

BASIC TRAINING

A T.C PROGRAMME

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ELECTRICIAN GENERAL

مزید کتب پڑھنے کے لئے آج ہی وزٹ کریں : www.iqbalkalmati.blogspot.com



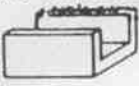
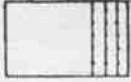

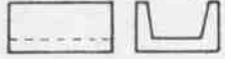
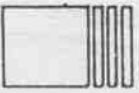
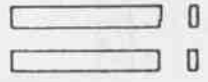
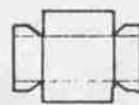



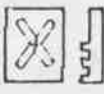

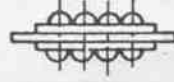

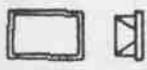


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TECHNICAL EDUCATION & VOCATIONAL TRAINING AUTHORITY
PUNJAB BOARD OF TECHNICAL EDUCATION
TRADE TESTING CELL, LAHORE

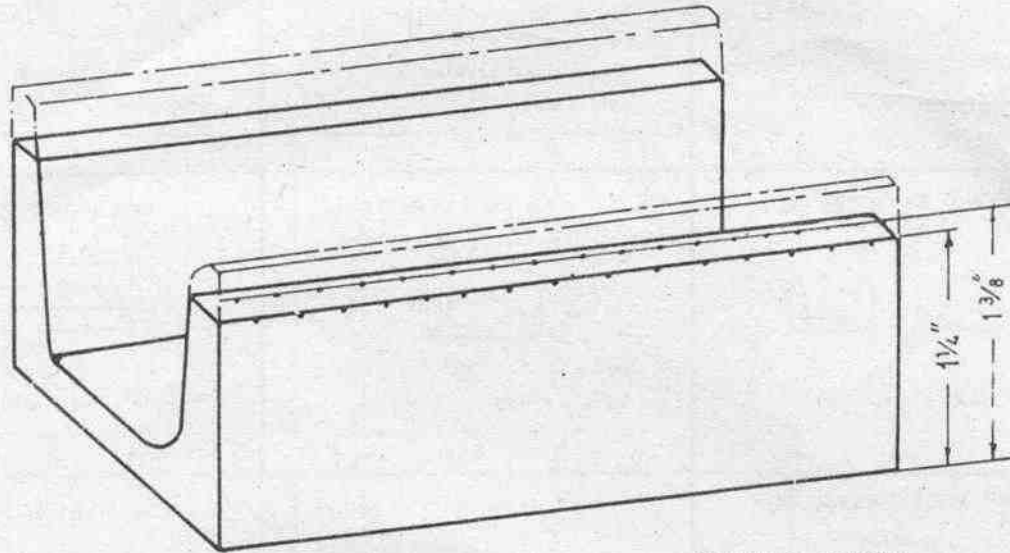
T.T.P Series No. 21

Price Rs. ~~26.00~~

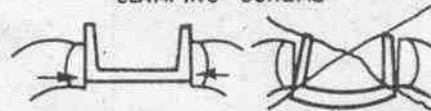


43

<p>FILING EXERCISE I</p>  <p>Flat filing.</p> <p>1 → 4</p>	<p>MARKING EXERCISE</p>  <p>Flat filing, marking & centre punching.</p> <p>2 → 5</p>	<p>STRETCHING EXERCISE</p>  <p>Filing, marking & hammering.</p> <p>3</p>
<p>FILING EXERCISE II</p>  <p>Flat and square filing.</p> <p>1 → 4 → 26</p>	<p>SAWING EXERCISE</p>  <p>Sawing, Square filing.</p> <p>2 → 5 → 10</p>	<p>FOR INSIDE CALIPER</p>  <p>Special filing operations.</p> <p>6 → 15</p>
<p>FOR SHEET-METAL BOX</p>  <p>Marking, shearing, filing.</p> <p>7 → 16</p>	<p>FOR DRILLING EXERCISE</p>  <p>Smooth-filing acc. to given dimensions.</p> <p>8 → 13</p>	<p>FOR RIVETING EXERCISE</p>  <p>Filing.</p> <p>9 → 14</p>
<p>CHIPPING EXERCISE</p>  <p>Cross and flat chiselling.</p> <p>5 → 10 → 12</p>	<p>CHIPPING EXERCISE</p>  <p>Groove chiselling, Chisel regrinding.</p> <p>10 → 12</p>	<p>DRILLING EXERCISE</p>  <p>Marking, drilling, drill regrinding.</p> <p>8 → 13 → 16</p>
<p>RIVETING EXERCISE</p>  <p>Marking, drilling, riveting.</p> <p>9 → 14</p>	<p>INSIDE CALIPER</p>  <p>Filing acc. to marking lines, assembling.</p> <p>6 → 15</p>	<p>SHEET-METAL BOX</p>  <p>Sheet-metal bending and folding.</p> <p>7 → 16</p>
<p>DRILLING EXERCISE</p>  <p>Counter-boring, reaming, thread cutting.</p> <p>13 → 18</p>	<p>THREAD BOLT</p>  <p>External thread cutting, form filing.</p> <p>19 E</p>	<p>THE BASIC FITTING COURSE IS THE SAME ONE AS FOR THE METAL TRADES WITH THE ONLY EXCEPTION OF LESS EXERCISES. Nos. 11 & 17 ARE DROPPED AND No 19 IS REPLACED BY No 19 E</p>
<p>LAYOUT</p>		<p>No. 1.0.1</p> <p>BASIC/FITTING</p>
<p>DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING</p> <p>PAK-GERMAN TECHNICAL TRAINING PROGRAMME</p>		<p>ELECTRICIAN GENERAL</p> <p>1</p>



CLAMPING SCHEME



SEQUENCE OF OPERATIONS

NO.	Symbol	Tools	Descriptions
1		FLAT FILE 300x1 STRAIGHT BAR	FLAT FILING UP TO 1st MARKING LINES
2		FLAT FILE 300x1 STRAIGHT BAR	FLAT FILING UP TO 2nd MARKING LINES
3		FLAT FILE 300x1 STRAIGHT BAR	FLAT FILING OF BASE SURFACE

SCALE

MAT.: ST. 37 - 1

FILING EXERCISE

NO: - 1.0.1/01

BASIC /FITTING

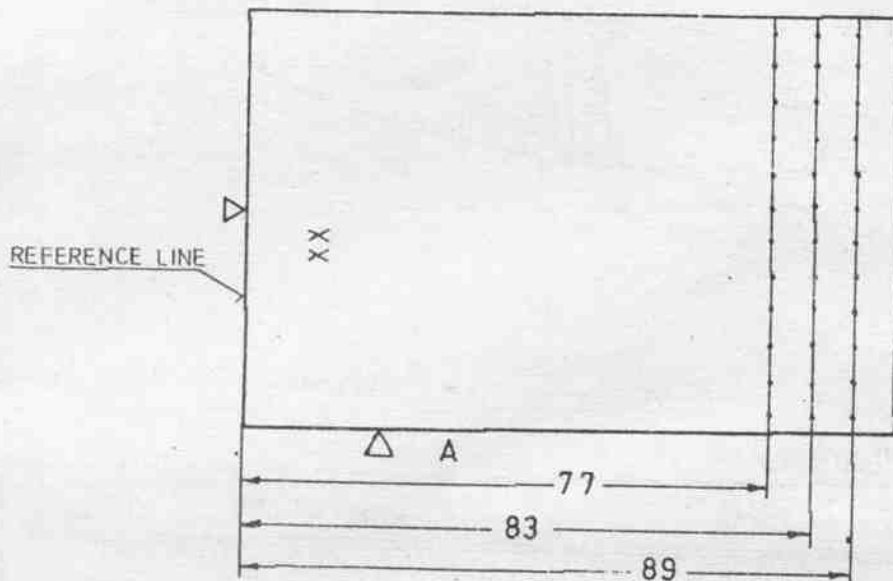


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

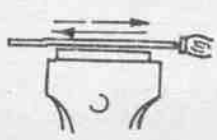
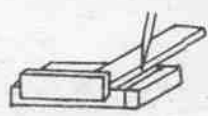
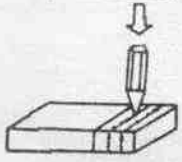
PAF GERMAN TECHNICAL TRAINING PROGRAMME

~ (▽)

TOLERANCE +1



SEQUENCE OF OPERATIONS

NO	Symbol	Tools	Descriptions
1		FLAT FILE 250 x 1 STRAIGHT BAR	FLAT FILING OF SURFACE 'A'
2		BACK SQUARE SCRIBER STEEL RULE	MARKING OF 'REFERENCE LINE' MARKING OF 'DISTANCE LINES'
3		CENTRE PUNCH HAND HAMMER 250 g	CENTRE PUNCHING OF DISTANCE LINES

SCALE 1 : 1

MAT : ST. 37-1

MARKING EXERCISE

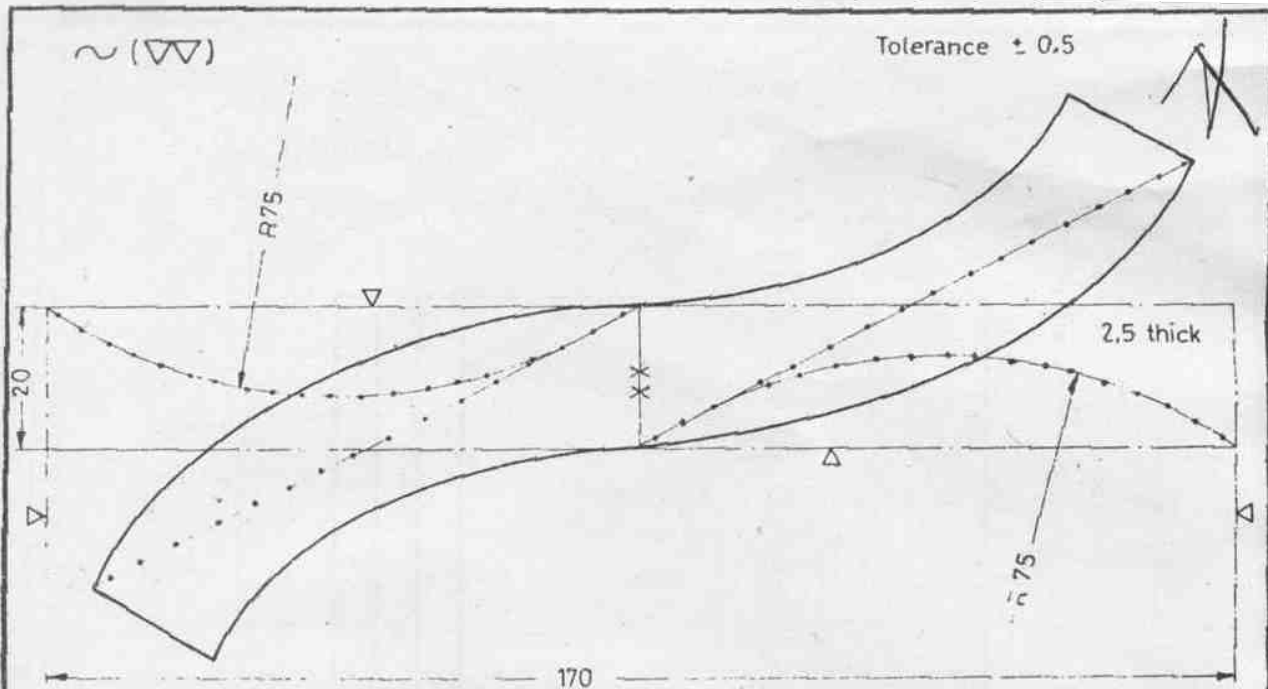
NO:- 1.01/02

BASIC/FITTING



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME



SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		FLAT FILE 300 x 1 STRAIGHT BAR	FLAT FILING OF 1st LONGITUDINAL SIDE
2		BACK SQUARE STRAIGHT BAR SCRIBER STEEL RULE	MARKING OF OUTER DIMENSIONS
3		FLAT FILE 300 x 1; 150 x 1	FILING OF OUTER SURFACES ACC. TO MARKING LINES
4		SCRIBER BACK SQUARE DIVIDER WOODEN BOARD	MARKING OF MIDDLE LINE AND RADII
5		CENTRE PUNCH HAND HAMMER 250 g	CENTRE PUNCHING OF RADII
6		HAND HAMMER STRAIGHTENING PLATE STRAIGHT BAR	CURVING OF THE MATERIAL
7	REPEAT OPERATION 6 ON THE 2nd HALF OF THE WORKPIECE. DON'T USE FILES FOR CORRECTION AFTER HAMMERING!		

SCALE 1:1

MAT. MILD STEEL

STRETCHING EXERCISE

No. 1.0.1/08

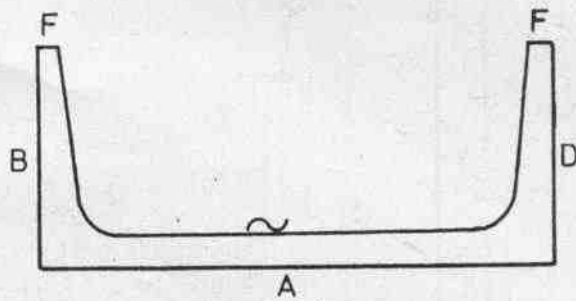
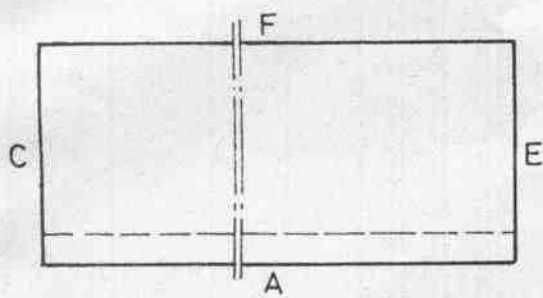
BASIC FITTING



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

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SEQUENCE OF OPERATIONS

NO	Symbol	Tools	Descriptions
1		FLAT FILE 300 x 1; 250 x 1 TRY SQUARE	FLAT- AND SQUARE FILING OF 1st FLANGE 'B' BASE SURFACE = REFERENCE SURFACE
2		FLAT FILE 250 x 1; 200 x 1 TRY SQUARE WOODEN BLOCK VICE CLAMPS	FLAT AND SQUARE FILING OF 1st FACE 'C' REFERENCE SURFACE = A & B
3		FLAT FILE 300 x 1; 250 x 1 TRY SQUARE VICE CLAMPS	FLAT AND SQUARE FILING OF 2nd FLANGE 'D'
4		FLAT FILE 250 x 1, 200 x 1 TRY SQUARE WOODEN BLOCK VICE CLAMPS	FLAT AND SQUARE FILING OF 2nd FLANGE 'E'
5		FLAT FILE 300 x 1 250 x 1 TRY SQUARE VICE CLAMPS	FLAT AND SQUARE FILING OF FLANGES 'F'

SCALE 1:1

MAT. of Ex. 01

FILING EXERCISE II

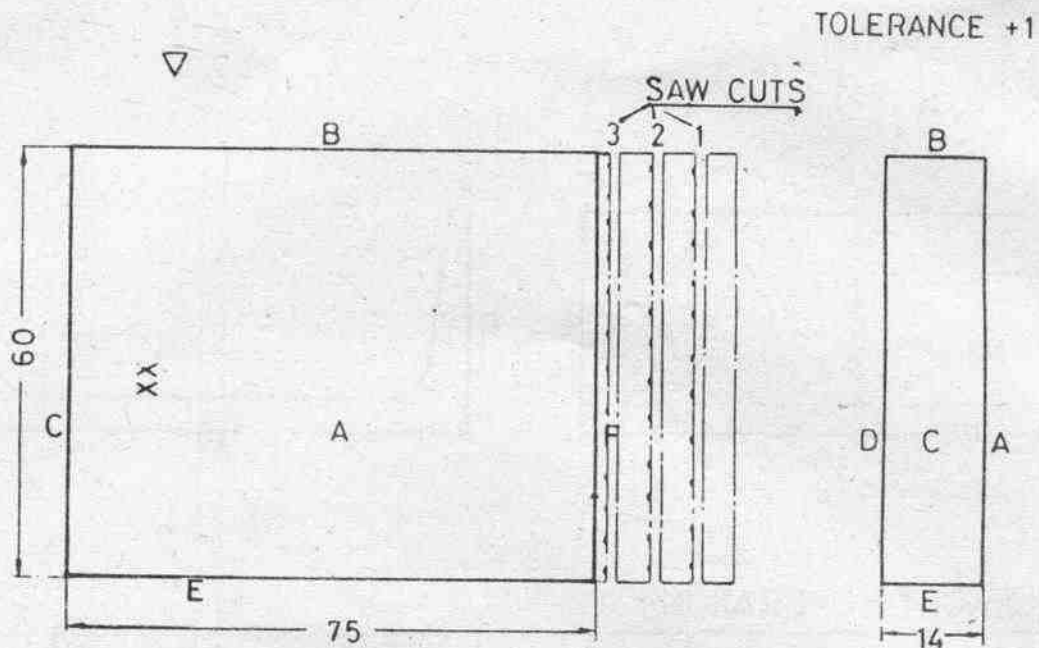
NO. 1.0.1/04

BASIC/FITTING



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK GERMAN TECHNICAL TRAINING PROGRAMME



SEQUENCE OF OPERATIONS

NO.	Symbol	Tools	Descriptions
1		THREE SQUARE FILE 150x1 HAND HACKSAW	NOTCH ENDS OF MARKING LINES WITH THREE SQUARE FILE. SAWING OF 1st AND 2nd CUT AS SHOWN.
2		THREE SQUARE FILE 150x1 HAND HACKSAW	SAWING OF 3rd CUT BY CLAMPING THE WORKPIECE IN HORIZONTAL POSITION.
3		FLAT FILES 300x1; 200x1 TRY SQUARE	FLAT FILING OF SURFACE 'A'.
4		FLAT FILES 300x1; 200x1 TRY SQUARE	FLAT- AND SQUARE FILING OF SURFACE 'B'.
5		FLAT FILES 300x1; 200x1 TRY SQUARE VICE CLAMPS	FLAT- AND SQUARE FILING OF SURFACE 'C'
6	REPEAT OPERATIONS 3, 4 AND 5 FOR SURFACES D, E AND F. DON'T CHECK WITH TRY SQUARE AND STEEL RULE, WHEN MATERIAL IS CLAMPED IN THE VICE! CHECK DIMENSIONS WITH OUTSIDE CALIPER AND STEEL RULE.		

SCALE 1 : 1

MAT. of Ex. 02

SAWING EXERCISE

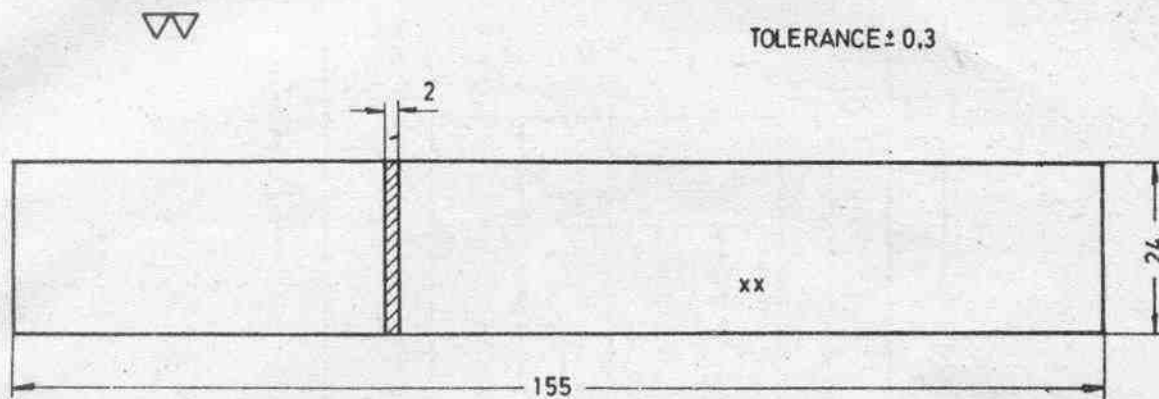
NO :- 1.01/05

BASIC / FITTING



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME



Two pieces

SEQUENCE OF OPERATIONS

No	Symbol	Tools	Descriptions
1		SMOOTH-CUT FILE	SMOOTHING OPERATIONS. MATERIAL ALLOWANCE FOR SMOOTH FILING 0.1 TO 0.2 MM.
2		FLAT FILES 300x1; 250x3 TRY SQUARE VERNIER CALIPER WOODEN PIECE, NAILS	FLAT FILING OF 1st BROAD SURFACE. HOLD THE WORK ON A WOODEN PIECE.
3		FLAT FILES 300x1; 200x1; 250x3 TRY SQUARE VERNIER CALIPER	FLAT AND SQUARE FILING OF 1st LONGITUDINAL SIDE.
4		COMPLETE THE WORK IN A SEQUENCE OF OPERATIONS AS DONE IN PREVIOUS EXERCISES. MIND SMOOTHING ALLOWANCE. USE VICE CLAMPS.	

SCALE 1:1

MAT. ST.37-1

INSIDE CALIPER 1

NO-1 01/06

BASIC/FITTING

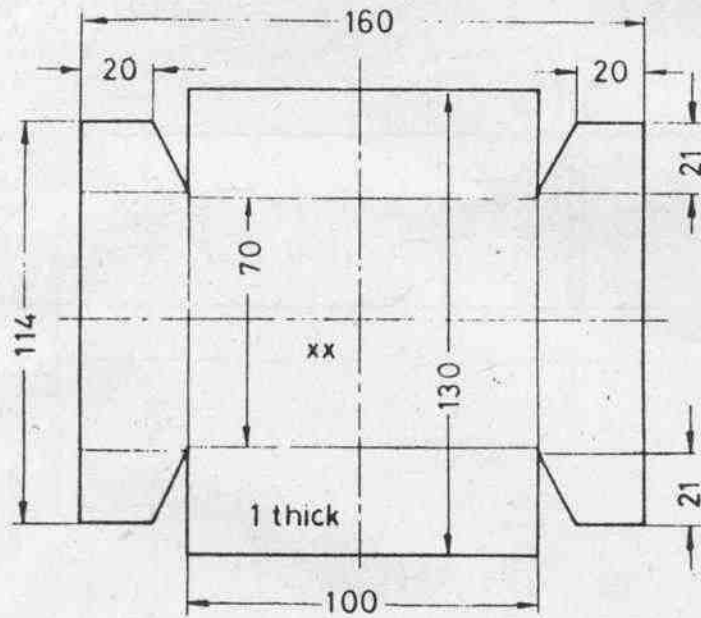


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

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TOLERANCE ± 0.3



SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		FLAT FILE 200x3 TRY SQUARE STEEL RULE HAND VICE	FILING OF SIDES 'A' & 'B' IN RIGHT ANGLE.
2		MARKING TOOLS	LENGTH AND WIDTH MARKING MARKING OF THE SHAPE OF THE WORK.
3		LEVER SHEAR	SHEARING OF LENGTH AND WIDTH. SHEARING OF SHAPE OF THE WORK ACCORDING TO MARKING LINES.
4		TRY SQUARE, STEEL RULE, HAND VICE, FILE 200x3, KEY FILE SET	COMPLETING THE WORK ACCORDING TO GIVEN DIMENSIONS.
5			WHEN NUMBER PUNCHING, USE LIGHT BLOWS. DEBURR THE WORK PROPERLY.

SCALE 1 : 2.5

MAT.: ST 10

SHEET METAL BOX 1

NO: - 1.0.1/07

BASIC/FITTING

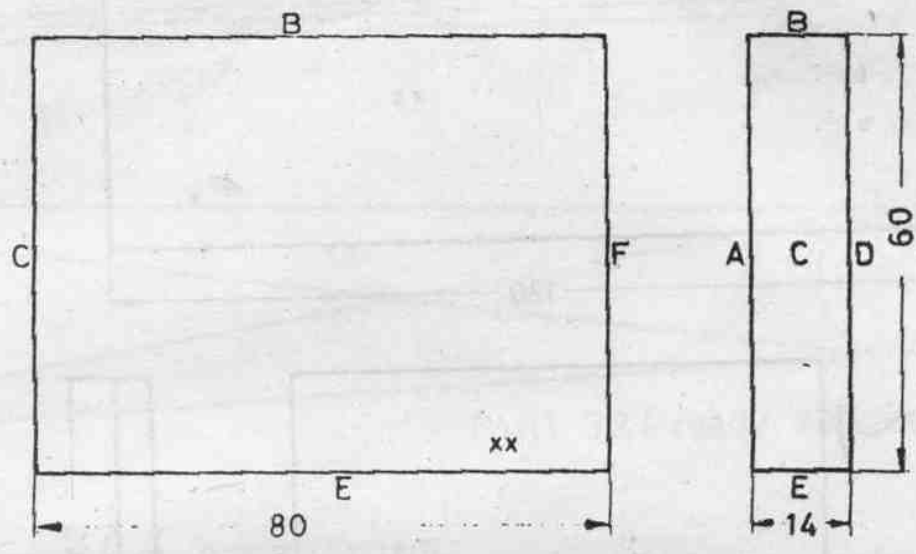


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME



TOLERANCE ± 0.2



SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		FLAT FILES 300x1; 200x1 TRY SQUARE, VERNIER CALIPER, VICE CLAMPS	FILING OF THE WORK ALL AROUND IN RIGHT ANGLES. MIND SMOOTHING ALLOWANCE.
2		FLAT FILES 250x3; 150x3 TRY SQUARE, VERNIER CALIPER, VICE CLAMPS	FINISHING OF SURFACE 'A' WITH SMOOTH FILES. USE CHALK FOR FINISHING.
3		FLAT FILES 250x3; 150x3 TRY SQUARE, VERNIER CALIPER, VICE CLAMPS	FINISHING OF SURFACE 'B' IN RIGHT ANGLE TO SURFACE 'A'.
4		FLAT FILES 250x3; 150x3 TRY SQUARE, VERNIER CALIPER, VICE CLAMPS	FINISHING OF SURFACE 'C' IN RIGHT ANGLE TO SURFACE 'A' & 'B'.
5			COMPLETE ALL OTHER SURFACES. CHECK THE DIMENSIONS WITH THE VERNIER CALIPER. DEBURR THE WORK PROPERLY.

SCALE 1:1

MAT. ST 37-1

DRILLING EXERCISE 1

NO:- 1.01/08

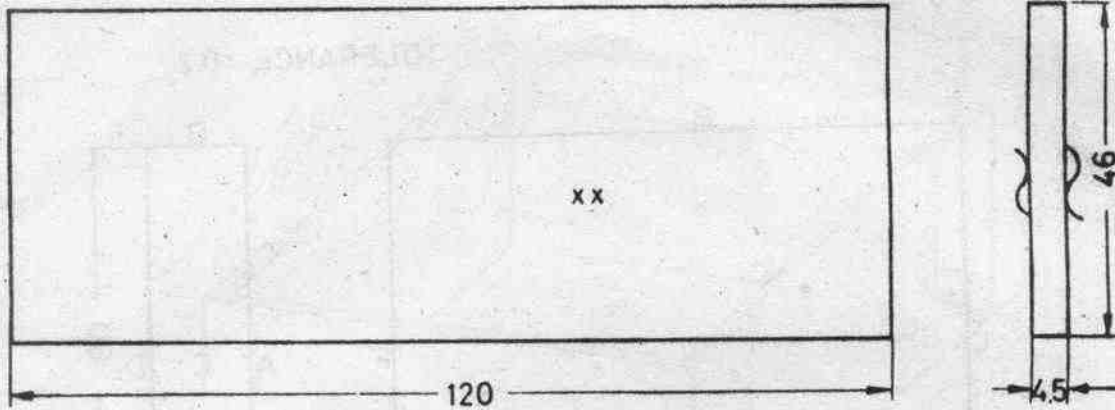
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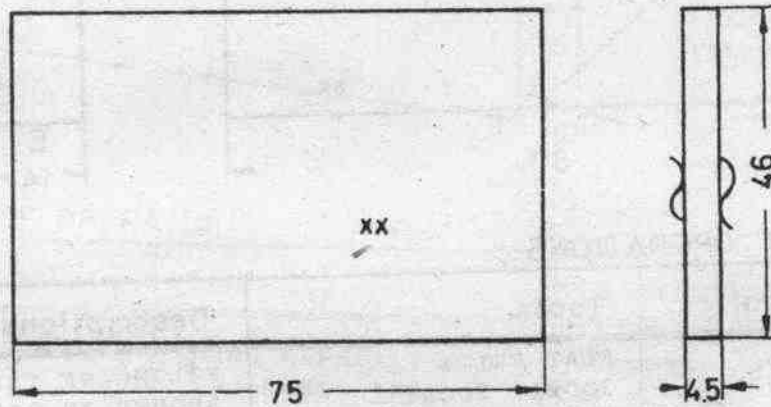
DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

TOLERANCE ± 0.2

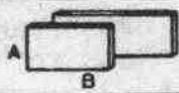




12 ∇ (~)



Two pieces each

SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		FLAT FILES 300x1, 200x1, 250x3, 150x3 TRY SQ., V.-CALIPER	FILING OF SURFACES 'A' & 'B' IN RIGHT ANGLE.
2		MARKING TOOLS	LENGTH AND WIDTH MARKING. USE SURFACES 'A' & 'B' AS REFERENCE SURF.
3		FLAT FILES TRY SQUARE VERNIER CALIPER	FILING OF ALL PIECES ACCORDING TO MARKING LINES.
4	PUNCH BENCH NUMBERS.		

SCALE 1:1

MAT.: ST 37-1

RIVETING EXERCISE 1

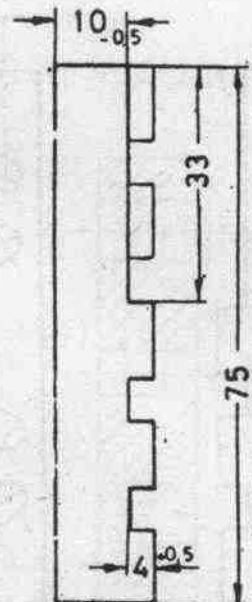
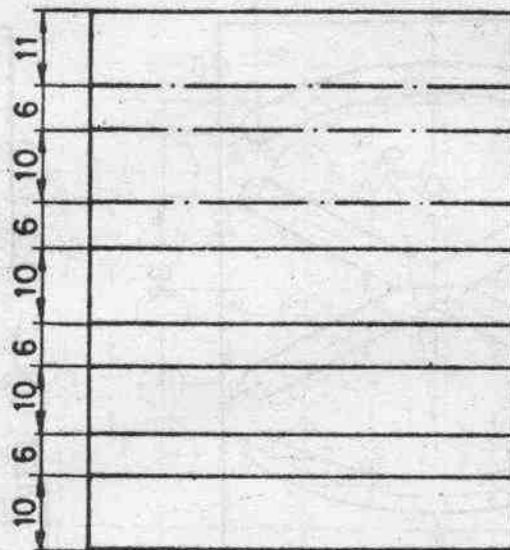
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BASIC / FITTING



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK GERMAN TECHNICAL TRAINING PROGRAMME



SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		MARKING TOOLS	MARKING OF NOTCHES
2		CROSS-CUT CHISEL HAND HAMMER 600 g STEEL RULE WOODEN BLOCK	CHIPPING OF NOTCHES
3		FLAT CHISEL HAND HAMMER 600 g STEEL RULE WOODEN BLOCK	CHIPPING OFF TWO RIBS
4	LOOK AT THE CUTTING POINT WHILE CHISELLING. USE SAFETY SHIELD. USE PACKING BLOCK OF WOOD		

SCALE 1 : 1

MAT. of Ex. 05

CHIPPING EXERCISE

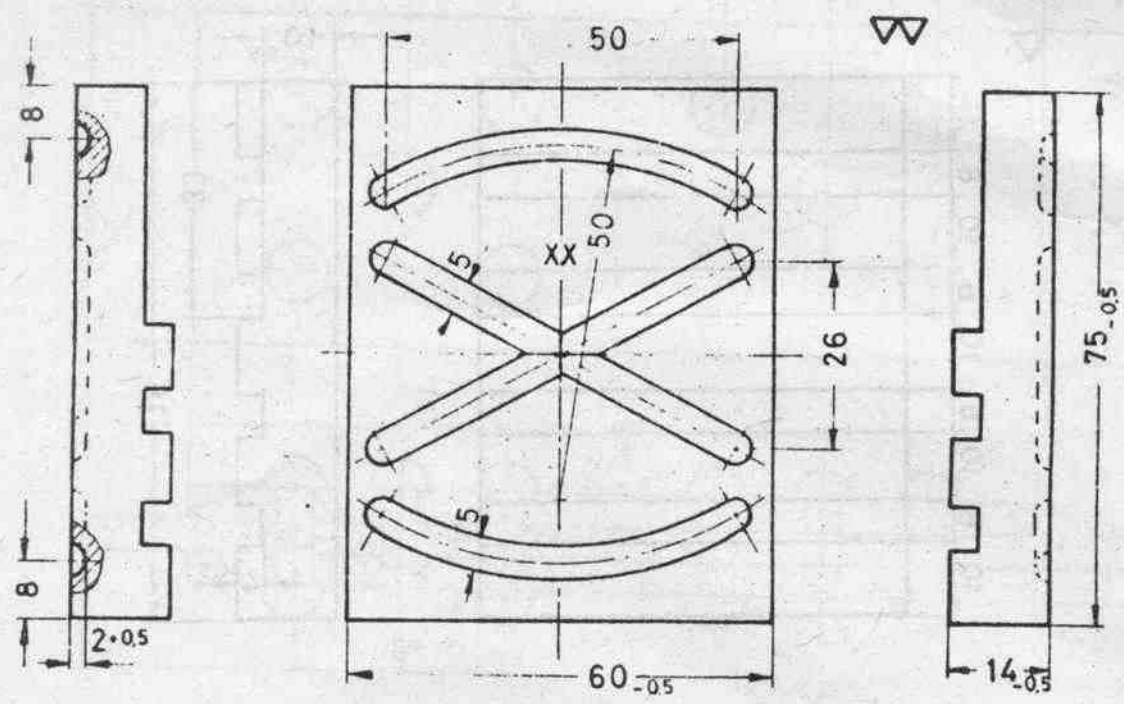
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BASIC / FITTING



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME



SEQUENCE OF OPERATIONS

No.	Symbol	Tools	Descriptions
1		MARKING TOOLS	MARKING OF GROOVES
2		GROOVE-CUT CHISEL HAND HAMMER 600 g STEEL RULE WOODEN BLOCK	CHIPPING OF CROSSED GROOVES
3		GROOVE-CUT CHISEL HAND HAMMER 600 g STEEL RULE WOODEN BLOCK	CHIPPING OF CURVED GROOVES
4		SMOOTH FILES VERNIER CALIPER TRY SQUARE VICE CLAMPS	SMOOTH AND SQUARE FILING ALL AROUND FINAL WORK

SCALE 1:1
MAT. of Ex. 10

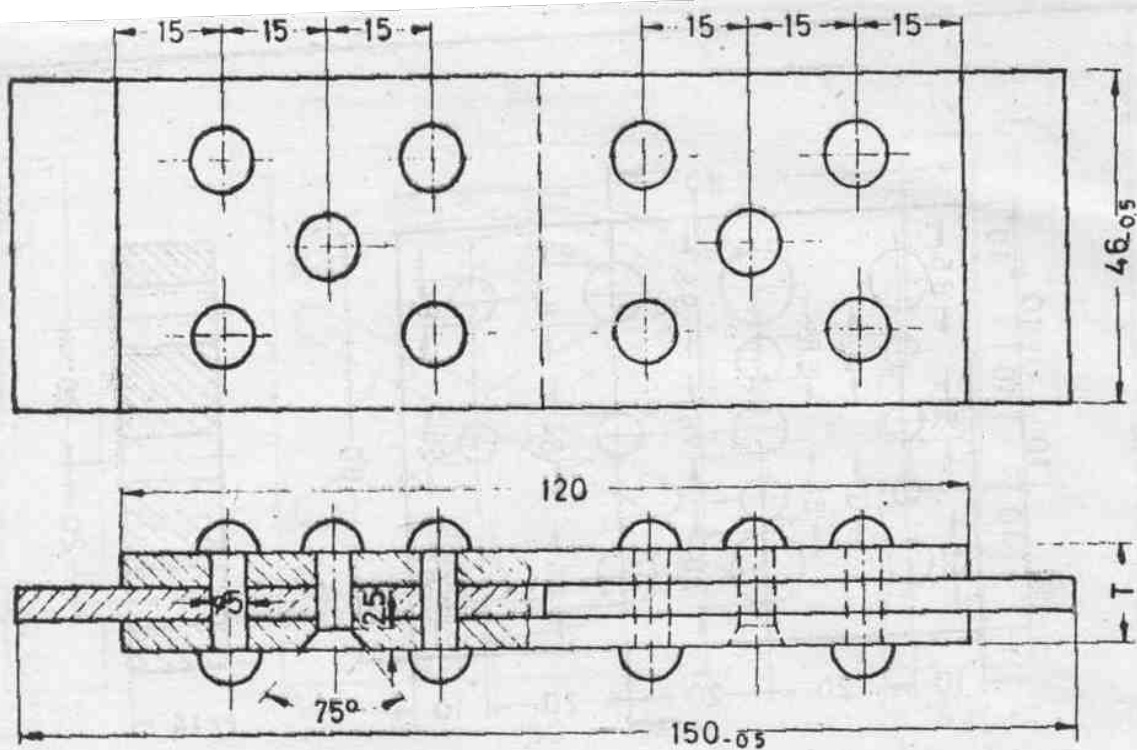
CHIPPING EXERCISE

NO :- 1.01/12
BASIC/FITTING



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME



SEQUENCE OF OPERATIONS

NO	Symbol	Tools	Descriptions
1		MARKING TOOLS 2 HAND VICES	MARKING OF CENTRE POINTS CLAMPING TOGETHER OF ALL PARTS
2		TWIST DRILL 5.2 MM C/SINK DRILL 90° C/SINK DRILL 75°	DRILLING, COUNTER-SINKING AND DEBURRING OF THE HOLES
3		RIVET-SETTING TOOL 5 MM HAND HAMMER 600 g	SETTING OF RIVETS
4		HAND HAMMER 250 g RIVET TOOL	PREFORMING OF RIVET HEAD
5		RIVET FORMING TOOL HAND HAMMER 600 g	FORMING OF RIVET HEAD
6		HAND HAMMER 600 g RIVET TOOL	SETTING OF COUNTER-SINK RIVET
7			REPEAT RIVETING OPERATIONS FOR ALL RIVET JOINTS SHOWN IN THE DRAWING. RIVET LENGTH FOR ROUND HEAD 'L' = T+1.5d. RIVET LENGTH FOR COUNTER-SINK 'L' = T + 1 d.

SCALE 1:1

MAT. of Ex.09

RIVETING EXERCISE

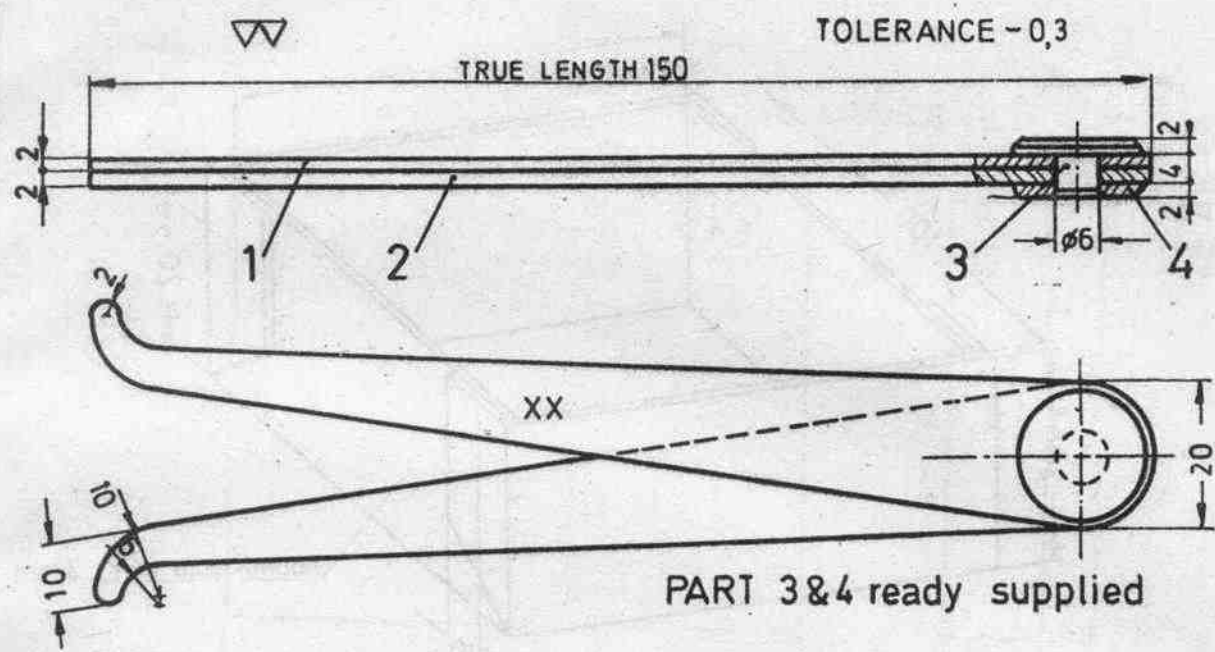
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BASIC / FITTING



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

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SEQUENCE OF OPERATIONS

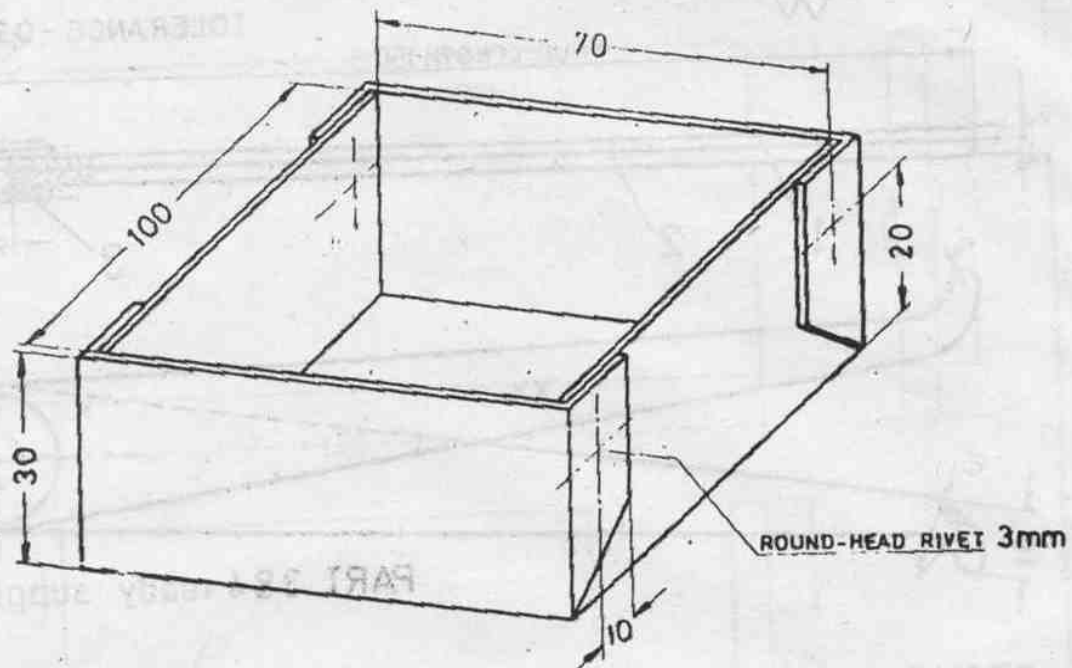
NO.	Symbol	Tools	Descriptions
1			MARKING OF PART 1 & 2 ACCORDING TO GIVEN DIMENSIONS.
2		FILES, VICE CLAMPS	FILING OF PART 1 & 2 ACCORDING TO MARKING LINES.
3		TWIST DRILL 6M.M. HAND VICE	DRILLING WITH PART 1 & 2 CLAMPED TOGETHER.
4		HAND HAMMER 250g.	RIVETING TOGETHER OF PART 1 & 2
5			FINAL WORK, DEBURRING, NUMBER PUNCHING.

SCALE 1:1	INSIDE CALIPER	NO:— 10.1 / 15
MAT. of Ex. 06		BASIC / FITTING



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

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SEQUENCE OF OPERATIONS

NO.	Symbol	Tools	Descriptions
1		HAND HAMMER 250 g TWO ANGLE IRON	BENDING OF THE 4 FLANGES
2		HAND HAMMER 250 g TWO ANGLE IRON	BENDING OF THE SIDES 100 MM LENGTH (WITHOUT FLANGES)
3		HAND HAMMER 250 g SHIM	COMPLETION OF BENDING WORK
4		MARKING TOOLS TWIST DRILL 3.2 MM HAND VICE	DRILLING, DEBURRING, RIVETING
5		FILES MEASURING AND CHECKING TOOLS	FILING, DEBURRING, FINAL CHECKING

SCALE 1:1

MAT. of Ex.07

SHEET METAL BOX

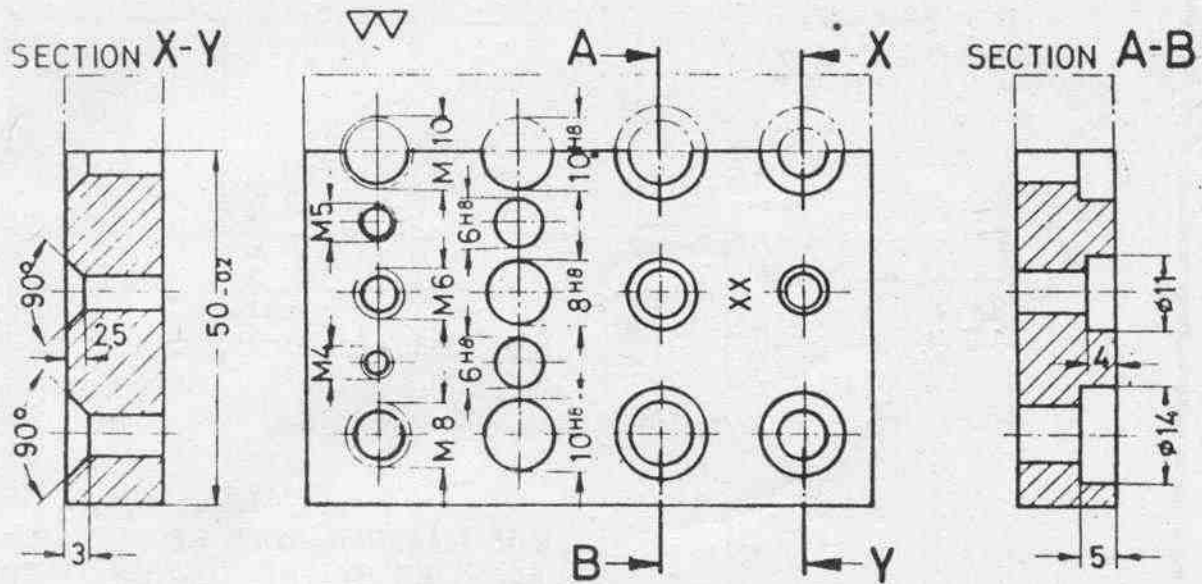
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BASIC / FITTING



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

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SEQUENCE OF OPERATIONS

NO.	Symbol	Tools	Descriptions
1		CENTRE-BORE DRILL 6.4x11; 8.4x14 MACHINE VICE	COUNTER-BORING
2		COUNTER-SINK DRILL 90° MACHINE VICE	COUNTER-SINKING
3		THREAD TAPS M4, M5, M6, M8, M10 TAP-HANDLE	INSIDE-THREAD CUTTING
4		HAND REAMER 6 ^{H8} , 8 ^{H8} , 10 ^{H8} HANDLE	REAMING
5		COUNTER SINK DRILL MACHINE VICE	DEBURRING AND RETAPPING IF NECESSARY
6		MARKING TOOLS HAND HACKSAW FILES MEASURING TOOLS	MARKING, FILING, FINAL WORK

SCALE 1 : 1

MAT. of Ex.13

DRILLING EXERCISE

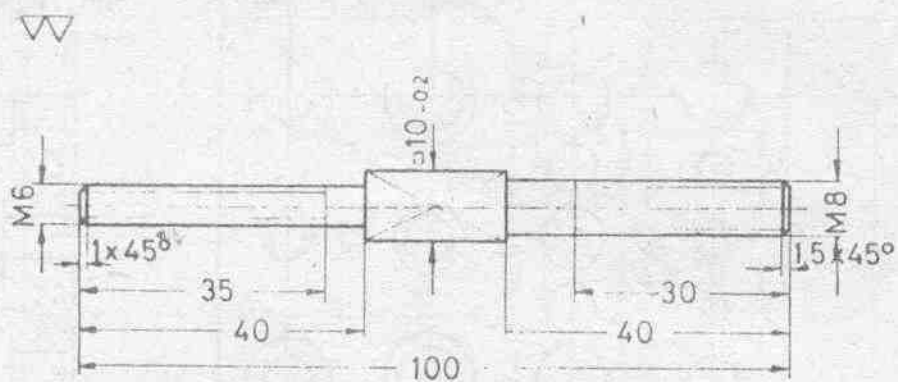
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BASIC/FITTING



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

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THE MATERIAL WILL BE SUPPLIED BY THE TURNER SECTION.

SEQUENCE OF OPERATIONS

NO.	Symbol	Tools	Descriptions
1		FILES MEASURING- AND CHECKING TOOLS	FILING OF SQUARE 10 MM
2		DIE M 6	CUTTING OF OUTSIDE THREAD M6
3		DIE M 8	CUTTING OF OUTSIDE THREAD M8

SCALE 1: 1

MAT.: ST 37 - 1

THREAD BOLT
FOR ELECTRICIAN ONLY

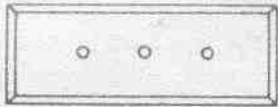
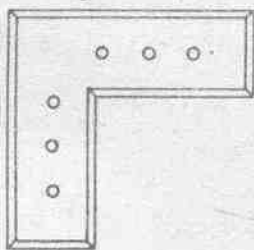
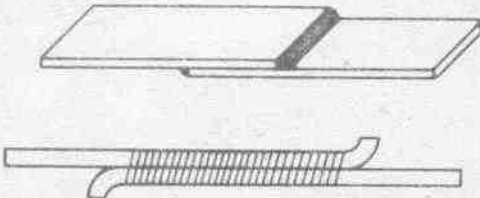
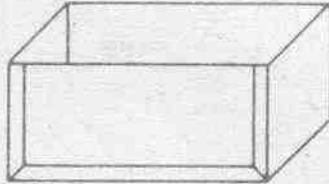
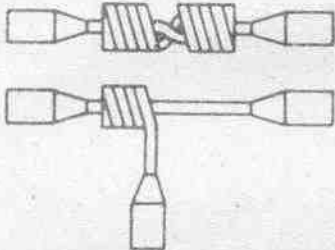
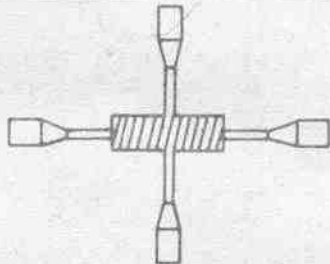
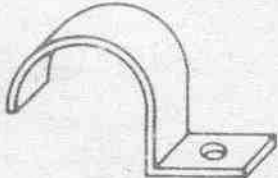
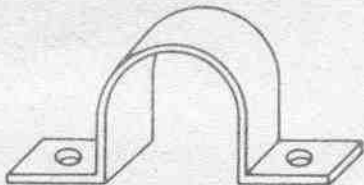
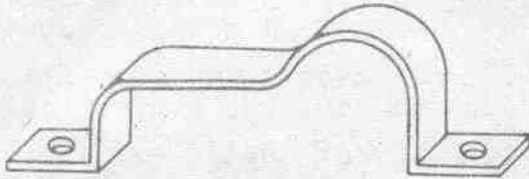
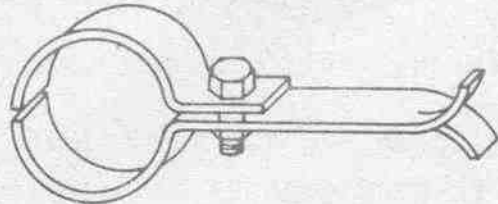

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BASIC/FITTING

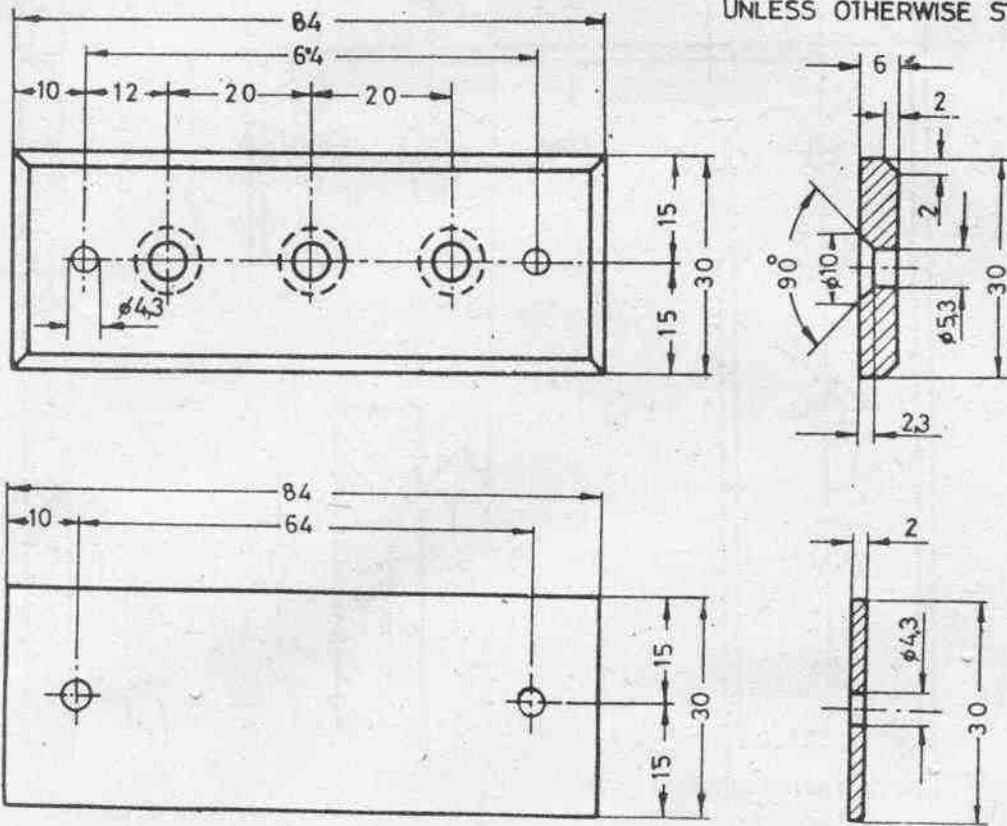


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

		
<p>TERMINAL PLATE I 01</p>	<p>TERMINAL PLATE II 02</p>	
		
<p>SOLDERING I 03</p>	<p>SHEETMETAL BOX 04</p>	
		
<p>SOLDERING II 05</p>	<p>SOLDERING III 06</p>	
		
<p>FOUR CLAMPS CLAMP I 07</p>	<p>THREE CLAMPS CLAMP II 08</p>	
		
<p>TWO CLAMPS CLAMP III 09</p>	<p>CLAMP IV 10</p>	
<p>LAYOUT</p>		<p>EP 1/2.5 3 BENCH WORK</p>
 <p>DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING PAK-GERMAN TECHNICAL TRAINING PROGRAMME</p>		<p>GENERAL ELECTRICIAN 19</p>

TOLERANCE ± 0.1
UNLESS OTHERWISE STATED



MATERIAL

2 mm and 6 mm hardpaper plates "Pertinax"

Countersunk brass screws M 5x30, brass nuts M5, brass washers 5 mm

PREPARATION OF TERMINAL PLATES

1. Check the material, mark the size of the plates and the centres of the holes according to drawing.
2. Saw the plates to approximate size.
3. Clamp both pieces together and drill the 4.3 mm holes.
4. Fit the 4 mm screws temporarily and the filing should be done according to marking.
5. File the workpieces according to size, mind the right angles and remove the burr as required.
6. Take the plates apart, drill and countersink the 5.3 mm holes.
7. Fit the **countersunk** screws with washers and hexagon nuts.
8. Cover and isolate the screw heads by fitting the thin plate from underneath with the help of 4 mm cheese head screws.

TERMINAL PLATE 1

EP 2.3/2.5.3/1

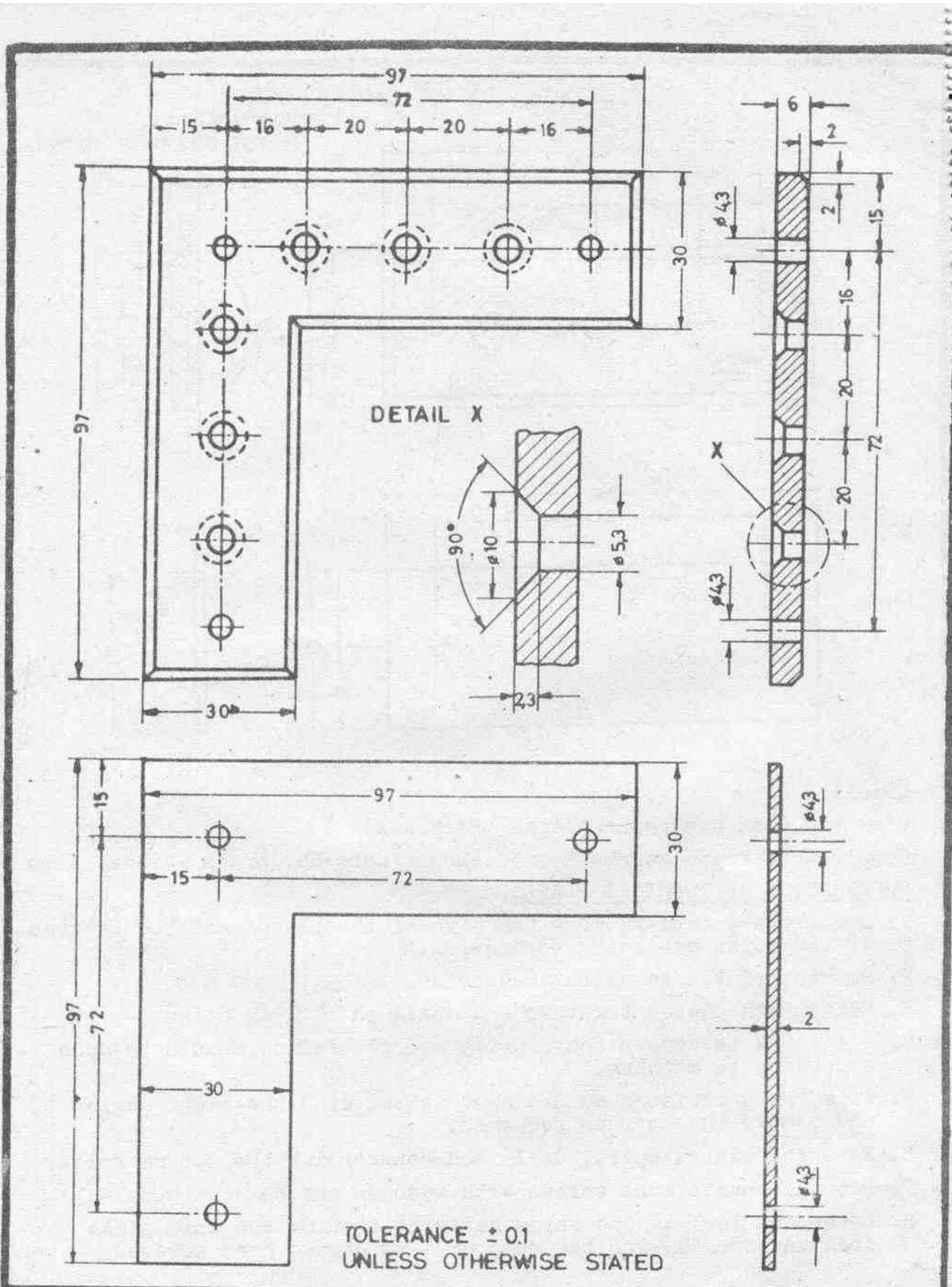
Bench Work



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL 21



TOLERANCE ± 0.1
UNLESS OTHERWISE STATED

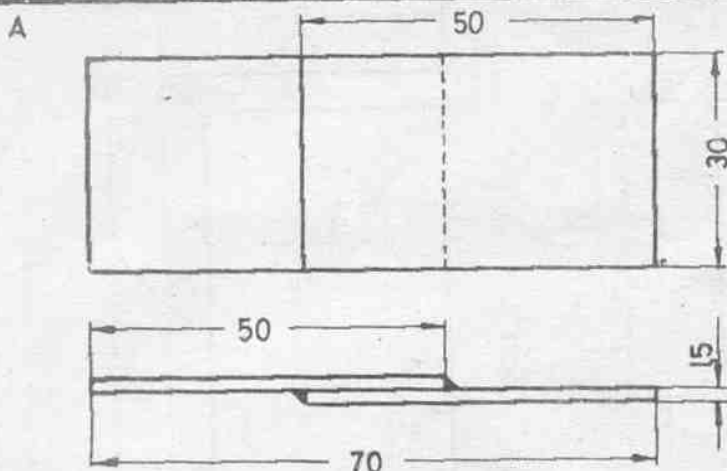
TERMINAL PLATE 2

EP 2.3/2.5.3/2
Bench Work



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING
PAK-GERMAN TECHNICAL TRAINING PROGRAMME

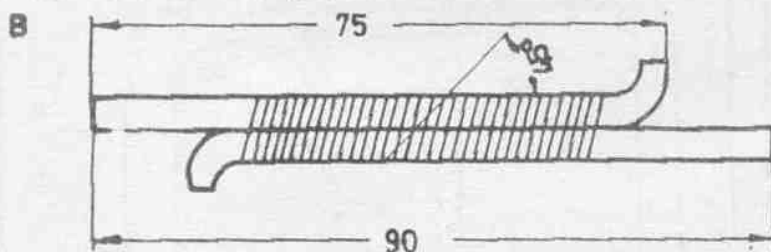
ELECTRICIAN
GENERAL



TOLERANCE ± 0.1
UNLESS OTHERWISE
STATED

SEQUENCE OF OPERATION

1. File sheets at right angle according to the given measurement.
2. Make the soldering surfaces clean and bright using file or scraper.
3. Apply soldering flux.
4. Tin both sheets at the soldering surfaces.
5. Solder the joint.



SEQUENCE OF OPERATION

1. Straighten and bend the copper wire and make it bright.
2. Wrap bending wire around the joint according to sketch.
3. Apply soldering flux.
4. Add solder and make sure that it properly penetrates the joint.
5. Saw under 45° as shown in the sketch and file the cutting surfaces for checking.

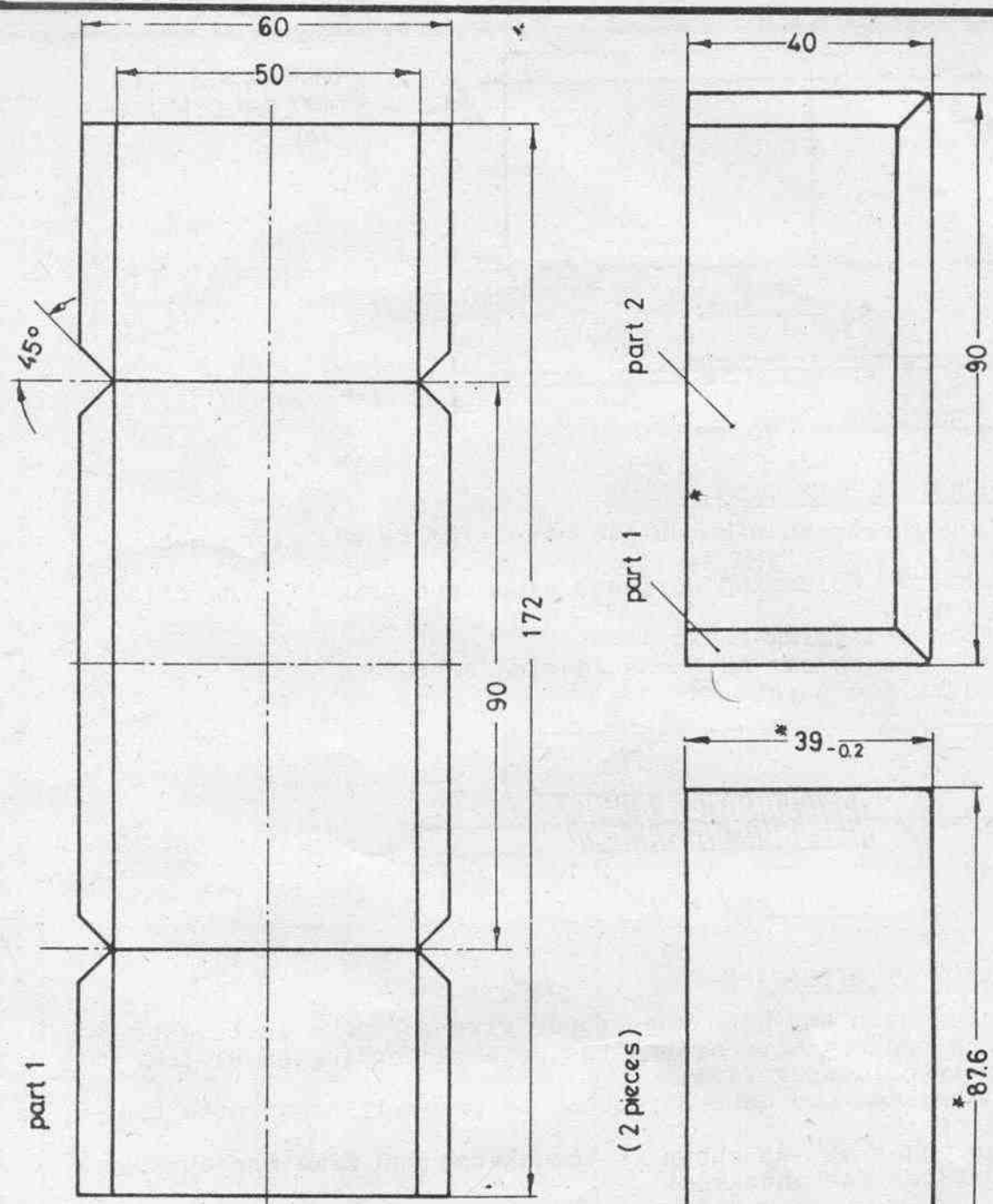
TOOLS AND MATERIALS

File, Scraper, Combi-pliers, Soldering iron, Soldering flux, Solder, Soldering stone.

NOTE

It is essential to heat sheets and wires to the correct soldering temperature. At too low temperature to solder does not melt and penetrate the joint properly. Such "cold joints" are not strong and do not give a good conductive connection.

SOLDERING		EP 2.3/2.5.3/3
A. SOLDERING JOINT	B. WIRE JOINT	Bench Work
DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING		ELECTRICIAN GENERAL
FAK-GERMAN TECHNICAL TRAINING PROGRAMME		23



PREPARE THE BOX ONLY IF NOT MADE
 IN 1.0.1/7 & 16.
 THICKNESS 1mm or SWG 19 OTHERWISE
 CHANGE MEASUREMENTS OF PART 2 *
 GIVE SEQUENCE OF OPERATION OVERLEAF
 TOLERANCE ± 0.1 UNLESS OTHERWISE STATED

SOLDERING
SHEETMETAL BOX

EP 2.3/2.5.3/4
 Bench Work



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
 GENERAL

A



SEQUENCE OF OPERATION

1. Remove the insulation from the ends of wire.
2. Make the ends clean and bright.
3. Twist the wires together as shown in drawing.
4. Add soldering flux.
5. Solder the wire-connection.

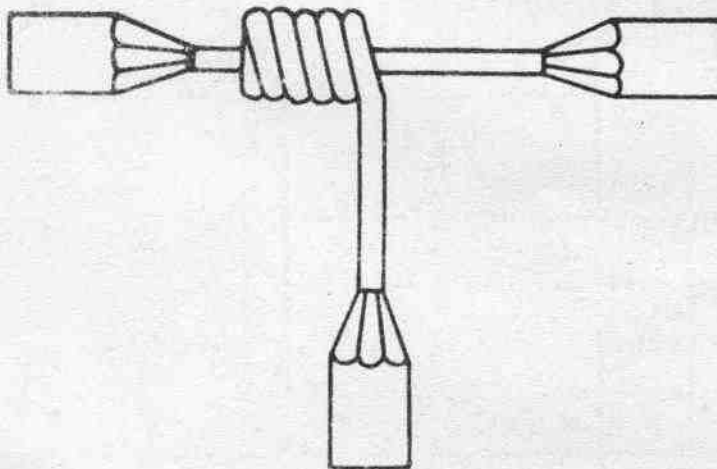
TOOLS AND MATERIALS

Combination-pliers, flat-nose-pliers, electricians knife, insulation remover, soldering iron, solder flux, soldering wire.

NOTE


Heat up the soldering joints until solder flows. Don't stick solder to the joint.

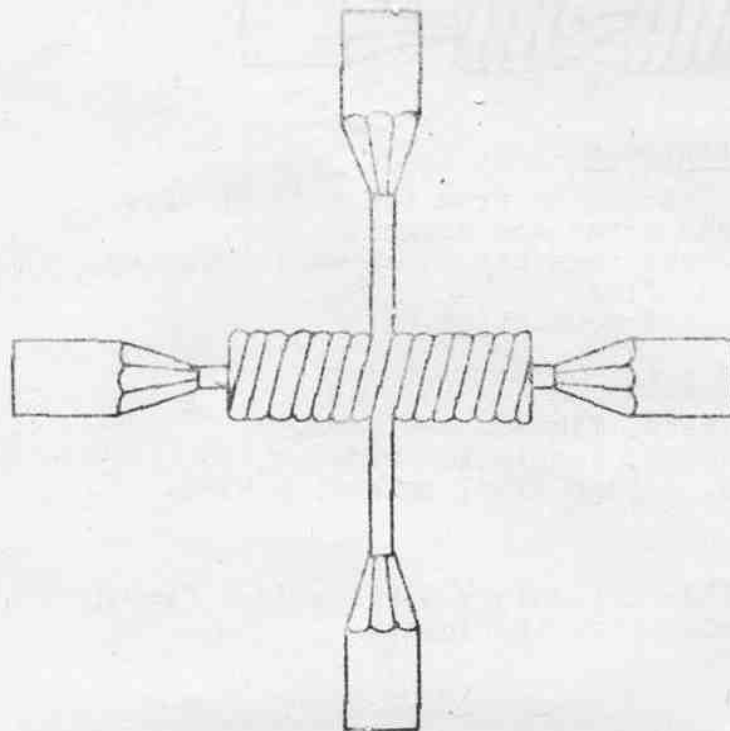
B



SEQUENCE OF OPERATION

1. Remove the insulation from the ends of wire.
2. Make the ends clean and bright.
3. Twist the wires together as shown in drawing.
4. Add soldering flux.
5. Solder the wire-connection.

	SOLDERING	EP 2 3/2.5.3/5
	A MARRIED-JOINT B T-JOINT	Bench Work
	DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING PAK-GERMAN TECHNICAL TRAINING PROGRAMME	ELECTRICIAN GENERAL ✓



SEQUENCE OF OPERATION

1. Remove the insulation from the ends of wire.
2. Make the ends clean and bright.
3. Twist the wires together as shown in drawing.
4. Add soldering flux.
5. Solder the wire-connection.

TOOLS AND MATERIALS

Combination-pliers, flat-nose-pliers, electricians knife, insulation remover, soldering iron, solder flux, soldering wire.

SOLDERING
CROSS JOINT

EP 2.3/2.5.3/6

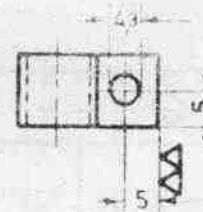
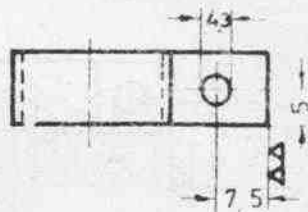
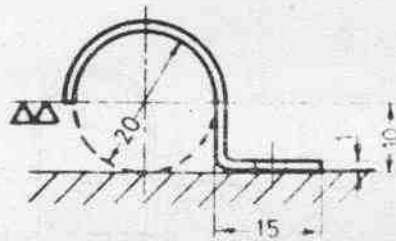
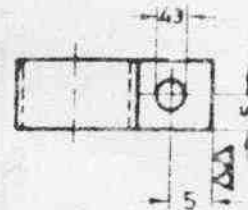
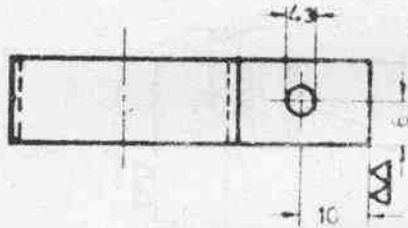
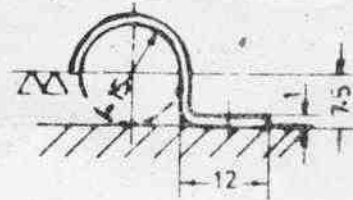
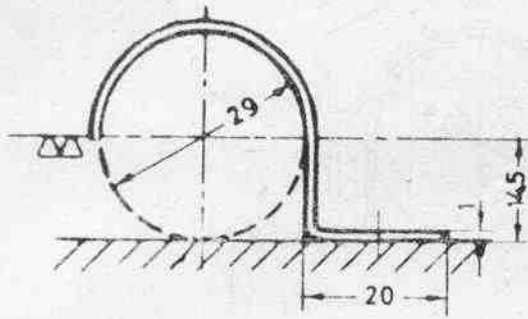
Bench Work

DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL

TOLERANCE ± 0.1
UNLESS OTHERWISE STATED



SEQUENCE OF OPERATION

1. File one end in right angle.
2. Mark the bending edge and bend it in right angle.
3. Bend the radius with the help of the bending-rod.
4. Cut the second end according to size and file it in right angle.
5. Mark, punch and drill the hole.

MAKING OF CLAMPS

EP 2.3/2.5.3/7

Bench Work

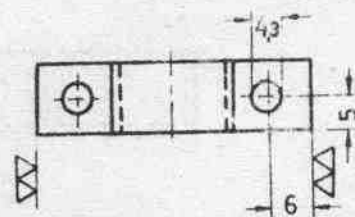
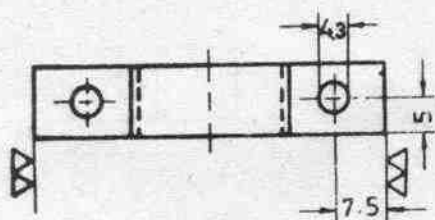
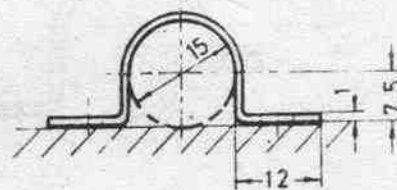
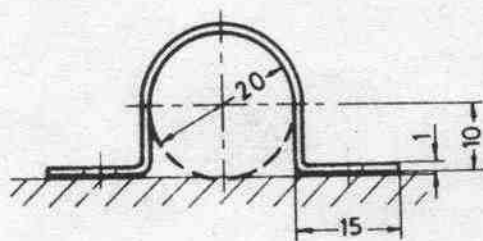
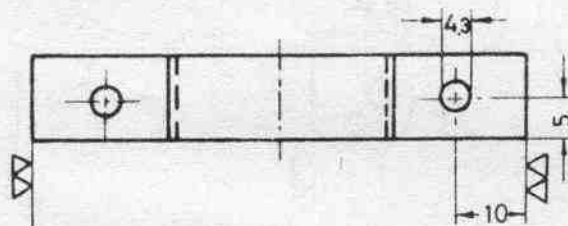
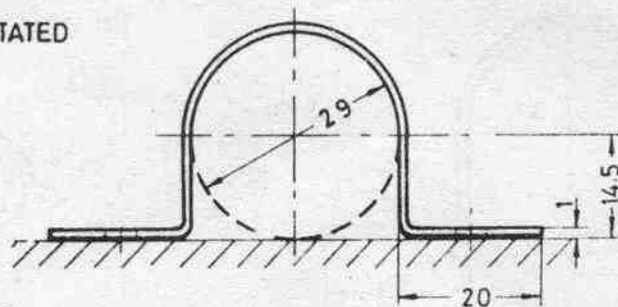


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL

TOLERANCE ± 0.1
UNLESS OTHERWISE STATED



SEQUENCE OF OPERATION

1. File one end at right angle.
2. Mark the bending edge and bend it at right angle.
3. Bend the radius with the help of the bending-rod.
4. Mark the second bending edge and bend it.
5. Cut the second end to size and file it at right angle.
6. Mark, punch and drill the holes.

MAKING OF CLAMPS

EP 2.3/2.5.3/8

Bench Work



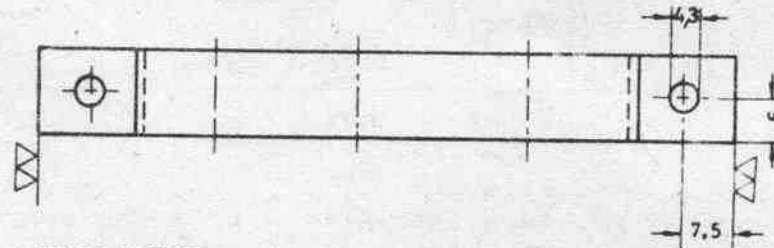
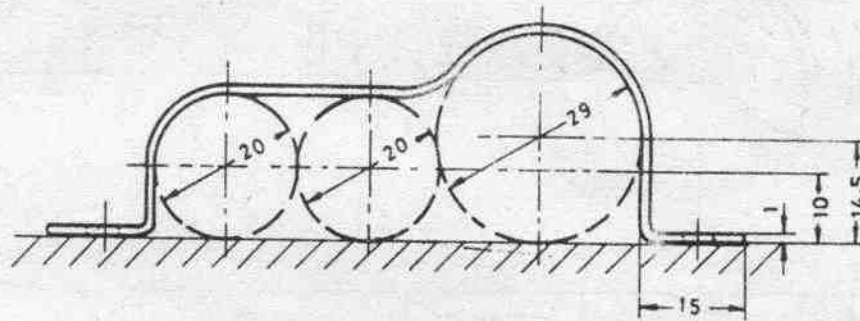
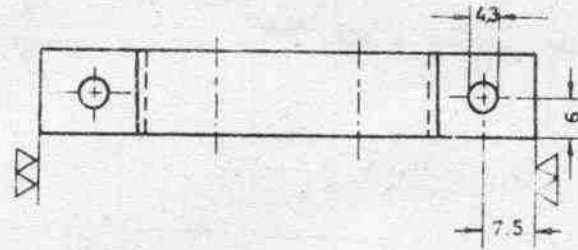
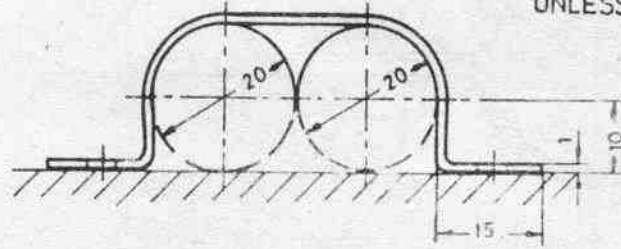
DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK. GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL

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TOLERANCE ± 0.1
UNLESS OTHERWISE STATED



SEQUENCE OF OPERATION

1. File one end at right angle.
2. Mark the bending edge and bend it at right angle.
3. Bend the clamp according to drawing.
4. Mark the second bending edge and bend.
5. Cut the second end to size and file it at right angle.
6. Mark, punch and drill the holes.

MAKING OF CLAMPS

EP 2.3/2.5.3/9

Bench Work

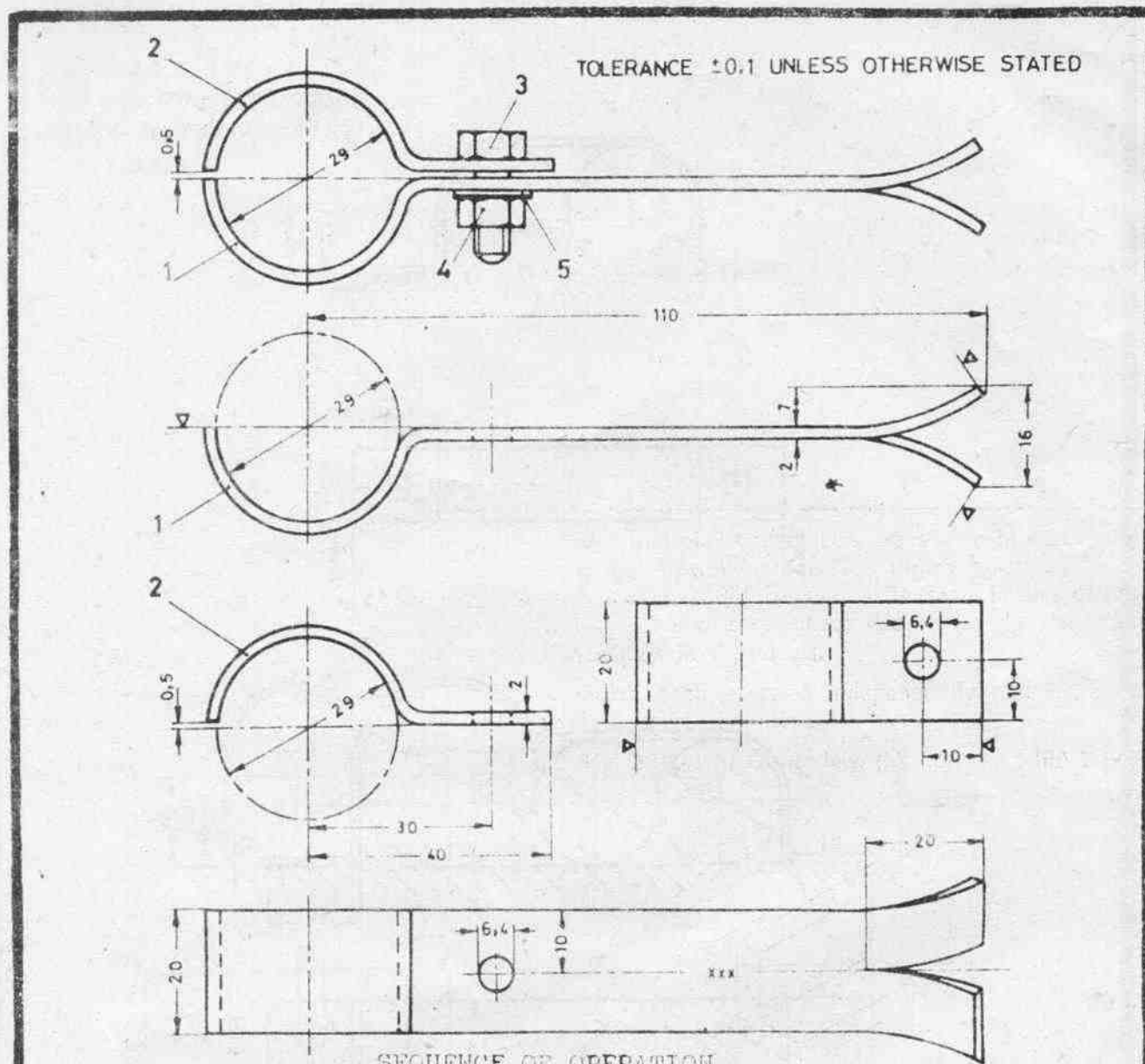


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL

29



SEQUENCE OF OPERATION

- | | |
|----------------|--|
| Part No. 1 | 1. File one end at right angle.
2. Mark the bending edge and bend the radius with the help of the bending rod.
3. Cut the second end to size and file it at right angle. |
| Part No. 2 | 4. Split and bend the wall-side end.
5. File one end at right angle.
6. Mark the bending edge and bend the radius with the help of the bending-rod.
7. Cut the second end to size and file it at right angle. |
| Part No. 1 + 2 | 8. Mark, punch and drill the holes in both parts. |
| Part No. 1 - 5 | 9. Assemble all five parts together. |

MAKING OF CLAMPS

EP 2.3/2.5.3/10

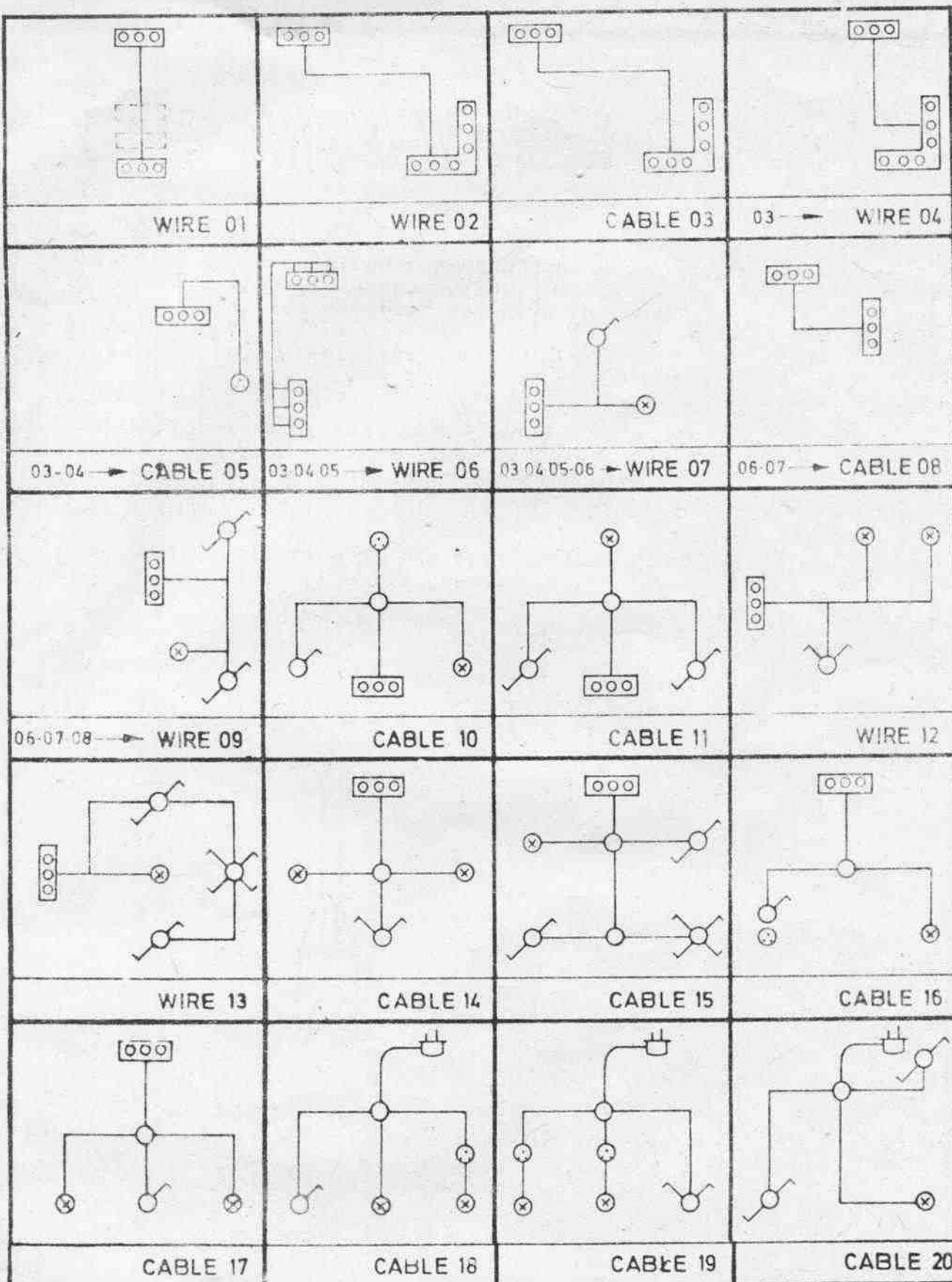
Bench Work



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL



LAYOUT

EP 2.1/2.5.1

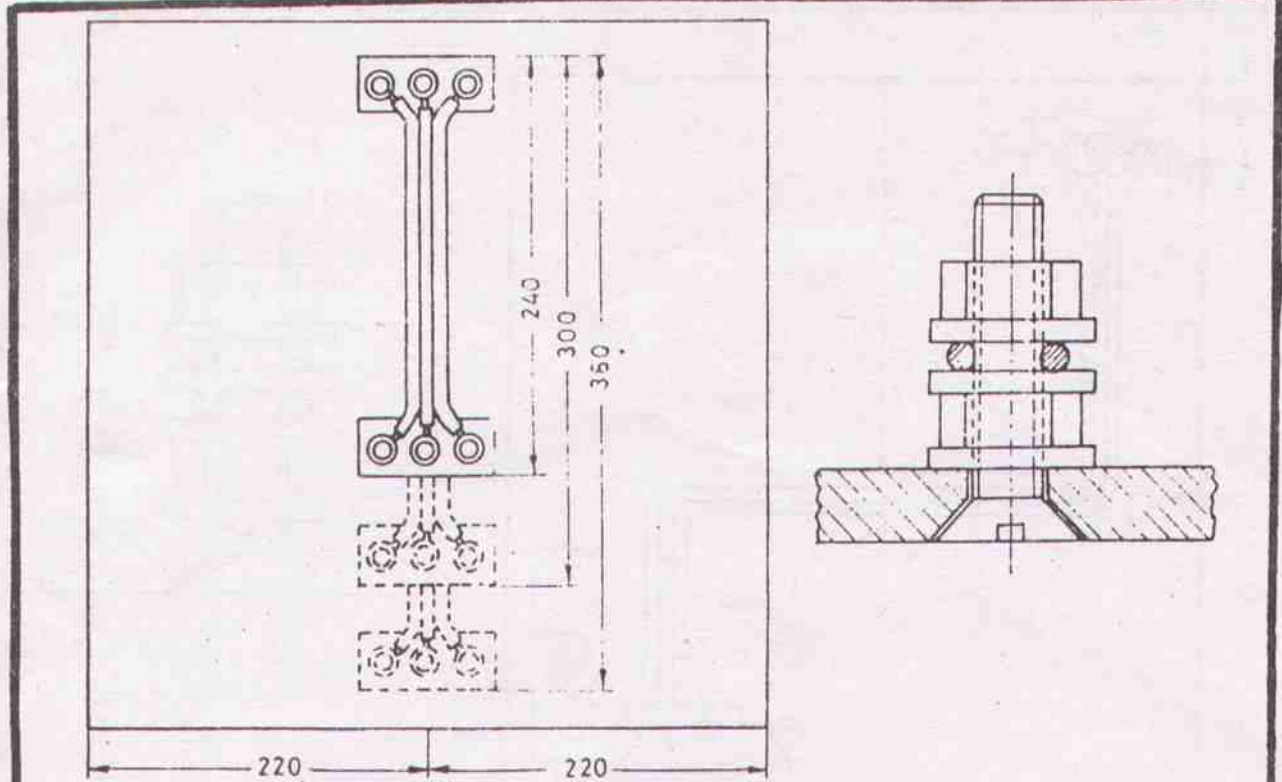
Installation I



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

FAK-GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL



SEQUENCE OF OPERATION

1. Fix terminal plates on the exercise board according to drawing.
2. Straighten the wire and cut it into three equal pieces.
3. Remove the insulation from one end of each wire.
4. Make an eye on each bared end.
5. Bend the wires according to drawing.
6. Cut the other ends of the wires to the necessary length, remove the insulation and make eyes.
7. Connect the wires with terminals and tighten the nuts.
8. Check the job thoroughly and compare with drawing.

TOOLS REQUIRED


Electrician's knife
 Plier, Flat- and Round Nose Plie.
 Backsquare, Meterrule,
 Spanner 9 mm

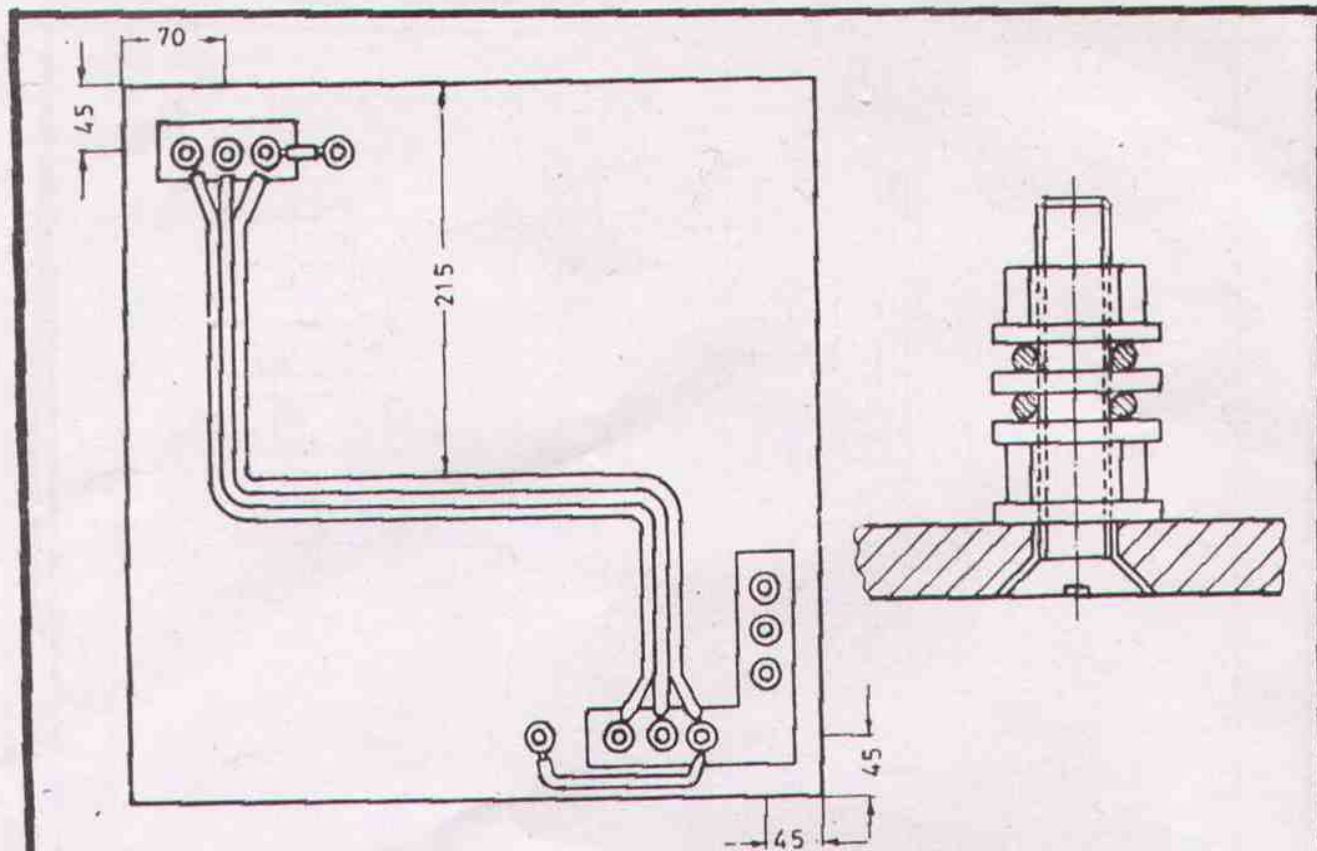
MATERIAL

2 Terminal plates I, compl.
 1.20 m NYA 1.5 mm²
 (1/.044 ~ 1 mm²)
 4 Cheese head screws
 M 4 x 25
 (3/16 " x 1 ") w. nuts
 and washers

NOTE

Don't damage the conductor when removing the insulation!
 Don't bend the wire with sharp edged tools!
 Make eyes always according to screw-size and bend them clockwise!

	HANDLING OF WIRE	EP 2.3/2.5.1/1
		Installation I
	DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING PAK-GERMAN TECHNICAL TRAINING PROGRAMME	ELECTRICIAN GENERAL 35



SEQUENCE OF OPERATION

1. Remove all parts from exercise board.
2. Fix terminal plates on the exercise board according to drawing.
3. Straighten the wire and cut it into three equal pieces.
4. Remove the insulation, make eyes and connect the wires with terminals on one side.
5. Bend the wires according to drawing.
6. Cut the other ends of wires to the necessary length, remove the insulation and make eyes.
7. Connect the wires with terminals, tighten the nuts and do the final check.

NOTE

Don't damage the conductor while removing the insulation!
 Don't bend the wire with sharp edged tools!
 Make eyes always according to screw-size and bend them clockwise!

MATERIAL

1 Terminal plate I,	compl.	7 Cheese head screws M 4 x 25
1 Terminal plate II,	compl.	(5/16 " x 1 ") w. nuts & washers
2.50 m NYA 1.5 mm ²	(1/.044 ~ 1 mm ²)	

HANDLING OF WIRE

EP 2.3/2.5.1/2

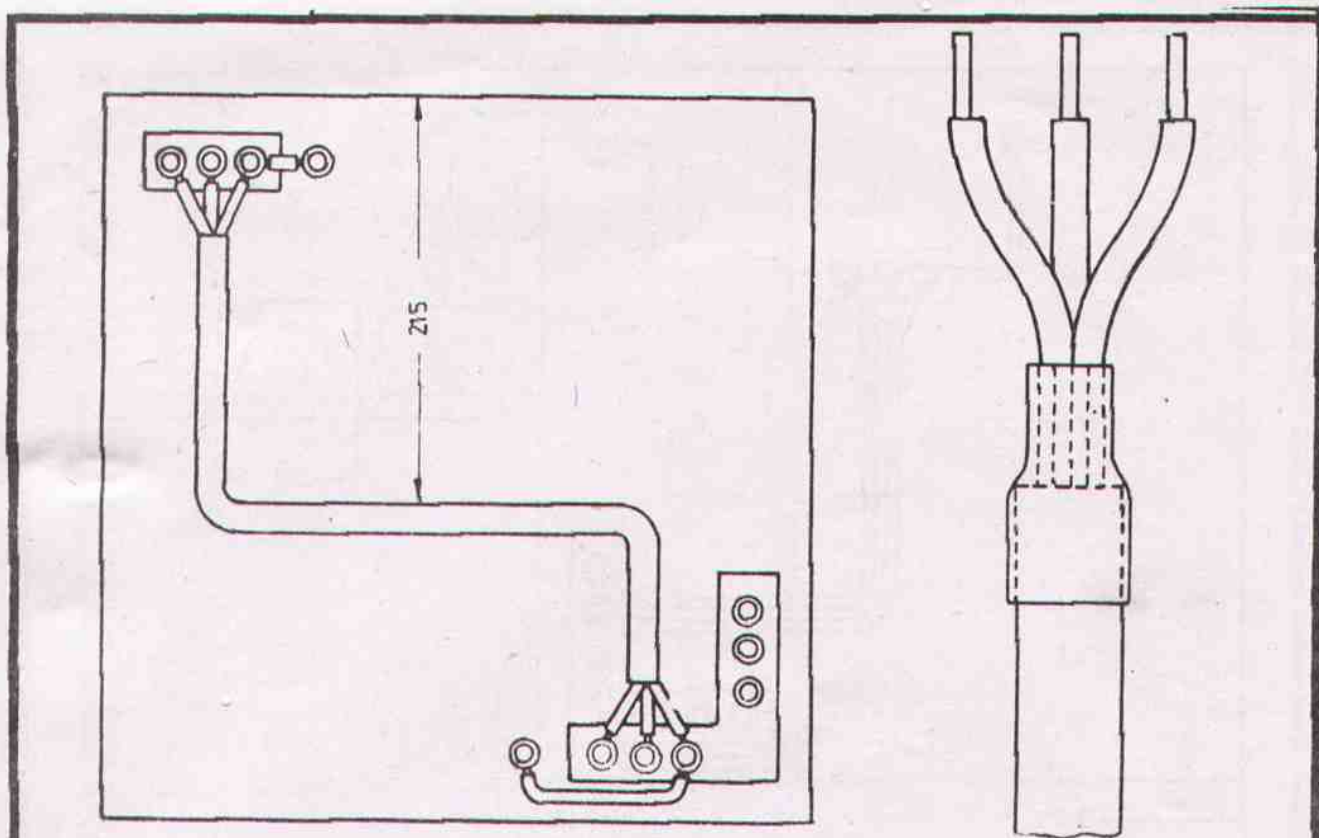
Installation I



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
 GENERAL



SEQUENCE OF OPERATION

1. Remove the wires of exercise 2.
2. Straighten the cable.
3. Bend the cable according to drawing.
4. Prepare both ends of the cable exactly as per special sketch and make eyes
5. Fix the cable on the exercise board with clamps and connect the wires with terminals.
6. Check the job thoroughly and compare with drawing.

NOTE

Don't use tools to bend the cable.
Don't damage conductor-insulation while removing the sheath-insulation.

MATERIAL

0.80 m NYM 3 x 1.5 mm²

(3 core cable round 1/ 044 - 3/.029)

HANDLING OF CABLE

EP 2.3/2.5.1/3

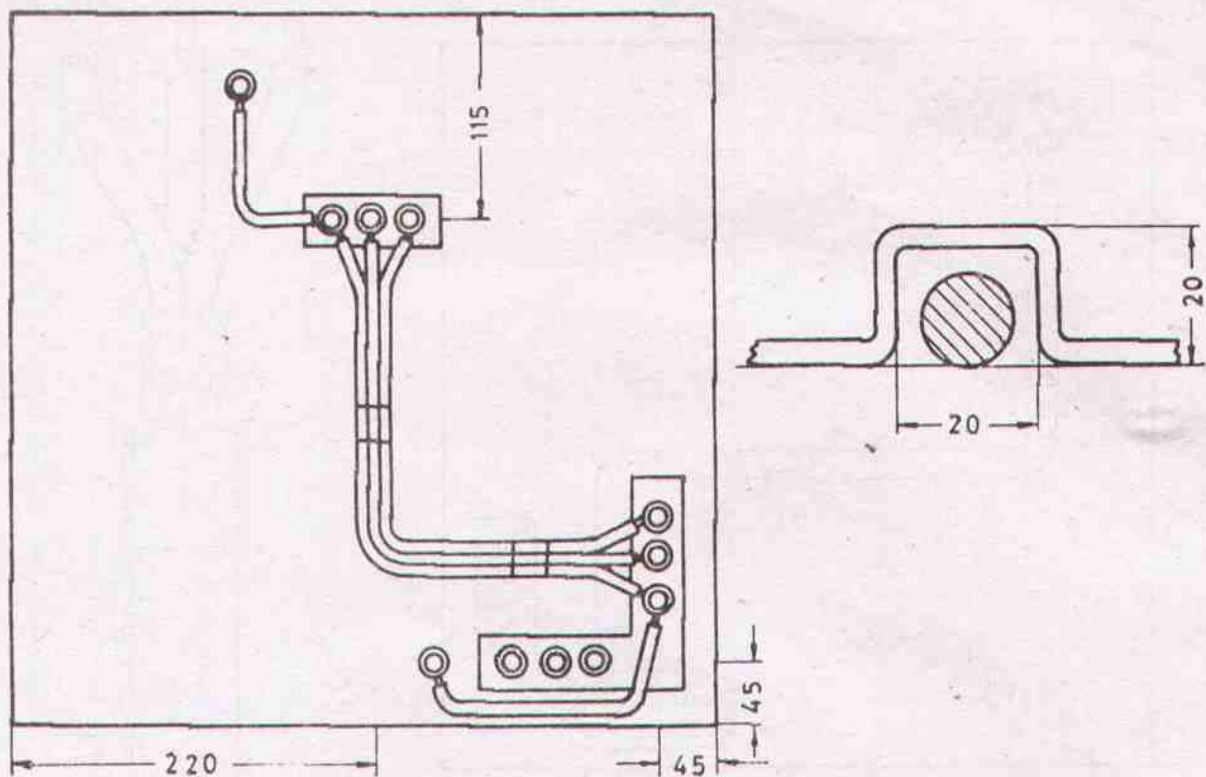
Installation 1



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL



SEQUENCE OF OPERATION

1. Fix an additional terminal plate on the exercise board.
2. Straighten the wire and cut it into three equal pieces.
3. Bundle the wires with insulation tape.
4. Bend the wires according to drawing and make the crossing as shown in additional sketch.
5. Cut the ends of the wires to the necessary length, remove the insulation and make eyes.
6. Connect the wires with both terminal plates, tighten the nuts and do the final check.

MATERIAL

- 1 Terminal plate I
- 2.0 m NYA 1,5 mm² (1/.044 ~ 1 mm²)
- 2 Cheese head screws M4 x 25
(3/16" x 1") with nuts and washers

HANDLING OF WIRE

EP 2.3/2.5.1/4

Installation I

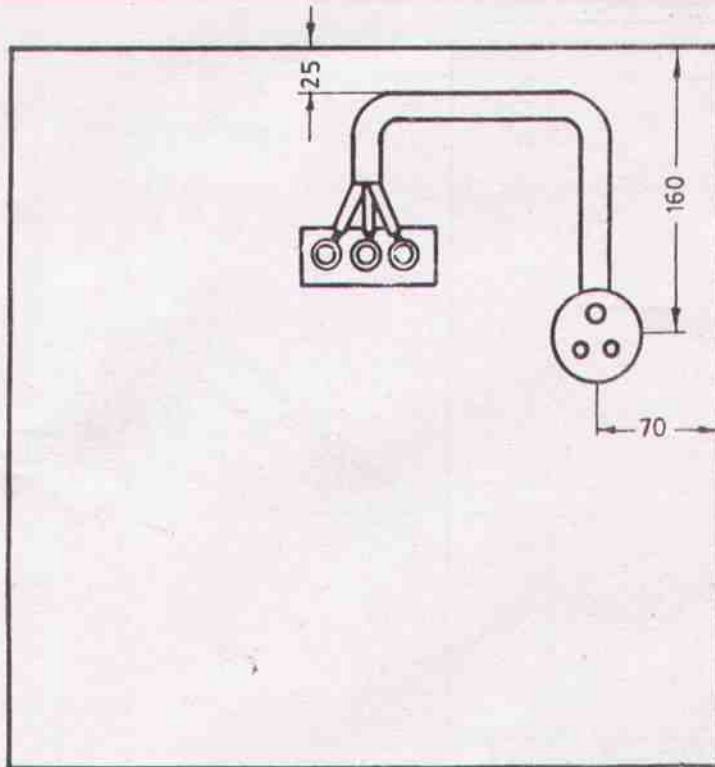


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL

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SEQUENCE OF OPERATION

1. Fix the socket on the exercise board.
2. Straighten the cable.
3. Bend the cable according to drawing.
4. Prepare the ends of the cable.
5. Fix the cable with clamps on the exercise board.
6. Connect the wires with terminals.
7. Check the job thoroughly and compare it with drawing.

NOTE

Connect all wires properly, especially the protective wire.

MATERIAL

- 1 3-pin socket
- 1 round block
- 0.50 m NYM 3 x 1.5 mm²
(3 core cable round
1/.044 - 3/.029)

- 1 Countersunk screw M 4 x 50
(3/16 " x 2 ") w. nut &
washer)
- 2 Wood screws 3.5 x 20
half round head (No. 6 3/4")

INSTALLING A SOCKET

EP 2.3/2.5.1/5

Installation I

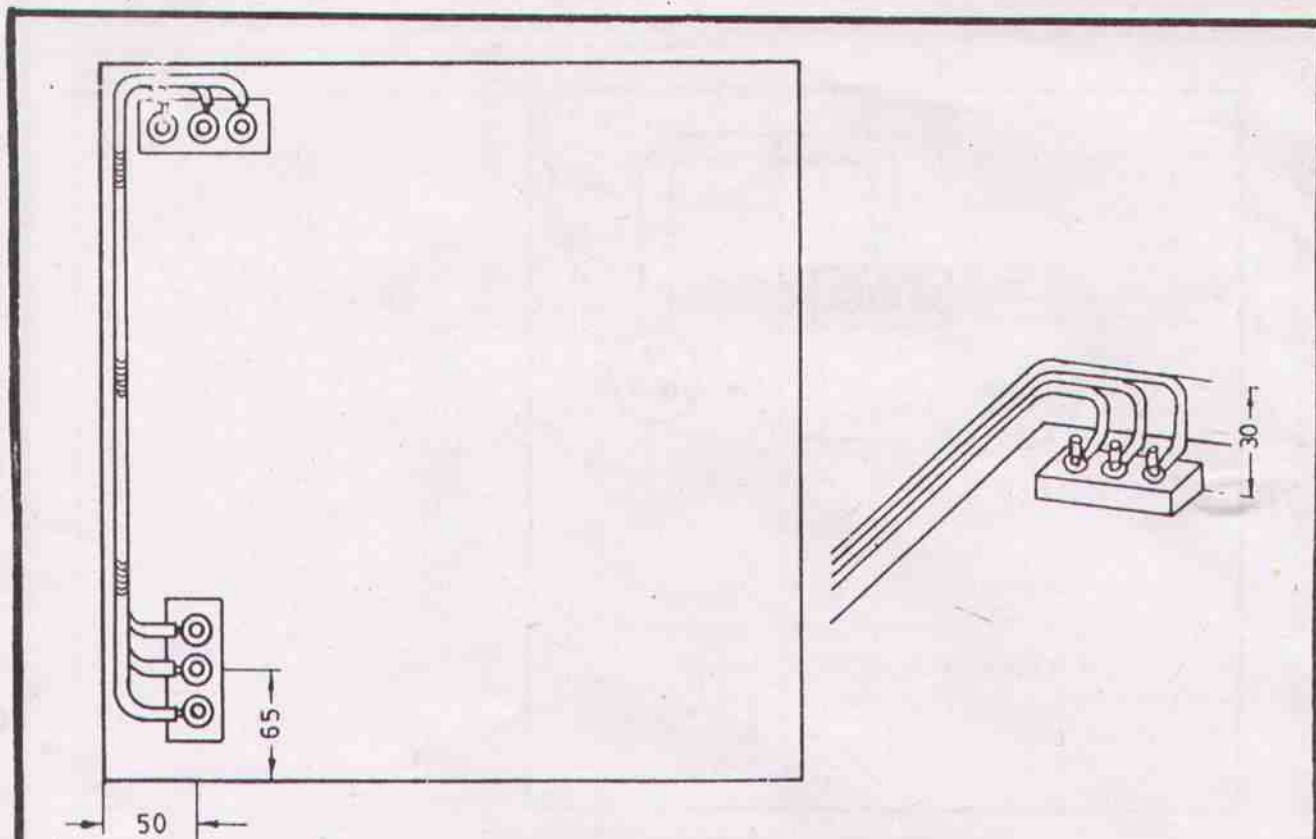


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL

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SEQUENCE OF OPERATION

1. Fix the additional terminal plate on the exercise board.
2. Straighten the wire and cut it into three equal pieces.
3. Bundle the wires as shown in drawing.
4. Bend the wires as shown in additional sketch.
5. Connect the wires with terminals.
6. Check the job thoroughly and compare it with drawing.

MATERIAL

- 1 Terminal plate I.
2. 10 m NYA 1.5 mm²
(1/.044 ~ 1 mm²)
- 2 Cheese head screws M 4 x 25
(3/16 " x 1 ") w. nuts and washers

HANDLING OF WIRE

EP 2.3/2.5.1/6

Installation I

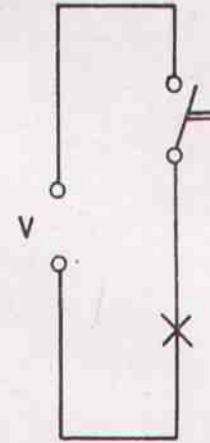
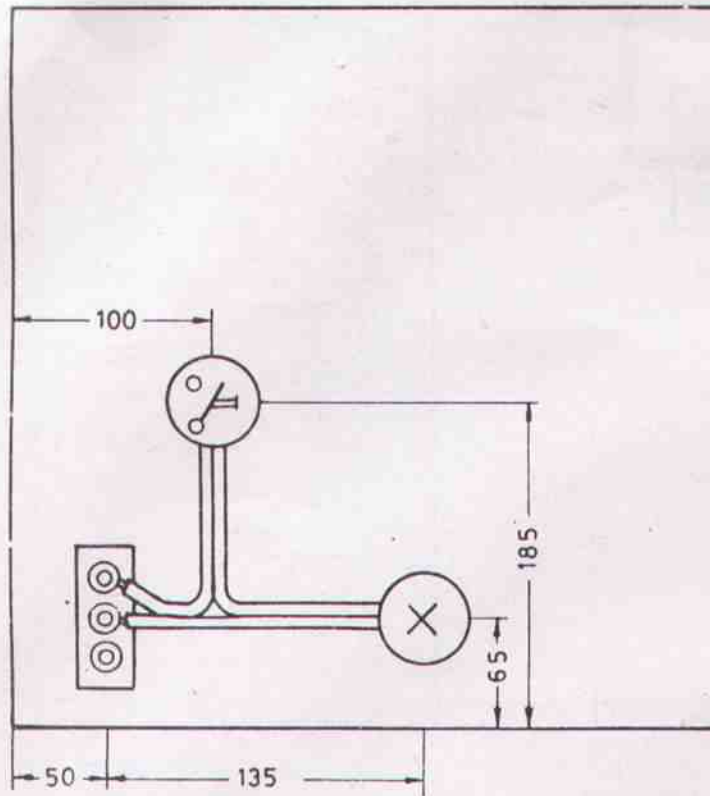


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL

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SEQUENCE OF OPERATION

1. Fix lamp holder and single pole switch on the exercise board.
2. Straighten the wire and cut it into the necessary length.
3. Bend the wires according to drawing.
4. Connect the wires as shown in drawing and additional sketch.
5. Check the job thoroughly and compare it with drawing.

NOTE

Phase wire always has to be connected to the switch.
Neutral to the lamp holder.

MATERIAL

- | | |
|--|---|
| 1 Lamp holder | 2 Countersunk screws M 4 x 50
(3/16" x 2") w. nuts & washers |
| 1 Single pole switch | 2 Wood screws half round head 3.5 x 15
(No. 6 x 1/2") |
| 2 Round blocks | 2 Wood screws half round head 3.5 x 20
(No. 6 x 3/4") |
| 0.9 m NYA 1.5 mm ²
(1/.044 ~ 1 mm ²) | |

LAMP-SINGLE POLE SWITCH

EP 2.3/2.5.1/7

Installation I

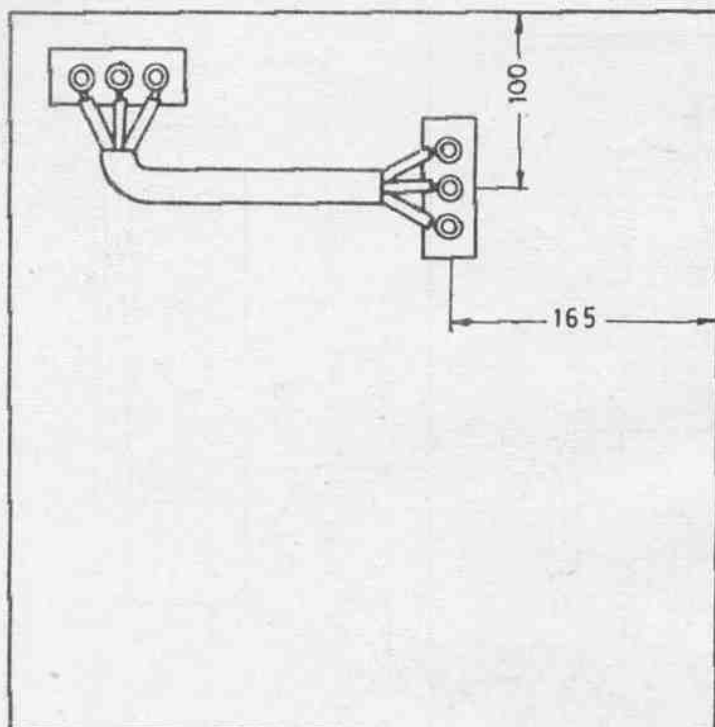


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

FOR GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL

39



SEQUENCE OF OPERATION

1. Remove the parts from exercises 3, 4 and 5.
2. Fix terminal plate on the exercise board according to drawing.
3. Straighten the cable.
4. Bend the cable according to drawing and prepare the ends.
5. Fix the cable with clamps on the exercise board.
6. Connect the wires with terminals.
7. Check the job thoroughly and compare it with drawing.

MATERIAL

- 1 Terminal plate I
- 0.35 m NYM 3 x 1.5 mm²
(3 core cable round 1/.044 - 3/.029)
- 2 Cheese head screws M 4 x 25
(3/16" x 1") w. nuts & washers

HANDLING OF CABLE

EP 2.3/2.5.1/8

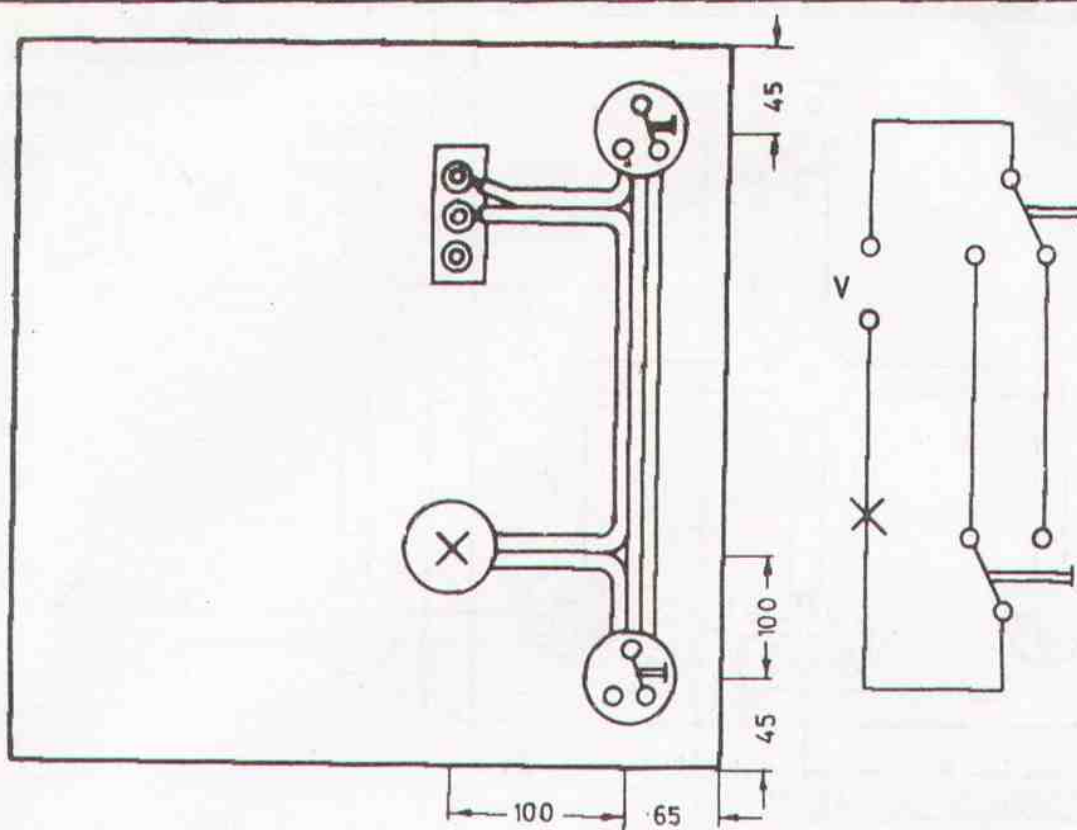
Installation I



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL



SEQUENCE OF OPERATION

1. Fix lamp holder and two-way switches on the exercise board.
2. Straighten the wire and cut it into the necessary length.
3. Bend the wires according to drawing.
4. Connect the wires as shown in drawing and additional sketch.
5. Check the job thoroughly and do the final check.
6. Test the wiring.

MATERIAL

- 1 Lamp holder
- 2 Two-way switches
- 3 Round blocks

2.0 m NYA 1.5 mm²

(1/.044 ~ 1 mm²)

- 3 Countersunk screws M 4 x 50
(3/16 " x 2 ") w. nuts & washers
- 2 Wood screws half round head
3.5 x 15 (No. 6 x 1/2 ")
- 4 Wood screws half round head
3.5 x 20 (No. 6 x 3/4 ")

TWO WAY CIRCUIT

EP 2.3/2.5.1/9

Installation I

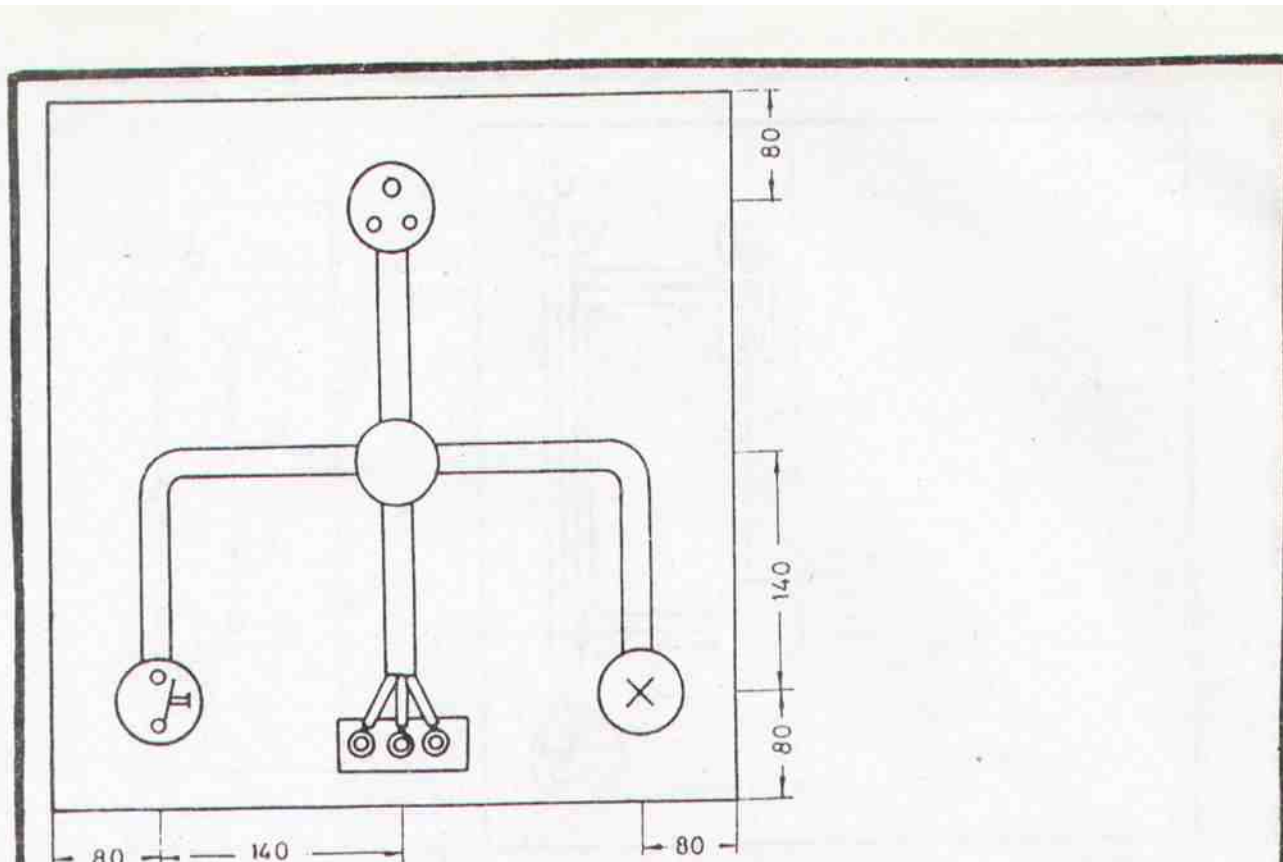


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL

41



SEQUENCE OF OPERATION


1. Remove all parts from exercise board.
2. Fix terminal plate, junction box, single pole switch, socket and lamp holder on the exercise board.
3. Straighten the cable and cut it into the necessary length.
4. Bend the cable according to drawing and prepare the ends.
5. Connect the wires with terminals. (Socket directly connected)
6. Check the job thoroughly and compare it with drawing.
7. Test the wiring

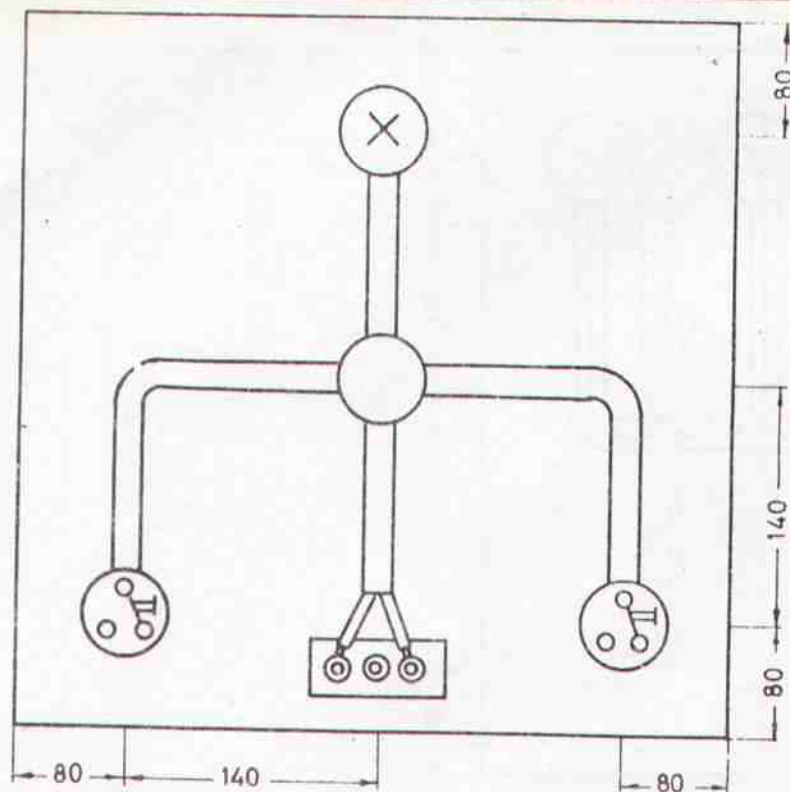
NOTE

The colour-code of protective wires is widely internationally standardised. In most countries yellow/green is prescribed, in some others, however, only green is used (USA, UK, Pakistan etc.). In any case, the colour of the protective wire must not be changed within one system.

MATERIAL

- | | |
|----------------------|----------------|
| 1 Terminal plate I | 1 Lamp holder |
| 1 Single pole switch | 1 Junction box |
| 1 3-pin socket | 3 Round blocks |
- 0.5 m NYM 3 x 1.5 mm² (3 core cable round 1/. 14 - 3/.029)
- 0.75 m NYM 2 x 1,5 mm² (2 core cable round 1/.044 - 3/.029)
- 3 Countersunk screws M 4 x 50 (3/16 " x 2 ") w. nuts & washers
- 4 Cheese head screws M 4 x 25 (3/16 " x 1 ") w. nuts & washers
- 2 Wood screws half round head 3.5 x 15 (No. 6 x 1/2 ")
- 4 Wood screws half round head 3.5 x 20 (No. 6 x 3/4 ")

	LAMP AND SOCKET	EP 2.3/2.5.1/10
		Installation I
 <p>DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING</p> <p>PAK GERMAN TECHNICAL TRAINING PROGRAMME</p>	ELECTRICIAN GENERAL	



SEQUENCE OF OPERATION

1. Remove all parts from exercise board.
2. Fix terminal, junction box, two two-way switches and lamp holder on the exercise board.
3. Straighten the cable and cut it into the necessary length.
4. Bend the cable according to drawing and prepare the ends.
5. Connect the wires with terminals.
6. Check the job thoroughly and compare it with drawing.
7. Test the wiring.

MATERIAL

- | | |
|--------------------|----------------|
| 1 Terminal plate I | 1 Junction box |
| 2 Two-way switches | 3 Round blocks |
| 1 Lamp holder | |
- 0.5 m NYM x 1.5 mm²
(2 core cable round 1/.044 - 3/.029)
- 0.75 m NYM 3 x 1.5 mm²
(3 core cable round 1/.044 - 3/.029)
- 3 Countersunk screws M 4 x 50 (3/16 " x 2 ") w. nuts & washers
 4 Cheese head screws M 4 x 25 (3/16 " x 1 ") w. nuts & washers
 2 Wood screws half round head 3.5 x 15 (No. 6 x 1/2 ")
 4 Wood screws half round head 3.5 x 20 (No. 6 x 3/4 ")

TWO WAY CIRCUIT

EP 2.3/2.5.1/11

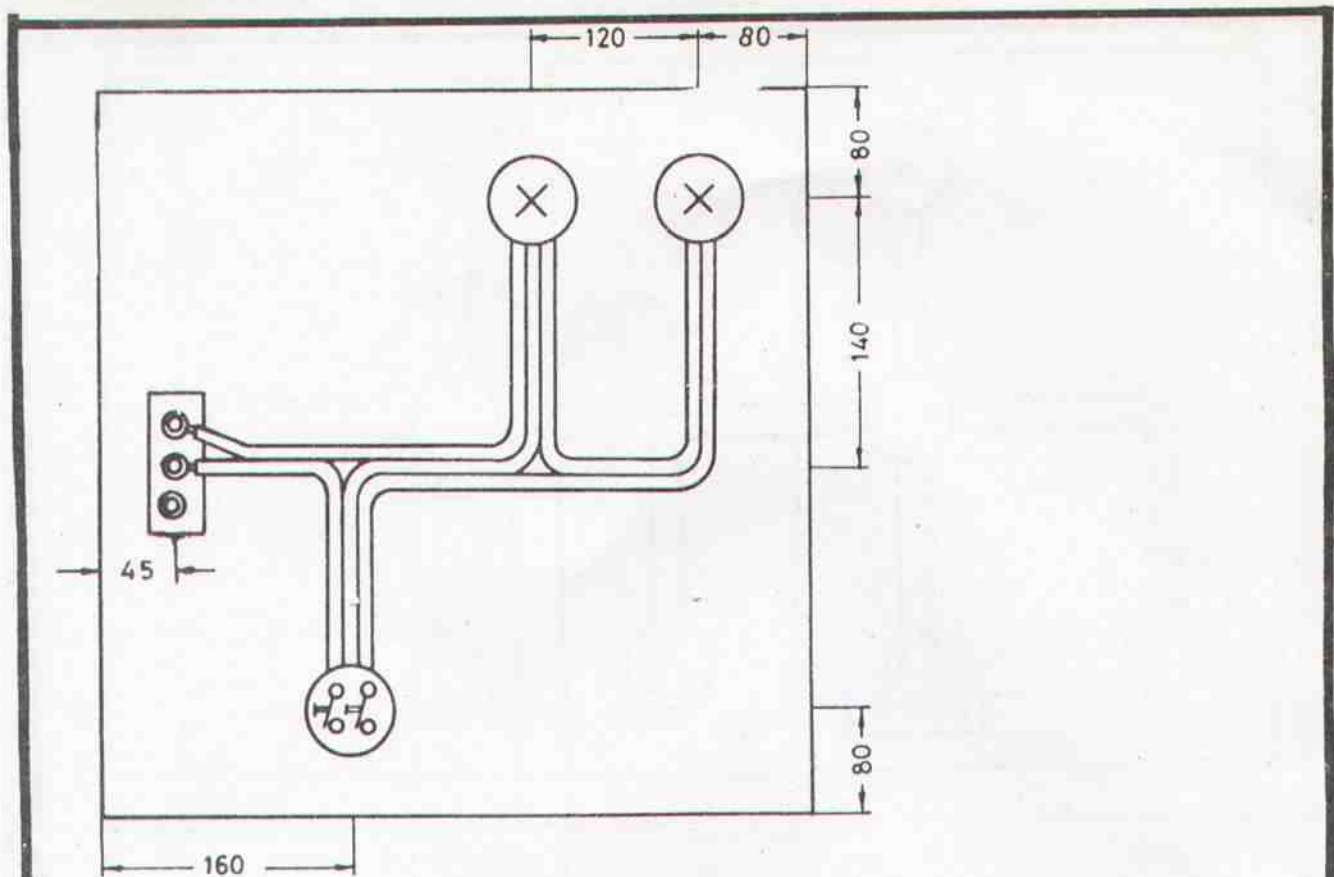
Installation I



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL



SEQUENCE OF OPERATION

1. Remove all parts from exercise board.
2. Fix lamp holders, multicircuit switch and terminal plate on the exercise board.
3. Straighten the wire and cut it into the necessary length.
4. Bend the wires according to drawing and connect them.
5. Check the job thoroughly and compare it with drawing.
6. Test the wiring.

MATERIAL

- | | |
|--|-----------------------|
| 1 Terminal plate I | 1 Multicircuit switch |
| 2 Lamp holders | 3 Round blocks |
| 2.50 m NYA 1.5 mm ² (1/.044 ~ 1 mm ²) | |
| 3 Countersunk screws M 4 x 50 (3/16 " x 2 ") | w. nuts & washers |
| 2 Cheese head screws M 4 x 25 (3/16 " x 1 ") | w. nuts & Washers |
| 4 Wood screws half round head 3.5 x 15 | (No. 6 x 1/2 ") |
| 2 Wood screws half round head 3.5 x 20 | (No. 6 x 3/4 ") |

TWO LAMPS-MULTICIRCUIT SWITCH

EP 2.3/2.5.1/12

Installation I

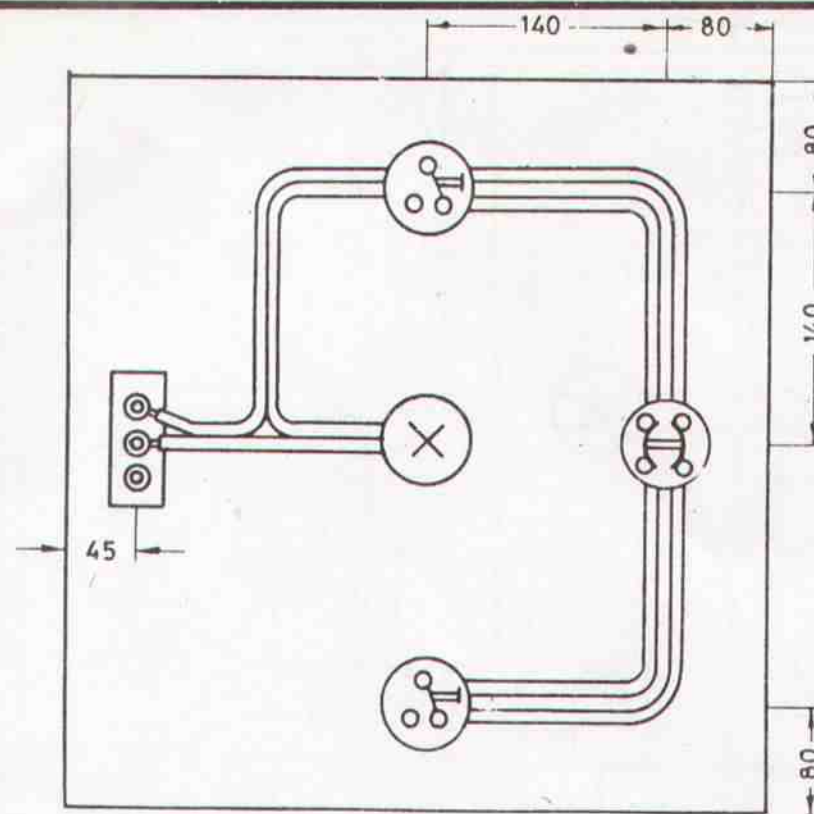


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL

49



SEQUENCE OF OPERATION

1. Remove all parts from exercise board.
2. Fix lamp holder, two-way switches, terminal plate and intermediate switch on the exercise board.
3. Straighten the wire and cut it into the necessary length.
4. Bend the wires according to drawing and connect them.
5. Check the job thoroughly and compare it with drawing.
6. Test the wiring.

MATERIAL

- | | |
|--|-----------------------|
| 1 Terminal plate I | 1 Intermediate switch |
| 1 Lamp holder | 4 Round blocks |
| 2 Two-way switches | |
| 3.5 m NYA 1.5 mm ² (1/.044 ~ 1 mm ²) | |
| 4 Countersunk screws M 4 x 50 (3/16 " x 2 ") w. nuts & washers | |
| 2 Cheese head screws M 4 x 25 (3/16 " x 1 ") w. nuts & washers | |
| 2 Wood screws half round head 3.5 x 15 (No. 6 x 1/2 ") | |
| 6 Wood screws half round head 3.5 x 20 (No. 6 x 3/4 ") | |

If intermediate switch is not available then perform practical exercise of Drg. EP 2.3/2.5.1/21

LAMP-TWO WAY AND INTERMEDIATE SWITCH

EP 2.3/2.5.1/13

Installation I

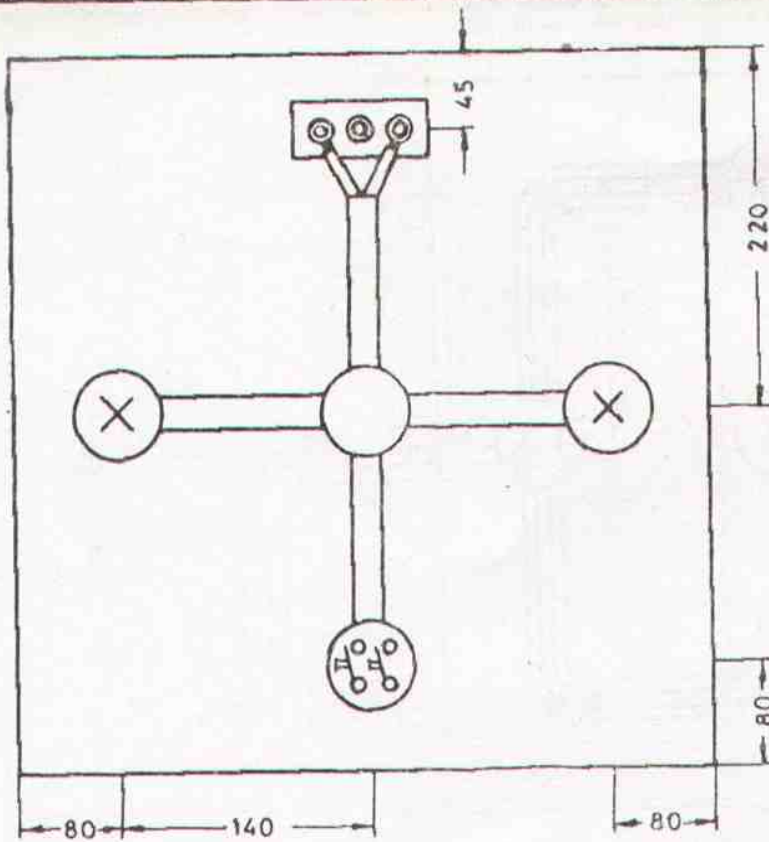


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL

15



SEQUENCE OF OPERATION

1. Remove all parts from exercise board.
2. Fix junction box, multicircuit switch, lamp holder and terminal plate on the exercise board.
3. Straighten the cable and cut it into the necessary length.
4. Prepare the ends and connect the wires.
5. Check the job thoroughly and connect the wires.
6. Test the wiring.

MATERIAL

- | | |
|--|----------------|
| 1 Terminal plate I | 1 Junction box |
| 2 Lamp holders | 3 Round blocks |
| 1 Multicircuit switch | |
| 0.9 m NYM 2 x 1.5 mm ² (2 core cable round 1/.044 - 3/.029) | |
| 0.3 m NYM 3 x 1.5 mm ² (3 core cable round 1/.044 - 3/.029) | |
| 3 Countersunk screws M 4 x 50 (3/16 " x 2 ") w. nuts & washers | |
| 4 Cheese head screws M 4 x 25 (3/16 " x 1 ") w. nuts & washers | |
| 4 Wood screws half round head 3.5 x 15 (No. 6 x 1/2 ") | |
| 2 Wood screws half round head 3.5 x 20 (No. 6 x 3/4 ") | |

TWO LAMPS-MULTICIRCUIT SWITCH

EP 2.3/2.5.1/14

Installation I

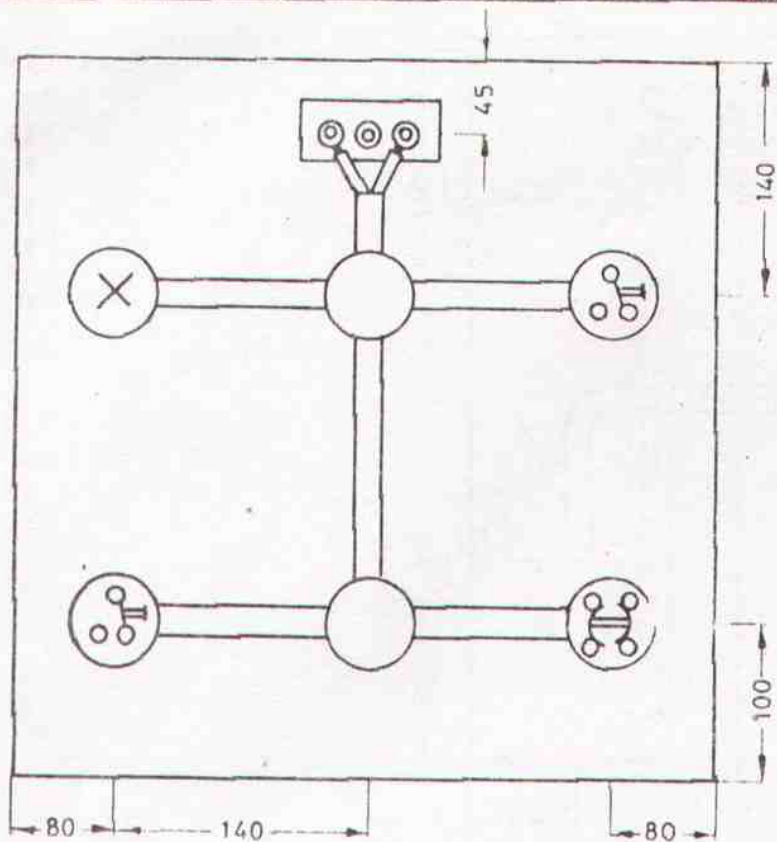


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL

66



SEQUENCE OF OPERATION

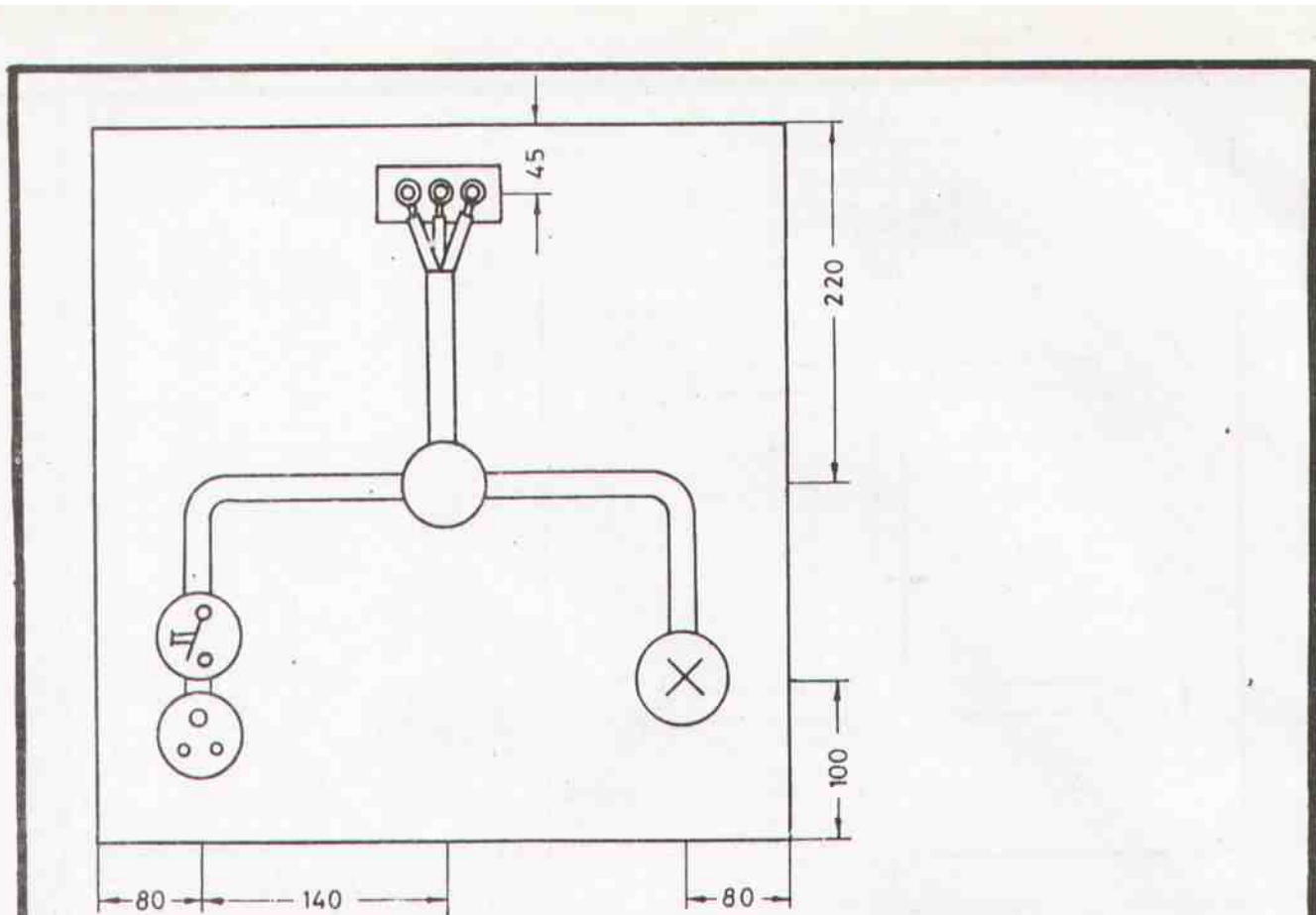
1. Remove all parts from exercise board.
2. Fix junction boxes, switches, lamp holder and terminal plate on the exercise board.
3. Straighten the cable and cut it into the necessary length.
4. Prepare the ends and connect the wires.
5. Check the job thoroughly and compare it with drawing.
6. Test the wiring.

MATERIAL

- | | |
|---|------------------|
| 1 Terminal plate I | 1 Lamp holder |
| 2 Two-way switches | 2 Junction boxes |
| 1 Intermediate switch | 4 Round blocks |
| 0.5 m NYM 2 x 1.5 mm ² (2 core cable round 1/.044 - 3/.029) | |
| 0.9 m NYM 3 x 1.5 mm ² (3 core cable round 1/.044 - 3/.029) | |
| 0.35 m NYM 4 x 1.5 mm ² (4 core cable round 1/.044 - 3/.029) | |
| 4 Countersunk screws M4 x 50 (3/16" x 2") w. nuts & washers | |
| 6 Cheese head screws M4 x 25 (3/16" x 1") w. nuts & washers | |
| 2 Wood screws half round head 3.5 x 15 (No. 6 x 1/2") | |
| 6 Wood screws half round head 3.5 x 20 (No. 6 x 3/4") | |

If intermediate switch is not available then perform practical exercise of Drg. EP 2.3/2.5.1/22

	<p>LAMP-TWO WAY AND INTERMEDIATE SWITCH</p>	<p>EP 2.3/2.5.1/15</p>
		<p>Installation I</p>
	<p>DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING</p> <p>PAK GERMAN TECHNICAL TRAINING PROGRAMME</p>	<p>ELECTRICIAN GENERAL</p>



SEQUENCE OF OPERATION

1. Remove all parts from exercise board.
2. Fix junction box, lamp holder, switch, socket and terminal plate on the exercise board.
3. Straighten the cable and cut it into the necessary length.
4. Bend the cable according to drawing and prepare the ends.
5. Connect the wires and check the job thoroughly.
6. Test the wiring.
(Socket directly connected)

MATERIAL

- | | |
|---|----------------|
| 1 Terminal plate I | 1 Lamp holder |
| 1 Single pole switch | 1 Junction box |
| 1 3-pin socket | 3 Round blocks |
| 0.4 m NYM 2 x 1.5 mm ² (2 core cable round 1/.044 - 3/.029) | |
| 0.3 m NYM 3 x 1.5 mm ² (3 core cable round 1/.044 - 3/.029) | |
| 0.5 m NYM 4 x 1.5 mm ² (4 core cable round 1/.044 - 3/.029) | |
| 3 Countersunk screws M 4 x 50 (3/16" x 2") w. nuts and washers | |
| 4 Cheese head screws M 4 x 25 (3/16" x 1") w. nuts and washers | |
| 2 Wood screws half round head 3.5 x 15 (No. 6 x 1/2") | |
| 4 Wood screws half round head 3.5 x 20 (No. 6 x 3/4") | |

LAMP-SINGLE POLE SWITCH-SOCKET

EP 2.3/2.5.1/16

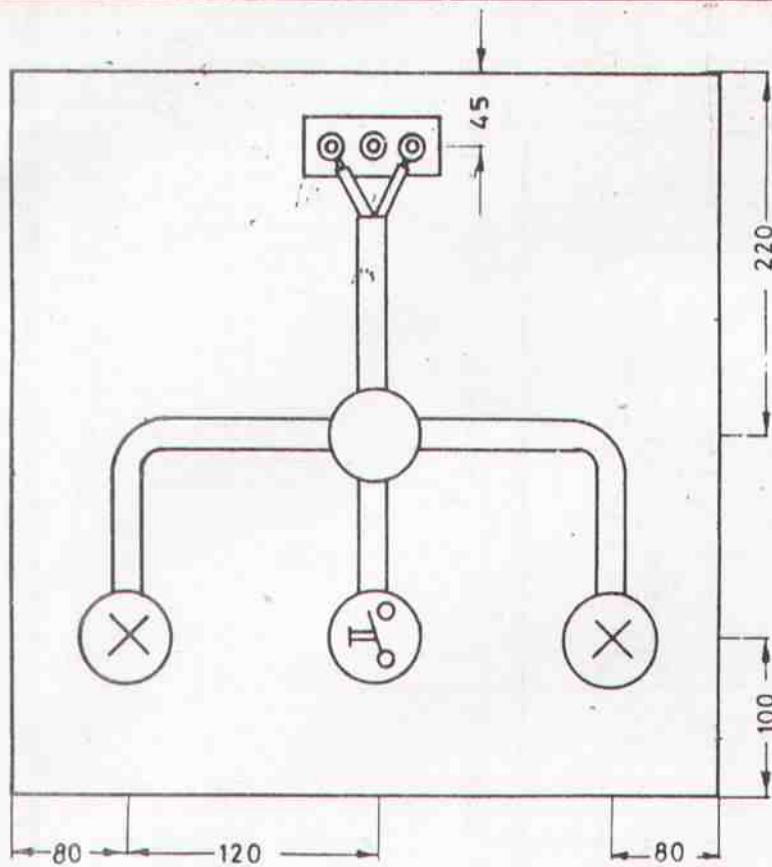
Installation I



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL



SEQUENCE OF OPERATION

1. Remove all parts from exercise board.
2. Fix junction box, single pole switch, lamp holders and terminal plate on the exercise board.
3. Straighten the cable and cut it into the necessary length.
4. Bend the cable according to drawing and prepare the ends.
5. Connect the wires and check the job thoroughly.
6. Test the wiring.

MATERIAL

- | | |
|----------------------|----------------|
| 1 Terminal plate I | 1 Junction box |
| 1 Single pole switch | 3 Round blocks |
| 2 Lamp holders | |
1. 30 m NYM 2 x 1.5 mm² (2 core cable round 1/.044 - 3/.029)
- 3 Countersunk screws M 4 x 50 (3/16 " x 2 ") w. nuts & washers
- 4 Cheese head screws M 4 x 25 (3/16 " x 1 ") w. nuts & washers
- 4 Wood screws half round head 3.5 x 15 (No. 6 x 1/2 ")
- 2 Wood screws half round head 3.5 x 20 (No. 6 x 3/4 ")

LAMPS- SINGLE POLE SWITCH

EP 2.3/2.5.1/17

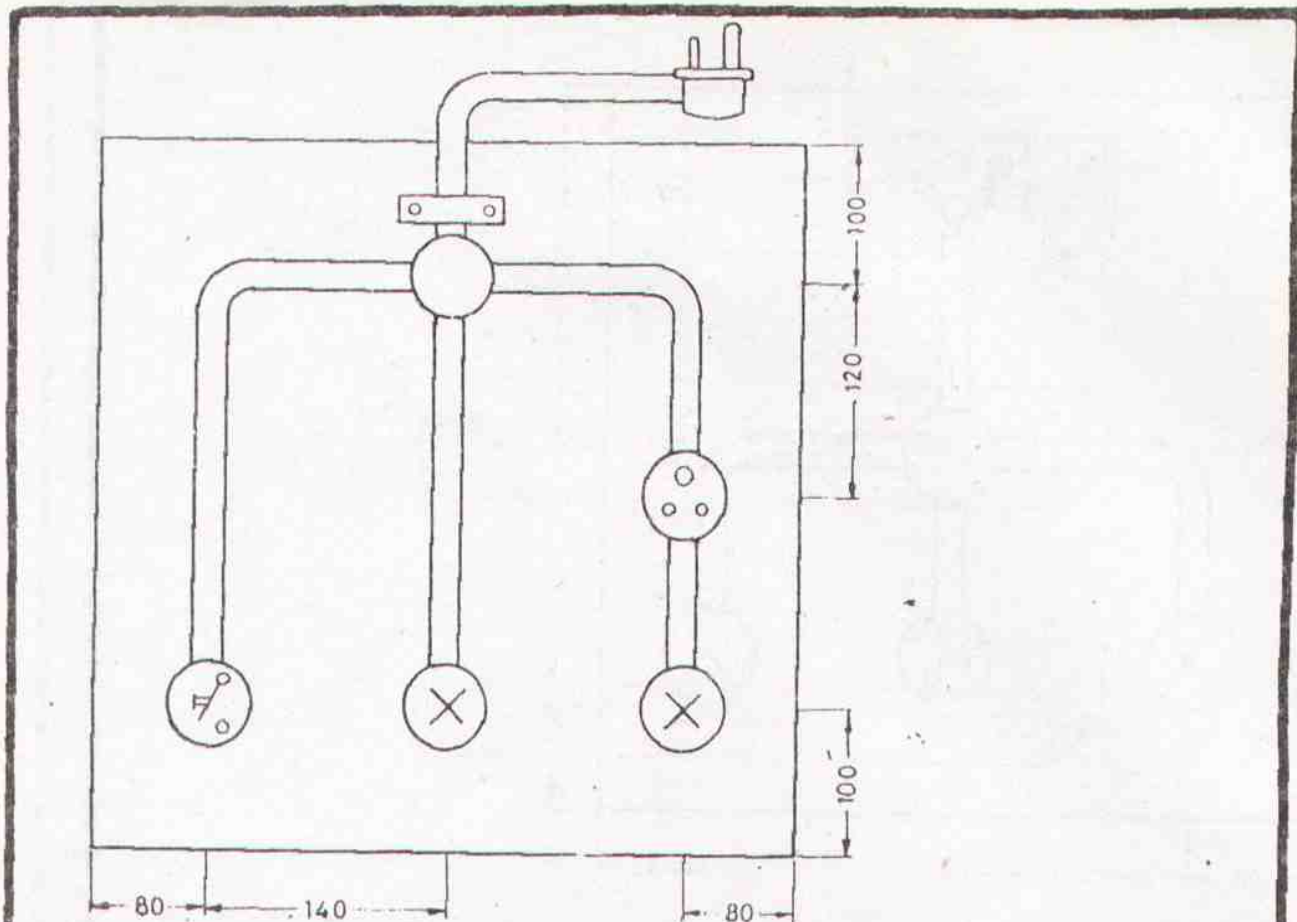
Installation I



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL



SEQUENCE OF OPERATION

1. Remove all parts from exercise board.
2. Fix junction box, switch, clamp, lamp holder and socket on the exercise board.
3. Straighten the cable and cut it into the necessary length.
4. Bend the cable according to drawing and prepare the ends.
5. Prepare the ends of flexible cable, connect one side with 3-pin plug and the other side with the junction box on the exercise board.
6. Connect the wires and check the job thoroughly.
7. Test the wiring. (Socket directly connected)

MATERIAL

- | | |
|----------------------|----------------|
| 1 Single pole switch | 2 Lamp holders |
| 1 3-pin plug | 4 Round blocks |
| 1 3-pin socket | |
- 1.25 m NYM 2 x 1.5 mm² (2 core cable round 1/.044 - 3/.029)
 0.4 m NYM 4 x 1.5 mm² (4 core cable round 1/.044 - 3/.029)
 1.0 m Flex. 3 x 1.5 mm² (3 core cable round 40/.0076)
 4 Countersunk screws M 4 x 50 (3/16 " x 2 ") w. nuts & washers
 2 Cheese head screws M 4 x 25 (3/16 " x 1 ") w. nuts & washers
 4 Wood screws half round head 3.5 x 15 (No. 6 x 1/2 ")
 4 Wood screws half round head 3.5 x 20 (No. 6 x 3/4 ")
 1 Clamp compl. for flexible cable

LAMPS-SINGLE POLE SWITCH-SOCKET

EP 2.3/2.5.1/18

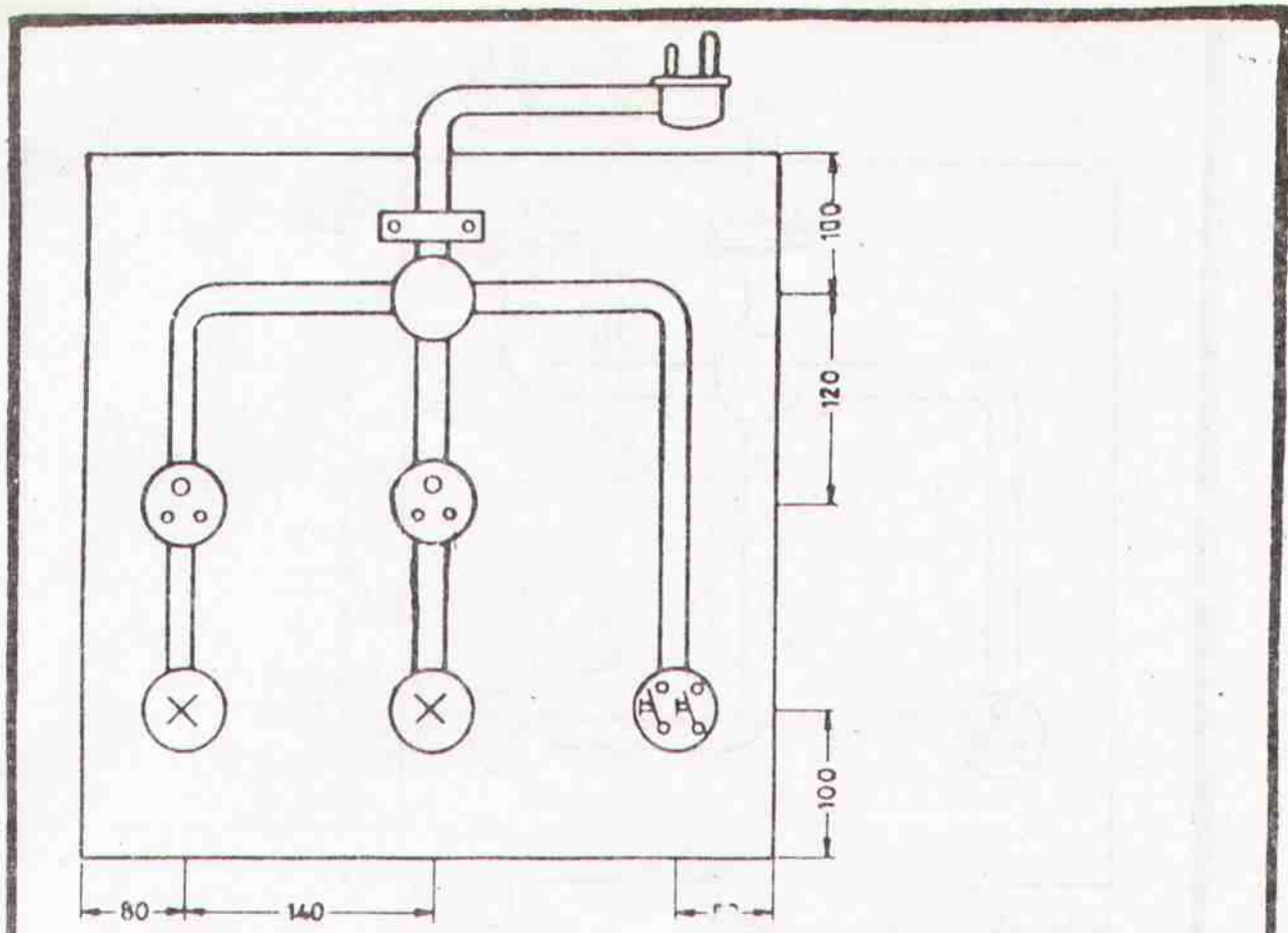
Installation 1



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL



SEQUENCE OF OPERATION

1. Remove all parts from exercise board.
2. Fix junction box, switch, clamp, lampholders and sockets on the exercise board.
3. Straighten the cable and cut it into the necessary length.
4. Bend the cable according to drawing and prepare the ends.
5. Connect the wires and check the job thoroughly.
6. Test the wiring.
(Sockets and lamps controlled by multicircuit switch.)

MATERIAL

- | | |
|--|----------------|
| 1 Multicircuit switch (or 2 S.P.S.) | 5 Round blocks |
| 2 Lamp holders | 1 Junction box |
| 2 3-pin sockets | |
| 1.1 m NYM 3 x 1.5 mm ² (3 core cable round 1/.044 - 3/.029) | |
| 1 flexible cable with plug (from previous exercise) | |
| 0.6 m NYM 2 x 1.5 mm ² (3 core cable round 1/.044 - 3/.029) | |
| 5 Countersunk screws M 4 x 50 (3/16 " x 2 ") w. nuts & washers | |
| 2 Cheese head screws M 4 x 25 (3/16 " x 1 ") w. nuts & washers | |
| 4 Wood screws, half round head 3.5 x 15 (No. 6 x 1/2") | |
| 6 Wood screws, half round head 3.5 x 20 (No. 6 x 3/4") | |
| 1 Clamp compl. for flexible cable | |

LAMPS-MULTICIRCUIT SWITCH-SOCKET

EP 2.3/2.5.1/19

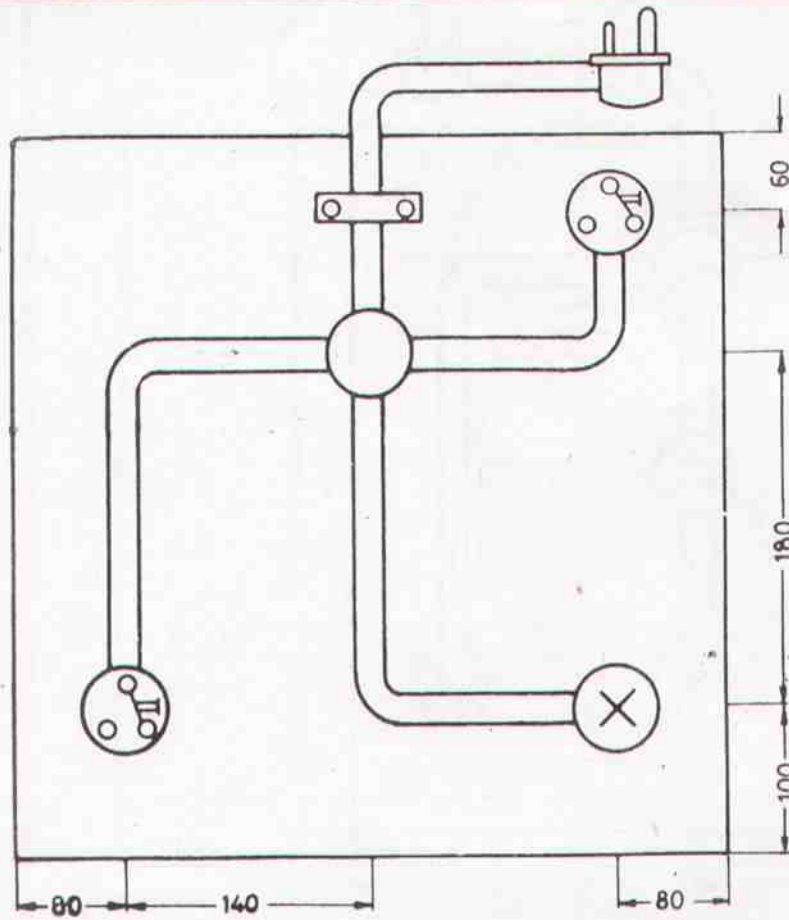
Installation I



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL



SEQUENCE OF OPERATION

1. Remove all parts from exercise board.
2. Fix junction box, switches, clamp and lamp holder on the exercise board.
3. Straighten the cable and cut it into the necessary length.
4. Bend the cable according to drawing and prepare the ends.
5. Connect the wires and check the job thoroughly.
6. Test the wiring.

MATERIAL

- | | |
|--|--------------------------------------|
| 2 Two-way switches | 3 Round blocks |
| 1 Junction box | 1 Lamp holder |
| 0.50 m NYM 2 x 1.5 mm ² | (2 core cable round 1/.044 - 3/.029) |
| 0.80 m NYM 3 x 1.5 mm ² | (3 core cable round 1/.044 - 3/.029) |
| 1 flexible cable with plug (from previous exercise) | |
| 3 Countersunk screws M 4 x 50 (3/16 " x 2 ") w. nuts & washers | |
| 2 Cheese head screws M 4 x 25 (3/16 " x 1 ") w. nuts & washers | |
| 2 Wood screws, half round head 3.5 x 15 (No. 6 x 1/2 ") | |
| 4 Wood screws, half round head 3.5 x 20 (No. 6 x 3/4 ") | |
| 1 Clamp compl. for flexible cable | |

LAMP-TWO WAY SWITCH

EP 2.3/2.5.1/20

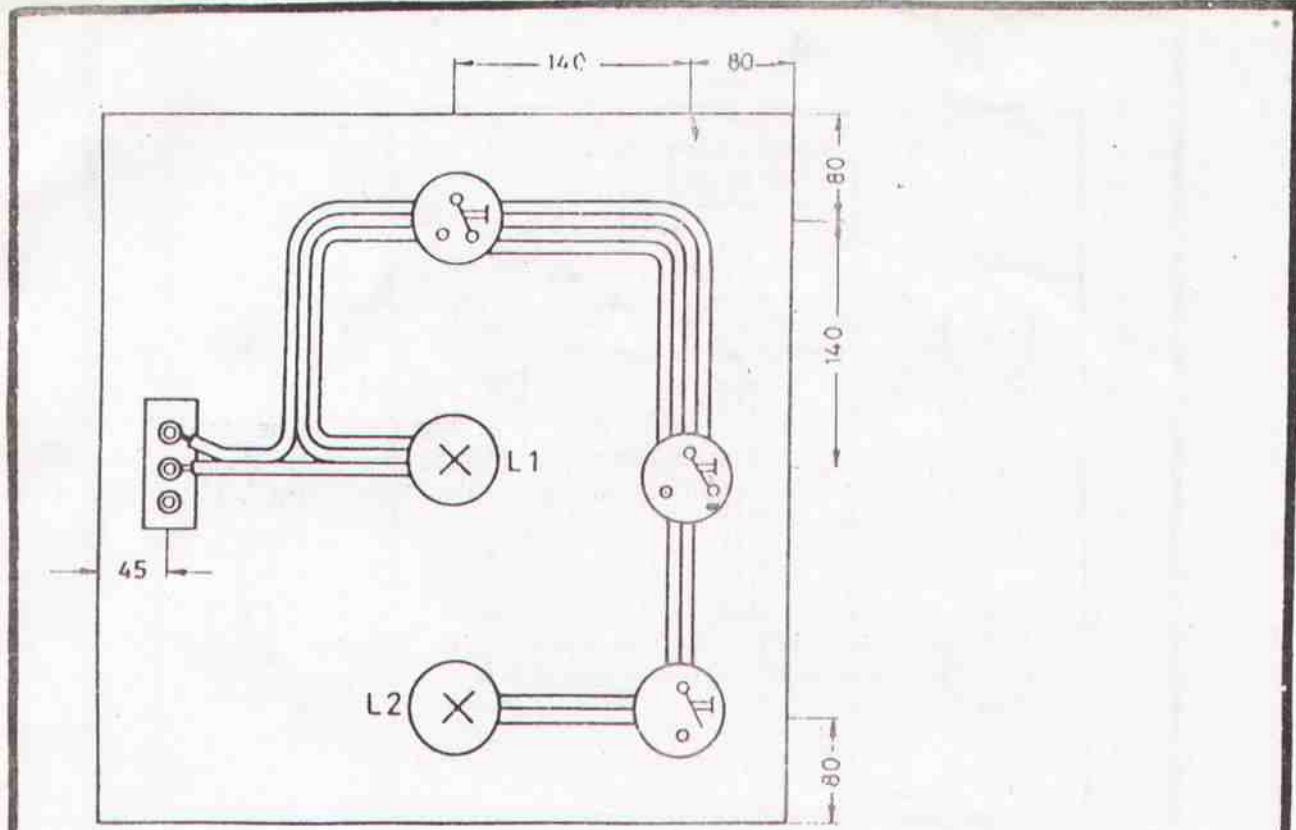
Installation I



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

P&K-GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL



SEQUENCE OF OPERATION

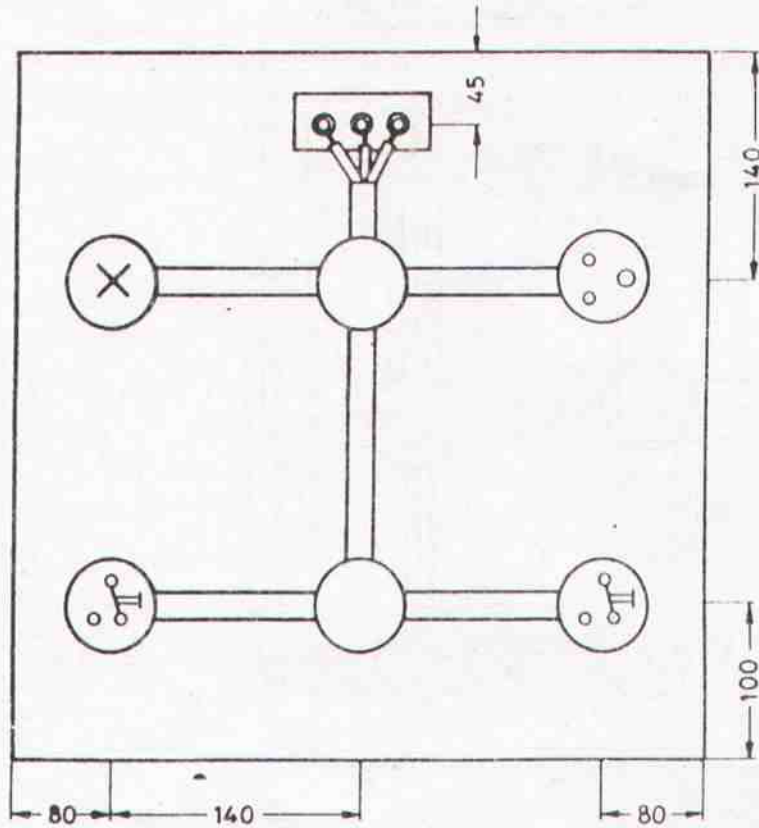
1. Remove all parts from exercise board.
2. Fix lamp holders, terminal plate, two-way switches and single pole switch on the exercise board.
3. Straighten the wire and cut it into the necessary length.
4. Bend the wires according to drawing and connect them.
5. Check the job thoroughly and compare it with drawing.
6. Test the wiring.

Lamp L₁ controlled by two-way switches.
 Lamp L₂ controlled by SPS.

MATERIAL

- | | |
|--|-------------------------------|
| 1 Terminal plate I | 1 Single pole switch |
| 2 Lamp holders | 5 Round blocks |
| 2 Two-way switches | |
| 5.40 m NYA 1.5 mm ² | (1/.044 ~ 1 mm ²) |
| 5 Countersunk screws M 4 x 50 (3/16 " x 2 ") | w. nuts & washers |
| 2 Cheese head screws M 4 x 25 (3/16 " x 1 ") | w. nuts & washers |
| 4 Wood screws, half round head 3.5 x 15 | (No. 6 x 1/2 ") |
| 6 Wood screws, half round head 3.5 x 20 | (No. 6 x 3/4 ") |

	LAMPS-SINGLE POLE AND TWO WAY SWITCHES	EP 2.3/2.5.1/21 Installation I
	DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING PAK GERMAN TECHNICAL TRAINING PROGRAMME	ELECTRICIAN GENERAL



SEQUENCE OF OPERATION

1. Remove all parts from exercise board.
2. Fix junction boxes, switches, lamp holder and terminal plate on the exercise board.
3. Straighten the cable and cut it into the necessary length.
4. Prepare the ends and connect the wires.
5. Check the job thoroughly and compare with drawing.
6. Test the wiring.
(Socket directly connected)

MATERIAL

- | | |
|--|------------------|
| 1 Terminal plate I | 1 Lamp holder |
| 2 Two-way switches | 2 Junction boxes |
| 1 3-pin socket | 4 Round blocks |
| 0.7 m NYM 2 x 1.5 mm ² (2 core cable round 1/.044 - 3/.029) | |
| 1.2 m NYM 3 x 1.5 mm ² (3 core cable round 1/.044 - 3/.029) | |
| 4 Countersunk screws M 4 x 50 (3/16 " x 2 ") w. nuts & washers | |
| 6 Cheese head screws M 4 x 25 (3/16 " x 1 ") w. nuts & washers | |
| 2 Wood screws, half round head 3.5 x 15 (No. 6 x 1/2 ") | |
| 6 Wood screws, half round head 3.5 x 20 (No. 6 x 3/4 ") | |

LAMP-TWO WAY SWITCHES-SOCKET

EP 2.3/2.5.1/22

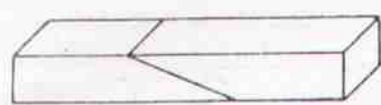

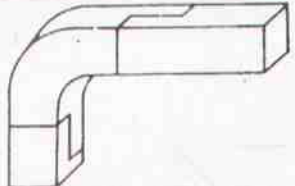
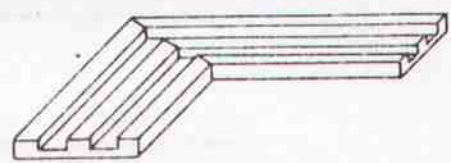
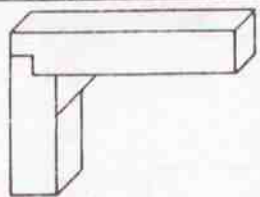
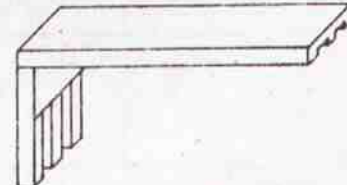
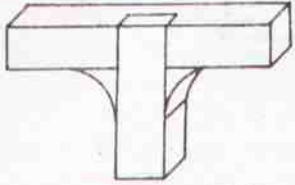
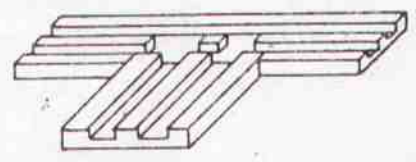
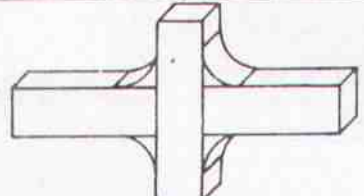
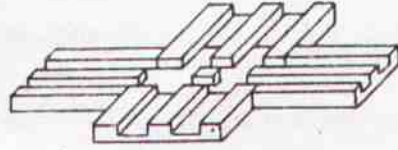
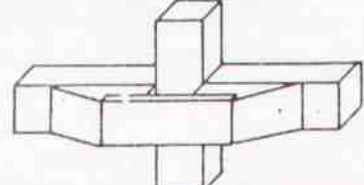
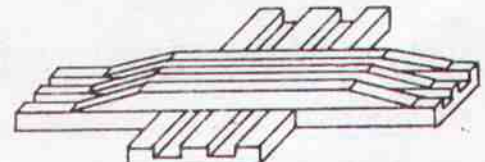
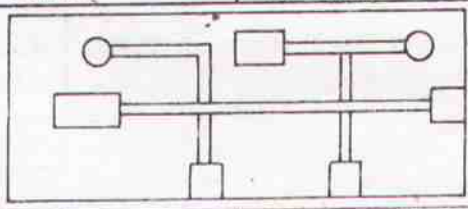
Installation I

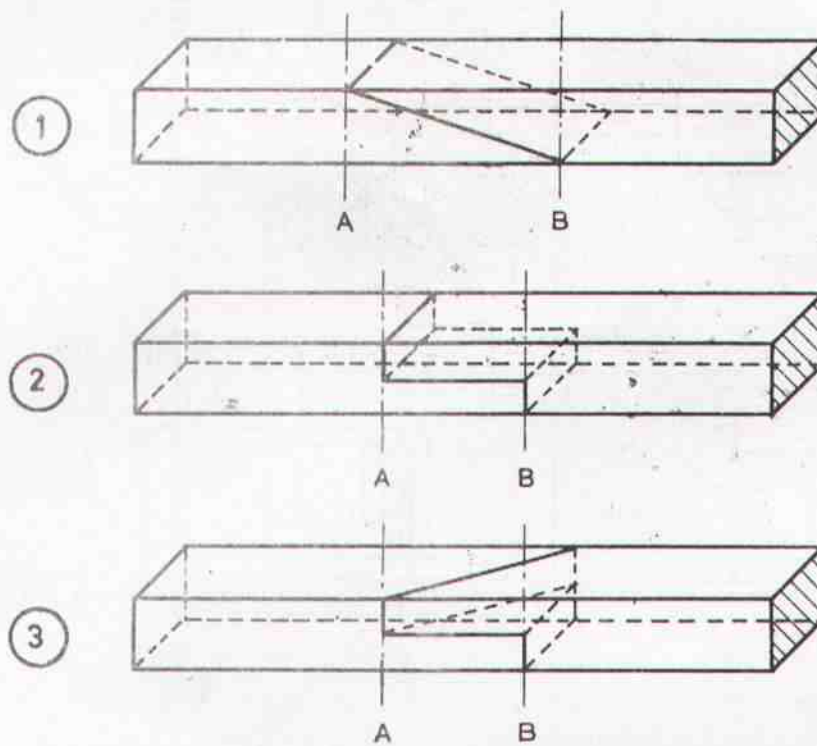


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

PAK-GERMAN TECHNICAL TRAINING PROGRAMME

ELECTRICIAN
GENERAL

	
<p>1 STRAIGHT BATTEN JOINT</p>	<p>8 STRAIGHT CASING AND CAPPING JOINT</p>
	
<p>2 L-BATTEN JOINT</p>	<p>9 L-CASING AND CAPPING JOINT</p>
	
<p>3 CEILING BATTEN JOINT</p>	<p>10 CEILING CASING AND CAPPING JOINT</p>
	
<p>4 T-BATTEN JOINT</p>	<p>11 T-CASING AND CAPPING JOINT</p>
	
<p>5 CROSS BATTEN JOINT</p>	<p>12 CROSS CASING AND CAPPING JOINT</p>
	
<p>6 BRIDGE BATTEN JOINT</p>	<p>13 BRIDGE CASING AND CAPPING JOINT</p>
	
<p>7 VARIOUS BATTEN JOINTS</p>	<p>14 VARIOUS CASING AND CAPPING JOINTS</p>
<p>LAYOUT</p>	
<p>EP 2.1 / 3.5.3 /</p>	
<p>WOOD WORK</p>	
<p>DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING PAK-GERMAN TECHNICAL TRAINING PROGRAMME</p>	
<p>GENERAL ELECTRICIAN 55</p>	



SEQUENCE OF OPERATION

JOINT 1

1. MARK BOTH PIECES EQUALLY AND THOROUGHLY. LENGTH BETWEEN 'A' AND 'B' ABOUT 2 INCHES.
2. SAW PROPERLY AT MARKED LINES.
3. FILE THE SAWED SURFACES SMOOTH TO MAKE THEM FIT EXACTLY TOGETHER.
4. SCREW (NAIL) THE TWO PIECES TOGETHER.
5. CHECK ALL OVER AND GIVE FINISHING TO THE JOINT ACCORDING TO DRAWING.

JOINT 2

1. MARK BOTH PIECES EQUALLY AND THOROUGHLY. LENGTH BETWEEN 'A' AND 'B' ACCORDING TO WIDTH OF BATTEN. HORIZONTAL LINE IN THE MIDDLE OF BATTEN.

STEP 2, 3, 4 AND 5 AS IN JOINT 1.

JOINT 3

SAME SEQUENCE OF OPERATIONS AS JOINT 2.

TOOLS

METER RULE, TRY BACK SQUARE, SAW, RASP AND SMOOTH FILES, HAMMER, BENCH HOOK, SCREW DRIVER.

BATTEN-WIDTH	A - B
1/2"	3/4"
3/4"	1"
1" 2"	1 1/2"

INLINE OR STRAIGHT-BATTEN JOINTS

EP-2-3/3.5-3/1

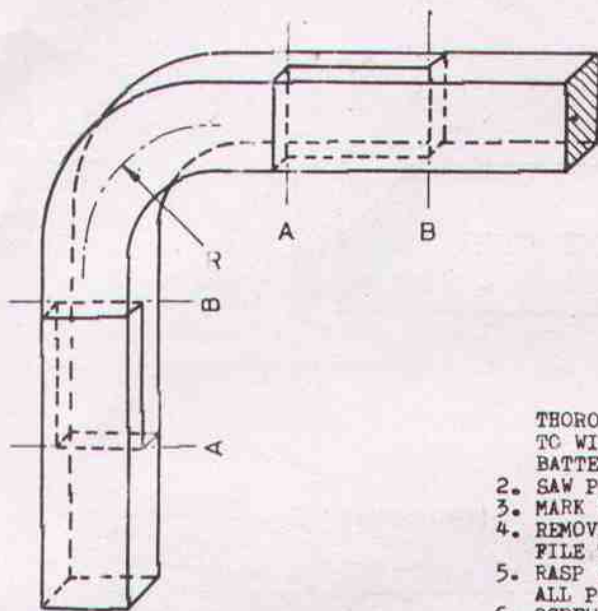
Wood Work



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

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ELECTRICIAN
GENERAL

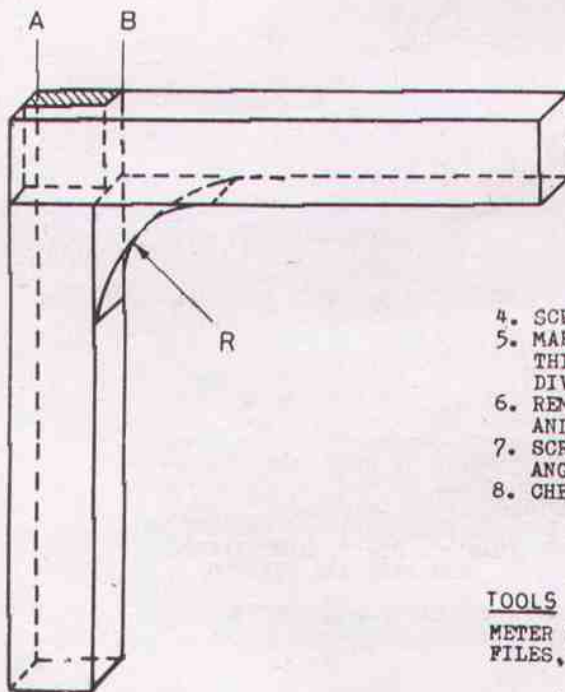


THE "L" JOINT IS A THREE
PIECE JOINT IN WHICH TWO
PIECES ARE EQUAL.

SEQUENCE OF OPERATION

JOINT 1

1. MARK BOTH EQUAL PIECES THOROUGHLY. LENGTH BETWEEN A AND B IS ACCORDING TO WIDTH OF BATTEN. MIDDLE LINE ALWAYS IN CENTRE OF BATTEN.
 2. SAW PROPERLY AT MARKED LINES.
 3. MARK THE CORNER PIECE WITH THE HELP OF A DIVIDER.
 4. REMOVE EXCESS MATERIAL BY SAWING. THEN RASP AND FILE TO PROPER SHAPE OF BEND.
 5. RASP AND FILE THE JOINING SURFACES SMOOTH SO ALL PARTS FIT TOGETHER EXACTLY IN AN 90° ANGLE.
 6. SCREW (NAIL) THE THREE PIECES TOGETHER.
 7. CHECK ALL OVER AND GIVE FINISHING TO THE JOINT.
- R = not less than 2".



JOINT 2

- STEP ONE AND TWO AS ABOVE.
3. RASP AND FILE THE SAWED SURFACES SMOOTH TO MAKE THEM FIT TOGETHER EXACTLY IN AN ANGLE OF 90°
 4. SCREW (NAIL) THE TWO PIECES TOGETHER.
 5. MARK THE CORNER PIECE, WHICH HAS THE SAME THICKNESS AS THE BATTENS, BY THE HELP OF A DIVIDER. R = NOT LESS THAN 1".
 6. REMOVE EXCESS MATERIAL BY SAWING. THEN RASP AND FILE TO PROPER SHAPE OF BEND.
 7. SCREW (NAIL) THIS CORNER PIECE INSIDE THE BATTEN ANGLE.
 8. CHECK ALL OVER AND GIVE FINISHING TO THE JOINT.

TOOLS

METER RULE, TRY BACK SQUARE, SAW, RASP AND SMOOTH FILES, HAMMER, BENCH HOOK, SCREW DRIVER, DIVIDER.

"L" BATTEN JOINTS

EP.2.3/3.5.3/2

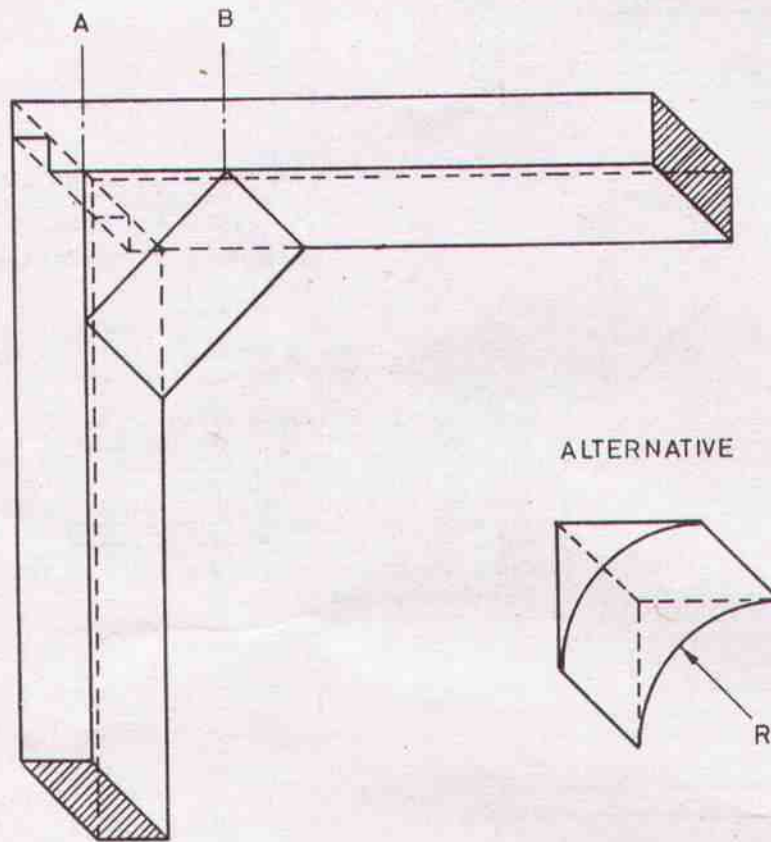
Wood Work



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SEQUENCE OF OPERATION

1. MARK THE TWO BATTENS EQUAL AND THOROUGHLY.
2. SAW PROPERLY AT MARKED LINES.
3. RASP AND FILE THE SAWED SURFACES SMOOTH TO MAKE THEM FIT TOGETHER EXACTLY IN THE REQUIRED ANGLE.
4. SCREW (NAIL) THE TWO PIECES TOGETHER.
5. MARK THE CORNER PIECE, WHICH HAS THE SAME WIDTH AS THE BATTEN. LENGTH BETWEEN A AND B NOT LESS THAN 1", R = 1" ALTERNATIVELY.
6. REMOVE EXCESS MATERIAL BY SAWING. THEN RASP AND FILE TO PROPER SHAPE OF BEND.
7. SCREW (NAIL) THIS CORNER PIECE INSIDE THE BATTEN ANGLE.
8. CHECK ALL OVER AND GIVE FINISHING TO THE JOINT.

TOOLS

METER RULE, TRY BACK SQUARE, S&W, RASP AND SMOOTH FILES, HAMMER, BENCH HOOK, SCREW DRIVER.

CEILING OR CORNER BATTEN JOINT

EP.2.3/3.5.3/3

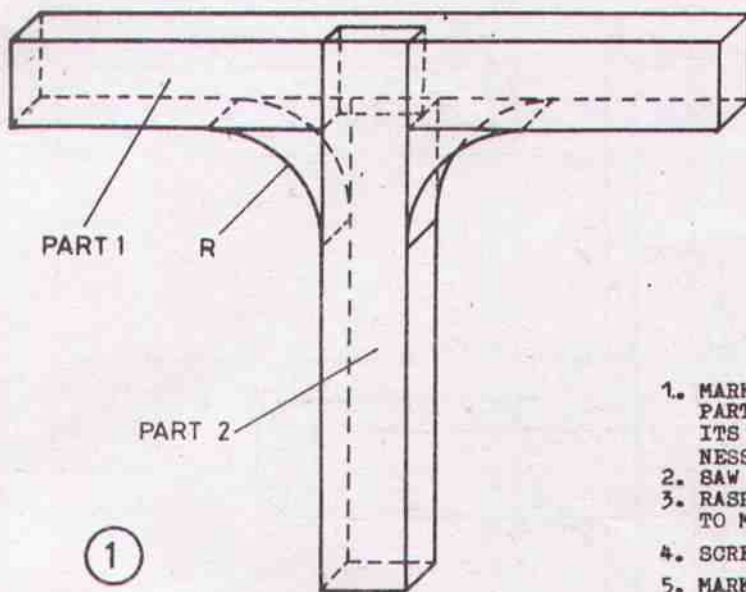
Wood Work

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GENERAL

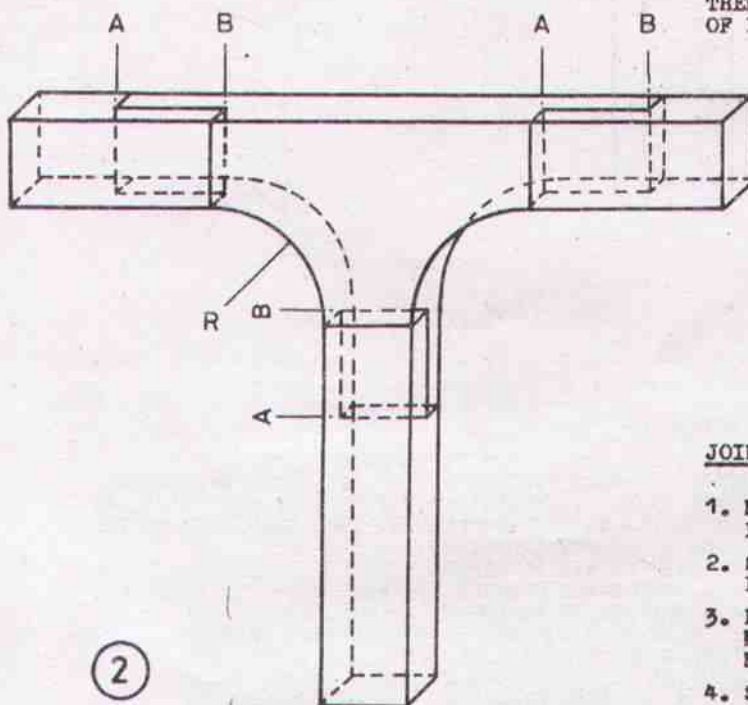
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SEQUENCE OF OPERATION

JOINT 1

1. MARK BOTH PIECES THOROUGHLY. SLOT OF PART 1 IS AS WIDE AS BATTEN PART 2 AND ITS DEPTH IS EQUAL TO HALF THE THICKNESS OF THE BATTEN.
2. SAW PROPERLY AT MARKED LINES.
3. RASP AND FILE THE SAWED SURFACES TO MAKE THEM FIT EXACTLY TOGETHER.
4. SCREW (NAIL) THE PIECES TOGETHER.
5. MARK THE TWO CORNER PIECES AS YOU DID IN PREVIOUS EXERCISES.
6. REMOVE EXCESS MATERIAL BY SAWING. THEN RASP AND FILE TO PROPER SHAPE OF BEND.
7. SCREW (NAIL) THE TWO CORNER PIECES INSIDE THE BATTEN ANGLES.
8. CHECK ALL OVER AND GIVE FINISHING TO THE JOINT.



JOINT 2

1. MARK ALL PIECES ACCORDING TO THE DRAWING. R = NOT LESS THAN 1".
2. SAW PROPERLY AT MARKED LINES, REMOVE EXCESS MATERIAL FROM BEND.
3. RASP AND FILE SAWED SURFACES TO MAKE THEM FIT EXACTLY TOGETHER AND MAKE PROPER SHAPE OF THE BEND.
4. SCREW (NAIL) ALL FOUR PIECES TOGETHER.
5. CHECK ALL OVER AND GIVE FINISHING TO THE JOINT.

TOOLS

METER RULE, TRY BACK SQUARE, SAW, RASP AND SMOOTH FILES, HAMMER, BENCH HOOK; SCREW DRIVER.

"T" BATTEN JOINTS

EP.2.3/3.5.3/4

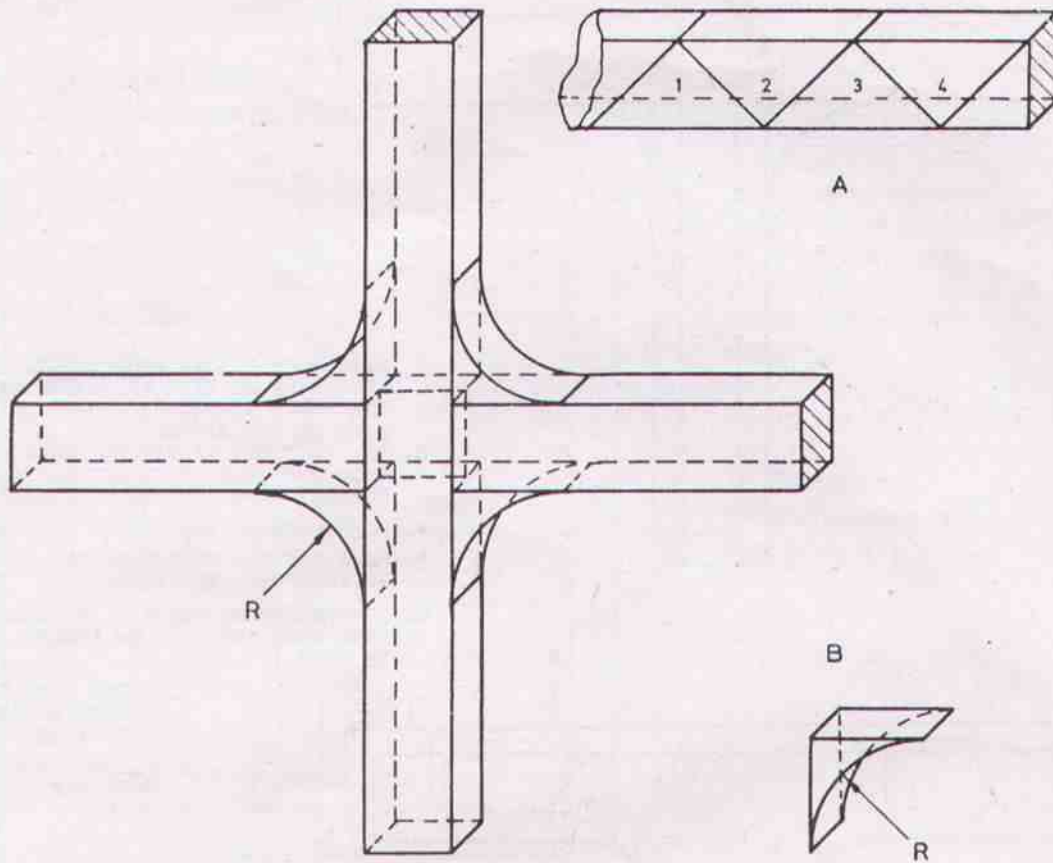
Wood Work



DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

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SEQUENCE OF OPERATION

THE CROSS BATTEN JOINT IS SIMILAR TO THE "T"-JOINT BUT COMPRISES OF TWO EQUAL PIECES IDENTICAL WITH PART 1 IN THE "T"-JOINT.

1. MARK THE TWO EQUAL PIECES THOROUGHLY. (ONE SLOT EACH AS IN PART 1 OF THE "T"-JOINT EXERCISE).
2. SAW PROPERLY AT THE MARKED LINES.
3. RASP AND FILE THE SAWED SURFACES TO MAKE THEM FIT TOGETHER.
4. SCREW (NAIL) THE PIECES TOGETHER.
5. SELECT TYPE A OR B OF CORNER PIECES AND MARK THEM AS YOU DID IN PREVIOUS EXERCISES.
6. SAW AND FILE THE CORNER PIECES TO SIZE.
7. SCREW (NAIL) ALL CORNER PIECES IN THE BATTEN ANGLES.
8. CHECK ALL OVER AND GIVE FINISHING TO THE JOINT.

TOOLS

METER RULE, TRY BACK SQUARE, SAW, RASP AND SMOOTH FILES, HAMMER, BENCH BOOK, SCREW DRIVER.

CROSS BATTEN JOINT

EP.2.3/3.5.3/5

Wood Work

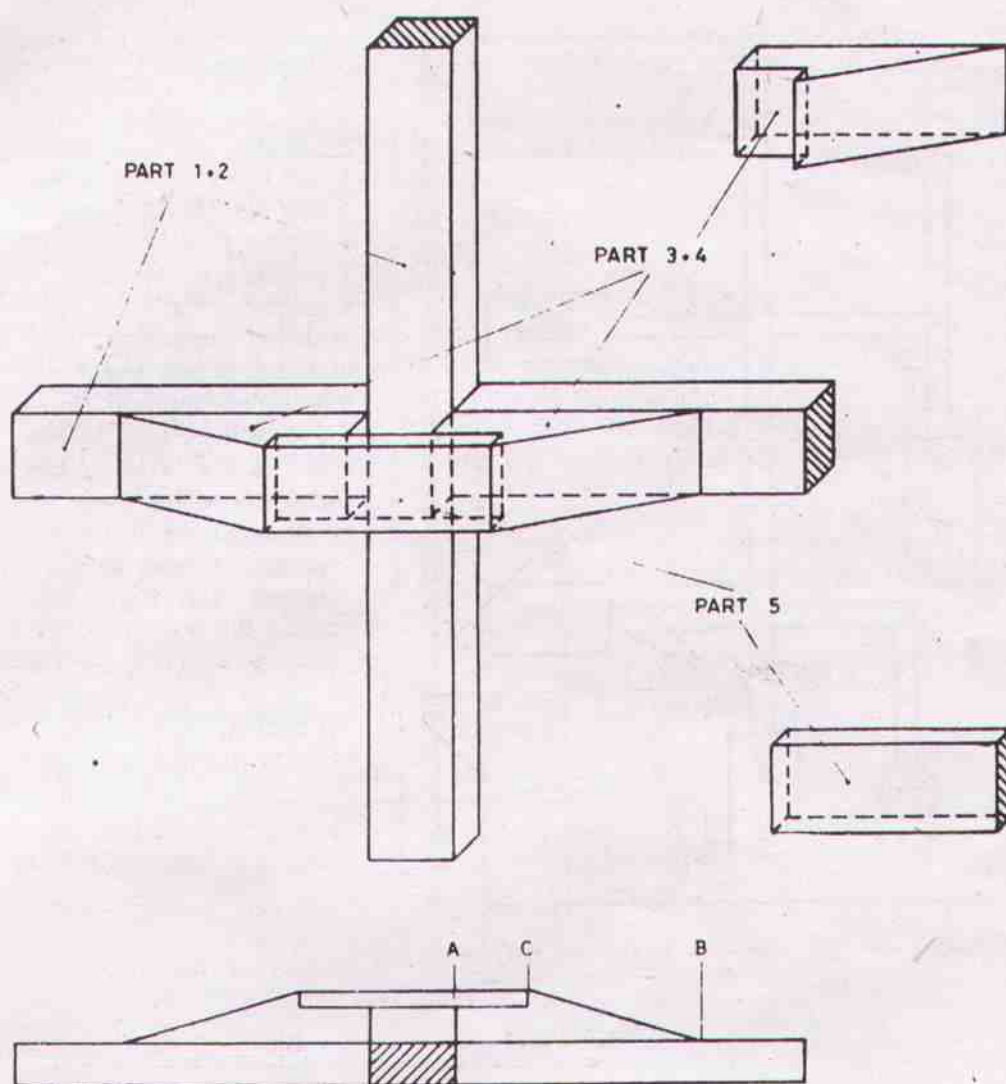


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SEQUENCE OF OPERATION

THE BRIDGE-JOINT IS SIMILAR TO THE CROSS-JOINT WITH THE ADDITION OF THE BRIDGE PARTS NO. 3, 4 AND 5. NO CORNER PIECES ARE HOWEVER REQUIRED WITH THE BRIDGE-JOINT.

- 1.-4. AS YOU DID IN THE CROSS-JOINT EXERCISE.
5. MARK PARTS 3, 4 AND 5 THOROUGHLY.
6. SAW AND FILE THE PIECES TO SIZE.
7. JOIN ALL PIECES TOGETHER ACCORDING TO YOUR DRAWING.
8. CHECK ALL OVER AND GIVE FINISHING TO THE JOINT.

- A TO B ABOUT 2"
- A TO C ABOUT $\frac{3}{4}$ "

TOOLS AS IN PREVIOUS EXERCISES.

BRIDGE BATTEN JOINT

EP2.3/3.5.3/6

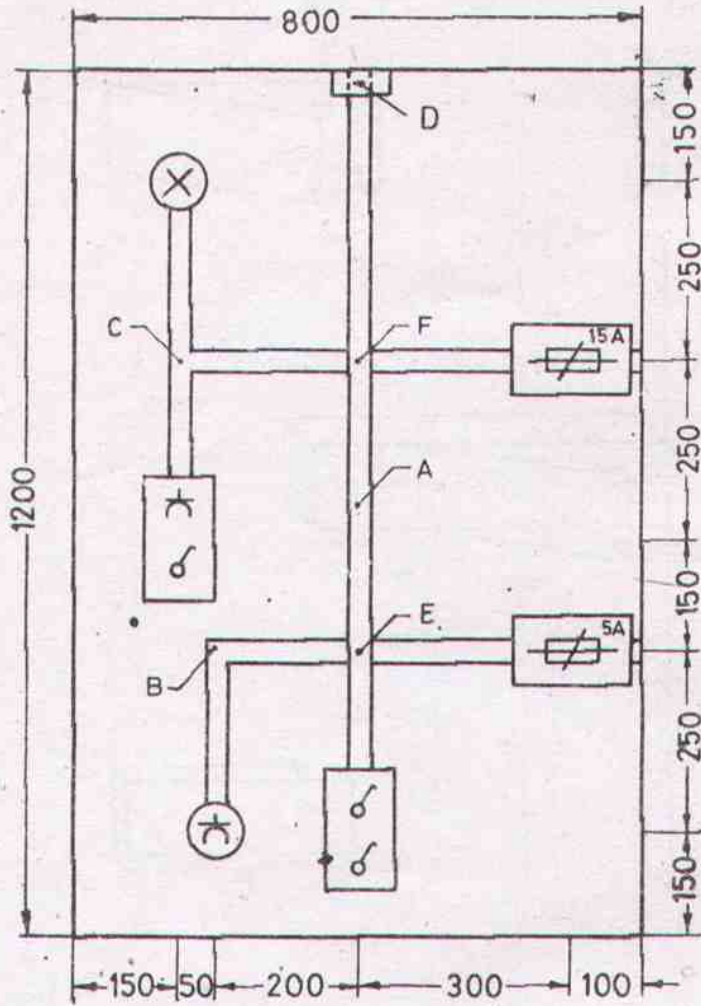
Wood Work



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MATERIAL

- 1 KIT KAT (FUSE) 15 AMP.
- 1 KIT KAT (FUSE) 5 AMP.
- 3 SINGLE POLE SWITCHES.
- 1 SOCKET 3 PIN 15 AMP.
- 1 SOCKET 3 PIN 5 AMP.
- 2 BATTEN LAMP HOLDERS
- 4 WOODEN BOARDS 4"x7"
- 3 ROUND BLOCKS
- PVC OR V.R. WIRE 1/.044
- PVC OR V.R. WIRE 7/.029
- ACCORDING TO THE TYPE
- OF INSTALLATION
- SCREWS, CLAMPS, NAILS,
- BATTEN MATERIAL.

BATTEN WIRING.

- A = INLINE JOINT (STRAIGHT JOINT)
- B = "L" JOINT
- C = "T" JOINT
- D = CEILING OR CORNER JOINT
- E = CROSS JOINT
- F = BRIDGE JOINT

ESTIMATE MATERIAL REQUIRED FOR THE INSTALLATION.
 DRAW COMPLETE INSTALLATION LAYOUT, WIRING - AND CURRENT PATH
 DIAGRAMS OF ABOVE INSTALLATION OVERLEAF.
 15 AMP. CIRCUIT: CONTROL-LAMP IN PARALLEL TO THE SOCKET,
 CONTROLLED BY A SINGLE POLE SWITCH.
 5 AMP. CIRCUIT: ONE LAMP AND ONE SOCKET EACH ONE CONTROLLED
 BY A SINGLE POLE SWITCH.
 CHECK AND CONNECT SUPPLY IN PRESENCE OF YOUR INSTRUCTOR.

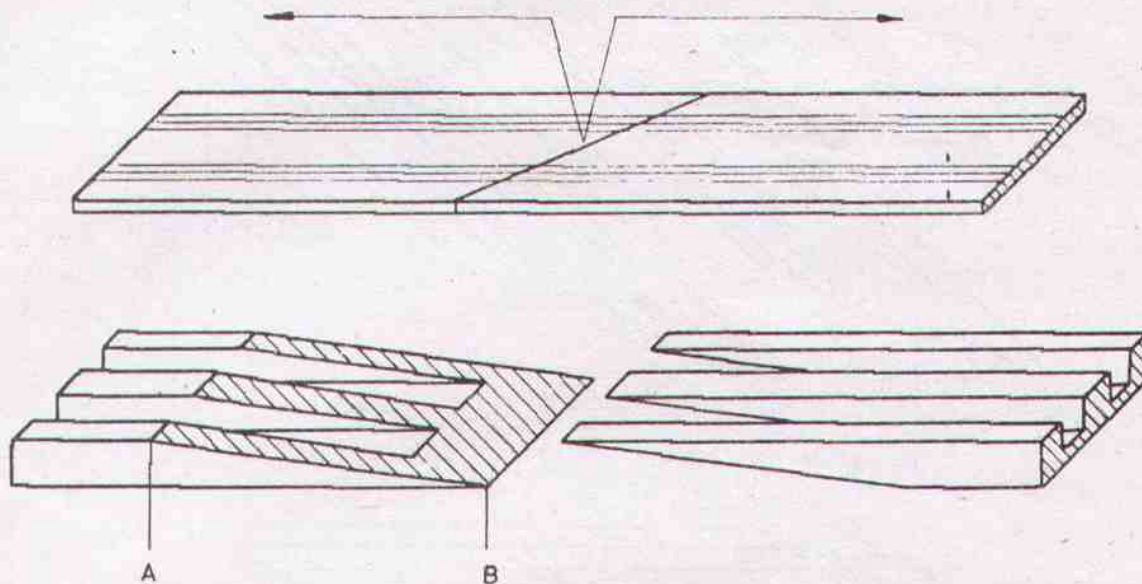
JOINTS

EP 2.3/3.5.3/
Wood Work

DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

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SEQUENCE OF OPERATION

1. MARK BOTH CASING PIECES EQUALLY AND THOROUGHLY. LENGTH BETWEEN A AND B ABOUT 2 1/2" - 3" OR ANGLE ABOUT 18°.
2. SAW PROPERLY AT MARKED LINES.
3. FILE THE SAWED SURFACES SMOOTH TO MAKE THEM FIT EXACTLY TOGETHER.
4. SCREW (NAIL) THE TWO PIECES TOGETHER.
5. MARK BOTH CAPPING PIECES EQUALLY IN 45° ANGLE.
6. SAW PROPERLY AT MARKED LINES AND FILE SAWED SURFACES SMOOTH TO MAKE THEM FIT EXACTLY TOGETHER.
7. SCREW CAPPING PIECES ON TOP OF CASING PART.
8. CHECK ALL OVER AND GIVE FINISHING TO THE JOINT.

TOOLS

METER RULE, TRY BACK SQUARE, SAW, RASP AND SMOOTH FILES, HAMMER, BENCH HOOK, SCREW DRIVER.

INLINE OR STRAIGHT CASING AND CAPPING JOINT

EP.2.3/3. 5.3/8

Wood Work

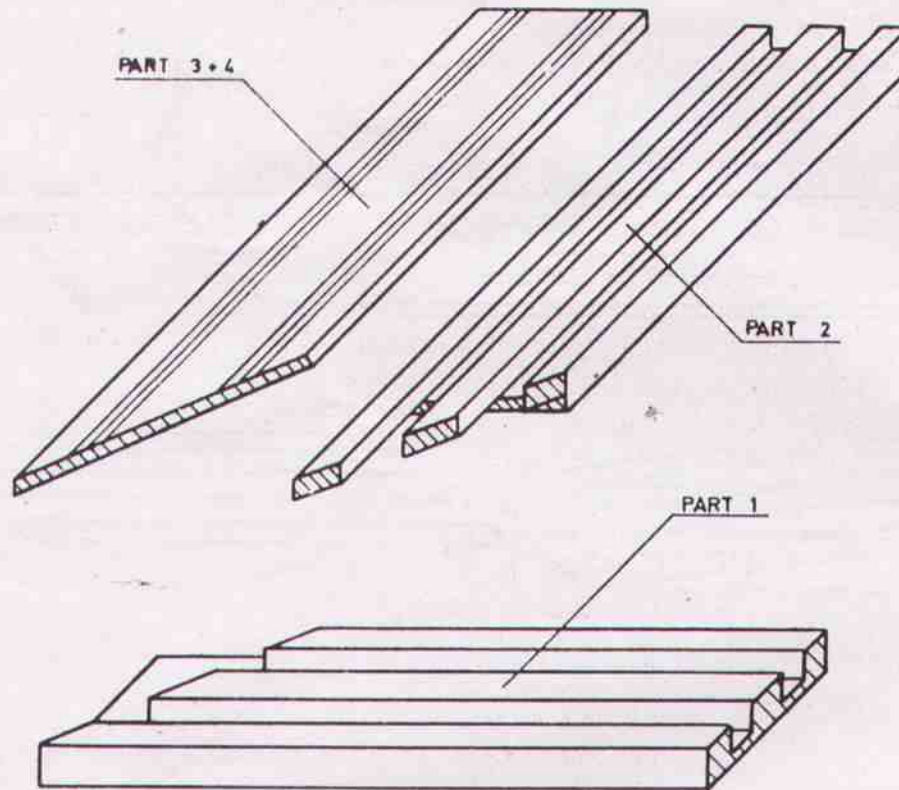


DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING

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SEQUENCE OF OPERATION

1. MARK BOTH CASING PIECES THOROUGHLY. SAWING ANGLES FOR UPPER PARTS OF CASINGS = 45° .
2. SAW PROPERLY AT MARKED LINES. REMOVE EXCESS MATERIAL, UPPER PORTION FROM PART 1, LOWER PORTION FROM PART 2.
3. FILE THE JOINING SURFACES SMOOTH TO MAKE THEM FIT EXACTLY TOGETHER.
4. SCREW (NAIL) THE TWO PIECES TOGETHER.
5. MARK THE CAPPING PIECES THOROUGHLY IN AN ANGLE OF 45° .
6. SAW PROPERLY AT MARKED LINES AND FILE SAWED SURFACES SMOOTH TO MAKE THEM FIT EXACTLY TOGETHER.
7. SCREW THE TWO CAPPING PIECES ON TOP OF THE CASINGS.
8. CHECK ALL OVER AND GIVE FINISHING TO THE JOINT.

TOOLS

METER RULE, TRY BACK SQUARE, SAW, RASP AND SMOOTH FILES, HAMMER, BENCH HOOK, SCREW DRIVER.

"L" CASING AND CAPPING JOINT

EP.2.3/3.5.3/9

Wood Work

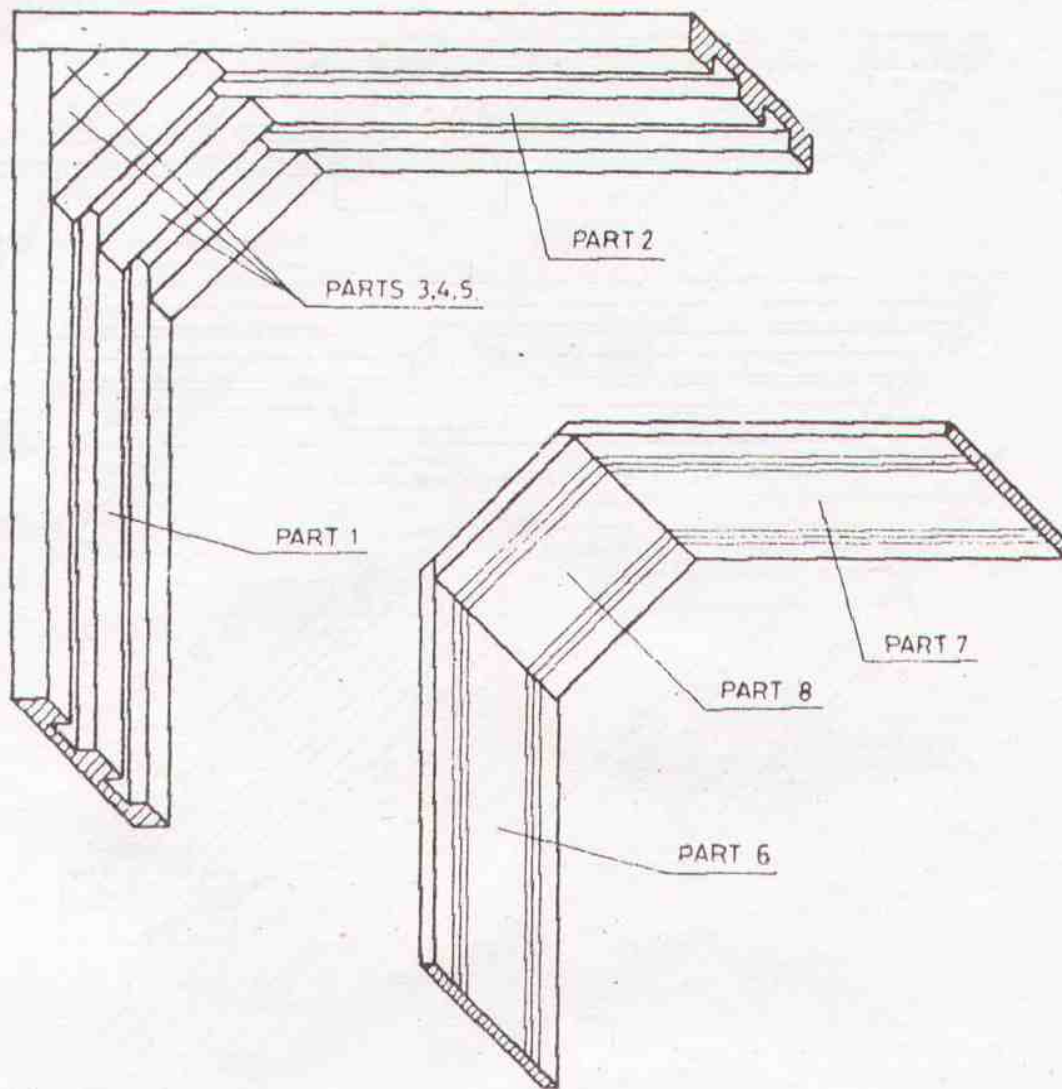


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SEQUENCE OF OPERATION

1. MARK ALL CASING PARTS ACCORDING TO THE DRAWING. PARTS NO. 3, 4 AND 5 ARE TO BE SHAPED SO THAT THEY FIT THE CORNER PRECISELY.
2. SAW AND FILE ALL PARTS TO MAKE THEM FIT EXACTLY TOGETHER.
3. JOIN ALL CASING PARTS.
4. MARK, SAW AND FILE CAPPING PARTS NO. 6 + 7 AND FIT THEM TO THE CASING.
5. PREPARE CAPPING PART NO. 8 AND FIT IT. THIS SEQUENCE OF FITTING ENABLES YOU TO REMOVE PART NO. 8 EASILY FOR CHECKING AND REPAIR OF THE WIPES.
6. CHECK ALL OVER AND GIVE FINISHING TO THE JOINT.

TOOLS

METER RULE, TRY BACK SQUARE, SAW, RASP AND SMOOTH FILES, HAMMER, BENCH HOOK, SCREW DRIVER.

CORNER OR CEILING CASING
AND CAPPING JOINT

EP2.3/3.5.3/10

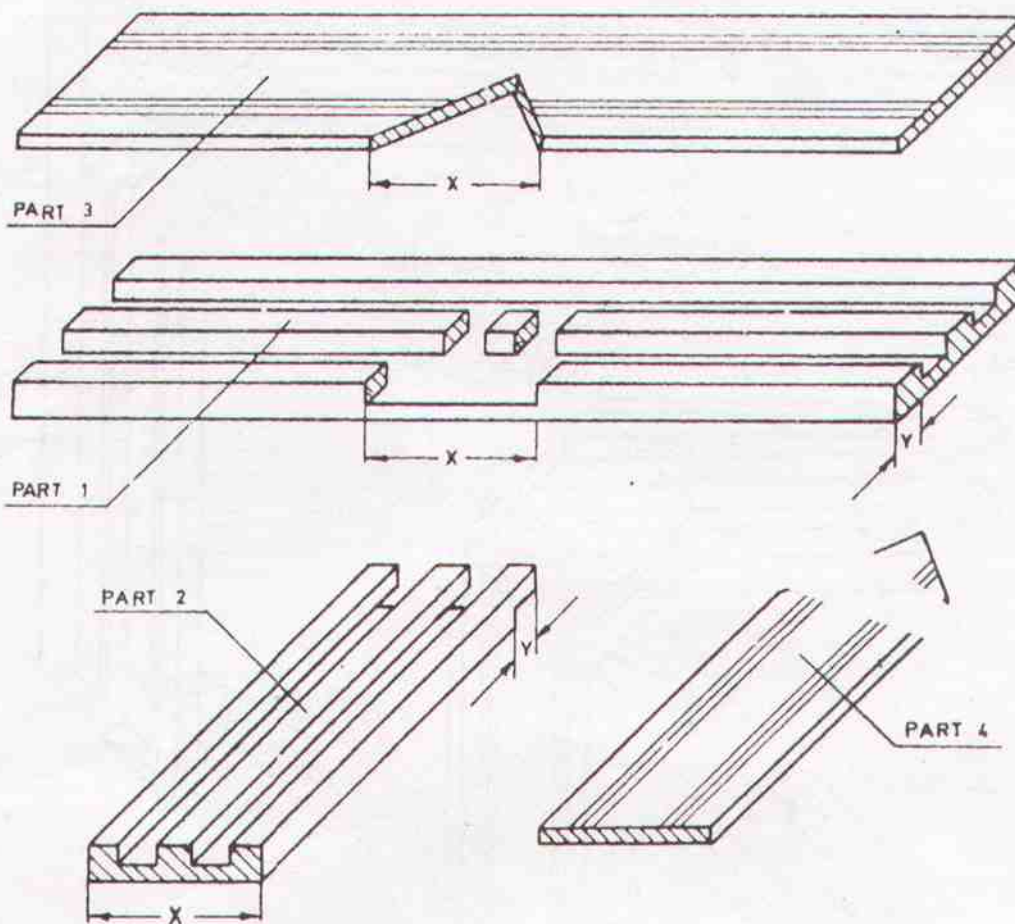
Wood Work

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SEQUENCE OF OPERATION

1. MARK BOTH CASING PIECES THOROUGHLY ACCORDING TO THE DRAWING.
X = WIDTH OF CASING, Y = WIDTH OF FILLET.
2. SAW PROPERLY AT MARKED LINES AND REMOVE EXCESS MATERIAL.
3. FILE THE JOINING SURFACES SMOOTH TO MAKE THEM FIT EXACTLY TOGETHER.
4. JOIN PART 1 AND PART 2.
5. MARK THE CAPPING PIECES PART 3 + 4 THOROUGHLY.
6. SAW PROPERLY AT MARKED LINES AND FILE SAWED SURFACES SMOOTH TO MAKE THEM FIT EXACTLY TOGETHER.
7. SCREW THE CAPPING PIECES PART 3 + 4 ON TOP OF THE CASINGS.
8. CHECK ALL OVER AND GIVE FINISHING TO THE JOINT.

TOOLS

METER RULE, TRY BACK SQUARE, SAW, RASP AND SMOOTH FILES, HAMMER, BENCH HOOK, SCREW DRIVER.

"T" CASING AND CAPPING JOINT

EP.2.3/3.53/11

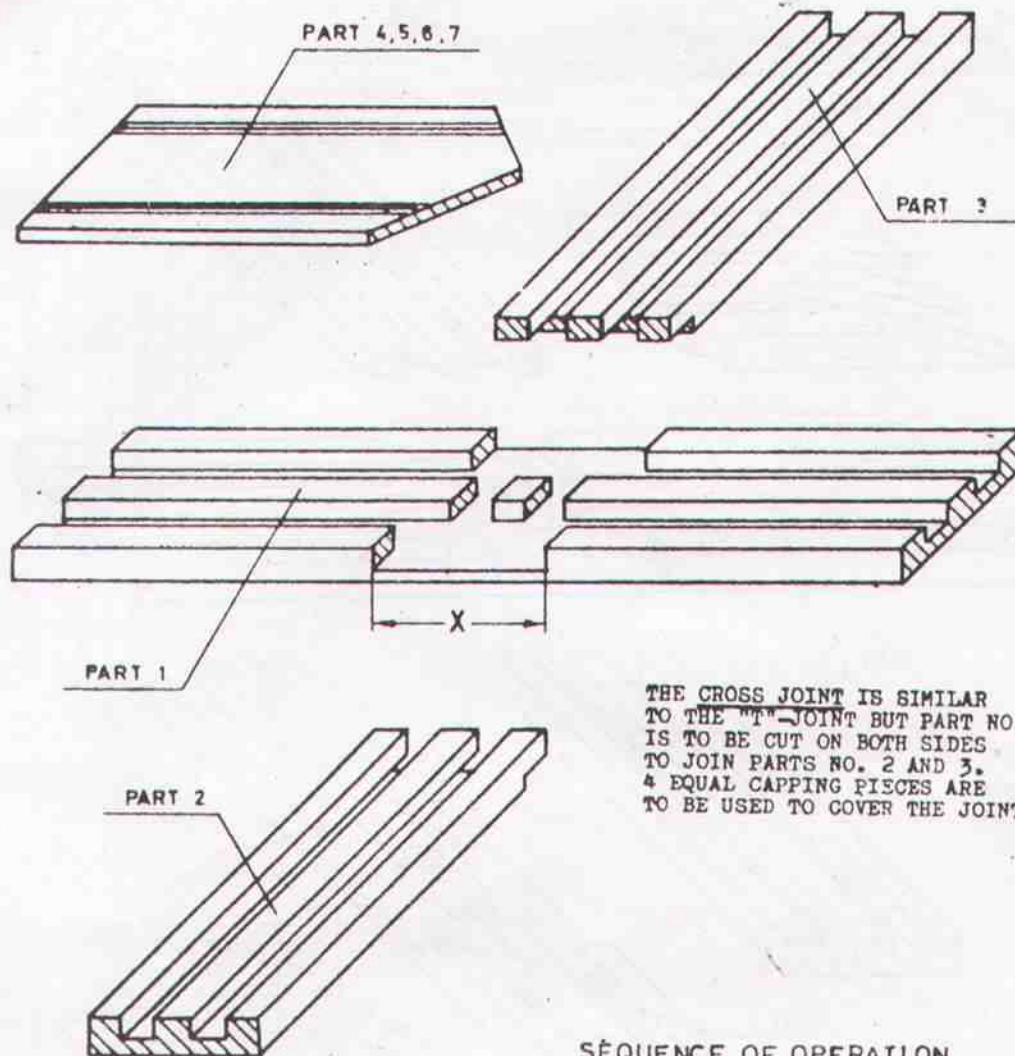
Wood Work

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THE CROSS JOINT IS SIMILAR TO THE "T"-JOINT BUT PART NO. 1 IS TO BE CUT ON BOTH SIDES TO JOIN PARTS NO. 2 AND 3. 4 EQUAL CAPPING PIECES ARE TO BE USED TO COVER THE JOINT.

SEQUENCE OF OPERATION

1. MARK THE CASING PIECES ACCORDING TO THE DRAWING. PARTS NO. 2 + 3 ARE EQUAL.
2. 3. AND 4. AS YOU DID IN "T"-JOINT EXERCISE.
5. MARK ALL FOUR CAPPING PIECES EQUALLY IN AN ANGLE OF 45° .
6. SAW PROPERLY AT MARKED LINES AND FILE SURFACES SMOOTH TO MAKE THEM FIT EXACTLY TOGETHER.
7. SCREW ALL FOUR CAPPING PIECES ON TOP OF THE CASINGS.
8. CHECK ALL OVER AND GIVE FINISHING TO THE JOINT.

TOOLS

METER RULE, TRY BACK SQUARE, SAW, RASP AND SMOOTH FILES, HAMMER, BENCH HOOK, SCREW DRIVER.

NOTE x = WIDTH OF CASING.

CROSS-CASING AND CAPPING JOINT

EP.2.3/3.5.3/12

Wood Work

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NOTE:
 X=ABOUT 2"
 Y=ABOUT 3-4"
 (SAME PARTS
 SAME SIZE)

THE BRIDGE JOINT IS EQUAL TO THE CROSS JOINT WITH THE ADDITION OF THE BRIDGE PARTS. THERE ARE TWO DESIGNS ONE PULL OR DOUBLE BRIDGE JOINT AS SHOWN ABOVE AND ONE THE MOST USED SIMPLE BRIDGE JOINT WITHOUT THE PARTS NO. 4 AND 5. IT IS USED FOR CROSSING ONE PATH OF CASINGS. THERE IS ALSO NO NEED OF COVER JOINT.

SEQUENCE OF OPERATION

1. AS YOU DID BEFORE IN THE CROSS JOINT EXERCISE.
2. MARK THE BRIDGE PARTS NO. 4, 5 AND 6 ACCORDING TO THE DRAWING.
3. SAW AND FILE PROPERLY TO SIZE.
4. JOIN THE PARTS NO. 4, 5 AND 6 TO THE PARTS NO. 1, 2 AND 3 IN SUCH A WAY THAT PART NO. 6 IS CROSSING PART NO. 1.
5. MARK, CUT AND FILE THE CAPPING PARTS PROPERLY. SAW, AS SHOWN IN THE DRAWING, A SMALL SLOT ON THE BEGINNING AND ON THE END OF TRACT Y, SO THE CAPPING PIECES CAN BENT IN SHAPE OF PARTS NO. 4, 5 AND 6. THEN FIT TO THE CASINGS.
6. CHECK ALL OVER AND GIVE FINISHING TO THE JOINT.

TOOLS
 METER RULE, TRY BACK SQUARE, SAW, RASP AND SMOOTH FILES, HAMMER, BENCH HOOK, SCREW DRIVER.

BRIDGE CASING AND CAPPING JOINT		EP.2.3/3.5.3/13
		Wood Work
 DEVELOPMENT CELL FOR SKILLED LABOUR TRAINING PAK GERMAN TECHNICAL TRAINING PROGRAMME	ELECTRICIAN GENERAL	
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