H-309-218-72	35T-MOD-M3	15-01854	H-388-067	H-344-113	H-346-113
6-32 -5 to -20	480-234	BLUE	H-309-234-72	35T-MOD-M3.5	15-01855	H-388-067	H-344-139	H-346-139
8-32 -6 to -20	480-250	GREEN	H-309-250-72	35T-MOD-M4	15-01856	H-388-093	H-344-166	H-346-166
10-32 -6 to -20 10-24-6 to -20	480-281	YELLOW	H-309-281-72	35T-MOD-M5	15-01857	H-388-093	H-344-191	H-346-191
1/4-20 -8 to -20	480-344	CLEAR	H-309-375-72	35T-MOD-M6	15-01858	H-388-093	H-344-250	H-346-250
5/16-18 -8 to -20	480-500	CLEAR	8002368	35T-MOD-M8	15-01809	H-388-093	H-344-315	N/A

Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS			Included with set					
M3 -6 to -25	480-218M	RED	H-309-218-72	35T-MOD-M3	15-01854	H-388-067	H-344-121	H-346-121
M3.5 -6 to -30	480-234	BLUE	H-309-234-72	35T-MOD-M3.5	15-01855	H-388-067	H-344-139	H-346-139
M4 -10 to -30	480-250M	GREEN	H-309-250-72	35T-MOD-M4	15-01856	H-388-093	H-344-160	H-346-160
M5 -10 to -30	480-281M	YELLOW	H-309-281-72	35T-MOD-M5	15-01857	H-388-093	H-344-199	H-346-199
M6 -12 to -30	480-344M	CLEAR	H-309-375-72	35T-MOD-M6	15-01858	H-388-093	H-344-236	H-346-236
M8 -12 to -30	480-500	CLEAR	800238	35T-MOD-M8	15-01809	H-388-093	H-344-315	N/A

Auto Anvils For FH4™ Studs

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
STUDS			Included with set				
4-40 -5 to -16	401-218	RED	H-309-218-72	35T-MOD-M3	15-01854	H-388-067	H-345-113
6-32 -5 to -20	401-234	BLUE	H-309-234-72	35T-MOD-M3.5	15-01855	H-388-067	H-345-139
8-32 -6 to -20	401-250	GREEN	H-309-250-72	35T-MOD-M4	15-01856	H-388-093	H-345-166
10-32 -6 to -20	401-281	YELLOW	H-309-281-72	35T-MOD-M5	15-01857	H-388-093	H-345-191
M3 -6 TO -25	401-218M	RED	H-309-218-72	35T-MOD-M3	15-01854	H-388-067	H-345-121
M4 -10 to -30	401-250M	GREEN	H-309-250-72	35T-MOD-M4	15-01856	H-388-093	H-345-160
M5 -10 to -30	401-281M	YELLOW	H-309-281-72	35T-MOD-M5	15-01857	H-388-093	H-345-199

PEM®: HFH™, HFHS™, HFHB™

824™ WindowTouch® -4e, -5e
618™ MSPe & 824™ MSPe

Shuttle HFH Studs Tooling

Notes:
The below tooling are available as MADE TO ORDER

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS			Included with set					
M5 -15 to -35	437-320M	CLEAR	H-309-375-72	35HF-MOD-M5	15-03339	15-03890	H-344-199	H-348-199
10-32 -8 to -20	437-320	CLEAR	H-309-375-72	35HF-MOD-M5	15-03339	15-03890	H-344-191	H-348-191

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS			Included with set					
M6 -15 to -35	437-400M	CLEAR	8002368	35HF-MOD-M6	15-03340	15-03891	H-344-236	H-346-236
1/4-20 -8 to -20	437-400	CLEAR	8002368	35HF-MOD-M6	15-03340	15-03891	H-344-250	H-346-250

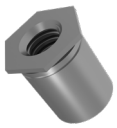
FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
STUDS			Included with set					
5/16-18 -12 to -20 M8 -20 to -35	437-500M	CLEAR	H-309-535	35HF-ORNT-M8	35HF-SING-M8	15-03341	15-03892	H-344-315

Notes:
A one time purchase of a Singulation Stand is required for HFH 5/15-18 & M8 tooling
15-42362 Assembly, Singulation Stand, MAS 350

PEM®: SO™, SOA™, SOS™

824™ WindowTouch® -4e, -5e
618™ MSPe & 824™ MSPe

Shuttle Standoff Tooling



Inch Sizes

STANDOFF SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS			Included with set					
4-40 -8 to -34	490-265	GREEN	H-309-250 -72	35S-MOD-M3	15-01859	H-398-084	H-344-169	H-346-169
64-40 -10 to -34	490-296	PURPLE	H-309-296-72	35S-MOD-M3.5	15-01860	H-398-084	H-344-216	H-346-216
6-32 -10 to -34	491-296	PURPLE	H-309-296-72	35S-MOD-M3.5	15-01860	H-398-105	H-344-216	H-346-216
86-32 -12 to -34	490-375	ORANGE	H-309-410-72	35S-MOD-M4	15-01861	H-398-105	H-344-284	H-346-284
8-32 -12 to -34	491-375	ORANGE	H-309-410-72	35S-MOD-M4	15-01861	H-398-129	H-344-284	H-346-284
10-32 -12 to -34	492-375	ORANGE	H-309-410-72	35S-MOD-M4	15-01861	H-398-155	H-344-284	H-346-284

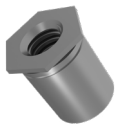
Metric Sizes

STANDOFF SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS			Included with set					
M3 -6 to -30	491-265	GREEN	H-309-250-72	35S-MOD-M3	15-01859	H-398-093	H-344-169	H-346-169
3.5M3 -8 to -30	492-296	PURPLE	H-309-296-72	35S-MOD-M3.5	15-01860	H-398-093	H-344-216	H-346-216
M4 -8 to -30	493-375	ORANGE	H-309-410-72	35S-MOD-M4	15-01861	H-398-122	H-344-284	H-346-284
M5 -8 to -30	494-375	ORANGE	H-309-410-72	35S-MOD-M4	15-01861	H-398-161	H-344-284	H-346-284

PEM®: SO™, SOA™, SOS™

824™ WindowTouch® -4e, -5e
618™ MSPe & 824™ MSPe

Shuttle Short Standoff Tooling



Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
STANDOFFS			Included with set				
#4-4	490-265-4	CLEAR	14-00220	35SS-MOD-M3-3	15-03393	H-398-084	H-344-169
#4-6	490-265-6	RED	H-407-280-72	35SS-MOD-4-6	15-03742	H-398-084	H-344-169
#64-4	490-296-4	RED	H-407-280-72	35SS-MOD-M3.5-3	15-03395	H-398-084	H-344-216
#64-6	490-296-6	BLUE	H-407-310-72	35SS-MOD-6-6	15-03396	H-398-084	H-344-216
#64-8	490-296-8	PURPLE	H-407-265-72	35SS-MOD-6-8	15-03743	H-398-084	H-344-216
#6-4	491-296-4	RED	H-407-280-72	35SS-MOD-M3.5-3	15-03395	H-398-105	H-344-216
#6-6	491-296-6	BLUE	H-407-310-72	35SS-MOD-6-6	15-03396	H-398-105	H-344-216
#6-8	491-296-8	PURPLE	H-407-265-72	35SS-MOD-6-8	15-03743	H-398-105	H-344-216
#86-4	490-375-4	GREEN	H-407-340-72	35SS-MOD-M4-3	15-03744	H-398-105	H-344-284
#86-6	490-375-6	PURPLE	H-407-265-72	35SS-MOD-8-6	15-03399	H-398-105	H-344-284
#86-8	490-375-8	PURPLE	H-407-265-72	35SS-MOD-8-8	15-03745	H-398-105	H-344-284
#8-4	491-375-4	GREEN	H-407-340-72	35SS-MOD-M4-3	15-03744	H-398-129	H-344-284
#8-6	491-375-6	PURPLE	H-407-265-72	35SS-MOD-8-6	15-03399	H-398-129	H-344-284
#8-8	491-375-8	PURPLE	H-407-265-72	35SS-MOD-8-8	15-03745	H-398-129	H-344-284
#10-4	492-375-4	GREEN	H-407-340-72	35SS-MOD-M4-3	15-03744	H-398-155	H-344-284
#10-6	492-375-6	PURPLE	H-407-265-72	35SS-MOD-8-6	15-03399	H-398-155	H-344-284
#10-8	492-375-8	PURPLE	H-407-265-72	35SS-MOD-8-8	15-03745	H-398-155	H-344-284

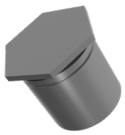
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
STANDOFFS			Included with set				
M3-3	491-265-3	CLEAR	14-00220	35SS-MOD-M3-3	15-03393	H-398-093	H-344-169
M3-4	491-265-4	RED	H-407-280-72	35SS-MOD-M3-4	15-03394	H-398-093	H-344-169
3.5M3-3	492-296-3	RED	H-407-280-72	35SS-MOD-M3.5-3	15-03395	H-398-093	H-344-216
3.5M3-4	492-296-4	BLUE	H-407-310-72	35SS-MOD-M3.5-4	15-03397	H-398-093	H-344-216
3.5M3-6	492-296-6	PURPLE	H-407-265-72	35SS-MOD-M3.5-6	15-03398	H-398-093	H-344-216
M4-3	493-375-3	GREEN	H-407-340-72	35SS-MOD-M4-3	15-03744	H-398-122	H-344-284
M4-4	493-375-4	GREEN	H-407-340-72	35SS-MOD-M4-4	15-03400	H-398-122	H-344-284
M4-6	493-375-6	PURPLE	H-407-265-72	35SS-MOD-M4-6	15-03401	H-398-122	H-344-284
M5-3	494-375-3	GREEN	H-407-340-72	35SS-MOD-M4-3	15-03744	H-398-161	H-344-284
M5-4	494-375-4	GREEN	H-407-340-72	35SS-MOD-M4-4	15-03400	H-398-161	H-344-284
M5-6	494-375-6	PURPLE	H-407-265-72	35SS-MOD-M4-6	15-03401	H-398-161	H-344-284

PEM®: BSO™, BSOA™, BSOS™

824™ WindowTouch® -4e, -5e
618™ MSPe & 824™ MSPe

Shuttle Blind Standoff Tooling



Inch Sizes

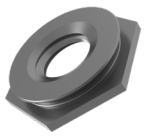
FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
BLIND STANDOFFS			Included with set					
4-40 -8 to -34	490-265	GREEN	H-309-250 -72	35S-MOD-M3	15-01859	H-398-084	H-344-169	H-346-169
64-40 -10 to -34 6-32 -10 to -34	495-296	PURPLE	H-309-296-72	35S-MOD-M3.5	15-01860	H-388-067	H-344-216	H-346-216
86-32 -12 to -34 8-32 -12 to -34 10-32 -12 to -34	495-375	ORANGE	H-309-410-72	35S-MOD-M4	15-01861	H-388-093	H-344-284	H-346-284

Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
BLIND STANDOFFS			Included with set					
M3 -6 to -30	495-265	GREEN	H-309-250-72	35S-MOD-M3	15-01859	H-388-067	H-344-169	H-346-169
3.5M3 -8 to -30	495-296	PURPLE	H-309-296-72	35S-MOD-M3.5	15-01860	H-388-067	H-344-216	H-346-216
M4 -8 to -30 M5 -8 to -30	495-375	ORANGE	H-309-410-72	35S-MOD-M4	15-01861	H-388-093	H-344-284	H-346-284

PEM®: F™

824™ WindowTouch® -4e, -5e
618™ MSPe & 824™ MSPe
Shuttle Flush Nut Tooling



Notes:
The below tooling are available as MADE TO ORDER

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
FLUSH NUTS		Included with set				
440-1	481-230	14-00220	35FN-MOD-M3-1	15-02019	H-398-084	H-442-230S
440-2	482-230	14-00220	35FN-MOD-M3-2	15-02020	H-398-084	H-442-230S
6-32-1	481-295	14-00221	35FN-MOD-M3.5-1	15-02021	H-398-105	H-442-295S
6-32-2	482-295	14-00221	35FN-MOD-M3.5-2	15-02022	H-398-105	H-442-295S
8-32-1	481-375	14-00222	35FN-MOD-M4-1	15-02023	H-398-129	H-442-375S
8-32-2	482-375	14-00222	35FN-MOD-M4-2	15-02024	H-398-129	H-442-375S
10-32-1	481-405	14-00223	35FN-MOD-M5-1	15-02025	H-398-155	H-442-405S
10-32-2	482-405	14-00223	35FN-MOD-M5-2	15-02026	H-398-155	H-442-405S

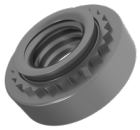
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
FLUSH NUTS		Included with set				
M3-1	481-230M	14-00220	35FN-MOD-M3-1	15-02019	H-398-093	H-442-230S
M3-2	482-230M	14-00220	35FN-MOD-M3-2	15-02020	H-398-093	H-442-230S
M3.5-1	481-295M	14-00221	35FN-MOD-M3.5-1	15-02021	H-398-114	H-442-295S
M3.5-2	482-295M	14-00221	35FN-MOD-M3.5-2	15-02022	H-398-114	H-442-295S
M4-1	481-375M	14-00222	35FN-MOD-M4-1	15-02023	H-398-122	H-442-375S
M4-2	482-375M	14-00222	35FN-MOD-M4-2	15-02024	H-398-122	H-442-375S
M5-1	481-405M	14-00223	35FN-MOD-M5-1	15-02025	H-398-161	H-442-405S
M5-2	482-405M	14-00223	35FN-MOD-M5-2	15-02026	H-398-161	H-442-405S

PEM®: S™, SS™, CLS™, CLSS™

824™ OneTouch™ -4e, -5e

Shuttle Nut Tooling



Notes:
PEM® CLA™ Aluminum nuts require custom tooling.

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
NUTS			Included with set					
4-40-0,-1,-2	450-250	CLEAR	H-407-250-72	35N-MOD-4	15-03117	15-02225	15-00650	15-02370
6-32-0,-1,-2	450-280	RED	H-407-280-72	35N-MOD-6	15-03118	15-02226	15-00651	15-02371
8-32-0,-1,-2	450-310	BLUE	H-407-310-72	35N-MOD-8	15-03119	15-02227	15-00652	15-02372
10-32-0,-1,-2	450-340	GREEN	H-407-340-72	35N-MOD-10	15-03120	15-02228	15-00653	15-02373
10-24-0,-1,-2	450-341	GREEN	H-407-340-72	35N-MOD-10	15-03120	15-02235	15-00653	15-02373
1/4-20-0,-1,-2	450-440	YELLOW	H-407-440-72	35N-MOD-04	15-03121	15-02229	15-00654	N/A
5/16-1,-2	450-500	ORANGE	H-407-500-72	35N-MOD-05	15-03122	15-02272	15-02374	N/A
3/8-1, -2	450-560	CLEAR	H-407-687-96	35N-MOD-06	15-03123	15-03838	15-42994	N/A

Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
NUTS			Included with set					
M2.5-0,-1,-2	450-251M	CLEAR	H-407-250-72	35N-MOD-M3	15-03117	15-02248	15-00650	15-02370
M3-0,-1,-2	450-250M	CLEAR	H-407-250-72	35N-MOD-M3	15-03117	15-02230	15-00650	15-02370
M3.5-0,-1,-2	450-280M	RED	H-407-280-72	35N-MOD-M3.5	15-03118	15-02231	15-00651	15-02371
M4-0,-1,-2	450-310M	BLUE	H-407-310-72	35N-MOD-M4	15-03119	15-02232	15-00652	15-02372
M5-0,-1,-2	450-340M	GREEN	H-407-340-72	35N-MOD-M5	15-03120	15-02233	15-00653	15-02373
M6-0,-1,-2	450-440M	YELLOW	H-407-440-72	35N-MOD-M6	15-03121	15-02234	15-00654	N/A
M8-0,-1,-2	450-500M	ORANGE	H-407-500-72	35N-MOD-M8	15-03122	15-02238	15-02374	N/A

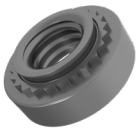
FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM TIP	1/2" DIA AUTO ANVIL (Optional)
NUTS			Included with set					
M10-0,-1,-2	451-683M	CLEAR	H-407-750-96	15-03652	15-03653	15-03246	15-03254	15-03256

Notes:
A one time purchase of a Singulation Stand is required for M10 nut tooling
15-42362 Assembly, Singulation Stand, MAS 350

PEM®: S™, SS™, CLS™, CLSS™

824™ OneTouch™ -4e, -5e

Shuttle Nut Tooling
(Shank Code 3)



Notes:
1. The below tooling are available as MADE TO ORDER
2. PEM® CLA™ Aluminum nuts require custom tooling.

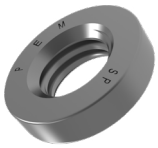
Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
NUTS			Included with set					
4-40-3	499-250	CLEAR	H-407-250-72	35N-MOD-4-3	15-03542	15-02225	15-00650	15-02370
6-32-3	499-280	RED	H-407-280-72	35N-MOD-6-3	15-03543	15-02226	15-00651	15-02371
8-32-3	499-310	BLUE	H-407-310-72	35N-MOD-8-3	15-03544	15-02227	15-00652	15-02372
10-32-3	499-340	GREEN	H-407-340-72	35N-MOD-10-3	15-03545	15-02228	15-00653	15-02373
10-24-3	499-341	GREEN	H-407-340-72	35N-MOD-10-3	15-03545	15-02235	15-00653	15-02373
1/4-20-3	499-440	YELLOW	H-407-440-72	35N-MOD-04-3	15-03546	15-02229	15-00654	N/A

PEM®: SP™

824™ OneTouch™ -4e, -5e

Shuttle SP Nut Tooling



Notes:
The below tooling are available as MADE TO ORDER

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL
NUTS			Included with set				
4-40-0,-1,-2	410-250	CLEAR	H-407-250-72	35N-MOD-4	15-43015	15-03916	15-00650
6-32-0,-1,-2	410-280	RED	H-407-280-72	35N-MOD-6	15-43016	15-03918	15-00651
8-32-0,-1,-2	410-310	BLUE	H-407-310-72	35N-MOD-8	15-43017	15-03920	15-00652
10-32-0,-1,-2	410-340	GREEN	H-407-340-72	35N-MOD-10	15-43018	15-03921	15-00653
1/4-20-0,-1,-2	410-440	YELLOW	H-407-440-72	35N-MOD-04	15-43019	15-03953	15-00654

Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL
NUTS			Included with set				
M3-0,-1,-2	410-250M	CLEAR	H-407-250-72	35N-MOD-M3	15-43015	15-03917	15-00650
M4-0,-1,-2	410-310M	BLUE	H-407-310-72	35N-MOD-M4	15-43017	15-03919	15-00652
M5-0,-1,-2	410-340M	GREEN	H-407-340-72	35N-MOD-M5	15-43018	15-03922	15-00653
M6-0,-1,-2	410-440M	YELLOW	H-407-440-72	35N-MOD-M6	15-43019	15-03923	15-00654

PEM®: FH™, FHS™, FHA™

824™ OneTouch™ -4e, -5e

Shuttle Stud Tooling

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS			Included with set					
4-40 -5 to -16	452-218	RED	H-309-218-72	35T-MOD-M3	15-03124	15-02216	15-00655	15-02375
6-32 -5 to -20	452-234	BLUE	H-309-234-72	35T-MOD-M3.5	15-03125	15-02216	15-00656	15-02376
8-32 -6 to -20	452-250	GREEN	H-309-250-72	35T-MOD-M4	15-03126	15-02216	15-00657	15-02377
10-32 -6 to -20 10-24-6 to -20	452-281	YELLOW	H-309-281-72	35T-MOD-M5	15-03127	15-02216	15-00658	15-02378
1/4-20 -8 to -20	452-344	CLEAR	H-309-375-72	35T-MOD-M6	15-03128	15-02216	15-00659	15-02379
1/4-20 -8 to -20	452-500	CLEAR	8002368	35T-MOD-M8	15-03220	15-02216	15-00662	N/A

Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS			Included with set					
M3 -6 to -25	452-218M	RED	H-309-218-72	35T-MOD-M3	15-03124	15-02216	15-00670	15-02380
M3.5 -6 to -30	452-234	BLUE	H-309-234-72	35T-MOD-M3.5	15-03125	15-02216	15-00656	15-02381
M4 -10 to -30	452-250M	GREEN	H-309-250-72	35T-MOD-M4	15-03126	15-02216	15-00672	15-02382
M5 -10 to -30	452-281M	YELLOW	H-309-281-72	35T-MOD-M5	15-03127	15-02216	15-00673	15-02383
M6 -12 to -30	452-344M	CLEAR	H-309-375-72	35T-MOD-M6	15-03128	15-02216	15-00674	15-02384
M8 -12 to -30	452-500	CLEAR	8002368	35T-MOD-M8	15-03220	15-02216	15-00662	N/A

AUTO ANVILS FOR FH4™ STUDS

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
STUDS			Included with set				
4-40 - 5 to -16	402-218	RED	H-309-218-72	35T-MOD-M3	15-03124	15-02216	15-03360
6-32 -5 to 20	402-234	BLUE	H-309-234-72	35T-MOD-M3.5	15-03125	15-02216	15-03361
8-32 -6 to 20	402-250	GREEN	H-309-250-72	35T-MOD-M4	15-03126	15-02216	15-03362
10-32 -6 to 20	402-281	YELLOW	H-309-281-72	35T-MOD-M5	15-03127	15-02216	15-03363
M3 -6 to -25	402-218M	RED	H-309-218-72	35T-MOD-M3	15-03126	15-02216	15-03365
M4 - 10 to -30	402-250M	GREEN	H-309-250-72	35T-MOD-M4	15-03127	15-02216	15-03366
M5 - 10 to -30	402-281M	YELLOW	H-309-281-72	35T-MOD-M5	15-03128	15-02216	15-03367

PEM®: HFH™, HFHS™, HFHB™

824™ OneTouch™ -4e, -5e

Shuttle HFH Studs Tooling

Notes:
The below tooling are available as MADE TO ORDER

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS			Included with set					
M5 -15 to -35	497-320M	CLEAR	H-309-375-72	35HF-MOD-M5	15-03342	15-03896	15-00673	15-02383
10-32 -8 to -20	497-320	CLEAR	H-309-375-72	35HF-MOD-M5	15-03342	15-03896	15-00658	15-02378

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS			Included with set					
M6 -15 to -35	497-400M	CLEAR	8002368	35HF-MOD-M6	15-03343	15-03897	15-00674	15-02384
1/4-20 -8 to -20	497-400	CLEAR	8002368	35HF-MOD-M6	15-03343	15-03897	15-00659	15-02379

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL
STUDS			Included with set					
5/16-18 -12 to -20 M8 -20 to -35	437-500M	CLEAR	H-309-535	35HF-ORNT-M8	35HF-SING-M8	15-03341	15-03892	H-344-315

Notes:
A one time purchase of a Singulation Stand is required for HFH™ 5/15-18 & M8 tooling
15-42362 Assembly, Singulation Stand, MAS 350

PEM®: SO™, SOA™, SOS™

824™ OneTouch™ -4e, -5e

Shuttle Standoff Tooling

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STANDOFFS			Included with set					
4-40 -8 to -34	454-265	GREEN	H-309-250 -72	35S-MOD-M3	15-03130	15-02221	15-00675	15-02385
64-40 -10 to -34	460-296	PURPLE	H-309-296-72	35S-MOD-M3.5	15-03131	15-02221	15-00676	15-02386
6-32 -10 to -34	454-296	PURPLE	H-309-296-72	35S-MOD-M3.5	15-03131	15-02222	15-00676	15-02386
86-32 -12 to -34	454-375	ORANGE	H-309-410-72	35S-MOD-M4	15-03132	15-02222	15-00677	15-02387
8-32 -12 to -34	455-375	ORANGE	H-309-410-72	35S-MOD-M4	15-03132	15-02223	15-00677	15-02387
10-32 -12 to -34	456-375	ORANGE	H-309-410-72	35S-MOD-M4	15-03132	15-02224	15-00677	15-02387

Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STANDOFFS			Included with set					
M3 -6 to -30	457-265	GREEN	H-309-250 -72	35S-MOD-M3	15-03130	15-02217	15-00675	15-02385
3.5M3 -8 to -30	458-296	PURPLE	H-309-296-72	35S-MOD-M3.5	15-03131	15-02217	15-00676	15-02386
M4 -8 to -30	458-375	ORANGE	H-309-410-72	35S-MOD-M3.5	15-03132	15-02219	15-00677	15-02387
M5 -8 to -30	459-375	ORANGE	H-309-410-72	35S-MOD-M4	15-03132	15-02220	15-00677	15-02387

PEM®: SO™, SOA™, SOS™

824™ OneTouch™ -4e, -5e

Shuttle Short Standoff Tooling

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
STANDOFFS			Included with set				
#4-4	454-265-4	CLEAR	14-00220	35SS-MOD-M3-3	15-03747	15-02221	15-00675
#4-6	454-265-6	RED	H-407-280-72	35SS-MOD-4-6	15-03756	15-02221	15-00675
#64-4	460-296-4	RED	H-407-280-72	35SS-MOD-M3.5-3	15-03749	15-02221	15-00676
#64-6	460-296-6	BLUE	H-407-310-72	35SS-MOD-6-6	15-03750	15-02221	15-00676
#64-8	460-296-8	PURPLE	H-407-265-72	35SS-MOD-6-8	15-03757	15-02221	15-00676
#6-4	454-296-4	RED	H-407-280-72	35SS-MOD-M3.5-3	15-03749	15-02222	15-00676
#6-6	454-296-6	BLUE	H-407-310-72	35SS-MOD-6-6	15-03750	15-02222	15-00676
#6-8	454-296-8	PURPLE	H-407-265-72	35SS-MOD-6-8	15-03757	15-02222	15-00676
#86-4	454-375-4	GREEN	H-407-340-72	35SS-MOD-M4-3	15-03758	15-02222	15-00677
#86-6	454-375-6	PURPLE	H-407-265-72	35SS-MOD-8-6	15-03753	15-02222	15-00677
#86-8	454-375-8	PURPLE	H-407-265-72	35SS-MOD-8-8	15-03759	15-02222	15-00677
#8-4	455-375-4	GREEN	H-407-340-72	35SS-MOD-M4-3	15-03758	15-02223	15-00677
#8-6	455-375-6	PURPLE	H-407-265-72	35SS-MOD-8-6	15-03753	15-02223	15-00677
#8-8	455-375-8	PURPLE	H-407-265-72	35SS-MOD-8-8	15-03759	15-02223	15-00677
#10-4	456-375-4	GREEN	H-407-340-72	35SS-MOD-M4-3	15-03758	15-02224	15-00677
#10-6	456-375-6	PURPLE	H-407-265-72	35SS-MOD-8-6	15-03753	15-02224	15-00677
#10-8	456-375-8	PURPLE	H-407-265-72	35SS-MOD-8-8	15-03759	15-02224	15-00677

Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
STANDOFFS			Included with set				
M3-3	457-265-3	CLEAR	14-00220	35SS-MOD-M3-3	15-03747	15-02217	15-00675
M3-4	457-265-4	RED	H-407-280-72	35SS-MOD-M3-4	15-03748	15-02217	15-00675
3.5M3-3	458-296-3	RED	H-407-280-72	35SS-MOD-M3.5-3	15-03749	15-02217	15-00676
3.5M3-4	458-296-4	BLUE	H-407-310-72	35SS-MOD-M3.5-4	15-03751	15-02217	15-00676
3.5M3-6	458-296-6	PURPLE	H-407-265-72	35SS-MOD-M3.5-6	15-03752	15-02217	15-00676
M4-3	458-375-3	GREEN	H-407-340-72	35SS-MOD-M4-3	15-03758	15-02219	15-00677
M4-4	458-375-4	GREEN	H-407-340-72	35SS-MOD-M4-4	15-03754	15-02219	15-00677
M4-6	458-375-6	PURPLE	H-407-265-72	35SS-MOD-M4-6	15-03755	15-02219	15-00677
M5-3	459-375-3	GREEN	H-407-340-72	35SS-MOD-M4-3	15-03758	15-02220	15-00677
M5-4	459-375-4	GREEN	H-407-340-72	35SS-MOD-M4-4	15-03754	15-02220	15-00677
M5-6	459-375-6	PURPLE	H-407-265-72	35SS-MOD-M4-6	15-03755	15-02220	15-00677

PEM®: BSO™, BSOA™, BSOS™

824™ OneTouch™ -4e, -5e

Shuttle Blind Standoff Tooling

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
BLIND STANDOFFS			Included with set					
4-40 -8 to -34	461-265	GREEN	H-309-250 -72	35S-MOD-M3	15-03130	15-02216	15-00675	15-02385
64-40 -10 to -34 6-32 -10 to -34	462-296	PURPLE	H-309-296-72	35S-MOD-M3.5	15-03131	15-02216	15-00676	15-02386
86-32 -12 to -34 8-32 -12 to -34 10-32 -12 to -34	463-375	ORANGE	H-309-410-72	35S-MOD-M4	15-03132	15-02216	15-00677	15-02387

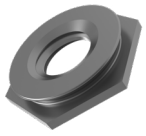
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
BLIND STANDOFFS			Included with set					
M3 -6 to -30	461-265	GREEN	H-309-250-72	35S-MOD-M3	15-03130	15-02216	15-00675	15-02385
3.5M3 -8 to -30	462-296	PURPLE	H-309-296-72	35S-MOD-M3.5	15-03131	15-02216	15-00676	15-02386
M4 -8 to -30 M5 -8 to -30	463-375	ORANGE	H-309-410-72	35S-MOD-M4	15-03132	15-02216	15-00677	15-02387

PEM®: F™

824™ OneTouch™ -4e, -5e

Shuttle Flush Nut Tooling



Notes:
The below tooling are available as MADE TO ORDER

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	MAS 9 MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
FLUSH NUTS		Included with set				
440-1	421-230	14-00220	35FN-MOD-M3-1	15-42351	15-02221	15-02670
440-2	422-230	14-00220	35FN-MOD-M3-2	15-42352	15-02221	15-02670
6-32-1	421-295	14-00221	35FN-MOD-M3.5-1	15-42353	15-02222	15-02671
6-32-2	422-295	14-00221	35FN-MOD-M3.5-2	15-42354	15-02222	15-02671
8-32-1	421-375	14-00222	35FN-MOD-M4-1	15-42355	15-02223	15-02672
8-32-2	422-375	14-00222	35FN-MOD-M4-2	15-42356	15-02223	15-02672
10-32-1	421-405	14-00223	35FN-MOD-M5-1	15-42357	15-02224	15-02673
10-32-2	422-405	14-00223	35FN-MOD-M5-2	15-42358	15-02224	15-02673

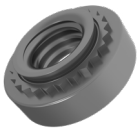
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	MAS 9 MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
FLUSH NUTS		Included with set				
M3-1	421-230M	14-00220	35FN-MOD-M3-1	15-42351	15-02217	15-02670
M3-2	422-230M	14-00220	35FN-MOD-M3-2	15-42352	15-02217	15-02670
M3.5-1	421-295M	14-00221	35FN-MOD-M3.5-1	15-42353	15-02218	15-02671
M3.5-2	422-295M	14-00221	35FN-MOD-M3.5-2	15-42354	15-02218	15-02671
M4-1	421-375M	14-00222	35FN-MOD-M4-1	15-42355	15-02219	15-02672
M4-2	422-375M	14-00222	35FN-MOD-M4-2	15-42356	15-02219	15-02672
M5-1	421-405M	14-00223	35FN-MOD-M5-1	15-42357	15-02220	15-02673
M5-2	422-405M	14-00223	35FN-MOD-M5-2	15-42358	15-02220	15-02673

PEM®: S™, SS™, CLS™, CLSS™

824™ OneTouch™ LITE -4e, -5e

Shuttle Nut Tooling



Notes:
PEM® CLA™ Aluminum nuts require custom tooling.

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL
NUTS			Included with set				
4-40-0,-1,-2	464-250	CLEAR	H-407-250-72	35N-MOD-4	15-03117	15-02225	H-442-166S
6-32-0,-1,-2	464-280	RED	H-407-280-72	35N-MOD-6	15-03118	15-02226	H-442-187S
8-32-0,-1,-2	464-310	BLUE	H-407-310-72	35N-MOD-8	15-03119	15-02227	H-442-213S
10-32-0,-1,-2	464-340	GREEN	H-407-340-72	35N-MOD-10	15-03120	15-02228	H-442-250S
10-24-0,-1,-2	464-341	GREEN	H-407-340-72	35N-MOD-10	15-03120	15-02235	H-442-250S
1/4-20-0,-1,-2	464-440	YELLOW	H-407-440-72	35N-MOD-04	15-03121	15-02229	H-442-344S
5/16-0,-1,-2	464-500	ORANGE	H-407-500-72	35N-MOD-05	15-03122	15-02272	H-442-413S

Metric Sizes

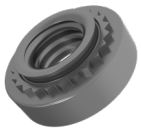
FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL
NUTS			Included with set				
M2.5-0,-1,-2	464-251M	CLEAR	H-407-250-72	35N-MOD-M3	15-03117	15-02248	H-442-166S
M3-0,-1,-2	464-250M	CLEAR	H-407-250-72	35N-MOD-M3	15-03117	15-02230	H-442-166S
M3.5-0,-1,-2	464-280M	RED	H-407-280-72	35N-MOD-M3.5	15-03118	15-02231	H-442-187S
M4-0,-1,-2	464-310M	BLUE	H-407-310-72	35N-MOD-M4	15-03119	15-02232	H-442-213S
M5-0,-1,-2	464-340M	GREEN	H-407-340-72	35N-MOD-M5	15-03120	15-02233	H-442-250S
M6-0,-1,-2	464-440M	YELLOW	H-407-440-72	35N-MOD-M6	15-03121	15-02234	H-442-344S
M8-0,-1,-2	464-500M	ORANGE	H-407-500-72	35N-MOD-M8	15-03122	15-02238	H-442-413S

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL
NUTS			Included with set					
M10-0,-1,-2	474-683M	CLEAR	H-407-750-96	15-03652	15-03653	15-03246	15-03254	H-442-550S

PEM®: S™, SS™, CLS™, CLSS™

824™ OneTouch™ LITE -4e, -5e

Shuttle Nut Tooling
(Shank Code 3)



Notes:
1. The below tooling are available as MADE TO ORDER
2. PEM® CLA™ Aluminum nuts require custom tooling.

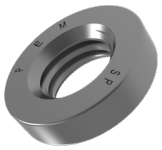
Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL
NUTS			Included with set				
4-40-3	488-250	CLEAR	H-407-250-72	35N-MOD-4-3	15-03542	15-02225	H-442-166S
6-32-3	488-280	RED	H-407-280-72	35N-MOD-6-3	15-03543	15-02226	H-442-187S
8-32-3	488-310	BLUE	H-407-310-72	35N-MOD-8-3	15-03544	15-02227	H-442-213S
10-32-3	488-340	GREEN	H-407-340-72	35N-MOD-10-3	15-03545	15-02228	H-442-250S
10-24-3	488-341	GREEN	H-407-340-72	35N-MOD-10-3	15-03545	15-02235	H-442-250S
1/4-20-3	488-440	YELLOW	H-407-440-72	35N-MOD-04-3	15-03546	15-02229	H-442-344S

PEM®: SP™

824™ OneTouch™ LITE -4e, -5e

Shuttle SP Nut Tooling



Notes:
The below tooling are available as MADE TO ORDER

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL
NUTS			Included with set				
4-40-0,-1,-2	410-250	CLEAR	H-407-250-72	35N-MOD-4	15-43010	15-03916	H-442-166S
6-32-0,-1,-2	410-280	RED	H-407-280-72	35N-MOD-6	15-43011	15-03918	H-442-187S
8-32-0,-1,-2	410-310	BLUE	H-407-310-72	35N-MOD-8	15-43012	15-03920	H-442-213S
10-32-0,-1,-2	410-340	GREEN	H-407-340-72	35N-MOD-10	15-43013	15-03921	H-442-250S
1/4-20-0,-1,-2	410-440	YELLOW	H-407-440-72	35N-MOD-04	15-43014	15-03953	H-442-344S

Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL
NUTS			Included with set				
M3-0,-1,-2	410-250M	CLEAR	H-407-250-72	35N-MOD-M3	15-43010	15-03917	H-442-166S
M4-0,-1,-2	410-310M	BLUE	H-407-310-72	35N-MOD-M4	15-43012	15-03919	H-442-213S
M5-0,-1,-2	410-340M	GREEN	H-407-340-72	35N-MOD-M5	15-43013	15-03922	H-442-250S
M6-0,-1,-2	410-440M	YELLOW	H-407-440-72	35N-MOD-M6	15-43014	15-03923	H-442-344S

PEM®: FH™, FHS™, FHA™

824™ OneTouch™ LITE -4e, -5e

Shuttle Stud Tooling

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS		Included with set						
4-40 -5 to -16	465-218	RED	H-309-218-72	35T-MOD-M3	15-03124	15-02216	H-344-113	H-346-113
6-32 -5 to -20	465-234	BLUE	H-309-234-72	35T-MOD-M3.5	15-03125	15-02216	H-344-139	H-346-139
8-32 -6 to -20	465-250	GREEN	H-309-250-72	35T-MOD-M4	15-03126	15-02216	H-344-166	H-346-166
10-32 -6 to -20 10-24-6 to -20	465-281	YELLOW	H-309-281-72	35T-MOD-M5	15-03127	15-02216	H-344-191	H-346-191
1/4-20 -8 to -20	465-344	CLEAR	H-309-375-72	35T-MOD-M6	15-03128	15-02216	H-344-250	H-346-250
5/16-18 -8 to -20	465-500	CLEAR	8002368	35T-MOD-M8	15-03220	15-02216	H-344-315	N/A

Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS		Included with set						
M3 -6 to -25	465-218M	RED	H-309-218-72	35T-MOD-M3	15-03124	15-02216	H-344-121	H-346-121
M3.5 -6 to -30	465-234	BLUE	H-309-234-72	35T-MOD-M3.5	15-03125	15-02216	H-344-139	H-346-139
M4 -10 to -30	465-250M	GREEN	H-309-250-72	35T-MOD-M4	15-03126	15-02216	H-344-160	H-346-160
M5 -10 to -30	465-281M	YELLOW	H-309-281-72	35T-MOD-M4	15-03127	15-02216	H-344-199	H-346-199
M6 -12 to -30	465-344M	CLEAR	H-309-375-72	35T-MOD-M6	15-03128	15-02216	H-344-236	H-346-236
M8 -12 to -30	465-500	CLEAR	8002368	35T-MOD-M8	15-03220	15-02216	H-344-315	N/A

Auto Anvils For FH4™ Studs

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL
STUDS			Included with set				
4-40 - 5 to -16	403-218	RED	H-309-218-72	35T-MOD-M3	15-03124	15-02216	H-345-113
6-32 -5 to 20	403-234	BLUE	H-309-234-72	35T-MOD-M3.5	15-03125	15-02216	H-345-139
8-32 -6 to 20	403-250	GREEN	H-309-250-72	35T-MOD-M4	15-03126	15-02216	H-345-166
10-32 -6 to 20	403-281	YELLOW	H-309-281-72	35T-MOD-M5	15-03127	15-02216	H-345-191
M3 -6 to -25	403-218M	RED	H-309-218-72	35T-MOD-M3	15-03126	15-02216	H-345-121
M4 - 10 to -30	403-250M	GREEN	H-309-250-72	35T-MOD-M4	15-03127	15-02216	H-345-160
M5 - 10 to -30	403-281M	YELLOW	H-309-281-72	35T-MOD-M5	15-03128	15-02216	H-345-199

PEM®: HFH™, HFHS™, HFHB™

824™ OneTouch™ LITE -4e, -5e

Shuttle HFH™ Studs Tooling

Notes:
The below tooling are available as MADE TO ORDER

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS			Included with set					
M5 -15 to -35	487-320M	CLEAR	H-309-375-72	35HF-MOD-M5	15-03339	15-03896	H-344-199	H-346-199
10-32 -8 to -20	487-320	CLEAR	H-309-375-72	35HF-MOD-M5	15-03339	15-03896	H-344-191	H-346-191

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STUDS			Included with set					
M6 -15 to -35	487-400M	CLEAR	8002368	35HF-MOD-M6	15-03340	15-03897	H-344-236	H-346-236
1/4-20 -8 to -20	487-400	CLEAR	8002368	35HF-MOD-M6	15-03340	15-03897	H-344-250	H-346-250

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	ORIENTATION MODULE	SINGULATION MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL
STUDS			Included with set					
5/16-18 -12 to -20 M8 -20 to -35	487-500M	CLEAR	H-309-535	35HF-ORNT-M8	35HF-SING-M8	15-03344	15-03898	H-344-315

Notes:
A one time purchase of a Singulation Stand is required for HFH™ 5/16 & M8 tooling
15-42362 Assembly, Singulation Stand, MAS 350

PEM®: SO™, SOA™, SOS™

824™ OneTouch™ LITE -4e, -5e

Shuttle Standoff Tooling

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STANDOFFS			Included with set					
4-40 -8 to -34	466-265	GREEN	H-309-250 -72	35S-MOD-M3	15-03130	15-02221	H-344-169	H-346-169
64-40 -10 to -34	467-296	PURPLE	H-309-296-72	35S-MOD-M3.5	15-03131	15-02221	H-344-216	H-346-216
6-32 -10 to -34	468-296	PURPLE	H-309-296-72	35S-MOD-M3.5	15-03131	15-02222	H-344-216	H-346-216
86-32 -12 to -34	468-375	ORANGE	H-309-410-72	35S-MOD-M4	15-03132	15-02222	H-344-284	H-346-284
8-32 -12 to -34	469-375	ORANGE	H-309-410-72	35S-MOD-M4	15-03132	15-02223	H-344-284	H-346-284
10-32 -12 to -34	475-375	ORANGE	H-309-410-72	35S-MOD-M4	15-03132	15-02224	H-344-284	H-346-284

Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STANDOFFS			Included with set					
M3 -6 to -30	476-265	GREEN	H-309-250 -72	35S-MOD-M3	15-03130	15-02217	H-344-169	H-346-169
3.5M3 -8 to -30	477-296	PURPLE	H-309-296-72	35S-MOD-M3.5	15-03131	15-02217	H-344-216	H-346-216
M4 -8 to -30	477-375	ORANGE	H-309-410-72	35S-MOD-M4	15-03132	15-02219	H-344-284	H-346-284
M5 -8 to -30	478-375	ORANGE	H-309-410-72	35S-MOD-M4	15-03132	15-02220	H-344-284	H-346-284

PEM®: SO™, SOA™, SOS™

824™ OneTouch™ LITE -4e, -5e

Shuttle Short Standoff Tooling

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STANDOFFS			Included with set					
#4-4	454-265-4	CLEAR	14-00220	35SS-MOD-M3-3	15-03747	15-02221	H-344-169	H-346-169
#4-6	454-265-6	RED	H-407-280-72	35SS-MOD-4-6	15-03756	15-02221	H-344-169	H-346-169
#64-4	460-296-4	RED	H-407-280-72	35SS-MOD-M3.5-3	15-03749	15-02221	H-344-216	H-346-216
#64-6	460-296-6	BLUE	H-407-310-72	35SS-MOD-6-6	15-03750	15-02221	H-344-216	H-346-216
#64-8	460-296-8	PURPLE	H-407-265-72	35SS-MOD-6-8	15-03757	15-02221	H-344-216	H-346-216
#6-4	454-296-4	RED	H-407-280-72	35SS-MOD-M3.5-3	15-03749	15-02222	H-344-216	H-346-216
#6-6	454-296-6	BLUE	H-407-310-72	35SS-MOD-6-6	15-03750	15-02222	H-344-216	H-346-216
#6-8	454-296-8	PURPLE	H-407-265-72	35SS-MOD-6-8	15-03757	15-02222	H-344-216	H-346-216
#86-4	454-375-4	GREEN	H-407-340-72	35SS-MOD-M4-3	15-03758	15-02222	H-344-284	H-346-284
#86-6	454-375-6	PURPLE	H-407-265-72	35SS-MOD-8-6	15-03753	15-02222	H-344-284	H-346-284
#86-8	454-375-8	PURPLE	H-407-265-72	35SS-MOD-8-8	15-03759	15-02222	H-344-284	H-346-284
#8-4	455-375-4	GREEN	H-407-340-72	35SS-MOD-M4-3	15-03758	15-02223	H-344-284	H-346-284
#8-6	455-375-6	PURPLE	H-407-265-72	35SS-MOD-8-6	15-03753	15-02223	H-344-284	H-346-284
#8-8	455-375-8	PURPLE	H-407-265-72	35SS-MOD-8-8	15-03759	15-02223	H-344-284	H-346-284
#10-4	456-375-4	GREEN	H-407-340-72	35SS-MOD-M4-3	15-03758	15-02224	H-344-284	H-346-284
#10-6	456-375-6	PURPLE	H-407-265-72	35SS-MOD-8-6	15-03753	15-02224	H-344-284	H-346-284
#10-8	456-375-8	PURPLE	H-407-265-72	35SS-MOD-8-8	15-03759	15-02224	H-344-284	H-346-284

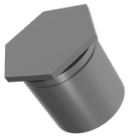
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM PUNCH	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
STANDOFFS			Included with set					
M3-3	457-265-3	CLEAR	14-00220	35SS-MOD-M3-3	15-03747	15-02217	H-344-169	H-346-169
M3-4	457-265-4	RED	H-407-280-72	35SS-MOD-M3-4	15-03748	15-02217	H-344-169	H-346-169
3.5M3-3	458-296-3	RED	H-407-280-72	35SS-MOD-M3.5-3	15-03749	15-02217	H-344-216	H-346-216
3.5M3-4	458-296-4	BLUE	H-407-310-72	35SS-MOD-M3.5-4	15-03751	15-02217	H-344-216	H-346-216
3.5M3-6	458-296-6	PURPLE	H-407-265-72	35SS-MOD-M3.5-6	15-03752	15-02217	H-344-216	H-346-216
M4-3	458-375-3	GREEN	H-407-340-72	35SS-MOD-M4-3	15-03758	15-02219	H-344-284	H-346-284
M4-4	458-375-4	GREEN	H-407-340-72	35SS-MOD-M4-4	15-03754	15-02219	H-344-284	H-346-284
M4-6	458-375-6	PURPLE	H-407-265-72	35SS-MOD-M4-6	15-03755	15-02219	H-344-284	H-346-284
M5-3	459-375-3	GREEN	H-407-340-72	35SS-MOD-M4-3	15-03758	15-02220	H-344-284	H-346-284
M5-4	459-375-4	GREEN	H-407-340-72	35SS-MOD-M4-4	15-03754	15-02220	H-344-284	H-346-284
M5-6	459-375-6	PURPLE	H-407-265-72	35SS-MOD-M4-6	15-03755	15-02220	H-344-284	H-346-284

PEM®: BSO™, BSOA™, BSOS™

824™ OneTouch™ LITE -4e, -5e

Shuttle Blind Standoff Tooling



Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
BLIND STANDOFFS			Included with set					
4-40 -8 to -34	479-265	GREEN	H-309-250 -72	35S-MOD-M3	15-03130	15-02216	H-344-169	H-346-169
64-40 -10 to -34 6-32 -10 to -34	483-296	PURPLE	H-309-296-72	35S-MOD-M3.5	15-03131	15-02216	H-344-216	H-346-216
86-32 -12 to -34 8-32 -12 to -34 10-32 -12 to -34	484-375	ORANGE	H-309-410-72	35S-MOD-M4	15-03132	15-02216	H-344-284	H-346-284

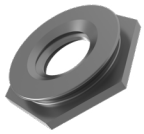
Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	COLOR CODE	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL	1/2" DIA AUTO ANVIL (Optional)
BLIND STANDOFFS			Included with set					
M3 -6 to -30	479-265	GREEN	H-309-250-72	35S-MOD-M3	15-03130	15-02216	H-344-169	H-346-169
3.5M3 -8 to -30	483-296	PURPLE	H-309-296-72	35S-MOD-M3.5	15-03131	15-02216	H-344-216	H-346-216
M4 -8 to -30 M5-8 to -30	484-375	ORANGE	H-309-410-72	35S-MOD-M4	15-03132	15-02216	H-344-284	H-346-284

PEM®: F™

824™ OneTouch™ LITE -4e, -5e

Shuttle Flush Nut Tooling



Notes:
The below tooling are available as MADE TO ORDER

Inch Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL
FLUSH NUTS		Included with set				
440-1	485-230	14-00220	35FN-MOD-M3-1	15-42351	15-02221	H-442-230S
440-2	486-230	14-00220	35FN-MOD-M3-2	15-42352	15-02221	H-442-230S
6-32-1	485-295	14-00221	35FN-MOD-M3.5-1	15-42353	15-02222	H-442-295S
6-32-2	486-295	14-00221	35FN-MOD-M3.5-2	15-42354	15-02222	H-442-295S
8-32-1	485-375	14-00222	35FN-MOD-M4-1	15-42355	15-02223	H-442-375S
8-32-2	486-375	14-00222	35FN-MOD-M4-2	15-42356	15-02223	H-442-375S
10-32-1	485-405	14-00223	35FN-MOD-M5-1	15-42357	15-02224	H-442-405S
10-32-2	486-405	14-00223	35FN-MOD-M5-2	15-42358	15-02224	H-442-405S

Metric Sizes

FASTENER SIZE	SHUTTLE TOOLING SET	FLIGHT TUBE	MULTI-MODULE	MULTI-SHUTTLE	VACUUM TIP	AUTO ANVIL
FLUSH NUTS		Included with set				
M3-1	485-230M	14-00220	35FN-MOD-M3-1	15-42351	15-02217	H-442-230S
M3-2	486-230M	14-00220	35FN-MOD-M3-2	15-42352	15-02217	H-442-230S
M3.5-1	485-295M	14-00221	35FN-MOD-M3.5-1	15-42353	15-02218	H-442-295S
M3.5-2	486-295M	14-00221	35FN-MOD-M3.5-2	15-42354	15-02218	H-442-295S
M4-1	485-375M	14-00222	35FN-MOD-M4-1	15-42355	15-02219	H-442-375S
M4-2	486-375M	14-00222	35FN-MOD-M4-2	15-42356	15-02219	H-442-375S
M5-1	485-405M	14-00223	35FN-MOD-M5-1	15-42357	15-02220	H-442-405S
M5-2	486-405M	14-00223	35FN-MOD-M5-2	15-42358	15-02220	H-442-405S