

Mounting Brackets, Accessories/Material, Surface Treatment

Segment	Description	Material	Surface treatment
Mounting brackets	Foot	Carbon steel	Nickel plating
	Flange	Carbon steel	Nickel plating
	Single clevis	Carbon steel	Nickel plating
	Double clevis	Carbon steel	Nickel plating
	Trunnion	Cast iron	Electroless nickel plating
	Rod end nut	Carbon steel	Zinc chromated
Accessories	Mounting nut	Carbon steel	Nickel plating
	Trunnion nut	Carbon steel	Nickel plating
	Clevis pivot bracket	Carbon steel	Nickel plating
	Clevis pivot bracket pin	Carbon steel	(None)
	Single knuckle joint	Carbon steel ø40: Free-cutting steel	Electroless nickel plating
	Double knuckle joint	Carbon steel ø40: Cast iron	Electroless nickel plating Metallic silver color painting for ø40
	Double clevis pin	Carbon steel	(None)
	Double knuckle joint pin	Carbon steel	(None)
	Pivot bracket	Carbon steel	Nickel plating
	Pivot bracket pin	Carbon steel	(None)

Weights

		(kg)			
		20	25	32	40
Basic weight	Bore size (mm)				
	Basic (Double-side bossed)	0.14	0.21	0.28	0.56
	Axial foot	0.29	0.37	0.44	0.83
	Flange	0.20	0.30	0.37	0.68
	Integrated clevis	0.12	0.19	0.27	0.52
	Single clevis	0.18	0.25	0.32	0.65
	Double clevis	0.19	0.27	0.33	0.69
	Trunnion	0.18	0.28	0.34	0.66
	Boss-cut/Basic	0.13	0.19	0.26	0.53
	Boss-cut/Flange	0.19	0.28	0.35	0.65
Boss-cut/Trunnion	0.17	0.26	0.32	0.63	
Additional weight per 50 mm of stroke		0.04	0.06	0.08	0.13
Weight reduction for female rod end		-0.01	-0.02	-0.02	-0.04
Option bracket	Clevis pivot bracket (with pin)	0.07	0.07	0.14	0.14
	Single knuckle joint	0.06	0.06	0.06	0.23
	Double knuckle joint (with pin)	0.07	0.07	0.07	0.20
	Pivot bracket	0.06	0.06	0.06	0.06
	Pivot bracket pin	0.02	0.02	0.02	0.03

Calculation: (Example) **CM2L32-100Z**
 ● Basic weight.....0.44 (Foot, ø32)
 ● Additional weight.....0.08/50 stroke
 ● Cylinder stroke.....100 stroke
 $0.44 + 0.08 \times 100/50 = 0.60 \text{ kg}$

CJ1

CJP

CJ2

JCM

CM2

CM3

CG1

CG3

JMB

MB

MB1

CA2

CS1

CS2

⚠ Precautions

Be sure to read this before handling the products. Refer to back page 50 for Safety Instructions and pages 3 to 12 for Actuator and Auto Switch Precautions.

Handling

⚠ Warning

- Do not rotate the cover.**
If a cover is rotated when installing a cylinder or screwing a fitting into the port, it is likely to damage the junction part with cover.
- Operate the cylinder within the specified cylinder speed, kinetic energy and lateral load at the rod end.**
- The allowable kinetic energy is different between the cylinders with male rod end and with female rod end due to the different thread sizes.**
- When female rod end is used, use a washer, etc. to prevent the contact part at the rod end from being deformed depending on the material of the workpiece.**
- Do not apply excessive lateral load to the piston rod.**
Easy checking method
Minimum operating pressure after the cylinder is mounted to the equipment (MPa) = Minimum operating pressure of cylinder (MPa) + (Load mass (kg) × Friction coefficient of guide/Sectional area of cylinder (mm²))
If smooth operation is confirmed within the above value, the load on the cylinder is the resistance of the thrust only and it can be judged as having no lateral load.
- Do not operate with the cushion needle in a fully closed condition.**
Using it in the fully closed state will cause the cushion seal to be damaged. When adjusting the cushion needle, use the "Hexagon wrench key; nominal size 1.5".
- Do not open the cushion needle wide excessively.**
If the cushion needle were set to be completely wide (more than 3 turns from fully closed), it would be equivalent to the cylinder with no cushion, thus making the impacts extremely high. Do not use it in such a way. Besides, using with fully open could give damage to the piston or cover.
- Do not open the cushion needle after rotating it numerous times in a row. Though uncommon, there are cases in which the cushion needle may leak air.**
The cushion needle should be adjusted by gradually opening it while checking the operation of the cylinder cushion.

⚠ Caution

- Not able to disassemble.**
Cover and cylinder tube are connected to each other by caulking method, thus making it impossible to disassemble. Therefore, internal parts of a cylinder other than rod seal are not replaceable.
- Use caution to the popping of a retaining ring.**
When replacing rod seals and removing and mounting a retaining ring, use a proper tool (retaining ring plier; tool for installing a type C retaining ring). Even if a proper tool is used, it is likely to inflict damage to a human body or peripheral equipment, as a retaining ring may be flown out of the tip of a plier. Be much careful with the popping of a retaining ring. Besides, be certain that a retaining ring is placed firmly into the groove of rod cover before supplying air at the time of installment.
- Do not touch the cylinder during operation.**
Use caution when handling a cylinder, which is running at a high speed and a high frequency, because the surface of a cylinder tube could get so hot enough as to cause you get burned.
- Do not use the air cylinder as an air-hydro cylinder.**
If it uses turbine oil in place of fluids for cylinders, it may result in oil leak.
- The oil stuck to the cylinder is grease.**
- The base oil of grease may seep out.**
The base oil of grease in the cylinder may seep out of the tube, cover, crimped part or rod bushing depending on the operating conditions (ambient temperature 40°C or more, pressurized condition, low frequency operation).
- When rod end female thread is used, use a thin wrench when tightening the piston rod.**
- Combine the rod end section, so that a rod boot might not be twisted.**
If a rod boot is installed with being twisted when installing a cylinder, it will cause a rod boot to fail during operation.
- When using a rod end bracket and/or pivot bracket, make sure they do not interfere with other brackets, workpieces and rod section, etc.**

D-□

-X□

Technical Data