

Noah[®]



ELECTRIC ACTUATOR "NA" SERIES



Certificate No. AC-01572



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The date of publication : 2002. 5. 6

Distributed by

2004. 5. 10



Noah Series of Electric Actuators are particularly suitable for quarter turn applications in piping, ducting and in various plants such as water treatment, pulp, paper, ship building and air conditioning combined with ball, butterfly, plug valves and dampers.

Its compact and simple design will assure reliability and quality for customers even in hazardous locations. Noah Series of Electric Actuators give the best automation solutions to you with its various models (60Nm~2,500Nm) and options.



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Noah

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CONFIGURATION

INDICATOR

The dome type indicator is directly mounted on the center column to provide positive visual indication of the valve position even over long distances.

CAPACITOR

TERMINAL BLOCK

Quality terminal block containing segregated power and control terminals are designed for use in high vibration environments.

LIMIT SWITCH & TORQUE SWITCH

One each for Open and Closed.

BODY

BASE

DRIVE BUSHING

WINDOW

MOTOR

Squirrel caged induction motor is totally enclosed type with high stall torque and low inertia force to suit seating/unseating of valves. Integral thermal protection to prevent damage to the single/three phase motor.

HEATER

HAND WHEEL

MANUAL OVERRIDE

Hand/Auto declutching lever for engagement of handwheel. The power drive is automatically resorted by the motor starting.

LEVER

WORM GEAR

The precision worm and worm wheel mechanism transfers high torque with high efficiency and low sound level (Max. 50dB) even though small in size. Additional benefits include low backlash and longer life. Various output torques (60Nm~2,500Nm) cater for valves from 2" to 24" .

FEATURES

► **SEALING**
Standard enclosure with o-ring sealing is watertight to IEC IP67, NEMA4 and 6. The actuator is available with optional explosion proof enclosure.

► **WIRING**
Electric wiring of control circuit is standardized for single and three phase power supply in a single module. Multiple terminal contacts sufficiently cover additional requirements such as auxiliary contacts for DCS, interlocking and other options.

► **COMPONENT ARRANGEMENT**
Mechanical and electrical module can be separated easily to improve assembling, maintenance and alteration of electrical requirements. Actuator has enough internal space for optional accessories.

► **HANDWHEEL**
Size of handwheel is designed for safe and efficient emergency manual operation.

► **MANUAL OVERRIDE**
Hand/auto declutching lever for handwheel engagement. The power drive is automatically restored by motor start.

► **ADAPTION**
Base mounting is standard to ISO 5211. Drive bush is removable for machining to valve stem requirement. The actuator position on the valve can be selected for 4 positions by means of 4 bolt holes in the drive bush.

► **HEATER**
A space heater inside the actuator prevents condensation due to temperature and weather changes. Standard 20W heater keeps all electrical components in the actuator clean and dry.

► **LIMIT SWITCHES**
The limit switch is activated by means of a simple and yet reliable cam mechanism mounted and driven by the center column. The valve position can be accurately and easily set with the simple adjustable switch mechanism. The set position is permanent and is not affected by over-travel resulting from manual operation.

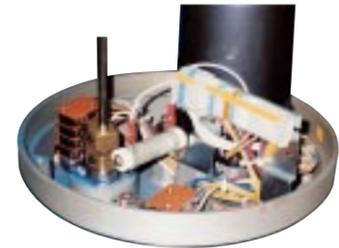
► **TORQUE SWITCHES**
Cam activated torque switches are easily adjustable to provide over-load protection.

► **SELF-LOCKING**
Rolled steel wormgear on aluminium bronze wormwheel self-locks to prevent valve back drive on control signal or power failure.

OPTIONAL

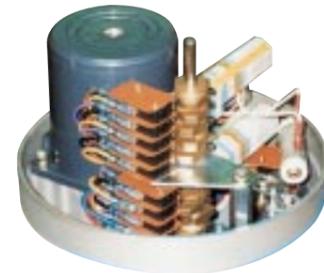
ALS (Auxiliary Limit Switches)

Providing the dry contact signal to check valve's positions (cam switches structure).



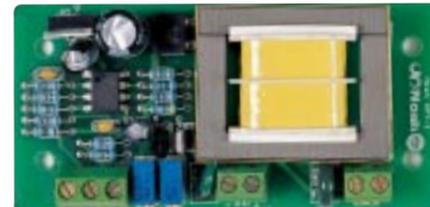
ATS (Auxiliary Torque Switches)

Providing the dry contact signal send to customer's panel as fault signal (cam switches structure).



CPT (Current Position Transmitter)

Combined with PIU and transfer output signal (DC : 4 ~ 20mA) from PIU's value of resistance
 power : AC 110/220V ±10% 50/60Hz
 DC24V
 output signal : DC 4-20mA



PCU (Proportional Control Unit)

Combined with PIU and control the valve's position proportionally by input signal and provide valve's position as their output signal.

- Input signal : DC 4 ~ 20mA/ DC 2 ~ 10V/ DC 1 ~ 5V
- Output signal : DC 4 ~ 20mA
- Power : AC 110/220V ±10% 50/60Hz/ DC 24V
- Size : 120mm × 135mm
- Operating temperature : -10℃ ~ 55℃
- Resolution : Min. 1/500
- Operating Humidity : 90% RH Max. (Non condensing)

Applicable Function

- Auto Scan - Automatically memorized each open/close position by the signal of PIU. (It is very easy to set the PCU even in local area only requiring one push of the Auto Scan button)
- Fail close - Drives to close position there is no certain input signal.
- Fail open - Drives to open position there is no certain input signal.
- Manual operation mode - Zero Null/ Span Open.
- Optional Setting - It is possible to fix a certain signal as Open and Close.
- Manual Operating - Locally move valve's position without source of signal by direct use of dip switch on PCU board.



LCU (Local Control Unit)

A small unit that is mounted to the actuator to operate the valve's position in local.
 Local/Remote switch
 Open/Stop/Close switches



EXP LCU (Explosion proof & Watertight enclosure LCU)

Rugged structure with special parts (Explosion proof type Selector, pushbutton switches)
 Guarantees that watertight and safety working in hazardous environments.



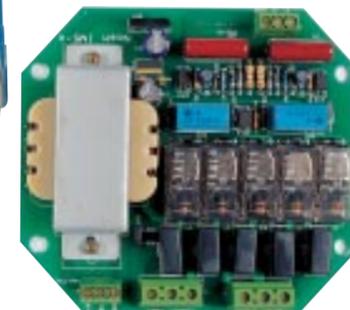
PIU (Position Indication Unit)

Providing resistance value (0~1KΩ) according to valve's position.



IMS (Reversing Magnet Contacts & Transformer)

Combined transformer with electric contactor and directly provides various control voltages to the Actuator (24VDC, 110VAC/220VAC) from main power (380VAC /440VAC).



PERFORMANCE

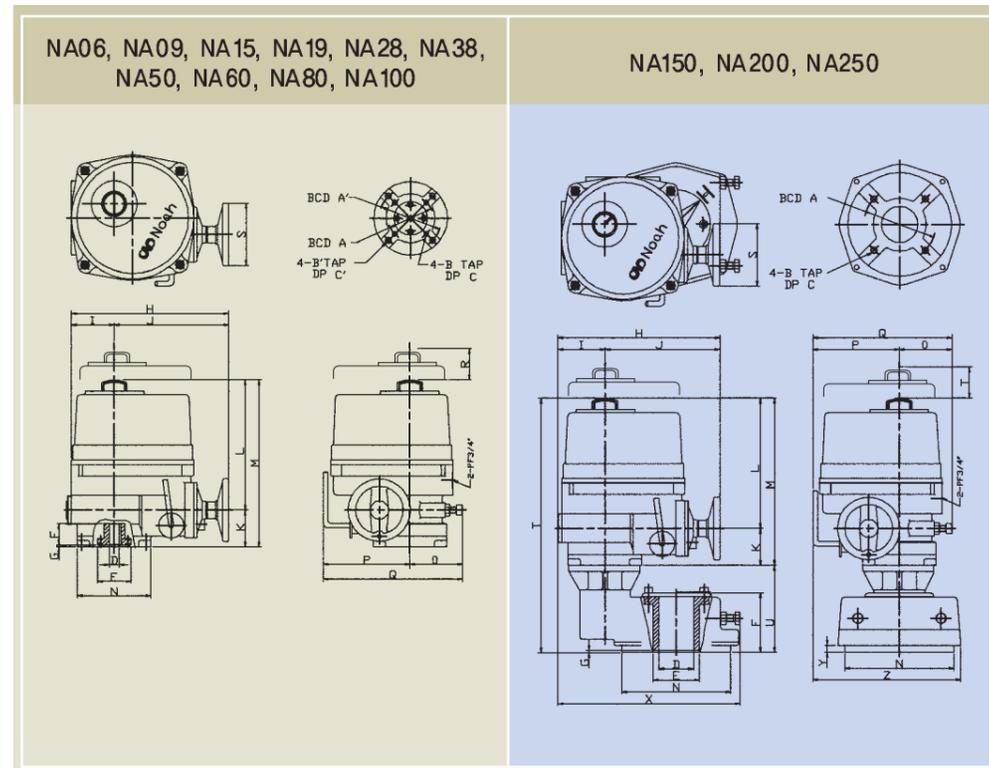
TYPE	Max Output Torque Kg/m	Operating Time 60/50 Hz 90 Deg.	Max Stem Dia mm	Motor Class F W	Rated Current (mA)				Number of Hand Wheel Turns	Weight (kgf)
					1 Phase		3 Phase			
					110V	220V	380V	440V		
NA 06	6	14 / 17	22	15	750	450	130	125	8.5	11
NA 09	9	14 / 17	22	25	1200	580	170	160	8.5	11
NA 15	15	17 / 20	22	40	1600	950	300	300	10	12
NA 19	19	17 / 20	22	40	1600	950	300	300	10	13
NA 28	28	20 / 24	32	40	1800	950	330	340	12.5	17
NA 38	38	20 / 24	32	60	2300	1300	360	340	12.5	18
NA 50	50	20 / 24	32	90	3900	1500	560	570	12.5	19
NA 60	60	24 / 29	42	90	3900	1500	560	570	14.5	22
NA 80	80	24 / 29	42	180	4700	2150	840	780	14.5	23
NA 100	100	24 / 29	42	180	4700	2150	840	780	14.5	25
NA 150	150	72 / 87	75	90	3900	1500	560	570	43.5	68
NA 200	200	72 / 87	75	180	4700	2150	840	780	43.5	70
NA 250	250	72 / 87	75	180	4700	2150	840	780	43.5	70

STANDARD SPECIFICATION

Enclosure	Watertight Ingress Protection 67 Nema 4 and 6
Ambient Temperature	- 20°C to +70°C, 150°C / 1hr
Power Supply (60 / 50 Hz)	110 / 220 VAC , 1 Phase 380 / 440 VAC , 3 Phase
Control Power	110 / 220 VAC , 1 Phase , 60 / 50 Hz
Torque Switches	2 Open / Close (Except NA 06 , NA 09)
Limit Switches	2 Open / Close, 250 VAC 16A Rating
Stall Protection	Built - in Thermal Protection (Open 150°C ± 5°C / Close 97°C ± 15°C)
Travel Angle	90° ± 5°
Indicator	Continuous Position Indicator
Manual Override	Hand / Auto Dec clutching Mechanism
Self Locking	Provided by means of Worm Gearing
Mechanical Stops	External Adjustable Screws
Space Heater	20 W (110 / 220 VAC , 24 VDC)
Conduit Entries	Two PF 3 / 4" (NPT 3/4")
Lubrication	Grease Moly (EP Type)
Materials	Steel, Aluminium Alloy , All Bronze
Surface Treatment	Anodizing
External Coating	Dry Powder, Epoxy - Polyester, Polyester(TGIC-Free)

OPTIONAL SPECIFICATION

EXP	Explosion Proof & Watertight Enclosure Ex d II B T4 IP 67 , EEx d II B T4 (NEMKO)
DCM	24 V DC Motor
ALS	Additional Auxiliary Limit Switches
EXT	Travel Angle 120° , 135° , 180° , 270° , 300°
LCU	Local Control Unit Local / Remote Selector Switch Open / Stop / Close Selector Switch or Push button type
PIU	Potentiometer Unit 1K Ohm.
CPT	Current Position Transmitter Output : DC 4-20mA
PCU	Proportional Control Unit Power : AC 110/220V 1PH , DC 24V Input : DC 4-20mA, DC 1-5 V, DC 2-10 V Output : DC 4-20 mA
IMS	Integral Motor Starter Reversing Magnet Contacts and Transformer

DIMENSION


TYPE	NA06 NA09	NA15 NA19	NA28 NA38 NA50	NA60 NA80 NA100	NA150 NA200 NA250
Flange	F07	F07	F10	F12	F16
ISO 5211	-	F10	F12	F14	F14
A	70	70	102	125	165
A'	-	102	125	140	*140
B	M8	M8	M10	M12	M20
B'	-	M10	M12	M16	*M14 *M16
C	12	15	18	22	30
D(MAX)	22	22	32	42	75
E	55	57	75	85	100
F	43	43	52	59	126
G	2	2	2	2	7
H	231	261	285	325	325
I	56	77	83	99	99
J	175	184	202	226	226
K	60	60	70	78	78
L	213	213	250	283	283
M	273	273	320	361	361
N	102	120	145	175	266
O	68	85	99	116	116
P	113	139	159	191	191
Q	181	224	258	307	307
R	108	108	130	178	178
S	102	102	125	170	170
T					556
U					195
X					388
Y					16
Z					318

* : for optional alternative flanges

TABLE OF AVAILABLE VALVE SIZE FOR ACTUATOR

CUSTOMER SERVICES

Piping Pressure : 10kgf/cm²



Butterfly Valve(on/off)

TYPE	BUTTERFLY VALVE	2-WAY BALL VALVE	3-WAY BALL VALVE
NA 06	80A	40A	
NA 09	100A	50A	40A
NA 15	125A	65A	50A
NA 19	150A	80A	65A
NA 28	200A	100A	80A
NA 38	250A		100A
NA 50		125A	
NA 60	300A	150A	125A
NA 80	350A		150A
NA 100		200A	
NA 150	400/450A		
NA 200	500A	250A	200A
NA 250	600A	300A	250A



Ball Valve(on/off)

When an actuator leaves our factory it not only has the Noah name attached it has with it our true heart as well. Our motto, Quality First and Fast Delivery have satisfied and will continue to satisfy customers around the world. Many things have changed over the past decade and many things will change in the decade to come, but our motto will remain the same.

THE METHODS OF CALCULATION TO FIT DAMPER

1) CIRCLE DAMPER

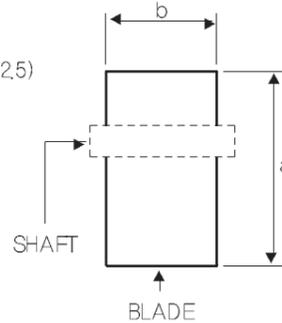
$$T = \frac{d^3 \times \Delta P}{12 \times n} \times 10^{-9} \times 1.8 = \text{[Kg} \cdot \text{m]}$$

2) LOUVER DAMPER

$$T = \frac{a^2 \times b \times \Delta P}{8 \times n} \times 10^{-9} \times 1.8 = \text{[Kg} \cdot \text{m]}$$

Load Bearing
(Unload Bearing = 2.5)

- a = width
- b = length
- d = damper diameter [mm]
- ΔP = pressure [mmAq]
- n = number of blades



Rod Box



Base Processing



Center Column Assembling

Noah Electric Actuator Test Report			
Messer(S) :	Test Power Source : 230V, 1 Phase, 50Hz		
Project Name :	NA-06		
Type	NA-06	Motor	15W, 4P
Order No.	025839	Suppl	230V, 1Ph
Serial No.			
M. O. V.	<input type="checkbox"/> BUTTERFLY V/V	<input type="checkbox"/> BALL V/V	<input type="checkbox"/> DAMPER
Lubricant	GREASE MOLY		
• Functional Test :			
Type & Size	NA-06	Gear Ratio	1.462:1
Construction	Weather Proof	Drive Steeve	1.00RPM
Handwheel Turn	Counter Clockwise to open Approx. 8.5Rev	Base Mounting	ISO05211 Fo7
Torque Setting	Open	Kg-m	17.0Sec/90°
	Close	Kg-m	17.0Sec/90°
	Max	9.97kg-m	Specified Time 17.0Sec/90°
M O T O R	Size	15W	Insulation
	Duty	15Min	Pole
Power Source	230V, 1Ph		
Control Source	230V, 1Ph		
Rated Current	0.42A		
Rated Start Torque	1.200/1.400		
		Insulation Res(500MV)	∞
		Insulation Potential Test	AC 1.800/1sec
Torque Graph		• Test result for Actuator	
		1. Function of Manual and Electric operating	
		2. Function of Limit switches	
		3. Function of Torque switches	
		4. Function of Position indicator	
		5. Wiring (NU-11000-B)	
		6. Oil leakage	
		7. Appearance painting	
		8. Overall dimensions	
		9. Space Heater	
		10. Options	
Tested By : S.J.Kim			
Approved By : R.G.Lee			
Date :			

Test Report



Torque Test of Actuator