Content

Congrationlations on your purchase of a double cut saw!

You have chosen the most reliable and most powerful mechanical-separation system currently available. This operating manual will help you familiarize yourself with the new cutting process. Please take time to read through the manual before using the machine for the first time. Our experience with previous saw systems has taught us a lot. Extensive customer feedback has helped us draw up the specifications for a new generation of power saws and these have been incorporated into the CDC model range. Countless training sessions have taught us the tricks and tips that the user needs to know and these have all been included in the new manual. TWINSAW is the registered trade-name of TwinSaw Werkzeuge und Geräte GmbH/ Herten. The pace of technological innovation means that we reserve the right to make technical changes to equipment and accessories without notice.

EU Declaration of Conformity

The importer and manufacturer	**TwinSaw Werkzeuge und Geräte GmbH** **Lippestrasse 10** **D- 45701 Herten**
herewith declares that the following machines:	TwinSaw CDC Type 2224 Serial numbers: 22240000 – 22249999
	TwinSaw CDC Type 2530 Serial numbers: 25300000- 25399999
meet the safety standards and general requirementsof the following EU Directives:	(89/392 EWG) (73/23 EWG) EN 50144-1 : 1995 EN 50144-2-5: 1996
As based on the harmonised standards:	VDE 0740 / 205.

The above machines comply with the technical test requirements laid down in manufacturers' guidelines ISO 9001 and following. The individual tests carried out during and after manufacture meet all relevant international criteria.
The Declaration of Conformity is rendered invalid by design modifications that affect the technical data given in the operating instructions and alter the way in which the equipment is to be used, i.e. fundamental modifications to the machine.

Herten, October 2004

Managing director

Klaus Rawert

Security advices to this manual

Foreword
TWINSAW is the registered trade-name of TwinSaw Werkzeuge und Geräte GmbH/ Herten. The pace of technological innovation means that we reserve the right to make technical changes to equipment and accessories without notice.

S1 Owner-operator responsibilities
TwinSaw tools are designed and built on the basis of risk analyses and in compliance with applicable (harmonised) CE/EU/DIN standards and other relevant technical specifications. The equipment is manufactured to the highest technical standards and is designed with maximum safety in mind.
However, workplace safety can only be maintained when all necessary safety measures are in place. It is the responsibility of the owner-operator of the sawing equipment and accessories to organize these measures and to ensure that they are being properly implemented.
The owner-operator must ensure that:

- the saws and accessories are always in proper working order and safety equipment is regularly checked
- there is a sufficient supply of protection equipment available for saw operators, servicing and repair staff and that this safety equipment is properly used
- a full set of operating instructions is always available at the workplace and is maintained in a legible condition
- persons operating, servicing and repairing the saws and accessories are properly trained and authorised to do so
- saw operators and servicing staff are given regular instruction in all matters relating to workplace safety and enironmental protection and are fully aware of the operating instructions and safety requirements
- safety and warning notices are never removed from the equipment and remain legible at all times.

S2 General safety measures

Keep the workplace clean
An untidy workbench or dirty workplace increases the risk of accident.

Pay attention to the workplace environment
Never expose electrical equipment to damp or wet conditions. Always ensure that the workplace is properly lit. Do not operate power tools in the vicinity of flammable gases or fluids.

Protection from electrical shock
When the equipment is switched on avoid skin contact with grounded objects
Always wear protective gloves and prescribed rubber-soled footwear.

Unauthorized persons
Do not allow unauthorized persons to approach the workplace (within range of the saw cuttings) or stand close to the electrical connections.

Keep your tools safe
Keep the saws dry and do not place them on the floor. Always use the transport/storage cases supplied with the equipment.

Avoid overload
Saws must only be used for the purpose for which they were intended and in accordance with operating instructions.

Wear suitable clothing

Do not wear loose-fitting clothing or jewellery, which can can restrict movement and result in accidents. Long hair should be tied back or put in a hair-net.

Eye and ear protection

Always wear safety goggles or a safety visor and use ear-plugs or ear defenders in accordance with relevant industrial safety provisions.

Power supply

Never hold the saw by its power cable. Never remove the plug from the mains socket by pulling on the lead. Protect the power cable from oil, heat and sharp objects. Damaged cables should be replaced immediately by a qualified person. It is strictly prohibited – and extremely dangerous - to attempt to "repair" the power cable.

Caring for your saw

Keep the saw clean at all times. Check the power tool, connecting cables and accessories for damage. Wipe away grease and oil. Ensure that accessory items such as saw blades are renewed when necessary and have damaged or worn parts replaced by authorized persons or at a workshop. Always follow the maintenance instructions laid down in the operator's manual.

Power extension leads

Only use approved extension leads and ensure that they are always of sufficient length. Check that the wire section is of the correct size. Never use leads that are damaged or have been "repaired".

Working Position

Always keep a proper footing and balance so that the saw can be held firmly at all times.

S3 Approved operators

The saw must only be operated by properly trained and authorized persons. Maintenance and repair work must be undertaken in a workshop or by approved technicians.
Personnel must receive regular instruction on the aspects of workplace safety and environmental protection. The operating manual, and especially its safety instructions, should be readily accessible to operators at all times.

S4 Hazards

Using the saw in its standard form for emergency rescue work, for example, requires special care on the part of the operator. There is a risk of injury from the rotating blades and from falling debris. Persons not wearing safety goggles or a protective visor are at serious risk of eye injury due to flying swarf and saw chips. Care is also needed when replacing the saw blades, which have very sharp carbide-tipped teeth.

S5 Caution

The TwinSaw CDC power saw is a new type of high-performance tool. Treat it with respect. Only use original TwinSaw replacement parts and accessories. Fitting non-approved parts is potential dangerous and can lead to serious injury. The use of non-approved or non-original spares or accessories will invalidate all guarantees and waranty claims.

S6 Contact for safety issues

If you have any questions relating to safety and the correct operation of the power saw please contact us or our agents on: **+49 (0) 209 3615 720** or mail us at: **info@twinsaw.de**

1. Technical characteristics and insert

1.1 Technical characteristics

The TwinSaw CDC-double cut saws are operating with an electronic motor, the CDF-saws are operating with fuel. They have two counterrotating blades that have the same size. Because of the particular form of the gearhead unit the saw blades are rotating in opposite direction with the same speed. They serve the EN norms for electrinic tools. Because of its form and handling they are more similar to a chain saw than to a circular saw. Because of the counterrotating saw blades the technique has got much famous properties:

- **cold cuts:** =sharp cuts needed by cutting materials with high sensivity to temperatures like aluminum, lead, asphalt, tar and others
- **recoil free cuts:** without jamming the saw blades and the resulting kicks of the machine. Much more security both for operator and for material especially when he makes free cuts in close situations
- **high performance cuts:** are necessary by entering smooth and tough surfaces The saws are cutting with 3-4 times higher cutting speed than normal circular saws and 2 times faster than angle grinders
- **variable materials**, like combination of materials like wood, steel, GFK, unite-mateial etc. Very unique and versatile cutting in almost any situation
- **effective drive performance:** here are working two one-blade-saws in outperforming synergy.
- **cuts with no burrs:** By pinching sharp edges can arise. But the double cut saws make edges with nearly no burrs.

Further characteristics you can see at our Info-CD-Rom and our homepage.

1.2.1 Insert in rescue

In rescue the double cut saws have now far reaching insert possibilities, because also in difficult situations they make possible high performance cuts. On by they offer high safety both for rescuer and also the victim. Espacially when you have to enter in surfaces and smooth edges, the saws have to be used. They are also suited for the completement of hydraulic systems. Further insert recommendations you can see at our training-CD-Rom.

1.2.2 Insert in industry

The aqpplication variety of the double cut saws in industry and professional manufacturing is growing up every day. Cold cuts with no burrs and no kick back that are flexible by hand-cutting have tremendous advantages many industry-areas. Now some examples:

A) **Roof construction:** cutting of roof layers with bitumina and asphalt, cutting copper sheets and a lot of other materials

B) **Construction of metal buildings:** Cutting of metall sheets, isolated and non isolated, cutting window and door openings into metal buildings very cold without rust

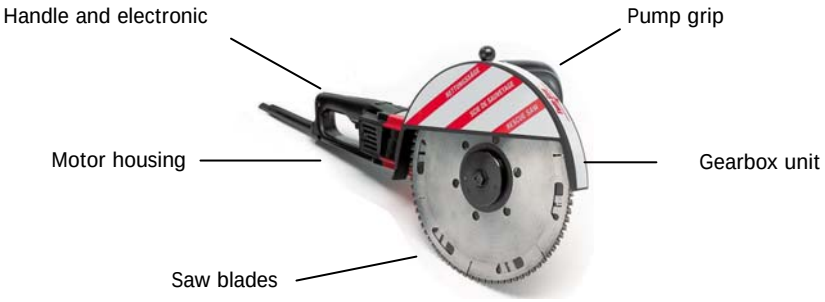
C) **Destruction branches:** cutting of all materials except concrete in almost any situation with only very poor sparks

D) **Nuclear technology:** cutting lead and other special isolation materials

E) **Vehicle maintenance and repair:** cutting off damages with perfect edges for rebuilding

Using the machines in industry, see the special regulations by your safety regulation authority concerning safety clothes, masks and ear protection.

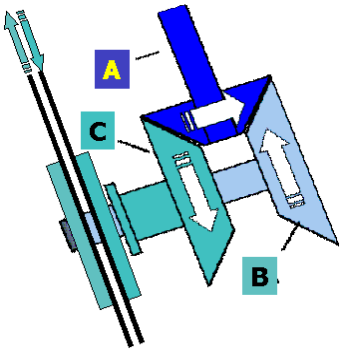
2. Parts diagram of the CDC-saw



CDC 2530 with special-blades CSM 235

2.1 Gearbox unit

The drive-shaft (A) from the electric motor drives the two pinions B and C.
Pinion B runs on the inner shaft,
while pinion C runs on a hollow outer shaft that encloses the inner shaft. The gearbox is greased for life and requires no further lubrication.



gear box

Do not attempt to dismantle the gearbox and do not expose the gear shafts to sudden shock loads, as this can cause imbalance that will eventually destroy the gearbox. If the inner shaft has to be struck for any reason, ensure that a block of wood is placed beneath it (refer to "Blade changing – 235 mm blades", Section 7.1).
For technical assistance call us directly on (+49 209 3615 720).

2.2 Handle and electronic

The black control unit contains the electronics pack, the main switch and the mechanical lock-switch. The latter must be depressed before the main switch can be operated. The electronics pack is contained in the front section of the control unit.
The motor has an electronic control system. The electronics not only protect the motor from overload but also provide smooth start-up and braking of the machine. When the main switch is released the electronic system quickly brings the motor to a standstill. Abrupt braking is technically impossible, as this causes sudden loading that would eventually result in damage to the gearbox. The single-speed electronic control is set at 1900 min-1/ rpm for both saws. The waveform run-up to full speed is quite normal. In this way the electronic system eliminates the current peaks that usually occur when starting-up an electric motor. Electronic control reduces the start-up current to about 12 A (without electronic control the start-up current level would be around 18 A).

2.3 Motor housing

The twin-saw system has clear advantages when it comes to cutting efficiency and requires about 40% less energy than two single-blade saws of similar size. As the twin-saw machine has to accommodate a much more powerful motor than the single-blade system, but in the same size of motor housing, there may be an increasd heat build-up when cutting tough materials and when making deep incisions.
In heavy cutting work avoid overloading the machine through motor overheating. Using the power saw in short bursts will give the motor time to cool down.

2.4 Pump grip

The pump grip shown in the Figure acts both as a front hand-hold and as a reservoir for the lubricant. The grip is attached to the gear unit by an M14 bolt. The bolt must not be over tightened, as this can damage the thread. A certain amount of force is required to remove the aluminium plug beneath the unit in order to top up/refill with oil.
The elbow fitting should be hand-tight on the inner thread of the internal shaft at the rear of the machine. Do not overtighten. The hose consists of a special oil-resistant material. A damaged pump unit must always be replaced. The TwinSaw company and its agents always have replacement pumps in stock.

To initiate pumping depress the plastic nipple on the top of the unit. Lubricants are now bio-degradable. This means that biological breakdown begins inside the pump and overlong lubricant retention leads to bacteria build-up and sludge formation. The pump unit should therefore be completely emptied and refilled now and again.
Depress the pump button to supply lubricant when cutting metals. Continuous lubrication is especially important when cutting soapy materials in order to prevent cold welding. Always use the correct oil.

2.5 Lubrication

Cool + is a suitable cutting fluid and lubricant for almost 95% of materials, the technology is able to cut. It is delivered with the sets and should used with every cuts.

For normal metals pump at the rate of one or two times a minute and for aluminium, lead and bitumen pump every 5 seconds.

The lubricant is forced from the hand-grip down the hose and along the inner shaft before penetrating between the saw-blades. Centrifugal force then slings it towards the outer blade zones. This pump system produces an 80% saving on lubricant compared the external lubrication method.

3. Technical data and figures

Machines	Adamant 2747 (old machines)	**CDC 2224**	**CDC 2530**
Output	2700 Watts	2200 Watts	3000 Watts
Rated current/ start-up current	12 A/16 A	9 A/ 12 A	14 A/ 18 A
Mains voltage/-frequency	230 V 50/60Hz	230 V 50/60Hz	230 V 50/60Hz
Electronic soft-start	No	Yes	Yes
Electronic rapid-start	No	No	No
110 Volt, 120 Volt, 150 Volt	NOT Avaliable	Available	Avaliable
Weight in kg (incl. Blades)	10,5	10,5	11,8
Lenght/ height/ width	712x255x160	712x 255x160	750x330x170
Cable lenghts	2,5m	2,5m	2,5m
Certification	CE	CE, CCC, TÜV/GS, UL	CE, CCC, TÜV/GS, UL
Pump system	Hand-grip	Hand-grip	Hand-grip
Blade attachment	Bolted	Bolted	Quick-release system
Blade diameter	Ø 235 mm	Ø 235 mm	Ø 310mm
Cuttingdepth = cutting reach	65 mm	65 mm	101 mm
Vibrations	3,4 kg/cm²	2,6 kg/cm²	2,8 kg/cm²
Noise level	86 dBA (5m)	71 dBA (5m)	78 dBA (5m)

4. Saw blades

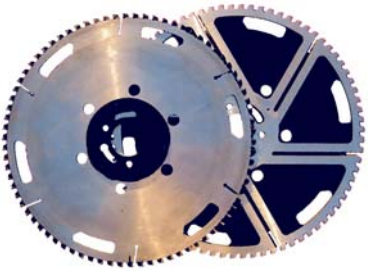
Apart from the gearbox, the most unusual feature of the counter-rotating twin-saw system is the arrangement of the saw-blades. The special blades used on twin-blade saws have two different sides. The outer face, i.e. the side that faces away from the companion blade, is smooth and the teeth jut out from the blade disc. The inner face, by comparison, is patterned with radial webs and grooves and the flanks of the saw teeth are flush with the blade disc. These special blades are very expensive and are the product of a highly-skilled production process.
Never fit non-approved blades. Only the original items can provide the precision, running characteristics and stability required for counter-rotating twin-blade saws. Never use abrasive blades or grinding blades, whose speed is too low for friction sawing.
The twin-saw system is not intended for use as a single-blade saw. The geometry of the special blades makes them unsuitable for single-blade cutting. Fitting non-approved single blades can seriously damage the adapter system and this will in turn impair the function of the entire machine.
The saw blades do not cut concrete or concrete-similar materials.

4.1 Blade types

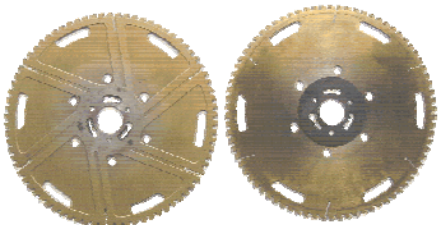
CSM: normal range type for almost all tasks

CSM 235 for CDC 2224/CDC 2530

CSM 310 with quick change for CDC 2530



CSH- Blades: For special tasks light



very hard steel and for those materials, which are sensible for cutting like lead, aluminum, bitumina (roof tar layers) and high performed steel. The Titanium coating hardens the surface and closes it for glueing materials. Picture left: CSH 310.

CST 225 blades: these blades are used for training and light industrial tasks. They are much cheaper than the rescue blades and so reduce the cost of the needed training courses.

With the special Training Set you can use these pricy saw blades on the large saws, too.

4.2 Hints for regrinding the saw blades

The special blades of the double cut saw will be regrinded in another way, not like normal saw blades that are used at circular saws. So please give the saw blades **only in pairs** to the grinding shop.
Make sure that the grinding shop has got the exactly **grind instructions** and so it is zertificated. (also look at the following picture)
http://www.twinsaw.de/schaerfanweisung.htm

5. Handling

5.1 Handling of the saws

Store the machine in a dry, clean place. Build-up of dust and moisture on the motor windings can eventually lead to current leakage and this will cause damage to the motor. Never store the machine in such a way that it rests on the blades.
Store the machine so that the user can pick it up by the front hand-grip when removing it from the storage case or mounting point.
Ensure that all accessories are kept tidy and within easy reach.
Allow plenty of time when re-ordering consummables such as blade mounting bolts and lubricant!

5.2 Preparing the machine

The machine is low-sparking – but it is not spark-free. It must not be used if there are flammable gases or liquids (e.g. petrol spillages at accident scenes) present nearby.
The air vent allows access to the electric motor. In heavy rain a cover should be used to protect the saw and operator.
Make sure that the mains plug is not connected to the power supply.
Grasp the machine by the front hand-grip and remove from the case or mounting point, keeping the blade end away from the body.
Check that the power cable is neatly contained alongside the machine.
Check the following:
The blades are tight and in good working order, Spare blades are available
There are no obstructions between the blades
There are no signs of external damage, dirt or moisture
The air filter inlets are clear
The mains supply/ generatoris of the correct rating
The 230 Volt machine is protected by a current breaker with a slow 16A fuse
Place the machine on its side or with the blades uppermost and insert the plug into the power supply socket
Allow the machine to start-up for about 10 seconds and listen for any unusual noises.

5.3 General hints of handling

Adopt a safe and stable stance before attempting the use the machine.
Remember: do not use the machine to help maintain your balance, as is done when using a hand-held circular saw. This will twist the blades and cause them to separate and possibly jam the machine.
Think for a few moments about where you want to make the cut and how long the first cut should be. Discuss this with other members of the team.
Avoid cutting through bolts, pins, safety-belt mounting points, arrestor units, etc. as far as possible. This places much greater stress on the cutting edges and can result in chipped and broken teeth.
Sparking tends to increase as the blades become worn. If there is a high level of sparking when cutting light metal plate the saw-blades should be examined. Worn blades will usually reduce the cutting performance of the machine.
Remember that saw chips are ejected form both sides of the machine. Warn other members of the team to stay out of range of flying chips.
The machine can cut backwards as well as forwards!Use this advantage to good effect.
You will have more energy at the beginning of the cutting operation than at the end. When cutting into a car bonnet, for example, start off as far out as possible and bring the saw back towards you. Do not use these saws for medium-duty cutting/rescue/salvage work. It is more efficient to use other power tools to cut into flat surfaces and make longer cuts. Use the saw to cut away panels and covers to provide access for heavy-duty equipment such as cylinder cutters and shears. Cut slowly when the material contains bolts or rivets.
If increased resistance is encountered when performing dismantling or rescue/salvage work the cut should be re-started. Cut slowly and steadily, as when using domestic DIY tools. This will help save on blades and give you many years of enjoyment from your machine.

5.4 The cutting

Ask your distributor for our special schematic course tabulars. They offer in a very clear form the main advices for the cutting. Here in short words:

1. Always cut in a modus of PUSH AND RELEASE:
    a. at cutting into surfaces
    b. at cutting in massive materials
    c. at cutting in thin metal sheets

    With this handling you make sure the best performance in cutting. Additionally this will give you a long life eather for the saw and for for the saw blades.
2. When cutting in an angle to the surface, keep the saw tight. Be aware that the saw is working with only one blade in the first moment. So there will be a reaction. When the second blade has entered the material, the reaction will vanish and you will cut reaction free. Do not forget the short release after etering the material.
3. Lubrication is needed at any material and any kind of cutting. It reduces the grinding between the saw blades and offers you an even colder cut. It is sufficient to press the button at the top of the handle for only 2-3 times before normal material cutting operations. Soapy material like tar or aluminum needs permanent lubricant between the blades. Ohterwise the blades will be damaged!

For more than 95% of rescue operation your normal set will offer you a very handsome and uncomplicated handling. Enjoy the high speed of ultrasharp and cold cutting without too much concnetration on the machine itself. With a little practice and experience the saw will be like your prolongered arm.

6. Checklist Maintenance

Check that the main components are in proper working order Pull out the power plug after removing the saw-bades.		**OK**	**Not OK**	**Order**
Checking the blades	Dirt on and between the blades			
Checking the teeth	Broken teeth: if more than 2 teeth are missing => send for repair If more than 6 teeth are missing => order new blades If teeth have become rounded: poor cutting – have teeth sharpened			
Checking the blade mounting bolts	Worn bolt heads - do up more tightly next time Replace bolts on both sides			
Checking the adapter	Dirty/soiled Damaged Spline fit good or loose Bent spline			
Machine	Place one drop of oil on the threaded journal to prevent corrosion Start motor – does it sound OK? Motor jerky at start-up – send for repair Safety fuse blown – send for repair External damage; soiled; damp Date/approval test			
Air filter	Blocked? Dirty filter: pull out power plug, remove filter and blow clear Do not use sharp implements to force open the motor housing or hand-grip			
Main switch	Check that safety switch is fitted and is in good condition			
Power cable	Check for damage to power cable and plug			
Pump	Filling level: contents? Dirt in pump? Is plug oil-tight? Is elbow joint (machine) oil-tight? Is hose (machine) in good condition? Is pump nipple in good condition?			
Safety cover	Bent? Re-straighten Torn or ripped? Order replacement			

7. Blade change

7.1 Bolted system Ø 235 mm
Machines: Adamant 2747 – CDC 2224 - CDC 2235

Remember that carbide teeth are extremely sharp. Always wear gloves when undoing and tightening Before your hands are near the teeth or even the blades:

REMOVE THE POWER PLUG!

Legen Lay the machine on ist side.
Remove the main nut using the special tool or a 19 mm wrench.

The blades have to be locked into position by using the lock-button or inserting the blade of a screwdriver through two aligned holes to prevent movement.
Once the main nut is removed it is possible to see the inner shaft, the outer- blade drive spline and the outer blade adapter, to which the outer blade is bolted. The latter can now be detached along with the blade.

As the spline and adapter are machined to very fine tolerances it may not be possible to free the adapter by finger force alone. The adapter can be released either by using the special extshould be positioned centrally above the shaft and then inserted into the slot in the adapter, or by striking the whole machine with its inner shaft against a block of wood. This must be done very carefully and on no account use anything other than wood, otherwise there is a risk of damage to the shaft, thread or gearbox.
After the outer blade system had been detached the three mouting bolts holding the inner blade can be removed using the 3 mm Allen key provided.

Examine the bolts and replace any whose heads have become rounded.
Once the bolts have been removed the inner blade can be withdrawn.
The outer blade can now be detached from its adapter by removing the three bolts with the Allen key.
Note the position of the blade with respect to the adapter. Both adapter discs are fixed to the outer face of the blade. The heads of the mouting bolts must lie flush in their recesses, otherwise they will collide when the saw is rotating.

Never use bolts other than the original replacement items. The two adapters are matched to an accuracy of 1/1000 mm. If the thread on one is damaged, both adapters must be replaced. Otherwise the entire gearbox unit may have to be renewed. It is better – and much cheaper – to order a new set of bolts from us.
Inspect the adapters for damage and dirt ingress.
Check the spline on the outer (loose) adapter for wear and fit. The spline is a potential failure point and can easily replaced if there is any doubt as to its condition.

The fitting sequence used for new blades is the reverse of the dismantling procedure. All bolts should be done-up handtight. Do not overtighten.

7.2 Quick-release system Ø 310 mm

Machine: CDC 2530

Remember that carbide teeth are extremely sharp. Always wear gloves when undoing and tightening Before your hands are near the teeth or even the blades:

REMOVE THE POWER PLUG!

Lay the machine on its side! Remove the main nut using the special tool or a 19 mm wrench.
The blades have to be locked into position by using the lock-button or inserting the blade of a screwdriver through two aligned holes to prevent movement.
Remove the outer blade system (saw blade and adapter) from its shaft and withdraw the blade from beneath the safety cover.
Remove the blade from the adapter by opening the screws a bit and turning around the blade. When the heads of the screws have reached the end, you can depart the blade from the adapter easily.
Examine both adapters (outer adapter shown in Figure) and ensure that the springs are properly seated on the lock-button. Wipe the adapters with a clean cloth, if necessary. The fitting sequence for the new blades is the reverse of the dismantling procedure.

7.3 Change from CDC 2530 to Training set CST 225

When you have lift off both blades, open the four screws beside the inner adapter, which hold the hood.
Get the small hood 235 out of the Training set and fix it with the screws to the machine.
After that the outer flange has to be changed, because the training blades do have the screwed system without bayonet plates.
Fix the small blades onto the adapters and make sure that the screws are fixed tightly.
Then begin operations as usual.

8. Problems, causes, remedies

Problem	Cause	Remedy
Machine speed fluctuates during start-up	The soft-start system produces waveform acceleration until full machine speed is reached. This prevents current peaks during start-up	No action needed
Machine runs erratically during normal operation	Electronics damaged	Send to servicing department for repair
Machine falters under low load	Gearbox damage	Send machine for repair

Saw-blades separating	Excessive stress on blades	Withdraw blades from cut, check blades for obstructing material and remove if necessary. After 10 seconds re-introduce the machine into the cut and continue sawing
	Crooked cutting	Proceed as above
	Tired blades due to frequent separations	Replace blades and send for repair
3 to 4 chipped teeth	Not cutting straight	Check blades for chipped/fractured teeth; continue to cut slowly, steadily and in a straight line
Several teeth broken	Material being cut changing from hard to soft; cutting too quickly	Replace blades that have more than 4 broken teeth and send damaged blades for repair
	Low-quality blades	Check that original blades are fitted
Increased stream of sparks	Cutting is not straight	Keep cut straight
	Worn blades	Send blades for re-sharpening
	Tough material	Check sawn material and discontinue sawing if necessary; examine blades and send for re-sharpening, if required
Cutting performance severely impaired	Worn blades	Replace blades and send for re-sharpening
	Blades jamming when ripping in wet wood	Discontinue sawing; check blades for obstruction
Machine jerks and kicks back	Cut not straight	Pull out of cut and slowly start a new cut
	Blades separating	Check blades and take appropriate steps as described above
	Gearbox damage	Send machine for repair
Outer adapter and blade cannot be separated	Drive spline jammed	Remove main nut and gently tap machine against a wooden block until adaper and blade are free Use blade extractor, if available
	Foreign body jammed between blades	Remove obstruction. Use blade extractor, if available
Smoke issues from between the blades when the machine is operating	Blade mounting bolts have become loose	Remove blades and replace bolts
Rattling sounds coming from the machine	Blade mounting bolts have become loose	Remove blades and replace bolts

Our main offers:

Art.-Nr.	Product description
1 2224 010	**TwinSaw CDC 2224 Basic Set** Saw, 1 Pair Special bladesn CSM 235, Assecories
1 2224 020	**TwinSaw CDC 2224 Rettungsset** Saw, 2 Pair Special bladesn CSM 235, Assecories
1 2224 080	**TwinSaw CDC 2224 Combo Training** Saw, 2 Pair Special bladesn CSM 235, Assecories 2 Pair Training blades CST 225, Course schedule and information
1 2530 010	**TwinSaw CDC 2530 Basic Set** Saw, 1 Pair Special bladesn CSM 310, Assecories
1 2530 020	**TwinSaw CDC 2530 Rettungsset** Saw, 1 Pair Special bladesn CSM 310, Assecories
1 2530 080	**TwinSaw CDC 2530 Comboset** Saw, 1 Pair Special bladesn CSM 310, Assecories Training set CST 225 with small blade hood, flat flange and 2 pairs training blades CST 225, Course schedule and information

Please see our Distributor list on the CD, which you can get at your distributor for free.

Do not miss our offers for the gasoline driven saws:

They will expand your skills and performance by netfree working.