A001 Local Auto/Manual Toggle Switch - NEMA 4. Switch for Auto (i.e. 4-20 mA from control room), or Manual (local control at actuator). Switch is maintain type.


A002 INCREASE/OFF/DECREASE Toggle Switch - NEMA 4. Momentary toggle type switch for local control of actuator.


A003 Local Auto/Manual Toggle Switch \& INCREASE/OFF/ DECREASE Toggle Switch NEMA 4. (A001 \& A002) (See photos for A001 \& A002)
A004 Open-Close-Stop Push Buttons - NEMA 4. Three pushbutton control. Open \& Close momentary type pushbutton with maintain type Stop button (pull to release)
A005 Two Pilot Lights - NEMA 4. Used for indication of ends of travel or intermediate position.


A006
Two Position Selector Switch, NEMA 4 (Auto/Manual). Switch for Auto (i.e. 4-20 mA from control room), or Manual (local control at actuator). Switch is maintain type.


## Toggles, Lights

A007 INCREASE/OFF/DECREASE
Three Position Selector Switch. NEMA 4 momentary type switch for local control of actuator.


A008 Local Auto/Manual, INCREASE/OFF/DECREASE (Close Coupled Enclosure). Option A003 mounted in a NEMA 4 enclosure.

A009 ON/OFF Toggle Power Switch - NEMA 4. Removes main power to the actuator for single phase input.
A010 Local Auto/Manual Switch \& (INCREASE/OFF/DECREASE) Switch - NEMA 4 (See photos for A006 \& A007)
A011 Key lock for rotary switches NEMA 4 (Auto/Manual). Manual operation only after unlocked.
A012 ON/OFF NEMA 4 Toggle Power Switch. Removes main power to the actuator for single phase input.
A013 Local Auto/Manual (Close Coupled Enclosure) Option A001 mounted in a NEMA 4 enclosure.
A014 INCREASE/OFF/DECREASE (Close Coupled Enclosure) Option A002 mounted in a NEMA 4 enclosure.

A015 ON/OFF Toggle Switch (Power) (Close Coupled Enclosure) Option A009 mounted in a NEMA 4 enclosure.
A016 Fault Indicator Light (SM-6000 Series)
A017 Power Indicator Light (SM-6000 Series)
A018 Auto/Manual Indicator Light (SM-6000 Series)
A031 Auto/Manual Switches
(JOM2-N, JOM3-N), 1 Ph.

A032 Auto/Manual Switches (JOM4-N, JOM5-N, JOM6-N), 1 Ph.
A033 Auto/Manual Switches (JOM7-N, JOM8-N), 1 Ph.
A034 Auto/Manual Switches (JOM2-N, JOM3-N), 3 Ph.
A035 Auto/Manual Switches (JOM4-N, JOM5-N, JOM6-N), 3 Ph.
A036 Auto/Manual Switches (JOM7-N, JOM8-N), 3 Ph.

## Brakes

B001 120 Vac Electrically Operated Brake. Electronically released brake, HOLDS when there is no power to HOLD a load, or to minimize coasting of the actuator. (Used on units with a high RPM rating). See drawing on page 186.
B002 240 Vac Electrically Operated Brake. Electronically released brake, HOLDS when there is no power to HOLD a load, or to minimize coasting of the actuator. (Used on units with a high RPM rating).. See drawing on page 186.
B003 Drag Brake (will decrease torque rating, contact factory for rating). Mechanical drag brake mounted on motor shaft to minimize coasting and to HOLD a load. (Used on units with a high RPM rating).
B004 Drag Brake (800 lbs. maximum thrust). Mechanical drag brake mounted on motor shaft to minimize coasting.

## Connectors

C001 Quick disconnect NEMA 4 connector on enclosure for power and control.
C002 Mating quick disconnect NEMA 4 connector on enclosure for power and control. (For use with C001).

## Drive Arm/Adapter Clevis/Driven Arm

D001 Fixed (10") drive arm for splined shaft of SM-1700 and SM-5100. Pinhole diameter of 0.75 in . and thickness of 1.0 in .


D002 Adjustable drive arm for splined shaft of SM-1700 and SM-5100. Adjustable range of 6 in. - 10 in., with a $3 / 4-16$ R.H. mating rod end.


D003 Adapter clevis kit used with D001 \& D005 for splined shaft of SM-1700 and SM-5100. Female clevis ends with a pinhole diameter of 0.75 in . and width of 1.0 in .


D004 Adapter clevis kit used with D002 \& D006 for splined shaft of SM-1700 and SM-5100. Threaded ends of $3 / 4-16$ to meet with rod ends.


D005 Driven arm used with D001 and D003. 1.0 in . width driven arm with 1.0 in . diameter pin holes at 10, 12.25 and 17. End bored to 1.0 in. for damper shaft.
0

D006 Driven arm used with D002 and D004. 1.0 in . width driven arm with 5/8-11 in. taps at $10,12.25$ and 17 in . End bored to 1.0 in . for damper shaft.


Standard 1.0 in.


D007
Fixed (10") drive arm for splined shaft of SM-5200. Pinhole diameter of 1.0 in. and thickness of 1.50 in. See drawing for D001.

D008 Adjustable drive arm for splined shaft of SM-5200. Adjustable range of 6 in. 10 in., with a $11 / 4-12$ R.H. mating rod end. See drawing for D002.

D009 Adapter clevis kit used with D007 and D011 for splined shaft of SM-5200. Female clevis ends with a pinhole diameter of 1.0 in . and width of 1.50 in . See drawing for D003.

D010 Adapter clevis kit used with D008 and D012 for splined shaft of SM-5200. Threaded ends of $11 / 4-16$ to meet with rod ends. See drawing for D004.
D011 Driven arm used with D007 and D009. 1.50 in . width driven arm with 1.0 in . diameter pin holes at 10, 12.25 and 17 in. End bored to 0.25 pilot for damper shaft. See drawing for D005.
D012 Driven arm used with D008 and D010. 1.5 in . width driven arm with $3 / 4-10$ taps at 10, 12.25 and 17 in. End bored to 0.25 pilot for damper shaft. See drawing for D006.
D013 Fixed (12") drive arm for splined shaft of SM-5300. Pinhole diameter of 1.0 in. and thickness of 1.50 in . See drawing for D001.
D014 Adapter clevis kit used with D013 and D015 for splined shaft of SM-5300. Female clevis ends with a pinhole diameter of 1.0 in . and width of 1.50 in. See drawing for D003.

D015 Driven arm used with D013 and D014. 1.50 in . width driven arm with 1.0 in . diameter pin holes at 12, 14.7 and 20.4 in . End bored to 1.938/1.940 in. for damper shaft. See drawing for D005.

## Drive Arm/Adapter Clevis/Driven Arm

Fixed (15") drive arm for splined shaft of SM-5400. Pinhole diameter of 1.0 in . and thickness of 1.50 in. See drawing for D001.
D017 Adapter clevis kit used with D016 and D018 for splined shaft of SM-5400. Female clevis ends with a pinhole diameter of 1.0 in . and width of 1.50 in . See drawing for D003.

D018 Driven arm used with D016 and D017. 1.50 in . width driven arm with 1.0 in . diameter pin holes at 15, 18.38 and 25.5. End bored to 0.25 pilot for damper shaft. See drawing for D005.
D019 Hagan Bailey Pneumatic Replacement (Pedestal Drive Arm) for SM-1700. Retrofit pedestal and drive arm to match Hagan and Bailey pneumatic drives up to 200 ft . lbs. of torque. Allows use of existing linkage and mounting. See D022 photo.
D020 Hagan Bailey Pneumatic Replacement (Pedestal Drive Arm) for SM-5100. Same as D019, but up to 300 ft . Ibs. of torque. See D022 photo.
D021 Hagan and Bailey Pneumatic Replacement (Pedestal Drive Arm) for SM-5200. Same as D019, but up to 1,000 ft. lbs. of torque. See D022 photo.
D022 Hagan and Bailey Pneumatic Replacement (Pedestal Drive Arm) for SM-5300. Same as D019, but up to 3,200 ft. Ibs. of torque.


D023 Hagan and Bailey Pneumatic Replacement (Pedestal Drive Arm) for SM-5400. Same as D019, but up to $12,500 \mathrm{ft}$. lbs. of torque. See photo for D022.

D024 Wedgelock Coupling for the SM-1700. Three piece coupling that allows adjustment of actuator and valve/ damper without removal of either from the mounting bracket.


D025 Wedgelock Coupling for SM-5100. See description and photo of D024.
D026 Wedgelock Coupling for SM-5200. See description and photo of D024.
D027 Wedgelock Coupling for SM-5300. See description and photo of D024.
D028 Wedgelock Coupling for SM-5400. See description and photo of D024.
D029 PT-1300 Mounting Kit. Universal mounting kit for sliding stem valves.
D030 Trunnion Mount for LA-2300. Allows actuator to be foot mounted. (Not available for 6 in. stroke).


D031 Trunnion Mount for LA-2400. Allows actuator to be foot mounted. (Not available for 6 in. stroke).


D032 Trunnion Mount for LA-2500. Allows actuator to be foot mounted. (Not available for 6 in. stroke).


D033 Trunnion Mount for LA-2600. Allows actuator to be foot mounted. (Available up to 3,600 lbf)


## Drive Arm/Adapter Clevis/Driven Arm

D034 Flange Mount for LA-2300. Mounting bracket which clamps to the tube of the actuator with a four bolt mounting face. (Not available for 6 in. stroke).


VEW A-A


D035 Flange Mount for LA-2600 and LA-2700. Mounting bracket which clamps to the tube of the actuator with a four bolt mounting face. (Available up to $3,600 \mathrm{lbf}$ ).


D036 Rack Bellows for LF-1210. Boot that protects the rack from dirt and moisture.


D037 Female clevis with pin for LA-1100.


D038 Rack Bellows for LA-1500. Boot that protects the rack from dirt and moisture.


D039 Female clevis with pin for LA-1500.


D040 Adjustable Drive Arm for TA-1200. Adjustable range of 0.5 in. to 4.0 in., with a \#1028 tap, 0.75 deep.


D041 Adjustable Drive Arm for SM-1500. Adjustable range of 0.5 in. to 4.0 in., with a \#1028 tap, 0.75 deep.


D042 Clevis, one end for LA-1000 \& LA-1100.


D043 Clevis, both ends for LA-1000 \& LA-1100.

D044 Flange Mount for LA-2400.
Mounting bracket which clamps to the tube of the actuator with a four bolt mounting face. (Not available for 6 in. stroke). See drawing for D034.

D045 Female front clevis for LA-2400.


## Drive Arm/Adapter Clevis/Driven Arm

Female rear clevis for LA-2400.


D047 Special front clevis for LA-2300 \& LA-2400 (consult factory, customer must provide dimensions).
D048 Special rear clevis for LA-2300 \& LA-2400 (consult factory, customer must provide dimensions).
D049 Special front clevis for LA-2500 (consult factory, customer must provide dimensions).
D050 Special rear clevis for LA-2500 (consult factory, customer must provide dimensions).
D051 Special front clevis for LA-2600 \& LA-2700 (consult factory, customer must provide dimensions).
D052 Special rear clevis for LA-2600 \& LA-2700 (consult factory, customer must provide dimensions).
D053 Special front clevis for LA-2900 (consult factory, customer must provide dimensions).
D054 Special rear clevis for LA-2900 (consult factory, customer must provide dimensions).

D055 Bellows for Linear Actuators (LA-2400/2500). Protects against dust and moisture when ram extends up.
D056 Vertical Moisture Shield (LA2300/2400). Protects against rain when ram extends up.

D057 Adjustable drive arm for 1/2 inch output shaft of TA-1200. Used with R008.
D058 Rotating clevis for LA-2400
D059 Keyed drive arm for 370 ft. lb. SM-6000. See drawing on page 53.
D060 Keyed drive arm for 800 ft. Ib. SM-6000. See drawing on page 53.
D061 Keyed drive arm for 1400 ft. Ib. SM-6000. See drawing on page 53.
D062 Keyed drive arm for 2500
ft. Ib. SM-6000. See drawing on page 53.
D063 Keyed drive arm for 4400 ft. Ib. SM-6000. See drawing on page 53.
D064 Keyed drive arm for 6200 ft. lb. SM-6000. See drawing on page 53.
D065 Keyed drive arm for 8000 \& 11000 ft. lb. SM-6000. See drawing on page 53.
D066 Keyed drive arm for 16500 ft. Ib. SM-6000. See drawing on page 53.
D067 Keyed drive arm for 26000 ft. lb. SM-6000. See drawing on page 53.
D068 Adapter assembly kit for 370 ft. Ib. SM-6000
D069 Adapter assembly kit for 800 \& 1400 ft . lb. SM-6000

D070 Adapter assembly kit for 2500 \& 4400 ft . lb. SM-6000
D071 Adapter assembly kit for 6200, 8000, 11000 \& 16500 ft. Ib. SM-6000
D072 Adapter assembly kit for 26000 ft. Ib. SM-6000

D073 Driven arm for 370 ft . lb. SM-6000
D074 Driven arm for 800 \& 1400 ft. Ib. SM-6000

D075 Driven arm for 2500 \& 4400 ft. Ib. SM-6000

D076 Driven arm for 6200, 8000, 11000 \& 16500 ft . lb. SM-6000
D077 Driven arm for 26000 ft . lb. SM-6000

D078 Pedestal replacement \& drive arm to replace SM-5100
D079 Pedestal replacement \& drive arm to replace SM-5200
D080 Pedestal replacement \& drive arm to replace SM-5300
D081 Pedestal replacement \& drive arm to replace SM-5400
D082 Pedestal replacement \& drive arm to replace Hagan Bailey
D083 Adjustable length drive arm for 370 ft . Ib. SM-6000
D084 Adjustable length drive arm for 800 ft . lb. SM-6000

D085 Adapter clevis kit for 370 ft. Ib. SM-6000 (Used with D083)
D086 Adapter clevis kit for 800 ft. Ib. SM-6000 (Used with D084)
D124 Adjustable length drive arm for 550 ft. Ib. SM-6000

D125 Adapter clevis kit for 550 ft. Ib. SM-6000 (Used with D124)
D126 Driven arm for 550 ft . lb. SM-6000

## Enclosure

E001 Watertight, NEMA 4 (IP65).
E002 NEMA 12 (IP52).
E003 Explosion Proof - Class 1, Div. 1, Groups C \& D, indoor/ outdoor (NEMA 7).

E004 Dust-Ignition Proof - Class II, Div. 1, Groups E, F \& G, indoor/outdoor (NEMA 9).
E005 Group B enclosure for use in Hydrogen atmosphere (AC input only).

## Position Feedback

10,000 ohm, wire wound potentiometer, (not available for units with internal amplifiers).


F005 Transmitter, 4-20 mA output


F006 One Potentiometer, 1000 ohms plus 4-20 mA Transmitter (not available for units with internal amplifiers)

F007 Hall Effect Contactless 4-20 mA Feedback.

F008 Contactless 4-20 mA
F009 Contactless 0-10Vdc
F010 Anti Backlash Feedback Gearing (Single Turn)
F011 Anti Backlash Feedback Gearing (Multi Turn)
F012 Tandem Potentiometers, 5000 ohms (not available for units with internal amplifiers). See drawing for F002.

F013 Tandem Potentiometers, 10,000 ohms (not avail. for units with internal amplifiers). See drawing for F002.
F014 Absolute Encoder Contactless Feedback.
F036 4-20 mA output transmitter

E006 Clear, hinged door with keylock.

## 3-Phase Controls

G001 3-Phase Contactor with Overloads


G002 120 Vac Control Transformer.
G003 240 Vac Control Transformer.

## Heater

H001 Anti-Condensation Heater (24 VDC)


H002 Anti-Condensation Heater (120 VAC). See drawing for H001.

H003 Anti-Condensation Heater (240 VAC). See drawing for H001.

## Identification/ Certifications

J001 CE Marking (AC input only)
J002 Stainless Steel Tags
J003 FM approved (Factory Mutual)
J004 One year extended warranty.
J005 Two year extended warranty.
J006 ATEX Approval.

## Position Indicator

P001 Local Position Indicator


N004 Failsafe, Spring return on loss of power
N006 Quick Failsafe (see Table 2 for speed select)

N007 Manual override (336 in. Ibs. or less)

N008 Manual override (460 to 1035 in. Ibs.)

N009 Manual override (1858 to 4513 in. lbs.)

N011 0-10 Vdc Command
N013 Failsafe - Spring return on loss of power

N015 Mounting direction, if not above valve

N016 Silicone oil for low temperature operation, $-40^{\circ} \mathrm{F}$ ( $-40^{\circ} \mathrm{C}$ )

N017 Valve mounting kit

## Motor

M001 575 Motor-3 Phase, for SM-5000 and LA-5000 Series actuators.

## Electro-Hydraulic

## Handcrank

K001
Manual Handcrank for SM-1500/1600 Series.


L005 Rotate unit 180 degrees CW viewing actuator from top so conduit entry is 174 degrees from current.

N028 Overthrust protection using a pressure switch - NEMA 4 \& Explosion-proof
N030 Geared manual overdrive, Code A

N031 Geared manual overdrive, Code B

N032 Overthrust protection using a pressure switch

N034 Split range command input
N035 Manual override
N036 Geared manual overdrive, Code C

N039 Manual override hand pump, Explosion-proof
N040 Remote mounted amplifier for EH-1000 Series

## OPTIONS

## Shaft

R001 3/8" Lg Shaft for SM-1100.

$R 002$ Hollow Shaft for SM-1100.


R003 Hollow Shaft for SM-1500.

R004 Keyed Shaft for SM-1700 \& SM-5100.


R005 Keyed Shaft for SM-5200.


R006 Keyed Shaft for SM-5300.


R007 Keyed Shaft for SM-5400.


R008 1/2 inch Output Shaft for TA-1200 with woodruf key.

## Auxiliary Position Switches



Switch options are multiples of above configuration.

S001 Two Adjustable Position Switches, SPDT, 20 Amp.
S002 Two Adjustable Position Switches, DPDT, 20 Amp.

S003 Four Adjustable Position Switches, SPDT, 20 Amp.
S004 Four Adjustable Position Switches, DPDT, 20 Amp.

S005 Aluminum Cam (Up to 5.85 turns)

S006 Aluminum Feedback Frame (Up to 5.85 turns)
S007 Aluminum Feedback Frame (5.85 turns and greater)

S008 Two nonadjustable end of travel position switches, SPST, 10 Amp
S009 Two Adjustable Position Switches, SPDT, 10 Amp.

S010 Two Adjustable Position Switches, DPDT, 10 Amp.
S011 Four Adjustable Position Switches, SPDT, 10 Amp.
S012 Four Adjustable Position Switches, DPDT, 10 Amp.
S013 Two nonadjustable end of travel position switches, SPDT, 10 Amp

## Conduit Entries

## Temperature Rating

T001 Extended operating temperature of $-40^{\circ} \mathrm{F}$ to $185^{\circ} \mathrm{F}$ $\left(-40^{\circ} \mathrm{C}\right.$ to $\left.85^{\circ} \mathrm{C}\right)$.

T002 Extended operating temperature of $-40^{\circ} \mathrm{F}$ to $225^{\circ} \mathrm{F}$ $\left(-40^{\circ} \mathrm{C}\right.$ to $\left.107^{\circ} \mathrm{C}\right)$.
T003 Extended operating temperature of $-40^{\circ} \mathrm{F}$ to $150^{\circ} \mathrm{F}$ $\left(-40^{\circ} \mathrm{C}\right.$ to $\left.66^{\circ} \mathrm{C}\right)$. ElectroHydraulic Only.

V001 1/2 inch Conduit Entry Additional (1000 Series, LA2500).

## Special Electrical Options

X001
24 Vdc power supply, 320 mA, 100-240 Vac input.
X002 Loss of signal high or low.
X003 Loss of signal low.
X004 Voltage to current converter.
X005

X006 EC-10726 $\pm 15 \mathrm{Vdc}$ power supply.
X007 MOVs for AD-8000 (Required for output to solenoids or starters).
X008 Fail open at loss of power and loss of command signal.
X009 Fail close at loss of power and loss of command signal.
X010 Command and feedback, 010 Vdc or $0-5 \mathrm{Vdc}$ instead of 4-20 mA.
X012 Signal conversion module, installed and wired to actuator.
X013 2 wire incremental dc input.
X014 3 wire incremental 120/240

Vac input.
X015 Battery Backup, only for 120/ 240 Vac, not availabe with X012.

X016 HART communication protocol.
X017 Process variable. (See page 7)
X018 Low current at null.
(See page 7)
X019 AC Power Sensing with Output.
X020 Palm Pilot Setup for AD-9120.
X021 AD-8120 and AD-8220 replacement for use with AD-8240.

X022 Form C relay contact and powered retransmission of process input for MT-6400
X023 Special control outputs for MT-6400
X025 Relay contact to detect overtorque (stall) for SM-6000
X026 Remote Amplifier for SM-6000 ( $185^{\circ} \mathrm{F}$ )

X027 Remote Amplifier for SM6000 ( $225^{\circ}$ F)
X028 208 Vac input power for AD-9120
X033 Loss of line power relay for SM-6000

X034 Loss of signal relay for SM-6000

X055 Step down transformer for 480 to 240 Vac. Close coupled, 4400 ft . lbs. and higher.
X057 Step down transformer for 480 to 240 Vac. Remotemounted, up to 2500 ft . Ibs.
X070 Torque overload indicator for SM-6000.
X088 75\% Duty cycle for JOM1 \& JOMB (AC only).
X089 75\% Duty cycle for JOM2 JOM8 (AC only).
X095 75\% Duty cycle (All Vdc, $12 \mathrm{Vac} \& 24 \mathrm{Vac})$.

## Special Mechanical Options

Y002 Helicoil Screw Thread Inserts (specify screw thread).
Y003 Increased rotation for TA1200 Series actuators to $135^{\circ}$.
Y004 Metric mounting holes, 6 mm (LF-1210)
Y005 Metric mounting holes, 6 mm (SM-1000)

Y006 Metric mounting holes, 6 mm (SM-1100)

Y008 Metric mounting holes, 12mm (SM-1700)
Y009 Metric mounting holes, 12mm (SM-5100)
Y010 Metric mounting holes, 20mm (SM-5200)
Y011 Metric mounting holes, 20mm (SM-5300)

Y012 Metric mounting holes, 26mm (SM-5400)

Y013 Metric mounting holes, 8 mm (SM-1600)
Y014 Metric mounting holes, 6 mm (LA-1000)
Y015 Metric mounting holes, 6 mm (LA-1100)

Y016 Metric mounting holes, 8 mm (LA-1500)
Y017 Metric mounting holes, 8 mm (SM-3300)

Y018 Metric mounting holes, 8 mm (LA-3300)
Y019 Metric mounting holes, 6 mm (PT-1010 \& PF-1010)
Y020 Metric mounting holes, 6 mm (PF-1210)

Y021 Metric mounting holes, 6 mm (PT-1330)

Y022 Faster speeds (SM-6000)

Y023 Extended rotation beyond $300^{\circ}$ (SM-6000)

Y024 Mechanical stop for 370 ft . lb. SM-6000

Y025 Mechanical stop for 800 ft . lb. SM-6000
Y026 Mechanical stop for 1400 ft. Ib. SM-6000

Y027 Mechanical stop for 2500 ft. Ib. SM-6000
Y028 Mechanical stop for 4400 ft. Ib. SM-6000
Y029 Mechanical stop for 6200 \& 8000 ft. lb. SM-6000
Y030 Mechanical stop for 11000 ft. Ib. SM-6000

Y031 Mechanical stop for 16500 ft. lb. SM-6000
Y032 Mechanical stop for 26000 ft. Ib. SM-6000
Y033 M20 conduit entries for J Series

