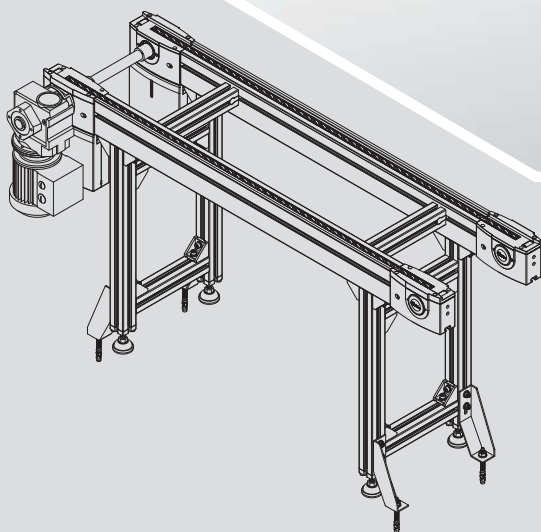


# PTS2/L Pallet Conveyors

## PTS2/L 托盘输送线

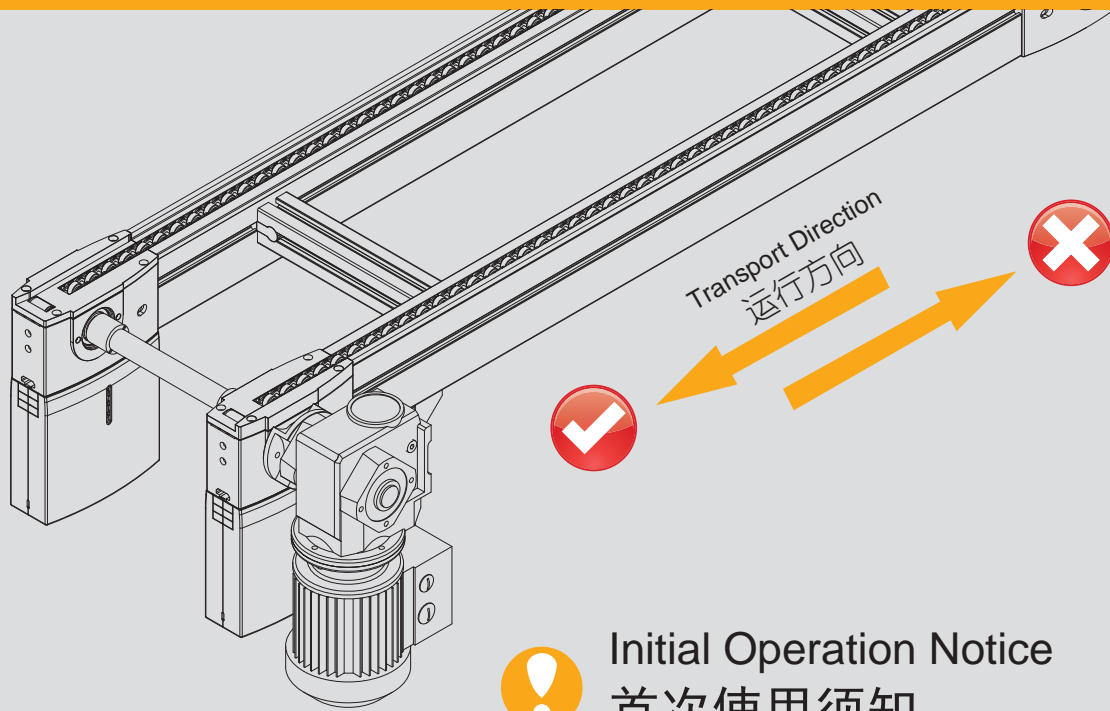
### Instruction & Maintenance Manual

### 安装使用维护手册



First time user must read this instruction  
首次使用必须详细阅读使用须知

大连美德乐工业组装技术有限公司  
Modular Assembly Technology Co., Ltd.



## Initial Operation Notice 首次使用须知

The chain and chain plate shall be fully lubricated before first use. See Page 9 for detailed operation instructions.

首次使用前，必须对链条整体进行润滑，具体操作详见第 9 页。

Please check the label on the equipment before operating: "PTS2/L-RV0" refers to only forward direction conveying (pallet conveying toward the drive unit) ; PTS2/L-RV1 refers to forward and reverse direction conveying. If it can not be confirmed, please contact with us.

PTS2/L 运行前请查看机身标识贴：“PTS2/L-RV0”仅为单方向运行（工件托盘向驱动单元方向输送）；“PTS2/L-RV1”可正反转运行，无法判断时请来电详询。

Reverse direction operation of PTS2/L-RV0 is not permissible, which might be damaged and cannot be fixed. First operation should be controlled within 2 seconds, please check if the conveying direction of chain is right.

PTS2/L-RV0 输送机禁止反向运转，否则会对设备造成不可逆的损坏，首次运行需短促启动系统（最长2秒），检查链条运行方向是否正确。

Overload circuit breaker must be installed(it will be provided by customers), to avoid the motor damage by overcurrent.

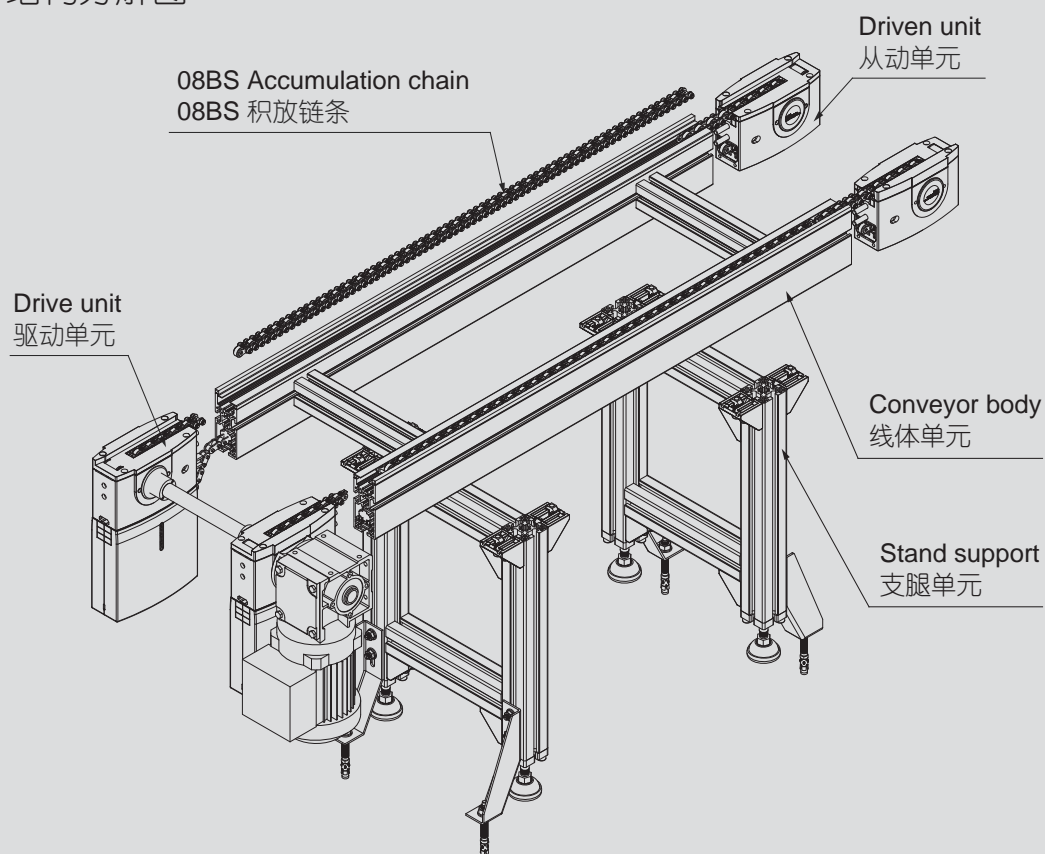
电机必须额外安装过载断路器（客户自备），可避免电流过载导致电机损坏。

Please make sure power off before do the repair and maintenance. It is suggested to use the original parts. Please check with us if other parts could be used instead, in order not to damage the equipment.

在进行维修和保养前，请务必切断电源，若更换零部件需使用原装备件，未经许可切勿使用自备件进行更换，以免造成设备损坏。

## Structure Diagram

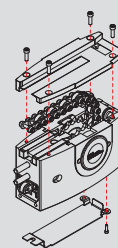
### 结构分解图



#### Driven unit 从动单元

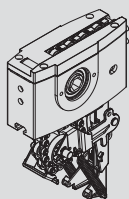


#### R60 Return unit R60 回程尾单元



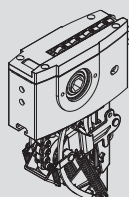
#### R170 Return unit R170 回程尾单元

#### Drive unit 驱动单元



#### PTS2/L standard drive unit (RV0) PTS2/L 标准型驱动单元 (RV0)

R60 return unit: conveyor length 6000 mm max, load capacity 700 kg max  
R170 return unit: conveyor length 12000 mm max, load capacity 700 kg max.  
使用 R60 回程尾单元时, 线体长度  $\leq 6000$  mm, 负载  $\leq 700$  kg;  
使用 R170 回程尾单元时, 线体长度  $\leq 12000$  mm, 负载  $\leq 700$  kg。



#### PTS2/L drive unit in forward and reverse direction (RV1) PTS2/L 正反转驱动单元 (RV1)

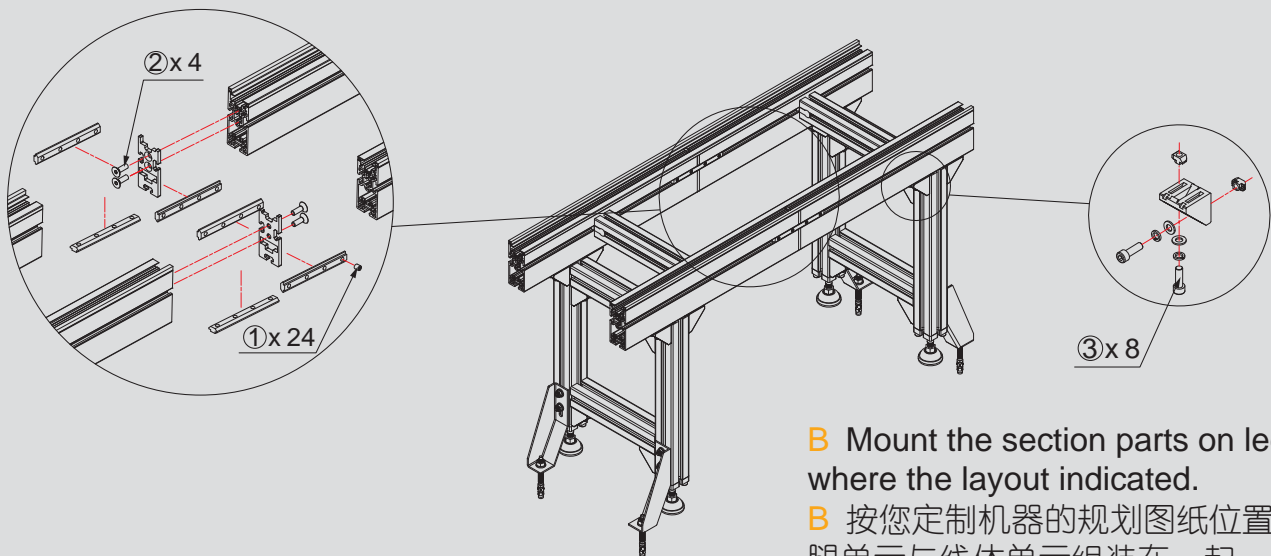
1. R60 return unit: conveyor length 2000 mm max, load capacity 100 kg max  
R170 return unit: conveyor length 2000 mm max, load capacity 200 kg max
  2. Only based on the forward conveying (Conveying pallet to drive unit), then reverse direction could be available.
  3. Frequency inverter is recommended to use, acceleration time 1s min, for protecting the chain tensioner.
  4. It is suggested to use automatic lubrication system for enough lubrication on the chain.
1. 使用 R60 回程尾单元时, 线体长度  $\leq 2000$  mm, 负载  $\leq 100$  kg;  
使用 R170 回程尾单元时, 线体长度  $\leq 2000$  mm, 负载  $\leq 200$  kg;  
2. 以正向运行为基础 (工件托盘走向驱动单元), 无法仅反向运行;  
3. 建议变频启动, 加速时间  $\geq 1$  s, 以保护链条张紧器;  
4. 需要有足够的润滑, 建议配备自动润滑单元。

## Assembly Steps Break Down 步骤分解

If the product is received in parts, please follow the below assembly instruction.  
如果您收到的是产品单元或部件，请按照以下说明进行安装。

**A** Join the the section parts together according to the drawing if the conveyor is made of two or more sections parts.

**A** 如果您的输送机线体单元由两部分或多部分组成，需按本图将线体装成一体。

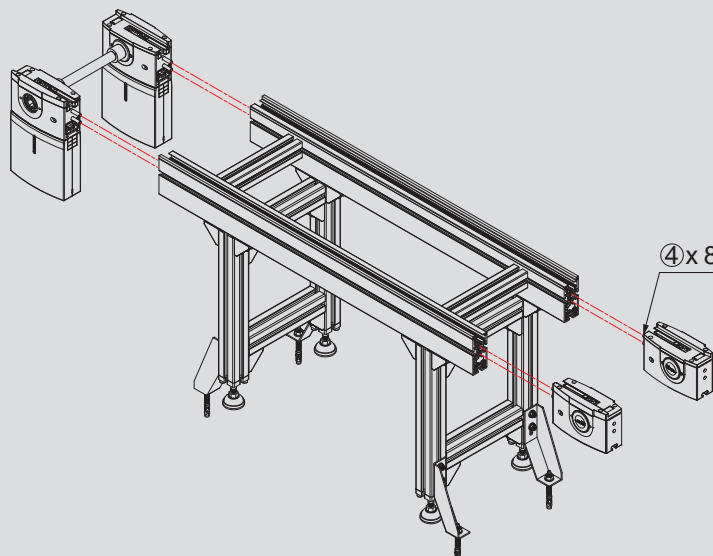


**B** Mount the section parts on leg sets where the layout indicated.

**B** 按您定制机器的规划图纸位置，将支腿单元与线体单元组装在一起。

**C** Attach the Drive Unit to the conveyor section.

**C** 将驱动单元和从动单元安装在线体单元上



① M8X10  
⑥ 6 Nm

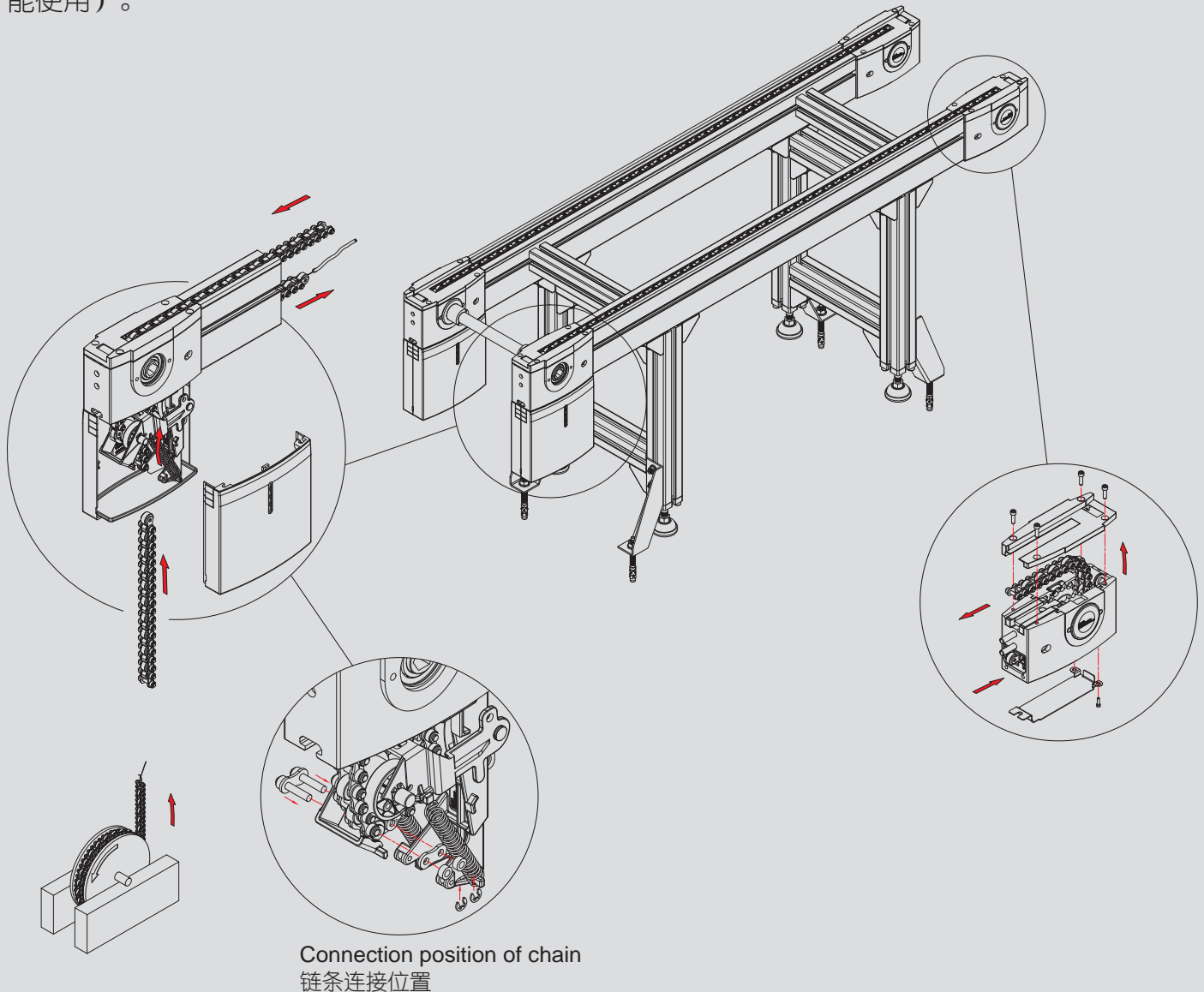
② M8X25  
⑥ 8 Nm

③ M8X20  
⑥ 13 Nm

④ M8X25  
⑥ 13 Nm

**D** Lay the chain around the chain shaft as shown in the figure to avoid chain damage from twisting during the chain installation process. (Twisted chain can not be used).

**D** 按图示将链条盘在链条辊子上, 这样会防止链条在穿入过程中因为扭拧而损坏 (扭拧的链条不能使用)。



**E** Insert the chain by a chain pulling device (a  $\Phi 2$  mm wire is recommended) into the drive unit, and pull through the lower slot of the chain profiles to the return head. Insert the chains around the return wheels and pull the chains through the upper slot of the chain profiles to the drive wheels until the ends of the chains are in the positions as shown in the figure.

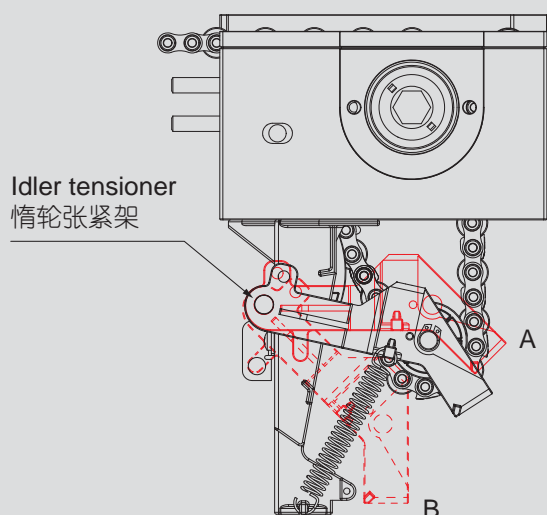
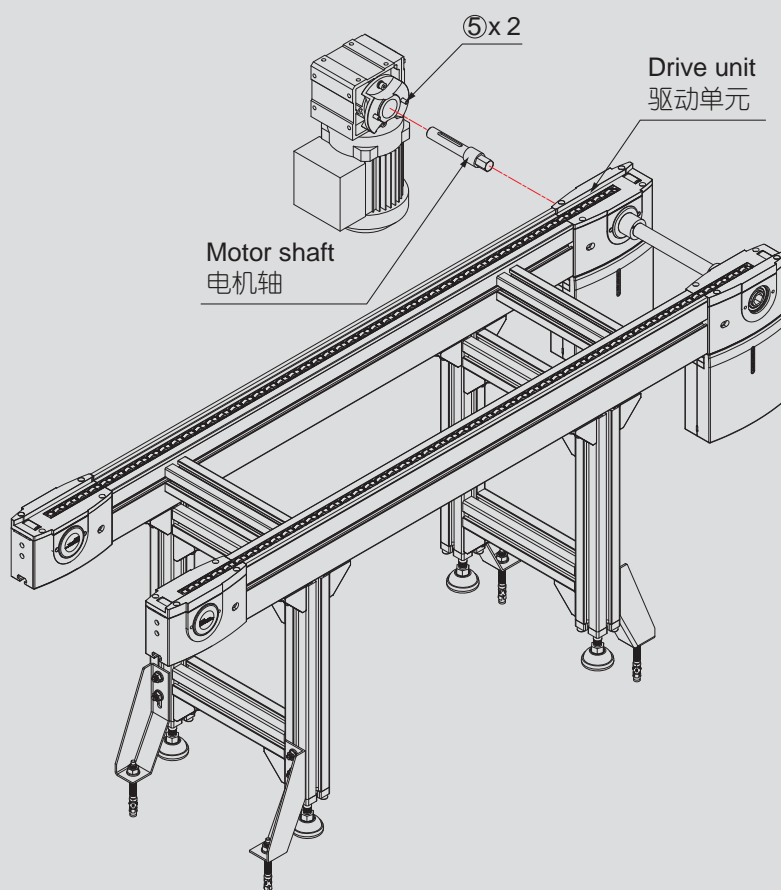
**E** 将链条的头端用钢丝 (建议 2 mm 直径) 牵引从驱动单元头端穿入, 由线体下层穿过, 绕过尾单元的从动链轮, 由上层向头端牵引, 绕过头端链轮, 使链条两端处上图被连接位置。

**!** Note: It is suggested to use  $\Phi 8$  plastic tube together with the steel wire as indicated to ensure the smooth guidance of chain.

注意: 为保证链条牵引过程流畅, 建议使用  $\Phi 8$  塑料管配合钢丝使用, 如上图所示。



- F Insert the motor shaft into the hole and connect with drive unit.  
F 将电机轴插入电机轴孔中，再与驱动单元连接。

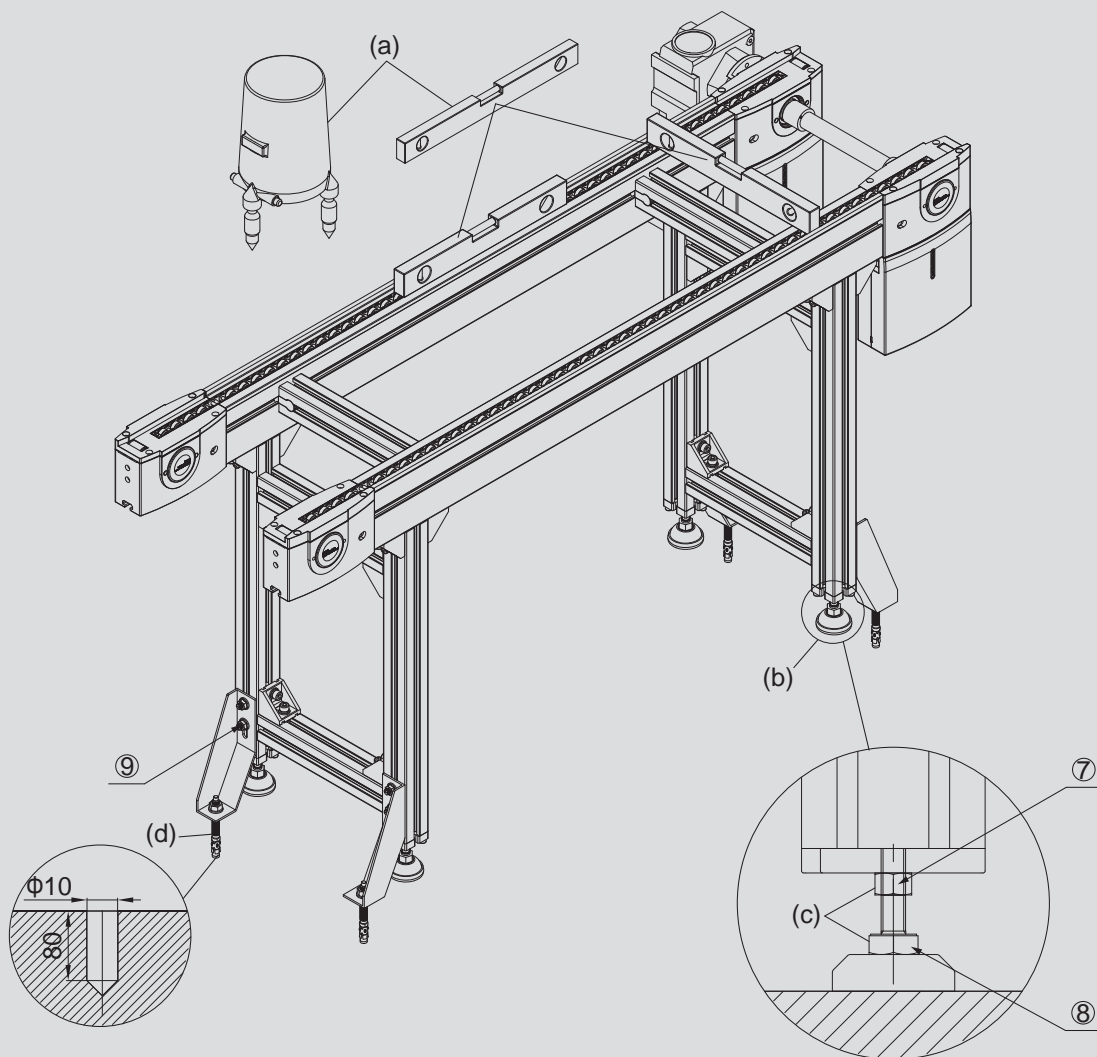


- G Move the idler tensioner to position A through adjusting the chain length. After a period of service time, shorten the chain by removing chain sections when the idler tensioner is at position B.

G 调整链条长度使张紧支架到图示 A 位置，随着时间的推移，当惰轮张紧架到达 B 位置时，需要通过去除链节的方法来缩短链条长度。

**H** With help of (a) level instruments, level the conveyor longitudinally and laterally by adjusting (b) pivot leveling feet under the stand supports. Fasten (c) nuts on the feet after adjustment. Fix the conveyor on the ground with (d) expansion bolts.

**H** 用 (a) 水平尺或水平仪（建议使用精度较高的水平仪）对输送线的横向和纵向进行水平调整。调节支腿下方的 (b) 微调支脚来达到要求。调整完成后，将支脚上的 (c) 螺母锁紧。最后，用 (d) 膨胀螺栓将输送线固定在地面上。



**Note:** 1.1. Longitudinal tolerance should be within 2 mm (Per 5000 mm conveyor).

1.2. Transversal tolerance should be:

within 0.4mm ( $B_{WT} \leq 500$  mm), within 0.6 mm ( $B_{WT} > 500$  mm).

注意：1.1. 纵向水平误差：每 5000 mm 线体，应不超过 2 mm。

1.2. 横向水平误差：当  $B_{WT} \leq 500$  mm，应不超过 0.4 mm；

当  $B_{WT} > 500$  mm，应不超过 0.6 mm。

⑦ M12  
SW18 20 Nm

⑧ M12  
SW24 20 Nm

⑨ M8  
SW13 13 Nm

## Maintenance 维护和保养

Modular Pallet conveyors are designed and produced for a long life cycle, but correct maintenances are required timely. These include the cleaning, replacement of damaged parts and preventive measures. The measures should be scheduled daily, weekly, monthly and seasonally.

Modular 托盘输送设备按较长的使用年限设计并生产；然而它也需要被适时和正确的维护。包括按时清洁和及时更换损坏的零部件。并作预防性的维护工作。包括下文的日维护，周维护，月维护和季度维护。

### Daily Care 日维护

Before running the conveyor each day, please check and remove small parts or fragments in the chain which may damage the conveyor.

每日开机前，检查和移除任何掉落于运动链条上的碎片，碎片进入到链条与轨道的间隙中会造成设备损坏。

### Weekly Care 周维护

Clean the dust on the surface each week. Check if there is any debris or fragment embedded underneath the plastic parts of the pallets.

每周清洁设备表面污垢。检查是否有异物或碎片嵌入托盘底部的塑料材料内。



**Note:** cleanser that might corrode metal can not be used.

注意：不能使用能够腐蚀金属的清洁剂。

### Monthly Care 月维护

Check the fasteners that may loose and tighten them with wrench each month. Check whether the chain need to be lubricated, if yes, see the Chain Lubrication instructions on Page 8 for operation to ensure long service life.

每月检查可能松弛的紧固件，并使用对应的扳手锁紧；检查链条是否需要润滑，如需润滑请参照第 8 页《链条润滑》说明进行操作，以保证较长的使用寿命。



**Note:** 1. The maintenance shall be done on regular basis. Lacking of lubrication will cause the failure of chain, which will lead to the failure of equipment or cause irreversible damage to the equipment.

2. lubricant that might corrode, UHMWPE, POM, Nylon and rubber etc can not be used.

注意：1. 请您务必保持保养周期，缺失润滑会导致输送链失灵从而引起设备运行故障，甚至造成不可逆的损坏。

2. 不能使用具有腐蚀超高分子量聚乙烯，POM，尼龙，橡胶等材料性质的润滑剂。



## Seasonally Care 季度维护

Check and watch out if the chain is loose. When idler tensioner changes from Position A to Position B, the chain need to be shortened by removing the chain sections. (Please refer to step G on Page 5)

每季度检查，重点观察链条是否松弛；当惰轮张紧架由 A 位置变为 B 位置时，需要通过去除链节的方法来缩短链条长度。（请参照第 5 页，步骤 G）

## Chain Lubrication 链条维护

### Lubrication of Chain In Carbon Steel 碳钢链条润滑

The chain shall be lubricated before starting the equipment. Lubrication method: rotate the whole chain. It is suggested to use Shell 15W40 machine oil. 2~3 ml of oil per meter. Refer to Figure 1 for lubrication point.

The equipment shall be re-lubricated after stop for more than 6 months. The redundant lubricating grease, oil or other impurities need to be cleaned before lubrication. Check whether the chain is worn or extended during the lubrication process. The lubrication method and oil volume are the same as first operation.

It is suggested to re-lubricate the chain if no exact stop duration is known.

When the equipment is in normal use, the chain shall be lubricated every 1000 hours. It is about 2 ml lubrication oil per meter.

When the equipment is in humid environment, it is necessary to shorten the lubrication circle according to the situation.

It is suggested to use AL automatic lubrication system. Refer to "Automatic lubrication " for detailed method.

首次开机前，碳钢链条必须润滑，润滑方式：转过全部链条，用大约 2~3 ml/每米链条的油量（推荐使用 15W40 壳牌机油）给链条上油，润滑点如图1所示。

设备停机 6 个月或更长时间，需要重新润滑，润滑前需清除链条上多余的润滑脂、油污或者其他杂质；在进行润滑时，需要检查输送机链条是否磨损和伸长；润滑方式及所需油量与首次开机相同。

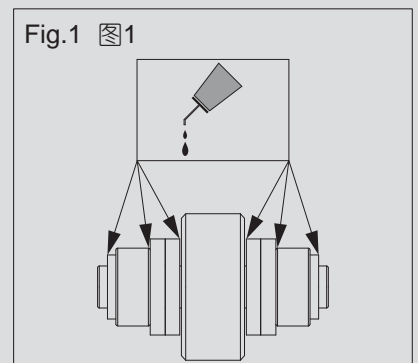
如果不清楚设备停用了多久，建议重新开机前做好润滑。

设备正常使用时，链条每 1000 小时需要润滑一次，每米链条使用约 2 ml 润滑油。

设备运行环境湿度较大时，需要根据实际情况缩短润滑周期。

我们推荐使用 AL 自动润滑系统，详细设定方法参考《自动润滑》。

Fig.1 图1



## Lubrication of Maintenance-free Chain

### 免维护链条润滑

The chain shall be lubricated before starting the equipment. Lubrication method: rotate the whole chain. It is suggested to use Shell 15W40 machine oil. 1~2 ml of oil per meter. See figure 1 for lubrication point.

The equipment shall be re-lubricated after stop for more than 6 months. The redundant lubricating grease, oil or other impurities need to be cleaned before lubrication. Check whether the chain is worn or extended during the lubrication process. The lubrication method and oil volume are the same as first use.

It is suggested to re-lubricate the chain if no exact stop duration is known.

When the equipment is in normal use, the chain shall be lubricated every 2000 hours. Little lubrication oil each time is suggested. It is about 1ml lubrication oil per meter.

When the equipment is in humid environment, it is necessary to shorten the lubrication cycle according to the situation.

It is suggested to use AL automatic lubrication system. Refer to "Automatic lubrication " for detailed method.

首次开机前，免维护链条必须润滑，润滑方式：转过全部链条，用大约 1~2 ml/每米链条的油量（推荐使用 15W40 壳牌机油）给链条上油，润滑点如图 1 所示。

设备停机 6 个月或更长时间，需要重新润滑，润滑前需清除链条上多余的润滑脂、油污或者其他杂质；在进行润滑时，需要检查输送机链条是否磨损和伸长；润滑方式及所需油量与首次开机相同。

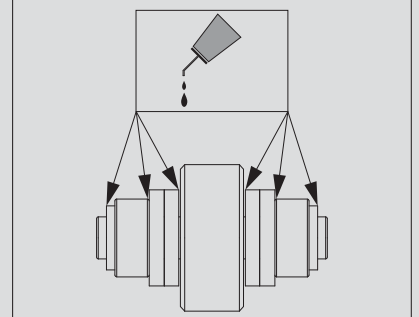
如果不清楚设备停用了多久，建议重新开机前做好润滑。

设备正常使用时，链条每 2000 小时需要润滑一次，每次少量润滑，每米链条使用约 1 ml 润滑油。

设备运行环境湿度较大时，需要根据实际情况缩短润滑周期。

我们推荐使用 AL 自动润滑系统，详细设定方法参考《自动润滑》。

Fig.1 图1



## Automatic Lubrication

### 自动润滑

AL automatic lubrication system will provide the even lubrication on the chain during the running process. Refer to Figure 2 for lubrication point.

AL自动润滑系统能够在设备运行过程中对链条进行最佳定量的均匀润滑，润滑点如图 2 所示。

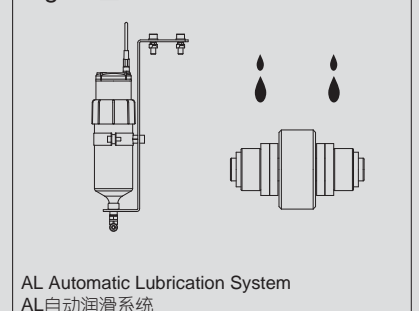
1、For the chain in carbon steel,  
the lubrication oil per meter is 0.85 ml/100 h min ( $\approx 8 \text{ g}/1000 \text{ h}$ )

对于使用碳钢链条的线体，  
每米线体润滑供给量  $\geq 0.85 \text{ ml}/100 \text{ h}$  ( $\approx 8 \text{ g}/1000 \text{ h}$ )

2、For the maintenance-free chain,  
the lubrication oil per meter is 0.21 ml/100 h min ( $\approx 2 \text{ g}/1000 \text{ h}$ )

对于免维护链条，  
每米线体润滑供给量  $\geq 0.21 \text{ ml}/100 \text{ h}$  ( $\approx 2 \text{ g}/1000 \text{ h}$ )

Fig.2 图2

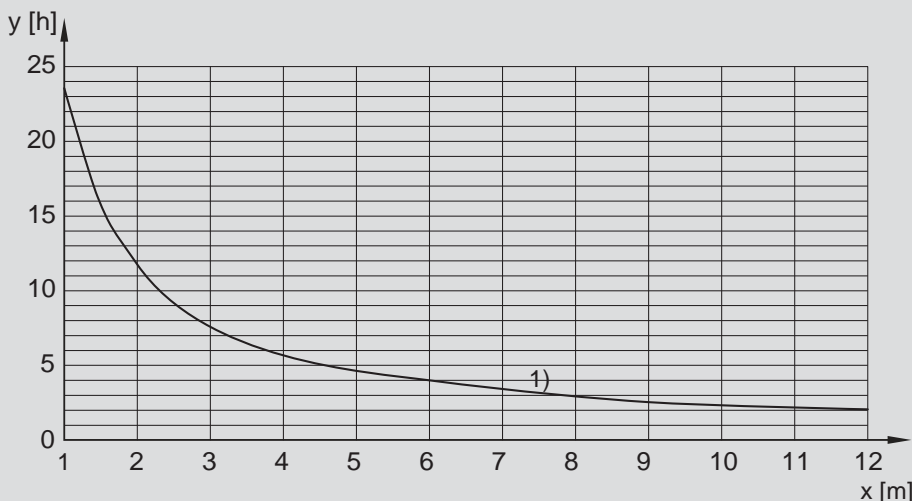


## The setting of Automatic lubrication circle 自动润滑周期设置

Reference value of lubricating circle for 120 ml oil tank (month) / 120 ml油罐润滑周期参考值 (月)												
Conveyor length/输送线体长度	1 m	2 m	3 m	4m	5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m
Carbon steel chain/碳钢链条	12	9	6	5	4	3	3	2	2	2	1	1
Maintenance-free chain/免维护链条	12	12	12	12	12	12	11	9	8	7	7	6

Reference value of lubricating circle of 250 ml oil tank (month) / 250 ml油罐润滑周期参考值 (月)												
Conveyor length/输送线体长度	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m
Carbon steel chain/碳钢链条	12	12	12	10	8	6	5	5	4	4	3	3
Maintenance-free chain/免维护链条	12	12	12	12	12	12	12	12	12	12	12	12

## The Setting of Automatic lubrication pulse 自动润滑脉冲设置



x [m]: Conveyor length  
输送线体长度

y [h]: The interval of pulse lubrication  
脉冲润滑的间隔

1): Reference value /Impulse for  
chain in carbon steel: 0.26 ml  
碳钢链条每脉冲的剂量: 0.26 ml  
Reference value /Impulse for  
maintenance-free chain: 0.1 ml  
免维护链条每脉冲的剂量: 0.1 ml

### Note 注意

- The length difference of lubrication lines is 10 mm max. Different length of lubrication lines may lead to unequal distribution of lubrication oil because of uneven flow resistance.  
润滑管道的长度差别要 < 10 mm。不同的润滑管道长度由于不同的流动阻力可能会导致润滑剂分配不一致。
- The lubrication line must always be located lower than the lubrication pin, otherwise the lubrication line runs dry (uncontrolled oil leakage, air bubbles form in the tubing).  
润滑管道必须处在润滑头的下方，否则润滑油会不受控流出，在润滑管道形成气泡，甚至可能导致润滑管道流空。
- Please fill in the lubrication lines with oil before the first operation. For example, Actuate the lubrication system by pressing button in the PLC control until the oil is spilled out of the line. (the details please refer to the manual of AL lubrication system).  
在初次运行前请注满润滑管道，例如，操作润滑设备 PLC 控制器上的键 (详见自动润滑单元使用手册)，直到润滑剂从润滑头中溢出为止。

## Regular Troubleshooting 常见故障及处理方法

1. Abnormal noise from chain: it is mostly because of minor parts falling into the chain. If any, stop the equipment at the first place and take out the parts according to the noise.  
链条异响: 多由微小零部件掉入链条间隙引起, 需要紧急停机, 根据声音位置找到异物并取出。
2. Noise from drive unit or driven unit: the bearing maybe need to be lubricated.  
驱动单元或从动单元异响: 考虑是否轴承需要润滑
3. Overheated motor: check if the equipment is overloaded, there is loose motor wire or the motor loses on phase.  
电机过热: 检查设备是否超载, 电机接线是否松动或电源是否缺相。

## Modular Conveyor System

## 模块化输送系统

### ■ 公司总部/Headquarters

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网址/Website: www.moduasm.com

国际业务部/International Department  
电话/Tel: +86 (411) 81981885  
+86 (411) 66316207  
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