

T-REX

Automatic Chain Sharpener

INSTRUCTION MANUAL

Version 6.0

Dinasaw®
13 Industrial Avenue
Caloundra Qld 4551
Australia

This manual should remain with the machine when resold or transferred to a new operator. The manual contains important safety procedures and instructions, which should be carefully and thoroughly read before operating the sharpener.

This machine is intended for use by professional operators who are familiar with the general requirements of chainsaw sharpening and the types of machinery used within this industry.



Caution



This machine uses a rotating grinding wheel to remove metal. As a consequence grinding dust and metal particles will be emitted and may be projected at high speed from the grinding contact area. Remove flammable substances from the vicinity of the machine.

- Read manual before use**
- Do not stand behind machine
- Ensure guards and shield are in place
- Wear face and dust masks
- Use correct grinding wheel rated at 6500 rpm or more
- Check grinding wheel for cracks before use

The machine is designed for sharpening chainsaw teeth and grinding drag (depth gauge/rakers) links and is not to be used for offhand grinding, or with the grinding head in the raised position.

Imported by:

LIMITED WARRANTY:

Dinasaw warrants that its products will be free of defects in workmanship or material. Should any failure to conform to this warranty appear within the period of 6 months or 100 hours of operation, whichever comes first, from date of purchase, Dinasaw shall upon notification of and substantiation that the product has been stored, installed, operated and maintained in accordance with Dinasaw's specifications and instructions, repair or replace, at Dinasaw's sole option, any components or parts of the product determined by Dinasaw to be defective.

This warranty is exclusive and is in lieu of any warranty of merchantability, fitness for a particular purpose or other warranty of quality, whether express or implied.

LIMITATION OF LIABILITY:

Dinasaw shall not under any circumstances be liable for special or consequential damages, such as, but not limited to, damage or loss or other property or equipment, loss of profits of revenue, cost of capital, cost of purchased or replaced goods, or claims of Purchaser for service interruption.

The remedies of the purchaser set forth herein are exclusive and the liability of Dinasaw with respect to any contract, or anything done in connection therewith such as the performance or breach thereof, or from the manufacture, sale delivery, resale, or use of any goods covered by or furnished by Dinasaw whether arising out of contract, negligence, strict tort, or under any warranty, or otherwise, shall not, except as expressly provided herein, exceed the price of the goods upon which such liability is based.

The warranty period for Dinasaw products is 100 hours or 6 months, whichever is sooner, from date of purchase. Grinding wheels are excluded from the warranty. Parts damaged through abuse or fair wear and tear are excluded from the warranty.

No transportation costs of any kind are covered under this warranty. Transportation charges to return products for repair shall be the responsibility of the customer. Returned goods shall be at the customers risk and expense.

Serial Number

The serial number is located on the back of the machine.

Record these numbers and keep in a safe place as they will be required in the event of warranty service.

Serial Number _____ Purchase Date _____

Table of Contents

5	Check List
6	Installation
7	Wall Mounting
9	Assembling the Tri-Pod stand (Optional)
11	Bench mounting
12	Operational Overview
13	The Control Panel
15	Assembling the Machine
18	Adjustments
19	Fitting The Grinding Wheel
20	Dressing the Grinding Wheel
22	Fitting the Chain
24	Feed Stroke & Pawl Height Adjustments
26	Operating Modes
27	Auto Cutter Sensor Setup
31	Magnet Positioning for Sensing
32	Adjusting the length of the Cutters
33	Adjusting how much to grind
35	Changing the Side Plate Angle
36	Changing the Top Plate Angle
37	'0' Degree Top Plate Angle
38	How to Grind the Depth Gauges
39	Chains with Double Tie Links
40	Safety Chain
41	3/4" Harvester Chain
43	How to check the Cam Timing

55 - 57	Trouble shooting
58 - 63	Parts diagram
64 - 66	Parts list
67	Electrical circuit
68 - 69	Maintenance
70 - 71	Options
72	Service and Dealers
74	Warranty form

IMPORTANT

Grinding is dangerous. You should become thoroughly familiar with the information supplied in this manual before operating this machine.

Check List

Unpack the machine and check that the following components are supplied.

Standard T-Rex accessory bag.

1 x Instruction CD	1 x Instruction Manual
1 x Dressing Stone	2 x 5mm Spring Washers
2 x 5mm Hex Nuts	2 x M5 x 10 Pan Head Screws
1 x 10/13mm Spanner	1 x 2.5mm Hex Key
1 x 3mm Hex Key	1 x 4mm Hex Key
1 x 6mm Flat Washer	1 x DC Lead
1 x Magnet	1 x Clear Shield
1 x 6mm Hex Key	

Wall / Bench mounting Bracket

1 x Bracket Body	2 x M6 x 12 bolts
1 x Brace	2 x 6mm flat washers
1 x Mounting Plate	1 x M10 Nyloc Nut
1 x 10mm Flat Washer	1 x M8 x 12 Bolt
1 x 8mm Spring Washer	

Optional Tri-Pod Stand

1 x Support Stand	3 x Sets of Legs
9 x M5 x 8 Pan Head Screws	9 x M5 Locknuts
2 x M6 x 12 Hex Head Bolts	2 x 6mm Flat Washers

Power Supply Stand Bracket (Optional)

1 x M6 x 40 Pan Head Screws	1 x M6 Nut
1 x Bracket	1 x 6mm Spring Washer

Power Supply

1 x Power Supply with AC power cord.



Installation

CAUTION

GRINDING SPARKS WILL BE EMMITTED IN THIS AREA!

**Do not stand, or allow others to stand behind
the machine while it is operating**



When positioning the machine it is recommended to have a wall or shield immediately behind the machine to prevent people from standing behind the machine.

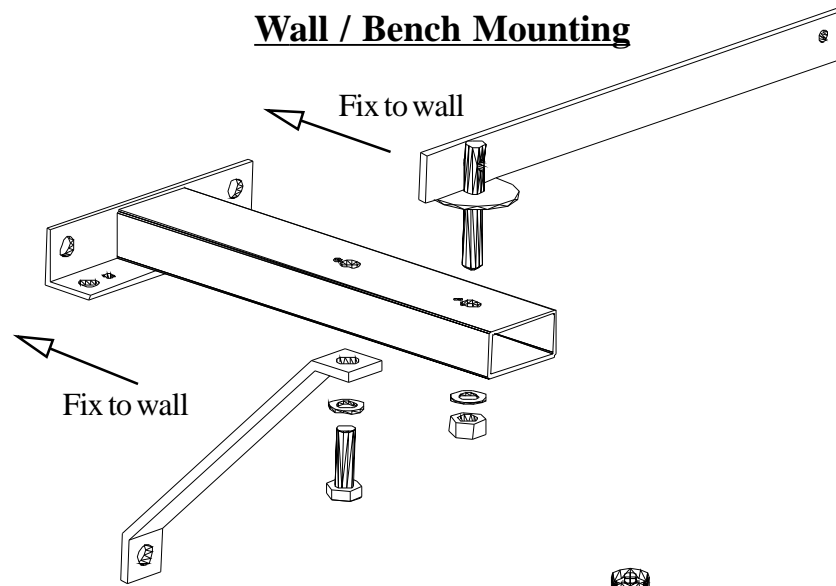
Power Requirements

The Dinasaw Chainsaw Sharpener can operate from a well charged automotive battery as well as a suitable regulated switch mode power supply. It is important however that the lead from the battery / power supply to the machine is no longer than 2 meters (6 feet).

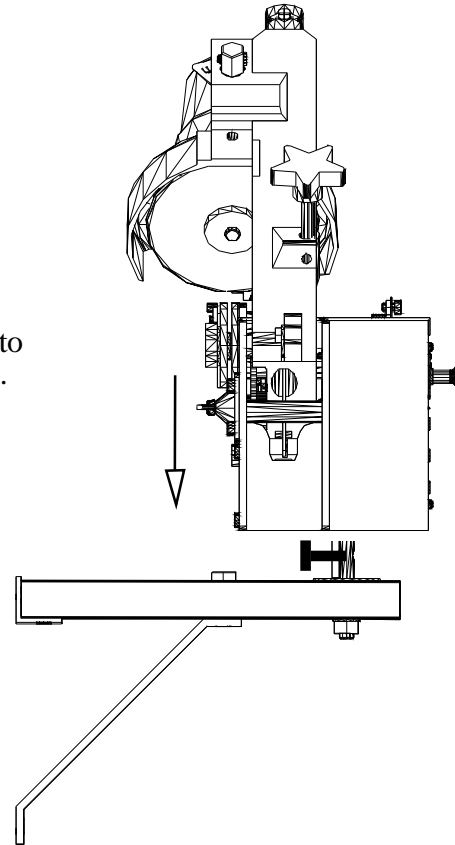
CAUTION

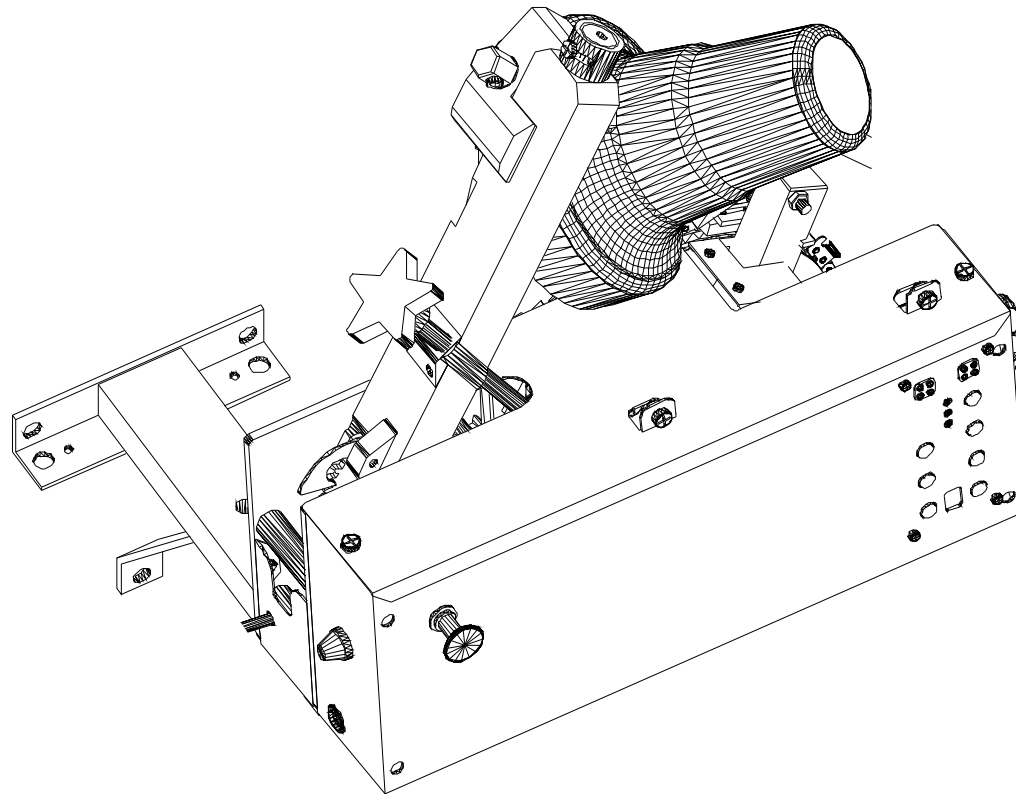
DO NOT USE AN UNREGULATED POWER SUPPLY AS DAMAGE TO THE
ELECTRONIC COMPONENTS MAY OCCUR.
USE OF AN UNREGULATED POWER SUPPLY WILL VOID THE WARRANTY
ON THE CONTROL MODULE.

Wall / Bench Mounting



Attach Machine onto Bracket as shown.

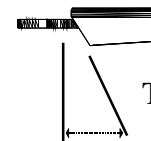
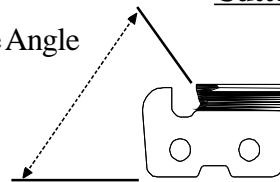




Machine attached to wall bracket.

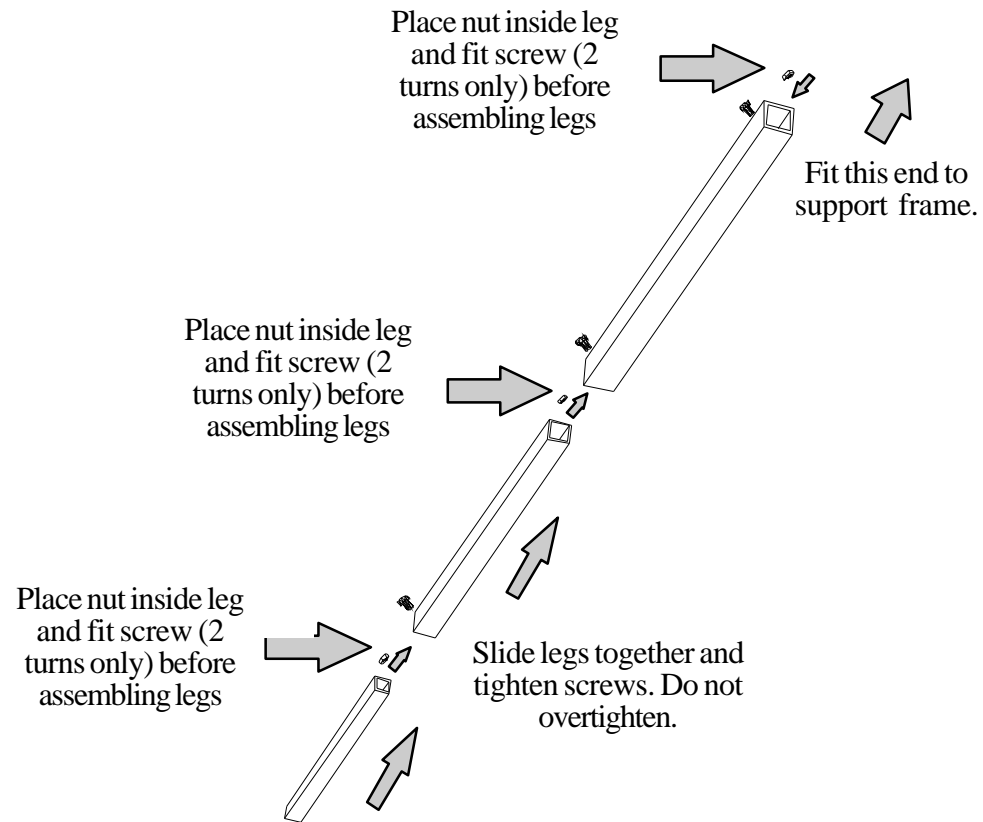
Cutter Terminology

Side Plate Angle



Top Plate Angle

Assembling the Tri-Pod Stand (optional)



Do not over tighten the screws in the legs as damage to the screws may occur.

Fig 1.

Fit the legs to the support frame as shown in fig 2.

Fit the 2 m6 x 12 hex head screws into the support frame as shown in fig 2.

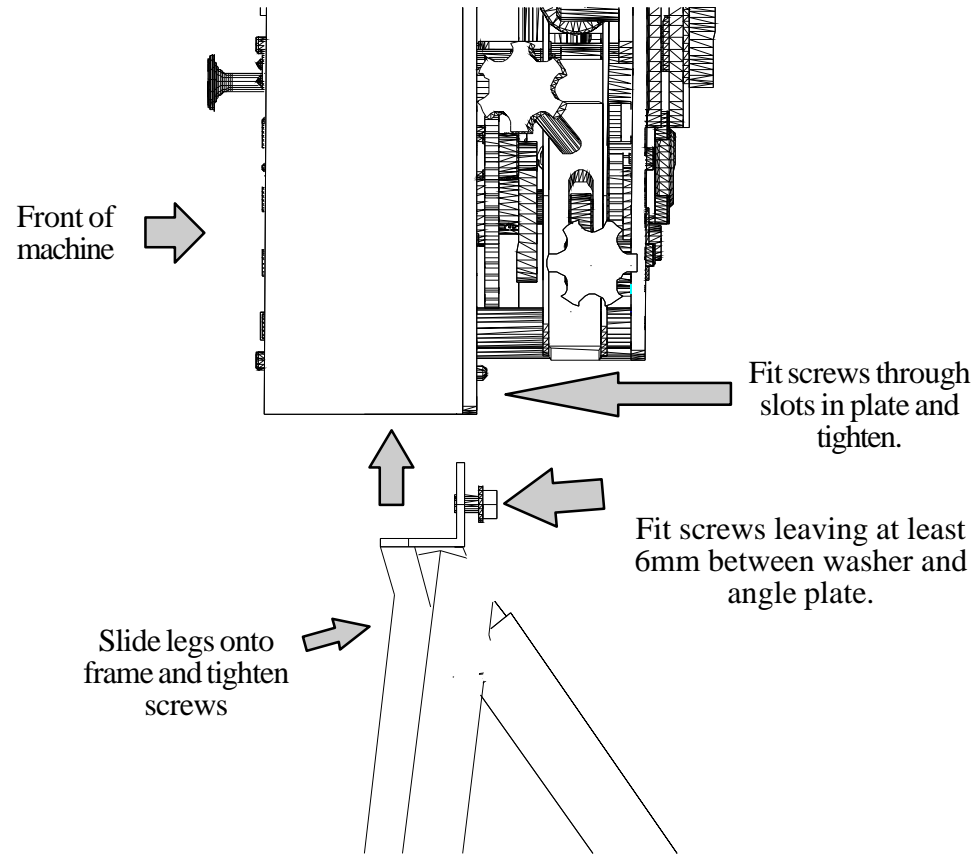


Fig 2.

Fit the machine onto the support frame and tighten securely. See fig 2.

Adjust the legs so that the machine sits level on the support frame.

Large harvester chains may require the machine to be tilted back slightly to prevent the chain from catching on the rear plate of the machine. To do this, shorten the centre leg by approximately 25mm (1 inch).

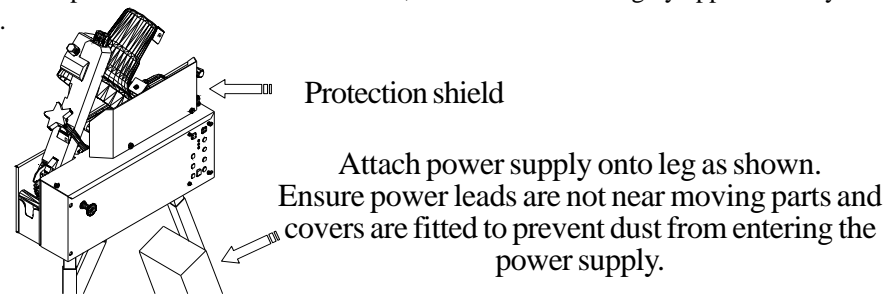
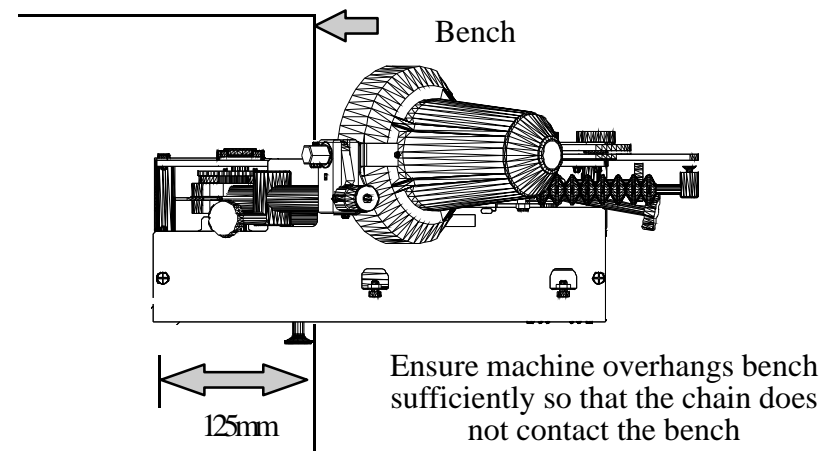
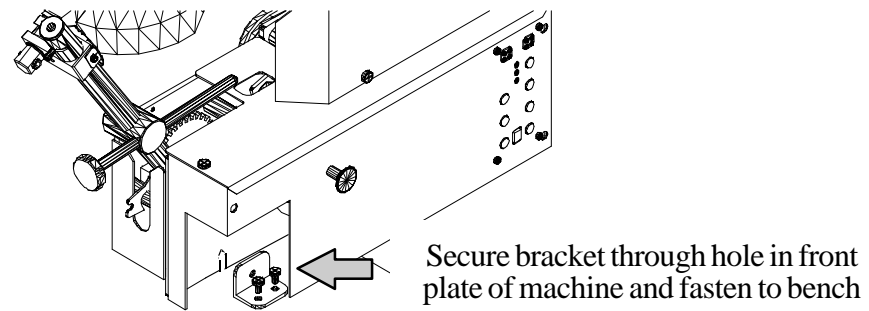
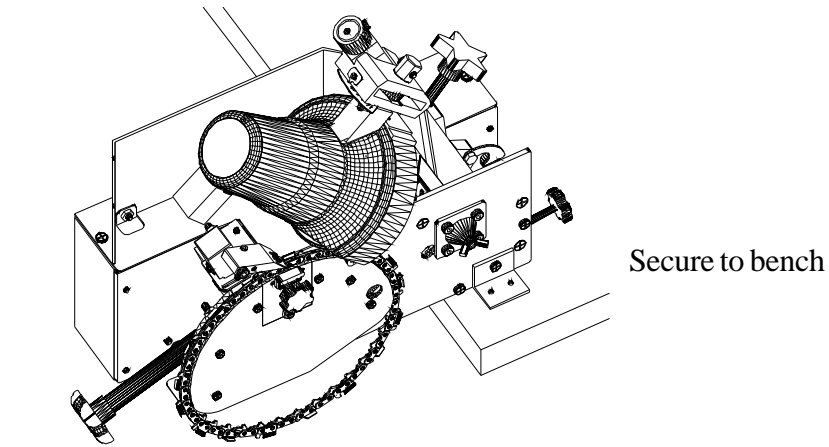


Fig 3.

Bench Mounting the Machine (Brackets not supplied)



Overview of Operation

The T-Rex uses cams to operate the feed, clamp and grinding head. The “Grind Cam” raises and lowers the grinding head while the “Feed Cam” both indexes and clamps the cutters.



CAUTION:

Excessive clamping pressure will damage the machine

The T-REX model has four modes of operation.

- “OFF” - Sharpens left and right hand cutters without detection
- “AUTO” - Uses cutter sensor to detect and grind two cutters in a row.
- “MAGNET” - Uses a magnet to detect and grind two cutters in a row.
- “SCRATCHER” - Allows the sharpening of scratcher chain. (Requires options).

The machine uses four sensors to operate automatically.

1. The cutter sensor “looks” at each cutter and determines what hand it is.
2. The proximity switch senses a magnet placed on a cutter to correct the grinding sequence for out of sequence cutters. It also serves as a counter to automatically shut off the machine.
3. Two other sensors are located inside the machine. One in the feed motor to count motor revolutions and another behind the idler gear which checks the bevel angle of the grinding head.

Adjustments

There are four main adjustments which need to be made when changing between different size chains. (see previous page)

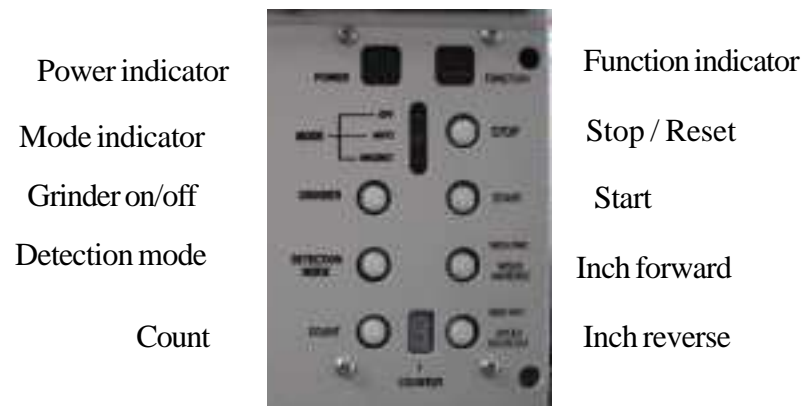
1. Limiting the feed stroke.
2. Setting the feed pawl height.
3. Centering the grinding head.
4. Chain Clamp

Limitations

1. The T-Rex model cannot automatically sharpen chains with three or more cutters in a row on the same side of the chain. Two is the maximum.
3. Chains with three or more tie links in one section of the chain must be stopped at this point with the magnet, as the feed stroke will not cope with more than two tie links.
4. Chains with double tie links cannot be sharpened using “AUTO” mode as the sensor will not ‘see’ the cutter after the double link. Only use “MAGNET” or “OFF” mode on these chains.

The Control Panel

Plug the machine in and turn the emergency stop switch on to power up the machine.



Counter display

Power indicator light:

- Indicates that power is on.

Function indicator light:

- When in “Run Mode” light is on.
- When magnet is detected light will go out momentarily.

Detection mode indicator:

- Indicates which mode machine is in.
- “OFF” - No detection. Machine grinds sequentially.
- “AUTO” - Automatically detects double cutters (left or right).
- “MAGNET” - Corrects only after chain magnet passes proximity switch.

Stop / Reset:

- Stops the machine

Start:

- Starts the feed mechanism.

Grinder:

- Turns the grinder motor on - press again stops motor.

Inch Fwd:

- “Inches” machine forward when not in run mode.

Inch Rev:

- “Inches” machine in reverse when not in run mode.

Detection Mode:

- Changes between the three detection modes and is shown by the Mode Indicator lights.

Counter:

- Sets number of times chain circuits (maximum of 9)
- Counter is triggered by placing the magnet on chain (Low down on sideplate, on or between the rivets of a cutter).

Counter Display:

- Indicates number of circuits chain will do, referenced by the chain magnet.

Holding Count and pressing Inch Fwd.

- Positions the machine for adjusting the top plate angle of LEFT hand cutters.
- Display will show a **L** symbol.

Holding Count and pressing Inch Rev.:

- Positions the machine for adjusting the top plate angle of RIGHT hand cutters.
- Display will show a **R** symbol.

Assembling the machine



Connect the AC lead to the power supply

Check the voltage selection switch.

Failure to correctly set this switch will destroy the unit and void the warranty.



Connect the output of the power supply to the machine.



Switch the machine on and wait 15 seconds.
Switch down to turn on.



Carefully tilt the motor arm fully back until the latch engages.

Press and hold the 'COUNT' Button and press the "Inch Fwd" Button, then release both Buttons.

This will force the machine to run to the position for setting the LEFT side angle.



Remove the nut from the bolt.
DO NOT WITHDRAW THE BOLT !
The stepped face of the spacer must be against the bearing (see picture left).



Attach the motor plate in the position shown.



Lower the arm



Rotate the motor to the desired angle on the LEFT side and tighten the bolt with the 6mm hex key.
Connect the wires.



Press and hold the 'COUNT' Button and press the 'Inch Rev' Button, then release both Buttons.

This will force the machine to run to the position for setting the RIGHT side angle.



Insert the 4mm hex key into the end of the motor arm and turn until the indicator shows the exact same angle on the right side

Turn Clockwise initially.

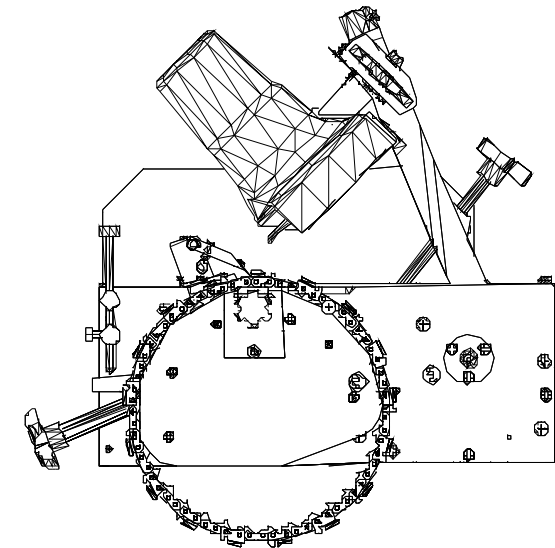
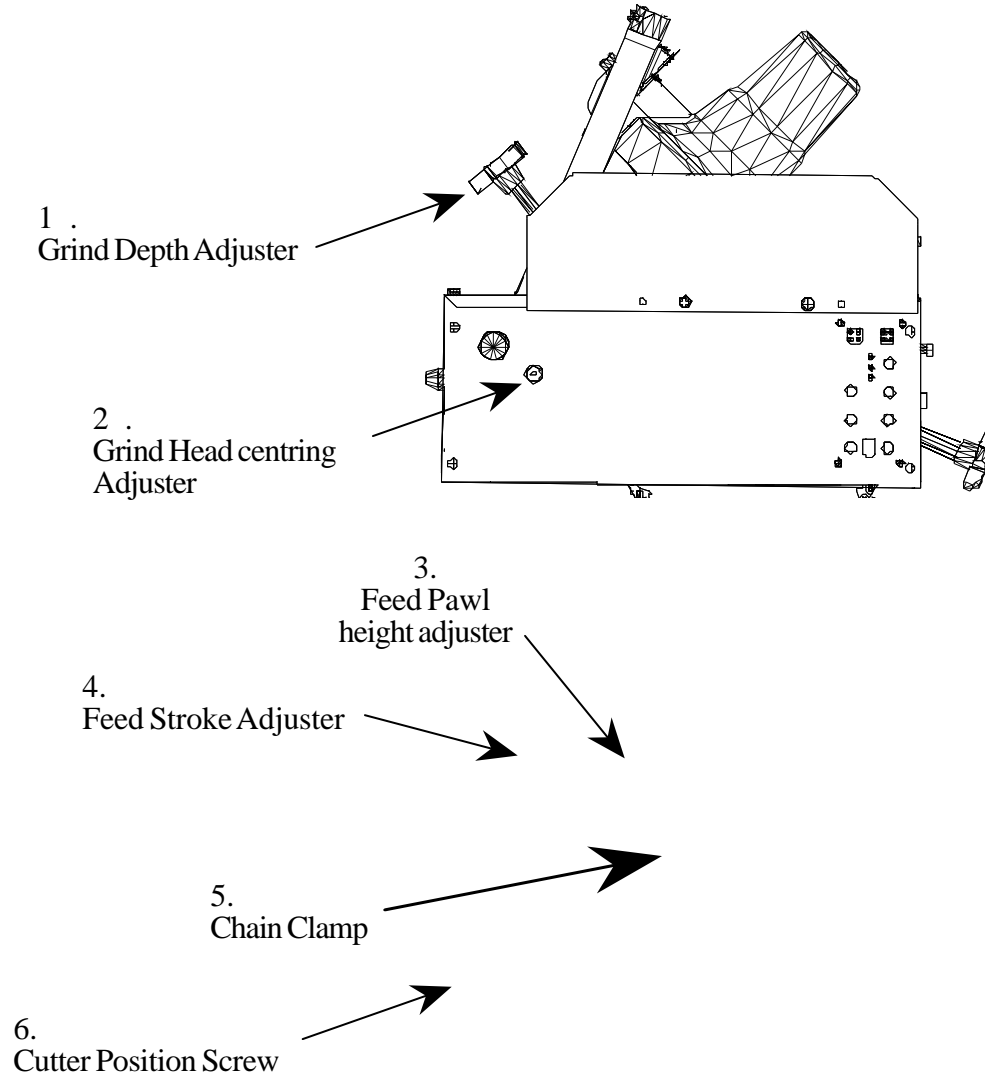


Attach the protection Shield

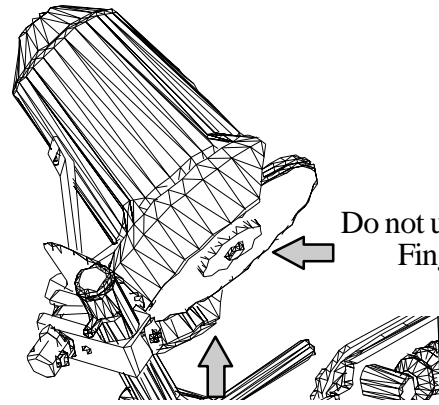
Adjustments

The diagram below shows the main adjustment positions on the machine.

1. Grind Depth Adjuster: Sets the grinding depth.
2. Grind Head Centring Adj.: Centers the grind head on the chain.
3. Feed Pawl Height Adjuster: Sets the feed pawl height to suit the chain pitch
4. Feed Stroke adjuster: Limits the return stroke of the feed arm.
5. Chain Clamp: Adjusts the clamping pressure.
6. Cutter Position Screw: Sets the amount of material ground from the face of the cutter.



Fitting the Grinding Wheel



Do not use tools to fit nut.
Finger tight only.

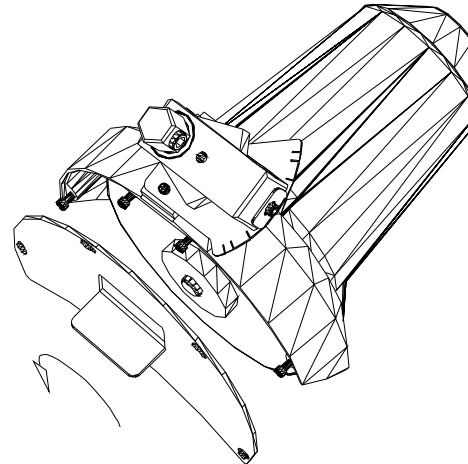
Fit the grinding wheel.
Tighten the securing nut
finger tight only. Fit the
grinding wheel cover and
protection shield.

Note: Retaining nut has **left hand thread**

Recessed face against grinding
wheel



Attach wheel cover by pushing over locating
screws and turning anti clockwise.



Dressing and Truing the Grinding wheel



CAUTION: Grinding wheels may shatter causing injury.

Grinding dust has been associated with respiratory disease.
Preferably use ABN / CBN wheels and wear a suitable dust mask

Resin bond Grinding Wheels

Fit and secure the appropriate grinding wheel (note left hand thread)

Before starting the grinding wheel check that it is rated at 6500 RPM or more and is not cracked or damaged.

Raise the grinding head fully so that the catch holds the head back.

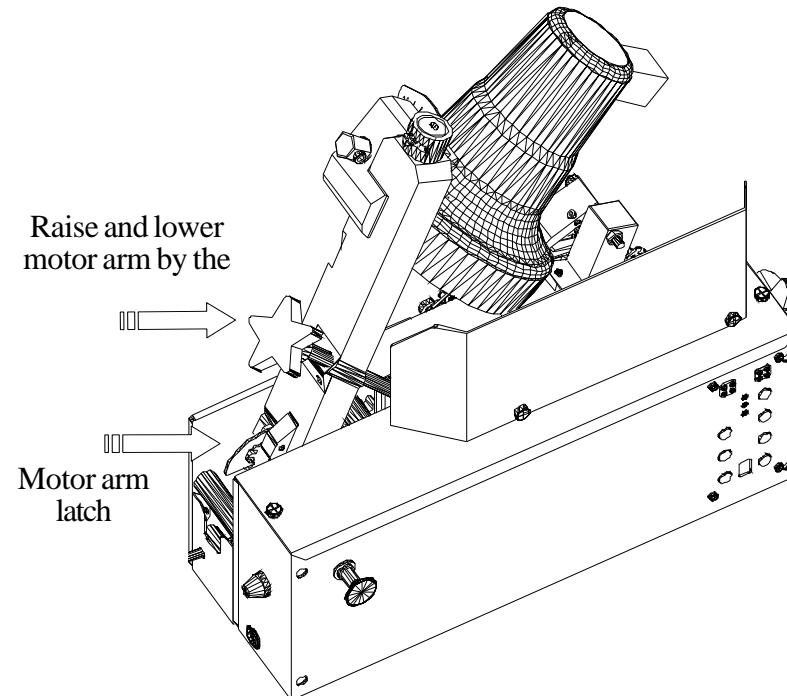
Do not lift the grinding head by the motor. Always lift the head by the handle on the depth adjusting screw.

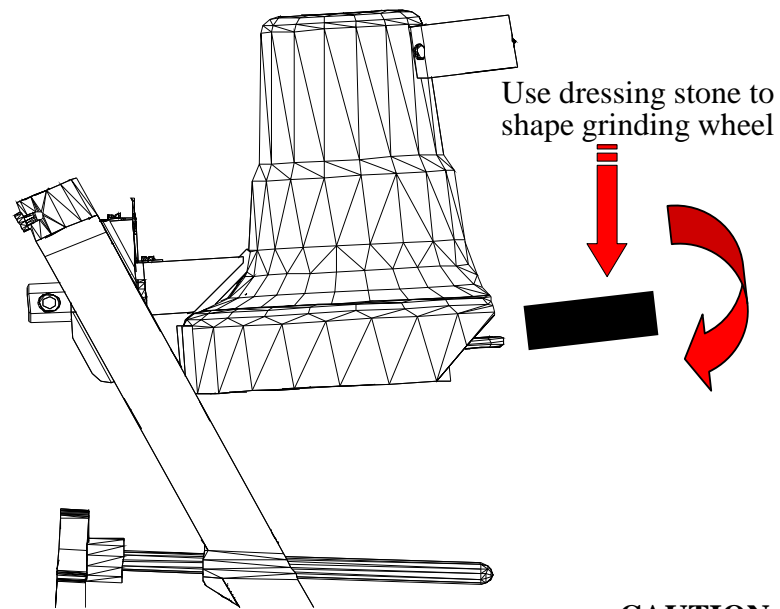
When satisfied the wheel is okay, make sure there are no bystanders near the machine and, **standing behind the grinding wheel shroud** press the grinder button.




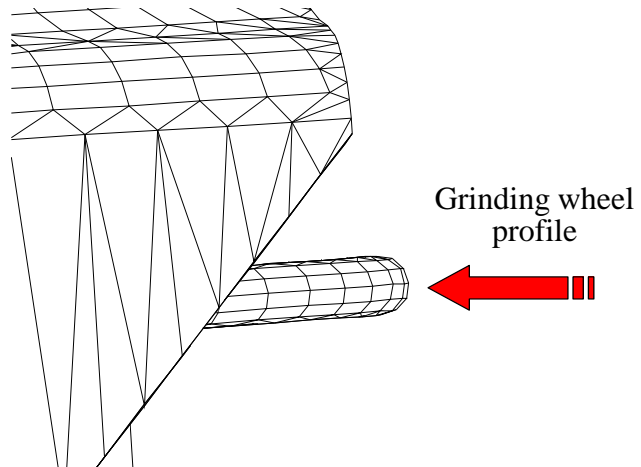
CAUTION

It is prudent not to trust the integrity of a newly fitted, bonded grinding wheel - run for at least one minute before dressing the wheel to the required shape.





CAUTION 
Wear face and breathing protection
when dressing the grinding wheel



CAUTION 

Grinding is dangerous. Damaged or cracked grinding wheels can shatter causing injury to the operator. Do not operate the machine without guards in place and always wear face and breathing protection.
True and dress the grinding wheel using the dressing stone provided as shown above.

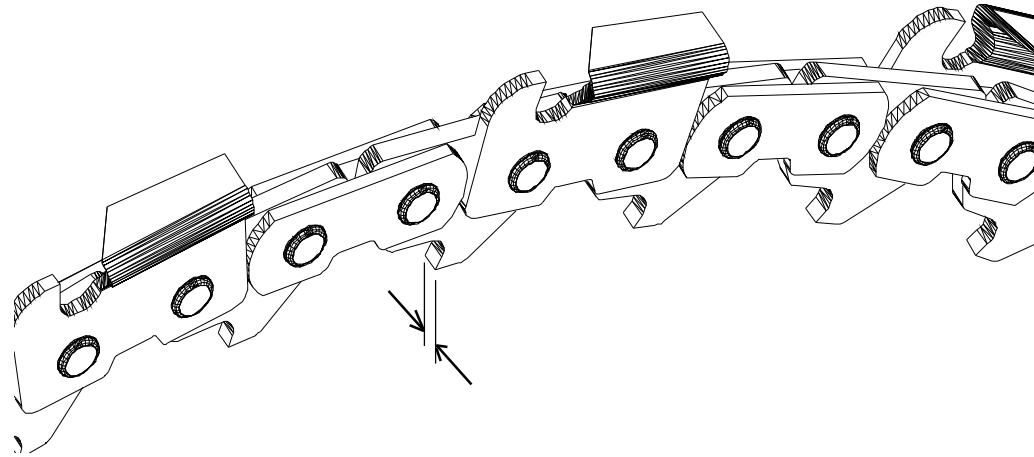
Fitting the Chain

Important. The chain clamp must be adjusted so that pressure is only applied when the cutter is in the fully forward position. Before fitting, ensure the clamp is backed off sufficiently when changing from small to large chains

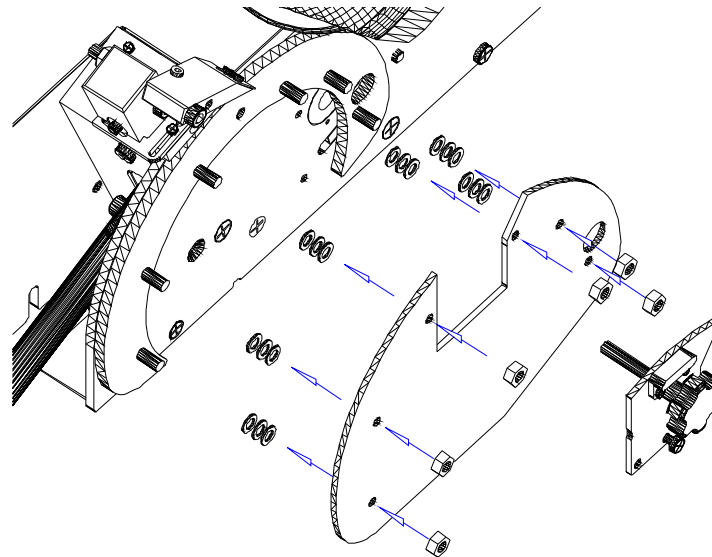


Excessive clamping pressure will damage the machine

First -- determine the drive link thickness



Use two spacers for all chain up to .404 harvester - three spacers for 3/4"
Transfer the outer spacer (washer) below the screw head to the inside to increase the gap for 3/4" harvester chain



With the motor arm still latched in the upright position, loosen the chain clamp one full turn.

Fit the chain into the chain guide as shown below.

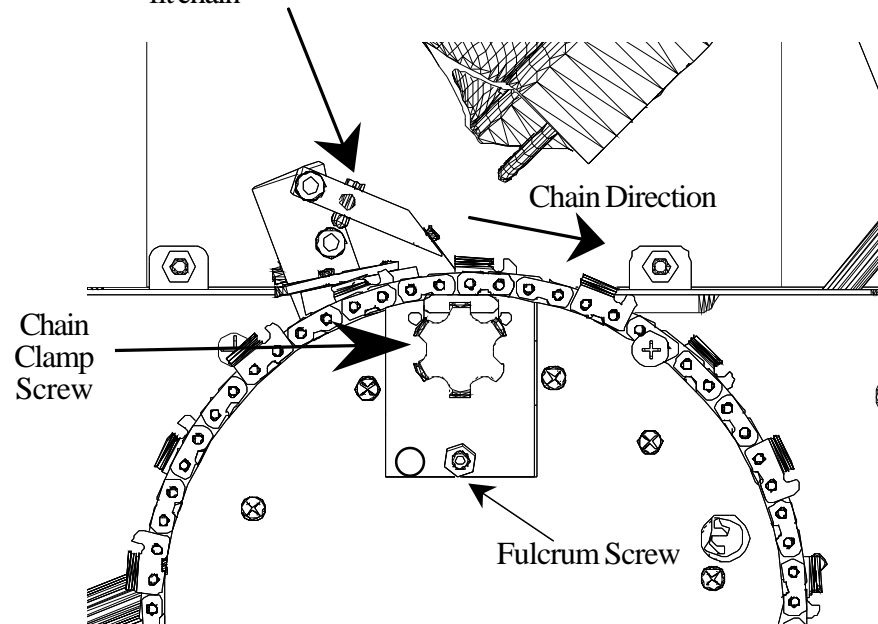
Press the button combination “COUNT”+”INCH FWD”. This will run the machine until the feed mechanism is in the fully forward position and the chain clamp is on.

When the machine has stopped, tighten the chain clamp on the chain. Finger tight only. The clamp need only be tight enough to stop movement of the chain.



Excessive clamping pressure will damage the machine

Lift feed pawl to remove and fit chain



Chain should be fitted to the machine as shown above. (Note the direction of chain.).



Tighten the chain clamp knob using finger pressure only.

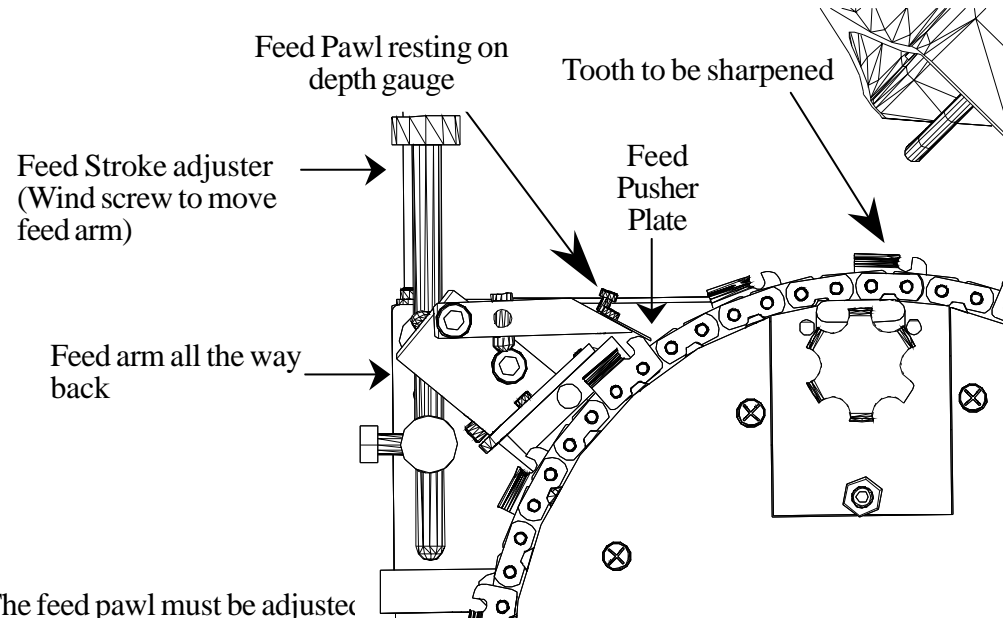
Do not overtighten

Ensure the clamp knob is only tightened (by finger pressure only) while the feed is in the fully forward position to avoid inadvertent overtightening.

Adjusting the Feed Stroke and Pawl Height

Using the Inch Fwd button, Inch machine until feed pawl is all the way back and adjust the feed stroke adjuster until the feed pusher plate is positioned just in front of the depth gauge.

Set the feed pawl height adjuster so that the feed pusher plate is just above the tie links. see below.

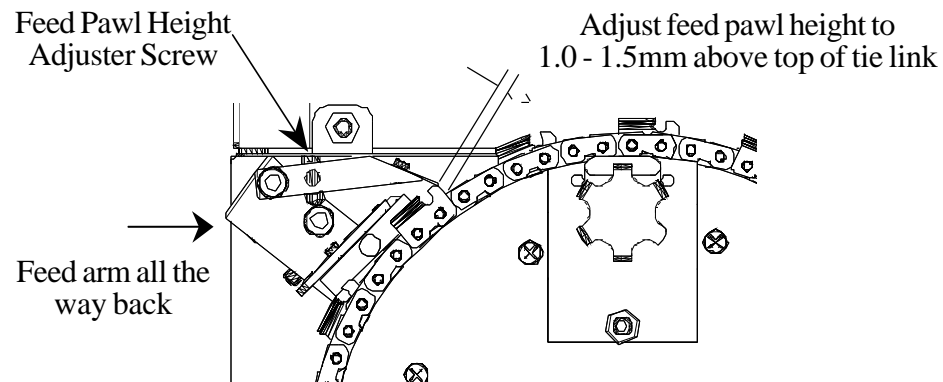


The feed pawl must be adjusted

1. To provide sufficient stroke length for the chain pitch.
2. At a height to prevent possible catching on the top of the tie links.

Press 'INCH FWD' and take note of the 'Feed Pusher Plate' as it approaches the cutter.

It must not contact the tie links of the chain as it may push from this point instead of the back of the cutter. Adjust the height of the Feed Pawl as shown below.

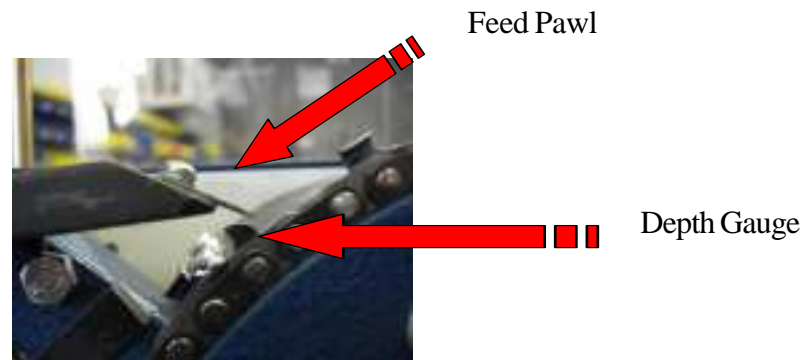


Lower the motor arm and wind the 'Depth Adjusting Screw' on the motor arm so that the grinding wheel is above and not contacting the chain.

Press the button combination "COUNT"+"INCH FWD".

Ensure the cutter being pushed is the same orientation as the grinding head. If not press 'INCH REV' until the Feed Pawl travels back over the following cutter then press 'INCH FWD' to get the correct cutter

The feed is set to overstroke the next cutter to provide sufficient stroke length should there be an additional tie link at the join. Set the stroke so the Feed Pawl returns and sits just in front of the following depth gauge. See below.



Note:

Sharpening chains with the extra tie link requires the stroke to be set accurately to prevent the feed finger jumping behind and engaging the depth gauge.

**The "Auto Detect" cutter sensor will not detect the following cutter if an additional tie link is present.
DO NOT USE AUTO MODE IN THIS CIRCUMSTANCE.**

Sensor 'Target' not in sensing position

Double tie link



‘OFF’ Mode Setup

This mode assumes the chain has **no double cutters and no extra tie links.**

1. Press ‘INCH FWD’ and ensure the cutter and the grinding head are angled the same way. If not, press ‘INCH REV’ until the Feed Pawl travels back over the following cutter then press ‘INCH FWD’ to get the correct cutter
2. Select ‘OFF’ mode
3. Attach magnet to first rivet on any cutter
4. Select number of chain rotations by pressing ‘COUNT’
5. Press ‘START’ then ‘GRINDER’

‘AUTO’ Mode Setup

This mode uses sensors to determine if there are two cutters in a row on the same side of the chain.

This mode uses a sensor to “*look*” at the cutter and determine what hand it is. If there are two cutters on the same side of the chain, the grinding head will automatically orientate itself and grind both cutters.

** This mode requires careful and accurate adjustment of the “Cutter Sensor”. See following page.

Caution: Check chain for bent or broken cutters before using AUTO mode.

DO NOT USE ‘AUTO’ MODE ON CHAINS WITH DOUBLE TIE LINKS.

Fit the chain into the chain guide making sure that the hand of the cutter is the same as the grinding head orientation. If it is not, press ‘INCH REV’ then ‘INCH FWD’ to synchronise the grinding head and the cutter.

Press and hold the “COUNT” then press “INCH REV” then release both buttons. The display will show a symbol and the machine will position itself with the head angled away from the operator (right).

The following series of pictures shows the correct setting of the tooth sensor.

1. Loosen the sensor clamp screw (1) and slide the sensor so that it's "TARGET" is beside the preceding left hand cutter.



Target

Sensor Clamp
Screw



1



Position Sensor As
shown

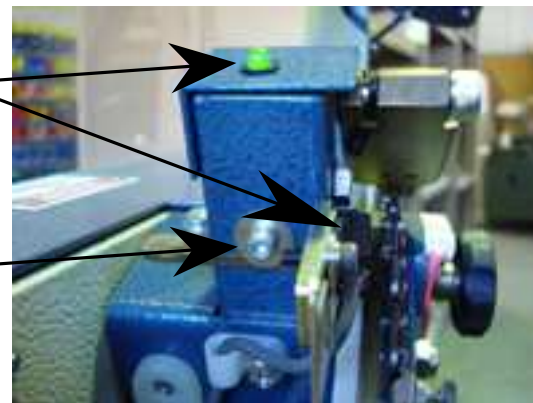
Target on sensor
should be in line with
top of cutter

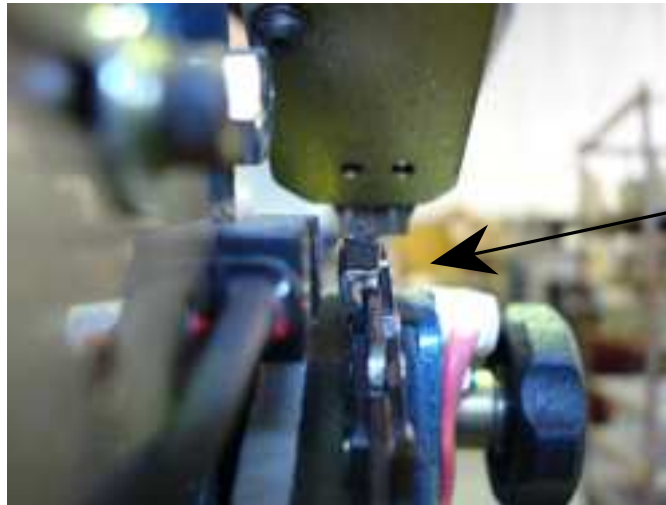
2. Loosen the Sensor Clamp Bracket Screw and slide the sensor toward the cutter. Position sensor approximately 1mm from the cutter. Both LED's (end of sensor & top of feed arm) should be on.

Lights indicate
sensor on

2

Sensor Clamp
Bracket Screw

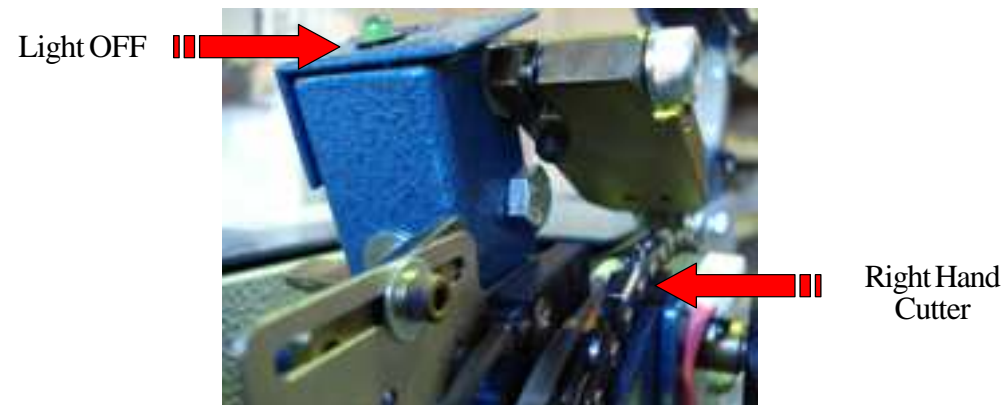




Sensor less than
1.5mm from cutter

Caution: Positioning sensor too low will cause false sensing. Make sure sensor only senses the cutter and not the body of the chain.

Figure below shows right hand cutter beside sensor.
Note that lights are OFF indicating that the sensor is NOT sensing.



Press and hold the 'COUNT' Button and press the "Inch Fwd" Button, then release both Buttons.

Check that the Grinding head and the cutter are angled the same way. If they are not, press 'INCH REV' until the feed pawl travels back over the following cutter then press "INCH FWD" to bring the correct cutter into place. Then repeat step 1.

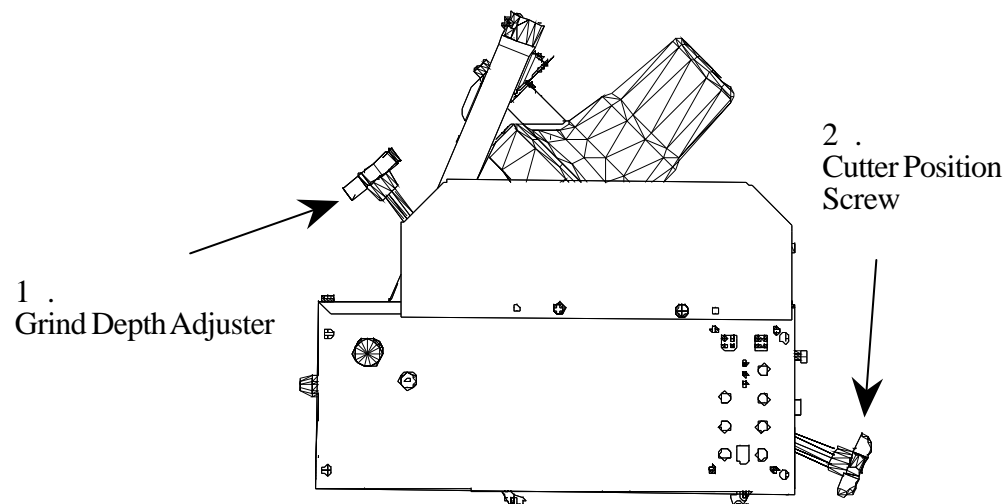
Ensure the grinding wheel is clear of the cutter by winding the 'Depth Adjusting Screw' on the motor arm clockwise.

Press 'START'. Allow to run and verify that grinding wheel is clear of chain.

Press 'GRINDER'. Note that the machine will stop feeding until the grinder motor reaches full speed.

Carefully adjust the 'Grind Depth Adjusting Screw' and 'Cutter Position Screw', while machine is running, to grind the desired amount off the cutters.

Note: Only adjust the 'Cutter Position Screw' when the feed arm is fully to the right.
See page 33.



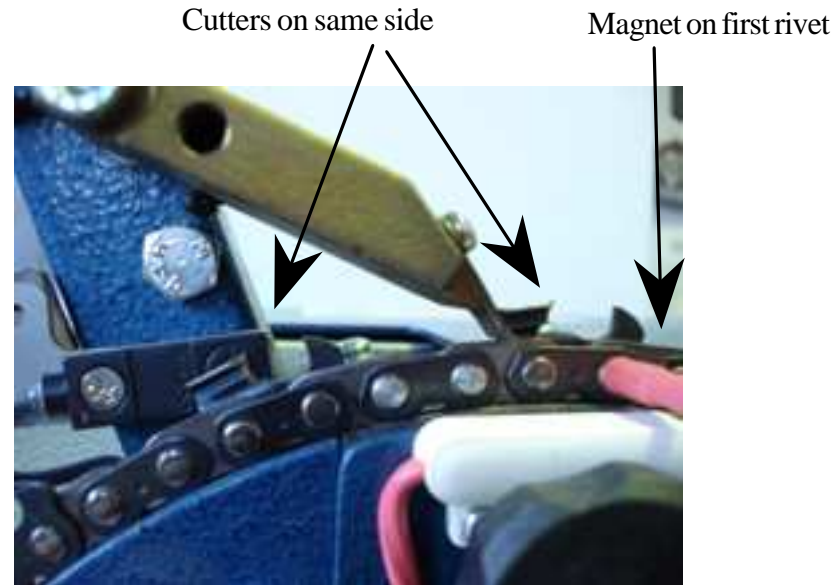
'MAGNET' Mode Setup

Use this mode if the chain is damaged and 'AUTO' mode cannot be used.

This mode uses a magnet placed on the first rivet of a cutter on the chain to force the machine to reposition itself for grinding two cutters on the same side of the chain. The magnet still provides the reference for counting the chain rotations.

1. Press the 'INCH' button to index the cutter into the grinding position.
2. Make sure the cutter is in the same orientation as the grinding head.
3. Place the magnet on the first rivet on the first of the two cutters which are on the same side.
4. Select 'MAGNET MODE'.
5. Press the count button so that the display reads at least 2. (if the cutter is left at 1 the machine will simply stop when the magnet passes the switch).
6. Press 'START', then 'GRINDER'

Note that the machine will stop feeding until the grinder motor reaches full speed.

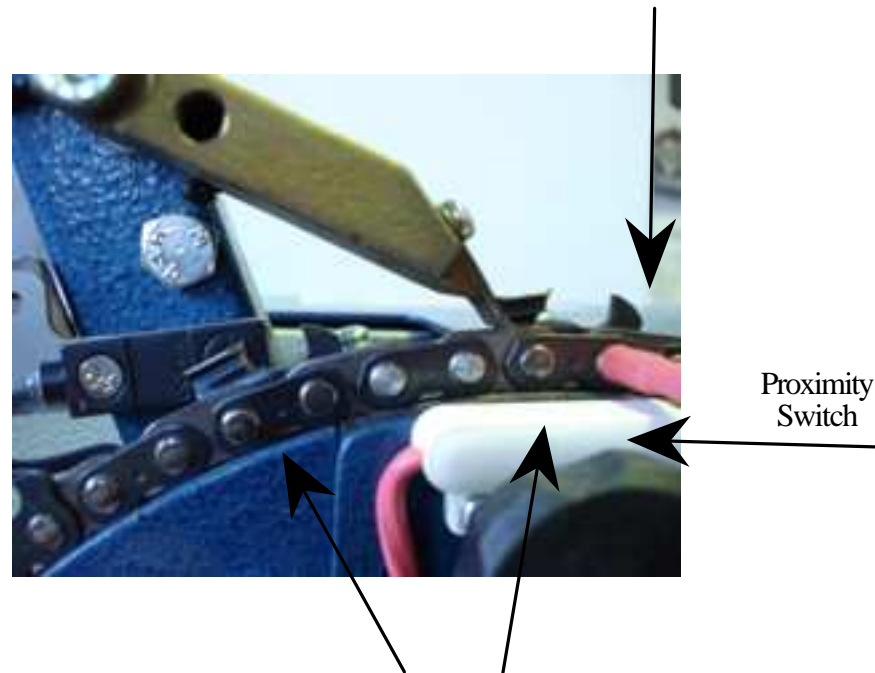


Magnet Positioning for Counting

Place the magnet supplied onto the chain as shown in fig. below.

Do not place the magnet on a tie link (link between cutters) as the machine will not function correctly.

Place the magnet on the first rivet of the first cutter in a double sequence on the chain.



Both Cutters on the same side of chain.

The magnet placed on the side of the chain references the number of chain rotations in **all modes.**

Press the “COUNT” button to indicate how many times the chain will circuit the machine. A maximum of nine(9) times may be entered.

If the count is set to one (1), the machine will stop when the magnet passes the proximity switch.

Grinding the Cutters the same length



For a chain to perform at it's optimum, it is crucial the cutters are the same length.

After grinding the cutters, measure the length of one cutter on each side.



If the cutters are different lengths, adjust the grinding head to compensate.



Winding the head clockwise will bring the grinding head towards the operator and winding the adjuster anticlockwise will move the grinding head away from the operator.

This adjustment can be made while the machine is operating.

Adjusting the amount of material to remove

It is only possible to adjust the cutter while the chain is not clamped.
IE: When the feed arm is in the return position. See picture below.

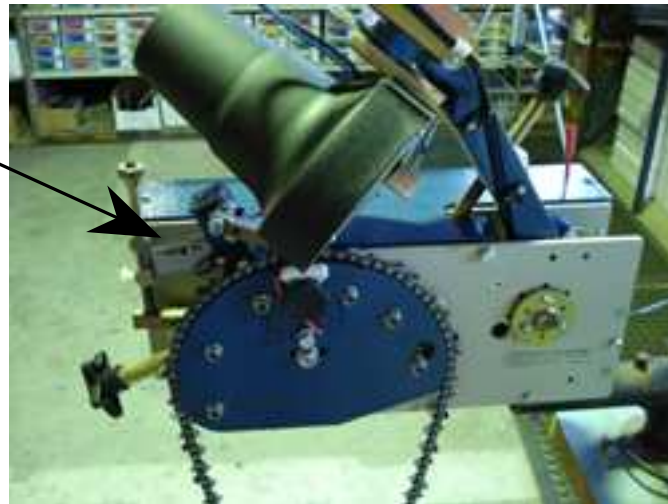
Feed Arm in the
return position and
the chain clamp is
OFF.



DO NOT ADJUST THE TOOTH POSITION SCREW WHEN THE CHAIN IS CLAMPED.

Damage to the machine may occur if the Tooth Position Screw is adjusted while the chain is clamped.

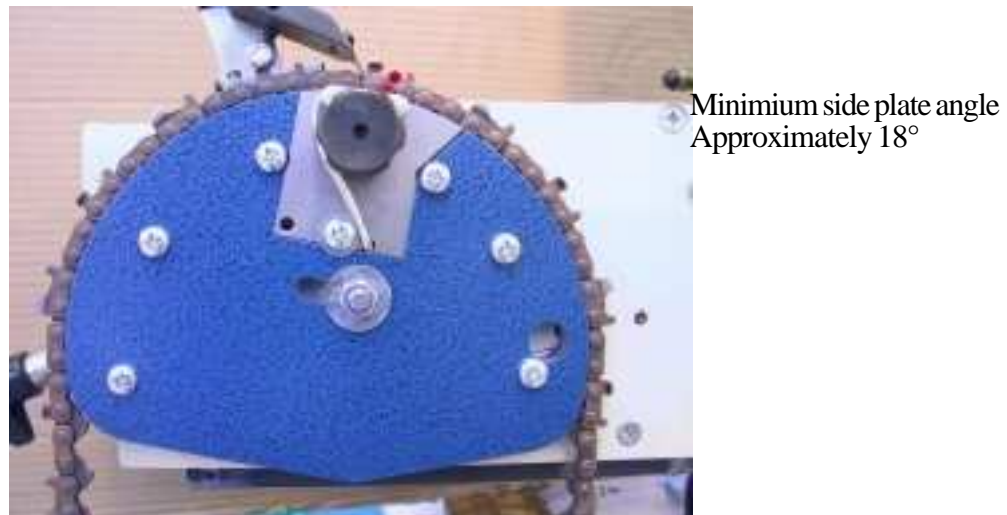
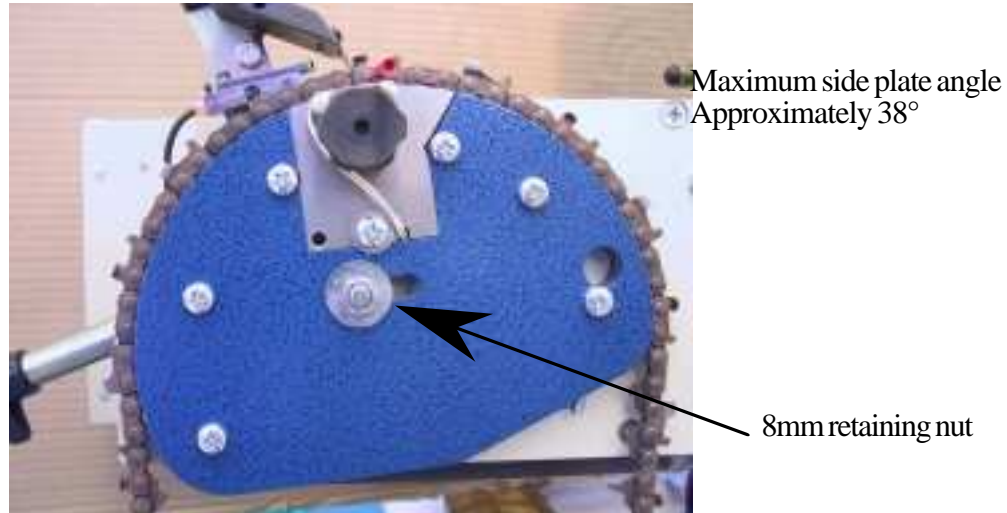
Feed Arm in the
Forward position
and the chain
clamp is ON.



**The following section deals with altering the settings
from standard**

Changing the Side Plate Angle

1. Loosen the 8mm retaining nut
2. Rotate the chain guide to the desired position
3. Retighten the 8mm retaining nut



Note: Reset the stroke length and feed pawl height after altering the side plate angle.

Changing the Top Plate Angles



Press and hold the 'COUNT' Button and press the "Inch Fwd" Button, then release both Buttons.



Loosen the bolt and set the LEFT angle to the desired angle (35° shown).



Press and hold the 'COUNT' Button and press the "Inch Rev" Button, then release both Buttons.



Insert the 4mm hex key into the end of the motor arm and turn until the indicator shows the exact same angle on the right side

“0” Degree Top Plate Angle



Press and hold the ‘COUNT’ Button and press the ‘Inch Fwd’ Button, then release both Buttons.

Loosen the head clamp bolt and rotate head to the triangular mark as shown.
Retighten head clamp bolt.



Press and hold the ‘COUNT’ Button and press the ‘Inch Rev’ Button, then release both Buttons.

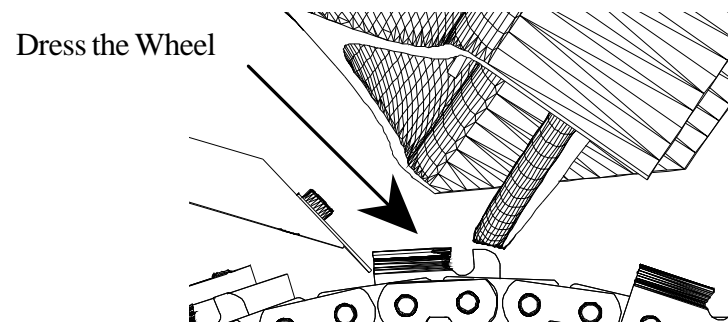
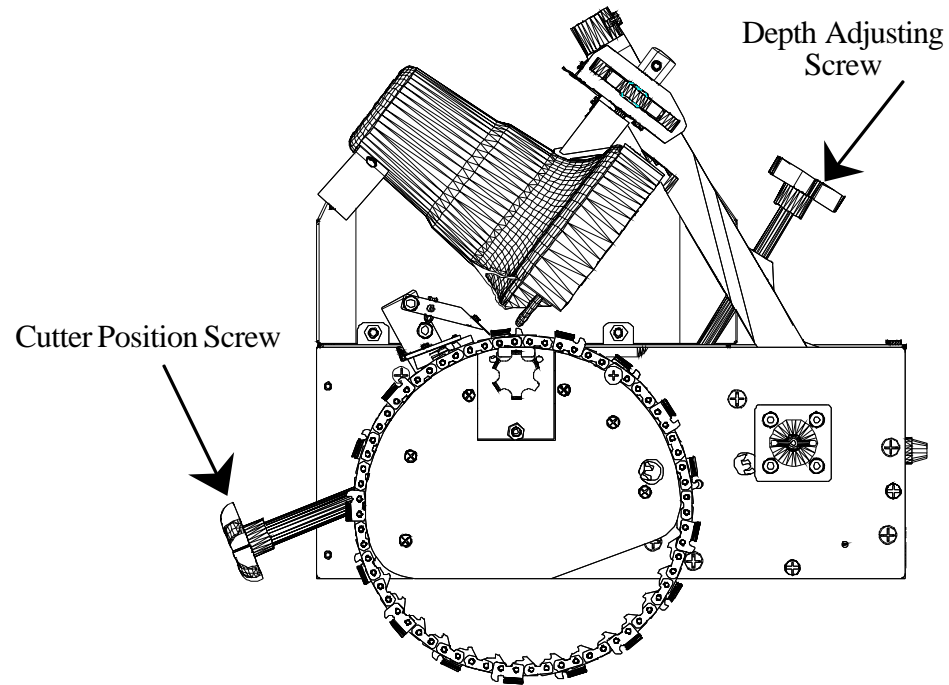


Insert the 4mm hex key into the end of the motor arm and turn until the indicator points to 0°.

To reset the grinding head angle after it has been set to “0” degrees refer to previous page.

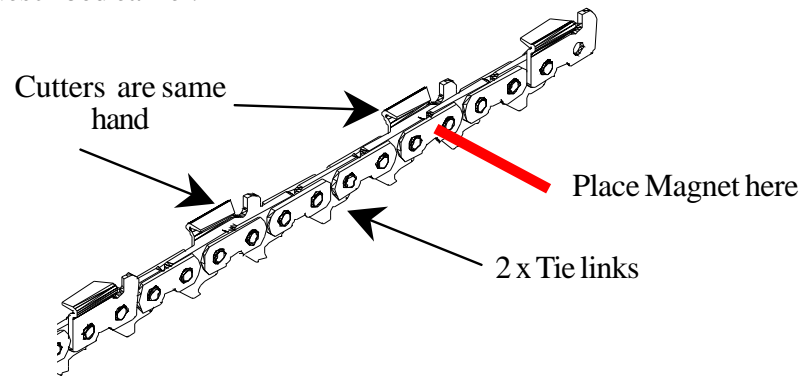
GRINDING the DEPTH GAUGES

- 1 Set the grinding head angle for “0” degrees as described earlier.
- 2 Replace or redress the grinding wheel so that the edge of the wheel suits the shape of the depth gauge.
- 3 Wind the depth adjusting screw in so that the grinding wheel is clear of the chain.
- 4 “INCH” the machine, adjusting the cutter position screw and the depth adjusting screw until the depth gauge is directly under, but not touching, the grinding wheel.
- 5 Select “OFF” mode
- 6 Press “START” then “GRINDER”
- 7 Adjust the depth adjusting screw for the amount of material to be removed.



Chains with Double Tie Links

Chains with both two tie links *and* an out of sequence cutter require the machine to be operated in **magnet mode**. Adjust the feed limiting screw so that the feed pawl returns far enough to push the cutter after the double join and place the magnet on the chain as described earlier.



Chains with two tie links and the cutters in the correct sequence, require the machine to operate in the “OFF” mode as no change is required through the join.

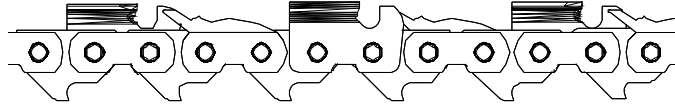
Chain with irregular joins can be easily identified by:

1. Place on a table.
2. Extend them out so the drive links lie immediately beside each other and check the cutters are paired in sequence.

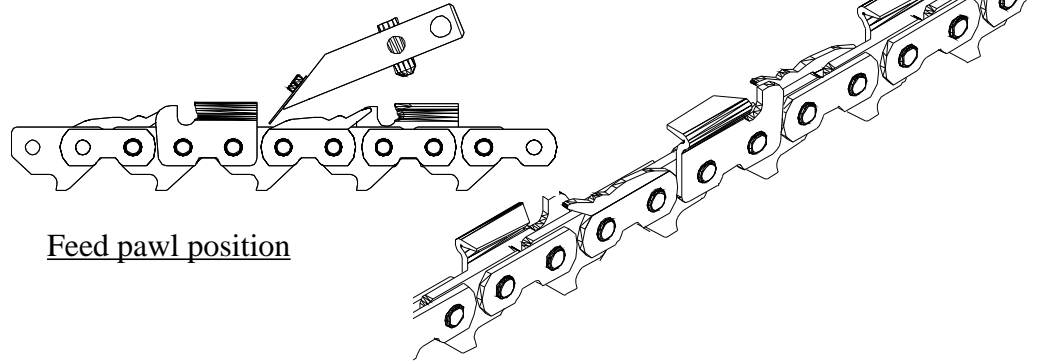
Repaired Chains

Chains which have had a cutter replaced require special attention. Because all of the chain cutters except the replaced cutter are worn or ground shorter than a new cutter, this replaced cutter must first be ground back to the same length as all other cutters. Set up the chain as described earlier. Inch the machine over a section of chain that has worn cutters with the grinding wheel running so that the grinding wheel is just touching the cutters. Inch the machine up to the replaced cutter and *very slowly* inch the machine into the replaced cutter. This will bring all cutters back to the same length and allow the chain to be sharpened in the normal manner.

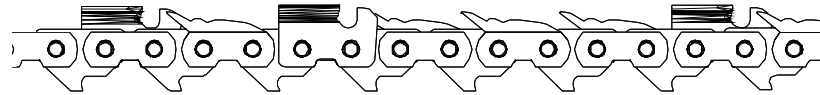
Safety Chains



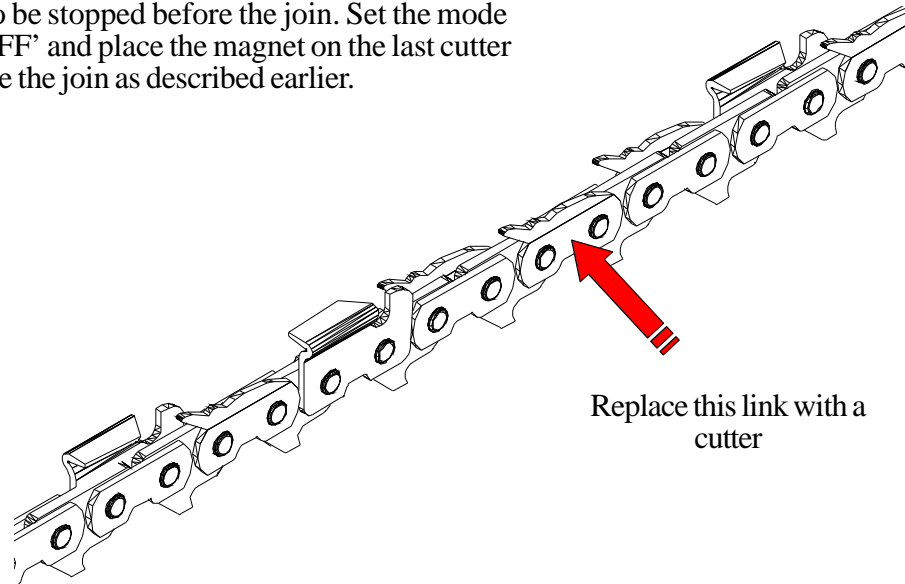
Chains with this type of safety link require the feed pawl stroke to be limited so that it does not push the ridges on top of the safety link.



Feed pawl position



If the chain has 2 or more tie links, the machine has to be stopped before the join. Set the mode to 'OFF' and place the magnet on the last cutter before the join as described earlier.



3/4" Harvester Chain

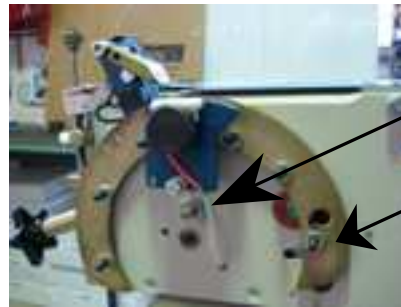
Changing the machine to grind 3/4" harvester chain requires the following adjustments.

1. Remove the chain guide plate and place 3 washers on each stud.
2. Add one washer to the centre stud.
3. Remove the plate from the feed Pawl.
4. Remove the feed Stop Arm.
5. Change the position of the cutter sensor.



CAUTION:

**Make sure the chain clamp has been loosened before fitting the chain.
Excessive clamping pressure will damage the machine.**



Extra washer on stud

3 washers on each stud

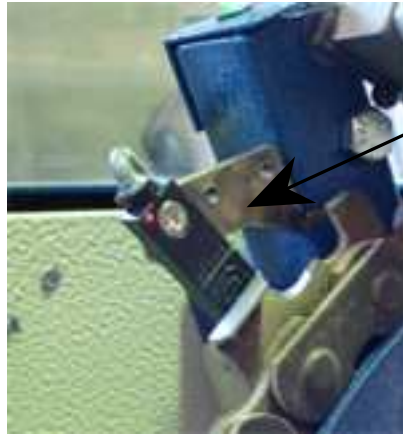


Remove plate from Feed Pawl

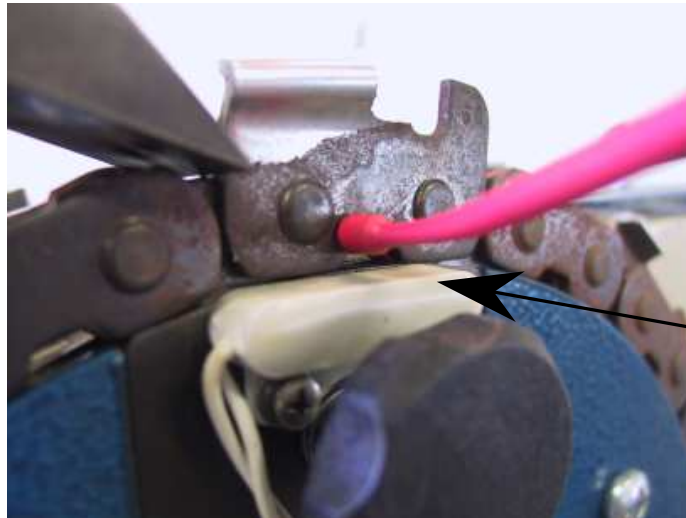


Remove Feed Stop Arm

Double joiner link



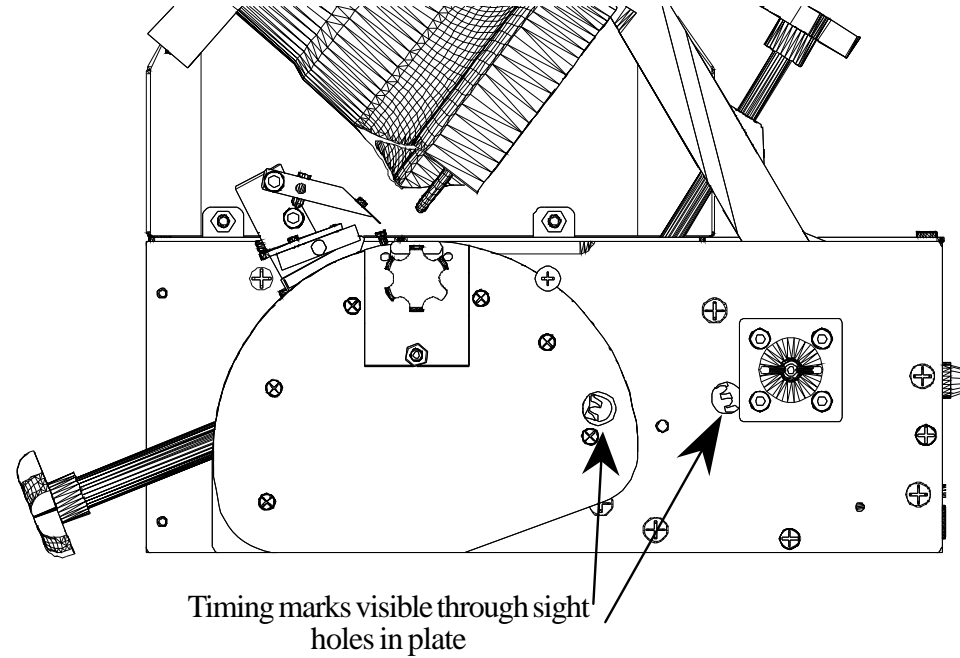
Attach Cutter Sensor as shown



Place magnet below pin
on chain.
Magnet must be no more
than 5mm (3/16") away
from proximity switch

Checking the Cam Timing

This will only be required after disassembly.
Inch the machine forward until the feed pawl has reached its furthestmost forward point.
View the timing marks through the cutouts in the rear plate and ensure all three gears are timed correctly as shown below.



To alter the timing, remove the retaining bolt from the bevel idler gear, rotate the gears so that the timing marks line up and replace the bolt in the bevel idler gear. Do not force the bevel idler gear into mating gears as coarse operation will result.