

Criterion			IAS1: Linear Actuation		IAS2: Hand-crank		IAS3: Worm Gear	
#	Description	Weight	Rating	Motivation	Rating	Motivation	Rating	Motivation
1	Ease of Operation	1	1	Fully automated with microcontroller control, providing smooth and precise movement.	-1	Requires manual effort to operate, and needs an additional stopping/holding mechanism for stability.	1	Fully automated with precise control via a microcontroller, offering smooth operation.
2	Cost	3	-1	Expensive actuators needed due to high forces exerted.	1	Very low cost due to no electronics or motors being needed.	0	Cost lower than actuators but slightly higher than hand crank.
3	Complexity	2	0	Not very complex system.	1	Quite Simple Design.	-1	Slightly Complex Design due to double gear down system.
4	Safety Mechanisms	3	1	Operator can stand away from machine while adjusting incline.	-1	Manual operation requires additional safety mechanisms for stability.	1	Safer operation with self-locking capabilities of the worm gear. Operator can stand away from machine while adjusting incline.
5	Reliability	2	1	Reliable operation with proper maintenance of the actuator.	-1	Reliability depends on manual operation, prone to human error.	1	Reliable, as worm gears have high durability and are self-locking.
6	Range of Motion	3	-1	Limited range of motion depending on actuator size.	1	Provides good range of motion depending on curved rack and pinion size.	1	Provides good range of motion depending on curved rack and pinion size.
7	Maintenance Requirement	1	1	Minimal maintenance required for actuators.	0	Little maintenance needed, but manual operation wears components.	-1	Regular maintenance required for lubrication and gear alignment.
Number of plus ratings			1		2		4	
Number of minus ratings			3		3		0	
Overall total			-2		-1		4	
Weighted total			1		2		6	