Chain Saw Safety

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Chain Saw Safety

Chain saws very common tool for tree work

- Reduces time and effort for pruning and removal
- Safe when used properly

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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

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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

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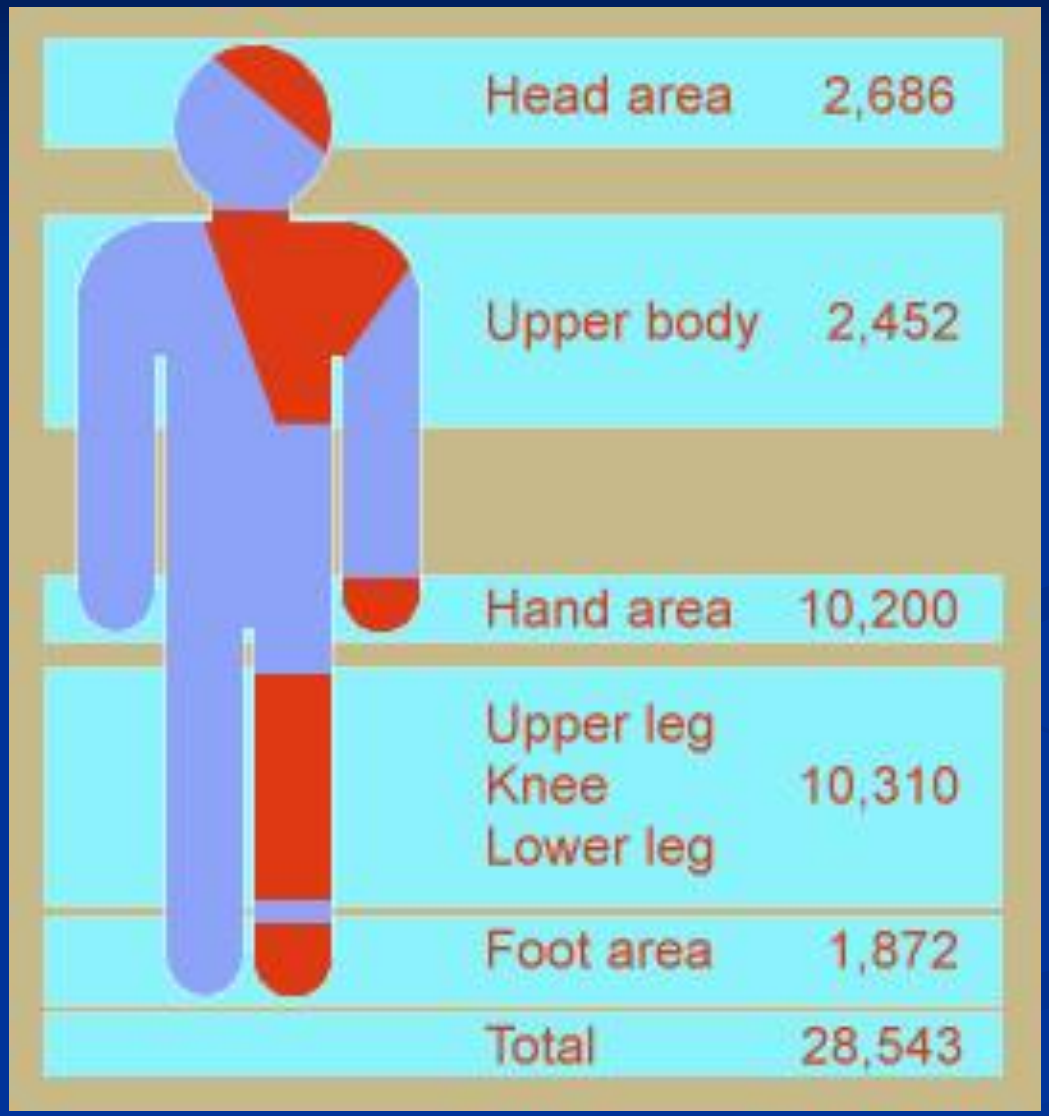
Statistics



Statistics, cont.

The two most common places for injuries are the front left thigh and the back of the left hand.

Statistics from U.S Consumer Product Safety Commission, 1999

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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

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Just the Facts…

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

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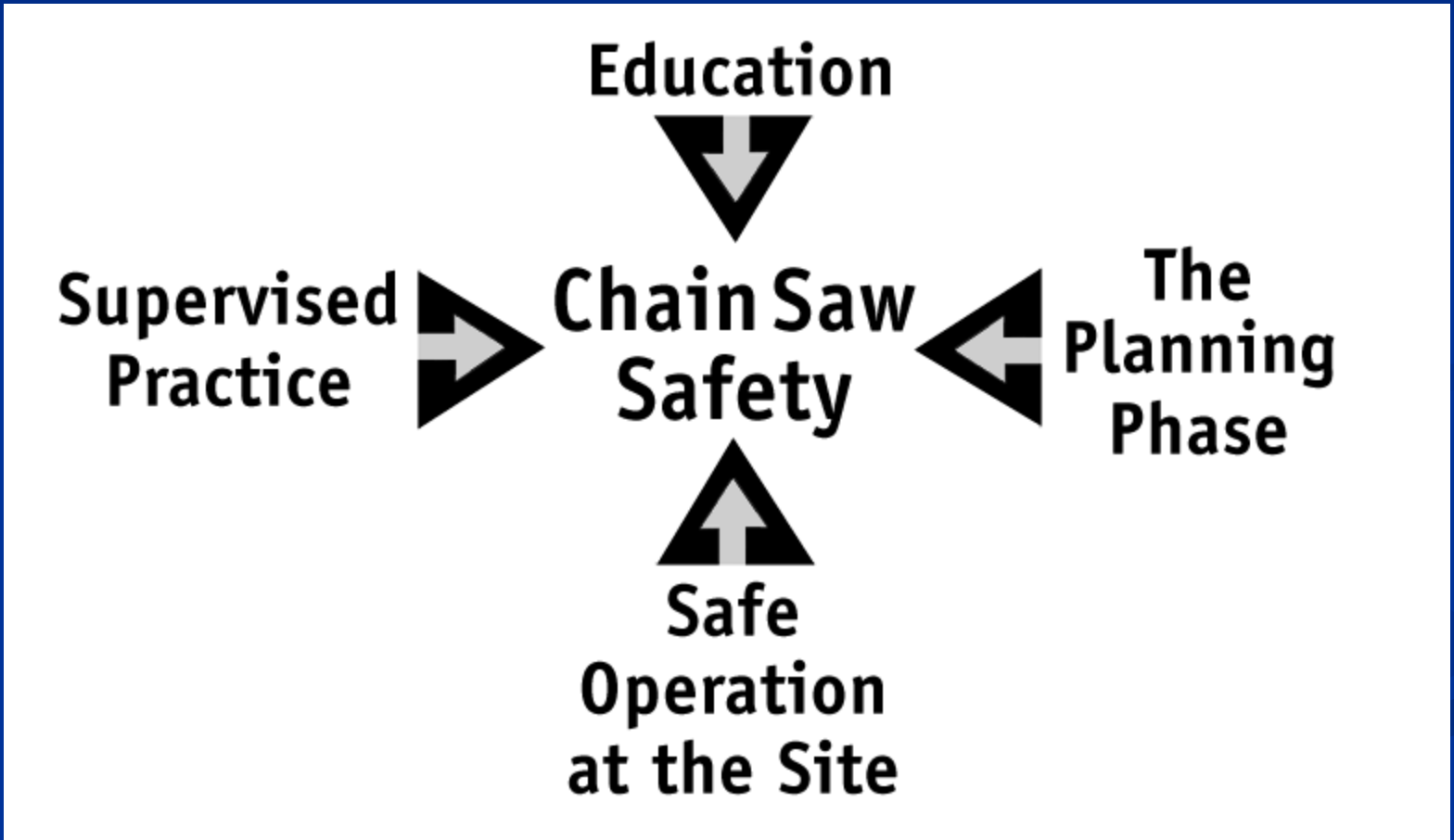
Four Steps to Prevention



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Chain Saw Selection

Select the proper chain saw for the work performed

- Lower safety risks
- More cost effective
- Enhances work quality

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Chain Saw Selection

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

- Top handle
- Rear handle, standard
- Pole saw
- Electric

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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

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Chain Saw Selection

Rear handle

- Standard configuration
- Many sizes
- Good control and comfort

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Chain Saw Selection

Pole saw

- Long reach
- Less control of cuts and cut wood

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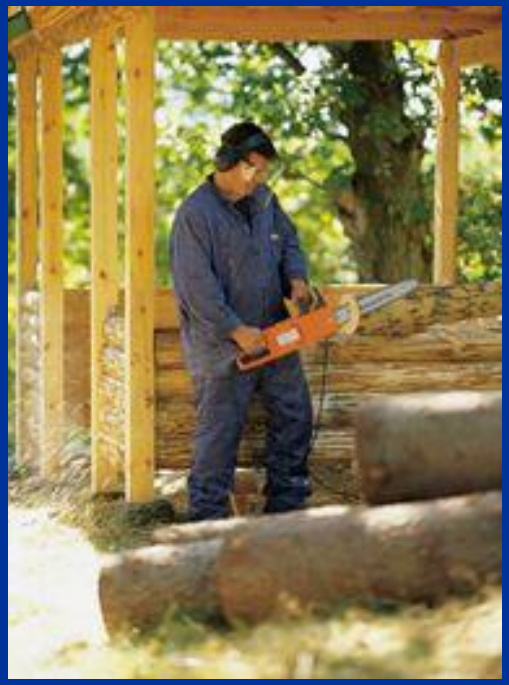
Chain Saw Selection

Electric chain saw

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



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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**

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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

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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

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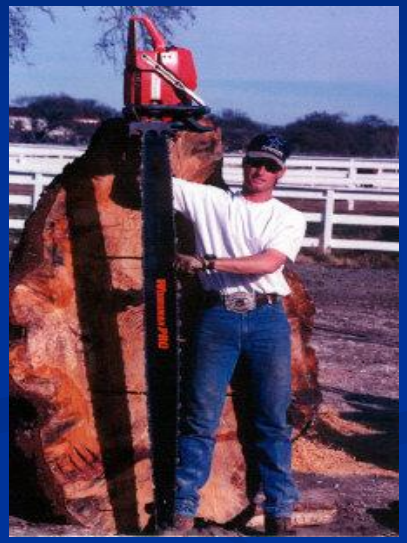
Chain Saw Selection

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

- Large diameter logs and stumps
- Infrequent use
- Professional, experienced operator only



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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

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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

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Chain Saw Safety Features

Throttle lock

- Prevents throttle from functioning unless lock is depressed
- Prevents accidental chain acceleration

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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
)~(= Half choke
|-| = Full choke

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Chain Saw Safety Features

Rear hand guard

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

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Chain Saw Safety Features

Chain catcher pin

- Guard at the lower front of the saw
- Catches loose or broken chain

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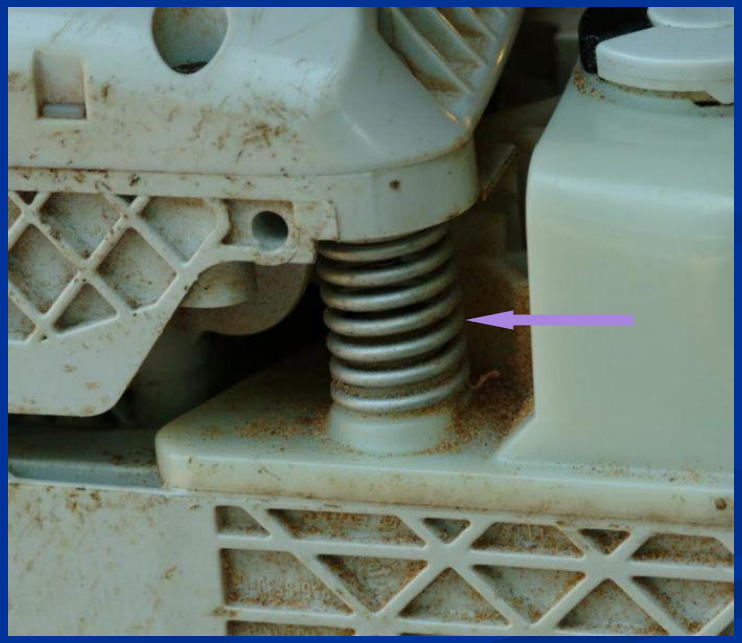
Chain Saw Safety Features

Vibration damping

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



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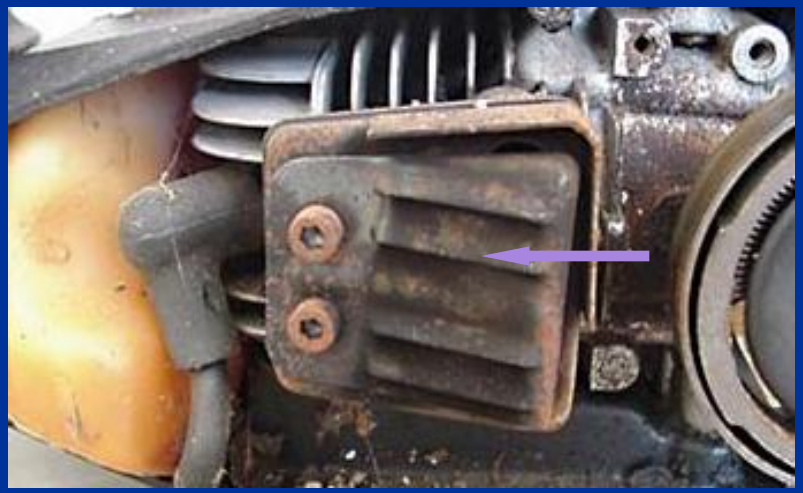
Chain Saw Safety Features

Spark arrester

- Screen or fins prevent engine sparks from exiting the exhaust



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Chain Saw Safety Features

Bumper spikes

- Secures chain saw to log
- Permits better control of chain saw

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Chain Saw Safety Features

Low kickback chain

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

Low kickback

Low kickback

High Performance

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Chain Saw Safety Features

Scabbard

- Covers guide bar and chain
- Protects workers and equipment

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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

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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

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Personal Transport

- Bar facing rear
- Scabbard on whenever practical

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Vehicle Transport

Never in cab of vehicle with passengers

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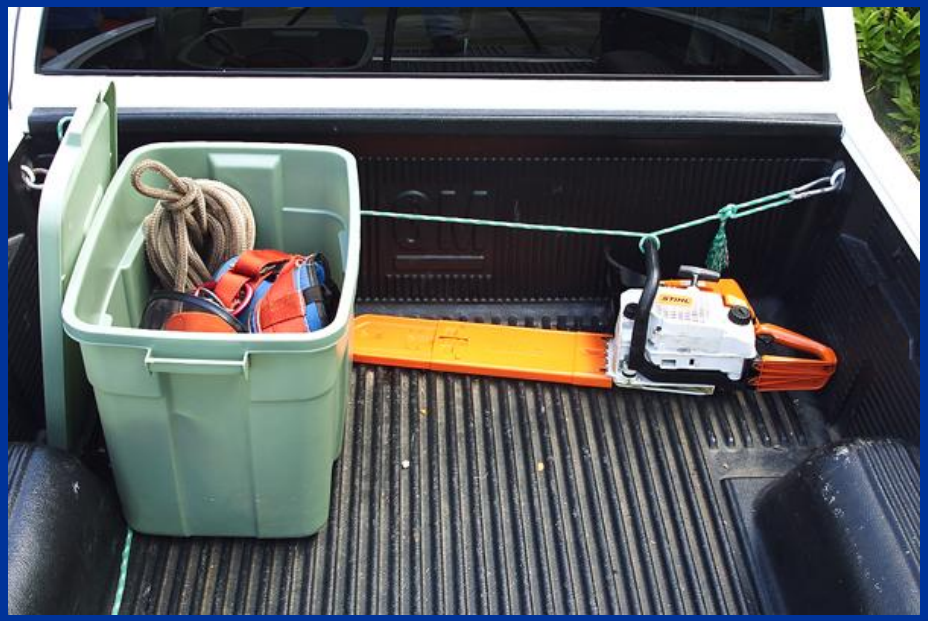
Vehicle Transport

Separate from tools & equipment



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Read Manual

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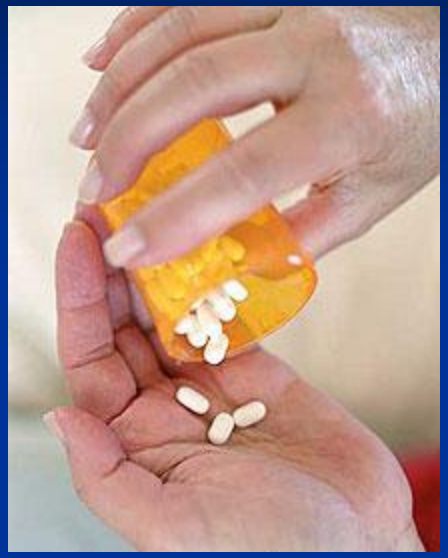
No Alcohol or Drugs



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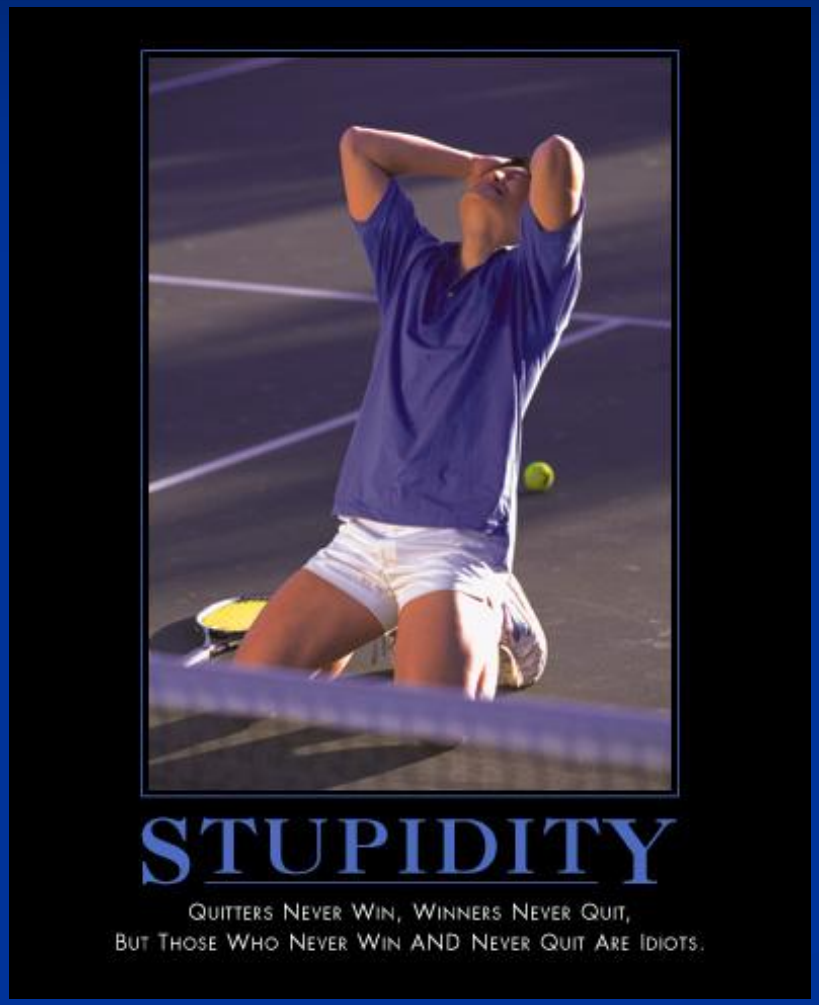
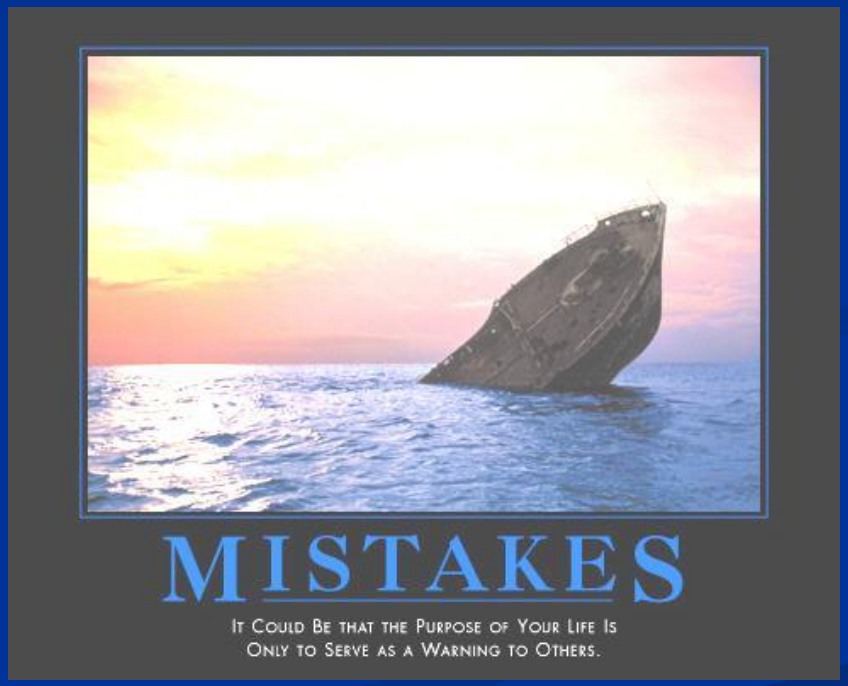
Know Your Limitations



Do not exceed them



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Hand Grip

Right hand only

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Hand Grip

Use entire handle to adjust chain saw position for cut

- Side cutting – thumb operates throttle
- Operator commands chain saw
  - Safe, comfortable operation

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Always Use Proper Starting Procedures

Ground or Leg Lock

- No “drop” start

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Always Use Proper Starting Procedures

- Secure footing
- Clear of other workers
- Engage chain brake

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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

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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

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Use Chain Brake

When chain saw running, brake always engaged unless cutting into wood

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Do Not Operate Alone

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Fueling

- Stop chain saw engine when fueling and during maintenance
- Do not start or operate within 10 feet of fuel site

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Keep Others Clear of Cutting Area

At least 10’ from cutter

- Never behind

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Do Not Stand in Front or Behind Cutter

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Careful When Getting Cutter's Attention

Establish communications plan prior to operations

- Piece of wood or stick
- Do not strike cutter

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Always Be Aware of Cutting Operations

Stay clear of cutter and falling trees landing zone

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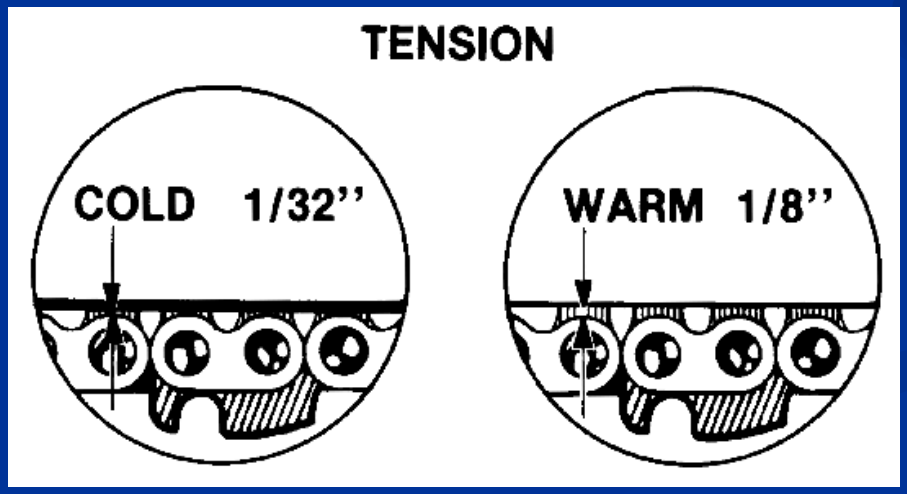
Keep Chain Tensioned and Sharp



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Avoid Contact with Rocks and Soil

- Throws debris – safety hazard
- Damages chain

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Use Full Power When Cutting

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Never Force or "Saw"

Let weight/pull of chain saw cut

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Stand Uphill or Away from Roll of Log When Cutting

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Always Focus on Cutting Operation

If distracted, stop cutting and set chain brake

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Do Not Cut Above Shoulders

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Always Have 2 Hands on Chain Saw When Cutting

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Do Not Leave Running Chain Saw Alone

Turn off chain saw during long periods when not cutting

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Clean/Inspect Chain Saw

- Inspect at beginning
  - Before leaving shop
- Inspect and clean at end of each day

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Chain Brake Set

Feet moving or attention not on chain saw

- Chain brake set – chain locked

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Stance Stable

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

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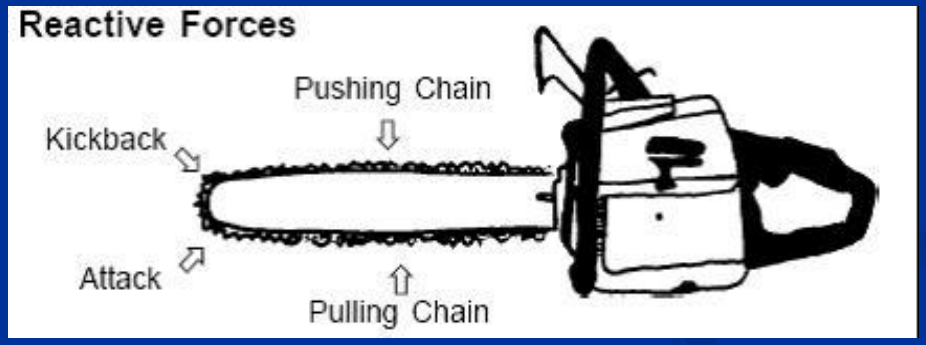
Reactive Forces

- 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



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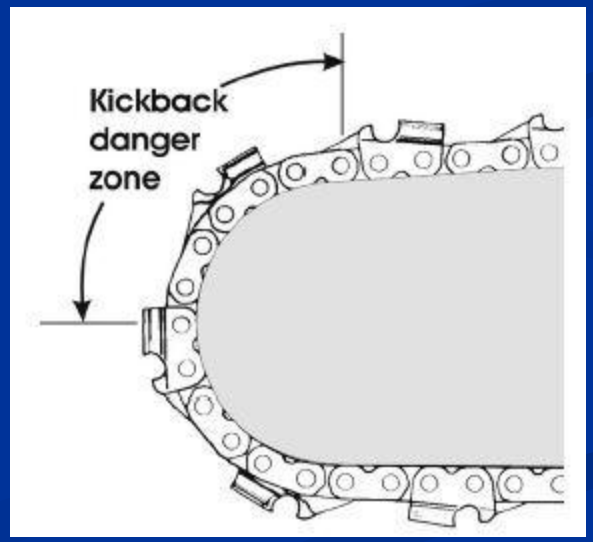
Kickback

- 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



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Guide Bar Aligned To Side

In the event of kickback, guide bar bypasses operator

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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.

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Always Work Safe!

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