

Cutting-Off & Grinding Wheels



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Cutting-Off & Grinding Wheels

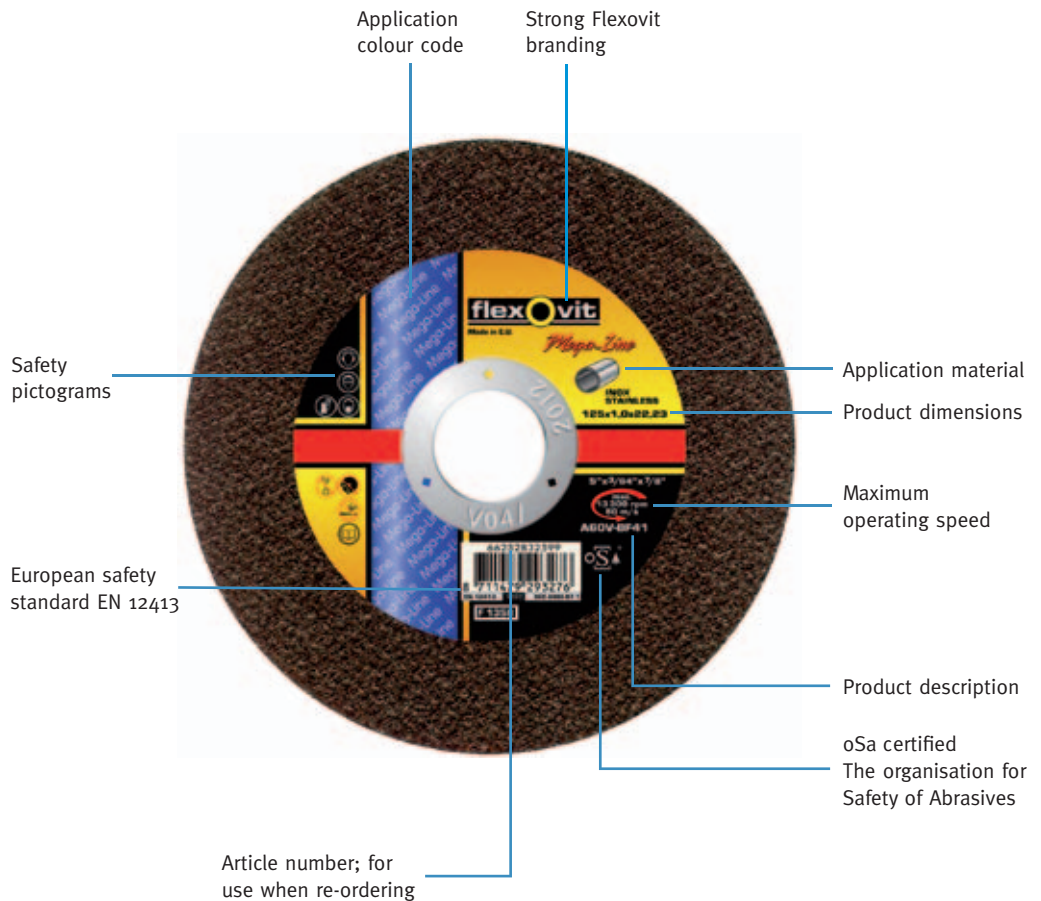


Technical Information

Throughout the world, Flexovit cutting-off and grinding wheels are extensively used across a range of industries including aerospace, automotive, foundries, fabrication, ship-building and construction. Flexovit's wide range of products provide high value, high performance industrial solutions. High performance Flexovit products are backed up by a team of experienced product engineers providing the technical support that modern industrial companies demand.


Flexovit's stock delivery program ensures quick and reliable availability. This is why Flexovit is the preferred brand for professional users of abrasive wheels. This section presents our state-of-the-art industrial range of cutting-off and grinding wheels covering a wide variety of cutting-off and grinding applications.

Understanding the Product



METAL RING WITH VALIDITY DATE

V = validity date (production quarter + 3 year)

	V01	V04	V07	V10
	1st quarter	2nd quarter	3rd quarter	4th quarter

Example:
V04/2012 indicates production in the 2nd quarter of 2009 and advised usage before the 2nd quarter of 2012



Differentiation in the Range

Flexovit provides the industry's widest selection of cutting-off and grinding wheels to help meet every requirement. The Flexovit Industrial range comprises three distinct product lines giving three different price/performance levels, satisfying all demands encountered in industrial markets. Flexovit cutting-off and grinding wheels are classified into Flexovit Mega-Line (premium performance), Flexovit (high performance), and Flexovit Speedoflex (economy performance) product lines to help you choose the right product for your specific application.



FLEXOVIT MEGA-LINE

Flexovit Mega-Line is the premium quality product line of Flexovit and contains cutting-off and grinding wheels, designed to meet the demands of the most discerning users. The products work faster and have a longer life resulting in lower operating costs. The products have been designed to be exceptionally user friendly and easy to use, satisfying the ultimate requirements of the professional user.



FLEXOVIT

Throughout the world, Flexovit cutting-off and grinding wheels are used extensively in a range of industries including aerospace, automotive, foundry, fabrication, ship-building and construction. Flexovit's wide range of products give high performance and high value levels, leading to lower costs.



FLEXOVIT SPEEDOFLEX

Speedoflex cutting-off and grinding wheels offer good levels of performance with excellent price/performance ratio, an excellent economy product. They are suitable for cutting-off and grinding wheels a wide range of materials including steel, stainless steel, cast iron and stone.

APPLICATION

Where greater differentiation of products by application is needed, this is done through colour coding.

APPLICATION MATERIAL

Stone/
Cast Iron

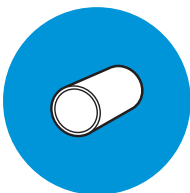
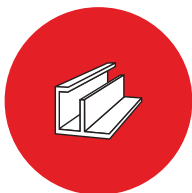
Non-ferrous

Inox/
Stainless Steel

Steel

Steel/Inox
Stainless Steel

PICTOGRAMS



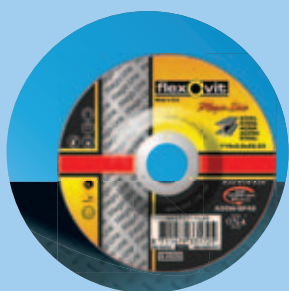
WHEELS



PACKAGING LABELS



Cutting-Off & Grinding Wheels



Technical Information

MARKING SYSTEM OF ABRASIVE CUTTING-OFF & GRINDING WHEELS

Type of Abrasive A	Grit size 30			Hardness Grade S			Type of Bond BF27
	Coarse	Medium	Fine	Soft	Medium	Hard	
A = Aluminium Oxide	16	30	80	N	Q	T	B = Bakelite/ Resinoid bond BF= Bakelite and glass fibre reinforcement
C = Silicon Carbide	20	to	to	O	R	U	
Z = Zirconia Alumina	24	60	100	P	S	V	

SHAPE SPECIFICATION SYSTEM

BF 27	BF 41	BF 42
Depressed centre grinding wheels, thickness from 2.2-10 mm. Available in diameters 76-230 mm for hand-held machines.	Flat cutting-off wheels. Available in diameters 76-406 mm for hand-held machines and 300-406 mm for stationery machines.	Depressed centre cutting-off wheels. Available in diameters 76-230 mm
Application: grinding	Application: cutting-off	Application: cutting-off

MACHINE PICTOGRAMS

 Cutting-off	 Grinding	 Straight Grinder	 Angle Grinder
 Petrol Saw with clamping device (Rail)	 Petrol Saw	 Chop Saw	 Stationary machine



Operating Speeds

Flexovit products are designed and tested for certain applications and operating speeds. Choose a wheel suitable for the application material. Suitable materials are indicated on the wheel label. For a comprehensive list please refer to Selecting the Right Product chart on page 160. Before mounting the grinding or cutting-off wheel on the machine, ensure that the operating speed of the machine does not exceed the maximum operating speed as it is marked on the product.

SPEED CONVERSION FOLLOWING EN 12413

Wheel diameter (mm)	Maximum peripheral operating speed in m/s		
	63	80	100
50/51	24100	30600	38200
63/65	19100	24300	30250
76	15850	20150	25150
80	15100	19100	23900
85	14200	18000	22500
100/102	12100	15300	19100
115	10500	13300	16650
125	9650	12250	15300
150/152	8050	10200	12700
180	6700	8500	10650
200	6050	7650	9550
230	5250	6650	8350
250/254	4850	6150	7650
300/305	4050	5100	6400
350/356	3450	4400	5500
400/406	3050	3850	4800

All figures are maximum operating speeds in RPM



Technical Information

Getting the best from your Cutting-Off & Grinding Wheels

- Decide which material is cut most and that you select the most suitable Flexovit wheel in accordance with the application chart in this chapter. To use the right wheel for the right material is very important for the life and cutting/grinding behaviour of the wheel
- Check if the machine is operating correctly and that the machine does not exceed the speed that is indicated on the wheel
- Use the wheel at the recommended speed indicated on the wheel and the maximum operating speed chart that you will find later in this chapter

The troubleshooting guide can easily help you recognise and solve problems.

TROUBLESHOOTING CUTTING OFF WHEELS

Wheel does not cut

Cause	in case of blue cutting: wheel too hard or too thick
Solution	use softer or Flexovit Thin Cut wheels, check peripheral speed
Cause	peripheral speed too low
Solution	increase rpm up to max. (80m/sec)

Excessive wear

Cause	in case of white cutting edge: wheel too soft
Solution	use harder wheel
Cause	operating speed too low
Solution	increase rpm up to max (80m/sec)
Cause	decrease of rpm during cutting
Solution	use machine with more power, reduce pressure on the machine

Crumbled wheel edge

Cause	cutting-off wheel used for grinding operations
Solution	use a grinding wheel for grinding operations
Cause	workpiece is moving
Solution	clamp the workpiece properly
Cause	too much side-pressure
Solution	add only the radial pressure to the wheel

Arborhole or centre break out

Cause	wheel sticks in the workpiece/material
Solution	use more radial pressure and swing the wheel forwards and backwards
Cause	cutting-off wheel used for grinding operations
Solution	use a grinding wheel for grinding operations
Cause	too much side pressure
Solution	add only the radial pressure to the wheel
Cause	different diameter top/bottom flange
Solution	use flanges with the same diameter



TROUBLESHOOTING GRINDING WHEELS

Wheel does not grind

Cause	wheel too hard, wheelglazing
Solution	use softer wheel
Cause	not enough pressure
Solution	increase pressure
Cause	machine power too low
Solution	use machine with more power
Cause	loading and wheelglazing (non-ferrous)
Solution	use Flexovit Alu wheels which counteracts loading and wheelglazing

Excessive wheelwear

Cause	wheel too soft
Solution	use harder wheel
Cause	too much pressure
Solution	reduce pressure, let the wheel do the grinding
Cause	decrease of peripheral speed
Solution	use machine with more power, reduce pressure on the machine
Cause	too low peripheral speed
Solution	max. 80m/sec is optimum speed

Crumbled wheel edge

Cause	grinding angle too flat
Solution	change angle to 30 - 40°
Cause	workpiece is moving
Solution	clamp the workpiece properly
Cause	too much pressure
Solution	reduce pressure, let the wheel do the grinding

Cracks on the bottom of the wheel

Cause	contact area too large
Solution	reduce contact area
Cause	too much pressure
Solution	reduce pressure, let the wheel do the grinding

Unbalance

Cause	dirty flanges
Solution	clean flanges
Cause	wheel mounting insecure
Solution	tighten flanges
Cause	flanges with different diameter
Solution	replace flanges



Technical Information

SAFETY ADVICE – DO'S

✓	DO always handle and store wheels carefully. Cutting-off wheels should be stacked horizontally and flat, preferably on a steel base plate. Depressed centre wheels should be placed on top of each other or stored in the original packaging.
✓	DO always visually inspect all wheels before mounting for possible damage in transit.
✓	DO always use a safety guard and ensure that it is correctly positioned and securely fitted. It should cover at least one half of the wheel and protect the operator in the unlikely event of a wheel breakage. NON-REINFORCED CUTTING-OFF WHEELS SHOULD ONLY BE USED ON FIXED MACHINES AND SHOULD BE CORRECTLY GUARDED.
✓	DO always switch 'OFF' the power at supply source and/or remove the plug from the socket before changing the wheel.
✓	DO always use the tools supplied by the machine manufacturer to change the wheel.
✓	DO always ensure that the spindle speed of the machine does not exceed the operating speed marked on the wheel.
✓	DO always use the correct wheel mounting flanges and ensure that they are undamaged, clean and free from burrs.
✓	DO SEE EN 12413.
✓	DO allow newly mounted wheels to run at operating speed, with the guard in place, for a reasonable time before cutting or grinding.
✓	DO always wear EYE PROTECTION.
✓	DO always wear appropriate safety clothing such as DUST MASK, GLOVES, EAR PROTECTION, OVERALLS AND SAFETY SHOES.
✓	DO always have machine speeds checked regularly, especially after maintenance or repair. Machines fitted with speed control devices (Governors), must be properly maintained at all times.
✓	DO check tension of driving belts, where fitted, on a regular basis. Belts must be kept tight to ensure full power transmission.
✓	DO always secure the workpiece firmly while it is being cut or ground.
✓	DO put portable machines in suitable cradles, when not being used, to avoid damage to the wheel.
✓	DO always use a portable machine in a comfortable position, where the workpiece is well balanced and the machine is well supported.
✓	DO grind at an angle above 30 degrees to the workpiece with a depressed centre grinding wheel.
✓	DO keep the working area around cutting and grinding operations clear. It is very dangerous if an operator trips and falls with an operating machine in his hands.



SAFETY ADVICE – DON'TS

X	DON'T handle wheels roughly.
X	DON'T use non-reinforced cutting-off wheels on portable machines.
X	DON'T store wheels in a damp atmosphere or in extreme temperatures.
X	DON'T mount a damaged wheel.
X	DON'T EVER exceed the maximum operating speed marked on the wheel.
X	DON'T force a wheel onto a machine spindle.
X	DON'T use mounting flanges which are incorrect, damaged, dirty or burred.
X	DON'T tighten the mounting nut or locking flange excessively. To do so can distort the flanges.
X	DON'T use blotters with depressed centre wheels less than or equal to 406 mm (EN 12413).
X	DON'T use a machine which is not in good mechanical condition.
X	DON'T use a machine without a wheel guard.
X	DON'T use wheels without proper ventilation or dust protection equipment.
X	DON'T apply side pressure to cutting-off wheels. You should not bend the wheel.
X	DON'T stop the wheel by applying pressure to the periphery or face. Always switch the machine off and allow the wheel to stop revolving.
X	DON'T allow the wheel to be trapped or pinched in the cut.
X	DON'T apply excessive pressure onto the wheel so that the driving motor slows down.
X	DON'T grind on the side of cutting-off wheels or depressed centre wheels below 4.0 mm thickness.
X	DON'T drop or lower a portable machine by the cable or airline onto the floor. A wheel can be easily cracked, if it is put down hard, by the weight of the machine. This is a common cause of wheel breakage.
X	DON'T grind with a depressed centre grinding wheel at an angle below 30 degrees to the workpiece.
X	DON'T use a machine in a position where you do not have full control of the machine and you are not well balanced.



Technical Information

Safety in the Storage & Use of Cutting-Off & Grinding Wheels

All cutting-off and grinding wheels are breakable and it is imperative that users take the appropriate precautions. Abrasive wheels that are damaged, improperly mounted or improperly used are dangerous and can cause serious injuries to any person in the vicinity. This section contains a summary of the most important precautions. Further safety recommendations can be found in the country laws, decrees and technical standards in the FEPA safety code (Federation of European Producers of Abrasives, www.fepa-abrasives.org).

SELECTION OF THE WHEEL

Carefully read the label or the information on the wheel and make sure that the wheel is suitable for the application and has the correct dimensions. Check that the max. rpm of the machine spindle on which you will mount the wheel never exceeds the max. rpm printed on the wheel label. Follow any restriction of use and any specific instruction which may be indicated on the wheel or on attached documents.

INSPECTION & TEST BEFORE MOUNTING

Make sure that the instructions on the wheel and on the machine are compatible.

VISUAL INSPECTION

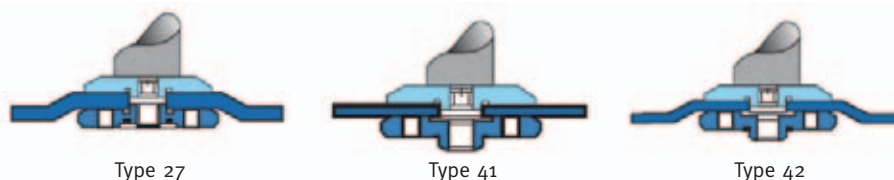
Carefully inspect the abrasive wheel: if it is damaged in any way do not use.

SAFETY EQUIPMENT

Before starting the cutting-off or grinding operation, the wheel guard must be in position and fixed securely. The wheel guard must be capable of catching broken wheel fragments effectively and capable of withstanding the impact caused by wheel breakage.

MOUNTING OF THE GRINDING WHEEL & USE OF THE MOUNTING DEVICES

Only mount the wheels on machines designed for the operation. Never use force when mounting. Always use the mounting flanges supplied with the machine and ensure they are clean, never modify them in any way.





WORKPLACE CONDITIONS

Safe operations depend on a clean and tidy working environment. Adequate working space, good lighting and heating should be available. All relevant local, national and international regulations must be followed.

INSTRUCTIONS FOR USE

Cutting-off and grinding wheels should only be used for materials they are suitable for. This is shown by means of pictograms on the product, on the packaging and in the catalogue.

Cutting-off

When cutting-off, keep the wheel straight in the cut and add only radial pressure to the wheel.

Grinding

When grinding keep the wheel at an angle of 20/30 degrees or more to the work piece.

PERSONAL PROTECTION

Safety goggles, ear defenders, safety gloves, dust masks and, if conditions are severe, additional face protection. Leather aprons and safety shoes must be worn.

PERSONAL PROTECTION



Mouth Protection



Wear Gloves



Eye Protection



Ear Protection



Read Instruction



Not for Side Grinding



Do not use Damaged Wheel

PROTECTION OF THE WORKPIECE

Hand-held grinders should be used in such a manner that sparks fly away from the operators body and any flammable material.

SAFETY GUARDS

The wheel guard of the machine must be in position and securely fixed.

STOPPING THE MACHINE

Switch off the machine and allow the wheel to stop completely before placing it on a bench or on the floor. Never bring the wheel to rest by applying pressure to the wheel surface.

Selecting the Right Product

GRINDING WHEELS

	Steel, construction steel	Low-alloy steel	High-alloy steel	Thin sheets, plates profiles	Stainless steel, inox	Rail	Cast iron	Non-ferrous	Titanium	Stone, concrete	Glass, plastics, pvc
A24/30S Speedoflex	●	●	◐	◐	◐		◐				
A24/30RS Speedoflex	●	●	◐	◐			◐				
A24/30Q Speedoflex	●	●	◐	◐	◐		◐				
A24Q Fast Cut	●	●	◐		◐		◐				
A30S General Purpose	●	●	◐		◐		◐				
A24V Long Life	◐	◐	●		●		◐				
ZA24Q Zirconia	◐	◐	●		●		●		◐		
A30P HP Mega-Line	●	●	●		●	●	◐				
A30W Mega-Line	●	●	◐	●	◐		◐				
A30Q INOX Mega-Line	◐	◐	●		●		◐				
ZA24R INOX Foundry	◐	◐	●		●		●				
ZA203R Foundry	◐	◐	◐		◐		●				
ZA203T Foundry	◐	◐	◐		◐		●				
A36Q Alu	◐	◐	◐		◐		◐	●	●		
C24/30RS Speedoflex							●		●	●	●
C30T General Purpose							●		●	●	●

USAGE KEY

- strongly recommended
- ◐ recommended

CUTTING-OFF WHEELS

Steel, construction steel	Low-alloy steel	High-alloy steel	Thin sheets, plates profiles	Stainless steel, inox	Rail	Cast iron	Non-ferrous	Titanium	Stone, concrete	Tiles, ceramic	Glass, plastics, pvc	
●	●	●	●	●								ZA 60 Y-BF41 Mega-Line
◐	◐	●	●	●			◐	◐				A46/60V Inox Speedoflex
●	●	◐	◐	◐		◐						A24/30S Speedoflex
●	●	◐	◐			◐						A24/30RS Speedoflex
◐	◐	●	●	●			◐	◐				A60T Thin Cut
●	●	◐	◐	◐		◐						A30S General Purpose
◐	◐	●	◐	●	●	◐						A24V INOX Long Life
●	●	◐	◐	◐		◐						A30V Extra Long Life
◐	◐	●	●	●			◐	◐				A60V INOX Mega-Line
◐	◐	●	◐	●		◐						A24V INOX Mega-Line
◐	◐	◐	●	◐								A60W Mega-Line
●	●	◐	◐	◐		◐						A30W Mega-Line
◐	◐	◐		◐		●						ZA24R Foundry
◐	◐	◐		◐		●						ZA30S Foundry
◐	◐	◐		◐		●						ZA203T Foundry
◐	◐	◐		◐		●						ZAC24S Foundry
●	●	●		●	◐	◐						A30S Petrol Saw
●	●	●		●								A30S Chop Saw
◐	◐	◐		◐	●							A24P Rail Cut
◐	◐	◐		◐	●							A24Q Rail Cut
◐	◐	◐		◐	●							ZA24Q Rail Cut
									●		●	C30S Petrol Saw
◐	◐	◐	●	◐			●	●				A60Q Alu

USAGE KEY

- strongly recommended
- ◐ recommended

Cutting-Off & Grinding Wheels

CUTTING-OFF WHEELS

A36Q Alu
C24/30RS Speedoflex
C30S/C30T General Purpose

Steel, construction steel	Low-alloy steel	High-alloy steel	Thin sheets, plates profiles	Stainless steel, inox	Rail	Cast iron	Non-ferrous	Titanium	Stone, concrete	Tiles, ceramic	Glass, plastics, pvc
●◐	●◐	●◐	●◐	●◐		●◐	●	●			
						●		●	●		●
						●◐		●	●	●	

USAGE KEY

- strongly recommended
- ◐ recommended