

OCCUPATIONAL
TOOLS AND EQUIPMENT LIST

Steamfitter/Pipefitter



Government of Newfoundland Labrador
Department of Education
Institutional & Industrial Education Division

Preface

This document is intended as a companion to the March 2011 Plan of Training for the **Steamfitter/Pipefitter** occupation. It identifies the necessary tools and equipment required by apprentices and training institutions for the completion of apprenticeships.

Acknowledgements

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We offer you a sincere thank you.

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Note:

The numbers suggested in the following Tools and Equipment List represent the required minimum. Please verify this list with your selected training institution.

Tools and Equipment List Steamfitter/Pipefitter

SECTION A: TOOLS AND EQUIPMENT REQUIRED BY STUDENT			
Item	Units for Individual Students	Required for Entry (E) Advanced (A) Both (B)	Comments
PERSONAL PROTECTIVE EQUIPMENT			
CSA Approved Safety Glasses (with side shield, protection)	1	B	
CSA Approved Hard Hats	1	B	
CSA Approved Safety Boots	1	B	
HAND TOOLS			
Standard/Metric Measuring Tape	1	B	
Phillips Screwdrivers Phillips #1, #2, #3	1 of each	B	
Robertson Screwdrivers #1, #2, #3	1 of each	B	
Slotted (flat) Screwdrivers Assorted	1 set	B	
Hacksaw with assorted hacksaw blades of different tooth numbers	1	B	
Torpedo Level	1	B	
Punches (center)	1	B	
Plumb Bobs	1	B	
Utility Knife	1	B	
Scale Rulers Metric/Standard	1	B	
Calculator (scientific)	1	B	

Note: If identifying sets, please include specific information.

SECTION B: TOOLS AND EQUIPMENT REQUIRED BY TRAINING INSTITUTION				
Item	Units per 15 Students	Maximum Students per Unit	Required for Entry (E) Advanced (A) Both (B)	Comments
TOOL CRIB CAN BE UTILIZED BY ENTRY LEVEL AND ADVANCED LEVELS DEPENDING ON SCHEDULING				
PIPE SHOP EXTRAS				
CSA Approved Safety Glasses (with side shield, protection)	5 Spare Sets		B	
CSA Approved Hard Hats	5		B	
Dust Mask	As required by the provincial regulations		B	
Leather Gloves (welder/fitter as required)	As required by the provincial regulations		B	
Rubber Gloves (fuel)	2 pair		B	
Safety Harness (full body) c/w lanyard (minz) Retractable Lanyard	2		B	
Welding Goggles	15		B	
Hearing Protection (ear plugs/ear muffs)	As required by the provincial regulations		B	
Full Face Shield (grinding)	15		B	
Appropriate Fire Extinguishers for Hazards	As required by the provincial regulations		B	
Eye Wash Station	As required by the provincial regulations		B	
First Aid Station (number 3 equipped) Burn Kit	As required by the provincial regulations		B	
Fire Blanket	1		B	
Hand Tools				
Hammers (ball pein)	Assorted		B	
Hammers (chippings)	One per Welding Booth		B	
Hammers (sledge)	1 – 6 lb, 1 – 10 lb		B	
Hammers (soft face)	1		B	

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Item	Units per 15 Students	Maximum Students per Unit	Required for Entry (E) Advanced (A) Both (B)	Comments
Hammers (dead blow)	1		B	
Hammers (carpenters framing type)	1		B	
Standard/Metric Measuring Tape	5		B	
Standard/Metric Measuring Tapes	1 – 50 feet		B	
Phillips Screwdrivers Phillips #1, #2, #3	5		B	
Robertson Screwdrivers #1, #2, #3	5		B	
Torx Screwdrivers	1 set		B	
Slotted (flat) Screwdrivers Assorted	5		B	
Hacksaws with assorted hacksaw blades of different tooth numbers	5		B	
Squares	8 – 2 foot framing		B	
Squares	5 combination		B	
Levels	15 – torpedo		B	
Levels	4 – 2 foot		B	
Smart Levels (laser)	1		B	
Levels (lines)	1		B	
Chain Pipe Tongs	1		B	
Pipe Wrenches (steel or aluminum straight pattern)	2 - 8's 2 - 10's 2 - 12's 4 - 18's 2 - 24's		B	
Pipe Wrenches (end pattern)	1 of each 10, 12		B	
Pipe Wrenches (offset)	1 of each 10, 12		B	
Pipe Wrenches (compound leverage)	1 – 36" capacity		B	

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Item	Units per 15 Students	Maximum Students per Unit	Required for Entry (E) Advanced (A) Both (B)	Comments
Pipe Wrenches (internal)	1		B	
Pipe Wrenches (hex)	1		B	
Tube Cutters (copper/stainless/plastic)	6 - #15 4 - #20 2 - #30 2 mini-cutters		B	
Tube Reamer/Cleaner	2		B	
Pipe Cutters (single wheel)	6 – 1/8 to 2" 4 – 2 to 4" 2 – 4 to 6"		B	
Pipe Cutters (multi wheel)	1 – ¾ to 2"		B	
Pipe Reamer (spiral)	1		B	
Pipe Reamer (fluted)	3		B	
Chisels (cold) set of assorted chisels	1 – 4 piece set		B	
Files (12" half round bastard cut)	5		B	
Files	2 sets of assorted files		B	
Punches (center)	5		B	
Plumb Bobs	5		B	
Combination Wrenches (metric)	2 complete sets of 8mm – 32mm		B	
Combination Wrenches (standard/metric)	2 complete sets of ¼ to 1 – ¼		B	
Wrenches (non spark)	1		B	
Wrenches (pin)	1		B	
Wrenches (hammer/slam)	1		B	
Wrenches (hex key metric set)	2 complete sets of 1mm to 15mm		B	
Wrenches (hex key standard)	2 complete sets of 3/32 to 9/16"		B	

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Item	Units per 15 Students	Maximum Students per Unit	Required for Entry (E) Advanced (A) Both (B)	Comments
Aviation Snips (left/right/combination)	3 left 3 right 3 combination		B	
Sheet Metal Shears (tin Snips)	2 – 10 inch		B	
Adjustable (crescent style) Wrenches	1- 6 inch 1- 8 inch 1- 10 inch 1- 12 inch 1- 15 inch)		B	
Pliers (needle nose)	1 set		B	
Pliers (linesman)	1 set		B	
Pliers (slip joint/combination)	4 sets		B	
Pliers (diagonal/side cutter)	1 set		B	
Swaging Tool (tubing)	2		B	
Pry Bar (flange alignment type, jimmy)	1		B	
Hand Tube Benders	4 – sets ¼" 4 – sets 3/8" 1 – set ½" 1 – set 5/8"		B	
Bolt Tap and Die Sets	3 sets 1/8" to ½"		B	
Pipe Tap and Die Sets	1 set of 1/8" to 1 – ½"		B	
C-Clamps	4 – 4" 4 – 6"		B	
Flaring Tool	2 Complete sets of standard flaring tools		B	
Flaring Tool (double flare)	1 complete set of double flaring tools		B	
Socket Sets	1 complete set of sockets from ¼" to 1 ¼' Metric 6mm-32mm		B	
Pipe Extractors	1 set any capacity		B	

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Item	Units per 15 Students	Maximum Students per Unit	Required for Entry (E) Advanced (A) Both (B)	Comments
Bolt Extractor	Any capacity		B	
Chalk Line	2		B	
Wire Brushes	15 carbon steel		B	
Wire Brushes	2 stainless steel		B	
Scratch Awl	1		B	
SPECIALTY HAND TOOLS				
Utility Knife	6		B	
Pipe Wraparound	6 manufactured type with markings		B	
High - Low Gauges	2		B	
Gap Gauges	2		B	
Gasket Cutter	1		B	
Bolt Hole Punch	1		B	
Packing Hooks	4		B	
Lapping Plates	2		B	
Lapping Compound	Assortment of lapping compound		B	
Angle Finder	3 manufactured type (not fabricated)		B	
Pipe Alignment Clamps	1 internal type manufactured type (not fabricated)		B	
Pipe Alignment Clamps	1 external manufactured type (not fabricated)		B	
Contour Markers (Large)	1 Large		B	
Contour Markers (small)	2		B	
Marking Gauge Multi Trammel Scribing Tool	1		B	

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Item	Units per 15 Students	Maximum Students per Unit	Required for Entry (E) Advanced (A) Both (B)	Comments
Feeler Gauges (for pump alignment)	1 set		B	
Electrical Multimeter	1		B	
Dial Indicator	1 set manufactured type (not fabricated)		B	
Flange Alignment Pins	1 set manufactured (not fabricated)		B	
Flange Spreader	3		B	
Center Finder	2 60 inch lb – MJ		B	
Torque wrench (Plumbing)	1 manual lever type 0 – 150 ft lbs		B	
Torque Wrenches	1 ratchet type 0 – 250 ft lb		B	
Torque Wrenches	1 either electric or air drive		B	
Beveling Tool	8 either electric or air drive 4 – ½ or 5” angle grinder		B	
Grinders	2 electric or air drive pencil or die type		B	
Grinders	1 bench mounted or pedestal		B	
Grinders	1		B	
Band Saw	1 air or electric drive portable band saw		B	
Power Electric Hacksaw (4” pipe capacity)	1		B	
Drills (electric) 3/8, ½, chuck capacity c/w bits for wood, steel, concrete	Electric or air drive 1 – 3/8” chuck capacity 1 – ½” chuck capacity		B	
Drills (hammer) c/w bits for concrete	Electric drive 1 – ½” chuck capacity		B	
Hole Saw Kit for wood and steel	1 set up to 2” capacity		B	
Powder Actuated Tools (ramset/hilti)	1		B	

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Item	Units per 15 Students	Maximum Students per Unit	Required for Entry (E) Advanced (A) Both (B)	Comments
Chop Saw	1 metal cutting with 12 14" blade		B	
Reciprocating Saw (sawzall)	1		B	
Pipe Roll Groover and/or Cut Groover	Victaulic type roll groover hydraulic types		B	
Shop Aire Compressor (large capacity)	1 large capacity for air tools used in the occupation (ie. Machining and beveling tools)		B	
SHOP EQUIPMENT				
Portable Air Compressor	1 small capacity for testing water and air lines		B	
Hydraulic or Electric Bending Equipment	1 with 1 – ½ to 2" bending capacity for schedule 40 pipe		B	
Hydrostatic Test Pump	1		B	
Drill Press (floor mounted)	1		B	
Pipe Stands (various types)	15		B	
Bench Pipe Vises (chain)	4 minimum, 4" capacity		B	
Bench Pipe Vises (yoke)	4 minimum, 4" capacity		B	
Bench Machinist Vises	4 minimum, 4" capacity		B	
Impact Wrench (electric or air) 3/8, ½" drive c/w impact sockets ½" drive set	1 – ½ inch drive capacity c/w ½" impact socket		B	
Portable Pipe Vise (tristand chain vise)	4		B	
Extension cords (recommended to be industrial quality 12 gauge cords OR Suitable power supply (ie. Shop integral power bars mounted in benches, etc.)	8 – 20 – 25 ft foot extension cords with GFCI built in or added on OR Suitable shop power supply		B	
PIPE THREADING EQUIPMENT				

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Item	Units per 15 Students	Maximum Students per Unit	Required for Entry (E) Advanced (A) Both (B)	Comments
Drop Head Dies	8 – 1/8 to 1"		B	
Bolt Threading Dies	3 sets – ¼" to ¾"		B	
Jam Proof Ratchet Threading Die Set	1 set – 1" to 2" capacity		B	
Threading Machine (such as a Rigid Power Machine 535 or 300)	1		B	
Geared Pipe Threader c/w universal drive shaft for power vise	1 -2 – ½' to 4" capacity		B	
Nipple Chuck	2 complete sets up to 2" capacity		B	
RIGGING EQUIPMENT				
Chain Hoist (Chainfalls)	4 half ton minimum		B	
Chain Puller (come-a-longs)	4-half ton minimum		B	
Cable Puller (Trifor)	1		B	
Hydraulic Jacks	2 – 10 ton bottle type jacks		B	
Block and Tackle System	1 – ½" rope type complete		B	
Snatch Block	1 – ½" rope type		B	
Wire Rope – left lay/right lay complete	3/8 wire rope with wire rope clips and thimbles		B	
Synthetic Rope	As required for shop projects including samples of different types		B	
Natural Fibre Manila/Sisal/Hemp/Cotton Rope	As required for shop projects including samples of different types		B	
Wire Rope Slings	As required for shop projects including samples of different types		B	
Poly Synthetic Slings	As required for shop projects including samples of different types		B	
Port a Power type Jack (Remote	1 hydraulic jack, pump and		B	

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Item	Units per 15 Students	Maximum Students per Unit	Required for Entry (E) Advanced (A) Both (B)	Comments
Hydraulic Jack)	hoses			
Shackles, turnbuckles, shoulder bolts, and various hardware for rigging	As required for shop projects including samples of different types		B	
Overhead Shop Cranes	1-Jib, Gantry or Trolley type crane for rigging training		B	
LADDERS AND SCAFFOLDING				
Sections of scaffolding (complete with braces/decking/toeboards, etc. according to regulations	Sections of scaffolding (complete with braces/decking/toeboards, etc. according to regulations		B	
Extension Ladder	Extension Ladder		B	
Step Ladder	Step Ladder		B	
ELECTRIC WELDING EQUIPMENT				
AC/DC Electric Arc Welder including cables and electrode holders	As required to deliver plan of training required welding competencies		B	
SMAW Welding System	1 complete systems		B	
GTAW Welding System	1 complete system		B	
Welding Helmets (with suitable lenses for welding application)	5		B	
Propane Torch type soldering system (turbo torch type swirl tips)	8		B	
Acetylene torch type soldering/brazing system (B tank included c/w swirl tips)	1		B	
Leather protective coats/jackets for welding as required	5		B	
Argon purging system for welding stainless steels and other alloys	1 complete systems		B	
Welding Rod Oven	1		B	

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OXYACETYLENE WELDING AND CUTTING EQUIPMENT				
Oxeyacetylene unit (complete with backflow preventers installed on regulators, hoses and torch assembly and assorted tips for brazing/heating/cutting OR Header system with associate piping and regulators OR Manifold system of tanks associated connections and regulators	4 complete sets		B	
Torch Tip Cleaners	4		B	
Torch Friction Lighters	4		B	
HEATING EQUIPMENT				
Electric Hot Water Tank OR Oil Fired Hot Water Tank	1		B	
Hot Water Heating Furnace (oil-fired)	1		B	
Hot Water Heating Furnace (gas-fired) or appliance	1		B	
Copper Finned Tube Radiation	12 feet		B	
Hydronic Heating Boiler and Trim (one that can be put together, tested and taken apart)	1		B	
Convection-type Radiation (Horizontal of Vertical)	1		B	
Manifold and plastic tubing for Hot Water Heating application of in-floor radiant heating system	Enough for 400 square foot		B	
ADVANCED TRAINING				
Tables suitable for drawing (drafting not tables necessary)	1		A	

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Item	Units per 15 Students	Maximum Students per Unit	Required for Entry (E) Advanced (A) Both (B)	Comments
Drafting sets including 45/45/90 30/60/90 Triangles, straight edge, pencils, T-square, compass, protractor	5		A	
Scale Rulers Metric/Standard	5		A	
Calculator (scientific)	5		A	
Convertible Jet Pump (with injector assembly)	1		A	
Piston Pump	1		A	
Diaphragm Storage Tank	1		A	
Builders Level, Extension Rod	1		A	
Manometer for testing low pressure gas system	1		A	
Gas Appliance/System	1		A	
Propane Tanks 20 lb minimum	1		A	
Propane Regulator	1		A	
Equipment, material and components to install and test a basic medical gas system and/or a medical gas trimming unit	1		A	
Tubing Benders for Stainless Steel Tubing	1 of each size $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$ "		A	
Tray Assembly Buy or Make	1		A	
Hydraulic Benders	1		A	
Hand Benders (tubing)	1		A	
Various types of pumps	1		A	
Equipment, material components to install a basic hydraulic system and/or a hydraulic trainer	1		A	
Equipment, material components to install a basic pneumatic system and/or	1		A	

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Item	Units per 15 Students	Maximum Students per Unit	Required for Entry (E) Advanced (A) Both (B)	Comments
a pneumatic trainer				
Various types of valves	1		A	
Valve and test repair equipment (ie. grinding/lapping tools)	1		A	
Various types of Cross Connection Control Devices including:				
Atmospheric vacuum breaker	1 of each unit per 15 students		A	
Pressure vacuum breaker				
Double check valve assembly				
Reduced pressure zone assembly				
Equipment for testing Cross Connection Devices:				
Manometer	1 of each unit per 15 students		A	
High/low (differential) testing unit				
Equipment, material and components to fabricate stainless steel (including dams and purging equipment)	1		A	
Various industrial drawings	1		A	
Hydraulic torquing unit (purchase or rent)	1		A	
Hydraulic tensioning unit (purchase or rent)	1		A	