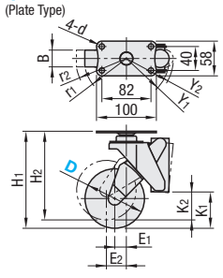
Vibration Damping Casters

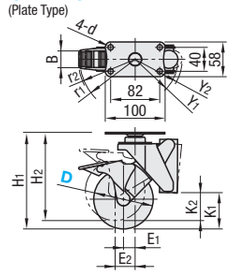
■Features: Vibration Damper (Spring with Built-in Urethane) absorbs vibration generated when the caster is traveling over steps and grating surfaces.
Able to protect conveyed workpiece and expected to improve yields because of a decrease in particulate generation volume in a clean room.

Main Body		Wheel		Bearing	
M Material	S Surface Treatment	M Material	Specific Volume Resistivity	Swiveling Part	Wheel
EN 1.4301 Equiv.	Barrel Grinding	Antistatic Urethane	Between 10^8 and $10^9\Omega \cdot cm$	Incorporated	Incorporated

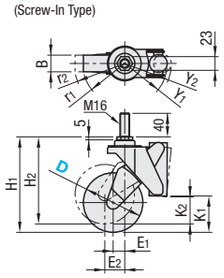
CMPR
(Plate Type)



CMPRS
(Plate Type)

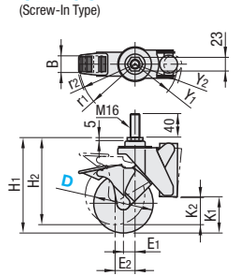


CMPG
(Screw-In Type)



For dedicated wrenches, see **P.1084**.

CMPGS
(Screw-In Type)



For dedicated wrenches, see **P.1084**.

Main Body	Part Number Type	Part Number D	Wheel Material	H Stroke H1(max)	H Stroke H2(min)	d	E1	E2	r1	r2	Y1	Y2	K1	K2	B	* Nominal Load (N)	Mass (g)	Unit Price 1 ~ 19 pc(s).	Volume Discount Rate 20~50
Swivel	CMPR	100	S (Antistatic Urethane)	162	148	8.8	20	34	71	85	71	78	61	46	28	150 ~ 300	1100		
		125		180	166		25	39	89	103	77	83	77	62	32		1258		
Swivel with Stopper	CMPRS	100		162	148		20	34	95	94	71	78	61	46	28		1212		
		125		180	166		25	39	110	110	77	83	77	62	32		1381		

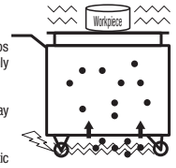
* Select the nominal load within the range of an applicable load corresponding to the total load (carriages + load). For use of 4 pcs: Applicable Load = Nominal Load x 4 pcs. x Safety Ratio (between 0.5 and 1.0)

Main Body	Part Number Type	Part Number D	Wheel Material	H Stroke H1(max)	H Stroke H2(min)	E1	E2	r1	r2	Y1	Y2	K1	K2	B	* Nominal Load (N)	Mass (g)	Unit Price 1 ~ 19 pc(s).	Volume Discount Rate 20~50
Swivel Screw-In	CMPG	100	S (Antistatic Urethane)	160	146	20	34	71	85	71	78	61	46	28	150 ~ 300	1062		
		125		178	164	25	39	89	103	77	83	77	62	32		1218		
Swivel Screw-In with Stopper	CMPGS	100		160	146	20	34	95	94	71	78	61	46	28		1174		
		125		178	164	25	39	110	110	77	83	77	62	32		1341		

Ordering Example Part Number - Wheel Material → CMPR100 - S

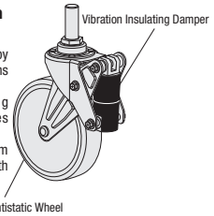
■Yield problems expected with the conventional wheels.

①Particle Generation of a Conveyor Machine due to Vibration Transmission
When a workpiece is being transported into a clean room, casters are traveling over steps or grating surfaces and vibrations from the floor are transmitted to a cart. Vibrations not only generate dust from casters and a cart but also may possibly transmit
②Generation of Particles due to Vibrations
Vibrations by casters traveling lift dusts around the floor surface and down flow air system may not be able to control the particle amounts.
③Anti-static Countermeasures
Dusts adhering to the rubber/urethane wheels of conventional casters, which accumulate static electricity generated by friction between wheels and the floor and may cause a spark discharge.



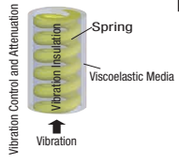
■Features of Vibration Damping Casters

- Protects transported equipment by absorbing and damping vibrations from the floor.
- Controls particle scattering from vibrations and improves production yields.
- Prevents static electricity from being generated on the floor with antistatic wheels.



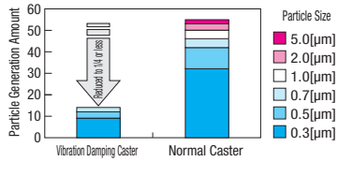
■Basic Structure of Vibration Damper

The damper is of a double-layer structure of a spring within a viscoelastic member. Shocks received by a caster when going over a stepped terrain are absorbed by a spring, then dampened by a viscoelastic member.
A new mechanism has resolved the insufficient vibration damping in the conventional spring-loaded casters and durability losses induced by degradation in the urethane type. It also excels in safety with no damping gas leaks.



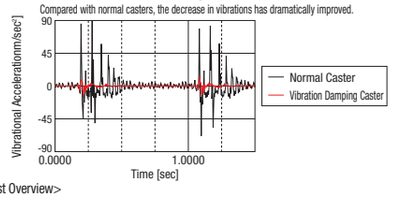
■Particle Generation Comparison

Compared with normal casters, particle volume is reduced to 1/4.



■Effect of Vibration Absorption

Compared with normal casters, the decrease in vibrations has dramatically improved.



<Test Overview>

Casters	CMPG100-S (Vibration Damping Casters)
	Urethane Wheel Diameter Ø100 (Normal Casters)
Testing Instrument	JIS B 8923 Compliant with Casters for Industrial Use
Protrusion	Semicircle R=2.5mm
Protrusion Intervals	per 1m
Load	201N
Running Speed	4km/h

■Specific Volume Resistivity of Wheels

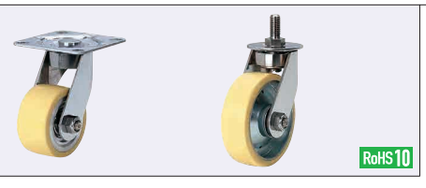
10^0	10^2	10^4	10^6	10^8	10^{10}	10^{12}	10^{14}
			Antistatic Urethane 10^8~$10^9\Omega \cdot cm$				Rubber Wheel $10^{15}\Omega \cdot cm$
Electrical Conductivity			Antistatic Performance			Insulation	

■Functional Comparison by Damper Type

(Research by MISUMI)

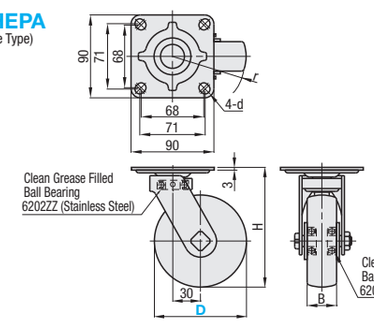
Damper Type	Shock Absorption	Vibration Transmission Time	Allowable Load	Safety	Service Life
No Damper (Normal Caster)	×	×	◎	○	○
Spring	○	×	△	○	△
Urethane Cushioned	○	△	△	△	×
Shock Absorber	○	○	△	×	△
* Vibration Damping Casters	○	◎	○	○	○

Casters for Clean Environment

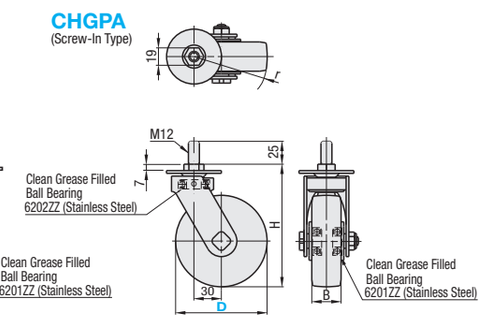


Main Body		Wheel		Bearing Shield	Bearing	
M Material	S Surface Treatment	M Material (Color)	Specific Volume Resistivity	M Material	Swiveling Part	Wheel
EN 1.4301 Equiv.	Electrolytic Polishing	Urethane (Blue)	10^{10} or More	Stainless Steel (Austenite)	Incorporated	Incorporated
		Antistatic Urethane (Yellow)	10^7~10^9			
		Electrically Conductive MC Nylon (Black)	10^2~10^4			

CHEPA
(Plate Type)



CHGPA
(Screw-In Type)



For dedicated wrenches, see **P.1084**.

Main Body	Part Number Type	Part Number D	Wheel Material	H	B	d	r	Allowable Load (N)	Mass (g)	Unit Price 1 ~ 20 pcs. U	S	D
Swivel	CHEPA	75	U (Urethane) S (Antistatic Urethane) D (Electrically Conductive MC Nylon)	118	38	10.5	70	1000	1200			
		100		130	32		83		1350			

Main Body	Part Number Type	Part Number D	Wheel Material	H	B	r	Allowable Load (N)	Mass (g)	Unit Price 1 ~ 20 pcs. U	S	D
Swivel Screw-In	CHGPA	75	U (Urethane) S (Antistatic Urethane) D (Electrically Conductive MC Nylon)	122	38	70	800	1100			
		100		134	32	83		1250			

Ordering Example Part Number - Wheel Material → CHEPA75 - U

■Antistatic Urethane (OCTRON) Wheel Properties

- Because of an antistatic effect, sparks and high-frequency noises are prevented.
- Conventional anti-static caster wheels may exhibit varying electrical resistivity depending on measured location on wheels, but the OCTRON urethane wheels have uniform resistivity regardless of the measured location, being effective in a wide voltage rang
- Due to lower in hardness than ordinary urethane wheels (shore A67), vibrations and noises on a grating floor have decreased.
- Because a carbon black is not used, there is no contamination to a floor nor dispersion of a carbon to products.

■Grease Performance Table

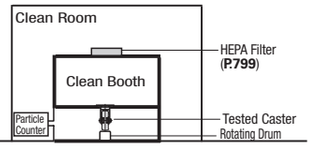
	Item	Conditions	Unit	Measurement Method	Low Particle Generation Type G Type
Grease Performance	Thickener	-	-	-	Lithium Type
	Base Oil	-	-	-	Mineral Oil + Synthetic Hydrocarbon Oil
	Base Oil Kinetic Viscosity	40°C	mm^2/s	JIS K2220 5.19	30
		100°C			-
	Worked Penetration	-	-	JIS K2220 5.3	207
	Dropping Point	-	°C	JIS K2220 5.4	200
	Evaporation Amount	99°Cx22hr	wt%	-	1.40%
	Oil Separation	100°Cx24hr	wt%	JIS K2220 514	0.8%
	Operating Temperature	In Air	°C	-	-10~80

Product Name:LG2 (made by NSK) with less particle generation is suitable for clean environments. Also, it excels in corrosion resistance.

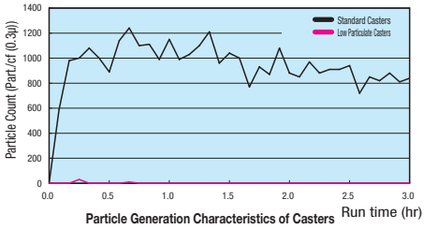
<Evaluation Test Overview>

<Evaluation Conditions>

Caster Used	CMGN75-R (General purpose caster + Rubber wheel)
	CHEPA75-S (Casters for Clean Environment + Anti-static Wheel)
Running Speed	2km/hr
Atmosphere	Clean booth in a clean room (Class 10)
Temperature	23°C
Humidity	40%
Particle Counter	237B Laser Type from RION Co., Ltd.



■Particle Generation Comparison (0.3 μm or More)



Particle Generation Characteristics of Casters