

# Best Practice Guidelines Working Safely Around Forestry Attachments.




Revision Nov22



# General Information.

- Make reference to the presenter notes.



 Indicates a key take away point.

 Indicates case study – refer presenter notes.

# Potential Consequences.

- Failure to observe safety information found in the operators or Component technical manuals, cab warning labels or information contained in this Best Practice Guidelines presentation may result in;
  - Lacerations.
  - Eye injury.
  - Amputation.
  - Crushing.
  - Other serious injury.
  - Death of individual or individuals.
  - Property damage.

The attachment, like any piece of machinery can be potentially dangerous.

- Extreme care and awareness must be exercised at all times.
- Observe Workplace best practice procedures.
-  Wear work gloves with wrist protection and eye protection. ①
-  Maintain eye contact and clear communication between operator and service personnel, confirm operator clearly understands what is required. ②
- Read and understand all warning labels.
- Read and understand the *Operators'* and or *Component Technical Manual* safety instructions.

- Before starting any work on the attachment carry out a site hazard and risk assessment.

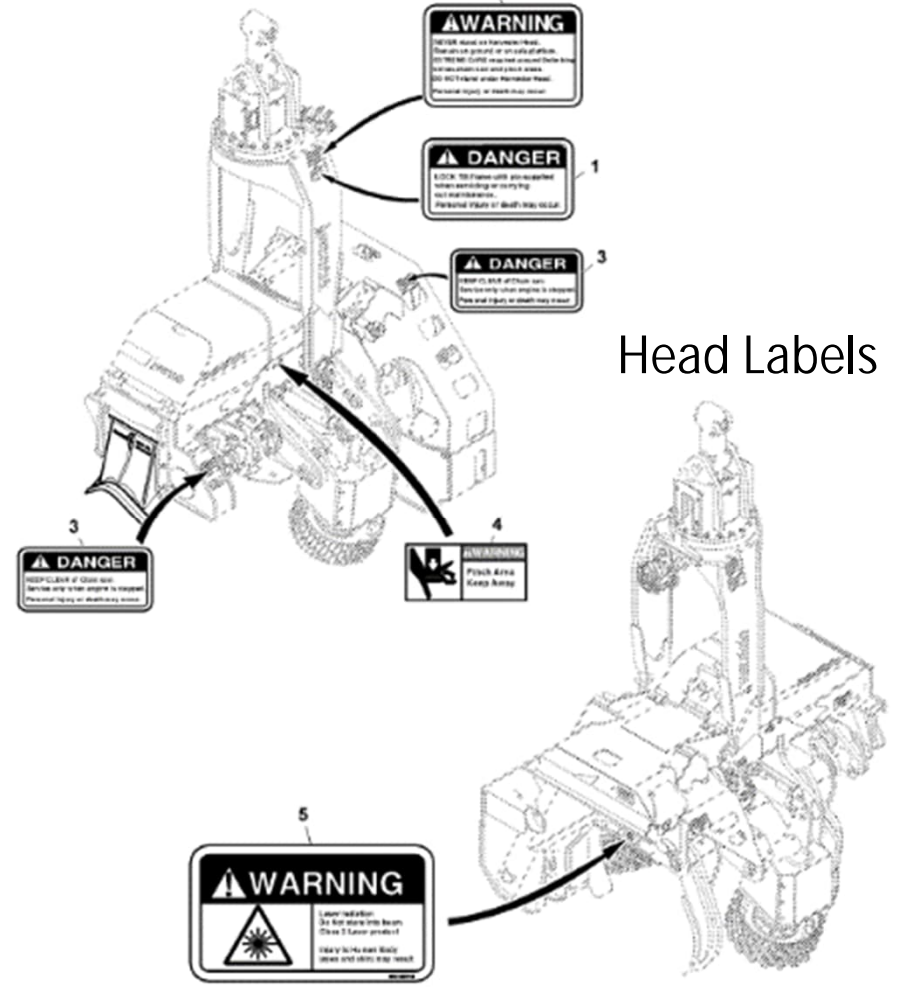
Hazard / Risk assessment			
<input type="checkbox"/> Site induction completed	<input type="checkbox"/> Site hazards identified by customer	<input type="checkbox"/> Emergency evac. location identified	
<input type="checkbox"/> Head / base isolated for maintenance			
<i>Tick all that apply. For all identified hazards, refer to the Waratah hazard register for hazard controls</i>			
<input type="checkbox"/> Man / machine interaction	<input type="checkbox"/> Operational testing	<input type="checkbox"/> No radio or channels	<input type="checkbox"/> Lack of PPE
<input type="checkbox"/> Medical conditions	<input type="checkbox"/> Loading zones	<input type="checkbox"/> Tree felling	<input type="checkbox"/> Driving on & around the site
<input type="checkbox"/> Under foot conditions	<input type="checkbox"/> Noise	<input type="checkbox"/> Falling debris	<input type="checkbox"/> Weather conditions
<input type="checkbox"/> Chain shot zone	<input type="checkbox"/> Working alone	<input type="checkbox"/> Suspended logs or loads	<input type="checkbox"/> Working at heights
<input type="checkbox"/> Hydration	<input type="checkbox"/> Nutrition	<input type="checkbox"/> Earthquake procedures	<input type="checkbox"/> New hazard
New hazard / Risk details			
Likelihood of harm, injury, or property damage		Severity of potential harm, injury, or property damage	
<input type="checkbox"/> Low	<input type="checkbox"/> Medium	<input type="checkbox"/> High	<input type="checkbox"/> Minor
		<input type="checkbox"/> Moderate	<input type="checkbox"/> Severe
Hazard controls			

# Safety Features:

- Carrier Bail/pilot Isolation System - harvester can be isolated electrically and/or hydraulically from carrier.
- Lock Pin- Harvester can be physically locked in either the up or down position.
- Warning Labels In Cab And On Harvester.
- Chain Catchers standard fitments.

# Warning labels/decals

Replacement warning labels available through parts distribution– refer to parts book for label parts numbers.



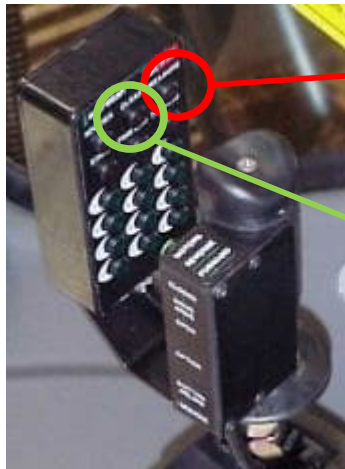
Head Labels

Cab Labels

XJ1182869

# Emergency Stop Function button.

- Joystick stop button – will stop automatic feeding when activated.
- Operator will need to initiate feeding to restart feed.
- Located RH joystick – Stop Button



Danfoss – H16

Danfoss - TimberRite



Suregrip = TimberRite & H16



# Isolation Systems

- Auto/Manual Switch
  - Located in Cab.
  - OFF- Cuts power to the Controller and head.
  - Manual - Isolates base functions, supplies hydraulic oil to the head for manual operation.
  - Auto - Normal operation of harvester.
- Carrier bail lever/isolation system
  - bail lever, door switches , arming switches – isolate Waratah as well as base functions.



# Use lockout tags.

The use of lockout tags is recommended.



# Attachment tilt functions (tilt Up / tilt Down).

- There is no clearance for service personnel, or parts of body.
- Attachment will move/fall Up or Down if tilt or head open button is activated or deactivated.
- Attachment may remain in tilt position if certain controller functions are enabled.
- Latch/Locking/Tilt Pin Must Be Fitted for maintenance.
- Replacement lock pins available through parts –
- Manual Actuator *MUST BE REMOVED.*
  - (Danfoss valve – 600 Series) **5**



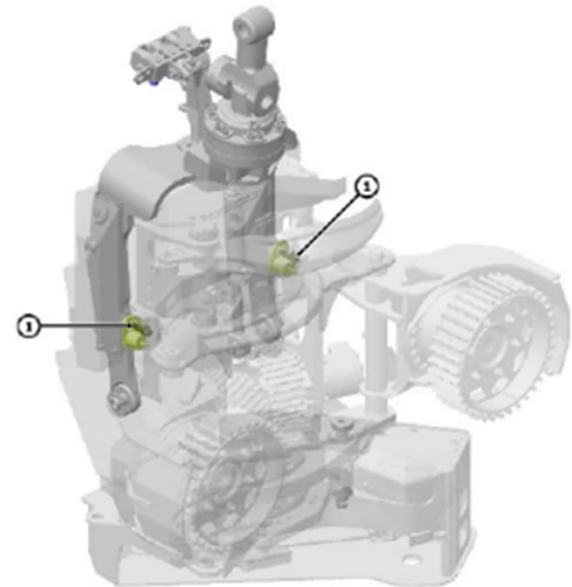
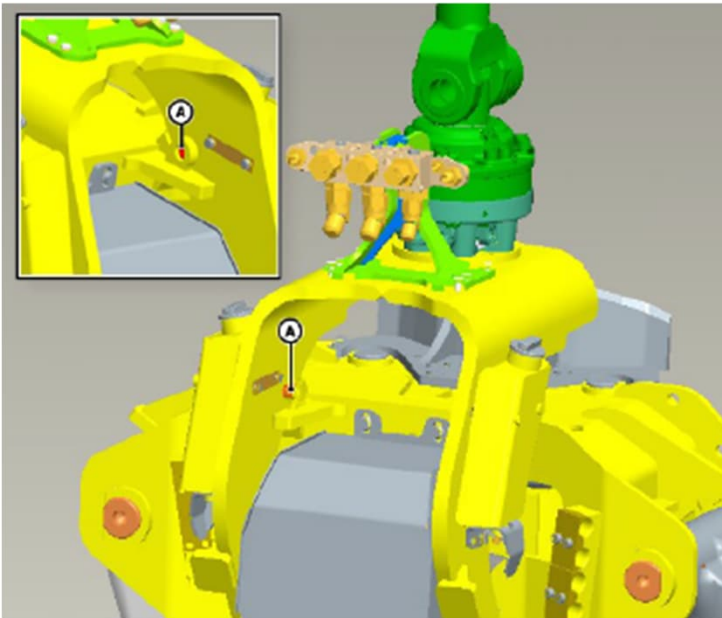
# Manual tilt lock types for servicing

- Locking Pin



# Manual tilt lock types for servicing

- Bolt style
- Plate or link style.



# Manual tilt lock types for servicing

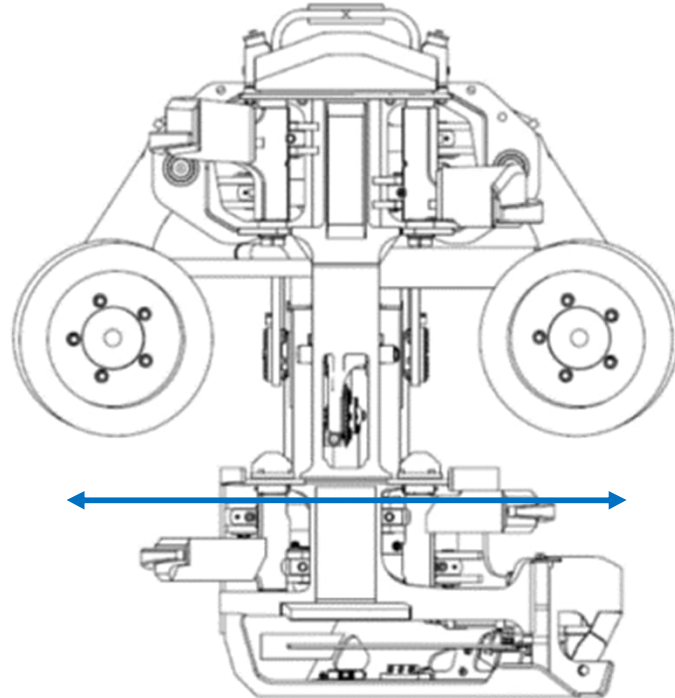
Tilt lock bolt  
storage  
location

Tilt lock bolt




# Tilt Up servicing of Two roller feed arms attachments.

- Be aware servicing two roller models in the tilt up standing position as the feed arm cylinder/s may move and feed rollers may close together.
- This closure of the cylinder/s can happen quickly or over a matter of time
- Be aware the two roller feed arms may also pivot from side to side when open.





# Overview - delimb, grab and feeding arms.

- Knives – Sharp,
  - Front (top) knife not fixed,
  -  Will close automatically under certain conditions.



Waratah Part # TS100082

- Feed Rollers – can be sharp,
  -  Will close automatically under certain conditions.
- Auto Feed -  Log selection will enable harvester i.e. drive the log.
  - Feed arms and delimb knives will close.



# Overview - tilt frame, chain saws.

## Tilt function-

- No clearance for service personnel
- Lock pin must be in place for servicing.



## Chain Saws – Very sharp,



- Very sharp edges on saw chain, bars and edges



- Know what chain shot is,

- Use gloves when servicing chains and bars,



- Ground head and shut down engine & controller,



- After engine is shut down, with the head in the processing position, the saws cutting units may fall out under their own weight.

- When servicing the find end, secure the main saw bar in the home position.

# Chainsaws.

- Are activated (powered) to the home saw frame position.
-  Some chainsaws systems have built in “Time Out” limit function –this is to protect the cutting unit from running continuously with no bar chain lubrication. This function will return home after time out period. **6**
- When machine engine is off and isolated the Chainsaw cutting units can be pulled out by hand. Use gloves.  

- Must be changed with harvester on ground, with the controller shut down, engine off.
- Be aware of chain shot – further information included in presentation.

# Recommended position to service chain saw.

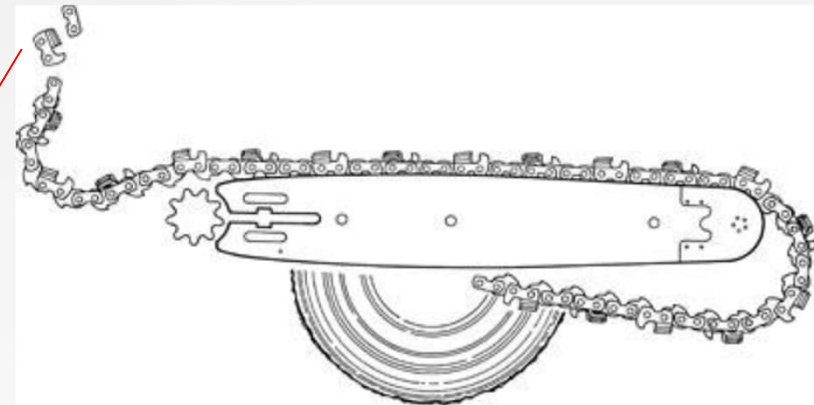
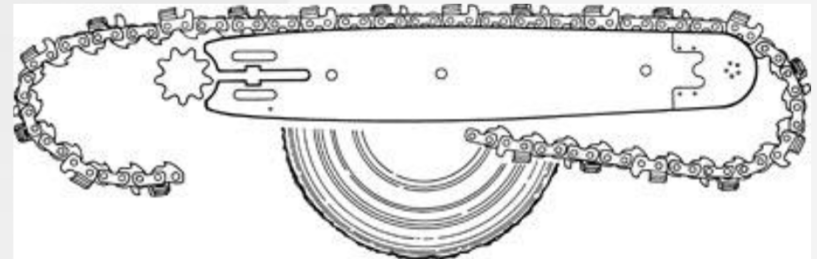
- Firmly ground head, with tilt frame on back stops
- Insert lock pin
- Shut down automation and engine
- Check hydraulics are de-energized by operating joysticks & buttons
- Service chainsaw cutting systems whilst wearing gloves



# Chain Shot

## Chain Shot

- Can occur when saw chain breaks and loose end whips or changes direction
- 1-3 chain links propelled at high speed as the whip action breaks the chain
- Has been known to enter operator cabin
- Difficult to completely eliminate hazard
- Do not stand, observe or be within in the chain shot zones when machine is working. This danger area is both in front and rear of chainsaws



# Chain Shot Warning Decals



# Ways to reduce likelihood of chain shot

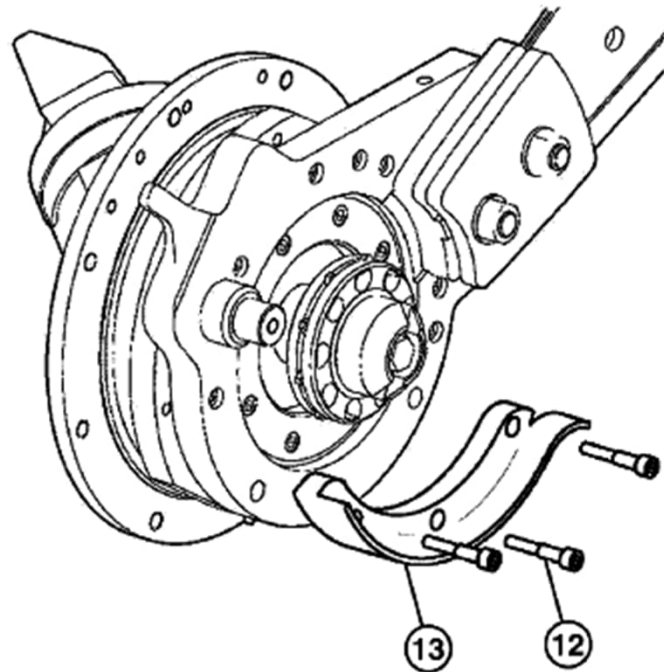


- Maintain the whole cutting system.
- Keep chains sharp -
  - maintain correct cutter depth gauge,
  - dress & reverse bars regularly.
- Repair chains using correct components – replace chain after second break.
- Monitor wear on sprocket, use the 6 chains, 3 bars, 1 sprocket ratio as a guide.
- Ensure correct chain tension.
- Ensure adequate lubrication –
  - use good quality, clean bar lube,
  - keep bar lube holes clean.
- Allow main and top saws to warm up before operating – cycle saws six times at low speed.
- Maintain correct saw motor RPM and chain speed,
  - bar out speed and bar pressure.



# Chain catchers

- Designed to lessen the risk of chainshot
- Inspect and replace when damaged



12— Cap Screw (3 used)

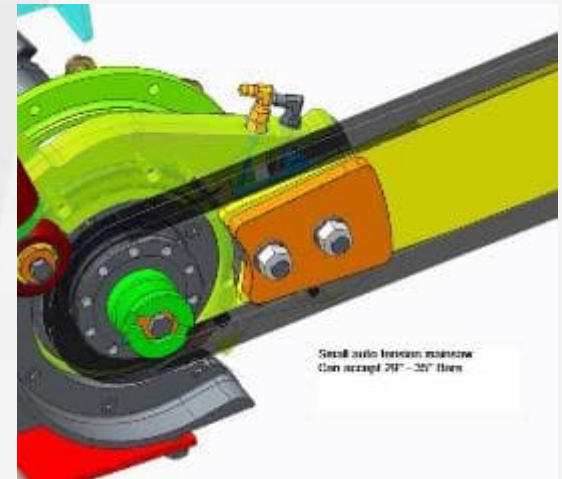
13— Chain Shot Guard





## Slow or restrict a chain once it breaks

- Utilise and maintain effective chain shot guard.
- Operate machine with doors and windows closed.
- Avoid processing with saw pointing directly at the cab.
- Ensure operator protection meets regional requirements.
- Be aware of other workers- take into account other personnel and machines when designing layout of processing deck.
- Refer to the *Waratah Chain Shot Awareness and Mitigation* brochure.



# Servicing Saw Proximity Systems

- Chainsaws have proximity systems – there can be two systems if a topping chainsaw is fitted.
- Systems are designed to detect when chainsaws are functioning to isolate movement of tree or log when cutting. They are automatically activated to return to protect the chainsaw in the saw frame when not needed.
- - If a chainsaw is activated or is moved from from home position the system will activate knives, grab and feed arms into closing function until the system detects the cutting unit has returned to home position.
  - If a chainsaw is activated or a chainsaw system is out from home position this function will also Disable feeding of motors on harvesters processors.
  - A chainsaw control system will continue to energise the head closure and saw return function until this chainsaw is returned. Any hindrance to the chainsaw returning to home position will not be detected and if chainsaw cutting unit cannot return the proximity system will remain energised until the proximity system is isolated, shut down and hindrance removed.
  - If a chainsaw cutting system has moved out from its saw home position while unenergized, once the control system is re energised the chainsaw proximity system will automatically close functions of the attachment until it is powered home. ④



# Servicing measuring wheels

- Tilt Lock fitted
- Engine off. Tag out machine
- Measuring wheels have sharp edges
- Be aware of knives and feed arm sharp edges, cover where possible
- Use protective gear
- Cover wheel if servicing
- Lock wheel in position



# Servicing Find end



- **Laser Find End** Class 2 laser.
- Refer owners' manuals and technical manuals
- Avoid direct eye contact. ③
- Use solid object to detect laser point – do not look into cavity or guarded area.



# Servicing - Hydraulic Hoses

- Damaged hoses have potential to burst – replace.
- Wire braiding can create sprags.
- Never use fingers to feel for leaks as high-pressure oil can enter the skin.
- Service cylinders only with engine off, machine tagged out and all items are closed to rest.
- Be aware of machine or component movement when removing any hoses.



# Servicing - Hydraulic cylinders

- Lower attachment to ground
- Engine off / tag out
- De energise all systems
- Cylinders can be still be under pressure.
- Components or attachment can still move when cylinder is being serviced.



# Disclaimer:



- This training program is only intended to highlight key Safety areas and scenarios when and working on and around forestry attachments
- It is not an all-inclusive training program for all machine attachment maintenance and diagnosing
- Please refer to specific Product Owner's manuals for further practices and procedures.
- A Live machine testing best practice presentation should also be studied.
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