



ATISAE

TYPE EXAMINATION CERTIFICATE

ELEVATOR COMPONENT / SYSTEM

Document number: ATI / CA020 **rev:** 0

Certification Body: TÜV SÜD ATISAE S.A.U.
Avda. de los Artesanos, 20
E 28760 Tres Cantos MADRID (ESPAÑA)

Product: Electrical activation means for the safety gears.
Only downwards activation

Type: DA

Manufacturer: DYNATECH. DYNAMICS AND TECHNOLOGY S.L.
P.I. PINA DE EBRO, SECTOR C PARCELA 9
50750 ZARAGOZA.

Certificate Holder: DYNATECH. DYNAMICS AND TECHNOLOGY S.L.
P.I. PINA DE EBRO, SECTOR C PARCELA 9
50750 ZARAGOZA.

Date of submission: 24.01.2020

Issuing date: 23.06.2020

Standards of reference: ⁽¹⁾ EN 81-20:2014; [5.6.2] [6.3.4]

Report number: 8101277506 (23.06.2020)

Expiry date: indefinite (please refer to tech. annex section 2.5)

Statement: Remote car safety gear activation means assessed in this certificate may be used in connection with an electronic overspeed governor and DYNATECH's safety gear type ASG. This certificate will be mentioned as an annex in the certificate of the safety gears that are allowed and shall be integrated in the design of the elevator where the system, together with the governor, is used. The Notified Body intervening in the certification procedure of the complete elevator, whichever it is, must assess the integration of the system with governor and controller.

For legal reasons, and since this means is not a safety component according to annex III of Lifts Directive 2014/33/UE, this agency cannot issue an EU type examination certificate.

This certificate may be used as justification of the features of the device together with the safety gears, when assembled within the scope of the elevator.

- (1) Only for the clauses mentioned in the technical annex. There are non-compliances when applying 5.6.2.2.1.1.d) of EN 81-20, according to what is stated in the annex.

This document consists of this cover, a technical annex with 5 pages and 2 drawings. It shall be reproduced with all its pages to be considered valid

C/OTR/003529



Bruno Cano Hernández
Director Técnico Elevación

TECHNICAL ANNEX TO THE TYPE EXAMINATION CERTIFICATE ATI / CA020 rev 0

1. Scope

1.1. **Type of component:** Car safety gears activation means

1.2. **Type:** DA

1.3. Use

Means to operate the car safety gear by means of the force provided by a retained compression spring that is electrically released with the overspeed input or other circuit opening input provided by an electronic overspeed governor (eOG) or by the controller of the elevator.

1.4. Product description.

Subtypes. There are two versions of the product depending on the means to keep the spring compressed.

PRT.83.2.1600/1. Spring retention provided by the reset coil with help of PWM circuit.

PRT.83.2.1600/2. Spring retention provided by electromagnetic suction cup (VEM-30)

Overall features.

TYPE	SAFETIES ACTIVATION	REFERENCE	ER60-10/C	VEM-30	PWM	
eASG	only downwards	PRT.83.2.1600/1	X		X	
		PRT.83.2.1600/2	X	X		
			+24 ±5%			Ur (DC)
			1.9	0.16	1.5 / 3.0 ¹	Ir (A)
			22.5	3.5	-	L/R (ms)
			40	100	-	%ED
			00	65	-	IP

1. maximum HOLD current: 1.5 A, maximum PULL current: 3.0 A.

Ur = rated voltage, Ir = rated current, L/R = coil characteristic;

The current requirement for the coils power supply is twice to that stated in the table due to coils parallel assembly.

1.4.1. Subtype PRT.83.2.1600/1

Components: please refer to picture CA020.01.

Operation:

Holding. The ER60-10/C linear electromagnet (1) prevents the activation of the car safety gear keeping the activation spring (3) compressed. The coil is powered through the PWM (Pulse Width Modulation) system that chops the supply voltage of +24V in such a way as to keep the spring retained with a continuous supply to the coil at an equivalent voltage of +12V, despite that the service factor of the coil is 40%.

Activation. The input from the governor opens the coil supply so the energy from the compressed spring is released. The spring pushes the cams until the safety gear roller is brought into contact with the guide rail ^[1].

Reset. In order to reset the system, the coil ER60-10/C is fed again with power. If the reset is made after an effective braking of the safety gears, it may be necessary to provide the coil with a continuous power pulse longer than that provided by PWM (please refer to 1.5.12).

[1] Releasing the spring only allows the roller to be put into contact with the guide rail. For the effective performance of the safety gears, the car must be into motion.



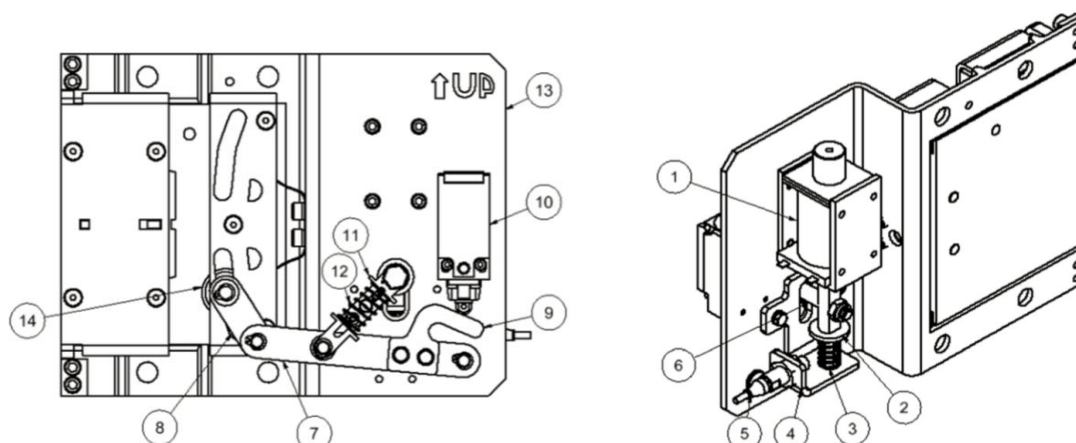


Figure CA020.01. **PRT.83.2.1600/1** (front and back view assemblies)

- | | |
|--|---------------------------------------|
| 1 Electromagnet ER60-10/C | 8 Roller cam |
| 2 Coil coupling | 9 Safety contact switching protrusion |
| 3 Activation spring | 10 Safety contact |
| 4 Support for inductive sensor & shaft guide | 11 Movable cam |
| 5 Inductive sensor | 12 Movable cam spring |
| 6 Activation rod | 13 Frame |
| 7 Coil cam | 14 Safety gear roller |

1.4.2. Subtype PRT.83.2.1600/2

Components: please refer to picture CA020.02.

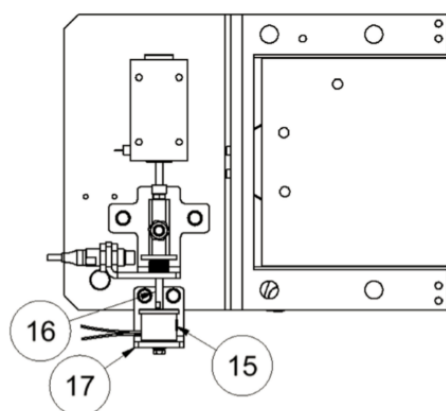
Operation:

Holding. The electromagnetic suction cup VEM-30 (15) keeps the activation spring (3) retained. This suction cup must be fed continuously. The PWM circuit is not use in this subtype.

Activation. The input from the governor opens the suction cup coil supply so the energy from the compressed spring is released. The spring pushes the cams until the safety gear roller is brought into contact with the guide rail ^[1].

Reset. ER60-10/C (1) electromagnet is used in this subtype only for reset purposes. The coil and suction cup must be power supplied. Once the reset is done, the coil of ER60-10/C must remain switched off.

[1] Releasing the spring only allows the roller to be put into contact with the guide rail. For the effective performance of the safety gears, the car must be into motion.



- | |
|------------------------|
| 15 Suction cup VEM-30 |
| 16 Suction cup plate |
| 17 Suction cup support |

Figure CA020.02. **PRT.83.2.1600/2** (back view assembly)
Note: rest of components as in PRT.83.2.1600/1



1.4.3. Switches

Safety gear electric safety device [5.6.2.1.5]:

D4N-4132. IP67. AC15 (240V/3A) / DC13 (250V/0.27A).

Monitoring:

Inductive sensor: E2A-M12KN08 IP67, 3 / 4 wires, 12 – 24 V,

1.4.4. Environmental operating conditions

The equipment supports the operating range:

Room temperature	- 5°C ÷ +40°C
Relative humidity	< 60% without condensation

1.4.5. Delays

The measured delay times between the opening of the holding coil supply and detection of the roller in the actuation position are less than 100 ms.

1.5. Conditions and remarks

1.5.1. Each safety gear of the car's safety gear set, has an individual activation system as described in section 1.4.1 and 1.4.2

1.5.2. The activation means is designed to be used together with an electronic overspeed governor (encoder), which must be designed according to SIL 3 integrity level.

1.5.3. The activation means is designed to be used exclusively with safety gears type DYNATECH's ASG for only downwards activation, according to certificates:

ASG-100, ASG-65, ASG-120, ASG-121
ASG-221

ATI / PP / 010
ATI / PP / 011

Note. The measurement of the required activation force is for these devices.

1.5.4. The force that the activation system is able to provide is less than that stated by [5.6.2.2.1.1.d)] of EN 81-20 for the tripping force of a conventional overspeed governor rope. This deviation of the standard requirement must be considered by the NoB assessing the integration of the electronic overspeed governor and the activation system in the safety technical dossier of the elevator. The measuring of the force required for the activation of the safety gear and that provided by the activation spring along its entire operating length shows that the safety factor is always greater than 2, which is the minimum required by the same clause of EN 81-20.

1.5.5. Concerning what is said in 1.5.4, it is required the checking of the required force and activation force by the manufacturer of 100% of the products delivered, in order to ensure the safety factor is always at least 2.

1.5.6. Concerning what is stated in [5.6.2.1.6.4] of EN 81-20, the activation operation is performed by mechanical means due to the energy stored in the compression spring, while the holding is electrically operated.

1.5.7. The safety electric device as required per [5.6.2.1.5] of EN 81-20 is included in the activation assembly. The electric device stated in 1.4.3 can be replaced by another of equivalent characteristics.

1.5.8. Each subtype has monitoring means for position of the activation cams. The device type stated in 1.4.3, can be replaced by another of equivalent characteristics. This monitoring means must be used by the elevator controller to decide when to put safely the elevator into motion, preventing unwanted performance of the safety gear, also to know if the safety gear has been correctly retracted and keep it on position, etc. The proper connection of these inputs to the controller lies in the designer that integrates the system into the elevator.



- 1.5.9. In order to avoid the tripping of the safety gear due to a power supply failure, the retention coils must be autonomously supplied by an independent supply source.
- 1.5.10. When carrying out the emergency operation (electrical or manual), the retention coils must be kept powered and check that the position of the activation means allows the car to be put into motion.
- 1.5.11. Regardless of what is stated in 1.5.9, energy saving functions like SLEEP or STAND BY operations, switching off power to the coils, can be used, for which the elevator must be stopped. Before restarting the elevator, the controller should check with the monitoring means the position of the activation means.
- 1.5.12. For the release of the safety gear, the reset coil must be powered in synchronicity with the starting of the lift engine, taking into account that: PRT.83.2.1600/1, the PWM circuit provides the reset power to the coil during only 1500 ms. If it is not possible to reset the elevator with the planned reset cycle, an alternative circuit should be used that bypasses PWM and power the reset coil at full power for a longer time. In such case the servicing factor (ED) of the reset coil must be considered and the switching off of the circuit must be timed to prevent the coil from burning out; PR.83.2.1600/2, a circuit such as the aforementioned should be considered in any case with a timed opening to avoid damage to the reset coil.
- 1.5.13. In order to allow the correct performance of the safety gear to be checked, the operation used to the elevator reset shall not impede the starting in the same direction to that of the safety gear activation.
- 1.5.14. The basis of the assessment is that of design under Fail Safe condition, which leads the system to the safe condition (safety gear operated). Durability, stress and component characterization tests have also been carried out. Electromechanical fatigue tests have been carried out on samples of the complete system with more than 320,000 connections and disconnections. [Instituto Tecnológico de Aragón, report C / 200673 I 1 (27.02.2020)].
- 1.5.15. In order to prevent the appearance of faults, a series of actions must be taken both for the design of the integration of the system and for the maintenance of the installed equipment:
- The supply for the coils must be protected against electrical fault (short circuit);
 - The assembly must be protected against the entry of foreign elements, locate the equipment below the car;
 - The assembly shall be accessible to check the existence of dirt or rust and to proceed to its cleaning;
 - The set used with each safety gear is recognizable by the mark 'UP', showing the up position on the assembly frame.
 - It is advisable to perform a daily operating test of the system, which can be automated by the controller or alternatively use the SLEEP or STAND BY function of the controller if available.
- 1.5.16. Other optional operating and connection indications are found in the operating system instruction manual. The system must be adapted to the governor and to the elevator controller circuits.

2. General remarks.

- 2.1. This certificate is issued as an assessment from a third party for DYNATECH's PRT.83.2.1600 safety gear activation system. These means cannot be considered as a safety component according to the list provided in annex III of the Directive 2014/33/EU, so an EU type examination cannot be issued.
- 2.2. The aim of this certificate is to describe the assemblies, operation and conditions of use of the activation system. In order to be used in connection with the elevator, the Notified Body in charge of the elevator design assessment, may take into account the measures and conditions shown in this certificate, for which may mention the reference of this certificate that can, doing so, be considered as an annex of the elevator approval or alternatively issue a certificate by its own.
- 2.3. DYNATECH shall provide for each installation applying these means, instructions of use and maintenance of the activation system, according to what is stated in this certificate.



2.4. The following documents are enclosed to this certificate:

Number	Date	Title
PRT83.2.1600.C05.00	15.06.2020	Plano general versión ventosa
PRT83.2.1600.C06.00	15.06.2020	Plano general versión PWM

These documents are enclosed in order to provide identification and information about the basic design of the means.

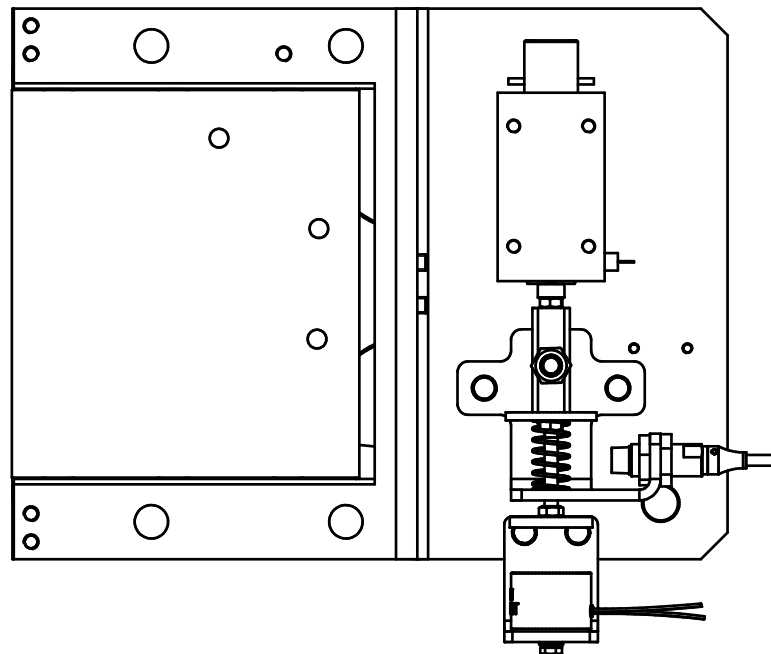
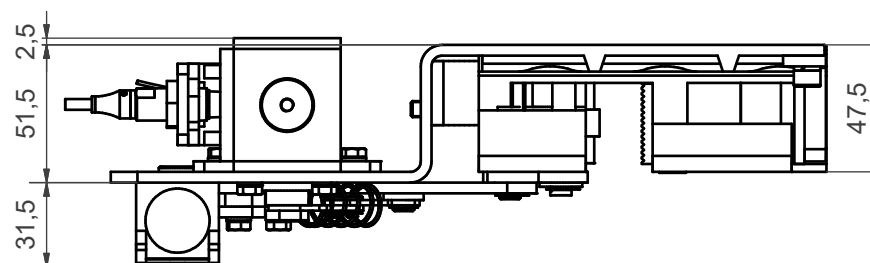
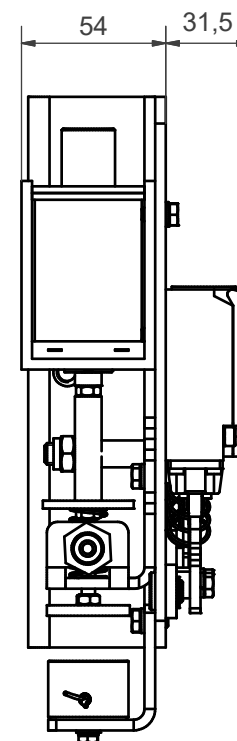
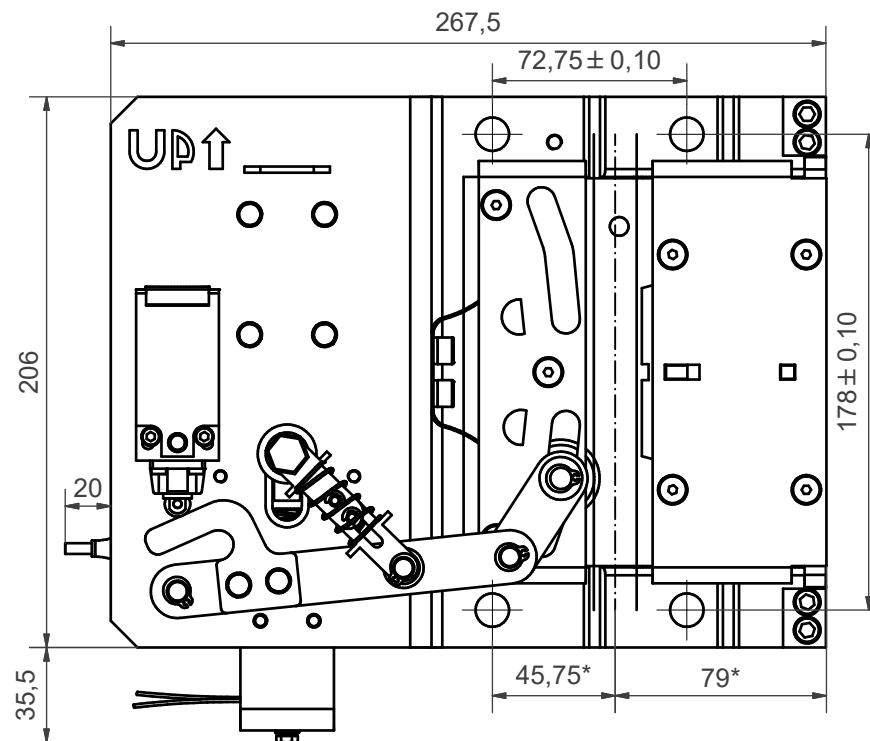
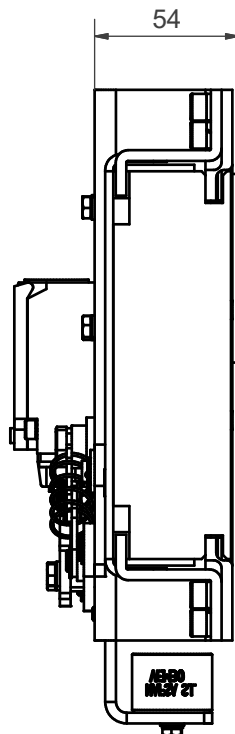
2.5. This certificate has not an expiry date except in case of: design modifications, that the manufacturer must communicate to this Agency previously to the modifications be effective; changes in the applicable legislation or technical changes in the standards of reference for which the expiry date shall be the deadline provided by the regulation or the date when the standard of reference ceases to provide presumption of conformity.

2.6. Revision log.

REV	Date	Modification
0	23.06.2020	Initial issue

- 0 -

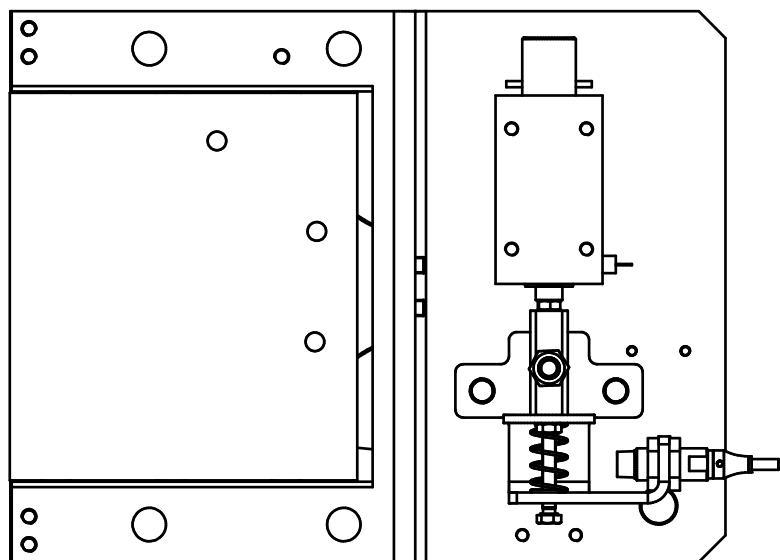
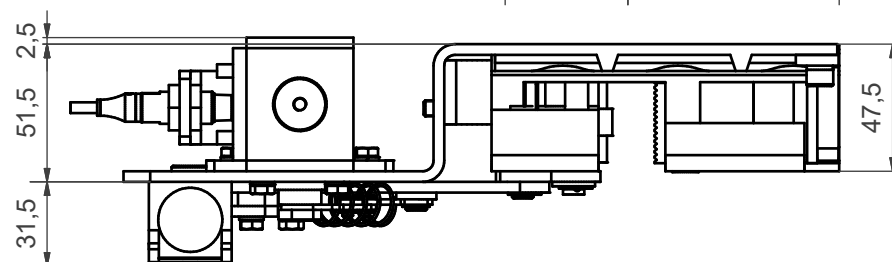
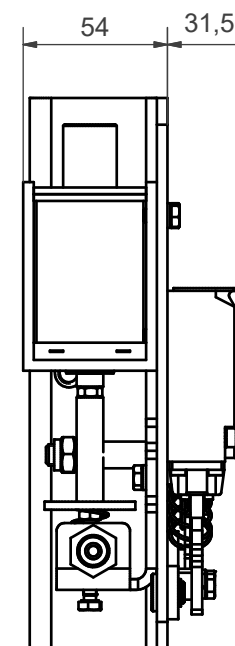
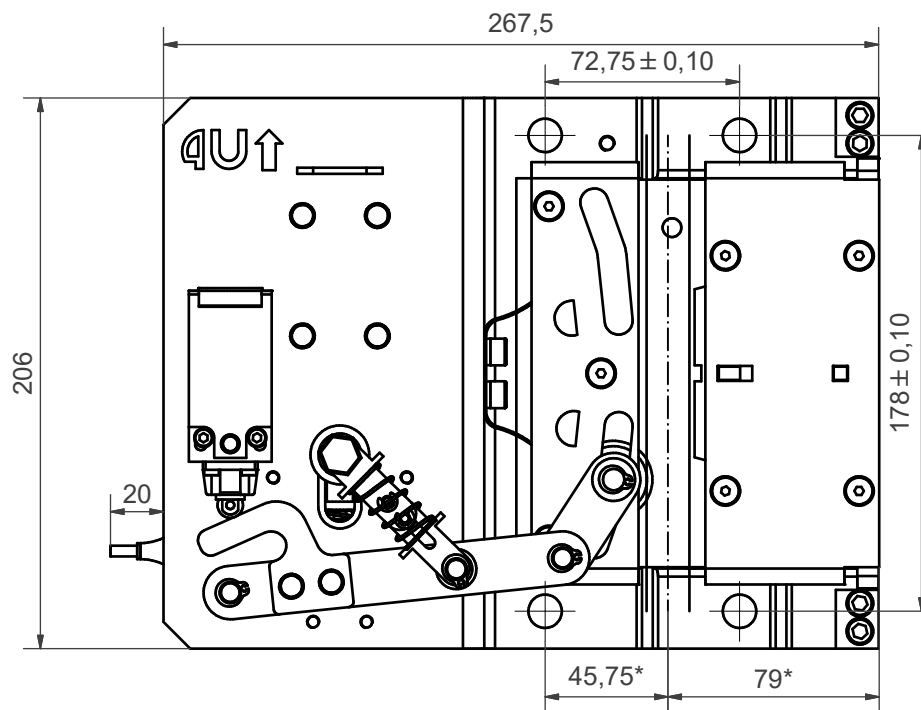
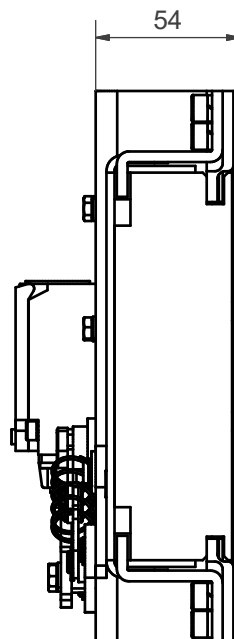




* Anchura de guía 16mm. Resto de anchuras de guía, consultar manual de la timonería extensible T25-UD/T25v2

CANTIDAD POR CONJUNTO:			 DYNATECH	
Material:				
Peso terminado:			CONJUNTO: eASG	
Tto. tco:				
Tto. sup:			Plano general version ventosa	
	Fecha	Nombre		
Dibujado	15/06/2020	A.GARRIDO		
Aprobado				
OBSERVACIONES:			Escala	
MEDIDAS SIN TOLERANCIA SEGÚN DIN-7168 GM			PLANO COD. Nº: PRT83-2.1600.C05.00	
Fichero:			Sustituye a:	Sustituido por:

Escala:



* Anchura de guía 16mm. Resto de anchuras de guía, consultar manual de la timonería extensible T25-UD/T25v2

CANTIDAD POR CONJUNTO:			 DYNATECH	
Material:			CONJUNTO: eASG	
Peso terminado:				
Tto. tco:				
Tto. sup:			Plano general version PWM	
	Fecha	Nombre		
Dibujado	15/06/2020	A.GARRIDO		
Aprobado				
OBSERVACIONES:				
MEDIDAS SIN TOLERANCIA SEGÚN DIN-7168 GM			PLANO COD. Nº: PRT83-2.1600.C06.00	
Fichero:			Sustituye a:	Sustituido por: