

## 1.2 Introduction to Project Work

### Documents for the project “Helicopter”

The project “Helicopter” is broken down into the following sub-projects:

1. **Manual manufacture**
2. **Machine manufacture**
3. **Assembly**

Each sub-project is described in its own chapter. The chapters each contain a task description, drawings, bills of materials, qualification modules, guiding questions, a work plan sheet, sheets for drafting documentation, forms for the technical discussion and inspection and evaluation sheets.

The guiding questions and the work plan sheet are important for the technical discussion, which should be conducted with the trainee upon conclusion of every sub-project.

An overview of the qualification modules displays which specialist knowledge on certain skills needs to be learnt during the respective sub-project. This can include small practical tasks to be completed after the theoretical processing.

To successfully complete the project “Helicopter”, the trainees are assisted in auto-didactic learning by various supplements.

These supplements have been compiled in a project library on the following pages. This project library should be regarded as a suggestion and can be expanded as desired. Learning materials in the most varied forms are employed for education. These include CBTs, simulation programs and printed documents, thus constituting a media mix.

We wish your trainees the best of success while working on the helicopter.

**The term “action orientation” describes a training principle that emphasises independent and comprehensive learning of how to handle complex occupational activity tasks in a competent and complete manner.**

**The action orientation concept is therefore described again in brief in the following chapter in the trainer’s folder.**

If renewed information and planning is not necessary in the decision phase, the trainee starts with the practical work on the sub-project.

#### **IV. Execution Phase**

The trainee now receives the materials according to the bill of materials. He/she has to prepare the tools and aids him-/herself in accordance with his/her work plan.

The work itself should be executed as independently as possible.

The trainer takes over the role of a counsellor and only intervenes if serious errors are made or on-the-job safety is violated.

#### **V. Review Phase**

The trainer explains the usage of the inspection and evaluation sheets to the trainee as well as the points-based evaluation system.

The trainee reviews his completed sub-project and enters his results into the inspection and evaluation sheet. The trainee inspects his work independently without the help of the trainer.

#### **VI. Evaluation Phase**

The evaluation phase proceeds as follows:

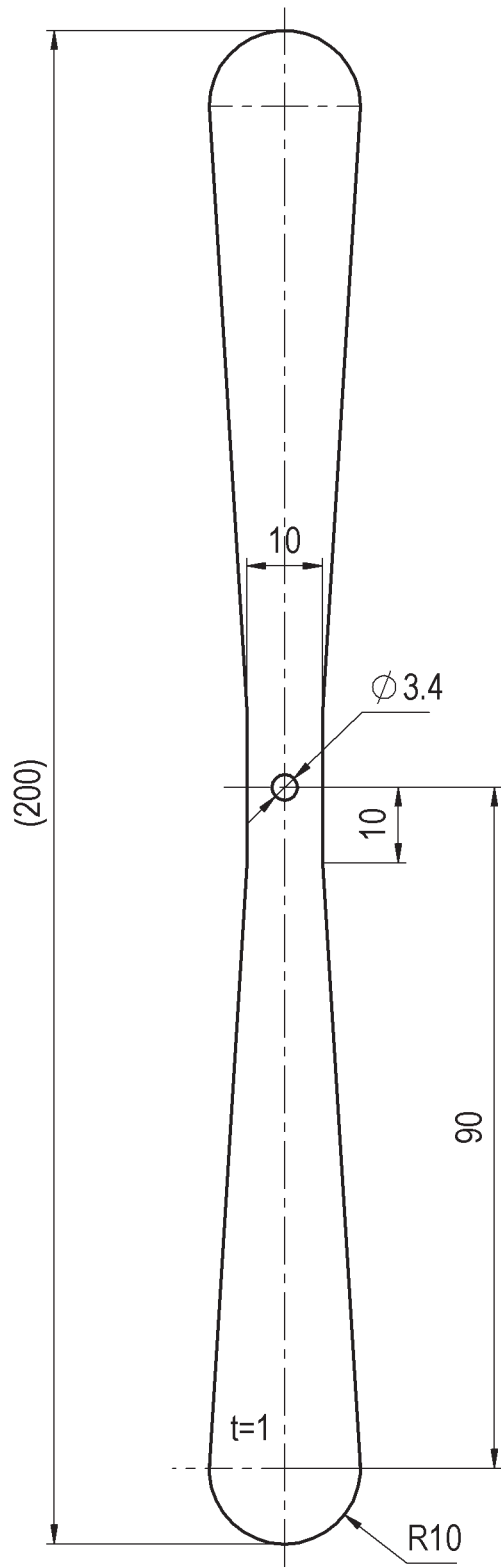
The trainer evaluates the sub-project and the inspection result of the trainee and also enters his evaluation into the inspection and evaluation sheet.

In a technical discussion with the trainee, deviations between the two inspections are determined and possible inspection mistakes are pointed out and explained.


Trainer and trainee together assess which skills should be repeated as a result of the mistakes made during execution. In addition, it is discussed how mistakes that occurred can be avoided in future on the basis of the assessment questions.

We wish you and your trainees the best of success in the execution of this project.

Dr.-Ing. Paul Christiani GmbH & Co. KG  
Technical Institute for Vocational and Advanced Training



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### 5.5 Guiding Questions

1. **What is the symbol of the unit for cutting speed during turning?**

*m/min*

2. **How is the size of the feed denoted during turning?**

*In Millimeter per rotation*

3. **How is the chip cross section calculated during turning?**

*The chip cross section is: the section depth multiplied by the feed*

4. **Which characteristics do milling cutters exhibit that are specifically suited for synchronous milling?**

*They have bigger clearance and rake angles than up-cut milling*

5. **What advantage do the helically broached milling cutters have against straight grooved milling cutters?**

*They are quieter and have a peeling cut*

6. **In which cutter are the teeth recessed?**

*Semicircular milling cutter*

7. **Which characteristics do milling cutters exhibit that are specifically suited for the processing of light metals?**

*Small number of teeth and big chip flutes*

8. **Which grinding discs are used as a rule for the sharpening of milling cutters?**

*Disc wheel and cup wheel*

9. **Why may recessed mould milling cutter be reground only on the cutting face?**

*Because then there is no profile distortion*

10. **What should you particularly attend to during grinding of milling cutters?**

*That the milling cutter runs faultlessly*

11. **Why are metal circular saw blades laterally ground as a rule?**

*So that the metal circular saw blades do not jam in the saw notch*

