



# S-20 SERIES II

Rev a

## ***THANK YOU,***

On behalf of everyone at **HYD-MECH**, I would like to thank and congratulate you on your decision to purchase a **HYD-MECH** band saw.

Your new machine is now ready to play a key role in increasing the efficiency of your operation, helping you to reduce cutting costs while boosting quality and productivity.

To ensure you are maximizing the power and versatility of your new **HYD-MECH** band saw, please take the time to familiarize yourself and your employees with the correct operation and maintenance procedures as outlined in this manual.

We sincerely appreciate the confidence you have demonstrated in purchasing our product and look forward to building a long and mutually beneficial relationship.

Thank-you.

**HYD-MECH GROUP LIMITED**  
**P.O. BOX 1030, 1079 Parkinson Road**  
**Woodstock, Ontario Canada, N4S 8A4**  
**Phone: (519) 539-6341**  
**Service 1-877-237-0914**  
**Sales 1-800-276-SAWS(7297)**  
**Fax (519) 539-5126**  
**e-mail, [info@hydmech.com](mailto:info@hydmech.com)**

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THE NEW  
**HYD-MECH**  
The Rock Solid Solution

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## **SECTION 1, INSTALLATION**

Upon delivery of your new S-20 Series II saw, it is imperative that a thorough inspection be undertaken to check for any damage that could have been sustained during shipping. Special attention should be paid to the electrical and hydraulic systems to check for damaged cords, hoses and fluid leaks. In the event of damage caused during shipping, contact your carrier to file a damage claim.

### **SAFETY PRECAUTIONS**

The S-20 Series II has been designed to give years of reliable service. It is essential that operators be alerted to the safe operation of this saw, and the practices to avoid that could lead to injury. The following safety rules are at the minimum necessary for the safe installation, operation, and maintenance of the saw. Take every precaution for the protection of operators and maintenance personnel.

POWER HOOK-UPS AND REPAIRS SHOULD BE ATTEMPTED ONLY BY QUALIFIED TRADESMEN.

THE SAW SHOULD BE LOCATED IN AN AREA WITH SUFFICIENT ROOM TO SAFELY LOAD STOCK INTO THE SAW. SECURE THE SAW TO THE FLOOR.

THE AREA AROUND THE SAW SHOULD BE MAINTAINED IN A CLEAN AND TIDY CONDITION TO AVOID OBSTACLES OPERATORS COULD TRIP OVER.

THE S-20 SERIES II SHOULD ONLY BE OPERATED ACCORDING TO THE SPECIFICATIONS OF THE SAW. AVOID UNSAFE USAGE PRACTICES.

IF AT ANY TIME THE SAW DOES NOT APPEAR TO BE OPERATING PROPERLY IT SHOULD BE STOPPED IMMEDIATELY AND REPAIRED.

*OPERATOR :* THE SAW SHOULD NEVER BE OPERATED UNLESS ALL GUARDS AND DOORS ARE IN PLACE AND CLOSED.

*OPERATOR :* KEEP A SAFE DISTANCE FROM ALL MOVING PARTS - ESPECIALLY THE BLADE AND VISES.

*OPERATOR :* LOOSE CLOTHING AND GLOVES SHOULD NEVER BE WORN WHILE OPERATING THE SAW. COVER LONG HAIR.

*OPERATOR :* STOCK SHOULD NOT BE LOADED ONTO THE SAW IF THE BLADE IS RUNNING.

*OPERATOR :* LONG AND HEAVY STOCK SHOULD ALWAYS BE PROPERLY SUPPORTED IN FRONT OF AND BEHIND THE SAW.

*OPERATOR :* NEVER ATTEMPT TO DISLodge OR MOVE STOCK WHILE THE BLADE IS MOVING. TAKE THE TIME TO STOP THE SAW BLADE, REMOVE OBSTRUCTIONS, AND RESTART BLADE.

*OPERATOR:* MUST WEAR EYE PROTECTION

*OPERATOR:* MAINTAIN PROPER ADJUSTMENT OF BLADE TENSION, BLADE GUIDES, AND BEARINGS

*OPERATOR:* HOLD WORK PIECE FIRMLY AGAINST TABLE

*OPERATOR:* DO NOT REMOVE JAMMED CUTOFF PIECES UNTIL BLADE HAS STOPPED

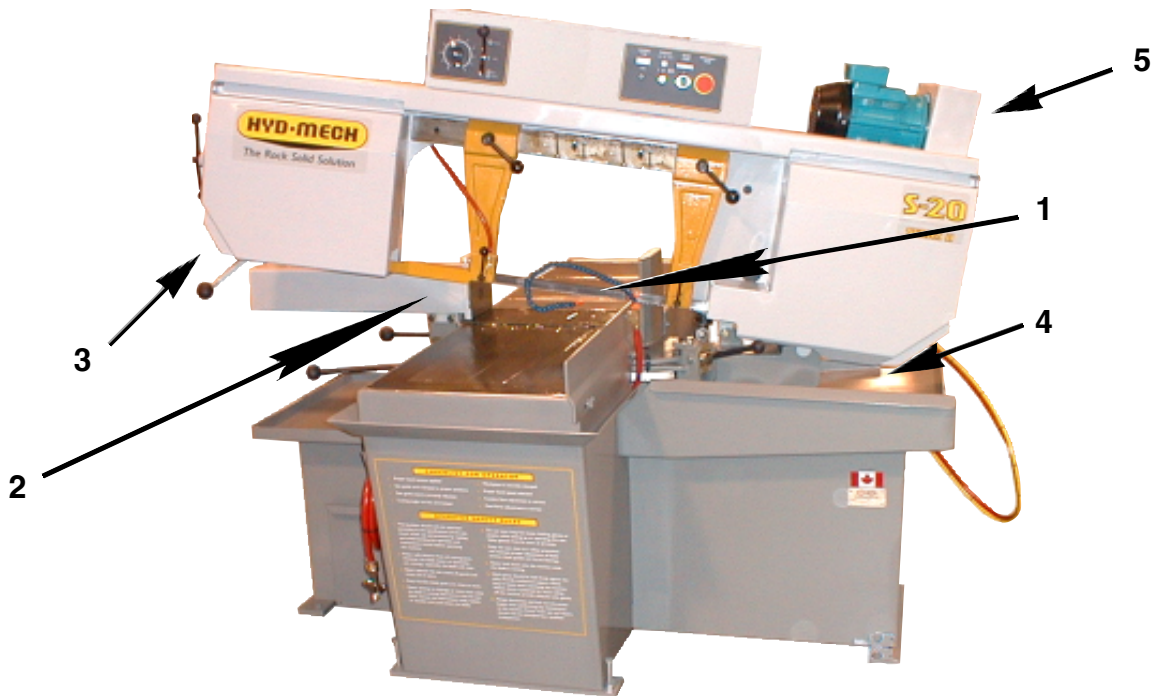
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## **OPERATOR SAFETY**

### **VISUAL INSPECTION**

The operator should always make a visual inspection of the saw before operating. The following areas should be checked.



### **Safety Inspection Points for Operators**

- |    |       |   |                                     |
|----|-------|---|-------------------------------------|
| 1. | BLADE | - | KEEP AWAY FROM MOVING BLADE!        |
| 2. | WISE  | - | NEVER LOAD STOCK WITH BLADE MOVING! |
| 3. | HEAD  | - | WATCH FOR HEAD DESCENDING TO TABLE! |
| 4. | PIVOT | - | CHECK FOR HEAD MOVEMENT BLOCKAGE!   |
| 5. | DRIVE | - | SECURE PULLEY COVER WHEN RUNNING!   |



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## **LIFTING THE S-20 SERIES II**

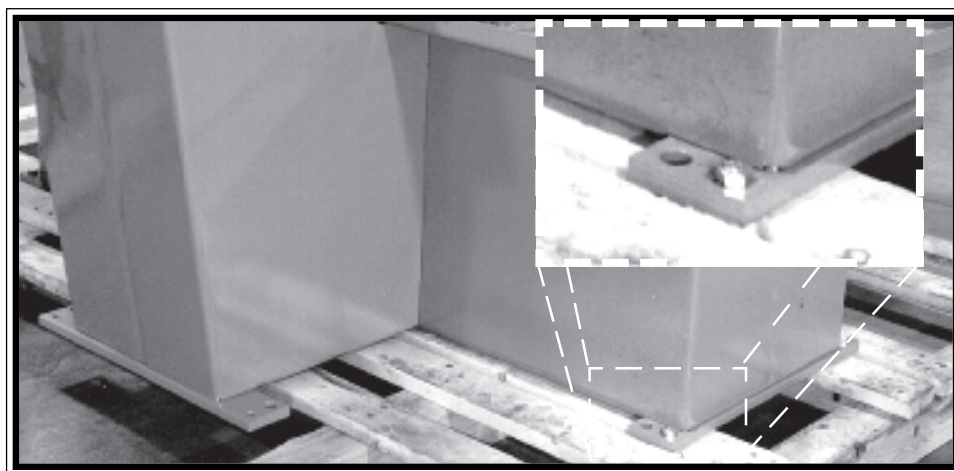
The S-20 Series II is shipped with a shipping pallet attached to the saw. When lifting the pallet with a forklift truck make sure that the load is firmly balanced. The following photo shows a lift truck lifting the saw and pallet from the correct side. The pallet length dimension is 84". Minimum fork length of 72" is recommended to safely lift the pallet.



**Lifting the S-20 Series II with a Forklift Truck**

## **WRAPPED FOR SHIPPING**

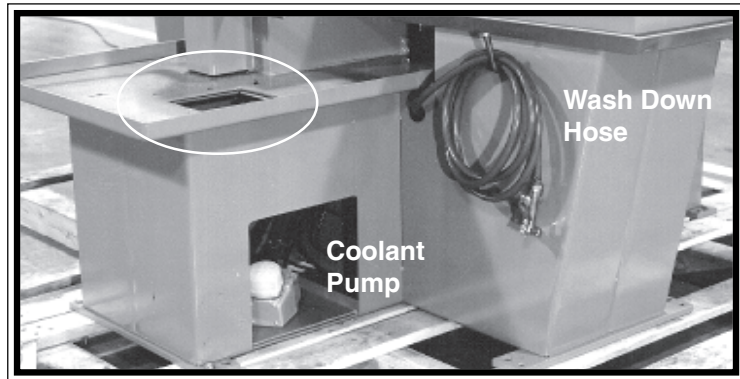
The S-20 Series II is shrink-wrapped for shipping from our plant. Remove the wrapping from around the saw. Complete the inspection for signs of damage. Undo the bolts that hold the saw to the pallet. Retain these bolts to use for levelling. The following photo illustrates the floor mounting plates located at the corners of the saw. The larger diameter hole is used for retaining during shipping and for use with concrete floor anchors. The smaller diameter, threaded holes at each corner are used for levelling the saw properly.



**S-20 Series II Mounted to Shipping Pallet**

## LEVELLING THE SAW

Use a machinist's level across the vise table to level the saw. Adjust the level with the levelling bolts supplied. Consideration should be given to the flow of the coolant as it returns to the coolant trough at the vise end of the saw. Levelling to give a small incline towards this area helps to ensure the coolant supply returns to the container.



**Coolant Return (Shown with tank removed)**

## HYDRAULIC OIL

The S-20 Series II is supplied with #22 hydraulic oil in the Head cylinder. Substitutes must be of the same viscosity in order for the system to work properly.

The cylinder contains oil in a reservoir that should be topped up to the level of the filler plug. Add oil to the cylinder only with the Head in the Head Down position. The head cylinder is a self air-bleeding cylinder with a small port in the top plate. If excess oil is displaced from this port, the cylinder is working normally.



**Head Cylinder Filler Plug**

## CUTTING FLUID

The S20 Series II uses a pump and reservoir to circulate the necessary cutting fluid to the blade for maximum blade life. Your saw blade supplier will be able to provide information to the cutting fluid products that are available for your needs.

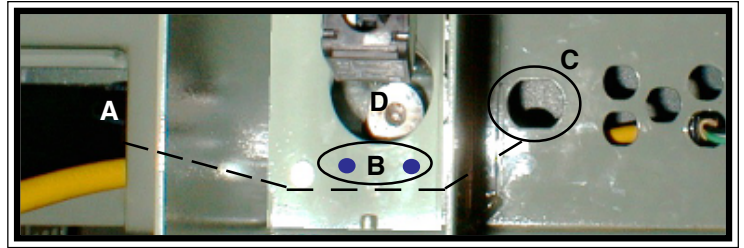
No cutting fluid (coolant) is supplied with the machine. There are two types of coolant available:

- oil based; dilute 1:10 ratio ( one part concentrated coolant to 10 parts water)
- synthetic; dilute as recommended by manufacturer.

## **POWER CABLE ROUTING**

This routing must be followed so the cable does not get pinched by the spring shaft (D). Failure to do so may cause serious injury.

- 1) In through opening A.
- 2) Between studs B, which protrude down, and the wall.
- 3) Up through hole C with a cable clamp attached.



**Power cable routing.**

## **POWER WIRING CONNECTIONS**

When the machine has been anchored and levelled the power hook-up is the last installation step. In order to provide safe operation and to prevent potential damage to the machine, only qualified personnel should make the electrical connections.

As supplied your new S-20 Series II is set to run on three phase voltage. The supply voltage of the machine is displayed on the Serial # Plate and the Voltage Label.

Connection from the Main supply is made to L1, L2, L3, and Ground terminals between the contactor & transformer.

Supply conductors should be rated for the current supplied and should be protected by time delay fusing rated for the amperage stated on the machine serial plate



**Electrical connection terminals.**

- CHECK FOR:**
- Signs of damage to the electrical cables from shipping or installation.
  - Correct phase order. The blade should be running counter clockwise. (If the blade direction is wrong, two lines should be reversed to correct)

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## **SECTION 1, INSTALLATION**

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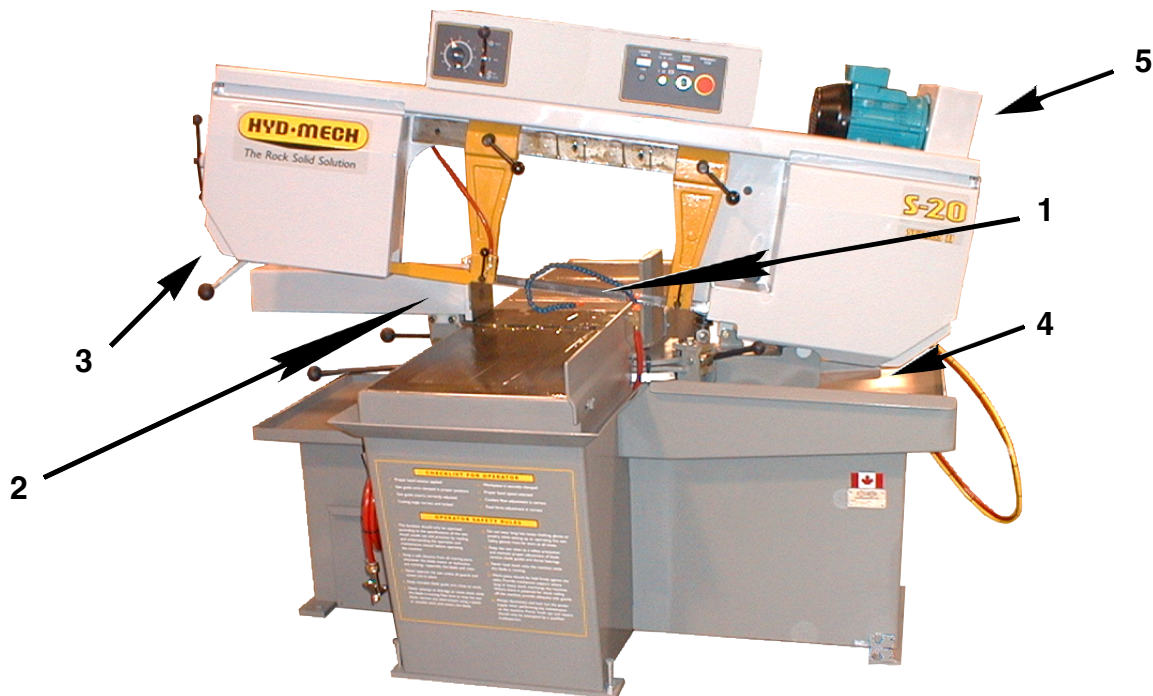
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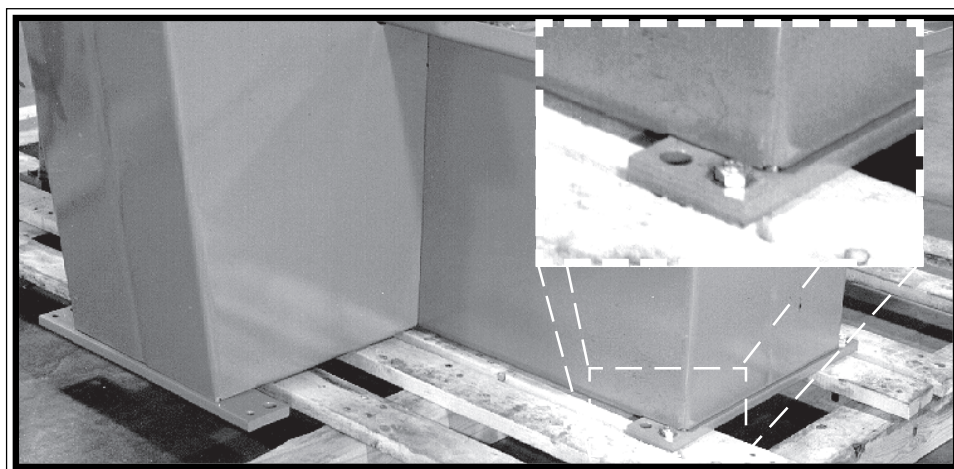
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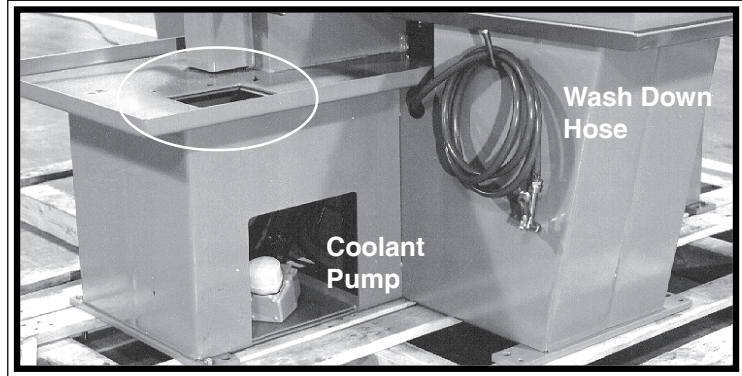
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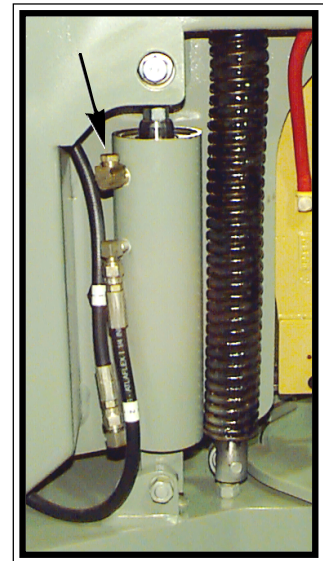


Coolant Return (Shown with tank removed)

## HYDRAULIC OIL

The S-20 Series II is supplied with #22 hydraulic oil in the Head cylinder. Substitutes must be of the same viscosity in order for the system to work properly.

The cylinder contains oil in a reservoir that should be topped up to the level of the filler plug. Add oil to the cylinder only with the Head in the Head Down position. The head cylinder is a self air-bleeding cylinder with a small port in the top plate. If excess oil is displaced from this port, the cylinder is working normally.



Head Cylinder Filler Plug

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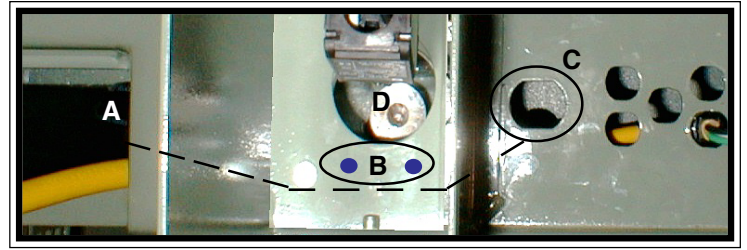
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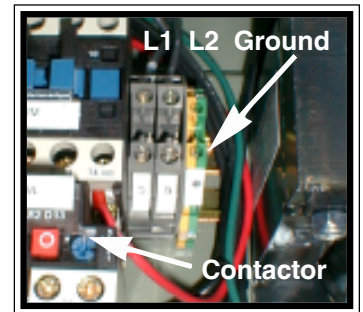
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As supplied your new S-20 Series II is set to run on single phase voltage. The supply voltage of the machine is displayed on the Serial # Plate and the Voltage Label. Connection from the Main supply is made to L1, L2, and Ground terminals between the contactor & transformer.

Supply conductors should be rated for the current supplied and should be protected by time delay fusing rated for the amperage stated on the machine serial plate

- CHECK FOR:
- Signs of damage to the electrical cables from shipping or installation.
  - Correct phase order - The blade should be running counter clockwise.  
( If the blade direction is wrong, two lines should be reversed to correct )



Electrical connection terminals.



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## SECTION 2, OPERATING INSTRUCTIONS

### OPERATOR CONTROL PANEL

The operator control panel provides the operator with all the controls necessary to operate the saw after the cutting angle has been set and the stock has been loaded and secured. All of the electrical functions and the Feed Rate setting are operated from the control panel.

#### HYDRAULIC CONTROLS

**HOLD** - Stops and holds the Head at position.

**FEED** - The Head will descend at the rate set by the Feed Rate knob. This rate can be set on the scale of 1 to 10. As the number increases so does feed rate.

**DOWN** - Allows for rapid approach of the blade to the workpiece.



#### ELECTRICAL CONTROLS

**FUSE** - Check if power fails. Twist & pull to remove the fuse.

**COOLANT Switch** -

**OFF:** No coolant flow.

**ON:** Coolant flow when blade is running.

**WASH:** Constant flow

**START Button** - This button starts the saw blade. The blade will not start with the Head in the down position.

**STOP Button** - Pressing the RED mushroom button will STOP the blade.



Before any material is cut, it is necessary to have good understanding of the basics of cutting metals. Damage to the blade and the saw it's self as well as injury to the operator may occur if the saw is not used properly. Refer to Section I for safety instructions. Following is the necessary information and instruction to operate this machine properly.

## BLADE BASICS

Technology is rapidly changing all aspects of production machining. Metal cutoff is no exception. The advances made in the bandsaw blade industry have definitely brought down the cost per cut, despite the three fold higher price of the newer technology blades. Variable pitch (see Pg 2.3), bi-metal blades (like the 5/8 or 4/6 bimetal blade supplied with the S-20 Series II saws) last much longer, cut faster, and more accurately than the conventional carbon steel blades. In order to take advantage of the superiority of bi-metal blades, it is critical to properly "break-in" a new blade. This is accomplished by taking two or three cuts through solid four or five inch diameter mild steel at an extremely slow feed rate. These two or three slow cuts sufficiently lap (polish) the new blade so that it does not snag the material being cut. Proper break-in will alleviate blade vibration, improve surface finish and accuracy, and improve expected blade life.

**1. A new blade must be properly "broken-in".** Proper break-in will alleviate blade vibration, improve surface finish and accuracy, and extend blade life. The most convenient way to do this is to cut the intended work-piece, at the standard recommended blade speed for that material, but with the feed rate reduced to about 25% of normal. Near the end of the first cut, increase the feed rate again, and once again when the blade approaches the end of the second cut. Keep increasing feed rate in this fashion, so that normal feed rate is reached after 100 to 120 sq. inches of cutting.

**2. Generous coolant application is essential with almost all materials.** A high quality and well mixed coolant will dramatically extend blade life, and will increase cutting rate and surface finish. On those few materials where coolant is undesirable, a slight coolant flow or periodic oiling of the blade is necessary to prevent the blade from being scored by the carbide guides.

**3. The stock being cut must be securely clamped in the vises.** Stock movement during cutting will strip blade teeth. Noticeable stock vibration reduces cutting performance and blade life - consideration should be given to reorientation of the stock, or additional clamping measures (e.g. wood between vise jaws and work-piece).

**4. The proper blade speed for the work-piece material must be selected.**

Use the following chart as a starting point.

- Blade speeds higher than recommended will quickly dull the blade. Blue chips are evidence of excessive blade speed.

- Lower than recommended speeds will not prolong blade life, and will require reduced feed rate - but reduced speeds may be helpful in reducing vibration, and will increase blade life in that case.

**5. The proper feed rate must be applied.**

Feed Rate is the speed which the head "free-falls", and is set with the feed rate control knob.

The head will descend more slowly when the blade encounters the work-piece but the force of the blade on the work will not be changed unless the setting is changed. Verification of proper feed rate is provided by the appearance of the cut chips which ideally form nicely curled "clock springs". (Note that cast irons, and interrupted cuts result in short, broken chips even at ideal feed rates).

- Excessive feed rate will result in short blade life and/or crooked cuts.

BLADE BASICS - CUTTING SPEEDS FOR VARIOUS MATERIALS			
	Blade Speed (In SFM)	Coolant Required	✓
Free Cutting Steels 1100 & 1200 Series Low&Medium Carbon 1008 - 1045	310	YES	✓
High Carbon Steels 1046 - 1095	140, 220	YES	✓
Alloy Steels	140, 220	YES	✓
Tool Steels	90, 140	YES	✓
Pipe & Structural	140, 220	YES	✓
Nickel Base Alloys	90, 140	YES	✓
Copper Base Alloys		YES	✓
Stainless Steels			
430F,416,420F,303	140, 220	YES	✓
Cast Iron		NO	
		Oil Blade	

Blade Speed Selection Chart

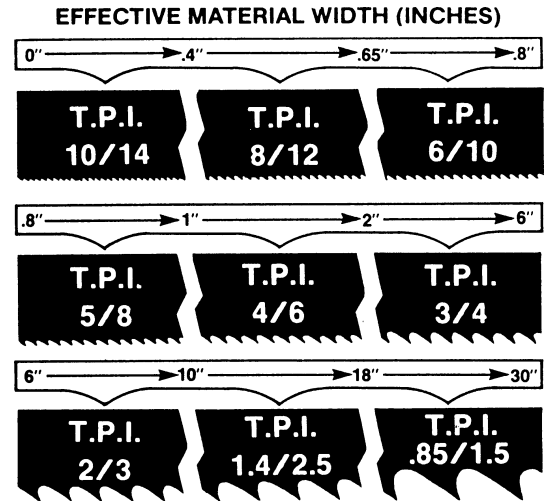
## DETERMINE OPTIMUM BLADE PITCH

### TEETH PER INCH (T.P.I.)

Selecting a blade with proper tooth pitch is important in order to achieve optimal cutting rates and good blade life.

For cutting narrow or thin wall structural materials a fine, blade with many teeth per inch (T.P.I.) is recommended. For wide materials a blade with a coarse pitch should be used. See the sketch below for the blade pitch changes for differing effective material widths.

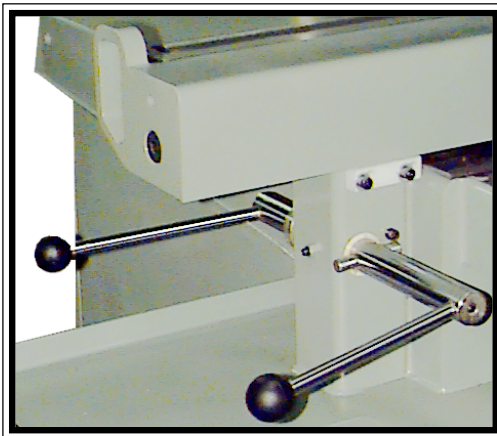
It is impractical to change the blade to the proper pitch every time a different width of material is cut and it is not necessary, but remember that the optimum blade will cut most efficiently. Too fine a blade must be fed slower on wide material because the small gullets between the teeth will get packed with chips before they get across and out of the cut. Too coarse a blade must be fed slower because it has fewer teeth cutting and there is a limit to the depth of a cut taken by each tooth.



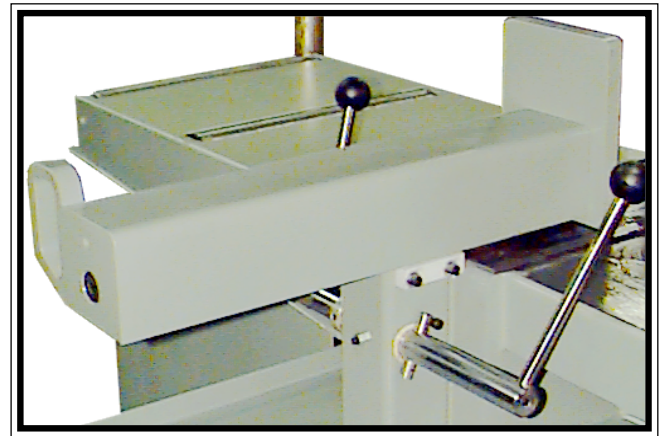
Optimum Blade Pitch ( T.P.I. ) for Material Width ( Inches )

### WISE OPERATION

The material clamping vise is a cam operated, double handle locking vise. The saw operator can push the vise handle to close the jaw on the material and then lock it from either side of the saw. The handles have two positions, forward toward the stock to unlock the vise, and away from the stock to lock. The following photos give a visual guide as to the operation of the vise.



Vise with handles in the Locked Position

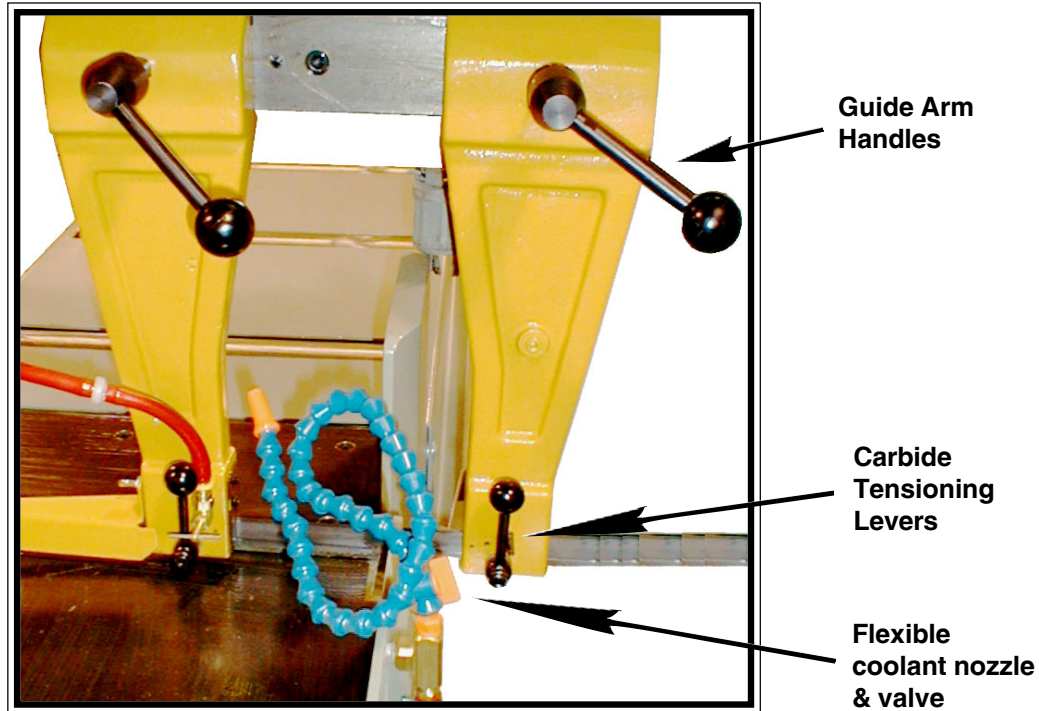


Vise with the handles in the Unlocked position

## GUIDE ARM POSITIONING

The S-20 Series II guide arms are adjustable to accommodate varying material widths. The guide arms should be adjusted as close to the material width as possible while still allowing the material to pass between them. This process of matching the guide arm spacing to the material size is important to optimize blade life.

To adjust the guide arm spacing the locking handles are loosened by turning them counter clockwise. The carbide locking lever is then moved in the counter clockwise direction so that the carbides release the blade. The guide arms will then slide on the main guide bar which supports them. To retighten the guide arm the handle is turned clockwise until the handles are in the Locked position as illustrated in the following photo. The carbide locking lever should be moved to the upright tensioned position.



**Guide Arms with Handles Locked (4 to 6 O'clock Position)  
Carbide Levers in Tensioned Position (Upright)**

## COOLANT FLOW

The S-20 Series II bandsaw is equipped with two needle valves that independently control the coolant nozzles which are capable of supplying a generous flow of coolant to the blade.

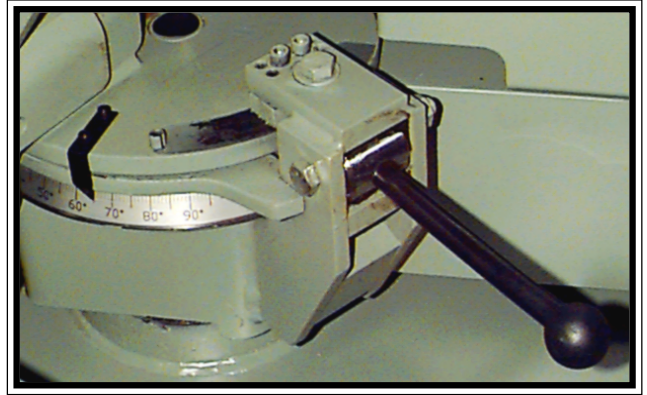
The left (idler) guide arm nozzle supplies a flow of coolant that should flood the blade as it moves through the carbide pads into the material to be cut. The adjustable valve on the left guide arm should be set to a higher flow as a higher blade speed is used to provide the flood of coolant necessary.

The right (drive) guide arm provides an adjustable coolant flow through the needle valve and the flexible hose nozzle that can be pointed directly where necessary. This flexible hose should be used when cutting solid bars, bundles, or wide structurals. Set the flow of coolant directly into the opening in the material where the blade is cutting.

**NOTE:** When cutting materials that do not need constant coolant, such as Cast Iron, some coolant flow is required for blade lubrication to prevent blade scoring by the carbide pads as the blade moves through them.

## **HEAD SWING and BREAK**

An integral function of the S-20 Series II is the ability to make mitred cuts at angles between 90° and 45°. The Head swing of the S-20 Series II is easily changed to set a different cutting angle by first releasing the Angle Brake lever, and then manually moving the Head to the cutting angle desired. An angle scale with a pointer in clear view of the saw operator allows for accurate setting of the cutting angle. The Angle Brake lever is then locked in position by forcing it into the down position. It should be noted that the angle brake should be locked into position whenever cutting with the saw. The photo illustrates the Angle Brake in the locked position at 65°. To set the saw to the 90° position, the Head ( in the fully down position ) is moved until the frame meets the 90° stop bolt which is located in the coolant tray at the drive end of the head.



**Head Swing Scale and Angle Brake ( Locked )**

## **BLADE SPEED SELECTION**

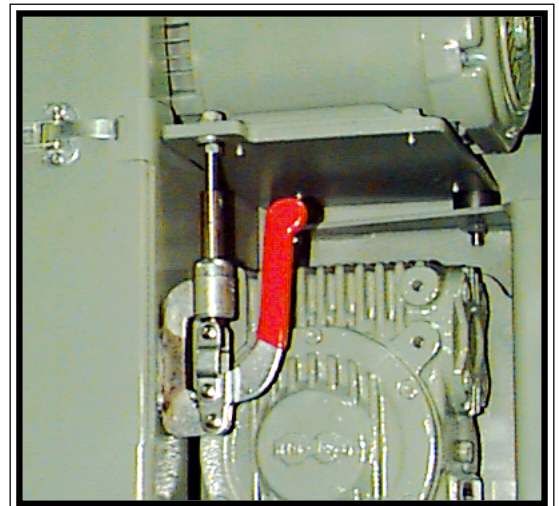
The blade speed of the S-20 Series II can be changed between four different speeds. The speed is determined by the ratio of the pulleys that drive the V belt. The four pulley sets give the optional speeds of 90, 140, 220, and 310 Surface Feet Per Minute.

### **APPROXIMATE BLADE SPEED**

Ratio	1	2	3	4
Ft/Min	90	140	220	310

## **CHANGING BELT POSITION**

To change the blade speed of the S-20 Series II it is necessary to release the V belt tension and move the V belt to another set of pulley grooves. The tension on the V belt is maintained by means of a toggle handle assembly that moves the motor. As the handle is moved to its locking position the motor is driven tight against the V belt. The toggle handle can be adjusted to change the effective tension on the V belt by setting the lock nuts which mount the handle to the motor mount plate. The motor mount plate pivots on rubber bushings that support the motor.



**Blade Speed Tensioning System**

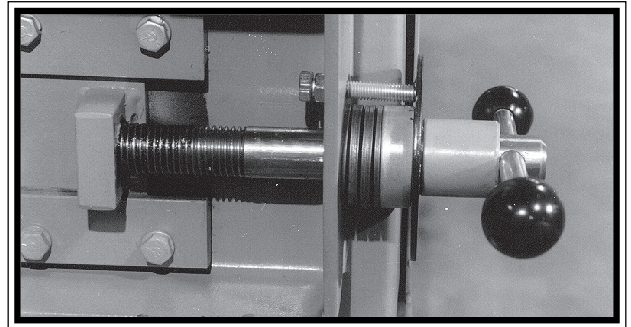
## SECTION 3, MAINTENANCE and TROUBLESHOOTING

### BLADE CHANGING PROCEDURE

**NOTE: Wear gloves for protection from the sharp blade.**

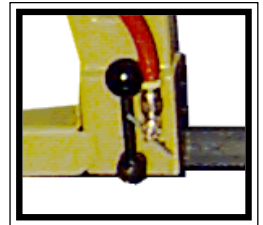
1. Open the Idler Wheel and Drive Wheel doors and swing the head to 45° as this will make it easier to grip the blade closer to both wheels.

2. Loosen the Blade Tensioner by turning counter clockwise.

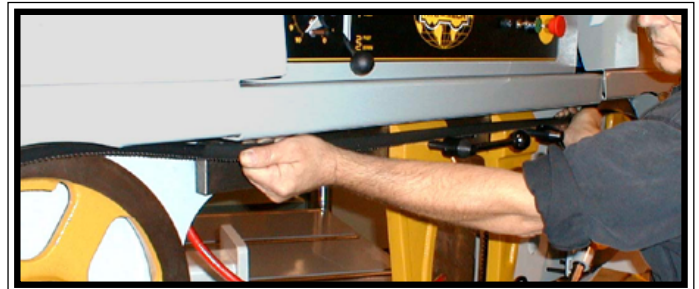


**Blade Tensioner**

3. Loosen the carbide tension handles by turning counter clockwise 1/4 turn.



4. At the top of the head, the saw blade runs in a protective channel. Grip the blade at each end of this channel and twist the blade teeth down past the channel and slide the blade forward. Let the blade rest on the out feed table, then slide the blade down and out of the carbide guides.



**Blade Removal from Top Blade Channel**

5. Before installing the new blade, check that it measures 1.075" wide including the teeth. Some blade manufacturers supply blades that measure 1" including the teeth. In this case you may not be able to adjust the head down limit switch to complete the cut.

6. Your new blade will be in a coil. While wearing gloves, hold the blade away from yourself, twist the blade to uncoil it. Do not let the blade teeth bounce on the concrete floor as some damage may be caused.

7. Place the new blade in the carbide guides and then slide the blade over the wheels. The teeth should be pointing towards the drive side as they pass through the carbide guides.

8. With the blade in place, turn the tensioner handle clockwise until the large black washer contacts the stop bolt as shown on the previous page. This will set the blade tension correctly.

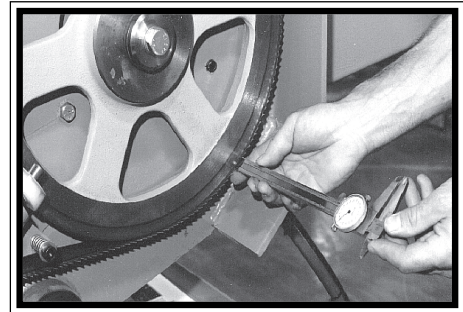
9. With the blade tension set, turn the two carbide locking handles clockwise to the locked position. Jog the blade a few rotations to check that the blade is not moving in or out on the blade wheels.

## **BLADE CHANGING PROCEDURE, CONTINUED**

**9A.** As the blade tracking will stay fairly constant, it should be checked occasionally as shown on the drive wheel tracking photo below. The blade teeth should protrude from .185" to .200" from the face of the blade wheels. If the tracking requires adjustment, follow the instructions below.

### **BLADE TRACKING ADJUSTMENT**

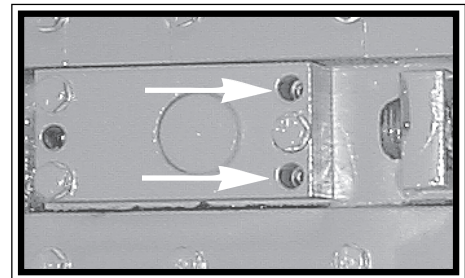
**10.** First, inspect the blade wheels for wear or damage and repair as required. Blade tracking adjustment should always begin at the wheel where the tracking is farthest out of specification. Using the instructions below, adjust the worst wheel, jog the blade and recheck both wheels. Repeat this process until both wheels are within specification.



**Checking the blade tracking with a calliper.**

#### **10A. Idler Wheel Adjustment**

On the blade tensioner slide assembly, there are three 9/16" hex head bolts. Loosen the two bolts at the left end by 1/4 turn. Loosen the single bolt at the right side of the slide assembly by 1/2 turn. In the two holes above and below this bolt are two 3/16" allen key set screws. Turn both set screws 1/4 turn and tighten the hex bolt at the right, then the two bolts at the left. Turning the set screws clockwise will pull the blade on to the wheel, and turning counter clockwise will push the blade off the wheel. Each 1/4 turn will move the blade approximately .02". There is also a single set screw at the left end of the slider. Turning it clockwise will push the blade off the wheel.

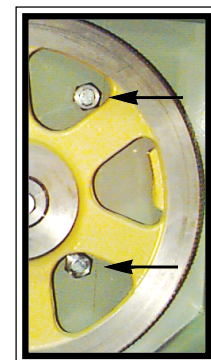


**Idler wheel tracking set screws & hex bolts found on the slide assembly.**

#### **10B. Drive Wheel Adjustment**

On the wall behind the drive wheel are two adjusting bolt assemblies and two hex bolts. Loosen all four of them with a 3/4" socket and turn the larger hex head bolts 1/4 turn with a 1 1/8" socket and extension and then tighten the two bolts in the assemblies, then tighten the two hex bolts at the left. Turning the 1 1/8" bolts clockwise will pull the blade on to the wheel and turning counter clockwise will push the blade off. Each 1/4 turn will move the blade approximately .02".

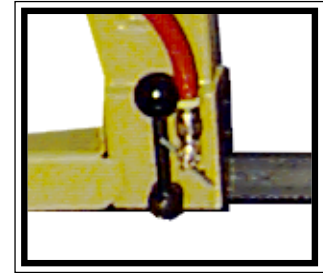
**11.** Check the blade brush adjustment (Pg 3.3) to be sure the blade is being cleaned properly.



**Drive wheel tracking bolt assemblies.**

## **BLADE GUIDE ADJUSTMENT**

At the bottom of the guide arms are the carbide blade guide assemblies, the photo below shows the carbide locking handle. These assemblies will need to be adjusted occasionally as the carbide pads become worn. To adjust properly, follow this simple procedure. Loosen the hex nut on the locking handle with a 9/16 wrench and turn the handle clockwise until it rests against the coolant tap on the idler guide arm or the roll pin on the drive guide arm. Turn the set screw clockwise with a 3/16 allen key until tight and then loosen 1/8 of a turn and tighten the hex nut. This should put just enough pressure on the blade to permit you to push the blade down approximately 1/8".

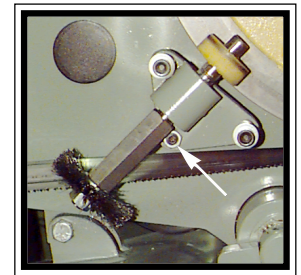


**Idler guide arm carbide locking handle in the locked position.**

## **BLADE BRUSH ADJUSTMENT**

The machine leaves the factory with the blade brush adjusted for maximum life of the brush. This setting places the ends of the blade brush wires so as to contact the blade at the bottom of the blade gullets. The plastic drive wheel that is driven by the drive wheel face should be held against the blade face with the minimum force that is necessary. As the blade brush wears it is necessary to periodically adjust it closer to the blade or if a new brush is installed, further away from the blade.

As shown, there are two springs on socket head screws holding the brush assembly against the blade. There is also an adjusting socket set screw with a hex nut on it. Loosen the hex nut with a 9/16" wrench and turn the set screw counter clockwise with a 3/16" allen key. This will move the brush closer to the blade. Adjust the set screw so that the brush cleans to the bottom of the blade gullets and tighten the hex nut.



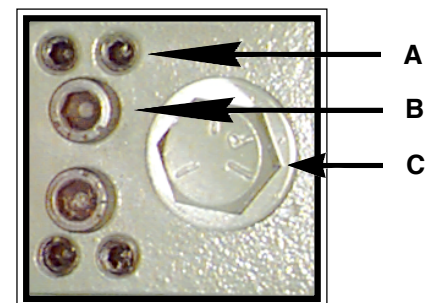
**Blade brush adjusting screw & hex nut.**

## **ANGLE BRAKE ADJUSTMENT**

The clamping force on the swivel brake can be adjusted to ensure that the Head is held securely and does not move during cutting. The brake handle should be adjusted so that it does not "bottom out" or hit it's movement limit, yet holds the head securely.

### **ANGLE BRAKE ADJUSTMENT PROCEDURE**

- STEP 1** Loosen locking cap screws "B" with a 1/4 allen key.
- STEP 2** Tighten all 4 set screws "A" until snug with a 5/32" allen key.
- STEP 3** Back out the "A" screws 1/4 of a turn.
- STEP 4** Tighten the locking cap screws "B".
- STEP 5** Swing the head to 45° and back to ensure that the head moves freely and does not bind on the pivot surfaces. Continue to step 6 if necessary.
- STEP 6** Adjust the clamping force bolt "C" with a 3/4" wrench. If not tightened enough, the locking handle will "bottom out" and not hold the head firmly.



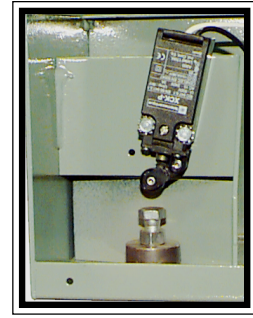
**Angle Brake Adjustment Screws.**



## **HEAD DOWN LIMIT SWITCH**

The Head down limit switch operates to cut power to the blade motor and the coolant pump motor when the Head has descended to the bottom of its travel. The Head is adjusted so that the blade will descend slightly past the level of the vise wear strips. This setting is critical to ensure that the blade has cut fully through the stock. The Head Down Limit switch is located in the electrical box and is mounted in such a way that as the Head descends the counterbalance spring post contacts the limit switch roller.

Adjustment of the limit switch is made by changing the position of the set bolt which is located in the end of the spring post. Lengthening the set bolt will cause the limit switch to activate sooner as the spring post meets the limit switch roller. Shortening the setting bolt by turning it into the spring post will lengthen the time before the Head limit switch is activated.



**Head Down Limit  
Switch & Adjusting Bolt  
(inside control box)**

## **BELT TENSION ADJUSTMENT**

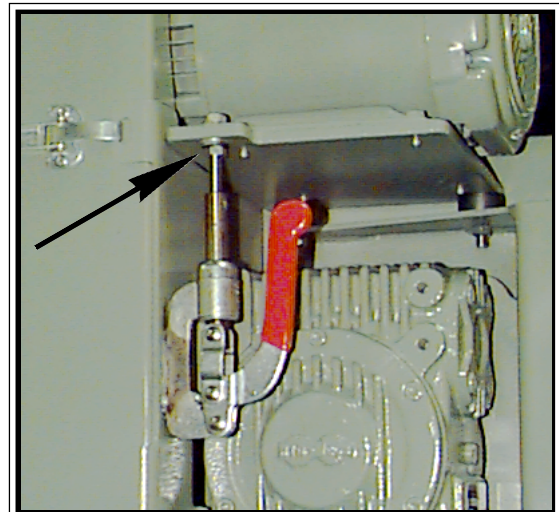
Drive belt tension is maintained by the locking of a toggle clamp assembly. The release of the toggle clamp permits the drive belt to be loosened so that the blade speed can be changed by selecting a different pulley ratio.

**STEP 1** Stop the blade motor. Undo the cover latch and swing the pulley cover away.

**STEP 2** At midpoint between pulleys, you should be able to push the belt in 1/2". Too much or too little movement will cause slippage or abnormal wear on the belt and other drive system parts.

**STEP 3** If adjustment is needed, loosen the lock nut with a 9/16" wrench and turn the adjusting bolt until the belt tension is set.

**STEP 4** Tighten the lock nut, test the belt on all 4 speed positions. Close cover.

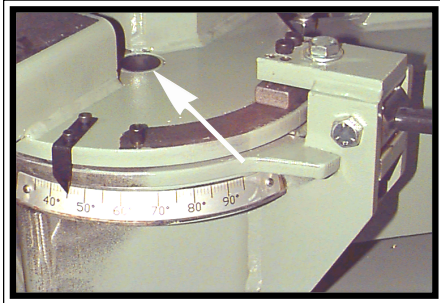


**Toggle Tensioner Adjustment Locknuts**

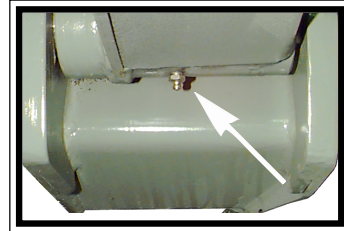
## LUBRICATION

The S-20 Series II was designed to minimize the maintenance requirements. Moving assemblies and contact faces need lubrication on a regular schedule whether they are in heavy use or not. The lubrication requirements of the S -20 Series II are primarily the saw pivot points which are equipped with grease fittings ( circled ), and metal to metal surfaces ( S ) that require lubrication to prevent wear and seizure.

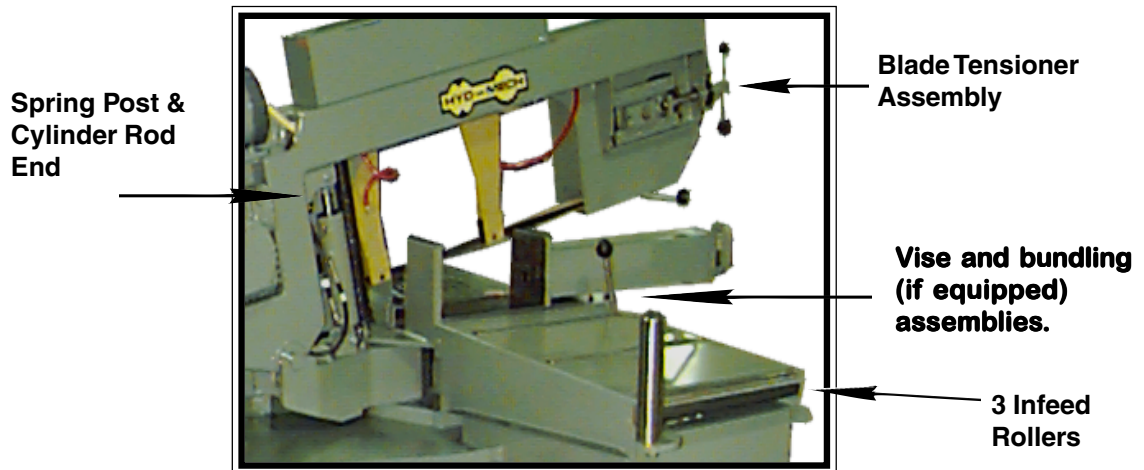
**NOTE:** Hyd-Mech recommends Monthly lubrication.



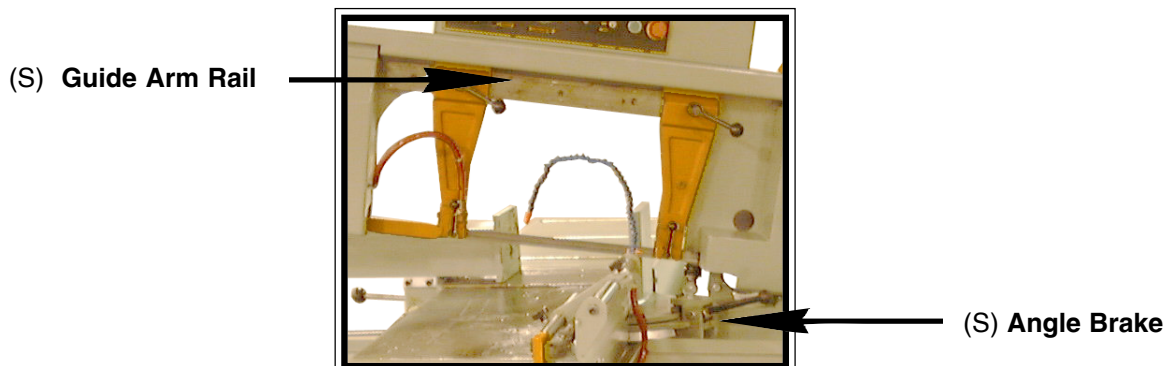
Swivel Pivot pin fitting under dome cap.



Head horizontal pivot fitting.



Rear View - Lubrication Points



S-20 Series II Front View - Surface Lubrication

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## **TROUBLE SHOOTING GUIDE**

<b>PROBLEM</b>	<b>PROBLEM CAUSE</b>
1. Cutting out of square vertically.	<ul style="list-style-type: none"><li>- Carbide guide adjustment incorrect (adjust).</li><li>- Feed rate excessive (reduce).</li><li>- Blade worn (replace).</li><li>- Guide arms too far apart.</li><li>- Blade Pitch Incorrect .</li></ul>
2. Cutting out of square horizontally.	<ul style="list-style-type: none"><li>- Angle not set correctly(adjust).</li><li>- Stock not square in vise. (reset material)</li><li>- Angle pointer out of adjustment.</li><li>- Stock is not secure in the vise. (reset vise)</li></ul>
3. Head cylinder creeps: A) in hold	<ul style="list-style-type: none"><li>- Cylinder cup seal defective (replace).</li><li>- 3 position valve defective (replace).</li><li>- Hydraulic hose leaking.</li></ul>
B) in feed position	<ul style="list-style-type: none"><li>- Loosen jam nut and readjust pointer with feed rate at zero.</li></ul>
4. Blade tracking incorrect.	<ul style="list-style-type: none"><li>- Improper tension (adjust).</li><li>- Tracking needs adjustment.</li><li>- Wheel is worn or in poor condition.</li></ul>
5. Blade stalls in cut.	<ul style="list-style-type: none"><li>- More tension needed.</li><li>- Excessive feed rate (reduce).</li><li>- Blade pitch incorrect.</li><li>- Carbide guides overtightened.</li></ul>
6. Blade vibrating excessively.	<ul style="list-style-type: none"><li>- Blade speed too fast.</li><li>- More blade tension needed.</li><li>- Guide arms too far apart.</li><li>- Feed rate too slow (increase).</li><li>- Carbide guides worn or loose (adjust or replace).</li></ul> <p><b>NOTE:</b> New blades tend to vibrate until they are “broken in”.</p>
7. Excessive blade breakage	<ul style="list-style-type: none"><li>- Excessive blade tension (reduce).</li><li>- Excessive feed rate (reduce).</li><li>- Top guide(s) damaged (replace).</li></ul>
8. No coolant flow.	<ul style="list-style-type: none"><li>- No coolant (add).</li><li>- Check coolant ports for blockage.</li><li>- Line blockage (blow out lines with compressed air).</li><li>- Coolant pump inoperable (replace).</li><li>- Coolant pump has lost its prime, loosen screws, sink pump in coolant. When coolant starts flowing, tighten screws.</li></ul>
9. Blade will not start.	<ul style="list-style-type: none"><li>- Lift head off limit switch.</li><li>- Control fuse blown.</li><li>- Push reset button.</li><li>- If present, check safety door interlock switches.</li></ul>
10. Machine stops before cut is completed or runs on after cut is completed.	<ul style="list-style-type: none"><li>- Adjust head down limit switch bolt. (Pg 3.4)</li></ul>

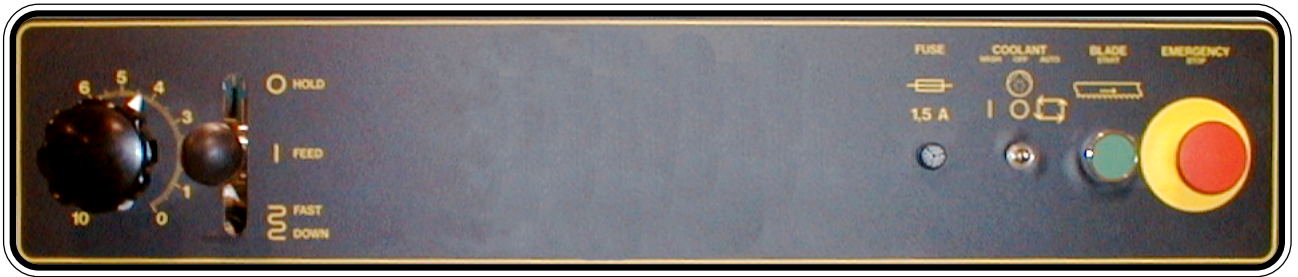


# SECTION 4, ELECTRICAL SYSTEM

## CONTROL PANEL & COMPONENTS

This machine has been built to the customers requirements, however, if any voltage changes are required, refer to the information on page 4.3 and then consult Hyd-Mech service department before implementing any changes.

The following photos show the S-20 control panel layout. The component codes shown are listed on the following pages.



1FU CONTROL FUSE

1SS COOLANT SWITCH

5PB START BUTTON

1PB STOP PUSH-BUTTON

BUSS

McGILL

TELEMECANIQUE

TELEMECANIQUE

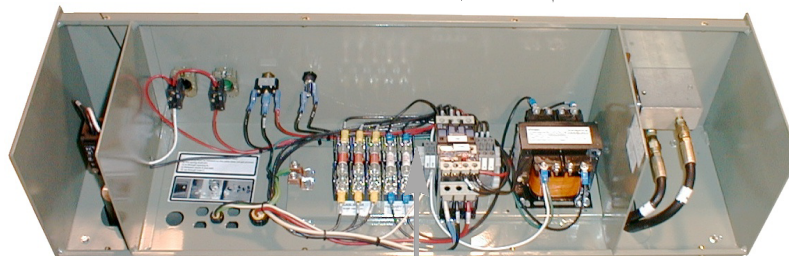
MC, MOTOR CONTACTOR

TR, TRANSFORMER

LS, LIMIT SWITCH

2FU & 4FU FUSES

OL, MOTOR OVERLOAD



## ELECTRICAL COMPONENTS LISTS

### LIST OF S22\_ S23 ELECTRICAL COMPONENTS

<i>Item Code as on S22_S23 Schematic</i>	<i>Description</i>	<i>Part Number</i>	<i>Component Manufacturer</i>
1PB-Emergency Stop Push Button	Red mushroom head, spring return push button. Mounting base with 1 N/C contact block.	ZB2 BC4 ZB2 BZ102	Telemecanique Telemecanique
5PB-Blade Start Push Button	Green, non-illuminated, flush head push button. Mounting base with 1 N/O contact block.	ZB2 BA3 ZB2 BZ101	Telemecanique Telemecanique
1SS-Coolant Selector Switch	Black, 3 positions, maintained toggle switch.	91-0003	Eaton
1FU	Fuse holder 1.5A Time-delay fuse	BKHT B261 6CC1.5S	Buss
2 L/S Head Down	Limit switch with roller lever	XCK L115H7	Telemecanique
3 L/S Blade Break	Limit switch with roller lever	XCK L115H7	Telemecanique
Coolant Pump	Coolant pump 1 Phase /120 VAC	2E-NT	Little Giant
	Coolant Pump Junction Box	SCEJB442	Selectric
	Wire terminal 20-10 AWG	WK4/U	Wieland
	Wire terminal 20-8 AWG	WK6/U	Wieland
	Ground terminal 20-8 AWG	WK6/SLU	Wieland
	Ground Lug	SLU35	IlSCO
<b><u>Options</u></b>			
3 L/S Blade Break	Limit switch with roller lever	XCK L115H7	Telemecanique

**S22 POWER COMPONENTS for SPECIFIC VOLTAGES**

Description & (Item Code) as on schematic	MACHINE VOLTAGE						Component Manufacturer
	3ph 208V	3ph 240V	3ph 380	3ph 415V	3ph 480V	3ph 600V	
<b>2HP BLADE DRIVE MOTOR (2M) Frame Size 145TC, 1800 R.P.M.</b>							
CONTACTOR ( 2M )	LC1D1210	LC1D1210	LC1D1210	LC1D1210	LC1D1210	LC1D1210	Telemecanique
OVERLOAD (2 O/L)	LR2D1312	LR2D1312	LR2D1308	LR2D1308	LR2D1308	LR2D1308	Telemecanique
MOTOR F.L.A. (1750 RPM)	6.1A	6A	3.5A	3.2A	3A	2.5A	
(4FU1 - 4FU3) FUSE PART # FUSE HOLDER PART #	15A T.D 6CC15S 30310	15A T.D 6CC15S 30310	8A T.D 6CC8S ST10	8A T.D 6CC8S ST10	8A T.D 6CC8S 30310	6A T.D 6CC6S 30310	Gould / Ferraz
<b>3HP BLADE DRIVE MOTOR (2M) Frame Size 182TC, 1800 R.P.M. ( OPTION ON S22H )</b>							
CONTACTOR ( 2M )	LC1D1210	LC1D1210	LC1D1210	LC1D1210	LC1D1210	LC1D1210	Telemecanique
OVERLOAD (2 O/L)	LR2D1314	LR2D1314	LR2D1310	LR2D1310	LR2D1310	LR2D1308	Telemecanique
MOTOR F.L.A. (1750 RPM)	8.6A	8A	4.8A	4.6A	4A	3.5A	
(4FU1 - 4FU3) FUSE PART # FUSE HOLDER PART #	20A T.D 6CC20S 30310	20A T.D 6CC20S 30310	10A T.D 6CC10S ST10	10A T.D 6CC10S ST10	10A T.D 6CC10S 30310	8A T.D 6CC8S 30310	Gould / Ferraz
<b>CONTROL TRANSFORMER (TR) 200 VA</b>							
TRANSFORMER PART # (TR)	9070 T200D3	9070 T200D1	9070 T200D33	9070 T200D33	9070 T200D1	9070 T200D5	Square-D
PRIMARY FUSE FUSE PART # FUSE HOLDER PART # (2FU1, 2FU2)	5A Fast Acting, 6JX5 30310	4A Fast Acting, 6JX4 30310	4A Fast Acting, 6JX4 ST-10	3A Fast Acting, 6JX3 ST-10	3A Fast Acting, 6JX3 30310	3A Fast Acting, 6JX3 30310	Gould / Ferraz
SECONDARY FUSE FUSE PART # FUSE HOLDER PART # (1FU)	1.5A T.D 6CC1.5S 30310	1.5A T.D 6CC1.5S 30310	1.5A T.D 6CC1.5S ST10	1.5A T.D 6CC1.5S ST10	1.5A T.D 6CC1.5S 30310	1.5A T.D 6CC1.5S 30310	Gould / Ferraz
<b>CONTROL TRANSFORMER (TR) 500 VA ( Only installed when Work Lamp is added as an option.)</b>							
TRANSFORMER PART # (TR)	9070 T500D3	9070 T500D1	9070 T500D33	9070 T500D33	9070 T500D1	9070 T500D5	Square-D
PRIMARY FUSE FUSE PART # FUSE HOLDER PART # (2FU1, 2FU2)	9A Fast Acting, 6JX9 ST-10	8A Fast Acting, 6JX8 ST-10	6A Fast Acting, 6JX6 ST-10	6A Fast Acting, 6JX6 ST-10	5A Fast Acting, 6JX5 ST-10	4A Fast Acting, 6JX4 ST-10	Ferraz
SECONDARY FUSE FUSE PART # FUSE HOLDER PART # (1FU)	5A T.D 6CC5S ST10	5A T.D 6CC5S ST10	5A T.D 6CC5S ST10	5A T.D 6CC5S ST10	5A T.D 6CC5S ST10	5A T.D 6CC5S ST10	Ferraz

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***ELECTRICAL SCHEMATIC***



# SECTION 4, ELECTRICAL SYSTEM

## CONTROL PANEL & COMPONENTS

This machine has been built to the customers requirements, however, if any voltage changes are required, refer to the information on page 4.3 and then consult Hyd-Mech service department before implementing any changes.

The following photos show the S-20 control panel layout. The component codes shown are listed on the following pages.



1FU CONTROL FUSE

1SS COOLANT SWITCH

5PB START BUTTON

1PB STOP PUSH-BUTTON

BUSS

McGILL

TELEMECANIQUE

TELEMECANIQUE

MC, MOTOR CONTACTOR

TR, TRANSFORMER

LS, LIMIT SWITCH

2FU & 4FU FUSES

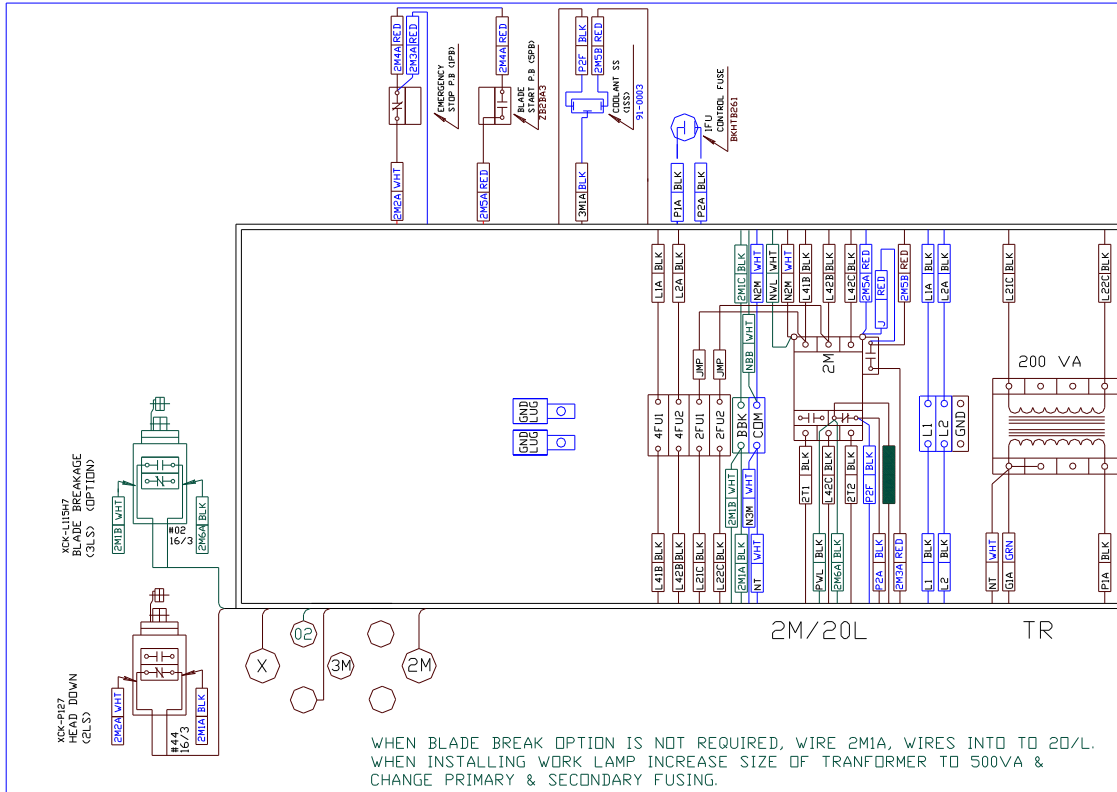
OL, MOTOR OVERLOAD

## ELECTRICAL COMPONENTS LISTS

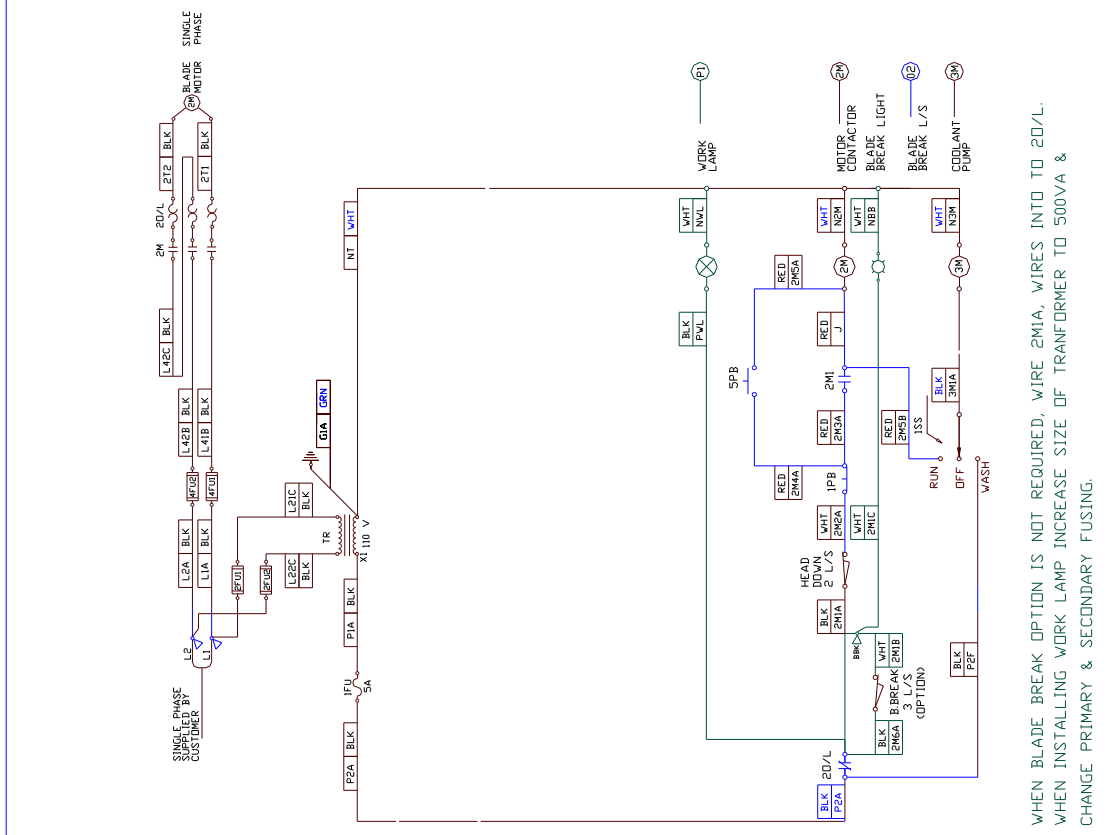
<b>LIST OF S22 ELECTRICAL COMPONENTS</b>			
<b>Item Code as on S22 Schematic</b>	<b>Description</b>	<b>Part Number</b>	<b>Component Manufacturer</b>
1PB-Emergency Stop Push Button	Red mushroom head, spring return push button. Mounting base with 1 N/C contact block.	ZB2 BC4 ZB2 BZ102	Telemecanique Telemecanique
5PB-Blade Start Push Button	Green, non-illuminated, flush head push button. Mounting base with 1 N/O contact block.	ZB2 BA3 ZB2 BZ101	Telemecanique Telemecanique
1SS-Coolant Selector Switch	Black, 3 positions, maintained toggle switch.	91-0003	Eaton
1FU	Fuse holder 1.5A Time-delay fuse	BKHT B261 6CC1.5S	Buss
2 L/S Head Down	Limit switch with roller lever	XCK P121	Telemecanique
Coolant Pump	Coolant pump 1 Phase /120 VAC	2E-NT	Little Giant
	Coolant Pump Junction Box	SCEJB442	Selectric
	Wire terminal 20-10 AWG	WK4/U	Wieland
	Ground terminal 20-10 AWG	WK4/SLU	Wieland
	Wire terminal 20-8 AWG	WK6/U	Wieland
	Ground Lug	SLU35	IlSCO
<b><i>Options</i></b>			
4 L/S, Out Of Stock	Limit switch with roller lever	XCK L115H7	Telemecanique
4CR	Out of Stock relay plus mounting base.	G2R-2-S P2RF-08-E	Omron
3 L/S Blade Break	Limit switch with roller lever	XCK L115H7	Telemecanique

<b>S22 SINGLE PHASE POWER COMPONENTS for SPECIFIC VOLTAGES</b>			
<b>Description &amp; (Item Code) as on schematic</b>	<b>MACHINE VOLTAGE</b>		<b>COMPONENT MANUFACTURE</b>
	<b>1ph 208V</b>	<b>1ph 240V</b>	
<b>2HP BLADE DRIVE MOTOR (2M) Frame Size 145TC, 1800 R.P.M.</b>			
CONTACTOR ( 2M )	LC1D1810	LC1D1810	Telemecanique
OVERLOAD (2 O/L)	LR2D1316	LR2D1316	Telemecanique
MOTOR F.L.A. ( 1750 RPM )	9.7A	9.2A	
(4FU1 & 4FU2) FUSE PART # FUSE HOLDER PART #	20A T.D ATDR20 30310	20A T.D ATDR20 30310	Gould
<b>CONTROL TRANSFORMER (TR) 200 VA</b>			
TRANSFORMER PART # (TR)	9070 T200D3	9070 T200D1	Square-D
PRIMARY FUSE FUSE PART # FUSE HOLDER PART # (2FU1, 2FU2)	5A Fast Acting, ATM5 30310	5A Fast Acting, ATM5 30310	Gould
SECONDARY FUSE FUSE PART # FUSE HOLDER PART # (1FU)	1.5A T.D MDL1.5 BKHT B261	1.5A T.D MDL1.5 BKHT B261	Gould / Buss
<b>CONTROL TRANSFORMER (TR) 500 VA ( Only installed when Work Lamp is added as an option.)</b>			
TRANSFORMER PART # (TR)	9070 T500D3	9070 T500D1	Square-D
PRIMARY FUSE FUSE PART # FUSE HOLDER PART # (2FU1, 2FU2)	9A Fast Acting, ATM9 30310	8A Fast Acting, ATM8 30310	Gould
SECONDARY FUSE FUSE PART # FUSE HOLDER PART # (1FU)	5A T.D MDL5 BKHT B261	5A T.D MDL5 BKHT B261	Gould / Buss

# ELECTRICAL DRAWINGS



HYD-MECH ENG. WOODSTOCK, ONT. SHEET 1 OF 1 DWG #S22\_S23-7-00-2 S22\_S23NA SINGLE PHASE B.B SERIAL# - DWN BY JSH DATE: MAR 24/00

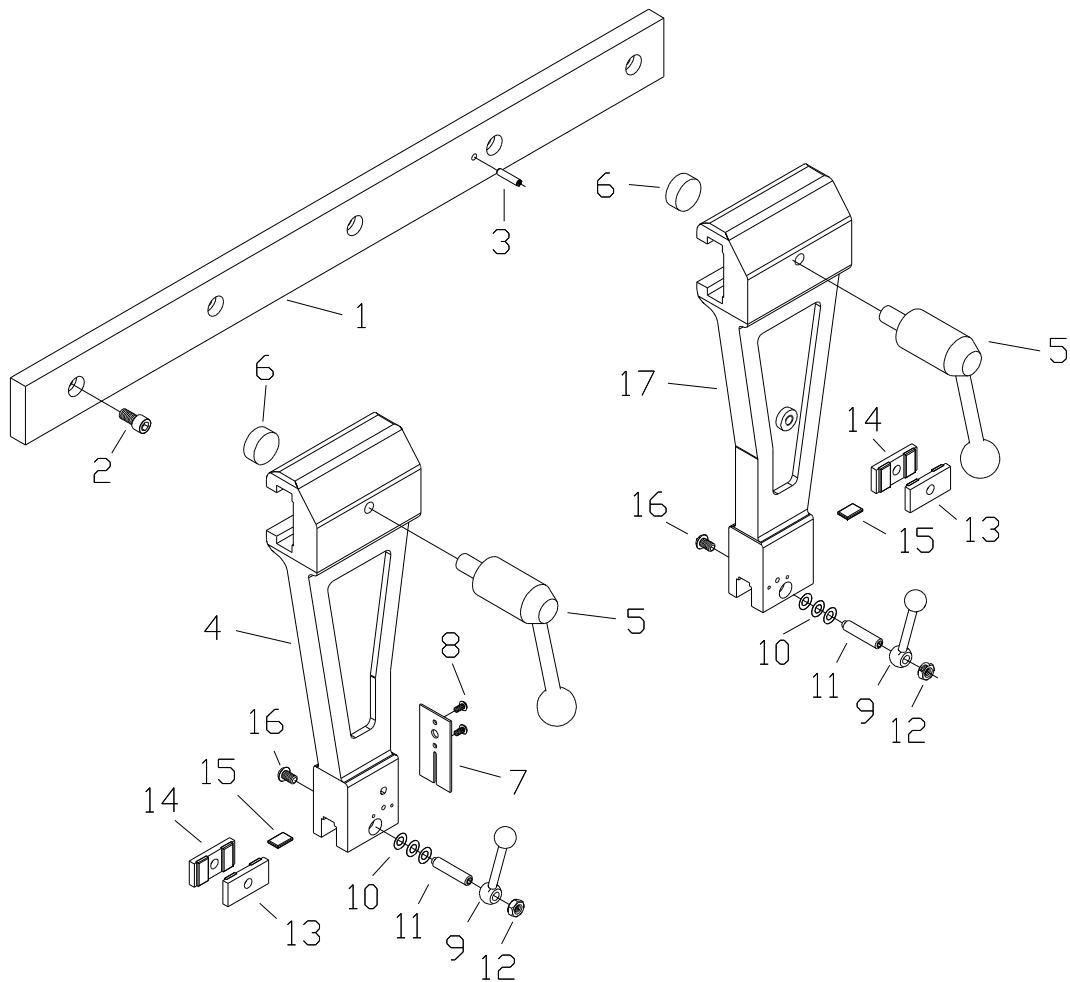


HYD-MECH ENG. WOODSTOCK, ONT. SHEET 1 OF 1 DWG #S22\_S23-7-00-1 S22\_S23NA SINGLE PHASE B.B SERIAL# - DWN BY JSH DATE: MAR 24/00

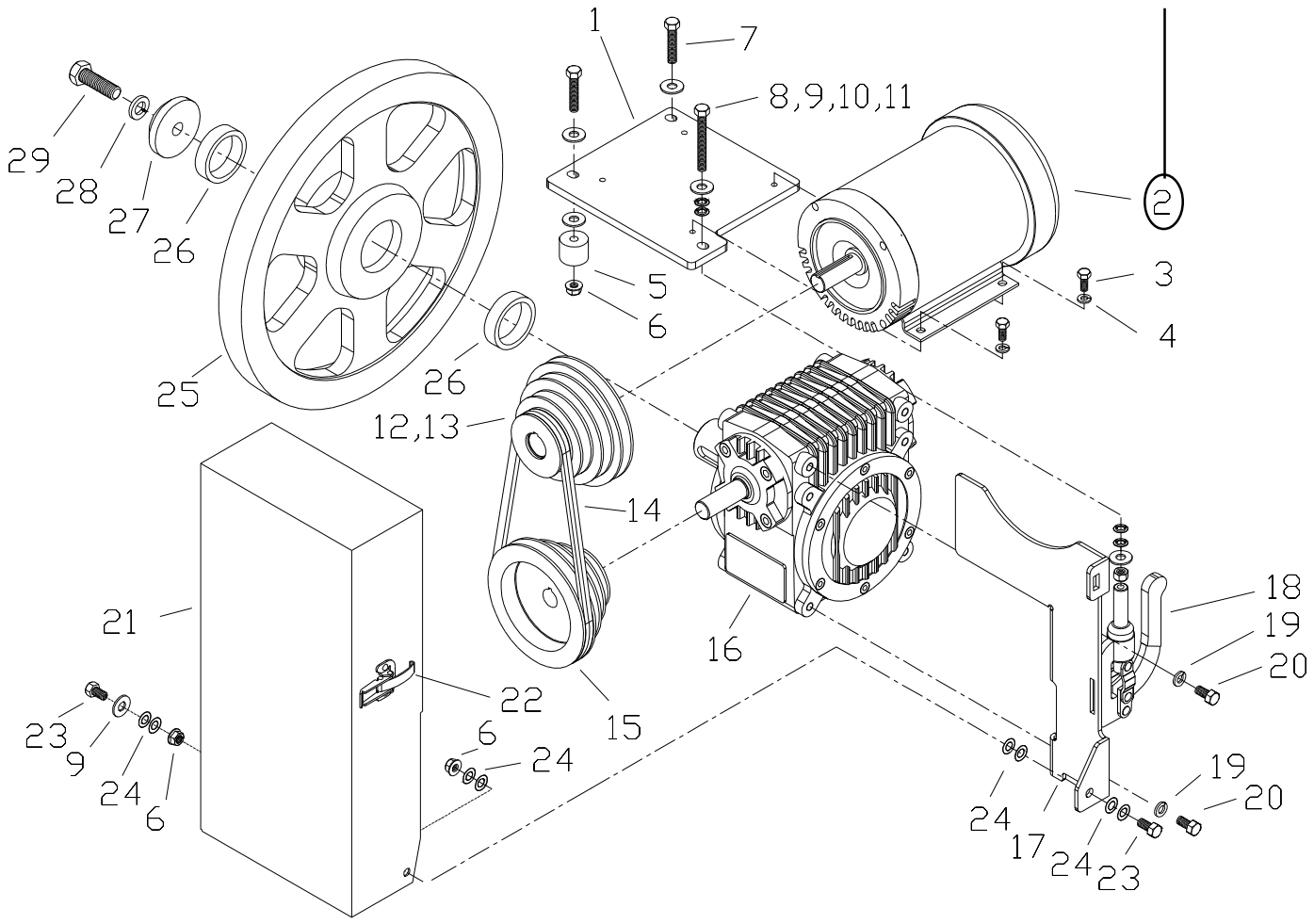


## SECTION 6, MECHANICAL ASSEMBLIES

### GUIDE ARM & CARBIDE ASSEMBLIES



ITEM	QTY	S22 PART NUMBER	DESCRIPTION
1	1	S22-45-01A	GUIDE ARM BAR
2	5	A1-.375 X.75	SOCKET HEAD CAP SCREW
3	1	.25X1	ROLL PIN
4	1	S22-45-02A	IDLER ARM
5	2	S22-45-06	GUIDE ARM LOCKING HANDLE
6	2	S22-45-05	CLAMPING PAD
7	1	S22-45-04	COOLANT NOZZLE COVER
8	2	SB1-.19X.5	SOCKET BUTTON HEAD SCREW
9	2	S22-45-08	CARBIDE LOCKING HANDLE
10	6	30 C0750-040	DISC SPRING
11	2	S2-.375X1.75D	SOCKET SET SCREW, DOG POINT
12	2	3/8-24 JNUT	JAM HEX NUT
13	2	CRB-100-21-00	CARBIDE PLATE, FRONT
14	2	CRB-100-22-00	CARBIDE PLATE, REAR
15	2	CRB-TL-770	CARBIDE, TOP
16	2	F1-.312X.5	FLAT SOCKET HEAD SCREW
17	1	S22-45-03A	DRIVE ARM

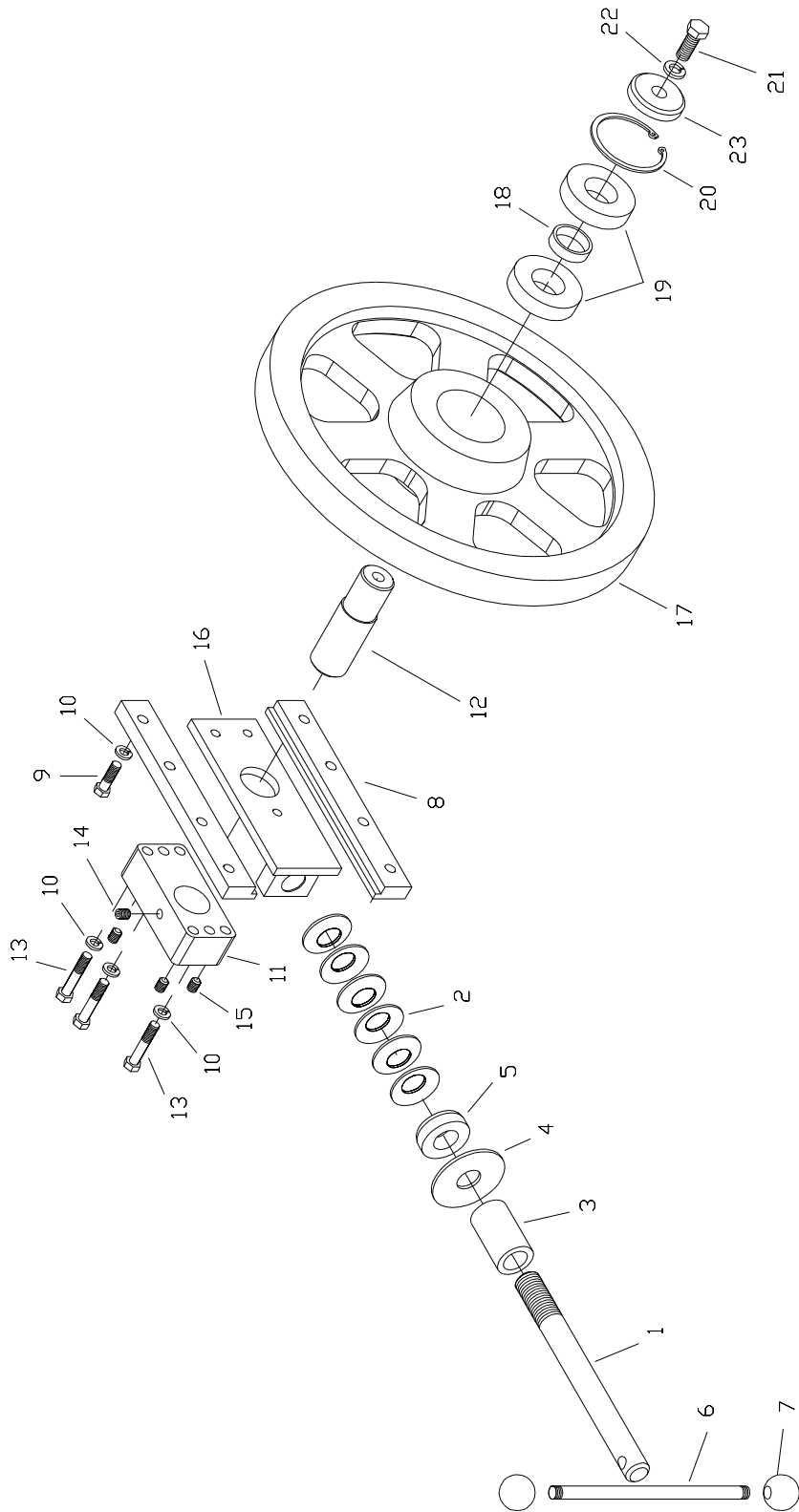


NOTE: There is no "C" flange on single phase motor (item 2), 145T\_ frame size, not 145TC.

**BLADE DRIVE ASSEMBLY, parts list**

<b>ITEM</b>	<b>QTY</b>	<b>S-22 PART NUMBER</b>	<b>DESCRIPTION</b>
1	1	S22-41-01A	MOTOR MOUNTING PLATE
2	1	145TC FRAME	2 HP, 1800RPM, SPECIFY VOLTAGE
3	4	B1-.312X.75	HEX HEAD CAP SCREW
4	4	.312 LOC	LOCK WASHER
5	2	S22-41-04	DAMPING SPACER
6	4	.375-16LNUT	HEX LOCK NUT
7	2	B1-.375x2	HEX HEAD CAP SCREW
8	1	B1-.375X3	HEX HEAD CAP SCREW
9	4	.375FLT	FLAT WASHER
10	4	30 C0750-040	DISC SPRING
11	1	.375-16HXNUT	HEX NUT
12	1	S22-41-05A	STEP PULLEY (motor)
13	1	S1-.25X.375-C	SOCKET SET SCREW, CUP POINT
14	1	4L-320	V BELT
15	1	S22-41-06B	STEP PULLEY (gear box)
16	1	HM 3 SP (HM3A)	CANIMEX (RENOLD) GEAR BOX, 39:1
17	1	S22-41-03A	COVER PIVOT BRACKET
18	1	GH-36012-Z	TOGGLE CLAMP (welded to item 17)
19	2	M10LOC	LOCK WASHER
20	2	B3-10X20	METRIC HEX HEAD CAP SCREW
21	1	S22-41-02	BELT PULLEY COVER
22	1	772-0086	DOOR LATCH (welded to item 21)
23	1	B1-.375X1	HEX HEAD CAP SCREW
24	8	30 C0750-040	DISC SPRING
25	1	S20-3-07E	DRIVE WHEEL
26	2	S22-44-01A	DRIVE WHEEL SPACER
27	1	S22-44-02	RETAINING CAP
28	1	M16LOC	LOCK WASHER
29	1	B3-16X50	METRIC HEX HEAD CAP SCREW

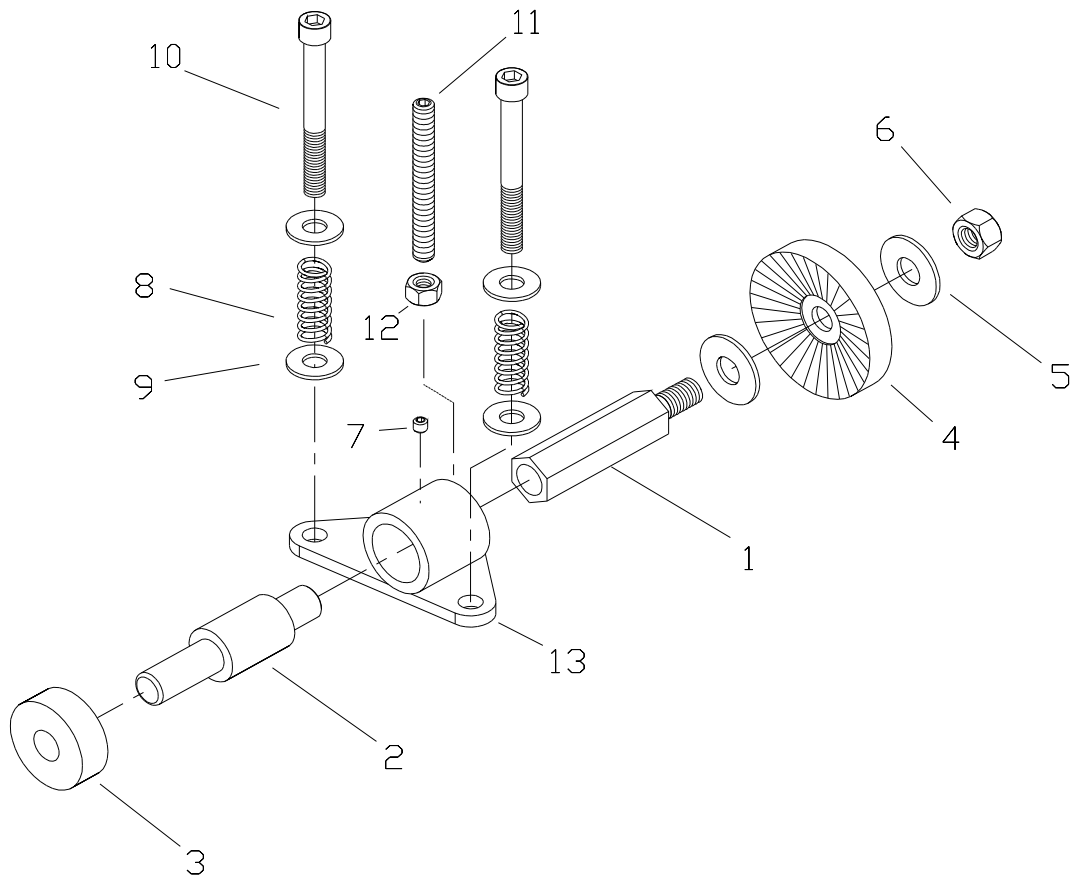
# IDLER WHEEL ASSEMBLY





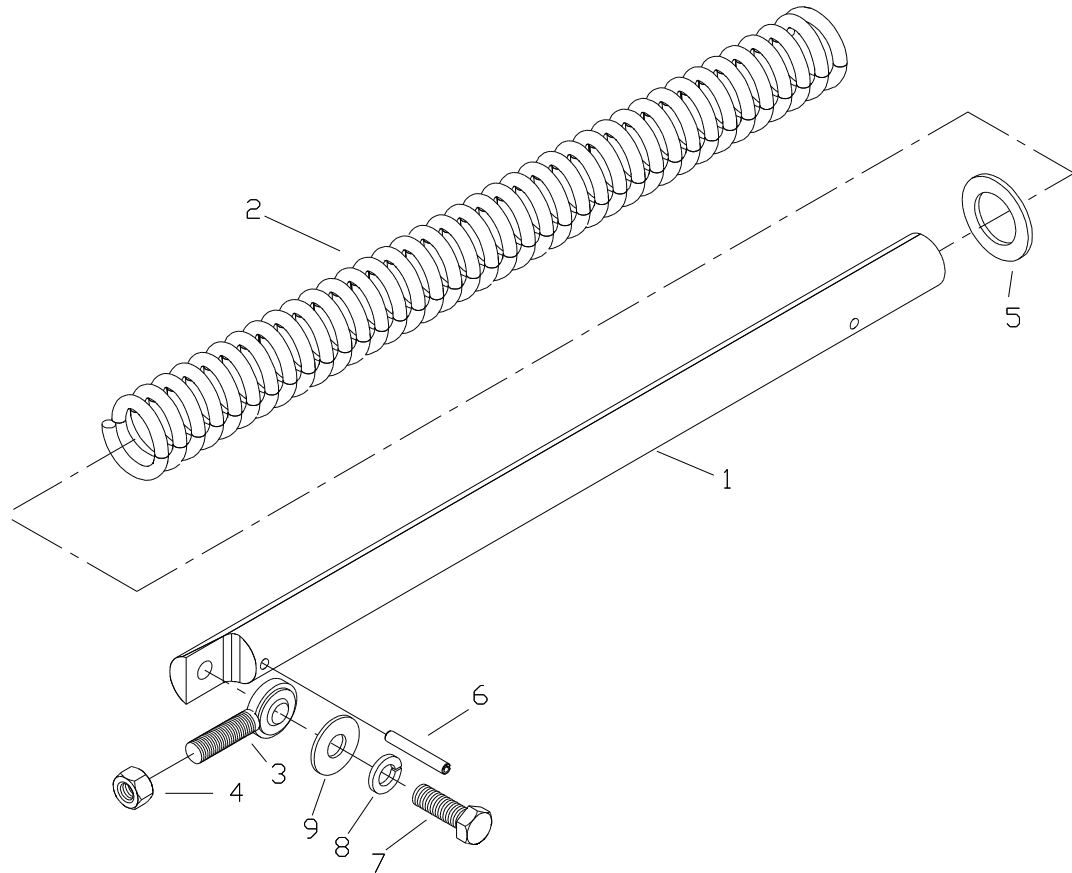
<b>ITEM</b>	<b>QTY</b>	<b>S-22 PART NUMBER</b>	<b>DESCRIPTION</b>
1	1	S22-42-01A	BLADE TENSION SHAFT
2	6	30 K2000-097	DISC SPRING
3	1	S22-42-03A	BLADE TENSION COLLAR
4	1	S22-42-04	STOP PLATE
5	1	4462-00	THRUST BEARING
6	1	S22-42-02A	TENSIONER HANDLE
7	2	1993	1 3/8 BALL KNOB, 1/2 nc
8	2	S20-3-05	SLIDE WAYS
9	8	B1-.375X1	HEX HEAD CAP SCREW
10	11	.375LOC	LOCK WASHER
11	1	S20-33B-01	BLOCK
12	1	S20-3-08A	IDLER SHAFT
13	3	B2-.375X2	HEX HEAD CAP SCREW (NF)
14	1	S2-.375X.375-F	SOCKET SET SCREW, FLAT POINT (NF)
15	3	S2-.375X2-C	SOCKET SET SCREW, CUP POINT (NF)
16	1	S20-331-00	BASE WELDMENT
17	1	W16-45A-01	IDLER WHEEL
18	1	W16-45A-02	IDLER WHEEL SPACER
19	2	6307 2RS	BALL BEARING
20	1	HO-315-PA	INTERNAL RETAINING RING
21	1	B1-.5X1.5	HEX HEAD CAP SCREW
22	1	.5LOC	LOCK WASHER
23	1	S22-44-02	RETAINING CAP

## BLADE BRUSH ASSEMBLY



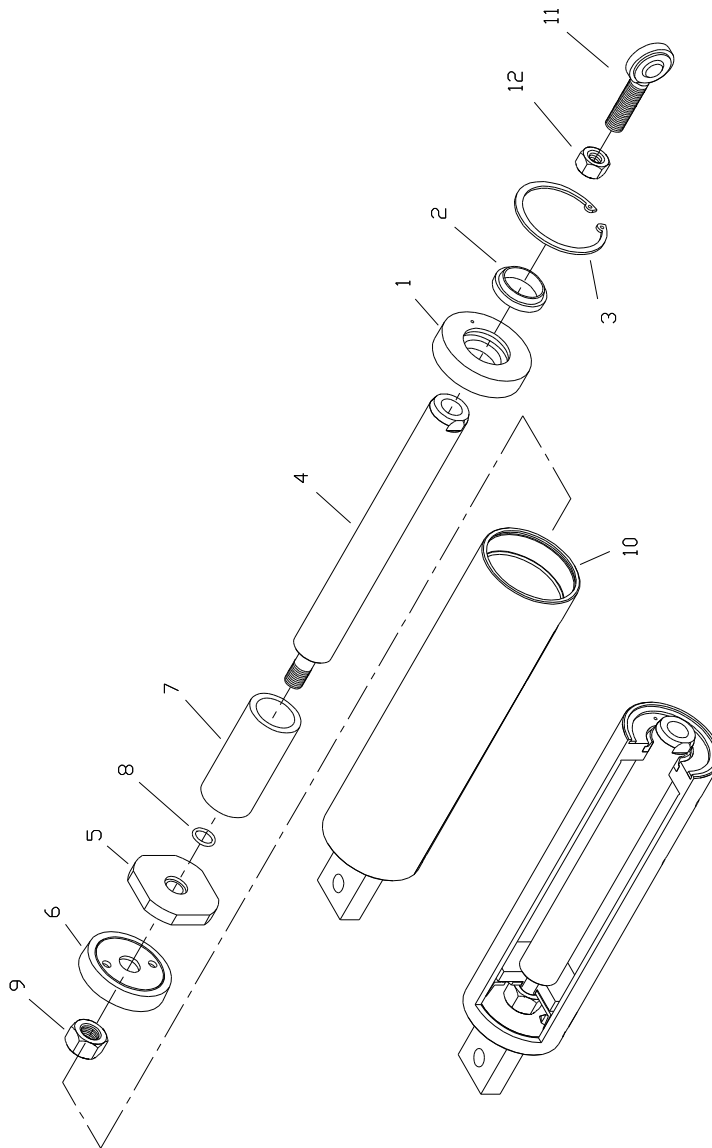
ITEM	QTY	S-22 PART NUMBER	DESCRIPTION
1	1	S22-43-01	SHAFT EXTENSION
2	1	W6440-4	BEARING
3	1	S20-925-03	POLYURETHANE WHEEL
4	1	5043	3" BLADE BRUSH
5	2	.5FLT	FLAT WASHER
6	1	.5-13HXNUT	HEX NUT
7	1	S1-.25X.25-C	SOCKET SET SCREW, CUP POINT
8	2	TC 13	COMPRESSION SPRING
9	4	.375FLT	FLAT WASHER
10	2	A1-.375X3.5	SOCKET HEAD CAP SCREW
11	1	S1-.375X2.5	SOCKET SET SCREW, FLAT POINT
12	1	.375-16HXNUT	HEX NUT
13	1	S22-431-00	BEARING PLATE WELDMENT

## COUNTER BALANCE SPRING ASSEMBLY



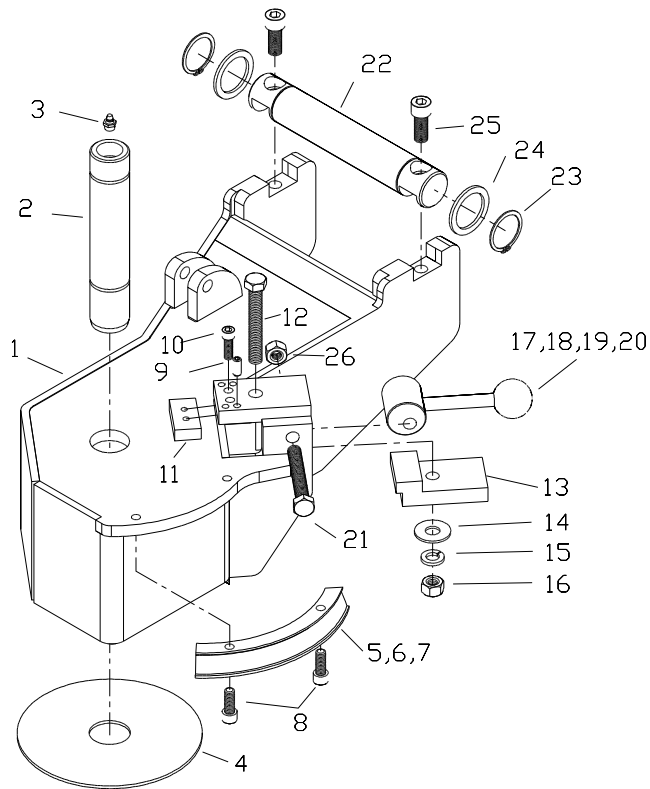
ITEM	QTY	S-22 PART NUMBER	DESCRIPTION
1	1	S22-2-03	SPRING GUIDE
2	1	S22-2-06	COMPRESSION HEAD SPRING
3	1	CM8	ROD END
4	1	.5NF HXNUT	HEX NUT
5	1	S22-2-07	SPRING SUPPORT
6	1	.25X1.75	ROLL PIN
7	1	B1-.5X1.5	HEX HEAD CAP SCREW
8	1	.5LOC	LOCK WASHER
9	1	.5FLT	FLAT WASHER

**HEAD CYLINDER ASSEMBLY, (less hoses)**



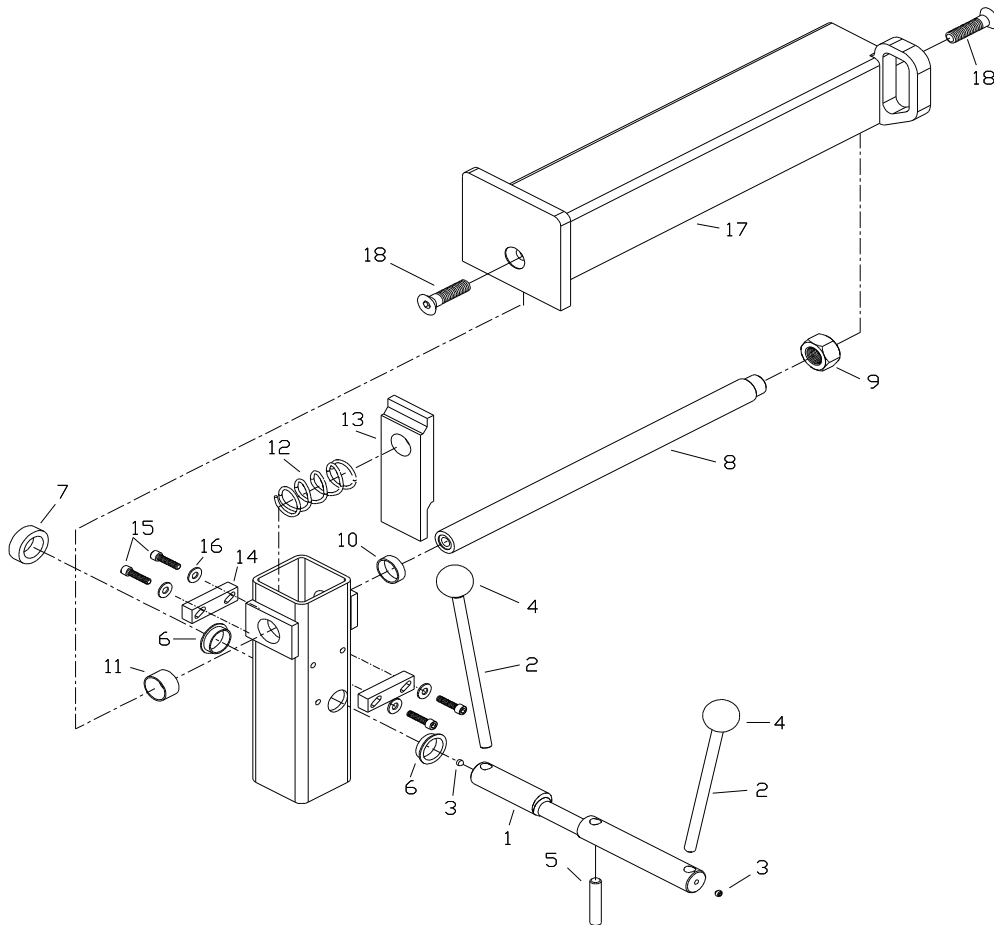
ITEM	QTY	S-22 PART NUMBER	DESCRIPTION
1	1	S20-61-01A	GLAND
2	1	U-1125	1 1/8" SHAFT WIPER
3	1	HO-0250-PA	INTERNAL RETAINING RING
4	1	S23-62-01	ROD
5	1	S20-62-03C	PISTON
6	1	S20-62-04B	PISTON CUP
7	1	S23-62-02A	STOP TUBE
8	1	2-112	O RING
9	1	.5-20LNUT	HEX LOCK NUT
10	1	S23-621-00A	TUBE WELDMENT
11	1	CM8	ROD END
12	1	.5NF HXNUT	HEX NUT

## PIVOT LINK ASSEMBLY



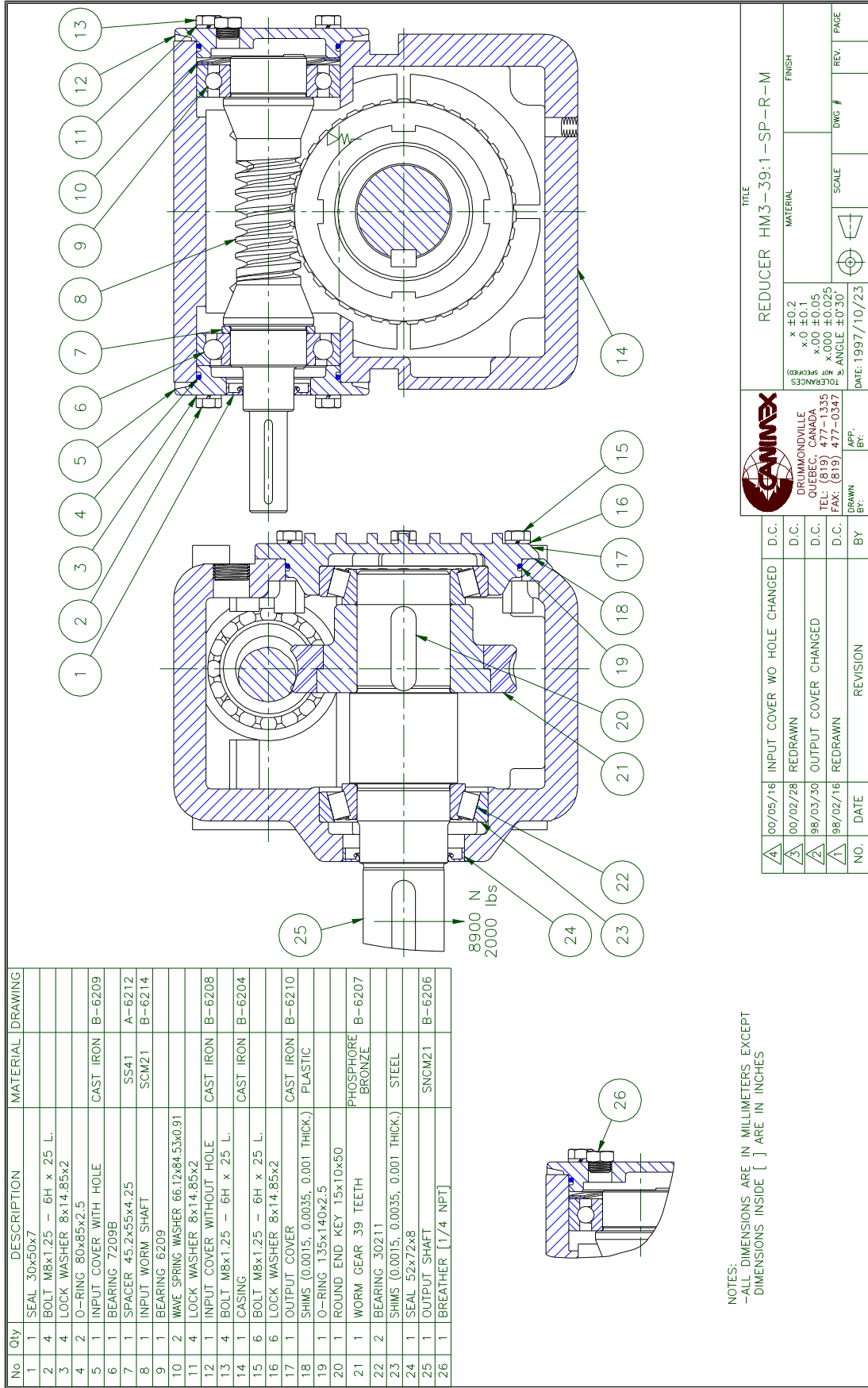
ITEM	QTY	S-22 PART NUMBER	DESCRIPTION
1	1	S22-21-00B	PIVOT LINK WELDMENT
2	1	S22-2-01	PIVOT PIN
3	1	1627-B	PIVOT PIN GREASE FITTING, 1/4 NPT
4	1	S22-2-08	THRUST PLATE
5	1	S22-2-02B	SCALE SUPPORT
6	1	S22-2-05A	ANGLE SCALE
7	2	N-.125X.250	PRESS IN RIVET
8	2	A1-.375X1	SOCKET HEAD CAP SCREW
9	4	S1-.312X.75-C	SOCKET SET SCREW, CUP POINT
10	2	A1-.312X1	SOCKET HEAD CAP SCREW
11	1	S20-42-03	BRAKE SHOE
12	1	B1-.5X3.5	HEX HEAD CAP SCREW
13	1	S22-22-00	BRAKE TONGUE WELDMENT
14	1	.5FLT	FLAT WASHER
15	2	.5LOC	LOCK WASHER
16	1	.5-13LOCHXNUT	LOCKING HEX NUT
17	1	S20-42B-02	BRAKE CAM
18	1	S20-423-B-01	BRAKE HANDLE
19	1	8470939	1/2" id BLACK TUBE
20	1	1993	1 3/8" BALL, 1/2" NC
21	1	B1-.5X3.75	HEX HEAD CAP SCREW
22	1	S22-3-01A	HORIZONTAL PIN
23	2	SH-0150-PA	EXTERNAL RETAINING RING
24	2	TRB 2435	THRUST WASHER
25	2	A2-.5X1.25	SOCKET HEAD CAP SCREW
26	1	.5-13HXNUT	HEX NUT

## WISE ASSEMBLY



ITEM	QTY	S-22 PART NUMBER	DESCRIPTION
1	1	S22-1-02	CAM SHAFT
2	2	S22-1-06	WISE HANDLE LEVER
3	2	S1-.375X.375-C	SOCKET SET SCREW, CUP POINT
4	2	1981	1 7/8 BALL, 5/8NF
5	1	S22-1-05	WISE LEVER STOP
6	2	LFI-2436-08	PLASTIC BUSHING
7	1	SC 1 1/2	SHAFT COLLAR
8	1	S22-1-03	WISE SHAFT
9	1	1 1/4-12JNUT	JAM NUT
10	1	24DU08	TEFLON COATED BUSHING
11	1	24DU16	TEFLON COATED BUSHING
12	1	TC 4920-475-0635	COMPRESSION SPRING
13	1	S22-13-00	LOCKING PLATE WELDMENT
14	2	S22-1-04B	WISE GUIDE, .75 HDP
15	4	A1-.375X1.5	SOCKET HEAD CAP SCREW
16	4	.375FLT	FLAT WASHER
17	1	S22-12-00	MOVING JAW WELDMENT
18	2	F1-.75X1.5	FLAT SOCKET HEAD SET SCREW

# HM3-SP-R-M A GEAR BOX ASSEMBLY



No.	Qty	DESCRIPTION	MATERIAL	DRAWING
1	1	SEAL 30x50x7		
2	4	BOLT M8x1.25 - 6H x 25 L.		
3	4	LOCK WASHER 8x14.85x2		
4	2	O-RING 80x85x2.5		
5	1	INPUT COVER WITH HOLE	CAST IRON	B-6209
6	1	BEARING 7209B		
7	1	SPACER 45.2x55x4.25	SS41	A-6212
8	1	INPUT WORM SHAFT	SCM21	B-6214
9	1	BEARING 6209		
10	2	WAVE SPRING WASHER 66.12x84.53x0.91		
11	4	LOCK WASHER 8x14.85x2		
12	1	INPUT COVER WITHOUT HOLE	CAST IRON	B-6208
13	4	BOLT M8x1.25 - 6H x 25 L.		
14	1	CASING	CAST IRON	B-6204
15	6	BOLT M8x1.25 - 6H x 25 L.		
16	6	LOCK WASHER 8x14.85x2		
17	1	OUTPUT COVER	CAST IRON	B-6210
18	1	SHIMS (0.0015, 0.0035, 0.001 THICK)	PLASTIC	
19	1	O-RING 1.35x14.0x2.5		
20	1	ROUND END KEY 15x10x50		
21	1	WORM GEAR 39 TEETH	PHOSPHORE BRONZE	B-6207
22	2	BEARING 30211		
23	3	SHIMS (0.0015, 0.0035, 0.001 THICK)	STEEL	
24	1	SEAL 52x72x8		
25	1	OUTPUT SHAFT		
26	1	BREATHER [1/4 NPT]	SNCM21	B-6206

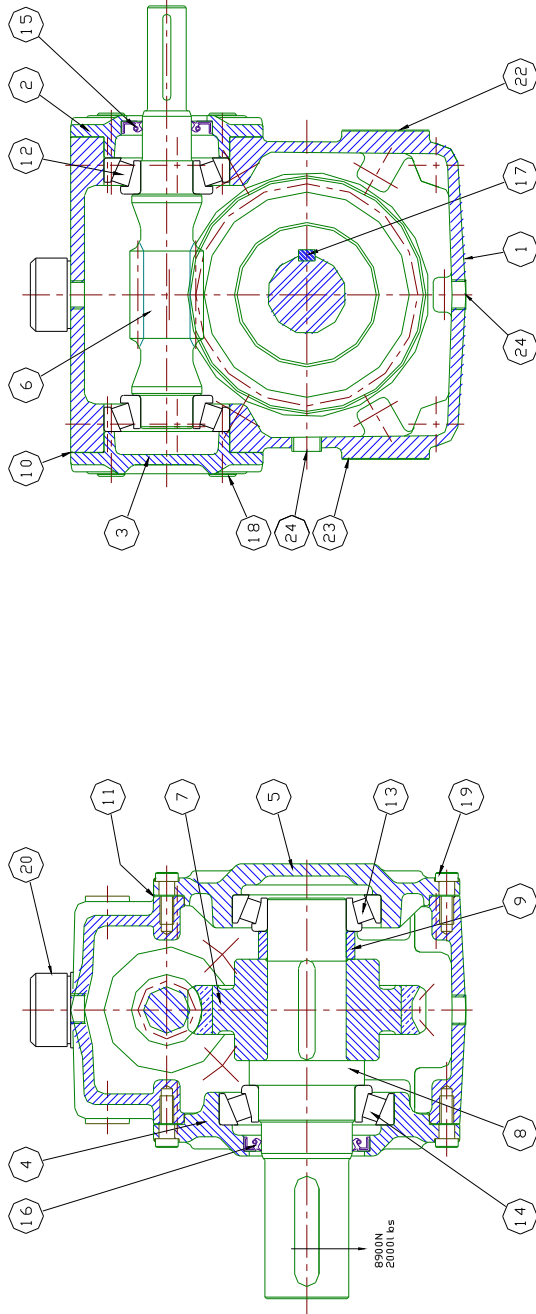
NOTES:  
 -ALL DIMENSIONS ARE IN MILLIMETERS EXCEPT DIMENSIONS INSIDE [ ] ARE IN INCHES

		TITLE REDUCER HM3-39:1-SP-R-M	
DRUMMONDVILLE QUEBEC, CANADA TEL: (819) 477-1335 FAX: (819) 477-0347		FINISH	
x ±0.2 x 0 ±0.1 x 00 ±0.05 x 000 ±0.025 ANGLE ±0.30		SCALE DWG #	
DATE: 1997/10/23		REV. # REV. # PAGE	
NO. DATE REVISION BY		D.C. D.C. D.C. D.C.	
4 00/05/16 INPUT COVER WO HOLE CHANGED		D.C.	
5 00/02/28 REDRAWN		D.C.	
2 98/03/30 OUTPUT COVER CHANGED		D.C.	
1 98/02/16 REDRAWN		D.C.	
NO. DATE REVISION BY		D.C.	



# HM3A GEAR BOX ASSEMBLY

SHOP ORDER QUANTITY	REF. NO.	DATE
3590/75	480	56936 10.12.92



PART No.	QTY	DMG No.	MATERIAL	DESCRIPTION
1	1	1/6680E	CAST IRON BS1452 GR 220	GEARCASE
2	1	2/6680E	CAST IRON BS1452 GR 220	WORMSHAFT CAP
3	1	3/6680E	CAST IRON BS1452 GR 220	WORMSHAFT COVER
4	1	4/6680E	CAST IRON BS1452 GR 220	WHEELSHAFT CAP
5	1	5/6680E	CAST IRON BS1452 GR 220	WHEELSHAFT COVER
6	1	7/6680E	ALLOY STEEL SAE 8620	WORMSHAFT SINGLE START
7	1	8/6680E	PHOSPHOR BRONZE/CAST IRON BS.1400: PB 2C/BS.1452: GR 260	WORMWHEEL 39 TEETH
8	1	12/6680E	ALLOY STEEL BS. 970 B17M40/7T	WHEELSHAFT
9	1	13/6680E	MILD STEEL BS. 970 070M20	WORMSHAFT SPACER
10	VAR	14/6680E	PLASTIC	WORMSHAFT SHIMS (1, 3, 5, & 10 THOU THICK)
11	VAR	15/6680E	PLASTIC	WORMSHAFT SHIMS (1, 3, 5, & 10 THOU THICK)

PART No.	QTY	DMG No.	MATERIAL	DESCRIPTION
12	2			TAPER ROLLER BEARING REF. 31206
13	1			TAPER ROLLER BEARING REF. 30209
14	1			TAPER ROLLER BEARING REF. 30211
15	1			OILSEAL 28x52x7 SEMI DUAL
16	1			OILSEAL 35x72x6 SEMI DUAL
17	1		KEY STEEL BS. 970 070M20	WORMWHEEL KEY 0.375"x0.25"x2.25" R. B. E.
18	8			LOW HEAD SOCKET CAP SCREWS M10x25
19	12			LOW HEAD SOCKET CAP SCREWS M8x20
20	1			CUSTOMER TO REMOVE TRANSIT PLUG AND FIT BREATHER REF. 56661. 3/8" GAS
21	1	6LITRES		MOBIL SHC632 OIL (NOT SHOWN)
22	1		ANODISED ALUMINIUM	NAMEPLATE SIZE 4
23	1		ANODISED ALUMINIUM	LUBRICATION PLATE SIZE 4
24	2		PLASTIC	3/8" BSPT TAPER PLUG
25	1		PLASTIC	TRANSIT INPUT SHAFT PROTECTOR (NOT SHOWN)
26	1		PLASTIC	TRANSIT OUTPUT SHAFT PROTECTOR (NOT SHOWN)

C BREATHER (20) ADDED PLUG (24) AND TRANSIT INPUT SHAFT PROTECTOR (25) 3/8" BRASS PLUG & WASHER REMOVED S. H. 10.12.92

B PART Nos 24, 25, 1, 26 ADDED S. H. 25/03/92

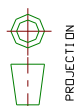
A 19/12/91

ISSUE MODIFICATION

CUSTOMS PART No. -

FILE STORES No. -

DRG No. 16/6280E



UNLESS OTHERWISE STATED ALL DIMENSIONS ARE UNLIMITED M/C DIMS 402 ANGULAR 40.5° DRAWING PRACTICE TO BS.3081:1985 WELDING SYMBOLS TO BS.4991:1980 ALL SHARP CORNERS TO BE REMOVED

**RENOLD**  
GEARS

HOLLROYD GEAR WORKS  
MILNOWN, ENGLAND

TITLE:- SECTIONAL ARRANGEMENT OF 80mm CRS SINGLE RED'N WORM GEAR UNIT ~ MODEL HM3 MATERIAL:-

PLOT SCALE 1:1.25

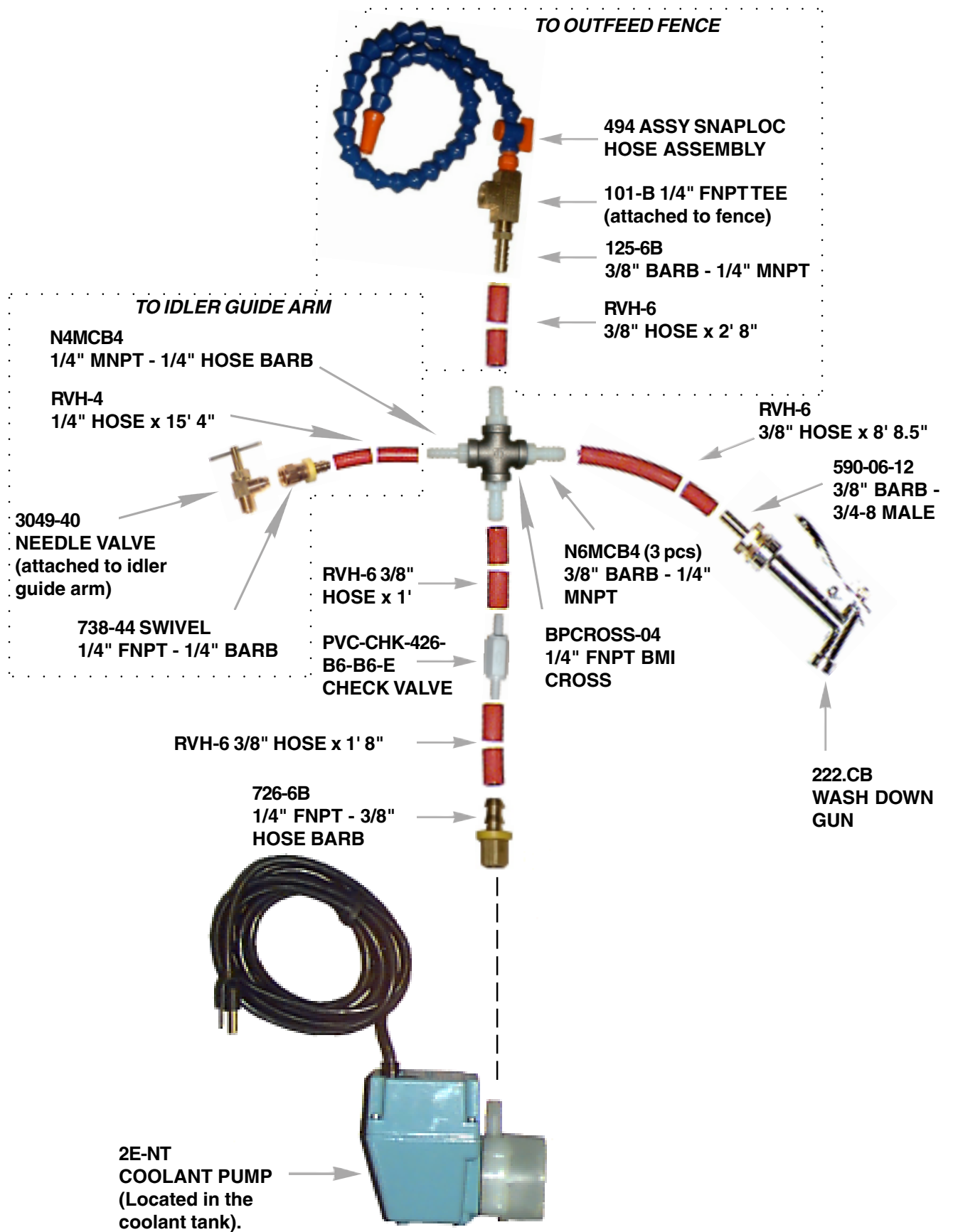
STOCK D/OUT 10.12.92

DRAWN S.H. 10.12.92

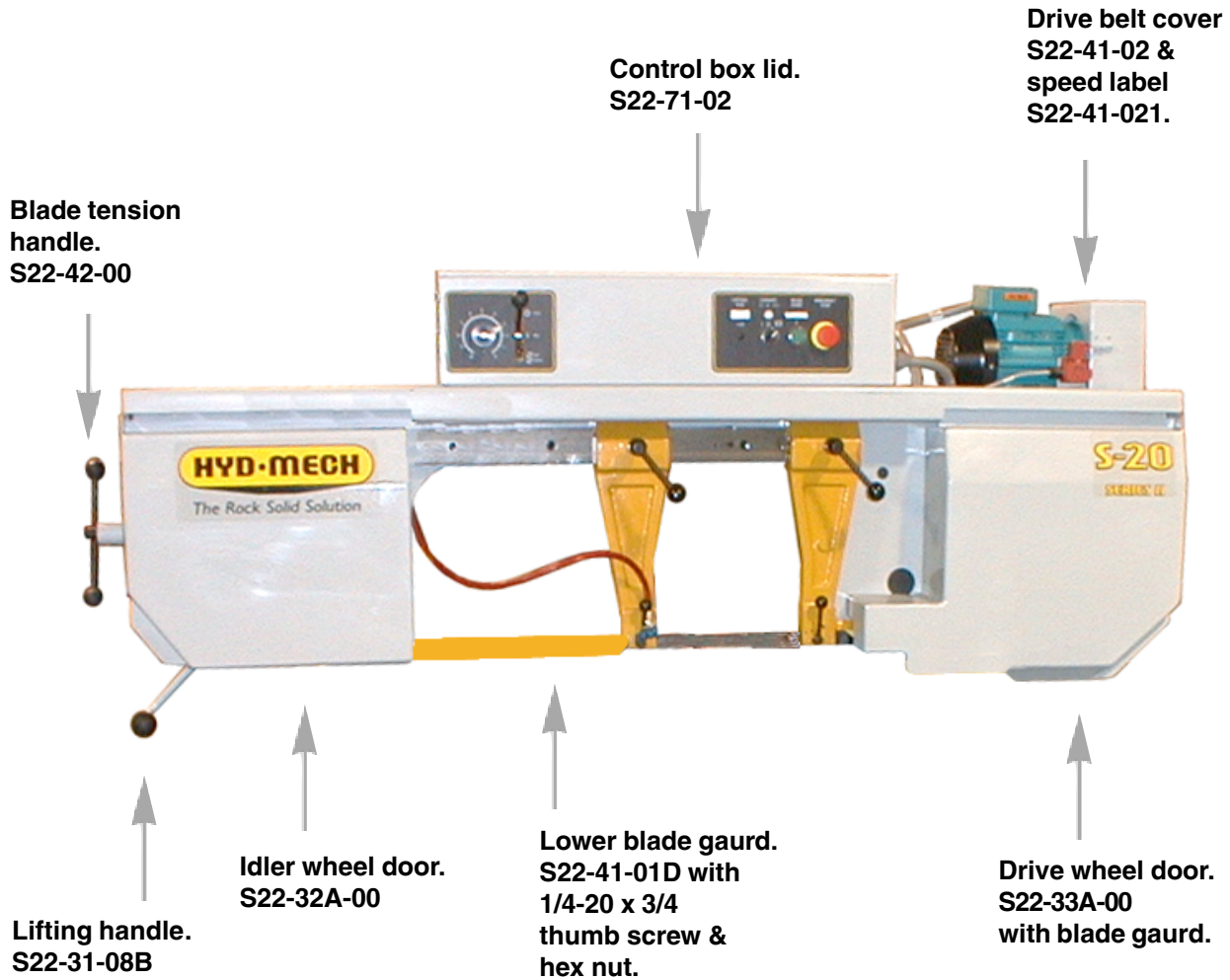
CHECKED S.H. 10.12.92



# COOLANT GROUP



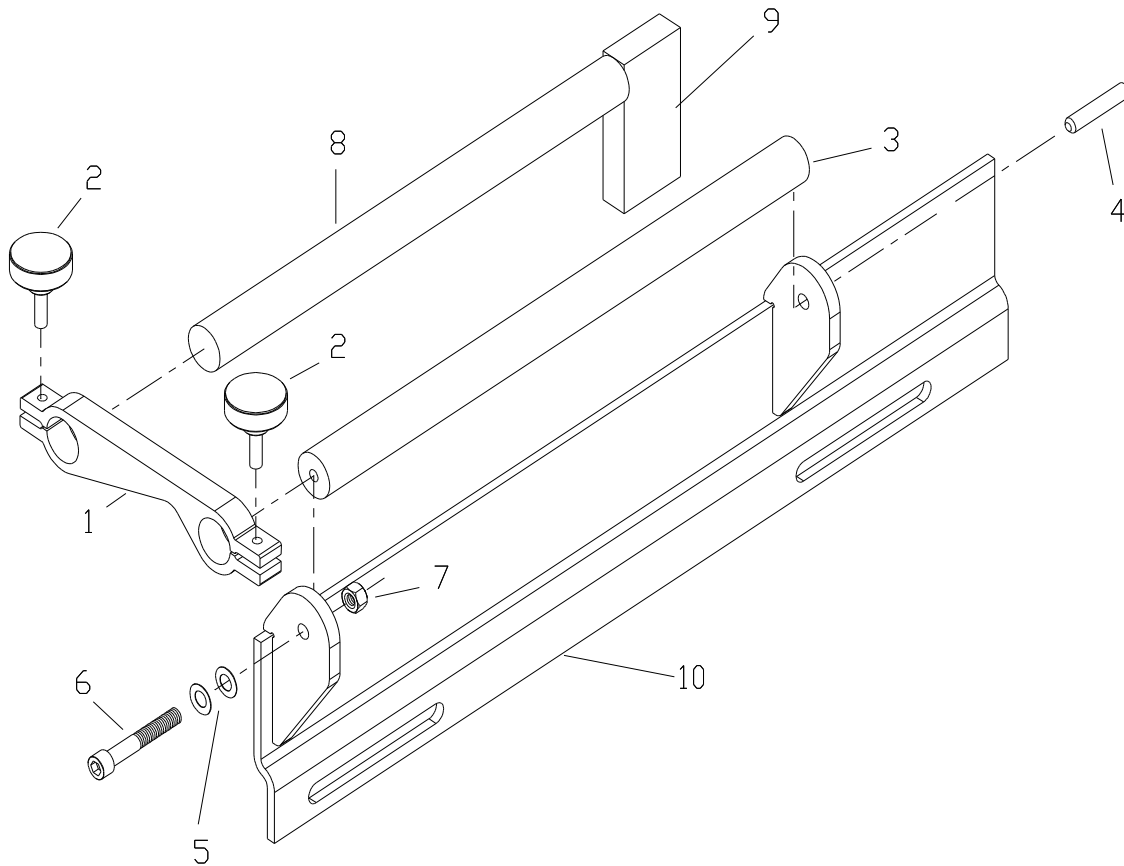
## DOORS and COVERS



**NOTE: When ordering doors or covers, specify label language.**

## SECTION 7, OPTIONAL ASSEMBLIES

### WORK STOP



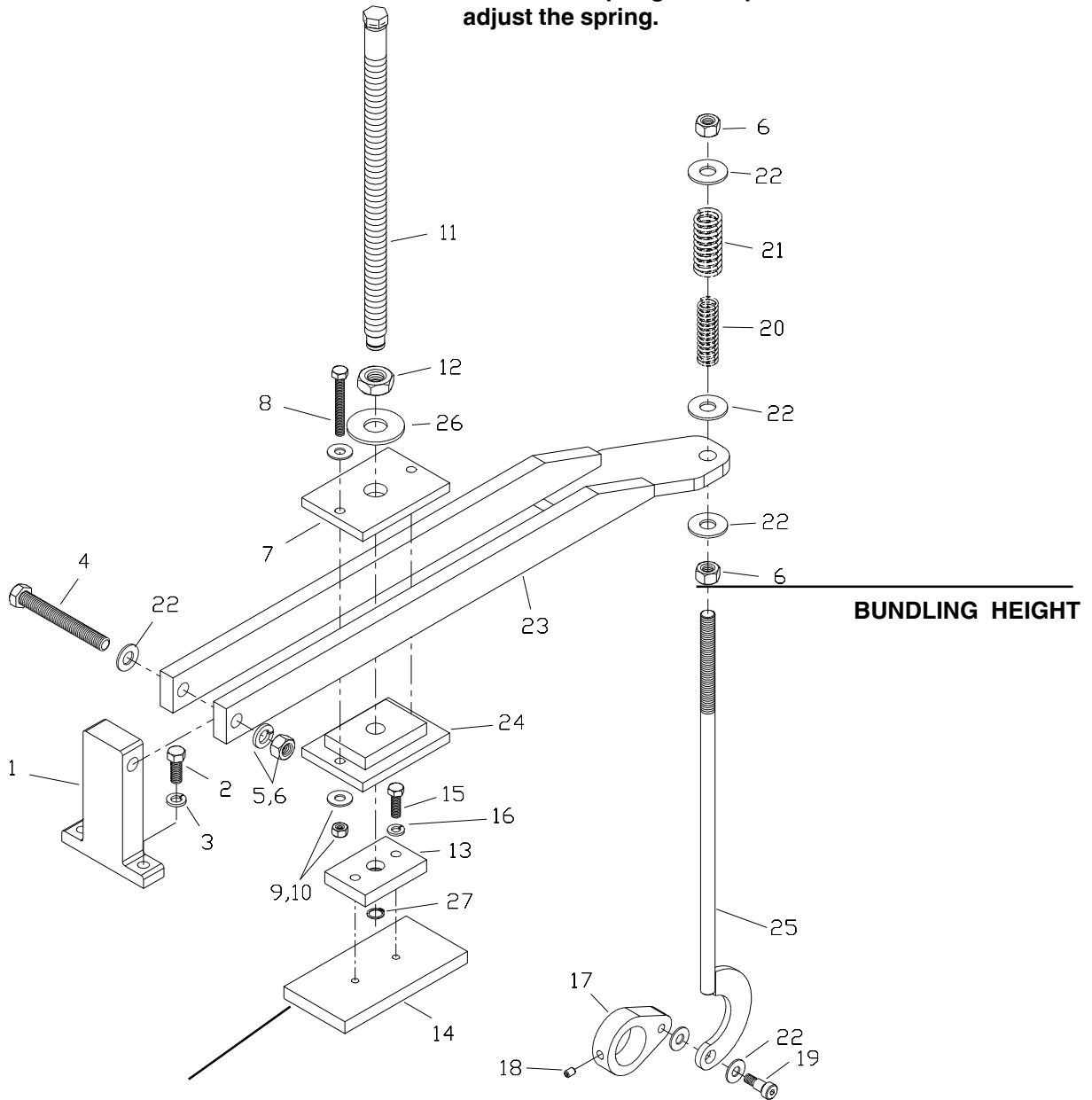
ITEM	QTY	S-22 PART NUMBER	DESCRIPTION
1	1	S22-G15-01	ARM
2	2	KHU-30	KNOB, 5/16-18X1 STUD
3	1	S22-G15-02	GUIDE BAR
4	1	S1-.375X2.25-C	SOCKET SET SCREW, CUP POINT
5	2	30 C0750-040	DISC SPRING
6	1	A1-.375X2.5	SOCKET HEAD CAP SCREW
7	1	.375-16HXNUT	HEX NUT
8	1	S22-G15-03	BAR
9	1	S22-G15-04	STOPPER
10	1	S22-G151-00	MATERIAL STOP WELDMENT

# BUNDLING ATTACHMENT

## BUNDLING ADJUSTMENTS

### Bundling Height Adjustment

Set the bundling height by matching the height to where the lower lock nut (6) is positioned on the rod. Setting with the lower locknut will either compress or release the spring. The top locknut can then be used to adjust the spring.



### CLAMPING PAD ADJUSTMENT

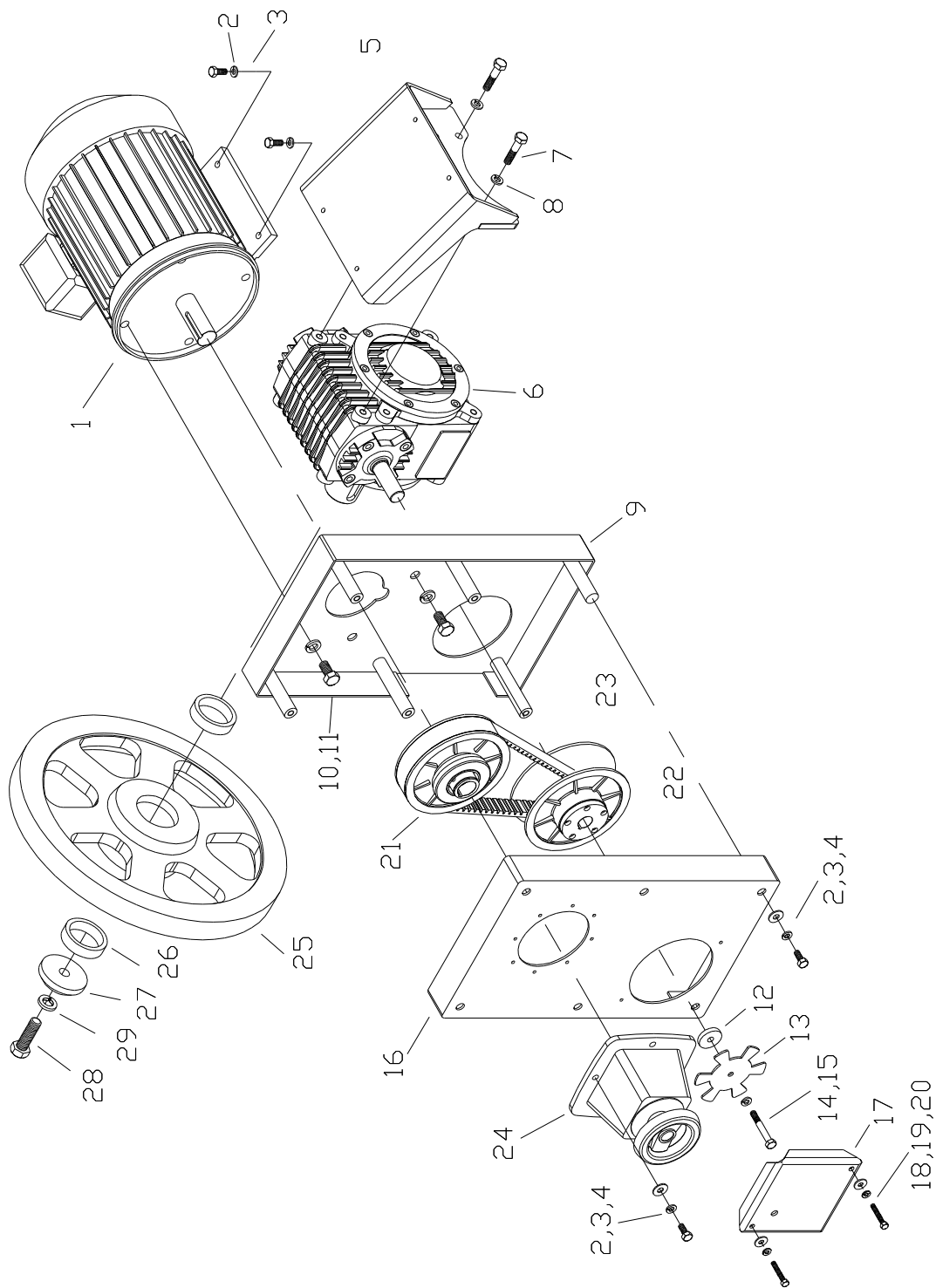
Loosen the jam nut (12) and turn the clamping pad assembly until it is positioned approximately 1/4" above the work piece height.

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**BUNDLING ATTACHMENT**, parts list

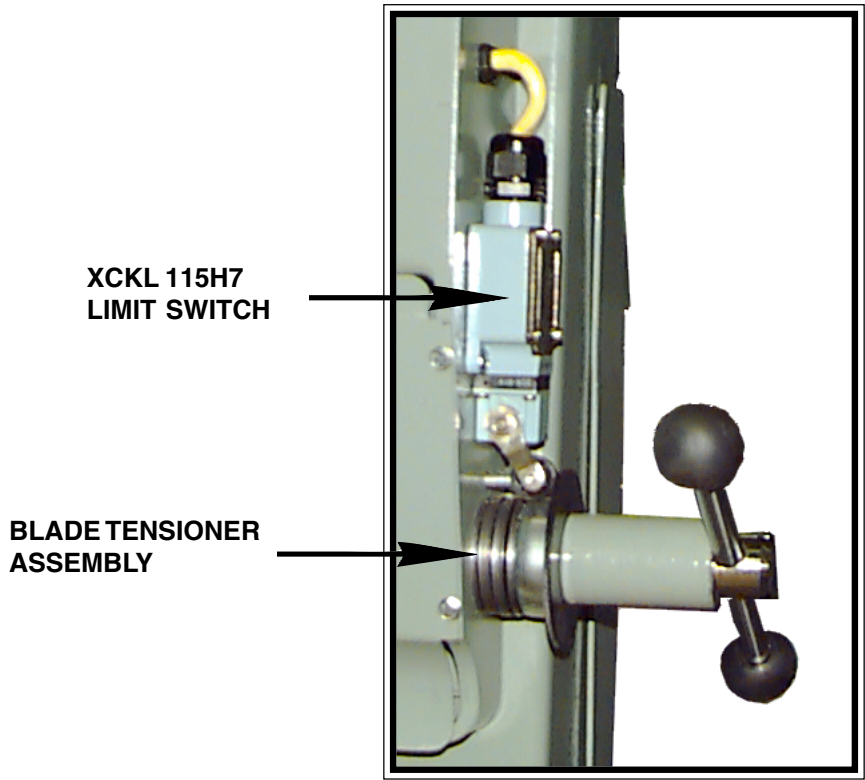
<b>ITEM</b>	<b>QTY</b>	<b>S-22 PART NUMBER</b>	<b>DESCRIPTION</b>
1	1	S22-G17-01	POST
2	2	B1-.375X1	HEX HEAD CAP SCREW
3	2	.375LOC	FLAT WASHER
4	1	B1-.5X4	HEX HEAD CAP SCREW
5	1	.5LOC	LOCK WASHER
6	3	.5-13HXNUT	HEX NUT
7	1	S22-G17-02	TOP PLATE
8	2	B1-.312X2.75	HEX HEAD CAP SCREW
9	4	.312FLT	FLAT WASHER
10	2	.312-18LNUT	LOCK NUT
11	1	S22-G17-03	THREADED ROD, 3/4-16
12	1	3/4-16JNUT	JAM NUT
13	1	S22-G17-04	JAW HOLDER
14	1	S22-G17-05	JAW, LARGE
15	2	B1-.312X1	HEX HEAD CAP SCREW
16	2	.312LOC	LOCK WASHER
17	1	S22-G17-06	LEVER
18	1	S1-.25X.375-C	SOCKET SET SCREW, CUP POINT
19	1	A1-.375X2.5S	SOCKET HEAD CAP SCREW
20	1	TC 1905-267-0635	COMPRESSION SPRING
21	1	TC 2464-318-0635	COMPRESSION SPRING
22	6	.5FLT	FLAT WASHER
23	1	S22-G171-00	ARM WELDMENT
24	1	S22-G1712-00	LOWER PLATE WELDMENT
25	1	S22-G173-00	PULL ROD WELDMENT
26	1	.75FLT	FLAT WASHER
27	1	SH-0062-PA	EXTERNAL RETAINING RING

**3 HORSE POWER DRIVE**  
with variable speed

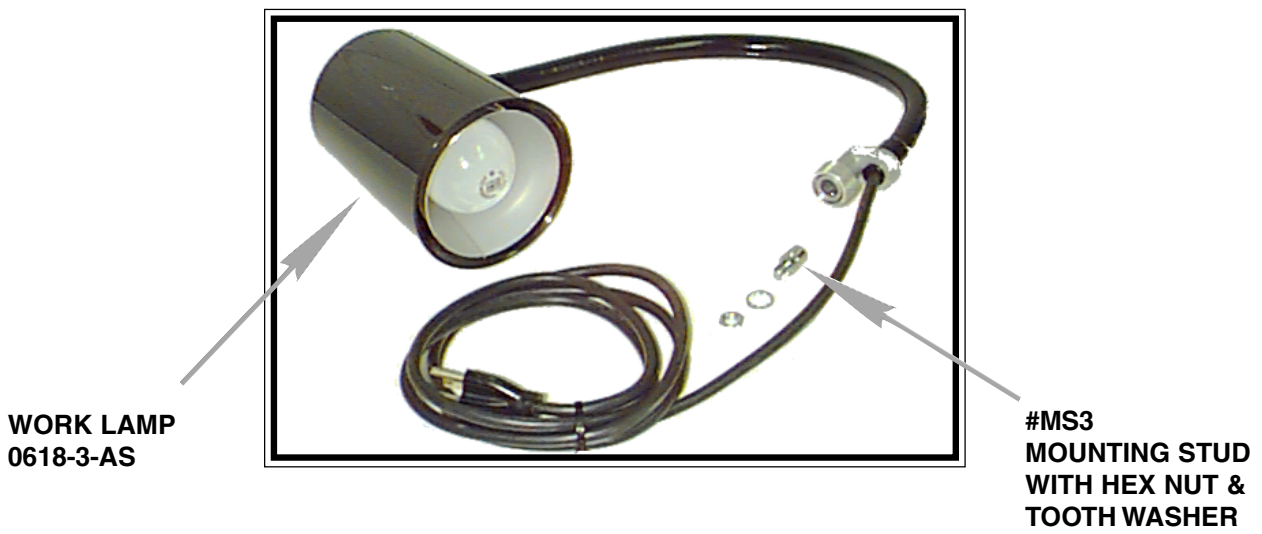


<b>ITEM</b>	<b>QTY</b>	<b>S-22A PART NUMBER</b>	<b>DESCRIPTION</b>
1	1	182TC FRAME	3 HP, 1800RPM, SPECIFY VOLTAGE
2	12	B1-.312X.75	HEX HEAD CAP SCREW
3	12	.312LOC	LOCK WASHER
4	10	.312FLT	FLAT WASHER
5	1	S22A-42-00B	MOTOR SEAT WELDMENT
6	1	HM4A	RENOLD GEAR BOX, 39:1
7	4	B3-12x30	METRIC HEX HEAD CAP SCREW
8	4	M12 LOC	LOCK WASHER
9	1	S22A-411-00A	VSD INNER COVER WELDMENT
10	4	B1-.5X1	HEX HEAD CAP SCREW
11	4	.5LOC	LOCK WASHER
12	1	S22A-412-04	TARGET SPACER
13	1	S22A-41-01	PULSAR TARGET
14	1	B3-8X60	METRIC HEX HEAD CAP SCREW
15	1	M8LOC	LOCK WASHER
16	1	S22A-41-02A	OUTER BOX SHELL
17	1	S22A-41-03	OUTER BOX TACH COVER
18	2	B1-.25X1.5	HEX HEAD CAP SCREW
19	2	.25LOC	LOCK WASHER
20	2	.25FLT	FLAT WASHER
21	1	R150B	MECHANICAL PULLEY
22	1	F150B	SPRING PULLEY
23	1	28X800	DRIVE BELT
24	1	RF150 ADJ	SPEED SDJUSTOR
25	1	S22-3-07E	DRIVE WHEEL
26	2	S22-44-01A	DRIVE WHEEL SPACER
27	1	S22-44--02	RETAINING CAP
28	1	B3-16X50	METRIC HEX HEAD CAP SCREW
29	1	M16LOC	LOCK WASHER

**BLADE BREAKAGE**



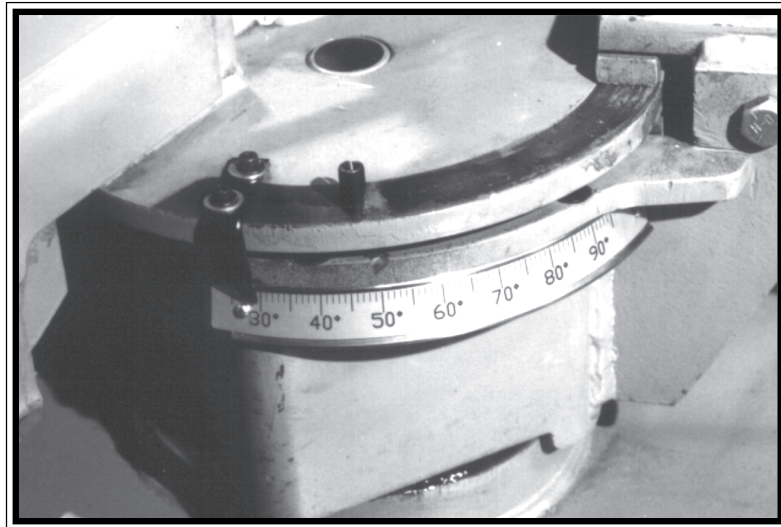
**WORK LAMP ASSEMBLY**





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## **30° MITRE CUTTING**

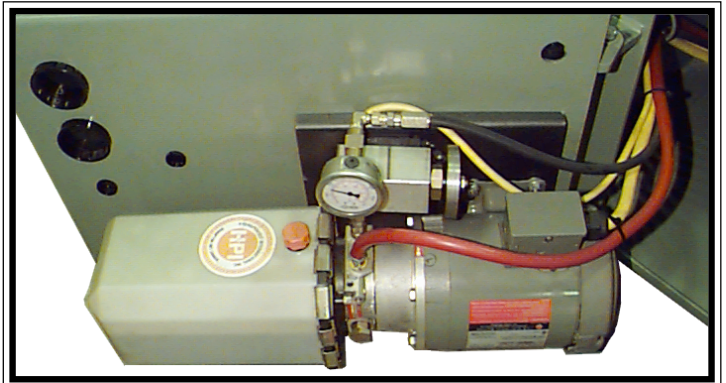


**Angle scale on the head swing pivot.**

### **HYDRAULIC POWER PACK**

System operates head up and vise.

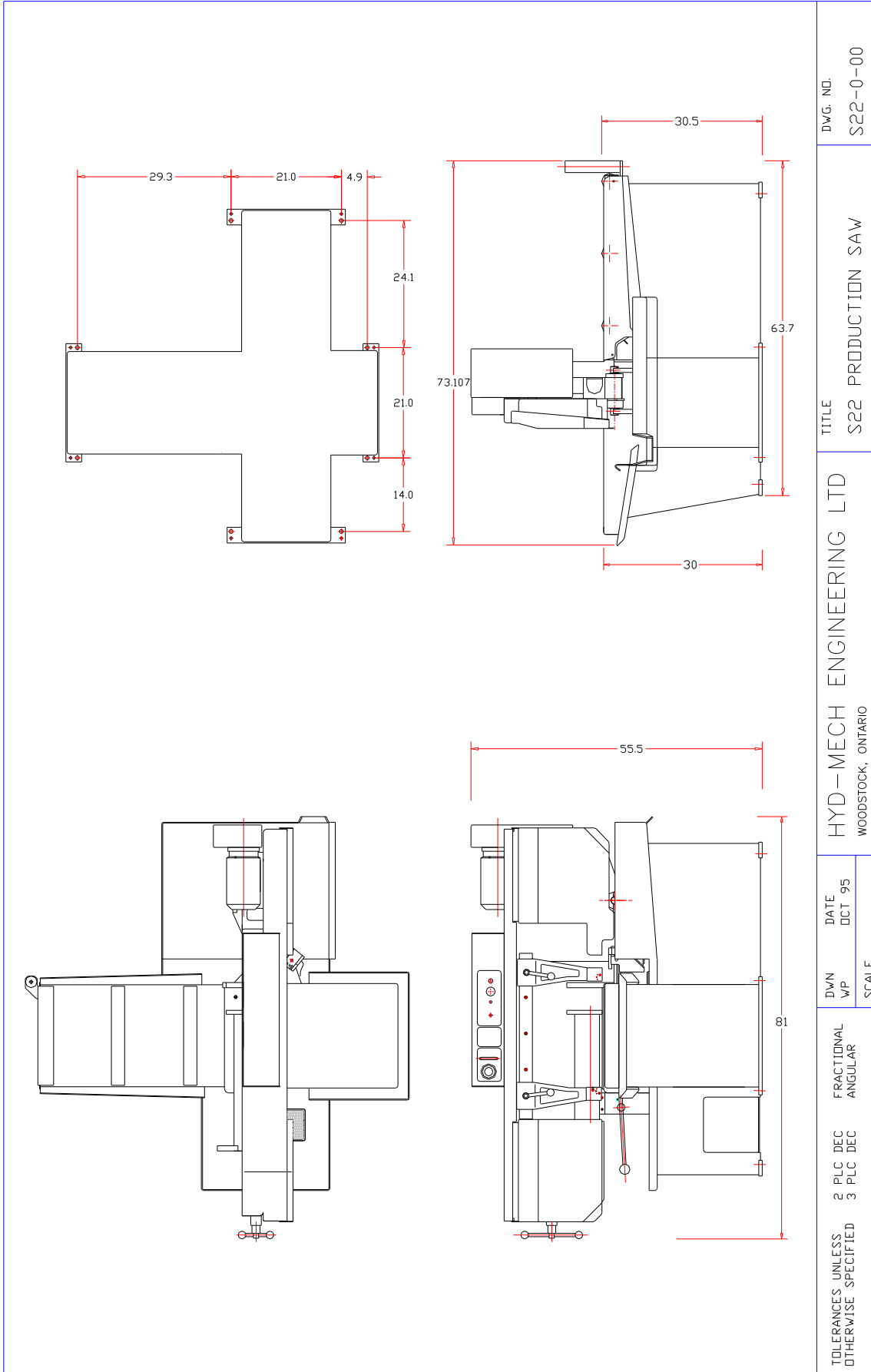
Power pack found mounted on the door at the drive side of the infeed table. Parts consist of 1/4hp motor, accumulator assembly and a gear pump & tank assembly. This option also requires a special head cylinder.



## **SECTION 8, SPECIFICATIONS**

	<b>IMPERIAL DIMENSIONS</b>	<b>METRIC DIMENSIONS</b>
<b>Cutting Capacity</b>		
rectangular	13" High x 18" Wide	325mm x 450mm
round	12" dia @ 45°	300mm dia @ 45°
<b>Blade</b>		
length	13' 6"	4115mm
width	1" (1.075" including teeth)	25mm (27.3mm including teeth)
thickness	.032"	0.8mm
<b>Blade speed</b>		
Standard step pulley		90 / 140 / 220 / 370 Surface Feet/Minute
3 HP Variable speed option		75 to 400 Surface Feet/Minute - Variable
<b>Blade speed (with 50Hz, 1450 RPM motor)</b>		
Standard step pulley		22/34/58/90 m/min
Variable speed option		22 to 122 m/min - Variable
<b>Blade guides</b>		Carbide Inserts
<b>Blade wheel diameter</b>	16"	400 mm
<b>Motors</b>		
Standard	2 HP	1.5 kW
Variable Speed Option	3 HP	2.2 kW
Hydraulic Option	1/4 HP	0.2 kW
<b>Hydraulic</b>		Optional - Micro Powerpack gear pump
<b>Coolant pump</b>	2.4 US Gal/min	9 L/min
<b>Coolant reservoir</b>	6 Gallons	23 Litre
<b>Table height</b>	30" High	762 mm
<b>Machine weight</b>	1800 pounds	810 kg
<b>Overall Dimensions</b>	80" W x 80.5" L x 55.5" H	2037mm W x 2046mm L x 1408mm H

# LAYOUT DRAWING



TOLERANCES UNLESS OTHERWISE SPECIFIED		2 PLC DEC	3 PLC DEC	FRACTIONAL ANGULAR	DWN WP	DATE OCT '95	HYD-MECH ENGINEERING LTD WOODSTOCK, ONTARIO		TITLE S22 PRODUCTION SAW	DWG. NO. S22-0-00
				SCALE						

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## **SECTION 9, WARRANTY**

Hyd-Mech Group Ltd. warrants each new S-20 Series II bandsaw to be free from failure resulting from defective material and workmanship under proper use and service for a period of one year following the date of shipment to the user. Hyd-Mech's sole obligation under this warranty is limited to the repair or replacement without charge, at Hyd-Mech's factory, warehouse, or approved repair shop, of any part or parts which Hyd-Mech's inspection shall disclose to be defective. Return freight must be prepaid by the user.

This warranty, in its entirety, does not cover maintenance items, including but not limited to lubricating grease and oils, filters, V-belts, saw blades, etc., nor any items therein which show signs of neglect, overloading, abuse, accident, inadequate maintenance, or unauthorized altering.

MOTOR, GEARBOX, PUMP, ELECTRIC COMPONENTS, VALVES, HOSES, FITTINGS, and any other items used in the manufacture of the S-20Series II, but not originally manufactured by Hyd-Mech are subject to the original manufacturer's warranty. Hyd-Mech will provide such assistance and information as is necessary and available to facilitate the user's claim to such other manufacturer.

Liability or obligation on the part of Hyd-Mech for damages, whether general, special or for negligence and expressly including any incidental and consequential damages is hereby disclaimed.

Hyd-Mech's obligation to repair or replace shall be the limit of its liability under this warranty and the sole and exclusive right and remedy of the user.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, WRITTEN OR ORAL, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

This warranty may not be changed, altered, or modified in any way except in writing by Hyd-Mech Group Ltd.

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