

Create mechanical effects

---

**Overview**

This Standard is about your ability to create mechanical effects, including the use of animatronics.

It assumes you have the required knowledge to work in this area of mechanical engineering. It also assumes you have an understanding of physical special effects and the part mechanical engineering can play in this area of work.

This Standard is for you if you create mechanical special effects.

## Create mechanical effects

**Performance criteria**

*You must be able to:*

1. create mechanical effects in line with production breakdown and budget constraints
2. work in collaboration with relevant people from other key departments to ensure that produced effects meet production requirements
3. use reliable information to interpret any designs or visualisations provided by the production to create effects
4. provide any designs or documentation for effects to relevant people
5. source materials appropriate for mechanical effects being produced
6. maintain the health and safety of cast and crew at all times
7. confirm that all mechanical work meets existing safety protocols and provide documentation to that effect
8. demonstrate a wide range of techniques and methods to achieve desired mechanical effects
9. record and document tests in appropriate formats, providing these to production for feedback
10. provide alternative solutions and designs if the effects cannot be produced within the original design, budget and schedule
11. liaise with other departments to ensure any vehicles are prepared in ways that minimise risk
12. confirm that appropriate safety measures and necessary documentation are in place when working with pressure vessels and pipework valving
13. document all aspects of risk assessment and risk management in appropriate formats

## Knowledge and understanding

*You need to know and understand:*

1. script breakdown, budget, constraints and schedule for the physical special effects
2. how to use mechanical engineering to create production, props, effects and stunts
3. construction materials and a wide range of techniques, including how to select appropriate fixing and attaching methods
4. traditional and innovative technologies for cutting and shaping
5. fluid mechanics
6. the calculation of forces
7. the design of various mechanisms
8. motors, drives, their component parts and how each is used to produce effects
9. how breakaways and release mechanisms work and the safety protocols when employing them
10. a knowledge of projectiles and their trajectories
11. how mechanical effects are operated and react in different environments, including under water
12. how to operate mechanical effects within appropriate safety protocols, adhering to current industry standards and legislation
13. the legislation and safety measures which exist for working with pressure vessels and regulated pipework valving
14. camera rigs and how they can be employed
15. how to use roll cages and vehicle preparation for stunts
16. current and emerging technologies and how these can be used to create mechanical effects
17. how Computer Aided Design (CAD), Computer Aided Manufacture (CAM) and 3D printing can work together to design and produce mechanical models
18. the manufacturing processes used in mechanics, including coded welding
19. what can be achieved by post production and visual effects

## Create mechanical effects

---

**Developed by** Creative Skillset

---

**Version Number** 2

---

**Date Approved** March 2017

---

**Indicative Review Date** March 2020

---

**Validity** Current

---

**Status** Original

---

**Originating Organisation** Creative Skillset

---

**Original URN** SKSSFX08

---

**Relevant Occupations** Arts, Media and Publishing; Physical Special Effects Professionals; Special Effects Senior Technician; Special Effects Supervisor; Special Effects Trainee; Special Effects Technician

---

**Suite** Physical Special Effects

---

**Keywords** mechanical; physical special effects, design, plan, explosive effect, breakdown, budget

---