AD-4961-2KD-2035

CHECKWEIGHER

ASSEMBLY GUIDE

A&D Company, Limited

1WMPD4002854

WARNING DEFINITIONS

The warnings described in this manual have the following meanings:

⚠WARNING	A potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠CAUTION	A potentially hazardous situation which, if not avoided, may result in minor or moderate injury or damage to the instrument.
	This symbol indicates caution against electrical shock. Do not touch the part where the symbol is placed.
	This symbol indicates the ground terminal.
	This symbol indicates that an operation is prohibited.
Note	Information or cautions to use the device correctly.

The contents of this manual and the specifications of the instrument covered by this manual are subject to change for improvement without notice.

Contents

1. Introduction 2
   1.1. Unpacking 2
   1.2. Required Tools 4

2. Descriptions of Individual Parts 5
   2.1. Control Box (Inside) 5
   2.2. Control Box (Rear) 6
   2.3. Photosensor 7

3. Assembly Procedure 8
   3.1. Assembling the Frame 8
   3.2. Installing the Control Box 10
   3.3. Installing the Display 12
      3.3.1. Installing the display 12
      3.3.2. Connecting the display 13
   3.4. Installing the Weighing Conveyor Unit 15
   3.5. Installing the Infeed Conveyor Unit 18
   3.6. Installing the Conveyors / Securing the Conveyor Units 24
   3.7. Connecting the Power Cable 29

4. Adjustment 31
   4.1. Adjusting the Height 31
      4.1.1. Adjusting the weighing conveyor height 31
   4.2. Adjusting the Photosensor / Reflector 35
      4.2.1. Adjusting the photosensor and reflector height 35
      4.2.2. Adjusting photosensor sensitivity 36
   4.3. Calibrating the Checkweigher Using a Weight 38

1. Introduction

⚠CAUTION

The AD4961-2KD-2035 checkweigher is a precision instrument. Handle it with great care.

A strong impact may damage the instrument.

1.1. Unpacking

Before assembling the checkweigher, confirm that everything is included and check each component for damage.

If any of the components are missing, please contact the nearest local dealer.

⚠CAUTION

The control box has the display connected with cables.
When unpacking, be careful not to damage the display cables.
Check the identification plates of the control box, infeed conveyor unit and weighing conveyor unit to confirm that they have the same serial number.

Frame unit

1. U-shaped pipe with adjustment feet…2 pieces
2. Side beam…2 pieces
3. Frame assembling screw (M6x30 countersunk hexagon socket head screw)…8 pieces

Control box

4. Control box…1 unit
5. Control box securing screw (M6x15 screw) …2 pieces

Display (Connected to the control box with cables)

6. Display…1 unit
7. Display securing screw (M6x15 screw) …2 pieces

Infeed conveyor

8. Infeed conveyor (with a belt) …1 unit
9. Infeed conveyor unit…1 unit
10. Photosensor (with a securing fixture) …1 piece
11. Reflector (with a securing fixture) …1 piece
12. Photosensor/reflector securing screw (M4x8 thumbscrew) …4 pieces
13. Infeed conveyor unit clamp…2 pieces
14. Infeed conveyor unit securing screw (M6x30 screw) …4 pieces
15. Infeed conveyor unit securing nut (M6 nut) …4 pieces

Weighing conveyor

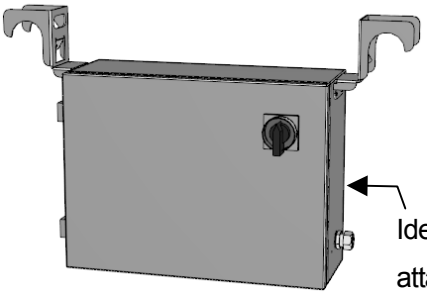
16. Weighing conveyor (with a belt) …1 unit
17. Weighing conveyor unit…1 unit
18. Weighing conveyor unit clamp…2 pieces
19. Weighing conveyor unit securing screw (M6x30 screw) …4 pieces
20. Weighing conveyor unit securing nut (M6 nut) …4 pieces

Documentation

21. Instruction manual…1 copy
22. Assembly guide (this document) …1 copy

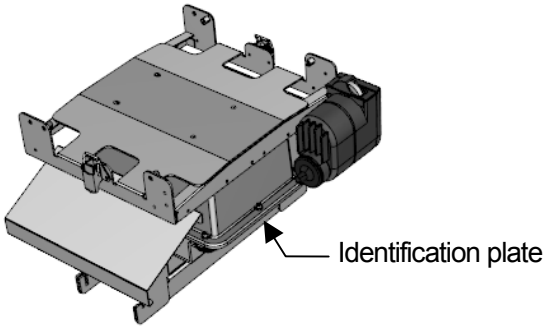
1. U-shaped pipe with adjustment feet

2. Side beam

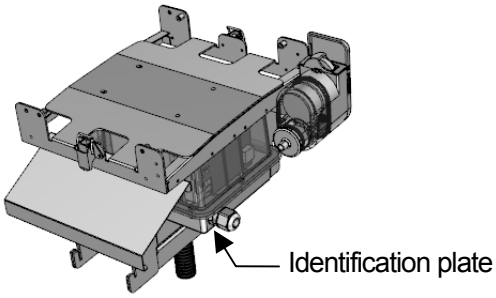


4. Control box

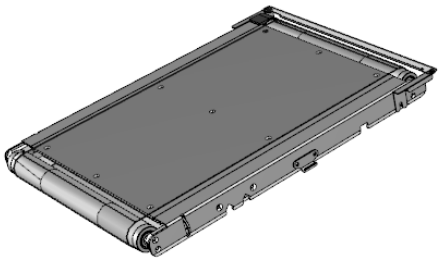
6. Display
(Connected to the control box with cables)



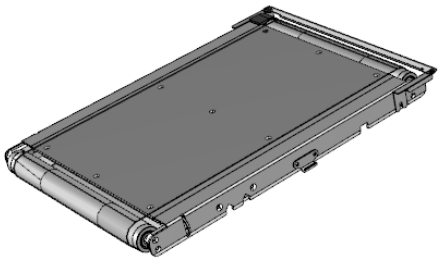
9. Infeed conveyor unit



17. Weighing conveyor unit



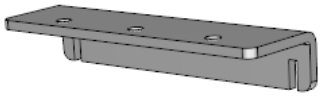
8. Infeed conveyor



16. Weighing conveyor

10. Photosensor

11. Reflector



13. Infeed conveyor unit clamp

18. Weighing conveyor unit clamp

1.2. Required Tools

The following tools are required for assembling the checkweigher.

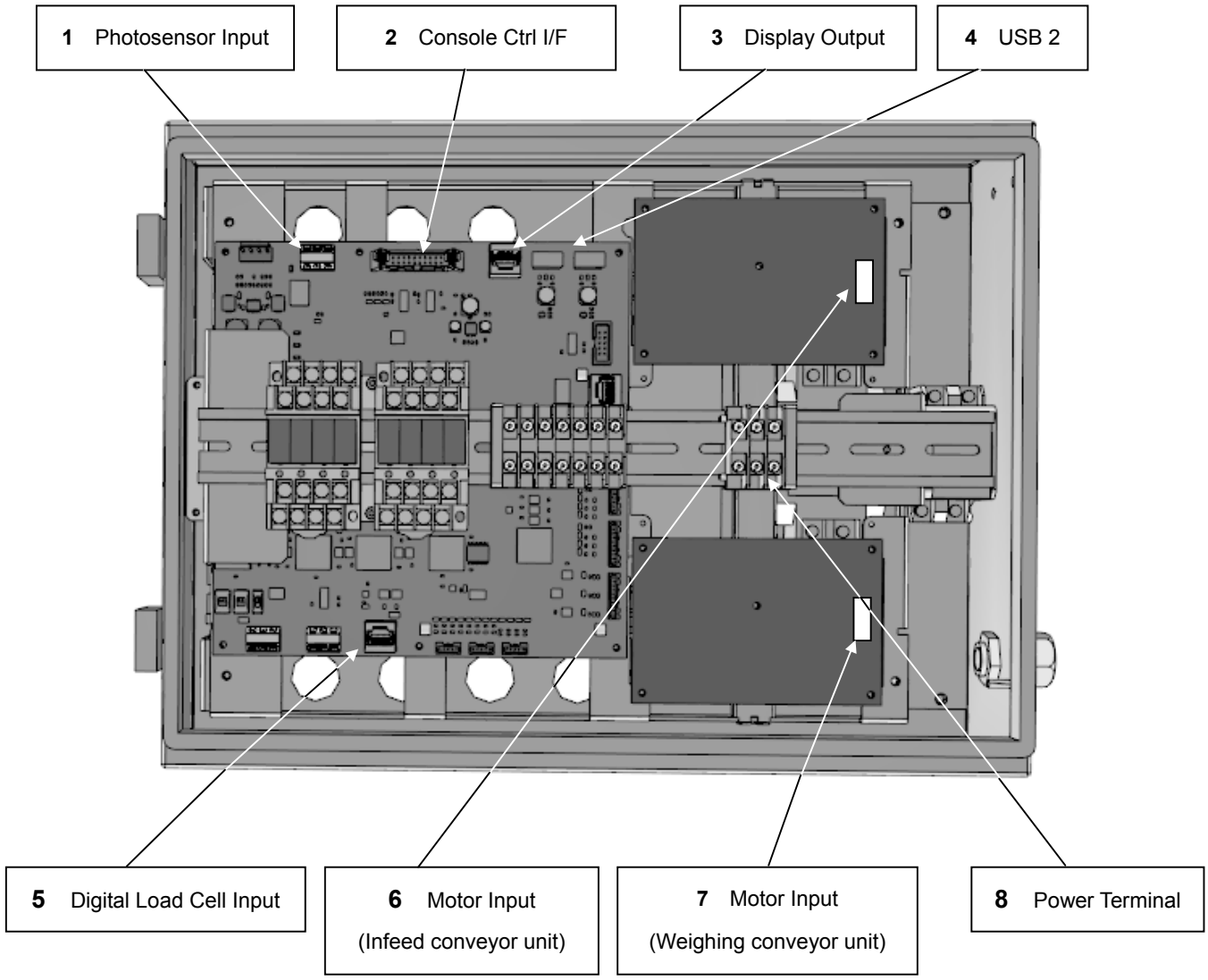
The tools are not provided and must be prepared by the user.

- Phillips screwdriver #2
- Flathead screwdriver 3 mm
- Flathead screwdriver 2 mm
- 4 mm Allen wrench
- 10 mm wrench
- 30 mm wrench

2. Descriptions of Individual Parts

2.1. Control Box (Inside)

Individual components of the control box are as follows.

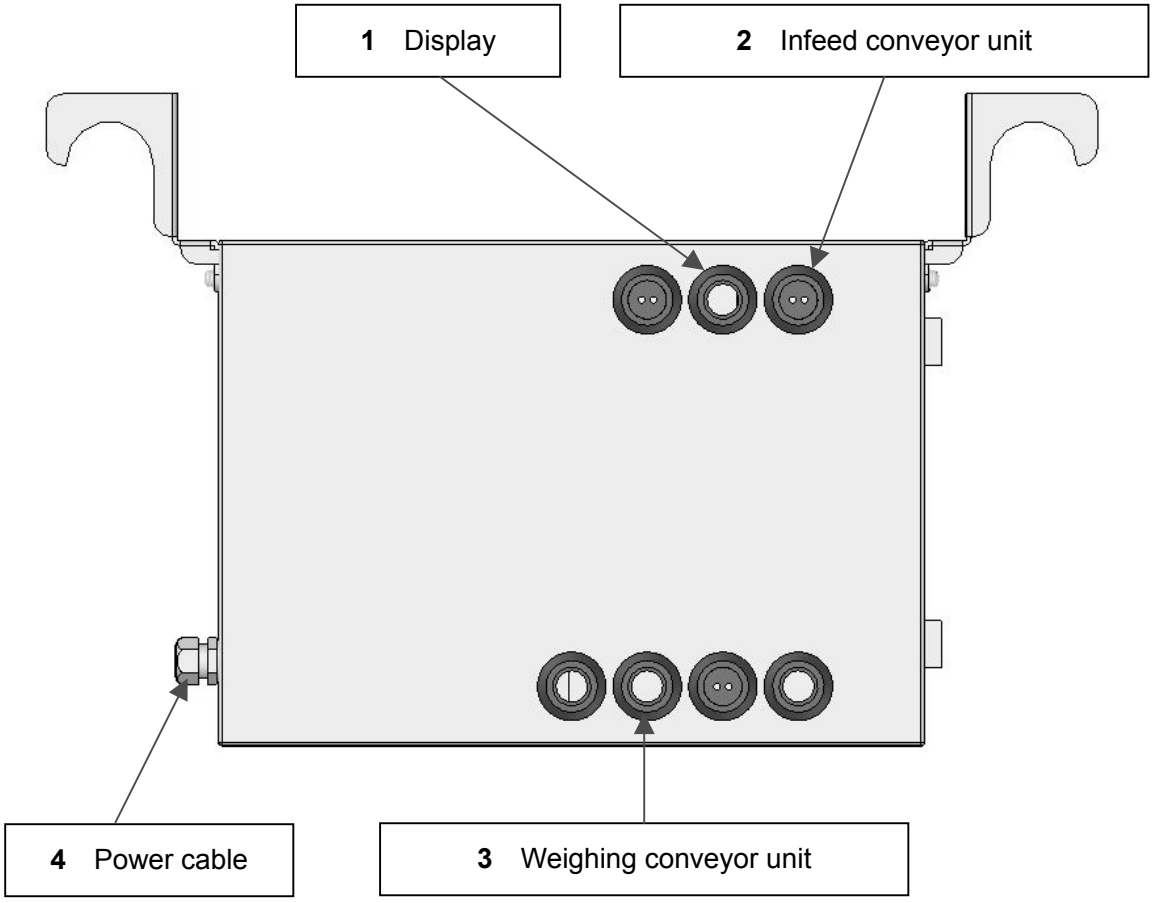


Connector position

No.	Name	Description
1	Photosensor Input	Connector to connect the photosensor
2	Console Ctrl I/F	Connector to connect the display
3	Display Output	Connector to connect the display
4	USB 2	Connector to connect the display USB
5	Digital Load Cell Input	Connector to connect the digital load cell
6	Motor Input (Infeed conveyor unit)	Connector to connect the infeed conveyor unit
7	Motor Input (Weighing conveyor unit)	Connector to connect the weighing conveyor unit
8	Power Terminal	Power terminal for the checkweigher

2.2. Control Box (Rear)

As shown in the illustration below, holes are provided on the rear side of the control box for routing tubes and cables.



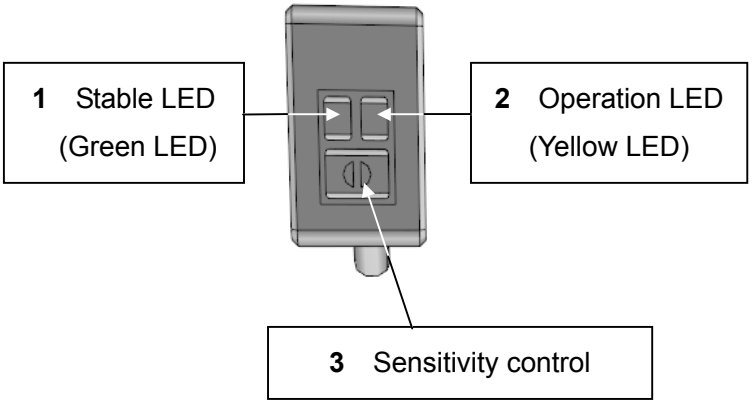
Rear side of the control box

No.	Name	Description
1	Display	Cable gland to attach the display tube
2	Infeed conveyor unit	Cable gland to route the infeed conveyor unit cables through
3	Weighing conveyor unit	Cable gland to attach the weighing conveyor unit tube
4	Power cable	Cable gland to route the power cable through

2.3. Photosensor

Individual components of the photosensor are as follows.

For details about the photosensor adjustment, refer to “4.2.2. Adjusting photosensor sensitivity.”



No.	Name	Description
1	Stable LED	Green LED to turn on when the light input or light blockage is stable according to the receive signal level
2	Operation LED	Yellow LED to turn on when the light is blocked
3	Sensitivity control	Control to adjust photosensor sensitivity

3. Assembly Procedure

⚠CAUTION

- Two people or more are required to assemble the checkweigher.
- Provide a space wide enough for assembly. Place a rug on the floor to protect it from scratches.
- During assembly, do not turn on the checkweigher.
- Check the identification plates of the control box, infeed conveyor unit and weighing conveyor unit to confirm that that they have the same serial number.

Note:

- The assembly procedure includes the tube or cable connection.
  For tube or cable connection, refer to “2.2. Control Box (Rear).”
  For connectors inside the control box, refer to “2.1. Control Box (Inside).”

3.1. Assembling the Frame

Components

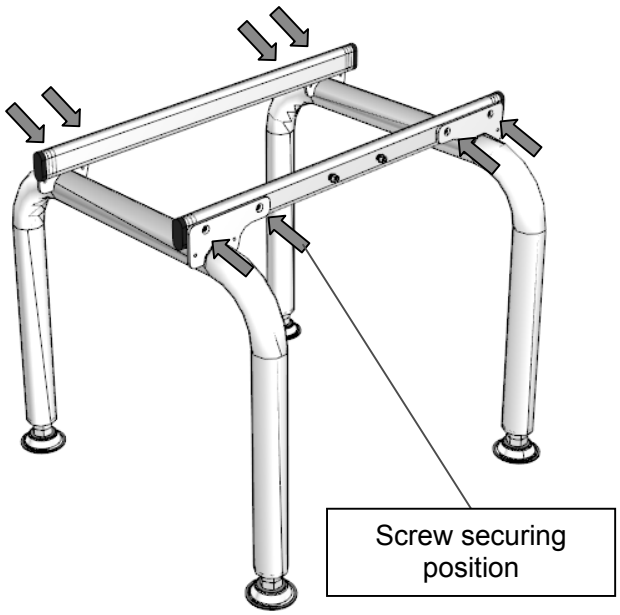
1. U-shaped pipe with adjustment feet…2 pieces
2. Side beam…2 pieces
3. Frame assembling screw (M6x30 countersunk hexagon socket head screw)…8 pieces

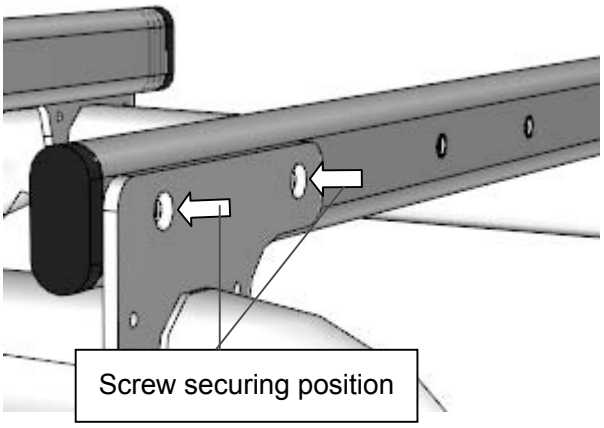
Tools

- 4 mm Allen wrench

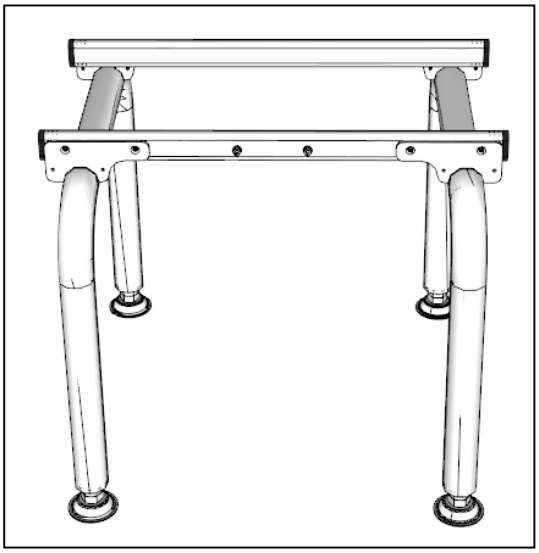
Follow the steps below:

1. Using the frame assembling screws, secure the side beams to the U-shaped pipes.





Enlarged view



Frame assembled view

3.2. Installing the Control Box

⚠CAUTION

The control box has the display connected with cables.
When installing, be careful not to damage the display cables.

Components

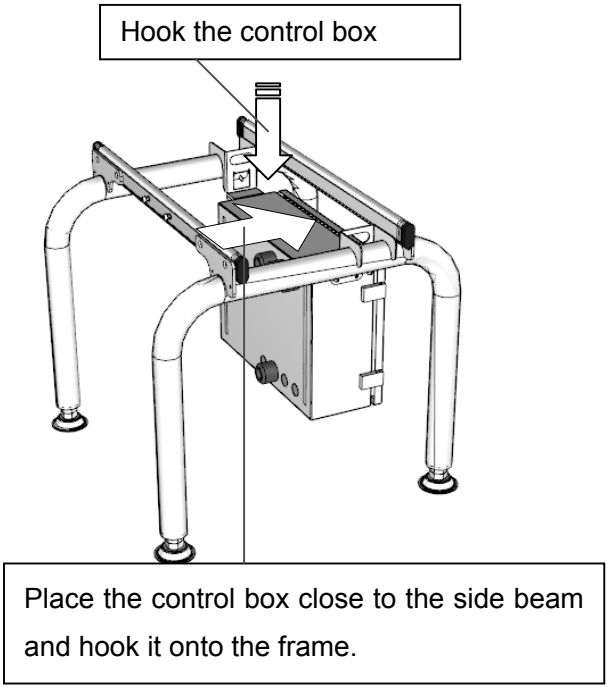
4. Control box…1 unit
5. Control box securing screw (M6x15 screw) …2 pieces

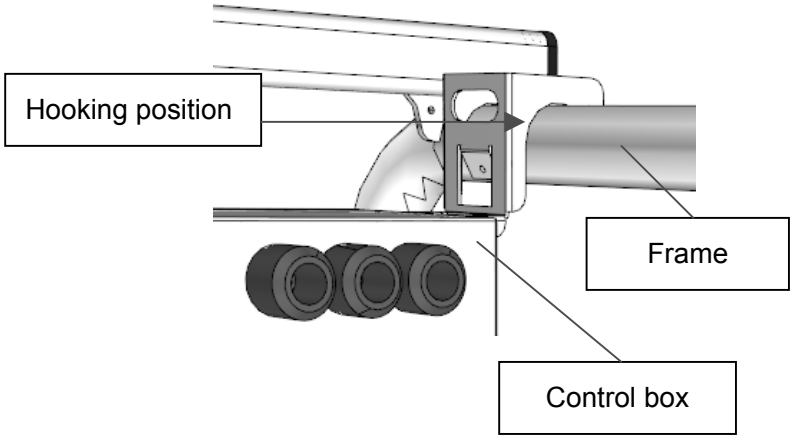
Tools

- 10 mm wrench

Follow the steps below:

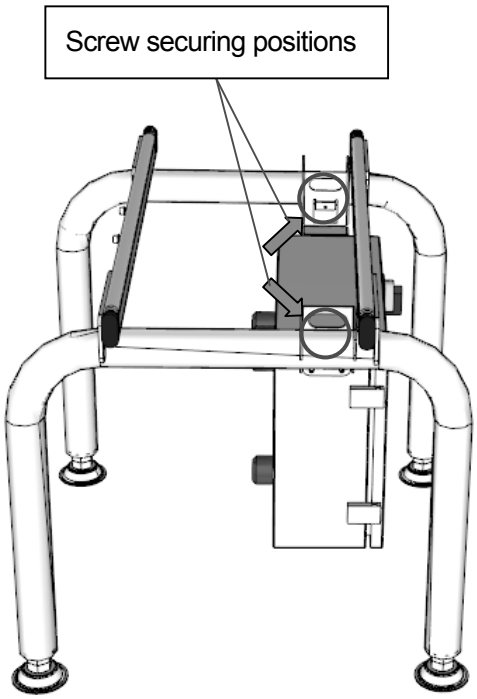
1. Hook the control box onto the frame assembled in “3.1.”

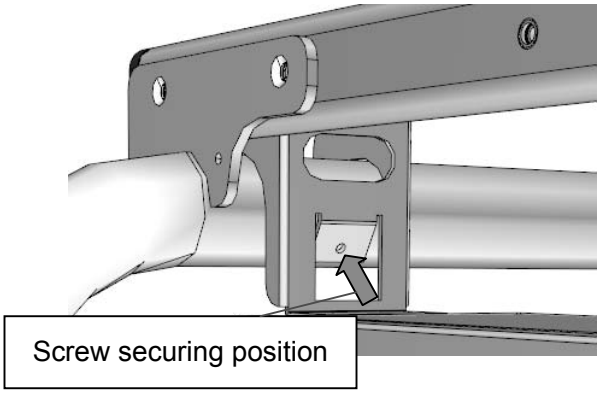




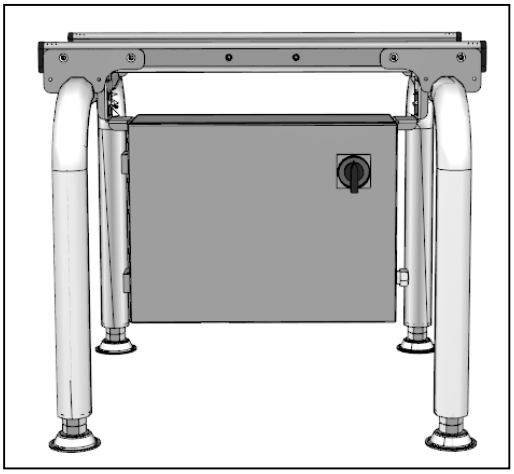
Enlarged view

2. Using the control box securing screws, secure the control box to the frame.





Enlarged view



Assembled view

(Frame with the control box)

3.3. Installing the Display

⚠CAUTION

The display has been connected to the control box with cables before shipment.

When assembling the checkweigher for the first time after receipt of the chechweigher, only the procedure described in “3.3.1.” is required.

Components

6. Display…1 unit
7. Display securing screw (M6x15 screw) …2 pieces

Tools

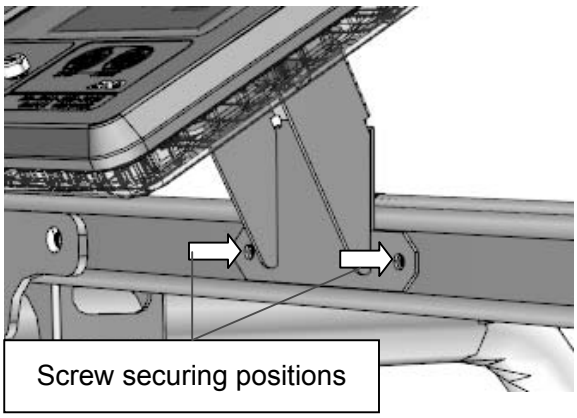
- Phillips screwdriver #2

Installation procedure

3.3.1. Installing the display

Follow the steps below:

1. Using the display securing screws, secure the display to the frame assembled in “3.2.”



Enlarged view

3.3.2. Connecting the display

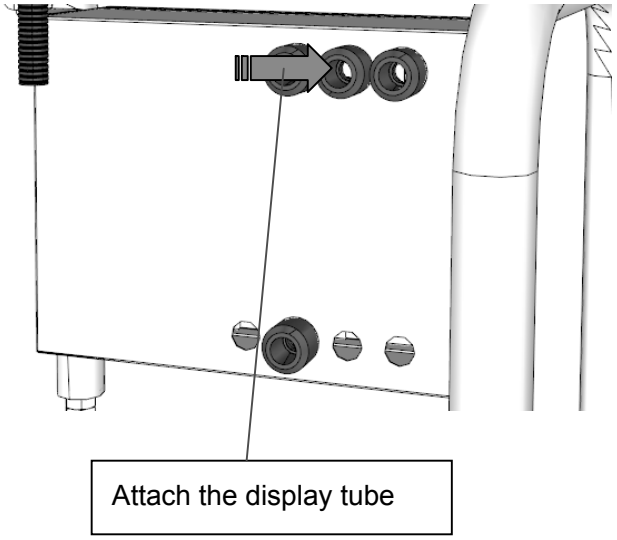
Note:

The display has been connected to the control box with cables before shipment.

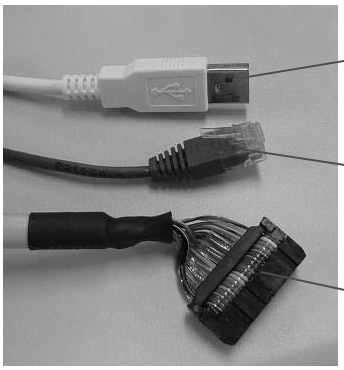
When assembling the checkweigher for the first time after receipt of the chechweigher, the procedure described in this section is not required.

Follow the steps below:

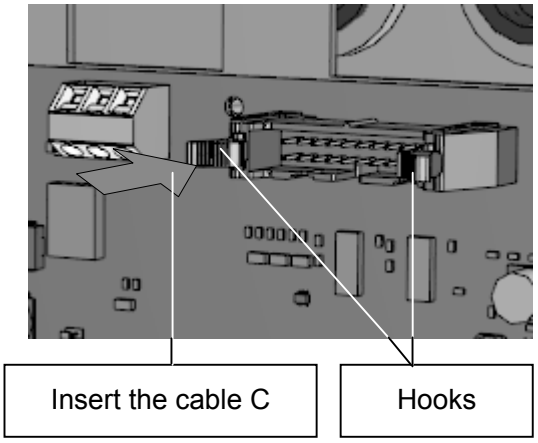
1. Attach the display tube to the cable gland (indicated by the arrow in the illustration) located on the control box rear side.
   Insert the cables out of the tube into the control box.



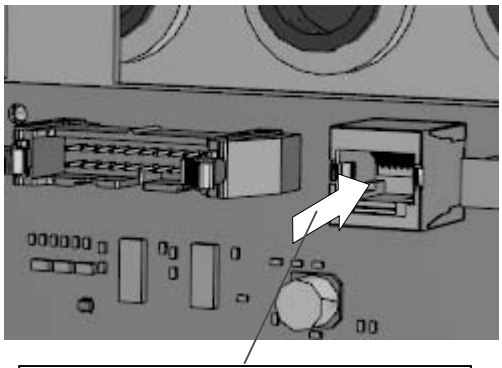
2. Open the control box and connect the cables inserted in Step 1 to the connectors as shown in the illustration.



(1) Insert the cable C into the “Console Ctrl I/F” connector to be secured between the hooks.

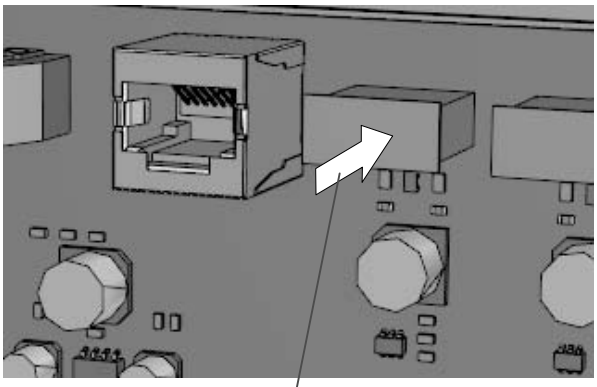


(2) Insert the cable B into the “Display Output” connector.

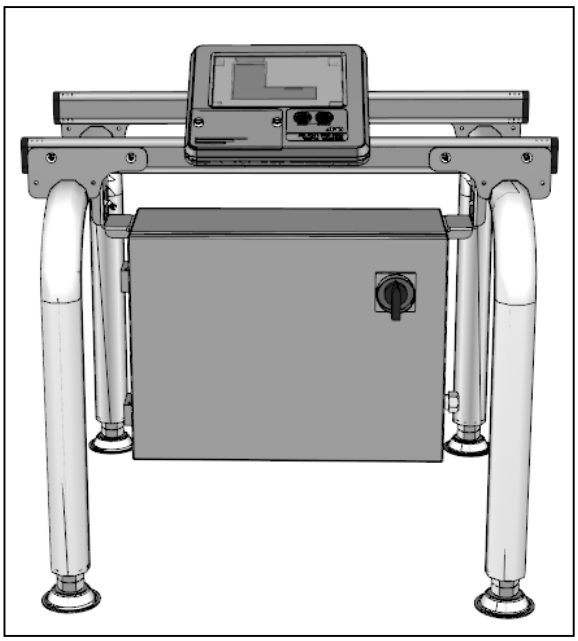


Insert the cable B

(3) Insert the cable A into the “USB 2” connector.



Insert the cable A



Assembled view
(Frame with the control box
and the display)

3.4. Installing the Weighing Conveyor Unit

⚠CAUTION

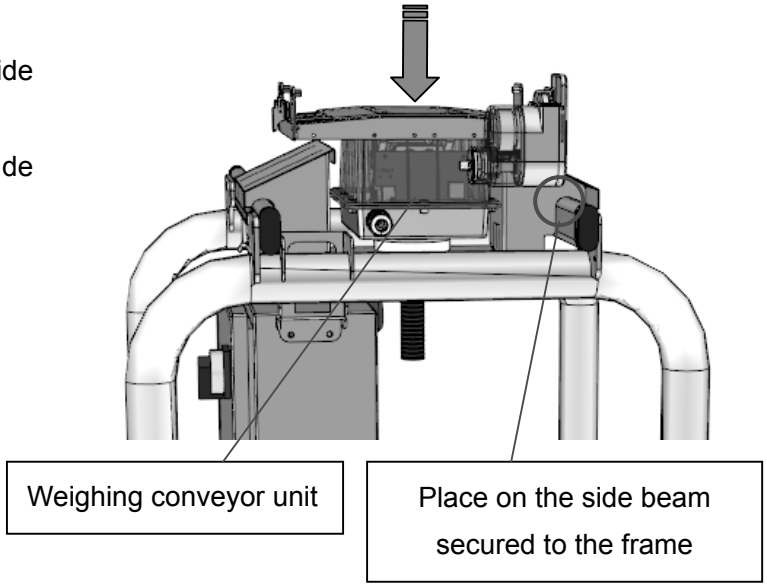
Please note that the display is excluded from the illustration in the following procedure to indicate the installation position clearly.

Components

17. Weighing conveyor unit…1 unit

Follow the steps below:

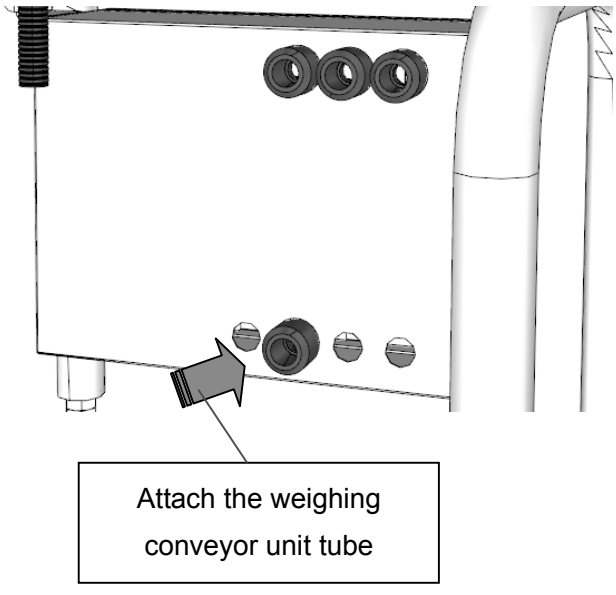
1. Place the weighing conveyor unit on the side beams of the frame assembled in “3.3.”
   Be sure to place the unit on the ending side of the flow.



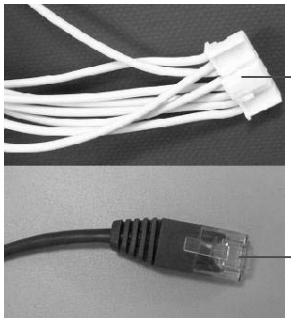
Enlarged view

2. Attach the weighing conveyor unit tube to the cable gland (indicated by the arrow in the illustration) located on the control box rear side.
   Insert the cables out of the tube into the control box.

   Note:
   For the weighing conveyor unit tube attaching position, refer to “2.2. Control Box (Rear).”



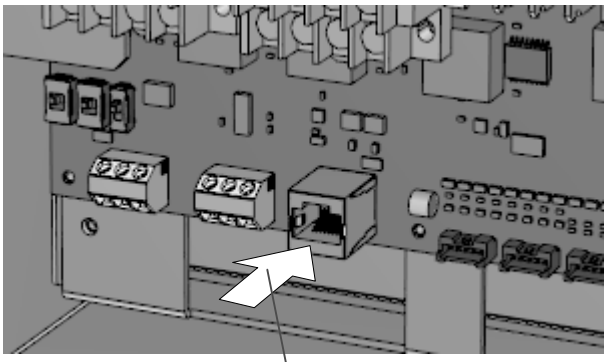
3. Open the control box and connect the cables inserted in Step 2 to the connectors as shown in the illustration.



Motor input cable
(To “Motor Input”
(Weighing conveyor unit))

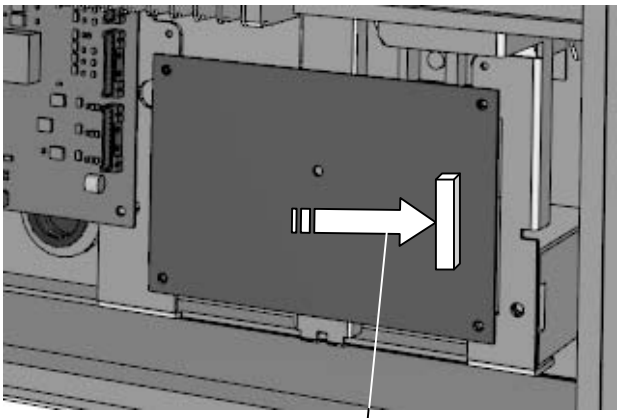
Digital load cell cable
(To “Digital Load Cell Input”)

(1) Insert the digital load cell cable into the “Digital Load Cell Input” connector.



Insert the digital load cell cable

(2) Insert the weighing conveyor unit motor input cable into the “Motor Input (Weighing conveyor unit)” connector.

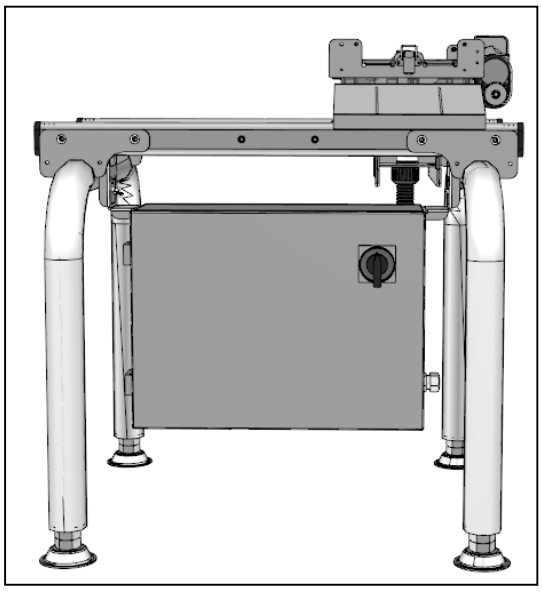


Insert the motor input cable

⚠CAUTION

At this stage, the weighing conveyor unit is not secured.

Keep that in mind and exercise caution during the following operations.



Checkweigher view
With the weighing conveyor unit installed

3.5. Installing the Infeed Conveyor Unit

⚠CAUTION

Please note that the display is excluded from the illustration in the following procedure to indicate the installation position clearly.

Components

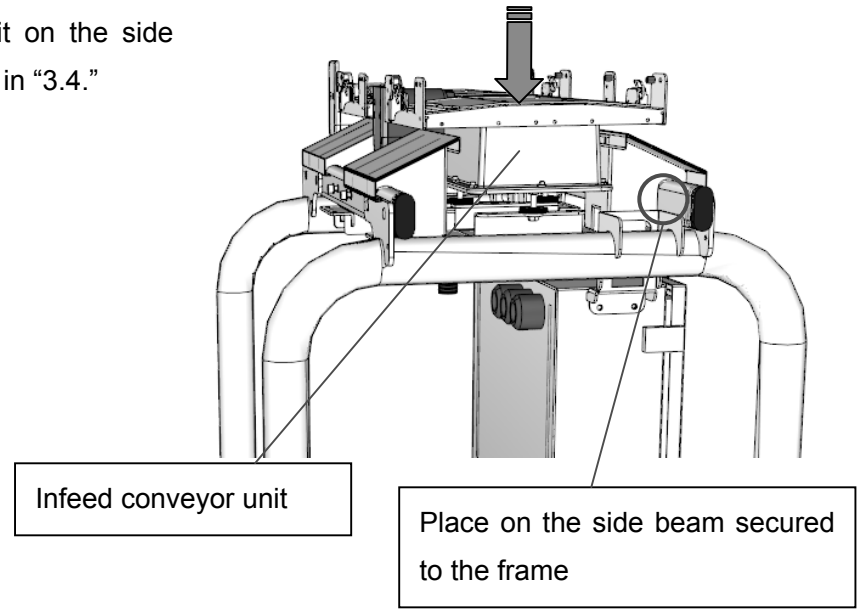
9. Infeed conveyor unit…1 unit
10. Photosensor (with a securing fixture) …1 piece
11. Reflector (with a securing fixture) …1 piece
12. Photosensor/reflector securing screw (M4x8 thumbscrew) …4 pieces

Tools

- Flathead screwdriver

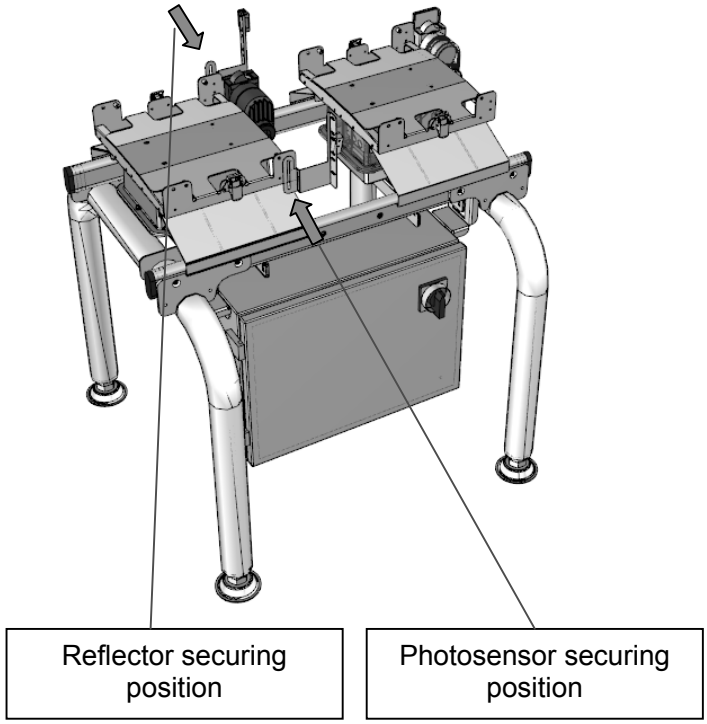
Follow the steps below:

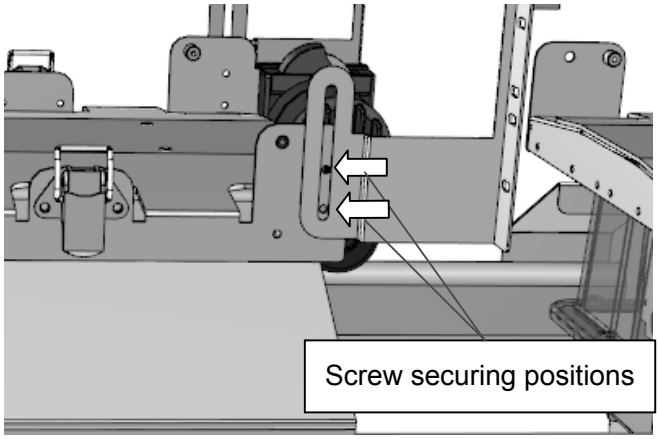
1. Place the infeed conveyor unit on the side beams of the frame assembled in “3.4.”



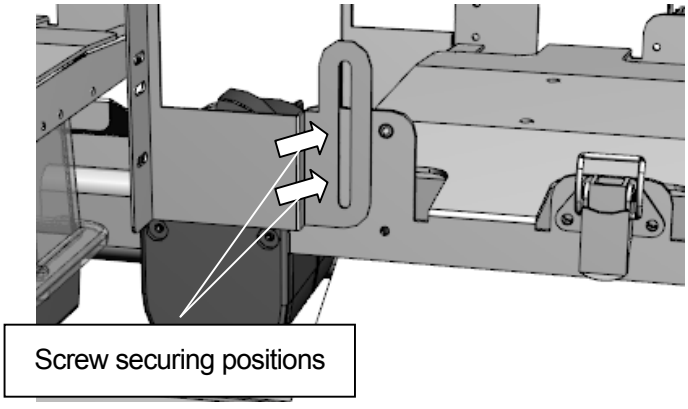
Enlarged view

2. Using the photosensor securing screws, secure the photosensor to the infeed conveyor unit.
   Using the reflector securing screws, secure the reflector to the infeed conveyor unit.



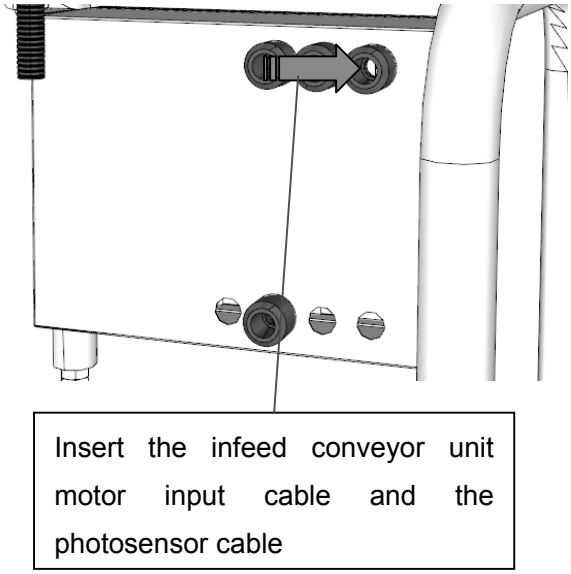


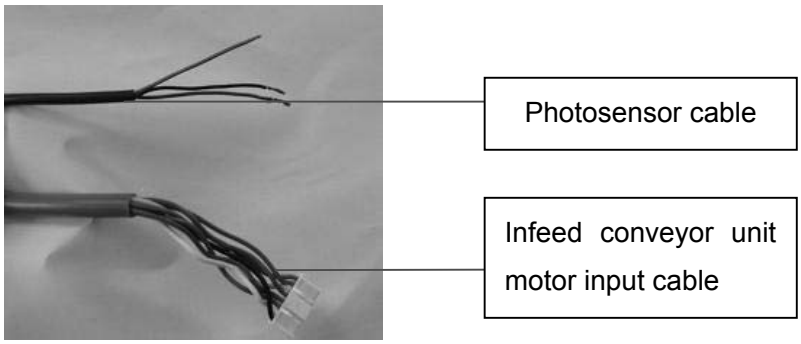
Enlarged view from the photosensor side



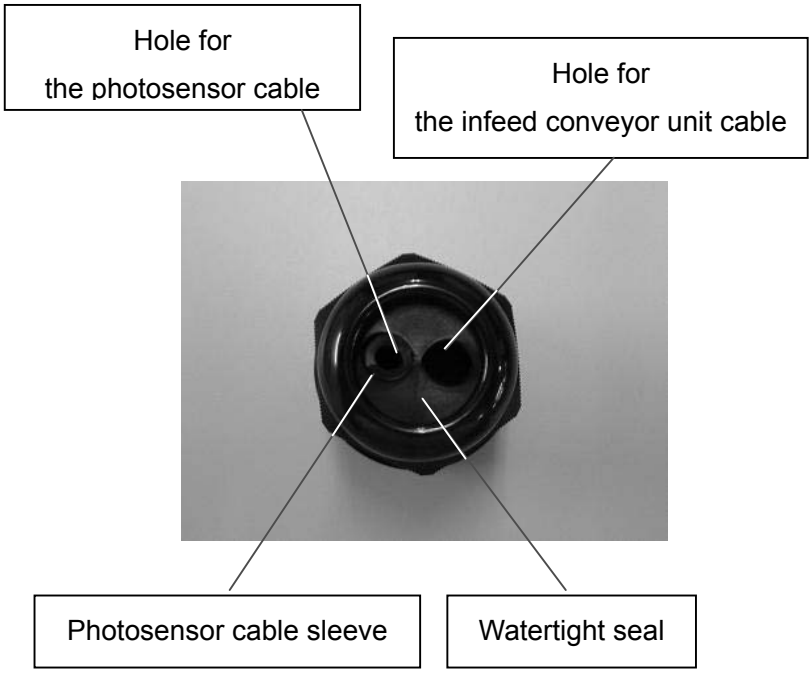
Enlarged view from the reflector side

3. Pass the infeed conveyor unit motor input cable and the photosensor cable (see the picture below) through the holes into the control box as shown in the illustration.
   Insert the cables as described below.





(1) The detailed description of the infeed converyor unit cable gland is shown below.

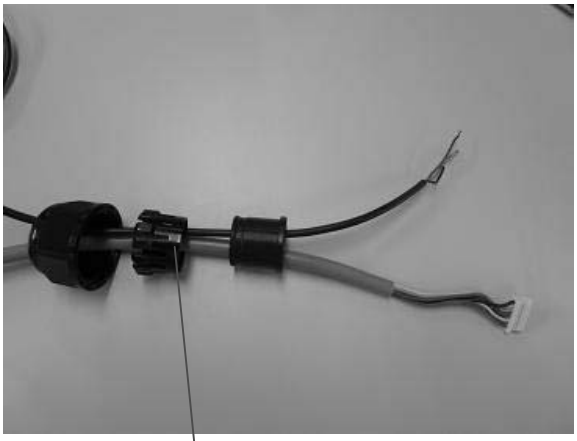


(2) Remove the cable gland and take the watertight seal out.

(3) Insert the infeed conveyor unit motor input cable through the slit into the hole on the watertight seal.

Insert the cable through the slit

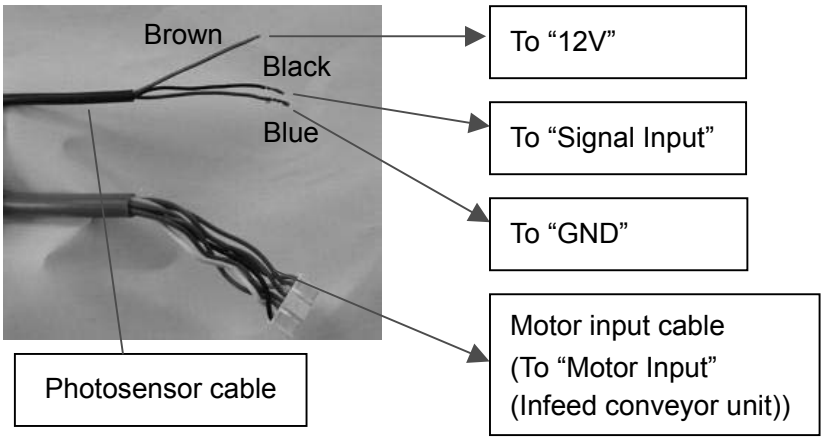
(4) Pass the photosensor cable through the photosensor cable sleeve and insert the cable into the hole on the watertight seal.



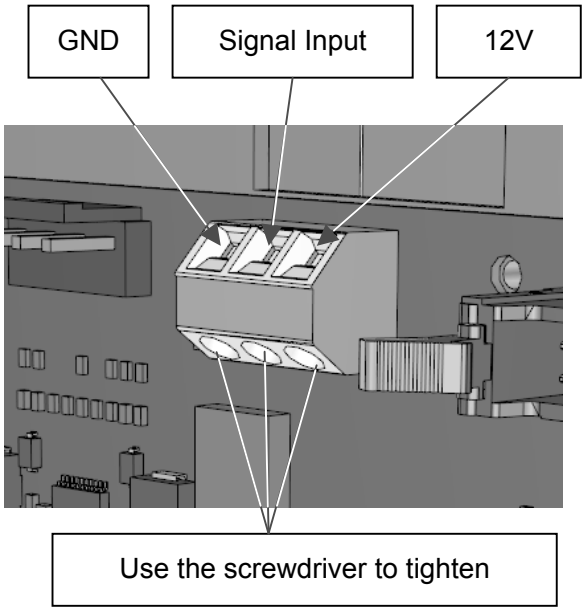
Pass the cable through the photosensor cable sleeve and insert the cable into the hole

(5) Attach the cable gland with the cables to the control box.

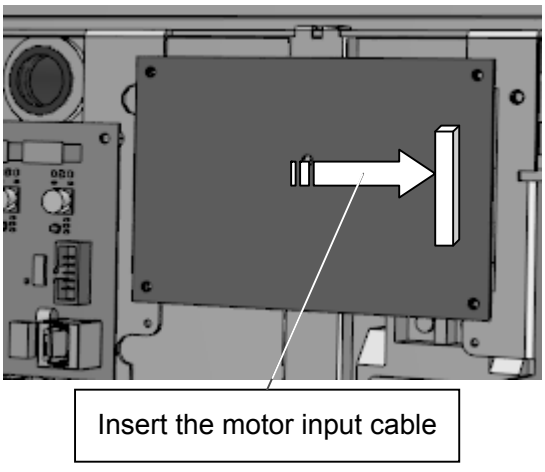
4. Open the control box and connect the cables inserted in Steps 3 and 4 to the connectors as shown in the illustration.。



(1) Insert the photosensor cable into the “Photo Sensor Input” connector (indicated by the arrows in the illustration).
The connectors have screws on the underside.
Use a flathead screwdriver to loosen the screws to insert the cables and tighten the screws after the cables are inserted.

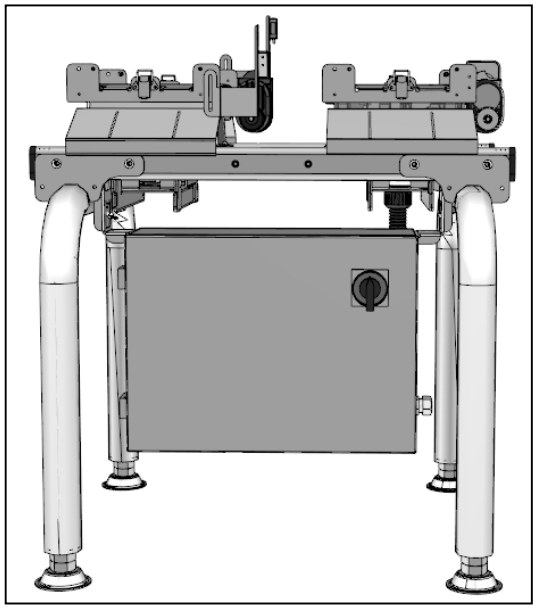


(2) Insert the infeed conveyor unit motor input cable into the “Motor Input” connector (indicated by the arrow in the illustration).



⚠CAUTION

At this stage, the infeed conveyor unit is not secured. Keep that in mind and exercise caution during the following operations.



Checkweigher view
With the weighing conveyor unit and infeed conveyor unit installed

3.6. Installing the Conveyors / Securing the Conveyor Units

Components

8. Infeed conveyor (with a belt) …1 unit
13. Infeed conveyor unit clamp…2 pieces
14. Infeed conveyor unit securing screw (M6x30 screw) …4 pieces
15. Infeed conveyor unit securing nut (M6 nut) …4 pieces
16. Weighing conveyor (with a belt) …1 unit
18. Weighing conveyor unit clamp…2 pieces
19. Weighing conveyor unit securing screw (M6x30 screw) …4 pieces
20. Weighing conveyor unit securing nut (M6 nut) …4 pieces

Tools

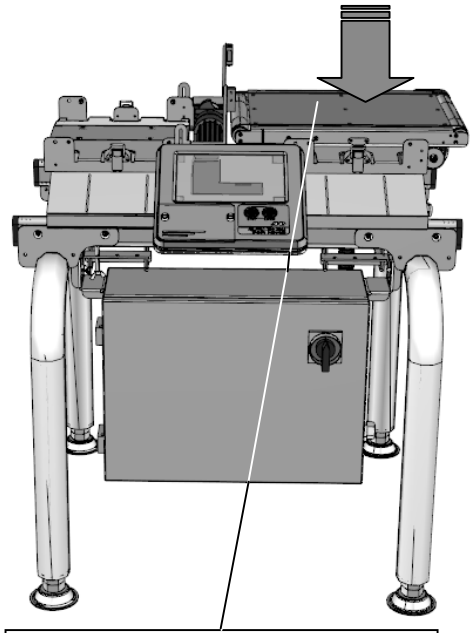
- Phillips screwdriver #2
- 10 mm wrench

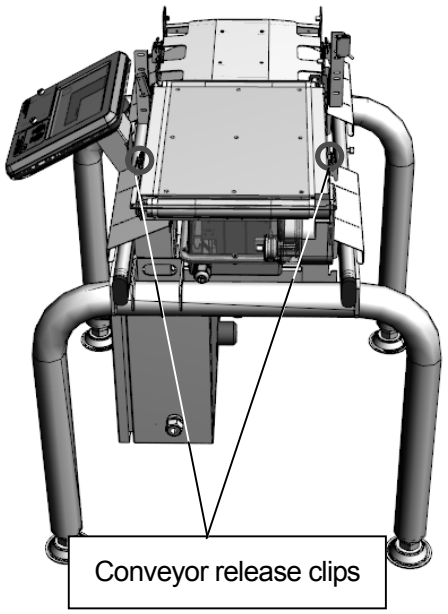
Note:

To prevent misinstallation, the weighing conveyor and the infeed conveyor have slits in different positions.

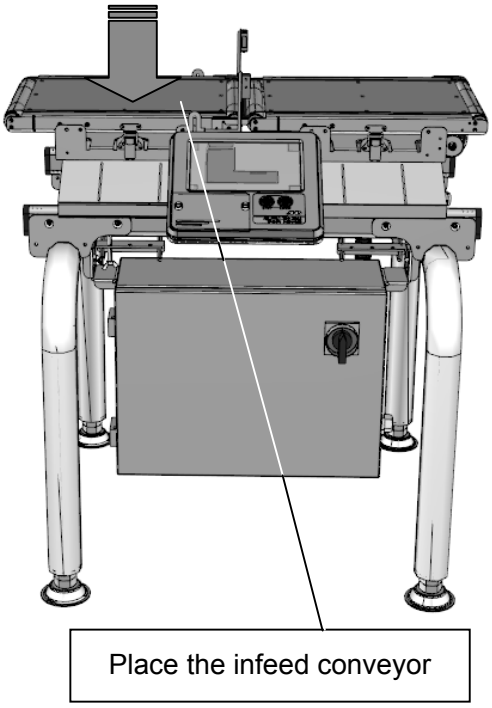
Follow the steps below:

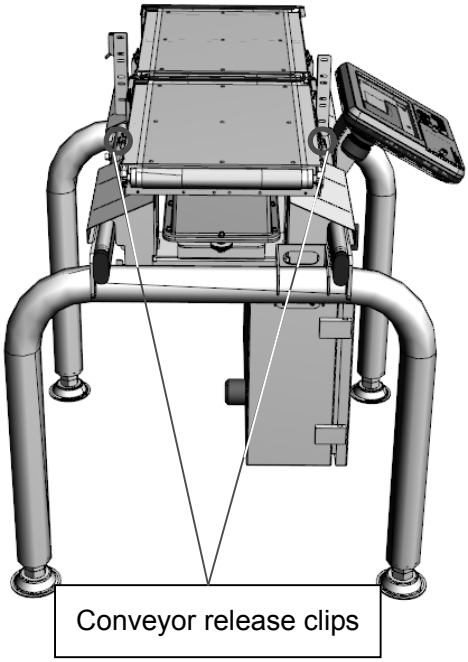
1. Place the weighing conveyor on the weighing conveyor unit as shown in the illustration.
   Lock the conveyor release clip to secure the conveyor to the conveyor unit.





2. Place the infeed conveyor on the infeed conveyor unit as shown in the illustration.
   Lock the conveyor release clip to secure the conveyor to the conveyor unit.

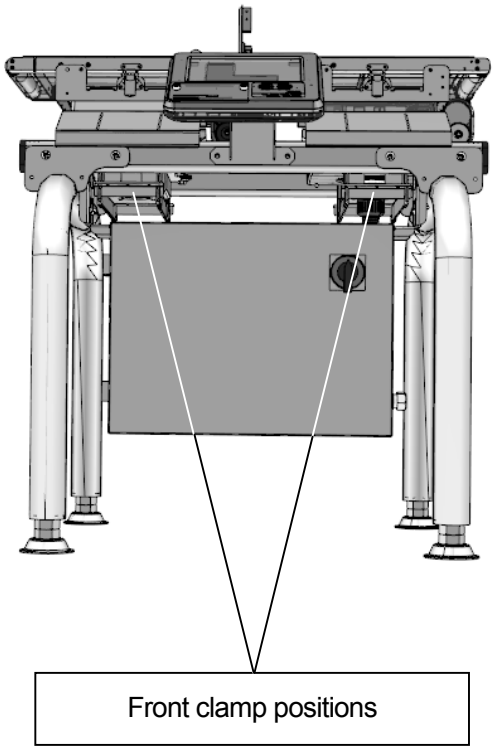


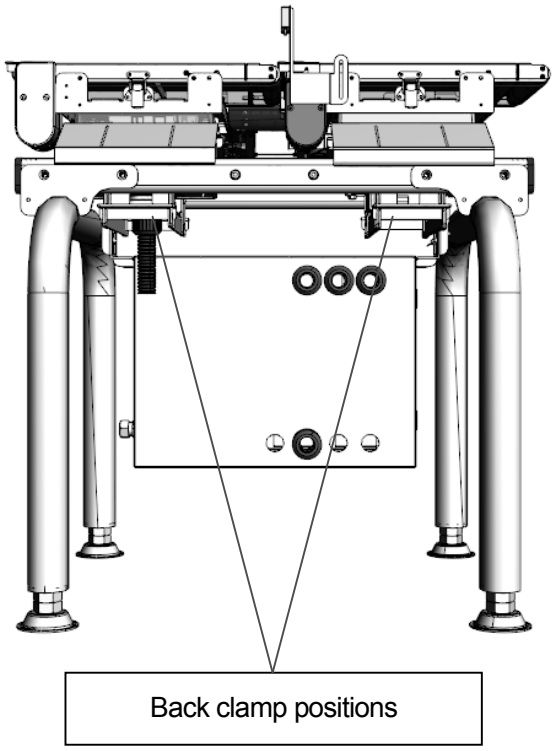


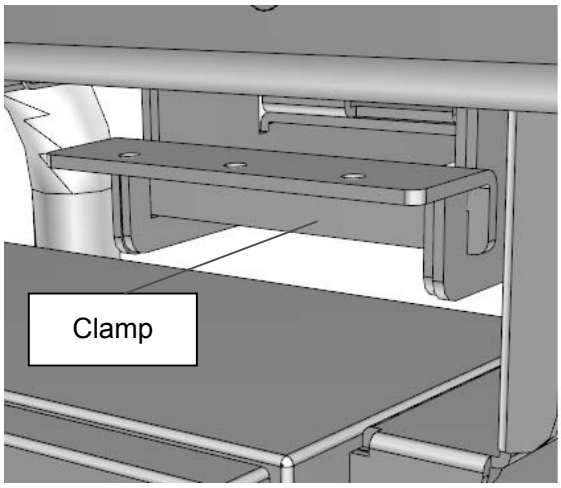
3. Adjust the positions of the infeed conveyor and the weighing conveyor so that they are not in contact with each other.

   Note:
   Provide a clearance of 2-3 mm between the infeed conveyor and the weighing conveyor.
   No clearance between the conveyors will make belt meandering adjustment impossible.

4. Place the weighing conveyor unit clamps on the weighing conveyor unit.
   Place the infeed conveyor unit clamps on the infeed conveyor unit.
   For clamp placement, see the illustration on the right and the first illustration on the next page.

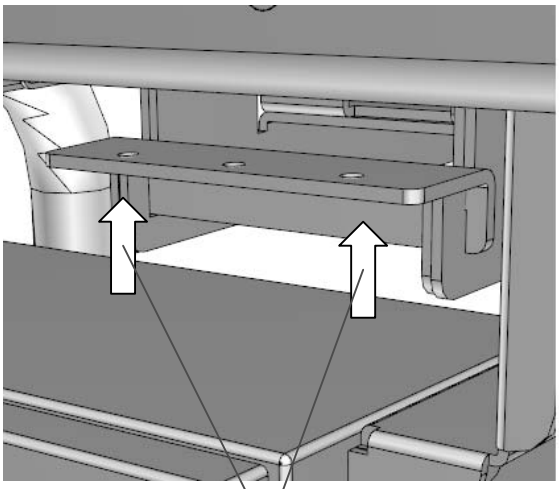






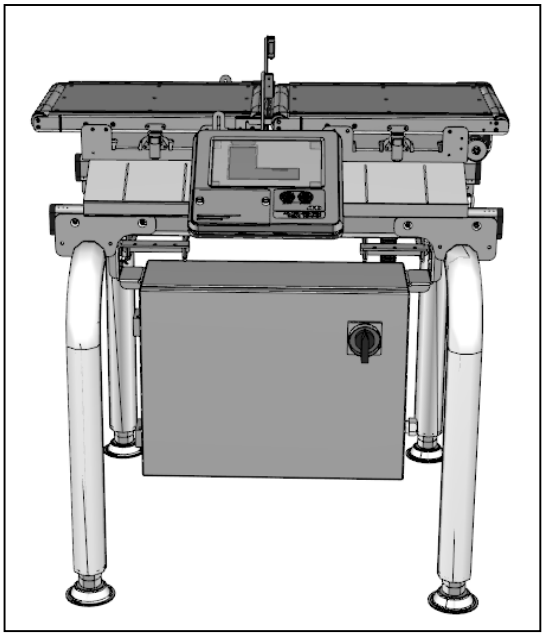
Enlarged view

5. Using the weighing conveyor unit securing screws and nuts, secure the weighing conveyor unit to the frame.



Screw securing positions

6. Using the infeed conveyor unit securing screws and nuts, secure the infeed conveyor unit to the frame.



Assembled view

3.7. Connecting the Power Cable

⚠CAUTION

The power cable and the tools are not provided and must be prepared by the user.

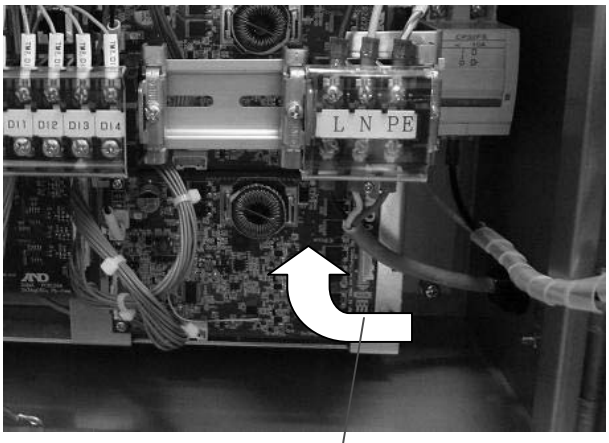
Tools

- Phillips screwdriver #2

Follow the steps below:

1. Insert the power cable into the power cable gland located on the right side of the control box.

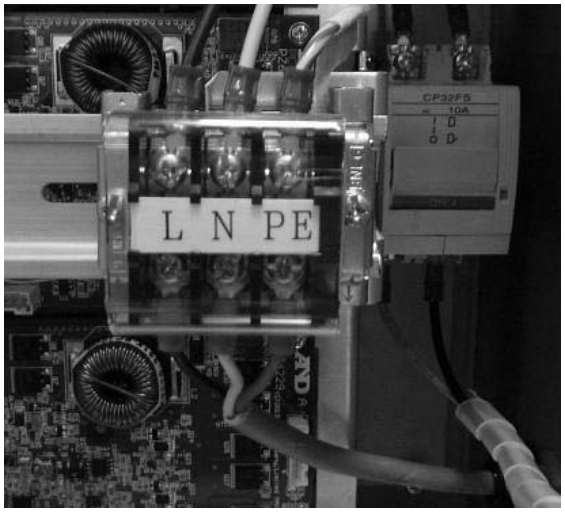
Insert the power cable



Insert the power cable into the control box

2. Insert the power cable into the power connector as shown in the illustration.

   Assembly of the checkweigher is now complete.



4. Adjustment

4.1. Adjusting the Height

To adjust the height of the checkweigher, a level is required. The level is not provided and must be prepared by the user.

⚠CAUTION

- Perform a height adjustment after the checkweigher assembly has been completed.
- When performing the height adjustment, be careful not to knock the checkweigher down.

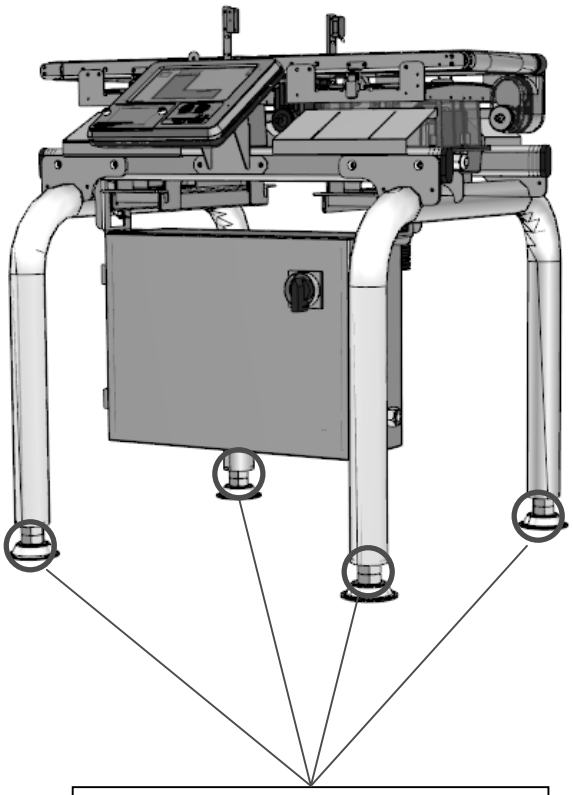
4.1.1. Adjusting the weighing conveyor height

Tools

- 30 mm wrench

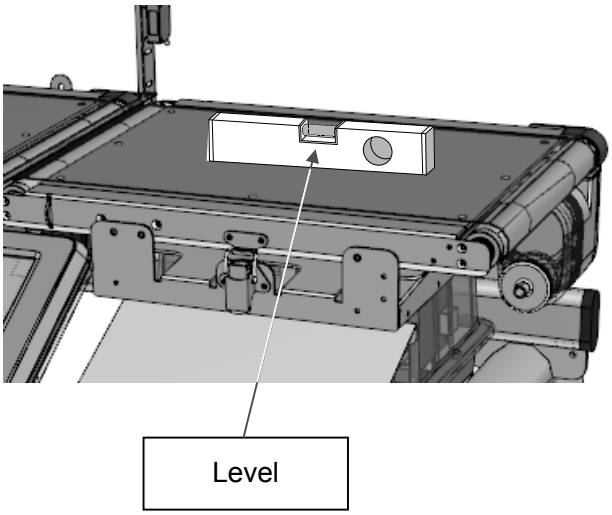
Follows the steps below:

1. Raise the frame to the required height.
   The frame height can be adjusted by turning the adjustment feet.



Turn the feet to adjust the height

2. Place the level on the weighing conveyor. Fine-adjust the frame height by turning the adjustment feet so that the frame is level.



3. Tighten the nuts to secure the feet.

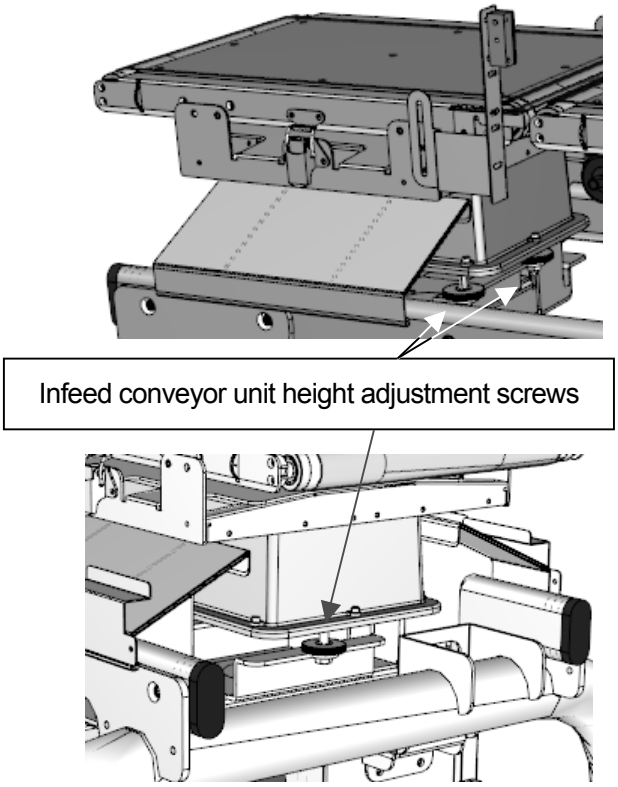
4-1-2 Adjusting the infeed conveyor height

Tools

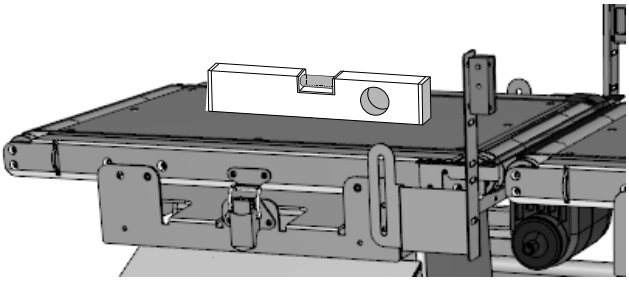
・10 mm wrench

Follow the steps below:

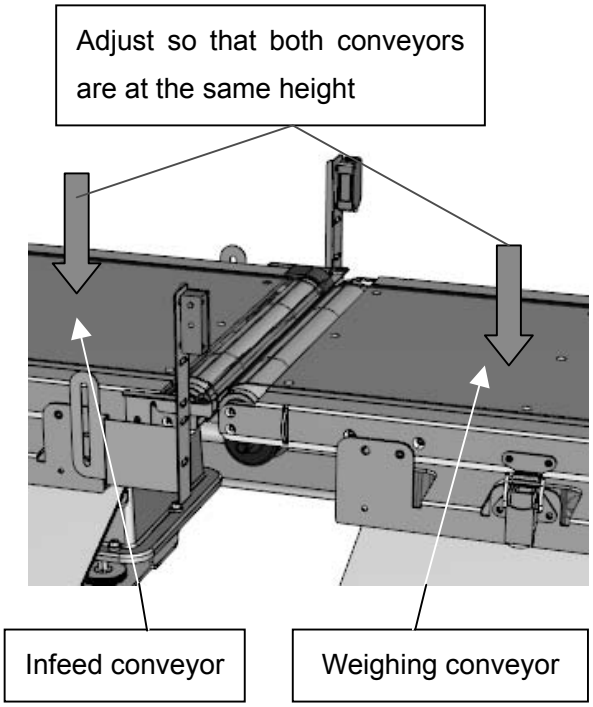
1. Turn the infeed conveyor unit height adjustment screws to raise the infeed conveyor up to the weighing conveyor.



2. Place the level on the infeed conveyor.
   Fine-adjust the infeed conveyor height so that the infeed conveyor is level.

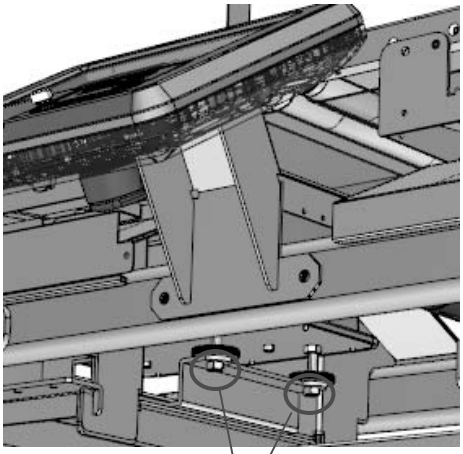


3. Fine-adjust the infeed conveyor height so that the infeed conveyor and the weighing conveyor are at the same height.

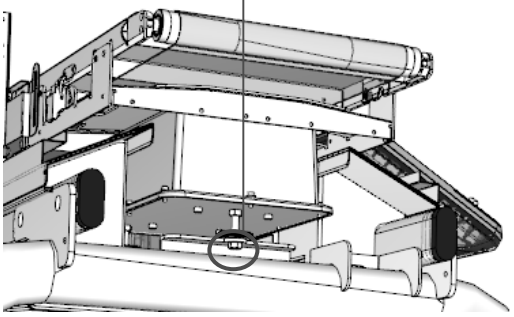


4. Repeat Steps 2 and 3 until the infeed conveyor and the weighing conveyor are level and at the same height.

5. After conveyor height adjustment, use the wrench to tighten the nut to secure the infeed conveyor unit height.



Use the wrench to tighten the height securing nuts



4.2. Adjusting the Photosensor / Reflector

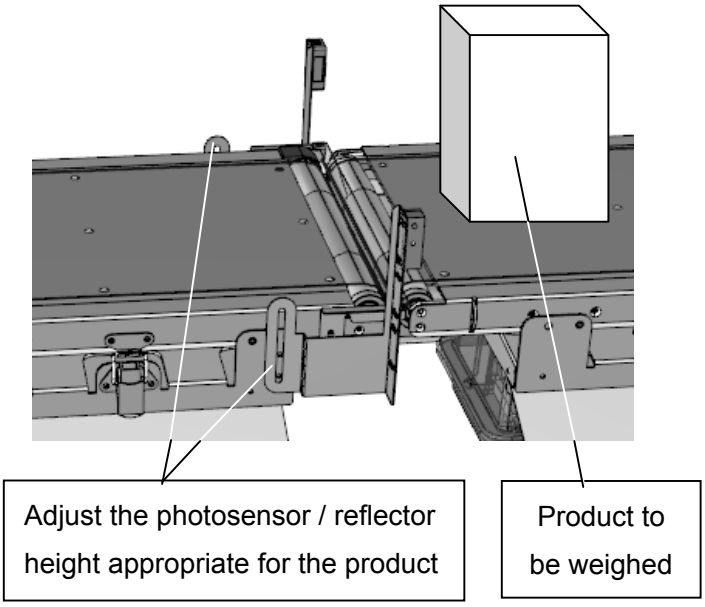
4.2.1. Adjusting the photosensor and reflector height

Tools

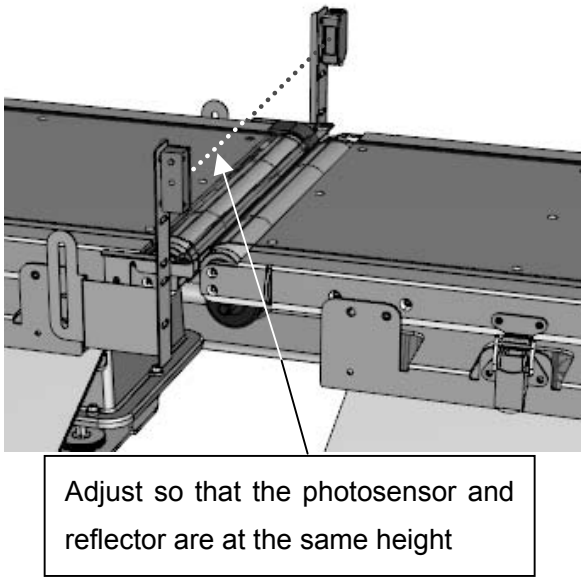
- Phillips screwdrive #2

Follow the steps below:

1. Adjust the photosensor and reflector to the appropriate height for the product to be weighed.



2. Fine-adjust the height of the photosensor and the reflector so that they are at the same height.



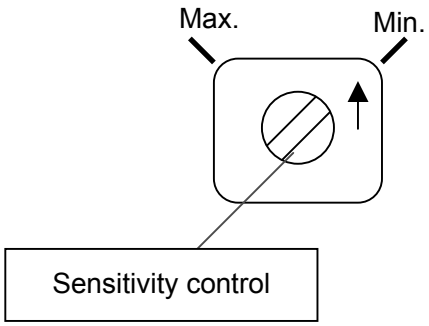
4.2.2. Adjusting photosensor sensitivity

Tools

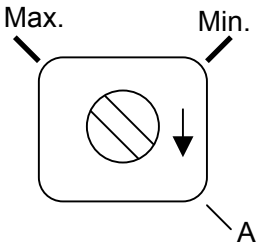
- Flathead screwdriver 2 mm

Follow the steps below:

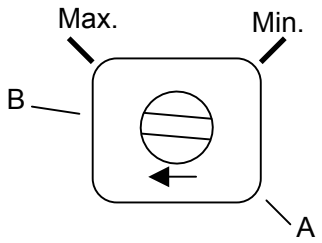
1. Confirm that there is nothing on the optical axis of the photosensor and the reflector.
   Turn the sensitivity control on the photosensor counterclockwise to the “Min.” position.



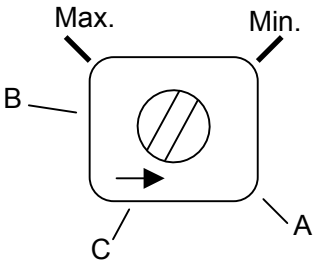
2. Turn the sensitivity control from “Min.” to “Max.” and find position (A) where the operation LED turns on.



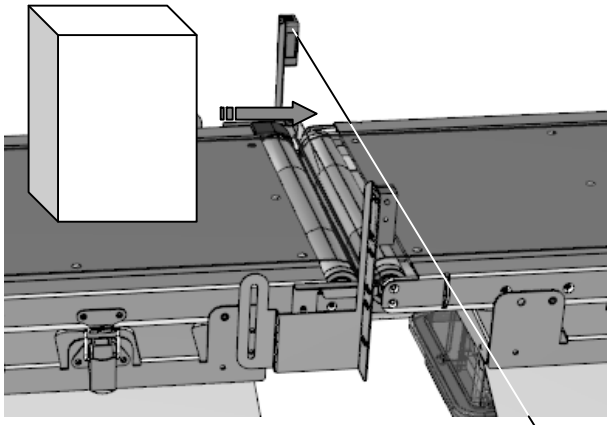
3. Place the product to be weighed on the optical axis.
   Under this light blocking condition, turn the sensitivity control from the position “A” and find position (B) where the operation LED turns on.
   When the operation LED does not turn on even if the sensitivity control is turned up to “Max.”, the position “Max.” will be position “B”.



4. Find the midpoint (C) of the positions of “A” and “B”.
   Set the sensitivity control to the position “C.”



5. Feed the product through the optical axis and confirm that the operation LED turns on in yellow when the photosensor light is blocked by the product.



Note:

When a transparent container is used as the product to be weighed, chattering may occur in the photosensor in Step 5.

Should this occur, turn the sensitivity control to “Max.” and fine-adjust the control position so that the operation LED turns on with the product on the optical axis.

4.3. Calibrating the Checkweigher Using a Weight

After completing the checkweigher assembly, calibrate the checkweigher by using a weight mass.

For details about the checkweigher calibration procedure, refer to “5.1. Calibrating the Checkweigher Using a Weight” of the checkweigher instruction manual.

MEMO

MEMO

A&D Company, Limited
3-23-14 Higashi-Ikebukuro, Toshima-ku, Tokyo 170-0013, JAPAN
Telephone: [81] (3) 5391-6132 Fax: [81] (3) 5391-6148

A&D ENGINEERING, INC.
1756 Automation Parkway, San Jose, California 95131, U.S.A.
Telephone: [1] (408) 263-5333 Fax: [1] (408)263-0119

A&D INSTRUMENTS LIMITED
Unit 24/26 Blacklands Way, Abingdon Business Park, Abingdon, Oxfordshire OX14 1DY United Kingdom
Telephone: [44] (1235) 550420 Fax: [44] (1235) 550485

A&D AUSTRALASIA PTY LTD
32 Dew Street, Thebarton, South Australia 5031, AUSTRALIA
Telephone: [61] (8) 8301-8100 Fax: [61] (8) 8352-7409

A&D KOREA Limited 한국에이.엔.디(주)
대한민국 서울시 영등포구 여의도동 36-2 맨하탄 빌딩 8층 우편 번호 150-749
(Manhattan Building 8th Floor, 36-2 Yoido-dong, Youngdeungpo-gu, Seoul, 150-749 Korea)
전화: [82] (2) 780-4101 팩스: [82] (2) 782-4280

OOO A&D RUS ООО "ЭЙ энд ДИ РУС"
121357, Российская Федерация, г.Москва, ул. Верейская, дом 17
(Business-Center "Vereyskaya Plaza-2" 121357, Russian Federation, Moscow, Vereyskaya Street 17)
тел.: [7] (495) 937-33-44 факс: [7] (495) 937-55-66

A&D INSTRUMENTS INDIA PRIVATE LIMITED **ऐ&डी इन्स्ट्रूमेन्ट्स इण्डिया प्रा0 लिमिटेड**
509, उद्योग विहार , फेस -5, गुड़गांव - 122016, हरियाणा , भारत
(509, Udyog Vihar, Phase-V, Gurgaon - 122 016, Haryana, India)
फोन : 91-124-4715555 फैक्स : 91-124-4715599