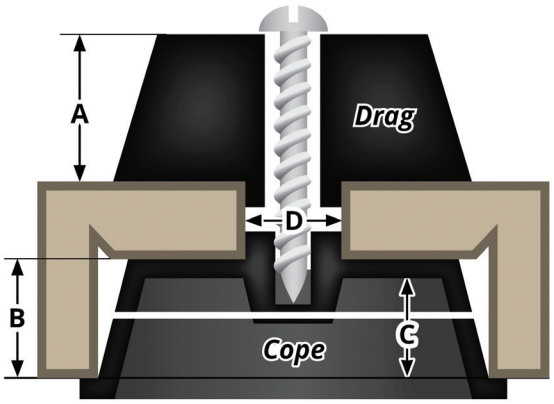
FOUNDRY TOOLS & SUPPLIES

Pages 60-67

Scan for website

FREEMAN COPE & DRAG INSERTS

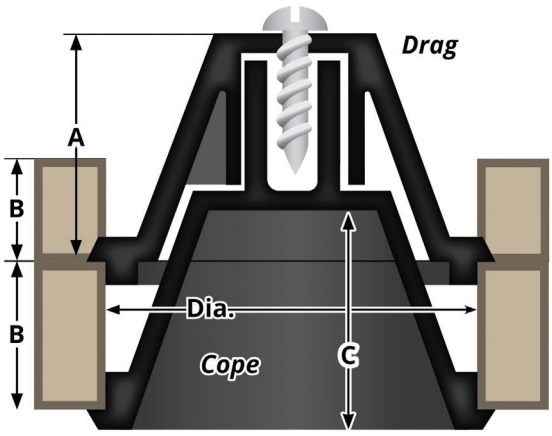
Freeman Cope & Drag Inserts are constructed from ABS plastic and offer a quick and simple way to accurately align two mold halves. One drag and one cope half are included in each set. They are available in diameters from 1½" to 3½". The two styles offer different installation methods and options to install on different types and sizes of matchplates.



Freeman Cope & Drag Buttons
Style "A"

Style "A" Inserts *may be installed on matchboards one above the other or separately on cope and drag plates or molding boxes. 2.5AA & 2.5A both use the 2.5A Drag Button. The only difference is in the cope button, where the 2.5A is 1" deep and the 2.5AA is only 5/8" deep for thinner plates.*

	1.5A	2A	2.5A	2.5AA	3.5A
Dia.	1.5"	2"	2.5"	2.5"	3.5"
A	0.5"	0.75"	1.25"	1.25"	1.25"
B	0.5"	0.625"	1"	0.625"	1"
C	0.437"	0.531"	0.906"	0.531"	0.906"
D	0.375"	0.5"	0.5"	0.5"	0.5"



Freeman Cope & Drag Buttons
Style "B"

Style "B" Inserts *are specifically designed to work together to provide accurate alignment for matchplates and matchboards, including automatic molding machines.*

Style "B" Zero Tolerance Inserts *are specifically designed for accurate alignment for matchplates that are used with green sand only. These buttons feature zero clearance on the diameter to ensure perfect cope and drag alignment. Easily distinguished by their gray color.*

	1.5B	1.75B	2.5B
Dia.	1.5"	1.75"	2.5"
A	0.875"	1.125"	1.125"
B	0.5-1.125"	0.625-1.125"	0.75-1.125"
C	0.75"	1"	1"

OTHER ALIGNMENT HARDWARE

Freeman Match-Lok Cope & Drag Buttons

These buttons are a simple and economical way for eliminating mold shift on flat metal pattern plates. They are precision machined from aluminum, ensuring accurate and positive matching between cope and drag halves.

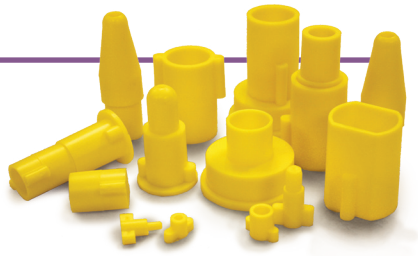
Availability: *1-2" diameters. Reamer, staking tool, rivets, and counterbore available for installation.*

Online Resources

Scan the QR code for more on our website:

Instructions for installing Freeman Match-Lok Cope & Drag Buttons.

Foundry Locators



Foundry Locators are yellow, high-density polystyrene alignment pins used to precisely position foundry cores. They help improve the accuracy and quality of complex, multiple-core castings.

Wood Dowels

These dowels are made of the highest grade birch, finished round and smooth from straight grained wood.

Availability: *⅛" to 6" exact diameters, 36" lengths.*

Malleable Iron Dowels

- Diameters from 0.125" to 0.750"
- Injection molded for accuracy
- Round shapes

These dowels are most commonly used to properly align very large core box halves, split patterns and loose pieces made from wood. Available in three sizes.

FREEMAN HUSKY DOWELS

- Precisely machined for accuracy
- Threaded for easy installation & removal
- Hardened for long life
- Black oxide treatment prevents rust

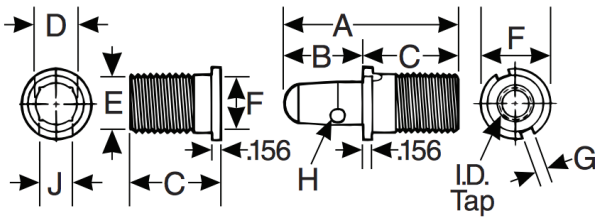
A Freeman exclusive, the No. 55 Husky Dowel is widely considered the strongest threaded body steel dowel available. Its blackened body prevents rust for a long, heavy duty life. The pin body and bushing body have the same outside diameter, enabling thru-hole drilling for fast, accurate installation.

Availability: *Complete sets of Husky Dowels are 25/box.*

Dimensions

Description	A	B	C	D	E	F	G	H	J
Male Pin - Standard	1¾"	13⁄16"	–	⅝"	–	15⁄16"	3⁄16"	3⁄16"	–
Male Pin - Long	2¼"	1 5⁄16"	–	⅝"	–	15⁄16"	3⁄16"	3⁄16"	–
Male Pin - Extra Long	3"	2 1⁄16"	–	⅝"	–	15⁄16"	3⁄16"	3⁄16"	–
Female Bushing	–	–	15⁄16"	⅝"	13⁄16"	15⁄16"	–	–	½"

Inside Diameter Threads for Pins: *½" threads (13)*
Outside Diameter Threads for Pins and Bushing: *13⁄16" threads (20)*



Freeman Husky Dowels Installation Tools

Husky Installation Tools

- (A) Counterbore
- (B) Tap with Pilot 13⁄16" - 20
- (C) Pin Wrench with Cross Pin

Other installation tools can be found in any hardware store, with sizes listed below for reference.

- Drill – ¾" Diameter
- Reamer – 49⁄64" Diameter
- Socket 1" Socket, ½" Drive
- Socket ⅝" x 12-Point Socket, ½" Drive
- Socket Wrench Handle – 10" Overall Length, ½" Drive

STEEL CORE BOX ALIGNMENT DOWELS

Master Sure-Lock (True-Line) Steel Dowels

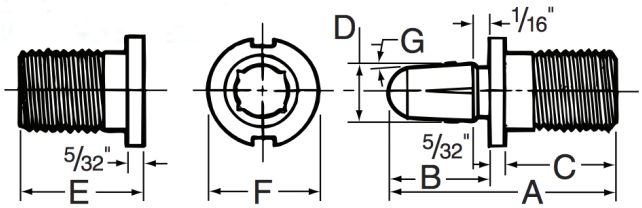
- Threaded for easy installation and removal - dowel may be extracted even if the pin is broken
- Ideal for small to medium sized jobs
- Hardened for long life
- Black oxide treated to prevent rust

This heavy-duty steel dowel system is the most popular alignment hardware in the industry. Master Sure-Lock (True-Line) Dowels are a Freeman exclusive design manufactured to exacting standards.

Availability: *Regular sizes are available as complete sets of 50, or as separate male pins and female bushings. Long sizes are available only as separate male pins and female bushings.*

Dimensions

Size		A	B	C	D	E	F	G	Threads
Regular	1	1 1/4"	17/32"	9/16"	1/4"	23/32"	9/16"	1 1/2°	3/8" - 24
	2	1 11/32"	5/8"	9/16"	5/16"	23/32"	5/8"	3°	7/16" - 20
	3	1 1/2"	11/16"	21/32"	3/8"	13/16"	11/16"	2 1/4°	1/2" - 20
	4	1 19/32"	25/32"	21/32"	1/2"	13/16"	13/16"	4°	5/8" - 18
Long	2	2 7/32"	1 1/4"	13/16"	5/16"	23/32"	5/8"	4°	7/16" - 20
	3	2 1/2"	1 3/8"	31/32"	3/8"	13/16"	11/16"	4°	1/2" - 20
	4	2 11/16"	1 9/16"	31/32"	1/2"	13/16"	13/16"	4°	5/8" - 18



Freeman Square-Head Steel Dowels

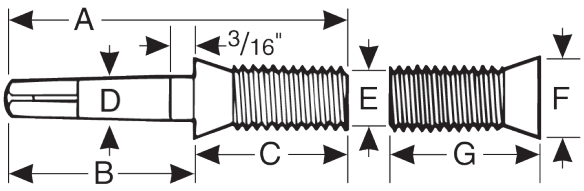
- Precisely machined for accuracy
- Square head design for easy installation & removal
- Hardened for long life
- Black oxide treated to prevent rust

The familiar square head of these dowels remains one of the best methods of offering a sturdy bearing surface for the inserting wrench to grasp. Dowels frozen in threads by foundry use can be removed with adjustable wrenches. All parts of one size are interchangeable, so changes in pin length or bushing length are possible without completely reworking the job. Offering good wear resistance and high strength, these dowels are commonly used for aluminum, gray iron, brass or plastic pattern equipment and are especially useful for shell mold and hot box pattern equipment.

Availability: *Regular sizes are available as complete sets of 50, or as separate male pins and female bushings. Long sizes are available only as separate male pins and female bushings. Extra Long pins can be paired with either standard or long bushings.*

Dimensions

Size		A	B	C	D	E	F	G	Drill	Tap
Regular	1	1 1/4"	17/32"	23/32"	1/4"	3/8"	1/2"	23/32"	19/64"	3/8" - 24
	2	1 11/32"	5/8"	23/32"	5/16"	7/16"	9/16"	23/32"	11/32"	7/16" - 20
	3	1 1/2"	11/16"	13/16"	3/8"	1/2"	5/8"	13/16"	13/32"	1/2" - 20
	4	1 19/32"	25/32"	13/16"	1/2"	5/8"	3/4"	13/16"	17/32"	5/8" - 18
Long	2	2 1/4"	1 1/4"	1"	5/16"	7/16"	17/32"	1"	11/32"	7/16" - 20
	3	2 1/4"	1 1/4"	1"	3/8"	1/2"	5/8"	1"	13/32"	1/2" - 20
	4	2 1/4"	1 1/4"	1"	1/2"	5/8"	3/4"	1"	17/32"	5/8" - 18
Extra Long	4	3"	2"	1"	1/2"	5/8"	–	–	17/32"	5/8" - 18



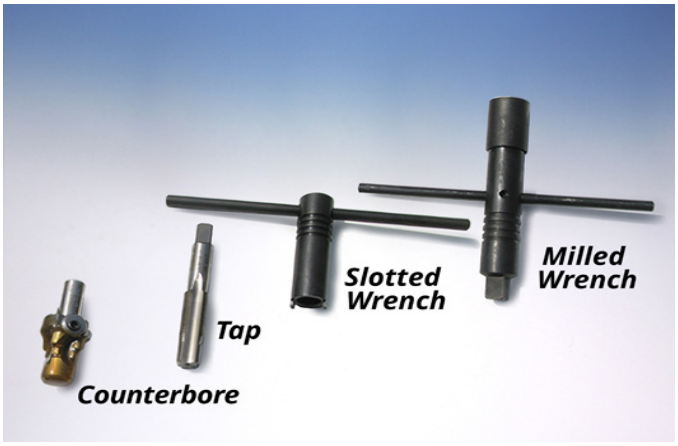
STEEL CORE BOX ALIGNMENT DOWELS CONTINUED

Steel Dowel Installation Tools

Our counterbores and taps are top-quality tools made of high-grade tool steel for long lasting performance and proper dowel installation.

Please note there are different tools, including wrenches, designed specifically for either Master Sure-Lock or Freeman Square-Head dowels.

Each style of dowel has its own counterbore to accommodate the differences in how the dowel sets below the surface. Both Husky dowels and Sure-Lock dowels have square shoulders while the Square-Head dowels have beveled shoulders. If you are using a CNC machine, the cam should be unnecessary.



Steel Dowel Installation Guide

Wrenches: *each style of dowel requires its own specially designed set of wrenches or sockets for easy installation.*

1. Drill

Using an appropriate sized drill bit, drill a hole deep enough to allow the pin and pilot of the tap (step four) to reach its proper depth.

- *Size 1 dowels: 19/64" bit*
- *Size 2 dowels: 11/32" bit*
- *Size 3 dowels: 13/32" bit*
- *Size 4 dowels: 17/32" bit*

2. Ream

Use an appropriate reamer to make the previously drilled hole smooth and precise in dimension.

- *Size 1 dowels: 21/64" reamer*
- *Size 2 dowels: 3/8" reamer*
- *Size 3 dowels: 7/16" reamer*
- *Size 4 dowels: 9/16" reamer*

3. Counterbore

Next you must counterbore the hole. This tool is designed with a pilot end to perfectly align itself in the center of the reamed hole before boring a perfect concentric bevel or shoulder. In order to prevent boring too deep, the counterbore has an adjustable cam with a set screw allowing you to manually set the depth of your counterbore.

4. Tap

This tap is also designed with a pilot end to precisely cut the threads in the hole. With a tap wrench attached, you can manually turn the tap to create the threads. The tap works for both Freeman Square-Head Steel and Master Sure-Lock Dowels. You now have an accurate, precise hole ready for installation of the dowel pin or bushing.

SQUARE-HEAD BRASS DOWELS & INSTALLATION TOOLS

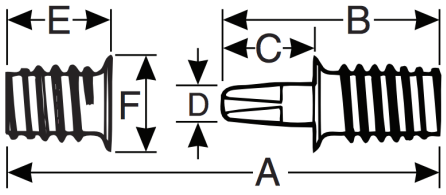
- Coarse, sharp threads and square-head design offer easy and secure installation
- Precisely machined for accuracy
- Solid brass prevents rust

Use these dowels for hardwood and softwood pattern equipment, plasters and plastics. The square head provides four wide flat areas that fit perfectly into the wrench, ensuring accuracy and control when installing both the pin and bushing. The large contact surface of the male dowel withstands the strain of removing without stripping. The wrench covers the entire pin of the male dowel down to the flange of the dowel. This eliminates the difficulties of squaring the wrench to the dowel and the work when inserting.

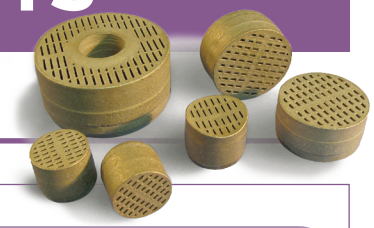
Availability: *Complete sets of 50 or 100 dowels, or as separate male pins and female bushings. Installation wrenches available.*

Dimensions

Size	A	B	C	D	E	F	Drill Bit Size
3	1 1/32"	15/16"	27/64"	7/32"	33/64"	27/64"	5/16"
4	1 7/32"	1 9/64"	17/32"	19/64"	39/64"	39/64"	7/16"
5	1 7/16"	1 3/8"	21/32"	13/32"	23/32"	23/32"	9/16"
6	1 7/8"	1 47/64"	51/64"	35/64"	15/16"	15/16"	3/4"



CORE BOX AIR RELEASE VENTS



VENTISTAMP CORE VENTS

Ventistamp Core Vent Features

Dimensions

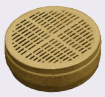
- *Middle of vent diameter is 0.005" oversized – tight installation prevents movement*
- *Top of vent diameter is 0.003" undersized – prevents deformation of the slots*
- *Metric or Imperial sizes available*

Construction Benefits

- *One piece construction – no screens or foils to break*
- *Extremely flat head surface allows less imperfection in core*
- *Tapered slots less likely to clog with sand and binders*

High Quality & Durability

These high-quality investment-cast core vents were developed for high-production applications where standard slotted vents would traditionally be used

Vent Type	Material	Diameters	Heights	Slot Widths	Features
 Zanatta	Brass alloy	3⁄16" to 1¾"	¼" to ⅜" and 6 to 10mm	0.012" (0.30mm) 0.017" (0.45mm)	High wear resistance for various grain sizes. Small to Medium Production in Cold Box and Green Sand Molding
 Maxvents	Brass alloy	3⁄16" to 1¾" and 3 to 25mm	¼" to ⅜" and 6 to 10mm	0.012" (0.30mm) 0.018" (0.45mm)	High wear resistance for various grain sizes. Small to Medium Production in Cold Box and Green Sand Molding
 Meltvents FS	Stanless steel or carbon	3⁄16" to 1¾" and 3 to 25mm	¼" to ⅜" and 6 to 10mm	0.008" (0.20mm) 0.012" (0.30mm) 0.018" (0.45mm)	High wear resistance for various grain sizes. Medium to High Production Cold Box, Green Sand, Hot Box, Warm Box and Shell Molding processes
 Meltvents KT	Carbon steel or Aluminum bronze	3⁄32" to 1" and 2.5 to 25mm	5⁄32" to ⅜" and 4 to 10mm	0.004" (0.10mm) 0.008" (0.20mm) 0.012" (0.30mm) 0.016" (0.40mm)	Increase productivity of permanent mold with inverted tapered slot. Resistance to high temperature and higher thermal conductivity

SHALCO CORE VENTS

Shalco Core Vent Features

Effective and Efficient

Opening rate of more then 43% (compare to an average of 13% for slotted vents and 30% for screen vents)

Prevents Clogs

Self-cleaning, allowing for continuous operation of a core molding machine during no-bake molding

Size & Feature Options

With or without support bar, metric sizes available

Vent Type	Material	Diameters	Heights	Slot Width
 Super Vents	Steel	¼"–1", 3–16 mm	¼" or 5⁄16", 6 or 8 mm	0.012" (0.3mm)

STANDARD CORE VENTS

Standard Core Vent Selection Guide

These guidelines do not include Shalco Super Vents or Ventistamp vents, which offer unique advantages superior to most standard brass and steel vents.

Material

- *Brass is soft, therefore easier to contour, remove from the core box, and clean*
- *Steel offers greater wear and temperature resistance, and provides uniform heating and cooling with steel core boxes*
- *Aluminum is popular for Styrofoam molding applications*

Style

The "opening rate" (amount of space provided) varies by vent style. Slotted vents average about 13% and can be machined to contour with the core box surface. Screen Vents average about 30% and are primarily used in flat areas of the core box.

Slot Width/Screen Mesh

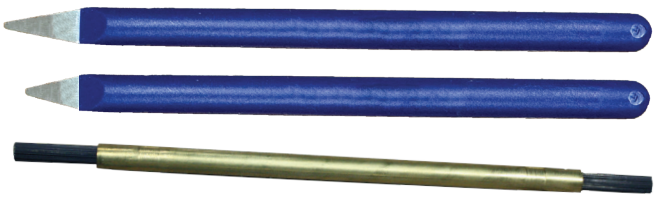
The slot width or mesh size required is determined by the sand mesh size used in your core making process. The slot width or mesh opening must not be greater than the sand mesh in order to hold the sand in the core box while allowing air to escape.

Dimensions

- *Diameter is determined by the size of the area requiring venting and the number of vents preferred in the particular location on the core box*
- *Height is based on the shoulder depth created by the step drill (insert drill)*
- *Head Thickness affects the ability to contour the vent to the tool surface. A thicker head allows for more contouring and a thinner head is less likely to clog with binders*

Vent Type	Material	Diameters	Heights	Head Thicknesses	Slot Widths	Features
 K – Screen	Brass	3⁄16" to 1"	1⁄4" to 1⁄2"	Meshes of 24–50		High venting area with corrosion-resistant, nickel-copper alloy (monel) screen
 T – Taper Slot	Brass	1⁄8" to 1"	5⁄16"	–	0.012"	Self-cleaning tapered slots diverge towards underface, preventing sand clogging
 AD – Slotted	Aluminum	1⁄8" to 1⁄2"	1⁄4" to 3⁄8"	0.093" or 0.156"	0.008" to 0.014"	Well-suited for aluminum molds
 C – Slotted	Steel	1⁄8" to 1"	1⁄4" to 5⁄16"	0.093"	0.010" to 0.020"	Metric sizes available by Special Order
 D – Slotted	Brass	1⁄8" to 1"	1⁄4" or 5⁄16"	0.093"	0.006" to 0.030"	Metric sizes available by Special Order
 XD – Slotted	Brass or Steel	1⁄8" to 1 1⁄4"	5⁄16" or 3⁄8"	0.156"	0.006" to 0.015"	For mounting on and contouring to extremely irregular surfaces
 Vent Plugs	Aluminum, Brass, or Steel	1⁄8" to 7⁄8"	1⁄4" to 3⁄8"	–	–	Plug holes from relocated core vents

CORE VENT ACCESSORIES



Freeman Vent Cleaners

Made with a tapered spring steel blade and a durable injection molded plastic handle, the slotted core vent cleaner is ideal for cleaning sand and binder from slotted core vents. The Screen Vent Cleaner has steel wire bristles at each end and measures 1⁄4" in diameter with 7⁄8" long steel wire bristles.

Insert Drills for Core Box Air-Release Vents

These drills allow for quick vent installation. This tool rough drills, relief drills, and reams to correct depth with concentricity. A complete drill consists of drill bit and collar.

Freeman Core Vent Wax

Freeman Brown Core Vent Wax is used to vent oil sand cores of curved or irregular shape. The wax is placed in critical locations in the sand as the core is molded. The wax dissipates when the core is baked, leaving a clean vent of high permeability.

Availability: *rolls of full round and half round shapes.*

FOUNDRY SPECIALTY TOOLS & SUPPLIES

Leather Fillet

This fillet is manufactured using the highest grade of leather, allowing for greater flexibility, faster fabrication and increased wear resistance. Larger diameters contain multiple slits on the underside to allow for easy installation. Fastweld 10 may be used with this product.

Availability: *Fillet radiuses from 1/32" to 1". Sold in full bundles of 50 or 100 feet.*

SEE ALSO

Product	Page #
Fastweld 10	51

Freeman Malleable-Iron Rapping Plates

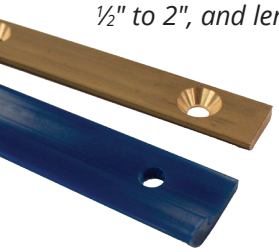
Freeman Rapping Plates are cast malleable inserts that enable a foundryman to easily remove wooden patterns or loose pieces from the molding sand. Designed to be installed flush on the parting line, each plate has a threaded hole for inserting an eye bolt or a draw rod.

Availability: *multiple shapes, sold individually. See our website, www.FreemanSupply.com, for all sizes.*

Abrasive Core Files

Easily clean foundry cores with these 20 grit flat files made of a strong, fiberglass-reinforced, silicon carbide abrasive resin bond material.

Availability: *thicknesses from 1/8" to 1/2", widths from 1/2" to 2", and lengths from 8" to 12". Sold individually.*



Disamatic Urethane Wipers & Brass Keepers

These replacement urethane wipers and brass keepers are pre-drilled for the Mark IV Disamatic.

Mouth Spray Can

These cans made of heavy brass are used to spray liquid partings, light washes or similar materials. Any air nozzle can be used.

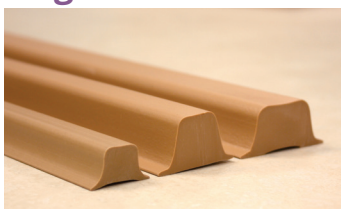
Availability: *pint or quart sizes*

Cleveland Vibrators

Linear shock action vibration makes the SA-EP the most powerful continuous-duty vibrator available for its size. It is ideal for use on matchplates in jolt-squeeze operations. It also features low air consumption and variable frequency.

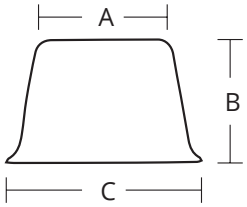
Availability: *Piston diameters from 5/8" to 1", with vibrations per minute from 7,600 to 16,000 @ 60 psi*

Flex-Gate Flexible Gating



Flex-Gate is a strong flexible plastic that can be used in place of wood gating on pattern plates. Flex-Gate can be easily cut with a knife and fastened to the plate with nails, screws, or glue. Its concave base holds it securely on the pattern plate. Because of its strength, Flex-Gate does not break or tear, allowing the runner to be removed and reused.

Dimensions	#8	#16	#20
A	1/2"	5/8"	1"
B	1/2"	3/4"	3/4"
C	5/8"	1/2"	1 1/4"
Length	36"	36"	36"



Dux-Bak Non-Silica Dry Parting and Parting Bags

This 6" x 10" Parting Bag is made of a special cloth for dusting Dux-Bak Non-Silica Dry Parting powder onto a pattern.

Availability: *50 lb. pails or 500 lb. drums of powder. Bags sold individually*

Bench Rammer

This 14" long Bench Rammer is made of hard maple with an oil finish and designed with one wedge-shaped end and one 3 1/2"-diameter cylindrical end.

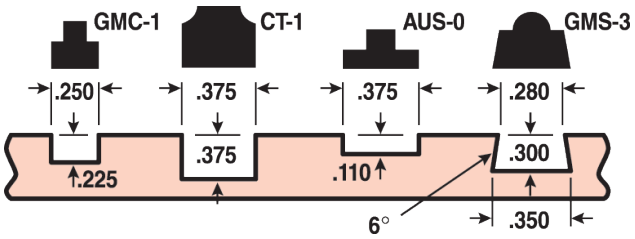
Sprayon Blue Layout Fluid

This fast-drying, non-flaking, non-etching layout fluid will not crack or peel. Its smooth, non-glare finish allows for clear, precise scribe lines.

Availability: *12 oz. cans*

SEALS, CLAMPS & ACCESSORIES

Dike-O-Seal Preform Strip



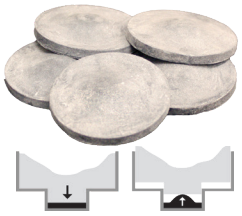
This product provides an effective seal in core boxes and gassing plates. Can be installed either by press fit or bonded into channels with Freeman F-Bond Adhesives (page 57).

- Can be installed and secured without adhesive
- Corners can be machined at 45° to the intersecting grooves
- Seal can be set in groove without cutting and bonding ends
- Available in 20 and 40 Shore A

Dike-O-Lastic Ejector Buttons

Ejector Buttons are ideal for contributing to clean draws on deep pockets or cavities on match-plates or core boxes.

Availability: *Diameters from ¼" to 2¾"*



Shalco Blowplate Gasket

These high heat resistant (500°F) silicone rubber gaskets are designed to be used for sealing shell-core and hot-box coremaking equipment. Reinforced with 26 gauge perforated steel, they provide a positive seal between the core box and the blowplate thus eliminating the escape of curing gases, air, and sand.

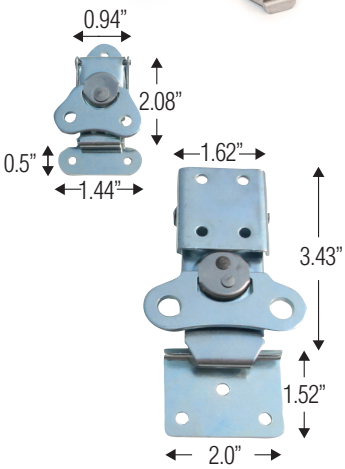
Peerless Core Box Clamps

- Parts sold individually – all 3 required for complete set
- Heavy gauge steel for long life
- Center section brings core box parting line together
- Two sizes for various jobs

Note: cable may be attached to centerpiece and core box to prevent accidental loss.

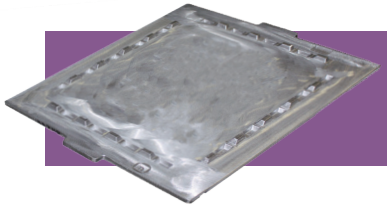
Link-Lock Fasteners

- Ideal for securing core box halves during molding
- Positive locking, springless latching and heavy-duty construction
- Compact and flat-closing
- Load carrying capacity:
  Light-Duty: 450 lb.
  Medium-Duty: 900 lb.



Striptube

This hollow, round, 60A neoprene rubber gasket material is an effective seal in foundry core boxes and gassing plates. Striptube is easily compressed and not affected by gasoline, naphtha, or kerosene.



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