

Electrical actuator

Installation, Operation og Maintenance Manual



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1. INTRODUCTION

1.1 Purpose

This Installation and operating manual explains how to install, operate and maintain 5630-004 electric actuators.

1.2 Safety notices

Safety notices in this manual outline precautions the user must take to reduce the risk of personal injury and damage to the equipment. User must read these instructions before installation, operating, or maintenance.

-  **DANGER:** Refers to personal safety. Alerts the user to danger or harm. The hazard or unsafe practice will result in severe injury or death.
-  **WARNING :** Refers to personal safety. Alerts the user to potential danger. Failure to follow warning notices could result in personal injury or death.
-  **CAUTION:** Directs the user's attention to general precautions that, if not followed, could result in personal injury and/or equipment damage.

Note : Highlights information critical to help the users understand how to install and operate actuators.

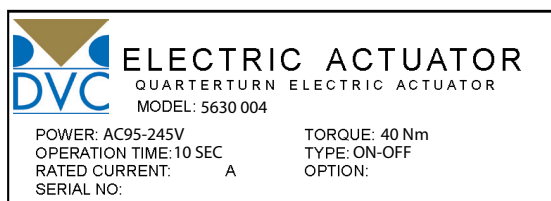
2. PRODUCT IDENTIFICATION

2.1 Product identification

The actuator name plate is located on the opposite side of the conduit entry. The name plate contains the following:

2.1.1 Marking

A) General



- DVC logo (trade mark)
- Model
- Electrical Power Supply
- Torque
- Operating time.
- Type
- Rated current
- Option
- Serial No.

Note: Name of manufacturer and country shall not be printed based on OEM.

2.2 Initial inspection

Upon receipt of the actuator, the user should inspect the condition of the product and ensure that product specification stated in the name plate matches with the order sheet.

- Remove packing wrap or wooden box carefully. Inspect the product for any visible damage that may have occurred during the delivery.
- Check the product specification with the order placed. If a wrong product have been delivered, immediately report to your supplier.

2.3 Storage

Actuators must be stored in a clean, cool and dry area. The unit shall be stored with the cover installed and the conduit openings sealed. Storage must be off the floor, covered with a dust protector. When actuators are stored outdoor, they must be stored off the ground, high enough to prevent being immersed in water or buried in snow.

3. GENERAL INFORMATION AND FEATURES

3.1 General information

TYPE 5630-004 electric actuator is designed to operate small size quarter turn valves like butterfly, ball valves, etc.

3.1.1 Performance standard

TYPE	MAX OUTPUT TORQUE Nm	OPERATING TIME (Sec.) 50/60 Hz	DUTY CYCLE IEC34-1 S4(%)	MOUNTING SIZE ISO 5210	POWER 1 PHASE AC or DC	RATED CURRENT (A) 50/60 Hz			KG
						110V	230V	24V	
5630-004	40	10/10	50	F03, F04, F05	AC85V~265V, or DC24V	0.1A	0.05A	1A	1.2

3.1.2 Standard technical data

ENCLOSURE RATED	Weatherproof IP67, NEMA 4 & 6
ENCLOSURE	High grade aluminum alloy, corrosion coated
POWER SUPPLY	95~245VAC/1Ph,50/60Hz, 24VDC
DUTY TYPE	S4 50% / S2 30min (IEC 60034)
MOTOR	DC motor
LIMIT SWITCHES	2 x open/close SPDT, 250V AC 5A rating
AUXILIARY LIMIT SWITCHES	2 x open/close SPDT, 250V AC 5A rating
TORQUE SWITCHES	Electronic Sensor(MAX 2A)
INDICATOR	Continuous position indicator & Full Position LED lamp
MANUAL	Manual push button & Manual lever
SPACE HEATER	0.5W
CONDUIT ENTRIES	1 x PG11&Long(1.2m) Wire Type
LUBRICATION	Moly EP Grease
AMBIENT TEMPERATURE	-20°C ~ + 80°C
EXTERNAL COATING	Powder coating polyester

3.1.3 Duty cycle

Duty cycle rated IEC60034 – S4 50% / S2 30 min. Exceeding the actuator's rated duty cycle may cause thermal overload.

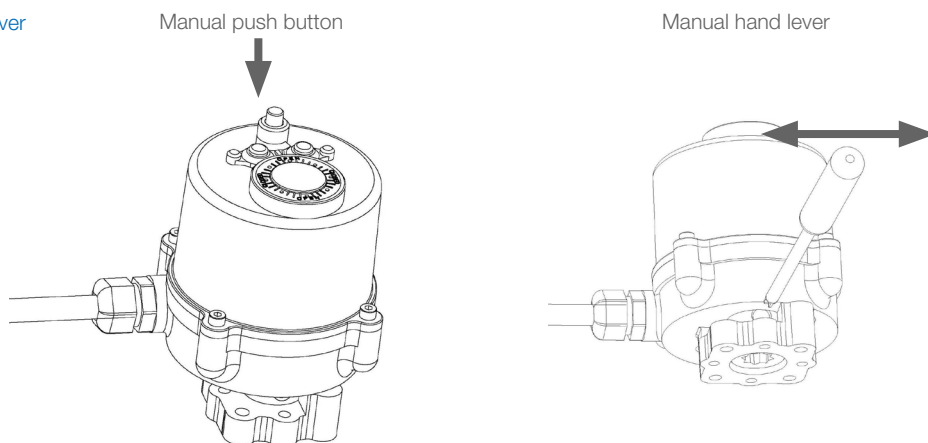
NOTE: ¹TYPE OF DUTY ACCORDING TO VDE 0530 / IEC 60034-1

SHORT – TIME DUTY S2	INTERMITTENT DUTY S4
The operation time at a constant load is short, so that thermal equilibrium is not reached. The pause is long enough for the machine to cool down to ambient temperature. The duration of the short time operation is limited to 15min (10min, 30min)	The duty is a sequence of identical cycles which consist of starting time, operation time with constant load and rest period. The rest period allows the machine to cool down so that thermal equilibrium is not reached. The relative on-time at S4-25% or S4-50% is limited to 25% and 50% respectively.

3.1.4 Heater

Condensation in the actuator is possible due to wide fluctuation of the ambient temperature. The heater integrated in the control unit prevents this in general.

3.1.5 Manual hand lever

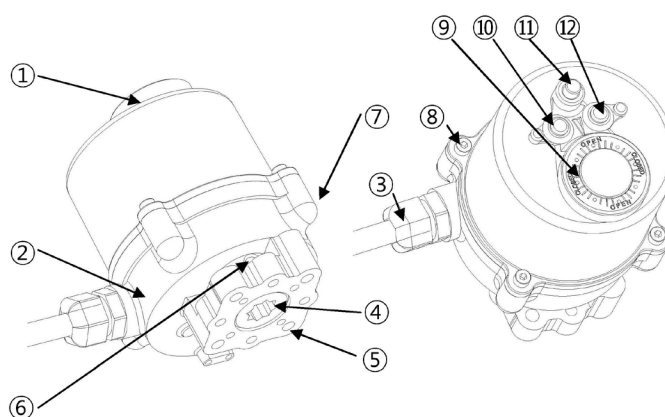


3.1.6 Lubrication

TYPE 5630-004 is a totally enclosed unit with permanent lubricated gear train (Moly EP Grease). Once installed, further lubrication should not be required. However, periodic preventative maintenance will extend the operating life of the actuator.

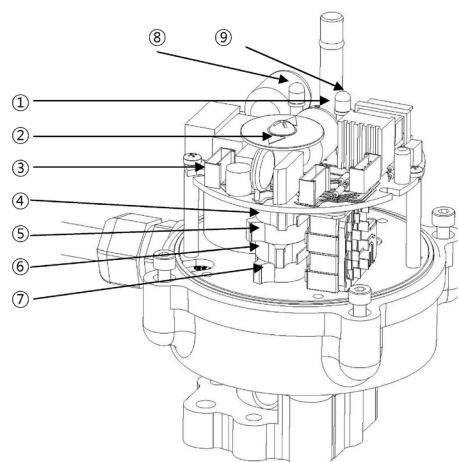
3.2 External parts for standard models

POS.	EXTERNAL PARTS
1	Top Cover
2	Body
3	Cable Entry (Pg 11) X1 & Wire (1.2M)
4	Drive Shaft (Star 11Mm)
5	Mounting Base (F03,F04,F05)
6	Manual Lever Hole
7	Name Plate
8	Cover Bolt (Captive Design)
9	Indicator
10	Full Close Led Lamp (Red Color)
11	Manual Push Button
12	Full Open Led Lamp (Blue Color)



3.3 Internal Parts for Standard Models


POS.	INTERNAL PARTS
1	Manual Push Shaft
2	Indicator
3	On/Off PCB & Heater
4	Additional - Close Limit Switch Set
5	Additional - Open Limit Switch Set
6	Close Limit Switch Set
7	Open Limit Switch Set
8	Full Close Led Lamp (Blue)
9	Full Open Led Lamp (Red)



4. INSTALLATION

4.1 Pre-installation for using in general service

Verify the name plate of the actuator to insure correct model number, force, operating speed, voltage and enclosure type before installation or use. It is important to verify that the output force of the actuator is appropriate for the force requirements of the valve and that the actuator duty cycle is appropriate of the intended application.

 **WARNING:** Read this installation and maintenance manual carefully and completely before attempting to install, operate, or troubleshoot the Type 5630 actuator.

4.2 Actuator mounting

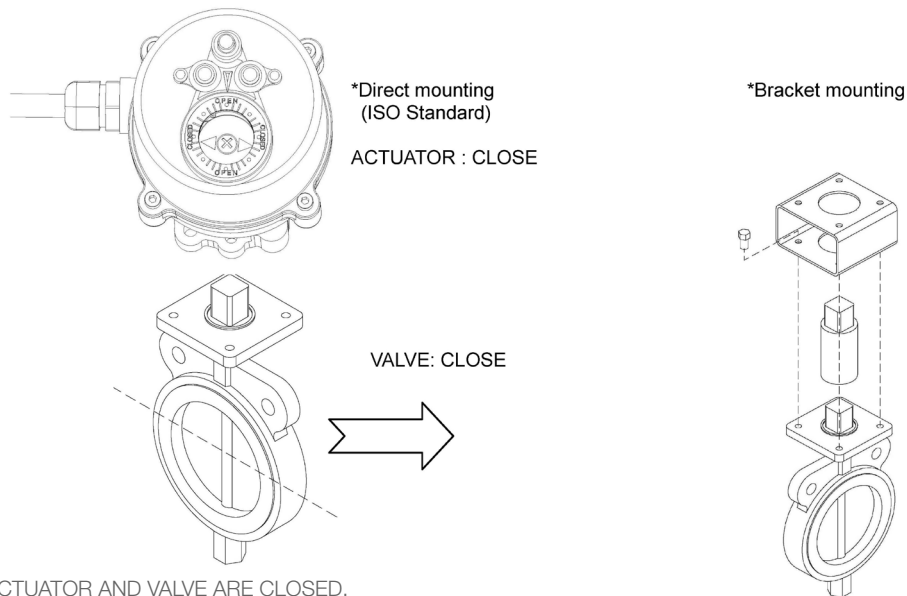
NOTE: Prior to mounting, the actuator must be checked for any damage. Damaged parts must be replaced by original spare parts

Mounting is most easily done with the valve shaft pointing vertically upward. But mounting is also possible in any other position. The actuator may be mounted in any position.

CAUTION:

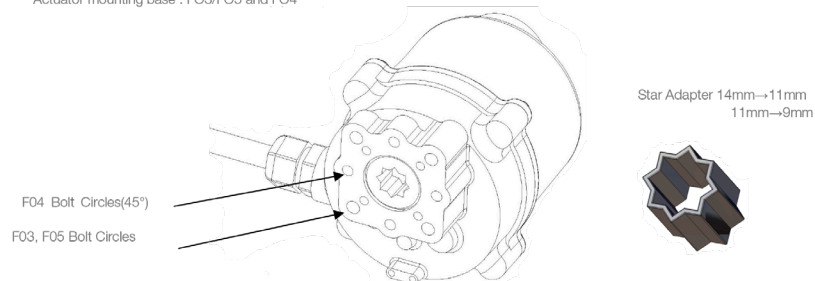
- Do not attempt to work on your 5630 actuator without first shutting off the incoming power
- Do not attach ropes or hooks to the hand lever for the purpose of lifting by hoist

4.2.1 Actuator mounting base details



*MAKE SURE BOTH THE ACTUATOR AND VALVE ARE CLOSED.

Actuator mounting base : F03/F05 and F04



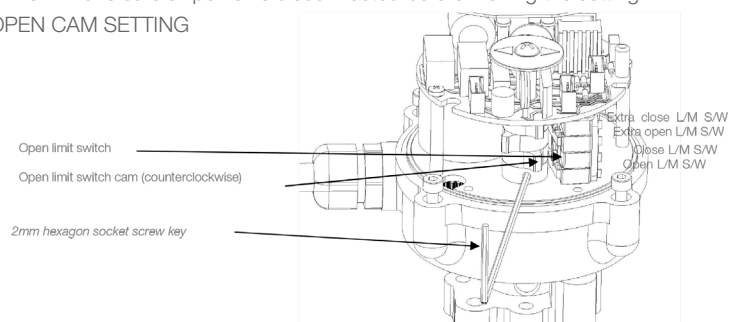
! DANGER: HAZARDOUS VOLTAGE. MAKE SURE ALL POWER IS DISCONNECTED BEFORE MOUNTING.

4.3 Limit switch setting

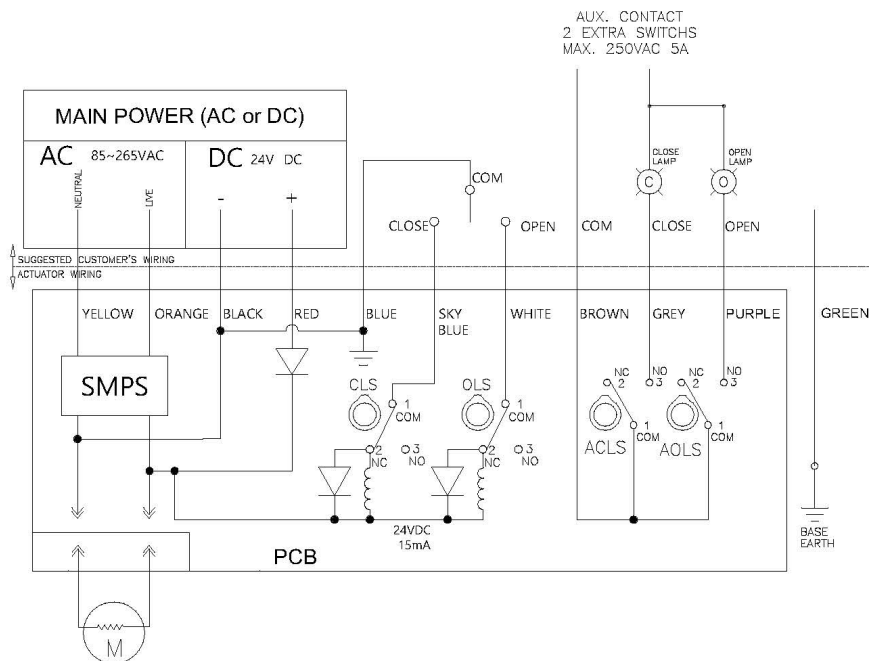
- Rotate the actuator with hand lever manually to closed position.
- Using a hex wrench, loosen the set screw in the CLOSE limit switch cam.
- Rotate the CLOSE cam towards limit switch lever until the switch 'clicks' (Fig 1).
- Tighten the set screw with hex wrench.
- Rotate the actuator with hand lever manually to open position.
- Using a hex wrench, loosen the set screw in the OPEN limit switch cam.
- Rotate the OPEN cam towards limit switch lever until the switch 'clicks' (Fig 2).
- Tighten set screw with hex wrench.

! DANGER: HAZARDOUS VOLTAGE. Make sure all power is disconnected before making the setting.

FIG. 2 OPEN CAM SETTING



5. TYPE 5630-004 WIRING DIAGRAM



DANGER:

- HAZARDOUS VOLTAGE
- No electrical power should be connected until all wiring and limit switch adjustments are completed.
- Once power is supplied to unit, caution if cover is not installed.

6. MAINTENANCE



Caution: Turn off all power services before attempting to perform service on the actuator. POTENTIAL HIGH PRESSURE ITEM. Before removing or disassembling your actuator, ensure that the valve or other actuated device is isolated and not under pressure.

Maintenance, under normal conditions at six month intervals. But when conditions are more harsh, more frequent inspections may be advisable.

- Insure valve actuator alignment.
- Insure wiring is insulated, and connected properly.
- Insure all screws are present and tightened.
- Insure cleanliness of internal electrical devices.
- Insure conduit connections are installed properly and are dry.
- Check internal devices for condensation.
- Check power to internal heater.
- Check enclosure O-rings seals and verify that the O-ring is not pinched between flange.
- Verify declutch mechanism.
- Visually inspect during open/close cycle.
- Inspect identification labels for wear and replace if necessary.



WARNING: Treat cover with care. Surfaces must not be damaged or dirtied in any way. Do not jam cover during fitting.

6.2 Tools

- 1 Set Metric Allen Key (Hex Wrench)
- 1 Set Screw Drivers
- 1 Set Metric Spanner
- 1 Wrench 20mm
- 1 Wrench 30mm
- 1 Wire Stripper long Nose
- 1 Multi Meter (AC, DC, Resistance)
- 1 Wire cutter

7. TROUBLE SHOOTING

The following instructions are offered for the most common difficulties encountered during installation and start-up.

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
Motor will not run	Open in control circuit Insulation resistance breakdown in motor	Refer to appropriate wiring diagram and check for continuity
No power available to actuator	Tripped circuit breaker	Reset circuit breaker
Manual hand lever hard to turn	Valve stem improperly lubricated Actuator lubrication has broken down Valve packing gland too tight Jammed valve	Lubricate with grease Clean out old grease and replace with recommended lubricant Loosen packing gland nuts as necessary Refer to valve maintenance
Valve only opens or closes partially with motor	Limit switch improperly set	Check setting and reset if necessary
Manual hand lever will not operate valve	Stripped gearing Broken hand lever shaft Broken valve stem	Replace as necessary Replace as necessary Repair or replace as necessary
Motor runs but will not operate valve	Stripped gearing	Replace as necessary

Actuator does not respond

- Verify the line voltage to the actuator
- Check that the voltage matches the rating on the actuator nameplate
- Check internal wiring against actuator wiring diagram
- Check limit switch cams

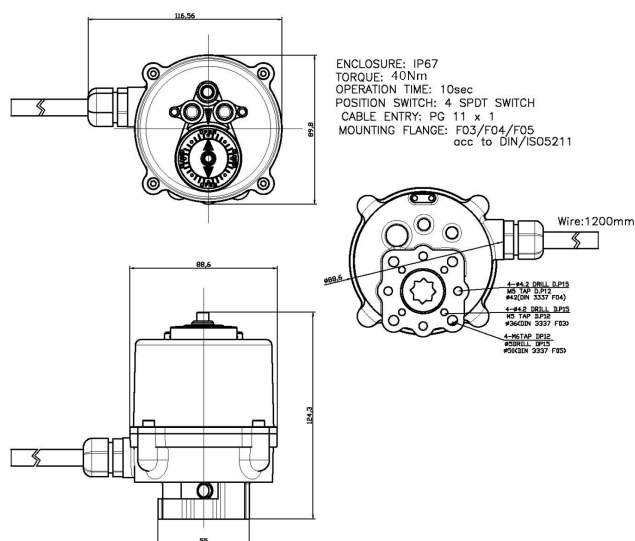
Actuator is receiving power but does not operate

- Verify the line voltage to the actuator
- Check actuator force to see if it's greater than the valve force
- Check limit switches and cams
- Check that the force switches have not tripped
- Check mechanical travel stop adjustment
- Verify the actuator against valve rotation (standard units are anti-clockwise open)
- Check internal wiring
- Check for corrosion and condensation
- Verify coupler/bracket are correctly installed and is not causing binding

Actuator runs erratically

- Check ambient temperature
- Verify that the duty cycle has not been exceeded
- Check the position of manual hand lever

8. DIMENSION



The Expert Leader

Concepts for flow technology

Vores forskellige koncepter inden for flowteknologi er essensen af en klar og grundlæggende idé – En skræddersyet løsning til et teknisk problem. Konceptet er baseret på det specifikke krav til kundens forretning, og derefter formuleret og udviklet af vores kompetente og opfindsomme ingeniører. Målet er at levere fleksible løsninger til mange specifikke behov, med fokus på holdbarhed, produktivitet og tilgængelighed med lave livscyklusomkostninger.

Armatec A/S

Øst:

Mjølnersvej 4-8
DK-2600 Glostrup
Tlf: +45 46 96 00 00
Mail: armatec@armatec.dk

Vest:

Ferrarivej 14
DK-7100 Vejle
Tlf: +45 75 72 33 00
Mail: mail@armatec.dk

