AD-4982-3550

Conveyor Drop Rejector

INSTRUCTION MANUAL

A&D Company, Ltd.

1WMPD4004736

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

The AD-4982-3550 is a conveyor drop type rejector that can be used by connecting to the AD-4991 X-ray inspection system or AD-4961A checkweigher. When the AD-4976-39 rejector power supply module (sold separately) is attached, the AD-4982-3550 can also be used to connect to AD-4976-H series and AD-4971 series metal detectors.

By operating the conveyor using the air cylinder, the AD-4982-3550 can sort products in two directions, either diverted off the conveyor or straight along the conveyor.

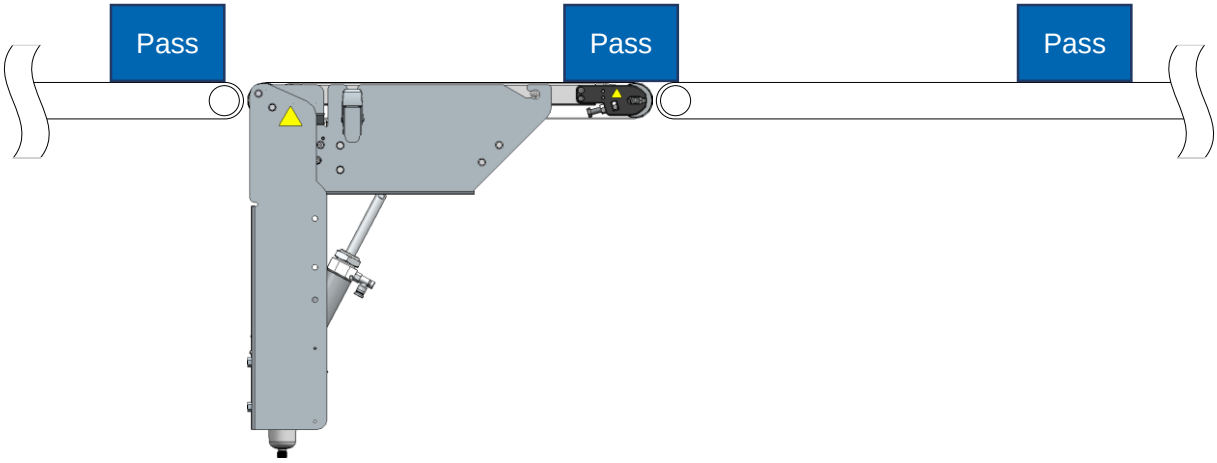


Fig. 1 Image of sorting (conveying products straight along the conveyor)

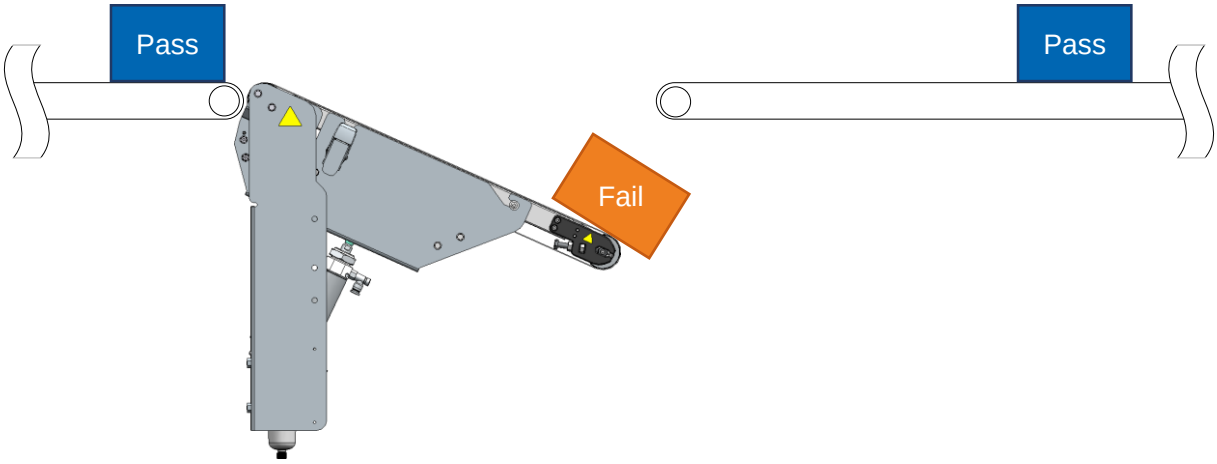


Fig. 2 Image of sorting (conveying products by diverting off the conveyor)

2. Unpacking

Before assembling, make sure that the following items are included in the package and that they are not damaged.

If anything is missing or damaged, please contact your local A&D dealer.

Depending on how you made the purchase, your product may be delivered pre-assembled.

Table 1 Packing list (1/2)

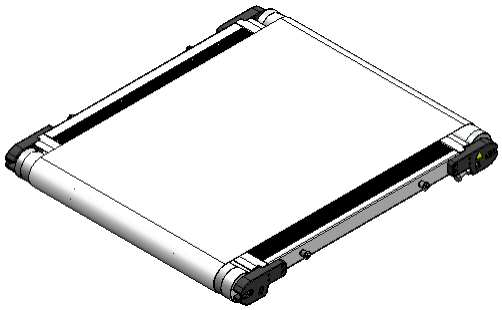
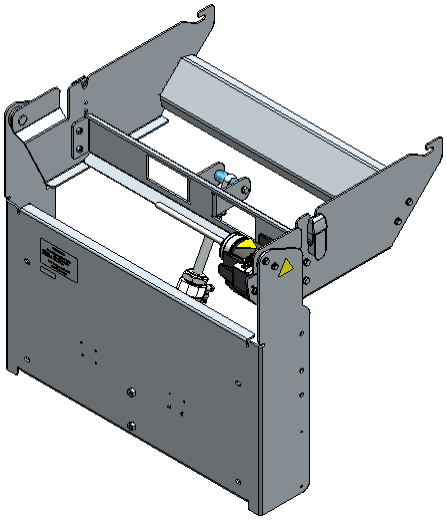
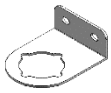
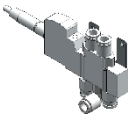
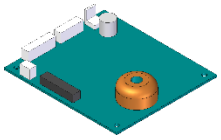
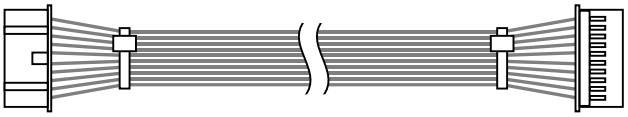
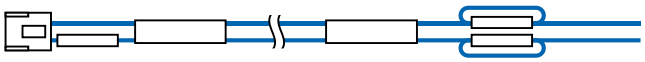
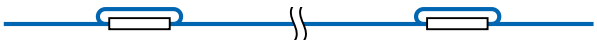
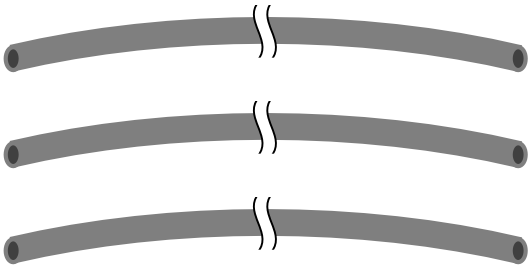
Item	External view
Conveyor unit	
Main unit	
Mounting screws for the main unit (4 pieces, M6, 15 mm in length)	
Filter regulator	

Table 2　Packing list (2/2)

Item	External view
Filter regulator bracket	
Mounting screws for the filter regulator bracket (2 pieces, M4, 8 mm in length)	
Solenoid valve	
Mounting screws for the solenoid valve (2 pieces, M3, 6 mm in length)	
Motor control board	
Mounting screws for the motor control board (4 pieces, M3, 6 mm in length)	
Dedicated cable gland	
Seal plug	
Motor control cable	
Motor power cable	
24 V crossover cable	
Cable clip 5N	
Mounting screws for the Cable clip (1 piece, M3, 8 mm in length)	
Air tubes (3 pieces, 300 mm in length)	

3. Descriptions of parts

3-1 Overall view

Front view

Rear view

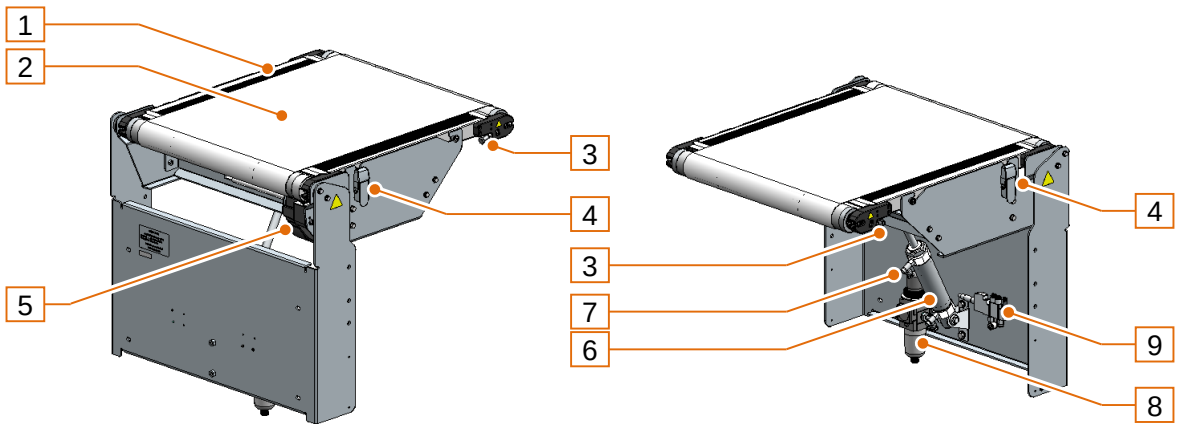


Fig. 3 Overall view (AD-4982-C3550)

Table 3 Part names and functions

No.	Name	Function
1	Conveyor base	The pulleys to move the belt and the base to convey products.
2	Belt	Conveys products. Can be removed and cleaned.
3	Belt tension adjusting screws	To adjust the tension of the belt, there is one screw on the front side and one on the back side of the rejector. Belt meandering can be also adjusted by adjusting the screws.
4	Draw latches	To firmly attach the conveyor unit to the main unit, there is one latch on the front side and one on the back side of the rejector.
5	Motor unit	Rotates the pulley on the conveyor base to operate the belt.
6	Air cylinder	Switches the conveyor between level and tilted states by air pressure to select passing or rejecting of conveyed products.
7	Speed controllers	The air pressure supplied to or discharged from the air cylinder can be adjusted.
8	Filter regulator	Filters the air supplied to the solenoid valve. The air pressure supplied to the solenoid valve can also be adjusted.
9	Solenoid valve	Switches between supplying air to the air cylinder and discharging air from the air cylinder via the speed controller according to an electric signal from the inspection system.

3-2 Cables

This rejector has three cables that are routed externally.

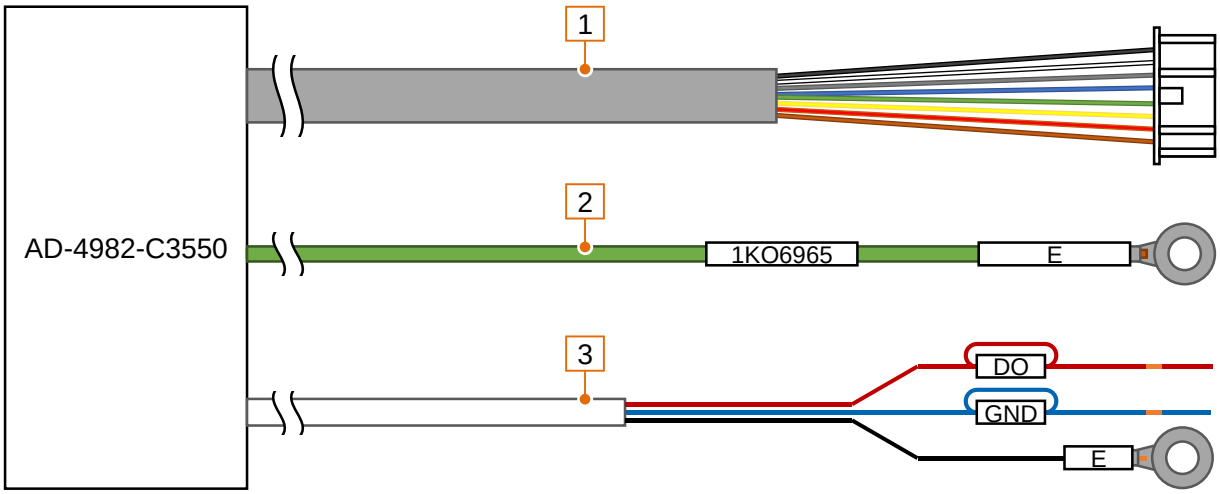


Fig. 4 Appearances of cable tips

Table 4 Cable name and function

No.	Name	Function
1	Motor cable (1KO4223)	Connects the motor control board to the motor of the rejector.
2	Ground cable (1KO6965)	Connects the ground of the inspection system to the main unit of the rejector.
3	Solenoid valve cable	Connects the general-purpose external output terminal of the inspection system to the solenoid valve of the rejector.

3-3 Warning labels

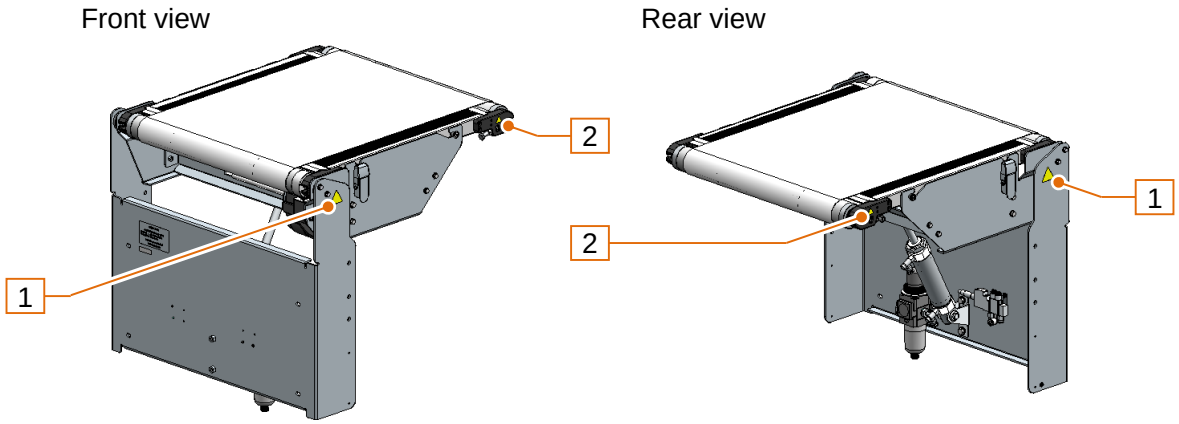


Fig. 5 Positions of the warning labels

Table 5 Warning labels

No.	Label	Meaning of the label
1		Be careful not to get hands, etc., caught in the conveyor moving parts.
2		Be careful not to get hands, etc., caught in the pulley and the belt.

4. Assembly

4-1 Main unit

Caution:

Assembly work should be done by two or more people.

Note:

In this section, the rejector is assumed to be mounted onto the AD-4982-B3550 conveyor drop base unit (sold separately). Depending on how you made the purchase, the rejector may be mounted differently. If you have any questions, please contact your local A&D dealer.

1. Using a 10 mm wrench, attach the main unit to the conveyor drop base unit with the mounting screws for the main unit.

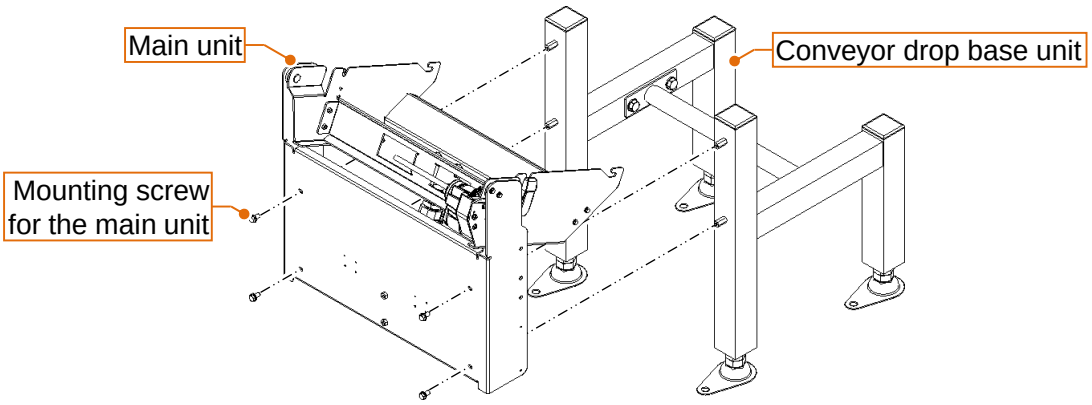


Fig. 6 Attaching the main unit

2. Using a 7 mm wrench, attach the filter regulator bracket to the main unit with the mounting screws for the filter regulator bracket.

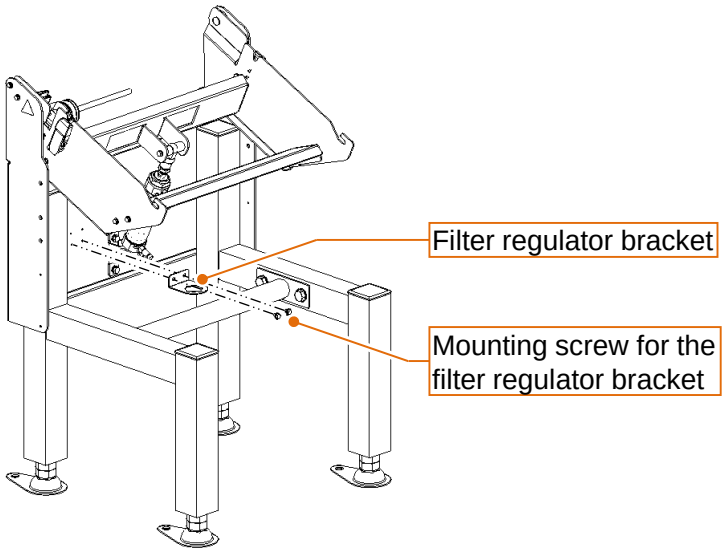


Fig. 7 Attaching the filter regulator bracket

3. Attach the filter regulator to the filter regulator bracket using the filter regulator nut.

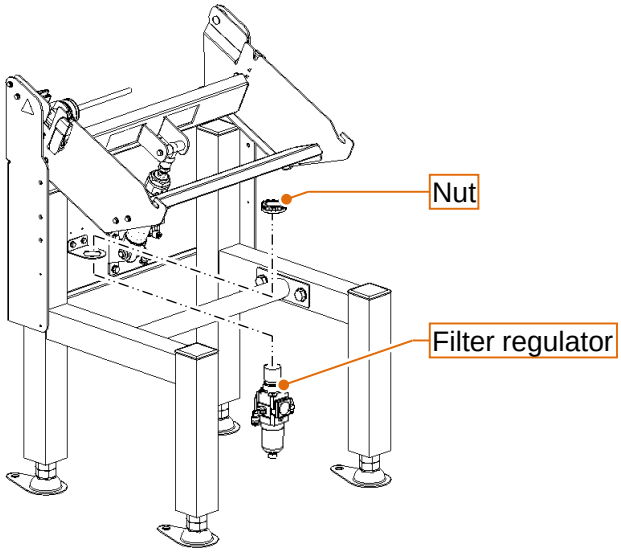


Fig. 8 Attaching the filter regulator

4. Using a #2 Phillips screwdriver, attach the solenoid valve to the main unit with the mounting screws for the solenoid valve.

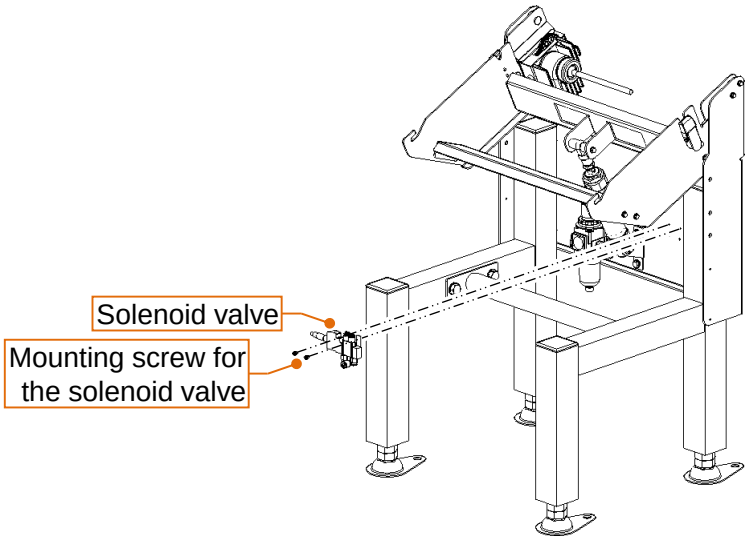


Fig. 9 Attaching the solenoid valve

5. Connect the filter regulator and solenoid valve with the air tube.

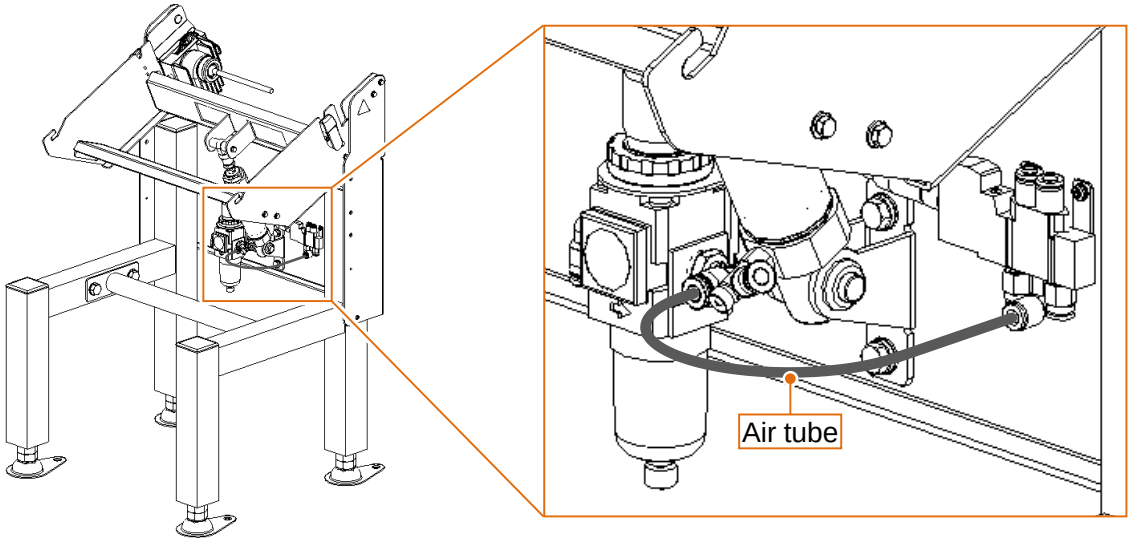


Fig. 10 Connecting the air tubes (1/2)

6. Connect the solenoid valve and speed controllers with the air tubes.

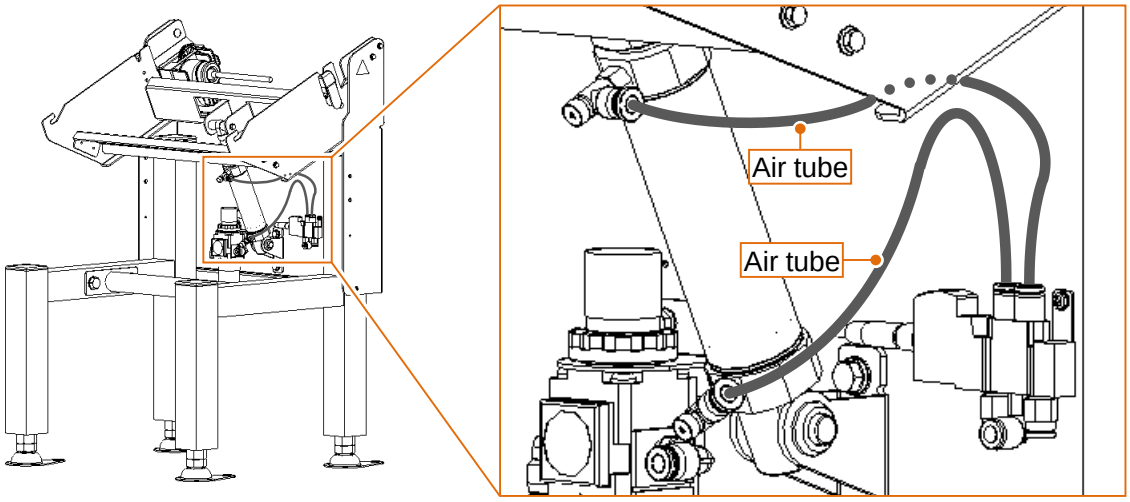


Fig. 11 Connecting the air tubes (2/2)

7. Place the conveyor unit on the main unit.
   Place the conveyor unit on the belt tension adjusting screws side of the conveyor unit first.
   After sliding the conveyor unit all the way to the back of the hooks, place on the draw latches side as well.

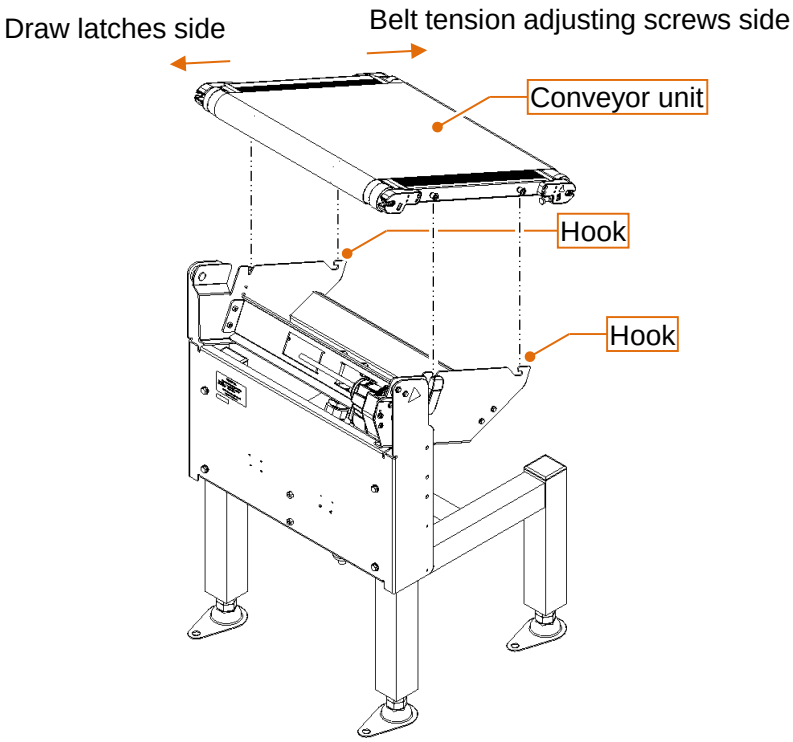


Fig. 12 Attaching the conveyor unit

8. Close the draw latches to secure the conveyor unit to the main unit.

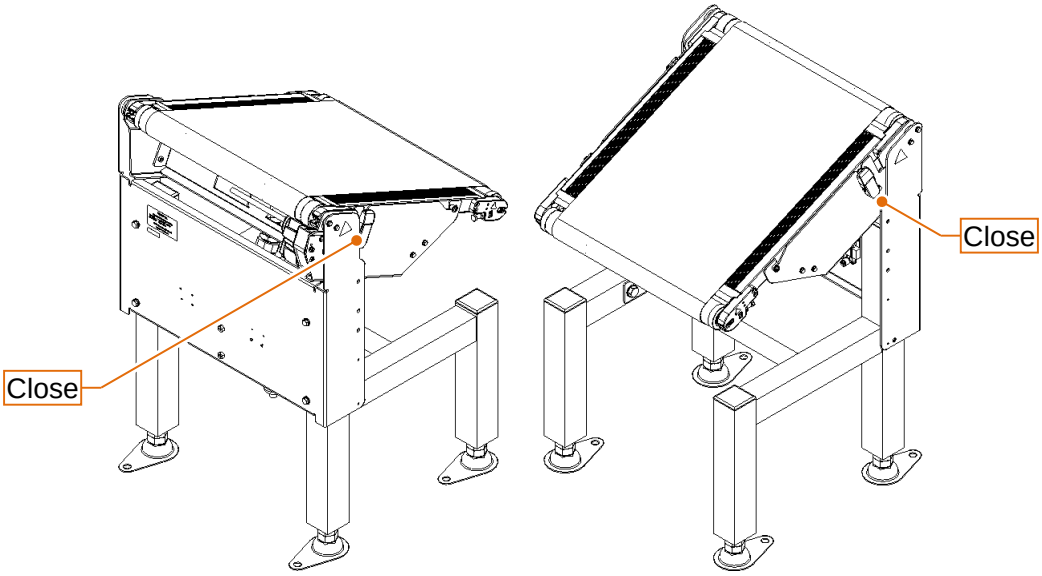


Fig. 13 Completed assembly of the main unit

5. Installation

Note:

In this chapter, the rejector is assumed to be mounted onto the AD-4982-B3550 conveyor drop base unit (sold separately).

The installation method may differ when the conveyor drop base unit is not used.

If you have any questions, please contact your local A&D dealer.

1. Install the rejector next to the unit (X-ray inspection system, checkweigher, or metal detector) it will be connected to.
2. The arrow indicates the direction in which products are conveyed. When installing, pay attention to the conveying direction and the orientation of the rejector.

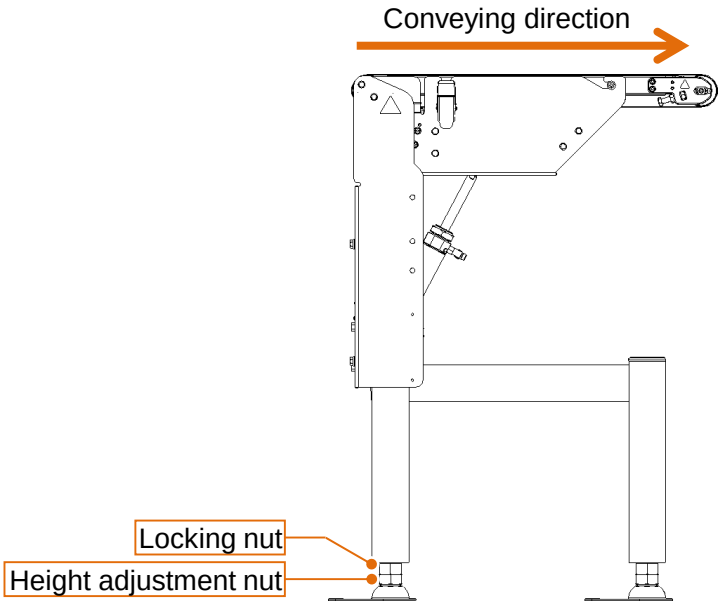


Fig. 14 Installation

3. Using a 30 mm wrench, adjust the conveyor height with the height adjustment nuts.
4. Using a 30 mm wrench, secure the adjustable feet with the locking nuts.
5. Depending on the conditions of the floor on which the rejector is installed and the operating speed of rejection operations, the installation position may be easily displaced by the vibration of rejection operations. If it is frequently displaced, anchor or otherwise secure the adjustable feet in place.

6. Connection

6-1 Connecting to the AD-4991 series

Caution:

To prevent injury or equipment failure during connection work, cut off the power supply to the AD-4991 series.

1. Remove the rear cover of the AD-4991 series.

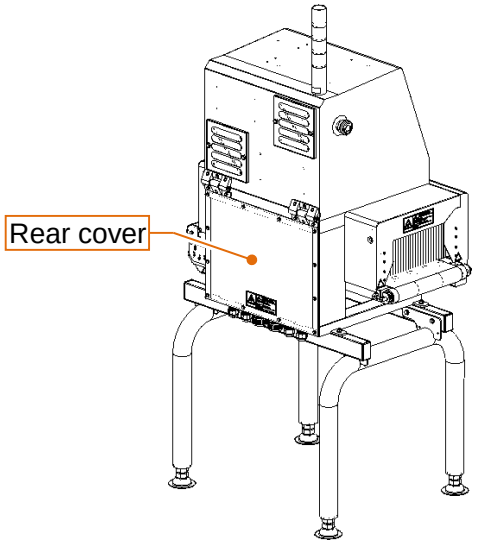


Fig. 15 Removing the rear cover

2. Using a #2 Phillips screwdriver, attach the motor control board to the following positions with the mounting screws for the motor control board.

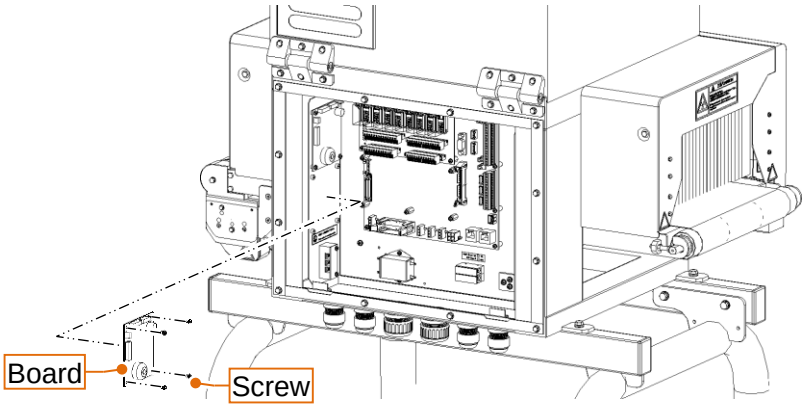


Fig. 16 Attaching the motor control board

3. Use two adjustable wrenches to remove the cable gland for the AD-4991 series.
   Install the dedicated cable gland in place of the removed cable gland.

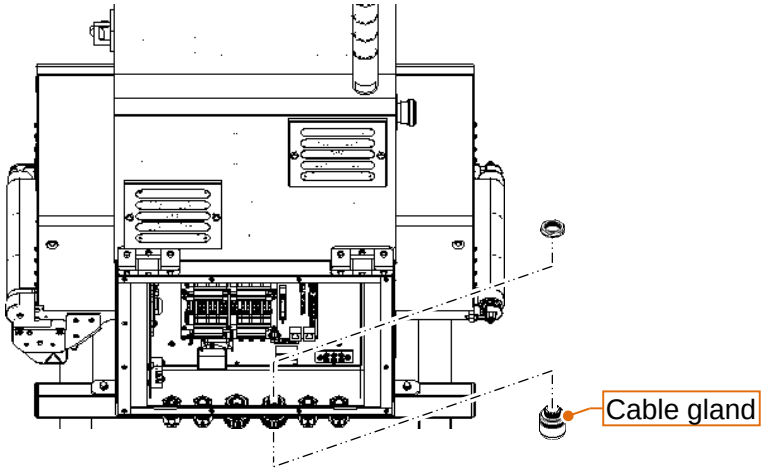


Fig. 17 Replacing the cable gland

4. Pull the motor cable (1KO4223), ground cable (1KO6965), and solenoid valve cable of this rejector into the dedicated cable gland.
   Install the seal plug in the remaining hole of the dedicated cable gland.

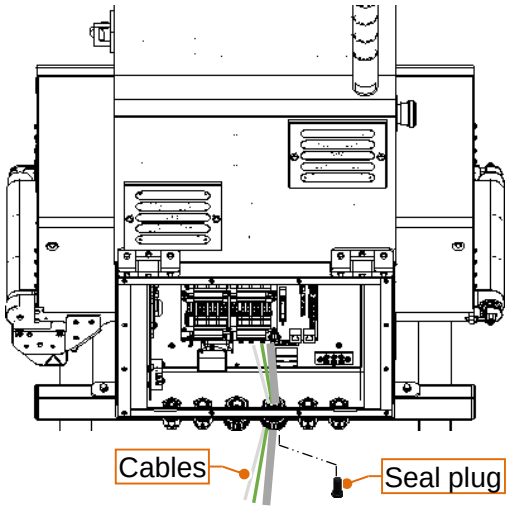


Fig. 18 Pulling the cables into the dedicated cable gland

5. Connect the motor power cable, motor cable, and motor control cable to the motor control board attached to the AD-4991 series product in step 2.

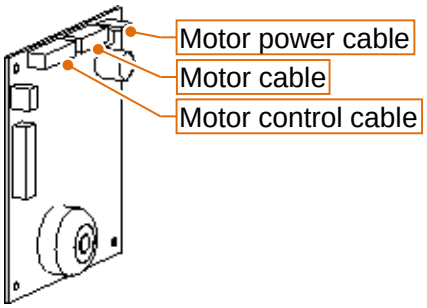


Fig. 19 Connecting the cables to the motor control board

6. Connect the motor power cable and motor control cable to the main board connectors.
   Using a #2 Phillips screwdriver, connect the ground cable and the black wire of the solenoid valve cable to the grounding bar.

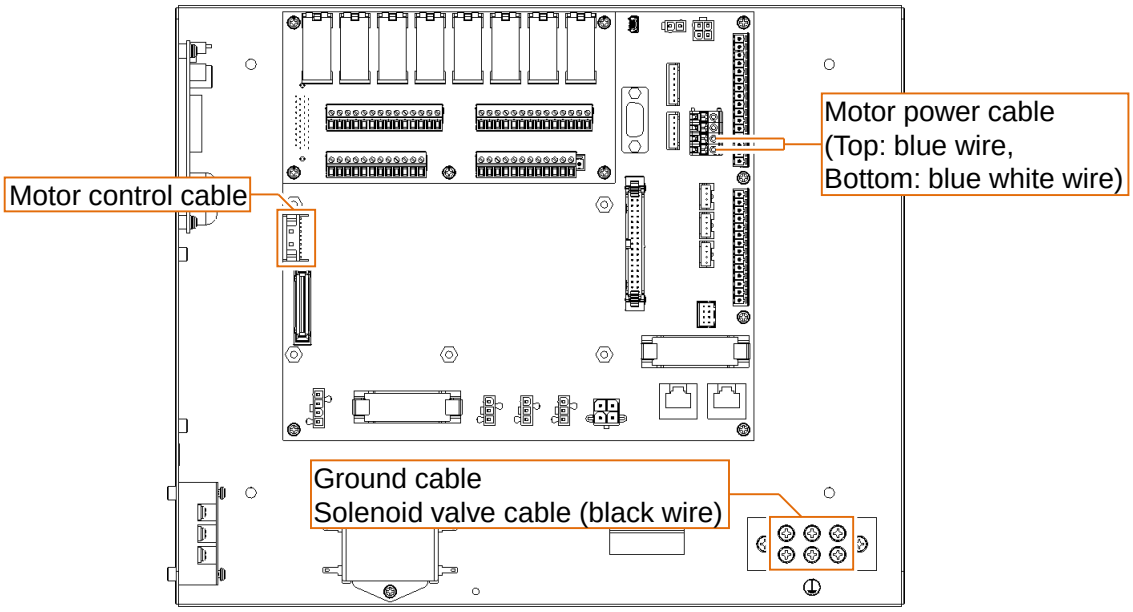


Fig. 20 Connecting the cables to the main board and grounding bar

7. Remove the connector shown below and connect the solenoid valve cable passed in step 2 and the supplied 24 V crossover cable.
   The figure below shows an example of connection for rejection operation using DO1 (positive polarity) of the AD-4991.

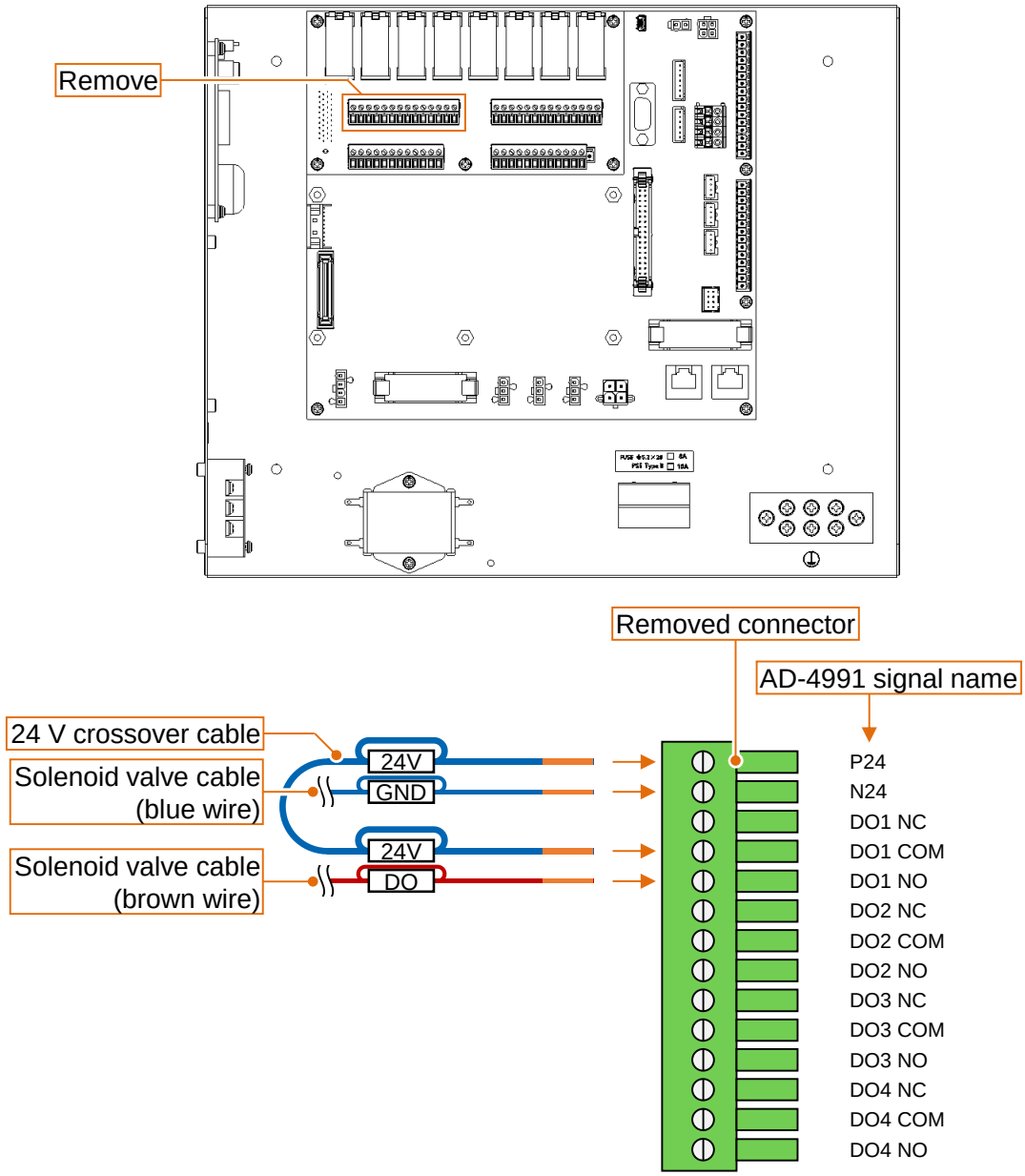


Fig. 21 Connecting the solenoid valve cable and 24 V crossover cable

8. Reattach the connector removed in step 7.
9. Reattach the rear cover removed in step 1.
10. Start supplying power to the AD-4991 series, and set the following items as necessary.
    - Administrator settings (use of the rejector)
    - Belt settings (belt speed adjustment, error check)
    - Product settings (belt speed of rejector, DO map, DO behavior)
    - DI settings (DI setting, reject confirmation, reject timing)

6-2 Connecting to the AD-4976-H series

Refer to the instruction manual for the AD-4976-39 rejector power supply module.

6-3 Connecting to the AD-4971 series

Refer to the instruction manual for the AD-4976-39 rejector power supply module.

6-4 Connecting to the AD-4961A series

Caution:

To prevent injury or equipment failure during connection work, cut off the power supply to the AD-4961A series.

1. Remove the cable gland claw and seal from the back of the AD-4961A series control box.
   Install the claw and seal of the dedicated cable gland in place of the removed claw and seal.

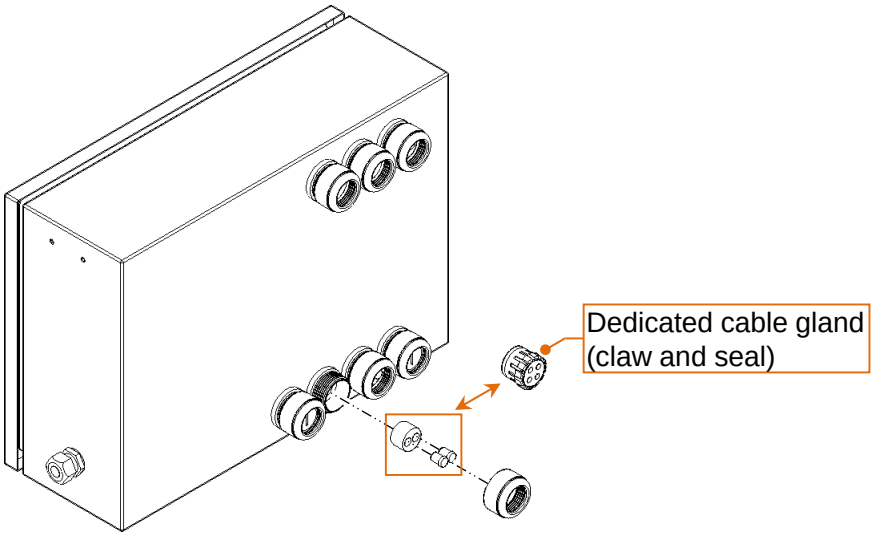


Fig. 22 Replacing the cable gland (AD-4961A series)

2. Pull the motor cable (1KO4223), ground cable (1KO6965), and solenoid valve cable of this rejector into the dedicated cable gland.
   Install the seal plug in the remaining hole of the dedicated cable gland.

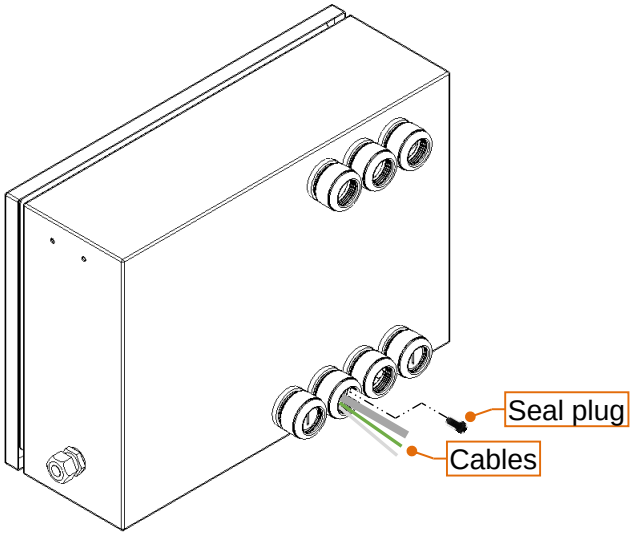


Fig. 23 Pulling the cables into the dedicated cable gland

3. Using a #2 Phillips screwdriver, attach the motor control board to the following position in the control box with the mounting screws for the motor control board.

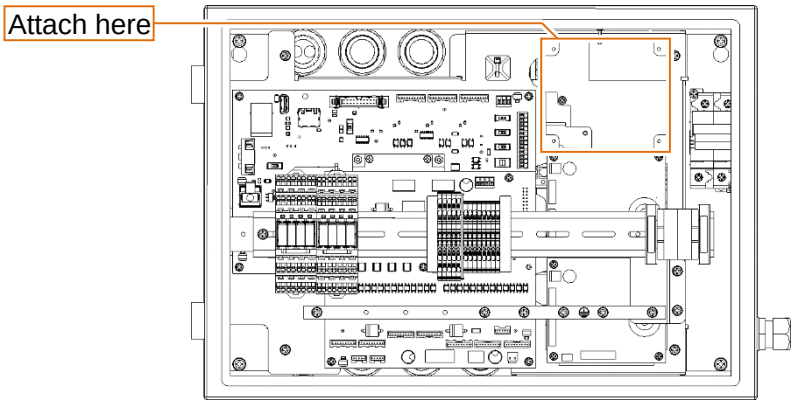


Fig. 24 Attaching the motor control board

4. Connect the motor power cable, motor cable, and motor control cable to the connectors shown below on the motor control board.

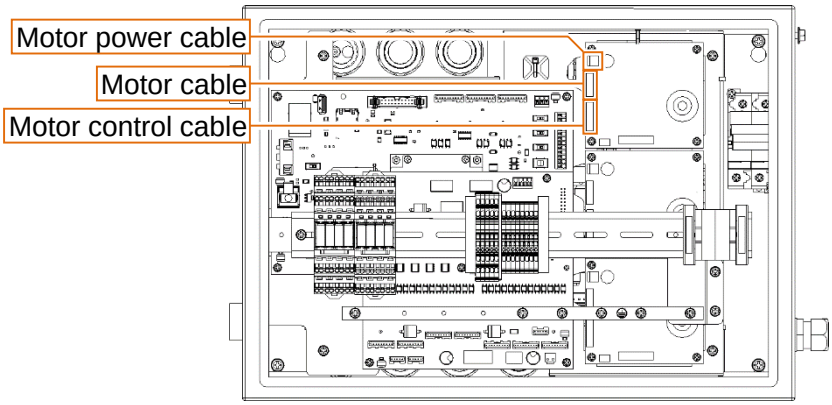


Fig. 25 Connecting the cables to the motor control board

5. Connect the motor control cable to the connector shown below in the control box.

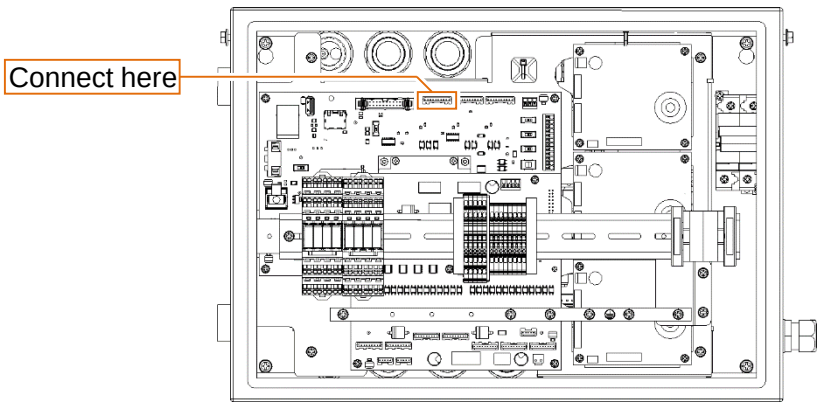


Fig. 26 Connecting the motor control cable

6. Connect the following wires to the terminal block (TB1) shown below in the control box.
   The following shows an example of connection for rejection operation using DO1 of the AD-4961A.
   - Terminal No. 12: Brown wire (DO) of the solenoid valve cable
   - Any of terminal No. 13 to 16: 24 V crossover cable

     Caution: Terminal No. 13 to 16 have shorting pins connected to them and are set so that each terminal is at the same electric potential. Do not remove the short pin.

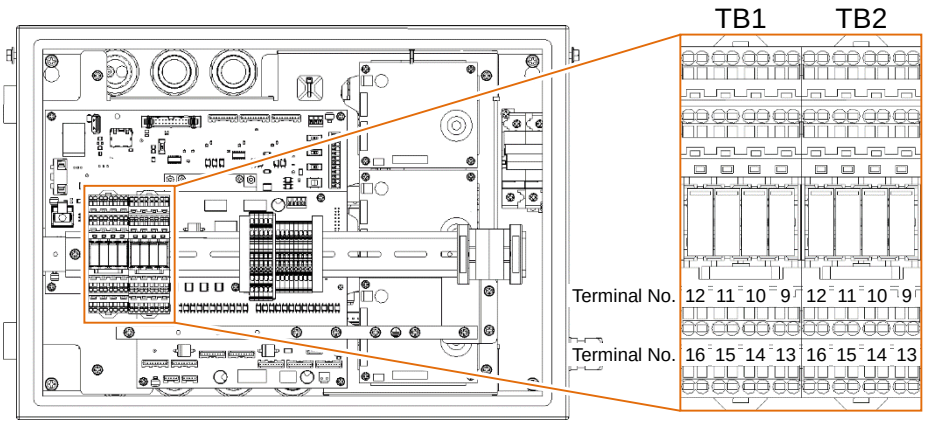


Fig. 27 Wiring to the terminal block (TB1)

7. Connect the following wires to the terminal block (TB3) shown below in the control box.
   - One of the rows of the terminal No. 1: Blue wire (24V) of the motor power cable
   - One of the rows of the terminal No. 1: 24 V crossover cable connected to TB1 in step 6
   - One of the rows of the terminal No. 2: Blue and white wire (GND) of the motor power cable
   - One of the rows of the terminal No. 2: Blue wire (GND) of the solenoid valve cable

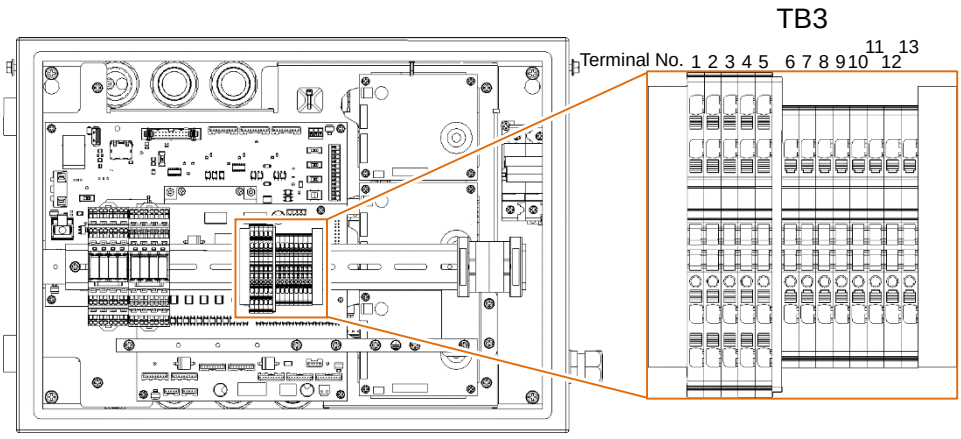


Fig. 28 Wiring to the terminal block (TB3)

8. Using a #2 Phillips screwdriver, connect the ground cable and the black wire of the solenoid valve cable to the grounding bar shown below in the control box.

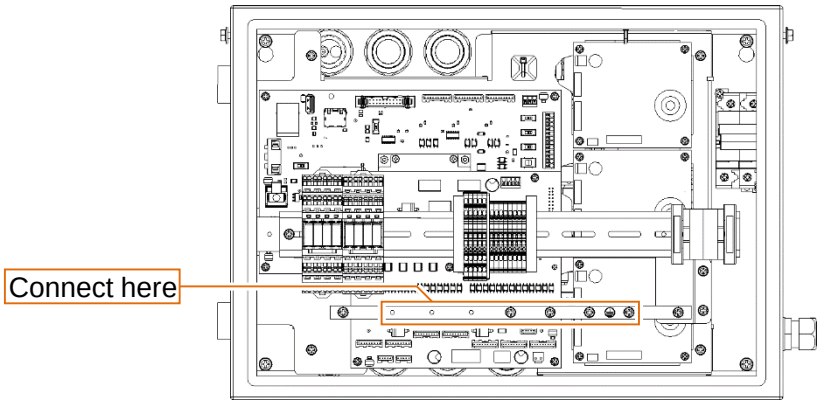


Fig. 29 Connecting the cables to the grounding bar

9. Start supplying power to the AD-4961A series, and set the following items as necessary.
   - Rejector connection settings
   - Belt settings (belt speed adjustment, error check)
   - Product settings (belt speed of rejector, DO map, DO behavior)
   - DI settings (DI setting, reject confirmation, reject timing)

7. Maintenance

7-1 Daily check

To ensure safe use, please check each part of this rejector before use.
If the status of the rejector does not match that of the check contents, please take the actions indicated in the table below.

Table 6 Daily check

No.	Check contents	Action contents
1	Make sure the installation position and height of the equipment in front of and behind the rejector allow products to be conveyed in and out.	Depending on the conditions of the floor on which the rejector is installed and the operating speed of rejection operations, the installation position may be easily displaced by the vibration of rejection operations. If it is frequently displaced, please contact your local A&D dealer. For adjustment of the height, refer to "5 Installation (P. 16)."
2	Make sure the belt is not damaged, the tension of the belt is normal, and there is no meander. If conditions are not normal, the belt may be damaged.	If the belt is damaged, it needs to be replaced. Please contact your local A&D dealer. If the belt tension is abnormal or the belt is meandering, adjust the belt tension and meander (7-3 Belt meander adjustment (P. 31)).
3	Verify non-conforming and conforming products to ensure that they are successfully sorted.	If products are not screened correctly, check the following. • The DO settings of the inspection system • Belt speed is normal. • The DI settings and reject confirmation settings of the inspection system
4	Run the belt and check that there is no abnormal noise or other abnormality in the motor or gears.	If there is abnormal noise or other abnormality, the motor or gears needs to be replaced. Please contact your local A&D dealer.

7-2 Belt installation/removal

7-2-1 Removing the belt

Caution:

To prevent injury or equipment failure during belt removal work, cut off the power supply to the inspection system (X-ray inspection system, checkweigher, or metal detector) connected to the rejector.

1. Using a 10 mm wrench, loosen the belt tension adjusting screws to loosen the belt.

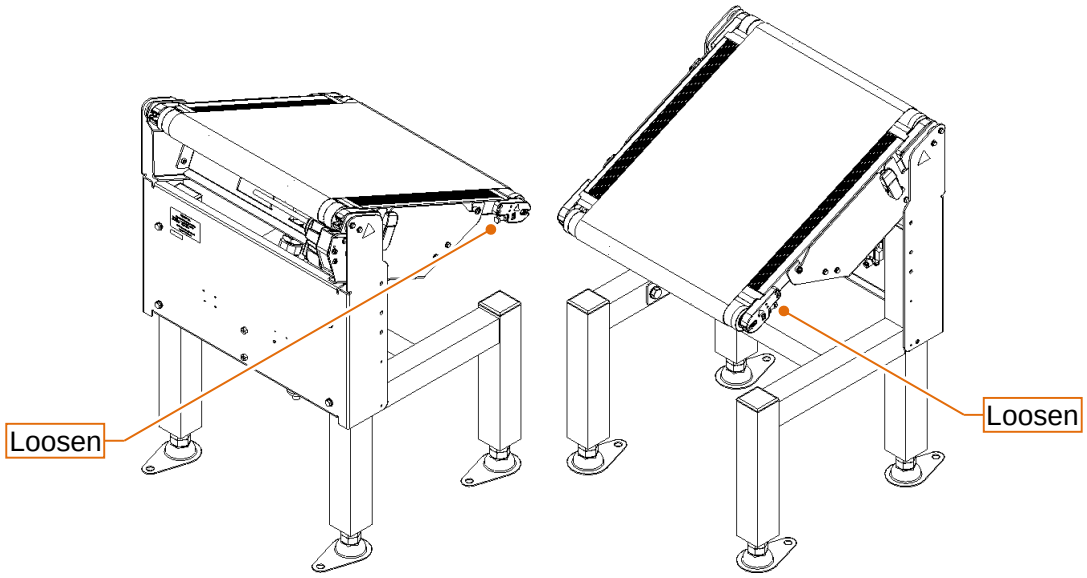


Fig. 30 Adjusting the belt tension

2. Release the draw latches.

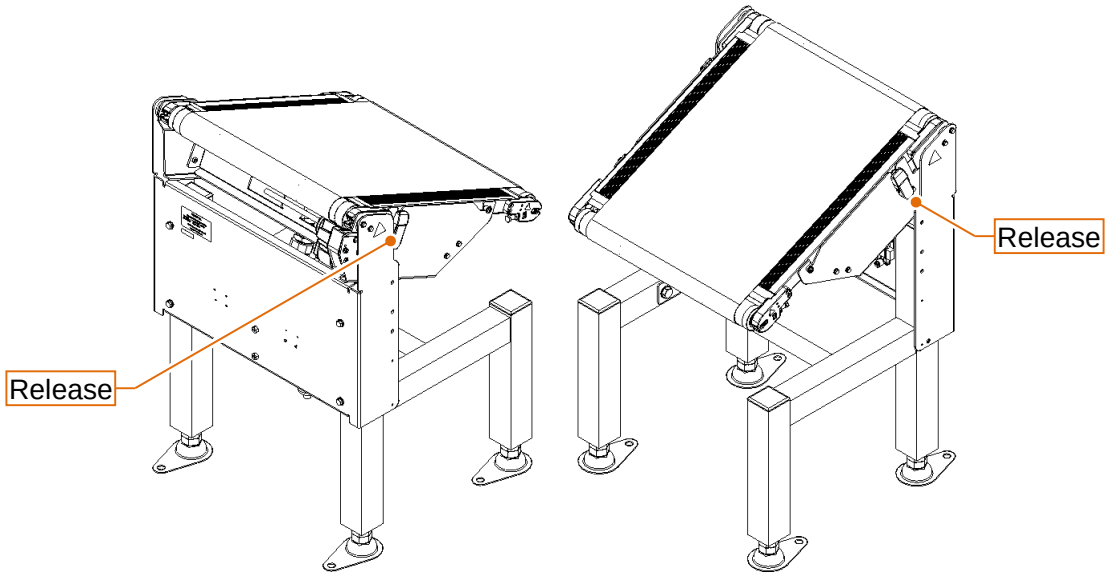


Fig. 31 Releasing the draw latches

3. Remove the conveyor unit from the main unit.
   Remove it from the side with the draw latches first.
   Remove the conveyor unit on the belt tension adjusting screws side while sliding it from the hooks.

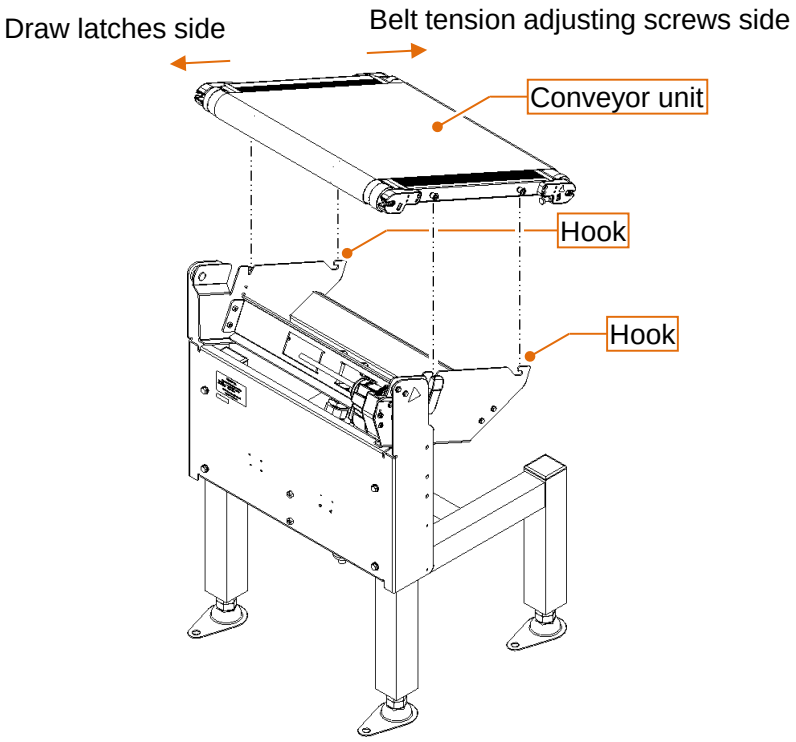


Fig. 32 Removing the conveyor unit

4. Remove the belt from the removed conveyor base.

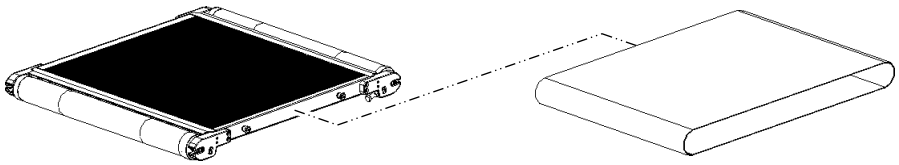


Fig. 33 Removing the belt

7-2-2 Attaching the belt

Caution:

To prevent injury or equipment failure during belt attachment work, cut off the power supply to the inspection system (X-ray inspection system, checkweigher, or metal detector) connected to the rejector.

1. If the conveyor base has not been removed from the main unit yet, refer to "7-2-1 Removing the belt (P. 27)" and remove the conveyor base from the main unit.
2. Attach the belt to the conveyor base.
   If it is difficult to attach the belt, use a 10 mm wrench to loosen the belt tension adjusting screws.

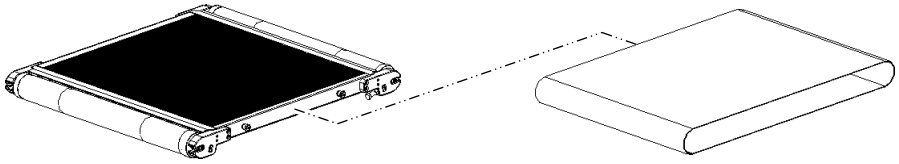


Fig. 34 Attaching the belt

3. Place the conveyor unit on the main unit.
   Place the conveyor unit on the belt tension adjusting screws side of the conveyor unit first.
   After sliding the conveyor unit all the way to the back of the hooks, place on the draw latches side as well.

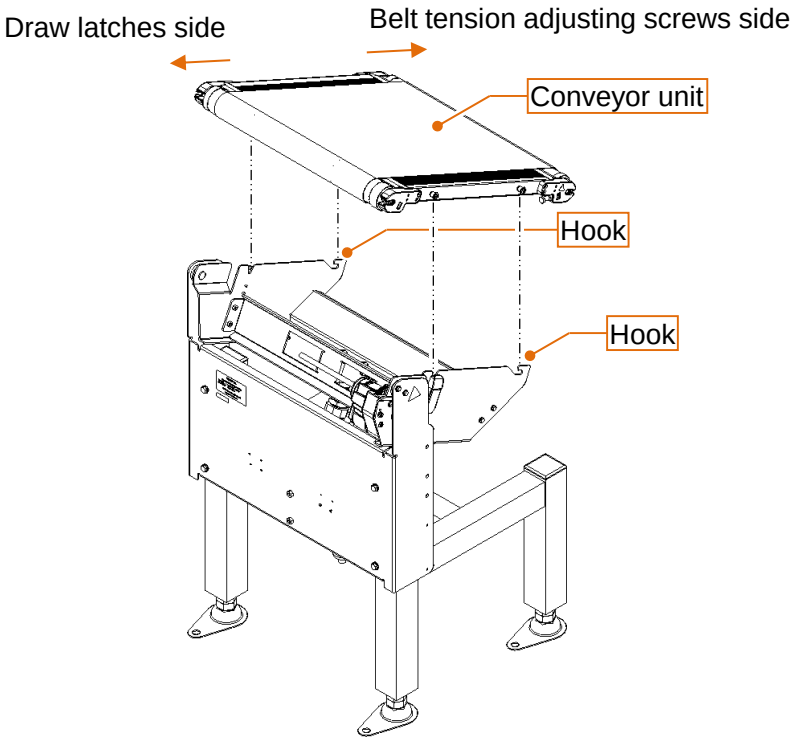


Fig. 35 Attaching the conveyor unit

4. Close the draw latches to secure the conveyor unit to the main unit.

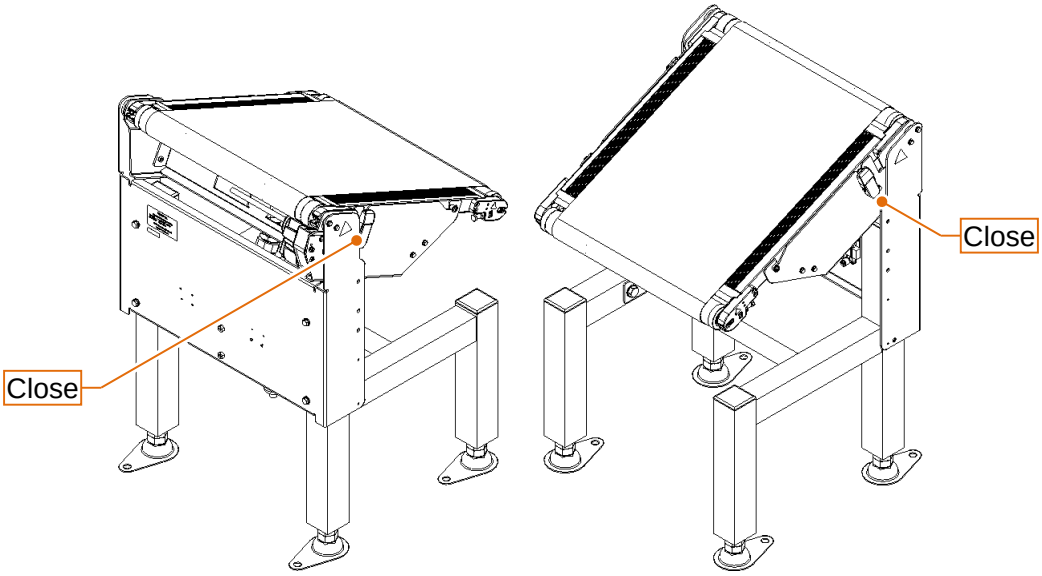


Fig. 36 Closing the draw latches

5. Using a 10 mm wrench, tighten the belt tension adjusting screws to tighten the belt. Adjust the belt meander as necessary (7-3 Belt meander adjustment (P. 31)).

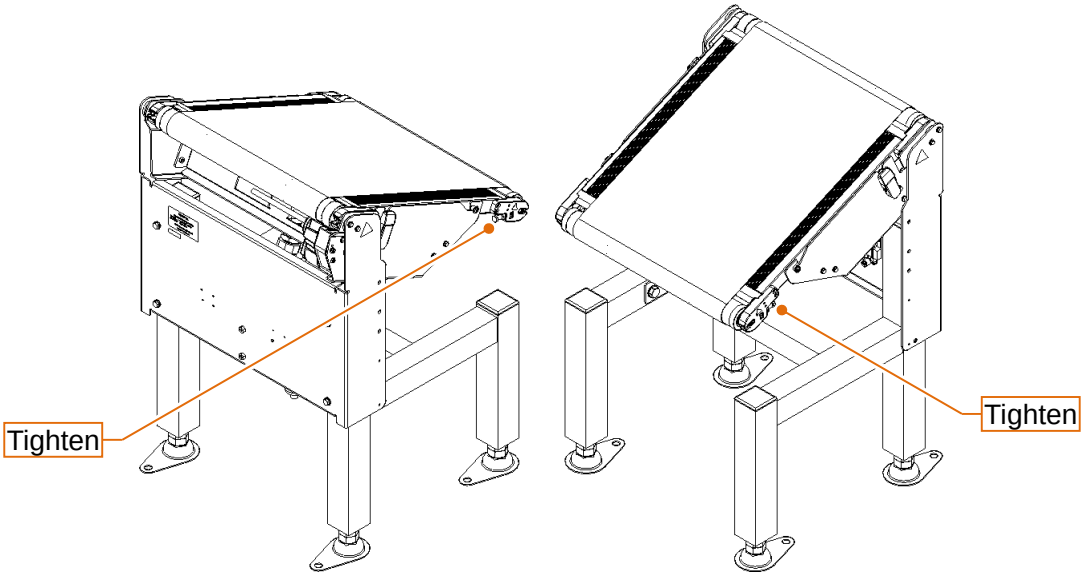


Fig. 37 Adjusting the belt tension

7-3 Belt meander adjustment

Caution:

The belt will be running during belt meander adjustment work. Be careful not to let your fingers or clothes get caught in the running belt.

1. Operate the inspection system to start running the belt of the rejector.
2. Check if the belt meanders.
3. The belt meanders in the loosened direction.
   The belt also meanders in the opposite direction of the tensioned direction.
   Tighten the belt in the meandering direction (by tightening the belt tension adjusting screw) or loosen the belt tension in the opposite direction (by loosening the belt tension adjusting screw).
   Be careful not to apply too much tension or loosen the belt too much.

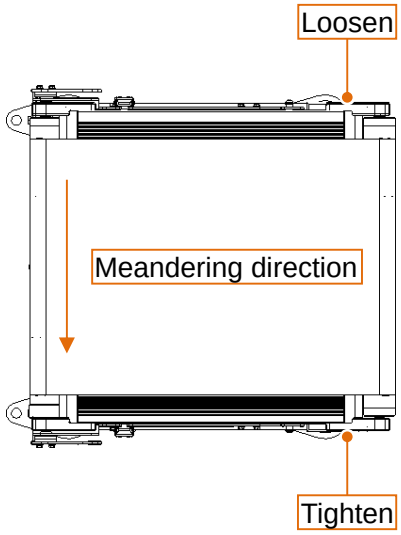


Fig. 38 Example of meandering adjustment (meandering to front side of the rejector)

4. Repeat steps 2 and 3 until the belt no longer meanders.
5. Operate the inspection system to stop the belt of the rejector.

7-4 Belt cleaning

In order to maintain a hygienic environment, please clean the rejector if it becomes noticeably dirty. If it becomes very dirty, the performance of the rejector may deteriorate.

Caution:

- **To prevent injury or equipment failure during cleaning work, cut off the power supply to the inspection system (X-ray inspection system, checkweigher, or metal detector) connected to the rejector.**
- **Clean the inside of the belt as any dirt may cause performance degradation.**

1. Remove the belt (7-2-1 Removing the belt (P. 27)).
2. Wipe off any dirt from the belt with a soft cloth. If it is very dirty, wipe off with lukewarm water at 60 °C or below, or a neutral detergent.
3. When the dirt is removed, wipe off any remaining water with a soft cloth.
4. Attach the belt (7-2-2 Attaching the belt (P. 29)).

7-5 Rejection operating speed adjustment

Adjust the speed controller to adjust the operating speed of rejection operation.

A) Adjust the amount of air supplied when extending the air cylinder and the amount of air discharged when retracting.

B) Adjust the amount of air discharged when extending the air cylinder and the amount of air supplied when retracting.

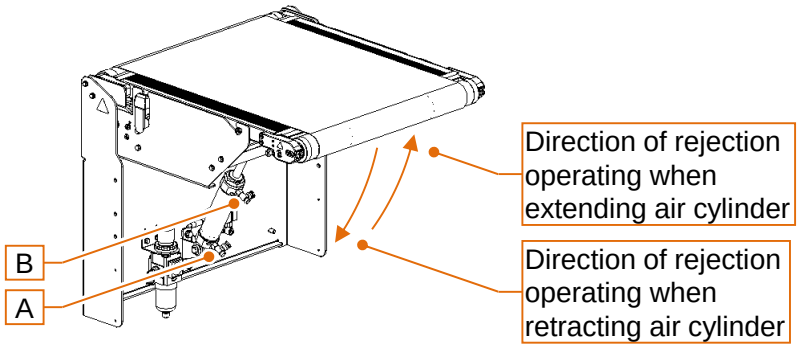


Fig. 39 Adjusting the rejection operating speed

8. Specifications

Table 7 Specifications

Specifications	AD-4982-C3550
Conveyor width	350 mm
Rejector length	500 mm
Conveyor height*1	720 to 860 mm
Conveyor speed	10 to 50 m/min
Screening capacity*2	60 pcs/min
Rejectable product size*3	W: 350 mm × L: 500 mm × H: 160 mm
Air source	0.5 MPa, 0.9 NL/time φ 6 mm urethane air tube quick joint type
Conveyor load capacity	Up to 6 kg
Operating temperature/humidity	0 to 40 °C / below 85%RH, with no condensation
Dust-/water-proof protection rating	IP65
Maximum power consumption	Approx. 60 W
Weight*4	17 [28] kg
Belt material	Polyurethane

*1: This value is for the combination of AD-4982-C3550 and AD-4982-B3550.

*2: Differs depending on the shape and the condition of the product and installation environment.

*3: This is a reference value when the thickness of the downstream belt conveyor is 45 mm.

*4: The value in [ ] is the weight including the AD-4982-B3550.

9. External dimensions

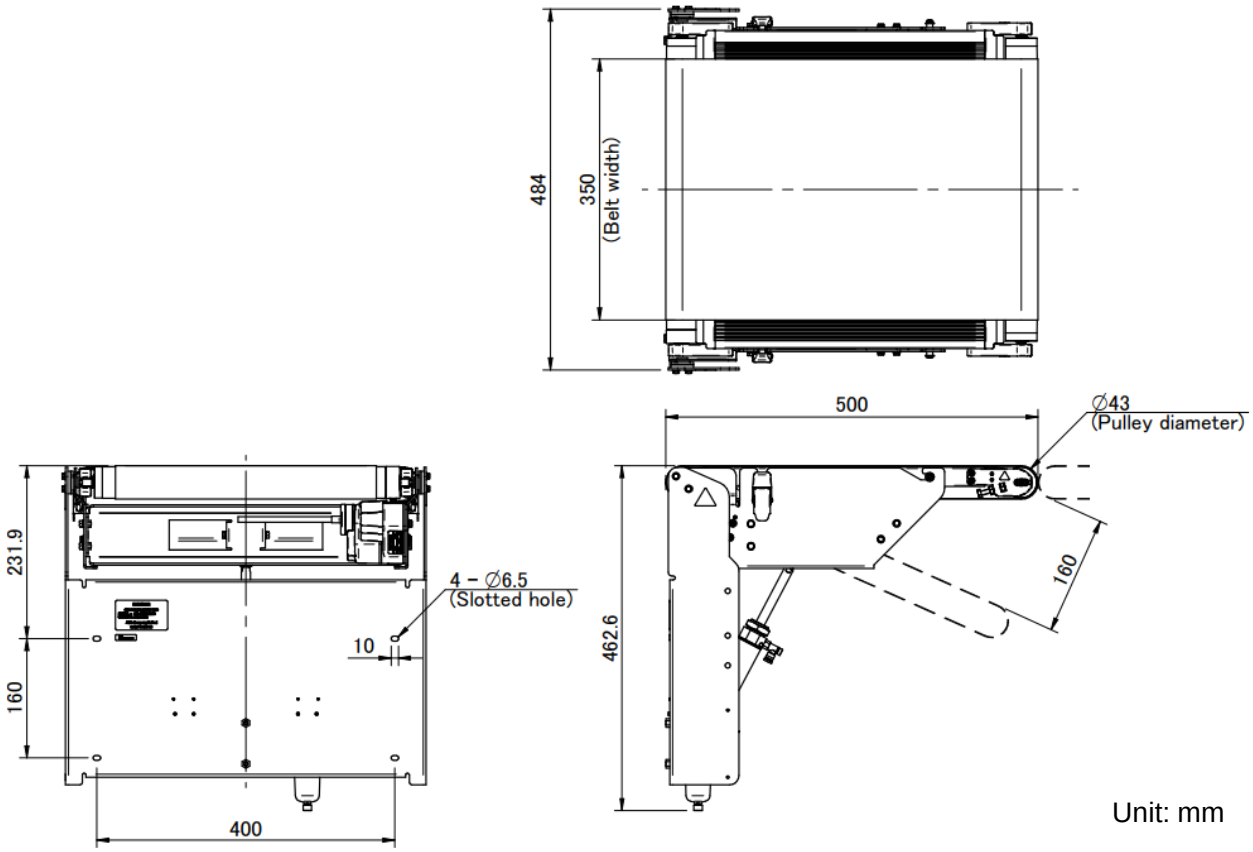
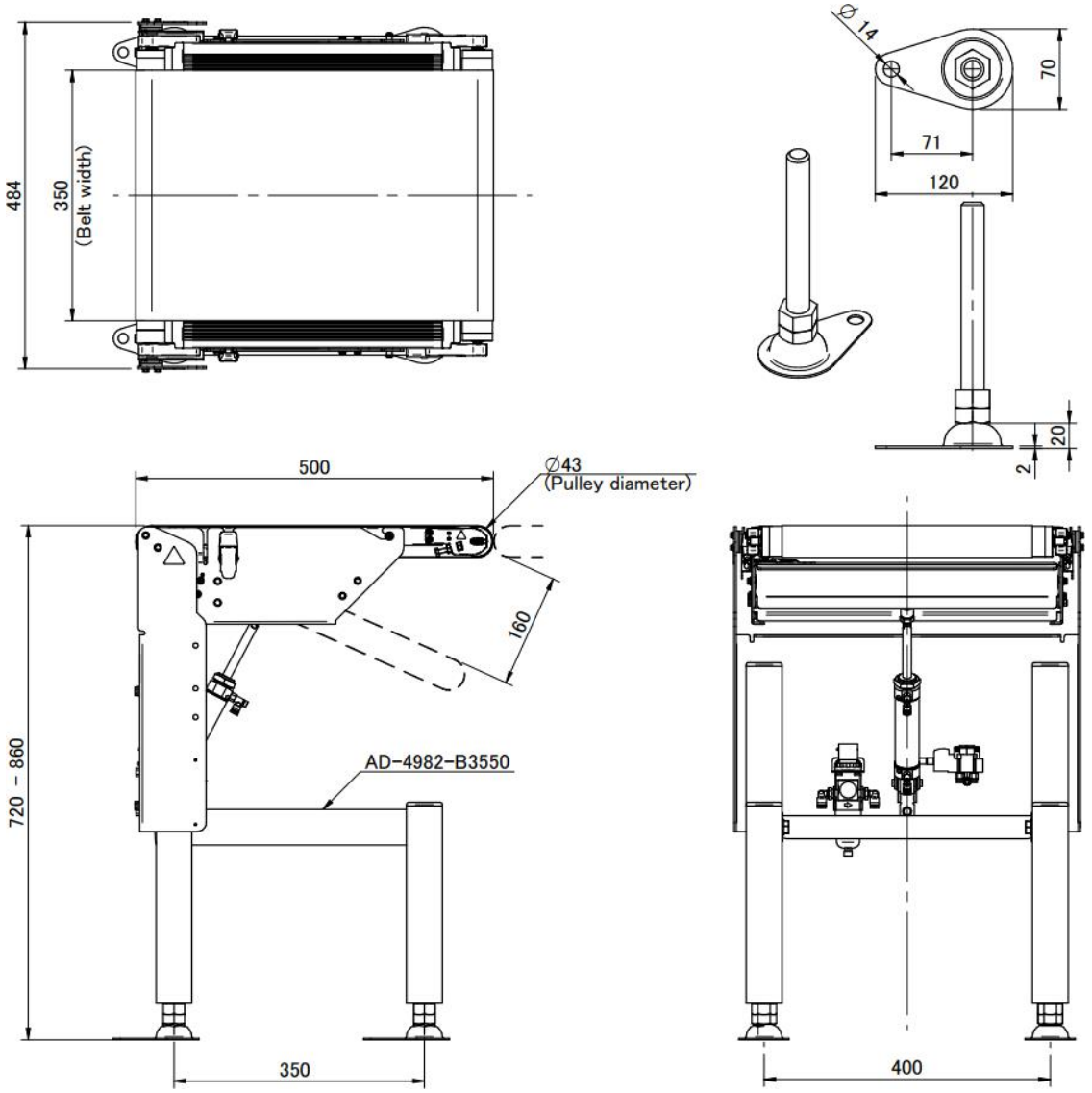


Fig. 40 External dimensions (standard)



Unit: mm

Fig. 41 External dimensions (when products sold separately are installed)

10. Revision history

Table 8 Revision history

Date	Part number	Description of issue
2022/05/01	1WMPD4004736	First edition

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