

TRADE TRAINING ATC PROGRAMME

TOOL & DIE MAKER



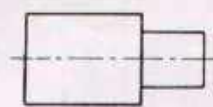
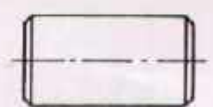
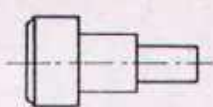
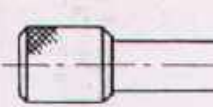
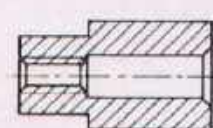
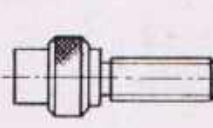

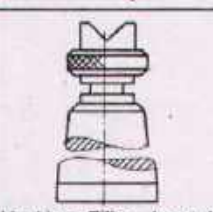
GOVERNMENT OF THE PUNJAB
TECHNICAL EDUCATION & VOCATIONAL TRAINING AUTHORITY
PUNJAB BOARD OF TECHNICAL EDUCATION
TRADE TESTING CELL, LAHORE.



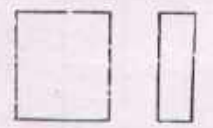


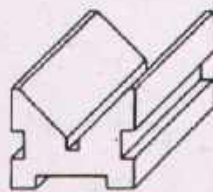
T. T. P. Series No. 20

Price Rs. 24/-


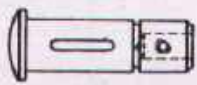
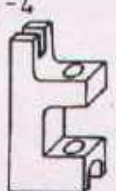
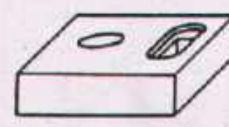
TURNING 1.0.4/1-8

			
1 → 5	2 → 3	2 → 3 → 4	3 → 4 → 6
			
1 → 5 → 7	4 → 6 → 8	5 → 7 → 8	6 → 8 → 7

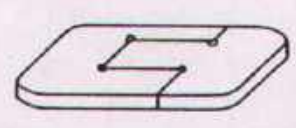
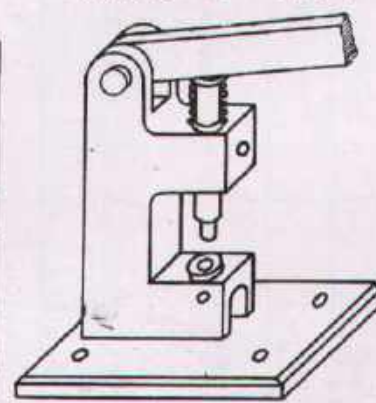
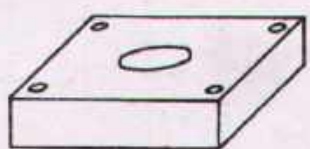
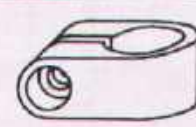
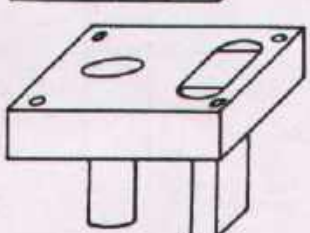
SHAPING 2.4.2/1-4

			
1 → 2, 4, 3/4	2 → 2, 4, 5/3	3 → 2, 4, 3/3	4

MILLING 2.4.3/1-4

			
1 → 2, 4, 5/4	2, 2, 3/6 → 2 → 2, 4, 5/3	3 → 2, 4, 5/3	2, 4, 2/1 → 4 → 2, 4, 5/4

FITTING 2.4.5/1-4

		
		
1	3	4

TRADE TRAINING

LAYOUT

No. 1.0.4
No. 2.4.2
No. 2.4.3
No. 2.4.5



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER

MATERIAL REQUIRED

Trade Training for Tool & Die Maker

Exercise No. (Length given in millimeter)

Turning No. 1.0.4 M/S Round 60 mm (2 1/2)	Exercise No.				Length per trainee	Total length for a batch of 16 trainees
	1	2	3	4		
	85	90			175 mm	2,9 meter
Shaping I No. 2.4.2						
M/S Flat 50 x 15 mm (2" x 5/8)	63				63 mm	1,1 meter
M/S Flat 90 x 12 mm (3 1/2 x 1/2)	115				115 mm	2,0 meter
M/S Flat 70 x 25 mm (3" x 1")	135				135 mm	2,3 meter
Cast iron according pattern				X		
Milling I No. 2.4.3						
Carbon steel Square 18 x 18 mm (3/4" x 3/4")	50				50 mm	0,9 meter
Fitting II No. 2.4.5						
M/S Flat 50 x 5 mm (2" x 3/16)	120				120 mm	2,1 meter
M/S Flat 40 x 16 mm (2" x 5/8)	28				28 mm	0,6 meter
M/S Flat 25 x 10 mm (1" x 3/8)		165			165 mm	2,8 meter
M/S Angle 25 mm (1")		30			30 mm	0,6 meter

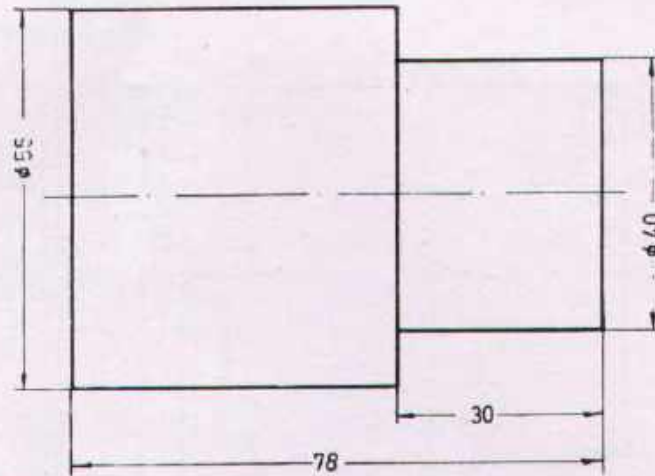
All other materials as screws, washers and pins for the Fitting course should be supplied according to drawing.



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER

TOLERANCE ± 0.2 

SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		4-JAW INDEPENDENT CHUCK RIGHT-HAND FACING TOOL	CLAMPING FACING
2		RIGHT-HAND ROUGHING TOOL	LONGITUDINAL TURNING
3		RIGHT-HAND SIDE TOOL	SHOULDER FACING
4		RIGHT-HAND SIDE TOOL	STEP TURNING TO DEPTH 30 MM AND DIA 40 MM
5		3-JAW CHUCK RIGHT-HAND SIDE TOOL	FACING TO LENGTH 78 MM
6			LONGITUDINAL TURNING TO DIA 56 MM. NUMBER PUNCHING.

SCALE 1:1

MAT. ST.37-1

STEPPED BAR

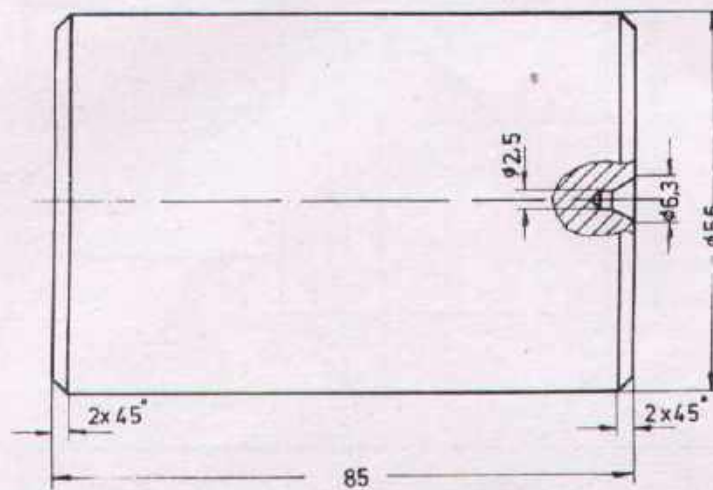
NO:- 1.0.4/01

BASIC / TURNING



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOLERANCE ± 0.2 

SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		4-JAW INDEPENDENT CHUCK RIGHT-HAND FACING TOOL	CLAMPING FACING
2		DRILL CHUCK CENTRE DRILL 2.5 MM	CENTERING
3	RECLAMPING, FACING TO LENGTH 85 MM. CENTERING.		
4		DRIVING PLATE DOG CARRIER RIGHT-HAND ROUGHING TOOL	HOLDING BETWEEN CENTRES ROUGH TURNING TO DIA 56 MM
5		RIGHT-HAND SIDE TOOL	RESETTING, ROUGH TURNING TO DIA 56 MM
6		RIGHT-HAND SIDE TOOL	CHAMFERING

SCALE 1:1

MAT. ST. 37-1

ROUND BAR

NO. 1.04 / 02

BASIC / TURNING

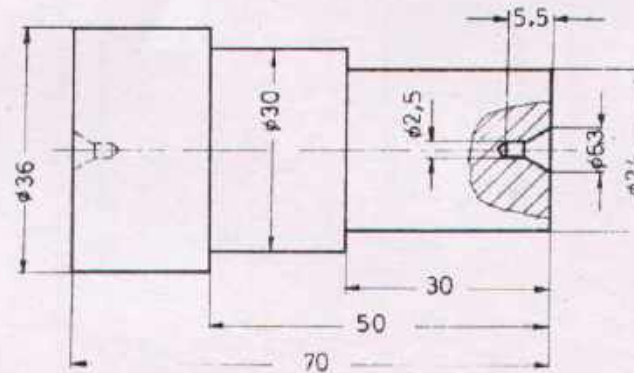


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME



Tolerance $\pm 0,1$



SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		3-JAW CHUCK FACING TOOL	TRUE SETTING WITH DEAD CENTRE FACING TO LENGTH 70 MM
2		DRILL CHUCK CENTRE DRILL 2.5 MM	RECENTERING
3		DRIVING PLATE DOG CARRIER RIGHT-HAND SIDE TOOL	STEP TURNING TO DEPTH 50 MM AND DIA 30 MM
4		RIGHT-HAND SIDE TOOL	STEP TURNING TO DEPTH 30 MM AND DIA 24 MM
5		RIGHT-HAND SIDE TOOL CLAMPING BUSH	RESETTING, TURNING TO OUTSIDE DIA 36 MM

SCALE 1:1

MAT. from Ex. 02

CENTERED BOLT

No. 1.0.4/03

BASIC / TURNING

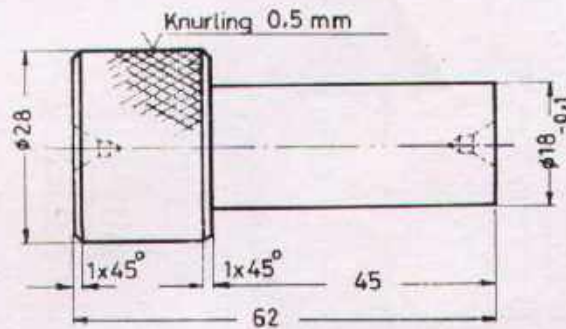


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME



Tolerance ± 0.1
unless otherwise stated



SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		3-JAW CHUCK FACING TOOL RIGHT-HAND SIDE TOOL	TRUE SETTING WITH DEAD CENTRE, FACING TO LENGTH 62 MM, TURNING TO OUT- SIDE DIA 28 MM CHAMFERING
2		DRILL CHUCK CENTRE DRILL 2.5 MM	RECENTERING
3		DRIVING PLATE DOG CARRIER RIGHT-HAND SIDE TOOL	STEP TURNING TO DEPTH 45 MM AND DIA 18 MM CHAMFERING
4		3-JAW CHUCK KNURLING TOOL 0.5 MM, RIGHT-HAND SIDE TOOL, CLAMPING BUSH, OIL CAN	TRUE SETTING WITH DEAD CENTRE KNURLING CHAMFERING

SCALE 1:1

MAT. of Ex.03

KNURLED BOLT

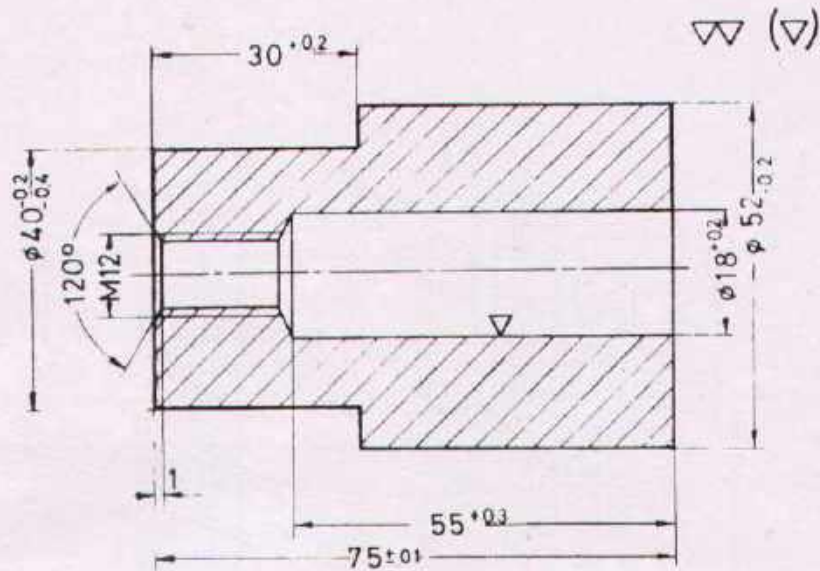
NO. 1.0.4/0 4

BASIC / TURNING

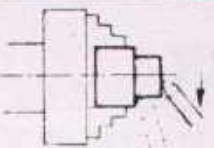
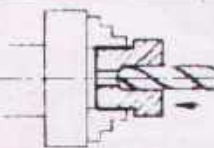
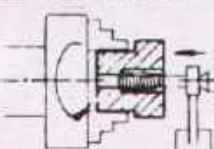
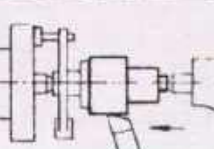


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME



SEQUENCE OF OPERATIONS

NO.	Symbol	Tools	Descriptions
1		3-JAW CHUCK FACING TOOL RIGHT-HAND SIDE TOOL	FACING UP TO LENGTH 75 MM. RECESS TURNING UP TO DEPTH 30 MM AND DIA 40 MM
2		CENTRE DRILL 2.5 MM TWIST DRILL 10.2 MM TWIST DRILL 18 MM CLAMPING BUSH	CENTERING, SETTING DRILLING 10.2 MM DRILLING 18.0 MM
3		TAPS M 10 HANDLE	INSIDE THREAD CUTTING RESETTING, TRUE SETTING WITH DEAD CENTRE CHAMFERING
4		HANDREL RIGHT-HAND SIDE TOOL	TURNING OUTSIDE DIA 52 MM

SCALE 1:1

MAT. of Ex 01

THREAD BUSH

NO:-1.0.4/05

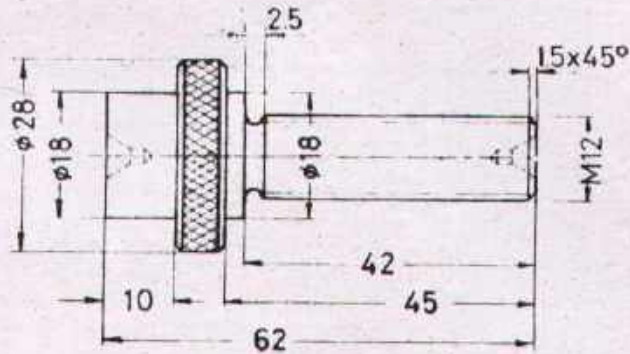
BASIC / TURNING



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOLERANCE ± 0.1



SEQUENCE OF OPERATIONS

NO.	Symbol	Tools	Descriptions
1		DRIVING PLATE DOG CARRIER RIGHT-HAND SIDE TOOLS	RECESS TURNING UP TO DEPTH 10 MM AND DIA 18 MM CHAMFERING
2		RIGHT-HAND SIDE TOOLS CLAMPING BUSH	RESETTING RECESS TURNING UP TO DEPTH 42 MM AND DIA 12 - 1.5 MM CHAMFERING
3		FORMING TOOL R 2.5 MM	RELIEF TURNING UP TO DIA 9.5 MM
4		3-JAW CHUCK THREAD DIE M 12 CLAMPING BUSH	TRUE SETTING WITH DEAD CENTRE OUTSIDE THREAD CUTTING

SCALE 1:1

MAT. of Ex.04

SPINDLE

NO:-1.0.4/06

BASIC / TURNING

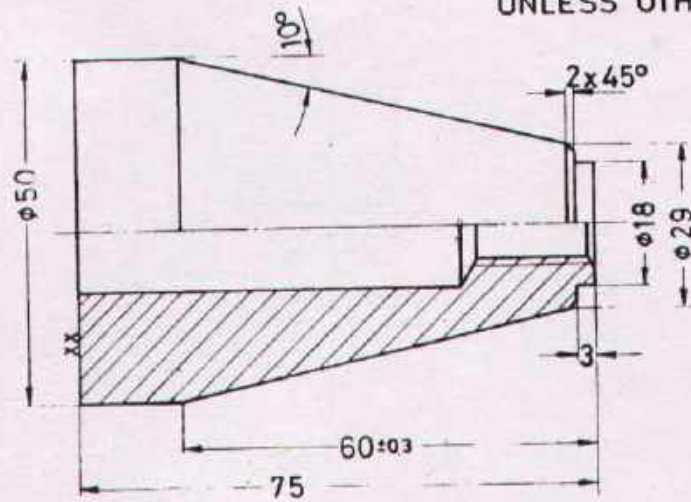


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME



TOLERANCE ± 0.1
UNLESS OTHERWISE STATED



SEQUENCE OF OPERATIONS

NO.	Symbol	Tools	Descriptions
1		DRIVING PLATE DOG CARRIER FINISHING TOOL	FINISHING DIA 50 MM
2		RIGHT-HAND ROUGHING TOOL MANDREL	SETTING OF COMPOUND REST TO 10° ROUGHING MIND FINISHING ALLOWANCE
3		FINISHING TOOL MANDREL	FINISHING OF TAPER
4		RIGHT-HAND SIDE TOOL MANDREL	RECESS TURNING UP TO DEPTH 3 MM AND DIA 18 MM CHAMFERING

SCALE 1:1

MAT. of Ex. 05

BASE STAND

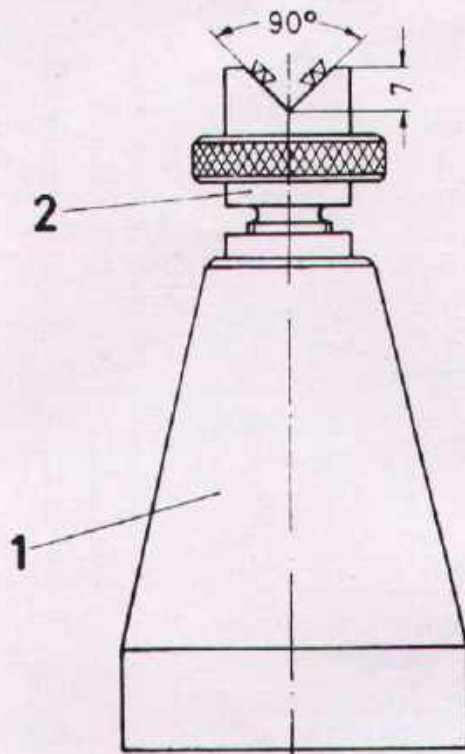
NO:- 1.04/07

BASIC / TURNING


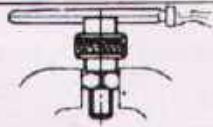



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME



SEQUENCE OF OPERATIONS

NO.	Symbol	Tools	Descriptions
1		MARKING TOOLS	MARKING
2		FILES SLOTTED NUT	FILING OF NOTCH
3			ASSEMBLING

2	1	SPINDLE	COMING FROM EX. 1 02/06
1	1	BASE STAND	" " EX. 1 02/07
P. No.	Qty.	Denomination	Remarks

SCALE 1 : 1

MAT.

SCREW JACK

NO :-1.0.4/08

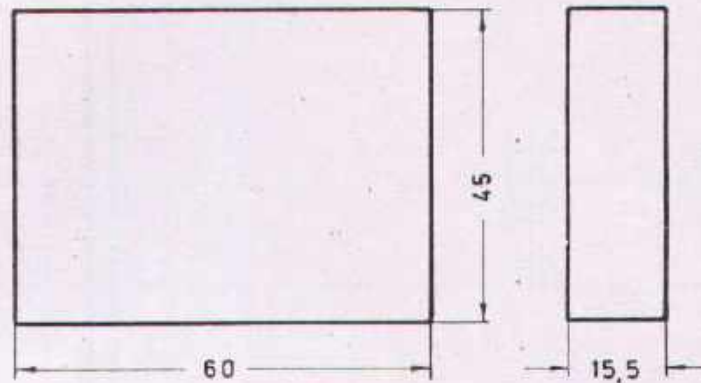
BASIC / TURNING



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

W

Tolerance $\pm 0,1$ 

SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		STRAIGHT LEFT HAND CUTTING TOOL PARALLELS VERNIER CALIPER	SHAPING THE 4 SIDES SQUARE AND PARALLEL
2		STRAIGHT LEFT HAND CUTTING TOOL PARALLELS DEPTH GAUGE	SHAPING BASE AND FACE

SCALE 1:1

PUNCH HOLDER PLATE

No. 2.4.2/1

MAT. MILD STEEL

SHAPING 1



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

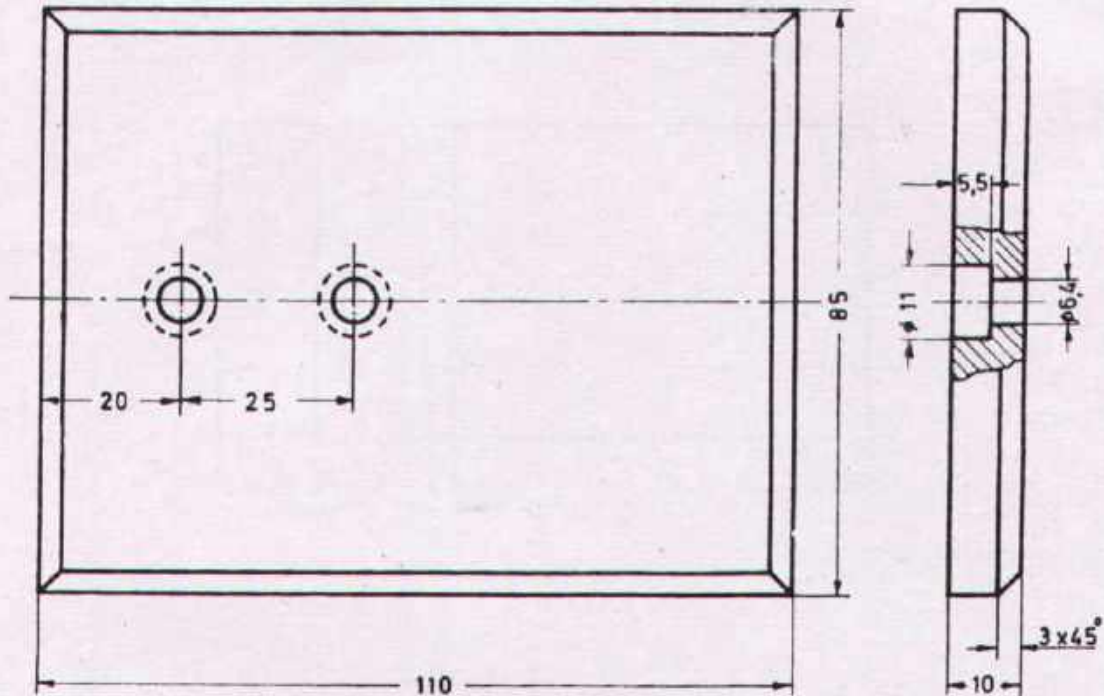
PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER



Tolerance $\pm 0,1$

2



SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		STRAIGHT LEFT HAND CUTTING TOOL PARALLELS	SHAPING FACE AND BASE
2		SIDE CUTTING TOOL PARALLELS VERNIER CALIPER	SQUARING-UP ENDS
3		ROUGHING TOOL	CHAMFERING 45° TURN THE TOOL THAT THE CUTTING EDGE COMES TO A 45° POSITION

SCALE 1:1

MAT. MILD STEEL

BASE PLATE

No. 2.4.2/2

SHAPING I



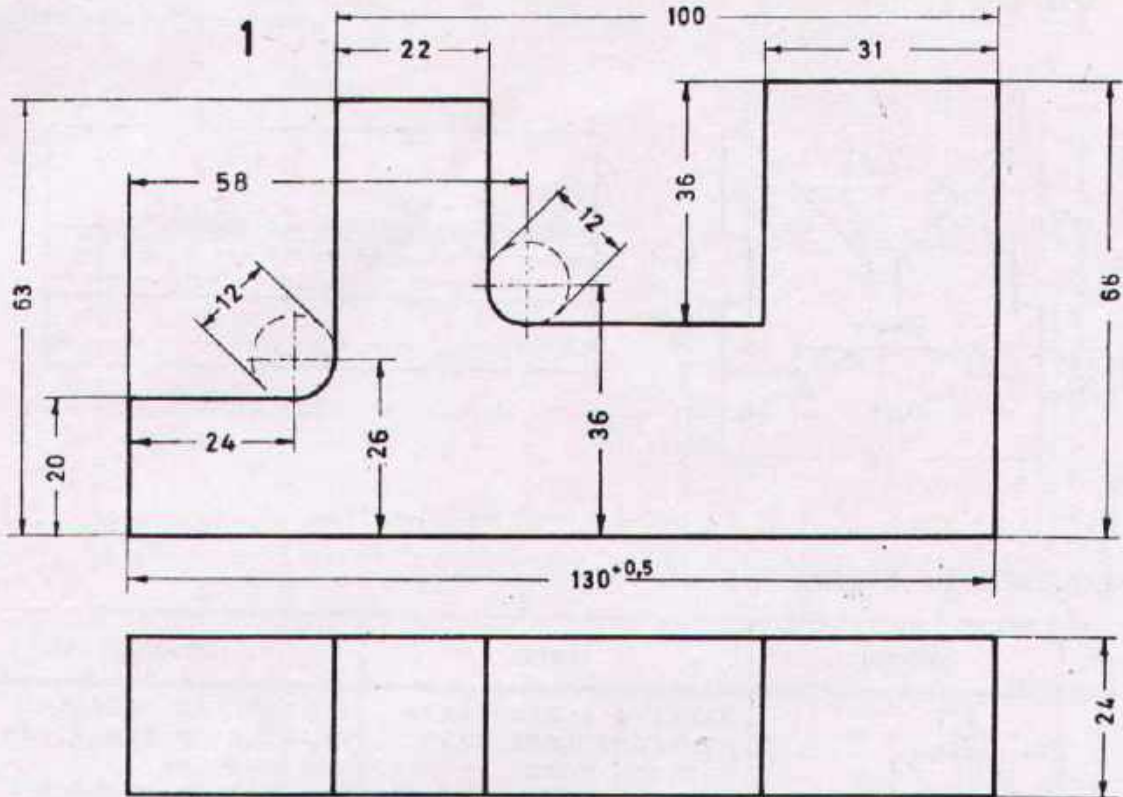
DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER



Caution! Drill holes $\phi 12$ before shaping Tolerance $\pm 0,1$



SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		STRAIGHT LEFT-HAND CUTTING TOOL PARALLELS	SHAPING SQUARE AND PARALLEL TO GIVEN SIZE
2		LEFT-HAND SIDE CUTTING TOOL	SQUARING-UP ENDS
3		MARKING TOOL L.H. SIDE CUTTING TOOL ROUND-NOSE ROUGHING TOOL	MARKING. ROUGHING ACCORDING TO THE MARKING LINES
4		LEFT-AND RIGHT HAND SIDE CUTTING TOOL FORM TOOL R6	FINISHING THE WORKPIECE TO GIVEN SIZE- MACHINING THE RADIUS SET THE TOOL TO 45°

SCALE 1:1

MAT. MILD STEEL

BODY (PUNCHING DEVICE)

No. 2.4.2 / 3

SHAPING 1



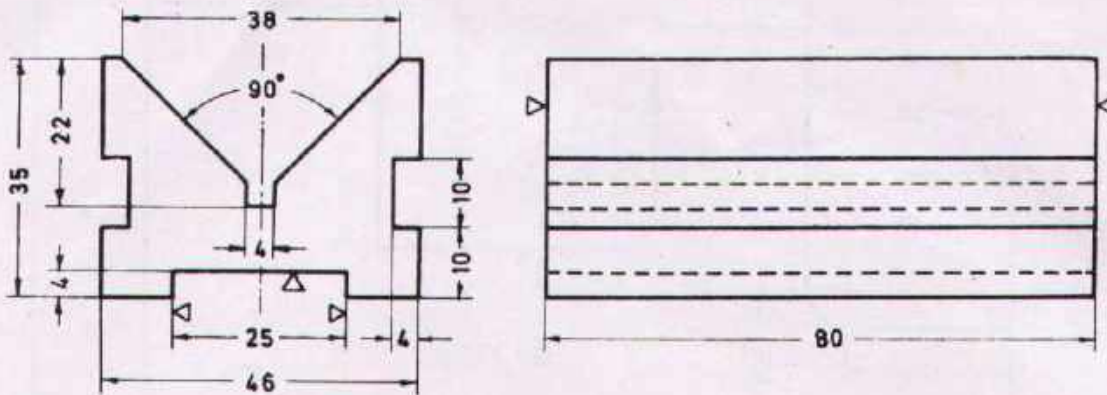
DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER

W (▽)

Tolerance $\pm 0,1$
unless otherwise stated.



SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		MARKING INSTRUMENTS STRAIGHT LEFT HAND CUTTING TOOL PARALLELS TRY SQUARE	SQUARE AND PARALLEL SHAPING OF THE SIZES 46x35x80 MM. MARKING OF V-BLOCK RECESSES AND GROOVES.
2		GROOVING TOOL DEPTH GAUGE	MOUNTING & ALIGNING OF THE WORKPIECE ROUGH SHAPING OF V-GROOVE
3		FINISHING TOOL BEVEL PROTRACTOR	SETTING THE TOOL SLIDE AT ANGLE 45° FINISHING THE V- GROOVE
4		GROOVING TOOL DEPTH GAUGE	SETTING THE TOOL SLIDE INTO NORMAL POSITION. RECLAMPING OF THE WORKPIECE. SHAPING OF RECESS.
5		GROOVING TOOL ROUND BAR SMOOTH FILE	RECLAMPING OF THE WORKPIECE, USE A ROUND BAR ON THE V-GROOVE SIDE SHAPING OF THE GROOVES

SCALE 1:1

MAT. CAST IRON

V-BLOCK

No. 2.4.2 / 4

SHAPING I



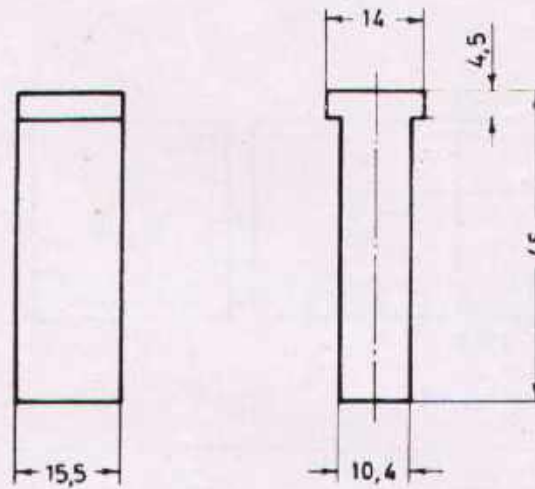
DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER



Tolerance $\pm 0,1$
unless otherwise state



SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		MACHINE VICE PARALLEL BARS SHELL END MILL CUTTER	CLAMP THE WORKPIECE IN THE MACHINE VICE. USE PARALLEL BARS. SET THE VERTICAL HEAD. MILLING TO DIMENSIONS 14 x 16.
2		MACHINE VICE PARALLEL BARS SHELL END MILL CUTTER TRY SQUARE	ALIGNING THE MACHINE-VICE. MOUNTING OF THE MILLING CUTTER IN HORIZONTAL POSITION. SQUARING UP ENDS.
3		MACHINE VICE PARALLEL BARS SHELL END MILL CUTTER DEPTH GAUGE	MILLING STEPS TO DIMENSIONS

SCALE 1:1

MAT. CARBON STEEL

PUNCH

No. 2.4.3/1

MILLING 1



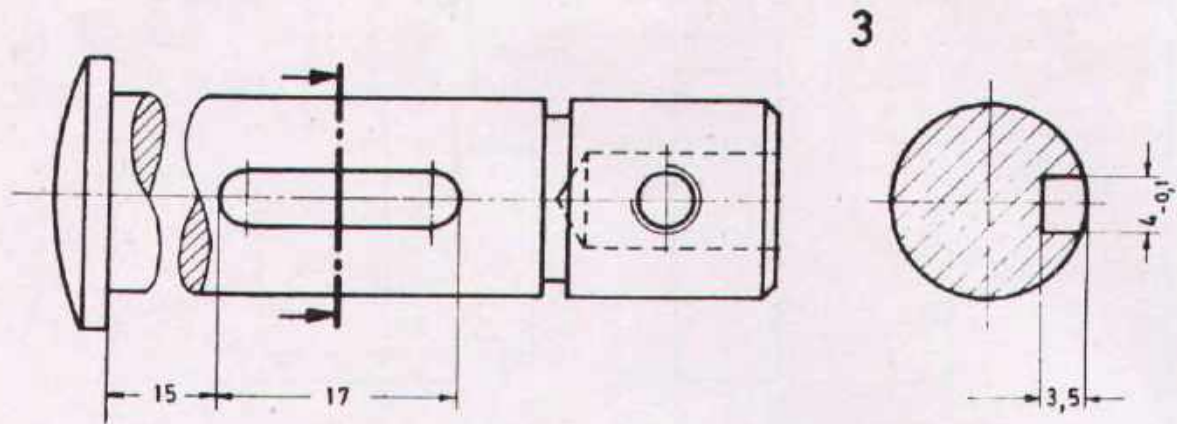
DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER



Tolerance $\pm 0,1$
unless otherwise stated



SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		MARKING GAUGE V-BLOCK	MARK THE LENGTH AND POSITION OF THE KEYWAY
2		MACHINE VICE WITH V-SHAPED JAWS TWO-LIP END MILL CUTTER DEPTH GAUGE	MACHINE ALIGNING LOCATING THE CUTTER TO THE WORKPIECE-CENTRE MILLING THE KEYWAY
3		LIMIT GAUGE	CHECKING THE WIDTH 4 MM WITH A LIMIT GAUGE

SCALE 2:1

GUIDE BOLT

No 2.4.3 / 2

MAT. CARBON STEEL From Mach./Turning II

MILLING I



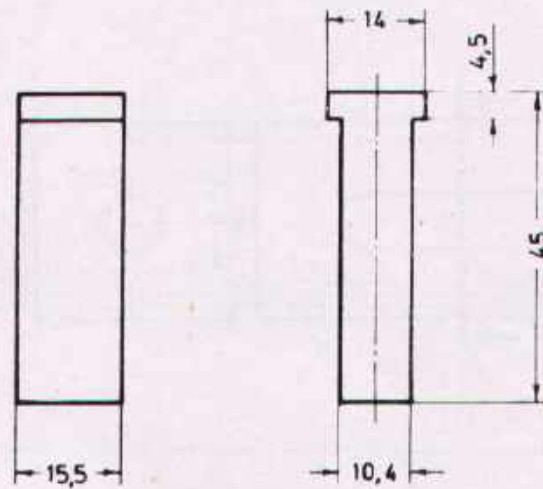
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PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER



Tolerance $\pm 0,1$
unless otherwise state



SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		MACHINE VICE PARALLEL BARS SHELL END MILL CUTTER	CLAMP THE WORKPIECE IN THE MACHINE VICE. USE PARALLEL BARS. SET THE VERTICAL HEAD. MILLING TO DIMENSIONS 14 x 16.
2		MACHINE VICE PARALLEL BARS SHELL END MILL CUTTER TRY SQUARE	ALIGNING THE MACHINE-VICE. MOUNTING OF THE MILLING CUTTER IN HORIZONTAL POSITION. SQUARING UP ENDS.
3		MACHINE VICE PARALLEL BARS SHELL END MILL CUTTER DEPTH GAUGE	MILLING STEPS TO DIMENSIONS

SCALE 1:1

MAT. CARBON STEEL

PUNCH

No. 2.4.3/1

MILLING I

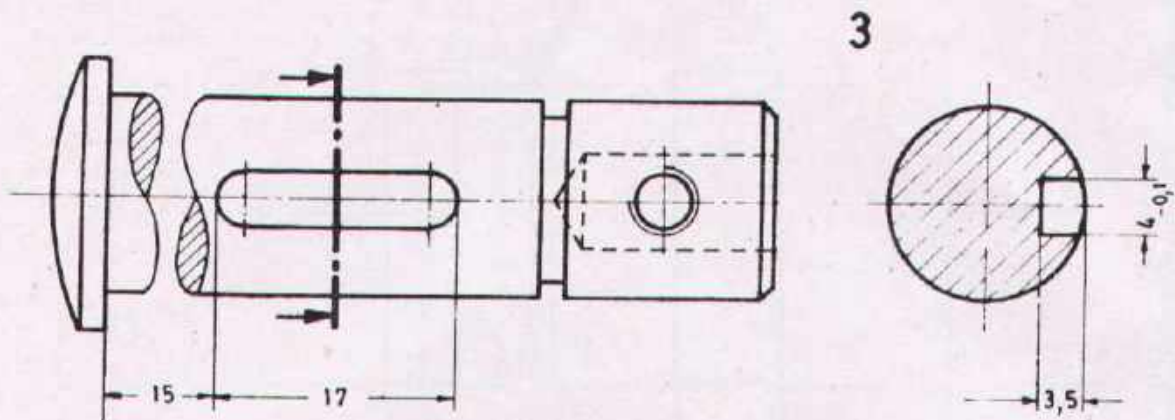


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

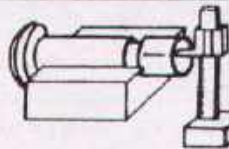
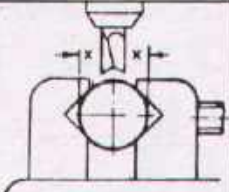
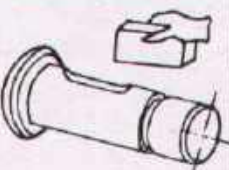
PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER

W

Tolerance $\pm 0,1$
unless otherwise stated

SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		MARKING GAUGE V-BLOCK	MARK THE LENGTH AND POSITION OF THE KEYWAY
2		MACHINE VICE WITH V-SHAPED JAWS TWO-LIP END MILL CUTTER DEPTH GAUGE	MACHINE ALIGNING LOCATING THE CUTTER TO THE WORKPIECE-CENTRE MILLING THE KEYWAY
3		LIMIT GAUGE	CHECKING THE WIDTH 4 MM WITH A LIMIT GAUGE

SCALE 2:1

GUIDE BOLT

No 2.4.3 / 2

MAT. CARBON STEEL From Mach./Turning II

MILLING I



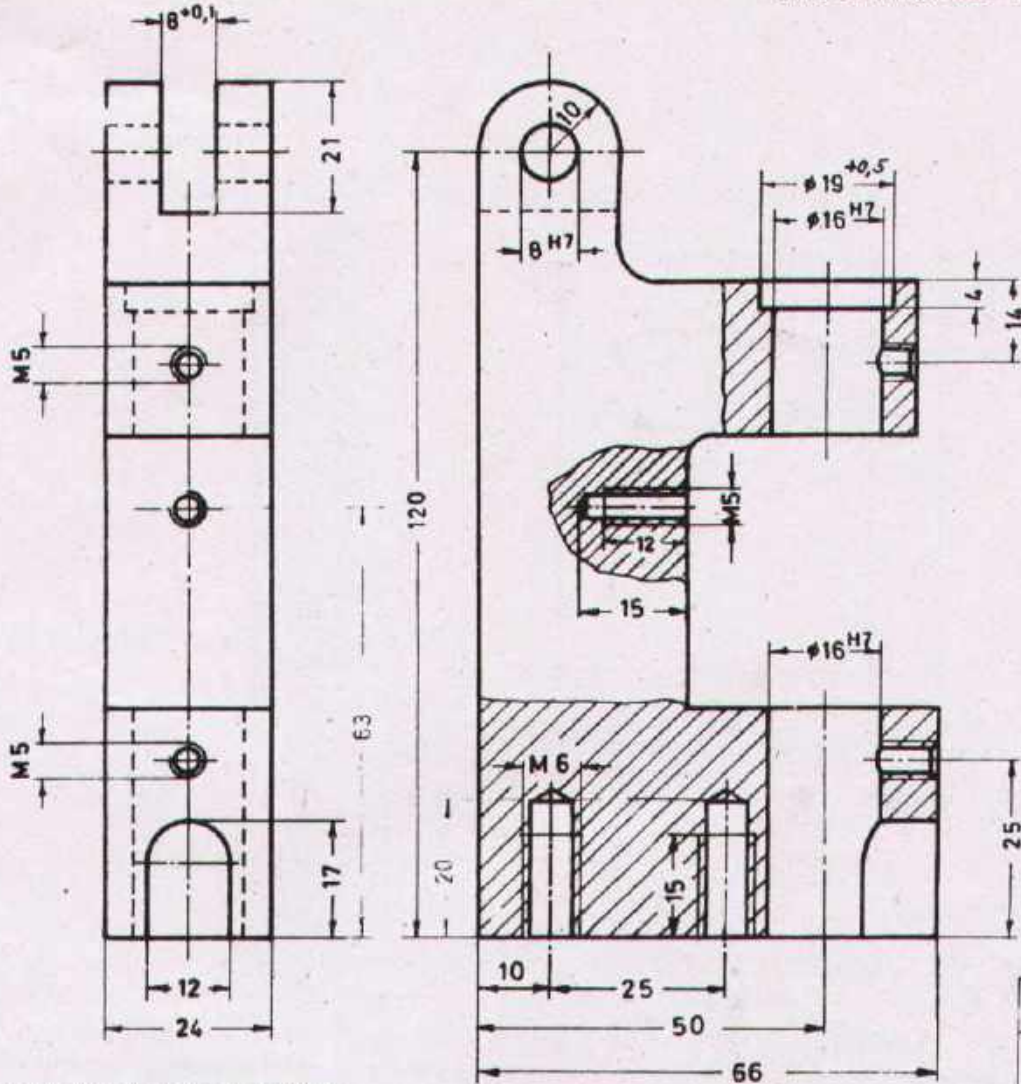
DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

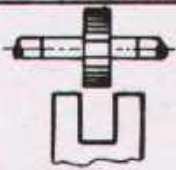
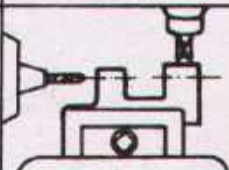
TOOL & DIE
MAKER

1 

Tolerance ± 0.1
unless otherwise stated



SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		STRAIGHT TOOTH SIDE MILLING CUTTER MICROMETER DEPTH GAUGE	MACHINING THE SLOT
2		TWIST-DRILL $\phi 6, \phi 15, 5$ REAMER 16^{H7} END MILLING CUTTER	MARK THE LENGTH SET THE CUTTER ON CENTER LINE MILL THE SLOT DRILL THE HOLE

SCALE 1:1

MAT. MILD STEEL

BODY (PUNCHING DEVICE)

From Shaping I

No. 2.4.3/3

MILLING I



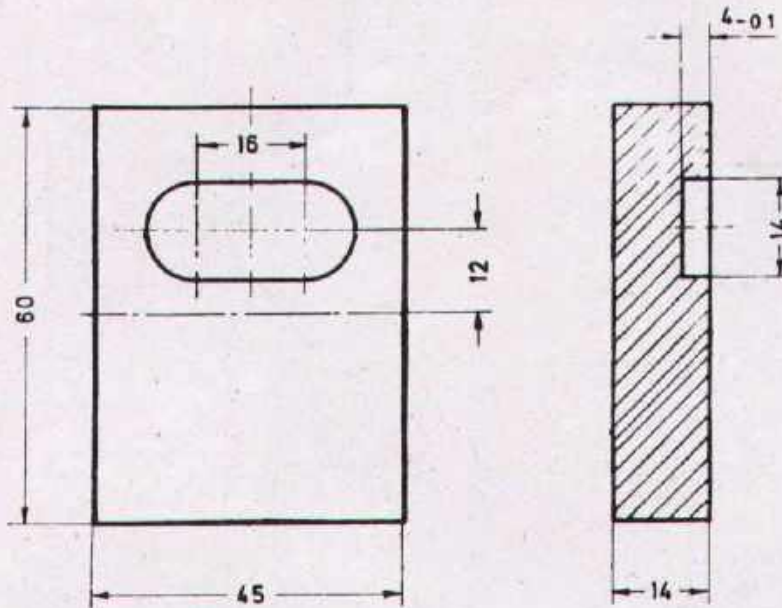
DEVELOPMENT-CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER



Tolerance $\pm 0,1$
unless otherwise stated



SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		MARKING PLATE VERNIER HEIGHT GAUGE	MARKING THE POSITION OF THE GROOVE
2		PARALLEL BARS DIAL TEST INDICATOR STRAIGHT- OR TAPER SHANK TWO-FLUTE END MILL CUTTER	ALIGNING OF THE MACHINE-VICE. CLAMPING OF THE CUTTER AND WORKPIECE. ADJUSTING OF THE STOPS ACCORDING TO THE LENGTH OF THE GROOVE. MILLING THE GROOVE.

SCALE 1:1

MAT. MILD STEEL

PUNCH HOLDER PLATE

From T. & D. Maker / Shaping 1

No. 2.4.3 / 4

MILLING I



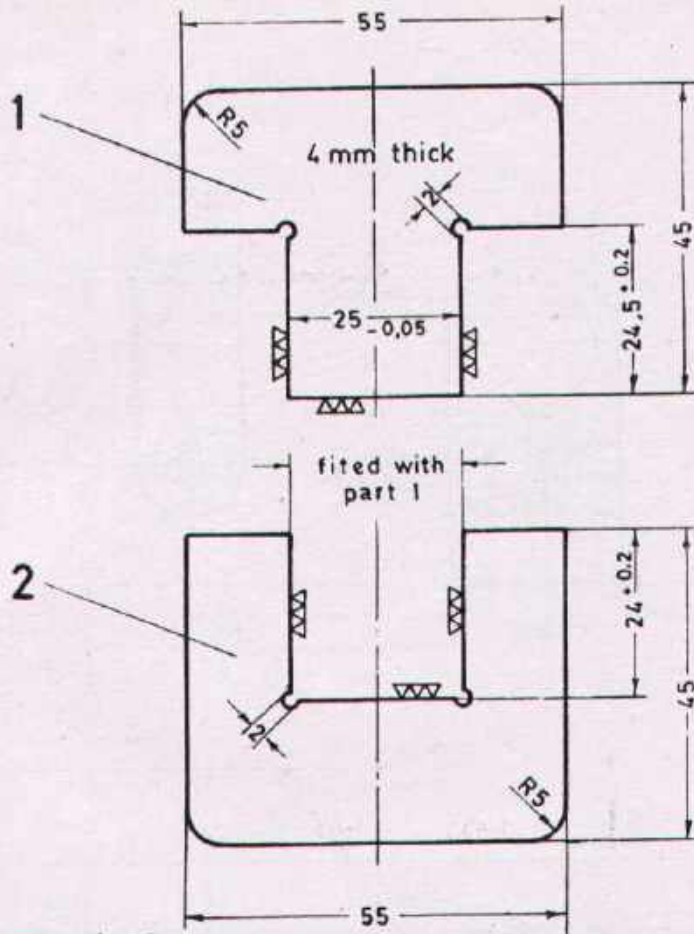
DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER

W (W)

Tolerance $\pm 0,1$
unless otherwise stated.



SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		SET OF BENCH TOOLS MARKING INSTRUMENTS DRILL ϕ 2 MM MICROMETER	FILING 2 REFERENCE SUR- FACES ON BOTH PIECES. MARKING TO DIMENSIONS & DRILLING OF THE HOLES. FINISH CONTACT SURFACES OF PART NO.1 ACC. TO DIMENSIONS.
2		DEPTH GAUGE	FINISHING CONTACT SUR- FACES OF PART NO.2 USING PART NO.1 AS RE- FERANCE PIECE.
3		RADIUS GAUGE	FILING TO THE EXTERNAL DIMENSIONS AND RADII.

Scale 1:1

Mat. Mild steel

FITTING EXERCISE

No. 2.4.5 / 1

Fitting II



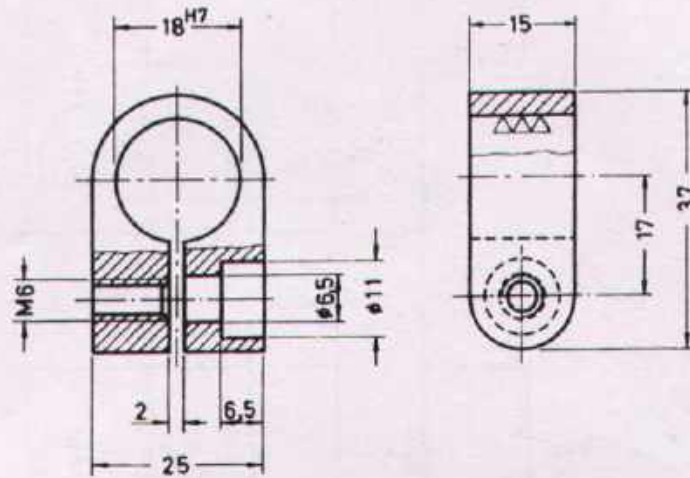
DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

Tool & Die
Maker

W (WW)


Tolerance $\pm 0,1$
Unless otherwise stated.



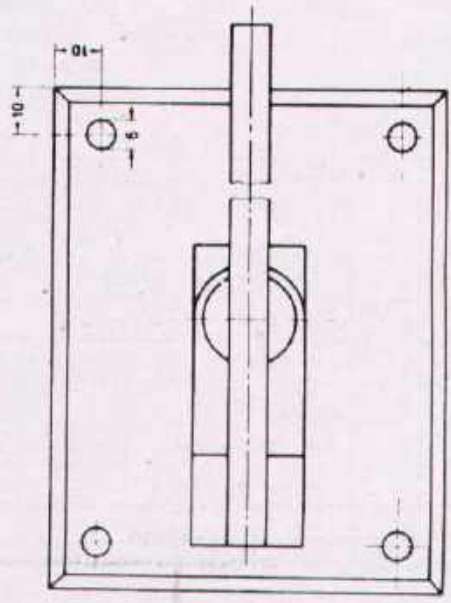
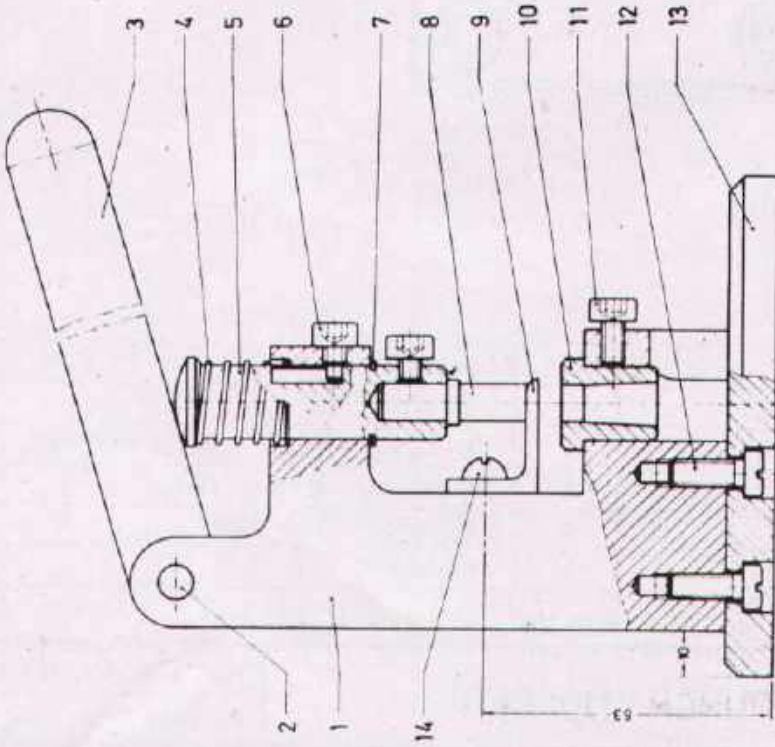
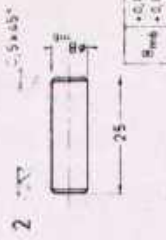
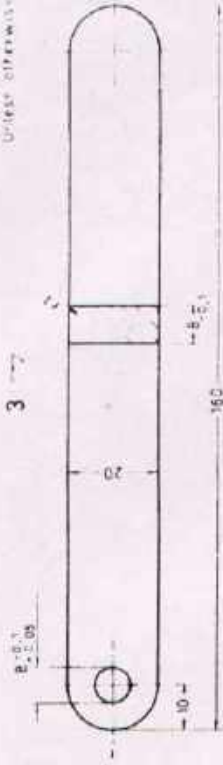
18 ^{H7}	+0,018 0
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SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		BENCH TOOLS MARKING INSTRUMENTS	FILING OF THICKNESS AND WIDTH MARKING AND CENTRE- PUNCHING OF HOLES
2		DRILLS $\phi 4,8$, $\phi 6,5$, $\phi 17,5$ REAMER 18 ^{H7} COUNTERBORE $\phi 11$ TAP SET M6	DRILLING, REAMING AND COUNTERBORING. CUTTING OF THREADS WITH TAP SET.
3		RADIUS GAUGES R12,5 , R7,5	FILING OF THE RADIUS CUTTING THE SLOT BY HAND HACKSAW.

Scale 1:1	CLAMPING PIECE	No. 2.4.5 / 2
Mat. Mild steel		Fitting II
 DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING PAK-GERMAN TECHNICAL TRAINING PROGRAMME		Tool & Die Maker

References : 1
 Chief Engineer's stamp



Qty	Denomination	Item No.	Material / Remarks
1	Button head Screw	14	M 5 x 12
1	Base Plate	13	From T.D. Maker 2 & 2 / 3
2	Cheese head Screw	12	M 6 x 15
2	Socket head cap Screw	11	M 5 x 10
1	Die	10	From Mach. 2 2 3 / 6
1	M/S. Angle	9	L 25 x 3 x 30 LONG
1	Punch	8	From Mach. 2 2 3 / 6
1	Lock Ring	7	d 16 x 1.2
1	Socket head cap Screw	6	M 5 x 10
1	Guide Bolt	5	From T.D. Maker 2 & 2 / 2
1	Pressure Spring	4	Spring steel # 1.2
1	Lever Arm	3	M/S-Plate 10 x 22 x 165
1	Cylindrical pin	2	8mm x 25
1	Body	1	From T.D. Maker 2 & 2 / 3

PUNCHING DEVICE

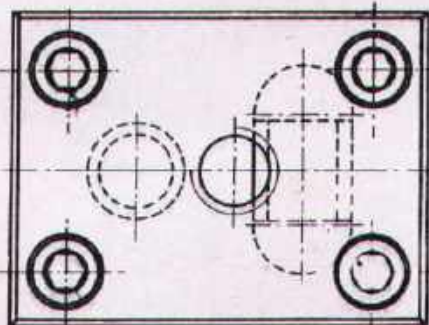
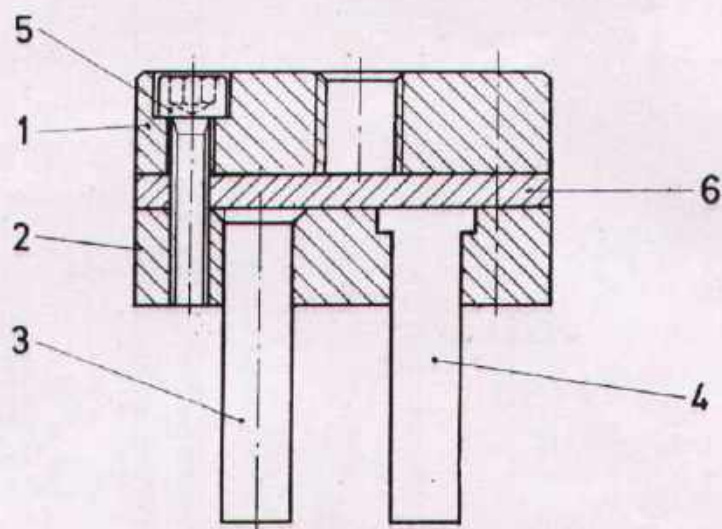
No 2 4 5 / 3
 FITTING II

DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING



THE GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
 MAKER



1	Pressure plate	6	Carbon steel
4	Socket head screw	5	M6 x 20
1	Punch	4	Tool steel harden to 60 Rc. 16 x 12 x 50
1	Punch	3	From turning 2.1.2 / 11
1	Punch holder plate	2	From T.D. 2.4.2 / 1
1	Thrust plate	1	From T.D. 2.4.2 / 1
Qty	Denomination	Part No.	Material / Remarks

SCALE. 1:1

PUNCH HOLDER

No. 2.4.5 / 4

FITTING II



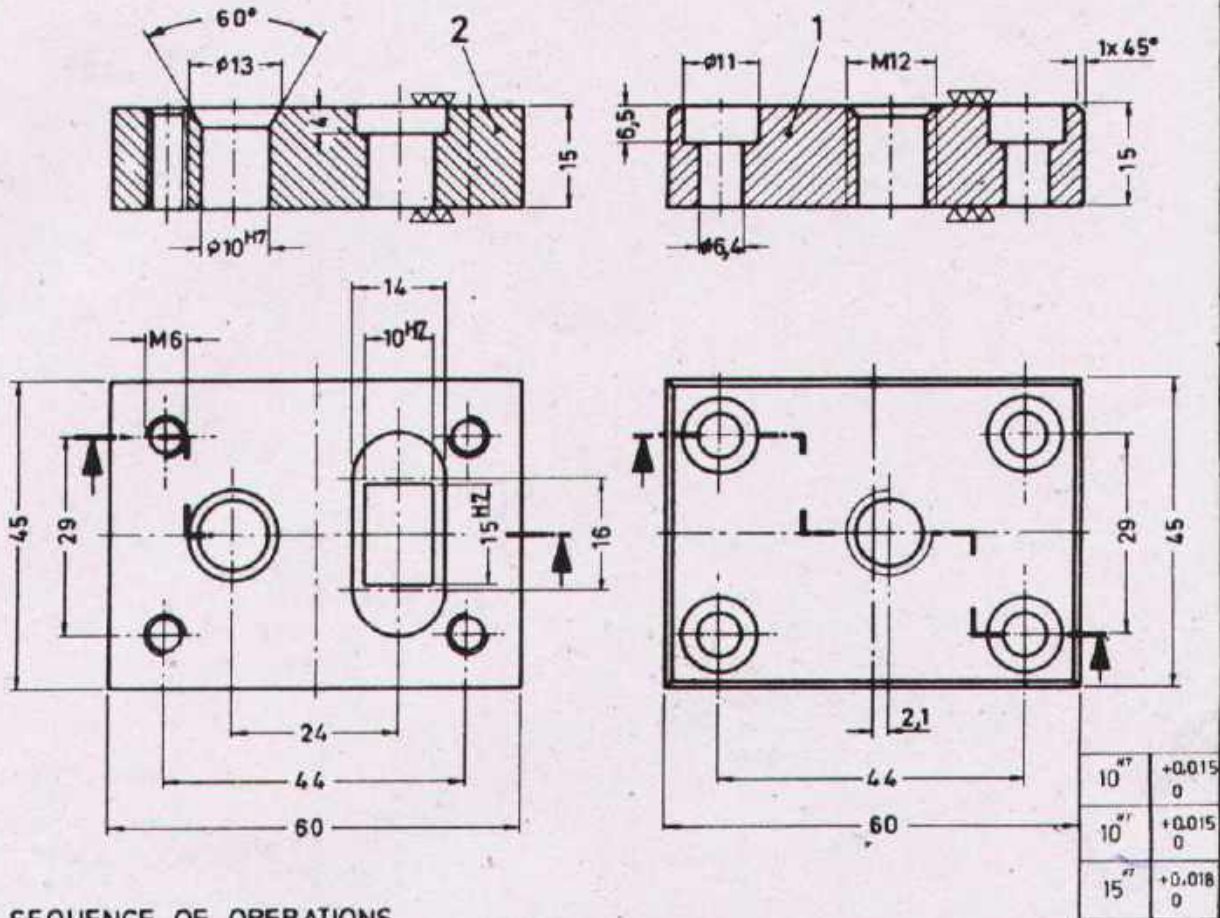
DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER

W (W Ground)

Tolerance : 0,1
unless otherwise stated



SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		MARKING INSTRUMENTS. DRILLS $\phi 4, \phi 9, \phi 9.7$ REAMER 10^H COUNTERSINK-DRILL 60°	GRIND SURFACE OF PART 1 & 2 MARK, DRILL, REAM & COUNTERSINK HOLE $\phi 10^H$ IN PART 2. DRILL & ROUGH FILE THE RECTANGULAR HOLE TO 9,5 x 13,5 MM.
2		GAUGE BLOCKS SCREW PRESS	PUT THE ROUND PUNCH IN HOLE $\phi 10^H$ AND THE RECT. PUNCH IN CORRECT POSITION AND RIGHT ANGLE ON PLATE. PRESS THE PUNCH APPROX. 1 MM INTO THE PLATE AND FINISH THE HOLE ACCORDING TO THE IMPRESSION.
3		DRILL $\phi 4.8, \phi 10,$ $\phi 6.2$ COUNTERBORE TAPS M6, M12	DRILL THE SCREW HOLES IN PART 1 TOGETHER WITH PART 2. ASSEMBLE PART 1 & 2 AFTER MACHINING THE GROOVE IN MILLING SECTION.

SCALE 1:1

MAT. MILD STEEL

PUNCH HOLDER PLATE
THRUST PLATE

No. 2.4.5 / 4-1

FITTING 11



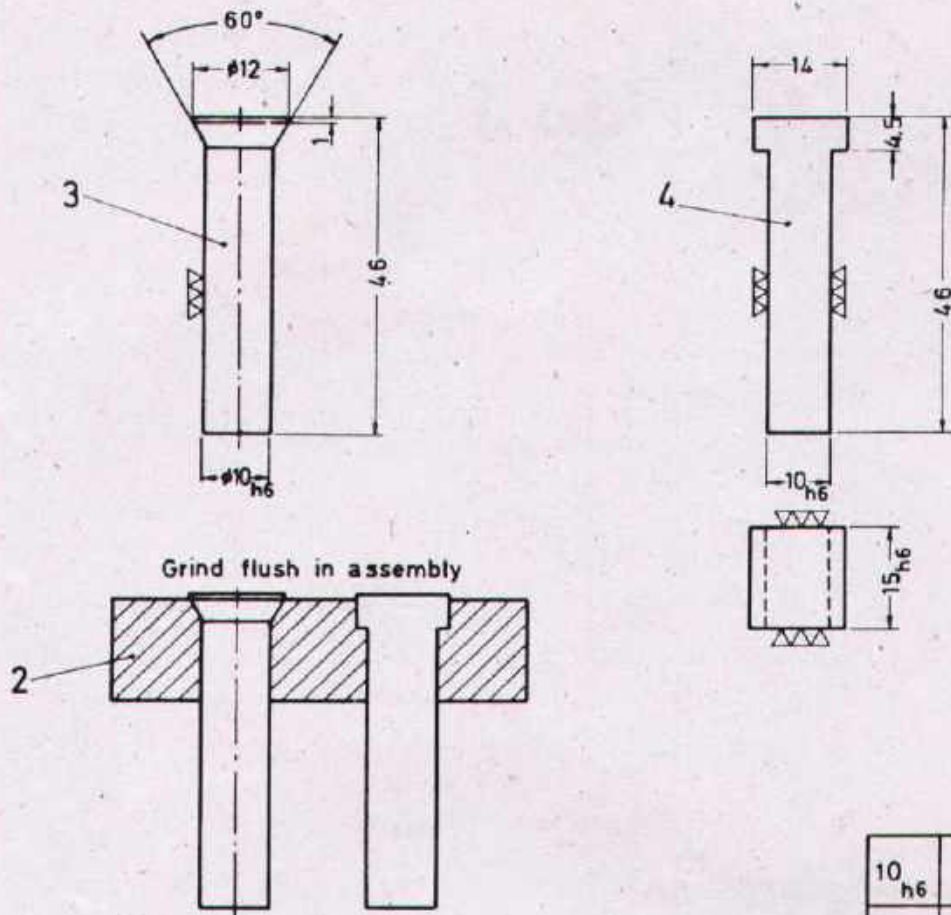
DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING.

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER

▽ (▽▽ Ground)

Tolerance ± 0,1
unless otherwise stated



10 _{h6}	0 - 9
15 _{h6}	0 - 11

SEQUENCE OF OPERATIONS

Harden to 60 Rc.

No	Symbol	Tools	Descriptions
		BENCH TOOLS	AFTER HARDENING & GRINDING FIT THE PUNCHES IN THE HOLES AND CHECK THAT THE SHOULDERS ARE IN CONTACT WITH THE GROOVE.
		SURFACE GRINDING MACHINE	GRIND THE BACK OF PUNCH FLUSH WITH PUNCH-PLATE MOUNTING SURFACE.

SCALE: 1:1

MAT. TOOL STEEL

PUNCH

No. 2.4.5/4 - II

FITTING II

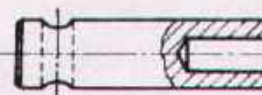


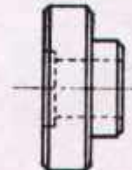
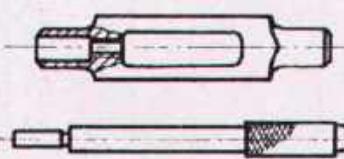
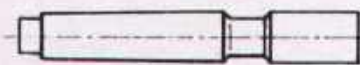


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

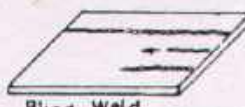
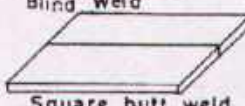
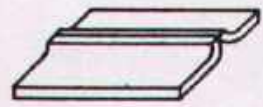

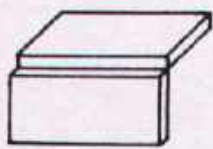
PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER

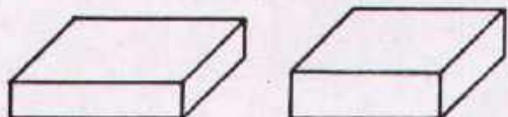
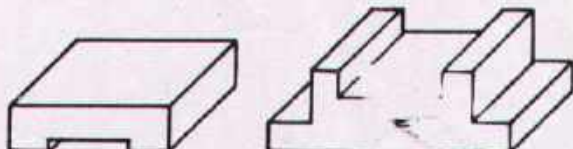
TURNING 3.4.1/1-6

 <p>Longitudinal turning, Drilling</p> <p>1 → 3.4.4/1</p>	 <p>Step turning, Thread cutting</p> <p>2 → 3.4.4/1</p>	 <p>Turning between centres</p> <p>3 → 3.4.4/2</p>
 <p>Mandrel work, Boring</p> <p>4 → 3.2.2/7</p>	 <p>Knurling, Thread cutting</p> <p>5 → 3.4.4/3</p>	 <p>Taper turning</p> <p>6 → 3.2.2/8</p>

GAS WELDING 2.0.2/1-5

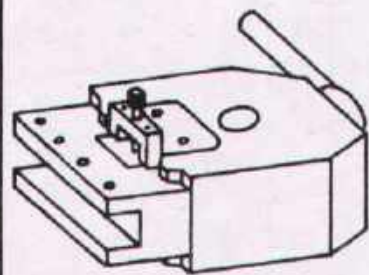
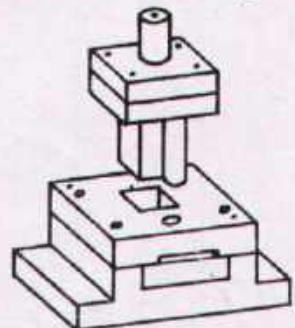
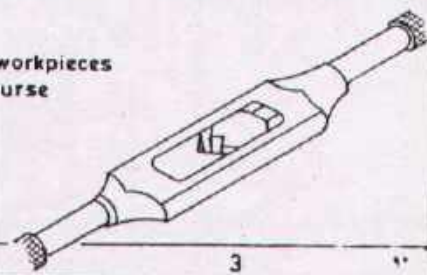
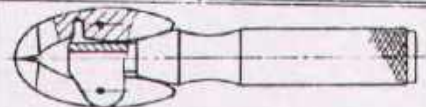
 <p>Blind Weld</p>  <p>Square butt weld</p> <p>1-2</p>	 <p>Double flanged butt weld</p> <p>3</p>	 <p>Pipe butt weld</p> <p>4</p>	 <p>Corner weld</p> <p>5</p>
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SHAPING 3.4.3/1-4

 <p>Parallel and square shaping</p> <p>1 → 3.4.4/2</p>	 <p>Form shaping</p> <p>2 → 3.4.4/2</p>
---	--

FITTING 3.4.4/1-4

Necessary milling work required on certain workpieces shall be carried out during fitting course

 <p>1</p>	 <p>2</p>	 <p>3</p>  <p>4</p>
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TRADE TRAINING

LAYOUT

No. 3.4.1
No. 2.0.2
No. 3.4.3
No. 3.4.4



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER

MATERIAL REQUIRED

Trade Training for Tool & Die Maker

Exercise No. (Length given in millimeter)

Turning No. 3.4.1	Exercise No.						Length per trainee	Total length for a batch of 16 trainees
	1	2	3	4	5	6		
M/S Round 16 mm (5/8)	60						60 mm	1,0 meter
M/S Round 10 mm (3/8)	85						85 mm	1,4 meter
M/S Round 15 mm (1/2)	210						210 mm	3,4 meter
M/S Round 25 mm (1")			60		110		170 mm	2,8 meter
M/S Round 70 mm (3")			28				28 mm	0,5 meter
M/S Round 12 mm (1/2)				270			270 mm	4,4 meter
High speed steel Round 20 mm (3/4)						125	125 mm	2,1 meter

Gas welding No. 2.0.2	Exercise No.						Length per trainee	Total length for a batch of 16 trainees
	1	2	3	4	5	6		
M/S Sheet 1mm (S.W.G. 19)	80 x 150						80 x 150 mm	0,3 meter ²
M/S Sheet 2,5 mm (S.W.G. 13)	50 x 120						50 x 120 mm	0,1 meter ²
M/S Sheet 1mm (S.W.G. 19)		60 x 150					60 x 150 mm	0,3 meter ²
M/S Pipe ø 40 mm (1 1/2)				100			100 mm	1,8 meter
M/S Sheet 3 mm (S.W.G. 11)					80 x 120		80 x 120 mm	0,2 meter ²

Contd. back page



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER

MATERIAL REQUIRED

Trade Training for Tool & Die Maker

Exercise No. (Length given in millimeter)

Shaping No. 3.4.3	Exercise No.			Length per trainee	Total length for a batch of 16 trainees
	1	2			
Carbon steel 50 x 12 mm (2" x 1/2")	75			75 mm	1,5 meter
M/S Flat 50 x 20 mm (2" x 5/8")	65			65 mm	1,1 meter
M/S Flat 75 x 20 mm (3" x 5/8")		70		70 mm	1,2 meter
M/S Flat 75 x 30 mm (3" x 1 1/8")		100		100 mm	1,7 meter
Fitting No. 3.4.4	Exercise No.			Length per trainee	Total length for a batch of 16 trainees
	1	2	3		
M/S Flat 60 x 15 mm (2 1/2" x 1/2")	22			22 mm	0,4 meter
Carbon steel square 35 x 35 mm (1 1/4" x 1 1/4")		50		50 mm	0,9 meter
Low Carbon steel square 15 x 15 mm (5/8" x 5/8")		45	50	95 mm	1,6 meter
Low Carbon steel Round φ 12 mm (1/2")		15		15 mm	0,3 meter
Low Carbon steel Flat 50 x 5 (2" x 1/2") Part No. 11		65		65 mm	1,1 meter

All other materials as screws, washers, and pins for the fitting course should be supplied according to drawing.

For details please see Layout



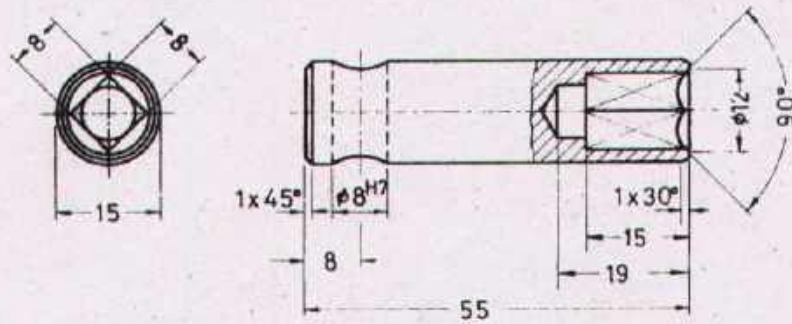
DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

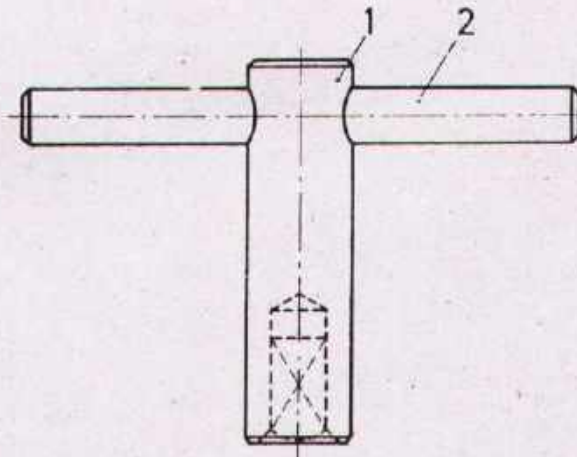
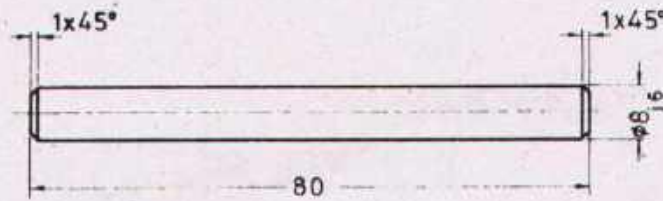
TOOL & DIE
MAKER

1 ∇

Tolerance $\pm 0,1\text{mm}$
unless otherwise stated.



2 ∇



8 H7	+0.015 0
8 j6	+0.007 -0.002

SCALE 1:1

MAT. MILD STEEL

SPANNER

(For tool post)

No. 3 4 1 / 1

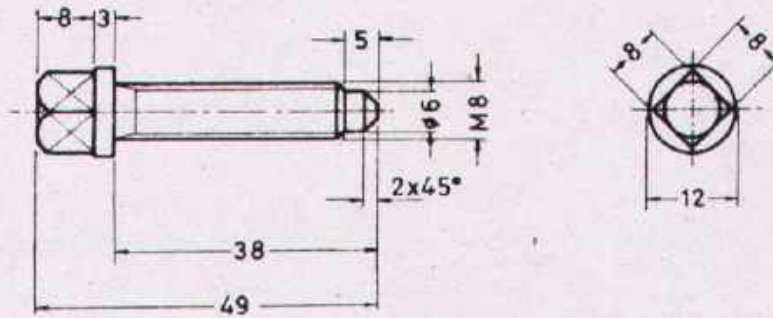
TURNING II



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

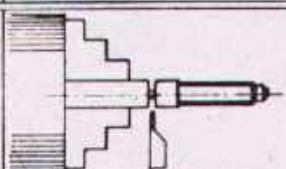
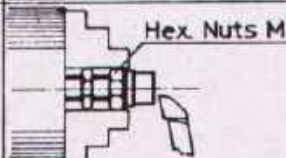
PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER



4 Pieces

SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Description
1		R.-HAND SIDE CUTTING TOOL R.-HAND ROUGHING TOOL DIE M8 PARTING TOOL	FACING, LONGITUDINAL TURNING, THREAD CUTTING PARTING
2	 Hex Nuts M8	TWO HEX. NUTS M8 RIGHT-HAND SIDE CUTTING TOOL	CLAMPING THE THREADED PART IN 3-JAW CHUCK BY THE HELP OF 2 HEX.NUTS. FACING TO LENGTH AND STEP TURNING.

SCALE 1 : 1

MAT. MILD STEEL

CLAMPING BOLT

(For tool post)

No. 3.4.1/2

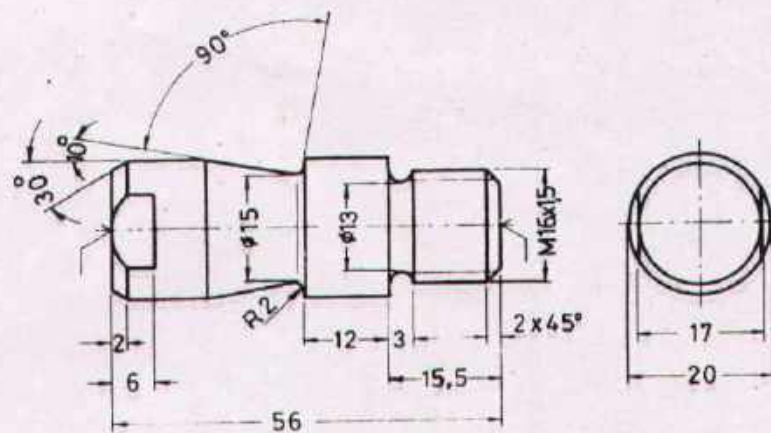
TURNING II



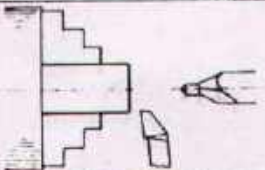
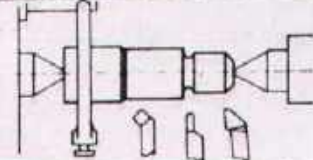
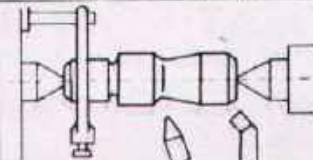
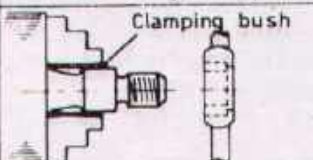
DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER



SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Description
1		RIGHT-HAND FACING TOOL CENTRE DRILL	FACING AND CENTERING ON BOTH SIDES
2		RIGHT-HAND ROUGHING TOOL RIGHT-HAND SIDE CUTTING TOOL NECKING TOOL	HOLDING BETWEEN CENTERING LONGITUDINAL TURNING NECKING CHAMFERING
3		RIGHT-HAND ROUGHING TOOL ROUND NOSE TOOL	RESETTING THE WORKPIECE FINISHING OF $\phi 20$ CHAMFERING TURNING OF THE RECESS
4		CLAMPING BUSH DIE M16 x 1.5	CLAMPING IN 3-JAW CHUCK THREAD CUTTING MIND THE PITCH OF THE THREAD

SCALE 1:1

MAT. MILD STEEL

SHANK FOR DIE SET

No. 3.4.1/3

TURNING II



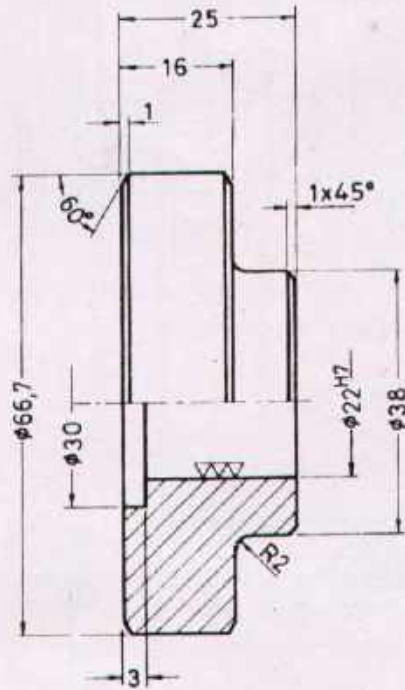
DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER

▽(▽▽)

Tolerance $\pm 0,1$ mm
unless otherwise stated.



22^{H7} 0

No.	Symbol	Tools	Descriptions
1		4-JAW INDEPENDENT CHUCK RIGHT-HAND FACING T. GROUND BORING TOOL DRILL $\phi 21.5$, REAMER 22^{H7} PLUG GAUGE 22^{H7}	FACING CENTERING, DRILLING REAMING, RECESSING
2		RIGHT-HAND SIDE CUTTING TOOL	RECHUCKING TURNING $\phi 38$ TO A ROUGH SIZE OF 40 MM
3		MANDREL $\phi 22$ MM RIGHT-HAND SIDE CUTTING TOOL RIGHT-HAND ROUGHING TOOL	FITTING OF THE WORKPIECE ON A MANDREL SETTING THE MANDREL BETWEEN CENTRES SMOOTH TURNING

SCALE 1:1

MAT. MILD STEEL

GEAR BLANK

No. 3.4.1/4

TURNING II



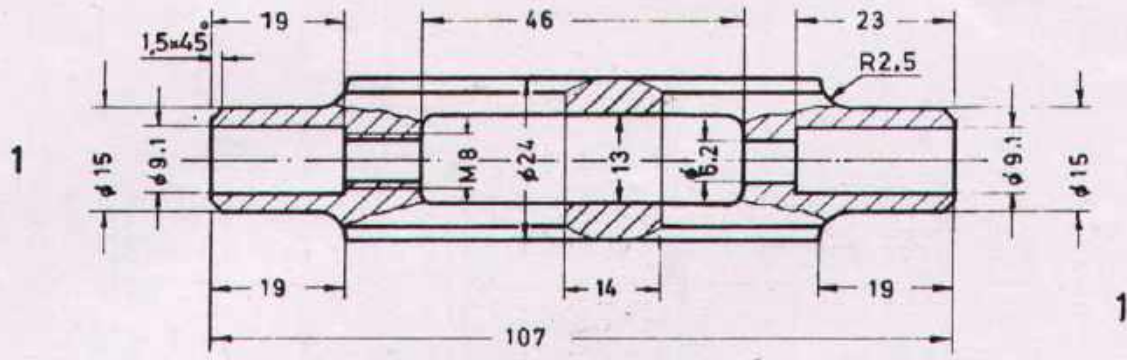
DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

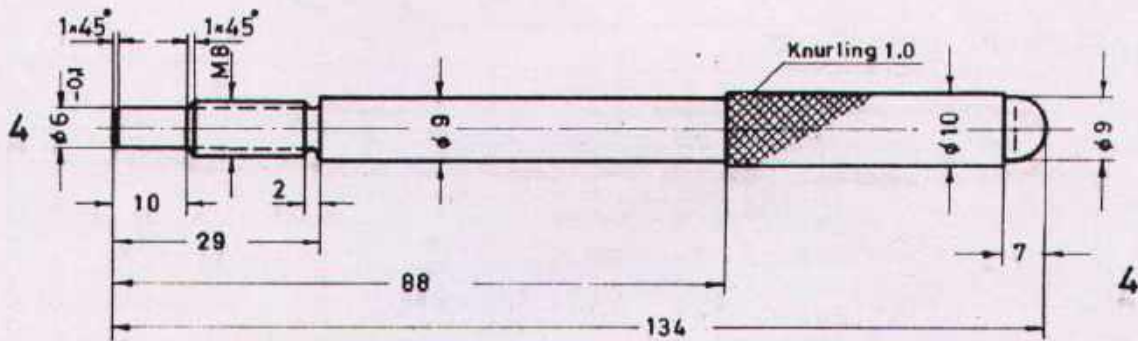
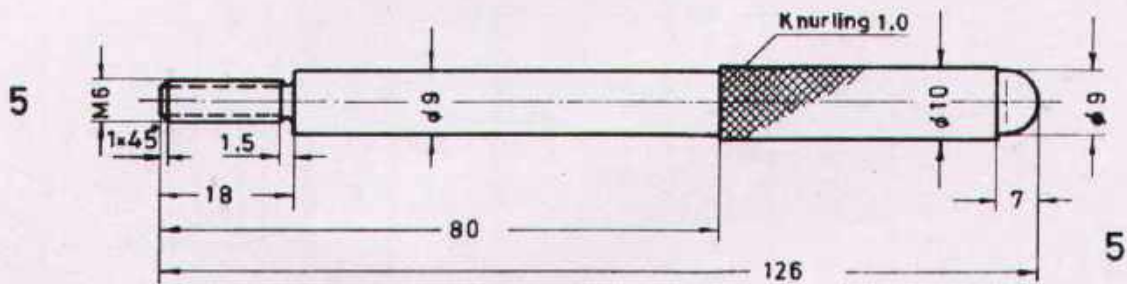
TOOL & DIE MAKER



Tolerance ± 0.1
unless otherwise stated.



The flats and the opening 46 x 13 will be made during assembling.



No.	Symbol	Tools	Description
1		CENTRE DRILL R.-HAND ROUGHING T. ROUND NOSE FINISHING TOOL RADIUS TOOL	FACING, CENTERING OF PART 1. HOLDING BETWEEN CENTRES. LONGITUDINAL TURNING. STEP TURNING, MIND THE RADI. CHAMFERING.
2		TWIST DRILLS $\phi 6.2$, $\phi 6.5$, $\phi 9.1$ TAPS M8	CLAMPING IN 3-JAW CHUCK. CHECKING OF TRUE RUNNING. DRILLING, THREAD CUTTING.

SCALE 1:1

MAT: MILD STEEL

STOCK & HANDLES

(For tap handle)

No. 3.4.1/5

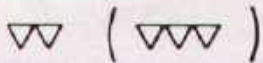
TURNING II



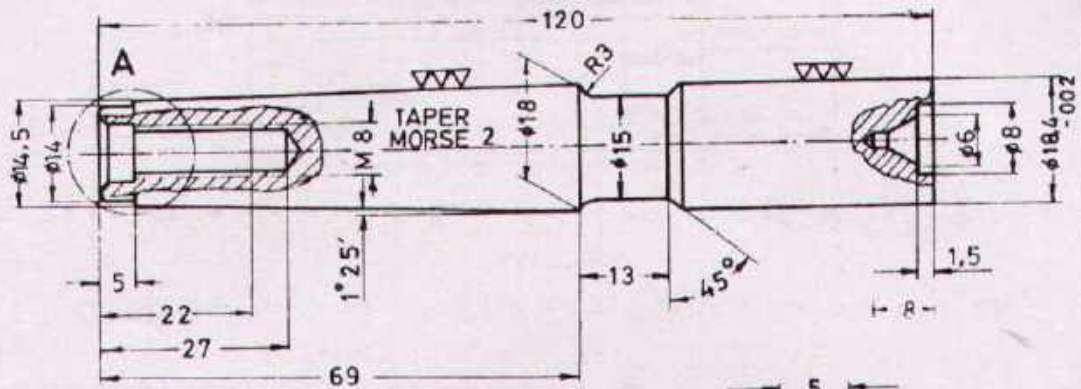
DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

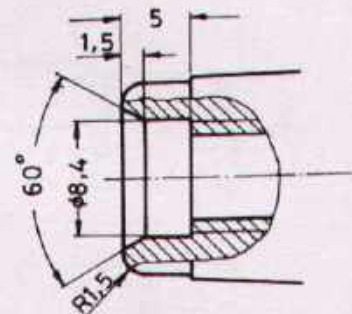
TOOL & DIE
MAKER



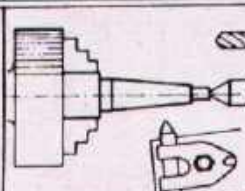
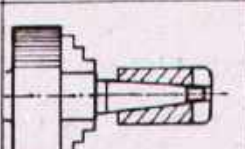
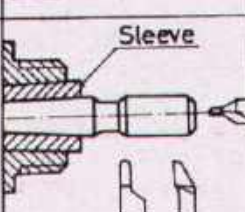
Tolerance ± 0.1
unless otherwise stated



DETAIL : A
SCALE : 2 : 1



SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Description
1		R.-HAND FACING TOOL CENTRE DRILL, TWIST DRILL $\phi 6.5$ AND $\phi 8$. TAP M8. R.-HAND ROUGHING TOOL. ROUND NOSE FINISH- ING TOOL.	FACING, CENTERING, DRILLING AND THREAD CUTTING. SETTING OF THE LATHE CENTRE LONGITUDINAL TURNING. SETTING OF THE COMPOUND REST AT THE REQUIRED ANGLE. TAPER TURNING.
2		TAPER RING GAUGE MORSE NO. 2	CHECKING OF THE TAPER WITH TAPER RING GAUGE
3		RIGHT-HAND FACING TOOL NECKING TOOL MICROMETER CENTRE DRILL BORING TOOL	HOLDING THE WORKPIECE IN THE HEADSTOCK SPINDLE BY USING A TAPER SLEEVE. FACING, LONGITUDINAL TUR- NING NECKING, CENTERING.

SCALE 1:1

MAT. HIGH SPEED
STEEL

TAPER SHANK END MILL

No. 3.4.1/6

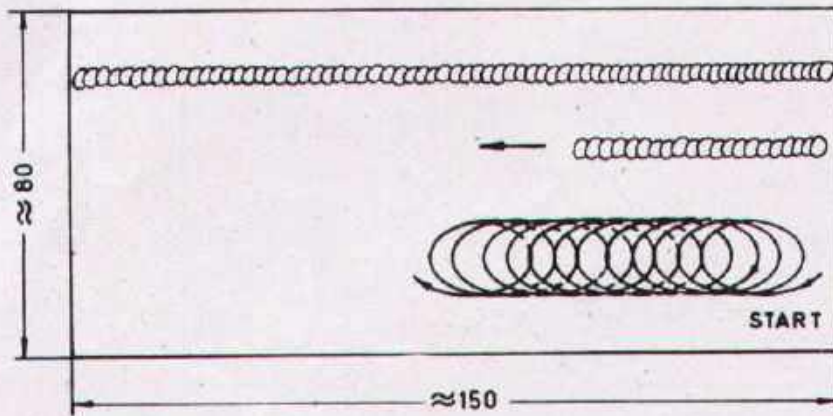
TURNING II



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING




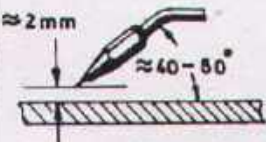

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER



Thickness 1mm
(Sheetmetal)

SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1	<p>A </p> <p>B </p> <p>C </p>	TORCH 0,5-1	<p>LIGHT THE TORCH AND ADJUST IT FOR A NEUTRAL FLAME</p> <p>A=NEUTRAL</p> <p>THE INNER CONE IS SHARP AND CLEAR VISIBLE.</p>
2			<p>KEEP THE TORCH IN A POSITION BETWEEN 40 - 60°.</p> <p>HOLD THE TIP OF THE CONE ≈ 2 MM ABOVE THE WORK.</p>
3			<p>MOVE THE TORCH CLOCKWISE.</p> <p>HOLD THE FLAME IN ONE SPOT UNTIL A PUDDLE OF METAL ≈ 4 - 6 φ IS FORMED.</p>

SCALE 1:1

MAT. MILD STEEL

BLIND BUTT WELD

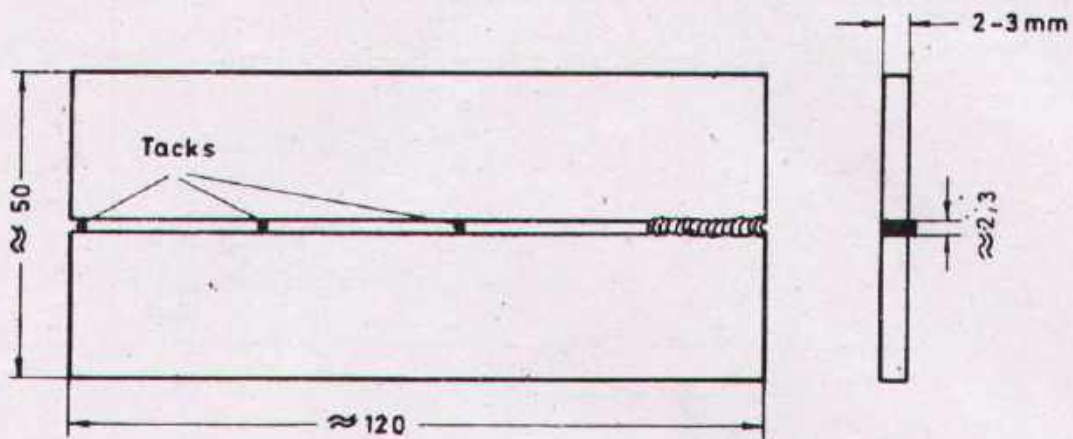
No. MP1./2.0.2/1

GAS WELDING I



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME



SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		TORCH 2 - 4 ROD ϕ 2 - 2,5	MOVE THE ROD RHYTHMICALLY UP AND DOWN. DIP THE END INTO THE MOLTEN PUDDLE. TORCH MOVEMENT NEARLY ROTATING. ENSURE COORDINATION WITH ROD.
2			TRY TO MAKE AN EQUAL WELD-BED BY HEIGHT AND SIZE. INSPECT REVERSE-SIDE FOR GOOD PENETRATION.

SCALE 1:1

MAT. MILD STEEL

SQUARE BUTT WELD

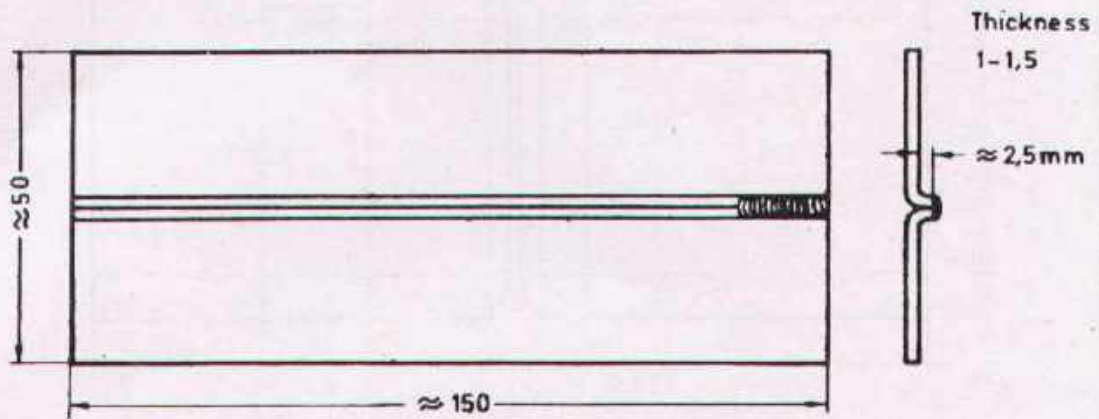
No. MP1- /2.0.2 /2

GAS WELDING I

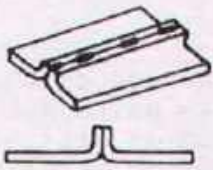



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME



SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		TORCH 1 - 1,5	MAKE TACK-WELDS TO HOLD THE WORK IN PLACE DO IT CORRECTLY (HEAT WILL EXPAND THE MATERIAL)
2			MOVE THE TORCH CLOCKWISE, MELT THE FLANGE AND DISTRIBUTE IT WITH THE PRESSURE OF THE FLAME. PAY UTMOST ATTENTION TO CORRECT PENETRATION.

SCALE 1:1

MAT. MILD STEEL

FLANGED BUTT WELD

No. MP 1. /2.0.2/3

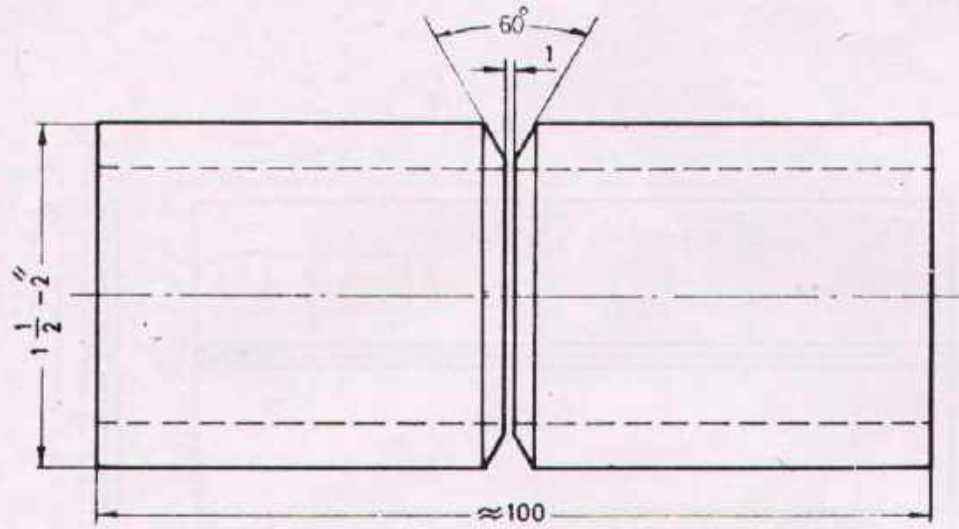
GAS WELDING I




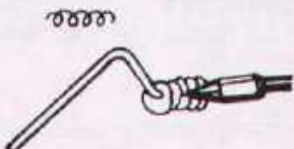
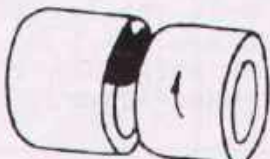

DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

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SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		TORCH 4 - 6 ROD 4 ϕ	TACK WELDING. BRING THE TORCH IN A POSITION THAT THE FLAME WILL HEAT BOTH SIDES EQUALLY.
2			USE THE ROD TO STIR UP THE MOLTEN MATERIAL. ROD SHOULD BE MELTED ONLY IN THE MOLTEN MATERIAL OF THE WORKPIECE, EXCEPT WHEN STARTING.
3			ROTATE THE PIPE SECTION-WISE THAT YOU ARE ALWAYS IN A GOOD WELDING POSITION. INSPECT PIPE INSIDE.

SCALE 1:1

MAT. MILD STEEL

PIPE BUTT WELD

No. MP1. /2.0.2 /4

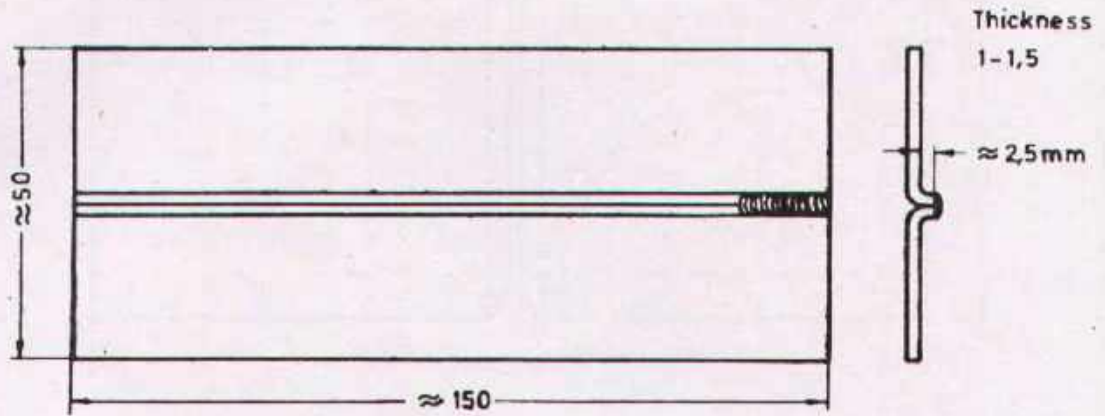
GAS WELDING I



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

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SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		TORCH 1 - 1,5	MAKE TACK-WELDS TO HOLD THE WORK IN PLACE DO IT CORRECTLY (HEAT WILL EXPAND THE MATERIAL)
2			MOVE THE TORCH CLOCKWISE. MELT THE FLANGE AND DISTRIBUTE IT WITH THE PRESSURE OF THE FLAME. PAY UTMOST ATTENTION TO CORRECT PENETRATION.

SCALE 1:1

MAT. MILD STEEL

FLANGED BUTT WELD

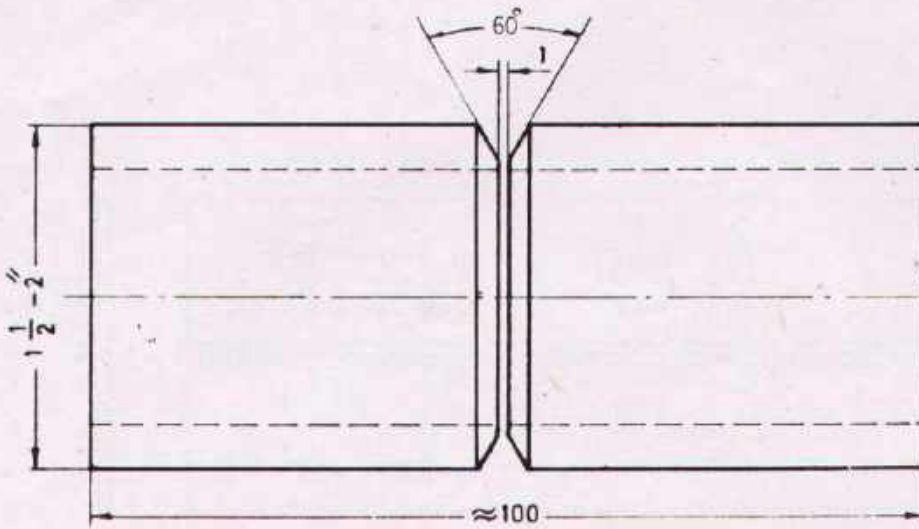
No. MP 1. /2. 0.2 /3

GAS WELDING 1


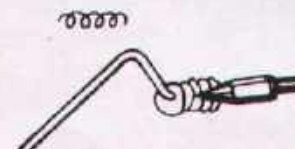
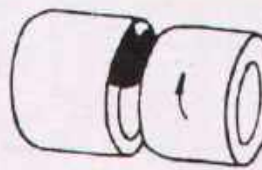
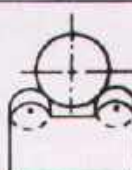


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME



SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		TORCH 4 - 6 ROD 4 ^φ	TACK WELDING. BRING THE TORCH IN A POSITION THAT THE FLAME WILL HEAT BOTH SIDES EQUALLY.
2			USE THE ROD TO STIR UP THE MOLTEN MATERIAL. ROD SHOULD BE MELTED ONLY IN THE MOLTEN MATERIAL OF THE WORKPIECE, EXCEPT WHEN STARTING.
3			ROTATE THE PIPE SECTION-WISE THAT YOU ARE ALWAYS IN A GOOD WELDING POSITION. INSPECT PIPE INSIDE.

SCALE 1:1

MAT. MILD STEEL

PIPE BUTT WELD

No. MP1. /2.0.2/4

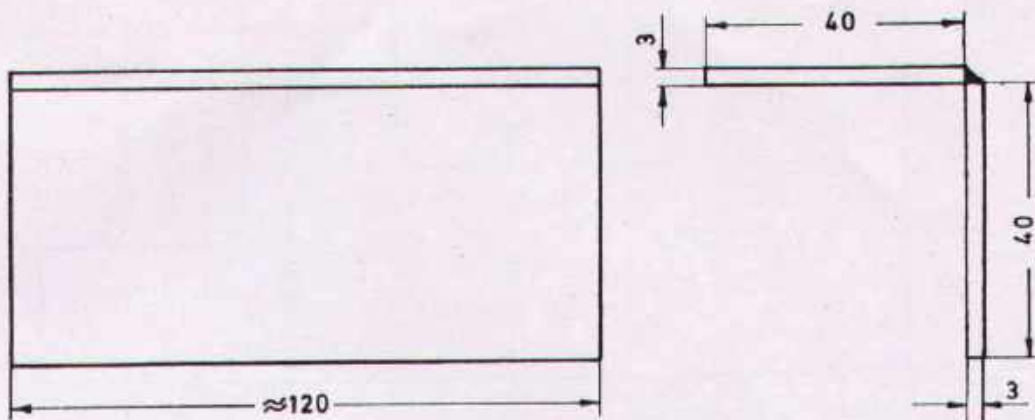
GAS WELDING I

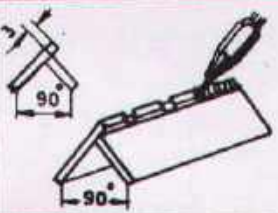

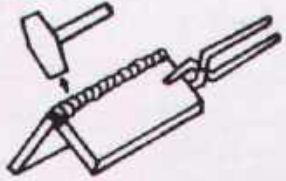


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

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No.	Symbol	Tools	Descriptions
1		TORCH 2 - 4	1) WELD THIS WITHOUT ROD (FLUSH WELDING) EXCESS EQUAL TO MATERIAL THICKNESS.
2		ROD 3 ϕ	2) USE A ROD FILL UP THE ANGLE (CORNER). ENSURE THAT THE ROOT HAS BEEN MOLTEN.
3		ANVIL PLIER HAMMER	TEST THE WELD BY HAMMERING ON THE BEAD UNTIL THE PLATE LIES PERFECTLY FLAT. BREAK IT THEN.

SCALE 1:1

MAT. MILD STEEL

CORNER WELD

No.MP 1. /2.0.2 /5

GAS WELDING I

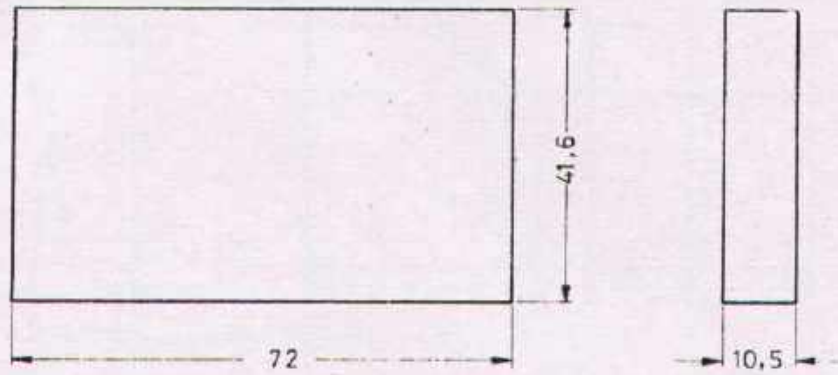


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

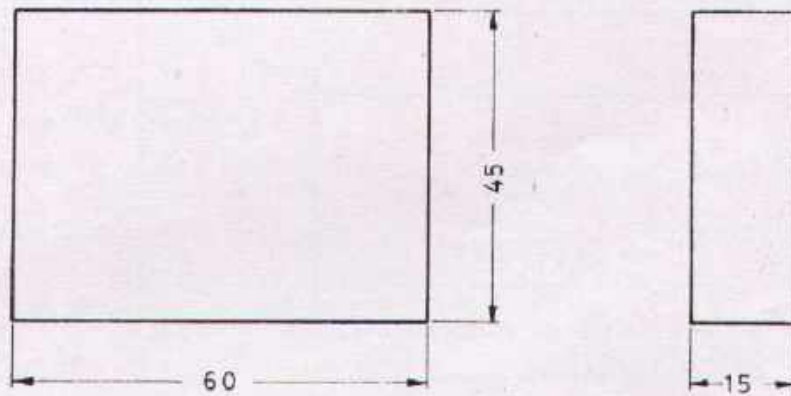


Tolerance $\pm 0,1$
Unless otherwise stated



2

MAT.: HIGH CARBON STEEL



4

MAT.: MILD STEEL

SCALE 1:1

DIE & PUNCH HOLDER PLATE

(For pierce & blank die)

No. 3.4.3/1

SHAPING 11



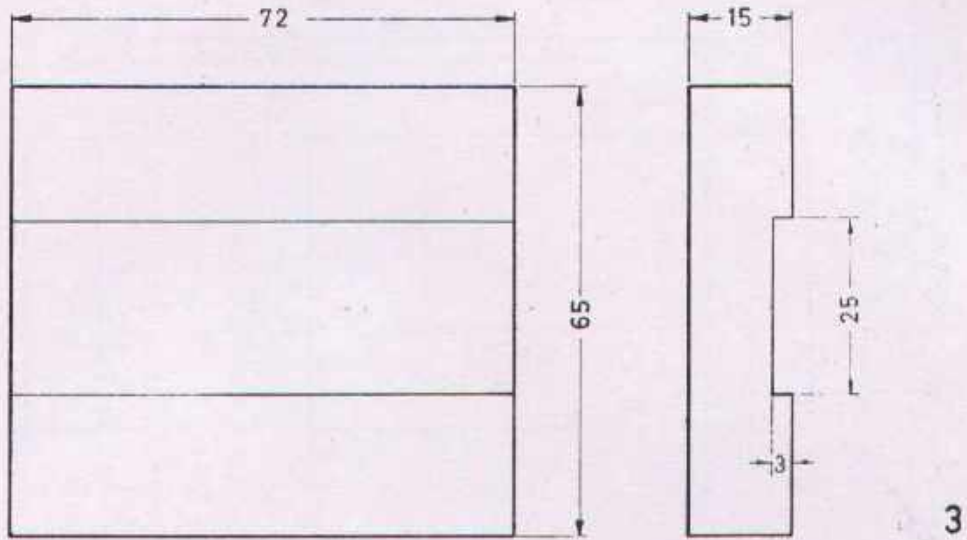
DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER

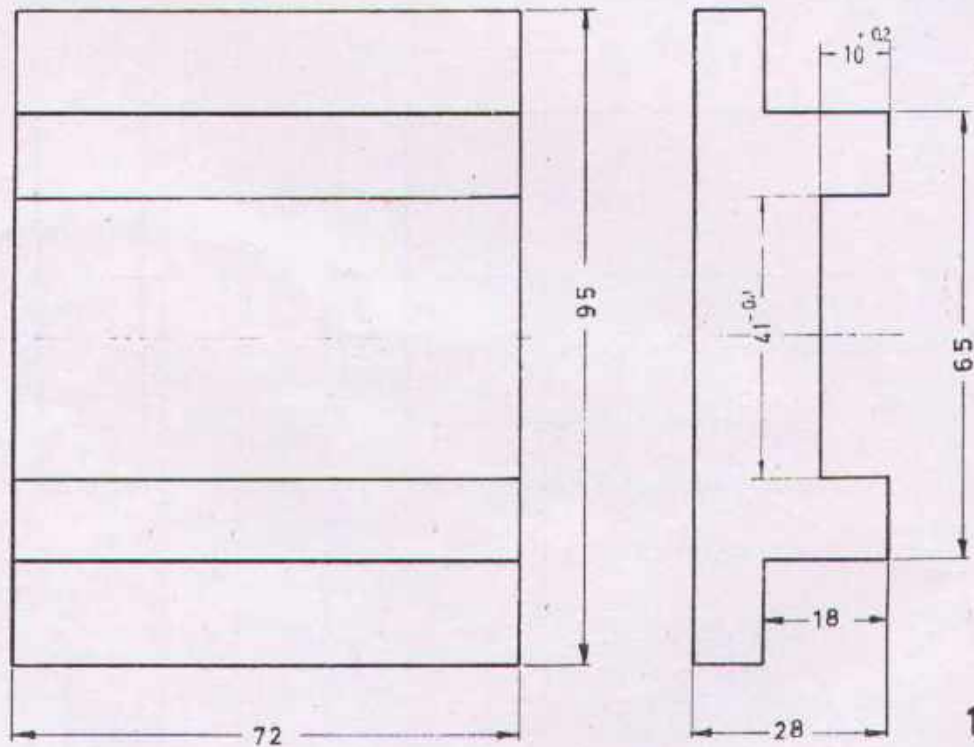


Tolerance $\pm 0,1$
unless otherwise stated



3

MAT.: LOW CARBON STEEL



1

MAT.: MILD STEEL

SCALE 1:1

DIE SHOE & GUIDE PLATE

(For pierce & blank die)

No. 3. 4. 3 / 2

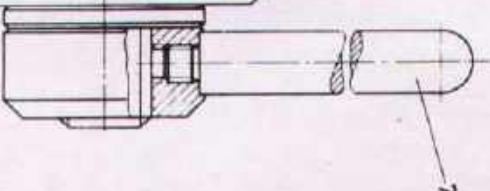
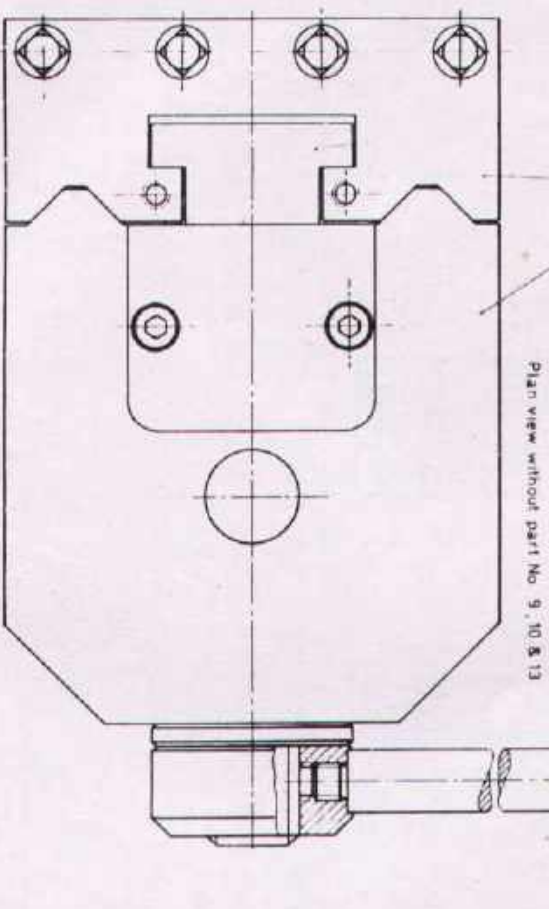
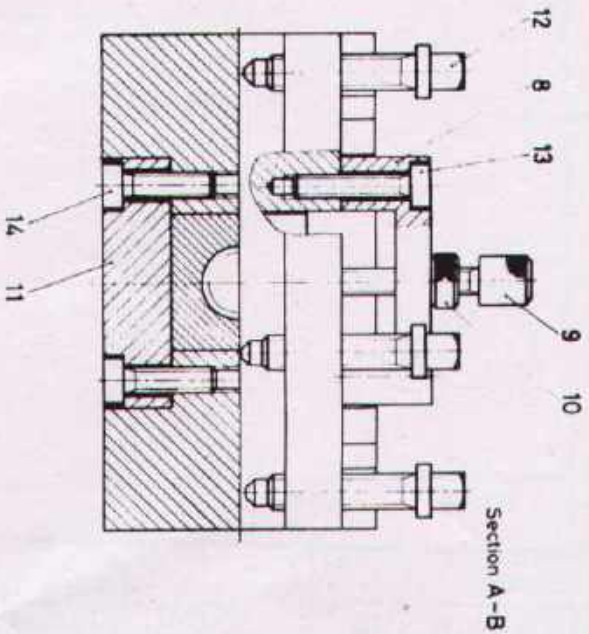
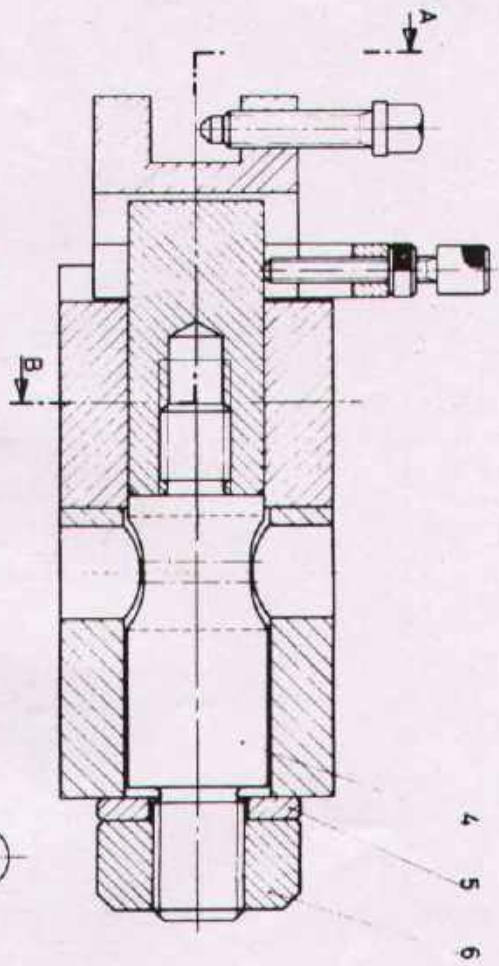
SHAPING II



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER

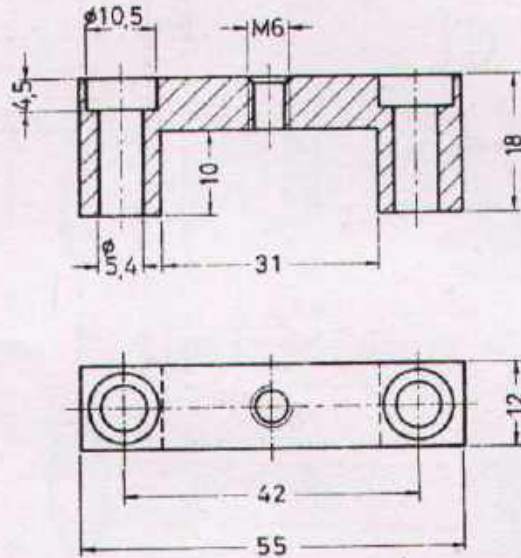


Plan view without part No. 9, 10 & 13

4	Socket head screw	14	M5 x 25
2	Socket head screw	13	M6 x 20
4	Clamping bolts	12	M8 x 38 Fr. Turning II Tool & Die M
2	Guide plates	11	Mild steel Fr. Sharp III Turner
1	Knurled chuck nut	10	M5 Fr. Turning II Millwright
1	Tool holder adjusting screw	9	M5 x 38 " "
1	Tool holder adjusting bracket	8	Mild steel Fr. fitting III Tool & Die Maker
1	Lever	7	Mild steel Fr. Turning II Millwright
1	Nut	6	Mild steel Fr. Turning III Turner
1	Washer	5	Mild steel " "
1	Spindle	4	Mild steel " "
1	Clamping piece	3	Low carbon steel Fr. Milling II Mach.
1	Tool holder	2	Low carbon steel " "
1	Base plate	1	Cast Iron " "
Qty	Denomination	P No.	Material / Remarks

TOOL POST

No. 3 & 4 / 1
FITTING III



SCALE 1:1

MAT. MILD STEEL

TOOL HOLDER ADJUSTING BRIDGE
(For tool post)

No. 3.4.4 / 1-1

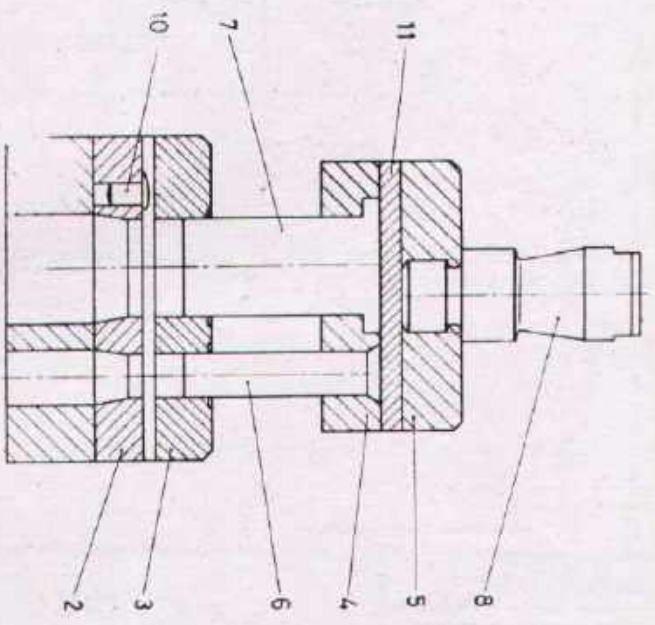
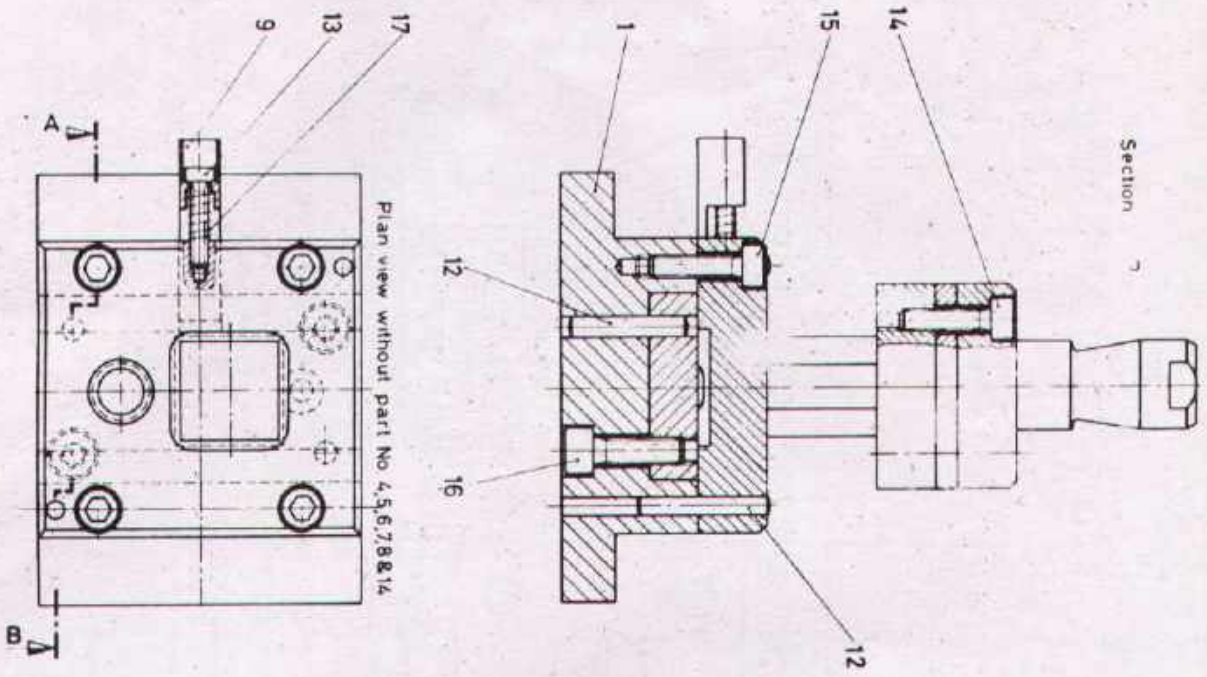
FITTING III



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER

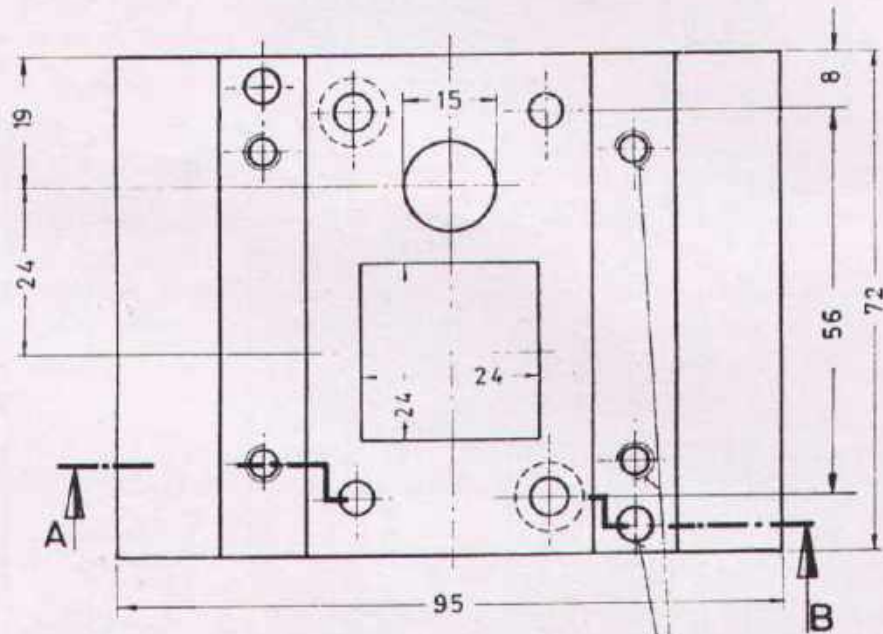
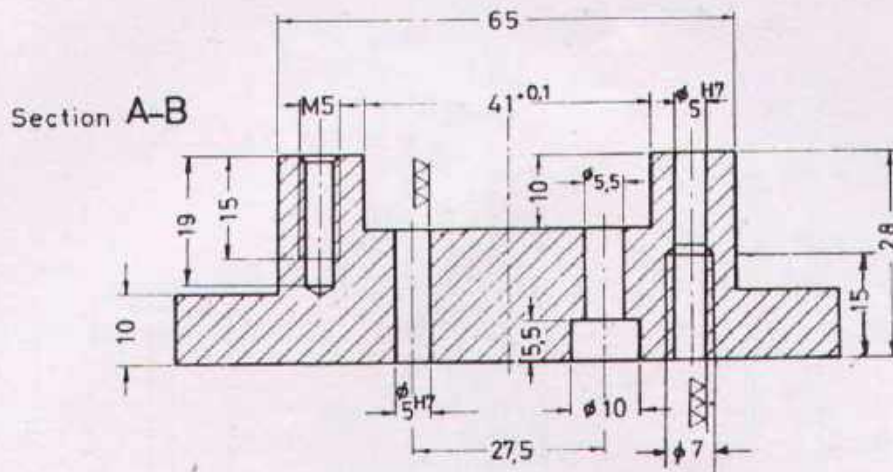


1	Pressure spring	17	Spring wire $\phi 0.25mm$
2	Socket head screw	18	M6 x 20
4	Socket head screw	15	M5 x 20
4	Socket head screw	14	M5 x 25
1	Socket head screw	13	M6 x 20
4	Cylindrical pin	12	$\phi 5m6 \times 25$
1	Thrust plate	11	Low carbon steel from Fitting III/20/200
1	Pin stopper	10	Low carbon steel from Fitting III/20/200
1	Finger stopper	9	Low carbon steel from Fitting III/20/200
1	Punch	8	Mild steel from Fitting III/20/200
1	Punch (square)	7	High carbon steel from Fitting III/20/200
1	Punch (round)	5	High carbon steel from Circ. Grind. Mach.
1	Shank plate	5	Low carbon steel from Fitting III/20/200
1	Punch holder plate	4	Mild steel from Snap II T&D Maker
1	Guide plate (channelled)	3	Low carbon steel from Snap II T&D Maker
1	Die block	2	High carbon steel from Snap II T&D Maker
1	Die shoe	1	Mild steel from Snap II T&D Maker
Qty.	Denominations	Part No.	Material / Remarks
PROGRESSIVE PIERCE & BLANK DIE			
(2 STATIONS)			
No 3 & 4 / 2			
FITTING III			
DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING			TOOL & DIE MAKER
THE GERMAN TECHNICAL TRAINING PROGRAMME			



1 ∇ (∇)

Tolerance $\pm 0,1\text{mm}$
unless otherwise stated.



The holes 5^{H7} and M5 drilled according to part No. 3

5 ^{H7}	+0,012 0
-----------------	-------------

SCALE 1:1

MAT. MILD STEEL

DIE SHOE

From Tool & Die Maker / Shaping II

No. 3.4.4/2-1

FITTING III



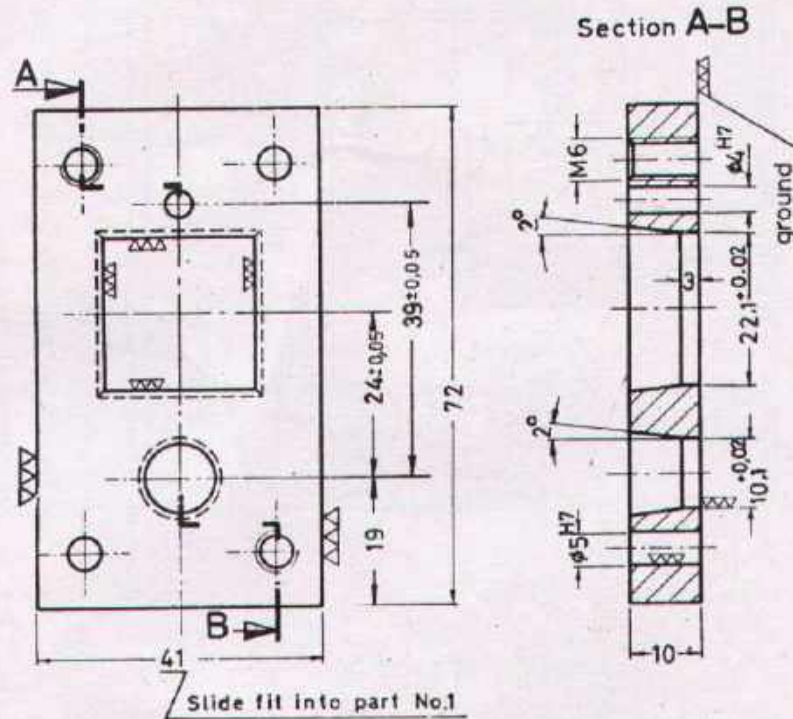
DÉVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

**TOOL & DIE
MAKER**

2 ∇ (∇) (∇ ^{ground})

Tolerance $\pm 0,1\text{mm}$
unless otherwise stated



The holes 5^{H7} and M6 drilled according to part No.1

4 ^{H7}	+0,012
5 ^{H7}	0

SCALE 1:1

MAT. H. C. STEEL

DIE BLOCK

From Tool & Die Maker / Shaping II

No. 3.4.4/2-2

FITTING III



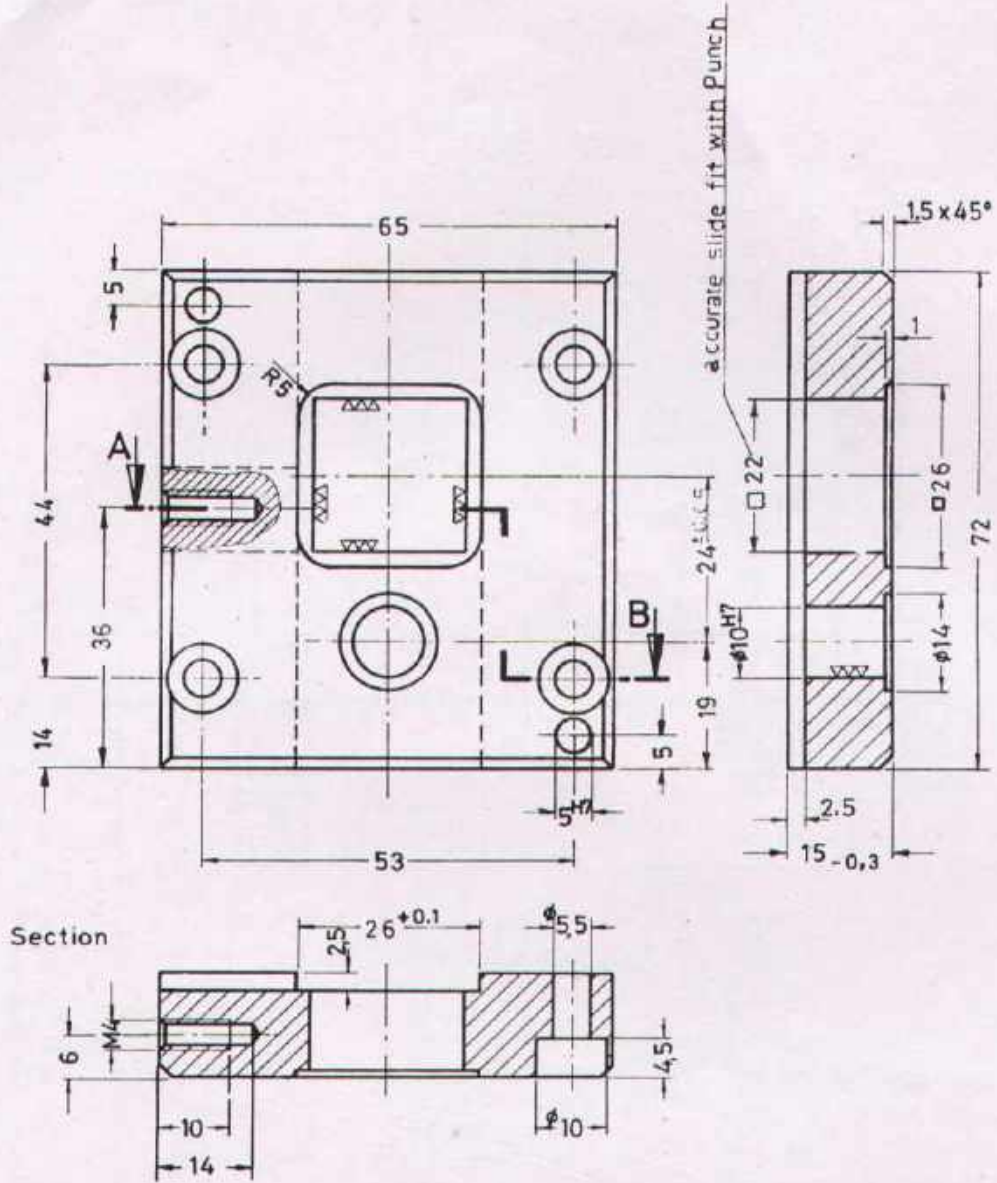
DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME


TOOL & DIE
MAKER

3 ∇ (∇)

Tolerance : 0,1 mm
unless otherwise stated.

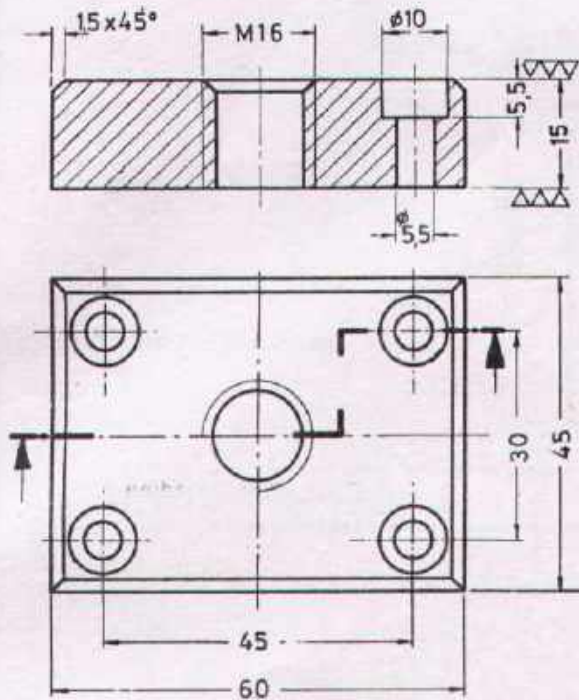


5 ^{H7}	+ 0,012 0
10 ^{H7}	+ 0,015 0

SCALE 1:1	GUIDE PLATE (CHANNELED) <small>From Tool & Die Maker / Shaping II</small>	No. 3.4.4 / 2-3
MAT. L.C. STEEL		FITTING III
 DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING PAK-GERMAN TECHNICAL TRAINING PROGRAMME		TOOL & DIE MAKER

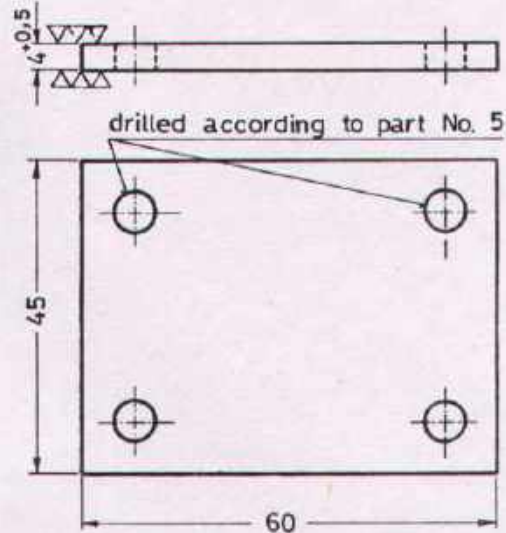
5 ∇ ($\nabla\nabla\nabla$)

Tolerance $\pm 0,1$
unless otherwise stated



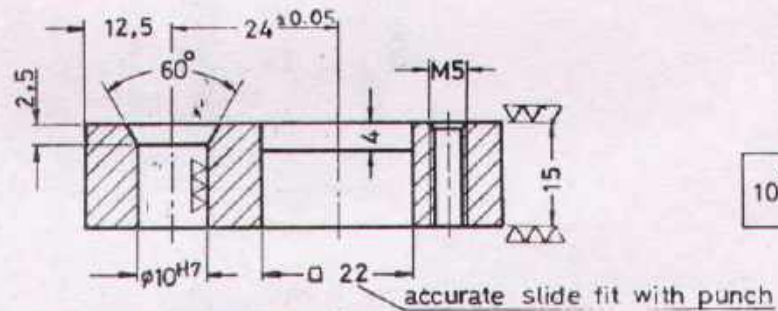
From T.& D. Maker / Fitting II

11 ∇ ($\nabla\nabla\nabla$)



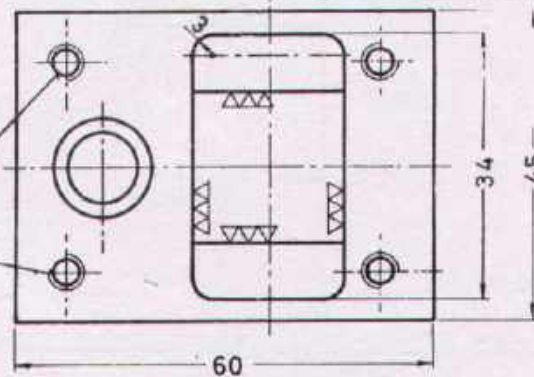
Mat.: Low carbon steel
hardened HRC 56

4 ∇ ($\nabla\nabla$)



10^{H7}	$+0,018$
	0

drilled according to part No. 5



From T&D. Maker / Shaping II

Mat: Mild steel.

SCALE 1:1

MAT. M. ST. & L. C. ST.

SHANK, THRUST & PUNCH HOLDER PLATE

No. 3.4.4/ 2-4

FITTING III

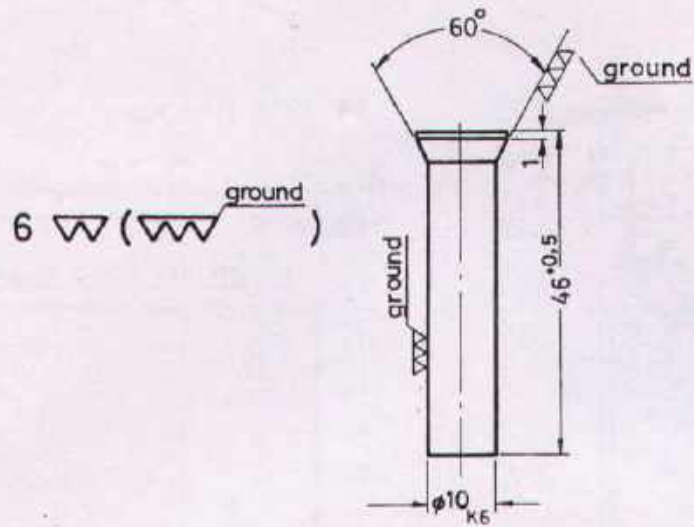


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE MAKER

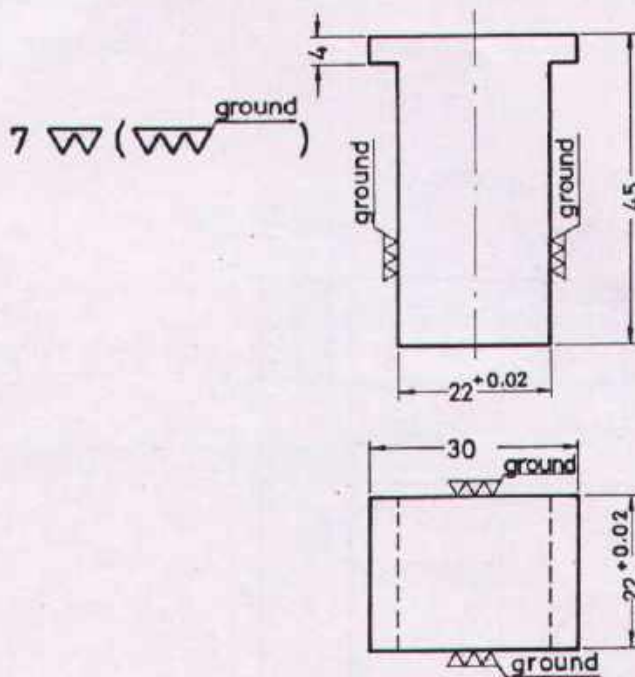
Tolerance $\pm 0,1\text{mm}$
 unless otherwise stated



hardened RHC 58

From Circ. Grinding
 Machinist.

10_{k6}	$+0,012$ $+0,001$
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hardened RHC 58

SCALE 1:1

MAT. H.C. STEEL

PUNCHES

No. 3.4.4/ 2-5

FITTING III



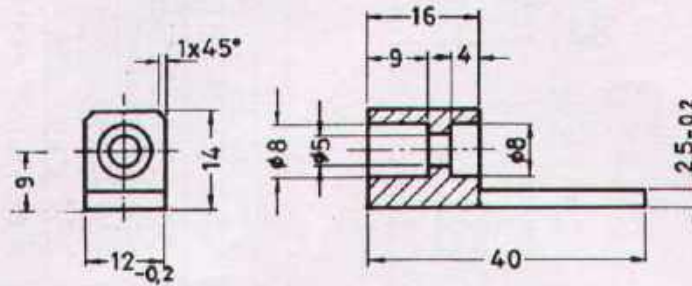
DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
 MAKER

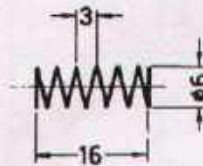


Tolerance $\pm 0,1$ mm
unless otherwise stated.



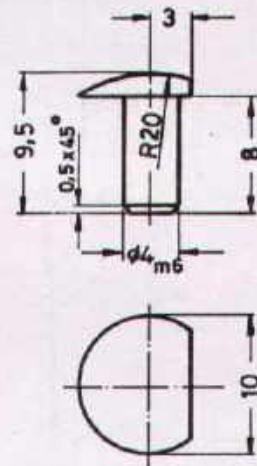
9

Mat.: Mild steel
(Low carbon steel)



17

Mat.: Spring wire $\phi 0,25$ mm



hardened RHC 56

10

Mat.: Carbon steel

Scale: 2 : 1

4_{m6}	$+0.012$ $+0.004$
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SCALE 1:1 / 2:1

FINGER STOPER
PRESSURE SPRING & PIN STOPER

No. 3.4.4/ 2-6

FITTING III

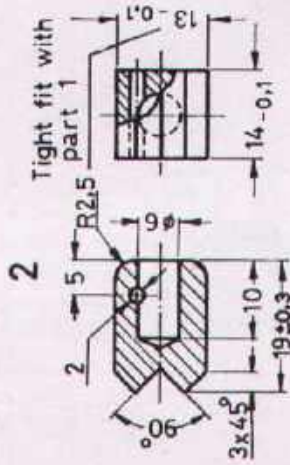
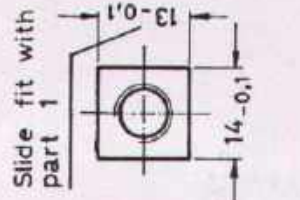
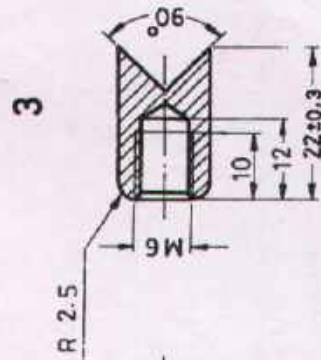
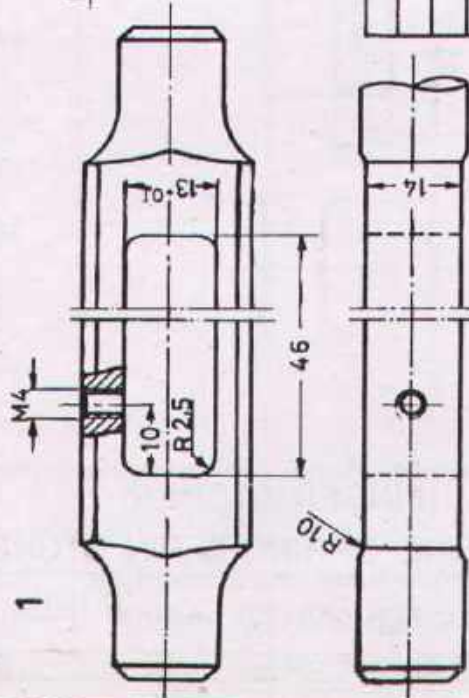
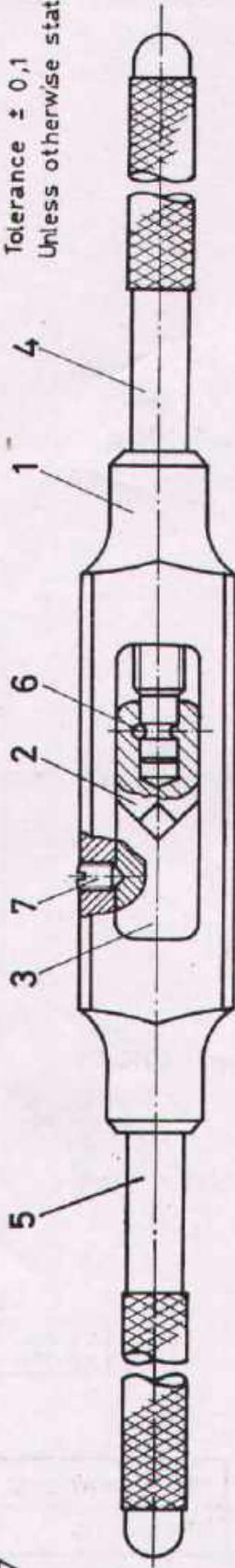


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER

Tolerance $\pm 0,1$
Unless otherwise stated



1	Qty	Denominations	Part No	Material / Remarks
1	1	Grub screw	7	M4 x 8
1	1	Cylindrical pin	6	ϕ 2 x 14 mm
1	1	Knurled Handle	5	Mild steel from Turning II T. & D. Maker
1	1	Knurled Handle	4	Mild steel from Turning II T. & D. Maker
1	1	Fixed jaw	3	Low Carbon steel \square 16x16x25
1	1	Movable jaw	2	Low Carbon steel \square 16x16x25
1	1	Stock	1	Mild steel from Turning II T. & D. Maker

SCALE 1:1		TAP HANDLE		No. 3.4 4/3	
				FITTING III	

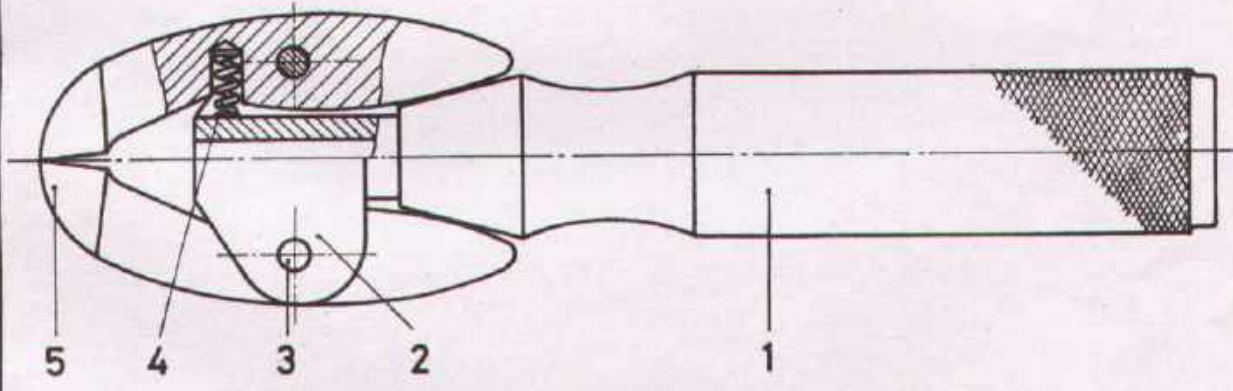
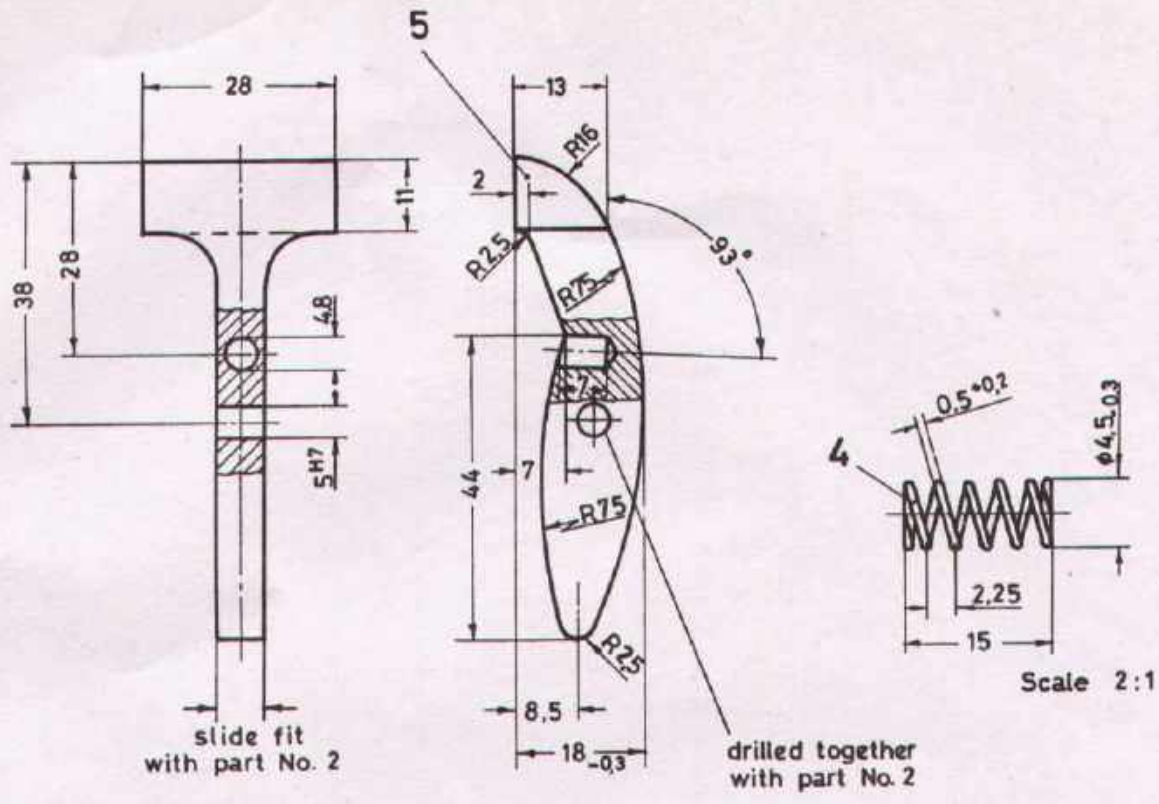
Gty		Denominations		Part No		Material / Remarks	
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DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOOL & DIE
MAKER



2	Jaw	5	L. Carbon steel	from Milling II Mach.
2	Spring	4	Spring wire	φ0,5
2	Cylindrical pin	3	φ5 m6 x 15	
1	Link	2	Mild steel	from Turn. III Turner
1	Handle	1	Mild steel	from Turn. III Turner
Qty.	Denomination	Part No	Material	Remarks

SCALE 1:1 2:1	HAND VICE	No. 3.4.4/4
		FITTING III
 DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING PAK-GERMAN TECHNICAL TRAINING PROGRAMME		TOOL & DIE MAKER

