

## Preface

Thank you for purchasing our Roll Separator.

1. This document is an operating manual for using this machine safely. Please read and understand this manual completely before using this machine or performing maintenance work.
2. Please operate this machine only after understanding how to operate, maintain, and check it properly. Failure to follow this manual may result in a serious accident.
3. Please keep this manual at hand near the machine so that you can refer to it at anytime necessary. Contact us or one of our distributors immediately when you have lost or damaged this manual.
4. You will find attention comments similar to the one shown below on various locations in this manual or on the machine. These notices are the particularly important messages for safety. Please pay enough attention to them.

### **Warning**

If you use this machine carelessly, you may suffer a severe wound or cause a serious accident.

## Safety Notes

Warning labels of this manual and the machine are classified as follows. Please keep them in mind for safe operations.

Terms of label	Meaning of label
 <b>Danger</b>	Indicates that serious personal injury or death may be incurred without avoiding the danger
 <b>Warning</b>	Indicates that a potential condition exists which may result in serious accidents without avoiding the danger.
 <b>Caution</b>	Indicates that personal damage or material damage may occur without avoiding the danger.

These safety standards include precautions to prevent dangerous conditions.

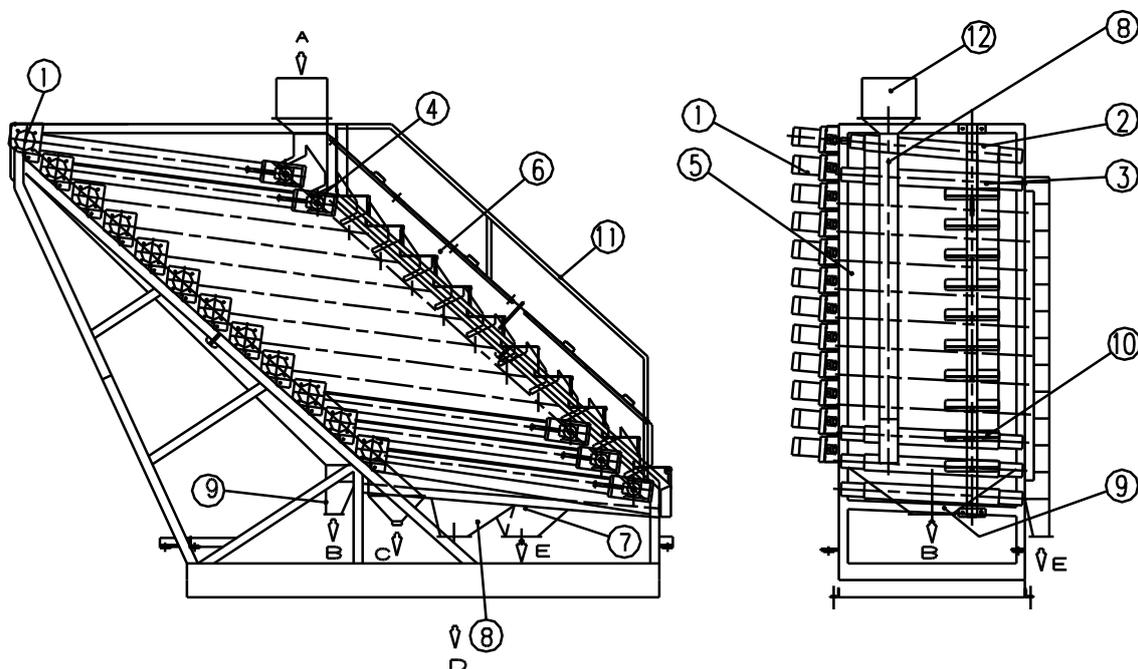
As some dangers indicated with any types of label may actually result in a more serious accident, please do not fail to follow the instructions of these labels.

**\*DO NOT ALLOW ANYONE OTHER THAN PROPERLY TRAINED STAFF TO OPERATE THIS MACHINE.**

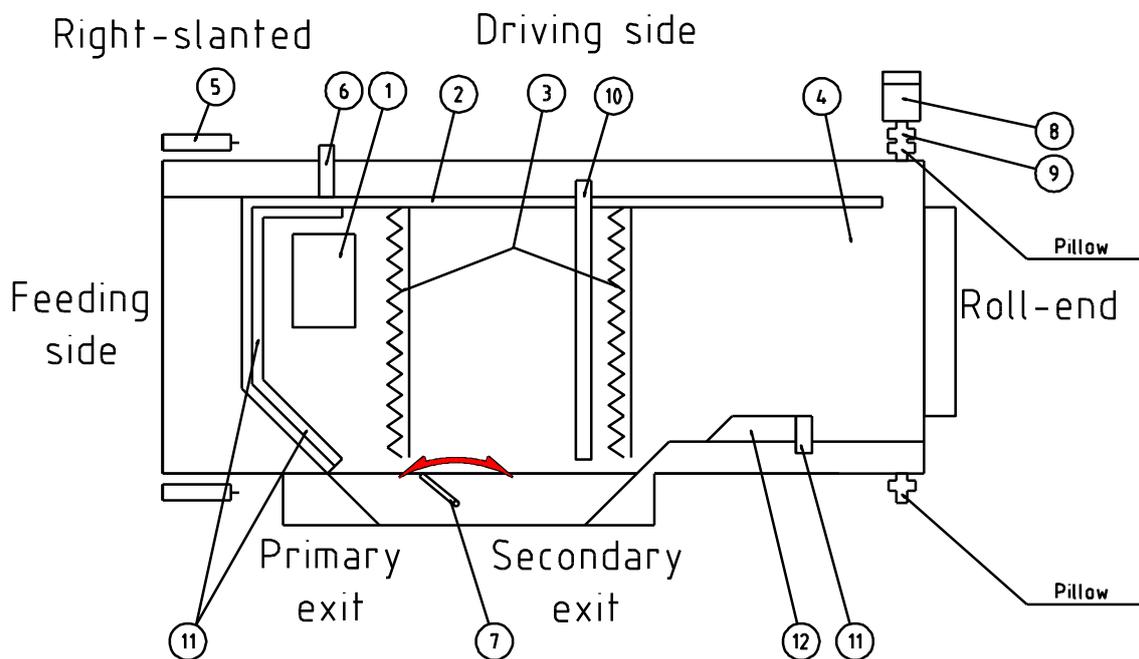
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## 1. Names of Each Section



1.	Driving gear motor
2.	Driving roller
3.	Tail roller
4.	Take-up
5.	Belt
6.	Material supply chute
7.	Product exit
8.	Secondary exit
9.	Roll-end exit
10.	Step for inspection
11.	Guard rail
12.	Fixed quantity supply feeder
A	Material supply entrance
B	Roll-end exit
C	Spilt bean exit
D	Secondary exit
E	Product exit



1.	Material feeding hopper
2.	Aluminum frame
3.	Breaker rubber
4.	Separator rubber
5.	Guide metal (207)
6.	Centering roller
7.	Damper for product exit adjustment
8.	Motor
9.	Coupling
10.	Return roller
11.	Lift-preventing roller
12.	Bean guiding rubber

## 2. Motor

Geared motor for slant type (RS type)

# of roll decks	Electric capacity	# of motors
2	0.4kW x 2	1
4	0.4kW x 4	
6	0.4kW x 6	
8	0.4kW x 8	
10	0.4kW x 10	
12	0.4kW x 12	

Geared motor for upright type (RST type)

One per deck	0.4 kW	1/30
	0.4 kW	1/30

Ex.) RST-6 (L/R) => Use 6 motors

## 3. Installation

1) The floor must be so structured that it can bear the weight of the machine. Do not fasten the machine with anchor bolts etc. so as to adjust the angle.

(Contact Harada Sangyo Co.Ltd. if you do not have a bottom mount.)

2) Level the bottom mount with a liner etc. and attach it firmly to the floor with anchor bolts. (Use the attached parts provided by Harada Sangyo.)

3) For chute piping, do not fasten each exit and other chutes since the angle adjustment for piping is required with observing the product shape and its separation state.

4) Make sure that the screw for angle adjustment is inserted correctly.

5) Note that the machine with more than 8 decks will be delivered in multiple separate sections for the convenience of transportation. Fit the connecting sections accurately when assembling. (Fitting points are marked accordingly.)

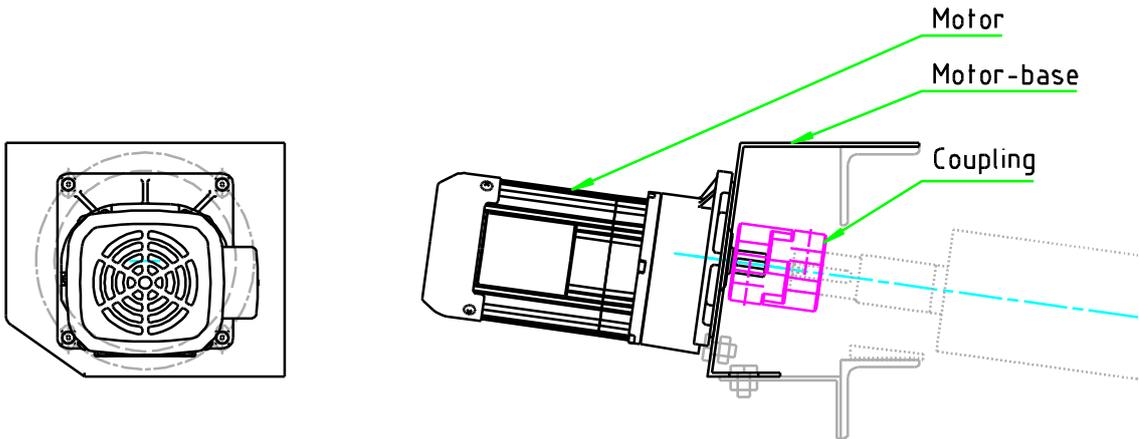
6) Fasten the motor to the main frame using bolts. Refer to Figure 1.

Attention 1: Fasten the motor so that misalignment of the coupling (in horizontal or vertical direction) does not occur.

Attention 2: Misalignment of the coupling may cause the motor to move in horizontal or vertical direction, so fix the motor so that the motor and the core of the shaft are in

accord with each other.

- 7) Install the machine with a hoisting device. Use wire with the thickness more than 12mm. Lifting angle must be more than 60 degrees.
- 8) Make enough room for electric wiring since angle adjustment is needed.
- 9) For installation, attach each section and part correctly.



#### 4. Separable Parts

No.	Separable Part	RST type	RS type
1	Product chute	Left 1, Right 1	1
2	Material supply hopper		
3	Material supply chute	1	
4	Material supply feeding chute		1
5	Bean spilling prevention skirt		1
6	Bean bouncing prevention board	Depend on model and # of decks	Depend on model and # of decks

#### 5. Checking after Installation

- 1) Make sure that each section is correctly attached.
- 2) Check if the bolts on every part are not loose.
- 3) Make sure that no other machines is in contact with this separator.

## 6. Special Attentions

- 1) Make enough room for angle adjustment and other actions.
- 2) There is a danger that you may be caught in the machine during operation. Never touch any rotating parts.
- 3) Stop the machine first before getting rid of any foreign substances stuck between the shaft and belt.
- 4) Electric wiring work must be done by a qualified electrician.
- 5) Make sure that electric wiring work has been done in such a way to allow for angle adjustment.

## 7. Electric Wiring

- 1) When the machine is not completely visible from the operator's spot, an operating warning device should be set up for safety.
- 2) Be sure to ground the machine in order to prevent electric shock accidents.
- 3) Electric work must be done by a qualified electrician.
- 4) Connect the machine to a proper power supply which satisfies the specifications of the machine.
- 5) Maintenance or inspection work must be done by an expert.
- 6) When performing maintenance, inspection or repair work on the machine, shut down the higher level breaker in order to ensure the power is cut off.
- 7) Terminals should be refastened at regular intervals.

## 8. Preparation for Operation

- 1) Make sure that the bolts on every section are not loose.
- 2) For the machine with a variable speed motor, make sure that oil is filled (speed change section/decelerating section). For a geared motor, oil is pre-filled by the manufacturer.
- 3) Make sure that no foreign substance is inside or on the surface of the belt.
- 4) Make sure that electric wiring etc. is done correctly.

## 9. Manual Checking for Operation

- 1) Check the rotating direction of the motor by using the arrow label. Stop the motor immediately if the direction is wrong because it may cause damage to the motor. (The belt is adjusted only for the correct direction.)
- 2) Check the position of the rubber belt. (It is adjusted on delivery.)
- 3) Adjust each supply chute to fully open position.

## 10. Trial Operation

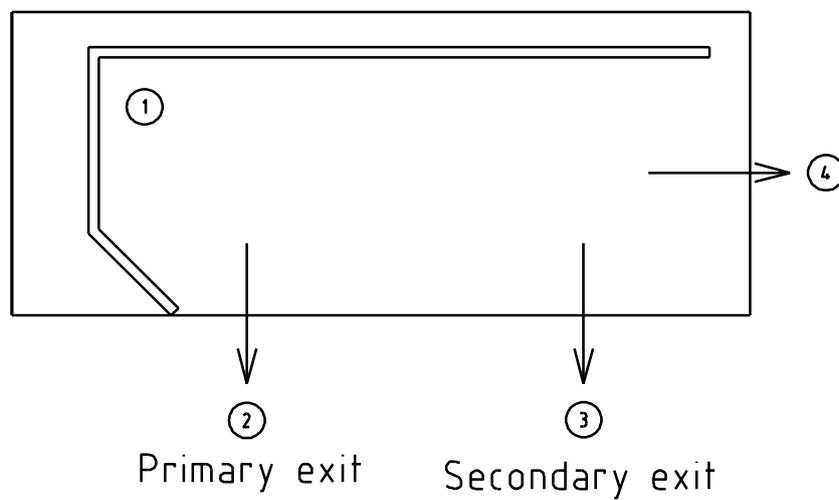
- 1) Adjust the supply chute adjustment board on each deck.
- 2) Adjust the product exit damper if the machine has the secondary product exit.
- 3) Use the machine with usual number of motor rotations (shaft rotations) of 67 – 70.

## 11. On Stop

- 1) Stop the machine after making sure that any raw materials are not left.

## 12. Actual Operation

- 1) Supply the raw materials after making sure that it is not in abnormal state inside and on the surface of the belt, and on each deck.
- 2) For raw material supply during operation, check the product condition by feeding the raw material with one-third of the capacity.
- 3) In usual case, start the separation with the mount set horizontal. The product is normally separated as shown in the following list.



1	Supply entrance
2	Almost orbicular round grains
3	Round grains, flattened grains
4	Flat grains not separated in 3, foreign substances, cracked grains, corns, stones, stalks, and etc.

### 13. Checking for Belt Leaning

- 1) Start the machine to check if the belt is not leaning to one side for each deck.
- 2) Adjustment  
If the belt is leaning to one side, strain the take-up unit on the leaned side little by little (To strain the belt, turn clockwise to the bolt head of the take-up unit. Turn left to loosen. Do not strain too much at a time.).
- 3) Belt leaning should be adjusted slowly until it is level because the belt is quite wide.
- 4) Do not strain the belt too much. (Too much strain on either side or both sides may cause meandering flow or breaking the shaft.)
- 5) Adjusting the belt leaning and belt strain is performed during operation. This work should be done by well-trained personnel who have been trained under Harada Sangyo. Failing to follow this can cause damage to the machine or injury to the worker.

### 14. Angle Adjustment

- 1) Increase the angle gradually while checking the separating condition.
- 2) If you increase the angle excessively, foreign substances may mix in the product grains.
- 3) Use the provided jack for angle adjustment.
- 4) Do not raise the machine more than 100mm in angle adjustment.
- 5) Angle adjustment must be done carefully and little by little since it may cause a toppling down. Use an attached square screw and fasten the screw firmly and properly.
- 6) When you use a jack to perform an angle adjustment, gaps are formed between sections. Do not put your hands or feet in such gaps, which may cause injuries.
- 7) Angle adjustment: Use the attached fixing bracket to fix the machine during the adjustment. Be careful not to put your hands or feet between the mount and the machine, which may cause serious injuries.

## 15. Inspection Points and Consumable Parts

Rubber belt

- 1) Replace the belt if any crack or damage is found on it.
- 2) When you leave the machine unused for a long time, the belt might firm up wrongly and become unusable. Do idling regularly.

※ If you leave the machine unused for a long time or if you have found any damage parts, contact Harada Sangyo.

※ If you have found any cracks, looseness, or other damage on the shaft, contact Harada Sangyo.

※ If you heard or found unusual noise or malrotation in bearings, guide metals, pillows, Centering roller, Return roller, or motor bearings, contact Harada Sangyo.

※ Particularly, watch carefully if the Centering roller and Return roller etc. are working properly during operation.

## 16. Greasing

Apply grease on the bearings. Refer to Table 1 and 2.

Table 1: Greasing Intervals

Interval			
Bearing temperature during operation C°(F°)	Environment		
	Clean	dusty	extremely dusty, wet, and humid
Less than 50 (122)	1 year	3 months	1 month
70 (158)	6 months	1 month	2 weeks
100 (212)	1 month	1 week	1 week

Table 2: Grease to be Used

Category	Grease to be Used		Temperature Range C°(F°)
Silver Grease	Shell	Alvania Grease 3	-10(+14) +80(+176)
For General Use	Shell	Alvania Grease 3	-16(+3.2) +100(+212)
Heat Proof HR4	Yuken Kogyo	Super Lube	normal temperature +120(+248)
Heat Proof HR5	Yuken Kogyo	Super Lube	normal temperature +200(+392)
Cold Proof CR2A	Shell	AeroShell Grease 7	-40(-40) normal temperature
For Concentrated Piping	Shell	Alvania EP 0	-10(+14) +100(+212)

## 17. Troubleshooting

Location	Trouble Description	Cause	Action
1. Motor	1)Motor does not start.	1-1)Motor is not wired. 1-2)Breaker is killed.	1-1)Make sure that the motor is correctly wired. 1-2)Reset the breaker.
	2)Rotation speed is slow. (for motor with inverter)	2-1)Inverter setting is too low.	2-1)Raise the inverter setting.
	3)Motor trips and does not work.	3-1)Foreign substance is stuck in the rubber belt, which prevents belt rotation.	3-1)Remove the foreign substances.
2. Bearing	1)Abnormal noise	1-1)Out of oil	1-1)Refill with oil.
	2)Does not work.	2-1)Worn down due to abrasion	2-1)Replace the part.
3. Shaft	1)Cracks on shaft	1-1)Too much strain of rubber belt 1-2)Metal fatigue	1-1)Replace the shaft. 1-2) Replace the shaft.
4. Rubber belt	1)Product is mixed at roll end.	1-1)Cracks on the separation surface 1-2)Detachment of the connecting parts due to abrasion.	1-1)Replace the rubber belt. 1-2) Replace the rubber belt.
	2)Belt leaning	2-1)Belt leaning due to rubber stretch 2-2)Belt leaning due to too much strain of the take-up at one side.	2-1)Re-adjust the belt. 2-2)Re-adjust the belt.
Coupling	1)Abnormal noise	1-1)Bolts on the motor mounting section are loose.	1-1)Adjust it. ※

※ If you hear an abnormal noise from the coupling section between the motor and the shaft, stop the machine and loosen the bolts on the motor mounting section and adjust it so that the motor and the core of the shaft are in accord with each other. Then refasten the bolts on the motor mounting section. If the abnormal noise does not stop when you start the machine again, repeat the above steps.

※※ For failure or trouble other than above mentioned, contact Harada Sangyo.

## 18. Checks and Maintenance

Items for checking	Every Day	Bimonthly	Monthly	Every three months	Every six months
Bolt looseness of the motor mounting section				✓	
Rubber belt leaning			✓		
Abnormality or abnormal noise on each bearing	✓				
Bearing oil feeding on receiving side		✓			
Bearing oil feeding on driving side		✓			
Cracks on rubber belt					✓
Cracks on shaft					✓
Electric current on motor			✓		

## 19. Guarantee and Customer Support

1) We will offer a free repair or replacement of components when the failure or damage is detected within one year after the trial operation on the customer's site or the delivery of our product only when it has been recognized that such failure or damage has occurred under normal usage and due to our defect of design or assembly.

The above indicated repair or replacement is our only responsibility for our product and we are not responsible for other than that.

2) In the event of one of the following cases, we are not responsible for our product even during the guarantee period.

(i) Wrong usage or careless handling

(ii) When improper repair or alteration was performed, or when non-genuine parts of ours were applied

(iii) In case of fire, wind or flood damage, earthquake, salt damage or any other natural disasters, or unusual voltage etc.

(iv) Erroneous operation or improper activation

3) For a safety cover, only use the one designed and made by our company. Be sure to install it in place.