



*Customized*

# ELECTRO-HYDRAULIC CONTROL SYSTEM



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Since the founding of Automation Technology (ATI) more than 20 years ago, we have been recognized for innovation and dependability in valve automation. Our linear and quarter-turn valve actuators are engineered to fit our customers' specific requirements and applications. We provide quality products for pneumatic, hydraulic, electro-hydraulic, and gas-over-oil service. In addition, ATI provides cutting-edge controls and power systems to operate valve actuators reliably even in remote locations.

**ATI introduces its NEW direct-mount or skid-mount remote-controlled electro-hydraulic system for operating linear or quarter-turn valve actuators in hazardous or non-hazardous environments.**

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## ANSI/ISA ELECTRO-HYDRAULIC VALVE ACTUATOR SPECIFICATIONS



The International Society of Automation (ISA), in conjunction with the American National Standards Institute (ANSI), provides guidelines for multiple types of valve actuator configurations and components. The 96.06.01 specifications for self-contained electro-hydraulic operators define the product category's standardization encompassing:

- Linear and rotary (quarter-turn) valve actuators
- Double-acting and single-acting (spring-return)
- On-off/isolation, positioning, and continuous modulation service
- Hydraulic fluid as the driving medium
- Fluid power can be direct motor driven, spring-return, motor pressure driven, or accumulator power driven
- Requires only electric power and a control signal to operate
- Includes electronic controls and a dedicated power unit

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# MODULAR CONTROL SYSTEM

*for*  
MAXIMUM EFFICIENCY



The ATI compact electro-hydraulic control system (EHCS) is direct-mounted to ATI spring-return, double-acting linear and quarter-turn actuators. It can also be mounted remotely in a separate enclosure. It operates in two environments; non-hazardous or hazardous duty. The EHCS modular package incorporates the following features:

- Compact 1 hp motor (115/208-230 VAC 1 PH 60Hz, 208-230/460 VAC 3 PH 50/60 Hz or 24 VDC)
- Single direction pump, max. 3000psi, with reservoir
- Control Solenoid valve/manifold
- On/Off, Auto/Manual, and Close/Stop/Open selector switch
- Power unit with 5 gallon or 10 gallon reservoir
- 4-20 MA position transducer with limit switches
- Non-hazardous NEMA 4X enclosure available

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## OPTIONAL FEATURES



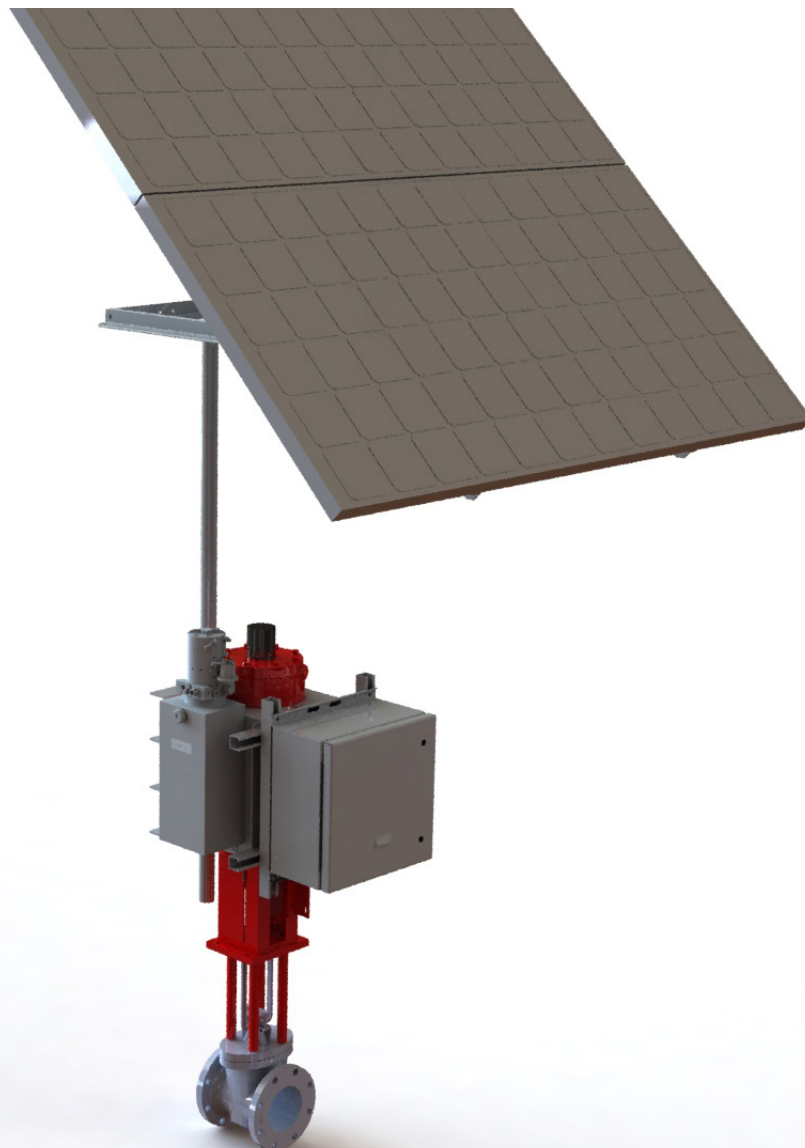
- Low power PLC
- Hazardous CSA/NEC Class I, Division 1 explosion proof enclosure
- Accumulator size – 2.5 gallon or larger
- Valve positioner
- Control protocol conversion module
- Hand pump for manual override (up to 3000 psi)

# ELECTRO-HYDRAULIC LINEAR VALVE ACTUATOR SYSTEM



ATI electro-hydraulic systems can be used direct-mounted to an ATI linear valve actuator for operating gate, globe, and other rising-stem valves.

- Linear Actuator Type – spring-return or double-acting
- Standard Operating Pressure – 1250 psi
- Extended Operating Pressure – 1250 to 2500 psi
- Standard Operating Temperature: -4° F to 140° F (-20° C to 60° C)
- Extended Operating Temperature: -40° F to 140° F (-40° C to 60° C), consult factory



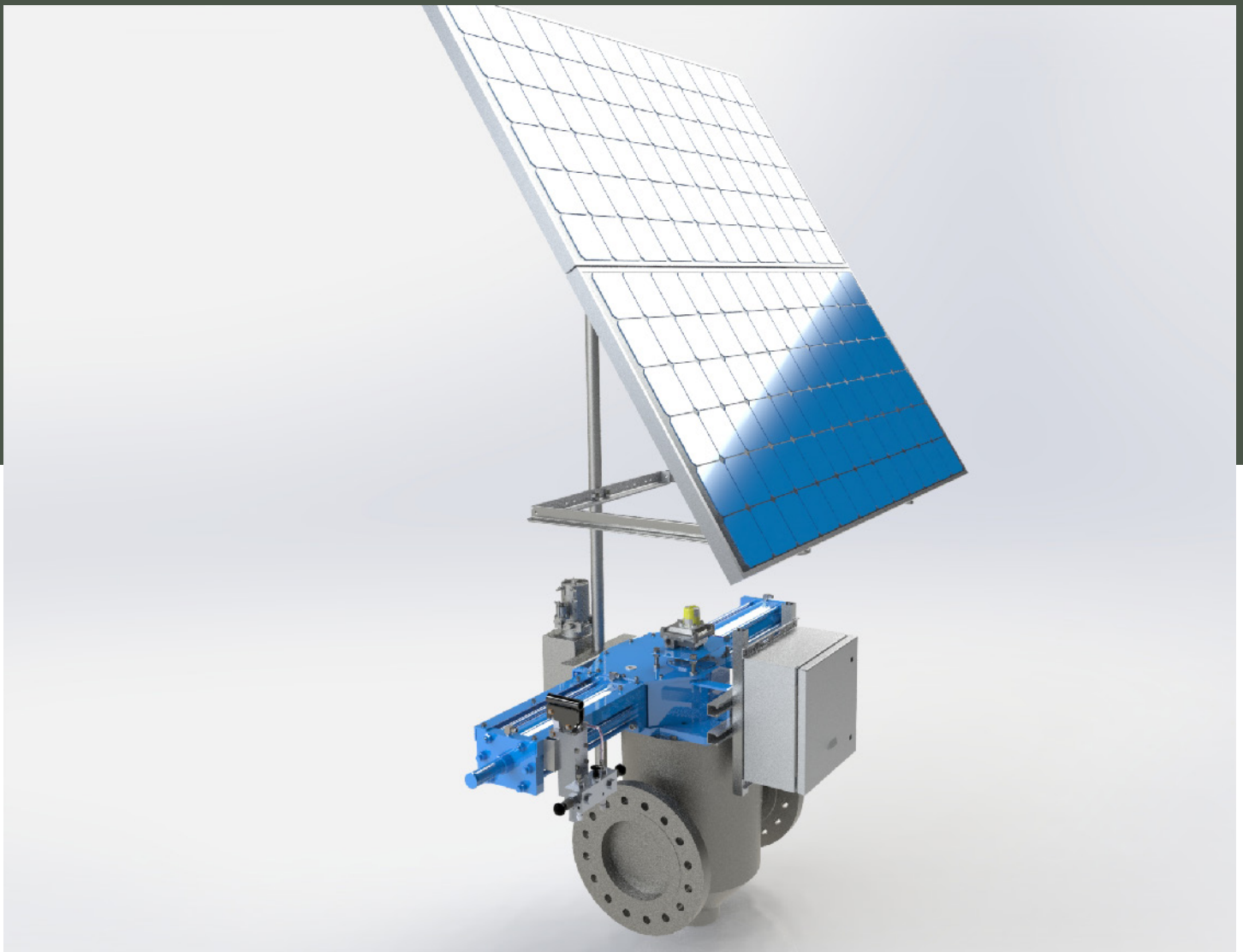


# ELECTRO-HYDRAULIC QUARTER-TURN VALVE ACTUATOR SYSTEM



ATI electro-hydraulic systems can be used as part of a quarter-turn valve actuator for operating butterfly, ball or other quarter-turn valves.

- Rotary Actuator Type – spring-return or double-acting
- Standard Operating Pressure – 1250 psi
- Extended Operating Pressure – 1250 to 2500 psi
- Standard Operating Temperature: -4° F to 140° F (-20° C to 60° C)
- Extended Operating Temperature: -40° F to 140° F (-40° C to 60° C), consult factory



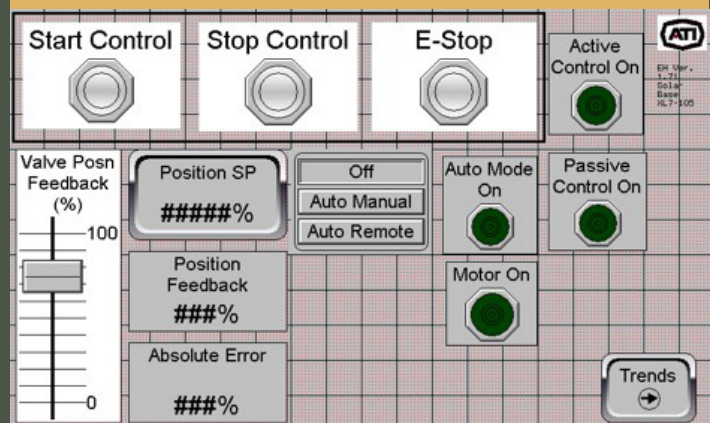
# PROGRAMMABLE LOGIC CONTROLLER (PLC) OPTION



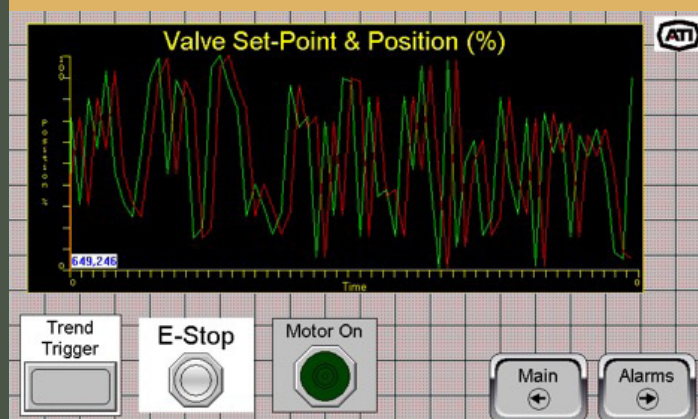
ATI's complete electro-hydraulic control system will be implemented using a 3 watt 24 VDC low power PLC in a NEMA 4X enclosure for non-hazardous duty or an explosion-proof enclosure for hazardous duty with the following components:

- PLC – Can acquire and store alarms for 1-3 months

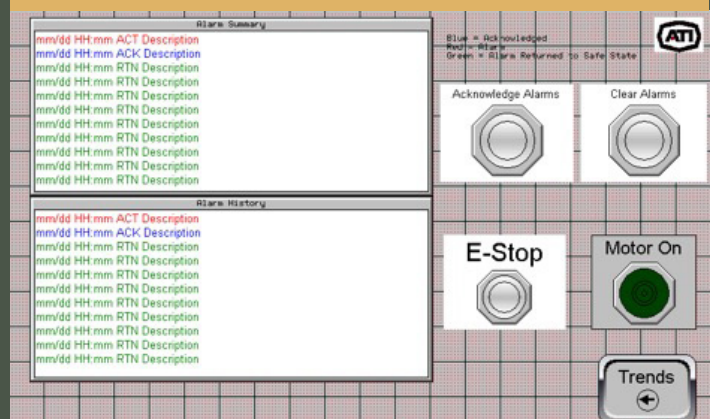
- HMI – User can activate set-point locally or remotely



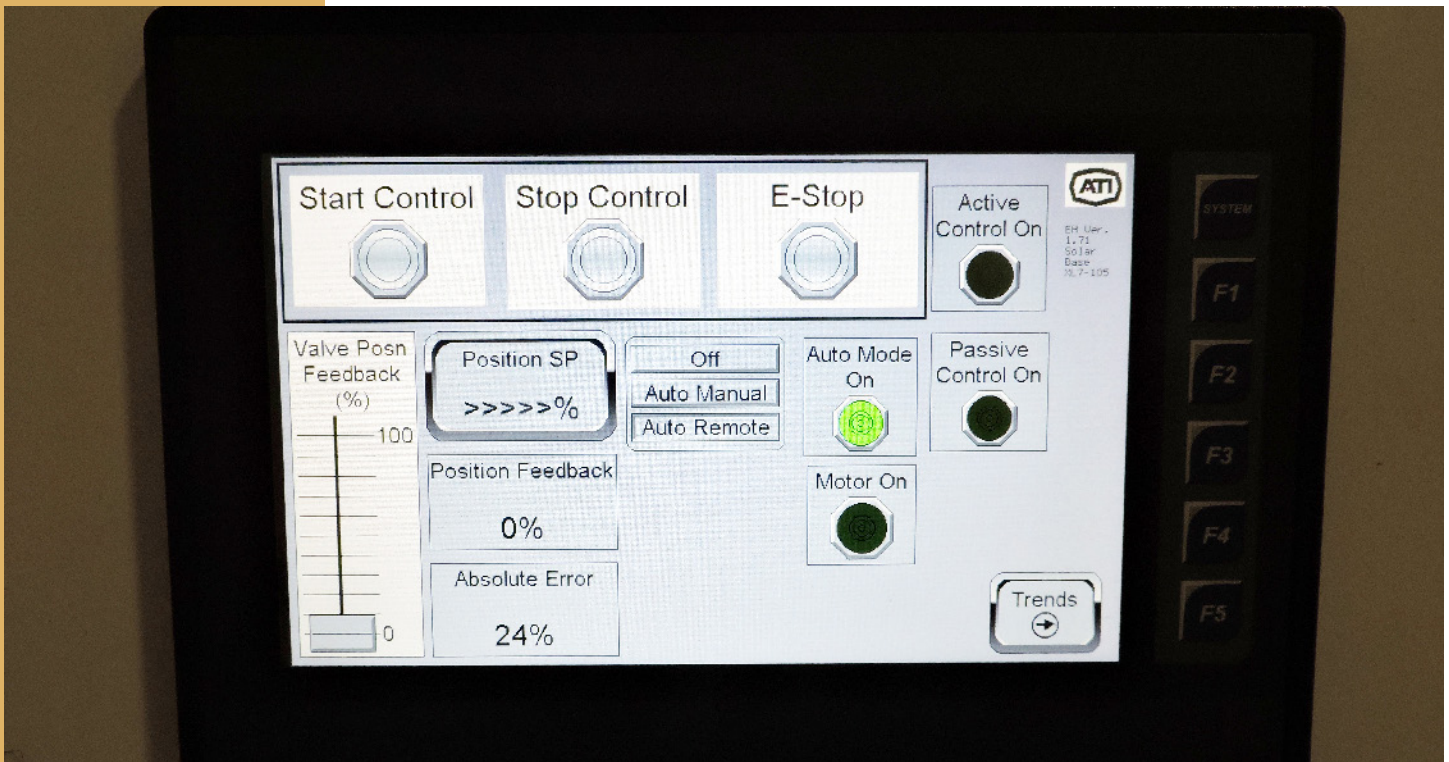
- Trends Control – Screen allows the user to see current valve position and set-point values



- Alarming Screen – Displays alarm summary and history with date and times



# PLC INPUT / OUTPUT POSSIBILITIES



\* Standard stroke time of 20 seconds with optional accumulator(s), spring fail close or spring fail open actuators will have slightly faster stroke time with strokes in the closed or opened position respectively

Faster standard stroke times available on request; consult factory

## SMART CONTROLS – ADDED ATI ADVANTAGES

- Programmable pressure switch for minimum system supply pressure control
- Limit switches and relays to prevent system over-pressurization

### Optional Features

- Pressure transducer for monitoring/alarming on high or low system pressure events
- Oil temperature sensor for monitoring/alarming on high or low hydraulic oil temperatures
- Reservoir level switch to monitor hydraulic fluid levels
- Partial Stroke Testing (PST) running in the background – no need for regularly scheduled PST
- Hand pump for manual override
- Accumulators for fast stroke times or with emergency fluid availability upon power loss
- Valve positioner with configurable dead-band from 1 to 25% of valve stroke length
- Power monitoring of solar batteries



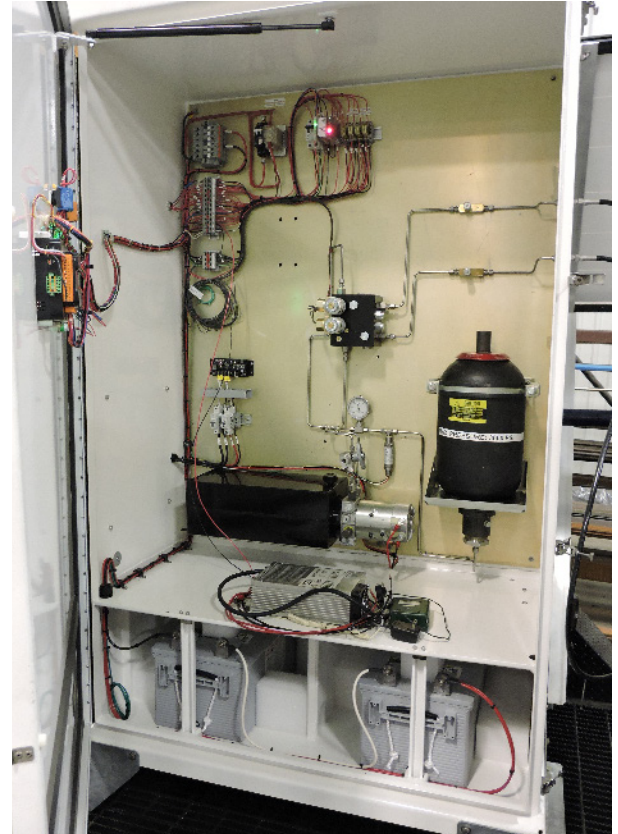
# SOLAR POWER OPTION WITH BATTERY PACK



The low power ATI Electro-Hydraulic Control System with solar package is available for use in remote area operation where no external power is available. The solar package with solar panel is typically mounted to the top of a remote self-contained EH control system for non-hazardous rated duty. The panel charges a series of DC batteries with a DC motor, eliminating the need for a costly and unreliable power inverter. For non-hazardous duty, the EH control system can be placed in a free-standing enclosure, if desired.

For hazardous duty units, batteries are separated from the direct mounted control system and placed in a separate vented enclosure, or the entire unit with solar package can be placed on a skid in a safe area to reduce cost.

The solar control package allows for a minimum of 1 stroke/day depending upon actuator size and location.



## STANDBY POWER REQUIREMENTS OVER 24 HOURS

	DA Fail Open/Close (Watts)	DA Fail in Place (Watts)	SR Fail Open/Close (Watts)
General Service	25	13	25
Hazardous Duty (Cl 1 Div 1)	35	13	35
Extended Hazardous Duty (ATEX Zone 1 or IECEx Zone 1)*	35	13	35

\*Contact ATI if system certification is required for Zone 1 Hazardous Duty



# POWER UNIT SPECIFICATIONS



Grp #	Motor Voltage	Motor Specifications	Motor Duty Cycle	Gear Pump Size [CIPR]	Reservoir Size [Gal.]	Motor [RPM]	Power Unit Flow Rate @ 2800 psi [GPM]	Max. Actuator Size [Gallons]	Stroke Time on 2 Gal. Actuator w/o Accumulator [Minutes]
Grp 1 (2 Gal. Max)	AC	1 Hp TEFC Motor: 115/208-230 VAC, 1Ph, 60 Hz or 208-230/460 VAC, 3 Ph, 50/60 Hz	30 minutes (Continuous for HA)	0.097 (0.073 for HA)	5 or 10	1725	0.52 (0.57 for HA)	2	3.8 (3.5 for HA)
Grp 1 (2 Gal. Max)	DC	24 VDC Motor: 75 A Fan Cooled (28 AMPS TENV for HA)	Continuous	0.049	5 or 10	N/A	0.8 (0.36 for HA)	2	2.5 (5.6 for HA)

\* Stroke time based on pump flow rate up to 2 gallons of fluid. Accumulator options allow for faster flow and higher volume.



AC Power Unit



DC Power Unit

# SAMPLE SIZING & PART NUMBER SELECTION



## ATI LINEAR ACTUATORS SIZED AT 1250 PSIG WITH 1.5 SAFETY FACTOR FOR WEDGE GATE VALVES

Wedge Gate Valve				
Valve Bore	ANSI 150	ANSI 300	ANSI 400	ANSI 600
	ATI Actuator Model			
1-1.5	HDH2	HDH2	HDH2	HDH2
2	HDH2	HDH2	HDH2	HDH2.5
2.5	HDH2	HDH2	HDH2.5	HDH3.2
3	HDH2	HDH2.5	HDH2.5	HDH3.2
3.5	HDH2	HDH2.5	HDH3.2	HDH4
4	HDH2	HDH2.5	HDH3.2	HDH4
6	HDH2.5	HDH4	HDH5	HDH6
8	HDH3.2	HDH5	HDH6	HDH7
10	HDH4	HDH6	HDH7	HDH8
12	HDH5	HDH7	HDH8	HDH10
14	HDH5	HDH8	HDH10	HDH12
16	HDH6	HDH10	HDH10	HDH12
18	HDH6	HDH10	HDH12	HDH14
20	HDH7	HDH12	HDH14	HDH16
24	HDH8	HDH14	HDH16	consult **
30	HDH10	HDH16	consult **	consult **

## OPTIONAL ACCUMULATOR(S) FOR RESERVE STROKE OR SPEED LESS THAN 20 SECONDS

Wedge Gate Valve				
Valve Bore	ANSI 150	ANSI 300	ANSI 400	ANSI 600
	Accumulator Size *			
1-8	A02.5	A02.5	A02.5	A02.5
10	A02.5	A02.5	A05	A05
12	A02.5	A05	A05	A11
14-16	A05	A11	A11	A11
18	A05	A11	A15	A22
20	A11	A22	A30	A30
24	A11	A30	A30	consult **
30	A22	A45	consult **	consult **

\* Minimum standard size accumulator for reserve travel or for speed is 2.5 gallon.

\*\* Contact ATI for sizing options

The tables above can be used as a guide for selecting the ATI actuator and EH. Actuator travel is in ½" increments above stroke requirement for the valve. For example, 4" ANSI 600 wedge gate for fail last service will use ATI model HDH44.5DA1500 actuator, and the EH for this actuator for 24VDC on-off general service would be EH-DL-O-24-A02.

Optional accumulators may require remote or skid-mount solutions depending on limitations of the actuator structure.

# ELECTRO-HYDRAULIC PRODUCT CONFIGURATOR



Base Mode							
EH	EH Control System						
Failure Type							
SE	Spring Return Extend (Close)						
SR	Spring Return Retract (Open)						
DL	Double Acting Fail Last						
DO/DC	Double Acting Fail Open/Close (specify)						
Control Mode							
O	On-off without PLC						
M	Modulating without PLC						
OP	On-off with PLC						
MP	Modulating with PLC						
External Power Option							
S	24 VDC with solar pack						
24	24 VDC						
115	115 VAC 1 PH 60 Hz						
220	208-230 VAC 1 PH 60 Hz						
460	460 VAC 3 PH 60 Hz						
Hazard Rating Options							
" "	Non-Hazardous area (NEMA 4X/IP 54)						
HA	Class 1, Division 1 XP (NEMA 4X/IP 55 and above)						
EHA	EHA* ATEX Zone 1 or IECEx Zone 1 Exd (NEMA 4X/IP55 & above)						
Override Option							
" "	Without hydraulic override						
HO	Hydraulic override (handpump)						
Speed or Speed and Reserve Stroke Option (specify)							
" "	No accumulator						
A02.5	2.5 gallon accumulator						
A05	5 gallon accumulator						
A11	11 gallon accumulator						
Alarm, Pressure & Position Control Output							
S	Standard, 4-20 mA for position sent continuously						
H	4-20mA HART for pressure and position, alarms with feedback values via Modbus						
E	4-20 mA for pressure and position, alarms with feedback values via Ethernet I/P						
P	4-20 mA for pressure and position, alarms with feedback values via Profibus						
DN	4-20 mA for pressure and position, alarms with feedback values via Device Net						
M	4-20mA for pressure and position,alarms with feedback values via Modbus						
EH	DL	O	S	HA	HO	A05	S

Explanation of model number: Double-Acting Fail Last actuator with an on/off control without a PLC, solar powered in a safe area for Class 1 Division 1 service, with a speed option using a 5 gallon accumulator, a standard 4-20mA position feedback sent continuously to a DCS.



## ENGINEERING



ATI has a full complement of experienced product designers and engineers to provide new product introduction from the ground up. Everything we do is customized to our clients' specifications. We use the industry's latest AutoCAD and 3D modeling software to assure the compatibility of design with our exacting manufacturing tolerances.

## MANUFACTURING



AT ATI, we don't mass produce our products. Rather, we manufacture every component under one roof in our new Houston-area ISO9000-certified manufacturing facility. We employ skilled machinists trained on our state-of-the-art Computer Numerically Controlled (CNC) machining equipment. Products undergo thorough quality checks throughout the manufacturing process to assure optimal field performance.

## INSTALLATION/ SERVICE



ATI technicians have years of experience in valve actuator installation and service. We understand your application and can provide the needed expertise to safely install your valve actuator and its automation either in our facility or at the job site, whether within a station or at a remote location. Our crews work quickly and efficiently, minimizing downtime and shut-ins.



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