



The Clutch Lock System



140010 Pyramid Housing Kit

140020 Cylindrical 4 Hole Housing Kit
No Integrated Air Expulsion Valve

140000 Delrin Housing Kit

Integrated Air Expulsion Valve
Lightweight Design with 300lb Rating
Durable Steel Bushings
Ideal for Thermoforming and Lamination

Mold Preparation For All Clutch Lock Configurations

Attach Assembly and Blend

The model should be prepared with a 1/4-20 x 2" set screw (P/N 880488) protruding 3/4" from the distal end with the hex socket inside the plaster. EXCEPTION: When using the 4-Hole Cylindrical Dummy (P/N 140070) a 5/16 - 18x3" set screw (P/N 880494, included in kit) should be used with 1" of the set screw protruding and the hex socket exposed. Align the set screw with the centerline of the model as shown in Figure 1 and 2 for proper alignment.

Prepare Model

• Foam Model

For foam models, apply a nylon hose and a PVA sleeve, tied off around the protruding set screw.

• Plaster Model

Vacuum holes may be needed with plaster models especially near the clutch housing. If the model is wet, use a casting balloon.

Once the model has been prepared, slide the Distal Attachment Dummy (P/N 140062) over the exposed set screw and line up the two alignment posts to the medial/lateral plane. Use the two brass nails (P/N 881351, included in kit) to affix the Dummy to the model to stop rotation. Blend the distal end of the model to the inner flair of the Dummy with a plaster slurry.

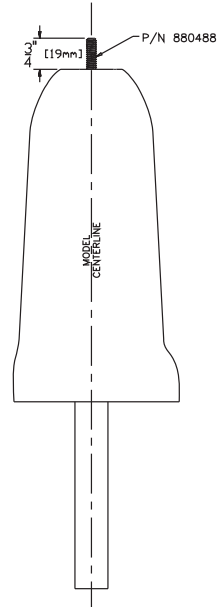


Figure 1. Set Screw Insertion Showing Alignment to the Model Centerline.

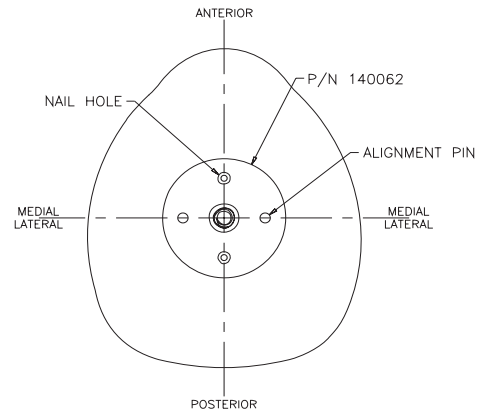


Figure 2. Rotational Alignment of the Distal Attachment Dummy to the Model.

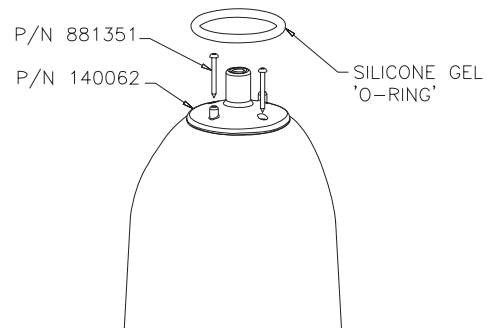


Figure 3. Attaching the Distal Attachment dummy with Brass Nails. Silicone Gel "O-Ring" (#741214) Used to Seal Resin from entering the Clutch Lock Body.

Fabricating Clutch Lock with Delrin Housing

Thermoforming

Any customary plastic may be used for definitive or check socket fitting. Standard drape or blister forming techniques may also be used with sufficient vacuum. Drape formed Durr-Plex is commonly used with a clear socket especially with the Socket Evaluation System. Special Care should be taken around the area of the clutch housing to prevent wrinkles especially when blister forming.

Two-Stage Lamination

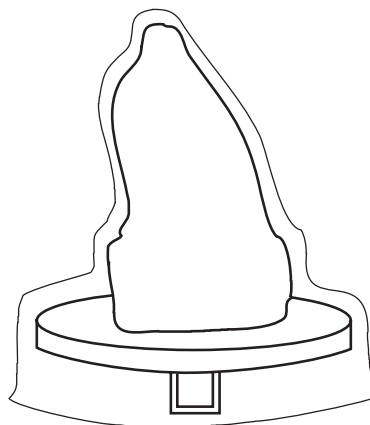
Pack the Delrin Housing (P/N 140002) with stick wax (P/N 990035), add a wax coating to the Clutch Housing Dummy (P/N 140061) and screw it into the clutch hole in the Delrin Housing (dummy and clutch lock housing have a left hand thread), then fill the slot with either wax or silicone gel. Next, add a silicone gel (P/N 741214) "O-Ring" as shown in Figure 3 on Page 3 to the distal attachment dummy before sliding on the Delrin Housing. The Delrin Housing is normally used with a two-stage lamination technique. In this method the Delrin Housing is incorporated in the first lamination. This inner shell consists simply of Dacron and/or Nylon.

The outer lamination is reinforced with carbon or fiberglass taking into consideration the patient's weight and activity level. It's suggested that the reinforcement include three 1" strips of carbon tape (P/N 211144) fanned over the distal end of the socket in addition to normal strengthening materials tied into the groove of the socket adapter.

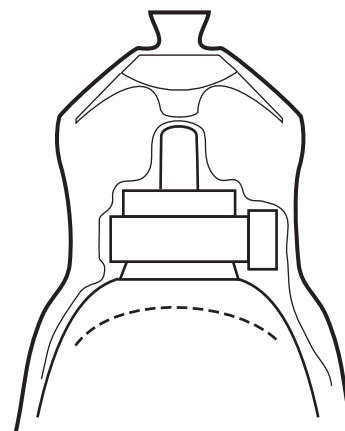
One-Stage Lamination

The Delrin Clutch Housing can also be used in a one-stage lamination technique using a pyramid socket adapter as the distal attachment (refer to the Fillauer One-Stage Lamination Manual for suggested techniques and fixtures). In this method the same reinforcement scheme using carbon, fiberglass, and nylon is tied into the groove of the socket adapter.

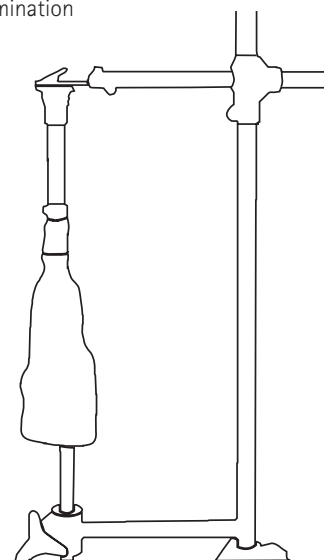
Thermoforming



Two-Stage Lamination



One-Stage Lamination



Fillauer Lock Systems

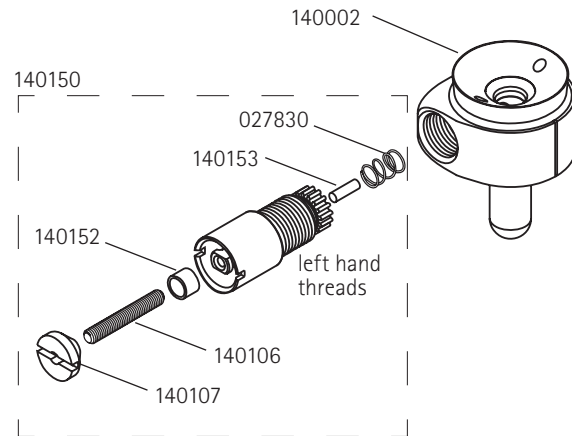
Clutch Lock with Delrin Housing and Air Expulsion

Delrin Housing Clutch Lock Kit w/o Plunger
140000



Clutch Lock Assembly and Plungers

	1/4" Thread	Metric M10
2"	140040	140043
1 1/2"	140041	140044



Clutch Lock Kit:

- 140000 Delrin Clutch Lock Kit w/o Plunger
- 140002 Delrin Housing for Clutch Lock
- 140150 Clutch Lock w/ Air Expulsion
- 140065 Fabrication Kit for Clutch Lock

Plungers: (sold separately)

- 140040 2" Clutch Lock Plunger, 1/4-20 Thread
- 140041 1 1/2" Clutch Lock Plunger, 1/4-20 Thread
- 140043 2" Clutch Lock Plunger, M10 Metric Thread
- 140044 1 1/2" Clutch Lock Plunger, M10 Metric Thread

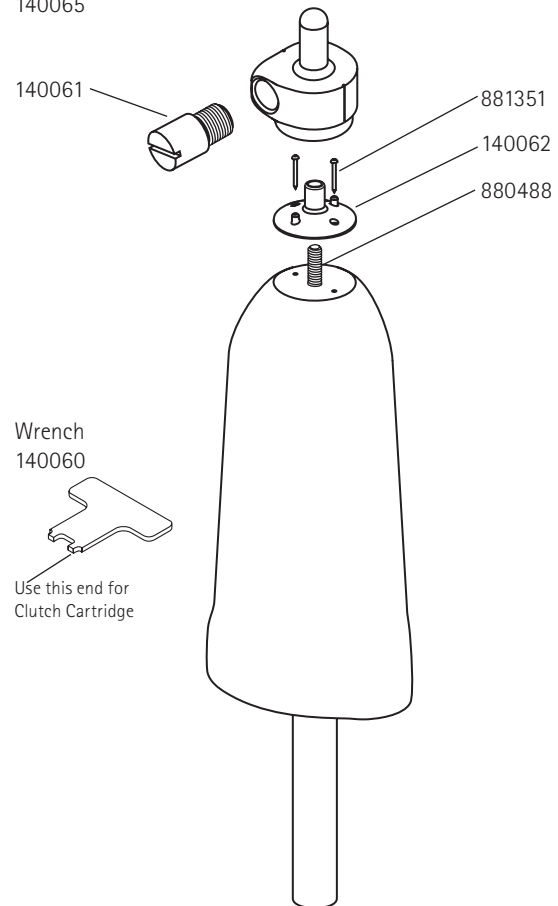
Clutch Lock Cartridge:

- 140150 Clutch Lock w/ Air Expulsion
- 140106 Latch Pin
- 140107 Latch Pin Button
- 140152 Air Expulsion Valve
- 140153 Air Expulsion Filter
- 027830 Compression Spring

Fabrication Kit - Thermoforming and Lamination

- 140065 Fabrication Kit
- 140060 Wrench
- 140061 Clutch Housing Dummy
- 140062 Distal Attachment Dummy
- 880488 1/4-20x2" Socket Head Set Screw
- 881351 Brass Nail

Fabrication Kit
140065



Fabricating Clutch Lock with Titanium Pyramid

Thermoforming

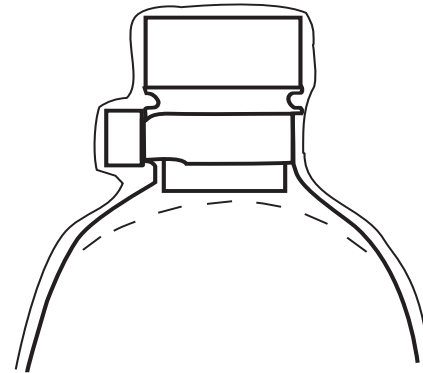
Any customary plastic may be used for definitive or check socket fitting. Standard drape or blister forming techniques may also be used with sufficient vacuum. Drape formed Durr-Plex is commonly used with a clear socket especially with the Socket Evaluation System. Special Care should be taken around the area of the clutch housing to prevent wrinkles especially when blister forming.

Lamination

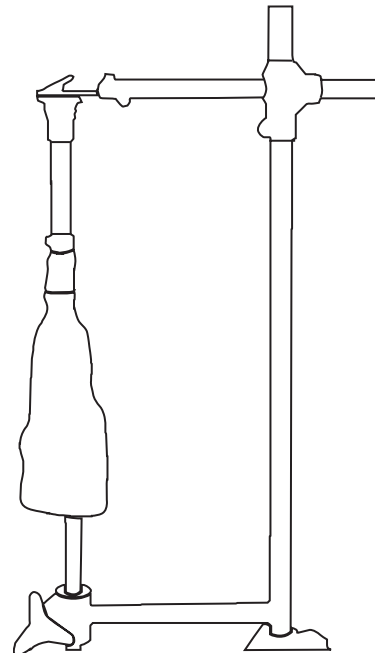
Pack the Pyramid Housing (P/N 140013) with stick wax (P/N 990035), add a wax coating to the Clutch Housing Dummy (P/N 140061) and screw it into the clutch hole in the Pyramid Adapter Housing (dummy and clutch lock housing have a left hand thread), then fill the slot with either wax or silicone gel and slide the Lamination Dummy (P/N 124183) over the pyramid. Next, add a silicone gel (P/N 741214) "O-Ring" as shown in Figure 3 on Page 3 to the distal attachment dummy before sliding the Pyramid Adapter Housing onto the Distal Attachment Dummy.

The suggested fabric lay-up includes 1" carbon fiber tape (P/N 211144) tied into the groove of the housing body and extending up several inches fanning out over the distal end of the socket. Based on the size of the patient add appropriate stockinettes and strengthening fabrics tied into the distal tie in groove. The selected resin should be prepared and poured into the outer PVA sleeve and thoroughly saturated around the Pyramid Housing body. After the resin has hardened, remove any excess from around the pyramid dome.

Thermoforming



Laminating



Fillauer Lock Systems

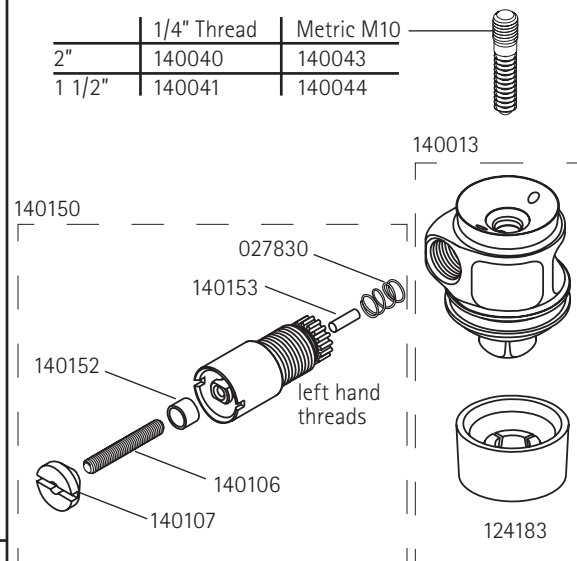
Clutch Lock w/ Titanium Pyramid and Air Expulsion

Pyramid Housing Clutch Lock Kit w/o Plunger
140010



Clutch Lock Assembly and Plungers

	1/4" Thread	Metric M10
2"	140040	140043
1 1/2"	140041	140044



Clutch Lock Kit:

- 140010 Pyramid Clutch Lock Kit w/o Plunger
- 140150 Clutch Lock w/ Air Expulsion
- 140065 Fabrication Kit for Clutch Lock
- 140013 Pyramid Housing Kit for Clutch Lock
- 124183 Lamination Cap

Plungers: (sold separately)

- 140040 2" Clutch Lock Plunger, 1/4-20 Thread
- 140041 1 1/2" Clutch Lock Plunger, 1/4-20 Thread
- 140043 2" Clutch Lock Plunger, M10 Metric Thread
- 140044 1 1/2" Clutch Lock Plunger, M10 Metric Thread

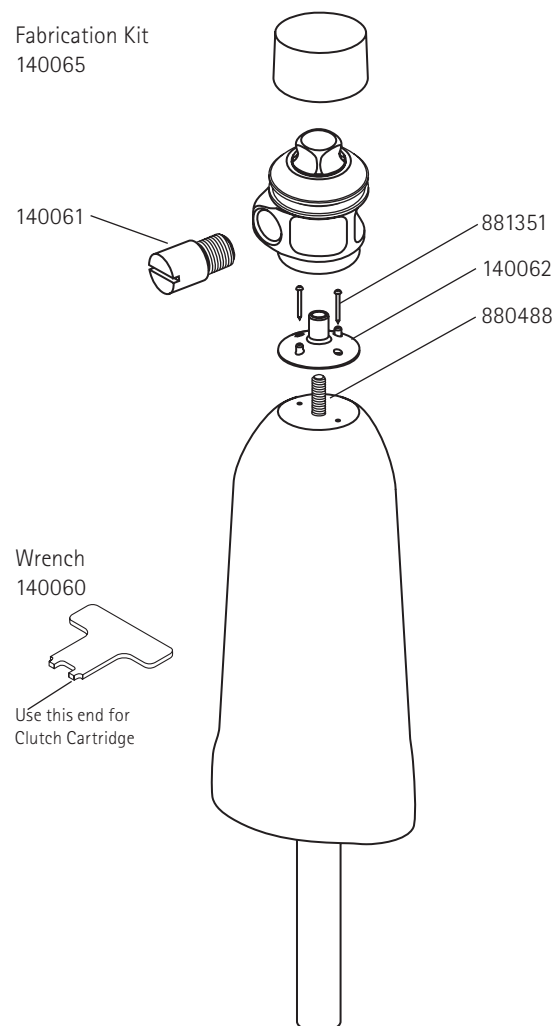
Clutch Lock Cartridge:

- 140150 Clutch Lock w/ Air Expulsion
- 140106 Latch Pin
- 140107 Latch Pin Button
- 140152 Air Expulsion Valve
- 140153 Air Expulsion Filter
- 027830 Compression Spring

Fabrication Kit - Thermoforming and Lamination:

- 140065 Fabrication Kit
- 140060 Wrench
- 140061 Clutch Housing Dummy
- 140062 Distal Attachment Dummy
- 880488 1/4-20x2" Socket Head Set Screw
- 881351 Brass Nail

Fabrication Kit
140065



Fabricating Clutch Lock with Cylindrical 4-Hole Housing

Thermoforming

Any customary plastic may be used for definitive or check socket fitting. Standard drape or blister forming techniques may also be used with sufficient vacuum. Drape formed Durr-Plex is commonly used with a clear socket especially with the Socket Evaluation System. Special Care should be taken around the area of the clutch housing to prevent wrinkles especially when blister forming.

Lamination Directly Over the Cylindrical Housing

Pack the 4-Hole Housing (P/N 140023) with stick wax (P/N 990035), add a wax coating to the Clutch Housing Dummy (P/N 140061) and screw it into the clutch hole in the Cylindrical Housing (dummy and clutch lock housing have a left hand thread), then fill the slot with either wax or silicone gel and insert four M6X12mm Socket Head Cap Screws (P/N 882613) into the threaded holes in the base along with silicone or wax to prevent resin from entering the housing cavity or the hex key socket. Next, add a silicone gel (P/N 741214) "O-Ring" as shown in Figure 3 on Page 3 to the distal attachment dummy before sliding the Cylindrical Housing onto the Distal Attachment Dummy.

The suggested fabric lay-up includes 1" carbon fiber tape (P/N 211144) laced over the housing body and extending up several inches fanning out over the distal end of the socket. Based on the size of the patient add appropriate stockinettes and strengthening fabrics. The selected resin should be prepared and poured into the outer PVA sleeve and thoroughly saturated around the Cylindrical Housing body. After the resin has hardened, grind the excess from the distal end of the Cylindrical Housing until the top of the heads of the M6 screws are barely exposed and a flat surface has been created. Remove the M6 screws and the socket is ready for use.

Lamination Over the Cylindrical Housing Dummy

Add a wax coating to the Clutch Housing Dummy (P/N 140061) and screw it into the clutch hole in the Cylindrical Housing Dummy (P/N 140063), then fill the slot with either wax or silicone gel and insert four M6X12mm Socket Head Cap Screws (P/N 882613) into the threaded holes in the base along with silicone or wax to prevent resin from entering the threads or the hex key socket.

The suggested fabric lay-up includes 1" carbon fiber tape (P/N 211144) laced over the dummy body and extending up several inches fanning out over the distal end of the socket. Based on the size of the patient add appropriate stockinettes and strengthening fabrics.

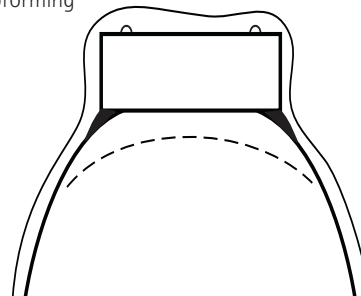
The selected resin should be prepared and poured into the outer PVA sleeve and thoroughly saturated around the Cylindrical Housing body. After the resin has hardened, grind the excess from the distal end of the Cylindrical Housing until the top of the M6 screws are barely exposed and a flat surface has been created. Remove the M6 screws and the socket is ready for use.

NOTE:

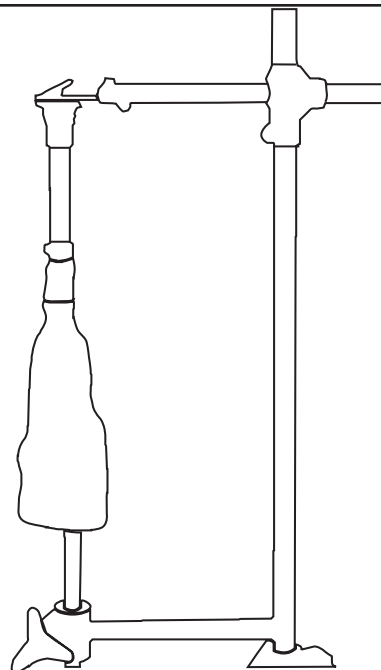
Fabricating the Clutch Lock with Cylindrical Housing may be performed in one of two ways:

1. Fabrication directly over the Cylindrical 4-Hole Housing - with this method all fabrication aids have been included with the Cylindrical 4-Hole Housing Kit.
2. Fabrication over the Cylindrical Housing Dummy Kit (140070) sold separately.

Thermoforming



Laminating



Fillauer Lock Systems

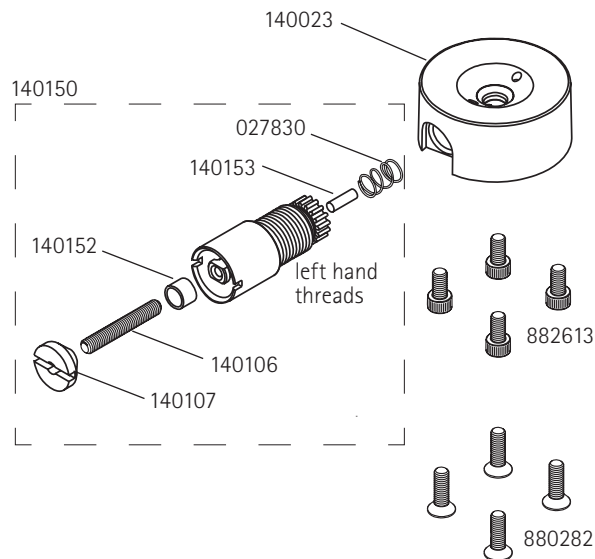
Clutch Lock with Cylindrical 4-Hole Housing and Air Expulsion*

Clutch Lock with Cylindrical 4-Hole Housing w/o Plunger
140020



Clutch Lock Assembly and Plungers

	1/4" Thread	Metric M10
2"	140040	140043
1 1/2"	140041	140044



Clutch Lock Kit:

- 140020 4-Hole Cylindrical Clutch Lock Kit w/o Plunger
- 140023 4-Hole Cylindrical Housing for Clutch Lock
- 880282 M6x1x20mm Flat Head Socket Cap Screw
- 882613 M6x1x12mm Socket Head Cap Screw
- 140150 Clutch Lock w/ Air Expulsion*
- 140065 Fabrication Kit for Clutch Lock

Plungers:(sold separately)

- 140040 2" Clutch Lock Plunger, 1/4-20 Thread
- 140041 1 1/2" Clutch Lock Plunger, 1/4-20 Thread
- 140043 2" Clutch Lock Plunger, M10 Metric Thread
- 140044 1 1/2" Clutch Lock Plunger, M10 Metric Thread

Clutch Lock Cartridge:

- 140150 Clutch Lock w/ Air Expulsion
- 140106 Latch Pin
- 140107 Latch Pin Button
- 140152 Air Expulsion Valve
- 140153 Air Expulsion Filter
- 027830 Compression Spring

Fabrication Kit - Thermoforming and Lamination:

- 140065 Fabrication Kit
- 140060 Wrench
- 140061 Clutch Housing Dummy
- 140062 Distal Attachment Dummy
- 880488 1/4-20x2" Socket Head Set Screw
- 881351 Brass Nail

Fabrication Dummy Kit - 4-Hole Cylindrical Housing:

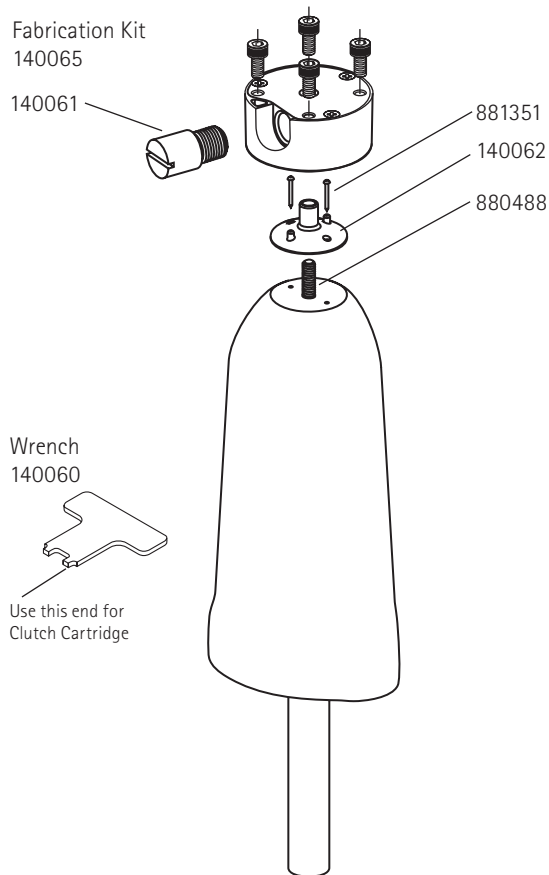
- 140070 Fabrication Dummy Kit (sold separately)
- 140063 Fabrication Dummy (Cylindrical Clutch Lock)
- 880494 5/16"-18x3" Socket Head Set Screw
- 882610 M6x1x10mm Socket Head Set Screw

Fabrication Kit
140065

140061

Wrench
140060

Use this end for
Clutch Cartridge



* Proper Fabrication Technique Required for Air Expulsion

The Modular Shuttle Lock System



125462 Cylindrical Housing Kit 125461 4 Hole Housing Kit 125460 Titanium Pyramid Kit 125459 Delrin Housing Kit
125410 Small Kit, 1" Pin
125412 Small Kit, 1-1/2" Pin

Fabrication Kits Optimize Fabrication
Easy Shuttle Replacement
Shuttle Body Fits All Housings
Ideal for Thermoforming and Lamination

Mold Preparation For Shuttle Configurations

Attach Assembly and Blend

The model should be prepared with a 5/16 - 18 x 3" set screw in the distal end, aligned with the center line of the model with the hex socket* within the plaster mold, the screw should protrude 1" beyond the end of the model for the housing dummy (A).

* Except when using the 4-Hole Housing the Hex Socket must be exposed out of the plaster and should protrude 1 1/4" from bottom of shuttle or 2" out of the plaster.

Screw the housing dummy over the exposed set screw. Blend the distal end of the model to the inner flair of the housing with a plaster slurry (B).

Prepare Model

• Foam Model

For foam models, apply a nylon hose and a PVA sleeve, tied off around protruding set screw.

• Plaster Model

Vacuum holes may be needed with plaster models especially near shuttle housing. If model is wet, use a casting balloon.

Mold Preparation For Small Delrin Shuttle

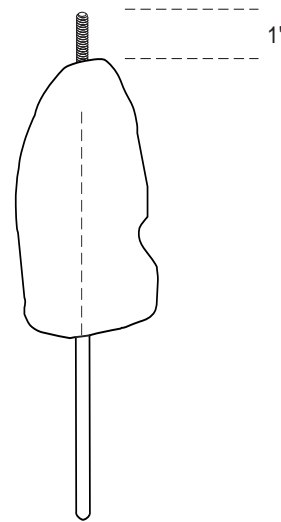
Attach Housing Dummy

Drill a 1/8" hole in the distal end of the plaster socket model along a center line, representing the plunger axis. Fill the two spanner wrench holes in dummy housing (#809824) with silicone gel before attaching to plaster model with mounting screw (#883124).

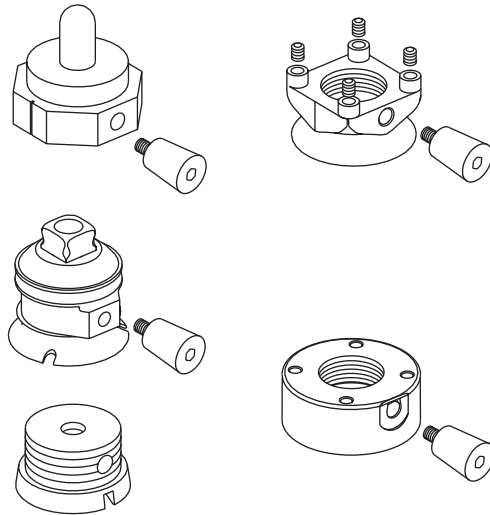
Secure Shuttle Housing

Assemble shuttle housing (#809820) to dummy housing and check that the latch pin hole (A) is in the desired position for the release button, then tighten mounting screw and shuttle housing securely. Fair dummy to blend to cast contour (B). Button shield dummy (809814) must be screwed in the latch pin hole (A), then fill the spanner wrench holes with silicone gel.

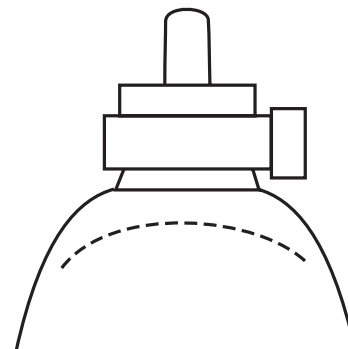
A) Center set screw



Shuttle housings with button shield dummies.



B) Blend to model with plaster slurry, attach button shield dummy.



Fabricating Shuttle Lock with Delrin Housing

Thermoforming

Any customary plastic may be used for definitive or check socket fitting. Standard drape or blister forming techniques may also be used with sufficient vacuum. Drape formed Durr-Plex is commonly used with a clear check socket especially with the Socket Evaluation System.

Special care should be taken around the area of the button shield to prevent wrinkles especially when blister forming.

Two-Stage Lamination

Add a stick wax (#990035) coating to the shuttle housing threads before assembling to the shuttle dummy. Button shield dummy must be screwed in the latch pin hole, then fill the hex wrench hole (Small Delrin spanner wrench hole) with silicone gel. The Delrin Shuttle Housing is normally used in a two-stage lamination technique. In this method the Delrin housing is incorporated in the first lamination. The inner shell consists simply of Dacron and/or Nylon to form the inner socket. The outer lamination is reinforced with carbon or fiberglass taking into consideration the patient's weight and activity level. We suggest that the reinforcement include three 1" strips of carbon tape (#211144) fanned over the distal end of the socket, in addition to normal strengthening materials, tied into the groove of the socket adapter.

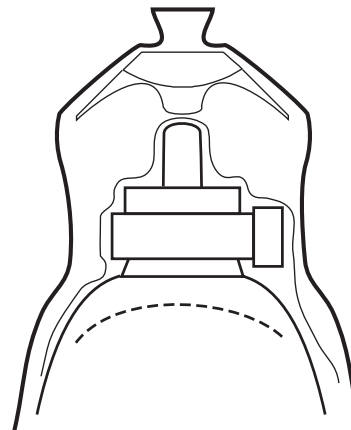
One-Stage Lamination

The Delrin Shuttle Housing can also be used in a one-stage lamination techniques using a pyramid socket adapter or 4-hole socket adapter as the distal attachment (refer to the Fillauer One-Stage Lamination Manual for suggested techniques and fixtures). In this method the same reinforcement scheme using carbon, fiberglass, and nylon is tied into the groove of the socket adapter.

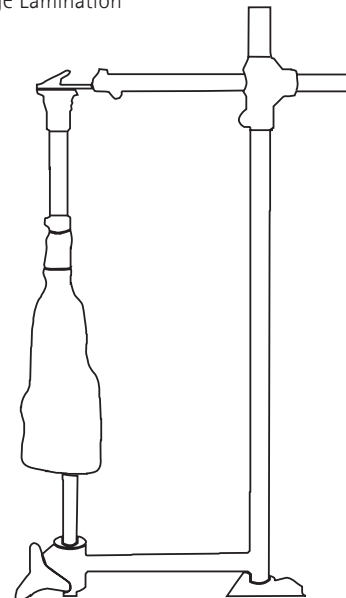
Thermoforming



Two-Stage Lamination



One-Stage Lamination



Fillauer Lock Systems

Modular Shuttle Lock with Delrin Housing

Shuttle Lock with Delrin Housing, w/o Plunger
125459



Shuttle Lock Assembly:

- 125459 Delrin Shuttle Lock w/o Plunger
- 809780 Large Delrin Shuttle Housing
- 809782 Shuttle Body
- 809784 Button Shield
- 809731 Latch Pin
- 809785 Latch Pin Button
- 809711 Shuttle Lock
- 809756 Compression Spring
- 809783 Guide Screw
- 880033 6-32 x 5/16" SOC HD SS
- 809787 Pe-Lite Washer

Plungers: (sold separately)

- 809722 Plunger 1", w/ 1/4-20 Thread
- 809725 Plunger 1 1/2", w/ 1/4-20 Thread
- 809727 Plunger 2", w/ 1/4-20 Thread
- 809722mm Plunger 1", w/ M10 Metric Thread
- 809725mm Plunger 1 1/2", w/ M10 Metric Thread
- 809727mm Plunger 2", w/ M 10Metric Thread

Shuttle Lock Sub Assembly:

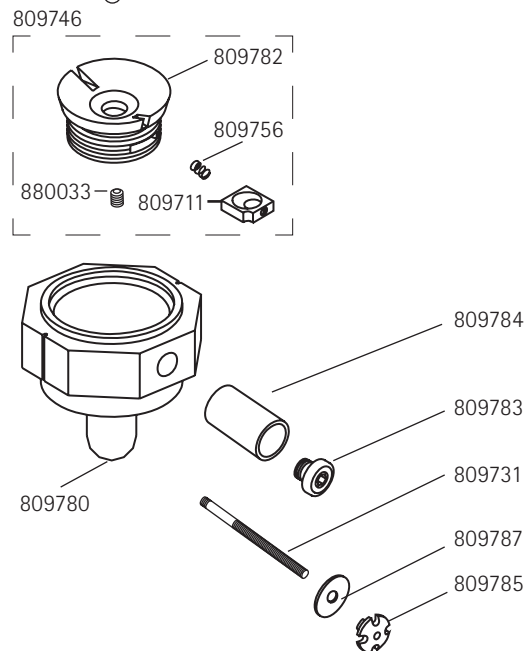
- 809746 Shuttle Lock Sub Assembly
- 809782 Shuttle Body
- 809711 Shuttle Lock
- 809756 Compression Spring
- 880033 6-32 x 5/16" SOC HD SS

Fabrication Kit - Thermoforming and Lamination:

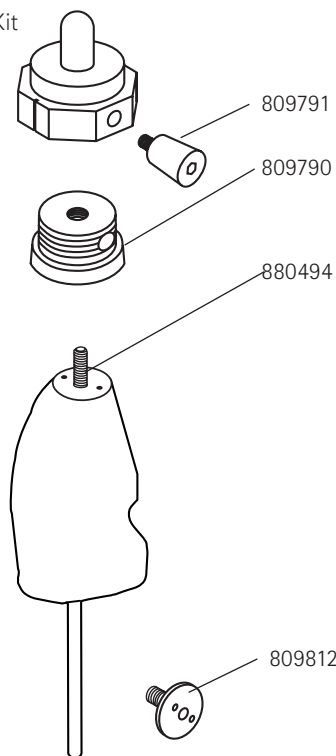
- 125200 Fabrication Kit
- 809790 Shuttle Body Dummy
- 809791 Button Shield Dummy
- 880494 5/16-18 x 3" SOC HD SS
- 809812 Button Shield Substitute

Shuttle Lock Assembly and Plungers

	1/4" thread	Metric M10
1"	809722	809722 mm
1 1/2"	809725	809725 mm
2"	809727	809727 mm



Fabrication Kit 125200



Fillauer Lock Systems

Small Modular Shuttle Lock with Delrin Housing

Small Shuttle Lock with Delrin Housing
125410



Plunger Not Pictured

Shuttle Lock Assembly:

- 125410 Delrin Shuttle Lock Kit, Small, 1" Plunger
- 125412 Delrin Shuttle Lock Kit, Small, 1-1/2" Plunger
- 809810 Shuttle Lock Body, Small
- 880033 Socket Head Set Screw, 6/32x5/16"
- 027869 Compression Spring
- 809816 Shuttle Lock
- 809820 Housing
- 809784 Shield
- 809729 Latch Pin
- 809775 Latch Pin Button
- 809773 Guide Screw
- 880033 6-32 x 5/16" SOC HD SS

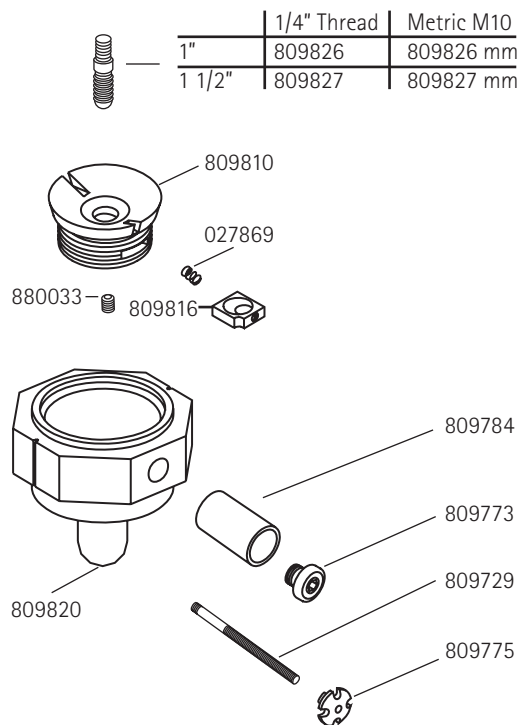
Plungers: (sold separately)

- 809826 Plunger, 1", 1/4-20"
- 809827 Plunger, 1 1/2", 1/4-20"
- 809826MM Plunger, 1", 1/4-20"
- 809827MM Plunger, 1 1/2", 1/4-20"

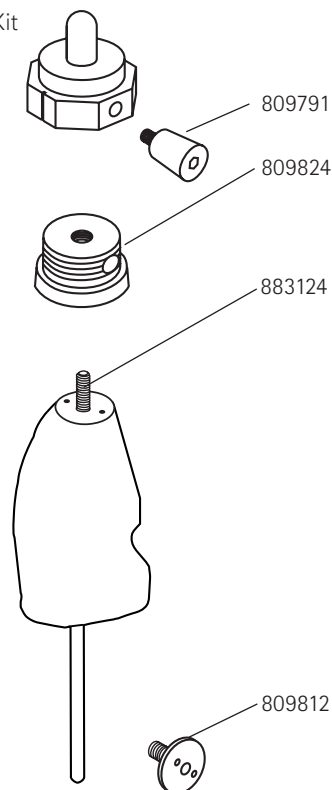
Fabrication Kit - Thermoforming and Lamination:

- 125420 Fabrication Kit
- 809824 Housing Dummy
- 883124 Flat Head Wood Screw #10x1-1/4"
- 809812 Button Shield Substitute
- 809791 Button Shield Dummy

Shuttle Lock Assembly and Plungers



Fabrication Kit 125420



Fabricating Shuttle Lock with Titanium Pyramid

Thermoforming

Any customary plastic may be used for definitive or check socket fitting. Standard drape or blister forming techniques may also be used with sufficient vacuum. Drape formed Durr-Plex is commonly used with a clear check socket especially with the Socket Evaluation System.

Special care should be taken around the area of the button shield to prevent wrinkles especially when blister forming.

Lamination

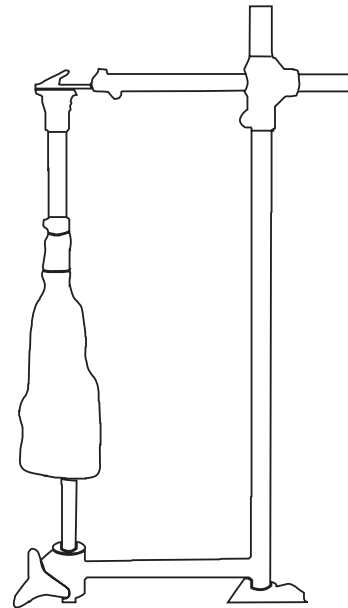
Add a wax (#990035) coating to the shuttle housing threads before assembling to the shuttle dummy. Button shield dummy must be screwed in the latch pin hole, then fill the hex wrench hole with silicone gel. The suggested fabric lay-up is the inclusion of 1" carbon fiber tape (211144) tied into groove of the housing body and extending up several inches fanning out over the distal socket section. Based on the size of the patient maximum of 300 lbs K4 level, add appropriate stockinettes and strengthening fabrics tied into the top tie in groove.

The selected resin should be prepared and poured into the outer PVA sleeve and thoroughly saturated around the pyramid body. After the resin has hardened, remove the excess resin near pyramid dome.

Thermoforming



Laminating



Fillauer Lock Systems

Modular Shuttle Lock with Titanium Pyramid

Shuttle Lock with Titanium Pyramid without Plunger
125460



Shuttle Lock Assembly:

- 125460 Titanium Pyramid Shuttle Lock w/o Plunger
- 809795 Titanium Pyramid Housing
- 809782 Shuttle Body
- 809784 Button Shield
- 809783 Guide Screw
- 809731 Latch Pin
- 809785 Latch Pin Button
- 809711 Shuttle Lock
- 809756 Compression Spring
- 880033 6-32 x 5/16" SOC HD SS
- 809787 Pe-Lite™ Washer
- 124183 Lamination Cap

Plungers: (sold separately)

- 809722 Plunger 1", w/ 1/4-20 Thread
- 809725 Plunger 1 1/2", w/ 1/4-20 Thread
- 809727 Plunger 2", w/ 1/4-20 Thread
- 809722mm Plunger 1", w/ M10 Metric Thread
- 809725mm Plunger 1 1/2", w/ M10 Metric Thread
- 809727mm Plunger 2", w/ M10 Metric Thread

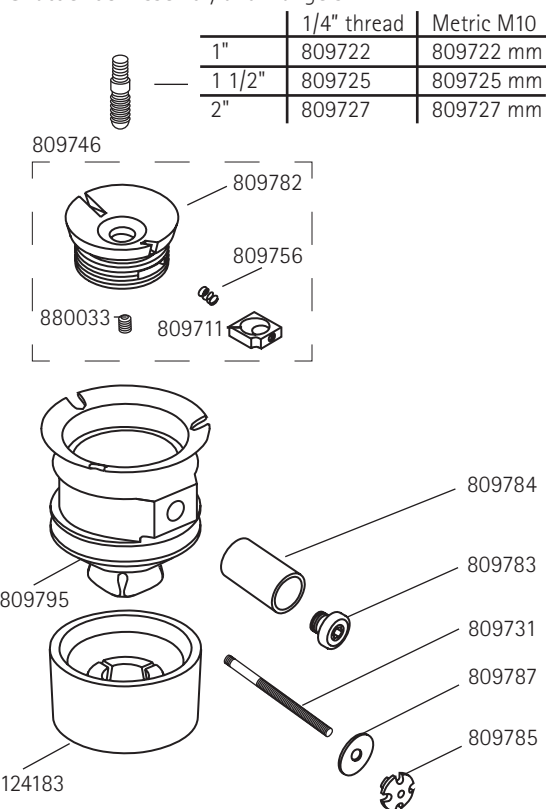
Shuttle Lock Sub Assembly:

- 809746 Shuttle Lock Sub Assembly
- 809782 Shuttle Body
- 809711 Shuttle Lock
- 809756 Compression Spring
- 880033 6-32 x 5/16" SOC HD SS

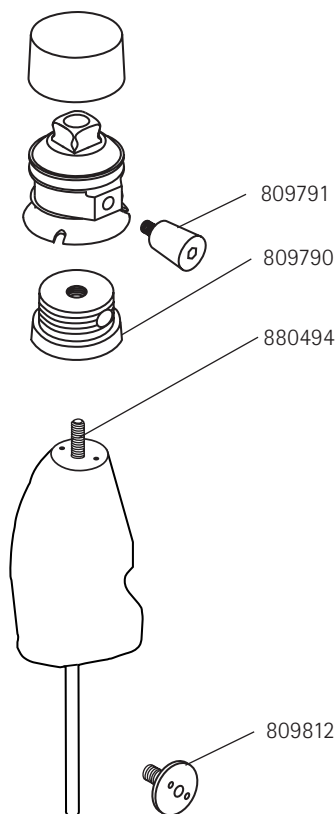
Fabrication Kit - Thermoforming and Lamination:

- 125200 Fabrication Kit
- 809790 Shuttle Body Dummy
- 809791 Button Shield Dummy
- 880494 5/16-18 x 3" SOC HD SS
- 809812 Button Shield Substitute

Shuttle Lock Assembly and Plungers



Fabrication Kit
125200



Fabricating Shuttle Lock with Cylindrical Housing

Fabrication of a socket for the Shuttle Lock with Cylindrical Housing may be performed in one of two methods.

1) Fabrication directly over the Cylindrical Housing - with this method, the Shuttle Body Dummy (809790), the Button Shield Dummy (809791), and a 5/16-18 set Screw (880494) will be necessary.

2) Fabrication directly over the Cylindrical Housing Dummy Kit (809866).

Thermoforming

Any customary plastic may be used for definitive or check socket fitting. Standard drape or blister forming techniques may also be used with sufficient vacuum. Drape formed Durr-Plex is commonly used with a clear check socket especially with the Socket Evaluation System.

Special care should be taken around the area of the button shield to prevent wrinkles especially when blister forming.

Lamination

If laminating directly over the Cylindrical Housing, the button shield dummy must be screwed in the housing and the hex wrench hole filled with silicone gel. In addition, insert 4 screws or plugs into the threaded holes in the base along with silicone or wax coating to prevent resin from entering the housing cavity. If laminating over the Dummy Kit, add a wax coating to the housing dummy and to dummy set screws.

The suggested fabric lay-up is the inclusion of 1" carbon fiber tape (211144) laced over the housing body and extending up several inches fanning out over the distal socket section. Based on the size of the patient maximum of 300 lbs K4 level, add appropriate stockinettes and strengthening fabrics.

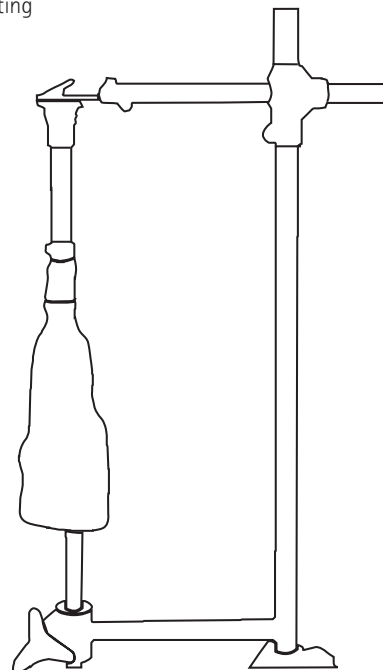
The selected resin should be prepared and poured into the outer PVA sleeve and thoroughly saturated around the housing. After the resin has hardened, a flat surface may be provided.

*Alternatives - Page 10 shows additional techniques that may be used for fabrication. If these methods are chosen, simply insert 4 M6 Socket head cap screws into the base of the housing or housing dummy. These will act as temporary posts that are necessary in order to use the flattening plates.

Thermoforming



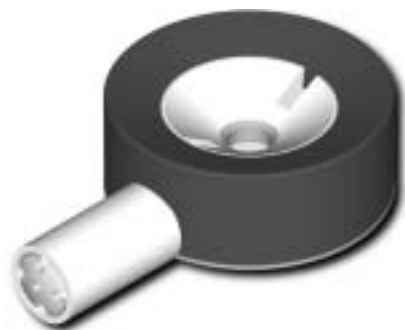
Laminating



Fillauer Lock Systems

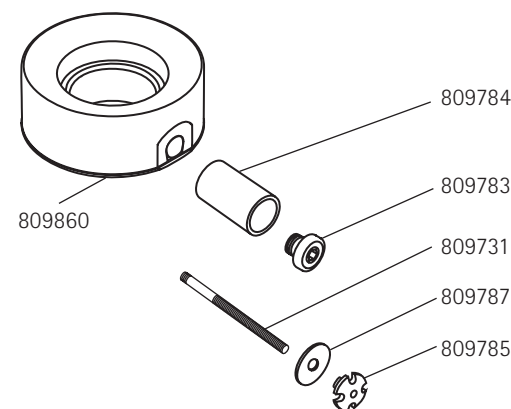
Modular Shuttle Lock with Cylindrical Housing

Shuttle Lock with Cylindrical Housing w/o Plunger
125462



Shuttle Lock Assembly and Plungers

	1/4" thread	Metric M10
1"	809722	809722 mm
1 1/2"	809725	809725 mm
2"	809727	809727 mm



Shuttle Lock Assembly:

- 125462 Cylindrical Housing Shuttle Lock w/o Plunger
- 809860 Cylindrical Housing
 - 809782 Shuttle Body
 - 809784 Button Shield
 - 809783 Guide Screw
 - 809731 Latch Pin
 - 809785 Latch Pin Button
 - 809711 Shuttle Lock
 - 809756 Compression Spring
 - 880033 5/16-18 x 3" SOC HD SS
 - 809787 Pe-Lite™ Washer

Plungers: (sold separately)

- 809722 Plunger 1", w/ 1/4-20 Thread
- 809725 Plunger 1 1/2", w/ 1/4-20 Thread
- 809727 Plunger 2", w/ 1/4-20 Thread
- 809722mm Plunger 1", w/ M10 Metric Thread
- 809725mm Plunger 1 1/2", w/ M10 Metric Thread
- 809727mm Plunger 2", w/ M10 Metric Thread

Shuttle Lock Sub Assembly:

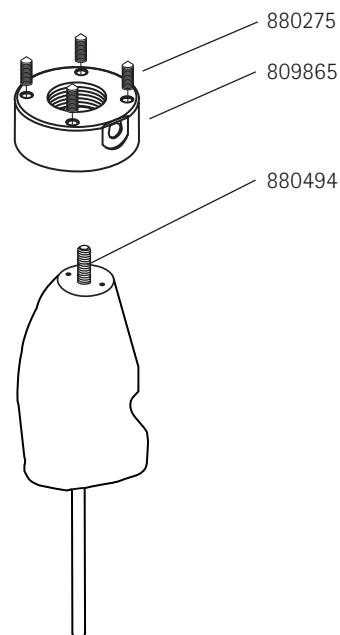
- 809746 Shuttle Lock Sub Assembly
- 809782 Shuttle Body
- 809711 Shuttle Lock
- 809756 Compression Spring
- 880033 6-32 x 5/16" SOC HD SS

Fabrication Kit For Thermoforming and Lamination*:

- 809866 Cylindrical Housing Dummy Kit
- 809865 Fabrication Dummy Body
- 880275 M6X1X16MM SHSS Cone Pt.
- 880494 5/16-18x3" SOC HD S.S.

(*Also may use Fabrication Kits: 125204 and 125202 with this item.)

Fabrication Kit
809866



Fabricating Shuttle Lock with 4 - Hole Housing

With the fabrication tooling available the distal surfaces of the laminated and the thermoformed sockets will be flat for immediate assembly. No sanding will be required.

Thermoforming

Heat plastic and flattening plate using standard thermoforming procedures.

Following thermoforming, use a hole punch to cut out a plug of plastic over the 5/16" center screw (E). Use a 4mm hex wrench, turn the screw up to a height of 1" above the plastic to allow for the flattening plate and cam lock.

Place hot flattening plate over the 5/16 screw and add compression nut with cam lock. Screw down to make contact with plastic. Turn cam lock to locked position (F).

Lamination

Before reattaching shuttle housing assembly, add stick wax (#990035) around both ends of the dummy to prevent entry of resin into the housing, place four set screws in the euro holes and coat with stick wax.

Button shield dummy must be screwed in the latch pin hole, then fill the hex wrench hole with silicone gel.

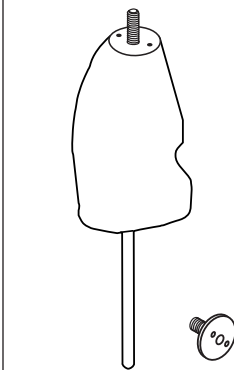
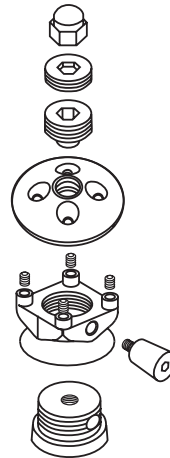
Rotate housing so four hole pattern is positioned correctly. Using lay-up preference, apply stockinette and reinforce over shuttle housing. It is imperative that the ends of the 4-Hole pattern and center screw be free of any fabric.

The flattening plate, 3/4" jack and locking screw should be coated with stick wax (#990035) before placing the plate on top of the shuttle housing; with center screw extending 1/4" above plate secure with acorn nut. Make sure the plate is in direct contact with the aluminum ends of the euro posts. The four holes of the flattening plate sets opposite of the euro 4-hole pattern.

The selected resin should be prepared and poured into the outer PVA sleeve and thoroughly saturated around and under flattening plate, etc.

After the resin has hardened, remove the excess resin and PVA sleeve. Unscrew the acorn nut and remove the 5/16" center set screw completely. With a 3/8" hex wrench remove the jam nut from the flattening plate. Using the hex wrench, screw the inner socket screw down until the plate releases from the top of the lamination for removal.

Thermoforming



Screw Housing Dummy to Set Screw and Attach Housing

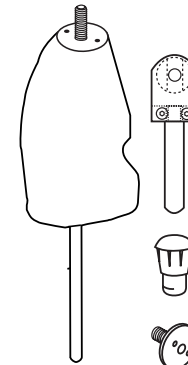
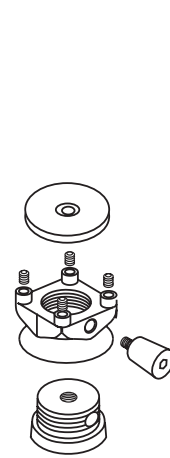


Following thermoforming, Use A Hole Punch To Cut Out A Plug of Plastic Over the 5/16" Center Screw F



Slide Heated Flattening Plate On Set Screw. attach Cam Lock and Rotate To Compress Plastic Against 4-Hole Posts

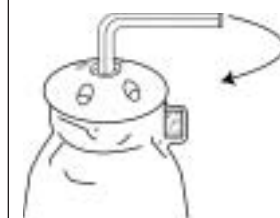
Lamination



Screw Shuttle Dummy & Housing to Center Screw



Apply Lay-up Leaving Holes for Attachment Screws and Center Screw.



Remove Center Screw and Jam Nut. Screw Inner Socket Screw Down to Release Lamination Plate.

Fillauer Lock Systems

Modular Shuttle Lock with 4-Hole Housing

Shuttle Lock with 4-Hole Housing w/o Plunger
125461



Shuttle Lock Assembly:

- 125461 4-Hole Shuttle Lock w/o Plunger
- 809792 4-Hole Shuttle Housing
- 809782 Shuttle Body
- 809711 Shuttle Lock
- 809784 Button Shield
- 809731 Latch Pin
- 809785 Latch Pin Button
- 809756 Compression Spring
- 809783 Guide Screw
- 880033 6-32 x 5/16" SOC HD SS
- 809787 Pe-Lite™ Washer

See page 16 for Shuttle Lock Sub Assembly

Plungers: (sold separately)

- 809722 Plunger 1", w/ 1/4-20 Thread
- 809725 Plunger 1 1/2", w/ 1/4-20 Thread
- 809727 Plunger 2", w/ 1/4-20 Thread
- 809722mm Plunger 1", w/ M10 Metric Thread
- 809725mm Plunger 1 1/2", w/ M10 Metric Thread
- 809727mm Plunger 2", w/ M10 Metric Thread

Fabrication Kit for Lamination:

125204 Fabrication Kit

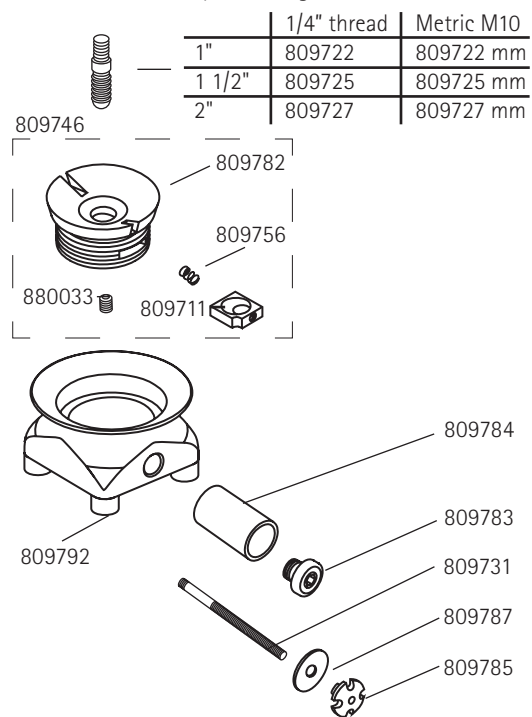
- 809790 Shuttle Body Dummy
- 809791 Button Shield Dummy
- 880494 5/16 - 18 x 3" SOC HD SS
- 809794 Flattening Plate
- 882610 M6 x 10 SOC SS (4)ea
- 885215 Nut 5/16 - 18 Acorn
- 809798 Jam Screw
- 809799 Jack Screw
- 809812 Button Shield Substitute

Fabrication Kit for Thermoforming:

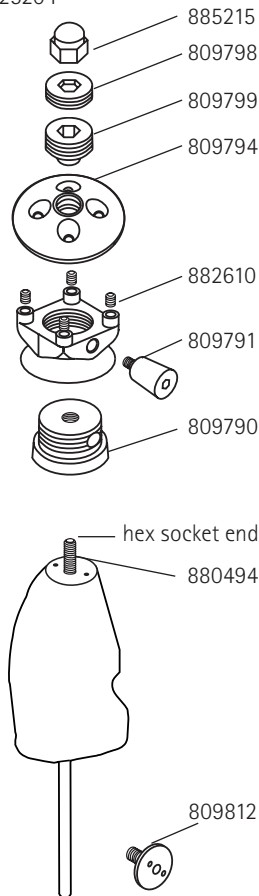
125202 Fabrication Kit

- 809790 Shuttle Body Dummy
- 809791 Button Shield Dummy
- 880494 5/16 - 18 x 3" SOC HD SS
- 809793 Flattening Plate
- 882610 M6 x 10 SOC SS (4)ea.
- 809800 Camlock Assembly
- 809801 Hole Punch
- 809812 Button Shield Substitute

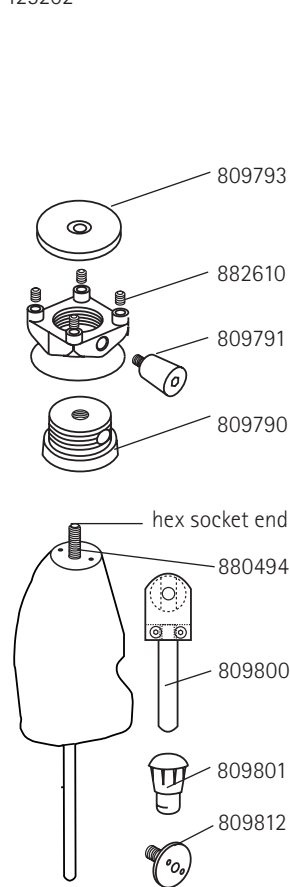
Shuttle Lock Assembly and Plungers



Lamination Fabrication Kit
125204

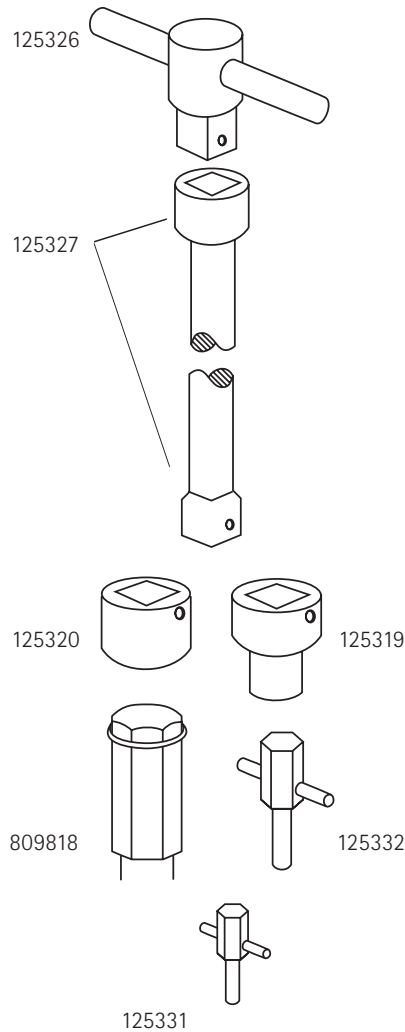


Thermoforming Fabrication Kit
125202



Assembly and Fabrication Items

Assembly Tools



Fabrication Items



Assembly Tools:

- 125326 "Tee Handle"
- 125327 Extension Bar 17"
- 125320 Socket, Size 1/2"
- 125319 Socket Size 3/8"
- 809818 Spanner Wrench
- 125332 Regular "Tee" Driver
- 125331 Small "Tee" Driver

The above tools are applicable for Delrin, Pyramid and 4-Hole Housings.

** Additional part for Titanium Pyramid only.

* Additional parts for 4-Hole only.

Fabrication Items:

- 809866 Cylindrical Housing Dummy
- 809790 Shuttle Body Dummy
- 809791 Dummy for Button Shield
- 880494 5/16 - 18 x 3" SOC HD SS
- 124183 Lamination Cap**
- 809800 Compression Camlock Assembly*
- 809801 Hole Punch*
- 809793 Flattening Plate for Thermoplastic*
- 882610 M6 x 10 SOC SS (4)ea.*
- 809794 Flattening Plate for Lamination*
- 885215 Nut 5/16 - 18 Acorn*
- 809798 Jam Screw*
- 809799 Jack Screw*
- 809812 Button Shield Substitute

The Original Shuttle Lock System



125236 Small Shuttle Kit

125236LP Small Low Profile Kit

125229 Regular Shuttle Lock Kit w/o Pin

125234 Kit with 1/4-20 Thread, 1" Pin

125232 Kit with 1/4-20 Thread, 1-1/2" Pin

125237 Kit with 1/4-20 Thread, 2" Pin

125234mm Kit with M10 Thread, 1" Pin

125232mm Kit with M10 Thread, 1-1/2" Pin

125237mm Kit with M10 Thread, 2" Pin

809750 Unitized Shuttle Lock Housing

Easy Fabrication and Service
Ideal for Thermoforming and Lamination

Fabricating Original Shuttle Lock

Mold Preparation

Seat set screw (#880490) in desired location on mold. Coat the distal surface of the distal socket plug (#125315), the threaded plug (#125314), and the plug screw (#125317) or Plug Screw for Shield (#125348) with stick wax (#990035). Fill the hex cavity in the threaded plug, the lateral hole in the distal socket plug, and the socket of the plug screw with silicone gel. Blend plaster from mold to distal socket plug.

Assemble the mounting nut on the threaded plug screw (125314) and place the two on the distal socket plug with the flattened corner of distal end facing the bottom hole of the desired medial position for the release button. Press the mounting nut down firmly on the plug so it is seated squarely.

Thermoforming

Standard drape or blister forming techniques may be used with sufficient vacuum. Special care should be taken around the area of the button shield to prevent wrinkles especially when blister forming.

Buildup for the frame and attachment is then made with plaster or foam. The rigid outer frame is then thermoformed using any customary plastics.

Two-Stage Lamination

The inner shell consists simply of Dacron and /or Nylon. Special care should be made to insure no air bubbles remain over the fabrication dummies.

Buildup for the attachment is then made with plaster or foam. The second stage is then laminated with the desired reinforcement scheme using carbon, fiberglass, and nylon.

One-Stage Lamination

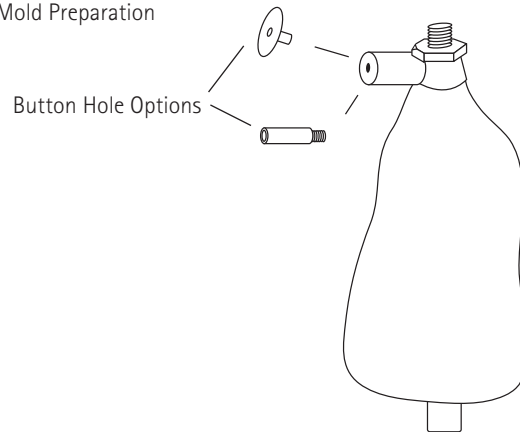
The Regular Shuttle can also be used in a one-stage lamination techniques using a pyramid socket adaptor as the distal attachment (refer to the Fillauer One-Stage Lamination Manual). Also the Unitized Shuttle Lock Housing with Pyramid (#809750) may be used, but this locks the pyramid attachment under the shuttle lock.

Assembly

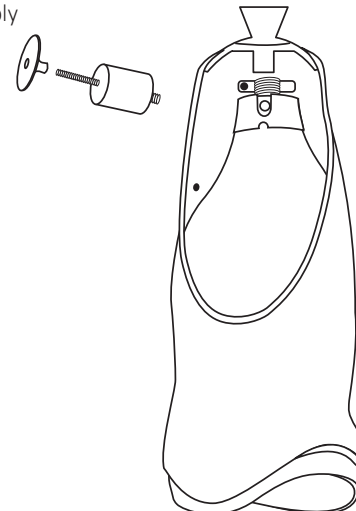
Trim plastic around threaded plug (#125314) even with Distal Socket Plug (#125315). Also trim plastic even with Plug screw (#125317) or Plug screw for Shield (#125348). Carefully remove interface from mold to reassemble shuttle lock.

The Shuttle Lock Body (#809747) is inserted into the distal cavity and the Mounting Nut (#809732) is screwed on drawing the Lock Body distally. The Guide Screw Assembly (#809712) is placed inside the Button Shield (#125345) pushed through a 1" Pelite Washer (#809758) and is screwed into the Shuttle Lock Body. The Latch Pin (#809731) is cut to desired length and the Latch Pin Button (#809730) is screwed on and secured with blue Loctite. The Latch Pin is pushed through the 3/4" Pelite Washer (#809757) and threaded into the shuttle through Screw Assembly. The Pelite washers are required to baffle air escape and prevent noise.

Mold Preparation



Shuttle Lock Assembly

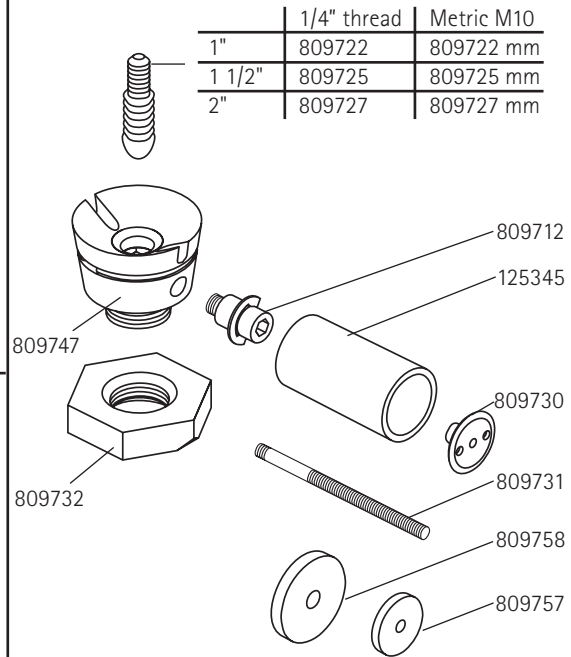


Original Shuttle Lock

Shuttle Lock, w/o Plunger
125229



Unitized Shuttle Lock Housing and
Shuttle Lock Assembly and Plungers



Shuttle Lock Assembly:

- 125229 Shuttle Lock Kit w/o Plunger
- 125234 Shuttle Lock Kit w/ Plunger, 1", 1/4-20
- 125232 Shuttle Lock Kit w/ Plunger, 1 1/2", 1/4-20
- 125237 Shuttle Lock Kit w/ Plunger, 2", 1/4-20
- 125234mm Shuttle Lock Kit w/ Plunger, 1", M10 Metric
- 125232mm Shuttle Lock Kit w/ Plunger, 1 1/2", M10 Metric
- 125237mm Shuttle Lock Kit w/ Plunger, 2", M10 Metric

All Kits Include:

- 809747 Shuttle Lock Body
- 125345 Button Shield
- 809712 Guide Screw Assembly
- 809731 Latch Pin
- 809730 Latch Pin Button
- 809732 Mounting Nut
- 809757 Pe-Lite™ Washers 3/4"
- 809758 Pe-Lite™ Washers 1"

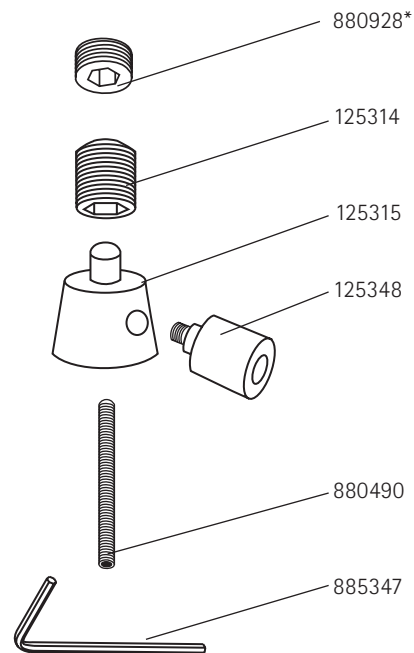
Plungers: (sold separately)

- 809722 Plunger 1", w/ 1/4-20Thread
- 809725 Plunger 1 1/2", w/ 1/4-20Thread
- 809727 Plunger 2", w/ 1/4-20Thread
- 809722mm Plunger 1", w/ M10 Metric Thread
- 809725mm Plunger 1 1/2", w/ M10 Metric Thread
- 809727mm Plunger 2", w/ M10 Metric Thread

Fabrication Kit:

- 125239 Fabrication Kit
- 125314 Threaded Plug, 3/4-16x1"
- 125315 Distal Socket Plug
- 125348 Plug Screw F/Shield
- 880490 Set Screw, 5/16-18x2"
- 885347 Hex Key, 1/4"
- 880928 Socket Jam Screw, 3/4-16x3/8

Fabrication Kit
125239



* Used only with Unitized Housing Shuttle Lock

Fabricating Unitized Shuttle Lock

Mold Preparation

Seat set screw (#880490) in desired location on mold. Coat the distal surface of the distal socket plug (#125315), the threaded plug (#880928), and the plug screw (#125317) or Plug Screw for Shield (#125348) with stick wax (#990035).

Assemble the threaded plug into the Unitized Housing and place them onto the distal socket plug, aligning the large opening (window) of the housing with the threaded button release hole of the distal socket plug. Be sure to keep the proper orientation of the pyramid in the AP plane of the socket. Fill the hex cavity in the threaded plug, the lateral hole in the distal socket plug, and the socket of the plug screw with silicone gel. Blend plaster from mold to distal socket plug.

One-Stage Lamination

The suggested fabric lay-up is the inclusion of 1" carbon fiber tape (#211144) laced through the windows of the housing body and extending up several inches fanning out over the distal socket section. Based on the size of the patient (maximum 220lbs, K3 level), add appropriate stockinettes and strengthening fabrics tied into the top and bottom grooves above the pyramid.

One-Stage Lamination Transtibial Socket Layup

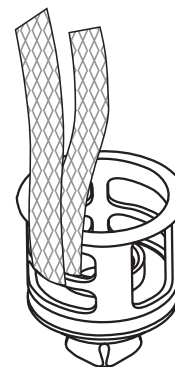
The Transtibial Socket Layup for One-Stage Lamination starts with one PVA Sleeve. Two Nylons are then doubled and tied into the bottom groove of the adaptor (with Polyester resin use 1/2 oz. Dacron material instead of two nylons). Weave three 1" carbon tape strips in and out of the slots in the Unitized Housing. Double and tie two *Ipos Fiberglass Nylon Stockinettes* into the top groove of the Unitized Housing. Then insert one Carbon Webbing layer around the entire socket along with one 2" to 2 1/2" glass strips (crossed over to go into the proximal ear area of the socket) around Brim and at MPT. Pull down Ipos. Next will be one glass circle on each side of proximal ears and one 1/2 Ipos. Double and tie two nylons into top groove of adaptor and reflect back down. Finally double and tie one Double Ortholon into top groove of Unitized Housing and reflect back down.

Assembly

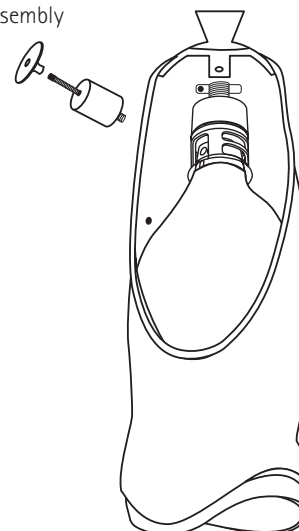
Trim plastic around threaded plug (#880928) even with Distal Socket Plug (#125315). Also trim plastic even with Plug screw (#125317) or Plug screw for Shield (#125348). Carefully remove interface from mold to reassemble shuttle lock.

The Shuttle Lock Body (#809747) is screwed into the Unitized Housing (#809754) is screwed on drawing the Lock Body distally. The Guide Screw Assembly (#809712) is placed inside the Button Shield (#125345) pushed through a 1" Pelite Washer (#809758) and is screwed into the Shuttle Lock Body. The Latch Pin (#809731) is cut to desired length and the Latch Pin Button (#809730) is screwed on and secured with blue Loctite. The Latch Pin is pushed through the 3/4" Pelite Washer (#809757) and threaded into the shuttle through Screw Assembly. The Pelite washers are required to baffle air escape and prevent noise.

Carbon Tape through Unitized Housing



Shuttle Lock Assembly



Fillauer Lock Systems

Original Shuttle Lock with Unitized Housing

Unitized Housing Shuttle Lock, w/o Plunger
125210



Unitized Shuttle Lock Assembly:

- | | |
|--------|---------------------------------------------|
| 125210 | Original Shuttle Lock with Unitized Housing |
| 809747 | Shuttle Lock Body |
| 125345 | Button Shield |
| 809712 | Guide Screw Assembly |
| 809731 | Latch Pin |
| 809730 | Latch Pin Button |
| 809757 | Pe-Lite™ Washers 3/4" |
| 809758 | Pe-Lite™ Washers 1" |
| 809750 | Unitized Housing Kit |
| 809754 | Unitized Housing |
| 124183 | Lamination Cap |

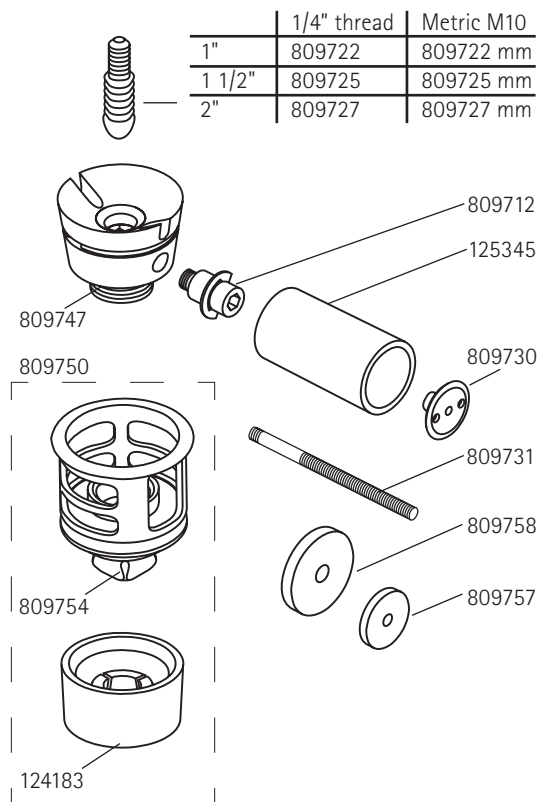
Plungers: (sold separately)

- | | |
|----------|--------------------------------------|
| 809722 | Plunger 1", w/ 1/4-20 Thread |
| 809725 | Plunger 1 1/2", w/ 1/4-20 Thread |
| 809727 | Plunger 2", w/ 1/4-20 Thread |
| 809722mm | Plunger 1", w/ M10 Metric Thread |
| 809725mm | Plunger 1 1/2", w/ M10 Metric Thread |
| 809727mm | Plunger 2", w/ M10 Metric Thread |

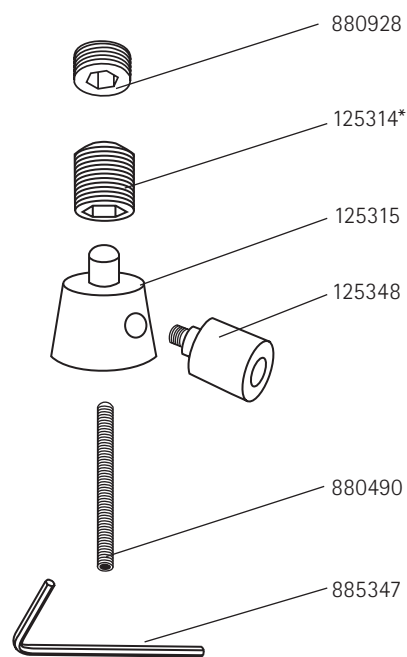
Fabrication Kit:

- | | |
|--------|---------------------------------|
| 125239 | Fabrication Kit |
| 125314 | Threaded Plug, 3/4-16x1" |
| 125315 | Distal Socket Plug |
| 125348 | Plug Screw F/Shield |
| 880490 | Set Screw, 5/16-18x2" |
| 885347 | Hex Key, 1/4" |
| 880928 | Threaded Plug Screw, 3/4-16x3/8 |

Unitized Shuttle Lock Housing and
Shuttle Lock Assembly and Plungers



Fabrication Kit
125239



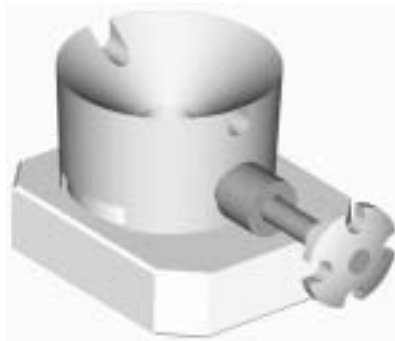
* Not needed for Unitized Housing Shuttle Lock

Fillauer Lock Systems

Small Shuttle Lock

Small Shuttle Lock, With Plunger
125236

Plunger Not Pictured



For upper extremities and small children (2-5 years) with lower extremity amputations.

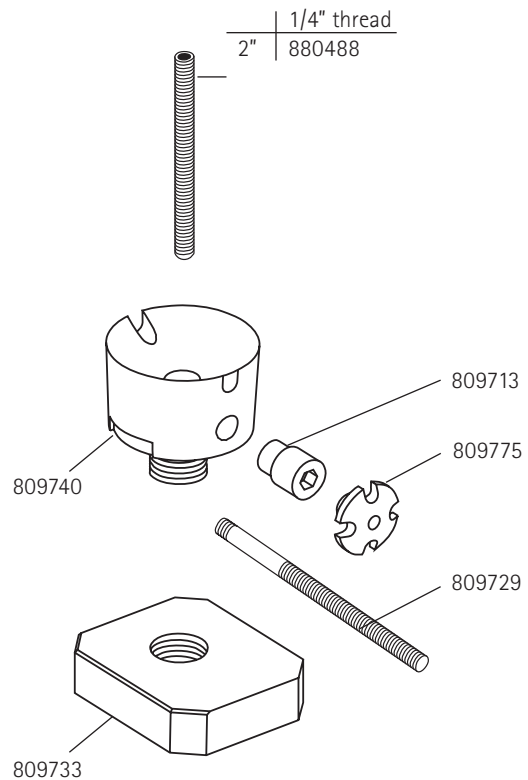
Shuttle Lock Assembly:

- 125236 Shuttle Lock Kit, with Plunger
- 880488 Plunger, 2", 1/4-20
- 809740 Shuttle Lock Body, Complete, Small
- 809713 Guide Screw, 1/4"
- 809729 Latch Pin
- 809775 Latch Pin Button
- 809733 Mounting Nut

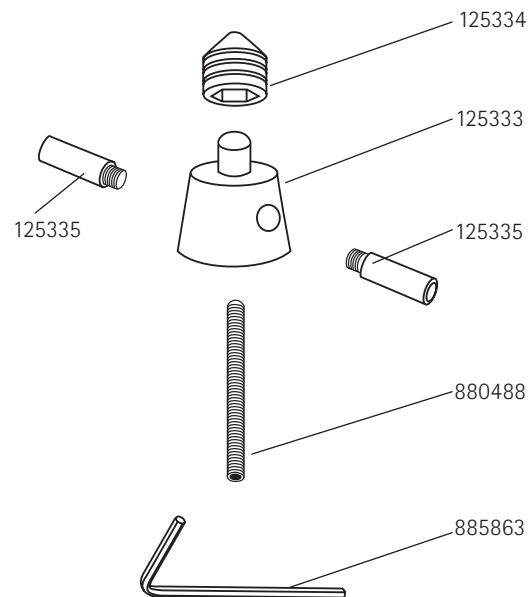
Fabrication Kit:

- 125238 Fabrication Kit for Small Shuttle Lock
- 125334 Threaded Plug, 1/2-13 x 1/2"
- 125333 Distal Socket Plug
- 125335 Plug Screw
- 880488 Plunger, 2", 1/4-20
- 885863 Hex Key, 3/16"

Shuttle Lock Assembly and Plungers



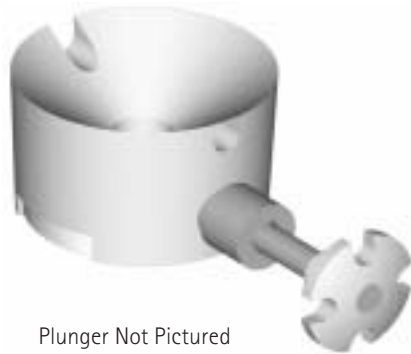
Fabrication Kit
125238



Fillauer Lock Systems

Small Low Profile Shuttle Lock

Small Low Profile Shuttle Lock, With Plunger
125236LP



Plunger Not Pictured

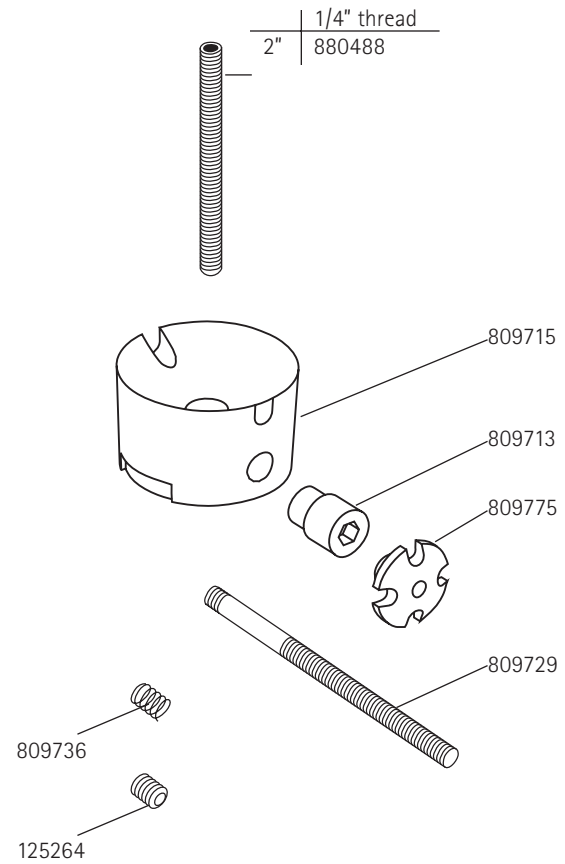
Shuttle Lock Assembly:

- 125236LP Shuttle Lock Kit, with Plunger
- 880488 Plunger, 2", 1/4-20
- 809715 Low Profile Shuttle Lock Body
- 809713 Guide Screw, 1/4"
- 809729 Latch Pin
- 809775 Latch Pin Button
- 125264 Spring Retainer Set Screw
- 809736 Spring

Fabrication Kit:

- 125238 Fabrication Kit for Low Profile Shuttle Lock
- 125334 Threaded Plug, 1/2-13 x 1/2"
- 125333 Distal Socket Plug
- 125335 Plug Screw
- 880488 Plunger, 2", 1/4-20
- 885863 Hex Key, 3/16"

Shuttle Lock Assembly and Plungers



Fabrication Kit
125238

