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Metric helicoil tap drill chart pdf

Pretty much any drill that uses the imperial system can also use the metric system and vice versa. The only difference between drill bits found in the U.S. and metric drill bits is that metric drill bits are measured in the metric system. Instead of finding a 1/4-inch bit, you'll find a 6-milimeter bit. Both types of bits are available in the same materials and styles, but since centimeters are divided smaller than inches, metric drill bits allow for more precise sizing of holes. Nowadays, even the imperial measurements of drill bits in the U.S. have the metric size specified on the package. This makes it easier to match up bits, screws, nuts and anything else your drilling project requires. The major drill bit companies like Makita, Ryobi, DeWalt, Bosch, Ingersoll Rand, Black and Decker, Craftsman and Hitachi all mark their bits in both the metric and imperial units of measurement.As with any drilling endeavor, you need to exercise caution and wear the proper safety gear, including goggles and ear plugs. It's also important to make sure you're using the right type of bit for your project so that the bit survives, along with the material you're drilling. That means that if you're drilling metal, a woodworker's Forstner bit would be a bad choice. A better choice might be an HSS drill bit or a titanium-coated drill bit, depending on the project.Metric drill bits are also available for impact drills and rotary hammers, which are typically used to bore through masonry. Since drills can also be used as drivers to insert screws, there are metric driver bits to help get any size screw into a wall or other material you need it for. Taps are used to cut threads for bolts or screws into wood, plastic and metal. A hole of a specific size is needed for the tap. An improper hole size, say too small, would not allow the tap to fit. On the other hand, too large of a hole would not allow the tapped threads to hold the bolt in place causing a bolt to strip out the threads when tightened. You can use an on-line resource, listed below, for calculating the drill bit needed for a particular sized tap. However, there may be times when access to a handy chart or the Internet is not feasible. By using a basic formula, you can find the correct drill bit for any machine thread tap. Measure the overall diameter of the tap with the micrometer. In this particular instance, we want a drill bit for a ¼" - 20 tap. The ¼" is the diameter and the 20 is the thread pitch or threads per inch. The overall measurement of the taps diameter from the micrometer is 0.252 inches. Use the following formula for finding the correct drill bit size: Dh = Dbm -- 0.0130 (percentage of the full thread desired/ Ni). Dh is equal to the drilled hole size in inches. Dbm is the basic major diameter of the thread, in our case 0.252 inches. The "percent" of full thread desired is your choice, but a good number is 70 percent to 85 percent depending on the material being used. "Ni" is the number of threads per inch, again, in our case, this is 20. Apply the numbers to the formula using an 84 percent thread depth. The formula would be: Dh = 0.252 -- 0.0130 (84/20) = 0.0130 (4.2) = 0.252 -- 0.0546 = 0.1974 inches. Find the nearest drill bit size in 1/16ths of an inch. Multiply 0.1974 times 16 and the answer is 3.15. This corresponds to a 3/16-inch drill bit; however, this is too small. Determine the drill bit size in 32nds of an inch. The answer is 6.31, so a 7/32-inch drill bit can be used for this tap. In fact, if you look to a chart, a 7/32-drill bit is recommended. Jupiterimages/Photos.com/Getty Images The qualities that make aluminum lightweight create problems when you are creating a threaded hole in the material. Drill bit and taps used on aluminum will clog as they remove material from the area. Each tool will fail to cut the aluminum once clogged. Keeping the tools free of aluminum ensures a threaded hole able to hold a fastener. Reference a tap chart to determine the drill bit size required for the threaded hole. Secure the drill bit in a drill motor. Cover the end of the drill bit and the surface of the aluminum with cutting fluid. Place the point of the coated drill bit on the aluminum. Pump the trigger of the drill motor to drill into the metal. Apply additional cutting fluid to the aluminum as you drill. Secure a tap in the handle of a tee-handle tap wrench. Apply cutting fluid to the threads of the tap. Pour cutting fluid into the drilled hole. Turn the tap handle clockwise to thread the tap into the hole. Reverse the direction of the tap when you have difficulty turning the tap into the aluminum. Remove the tap from the threaded aluminum hole. Run a wire brush around the threads of the tap. Thread the clean tap back through the threaded hole. Drilling and tapping a hole in thicker gauge metal is a fundamental part of fabricating metal. Using the optimal drill bit is imperative in producing a functional and strong final tapped hole. If the drilled hole is too small, the bolt will be hard to thread. This can result in damaged threads on the bolt. A hole that is too large will result in a loose bolt, which will not have 100 percent of its structural strength when fully tightened. For a 1/4-20 bolt, the optimal drill bit size is #7 or 13/64th. Measure the location needed for the 1/4-20 tapped hole. Locate the hole with the tape measure, and mark the holes location with the scribe. Set the point of the center punch on the location of the hole to be tapped. Hit the back of the center punch with the hammer to make a depression of the hole location. This will keep the drill bit from wandering away from the hole's center. Insert the drill bit into the drill. Tighten the drill's chuck to secure the drill bit. Liberally apply cutting fluid to the drill bit. Place the point of the drill bit onto the center mark. Apply pressure to the drill. Begin drilling the hole, stop and apply additional cutting fluid to the drill bit to keep the drill bit and metal cool. Insert the 1/4-20 tap into the tee handle. Thoroughly secure the tap within the tee handle. If the tap comes loose from the tee handle there is a chance that the tap will break during the threading of the metal. Apply cutting fluid to the tap. Hold the tee handle level and start the tap in the hole. Turn the tee handle clockwise to thread the tap into the hole. If the tap binds in the hole, turn the tee handle 1/4 of a turn counter-clockwise to free the tap. Continue to turn the tap into the hole. Run the tap through the hole until the tap bottoms out. Turn the tap counter-clockwise to remove the tap. Attach the flapper wheel to the grinder. With the grinder, remove the burr from both sides of the tapped hole. Thread a 1/4-20 bolt into the hole to ensure that the hole is threaded properly. If the bolt will not thread into the hole, clean the tap, apply cutting fluid to the tap and the threaded hole. Re-tap the hole to clean the threads. The crystalline structure of cast iron varies depending on the rate the steel was cooled. Cast iron drills differently than other types of steel due to the variations in the steel structure. When drilling rolled steel, the material drilled from the hole will work in a spiral from the tip of the drill bit. Cast iron emits numerous small chips of metal. Occasional hard spots in the cast iron can break the tip of a drill bit if you apply excessive pressure on the tip of the bit. Tapping a hole drilled in cast iron requires care to avoid breaking taps in the hole when you encounter a hard spot. Find the size of the fastener you need to thread into the cast iron on a drill and tap chart. Follow the line on the chart representing the fastener size to determine the drill-bit size. For example, a 1/4-20 threaded fastener on a drill and tap chart will show a #7 drill bit as an ideal size for the tap. Secure the drill bit from the set into the chuck of a variable-speed drill motor. Coat the drill bit with cutting fluid. Drill the hole into the cast iron by pumping the trigger of the drill motor to keep the rpms of the drill motor low. Coat the drill bit with additional cutting fluid if smoke appears in the drilling area. Install the correctly sized tap into the T-handle tap wrench. Coat the tap with cutting fluid. Insert the tip of the tap into the drilled hole. Pour additional cutting fluid along the tap and into the hole. Turn the tap wrench clockwise to start tapping the hole. Twist the tap wrench 1/2 turn counterclockwise if the tap binds in the hole. Continue alternating between clockwise and counterclockwise until you have a tapped hole. Remove the tap from the hole. Thread the fastener into the tapped hole. Run the tap through the hole if the fastener does not thread readily into the hole. Desktop Views include most desktop computers. Mobile Views include most mobile phones (aka, smartphones). Tablet devices may be tracked as either Desktop or Mobile depending on their configurations. Desktop Views include most desktop computers. Mobile Views include most mobile phones (aka, smartphones). Tablet devices may be tracked as either Desktop or Mobile depending on their configurations. Desktop Views include most desktop computers. Mobile Views include most mobile phones (aka, smartphones). Tablet devices may be tracked as either Desktop or Mobile depending on their configurations. (v) In information technology, to move from summary information to detailed data by focusing in on something. To drill down through a series of folders, for example, on a desktop means to go through the hierarchy of folders to find a specific file or to click through drop-down menus in a GUI. To drill down through a database is to access information by starting with a general category and moving through the hierarchy of field to file to record. (n) Spelled drilldown. The act of focusing in. For example, "He got the information he needed through a drilldown of the database."

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