Kushed Procedures

Combination Shear, Brake & Roll | M9

30” Three in one Machine

- Hafco

Bramley Hand Lever
Bench Shear (up to 45 x 5)

The Shed provides items such as welding masks and gloves.

Members are required to provide their own footwear, eyewear, hearing protection and masks.

Safety

This is a very high priority for our Shed members. There are some aspects that are mandatory under our insurance policies and some which the The Shed requires members to adhere to for everyone's benefit.

The Shed Safety Induction

It is a requirement of attendance at The Shed that members have reviewed the Safety Induction Presentation

Personal Protective Equipment

This is required in various forms depending upon the equipment being used or the activity being undertaken.

Protective eyewear is always mandatory when using machinery.

The Shed schedules a Coordinator and a First Aid Safety Officer for each day of attendance and their safety directions are final and must be adhered to.

THE SHED
KU-RING-GAI COMMUNITY WORKSHOP

Purpose of this machine

- Braking - bending sheet metal at 90°
- Shearing - cutting sheet metal
- Rolling - rolling sheet metal or wire in curves up to full circles

Key Features of the 3-in-1 Pressbrake, Guillotine and Roll

- A compact three-function sheet metal working machine which will shear, roll and bend thin sheet material up to a maximum width of 760mm.
- The handle operates all three functions at the same time, but only one function can be used at one time - the rolls incorporates wiring grooves and are rotated directly whilst the bending and shearing functions operate via an eccentric cam.
- The pressbrake bending dies can be removed in sections to allow for partial bends to be formed and the top roll can be removed completely when forming closed cylinders.
- The maximum thickness capacity is 1mm for mild steel & 1.5mm for soft grade aluminium

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Safety First

If you haven't used one of these machines before, it can be dangerous in unexpected ways.

For example, keep hands well away when the guillotine blade is raised as a slight bump can cause the weight of the handles to drop the blade.

Bolt the machine down so there is no movement during operation.

Close the cover when not using rolls

Safety and Procedural Issues

Before using this machine

- Read the instruction manual attached to the machine for the procedures that relate to the work you are doing
- If in doubt about the operation you are about to do, seek a Coordinator's assistance.
- Ensure there are no metal offcuts, loose screws or bolts, keys or wrenches remaining in any part of the machine
- Ensure the machine is complete and all required bending dies are in place
- Adjust the machine for the function to be performed (Shear, Roll, Brake) according to the instruction manual

During use of the machine

- Keep fingers, clothing etc away from the moving parts
- Ensure all metal pieces to be formed are square to the machine

THE SHED
KU-RING-GAI COMMUNITY WORKSHOP

Material Size Limitations

Width	760mm
Mild steel thickness	1mm
Aluminium thickness	1.6mm
Wire diameter (estimate based on roller cutouts) *Note: spring steel ("piano wire") is noticeably tougher to roll than mild steel*	2, 3.5 or 5mm

Minimum internal rolling diameter of a job is 42mm.

Manage your expectations

Every gauge and type of sheet metal has a minimum Bend Radius. If an attempt is made to bend that metal sharper than the allowable Bend Radius, it will fatigue and crack.

It is best to consult an online table or a Machinist's Handbook for the proper Bend Radius, however, a good "rule-of-thumb" to employ is never set the distance of the Knife-edge of the Fingers any less than 1-1/2x the thickness of the metal being bent.

Operation

Insert the job against RH alignment piece and push through until it touches the length stop

Push down firmly on the handles, don’t jerk (may need hands on both operating levers to give even pressure across the job.)

Brake (90°bends with standard machine)

Setup

- Use cap screw 40 to adjust operating levers so that one handle is near the axle, to provide maximum leverage. Turn to check operation.
- Adjust the length stop to suit the job length required.
- There are 6 upper dies : may need to remove some to suit width of job (only necessary if doing multiple bends where they conflict)
- Sit a piece of wood (25x25x160) on the bottom mould plate to set all the upper dies in the same position
- Install required dies and tighten bolts.
- Adjust the cross girder for uniform bending across the width of the machine
- Bend a test piece on each side of the machine to check that the angles are the same across the width. If not, then adjust by loosening crossbeam bolt.
- Insert a 1m piece of steel plate across the entire machine width and raise the lower die until the plate touches the upper die.
- Adjust the screw on the crossbeam until it is touching evenly across the width. Tighten bolt. Repeat test until adjustment is satisfactory.

Operation

If necessary, adjust rear angle plate for the length of the job.

Keep hands well away when blade is up as a slight bump can cause the weight of the handles to drop the blade.

Shearing (cutting with the guillotine)

Adjustment

- Use cap screw to adjust operating handle supports so that one handle is near the axle, to provide maximum leverage. Turn to check operation.
- Adjust the length stop to suit job length required
- Adjust eccentric washers at front (underneath table) to set the clearance gap (5% to 10% of material thickness) at each end i.e. undo the allen cap screws, adjust and tighten.
- Test and adjust so that material in the centre of the machine is cut and not folded.
- Use the adjuster bolt at the back to adjust the gap in the middle of the job to be the same as the ends.
- Check guide is at 90° to cutting edge.
- Turn handles to check operation.
- Use cap screw to adjust operating handle supports so that one handle is near the axle, to provide maximum leverage.
- Set length stop to suit the length of job

Operation

Wire: insert wire into the correct size channel in the left side of the rollers

Strip: insert in the middle of the rollers, carefully ensuring it is at 90° to the rollers.

Pass the job through completely and check the resulting radius. Screw the rear adjusters out a little and then pass the job through again to reduce the radius a little. Repeat until the radius is correct.

When creating a complete circle, unscrew the left hand front adjuster to lift up the left hand side of the front top roller to take the job out.

Rolling

Setup

- Use cap screw to adjust operating levers to suit the job i.e. set the axle at the midpoint of each lever when using rollers to give full 360° movement. Turn to check operation.
- Lift up the top cover 33 to expose the three rollers.
- Screw rear adjustors anticlockwise all the way out – this is the setting for the largest radius bend.
- Push the material in between the two front rollers and adjust the top adjustment bolt on each side to give the gap between the rollers to be the same as the material thickness.
- For parallel work, make sure the setting is the same across the entire width of the rollers. For tapered work, experiment with different settings on the two sides.

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MOUNTED BENCH SHEAR

Safety & Procedural Issues

Before using this machine

- Locate and ensure you are familiar with all the machine operations and controls.
- Ensure all guards are fitted, secure and functional. Do not operate if the guards are missing or faulty.
- Ensure the bench shears are securely fastened to a bench or purpose-designed stand.
- Ensure the shearing edges are in good condition, distortion free and correctly adjusted.
- Ensure all working parts are well lubricated and the blades free of rust and dirt.
- Check workspaces and walkways to ensure no slip/trip hazards are present.
- Ensure there is sufficient space around the machine to prevent accidental contact with people in the area.
- Familiarise yourself with and check all machine operations and controls.
- Faulty equipment must not be used. Immediately report suspect machinery to a coordinator.

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After machine use

Oil the eccentric mechanism after use with standard machine oil

When not in use this machine **must be locked** by the stout pin through the hole in the blades.

Do not leave in a raised state.

Leave the work area in a safe, clean and tidy state.

During use of the machine

- Never use bench shears for cutting metal that is beyond the machine's capacity with respect to thickness, shape, or type.
- Material should be properly supported during cutting and industrial type gloves should be worn to protect the hands.
- Use supports for long material – signpost if a tripping hazard.
- Manual handling tasks should be assessed, and appropriate procedures put in place.
- Hold material securely to prevent it tilting during the cut.
- Ensure fingers and limbs are clear before operating the bench shears.