

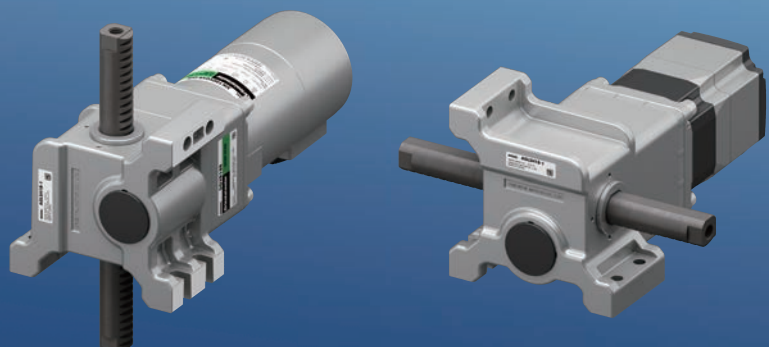
Orientalmotor

LJ Linear Heads

The LJ Linear Head with motor and rack and pinion mechanism has a **maximum transportable mass of 200 kg**



Combinable Motors



Three-Phase High Efficiency Motor
with Electromagnetic Brake

***α*STEP AZ Series**

Product Line of Linear Heads with 200 kg Maximum Transportable Mass

When the **LJ** linear head with rack and pinion mechanism is attached to a parallel shaft gearhead and motor, linear motion such as pushing, pulling, raising and lowering is possible. Perfect for high load or long stroke applications.

A Maximum Transportable Mass of 200 kg in a Compact Size

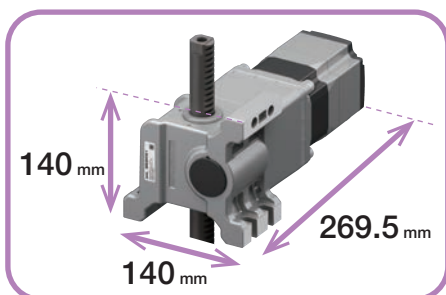
- **200 kg Maximum Transportable Mass***

Large-diameter pinions and stronger gears enable a maximum transportable mass of 200 kg*.

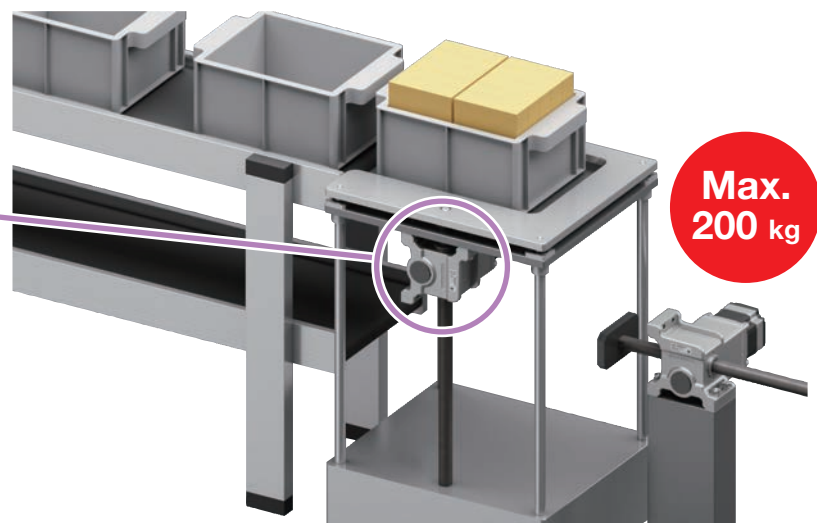
*The maximum transportable mass depends on the gearhead's gear ratio and the combined motor.

- **700 mm Maximum Stroke Length**

Product line with strokes from 100 to 700 mm

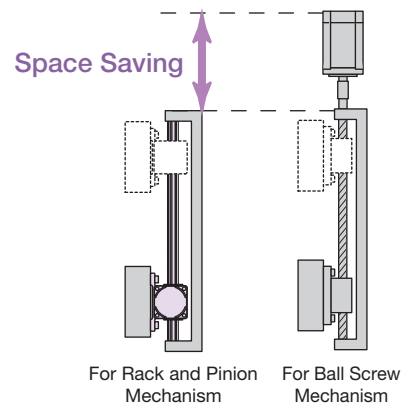


When Combined with an **AZ** Series Electromagnetic Brake Motor



Fix the Rack for Effective Use of Space

The motor itself can run on its own by fixing both ends of the rack. It is effective for equipment where motor space is difficult to secure.



LJ Linear Heads



Combinable Motors



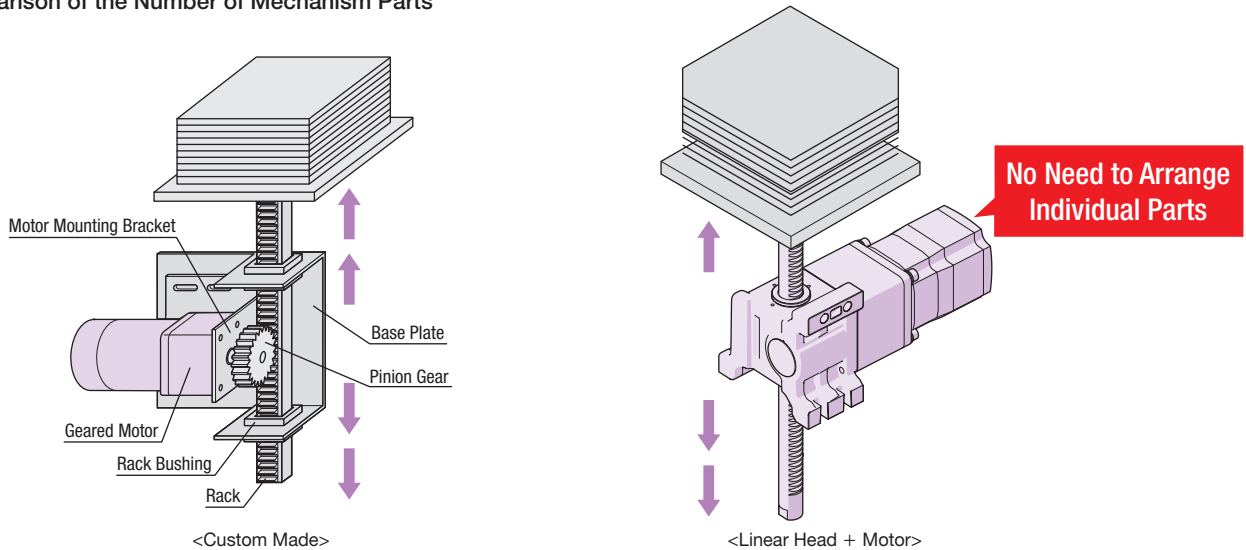
Three-Phase High Efficiency Motor αSTEP AZ Series (Electromagnetic Brake Type)

Contributes to Improved Design Efficiency

● Reduces Time from Design to Startup

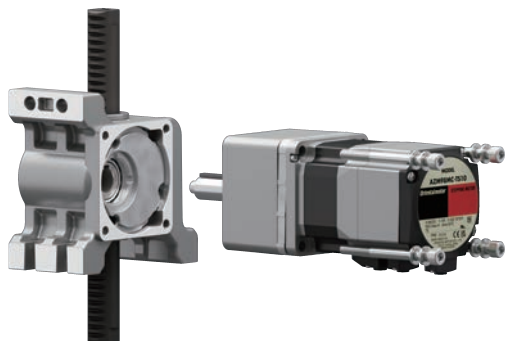
Compared to a self-built rack and pinion mechanism, the number of parts is reduced, and the amount of labor for design and assembly can be reduced.

● Comparison of the Number of Mechanism Parts



● Easy Assembly with a Parallel Shaft Gearhead

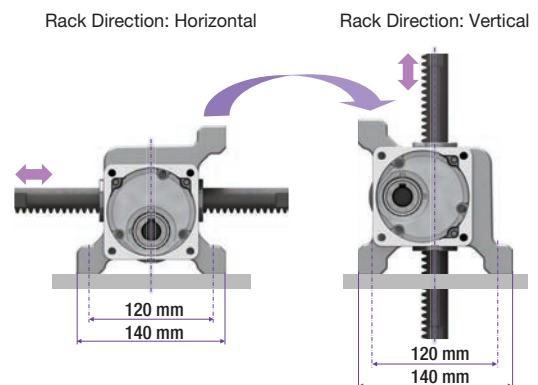
The structure is simple. Just insert the parallel shaft gearhead into the linear head and fix it with screws. This makes both installing to the equipment and performing motor maintenance easy.



● Rack Can be Installed in Horizontal or Vertical Orientations

The structure allows for mounting in both horizontal and vertical directions.

The ability to freely select the mounting direction contributes to improved ease of design and cost reductions through the sharing of parts.



Product Line

● Linear Head

Linear Head	Maximum Transportable Mass [kg]	Stroke [mm]
	200	100, 200, 300, 400, 500, 600, 700

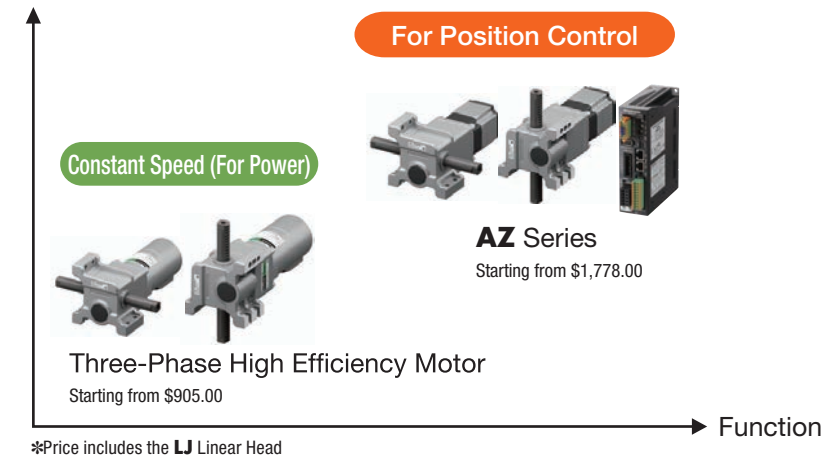
● Combined Motors

The motor can be selected according to the linear motion that is needed.

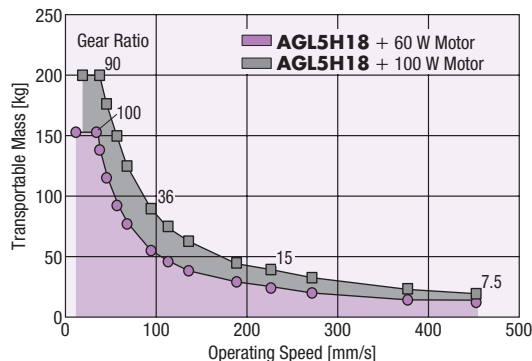
Motor Series	Motor Output Power [W]	Gear Ratio
Three-Phase High Efficiency Motor with Electromagnetic Brake + Parallel Shaft Gearhead	60	7.5~300
	100	7.5~180
QSTEP AZ Series TS Geared Type	—	10, 20, 30

● Use after checking the operating manual for the motor that will be combined.

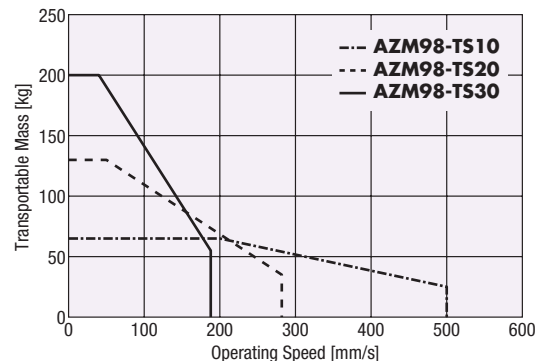
Prices



● Example Characteristics when Combined with Various Motors (Operating Speed-Transportable Mass Characteristics)



<Characteristics of a Combination of **LJ** Linear Head + Three-Phase High Efficiency Motor (60 Hz)>



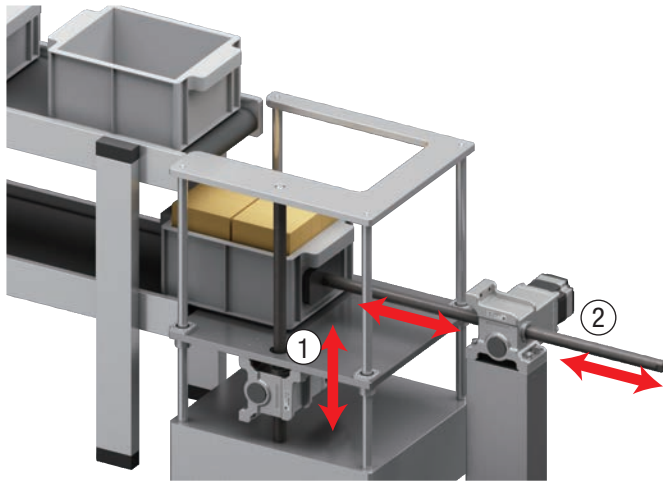
<Characteristics of a Combination of **LJ** Linear Head + **AZ Series**>

Applications

The rack and pinion mechanism, which can be used in a variety of applications, is a product that can be selected just like a component, and is easy to use.

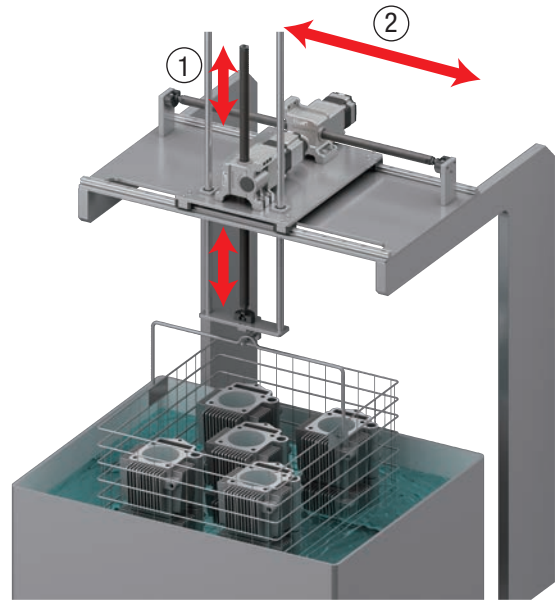
● Application Example 1 Bucket Transporting Belt Conveyor

- ① Fix the rack and drive the motor vertically
- ② Fix the motor and drive the rack horizontally



● Application Example 2 Machine Parts Cleaning Equipment

- ① Fix the motor and drive the rack vertically
- ② Fix the rack and drive the motor horizontally



Product Number

AGL 5 H 18 - 1

① ② ③ ④ ⑤

①	Product Line	AGL: LJ Linear Heads		
②	Gearhead Frame Size	5: 90 mm		
③	Shaft Type	H: Hollow		
④	Hole Diameter	18: ϕ 18 mm		
⑤	Stroke	1: 100 mm	2: 200 mm	3: 300 mm
		4: 400 mm	5: 500 mm	6: 600 mm
		7: 700 mm		

Product Line

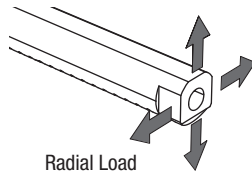
Stroke mm	Product Name	List Price
100	AGL5H18-1	\$506.00
200	AGL5H18-2	\$512.00
300	AGL5H18-3	\$519.00
400	AGL5H18-4	\$537.00
500	AGL5H18-5	\$562.00
600	AGL5H18-6	\$607.00
700	AGL5H18-7	\$651.00

Included Items

Item	Quantity
Key Retaining Screws	1 set
Safety Cover	1 Piece

Permissible Radial Load

Stroke mm	Permissible Radial Load*
	N
100	12
200	9
300	7
400	5
500	4
600	3
700	3



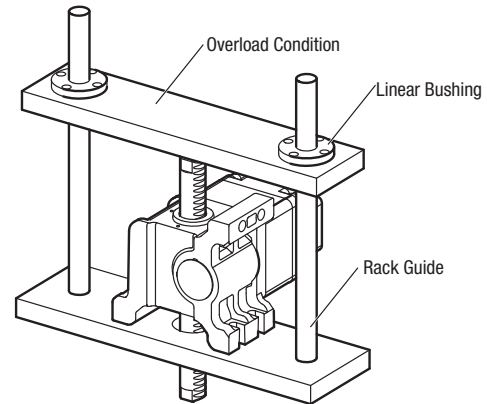
*The values are for an operating speed of up to 45 mm/s. When operating at speeds exceeding 45 mm/s, guides or other devices should be installed to prevent radial loads from being applied to the rack.

Specifications

Product Name		AGL5H18-□
Maximum Speed	mm/s	500
Maximum Transportable Mass	kg	200
Maximum Input Speed	r/min	265.3
Maximum Input Torque	N·m	39.3
Transfer Efficiency		90%
Stroke	mm	100, 200, 300, 400, 500, 600, 700

- A number indicating the stroke is specified where the box □ is located in the product name.
- Maximum speed and maximum transportable mass depend on the gear ratio of the motor it is combined with.
- When moving a rack in the vertical direction, the drivable load mass is the maximum transportable mass minus the rack mass.

Example Guide Installation



General Specifications

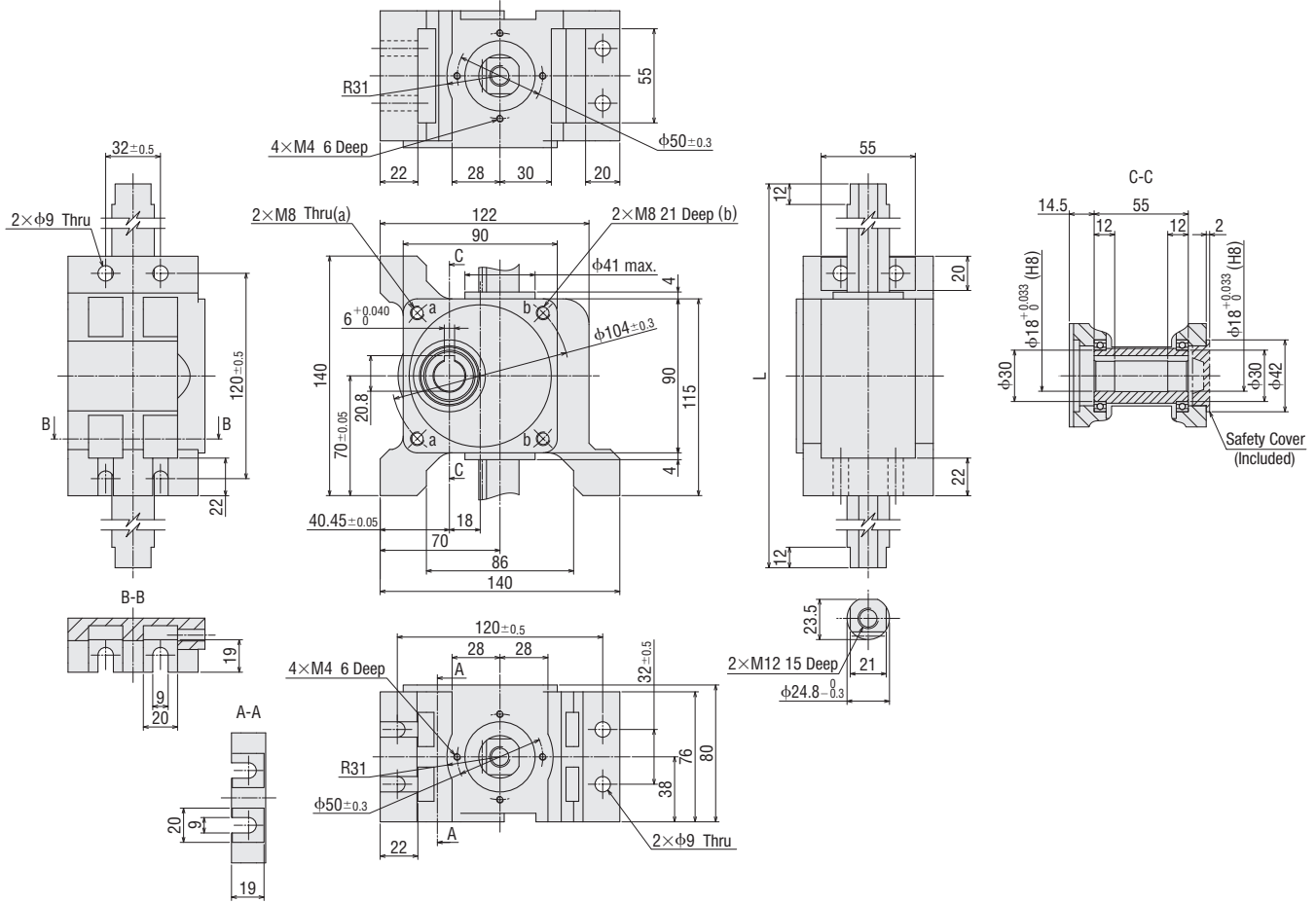
Operating Environment	Ambient Temperature	-10 ~ 50°C (Non-freezing)
	Ambient Humidity	85% or less (Non-condensing)
	Altitude	Up to 1000 m above sea level
	Atmosphere	No corrosive gases or dust. Do not expose to water or oil.
Storage Conditions*	Ambient Temperature	-20 ~ 70°C (Non-freezing)
	Ambient Humidity	85% or less (Non-condensing)
	Altitude	Up to 3000 m above sea level
	Atmosphere	No corrosive gases or dust. Do not expose to water or oil.

*The storage conditions apply to short periods such as during transportation.

Dimensions

2D & 3D CAD

Stroke mm	Product Name	Rack Total Length L mm	Mass (Including rack mass) kg	Rack Mass kg	2D CAD
100	AGL5H18-1	257.6	2.8	0.9	D7918
200	AGL5H18-2	358.1	3.1	1.2	
300	AGL5H18-3	458.6	3.5	1.6	
400	AGL5H18-4	559.2	3.8	1.9	
500	AGL5H18-5	659.7	4.2	2.3	
600	AGL5H18-6	760.3	4.6	2.7	
700	AGL5H18-7	860.8	4.9	3.0	



In Combination with Three-Phase High Efficiency Motor 60 W

LJ Linear Head Specifications

Product Name	Maximum Speed mm/s	Max. Transportable Mass kg	Max. Input Speed r/min	Max. Input Torque N·m	Transmission Efficiency	Stroke mm
AGL5H18- <input type="checkbox"/>	500	200	265.3	39.3	90%	100, 200, 300, 400, 500, 600, 700

- A number indicating the stroke is entered where the box is located within the product name.
- The maximum speed and maximum transportable mass varies with the gear ratio of the motor with which the head is combined.

Stand-alone Motor Specifications

Motor Part



Product Name		Rating	Output W	Voltage V	Frequency Hz	Current A	Starting Torque mN·m	Rated Torque mN·m	Rated Speed r/min
Cable Type	Terminal Box Type								
5IK60GVH-JSM	5IK60GVH-JSMT2	Continuous	60	Three-Phase 200	50	0.40	600	410	1400
					60	0.35	500	350	1680
5IK60GVH-ESM	5IK60GVH-ESMT2	Continuous	60	Three-Phase 220	50	0.37	600	410	1400
					60	0.33	500	350	1670
			60	Three-Phase 230	50	0.38	600	410	1400
					60	0.33	500	350	1670

- No built-in overheat protection device (thermal protector).
When there is an overload or the output shaft is locked, use the electromagnetic switch and the inverter's electronic thermal function to prevent motor burnout.
- Use an inverter setting frequency of 120 Hz or less when driving in combination with the inverter.

Electromagnetic Brake (Power off activated type)

Product Name		Voltage V	Frequency Hz	Current A	Input W	Static Friction Torque mN·m
Cable Type	Terminal Box Type					
5IK60GVH-JSM	5IK60GVH-JSMT2	Single-Phase 200	50/60	0.04	6	500
5IK60GVH-ESM	5IK60GVH-ESMT2	Single-Phase 220 Single-Phase 230	50/60	0.04	6	500

Permissible Torque When Gearhead is Installed (Motor + Gearhead)

50 Hz

Unit: N·m

Product Name	Speed r/min	200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3	6	5	
		Motor/Gearhead	Gear Ratio	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250
5IK60GVH-JSM <input type="checkbox"/> 5IK60GVH-ESM <input type="checkbox"/>	/ 5GVH <input type="checkbox"/> B	2.8	3.3	4.6	5.5	6.6	8.8	10.6	12.7	17.6	21.2	26.4	30	30	30	30	30	30	30	30

60 Hz

Unit: N·m

Product Name	Speed r/min	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10	7.2	6	
		Motor/Gearhead	Gear Ratio	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250
5IK60GVH-JSM <input type="checkbox"/> 5IK60GVH-ESM <input type="checkbox"/>	/ 5GVH <input type="checkbox"/> B	2.4	2.8	3.9	4.7	5.7	7.5	9.0	10.8	15.1	18.1	22.6	27.1	30	30	30	30	30	30	30

- A code (T2) is entered where the box is located in the product name. A number indicating the gear ratio is specified where the box is located in the product name.
- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.
The actual speed is a maximum of 10% less than the displayed value, depending on the load.
- Decimal gearheads are not available.

Specifications of Combinations (LJ Linear Head + Motor + Gearhead)

Combination	Frequency	Gearhead Gear Ratio	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	
			LJ Linear Head + Three-Phase High Efficiency Motor 60 W + Gearhead	50 Hz	Operating Speed [mm/s]	376	312	226	188	156	113	94	77	56	47	37	31	28	23	18	15
Transportable Mass [kg]	14	16			23	28	33	44	54	64	89	108	134	152	152	152	152	152	152	152	152
Holding Force [N]	140	165			230	275	330	440	530	635	880	1060	1320	1500	1500	1500	1500	1500	1500	1500	1500
60 Hz	Operating Speed [mm/s]	452		376	271	226	188	135	113	94	67	56	45	37	33	28	22	18	13	11	11
	Transportable Mass [kg]	12		14	19	23	29	38	45	55	76	92	115	138	152	152	152	152	152	152	152
	Holding Force [N]	120		140	195	235	285	375	450	540	755	905	1130	1355	1500	1500	1500	1500	1500	1500	1500

- The maximum load mass that can be driven when operating the rack vertically is the transportable mass minus the rack mass.
The operating speed is the value calculated based on the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min). The actual speed changes with the size of the load.

Note

- Do not use gearhead gear ratios of **5** or **6** in combination with **LJ** linear heads.
- Do not perform push-motion operation.
- For details on the three-phase high efficiency motor, please see the Oriental Motor website.

In Combination with Three-Phase High Efficiency Motor 100 W

LJ Linear Head Specifications

Product Name	Maximum Speed mm/s	Max. Transportable Mass kg	Max. Input Speed r/min	Max. Input Torque N·m	Transmission Efficiency	Stroke mm
AGL5H18- <input type="checkbox"/>	500	200	265.3	39.3	90%	100, 200, 300, 400, 500, 600, 700

- A number indicating the stroke is entered where the box is located within the product name.
- The maximum speed and maximum transportable mass varies with the gear ratio of the motor with which the head is combined.

Stand-alone Motor Specifications

Motor Part



Product Name		Rating	Output W	Voltage V	Frequency Hz	Current A	Starting Torque mN·m	Rated Torque mN·m	Rated Speed r/min
Cable Type	Terminal Box Type								
5IK100VGVR-JSM	5IK100VGVR-JSMT2	Continuous	100	Three-Phase 200	50	0.60	850	690	1400
					60	0.53	700	570	1680
5IK100VGVR-ESM	5IK100VGVR-ESMT2		100	Three-Phase 220	50	0.55	850	690	1400
					60	0.48	700	570	1680
		100	Three-Phase 230	50	0.57	850	690	1400	
				60	0.48	700	570	1680	

- No built-in overheat protection device (thermal protector).
When there is an overload or the output shaft is locked, use the electromagnetic switch and the inverter's electronic thermal function to prevent motor burnout.
- Use an inverter setting frequency of 120 Hz or less when driving in combination with the inverter.

Electromagnetic Brake (Power off activated type)

Product Name		Voltage V	Frequency Hz	Current A	Input W	Static Friction Torque mN·m
Cable Type	Terminal Box Type					
5IK100VGVR-JSM	5IK100VGVR-JSMT2	Single-Phase 200	50/60	0.04	6	500
5IK100VGVR-ESM	5IK100VGVR-ESMT2	Single-Phase 220 Single-Phase 230	50/60	0.04	6	500

Permissible Torque When Gearhead is Installed (Motor + Gearhead)

50 Hz

Unit: N·m

Product Name	Speed r/min	Gear Ratio															
		200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3
Motor/Gearhead	Gear Ratio	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
5IK100VGVR-JSM <input type="checkbox"/> 5IK100VGVR-ESM <input type="checkbox"/>	5GVR <input type="checkbox"/> B	4.7	5.6	7.8	9.3	10.7	14.8	17.8	21.4	29.7	35.6	40	40	40	40	40	40

60 Hz

Unit: N·m

Product Name	Speed r/min	Gear Ratio															
		240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
Motor/Gearhead	Gear Ratio	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
5IK100VGVR-JSM <input type="checkbox"/> 5IK100VGVR-ESM <input type="checkbox"/>	5GVR <input type="checkbox"/> B	3.8	4.6	6.4	7.7	8.8	12.3	14.7	17.6	24.5	29.4	34.6	40	40	40	40	40

- A code (**T2**) is entered where the box is located in the product name. A number indicating the gear ratio is specified where the box is located in the product name.
- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.
The actual speed is a maximum of 10% less than the displayed value, depending on the load.
- Decimal gearheads are not available.

Specifications of Combinations (LJ Linear Head + Motor + Gearhead)

Combination	Frequency	Gearhead Gear Ratio	Gear Ratio															
			7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
LJ Linear Head + Three-Phase High Efficiency Motor 100 W + Gearhead	50 Hz	Operating Speed [mm/s]	376	312	226	188	156	113	94	77	56	47	37	31	28	23	18	15
		Transportable Mass [kg]	23	28	39	47	54	75	90	109	151	181	200	200	200	200	200	200
		Holding Force [N]	208	250	347	416	500	694	833	1000	1388	1666	1961	1961	1961	1961	1961	1961
	60 Hz	Operating Speed [mm/s]	452	376	271	226	188	135	113	94	67	56	45	37	33	28	22	18
		Transportable Mass [kg]	19	23	32	39	44	62	74	89	124	149	176	200	200	200	200	200
		Holding Force [N]	190	230	320	385	440	615	735	880	1225	1470	1730	1961	1961	1961	1961	1961

- The maximum load mass that can be driven when operating the rack vertically is the transportable mass minus the rack mass.
The operating speed is the value calculated based on the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min). The actual speed changes with the size of the load.

Note

- Do not use gearhead gear ratios of **5** or **6** in combination with **LJ** linear heads.
- Do not perform push-motion operation.
- For details on the three-phase high efficiency motor, please see the Oriental Motor website.

Combination with the AZ Series

Specifications

Linear Head Product Name		AGL5H18-□		
Motor Product Name	Standard	AZM98AC-TS10■	AZM98AC-TS20■	AZM98AC-TS30■
	With Electromagnetic Brake	AZM98MC-TS10■	AZM98MC-TS20■	AZM98MC-TS30■
Maximum Speed	mm/s	500	282	188
Transportable Mass	kg	65 (200 mm/s)	130 (50 mm/s)	200 (40 mm/s)
		25 (500 mm/s)	35 (282 mm/s)	55 (188 mm/s)
Maximum Acceleration	m/s ²	1	0.3	0.1
Push Force	N	637	1274	1961
Thrust*	N	637 (200 mm/s)	1274 (50 mm/s)	1961 (40 mm/s)
		245 (500 mm/s)	343 (282 mm/s)	539 (188 mm/s)
Holding Force	Power ON	N	637	1274
	With Electromagnetic Brake	N	637	1274
Stroke	mm	100, 200, 300, 400, 500, 600, 700		

● A number indicating the stroke is specified where the box □ is located in the product name.

● A letter indicating the cable outlet direction, either **R** (to the right), **U** (upwards) or **L** (to the left) where the box ■ is located in the product name. If the outlet direction is down, there is no letter in the ■ box.

● When moving a rack in the vertical direction, the drivable load mass is the transportable mass minus the rack mass. For the rack mass, refer to the dimension diagram.

*The sum of the load thrust and the load acceleration thrust should not exceed the thrust value.

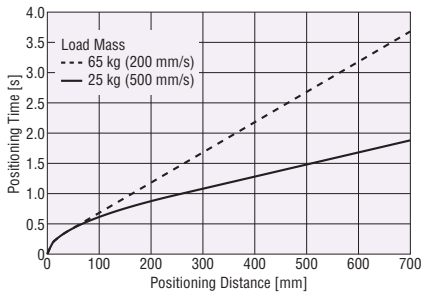
Positioning Distance–Positioning Time

Check the positioning time (reference) from the positioning distance.

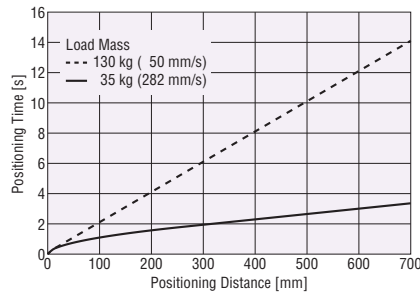
The positioning time differs according to the load mass.

● The product names are listed such that the product names are distinguishable.

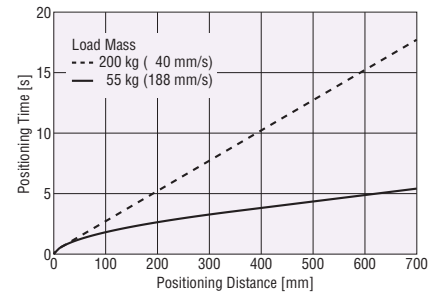
AGL5H18 + AZM98-TS10



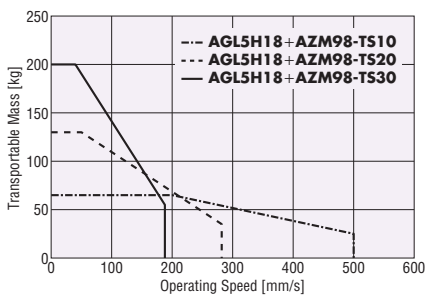
AGL5H18 + AZM98-TS20



AGL5H18 + AZM98-TS30



Operating Speed–Transportable Mass



<Characteristics of LJ Linear Head + AZ Series Combination>

Note

● The operating speed–transportable mass characteristics are based on data using Oriental Motor's measurement conditions. Conditions such as power supply voltage and ambient temperature may cause these characteristics to change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the absolute sensor, be sure to keep the temperature of the motor case at 80°C or less. (When conforming to the UL or CSA Standards, the temperature of the motor case must be kept at 75°C or less since the motor is recognized as heat-resistant class A.)

Repetitive Positioning Accuracy (Reference value)

Transportable mass is the actual measurement value. This will change based on load, driving condition and installation direction.

Linear Head Product Name	Motor Product Name	Repetitive Positioning Accuracy [mm]	
		Rack Traveling Direction: Horizontal	Rack Traveling Direction: Vertical
AGL5H18	AZM98-TS10	±0.35	±0.07
	AZM98-TS20		
	AZM98-TS30		

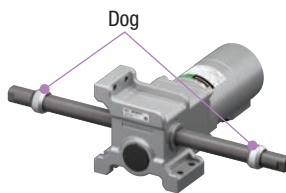
● The product names are listed such that the product names are distinguishable.

Peripheral Equipment

Dog

When an external limit switch is used, these are installed on the rack in order to turn the switch ON or OFF.

Product Name	List Price
LXD5C	\$9.00



Application Example

Rack-and-Pinion Related Products

Series Name	Maximum Transportable Mass (kg)	Stroke	Motor Type	Combinable Motor/Motor
LH Linear Heads 	~70	100~700	Standard AC Motors	[Compatible With] · Reversible Motor · Electromagnetic Brake Motor
Rack-and-Pinion System DSC Series equipped L Series 	~67	100~1000	AC Speed Control Motors	[Equipped With] DSC Series
Rack-and-Pinion System AZ Series equipped L Series 	~100	100~1000	<i>αSTEP</i>	[Equipped With] AZ Series

Specifications are subject to change without notice. This catalog was published in June 2023.

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