

G&T TRAINING SERVICES

Hand Held Portable Cut Off Saws



Information for:

Safe Use of the
Petrol Cut Off Saws

Introduction to Safe Use of Portable Petrol Cut Off Machines

There are many types of Abrasive Wheel used in various Industry and they vary in size, shape and use to suit the task required.

They all have the ability to cause an injury to the user; passing pedestrian workers and can cause damage to nearby building and vehicles.

The potential to cause injury is huge and the resulting injury could affect the injured party for the rest of their lives.

The Abrasive Wheels used on the Petrol Cut Off Saw are:

Aluminum Oxide (A) Steel Ferrous Metals

Silicon Carbide (C) Concrete or Non Ferrous Metal

Diamond Tipped (D) Concrete, Stone, Asphalt

All Abrasive Wheels used on this equipment should be stored according to the manufacturers instructions.

PPE must be worn and pre use inspections must be carried out prior to use.

Never leave a machine running and un attended as it may vibrate and move around site or you could walk backwards in to the disc

Personal Protective Equipment

HARD HAT: Wear a hard hat where there is a risk of falling objects.

EAR DEFENDERS: Wear personal noise protection.

GOGGLE & SHIELD: (BS EN166B)

DUST MASK: (Min FFP3 rating) always wear a dust mask if dust is generated, remember you can't always see the dust.

GLOVES: Wear protective gloves made of resistant materials to protect against flying debris.

SAFETY BOOTS: Wear safety boots with steel toe protection and non-slip soles.

CLOTHING: Wear non/barley flammable material clothing (leather, cotton) no man made fibre. Must be free of oils and fuels. No loose items of jewelry or clothing



**THIS PROTECTIVE EQUIPMENT
MUST BE WORN
IN THIS AREA**

Safe Use of Portable Petrol Cut Off Saws

Special safety precautions must be taken when working with the Cut Off Machine due to the high rotational speed of the Abrasive Wheel.

It is important you have access to the operator manual for all equipment provided to you for use at work.

Failure to read and understand the manuals may result in injury.

No untrained personnel must use the equipment.

You must clear the area of all debris and pedestrians.

The user is responsible for the safety of everyone and their property.

Only be used by operators who are physically fit and in good mental health.

Never use the equipment while under the influence of drugs, alcohol or medication that may affect your responses.

If you have a pace maker it is essential to consult your doctor due to the electromagnetic field of low intensity generated in use.

Safe Use of Portable Petrol Cut Off Saws

Consider weather conditions when working as risk of injury may rise.

Asbestos is extremely toxic and the saw must not be used on this material.

Never expose more of the disc cutting edge than is required and never remove the guards it is illegal.

Clean out the hood after wet cutting operations to prevent build up of materials that effect the fitting of a new disc.

Never use pressure washers to clean the equipment.

Only use Discs that are fully marked up with all manufactures safety information and have not expired.

Always check the discs prior to use and fitting for damage and check the cutting machine entirely for defects, security of covers, fuel leaks and condition.



Cutting Wheel Selection

The Abrasive Wheel must be approved for Use.

Identify the product to be cut and select the disc required.

Check the Expiry Date especially on bonded abrasives.

The disc rotational speed must be equal too or greater than that marked on the machine.

Before fitting a wheel check that the disc is not chipped, cracked, uneven, undercut and shows no signs of any distortion or contamination from oil, grease or fuels.

Distortion on Diamond discs can cause the disc to become stuck in a cut and may cause a kick back of the machine leading to injury.

Do not use Discs that have fallen to the ground it may contain a hidden fault leading to a risk of accident.

When fitting a directional wheel double check that the arrow on the disc is pointing away from the operator (direction of rotation of the engine)

Clean the spindle and face plate, locate the disc on the spindle and then locate the faceplate over the disc and secure the fixing bolt hand tight only.

Rotate the disc by hand, check for run out and rubbing.

Refueling a Portable Petrol Cut Off Machine

Petrol is an extremely flammable fuel. Always keep it clear of naked flames and fire.

Do not smoke whilst refueling and if you spill any fuel do not work near it. Use the correct 2 stroke mixture.

Never refuel with the engine running; switch off and let the engine cool down.

Open the fuel cap slowly to release any pressure that built up in the system, only re fuel in a well ventilated area.

If you spill fuel on your clothes do not smoke or make a cut using the cutting machine.

Once refilled check the sealing ring on the cap and refit securely; once fitted check for leaks.

Always refuel the machine away from the work area or at least 3m prior to starting.



Prior to Starting The Machine

Prior to starting the machine you must check the following.

Check the fuel system for leaks.
Check the Filler cap and hose connections
Check the Manual Fuel Pump if fitted.

If any leaks are found do not use the machine and report the defects to the supervisor.

The Abrasive Wheel must be suitable for the material to be cut; it must be in good condition and fitted correctly.

The direction of rotation must be checked and the disc must be secure.

Inspect the guard for damage and security. If loose report the defect and do not use until it has been done.

Check the hand controls for full function and smooth operation and automatic idle control. Check the stop button works correctly.

Check that the spark plug cover is secure to ensure no sparks ignite fuel or vapors.

Keep all handles clean, dry and free of oil and dirt. This is important for guiding the machine safely.

The pull cord should extend and retract completely

Starting the Machine

Move at least 3m from the refueling area and into the ventilated area.

Place the machine on good firm ground and secure footing and grasp the machine firmly.

Make sure that the disc is not in contact with anything or inside the work piece. The disc may rotate as soon as you start the machine.

Only trained operators are allowed to start the machine.

Once started and the accelerator handle is released the disc will continue to turn for a while. The disc should come to a stop on its own never force it to stop by placing the disc on to a surface. It may damage or distort the disc.

Whilst the disc rotates it presents a danger!!!



Holding & Controlling the Machine

The Cutting Off Machine can only be used by one person and held by 2 hands or the purpose built aids manufactured for the purpose.

Always hold the machine firmly and with both hands. Never be tempted to operate and guide the machine with one hand because you have a backache.

The correct method of grasping the machine is to place the right hand on the rear handle. This applies even if left-handed.

Work calmly and carefully to prevent snagging and kick back. Work only in good visibility stop if you cannot follow your line.

Ensure proper ventilation at all time and especially when working in trenches.

The machine gives off toxic fumes when in use, the gases will generally be odorless and colorless but contain harmful chemicals such as benzene, and unburnt hydrocarbons.

Symptoms of poisoning include: headache, dizziness, low concentration levels, and vision impairment.

If stopping work due to feeling unwell then stop the machine and place on the ground securely before an accident happens or injury to others.

Holding & Controlling the Machine

Make sure the work piece is properly supported so that as you finish the cut the wheel does not become pinched and possible wheel burst or kick back occurs.

Never use above head heights or on ladders.

Never use the top $\frac{1}{4}$ of the cutting edge of the wheel as serious injury may occur to the user.

Never expose the blade completely and never remove the stop peg in order to gain more exposure.

It is illegal to modify the equipment or remove the guards. Fines and Imprisonment may be the result.

Working under pressure can result in rushing jobs to meet deadline, this pressure is also a factor that results in accidents.

Think Safe!!!



DURING OPERATIONS

Never force the guard back over the stop pin.

Set the guard to deflect the materials away from the user and machine.

Be aware of your surroundings and where the debris and sparks are being deflected.

Do not work with the accelerator lever in the starting position, as engine speed cannot be controlled.

Never touch a rotating disc with any part of your body.

Check the work area and avoid damage to pipes and electrical cables.

Do not use close to flammable substances or combustible materials.

Do not cut into tanks, pipes or containers if you are unsure of the contents; there maybe volatile or inflammable materials inside.

Never leave the machine unattended with the engine running.

Never put the machine on the ground until the disc has stopped turning. It is not recommended to stop the discs rotating by forcing into concrete but this can be an effective method if done using a light touch.

REACTIVE FORCES

The most common occurrence when using a cut off machine is kick back or pull in.

Kickback can result in fatal or serious injuries.

This occurs when the machine is thrown up and backwards towards the operator uncontrollably. It usually occurs when it is jammed in the upper $\frac{1}{4}$ of the disc or is abruptly braked through friction contact with a solid object.

To reduce the risk of Kickback work cautiously and methodically.

Hold the cut off machine firmly with both hands and maintain a secure grip throughout the cut.

Do not use the upper $\frac{1}{4}$ of the abrasive wheel for cutting and use extreme caution when entering the abrasive wheel into a cut and do not twist or push.

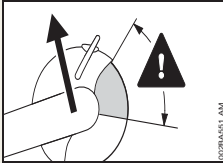
Never try to change the direction of the cut by twisting.



To be used by
trained & authorised
personnel only

Working with a Cut off Machine

English



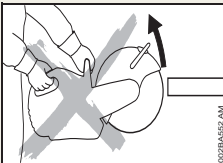
Kickback occurs when the cut-off machine is suddenly thrown up and back in an uncontrolled arc towards the operator.

Kickback occurs if, for example, the abrasive wheel

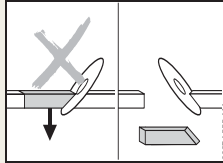
- becomes jammed – above all in the upper quarter
- is severely braked through frictional contact with a solid object

Reducing the risk of kickback

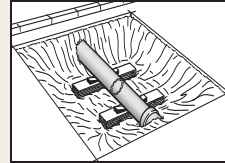
- Work cautiously and methodically
- Hold the cut-off machine firmly with both hands and maintain a secure grip



- Do not use the upper quarter of the abrasive wheel for cutting. The abrasive wheel must be introduced into the cut with extreme care, without twisting and without pushing

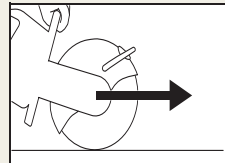


- Avoid wedge action, the severed part must not brake the abrasive wheel
- Always be aware that the object to be cut may move and other factors may cause the cut to close and jam the abrasive wheel
- The object to be cut must be secured and supported so that the kerf remains open during and after cutting
- Objects to be cut must therefore be fully supported and must be secured against rolling away or slipping off or vibrations



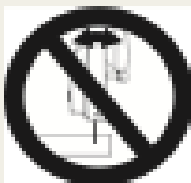
- Support an exposed pipe so that it is stable and capable of bearing weight, use wedges if necessary – always pay attention to subgrade and subsurface – material can crumble away
- Work with water and wet cutting when using diamond abrasive wheels
- Depending on version, composite resin abrasive wheels are suitable for dry cutting or wet cutting only. Always use wet cutting with composite resin abrasive wheels that are suitable only for wet cutting

Pulling away



The machine pulls forward, away from the user, when the abrasive wheel touches the object to be cut from above.

Warning Signs Commonly Found



The abrasive wheel must be guided straight in the cut, without wedging. Never exert lateral pressure on the abrasive wheel.



Do not use the diamond abrasive chain for lateral grinding or scrubbing.



When cutting steel: glowing metal particles may cause fires!



Inspect abrasive wheels frequently and replace immediately if there is evidence of cracking, warping or other damage



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Machine Maintenance

The maintenance of the Petrol Cut Off Saw is essential to maintain a safe piece of working hardware.

Carrying out basic checks before and after use in line with the pre operational checks will ensure that the life of the machine is prolonged and if repaired then the cost is inexpensive.

Not carrying out a simple check will no doubt lead to starting problems, running problems or breakdown.

Just 5 minutes of your time will mean the machine is reliable and useable, but above all else should be safe to use.

The manufacturer of whatever make of machine you are using recommends servicing by the agents and the use of original parts.

Unless you are a qualified mechanic the as an operator you are only required to carry out the daily checks and report all defects and concerns.



Storing the Machine

If the Petrol Cut Off Machine is to be stored for a long period of time then you need to carry out a few steps to ensure function and safety.

Drain the fuel from the tank in a well-ventilated area and into a sealed container designed for this purpose.

Either use the fuel in other equipment capable of taking it or dispose of the fuel in accordance with the regulations and think of the environment.

Run the engine until the carburetor is dry, this helps prevent the sticking of any diaphragms.

Remove the cutting wheel as this may be damaged during storage, the wheel may even reach its expiration date.

Always rotate the stock of cutting wheels held in your vehicles, stores or secure lock ups so that you use old stock first.



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Machine Accessories



These are just some of the aids that are produced by most of the manufacturers.

Other attachments are available such as a clamp for railway lines and a set of wheels to make movement easier.

Check your manufactures web sites.

Health & Safety Control Measures

LEV: Local Exhaust Ventilation. Dust/Fume extraction can carry away airborne contaminants before they can be breathed in.

RPE: Respiratory Protective Equipment. Is a particular type of personal protective equipment (PPE) designed to protect the wearer from breathing in harmful substances or from oxygen-deficient atmospheres when other controls are either not possible or insufficient on their own

PPE: Personal Protective Equipment. Should be used when all other measures are inadequate to control exposure. It protects only the wearer, while being worn if it fails PPE offers no protection at all.

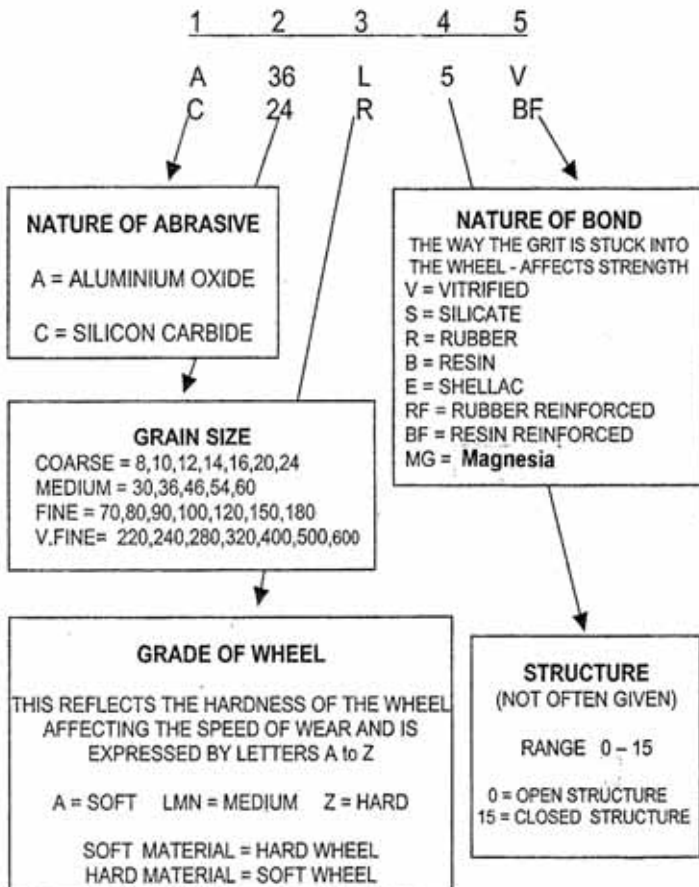
Collective Measures: Collective control measures should always take priority over personal control measures. Collective measures protect more than one person at any one time.



Abrasive Wheels Markings

ABRASIVE WHEELS CODES

BRITISH STANDARD SYSTEM FOR MARKING OF ABRASIVE WHEELS (BS 4481 Part 3)



Wheel Burst

Incorrectly Mounted or damaged wheels can burst. The edge of an Abrasive Wheel travels at approximately 180mph. A wheel bursting will be dangerous and parts will fly out in all directions.

Causes of Wheel Burst:

Use of the side of the disc for grinding purposes

The Wheel has been damaged

Machine speed is greater than that marked on the disc

The Wheel was fitted too tightly or became loose

Washers may have been used instead of Flanges

The rules for blotters and flanges were not observed

The manufacturers expiry date was not checked

The Abrasive Wheel may have been contaminated.



Inspecting an Abrasive Wheel

Before an Abrasive Wheel is mounted to any Cut Off Saw it has to be thoroughly inspected to ensure that it is in good condition and free from damage and suitable for the Machine in use.

Check The Following:

The disc has no scrapes or gouges on either side.

The blotters if fitted are in good condition.

The disc is free of contamination from fuel or oil

The disc is flat and free of distortion

The edge of the disc is not chipped or damaged

The reinforcement is visible on both sides

The disc has not overrun its manufacturers expiry date

Carry out a ring test for hidden cracks

If any faults are found during your checks you have a responsibility to everyone on site under the Health & Safety at Work act 1974 to remove the problem from the work area, you must source other suitable safe equipment to use.

Flanges

The weakest part of an Abrasive Wheel is the hole in the centre.

The flanges provide support to the centre and the recess in the flange acts to move the pressure away from the centre.

Flanges must be a matched pair with a smooth and true surface so it is essential that they be cleaned regularly to remove high spots stuck to the flange.

The flanges should be at least a third of the diameter of the disc.

The drive flange must be fixed to the spindle so that it can not slip, (usually a square cut out or 2 prong locator

Flanges are usually very thick and do not bend easily, overtime though it is possible that they may distort if not cleaned correctly.



Guards

No Abrasive Wheel Machine may be used unless a guard is fitted and is not modified in any way from its original design.

This is a legal requirement and is enshrined in law under the Provision & Use of Work Equipment Regulation 1998

Under the law anyone who uses the equipment must be trained and competent and those that supervise the use of equipment should also be adequately trained.

Guards Must:

Be strong enough to withstand a wheel bursting

Protect the Abrasive Wheel from Damage and prevent the operator being dragged in by the wheel

The guard must be fitted correctly and it must protect the operator from flying debris

Portable machines must have 5mm lip all around the guard.

Guards should be checked and cleaned regularly to ensure that the discs fits correctly and does not rub becoming damaged or distorted.

Guards must never be removed or forced back beyond the safety pin fitted to the machine

Important Final checks Prior to Use

Have you got all the correct PPE to the required standards and checked the Portable Cut Off to ensure that it is safe to use?

Have you checked the disc to make sure it is in good condition, in date and is the disc correctly mounted?

Have you started the machine and run it for at least 60 seconds to ensure tightness and no vibration is present?

Is the work area protected and all operatives nearby wearing the correct PPE? Are you at least 3m away from a refueling area and were there any spills?

Have you placed your site protection signs and barriers up to warn others and checked wear debris is being directed

Have you got suitable dust suppression equipment and water on site?

If unsure of anything to do with a Abrasive Wheel or Potable Cut Off Machine then always check the operator manual or ask another suitably qualified operator.

An Accident is an "undesired circumstance which gives rise to ill health, injury, damage, production losses or increased liabilities."

Abrasive Wheels

Training Notes on the Inspection, Storage, and Mounting of Abrasive Wheels and Diamond Blades

These notes have been produced in the interest of Health & Safety.

They are intended as an aid to the professional operators in the storage, handling, transporting and mounting of Abrasive Wheels.

These notes are in Accordance with the requirements of the Provision & Use of Work Equipment Regulations 1998, Personal Protective Equipment Regulations 1998 and other relevant legislation

Due to the wide range of applications involved no liability can be accepted for any errors or omissions in these notes. Not all parts of these notes will apply to, or necessarily be correct for all types of cutting or grinding machines.

These notes must be read and used in conjunctions with the manufacturers operating manuals for the specific machine in use by the employee and also the Abrasive Wheels and Diamond blades.

Guidance notes and Codes of Practice issued by the Health & Safety Executive can be found by visiting their web site at www.hse.gov.uk



Health & Safety Law

More Information can be found on the HSE web site

The Health & Safety at Work Act 1974

The Provision & Use Work Equipment Regulations 1998

The Personal Protective Equipment Regulation 1992

Control of Substances Hazardous to Health Regulation
1999

The Noise at Work Regulations 1989

Reporting Injuries Diseases & Dangerous Occurrences
Regulation 2013

Safe Use of Portable Apparatus 1990

The Manual Handling Operations Regulations 1992

The Management of Health and Safety at Work Regulations
1992

The Health & Safety Executive is often accused of placing too many Laws, Regulations and Controls on Business making work too expensive to make profit. In fact they advise on how to make the job safe and reduce the likelihood of an accident.



National Plant Operators Registration Scheme Training Provider.

G&T Training Services is a registered training provider with this scheme.

If you require any information regarding this scheme please go to www.npors.com or call them on 01606 351240



Information supplied in this book is taken from the following sources of information.

The Health and Safety Executive Guidance Notes and Laws

The Manufacturers Manuals

This course was delivered to you by

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