

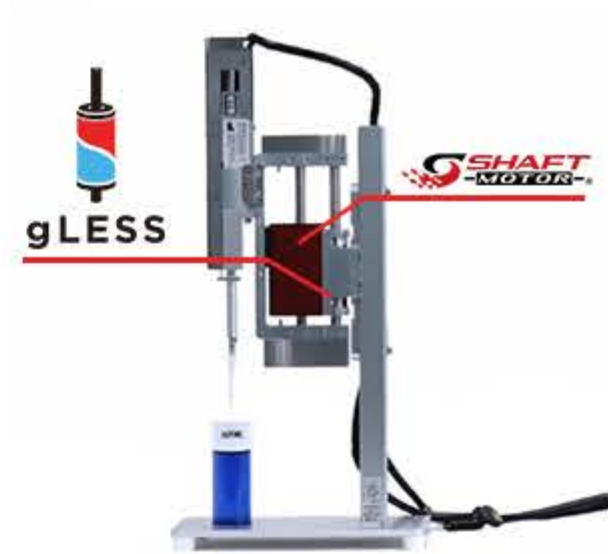
Magnetic counterbalance gLESS (prevents dropping when using a shaft motor on a vertical axis)

Problems when using a shaft motor in the vertical direction (Z-axis)

- When the power is off, there is no holding force, so it will **fall to the lowest point** .
- Even just maintaining the current position requires **thrust for holding, which leads to coil overheating** .
- **A large shaft motor** must be selected, which **increases costs** .

⇒ A "counterbalance mechanism" is needed to cancel gravity. As a countermeasure for the vertical direction (Z axis), we propose

the magnetic counterbalance [**gLESS**]. The magnetic counterbalance, which utilizes a special arrangement of magnets, is ideal for those considering a Z-axis unit.



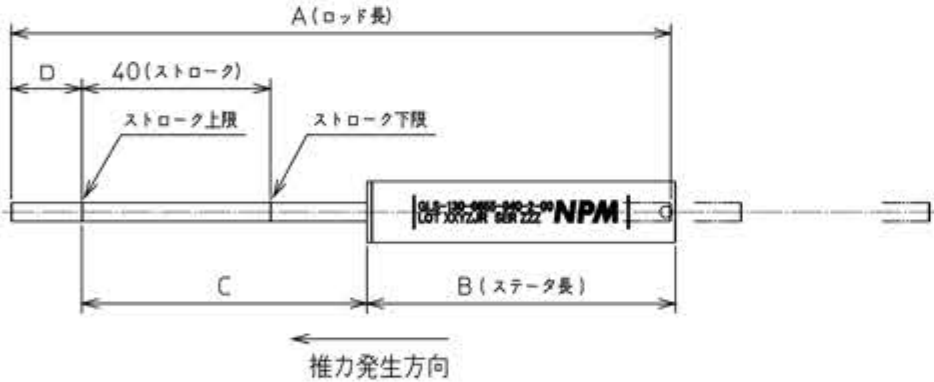
Features

- Non-contact design ensures stable movement and maintenance-free operation. -
- Unlike springs, the thrust generated within the range of motion is nearly constant, enabling stable motor operation.
- A special arrangement of magnets minimizes outward magnetic flux leakage, allowing placement near shaft motors and magnetic encoders.
- The smaller motor size allows for significant cost reduction and energy savings.

Lineup and specifications



	GLS-130	GLS-180	GLS-260
Stator diameter	Φ13	Φ18	Φ26
thrust	2.66N	6.1N	19.6N
Operating stroke	40mm	40mm	40mm
Radial load	60N or less	120N or less	200N or less
mass	65g	140g	320g
Rod mass	15g	56g	92g
Operating temperature	0-40℃		
Operating humidity	85% RH or less (no condensation)		
storage temperature	-20 to 60℃		
storage humidity	85% RH or less (no condensation)		
Leakage magnetic flux density	30mT or less		



	GLS-130	GLS-180	GLS-260
[A] Rod length	140mm	140mm	150mm
[B] Stator length	65.5mm	65.5mm	75.5mm
[C] Stroke limit	60.5mm	60.5mm	55.5mm
[D]	15mm	15mm	20mm

Comparison of types of vertical weight cancellation (gravity compensation)

	gLESS	Other companies' magnet springs	spring	Air cylinder	Counterweight
contactless	◎	△	×	△	×
Servo control stability	◎	◎	△	△	○
High-speed driving	◎	◎	○	△	×
Changes in thrust generation due to position	◎ (No change)	◎ (No change)	×	×	◎ (No change)
Aging	◎ (No change)	◎ (No change)	×	×	×
Maintainability (durability)	◎	△	△	×	△
Magnetic flux leakage	◎ (None)	×	-	-	-
Ease of integration	◎	◎	◎	△	△
Contamination	◎	△	△	△	×
cost	○	△	◎	○	○
Stroke compatible	△	△	△	△	◎