Chain Saw Safety
Chain Saw Safety

Chain saws very common tool for tree work

• Reduces time and effort for pruning and removal
• Safe when used properly
Chain Saw Safety

Safe Chain Saw use requires:

• Proper training
• Compliance with safety practices
• Work planning
• Follow manufacturer’s operating and maintenance instructions
• Always use PPE – proper clothing and head, eye, hearing and leg protection
Chain Saw Risks

Very dangerous if improperly used

- Damages tree
- Injuries operator and other workers
- More than 40,000 people are injured by chain saws each year
- Injury is not always the person operating the chain saw
The two most common places for injuries are the front left thigh and the back of the left hand.

Vibration Syndrome

- Vibration syndrome causes frequent users of chain saws to get white knuckles and a loss of feeling in their fingers from the vibrations of the chain saw.

- It is not very common presently, due to better working conditions and safer chain saws.
Just the Facts…

- When a chain saw is at full speed, more than 600 teeth pass a given point per second.
- A muffler on a chain saw can reach as much as 900 degrees F.
- One in 5 chain saw injuries are from kickback.
- A chain saw chain can move up to 68 miles per hour.
Four Steps to Prevention

1. Supervised Practice
2. Education
3. Chain Saw Safety
4. Safe Operation at the Site
5. The Planning Phase
Chain Saw Selection

Select the proper chain saw for the work performed

- Lower safety risks
- More cost effective
- Enhances work quality
Chain Saw Selection

4 types of chain saw: Select type that best fits needs

- Top handle
- Rear handle, standard
- Pole saw
- Electric
Chain Saw Selection

Top handle

- Small, light, designed for cutting while climbing
- Balanced on trigger
- Increased risk to use on ground
- Increased fatigue due to size and grip
Chain Saw Selection

Rear handle

• Standard configuration
• Many sizes
• Good control and comfort
Chain Saw Selection

Pole saw

- Long reach
- Less control of cuts and cut wood
Chain Saw Selection

Electric chain saw

- Quiet
- Light construction – not durable
- Low power
- Restricted by electric cord
Chain Saw Selection

3 chain saw sizes

- Select based upon most common diameter of wood cut
- Lightweight saws: 200 to 300 mm (8 to 12 inch) guide bar
- Midweight saws: 350 – 500 mm (14 to 20 inch) guide bar
- Heavy weight chain saws: guide bar > 500 mm (20 inches)
- Select smallest size that will effectively complete work
Chain Saw Selection

Lightweight saws: 200 to 300 mm (8 to 12 inch) guide bar

- Cutting small branches
- Felling small trees: 150 – 250 mm (6 to 10 inch) diameter at cut
- Easy to handle
- Less fatigue for operator
Chain Saw Selection

Midweight saws: 350 – 500 mm (14 to 20 inch) guide bar

• Used for frequent cutting
• Felling of medium size trees: 300 – 450 mm (12 to 18 inch) diameter at cut
Chain Saw Selection

Heavy weight chain saws: guide bar > 500 mm (20 inches)

• Large diameter logs and stumps
• Infrequent use
• Professional, experienced operator only
Safety features

- Low kickback saw chain
- Hand guard
- Safety tip
- Chain brake
- Vibration reduction system
- Spark arrestor on gasoline models
- Trigger or throttle lockout
- Chain catcher
- Bumper spikes

- In good working condition
- Inspect regularly
  - Present
  - Proper function
Chain Saw Safety Features

Chain Brake/Front hand guard

- Lever-front hand guard
  - If activated forward, sets chain brake and stops chain rotation
- Guard mounted on front of the upper handle
  - Protects hand from hand slips or chain breaks
Chain Saw Safety Features

Throttle lock

- Prevents throttle from functioning unless lock is depressed
- Prevents accidental chain acceleration
Chain Saw Safety Features

Stop switch

- Permits disconnection of chain saw power
- Must be located to permit turn off saw without removing hand from rear handle

O = Off
I = On
\( \sim \) = Half choke
\[ - \] = Full choke
Chain Saw Safety Features

Rear hand guard

- Lower part of the rear handle
- Should be wide enough to protect hand from loose chain
Chain Saw Safety Features

Chain catcher pin

- Guard at the lower front of the saw
- Catches loose or broken chain
Chain Saw Safety Features

Vibration damping

- Rubber bushings/springs mounted between handle and saw body
- Isolates handles and operator from engine vibration
Chain Saw Safety Features

Spark arrester

- Screen or fins prevent engine sparks from exiting the exhaust
Chain Saw Safety Features

Bumper spikes

- Secures chain saw to log
- Permits better control of chain saw
Chain Saw Safety Features

Low kickback chain

- Plates between cutting teeth or special design
- Reduces risk, does NOT eliminate kickback

High Performance
Chain Saw Safety Features

Scabbard

- Covers guide bar and chain
- Protects workers and equipment
Personal Protection Equipment (PPE)

Leg Protection/Chaps

- Must be worn whenever chain saws are operated on the ground
- Fabric designed to jam chain saw and quickly stop chain
- Other clothing (shirts, jackets, gloves, trousers) designed with chain saw protection
Personal Protection Equipment (PPE)

Boots
- All workers should wear proper work boots
  - Foot and ankle support
  - Traction
  - Foot protection – falling objects, chain saws and cutting tools
Personal Transport

- Bar facing rear
- Scabbard on whenever practical
Vehicle Transport

Never in cab of vehicle with passengers
Vehicle Transport

Separate from tools & equipment
Read Manual
No Alcohol or Drugs
Know Your Limitations

Do not exceed them
Hand Grip

Right hand only
Hand Grip

Use entire handle to adjust chain saw position for cut
  • Side cutting – thumb operates throttle
  • Operator commands chain saw
    • Safe, comfortable operation
Always Use Proper Starting Procedures

Ground or Leg Lock

• No “drop” start
Always Use Proper Starting Procedures

- Secure footing
- Clear of other workers
- Engage chain brake
Both Hands Control Chain Saw

When chain saw engine operating:
  • Both hands on chain saw
    • Fingers and thumb wrapped on handles
  OR
  • Chain brake set – chain locked
Chain Saw Grip/Position

- Cut with saw to one side, not with bar lined up with body
- Left arm straight and right arm bent
- Saw braced against operator’s right leg
- Cut with chain saw engine (not bar) close to body for control
Use Chain Brake

When chain saw running, brake always engaged unless cutting into wood
Do Not Operate Alone
Fueling

• Stop chain saw engine when fueling and during maintenance
• Do not start or operate within 10 feet of fuel site
Keep Others Clear of Cutting Area

At least 10’ from cutter

• Never behind
Do Not Stand in Front or Behind Cutter
Careful When Getting Cutter’s Attention

Establish communications plan prior to operations

- Piece of wood or stick
- Do not strike cutter
Always Be Aware of Cutting Operations

Stay clear of cutter and falling trees landing zone
Keep Chain Tensioned and Sharp
Avoid Contact with Rocks and Soil

- Throws debris – safety hazard
- Damages chain
Use Full Power When Cutting
Never Force or “Saw”

Let weight/pull of chain saw cut
Stand Uphill or Away from Roll of Log When Cutting
Always Focus on Cutting Operation

If distracted, stop cutting and set chain brake
Do Not Cut Above Shoulders
Always Have 2 Hands on Chain Saw When Cutting
Do Not Leave Running Chain Saw Alone

Turn off chain saw during long periods when not cutting
Clean/Inspect Chain Saw

• Inspect at beginning
  • Before leaving shop
• Inspect and clean at end of each day
Chain Brake Set

Feet moving or attention not on chain saw
• Chain brake set – chain locked
Stance Stable

- Feet comfortably apart
- Knees bent
- Back straight
- Close to work
Reactive Forces

- Chain spins very fast and forward over top of bar
- Causes reactive push-pull on operator
  - Cutting with bottom of bar – pulls operator into work
  - Cutting with top of bar – pushes operator away from work
Kickback

- Common cause of chain saw injury
- Contact with upper tip of bar (kickback quadrant)
  - Rotating chain very quickly rolls tip of bar up and toward operator
- Always be aware of where tip of bar is when cutting
- Avoid contact with objects and cutting with upper tip of bar
- Always position chain saw to avoid kickback of bar
Guide Bar Aligned To Side

In the event of kickback, guide bar bypasses operator
Chain Saw Safety

• Adequate training and proficiency
• Work plan, including good communication plan
• Wear PPE
• Maintain Chain saw tensioned, sharp and good condition
• Chain brake on except when actively cutting
• Attention on work
• Follow all safe work practices.
Always Work Safe!

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