

Leseprobe

Christiani

est.1931

Operational training · Metal working

Machine-based material processing

Part: Milling

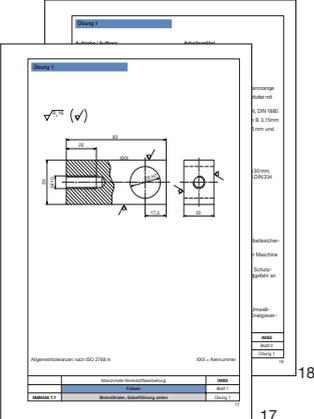


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Time (h)	Goals – Content – Schedule – Notes	Media
0.5	<p>Learning objectives – exercise 1</p> <ul style="list-style-type: none"> ▶ Classify milling processes ▶ Explain the design and function of a milling machine ▶ Establish the operational readiness of a milling machine ▶ Distinguish between milling tools ▶ Select and fit appropriate toolholders ▶ Clamp and align workpieces ▶ Determine and set process parameters ▶ Measure clamped workpieces ▶ Identify and apply health and safety regulations, and environmental protection measures ▶ Exercise 1: Manufacture a fork guide 	Flip chart
2.5	<p>Briefing/discussion (exercise 1)</p> <ul style="list-style-type: none"> ▶ Review / follow-up Training sections: Turning, drilling Vocational school (knowledge of material removal) ▶ Classifying milling Manufacturing/cutting processes Material-removal processes/milling processes ▶ Milling machine design Machine frame Knee Main drive Feed device Vertical milling head 	Library Libraries: - Turning - Drilling Slide 2, 3 Slide 4 - 7
	Trainer manual	Metal working
	Milling	

Time (h)	Goals – Content – Schedule – Notes	Media
	<ul style="list-style-type: none"> ▶ Milling machine functions <ul style="list-style-type: none"> Power flow Switching the machine on/off Emergency stop Motions on a milling machine Manual feed ▶ Criteria for operational readiness <ul style="list-style-type: none"> Lubrication/cooling Feed limit switch Workplace lighting Sources of danger when switching on ▶ Milling tools <ul style="list-style-type: none"> Shell-type milling cutter ▶ Toolholders <ul style="list-style-type: none"> Shell-type mill arbor Draw-in collet chuck Toolholder with morse taper ▶ Clamping and aligning workpieces <ul style="list-style-type: none"> Machine vice Edge finder ▶ Determining and setting process parameters <ul style="list-style-type: none"> Cutting speed/rotational speed Cutting depth/cutting width Effects on surface finish Effects on service life Setting procedure 	<p>Slide 4, 8</p> <p>Flip chart</p> <p>Sample</p> <p>Slide 9, 10 Sample</p> <p>Slide 11 Sample</p> <p>Slide 12 Manufacturer documents (milling cutter) Library: Turning</p>
	Trainer manual	Metal working
	Milling	

Time (h)	Goals – Content – Schedule – Notes	Media
1.0	<ul style="list-style-type: none"> ▶ Checking the dimensions on the clamped workpiece Work safety Measuring procedure Reference temperature ▶ Safety and accident prevention guidelines Personal protective equipment Operating instructions ▶ Environmental protection Dosing operating fluids Disposing of cooling lubricant, chips and rags Location of disposal containers ▶ Consolidation questions (oral) Summary from the trainer ▶ Review the instructions, taking into account the milling machine at hand and the associated operating material The trainer demonstrates the procedures on the milling machine 	Library Checking: Measuring and gauging
	Trainer manual	Metal working
	Milling	

Time (h)	Goals – Content – Schedule – Notes	Media
<p>3.5</p>	<p>▶ Exercise 1: Lower fork guide</p> <p>Task/assignment</p> <p>The trainees should manufacture the "lower fork guide" in accordance with the engineering data provided.</p>  <p>▶ Trainee sets up the milling machine</p> <p>Clamping the workpiece/tool</p> <p>Setting the process parameters</p> <p>Review with the trainer</p> <p>▶ Complete exercise 1</p>	<p>Engineering data</p>
<p>0.5</p>	<p>Evaluate exercise 1 with each trainee</p>	<p>Evaluation sheet</p>
Trainer manual		Metal working
Milling		