

ELECTRO-HYDRAULIC VALVE ACTUATORS



FOR POSITIONAL, MODULATING AND STEPPING
CONTROL OF:

CHOKE VALVES
GLOBE VALVES
PLUG VALVES
GATE VALVES
BALL VALVES
BUTTERFLY VALVES

FOR HAZARDOUS LOCATIONS
AND SEVERE ENVIRONMENTS





WHY CHOOSE ELECTRO-HYDRAULIC ACTUATORS?

- Alternative forms of electric and pneumatic actuators have always offered their own particular advantages, depending on the size of valve and the control required.
- Recovery of oil and gas from smaller marginal fields has forced radical changes in the design of offshore installations.
- The result being the demanding and reduction in the size of platforms and the introduction of FPSO's.
- Equipment space and weight factors have always been at a premium but now even more so. Therefore compressed air and high electrical power consuming equipment is becoming less common on installations.
- Midland-ACS Electro-Hydraulic Actuators provide considerably more thrust, size for size compared to electric and pneumatic actuators.

RING MAIN OR SELF CONTAINED?

- Midland-ACS Electro-Hydraulic Linear Valve Actuators are the perfect solution for the control of choke and globe type control valves.
- They can provide high seat forces, fast stroking speeds, accurate positional, modulating and stepping control, plus fail safe modes.
- Midland-ACS Electro-Hydraulic Linear Valve Actuators can be connected to hydraulic RING MAIN circuits utilising hydraulic and electrical power from wellhead control or centralised hydraulic power units.
- Alternatively if only an electrical power supply is available integral or free standing SELF-CONTAINED HYDRAULIC POWER UNITS can also be supplied.

MIDLAND-ACS ACTUATOR CODING SYSTEM 2004

ACS			
603	603	603 IR (WITH INFRARED KEYPAD FACILITY)	
EEx	HAZARDOUS AREA (see below)	SAFE AREA (NO CODE REQ'D)	
ia	ia = INTRINSICALLY SAFE (RING MAIN ONLY)	d = EXPLOSION PROOF	UL/CSA = EXPLOSION PROOF (USA & CANADA)
P	P = POSITIONING	M = MODULATING	ST = STEPPING
BORE	MM's	BORE, ROD SIZE AND TRAVEL ARE SELECTED BY MIDLAND-ACS TO SUIT THE CLIENTS VALVE THRUST AND TRAVEL CHARACTERISTICS.	
ROD	MM's		
TRAVEL	MM's		
DA	DA = DOUBLE ACTING	SAS = SINGLE ACTING, SPRING FAIL SAFE	SAA = SINGLE ACTING, ACCUMULATOR FAIL SAFE
FSP	FSP = FAIL STAYPUT	FC = FAIL CLOSED	FO = FAIL OPEN
MO	MO = MANUAL OVERRIDE (HYDRAULIC HAND PUMP)		
RM	RM = RING MAIN	SC = SELF CONTAINED	
LS1	LS1 = LIMIT SWITCH, CLOSED	LS2 = SWITCH OPEN	LS3 = CLOSED & OPEN
SMART	STANDARD ANALOG, NO CODE		
WG	MINERAL OIL (NO CODE REQ'D)	WG = WATER GLYCOL FLUID	FR = FIRE RESISTANT

RING MAIN ELECTRO-HYDRAULIC ACTUATORS

1. ELECTRONIC POSITIONER, TYPE, ANALOGUE, MICROPROCESSOR. FOR POSITIONAL, MODULATING, STEPPING AND FAIL SAFE CONTROL.

POWER SUPPLY, 24 VDC OR SINGLE & 3 PHASE AC VOLTAGES
INPUT COMMAND SIGNAL, 4-20 mA, INCREASE TO OPEN
OUTPUT RETRANSMISSION SIGNAL 4-20 mA,
POSITIONAL ACCURACY +/- 1 %
POSITIONAL REPEATABILITY +/- 1 %
TROPICALISED

- MIDLAND-ACS 603-EEExd EXPLOSION PROOF VERSION, EEExd IIC T6, ATEX II 2 GD, ENCLOSURE MATERIAL, MARINE GRADE ALLOY WITH OFFSHORE PAINT FINISH, IP 66 RATED
- MIDLAND-ACS 603-EEExd EXPLOSION PROOF VERSION, EEExd IIB T4/6, ATEX II 2 G/D, ENCLOSURE MATERIALS, 316 ST-ST OR CAST IRON WITH OFFSHORE PAINT FINISH, IP 65 RATED
- MIDLAND-ACS 603-EEExd EXPLOSION PROOF VERSION, CSA, CLASS1, DIV 2, GROUP D, T3, ENCLOSURE MATERIAL, MARINE GRADE ALLOY WITH OFFSHORE PAINT FINISH, NEMA 4/IP66
- MIDLAND-ACS 603IR-EEExd EXPLOSION PROOF VERSION, EEExd IIC T6, ATEX II 2 GD, ENCLOSURE MATERIAL, MARINE GRADE ALLOY WITH OFFSHORE PAINT FINISH, IP 66 RATED INFRARED OPTION AVAILABLE FOR LOCAL CALIBRATION WITHOUT THE NEED TO OPEN THE POSITIONER ENCLOSURE IN THE HAZARDOUS AREA.
- MIDLAND-ACS 603-EEExia INTRINSICALLY SAFE VERSION, EEExia IIC T4, ATEX II 2 G ENCLOSURE MATERIALS AVAILABLE, 316 ST-ST, WITH OFFSHORE PAINT FINISH, IP 66 RATED

2. ACTUATOR POSITION FEEDBACK TRANSMITTER, OPTIONS

- LINEAR OR ROTARY POTENTIOMETER
- LINEAR TRANSDUCER (CONTACTLESS)
- "HART" PROTOCOL DIGITAL

3. ACTUATOR OPTIONS

- DOUBLE ACTING, PISTON TYPE, STAYPUT, FAIL LAST POSITION
- SINGLE ACTING, PISTON TYPE, SPRING FAIL SAFE, OPEN OR CLOSED
- 1/4 TURN, SEMI-ROTARY, DOUBLE ACTING OR SPRING FAIL SAFE
- FAIL SAFE MODES, ON LOSS OF POWER SUPPLY, 4-20 mA COMMAND SIGNAL, HYDRAULIC SUPPLY
- MATERIALS AVAILABLE, CARBON STEEL/STAINLESS STEEL WITH OFFSHORE PAINT FINISH, IP 66 RATED ALL FASTNERS 316 STAINLESS STEEL, WITH OFFSHORE PAINT FINISH, IP 66 RATED.

4. **DRIVE COUPLING**, DESIGNED TO SUIT CUSTOMERS VALVE STEM, 316 ST-ST, ANTI-ROTATION, WITH GRADUATED VISUAL TRAVEL INDICATOR.

5. **YOKE**, DESIGNED TO SUIT CUSTOMERS VALVE TOPWORK CARBON STEEL, WITH OFFSHORE PAINT FINISH.

6. **MANUAL OVERRIDE**, OPTIONAL, 316 ST-ST HYDRAULIC HANDPUMP.

7. **ACCUMULATOR STORAGE CAPACITY**, OPTIONAL CARBON STEEL, WITH OFFSHORE PAINT FINISH.

8. **CONTROL PANEL**, 316 ST-ST, IP66 RATED, OFFSHORE PAINT FINISH CONTAINS ALL 316 ST-ST MANIFOLDED HYDRAULIC CONTROL SYSTEM.

COIL OPTIONS

EEExme II T4/T6, ATEX II 2 G, 1.5, 3.5 OR 8 WATT COIL OPTIONS
UL/CSA CLASS 1, ZONE 1 AExme II, 1.5, 3.5 OR 8 WATT COIL OPTIONS
EEExia IIC T6, ATEX II 2 G, <1 WATT, (DEPENDS ON BARRIER/ISOLATOR SELECTION)
UL/CSA CLASS 1, ZONE 0, Exia II, <1 WATT, (DEPENDS ON BARRIER/ISOLATOR SELECTION)
EEExd/e IIB T4/T6, NON-ATEX, 13/33 WATTS OPTIONS

SOLENOID VALVES

316 ST-ST, LEAKTIGHT TO ENSURE NO DRIFT OF ACTUATOR POSITION
M20 X 1.5 OR 1/2" NPTF CABLE GLAND ENTRY
PRESSURE FILTER, SINGLE OR DUAL 5 MICRON, WITH ON-LINE ISOLATION, AND VISUAL POP UP INDICATOR.
FLOW CONTROL VALVES, NEEDLE TYPE, ADJUSTABLE LOCKABLE, CHECK VALVES, PRESSURE/THERMAL RELIEF VALVES
PRESSURE REGULATOR ISOLATION VALVES

9. REMOTE INDICATION SWITCHES FOR OPEN AND CLOSED POSITIONS

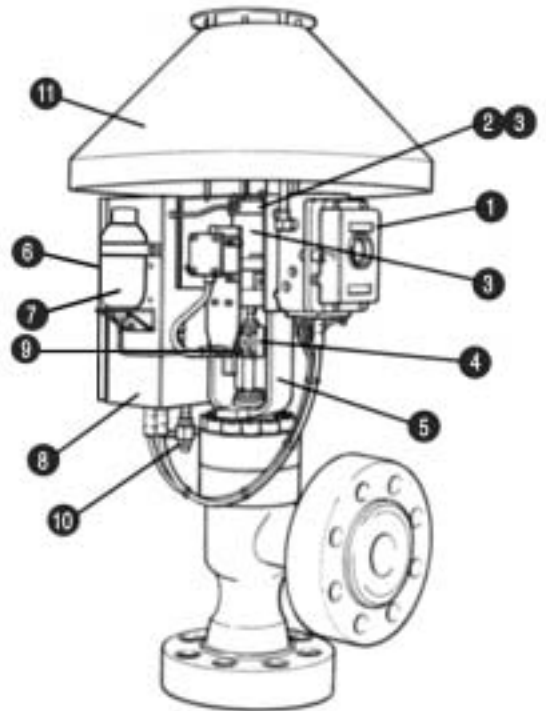
MECHANICAL, INDUCTIVE PROXIMITY OR MAGNETIC REED TYPE, EEExd/e, EEExm. EEExi & NAMUR SPDT, & DPDT, ALL AVAILABLE.
WIRED TO 316 ST-ST JUNCTION BOX, M20 X 1.5 OR 1/2" NPTF

10. **HYDRAULIC CONNECTIONS**, SUPPLY AND RETURN, 1/2" NPTF

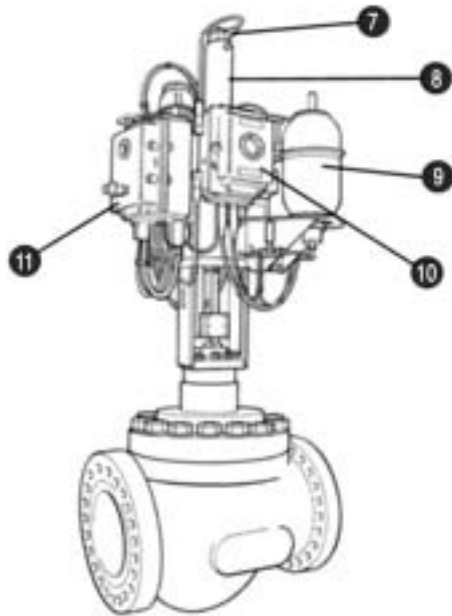
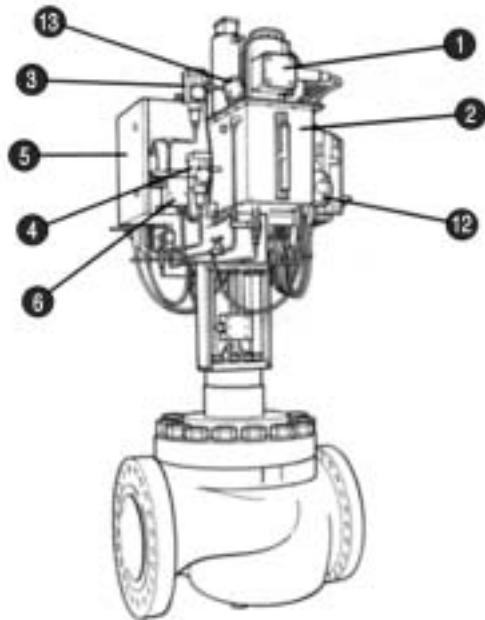
11. **SUNSHADE**, OPTIONAL, ST-ST PAINTED TO PROTECT COMPLETE ACTUATOR ASS'Y FROM DIRECT SUNLIGHT TO ENSURE THAT AMBIENT TEMPERATURES ARE BELOW + 60°C, ST-ST PAINTED

ADDITIONAL INFORMATION

HYDRAULIC FITTINGS, 316 TWIN FERRULE,
HYDRAULIC TUBING OPTIONS 316 L, OR 904L
GLANDS, EEExd/EEExe, BRASS, BRASS/NICKEL PLATED OR 316 ST-ST PVC SHROUDS CAN BE FITTED
CABLING, ARMOUR BRAIDED AND HALOGEN FREE
LOCATIONS, ON/OFFSHORE HAZARDOUS AND SEVERE CORROSIVE ENVIRONMENTS
HYDRAULIC SUPPLY PRESSURE RANGE FROM RING MAIN, STANDARD 90 TO 210 bar, ALSO 345 bar
HYDRAULIC FLUID COMPATIBILITY, MINERAL/SYNTHETIC OILS AND WATER GLYCOLS
HYDRAULIC FLUID CLEANLINESS REQUIRED, NAS 1638 CLASS 8 / ISO 4406 19/17/14 OR BETTER
AMBIENT TEMPERATURE RANGE - 20° + 60° C, SPECIAL INSULATED UNITS FOR - 50° C



SELF-CONTAINED ELECTRO-HYDRAULIC VALVE ACTUATORS



1. EEXD MOTORISED HYDRAULIC PUMP UNIT 24 VDC & AC VOLTAGES AVAILABLE
2. STAINLESS STEEL RESERVOIR WITH PRESSURISED FILLER CAP AND SIGHT LEVEL GAUGE
3. EEXD PRESSURE SWITCHES FOR PUMP START/STOP CONTROL
4. EEXD PRESSURE SWITCH FOR LOW OIL PRESSURE ALARM
5. HYDRAULIC CONTROL PANEL
6. MANUAL OVERRIDE HYDRAULIC HAND PUMP
7. POSITION TRANSMITTER
8. LINEAR HYDRAULIC PISTON ACTUATOR DOUBLE ACTING, STAYPUT, LAST POSITION SINGLE ACTING SPRING FAIL SAFE OPEN OR CLOSED
9. ACCUMULATOR STORAGE TO MINIMISE MOTOR STOP/STARTS AND REDUCE ELECTRICAL POWER CONSUMPTION
10. EEXD ELECTRONIC POSITIONER ENCLOSURE
11. EEXD STARTER/ISOLATOR ENCLOSURE WITH LOCAL AND REMOTE OPERATION & ALARM FACILITY.
12. EEXD LOW OIL SWITCH
13. EEXD OIL TEMPERATURE PROBE

NOTE: POWERUNIT AND INSTRUMENTATION CAN BE MOUNTED SEPERATELY TO THE ACTUATOR ON A FREE STANDING SKID OR FRAME

