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Further Education and Training Authority



# Construction Skills Certification Scheme

## Safe Operation of Earthmoving Plant



**Articulated Dumper**

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### **Articulated Dumper**

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# Receipt

I have received a copy of the CSCS Safe Operation of Earthmoving Plant – Articulated Dumper notes and agree to read it carefully and comply with all the guidance and advice on safety and good working practices which it contains.

Signature	
Full Name	
Date	

Name of Company or Organisation	
Address	

# Contents

Introduction	1
1. Safety, the law and you	2
2. Accident prevention and control	5
3. Safe use of Articulated Dumpers	7
4. Operator servicing and maintenance duties	10
5. Articulated Dumper safety checklist	12
<b>Appendix</b>	
A Recommended signals	14

## **Acknowledgements**

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## Introduction

This guide for the safe operation of Articulated Dumpers has been produced for plant operators. It sets out to provide guidance in an easy to read form, paying particular attention to the duties of the Articulated Dumper operator. It covers a wide range of operating conditions and activities, and aims to promote safe working practices which comply with current legislation and the precautions to be taken if accidents are to be avoided.

Specific sections on the preparation and operation of Articulated Dumpers contain readily accessible information in a checklist format with a simple **Do's** and **Don'ts** message.

This guide complements manufacturers' instructions and recommendations with regard to:

- general safety legislation and safe operating procedures for Articulated Dumpers
- safe and efficient use of Articulated Dumpers
- basic operator maintenance.

Manufacturer's operating manuals must always be used for the relevant machine and referred to as and when required. The manufacturer of the machine has no direct control over the operation of the machine – *it is the responsibility of the operator to work safely at all times.*

This guide does not attempt to try to cover every aspect of working conditions when using Articulated Dumpers and does not cover every make and model of Articulated Dumper available.

## 1. Safety, the law and you

This section provides guidance for employers, employees and the self-employed who use mobile plant equipment. Minimum legal requirements are outlined which relate to the safe use of mobile plant. Various Acts of the Oireachtas and statutory requirements, examples of which are listed below, provide the definitive legislation to be followed.

### Legislation

Legislation to be followed includes the Safety, Health and Welfare at Work Act 2005 (SHAWWA). Parts of the Act and other regulations connected with the operation of plant include:

- *General Duties of Employer*
- *General Duties of Employee and Persons in Control of Places of Work*
- Protective and Preventive Measures
- Safety Representatives and Safety Consultation
- The Health and Safety Authority
- Offences and Penalties

*All Health and Safety rules also apply to self-employed persons.*

### Regulations and Codes of Practice

Regulations made under an Act of the Oireachtas are mandatory

#### **Safety, Health and Welfare at Work (Construction) Regulations 2013 S.I No. 291 of 2013 include**

- Design and Management
- General Duties of Contractors and others
- General Safety Provisions
- Excavations, Shafts, Earthworks, Underground Works and Tunnels
- Cofferdams and Caissons
- Compressed Air
- Explosives
- General Health Hazards
- Construction Work on or Adjacent to Water
- Transport, Earthmoving and Materials-Handling Machinery and Locomotives
- Demolition
- Roads
- Construction Site Welfare Facilities
- SCHEDULE 4 - Safety Awareness Scheme
- SCHEDULE 5 - Construction Skills Certification Scheme
- SCHEDULE 6 - Procedure for Selection of Site Safety Representatives
- SCHEDULE 7 – Machinery

- **The Safety, Health and Welfare at Work (General Application) Regulations 2007 S.I. No. 299** include:
- Workplace and Work Equipment
- Use of Work Equipment
- Personal Protective Equipment
- Manual Handling of Loads
- Display Screen Equipment
- Electricity
- Work at Height
- Control of Noise at Work
- Control of Vibration at Work
- Safety Signs at Places of Work
- First-aid
- Explosive Atmosphere at Places of Work

The introduction of the above legislation, which protects people at work and those who may be affected by their actions, has helped to improve our working environment.

The legislation concerns employers, employees and the self-employed, and makes people responsible for their actions, as well as their omissions, including others affected by their actions.

Regulations made under an Act of the Oireachtas are mandatory and may be supplemented by an Approved Code of Practice (ACoP), which advises organisations and their staff on how to comply with the law.

If the advice of the ACoP is followed then generally you are meeting the requirements and complying with the law. If you, or your organisation, are prosecuted for breaking a health and safety law and it is proven you did not follow the advice in the ACoP, you must prove you have complied with the law in another way.

*Penalties can be imposed on persons who are found guilty of a Health and Safety Offence (on summary conviction), which may include:*

- a fine
- a term of imprisonment.

*Penalties may be imposed for:*

- Contravening any of the relevant statutory provisions
- disobeying a Prohibition notice
- unauthorised disclosure of information
- a breach of the conditions of a licence.



## Duties of personnel

It is in the interest of every employer and employee involved in the use of plant and equipment to promote safety within their workplace.

## Legal duties of employers

*'Every employer shall ensure, so far as is reasonably practicable, the safety, health and welfare at work of his or her employees.'* \*

Employers have a duty to:

- provide a safe working environment that is without risk to health
- provide and maintain safe plant and equipment and ensure it has been designed, constructed, tested and examined to be safe
- carry out risk assessments and provide their employees with clear and appropriate information on any risks that exist in the workplace and how they intend to reduce those risks
- prepare a safety statement based on the risk assessment
- provide suitable protective clothing and equipment (PPE) to ensure the health and safety at work of their employees. *'Every employer shall ensure that any measure taken by him or her relating to safety, health and welfare at work do not involve financial cost to his or her employees'* \*
- provide employees with any necessary information, including legal requirements, adequate instruction, training and supervision *'in a form, and manner and, as appropriate, language that is reasonably likely to be understood by the employee concerned'* \*
- obtain the services of a competent person for Health and Safety purposes
- provide adequate welfare facilities

**\*Source:** *Safety, Health and Welfare at Work Act 2005*

## Legal duties of employees

In general terms, the law says that you must:

- be responsible and as safe and careful as possible in your work, so as not to put the health and safety of yourself or others at risk, including members of the public
- co-operate with and assist your employer or any other person, as far as necessary, to enable them to carry out their legal duties in health and safety
- not interfere with or misuse any safety devices or equipment
- not intentionally or recklessly interfere with anything provided in the interest of health, safety and welfare
- follow your employer's procedures and the manufacturer's instructions which apply to the care and safe operation of the machine you are responsible for
- inform your employer, without unreasonable delay, of any work situation that you are aware of which presents a risk to the health and safety of yourself and others
- report (without delay) any defects in plant and equipment which might endanger safety.

*All Health and Safety rules also apply to self-employed persons.*

## 2. Accident prevention and control

Accidents are unplanned, unwanted events which can injure or kill people. Industry also pays a price with loss of working hours, loss of production and damage to plant and equipment and extra costs.

Remember that **you** as an operator of plant equipment **are the key to safety**: good safety practices not only protect you but also protect others around you.

Accidents can be caused by unsafe working practices and attitudes of people in the workplace. By following a safety programme and adopting safe working practices, unsafe conditions can be avoided. This contributes to improving safety in the workplace.

Prevention can remove or reduce the likelihood of an accident by following some basic rules, for example:

### Do

- Protect yourself – wear all protective clothing and personal safety equipment issued to you or required by your working conditions
- Follow a safety programme – understand and follow safety procedures when working on site and using plant and work equipment
- Assess your ability to do the job – ensure you are fully aware of the job requirements and how they need to be carried out
- Stay alert – know where to get help. Know the first aid and emergency procedures
- Make yourself aware – study the manufacturer's operator's manual for using your plant and equipment. If the manual is not provided, ask your supervisor or the suppliers of the plant/equipment to supply one
- Report faulty/unsafe plant or equipment and any dangerous occurrences and incidents
- Travel the plant equipment safely so as not to affect its stability
- Be careful – human error is caused by carelessness, fatigue, preoccupation and lack of concentration. Ensure you watch out for others who are affected by your actions
- Ensure all personal injuries, no matter how slight, are reported and entered in the accident book (or equivalent)
- Take advantage of any training programme offered by your employer or contractor. You are never too old to learn new practices or techniques.

## Don't

- Use plant or work equipment that you have not been trained to use
- Overload any plant or work equipment either by lifting or loading
- Operate plant and work equipment unsafely or at unsafe speeds
- Throw or drop objects from plant or work equipment
- Attempt to carry out work on moving parts of plant or work equipment with the safety guards removed
- Indulge in horseplay on plant or work equipment
- Attempt to use any type of plant or work equipment if you are under the influence of drugs, alcohol or any other substance which affects your health or judgement
- Ignore warning instructions or safety signs.

### **3. Safe use of Articulated Dumpers**

If you are an operator of an Articulated Dumper you are legally required to be responsible for your own safety and that of others who are working nearby.

Common sense plays a major part in the safe operation and working of an Articulated Dumper. All Articulated Dumper operators should be aware of dangers and hazards, which could injure them or other site workers nearby, or cause damage to the vehicle.

Articulated Dumper operators are responsible at all times for the safety of their vehicle and its load.

Simple measures taken by yourself, your employer and by following some basic rules can reduce the possibility of risk. For example:

#### **Do**

- Comply fully with instructions given by site managers and supervisors
- Follow the manufacturer's instructions (operator manuals) for the machine you are operating
- Take safety precautions when using your machine prior to, during and after work
- Operate within the machine's capabilities.

#### **Don't**

- Operate any machine unless you have received appropriate training and are authorised to do so
- Ignore hazards
- Misuse, tamper or interfere with your machine and any associated safety equipment provided to you
- Endanger your own health and safety, or that of anyone else, through being negligent.

#### **Before use**

- Always check that the Articulated Dumper is serviceable and safe to use
- Carry out daily checks and maintenance
- Check working areas for hazards and obstacles, which could affect Articulated Dumper operations.

## During Operation

### Do

- Look out for people working and hazards such as trenches, potholes and cables
- Face the machine and use the steps and handholds when getting on or off. Ensure you maintain three points of contact
- Wear the seat belt.
- Drive and operate at a speed consistent with site conditions
- Keep a safe distance from a tip edge and use an approved stop block or berm of material before tipping over an edge
- Keep a safe distance from other plant or vehicles
- Before leaving the machine unattended: drive clear of the working area; stop and apply brakes; disengage drive and controls; stop engine and remove ignition key
- Keep your boots as clean as possible in wet/muddy conditions. Brakes become less effective in these conditions. Wet/muddy boots can cause your feet to slip off the foot controls at vital moments.

### Don't

- Let the machine's transmission shift up and down between gears when travelling uphill
- Indulge in games or horseplay
- Reverse unless you can see it is safe to do so
- Run the engine in an enclosed area for long periods.

### After Use

- Park a safe distance from excavations or vertical faces
- Top up the fuel tank
- Park on firm, level ground; apply parking brake; ensure drive is in neutral
- Stop engine and shut down in accordance with the manufacturer's recommendations
- Climb down using the handholds and foot steps provided. **Never jump.**

## Additional precautions to be followed

### Articulated Dumpers

#### Do

- Drive carefully taking into consideration ground and road haul conditions
- Drive carefully, taking into consideration the different handling characteristics of a loaded Articulated Dumper
- Slow down and avoid taking sharp turns with Articulated Dumpers
- Observe speed limits and other site restrictions
- Give way to loaded Articulated Dumpers
- Slow down and select the correct gear and use great care when travelling up and down ramps and on embankments. When travelling downhill, use the retarder to assist braking
- Apply the parking brake and disengage drive before tipping
- Take care when loading in confined areas as manoeuvring space will be restricted
- Avoid parking a loaded machine
- Be aware of any overhead restrictions or electric cables in the tipping area, which could be a potential danger when the body is raised
- When tipping the load:
  - park the machine straight with the load unit on flat ground before raising the body to tip
  - ensure nobody is close to the machine
  - stop and lower the body on to the chassis before driving away

**Note:** *The tipping control lever to raise or lower the body should be kept in the float position at all times when not in use. The tipping control should only be used with the Articulated Dumper stopped and the drive in neutral*

- Keep reversing distance to a minimum
- Use the services of a signaller/banksperson to assist you when reversing or tipping a load into an excavation
- Take into account that weather can affect the ground conditions, the machine could sink into the ground or the wheels could freeze solid to the ground. Take effective measures to counteract the possibility of this happening.

## Don't

- Let anyone stand within the steering arc of an Articulated Dumper when the engine is running
- Remain in the cab if there is insufficient overhead protection
- Allow loading over the cab of your machine
- Travel with the body raised, except when moving forwards to clear materials after tipping
- Try to tip when standing on severe cross slopes
- Allow passengers in the cab unless an authorised fitted seat is provided
- Allow the Articulated Dumper body to be overloaded
- Drive too close to banks or excavations
- Work under a raised body unless a safety bar or prop has been fitted.

***Road travel:*** before taking an Articulated Dumper on public roads, ensure the machine is prepared for road travel, complies with all road traffic regulations and obey all driving laws!



## 4. Operator servicing and maintenance duties

The Operator's contribution to maintenance of the machine is of prime importance.

It is essential that adequate time and facilities are provided to carry out maintenance of your machine. Supplies of materials and substances (oils, greases, coolants etc.) should always be to hand, with suitable provision for storing them.

All maintenance should be carried out in accordance with the manufacturer's recommendations and your company's procedures.

Whatever system of maintenance and servicing is used, all operators have the responsibility to ensure the machine is in a safe condition for work.

**Pre-use checks:** It is estimated that the recommended pre-use checks of many manufacturers would include the checking and adjustments of the following:

- fluids – engine oil, coolant, transmission, brake, hydraulic
- tyres – rims, wheel nuts, wall and tread, pressures
- hydraulic pipe/hose condition, security leakages
- hydraulic rams condition, security, leakages
- lights, warning and safety appliances, such as reversing devices, horn protective guards
- ROPS/FOPS, seat and seat belts, driving position, mirrors
- controls, gauges, warning lights and other types of safety devices.

### Running checks

- Hot/Cold starting methods
- Function of steering/brakes/hydraulic/electrical and mechanical systems
- During cold weather and extremely hot conditions always be aware of the operating temperature of the machine.

### Maintenance and servicing schedules

Apart from daily pre-start checks, servicing schedules are usually based on machine running hours, therefore regular checks need to be kept on the machine's hour-meter reading.

Operators are likely to carry out only basic servicing on their machine in accordance with the manufacturer's recommendations and company procedures. In addition to pre-start and running checks, operators would usually be responsible for:

- cleaning air filter dust bowls
- draining water and sediment/fuel/water separators
- replenishing coolants, lubricants and fluids
- greasing all greasing pins and pivot points
- carrying out minor adjustments.

You should only carry out the servicing on your machine if you have been trained and have been authorised to do so.

**Do not** attempt any major maintenance, repairs or adjustments to your machine which you are not authorised to carry out. This must be done by a suitably qualified and competent person!

## Do

- Ensure the machine is on firm and level ground before attempting to carry out any operator maintenance
- Where practically possible, place signs on the machine to prevent accidental start up before carrying out your operator maintenance duties
- Carry out regular visual checks for any defects, damage, leaks
- Ensure the locking bar is in position to prevent the front and rear chassis moving and creating a crushing zone (articulated machines only)
- Keep footplates and steps clean and free from mud, dirt, oil, ice and snow etc.
- Complete daily/weekly maintenance/defect sheets if your company issues them to you. All faults/defects should be reported immediately and corrected before the machine is used

## Don't

- Attempt to carry out any operator maintenance on a machine with a hot engine
- Attempt to inspect or clean the machine with the engine running
- Attempt to refuel or top up lubricants and fluids while the engine is running
- Remove the radiator cap when the engine is hot
- Add coolant to a hot engine
- Overfill the engine oil or fuel tank

## 5. Articulated Dumper safety checklist

**S**afety starts with you. Remember! You, as an Articulated Dumper operator are the key to safety. You are legally responsible for your own safety and that of others working nearby.

**A**ccidents are unplanned, unwanted events, which can injure or kill people. Simple measures taken by your employer and yourself can reduce the risk of them happening.

**F**ines can be imposed on your employer and yourself for breaching Health and Safety Regulations (in some instances it can also lead to imprisonment).

**E**nsure you wear all protective clothing and equipment and personal safety equipment (PPE) issued to you or required by your working conditions.

**O**nly operate an Articulated Dumper that you have been trained to use and are familiar with.

**P**assengers should not be carried on your Articulated Dumper (unless an authorised seat has been provided).

**E**nlist the services of a signaller/banksperson to assist you if your vision is restricted or there are obstructions in the vicinity. Ensure there is edge protection when tipping materials into excavations.

**R**eport all accidents (no matter how slight), faulty/damaged plant and equipment and any dangerous incidents. Stay alert, know where to get help, know the emergency procedures on site.

**A**lways drive your Articulated Dumper with due consideration for others and adjust your speed to suit weather and site conditions. If you need to drive on the road obey all driving laws, ensure your Articulated Dumper is prepared for road travel and complies with all road traffic regulations.

**T**ravel your Articulated Dumper safely, so as not to affect its stability. Take extra care when travelling uphill and downhill, on slopes or on hillsides. Select the appropriate gear for driving uphill and downhill and use the retarder as necessary to assist braking.

**I**nspect your Articulated Dumper and working area at regular intervals before use to spot any defects, hazards or distractions. Take nothing for granted!

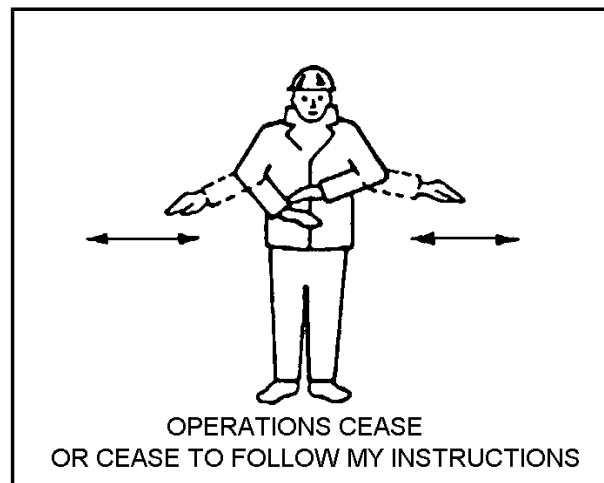
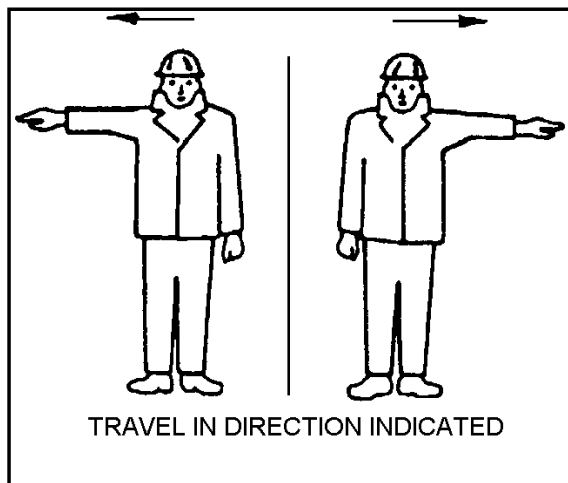
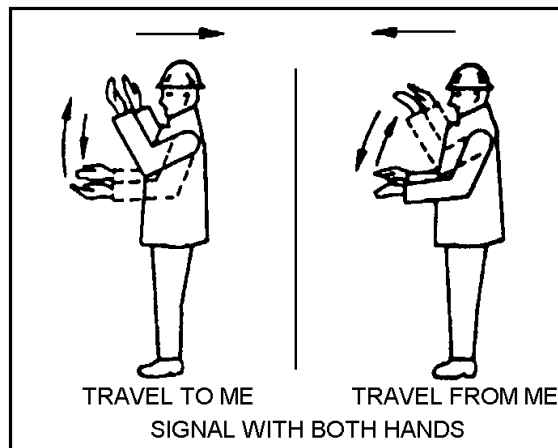
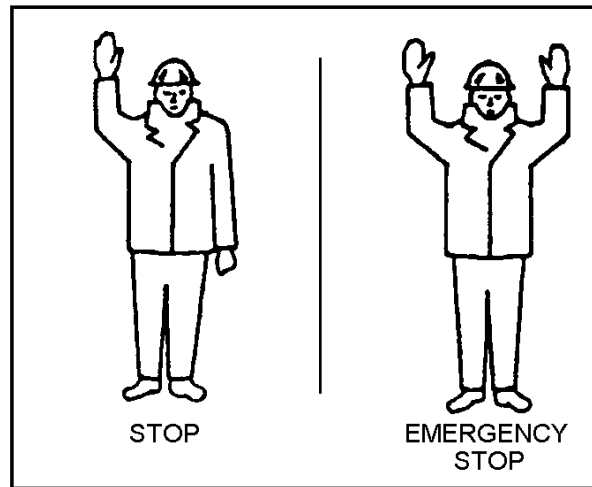
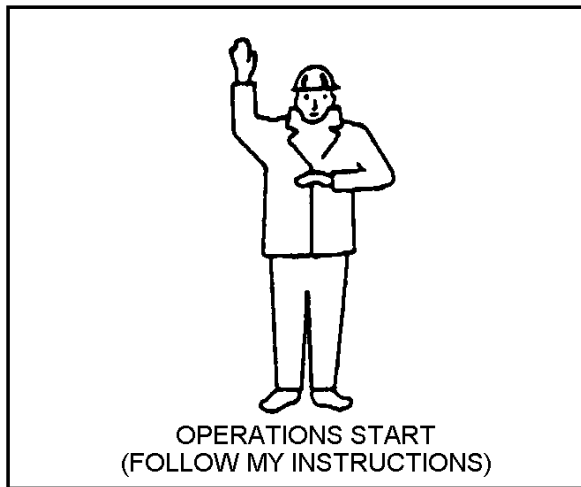
**O**bserve all warning/safety signs and traffic regulations on site.

**N**ever carry out a manoeuvre with your Articulated Dumper if it is likely to endanger yourself and others (even if your work colleagues request it to try and cut corners on a job). If in any doubt seek guidance from your supervisor.

**S**hut down, secure and isolate your Articulated Dumper in accordance with the manufacturer's recommendations and your company's procedures.

## APPENDIX A

### Recommended signals



#### Note:

*The signaller should stand in a secure position where he/she can see the load and can be seen clearly by the driver and should face the driver if possible. Each signal should be distinct and clear.*