

# ELECTRIC ACTUATORS

## HYDRONAUT Series

<b>TYPE A</b>	STANDARD ON-OFF 110/220/380 VAC
<b>TYPE D</b>	STANDARD ON-OFF 12/24/12+24 VDC
<b>TYPE I</b>	TURBO ON-OFF 110/220/380 VAC
<b>TYPE L</b>	100% DUTY ON-OFF 110/220 VAC
<b>TYPE M</b>	MODULATING 110/220 VAC

- Suitable for aggressive media
- On-Off and modulating control
- High flow rate valve and low power consumption
- Visual position indicator
- Built in manual override for safety and convenience
- IP 67 Weather Proof and Submersible Housing





### Perfect Combination of Valve and Electric Actuator

The **HYDRONAUT** electric actuator, developed as one of the most reliable electric actuators in the market, adds a new dimension of operational dependability and flexibility to modern processes controlled by computer, PLC, and other electric control equipment.

**HYDRONAUT** Series electric actuated assemblies valves consist of a **HYDRONAUT** actuator and a ball or butterfly type valve. It is featured for its compact design with the gear section fully isolated from electrical components and cables.

The **HYDRONAUT** electric actuator can be used as a single device for other fluid control elements such as butterfly valves, plug valves, dampers and others.

### The toughest, sturdiest and most efficient electric actuator

HYDRONAUT electric actuators add a new dimension of operational dependability and flexibility to modern processes controlled by all types of automation.

#### Technical Data

Operation Voltage	TYPE A STANDARD ON-OFF 110/220/380 VAC TYPE D STANDARD ON-OFF 12/24/12+24 VDC TYPE I TURBO ON-OFF 110/220/380 VAC TYPE L 100% DUTY ON-OFF 110/220 VAC TYPE M MODULATING 110/220 VAC
Power Consumption	10 to 60 watts (depending on model)
Enclosure	IP 67 according to STD. IEC60529
Torque Range	35 to 600 NM (310 to 5310 lbf*in)
Temperature Range	-10 to 60°C (14 to 140°F)
Rotation Angle	Reversible 90°(±5°)
Case Material	Aluminum alloy
Cover Material	UV resistant semi-transparent Polycarbonate
Certification / Test	Certification / Test - The LOW Voltage Directive, 73/23/EEC, 93/68 EEC - The EMC Directive, 89/336/EEC

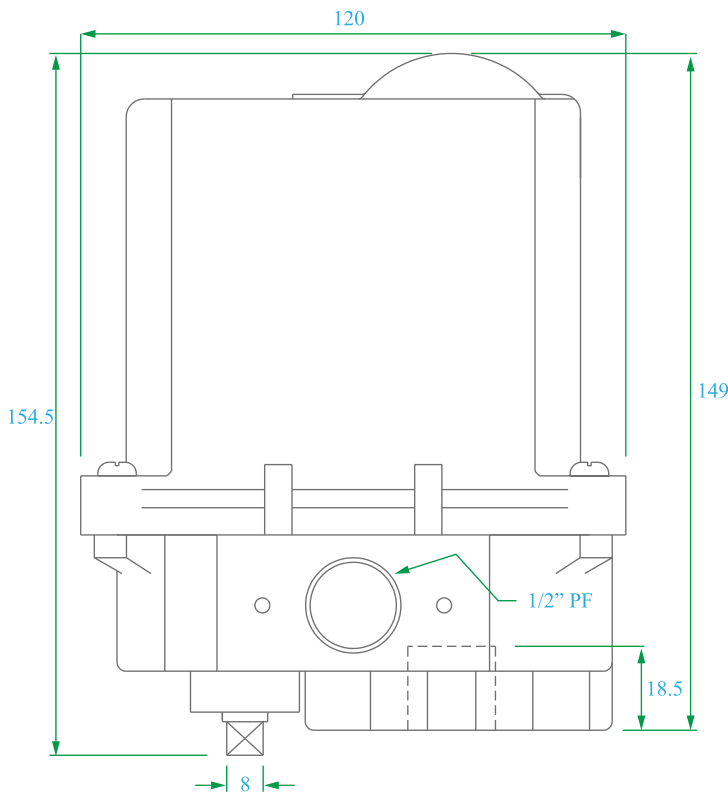
### Common Service Applications



- Water treatment
- Sewage treatment
- Drinking water
- Pools and Spa



- Chemical industry
- Air conditioning
- Food industry
- Metal Plating
- Semi Conductor
- Pulp and Paper



### FEATURES

- Reversible (open-close) shaft motion for a 10,000 cycle life
- Built in adjustable mechanical shaft stop to prevent over-rotation of the camshaft
- Manual Override
- Overheating auto-shut off

### OPTIONS

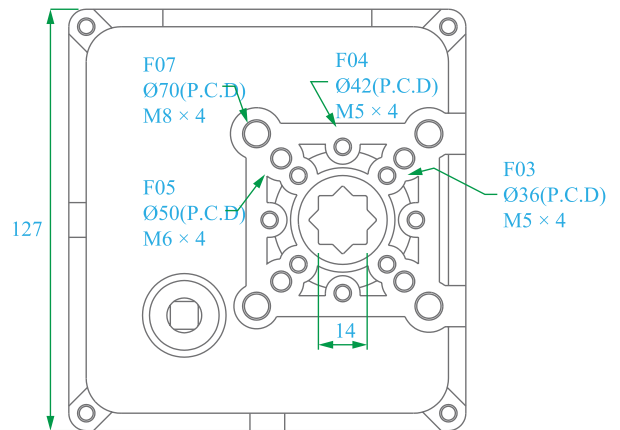
- Additional Limit Switches
- Heater for cold temperatures
- Electrical Relay
- 4~20 ma positioner

### HYDRONAUT 100 ~ 200 Series

Hydrosel Canada's range of electric actuators takes its highly successful predecessor to the next level with the introduction of the **HYDRONAUT** Series. With an all new, rugged weather proof and submersible PC semi-transparent housing, the 100 ~ 200 Series electrical actuators offer even more user friendly features.

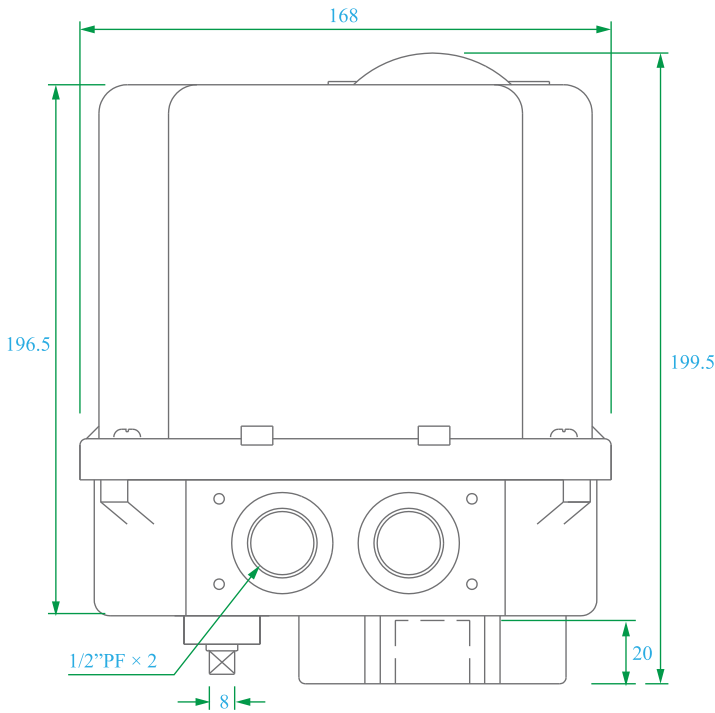
### Availability

- TYPE A** STANDARD ON-OFF 110/220/380 VAC
- TYPE D** STANDARD ON-OFF 12/24/12+24 VDC
- TYPE I** TURBO ON-OFF 110/220/380 VAC
- TYPE L** 100% DUTY ON-OFF 110/220 VAC
- TYPE M** MODULATING 110/220 VAC



STANDARD CONNECTOR	
SIZE	TYPE
<input type="checkbox"/> 9 <input type="checkbox"/> 11	

TECHNICAL INFORMATION						
HYDRONAUT Series	TORQUE	WEIGHT	MOUNTING FLANGE		KAPLAN	SERTÃO
100 Series	35 NM	1.70 KGS	F03	F04	1/2 ~ 1 1/2"	-
200 Series	50 NM	1.80 KGS	F05	F07	2 ~ 2 1/2"	2 ~ 3"



## HYDRONAUT 300 Series

Hydrosal Canada's range of electric actuators takes its highly successful predecessor to the next level with the introduction of the **HYDRONAUT** Series. With an all new, rugged weather proof and submersible PC semi-transparent housing, the 300 Series electrical actuators offer even more user friendly features.

### Availability

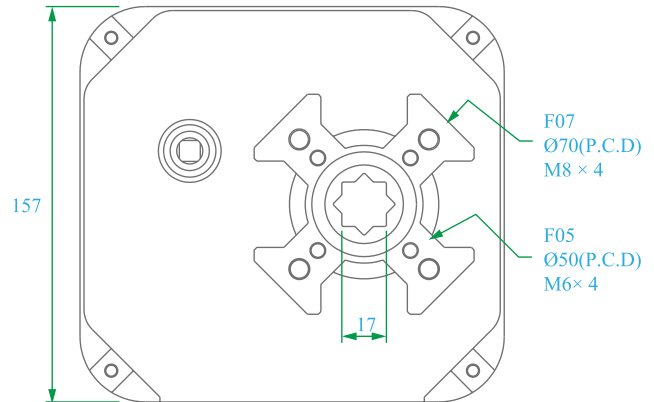
- TYPE A** STANDARD ON-OFF 110/220/380 VAC
- TYPE D** STANDARD ON-OFF 12/24/12+24 VDC
- TYPE I** TURBO ON-OFF 110/220/380 VAC
- TYPE L** 100% DUTY ON-OFF 110/220 VAC
  
- TYPE M** MODULATING 110/220 VAC



### FEATURES

- Reversible (open-close) shaft motion for a 10,000 cycle life
- Built in adjustable mechanical shaft stop to prevent over-rotation of the camshaft
- Manual Override
- Overheating auto-shut off

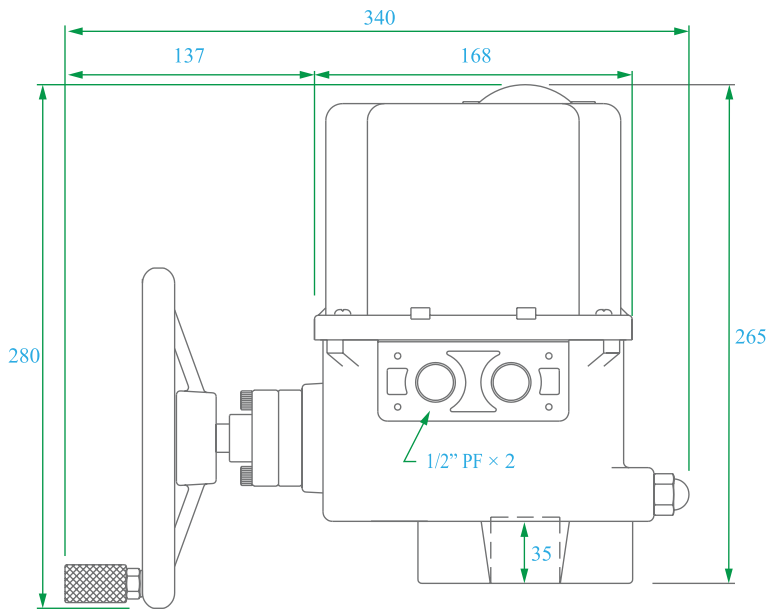
### OPTIONS

- Additional Limit Switches
- Heater for cold temperatures
- Electrical Relay
- 4~20 ma positioner



STANDARD CONNECTOR	
SIZE	TYPE
14	
14	

TECHNICAL INFORMATION					
HYDRONAUT Series	TORQUE	WEIGHT	MOUNTING FLANGE	KAPLAN	SERTÃO
300 Series	170 NM	4.40 KGS	F05	F07	3" / 4 ~ 5"



### HYDRONAUT 400 ~ 700 Series

Hydrosal Canada's range of electric actuators takes its highly successful predecessor to the next level with the introduction of the **HYDRONAUT** Series. With an all new, rugged weather proof and submersible PC semi-transparent housing, the 400 ~ 700 Series electrical actuators offer even more user friendly features.

#### Availability

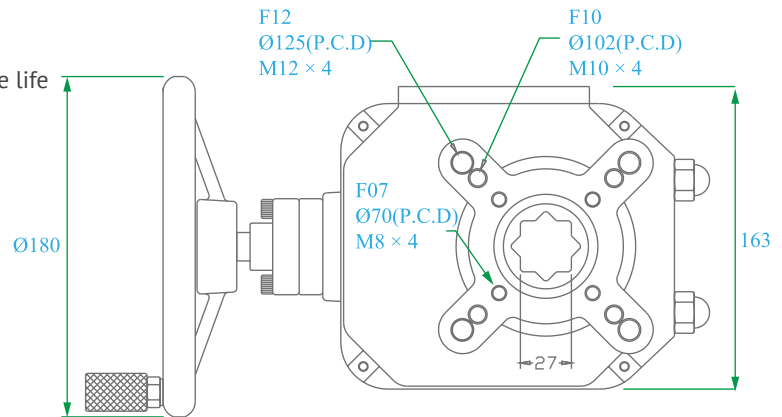
- TYPE A** STANDARD ON-OFF 110/220/380 VAC
- TYPE D** STANDARD ON-OFF 12/24/12+24 VDC
- TYPE I** TURBO ON-OFF 110/220/380 VAC
- TYPE L** 100% DUTY ON-OFF 110/220 VAC
- TYPE M** MODULATING 110/220 VAC



#### FEATURES

- Reversible (open-close) shaft motion for a 10,000 cycle life
- Built in adjustable mechanical shaft stop to prevent over-rotation of the camshaft
- Manual Override
- Overheating auto-shut off

#### OPTIONS

- Additional Limit Switches
- Heater for cold temperatures
- Electrical Relay
- 4~20 ma positioner



STANDARD CONNECTOR					
SIZE					TYPE
□ 17	□ 22				
◻ 8	◻ 11	◻ 12			
□ 14	□ 16	□ 19	□ 21		
					

TECHNICAL INFORMATION							
HYDRONAUT Series	TORQUE	WEIGHT	MOUNTING FLANGE			KAPLAN	SERTÃO
400 Series	200 NM	7.90 KGS				4"	6"
500 Series	380 NM	8.60 KGS				-	8"
600 Series	500 NM	8.80 KGS	F07	F10	F12	-	10"
700 Series	600 NM	9.10 KGS				-	12"

## Performance Chart

STANDARD ON-OFF 110/220/380 VAC														
HYDRONAUT TYPE "A"	TORQUE	PHASE	VOLTAGE			POWER CONSUMP- TION	CYCLE TIME ( 90 DEGREES)		DUTY CYCLE	CURRENT CONSUMPTION				WEIGHT
			110 VAC	220 VAC	380 VAC		50 HZ	60 HZ		110 ~ 120VAC		200 ~ 240 VAC		
										50 HZ	60 HZ	50 HZ	60 HZ	
100 SERIES	35 NM	Single	0	0	X	10 W	12 sec	10 sec	25%	0.60 A	0.70 A	0.29 A	0.38 A	1.70 KGS
200 SERIES	50 NM	Single	0	0	X	15 W	12 sec	10 sec	25%	0.80 A	0.90 A	0.40 A	0.50 A	1.80 KGS
300 SERIES	170 NM	Single 3-PH	0 X	0 0	X 0	25 W	10 sec	8 sec	50%	1.00 A	1.20 A	0.69 A	0.72 A	4.40 KGS
400 SERIES	200 NM	Single 3-PH	0 X	0 0	X 0	25 W	12 sec	10 sec	50%	1.00 A	1.20 A	0.69 A	0.72 A	7.90 KGS
500 SERIES	380 NM	Single 3-PH	0 X	0 0	X 0	25 W	36 sec	30 sec	50%	1.00 A	1.20 A	0.69 A	0.72 A	8.60 KGS
600 SERIES	500 NM	Single 3-PH	0 X	0 0	X 0	40 W	36 sec	30 sec	50%	1.80 A	2.00 A	1.00 A	0.75 A	8.80 KGS
700 SERIES	600 NM	Single 3-PH	0 X	0 0	X 0	60 W	36 sec	30 sec	50%	2.80 A	2.40 A	1.10 A	0.80 A	9.10 KGS

STANDARD ON-OFF 12/24/24+12 VDC												
HYDRONAUT TYPE "D"	TORQUE	VOLTAGE			POWER CONSUMPTION	CYCLE TIME ( 90 DEGREES)		DUTY CYCLE	CURRENT CONSUMPTION			WEIGHT
		110 VAC	220 VAC	380 VAC		60 HZ	12 VDC		24 VDC	12 VDC		
100 SERIES	35 NM	0	0	0	20 W	10 sec	100%	2.00 A	0.80 A	1.50 A	2.00 KGS	
200 SERIES	50 NM	0	0	0	20 W	10 sec	100%	2.00 A	0.80 A	1.50 A	2.20 KGS	
300 SERIES	150 NM	X	0	0	36 W	8 sec	100%	-	1.50 A	1.50 A	4.40 KGS	
400 SERIES	200 NM	X	0	0	36 W	10 sec	100%	-	1.50 A	1.50 A	7.90 KGS	
500 SERIES	280 NM	X	0	0	36 W	30 sec	100%	-	1.50 A	1.50 A	8.60 KGS	

TURBO ON-OFF 110/220/380 VAC												
HYDRONAUT TYPE "I"	TORQUE	PHASE	VOLTAGE			POWER CONSUMP- TION	CYCLE TIME ( 90 DEGREES)		DUTY CYCLE	CURRENT CONSUMPTION		WEIGHT
			110 VAC	220 VAC	380 VAC		60 HZ	110-120 VAC 60 HZ		220-240 VAC		
100 SERIES	10 NM	Single	0	0	0	15 W	1 sec	25%	0.70 A	0.38 A	1.70 KGS	
300 SERIES	35 NM	Single	0	0	0	25 W	1 sec	25%	1.20 A	0.72 A	4.40 KGS	

100% DUTY ON-OFF 110/220 VAC											
HYDRONAUT TYPE "L"	TORQUE	PHASE	VOLTAGE		POWER CONSUMP- TION	CYCLE TIME ( 90 DEGREES)		DUTY CYCLE	CURRENT CONSUMPTION		WEIGHT
			110 VAC	220 VAC		60 HZ	110-120 VAC 60 HZ		220-240 VAC		
100 SERIES	30 NM	Single	0	0	25 W	16 sec	100%	0.30 A	0.15 A	1.70 KGS	
200 SERIES	35 NM 50 NM	Single	0	0	25 W	16 sec 36 sec	100%	0.30 A	0.15 A	1.80 KGS 4.40 KGS	
300 SERIES	90 NM 120 NM	Single	0	0	25 W	36 sec 54 sec	100%	0.30 A	0.15 A	7.90 KGS 8.60 KGS	
400 SERIES	100 NM	Single	0	0	25 W	65 sec	100%	0.30 A	0.15 A	8.80 KGS	

### Performance Chart

MODULATING 110/220 VAC											
HYDRONAUT TYPE "M"	TORQUE	PHASE	VOLTAGE		POWER CONSUMPTION	CYCLE TIME (90 DEGREES) 60 HZ	DUTY CYCLE	CURRENT CONSUMPTION		WEIGHT	
			110 VAC	220 VAC				110-120 VAC 60 HZ	220-240 VAC 60 HZ		
100 SERIES	25 NM	Single	0	0	25 W	16 sec	100%	0.30 A	0.15 A	2.20 KGS	
200 SERIES	35 NM 50 NM	Single	0	0	25 W	16 sec 36 sec	100%	0.30 A	0.15 A	2.50 KGS	
300 SERIES	100 NM	Single	0	0	25 W	36 sec	100%	0.30 A	0.15 A	3.20 KGS	
	120 NM					54 sec					4.00 KGS
	170 NM					8 sec					50%
400 SERIES	200 NM	Single	0	0	25 W	10 sec	50%	1.20A	0.72A	8.30 KGS	
500 SERIES	300 NM	Single	0	0	25 W	30 sec	50%	1.20A	0.72A	9.00 KGS	
600 SERIES	500 NM	Single	0	0	40 W	30 sec	50%	2.00A	0.75A	9.20 KGS	
700 SERIES	600 NM		0	0	60 W			2.40A	0.80A	9.50 KGS	

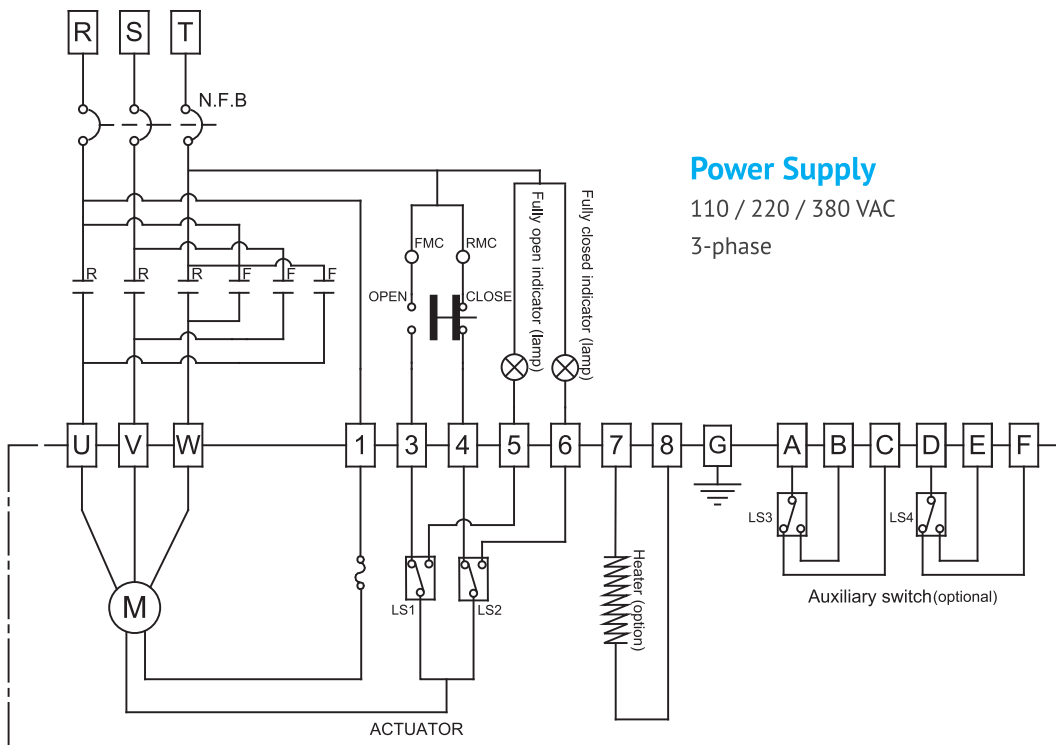
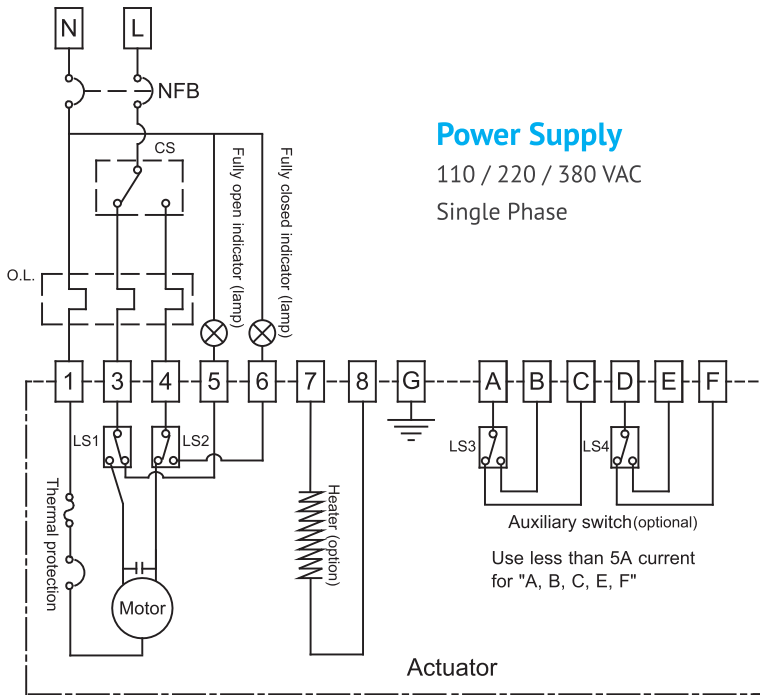
### Part Numbers

SERIES	TYPE A STANDARD ON/OFF			TYPE I TURBO ON/OFF		
	110 VAC	220 VAC	380 VAC	110 VAC	220 VAC	380 VAC
100 SERIES	0604.HNTE.100A110	0604.HNTE.100A220	0604.HNTE.100A380	0604.HNTE.100I110	0604.HNTE.100I220	0604.HNTE.100I380
200 SERIES	0604.HNTE.200A110	0604.HNTE.200A220	0604.HNTE.200A380	-	-	-
300 SERIES	0604.HNTE.300A110	0604.HNTE.300A220	0604.HNTE.300A380	0604.HNTE.300I110	0604.HNTE.300I220	0604.HNTE.300I380
400 SERIES	0604.HNTE.400A110	0604.HNTE.400A220	0604.HNTE.400A380	-	-	-
500 SERIES	0604.HNTE.500A110	0604.HNTE.500A220	0604.HNTE.500A380	-	-	-
600 SERIES	0604.HNTE.600A110	0604.HNTE.600A220	0604.HNTE.600A380	-	-	-
700 SERIES	0604.HNTE.700A110	0604.HNTE.700A220	0604.HNTE.700A380	-	-	-

SERIES	TYPE D STANDARD ON/OFF		TYPE L 100% DUTY ON/OFF		TYPE M MODULATING	
	110 VAC	220 VAC	110 VAC	220 VAC	110 VAC	220 VAC
100 SERIES	0604.HNTE.100D012	0604.HNTE.100D024	0604.HNTE.100L110	0604.HNTE.100L220	0604.HNTE.100M110	0604.HNTE.100M220
200 SERIES	0604.HNTE.200D012	0604.HNTE.200D024	0604.HNTE.200L110	0604.HNTE.200L220	0604.HNTE.200M110	0604.HNTE.200M220
300 SERIES	-	0604.HNTE.300D024	0604.HNTE.300L110	0604.HNTE.300L220	0604.HNTE.300M110	0604.HNTE.300M220
400 SERIES	-	0604.HNTE.400D024	0604.HNTE.400L110	0604.HNTE.400L220	0604.HNTE.400M110	0604.HNTE.400M220
500 SERIES	-	0604.HNTE.500D024	0604.HNTE500L110	0604.HNTE500L220	0604.HNTE500M110	0604.HNTE500M220
600 SERIES	-	0604.HNTE.600D024	0604.HNTE.600L110	0604.HNTE.600L220	0604.HNTE.600M110	0604.HNTE.600M220
700 SERIES	-	0604.HNTE.700D024	0604.HNTE700L110	0604.HNTE700L220	0604.HNTE700M110	0604.HNTE700M220

## Wiring Diagram

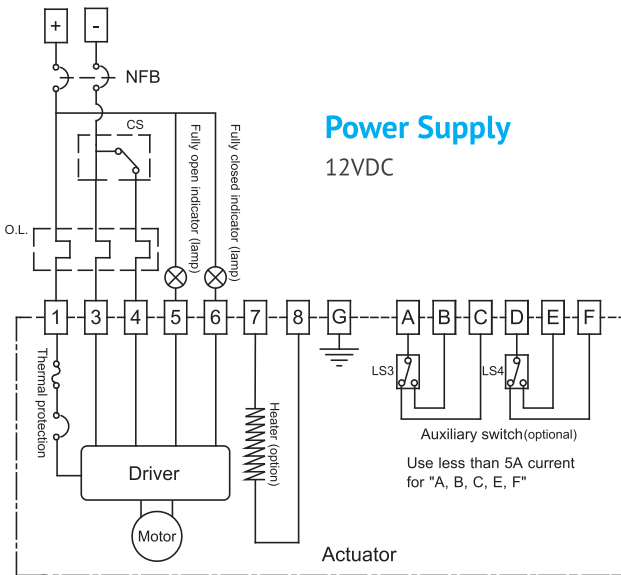
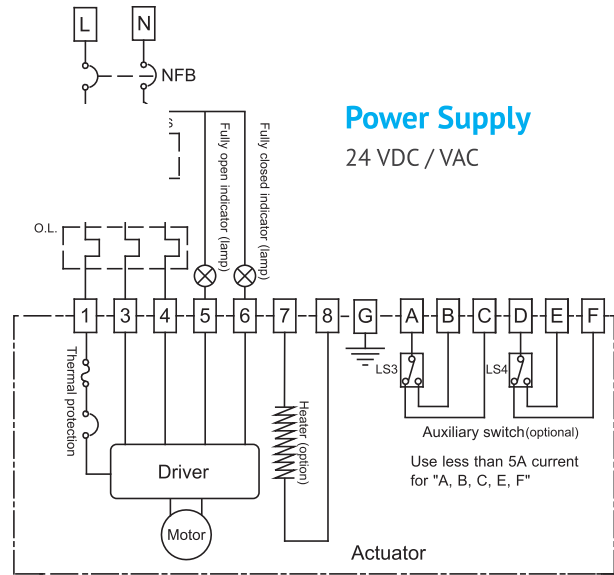
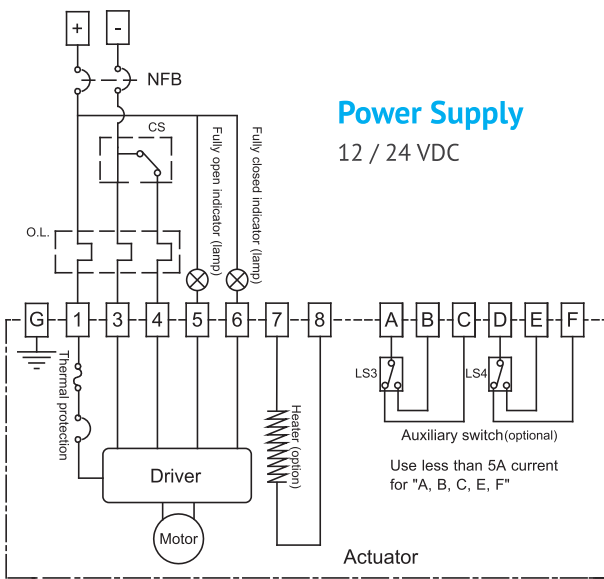
ON / OFF Type for 110 / 220 / 380 VAC





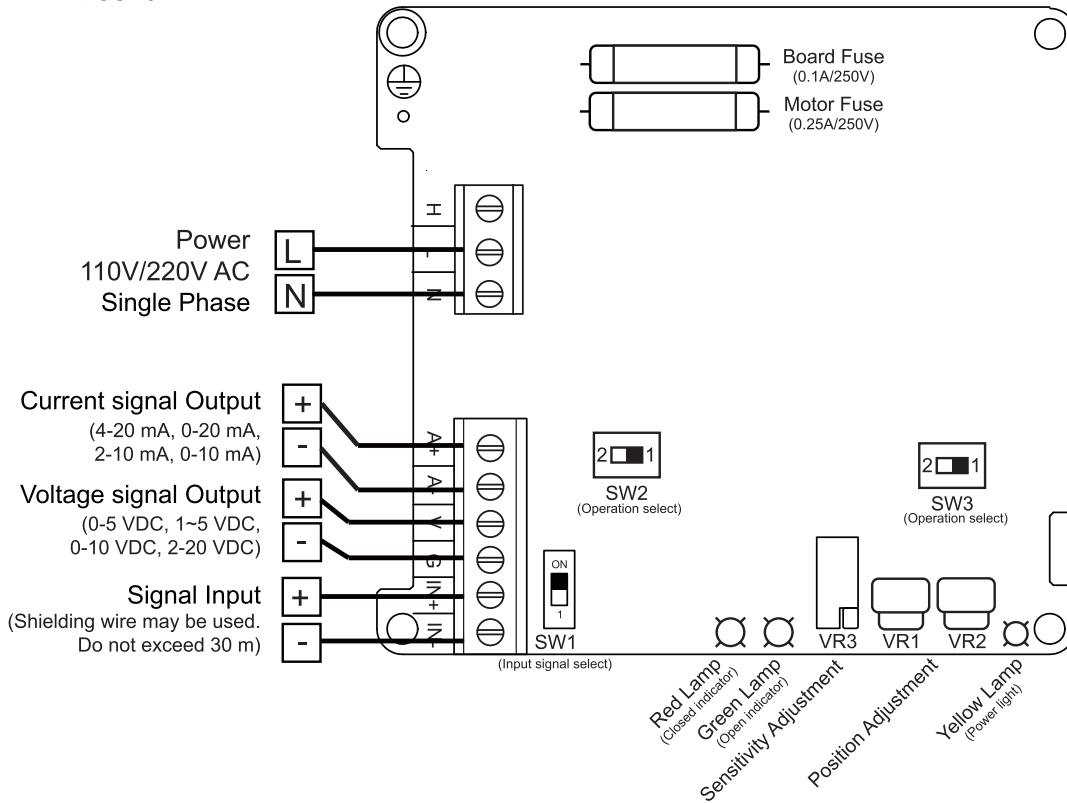
### Wiring Diagram

ON / OFF Type for 12/24VDC 12VDC , and 24 VDC / VAC

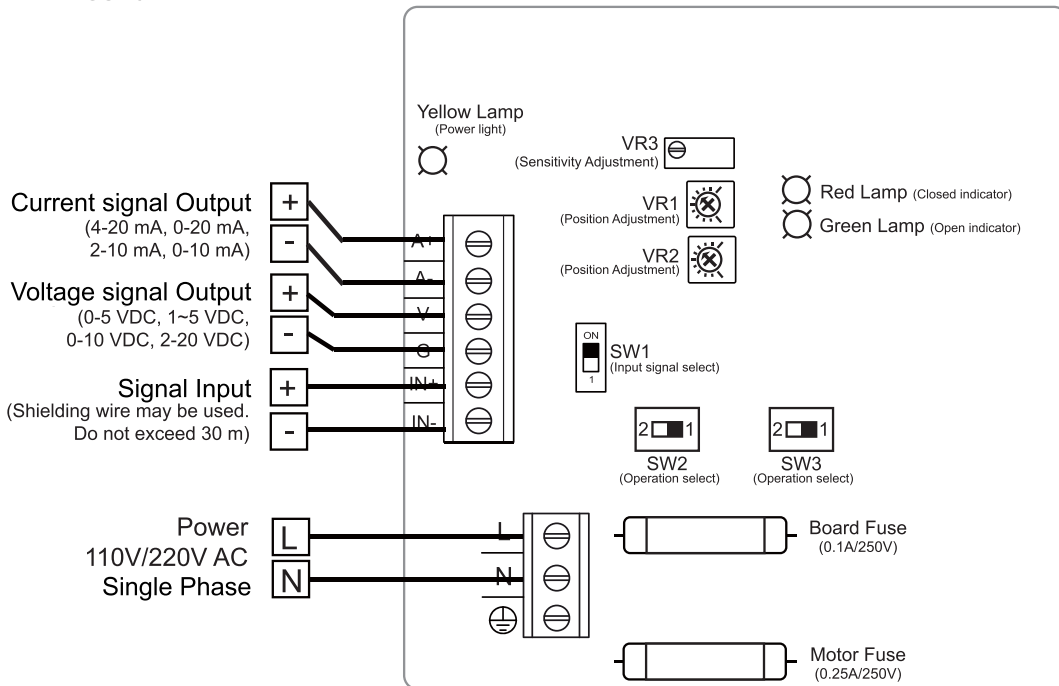


## Wiring Diagram

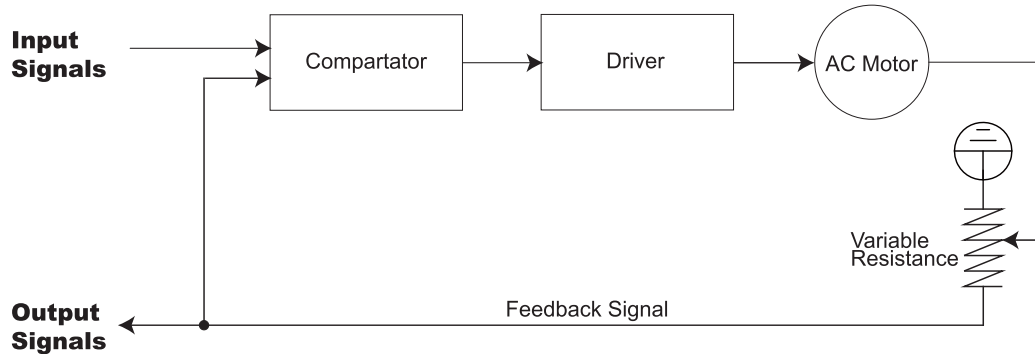
### AMD Board



### BMD Board



### Modulating Signal Flow

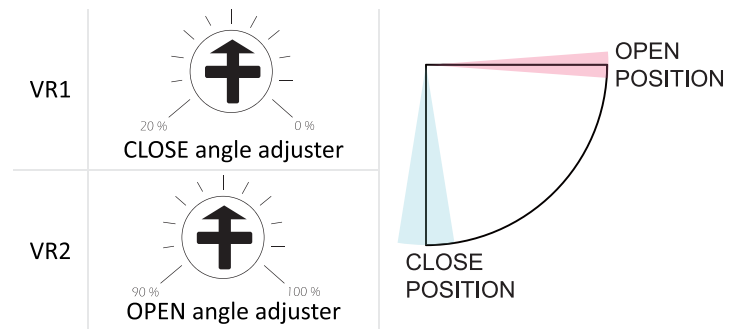


### Switch & Adjustment Settings

#### SW1 Input Signal Selection

	ON	OFF (1)
	Current Input Signal	Voltage Input Signal
SW1	4 ~ 20 mA	2~10 V 0~10 V 1~5 V 0~5 V

#### VR1 & VR2 Position Adjustment



#### SW2 & SW3 Operation Selection

		SW2	
		1	2
SW3	1	<b>MODE A</b> Valve is fully closed when the input signal is 4mA, 2V, 1V, or 0V	X
	2	X	<b>MODE B</b> Valve is fully closed when the input signal is 4mA, 2V, 1V, or 0V

#### VR3 Sensitivity Adjustment

Rotation	Result
Clockwise	Increase sensitivity
Counter-clockwise	Decrease sensitivity

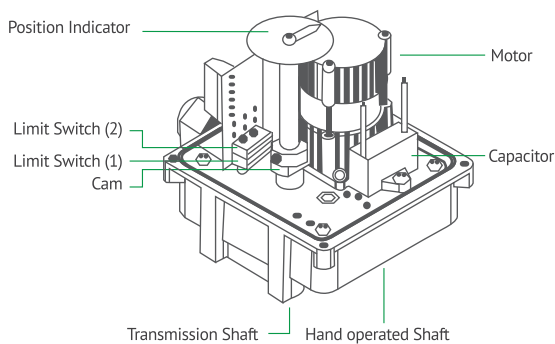
## Installation

- Confirm voltage before powering up actuator.
- Follow this guide to connect wiring. Alteration or changing of circuitry is not advisable.
- Ensure that this product is not used in the presence of explosive gas or volatile chemicals.
- In manual mode, or during routine maintenance ensure unit is powered down.
- The viewing bubble at the top of the valve indicates the O [open] and S [shut] status.
- The standard down time before a rest is THREE Minutes [unless you are using a quick-hi designed actuator].
- AC models have built in protectors to prevent overheating.
- DC models there is no built in protection for overheating.
- All models may be used with proportion controllers.

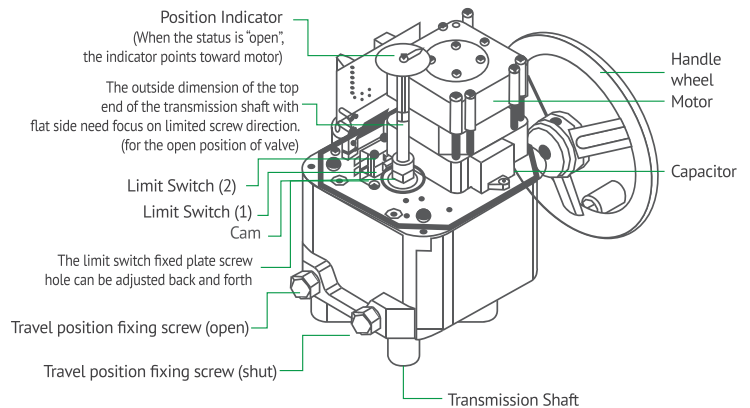
## Cautions

- After connecting all wiring, do an inspection to check the O-Ring is properly in its groove to prevent dust, debris and humidity / water from getting into the housing.
- This actuator is designed to be operated as a single unit. It is not recommended to use multiple units in parallel or serial.
- If two or more sets are to be used concurrently, install relays for each unit.
- If excessive force is needed to turn the actuator during manual mode do not attempt to overcome with additional force, this will damage the internal parts. Instead, open up the housing and investigate the problem further.
- It's not advisable to remove actuator from valve mounting bracket as this could result in misalignment.
- If the actuator and valve are misaligned, or when assembling them together, please refer to the following instructions:

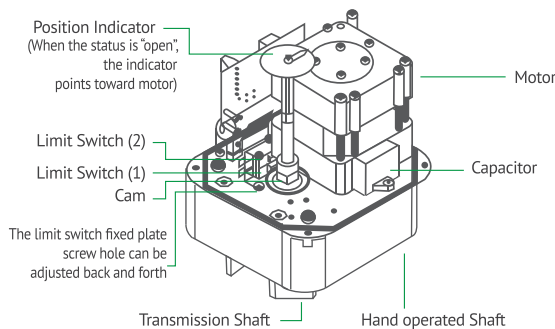
### 100 ~ 200 Series



### 400 ~ 700 Series



### 300 Series



## CAUTIONS/TESTING

- Prior to adjustment of valve ensure the limit screw is turned counter clockwise a minimum of 3 cm.
- After adjustment always confirm position accuracy with a powered test. Only if successful move to below steps:
- Valve at full open position: Limit screw should be open. Turn clockwise to lock screw in place ensuring top of screw touches limit plate. Screw cap should be snug and tight.
- Valve at full close position: Limit screw should be shut. Turn clockwise to lock screw in place ensuring top of screw touches limit plate. Screw cap should be snug and tight.

## CAM DRAWING

Adjustable tools: Hexagonal wrench [2.5 H x 1]



## CAM INSTRUCTIONS

- The cam is to be fixed on main transmission shaft.
- Transmission shaft counter clockwise motion will open the valve and reset the limit switch
- Transmission shaft clockwise motion will close the valve and reset the limit switch.

## CAM DRAWING

Adjustable tools: Hexagonal wrench [2.5 H x 1]



## CAM INSTRUCTIONS

- The cam is to be fixed on main transmission shaft.
- Transmission shaft counter clockwise motion will open the valve and reset the limit switch
- Transmission shaft clockwise motion will close the valve and reset the limit switch.