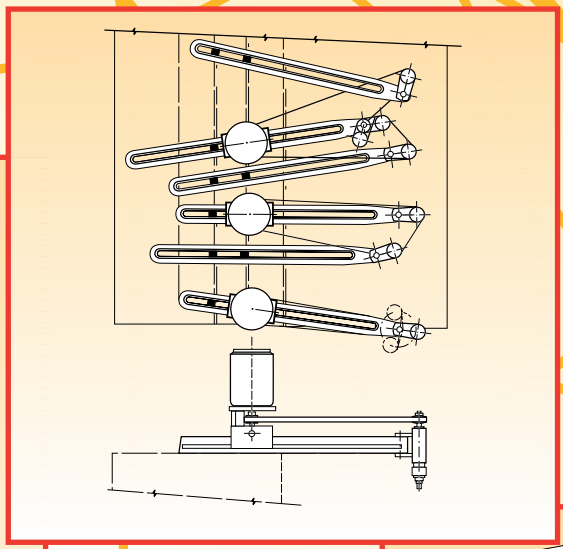
Sicotte®

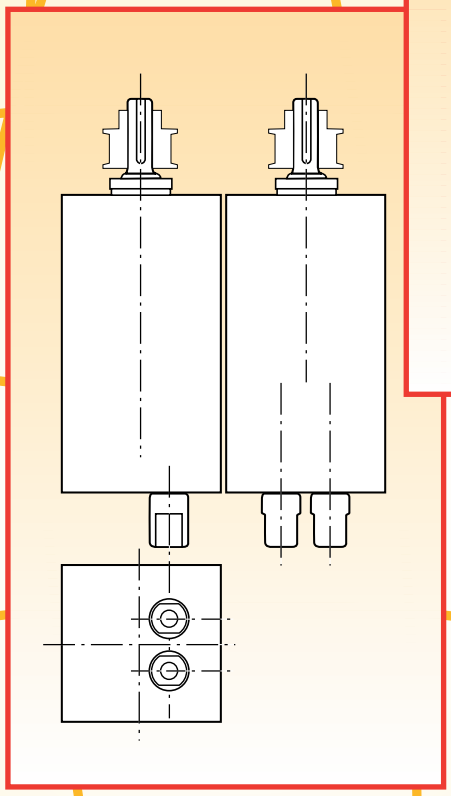
BULLETIN 98A

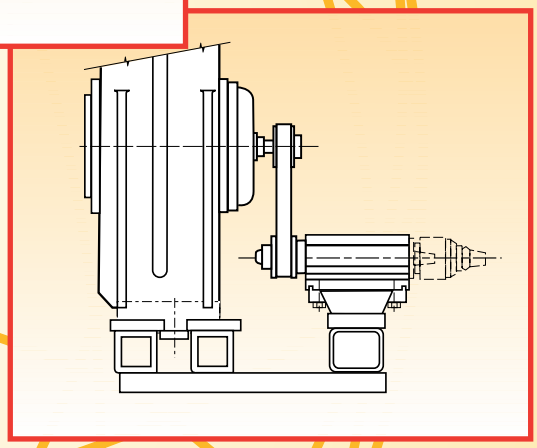
STANDARD COMPONENTS AND ACCESSORIES

DOUCET "J" & "AIRBOR"

MULTIPLE-SPINDLE BORING MACHINES







The Doucet «J» and «Airbor» Series were originally developed by the Sicotte Company based in Ste-Thérèse, Québec, Canada. Over a forty year period, the company and its products acquired a solid reputation for quality and productivity throughout North-America. In 1989, Doucet Machineries Inc. of Daveluyville, Québec, acquired the Sicotte brand. Perpetuating the tradition, the most popular models of boring machines have been incorporated into Doucet's diversified line of fine woodworking machinery.

The present document provides a detailed outline of accessories and boring configurations for both existing and new machines.

DOUCET MACHINERIES INC.

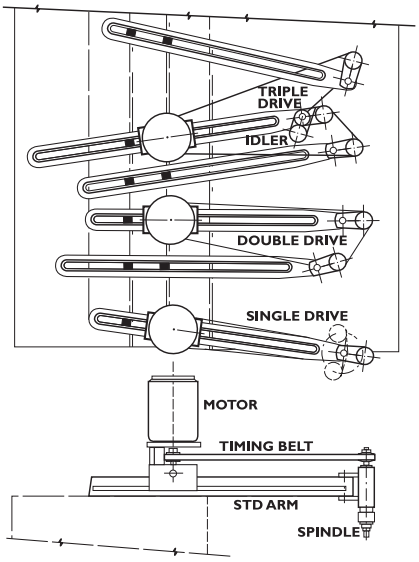
ISO 9001

STANDARD ARMS GENERAL ARRANGEMENTS

In **DOUCET/SICOTTE** standard vertical boring machines, each spindle, cluster or hold down is mounted at the end of individual standard arms that are fastened to the top of the machine. These arms can be set in any position and direction in order to make it possible to reach all pre-determined boring points over the table and even around it with longer arms. Through timing belt and pulleys, power is transmitted from the appropriate motor to spindles or clusters.

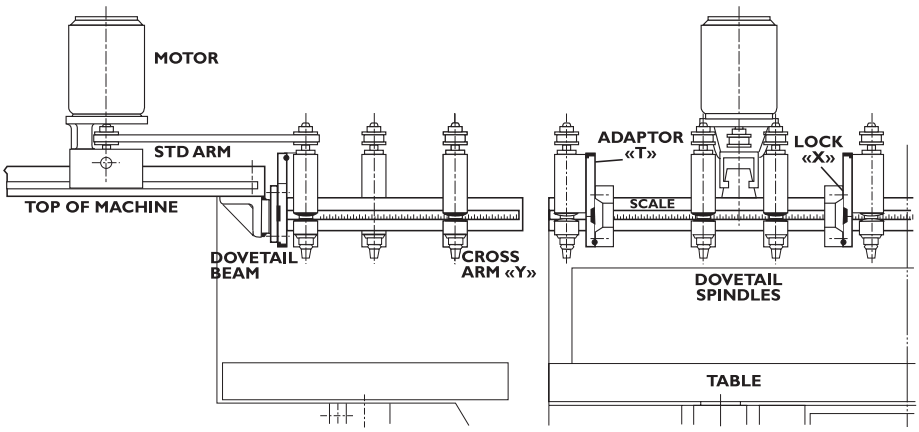
Normally, one motor is used to drive two spindles, however there are circumstances when only one spindle may be driven by a given motor, such as an odd number of spindles, a distance between two spindles in excess of 16", or higher power requirements.

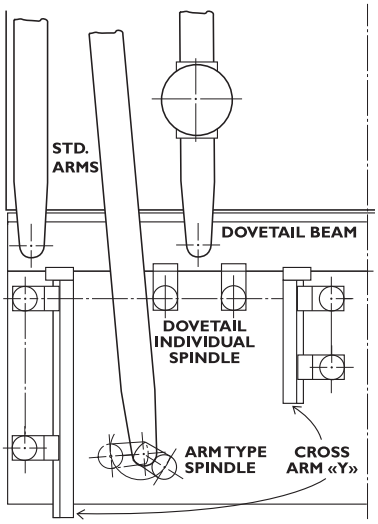
Tension adjustments on timing belt transmission can be made in a matter of seconds by moving the motors backward on the arm, and locking them into place. The typical general mounting shows a single spindle drive, a double spindle drive (standard) and a triple spindle drive making use of an idler pulley to better wrap the spindle pulleys.



DOVETAIL GENERAL ARRANGEMENT

As in most cases the holes to be bored present an in-line pattern, an alternative method of spindle mounting which saves up to 60% on set-up time was developped. Contrary to the arm arrangements shown above, this method requires the adjustment of spindles in only one direction along a dovetail beam. That beam is mounted under the standard arms of any multiple-spindle vertical boring machine.
After loosening the spindles, these can be moved to the exact position, with the help of a scale fastened to the face of the dovetail beam. When boring is to be done on more than one axis, dovetail cross arms «Y» can be incorporated and mounted on the main dovetail beam thereby permitting the installation of spindles on this later dovetail.
Even with a dovetail beam, standard arm mounting is still possible in order to reach a particular boring location. Drive motors are mounted in the same manner as for standard arms arrangements.





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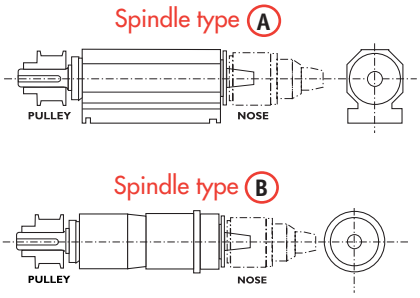
SPINDLE TYPES

The rugged DOUCET/SICOTTE spindles are available in two standard types: type «A» and type «B». Both spindle types consist of :

- a main body including a quill, a shaft and two single row radial double seal ball bearings;
- a standard timing belt pulley, and
- a spindle nose of selected type and size. The standard sizes for these spindles are 1½" and 2".

Type «A»
The type «A» spindles are used for either vertical or horizontal boring. These can be mounted in various manners, as shown by arrangements «M», «N» and «P». The spindles can be equipped with any one of the noses shown below.



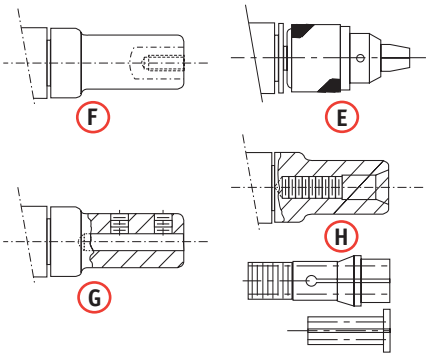
Type «B»
The type «B» spindles are used exclusively in conjunction with appropriate quick set-up templates in vertical boring applications only. They can be fitted with any one of the standard noses. Please refer to template section and arrangement «J».

SPINDLE NOSES

Following are the types of spindle noses available and suitable to be mounted at one end of any type and/or size of the standard spindles shown above.

THREADED END "F"
Designed to receive RH or LH threaded bits 7/16" diameter 14 TPI. (Not meant for precise depth boring).

SET SCREWS «G»
Suitable to receive ½" standard diameter bit shanks. Other sizes are optional.



JACOBS CHUCK «E»
Standard Jacobs chuck, capacity available: up to ⅜ & up to ½.

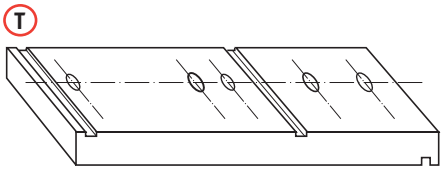
SPRING COLLET «H»
Consist of a nose body threaded to receive the spring collet (for ½" shank)

- Spring Collet
- Spring Collet Reducer from ½" to required diameter.

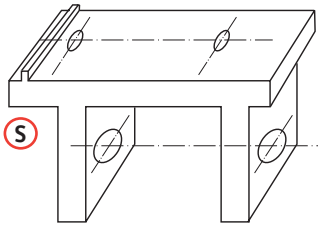
SPINDLE ADAPTORS

The following spindle adaptors can either be 1½" wide or 2" wide.

ADAPTOR «T»
Used between type «A» spindle and dovetail beam. (See arr. «M»)



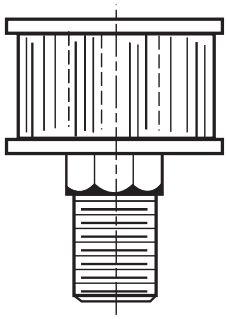
ADAPTOR «S»
Used between type «A» spindle and standard arm. (See arr. «N»)



IDLER PULLEY

Idler Pulleys such as the one shown below are recommended. When more than two spindles are driven by the same motor, and in any other set-up where the belt does not wrap properly around the pulleys.

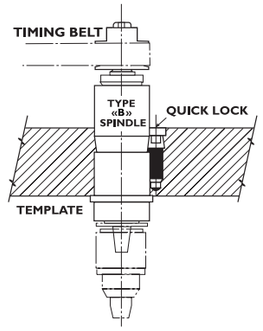
They are available equipped with appropriate mountings.



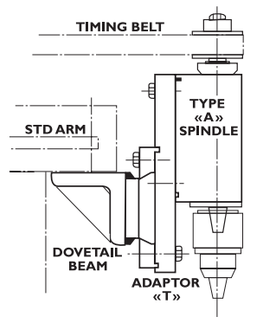
SPINDLE ARRANGEMENTS

Most of the possible mounting arrangements that can be made with the standard spindles and adaptors follow immediately. Arrangements «J», «M» and «N» refer to vertical boring while arrangement «P» is for horizontal boring.

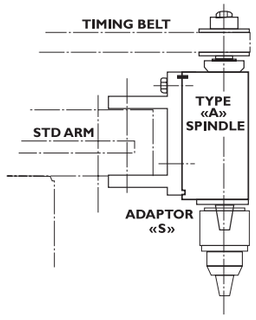
- In **ARRANGEMENT «J»**, the type «B» flanged spindles can be mounted in any pre-determined holes of the template.
- **ARRANGEMENT «M»** shows an advanced method of spindle mounting on a dovetail beam which arrangement provides for tremendous set-up time savings.
- In **ARRANGEMENT «N»**, the spindles can be set at end of arm at any position over 180° while all the other arrangements apply primarily to in-line boring when spindles are mounted on the same dovetail beam.
- In **ARRANGEMENT «P»**, a spindle mounted directly onto an horizontal dovetail beam on which it slides.



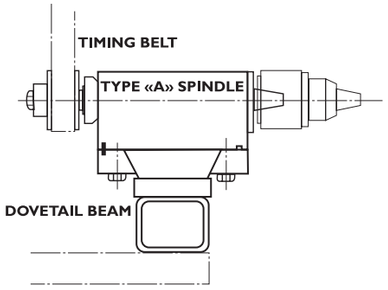
Arrangement (J)



Arrangement (M)

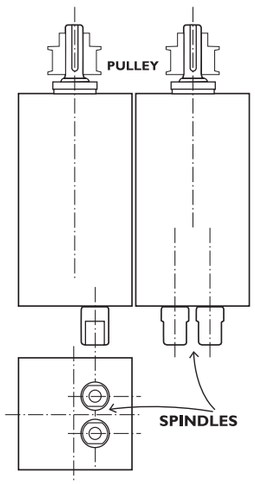


Arrangement (N)



Arrangement (P)

CLUSTERS



The **DOUCET/SICOTTE** standard clusters are boring units incorporating 2 or more fixed center spindles.

These clusters are interchangeable with standard spindles and they can be mounted on either standard arms or on dovetail beams.

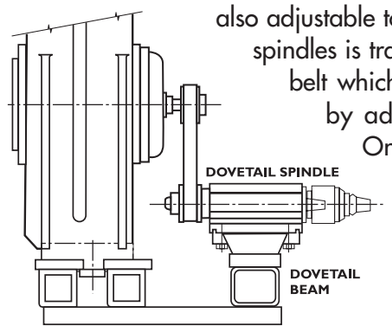
The clusters are available with standard centers ranging from ¾" up to 1½".

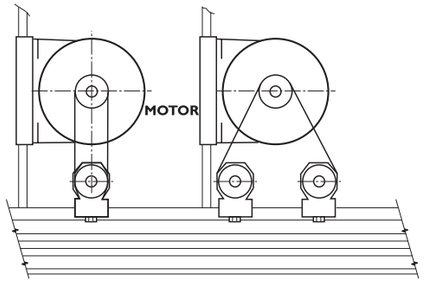
A single pulley drives all the spindles of the cluster through an integrated gear drive. The spindles of the clusters can be set in almost any desired pattern.

HORIZONTAL DRIVES

Depending on requirements, the DOUCET/SICOTTE models J20, J35, J40, Airbor 735 and Airbor 750 machines are equipped with several horizontal boring units.

The center to center distance between the spindles is adjustable. These spindles are mounted on a common dovetail beam for in-line boring. The motor brackets mounted on a common base are also adjustable to suit the spindle positions. The power from the motors to the spindles is transmitted by timing belt which can be tightened by adjusting the motor. One or two spindles can be driven from the same motors as shown.

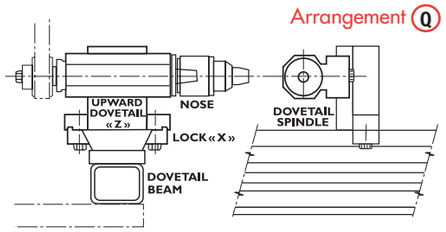




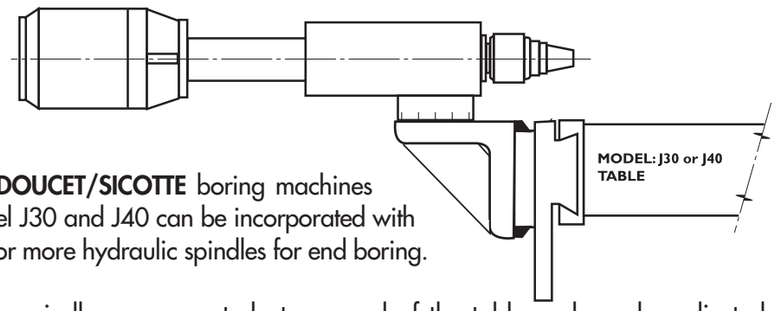
ARRANGEMENT «Q»

For vertical adjustment of the spindles in horizontal boring, an upward short dovetail adaptor «Z» which can be mounted on the common dovetail beam is recommended. Mounting as per arrangement «Q» is shown below. Drive is similar to that discribed in arrangement «P».

Arrangement (Q)



HYDRAULIC SPINDLE



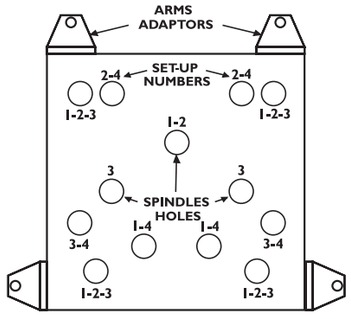
The **DOUCET/SICOTTE** boring machines model J30 and J40 can be incorporated with one or more hydraulic spindles for end boring.

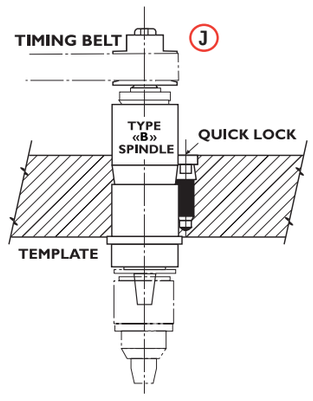
These spindles are mounted at one end of the table and can be adjusted both vertically and horizontally. These self feed hydraulic spindles have an up to 4" stroke and they can be set to do boring at 90° or at almost any desired angle. The hydraulic spindle noses can be equipped with either a single Jacob's chuck or with a multi spindle cluster.

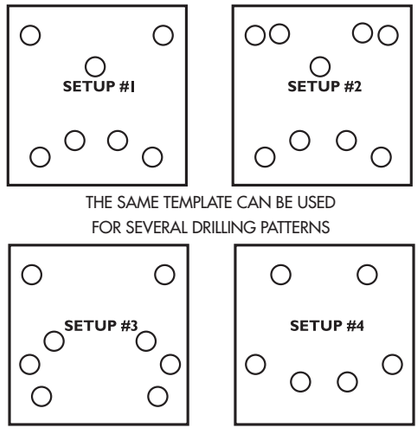
TEMPLATES

The quick set-up template is simple, accurate and time saving. They are made of aluminum of almost any dimension with holes bored precisely to suit your predetermined number of drilling patterns.

With these, measuring is no longer required and you can reproduce the same patterns with an accuracy of within 0.002". Simply set the spindles in the premarked holes of the template, secure them with a quick lock, and arrange the belt using an idler pulley if necessary.

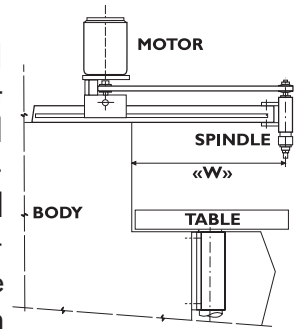






ARMS

All the **DOUCET/SICOTTE** standard vertical boring machines are equipped with cast iron standard arms to support and secure the spindles, clusters, hold downs, dovetail beams and other attachments. These standard arms are mounted and firmly secured on the top of the machines and are designed to receive the spindle motors. The machines are supplied with their standard size arms as per chart below but should wider boring area be required, longer arms are available as an option.

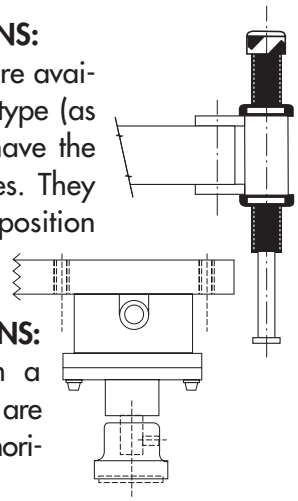


DIM."W"	AIRBOR	J3H	J30	J35	J40
18"	STD.	OPT.	OPT.	OPT.	OPT.
24"	OPT.	STD.	STD.	STD.	STD.
30"	N/A	OPT.	OPT.	OPT.	OPT.

MODELS

HOLD DOWNS

SPRING LOADED AND AIR HOLD DOWNS:
The spring loaded and air hold downs are available for either the dovetail or the arm type (as shown) vertical boring machines and have the same mounting adaptors as the spindles. They are adjustable both in tension and in position over the table.



HORIZONTAL BORING, AIR HOLD DOWNS:
These hold downs are mounted on a pneumatic cylinder 3" in diameter foot and are used to secure material onto the table on horizontal and combination boring machine.

MOTOR

Since wood is natural product of varying density, it is difficult to establish precise rules as to the feed speed and HP required in every specific application. The following recommendations should be considered as guidelines only since variations in materials methods used and other conditions will affect the performance.

SUGGESTED MOTOR HP TO BORE IN HARDWOOD

Number of holes per motor	Size of holes	Slow feed	Medium feed	Fast feed
	H.P. required			
2	⅝"	¾	¾	1
2	1"	¾	1	1½
2	1½"	1	1½	2
2	2"	1½	2	3
1	1"	¾	¾	1
1	1½"	¾	1	1½
1	2¼"	1	1½	2
1	3"	1½	2	3

The correct Horse Power and feeds are to be determined by sound judgment and experience. A medium feed will generally give the best quality holes and a clean cut; drills will last longer and belt life will be increased considerably. It is advisable to use high speed steel drills of superior quality.

DOVETAIL ATTACHMENTS

LOCKING BLOCKS «X»: In all dovetail types **DOUCET/SICOTTE** boring machines, one or more pairs of adequate width locking blocks «X» are used to permit fastening, adjusting and locking in place the spindles, adaptors, attachments, etc... to any dovetail beam, cross arm «Y» or upward dovetail «Z».

CROSS ARM DOVETAIL «Y»: To permit making others than in-line set-ups with vertical boring units, cross arm dovetail «Y» are normally mounted on the dovetail beam on which it can be located in desired position. These are available in standard lengths of 4", 6", 9", 12" and 18".

UPWARD DOVETAIL «Z»: The short upward dovetail «Z» mounted on the common dovetail beam of a **DOUCET/SICOTTE** horizontal boring machine can be used to permit the vertical adjustment of the spindles.