

# Unit 5: Backline Technical Management

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| <b>Unit code:</b>             | <b>A/600/6893</b>    |
| <b>QCF Level 3:</b>           | <b>BTEC National</b> |
| <b>Credit value:</b>          | <b>10</b>            |
| <b>Guided learning hours:</b> | <b>60</b>            |

## ● Aim and purpose

The aim of this unit is to enable learners to develop their knowledge and skills in the setting up and maintenance of backline instruments – guitars and basses with associated equipment, and the methods used to support musicians in performance situations safely.

## ● Unit introduction

Knowledge of the construction methods used in the creation of musical instruments and the skills required to set up and maintain these instruments can be valuable assets for the complete musician. Furthermore it should be appreciated that these skills alone can form the basis for a career that does not focus primarily on performance or the creation of a music product. A team of effective support staff can be an important element of everyday life for the performing musician in both the preparation and performance of live and recorded work.

Learners will consider how the design and construction of instruments has developed, and develop an understanding of current methods and practices. They will complete a number of practical tasks which will develop the skills required in setting up and maintaining instruments safely whilst developing an understanding of practical issues including costs and budgeting for the effective maintenance of backline equipment. There will be further focus on associated backline equipment such as amplifiers, effects units and methods of interconnection.

Current trends in instrument and equipment design, both technical and aesthetic tend to be a healthy mix of old and new. Learners will be encouraged to consider how modern instruments and equipment have developed from the original concepts of early electric solutions to the problem of under-powered acoustic instruments struggling to compete with the other instruments in a band or orchestra. They will be encouraged to look at both musical and social influences when considering the issue.

Learners will take into account health and safety issues when undertaking both practical and theoretical aspects of the unit.

## ● Learning outcomes

### On completion of this unit a learner should:

- 1 Know the design and construction basics of backline instruments
- 2 Be able to set up and maintain backline instruments and equipment
- 3 Know technical roles and commercial practice
- 4 Know Health and Safety practice for the backline technician.

# Unit content

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## 1 Know the design and construction basics of backline instruments

*Design and construction:* materials; finishes; set neck; bolt-on neck; pickup configuration; vibrato; hard-tail; active and passive electronic configuration; materials: woods; plastics; carbon fibre; laminate

*Musical influences:* ergonomics; aesthetics; design; considerations of tonal range; playability; sustain and feedback

## 2 Be able to set up and maintain backline instruments and equipment

*Instrument set up:* tuning; intonation; playing action; truss rod adjustment; vibrato/tremolo adjustment; string alignment; neck alignment

*Instrument maintenance:* re-stringing; checking batteries in active systems; reviewing truss rod alignment; replacing bridge components; checking nut for wear; cleaning potentiometers and switches; checking machine heads.

*Equipment set up:* lifting; inter-connecting systems; effects loops; ground loops; D.I. (direct injection); microphones for sound reinforcement; speaker impedance matching

*Equipment maintenance:* basic fault analysis; cable checking; battery checking; wireless systems; speakers; valves/vacuum tubes; cleaning potentiometers and switches; replacing fuses

## 3 Know technical roles and commercial practice

*Roles:* eg permanent crew, technical tour support, pre and post sales servicing, personal assistant, luthier

*Commercial practice:* eg economic repairs, time and materials costing, working to deadlines, adhering to a budget, effective planning

## 4 Know Health and Safety practice for the backline technician

*Hazards:* physical hazards; electric shock; heavy loads; noise

*Safe practice:* using tools; soldering; cutting; hand tools; erecting equipment; lifting; moving; rigging; ear protection

## Assessment and grading criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The criteria for a pass grade describe the level of achievement required to pass this unit.

| Assessment and grading criteria   |  |   |
|---|--|---|
| To achieve a pass grade the evidence must show that the learner is able to:   | To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:  | To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:                                 |
| <b>P1</b> identify the ways in which musical styles, available materials, and popular trends have influenced the design and construction of backline instruments [IE] | <b>M1</b> describe the ways in which musical styles, available materials, and popular trends have influenced the design and construction of backline instruments | <b>D1</b> explain the ways in which musical styles, available materials, and popular trends have influenced the design and construction of backline instruments |
| <b>P2</b> prepare an instrument to performance standard with some assistance [RL]   | <b>M2</b> prepare an instrument to performance standard with only occasional assistance  | <b>D2</b> prepare an instrument to performance standard independently and to near professional expectations   |
| <b>P3</b> prepare the backline equipment to performance standard with some assistance [EP]  | <b>M3</b> prepare the backline equipment to performance standard with only occasional assistance   | <b>D3</b> prepare the backline equipment to performance standard independently and to near professional expectations  |
| <b>P4</b> identify the commercial practices used to perform backline technicians skills effectively in a variety of roles   | <b>M4</b> describe the commercial practice used to perform backline technicians skills effectively in a variety of roles   | <b>D4</b> explain the commercial practice used to perform backline technicians skills effectively in a variety of roles   |
| <b>P5</b> identify the electrical and physical hazards likely to be encountered by the backline technician, giving effective solutions.                               | <b>M5</b> describe the electrical and physical hazards likely to be encountered by the backline technician, giving effective solutions.                          | <b>D5</b> explain the electrical and physical hazards likely to be encountered by the backline technician, giving effective solutions.                          |

**PLTS:** This summary references where applicable, in the square brackets, the elements of the personal, learning and thinking skills applicable in the pass criteria. It identifies opportunities for learners to demonstrate effective application of the referenced elements of the skills.

|            |  |   |  |
|------------|--|---|--|
| <b>Key</b> | IE – independent enquirers<br>CT – creative thinkers | RL – reflective learners<br>TW – team workers | SM – self-managers<br>EP – effective participators |
|------------|--|---|--|

## Essential guidance for tutors

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### Delivery

Although there are four learning outcomes, the focus of this unit is on the practical element addressed by LO2 P2, M2, D2 and P3, M3, and D3. Learners could begin by researching how social influences – popular trends, have influenced the various areas of design and construction of modern guitars and basses. For example the way that the use of bright colours on motor cars in the late '50's and '60's influenced the finishes on electric guitars and basses – particularly those built by 'Fender' in this period. Aesthetic design combined with practical – playability considerations drove the manufacturers to new heights during this period. Many designs created at this time remain the most popular even today, with original examples of these instruments fetching many times the price originally paid. Another area of development has been the use of modern materials, with plastics in particular replacing woods, and even the animal parts originally utilised in instrument making (tortoiseshell, abalone, bone). The practical elements of the unit will require that learners are provided with a safe environment in which to work on a range of guitar and bass instruments. Initially, learners can attempt simple tasks such as the re-stringing of instruments, progressing to the techniques needed for a full setup of an instrument. On completion of the unit learners will know how to work safely whilst setting up and maintaining the actual instruments available, and preparing backline rigs fit for performance. There will be areas beyond the learner's expertise however in recognising this, learners will also know the procedure for obtaining the correct quote for the right job in hand.

There are a number of potential areas of employment for the learner gaining the skills required to complete this unit. Each learner should know the roles involved together with the skills particular to each role including any commercial practice involved in completing each role effectively.

Health and safety is an important issue, with learners likely to encounter both electrical and physical hazards during the completion of the unit therefore it is important that each learner knows how to identify and avoid potential injury.

## Outline learning plan

The outline learning plan has been included in this unit as guidance and can be used in conjunction with the programme of suggested assignments.

The outline learning plan demonstrates one way in planning the delivery and assessment of this unit.

| Topic and suggested assignments/activities and/assessment  |
|--|
| Introduction to the unit and structure of the programme of learning.   |
| Whole class sessions covering the design and construction of guitars and basses with learners accessing the internet wherever possible.  |
| <b>Assignment 1: The Development of the Modern Guitar – P1, M1, D1</b><br>Assignment overview: <ul style="list-style-type: none"><li>• individual and class discussions – example and methods</li><li>• research and preparation of materials</li><li>• assessment feedback, review and further opportunities.</li></ul> |
| Whole class sessions covering the basic skills for setting up an instrument – tutor or technician demonstration.   |
| <b>Assignment 2: Guitar or Bass Setup – P2, M2, D2</b><br>Assignment overview: <ul style="list-style-type: none"><li>• individual and group practical sessions – setting up an instrument</li><li>• consultation and review</li><li>• assessment feedback, review and further opportunities.</li></ul>                   |
| Whole class sessions covering the basic skills for setting up a backline equipment rig – tutor or technician demonstrations.   |
| <b>Assignment 3: Preparing the Rig – P3, M3, D3</b><br>Assignment overview: <ul style="list-style-type: none"><li>• individual and group practical sessions – setting up a rig</li><li>• consultation and review</li><li>• assessment feedback, review and further opportunities.</li></ul>                              |
| Whole class sessions covering roles and commercial practice.   |
| <b>Assignment 4: Roles and Responsibilities – P4, M4, D4</b><br>Assignment overview: <ul style="list-style-type: none"><li>• individual and class discussions</li><li>• collating evidence, report writing</li><li>• assessment feedback, review and further opportunities.</li></ul>                                    |
| <b>Assignment 5: Health and Safety Guide – P5, M5, D5</b><br>Assignment overview: <ul style="list-style-type: none"><li>• individual and class discussions</li><li>• H&amp;S tests, collating materials resource writing</li><li>• assessment feedback, review and further opportunities.</li></ul>                      |

## Assessment

P1, M1 and D1 assess the learner's knowledge of the ways in which the design and construction of modern instruments has evolved. Driven as much by social trends as by the musical requirements of the day, learners will need to investigate these links along with the influences of the increasing use of newly available materials and manufacturing techniques. At pass level, learners will *identify* – addressing **all** unit content for learning outcome 1 which can have strong vocational links despite its simplicity at this level. To successfully address M1 the learners will incorporate *descriptive* language to, again address all unit content for LO1. To achieve D1 learners will *explain* fully the influences which clearly addresses every area and exploits the potential vocational links as provided in the sample assignment.

P2, M2, D2 and P3, M3, D3 should give each learner the opportunity to experience and develop practical skills as a backline technician. It is essential that a safe and well equipped environment is provided in which the learner can perform a range of practical activities to a high standard. Specialist tools will be required as will expert instruction in their use, from an experienced practitioner wherever possible – perhaps a technician or luthier from the local community can act as a visiting professional. Learners working at **all** levels are expected to prepare backline instruments and equipment to performance standard ie an instrument with its associated backline equipment as prepared by the learner will satisfy the requirements and be acceptable for use by the performing musician. Every learner will, through appropriate assessment instruments show that they are able to address all of the unit content for learning outcome 2. The level of achievement attained by each learner is determined by the level of assistance required to complete each practical activity with a learner requiring constant support being restricted to pass level even though the standard of work is acceptable. At merit level the learner will need very little – only occasional support, and a distinction can only be achieved by consistently work with total independence when completing these practical tasks. A/V evidence supported by Tutor observation documentation can prove an effective way of tracking and evidencing this area.

To successfully address LO3 the learner will show knowledge of at least three roles associated with backline technical management. An effective assessment instrument will use clear vocational links to encourage the learner to also provide evidence with regard to typical commercial practice used within each role. For example a number of the suggested roles would require that the technician provide estimates for repairs to instruments and equipment, or simply source costs for routine maintenance outside the expertise of the technician in question. To address the different levels of grading criteria effectively the learner will again refer to appropriate areas of unit content for the commercial practice element of LO3.

Health and safety is always important but in particular when addressing LO2 learners will need to know accepted practice with regard to lifting, using sharp tools, and the hazards associated with electric shock. Tests can judge knowledge, as can elements of written reports that refer to practical activities undertaken for the unit.

A/V evidence is particularly useful in conjunction with Tutor observation records to complete the picture.

## Programme of suggested assignments

The table below shows a programme of suggested assignments that cover the pass, merit and distinction criteria in the assessment and grading grid. This is for guidance and it is recommended that centres either write their own assignments or adapt any Edexcel assignments to meet local needs and resources.

| Criteria covered | Assignment title                     | Scenario   | Assessment method   |
|------------------|--------------------------------------|--|---|
| P1 M1 D1         | The Development of the Modern Guitar | Brief from a magazine to write a piece on how the design modern guitars and basses has been influenced by social and technical factors.              | Magazine article.<br>Evidence to include: <ul style="list-style-type: none"> <li>written piece</li> <li>illustrations</li> <li>technical information.</li> </ul>  |
| P2 M2 D2         | Guitar or Bass Setup                 | Learners will set up and prepare an instrument to a level fit for performance.   | Practical sessions to set up and prepare a guitar or bass.<br>Evidence to include: <ul style="list-style-type: none"> <li>completed instrument</li> <li>A/V evidence</li> <li>tutor observation.</li> </ul> |
| P3 M3 D3         | Preparing the Rig                    | Learners will set up and prepare backline equipment to a level fit for performance.  | Practical sessions to set up and prepare a guitar or bass rig.<br>Evidence to include: <ul style="list-style-type: none"> <li>completed rig</li> <li>A/V evidence</li> <li>tutor observation.</li> </ul>    |
| P4 M4 D4         | Roles and Responsibilities           | Brief from School or College careers office to prepare a piece for the careers magazine, on the Roles and Responsibilities of a Backline Technician. | Magazine article.<br>Evidence to include: <ul style="list-style-type: none"> <li>written piece</li> <li>illustrations</li> <li>technical information.</li> </ul>  |
| P5 M5 D5         | Health and Safety                    | Brief to prepare a guide covering all the elements/hazards likely to be encountered when completing this unit.                                       | Health and safety guide to include solutions, illustrations and instructions.   |



## Links to National Occupational Standards, other BTEC units, other BTEC qualifications and other relevant units and qualifications

This unit forms part of the BTEC Music and Music Technology sector suite. This unit has particular links with the following unit titles in the BTEC Music and Music Technology suite:

| Level 1 | Level 2              | Level 3                        |
|---------|----------------------|--------------------------------|
|         | Rehearsal Techniques | Concert Production and Staging |
|         | Live Music Workshop  | Music Performance Techniques   |

This unit also has links with the following National Occupational Standards:

Technical Theatre

- CPD1 – Improving your skills
- CPD2b – Ensure that you and your team keep up to date with the technical and production areas of the live arts
- CPD4a – Contributing to technical production work for Performance
- TP8.4 – Setting up and checking sound equipment (C6)
- HSI – Working safely.

### Essential resources

Learners will need access to a safe working environment with working surfaces on which to layout instruments when working on them, and to place other items of backline equipment when inspecting for routine maintenance. Tools will include electronic tuners, soldering equipment, screwdrivers and Allen keys, cutters and pliers. There should be guitar and bass strings available, and a full range of fuses, jack plugs and batteries.

### Employer engagement and vocational contexts

Strong vocational links are available which provide access to professionals working in the backline and technical areas of the music industry, or performers needing assistance/support.

## Indicative reading for learners

### Textbooks

Brosnac D – *Guitar electronics for musicians* (Music Sales Ltd, Dec 1983) ISBN 978-0711902329

Erlewine D – *Guitar player: Repair Guide, 3rd Revised Edition* (Backbeat Books, Nov 2007)  
ISBN 978-0879309213

Hiscock M – *Make your own electric guitar, 2nd Revised Edition* (NBS Publications, Oct 1998)  
ISBN 978-0953104901

## Delivery of personal, learning and thinking skills

The table below identifies the opportunities for personal, learning and thinking skills (PLTS) that have been included within the pass assessment criteria of this unit.

| Skill                   | When learners are ...  |
|-------------------------|--|
| Independent enquirers   | investigating roles and responsibilities                       |
| Reflective learners     | evaluating the success of a guitar setup                       |
| Team workers            | working with others when setting up backline for a performance |
| Self-managers           | managing time whilst setting up an instrument                  |
| Effective participators | setting up for the performance.                                |

Although PLTS are identified within this unit as an inherent part of the assessment criteria, there are further opportunities to develop a range of PLTS through various approaches to teaching and learning.

| Skill                 | When learners are ...                  |
|-----------------------|--|
| Independent enquirers | considering the needs of the performer |
| Self-managers         | ensuring deadlines are met.            |

## ● Functional Skills – Level 2

| Skill   | When learners are ...                                     |
|---|---|
| <b>ICT – Develop, present and communicate information</b>   |   |
| Present information in ways that are fit for purpose and audience   | using ITC to create publicity materials                   |
| <b>English</b>  |   |
| Speaking and listening – make a range of contributions to discussions and make effective presentations in a wide range of contexts        | discussing the running of a marketing campaign            |
| Reading – compare, select, read and understand texts and use them to gather information, ideas, arguments and opinions                    | exploring marketing materials used by music organisations |
| Writing – write documents, including extended writing pieces, communicating information, ideas and opinions, effectively and persuasively | producing copy for marketing materials.                   |