维护保养手册

一、日常检查项目

线性模组是一种常见的传动机构，在实际操作中，被广泛应用到各种各样的设备中，因使用环境和使用工况不同，需要及时检查和维护。

日 常 检 查 项 目	
1. 检查部件表面是否有损伤，压痕和摩擦情况。	2. 滚珠螺杆、轨道、轴承是否有异常震动或噪音。
3. 电机、联轴器是否有异常震动或噪音。	4. 所见部位是否有不明粉尘、油渍、痕迹等。

二、周期维护项目

配 件	维 护 方 案	维 护 周 期	具 体 操 作
滚珠螺杆	增加润滑脂（粘度：30-40cts） 清理旧油污，注入新润滑脂。	每月一次或每行走100KM的距离	用无尘布直接擦拭干净螺杆珠槽和螺母两端， 将新润滑脂直接注入油孔或涂抹螺杆表面。
线性滑轨	增加润滑脂（粘度：30-150cts） 清理旧油污，注入新润滑脂。	每月一次或每行走100KM的距离	用无尘布直接擦拭干净轨道表面及轨道珠槽， 将新润滑脂直接注入油孔。

三、异常问题以及解决方法

线 性 模 组 异 常 情 况	维 修 、排 除 方 法
电源接入时产生异音	1. 调整伺服驱动器内参数“机械共振抑制”数值。 2. 调整伺服驱动器内参数“自动调谐”数值。
马达转动时产生异音	1. 调整伺服驱动器内参数“机械共振抑制”数值。 2. 调整伺服驱动器内参数“自动调谐”数值。 3. 检查马达刹车是否释放。 4. 检查机构是否因超载产生变形。
马达运转时滑台不顺畅	1. 检查刹车是否释放。 2. 将马达与线性模组分离，手推滑动座，判断问题点原因。 3. 检查联轴器固定螺丝是否松动。 4. 检查线性模组移动区域是否有异物掉落。
线性模组行走距离与实际距离不符	1. 检查输入行走数值是否正确。 2. 检查导程输入数值是否正确。
马达运动ON,滑台没有移动	1. 检查刹车是否释放。 2. 检查联轴器固定螺丝是否松动。 3. 将马达与线性模组分离，判断问题点、原因。

另本公司负责自身商品的故障维修，并不负责因产品故障引起的其他损失。

Maintenance manual

一、Daily inspection items

Linear module is a common transmission mechanism, which is widely used in all kinds of equipment in actual operation. It needs to be checked and maintained in time because of the different environment and working conditions.

Daily inspection items	
1.Check the surface of parts for damage, indentation and friction.	2.Is there any abnormal vibration or noise in the screw, track and bearing.
3.Whether the motor and coupling have abnormal vibration or noise.	4.See if there are any unknown dust, oil stains, traces, etc.

二、Periodic maintenance project

Parts	Maintenance scheme	Maintenance cycle	Specific operation
Ball screw	Add grease (viscosity: 30-40cts) Clean up old grease and inject new grease.	Once a month or every 100KM distance.	Clean the screw bead groove and both ends of the nut directly with a dust-free cloth, and directly inject new grease into the oil hole or coat the screw surface.
Linear slide rail	Add grease (viscosity: 30-150cts) Clean up old grease and inject new grease.	Once a month or every 100KM distance.	Clean the track surface and track bead groove directly with a dust-free cloth, and directly inject new grease into the oil hole.

三、Exceptions and solutions

Linear module abnormal situation	Maintenance and troubleshooting methods
Abnormal sound is produced when the power supply is connected.	1. Adjust the value of the servo drive parameter "mechanical resonance suppression". 2. Adjust the value of Auto tuning in the servo driver.
Abnormal sound is produced when the motor rotates.	1. Adjust the value of the servo drive parameter "mechanical resonance suppression". 2. Adjust the value of Auto tuning in the servo driver. 3. Check whether the motor brake release. 4. Check whether the mechanism is deformed due to overload.
The sliding table is not smooth when the motor is running.	1. Check the brake release. 2. Separate the motor from the linear module and push the sliding seat to determine the cause of the problem. 3. Check the coupling setting screws for loosening. 4. Check whether foreign objects have fallen from the moving area of the linear module.
The linear walking distance of the module is inconsistent with the actual distance.	1. Check whether the input walking value is correct. 2. Check whether the lead input value is correct.
The motor is ON, and the slide table does not move.	1. Check the brake release. 2. Check whether the coupling fixing screw is loose. 3. Separate the motor from the linear module to determine the cause of the problem.

In addition, the company is responsible for the fault maintenance of its own goods, and is not responsible for other losses caused by product failure.

维护保养手册

一、日常检查项目

线性模组是一种常见的皮带传动机构，在实际操作中，被广泛应用到各种各样的设备中，因使用环境和使用工况不同，需要及时检查和维护。

日 常 检 查 项 目	
1. 检查部件表面是否有损伤，压痕和摩擦情况。	2. 检查皮带是否张紧，是否达到张力计参数标准。
3. 调试的时候因查阅同步带参数避免速度过快撞机。	4. 模组程序启动，人应离开模组安全距离，避免人身伤害。

二、周期维护项目

配 件	维 护 方 案	维 护 周 期	具 体 操 作
同步带	垂直使用情况下，皮带张紧力校核。	每半个月检查下皮带松弛。	把张力计对着皮带间距10MM处，手拨动皮带，皮带震动显示数值，是否达到出厂时的参数值，若不是，拧紧张紧机构。
线性滑轨	增加润滑脂(粘度:30-150cts)清理旧油污，注入新润滑脂。	每月一次或每行走100KM的距离。	用无尘布直接擦拭干净轨道表面及轨道珠槽，将新润滑脂直接注入油孔。

三、异常问题以及解决方法

线 性 模 组 异 常 情 况	维 修 、排 除 方 法
电源接入时产生异音	1. 调整伺服驱动器内参数“机械共振抑制”数值。 2. 调整伺服驱动器内参数“自动调谐”数值。
如联轴器，同步轮出现打滑	1. 检查同步轮，连轴器是否锁紧。 2. 检查同步轮，连轴器是否带键槽。 3. 同步轮和连轴器的轴是否匹配。
马达运转时滑台不顺畅	1. 检查刹车是否释放。 2. 将马达与线性模组分离，手推滑动座，判断问题点原因。 3. 检查联轴器固定螺丝是否松动。 4. 检查线性模组移动区域是否有异物掉落。
皮带模组运行出现定位精度不准	1. 检查皮带是否松弛，皮带出现跳齿。 2. 检查皮带导程输入数值是否正确。
如伺服电机报警，显示过载	1. 检查刹车是否释放。 2. 检查联轴器固定螺丝是否松动。 3. 因加减速机，加大速比，增大扭矩，降低速度。

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Maintenance manual

一、Daily inspection items

Linear module is a common belt transmission mechanism, which is widely used in all kinds of equipment in actual operation. It needs to be checked and maintained in time because of the different environment and working conditions.

Daily inspection items	
1. Check the surface of parts for damage, indentation and friction.	2. Check whether the belt is tensioned and meets the parameter standard of tensiometer.
3. When debugging, consult the timing belt parameters to avoid too fast collision.	4. When the module starts, people should leave the module at a safe distance to avoid personal injury.

二、Periodic maintenance project

Parts	Maintenance scheme	Maintenance cycle	Specific operation
Synchronous belt	Under vertical use, belt tension Check.	Check the belt slack every half month.	Point the tensiometer at the belt spacing of 10mm, and touch the belt by hand. The vibration of the belt shows whether the value reaches the factory parameter value. If not, screw the tensioning mechanism.
Linear slide rail	Add grease (viscosity: 30-150cts) Clean up old grease and inject new grease.	Once a month or every 100KM distance.	Clean the track surface and track bead groove directly with a dust-free cloth, and directly inject new grease into the oil hole.

三、Exceptions and solutions

Linear module abnormal situation	Maintenance and troubleshooting methods
Abnormal sound is produced when the power supply is connected.	1. Adjust the value of the servo drive parameter "mechanical resonance suppression". 2. Adjust the value of Auto tuning in the servo driver.
For example, the coupling and synchronous wheel slip.	1. Check whether the synchronizing wheel and coupling are locked. 2. Check whether the synchronizing wheel and coupling have keyways. 3. Whether the shafts of the synchronizing wheel and the coupling are matched.
The sliding table is not smooth when the motor is running.	1. Check the brake release. 2. Separate the motor from the linear module and push the sliding seat to determine the cause of the problem. 3. Check the coupling setting screws for loosening. 4. Check whether foreign objects have fallen from the moving area of the linear module.
The positioning accuracy of belt running is inaccurate.	1. Check whether the belt is slack, and the belt has tooth jumping. 2. Check whether the input value of belt lead is correct.
If the servo motor alarms, overload is displayed.	1. Check the brake release. 2. Check whether the coupling fixing screw is loose. 3. Increase the speed ratio, torque and speed by adding a reducer.

In addition, the company is responsible for the fault maintenance of its own goods, and is not responsible for other losses caused by product failure.

维护保养手册

一、日常检查项目

电动缸是一种常见的传动机构，在实际操作中，被广泛应用到各种各样的设备中，因使用环境和使用工况不同，需要及时检查和维护。

日 常 检 查 项 目	
1. 检查部件表面是否有损伤，压痕和摩擦情况。	2. 滚珠螺杆、活塞杆、轴承是否有异常震动或噪音。
3. 电机、联轴器/同步轮是否有异常震动或噪音。	4. 所见部位是否有不明粉尘、油渍、痕迹等。

二、周期维护项目

配 件	维 护 方 案	维 护 周 期	具 体 操 作
滚珠螺杆	增加润滑脂（粘度：30-40cts）	每月一次或每行走100KM的距离	将新润滑脂，通过注射器（型材本体开孔）。注入电动缸的内部滚珠螺杆上即可。
活塞杆	增加润滑脂（粘度：30-150cts）清理旧油污，注入新润滑脂。	每月一次或每行走100KM的距离	用无尘布直接擦拭干净活塞杆表面将新润滑脂直接涂抹在活塞杆表面。

三、异常问题以及解决方法

电 动 缸 异 常 情 况	维 修 、排 除 方 法
电源接入时产生异音	1. 调整伺服驱动器内参数“机械共振抑制”数值。 2. 调整伺服驱动器内参数“自动调谐”数值。
马达转动时产生异音	1. 调整伺服驱动器内参数“机械共振抑制”数值。 2. 调整伺服驱动器内参数“自动调谐”数值。 3. 检查马达刹车是否释放。 4. 检查机构是否因超载产生变形。
马达运转时活塞杆不顺畅	1. 检查刹车是否释放。 2. 将马达与电动缸分离，手拉滑台杆，判断问题点原因。 3. 检查联轴器固定螺丝是否松动。 4. 检查电动缸移动区域是否有异物掉落。
电动缸行走距离与实际距离不符	1. 检查输入行走数值是否正确。 2. 检查导程输入数值是否正确。
马达运动ON,活塞杆没有移动	1. 检查刹车是否释放。 2. 检查联轴器固定螺丝是否松动。 3. 将马达与电动缸分离，判断问题点、原因。

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Maintenance manual

一、Daily inspection items

Electric cylinder is a common transmission mechanism, which is widely used in all kinds of equipment in actual operation. It needs to be checked and maintained in time because of the different environment and working conditions.

Daily inspection items	
1. Check the surface of parts for damage, indentation and friction.	2. Is there any abnormal vibration or noise in the screw,piston rod and bearing.
3. Whether the motor, coupling/synchronous wheel have abnormal vibration or noise.	4. See if there are any unknown dust, oil stains, traces, etc.

二、Periodic maintenance project

Parts	Maintenance scheme	Maintenance cycle	Specific operation
Ball screw	Add grease (viscosity: 30-40cts).	Once a month or every 100KM distance.	Pass the new grease through the syringe (the hole of the profile body). On the inner ball screw of the electric cylinder.
Piston rod	Add grease (viscosity: 30-150cts) Clean up old grease and inject new grease.	Once a month or every 100KM distance.	Wipe the surface of the piston rod directly with a dust-free cloth, and directly apply new grease to the surface of the piston rod.

三、Exceptions and solutions

Abnormal condition of electric cylinder	Maintenance and troubleshooting methods
Abnormal sound is produced when the power supply is connected.	1. Adjust the value of the servo drive parameter "mechanical resonance suppression". 2. Adjust the value of Auto tuning in the servo driver.
Abnormal sound is produced when the motor rotates.	1. Adjust the value of the servo drive parameter "mechanical resonance suppression". 2. Adjust the value of Auto tuning in the servo driver. 3. Check whether the motor brake release. 4. Check whether the mechanism is deformed due to overload.
The piston rod is not smooth when the motor is running.	1. Check the brake release. 2. Separate the motor from the electric cylinder, and pull the slide bar by hand to determine the cause of the problem. 3. Check the coupling setting screws for loosening. 4. Check the moving area of the electric cylinder for foreign objects falling.
The walking distance of the electric cylinder is inconsistent with the actual distance.	1. Check whether the input walking value is correct. 2. Check whether the lead input value is correct.
The motor is ON, and the piston rod does not move.	1. Check the brake release. 2. Check whether the coupling fixing screw is loose. 3. Separate the motor from the electric cylinder, and judge the problem and reason.

In addition, the company is responsible for the fault maintenance of its own goods, and is not responsible for other losses caused by product failure.

维护保养手册

一、日常检查项目

直驱电机滑台属于高精密全闭环控制运动结构，通常采用光栅编码器配套光栅尺，或者磁栅编码器配套磁栅尺作为模组的位置反馈，精密导轨做为导向支撑。所以关于直驱电机的维护、保养，会直接影响到模组的正常运行。

日 常 检 查 项 目	
1. 检查部件表面是否有损伤，压痕和摩擦情况。	2. 在模组的搬运、安装及使用过程中，注意不要触摸到光栅尺表面，以防污染光栅尺，影响读数头读数。
3. 使用时确保动子运动范围内不能有异物。	4. 所见部位是否有不明粉尘、油渍、痕迹等。
5. 若编码器为磁栅编码器，要防止带磁性的物体接触和靠近磁栅尺，以免造成磁栅尺磁性消退或被磁化，导致磁栅尺报废。	6. 检查读数头窗口及光栅尺表面是否有污损，检查读数头与各部件之间的连接螺钉是否有松动，通电后读数头信号灯是否正常。

二、周期维护项目

配 件	维 护 方 案	维 护 周 期	具 体 操 作
线性滑轨	增加润滑脂（粘度：30-150cts）清理旧油污，注入新润滑脂。	每月一次或每行走100KM的距离。	用无尘布直接擦拭干净轨道表面及轨道珠槽，将新润滑脂直接注入油孔。
光栅尺 磁栅尺	可用无尘布，丙酮/酒精进行清洗。	2个月/次（工作环境恶劣，酌情缩短维护周期）。	带上橡胶手套，用沾有丙酮的无尘布轻度按压在光栅尺表面，从光栅尺的一端擦向光栅尺另一端，注意不要来回擦拭，防止刮花光栅尺面，要始终沿一个方向擦拭，一至两次即可。维护完成后，通电检查读数头在全程感应光栅尺信号灯是否正常。

三、异常问题以及解决方法

直 驱 滑 台 异 常 情 况	维 修 、排 除 方 法
电机超限	1. 电机超出极限位置； 2. 调整电机参数； a）重启软件后整体复位。 b）检查电机与行走臂之间的连接杆长度是否合适。
无法找到电机原点	1. 电机超出HM； 2. 手动移动行走臂，观察电机的位置； a）更换读数头，重启复位。 b）检查磁尺表面是否有损伤，若有则更换磁栅尺。
无法复位	1. 软件问题； 2. 重新下载电机 板卡驱动程序试验； a）更换驱动板卡。 b）检查驱动板卡和电机外围接线是否有松动。
CAN总线通讯报警	a）检查CAN Bus接线是否有松动。 b）拔下PC板卡上的总线接头，如果 有灰尘，清洁后重新插上试验。 C）更换驱动板卡重新下载程序试验。
直驱电机运行有异响抖动	1. 检查相应机械部位，进行调整，必要时更换备件。 2. 调整电机PID参数。

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Maintenance manual

一、Daily inspection items

Direct driver slide table belongs to a high-precision full-closed-loop motion control structure, and usually adopts grating encoder with grating ruler or magnetic grating encoder with magnetic grating ruler as the position feedback of the module. Precision guide rails are used as guide supports. Therefore, the maintenance of direct driver will directly affect the normal operation of the module.

Daily inspection items	
1.Check the surface of parts for damage, indentation and friction.	2.Be careful not to touch the grating ruler during the handling, installation and use of the module. Surface, to prevent pollution grating ruler, affect the reading head reading.
3.When using, make sure that there is no foreign matter in the moving range of the Mover.	4.See if there are any unknown dust, oil stains, traces, etc.
5.If the encoder is a magnetic grid encoder, it is necessary to prevent objects with magnetism from contacting and approaching magnetism. Grid ruler, so as not to cause the magnetism of the magnetic grid ruler to fade or be magnetized, resulting in the scrapping of the magnetic grid ruler.	6.Check whether the window of the reading head and the surface of the grating ruler are stained, whether the connecting screws between the reading head and various parts are loose, and whether the signal lamp of the reading head is normal after being electrified.

二、Periodic maintenance project

Parts	Maintenance scheme	Maintenance cycle	Specific operation
Linear slide rail	Add grease (viscosity: 30-150cts) Clean up old grease and inject new grease.	Once a month or every 100KM.	Clean the track surface and track bead groove directly with a dust-free cloth, and directly inject new grease into the oil hole.
Grating ruler Magnetic grating ruler	Clean with lint-free cloth and acetone/alcohol. Wash.	2 months/time (the working environment is harsh, so it can be reduced as appropriate. Short maintenance period).	Wear rubber gloves, gently press them on the surface of the grating ruler with a dust-free cloth dipped in acetone, and wipe them from one end of the grating ruler to the other. Be careful not to wipe them back and forth to prevent scratching the grating ruler surface. Always wipe them in one direction, once or twice. After the maintenance is completed, electrify and check whether the reading head senses the grating ruler signal lamp in the whole process.

三、Exceptions and solutions

Abnormal situation of direct-drive sliding table	Maintenance and troubleshooting methods
Motor overrun	1. The motor exceeds the limit position; 2. Adjust motor parameters; a) The whole software is reset after restarting. b) Check whether the length of the connecting rod between the motor and the walking arm is appropriate.
Unable to find motor origin.	1. The motor exceeds HM; 2. Manually move the walking arm and observe the position of the motor; a) Replace the reading head and restart the reset. b) Check whether the surface of the magnetic ruler is damaged, and if so, replace the magnetic grid ruler.
Unable to reset	1. Software problems; 2. Download motor board driver test again; a) Replace the drive board. b) Check whether the peripheral wiring of the drive board and motor is loose.
CAN bus communication alarm	a) Check the CAN Bus wiring for looseness. b) Unplug the bus connector on the PC board. If there is dust, clean it and plug it in again for testing. C) Test of replacing drive board and downloading program again.
There is abnormal noise jitter in direct driver operation.	1. Check the corresponding mechanical parts, make adjustments, and replace spare parts if necessary. 2. Adjust the motor PID parameters.

In addition, the company is responsible for the fault maintenance of its own goods, and is not responsible for other losses caused by product failure.