

LIMITADOR DE VELOCIDAD/
OVERSPEED GOVERNOR/
LIMITEUR DE VITESSE/
GESCHWINDIGKEITSBEGRENZER /

STAR

INSTRUCCIONES DE USO Y MANUTENCIÓN/
INSTRUCTIONS FOR USE AND MAINTENANCE/
INSTRUCTIONS D'USAGE ET ENTRETIEN/
GEBRAUCHS- UND WARTUNGSANLEITUNG/



EU TYPE-EXAMINATION CERTIFICATE

According to annex IV part A of Directive 2014/33/EU

Certificate number:	ATI / LV / 009	rev: 1
Notified Body:	TÜV SÜD ATISAE S.A.U. Ronda de Poniente, 4 ES 28760 Tres Cantos MADRID ID number: 0053 .	
Product:	Safety Component Overspeed Governor (LV)	
Type:	STAR	
Manufacturer:	DYNATECH. DYNAMICS AND TECHNOLOGY S.L. P.I. PINA DE EBRO, SECTOR C PARCELA 9 ES 50750 ZARAGOZA	
Certificate Holder:	DYNATECH. DYNAMICS AND TECHNOLOGY S.L. P.I. PINA DE EBRO, SECTOR C PARCELA 9 ES 50750 ZARAGOZA	
Date of submission:	09.06.2022	
Date of type examination:	09.20.2022	
Test laboratory & report:	Please refer to tech. annex section 2.14	
Directive:	Directive 2014/33/EU of 26 February 2014	
Standards of reference:	EN 81-20:2020; EN 81-50:2020;	
Report number: ⁽¹⁾	8103622447 (09.20.2022)	
Expiry date:	Indefinite. (Please refer to tech. annex section 2.16)	
Statement:	<p>The safety component allows the lift on which it is installed to satisfy the health and safety requirements of the Lifts Directive when it is used within the scope, as well as under the installation conditions that are set up in the technical annex to this certificate.</p> <p>This certificate has a technical annex with reference ATI / LV / 009 R1. This certificate is digitally signed. Only the document issued in format 'pdf' with its signature is legally valid</p>	

⁽¹⁾ other applicable reports in section 2.18 of the technical annex



DAS / 000262-1

Jordi Olivera
LCC Technical Director

TÜV SÜD ATISAE S.A. (Unipersonal). Organismo de Control acreditado por ENAC con acreditación nº 05 / EI 730
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Sede Técnica: Ronda de Poniente, 4 – P.E. EURONOVA – 28760 Tres Cantos (Madrid) – España

INSTRUCTIONS FOR USE AND MAINTENANCE

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1 GENERAL INSTRUCTIONS

STAR overspeed governor by DYNATECH is specially designed to be fitted into the car or sling of the lift and to move together with them. Thanks to this, the engine room governor, the guide pulley and the mass at the bottom of the well can be removed.

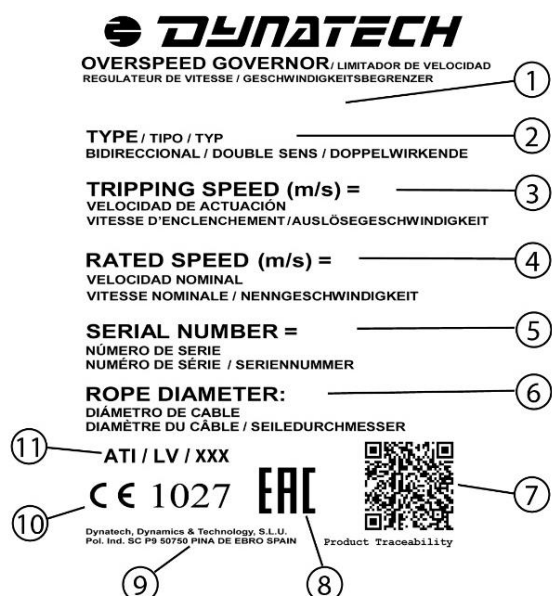
By using this new concept, the governor moves, whereas the rope remains fixed, anchored to the well ceiling and to the pit by means of a small-sized tensing system. The information on the set of devices integrating the Governor will be broadened later on.

It is strictly forbidden:

- To modify or replace the overspeed governor adjustment spring.
- Use an overspeed governor in a lift for which it is not intended, or whose features do not correspond to those marked on the lift (e.g. nominal speed or rope type).
- To adjust any component of the overspeed governor, except for those parts specified in the manual.

DYNATECH DYNAMICS & TECHNOLOGY, SL will not be liable for any damage caused by failure to observe any of these general conditions.

2 OVERSPEED GOVERNOR IDENTIFICATION



OVERSPEED GOVERNOR IDENTIFICATION STICKER			
1	Governor model	7	QR product traceability code
2	Governor type	8	Marking for market access to member states of the Customs Union
3	Performance speed (m/s)	9	Dynatech address
4	Rated speed (m/s)	10	Quality assurance CE marking and notified body number
5	Serial number	11	EU type examination certificate number
6	Rope diameter (mm)		

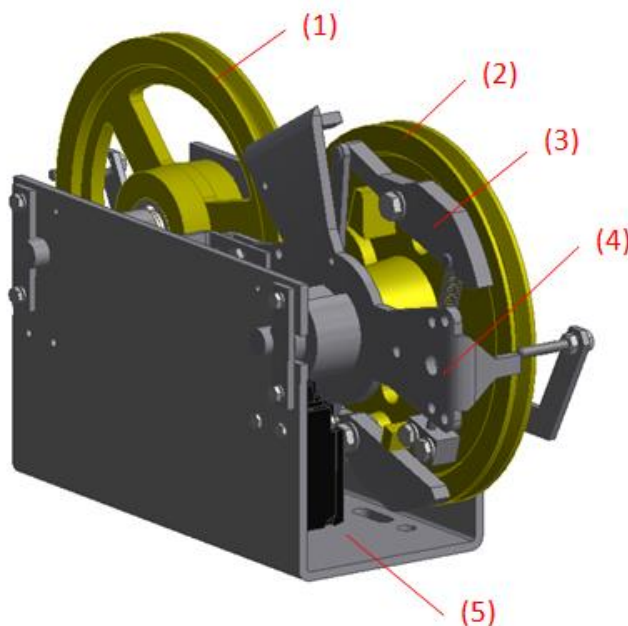
3 MAIN COMPONENTS

Each governor is composed of the following main elements: two pulleys, a centrifugal system, a locking device, a casing and an element linking the governor to the car or sling.

Below, a figure representing the governor set is shown:

Where:

- (1) Guide Pulley.
- (2) Main Pulley.
- (3) Centrifugal system.
- (4) Locking system.
- (5) Car or sling fixing plate.

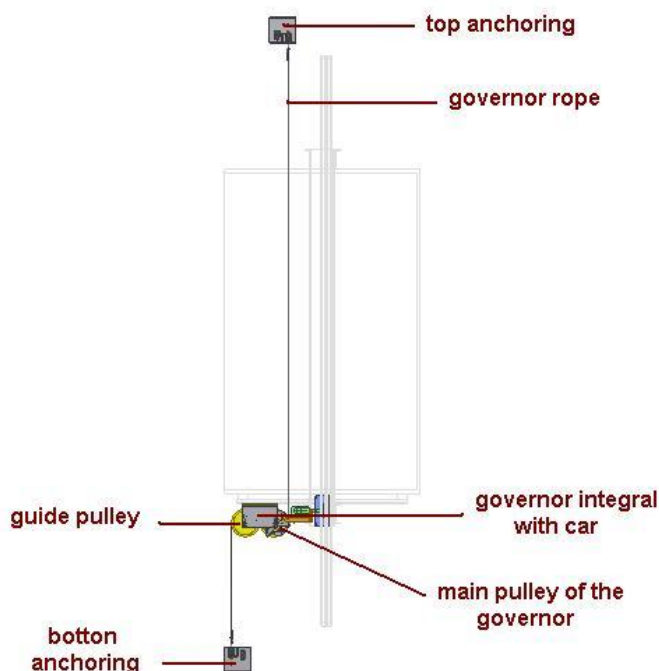


4 WORKING PRINCIPLES

The governor is of the centrifugal type, and is able to work either **upwards** or **downwards**.

As mentioned above, the designed object is fixed into the car or into the sling of the lift, and it can be placed either above or below both. The rope, anchored to the ceiling and to the pit floor, passes through the governor, along the pulley jaws. This way, when the car reaches its tripping speed, the rope-governor relative movement will lock it. This governor locking will drive the safety gear and will stop the car movement.

Working diagram is as follows:



Such is the interlocking process that, when the car speed exceeds a pre-set level (governor tripping speed), the centrifugal system, together with the pulley, interlocks with the governor "locking system", which, in turn, is coupled to the driving bar by means of an auxiliary component. At this moment, the main pulley locks and the friction between the rope and the pulley is transferred to the safety gear through the auxiliary component and the driving bar. The safety gear, on wedging, will cause the car to stop.

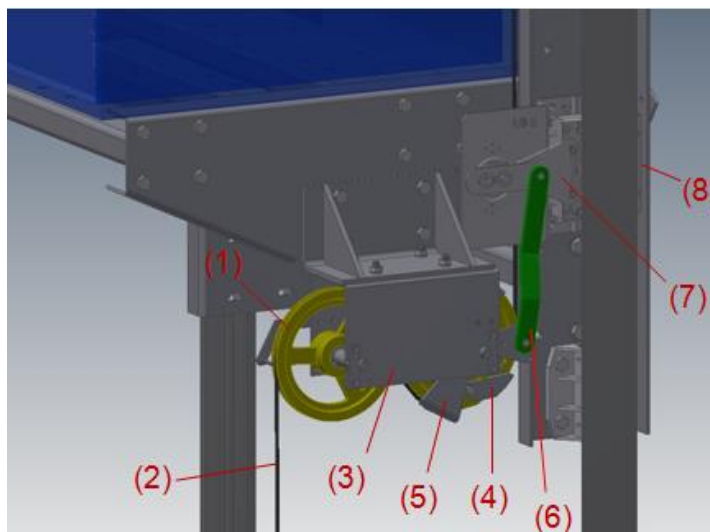
It is important to remark that the connection between governor and safety gear is not carried out through the governor

rope, but through an auxiliary mechanical system.

Below, a more detailed view of one of the possible governor positions in the lift, as well as of the above-mentioned parts, is given. In the first view, the governor placed below the car is shown.

Where:

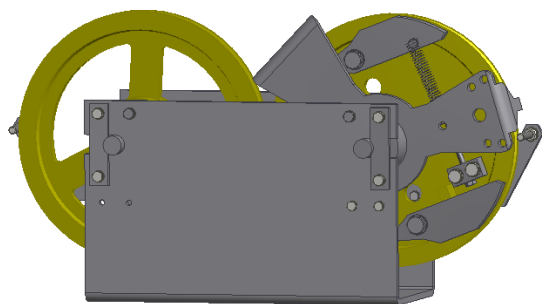
- (1) Guide pulley.
- (2) Rope.
- (3) Governor.
- (4) Centrifugal system.
- (5) Locking device.
- (6) Auxiliary system.
- (7) Driving bar.
- (8) Safety gear



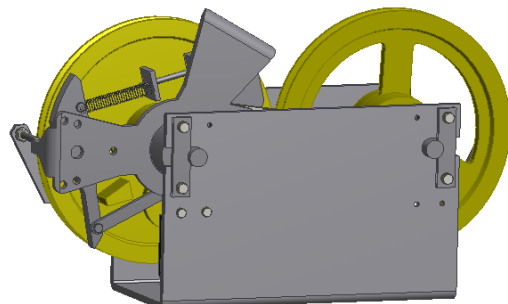
Bearing in mind that the governor position in the car depends on the customer's design, the auxiliary system coupling the governor to the driving bar must be made by the lift manufacturer.

GOVERNOR HAND

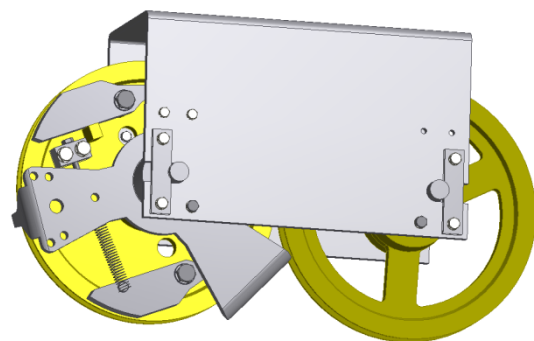
As mentioned above, the customer can install the limiter according to their own possibilities and convenience. For added versatility, the customer can install the limiter right or left handed. A right-handed limiter means the main pulley is also on the right side. See the figures below.



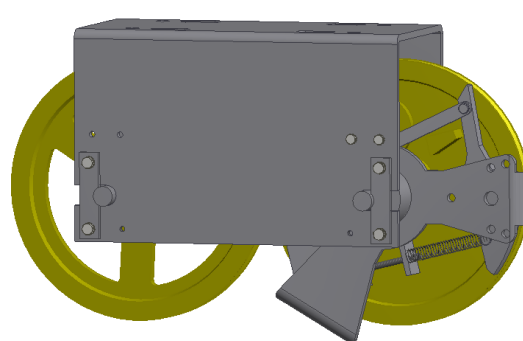
RIGHT HANDED STAR



LEFT HANDED STAR



RIGHT HANDED STAR FACE DOWN

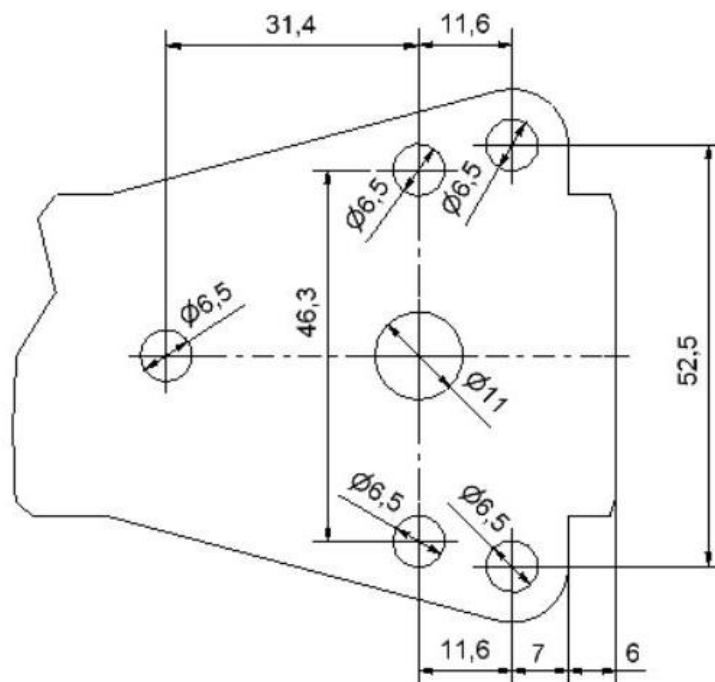


LEFT HANDED STAR FACE DOWN

Note also that when a right-handed star is placed face down, the main pulley is on the left.

ANCHORING THE AUXILIARY SYSTEM

Below is attached, an enlarged drawing of the five anchoring drills of said auxiliary system to the locking device.



The guide pulley is used to re-divert the rope towards the tensor placed in the pit. This pulley rotates whenever there is movement of the car, even when the main pulley is locked. That is why we can assure that said pulley follows the car movement perfectly.

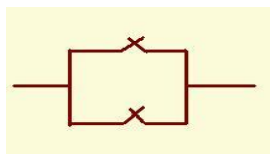
This is very important as it allows us to know the position of the lift at any time, by installing an Encoder on said pulley. (Dynatech offers its customers this possibility in the "Star Plus" governor).

Another important part of the Governor set is the rope tensing system. Below, the workings are briefly explained.

4.1 ROPE TENSING SYSTEM

The rope is anchored to the pit and ceiling of the lift well, by means of a tensing spring system.

The "detensing contacts" will be placed together with the anchorings. Said contacts must be connected parallel and, in turn, to the installation security series line.

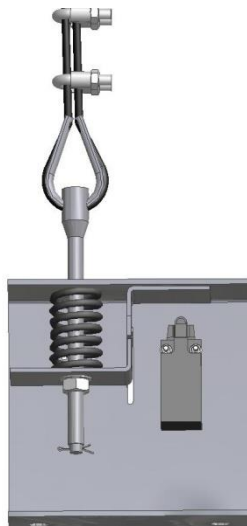


The aim of the two contacts is to detect rope breakage or detensing, as, in such a case, both springs will drive the contacts. In the case of wedging, one of the springs will loosen and the other will tighten. As a result, therefore, only one of the two contacts will open without modifying the series line.

Tensing is carried out by means of the "adjusting nut", as this will compress the spring to the maximum position allowed by the driving plate.

Then apply tension to the rope using the nut.

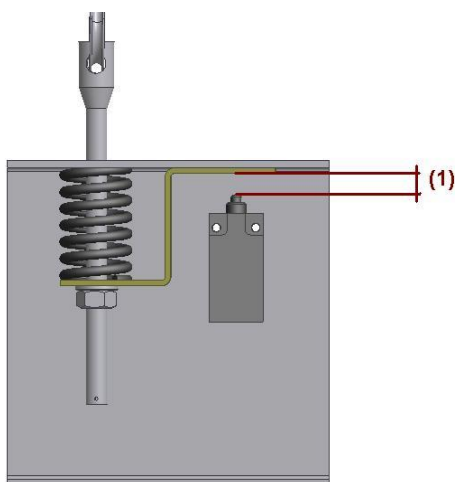
Tighten the nut until the trigger plate touches the tensioner's U-support. See diagram below.



The drive plate has to touch the support

This tensioning process should be carried out on the two tensioners.

The “maximum position” indicated above can be seen in the diagram below:



Where (1) is the “loosening margin”

If the rope becomes loose or breaks, on recovering its natural length, the springs will allow for the plates to drive the contacts. This ensures machine stoppage.

Note: There are different tensioning devices for greater versatility when mounting the Overspeed governor, depending on the requirements of each installation. See website for further information.

4.2 REMOTE TRIPPING SYSTEM

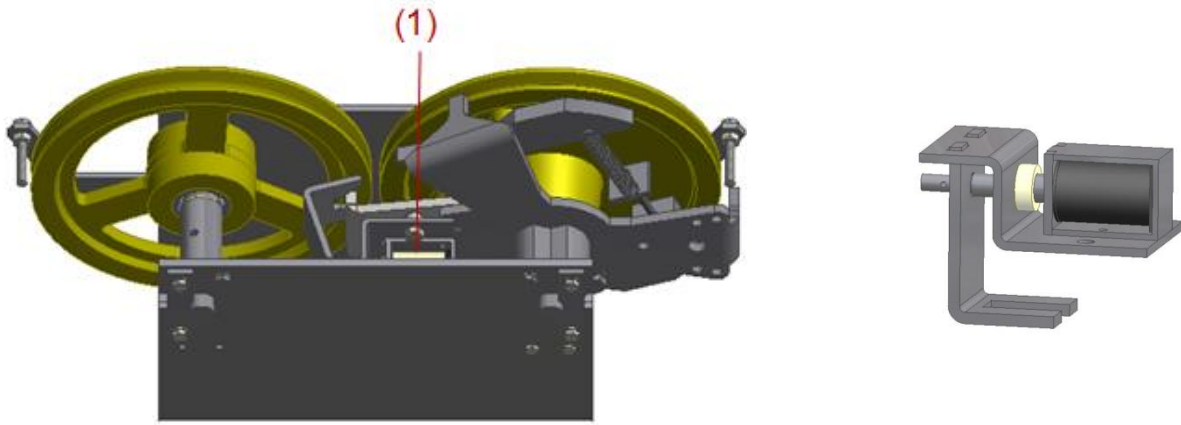
The governor has a built-in remote tripping system to check the correct interlocking of the governor and the subsequent safety gear wedging.

Basically, it consists of a remote interlocking electromagnetic system, which can be driven from the engine room. In order to help during the installation, three versions of the system are available:

- Solenoid fed by **24 V DC** (direct current). A current of **1,2 A** must be provided.
- Solenoid fed by **48 V DC** (direct current). A current of **0,54 A** must be provided.
- Solenoid fed by **190 V DC** (direct current). A current of **0,16 A** must be provided.

Remark: Anyway just a few seconds are necessary to engage the system. After the activation, the current that feeds the solenoid must be switched off to avoid its overheating. In that way, a button is recommended to activate the system.

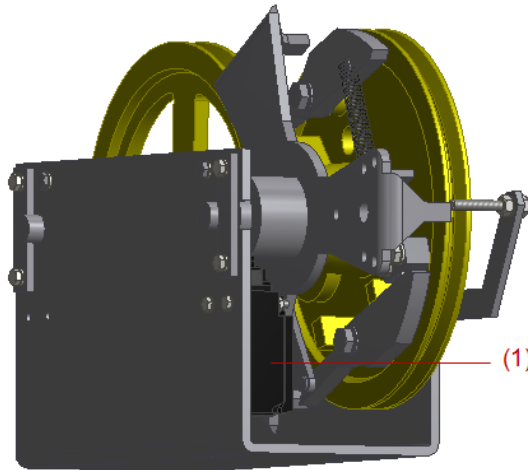
Some images of this, as well as of its position in the set are shown in the next pictures (1).



4.3 OVERSPEED CONTACT

The governor has a built-in overspeed contact. Bearing in mind that the governor will be placed in the car, said contact will have automatic rearming. In any case, the starting of the lift after interlocking must be carried out by a qualified person, but without the need for direct access to the governor.

Below, a picture of the overspeed contact position is shown, where (1) is the automatic rearming contact.



4.4 UNCONTROLLED MOVEMENT UCM DEVICE

4.4.2 WARNINGS AND SUGGESTIONS

The anti-creep system requires the lift controller to be able to manage the functions that the anti-creep system uses, such as the coil power, control sensor monitoring and manual rescue. If the controller is unable to manage these functions, Dynatech offers the possibility of installing an electronic module, D-Box. For more information, see the website.

If the D-Box is not used, please observe the following warnings and follow the recommendations below for proper controller design.

Note. It is highly recommended that the **controller designer** contacts Dynatech before designing the circuit to manage the anti-creep system, to clarify any doubts regarding connections and to be recommended a specific solution for their installation:

Locking the overspeed governor after UCM can be done by either of the following 2 methods: 1) Detecting the UCM or 2) Letting the anti-creep system proactive.

- (1) To detect the UCM, either a sensor needs to be placed on each floor or, as is the case with the D-Box, a leveling signal needs to be used. Therefore, if the car creeps with the doors open, the sensor detects it and cuts off the current to the anti-creep system coil, thus locking the overspeed governor.
- (2) In this case, the anti-creep system clamping device is locked at each floor in the installation. When the lift moves, the anti-creep system coil is excited and releases the overspeed governor. Then, once the car

reaches one of the floors, the current to the coil is cut, leaving the anti-creep system in the locked position.

- The D-Box has a feature whereby, when the elevator reaches a floor, **current continues through the coil for a set time**, usually 10 minutes, if the lift does not receive another call. After this time, the anti-creep system locking device is activated. This correction is due to the VDI 4707 Part 1 (German lift energy efficiency standard) which establishes a period of 5 minutes before stand-by.

Thus, the anti-creep system performs fewer on-off cycles, thereby increasing its useful life.

This is helpful in periods when there is heavy traffic, as it prevents the anti-creep system from repeatedly locking and unlocking the overspeed governor.

It must be remembered that a UCM sensor will need to be installed if the anti-creep system works this way

- **It is recommended to over-excite the coil** with a voltage slightly above nominal for less than one second to ensure the anti-creep system unlocks. Once it is unlocked and the lift begins to move, the supply voltage should be reduced during the journey to lessen the coil heating.

Also, if the choice of keeping the coil excited while the lift is at a floor is taken, the voltage to the solenoid can also be lowered. This saves energy and improves the energy efficiency of the lift.

Below is a table of recommended voltages

	Over-excitation	Voltage during travel	Voltage at floor
24V	30 V	20 V	12V
48V	60 V	40 V	30 V
190V	215-205 V (*)	150 V	104 V

(*) This is the voltage at the rectifier output, which can vary between the values shown.

- To ensure proper operation of the device, it is advisable to design a circuit such that, if the inductive sensor does not detect the anti-creep system unlocking, the controller **will try more than once to supply current to the coil** (the Dynatech D-Box makes 7 attempts before the error message appears that no reading for the inductive sensor is detected).

Thus, if there is any mechanical fault preventing the sensor from being read, the same attempts to solve the problem will be made before an error message appears on the controller.

- To prevent the car from stopping due to the loss of the inductive sensor signal while travelling, it makes a reading only at the floors.
- **In the event of a cut in the electricity supply** to the electric magnet coil when the car is moving, the speed governor will lock and the safety gear subsequently engaged.

The installation of an autonomous power system is recommended to avoid undesired engagement in the event of a cut in the mains electricity supply.

- Open the pin to enable the speed governor to turn for **manual rescue**. If the pin is not released, the governor will lock and the safety gear will engage during the rescue movement.
- Open the pin to enable the speed governor to turn for **automatic rescue**. If the pin is not released, the governor will lock and the safety gear will engage during the rescue movement.
- Use in **installations with re-levelling over 20 mm**: in installations with re-levelling over 20 mm, certified switching must be used to activate the electric magnet during the re-levelling process because if it re-levels by more than 20 mm then the governor could lock and the safety gear engage. In this case, the switching must discriminate between re-levelling and an uncontrolled movement.
- Use in **installations with door pre-opening**: in installations with door pre-opening, certified switching must be used to ensure the electric magnet remains activated during the pre-opening process because if the electric magnet does not remain activated then the governor could lock and the safety gear engage. In this case, the switching must discriminate between pre-opening and an uncontrolled movement.

4.4.3 THE PARKING SYSTEM AS REMOTE CONTROL

The parking can be used as remote control.

Operations are the opposite to those of the parking system, as it unlocks the governor when the lift is running under normal conditions.

The purpose of the remote control system is to lock the governor when the lift is moving. This takes place during

engagement tests. On locking the governor, the safety gear is forced to operate.

To do so, a button must be installed on the control panel that disconnects the current to the parking system coil.

As indicated above, the parking system unlocks the governor by powering the solenoid valve in this system. If the governor is to be locked while the car is operating normally, this solenoid valve must be disconnected so that the parking system locks the governor.

4.4.4 ANTI-CREEP SYSTEM MAINTENANCE.

It is very important that the anti-creeper system is in the best possible condition. As it is a mechanism that will perform many cycles over its lifetime, it is advisable to check its condition and operation during lift maintenance.

The anti-creeper system should be kept as free of dust and dirt as possible, to ensure the moving parts are not obstructed. It should be checked and cleaned of dirt if necessary. After cleaning, a lubricant should be applied to increase the mechanism life.

A spray type lubricant, which prevents the adhesion of dust, can be used on the parts shown in the figure.

Attaching a protective cover in the governor will help prevent dirt from entering, and keep the mechanism in a cleaner condition.

4.5 STAR LS OVERSPEED GOVERNOR

There is a low speed STAR limiter called STAR LS.

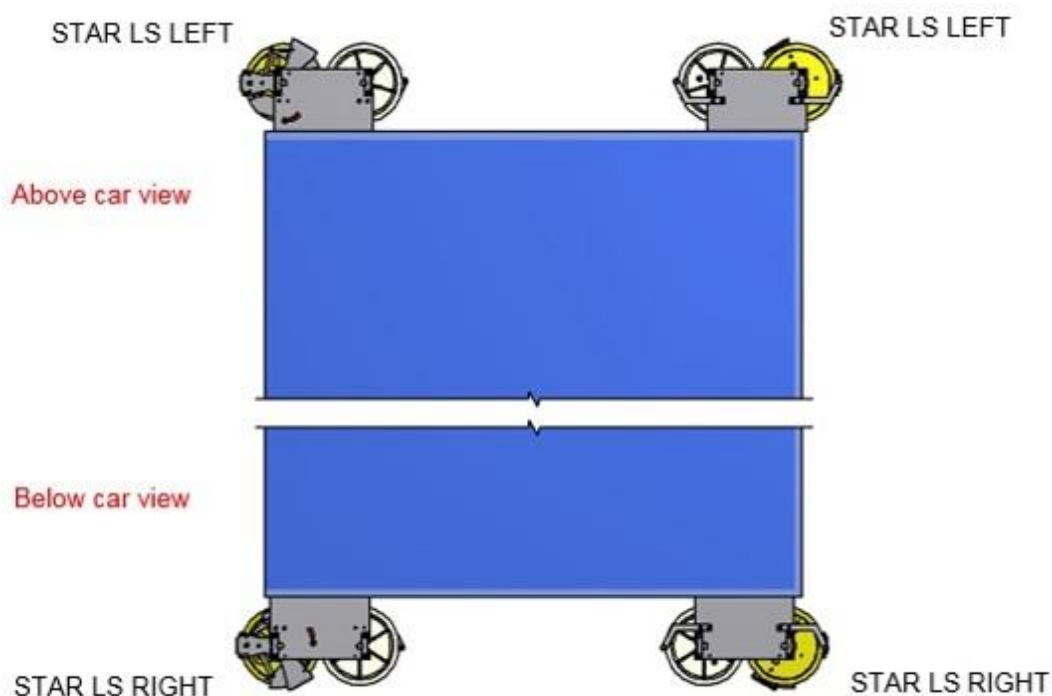
The minimum performance speed is 0.35 m/s

This governor is DOWNWARDS ACTING ONLY and the performance speed range is: 0.35 – 0.6 m/s

IMPORTANT NOTE: Customers asking for a STAR LS, may know that it's unidirectional. In order to know the right way, it must pay attention to the arrow in the governor.

Depending on the position of the overspeed governor in the cab, a right hand or left hand one should be ordered.

See the following diagram.

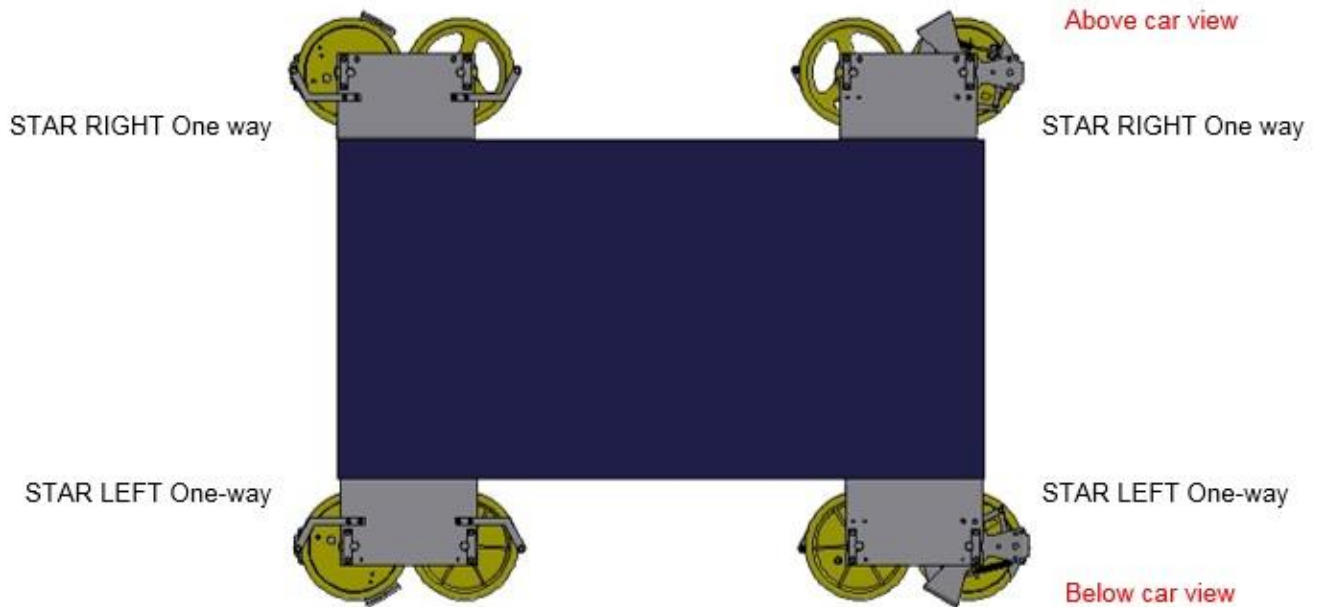


Thus, for example, if the overspeed governor is attached to top of the cab, the Star LS limiter must be left-handed.

4.6 ONE WAY STAR OVERSPEED GOVERNOR

The Star overspeed governor may be sent for any speed as a one-way overspeed governor.

As with the Star overspeed governor, a right or left-handed one must be ordered, depending on the overspeed governor in the cab. See the below diagram.



4.7 HARDENED GROOVE

It is possible to order the governor with a hardened groove. The following data is provided to assess whether or not ordering the governor with this option is required.

Non-hardened groove: 500000 cycles

Hardened groove: 1500000 cycles

Note: This data is the result of tests performed on Dynatech premises and are for illustrative purposes only. The wear depends on the type of installation, traffic, tension on the governor rope, speed, etc. The client must decide whether or not to select this option depending on the type of installation.

4.8 CURRENT RECTIFIER

There is the option of requesting the Star governor with a current rectifier attached. This option is related to remote tripping and the parking system.

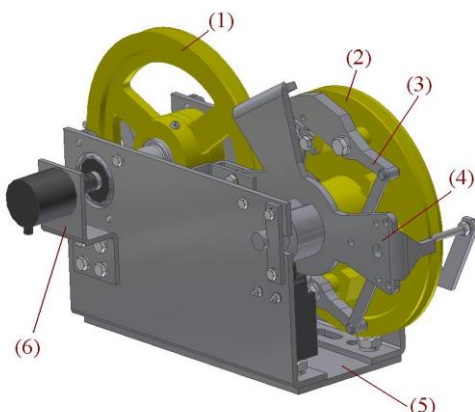
As the coils of these 190Vdc devices are coupled to the rectifier, the customer need do no more than connect the rectifier to the 230Vac mains.

The rectifier is a device which converts alternating current to direct current, which allows the current coil to continue working.

5 STAR PLUS

The Star governor moves with the lift's car, therefore following the car's movement.

Star Plus is a Star governor model that comes ready to house an encoder.

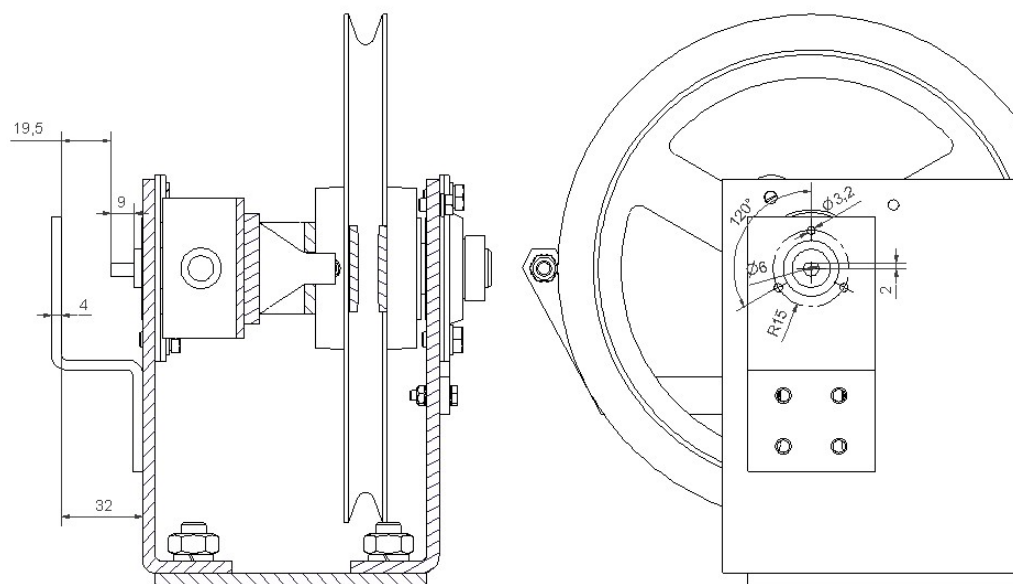


As seen in the figure, the encoder is mounted on the diverting pulley's shaft.

The encoder's features can be found on the manufacturer's website.

Please contact Dynatech in order to request an Encoder with different pulses.

If needed, the customer may purchase the Star plus governor without an encoder. Please find below drawings including the measurements required if a customer needs to install an encoder.

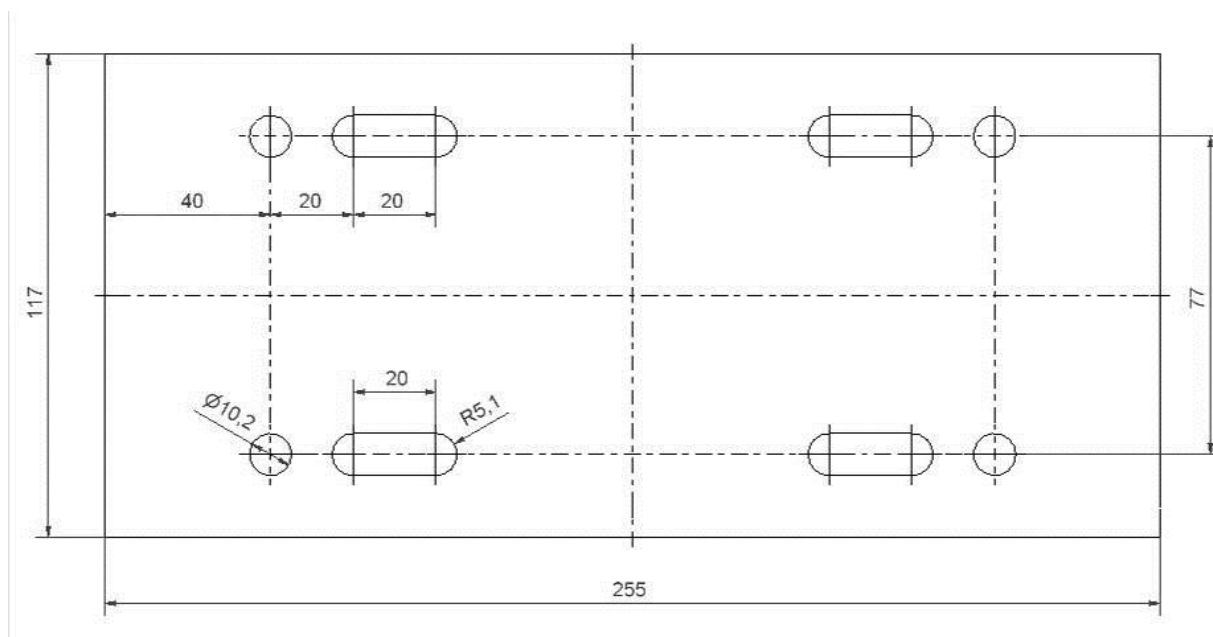


6 FIXING

6.1 ATTACHING THE GOVERNOR

The governor must be anchored by means of 4 8.8-quality M10 screws. Suitable lengths are between 30 and 40 mm. Tightening torque must be 80 Nw·m.

It is advisable to use Autoblock nuts in order to avoid possible screw loosening.



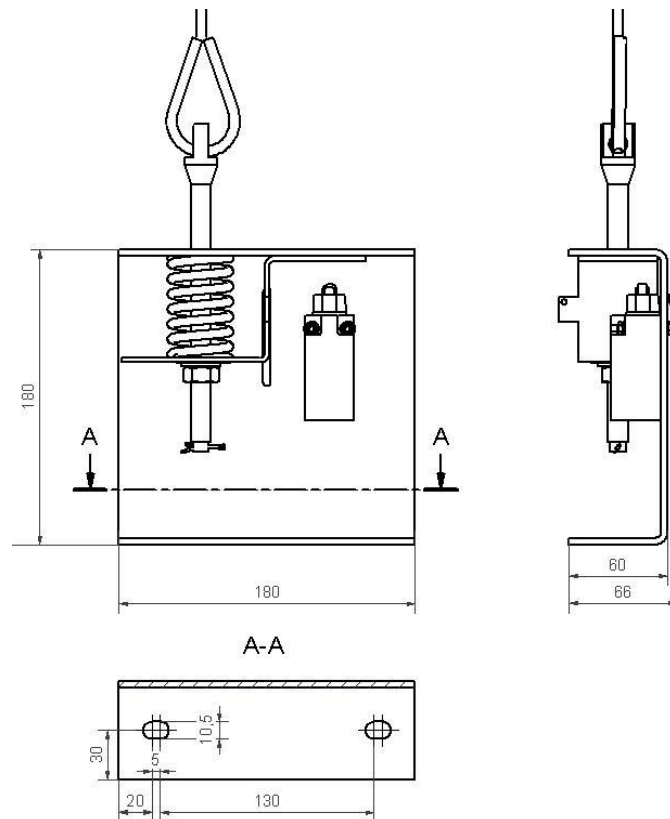
6.2 ATTACHING THE TENSORS

The tensors included with the Star limiter can be attached to the pit and the ceiling directly or to the guide rails (see

Star tensors manual)

To attach the two tensors to the pit and to the roof, respectively, use bolts or M10 studs of 8.8 qualities. The attachment to the roof and pit must be able to support 200 kg of traction.

The following diagrams show how the tensor is attached:



7 TECHNICAL FEATURES

- **Machine:** Overspeed governor
- **Model:** STAR
- **Manufacturing company:**
DYNATECH, DYNAMICS & TECHNOLOGY, S.L.
- **Performance field:**
Maximum rated speed: **2,3 m/s**
Maximum performance speed: **2,72 m/s**
Minimum rated speed: **0,1 m/s**
Minimum performance speed: 0.35 – 0.66 m/s **DOWNWARDS**

* From 0.6 – 2.66 m/s the limiter can be **DOWNWARDS** and **BIDIRECTIONAL**

Important Note: Customers asking for Unidirectional model of STAR, must specify if the governor will be placed under or on the cabin.

- **Rope:**
Diameter: 6 mm
Composition: 6 x 19 + 1
- **Rope anti-fall out system**
- **Rope tension:**
450 N minimum (Spring tensioner)
490 N (Weight tensioner)

- **Tension produced in the connection between the driving bar and the governor:**
 - **Greater than 300 N**
 - **Pulley diameter:** 200 mm
 - **Overspeed contact.**
Explained in Section 3.3.
- **Serial remote interlocking:**
Explained in Section 3.2.
- **Other features:**
 - Possibility of assembling an encoder to report the position of the car at all times. (**Star Plus Model**)
 - The governor has 3 engagement points, in this way the distance between two consecutive interlocking points is limited to a maximum of 200 mm.
 - STAR overspeed governors will always be assembled with first quality **bearings**. SKF Explorer bearings
 - Possibility of mounting an anti-creep system (Parking System) that locks the overspeed governor when there is no current.
 - Possibility of installing types of tensioners of greater versatility when mounting.
 - Option to install a rectifier for the coils
 - Can be downwards or bidirectional.
 - Possibility of ordering the pulley groove hardened
- **Safety gears with which it may be used:**

All safety gears whose tripping speed can be reached by the overspeed governor.

Remark: For tripping speeds below 1 m/s (generally instantaneous safety gears) a specifically designed version for low speeds will be supplied (**STAR BV**). This overspeed governor has the same dimensions and technical features than the standard one.

For performance speeds between 0.35 m/s – 0.6 m/s the STAR LS limiter will be fitted and has a DOWNWARDS system.

8 TYPE OF ADJUSTMENT.

Tripping speed adjusting is carried out by means of a regulating screw which tenses or detenses the centrifugal system spring. When tensing the spring, the speed required to drive the centrifugal system will be higher. In this way, tripping speed can be adjusted within the speed range.

9 INSTRUCTIONS FOR USE AND MAINTENANCE

Positioning of the governor on the sling can be varied: at the top, at the bottom, in a cross-sectional or horizontal position... End location will depend on frame manufacturer's criteria. However, the marks and technical information supplied for that purpose must be taken into account, so that the governor functions accordingly.

The frame manufacturer must provide for the positioning of an articulated driving system between the governor and the driving bar. Depending on the distance between them, said system must bear the compression stress produced by wedging without causing bending. For this reason, it is recommended to place the governor as close as possible to the safety gear, so that the driving system is light, simple and does not send an inappropriate torque to the governor.

To avoid unnecessary risks that may cause incorrect governor functioning, two basic criteria must be taken into account: cleaning and monitoring for corrosion. There are moving elements in any governor that will carry out the action of interlocking. Dirt accumulation in these elements can cause malfunctioning. It is of vital importance that both the installer and the maintenance staff ensure that these elements are perfectly cleaned.

On the other hand, Dynatech governors have rustproof protection in all cases but it is important that the maintenance staff determine the possible existence of a corrosive process that may affect any mobile part of the element and stop its natural movement. This check will be carried out by visually inspecting the surface condition and by carrying out a wedging using the remote interlocking system. The frequency of these inspections is at the discretion of the

maintenance staff, although they should be more frequent in the case of an especially corrosive environment.

Dynatech will not be responsible for any problem or accident caused by not observing the prescriptions and recommendations described, both in these instructions and in the EEC Type-examination certificate documents

9.1 STORAGE AND SERVICE LIFE

The overspeed governor must be stored in a cool, dry place. It must be protected from excessive light and never be exposed to the open air.

Storage temperature: 5 - 40°C.

Storage Humidity: 15 - 85% without condensation

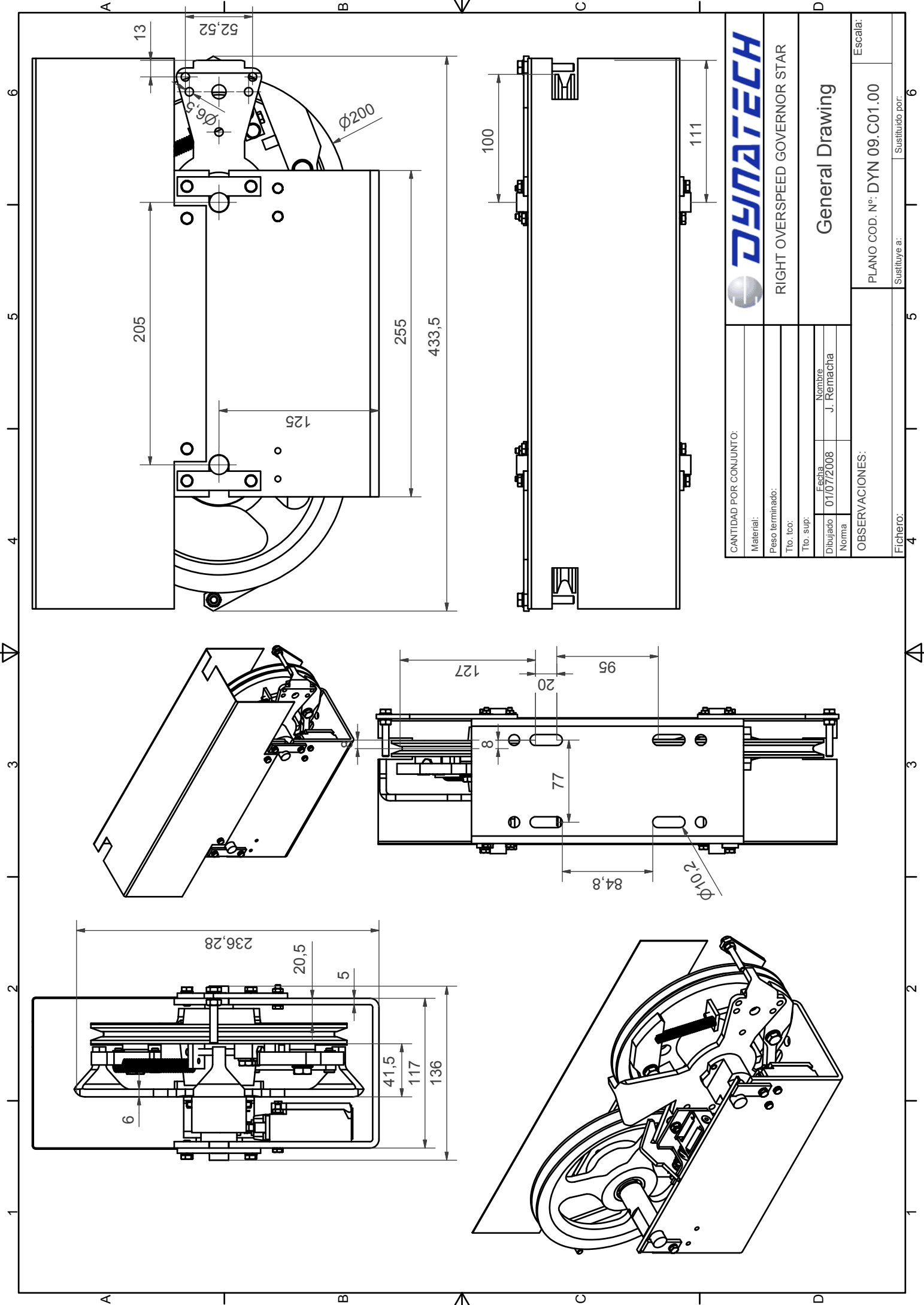
Overspeed governor packages should be clean and dry so that they can be clearly identified.

Constantly leaning an unbalanced load on packages, which may cause bending, or the accumulation of products stacked on top of each other is not allowed. When placing products or product packages on top of each other, the storage height should correspond to the packages' load and stability.

If the established criteria of this manual are observed, the overspeed governor's service life is set by the wear of his main pulley groove, which depends on the installation duty cycle. When estimating the element's service life, the effects of grease, dust or dirt due to the shaft's condition or to environmental conditions differing from those stated in this manual, were not taken into consideration.

10 INSTALLATION DRAWINGS

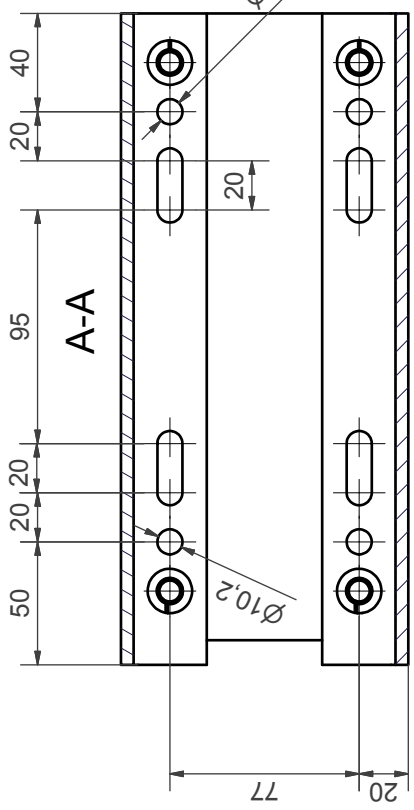
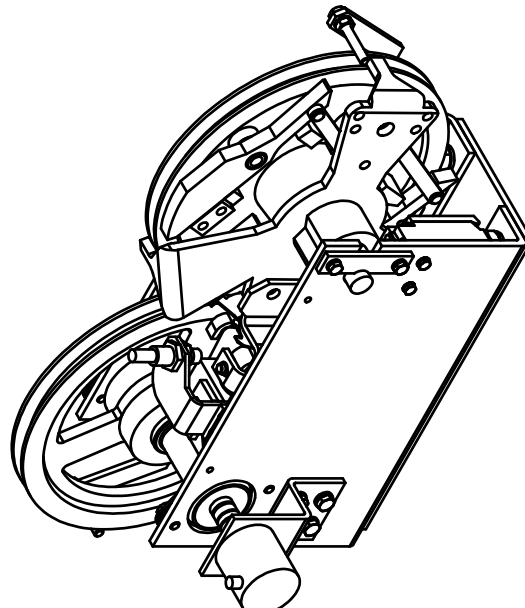
The following drawings may be of help when adapting and installing the STAR and STAR PLUS overspeed governor to the sling.



RIGHT OVERSPEED GOVERNOR STAR

General Drawing

OBSERVACIONES:		Escala:	
		PLANO COD. N°: DYN 09.C01.00	
Fichero:		Sustituye a:	Sustituido por:



CANTIDAD POR CONJUNTO:			
Material:			
Peso terminado:		CONJUNTO: STAR PLUS RIGHT	
Tto. too:			
Tto. sup:		ASSEMBLY	
Fecha	Nombre		
Dibujado	J.		
Norma	Remacha		
OBSERVACIONES:		Escala:	
MEDIDAS SIN TOLERANCIA SEGÚN DIN-7168 GM		PLANO COD. N.º: DYN 09.C05.00	
Fichero:	Sustituye a:	Sustituido por:	