

LOW VELOCITY LOADS

TECHNICAL DATA

.22 CALIBER

ORDER DETAIL

Order Code	Description	Power Level	Box Quantity	Master Quantity
22C2	Brown	(2) Light	100	10,000
22C3	Green	(3) Medium	100	10,000
22C4	Yellow	(4) Heavy	100	10,000

.25 CALIBER DISK

ORDER DETAIL

Order Code	Description	Power Level	Box Quantity	Master Quantity
25DL2	Brown	(2) Light	100	5,000
25DL3	Green	(3) Medium	100	5,000
25DL4	Yellow	(4) Heavy	100	5,000
25DL5*	Red	(5) Extra Heavy	100	5,000

*Will not fit D60

.27 CALIBER

ORDER DETAIL

Order Code	Description	Power Level	Box Quantity	Master Quantity
27CS3	Green	(3) Light	100	10,000
27CS4	Yellow	(4) Medium	100	10,000
27CS5	Red	(5) Heavy	100	10,000
27CS6*	Purple	(6) Extra Heavy	100	10,000

*For use in DX451 Only

.25 CALIBER

ORDER DETAIL

Order Code	Description	Power Level	Box Quantity	Master Quantity
25CS3	Green	(3) Light	100	10,000
25CS4	Yellow	(4) Medium	100	10,000
25CS5	Red	(5) Heavy	100	10,000

.27 CALIBER LONG

ORDER DETAIL

Order Code	Description	Power Level	Box Quantity	Master Quantity
27CL4	Yellow (long)	(4) Medium	100	10,000
27CL5	Red (long)	(5) Heavy	100	10,000
27CL6	Purple (long)	(6) Extra Heavy	100	10,000

A SIMPLE TEST TO DETERMINE BASE MATERIAL SUITABILITY

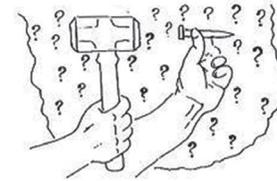
CENTER PUNCH TEST PROCEDURE

Use a fastener as a punch on the actual base material and always wear safety goggles:

- If the material shows a clear fastener point impression and the fastener point is not blunted – proceed with the first test fastening.
- If fastener point is blunted – material is too hard.
- If material cracks or shatters – material is too brittle.
- If fastener sinks into material with an average hammer blow – the material is too soft.

The same procedure to test for hardness or brittleness should be made on questionable material to be driven through and attached to the base material. Soft materials to be attached need not be tested.

Unknown or questionable base material



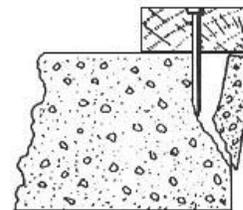
Don't guess – If in doubt, center punch test the material or consult tool manufacturer's representative before attempting to fasten

SELECTING THE PROPER FASTENER

The selection of the proper fastener depends upon the thickness and hardness of the material into which the fastener is to be driven and the intended use for the application. If a permanent, non-removable fastening is desired, a drive pin should be used. If a removable installation is desired, use a threaded stud. If in doubt as to which fastener type should be used for your special applications, consult the tool manufacturer's representative. Various diameters for each shank length are available. For a light duty application, select a small shank diameter. For a heavy duty application, select a large shank diameter.

FASTENING INTO MASONRY MATERIALS

Do not fasten closer than 3" from edge of masonry. If masonry cracks, fastener won't hold and there's a chance a chunk of masonry or the fastener could escape in an unsafe way.

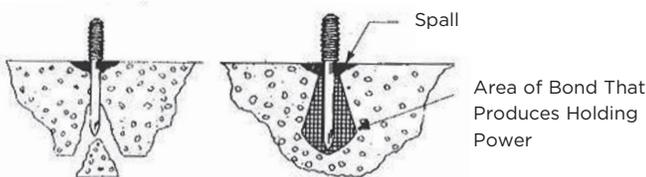


TECHNICAL DATA CONTINUED

Setting fasteners too close together can also cause masonry to crack. Recommended minimum fastener spacing based on shank diameter is as follows:

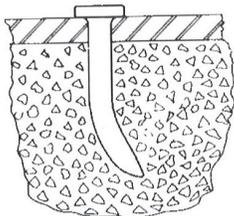
Recommended Minimum Distance	
Shank Diameter	Between Fastenings
1/8 thru 5/32	3"
11/64 thru 3/16	4"
7/32 thru 1/4	6"

It is important that the masonry be at least three times as thick as the fastener penetration. If masonry is too thin, the compressive forces forming at the point can cause the far side of the masonry to break away. The result is no holding power and potential problems from flying masonry or the fastener itself.



As a general rule, when fastening into average concrete, the fastener should penetrate 7 to 8 times the shank diameter. In hard concrete, 5 to 6 times the shank diameter's penetration would normally be sufficient for proper holding power. In soft concrete, 9 to 10 times the shank diameter would be appropriate.

Large, hard and excessive amounts of aggregate, reinforcing rod or cable may be a problem, causing "fish-hooking."



"Fish-hooking" can occur when a partially driven fastener hits a hard object, which bends and deflects the shank. "Fish-hooking" may reduce holding power, usually increases spalling and can be a potential hazard from an escaping fastener and/or particles of masonry. Always use a shield or fixture on the tool unless the item fastened provides equal or greater protection - especially when driving threaded studs or eye pins directly into masonry.

Ways to eliminate or minimize "fish-hooking:"

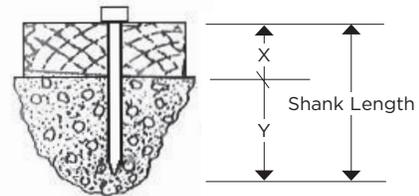
- Reduce shank penetration.
- Increase shank diameter.
- Check power level to be sure that fastener is not being overdriven.
- Fasten through a metal disc.

Fastening into mortar joints should only be attempted in the horizontal joint.

Usually the vertical joint is not solid mortar and thus not of sufficient thickness for proper fastening. The shank diameter is also important due to the limited width of a mortar joint. To avoid cracking of the joint, large shank diameters should be avoided.

DRIVE PINS

In selecting the proper drive pin for concrete or masonry, determine the correct shank length by allowing for the thickness of the material through which the drive pin is to be driven (X) plus the depth of penetration required (Y) utilizing the preceding shank diameter penetration rules.



THREADED STUDS

The selection of the proper threaded stud shank length is determined by using the preceding shank diameter-penetration rules. Select a thread length to allow for the thickness of the material to be attached and a nut and washer.

In selecting the proper shank lengths for special fasteners such as eye pins and utility studs, apply the same shank diameter-penetration rules.

FASTENING INTO STEEL MATERIALS

Practically all of the powder actuated fasteners driven into steel as the base material are driven into structural steel. Structural steel shapes in common usage include structural beam, angle iron, channel, tee, plate and strip.

Where fasteners are to be driven in metal materials other than structural steel, it will be necessary to determine the acceptability of that material for powder actuated fastenings either by consulting the supplier or by center punch testing for hardness. A fastener driven into steel holds in the steel by the natural tendency of the steel to return to its original undisturbed condition. As the fastener is driven into steel it pushes the steel aside, compressing and displacing the steel. The tendency of the steel to flow back to its original position exerts a gripping or clamping force on the fastener shank.

Holding power of a powder actuated fastener set in steel is directly affected by the total contact area between the fastener shank and the steel.

An increase in either the shank diameter or steel thickness will increase holding power. For effective holding power, shank diameter should not exceed steel thickness.

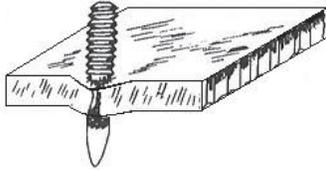
The tensile strength of the steel into which the fastener is driven affects the holding power of the fastener. The stronger the steel into which a fastener is driven, the greater the gripping power on the fastener shank and the more firmly the fastener is held by the steel.

In order to get maximum gripping force, the fastener point should completely penetrate the opposite side of the steel into which the fastener is set.

If the pointed portion of the shank does not extend through the steel, a part of the compressive force in the area of the point will act to force the fastener back out and reduce holding power.

Do not fasten too close to the edge of a steel member.

The steel between the fastener and the edge can stretch so that it will not grip the fastener shank. It may fracture and allow the fastener to escape in an unsafe manner. In neither case can maximum holding power be obtained.



Recommended Minimum Edge Distance

Fastener Shank Diameter	Fastener to Edge of Steel
1/8" through 5/32"	1/4"
1/8" through 1/4"	1/2"

Do not set fasteners too close together.

Setting fasteners too close together can disturb the compressive force holding the adjacent fastener and reduce its holding power.

Recommended Minimum Fastener Spacing

Fastener Shank Diameter	Minimum Spacing
1/8" through 5/32"	1"
11/64" through 3/16"	1-1/8"
7/32" through 1/4"	1-1/2"

Do not fasten into steel base material thinner than the fastener shank diameter.

Holding power will be reduced and the fastener may be overdriven.

Recommended Minimum Fastener Spacing

Fastener Shank Diameter	Minimum Thickness
1/8"	1/8"
5/32" through 3/16"	3/16"
7/32" through 1/4"	1/4"

Do not use fasteners with a shank longer than required for the application.

The burnishing effect of a long shank passing through the steel enlarges the hole in the steel, reducing holding power.

Avoid overdriving the fastener.

A fastener driven with excessive force can be damaged or break. Rebound (bounce back) of an overdriven fastener will reduce holding power of the fastener. A threaded stud, in addition, may sink too far into the steel reducing its effective thickness, greatly reducing the holding power. The useful thread length is also reduced by overdriving.



Do not drive a fastener in areas that have been welded or torch cut.

Welding or torch cutting can produce hard areas. These areas may be too hard for powder actuated fastening.

For effective permanent fastening, do not use fasteners to draw bowed steel members together.

A fastener used to draw bowed members together remains under constant tension and may sooner or later fail.

Use the proper tool shield when fastening into steel which is heavily rusted, scaled or galvanized.

Dislodged surface particles can be hazardous.

Do not fasten through existing holes unless a positive guide to center the bore of the tool over the hole is used.

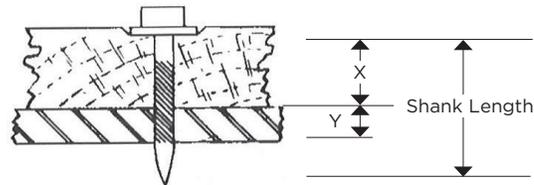
Unless the fastener is centered over the hole, it can be deflected by the edge of the hole.

When fastening into long unsupported steel members, to assure uniform penetration and proper holding power, support the steel in the area of the drive to avoid any "springing" action.

Remember, as a general rule, when fastening into steel the point of the fastener should fully penetrate the opposite side. This factor should be considered when selecting shank lengths. Also remember, knurled shank fasteners hold better in steel compared to smooth shank fasteners.

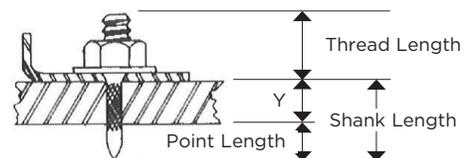
DRIVE PINS

To select the proper shank length, determine the total thickness of the material to be fastened (X), the thickness of the steel into which the pin will be driven (Y) plus the point length. A total of X, Y and the point length is the proper shank length.



THREADED STUDS

The proper shank length for threaded studs depends on the thickness of the steel (Y) plus the point length on the opposite side. Depending upon the thickness of the item to be fastened, different thread lengths are available. Generally, if the item to be fastened is sheet metal, a short thread length would be selected. If the item to be fastened is thick, a correspondingly long thread length should be chosen so that a nut, and perhaps a washer can be applied.



American National Standard Powder-actuated fastening systems - safety requirements

A10.3-2006 / 7.10: Only those types of fasteners and power loads recommended by the tool manufacturer for a particular tool, or those providing the same level of safety and performance, shall be used.

ANSI / American National Standard Institute, Inc. / 1430 Broadway, New York, NY 10018



WARNING: All Powder Actuated Tools are to be used ONLY by trained and qualified operators and in accordance with the operator's manual. Obtain certification before operating any Powder Actuated Tool. It is the operator's responsibility to obtain certification.