10. Safe Operation Procedure for cutting Charpy/Izod Notch

10mm Specimen with 2mm V Notch

Caution notes

a) DO NOT STALL THE MACHINE! ATTEMPTING TO CUT A MATERIAL WHICH IS TOO HARD OR USING A BROACH WHICH IS NOT SHARP, CAN STALL THE MACHINE AND CAUSE DAMAGE.
STOP THE MACHINE IMMEDIATELY WITH THE STOP BUTTON.
RELEASE AND REMOVE THE SPECIMEN. SELECT THE 'UP' STROKE DIRECTION.

b) It is essential that the component is properly clamped before the broaching stroke commences.

c) It is essential that a component, once cut, be removed from the clamp before the 'Up' stroke switch is operated.

Check Type of Broach Keep Fitted

Use Table 1 to ensure the correct broach keep is fitted, for the broach being used

Table: 1

NOTCH	BROACH TYPE	BROACH	BROACH KEEP
2mm 'V'	C	CNB30-027A2	X
1mm 'V'	M	CNB30-028A2	X
2mm 'U'	P	CNB30-006A2	Y
3mm 'U'	N	CNB30-005A2	Y
5mm 'U' (2 Cuts)	JS	CNB30-004A2	Y
0.13"/3.3mm "V"	H	CNB30-002A2	X
3.5mm "V"	T	CNB30-035A2	X
2mm 'V' Sub-size (5-2.5mm) see 10H	C	CNB30-027A2	W
2-5mm 'U' Sub-size (5-2.5mm) see 10H	JS,N,P	CNB30-004A2 CNB30-005A2 CNB30-006A2	U

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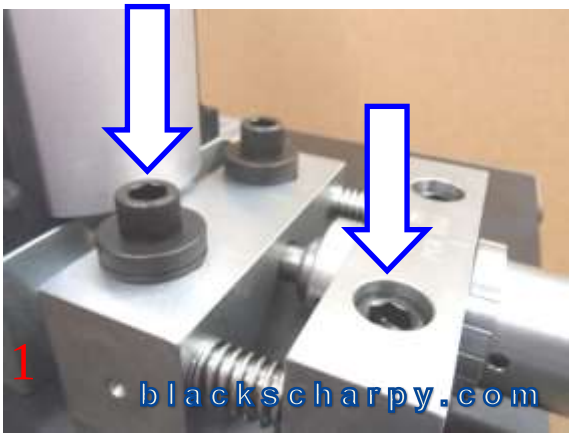
10 A. How to change Broach Keep



Remove clamping screws

Remove clamp assembly

Clamp assembly removed

Remove broach keep clamping screws

Remove broach keep

Fit the broach keep required

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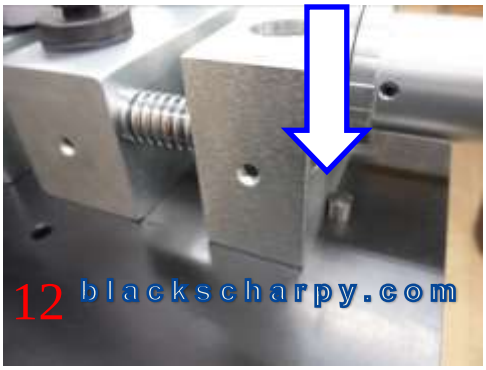
Tighten clamping screws

Broach Keep fitted

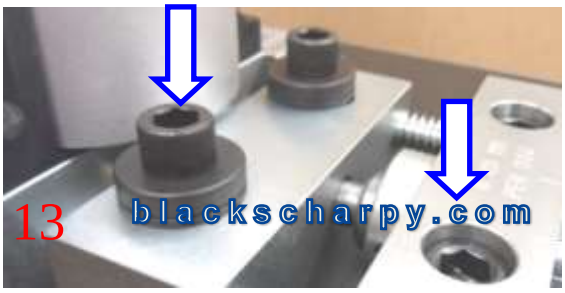
Check free movement of broach

Refit clamp assembly

Refitting clamp assembly



Ensure clamp is pressed up against the 2 dowels



Tighten clamping screws

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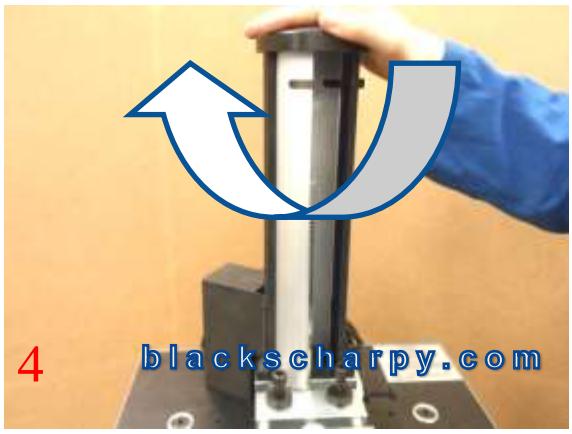
10 B. Fitting the Broach

Close broach guard shield with no specimen loaded

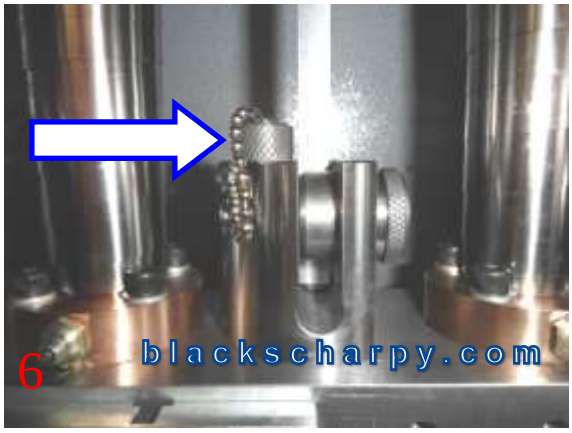
CNB31– Press “up” to raise broach to upper position

CNB34– Turn “up” to raise broach to upper position



Remove broach guard shield

Remove 7 screws and top panel



View inside top cover. Remove broach anchor locking pin

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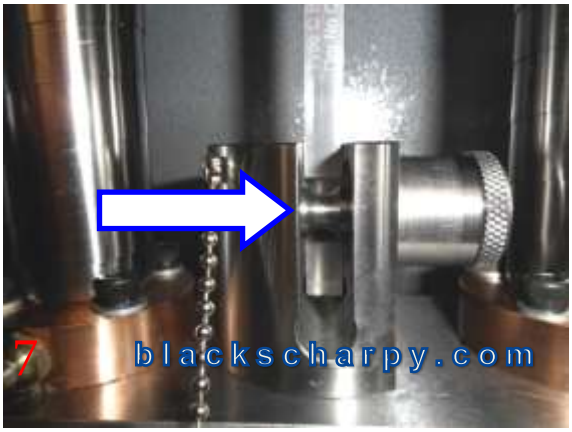
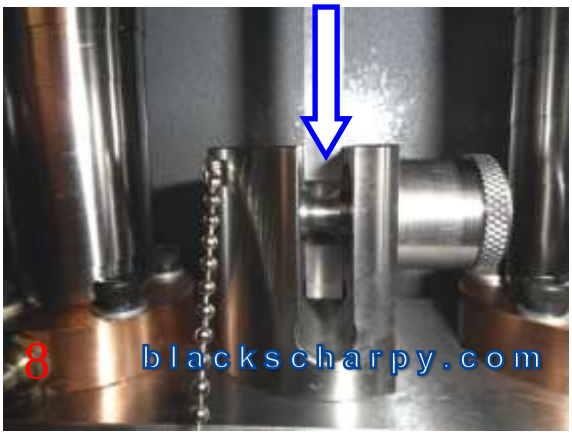
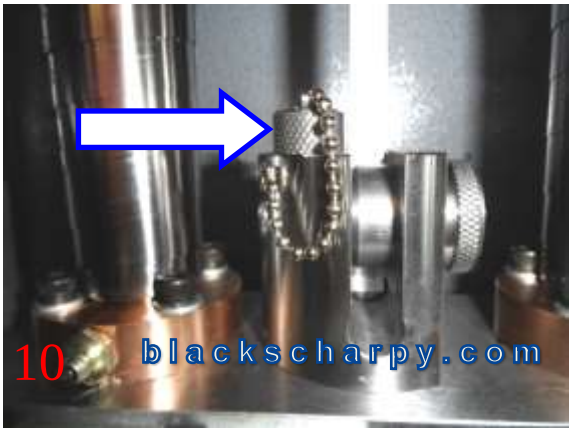


Withdraw broach anchor pin



Feed broach through top plate to broach anchor pin

Fit broach anchor pin



Fit broach anchor locking pin

Replace top cover

Refit broach guide shield

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10 C. Setting specimen Axial Position

Load 10mm specimen into clamp assembly so that the specimen is contacting the axial adjusting screw

Check axial position & broach a specimen

Check axial position and re-adjust position if required

Tighten the locking nut, so securing the adjusting screw position

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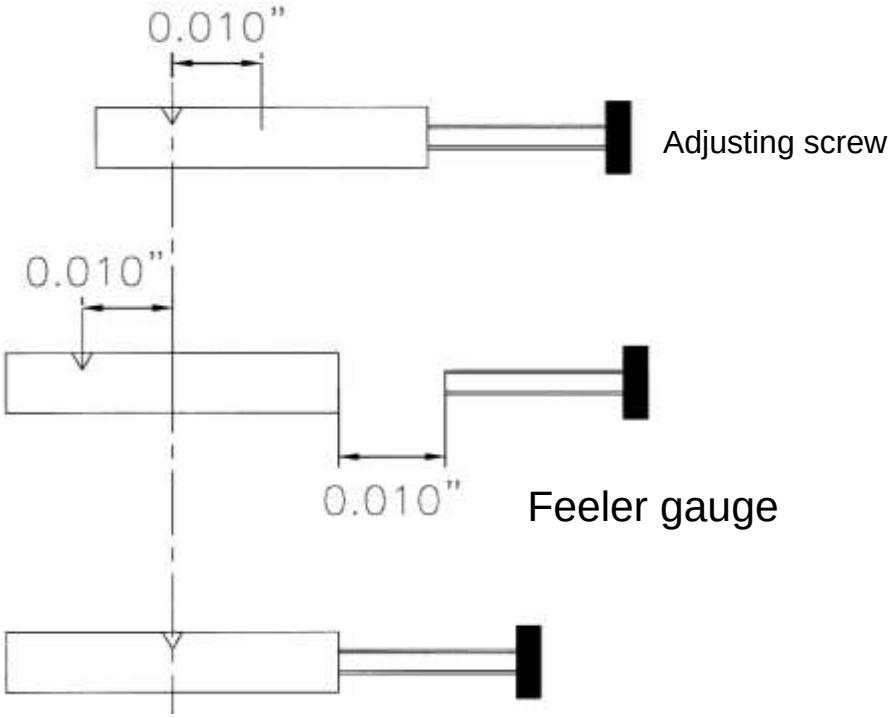
USER MANUAL

CUSTOMER TO CHECK AXIAL POSITION, WITH THEIR OWN EQUIPMENT

Notch to left of specimen centre line, by say 0.010”

1. Initial notch position

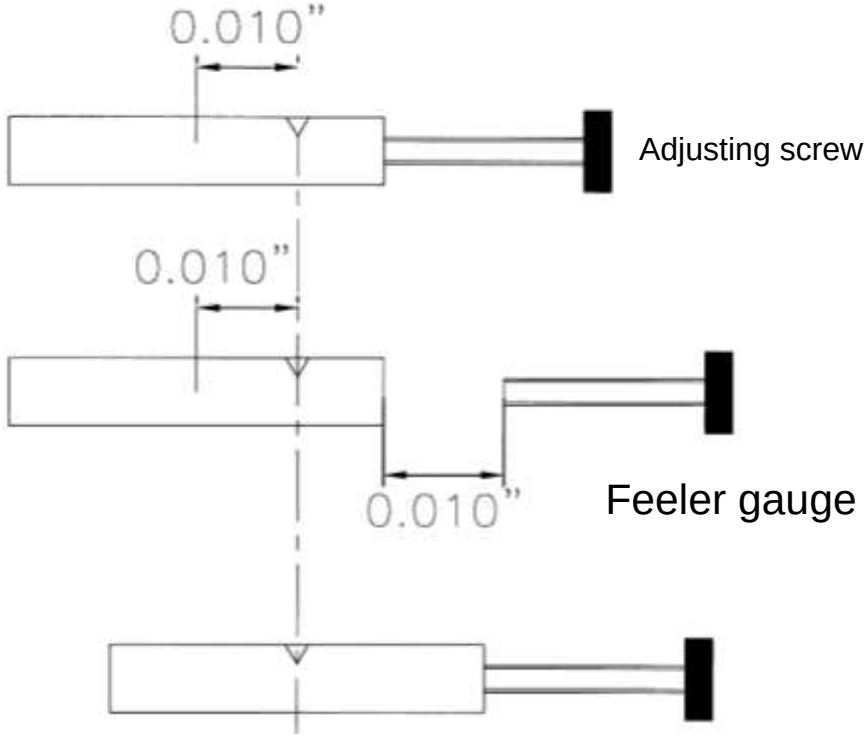


2. Unclamp specimen
3. Move specimen using 0.010” feeler gauge
4. Clamp specimen

5. Reposition adjusting screw

Notch to right of specimen centre line, by say 0.010”

1. Initial notch position



2. Reposition adjusting screw using 0.010” feeler gauge

3. Unclamp specimen
4. Move specimen
5. Clamp specimen

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10 D. Setting Broach Depth

CNB31– Press “up” to raise broach to upper position, with no specimen loaded

CNB34– Turn “up” to raise broach to upper position, with no specimen loaded

Open broach guard shield and determine feeler gauge thickness for broach type being used, from Table 2

Release two clamping screws of the adjustable clamp jaw

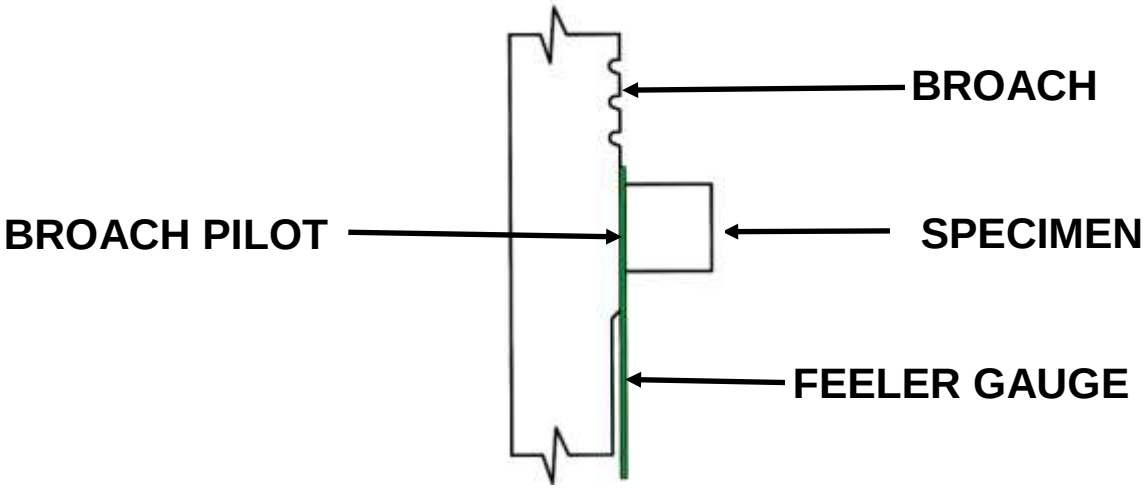

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Table 2

NOTCH	BROACH TYPE	BROACH	FEELER GAUGE THICKNESS
2mm ‘V’/2mm ‘V’ Sub-size	C	CNB30-027A2	0.005”
1mm ‘V’	M	CNB30-028A2	0.005”
2mm “U”/2mm ‘U’ Sub-size	P	CNB30-006A2	0.016”
2mm ‘U’”/2mm ‘U’ Sub-size	N	CNB30-005A2	0.055”
3mm ‘U’”/3mm ‘U’ Sub-size	N	CNB30-005A2	0.016”
5mm ‘U’”/5mm ‘U’ Sub-size (2 Cuts)	JS	CNB30-004A2	0.005” 1st CUT
0.13”/3.3mm “V”	H	CNB30-002A2	0.004”
3.5mm “V”	T	CNB30-035A2	0.004”

Use feeler gauges placed between the broach pilot and specimen

Advance adjustable clamp jaw, so that the feeler gauges are a sliding fit

Tighten adjustable jaw clamping screws

Re-check the feeler gauges are a sliding fit, re-adjust as necessary

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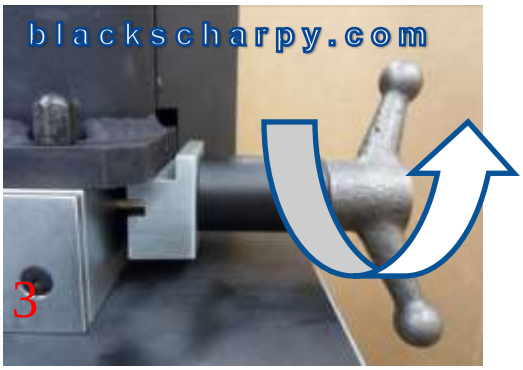
10 E. Broaching Specimen

Load specimen

Push specimen up against axial screw face



Clamp specimen using handle

Clamping pins securing specimen

Apply cutting oil to the broach teeth, using brush supplied with machine.

Close broach guard shield

We recommend RTD metal cutting liquid

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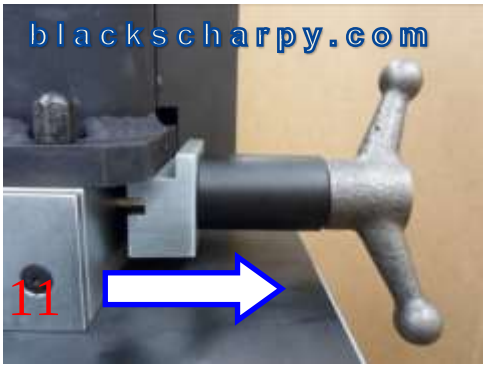
CNB34 Only– Select broach speed

CNB34 Only
The optimum speed has to be determined by tests. If in doubt, start at a slower broach speed.
Typical settings:
Low carbon steels 7
Stainless steel 2

CNB31– Press “down” to broach the Specimen

CNB34– Turn “down” to broach the Specimen

Open broach guard shield



Release the clamp handle

Note:
To prevent damage to broach teeth always remove specimen BEFORE raising the broach

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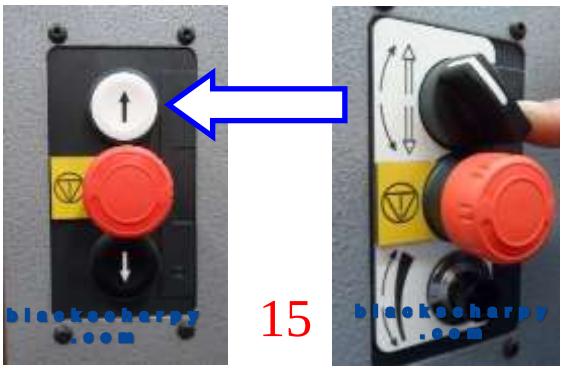
Remove the specimen

Specimen broached

Close broach guard shield



Raise the broach

Open broach guard shield

Clean broach teeth using wire brush supplied with machine, ensuring cuttings are removed from teeth gulley's

Thoroughly clean clamping area and area inside broach guard shield, using brush supplied. The machine is now ready to cut next notch

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10 F. Adjusting Depth of Cut

Mark position of index head with a marker

Note:
The index head has graduations.

1 division will alter broach depth by 0.05mm.

Increases the notch depth

Decreases the notch depth

Release adjustable jaw clamping screws

Adjust index head, by the change in notch depth required.

Tighten adjustable jaw clamping screws

Note:
Index head adjustment has backlash.
Always adjust from one direction.

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10 G. JS Broaching

5mm U notch
1st cut, use feelers as in Table 2 to set broach depth

1st cut completed producing a 3mm deep notch

2nd cut, use the 2mm packer behind the specimen, to produce a 5mm deep notch

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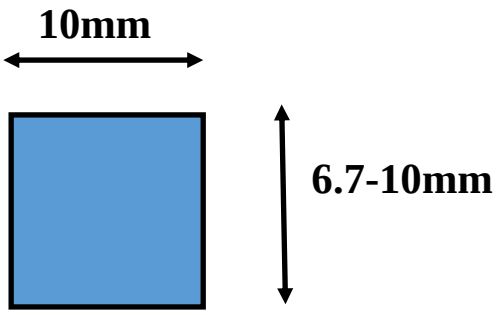
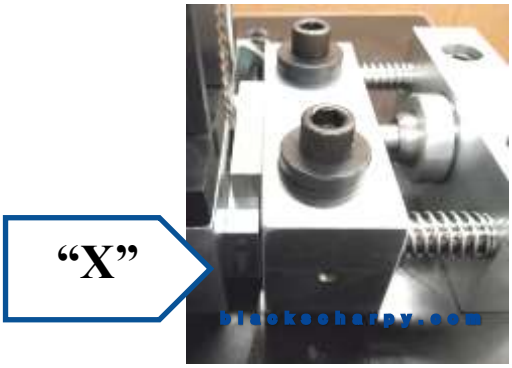
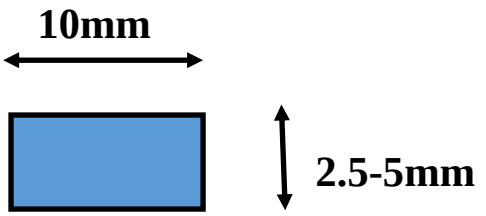
10 H. Broach Keeps, sub-size

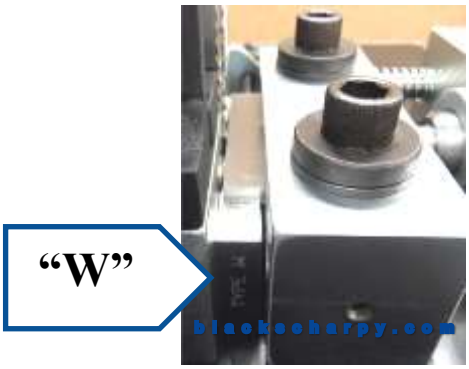
Broach Keep "X", V Notch 2mm deep



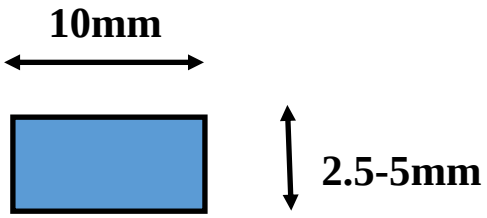


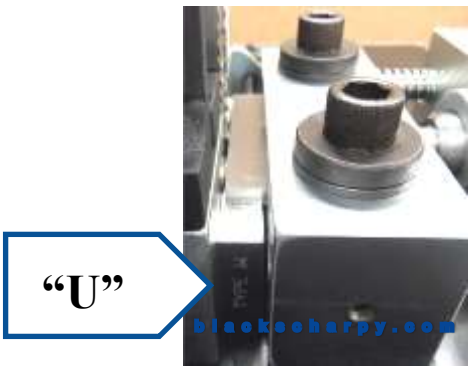
Broach Keep "W", V Notch 2mm deep (Option)





Broach Keep "U", U Notch 2mm-5mm deep (Option)





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10 I. Multi Notch(options)

10mm Multi notch specimen

Broach keep type A fitted, with the setting up block accurately positioning the broach keep

Broaching 10mm Square Multi Notch

Broaching 1st notch

Broaching 2nd notch

Broaching 3rd notch

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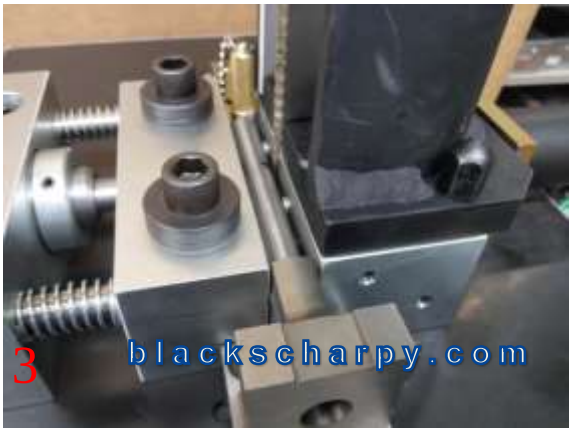
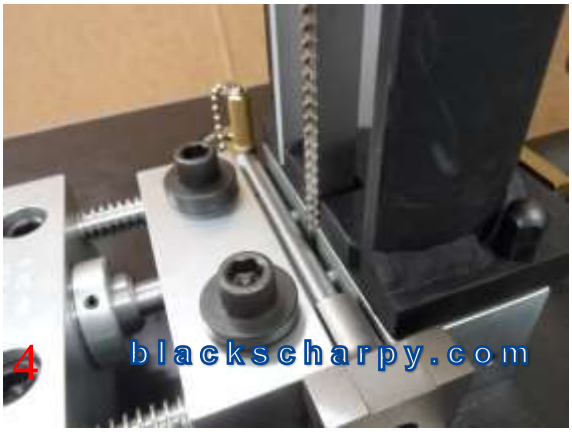
Broaching 0.45”/11.4mm Round Multi Notch, with “H” broach

Broaching round multi-notch specimens, showing the holding block, which radially positions the notches

Clamping round specimen, with a clamp block which has tapered flats



Broaching 1st notch



Broaching 2nd notch

Note:
Up to 3 notches can be produced in square or round specimens, at a 28mm pitch

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