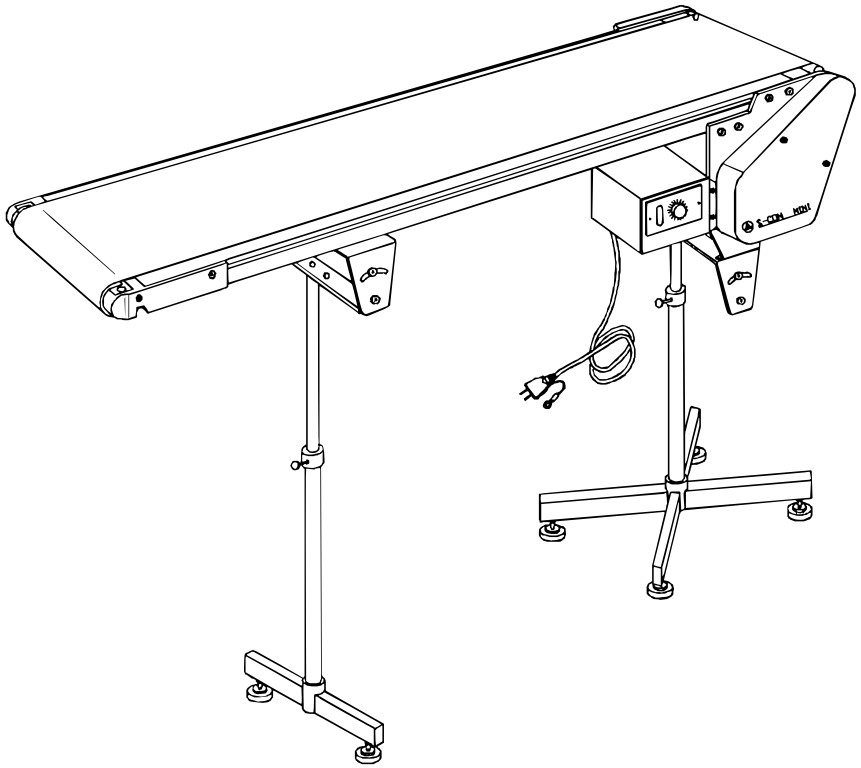
SANKI ENGINEERING CO., LTD.

S-CON®MINI Series

OPERATING AND SERVICE MANUAL



Thank you very much for purchasing our **S-CON®MINI** Series. To use the machine properly, please read this operating and service manual carefully before use. Keep the manual where the machine is installed, so that it may be referred to when needed.

TABLE OF CONTENTS

For the following models, refer to separate operating and service manuals:

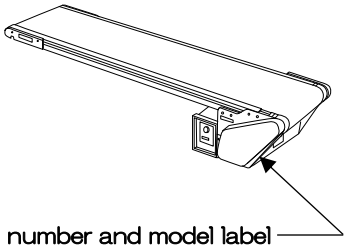
S-CON®MINI-Z Series (SZ model)

S-CON®MINI CURVE (SMBM model)

S-CON®MINI FLEX (SMFX model)

S-CON®MINI FLOW-BEL (SMF model)

Upon delivery of this product, please check the package contents to ensure the product matches your order. If the delivered items do not match your order, please contact our local agent directly before use.



Serial number and model label
(affixed on underside of chain cover)

Manufacturer's serial number
(refer to this number when contacting us)

[Example]

Date of production 20□□. □□
JOB №. □□−□□□□□−□□□−□□
SC30-1.5H（C25-1A18.0）R-BG
i = 1/12.5 , M = 11 P = 13

Reduction gear ratio

Number of sprocket or timing-pulley teeth

SC 30 - 1.5 H (C 25 - 1 A18.0) R - BG
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

①Conveyor model code
②Nominal belt width in cm (eg 30cm)
③Machine length in m (eg 1.5m)
④Drive type (eg Standard motor)

Drive type			Code
Head drive	Under-mount motor	Double support	H
		Single support	A
	Side-mount motor	Standard motor	HS
		Vertical-axial motor	HSW
	Top-mount motor	Double support	HU
		Single support	AU

Drive type			Code
Center drive	Under-mount motor	Standard	C
		For reinforced/wide-belt model of 10m or less in machine length	CA
		For reinforced/wide-belt model of 10.1m or more in machine length	CL

⑤Motor type (eg Constant speed)

Motor type	Code
Constant speed	C
Brushless-inverter variable speed	D
Inverter variable speed	F

⑦Power source type (eg 100V single-phase)

Power source type	Code
100V single-phase	1
200V single-phase	2
200V three-phase	3
other	0

⑥Motor output (eg 25W)

Motor output	Code	Motor output	Code
25W	25	130W	13
40W	40	0.1kW	01
50W	50	0.2kW	02
60W	60	0.4kW	04
90W	90	0.75kW	07

⑧Power source frequency and Belt speed
(eg 50Hz 15m/min)
NOTE: For variable speed, maximum speed is shown.

Frequency	Code
50Hz	A
60Hz	B

⑨Switch position and Direction of belt travel

Drive position	Direction of belt travel	Code
Right	Normal direction	R
Left		L
Right	Reverse direction	RB
Left		LB

⑩Belt specification

Code	BG	BW	IG	IW	RG	EK	SG	SW	HW
Specification	Standard		Incline		Special rubber for inclines	Ultra anti-static	Sliding		Heat-resistant
Color	Green	White	Green	White	Green	Black	Green	White	White
Code	OG	OW	KW	KB	XG	XW	XB	XX	NO
Specification	Oil resistant		Antibacterial		Other				None
Color	Green	White	White	Blue	Green	White	Blue	Other	−

1 CAUTION WHEN HANDLING

FOR YOUR SAFE USAGE

A. Prior To Use

CAUTION : Improper handling of the conveyor may result in physical injury or damage!

■Transport and assembly
When transporting and assembling the conveyor, pay special attention not to drop it in order to avoid physical injury or damage. When lifting by crane, pay attention to the balance of the conveyor.

■Earth and leakage breaker
Ensure the conveyor is connected to earth at all times to prevent electric shock. Also ensure that an earth leakage breaker is connected to the power supply.

■Emergency stop
Install an emergency stop device to immediately stop the conveyor in emergency.

■Start alarm
If it is not possible to supervise the operation of the full length of the conveyor from the operating position, install a start alarm for increased safety.

■Keep the conveyor dry at all times
Do NOT use the conveyor in wet or humid areas. Do NOT splash liquids onto the conveyor. Do NOT use or leave the conveyor outdoors. The machine is not waterproof. Do NOT touch electrical parts with wet hands.

■Do NOT use in an explosive atmosphere
(Avoid explosive gas, explosive dust, etc.)

□ When using in a high or inclined position:

■Lower cover and guard
Install the optional lower cover or guard in order to prevent entry under the conveyor.

■Guide rail, top and side covers
To prevent objects from falling off the conveyor, install the optional guide rail, top and/or side covers.

■Braking system
When using the conveyor on an incline, it is recommended that an optional braking system be installed, in order to prevent reverse or other incorrect running of the conveyor.

■Environmental conditions

Ambient temperature	: 0℃ to +40℃
Ambient humidity	: RH 90% max(Avoid condensation)
Atmosphere	: Indoor(Avoid corrosive gases, dust, etc.)
Elevation	: 1,000m or less

NOTE :

- Using the conveyor in a strong electric field (eg near broadcasting devices or high- frequency welding machinery/equipment) could cause the conveyor to malfunction. In this case, install the conveyor at a sufficient distance. Alternatively shield completely to avoid any interference with the conveyor.
- Using an inverter to this machine could cause other machines to get effects of high-frequency. In this case, install the conveyor at a sufficient distance or shield completely.

B. During Operation

WARNING：Improper handling of the conveyor could result in serious physical injury or damage!

■Do NOT touch the conveyor when it is running
There is considerable risk of being caught and injured by the conveyor.

■Do NOT ride on or climb on the conveyor／Do NOT go under the conveyor
There is considerable risk of falling or being caught and injured by the conveyor.

CAUTION：Improper handling of the conveyor may result in physical injury or damage!

■Beware of entanglement
When working close to the conveyor, take care not to get caught in the conveyor. There is considerable risk of being injured by the conveyor.

■Do NOT remove safety covers
There is a risk of getting caught in the rotating parts such as pulleys. Only remove in case of maintenance or inspection.

■Do NOT start the conveyor while it is loaded
The motor may become damaged due to overload. Additionally, the motors of variable-speed type machines may burn out as a result of running at excessively low speeds for long periods. Use the conveyor within the specifications, indicated in the instructions for use, and in the catalogue.

■Do NOT apply force to ends of conveyor
Do NOT press down on, or hang off the sides of the conveyor. Injury may result from a toppling conveyor.

■Secure the conveyor to the floor/ground
When using the conveyor, be sure to secure it to the floor/ground with anchor bolts etc. to prevent it from toppling irrespective of indoor use or outdoor use.

C. After Use

CAUTION：Improper handling of the conveyor may result in physical injury or damage!

■Switch off the power after use
Ensure that the power is switched off when carrying out relocation, inspection, cleaning, etc. of the conveyor, otherwise there is a risk that the conveyor could start unexpectedly. When leaving the conveyor unused for a long period, take plug out of the outlet /connector to prevent electric shock or leakage.

NOTE：1. Always use in accordance with the Occupational Safety and Health Act.
2. If the owner modifies the conveyor, any ill effects will fall outside the conditions of the guarantee.

■WARNING LABELS etc. AND ATTACHMENT POSITIONS

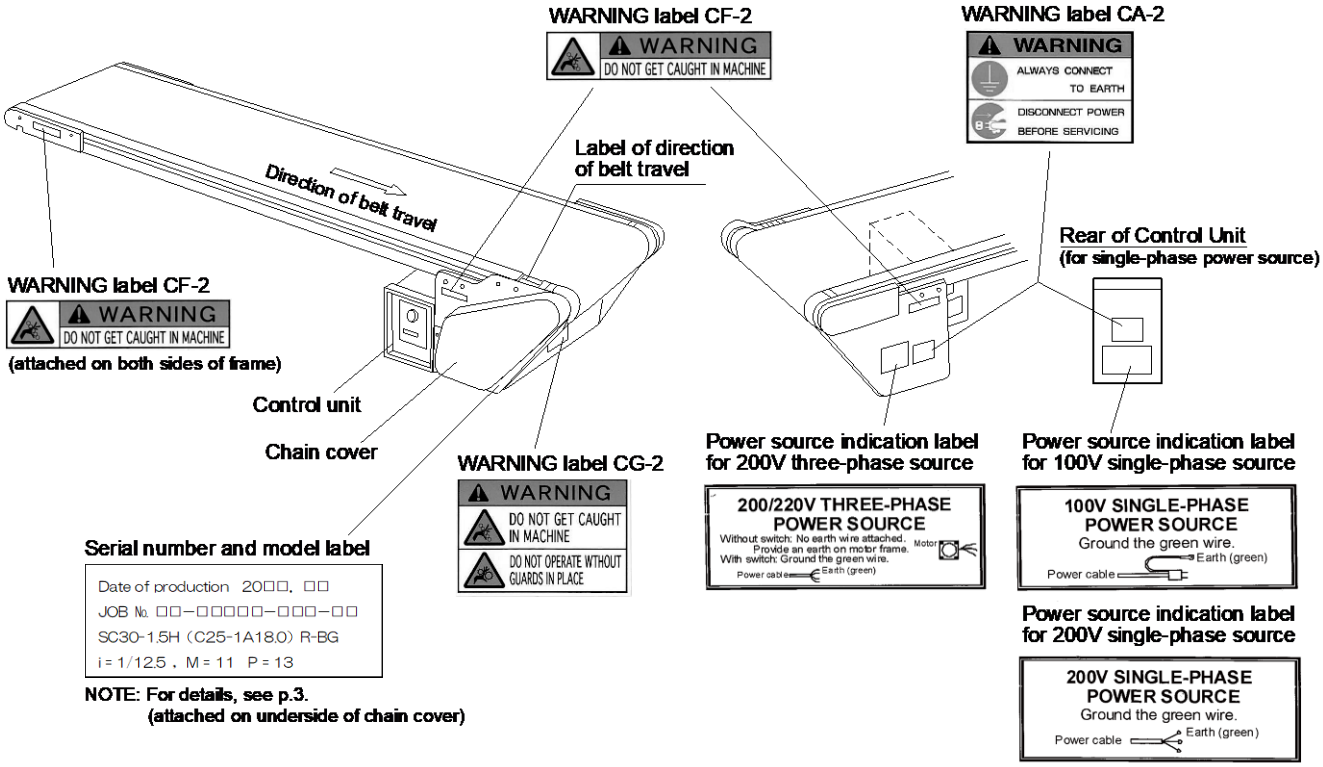
For standard machines, warning labels etc. and their attachment positions are as follows:

1. WARNING LABELS

Label classification	Label	Instruction
CAUTION or WARNING	CA-2 	■ALWAYS CONNECT TO EARTH Ensure the conveyor is connected to earth at all times to prevent electric shock. ■DISCONNECT POWER BEFORE SERVICING Ensure that the power is switched off when carrying out relocation, inspection, cleaning, etc. of the conveyor, otherwise there is a risk that conveyor may start unexpectedly.
	CF-2 	■DO NOT GET CAUGHT IN MACHINE When working close to the conveyor, take care not to get caught in it. There is a risk of being injured by the conveyor.
	CG-2 	■DO NOT GET CAUGHT IN MACHINE When working close to the conveyor, take care not to get caught in it. There is a risk of being injured by the conveyor. ■DO NOT OPERATE WITHOUT GUARDS IN PLACE Do NOT remove safety covers etc. There is a risk of getting caught in the rotating parts such as pulleys. Only remove in case of maintenance, inspection, etc. unexpectedly.

2. ATTACHMENT POSITIONS OF WARNING LABELS etc.

(eg S-CON®MINI SC model)

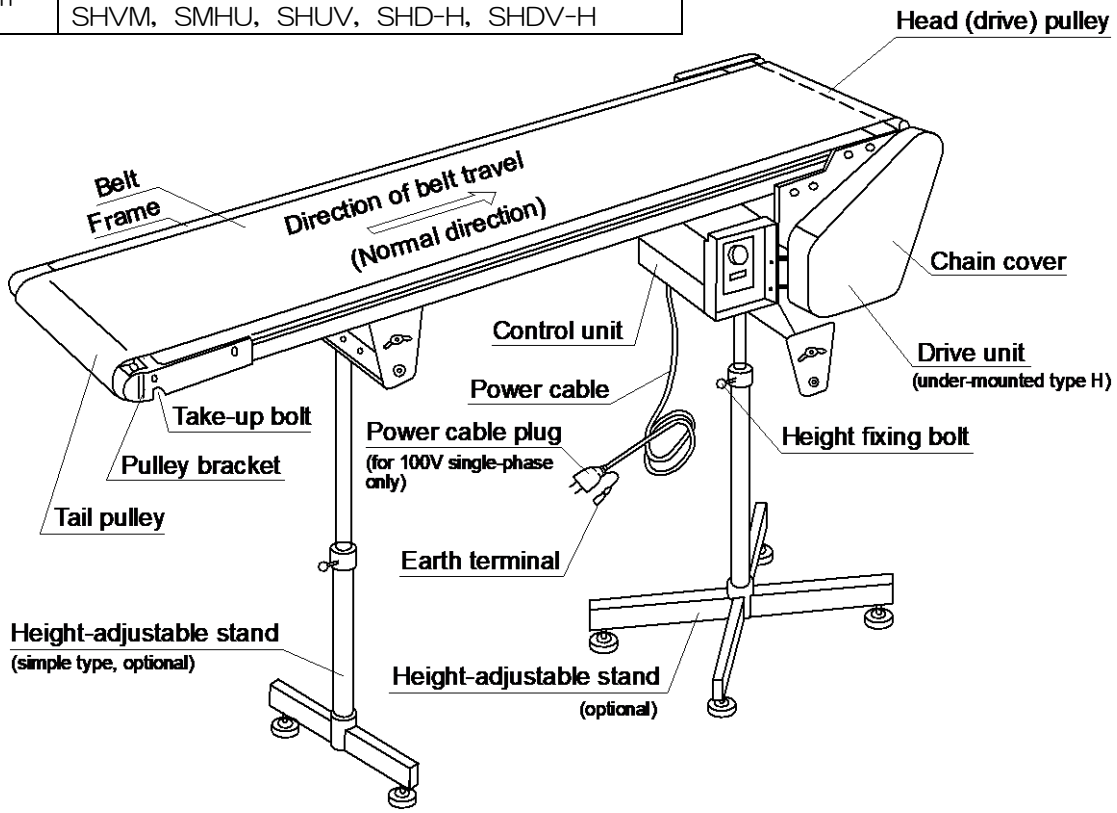


2 COMPONENT NAMES

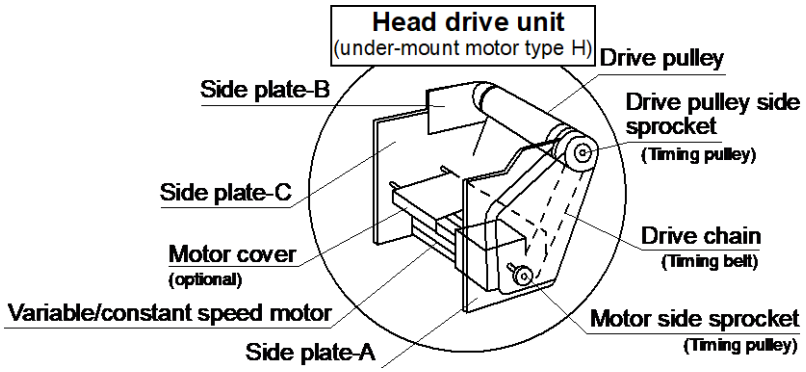
HEAD DRIVE TYPE (H)

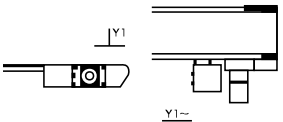
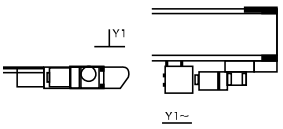
Applied models:

Frame depth	Model code
30mm	SC, SCV, SCC, SCCV, SCU, SCUV
60mm	SMH, SHV, SMC, SMCV, SMHH, SMHM SHVM, SMHU, SHUV, SHD-H, SHDV-H



NOTE: For roller-edge/knife-edge models, see p.33-38;
for motor-pulley models, see p.39-41;
for tilt models, see p.42.

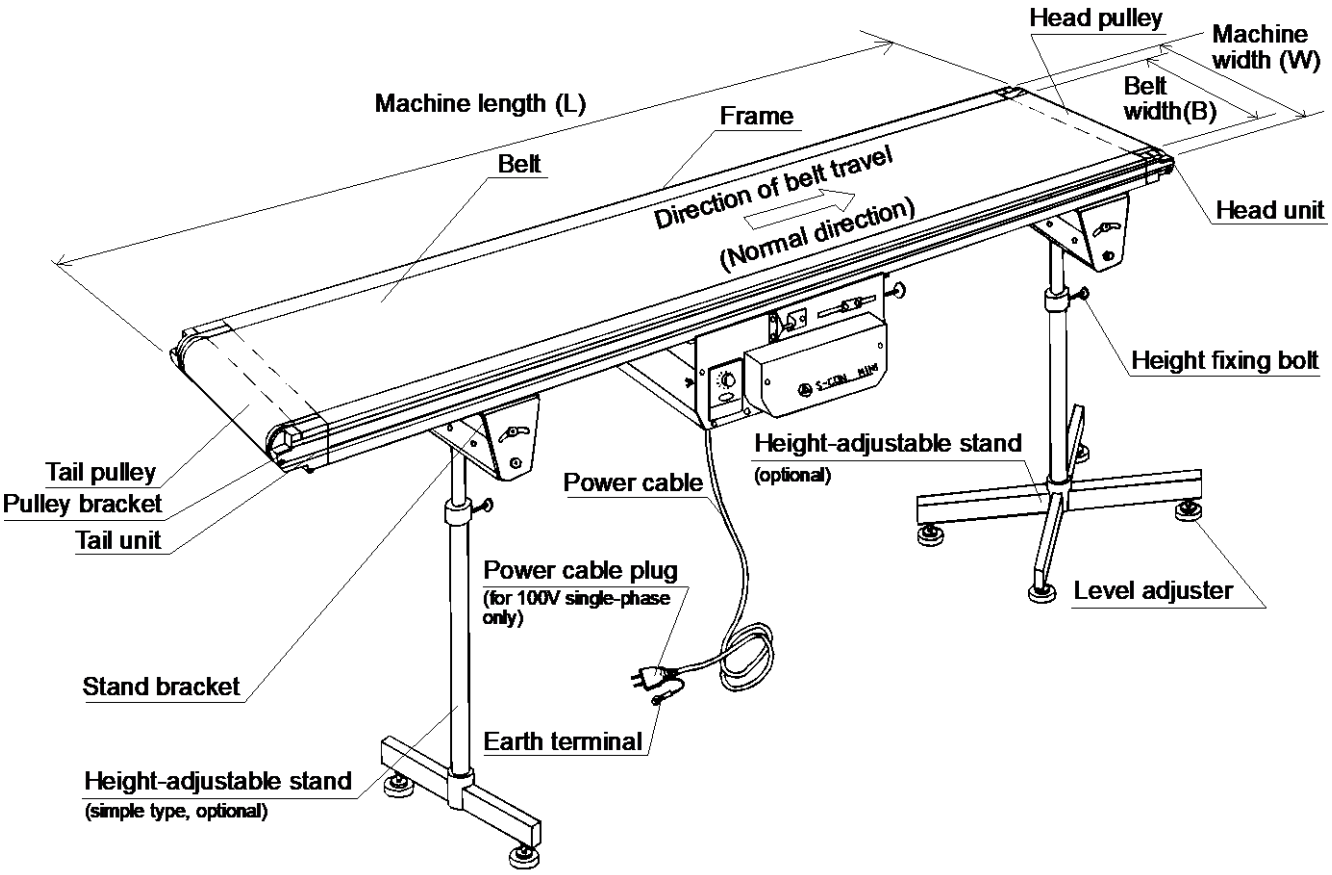


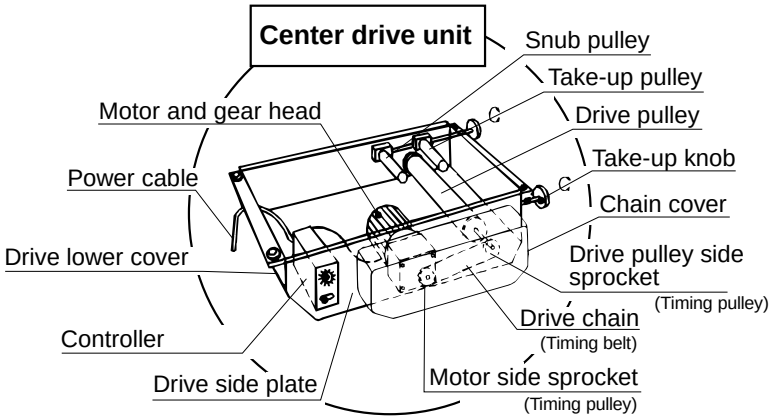
Drive type	Simplified diagram
H	
HU	
A	
AU	
HS	
HSW	

CENTER DRIVE TYPE (C)

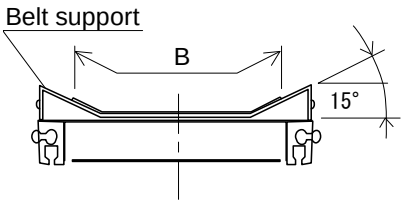
Applied models:

Frame depth	Model code
15mm	SMM
30mm	SMJ, SJV, SJE, SJEV
60mm	SMHG, SHGV, SHD-C, SHDV-C

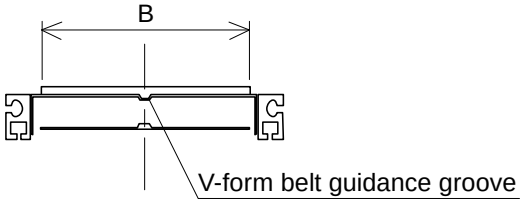




Trough type
SCU, SCUV, SMHU, SHUV



Non-deviation type
SCV, SHV, SHGV, etc.
("V" included in model code)



Cross section

3 ASSEMBLY

3-1. INSTALLING STANDS AND RETURN ROLLERS

1. Place conveyor frame upside down on table. (Assembly is easier this way.)
2. If return rollers are delivered in separate packaging, stickers RETURN ROLLER FIXING POSITION are affixed on side of frame. Return roller attachment tap pieces are temporarily bolted into underside slots of frame, just under the stickers. Install return rollers using the tap pieces as shown in figures below. (Return rollers are individually packed and temporarily attached beside drive unit.)

   NOTE: 1. For center drive type of 2m or less in length, machine has no return roller.
   2. In the following cases, return rollers are delivered already installed as shown in fig. 1, i.e. installation is unnecessary.
   -3m or less in machine length and 60mm in frame depth
   -3m or less in machine length, 30mm in frame depth and 300mm or less in belt width

fig. 1: Machines of 60mm in frame depth, or machines of 30mm in frame depth and 300mm or less in belt width

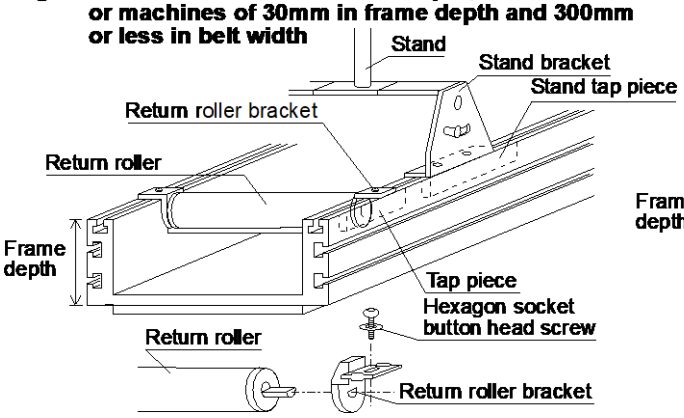
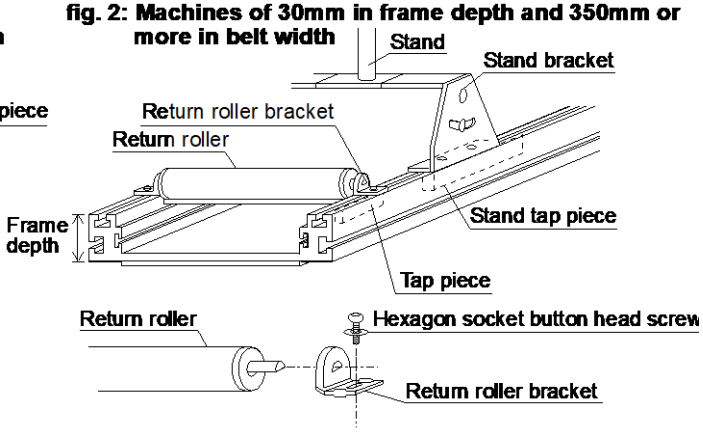
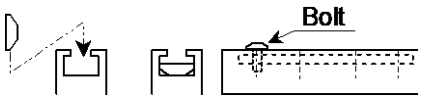


fig. 2: Machines of 30mm in frame depth and 350mm or more in belt width



3. Stands(optional) are delivered in separate packaging. Install them using the attached stand tap pieces.

   NOTE: 1. Install each stand in appropriate position referring to "Standard Installation Positions of Stands", p.10.
   2. For machine length of 1.2m or less, stand tap pieces are delivered inserted into conveyor frame.



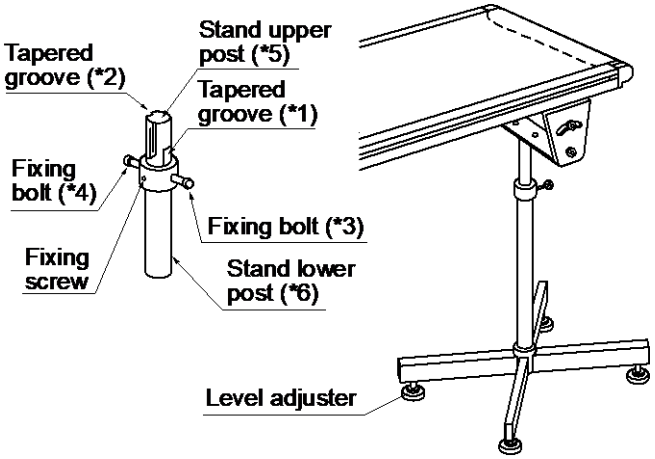
Installation will become easier by inserting and tightening bolt into end of tap piece.

4. When assembly is completed, turn over the entire conveyor and place on the floor.

5. Adjust conveyor height following "Stand Height Adjustment" below. Confirm full length of frame is straight and level on top, and firmly tighten stand bolts and nuts.
NOTE: When adjusting stand heights, take care not to pinch fingers. To prevent conveyor main body from rapidly going down, loosen fixing bolts little by little while supporting conveyor with the other hand.

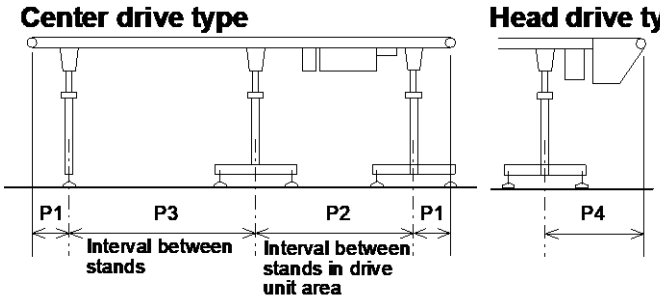
■ Stand Height Adjustment

Before starting adjustment, ensure tapered grooves(*1, *2) and fixing bolts(*3, *4) are positioned correctly as shown in figure, right.
To lower stand upper post(*5), loosen fixing bolt(*3). If tapered groove(*1) entirely goes down into stand lower post(*6) while lowering upper post(*5), tighten fixing bolt(*4) into tapered groove(*2). For more adjustment, loosen fixing bolt(*4) again. Once adjustment is completed, tighten fixing bolts(*3, *4).
To finely adjust conveyor level, use level adjusters beneath stand.
NOTE: For belt top height of 550mm or less, stand does not have tapered groove(*2).



■ Standard Installation Positions of Stands

Considering frame depth and strength, installation positions of stands are determined as follows.



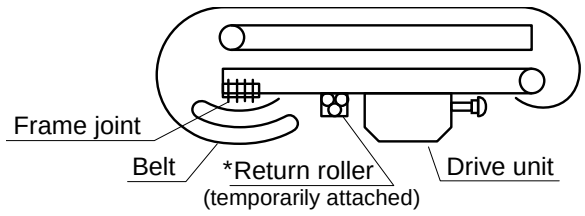
Frame depth(mm)	Standard installation interval (mm)			
	P1	P2	P3	P4
30	400 (150 min.)	1200 or less	2000 or less	360 (315 min.)*
60	700 (300 min.)	2300 or less	3000 or less	500 (300 min.)

*NOTE: For drive type H, drive support stand is used.

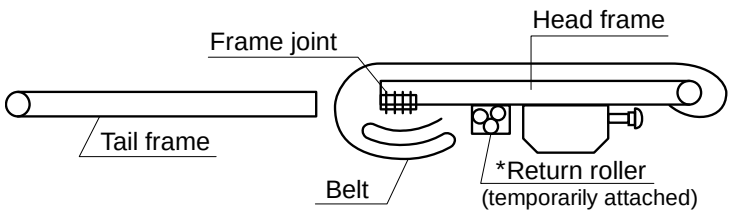
3-2. ASSEMBLING LONGER MACHINES

When conveyor exceeds 3m in length, it is delivered packed as shown below. Assemble conveyor following the procedures in the tables. (*Return rollers are individually packed and temporarily attached beside drive unit.)

PACKAGING	MACHINE LENGTH: 3.01～6.0m Divided into 2 sections Belt width of 300mm or less: 1 package



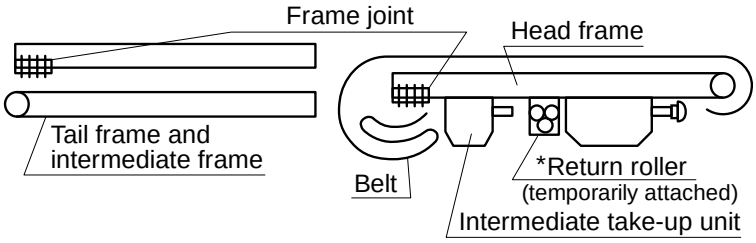
Belt width of 350mm or more: 2 packages



PACKAGING

MACHINE LENGTH: 6.01～ 9.0m Divided into 3 sections　9.01～12.0m Divided into 4 sections

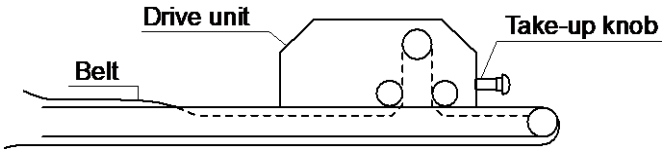
2 packages　For machine length of 6.01m or more, intermediate take-up unit is provided on head frame.



ASSEMBLY METHOD

1. Loosen belt.

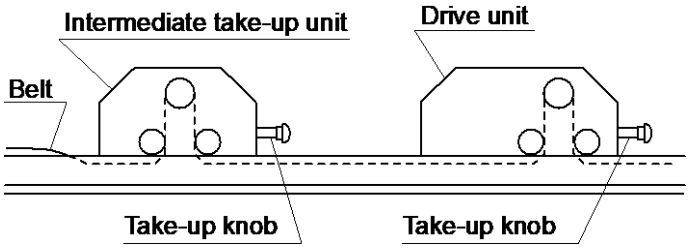
MACHINE LENGTH: 3.01～6.0m Divided into 2 sections



Center drive type　Loosen belt by turning take-up knobs clockwise.

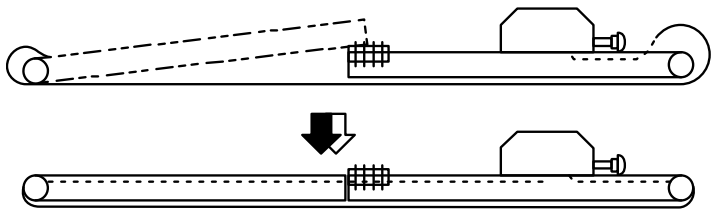
Head drive type　Loosen frame attachment bolts of tail pulley brackets, and loosen belt by turning take-up bolts clockwise.

MACHINE LENGTH: 6.01～ 9.0m Divided into 3 sections　9.01～12.0m Divided into 4 sections



2. Assemble main body.

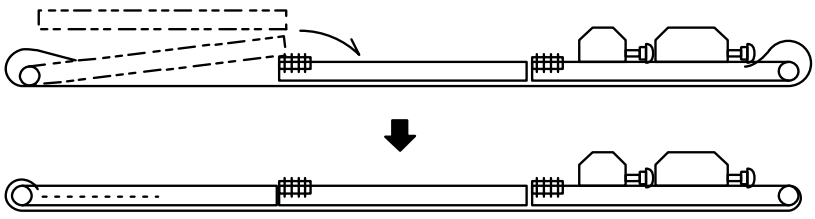
MACHINE LENGTH: 3.01～6.0m Divided into 2 sections

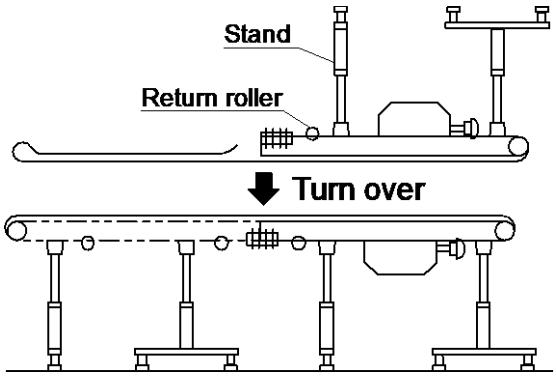


(1) Unfold belt. Check installation positions of frames.

(2) Join frames. → See "Joining Frames", p.12-13.

MACHINE LENGTH: 6.01～ 9.0m Divided into 3 sections　9.01～12.0m Divided into 4 sections



3. Install stands and return rollers.	(3) Move tap pieces to installation positions of stands and return rollers. Fix them temporarily and install stands and return rollers. → See p.9-10.  (4) When assembly is completed, take up belt slack (ref. p.21-22) and adjust belt alignment (ref. p.23-27). NOTE: If, as a result of machine length, it is difficult to turn over the entire assembly, first assemble and turn over in sections, and then join frames.

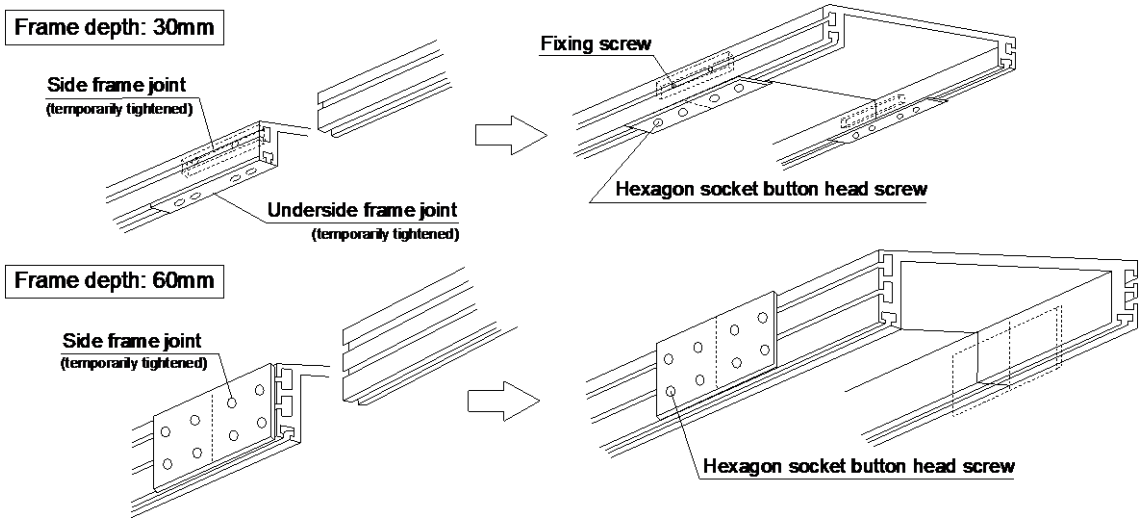
■ Lengths of divided frames

Unit : m

Divided into 2 sections		Divided into 3 sections		Divided into 4 sections	
Machine length	Component	Machine length	Component	Machine length	Component
~3.5	(1.5) +2.0	~6.5	(2.0) +1.5+3.0	~9.5	(2.5) +2.0+2.0+3.0
~4.0	(2.0) +2.0	~7.0	(2.0) +2.0+3.0	~10.0	(3.0) +2.0+2.0+3.0
~4.5	(2.0) +2.5	~7.5	(2.5) +2.0+3.0	~10.5	(3.0) +2.5+2.0+3.0
~5.0	(2.5) +2.5	~8.0	(3.0) +2.0+3.0	~11.0	(3.0) +3.0+2.0+3.0
~5.5	(2.5) +3.0	~8.5	(3.0) +2.5+3.0	~11.5	(3.0) +3.0+2.5+3.0
~6.0	(3.0) +3.0	~9.0	(3.0) +3.0+3.0	~12.0	(3.0) +3.0+3.0+3.0

■ Joining Frames

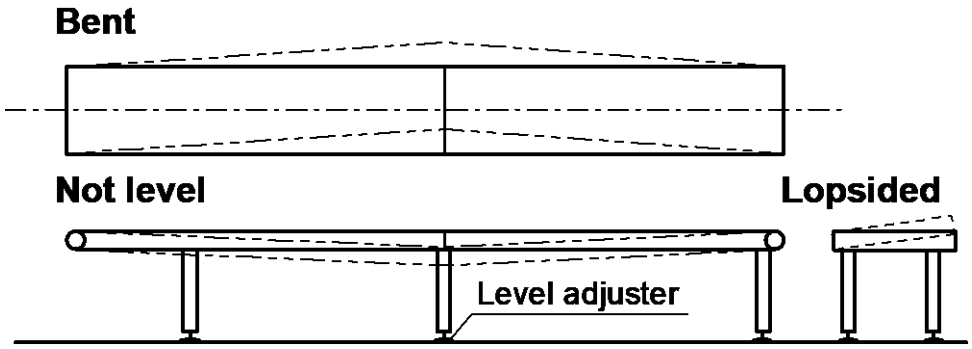
Frame joints are temporarily tightened to one side of frame. Correctly attach them using a hexagonal wrench as shown below:



■ Caution When Joining Frames and Setting up Conveyor

1. Install full length of frame straight, not bent in any place.
2. Finely adjust conveyor level. (Use level adjusters beneath stands.)

NOTE: If conveyor is bent or not level on top, belt may stray to one side or the other.



3-3. INSTALLING CONTROL UNIT

If control unit is delivered in separate packaging, install it as follows:

NOTE: For constant-speed type using 200V three-phase power source, standard machine has only lead wire terminal of motor, control device is optional.

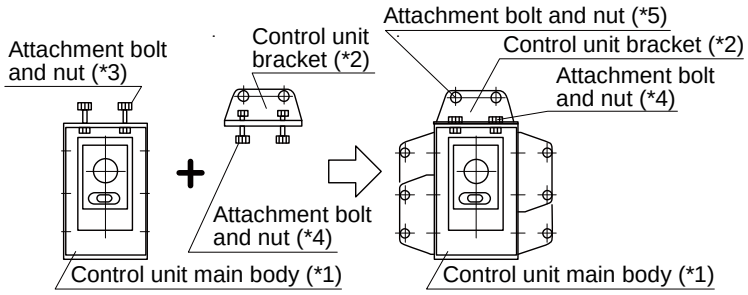
-When directly installing to frame underside slot (for machine with 60mm-deep frame and projection-less /fin-less belt): Install control unit main body(*1) to frame underside slot near the drive unit, with attachment bolts and nuts(*3).

-When installing to drive side plate: Remove attachment bolts and nuts(*3) from control unit main body(*1). Fix control unit bracket(*2) to control unit main body(*1) with attachment bolts and nuts(*4). Then fix the bracket(*2) to attachment holes of drive side plate with attachment bolts and nuts(*5).

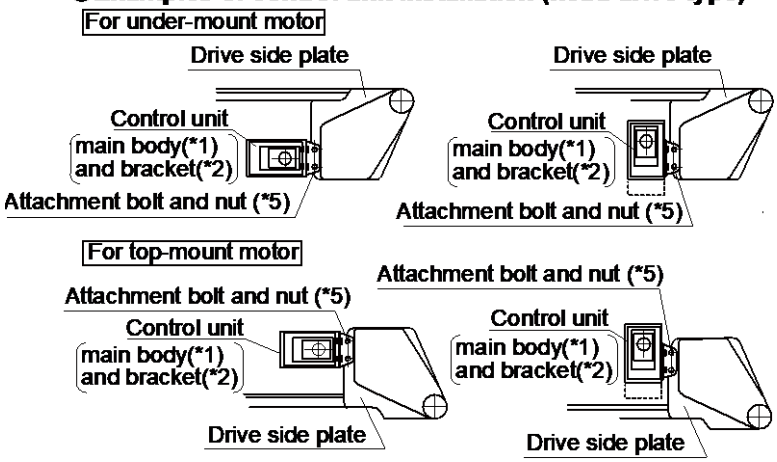
NOTE: It is possible to arrange control unit main body(*1) and bracket(*2) as shown below. Install them in correct positions for intended use.

NOTE: After installing control unit to conveyor, connect control unit connector to motor cable connector.

●**Arrangements of control unit and bracket**

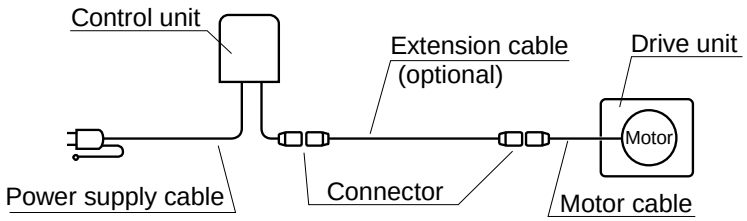


●**Examples of control unit installation (head drive type)**



●Connection of control unit and motor unit

If it is necessary to install control unit separately from drive unit, use extension cable (optional) to make connection as shown in figure below. (If necessary, remove control unit cover to connect connectors. In this case be sure to reinstall control unit cover.)



3-4. INSTALLING GUIDE RAILS AND SKIRTS (OPTIONAL)

1. Installing Guide Rails

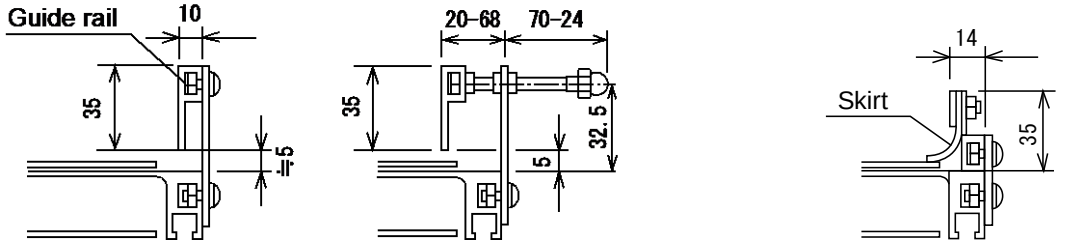
When installing, slightly raise guide rails, giving clearance to prevent belt from touching them. If there is no clearance, it may cause friction damage to belt and guide rails when belt deviates.

2. Installing Skirts

When installing, ensure skirts are properly touching belt.
If belt deviates, to prevent friction damage of belt and skirt fitting pieces, reinstall skirt fitting pieces raised as required.

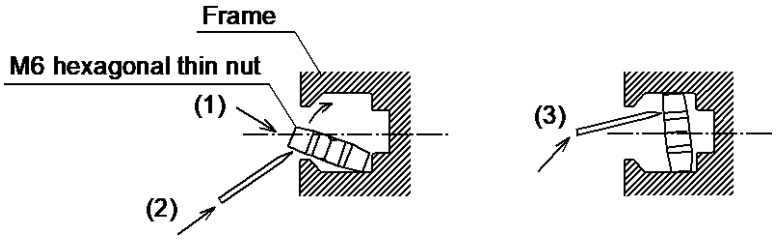
[Examples]

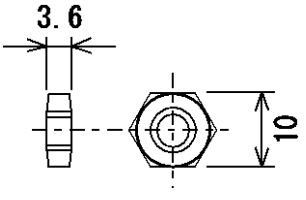
G-A1 model, fixed type **G-A2 model, adjustable type** **S-A1 model, fixed type**



■ Insertion of Nuts

When installing additional attachments to frame, insert M6 hexagonal thin nuts into frame slots, as shown in figures, below.
NOTE: These nuts are delivered as spare parts in tool bag.





M6 hexagonal thin nut

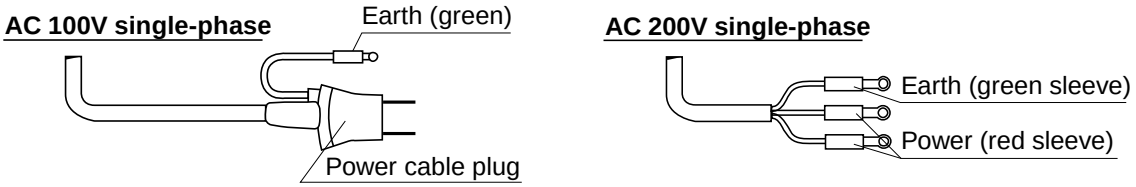
(1) Insert nut into slot diagonally from above.
(2) Insert something cylindrical and pointed (eg tip of mechanical pencil) into nut hole, and lightly push nut upward.
(3) Continue pushing nut this way until in position.

4 RUNNING THE CONVEYOR

4-1. BE SURE TO GROUND MACHINE BEFORE OPERATION

100V single-phase power source : Ground earth terminal (green) of power cable plug.
200V single-phase power source : Connect earth terminal (green) of power cable to power cable plug with an earth.
200V three-phase power source : Standard machine has only lead wire terminal. For constant-speed type, switch etc. are not provided. When wiring, properly provide an earth on motor or drive side plate.

● Power cable and terminals



4-2. STARTING CONVEYOR

1. Constant-speed Type

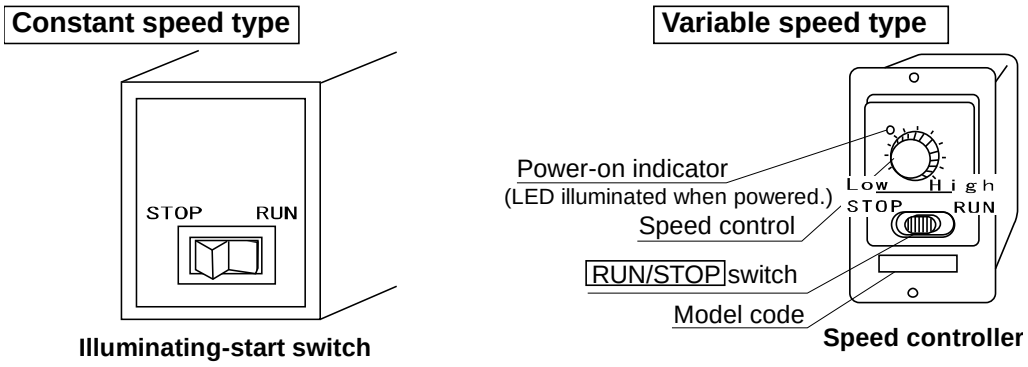
Push illuminating-start switch into "RUN" position. To stop machine, push it to "STOP" position.

NOTE: This switch is not for turning power on and off. When leaving conveyor unused for a long period, make sure that it is unplugged or mains is off.

2. Speed-controller Variable-speed Type

(1) Make sure RUN/STOP switch on speed controller is in "STOP" position. Turn on power supply and ensure that power-on indicator is illuminated.
(2) Set RUN/STOP switch to "RUN" position. Motor will start rotating and conveyor will run. (When setting RUN/STOP switch, make sure that it is completely either in "RUN" or "STOP" position, but not halfway.)
(3) To increase speed, turn speed control clockwise; to decrease speed, turn it counterclockwise. Set appropriate speed for intended use.
(4) To stop conveyor, set RUN/STOP switch to "STOP" position.

NOTE: This switch is not for turning power on and off. When leaving conveyor unused for a long period, make sure that it is unplugged or mains is off.

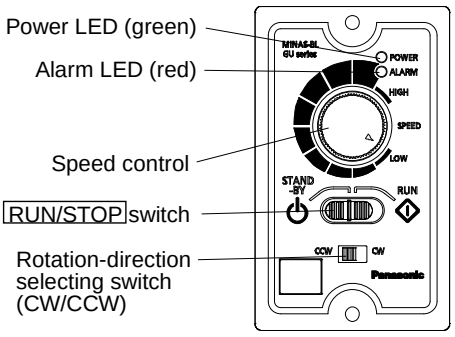


3. Brushless-inverter Variable-speed Type

For brushless-inverter (inverter for brushless-motor variable-speed control) variable-speed type, operate machine as follows:

NOTE: 1. Be sure to combine brushless inverter with specified brushless motor.
2. Be sure to ground before use.

(1) Make sure RUN/STOP switch on brushless-inverter operating panel is in "STOP" position. Turn on power supply and ensure that power LED (power-on indicator) is illuminated in green.
(2) Set RUN/STOP switch to "RUN" position. Motor will start rotating and conveyor will run.
(3) To increase speed, turn speed control clockwise; to decrease speed, turn it counterclockwise. Set appropriate speed for intended use. (→See "Variable-speed Range of Brushless-inverter", p.17.)
(4) To stop conveyor, set RUN/STOP switch to "STOP" position.



Brushless-inverter operating panel

NOTE: 1. Be sure to confirm that the power source voltage is within the rated voltage range, before turning ON the power source.
2. Be sure to start and stop the conveyor with RUN/STOP switch. When starting and stopping the machine by external signals, use control circuit terminals on rear of inverter. (→See "Starting and Stopping the Conveyor by External Signals", p.17-18.)
3. When leaving the conveyor unused for a long period, make sure that the power supply is off. (The RUN/STOP switch is not for turning the power on and off.)
4. Before turning off the power supply, be sure to set RUN/STOP switch to "STOP" position, otherwise there is a risk that the motor will restart rotating unexpectedly when powered. Moreover make sure that RUN/STOP switch is in "STOP" position before turning on the power supply.

Brushless-inverter standard specification		
Applied motor		Brushless motor 50W, 130W
Power source	Voltage	Single-phase AC100-120V Single-phase/three-phase AC200-240V
	Permissible voltage range	±10%
	Frequency	50／60Hz
Variable-speed range (→See *NOTE above.)		-With RED ZONE General change gear ratio 1:76 (Maximum change gear ratio 1:100) -Without RED ZONE Maximum change gear ratio 1:66
Environmental conditions	Ambient temperature	−10℃ to +40℃ (Avoid freezing.)
	Ambient humidity	Relative humidity 85% max. (Avoid condensation.)
	Atmosphere	Indoor (Avoid splash of liquids, corrosive/flammable gases, dust, etc.)
	Elevation	1000m or less

*NOTE: For details of variable-speed range and RED ZONE, see "Variable-speed Range of Brushless-inverter", p.17.

■ Variable-speed Range of Brushless-inverter

(Torque at high speed can be used at low speed as well.)
Check if speed control on brushless-inverter operating panel has RED ZONE in high speed area or not.
Variable-speed range depends on speed control type.

(1) Speed Control with RED ZONE (necessary to use carefully)

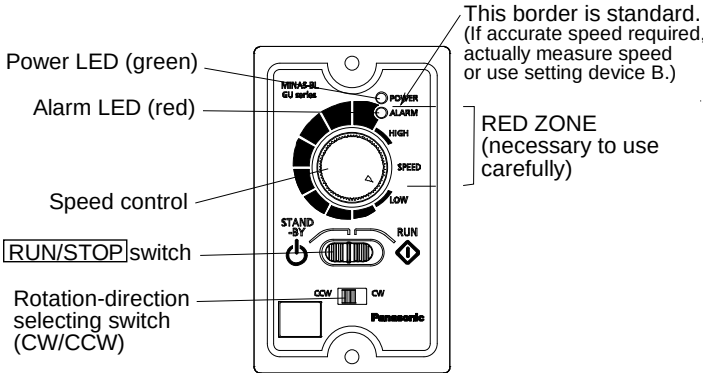
Nominal speed (motor rotation: 2300 r/min) is determined as the lower limit of RED ZONE. Variable-speed range up to the lower limit of RED ZONE is 1:76 (motor rotation: 30-2300 r/min).
By using RED ZONE up to the upper limit, it is possible to vary speed up to 1.3 times of nominal speed (variable-speed range: 1:100, motor rotation: 30-3000r/min).
However, some models cannot be used in RED ZONE, so use the machine within the maximum speed shown in the catalogue.
NOTE: Since motor rotation increases as the speed gets closer to the upper limit of RED ZONE, this will increase noise and shorten service life of gear head. Use the machine at appropriate speed to avoid these troubles.

(2) Speed Control without RED ZONE

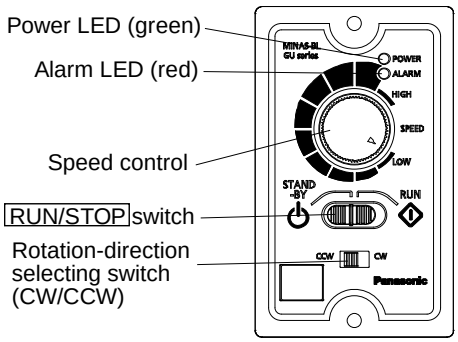
Nominal speed (motor rotation: 2000 r/min) is determined as the upper limit. Variable-speed range is 1:66 (motor rotation: 30-2000 r/min).
This applies to machines using vertical-axial gear head, SMBM model (curve belt type) or cases for which high-speed rotation is inappropriate.
NOTE: Variable-speed range is limited by the setting device B. When the setting device B is initialized, reset the upper limit to motor rotation of 2000r/min. → For details, refer to "Brushless-inverter instruction manual", appendix.

● **Brushless-inverter operating panel**

Speed control with RED ZONE



Speed control without RED ZONE

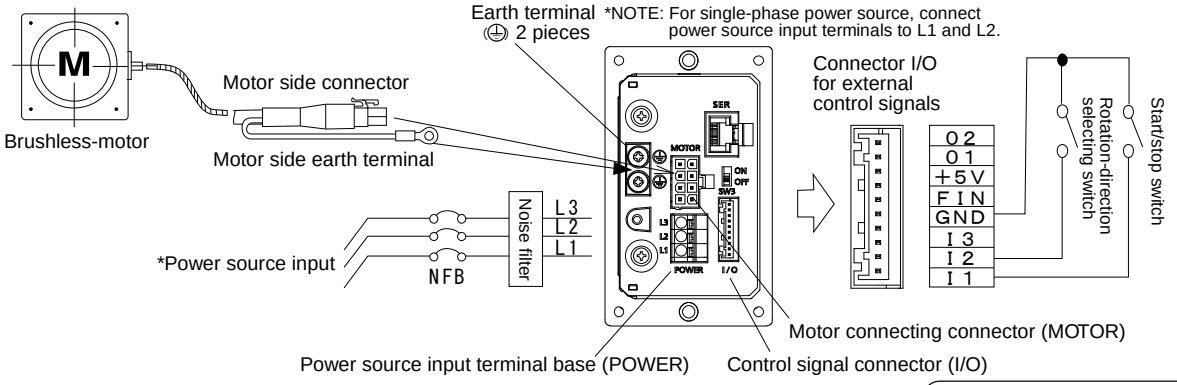


■ Starting and Stopping the Conveyor by External Signals

When starting and stopping the conveyor frequently in a short period (tact operation etc.), it is impossible to start and stop the machine by turning on/off the power supply. (The controller may get damaged and trip.) In this case be sure to start and stop the machine by external signals. For start and stop circuit by external signals, make connection to external control circuit terminals on rear of brushless-inverter.
NOTE: Do not start and stop the conveyor excessively frequently. It may cause machine failure or shorten its service life.

NOTE: 1. Be sure to ground earth. (D-type grounding, 100Ω or less, ϕ1.6mm or more)
2. Noise filter, NFB, etc. should be set up by user.
3. When making connection to external control terminals, use special cable for external control (optional).
4. For reversible operation by external signals, set rotation-direction selecting switch to CCW.

● **Standard connection diagram of brushless-motor and power source** (eg 200V three-phase)



● **Standard connection diagram for starting/stopping conveyor by external signals** (eg Reversible operation)

When using connector I/O for external control signals, purchase "Cable for control signals (cable with I/O connector) Item number: DV0PM20076" sold separately.

■ Caution When Using Brushless-inverter

⚠ CAUTION	1. Be sure to confirm that the power source voltage is within the rated voltage range, before switching ON the power source. (Voltage exceeding the rated voltage could cause fuming, abnormal noise, etc.) 2. Be sure to start and stop the conveyor with RUN/STOP switch. When starting and stopping the conveyor frequently in a short period (tact operation etc.), it is impossible to start/stop the machine by turning on/off the power supply. In this case be sure to start and stop the machine by external signals. (The controller may get damaged and trip.) Do not start and stop the conveyor excessively frequently. It may cause machine failure or shorten its service life. 3. The RUN/STOP switch of control unit is not for turning the power on and off. When leaving the conveyor unused for a long period, make sure that the mains is off. 4. Do not run the conveyor at excessively low speed for a long period, or start and stop the conveyor excessively frequently. These may cause machine failure or shorten its service life. 5. Do not touch the inverter radiator of side of control unit, and do not allow any material to touch it, because of its high temperature. 6. Use the control unit within the permissible range of ambient temperature (from -10℃ to +40℃). Avoid freezing. 7. Pay special attention not to allow any foreign matter (dust, iron powder, etc.) to get into the control unit. 8. Operating the motor using the inverter could cause noises from the inverter I/O cables, motor, etc. Keep in mind that these could interfere with the correct operation of other electronic devices. (In this case, noises and their effects can be suppressed to some extent by providing the inverter I/O with a filter or otherwise shielding the power cable.)

For details, refer to "Brushless-inverter instruction manual", appendix.

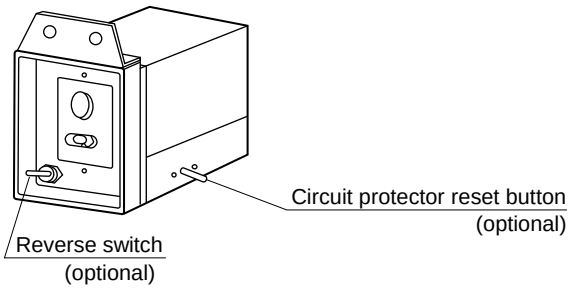
■ **Circuit Protector** (Some models are already equipped with as a standard device.)

(1) Constant-speed Type

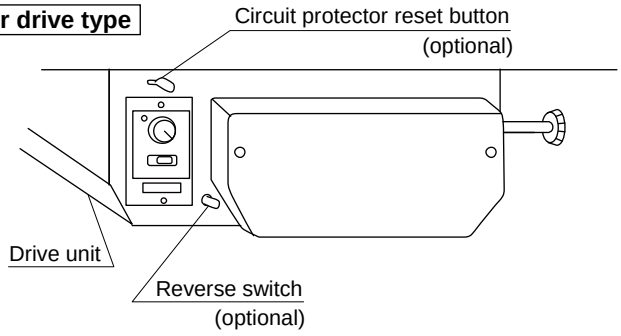
To prevent motor from burning out due to overload etc., it is recommended to provide the machine with a circuit protector(optional). When protector is activated and conveyor stops, reset button pops out. In this case always switch off power and set RUN/STOP switch to "STOP". Reset button may be pressed in to restore circuit, and machine can be restarted by setting RUN/STOP switch to "RUN".

NOTE: Before restarting machine, carefully check for cause of stoppage and ensure it is removed.

Head drive type



Center drive type



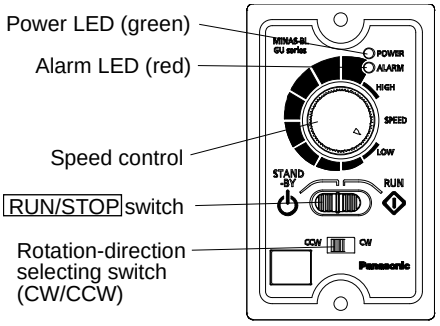
(2) Brushless-inverter Variable-speed Type

Brushless-inverter has built-in protective function against overload, overcurrent, overheat, etc. In emergency, brushless-inverter trips and alarm LED is illuminated in red.

NOTE: 1. When brushless-inverter trips, immediately set RUN/STOP switch to "STOP" position and turn off power supply. Before restarting machine, carefully check for cause of trip and ensure it is removed.

2. When voltage is insufficient, alarm LED is illuminated in red. However, brushless-inverter does not trip in standard circuit.

3. For increased safety, separately install overcurrent protective device on power source side.



Brushless-inverter operating panel

4-3. CHANGING DIRECTION OF CONVEYOR TRAVEL

1. Machine with Reverse Switch

(1) Constant-speed Type

To change direction of belt travel, flip reverse switch of control unit.

NOTE: Before operating reverse switch, be sure to stop the conveyor by setting RUN/STOP switch on operating panel to "STOP" position.

(2) Brushless-inverter Variable-speed Type

To change direction of belt travel, slide the reverse switch (rotation-direction selecting switch) on inverter operating panel from CCW to CW (or from CW to CCW).
(For brushless-inverter operating panel, see p.16 or 19.)

NOTE: Before operating the reverse switch (rotation-direction selecting switch), be sure to stop the conveyor by setting RUN/STOP switch on operating panel to "STOP" position. (For brushless-inverter variable-speed type, if set position of rotation-direction selecting switch is changed while RUN/STOP switch is in "RUN" position, belt running will be rapidly reversed and brushless-inverter may trip due to inertia of load. In this case alarm LED will be illuminated in red.)

2. Machine without Reverse Switch

To change direction of belt travel, remove control box cover and change electrical wiring connections as follows:

■ Removing Control Box Cover

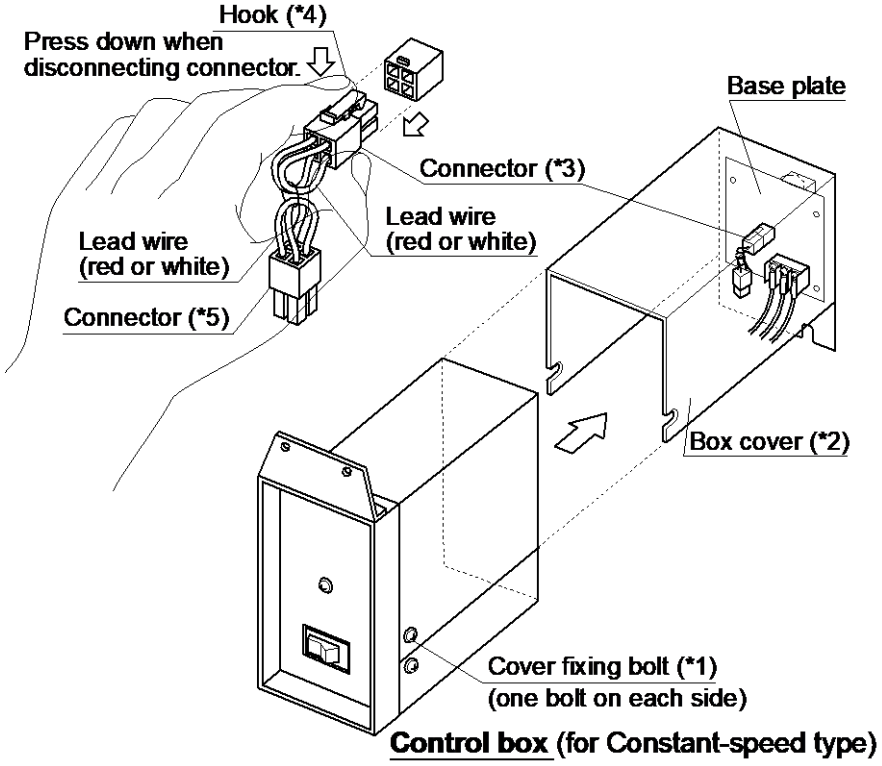
-For head drive type (control unit is a separate box), loosen cover fixing bolts(*1) (one bolt on each side) and remove the cover(*2) sideways. (If difficult, remove the entire control box from frame, and then remove fixing bolts and cover. In this case do not loosen any of the other bolts on sides of control box.)

-For center drive type (control unit is included in drive unit), remove drive lower cover. (→See p.29 and 31.)

Constant-speed Type

Connector(*3) is found in center of base plate inside box cover(*2). Press down hook(*4) on the top with your finger and disconnect connector(*3) from base plate. Then replace it with connector(*5), which is attached to connector(*3). (Connectors(*3, *5) can be identified by lead wire colors, red or white.)

NOTE: 1. After changing direction of conveyor travel, ensure belt is correctly aligned before starting machine. For belt alignment adjustment, see p.23 to 27.
2. Do not change direction of conveyor travel frequently. It may cause machine failure.



5 TAKING UP THE BELT

When belt is slackened off, take up belt as follows:
NOTE: For belt tension, see p.22.

Taking up the Belt of HEAD DRIVE TYPE

● For frame depth of 30mm

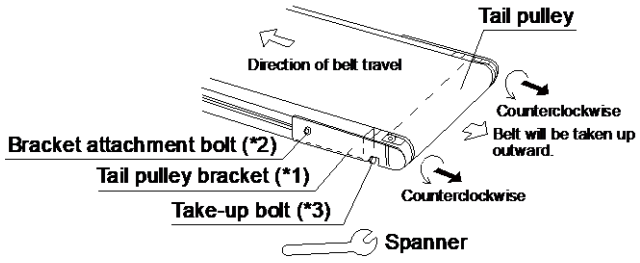
On both sides of conveyor, loosen bracket attachment bolts(*2)(one bolt on each side). To move tail pulley and brackets(*1) outward, turn take-up bolts(*3) inside bracket underside grooves with a spanner. Belt will then be taken up. When turning take-up bolts(*3), adjust them alternately, little by little, to keep their movement lengths the same. Once adjustment is completed, retighten bracket attachment bolts(*2).

● For frame depth of 60mm

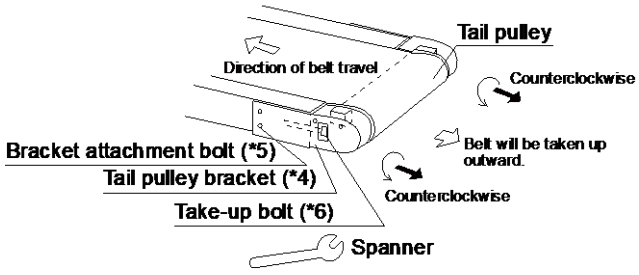
On both sides of conveyor, loosen bracket attachment bolts(*5)(2 bolts on each side). To move tail pulley and brackets(*4) outward, turn take-up bolts(*6) inside bracket side holes with a spanner. Belt will then be taken up. When turning take-up bolts(*6), adjust them alternately, little by little, to keep their movement lengths the same. Once adjustment is completed, retighten bracket attachment bolts(*5).

Head drive type

● **Frame depth of 30mm**



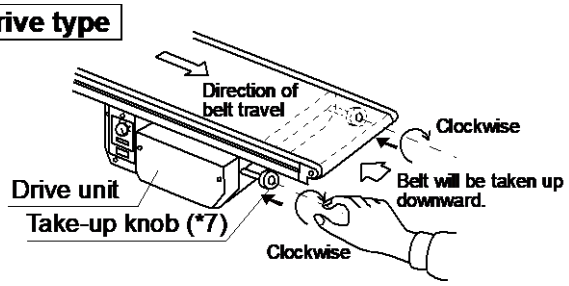
● **Frame depth of 60mm**



Taking up the Belt of CENTER DRIVE TYPE

Take up belt by turning right and left take-up knobs(*7) clockwise. When turning take-up knobs(*7), adjust them alternately, little by little, to keep their movement lengths the same.

Center drive type



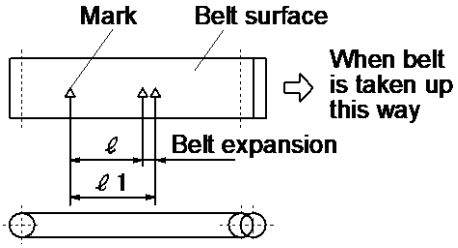
■ Belt Tension

Do not take up belt too much, but only to extent that belt does not slip on drive pulley, i.e. enough to drive belt.

NOTE: 1. Excessive belt take-up may overload motor or shorten service lives of belt, pulley, etc.
2. For lagged drive pulley, belt makes abnormal noise when slipping.

Standard belt expansion percentage

Nominal belt width (mm)	Expansion percentage (%)
～200	0.2
250～600	0.15～0.1
600～1,000 or Motor power of 0.2kW or more	0.1



How to calculate belt expansion percentage

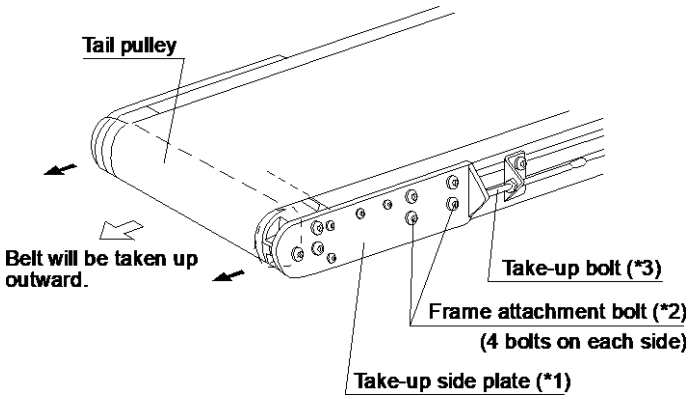
1) Slacken belt.
2) Mark any two points on belt surface and measure length between them (ℓ).
3) Take up belt.
4) Measure length between two marks (ℓ 1) again.

eg ℓ = 1000 mm
ℓ 1= 1002 mm
Belt expansion percentage = 0.2 %

■ Adjustment Using Intermediate Take-up Unit (for longer machines exceeding 6m in length)

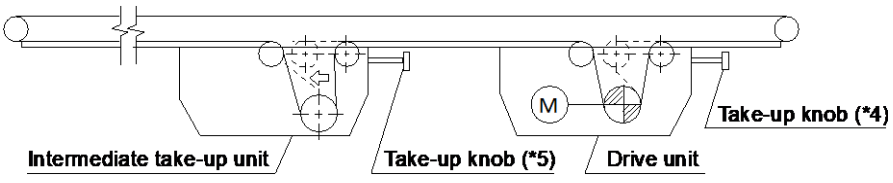
HEAD DRIVE TYPE (Long take-up unit)

On both sides of conveyor, loosen frame attachment bolts(*2)(4 bolts on each side). To move tail pulley and take-up side plates(*1) outward, turn take-up bolts(*3)(M6) with a spanner. Belt will then be taken up. When turning take-up bolts(*3), adjust them alternately, little by little, to keep their movement lengths the same. Once belt is taken up, retighten frame attachment bolts(*2).



CENTER DRIVE TYPE (Intermediate take-up unit)

(1) Fully loosen take-up knobs(*4) of drive unit. (Turn them clockwise.)
(2) Take up belt by turning take-up knobs(*5) of intermediate take-up unit counterclockwise. When turning take-up knobs(*5), adjust them alternately, little by little, to keep their movement lengths the same.
(3) To completely remove belt slack, turn take-up knobs(*4) of drive unit counterclockwise. Also adjust belt alignment while turning take-up knobs(*4).



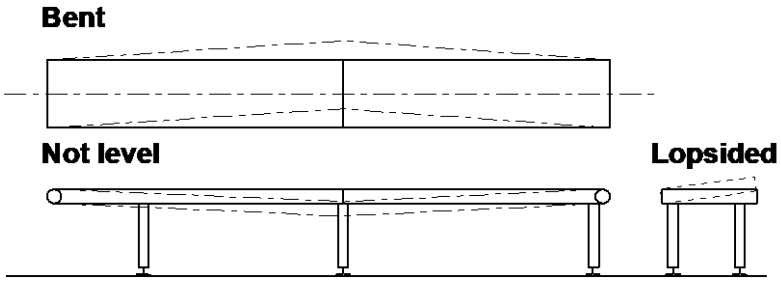
6 BELT ALIGNMENT ADJUSTMENT

When belt is not correctly aligned, make adjustments as follows:

6-1. PRIOR CHECKING

1. Frame Condition

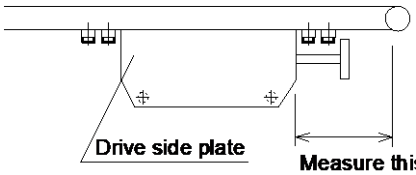
Confirm full length of frame is level on top, straight and not bent in any place.



2. Positions of Drive Side Plates

Confirm that right and left drive side plates are symmetrically positioned. → See p. 32.

NOTE: If drive side plates are not positioned equally on right and left sides, it may cause belt deviation. Be sure to check their positions before using conveyor because side plates may have shifted out of position in transit.



Measure this length on both sides to check installation condition of right and left drive side plates.

3. Dirt on Pulleys

Check drive pulley, head and tail pulleys, etc. for dirt. Remove any dirt and clean. (Remove drive lower cover to check.)

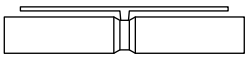
4. Loading Condition

Improper loading, i.e. not-centered, may cause belt deviation.

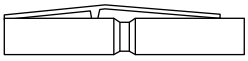
5. Dislodgment of V-form Strip

For non-deviation models(**SCV**, **SHV** model, etc.), check if V-form strip on belt undersurface has dislodged from V-form belt guidance grooves on pulleys and rollers. (For center drive type, remove drive lower cover to check.)

Correct condition



Dislodgment



Pulley of non-deviation model

6. Belt Deviation

Check how belt is deviating before adjustment. Correct positions of the following parts while running conveyor slowly, and then continue running it for a while to check any further belt deviation.

-**Take-up devices**: Position and adjust them equally on right and left sides.

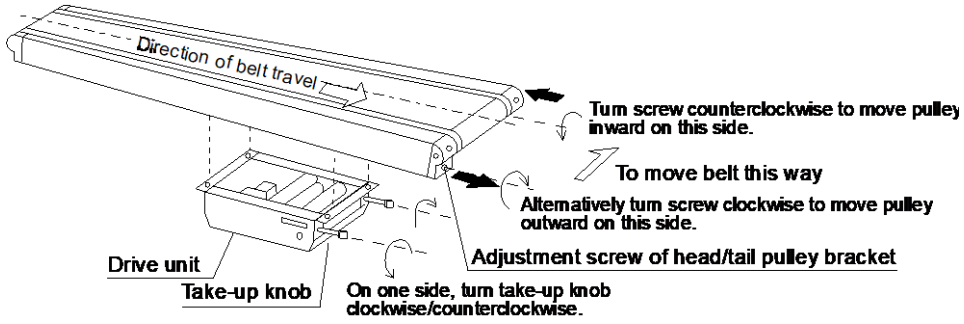
-**Head and tail pulleys**: Set at right angle to frame.

6-2. BELT ALIGNMENT ADJUSTMENT

After checking belt deviation, adjust each part following the procedures on p.25-27 while running conveyor slowly.

Outline of belt alignment adjustment

When moving belt in direction of arrow ⏢ , adjust each part as shown in figure below.
(To move belt in opposite direction of arrow ⏢ , adjust each part oppositely to that shown below.)



NOTE: It is necessary to wait until belt running stabilizes after each adjustment step and to adjust belt alignment little by little. Belt running will not change immediately.

BELT ALIGNMENT ADJUSTMENT OF HEAD DRIVE TYPE

1. Adjustment Using Take-up Bolt of Tail Unit

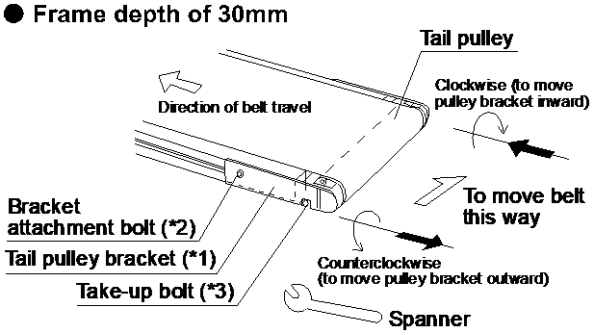
● For frame depth of 30mm

On side to which belt is deviating, loosen bracket attachment bolt(*2)(1 bolt on one side). Turn take-up bolt(*3) inside bracket underside groove counterclockwise with a spanner. Tail pulley bracket(*1) will then move outward on this side and belt will center itself. Alternatively adjust on opposite side. In this case, to move tail pulley bracket(*1) inward on this side, loosen bracket attachment bolt(*2) and turn take-up bolt(*3) clockwise. Once adjustment is completed, retighten bracket attachment bolt(*2).

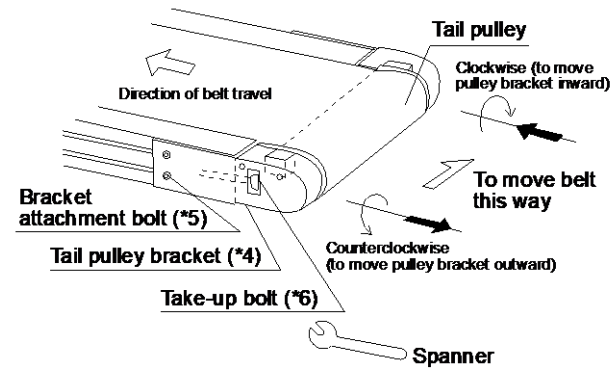
● For frame depth of 60mm

On side to which belt is deviating, loosen bracket attachment bolts(*5)(2 bolts on one side). Turn take-up bolt(*6) inside bracket side hole counterclockwise with a spanner. Tail pulley bracket(*4) will then move outward on this side and belt will center itself. Alternatively adjust on opposite side. In this case, to move tail pulley bracket(*4) inward on this side, loosen bracket attachment bolts(*5) and turn take-up bolt(*4) clockwise. Once adjustment is completed, retighten bracket attachment bolts(*5).

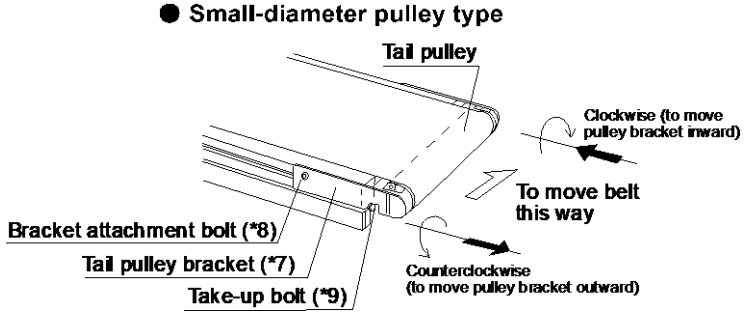
● Frame depth of 30mm



● Frame depth of 60mm



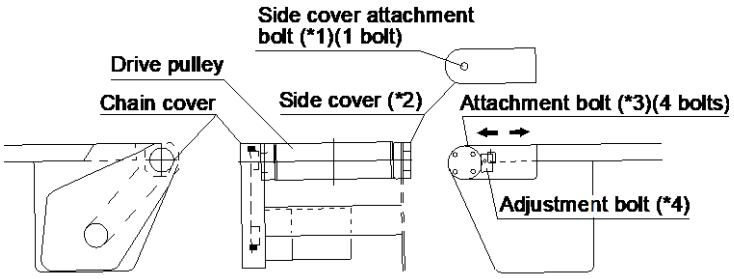
NOTE: For **small-diameter pulley type** such as **SMHM** and **SHMV** models, make adjustments similarly to "● **For frame depth of 30mm**" above, i.e. on side to which belt is deviating, loosen bracket attachment bolt(*8) and finely adjust take-up bolt(*9) inside bracket underside groove.



2. Adjustment Using Head Drive Pulley

(1) On opposite side of chain cover, remove side cover attachment bolt(*1)(1 bolt) and side cover(*2).
(2) Loosen attachment bolts(*3)(4 bolts) of drive pulley.
(3) To adjust belt alignment, move drive pulley by turning adjustment bolt(*4).
(4) Once adjustment is completed, retighten attachment bolts(*3) of drive pulley. Reinstall side cover(*2) with attachment bolt(*1).

NOTE: For adjustment using return roller etc., refer to adjustments of center drive type.

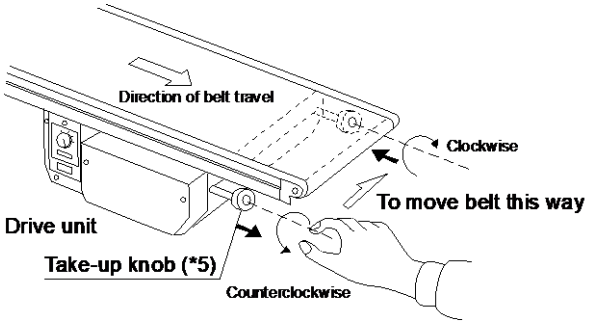


BELT ALIGNMENT ADJUSTMENT OF CENTER DRIVE TYPE

1. Adjustment Using Take-up Knob

On side to which belt is deviating, turn take-up knob(*5) counterclockwise. Belt will then be loosened on this side and center itself. Alternatively turn take-up knob(*5) on opposite side clockwise. Belt will then be taken up on this side and center itself.

NOTE: Looking from the conveyor center, if drive unit is attached on conveyor tail side, turn take-up knobs in opposite directions to those shown in figure, below.



2. Adjustment Using Head or Tail Pulley

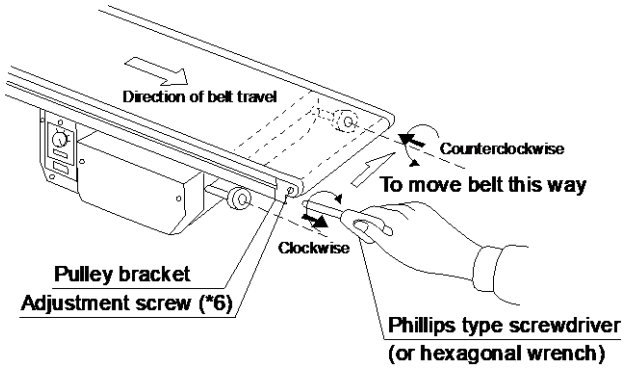
● For frame depth of 30mm

On side to which belt is deviating, slightly turn adjustment screw(*6) of head (or tail) pulley bracket clockwise. Pulley will then move outward on this side and belt will center itself. Alternatively, on opposite side, if there is a space between pulley bracket and frame end, make adjustment on this side. In this case slightly move pulley inward by turning adjustment screw(*6) counterclockwise.

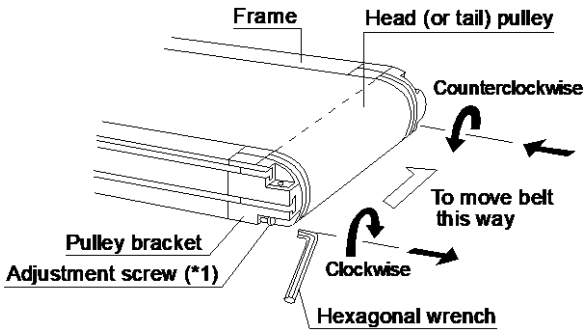
● For frame depth of 60mm

On side to which belt is deviating, slightly turn adjustment screw(*1) in lower part of tail pulley bracket clockwise with a hexagonal wrench. Pulley will then move outward on this side and belt will center itself. Alternatively, on opposite side, if there is a space between pulley bracket and frame end, make adjustment on this side. In this case slightly move pulley inward by turning adjustment screw(*1) counterclockwise.

● Frame depth of 30mm

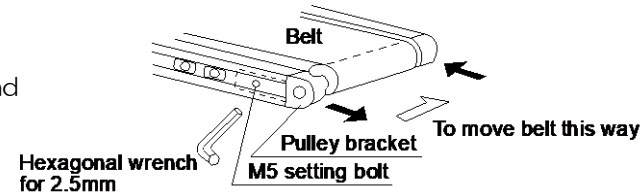


● Frame depth of 60mm



● For frame depth of 15mm

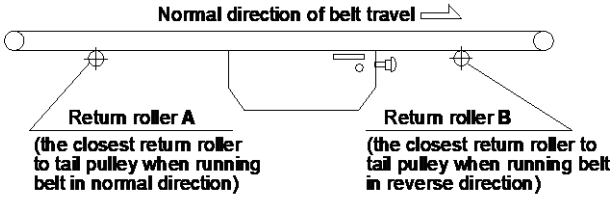
Loosen M5 setting bolt with a hexagonal wrench, and make adjustment by moving pulley bracket. Once adjustment is completed, retighten M5 setting bolt.

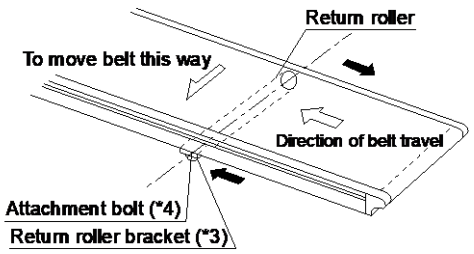


3. Adjustment Using Return Roller (if any return rollers are attached)

On one side, loosen return roller bracket(*3) attachment bolt(*4), and set return roller slightly diagonally. Belt will then move to form right angle to return roller rotation axis.

NOTE: It is effective to adjust the closest return roller to tail pulley. (The closest return roller to tail pulley alternates depending on direction of belt travel as shown in figure below.)

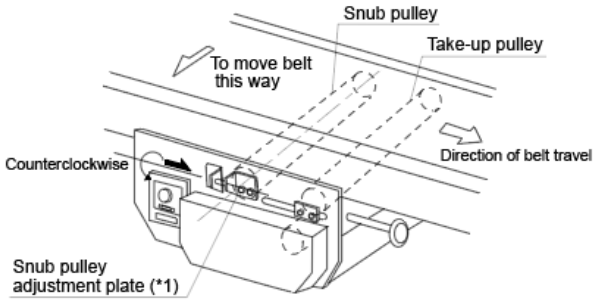




4. Adjustment Using Snub Pulley

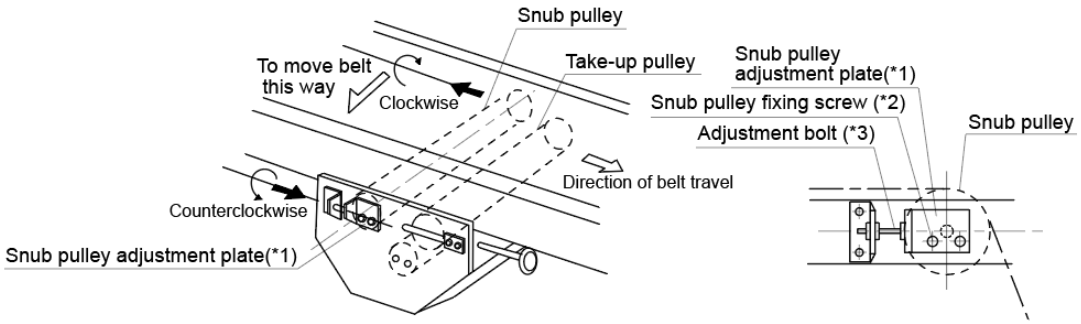
● For frame depth of 60mm

Snub pulley adjustment plate(*1) (one plate on one side) is found above drive unit chain cover. Loosen snub pulley fixing screws(*2) and make adjustment by turning adjustment bolt(*3). Once adjustment is completed, retighten the fixing screws(*2).



● Using snub pulley of intermediate take-up unit (frame depth: 60mm)

Snub pulley adjustment plate(*1) (one plate on each side) are found on sides of intermediate take-up unit. Loosen snub pulley fixing screws(*2) and make adjustment by turning adjustment bolt(*3). Once adjustment is completed, retighten the fixing screws(*2).



5. Adjustment for Reversible Operation

First run belt in normal direction and make adjustments so that belt will center approximately. Next reverse the running direction and make adjustments according to direction of belt deviation as follows:

-When belt deviates to the same side in both normal and reverse operations: Make fine adjustments so that belt will center.

-When belt deviates to the opposite side in reverse operation: First make adjustments so that belt will center. Taking into account normal directional operation, slightly move belt back to the side of deviation.

NOTE: 1. For reversible operation, it usually takes a long time to adjust belt alignment. Additionally it is required to cut off belt deviation margin thus reducing belt width.

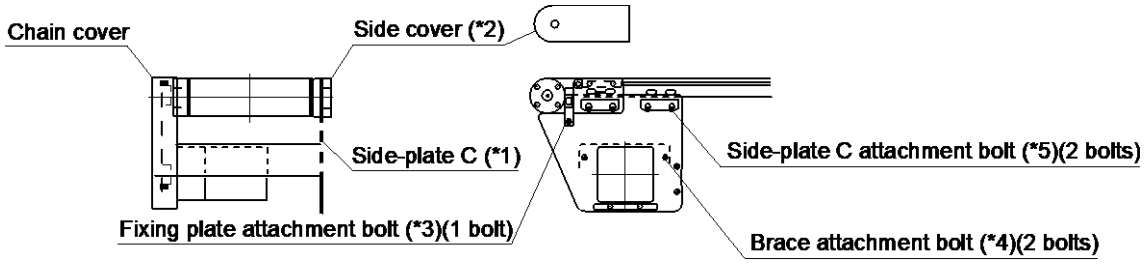
2. It is difficult to make adjustments when belt width is as long as, or longer than machine length.

For reversible operation, it is recommended to choose non-deviation models such as **SCV, SHV**.

7 BELT REPLACEMENT

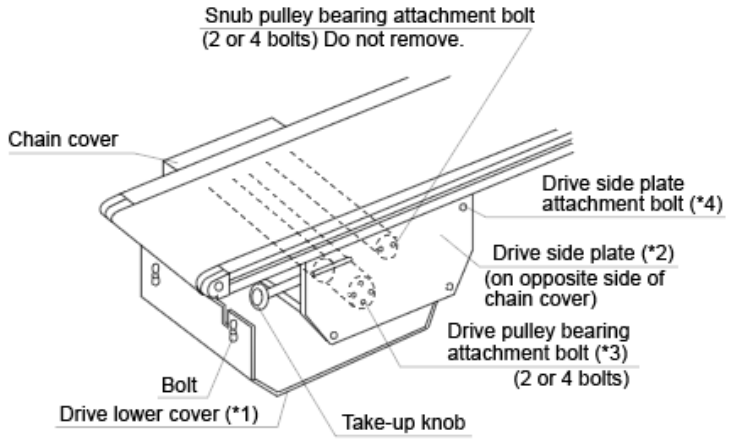
BELT REPLACEMENT OF HEAD DRIVE TYPE

1. Remove stands from conveyor. If difficult, on opposite side of drive unit chain cover, remove all the stand attachment bolts. For machine with belt removal stand (optional), see p.29.
2. Remove all the return rollers, if any.
3. Loosen take-up bolts of tail unit. For machine with belt slackener (optional), see p.29.
4. Remove side-plate C(*1) on opposite side of chain cover as follows:
   (1) Remove side cover(*2).
   (2) Remove the following bolts from side-plate C(*1).
   -Fixing plate attachment bolt(*3)(1 bolt)
   -Brace attachment bolts(*4)(2 bolts)
   -Side-plate C attachment bolts(*5)(2 bolts)
   NOTE: Machine with single-support drive or side-mounted drive has no side-plate C, i.e. this step is unnecessary.
5. Remove head (or tail) pulley from frame end. →See p.26. For SC model, remove pulley retaining block attachment bolts (flat head bolts) and remove pulley upwards. For machine with belt slackener (optional), belt can be removed without removing tail pulley.
6. Remove belt sideways and install replacement belt.
7. Reinstall parts in reverse order. Take up belt and adjust belt alignment.



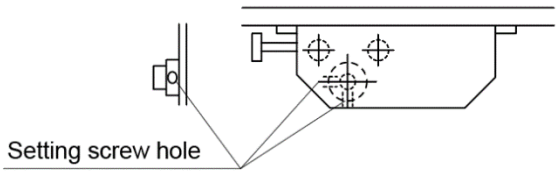
BELT REPLACEMENT OF CENTER DRIVE TYPE

1. Remove stands from conveyor. If difficult, on opposite side of drive unit chain cover, remove all the stand attachment bolts.
2. Remove all the return rollers, if any.
3. Loosen belt by turning take-up knobs counterclockwise.
4. On opposite side of chain cover, remove drive side plate(*2) as follows:
   (1) Remove drive lower cover(*1) by loosening bolts on the sides.
   (2) On opposite side of chain cover, remove all the drive side plate attachment bolts(*4).
   (3) Remove drive pulley bearing (or pulley adjustment plate) attachment bolts(*3).
   NOTE: 1. Do not remove snub pulley bearing attachment bolts.
   2. For proper re-assembly, mark initial positions of right and left drive side plates, on frame.
5. Remove head (or tail) pulley from frame end. →See p.30.
6. Remove belt sideways and install replacement belt.
   NOTE: In advance, check replacement belt for length, straightness, etc. When installing, pay attention to direction of belt travel.
7. Reinstall parts in reverse order. Take up belt and adjust belt alignment.



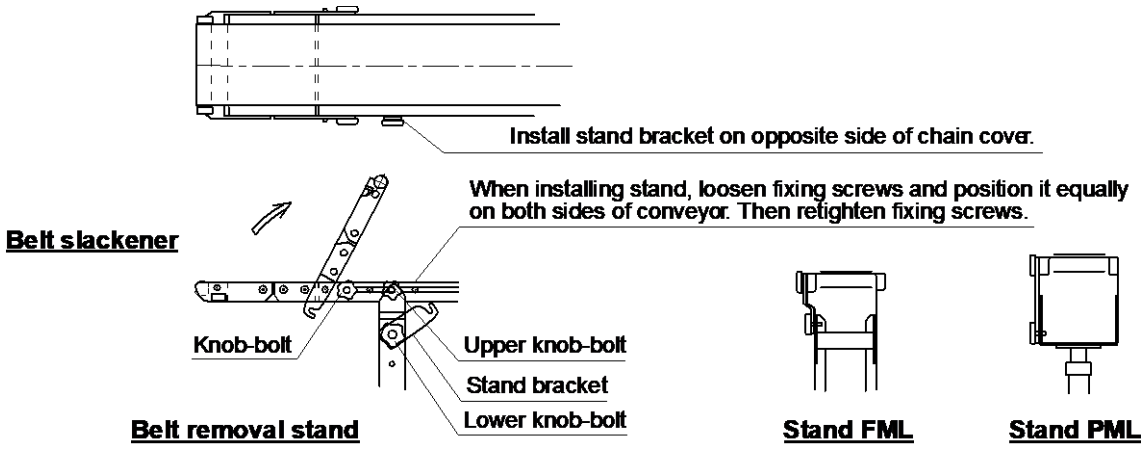
■ Caution When Reinstalling Drive Pulley Bearing

Each drive pulley bearing has 2 setting screw holes. When reinstalling the bearing on opposite side of chain cover, position these holes equally to the other drive pulley bearing's, as shown in figure right. (This makes tightening setting screws easier.)



■ Belt Slackener and Belt Removal Stand (optional)

Belt slackener: Loosen knob-bolts on both sides and raise tail unit. Belt can thus be loosened easily.
Belt removal stand: Loosen lower knob-bolt and upper knob-bolt in this order. Turn stand bracket clockwise while slightly raising conveyor main body. When resetting, slightly raise conveyor main body and return stand bracket in initial position. Retighten upper knob-bolt and lower knob-bolt in this order.



■ Tail Pulley Removal

HEAD DRIVE TYPE

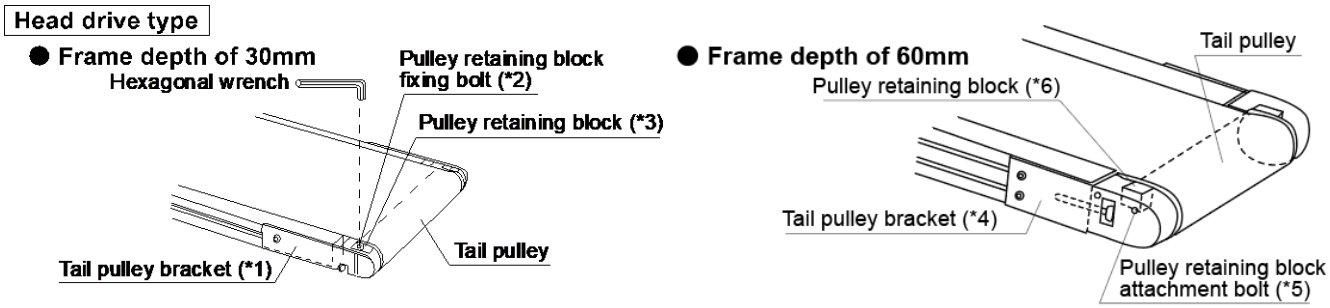
● For frame depth of 30mm

Loosen pulley retaining block fixing bolts(*2) on tops of pulley brackets(*1) with hexagonal wrench. Remove pulley retaining blocks(*3) upwards. Pulley may then be removed upwards.

● For frame depth of 60mm

Remove pulley retaining block attachment bolts(*5) on sides of pulley brackets(*4) with hexagonal wrench. Remove pulley retaining blocks(*6) upwards. Pulley may then be removed upwards.

NOTE: For small-diameter pulley type such as SMHM and SHMV models, refer to "● For frame depth of 30mm" above.



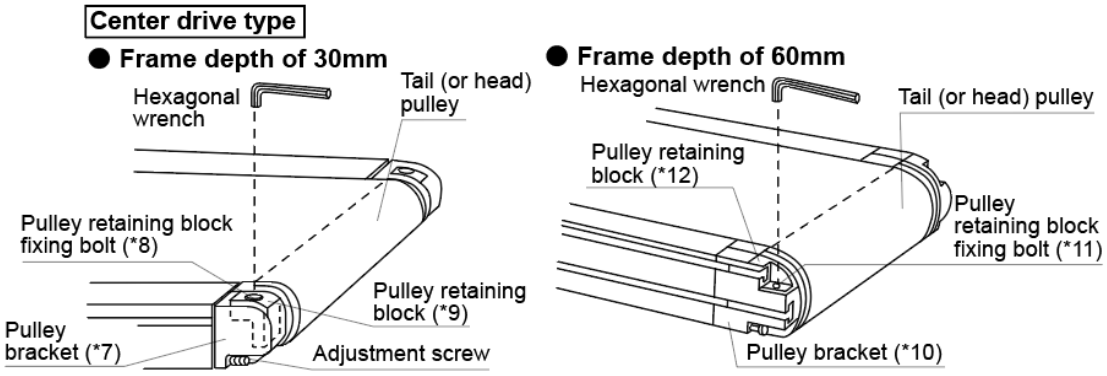
CENTER DRIVE TYPE

● For frame depth of 30mm

Loosen pulley retaining block fixing bolts(*8) on tops of tail (or head) pulley brackets(*7) with hexagonal wrench. Remove pulley retaining blocks(*9) upwards. Pulley may then be removed upwards.

● For frame depth of 60mm

Loosen pulley retaining block fixing bolts(*11) on tops of tail (or head) pulley brackets(*10) with hexagonal wrench. Remove pulley retaining blocks(*12) upwards. Pulley may then be removed upwards.

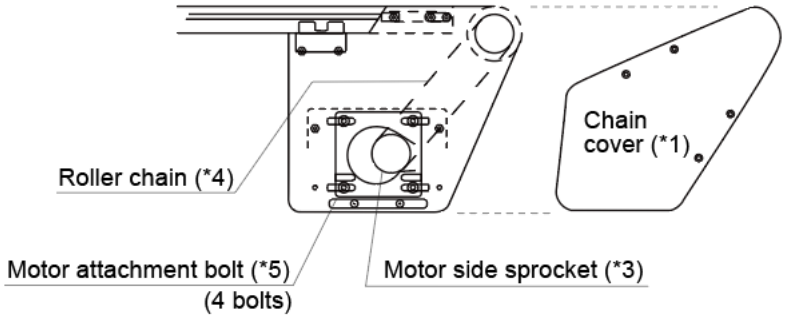


8 MOTOR REPLACEMENT

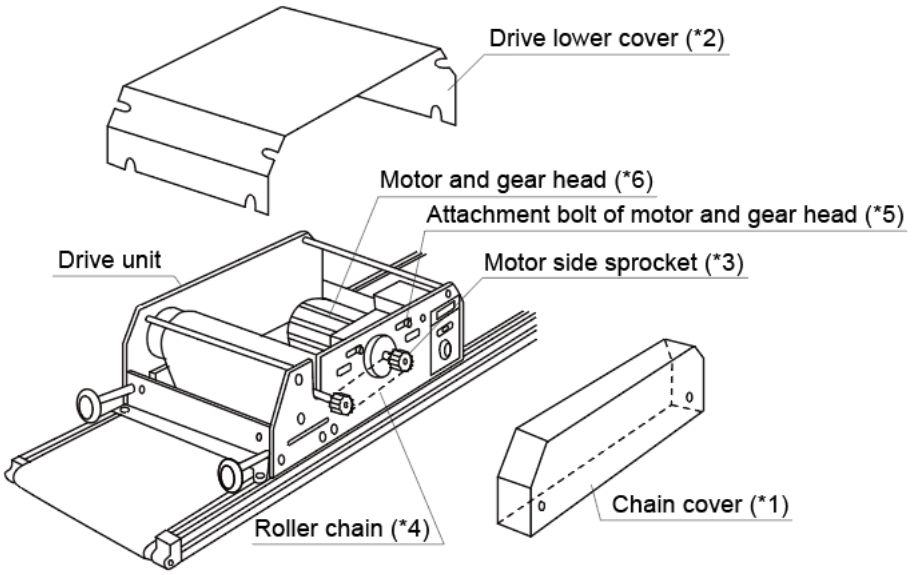
Replace motor following the procedure below:
1. Remove chain cover(*1) and drive lower cover(*2).
2. Remove motor side sprocket(*3) and roller chain(*4).
3. Remove attachment bolts(*5) (4 bolts), and replace motor and gear head(*6).
4. Reinstall parts in reverse order and adjust belt alignment.

NOTE: Gear head service life is 5,000 operating hours under normal service conditions.

HEAD DRIVE TYPE



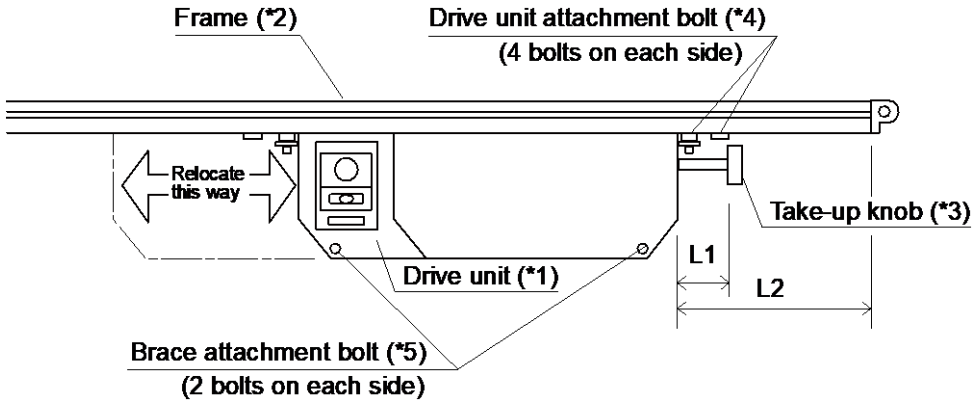
CENTER DRIVE TYPE



9 DRIVE UNIT RELOCATION *(for center drive type only)*

For center drive type, it is possible to move drive unit(*1) along frame(*2). If necessary, relocate drive unit as follows:

1. Check initial lengths(L1) of right and left take-up knobs(*3). (For example, mark lengths(L1) on take-up knob shafts.)
2. Loosen belt by turning take-up knobs(*3).
3. Loosen drive unit attachment bolts(*4)(4 bolts on each side).
4. Move drive unit to intended position. On right and left sides of conveyor, measure lengths(L2) to ensure drive side plates are positioned equally on both sides. Then retighten drive unit attachment bolts(*4).
5. Turn take-up knobs(*3) until their lengths become initial ones(L1). Take-up pulley will then return to initial position and belt will be taken up properly. Then adjust belt alignment.



NOTE: 1. Large relocation is occasionally impossible depending on positions of other attachments.
2. When correcting position of drive side plate only on one side, loosen brace attachment bolts(*5)(2 bolts on one side) as well as drive unit attachment bolts(*4)(4 bolts on one side).

10 ROLLER-EDGE/KNIFE-EDGE MODELS

10-1. COMPONENT NAMES

HEAD DRIVE TYPE

Applied models:

Type	Frame depth	Model code	Figure code
Roller-edge	30	SCR	A
		SCB	B
		SCBV	C
	60	SMHB SHDB (H) SHDBV (H)	D
		SHBV	E
Knife-edge	30	SCKK	F
	60	SMHKK	G

CENTER DRIVE TYPE

Applied models:

Type	Frame depth	Model code	Figure code
Roller-edge	30	SMJR	A
		SMJB	B
		SJBV	C
	60	SMHGB SHDB (C) SHDBV (C)	D
		SHGBV	E
Knife-edge	30	SJKK	H

● Roller-edge Unit

fig. A (SCR, SMJR)

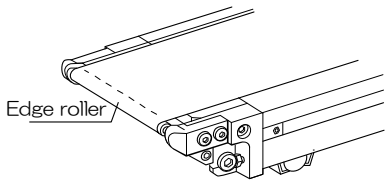


fig. B (SCB, SMJB)

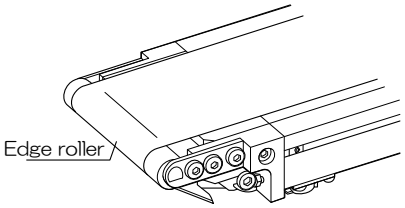


fig. C (SCBV, SJBV)

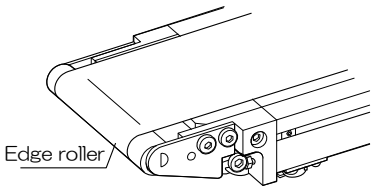


fig. D (SMHB, SHDB, SHDBV, SMHGB

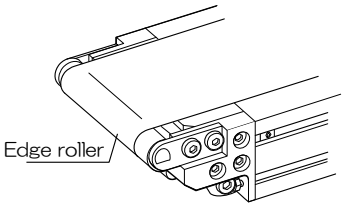
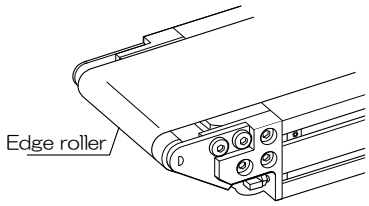


fig. E (SHBV, SHGBV)



● Knife-edge Unit

fig. F (SCKK)

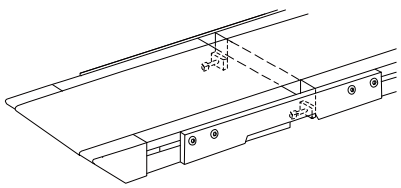


fig. G (SMHKK)

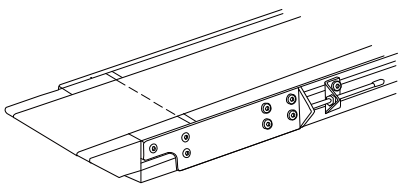
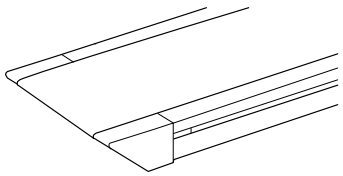


fig. H (SJKK)



10-2. ROLLER-EDGE MODELS

1. Taking up the Belt

When belt is slackened off, take up belt as follows:

HEAD DRIVE TYPE

● For frame depth of 30mm

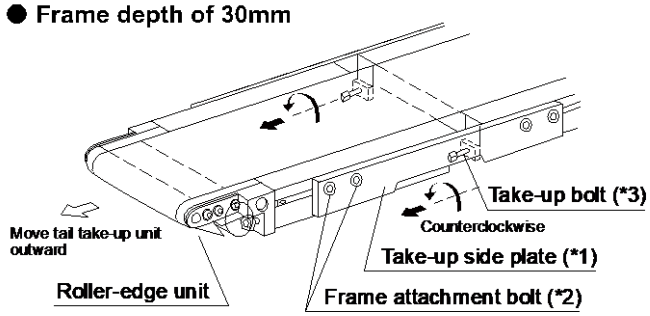
On both sides of tail take-up unit, loosen the two frame attachment bolts(*2) on take-up side plates(*1) with a hexagonal wrench. Turn right and left take-up bolts(*3) (M6 square head) counterclockwise with a spanner. The entire tail take-up unit will then move outward and belt will be taken up. When turning take-up bolts(*3), adjust them alternately, little by little, to keep their movement lengths the same. Once adjustment is completed, retighten the frame attachment bolts(*2).

● For frame depth of 60mm

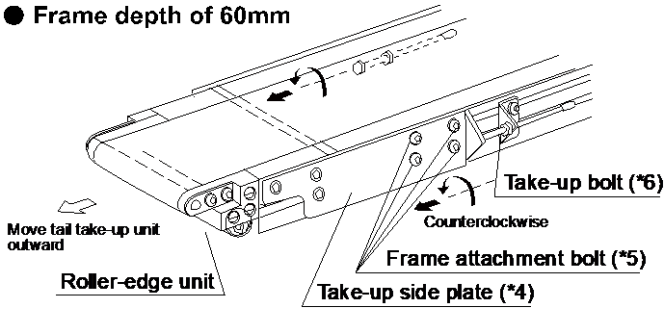
On both sides of tail take-up unit, loosen the four frame attachment bolts(*5) on take-up side plates(*4) with a hexagonal wrench. Turn right and left take-up bolts(*6) (M6) counterclockwise with a spanner. The entire tail take-up unit will then move outward and belt will be taken up. When turning take-up bolts(*6), adjust them alternately, little by little, to keep their movement lengths the same. Once adjustment is completed, retighten the frame attachment bolts(*5).

Head drive type

● **Frame depth of 30mm**



● **Frame depth of 60mm**



CENTER DRIVE TYPE

For center drive type, take up belt by turning take-up knobs of drive unit. → For details, see p.21-22.

■ Belt Tension

Do not take up belt too much, but only to extent that belt does not slip on drive pulley, i.e. enough to drive belt. → For details, see p.22.

2. Belt Alignment Adjustment

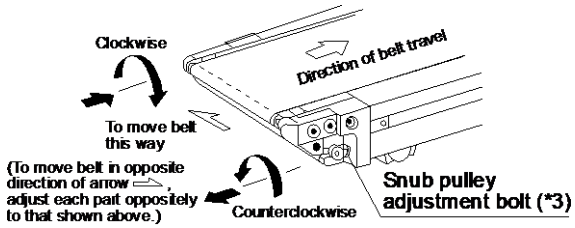
When belt is not correctly aligned, make adjustment as follows while running conveyor slowly. For prior checking and adjustments except in roller-edge unit, see p.23-27.

(1) Adjustment Using Snub Pulley of Roller-edge Unit

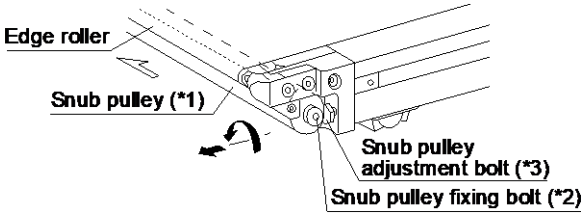
Snub pulley(*1) is found in lower part of roller-edge unit, as shown in the figures. On side to which belt is deviating, slightly loosen snub pulley fixing bolt(*2) with a hexagonal wrench. Turn snub pulley adjustment bolt(*3)(M5) counterclockwise with a spanner. Snub pulley will then move outward on this side and belt will center itself. Alternatively adjust on opposite side. In this case turn snub pulley adjustment bolt(*3) clockwise. Snub pulley will then move inward on this side and belt will center itself. Once adjustment is completed, retighten snub pulley fixing bolt(*2).

NOTE: 1. SHBV and SHGBV models have no snub pulley fixing bolts, i.e. snub pulley can be moved only by turning adjustment bolt(*3).

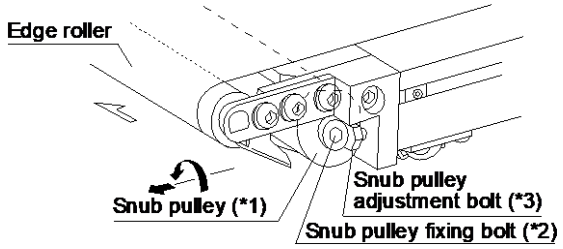
2. It is impossible to make adjustment by moving edge roller only.



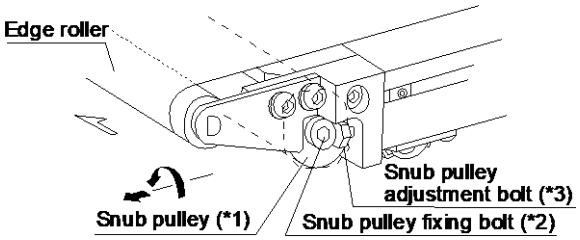
●SCR, SMJR model



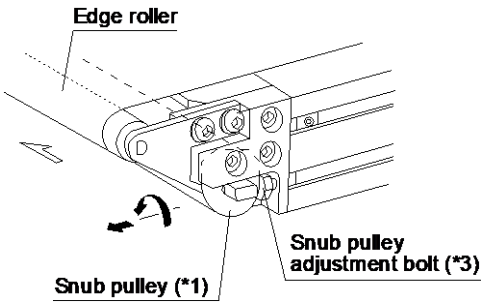
●SCB, SMJB model



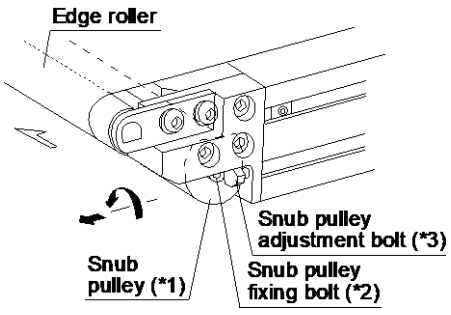
●SCBV, SJBV model



●SHBV, SHGBV model



●SMHB, SHDB, SHDBV, SMHGB model



(2) Adjustment Using Take-up Unit

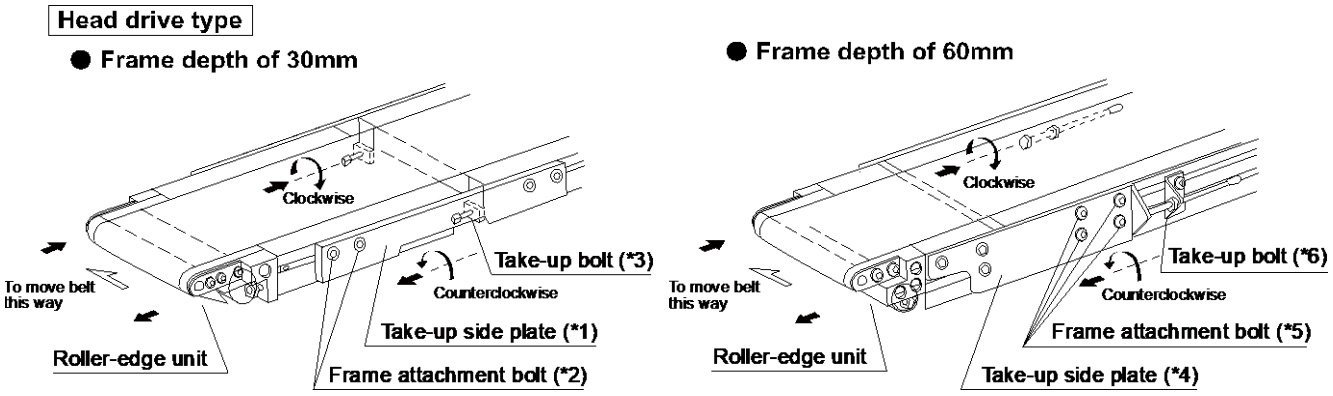
HEAD DRIVE TYPE

● For frame depth of 30mm

On side to which belt is deviating, loosen the two frame attachment bolts(*2) on take-up side plate(*1). Turn take-up bolt(*3) (M6 square head) counterclockwise with a spanner. Frame will then move outward on this side and belt will center itself. Alternatively adjust on opposite side. In this case, to move frame inward on this side, loosen the two frame attachment bolts(*2) and turn take-up bolt(*3) clockwise. Once adjustment is completed, retighten the frame attachment bolts(*2).

● For frame depth of 60mm

On side to which belt is deviating, loosen the four frame attachment bolts(*5) on take-up side plate(*4). Turn take-up bolt(*6) (M6) counterclockwise with a spanner. Frame will then move outward on this side and belt will center itself. Alternatively adjust on opposite side. In this case, to move frame inward on this side, loosen the four frame attachment bolts(*5) and turn take-up bolt(*6) clockwise. Once adjustment is completed, retighten the frame attachment bolts(*5).



CENTER DRIVE TYPE

For center drive type, make adjustment by turning take-up knobs of drive unit. → For details, see p.25.

3. Removal of Snub Pulley and Edge Roller (for roller-edge models)

Fully loosen belt and perform as follows:

NOTE: To loosen belt, refer to " 5. TAKING UP THE BELT" on p.21 and adjust each part in opposite direction.

(1) Snub Pulley Removal

First remove right and left snub pulley fixing bolts(*1) with a hexagonal wrench. (→See figures on next page.) Then remove each part following the procedures below, according to frame depth and machine model. Snub pulley may then be removed.

■ For frame depth of 30mm

SCR, SMJR model: On both sides of conveyor, remove attachment screws(*2) (cross recessed) and safety end covers(*3).

SCB, SMJB model: On both sides of conveyor, remove attachment screws(*4) and head-tail covers(*5).

SCBV, SJBV model: Remove the entire roller edge unit from frame. Remove edge roller, and then remove snub pulley. → See "(2) Edge Roller Removal" on next page.

■ For frame depth of 60mm (SMHB, SMHGB model, etc.)

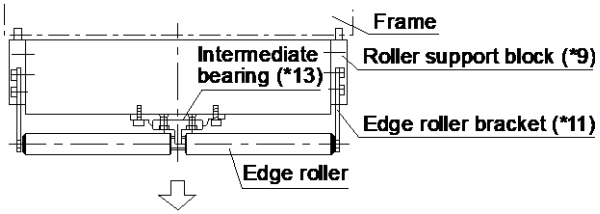
Remove snub pulley bracket attachment bolts(*6) (2 bolts on each side). Then remove snub pulley together with brackets(*7).

NOTE: **SHBV** and **SHGBV** models have no snub pulley fixing bolts.

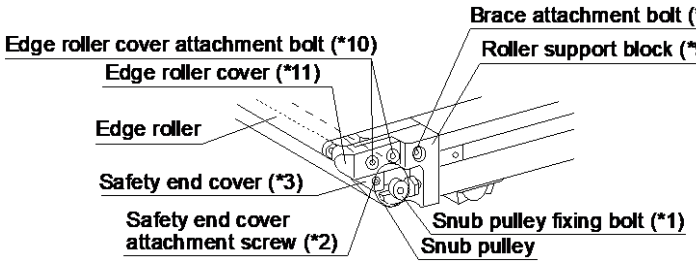
(2) Edge Roller Removal

1) Loosen right and left fixing screws(*8) with a hexagonal wrench. (→See figures on next page.) Pull the entire roller edge unit together with roller support blocks(*9) out of frame.
   NOTE: For **SCR** and **SMJR** models, this process is unnecessary. Start from step 2) below.
2) Remove edge roller bracket (or edge roller cover) attachment bolts(*10) (2 bolts on each side) with a hexagonal wrench. Then remove edge roller together with brackets(or covers) (*11). (It is unnecessary to remove brace attachment bolts(*12) etc.) If intermediate bearing(*13) is attached as shown in figure below, remove it also.

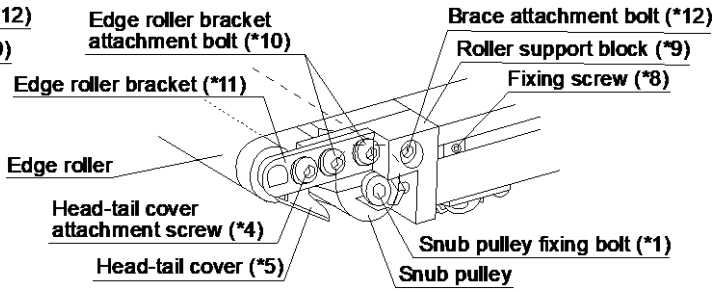
● **Top view of roller edge unit (except SCR and SMJR models)**



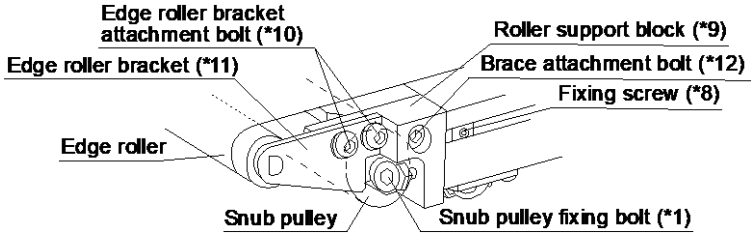
●SCR, SMJR model



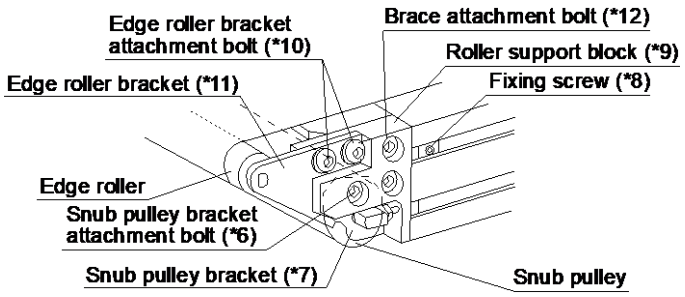
●SCB, SMJB model



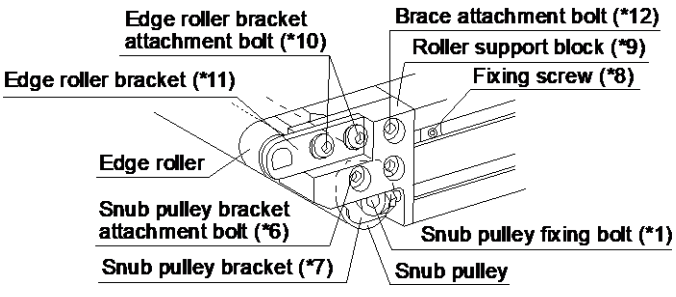
●SCBV, SJBV model



●SHBV, SHGBV model



●SMHB, SHDB, SHDBV, SMHGB model



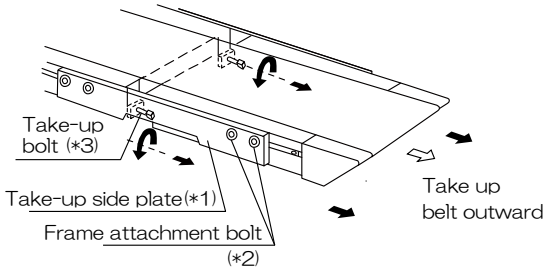
10-3. KNIFE-EDGE MODELS

1. Taking up the Belt

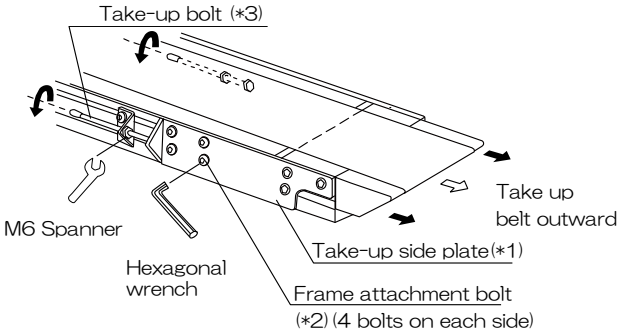
HEAD DRIVE TYPE

On both sides of conveyor, loosen frame attachment bolts(*2) (4 bolts on each side) on take-up side plates(*1) with a hexagonal wrench. Turn take-up bolts(*3) (M6) with a spanner. The entire knife-edge unit will move outward and belt will be taken up. When turning take-up bolts(*3), adjust them alternately, little by little, to keep their movement lengths the same. Once adjustment is completed, retighten frame attachment bolts(*2).

●Frame depth of 30mm



●Frame depth of 60mm



CENTER DRIVE TYPE (SJKK model)

For center drive type, take up belt by turning take-up knobs of drive unit. → For details, see p.21.

■ Belt Tension

Do not take up belt too much, but only to extent that belt does not slip on drive pulley, i.e. enough to drive belt. → For details, see p.22.

2. Belt Alignment Adjustment

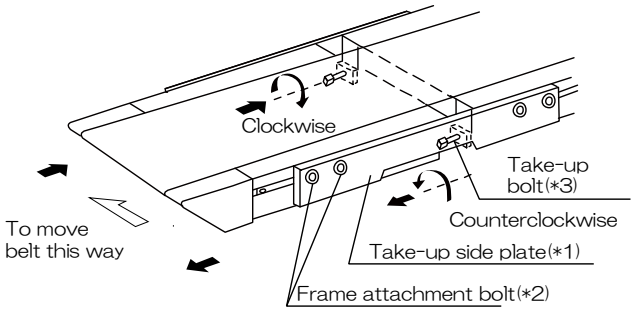
When belt is not correctly aligned, make adjustment as follows while running conveyor slowly.
For prior checking and adjustments except in knife-edge unit, see p.23-27.

Adjustment Using Take-up Unit

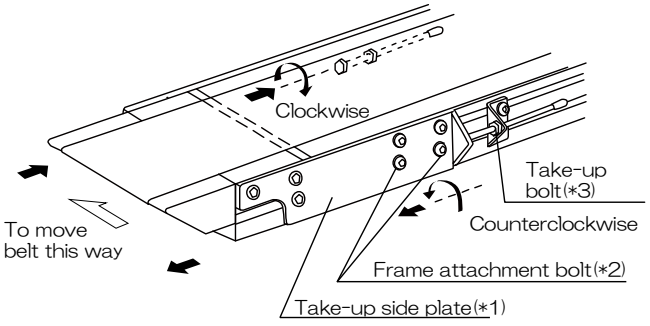
On side to which belt is deviating, loosen frame attachment bolts(*2) (4 bolts on each side) on take-up side plates(*1) with a hexagonal wrench. Slightly move the entire knife-edge unit outward by turning take-up bolt(*3) with a spanner. Alternatively, on opposite side, similarly move the entire knife-edge unit inward. Once adjustment is completed, retighten frame attachment bolts(*2).

HEAD DRIVE TYPE

●Frame depth of 30mm



●Frame depth of 60mm



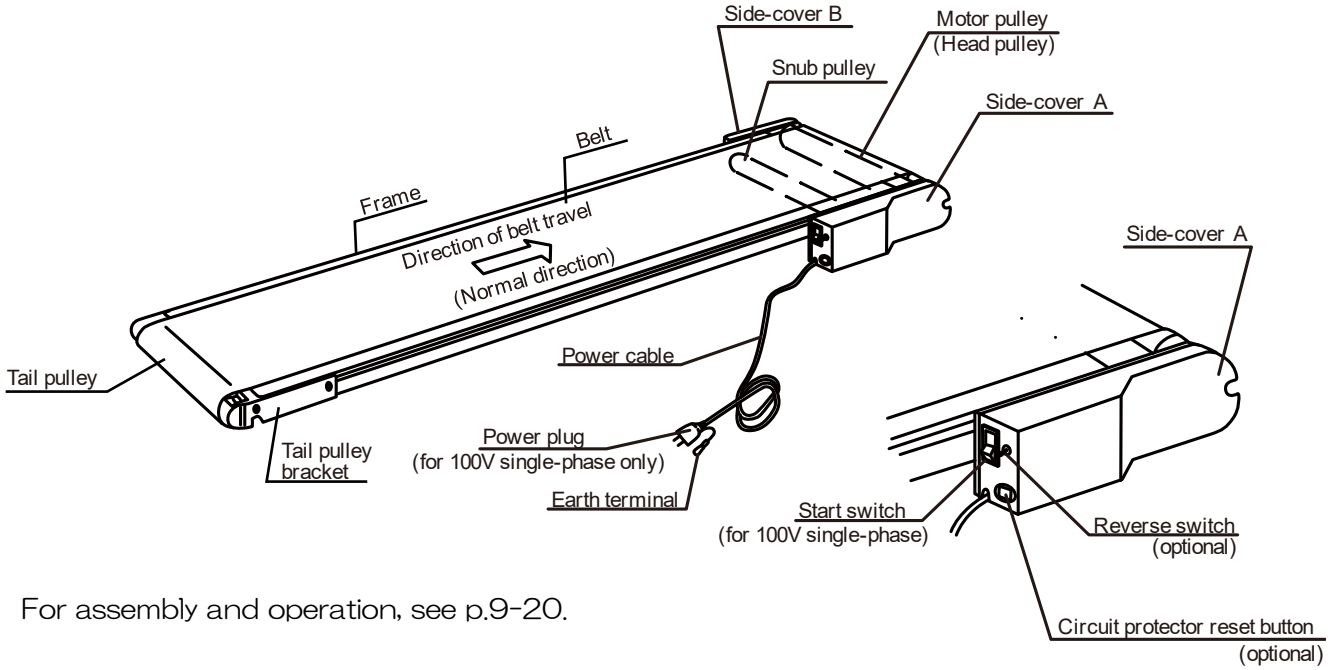
CENTER DRIVE TYPE (SJKK model)

For center drive type, take up belt by turning take-up knobs of drive unit. → For details, see p.21.

11 MOTOR PULLEY MODELS

11-1. SCP and SCPV models (frame depth: 30mm)

1. Component Names



For assembly and operation, see p.9-20.

2. Taking up the Belt

When belt is slackened off, take up belt by turning take-up bolts of tail pulley brackets.
For details, see p.21. (Follow the procedure for HEAD DRIVE TYPE of 30mm-deep frame.)

3. Belt Alignment Adjustment

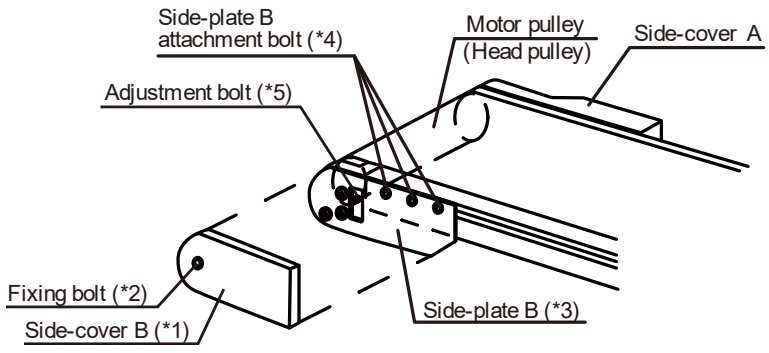
When belt is not correctly aligned, make adjustment as follows while running conveyor slowly.
For prior checking and outline of belt alignment adjustment, see p.23.

(1) Adjustment Using Motor Pulley (Head pulley)

Side-cover A (with switch attached) and side-cover B(*1) are attached on frame ends. Remove only side-cover B(*1) by loosening fixing bolt(*2) (one bolt on one side). Loosen attachment bolts(*4) (3 bolts on one side) of side-plate B(*3) with a hexagonal wrench. To make adjustment, move side-plate B(*3) little by little by turning adjustment bolt(*5) inside hole of side plate with a spanner. (This adjustment is possible only on one side.)

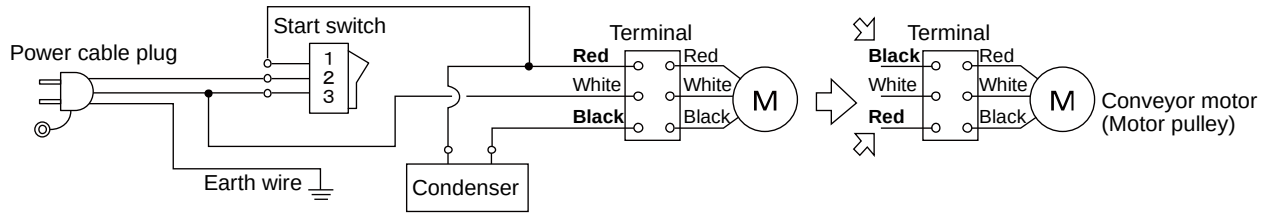
(2) Adjustment Using Tail Pulley

For details, see p.24-25. (Follow the procedure for HEAD DRIVE TYPE of 30mm-deep frame.)



4. Changing Direction of Conveyor Travel (for machine without reverse switch)

● **For machines with single-phase motor** : Remove side-cover A. On one side of terminal, switch positions of read and black lead wires as shown below.



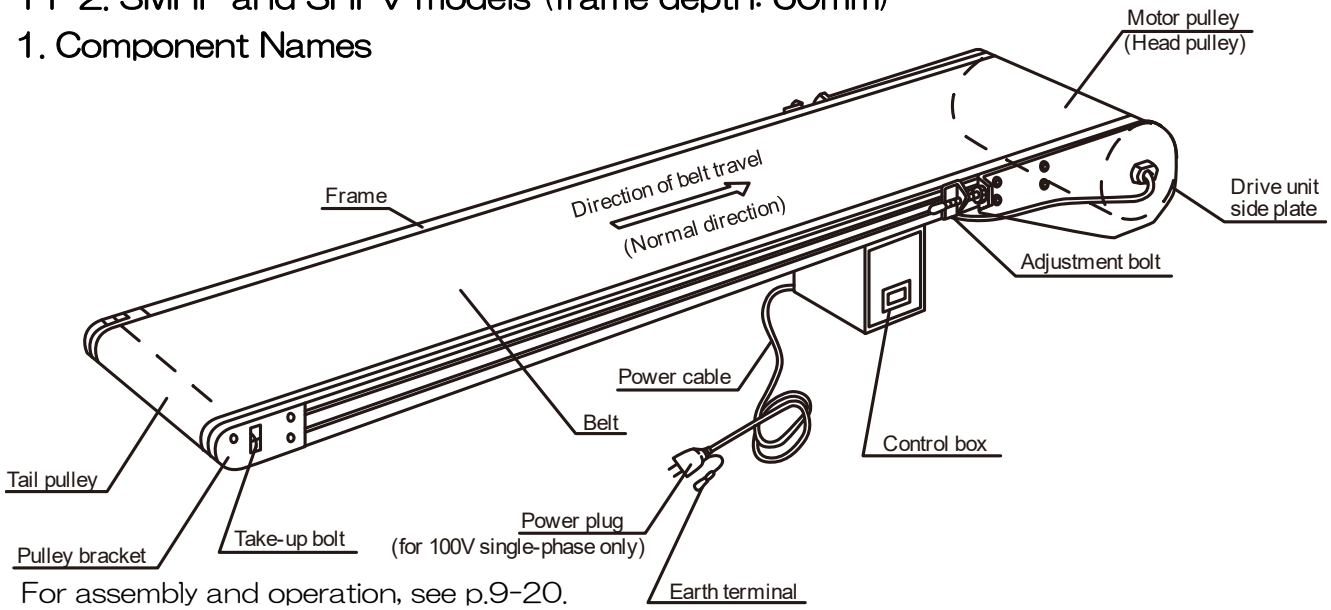
NOTE: 1. After changing direction of conveyor travel, be sure to make belt alignment adjustment before use.

2. Keep in mind that conveying capacity is reduced to a certain extent when running conveyor in reverse direction.

● **For machines with three-phase motor** : Switch positions of any two of three power supply lead wires.

11-2. SMHP and SHPV models (frame depth: 60mm)

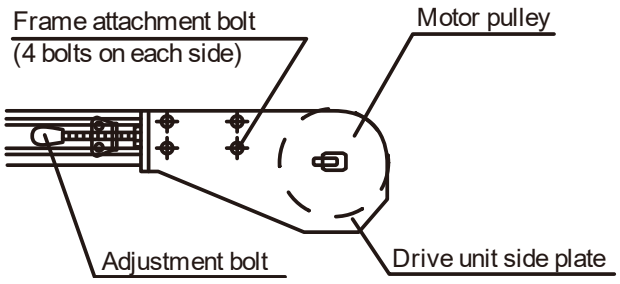
1. Component Names



For assembly and operation, see p.9-20.

2. Taking up the Belt

When belt is slackened off, take up belt by turning take-up bolts of tail pulley brackets. For details, see p.21.



3. Belt Alignment Adjustment

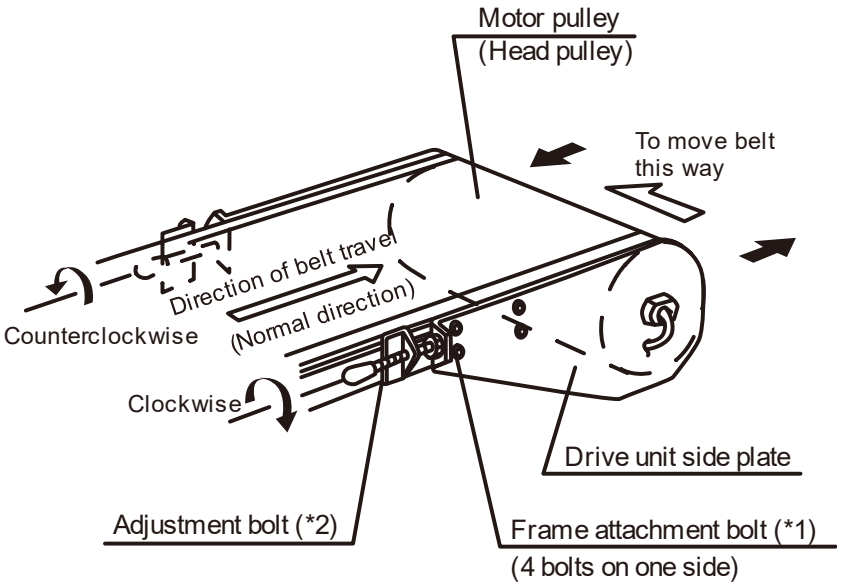
When belt is not correctly aligned, make adjustment as follows while running conveyor slowly. For prior checking and outline of belt alignment adjustment, see p.23.

(1) Adjustment Using Motor Pulley (Head pulley)

On side to which belt is deviating, loosen frame attachment bolts(*1) (4 bolts on one side) on drive unit side plate, with a hexagonal wrench. Slightly move the entire drive unit outward by turning adjustment bolt(*2) clockwise with a spanner. Belt will then center itself. Alternatively adjust on opposite side. In this case, slightly move the entire drive unit inward by turning adjustment bolt(*2) counterclockwise. Once adjustment is completed, retighten frame attachment bolts(*1).

(2) Adjustment Using Tail Pulley

→ See p.24. (Follow the procedure for HEAD DRIVE TYPE of 60mm-deep frame.)



4. Changing Direction of Conveyor Travel

● For variable-speed type

It is possible to change direction by setting of inverter.

● For constant-speed type

Switch positions of any two of three power supply lead wires.

NOTE: 1. After changing direction of conveyor travel, be sure to make belt alignment adjustment before use.

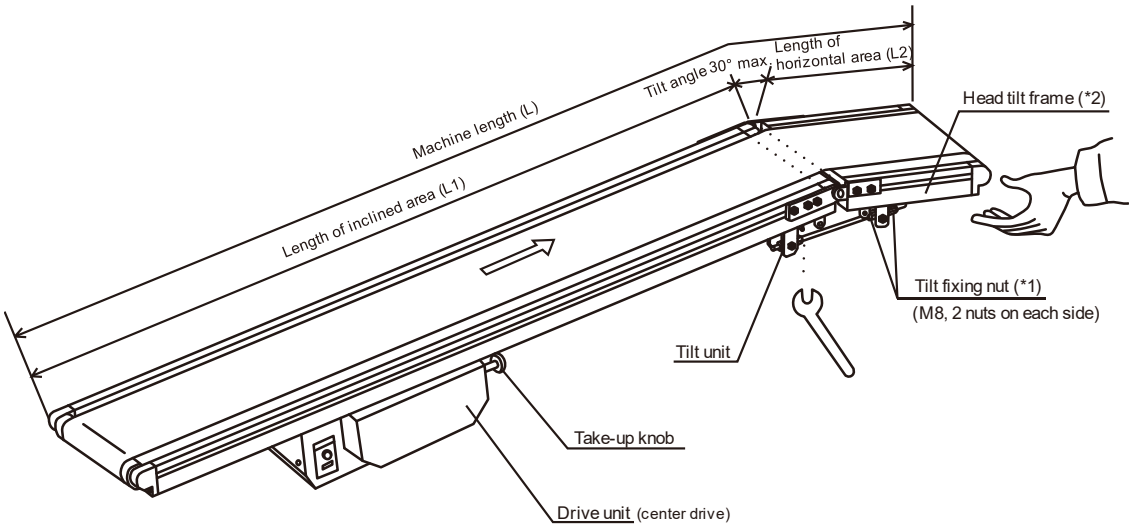
2. Keep in mind that conveying capacity is reduced to a certain extent when running conveyor in reverse direction.

12 TILT MODELS

Applied models:

Frame depth	Head drive type	Center drive type
30	SCS, SCSV	SMJS, SJSV
60	SMHS, SHVS	SMHGS, SHGVS

12-1. COMPONENT NAMES



12-2. TILT ANGLE ADJUSTMENT

Be sure to switch off power supply and adjust tilt angle as follows:

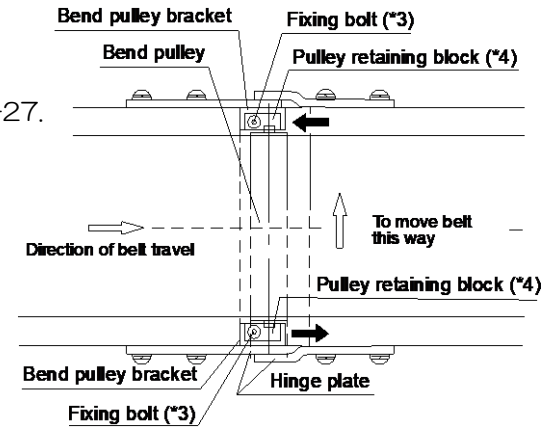
1. On both sides of conveyor, loosen tilt fixing nuts(*1) (M8, 2 nuts on each side) with a spanner. Hold head tilt frame(*2) with your hand, and set it at intended angle.
2. To fix the tilt angle, retighten all the tilt fixing nuts(*1).

NOTE: 1. Before retightening tilt fixing nuts(*1), make sure that these are equally adjusted on both sides of conveyor.
2. If setting at a larger angle, slightly loosen belt with take-up device before angle adjustment. After fixing the tilt angle, take up belt slack.

For assembly, operation and belt take-up, see p.9-20.

12-3. BELT ALIGNMENT ADJUSTMENT

When belt is not correctly aligned, make adjustment as follows.
For prior checking and adjustments except in tilt unit, see p. 23-27.



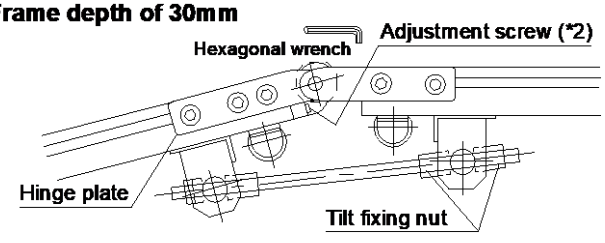
Adjustment Using Bend Pulley of Tilt Unit

When belt is deviating at tilt unit, on side to which belt is deviating, slightly move bend pulley outward by turning adjustment screw(*2). Belt will then center itself. Alternatively, on opposite side, if there is a space between pulley bracket and frame end, make adjustment on this side. In this case slightly move bend pulley inward by turning adjustment screw(*2).

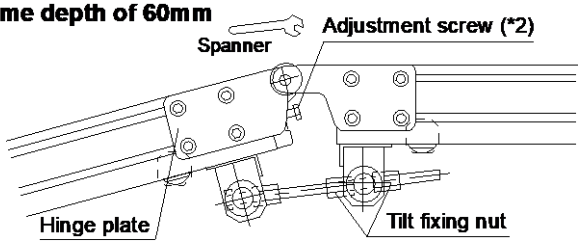
■ Bend Pulley Removal

Be sure to switch off power supply. Loosen fixing bolts(*3) on tops of bend pulley brackets with a hexagonal wrench. Remove pulley retaining blocks(*4) upwards, and then remove bend pulley upwards.

● Frame depth of 30mm



● Frame depth of 60mm



13 REINFORCED/WIDE-BELT MODELS(REINFORCED/WIDE-BELT MODELS)

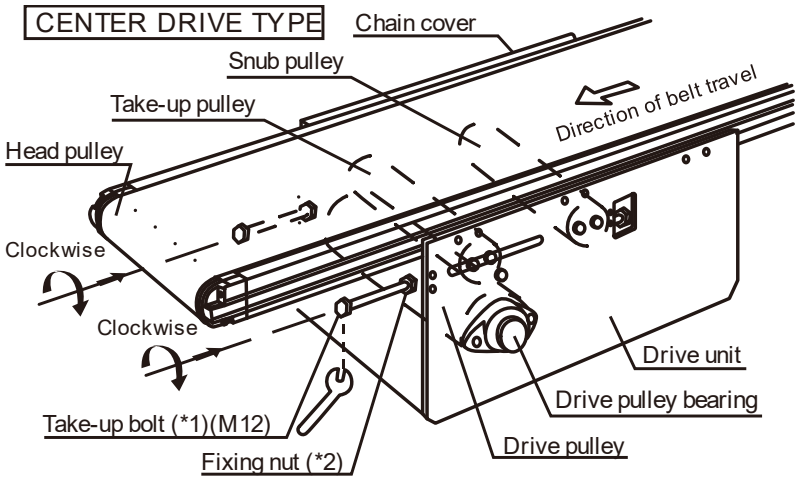
Applied models (center drive type only): SMHG, SHGV, SMHH(C), SMHD(C), SMHDV(C) model

13-1. REINFORCED/WIDE-BELT MODELS WITH CC-TYPE DRIVE UNIT (motor output: 0.2 to 0.4 kW, machine length: 10m or less)

1. Taking up the Belt

When belt is slackened off, loosen right and left fixing nuts(*2) of take-up bolts(*1)(M12) with a spanner, and turn take-up bolts(*1) clockwise. Belt will then be taken up. For belt tension, see p.22.

NOTE: When turning take-up bolts, adjust them alternately, little by little, to keep their movement lengths the same. Once adjustment is completed, retighten fixing nuts(*2).



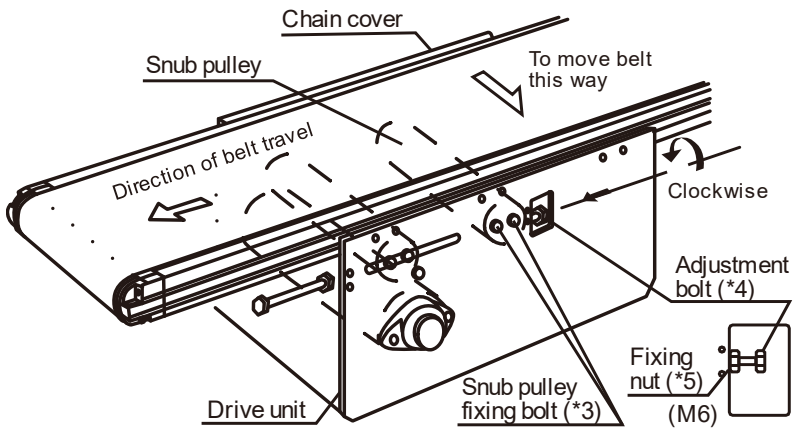
2. Belt Alignment Adjustment

For prior checking and belt alignment adjustment except using snub pulley, see p.23-27.

●Adjustment Using Snub Pulley

Loosen snub pulley fixing bolts(*3) of drive unit. To make adjustment, loosen fixing nut(*5) and turn adjustment bolt(*4)(M6). Once adjustment is completed, retighten snub pulley fixing bolts(*3) and fixing nut(*5).

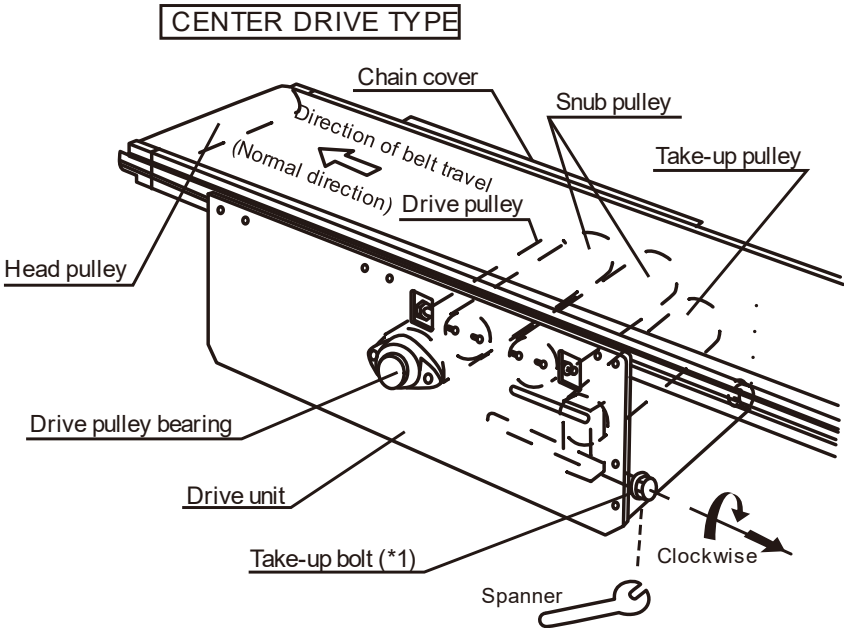
NOTE: This adjustment is possible only on opposite side of chain cover. For assembly and operation, see p.9-20.



13-2. REINFORCED/WIDE-BELT MODELS WITH CL-TYPE DRIVE UNIT (motor output: 0.2 to 0.4 kW, machine length: 10.1m or more)

1. Taking up the Belt

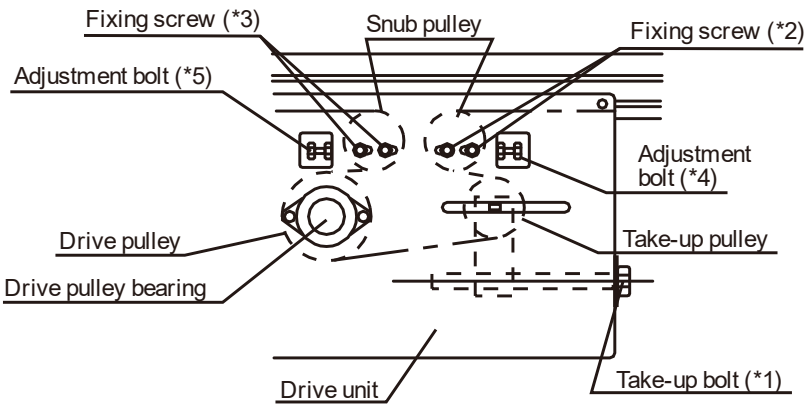
When belt is slackened off, turn right and left take-up bolts(*1) (M16) of drive unit clockwise with a spanner. Belt will then be taken up. For belt tension, see p.22.
NOTE: When turning take-up bolts, adjust them alternately, little by little, to keep their movement lengths the same.



2. Belt Alignment Adjustment

For prior checking and belt alignment adjustment except using snub pulley, see p.23-27.

●Adjustment Using Snub Pulley
Loosen snub pulley fixing screws(*2 or *3) of drive unit. To make adjustment, turn adjustment bolt(*4 or *5). Once adjustment is completed, retighten snub pulley fixing screws(*2 or *3).
For assembly and operation, see p.9-20.



14 INSPECTION AND MAINTENANCE

14-1. PROBLEMS AND REMEDIES

PROBLEM	CAUSE	REMEDY
1. Conveyor does not run when switched on.	(1) Power plug is not properly connected to mains. (2) Power switch is not turned on. (Reverse switch remains halfway.) (3) Inappropriate power source	(1) Inspection, correction (2) Inspection, correction (3) Check power source. → See p.15.
2. Conveyor is turned on, but motor will not run.	(1) Disconnection or breakage in wiring (2) Speed control is set at zero. (3) Circuit protector or emergency stop switch has been activated. (4) Failure of motor or condenser (5) Failure of controller	(1) Inspection, repair (2) Reset to appropriate speed. → See p.16. (3) Restore protection circuit or emergency stop switch. → See p.19. (4) Replacement (motor, condenser and controller) (5) Replacement (motor, condenser and controller)
3. Motor runs, but belt does not move.	(1) Belt is slacked off. (2) Chain has come off. (3) Belt is trapped after misalignment. (4) Motor gear head teeth have become worn.	(1) Take up belt. → See p.21-22. (2) Repair (3) Adjust belt alignment. → See p.23 to 27. (4) Replacement (Replace motor also.) → See p.31.
4. Belt runs, but speed cannot be changed. (in case of variable-speed type)	(1) Disconnection or breakage in wiring of motor and controller (2) Failure of speed changing device inside motor (3) Failure of controller	(1) Inspection, repair (2) Replace motor and controller. (3) Replace motor and controller.
5. Conveyor will not start running unless belt is pulled.	(1) Belt has been taken up too much. (2) Belt has something sticky on undersurface. (3) Belt has excessive resistance to winding. (Incorrect belt has been chosen.)	(1) Loosen belt to proper tension. → See p.21-22. (2) Remove any foreign matter and clean belt undersurface, or replace motor with higher capacity version. (3) Replace belt, or replace motor with higher capacity version. → See p.28-30.
6.Conveyor makes abnormal noise.	(1) Drive pulley bearing setting bolt(s) has become loose. (2) Sprocket setting bolt(s) has become loose. (3) Chain has become slack.	(1) Tighten setting bolt(s). (2) Tighten setting bolt(s). (3) Take up or replace chain.
7.Motor has become damaged.	(1) Inappropriate power source (2) Conveyor has been overloaded. (3) Conveyor runs too quickly or too slowly. (4) Belt has been taken up too much. (5) Belt is trapped after misalignment.	(1) Check power source. → See p.15. (2) Reduce load. (3) Set at proper speed, or replace gear head. (4) Loosen belt to proper tension. → See p.21-22. (5) Adjust belt alignment. → See p.23-27.
8.Electric shock is received from conveyor.	(1) Static electricity has been charged in frames. (2) Electric leakage	(1) Properly ground the machine. → See p.15. (2) Inspection, investigation

14-2. ITEMS FOR REGULAR INSPECTION

CHECKING PERIOD	PART TO CHECK	PART TO CHECK	PART TO CHECK	REMEDY
Daily	Belt	Foreign substances on surface and undersurface	Visual inspection	Visual inspection
		Dislodgment from V-form belt guidance grooves	Visual inspection	Inspection, adjustment
		Getting caught	Visual inspection	Inspection, adjustment
	Drive pulley and other pulleys	Foreign substances	Visual inspection	Clean and remove foreign substances
Monthly	Drive chain	Slack, lubrication	Visual inspection and manual check	Take up slack. Apply oil*.
	Sprocket	Wear of sprocket teeth, damages	Visual inspection and manual check	Inspection and adjustment or replacement
Three monthly	Geared motor	Rotation malfunction, loose attachment bolts	Visual inspection and manual check	Inspection Tighten loose bolts.
		Overheat, abnormal noise	Manual check, listening	Inspection and adjustment or replacement
Six monthly	Drive pulley	Wear of surface, rotation malfunction	Visual inspection and manual check	Inspection and adjustment or replacement
	Pulleys and rollers	Rotation malfunction, loose attachment bolts	Visual inspection and manual check	Inspection, repair Tighten loose bolts.
		Overheat of bearings, abnormal noise	Manual check, listening	Inspection and adjustment or replacement
	Frame, stands, attachments	Loose attachment bolts	Visual inspection and manual check	Tighten loose bolts.
		Damages	Visual inspection and manual check	Inspection and adjustment or replacement

*NOTE: Apply oil to drive chain every 3 months or every 1,000 operating hours. However, for machines using toothed belt (or timing belt) instead of drive chain, lubrication is unnecessary.

CAUTION Improper handling of the conveyor may result in physical injury or damage!

■Switch off the power after use

Ensure that the power is switched off when carrying out relocation, inspection, cleaning, etc. of the conveyor, otherwise there is a risk that the conveyor could start unexpectedly. When leaving the conveyor unused for a long period, take plug out of the outlet/connector to prevent electric shock or leakage.

MEMO

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- Particular attention is given to the manufacture and transportation of SANKI conveyors. However, if you need any information about the use or failure of the machine or any other matters, please contact our customer service. Also do not hesitate to ask us for information about conveyors in general.
- The specification given in this manual are subject to change without notice.

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