



SWI/001

**KESCRG SAFE WORKING INSTRUCTIONS
FOR
GENERATORS**



1. Revision Table

Revision	Date	Comments
1	01/03/2012	First Issue

2. Objectives

2.1. The objective of this safe working instruction is to enable KESCRG members and others working on canal restoration projects to work safely.

2.2. This document will form part of a suite of documents for safe site working; and will be used for instruction and reference purposes.

2.3. This safe working instruction (SWI) refers to small portable generator sets which are included in the tool trailer or from hire shops. Diesel generators are also available.

2.4. As with any hired equipment, **read the instructions before use, not after it's broken!**

3. Introduction

3.1. Electric generators have been used in construction projects for many years and take a lot of the hard work out of this activity. This SWI covers the basic principles/procedures for operating this type of equipment; there are many variants which cannot be covered in a brief document. Always familiarise yourself with the exact piece of equipment you are going to use and identify the key components. Most importantly know how to stop it in an emergency, before starting work.

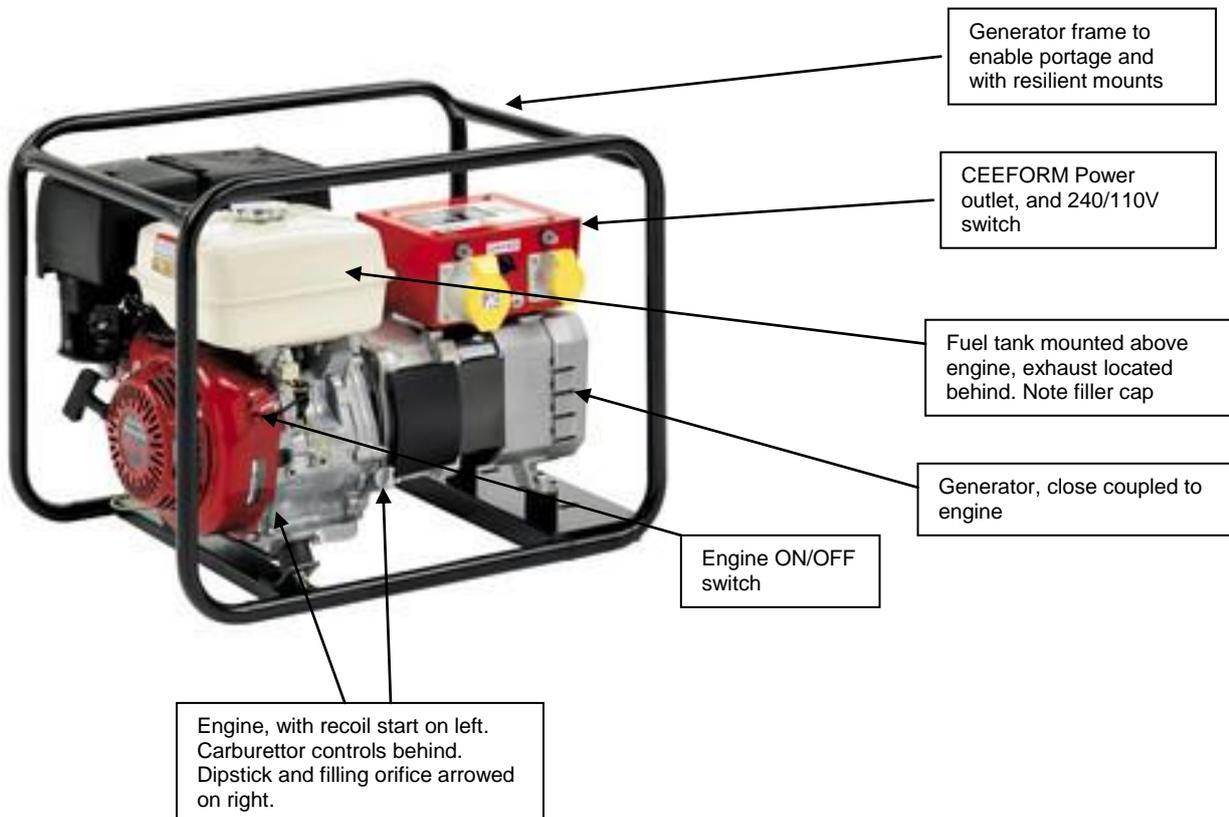
3.2. Generators consist of:

- An engine(Honda or similar) as the prime mover, with choke and stop/run button
- Exhaust which gets **hot**
- Recoil starting cord
- A generator close-coupled to the prime mover. Generator will have power outlets and may have 110/240V switch
- A fuel tank and fuel tap, plus fuel pipework to carburettor or injector
- A frame to mount the generator set in, and to permit portage of the generator. Generally there are resilient mounts
- Bigger generators have a set or more of wheels to aid portability.



General view of generators

This shows typical petrol generator, complete with frame, fuel tank prime mover (Honda petrol engine in this case) and power outlets.



This photo shows a Petrol Generator. Diesel ones are chunkier and heavier, but more economical to run. Bigger generators have a cranking battery and keyswitch for starting. Generators are heavy. Use a two-man (or more if needed) to lift. Use wheelbarrow to transport to site.

4. Health and Safety and Working Environment

4.1. Hazards from generator

- Danger from electrocution. CEEFORM sockets reduce the risk as they are water resistant. See pre-use checks below. Check appliances for up-to-date PAT (Portable Appliance Test) test certificate.
- Potential for the generator to overturn as it will vibrate when running, so make sure it's on flat level ground.
- Generators are relatively noisy, dependant on type, so position away from work area to dissipate noise.
- Pollution and dermatitis from petrol/diesel and lubricating (lube) oil. Position generator in suitable place to avoid accidental contact.
- Exhaust is **HOT**, site to avoid trips or slips onto generator. Do not fill with fuel or lube when hot, allow cooling down first. **Fuel + hot part = BOOM!**
- Route the cable to avoid trip hazards and site the generator to minimise risk of noise/fumes.
- Wheeled generators. Position towbar/chock wheels to prevent movement.

4.2. COSHH (Control of Substances Hazardous to Health)

- Noise can harm health. Most generators are not too noisy, but site them away from the work area. Diesels are generally noisier.
- Diesel, petrol and lube oil are irritants and flammable.
- Generator fumes can kill! Site generator in open air, not in confined space such as a lock chamber. Use extension leads if necessary.

4.3. Manual Handling and Siting the Generator and Fuel

- Assess the weight if it's not stamped on the machine. Use a two-or-more man lift.
- Position fuel in a safe place away from the generator (and away from sparks or hot work area).
- As stated above, position generator away from work area to minimise noise. .

4.4. PPE. The following Personal Protective Equipment (PPE) is mandatory:

- Hard hat, safety boots and fastened high viz jacket (no loose bits to catch in machine). This applies to any site work.
- Gloves when filling with fuel and lube oil.
- Not strictly PPE, but use a funnel to fill with fuel and oil to minimise spillage.

5. Pre-start checks and maintenance

5.1. Carrying out pre-start checks will save damage to the generator and will save time. If it's a hire generator....**Read the Instructions first, not after it's broken!**

5.2. Generators will vary in detail but the following is generally applicable:

- Fill up with fuel before you start, keep **correct** fuel in a suitable container. Fuel could be diesel or petrol. Stop the generator and let it cool to fill up, and use a funnel to avoid spillage. **Fuel + hot machine = BOOM!**
- Ensure spillages are dealt with immediately to avoid pollution/fire hazards.
- Check the lubricating oil, if on a long camp then make sure there is spare oil in a sealed container for use. Small funnel needed for top-up.
- Check the appliances to be connected to the generator are in good condition and have an up-to-date PAT test certificate. The generator itself should have one as well. Also, check that the generator is big enough to cope with the load to be connected. In general the generator kVA should be 1½ - 2 times the kVA or kW rating of the appliance. If in doubt ask the site leader.
- Check extension cables for PAT certificate, and that it is in a good condition. The plug and socket must be undamaged otherwise there is the danger of **electrocution**, i.e. **fatal**. The cable must be thick enough to supply current without overheating. If in doubt ask the site leader.
- Make sure you know how to **stop** the generator **before you start it!** Obvious really.

5.3. Locations of parts

- Refer to the photo above. On some generators the dipstick and filler will be painted to make it obvious.

6. Starting the generator

6.1 Generators need the carburettor or fuel controls set to a "Run" position, with choke engaged if necessary (if fitted). Control switches need to be "ON".

6.2. Check the area around the generator is clear, with no obstructions.



6.3. Check the fuel is "On". Then operate the starter key or operate the recoil starter. It may take 2 or 3 goes to start manually, or a few seconds to crank over to starting speed. Some machines may need the de-compressor operated to enable the motor to turn over. Disengage it once the engine is rotating.

6.4. The generator should then fire up and run. If it takes more than a few seconds then re-check fuel etc as above.

6.5. Generators usually have an "ON/OFF" switch to energise the ignition circuit and some may have "ON/110V/240V" selector switches next to the outlet sockets. Ensure the correct voltage is selected.

7. Using the generator.

7.1. Ensure that the cables are routed to avoid trip hazards.

7.2. Switch off when not in use to avoid wasting fuel. There will be a stop button or switch which will cut out the ignition or stop the fuel supply.

7.3. Ensure any accidental damage to cables or the generator is reported to the site leader promptly. Accidents do sometimes happen and are forgivable (maybe!); unreported defects are not and could be fatal to the next user. 240V can and does kill

8. Cleaning after use

8.1. The generator will need examination at the end of each working day, so allow enough time for this. Stop the generator and allow to cool.

8.2. Check for oil or fuel leaks and any other defects and report them. You do not need to be a mechanic to spot the obvious.

8.3. Report any defects to the site leader.

8.4. Clean any oil or dirt with a soft cloth.

8.5. Switch off the fuel.

8.6. Neatly coil up extension leads and pack away.

