Sub Assembly 1

		Time Factors (seconds)														
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
No.	Part/Operation Description	End-to-End Orientation	Rotational Alignment	Part Size	Part Thickness	Insertion Clearance	Insertion Direction	Insertion Condition	Fastening	Fastening Process	Handling Condition	Time/Each Operation (T_{op})	Number of Repetitions (N_{rep})	Repetition Time (K*L) (T_{rep})	Insert Part (1 = Yes; 0 = No)	Eliminate Part (1=yes; 0 = No)
1	P-2a Bracket	1.8	1.5									3.3	1	3.3	1	
2	P-2b Bracket	1.8	1.5									3.3	1	3.3	1	
3	FHS		0.5	0.1			0.6	1.4	4.0	4.0		10.6	2	21.2	1	
4	P-11 Rotating Disc	1.8	1.0			1.6	0.6					5	1	5	1	
5	Flip assembly							2.3				2.3	1	2.3	0	
6	P-12 Pivot clamp (A)	1.8	1.0				0.6	1.4				4.8	1	4.8	1	
7	Flip assembly							2.3				2.3	1	2.3	0	
8	P-7 SS Flat head Screw		0.5	0.1			0.6	1.4	4.0	4.0		10.6	4	42.4	1	
9	P-10 Backing plate	1.8	1.0			1.6	0.6					5	1	5	1	
9	Chain guard metal piece	2.3	1.5			1.4	1.4					6.6	1	6.6	1	
10	P-16 mounting bolts		0.5	0.1			0.6	1.4	4.0	4.0		10.6	2	21.2	1	
11	P-7 SS Flat head Screw		0.5	0.1			0.6	1.4	4.0	4.0		10.6	4	42.4	1	
													20	159.8	10	
													TOP	TAT	NUP	

Step 1: Draw the Assembly Sequence Diagram
Step 2: List Parts & operations in order (left column)
Step 3: Enter times from Estimated DFA Time Chart
Step 4: Sum time per part/oper. in column K
Enter no. of repetitions for each operation in col. L
Enter K*L in col. M
Step 5: Enter a 1 in col. N if a part was inserted during operation
Enter a 1 in col. O if part or operation can be eliminated
Step 6: Calculate Summary Statistics

Summary Statistics

NUP	10	= number of unique parts (Sum of Column N)
TOP	20	= total number of operations (sum of Column L)
TAT	159.8	= total assembly time (sum of Column M)
NP	18	= number of parts = sumproduct(L,N)
T_{avg}	8.0	= avg time/operation = TAT/TOP
P_{min}	18.0	= min # parts = NP - sumproduct(L,N,O)
AR	0.26	= Assembly rating = 2.35 * NP /TAT
PE	1.00	= Part Effciency = Pmin/NP
C	###	= Assembly complexity = TAT - (2.4*TOP)
OR	3.33	= Operation difficulty rating = TAT/(2.4*TOP)

Sub Assembly 2

		Time Factors (seconds)														
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
No.	Part/Operation Description	End-to-End Orientation	Rotational Alignment	Part Size	Part Thickness	Insertion Clearance	Insertion Direction	Insertion Condition	Fastening	Fastening Process	Handling Condition	Time/Each Operation (T_{op})	Number of Repetitions (N_{rep})	Repetition Time (K*L) (T_{rep})	Insert Part (1 = Yes; 0 = No)	Eliminate Part (1=yes; 0 = No)
1	P-4 Shift lever press fit attachment	2.3	1.5				1.4	1.4	4.0	4.0		14.6	1	14.6	1	
2	P-3 Tab	1.8	1.5				0.6	1.4				5.3	1	5.3	1	
3	P-7 SS Flat head Phillips screw 8-32 7/8”		0.5	0.1			1.4	14.0	4.0	4.0		24	4	96	1	
4	P-5 Toe bar	1.3	1.5									2.8	1	2.8	1	
5	Flip assembly							2.3				2.3	1	2.3	0	
6	P-15 Socket cap screw		0.5	0.1		1.6	1.7	1.4	4.0	4.0		13.3	1	13.3	1	
													9	134.3	5	
													TOP	TAT	NUP	

Step 1: Draw the Assembly Sequence Diagram
Step 2: List Parts & operations in order (left column)
Step 3: Enter times from Estimated DFA Time Chart
Step 4: Sum time per part/oper. in column K
Enter no. of repetitions for each operation in col. L
Enter K*L in col. M
Step 5: Enter a 1 in col. N if a part was inserted during operation
Enter a 1 in col. O if part or operation can be eliminated
Step 6: Calculate Summary Statistics

Summary Statistics

NUP	5	= number of unique parts (Sum of Column N)
TOP	9	= total number of operations (sum of Column L)
TAT	134.3	= total assembly time (sum of Column M)
NP	8	= number of parts = sumproduct(L,N)
T_{avg}	14.9	= avg time/operation = TAT/TOP
P_{min}	8.0	= min # parts = NP - sumproduct(L,N,O)
AR	0.14	= Assembly rating = 2.35 * NP /TAT
PE	1.00	= Part Effciency = Pmin/NP
C	112.70	= Assembly complexity = TAT - (2.4*TOP)
OR	6.22	= Operation difficulty rating = TAT/(2.4*TOP)

Main Assembly

		Time Factors (seconds)														
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
No.	Part/Operation Description	End-to-End Orientation	Rotational Alignment	Part Size	Part Thickness	Insertion Clearance	Insertion Direction	Insertion Condition	Fastening	Fastening Process	Handling Condition	Time/Each Operation (T_{op})	Number of Repetitions (N_{rep})	Repetition Time (K*L) (T_{rep})	Insert Part (1 = Yes; 0 = No)	Eliminate Part (1=yes; 0 = No)
1	P-1 Pingel electric Solenoid	0.8	1.5				1.4		0.8			5	1	4.5	1	
2	P-8 Clevis pin	0.8	0.5	0.6	0.2	1.6	1.4	1.3		1.0		7	1	7.4	1	
3	P-9 Cotter pin	1.3	0.5	0.4	0.2	0.9	1.4	1.4	1.0	1.0		8	1	8.1	1	
4	P-13 Pivot clamp (B)	0.8	0.5				1.4					3	1	2.7	1	
5	P-6 Clamp Bolts SCHS 8-32 5/8"	0.8				0.9	1.4	1.4	4.0	4.0		13	2	25	1	
													6	47.7	5	
													TOP	TAT	NUP	

Step 1: Draw the Assembly Sequence Diagram
Step 2: List Parts & operations in order (left column)
Step 3: Enter times from Estimated DFA Time Chart
Step 4: Sum time per part/oper. in column K
Enter no. of repetitions for each operation in col. L
Enter K*L in col. M
Step 5: Enter a 1 in col. N if a part was inserted during operation
Enter a 1 in col. O if part or operation can be eliminated
Step 6: Calculate Summary Statistics

Summary Statistics

NUP	5	= number of unique parts (Sum of Column N)
TOP	6	= total number of operations (sum of Column L)
TAT	47.7	= total assembly time (sum of Column M)
NP	6	= number of parts = sumproduct(L,N)
T_{avg}	8.0	= avg time/operation = TAT/TOP
P_{min}	6.0	= min # parts = NP - sumproduct(L,N,O)
AR	0.30	= Assembly rating = 2.35 * NP /TAT
PE	1.00	= Part Effciency = Pmin/NP
C	33.30	= Assembly complexity = TAT - (2.4*TOP)
OR	3.31	= Operation difficulty rating = TAT/(2.4*TOP)

	Time (sec)					
	Sub Assembly 1	Sub Assembly 2	Main Assembly	Total		
NUP	10.00	5.00	5.00	20.00	NUP	number of unique parts
TOP	20.00	9.00	6.00	35.00	TOP	total number of operations
TAT	159.80	134.30	47.70	***341.80***	TAT	total assembly time
NP	18.00	8.00	6.00	32.00	NP	number of parts
Tavg	7.99	14.92	7.95	30.86	Tavg	avg time/operation = TAT/TOP
Pmin	18.00	8.00	6.00	32.00	Pmin	min # parts
AR	0.26	0.14	0.30	0.70	AR	Assembly rating = 2.35 * NP /TAT
PE	1.00	1.00	1.00	3.00	PE	Part Effciency = Pmin/NP
C	111.80	112.70	33.30	257.80	C	Assembly complexity = TAT - (2.4*TOP)
OR	3.33	6.22	3.31	12.86	OR	Operation difficulty rating = TAT/(2.4*TOP)