

**COLD SAW MACHINE**  
**MODEL: CS-9**

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# 1. Warnings

1. Read and understand the entire owner's manual before attempting assembly or operation.
2. Read and understand the warnings posted on the machine and in this manual. Failure to comply with all of these warnings may cause serious injury.
3. Replace the warning labels if they become obscured or removed.
4. The cold saw is designed and intended for use by properly trained and experienced personnel only. If you are not familiar with the proper and safe operation of a cold saw, do not use until proper training and knowledge have been obtained.
5. Do not use this cold saw for other than its intended use. If used for other purpose, we disclaims any real or implied warranty and holds itself harmless from any injury that result from that use.
6. Always wear approved safety glasses/face shields while using this cold saw. Everyday eyeglasses only have impact resistant lenses; they are not safety glasses.
7. Before operating the cold saw, remove tie, rings, watches and other jewelry, and roll sleeves up past the elbows. Remove all loose clothing and confine long hair. Non-slip footwear or anti-skid floor strips are recommended. Do not wear gloves.
8. Wear ear protectors (plugs or muffs) during extended periods of operation.

9. Some dust created by power sanding, sawing, grinding, drilling and other construction activities contain chemicals known to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are.  
Lead from lead based paint.  
Crystalline silica from bricks, cement and other masonry products.  
Arsenic and chromium from chemically treated lumber.
10. Your risk of exposure varies, depending on how often you do this type of work. To reduce your exposure to these chemicals, work in a well-ventilated area and work with approved safety equipment, such as face or dust masks that are specifically designed to filter out microscopic particles.
11. Do not operate this machine while tired or under the influence of drugs, alcohol or any medication.
12. Make certain the switch is in the OFF position before connecting the machine to the power supply.
13. Make certain the machine is properly grounded.
14. Make all machine adjustments or maintenance with the machine unplugged from the power source.
15. Remove adjusting keys and wrenches. From a habit of checking to see that keys and adjusting wrenches are removed from the machine before turning it on.
16. Keep safety guards in place at all times when the machine is in use. If removed for maintenance purposes, use extreme caution and replace the guards immediately.
17. Make sure the cold saw is firmly placed on a secure foundation.
18. Check damaged parts. Before further use of the machine, a

guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting and any other condition that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced.

19. Provide for adequate space surrounding work area and non-glare, overhead lighting.
20. Keep the floor around the machine clean and free of scarp material, oil and grease.
21. Keep visitors a safe distance from the work area. Keep children away.
22. Make your workshop child proof with padlocks master switches or by removing starter keys.
23. Give your work undivided attention. Looking around, carrying on a conversation and “horse-play” are careless acts that can result in serious injury.
24. Maintain a balance stance at all times so that you do not fall into the blade or other moving parts. Do not overreach or use excessive force to perform any machine operation.
25. Use the right tool at the correct speed and feed rate. Do not force a tool or attachment to do a job for which it was not designed. The right tool will do the job better and safer.
26. Use recommended accessories; improper accessories may be hazardous.
27. Maintain tools with care. Keep saw blades sharp and clean for the best and safest performance. Follow instructions for lubricating and changing accessories.
28. Turn off the machine before cleaning. Use a brush or

compressed air to remove chips or debris-do not use your hands.

29. Do not stand on the machine. Serious injury could occur if the machine tips over.
30. Never leave the machine running unattended. Turn the power off and do not leave the machine until it comes to a complete stop.
31. Remove loose items and unnecessary work pieces from the area before starting the machine.

Familiarize yourself with the following safety notices used in this manual:

This means that if precautions are not heeded, it may result in minor injury and / or possible machine damage.

This means that if precautions are not heeded, it may result in serious injury possible even death.

## **2. Introduction**

The CS-9 cold saw is a pendulum bench are designed for cutting metals. Operation is manual: after turning on the electrical power supply to the machine and clamping the workpiece in the vice, the operator starts the blade by pressing the microswitch located on the control lever; he then moves the head downwards in order to cut the material; after completing the cut, the cutting head returns to position ready for new cutting cycle. The model: CS-9 can perform miter cuts up to 45 degree to the left.

## 2.1. Specifications:

Model: CS-9

Disc blade: 9"

Hole diameter: 1.3"

Blade thickness: 0.08"

Cutting speed

Blade speed: 50 RPM

Vise opening: 6"

Motor: 115V,1HP,1PH

Other

Coolant capacity: 2.7 quarts

Dimensions: 25"x15"x28"

Weight: 84 lbs

## 2.2. Cutting capacity:

	Degree	Round	Square
Tubing	90	2.5"	2"
	45	2.125"	2"
solid	90	1.75"	1.75"
	45	1.5"	1.5"

## 3. Features

In this section, refer to figure 1 except where otherwise specified.

### 3.1. Miter cutting head

The miter cutting head (figure 1) is the unit that cuts the material and consists of a cast iron base, blade support unit and guard,

transmission unit, and motor. The depth of cut is set by adjusting the depth cut stop. The miter cutting head swivels and can be adjusted from 0-45 degree.

### **3.2. Miter positioning**

The cutting angle (miter position) is manually adjusted and described in performing angle cuts on page 10.

### **3.3. Self-centering vise**

The self-centering vise holds the work piece in place during cutting. The work piece is secured in the vise by turning the vise handle.

### **3.4. Trigger handle**

The trigger handle is located on the operating lever used to raise and lower the saw. It contains a micro-switch (figure 9), which starts the saw when pressed.

### **3.5. Flood coolant system**

Coolant is dispensed directed onto the saw blade from a coolant fitting on the upper blade guard. Coolant is provided through tubing from the coolant pump mounted on the back of the motor casting.

The coolant flow control valve (figure 2) is located on the back of the saw. Adjust the value to achieve desired flow. Flow starts when the switch on the machine is turned on and the micro-switch in the trigger handle is depressed. Releasing the micro-switch stops coolant flow.

This coolant system can operate with either a soluble oil base coolant or water-soluble synthetic coolant. Coolant should be changed regularly. Some recommended brands are do all and



lenox. These coolant are available at your local industrial distributor.

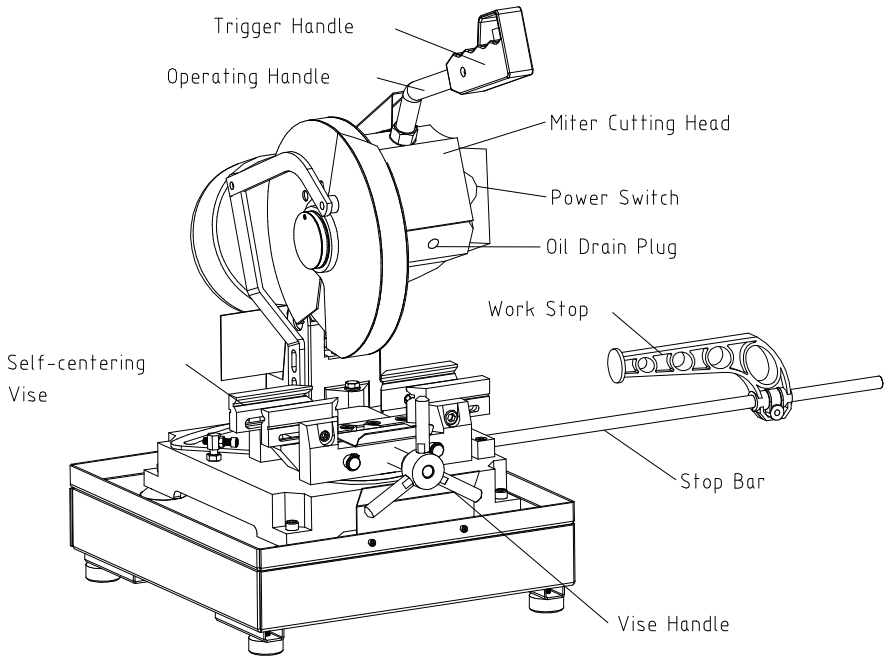


Figure 1

## 4. Unpacking

Remove packing and two wrapped parcels containing the handle and workshop, requiring simple assembly, from shipping container. Then lift machine from container and place on sturdy work surface.

## 5. Assembly

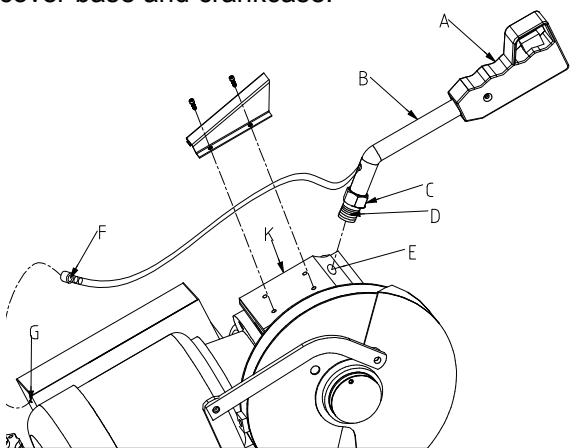
### 5.1. Handgrip

Tools required 23 mm wrench, Cross point screwdriver

Referring to figure 3:

1. Screw the threaded end (D) of the operating handle into the threaded opening (E) of the crank case. Back off slightly, aligning the position of the trigger handle (A) for a comfortable grip when operator stands before the machine.
2. Secure the operating handle (B) by tightening the lock nut (C) with 1 23 m wrench.
3. Attach the connector (F) of the cable to the socket (G) on the side of the switchbox.
4. Attach the cable cover (H) to the crankcase (K). Secure the cover with four M4x6 pan head screws (J).

Tighten with a cross point screwdriver. Make sure the cable can move freely inside the cover and is not pinched between the cover base and crankcase.



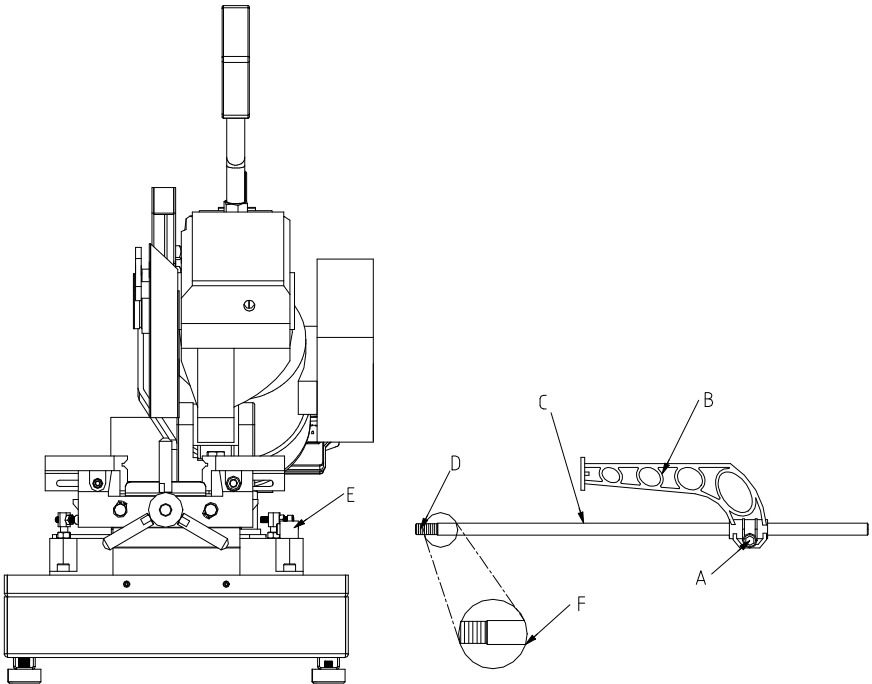
## 5.2. Workshop stop

Tools required

Adjustable wrench

Referring to figure 4, assemble to the workshop as follows:

1. Loosen the lock knob (A) on the stock stop (B) and slide it onto the stop bar (C).
2. Thread the assembly (D) into the mounting bracket (E). place an adjustable wrench at the indents (F) and tighten the rod.



## **6. Electrical**

### **6.1. Electrical requirements**

When connecting the cold saw to the power source outlet, the outlet must be properly grounded to protect the operator from electrical shock.

In the event of a malfunction or breakdown, grounding provides a path of least resistance for electrical current to reduce the risk of electrical shock. This machine is equipped with an electric cord having an equipment-grounding conductor-outlet that is properly installed and grounded in accordance with all local codes and ordinances.

This saw is equipped with a power cord. Improper connection of the equipment grounding conductor can result in a risk of electric shock. The conductor with insulation having an outer surface that is green (with or without yellow stripes) is the equipment-grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal.

Plug power cord into a 110-120V properly grounded outlet protected by a 14-amp fuse or circuit breaker.

**Warning:** Do not touch the prongs of the power cord plug when plugging or unplugging to or from an outlet.

**Warning:** If improperly grounded, this power tool can cause serious injury from electrical shock, particularly when used in damp locations or near plumbing. If an electrical shock occurs, there is the potential of a secondary hazard such as your hands

coming in contact involuntarily with the rotating blade.

## **6.2. Electrical connections**

The CS-225 cold saw is rated at 115V, 1 phase and is designed for use on a circuit with an outlet that looks the one shown in figure A. A temporary adapter (figure B) may be used to connect the plug to a two-prong receptacle (figure B) If a properly grounded outlet is not available. A temporary adapter should only be installed by a qualified electrician. This adapter is not applicable in Canada. The green colored lug must be fastened to the cover plate screw.

Important: The adapter illustrated in figure B is for use only if you already have a properly grounded two-prong receptacle. Do not modify the plug provided-if it will not fit the outlet, have the proper outlet installed by a qualified electrician. Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the tool is properly grounded.

Warning: Before plugging into the power source, be sure that power switch is in the OFF position.

## **6.3. Extension cords**

Use only three-wire extension cords that have three-prong grounding type plugs and three prong receptacles that accept the tool's plug. Replace or repair damaged or worn cords immediately. Use proper extension cord. Make sure your extension cord, be sure to use one heavy enough to carry the current your product will draw. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating. Table 1 shows the correct size to use depending on cord length and nameplate

ampere rating. If in doubt, use the next heavier gage

Amp rating	Volts	Total length of cord in feet			
	120V	25	50	100	150
	240V	50	100	200	300
		AWG			
0-6		18	16	16	14
6-10		18	16	14	12
10-12		16	16	14	12
12-16		14	12	Not rcmd	Not rcmd

## 7. Adjustments

Warning: Remove power when making any adjustments. Failure to comply may result in serious injury!

### 7.1. Performing angle cuts

The CS-9 can perform cuts at angles up to 45 degree to the left. Adjust the angle of a cut as follows while referring to figure 5:

1. Loosen two hex cap screws (A) with a 6mm hex wrench to free the turntable.
2. Turn the machine body to any position between 0-45 degree, reading positin on the angle scale on the base.
3. Tighten the hex cap screws (A).

### 7.2. Blade travel adjustment

Tools required

12mm wrench

13mm wrench

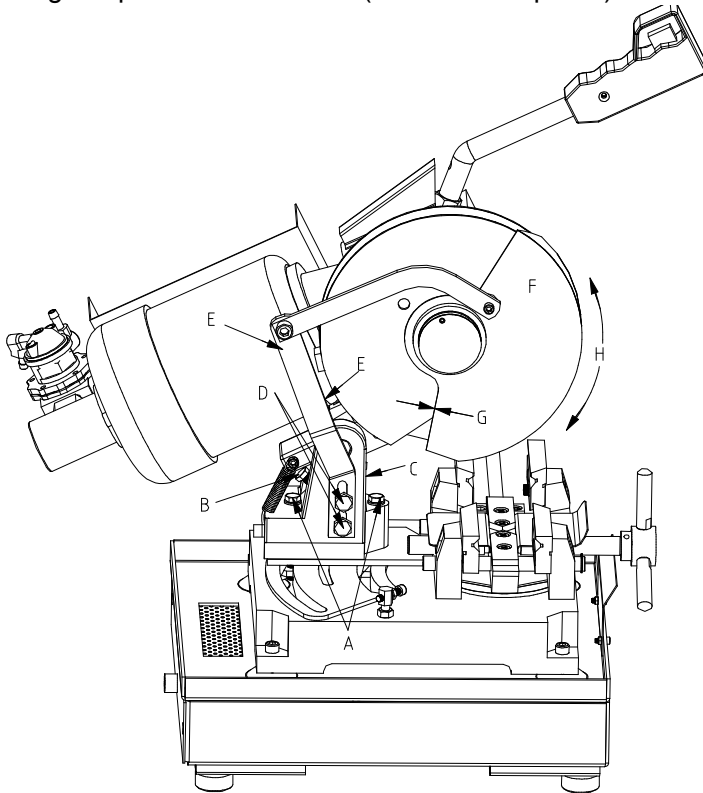
The height of retract and depth of cut stop adjustments limit the

upper and lower travel limits of the saw blade.

To make adjustments (refer to figure 5):

Height of retract-this is the upper travel limit of the saw blade when the trigger handles is raised. Adjustment is made by setting the position of screw B.

Depth of cut stop-this is the lower travel limit of the saw blade when the trigger handle is brought down adjustment is made by setting the position of screw C (not visible in photo).



### **7.3. Blade guard adjustment**

Warning: Remove power when making any adjustments.

Failure to comply may result in serious injury!

Referring to Figure 5:

When the saw head is lowered all the way, the blade should not be visible (G). If the blade is visible, the blade guard (F) needs to be adjusted as follows:

1. Loosen two socket head cap screws (D) just enough to permit the bracket (E) movement for adjustment.
2. Manually adjust the blade guard (H) until blade is not visible at G.

Note: During step 2, the saw must be in the lowered position.

3. Tighten the two socket head cap screws (D).

### **7.4. Changing the saw blade**

Warning: The corded saw must not be connected to the power source when changing saw blades. Failure to comply may result in serious injury!

Remove the saw blade as follows while referring to figure 6:

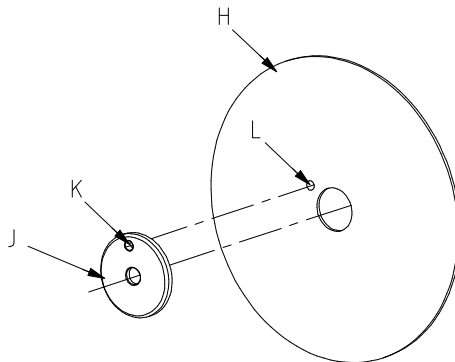
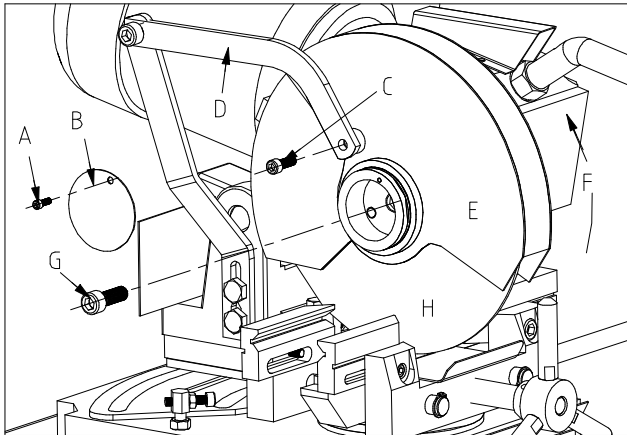
1. Remove the screw (A) and cover plate (B), or loosen the screw just enough to slide the cover plate away to reveal the hub.
2. Remove the socket head cap screw C that secures the bracket (D) to the lower blade guard (E).
3. Raise the lower blade guard (E) upwards (F).
4. Remove socket head cap screw (G) that secures the blade (H).

Note: This screw has a left thread requiring a clockwise turn to



loosen and a counterclockwise turn to tighten.

5. Remove the blade (H) and outer flange (J). Discard the old blade (or have it sharpened) and replace with a new one.
6. Install the new blade in the reverse order described above. Note that the flange (J) has a pin (K) that needs to match up with the correct keyhole (L), if the blade has more than one keyhole, make the selection such that the mounting holes of the flange and blade are centered.



## 8. Controls

**Power switch** – The power switch has two position, off and on. To operate the machine, the power switch must be set to on. Then depress micro-switch (figure 8) in the trigger handle to start.

**Locking key** – When the saw is not in use, the switch should be locked in the off position. To lock the switch in the off position, pull out the safety key removed. However, if the key is removed while the switch is in the on position, it can be turned off once. The saw will not restart until the key has been reinserted into the switch.

**Trigger handle** – To operate, the on / off switch must be on the trigger handle (figure 8) depressed.

## 9. Operation

Before using the machine:

1. Check that safety devices (ex., blade guards) are in position and work perfectly and tht personal safety requirements are complied with.
2. Check the sharpness of the blade and verify coolant flow.

To operate:

3. Make sure the work piece is securely clamped in the vise.
4. Turn the power on (figure 7).
5. Grip the trigger handle (figure 8) on the control lever.
6. Start the blade by pressing the micro-switch on the handgrip. The down stroke speed of the head is controlled manually by the operator.
7. Raise the head.

8. Remove the work piece from the vise using the vise hand wheels.

## **10. Maintenance**

### **Maintenance requirements**

**Warning: All maintenance must be carried out with the power switched off. Failure to comply may result in serious injury!**

On completion of maintenance, ensure that replaced parts and / or any tools used have been removed from the machine before starting it up.

#### **10.1. Periodic maintenance**

Remove chips from the machine and table (A), preferably with a brush.

Clean coolant tray (C) and change coolant regularly (see coolant section below).

Top up the coolant level (see coolant)

Check the wear of the blade and change if necessary (see changing the saw blade on page 11).

Clean the vise and lubricate all the joints and sliding surfaces, using good quality oil.

Attend to daily, weekly and annual lubrication recommendations (see the lubrication section on this page).

#### **10.2. Coolant**

This coolant system can operate with either a soluble oil base coolant or water-soluble synthetic coolant. Coolant should be

changed regularly. Some recommended brands are do all and lenox. These coolants are available at your local industrial distributor.

Coolant type:

Soluble oil base

Water-soluble synthetic coolant

Referring to figure 9:

The coolant tray (C) is located on the back of the cabinet stand. Remove two hex cap screws and washers (D) with a 5mm hex wrench and slide open as shown. Check coolant level in the tray (B) periodically and top off if necessary. Coolant can also be added by pouring directing on the table (A), which will drain into the tank through the chip strainer.

## **11. Lubrication**

For long life and trouble free operation, it is essential that this machine is kept clean and well lubricated.

Vice and lead screw – oil daily with regal R & O 68.

Pivot joints and bearings – grease weekly with Texaco starplex 2 or equivalent.

Gearbox oil – check level weekly, full level is top of sight glass (see figure 7) with head in full up position; gearbox oil should be changed annually. Unscrew operating arm (B,figure 3) and add oil through opening in crankcase (E, figure3).

Lubricant – add or change Texaco meropa 460 or equivalent.

## 12. Blade selection

When using the CS-9 cold saw, it is important to select the correct type of blade for the material to be cut. This section explains the limitations and specific applications of the different types of blades.

### 12.1. General characteristics:

Fine tooth pitch – used for thin wall materials such as sheet steel, tubes and profiles

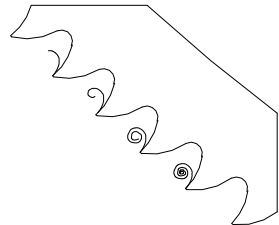
Coarse tooth pitch – used for large cross-sections.

- for soft materials (aluminum alloys and soft alloys in general).

### 12.2. Determining proper tooth pitch





Proper tooth pitch depends on:

- a) the size of the section;
- b) the hardness of the material;
- c) wall thickness.



Solid sections call for discs with a coarse tooth pitch, while small cross-sections require blades with finer teeth. This is because when cutting walls of small cross-section (1-7 mm) profiles, it is important that the number of teeth actually making the cut should not be too small, otherwise the effect obtained will be one of tearing rather than of chip removal. Leading to a large increase in shearing stress. On the other hand, when cutting an excessively fine tooth pitch, the chip collects as a spiral inside the gullets, the accumulated chip will exceed the gullet capacity and press against

the walls of workpieces, resulting in poor cutting (same situation with soft materials), greater shearing stress and hence breakage of the blade.

Choice of tooth pitch T as function of cross-section to be cut for light alloy solid pieces and profiles			
 		 	
S in mm.	Pitch T	S and sp in mm.	Pitch T
10	6	10 sp=0.5	3-4
30	8	30 sp=1.5	4-5
50	10	50 sp=2.5	6-7
70	12	70 sp=3.5	8-9
90	14	90 sp=4.5	8-9
130	18	130 sp=6.5	10

S= diameter or width of the solid piece to be cut in mm

Sp=thickness of the wall to be cut in mm

T= tooth pitch in mm

A large pitch should be chosen when, as a result of the shape of the piece to be cut, the cross-section at any given point exceeds the average cross-section given above.

### 12.3. Cutting and feeding speed

The cutting speed, in m/min, and the head feeding speed, in cm<sup>2</sup>/min, are limited by the amount of heat generated near to the

points of the teeth. If the head feeding speed is too high, The cut will not be straight in either the vertical or the horizontal plane. As we have already said the cutting speed depends on the strength (kg/mm<sup>2</sup>) and hardness (HRC) of the material the dimensions of the thickest section. The feeding speed depends on the cross-section of the material. Solid or thick-walled materials (thickness>5mm) can therefore be cut at high speed providing there is sufficient swarf removal by the blade, while thin-walled materials such as tubes or thin profiles must be cut with a low feeding speed.

**Warning: A new blade requires a break-in period, during which time about half the normal feeding speed should be used.**

### **Coolant**

The cooling fluid ensures that the blade teeth and material in the area of the cut do not overheat. The fluid must be an excellent lubricant so as to prevent abrasion of the teeth and welding of the chips to the teeth themselves (seizing).

## 14. Trouble shooting blade and cutting problems

problem	Problem cause	Solution
Teeth breaking	Incorrect lubricant/coolant fluid	Ensure proper coolant flow
	Material too hard	Check the cutting speed, feed speed and air pressure parameters and the type of blade you are using.
	Disc not worn-in correctly	With a new blade it is necessary to start cutting at half feeding speed. After the wearing-in period (a cutting surface of about 300 cm <sup>2</sup> for hard materials and about 1000cm <sup>2</sup> for soft materials) the cutting and feed speeds can be brought up to normal values.
	Disc with excessively fine tooth pitch	The swarf wedges into the bottom of the teeth causing excessive pressure on the teeth themselves
	New blade inserted in	The surface of the cut may



	a partially completed cut	have undergone work hardening. When starting work again, use a lower cutting speed and head feed speed. A tooth from the old blade may be left in the cut: check and remove before starting work again
	Work piece not clamped firmly in place	Any movement of the work piece during cutting can cause broken teeth: check the vise, jaws and clamping pressure.
Rapid tooth wear	Feed speed too slow	The blade runs over the material without removing it: increase feed speed
	Cutting pressure too high	Reduce cutting pressure
	Blade speed too high	The teeth slide over the material without cutting it: reduce the blade speed
	Insufficient coolant	Check and coolant level and clean coolant lines and nozzles.
	Incorrect fluid concentration	Check and use the correct concentration.
	Material defective	The material may present altered zones either on the

		surface, such as oxides or sand, or in section, such as under-coolant inclusions. These zones, which are much harder than the blade, cause the teeth to break: discard or clean these materials.
Broken blade	Feed speed too high	Reduce blade speed
	Teeth in contact with material before starting the cut	Always check the position of the blade before starting a new job.
	Insufficient coolant	Check the coolant level and clean coolant lines and nozzles.
	Electrical power supply	Check the cables, plug and socket. Also check that the motor connections are in place.
	transformer	Check that the voltages are present both on the input and output. Otherwise replace.
	Contacteur	Check that the phases in it are present both on the input and output, that it is not jammed, that it closes

		when powered and that it is not causing short circuits. Change if any of these problems are found.
	Thermal relay	Make sure it is closed, it check that the phases are present in input and output that it is not causing short circuits and responds when the reset coil is closed. If it has tripped to protect the motor, check the amperage setting, reset, and check the motor. Change if necessary.
	Motor	Check that it has not burnt out, that is turns freely and that there is no moisture in the connection terminal board box. The winding can be rewound or replaced.

## 15. Part list

Item	Description	Qty	Item	Description	Qty
1	Base	1	52	Socket head cap screw (LH thread) M12x25 LH	1
2	Spring pin $\varnothing$ M4x10	2	53	Blade shaft flange	1
3	Scale	1	54	Blade shaft	1
4	Support block	1	55	Oil seal	1
5	Socket head cap screw M6x12	2	56	Handle grip	1
8	Stop rod	1	57	Flat head screw M4x8	4
9	Cabinet	1	58	Limit switch	1
10	Coolant tank	1	59	Cable	1
12	Hex cap screw M8x30	4	60	Handle	1
13	Rubber foot	4	61	Hex nut M16	1
14	Round pin	1	62	Head	1
15	Coolant valve	1	63	Oil plug	1
16	Coolant tubing	1	64	Bolt M6x16	2
17	Disc	1	65	Spring	2
18	Swivel plate	1	66	Socket set screw M6x8	1
19	Pivot block	1	67	Worm gear	1
20	Pivot pin	1	68	Oil sight glass	1
21	Hex cap screw M8x25	2	69	Ball bearing 6001ZZ	1
22	Socket head cap	2	70	Nut	1

	screw M8x25				
23	Socket set screw M8x16	2	71	Worm	1
24	Lead screw	1	72	Head gasket	1
25	Guide rod	2	73	Switch box	1
26	Retaining ring S13	2	74	Switch	1
27	Middle support	1	75	Motor	1
28	Socket head cap screw M8x35	2	76	Bearing 609ZZ	1
29	Plate	4	77	E-Clip E-10	1
30	Flat head screw M8x20	2	78	Pump connection box	1
31	Cover	1	79	Socket head cap screw M4x16	3
32	Support plate	2	80	Coolant pump	1
33	Rear vise jaw	1	81	Socket head cap screw M6x20	2
34	Front vise jaw	1	82	Power cord	1
35	Jaw insert	2	83	Flat washer M4	2
36	Jaw insert	2	84	Bolt M4x10	1
37	Socket head cap screw M6x20	4	85	Cover	1
38	Hex nut M6	7	86	Pan head screw M4x6	4
39	Handle hub	1	87	Spring pin 4x12	2
40	Handle	3	88	Rubber sheet	1
41	Spring pin	1	89	Front cover plate	1

42	Support link	1	90	Cover	1
43	Lock nut M8	2	91	Stock stop	1
44	Socket head cap screw M8x20	1	92	Bolt M6x25	1
45	Guard link	1	93	Bolt Mx630	2
46	Retaining ring S60	1	94	Pan head screw M4x6	2
47	Screw	1	95	Socket head cap screw M8x16	2
48	Socket head cap screw M8x16	1	96	Nut M4	2
49	Connector fitting	1	97	Washer 6	4
50	Fixed blade guard	1	98	Mounting plate	1
51	Moveable blade guard	1	99	Blade $\varnothing$ 225	1

