DESIGN FOR MANUAL ASSEMBLY - SUMMARY DATA

ASSEMBLY NAME - CURRENT SUB

CUMULATIVE DATA FOR FINAL ASSEMBLY AND SUB-ASSEMBLIES

Assembly efficiency (percent)	5
Total assembly time (seconds)	629
Total labor cost (cents)	262
Number of different parts or sub-assemblies handled	29
Number of parts or sub-assemblies handled (incl. repeats)	67
Total number of operations (incl. repeats)	103
Theoretical minimum number of parts or pre-assembled items	11
Labor rate (dollars/hour)	15

DESIGN FOR MANUAL ASSEMBLY SUMMARY OF RESULTS

ASSEMBLY NAME – CURRENT [illegible]

[illegible] Time	[illegible]29
Main Assembly	252

Part	Assembly Operation Description	No. of items	Theo. min. parts	Assembly Operation Time, sec	Assembly Op'n cost cents	Manuf. Process	Tool/Die Cost, k$	Part cost cents
[illegible]	place in workfixture	1	[illegible]	4.0	1.7	-	-	-
BASEPLATE	[illegible]	1	1	4.0	1.7			
[illegible] BRACKET	add	1	0	3.8	1.6			
FUSE BRACKET	add	1	0	3.5	1.4			
[illegible]	add	1	0	4.0	1.7			
FEET	add	4	1	13.2	5.5			
RIVETS	add	7	0	26.3	10.9			
rivet, stake etc.	standard operation	1	-	7.0	2.9	-	-	-
[illegible]	add	1	[illegible]	3.5	1.4			
PLASTIC NUT	add	1	0	2.9	1.2			
[illegible] fastening	standard operation	1	-	5.0	2.1	-	-	-
[illegible]	add & press fit	1		6.9	2.9	-	-	-
[illegible]	place in workfixture	1	1	3.5	1.4			
RETAINER	add & snap fit	1	0	4.0	1.6			
reorientation	reorient or adjust	1	-	9.0	3.8	-	-	-
TOOTHED WASHER	add	1	0	3.2	1.3			
[illegible]	add	1	0	3.3	1.4			
[illegible]	add	1	0	3.2	1.3			
[illegible] fastening	standard operation	1	-	5.0	2.1	-	-	-
[illegible] thermocompound	special operation	1	-	6.0	2.5	-	-	-
[illegible]	add	1	1	3.9	1.6			
CONTACT	add	1	-	3.5	1.4	-	-	-

DESIGN FOR MANUAL ASSEMBLY SUMMARY OF RESULTS

ASSEMBLY NAME - CURRENT SUB

1st Level Subs / 2nd Level Subs / 3rd Level Subs	Assembly Operation Description	No. of Assembly Operations	No. of Different Parts	Assembly Operation Time, sec	Assembly Cost, cents	Manuf. Process Loss	Manuf. Die Cost, $	Partial Cost cents
STATOR	place in work-fixture	4	0	37.0	15.4			
THERMAL PARTITION	add	1	1	3.5	1.4			
[illegible]	add & hold down	4	4	46.9	19.5			
Inlet, intake etc.	standard operation	1	-	7.0	2.9	-	-	-
Reorientation	reorient or adjust	1	-	9.0	3.8	-	-	-
INSERT CAP	add & press fit	1	0	6.8	2.8			
WIRES	add & hold down	4	0	32.8	13.6			
WIRE TIE	add	1	0	3.6	1.5			
Tie wrap	special operation	1	-	9.0	3.8	-	-	-
CAPACITORS	add & hold down	2	0	16.1	5.7			
Soldering process	standard operation	8	-	64.0	26.7	-	-	-
Soldering process	standard operation	3	-	24.0	10.0	-	-	-
CAP	add & snap fit	1	1	4.0	1.6	-	-	
[illegible]	add	2	0	6.5	2.8			
RESISTOR NUT	add	1	0	3.2	1.3			
[illegible] fastening	standard operation	2	-	10.0	4.2	-	-	-
TRANSFORMER	add	1	1	3.5	1.4			
[illegible]entation	reorient or adjust	1	-	9.0	3.8	-	-	-
TRANSFORMER SCREWS	add & screw fasten	2	0	15.6	6.5			
THERMAL INSULATOR	add & snap fit	1	0	4.0	1.6			
INSULATOR SCREW	add & screw fasten	1	0	7.8	3.3			
[illegible]entation	reorient or adjust	1	-	9.0	3.8	-	-	-

DESIGN FOR MANUAL ASSEMBLY SUMMARY OF RESULTS

ASSEMBLY NAME - CURRENT SUP

[illegible] Level Sub [illegible] / ---2nd Level Sub--- / ---3rd Level Subs---		Assembly Operation Description	No. of Repeats	Theo. min. parts	Assembly Operation Time, sec	Assembly Op'n cost cents	Manuf. Process	Tool/Die Cost, $	Part(s) Cost cents
[illegible]ING PROCESS		standard operation	5	-	40.0	16.7	-	-	-
[illegible]TION POCKET 1		add	1	0	3.3	1.4			
[illegible]TION POCKET 2		add	1	0	3.3	1.4			
[illegible]		add	2	0	7.7	3.2			
[illegible]ater tightening		special operation	2	-	24.0	10.0	-	-	-
[illegible]	44	add	1	-	3.5	1.4	-	-	-
HOUSING		place in workfixture	1	1	3.5	1.4			
ESCUTCHEON		add & press fit	1	0	4.5	1.9			
Reorientation		reorient or adjust	1	-	9.0	3.8	-	-	-
INSERT CAPS		add & press fit	4	0	27.2	11.3			
[illegible]ntation		reorient or adjust	1	-	9.0	3.8	-	-	-
[illegible]ING SCREWS		add	4	0	13.2	5.5			
[illegible] fastening		standard operation	4	-	20.0	8.3	-	-	-

DESIGN FOR MANUAL ASSEMBLY RESPONSES

ASSEMBLY NAME - CURRENT SUC

PART NAME — MINIMUM PART COUNT: N one, R elative ... A ... unrestricted — NOT EASY TO GRASP AND MANIPULATE

Length; Diam. or width; Thick-ness; Easy to grasp and manipulate; Alpha symm.; View clear; Easy to align & posit'n; Low resistance to insertion; Holding down; Nest or tangle (Severe N or T); Flexible; Slippery; Stick; Heavy; Sharp or fragile; Other: stand. tools, Tweezers, Special tools, Two hands; Magnif.

...PLATE	[illegible]	2	105	N	Y	D	D	[illegible]	[illegible]	[illegible]	Y	N		N	N	N	N	N	N	N	N	N	N	N	N	N
...COVER	[illegible]	[illegible]	[illegible]	N	[illegible]	[illegible]	[illegible]	Y	Y	Y	Y	N	D	N	N	N	N	N	N	N	N	N	N	N	N	N
...TIC NUT	-	14	5	P	[illegible]	[illegible]	A	Y	Y	Y		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
...fastening	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
STAPLE	15	15	30	N	Y	D	D	Y	Y	Y	N	-	D	N	N	N	N	N	N	N	N	N	N	N	K	N
...orientation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
...WASHER	-	7	.5	P	Y	C	A	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
...EW	-	6.5	11.5	P	Y	D	A	Y	[illegible]	[illegible]	[illegible]	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N
...GROUND	-	7	2	P	Y	C	A	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
...fastening	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
...thermocompound	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
...A	14	.2	21	N	Y	[illegible]	[illegible]	Y	Y	Y	Y	N	D	N	N	N	N	N	N	N	N	N	N	N	N	N
...STAT	50	40	55	N	[illegible]	D	D	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
...EW	-	6.5	11	P	Y	D	A	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
...STOR NUT	-	6.5	2	P	Y	C	A	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
...fastening	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
...ANSFORMER	60	50	80	N	Y	D	D	Y	Y	Y	Y	N	D	N	N	N	N	N	N	N	N	N	N	N	N	N
...orientation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
...ANSFORMER SCREWS	-	9	13	P	Y	D	A	Y	Y	Y	Y	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N
...MAL INSULATOR	57	4	78	N	Y	D	D	Y	Y	Y	Y	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N
...LATOR SCREW	-	8	11	P	Y	D	A	Y	Y	Y	Y	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N
...rientation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
...design process	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
...LATION POCKET 1	22.5	12.5	42	N	Y	D	C	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
...ATION POCKET 2	17	7.5	27	N	Y	D	C	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
...	5	1.5	[illegible]	N	Y	D	[illegible]	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
...after tightening	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
...	125	75	[illegible]	N	Y	D	D	[illegible]	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
...entation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
...ING SCREWS	-	6	11	P	Y	D	A	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
...w fastening	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

DESIGN FOR MANUAL ASSEMBLY RESPONSES

ASSEMBLY NAME - CURRENT SUC

SUB-ASSEMBLY NAME - $BASE PLATE

PART NAME	Width	Diam. or thickness	Length	Rotat'l or Non-rotat'l	Alpha	Beta	View	Easy to grasp and manipulate	Easy to align & position	Holding down	Low resistance to insertion	Relative movement / Different material / Access unrestricted	Nest or tangle: Severe	Nest or tangle	Flexible	Sharp or fragile: Slippery	Sharp or fragile	Heavy	Other stand. tools: Tweezers	Other stand. tools	Special tools	Magnify	Two persons / Two hands	[illegible]	[illegible]
[illegible]ATE	120	2	185	N	[illegible]	D	D	Y	Y	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N
[illegible] BRACKET	10	7	10	N	Y	D	D	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
[illegible] BRACKET	25	8	73	N	Y	D	D	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
[illegible]	10	1	30	N	Y	D	D	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
[illegible]	-	13	6	R	Y	D	A	Y	Y	Y	Y	N	D	N	N	N	N	N	N	N	N	N	N	N	N	N
[illegible]	-	5.5	[illegible]	R	Y	D	A	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
[illegible], stale etc.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

DESIGN FOR MANUAL ASSEMBLY RESPONSES

ASSEMBLY NAME - CURRENT SUC

SUB-ASSEMBLY NAME - [illegible]

MINIMUM PART COUNT, ... Assembly ... to insertion ... Easy to ... pos'n ... down

--NOT EASY TO GRASP AND MANIPULATE--

Width ... Diam. or ... thick- ... Alpha ... clear ... Holding

Nest or tangle ... Flexible ... Severe ... Slippery ... Sharp or fragile ... Other ... Tweezers ... Special tools ... Magnify ... Two persons ... Two hands ... Heavy ... Sticky

[illegible]	9	5	1000	N	Y	D	D	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	Y	[illegible]	[illegible]	[illegible]
[illegible]	15	15	20	N	Y	D	D	Y	Y	Y	Y	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N

DESIGN FOR MANUAL ASSEMBLY RESPONSES

ASSEMBLY NAME - CURRENT SUB

SUB-ASSEMBLY NAME - $CONTACT

NO. PART NAME — MINIMUM PART COUNT; N = no, Relative movement; Different material; Assembly; Access unrestricted; Width; Length; Diam. or thickness; Easy to grasp and manipulate; Alpha symm.; Beta symm.; Vision unrestricted; Easy to align & position; Low resistance to insertion; Holding down; --NOT EASY TO GRASP AND MANIPULATE--: Nest or tangle; Severe N or T; Flexible; Sticky; Heavy; Slippery; Sharp or fragile; Other; Tweezers; Special tools; Two hands; Magnify

RIVETS	-	5.5	5	R	Y	D	A	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N
THERMAL PARTITION	70	50	90	N	Y	D	D	Y	Y	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N
CONTACTS	25	5	30	N	N	D	D	Y	N	N	Y	Y	D	Y	N	N	N	N	N	N	N	N	N	N	N
Reset, state etc.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Reorientation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INSERT CAP	-	12	7	R	Y	D	A	Y	Y	Y	N	-	N	N	N	N	N	N	N	N	N	N	N	N	N
WIPES	-	1.2	70	R	Y	C	A	Y	Y	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N
WIRE TIE	5	1.5	100	N	Y	D	A	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N
tie wrap	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CAPACITORS	5	2	20	N	N	C	D	Y	Y	Y	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N
Soldering process	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soldering process	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BPCB	50	15	75	N	Y	D	D	Y	Y	Y	Y	-	N	N	N	N	N	N	N	N	N	N	N	N	N

DESIGN FOR MANUAL ASSEMBLY RESPONSES

ASSEMBLY NAME - CURRENT SUC

SUB-ASSEMBLY NAME - $HOUSING

SUB OR PART NAME	Width	Length	Diam. or thickness		Easy to grasp and manipulate	Beta-symm.	Alpha s.m.	View clear	Easy to		Low resistance to insertion	Holding down	Nest or tangle	Flexible		Slippery	Sharp or fragile	Heavy	Other		Tweezers	tools		Magnif.		
HOUSING	130	75	195	N	[illegible]	[illegible]	[illegible]	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
ESCUTCHEON	36	.5	175	N	Y	D	D	Y	Y	Y	Y	-	D	N	N	N	N	N	N	N	N	N	N	N	N	N	N
[illegible]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INSERT CAPS	-	12	6	P	Y	D	A	Y	Y	Y	N	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

DESIGN FOR MANUAL ASSEMBLY SUMMARY DATA

ASSEMBLY NAME - SUC PLASTIC

CUMULATIVE DATA FOR FINAL ASSEMBLY AND SUB-ASSEMBLIES

Assembly efficiency (percent)	20
Total assembly time (seconds)	120
Total labor cost (cents)	50
Number of different parts or sub-assemblies handled	14
Number of parts and sub-assemblies handled (inc.repeats)	17
Total number of operations (inc.repeats)	23
Theoretical minimum number of parts or pre-assembled items	8
Labor rate (dollars/hour)	15

DESIGN FOR MANUAL ASSEMBLY SUMMARY OF RESULTS

ASSEMBLY NAME - SUC PLASTIC

Total Assembly Time 120	Assembly Operation Description	No. of repeats	Figs. min. parts	Assembly Operation Time, sec	Assembly Op'n cost cents	Manuf. Process	Tool/ Die Cost,k$	Part(s) Cost cents
Time for Main Assembly 89								
BASE PLATE 19	place in workfixture	1	1	4.0	1.7	-	-	-
BASEPLATE	place in workfixture	1	1	4.0	1.7			
FEET	add & press fit	4	1	15.2	6.3			
FUSE HOLDER	add & press fit	1	1	4.0	1.6			
CABLE	add & press fit	1	1	6.9	2.9			
CONTACT PCB	add & snap fit	1	1	4.0	1.6	-	-	
MAIN PPCB	add & snap fit	1	1	4.0	1.6	-	-	
plug flex conn.	special operation	1	-	8.0	3.3	-	-	-
HEATSINK	add	1	1	3.5	1.4			
TRANSISTOR CLIP	add & snap fit	1	0	4.1	1.7			
RUBBER PAD	add	1	0	2.6	1.1			
TRANSFORMER	add & snap fit	1	1	4.0	1.6			
plug in sockets	special operation	5	-	40.0	16.7	-	-	-
HOUSING 12	add & snap fit	1	-	4.0	1.6	-	-	-
HOUSING	place in workfixture	1	1	4.4	1.9			
ESCUTCHEON	add & press fit	1	0	7.5	3.1			

DESIGN FOR MANUAL ASSEMBLY WORKSHEET

ASSEMBLY NAME - SUC PLASTIC

Part or Sub or Oper'n No.	Manual Handling Code		Manual Insertion Code		Operation Time RP*(TH+TI)		Figures for Min. Parts	MANUAL-BENCH ASSEMBLY
	No. of Repeats	Handling Time per Part (s)	Insertion Time per Part (s)		Operation Cost-cents TA*OP			Name of Assembly- SUC PLASTIC
ID	RP	HC	TH	IC	TI	TA	CA	NM	Name of Part, Sub-assembly or Operation
1	1	33	2.51	00	1.5	4.0	1.7	1	$BASE PLATE
2	1	30	1.95	30	2.0	4.0	1.6	1	FUSE HOLDER
3	1	30	1.95	31	5.0	6.9	2.9	1	CABLE
4	1	30	1.95	30	2.0	4.0	1.6	1	$CONTACT PCB
5	1	30	1.95	30	2.0	4.0	1.6	1	$MAIN PPCB
6	1	-	-	99*	8.0	8.0	3.3	-	plug flex conn.
7	1	30	1.95	00	1.5	3.5	1.4	1	HEATSINK
8	1	21	2.10	30	2.0	4.1	1.7	0	TRANSISTOR CLIP
9	1	00	1.13	00	1.5	2.6	1.1	0	RUBBER PAD
10	1	30	1.95	30	2.0	4.0	1.6	1	TRANSFORMER
11	5	-	-	99*	8.0	40.0	16.7	-	plug in sockets
12	1	30	1.95	30	2.0	4.0	1.6	1	$HOUSING

* Code number does not represent original data base value

DESIGN FOR MANUAL ASSEMBLY RESPONSES

ASSEMBLY NAME - SUC PLASTIC

	SUB OR PART NAME	Width	Diam. or thick-ness	Length	(R)otat'l or (N)on-rotat'l	Easy to grasp and manipulate	Alpha symm.	Beta-symm.	View clear	Access unrestricted	Easy to align & pos'n	Low resistance to insertion	Holding down	MINIMUM PART COUNT: (N)one, (R)elative movement (D)ifferent material, (A)ssembly	NOT EASY TO GRASP AND MANIPULATE: Nest or tangle	Sev-ere N or T	Flexible	Stick	Slippery	Heavy	Sharp or fragile	Twee-zers	Other stand. tools	Spec-ial tools	Magnify	Two hands	Two persons
1	$BASE PLATE	120	2	185	N	Y	D	D	Y	Y	Y	Y	N	-	N	N	N	N	N	N	N	N	N	N	N	N	N
2	FUSE HOLDER	13	13	50	N	Y	D	D	Y	Y	Y	Y	-	D	N	N	N	N	N	N	N	N	N	N	N	N	N
3	CABLE	15	15	30	N	Y	D	D	Y	Y	Y	N	-	D	N	N	N	N	N	N	N	N	N	N	N	N	N
4	$CONTACT PCB	40	20	50	N	Y	D	D	Y	Y	Y	Y	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N
5	$MAIN PPCB	50	5	200	N	Y	D	D	Y	Y	Y	Y	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N
6	plug flex conn.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	HEATSINK	40	20	50	N	Y	D	D	Y	Y	Y	Y	N	D	N	N	N	N	N	N	N	N	N	N	N	N	N
8	TRANSISTOR CLIP	12	3.5	14	N	Y	D	C	Y	Y	Y	Y	-	D	N	N	N	N	N	N	N	N	N	N	N	N	N
9	RUBBER PAD	50	5	50	N	Y	B	C	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
10	TRANSFORMER	60	50	80	N	Y	D	D	Y	Y	Y	Y	-	D	N	N	N	N	N	N	N	N	N	N	N	N	N
11	plug in sockets	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	$HOUSING	125	75	190	N	Y	D	D	Y	Y	Y	Y	-	A	N	N	N	N	N	N	N	N	N	N	N	N	N

DESIGN FOR MANUAL ASSEMBLY SUMMARY DATA

ASSEMBLY NAME = SUC PLASTIC

SUB-ASSEMBLY NAME = $BASE PLATE

Assembly efficiency (percent)	21
Total assembly time (seconds)	19
Total labor cost (cents)	9
Number of different parts or sub-assemblies	2
Number of parts and sub-assemblies (inc.repeats)	5
Total number of operations (inc.repeats)	5
Theoretical minimum number of parts or pre-assembled items	2
Labor rate (dollars/hour)	15

DESIGN FOR MANUAL ASSEMBLY WORKSHEET

ASSEMBLY NAME SUB PLASTIC

SUB-ASSEMBLY NAME - $BASE PLATE

Part or Sub or Oper'n No.	Manual Handling Code No.	Manual Insertion Code Time per Part (s)	Operation Time RP*(TH+TI) Operation Cost-cents TA*OP			Figures for Mic. Parts	MANUAL-BENCH ASSEMBLY Name of Assembly- $BASE PLATE
ID Repeat	RP	HC	TH	IC	TI	TA	CA	NM	Name of Part, Sub-assembly or Operation
1	1	37	2.51	00	1.5	4.0	1.7	1	BASEPLATE
2	4	11	1.80	30	2.0	15.2	6.3	1	FEET

DESIGN FOR MANUAL ASSEMBLY RESPONSES

ASSEMBLY NAME - SUC PLASTIC

SUB-ASSEMBLY NAME - $BASE PLATE

SUB OR PART NAME	Width	Diam. or thickness	Length	(R)otat'l or (N)on-rotat'l	Alpha symm.	Beta-symm.	MINIMUM PART COUNT: (N)one, (R)elative movement, (D)ifferent material, (A)ssembly	View clear	Easy to align & pos'n	Low resistance to insertion	Holding down	Access unrestricted	Easy to grasp and manipulate	Nest or tangle	Severe N or T	Flexible	Stick	Slippery	Heavy	Sharp or fragile	Tweezers	Other stand. tools	Special tools	Magnify	Two hands	Two persons
BASEPLATE	120	2	185	N	Y	D	D	Y	Y	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N
FEET	-	13	6	R	Y	D	A	Y	Y	Y	Y	-	D	N	N	N	N	N	N	N	N	N	N	N	N	N

DESIGN FOR MANUAL ASSEMBLY SUMMARY DATA

ASSEMBLY NAME - SUB [PLASTIC]

SUB-ASSEMBLY NAME - $HOUSING$

Assembly efficiency (parts)	25
Total assembly time (seconds)	12
Total labor cost (cents)	5
Number of different parts or sub-assemblies	2
Number of parts and sub-assemblies (inc.repeats)	2
Total number of operations (inc.repeats)	2
Theoretical minimum number of parts or pre-assembled items	1
Labor rate (dollars/hour)	15

DESIGN FOR MANUAL ASSEMBLY WORKSHEET

ASSEMBLY NAME - SUIC PLASTIC

SUB-ASSEMBLY NAME - $HOUSING

Part or Sub or Operation No.	Manual Handling Code	Manual Insertion Code	Operation Time RP*(TM+TI)	Figures for Min. Parts	MANUAL-BENCH ASSEMBLY
	No. of Repeats	Machine Time per Part (s)	Insertion Time per Part (s)	Cost-cents TA*OP	Name of Assembly- $HOUSING
ID	RP	HC	TM	IC	TI	TA	CA	NM	Name of Part, Sub-assembly or Operation
1	1	30	1.95	02	2.5	4.4	1.9	1	HOUSING
2	1	33	3.51	31	5.0	7.5	3.1	0	ESCUTCHEON

DESIGN FOR MANUAL ASSEMBLY RESPONSES

ASSEMBLY NAME - SUC PLASTIC

SUB-ASSEMBLY NAME - SHOUSING

SUB OR PART NAME	MINIMUM PART COUNT: <N>one, <R>elative movement <D>ifferent material, <A>ssembly-												-NOT EASY TO GRASP AND MANIPULATE-											
	Width	Length	Diam. or thick-ness	Acress unrestricted	Easy to grasp and manipulate				Low resistance to insertion				Nest or tangle	Sharp or fragile		Other stand. tools		Two persons					
						Beta-symm.							Flexible					Magnify						
				<R>otat'l or <N>on-rotat'l	Alpha symm.	View clear			Easy to align & pos'n		Holding down		Severe N or T	Slippery		Spec-ial tools		Two hands						
														Stick	Heavy	Twee-zers								
HOUSING	150	100	200	N	Y	D	D	Y	Y	N	Y	N	A	N	N	N	N	N	N	N	N	N	N	N
ESCUTCHEON	30	2	100	N	Y	D	D	Y	Y	N	Y	-	N	N	N	N	N	N	N	N	N	N	N	N

DESIGN FOR MANUAL ASSEMBLY - SUMMARY DATA

ASSEMBLY NAME = GEN1FGU

CUMULATIVE DATA FOR FINAL ASSEMBLY AND SUB-ASSEMBLIES

Assembly efficiency (percent)	3
Total assembly time (seconds)	226
Total labor cost (cents)	63
Number of different parts or sub-assemblies handled	13
Number of parts and sub-assemblies handled (inc.repeats)	16
Total number of operations (inc.repeats)	28
Theoretical minimum number of parts or pre-assembled items	2
Labor rate (dollars/hour)	10

DESIGN FOR MANUAL ASSEMBLY SUMMARY OF RESULTS

ASSEMBLY NAME - GEN[illegible]

Total Assembly Time	[illegible]	Assembly Operation Description	No. of Rep-eats	Figs. min. parts	Assembly Operation Time, sec	Assembly Op'n cost cents	Manuf. Process	Tool Die Cost, $	Parts Cost cents
Time for Main Assembly	55								
[illegible]	[illegible]	place in workfixture	1	1	[illegible]	1.0	-	-	-
BUFFER SHD, BACK		place in workfixture	[illegible]	1	[illegible]	[illegible]			
BUFFER BD.		add & hold down	1	0	8.5	2.3			
Soldering process		standard operation	3	-	24.0	6.7	-	-	-
BUFFER SHD, [illegible]		add	1	0	3.5	1.0			
[illegible]		add & screw fasten	2	0	19.0	5.3			
[illegible] MOD	125	add & hold down	1	-	8.5	2.3	-	-	-
VCO CASTING		place in workfixture	1	1	8.5	2.3			
SYNTH. BD.		add & hold down	1	[illegible]	8.5	2.3			
WIRES		add & hold down	3	0	30.3	8.4			
Soldering process		standard operation	6	-	48.0	13.3	-	-	-
VCO BD.		add	1	0	3.5	1.0			
Soldering process		standard operation	1	-	8.0	2.2	-	-	-
TRIMMER SHD.		add & hold down	1	0	11.6	3.2			
Soldering process		standard operation	1		8.0	2.2	-	-	-
[illegible]		add & bend, crimp etc	1	0	7.4	2.0			
[illegible] SYNTH. SHD.		add & hold down	1	0	8.5	2.3			
Soldering process		standard operation	1	-	8.0	2.2	-	-	-

DESIGN FOR MANUAL ASSEMBLY SUMMARY DATA

ASSEMBLY NAME - GEN1FGU

SUB-ASSEMBLY NAME - $BUFFER MOD

Assembly efficiency (percent)	7
Total assembly time (seconds)	44
Total labor cost (cents)	12
Number of different parts or sub-assemblies	3
Number of parts and sub-assemblies (inc.repeats)	3
Total number of operations (inc.repeats)	5
Theoretical minimum number of parts or pre-assembled items	1
Labor rate (dollars/hour)	10

DESIGN FOR MANUAL ASSEMBLY WORKSHEET

ASSEMBLY NAME - GEN1FGU

SUB-ASSEMBLY NAME - $BUFFER MOD

Part / Sub or Oper'n No.	No. of Repeats	Manual Handling Code	Handling Time per Part (s)	Manual Insertion Code	Insertion Time per Part (s)	Operation Time RP*(TH+TI)	Operation cost, cents TA*OP	Figures for Min. Parts	MANUAL BENCH ASSEMBLY — Name of Assembly- $BUFFER MOD — Name of Part, Sub-assembly or Operation
ID	RP	HC	TH	IC	TI	TA	CA	NM	
1	1	30	1.95	08	6.5	8.5	2.3	1	BUFFER SHD. BACK
2	1	30	1.95	08	6.5	8.5	2.3	0	BUFFER BD.
3	3	-	-	95	8.0	24.0	6.7	-	Soldering process
4	1	30	1.95	00	1.5	3.5	1.0	0	BUFFER SHD. FRT.

DESIGN FOR MANUAL ASSEMBLY SUMMARY DATA

ASSEMBLY NAME = GENIEGU

SUB-ASSEMBLY NAME = AVCO MOD

Assembly efficiency = theoretical/actual	5
Total assembly time (seconds)	126
Total labour cost (cents)	35
Number of different parts or sub-assemblies	5
Number of parts and sub-assemblies (inc.repeats)	7
Total number of operations (inc.repeats)	15
Theoretical minimum number of parts or pre-assembled items	2
Labor rate (dollars/hour)	10

DESIGN FOR MANUAL ASSEMBLY WORKSHEET

ASSEMBLY NAME - GEN3F5U

SUB-ASSEMBLY NAME - SYTO MOD

Part or Sub or Oper'n No.	Material Handling Code	Insertion Code	Operation Time PP+IN+TI	Figures for Min. Parts	MANUAL-BENCH ASSEMBLY
	No. of Repeats	Handling Time per Part (s)	Insertion Time per Part (s)	Operation Cost cents (A+B)	Name of Assembly- SYCO MOD
ID	PP	HC	TH	IC	TI	TA	CA	NM	Name of Part, Sub-assembly or Operation
1	1	30	1.95	08	6.5	8.5	2.3	1	VCO CASTING
2	1	30	1.95	08	6.5	8.5	2.3	1	SYNTH. BD.
3	3	40	3.60	08	6.5	30.3	8.4	0	WIRES
4	6	-	-	[illegible]	[illegible]	[illegible]	13.3	-	Soldering process
5	1	30	1.95	00	1.5	3.5	1.0	0	VCO BD.
6	1	-	-	95	8.0	8.0	2.2	-	Soldering process
7	1	70	5.10	09	5.5	11.6	3.2	0	TRIMMER SHD.
8	1	-	-	95	8.0	8.0	2.2	-	Soldering process

DESIGN FOR MANUAL ASSEMBLY RESPONSES

ASSEMBLY NAME : GEN1FGU

PART NAME	Width	Length	Diam. or thickness	Rotat'l (or N for rotat'l)	Alpha symm.	MINIMUM PART COUNT: Motion, Different material, Assembly	Access unrestricted	View clear	Easy to grasp and manipulate	Easy to align & pos'n	Low resistance to insertion	Holding down	NOT EASY TO GRASP AND MANIPULATE: Nest or tangle	Flexible	Severe N for T	Sharp or fragile	Slippery	Sticky	Heavy	Other stand. tools	Tweezers	Special tools	Magnify	Two persons	Two hands	
BUFFER MOD		1	1	Y	Y	R	A	Y	Y	Y	Y	N	-	N	N	N	N	N	N	N	N	N	N	N	N	N
SCREW	-	5	11	R	Y	A	D	Y	Y	N	Y	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SWTC MOD	20	15	50	N	Y	D	D	Y	Y	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N
INSUL	15	2	30	N	Y	D	[illegible]	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
[illegible]/SYNTH. BRD.	[illegible]	10	40	N	Y	D	D	Y	Y	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Soldering process	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

DESIGN FOR MANUAL ASSEMBLY RESPONSES

ASSEMBLY NAME - GEN1FGU

SUB-ASSEMBLY NAME - BUFFER MOD

SUB OR PART NAME — MINIMUM PART COUNT — NOT EASY TO GRASP AND MANIPULATE

Length; Width; Diam.; Access unrestricted; Easy to grasp and manipulate; Beta-symm.; Easy to ... Holding down; Tangle; Flexible; Sev- ere N; Slippery; Stick; Heavy; Spec- Tweezers; tools; Magnify; hands

BUFFER SHD. BACK	20	5	40	N	Y	[illegible]	D	Y	[illegible]	N	[illegible]	[illegible]	Y	N	N	N	N	N	N	N	N	N	N	N	N	N
BUFFER BD.	10	0	[illegible]	N	Y	D	D	Y	Y	N	Y	Y	D	N	N	N	N	N	N	N	N	N	N	N	N	N
Soldering process	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BUFFER SHD. FRT.	15	2	30	N	Y	D	D	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

DESIGN FOR MANUAL ASSEMBLY RESPONSES

ASSEMBLY NAME - GENIE BU

SUB-ASSEMBLY NAME $UPP MOD

PART NAME	Width	Diam. or thickness	Length	for N ...	Alpha symm.	View clear	Easy to align & posi'n	Holding down	NOT EASY TO GRASP AND MANIPULATE: Nest or tangle	Flexible	Sharp or fragile	Other	Two													
CASTING	[illegible]	[illegible]	[illegible]	N	Y	D	D	Y	Y	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SYNTH. BD.	20	5	40	N	Y	D	D	Y	Y	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N
WIRES	-	1	5	?	N	A	?	Y	Y	N	Y	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	N
Soldering process	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
... BD.	15	3	30	N	Y	D	D	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Soldering process	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRIMMER SHD.	10	5	[illegible]	N	N	D	D	Y	Y	N	Y	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	N
Soldering process	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

DESIGN FOR MANUAL ASSEMBLY SUMMARY DATA

ASSEMBLY NAME - LR FGH

CUMULATIVE DATA FOR FINAL ASSEMBLY AND SUB-ASSEMBLIES

Assembly efficiency (percent)	6
Total assembly time (seconds)	367
Total labor cost (cents)	61
Number of different parts or sub-assemblies handled	6
Number of parts and sub-assemblies handled (inc.repeats)	7
Total number of operations (inc.repeats)	17
Theoretical minimum number of parts or pre-assembled items	3
Labor rate (dollars/hour)	15

DESIGN FOR MANUAL ASSEMBLY SUMMARY OF RESULTS

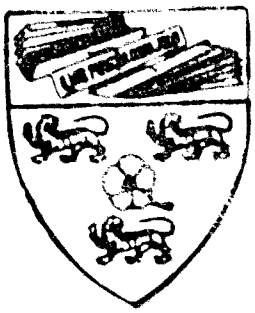
ASSEMBLY NAME: [illegible]

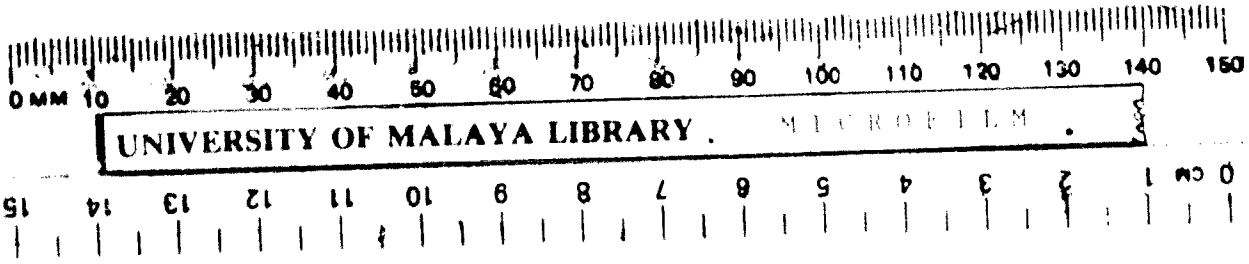
Name	[illegible]	ID	Assembly Operation Description	No. of reps	Min. parts	Assembly Operation time, sec	Operation cost	Manuf. Process	[illegible]	Tool cost
[illegible]			place in fixture [illegible]			[illegible]	4.[illegible]			
[illegible]			[illegible]	[illegible]	[illegible]	8.5	[illegible]			
[illegible]			add & hold down	1	1	11.[illegible]	4.[illegible]			
[illegible] CASTING			add & hold down	1	0	11.8	4.9			
Soldering process			standard operation	5	-	40.0	16.7	-	-	-
Soldering process			standard operation	5		40.0	16.7	-	-	-
[illegible]			add & snap fit	1	0	4.0	1.6			
[illegible]			add & screw fasten	1	0	20.5	8.5			

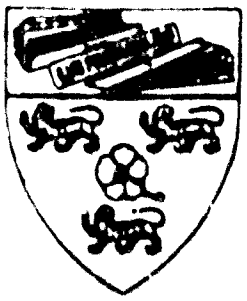
DESIGN FOR MANUAL ASSEMBLY RESPONSES

ASSEMBLY NAME - [illegible]

PART NAME	MINIMUM PART COUNT														NOT EASY TO GRASP AND MANIPULATE											
[illegible]	[illegible]	[illegible]	[illegible]	N	[illegible]	[illegible]	N	N	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	N	N	N	N	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]TING	[illegible]	[illegible]	[illegible]	N	[illegible]	[illegible]	[illegible]	[illegible]	Y	N	[illegible]	[illegible]	N	N	N	N	N	N	N	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	60	N	[illegible]	[illegible]	[illegible]	[illegible]	N	N	[illegible]	[illegible]	[illegible]	N	N	N	N	N	N	N	N	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] ATING	20	10	60	N	[illegible]	[illegible]	[illegible]	[illegible]	N	N	N	Y	N	N	N	N	N	N	N	N	N	[illegible]	[illegible]	[illegible]	N	N
[illegible]	-	-	-	[illegible]						[illegible]	[illegible]	-	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]									
[illegible]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
[illegible]	[illegible]	10	[illegible]	N	[illegible]	[illegible]	[illegible]	N	N	Y	Y	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N
[illegible]	-	5	4	F	[illegible]	A	[illegible]	N	[illegible]	N	[illegible]	[illegible]	N	N	N	N	N	N	N	N	N	N	N	N	N	N







TAMAT