

Instruction Manual for Shinko Dual Motion Partsfeeder Model DMS-15, 20,25,30,38 & 45

Thank you for buying Shinko Dual Motion Partsfeeder. To use your partsfeeder in the right way, please read this Instruction Manual through with care before use. And if the equipment would be handed over to the other please attach the instruction manual on the equipment for the final operator.

1. Introduction

- Your dual motion partsfeeder absolutely requires an exclusive controller shown in the table below.

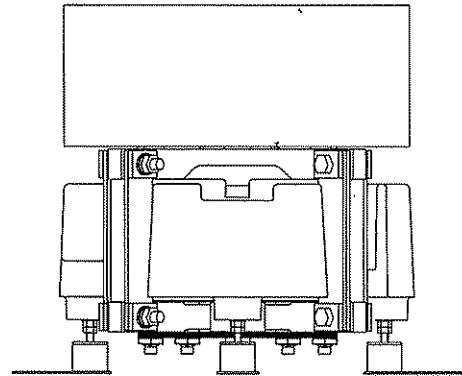
The other controller can not drive it.

Drive unit	Controller
DMS-15,20	C9-4DMB
DMS-25,30 38,45	C9-4DMB or C9-4DM

- Please check accessories enclosed on kinds and quantity.

Those accessories below should be enclosed as a unit or assembled on your partsfeeder.

- Rubber isolator feet 3 or 4 pcs. depending on the model
- Bowl mounting center bolt 1 pc.
- Bowl mounting block 1 pc.
- Horizontal / Vertical Stroke sensor 1 pc. each



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2.Safety Instructions

⚠ Danger!

Don't use the partsfeeder where inflammable gases exist. It has no explosion proof structure and will cause an explosion and/or fire.



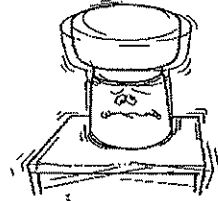
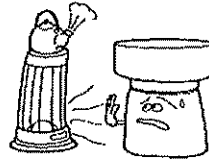
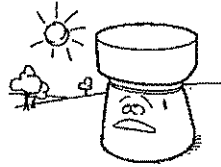
⚠ Caution!

Don't use the partsfeeder any place shown below. An electric leak, damage and/or deterioration of the partsfeeder should result.

Outdoors

Hot and moist place

A place subject to large vibration

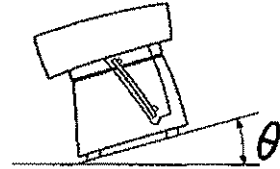
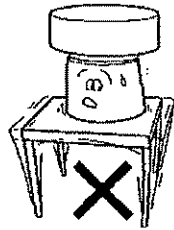
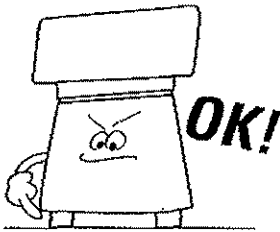


⚠ Caution!

A Before installation of the partsfeeder, check the rubber isolator feet are mounted.

B Don't use the partsfeeder on an unstable base.

C Don't install the partsfeeder on a tilted base.

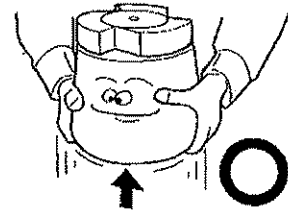
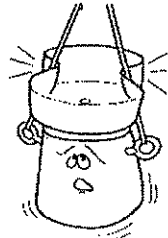
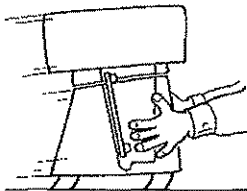


⚠ Caution!

A Don't slide the partsfeeder on a base. Or rubber isolator feet must be broken.

B Remove the bowl before lift and transport the partsfeeder. Or lifting slings or arms should damage the bowl.

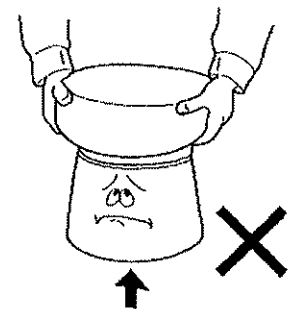
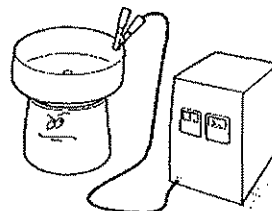
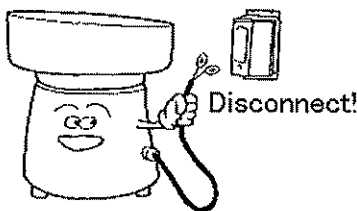
C Don't lift the partsfeeder other than on the base frame. Or deformation and/or damage of the leaf springs should result.



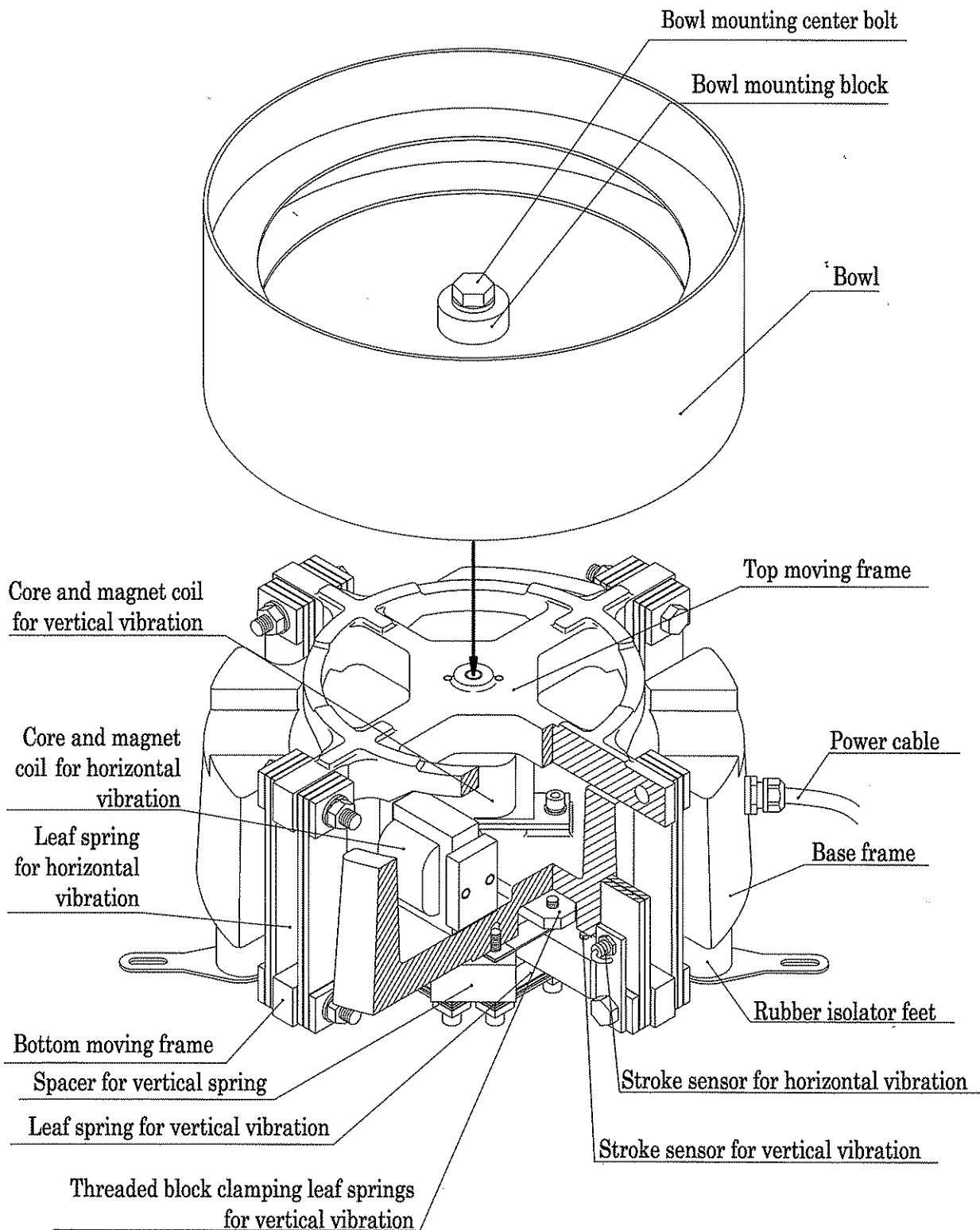
⚠ Caution!

A Before making any weld on the bowl disconnect the cable connected to the controller without fail. Or earth leakage must break the controller.

B Before making any weld on the bowl connect the ground line of the welder on the bowl directly. Or earth leakage must burn out the magnet coil in the drive unit.



3. Structure and Name of Part



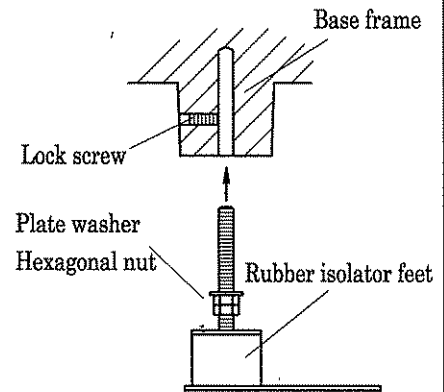
A Shinko's standard bowl for EA and ER partsfeeder series is applicable.
Please see Shinko's Partsfeeder Catalog as for bowls.

4. Installation

Please follow the procedure below to install the partsfeeder

① Setting of the rubber isolator feet

1. Screw two nuts, one for height adjusting and the other as a lock nut, and put a plate washer in order on a screw of rubber isolator foot.
2. Loosen three or four lock screws on bottom of the base frame.
3. Screw the rubber isolator feet into the base frame temporarily.
Caution!
Don't screw and secure the lock screws at that time.
Or the lock screw damages the screw of a rubber isolator foot which adjusts the height and level of the partsfeeder.



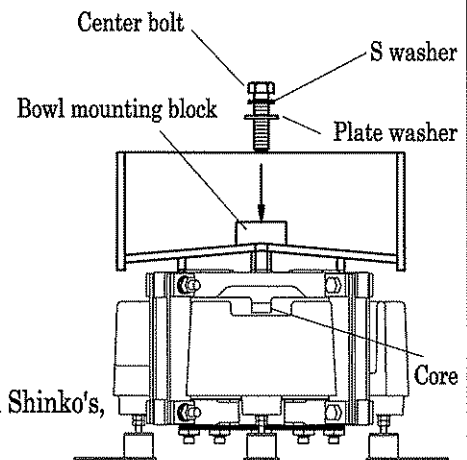
② Mounting a bowl

1. Put a bowl on the drive unit and a bowl mounting block in the bowl.
2. Screw the bowl mounting center bolt with a spring washer and a plate washer.
3. Screw and secure the center bolt with proper torque that is shown on the specifications page 8 of this manual.

Caution!

The center bolt attached is for the Shinko's standard bowl.

Please carefully determine the length of the bolt if you use other bowl than Shinko's, in case too long bolt damages the core installed under the top moving frame or too short bolt must be pull out and damage the female screw.

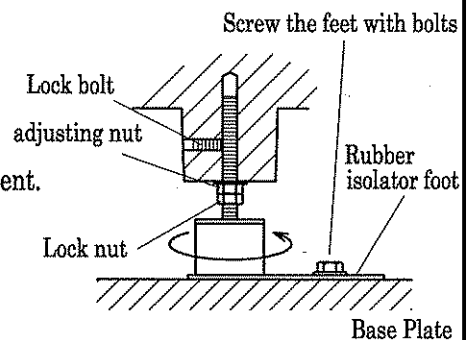


③ Installation and Height adjustment

1. Position the rubber isolator feet with the female threads respectively on the base plate and fix them with bolts.
Screw the height adjusting nuts so that the partsfeeder must be level and the discharge chute can communicate with the downstream equipment.
2. After finished the height adjustment, screw and secure the lock bolts and the lock nuts on the feet in order.

Caution!

The height of the partsfeeder should be within the dimension "H" in the table on page 9.



④ Wiring connection and Operation

Please see the instruction manual of the controller for wiring connection and operation.



Caution!

The partsfeeder must be driven within the specified conditions, drive frequency and maximum stroke, on page 8. Or the drive unit should be damaged.

5. Check and adjustment of the resonance point

Check the resonance point and if it is unappropriate, readjust it.

① Check of resonance point

1. Check "the drive frequency shown on the display of the controller" hereafter referred to as "the resonance point of horizontal vibration".
2. Set the controller, only if model C9-4DB is used,

up vertical scan mode and check the resonance point of vertical vibration.

Where C9-4DM is used, connect the magnet coil for vertical vibration of the drive unit to a Shinko's controller model C10-3VF and check the drive frequency at the maximum stroke.

Caution! Please see the instruction manual of the controller as for the drive frequency and vertical scan mode.

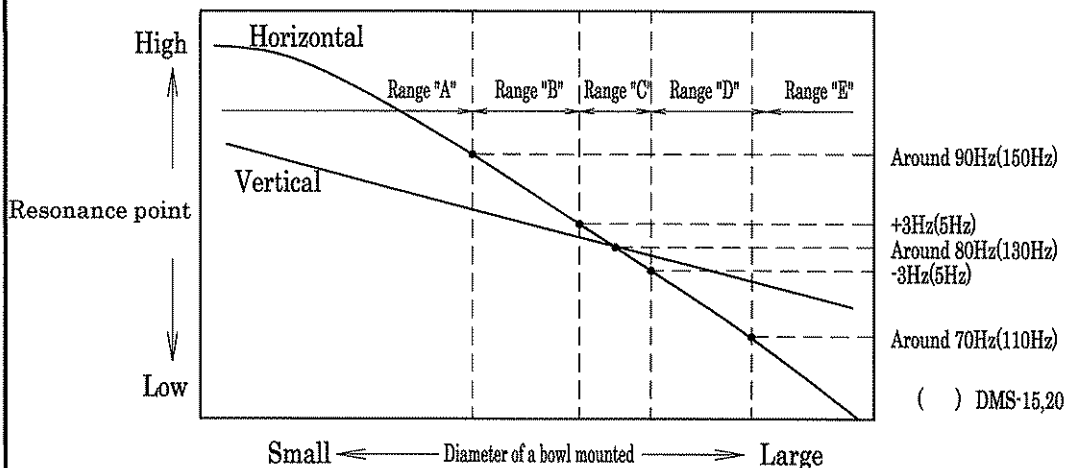
② Adjustment of resonance point

1. In case of the difference of the horizontal and vertical resonance points is less than 3Hz or in the range "C" shown on the graph below, reduce some leaf springs for horizontal vibration to keep the horizontal resonance point from the vertical one by more than 3Hz. As for model DMS 15 and 20 the difference must be larger than 5Hz.

Note: After above adjustment the vertical stroke is not enough, you may proceed to adjust the followings.

2. In case of the horizontal resonance point is extremely higher than the vertical or in the range "A" shown on the graph below, reduce some leaf springs for horizontal vibration to near it to the vertical.
3. In case of the horizontal resonance point is extremely lower than the vertical or in the range "E" shown on the graph below, increase some leaf springs for horizontal vibration or reduce some leaf springs for vertical vibration to near them mutually.

Correlation of a bowl diameter mounted and the resonance points



Correlation of a bowl diameter mounted and the resonance point

The resonance points, horizontal and vertical, depend on the size of the bowl the drive unit drives.

The characteristic curves relating to the size and the resonance point are shown on the graph above.

The range "B" and "D" are recommendable.

In the ranges "A", "C" and "E" readjustment of the resonance points are needed to recover some drawback.

- In case of the range "C":

The two resonance points are so close, that the horizontal vibration interferes with the vertical vibration to be out of control.

The controller can not control the vertical stroke even if the setting of stroke is altered on it. And also sudden reverse rotating movement would happen.

- In case of the range "A" and "E":

The two resonance points are so apart, that the vertical magnet coil outputs least pulling power.

The controller can not control the vertical stroke even if the setting of vertical stroke is increased on it.

6. Trouble shooting

If any abnormal movement is there please check the following items and those of the instruction manual for the exclusive controller. After that, you would still have a problem please consult it our agent or Shinko Electric.

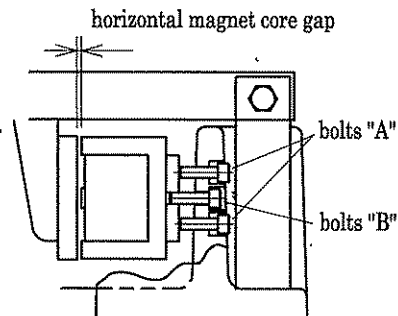
Trouble	Checking Item
A.Partsfeeder doesn't run	1.Wrong setting and/or operation of the controller 2.Wrong wiring between the partsfeeder and the controller
B.The stroke is not enough	1.Small stroke setting on the controller 2.Transportation lock metal fittings are still set 3.Lack of rigidity of the installing base or structure 4.Too wide gap of magnet cores or small pulling power See page 7 to check the gap 5.In case of small vertical stroke, readjust the resonance point See page 5 to adjust it
C.The stroke is too much	1.Too wide gap between the stroke sensor and the leaf spring, so that the sensor cannot detect the leaf spring. See page 7 to check the gap 2.In case of vertical stroke is too much, readjust the resonance point See page 5 to adjust it
D.The unit is vibrating but work pieces stay in the bowl	1.Horizontal stroke must be null, check it with a stroke indicator Vertical stroke must be null, set the horizontal stroke null and check the vertical stroke. If horizontal or vertical stroke might be null, please check the items below: 1-1.Is the stroke setting on the controller suitable? 2-2.Is the wiring between the unit and the partsfeeder correct? 2-3.Is there any breakage on the power cable and/or the magnet coil? Remove the power cable and test it with a universal tester 2.Is the phase difference set on the controller suitable?
E.Clattering metal sound	1.Is anything strike against the bowl or drive unit? 2.Is there any loose bolt, the bowl mounting bolt or isolator feet? 3.Is there anything dancing on the base frame? 4.Do the cores with a narrow gap strike mutually? Or does anything come into the gap? See page 7 to check the gap 5.Does the stroke sensor with a narrow gap strike against the leaf See page 7 to check the gap
F.Sudden reverse rotating movement	1.Check the resonance points, the horizontal and vertical. See page 5 readjust them

7. Readjustment

Your partsfeeder is fully tuned and suitably adjusted in the test shop before shipment. If any trouble might happen readjust the drive unit following the procedure below.

(A) Adjustment of horizontal magnet core gap

- To widen the gap
 1. Loosen two bolts "A" at up and down a little uniformly.
 2. Screw two bolts "B" at right and left little by little to widen the gap.
 3. Suitable gap is obtained then screw and secure the bolts "A".
- To narrow the gap
 1. Loosen the two bolts "B" at right and left a little uniformly.
 2. Screw two bolts "A" at up and down to narrow the gap.
 3. Suitable gap is obtained then screw and secure the bolt "B".

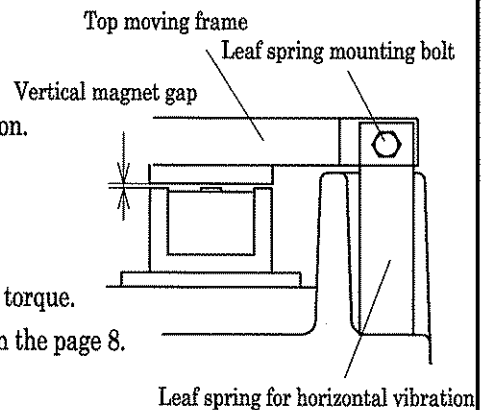


The specifications on the page 8 show the figure of the suitable gap.

(B) B. Adjustment of the vertical magnet core gap

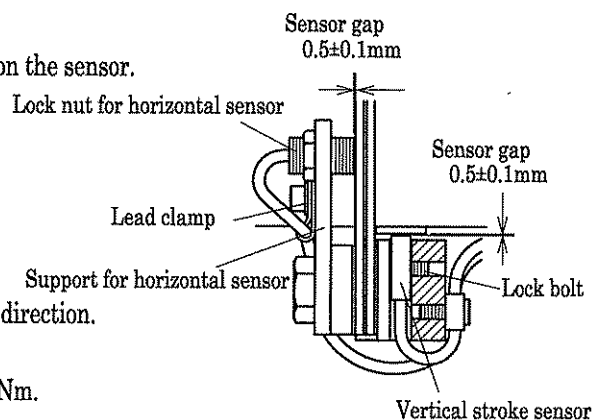
1. On the top moving frame, loosen all bolts which are mounting the leaf springs for horizontal vibration or in the vertical location.
 2. Insert a thickness gauge into the vertical magnet gap.
 3. Press the top moving frame down so that the gap narrows.
- Screw the bolts mounting the leaf springs temporarily.
4. Remove the thickness gauge and secure all bolts with specified torque.

Please consult the figure of suitable core gap and specified torque on the page 8.



(C) Adjustment of horizontal stroke sensor gap

- Adjustment of horizontal stroke sensor gap
 1. Remove the lead clamp and loosen the lock nut on the sensor.
 2. Screw the sensor to adjust the gap.
 3. Suitable gap is obtained and then secure the lead clamp.
- Adjustment of vertical stroke sensor gap
 1. Loosen the lock bolt clamping the sensor.
 2. Adjust the gap sliding the sensor in the vertical direction.
 3. Suitable gap is obtained and then secure the lock bolt mildly or recommended torque 0.2 Nm.



The lock bolt for the vertical sensor must damage the sensor, naturally, when it is secured too tight.

8. Specifications

Model		DMS-15	DMS-20	DMS-25	DMS-30	DMS-38	DMS-45	
Mass of a drive unit(kg)		7	14	25	40	70	110	
Rated voltage(V) *1		200						
Rated current(A)	Horizontal	0.18	0.3	0.6	2.0	2.0	2.0	
	Vertical	0.18	0.3	0.3	0.8	0.8	2.0	
Drive frequency(Hz) *2		100~180			70~110			
Un-tooled bowl(mm) (Cylindrical)		φ150	φ200	φ250	φ300	φ375	φ450	
Maximum bowl diameter(mm)		φ250	φ320	φ400	φ500	φ600	φ700	
Maximum stroke(mm)	Horizontal*3	0.6			1.0			
	Vertical	0.13			0.3			
Un-tooled cylindrical bowl		0.13			0.3			
Max.bowl mass(kg) (work : pieces and bowl)		2.3	4	8	12.5	17	26	
Power cable		0.5mm ² ×5cores			0.75mm ² ×5cores			
Magnet core gap(mm)	Horizontal	0.4~0.5			0.7~0.8			
	Vertical	0.2~0.3			0.4~0.5			
Leaf spring mounting bolt	Horizontal	M6	M8	M10	M12	M12	M16	
	Vertical	M5	M5	M6	M8	M8	M10	
Torque for leaf spring mounting bolt(N·m)	Horizontal	12	28	50	80	80	220	
	Vertical	8	8	50	28	28	50	
Bowl mounting center bolt		M8	M10	M12	M12	M16	M16	
Torque for bowl mounting center bolt(N·m)		20	30	40	50	60	110	
Stroke sensor		Proximity sensor Horizontal : EH-110 Vertical : EH-305 (keyence) Plug & connector CN70AP-2P (sato part)						
Applicable controller		C9-4DMB			C9-4DMB or C9-4DM			

*1 The rated voltage shows the maximum input voltage to a drive unit.

As for the input power supply to the controller,
see Instruction Manual of the exclusive controller.

*2 Drive frequency ranges in the range depending on the moment
of inertia (weight and/or diameter) of a bowl mounted.

Do not drive the unit under the range, or it will be damaged.

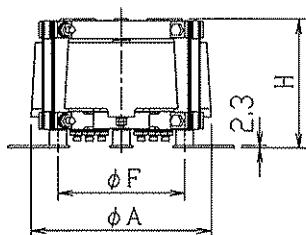
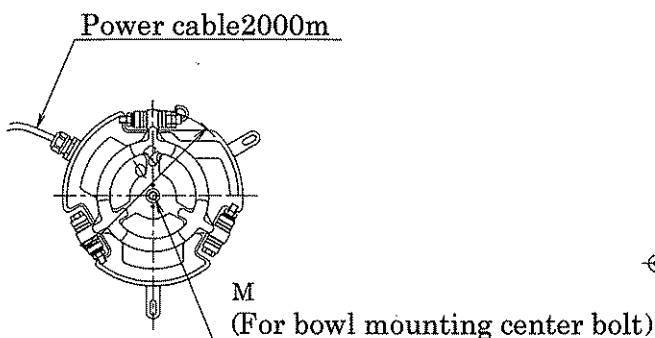
*3 The horizontal stroke is the value on the periphery
of an un-oriented standard cylindrical bowl.

Be careful that it differs from the stroke on the periphery
of an oriented bowl with large diameter.

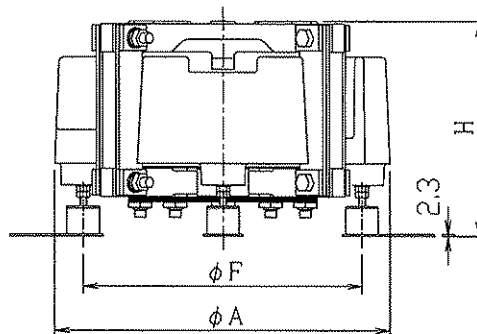
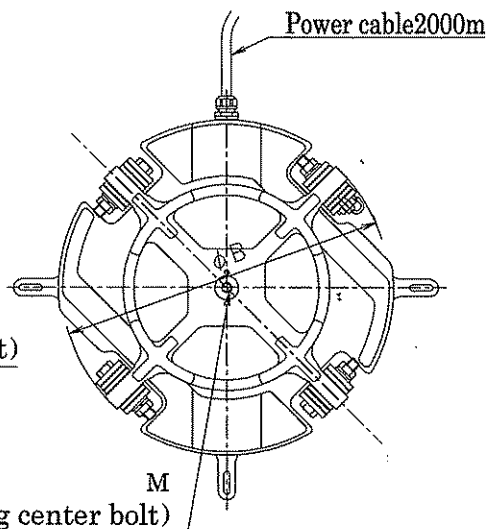
Do not drive the unit over the maximum stroke, or will be damaged.

9.Outline drawing

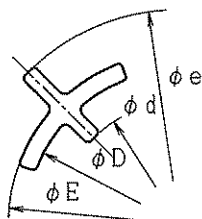
DMS-15,20



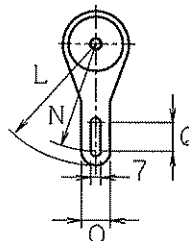
DMS-25,30,38,45



Surface contacting with a bowl



Rubber isolator foot



•Dimensions

Model	H	ϕA	ϕB	M	ϕF	L	N	O	Q	ϕD	ϕE	ϕd	ϕe
DMS-15	127~130~133	160	150	M8	130	58	50	16	10	72	94	50	120
DMS-20	147~150~153	210	200	M10	170	58	50	16	10	100	130	70	160
DMS-25	182~185~188	260	250	M12	216	58	50	16	10	140	160	100	200
DMS-30	215~220~225	310	300	M12	252	85	75	20	20	172	192	140	240
DMS-38	245~250~255	390	380	M16	324	85	75	20	20	215	240	170	300
DMS-45	260~265~270	460	450	M16	390	85	75	20	20	270	300	210	350

10. Guarantee

Shinko Electric parts feeder, when it is used in accordance with the manufacturer's Instruction Manual and normally, is guaranteed for one year after the date of shipment. Within the period Shinko Electric Co., Ltd. will repair or replace free of charge, at its sole discretion, all parts that are defective because of material or workmanship, not including costs for removing or installing the parts and also compensation for the downtime.

- (1) Consumables such as isolator rubber feet, leaf spring, leaf spring shim, and their mounting bolts and etc. are out of the guarantee.
- (2) Parts whose function is damaged by wear caused by work pieces are out of the guarantee.
- (3) Accessories such as sensors, solenoid valves and etc. are out of the guarantee.
- (4) Do not make any alterations to the parts feeder without first contacting Shinko Electric. Unauthorized alteration will void the guarantee.

Shinko Electric will not assume responsibility for damage that may occur due to unauthorized alterations to the parts feeder.

Shinko Electric reserves the right to alter at any time, without notice and without liability or other obligation on its part, materials, equipment specifications, and model. Shinko Electric also reserves the right to discontinue the manufacture of models, parts and components thereof.