



Electromotive actuator
Aktor M ST L, 24 V
Operating instructions



Contents

	Seite
1. General information	5
1.1 Validity of the operating instruction.....	5
1.2 Type plate	5
1.3 Extent of supply	5
1.4 Contact.....	5
1.5 EU Declaration of conformity	5
1.6 Used symbols.....	5
2. Safety-related information.....	6
2.1 Correct use.....	6
2.2 Warnings	6
2.3 Safety notes	6
2.3.1 Danger caused by inadequately qualified personnel	6
2.3.2 Danger from electric current	6
2.3.3 Risk of burns due to hot components and surfaces.....	6
2.3.4 Availability of the operating instructions	6
3. Technical description	7
3.1 Construction.....	7
3.2 Functional description.....	7
3.3 Technical data	7
4. Transport and storage.....	8
5. Installation.....	8
5.1 Initial installation.....	8
6. Commissioning.....	9
6.1 Configuration of the DIP switches.....	9
6.2 Connection of the power supply	9
6.2.1 Steady control.....	9
6.2.2 3 point control	9
6.2.3 2 point control	10
7. Operation	10
8. Maintenance	10
9. Removal.....	10

10.	Reinstallation	11
11.	Disposal.....	11
12.	Appendix	12

1. General information

The original operating instructions were drafted in German.

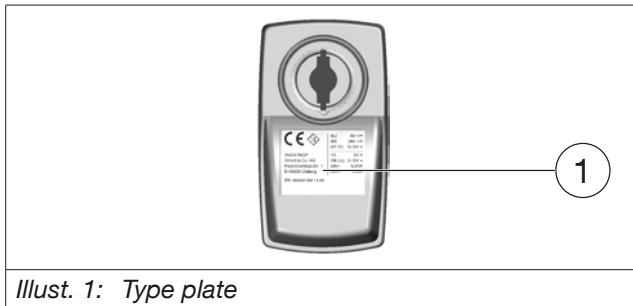
The operating instructions in other languages have been translated from German.

1.1 Validity of the operating instruction

These operating instructions are valid for the electro-motive actuator, 24V Aktor M ST L, 0-10V / 3 point control.

1.2 Type plate

The type plate is located on the bottom of the product.



(1)	Type plate
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1.3 Extent of supply

Please check your delivery for any damage caused during transit and for completeness.

Items included in the delivery:

- “Aktor M ST L”
- Operating instructions

1.4 Contact

Contact address

OVENTROP GmbH & Co. KG
Paul-Oventrop-Straße 1
59939 Olsberg
GERMANY

Technical services

Phone: +49 (0) 29 62 82-234

1.5 EU Declaration of conformity

Oventrop GmbH & Co. KG hereby declares that this product complies with the basic requirements and other relevant provisions of the EC Directives concerned.

The declaration of conformity can be obtained from the manufacturer.

1.6 Used symbols

	Highlights important information and further explanations.
	Action required
	List
1.	Fixed order. Steps 1 to X.
2.	
	Result of action

2. Safety-related information

The current standards, rules and guidelines apply.

2.1 Correct use

Operating safety is only guaranteed if the product is used correctly.

The actuator may be used in indoor heating, ventilation and air conditioning systems.

Any other use of the product will be considered incorrect use.

Claims of any kind against the manufacturer and/or its authorised representatives due to damage caused by incorrect use will not be accepted.

Observance of the operating instructions is part of compliance with correct use.

2.2 Warnings

Each warning contains the following elements:

Warning symbol SIGNAL WORD	
	Type and source of danger! Possible consequences if the danger occurs or the warning is ignored. ► Possibilities of avoiding the danger.

The signal words identify the severity of the danger arising from a situation.

	DANGER
	Indicates an imminent danger with high risk. The situation will lead to death or serious injury if not avoided.

	WARNING
	Indicates a possible danger with moderate risk. The situation may lead to death or serious injury if not avoided.

	CAUTION
	Indicates a possible danger with lower risk. The situation may lead to minor and reversible injury if not avoided.

	NOTICE
	Indicates a situation that may lead to damage to property if not avoided.

2.3 Safety notes

We have developed this product in accordance with current safety requirements.

Please observe the following notes concerning safe use.

2.3.1 Danger caused by inadequately qualified personnel

Any work on this product must only be carried out by qualified tradesmen.

As a result of their professional training and experience as well as their knowledge of the relevant legal regulations, qualified tradesmen are able to carry out any work on the described product professionally.

User

The user must be informed how to operate the product by a qualified tradesman.

2.3.2 Danger from electric current

Any work on the power supply must only be carried out by a qualified electrician.

- Do not put the product into operation if there are visible signs of damage.
- Completely disconnect the product from the power supply.
- Check that no voltage is present.
- Secure the product against switching back on.
- Only install the product in dry indoor areas.

2.3.3 Risk of burns due to hot components and surfaces

- Allow the product to cool down before working on it.
- Wear suitable protective clothing to avoid unprotected contact with hot system components and fittings.

2.3.4 Availability of the operating instructions

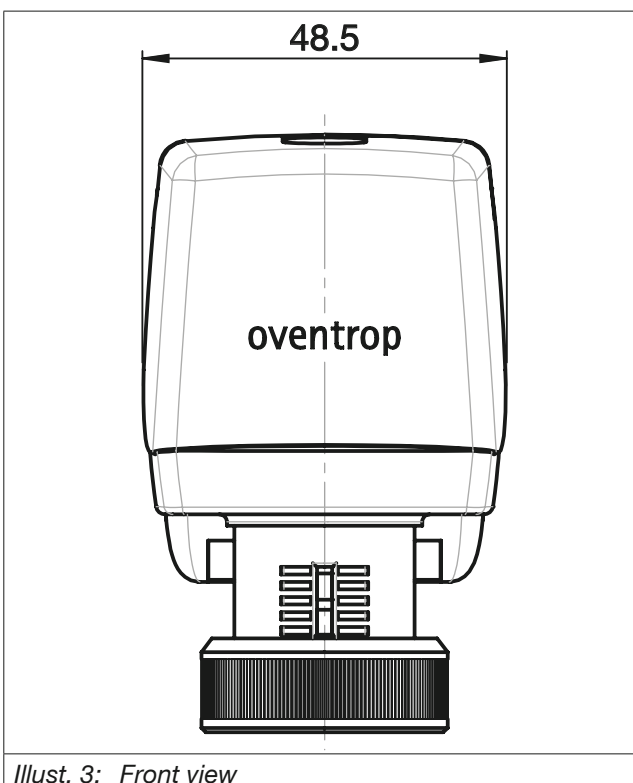
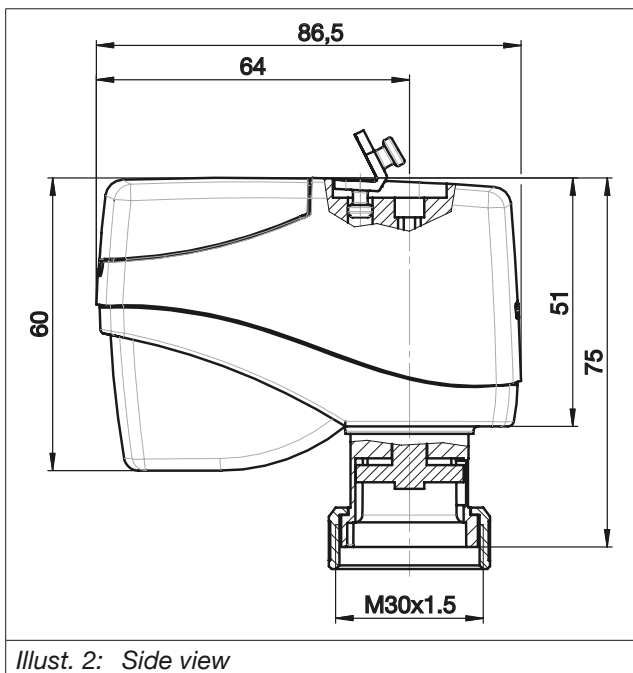
Any person working on the product has to read and apply these operating instructions and all other valid documents.

The operating instructions must be available at the installation location of the product.

- Hand these operating instructions and all other relevant documents over to the user.

3. Technical description

3.1 Construction



3.2 Functional description

The actuator opens and closes a valve depending on the applied control voltage.

The actuator can be adapted to the specific parameters of the valve and to specific operational requirements with the help of DIP switches.

3.3 Technical data

Operating voltage	24 V AC $\pm 10\%$, 50/60 Hz 24 V DC $\pm 10\%$
Power consumption	Dimensioning: - 3.7 VA (24 V AC) - 1.7 W (24 V DC) nominal: - 2.5 VA (24 V AC) - 1.3 W (24 V DC)
Start up load	Max. 10 A for short periods
Control	- Steady control 0 - 10 V DC - 3 point control (open/stop/closed) The voltage switch on time may not fall below 2 seconds to start regular operation! - 2 point (open/closed) The voltage switch on time may not fall below 2 seconds to start regular operation!
Connection	Fixed pre-assembled cable 1.5 m; 3 x 0.5 mm ²
Motor deactivation	Drive stem: opening up = load-dependent closing down = travel-dependent
Travel	Max. 4 mm
Travel time	22 s/mm
Positioning force	Nominal 150 N
Position indicator	Stroke scale
Manual setting	Only when the operating current is switched off! Adjustment spindle for Allen key under the cover (position 2 in Illust. 9 on page 10), spanner size 4 mm
Permissible fluid temperature in the valve	0 - 120 °C

Ambient temperature	0 - 50 °C
Ambient humidity	In operation: 0 - 85 % r.h., not condensing not in operation: 0 - 85 r.h., not condensing
Overvoltage category	III
Pollution degree	2
Protection	IP54 in all installation positions
Protection class	III according to EN 60730
Installation position	No restriction
Maintenance	Maintenance-free
Weight	230 g

4. Transport and storage

Temperature range	-0 °C - +40 °C
Relative air humidity	Max. 95%
Particles	Store dry and free from dust
Mechanical influences	Protected from mechanical agitation
Weather influences	Do not store outdoors Protect from direct sunlight
Chemical influences	Do not store together with aggressive fluids

5. Installation

5.1 Initial installation



Make sure that there is enough space for the installation of the actuator.



Only connect the actuator to the power supply after installation!



CAUTION

Risk of burns due to hot components

Any unprotected contact with hot components may lead to burns.

- Allow the valve to cool down before working on it.
- Wear safety gloves.

1. Fit the actuator to the connection thread of the valve.
2. Hand tighten the collar nut.



Ensure that you avoid cross-threading.

NOTICE

Damage to the actuator due to excessive torque when fastening the collar nut

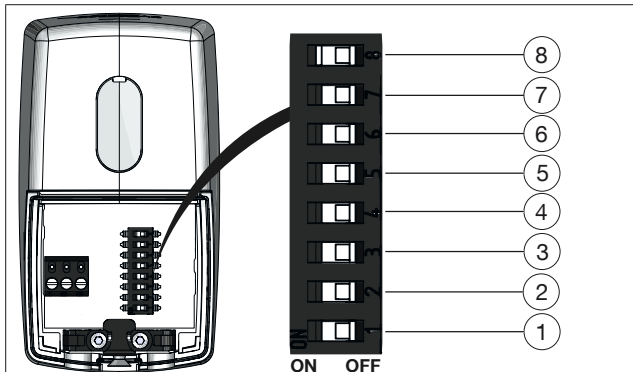
The actuator can be damaged and its function impaired if the collar nut is over-tightened.

- Hand tighten the collar nut.

6. Commissioning

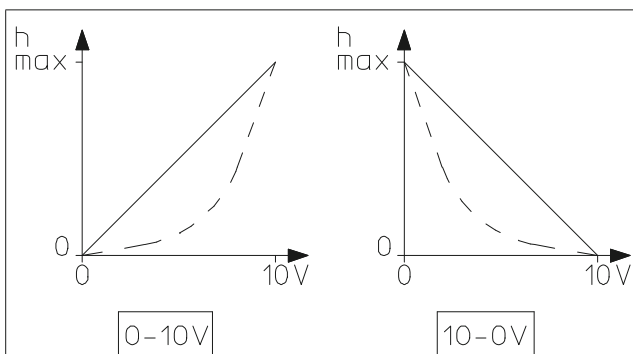
6.1 Configuration of the DIP switches

- ▶ Remove the casing cover.
- ▶ Configure the DIP switches according to the valve used (see section 12 on page 12).



Illust. 4: DIP switches

(1)	S1 ON/ OFF	Setting of the required stroke behaviour in accordance with the characteristic lines of the valve used.
(2)	S2 ON/ OFF	
(3)	S3 ON/ OFF	
(4)	S4 ON/ OFF	
(5)	S5 ON/ OFF	
(6)	S6 ON/ OFF	
(7)	ON = 10 V - 0 V	OFF = 0 V - 10 V see Illust. 5 on page 9
(8)	Automatic flushing function and valve anti-blocking function	
	ON	activated
	OFF	deactivated

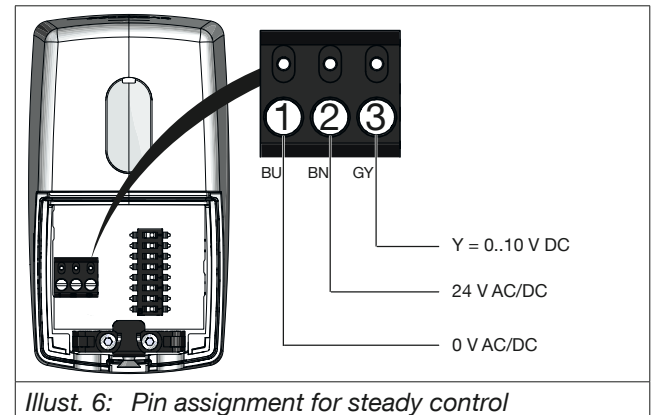


Illust. 5: Characteristic line inversion DIP switch 7

6.2 Connection of the power supply

- ▶ Connect the power supply according to the desired assignment in Illust. 6 on page 9 to Illust. 8 on page 10.

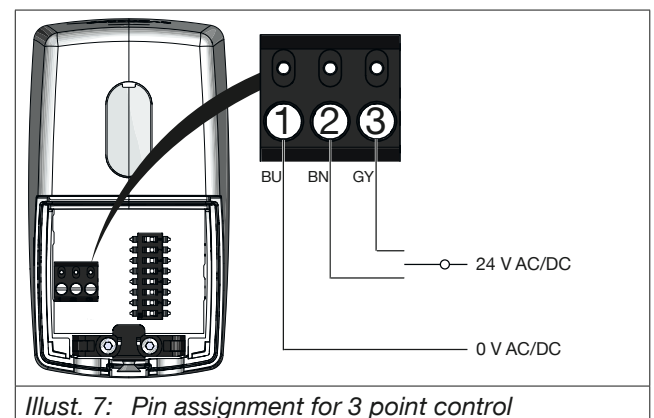
6.2.1 Steady control



Illust. 6: Pin assignment for steady control

(1)	0 V AC/DC	blue (BU)
(2)	24 V AC/DC	brown (BN)
(3)	Control 0 - 10 V DC	grey (GY)

6.2.2 3 point control



Illust. 7: Pin assignment for 3 point control

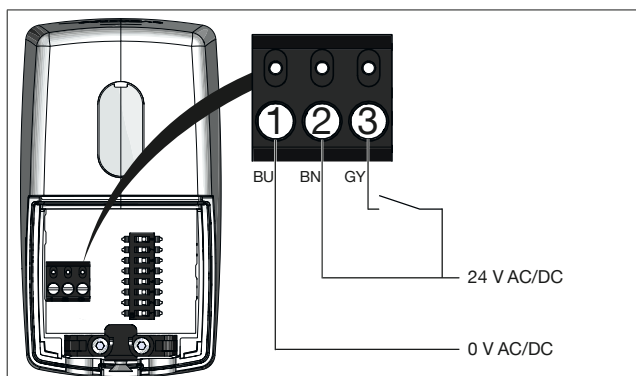
(1)	0 V AC/DC	blue (BU)
(2)	24 V AC/DC (▼)	brown (BN)
(3)	24 V AC/DC (▲)	grey (GY)



If the DIP switch 7 is set to OFF, the stroke behaviour will be as follows. (If the DIP switch 7 is set to ON, the stroke behaviour will be reversed!)

- The actuator will move to the upper lift position (see position (1) in Illust. 10 on page 10) when 24 V are applied to position/contact (3).
- The actuator will move to the lower lift position when 24 V are applied to position/contact (2).

6.2.3 2 point control



Illust. 8: Pin assignment for 2 point control

(1)	0 V AC/DC	blue (BU)
(2)	24 V AC/DC	brown (BN)
(3)	0 V (▼) or 24V AC/DC (▲)	grey (GY)

- After the power supply has been connected for the first time, the actuator will carry out an initialisation run. The product will be ready for operation after this initialisation.

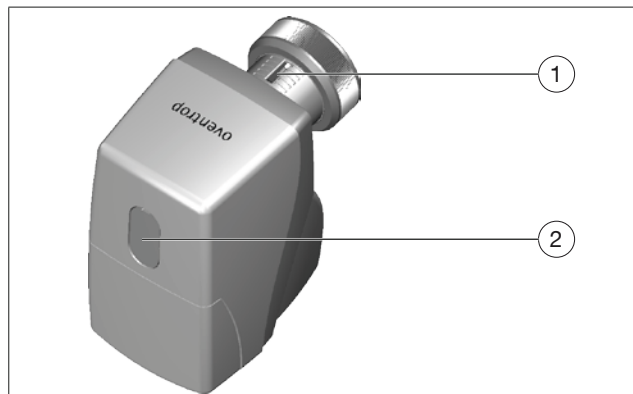
7. Operation

The actuator is automatically controlled via the control technology.

8. Maintenance

The actuator is maintenance-free.

9. Removal



Illust. 9: Lift position indicator and valve stem cover

(1)	Lift position indicator of the actuator
(2)	Cover for manual setting (adjustment spindle)



Illust. 10: Upper lift position

(1)	Upper lift position indicator
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CAUTION

Risk of burns due to hot components

Any unprotected contact with hot components may lead to burns.

- Allow the product to cool down before working on it.

NOTICE

It may not be possible to unscrew the collar nut by hand

In some circumstances, the actuator closes the valve with the maximum actuating power of 200 N. In this case, the collar nut can no longer be unscrewed by hand.

- Do not use pliers or similar to loosen the collar nut!
► Use the manual setting option.

1. Completely disconnect the actuator from the power supply.
2. Check the lift position of the actuator.
3. If the actuator is not in the upper lift position (see position (1) in Illust. 10 on page 10):
Open the cover for manual setting (adjustment spindle) (see position 2 in Illust. 9 on page 10) and move the actuator to the upper lift position using a 4 mm Allen key.

NOTICE**Malfunction due to manual over-tightening**

Fault-free operation of the actuator is not guaranteed if the slip clutch is triggered during manual setting.

- After having reached the manually set lift position, turn the Allen key by half a turn in the opposite direction!

4. Loosen the collar nut.
- ▷ The actuator can be removed.

10. Reinstallation

The actuator must be in the upper lift position for correct installation.

1. Before reinstalling, move the actuator to the upper lift position as described in section 9 on page 10.
2. Fit the actuator to the connection thread of the valve.
3. Hand tighten the collar nut.
4. Put the actuator into operation as described in section 6 on page 9.



After reinstallation, an initialisation run will only be triggered if one of the DIP switches 1 to 6 (see Illust. 4 on page 9) is readjusted after connection to the power supply.

The initialisation run will neither be triggered after a reconfiguration if the actuator is already in the upper lift position.

11. Disposal**Directive 2012/19/EU WEEE:**

Old appliances must not be disposed of with standard waste, but must be dropped off at a collection point for the recycling of electrical and electronic appliances.

NOTICE**Risk of environmental pollution**

Incorrect disposal (for instance with standard waste) may lead to environmental damage.

- Dispose of packaging material in an environmentally friendly manner.
- Dispose of the components appropriately.

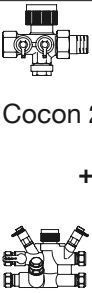
If no return or disposal agreement has been made, dispose of the product yourself.

- If possible, recycle the components.
- Dispose of components which cannot be recycled according to local regulations. Disposal with the standard waste is not permitted.

12. Appendix

Settings of the DIP switches

Valve + actuator =														
Valve type	Model	Control range	DIP switches						DIP switches					
			S1	S2	S3	S4	S5	S6	S1	S2	S3	S4	S5	S6
 Cocon QTZ PN 25	DN 10/15	30 - 90 l/h	on	off	off	off	off	off						
		91 - 150 l/h	on	on	off	off	off	off		on	on	off	off	on
	30 - 210 l/h	151 - 210 l/h	on	off	on	off	off	off		on	off	on	off	on
	DN 10/15	150 - 250 l/h	on	on	on	off	off	off						
		251 - 500 l/h	on	off	off	on	off	off		on	on	on	off	on
	150 - 700 l/h	501 - 700 l/h	on	on	off	on	off	off		on	off	off	on	on
	DN 15	200 - 300 l/h	on	off	on	on	off	off						
		301 - 500 l/h	on	off	on	off	off	off		on	off	on	off	on
	200 - 1300 l/h	501 - 900 l/h	on	on	on	on	off	off		on	on	off	on	on
		901 - 1300 l/h	on	off	off	on	on	off		on	off	on	on	on
	DN 20	250 - 400 l/h	on	off	on	on	off	off						
		401 - 800 l/h	on	on	off	off	off	off		on	on	off	off	on
	250 - 1800 l/h	801 - 1100 l/h	on	on	on	on	on	off		on	on	off	off	on
		1101 - 1500 l/h	on	on	off	off	on	off		on	on	on	on	on
		1501 - 1800 l/h	on	off	on	off	on	off		on	off	on	on	on
 Cocon QTZ PN 16	DN 10/15	30 - 90 l/h	off	off	off	off	on	off						
		91 - 150 l/h	off	on	off	off	on	off		off	on	on	off	on
	30 - 210 l/h	151 - 210 l/h	off	off	on	off	on	off		off	on	off	on	on
	DN 10/15	90 - 150 l/h	off	on	on	off	on	off						
		151 - 250 l/h	off	off	off	on	on	off		off	off	off	on	on
	90 - 450 l/h	251 - 450 l/h	off	on	off	on	on	off		off	on	off	on	on
	DN 15/20	150 - 200 l/h	off	off	on	on	on	off						
		201 - 300 l/h	off	off	off	on	off	on		off	off	on	off	on
	150 - 1050 l/h	301 - 600 l/h	off	on	on	on	on	off		off	off	off	on	on
		601 - 1050 l/h	off	off	off	off	off	on		off	on	off	on	on
	DN 20	180 - 400 l/h	off	on	off	off	off	on		off	off	on	off	on
		401 - 500 l/h	off	on	off	off	on	off		off	on	on	off	on
	180 - 1300 l/h	501 - 600 l/h	off	off	on	off	on	off		off	on	off	on	on
		601 - 700 l/h	off	off	on	off	off	on		off	off	on	on	on
		701 - 1300 l/h	off	on	on	off	off	on		off	off	on	on	on
	DN 25	300 - 400 l/h	off	off	off	on	off	on						
		401 - 600 l/h	off	off	off	on	on	off		off	off	off	on	on
	300 - 2000 l/h	601 - 900 l/h	off	off	off	off	off	on		off	on	off	on	on
		901 - 1400 l/h	off	on	off	on	off	on		off	off	on	on	on
		1401 - 2000 l/h	off	off	on	on	off	on		off	on	on	on	on
	DN 32	600 l/h	off	on	on	on	off	on						
		601 - 800 l/h	off	off	off	off	on	on		off	on	off	on	on
	600 - 3600 l/h	801 - 1600 l/h	off	off	off	off	on	on		off	off	on	on	on
		1601 - 3600 l/h	off	off	off	off	off	off		off	on	on	on	on

 Cocon 2TZ + Cocon 4TR	kvs = 0.45	0.25 U. 0.26 - 0.5 U. 0.6 - 4 U.	off off off	off off on	off on off	on off on	off off off	off off off								
	kvs = 1.0	0.5 - 1 U. 1.1 - 4.5 U.	off off	on off	off off	off off	on on	off on	off on		off	off	on	off	on	off
	kvs = 1.8	0.5 - 7 U.	off	on	off	off	on	off	off							
	kvs = 4.5	0.75 - 1 U. 1.1 - 7 U.	off off	off off	on on	off on	off off	on on	off on							
 AV9 + AV6 + AF + AZ/A		Presetting 3, 4, 5, 6	off	off	on	on	off	off								
		Presetting 7, 8	off	on	off	on	off	off								
		Presetting 9	off	off	off	on	off	off								
		Presetting 2, 3	off	off	on	on	off	off								
		Presetting 4, 5	off	on	off	on	off	off								
		Presetting 6	off	off	off	on	off	off								
		Presetting 1, 2, 3, 4	off	on	on	on	off	off								
		Presetting 5, 6	off	off	on	on	off	off								
			off	on	off	off	off	on		off	on	on	off	on	off	off
		PTB kvs=0.45	off	off	on	off	off	off		off	off	on	off	on	off	off
		PTB kvs=0.80	off	off	off	off	off	on		off	on	on	on	on	on	on
 Hycococon HTZ	DN 15	0.5 - 0.75 U. 0.76 - 1 U.	off off	off on	on off	on on	off off	off off								
	kvs = 1.7	1.1 - 3 U.	off	off	off	on	off	off								
	DN 20	0.5 - 0.75 U. 0.76 - 1.5 U.	off off	off off	on on	on on	off on	off off								
	kvs = 2.7	1.6 - 3 U.	off	off	on	on	off	on								
	DN 25	0.5 - 0.75 U. 0.76 - 1.0 U.	off off	on off	on on	on on	off off	off off								
	kvs = 3.6	1.1 - 1.5 U. 1.6 - 3.0 U.	off off	on off	off off	off on	on off	off on								
		3.1 - 3.5 U.	off	off	on	off	off	on								
	DN 32	0.5 U. 0.6 - 1.0 U.	off off	on off	on on	on on	off off	off off								
	kvs = 6.8	1.1 - 1.5 U. 1.6 - 2.0 U.	off off	on off	off on	on on	off off	off off								
		2.1 - 2.5 U. 2.6 - 3.0 U.	off off	on on	on off	off off	off off	off off								
		3.1 - 4.0 U.	off	off	off	off	off	off								
	DN 40	0.5 - 0.75 U. 0.76 - 1.0 U.	off off	off on	on off	on on	off off	off off								
	kvs = 10	1.1 - 1.5 U. 1.6 - 2.0 U.	off off	off on	off on	on off	off off	off off								
		2.1 - 2.5 U. 2.6 - 3.0 U.	off off	off on	on off	off off	off off	off off								
		3.1 - 4.0 U.	off	off	off	off	off	off								
			off	on	on	on	off	off		off	on	off	off	on	on	on
		h = 1.0 mm	off	off	on	on	off	off								
		h = 1.5 mm	off	on	off	on	off	off		off	off	on	off	on	on	on
		h = 2.0 mm	off	off	off	on	off	off		off	on	on	off	on	on	on
		h = 2.5 mm	off	on	on	on	off	off		off	off	off	on	on	on	on
		h = 3.0 mm	off	off	on	off	off	off		off	on	off	on	on	on	on
		h = 3.5 mm	off	on	off	off	off	off		off	off	on	on	on	on	on
		h = 4.0 mm	off	off	off	off	off	off		off	on	on	on	on	on	on
Products of other manufacturers (M30x1.5, s=11.8mm)	Valve lift h	h = 0.5 mm	off	on	on	on	off	off		off	on	off	off	on	on	on
		h = 1.0 mm	off	off	on	on	off	off								
		h = 1.5 mm	off	on	off	on	off	off		off	off	on	off	on	on	on
		h = 2.0 mm	off	off	off	on	off	off		off	on	on	off	on	on	on
		h = 2.5 mm	off	on	on	on	off	off		off	off	off	on	on	on	on
		h = 3.0 mm	off	off	on	off	off	off		off	on	off	on	on	on	on
		h = 3.5 mm	off	on	off	off	off	off		off	off	on	on	on	on	on

