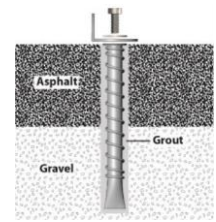


BoltHold™ is a family of anchors specifically designed for anchoring to asphalt. The anchors are suitable for attaching objects and structures to asphalt. This document provides instructions and a guide to the installation of our line of anchors. Updated information on anchor installation, as well as application-specific calculators, can be found on our web site asphaltanchors.com



STATIC VS. DYNAMIC STRESS

Asphalt “flows” under *continuous* pull stress. Asphalt is, however, very resilient when subjected to short duration forces. Expansion anchors, which depend on pressure against the walls and work well in concrete, will loosen quickly when used in asphalt. BoltHold anchors, however, use an adhesive to bind with the asphalt in a stress-free bond and will therefore hold fast for many years.

When considering securing a structure using the BoltHold anchors, review how stable the object is without the effects of wind, ice or snow. If the structure stands solidly on its own, you may load the anchors at 80% of their pull rating. If the object will apply a static pull force on the anchors just as it stands, limit the load on the anchors to 20% of the pull rating.

PULL RATING

Ratings are based on a minimum distance of 12” between anchors. If the distance is less than 12”, de-rate the pull force of all but the first anchor by 6% for every inch less than 12”². Ratings are based on asphalt thickness of 2½”. For heavier asphalt, increase the allowed forces proportionately³.

	SP10	SP12	SP18	SP58
Rated Pull, lbs.	1,500	2,000	2,500	15,000
Bolt Torque lb-in	200	200	280	720
Drill Depth	6”	12”	12”	10”
Drill diameter	7/8”	7/8”	1”	1.5”
Drill Part Number	83-1002	83-1002	83-1003	n/a
Anchors per EPX2 bag	3.4	1.7	1.3	0.7
Anchors per EPX2 tub	45	22	17	9.3
Anchors per EPX3 tube	4	2	2	1
Grout required, mL (cc)	60	120	150	290

Table 1

BOLT LENGTH

The minimum required thread inside the anchors is 5 turns of the bolt or 0.5”. The maximum length is the length of the anchor less 2”. There is no strength benefit having more than 0.75” of thread inside the anchor.

¹ This anchor is specified at 3” asphalt thickness

² An example for derating due to proximity of anchors: 4 anchors are installed 5” apart. The force capacity for the 2nd 3rd and 4th anchors is derated by (12-5) x 0.06 = 42%. See de-rating calculator asphaltanchors.com/calculators.

³ An example for calculating the effect of asphalt thickness: 3” asphalt will increase the anchor’s force capacity to 3/2.5 = 1.20. Thus, SP10 rated at 1,500lbs. will handle 1,800 lbs. See Group calculator asphaltanchors.com/calculators.

GROUT SELECTION

The anchors are designed to be used with grout. The grout binds the anchors on the one hand and bonds with the asphalt on the other hand. Grout is also called “adhesive” and should not be confused with grout used to seal tiles. Suitable materials are expanding concrete or epoxy. Grout must be self-leveling (meaning that it flows easily, to fill in crevices and voids). It must cure to a hard material. The cured grout must be immune to extended exposure to water. The amount of grout required depends on the model of the anchor you selected. See Table 1.



EPX2 BAG

The most cost-effective anchoring results are achieved using our EPX2, an expanding anchoring cement. The EPX2 is packaged either in bags or in a large tub. The bags hold 12oz (P/N 82-5002.K for a six-pack). The re-sealable bags allow adding water, kneading the mixture, then pouring it. The EPX2 is also available in 10 lbs. tubs at a lower cost (P/N 82- 5002.010). [See application note [AN36](#) for installing the EPX2 when temperatures are below 50°F, or use the EPX3]. Do not use the EPX2 with Dacromet coated anchors, as chemicals in the cement may attack the coating; use our EPX3 instead.

EPX2 TUB



EPX3 TUBE



Our EPX3 epoxy (a 2-part acrylic resin) is packaged in a single cartridge compatible with caulk guns⁴. We recommend high-thrust (26:1) guns such as our [CG26](#). The EPX3 can be applied at temperatures as low as 14°F and offers the convenience of cartridge application with no mixing required.

Note that our ratings of anchors are based on tests that we have run with the EPX2 and EPX3. Your results and the reliability of the installation using other grouts may vary. Do not use Rocktite or Kwixset as they are water soluble.

REQUIRED SUPPLIES

Before starting the installation, make sure that you have the following items:

1. Grout in quantity per table 1
2. If the object that you are attaching is thicker than 3/8”, procure the required bolts⁵. Otherwise, the bolts provided with the anchors will do.
3. If you provide your own bolts, you will need Permatex anti-seize paste to facilitate removal of the bolts in the future. #80078 for steel anchors, #77124 for stainless steel anchors.
4. Masonry drill bit per Table 1
5. Tools — hammer-drill, hammer, wrench for bolts, vacuum cleaner or blower.
6. Caulk gun if using the EPX3.



⁴ Due to the force required to squeeze the epoxy we recommend using a hi-thrust caulk gun. See the [EPX3 datasheet](#).

⁵ Length of bolt equals thickness of object plus thickness of washer plus 0.75”, rounded up.

FOR REALLY FLUSH INSTALLATION

The head of the anchor is about 0.080" (2mm) high. That only presents a problem if the attached object is removed for the winter for snow removal as some snowplows may snag the head of the anchor. The asphalt may be compacted to accommodate the entire head of the anchor using our Flattener tool (P/N 01-6390). The tool is placed in the hole before grout is applied and hammered in to compact the area below the head. The tool is not suitable for the SP58 anchors. **Do not use the tool on an installed anchor.**



DIRECTIONS

The directions that follow apply to the use of the EPX2 in bag or tub, and for the use of the EPX3. Sections specifically for the EPX3 are shaded to separate them from the EPX2.

EPX2 USE

1. Prior to the activation of the grout, make sure that you have the anchors on hand. Do not separate the bolts from the anchors.
2. Note that the EPX2 and EPX3 are fast curing; you have less than 10 minutes handling time for the EPX2 and 20' for the EPX3.
3. Drill a hole in the diameter and length per table 1. If you use a larger drill diameter or drill deeper than specified, you will need more grout.
4. **BAG User:** With the zipper on top, carefully open the bag in the middle of the zipper. Do not press on the bag as it will send a cloud of dust which should be avoided. See this [video clip](#).
5. **TUB User:** Use instructions are similar the bag use except that you need to mix the grout in a bowl. Full details in this [video clip](#).
6. Slowly add water. There is large variability in the required amount, depending on the water content of the grout as provided in the bag. Typically, you will need just short of 1/2 cup of water per bag. The end consistency of the mixture should be heavy syrup-like. Note that the transition from dry powder to liquid is quite abrupt, so add the water slowly.
7. Aim at a consistency as shown in the picture on the right. If too much water was added, the consistency will be too thin, and the grout will require much longer to cure and may not reach full strength. If an inadequate amount of water is applied, there will be lumps in the mixture and it will clog the top of the hole and the grout will not flow to the full length of the hole. The pull resistance will be severely reduced.
8. Roll the top section of the bag that has no mixture to remove trapped air from the bag, then carefully zip the bag closed.
9. Knead the mixture for 2 minutes until all the powder was dissolved and no lumps are present. As you knead, rotate the bag 90 degrees at a time, knead and rotate again.



10. If more water is required, add one tablespoon at a time.
11. If there was too much water in the mix, add grout from another bag.
12. Slowly pour the mixture into the hole from a corner of the bag.
13. Make sure that the grout reaches the very top of the hole, even a little above it. Failure to fill to the top will greatly weaken the bond between the anchor and the asphalt.

EPX3 DIRECTIONS

[See EPX3 datasheet](#)

1. EPX3 USER: Place the EPX3 cartridge in a single cartridge caulk gun. Remove the protective nut at the top of the cartridge. There is no need to puncture the opening as in most cartridges.
2. Attach the supplied mixing nozzle to the threaded front of the cartridge
3. Pump a full length of the nozzle so that the mix coming out of the nozzle is uniformly gray. Discard this mix. Do not use this mix in the hole.
4. Proceed to fill the hole with the mixture, starting with the nozzle deep in the hole and slowly retracting the nozzle as the hole fills. This assures that the epoxy will reach the full length of the anchor.
5. Make sure that the grout reaches the very top of the hole, even a little above it. Failure to fill to the top will greatly weaken the bond between the anchor and the asphalt.

INSERT ANCHOR

1. Push the anchor into the hole. When the anchor head is about 2" from the asphalt, inspect the level of the grout in the hole. If the level is below the surface, top up the grout without pulling out the anchor.
2. Push the anchor in until its head is flush with the surface.
3. Immediately wet-clean the area around the anchor to remove unsightly grout before it cures. Alternately, scrape the excess using a trowel or a piece of cardboard.
4. The time for cure is about 15 minutes at 75°F. The time for full cure is 1 hour. Wait 2 hours before exerting a pull load or a heavy torque on the anchors.



ATTACH STRUCTURE

1. Remove the bolt and washer from the anchor (can be done after 15 minutes).
2. If you need to use your own bolt, apply a small amount of the Permatex paste along the thread (one side is enough). Use Permatex 80078 for steel anchors, use Permatex 77124 for Stainless Steel anchors.
3. Making sure that the plate to be attached is flat and in contact with the head of the anchor, align the hole in the plate with the anchor.
4. Insert the washer and the bolts and tighten. Do not exceed the torque allowed in Table 1. **Do not use an impact wrench.**



EPX2 WARNINGS

- Mixed with water but not yet cured, the grout is caustic and can cause burns to eye and skin.
- Prevent aluminum from coming in contact for a lengthy period with the installed grout.
- Do not use with Dacromet or similar coating that contains aluminum.

CALCULATORS

Our website offers several useful calculators that will save you time and will recommend the least-cost anchors for your application. You can find the calculators at asphaltanchors.com/Calculators.

- The **Grout** calculator computes the required grout for the selected number of anchors of any one anchor model.
- The **Group** calculator provides the rated pull resistance of a group of anchors installed close to each other, in asphalt of specified thickness.
- The **Fence** calculator suggests the number and model of anchors to secure surface-mounted fence posts to asphalt.
- The **Sign** calculator suggests the number and model of anchors to secure a surface-mounted signpost to asphalt.
- The **Carport** calculator suggests the number and model of anchors to secure surface-mounted carport posts to asphalt.

ANCHOR REMOVAL

Sometimes the installed anchor needs to be removed. The best time to do so is immediately after installation, before the grout fully cured. That is usually within 15-60 minutes of pouring the grout.

The recommended method is to use a socket or open wrench and over-tighten the bolt to the point where the entire anchor will break away from the grout that surrounds it. Once the anchor rotates in the asphalt, try and rotate it counterclockwise and it may thread itself out. If that does not work, use two large flat screwdrivers or a nail puller under the anchor's head to extract it.

Removing the anchor this way allows you to reinstall an anchor in the same hole. If the grout is already fully cured, the over-tightening method may result in the head of the anchor breaking off the body of the anchor. In that case, you can use a suitable metal drill and drill the body of the anchor out.