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The role of short formal tests and measured workshop performance in occupational therapy in the evaluation of failure by disabled persons to reach employable speed in repetitive

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APPENDIX 4

MODAPTS MOTIONS AND COMMON CIRCUMSTANCES IN WHICH THEY WERE FOUND IN INDUSTRY - STUDY 1

MODAPTS MOTION		EXAMPLE OF TYPE OF TASK IN WHICH MOTION IS FOUND IN INDUSTRY	TEST NO.
ONE HAND MOVEMENT - TOWARDS AND AWAY			
1G1	1P0	Sliding easily collected items a distance of 1" (2,5 cm) or less .	1
		Turning in circular pattern, e.g. nut	2
		"Thumbing" through leaves of paper	3
2G1	1P0	Turning in circular pattern, e.g. chuck key or tap	6
		Arm performing 2" (5 cm) displacement theoretically possible by wrist alone	7
3G1	3P0	Collecting items with reach of 6" (15 cm)	10
4G0	4P0	Machine levers	16
4G1	4P0	Machine levers	17
		Collecting larger items with reach of 12" (30 cm)	18
TWO HAND MOVEMENTS - TOWARDS AND AWAY (Involve ability to do two low conscious control movements simultaneously)			
1G0	1P0	Fold in packet tops	5
1G1	1P0	Low grade circular motions, e.g. nuts and bottle tops	4
2G1	2P0	Bi-lateral Section 1	9
3G1	3P0	Bi-lateral Section 1	13
ONE HAND MOVEMENTS - SIDEWAYS			
2G1	2P0	Collect or move items within 2" (5 cm) and allow flexibility in the work place area	8
3G1	3P0		11

MODAPTS MOTION	EXAMPLE OF TYPE OF TASK IN WHICH MOTION IS FOUND IN INDUSTRY	TEST NO.
TWO HAND MOVEMENTS - SIDEWAYS (Situation where eyes are needed to guide hands if objects are widely spaced)		
	Same as group 2 above	14
ONE HAND MOVEMENT - UP AND DOWN (VERTICAL PLANE		
3G1 3P0	Threading coil winding and sewing machines	12
	Harness wiring	12
4G1 4P0	Taking items from below or above to bench height	20
	Machine levers	19
5G1 5P0	Machine levers associated with standing	22
	Larger objects from shelf above workplace to workplace, while standing	23
TWO HAND MOVEMENT - UP AND DOWN (VERTICAL PLANE)		
3G1 + 3P0	Assembly at elevated position ...	15
4G1 + 4P0	Collect items from above bench height	21
5G1 + 5P0	Collect containers and large items or put aside on high shelf	24
ONE HAND - HIGH CONSCIOUS CONTROL G_3 AND P_3		
XG3 + XP0	Picking up from jumbled objects .	25
(Very low conscious control subsequent motion)	Picking up small isolated objects	26
	Picking up single sheet of paper or thin plastic bag	27

MODAPTS MOTION	EXAMPLE OF TYPE OF TASK IN WHICH MOTION IS FOUND IN INDUSTRY	TEST NO.
XG3 + XP0 (Very low conscious control motion with regrasp (R2) in sub-sequent motion)	Move screwdriver ready to screw .	58
	Passing tubing through fingers and palming components	54
	Re-orientation by turning in the fingers	53
XG1 + XP2 (Very low conscious control preceding motion)	Fitting symmetrical components together, e.g. putting covers on grease nipples or bushes on bolts	30
XG1 + XP5 (Very low conscious control preceding motion)	Assembling items involving close asymmetrical fit without re-grasp	33 34 35 36
TWO HANDS - ONE HIGH CONSCIOUS CONTROL AND ONE LOW CONSCIOUS CONTROL		
XG3 with XG1	Get two things at once, one easy to grasp, other not easy	29 31
XP2 with XP0 XP5 with XP0	Put two things at once, one re-quiring accuracy	38 39
TWO HANDS - TWO HIGH CONSCIOUS CONTROL (TWO GETS AT SAME TIME)		
XG3 with XG3	High level assembly	28
TWO HANDS - TWO HIGH CONSCIOUS CONTROL (TWO PUTS AT SAME TIME)		
XP2 with XP2	High level assembly	32
XP5 with XP5	High level assembly	40 41 42
XG3 with XP5	High level assembly	37
SEATED POSITION - MOVEMENT CLASS WITH WEIGHT		
L2 (Sequence from any of above which has	Move items aside	43

MODAPTS MOTION	EXAMPLE OF TYPE OF TASK IN WHICH MOTION IS FOUND IN INDUSTRY	TEST NO.
been done satisfactorily could be used)	Machine levers	44, 47, 50
STANDING POSITION - MOVEMENT CLASS WITH WEIGHT		
L2	Machine levers	45, 46, 48, 49, 51, 52
REACTION TIME		
D3	Reaction to visual or audible signals	62
FOOT MOTION		
F3	Operation of foot switch	75
DECISION		
D3 (Simple decision not involving colour)	Simple decision possibly involving pattern or position	64, 65
	Simple quality checks after having been shown faults requiring rejects	63
	Inspection work	66, 67, 68, 69, 70
	Sorting	
MOVEMENT OF BODY AND WEIGHT HANDLING		
W5	Foot pedal	74
W5 + B17 + S30	General materials handling	76, 77
W5 + Body assisted arm movement	Placement of items after carrying them to bench	71
3 above repeated with medium weight package		72, 73

MODAPTS MOTION	EXAMPLE OF TYPE OF TASK IN WHICH MOTION IS FOUND IN INDUSTRY	TEST NO.
CRANK		
C4 with fixed crank wheel	Lathe and other machine work	60
C4 winding flexible material in neat coil		59 61
APPLY PRESSURE		
AP2	Pressing buttons, releasing taps or chuck keys, using screwdriver	55 56
	Adhering objects using pressure	57 58
ADDITIONAL COMMENTS		
Some of tests should check a 3-dimensional co-ordination of hand (by being carried out above work place)	Assembly without jigs	31 38 39

APPENDIX 5

MODAPTS MOTIONS AND THE BMW TESTS IN WHICH THEY OCCURRED

MODAPTS MOTION	TESTS CONSTRUCTED TO EXAMINE MOTION SHOWN	OTHER TESTS CONTAINING MOTION SHOWN	
		IN EACH CYCLE	ONCE, USUALLY AT BEGINNING OR END OF TEST
MOVEMENT CLASS			
M1	1 2 3 4 5	31 35 38 39 41 53 56 64	59 63
M2	6 7 8 9	28 30 32 33 34 35 36 40 41 53 54 58 63 64 65	11 13 14 59 71 72 73 76
M3	10 11 12 13 14 15	25 26 27 28 29 31 32 36 39 41 42 55 57 58 66 67 68 77	5 30 33 35 56 59 60 63 64 65 70
M4	16 17 18 19 20 21	38 42 43 44 45 46 47 48 49 50 51 52 58 67 70	15 23 24 26 32 34 36 40 41 55 57 59 71 72 73 74
M5	22 23 24		
OBTAINING CONTROL			
G0	1 3 5	42 55 64 66	
G1	2 4 6 7 9 10 13	11 14 16 17 18 20 21 23 24 29 30 31 32 33 34 35 40 41 43 57 76	19 44 45 46 47 48 49 50 51 52 58 59 60 61 72 73
G3	25 26 27 28 29	15 31 37 39 42 53 54 56 64 66 67 68 69 70	
THINGS TO DESTINATIONS			
P0		* 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	33 34 36 37 40 54 55 59 60 61 62 69 71 72 73

* Where a P0 occurs as part of a 'simultaneous' P2, P5 or G3 it is not shown here.

MODAPTS MOTION	TESTS CONSTRUCTED TO EXAMINE MOTION SHOWN	OTHER TESTS CONTAINING MOTION SHOWN	
		IN EACH CYCLE	ONCE, USUALLY AT BEGINNING OR END OF TEST
THINGS TO DESTINATIONS			
P0 (Cont.)		15 20 21 22 23 24 25 26 27 28 29 31 35 38 39 42 43 44 45 46 47 48 49 50 51 52 53 56 57 58 63 64 65 66 67 68 70 76	74 75
P2	30 31 32	15	
P5	33 34 35 36 37 38 39 40 41 42	5 58	
OTHERS			
L1	43 44 45	72	
L2	46 47 49	73	
L3	48		
L4	50 51		
L6	52		
E2	63 64 65 66 67 68 69 70		
R2	53 54	31 38 39 56 58 64 69	59
D3	62 63 64 65 66 67 68 69 70		
F3	75		
A4	55 56 57 58		
C4	59 60 61		
W5	71 72 73 74		
B17	76		
S30	77		

APPENDIX 6

Basic Motions of Work Battery test record sheet used in Study 1.
(First page only, to illustrate design.)

TRANS CODE: 4 0

STATE CODE: NSW = 2, VIC = 3

BENEFIT TYPE: PENS = P, SICK = S, NONE = N

1st 4 CHARS OF REF No.

1st 2 LETTERS OF SURNAME

1st INITIAL

TEST HISTORY RECORD
OCCUPATIONAL THERAPY
RESEARCH PROJECT OT/1

TEST No.	WORK PLACE	OPTION	ACTION DESCRIPTION	STANDARD TIME (secs)	HANDS	TIME TAKEN TO PERFORM TESTS (Seconds)	BEST PERFORMANCE AS PERCENTAGE OF STANDARD TIME: Test	BEST PERFORMANCE AS PERCENTAGE OF STANDARD TIME: Workshop	SUCCESSFUL EMPLOYMENT WITHIN 6 MONTHS AFTER DISCH	COMMENTS
1	1	1	FORWARD AND BACK SLIDE RIGID	5.42	R		14 15 16	17 18 19	14	
					L		20 21 22	23 24 25	15	
2	2	1	FORWARD AND BACK GUIDED RIGID	7.87	R		26 27 28	29 30 31	16	
					L		32 33 34	35 36 37	17	
3	3	1	FORWARD AND BACK FLEXIBLE	5.29	R		38 39 40	41 42 43	18	
					L		44 45 46	47 48 49	19	
4	2	1	FORWARD AND BACK FIXED RIGID	7.87	BOTH		50 51 52	53 54 55	20	
5	4	1	FORWARD AND BACK FIXED FLEX	9.66	BOTH		56 57 58	59 60 61	21	
6	4	1	REVERSE OF ABOVE	7.61	BOTH		62 63 64	65 66 67	22	
							68 69 70	71 72 73	23	
			DATE OF TEST (DDMMYY)				74 75 76	77 78 79	24	
								80	25	

TEST CODE: A = INITIAL; B = AFTER 1 MONTH; C = AFTER 6 MONTHS; D = AFTER 1 YEAR; E = FINAL WORKSHOP

TIME CODE: F = 3 mths; G = 6 mths; H = 1 year; I = 2 years; J = 5 years

APPENDIX 6

BMW Battery test record sheet adapted for use with FOCUS computer programme in Study 2.

BASIC MOTIONS OF WORK TEST BATTERY – TEST RECORD SHEET (HFV/UP)

PATIENT STUDY NUMBER [ ][ ][ ][ ] 1-4

PATIENT NAME: _____ DATE: _____

PATIENT HOSPITAL NUMBER: [ ][ ][ ][ ][ ][ ] BATTERY NUMBER: [1] [2] [3] [ ] 5

TEST No	WORK PLACE	MOTION	ACTION DESCRIPTION	STANDARD TIME (secs)	HANDS	TIME TAKEN TO PERFORM TESTS (Seconds)	BEST PERFORMANCE AS PERCENTAGE OF STANDARD TIME Test	COMMENTS			
1	1	1	FORWARD AND BACK SLIDE RIGID	5.42	R				TEST NO	0 1 R	6-8
									TEST SCORE		9-11
					L				TEST NO	0 1 L	6-8
									TEST SCORE		9-11
2	2	1	FORWARD AND BACK GUIDED RIGID	7.87	R				TEST NO	0 2 R	6-8
									TEST SCORE		9-11
					L				TEST NO	0 2 L	6-8
									TEST SCORE		9-11
3	3	1	FORWARD AND BACK FLEXIBLE	5.29	R				TEST NO	0 3 R	6-8
									TEST SCORE		9-11
					L				TEST NO	0 3 L	6-8
									TEST SCORE		9-11
4	2	1	FORWARD AND BACK FIXED RIGID	7.87	BOTH				TEST NO	0 4	6-8
									TEST SCORE		9-11
5	4	1	FORWARD AND BACK FIXED FLEX	10.19	BOTH				TEST NO	0 5 R	6-8
									TEST SCORE		9-11
5	4	1	REVERSE OF ABOVE	7.61	BOTH				TEST NO	0 5 L	6-8
									TEST SCORE		9-11

BASIC MOTIONS OF WORK TEST BATTERY - TEST RECORD SHEET (HFV/UP)

PATIENT STUDY NUMBER [ ][ ][ ][ ] 1-4

PATIENT NAME: _____

PATIENT HOSPITAL NUMBER: [ ][ ][ ][ ][ ][ ]

BATTERY NUMBER: [1][2][3] [ ] 5

TEST No.	WORK PLACE	MOTION	ACTION DESCRIPTION	STANDARD TIME (secs)	HANDS	TIME TAKEN TO PERFORM TESTS (Seconds)	BEST PERFORMANCE AS PERCENTAGE OF STANDARD TIME Tens	COMMENTS		
6	2	2	FORWARD AND BACK FIXED RIGID	8.51	R				TEST NO	0 6 8 6-8
					L				TEST SCORE	9-11
7	1	2	FORWARD AND BACK CARRY RIGID	5.42	R				TEST NO	0 6 1 6-8
					L				TEST SCORE	9-11
8	1	2	SIDEWAYS CARRY RIGID	5.16	R				TEST NO	0 7 8 6-8
					L				TEST SCORE	9-11
9	2	2	FORWARD AND BACK FIXED RIGID	5.55	BOTH				TEST NO	0 7 1 6-8
									TEST SCORE	9-11
10	1	3	FORWARD AND BACK CARRY RIGID	5.88	R				TEST NO	0 8 8 6-8
					L				TEST SCORE	9-11
11	1	3	SIDEWAYS CARRY RIGID	5.34	R				TEST NO	0 8 1 6-8
					L				TEST SCORE	9-11
									TEST NO	0 9 6-8
									TEST SCORE	9-11
									TEST NO	1 0 8 6-8
									TEST SCORE	9-11
									TEST NO	1 0 1 6-8
									TEST SCORE	9-11
									TEST NO	1 1 8 6-8
									TEST SCORE	9-11
									TEST NO	1 1 1 6-8
									TEST SCORE	9-11

BASIC MOTIONS OF WORK TEST BATTERY - TEST RECORD SHEET (HFV/UP)

PATIENT STUDY NUMBER [ ][ ][ ][ ] 1-4

PATIENT NAME: _____

PATIENT HOSPITAL NUMBER: [ ][ ][ ][ ][ ][ ]

BATTERY NUMBER: [1][2][3] [ ] 5

TEST No.	WORK PLACE	MOTION	ACTION DESCRIPTION	STANDARD TIME (secs)	HANDS	TIME TAKEN TO PERFORM TESTS (Seconds)	BEST PERFORMANCE AS PERCENTAGE OF STANDARD TIME Tens	COMMENTS		
12	1	3	VERTICAL HI FLEX	8.04	R				TEST NO	1 2 8 6-8
					L				TEST SCORE	9-11
13	1	3	FORWARD AND BACK CARRY RIGID	5.88	BOTH				TEST NO	1 3 6-8
									TEST SCORE	9-11
14	1	3	SIDEWAYS CARRY RIGID	5.34	BOTH				TEST NO	1 4 6-8
									TEST SCORE	9-11
15	4	3	VERTICAL CARRY FLEX RIGID	11.48	BOTH				TEST NO	1 5 6-8
									TEST SCORE	9-11
16	2	4	LEVER HORIZONTAL AWAY	6.32	R				TEST NO	1 6 8 6-8
					L				TEST SCORE	9-11
									TEST NO	1 6 1 6-8
									TEST SCORE	9-11
17	2	4	LEVER HORIZONTAL TOWARDS	6.32	R				TEST NO	1 7 0 6-8
					L				TEST SCORE	9-11
									TEST NO	1 7 1 6-8
									TEST SCORE	9-11
18	1	4	FORWARD AND BACK CARRY RIGID	6.76	R				TEST NO	1 8 8 6-8
					L				TEST SCORE	9-11
									TEST NO	1 8 1 6-8
									TEST SCORE	9-11

BASIC MOTIONS OF WORK TEST BATTERY - TEST RECORD SHEET (IIFV/UP)

PATIENT STUDY NUMBER [ ] 1-4

PATIENT NAME: _____

PATIENT HOSPITAL NUMBER: [ ][ ][ ][ ][ ][ ]

BATTERY NUMBER: 1 2 3 [ ] 5

TEST No	WORK PLACE	MOTION	ACTION DESCRIPTION	STANDARD TIME (min)	HANDED	TIME TAKEN TO PERFORM TESTS (Seconds)	TEST PERFORMANCE AS PERCENTAGE OF STANDARD TIME Test	COMMENTS				
19	2	4	VERTICAL LEVER RIGID	6.33	R				TEST NO	1 9 R	6-8	
					L				TEST SCORE		9-11	
									TEST NO	1 9 L	6-8	
									TEST SCORE		9-11	
20	1	4	VERTICAL CARRY RIGID	7.46	R				TEST NO	2 0 R	6-8	
									TEST SCORE		9-11	
					L				TEST NO	2 0 L	6-8	
									TEST SCORE		9-11	
21	4	4	VERTICAL STANDING CARRY RIGID	6.18	BOTH				TEST NO	2 1 R	6-8	
									TEST SCORE		9-11	
21	4	4	REVERSE OF ABOVE	6.18	BOTH				TEST NO	2 1 L	6-8	
									TEST SCORE		9-11	
22	2	5	VERTICAL STANDING LEVER RIGID	7.87	R				TEST NO	2 2 R	6-8	
									TEST SCORE		9-11	
					L				TEST NO	2 2 L	6-8	
									TEST SCORE		9-11	

BASIC MOTIONS OF WORK TEST BATTERY - TEST RECORD SHEET (IIFV/UP)

PATIENT STUDY NUMBER [ ] 1-4

PATIENT NAME: _____

PATIENT HOSPITAL NUMBER: [ ][ ][ ][ ][ ][ ]

BATTERY NUMBER: 1 2 3 [ ] 5

TEST No	WORK PLACE	MOTION	ACTION DESCRIPTION	STANDARD TIME (min)	HANDED	TIME TAKEN TO PERFORM TESTS (Seconds)	TEST PERFORMANCE AS PERCENTAGE OF STANDARD TIME Test	COMMENTS				
23	4	5	VERTICAL STANDING CARRY FLEX	6.18	R				TEST NO	2 3 R	6-8	
					L				TEST SCORE		9-11	
23	4	5	REVERSE OF ABOVE	6.18	R				TEST NO	2 3 R	6-8	
									TEST SCORE		9-11	
					L				TEST NO	2 3 L	6-8	
									TEST SCORE		9-11	
24	4	5	VERTICAL STANDING CARRY RIGID	6.18	BOTH				TEST NO	2 4	6-8	
									TEST SCORE		9-11	
25	1	53	RIGID MATERIALS JUMBLED	8.18	R				TEST NO	2 5 R	6-8	
									TEST SCORE		9-11	
					L				TEST NO	2 5 L	6-8	
									TEST SCORE		9-11	
26	1	53	RIGID	8.22	R				TEST NO	2 6 R	6-8	
									TEST SCORE		9-11	
					L				TEST NO	2 6 L	6-8	
									TEST SCORE		9-11	
27	1	53	FLEXIBLE MATERIAL	8.18	R				TEST NO	2 7 R	6-8	
									TEST SCORE		9-11	
					L				TEST NO	2 7 L	6-8	
									TEST SCORE		9-11	

BASIC MOTIONS OF WORK TEST BATTERY — TEST RECORD SHEET (HFV/UP)

PATIENT STUDY NUMBER [ ][ ][ ][ ] 1-4

PATIENT NAME: _____

PATIENT HOSPITAL NUMBER: [ ][ ][ ][ ][ ][ ]

BATTERY NUMBER: [1][2][3] [ ] 5

TEST NO	WORK PLACE	MOTION	ACTION DESCRIPTION	STANDARD TIME (min)	HAND	TIME TAKEN TO PERFORM TESTS (Seconds)	BEST PERFORMANCE AS PERCENTAGE OF STANDARD TIME — Test	COMMENTS
19	2	4	VERTICAL LEVER RIGID	6.32	R			
					L			
20	1	4	VERTICAL CARRY RIGID	7.48	R			
					L			
21	4	4	VERTICAL STANDING CARRY RIGID	5.16	BOTH			
21	4	4	REVERSE OF ABOVE	5.16	BOTH			
22	2	5	VERTICAL STANDING LEVER RIGID	7.67	R			
					L			

TEST NO	1	9 R
TEST SCORE		9-11
TEST NO	1	9 L
TEST SCORE		9-11
TEST NO	2	0 R
TEST SCORE		9-11
TEST NO	2	0 L
TEST SCORE		9-11
TEST NO	2	1 R
TEST SCORE		9-11
TEST NO	2	1 L
TEST SCORE		9-11
TEST NO	2	2 R
TEST SCORE		9-11
TEST NO	2	2 L
TEST SCORE		9-11

BASIC MOTIONS OF WORK TEST BATTERY — TEST RECORD SHEET (HFV/UP)

PATIENT STUDY NUMBER [ ][ ][ ][ ] 1-4

PATIENT NAME: _____

PATIENT HOSPITAL NUMBER: [ ][ ][ ][ ][ ][ ]

BATTERY NUMBER: [1][2][3] [ ] 5

TEST NO	WORK PLACE	MOTION	ACTION DESCRIPTION	STANDARD TIME (min)	HAND	TIME TAKEN TO PERFORM TESTS (Seconds)	BEST PERFORMANCE AS PERCENTAGE OF STANDARD TIME — Test	COMMENTS
21	4	5	VERTICAL STANDING CARRY FLEX	5.19	R			
					L			
22	4	5	REVERSE OF ABOVE	5.19	R			
					L			
24	4	5	VERTICAL STANDING CARRY RIGID	5.19	BOTH			
25	1	03	RIGID MATERIALS JUMBLED	5.19	R			
					L			
26	1	03	RIGID	6.33	R			
					L			
27	1	03	FLEXIBLE MATERIAL	5.19	R			
					L			

TEST NO	2	3 R
TEST SCORE		9-11
TEST NO	2	3 L
TEST SCORE		9-11
TEST NO	2	5 R
TEST SCORE		9-11
TEST NO	2	3 L
TEST SCORE		9-11
TEST NO	2	4 -
TEST SCORE		9-11
TEST NO	2	5 R
TEST SCORE		9-11
TEST NO	2	5 L
TEST SCORE		9-11
TEST NO	2	6 R
TEST SCORE		9-11
TEST NO	2	6 L
TEST SCORE		9-11
TEST NO	2	7 R
TEST SCORE		9-11
TEST NO	2	7 L
TEST SCORE		9-11

BASIC MOTIONS OF WORK TEST BATTERY - TEST RECORD SHEET (HFV/UP)

PATIENT STUDY NUMBER [ ][ ][ ] 1-4

PATIENT NAME: _____

PATIENT HOSPITAL NUMBER: [ ][ ][ ][ ][ ][ ]

BATTERY NUMBER: 1 2 3 [ ] 5

ACTION DESCRIPTION	STANDARD TIME (sec)	HANDS	TIME TAKEN TO PERFORM TESTS (Seconds)	BEST PERFORMANCE AS PERCENTAGE OF STANDARD TIME — Test	COMMENTS	
RIGID JUMBLED BILAT HC GET	9.4	R				TEST NO 2 0 [ ] 6-8 / TEST SCORE 9-11
		L				
RIGID LC WITH GET	6.10	R				TEST NO 2 0 R 6-8 / TEST SCORE 9-11
		L				TEST NO 2 0 L 6-8 / TEST SCORE 9-11
RIGID TO JIG HELD OBJECT	5.83	R				TEST NO 3 0 R 6-8 / TEST SCORE 9-11
		L				TEST NO 3 0 L 6-8 / TEST SCORE 9-11
RIGID AIR	4.13	R				TEST NO 3 1 R 6-8 / TEST SCORE 9-11
		L				TEST NO 3 1 L 6-8 / TEST SCORE 9-11
RIGID BILAT TO JIG HELD OBJECT	8.39	BOTH				TEST NO 3 2 [ ] 6-8 / TEST SCORE 9-11
RIGID TO JIG	6.87	R				TEST NO 3 2 R 6-8 / TEST SCORE 9-11
		L				TEST NO 3 2 L 6-8 / TEST SCORE 9-11

BASIC MOTIONS OF WORK TEST BATTERY - TEST RECORD SHEET (HFV/UP)

PATIENT STUDY NUMBER [ ][ ][ ] 1-4

PATIENT NAME: _____

PATIENT HOSPITAL NUMBER: [ ][ ][ ][ ][ ][ ]

BATTERY NUMBER: 1 2 3 [ ] 5

ACTION DESCRIPTION	STANDARD TIME (sec)	HANDS	TIME TAKEN TO PERFORM TESTS (Seconds)	BEST PERFORMANCE AS PERCENTAGE OF STANDARD TIME — Test	COMMENTS	
RIGID TO JIG	4.32	R				TEST NO 3 4 R 6-8 / TEST SCORE 9-11
		L				TEST NO 3 4 L 6-8 / TEST SCORE 9-11
RIGID TO JIG HELD OBJECT	5.99	R				TEST NO 3 5 R 6-8 / TEST SCORE 9-11
		L				TEST NO 3 5 L 6-8 / TEST SCORE 9-11
FINE SEMI RIGID TO JIG	7.74	R				TEST NO 3 6 R 6-8 / TEST SCORE 9-11
		L				TEST NO 3 6 L 6-8 / TEST SCORE 9-11
RIGID EDGE TO LINE BILAT	9.8	BOTH				TEST NO 3 7 [ ] 6-8 / TEST SCORE 9-11
RIGID AIR AFTER BILAT LC GET	11.88	R				TEST NO 3 8 R 6-8 / TEST SCORE 9-11
		L				TEST NO 3 8 L 6-8 / TEST SCORE 9-11
RIGID AIR AFTER BILAT HC GET	15.87	R				TEST NO 3 9 R 6-8 / TEST SCORE 9-11
		L				TEST NO 3 9 L 6-8 / TEST SCORE 9-11

BASIC MOTIONS OF WORK TEST BATTERY - TEST RECORD SHEET (18YR/UP)

PATIENT STUDY NUMBER 1-4

PATIENT NAME: _____

PATIENT HOSPITAL NUMBER: | | | | | | |

BATTERY NUMBER: 1 2 3 5

TEST NO.	WEIGHT PLACED	POSITION	ACTION DESCRIPTION	STANDARD TIME (sec)	HANDED	TIME TAKEN TO PERFORM TESTS (Seconds)	BEST PERFORMANCE AS PERCENTAGE OF STANDARD TIME Test	COMMENTS				
43	0	PB	RIGID BILAT TO AFTER BILAT ACTIV	12.26	B				TEST NO	4 0		6-8
									TEST SCORE			9-11
41	0	PB	RIGID BILAT TO OBJECT AFTER B	14.84	B				TEST NO	4 1		6-8
									TEST SCORE			9-11
42	0	PB	BILAT CONTROL SINGLE FLEXIBLE OBJECT	11.81	B				TEST NO	4 2		6-8
									TEST SCORE			9-11
43	0	L7	SLIDE AND LIFT	8.77	R				TEST NO	4 3 R		6-8
			SEATED		L				TEST SCORE			9-11
									TEST NO	4 3 L		6-8
									TEST SCORE			9-11
44	2	L2	LEVER VERTICAL	7.81	R				TEST NO	4 4 R		6-8
			SEATED		L				TEST SCORE			9-11
									TEST NO	4 4 L		6-8
									TEST SCORE			9-11
45	2	L2	LEVER 6 IN VERTICAL DOWN	7.81	R				TEST NO	4 5 R		6-8
			STANDING		L				TEST SCORE			9-11
									TEST NO	4 5 L		6-8
									TEST SCORE			9-11
46	2	L2	LEVER VERTICAL AWAY 18 IN	7.81	R				TEST NO	4 6 R		6-8
			STANDING		L				TEST SCORE			9-11
									TEST NO	4 6 L		6-8
									TEST SCORE			9-11

BASIC MOTIONS OF WORK TEST BATTERY - TEST RECORD SHEET (18YR/UP)

PATIENT STUDY NUMBER 1-4

PATIENT NAME: _____

PATIENT HOSPITAL NUMBER: | | | | | | |

BATTERY NUMBER: 1 2 3 5

TEST NO.	WEIGHT PLACED	POSITION	ACTION DESCRIPTION	STANDARD TIME (sec)	HANDED	TIME TAKEN TO PERFORM TESTS (Seconds)	BEST PERFORMANCE AS PERCENTAGE OF STANDARD TIME Test	COMMENTS				
47	2	L2	LEVER VERTICAL DOWN 18 IN	8.38	R				TEST NO	4 7 R		6-8
			SEATED		L				TEST SCORE			9-11
									TEST NO	4 7 L		6-8
									TEST SCORE			9-11
48	2	L2	LEVER VERTICAL AWAY 24 IN	8.38	R				TEST NO	4 8 R		6-8
			STANDING		L				TEST SCORE			9-11
									TEST NO	4 8 L		6-8
									TEST SCORE			9-11
49	2	L1	LEVER 18 IN VERTICAL DOWN	8.38	R				TEST NO	4 9 R		6-8
			STANDING		L				TEST SCORE			9-11
									TEST NO	4 9 L		6-8
									TEST SCORE			9-11
50	2	L5	LEVER VERTICAL DOWN 30 IN	8.55	R				TEST NO	5 0 R		6-8
			SEATED		L				TEST SCORE			9-11
									TEST NO	5 0 L		6-8
									TEST SCORE			9-11
51	2	L5	LEVER 30 IN VERTICAL DOWN	8.55	R				TEST NO	5 1 R		6-8
			STANDING		L				TEST SCORE			9-11
									TEST NO	5 1 L		6-8
									TEST SCORE			9-11

BASIC MOTIONS OF WORK TEST BATTERY - TEST RECORD SHEET (HFV/UP)

PATIENT STUDY NUMBER [ ][ ][ ][ ] 1-4

PATIENT NAME: _____

PATIENT HOSPITAL NUMBER: [ ][ ][ ][ ][ ][ ]

BATTERY NUMBER: [1][2][3] [ ] 5

TEST No.	WORK PLACE	ACTION: MOTION	ACTION: DESCRIPTION	STANDARD TIME (sec)	HANDED	TIME TAKEN TO PERFORM TESTS (Seconds)	BEST PERFORMANCE AS PERCENTAGE OF STANDARD TIME: Test	COMMENTS
52	3	L6	LEVER VERTICAL AWAY STANDING 40 lb	10.64	R			
					L			
53	3	A2	RIGID	8.37	R			
					L			
54	3	A2	RIGID TO PALM	8.56	R			
					L			
55	4	A4	FIXED BUTTON SWITCH	4.83	R			
					L			
56	4	A4	LOOSE SPARING PINS	5.98	R			
					L			

TEST NO	5 2 R 6-8
TEST SCORE	9-11
TEST NO	5 2 L 6-8
TEST SCORE	9-11
TEST NO	5 3 R 6-8
TEST SCORE	9-11
TEST NO	5 3 L 6-8
TEST SCORE	9-11
TEST NO	5 4 R 6-8
TEST SCORE	9-11
TEST NO	5 4 L 6-8
TEST SCORE	9-11
TEST NO	5 5 R 6-8
TEST SCORE	9-11
TEST NO	5 5 L 6-8
TEST SCORE	9-11
TEST NO	5 6 R 6-8
TEST SCORE	9-11
TEST NO	5 6 L 6-8
TEST SCORE	9-11

BASIC MOTIONS OF WORK TEST BATTERY - TEST RECORD SHEET (HFV/UP)

PATIENT STUDY NUMBER [ ][ ][ ][ ] 1-4

PATIENT NAME: _____

PATIENT HOSPITAL NUMBER: [ ][ ][ ][ ][ ][ ]

BATTERY NUMBER: [1][2][3] [ ] 5

TEST No.	WORK PLACE	ACTION: MOTION	ACTION: DESCRIPTION	STANDARD TIME (sec)	HANDED	TIME TAKEN TO PERFORM TESTS (Seconds)	BEST PERFORMANCE AS PERCENTAGE OF STANDARD TIME: Test	COMMENTS
57	4	A4	TURNED CHUCK KEY	5.01	R			
					L			
58	4	A4	LOOSE SCREW DRIVEN	11.06	R			
					L			
59	5	C4	FLEXIBLE AIR	8.45	R			
					L			
60	5	C4	RIGID HANDLE	12.80	R			
					L			
61	5	C4	FLEXIBLE AIR SHUTTLE	8.06	R			
					L			
62	5	[illegible]	SILENCE NOISE	5.11	R			
63	5		O3 WITH O2 SHADE	8.42	L			

TEST NO	5 7 R 6-8
TEST SCORE	9-11
TEST NO	5 7 L 6-8
TEST SCORE	9-11
TEST NO	5 8 6-8
TEST SCORE	9-11
TEST NO	5 9 R 6-8
TEST SCORE	9-11
TEST NO	5 9 L 6-8
TEST SCORE	9-11
TEST NO	6 0 R 6-8
TEST SCORE	9-11
TEST NO	6 0 L 6-8
TEST SCORE	9-11
TEST NO	6 1 R 6-8
TEST SCORE	9-11
TEST NO	6 1 L 6-8
TEST SCORE	9-11
TEST NO	[illegible] 6-8
TEST SCORE	9-11
TEST NO	6 3 6-8
TEST SCORE	9-11

BASIC MOTIONS OF WORK TEST BATTERY - TEST RECORD SHEET (HFV/UP)

PATIENT STUDY NUMBER [ ][ ][ ] 1-4

PATIENT NAME: _____

PATIENT HOSPITAL NUMBER: [ ][ ][ ][ ][ ][ ]

BATTERY NUMBER: [1] [2] [3]

TEST NO	WORK PLACE	MOTIONS	ACTION DESCRIPTION	STANDARD TIME (MIN)	HANDED	TIME TAKEN TO PERFORM TESTS (Seconds)	TEST PERFORMANCE AS PERCENTAGE OF STANDARD TIME Test	COMMENTS			
04	1	03	WITH 02 HEADS/TAILS	0.42					TEST NO	6 4	6-8
									TEST SCORE		9-11
05	1	03	WITH 02 GATE	10.50					TEST NO	6 5	6-8
									TEST SCORE		9-11
06	1	03	WITH 02 SHAPE	8.04					TEST NO	6 6	6-8
									TEST SCORE		9-11
07	1	03	WITH 02 SHAPE	8.10					TEST NO	6 7	6-8
									TEST SCORE		9-11
08	1	03	WITH 02 SHAPE	3.84					TEST NO	6 8	6-8
									TEST SCORE		9-11
09	1	03	WITH 02 SHAPE	10.70					TEST NO	6 9	6-8
									TEST SCORE		9-11
10	1	03	WITH 02 SHAPE	8.13					TEST NO	7 0	6-8
									TEST SCORE		9-11
11	4	09	30 FEET	10.46					TEST NO	7 1	6-8
									TEST SCORE		9-11
12	4	09	30 FEET R/H	11.22					TEST NO	7 2	6-8
									TEST SCORE		9-11
13	4	09	10 FEET R/H	12.12					TEST NO	7 3	6-8
									TEST SCORE		9-11

BASIC MOTIONS OF WORK TEST BATTERY - TEST RECORD SHEET (HFV/UP)

PATIENT STUDY NUMBER [ ][ ][ ][ ] 1-4

PATIENT NAME: _____

PATIENT HOSPITAL NUMBER: [ ][ ][ ][ ][ ][ ]

BATTERY NUMBER: [1] [2] [3]

TEST NO	WORK PLACE	MOTIONS	ACTION DESCRIPTION	STANDARD TIME (MIN)	HANDED	TIME TAKEN TO PERFORM TESTS (Seconds)	BEST PERFORMANCE AS PERCENTAGE OF STANDARD TIME Test	COMMENTS			
14	4	09	FOOT PEDAL	7.68	R				TEST NO	7 4 R	6-8
					L				TEST SCORE		9-11
									TEST NO	7 4 L	6-8
									TEST SCORE		9-11
15	4	13	FOOT PEDAL	9.60	R				TEST NO	7 5 R	6-8
					L				TEST SCORE		9-11
									TEST NO	7 5 L	6-8
									TEST SCORE		9-11
16	4	61	PICK UP FROM FLOOR	8.46					TEST NO	7 6	6-8
									TEST SCORE		9-11
17	4	69	ARISE FROM CHAIR AND SIT	8.51					TEST NO	7 7	6-8
									TEST SCORE		9-11

APPENDIX 7

TECHNICAL DETAILS OF BASIC MOTIONS OF WORK

TEST BATTERY EQUIPMENT

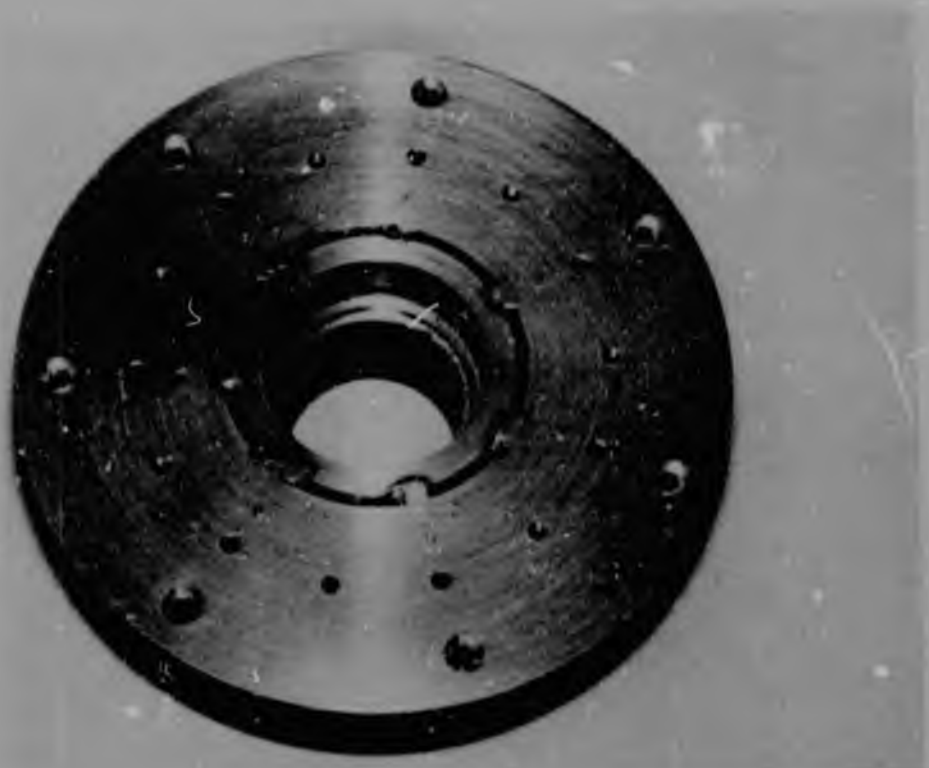
Drawings by: (other than drawn by the author)
1) D. Pienaar (pp. 1, 8, 11, 18, 20, 22)
2) Medical Fitness for Work Unit, H.F. Verwoerd Hospital (pp. 9, 10, 12, 13, 14, 15, 16, 17, 19, 21, 23, 24, 25, 26)

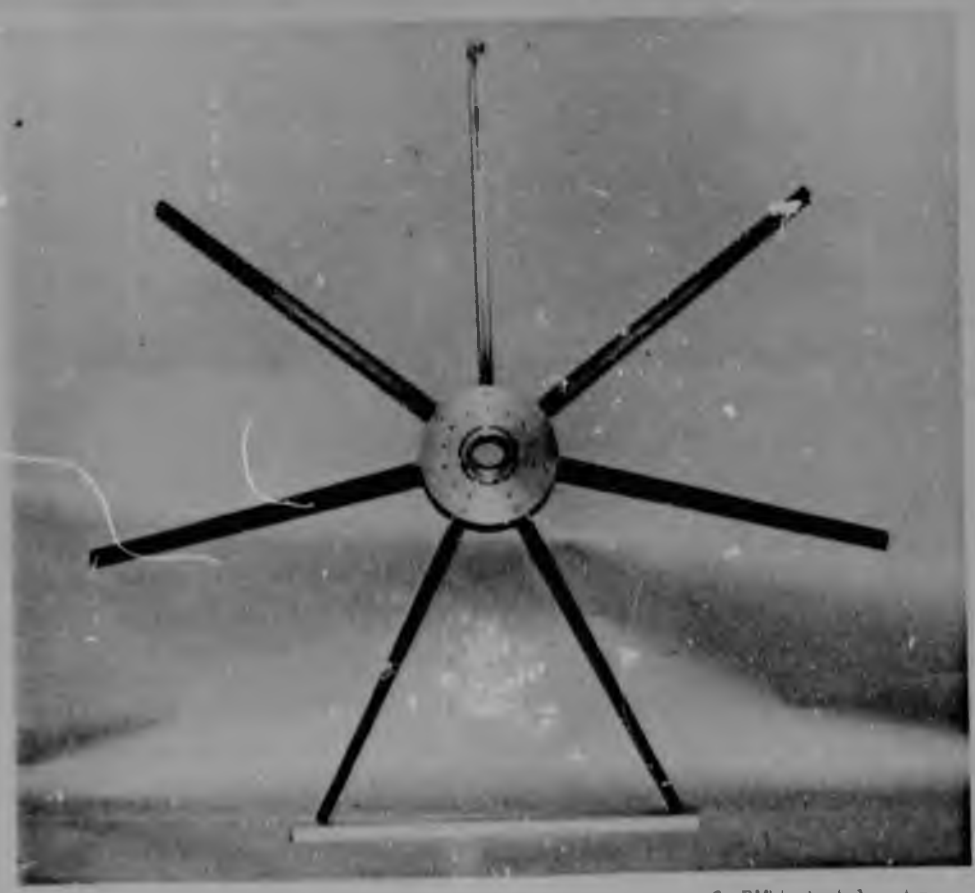
Photographs by: Charmaine Vermeulen, photography department, H. F. Verwoerd Hospital.





Hub to which supporting arms of BMW table top were bolted.





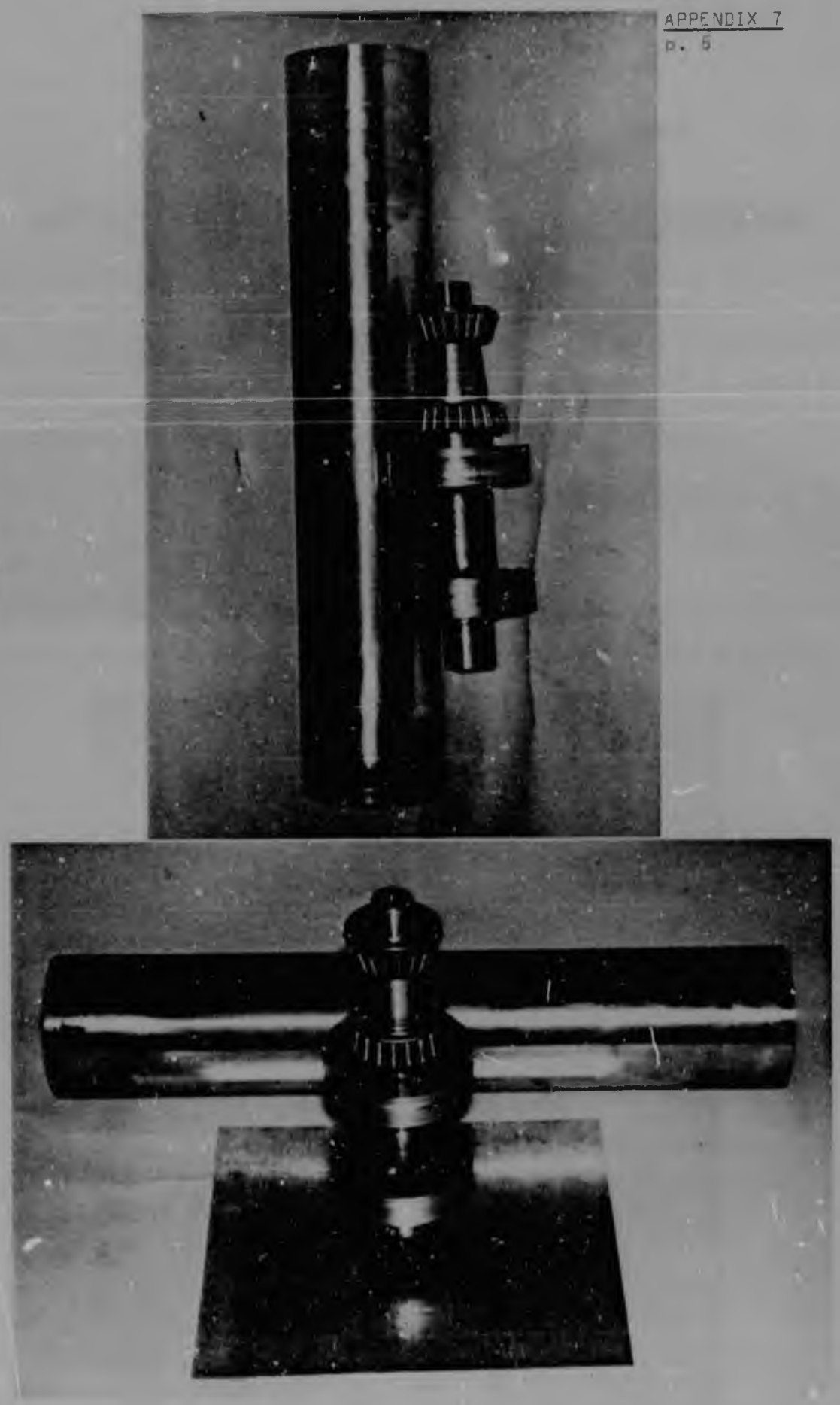
Hub from above, and showing supporting arms of BMW table top attached.



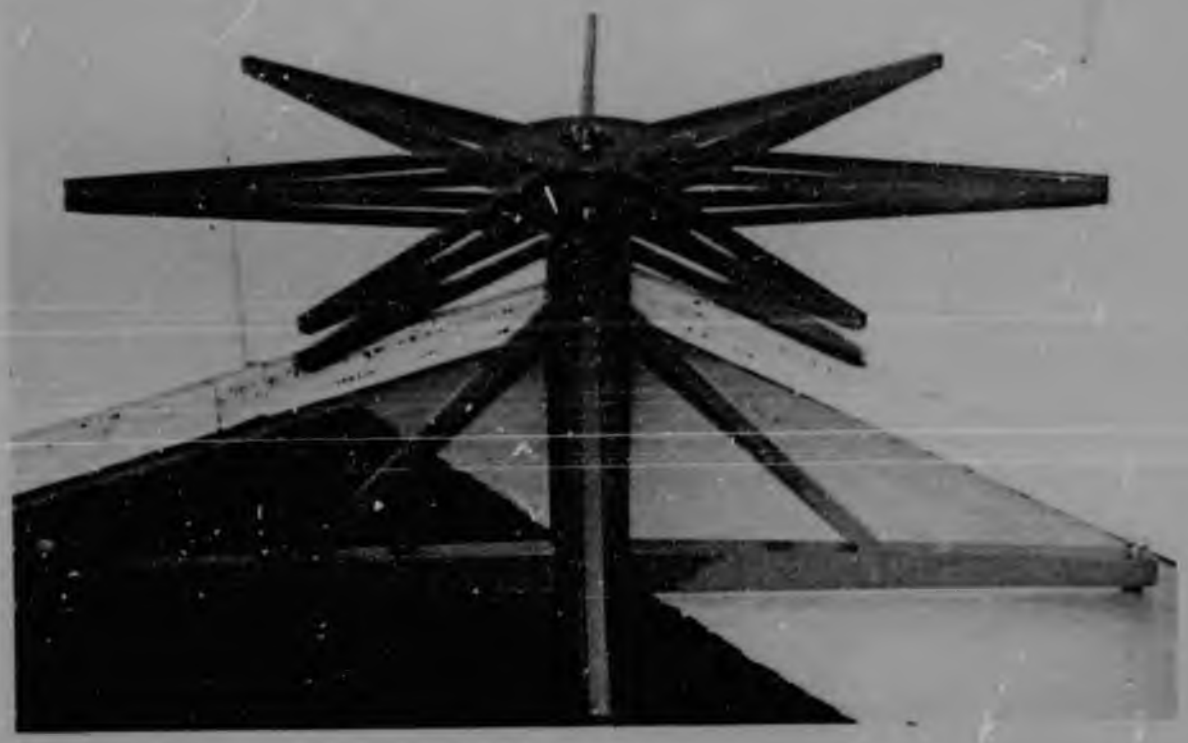
Spindle at top of central pillar of BMW table, on which roller bearings rested.



Roller bearings on which hub and supporting arms of BMW table top rested.



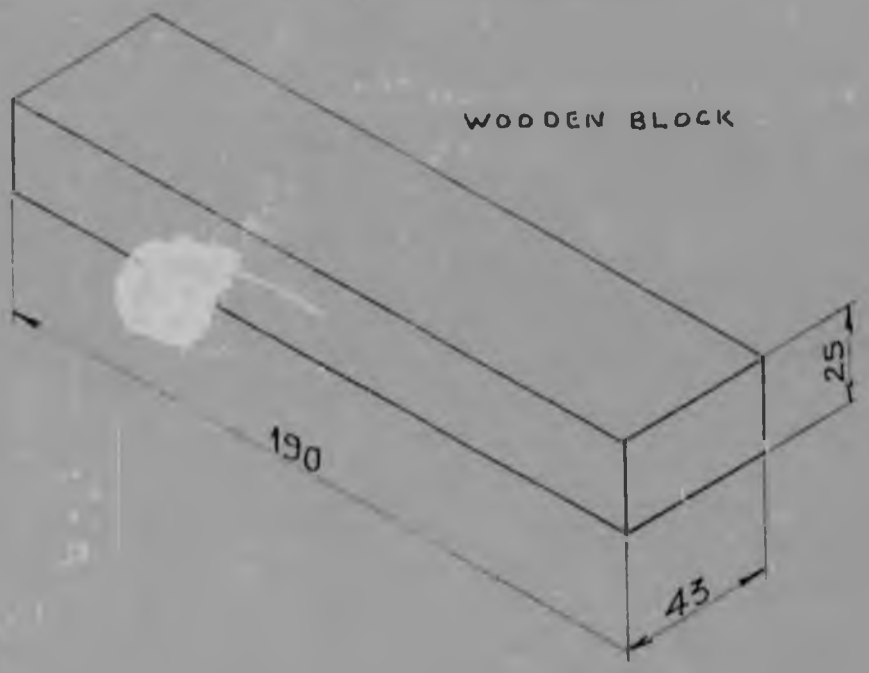
Central pillar and spindle of BMW table showing base of spindle which was seated inside the pillar.



Central pillar of BMW table with legs and table top support attached.

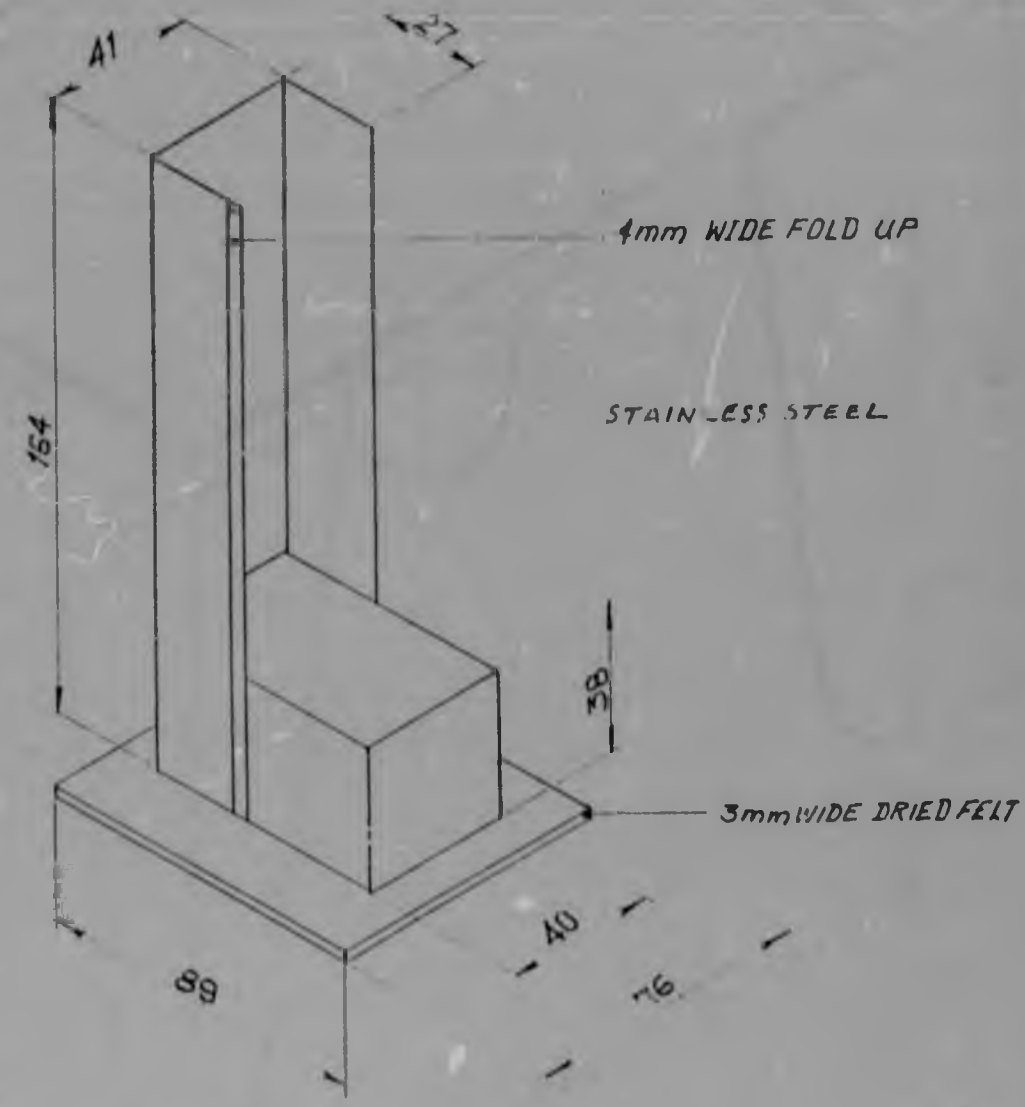


Legs and braces ready for assembly to central pillar.



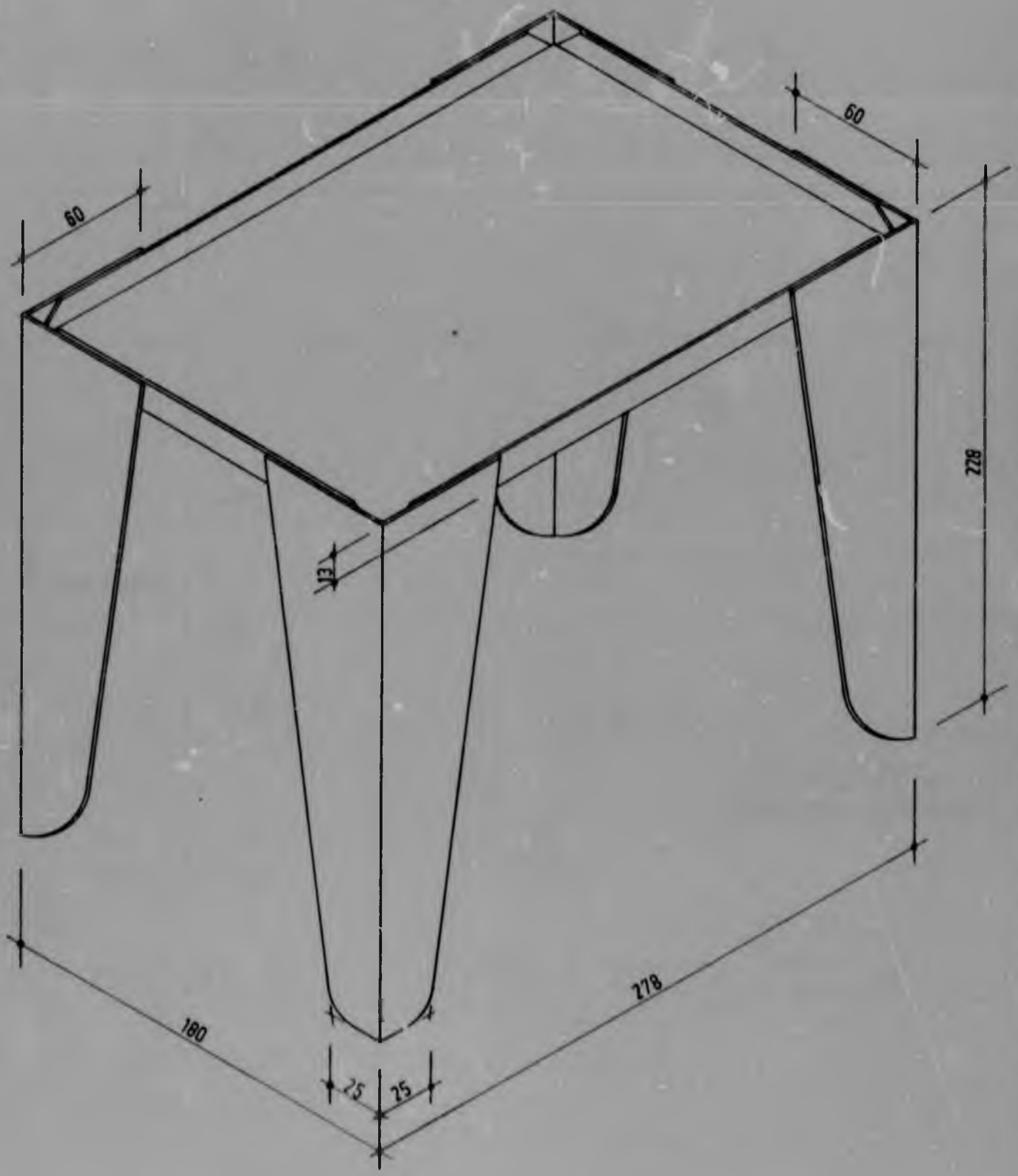
B.M.W. WORKPLACE 1 TEST 7

SCALE 1:2



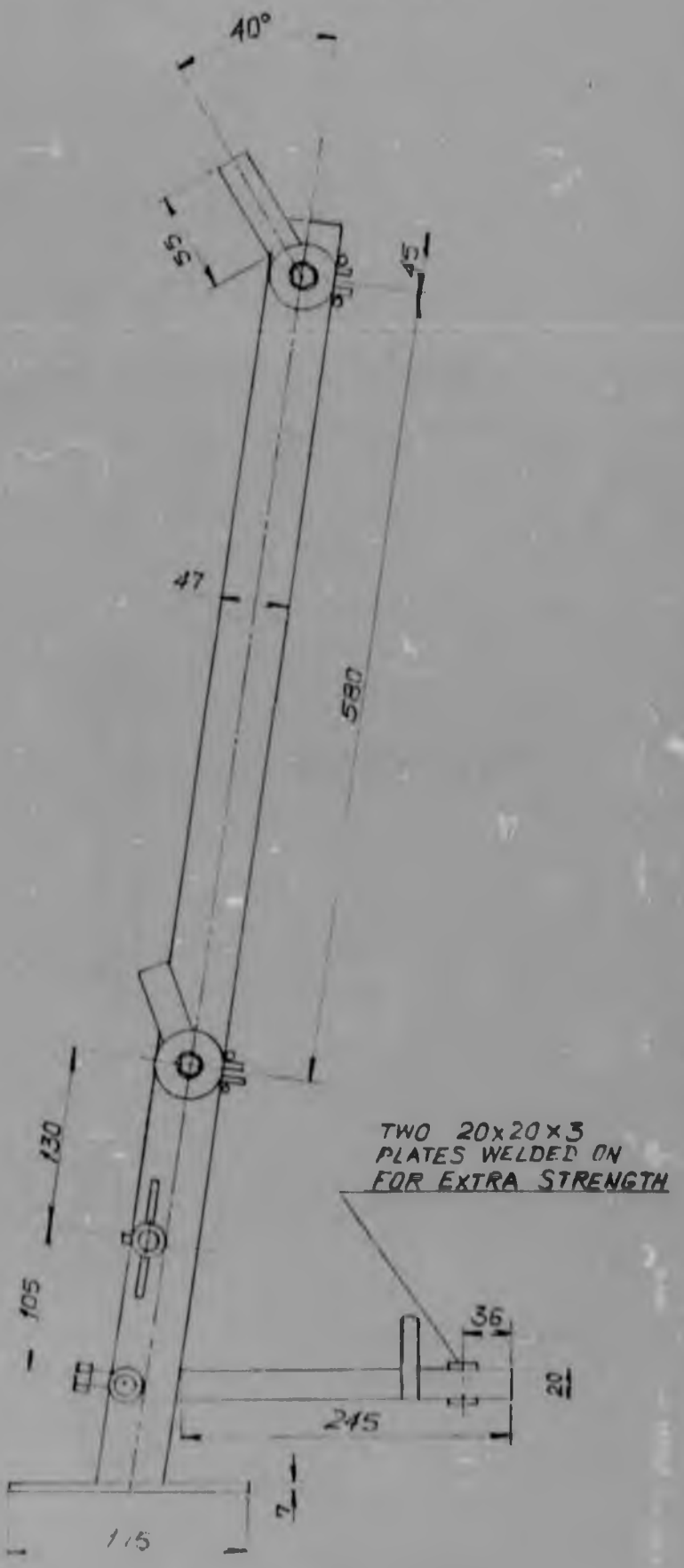
BMW WORKPLACE 1 TEST 18

SCALE 1:2



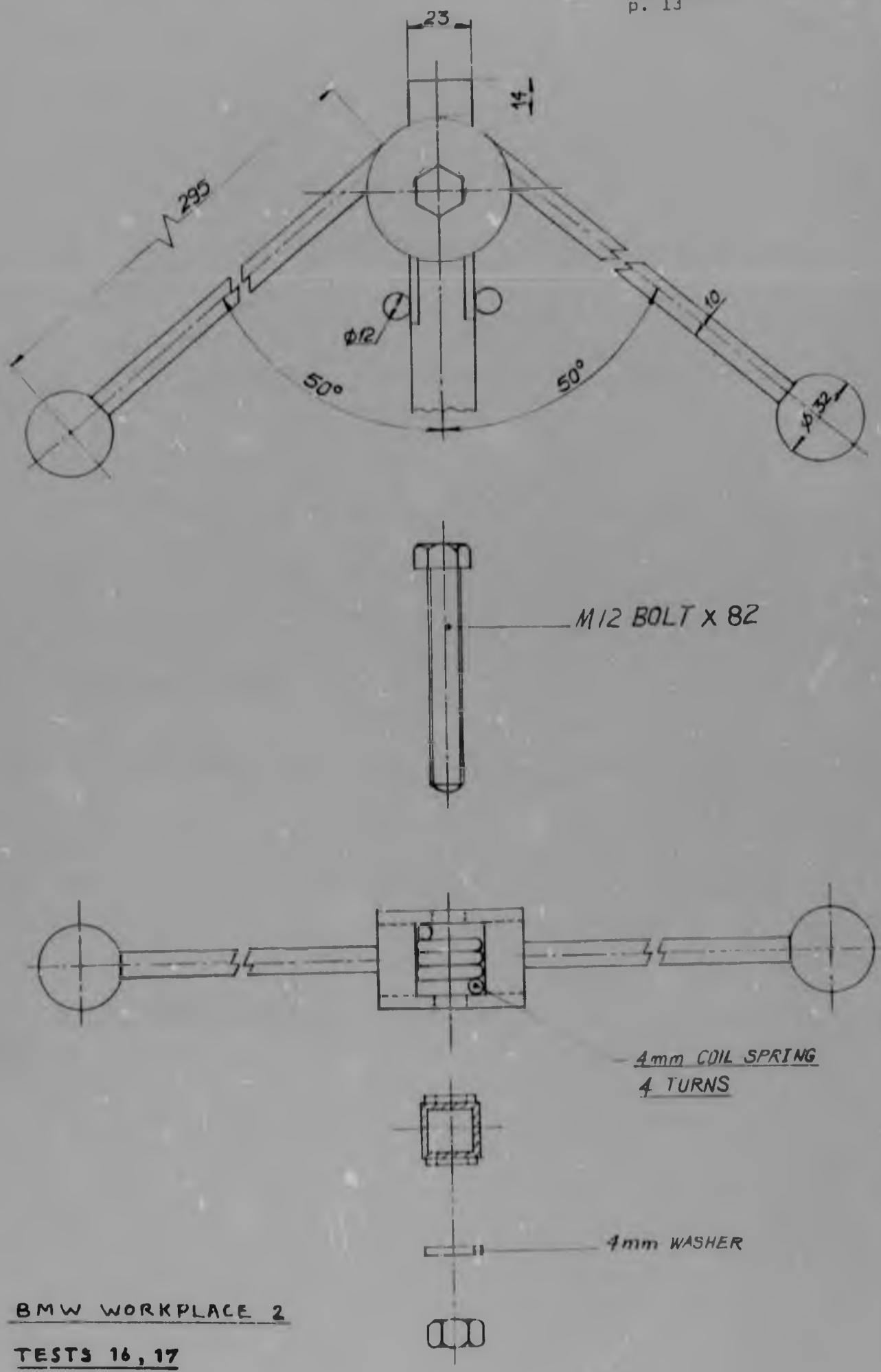
BMW WORKPLACE 1 TEST 20 Scale 1:2,5





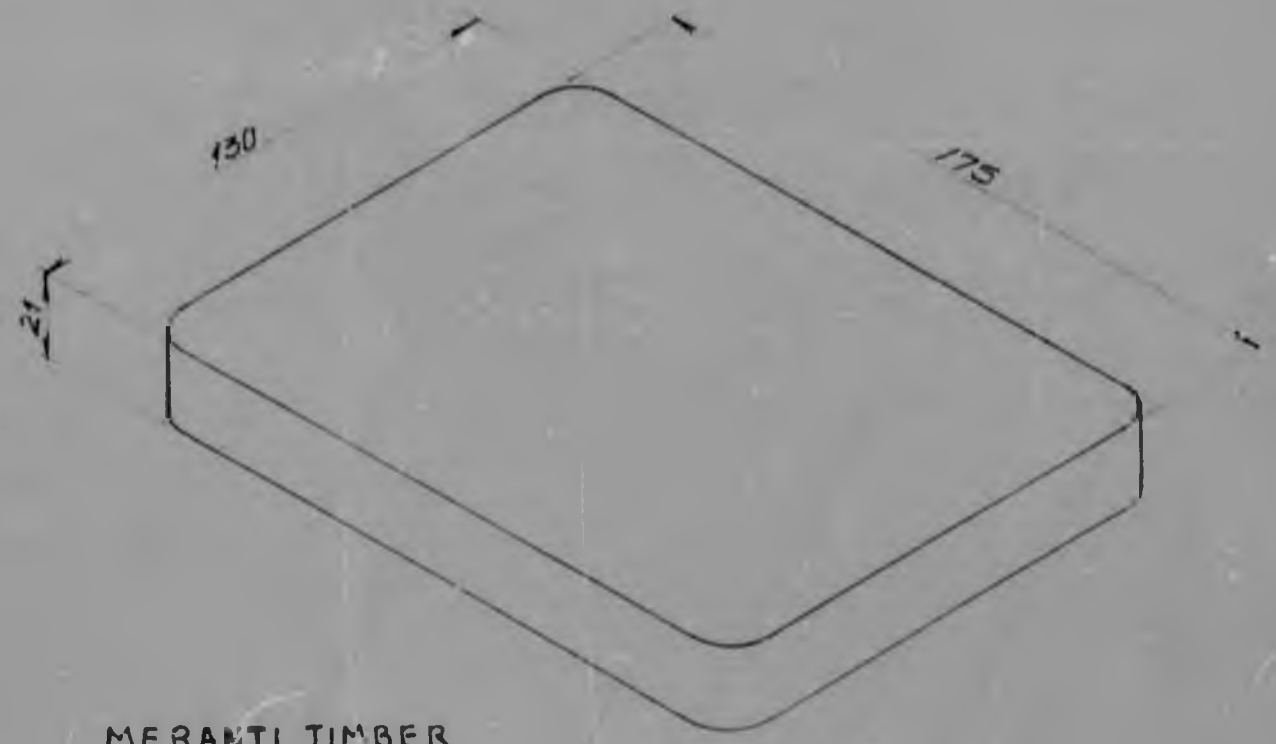
BM.W. WORKPLACE 2

ALL TESTS



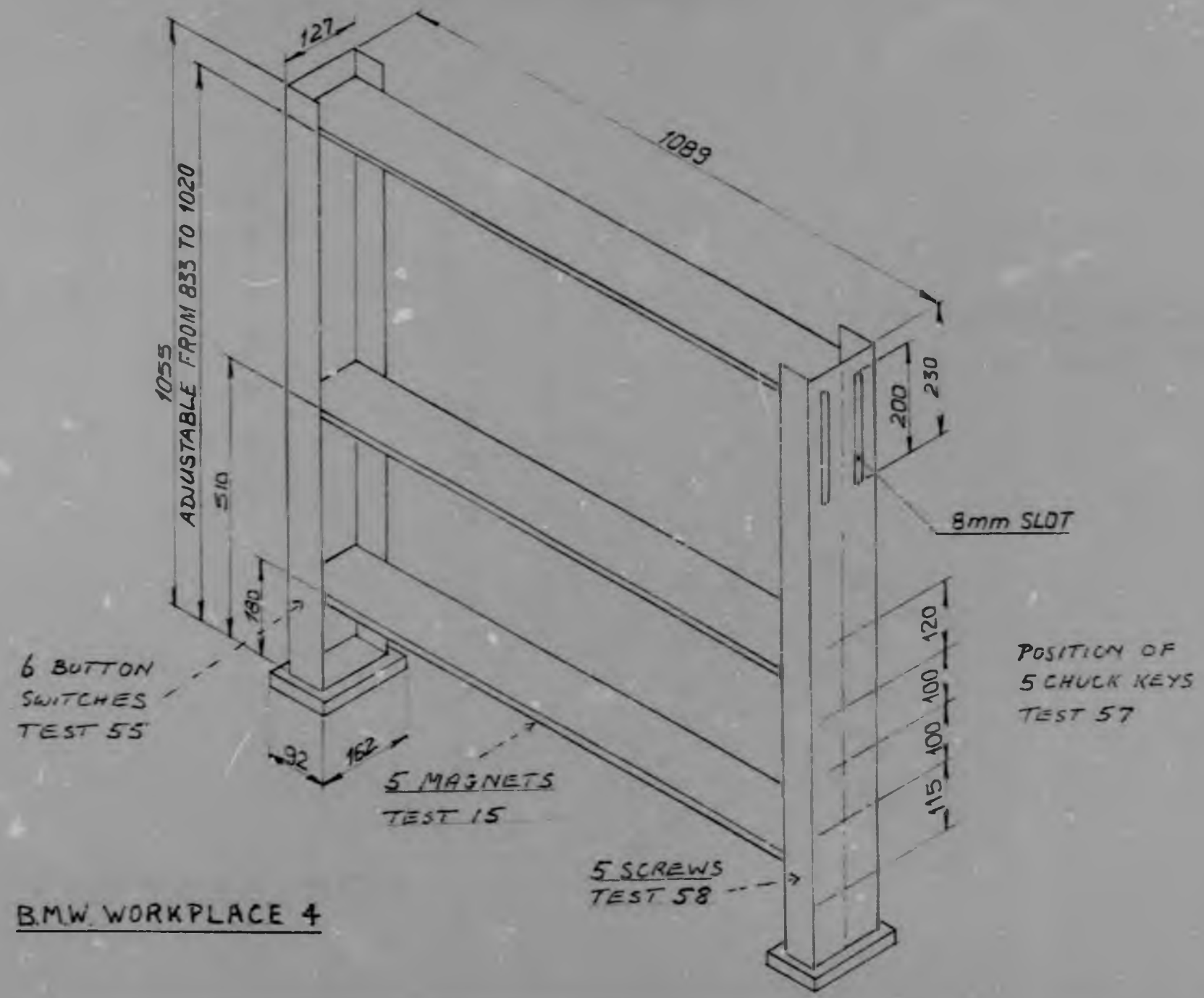
BMW WORKPLACE 2

TESTS 16, 17

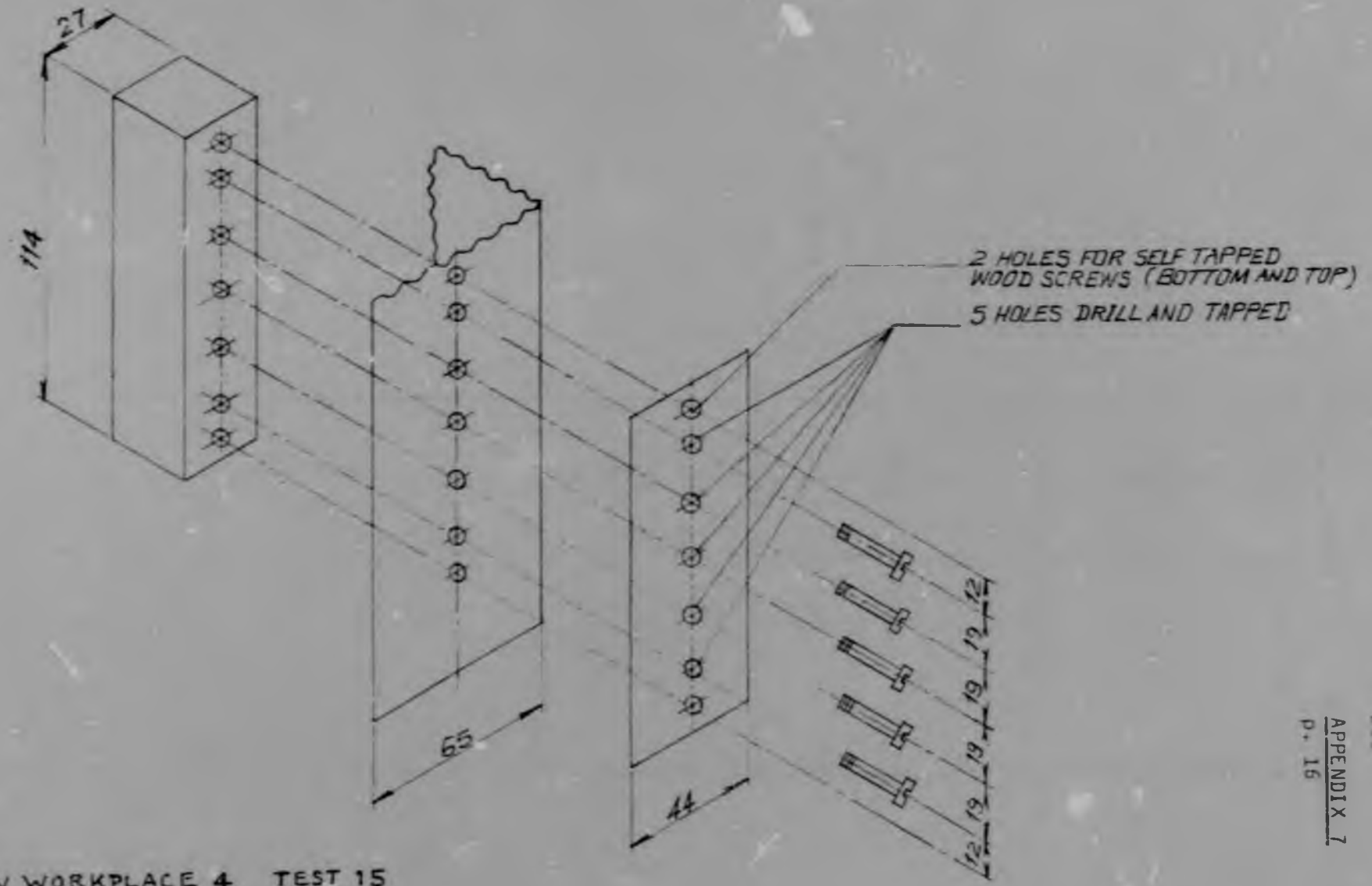


MERANTI TIMBER

BMW WORKPLACE 3 TEST 56

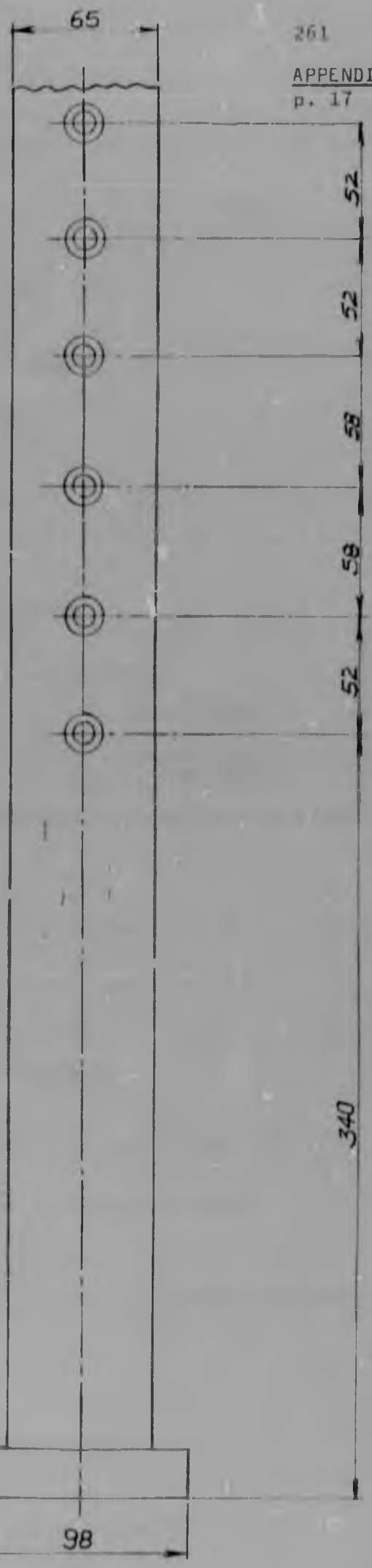


B.M.W. WORKPLACE 4

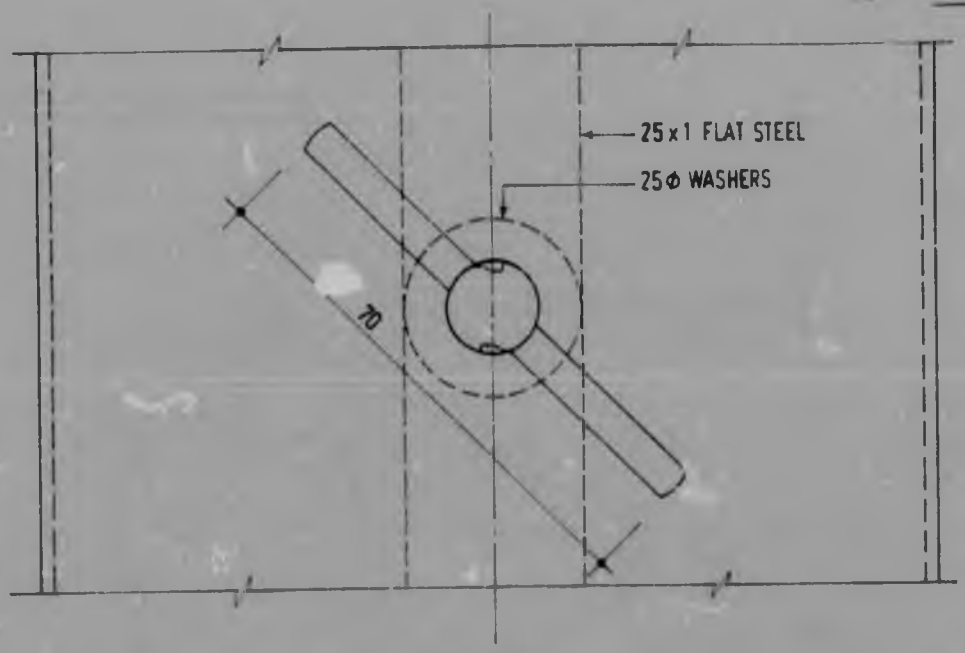


BMW WORKPLACE 4 TEST 15

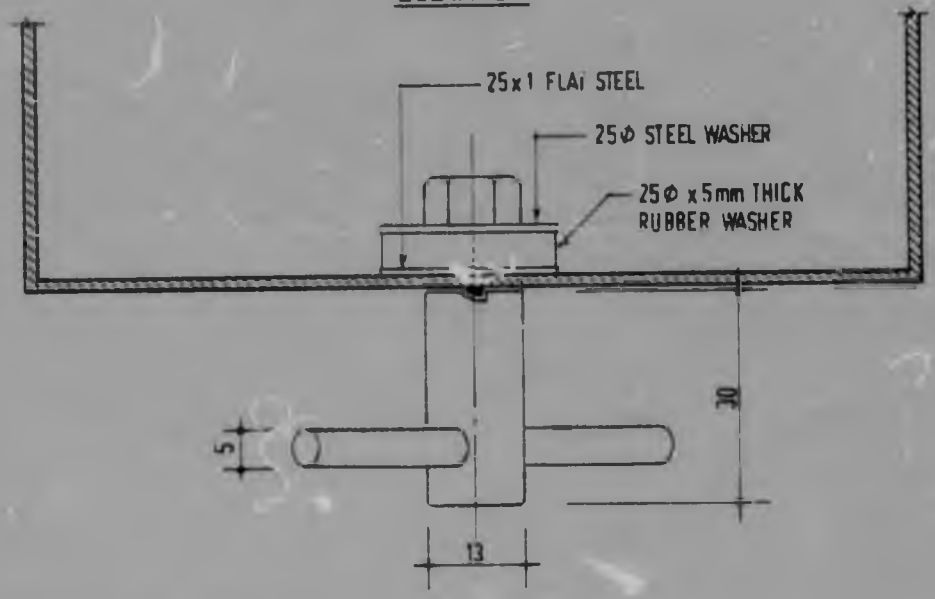
BUTTON
SWITCHES



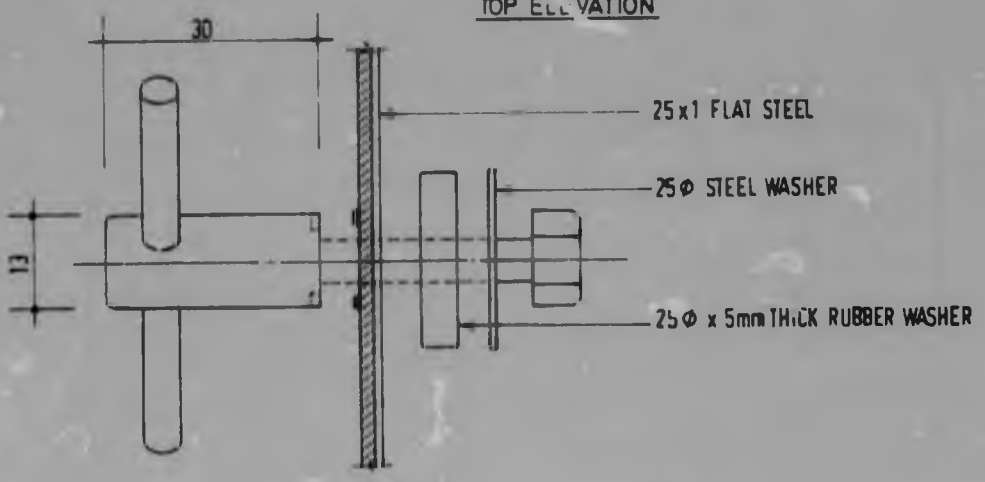
B.M.W. WORKPLACE 4
TEST 55



ELEVATION

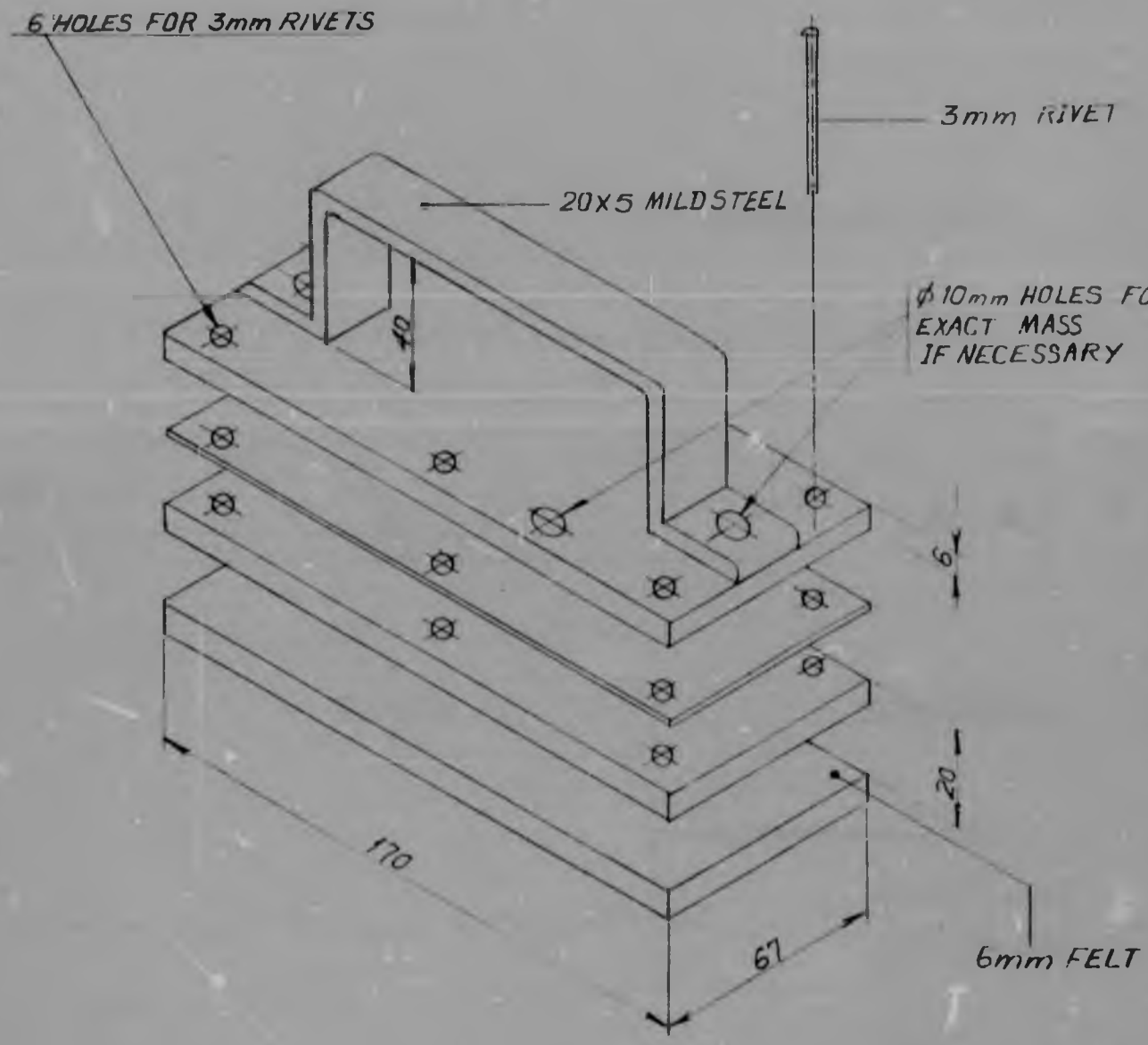


TOP ELEVATION



SIDE ELEVATION WITH COMPONENTS APART

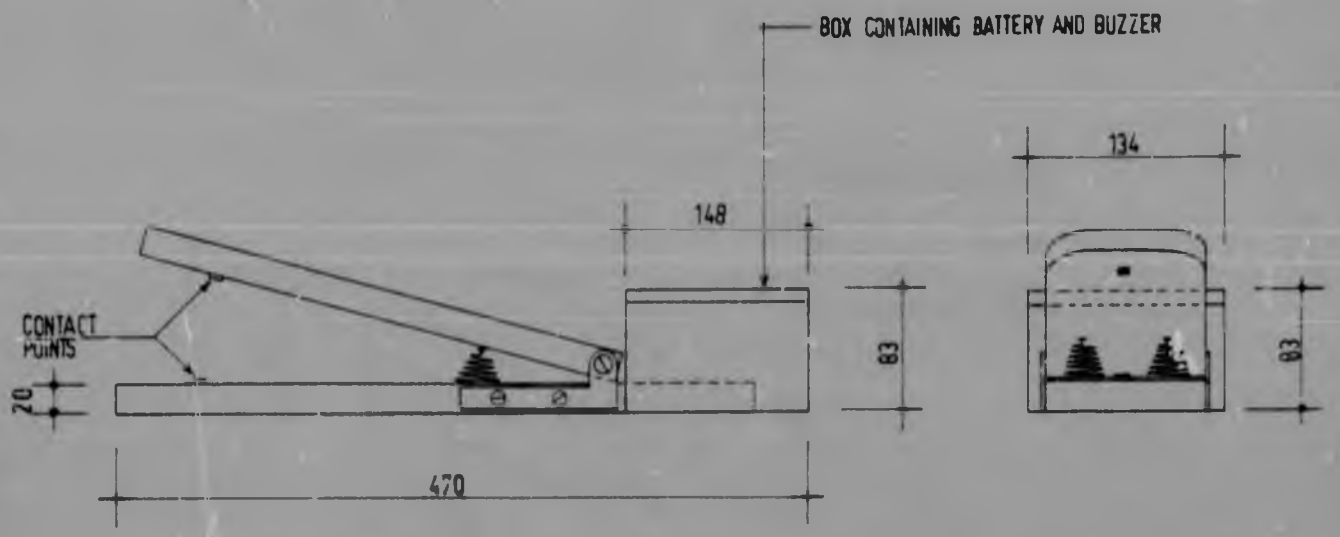
B.M.W. WORKPLACE 4 TEST 57 Scale 1:1



MASS			1mm MILD STEEL	6mm MILD STEEL
1	2 lb	0,91 kg	2	0
2	2 lb	0,91 kg	2	0
3	4 lb	1,81 kg	5	1
4	6 lb	2,72 kg	3	3
5	8 lb	3,62 kg	1	5

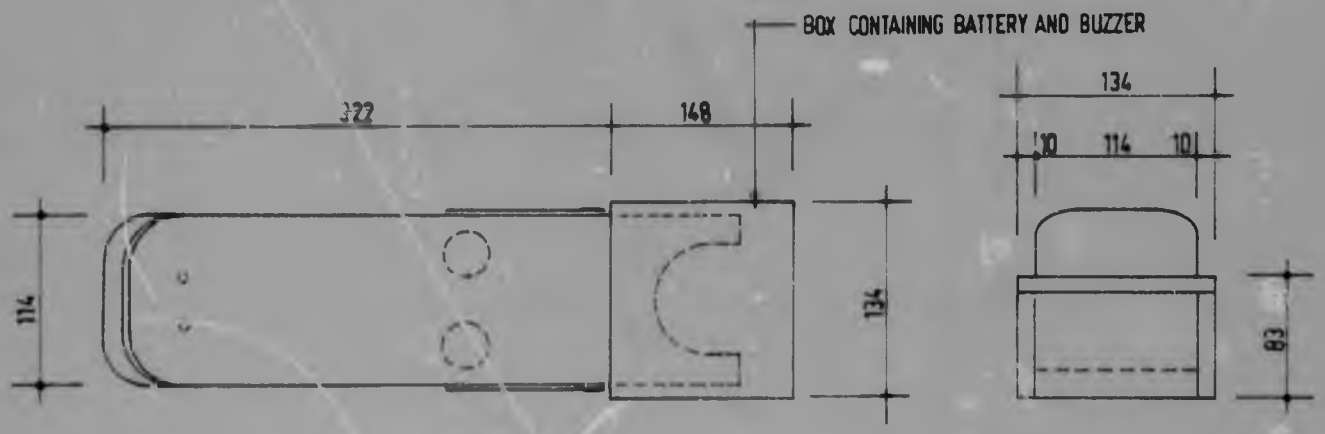
BMW WORKPLACE 4

TESTS 43, 72, 73, 76.



ELEVATION

FRONT ELEVATION



PLAN

BACK ELEVATION

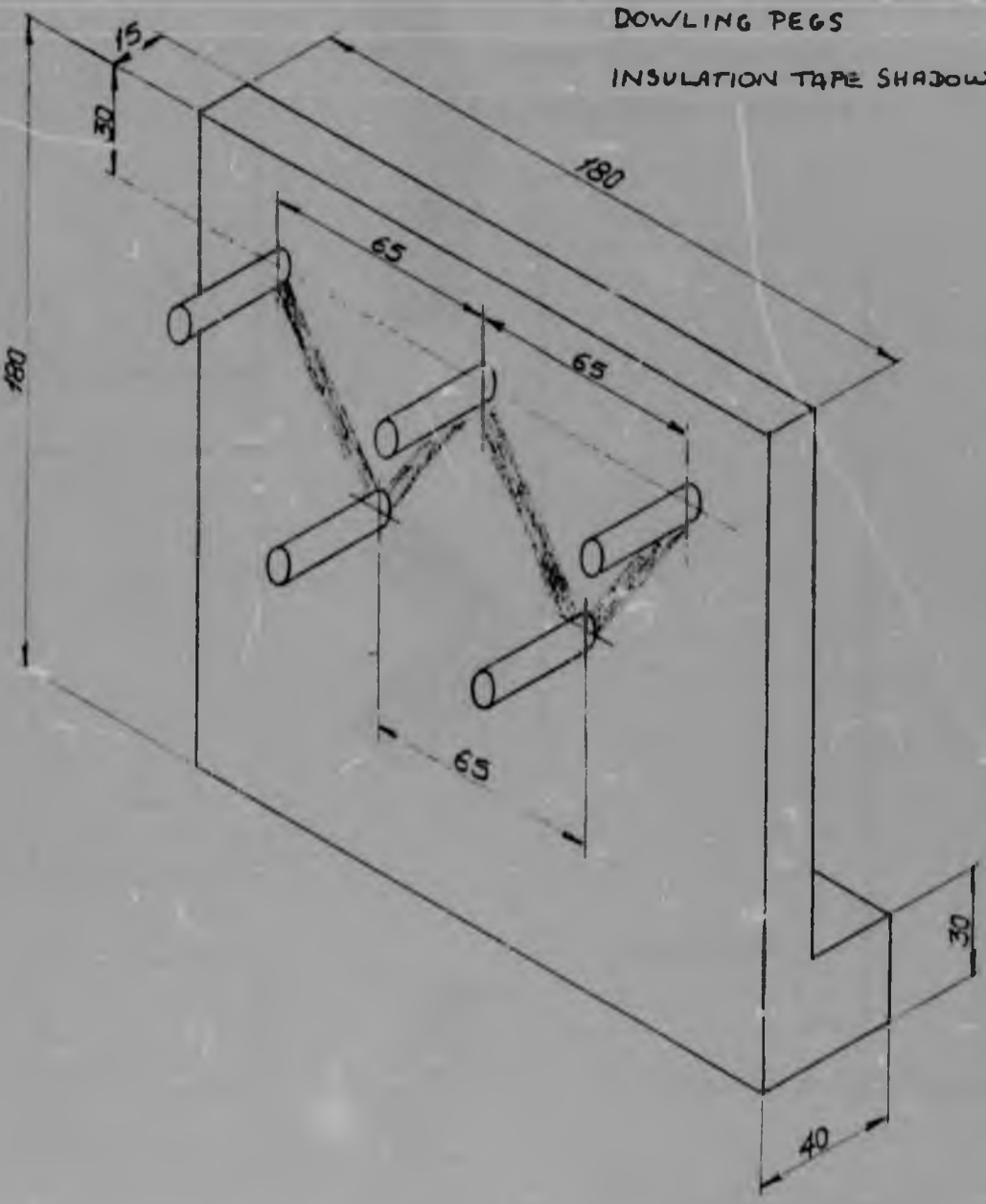
B.I.M.W. WORKPLACE 4 TESTS 74, 75

Scale 1:5

WOODEN STAND

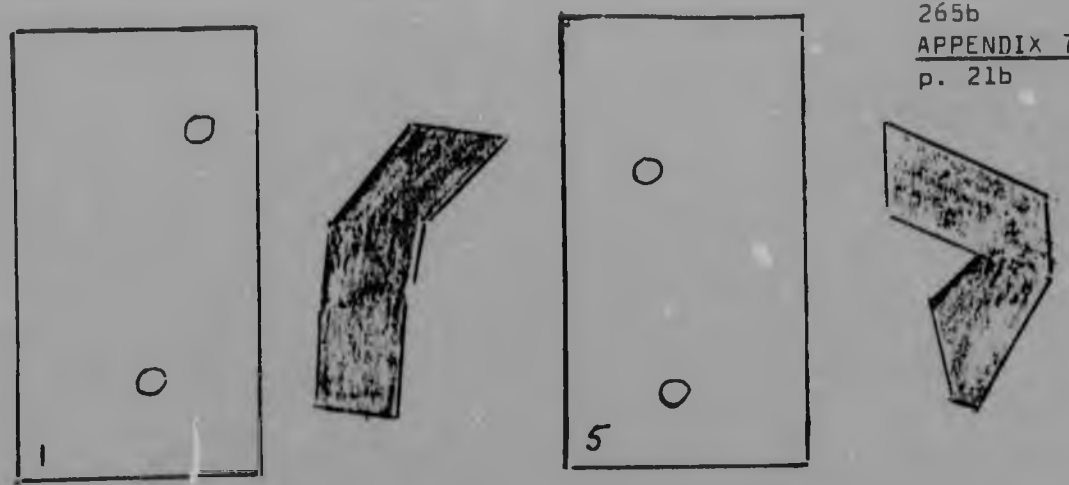
DOWLING PEGS

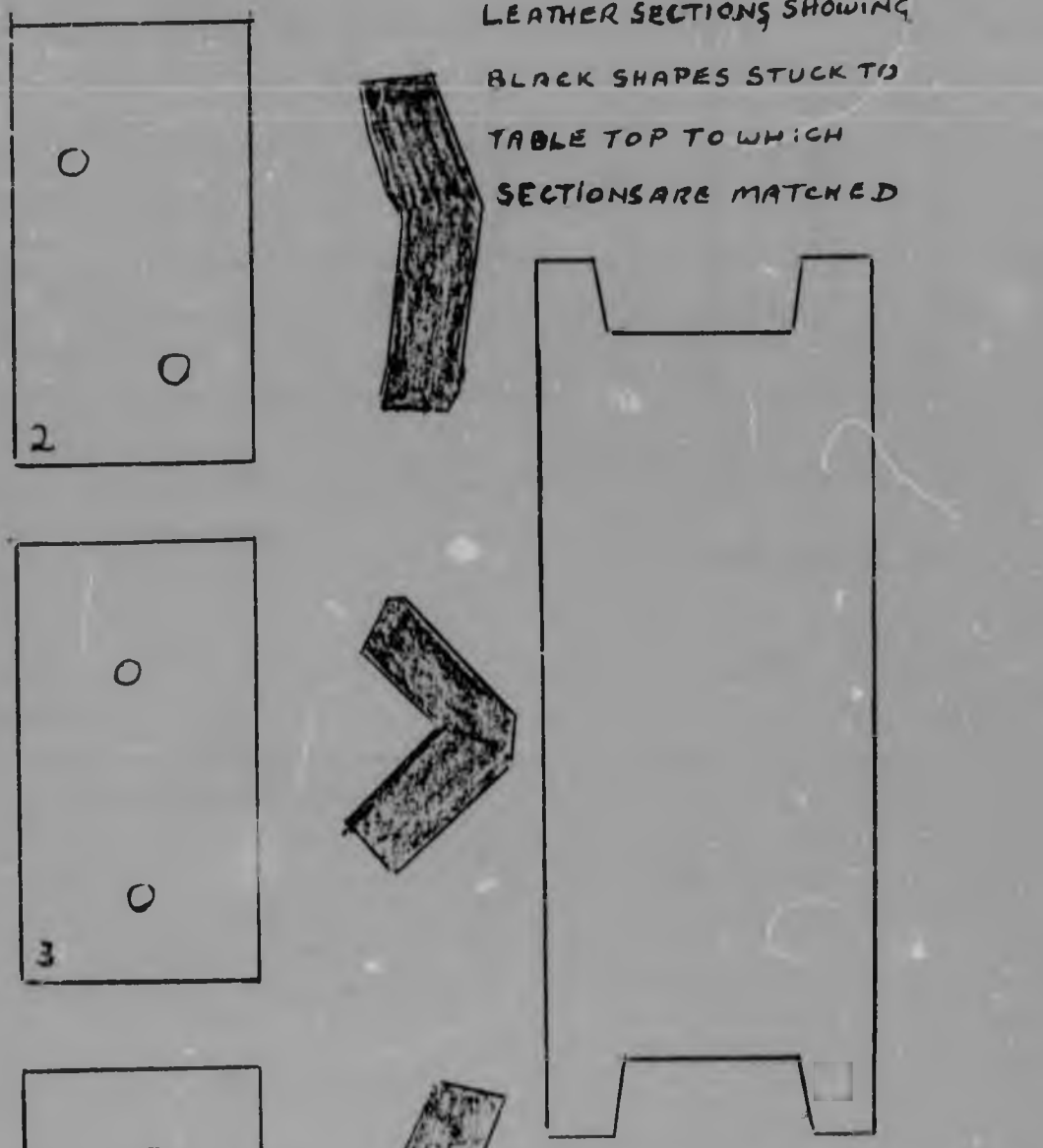
INSULATION TAPE SHADOW



BMW WORKPLACE 5

TEST 12



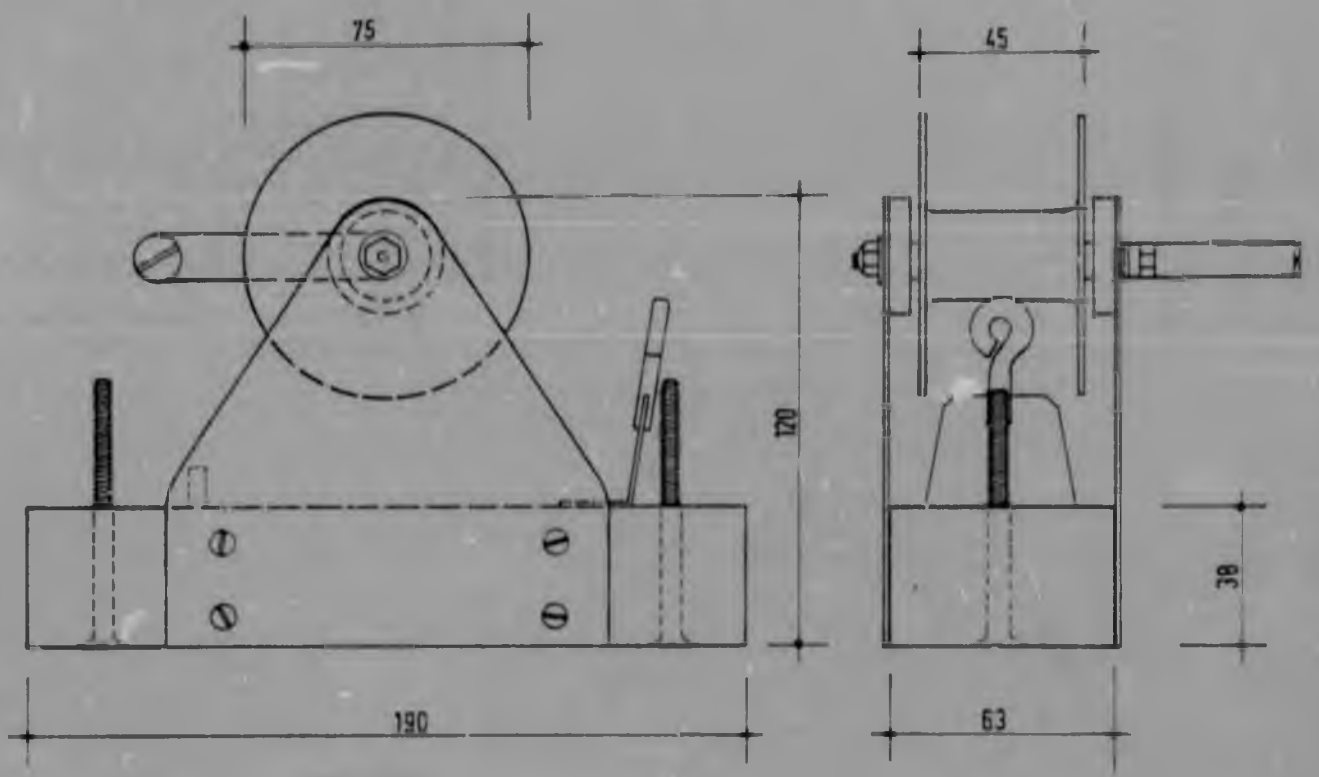


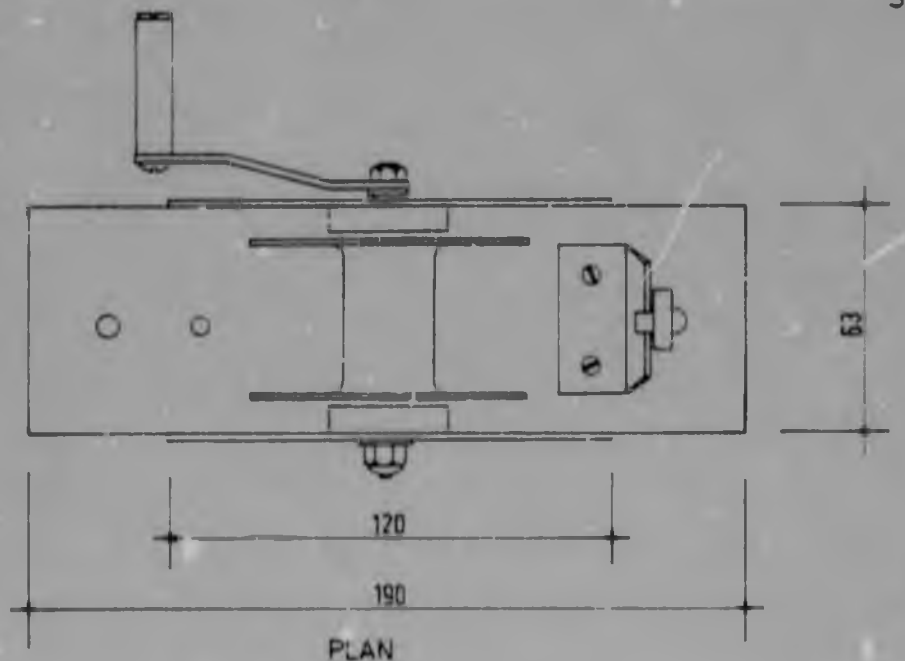
LEATHER SECTIONS SHOWING BLACK SHAPES STUCK TO TABLE TOP TO WHICH SECTIONS ARE MATCHED

SHUTTLE (HARDBOARD)

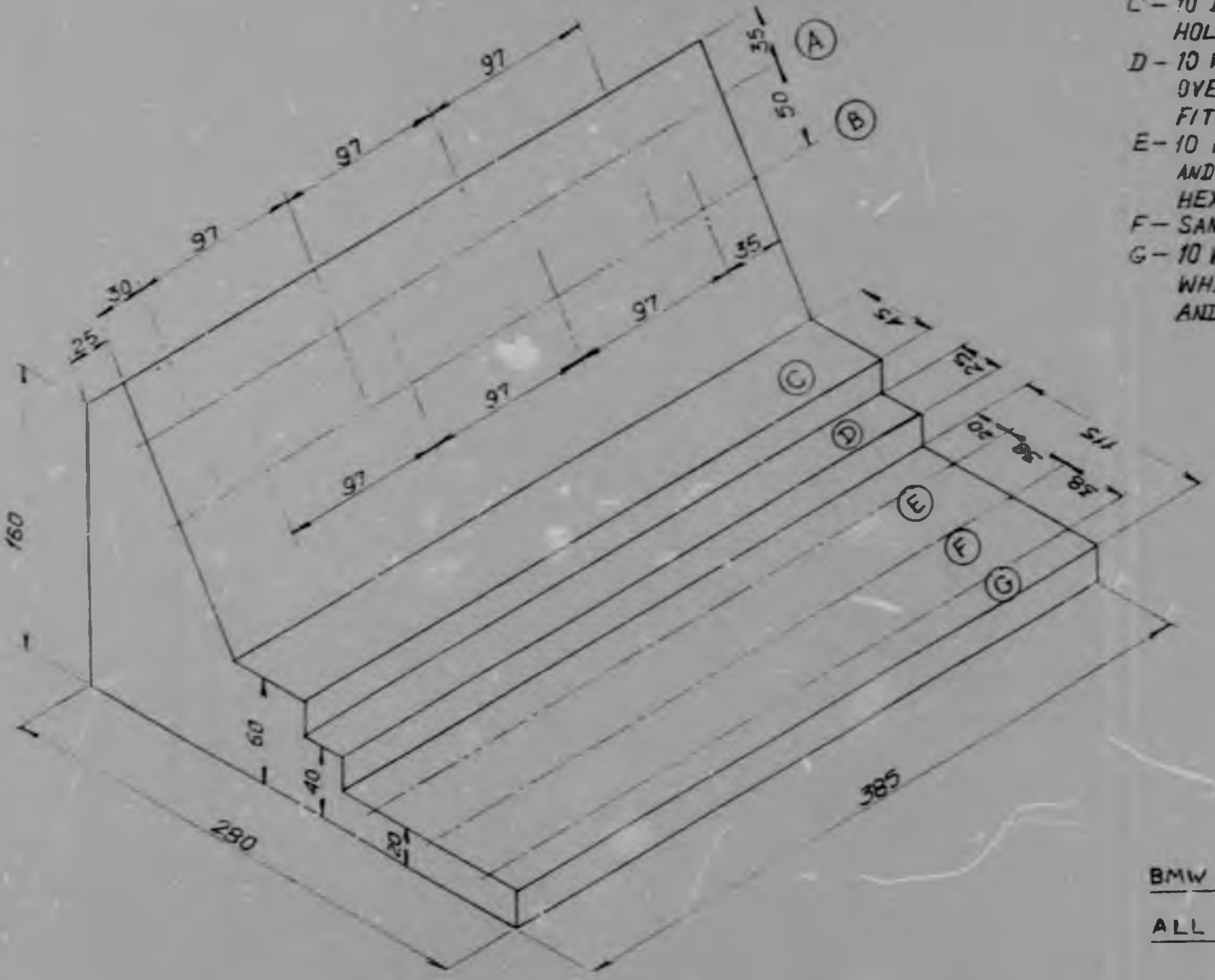
BMW WORKPLACE 5

TESTS 42 AND 61





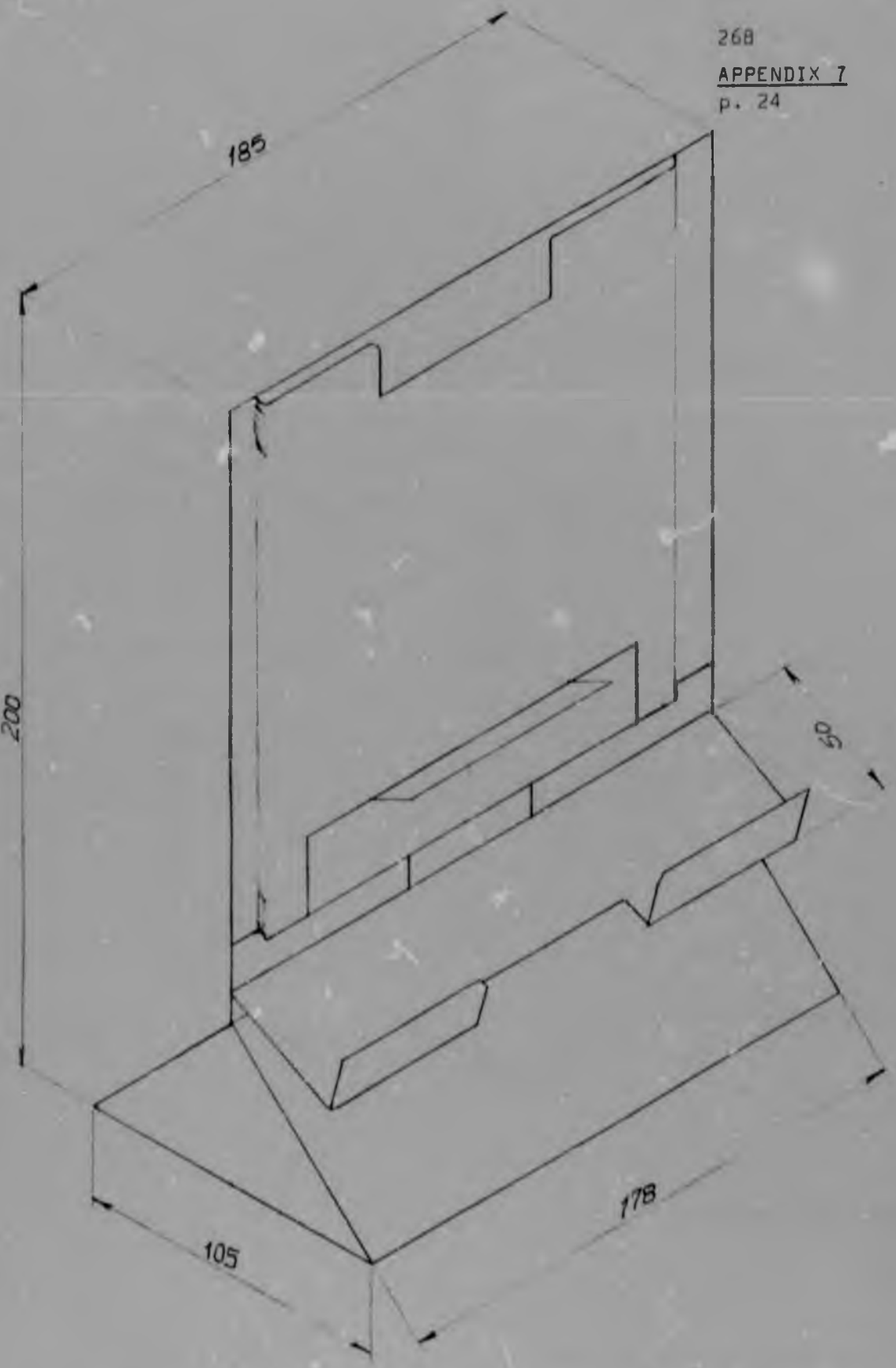
B.M.W. WORKPLACE 5 TESTS 59, 60 Scale 1:2



A – FOUR 3-PIN PLUGS
B – MALE FOR ABOVE
C – 10 1W RESISTORS EVENLY SPACED HOLES FOR LEGS 24mm APART
D – 10 WOODEN PEGS ϕ6x20mm OVER WHICH 10 PIECES OF PIPE ARE FITTED ϕ10 (INSIDE DIA x 21mm
E – 10 HEXAGON HOLES 21mm DEEP AND 10mm ACROSS FITTING LOOSELY HEXAGON HEADED BOLTS 55mm LONG
F – SAME AS E ROTATED ⅛"-¼" TURN
G – 10 WOODEN PEGS ϕ6mm x 10mm OVER WHICH ARE FITTED NUTS ϕ8mm INSIDE AND 19mm ACROSS

BMW WORKPLACE 6

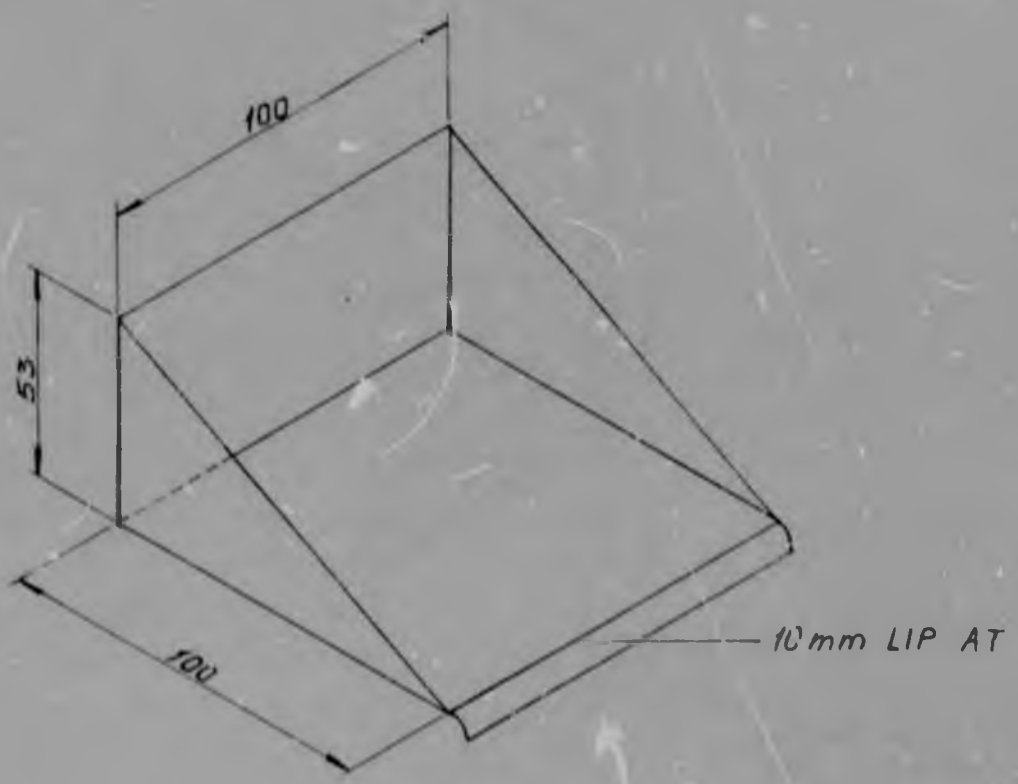
ALL TESTS



STAINLESS STEEL
PEN DISPENSER

BMW WORKPLACE 7

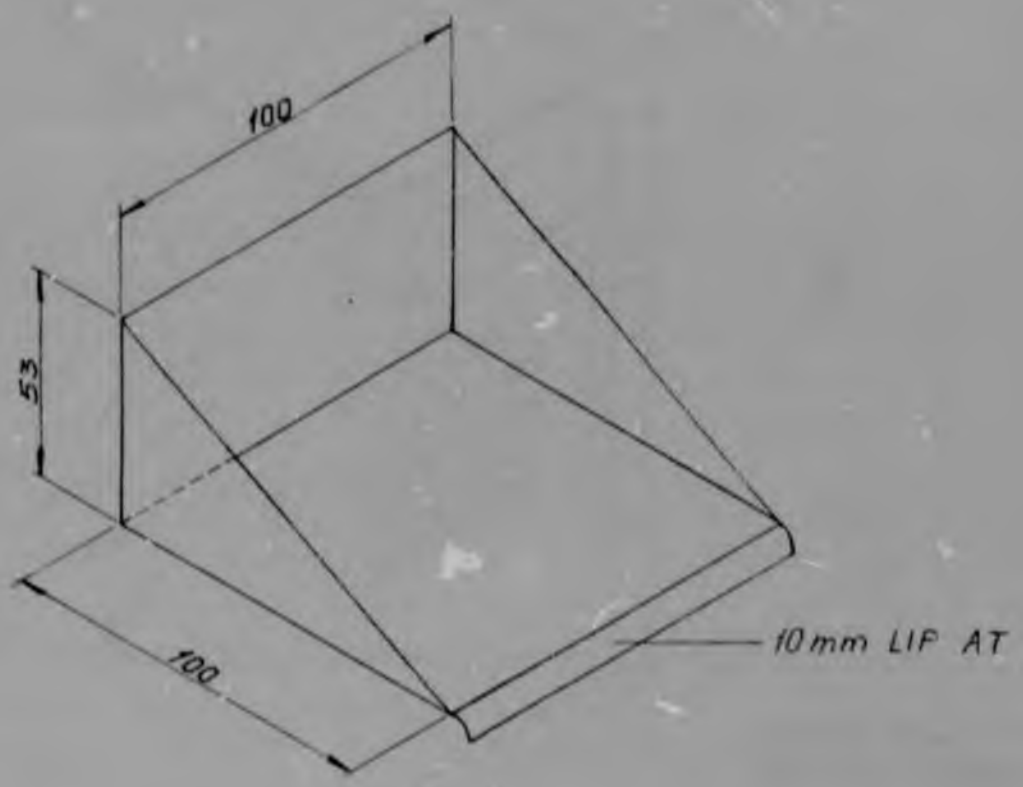
TESTS 29, 31, 69



STAINLESS STEEL BIN

BMW WORKFLACE 7

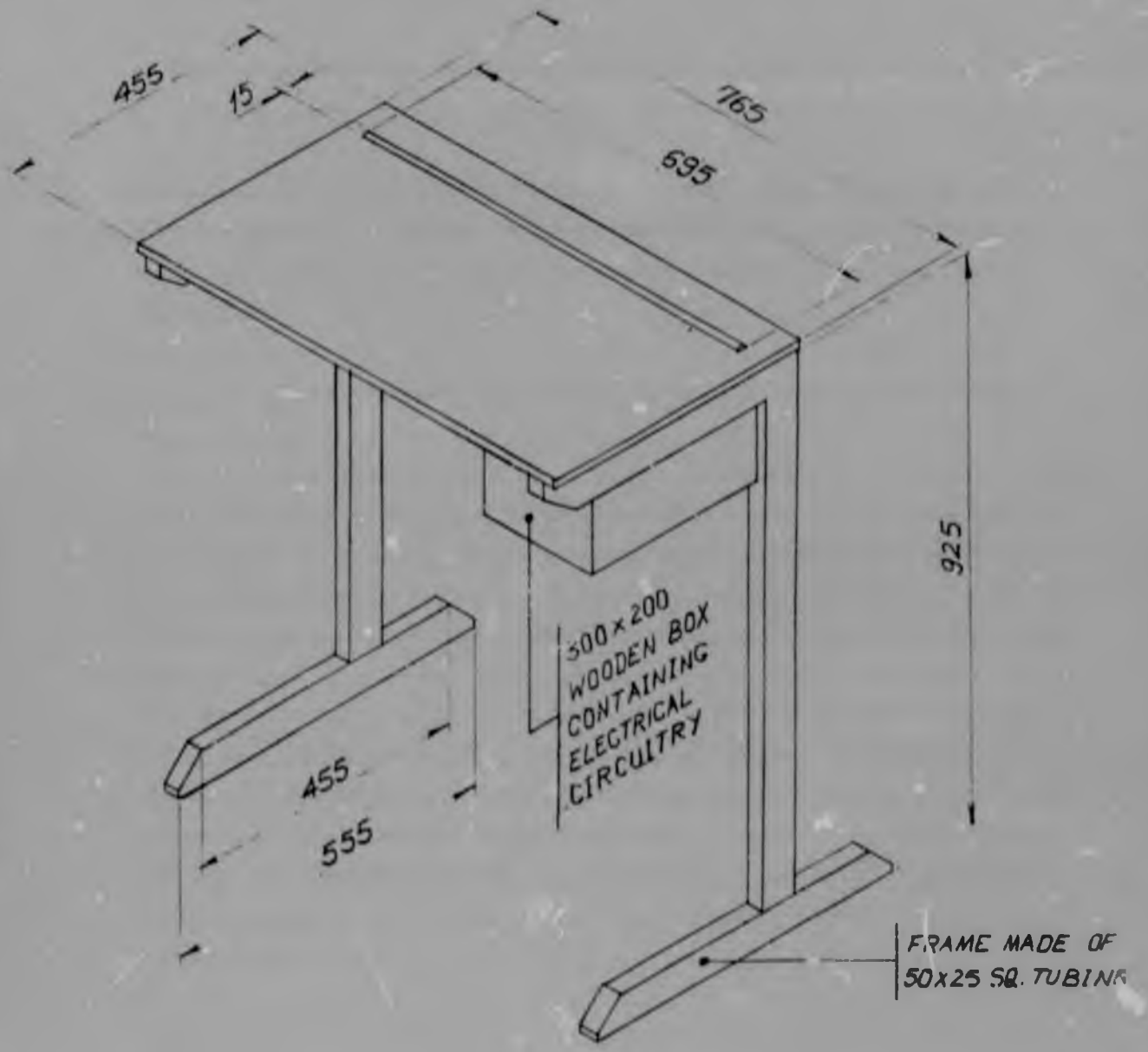
TESTS 25, 28, 31, 39, 54, 67, 68, 70



STAINLESS STEEL BIN

B/MW WORKPLACE 7

TESTS 25. 28. 31. 39. 54. 67. 68. 70



BMW TESTER'S CONSOLE

SCALE 1:10

REPORTS FROM OCCUPATIONAL THERAPY RECORD, BASED ON BMW BATTERY RESULTS AND WORKSHOP PERFORMANCE, COONAC REHABILITATIO[illegible]NTRE

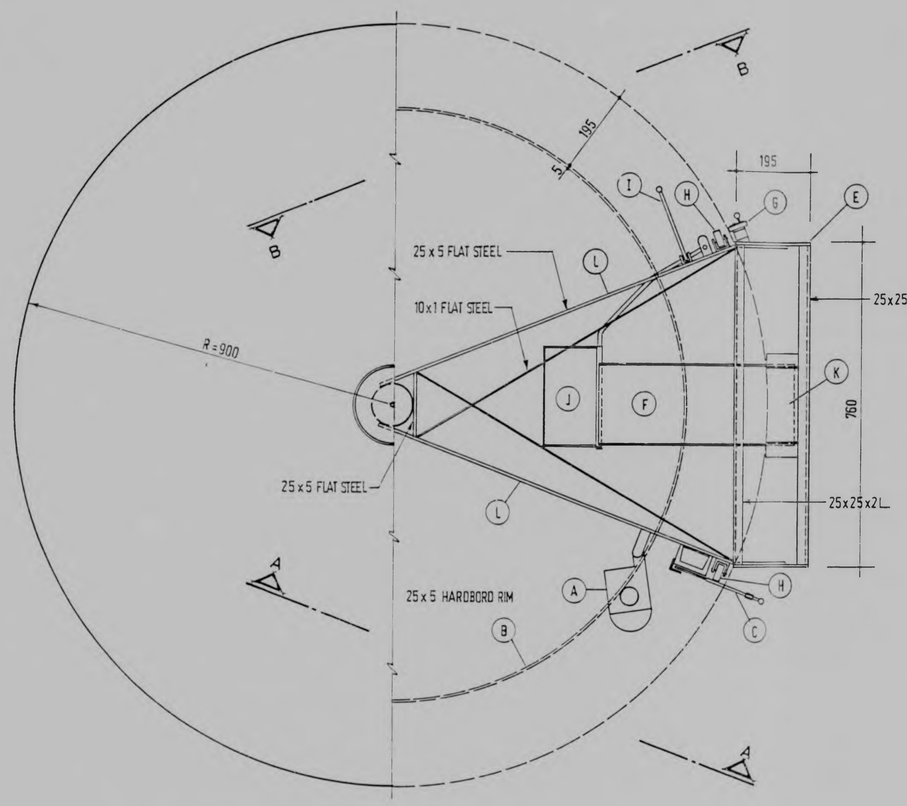
Initial report following performance of repetition work on Basic Motions of Work Test and in three jobs in the process workshops - V.C. 18/10/72

Comparison of Vivienne's performance of work motions over periods between 5,16 - 18,58 seconds and the same motions for half an hour or more, show that she is consistently more successful for the shorter period.

Vivienne performed thirty-one of the motions in the Basic Motions of Work Test at 80 per cent of normal time, some of these at over 100 per cent. These thirty-one motions included simple and more complex grasps of objects both free and jumbled with others, and of flexible and rigid material; positioning rigid components in jigs requiring single and multiple adjustments in orientation; regrasping rigid components in the fingers of the right hand; cranking motions with flexible material around the hands without support and winding crank handle using either hand; pulling levers against up to 36 lbs resistance while standing, and 18 lbs while sitting, pushing levers up to 15 lb while standing; operating foot pedals; walking while carrying up to 8 lbs; stooping to pick up objects from the floor; and rising from a chair. She also demonstrated ability to sort objects according to shade, number and design into two categories in each case, within 80 per cent of normal time.

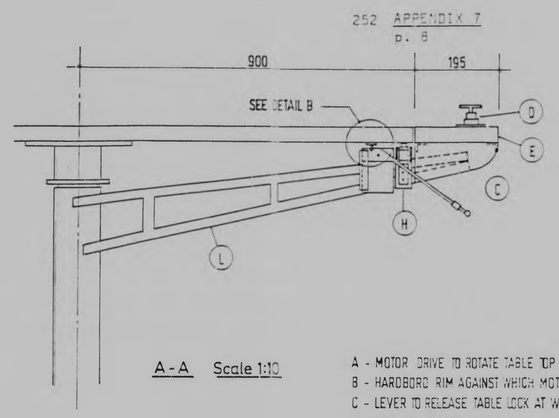
Assembly of components in air without the use of a jig was below 50 per cent of normal pace.

Vivienne's performance was frequently distorted by a marked pause when a change of movement pattern occurred. During early tests she held her hand poised over the stop switch of the timing mechanism for many seconds before hitting it. This improved but did not become a smooth operation. However a test for repeatedly pushing switches was performed at 82 per cent of normal pace with the right hand.

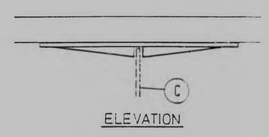


VIEW OF TABLE TOP SHOWING MOTOR DRIVE, FIXED WORK STATION, CANTILEVER SUPPORTS AND CHUTE Scale 1:10

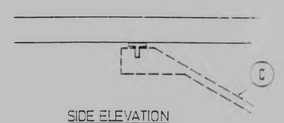
252 APPENDIX 7
p. 8



A-A Scale 1:10



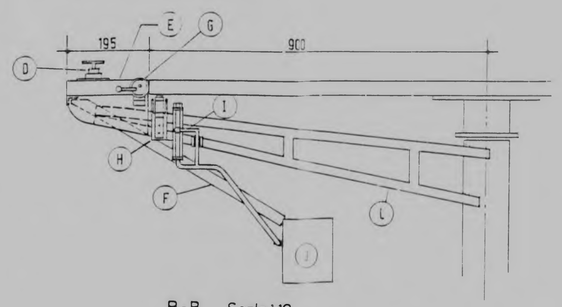
ELEVATION



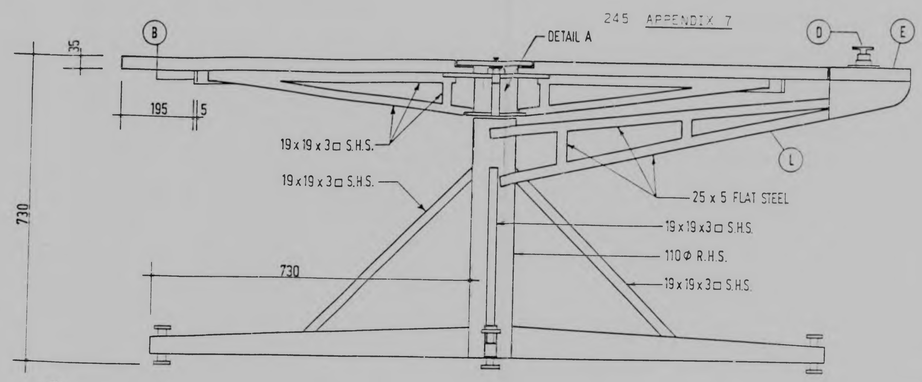
SIDE ELEVATION

DETAIL B Scale 1:5

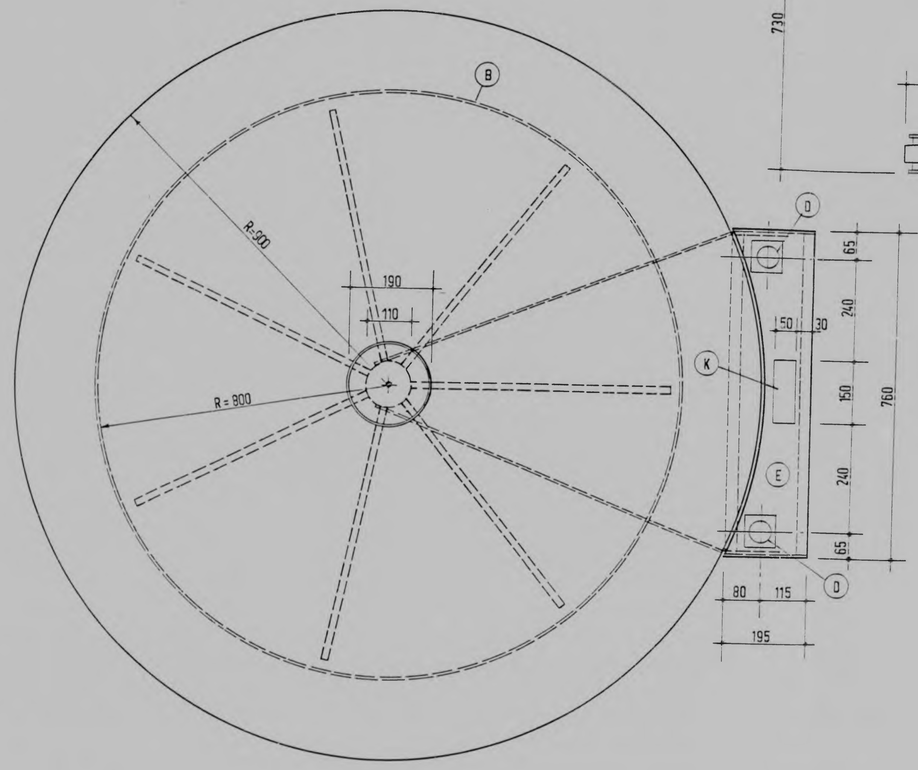
A - MOTOR DRIVE TO ROTATE TABLE TOP
B - HARDBORD RIM AGAINST WHICH MOTOR DRIVES
C - LEVER TO RELEASE TABLE LOCK AT WORK PLACE 2
D - TIMER MUSHROOM BUTTON
E - FIXED WORK STATION
F - 180mm WIDE STAINLESS STEEL CHUTE
G - CAM TO PREVENT ROTATION OF TABLE TOP
H - WHEEL TO SUPPORT TABLE TOP
I - HANDLE OF BIN SWIVEL
J - 130 x 240 x 150 DEEP STAINLESS STEEL BIN TO CATCH COMPONENTS
K - CHUTE TOP
L - CANTILEVER SUPPORT FOR FIXED WORK STATION



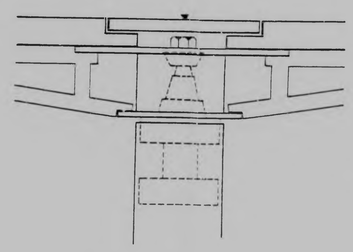
B-B Scale 1:10



B.M.W. TABLE SHOWING SUPPORTING FRAME OF ROTATING TOP, CENTRAL PILLAR AND LEGS Scale 1:10



VIEW OF TABLE TOP SHOWING METAL SUPPORTS AND FIXED WORK STATION Scale 1:10



DETAIL A Scale 1:5

B - HARBORD RIM AGAINST WHICH MOTOR DRIVES
D - TIMER MUSHROOM BUTTON
E - FIXED WORK STATION
K - CHUTE TOP
L - CANTILEVER SUPPORT FOR FIXED WORK STATION

APPENDIX B
p. 2

It is evident from Vivienne's performance on the Basic Motions of Work Test that she has the intellect and perceptuo-motor skills to perform a sufficient range of motions at between 80 - 130 per cent normal pace to complete such jobs as feeding lever operated machinery (not necessarily powered) where the material is fed to a jig.

Not all of these motions have been performed over a more realistic time in the process workshops, and where they have been performed it has always been in association with other motions which even for a few seconds on the BMW test she did not perform at 80 per cent normal pace. In each case these jobs have been performed at considerably slower speed than 80 per cent normal pace - i.e. at 32, 36 and 68 per cent.

It is recommended that she be asked to perform work for periods increasing from five minutes upwards, which includes only those motions she has demonstrated an ability to perform at 80 per cent normal pace or above, to assess her capacity to perform repetitive work for a useful period of time.

Vivienne demonstrated no difficulty in understanding jobs in the test series, nor the method required to perform them. She was alert to other facets of the environment, and operated various mechanisms of the table without instruction.

While entirely co-operative and tractible, Vivienne's intent application to any one of these repetitive tasks was of only a few minutes duration, and she is very evidently quite unemployable in repetitive work at present, because of this factor.

Because of this and in view of her quite rapid appreciation of and imitation of what others are doing one wonders whether she may work for more useful periods of time as the assistant member of a two-man team whose work routine is varied. One also wonders whether her curiosity and desire to solve things could be turned to useful purpose.

J.M. FARRELL
OCCUPATIONAL THERAPIST

Report following 2nd Basic Motions of Work Table - V.C. - February 1973

Comparison of the results of Basic Motions of Work test dated 22/9772 shows that Vivienne's performance on the tests and in the work areas has improved considerably. Improvement was noted in the test situation on the following motions:

Movement	Rate of Improvement
1. Finger, wrist, forearm and arm movements	10 % - 40 %
2. Grasping jumbled materials and small fine objects	10 %
3. Assembling objects in air and in a jig	2 % - 10 %
4. Regrasping objects	10 % - 30 %
5. Using pressure to adjust the position of objects	10 % - 20 %

As in the test situation Vivienne's rates have increased in Process Work.

Type of Job	Performance during 1st testing over 30-45 minute period	Performance during 2nd testing over 30-45 minute period
1. Flexible folding	68 %	77 %
2. Flexible labelling	32 %	job not available
3. Gross rigid 2-part assembly	36 %	53 %
4. Fine 3-part semi-rigid assembly	job not available	54 %
5. Flexible packing	job not available	33 %

During the test, Vivienne continued to show marked perseveration prior to commencing a specified task and in changing the direction of particular movement patterns, making her movements jerky and deliberate. She also showed an inability to carry out asymmetrical bilateral tasks.

It is suggested that Vivienne continues to work on manual assembly work for short periods of time which in my opinion should now be increased from five minutes to fifteen minutes as her dexterity, stamina and overall performance in Process Work has improved considerably during the past four months.

W. HOGG
OCCUPATIONAL THERAPIST

Initial report following comparison of performance on jobs in process workshop and on Basic Motions of Work Test - L.N. - 20/10/72

Lorna's failure to perform the three jobs so far undertaken in process work at greater speeds than 64 per cent, 58 per cent and 53 per cent of standard time, would, from her performance of their component motions on The Basic Motions of Work Test appear to be largely the result of lack of stamina, and to some extent the result of lack of strength. She may have some difficulty in acquiring an easy speed with tasks involving multiple patterns of movement.

Lorna performed the work motions in sixty-eight of 122 tests at over 100 per cent of standard time, and in only nineteen did she perform in under 80 per cent of standard time. Seven of the tests performed below 80 per cent required motions against resistance, varying from pushing a drawing pin into timber, to pulling a drill handle against 18 lb. The latter she could perform with only her right hand. Her failure in some of the sorting tasks resulted from lack of system rather than lack of correct judgement. She had some difficulty re-grasping objects with her right hand, and in doing up two nuts using both hands asymmetrically. However, both these tasks were performed at over 70 per cent standard pace. Doing up nuts using two hands symmetrically was performed in 104 per cent of standard time.

Lorna certainly has the intellect and co-ordinative skills to perform sufficient basic motions of work to perform many repetitive process operations at employable speed for short periods.

Attention to building stamina on jobs containing only those motions which she has shown herself able to perform at 80 per cent standard pace would indicate whether she can develop sufficient stamina to maintain an employable speed for eight hours daily.

Also some attention to improving her ability and assurance in learning to perform jobs with multiple movement patterns e.g. folding cardboard boxes, would indicate whether she can broaden even further the repertoire of repetitive jobs within her intellectual and co-ordinative ability.

J.M. FARRELL
OCCUPATIONAL THERAPIST

Initial report following comparison of performance on jobs in process workshop and on Basic Motions of Work Test - M.C. - 3/11/72

Michael's performance of 10 per cent, 14 per cent, 15 per cent, 28 per cent, 34 per cent and 56 per cent respectively on the six jobs recently undertaken in the process workshop does not compare well with his performance on the BMW Test of the motions which these jobs contain, the majority of which were performed at over 100 per cent of standard pace, the lowest performance being 75 per cent.

During the test some tremor in his hands, particularly the left hand, reduced Michael's speed when fitting objects together using two hands away from the support of the bench. These same movements were performed bilaterally at over 100 per cent standard pace where parts had to be fitted to those held rigid in a jig. Even the mid-air assembly was performed at 91 per cent standard pace. The tremor also reduced his insertion of bendable components into a jig without damaging them to 62 per cent with his left hand and 79 per cent with his right. Practice under less demanding situation may improve these speeds.

Tasks requiring him to stretch above shoulder height across his body with his left arm were performed with some difficulty, although at 90 per cent standard pace, and it seems likely that he would quickly fatigue if required to undertake such movements frequently.

Michael appears to lack sufficient strength in his hands to tighten such handles as a chuck key, at normal speed. This reduced his performance to 44 per cent standard pace with his right hand.

The fact that only twenty-nine of the 122 were performed below 100 per cent, and of these twenty-nine only ten were below 80 per cent standard pace indicates that Michael has the intellect and co-ordination to perform many process operations at employable pace. His failure to demonstrate this over a useful period of time could be the result of insufficient physical stamina, or lack of application for one reason or another.

J.M. FARRELL
OCCUPATIONAL THERAPIST

Results of performance on BMW Test in comparison with performance in process workshop - second test - M.T. - April 1973

Out of 130 tests, Mandy performed eighty-six of them at an employable rate over periods of 5,16 seconds - 18.58 seconds. Her performance during the second testing was significantly better than her initial test results showed. She improved on 100 tests with forty-seven of these to employable speed. The movements on which she improved include:

	Rate of Improvement
1. Finger and wrist movements	20 % - 40 %
2. Forearm, arm and shoulder movements	10 % - 20 %
3. Grasping flexible materials or jumbled materials	20 %
4. Assembly of objects with use of a jig (i.e. fluctuates according to complexity of task)	15 % - 20 %
5. Assembly of objects in air	10 %
6. Regrasping objects	20 % - 30 %
7. Using pressure to adjust the position of an object	10 % - 20 %
8. Cranking movements	10 % - 20 %

Since the initial testing on basic Motions of Work Table (June 1972) Mandy's rates in Process Workshop have improved considerably. Her highest rates over periods ranging from half an hour to one hour are recorded below.

	June 1972	April 1973
2-part rigid assembly	18 %	110 %
3-part semi-rigid assembly	17 %	68 %
Flexible folding	60 %	106 %
Flexible packing	24 %	87 %

Her inability to maintain an employable speed in unskilled repetitive work appears to be due to her poor concentration span and lack of stamina.

Throughout the test situation Mandy was quick to comprehend verbal instruction and demonstration. and was keen to do well. She relied heavily on visual reinforcement for grasping and placing objects correctly. Without this her rates were significantly lower, and therefore it is suggested that her work is set up in a small area directly

in front of her to minimize eye travel time. On some tests she seemed to have difficulty perceiving depth and her spatial judgement was poor. Although she performed the tests for wrist movements at the required speed her wrists were stiff and she compensated with forearm movements. She also appeared to lack hand dominance.

It is suggested that jobs requiring:

1. assembly of objects in air;
2. complicated placement of objects;
3. decision making;
4. the use of pressure for assembly of objects are avoided.

All other movements were performed at an employable speed. Two or three part assembly work with the use of a jig (to avoid complicated placement of objects) and folding tasks using flexible materials will be used to build up Mandy's stamina and concentration by giving her periods working from twenty minutes upwards.

As her manual dexterity has made such significant improvement with constant manipulation of objects over the past eight months, it is also suggested that she works for one period daily on tasks requiring more difficult manipulative skills to help improve her dexterity.

W. HOGG
OCCUPATIONAL THERAPIST

APPENDIX 9

DEMOGRAPHIC DATA OF EMPLOYEES IN STUDY 2

Employee	Disorder (see p162)	Date tested	Date commenced employment at institute	Time between employment date and test date (Years)	Date of onset of disorder	Time between date of onset and test date (Years)	Age at onset of disorder	Age on test date
1	5	82-08-10	*					
2	5	82-11-16	81-01-05	2	64-07-06	18	Birth	18
3	2	82-11-19	72-01---	11	43-02---	40	Birth	40
4	1	84-04-11	82-03-11	2	35-11-16	48	Birth	48
5	7	84-04-18	78-02-13	6	74-10-±9	10	15	25
6	1	82-10-26	68-08-05	14	44-07-01	38	Birth	2
7	1	83-03-03	77-01---	6	58-07-07	24	Birth	24
8	1	82-10-26	72-11---	10	26-10-14	56	Birth	56
9	9	83-02-29	74-05---	9	70-10---	12	30	42
10	5	83-07-11	78-04---	5	54-09-09	29	Birth	29
11	2	83-03-09	6--04---	14	47-06-19	36	Birth	36
12	5	83-03-25	81-01-05	2	62------	21	Birth	21
13	9	83-07-18	76-05-03	7	71-09-11	12	22	34
14	2	83-02-22	70-11---	12	48-08-23	34	Birth	34
15	3	83-03-10	76-06---	7	56-10-15	26	Birth	26
16	3	83-07-13	72-05---	11	32-10-31	51	Birth	51
17	1	83-03-21	77-01---	6	59-12-22	23	Birth	23
18	1	83-10-04	75-01---	9	54-11-14	29	Birth	29
19	6	84-03-06	77-03-30	7	66-09-21±	16	7	23
20	2	83-03-09	68-05-29	15	32-04-01	51	Birth	51
21	8	83-10-14	78-11---	5	49-11---±	34	12	46
22	1	84-03-13	77-02---	7	58-11-29	25	Birth	25
23	5	84-03-16	81-01-12	3	57-11-15	26	Birth	26
24	5	84-04-03	82-03-15	2	60-08-09	24	Birth	24
25	10	84-04-16	81-09-21	4	Unknown		Adult	47
MEAN				7,33		29,69		34
STANDARD DEVIATION				4,01		13,07		11,22

* Ceased employment - Record no longer available.

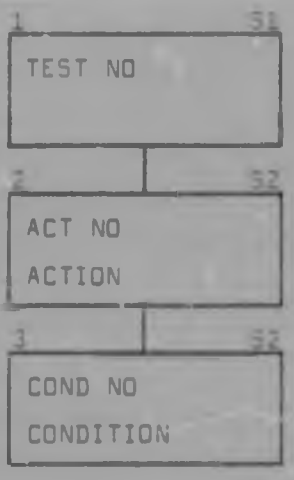
APPENDIX 10

STRUCTURE

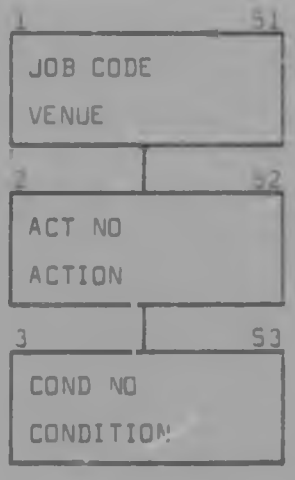
FOCUS BASED PROGRAMME - BASIC MOTIONS OF WORK

LINKS TEST PERFORMANCE - JOB PERFORMANCE - PATIENT DEMOGRAPHIC INFORMATION - OCCUPATIONAL THERAPY AIMS AND MEDIA

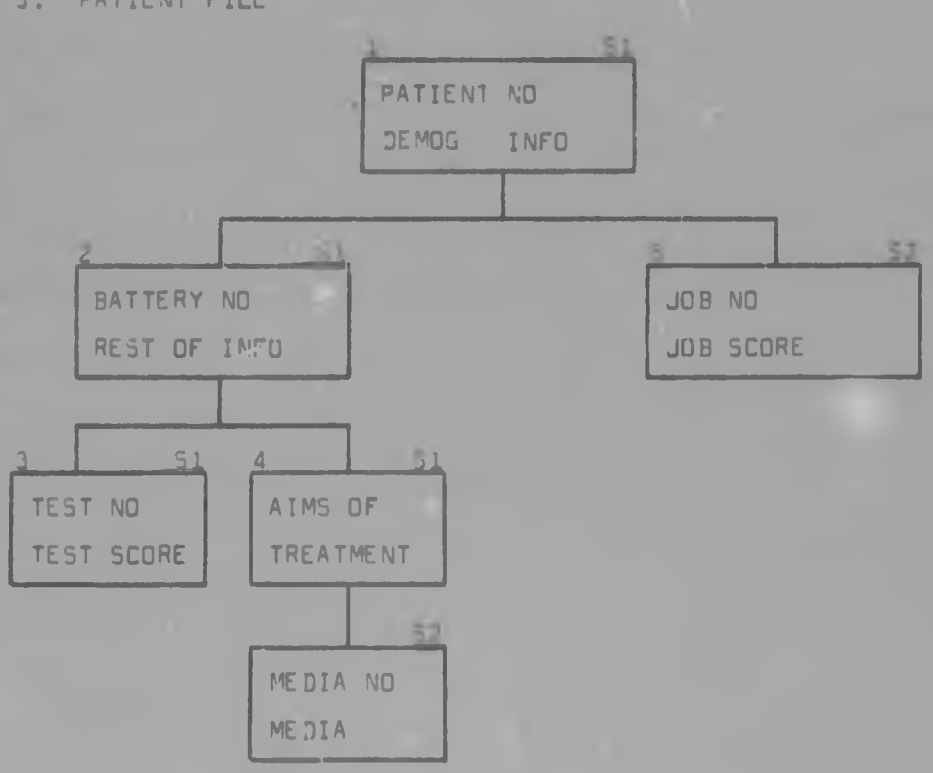
1. TEST FILE



2. JOB FILE



3. PATIENT FILE



PATIENT DEMOGRAPHIC INFORMATION

For use with analysis of basic motions of work
Occupational Therapy Department
University of Pretoria

PATIENT NAME: PATIENT STUDY NUMBER

PATIENT HOSPITAL NUMBER:

PATIENT HOME PHONE NUMBER:

NAME AND ADDRESS OF HOSPITAL/CENTRE/WORKSHOP
IN WHICH PATIENT/WORKER CURRENTLY TREATED/
EMPLOYED

DATE

J.M.F. JULY 1985

PATIENT DEMOGRAPHIC INFORMATION
BASIC MOTIONS OF WORK ANALYSIS

1	PATIENT STUDY NUMBER	1-4
2	BIRTH DATE	5-10
3	GENDER	11
4	I.Q. VERBAL	12-14
5	I.Q. PERFORMANCE	15-17
6	I.Q. OVERALL	18-20
8	DATE OF ONSET OF CONDITION	21-26
9	ADMISSION DATE	27-32
10	PRIMARY DISORDER (Use international code of disorders)	33-37
11	OTHER DISORDER - 1	38-42

-2-

12 OTHER DISORDER - 2 [| | | . | |] 43-47

13 OTHER DISORDER - 3 [| | | . | |] 48-52

14 OTHER DISORDER - 4 [| | | . | |] 53-57

SELECT LIMITATIONS FROM LIST BELOW

CODES R	CODES L	DESCRIPTIONS OF LIMITATIONS	
			[ ][ ] 58-59
01	02	VIRTUALLY NO FUNCTION IN ARM OR HAND	
03	04	UPPER LIMB PROSTHESIS	[ ][ ] 60-61
05	06	MILD TREMOR AFFECTING HANDS	
07	08	MARKED TREMOR AFFECTING HANDS	[ ][ ] 62-63
09	10	MILD INCO-ORDINATION OF UPPER LIMBS, LACK OF DEXTERITY THROUGH SPASTICITY	
11	12	MARKED INCO-ORDINATION INVOLVING UPPER LIMBS	[ ][ ] 64-65
13		LIMITED PHYSICAL STAMINA	
14	15	DISORDER OF TACTILE SENSATION IN HANDS	[ ][ ] 66-67
16	17	DISORDER OF PROPRIOCEPTION (Knowledge of position of hands and arms)	
18		DISORDER OF VISUAL FORM DISCRIMINATION	
19	20	DISORDER OF HAPTIC FORM DISCRIMINATION	
21		DISORDER OF AUDITORY PERCEPTION	
22		DISORDER OF PERCEPTUAL STABILITY AND CONSTANCY (Particularly size and shape)	
23		RESTRICTED VISUAL FIELD	
24	25	VIRTUALLY NO FUNCTION IN LEG	
26	27	LOWER LIMB PROSTHESIS	
28		UNSTEADY OR ATTAXIC GAIT	
29		POOR SITTING BALANCE	

CODES		DESCRIPTIONS OF LIMITATIONS
R	L	
30		POOR STANDING BALANCE
31		POOR VISUAL MEMORY
32		POOR AUDITORY MEMORY
33		POOR MEMORY FOR SHORT CYCLE OPERATIONS (i.e. 5 or less sub-operations)
34		POOR MEMORY FOR LONG CYCLE OPERATIONS (i.e. more than 5 sub-operations)
35		POOR MEMORY FOR DAILY OR WEEKLY ROUTINE
36		LIMITED CONCENTRATION SPAN
37		PERSEVERATION
38		LOW INITIATIVE
39		LOW CAPACITY FOR ABSTRACT THOUGHT AND FORWARD PLANNING
40		LOW MOTIVATION FOR REPETITIVE WORK
41		LITTLE RESPONSE TO ANY PERSONS OPINION OF HIS PERFORMANCE
42		INSUFFICIENT INTEREST IN ANY ACTIVITY TO WORK TO REGAIN IT IF OPPORTUNITY FOR INVOLVEMENT IS WITHDRAWN
43		OTHER - PLEASE SPECIFY
44		OTHER - PLEASE SPECIFY
45		OTHER - PLEASE SPECIFY
46		OTHER - PLEASE SPECIFY
47		OTHER - PLEASE SPECIFY

BASIC MOTIONS OF WORK TEST BATTERY

PATIENT STUDY NUMBER	☐☐☐☐	1-4
TEST BATTERY (1st / 2nd / 3rd)	☐	5
DATE BATTERY COMMENCED	☐☐☐☐☐☐	6-11
DATE BATTERY COMPLETED	☐☐☐☐☐☐	12-17
NUMBER OF WORKING DAYS OVER WHICH BATTERY CONDUCTED	☐☐	18-19
NUMBER OF HOURS SPENT ON TEST BATTERY	☐☐.☐☐	20-24
DATE FIRST COMPARISON BETWEEN BATTERY RESULTS AND WORKSHOP PERFORMANCE COMPLETED	☐☐☐☐☐☐	25-30

BASIC MOTIONS OF WORK TEST BATTERY

PATIENT STUDY NUMBER		1-4
TEST BATTERY	1st | 2nd | 3rd	5
DATE BATTERY COMMENCED		6-11
DATE BATTERY COMPLETED		12-17
NUMBER OF WORKING DAYS OVER WHICH BATTERY CONDUCTED		18-19
NUMBER OF HOURS SPENT ON TEST BATTERY		20-24
DATE FIRST COMPARISON BETWEEN BATTERY RESULTS AND WORKSHOP PERFORMANCE COMPLETED		25-30

Example of coded analysis of the MOMAPTS actions and the circumstances under which they are found in one job at the workplace. The job illustrated is Worker 10's method of assembling exhaust bracket body, U-bolt, washers and nuts (A00135).

JOBNO	VENUE	LHAND	STDTIME	STDDIST	ACT_NO	ACTION	CIRC NO	CIRCUMSTANCE
A00135	S	R	29.62	121	1	M4	1 2 3	SA SE GOR

PAGE 62

JOBNO	VENUE	LHAND	STOTIME	STORAGE	ACT_NO	ACTION	CIRC NO	CIRCUMSTANCE
A00135	S	R	20.42	121	1	M6	17	D
					2	E2	2	M4
							14	SP
							16	R
							17	D
					3	D3	2	M4
							14	SP
							16	R
							17	D
					4	G3	5	R
							6	L
							9	J
							9	D
							12	Z
							16	R
							17	D
					5	M3	1	ST
							2	J2
							3	E3
							5	P
							6	D
							16	R
							17	D
					6	E2	2	M3
							14	SP
							16	R
							17	D
					7	D3	2	M4
							14	SP
							16	R
							17	D
					8	M4	1	ST
							2	J2
							3	E3
							5	P
							6	D
							16	R
							17	D
					9	P0	2	M3
							14	SP
							16	R
							17	D

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JOBNO	VENUE	LMAND	STDTIME	STDSPCE	ACT_NO	ACTION	CIRC NO	CIRCUMSTANCE
A00135	S	P	29.42	121	1	M4	17	ON
					2	E2	2	ON
							14	SP
							15	SP
							17	SP
					3	D2	2	ON
							14	SP
							15	SP
							17	SP
					4	G3	5	OR
							9	F
							2	2
							12	R
							16	R
							17	S
					5	M2	1	S
							2	T2
							3	E
							4	3
							5	P
							6	P
							16	S
							17	S
					6	E2	2	ON
							14	SP
							16	SP
							17	SP
					7	D2	2	ON
							14	SP
							15	SP
							17	SP
					8	M4	1	S
							2	T
							3	E
							4	3
							5	P
							6	P
							10	S
							11	S
							12	S
					9	P0	2	ON

JOBNO	VENUE	LWAYD	STDTIME	STORAGE	ACT_NO	ACTION	CIRC NO	CIRCUMSTANCE
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	12	0
							14	P
							17	G1
							22	R
							23	H4
							26	0
							29	1
					10	M1	1	H
							2	0
							3	E
							4	P5
							9	0
							16	R
							17	H
					11	P5	5	P
							6	1
							8	P
							9	P
							10	0
							11	H4
							12	1
							13	2
							16	0
							17	P
					12	M1	1	H
							2	4
							5	0
							6	P
							7	1
							8	G
							9	H
							10	H
							11	0
							12	P
							15	5
							16	0
							17	2
							18	4
							19	5
							20	P
							21	1
							22	2
							23	4
							24	5
							25	P
							26	1
							27	2
							28	4
							29	5
							30	P
							31	1
							32	2
							33	4
							34	5
							35	P
							36	1
							37	2
							38	4
							39	5
							40	P
							41	1
							42	2
							43	4
							44	5
							45	P
							46	1
							47	2
							48	4
							49	5
							50	P
							51	1
							52	2
							53	4
							54	5
							55	P
							56	1
							57	2
							58	4
							59	5
							60	P
							61	1
							62	2
							63	4
							64	5
							65	P
							66	1
							67	2
							68	4
							69	5
							70	P
							71	1
							72	2
							73	4
							74	5
							75	P
							76	1
							77	2
							78	4
							79	5
							80	P
							81	1
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JOBNO	VENUE	LHAND	STOTIME	STORAGE	ACT_NO	ACTION	CIRC NO	CIRCUMSTANCE
A00135	C	0	20.42	171	16	00	13	
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							17	
					16	04	1	
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					22	02	1	
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JOBNO	VEHIC	LINNO	STOPTIME	STOPAGE	ACT_NO	ACTION	CIRC NO	CIRCUMSTANCE
A00135	5	8	20.43	121	23	ME	2	5
							6	23
							9	2
							15	2
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					23	53	5	2
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							7	1
							9	2
							12	2
							15	2
							17	4
					24	ME	1	57
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							13	4
							15	4
							17	4

JOBNO	VENUE	LHAND	STDTIME	STORAGE	ACT_NO	ACTION	CIRC NO	CIRCUMSTANCE
A00135	S	P	28.43	121	28	00	11	0
							12	2
							13	0
							14	2
							17	01
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					29	H	16	0
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					33	H	16	0
							17	01
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							22	2
							23	1
					36	H	16	0
							17	01
							22	2
							23	44

JOBNO	VENUE	LHAND	STRTIME	STRRATE	ACT_NO	ACTION	CIRC NO	CIRCUMSTANCE
A00135	S	R	20.42	171	34	H	26	0
							20	2
					35	H	15	2
							17	MI
							18	SA
							19	0
							22	E
							21	DO
							26	0
					36	H	15	2
							17	DO
							25	E
							25	0
					37	H	15	2
							17	MI
							18	ST
							19	0
							22	E
							21	DO
							26	0
					38	H	15	2
							17	DO
							22	E
							22	0
							26	0
					39	H	15	2
							17	MI
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							26	0
					40	H	15	2
							17	DO
							22	E
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							26	0
					41	H	20	2
							5	0
							3	E
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					42	H	5	2
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JOBNO	TCNTIC	TWAND	STOTIME	STORAGE	ACT_NI	ACTION	CIRC NO	CIRCUMSTANCE
A00135	C	0	20.63	171	43	05	16	0
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							18	0
							19	0
							20	0
							21	0
					48	4	16	0
							17	0
							18	0
							19	0
							20	0
							21	0
					49	43	1	0
							2	0
							3	0

JOBNO	VENUE	LWAND	STOTIME	STORAGE	ACT_NO	ACTION	CIRC NO	CIRCUMSTANCE
A00135	5	0	20.62	131	60	M3	5	0
							9	0
							15	3
							17	3
					60	00	5	0
							6	1
							8	0
							9	0
							14	3
							17	3
A00136	5	0	21.82	164	1	52	2	M6
							14	53
							15	0
							17	3
					2	03	2	M5
							14	53
							15	0
							17	3
					3	M6	1	51
							2	03
							3	5
							4	33
							9	3
							15	3
							17	3
					4	03	2	M5
							14	53
							15	0
							17	3
					5	33	1	51
							2	03
							3	5
							4	33
							9	3
							15	3
							17	3
					6	M4	2	M5
							14	53
							15	0
							17	3

APPENDIX 12

RECOMMENDED METHOD - WASHERS AND NUTS TO PRE-ASSEMBLED U/BOLT AND BODY.
TRANSFER FROM HOLDER TO FOOT-OPERATED JIG. METHOD A0060.

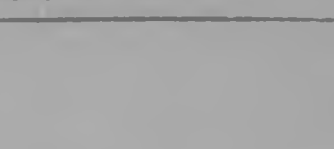
LEFT HAND			Number of MOD units	RIGHT HAND		
DESCRIPTION	CODE	FREQ.		FREQ.	CODE	DESCRIPTION
Release foot clamp. Obtains	(W5)	1	71	1	(M4C1 M4P5)	Obtains ass. and places in jig.
ass. and places in jig.	M4G1 M4P5				M2P5	
Close. foot clamp. Obtains 2	(W5) M3G1 M3P2	1	71	1	(M3P0 M2G1 M1P)	Obtains 4 washers and places on
washers and places on U/bolt.	M2G1 P2				M2P2 (2J2P0)	U/bolt.
					M2P5	
Obtains nut and places on U/B	M3G1 M3P5	2	54	2	(M3P0) M2G1 (M3P0)	Obtains nut and places on U/bolt.
Turns down once.	M1P0				M2P5 (M1P0)	Turns down once.
Turns nut down 4 times.	M1G1 M1P0	4 x 2	24	4 x 2	(M1G1 M1P0)	Turns nut down 4 times.
Slide full holder to w/P.	M3G1 M3P0	1/12	1,17		(M3G0 M3P0)	Slide empt. holder aside.
TOTAL MOD UNITS			226,17	SET BY: J.M. FARRELL		DATE: 1984
MULTIPLY BY 0,129 FOR NORMAL SECONDS			16,53	PREVIOUS STANDARD CANCELLED:		
ADD REST ALLOWANCES (%)		12 %	1,98			
ADD OTHER ALLOWANCES (%				LAYOUT: Scale 1:20		
STANDARD TIME IN SECONDS			18,51/3			
			3,26			
min		1				
STANDARD TIME			388/hr			
APPROVED:				NOTE: IF FOR ANY REASON THE ABOVE PROCEDURE IS CHANGED, THE STANDARD TIME BECOMES VOID.		

RECOMMENDED METHOD - WASHERS AND NUTS TO PRE-ASSEMBLED U/BOLT AND BODY - WITH ONE HAND.
TRANSFER FROM HOLDER TO FOOT-OPERATED JIG. METHOD A0060.

LEFT HAND			Number of MOD units	RIGHT HAND		
DESCRIPTION	CODE	FREQ.		FREQ.	CODE	DESCRIPTION
Release foot clamp. Obtains	W5	1	14			
ass. and places in jig.	M4C1 M4P5					
Closes foot clamp. Obtains 2	W5 M3G3 M3P2	1	11			
washers and places on U/bolt.	M2G2P2	1	4			
Obtains nut and places on U/B	M3G3 M3P5	4	30			
Turns down once.	M1P0					
Turns nut down 4 times.	M1G1 M1P0	4 x 2	24			
Slide full holder to w/P.	M3G1 M3P0	1/12	0,5			
TOTAL MOD UNITS			83,5	SET BY: J.M. FARRELL		DATE: 1984
MULTIPLY BY 0,129 FOR NORMAL SECONDS			10,7	PREVIOUS STANDARD CANCELLED:		
ADD REST ALLOWANCES (%)		12 %	1,2			
ADD OTHER ALLOWANCES (%				LAYOUT: Scale 1:20		
STANDARD TIME IN SECONDS			12,01			
min		1				
STANDARD TIME			298/hr			
APPROVED:				NOTE: IF FOR ANY REASON THE ABOVE PROCEDURE IS CHANGED, THE STANDARD TIME BECOMES VOID.		

RECOMMENDED METHOD BI-LATERAL ASSEMBLY U/BOLTS, BODIES, WASHERS AND NUTS - A0130

LEFT HAND			Number of MOD units	RIGHT HAND		
DESCRIPTION	CODE	FREQ.		FREQ.	CODE	DESCRIPTION
Pushes foot release. Obtains	W5 M3G3	1	20	1	M3P0 M2G3	Obtains U/bolt and places in jig
U/bolt and places in jig.	M3P2				M3P0 M2P2	
Releases foot lever. Obtains	W5 M3G3	1	26	1	M3P0 M2G3	Obtains body and places on U/bolt.
body and places on U/bolt.	M3J2P5				M3J2P0 M2P5	
Obtains 2 washers and places	M3G3 M3P2	1	28	1	M3P0 M2G3	Obtains 2 washers and places on
on U/bolt.	M2J2P2				M2J2P0 M2P2	U/bolt.
Obtains nut and places on	M3G3	2	52	2	M3P0 M2G3	Obtains nut and places on U/bolt.
U/bolt.	M3P5				M3P0 M2P5	
Turns nut down.	M1P0 M1G1	4 x 2	24	4 x 2	M1P0 M1G1	Turns nut down.
Final turn of nut.	M1P0	1	1	1	M1P0	Final turn of nut.
TOTAL MOD UNITS			151	SET BY: J.M. FARRELL		DATE: 1984
MULTIPLY BY 0,129 FOR NORMAL SECONDS			19,47	PREVIOUS STANDARD CANCELLED:		
ADD REST ALLOWANCES (%)		12 %	2,34			
ADD OTHER ALLOWANCES (%)				LAYOUT: Scale 1:20		
STANDARD TIME IN SECONDS			21,81/2			
			10,91			
PER		1				
STANDARD TIME			329/hr			
APPROVED:				NOTE: IF FOR ANY REASON THE ABOVE PROCEDURE IS CHANGED, THE STANDARD TIME BECOMES VOID.		



RECOMMENDED METHOD UNI-LATERAL ASSEMBLY U/BOLTS, BODIES, WASHERS AND NUTS - A0130

LEFT HAND			Number of MOD units	RIGHT HAND		
DESCRIPTION	CODE	FREQ.		FREQ.	CODE	DESCRIPTION
Pushes foot release. Obtains	W5 M3G3	1	11			
U/bolt and places on jig.	M3P2					
Releases foot lever. Obtains	W5 M3G3	1	11			
body and places on U/bolt.	M3J2P5					
Obtains 2 washers and places	M3G3 M3P2	1	15			
on U/bolt.	M2J2P2					
Obtains nut and places on	M3G3	2	28			
U/bolt.	M3P5					
Turns nut down.	M1P0 M1G1	4 x 2	24			
Final turn of nut.	M1P0	1	1			
TOTAL MOD UNITS			93	SET BY: J.M. FARRELL		DATE: 1984
MULTIPLY BY 0,125 FOR NORMAL SECONDS			11,00	PREVIOUS STANDARD CANCELLED:		
ADD REST ALLOWANCES (%)		12 %	1,44			
ADD OTHER ALLOWANCES (%)				LAYOUT: Scale 1:20		
STANDARD TIME IN SECONDS						
PER						
STANDARD TIME			267/hr			
APPROVED:				NOTE: IF FOR ANY REASON THE ABOVE PROCEDURE IS CHANGED, THE STANDARD TIME BECOMES VOID.		



RECOMMENDED METHOD - BI-LATERAL MACHINE TIGHTENING OF NUTS - METHOD A0170.

LEFT HAND			Number of MOD units	RIGHT HAND		
DESCRIPTION	CODE	FREQ.		FREQ.	CODE	DESCRIPTION
Carries ass. to spanner.	M3J2P2	1		1	M3J PO M2P2	Carries ass. to spanner. Position
Positions in spanner.						in spanner.
Applies pressure.	X4	1	4	1	X4	Applies pressure.
Holds while nut is tightened.	1,2 sec.	1		1	1,2 sec.	
Moves to insert 2nd nut in	M2PO M2P2	1	10	1	M2PO M2P2	Moves to insert 2nd nut in spanner
spanner.						
Applies pressure.	X4	1	4	1	X4	Applies pressure.
Holds while nut is tightened.	1,2 sec.	1		1	1,2 sec.	Holds while nut is tightened.
Drops product en route and	M3POG3	1		1	M3PO	Drops product en route and obtains
obtains next assembly.					M2G3	next assembly.
TOTAL MOD UNITS			38	SET BY: J.M. FARRELL		DATE: 1984
MULTIPLY BY 0,129 FOR NORMAL SECONDS (4,00+1,2+1,2)			7,3	PREVIOUS STANDARD CANCELLED:		
ADD REST ALLOWANCES (%)		12 %	0,88			
ADD OTHER ALLOWANCES (%)				LAYOUT: Scale 1:20		
STANDARD TIME IN SECONDS			8,18/2			
			4,09			
PER		1				
STANDARD TIME			880/hr			
APPROVED:				NOTE: IF FOR ANY REASON THE ABOVE PROCEDURE IS CHANGED, THE STANDARD TIME BECOMES VOID.		

RECOMMENDED METHOD - UNI-LATERAL MACHINE TIGHTENING OF NUTS - METHOD A0170

LEFT HAND			Number of MOD units	RIGHT HAND		
DESCRIPTION	CODE	FREQ.		FREQ.	CODE	DESCRIPTION
Carries assembly to spanner.	M3J2P2	1				
Positions in spanner.						
Applies pressure.	X4	1	4			
Holds while nut is tightened.	1,2 sec.	1				
Moves to insert 2nd nut in	M2PO M2P2	1				
spanner.						
Applies pressure.	X4	1	4			
Holds while nut is tightened.	1,2 sec.	1				
Drops product en route and	M3POG3	1				
obtains next assembly.						
TOTAL MOD UNITS			25	SET BY: J.M. FARRELL		DATE: 1984
MULTIPLY BY 0,129 FOR NORMAL SECONDS (3,23+1,2+1,2)				PREVIOUS STANDARD CANCELLED:		
ADD REST ALLOWANCES (%)		12 %	0,68			
ADD OTHER ALLOWANCES (%)				LAYOUT: Scale 1:20		
STANDARD TIME IN SECONDS						
			6,31			
PER		1				
STANDARD TIME			570/hr			
APPROVED:				NOTE: IF FOR ANY REASON THE ABOVE PROCEDURE IS CHANGED, THE STANDARD TIME BECOMES VOID.		

Manual of Instruction

BASIC MOTIONS OF WORK TEST

Research and Development Project — O.T. - 1
Developed by Miss J. M. Farrell - Research Occupational Therapist
Commonwealth Rehabilitation Service
1972

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APPENDIX L3

TEST FOR ABILITY TO PERFORM

BASIC MOTIONS OF WORK.

The object of the basic motions of work test series is to establish whether the person tested can, on any single occasion, perform the motion concerned within standard time.

Standard time is the time which qualified workers would naturally take "without over-exertion as an average over the working day or shift, provided they know and adhere to the specified method, and provided they are motivated to apply themselves to their work" (i).

Because of the extreme brevity of each test, and the opportunity to rest for significant periods between tests, no fatigue or personal allowances are included in the time standard for individual tests.

All actions to be undertaken by each hand are shown in MODAPTS code (ii) including combined and simultaneous motions, which are limited out for calculation of the time standard. These simultaneously performed motions are circled.

. . . . . .

There is at present (1972) no value in recording performance on the test series alone.

The test has been designed for use in conjunction with workshop performance of jobs known to contain the same motions.

Performance on the test series will show whether sufficient strength and co-ordination exist to perform the motions at normal speed.

Performance in the workshop will show whether sufficient mental and physical stamina exist to maintain this performance for a useful period of time.

In future years study of records of subsequent performance, both in occupational therapy workshops and in employment, in relation to test results, will indicate whether the test series has any contribution to make as a guide to potential performance of persons with particular disabilities.

. . . . . .

To assist in ensuring that the correct method is used by the person being tested, and to help to present the series as smoothly as possible, the test manual supplies notes for the occupational therapist applying the tests. These notes cover any preparation of a work area required prior to a test, (above dotted line) any re-positioning of components after a test (below dotted line) and any special instructions the patient should be given.

The use of Capital letters for the name of the material in each test is aimed at aiding rapid identification of the test to be presented.

The manual describes the actions to be performed by the person under test. It is essential that these be performed using the method described. Any change in method renders the time standard invalid.

Each workplace has been designed to eliminate the likelihood that alternative methods would be adopted in preference to those required. This has been done by selecting tasks which naturally contain the motions to be examined.

The method used to teach the patient the motions involved in any test need not be stereotyped. Demonstration combined with a verbal explanation is probably the quickest way to provide a clear picture of what is to be done.

Praise where appropriate, and other forms of encouragement should be used during the test series, if this will result in the patient performing more successfully.

The test record sheet (iii) has space to record 5 attempts at each test. Many more attempts may be used, if the patient is showing marked improvement each time he performs a test.

The object of the test is to establish whether the person tested can on any single occasion perform the action concerned within standard time. If encouragement and a few additional practices help to achieve this, this accomplishment is in no way invalidated.

. . . . . .

The most reliable results will be achieved if the test series, the workshop activities, and the comparative analysis of both, are undertaken by occupational therapists who, in addition to other relevant professional skills, have a sound understanding of both the Methods Investigation and Work Measurement aspects of Work Study (i), and a detailed knowledge of work place layout and of one of the Pre-determined Motion-Time Standards Systems (MODAPTS in the case of this manual).

. . . . . .

Throughout the manual the person being tested is referred to as the "operator".

WORKPLACE 1

Test No.	Description	Code	Frequency	Mod.Units	Seconds	Notes for Occupational Therapists: Performance of these tests by methods other than those prescribed render the time standard invalid
1	Commence with hand resting beside nearest [illegible] working along front row then return. Obtain 20 alias 20 coins one by one into chute	1G0, 1P	20	40		[illegible] Use manual timer ..... Must chute. Exchange Area delivery bins Do not return coins to table yet.
Forward & Back side Right & L)	Return hand to starting position.	2P0.	1	2		
				42	5.42	
7	Commencing with hand resting beside nearest NUT in front row, work along front row, return along back row, picking up each nut singly and placing in nearest convenient position on platform.	2G1, 2P0	8	40		Place wooden platform at edge of rotating table in front of operator, and nuts in an fixed table in front of platform, arranged in 2 rows, with approx. 1" space around each nut, for ease of e.g. Advise operator to he elbow loosely to the side of body to avoid unnecessary class 3 covement Use manual timer ..... Return platform and nuts to back of ork area.
Forward & Back. arry Right & L)	Return hand to starting position.	2P0	1	2		
				42	5.42	
10	Commencing with hand resting on Stop Switch. With one hand, pick up medium sized components from in front one by one and drop down chute.	2G1, 3P0	1	6		Ensure 6 blocks only are in the trough to be used, and that they are sufficiently well spaced to enable them to be easily grasped. Open chute .....
		3G1, 3P0	5	35		
Forward & Back lexible L & L)	Return hand to Stop Switch	3P0	1	3		Do not replace blocks.
				44	5.68	

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WORK PLACE 1

Test No.	Description	Code		Frequency	Mod.Units	Seconds	Notes for Occupational Therapists: Performance of these tests by methods other than those prescribed render the time standard invalid
		L	R				
12	Commencing with hands resting on Stop Switches. With 2 hands simultaneously pick up MEDIUM SIZED COMPONENTS from in front, one in each hand, and drop down chute.	(2G1)	(3P0) 2G1,3P0	1	6		
		(3G1)	(3P0) 3G1,3P0	5	35		
3 Forward & Back Carry Rigid (Both)	Return hands to Stop Switches	(3P0)	3P0	1	3		
					44	5.68	
11	Commencing with hand resting on Stop Switch, with one hand pick up MEDIUM SIZED COMPONENTS from side, one by one, and drop down chute.	2G1, 3P0		1	6		
		3G1, 3P0		5	35		
3 Sideways Carry Rigid (R & L.	Return hand to Stop Switch.	3P0		1	3		
					44	5.68	
14	Commencing with hands resting on Stop Switches, with 2 hands simultaneously pick up MEDIUM SIZED COMPONENTS from sides, one in each hand, and drop down chute.	(2G1)	(3P0) 2G1,3P0	1	6		
		(3G1),3P0	3G1,3P0	5	35		
3 Sideways Carry R gid (Both)	Return hands to stop switch	(3P0)	3P0	1	3		
					44	5.68	

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WORK PLACE 1

Test No.	Description	Code	Frequency	Mod. Units	Seconds	Notes for Occupational Therapists Performance of these tests by methods other than those prescribed render the time standards invalid.
18	Commencing with hands on Stop Switch use one hand to pick up pre-positioned LARGE COMPONENT from dispenser and drop down chute.	4G1, 4P0	1	9		..... Close chute.
	Repeat with further 4 components	4G1, 4P0	4	36		
4 Forward & Back Carry Rigid (R & L)	Return to Stop Switch	2P0	1	2		
				47	6.06	
20	While seated, commencing with hand on Stop Switch, pick up 6 BOTTLES in turn from stand on floor at side and place on bench.	4G1, 4P0	6	54		Position bottle stand. ..... Replace bottle stand under table.
4 Vertical Carry Rigid (R & L)	Return to Stop Switch.	4P0	1	4		
				58	7.48	
63	Commencing with hand on Stop Switch, move to first coin or COINS identified according to SHADE and slide to area near appropriate sample coin.	3P0, E2, E2, D3, 100	1	7		Replace coins on rotating table in a loosely scattered but confined group. Do not attempt to sort coins in any way as they come free drop delivery bin. Place one dull coin and one bright coin as samples separately at the back of the group, one at left hand side and one at right. ..... There are 11 bright and 9 dull coins.
	Sort remaining coins into two shade groups in similar manner.	2P0, E2, E2, D3, 200,	9	63		
D3 with E2 Shade	Return hand to Stop Switch.	3P0	1	3		
				73	9.48	

WORK PLACE 1

Test No.	Description	Code	Frequency	Mod. Units	Seconds	Notes for Occupational Therapists Performance of these tests by methods other than those prescribed render the time standards invalid.
64	Commencing with hand on Stop Switch turn first coin IN TO HEAD	E2, E2, D3	1	7		Draw coins together again into one loosely scattered but confined Group
	Inspect remaining 19 coins and turn over those with tails up	E2, E2, D3	9	63		Ensure 9 coins are facing upward and that coins are at the perimeter of the group, so that all coins are inspected .....
D3 with E2 Heads/Tails	Return hand to Stop Switch.	3P0	1	3		
				73	9.42	
65	Commencing with hand on Stop Switch, inspect 20 coins and push to back of group those which are not dated 1966	3P0	1	3		..... There are 7 coins not dated 1966 Replace coins in double row along edge of revolving table. Replace medium and large components on revolving table
		E2, D3	20	140		
		200, 2D0, 2D0	7	7		
Mixed with E2 Heads	Return hand to Stop Switch	3P0		3		
				143	18.48	

WORK PLACE 2

Test No.	Description	Code	Frequency	Mod.Units	Seconds	Notes for Occupational Therapists: Performance of these tests by methods other than those prescribed render the time standard invalid
2 1 Forward & Back Guided Rigid (R & L)	Commencing with forearm poised beside BOLT, tighten bolt into block by grasping head in fingers and turning. Release bolt.	101, 1PO 1PO	20 1	60 1		Bolt may be undone rather than tightened if home when test begins Draw attention to fact that left hand bolt turns in opposite direction to tighten. Use manual timer
				61	7.87	
6 2 Forward & Back Guided Rigid (R & L)	Commencing with hand poised beside handle, tighten HANDLE into shaft by grasping with fingers and turning. Release handle and withdraw hand.	201, 2PO 2PO	15 1	75 2		Handle may be loosened if home when test begins. Draw attention to fact that left hand handle turns in opposite direction to tighten. Use manual timer
				77	9.93	
4 1 Forward & Back Guided Rigid (Both)	Commencing with fingers poised beside bolts, tighten 2 BOLTS into block simultaneously one with right hand one with left hand. Release bolts	L. R. 101,1PO 101,1PO 1PO 1PO	20 1	60 1		Use manual timer
				61	7.87	

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WORK PLACE 2

Test No.	Description	Code	Frequency	Mod.Units	Seconds	Notes for Occupational Therapists: Performance of these tests by methods other than those prescribed render the time standard invalid
9 2 Forward & Back Guided Rigid (Both)	Commencing with hands poised beside handles, tighten 2 HANDLES into shaft simultaneously one with (R) hand one with (L) hand. Release handle and withdraw hand.	L. R. 201,2PO 201,2PO 2PO 2PO	15 1	75 2		Use manual timer
				77	9.93	
19 4 Vertical Lever Rigid (R & L)	Commencing sitting with hand on Step Switch move to grasp DRILL handle B in lowest fixture and pull down until bell rings, then return to rest. Pull handle down and raise it 4 more times. Return hand to Step Switch	4O1,4PO,4PO 4PO 4PO 4PO	1 4 1	13 32 4		Use handle (B). If arm must be fully extended, and thus a class 4 movement performed raise the height of the chair.
				49	6.32	
22 5 Vertical Standing Lever Rigid (R & L)	Commencing while STANDING and with hand on Step Switch, move one hand to grasp higher vertical handle, pull down until bell rings, then return until handle meets step. Pull handle down and raise it 4 more times Return hand to Step Switch	5O1,5PO,5PO 5PO,5PO 5PO	1 4 1	16 40 5		Use longest handle (A) in upper socket, and ensure operator extends his arm fully to grasp it. Do not grasp shaft beyond 3½" from knob, as this introduces a load factor. If operator cannot reach lever he may stand on a stool. Care should be taken that a full stretch of the arm is required.
				61	7.87	

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WORK PLACE 2

Test No.	Description	Code	Frequency	Mod.Units	Seconds	Notes for Occupational Therapists Performance of these tests by methods other than those prescribed render the time standard invalid.
45 49 51	Commencing standing with hand on Stop Switch move to grasp lower vertical handle and pull down against:					
	9 lbs.	4G1,L1,4P0,4P0	1	14		
	18 lbs	" L2 " "	1	15		
	36 lbs.	" L4 " "	1	17		Handles C D E in that order, in lower socket.
	until buzzer rings, return unresisted to top.					
	Repeat 4 more times:					.....
	9 lbs.	L1,4P0,4P0	4	16		
	18 lbs.	L2 " "	4	40		
	36 lbs.	L4 " "	4	48		
	Return hand to Stop Switch	4P0	1	4 4 4		
Lead Lever Vertical Down Standing	(45) 9 lbs. (49) 18 lbs. (51) 36 lbs.			34 39 49	6.97 7.61 8.90	

WORK PLACE 2

Test No.	Description	Code	Frequency	Mod.Units	Seconds	Notes for Occupational Therapists Performance of these tests by methods other than those prescribed render the time standard invalid.
52 48 46	Commencing STANDING with hand on Stop Switch move one hand to grasp lower vertical handle, push the handle away against resistance of:					Handles E.D.C. in that order, in lower socket. Show operator how to place feet to brace against resistance.
	46 lbs.	4G1,L4,4P0,4P0	1	19		.....
	24 lbs.	" L3 " "	1	16		
	15 lbs.	" L2 " "	1	15		
	until bell rings, and return to starting place without resistance.					
	Repeat 4 more times 46 lbs.	L4,4P0,4P0	4	36		
	24 lbs.	L3, " "	4	44		
	15 lbs.	L2, " "	4	40		
	Return to Stop Switch	4P0	1	4 4 4		
Lead Lever vertical away standing (R & L)	(52) 46 lbs. (48) 24 lbs. (46) 15 lbs.			79 64 59	10.19 8.26 7.61	
44 47 50	Commencing SITTING with hand on Stop Switch move one hand to grasp lower vertical handle and pull down against:					Handles C.D.E. in that order in lower socket .....
	9 lbs.	4G1,L1,4P0,4P0	1	14		
	18 lbs.	" L2 " "	1	15		
	36 lbs.	" L4 " "	1	17		
Lead Lever vertical down Seated (R & L)	until bell rings and return unresisted to top.					
	Repeat 4 more times : 9 lbs.	L1,4P0,4P0	4	36		
	18 lbs.	L2, " "	4	40		
	36 lbs.	L4, " "	4	48		
	Return to Stop Switch.	4P0	1	4 4 4		
	(44) 9 lbs.			34	6.97	
	(47) 18 lbs.			39	7.61	
	(50) 36 lbs.			49	8.90	

WORK PLACE 2

Test No.	Description	Code	Frequency	Mod. Units	Seconds	Notes for Occupational Therapists: Performance of these tests by methods other than those prescribed render the time standard invalid.
16	Commencing with hand on Stop Switch move one hand to grasp HORIZONTAL HANDLE and push it away against 7 lbs. resistance	4G1,4P0,4P0	1	13		
	until bell rings and return to starting position without resistance.	4P0,4P0	4	52		
4 Lever Horizontal away (R & L)	Repeat 4 more times Return hand to Stop Switch	4P0	1	4		
				49	4.52	
17	Commencing with hand on Stop Switch move one hand to grasp HORIZONTAL HANDLE and pull towards body against (7 lbs.) resistance until bell rings.	4G1,4P0,4P0	1	13		
	and return without resistance to starting position. Repeat 4 more times.	4P0,4P0	4	52		
4 Lever Horizontal Towards (R & L)	Return hand to Stop Switch	4P0	1	4		
				49	4.52	

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WORK PLACE 3

Test No.	Description	Code	Frequency	Mod. Units	Seconds	Notes for Occupational Therapists: Performance of these tests by methods other than those prescribed render the time standard invalid.
7	Commencing with fingers at rest, over appropriate corner of PAGE to be lifted and with finger still on middle (or index) finger, pull corner of page towards operator using rubber stall, until page is raised sufficiently to place thumb underneath it. Move thumb beneath raised page release stall pressure and elevate corner of page off the pad with thumb. Similarly "thumb through" remaining 9 pages.	1P0 10G(2),10P0(10P1) 10G(2),11G(2),10P1	1 10 10	1 20 20		Place the stack of paper in front of the operator, so that the hand rests comfortably on the far corner of that hand's side, while the forearm is on the table Ask operator to choose finger stall of appropriate size and place on middle or index finger. Make the method clear. Use manual timer Remove and replace finger stall.
Forward Back (Table R & L)				41	5.29	
8	Commencing with RUBBER STAMP already grasped in hand, and positioned over ink pad move to pad for inking and stamp adjacent paper.	2P0,2P0	1	40		Place open ink pad at black lines next to the stack of paper, so that the forearm can rest comfortably on the table while stamp swings from ink pad to paper. Advise operator a clear imprint is not required Use manual timer.
Sideways (Try Rigid R & L)	Repeat 9 more times	2P0,2P0	9			
				40	5.16	
						Close ink pad, place stamp on top and return to storage position, together with stack of paper.
18	Commencing with hand on Stop Switch, pick up 5 PAPER CLIPS in turn and place on or near chute top in front of operator.					Ensure paper clips are lying separately in the square. If test used in reverse do not ask that they be positioned strictly within the square.
	Return to Stop Switch	4G1,3P0 3G1,3P0 3P0	1 4 1	10 36 3		Return clips to square.
Rigid R & L)				49	6.32	

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WORK PLACE 3

Test No.	Description	Code	Frequency	Mod.Units	Seconds	Notes for Occupational Therapists: Performance of these tests by methods other than those prescribed render the time standard invalid.
27	Commencing with hand on Step Switch, pick up 5 PLASTIC BAGS in turn and place near white top in front of operator.	5G3,3P0	1	9		Can be used in reverse.
		5G3,3P0	4	36		.....
	Return to Step Switch.	3P0	1	3		Return bags to crosses.
G) Flexible (R & L)				48	6.19	
56	Commencing with hand on Step Switch, pick up one of the 5 DRAWING PINS lying together on the board and press it into the board.	5G3,1P0,R2 R2,1P0,A4	1	14		Pull board forward to position in front of operator at edge of revolving table.
		1G3,1P0,R2,R2,1P0,A4	4	56		....
	Repeat with remaining 4 pin.					Return board to back of work place.
	Return to Step Switch.	3P0	1	3		Replace board when it becomes extremely pitted. Hirnutt is suitable timber.
AA Loose Drawing Pins (R & L)				73	9.48	

WORK PLACE 4

Test No.	Description	Code	Frequency	Mod.Units	Seconds	Notes for Occupational Therapists: Performance of these tests by methods other than those prescribed render the time standard invalid.
23.	Commencing standing with hands on Step Switch, move ONE HAND to top shelf GRASP BOX (placed on side) by placing fingers inside box and thumb outside, place box right way up on bench in front of shelves.	5G1,5P0	1	11		Ensure boxes are open, resting on their ends with flap to the back of the shelf, and top to the right (for right hand pick up) or to the left (for left hand pick up).
	Repeat with remaining 3 boxes	3G1,3P0	3	33		If boxes are out of reach of a shorter operator a stool may be used. Care should be taken that the movement requires full stretch of the arm.
	Return hand to Step Switch	1P0	1	4		
5 Vertical standing carry flex. (R & L)				48	6.19	.....
						Test can be performed in reverse. If boxes are already filled perform tests in order 24,5,21,23
23 Reversed	Commencing standing with hands on Step Switches, using ONE HAND grasp nearest box by the front wall, with fingers inside BOX and thumb outside and place on top shelf on end so that the front surface faces outwards and the open flap lies against the step at the back of the shelf.	4G1,5P0	1	10		
5 Vertical Standing Carry flex. (R & L)	Repeat with remaining 3 boxes.	3G1,5P0	3	33		
	Return to Step Switches.	5P0	1	5		
				48	6.19	

WORK PLACE 4

Test. No.	Description	Code L.	Code R.	Frequency	Std. Units	Seconds	Notes for Occupational Therapists Performance of these tests by methods other than those prescribed render the time standard invalid.
11	Commencing standing with hands on Step Switches, move BOTH HANDS simultaneously to pick up 2 "ITEMS" from middle shelf, and place both in box on bench top.	4G1,4PO	4G1,4PO	1	9		Ensure that box flaps are open, and access to box with 2 hands is unimpeded. Test can be performed in reverse.
4 Vertical Standing Carry Rigid (Both)	Repeat with further 3 pairs of "ITEMS"	4G1,4PO	4G1,4PO	3	27		
	Return to Step Switches	4PO	4PO	1	4		
					40	5.16	
21 Reverse	Commencing standing with hands on Step Switches, move BOTH HANDS simultaneously to pick up 2 ITEMS from one box and place both on middle shelf.	4G1,4PO	4G1,4PO	1	9		
4 Vertical Standing Carry, Rigid (Both)	Repeat with remaining 3 pairs of "ITEMS"	4G1,4PO	4G1,4PO	3	27		
	Return to Step Switches	4PO	4PO	1	4		
					40	5.16	

WORK PLACE 4

Test No.	Description	Code L.	Code R.	Frequency	Std. Units	Seconds	Notes for Occupational Therapists Performance of these tests by methods other than those prescribed render the time standard invalid.
5	Commencing seated, with both hands resting on Step Switches, and working simultaneously with both hands, grasp box at sides. FOLD IN SIDE FLAPS with thumbs and fold top flaps over with index fingers. Gain control of front lip with thumbs and press closed with index fingers.	2G0,1PO(T) 1PO(Ind) 1G0(Ind) 1G0(Ind) 1PO(T),1G0(T)	2G0,1PO(T) 1PO(Ind) 1G0(Ind.) 1G0(Ind) 1PO(T),1G0(T)	4	20		Ensure lip of flap is not pre-angled. Test can be performed in reverse Care should be taken to replace boxes with new ones when flaps become floppy at joints, as this reduces degree of control normally required for such an operation.
1 Forward and back guided flex (Both)	Repeat with remaining three boxes.	1PO(T),1G0(T) 1P5	1PO(T),1G0(T) 1P5	4	48		
	Return to Step Switches.	3P0	3P0	1	1		
					73	10.19	
5 Reversed	Seated with hands resting on Step Switches, grasp box at sides also placing index finger at edge of lid RAISE LID with index finger, straighten lip with index finger and thumb, push flap back with fingers, open side flaps with thumb.	2G0,1PO(Ind) 1PO,1G1,1PO(T) 1PO,1G0(Ind) 1PO(Ind)	2G0,1PO(Ind) 1PO,1G1,1PO(T) 1PO,1G0(Ind) 1PO(Ind)	4	56		
1 Forward and back guided flex (Both)	Repeat with remaining 3 boxes.	1G1,1PO(T)	1G1,1PO(T)				
	Return to Step Switches.	3P0	3P0	1	3		
					59	7.61	

WORK PLACE 4

Test No.	Description	Code	Frequency	Mod. Units	Seconds	Notes for Occupational Therapists Performance of these tests by methods other than those prescribed render the time standard invalid
4.	Commencing seated with hand on Stop switch, reach to tray containing 5 weights, 4 weighing 2 lbs., 1-4lbs, 1-6lbs, 1-8lbs. and using one hand, drag from back of bench to black line at front of bench.	4C0,4PO,L1	1	9		Test can be performed in reverse. If reversed, inform operator that weights need not be neatly placed in tray.
L1 Slide & lift seated (R & L)	Using one hand remove each item in turn from tray, placing them in front of tray.	4G1,4PO	5	45		
		4G1,4PO,L1	1	10		
	Return hand to Stop Switch	4PO	1	4		
				68	8.77	
74	Commencing seated a little away from the table, with hinge of FOOT PEDAL away from body, and foot resting on floor beside pedal and hands on Stop Switches.	4PO,4PO	1	4		Move foot pedal into position with hinge away from operator.
	Place hands on table edge in front of operator, then move foot to depress pedal until buzzer rings and replace foot on floor.	W5, W5	1	10		
	Repeat foot action 4 times.	W5, W5	4	40		
W5 footpedal (R & L)	Return hands to Stop Switches.	4PO, 4PO	1	4		
				58	7.48	

WORK PLACE 4

Test	Description	Code	Frequency	Mod. Units	Seconds	Notes for Occupational Therapists Performance of these tests by methods other than those prescribed render the time standard invalid.
75.	Commencing seated a little away from the table, with hands on Stop Switches and with FOOT resting on PEDAL with hinge at heel. Place hands on edge of table in front of operator, depress pedal 7 times until buzzer rings, release pedal to raised position,	4PO,F3	1	4		Reverse foot pedal so that heel rests upon hinge with knee slightly extended beyond right angle.
		P*	12	56		
F3 Foot Pedal (R & L)	and return hands to Stop Switches.	F3, 4PO	1	4		Move foot pedal to storage area.
				44	5.68	
77	Commencing seated with hands on Stop Switches, move hands place on table near Stop Switches, stand upright, resume sitting position, STAND again, SIT and return hands from table to Stop Switches.	3PO, 3PO	1	3		Ensure chair is drawn back far enough to permit standing.
		3PO	2	60		
330 Arise from Chair and Sit.		3PO,3PO	1	3		
				66	8.51	
71	Commencing standing in front of work place 4 and hand on Stop Switch with chair removed from area pick up small PACKET easily grasped in one hand, carry it around the table and timing console, (30 feet) replace it on the table, and place hand on Stop Switch.	4G1	1	5		Stand beside the console, close to the table, so that your position does not increase the distance the operator must walk.
(W5)		W5	14	70		
		2PO	1	2		
		4PO	1	4		
				81	10.45	

WORK PLACE 4

Test No.	Description	Code	Frequency	Mod. Units	Seconds	Notes for Occupational Therapist Performance of these tests by methods other than those prescribed render the time standard invalid.
72	Commencing standing in front of work place 4 with chair removed from area and hand on Step Switch use one hand to pick up 6LB. weight, carry it around table and console, (30 feet) and replace it at the work place, and return hand to Step Switch. Ensure lagging foot is brought up to take body weight before replacing 6 Lb. weight.	4G1,4P0,L1	1	10		Isolate 6Lb. weight on centre of fixed table.
		W5	14	70		
		2P0 + L1	1	3		
		4P0	1	4		
W5 L1 one hand (W5 with L1)				87	11.22	
73	Commencing standing in front of work place 4 with chair removed from area and hands on Step Switches, use both hands and lift up trays all 5 weights (30lbs), carry it around table, replace it at work place, and return hands to Step Switches. Ensure lagging foot is brought up to take body weight before replacing tray.	4G1,4P0	1	11		Ask operator to lift tray to feel its weight before commencing the test
		W5	15	75		
		2P0+L2	1	4		
		4P0		4		
W5 L2 two hands				94	12.13	

WORK PLACE 4

Test No.	Description	Code	Frequency	Mod. Units	Seconds	Notes for Occupational Therapist Performance of these tests by methods other than those prescribed render the time standard invalid.
74	Commencing side on to the table with hand resting on nearest Step Switch and with the two 21lb. WEIGHTS ON THE FLOOR between the body and the table move hand from table, stoop to pick up one weight, and arise, placing the weight on the table near the Step Switch. Repeat with second weight.	2P0.B17 2W1.2P0	2	48		Ensure weights are just out free on of table edge, and operator is in easy arms reach of table.
B17	Return hand to Step Switch.	B17	1	2		Release all weights on tray, and push tray to centre of table.
				50	6.45	

WORK PLACE 4

Test No.	Description	Code	Frequency	Mod. Units	Seconds	Notes for Occupational Therapist Performance of these tests by meth 4s other than those prescribed render the time standard invalid.
T2	Commencing standing in front of work place 4 with chair removed from area and hand on Stop Switch use one hand to pick up 8LB. weight, carry it around table and consols, (30 feet) and replace it at the work place, and return hand to Stop Switch.	4G1,4PO,L1	1	10		Isolate 8Lb. weight on centre of fixed table.
	Ensure lagging foot is brought up to take body weight before replacing 8 Lb. weight.	W5	14	70		.....
		2PO + L1	1	3		
		4PO	1	4		
W5 L1 use hand (W5 with L1)				87	11.22	
T3	Commencing standing in front of work place 4 with chair removed from area and hands on Stop Switches, use both hands and pick up trays all 5 weights (30lbs), carry it around table, replace it at work place, and return hands to Stop Switches.					Ask opera or to lift tray to feel its weight before commencing the test.
		4G1,4PO	4G1,4PO+L2	1	11	.....
	Ensure lagging foot is brought up to take body weight before replacing tray.	W5		15	75	
		2PO	2PO+L2	1	4	
		4PO	4PO		4	
W5 L2 two hands					94	12.13

WORK PLACE 4

Test No.	Description	Code	Frequency	Mod. Units	Seconds	Notes for Occupational Therapist Performance of these tests by methods other than those prescribed render the time standard invalid.
T6	Standing side on to the table with hand resting on nearest Stop Switch and with the two 21b. WEIGHTS ON THE FLOOR between the body and the table move hand from table, stoop to pick up one weight, and arise, placing the weight on the table near the Stop Switch.					Ensure weights are just out from the table edge, and operator is in easy arms reach of table. ..... Replace all weights on tray, and push tray to centre of table.
	Repeat with second weight.	2G1,2P1 2G1,2PO	2	48		
B17	Return hand to Stop Switch.	2P1	1	2		
				50	6.45	

WORK PLACE 5

Test	Description		Code	Frequency	Mod.Units	Seconds	Notes for Occupational Therapists Performance of these tests by methods other than those prescribed render the time standard invalid.
		L.	R.				
42	Commencing with hands on Stop Switches pick up first LEATHER section from loose stack on chute cover and place over corresponding black stripes, starting at left hand end so that only black can be seen through the holes.	3G3,3P3	3G3,4P3	1	18		Place leath[illegible] pieces in loose stack on to[illegible] chute cover, with numbers [illegible] top to ensure holes are in general alignment with black stripes. Ensure leather is soft enough to rest easily on surface of table once placed.
		3G3,3P0	4G3,3P3	1	18		
		3G3,3P0	3G3,3P3	1	17		
		3G3,4P0	3G3,3P3	1	17		
P3	Repeat with further 4 leather sections.	4G3,4P0	3G3,3P3	1	18		Can be written.
							L. / R. / Mins. 3G3,3P0,1P2 / 3G3,4P3 / 18 3G3,3P0,1P2 / 4G3,3P3 / 18 3G3,3P0,1P2 / 3G3,3P3 / 17 3G3,4P0,1P2 / 3G3,3P3 / 17 4G3,4P0,1P2 / 3G3,3P3 / 18 4P0 / 3P0 / 4
Single Flexible Object (Both)	Return to Stop Switches	4P0	3P0	1	4		
					92	11.87	
12	Commencing with hand on Stop Switch, grasp string near peg to which it is attached and wind string around pegs thus 5 times (finishing at top right hand peg).	3G1 3P0		1 20	4 60		
3 Vertical Jig. Flex (R & L)	Return to Stop Switch	3P0		1	3		
					67	8.64	

WORK PLACE 5

Test No.	Description	Code		Frequency	Mod.Units	Seconds	Notes for Occupational Therapists Performance of these tests by methods other than those prescribed render the time standard invalid.
		L.	R.				
59	Commencing with hands on Stop Switches, re[illegible]h and grasp number bands at the end of cord with one hand, draw them out sufficiently to loosely grasp further cord with other hand.	4G1	4P0	1	5		Adjust revolving table to bring operators arm just clear of Stop Switch when operating crank handle.
		2P0	1G1	1	2		
		R2,C4		1	4		If 58 to be applied more than once, apply 59 before re-applying 58.
	Using first hand as a crank and the second as a jig. WIND THE CORD AROUND THE FIRST HAND until the reel stops (10 turns around the hand)	C4		9	36		
C4 Flex.Air (R & L)	Return unbound hand to Stop Switch.		3P0	1	3		
					50	6.45	
60	Commencing with one hand on Stop Switch and all twine unwound, grasp CRANK HANDLE and wind twine back on to spool (25 turns to a stop).	3G1		1	4		Pull cord out fully before rewinding.
		C4		25	100		
C1 Rigid Handle (R & L)	Return hand to Stop Switch	3P0		1	3		
					107	13.80	

WORK PLACE 5

Test No.	Description	Code		Frequency	Mod.Units	Seconds	Notes for Occupational Therapists Performance of these tests by methods other than those prescribed render the time standard invalid.
4?	Commencing with one hand on Step Switch the other holding the shuttle in front of the body reach to plastic tubing loosely grasp it.	L	L				Ensure tubing has not stretched, so that more than 10 complete turns are required to wrap it all around the shuttle.
			321 ?4	1 10	4 40		
	Wind available tubing around SHUT.L2 in a continuously circular pattern (10 complete turns).						A knot near the end of the tubing which will pass through the fingers as the last turn is completed is helpful.
C4 Flex.Air Shu.Ale (R & L)	Release and return hands to Step Switch.		1M0	1	3		
					47	6.58	

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WORK PLACE 6

Test No.	Description	Code	Frequency	Mod.Units	Seconds	Notes for Occupational Therapists Performance of these tests by methods other than those prescribed render the time standard invalid.
?0	Commencing with hand on Stop Switch and using one hand, pick-up a pre-positioned BUSH and drop it over bolt held in jig.					Ensure bolts are in rear jig .....
	Pick-up in turn and drop over bolts, 4 more bushes.	3?1,2?2 2?1,2?2	1 4	8 28		Replace bushes.
P2 Rigid to jig hold ob-ject. (R & L)	Return to Stop Switch.	3P0		3		
				39	5.03	
??	Commencing with hands on Stop Switch and using one hand, pick-up pre-positioned BOLT from one JIG and place in the jig in front. Repeat with 4 more bolts.					This test can be performed in reve .....
		3?1,2P5 2?1,2P5	1 4	11 40		
P5 Rigid to jig. (R & L)	Return to Stop Switch	3?0	1	3		
				54	6.97	

ONE PLACE S

Test No.	Description	Code		Frequency	Mod. Units	Seconds	Notes for Occupational Therapists: Performance of these tests by methods other than those prescribed render the time standard invalid.
35	Commencing with hand on Step Switch and using one hand, pick-up a pre-positioned NUT and place ON BOLT held in jig.	301,2P5		1	11		.....
		1P0,101,1P0		1	4		Replace nuts.
	Pick up in turn 4 further nuts and screw down 2 turns on jigged bolts.	301,2P5		4	40		
		110,101,110		4	16		
P5 Rigid to jig held object. (S & L)	Return to Step Switch	5P0		1	3		
					74	9.99	
37.	Commencing with hands on Step Switches and starting at one end pick up adjacent pre-positioned NUTS one in (L) and one in (R) hand and place ON UPRIGHT BOLT held in jig.	L.	R.				Ensure adjacent nuts are picked up together.
		301,2P5	401,2P5	1	19		.....
		1P0,101,1P0	1P0,101,1P0	1	4		Replace nuts.
	Repeat placing 8 further nuts on 8 bolts.	301,2P5	301,2P5	8	72		
		1P0,101,1P0	1P0,101,110	8	16		
	Return to Step Switches	4P0	2P0	1	3		
P5 Rigid to jig held object after Bilat. L.C. Set. (Both)					114	14.84	

WIRE PLACE S

Test No.	Description	Code		Frequency	Mod. Units	Seconds	Notes for Occupational Therapists: Performance of these tests by methods other than those prescribed render the time standard invalid.
40	Commencing with hands on Step Switches pick up adjacent upright BOLTS from JIGS using one in (L) hand and one in (R) hand and place in jig behind. Leading hand then moves to third bolt.	L.	R.				Ensure adjacent bolts are worked with. This test can be performed in reverse.
		301,2P5	401,2P5	1	19		.....
							Finish with bolt in rear jig.
P5 Rigid Bilat. to Jig after Bilat. L.C. Set (Both)	Pick up and repositio remaining 8 bolts.	301,2P5	301,2P5	8	72		
	Return to Step Switches	4P0	2P0	1	4		
					95	12.26	
32	Commencing with hands on Step Switches, pick up adjacent pre-positioned NUTS one with (L) hand and one with (R) hand and place each in turn upon the upright bolt in the jig in front of them.						Ensure adjacent bushes are worked with. This test can be performed in reverse.
		301,2P5	401,2P5	1	17		.....
P2 Bilat. Bilat. to jig held object. (Both)	Similarly pick up 8 more adjacent bushes and place over bolts.	301,2P5	301,2P5	8	68		Replace bushes in original position.
	Return to Step Switches	4P0	2P0	1	4		
					89	11.19	

WORK PLACE 6

Test No.	Description	Code		Frequency	Mod.Units	Seconds	Notes for Occupational Therapists Performance of these tests by methods other than those prescribed render the time standard invalid.
38	Commencing with hands on Stop Switches and starting at left hand and pick up pre-positioned NUT with one hand (L) and adjacent pre-positioned NUT with the other (R). move to chute, put together. TURN nut twice and drop.	1m,16D 1P0 4G1,2P9 1m,16I,1P0	1P0 4G1 P2 P0	1 1 4 4 4	13 4 1 52 16 4		Ensure adjacent nut and bolt are marked with. If test is repeated with the 5 nuts and bolts in right hand block, left hand moves are class 4, and right hand moves class 3.
58 Rigid Air after Bilat. LC.Get (Both)	Repeat assembly in same manner 4 times. Return to Stop Switches	10		1	3 93	11.99	Return bolts to back row and nuts to jigs.
34 P9 Rigid to Jig (R & L)	Commencing with hand on Stop Switch, move one hand to pick up PLUG and place it in adjacent socket. Repeat with remaining 3 plugs. Return hands to Stop Switch.	4G1,2P9 3G1,2P 4P0		1 3	12 33 4 49	6.38	
C Right to J14 (R & L)	Commencing with hand on Stop Switch, move one hand to pick up pre-positioned RESISTOR with pre-angled wires and place the wire ends in the adjacent holes. Repeat with further 4 resistors Return to Stop Switch	4G1,2P9 3G1,2P9 4P0		1 4 1	12 44 4 60	7.74	Have all pre-positioned resistors in adjacent holes, with one empty pair of holes at right hand and when using right hand and at left hand and when using left hand.

WORK PLACE 7

Test No.	Description	Code	Frequency	Mod.Units	Seconds	Notes for Occupational Therapists Performance of these tests by methods other than those prescribed render the time standard invalid.
29 03 Rigid Jumbled (R & L)	Commencing with hand on Stop Switch obtain first nut from bin jumbled with other NUTS, and place on chute cover. Obtain further 4 nuts one at a time and place at work place. Return to Stop Switch	3G3,3P0 3G3,3P0 3P0	1 4 1	9 36 3 48	6.19	Replace nuts.
54 R2 Rigid to Pole (R & L)	Commencing with hand on Stop Switch pick up from bin jumbled with others and PALM one WASHER Pick up and pole 9 further washers, one at a time. Return to Stop Switch with the 10 washers in the hand.	3G3,R2 2G3,R2 3P0	1 9 1	8 63 3 74	9.55	
53 R2 Rigid (R & L)	Commencing with hand on Stop Switch pick up one name PLATE ROTATE it in the fingers through 180 degrees, and replace on table. Pick up 9 further name plates in turn and rotate each through 180° and replace on table. Return hand to Stop Switch.	3G3,R2,1P0 2G3,R2,1P0 3P0	1 9 1	9 40 3 52	6.71	Ensure fingers, not forearm or wrist, are used to replace the plate. Test involves moving red stripe from front to back, and vice versa.

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WORK PLACE 7

Test No.	Description	Code L.	Code R.	Frequency	Mod.Units	Seconds	Notes for Occupational Therapists Performance of these tests by methods other than those prescribed render the time standard invalid.
29	Commencing with hands on Stop Switches pick up one pen top from TOPS jumbled in bin with one hand, and at the same time pick up one PEN from prepositioned dispenser. drop both. UNASSEMBLED, down the chute.	3G3,3P0	(3G)(3P0)	1	9		Ensure drop disposal bin is empty. ..... Leave pens and tops in bin.
G3 M.C.Get with L.C.Get (Both) (R & L)	Pick up 4 more tops and pens in the same manner, one at a time, dropping each down the chute.	3G3,3P0	(3G)(3P0)	4	36		
	Return to Stop Switches	3P0	(3P0)	1	3		
					48	6.19	
31	Commencing with hands on Stop Switches, pick up pen top from jumble with other TOPS in one hand and pre-positioned PEN with other hand, PLACE TOGETHER and drop down chute.	3G3(R2) 3P2,3P0	(3G)(3P0) 1P0	1	12		.....
P2 Rigid Air (Both) (R & L)	Repeat as above 4 times	3G3,(R2) 3P2,(3P0)	3G1,3P0 1P0	4	48		Leave assembled pens and tops in bin.
	Return to Stop Switches	(3P0)	3P0	1	5		
					65	8.13	

WORK PLACE 7

Test No.	Description	Code L.	Code R.	Frequency	Mod.Units	Seconds	Notes for Occupational Therapists Performance of these tests by methods other than those prescribed render the time standard invalid.
37. P9 Edge to line. Both	With one PLATE already held in the right hand, and both hands on Stop Switches, simultaneously pick up the nearest plate with the left hand while placing the plate held in the right hand ALONG the EDGE of the closed chute. Then use the right hand to pick up the next plate while AT THE SAME TIME placing the plate in the left hand along the edge of the closed chute.	(3P0) 2G3 3P5	3P5 (3P0) 2G3	3	57		The object is to test ability to simultaneously perform the G3 with one hand and P5 with the other. ..... Return plates to starting positi
	Place the remaining 4 plates along the edge of the closed chute in the same manner, ensuring that the edge of the plates are in line with the edge of the chute cover.	(3P0) 2G3 3P5	3P5	4	76		
		3P0	(3P0)	1	3		
					76	9.60	

WORK PLACE 7

Test No.	Description	Code L.	Code R.	Frequency	Med.Units	Seconds	Notes for Occupational Therapists Performance of these tests by methods other than those prescribed render the time standard invalid.
28	Commencing with hands on Stop Switches, pick up NUT from jumbled nuts with one hand, and as simultaneously as possible pick up a BOLT jumbled with other bolts with the other hand.						..... Leave nuts and bolts in bin.
	Drop both UNASSEMBLED down chute.	3P0 2G3 3P0	3G3,3P0	1	14		
G3 Bilat. M.C. Get Jumbled Rigid. (Both)	Pick up 4 more nuts and bolts one pair at a time, in the same manner.	3P0 2G3 3P0	3G3,3P0	4	56		
	Return to Stop Switches	3P0	3P0	1	3		
					73	9.80	
39	Commencing with hands on Stop Switches pick up NUT from jumbled nuts with one hand (R) and BOLT (L) from jumbled bolts with the other hand, move to position over chute, PUT TOGETHER, and screw for 2 turns, drop down chute.	3P0 2G3 A2 3P5	3G3,R2,3P0 1P0,1G1,1P0	1 1	19 4		..... Leave assembled nuts and bolts in bin. Close chute.
15 Rigid Air after Bilat. M.C.Get (Both) (R & L)	Pick up 4 more nuts and bolts and screw together similarly, and drop down chute.	1P0 3P0 2G3 A2 3P5 1P0	1P0 3G3,R2,3P0 1P0,1G1,1P0 1P0	1 4 4 4 1	1 76 16 4 3		
	Return to Stop Switches	3P0	3P0	1	123	15.87	

WORK PLACE 7

Test	Description	Code	Frequency	Med.Units	Seconds	Notes for Occupational Therapists Performance of these tests by methods other than those prescribed render the time standard invalid.
66	Commencing with hand on Stop Switch and disposal bin on table, and using only one hand (the hand of choice) pick out one BOLT ASSEMBLED WITH NUT and place on table beside box.	E2,D3	1	5		Tests 66,67,68,69 and 70 are all testing for D3, under similar conditions. It is rarely necessary to repeat them beyond the supply of components already in the drop-delivery bin. Place low side of drop delivery bin on side of the hand to be used. ..... Leave the assembled nuts and bolts on table until end of test series.
		3G3,3P0 E2 D3	4	36		
	Repeat with a further 4 bolts assembled with nuts.	3G3,3P0	1	9		
	Return hand to Stop Switch	3P0	1	3		
D3 with E2 Shape				53	6.84	
67	Commencing with hand on Stop Switch and disposal bin on table, and using only one hand (the hand of choice) pick out 1 UNASSEMBLED BOLT, and place it in the appropriate supply bin.	E2,D3	1	5		Ensure bin of bolts is the second bin from the left, if right hand is to be used, and second bin from the right if left hand is to be used. .....
		3G3,4P0 E2 D3	1	10		
		4G3,4P0 E2 D3	3	33		
	Repeat with a further 4 bolts.	3G3,3P0	1	10		
D3 with E2 Shape	Return to Stop Switch	4P0	1	4		
				62	8.00	

WORK PLACE 7

Test No.	Description	Code	Frequency	Mod. Units	Seconds	Notes for Occupational Therapists: Performance of these tests by methods other than those prescribed render the time standard invalid.
68	Commencing with hand on Stop Switch, and disposal bin on table, and using only one hand (the hand of choice) pick out an UNASSEMBLED NUT, and place it in the appropriate bin with other nuts.	E2,D3	1	5		Ensure bin for nuts is the second bin from right if right hand is to be used, and second bin from left if left hand is to be used.
		3G3,3P0 (R1,L1)	4	16		
	Repeat with 4 more nuts.	3G3,3P0	1	9		.....
D3 with E2 Shape	Return hand to Stop Switch	3P0	1	3		
				53	6.84	
69	Commencing with hand on Stop Switch, and disposal bin on table, and using only one hand (the hand of choice) pick out an UNASSEMBLED PEN and place it in the top of the pen dispenser, with the nib at the correct end.	E2,D3	1	5		Ensure that the pen dispenser is on the right hand end of the bins if the right hand is used, and on the left hand end of the bins if the left hand is used.
		3G3,(R2,L2),3P2,E2,D3	4	64		
		3G3,3P2	1	11		.....
	Repeat with a further 4 unassembled pens.					
D3 with E2 Shape	Return hand to Stop Switch	3P0	1	3		
				83	10.70	

WORK PLACE 7

Test No.	Description	Code	Frequency	Mod. Units	Seconds	Notes for Occupational Therapists: Performance of these tests by methods other than those prescribed render the time standard invalid.
70	Commencing with hand on Stop Switch, and disposal bin on table, and using one hand (the hand of choice) pick out one UNASSEMBLED PEN TOP and put it in the appropriate supply bin with other pen tops.	E2,D3	1	5		Ensure bin for pen tops is first bin from left if right hand is used, and first bin from right if left hand is used.
		3G3,4P0 (E2)(D3)	1	10		.....
		4G3,4P0 (E2)(D3)	3	39		Disassemble pen and tops remaining in drop-delivery bin and replace in appropriate supply bins.
	Repeat with a further 4 pen tops.	4G3,4P0	1	11		
D3 with E2 Shape	Return hand to Stop Switch	4P0	1	4		
				63	8.13	
62 D3 Noise	Commencing with hand (the hand of choice) resting on the chute top, as soon as the timer is heard move the hand to the Stop Switch, to switch off the timer.	D3,3P0	1	6	0.77	Start timer from the console, while the operator's hand is resting on the chute top.

On completion of the test series the best performance of each test, expressed as a percentage of standard time, is entered in the appropriate column of the total record (iv) of the person tested.

The percentage of standard time achieved by the patient on all repetitive production jobs performed in the occupational therapy department during the week preceding the test, (if this work was done at that time) during the week the test was being administered, and the week following the test are recorded in the appropriate column of the total record, against the motions which the job contained.

It is essential that the motions within these jobs are identified by the same Pre-determined Motion-Time Standards system as that by which the test series is described. In this manual MOMATTS is the Pre-determined Motion-Time Standards system used.

Comparison of performance in the workshop and the test series, motion by motion, will determine whether any failure to achieve standard time in the workshop is due to insufficient strength or co-ordination on the one hand, or to insufficient mental or physical stamina on the other.

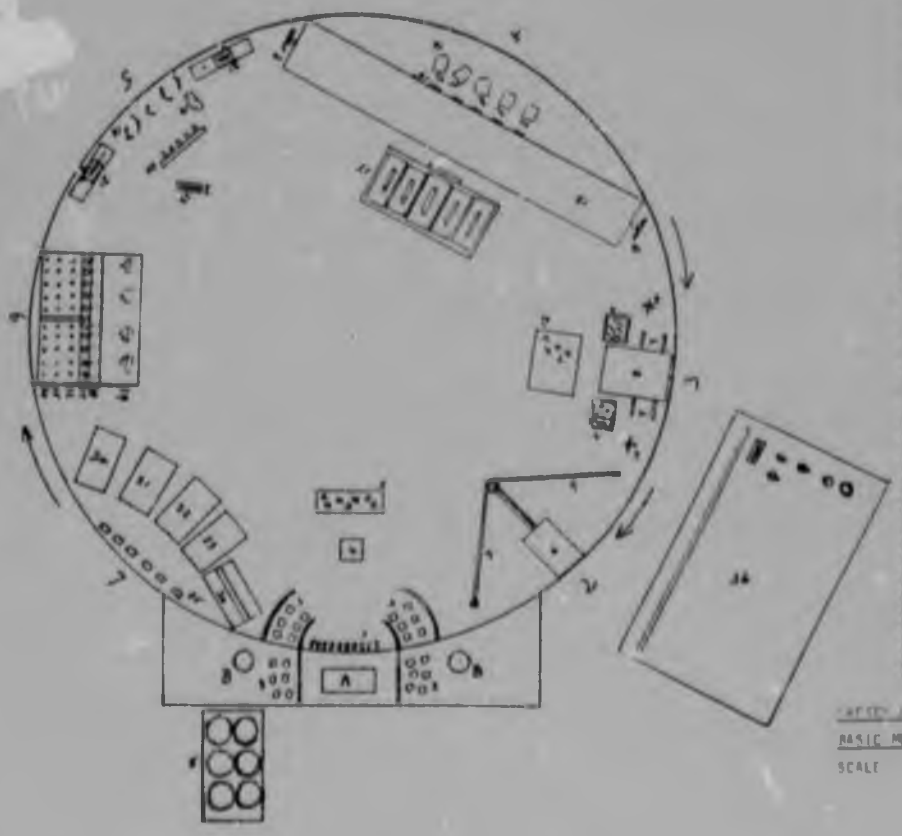
References.

(i) "Introduction to Work Study" - Revised Edition 1970. International Labour Office.

(ii) "PI : Control with MODAPTS" The Australian Association for Pre-determined Time Standard and Research 19[illegible].

(iii) Basic Motions of Work Test - Test Record Sheet

(iv) Basic Motions of Work Test - Total Record Sheet.



A. Chute
B. Stop switch
1. Coins
2. Nuts on platform (aside)
3. Medium sized components
4. Large size component dispenser.
5. Bottles on stand.
6. Drill stand with nuts & handles.
7. Horizontal handles.
8. Pad of paper.
9. Position for ink pad.
10. Position for plastic bags.
11. Paper clips.
12. Board & drawing pins (aside)
13. Shelves.
14. "Chuck" handles.
15. Magnets.
16. Paper & metal plates
17. Tray of weights.
18. Block lines to be covered.
19. Stack of leather pieces(aside)
20. Pigs for cord.
21. Crank
23. Shuttle (aside)
24. Nuts
25 - 26 Jig for bolt
27. Bushes
28. Holes for resistors.
29. 3 - pin plugs.
30. Pen tops.
31. Bolts
32. Washers.
33. Nuts.
34. Pen dispenser.
35. Name plates.
36. Console.

[illegible] LAYOUT OF WORK PLACE

BASIC MOTIONS OF WORK TEST

SCALE 1" = 1'

REFERENCE LIST

AUSTRALIAN ASSOCIATION FOR PRE-DETERMINED TIME STANDARDS AND RESEARCH. (1966). PI: Control with Modapts. Sydney: AAPTS & R.

ACKER, M. and THOMPSON, D.A. (1960). Development of the Pre-vocational Unit: Stanford Rehabilitation Service. Archives of Physical Medicine and Rehabilitation. 41(5):195-198.

BARNES, R.M. (1958). Motion and Time Study, 4th ed. New York: John Wiley and Sons.

_____. (1968). Motion and Time Study. 6th ed. New York: John Wiley and Sons.

BIRDSONG, J.H. and CHYATTE, S.B. (1970). Further Medical Applications of Methods-Time Measurement. Journal of Methods-Time Measurement. 15(2):19-27.

BIRDSONG, J.H. (1971). MTM and [illegible] Combination for Potential Profits. Proceedings 19th [illegible] Conference USA/Canada, MTM Association, New York. New York: MTM Association.

BIRN, S.A., CROSSAN, R.M. and EASTWOOD R.W. (1961). The Measurement and Control of Office Costs. New York: McGraw-Hill.

BOOTLE, E.C. (1971). Graded Movement Assessment Based on a Predetermined Time System. Australian Occupational Therapy Journal. 18(4):7-12.

_____. (1976). Predictive Vocational Assessment and/or Therapeutic Evaluation. Australian Occupational Therapy Journal. 23(4): 130-144.

BRICKEY, M. (1981). MTM in a Sheltered Workshop. The Journal of Methods-Time Measurement. 8(3):2-7.

BRITISH STANDARDS INSTITUTE. (1969). Glossary of Terms used in Work Study. London: BSI.

CEMACH, H.P. (1969). Work Study in the Office. London: Maclaren and Son.

CHYATTE, S.B. and BIRDSONG, J.H. (1968). Assessment of Brain Damage with MTM. Journal of Methods-Time Measurement. 13(2):15-17.

_____. (1972). Methods-Time Measurement in Assessment of Motor Performance. Archives of Physical Medicine and Rehabilitation. 53(1):38-72.

CROSSAN, R.M. and NANCE, H.W. (1962). Master Standard Data. New York: McGraw-Hill.

_____. (1972). Master Standard Data. 2nd ed. New York: McGraw-Hill.

COMMONWEALTH DEPARTMENT OF SOCIAL SECURITY. (c.1976). A Manual of Instruction for Predictive Vocational Assessment and/or Therapeutic Evaluation. Hornsby: CDSS.

DOWNES, B. (1970). Assessment Centre - Gladesville Hospital. Australian Occupational Therapy Journal. 17(1):15-17.

DREWES, D.W. (1961). Development and Validation of Synthetic Dexterity Tests Based on Elemental Motion Analysis. Journal of Applied Psychology. 45(3):179-185.

EVANS, F. (1980). Application of MTM. Cheshire: Methods-Time Measurement Association.

FARRELL, J.M. (1958). Occupational Therapy Assessment by Repetitive Process Work. Australian Occupational Therapy Journal. 5(2): 40-43.

_____. (1966). The Value of Work Study in Occupational Therapy. Proceedings Fourth International Congress, World Federation of Occupational Therapists, London. Amsterdam: Exerpta Medica.

_____. (1969). Poor Work Habits - a Major but Treatable Disability. Proceedings National Rehabilitation Conference, Australian Council for the Rehabilitation of the Disabled, Sydney. Sydney: ACROD.

_____. (1971). Activity Programmes in the Preparation of the Cerebral Palsied for Employment. Minutes Annual General Meeting, National Cerebral Palsy Division, National Council for the Care of Cripples in SA, 17-18 September, Pretoria. Johannesburg: NCCCSA.

_____. (1972a). Manual of Instruction, Basic Motions of Work Test. Melbourne: Commonwealth Rehabilitation Service.

_____. (1972b). The Role of Occupational Therapy with particular regard to Vocational Resettlement. Proceedings International Council for Rehabilitation of the Disabled, Sydney. New York: ICRD.

_____. (1973). Occupational Therapy Research Project, Basic Motions of Work. Melbourne: Department of Social Security.

_____. (1974). The Combined Use of Tests and Measured Workshop Performance to Determine Potential of the Disabled to Succeed in Repetitive Process Work. Proceedings Sixth International Conference, World Federation of Occupational Therapists, Vancouver. Vancouver: WFOT.

_____. (1975). Productivity - Maximum Use of Potential through Good Work Habits and Appropriate Work. Proceedings Annual General Meeting, Division for the Mentally Retarded, South African National Council for Mental Health, Johannesburg. Johannesburg: SANCMH.

GILBRETH, F.B. and GILBRETH-CAREY, E. (1949). Cheaper by the Dozen. Surrey: William Heinemann.

GRANT, G.W.B., MOORES, B. and WHELAN, E. (1975). Applications of Methods-Time Measurement in Training Centres for the Mentally Handicapped. The Journal of Methods-Time Measurement. 2(4):23-30.

GUÉRIN, B. (1975). The Use of MTM in Helping Young Disabled People. The Journal of Methods-Time Measurement. 2(1):10-11.

HANCOCK, W.M. and FOULKE, J.A. (1963). Learning Curve Research in Short Cycle Operations. Methods-Time Measurement Research Studies Report 112. Michigan: MTM Association for Standards and Research.

HASSELQUIST, O. (1972). The MTM Method - with Special Reference to the Physically Handicapped. Scandinavian Journal of Rehabilitation Medicine. 4.157-164.

HEYDE, G.C., HOSKINSON, L.A., PULLEN, I.D. and SHRUBSALL, D.C.H. (1969). Office MODAPTS. Sydney: Australian Association for Predetermined Time Standards and Research.

HEYDE, G.C. (1974a). Transit MODAPTS. Sydney: Australian Association for Pre-determined Time Standards and Research.

_____. (1974b). Work Ability with MODAPTS. Sydney: Australian Association for Pre-determined Time Standards and Research.

_____. (1976). The Sensible Taskmaster. Sydney: Heyde Dynamics.

_____. (1978). The Sensible Taskmaster, 2nd ed. Sydney: Heyde Dynamics.

_____. (1981). MODAPTS Plus. Sydney: Heyde Dynamics.

_____. (1983). The Concepts and History of "MODAPTS Plus". Oakland: Management Research Frontiers Inc.

INTERNATIONAL LABOUR ORGANISATION (ILO). (1957). Introduction to Work Study. Geneva: ILO.

_____. (1969). Introduction to Work Study, 2nd ed. Geneva: ILO.

_____. (1979). Introduction to Work Study, 3rd ed. Geneva: ILO.

INTERNATIONAL MTM DIRECTORATE. (No date given). Data Cards. Warrington: MTM Directorate.

KARGER, D.W. and BAYHA, F.H. (1966). Engineered Work Measurement, 2nd ed. New York: Industrial Press.

KARGER, D.W. and HANCOCK, W.M. (1982). Advanced Work Measurement. New York: Industrial Press.

KRICK, E.V. (1962). Methods Engineering. New York: John Wiley and Sons.

LONGMUIR, D.O. (1958). The Pre-Vocational Treatment and Assessment of the Disabled for Training or Employment. Proceedings First Pan-Pacific Rehabilitation Conference, Sydney. Sydney: Australian Advisory Council for the Physically Handicapped.

MAYNARD, H.B., STEGEMERTON, G.J. and SCHWAB, J.L. (1948). Methods-Time Measurement. New York: McGraw-Hill.

METHODS-TIME MEASUREMENT ASSOCIATION LIMITED. (1955). Methods-Time Measurement Application Data in TMU. Warrington: MTM Association.

MINK, J.A. (1975). MTM and the Disabled. The Journal of Methods-Time Measurement. 2(2):22-30.

MULLY, J.H. and FARRELL, J.M. (1958). Bench Motion Test. Unpublished notes, Maryport Rehabilitation Centre, Commonwealth Department of Social Services, Melbourne.

PEAT, MARWICK, MITCHELL AND COMPANY (PMM & Co.). (1969). PI: Planned Methods Improvement. Melbourne: PMM & Co.

ROBB, J. (1975). Returning the Patient to Work. An Occupational Therapy Point of View. Australian Occupational Therapy Journal. 22(1):37-40.

ROYAL MELBOURNE INSTITUTE OF TECHNOLOGY. (1963). Master Standard Data (Card). Melbourne: RMIT.

SHERVINGTON, J. (1974). Process Work as Occupational Therapy. Postgraduate Diploma in Administration thesis. Western Australian Institute of Technology, Perth.

SIMMS, L. (1975). Value of the Basic Motions of Work Test in Assessment and Treatment of Patients suffering from Trauma. Proceedings Eighth Federal Conference of the Australian Association of Occupational Therapists, Melbourne. Melbourne: AAOT.

SMITH, P.J., ARMSTRONG, T.J. and LIZZA, G.D. (1982). IE can play a Crucial Role in Enabling Handicapped Employees to Work Safely, Productively. Industrial Engineering. 14(4):98-105.

SPILLING, O.R. (1970). Job Design for Handicapped Workers. Trondheim: Norwegian Institute of Technology.

STEYN, A.G.W, SMIT, C.F. and DU TOIT, S.H.C. (1984). Moderne Statistiek vir die Praktyk. Pretoria: J.L. van Schaik.

THOMPSON, D.A. and PAUHLE, G.P. (1963). Development of an Elemental Motion Analysis for Man-Work Matching in Vocational Rehabilitation and Placement. Archives of Physical Medicine and Rehabilitation. 44(10):545-548.

TODD, H.C., CHYATTE, S.B. and DECKER, R.S. (1979). Pre-determined Time Standards: Their Application in Workshop Settings. Archives of Physical Medicine and Rehabilitation. 60(5):222-226.

TRICKETT, S. and COLLINS, R.J. (1975). The Use of Repetitive Work as a Treatment and Work Preparation Media. Proceedings Eighth Federal Conference of the Australian Association of Occupational Therapists, Melbourne. Melbourne: AAOT.

WILCOCK, R. (1980). Some New Dimensions on Manual Skills Assessment and Training for Industry. The Journal of Methods-Time Measurement. 7(4):20-27.

WILCOCK, R. and MINK, J.A. (1982). The International MTM Directorate Rehabilitation Project - A Study of Man and Work. Journal of Methods-Time Measurement. 9(2):2-11.

ZANDIN, K.B. (1980). MOST Work Measurement Systems. New York and Basel: Marcel Dekker.

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