

Leseprobe

Christiani

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Operational training · Metal working

Manual material processing

Drilling, countersinking, reaming



Text book

Dr.-Ing. Paul Christiani GmbH & Co. KG
www.christiani.de

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1. General information

This booklet is part of the METINA (method-enintegrierte Ausbildung (English: method-integrated training)) training concept for IMBE developed by RUHRKOHLE AG. The concept includes the following written documentation for each stage of the occupational training plan at RUHRKOHLE AG:

1. Theoretical information

2. Trainer manual

3. Documentation for practical exercises

4. Documentation for trainees

The training concept is based on the premise that the qualifications required in the Training Ordinance are taught from systematically organised documents and/or in the form of learning processes that are similar to training courses in their nature.

"Drilling, countersinking, reaming" belongs to the "Manual material processing" part of the training programme.

Other skills included in this part of the training programme:

- ▶ **Filing**
- ▶ **Sawing**
- ▶ **Chiselling**
- ▶ **Thread production**
- ▶ **Checking and measuring**
- ▶ **Scribing, punching, marking**

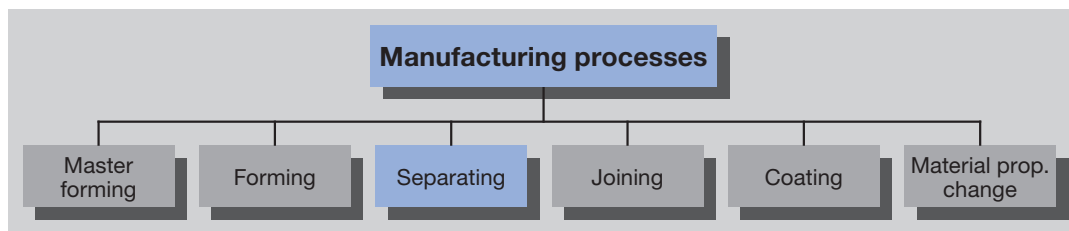
The training course is self-contained. It teaches skills and shares knowledge in a practical setting as part of an occupational training framework designed to meet the needs of industrial mechanics. In completing the exercises, trainees will learn basic skills and recognise and consolidate fundamental work techniques.

The theoretical information contained in this booklet is part of a comprehensive multimedia resource library and is readily available to both trainers and trainees in the training location.

2. Classification of drilling, countersinking and reaming

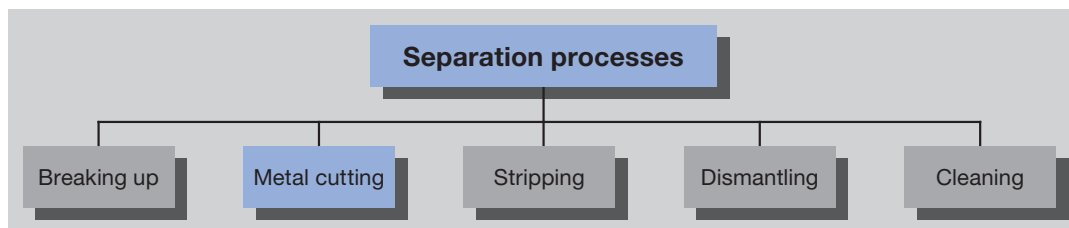
2.1 Manufacturing processes

The manufacturing processes have been divided into 6 main groups according to DIN 8580.



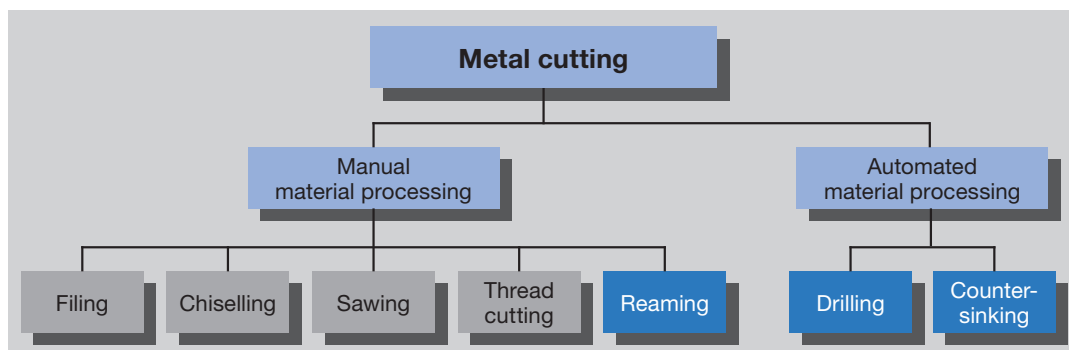
2.2 Separation processes

Separation processes are divided into 5 sub-groups according to DIN 8580.



2.3 Metal cutting

Metal cutting processes are divided into the following skills:



In the field of manual material processing, drilling, countersinking and reaming are cutting or parting processes. According to DIN 8580, they are separation processes.



3. General principles

3.1 Drilling machines

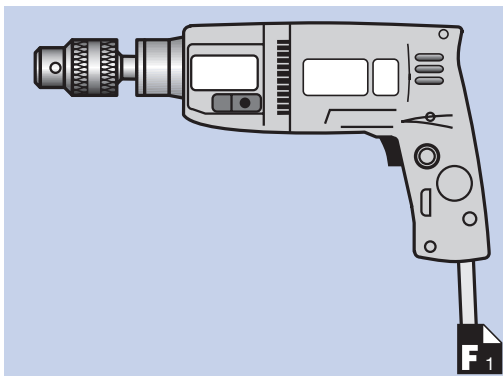
Various types of drilling machine are available. Suitable drilling machines are selected based primarily on the following criteria:

- ▶ **Size of bore**
- ▶ **Shape of workpiece**
- ▶ **Position of workpiece**

We distinguish between the following:

1. Electric hand drill

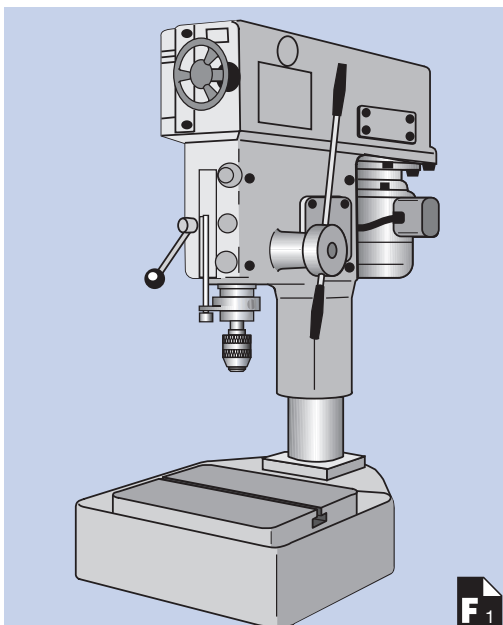
Electr. hand drill



For drilling holes for installation and assembly purposes

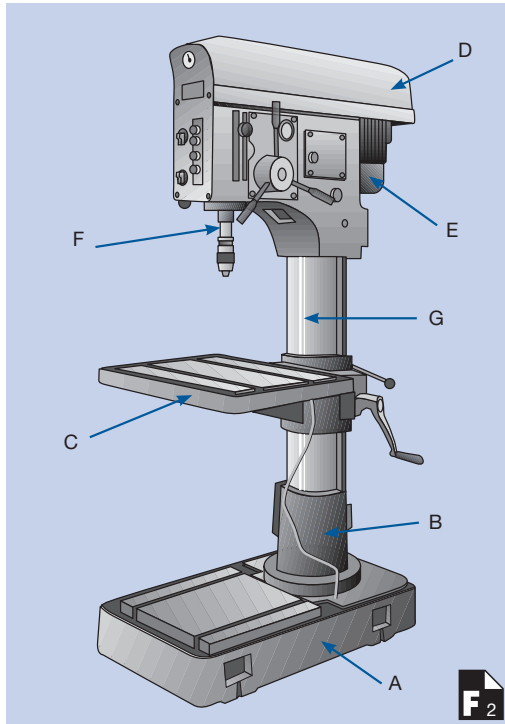
2. Bench drill

Bench drill



For drilling small bores (up to 13 mm)

Column drill



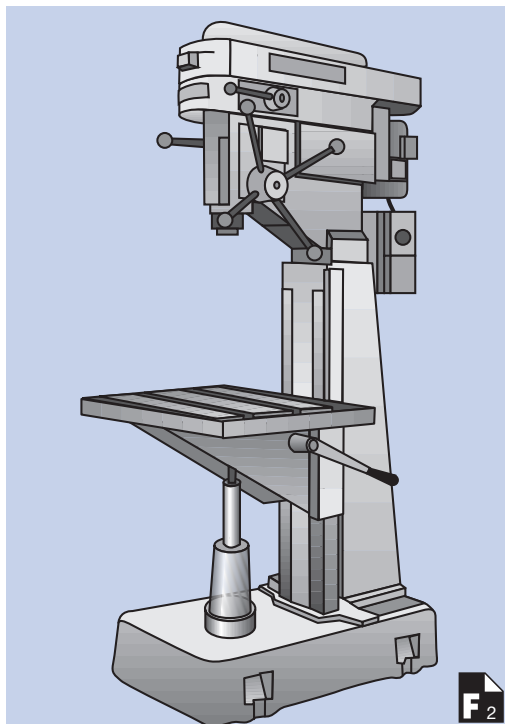
3. Column drill

For drilling small and larger holes (including larger than 13 mm).

A column drill consists of the following main components:

- A. Base
- B. Stand
- C. Drilling table
- D. Transmission
- E. Motor
- F. Drill spindle
- G. Column

Box column drill



4. Box column drill

For drill large and dimensionally accurate holes.

The drilling table is not pivoted; it has an additional support.