 <b>THOMPSON RIVERS UNIVERSITY</b> Occupational Health & Safety	<b>Number:</b> OH&S 18.43.1
	<b>Revision Date:</b> 07/04/2014
	<b>Scotchman Ironworker Safety Procedures</b>

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### 1. PURPOSE






- 1.1. The purpose of this Safety Procedure is to provide guidance for the safe operation of the Scotchman Ironworker machine in the Metal Fabricating area.

### 2. SCOPE







- 2.1. These procedures apply to all Staff, Trades Instructors, and students using this machine on TRU property.

### 3. PRECAUTIONS

## **POTENTIAL HEALTH & SAFETY HAZARDS**

<b>HAZARD</b>		<b>TO PROTECT YOURSELF</b>
<b>PINCH POINTS</b> There are gears and exposed moving parts on machinery.		Use <b>LOCK-OUT</b> procedures when performing maintenance or conducting any work within 12" of an exposed pinch point. <b>NEVER</b> put your hands or feet near an exposed pinch point or gears!
<b>ELECTRICAL HAZARD</b>		Ensure that all switches, wires, and plugs are in good operating condition.
<b>HIGH SOUND LEVELS</b> Sound levels exceed 85 dB		<b>HEARING PROTECTION</b> is required when working in designated areas.
<b>FOOT INJURY</b>		Approved protective footwear is needed when there is the risk of foot injury due to slipping, uneven terrain, abrasion, crushing potential, temperature extremes, corrosive substances, puncture hazards, electrical shock and any other recognizable hazard
<b>Rings and Dangling jewelry</b>		<b>Rings and any loose or dangling jewelry must not be worn while operating any equipment or machines</b>

#### 4. PERSONAL PROTECTIVE EQUIPMENT

	Safety glasses must be worn at all times in work area!
	Long and Loose hair must be contained by a hat or hairnet to prevent contact with moving parts on equipment and machines
	Work Boots must be worn at all times when working in an area where there is risk of serious foot injury due materials falling onto the foot.
	Work Gloves should be worn when there is a risk of hand injury during the course of work tasks.
	Hard hats must be worn when working in an environment where there is a risk of objects falling from above or where there is a high risk of striking your head on objects.
	Close fitting clothing or protective clothing must be worn.

#### 5. PROCEDURES

##### 5.1. Safety Issues

- Read and understand the instruction manual before operating the Ironworker. If you are unsure of anything enquire with your Instructor.
- Check the punch securing nut, die, stripper and die at the start of each period of usage and periodically throughout the day for tightness.
- Check the punch and die for alignment prior to punching the first hole and

intermittently during the day.

- Make sure all guards are in place and that all table adjustment bolts are tight.
- Prior to operating the Ironworker, remove all tools or other objects from under the beam and punch ram. Failure to do so could result in danger to other personnel and to tools.
- Do not punch anything thicker than one punch diameter. Remember, that on higher the grade steel, the more punch power is required.
- Punch full and complete holes, do not punch partial holes. The sides thrust encountered in punching a partial hole can force the punch against the die and result in punch and die breakage.
- Contact both sides of the punch stripper. Punch holes with sufficient material around the hole so that contact will be made on both sides of the punch stripper. Stripping forces can be severe. Unbalanced forces due to contact on only side of the stripper may cause punch breakage.
- Stay within rated punching capacities. The Ironworker is designed to punch or shear in mild steel. Within conservative limits it can be used to punch or shear in medium carbon-annealed steel and some grade of abrasion resistant steels.
- Your foot must be completely removed from the pedal box after completing each cut.
- Do not try to grab a piece as it is being cut. Remove small pieces from the blade area with a hook, never your fingers.
- **NEVER** put your hands near a Hazardous area or Pinch Point, if a part is too large to sit on the Ironworker table without your assistance, only hold the part if your hands are completely off the Ironworker table and no body part could be susceptible to injury.
- Use proper shutdown procedures when changing punches, dies, blades, or shims. Shut off the main power and locked out and have the switch in off position when changing punches and dies.
- Turn the main power off when leaving the machine unattended.

## 5.2 Safe Operation of Ironworker

- After changing punches, dies, blades or shims, lower the punch/shear by hand (or jog) to check the clearance alignment.

**Note: Most ironworker Manufacturers recommend Punch and Die alignment is checked before each set-up and periodically throughout longer runs.**

- **Before** installing a Punch or a die into the Ironworker, they must be slipped checked. Failure to do so could cause tooling damage and/or personal injury.
- Always adjust material hold-downs to allow material to just slide under before attempting to shear. Don't allow more than 1/8" clearance between material and the hold-down clamp. Check to confirm proper blade clearance.
- Never put material in from the back-side of the shear. Always cut from the roller table side making sure the material is under the hold-down.
- Do not attempt to shear off a piece of material shorter than its thickness.
- Don't cut pieces that have less than 1/2" under the hold-down
- Use proper size stripper insert or plate.
- Punch depth must be set to avoid stripper damage.
- Make sure stripper is fully engaged and tightened before operation.
- Do not attempt to punch material thicker than the diameter of the punch.

### 5.3 Punch Steps:

- 1) Unlock Ironworker.
- 2) Turn on motor switch
- 3) Swing lever to P (punch) setting. The punch will move to the raised position. The punch-operating pedal will be in the raised position and shear-operating pedal will be in the down position.
- 4) Move valve knobs when machine is at rest at either end of the stroke.
- 5) Place material to be punched beneath the punch.
- 6) Check that the area below the foot pedal is clear.
- 7) Move hands away from the punch area. There is no need to hold the material being punched.
- 8) Depress foot pedal
- 9) At the conclusion of the stroke, your foot should be removed from the pedal and the machine will return and stop in readiness for the next stroke.

### 5.4 Shearing Steps:

- 1) Unlock Ironworker
- 2) Turn on motor switch
- 3) Swing lever to S (shear) position. The machine will now move to a position

with the shear in the raised position. The operating pedals will change position with the shear pedal in the raised position and the punch pedal in the lower position.

- 4) Move valve knobs when the machine is at rest at either end of the stroke.
- 5) Place material to be cut between the shear blades.
- 6) Snug the moveable blades up to the channel’s flange
- 7) Check that the area below the foot pedal is clear.
- 8) Move hands away from shear blade. Unless the material is very long there is no need to have your hands on the material to be sheared.
- 9) Make the shear stroke by depressing the foot pedal.
- 10) Before releasing the foot pedal back the moveable blades off by ½ turn of the crank. Make sure the slug drops from the chute after each stroke.
- 11) At the conclusion of the stroke, remove your foot from the pedal and the machine will return and stop in readiness for the next stroke.

**6. RECORDS/VERIFICATION OF UNDERSTANDING**

6.1. Records of Instructor qualifications on the Ironworker and Students training is to be maintained by the Chairperson and the Dean of Trades.

7. A Training Master Log will be maintained by the Department Chairperson

**8. SUMMARY OF CHANGES**

Revision #	Date	Change (include section #)	Issued By
1	07/04/2017	NEW	OHS Officer