

# Portable Valve Actuators

## JA73 Electric battery powered series

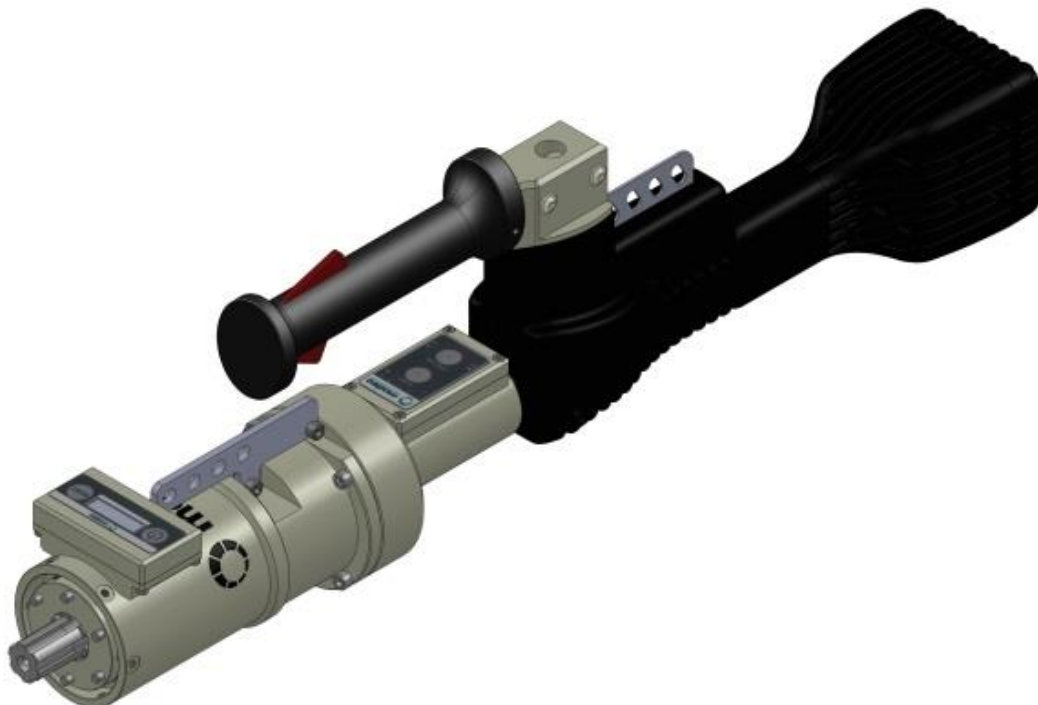
### *Instruction manual*

**Light, powerful and fast, modtec** PVAs (Portable Valve Actuators) offer improved **safety** and **comfort** for operators and protect equipment from damage. They can be adapted to all types of handwheels, keys and valves, and have a torque that can reach up to 1000Nm.

They come with a large number of **options, adaptors and accessories** so they can be assembled to best meet the particularities of different maneuvering systems and their environment.

Thanks to their long life batteries, **modtec electric portable valve actuators** are able to deliver a **high power** for **more than one hour**. This means they are not dependent on an energy source (electric plug or compressed air network) and can operate freely anywhere. Their **exceptional power** for a portable tool allows benefiting from high speed and high torque at the same time. Extremely robust, they have an **integrated clutch system which protects the operator and the equipment**, even if a valve is completely blocked.

The **power limiter** integrated in all models and the **torque limiter** available as an option mean you can **adapt the tool to any configuration and further improve user safety**.



CAREFULLY READ THE OPERATING HANDBOOK BEFORE USE



## Table of content

1. General safety warnings .....	4
a. Transporting the actuator .....	5
b. Storing the actuator.....	5
c. Protecting the environment .....	5
2. CE certification.....	6
3. Safety equipment .....	7
4. Description and technical specifications.....	8
a. Portable Valve Actuator.....	8
b. Batteries and chargers.....	9
5. Setting up the Portable Valve Actuator.....	10
a. General info .....	10
b. Fixing the actuator on to the torque management device and/or on an adaptor.....	10
c. Fixing the BR001 torque management arm and anchoring strap .....	11
d. Setting the system for rotation “D1” .....	11
e. Setting the system for rotation “D2” .....	11
6. Using the actuator .....	12
a. Preliminary checks .....	12
b. Potential problems when actuating a valve .....	13
7. Options.....	14
a. Digital Revolution counter .....	14
b. Torque limiter .....	15
8. Servicing and maintenance .....	16
9. Problem solving .....	17
10. Warranty .....	18

## Introduction

This instruction manual must always be available and kept close to where the actuator will be used.

This document is unique and is owned by the company **modec**. It cannot be corrected, modified or duplicated without prior written agreement. This document should not be considered a replacement for safety rules set out in the Work Code or in any other legislation that applies to the site where the actuator is used.

It belongs to the operators to make sure that all security regulations applicable to both the work site and the Portable Valve Actuator conditions of use are respected.

**modec** products are conceived and fabricated with the utmost care and attention for the safety of both the operator and the equipment. This is certified by the declaration of conformity with the relevant clauses in the European directive 2006/42/CE.

The actuators described in this document may evolve. We reserve the right to modify their specifications, without prior notice. Updates will be available on our website [www.modec.fr](http://www.modec.fr). It is important to refer to the website before setting up or using the actuator, and before carrying out maintenance. Any modifications made to the actuators or their accessories must be approved in writing by **modec**.

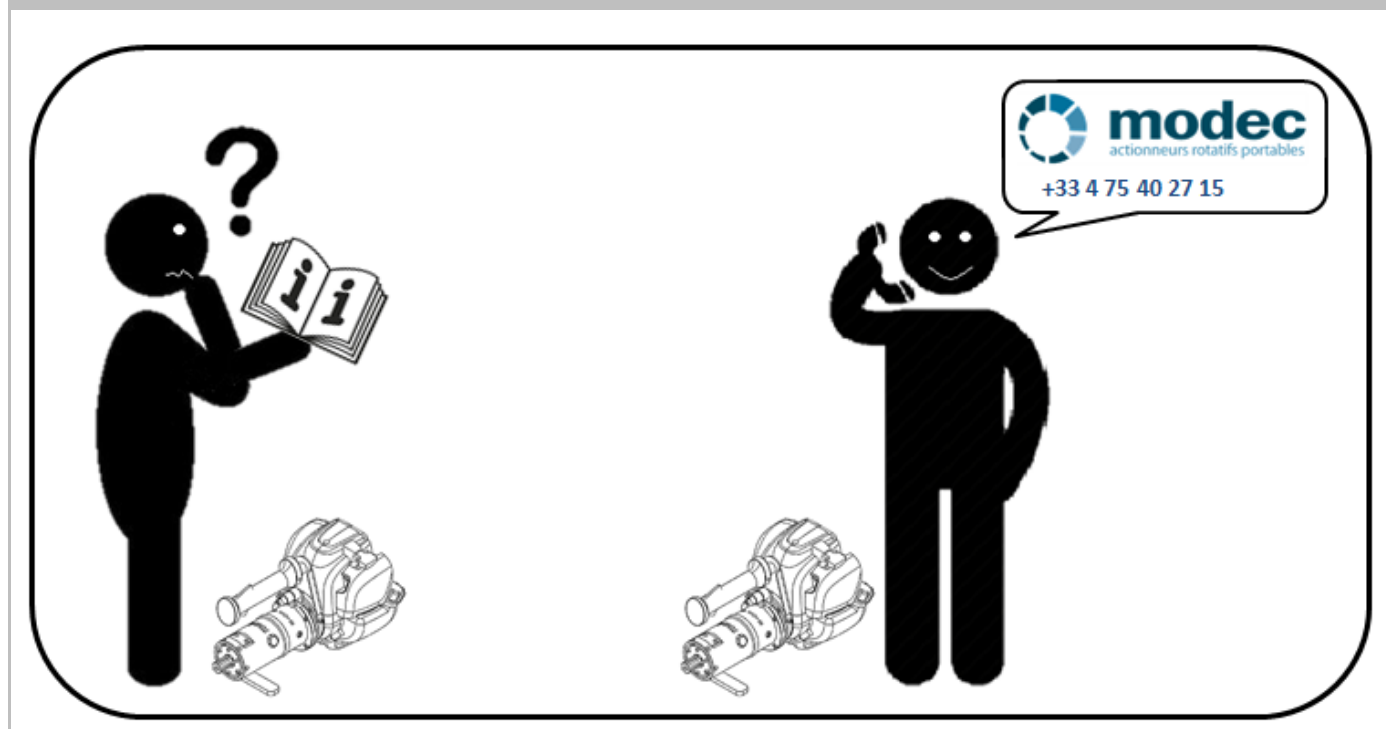
Operators in charge of setting up, using or servicing **modec** actuators must have a reasonable knowledge of the equipment. As well as carefully reading this instruction manual, they must be competent in the valve sector and the particularities related to their work environment.



### KEEP THESE INSTRUCTIONS

This manual contains important information and user instructions for the following tools:  
Electric Portable Valve Actuator JA73x-xxx-xx.

It is **IMPERATIVE** that you read the whole of this user guide before using the tool or carrying out any maintenance operations. Make sure you follow to the letter the instructions and diagrams found in this document. Failure to adhere to the instructions contained in this manual, and any modifications, omissions or the use of replacement parts that do not adhere to the specifications set out in this manual, clears the manufacturer of all responsibility related to the protection of people and equipment.



## 1. General safety warnings

**This machine is not intended for use by people with reduced physical, sensory or mental capacity, or by people devoid of experience or knowledge, except if they are supervised by, or have been given instructions by, an intermediary for the person responsible for their security.**

**Portable Valve Actuators are designed solely for use by professional operators trained in how to use them and educated about the relevant safety measures.**



To avoid all risk of injury associated with using a **modéc** Portable Valve Actuator, always take care to follow the user instructions. Make sure you work in a comfortable position that demands minimal effort from your body, arms and wrists. Keep your wrists straight, without excessive, repetitive or prolonged twisting or extension. Do not use force and do not hold the tool tighter than necessary – avoid long exposure to vibrations.

- The **modéc** Portable Valve Actuator is a tool whose use is exclusively for manipulating valve handwheels or rotating systems, such as those described in this document.
- **modéc** Portable Valve Actuators are not adapted for manipulating winches or lifts.
- The company **modéc** declines all responsibility for damages caused by incorrect use and any use other than the one intended.
- The company **modéc** also declines all responsibility for damages resulting from the use of accessories that are not the original.

### Work zone safety

- Keep the work area clean and well-lit – minimum level lighting of 300 lux
- Aside from the operator, keep any other people at a safe distance within a radius that takes account of fixed points, straps, chains and any other torque retention system used.
- To protect the operator, we recommend that you do not use the PVAs if there is a risk of lightning.

### Safety of personnel during use and maintenance

- Stay vigilant – watch what you are doing and apply common sense when using the tool. Do not use a tool if you are tired or under the influence of drugs, alcohol or medicines.
- Use the individual safety protection equipment (see the summary table, page 7).
- Do not rush ahead – maintain a suitable position and balance at all times.
- Wear suitable clothing – do not wear baggy clothes or jewelry. It is obligatory to tie back hair and to wear close-fitting clothes (not floaty) to ensure all clothing parts are distanced when moving.
- To avoid the motor starting at the wrong time, before picking up or while carrying the PVA, remove or disconnect the battery and/or unplug the wire from the main.

### Use and servicing

- Do not use the tool if the switch systems for changing direction, accelerating, starting up or stopping are not working properly. This could pose danger to the operator.
- Observe tool maintenance. Check there if no incorrect alignment or blockage of moving parts or from broken parts or any other problem that could affect how the tool functions. If there is any damage, take the necessary steps and precautions to return the tool and its accessories to good working order.
- Have the tool serviced by a qualified repairer using only **modéc** products when changing parts.
- Only use valve accessories recommended and approved by **modéc**. Think to consult the accessory list provided and/or seek advice from **modéc** for specific uses.
- Before starting up the motor, the operator must, without fail, check the follow points:
  - Accessories mounted or activated by the actuator are in good condition and correctly attached.
  - The most suitable torque retention system is being used and it assures the safety of the operator.
  - The system that fixes to the valve or the handwheel is adapted to the valve or handwheel being actuated.
  - Both the actuator and the operator are in a stable position. The operator is placed in opposition to any possible movements the actuator may make while coming to a stop.
- Stop the actuator immediately if it starts to behave differently (a change of noise, increased vibrations). Replace all damaged parts of the actuator and accessories. Damaged parts can burst and cause serious harm, even a potential fatality.
- Before placing a handwheel on, or removing it from, the actuator, wait until the actuator has come to a complete stop.
- Only activate the command to inverse the direction left/right when the actuator is fully stopped, otherwise the operator may find they are working in a poorly adapted position.
- Always hold down the rotation direction switch until it stops.



- In certain circumstances, the tool may keep rotating for several seconds after releasing the switch. Never put your hands close to the tool or any moving parts.
- Keep the ventilation slits on the actuator and the batteries free and clean to ensure adequate cooling.
- Keep the contacts on the machine, charger and battery pack clean.
- Do not open the battery. Risk of short-circuiting.
- Protect the battery from heat, for example direct exposure to the sun, to fire, to water and to humidity. There is a risk of explosion.
- In case of damage or non-conforming use of the battery, vapors could escape. Ventilate the work place and consult a doctor if you feel unwell.



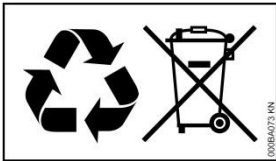
#### a. Transporting the actuator

- Keep the original casing for return in case of any revisions or repairs.
- When packing, make sure that all switches are off and without any constraints.
- Always pack the tools in the correct spaces to avoid them knocking against each other.
- Replace the batteries in their allotted casing.
  - Lithium-ion batteries are subject to rules regulating the transport of dangerous materials. The operator can transport the batteries by road without taking any additional measures.
  - When transporting via a third party (for example, by air or a via a transport company), you must conform to the specific measures regarding packaging and labelling. In such a case, it is imperative to take advice from an expert in the transport of dangerous materials when preparing the transportation. Only send the batteries if the packaging is not damaged. Cover any unprotected contacts and pack the batteries tightly so they cannot move about. Please also follow any additional regulations that may apply.

#### b. Storing the actuator

**modec** actuators must be stored in a dry and correctly ventilated environment to ensure there is no corrosion of the internal mechanic parts.

#### c. Protecting the environment



To eliminate waste, conform to the stated national requirements. The actuators and their accessories must not be thrown in a waste bin. Make sure you dispose of the tools in specialist recycling centers.

## 2. CE certification

### CERTIFICATE OF COMPLIANCE (Annex II A)

The undersigned manufacturer

**MODEC SAS**  
**ZI Sirius Quatre, 80 allée René Higonet**  
**F-26760 Beaumont lès Valence**  
**N° SIRET : 493 748 917 00017**

Declares that the Portable Valve Actuator designated by the following commercial references:

<u>Type</u>	<u>Designation</u>	<u>Serial number</u>
<b>Pneumatic</b>		
HL83E-xxx-xx	Air Portable Actuator, Easy Duty,	HL83E-XXXXXXXX
HL83S-xxx-xx	Air Portable Actuator, Standard Duty	HL83S-XXXXXXXX
HL83H-xxx-xx	Air Portable Actuator, Heavy Duty	HL83H-XXXXXXXX
<b>Petrol gas</b>		
PY68E-xxx-xx	Gas Portable Actuator, Easy Duty	PY68E-XXXXXXXX
PY68S-xxx-xx	Gas Portable Actuator, Standard Duty	PY68S-XXXXXXXX
PY68H-xxx-xx	Gas Portable Actuator, Heavy Duty	PY68H-XXXXXXXX
<b>Electric</b>		
MC89E-xxx-xx	Electric Portable Actuator, Easy Duty	MC89E-XXXXXXXX
MC89S-xxx-xx	Electric Portable Actuator, Standard Duty	MC89S-XXXXXXXX
JA73E-xxx-xx	Electric Portable Actuator, Easy Duty	JA73E-XXXXXXXX
JA73S-xxx-xx	Electric Portable Actuator, Standard Duty	JA73S-XXXXXXXX
JA73H-xxx-xx	Electric Portable Actuator, Heavy Duty	JA73H-XXXXXXXX

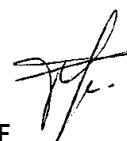
complies with the essential requirements of the European Directive 2006/42/EC

Type :

S/N :

Beaumont lès Valence,  
 XX/XX/XXXX

Mr. Pierre-Yves COTE  
 Managing Director



### 3. Safety equipment

#### **Personal Protective Equipment :**

Operators or anyone placed close to the actuators must wear the following protection. It is incumbent on the company using the equipment to ensure that safety rules are respected.



Hearing protection



Protective goggles



Safety shoes



Safety gloves  
(level 3121 according to EN388)

#### **Safety signs :**

Summary table explaining the pictograms found on the apparatus.



Warning ! Using this  
Material can be dangerous



Read the notice,  
before use



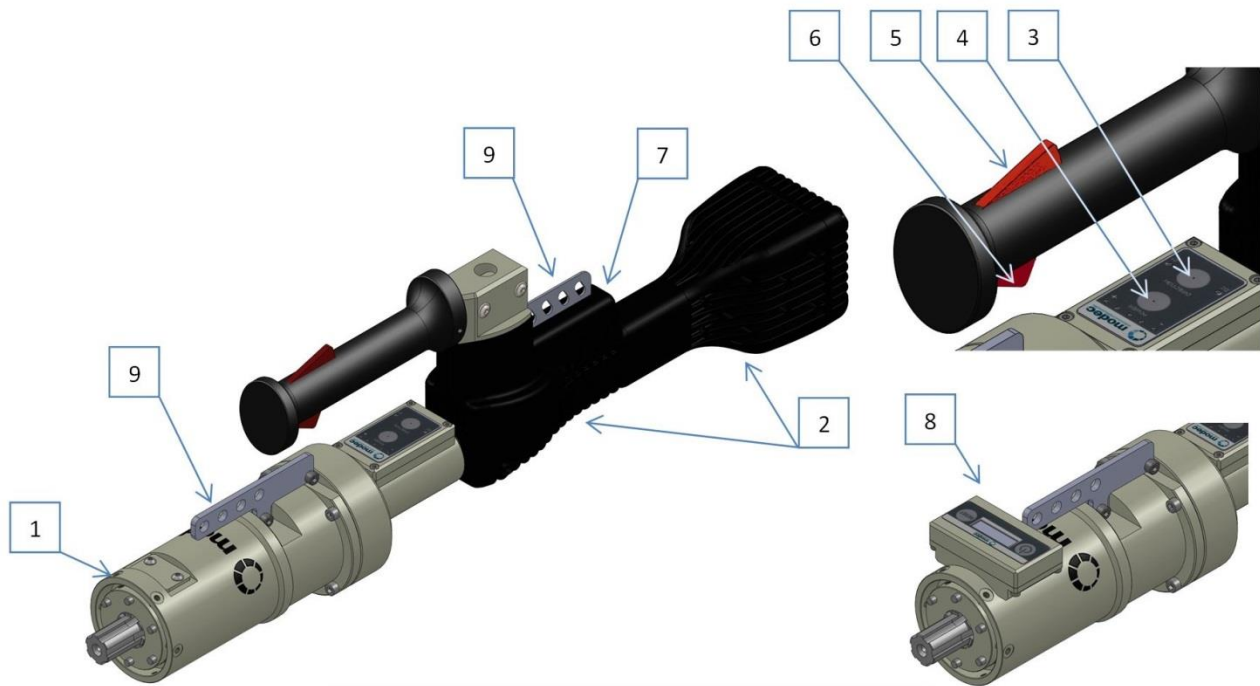
Risk of fire



Do not use in the rain  
or in damp surroundings

## 4. Description and technical specifications

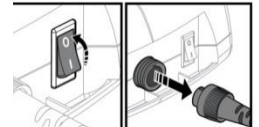
### a. Portable Valve Actuator



- 1 – Flange: enables the attachment of all **modéc** heads, adaptors and torque systems.
- 2 – Motor casing and electronic card – this dissipates the heat from the electric equipment. Hot zone during use.
- 3 – Left/right switch – to choose rotational direction of the actuator.
- 4 – Power button: to adjust the power of the apparatus from 1 to 5. Level 5 corresponds to the speeds and torques indicated in the general specifications table below.
- 5 – Safety trigger: prevents inadvertently operating the accelerator – the safety catch must be pressed to be able to use the accelerator switch (6).
- 6 – Start / Stop trigger :) For a progressive start and to stop the actuator when released.
- 7 – Battery connection.
- 8 – Revolution counter module (option): it gives a double reading – rotating speed and number of turns.
- 9 – Fastening ring to attach a strap for transporting the actuator.



**WARNING** Before use, always check that the stop/start switch located in the lower part of the battery is in the stop “0” position and disconnect the power feed cable.



General specifications	Standard Duty	Heavy Duty	Battery / Reference	BAT 400	BAT 700
Model	JA73S-xxx-xx	JA73H-xxx-xx	Specifications	43,2V – 9Ah	43,2V – 17,4Ah
Weight (kg) (not including options and accessories)	10,1		Weight (kg)	4,2	5,9
			Autonomy (load = 50% of max load)	15 min	35 min
Dimensions (l x w x h) in mm	750 x 110 x 224		Charging time	5h	8h

Straight or with RA30	Free speed (rpm)	Max torque (Nm (lb.ft))	Starting torque (Nm (lb.ft))
JA73E-023	360	44 (32)	35 (26)
JA73S-077	110	150 (110)	120 (89)
JA73S-132	63	250 (180)	200 (150)
JA73H-169	49	325 (240)	260 (190)
JA73H-309	27	590 (435)	470 (350)
JA73H-564	15	1080 (800)*	860 (640)

\* Warning ! Do not use the actuator when the torque is higher than 1000 Nm (740 lb.ft) or use the torque limiter



With a banjo head BJH01	Free speed (rpm)	Max torque (Nm (lb.ft))	Starting torque (Nm (lb.ft))
JA73E-023	90	180 (130)	140 (100)
JA73S-077	27	590 (435)	470 (350)
JA73S-132	Not available		
JA73H-169			
JA73H-309			
JA73H-564			
With a banjo head BJH02	Free speed (rpm)	Max torque (Nm (lb.ft))	Starting torque (Nm (lb.ft))
JA73E-023	120	135 (100)	105 (77)
JA73S-077	36	440 (320)	350 (260)
JA73S-132	21	760 (560)	600 (440)
JA73H-169	16	975 (720)	780 (580)
JA73H-309	Not available		
JA73H-564			

### Sound and vibration levels

Sound and vibration levels are calculated based on the conditions of use at the maximum rated speed. Values apply to the core tool (without added options or accessories). The values can vary significantly depending on the equipment to which the tool is applied. The end operator should establish the actual measurements.

Maximum level of weighted acoustic pressure A at the operator's location	<b>L pA = 85 dB(A)</b>
Values established from an equivalent apparatus.	
Value of vibration emission	A <sub>h</sub> < 2 m/s <sup>2</sup>
Uncertainty of measure	1,5m/s <sup>2</sup>

Values established from an equivalent apparatus.

### b. [Batteries and chargers](#)

See the battery instruction notice joined to the battery

## 5. Setting up the Portable Valve Actuator

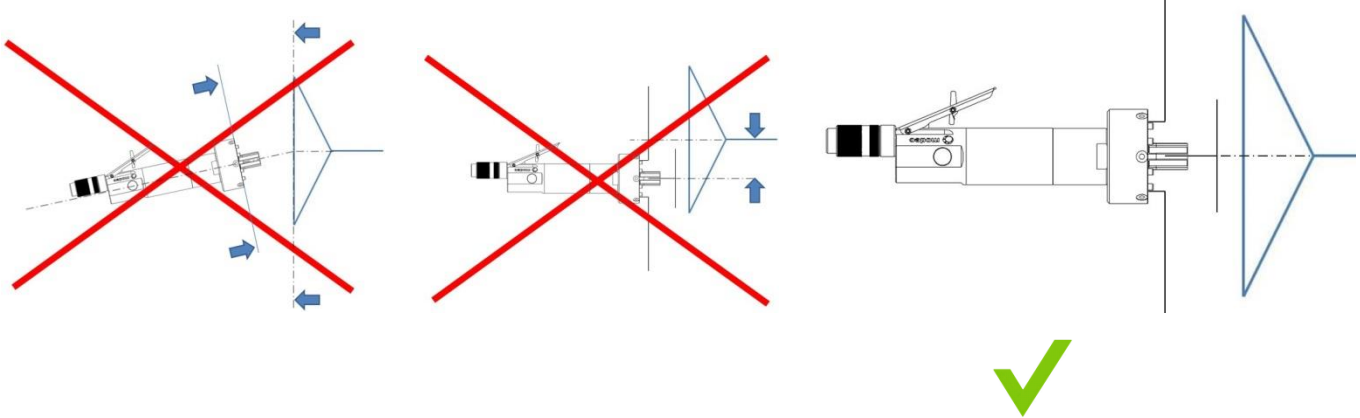
### a. General info



The actuator must be kept stable while turning the valve or handwheel.

**modéc** Portable Valve Actuators can be used in any position.

However, to ensure the operator is working safely and in the best conditions, it is imperative that the actuator is used in the axis of the handwheel being activated.



NB: These diagrams are made with one of the **modéc** actuators. However, the head (flange and output shaft) being identical on all actuators, they apply in the same way to all the actuators of the range.

### b. Fixing the actuator on to the torque management device and/or on an adaptor



To ensure the operator is working safely and in optimum conditions, it is imperative to use a torque retention system. Our actuators are delivered with:

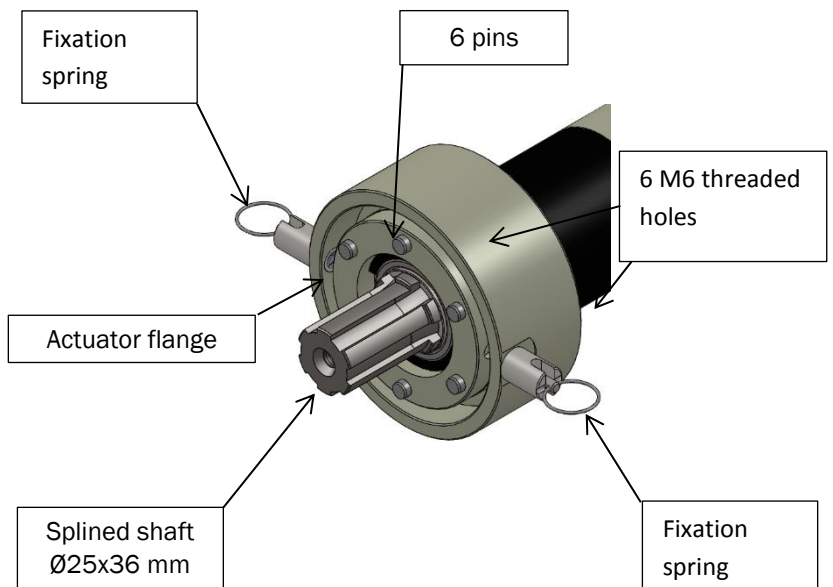
- A BR001 torque management reaction bar
- A strap or a chain
- 2 carabiners.

In addition to this basic pack, **modéc** also has a wide range of torque management accessories (see the catalogue and the following presentation for more details).

As well as these standard accessories, **modéc** develops specific systems. If you would like to check your installation or if you have a specific solution request, contact a registered **modéc** distributor.

Besides this torque retention rod, it is also possible using the “**modéc** standard” flange and shaft to fix the system to RA30 right-angled models, to BJH hollow heads and all **modéc** torque management accessories (see catalogue).

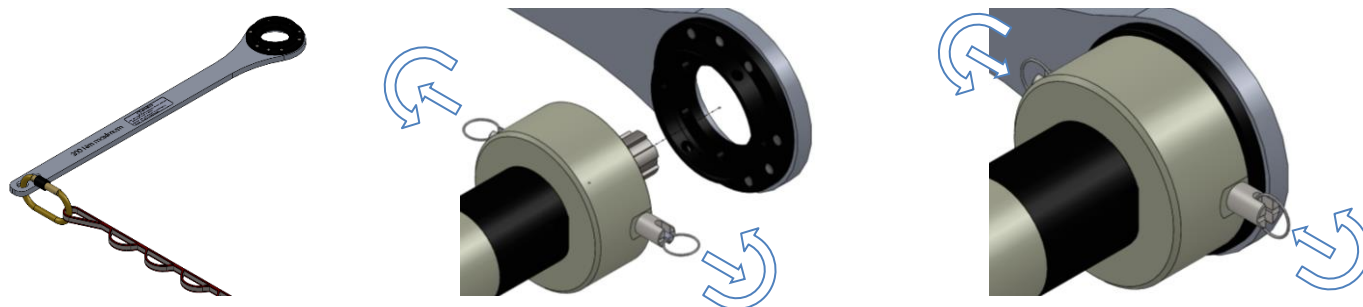
If the standard equipment does not provide a torque retention that offers sufficient safety for both operators and equipment, **modéc** can develop and/or adapt special torque management systems.



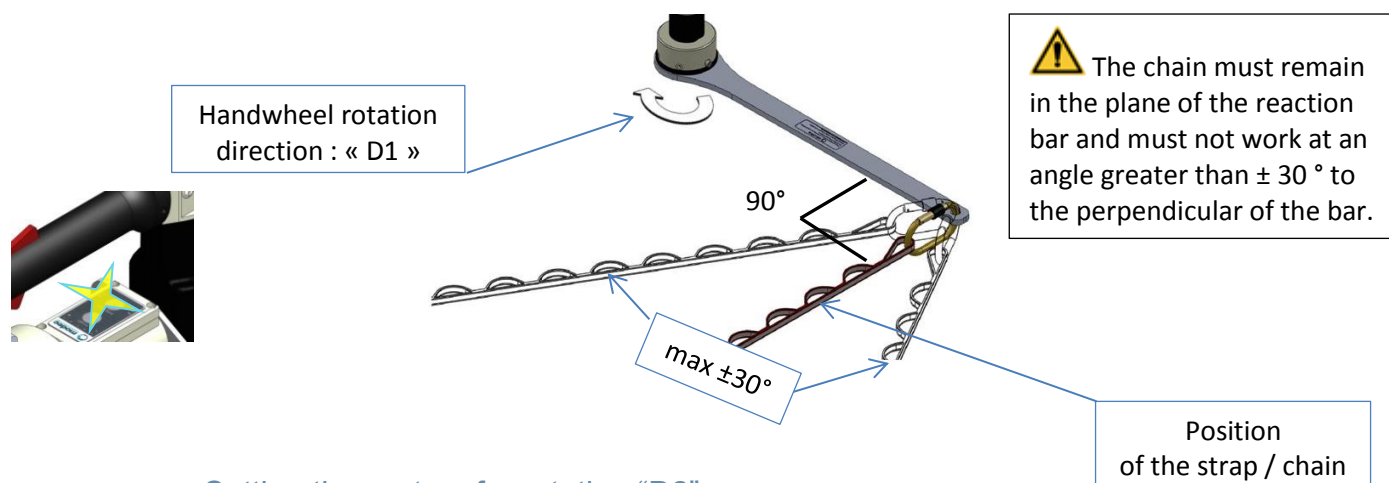
Never use a portable actuator with a torque management system that is under-sized, unstable or badly positioned.

### c. Fixing the BR001 torque management arm and anchoring strap

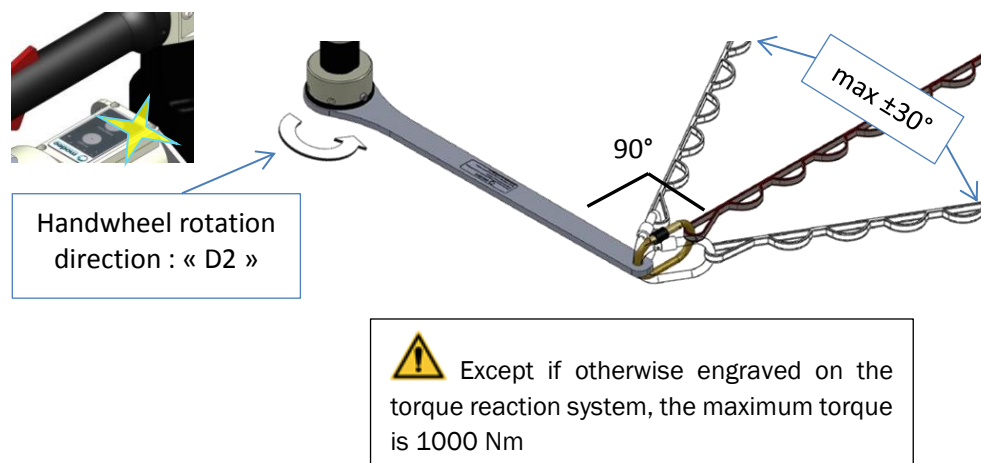
Pull each fixation spring with the ring and rotate for a quarter turn so that they stay in the pulled position. Place the black ring of the torque management bar on the flange so that the 6 pins enter the corresponding holes. Make a quarter turn with the fixation springs rings and release the springs making sure they come back. Check that the torque management bar is properly secured to the flange.



### d. Setting the system for rotation "D1"



### e. Setting the system for rotation "D2"



## 6. Using the actuator

### a. Preliminary checks

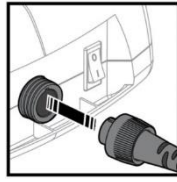
- 1- Check the equipment is in good condition and use accessories that are the most suitable for the actuator.



**Make sure the torque management system and the handwheel adapter are compatible with the action about to be carried out.**

- 2- Connect in the battery.

Battery



Actuator



- 3 - Set the actuator's power to minimum (one blue light only = 20% of max power).

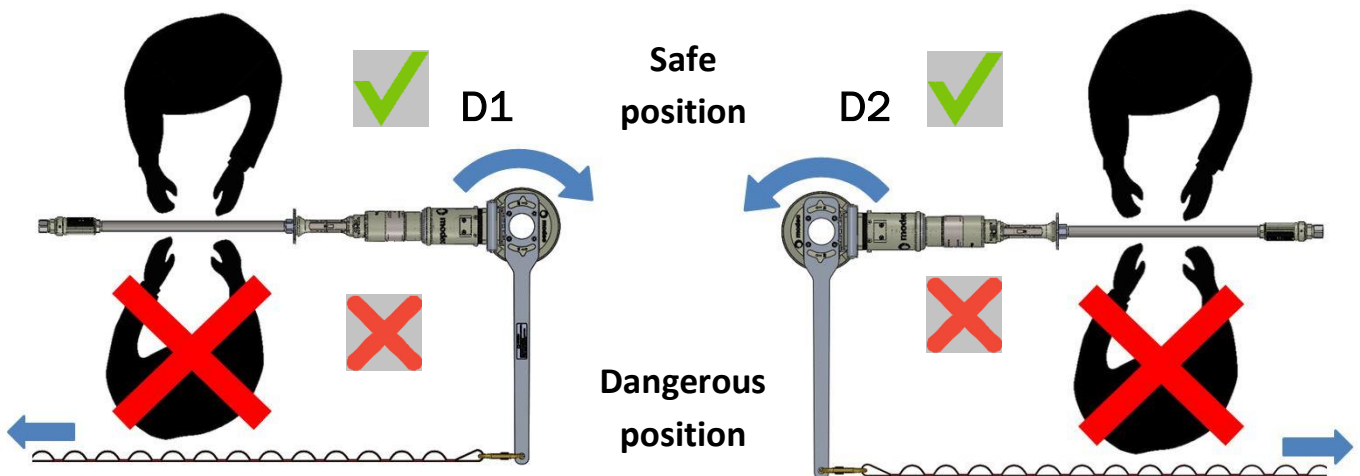


- 4- If the actuator has a torque limiter, set it to minimum.

- 5 - Check the rotational direction required for the valve, indicated on the handwheel or the manual. Set the defined rotational direction using the actuator's left/right switch.

- 6 - Position the adaptor on the valve and set up the torque retention system. Consult the instructions for adaptors.

- 7 - Check the operator is correctly positioned in relation to both the actuator and the torque retention rod. When used, the actuator (or the torque retention rod) is designed to have a tendency to move away from the operator. This way, if there is a malfunction, the operator drops the tool safely and it will then move away from him and immediately stop.



- 6 - When starting up **always** start up slowly in order to **VERIFY** the rotational direction, and to put tension on the torque retention strap or chain.



Unlock by pressing the safety trigger



Accelerate progressively

The apparatus is equipped with a clutch. When accelerating, the motor runs before engaging the gearbox and output. This shift process is normal.

## b. Potential problems when actuating a valve

1 – If the valve doesn't move, release the handle and change the actuator's rotational direction to give it a little nudge.



**Check again the direction of the torque retention.**

2 – If there is increased resistance from the valve (torque applied to the actuator), the actuator will slow down and will eventually stall when the maximum torque it can face is reached. Be very careful that the applied torque does not exceed the limits the valve can withstand, or use a torque limiter (optional).

3 – In case of resistance resulting from deposits on the stem, turn the valve in both directions several times to 'clean' it. **modec** revolution counter (optional) enables you to always know which position the valve is in.

4 – When the closed position is reached, make sure the torque does not exceed the level that the valve can withstand. Unless the procedure indicates otherwise, reopen the valve with a few turns so that the accelerated fluid "cleans" any potential impurities from the valve, then close it again at the desired torque.

5 – When the maximum open position is reached, reclose with a few turns to avoid the valve being stuck in future. Doing this also means that the valve is still able to turn when next actuated even if the operator turns it the wrong way, which again helps prevent the valve being stuck.



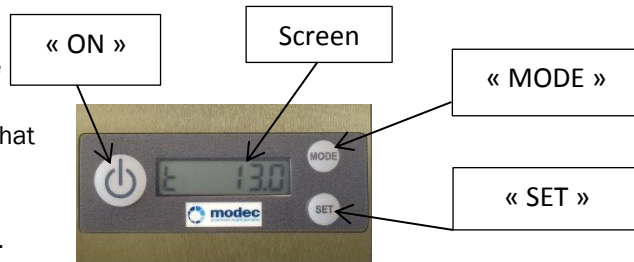
Take note - **the torque when closing a valve should always be inferior to the torque when opening a valve**, in order to guarantee that the valve can be reopened. Using a torque limiter for closing and opening a valve means you can be always be sure to have enough torque in reserve for the valve to be reopened or reclosed.

## 7. Options

### a. Digital Revolution counter

#### • PRESENTATION

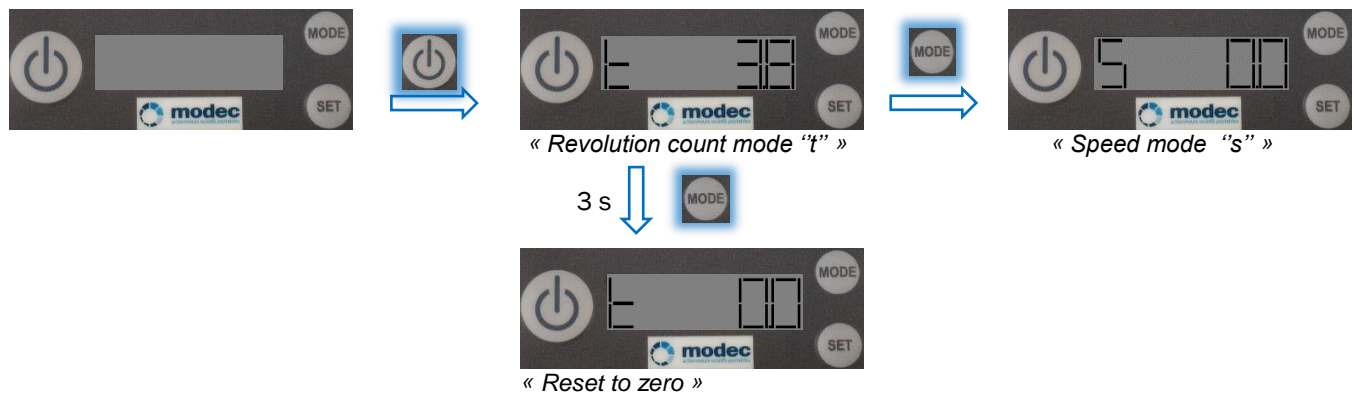
The digital Revolution counter adds up the revolutions in one direction and subtracts them in the other direction in such a way that the operator always knows where he is in relation to the initial set-up. The tool also measures and shows the rotational speed.



**Nota 1 :** The instant speed indicator needs several revolutions before it can give a stable and regular speed. In light of this, you have to wait several seconds to get a reliable reading.

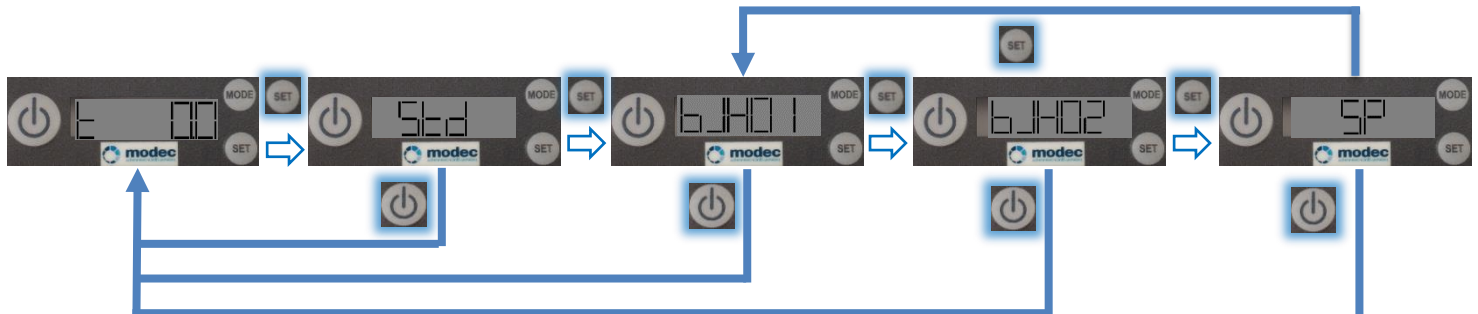
**Nota 2 :** The screen turns itself off after 5 minutes.

#### • HOW IT WORKS



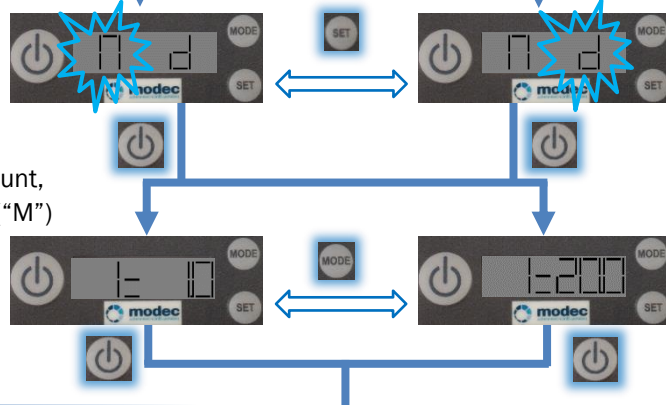
#### • REVOLUTION COUNTER PARAMETERS

The revolution counter is set by default for a straight or right angle head standard output shaft (STD), without Banjo head.



When used with a BJH banjo head (see chapter 8), the number of turns and the output speed of the actuator will be different, so you need to select "BJH01" for a standard duty Banjo head (speed is divided by 4) or "BJH02" for a heavy duty Banjo head (speed is divided by 3).

If you want to set a specific ratio for speed and count, select "SP", then indicate if you want to multiply ("M") or divide ("d") the speed and number of turn, and set the ratio "I=" from 1.0 to 20.0.

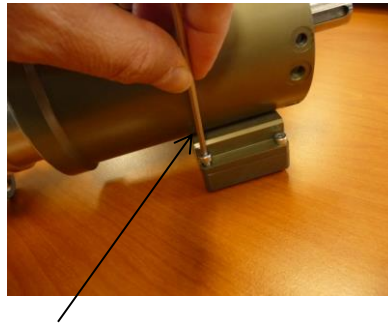




## • CHANGING THE BATTERY



Use a 3mm hexagonal



Use an AA 3,6V Li-SOCL2 battery

Reposition the wires correctly before tightening the 4 screws



### b. Torque limiter

The **modéc** torque limiter allows setting the actuator maximum torque within a certain range

**1 – Thumb wheel :** to block the adjustment ring in the chosen position

**2 – Adjustment ring :** Allows setting the maximum torque value.

- « + » – Direction to increase torque limit
- « - » – Direction to decrease torque limit

**3 – Reloading ring :** to reload the torque limiter after it stops.

#### • HOW IT WORKS

1. Set the maximum torque value to the desired level:

- Loosen the thumb wheel (1)
- Move the adjustment ring (2)
- Tighten the thumb wheel (1)

2. Check the torque limiter is engaged by pushing the reloading ring (3) towards the front of the actuator.

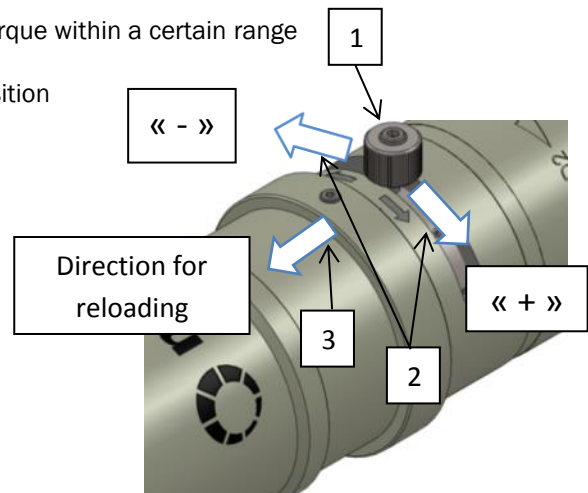
3. Use the actuator until the torque limiter is released.

4. Re-engage the limiter by pushing the ring (3) towards the front of the actuator.



This procedure can only be carried out if the motor is stopped (or, for the petrol gas actuator, if the motor is running slowly with the clutch not engaged).

In order to avoid any untimely disengagement, make sure that you start the actuator gradually, and smoothly.



The torque limiter is available as an option in line with the following references:

Straight or with RA30 right angle head	Reduction ratio	Minimum torque limit Nm (lb.ft)	Maximum torque limit Nm (lb.ft)
Easy duty	54	37 (27)	92 (68)
Standard duty	169	115 (85)	288 (212)
Heavy duty	258	176 (130)	440 (325)
Super heavy duty	564	380 (280)	960 (710)

With Banjo head BJH01	Reduction ratio	Minimum torque limit Nm (lb.ft)	Maximum torque limit Nm (lb.ft)
Easy duty	216	148 (109)	368 (271)
Standard duty	Not available		
Heavy duty			
Super heavy duty			

With Banjo head BJH02	Reduction ratio	Minimum torque limit Nm (lb.ft)	Maximum torque limit Nm (lb.ft)
Easy duty	162	111 (82)	276 (204)
Standard duty	507	345 (254)	864 (637)
Heavy duty	Not available		
Super heavy duty			

Torque values indicated in these tables can vary depending on customers' request

## 8. Servicing and maintenance

Take the machine to a registered **modec** distributor for servicing every 400 hours or at least once a month.

Maintenance operation	Weekly	Yearly or as needed
Check and service the actuator by a registered <b>modec</b> distributor		
Grease the right-angled head (grease type ORAPI n° 606-CTDMEP2)		
Replace the Revolution counter battery *		
Check the torque limiter* by a registered <b>modec</b> distributor		

\*The revolution counter and the torque limiter are optional

Maintenance to be carried out at the indicated intervals in months or in hours of use, from the first deadline onwards.			Interval			
			After each time used	Every 3 months or 25 hours	Every 6 months or 50 hours	Every year or 100 hours
Range	Parts	Task				
JA73	Condition of the tool and protective elements	Check	U			
JA73	Functioning of the triggers and Stop/ Start button	Check	U			
JA73	Functioning of the setting systems for the torque, power and direction inversion	Check	U			
JA73	Condition of the cables and/or leads	Check	U			
JA73	Motors cooling fins	Clean			U	
JA73	Clutch spring and runners	Check			M	

U : user – M : **modec** registered distributor / repairer

### General recommendations

- Take note of all the work health and safety regulatory provisions that apply and any local workplace safety instructions including conditions relating to the work environment, clothing and the operator's individual protective equipment as required by all the applicable regulations.
- It is advisable to keep a maintenance log for all maintenance tasks carried out on the actuator.
- Prevent foreign bodies from entering the system by using a clean work surface in order to protect the delicate moving parts from being contaminated by dirt or foreign materials when assembling and disassembling, as this could cause a deterioration of the mechanical parts.**
- Maintenance of the Portable Valve Actuators should be carried out by people who have been trained by **modec**.
- Our "After Sales Service" department are ready to help in this respect.
- Systematically take out the spark plug before carrying out any procedure that involves replacing, adjusting, servicing or disassembling the actuator or any of its parts.
- Every time maintenance is carried out, test the actuator afterwards to check it is working correctly.
- Only use approved replacement parts and follow the manufacturer's advice with regard to lubrication and waterproofing.**





## 9. Problem solving

<b>Electric Portable Valve Actuator JA73</b>				
Symptom	LED status	Probable causes	Checks & solutions	Repaired by
The actuator won't start or stops during use	off	Battery is off or discharged	Recharge the battery, plug in the power lead and switch on the battery switch Recharge the battery if it has less than 10% charge remaining	User
	off	Electronic problem	Ask for a complete check and diagnosis	<a href="#">modéc</a> Distributor
	off	The tool has reached its temperature limit	Leave the tool to cool down for at least 15 minutes	User
	on	Problem with switch buttons or with electronics	Carry out an electronic diagnostic with a view to repair	<a href="#">modéc</a> Distributor

<b>Revolution counter (optional)</b>					
Symptom	Screen status	Probable causes	Checks	Solutions	Repaired by
The counter doesn't give a reading	Off	Timer elapsed / automatic stop		Activate the "ON" button	User
		Flat battery	Check the state of the battery	Change the battery	User
		Screen is out of order	Check with a registered <a href="#">modéc</a> distributor	Change the screen	<a href="#">modéc</a> Distributor
The counter is on but doesn't count	On and not moving	Poor connection between the captor and the card	Check the sensor connection	Reconnect the sensor	User <a href="#">modéc</a> Distributor
		Captor and/or the card is out of order	Check with a registered <a href="#">modéc</a> distributor	Change the electronic card	<a href="#">modéc</a> Distributor

<b>Torque limiter (optional)</b>			
Symptom	Probable causes	Solutions	Repaired by
The motor runs but the output shaft doesn't	The torque limiter is disconnected	Re-engage the torque limiter Start the actuator smoothly	User
	The torque limiter setting is too low	If possible, increase the maximum torque value	User
		Check the torque limiter status (is it damaged ?) Change the torque limit range	<a href="#">modéc</a> Distributor

## 10. Warranty

**modec** guarantees its equipment in accordance with the following conditions:

- During 12 months as of the delivery date, **modec** warrants its equipment against all material and manufacturing defects, except for consumable parts and elements that are out of order due to normal wear and tear further to standard use 8 hours per business day. During the aforementioned period, **modec** will replace or repair all parts acknowledged as defective by our departments, which parts shall have been promptly returned by the buyer to **modec** plants, all carriage costs and duties paid, enclosing a detailed description of the recorded breakdown and the warranty certificate.
- Components that were not manufactured by us come under the relevant manufacturer's warranty.

This warranty shall only be applicable if the machine is used with **modec** consumables. We hold no liability if our products are used in an abnormal manner.

### **AGREEMENT REVIEW**

Significant modifications in the Buyer's economic or financial situation, including the sale, transfer, pledge or contribution of the latter's business or assets, and if payment or acceptance of bill is not performed on the agreed date, even further to partial order performance, may entail revision of the conditions thereof and the overall credit conditions granted.

### **INTELLECTUAL PROPERTY**

We continue to hold all intellectual property rights to our projects, studies and documents that shall not be communicated, exploited or reproduced without our prior written authorization.

### **FORCE MAJEURE EVENT**

**modec** shall not be held responsible for any breach whatsoever of its contractual obligations that result from causes which are beyond our control such as, amongst others: fire, storms, flooding, earthquake, explosion, accident, strikes and/or industrial disputes, hostile actions, insurrection, war (declared or otherwise), rebellion, sabotage, epidemics, quarantine, impossibility of ensuring supplies of parts, raw materials or machinery, Government decision and legal actions.

### **APPLICABLE LAW**

The agreement shall be governed and construed in accordance with French law.

### **POWER OF JURISDICTION**

All disputes or litigation which have not been amicably settled shall be referred to the Commercial Court of Romans, acknowledged as sole competent jurisdiction by the contractors, including in the event of the introduction of third parties.

### **OTHER CONDITIONS**

Those of the Federation of Mechanical Industrialists of France.