

Standard work sheet — bracket assembly cell

All records

ELEMENTS DOCUMENTED
12
3 operators · Bracket assembly cell

OPERATOR CYCLE TIME
58.0 s
Operator 1 · takt 55 s · 3.0 s over

OPERATORS NEEDED
3
148.0 s of work ÷ 55 s takt · target 3

WALK AND WAIT
16.0 s
10.6 % of the 151 s the operators are tied up

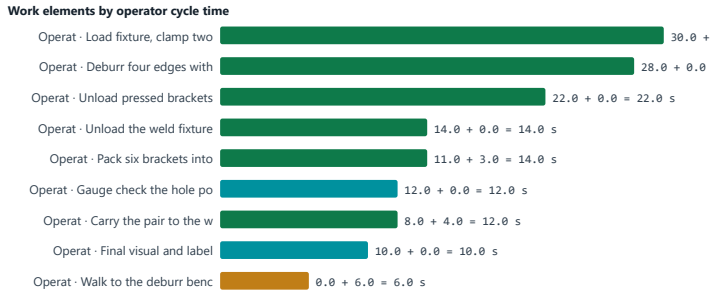
LONGEST ELEMENT
30.0 s
Load fixture, clamp two brackets ...

QUALITY CHECKS
2
built into the sequence, not left to the end

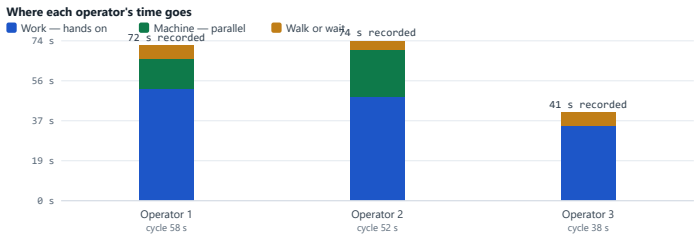
12 of 12 record(s) included. All records. Amounts in USD.



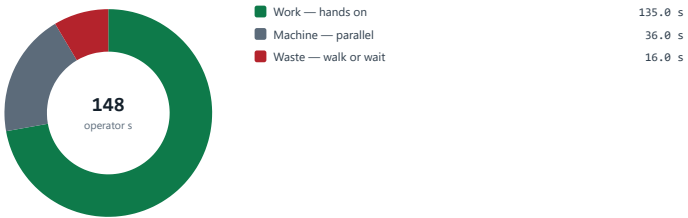
The chart the whole sheet exists to produce. A bar above the dashed takt line is an operator who cannot finish inside the customer's beat and will miss demand every cycle; bars well below it are work waiting to be rebalanced, not a saving already made. The chart the whole sheet exists to produce. A bar above the dashed takt line is an operator who cannot finish inside the customer's beat and will miss demand every cycle; bars well below it are work waiting to be rebalanced, not a saving already made.



Manual plus walk for each element. Elements where the operator is free — automatic cycles and pure waits — carry no operator cycle and do not appear here; find them in the sheet itself. The top two or three elements are where a rebalance or a method change pays. Manual plus walk for each element. Elements where the operator is free — automatic cycles and pure waits — carry no operator cycle and do not appear here; find them in the sheet itself. The top two or three elements are where a rebalance or a method change pays.



Only the work and walk-or-wait blocks belong to the operator; the machine block runs in parallel, so the bar total is the seconds recorded against that operator, not their cycle time. The figure under each bar is the cycle that has to fit inside takt. Only the work and walk-or-wait blocks belong to the operator; the machine block runs in parallel, so the bar total is the seconds recorded against that operator, not their cycle time. The figure under each bar is the cycle that has to fit inside takt.



The ring is every second recorded — operator seconds and machine seconds together — split by what kind of time it is. The centre is the operators' own time, manual plus walk, which is the only part that has to fit inside takt. The ring is every second recorded — operator seconds and machine seconds together — split by what kind of time it is. The centre is the operators' own time, manual plus walk, which is the only part that has to fit inside takt.

The standard work sheet

OPERATOR	#	ELEMENT	TYPE	MANUAL S	MACHINE S	WALK S	ELEMENT CYCLE S	WIP	QUALITY	SAFETY NOTE	TOOLS
Operator 1	1	Load fixture, clamp two brackets and two-hand start	Manual	30.0	—	—	30.0	2.0		Both hands clear of the tool before the start buttons	Clamp fixture BR-2
Operator 1	2	Press cycle runs — operator free	Auto	0.0	14.0	—	0.0	2.0		Do not reach into the die area while the light curtain is muted	Press 3
Operator 1	3	Unload pressed brackets to the chute	Manual	22.0	—	—	22.0	2.0		Edges are sharp before deburr — cut-resistant gloves	—
Operator 1	4	Walk to the deburr bench with the pair	Walk	0.0	—	6.0	6.0	2.0		Marked walkway — do not cut across the press bay	—
Operator 2	1	Deburr four edges with the air tool	Manual	28.0	—	—	28.0	2.0		Eye protection and extraction on before the tool is triggered	Air deburr tool, bench extraction
Operator 2	2	Gauge check the hole positions	Inspect	12.0	—	—	12.0	1.0	Check	—	Go/no-go gauge GG-14
Operator 2	3	Carry the pair to the welder and load the fixture	Manual	8.0	—	4.0	12.0	2.0		Weld screen closed before the cycle is started	Weld fixture WF-7
Operator 2	4	Weld cycle runs — operator free	Auto	0.0	22.0	—	0.0	2.0		Weld screen stays closed for the whole cycle	Weld cell
Operator 3	1	Unload the weld fixture to the cooling rack	Manual	14.0	—	—	14.0	1.0		Heat-resistant gloves — parts leave the fixture hot	Cooling rack
Operator 3	2	Wait for the weld cycle to finish	Wait	0.0	3.0	—	0.0	—		—	—
Operator 3	3	Final visual and label check	Inspect	10.0	—	—	10.0	1.0	Check	—	Boundary sample board
Operator 3	4	Pack six brackets into the carton and walk to the stack	Manual	11.0	—	3.0	14.0	6.0		Carton lifted from the bench, not from the floor	Carton former
Totals	12 elements			135.0	39.0	13.0	148.0	23.0	2 checks		

Balance and waste, operator by operator

OPERATOR	ELEMENTS	WORK S	MACHINE S	WALK + WAIT S	CYCLE S	TAKT S	VS TAKT	VERDICT
Operator 1	4	52.0	14.0	6.0	58.0	55.0	+3.0	Over takt — rebalance
Operator 2	4	48.0	22.0	4.0	52.0	55.0	-3.0	Near takt
Operator 3	4	35.0	0.0	6.0	38.0	55.0	-17.0	Under-loaded
All operators	12	135.0	36.0	16.0	148.0	55.0		Needs 3 operators at this takt

Work element register

CELL	OPERATOR	#	ELEMENT	TYPE	MANUAL	MACHINE	WALK	QUALITY CHECK	SAFETY	TOOLS	WIP	ELEMENT CYCLE	VALUE CLASS
Bracket assembly cell	Operator 1	1	Load fixture, clamp two brackets and two-hand start	Manual	30.0	0.0	0.0	No	Both hands clear of the tool before the start buttons	Clamp fixture BR-2	2.0	30.0	Work
Bracket assembly cell	Operator 1	2	Press cycle runs — operator free	Auto	0.0	14.0	0.0	No	Do not reach into the die area while the light curtain is muted	Press 3	2.0	0.0	Machine
Bracket assembly cell	Operator 1	3	Unload pressed brackets to the chute	Manual	22.0	0.0	0.0	No	Edges are sharp before deburr — cut-resistant gloves	—	2.0	22.0	Work
Bracket assembly cell	Operator 1	4	Walk to the deburr bench with the pair	Walk	0.0	0.0	6.0	No	Marked walkway — do not cut across the press bay	—	2.0	6.0	Waste — walk or wait
Bracket assembly cell	Operator 2	1	Deburr four edges with the air tool	Manual	28.0	0.0	0.0	No	Eye protection and	Air deburr tool,	2.0	28.0	Work

CELL	OPERATOR	#	ELEMENT	TYPE	MANUAL	MACHINE	WALK	QUALITY CHECK	SAFETY	TOOLS	WIP	ELEMENT CYCLE	VALUE CLASS
									extraction on before the tool is triggered	bench extraction			
Bracket assembly cell	Operator 2	2	Gauge check the hole positions	Inspect	12.0	0.0	0.0	Yes	—	Go/no-go gauge GG-14	1.0	12.0	Work
Bracket assembly cell	Operator 2	3	Carry the pair to the welder and load the fixture	Manual	8.0	0.0	4.0	No	Weld screen closed before the cycle is started	Weld fixture WF-7	2.0	12.0	Work
Bracket assembly cell	Operator 2	4	Weld cycle runs — operator free	Auto	0.0	22.0	0.0	No	Weld screen stays closed for the whole cycle	Weld cell	2.0	0.0	Machine
Bracket assembly cell	Operator 3	1	Unload the weld fixture to the cooling rack	Manual	14.0	0.0	0.0	No	Heat-resistant gloves — parts leave the fixture hot	Cooling rack	1.0	14.0	Work
Bracket assembly cell	Operator 3	2	Wait for the weld cycle to finish	Wait	0.0	3.0	0.0	No	—	—	0.0	0.0	Waste — walk or wait
Bracket assembly cell	Operator 3	3	Final visual and label check	Inspect	10.0	0.0	0.0	Yes	—	Boundary sample board	1.0	10.0	Work
Bracket assembly cell	Operator 3	4	Pack six brackets into the carton and walk to the stack	Manual	11.0	0.0	3.0	No	Carton lifted from the bench, not from the floor	Carton former	6.0	14.0	Work

Notes

Sample cell at a takt of 55 s. Operator 1 runs 3 s over takt and will miss demand every cycle; Operator 3 is 17 s under-loaded. The obvious first move is the 6 s walk to the deburr bench — bring the bench to the press and Operator 1 falls to 52 s without anyone working faster. Replace every element and time with your own before relying on this.

This sheet records times observed for one product, on one layout, at one takt. It is a description of the current best-known method, not a certified standard and not engineering advice. Observed times carry the operator, the tooling and the day they were taken from; re-observe and reissue the sheet whenever the product, the layout, the tooling or customer demand changes. The operator balance assumes the elements can be moved between people — check reach, competence, safety and any qualification requirement before you rebalance anything.