Model KS450

HORIZONTAL BAND-MITERING MACHINE

OPERATORS MANUAL

PARTS LIST

Kalamazoo Machine Tool
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SPECIFICATIONS

Model	**KS450**
Blade Drive Motor	**3 HP**
Blade Speeds	**60-360 meet per minute**
Blade Size	**1 ¼" wide x 13' 11" Long**
Capacities	
@90°	
round	**14"**
square	**13"**
rectangular	**12 1/2 x 17 1/2"**
@ 45°r	
round	**13"**
square	**12 1/2"**
rectangular	**11 3/4" x 12 1/2"**
@ 60°r	
round	**8 1/4"**
square	**7 3/4"**
rectangular	**7" x 10"**
@ 45°l	
round	**13"**
square	**12 1/2"**
rectangular	**11 3/4" x 12 1/2"**
@ 60°l	
round	**6 1/4"**
square	**6"**
rectangular	**6" x 10 1/2"**
Work Height	**37"**
Power Requirements	**208-220-230 volts - 20 amps** **440-460 volts - 12 amps** **3 phase60 cycles**
Coolant Capacity	**3.5 Gal (15 lit)**
Gearbox	**Sealed for life. No gearlube to be added at any time.**
Hydraulic Capacity	**2.75 Gal (13 lit) – Viscosity 46**

WHEN ORDERING PARTS PLEASE STATE

1. **Model Number**
2. **Serial Number**
3. **Power Supply (electrical components)**
4. **Quantity Required**

SAFETY INSTRUCTIONS
TO THE OWNER OR SUPERVISOR

You must remember that this machine is designed to cut metal with a sharp tool, and you are responsible to see that the machine is in top operating condition and that it is operated **IN A SAFE MANNER!**

YOU MUST:

1. Make sure the machine is properly installed, anchored to floor, and electrical installation is proper.
2. Be sure you are familiar with all operating, safety, and applications information before operating this machine or turning it over to one of your employees.
3. See that all who operate this machine are properly trained and fully aware of all safety practices.
4. Be aware of all unsafe practices that may occur. (See operator safety precautions and applications information)
5. Insist on proper personal protective equipment and practices.
6. Maintain all factory installed safety devices and insure that these are never removed or altered or restricted in any way.
7. Insure that your operators have a safe and orderly work area, with adequate light and operating room.
8. Be certain that your machinery receives responsible and competent maintenance and that your machinery is inspected on a regular basis.

YOU ARE RESPONSIBLE
SAFETY INSTRUCTIONS
TO THE MACHINE OPERATOR

You must read and understand all operating, safety, and applictions information before attempting to use this machine, including safety instructions above.

1. Use care when uncoiling and installing new bandsaw blades as the teeth are very sharp. It is advisable to wear gloves when handling saw blades.
2. Always wear proper eye protection.
3. Never operate machine unless all guards are in place.
4. Never insert hands or arms into or near cutting area while machine is running.
5. Never load or unload machine while blade is running.
6. Never wear loose clothing, long sleeves, gloves, jewelry, or any other items that may be caught. Confine long hair.
7. Adequately support stock on both sides of machine to prevent falling.
8. Never adjust guide arms when blade is running.
9. Always disconnect power at source when performing maintenance or making adjustments, other than those necessary for the normal operation of machine.
10. Keep cutting area clear of tools or other loose objects.
11. Accumulation of chips can cause problems with safety and use of this machine. Keep the machine clean.
12. Before starting a sawing cycle, be sure vise is securely clamped and machine set-up is correct.
13. Never use this machine to cut workpieces larger than the stated capacity.
14. Never use a blade other than the machine is designed for.
15. Be aware of the possible sawing problems (see APPLICATIONS section of this book)
16. CAUTION: If blade becomes jammed, immediately turn off power, loosen vise, extract workpiece from blade, and inspect blade for cracks or broken teeth.

ALWAYS OPERATE MACHINE SAFELY, USING COMMON SENSE AND ALERTNESS

INSTALLATION

We recommend that you follow these instructions closely and report any problems to your distributor.

Select an installation site that is clear of traffic and obstructions, suitable for proper machine operation and maintenance, including adequate light and clearance.

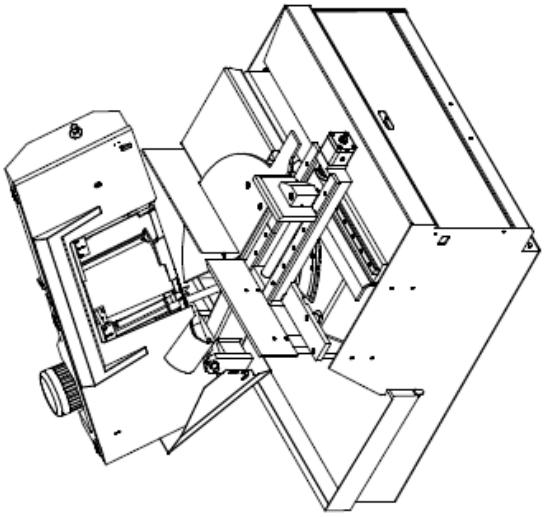
Illustrated is typical installation layout, shown with optional conveyors.

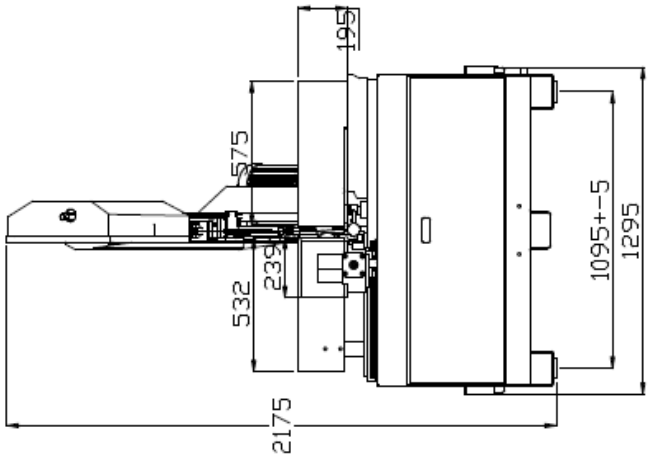
The first step after uncrating your machine is to see that all items are present and that there is no apparent damage to any part of the machine.

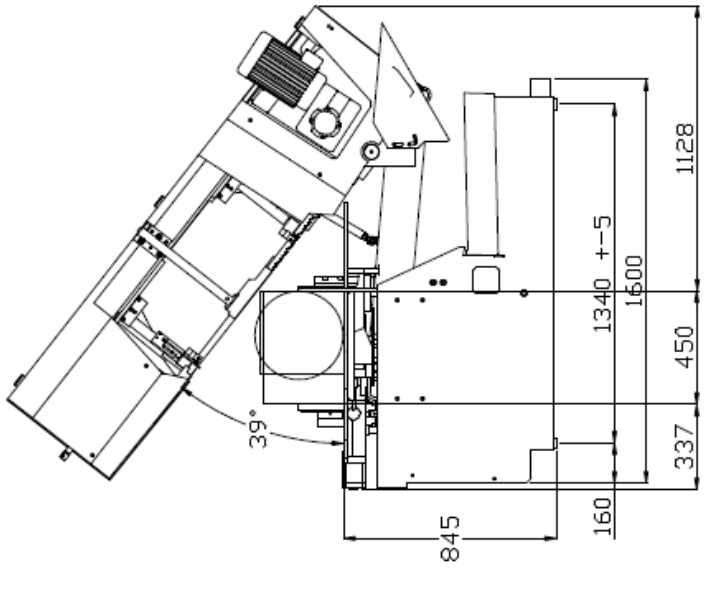
Your machine has been carefully packed and has preservative applied to metal surfaces to protect it during transit and storage. It is recommended that all of these surfaces be cleaned at this time.

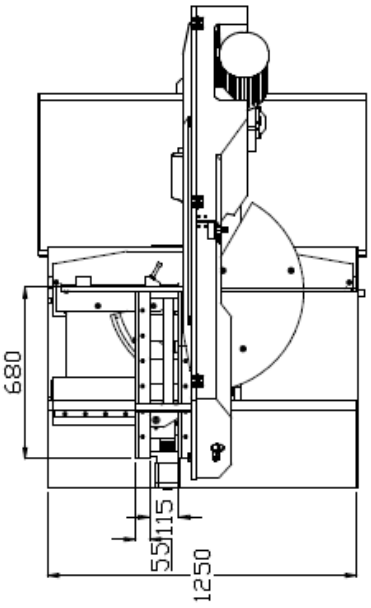
KS450 Layout

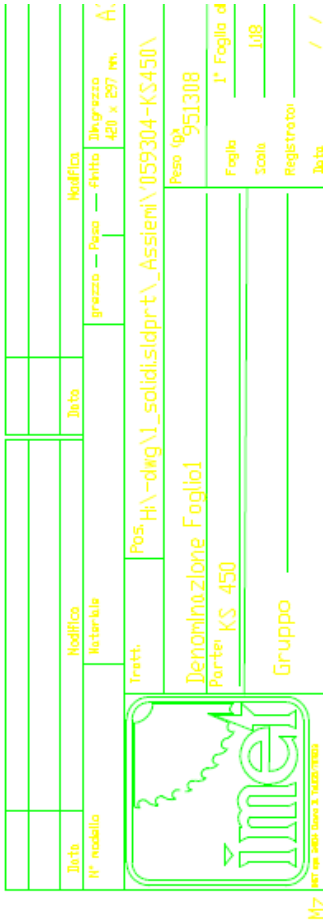
(mm)











COOLANT SYSTEM

Before cutting any material you must supply machine with coolant.
We recommend a good grade of water soluble synthetic, and mix it no leaner than the manufacturers recommendations. Never use straight cutting oil.

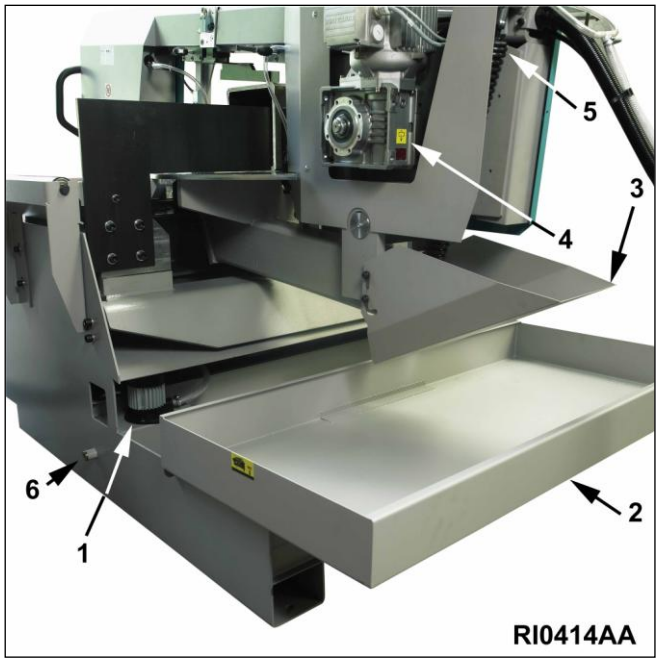
At rear of machine is chip pan. The pan may be completely removed and coolant may be poured directly into reservoir.

Prior to pouring into machine, mix coolant into water in order to ensure mixture is consistent.

Illustrated at right
1. Coolant pump
2. Removable pan
3. Chips/coolant deflection shield

Note: Packed separately, and must be installed with bolts attached.

4. Gearbox
5. Sawframe counterbalance spring
6. Coolant tank drain plug



ELECTRICAL CONNECTION

Electrical connections should be done only by a qualified electrician!

Make sure your power supply matches the machine.

It is recommended that the machine be on a circuit that is **properly fused,** and the machine must be **properly grounded** to comply with
OSHA and state electrical codes.

Packed in the base of the machine you will find a rectangular box containing a power transformer that is specified for your correct operating voltage. Connect 3-phase supply **L1, L2, and L3** and the yellow/green wire to ground. (After eventually starting the machine up, you will need to check the machine for proper rotation. If rotation is not correct, change any two of the three power leads at point of connection.

CAUTION! It is essential that this machine be properly grounded. Electrical problems due to improper grounding can be very expensive and are not covered under warranty!

WIRE SIZES

The machine must be serviced by adequate wire or a severe loss of power may occur, leading to poor machine performance. We recommend:

Length of conductor	Wire Gauge Size
50' or less	#14
100" or less	#12
100-150"	#10
150 or longer	NOT RECOMMENDED

REMOVAL OF SHIPPING BRACKET

The yellow shipping bracket is removed by taking out the two hex head bolts at bottom and the one socket head cap screw attached to sawframe. You may open the sawframe cover to gain access to the bolt head. The cover is held in place with one latch on each end.
(see photos in section on changing sawblade)

GENERAL LAYOUT - Console

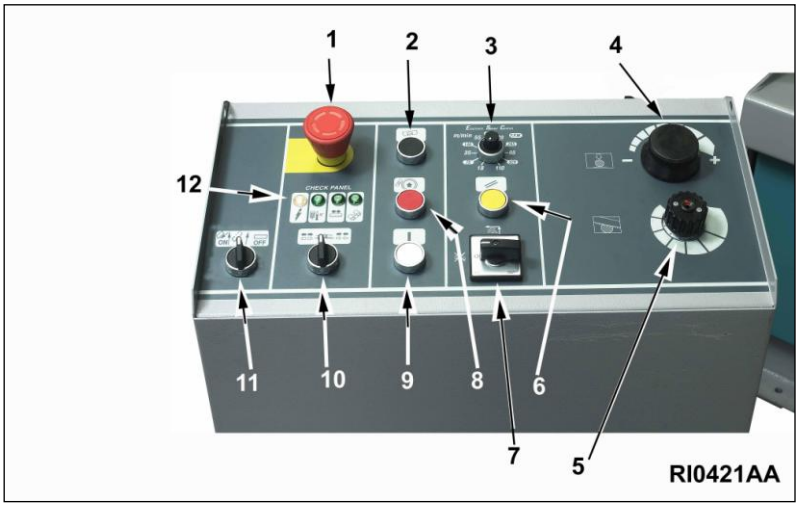
1. Emergency Stop - On operators console, upper LH corner. When pushed, you must turn 1/4 turn right to release. Machine will not function when pushed in.

2. Main ON/Off disconnect switch & overload; mounted on LH side of operators control station.

Push black (right) button to power up machine.

3. Power lockout (padlock not supplied)

Operators Controls



1. Emergency Stop - On operators console, upper LH corner. When pushed, you must turn 1/4 turn right to release. Machine will not function when pushed in.

2, Sawframe Lower

3. Variable blade speed control knob

4. Feed pressure valve
Controls the amount of downfeed pressure

5. Feed speed valve
Controls the speed of sawframe descent

6. Hydraulic Start
Note: System will shut off is no activity is detected for 10 minutes.

7. Coolant Selector Switch (Off, On during sawing)

8. Sawframe Raise
Note: If pushed during a sawing cycle, sawframe descending and cycle is cancelled

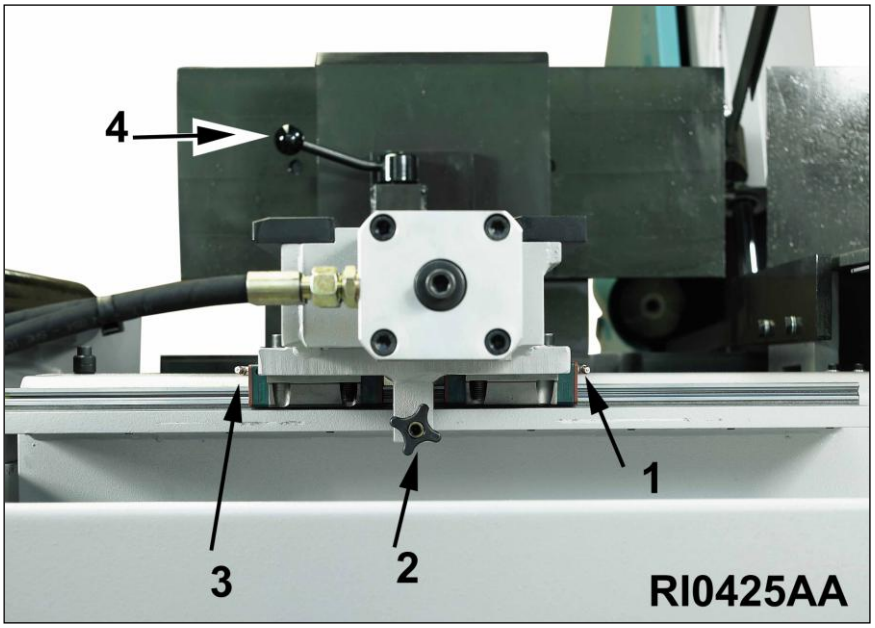
9. Cycle Start Button

10. Vise Clamp & Unclamp Selector Switch
Note: All of the green lights must be illuminated for vise clamping to work.

11. Cycle mode selector
Selector switch that controls the method of cycle. From left to right:
-Left - Sawframe returns to top with blade running
-Center - Sawframe returns to top with blade stopped
-Right - Sawframe and blade stops at bottom of travel at end of cut

12. Pilot lights
From left to right, as follows. Note that all illuminated pilot lights indicate 'ready' condition
-Power On (white) Illuminated when machine power is on, and E-Stop button is released
-Blade Drive Ready If not illuminated, there is a drive problem
-Blade Tension (green) Illuminated when blade tension is correct
-Bandwheel Covers in proper position (green)
NOTE: Blade tension and bandwheel cover switches are in series; this means the blade must be correctly tensioned ***first*** before cover switch can be illuminated.

Sawvise Components



Your vise assembly may be positioned on the linear slideways at the location that enables you to clamp as close to the sawblade as possible.

Handle #2 unlocks the assembly to allow lateral positioning of vise.

1. Grease zerk for slide bearings.

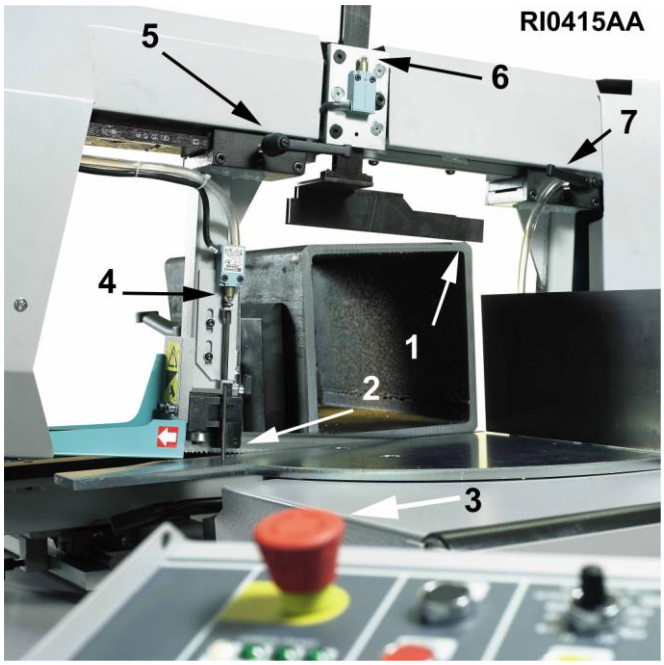
2. Locking knob for vise assembly. When you have positioned the vise assembly laterally on the slideways, lock into place.

3. Grease zerk for slide bearings.

4. Main vise locking lever
Clamps moving vise jaw onto spindle.

It is recommended to keep slideways clean and bearings lubricated frequently.

Sawframe Control Components



1. Material sensor (top)

2. Material cutoff sensor (bottom of cut)

3. Emergency Stop

4. Material cutoff microswitch

5. Adjustable handle for LH moving guide assembly.

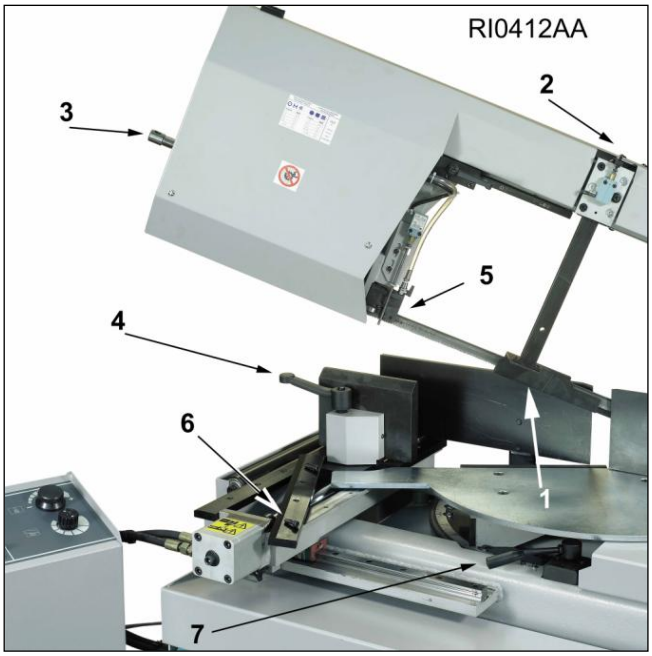
6. Material microswitch (top)

7. Adjustable handle for RH moving guide assembly.
Note: It is recommended that both LH and RH guide assemblies be positioned as close to the work piece as possible. This provides the greatest beam strength of the sawblade and moves the guides further from the blade twist that occurs as the blade travels on & off the bandwheels.

Caution: Before making final adjustments of the blade guides position be certain to check the travel of the sawframe to make sure you don't crash guides into front or rear vise assembly

Setup Components

1. Material sensor
2. Material sensor microswitch
3. Blade tension spindle
4. Vise clamp lever
5. Adjustable LH guide assembly
6. Vise slide top plate
7. Mitering locking lever



System Startup

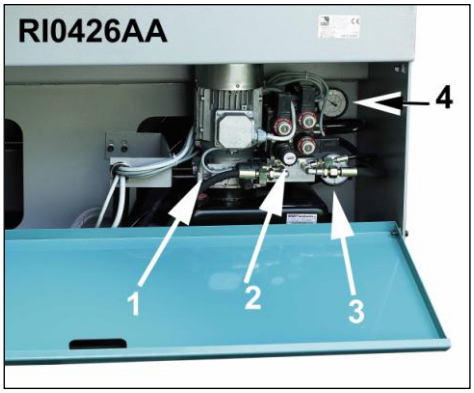
-Turn on main power at disconnect.

-Ensure all pilot lights are illuminated. If not, make necessary corrections.

-Push Hydraulic Start button. Open hydraulic compartment (lift cover) to ensure system pressure gauge (#4) shows 300 psi

Other hydraulic components illustrated as follows.
1. Hydraulic Drive Motor
2. Pressure regulator for vise clamping pressure
3. System pressure gauge
4. Gauge for vise clamping pressure

Note: Recommended hydraulic oil – Viscosity 46



Sawframe Mitering

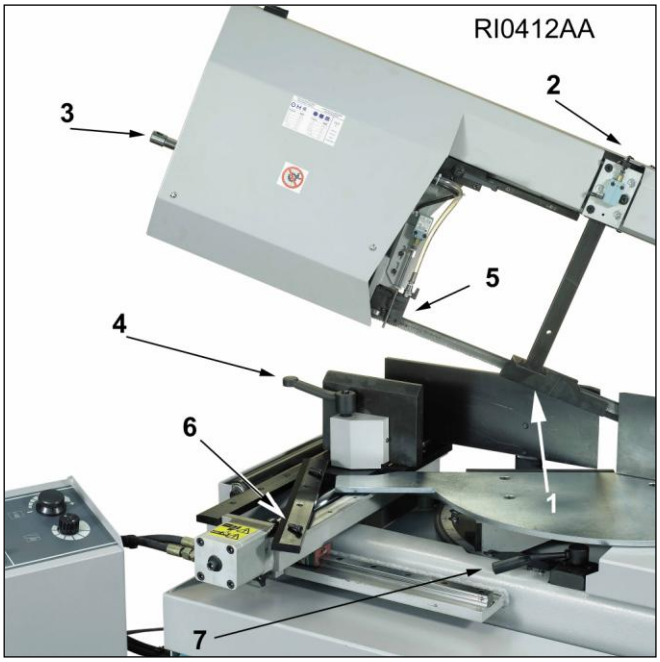
Mitering to the right
Loosening handle #7 allows the sawframe to miter left or right.

You will detect detent stops a 0 degrees and 45 degrees. You can also see that the 1 degree increments are approximately ¼" apart so it is very easy to set your angle with great accuracy.

When your sawframe is set at the desired angle, lock again with handle #7.

Mitering to the left
The process is similar to mitering to the right.
You will need to take the additional step of releasing the saw vise and moving it on the slideways to the sawframe to miter left.

You may miter left up to 45 degrees without any further steps.
If you need to go beyond 45 degrees to the left it can only be done by removing vise top plate #6 which will allow the additional sawframe movement.



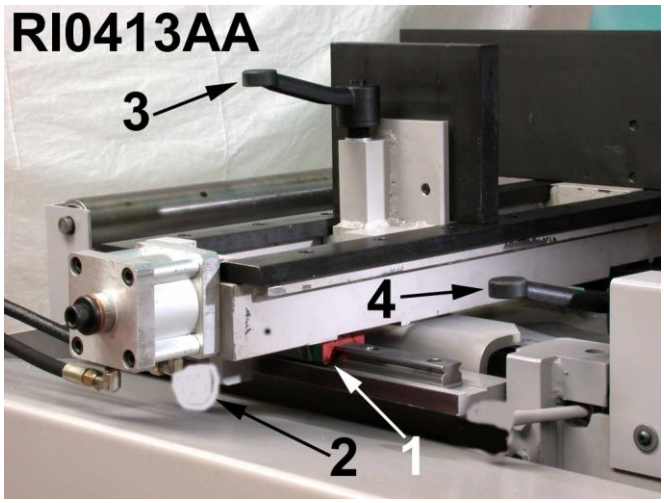
Moving vise components

1. Linear bearings, slideways

2. Vise locking handle, to lock vise assembly onto slideways

3. Vise clamping handle

4. Mitering locking lever



BLADE INSTALLATION

USE GLOVES! THE TEETH ON A BLADE ARE FOR CUTTING!

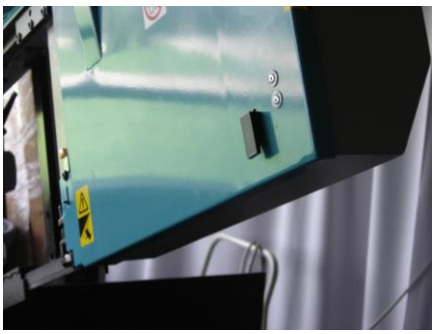
Please refer to the section on APPLICATIONS to select proper blade.

Raise saw frame to the point where the blade clears the fixed vise.

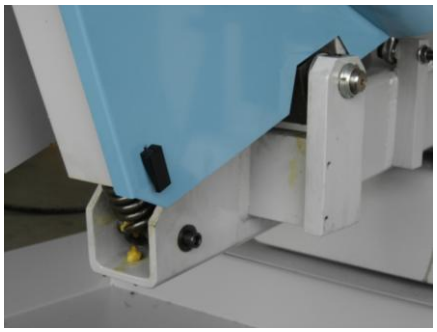
Disconnect machine power to ensure safe blade change.

Loosen LH blade guide adjustable locking handle and move the LH guide close to the RH guide.

Swing away rear bandwheel cover (4 latches) and front guard.



Tension end latch



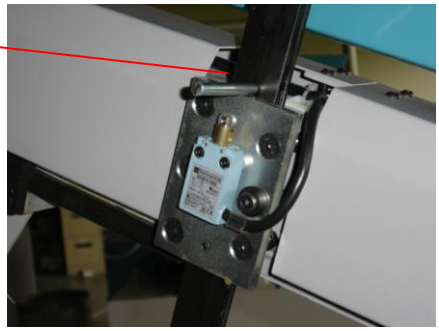
Drive end latch

The gas cylinder on the end of the sawframe will allow cover to be held open for blade changing.

Remove blade guard at RH end of sawframe.

Raise material sensor device and block into place with a small hex key or pin as illustrated.

This will assist you by getting the device out of the way.



Turn blade tension screw (indicated with arrow) *counterclockwise* until blade is free. Remove blade from bandwheels.

Thoroughly clean areas of bandwheels and guides.

Check the tooth direction of blade, and place into the channel in center of sawframe, then over bandwheels and through guides.

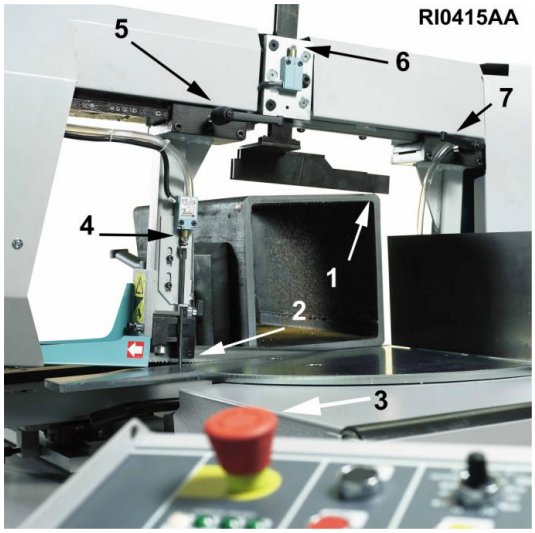
Lightly tension blade, checking to see that it is properly against the bandwheel flanges. Continue to tension blade until indicator LED on panel is illuminated.

Replace guards

MACHINE OPERATION

It is recommended to make a "Test" cycle with material in the vises but not under the blade, to check all operating conditions, including proper adjustment of vise, saw frame travel, correct selection of blade, blade speed, and coolant prior to initiating a sawing cycle.

Place material to be cut in the vise, in position to contact the material height sensor (#1)
BUT NOT under the sawblade (as shown at right).



Operation Note
At all times during sawing the material height sensor will be in contact with the workpiece. When the material height sensor is above the workpiece the sawframe will be descending in rapid approach. When it is in contact with the workpiece the sawframe will be descending in the controlled feed rate, and controlled by the feed speed valve in front of the machine base.

Your material cutoff sensor (#2) is automatic and needs no adjustment. It moves when you adjust your moving guide arm, and senses the buttom of the cut.

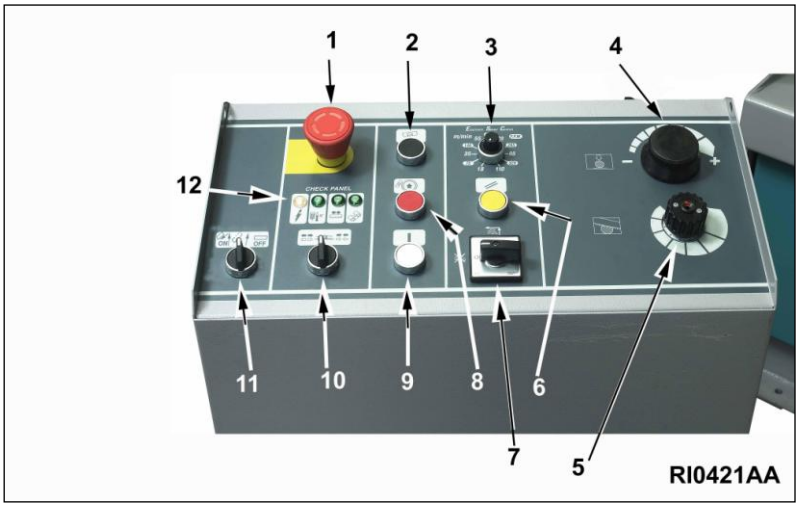
Make sure the vise is hydraulically unclamped (selector switch ***left***).

Loosen vise clamp handle and push vise up to workpiece then move it back about 1/8".
Lock clamping handle (clockwise).

Clamp vise (selector switch 10)

Set Blade Speed desired (3).

Turn feed speed valve complete off (#5, clockwise).



Turn feed pressure valve left (#4, minus)

Inspect LH guide assembly to ensure it is as close as possible to the workpiece.

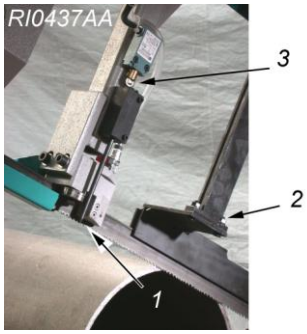
Push Cycle Start button (9). Check coolant flow and blade speed, and adjust as necessary.

Adjust Feed Speed until you reached desired sawing rate.

Additional Operation Notes

In the event you require maximum capacity it will be necessary to remove the material sensing devices. You can remove two each mounting screws for at locations #2 & #3 to remove material sensor hardware.

This changes the operation of the machine. The sawblade cutoff point micro switch will not be active, and you must push the red sawframe raise button at the completion of the cut.



UNDERSTANDING SAWING CONTROLS

Successful sawing requires an understanding of the sawing variables. Many sawing problems can be eliminated with proper understanding of the adjustments available to you on your machine.

BLADE SPEED

The charts contained in the "Applications" section are a result of years of research and testing by the bandsaw blade manufacturer. Pay attention to them. Make sure you use the proper blade speed for the type and size of material you are cutting.
If you have questions, call the factory or your local blade supplier.
The correct blade speed ensures that the material is being removed as quickly as possible. Too slow or too fast yields a chip load less than optimum and may dull the blade prematurely.
Too slow a blade speed will lead to overloading of teeth and crooked cuts.
Observe your chip load.

CHIP LOAD

Careful observation of the chip load is important when sawing. Chips could be nicely curled as shown in illustration.
Too tight a curl may mean too heavy a feed pressure. Lack of a curl shows too little feed pressure.
Chips that are blue in color could mean too great a blade speed, too heavy feed pressure, or a combination of the two.

FEED SPEED

Feed speed valve controls the rate of saw frame descent. The setting should be so that the saw frame moves only as fast as the material is being removed with a proper chipload.
Open the valve slowly enough that the blade does not crash into the workpiece and damage the blade. Often it is proper to ease the blade into the workpiece, then gradually open the valve further when the blade is well into the cut.

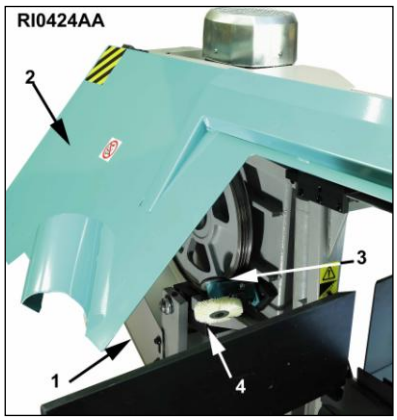
FEED PRESSURE

Feed pressure valve controls the amount of sawframe pressure is exerted against the workpiece; or how heavy the sawframe is. Always start with the least amount of pressure possible, and increase only as necessary. Excessive pressure will cause premature blade wear, blade breakage, and crooked cuts.

Blade Brush

The nylon blade brush will be most effective when properly maintained. Periodic inspection to ensure the drive belt is properly adjusted against drive wheel and that the area is not overloaded with chips. Also inspect brush for wear.

1. Chip chute - inspect for chip accumulation
2. Bandwheel cover - must be opened for inspection
3. Brush drive belt
4. Nylon brush



MATERIAL AND SPEEDS SELECTION

The following are estimates, and recommended starting points. Actualy results may vary in accordance with desired results, coolants, and other variables.

Material to Cut		Bi-Metal Band	S.F.P.M.	Cut Rate Sq. In./Min.	Feed Pressure	Tool life Sq. In./Ft.	Material Characteristics
Low Carbon	1010-1019	Matrix II	300-350	11 to 15	Medium/Light	650 to 800	Free Machining
Medium Carbon	1020-1050	Matrix II	190-225	7 to 9	Medium/Light	425 to 700	Free Machining
High Carbon	1055-1095	Matrix II	145-170	6 to 8	Medium	300 to 400	Free Machining
Free Machining	1109-1113	Matrix II	300-350	12 to 15	Medium/Light	700 to 850	Free Machining
Free Machining	1115-1213	Matrix II	200-250	8 to 10	Medium/Light	500 to 750	Free Machining
Manganese	1320-1340	M42/M51	175-220	6 to 8	Medium	330 to 375	Work Hardening
Nickel	2015-2517	M42/M51	225-250	6 to 7	Medium	250 to 300	Work Hardening
Nickel	2320-2350	M42/M51	145-170	5 to 6	Medium	250 to 300	Work Hardening
Nickel	2512-2515	M42/M51	175-200	4 to 5	Medium	250 to 300	Work Hardening
Nickel-Chrome	3115-3150	M42	125-160	6 to 9	Medium	275 to 350	Tendency to Chip Weld
Nickel-Chrome	3215-3240	M42/M51	110-140	5 to 8	Medium	250 to 300	Work Hardening
Nickel-Chrome	3415-3450	M42/M51	90-125	4 to 6	Medium/Heavy	250 to 300	Work Hardening
Molybdenum	4023-4037	Matrix II	230-270	6 to 8	Medium	350 to 375	Abrasive
Molybdenum	4042-4063	Matrix II	180-220	5 to 7	Medium/Heavy	325 to 350	Abrasive
Chrome-Moly	4120-4140	M42/M51	185-210	5 to 7	Medium	275 to 350	Work Hardening/Abrasive
Chrome-Moly	4320-4340	M42/M51	180-230	5 to 7	Medium	250 to 325	Work Hardening/Abrasive
Nick-Chro-Moly	8620-8750	M42	175-230	5 to 7	Medium	275 to 425	Good Cutting Characteristics
Nick-Chro-Moly	9310-9850	M42/M51	160-220	4 to 6	Medium/Heavy	175 to 300	Work Hardening
Nickel-Moly	4615-4640	M42/M51	210-240	5 to 7	Medium	275 to 300	Work Hardening
Nickel-Moly	4812-4820	M42/M51	175-190	4 to 6	Medium/Heavy	225 to 275	Work Hardening
Chrome	5120-5160	M42	190-230	6 to 8	Medium	225 to 350	Good Cutting Characteristics
Chrome	50100-52100	M42/M51	150-185	4 to 6	Medium	200 to 275	Abrasive
Chro-Van-Silicon	6115-6120	M42	160-225	3 to 6	Medium	200 to 275	Abrasive
Silicon	9255-9262	M42	175-210	8 to 16	Medium	175 to 250	Extremely Abrasive
Stainless	201-304	M42/M51	80-125	2 to 4	Medium/Heavy	275 to 300	Work Hardening
Stainless	308-348	M42/M51	55-80	1 to 2	Medium/Heavy	100 to 250	Work Hardening
Stainless	410-430	M42/M51	110-150	2 to 4	Medium	125 to 250	Work Hardening/Abrasive
Stainless	440 & 17- series	M42M51	75-110	1 to 2	Medium/Heavy	125 to 175	Work Hardening/Abrasive
Tool Steel	M1,M2,M3,T1,T2	M42/M51	120-150	3 to 5	Medium/Heavy	125 to 175	Work Hardening/Abrasive
Die Steel	O-1, O-2, O-6, O-7	M42/M51	175-210	3 to 5	Medium/Heavy	225 to 350	Work Hardening/Abrasive
Die Steel	A-2, A-4	M42/M51	180-220	3 to 4	Medium/Heavy	200 to 250	Work Hardening/Abrasive
Die Steel	D-2, D-3, D-4	M42/M51	90-120	2 to 3	Medium/Heavy	125 to 175	Work Hardening/Abrasive
Hot Work Steel	H12, H13, H21	M42	160-200	4 to 5	Medium	275 to 325	Abrasive
Hot Work Steel	H22, H24, H25	M42	130-175	2 to 4	Medium/Heavy	175 to 225	Abrasive
Monel		M42/M51	60-90	.5 to 4	Medium/Heavy	50 to 100	Extremely Work Hardening
Inconel		M42/M51	50-80	.5 to 4	Medium/Heavy	25 to 70	Extremely Work Hardening
Hastelloy		M42/M51	50-80	.5 to 4	Medium/Heavy	55 to 100	Extremely Work Hardening
Titanium		M42/M51	40-60	.5 to 4	Medium/Heavy	25 to 60	Extremely Work Hardening
Aluminum	2011-7075	Matrix II	325-400	14 to 25	Medium/Light	175 to 275	Abrasive/Chip Build-up
Copper		Matrix II	275-350	6 to 8	Medium/Light	250 to 600	Good Cutting Characteristics
Bronze		Matrix II	225-300	14 to 18	Medium/Light	200 to 425	Good Cutting Characteristics
Brass Red		Matrix II	225-300	14 to 18	Medium/Light	225 to 400	Good Cutting Characteristics
Brass, Naval		Matrix II	275-350	10 to 14	Medium/Light		Good Cutting Characteristics
Cast Iron		Matrix II	165-225		Medium		
Cast Steel		Matrix II	110-225		Medium		
Structurals		Matrix II	175-250		Medium/Light		Tooth Breakage Potential

Material	24 W	18/14	14/10	12/8	10/6	8/5	6/4	4/3	3/2	4 H	3 H	1.5/1
Thin Gauge												
1/8" - 1/4"												
1/4" - 1/2"												
1/2" - 1"												
1" - 3"												
3" - 6"												
6" - 9+"												
Wide Material Range Selection												
1/2" - 3"												
1" - 6"												
3" - 9+"												
Interrupted Cut Tubing/Structural Selection*												
Thin Tube												
Extrusions												
Normal Wall												
Heavy Wall												

**Note: There are two specialty brands available for interrupted cut applications: wavy set 'New Wave' for thin tube and extrusions or extra set 'Kerf Plus' in order to reduce pinching when cutting structural shapes.*

PERFORMANCE COMPENSATION

The correct tooth pitch, tooth design, feed rate and band speed (s.f.p.m.) are critical to providing maximum cut rate, tool life, finish and cut accuracy. In certain unique situations it may be desirable to sacrifice one or more of these parameters in order to improve another. You must keep in mind that when you deviate from normal recommendations in order to improve an area with an 'X' that you will sacrifice results in the unmarked boxes.

To Improve	Cut Rate	Tool Life	Finish	Accuracy
Finer Pitch			X	
Coarser Pitch	X			
Reduce Feed			X	X
Increase Feed	X			
Medium Feed		X		
Positive Rake	X	X		
0° Rake Angle			X	

TOOTH PITCH SELECTION

Determine the **actual range of materials** which you **normally** cut. Select the material size range row which covers the highest % of your materials. Follow *across* the row to the shaded blocks. Follow *up* the columns to find the recommended tooth pitch. Select from two choices for each material range. The ***finer*** tooth pitch is the normal cut rate, ***conservative*** recommendation. The ***coarser*** tooth pitch is more ***aggressive*** providing faster cutting rates. Always follow the correct feed and speed recommendations.

Select ***conservative*** if most of your material is at the smaller end of your selected range, if your saw is in poor condition or is undersized for the application. Select ***aggressive*** if most of your material is at the larger end of your selected range, your saw is properly sized and is in good condition.

Note: Using a tooth pitch one step below material size recommendations will reduce production by as much as 50%

TOOTH STYLE SELECTION

Several tooth face designs are available for most tooth pitches and material types; select the appropriate tooth design.

Aggressive 7° tooth face (M11 and M42) for improved band life when cutting solids at reduced feed pressures.

Aggressive 12° tooth face (M51) for improved performance cutting hard or hardening solids at reduced feed pressures.

Tough, forgiving 0° tooth face for cuts on structural shapes, tubing or for maintenance department applications.

Blade Guide Parts

Two round buttons. (515796)

Four carbide guides. (515800)

Four guide holder screws.

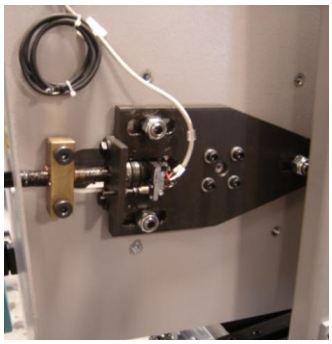
Four pad support for carbide guides.
(697300)

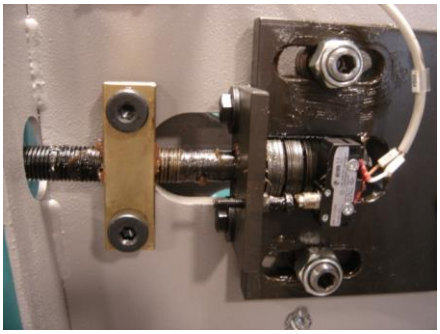
Four guide bearings. (284209)

Blade Tension Mechanism

Access the blade tension assembly as follows.

Remove sawframe cover allowing access to the blade tension mechanism.





In the event that the blade tension assembly is disassembled for service or to replace any components it will become necessary to verify that the proper tension is being applied to actuate the micro switch.

You may obtain a tension meter from any legitimate blade vendor. Simply utilize the tension meter to set to the proper tension and when tension is correct you may adjust the microswitch with the adjusting screw as illustrated in photo.

Variable Speed Drive Will Not Operate

There are a number of reasons that can cause the drive to not start or prematurely trip out. Following is a checklist of points to check:

-If a problem has occurred during operation, at times you can put the machine back into operation by recycling the power (turn off disconnect switch on operators console, leave it off for 2 minutes, and turn back on).

-The INDICATOR LIGHT for motor is not illuminated. This indicator light illuminated illustrates that the drive is ready to work. If it goes out it is for one of two reasons. The thermal protection device internally in the motor is hot (you have overloaded the machine) or the A/C drive has a fault or failure.

If this light is out because the internal protector of the motor has tripped, you must let the motor cool for awhile before restarting. If the light is out because the drive has been overloaded, you should examine how the machine is being used. Some reasons for this can be:

-Dull Sawblade

-Sawblade too fine for the job being done. You need at least 3 teeth in the cut and not more than 7 (in a perfect world). You should try for this formula whenever possible.

-Too many teeth in the cut at once. This relates to the above; if you are laying a piece flat when you could stand it on end, this can contribute to the problem.

-Too slow a blade speed. If the chips aren't being removed fast enough the drive will become oveloaded.

-Too fast downfeed rate. Slow it down.

-Too heavy with sawframe feed pressure.

-The main switch disconnect switch on the operators console trips out. If this disconnect switch shuts off machine power it could be an indication that this is set too low. Remove cover plate (two phillips head screws top center & bottom center) and you will see the pot for setting amperage. Adjust if necessary. See picture at right

-Open cover of operators console, and you will see in the upper right hand corner the A/C drive, labeled
ALTIVAIR When you turn on power, you will see the rdy message.
When the drive is in operation, you will see rdy (ready) on the panel.
When the drive has a problem, instead of rdy you will see most likely one of the following:
OLF - which means the drive has been overloaded for some reason (reassess how you are using the machine)
OSF - which means the supply voltage is too high (check your voltage)
USF - which means the supply voltage is too low (check your voltage)

The most frequent problems with machines are voltage too high, voltage too low, and overloading the drive.

MAINTENANCE

DAILY

-Clean all chips from machine
-Replenish coolant level
-Inspect all blades for sharpness
-Check blade tension and adjust as necessary

WEEKLY

-Remove and clean out coolant tank and replenish with fresh coolant mixture

TROUBLESHOOTING

Aside from obvious machine malfunctions, most sawing problems can be attributed to improper practices or applications, and will result in blade problems or unsatisfactory cuts or cutting times.

1. Improper application, i.e. an application not suited to a bandsawing machine
2. Improper blade selection, including
   -wrong pitch
   -wrong type
4. Material improperly clamped in machine vise
5. Improper use of coolant
6. Feed rate too heavy
8. Improper training of saw operator

POSSIBLE MACHINE PROBLEMS

MOTOR FAILS TO DEVELOP FULL POWER
1. Power line overloaded
2. Undersize wire
3. Low voltage from power company

MOTOR OVERHEATS
1. Motor overloaded
2. High or low power supply voltage
3. Air circulation over motor restricted

COOLANT FLOW INADEQUATE
1. Valve closed or clogged
2. Coolant tank empty
3. Crimped or restricted coolant line
4. Defective valve
5. Defective or clogged pump
6. Clogged pump filter inside main tank

CANNOT MAKE SQUARE CUT
1. Dull blade
2. Wrong blade for application;
3. Blade installed with teeth backwards
4. Vise not set at 90 °
5. Material not clamped squarely

BLADE WILL NOT CUT AT ALL
Blade mounted with teeth in wrong direction
Blade running wrong direction

MOTOR WILL NOT RUN
1. Low voltage
2. Fuse blown or circuit breaker open
5. Open circuit in wiring
6. Motor defective

MOTOR WILL NOT START; FUSES BLOW
1. Short circuit in line or cord
2. Short circuit in motor terminal box
3. Fuses too light
4. Defective motor

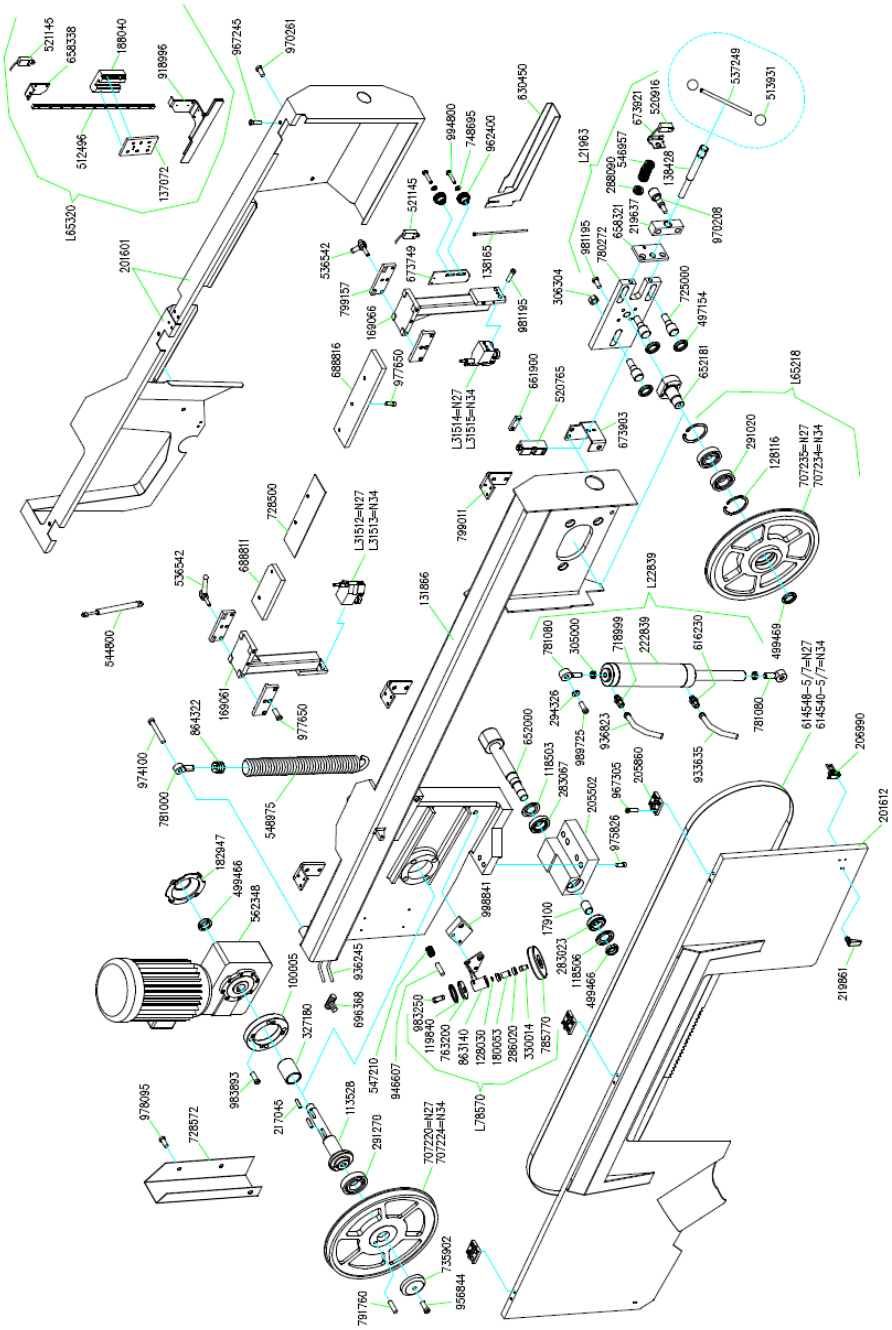
MOTOR STALLS EASILY
1. Low voltage supply
2. Inadequate wiring
3. Excessive pressure being used while sawing
4. Dull blade (in conjunction with above)

PREMATURE DULLING OR BREAKING OF SAWBLADE
1. Cutting speed too fast for material being cut
2. Feed rate too fast
3. Excessive feed pressure
4. Improper blade for material being cut
5. Cutting without proper coolant
6. Wrong coolant for job
7. Fusion of chips in sawblade (coolant problem)
8. Fusion of chips in sawblade (incorrect pitch)
9. Material loose in vise
10. Workpiece not properly clamped in vise, and moving during the cut

TEETH STRIPPING FROM BLADE
1. Excessive feed pressure
2. Feed speed too fast
3. Blade speed too slow
4. Gullets of teeth overloading, blade pitch too fine
5. Blade pitch too coarse
6. Workpiece not firmly clamped in vise jaws
7. Workpiece clamped incorrectly. When possible, flat and/or rectangular pieces should be placed on side, to allow cutting through thinnest possible section

CROOKED CUTS
1 . Excessive feed pressure
2. Incorrect blade tension
3. Blade speed too slow
4. Too fine pitch of sawblade
5. Blade dull
6. Guides improperly set; gap too wide between carbides
7. Guides set too far from workpiece
8. Vise jaws not square to blade
9. Bandwheel flanges work, causing loss of set to one side of saw teeth

SAW BLADE "KICKS"
Chips have fused in teeth (see 8 & 9 above)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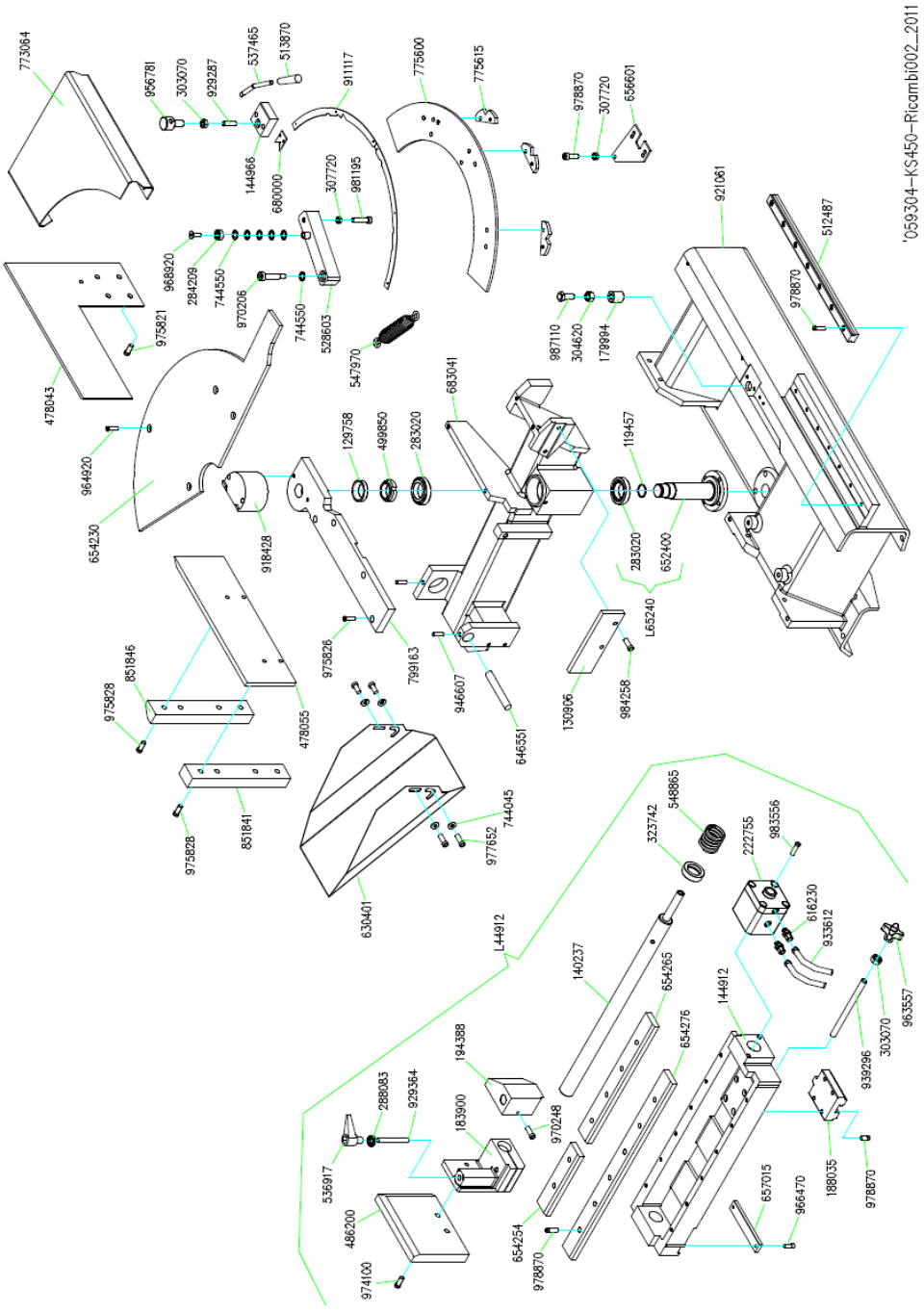
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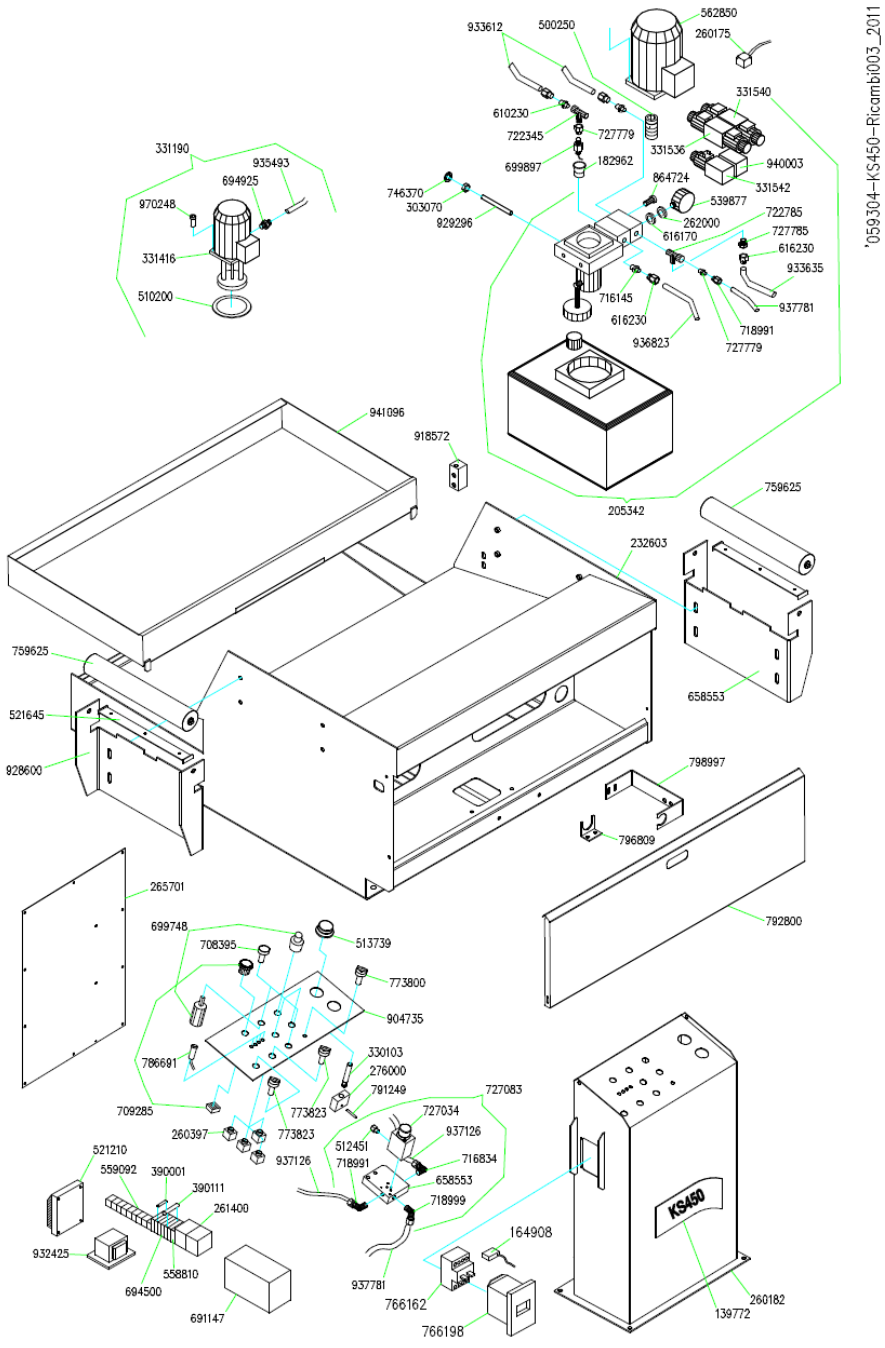
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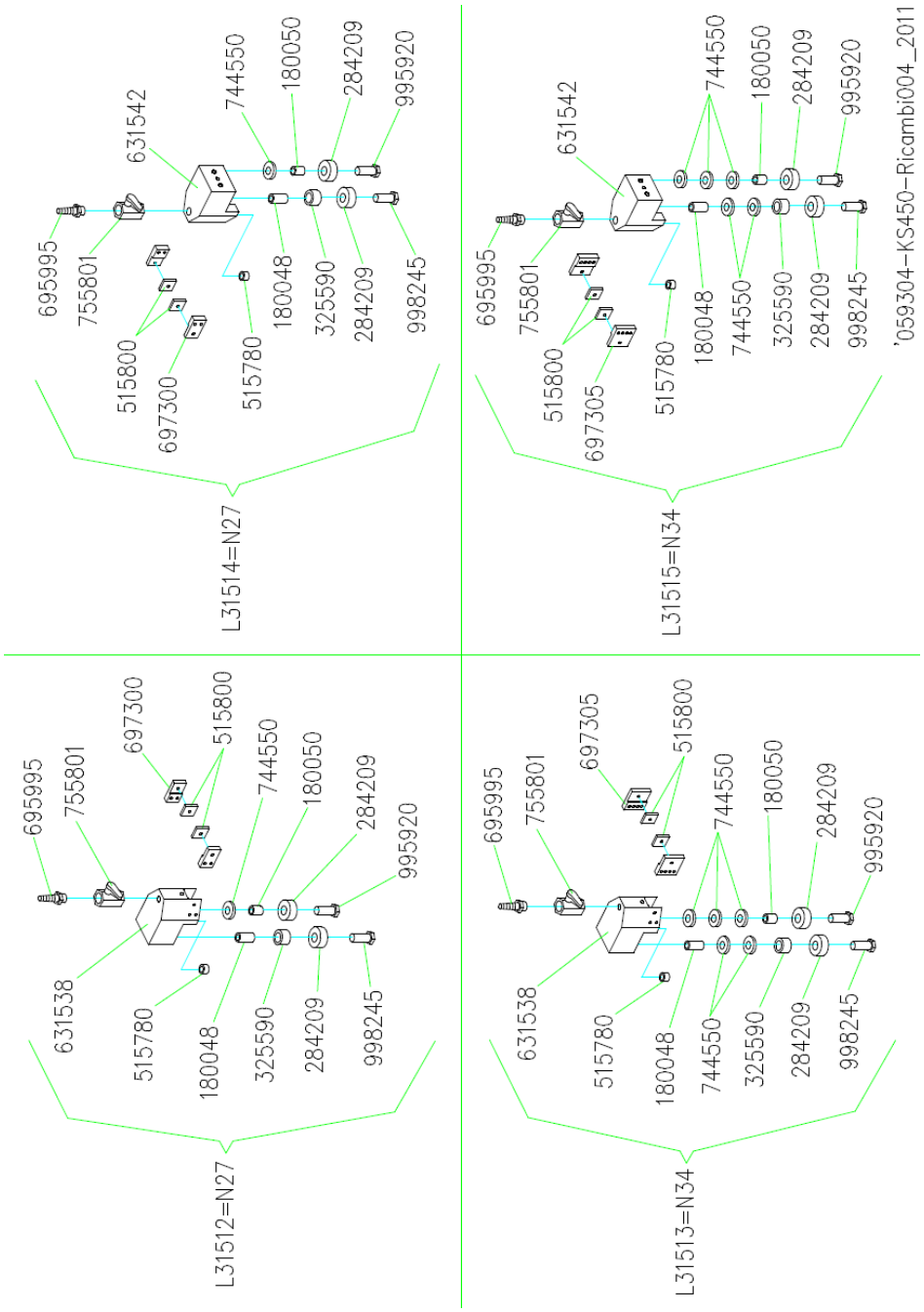
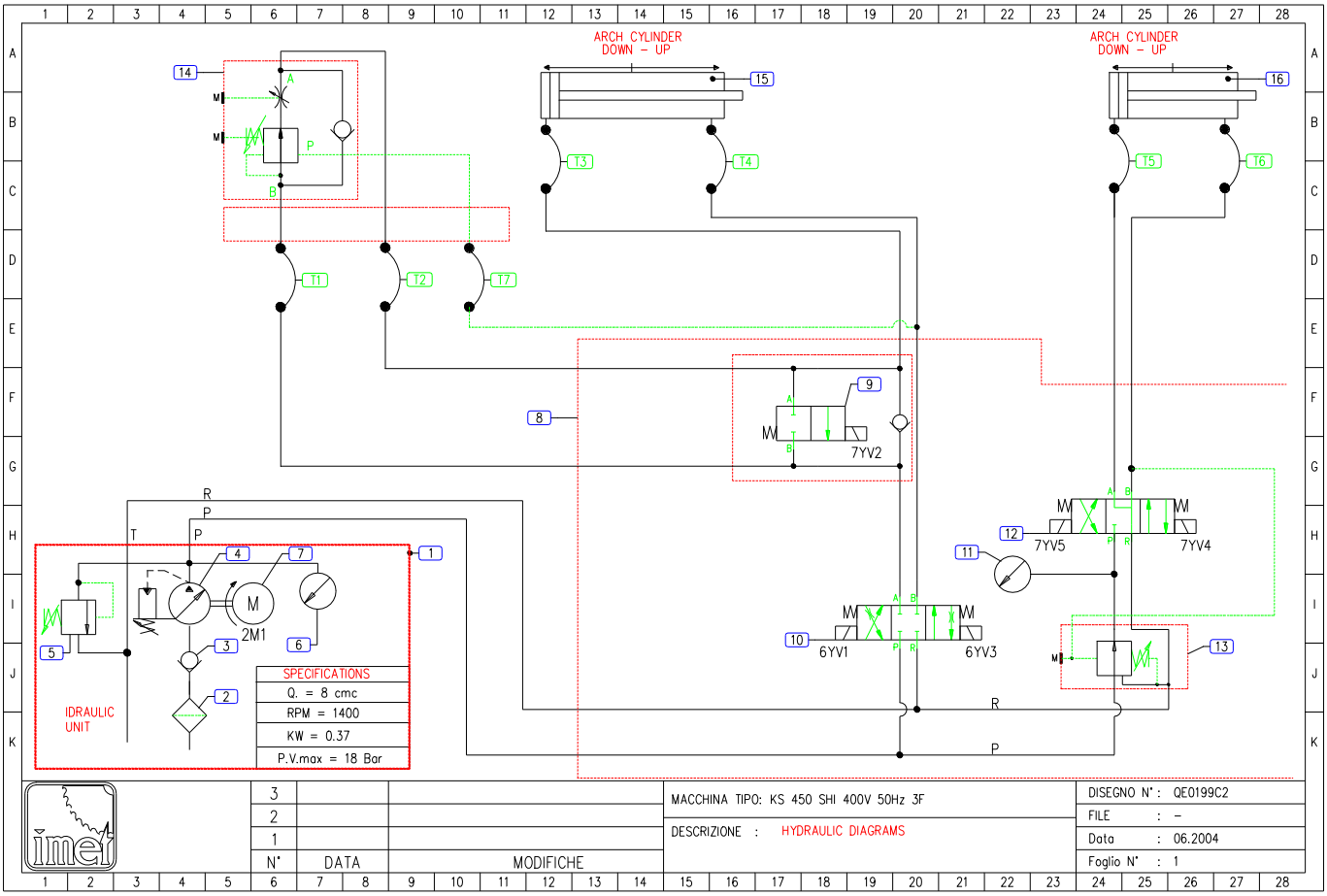
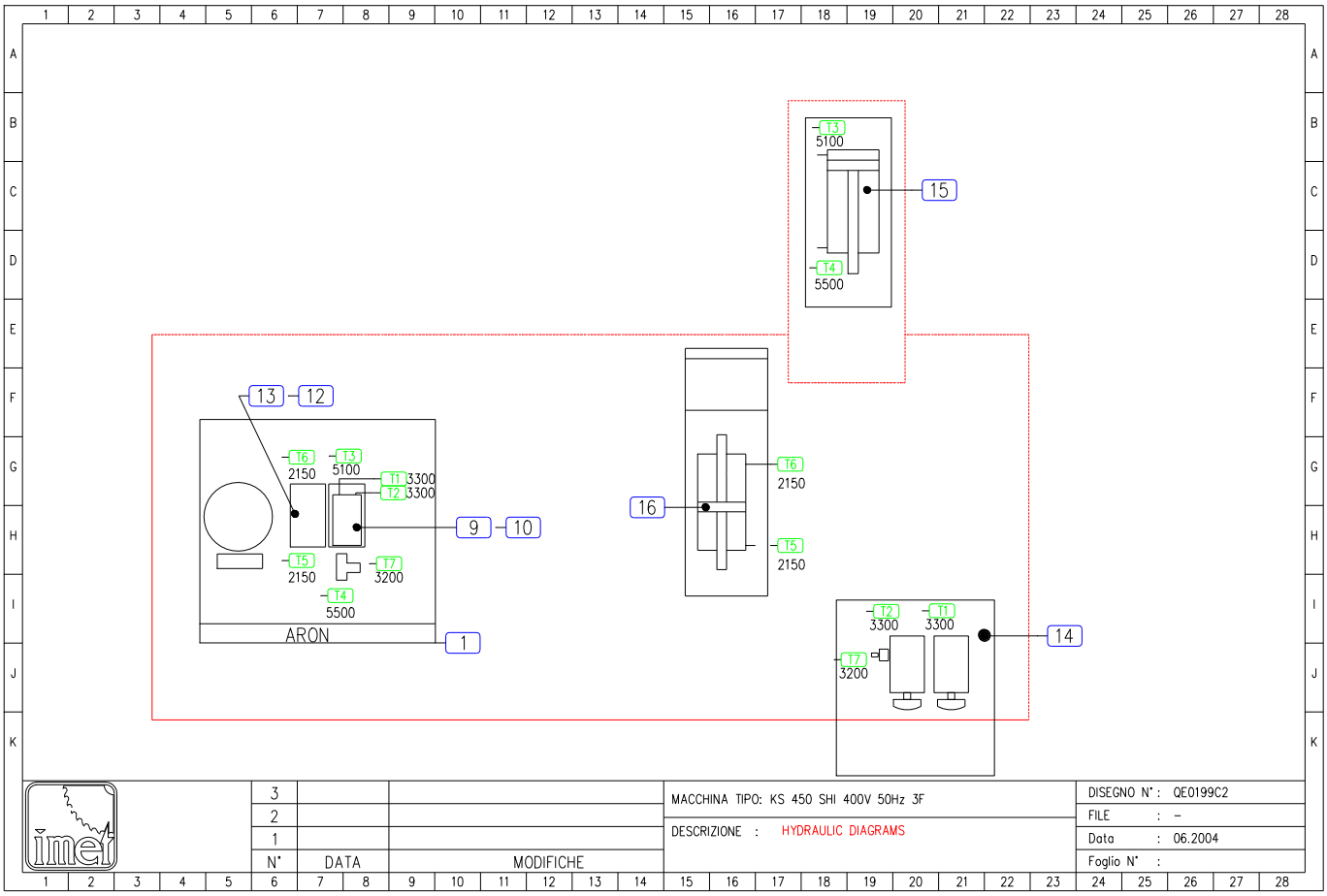
Blade Guides

Note: N27 for 1” blade
N34 for 1 ¼” blade




ARCH CYLINDER
DOWN – UP
ARCH CYLINDER
DOWN – UP
7YV2
7YV5
7YV4
6YV1
6YV3
2M1
IDRAULIC
UNIT
SPECIFICATIONS
Q. = 8 cmc
RPM = 1400
KW = 0.37
P.V.max = 18 Bar
MACCHINA TIPO: KS 450 SHI 400V 50Hz 3F
DESCRIZIONE : HYDRAULIC DIAGRAMS
DISEGNO N°: QE0199C2
FILE : –
Data : 06.2004
Foglio N° : 1
N° DATA MODIFICHE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T7
3200
T4
5500
ARON
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16
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N°
DATA
MODIFICHE
MACCHINA TIPO: KS 450 SHI 400V 50Hz 3F
DESCRIZIONE : HYDRAULIC DIAGRAMS
DISEGNO N° : QE0199C2
FILE : –
Data : 06.2004
Foglio N° :

REF.	DESCRIPTION	SPECIFICATION	FACTORY	TYPE	PART NUMBER	Q.TY
1	COMPLETE HYDRAULIC UNIT	MODULAR ELEMENTS MOTOR 4POLES 0.37KW	IMET		L20532	1
2	OIL FILTER	D. 80 X 28			–	1
3	ONE-WAY CHECK VALVE	CARTRIDGE TYPE	–		–	1
4	HYDRAULIC PUMP	9.2 cc MARZOCCHI – 5.9 cc HYTOS			–	1
5	MAX. PRESSURE CONTROL VALVE	0 – 50 BAR		–	–	1
6	PRESSURE GAUGE	0 – 40 BAR	WIKA	113-13-063	539877	1
9	DIRECTIONAL CONTROL VALVE/ONE POSITION	4/2 – Tensione 24Vd.c.	ARON	A66E121AM003	331542	1
10	DIRECTIONAL CONTROL VALVE/TWO POSITION	4/3 – Tensione 24Vd.c.	ARON	AD3E01C	331540	1
11	PRESSURE GAUGE	0 – 40 BAR	WIKA	113-13-063	539877	1
12	DIRECTIONAL CONTROL VALVE/TWO POSITION	4/2 – Tensione 24Vd.c. – OPEN CENTRE	ARON	AD3E03C M20	331536	1
13	PRESSURE REGULATOR VALVE	–	ARON	AM3VRPIM1	940003	1
14	COMPLETE SPEED REGULATOR UNIT	–	IMET	–	727043	1
15	DOUBLE ACTING FEED CYLINDER ARCH	SPECIAL CYLINDER	IMET	–	222839	1
16	DOUBLE ACTING FEED CYLINDER VICE	SPECIAL CYLINDER	IMET	–	222755	1
T1	FLEXIBLE LINE FOR SAW	TUBO R7 1/4"3300+CODOLI d8	PBC	–	937126	1
T2	FLEXIBLE LINE FOR SAW	TUBO R7 1/4"3300+CODOLI d8	PBC	–	937126	1
T3	FLEXIBLE LINE FOR SAW	TUBO R7 1/4"5100+CODOL.	PBC	–	936823	1
T4	FLEXIBLE LINE FOR SAW	TUBO R6 3/8" 5500+FEMM.	PBC	–	933635	1
T5	FLEXIBLE LINE FOR SAW	TUBO R6 3/8" 2150+FEMM.	PBC	–	933612	1
T6	FLEXIBLE LINE FOR SAW	TUBO R6 3/8" 2150+FEMM.	PBC	–	933612	1
T7	FLEXIBLE LINE FOR SAW	TUBO R7 3/16"3200+CODOLI d6	PBC	–	937781	1

N°	DATA	MODIFICHE
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MACCHINA TIPO: KS 450 SHI 400V 50Hz 3F

DESCRIZIONE : GENERAL LIST OF COMPONENTS

DISEGNO N° : QE0199C2
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