Turning Cycle Time

How-to guide: what the workbook does, how to use it and what every number means. mfgcalcs.com

Turning Cycle Time

Estimate the cycle time of every turned part from its operations' cut lengths, speeds and feeds, check it against the target, and see parts per hour and per shift.

For: CNC programmers, setters, manufacturing engineers and estimators in turning and lathe shops.

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Quick start

1. On Setup, type your shop, shift length and planning efficiency, and list your parts with their target cycle times.
2. On Operations, give each turning operation a row: part, operation, spindle speed, feed per revolution, total cut length and the allowance for approach, retract and turret moves.
3. Fix anything the Check column names.
4. Open the Dashboard: cycle time against target by part, parts per shift and the operations that take the most time.

What is in the workbook

Start Here	Read this first: what the workbook does and how to use it.
Setup	Shop, shift length and planning efficiency, and the parts with their target cycle times.
Operations	One row per turning operation: speed, feed and cut length in; base, allowance and estimated time out.
Dashboard	Cycle time against target by part, parts per hour and per shift, and the operations that take the most time.
Method	How every number is calculated, with assumptions, limits and sources.
Verify	Self-check: the workbook's formulas recomputed on fixed inputs against an independent reference.

What each number means

Quantity	How it is calculated	Units
Feed rate	Spindle speed x feed per revolution.	in/min
Base time	Cut length / feed rate.	min
Allowance time	Base time x allowance for approach, retract and turret moves.	min
Estimated time	Base time x (1 + allowance).	min

Quantity	How it is calculated	Units
Cycle time (part)	Sum of the estimated times of the part's operations.	min
Gap to target, status	Cycle - target; On target at or below, Near target up to 5% over, Above target beyond.	min
Parts per hour, per shift	60 / cycle time; shift hours x 60 x planning efficiency / cycle time.	parts

Assumptions, limitations, sources and the self-check (the Verify sheet, which recomputes the workbook's formulas on fixed test inputs) are in the workbook. The last page shows the Dashboard with the example data for Merrow Turned Parts, a fictional business.

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Engineering estimates for planning and improvement work. Verify the results against your own process, data and standards before you rely on them.

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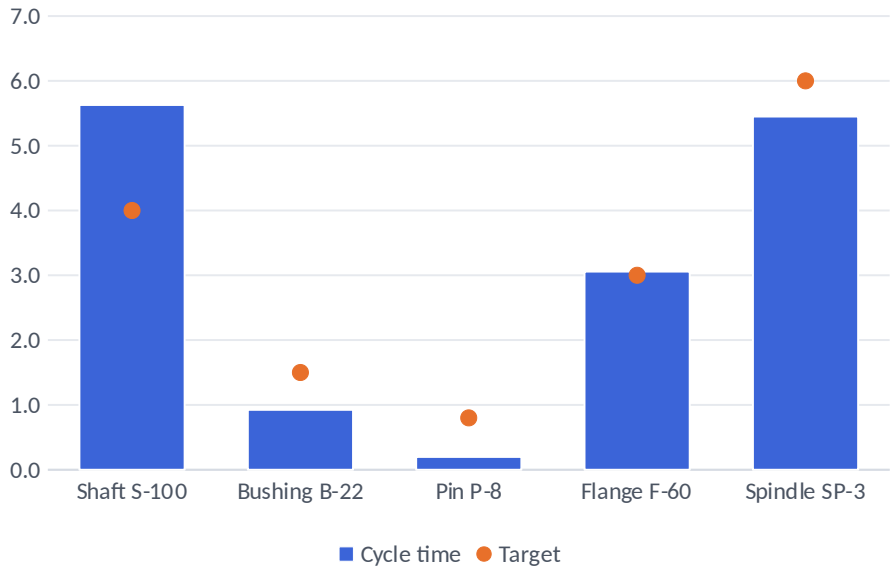
Cycle time against target by part, parts per hour and per shift, and the operations that take the most time.

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Merrow Turned Parts (example): 5 parts, 18 operations. Parts per shift at 8.0 h and 85% efficiency.

PARTS OVER TARGET CYCLE	SLOWEST PART	TOTAL TURNING MINUTES	OPERATIONS
1	**Shaft S-100**	**15.3**	**18**
Status Above target	Longest cycle time	One of each part	Rows on Operations

Cycle time against target by part (min)



Where each part's cycle goes (min)

