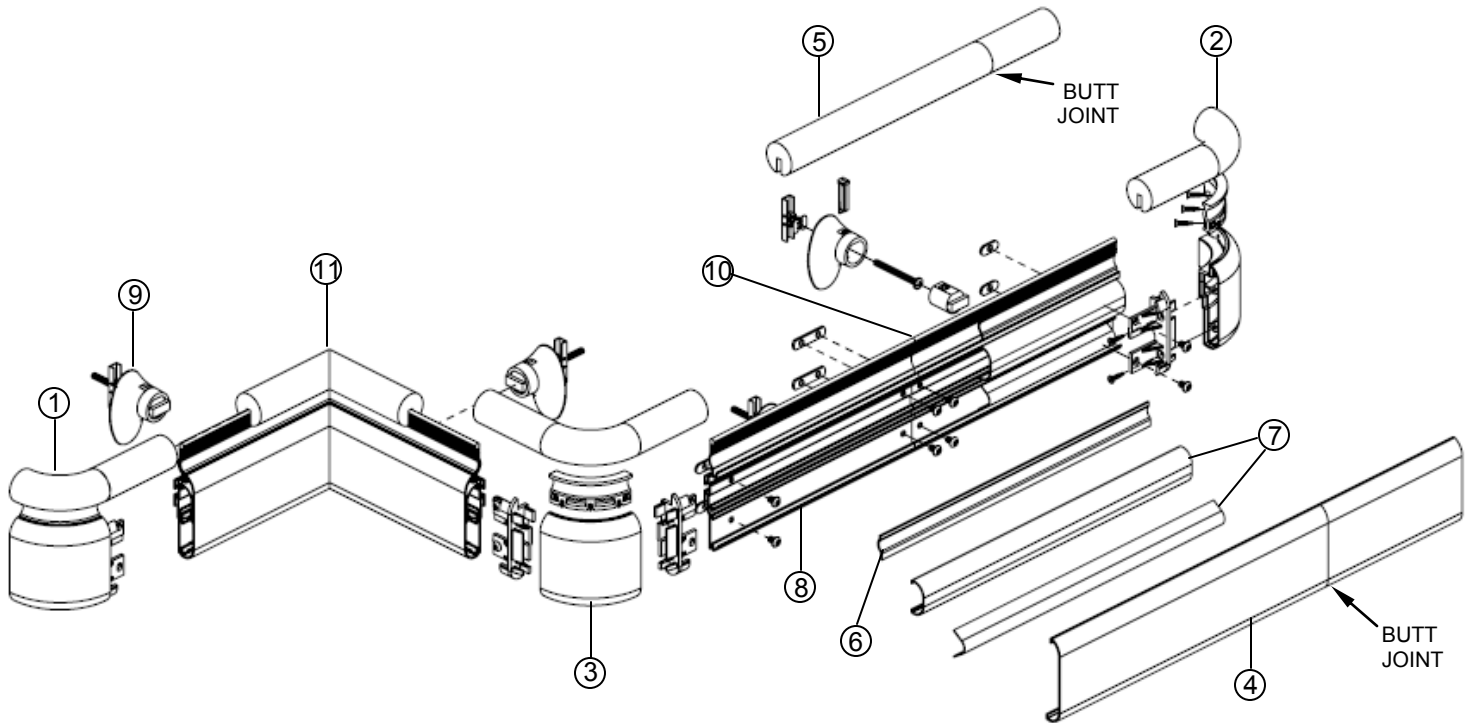


TYPICAL ASSEMBLY



COMPONENT LIST

- | | |
|-----------------------|--|
| 1 LEFT RETURN | 7 UPPER & LOWER IMPACT ABSORBERS |
| 2 RIGHT RETURN | 8 ALUMINUM RETAINER |
| 3 OUTSIDE CORNER | 9 LOCKTIGHT® MOUNTING BRACKET ASSEMBLY |
| 4 SNAP ON VINYL COVER | 10 SPLICE |
| 5 WOOD HAND GRIP | 11 FIELD MITRE INSIDE CORNER |
| 6 ACCENT STRIP | |

TOOLS REQUIRED FOR HANDRAIL ASSEMBLY

Level
 Chalk Line
 Tape Measure
 Phillips Screw Driver
 Compound Mitre Saw with an 80-100 tooth carbide blade
 Drill
 1/4" Drill Bit
 1/2" Drill Bit
 Socket wrench and socket set
Note: Drill bit sizes may differ for Masonry and other substrate applications, see instructions on the appropriate fasteners for the substrate (provided by others).

HARDWARE DETAILS (Provided by others)

End Cap and Corner Assembly:

#8 Self tapping screw
 1/4-20x3/8" button head fastener
 1/4-20 slot nut

Standoff Assembly;

For standard steel stud and drywall applications

Toggler® brand anchor
 1/4-20x4" Phillips head screw

Aluminum Retainer Splice Connections;

Aluminum retainer splice
 1/4-20x3/8" button head fastener

STORAGE & HANDLING

The handrails are shipped unassembled. Upon receipt, immediately check all material for any damage that may have occurred in transit and verify that all of the items and quantities are correct. The handrail covers should be stored in the horizontal position at room temperature (65 - 75° F). This is a finished product; store in a protected, clean, dry area away from direct sunlight.

DO NOT WALK ON THIS PRODUCT OR STORE ANYTHING ON TOP OF IT.

Check to ensure the anchors supplied by the factory will work with the type of wall substrate on the project.

CUTTING

All materials are supplied in stock 12' lengths and are to be field cut using quality equipment to insure that all cuts are square. When cutting materials Wallprotex recommends using a 80-100 tooth carbide tipped saw blade or equivalent. **NOTE:** Stock length material does not always have squared ends and may require squaring in the field. If space is available use a minimum 12' long cutting bench to allow the installer to cut the material without having to turn it around.

IMPORTANT!

The factory recommends using back up channels at stud wall conditions (Figure 1).

SPLICES

When splices occur (runs over 12'-0"), always splice the aluminum retainers, vinyl covers, and impact cushion at different locations along the run. The minimum required spacing between the splice locations is 6" (See Page 3, Figure 4).

INSTALLATION

Install the longest run of the handrail first, use scrap for shorter runs. The handrail requires a minimum of 2 standoffs per unit/run. See **Minimum Layout Configuration** (Page 5) for minimum handrail layouts and sizes.

STEP 1. Using the correct plans, layout guides and local code requirements layout and mark the location of the handrail on the wall at the appropriate height above the finished floor. Measure 3-3/4" down from the desired top of the handrail and mark this location at each end of the run (See Figure 2). Snap a chalk line, or use a laser level to mark the height of the standoff fasteners.

STEP 2. Once the handrail is laid out, mark any required cuts to each aluminum retainer and cut to correct length. See **Cutting Adjustment and Schedule** (Page 5) for adjustments to the aluminum retainer length that are required for end caps, inside corners, and outside corners. Refer to **Minimum Layout Configurations** (Page 5) for additional information concerning spacing and minimum wall guard length requirements.

Important: All cuts must be square and deburred.

STEP 3. Layout the handrail runs, marking the location of each standoff along the chalk or laser line (See Figure 2). There must be a standoff located 6" from the start and the end of each run. Standoffs must be located 6" from all outside corners and 10" from all inside corners. The remaining standoffs are to be spaced a maximum of 32" O.C.. Make sure there is an equal distance on both ends of the handrail run from door jambs and windows (see Page 5 Minimum Layout Configurations).

STEP 4. Drill 1/2" holes at the marked locations for each standoff, then insert a toggle in each hole (see toggle instructions on page 6). Using the 1/4-20x4" hardware supplied by Wallprotex attach the standoffs to the wall along the run (see Figure 3).

NOTE: observe all safety precautions when drilling to avoid all utilities and re-bar.

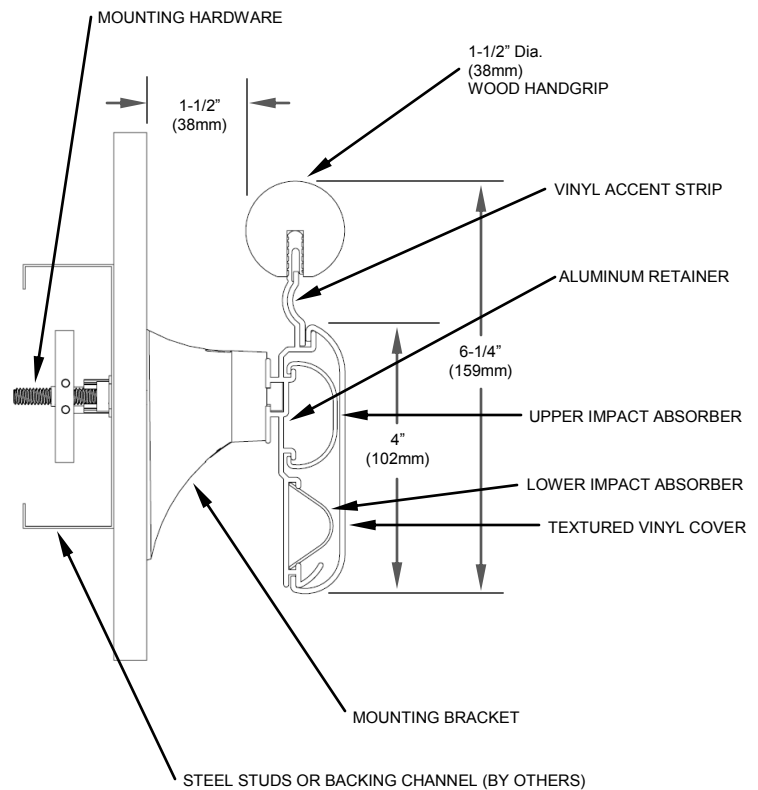


Figure 1

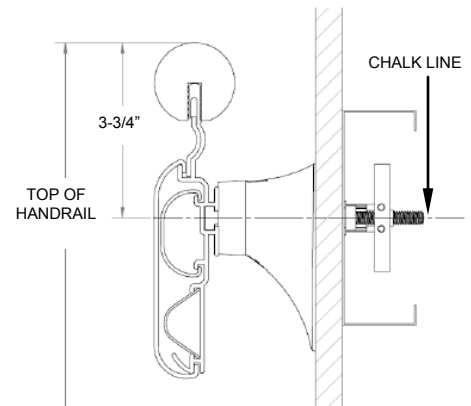


Figure 2

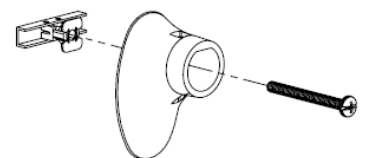


Figure 3

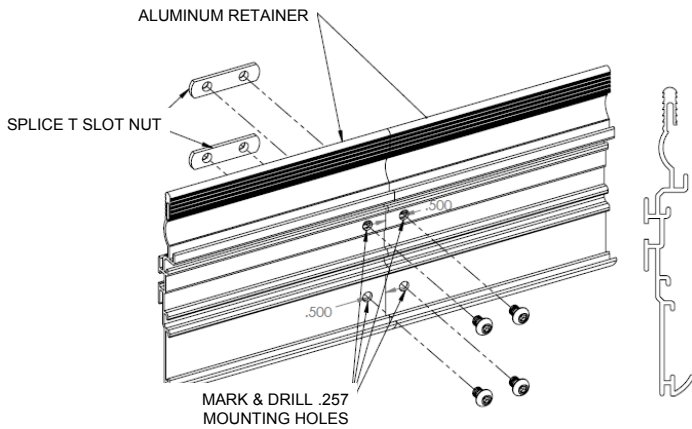


Figure 4

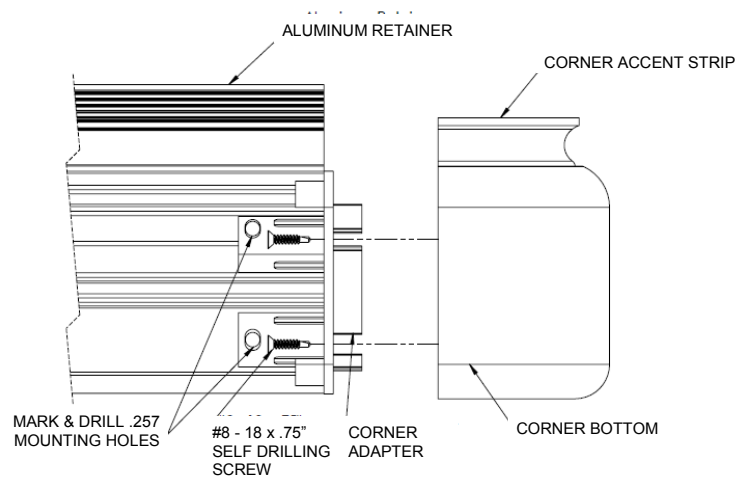


Figure 5

STEP 5. Assembly of returns and outside corners, select proper amount of corner housings and corner accent pieces to assemble all left hand returns required. Using the #8 - 18 screws provided attach the corner accent strip to the corner housing. Then select the proper amount of left hand adapters. Using the factory supplied screws affix the adapters to the corner housing. Repeat this step for the right hand returns and the corners, using two adapters per corner (see Return and Outside Corner Diagrams Below).

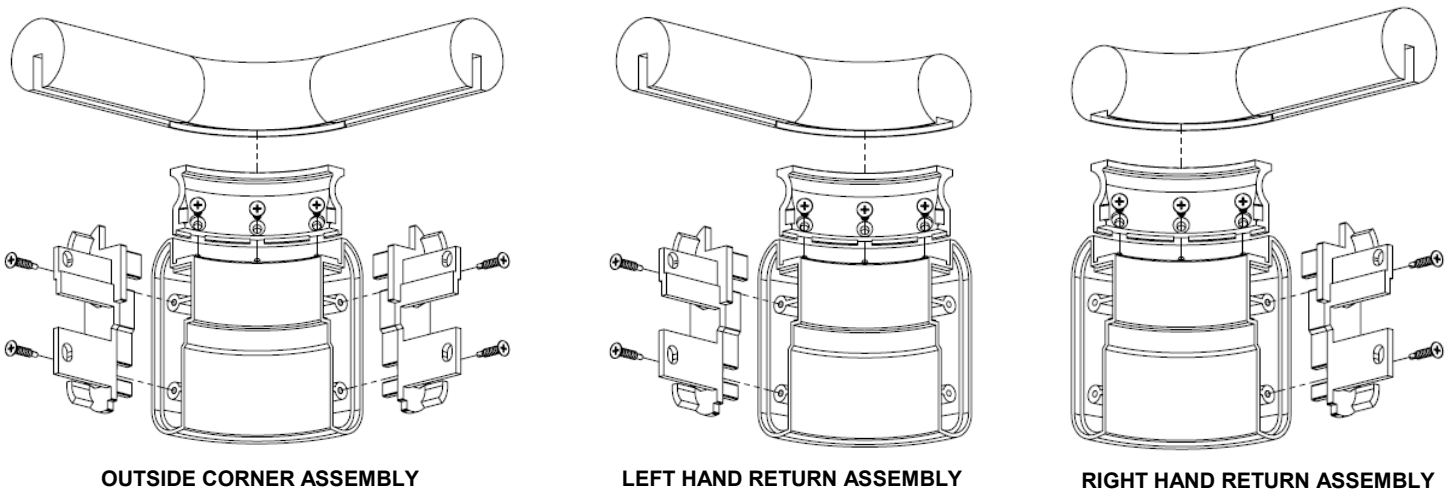
NOTE: The corner adapters are reversible enabling them to be used for an outside as well as an inside corner application.

STEP 6. Select the end caps or outside corners for each section. Slide the return or corner tabs into the aluminum channel, mark and drill the mounting holes for the return or corner (see Figure 5). Attach the return or corner using the T Slot Nuts and 1/4 - 20 Button Head Screws provided. For the upper screw slide the T Slot Nut into the channel on the back of the aluminum, the bottom nut will be placed directly on the aluminum (see Page 4, Figure 6).

NOTE: The handrail cover can be attached to the aluminum retainer prior to mounting the handrail to the standoffs as long as there are no splices in the run, if you desire to do so go to steps #8 & #9 before step #7.

STEP 7. Insert the required amount of locking brackets for the run into the channel on the back of the aluminum retainer with the flat side of the locking bracket facing up (see Page 4, Figure 9). Align the locking brackets with the standoffs along the run, then lift the handrail assembly into place, pushing the locking brackets into the standoffs (see Page 4, Figure 10). Insert and push down on the locking pin until it is flush with the top of the standoff to lock the handrail assembly into place (see Page 4, Figure 11). Should you need to remove the handrail for any reason use a screw driver at the bottom of the standoff to push the clip up unsnapping the mounting bracket from the standoff.

OUTSIDE CORNER, LEFT HAND AND RIGHT HAND RETURN DIAGRAMS



OUTSIDE CORNER ASSEMBLY

LEFT HAND RETURN ASSEMBLY

RIGHT HAND RETURN ASSEMBLY

STEP 8. Measure and cut the upper and lower impact absorbers (see Cutting Adjustment and Schedules on Page 5). Place the upper impact absorber over the top lip of the absorber channel on the aluminum retainer and then snap into place. Place the top edge of the lower absorber inside the lower channel and then snap the bottom edge into place on the retainer (see Figure 6).

STEP 10. Measure between accessories (corners and returns) and cut the corresponding vinyl cover and accent strip profiles to the correct size (see Cutting Adjustment and Schedules on Page 5). Cut the profiles so that they will span any retainer butt joints/splices. *Important:* All cuts must be square and deburred.

STEP 11. Place the accent strip in the finger groove of the aluminum retainer. Then place the top edge of the vinyl cover in the upper groove of the retainer over lapping the bottom of the accent strip. Starting at one end, using the palm of the hand, push the cover down over the bottom of the retainer.

STEP 12. Attach the return and corner wood handgrip pieces. Using an adhesive caulk or construction adhesive such as Loctite® PL Premium Construction Adhesive to secure the wood handgrip. Place a thin bead of the caulk or adhesive along the top spine of the retainer prior to placement of the handgrip. Be sure to follow all manufacturer instructions for the chosen caulk or adhesive. Then measure and cut the straight run sections of the wood handgrip, taking into consideration any splices in the run and attach in the same manner as the return and corner pieces. Be sure to immediately clean up any excess caulk or adhesive following the manufactures instructions for clean up.

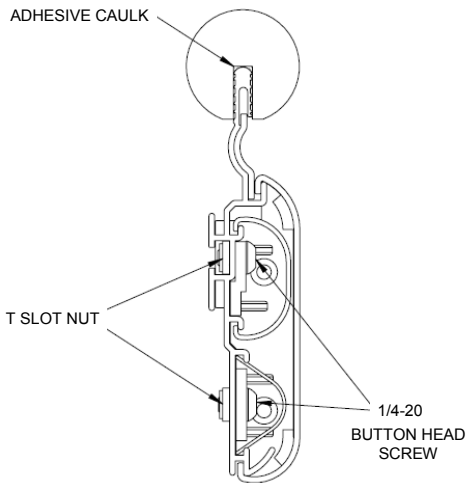


Figure 6

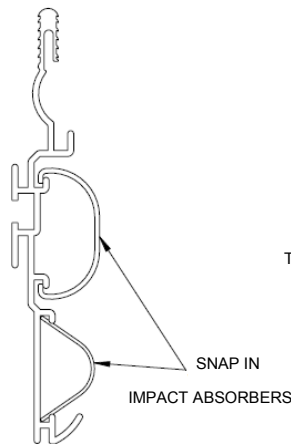


Figure 7

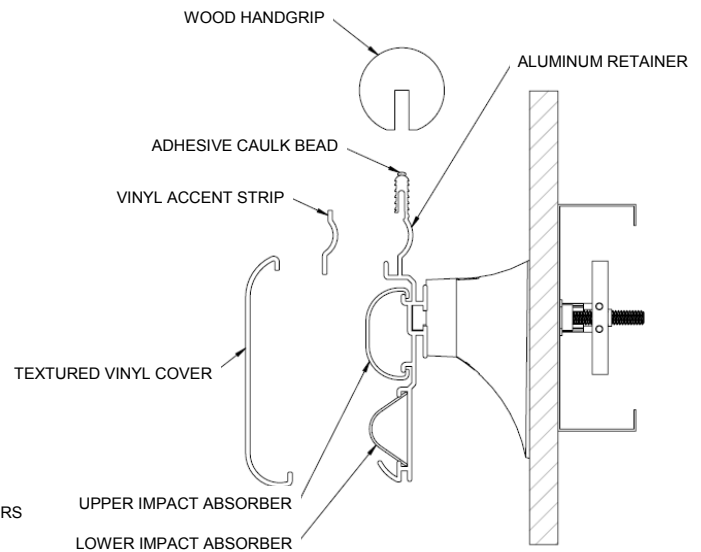


Figure 8

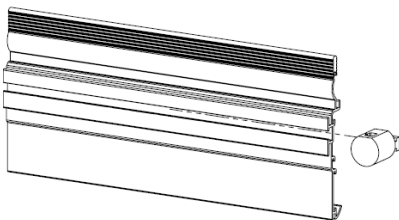


Figure 9

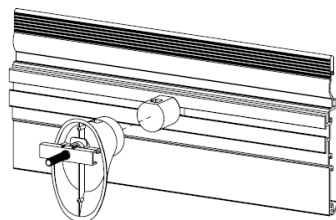


Figure 10

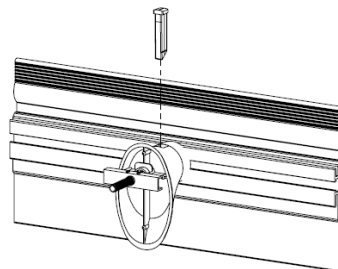


Figure 11

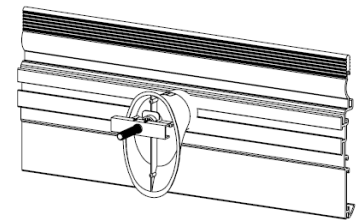
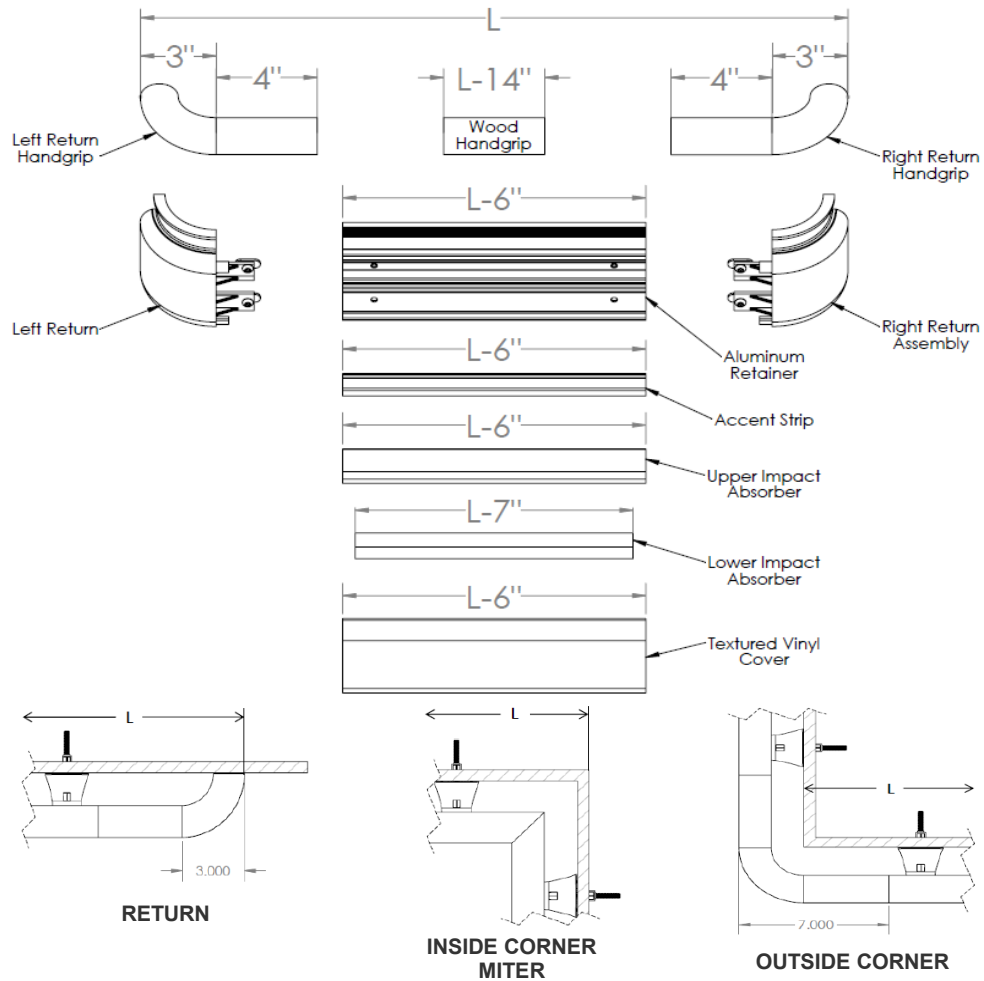


Figure 12

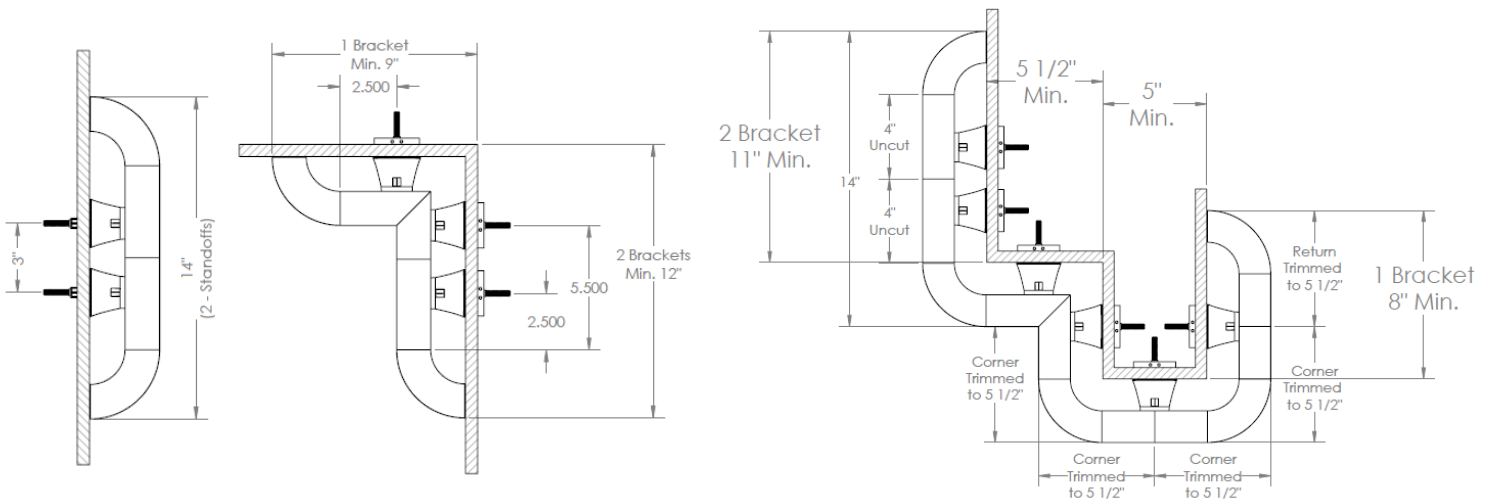
CLEANING INSTRUCTIONS

1. For best results, the use of liquid cleaners such as "409", "Fantastic", "Mr. Clean", etc. are recommended. The use of powder cleansers is not recommended, use of such cleaners can leave residue which is difficult to remove.
2. Do not use chlorinated or aromatic hydrocarbons, esters or ketones to clean Wallprotex vinyl products. Avoid the use of heavy degreasers, compounds containing surfactants, and abrasive compounds or cleaning devices.

CUTTING ADJUSTMENT DIAGRAMS AND SCHEDULE

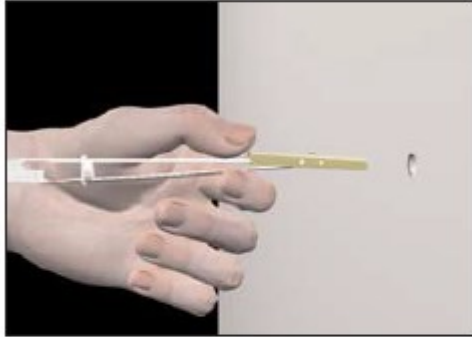


MINIMUM LAYOUT CONFIGURATIONS



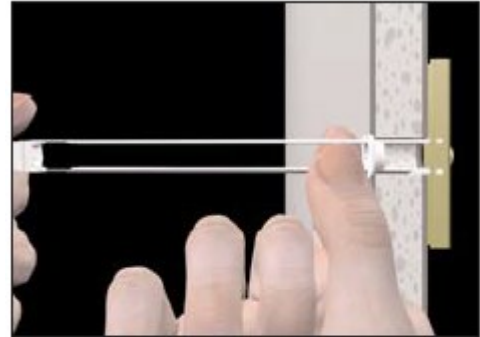
TOGGLE INSTALLATION INSTRUCTIONS & TECHNICAL DATA

STEP 1



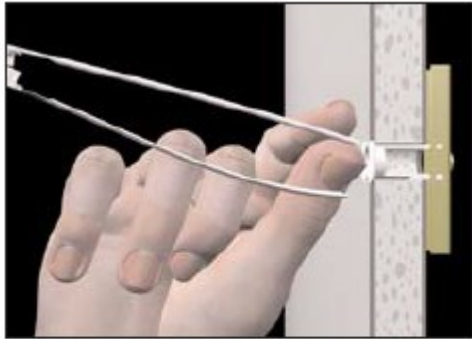
Drill appropriate size hole (1/2"). Hold metal channel flat alongside plastic strips and slide channel through the hole. Minimum clearance behind wall: only 1-7/8".

STEP 2



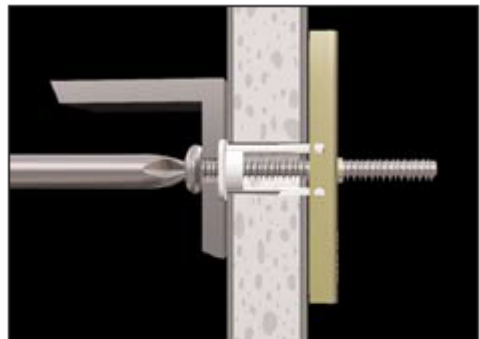
Hold ends of straps together between thumb and forefinger and pull toward you until channel rests behind the wall. Ratchet cap along the straps with other hand until flange of the cap is flush with wall.

STEP 3



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

STEP 4



Place standoff to the wall over the flange. Using 1/4, 20 tap bolt, Insert tap and tighten until snug against the standoff, then stop.

Ultimate Tensile Pull-out Values (lb)

UNC Thread	Drill dia.	1/2" Drywall	5/8" Drywall	*1/2" with 25 gauge stud	*5/8" with 25 gauge stud	Concrete block	1/2" Steel plate
1/4"-20	1/2"	265	356	425	464	1080	1288 ²

* Failure measured as breakage of drywall portion

² Hardened bolts used

Ultimate Shear (lb)

UNC Thread	Drill dia.	1/2" Drywall	5/8" Drywall
1/4"-20	1/2"	241	324

- For maximum shear holding, orient channels vertically to the floor.
- Use hardened or stainless bolts for maximum weight load.
- Enlargement of specified insertion holes size will reduce anchor effectiveness.
- All toggle anchors meet requirements of Type V anchors in Federal Specification FF-B-588-D (superseded).
- 1/4-20 x 4" tap bolt/screw (fully threaded) meeting or exceeding ASTM A307 Grade A and SAE J429 Grade 1 requirements.