



## Handling of diamond blades



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# Saw blades - General instructions

## How to store the blade

If the blade needs to be stored for a long time before taken into use, it should be placed on a flat base or hanged from it's bore on the wall.

The blade should never be placed leaning against the wall. The core will be deformed and the tension fails. A so called "cup" is formed. In this case the core needs to be hammered again.

## Choosing the right blade

The blades are manufactured for different kind of use. Each material has its own special characteristic, e.g. hardness and abrasiveness, which affect the choice of blade. This means that even a good blade can be broken when used on the wrong material.

E.g. a blade made for marble runs out in a short while if soft sandstone is cutted with it even a little. Sandstone is softer than marble but it also is a lot more abrasive than it.

## To mount the saw blade

Before mounting the saw blade you need to check:

- that the axis and collar are free of rust and oil. All surfaces need to be cleaned with emery cloth.
- if the collar edges are uneven they need to be evened with a file.
- that the blade is not hanging by the axis thread.

## Direction of rotation

Mount the blade to roll in the same direction as indicated by the arrow on the blade core.

## Check the position of the blade

If the blade needs to be removed from the machine temporarily, please mark the blades position in relation to the axis to avoid instability when re-mounting the blade.



# Saw blades - General instructions

To avoid any radial deviation the bore diameter should be exactly the same (with 0,01 mm accuracy) as the machine axis. A too big bore can be downsized with a sleeve that is as thick as the blade. If the bore is too small it needs to be returned to Levanto. The bore should not be enlarged by one's one.

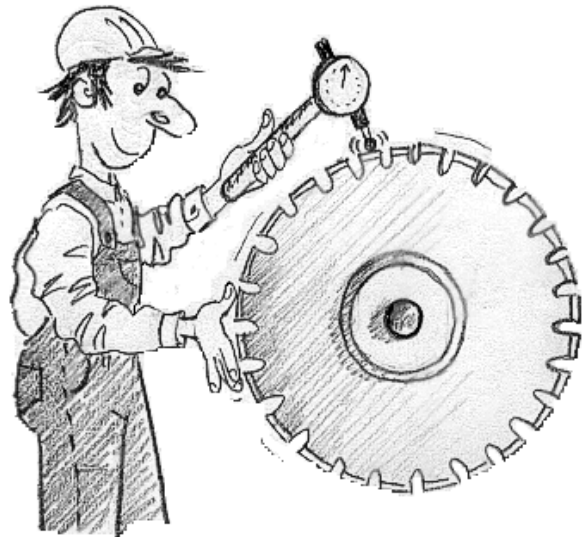
## Check ups during mounting

Radial deviation of the axis: measure with a dial indicator that the radial deviation does not exceed the permitted value.

Lateral deviation of the collar: measure with a dial indicator that the lateral deviation does not exceed the permitted value.

## Radial deviation

Check that the radial deviation does not exceed the permitted tolerance values.



## Lateral deviation

Measure with a dial indicator that the lateral deviation does not exceed the permitted value. If the deviation is more than twice the tolerance value, should it be considered as dangerous.

## Parallelism

To guarantee a good cutting result should the blade and table be moved exactly in the same direction. The parallelism is measured with a dial indicator.



# Saw blades - Troubleshooting

PROBLEM	REASON, CHECKUPS AND ACTIONS
<b>Insufficient cutting speed, segment is polished</b>	<ul style="list-style-type: none"> <li>• Increase feeding</li> </ul>
<b>When feeding is increased, power amps are exceeded</b>	<ul style="list-style-type: none"> <li>• Check motor power compared to blade diameter</li> <li>• Check cutting speed</li> <li>• Reduce depth feeding and increase length feeding so that the blade is grinded or grind the blade against soft abrasive material e.g. sandstone.</li> </ul>
<b>When feeding is increased the blade sparks, the blade is polished even if RPM, power and cutting speed is checked.</b>	<ul style="list-style-type: none"> <li>• Check the RPM, power and cutting speed</li> <li>• "Grind" the blade (check previous). If it won't work ask for some technical help.</li> </ul>
<b>When feeding is increased the blade bends</b>	<ul style="list-style-type: none"> <li>• Check cutting speed</li> <li>• Read "Cutting tolerance" (below)</li> </ul>
<b>Cutting tolerance</b>	<ul style="list-style-type: none"> <li>• Check that the material to be cut is well fastened</li> <li>• Check with right angle that the blade is straight</li> <li>• Check that the blade is sharp; if not sharpen it (read above).</li> <li>• Check that the collar diameter is suitable for the blade</li> <li>• Check parallelism</li> <li>• Check that the axis is perpendicular</li> <li>• Check if the other side of the blade is different. If so the blade needs to be straightened. Please contact Levanto.</li> <li>• Check that the blade is suitable for the material your are cutting</li> </ul>
<b>The cutting result is uneven</b>	<ul style="list-style-type: none"> <li>• Check if the blade is vibrating</li> <li>• Check the axis radial clearance</li> <li>• Check the collar</li> <li>• Check collar diameter</li> <li>• Get blade tension checked</li> </ul>

# Saw blades - Troubleshooting

PROBLEM	REASON, CHECKUPS AND ACTIONS
<b>Edge cleft</b>	<ul style="list-style-type: none"> <li>• Make sure that the cutting is done correctly</li> <li>• Check with right angle that the blade is straight</li> <li>• Check blades radial displacement</li> <li>• Check parallelism</li> <li>• Check the axis radial clearance</li> <li>• Check collar</li> <li>• Check collar diameter</li> <li>• Check that the axis is perpendicular</li> <li>• Get blade tension checked</li> </ul>
<b>Premature attrition of segment</b>	<ul style="list-style-type: none"> <li>• Check cutting speed</li> <li>• Check peripheral speed</li> <li>• Make sure that the water supply is sufficient</li> <li>• Check if the machine is vibrating</li> <li>• Check that the blade is suitable for the material your are cutting</li> </ul>
<b>Premature attrition of the side of segment</b>	<ul style="list-style-type: none"> <li>• Make sure that the water supply is sufficient</li> <li>• Check if the machine is vibrating</li> <li>• Check collar diameter</li> <li>• Check the axis radial clearance</li> <li>• Check collar</li> <li>• Check that the axis is perpendicular</li> </ul>
<b>Abnormal sound</b>	<ul style="list-style-type: none"> <li>• Check that the segments aren't polished or worn</li> <li>• Get blade tension checked</li> </ul>
<b>Blade core rubs</b>	<ul style="list-style-type: none"> <li>• Check with right angle that the blade is straight</li> <li>• Check that the axis is perpendicular</li> <li>• Check segment lateral tolerance</li> </ul>
<b>Blade cuts inclined</b>	<ul style="list-style-type: none"> <li>• Blade needs to be "sharpened" by cutting small incisions or grinding it against soft, abrasive material (sandstone).</li> </ul>
<b>Cracks in blade core</b>	<ul style="list-style-type: none"> <li>• If cracks appear on the blade, they need to be drilled away (hole diameter 4-5 mm).</li> <li>• If more cracks appear - check blade tension.</li> </ul>

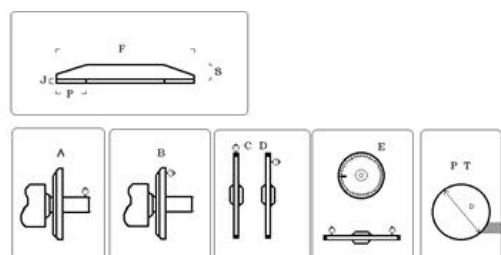
# Saw blades - Tolerance chart

Ø (mm)	Collar dimensions				Max. cutting depth PT (mm)	Machine tolerance limit		Blade tolerance limit			Amount of water	
	ØF	P	S	J		A	B	C	D	E	Cooling l/min	Pressure bar
200	80	10	10	1	40	0,04	0,04	0,15	0,12	0,10	6-10	4
250	80	13	13	1	50	0,04	0,04	0,15	0,15	0,10	6-10	4
300	80	16	13	1	60	0,04	0,05	0,15	0,15	0,10	10-15	4
350	140	16	13	1	80	0,04	0,05	0,15	0,15	0,15	10-15	4
400	140	20	16	1	100	0,04	0,06	0,15	0,15	0,15	10-15	4
450	140	20	16	1	125	0,05	0,06	0,20	0,20	0,17	15-20	4
500	170	22	16	1	130	0,05	0,07	0,20	0,20	0,20	15-20	4
550	170	22	16	1	150	0,05	0,07	0,20	0,20	0,20	15-20	4
600/625	180	22	16	1	170	0,05	0,08	0,20	0,20	0,20	30-40	5
700/725	200	25	16	1	200	0,05	0,09	0,20	0,25	0,20	30-40	5
800/825	225	25	16	1	230	0,05	0,10	0,20	0,25	0,20	30-40	5
900	255	32	20	1,5	300	0,05	0,10	0,20	0,25	0,25	30-40	5
1000/1100	280	32	22	1,5	330	0,05	0,12	0,20	0,30	0,25	40-50	5
1200	335	32	22	1,5	370	0,05	0,14	0,20	0,30	0,25	50-60	5
1300	365	32	22	1,5	400	0,06	0,14	0,25	0,50	0,25	50-60	5
1400	395	35	28	1,5	430	0,06	0,14	0,25	0,50	0,30	60-70	5
1500	420	40	28	1,5	500	0,06	0,16	0,25	0,50	0,30	60-70	5
1600	450	40	32	1,5	530	0,06	0,16	0,25	0,50	0,30	60-70	5
1750/1800	490	40	32	2	580	0,06	0,18	0,25	0,80	0,35	60-70	5
2000	560	40	32	2	670	0,06	0,20	0,25	0,80	0,40	70-80	5
2500/2700	700	50	38	2	830	0,06	0,22	0,25	1,10	0,40	80-100	5
3000	840	50	10	2	1050	0,06	0,25	0,25	1,50	0,40	80-100	5

**Collar diameter** needs to be appropriate for the blade to rotate correctly.

**Motor power:** blade performance depends a lot on motor performance. Lack of power can affect blade lifetime.

**Cutting result:** the vertical and horizontal tolerance of the blade and collar should be checked with a dial indicator.



# Saw blades - RPM speed chart

Diamoind saw blades RPM speed in relation to peripheral speed and blade diameter								
	Peripheral speed m/s							
	25	30	35	40	45	50	55	60
Ø	Axis rotation speed							
200	2390	2870	3340	3820	4300	4780	5250	5730
250	1910	2290	2670	3060	3440	3820	4200	4580
300	1590	1910	2230	2550	2870	3180	3500	3820
350	1360	1640	1910	2180	2460	2730	3000	3270
400	1190	1430	1670	1910	2150	2390	2630	2870
450	1060	1270	1490	1700	1910	2120	2330	2550
500	960	1150	1340	1530	1720	1910	2100	2290
550	870	1040	1220	1390	1560	1740	1910	2080
600	800	960	1110	1270	1430	1590	1750	1910
700	680	820	960	1090	1230	1360	1500	1640
800	600	720	840	960	1070	1190	1310	1430
900	530	640	740	850	960	1060	1170	1270
1000	480	570	670	760	860	960	1050	1150
1100	430	520	610	690	780	870	960	1040
1200	400	480	560	640	720	800	880	960
1300	370	440	510	590	660	740	810	880
1400	340	410	480	550	610	680	750	820
1500	320	380	450	510	570	640	700	760
1600	300	360	420	480	540	600	660	720
1750	270	330	380	440	490	550	600	660
2000	240	290	330	380	430	480	530	570
2500	190	230	270	310	340	380	420	460
2700	180	210	250	280	320	350	390	420
3000	160	190	220	260	290	320	350	380

50-60 m/s concrete  
 50 m/s soapstone  
 40-50 m/s marble  
 33-35 m/s black stone  
 25-28 m/s hard stone



# Tools used for inspecting the blades

An indicator with magnetical base to check the lateral and radial deviation.

## Lateral deviation

Ø 100 - 200  
- 0,40 - 0,50

## Radial deviation

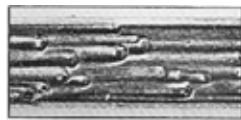
Ø 100 - 200  
- 0,08 - 0,20



A magnifying glass to check if the segment is polished.

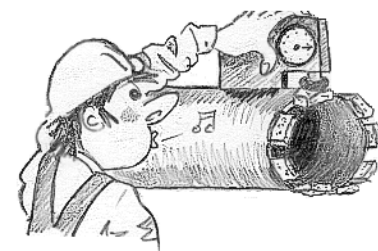
## Reasons why diamond segments get polished:

- the adhesive is too hard
- feeding power is too low
- the diamond is too strong
- the frequency of diamonds is too high



A polished segment      A segment that cuts the blade

An indicator to check segments lateral clearance.



A tachometer and chronometer to check feeding speed and RPM.



# Diamond drill bits - Troubleshooting

PROBLEM	REASON, CHECKUPS AND ACTIONS
Drill performance is reduced	<ul style="list-style-type: none"> <li>• Increase feeding speed</li> </ul>
When feeding is increased the blade sparks, the drills polished	<ul style="list-style-type: none"> <li>• Check feeding speed</li> <li>• Check peripheral speed</li> <li>• Check that the drill is in line with the recommendations</li> <li>• Sharpen the drill with soft and grinding material (soft sandstone or sharpening stone)</li> <li>• Please contact our technical sales if the repairs only are temporary improvements</li> </ul>
The drilled surface is uneven	<ul style="list-style-type: none"> <li>• Check the drills lateral deviation</li> <li>• Check axis eccentricity</li> <li>• Check that the machine is correctly installed</li> </ul>
Premature attrition of diamond segment	<ul style="list-style-type: none"> <li>• Check feeding speed</li> <li>• Check peripheral speed</li> <li>• Make sure that the water supply is sufficient</li> <li>• Check that the machine is correctly installed</li> <li>• Check that the drill is in line with the recommendations</li> <li>• Check machines longitudinal deviation</li> </ul>
Premature attrition of the side of diamond segment	<ul style="list-style-type: none"> <li>• Check the drills lateral deviation</li> <li>• Check axis eccentricity</li> <li>• Check that the machine is correctly installed</li> <li>• Make sure that the water supply is sufficient</li> </ul>
Drill core rubs	<ul style="list-style-type: none"> <li>• Check segment transverse clearance</li> </ul>
Significant erosion of the bottom surface	<ul style="list-style-type: none"> <li>• Check that the water pressure isn't too high</li> <li>• Check feeding speed and adjust a lower speed at the end if necessary</li> </ul>

# Diamond drill bits - Recommended speed chart

RECOMMENDED SPEED CHART - DIAMOND DRILL BITS				
Ø	PERIPHERAL SPEED		kW	l/min
	3 m/s	5 m/s		
25	2300	3700	1,0	3-5
36	1650	2700	1,0	3-5
50	1150	1900	1,0	3-5
75	750	1300	1,0	6-10
100	550	950	1,5	6-10
125	450	750	1,5	6-10
150	375	620	1,5	10-14
180	325	520	2,0	10-14
200	275	450	2,0	10-14
225	250	400	2,0	10-14
250	230	375	2,0	15-20
275	210	350	2,5	15-20
300	190	320	2,5	15-20
350	160	270	2,5	15-20
400	140	230	3-4	25-40
450	130	210	3-4	25-40
500	115	190	4-6	25-40
550	100	170	4-6	25-40
600	90	160	4-6	25-40

Attention! Peripheral speed for granite 1,5 – 2 m/s

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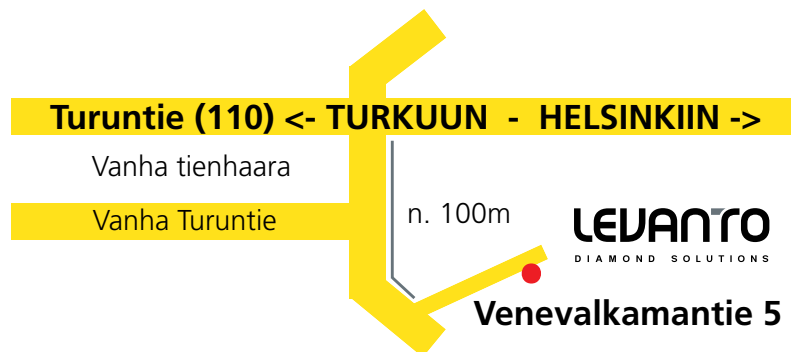
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