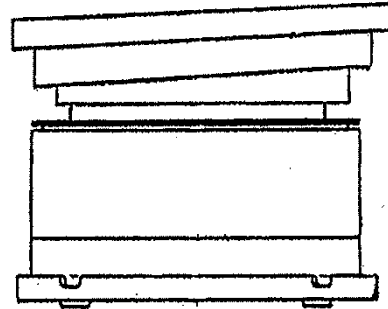


NTN INSTRUCTION MANUAL

NTN Bowl Feeder Type N25/N32/N40

Before use

Read this Instruction Manual thoroughly, and operate the machine correctly.



Introduction

Thank you for your purchase of the **NTN bowl feeder**.

For correct operation of the **NTN bowl feeder**, read this Instruction Manual carefully before use, and ensure execution of safe work through correct operation.

Be sure to deliver this Instruction Manual to the end user. The end user is further requested to store the Instruction Manual carefully in a ready-to-take-out place to facilitate ready reference at any time after reading.

1. Before Use












- When the machine is delivered, check for damage during transport and missing parts. If any trouble is found, inform the sales office nearby.
- When packaging of the machine and holding fixture for transport are attached to the body, be sure to remove them before use.
- Be sure to use **NTN controller and bowl** for this machine. Otherwise, specified performance of the machine may not be obtained.

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2. Precaution for Safety

This machine is designed and manufactured for parts feeding equipment based on the concept of trouble-free operation and labor saving. However, the user is also responsible for ensuring safety. Read this manual carefully before starting use, and be sure to follow the description below on safety. Also be sure to follow the warning and caution label attached to the body.

 WARNING	Indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury.
 CAUTION	Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury or property damage only.
 WARNING	
	The most dangerous part of the machine is electric equipment. Be sure to connect a grounding wire. Failure to do so may result in electric shock.
	Never use the machine in the atmosphere of explosive gas or flammable gas, or in a wet place. Explosion or fire hazard may be caused.
 CAUTION	
	Do not use the machine in a place exposed to splash of water, outdoors, or in a place of extremely low temperature or high temperature and high humidity. (See the next page for operating environmental conditions.)
	<ul style="list-style-type: none"> • This machine is a heavy material. (See the specification in Section 10 for the mass.) In transporting the machine, wear safety shoes, watch out for dropping, and take due care. • Fix the machine securely after installation.
	<ul style="list-style-type: none"> • Do not conduct the installation and assembly work with bare hands. • As for a bowl equipped with alignment mechanism, pay attention to sharp edges and do not touch with bare hands. <u>Be sure to wear gloves.</u>
	Do not use the machine on a base lacking in sufficient strength or in an unstable place. The specified performance of the machine may not be observed.
	Do not place the body in inclination. The specified performance of the machine may not be observed.
	Please do not scratch, pull or forcibly bend the wiring. Moreover, when a heavy thing is put on it, or it is pinched, the wiring will damage. It causes a fire or an electric shock.
	When welding the machine to a bowl, be sure to connect the grounding clip of welder to the bowl. If welding ground is insecure, the grounding wire connecting between the body and the controller may be burnt, resulting in electric shock or leakage.

□ For correct operation of the machine

- [1] The **NTN bowl feeder** is a vibrating machine with a bowl equipped with the mechanism to align the orientation of specified parts to thereby align and feed parts in bulk state to a specified point of place. Do not use the machine for other purposes such as material tests and as equipment such as sieve.
- [2] Operate the **NTN bowl feeder** in accordance with instructions given in this Instruction Manual and the Manual enclosed in the same package. For technical specifications, see Section 10 “Specifications”.
- [3] For operation of the machine, be sure to use an **NTN controller and bowl**. Further, be careful to select a controller, bowl and power supply conforming to the machine.
- [4] The resultant noise level varies with specifications of the machine and materials of parts to be fed. If the noise level should be in excess of the tolerance limit, take countermeasures against the noise such as fitting of a noise shielding cover.

(Note 1) Do not use the machine, when it is not in perfect condition (such as unusual noise, abnormal vibration and omission of parts).

(Note 2) Where the bowl is equipped with the mechanism to align specified parts, any parts other than the specified parts cannot be charged.

(Note 3) Operating environmental conditions

Operating ambient temperature	0 to 40°C
Operating ambient humidity	30 to 90% (No dew condensation is allowed.)
Operating altitude	1000 m max.
Storage temp. during transportation	-10 to 50°C
Atmosphere at operating place	No splashing of water and chemicals is allowed. No flammable gas and corrosive gas are permitted. To be operated indoors.

□ User observance items

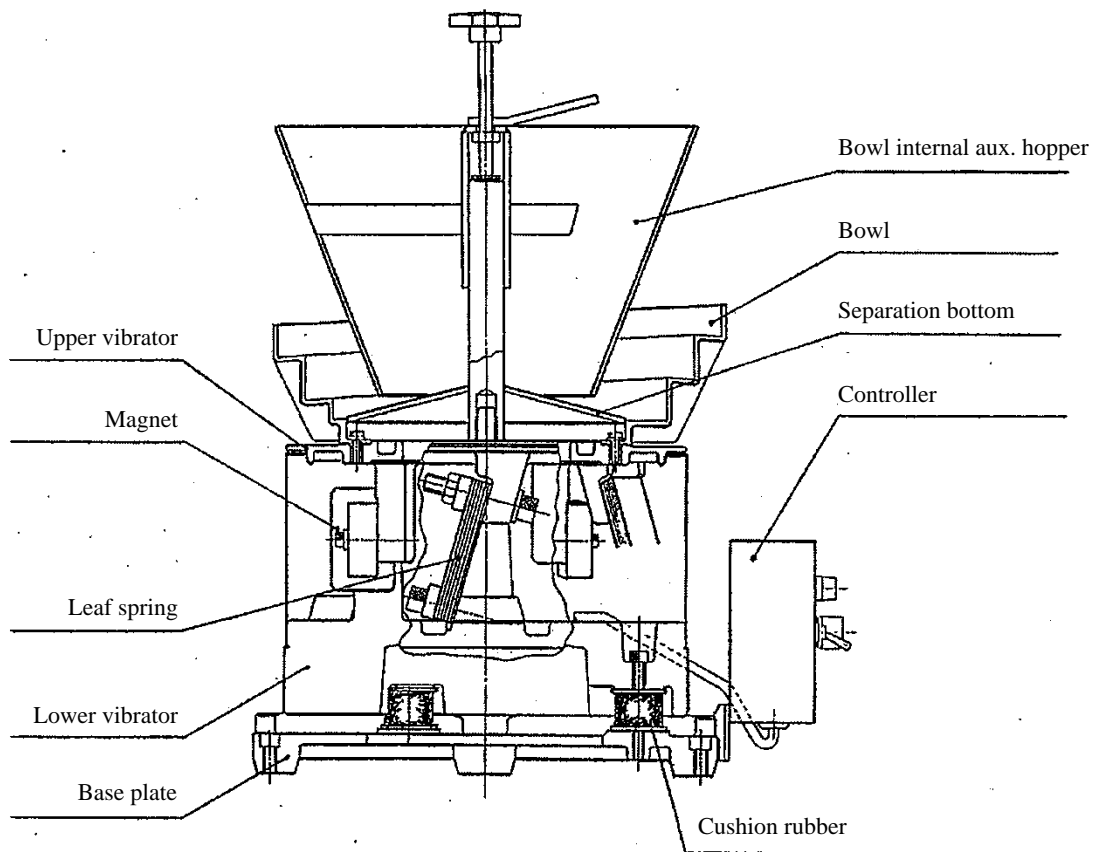
- [1] Conduct all operations of the machine including run, maintenance and repair in accordance with instructions given in this Instruction Manual and the Manual enclosed in the same package.
- [2] Be fully careful to avoid such operations as to jeopardize the safety of the **NTN bowl feeder**. If a sign of change liable to jeopardize the safety of the machine should be found, inform NTN to that effect.

(Note) Ensure installation, operations, maintenance and repair of the **NTN bowl feeder** by professional engineers. In addition, ensure that the machine is not operated by any person other than those concerned.

3. Operating Principle

NTN bowl feeder is designed to magnetically vibrate a bowl and a lower vibrator coupled to each other with a leaf spring set at a certain angle of inclination. As a result of this rotary vibration, works are aslant in the upward direction in the bowl to go forward little by little. The relationship between the bowl and the leaf spring is so set that the vibration may be nearly resonant to the suction frequency of the vibration magnet. Accordingly, a large vibration can be put forth with small exciting force.

4. Names of Main Component Parts



(Note) The actual structure may be different from the illustration shown above because of reasons such as different shapes of bowl and controller and absence of the bowl internal aux. hopper.

5. Dimensional Drawing

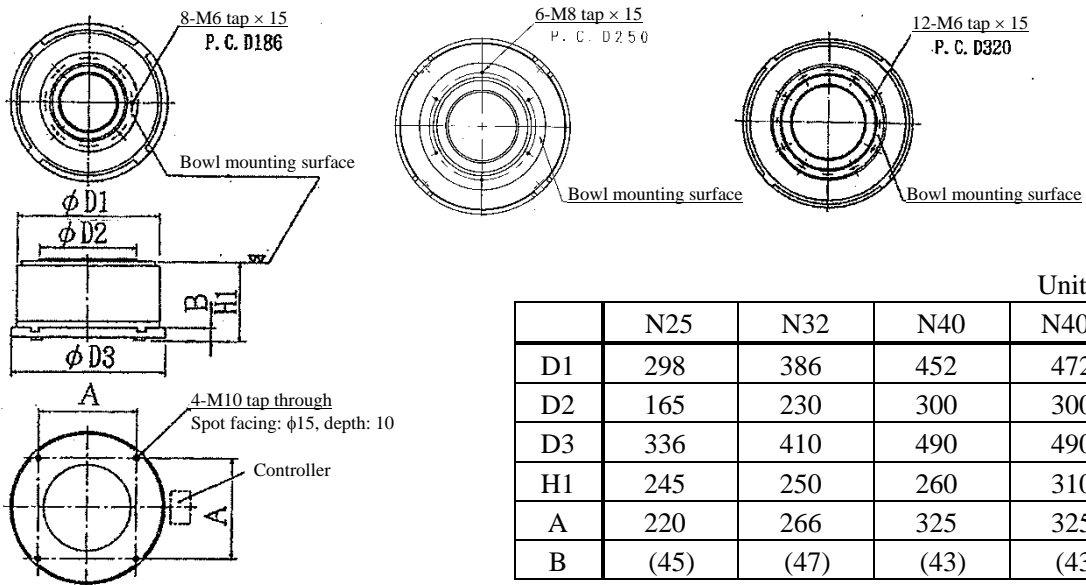
(1) Circular base specifications <basic type>

K-N25^RM₂¹

K-N32^RL2M₄²

K-N40^RM₄²

K-N40^RL1M4



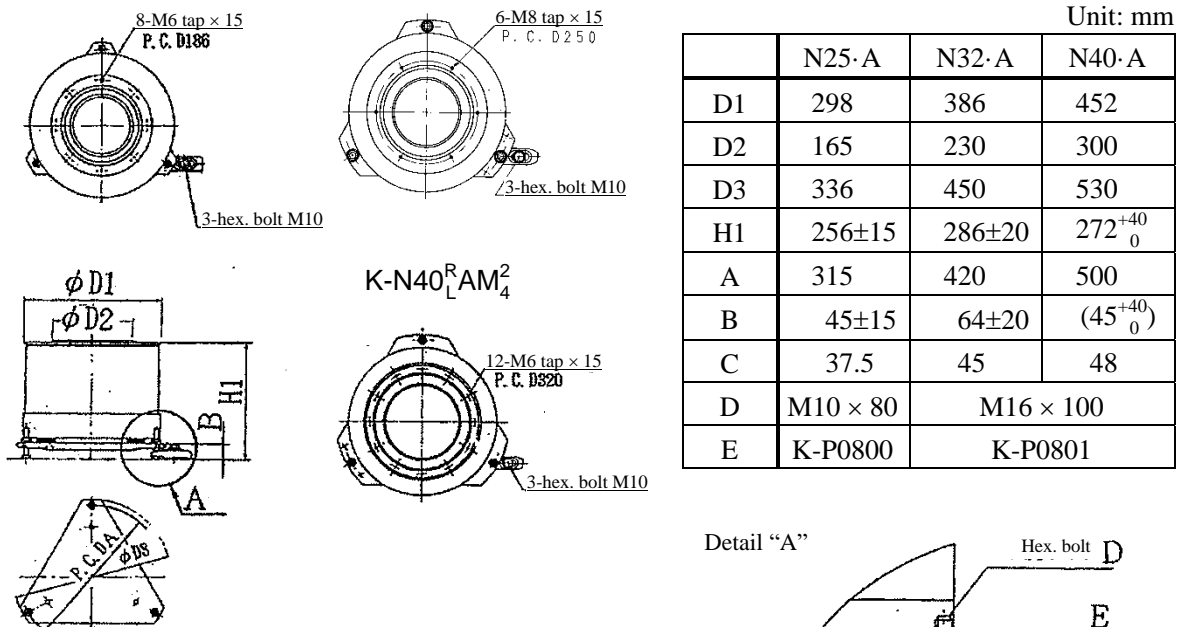
Base plate dimensional drawing (top view)

(2) Free set base specifications <basic type>

K-N25^RAM₂¹

K-N32^RAM₄²

K-N40^RAM₄²

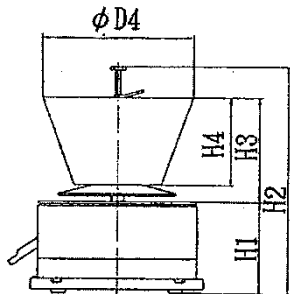


Free set base dimensional drawing (top view)

(3) Circular base specifications

<With auxiliary hopper in bowl>

K-N25^R_LH₂¹ K-N40^R_LH₄²
 K-N32^R_LH₄² K-N40^R_L1H4

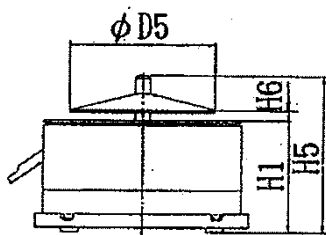


Unit: mm

	D4	H1	H2	H3	H4
N25	300	245	(570)	230-290	200
N32	345	250	(630)	290-340	230
N40	430	260	(650)	290-350	250
N40·1	430	310	(700)	290-350	250

<With separation bottom>

K-N25^R_LT₂¹ K-N40^R_LT₄²
 K-N32^R_L2T₄² K-N40^R_L1T4

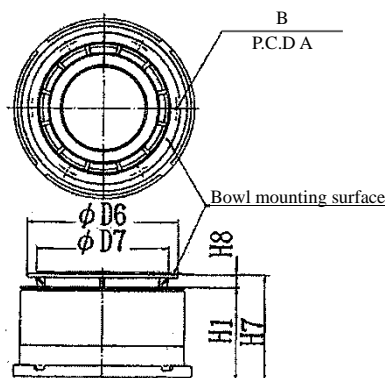


Unit: mm

	D5	H1	H5	H6
N25	198.5	245	(314)	18
N32	268	250	(351)	21
N40	334	260	(363)	21
N40·1	334	310	(413)	21

<With bowl mounting flange>

K-N25^R_LF₂¹ K-N32^R_L2F₄²
 K-N40^R_LF4 K-N40^R_L1F4



Unit: mm

	D6	D7	H1	H7	H8	A	B
N25	269	225	245	270	25	250	8-φ7 through
N32	300	230	250	285	35	280	6-φ9 through
N40	420	365	260	295	35	400	6-φ9 through
N40·1	420	365	310	345	35	400	6-φ9 through

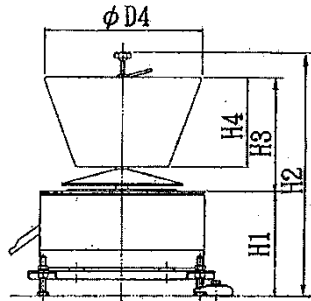
(Note) For dimensions of the base plate and the bowl mounting area, refer to “(1) Circular base specifications <basic type>”.

(4) Free set base specifications

<With auxiliary hopper in bowl>

K-N25^R_LAH₂¹ K-N32^R_LAH₄²

K-N40^R_LAH₄²



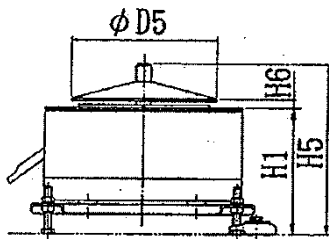
Unit: mm

	D4	H1	H2	H3	H4
N25	300	256±15	(580±15)	230-290	200
N32	345	286±20	(665±20)	290-340	230
N40	430	272 ⁺⁴⁰ ₀	(662 ⁺⁴⁰ ₀)	290-350	250

<With separation bottom>

K-N25^R_LAT₂¹ K-N32^R_LAT₄²

K-N40^R_LAT₄²



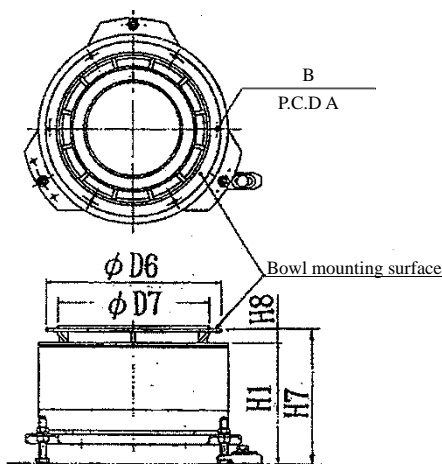
Unit: mm

	D5	H1	H5	H6
N25	198.5	256±15	(325±15)	18
N32	268	286±20	(387±20)	21
N40	334	272 ⁺⁴⁰ ₀	(375 ⁺⁴⁰ ₀)	21

<With bowl mounting flange>

K-N25^R_LAF₂¹ K-N32^R_LAF₄²

K-N40^R_LAF₄



Unit: mm

	D6	D7	H1	H7	H8	A	B
N25	269	225	256±15	(281±15)	25	250	8-φ7 through
N32	300	230	286±20	(321±20)	35	280	6-φ9 through
N40	420	365	272 ⁺⁴⁰ ₀	(307 ⁺⁴⁰ ₀)	35	400	6-φ9 through

(Note) For dimensions of the base plate and the bowl mounting area, refer to “(2) Free set base specifications <basic type>”.

6. Transportation and Installation



CAUTION

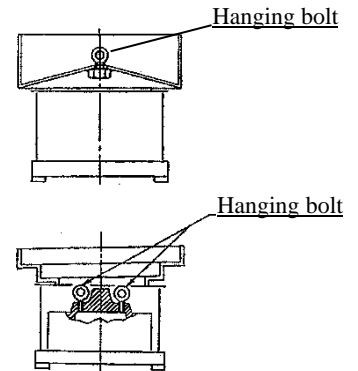
The machine is heavy. When required, transport the machine carefully with a hoisting accessory mounted as shown below. Note carefully that serious accident may result when the machine is dropped.

(1) Transportation

- [1] When the machine is of a type with M12 nut provided at the bowl center, relocate the machine with M12 hanging bolts mounted as shown below.
- [2] When the machine is of a type with M12 nut not available for use at the bowl center, relocate the machine with M12 hanging bolts mounted on the M12 taps for transportation of the lower vibrator as shown.

(Note 1) Pull out the separation bottom, and mount hanging bolts on M12 taps.

(Note 2) Operate the machine with the hanging bolts removed during run.



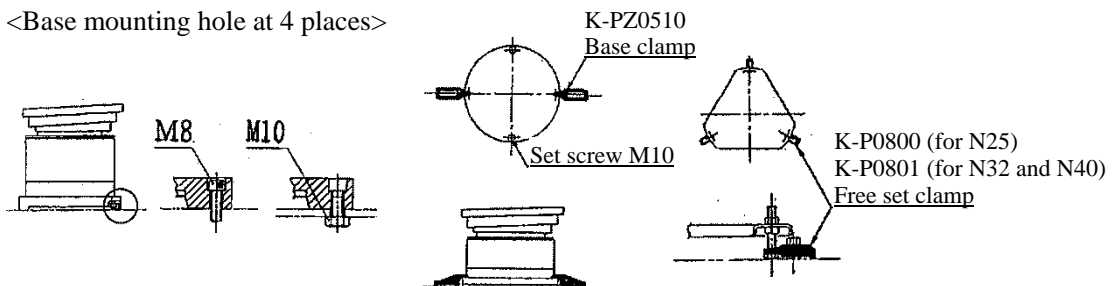
□ Precautions for transportation

- [1] Use a lifting device and a hoisting accessory of sufficient lifting capacity in considerations of individual body masses (in the case of a type provided with a bowl, the bowl mass should be added). For the body mass, refer to Section 10 “Specifications”.
- [2] During transportation, be fully careful never to put your hands and feet under the machine body suspended.
- [3] Do not relocate the body while holding the bowl.

(2) Installation

- [1] After installation, fix the product securely using base holes in 4 places (M8 or M10 bolts).
- [2] When use of base clamps is intended, set base clamps and setscrews in 2 places each. In the case of a free set base, set free set clamps in 3 places as shown below.

<Base mounting hole at 4 places>



□ Precautions for installation

- [1] Assemble and set the machine with sufficient care paid to defects such as deformation of the bowl and the alignment mechanism.
- [2] Wear safety gloves to prevent bare hands from coming into contact with sharp edges of the bowl and the alignment mechanism.
- [3] Do not operate the machine on a base with insufficient strength or in an unstable place.
- [4] Be careful not to fix the machine with its vibrating part (other than the base) in contact with other parts.
- [5] When the machine is inclined in installation, specified capability cannot be obtained. Be sure to level the machine.
- [6] When execution of welding work or grinding work is intended in vicinity of the bowl feeder, fit a protective cover to the entire bowl feeder. Otherwise, infiltration of iron powder or the like into the machine to spoil its performance.

7. Wiring and Operating Methods

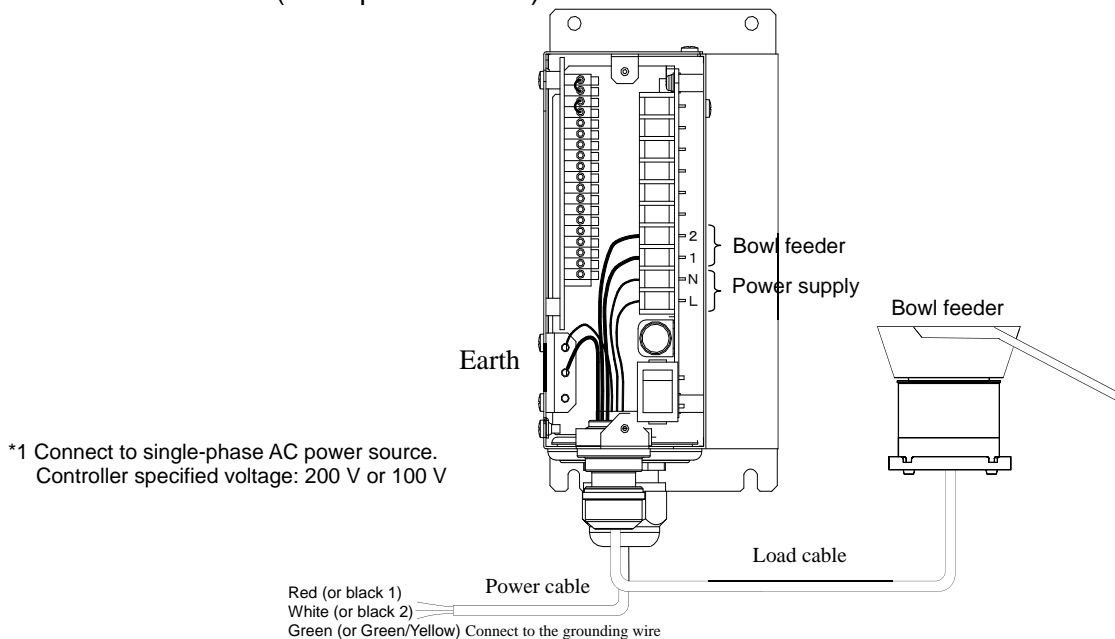
WARNING

Ensure that the supply voltage is as shown on the machine nameplate (seal bearing the type, power supply and manufacturer's serial No.) of the vibrator body. Be sure to connect the grounding wire of the power source.

CAUTION

Relating to controllers provided with selector switches (such as selection of full wave/half wave, 50/60 Hz and 100/200 V) and variable frequency controllers provided with the F-V curve setting function, adjust the settings to the specifications and power requirements of the body. Wrong setting may cause accidents such as burning of the magnet. For setting of the selector switches and the F-V curve, refer to the Instruction Manual for the bowl feeder controller.

Controller (Example K-ECH45)



*1 In the case of 3-phase power supply, use two phases out of three. Do not use the remaining one phase.

- (1) Remove fixtures used for transportation of the chute and the bowl feeder, if they are still provided.
- (2) Connect the power supply. (For detailed connection method, refer to the Instruction Manual for the bowl feeder controller.)
- (3) Turn the controller speed control knob counterclockwise up to the position of the scale "0". (Check that the bowl feeder is in free state without coming into contact with others located in vicinity.)
- (4) Put parts in the bowl and turn ON the POWER switch of the controller. (Confirm lighting of LED on the operation panel.)
- (5) Turn the speed adjusting knob of the controller slowly clockwise to set the graduation at a workpiece speed that matches with supply capacity. Operate this machine under the maximum acceptable amplitude of leaf spring in the item 8 in order to prevent breakage of leaf spring.

- (Note 1)** When the bowl feeder is used in assembly with another device or the like, do not turn On-Off the “On-Off” switch on the primary side of the controller but make use of the external control signal input terminal.
- (Note 2)** Ensure that the power connection work is executed by electrical engineers. When modification or change of wiring is intended, be sure to refer to the Instruction Manual for the bowl feeder controller.
- (Note 3)** Where a bowl is provided with an alignment mechanism and an instruction mark is located around the speed control knob of the controller, operate the machine with the speed control knob position adjusted to the marking.
- (Note 4)** When extension of the load cable is intended by your company, ensure the extension length of 10 m max. in use of a cable of 2.5 mm² min. in size. In addition, conduct the protective continuity test to check that the machine is grounded appropriately.
- (Note 5)** For details of required operation of the controller to be used, refer to the Instruction Manual for the bowl feeder controller.

8. Inspection and Adjustment

(1) Inspection and adjustment of leaf spring

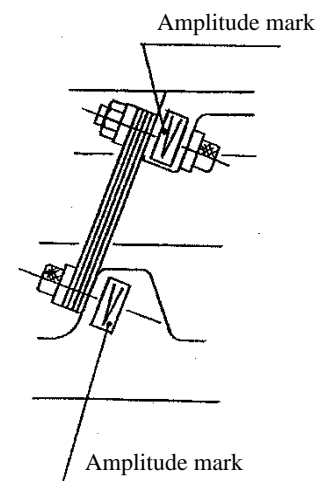
[1] Acceptable maximum amplitude of leaf spring

To prevent break of the leaf springs, operate the machine at amplitude lower than shown in the following table.

If the machine should be operated at higher amplitude, the leaf springs may break at an early date. When measuring the amplitude, be sure to attach the supplied amplitude marks as shown below and total the readings of upper and lower amplitudes.

Type/Size	Leaf spring Part No.	Amplitude (mm) <Top + Bottom>
N25	K-PLS2-86 × 20	1.0
N32	K-PLS2-116 × 40 (for full wave)	1.3
	K-PLS2-116 × 20 (for half wave)	2.2
N40	K-PLS2-86 × 20 (for full wave)	1.0
	K-PLS2-116 × 20 (for half wave)	2.2
N40-1	K-PLS2-150 × 30	3.0

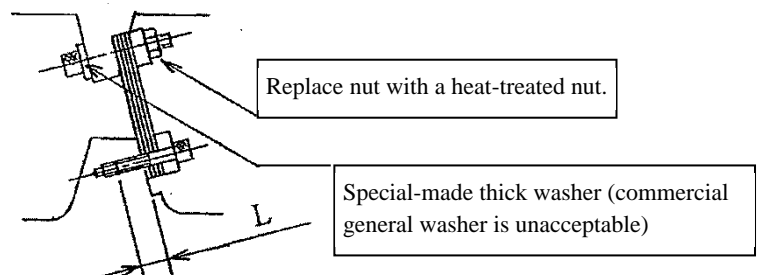
(Note) When a recommended speed is specified by NTN, set the pointer to the scale of the recommended speed.



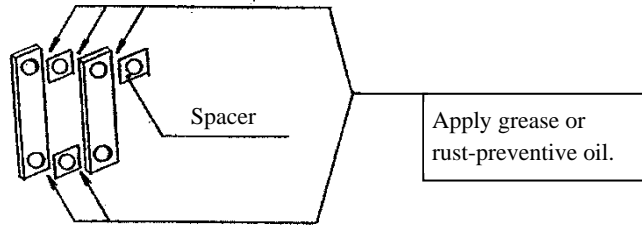
[2] Caution in attaching and detaching leaf spring

When attaching and detaching the leaf spring, be sure to complete one unit before moving to the next unit. Do not loosen all the units at the same time.

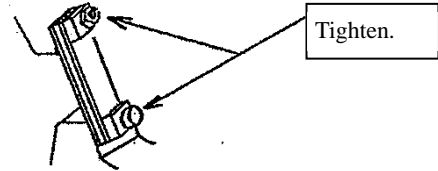
- a) The bolt bite depth (Dimension L) shall be at least 2 times as large as the screw diameter. Change the bolt length depending on increase or decrease in the number of leaf springs.



- b) Place spacers between leaf springs, and apply grease or rust preventative oil between the spring and the spacer. At that time, make sure not to include dirt and chips between them.



- c) Tighten the bolts to the tightening torques that are specified as guide values in the table below. Apply grease or rust-preventive oil to the whole spring after adjustment of the springs. When tightening the bolts, check that the spacer orientation is aligned to that of leaf springs.



Type/Size	Bolt used	Tightening torque
N25, N25·A N32, N32·A N40, N40·A	Hex. socket head bolt M12 (Strength division: 10.9 min.)	Approx. 117.6 N·m (1200 kgf·cm)
N40·1	Hex. socket head bolt M14 (Strength division: 10.9 min.)	Approx. 186.2 N·m (1900 kgf·cm)

(Note) Guide value of tightening torque: In the case of “Approx. 117.6 N·m” shown in the above table, the value roughly means tightening of a bolt to the level such as tightening under full power with one hand using a tool of 300 mm in arm length.

[3] Retightening

Check the leaf spring mounting bolt and retighten it after actual operating time of about 40 hours.

(When the tightening is normal, there is hardly the additional tightening allowance. But, consider this requirement as retightening of comfortable fitting of the leaf spring.)

[4] Correction of fatigue

When the machine is operated with the speed control knob set to the MAX. position at all times, add 1 or 2 pieces of leaf springs to a leaf spring unit in either one place.

(Even if a leaf spring mounting bolt is tightened normally, the spring constant of the leaf spring itself may reduce due to repetitive stress caused by vibration, thus resulting in slight decrease in the amplitude, when the machine is operated for 40 to 100 hours.)

[5] Replacement of leaf spring

100% replacement of leaf springs is recommended with the guideline of 1-year operation on the basis of 8 hours a day.

(If amplitude cannot be recovered after correction of set in fatigue described in [4] above, we recommend that you replace all leaf springs, considering that the end of the life of the leaf spring has been reached.)

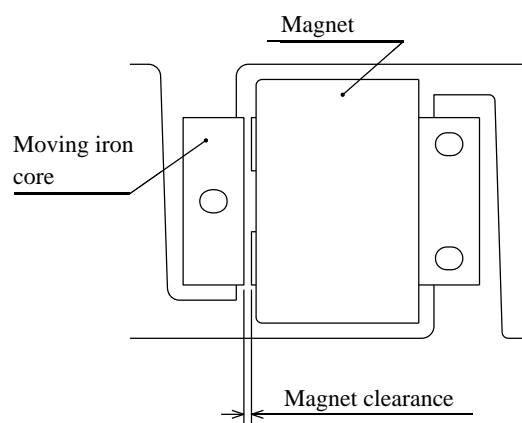
(Note) When new leaf springs are required, place an order with us while referring to the part No. of the leaf spring shown in Section 10 “Specifications”.

(2) Check and adjustment of clearance in magnet

The clearance between the magnet and the moving iron core is set to a value shown in the following table when the body is shipped from NTN. But, since minimization of the clearance is advisable to the extent not to allow contact of them with each other at the occasion of maximum amplitude, check the clearance from time to time to keep a proper value.

In a much dusty environment, such dust may stick to the magnet and the movable iron core solidly to narrow the clearance, possibly resulting in generation of unusual noise. Conduct check to remove dust and others periodically.

Type/Drive method	Magnet clearance (mm)	
	In shipment	Maximum
N25 (Full wave)	1.0	1.5
N32 (Full wave)	1.2	
N32 (Half wave)	2.0	
N40 (Full wave)	1.5	
N40 (Half wave)	2.0	
N40-1 (Half wave)	2.0	



<Adjusting method>

- [1] Remove the cover.
- [2] Insert a clearance gauge of the dimension specified for each body (shown above) into the space between the magnet and the movable iron core, and temporarily tighten the movable iron core tightening bolt with the movable iron core pressed against the magnet side.
- [3] Tighten the movable iron core tightening bolt to the specified torque. At this time, be careful so that the position set in [2] above may not deviate.
- [4] Pull out the clearance gauge. (Check that no deviation is present in the clearance between the magnet and the movable iron core.)
- [5] Attach the cover.



CAUTION

When the machine is operated with the clearance in the magnet increased by 20% in excess of the maximum value shown above, the magnet may burn. Check the clearance in the magnet from time to time to keep a proper value.

(3) Change of power frequency

The power frequency of the **NTN bowl feeder** is adjusted in conformance to the value applicable to the area where it is used or the preset frequency for the controller. Accordingly, normal vibrations cannot be ensured, if the power frequency or the preset frequency for the controller as the output frequency for driving should change. When change of the power frequency is intended, strictly observe the procedure described below.

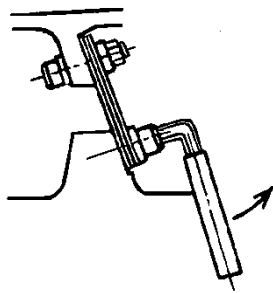
(Note) Where the output frequency for driving is set on a variable frequency controller, change of settings is not required, even if the power frequency (50 Hz ↔ 60 Hz) is changed.

[1] Change of number of leaf springs

50 Hz → 60 Hz: Increase the number of leaf springs by about 40%.

60 Hz → 50 Hz: Decrease the number of leaf springs by about 30%.

<For information: How to check the number of leaf springs for surplus or shortage>



Check according to the following method whether the number of leaf springs currently mounted is excessive or short for the bowl and the alignment mechanism used.

Slightly loosen the leaf spring mounting bolt located at one place while allowing continuous vibrations of the machine, and check the amplitude.

- Amplitude increased. → Number of leaf springs is too large.
- Amplitude decreased. → Number of leaf springs is too small or proper.

Optimum number of leaf springs is that sufficient amplitude is ensured and that the amplitude decreases when the bolt is loosened.

[2] Changeover of frequency in controller

Set the frequency as shown below. For details, refer to the Instruction Manual for individual controllers.

Power source frequency	In the case of 50Hz		In the case of 60Hz	
Setting of DIP switch by K-EGA57.	SW2	ON	SW2	OFF
	SW3	OFF	SW3	ON

9. Troubleshooting

If any trouble should be found, check the following points:

(1) No vibration at all

In this case, distinguish the trouble between mechanical system and electric system as shown below for checking.

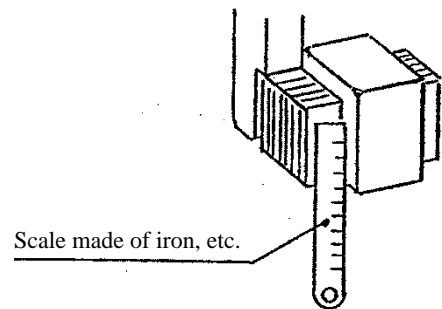
Turn ON the POWER switch, remove the cover, and bring an iron piece close to the vicinity of the magnet core.

[1] When the iron piece is attracted strongly during vibration

Electric system is normal. Accordingly, the cause of the trouble lies in either setting of the number of leaf springs of the bowl feeder or wrong designation of the power frequency.

[2] When the iron piece is not attracted at all

Trouble of electric system including controller and magnet. However, if the controller is equipped with a sensor, it is possible that the detection head detects a workpiece. It is not a trouble. Align optical axis or recheck proximity distance, etc.



Further, check the following points for electric system for safety:

- a) Power supply is connected properly. (See the Section 7 “Wiring and Operating Methods”.)
- b) No melting of controller fuse and no working of overcurrent protective function
- c) Shorting of the controller external control signal input terminals. Closing of the terminals according to external control signal (refer to the Controller Instruction Manual.)
- d) Normal magnet (If a)–c) are normal, subject individual magnets to the attraction test shown above.)

(2) Vibration is found, although amplitude is insufficient.

- [1] Imperfect power source (such as 100 V connection in spite of 200 V specification)
- [2] Leaf spring mounting bolt is loosened.
- [3] Tightening bolt of bowl etc. is loosened.
- [4] Magnet clearance is too large.
- [5] Omission of removal of fixtures used for transportation

(3) Amplitude is decreasing during use.

- [1] Leaf spring is fatigued.
- [2] Leaf spring mounting bolt is loosened.
- [3] Leaf spring is damaged, and rust is found.
- [4] Foreign substance is caught in the magnet clearance.
- [5] Bowl tightening bolt is loosened.

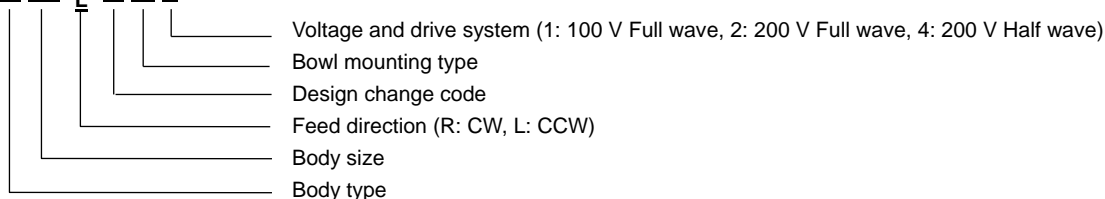
(4) Unusual metallic noise

- [1] Narrow clearance in magnet or entry of foreign matter
- [2] Excessive amplitude
- [3] Interference of the cover with the vibrator
- [4] Omission of removal of fixtures used for transportation

When you inform NTN of trouble condition with unknown cause, let them know the detail as far as possible with reference to the above so that they can take a measure as soon as possible.

10. Specifications

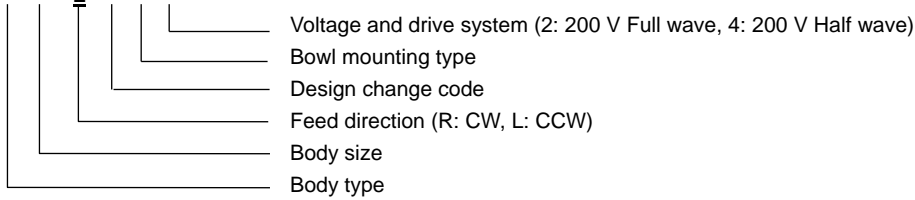
K-N 25^R L A M 1



Product No.	Circular base spec.	K-N25 ^R _L M10 K-N25 ^R _L M2	K-N25 ^R _L H1 K-N25 ^R _L H2	K-N25 ^R _L T1 K-N25 ^R _L T2	K-N25 ^R _L F1 K-N25 ^R _L F2
	Free set base spec.	K-N25 ^R _L AM1 K-N25 ^R _L AM2	K-N25 ^R _L AH1 K-N25 ^R _L AH2	K-N25 ^R _L AT1 K-N25 ^R _L AT2	K-N25 ^R _L AF1 K-N25 ^R _L AF2
Bowl mounting type		Basic type	With aux. hopper in bowl	With separation bottom	With bowl mounting flange
Supply voltage (V)		Part No. last digit 1: 100 Part No. last digit 2: 200			
Consumption current (A)		Part No. last digit 1 (100 V): 3.6 Part No. last digit 2 (200 V): 1.8			
Dissipation power (VA)		360			
Drive method		Full wave			
Frequency (times/min)		6000 (50 Hz), 7200 (60 Hz)			
Spring angle (θ°)		15°			
Max. loading mass (kg) (work + bowl mass)		15			
Magnet part No.		Part No. last digit 1 (for 100 V): K-PMG-213 Part No. last digit 2 (for 200 V): K-PMG-223			
Cable size × length (from center)		Magnet: 1.0 mm ² × 0.35 m Body: 1.5 mm ² × 0.46 m			
Leaf spring fitting (places)		3			
Standard No. of leaf springs set		9 pieces × 3 places = 27 pieces			
Leaf spring part No. (material)		K-PLS2-86×20 (Steel)			
Leaf spring dim. (mm) Length (hole pitch) × Width × Thickness		106 (86) × 35 × 2			
Leaf spring fixing bolt strength division		12.9			
Leaf spring tightening torque		117.6 N·m (1200 kgf·cm)			
Outside coating color		Black/silver			
Mass (kg)	Circular base spec.	48	52	49	49
	Free set base spec.	44	48	45	45

(Note) For controllers that can apply to this machine, refer to the Catalog and the Controller Instruction Manual.

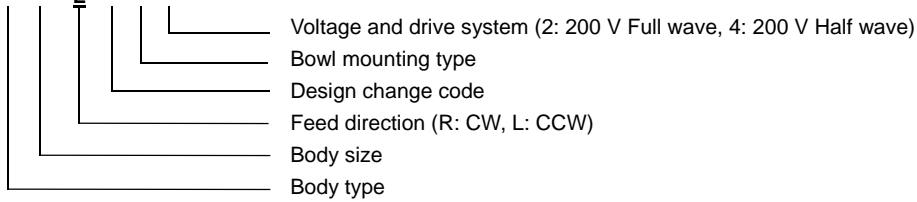
K-N 32^R 2 M 2



Product No.	Circular base spec.	K-N32 ^R _L 2M2	K-N32 ^R _L 2H2	K-N32 ^R _L 2T2	K-N32 ^R _L 2F2
	Free set base spec.	K-N32 ^R _L 2M4	K-N32 ^R _L 2H4	K-N32 ^R _L 2T4	K-N32 ^R _L 2F4
		K-N32 ^R _L AM2 K-N32 ^R _L AM4	K-N32 ^R _L AH2 K-N32 ^R _L AH4	K-N32 ^R _L AT2 K-N32 ^R _L AT4	K-N32 ^R _L AF2 K-N32 ^R _L AF4
Bowl mounting type		Basic type	With aux. hopper in bowl	With separation bottom	With bowl mounting flange
Supply voltage (V)	200				
Consumption current (A)	Part No. last digit 2 (Full wave): 2.8 Part No. last digit 4 (Half wave): 3.5				
Dissipation power (VA)	Part No. last digit 2 (Full wave): 560 Part No. last digit 4 (Half wave): 700				
Drive method	Part No. last digit 2: Full wave Part No. last digit 4: Half wave				
Frequency (times/min)	Part No. last digit 2 (Full wave): 6000 (50 Hz), 7200 (60 Hz) Part No. last digit 4 (Half wave): 3000 (50 Hz), 3600 (60 Hz)				
Spring angle (θ°)	15°				
Max. loading mass (kg) (work + bowl mass)	23				
Magnet part No.	Part No. last digit 2 (for full wave): K-PMG-323-1 Part No. last digit 4 (for half wave): K-PMG-323				
Cable size × length (from center)	Magnet: 1.0 mm ² × 0.44 m Body: 1.5 mm ² × 0.68 m				
Leaf spring fitting (places)	3				
Standard No. of leaf springs set	Part No. last digit 2 (for full wave): 7 pieces × 3 places = 21 pieces Part No. last digit 4 (for half wave): 8 pieces × 3 places = 24 pieces				
Leaf spring part No. (material)	Part No. last digit 2 (for full wave): K-PLS2-116×40 (Steel) Part No. last digit 4 (for half wave): K-PLS2-116×20 (Steel)				
Leaf spring dim. (mm) Length (hole pitch) × Width × Thickness	Part No. last digit 2 (for full wave): 136 (116) × 35 × 4 Part No. last digit 4 (for half wave): 136 (116) × 35 × 2				
Leaf spring fixing bolt strength division	12.9				
Leaf spring tightening torque	117.6 N·m (1200 kgf·cm)				
Outside coating color	Black/silver				
Mass (kg)	Circular base spec.	68	76	72	69
	Free set base spec.	64	72	68	65

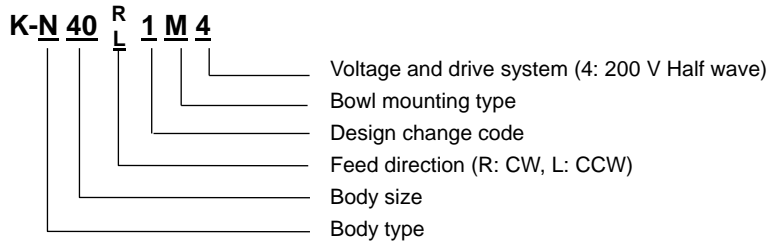
(Note) For controllers that can apply to this machine, refer to the Catalog and the Controller Instruction Manual.

K-N 40^R L A M 2



Product No.	Circular base spec.	K-N40 ^R _L M2 K-N40 ^R _L M4	K-N40 ^R _L H2 K-N40 ^R _L H4	K-N40 ^R _L T2 K-N40 ^R _L T4	K-N40 ^R _L F4
	Free set base spec.	K-N40 ^R _L AM2 K-N40 ^R _L AM4	K-N40 ^R _L AH2 K-N40 ^R _L AH4	K-N40 ^R _L AT2 K-N40 ^R _L AT4	K-N40 ^R _L AF4
Bowl mounting type		Basic type	With aux. hopper in bowl	With separation bottom	With bowl mounting flange
Supply voltage (V)	200				
Consumption current (A)	Part No. last digit 2 (Full wave): 2.8 Part No. last digit 4 (Half wave): 3.5				
Dissipation power (VA)	Part No. last digit 2 (Full wave): 560 Part No. last digit 4 (Half wave): 700				
Drive method	Part No. last digit 2: Full wave Part No. last digit 4: Half wave				
Frequency (times/min)	Part No. last digit 2 (Full wave): 6000 (50 Hz), 7200 (60 Hz) Part No. last digit 4 (Half wave): 3000 (50 Hz), 3600 (60 Hz)				
Spring angle (θ°)	15°				
Max. loading mass (kg) (work + bowl mass)	35				
Magnet part No.	K-PMG-324				
Cable size × length (from center)	Magnet: 1.0 mm ² × 0.44 m Body: 1.5 mm ² × 0.68 m				
Leaf spring fitting (places)	4				
Standard No. of leaf springs set	Part No. last digit 2 (for full wave): 8 pieces × 4 places = 32 pieces Part No. last digit 4 (for half wave): 9 pieces × 4 places = 36 pieces				
Leaf spring part No. (material)	Part No. last digit 2 (for full wave): K-PLS2-86×20 (Steel) Part No. last digit 4 (for half wave): K-PLS2-116×20 (Steel)				
Leaf spring dim. (mm) Length (hole pitch) × Width × Thickness	Part No. last digit 2 (for full wave): 116 (86) × 35 × 2 Part No. last digit 4 (for half wave): 136 (116) × 35 × 2				
Leaf spring fixing bolt strength division	12.9				
Leaf spring tightening torque	117.6 N·m (1200 kgf·cm)				
Outside coating color	Black/silver				
Mass (kg)	Circular base spec.	90	98	94	93
	Free set base spec.	88	96	92	91

(Note) For controllers that can apply to this machine, refer to the Catalog and the Controller Instruction Manual.



Product No. (large amplitude spec.)	K-N40 ^R 1M4	K-N40 ^R 1H4	K-N40 ^R 1T4	K-N40 ^R 1F4
Bowl mounting type	Basic type	With aux. hopper in bowl	With separation bottom	With bowl mounting flange
Supply voltage (V)	200			
Consumption current (A)	3.5			
Dissipation power (VA)	700			
Drive method	Half wave			
Frequency (times/min)	3000 (50 Hz), 3600 (60 Hz)			
Spring angle (θ°)	15°			
Max. loading mass (kg) (work + bowl mass)	35			
Magnet part No.	K-PMG-324			
Cable size × length (from center)	Magnet: 1.0 mm ² × 0.44 m Body: 1.5 mm ² × 0.68 m			
Leaf spring fitting (places)	4			
Standard No. of leaf springs set	6 pieces × 4 places = 24 pieces			
Leaf spring part No. (material)	K-PLS2-150×30 (Steel)			
Leaf spring dim. (mm) Length (hole pitch) × Width × Thickness	174 (150) × 40 × 3			
Leaf spring fixing bolt strength division	12.9			
Leaf spring tightening torque	186.2 N·m (1900 kgf·cm)			
Outside coating color	Black/silver			
Mass (kg)	110	118	114	113

(Note) For controllers that can apply to this machine, refer to the Catalog and the Controller Instruction Manual.

About NTN Parts Feeder Shipping Warranty Card

A shipping warranty card is attached to this product. Be sure to receive the card at the occasion of your purchase of the product.

The warranty card assures free repair of the product in accordance with conditions specified in the card. You are requested to keep the card after reading the descriptions given therein carefully.

- The Instruction Manual is subject to change without prior notice for functional improvement or other purposes.

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