

Ergonomics in Design for Manufacture and Assembly

Product name: _____

Name: _____ Date: _____

Instructions:

1. List the parts in the order they are assembled.
2. Note the design rules that are violated for each step.
3. Total the number of boxes noted and fill in the score column.
4. Note product maintenance design rules violated.
5. Total to obtain the overall score.

	Separate Fastener	Spring or washer	Separate label	Further integration	Need leads, guides, chamfers	Needs pilot holes	Flexible, slippery	Can nest or tangle	Slightly asymmetrical	Low friction grasping surface	Uncommon fastener	More than one 'right' way	Multi-step assembly	Assembled from side	Can't see mating surface	Reorient product	Insufficient clearance	Precision/Adjustment	High joining forces	Reach below 23", above 50"	Reach beyond 16"	Tool required	Separate subassembly		
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Product Maintenance	Access ports and test points not labeled																								
	Difficult access to key maintenance areas.																								
	Cannot see display while adjusting.																								
OVERALL SCORE																									

Separate fastener	Check this box if the part is a separate fastener.	More than one right way	Check this box if the part can be added to the assembly incorrectly or partially assembled.
Springs or washers	Check this box if the part is a spring or washer.	Multi-step assembly	Check this box if the part requires more than one motion to be added to the assembly.
Separate label	Check this box if the part is a separate label.	Assembled from side	Check this box if the part is added to the assembly from the side rather than from the top down.
Further integration	Check this box if the part can be integrated into another component.	Reorient product	Check this box if the product must be re-oriented to add the part.
Needs leads, guides, chamfers	Check this box if the part would benefit from leads, guides, tapers or chamfers.	Can't see mating surfaces	Check this box if the mating surfaces of a part and assembly cannot be easily seen while joining the part.
Needs pilot holes	Check this box if the part would benefit from pilot holes for fasteners or if screws would benefit from pilot points.	Insufficient clearance	Check this box if there is not adequate clearance for large handed individuals and the tools necessary to join the part.
Flexible, slippery or sharp	Check this box if the part is flexible, slippery or sharp enough to make handling more difficult than necessary	Precision/adjustment	Check this box if precision or adjustments are needed to position the part for insertion.
Can nest or tangle	Check this box if the part can nest or tangle in bulk storage.	High joining forces	Check this box if a noticeable force must be applied to join the part to the assembly.
Slightly asymmetrical	This box if the part is neither symmetrical nor very asymmetrical.	Reach below 23" or above 50"	Check this box if the operator must reach below 23" or above 50" to join the part to the assembly.
Low friction grasping surface	Check this box if the grasping surfaces on the part could be of a higher friction.	Reach beyond 16"	Check this box if the operator must reach beyond 16" to join the part to the assembly.
Uncommon fastener	Check this box if the fastener is different from the others in the assembly or if it requires a nonstandard tool.	Tool required	Check this box if a tool must be used to join a part to the assembly.
		Separate subassembly	Check this box if a subassembly step is required before adding the part.
Product Maintenance	Accessed ports and test points not labeled		
	Difficult access to key maintenance areas		
	Cannot see display while adjusting		