Tool Type	Size/Style	Power	Potential Hazards	Emergency Stopping and Power Controls ²	Shields and Guards	Other Protective Measures
Arbor Press	Bench or Standing	Manual	Caught between – crushing, limited by manual operation			Warning label
Band Saw / Small	Bench	Electric	 Cutting blade –lacerations Rotating blade pulleys – pinch points, entanglement Flying objects – eye, face, skin injuries 	 E-stop, accessible single action hand switch, or foot switch Anti-restart for wood 	Blade Covered pulleys	Push sticksFence
Band Saw / Large	Standing	Electric	 Cutting blade – lacerations, amputation Rotating blade pulleys – pinch points, entanglement Flying objects – eye, face, skin injuries 	 E-stop, accessible single action hand switch, or foot switch Anti-restart for wood 	 Blade plus extension if needed Fully encased band saw wheels 	Smallest opening in work surface possible
Bead / Shot Blaster (w/ Glove box)	Bench	Electric	 Abrasive shot – skin irritation, abrasion Rotating / moving parts –blade in fan motor Flying objects – eye, face, skin injuries 	 E-stop, accessible single action hand switch, or foot switch Door interlocks for large units 		
Brake, Metal Bending	Bench or Standing	Manual	Caught between – finger crushing			
Buffer, Wheel	Bench or Standing	Electric	 Rotating parts – entanglement Flying objects – eye, face, skin injuries Parts pulled / thrown from hand – flying objects 	E-stop, accessible single action hand switch, or foot switch	Rotating shaft and nut guards as feasible	 Clamps for small parts Face shield if excessive flying objects expected
Cutting Block	Bench	Manual	Cutting blades – lacerations, amputation			
Die Filer	Bench or Standing	Electric	 Vertical oscillating shaft – minor punctures Possible flying objects – eye, face, skin injuries 	E-stop, accessible single action hand switch, or foot switch	Chip shield as feasible	 Bit vise / clamp Face shield if excessive flying objects expected

¹ For all tools:

- 1. Bench models affixed with bolts / clamps; standing / pedestal models bolted / secured to floor (except high mass units such as mills and lathes)
- 2. After-market E-stop placement at critical operator locations, installed in consultation with shop manager
- 3. Tool lights protected by covers or safety coated bulbs; low voltage (< 24 V) preferred
- 4. Safety glasses / goggles worn for all tools inside shop proper; no loose clothing, jewelry, or hair
- 5. All tool use limited to approved / qualified personnel only

² Anti-restart: (as available)

Tool Type	Size/Style	Power	Potential Hazards	Emergency Stopping and Power Controls ²	Shields and Guards	Other Protective Measures
Drill Grinder/Sharpener	Bench or Standing	Electric	 Rotating shaft and wheel – pinch points, abrasions Flying objects – eye, face, skin injuries Heat / sparks – burns, fire 	E-stop, accessible single action hand switch, or foot switch	Wheel Chip shield as feasible	Bit vise / clamp Face shield if excessive flying objects expected
Drill Press / Small	Bench	Electric	 Sharp cutting bit – minor lacerations, punctures Rotating chuck and bit –entanglement Flying objects – from parts working or centrifugal throw (chuck key, part) – eye, face, skin injuries Torque exerted on work piece – impact injuries 	 E-stop, accessible single action hand switch, or foot switch Anti-restart for wood 	 Covered pulley head Portable chuck / chip Rear shielding as needed 	 Vise – secured Spring-loaded chuck key Work / tool rest
Drill Press / Large	Standing	Electric	 Sharp cutting bit – minor lacerations, punctures Rotating chuck and bit –entanglement Flying objects – from parts working or centrifugal throw (chuck key, part) – eye, face, skin injuries Higher torque on work piece – impact injuries 	 E-stop, accessible single action hand switch, or foot switch Anti-restart for wood 	 Covered pulley head Affixed multi- plane chuck/chip Rear shielding as needed 	 Vise – secured Spring-loaded chuck key Hearing protection for high pitch metal cutting
Foam Cutter	Bench or Standing	Electric	Hot wire – burns, fire Smoke – inhalation exposure	E-stopAnti-restartKey or code access	Interlocked cover / access	Local exhaust
Grinder (hard wheels)	Bench or Standing	Electric	 Rotating shaft and wheel – pinch points, abrasions Flying objects – parts or wheel shatter - eye, face, skin injuries Heat / sparks - burns, fire 	E-stop, accessible single action hand switch, or foot switch	 Wheel enclosure Upper tongue Chip shield Rear shielding as needed 	 Work / tool rest Warning label with gap tolerances Depth / feeler gauge Face shield as needed

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- 2. After-market E-stop placement at critical operator locations, installed in consultation with shop manager
- 3. Tool lights protected by covers or safety coated bulbs; low voltage (< 24 V) preferred
- 4. Safety glasses / goggles worn for all tools inside shop proper; no loose clothing, jewelry, or hair
- 5. All tool use limited to approved / qualified personnel only

Anti-restart: (as available)

Tool Type	Size/Style	Power	Potential Hazards	Emergency Stopping and Power Controls ²	Shields and Guards	Other Protective Measures
Jig and Scroll Saws	Bench or Standing	Electric	 Sharp cutting blade - lacerations Flying objects – eye, face, skin injuries 	 E-stop, accessible single action hand switch, or foot switch Anti-restart for wood 	• Blade	Face shield if excessive flying objects expected
Jointer	Bench or Standing	Electric	 Sharp cutting heads – serious lacerations, amputation Rotating (horiz.) parts –entanglement Flying objects – eye, face, skin injuries 	 E-stop, accessible single action hand switch, or foot switch Anti-restart for wood 	Cutter shield	Push sticks and blocks
Laser Cutter	Bench or Standing	Electric	 Laser – ocular injury, burns Heat - burns, fire Moving laser head – physical injuries 	E-stop Anti-restart Key or cord access	Interlocked cover / access	Local exhaust
Lathe - Wood	Bench or Standing	Electric	 Rotating parts – serious entanglement Flying objects – from parts working or centrifugal throw (chuck key, part) – eye, face, skin injuries Sharp cutting tools - lacerations Pinch points – crushing, bruising 	 E-stop, accessible single action hand switch, or foot switch Anti-restart 	Chuck Work piece / point of operation	 Tool rest Face shield if point of operation shield not possible
Lathe – Metal	Mini Bench	Electric	 Rotating parts – entanglement Flying objects – eye, face, skin injuries Sharp cutting tools - lacerations Pinch points – minor crushing, bruising 	E-stop, accessible single action hand switch, or foot switch	Portable shield	
Lathe – Metal	Bench or Standing	Electric	 Rotating parts – serious entanglement Flying objects – from parts working or centrifugal throw (chuck key, part) – eye, face, skin injuries Sharp cutting tools - lacerations Pinch points – crushing, bruising 	 E-stop, accessible single action hand switch, or foot switch Emergency foot brake / power stop (geared by factory new equipment 	 Fixed or portable chuck shield Cross-slide shield Lead screw if 	Spring-loaded chuck wrenches Protect collet release handle if exposed

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- 2. After-market E-stop placement at critical operator locations, installed in consultation with shop manager
- 3. Tool lights protected by covers or safety coated bulbs; low voltage (< 24 V) preferred
- 4. Safety glasses / goggles worn for all tools inside shop proper; no loose clothing, jewelry, or hair
- 5. All tool use limited to approved / qualified personnel only

Anti-restart: (as available)

Tool Type	Size/Style	Power	Potential Hazards	Emergency Stopping and Power Controls ²	Shields and Guards	Other Protective Measures
Lathe – Metal (cont'd)			• Heat – burns	required for student shops)Anti-restart	exposed Bar feeder cover (if present) Rear shield as needed	
Metal Cutting Saw – Horizontal	Standing	Electric	 Sharp cutting blade – lacerations, amputation Rotating blade pulley – entanglement, pinch point Flying objects – eye, face, skin injuries Heat / sparks – burns, fire 	E-stop, accessible single action hand switch, or foot switch	 Blade guard, upper and lower Wheel / pulley guards 	Work piece vise / clamp
Milling Machine	Standing	Electric	 Sharp cutting bit – minor lacerations, punctures Rotating chuck and bit –entanglement Flying objects – from parts working or centrifugal throw (chuck key, part) – eye, face, skin injuries Higher torque exerted on work piece – impact injuries 	 E-stop, accessible single action hand switch, or foot switch Anti-restart 	 Affixed multiplane chuck/chip Drive belt covers Rear / side shielding as needed 	 Spring-loaded chuck wrenches (if used) Vise – secured Retractable handles on powered tables
Planer	Bench or Standing	Electric	 Sharp cutting heads – serious lacerations, amputations Rotating (horiz.) parts –entanglement Flying objects – eye, face, skin injuries 	E-stop Anti-restart for wood	Adjustable entry / feedCutting head	Push sticksOutfeed supportHearing protection for high noise planing
Press	Bench or Standing	Manual	 Caught between – crushing Flying objects – eye, face, skin injuries 		 Portable shield or cage for potential shattering object 	Warning label

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- 2. After-market E-stop placement at critical operator locations, installed in consultation with shop manager
- 3. Tool lights protected by covers or safety coated bulbs; low voltage (< 24 V) preferred
- 4. Safety glasses / goggles worn for all tools inside shop proper; no loose clothing, jewelry, or hair
- 5. All tool use limited to approved / qualified personnel only

Anti-restart: (as available)

Tool Type	Size/Style	Power	Potential Hazards	Emergency Stopping and Power Controls ²	Shields and Guards	Other Protective Measures
Printer, 3-D	Bench or Standing	Electric	 Moving head – physical injuries Ink aerosol – inhalation exposure 	E-stop Anti-restart Key or code access	• Interlocked cover / access	
Printing Press	Bench or Standing	Electric	 Rotating parts, pulleys, wheels - entanglement Caught between - crushing Possible flying objects - eye, face, skin injuries Pinch points - crushing, bruising Ink and cleaning solvents - chemicals 	 E-stop, accessible single action hand switch, or foot switch Anti-restart 	• Pulley(s) • Feeds • Rollers	 Gloves (nitrile exam) for incidental chemical handling and cleaning Chemical substitution
Punch	Bench or Standing	Manual	 Caught between – crushing, bruising Possible flying objects – eye, face, skin injuries 			
Radial Arm Saw	Bench	Electric	 Sharp cutting blade – serious lacerations and amputations Flying objects – eye, face, skin injuries Rotating shaft / blade –entanglement 	 Finger /constant pressure switch, E-stop, accessible single action hand switch, or foot switch Anti-restart 	 Top enclosed blade cover Blade (self- adjusting) 	 Auto-retraction Fence (kerfed to avoid restricting blade guard) Clamps Faceshield if excessive flying objects expected
Robotics Devices (tabletop, instructional)	Bench or Standing	Electric	 Various moving parts – physical injuries Possible flying objects – eye, face, skin injuries 	E-stop Anti-restart Key or code access	 Enclosure as feasible Interlocked cover / access as feasible 	Marked exclusion zone
Roller, Sheetmetal	Bench or Standing	Manual	Caught between / pinch points – crushing, limited by manual operation			Warning label

¹ For all tools:

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- 2. After-market E-stop placement at critical operator locations, installed in consultation with shop manager
- 3. Tool lights protected by covers or safety coated bulbs; low voltage (< 24 V) preferred
- 4. Safety glasses / goggles worn for all tools inside shop proper; no loose clothing, jewelry, or hair
- 5. All tool use limited to approved / qualified personnel only

Anti-restart: (as available)

Tool Type	Size/Style	Power	Potential Hazards	Emergency Stopping and Power Controls ²	Shields and Guards	Other Protective Measures
Roller, Sheetmetal	Bench or Standing	Electric	Caught between / pinch points – serious crushing, amputation	 E-stop (manual, foot, bump, wire, light curtain) Anti-restart 	Sliding adjustable roller shield	Warning label
Sander, Belt (vertical or horizontal)	Bench or Standing	Electric	 Flying objects – eye, face, skin injuries Rotating pulleys, belts - entanglement Pinch points – crushing, bruising 	 E-stop, accessible single action hand switch, or foot switch Anti-restart 	PulleysRollers (both sides)Area below tool rest	• Tool rest
Sander, Disc	Bench or Standing	Electric	 Flying objects – eye, face, skin injuries Rotating pulleys, belts - entanglement Pinch points – crushing, bruising 	E-stop, accessible single action hand switch, or foot switch Anti-restart for wood	• Pulleys • Side	• Tool rest
Saw, Cut-Off (abrasive disc and metal cutting)	Bench	Electric	 Sharp cutting blade – lacerations, amputations Rotating blade –entanglement Flying objects – eye, face, skin injuries Heat / sparks – burns, fire 	• Finger / constant pressure switch	Blade (self- adjusting)	 Auto-return to upright Fence Vise – bolted / clamped Clamps
Saw, Miter / Compound Miter Chop-Style Saw	Bench	Electric	 Sharp cutting blade – lacerations, amputations Rotating blade –entanglement Flying objects – eye, face, skin injuries Heat / sparks – burns, fire 	Finger / constant pressure switch	Blade (self- adjusting)	Auto-return to upright Fence Clamps Laser sighted cut
Saw, Upright Panel Style	Standing	Electric	 Sharp cutting blade – lacerations, amputations Rotating blade –entanglement Flying objects – eye, face, skin injuries Heat / sparks – burns, fire 	Finger / constant pressure switch	Blade (self- adjusting)	Auto-return Fence Clamps

¹ For all tools:

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- 2. After-market E-stop placement at critical operator locations, installed in consultation with shop manager
- 3. Tool lights protected by covers or safety coated bulbs; low voltage (< 24 V) preferred
- 4. Safety glasses / goggles worn for all tools inside shop proper; no loose clothing, jewelry, or hair
- 5. All tool use limited to approved / qualified personnel only

Anti-restart: (as available)

Tool Type	Size/Style	Power	Potential Hazards	Emergency Stopping and Power Controls ²	Shields and Guards	Other Protective Measures
Saw, Wet Abrasive	Bench or Standing	Electric	 Sharp cutting blade – lacerations, amputations Rotating blade –entanglement Flying objects – eye, face, skin injuries Heat / sparks – burns, fire Water / electrical – shock 	E-stop, accessible single action hand switch, or foot switch	• Blade	 GFCI outlet / plug adapter Fence Clamps Face shield as needed
Shaper / Inverted Router (Table)	Bench or Standing	Electric	 Sharp cutting tool – lacerations, amputation Rotating tool –entanglement Flying objects – eye, face, skin injuries 	 E-stop, accessible single action hand switch, or foot switch Anti-restart for wood 	Cutting tool guard	• Fence • Push sticks
Shear / Cutter	Bench or Standing	Manual	 Sharp cutting blade – serious lacerations, amputations Caught between - crushing 		• Blade	Warning label
Shear / Cutter	Bench or Standing	Electric	 Sharp cutting blade – serious lacerations, amputations Caught between – crushing 	E-stop or foot switch Anti-restart	Blade and hold down guard Rear access prevention	• 2-hand controls as interim
Surface Grinder	Bench or Standing	Electric	 Rotating shaft and wheel – pinch points, abrasions, entanglement Flying objects – parts or wheel shatter - eye, face, skin injuries Heat / sparks - burns, fire 	 E-stop, accessible single action hand switch, or foot switch Anti-restart 	Wheel guard Shielded table	Face shield if excessive flying objects expected
Table Saw	Standing	Electric	 Sharp cutting blade – serious lacerations or amputation Rotating blade –entanglement Flying objects – eye, face, skin injuries 	 E-stop, accessible single action hand switch, or foot switch Anti-restart for wood 	Blade (self- adjusting)	 Fence and miter Splitter / riving knife Anti-kickback pawls Push sticks Feather boards / jigs SawStop required for student shops

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- 3. Tool lights protected by covers or safety coated bulbs; low voltage (< 24 V) preferred
- 4. Safety glasses / goggles worn for all tools inside shop proper; no loose clothing, jewelry, or hair
- 5. All tool use limited to approved / qualified personnel only

Anti-restart: (as available)

Tool Type	Size/Style	Power	Potential Hazards	Emergency Stopping and Power Controls ²	Shields and Guards	Other Protective Measures
Water Jet Cutter	Bench or Standing	Electric	 High pressure water – lacerations Moving spray head(s) – physical injuries 	E-stopAnti-restartKey or code access	• Interlocked cover / access	GFCI outlet / plug adapter
Wire Wheel	Bench or Standing	Electric	 Rotating shafts and wheels – abrasions, lacerations, entanglement Flying objects – eye, face, skin injuries Pinch points – crushing, bruising Heat / sparks - burns, fire 	E-stop, accessible single action hand switch, or foot switch	Wheel enclosure as feasible	 Tool rest if needed Clamps for holding small parts Face shield if excessive flying objects expected

¹ For all tools:

^{1.} Bench models affixed with bolts / clamps; standing / pedestal models bolted / secured to floor (except high mass units such as mills and lathes)

^{2.} After-market E-stop placement at critical operator locations, installed in consultation with shop manager

^{3.} Tool lights protected by covers or safety coated bulbs; low voltage (< 24 V) preferred

^{4.} Safety glasses / goggles worn for all tools inside shop proper; no loose clothing, jewelry, or hair

^{5.} All tool use limited to approved / qualified personnel only

Anti-restart: (as available)