Point Support™

Solution Document

3form Point Support is a standoff and spider system that provides versatile and elegant solutions for affixing 3form materials to a variety of substrates, including wood, concrete, steel studs, gypsum, and aluminum framing systems, such as 3form Versa. An impressive range of precision-machined components, including barrels, caps, spiders, and anchors, work together as an integrated solution to provide both flexibility and ease of installation.

3form

For more information, please visit 3-form.com or call 800.726.0126

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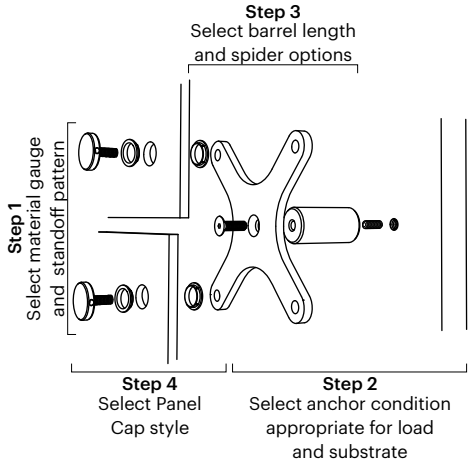
Overview - Material Selection

Hardware shown in this document is for interior use only.
For exterior rated hardware refer to the 3form Point Support XT™ product line.

From left to right, the different components that will be specified include the panel cap, panel gauge and resulting standoff pattern, spider type and/or barrel size, and anchor conditions. The individual components are presented below, followed by detailed solutions for recommended number of Point Supports and anchor assemblies.



Panel Caps

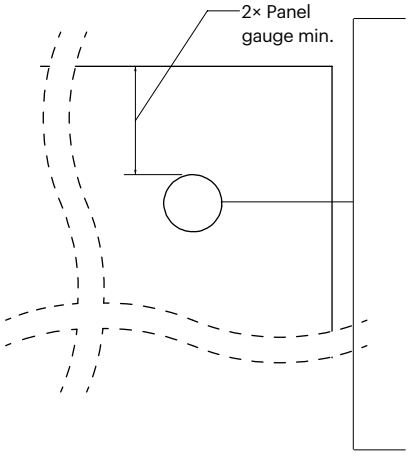
Do not use cyanoacrylate or solvent type thread locking materials with 3form Materials.

3form Materials must be separated from metal at all times, especially threads, which can often cause crazing with some materials such as Chroma, Koda, and Glass. While some 3form materials are more susceptible to crazing it is recommended for all materials that the threads do not contact the material.

3form Varia and Monolithic Glass must be protected from metal at all times.

1" diameter caps ship bundled with Pressure Fit Washers (3-15-1705) which press into a ⅝" diameter hole to stay in place during the installation process to protect the panel from any metal contact. ¾" diameter caps (3-15-0020-K) are meant for 3form materials only and should be used with a standard ½" diameter hole.

Refer to pages 5-6 for Panel Cap selection assistance. Refer to page 16 for instructions on installing Panel Caps.



Part Number	Thread Size	Hole Size to Drill	Notes
3-15-0020-K	(3/4") 20mm × (3/4") 20mm M8 Thread	1/2"	use provided washer front and back of panel
3-15-0025-K	(1") 25mm × (3/4") 20mm M8 Thread	5/8"	use press fit washers as described next page
3-15-0026-K	(1") 25mm × (11/16") 17mm M8 Thread	5/8"	use press fit washers as described next page
3-15-0027-K	(1") 25mm × (3/8") 10mm M8 Thread	5/8"	use press fit washers as described next page
3-15-0028-K	(1") 25mm × (1") 25mm M8 Thread	5/8"	use press fit washers as described next page
3-15-0029-K	(1") 25mm × (1-1/4") 32mm M8 Thread	5/8"	use press fit washers as described next page
3-15-1716-K	(1") 25mm 2 part cap for thinner material M8 Thread	5/8"	use press fit washers as described next page
3-15-1717-K	(1") 25mm 2 part cap for thinner material M8 Thread	5/8"	use press fit washers as described next page
3-15-1719-K	(1") 25mm 2 part cap for thinner material M8 Thread	5/8"	use press fit washers as described next page
3-15-1720-K	(1") 25mm 2 part cap for thinner material M8 Thread	5/8"	use press fit washers as described next page

Gauge and Standoff Pattern

As panel thickness increases fewer point supports are needed to prevent deflection but there may need to be more points of support to carry the weight. Conversely, a thinner panel requires support for deflection and not for weight. Recommended standoff patterns and quantities can be found on page 7.

Overview - Material Selection

Spider Attachment and Barrel Length

The use of a Spider, as it may attach to two or more panels at once, increases the weight and load on a given anchor and substrate. Therefore it may require additional points of support. Refer to page 17 for Spider installation.

As the selected barrel length increases more force will be placed on the barrel, anchor, and substrate by the given load that is placed upon them. Therefore, the respective anchor and substrate must be able to bear this increased force.

Substrate / Anchor Conditions

3form provides support for the following anchor conditions:

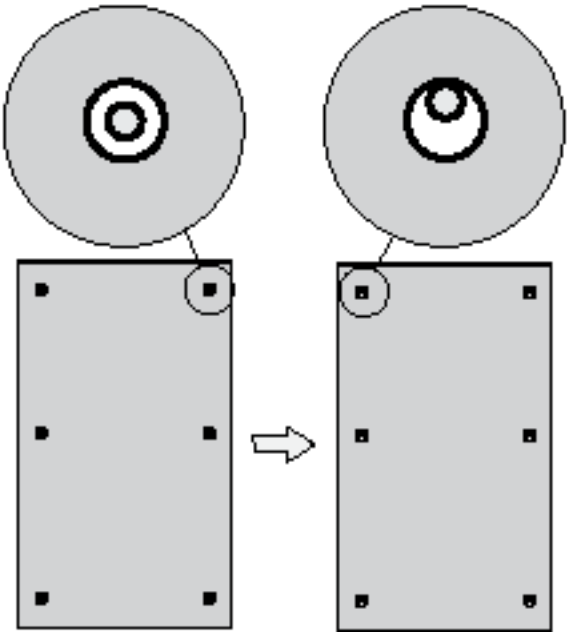
- Drywall
- Concrete
- Wood studs or blocking
- Metal studs or blocking
- Aluminum framing systems (including 3form Versa)

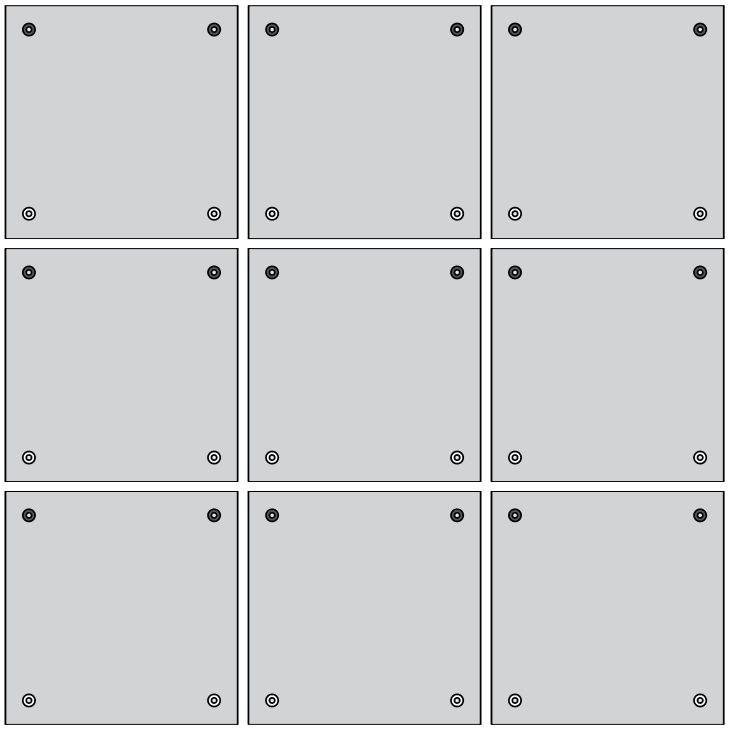
Substrates that are stronger and less compressible can accommodate a greater amount of weight with the appropriate anchor. For maximum stability 3form recommends concrete, wood blocking, or aluminum framing for all standoff system installations. However, drywall and “kitchen sink” blocking solutions are also presented in this document.

See page 8 for anchor conditions and page 13 for anchor installation.

Grid Patterns

The threaded rod is ¼" diameter while the hole is ⅝" diameter. As a result, when installed with all threaded rods in the center of the hole, the panel will have a tendency to work its way down over time so that the panel rests directly on the threaded rods. The movement of the panels should never be a concern unless the panels are installed in a grid.



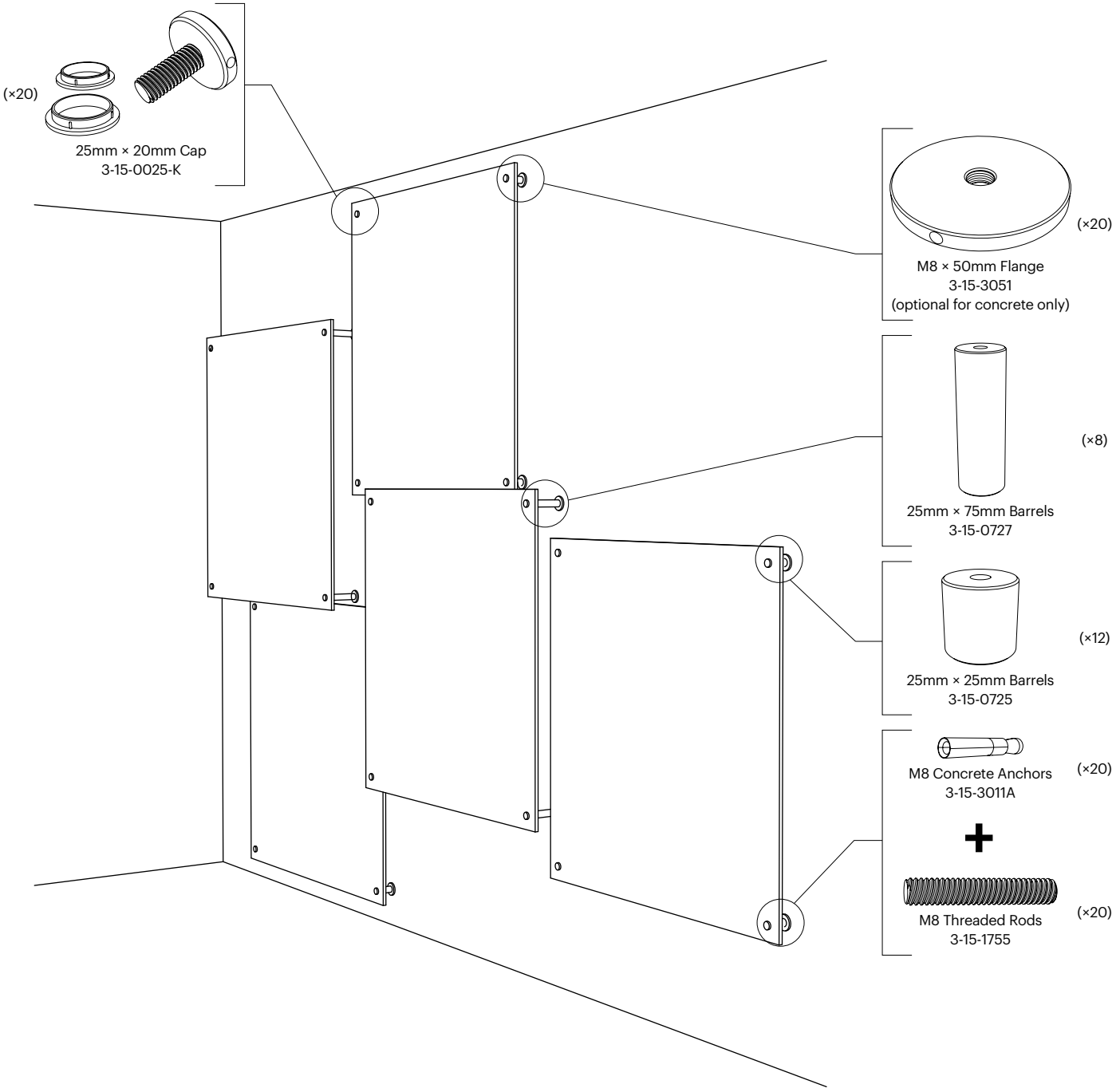


There are 2 methods to prevent this issue in a grid type installation. One of these methods uses clear tubing (3-15-8894) from 3form to prevent gradual movement of the panels in the grid.

See page 17 for more detailed information on installation.

Solution 1

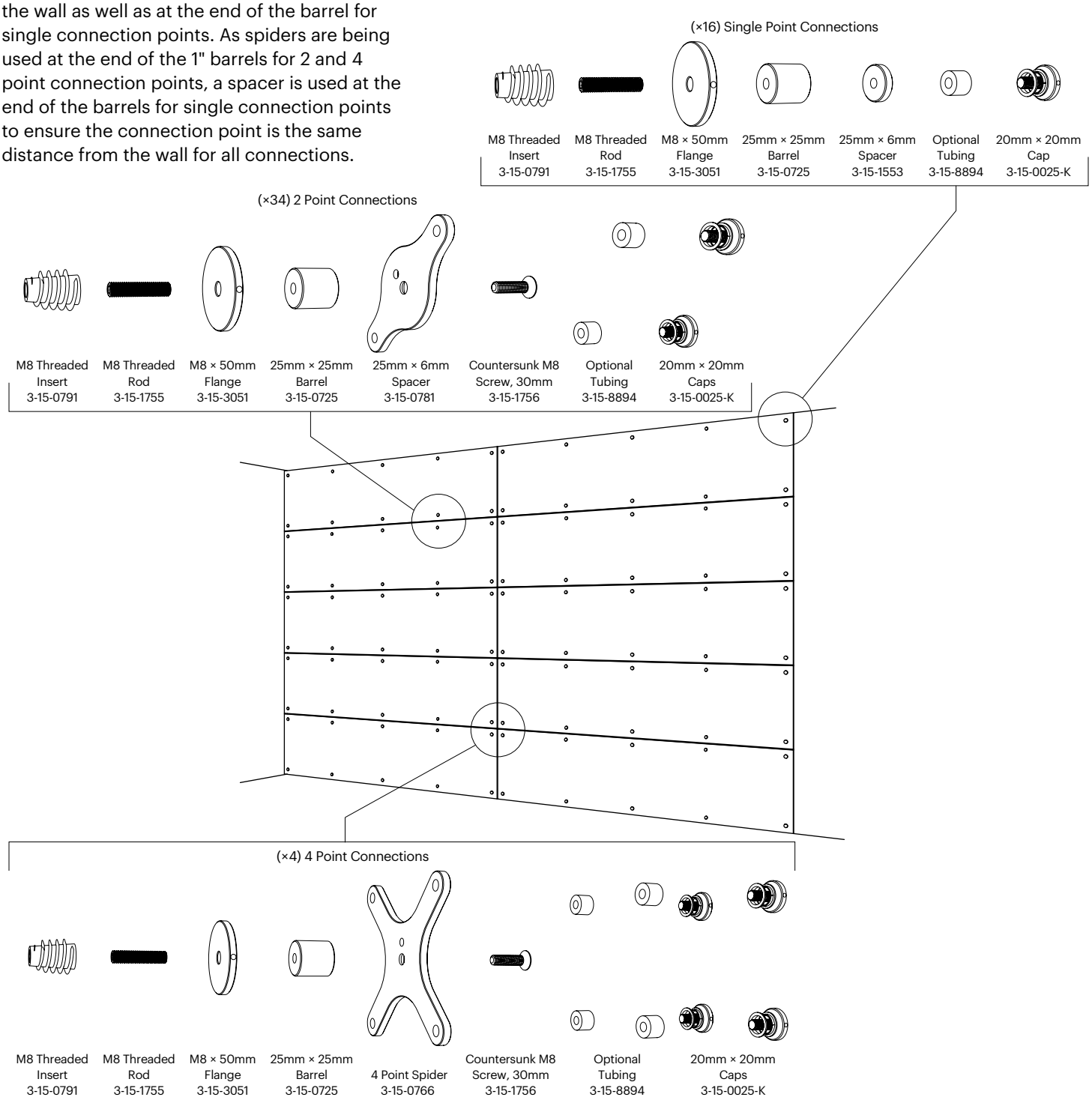
(×5) 4' × 4' Panels on Concrete Substrate



Solution 2

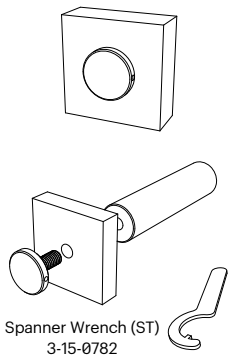
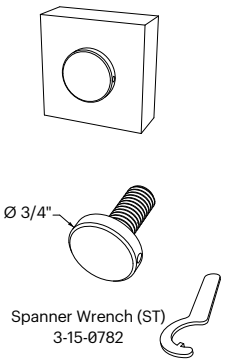
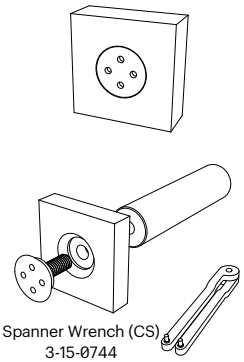
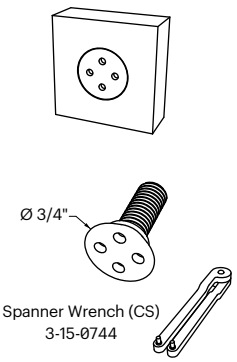
(×10) 8' × 2' Panels on Wood Substrate

In the diagram below, a flange is used against the wall as well as at the end of the barrel for single connection points. As spiders are being used at the end of the 1" barrels for 2 and 4 point connection points, a spacer is used at the end of the barrels for single connection points to ensure the connection point is the same distance from the wall for all connections.



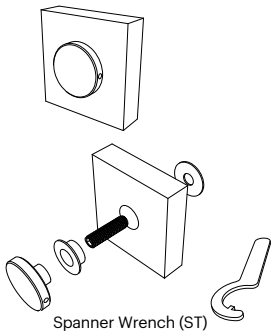
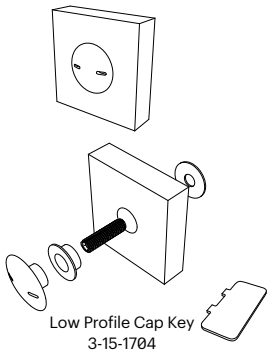
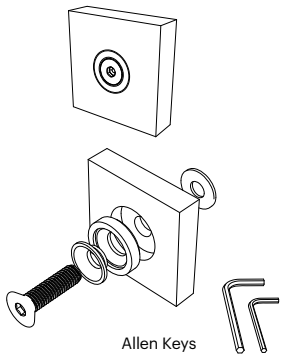
1 Piece Cap Chart

Another integral part of the Point Support and Versa systems regardless of the application is the 1-piece threaded cap. The length of the threading needs to be selected based on the gauge of the material. To select the best option for the installation, please follow the steps outlined below. The result will be a bill of materials with separate part numbers for each connection. 3form material specifications for different types of panels can be found at www.3-form.com/download_files.php.

1 Choose the design >	**1" Cap Threaded Rod** 	**¾" Cap Threaded Rod** 	**1" Countersunk** 	**¾" Countersunk** 
2 Select the panel gauge v	Designed for: Varia, Chroma, Struttura, Stone, Monolithic Glass, 100%	Designed for: Varia, Struttura, 100%	Designed for: Varia, 100%	Designed for: Varia, 100%
1/8"	25mm(1") Cap w/ 17mm Threaded Rod 3-15-0026-K 	-	-	-
3/16"	25mm(1") Cap w/ 17mm Threaded Rod 3-15-0026-K 	20mm(3/4") Cap w/ 20mm(3/4") Threaded Rod 3-15-0020-K 	-	-
1/4"	25mm(1") Cap w/ 20mm(3/4") Threaded Rod 3-15-0025-K 	20mm(3/4") Cap w/ 20mm(3/4") Threaded Rod 3-15-0020-K 	25mm(1") Countersunk Cap w/10mm(3/8") Threaded Rod 3-15-0738 	-
3/8"	25mm(1") Cap w/ 25mm(1") Threaded Rod 3-15-0028-K 	-	25mm(1") Countersunk Cap w/ 17mm(3/8") Threaded Rod 3-15-0737 	20mm (3/4") Countersunk Cap w/ 20mm (3/4") Threaded Rod 3-15-0732
1/2"	25mm(1") Cap w/ 25mm(1") Threaded Rod 3-15-0028-K 	-	25mm(1") Countersunk Cap w/ 20mm(3/4") Threaded Rod 3-15-0736 	20mm (3/4") Countersunk Cap w/ 20mm (3/4") Threaded Rod 3-15-0732
3/4"	25mm(1") Cap w/ 25mm(1-1/4") Threaded Rod 3-15-0029-K 	-	25mm(1") Countersunk Cap w/ 25mm(1") Threaded Rod 3-15-0739 	-
1"	-	-	25mm(1") Countersunk Cap w/ 32mm(1-1/4") Threaded Rod 3-15-0740 	-

2 Pieces Cap Chart

Another integral part of the Point Support and Versa systems regardless of the application is the 2-piece cap. The length of the threaded rod needs to be selected based on the gauge of the material. The threaded rod is then capped using a choice of standard, low-profile, counter-bore, or countersunk caps. To select the best options for the installation please follow the steps outlined below. The result will be a bill of materials with separate part numbers for each connection.
3form material specifications for different types of panels can be found at www.3-form.com/download_files.php.

1 Choose the design >	**1" Standard**  Spanner Wrench (ST) 3-15-0782	**1" Low Profile**  Low Profile Cap Key 3-15-1704	**1" Counter-bore**  Allen Keys
2 Select the panel gauge v	Designed for: Varia, Chroma, Struttura, Stone, Monolithic Glass, 100%	Designed for: Varia, Chroma, Struttura, Stone, Monolithic Glass, 100%	Designed for: Varia, 100%
1/8"	Standard thinner gauge kit 3-15-1716-K + 3-15-1753	Low-profile thinner gauge kit 3-15-1717-K + 3-15-1753	-
3/16"	Standard thinner gauge kit 3-15-1716-K + 3-15-1754	Low-profile thinner gauge kit 3-15-1717-K + 3-15-1754	-
1/4"	Standard thinner gauge kit 3-15-1716-K + 3-15-1754	Low-profile thinner gauge kit 3-15-1717-K + 3-15-1754	-
3/8"	Standard thinner gauge kit 3-15-1719-K + 3-15-1754	Low-profile thinner gauge kit 3-15-1720-K + 3-15-3032	-
1/2"	Standard thinner gauge kit 3-15-1719-K + 3-15-3032	Low-profile thinner gauge kit 3-15-1720-K + 3-15-1755	Countersunk assembly thicker gauge 3-15-1721-K + 3-15-1756
3/4"	Standard thinner gauge kit 3-15-1719-K + 3-15-1755	Low-profile thinner gauge kit 3-15-1720-K + 3-15-3033	Countersunk assembly thicker gauge 3-15-1721-K + 3-15-1758
1"	Standard thinner gauge kit 3-15-1719-K + 3-15-3033	Low-profile thinner gauge kit 3-15-1720-K + 3-15-3033	Countersunk assembly thicker gauge 3-15-1721-K + 3-15-1757

Panel Gauge and Standoff Pattern

There is a general trade off between panel gauge, stiffness, and the required number of standoffs. The greater the thickness of the panel, the greater the rigidity and stiffness of the panel, but the more it weighs. The following table contains the weights of the different gauges of material for Varia. For the weights and other details of all materials please see the material-specific Spec Sheets at www.3-form.com/download_files.php.

Panel Gauge Nominal	1/16"	1/8"	3/16"	1/4"	3/8"	1/2"	3/4"	1"
Panel Gauge (mm)	1.6	3	5	6	10	12	19	25
Lbs/Ft^2	0.43	0.8	1.2	1.57	2.35	3.13	4.7	7.05
Lbs/Panel (4'×8')	14	26	38	50	75	100	150	225

With that in mind, the number of Point Supports required for a given panel must address both deflection and weight. For example, a 1/8"×4'×8' panel requires 15 point supports to prevent visible deflection but only 1 point for weight. Conversely, a 1"×4'×8' panel requires 4 point supports to prevent visible deflection but requires 6 points due to the weight.

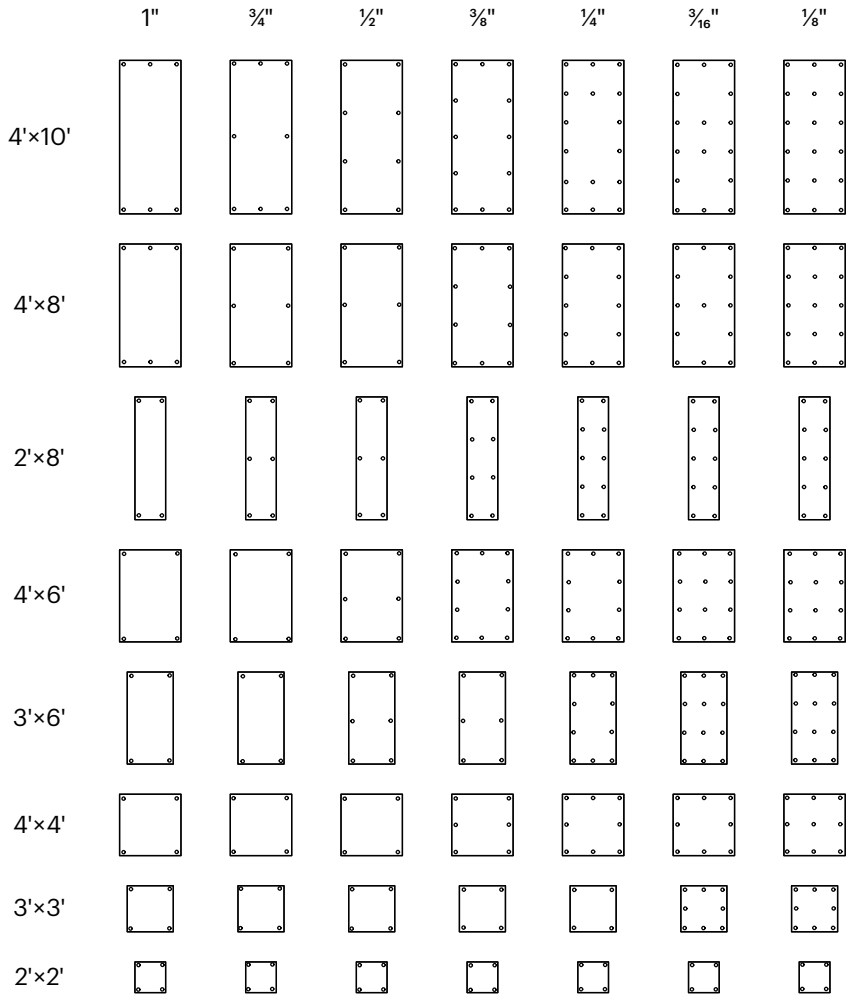
3form Point Support systems have been engineered to address both weight and deflection. Our recommended patterns, shown on the right, assume the following:

- One panel attachment per Point Support.
- The top connections bear the full weight of the panel.
- The side and bottom Point Supports are present to prevent deflection and bowing.
- The use of spiders would alter the number of top supports required.

These standoff patterns take into account both the weight and visible deflection of the different gauges and panel sizes. If the desired panel size is not shown 3form recommends using the standoff pattern of the next largest panel size. Certain substrate conditions, barrel lengths, and the use of spiders may require additional point supports.

Note: These standoff patterns are only for vertical surfaces. For horizontal surfaces supports are required in the center of panels or there will be deflection in the panel.

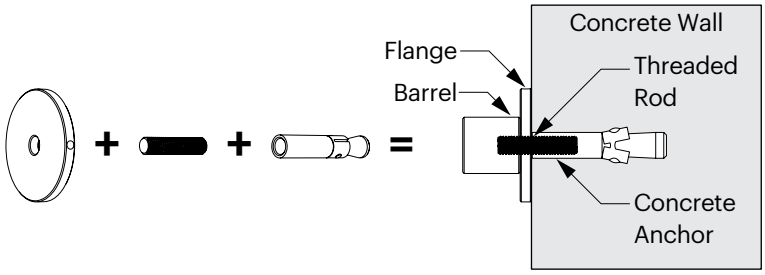
These diagrams are for interior use only. For exterior use contact your 3form sales representative. For horizontal applications see material-specific deflection charts at www.3-form.com/download_files.php.



Anchor Conditions

Concrete Substrate

The concrete anchor is placed directly into the concrete. The threaded rod is inserted into the anchor. The flange is then threaded onto the rod, flush against the wall.



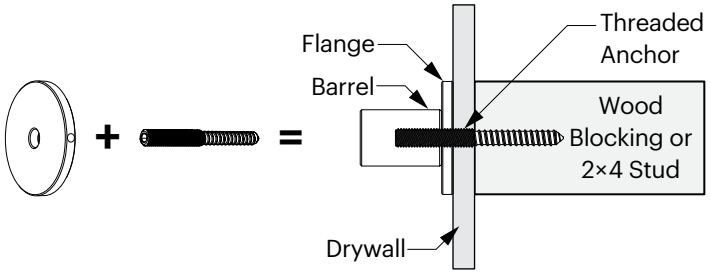
Wood Substrate

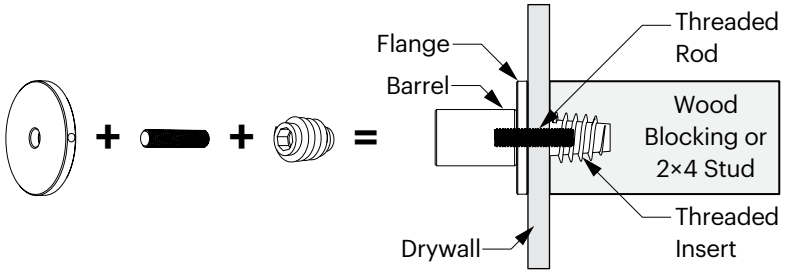
3form offers two different options for fastening to a wood substrate: a threaded insert anchor or an externally threaded wood anchor.

The externally threaded anchor has M8 threads on one end upon which the barrel can be fastened directly.

The threaded insert requires an additional M8 threaded stud to couple the barrel to the anchor.

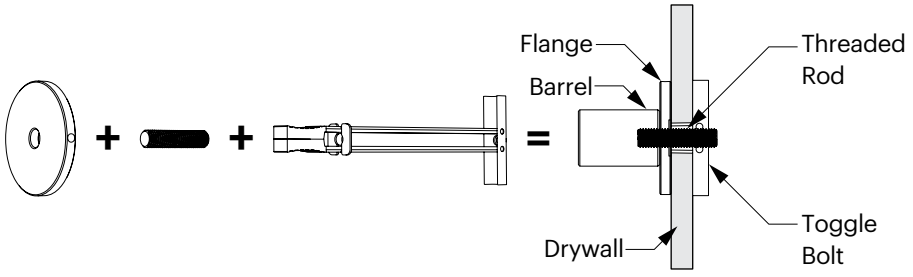
Both can accept the flange to cover up any pre-drilled openings and add support.

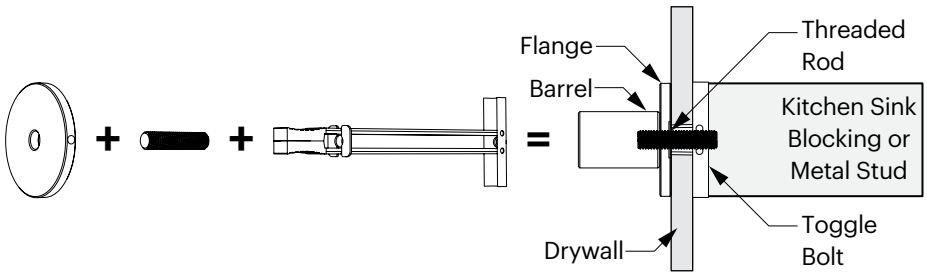




Hollow Wall

For hollow wall conditions (drywall or sheet metal studs), 3form offers an M8 threaded snap toggle bolt. Similar to the anchor conditions described previously, the barrel can be fastened to the wall using an M8 threaded stud coupling the barrel with the toggle bolt.





Specifications

Standoffs with Glass

Using Point Supports with 3form Pressed Glass can occasionally be done with very specific exceptions and great care. Please see the associated 3form Glass Adapter Solution Document / Install Manual for specific details. Use of glass with 3form hardware should only be done with careful following of the instructions in that document. If the glass is compressed with Point Supports or other manufacturers' standoffs it is highly likely that it will break. When installing 3form Glass it is typically recommended that the glass is either glazed into the space, framed into the space, or built into a soffit.

Component Specifications

Below are specifications for the primary components involved in the Point Support system. Dimensions can be found in the hardware catalog at www.3-form.com/hardware/catalog. Additional instructions on installing the system can be found in the last section of this document. For anchoring specifications and installation instructions, please refer to the Anchoring Solution Document.

	Parts	Material	Finish	Recommended Use	MSDS Information
Milled Stainless Steel*	Barrels Standard Caps 2-Piece Caps Countersunk Caps Flanges Spacers	Interior Grade Stainless Steel 303	Mill Finish (raw)	Interior Only	Recycled content typically approx. 60% 35% Post Industrial 25% Post consumer
Machined Aluminum	Flat Spiders	6061 T6 Aluminum	Satin Anodized	Primarily Interior. Engineering approval must be obtained for any other use	Recycled content approx. 40% Post Industrial

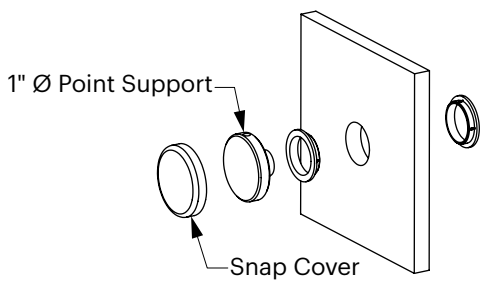
* See the catalog online for dimensions, part numbers, and available sizes.

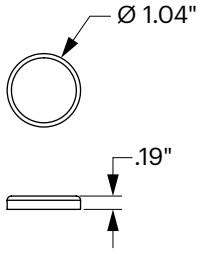
Milled Stainless Steel

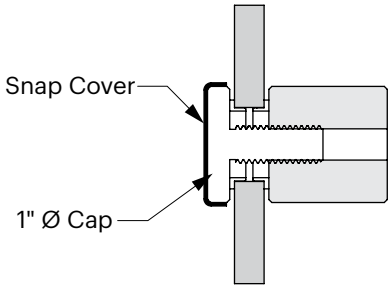
Machined Aluminum

Snap Covers

Snap Covers are an accessory for 1" diameter interior caps. Available in any of the 3form color pallet, they can used to match or accent your Point Supported Panels. Snap Covers are an aesthetic alternative to powder coating and offer a much larger variety of colors and finishes. Each set of Snap Covers is made specifically to match your 3form color selection.







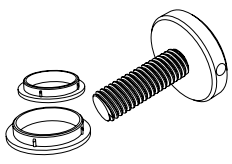
Installation:

Install Point Supports per instructions in Point Support Solution Document. Once Point Supports are installed, press your custom Snap Covers directly onto Point Support Caps. Unless otherwise specified, do not use adhesives to attach the Snap Covers. It will make the Snap Covers, Point Supports, and ultimately the panel difficult to remove.

For Snap Cover removal, place cloth behind Snap Cover and against the panel to prevent scratching. Then, orient a putty knife so that one edge is behind the edge of Snap Cover and other is against cloth. Twist putty knife so that Snap Cover is pushed away from Point Support Cap.

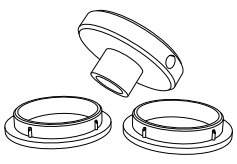
*Available for interior applications only. Compatible with all Varia Standard Finishes and standard color options.
**Not available in high resolution images.

Compatible With:



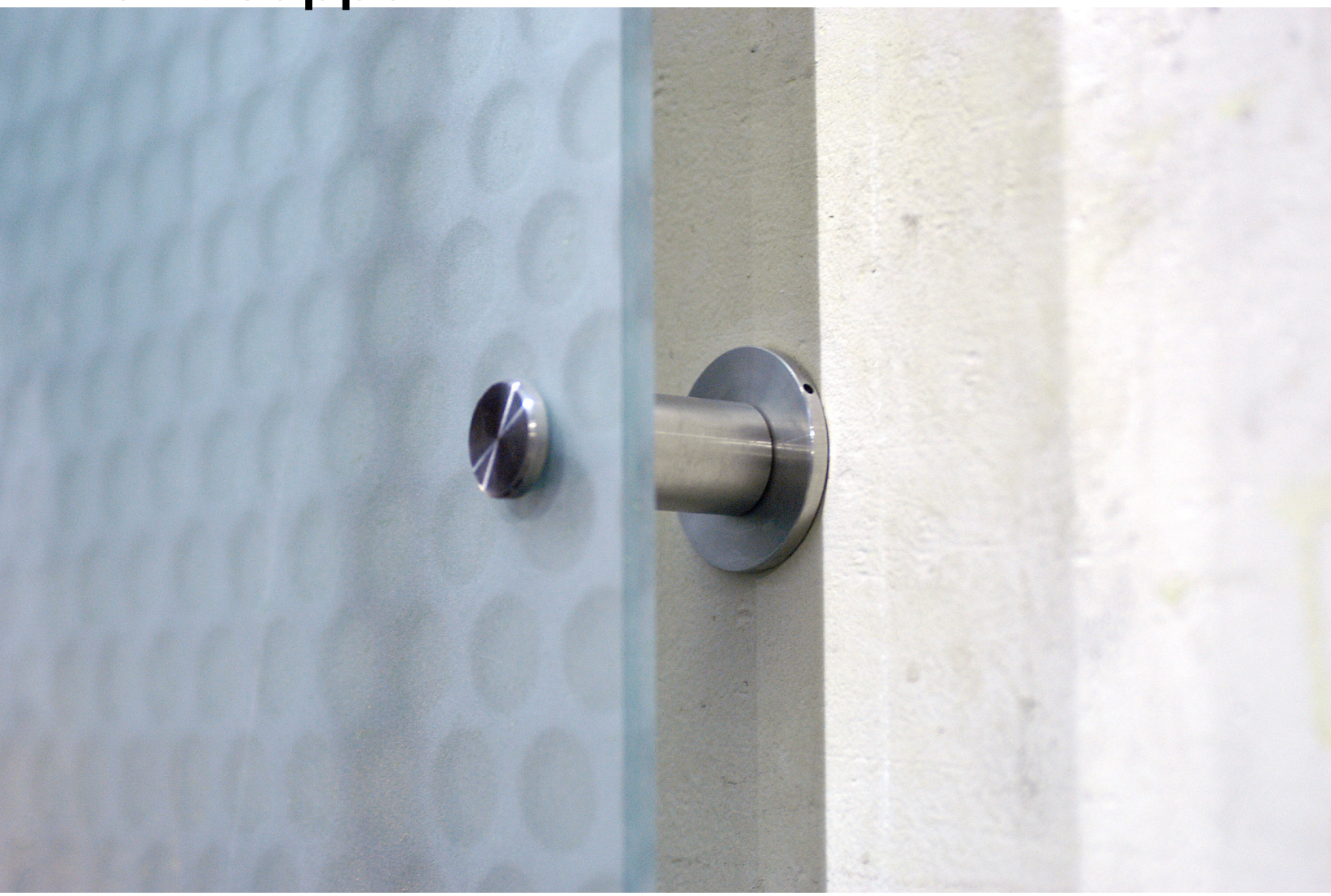
1" Ø 1 Piece Cap

3-15-0025-K
3-15-0026-K
3-15-0027-K
3-15-0028-K
3-15-0029-K



1" Ø 2 Piece Cap

3-15-1716-K
3-15-1719-K



Installation Overview

Preparation

a Provide a smooth, straight, solid and clean substrate. Correct any defects prior to commencement of installation.

b Refer to the drawings (approved shop drawings if required) for correct panel location and layout.

c Correctly identify and mark locations for anchors to be attached to the wall or other substrate.

Anchor

Place anchor assemblies into the substrate and attach barrels.

See pages 13-15 for anchoring instructions for concrete, wood and hollow walls.

For anchoring in other substrates such as aluminum framing or 100mm (4") plates, refer to the Anchoring Solution Document available at www.3-form.com/download_files.php

Mount Panels

a Accurately mark and drill holes for each cap in the panel. Refer to page 1 for appropriate hole sizes based on cap size.

b Holding the panel in place on the wall, thread the caps for the top point supports. See page 16 for cap installation.

c With the panel in place on the wall, mark the locations for the remaining point supports.

Note: The oversized holes for the side and bottom supports ensure that the panel is hung appropriately (from the top) and help prevent deflection caused by the expansion and contraction of the panels.

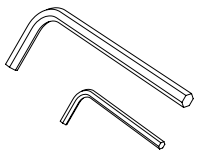
Grid Patterns

For details on installing panels in a grid pattern refer to page 17

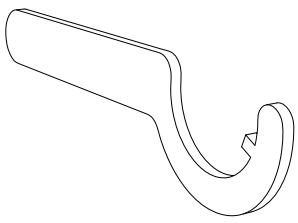
Spider Attachment

Spider attachment - refer to page 17

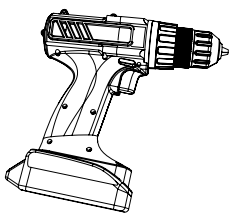
Recommended Tools



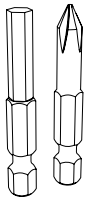
Metric and SAE Allen Wrenches



Spanner Wrench
(Optional Substitute for Allen Wrenches)



Drill



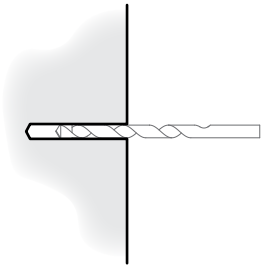
Driver Bits

Anchor Installation - Concrete

The concrete anchor is placed directly into the concrete. The threaded rod is inserted into the anchor. The flange is then threaded onto the rod, flush against the wall.

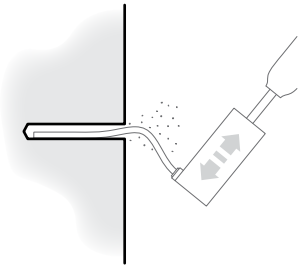
Concrete Substrate

a



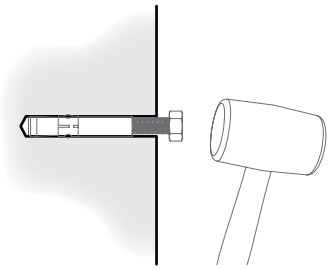
Drill Ø10mm hole, minimum 65mm deep. Concrete should be 150mm (6") minimum thickness.

b



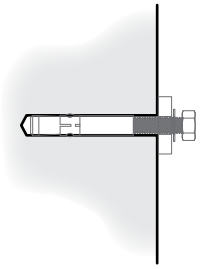
Remove drilling debris with a blowout bulb or with compressed air.

c



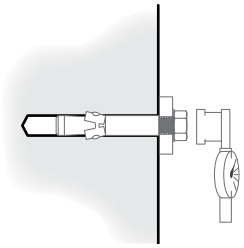
With screw in M8 Concrete Anchor (3-15-3011A), use a hammer to insert anchor.

d



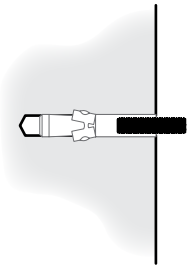
Place a washer under the screw head.

e



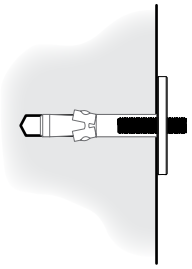
Torque the screw to 15 Nm.

f



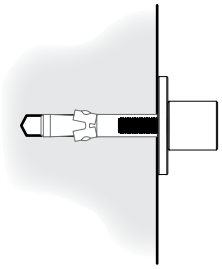
Remove screw and Insert the M8 threaded rod (3-15-1755) into the anchor.

g



Thread the M8×50mm flange (3-15-3051) on the M8 threaded rod and tighten flush against the wall.

h



Fasten the barrel to the wall.

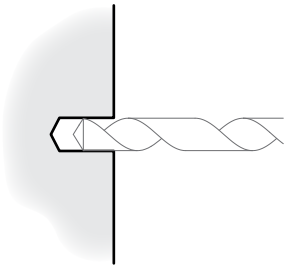
Note: For the most secure installation, use an epoxy to hold anchor in place.

Anchor Installation - Wood

3form offers two different options for fastening to a wood substrate, a threaded insert anchor and an external threaded wood anchor. Both are illustrated below. The external threaded anchor has M8 threads on one end upon which the barrel can be fastened directly. The threaded insert requires an additional M8 threaded stud to couple the barrel to the anchor. Both can accept the flange to cover up any pre-drill openings and add support.

Wood Substrate - Option 1

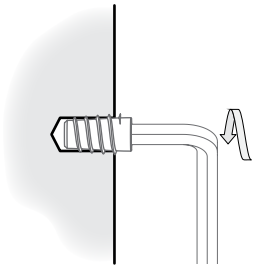
a



Drill Ø 7/16" (Ø11mm) hole, minimum 20mm deep.

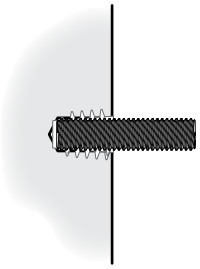
Note: If installing into wood behind drywall, ensure there is room for the anchor to be embedded at least 16mm deep into the wood.

b



Use an Allen wrench or 8mm hex driver bit to install the M8 Threaded Insert (3-15-0791).

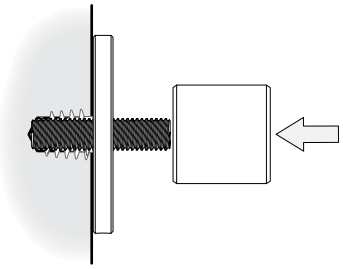
c



Insert the M8 threaded rod (3-15-1755) into the anchor.

Note: Ensure that there is sufficient length remaining (19mm or ¾") onto which the flange and barrel thread.

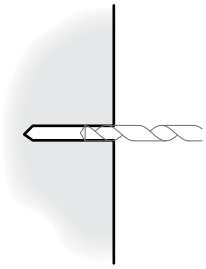
d



Thread the M8×50mm flange (3-15-3051) on the M8 threaded rod and tighten flush against the wall. The barrel may now be fastened to the wall.

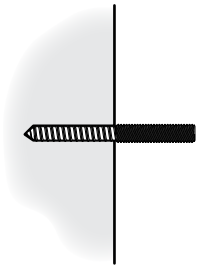
Wood Substrate - Option 2

a



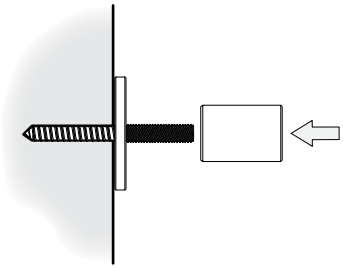
Drill a 4mm (5/32") diameter pilot hole into the wood.

b



Drive M8 anchor into the wood using appropriate Allen wrench. The lag portion of the anchor should be placed firmly into the wood stud and below the surface of the substrate. The base of the threaded stud portion should be flush with the surface of the substrate.

c



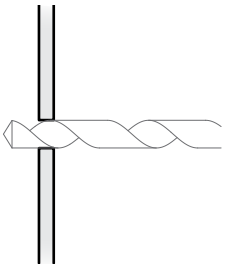
Thread the M8×50mm flange (3-15-3051) on the M8 anchor and tighten flush against the wall. The barrel may now be fastened to the wall.

Anchor Installation - Hollow Wall

For hollow wall conditions (drywall or sheet metal studs), 3form offers an M8 threaded snap toggle bolt. Similar to the anchor conditions above, the barrel can be fastened securely to the wall via an M8 threaded stud coupling the barrel with the toggle bolt.

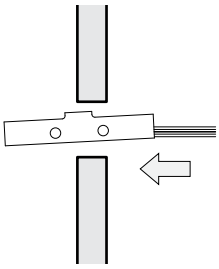
Hollow Wall

a



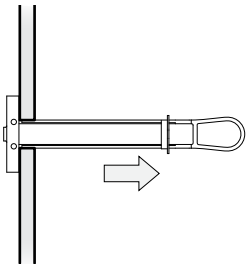
Drill a 19mm (¾") diameter hole through the drywall/ gypsum. Minimum clearance behind wall = 1⅞" (48mm)

b



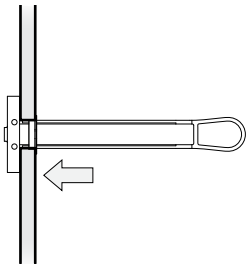
Position the metal channel parallel with the plastic legs. Insert the metal channel through the drilled hole into the wall cavity.

c



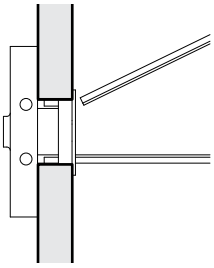
With one hand, pull ring so metal channel rests flush behind wall.

d



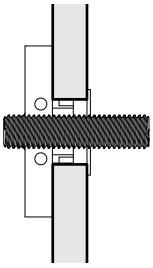
Slide the plastic cap forward along the legs until it is seated flush to the work surface.

e



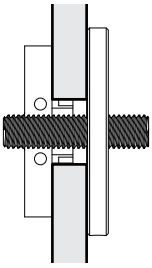
Place thumb between plastic straps. Push side to side, snapping off straps level with flange of cap.

f



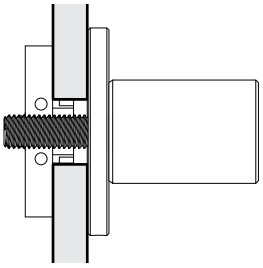
Insert the M8 threaded rod (3-15-1755) into the anchor.

g



Thread the M8×50mm flange (3-15-3051) on the M8 threaded rod and tighten flush against the wall.

h



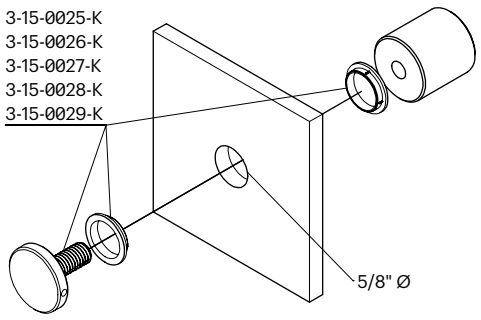
Fasten the barrel to the wall.

Note: Maximum torque on screw or rod is 5 ft-lb.

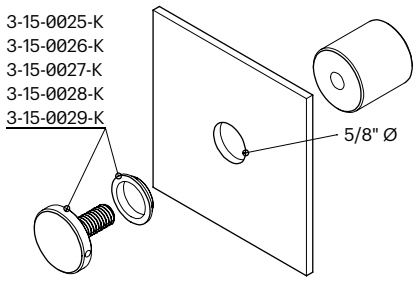
Panel Cap Installation

1 Piece Cap

Materials ¼" and Thicker
(Varia, Chroma, Koda, Stone and 100%)



Materials 3⁄16" and Thinner
(Varia only)

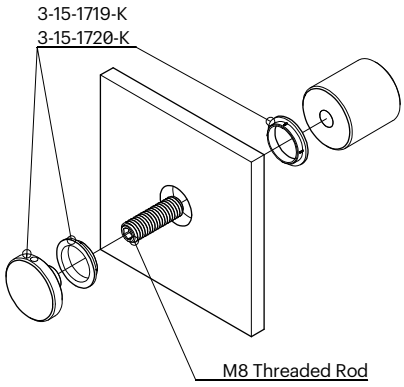


a Insert Pressure Fit Washers into ⅝" diameter hole (if drilled properly the washers should snap into place in the panel hole) front and back of panel (back side only for thinner panels).

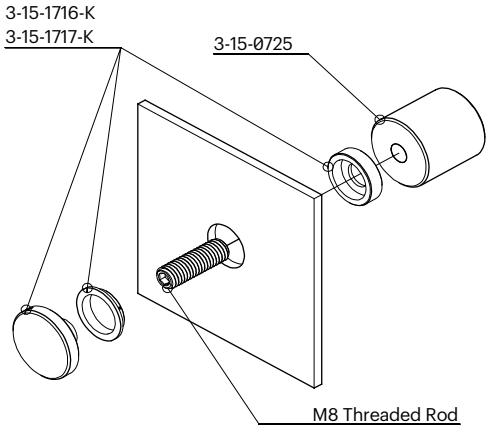
b Carefully place panel in position, verify washers remain in place. Install caps through washers and panel to back hardware. Hand tightening with a subsequent partial tool tightening is appropriate. Caps do not need to be overtightened.

2 Piece Cap

Materials ¼" and Thicker
(Varia, Chroma, Koda, Stone and 100%)



Materials 3⁄16" and Thinner
(Varia only)



a Install hardware at substrate and M8 Threaded rod into substrate hardware (barrel or other) so it is ready to receive cap and panel. For thinner panels place recessed white bushing onto threaded rod in preparation for panel installation.

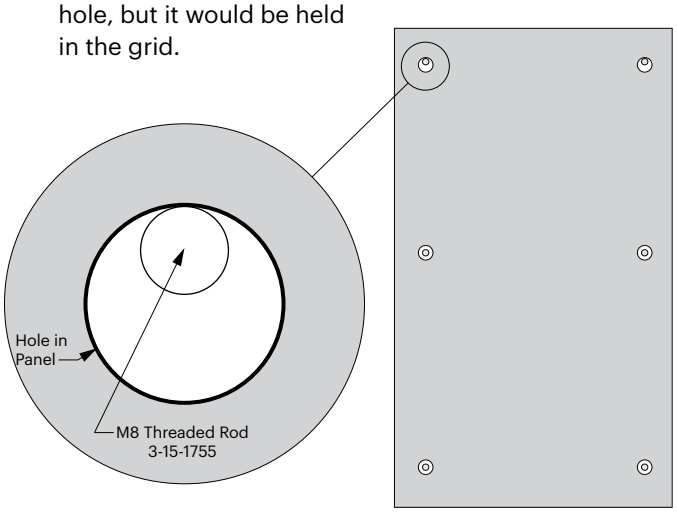
b Insert Pressure Fit Washers into ⅝" diameter hole (If drilled properly the washers should snap into place in the panel hole) front and back of panel, (back side only for thinner gauge panels).

c Carefully place panel in place, verify washers remain in place. Install caps through washers and panel to back hardware. Hand tightening with a subsequent tool partial tightening is appropriate. Caps do not need to be overtightened.

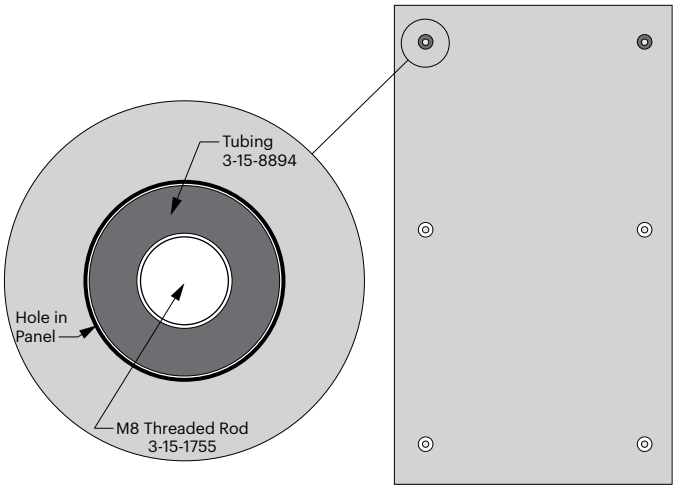
Grid Pattern Installation

Use one of the following 2 methods to prevent gradual downward movement of panels in a grid type installation.

1 Drill only the top holes for the panels first and hang them in a grid with the top holes resting directly on the threaded rods. Mark additional anchoring points on center with the holes. Take the panels down, drill the other holes, set the anchors, and mount the panels. All of the weight would be borne on the top hole, but it would be held in the grid.



2 Use clear tubing (3-15-8894) supplied with all Point Support orders in only the top holes. Cut 2 pieces per panel, a little thinner than the gauge of the material, and insert the tubing over the threaded rod to hold the panel on center to the hole.



Spider Installation

The optional spider attachment is designed to attach to multiple points on a panel(s) and to a single point on the wall or surface. It may also attach to aluminum framing.

a Mark panel locations for drilling. For a ¼" reveal between the adjoining panels, the appropriate distance is approximately 1⅞" (~ 48mm).

b Drill panel with ⅝" diameter hole through which caps can be inserted.

c Fasten spider to end of barrel or aluminum framing with included M8 threaded countersunk cap.

Note: If using with aluminum framing, insert included dowel pin into correct location on the back of the pin. This will prevent the spider from rotating once it is in place.

d Fasten panel to spider by threading cap through the panel into the leg of the spider.