

Quarter Master Chief Series 92 Actuator



Installation, Operation and Maintenance Manual



Table of Contents

| | |
|---|-----------|
| Series 92 Electric Actuator Introduction | 3 |
| Description | 3 |
| Electrical Requirement | 3 |
| Installation | 4 |
| Electrical..... | 4 |
| Type 21 Ball Valve | 4 |
| Type 23 Ball Valve (3-way)..... | 5 |
| Type 57 / 57L Butterfly Valves..... | 5 |
| Actuator Mounting Dimensions..... | 6 |
| Operation | 7 |
| Manual Override Operation | 7 |
| Setting Limit Switches | 7 |
| Options..... | 8 |
| Single Limit Switch..... | 8 |
| Double Limit Switch | 8 |
| Heater and Thermostat..... | 8 |
| Mechanical Brake | 9 |
| Feedback Potentiometer..... | 9 |
| Series 92 Options Codes for Serial # Tags..... | 10 |
| Troubleshooting..... | 10 |
| Maintenance..... | 12 |
| ATEX Requirements | 12 |
| Spare Parts | 13 |

Series 92 Electric Actuator Introduction

Description

The Series 92 electric actuators feature a reversing, capacitor run motor, with a permanently lubricated gear train, and hardened steel spur gears. These actuators are equipped with integral thermal overload protection (AC models) with automatic reset, independently adjustable limit switches, declutchable manual override, beacon position indication, baked powder epoxy coating with stainless steel trim, ISO bolt circle, and 2 (two) ½” NPT conduit entries.

Standard models are offered in 115 VAC, feature a combination enclosure of Nema-4X, 7 & 9, and, provide up to 2000 in-lbs. of output torque.

Various options are available such as operating voltages, additional limit switches, heater and thermostat, feedback potentiometers, etc. Please see page 8 regarding these options.

Electrical Requirement

WARNING: Do not open actuator cover while circuits are energized.

CAUTION: Proper voltage must be supplied to actuator or damage will result.



CAUTION: If 115vac & 220vac models are PLC driven, output contacts of PLC should be rated at a minimum of 1.5 times required input voltage of actuator

NOTE: To conform to various electrical codes, a **green grounding screw** has been provided (on the baseplate) inside of actuator.

Terminal Strip Wiring: 75° C Copper Supply Wires up to #14 AWG, wired as per the attached diagrams or the wiring diagram affixed inside of actuator cover. Control Wiring shall be insulated with conductors rated 105° C, 300 V minimum. Torque Terminal Strip Wiring to 5 in-lbs.

| Model | Torque (in/lbs) | 115 Vac | | 230 Vac | | 12 Vdc | | 24 Vdc | | 12 Vac | | 24 Vac | | Cycle Time per 90 Degrees (seconds) |
|-------|--------------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|--|
| | | Amp Draw | Duty Cycle | Amp Draw | Duty Cycle | Amp Draw | Duty Cycle | Amp Draw | Duty Cycle | Amp Draw | Duty Cycle | Amp Draw | Duty Cycle | |
| S92 | 400 | 0.5 | 100% | 0.4 | 100% | 2.0 | 75% | 4.0 | 75% | 2.0 | 75% | 3.0 | 75% | 10 |
| A92 | 700 | 0.8 | 75% | 0.6 | 75% | 2.0 | 75% | 4.0 | 75% | 2.0 | 75% | 3.0 | 75% | 10 |
| B92 | 1100 | 0.5 | 100% | 0.4 | 100% | 2.0 | 75% | 4.0 | 75% | 2.0 | 75% | 3.0 | 75% | 25 |
| C92 | 2000 | 1.0 | 50% | 0.6 | 50% | 2.0 | 75% | 4.0 | 75% | 2.0 | 75% | 3.0 | 75% | 25 |

NOTE: Amp rating is considered locked rotor.
Duty cycles are for ambient temperature (73°F)

Installation

Electrical

Reference Drawing #289S92

Models S-92, A92, & B92

1A. To gain access to terminal strip (Part #24) it is necessary to remove manual override knob (Part #18) by loosening slotted setscrew (Part #39). Remove 2 cover screws and cover; the remaining 6 cover screws are packaged inside the actuator. Torque cover/base screws to 120 in-lbs.

Note: Failure to properly tighten cover/base flange fasteners to 120 in/lbs may compromise the certified safety factors of the actuator.

Model C92

1B. To gain access to terminal strip it is necessary to remove manual override hand wheel (Part #18A) by loosening slotted setscrew (Part #39). Remove cam (Part #51) by loosening 2 set screws (Part #52). Remove 2 cover screws and cover; the remaining 6 cover screws are packaged inside the actuator. Torque cover/base screws to 120 in-lbs.

All Models

2. Make electrical connections to terminal strip as shown on wiring schematic located inside the cover (per various electrical codes there is a green screw on the actuator base plate for grounding purposes). Terminals are suitable for up to #14 AWG wire. All units are completely calibrated prior to shipment, and no internal adjustments should be required.

3. For United States units, Install 1/2" NPT conduit fitting(s) to actuator base. For ATEX Certified European Union units, Install M20 x 1.5 conduit fitting(s) to actuator base.

Note: Proper conduit fitting must be used to maintain enclosure rating and not compromise the certified safety factors of the actuator (weatherproof, explosion proof or combination weather proof/explosion proof).

NOTE: We recommend sealing conduit openings on units installed outdoors or exposed to large temperature swings (15°F or more).

We also recommend the Heater and Thermostat option in these applications.

4. Replace actuator (gasket if removed) cover, and install 8 cap screws supplied and tighten securely to 120 in/lbs. For outdoor or wet locations it is recommended prior to replacing the cover that the top shaft seal be cleaned and coated with silicone grease. Also clean shaft and lightly coat seal area of shaft with silicone grease. Unit is now ready for operation.

Type 21 Ball Valve

Position the valve and the actuator to corresponding positions (either OPEN or CLOSED). The flats on the actuator shaft extension indicate valve position

Type 21 Ball Valves (See Drawing #0107BV sizes ½” – 2”)

Install mounting bracket #3 to actuator #2 using bolts #8 and washers #9. Insert coupling #4 on stem of valve #1 and then bolt valve #1 to mounting bracket #3 using bolts #5, nuts #7, and washers #6.

Note: All bolts should be snug and not excessively over tightened.

Type 21 Ball Valves (See Drawing #0113BV sizes 2-1/2” - 4”)

Install mounting bracket #3 to actuator #2 using bolts #8 and washers #9. Insert coupling #4 on stem of valve #1 and then bolt valve #1 to mounting bracket #3 using bolts #5, nuts #7, and washers #6.

Note: All bolts should be snug and not excessively over tightened.

Type 23 Ball Valve (3-way)

Position the valve and the actuator to corresponding positions (either OPEN or CLOSED). The flats on the actuator shaft extension indicate valve position

Type 23 Ball Valves (3-way): (See Drawing #0130BV, sizes ½” - 4”)

Install mounting bracket #3 to actuator #2 using bolts #8 and washers #9. Insert coupling #4 on stem of valve #1 and then bolt valve #1 to mounting bracket #3 using bolts #5, nuts #7, and washers #6.

Type 57 / 57L Butterfly Valves

CAUTION: If valve is in line, system must be shut down and have no line pressure before removing throttle plate and retaining washer.

Position the valve and the actuator to corresponding positions (either OPEN or CLOSED). The flats on the actuator shaft extension indicate valve position

Butterfly Valves (See Drawing # 0200BF57 sizes 1-1/2” - 6”)

No specially machined stem or valve body drilling required. Remove handle (remove handle cap and hex head bolt) to expose throttle plate screws. Remove throttle plate and retaining washer to expose existing bolt pattern.

Mount bracket #3 to actuator #2 with bolts #8 and washers #9 and tighten evenly. Insert coupling #4 into actuator #2. Install valve #1 onto mounting bracket #3 and align stem of valve to engage with coupling. (Line scribed on top of stem indicates disc orientation). Install bolts #5, washers #6 and nuts #7 and tighten evenly. Flats on actuator shaft indicate valve position. (Disc Orientation)

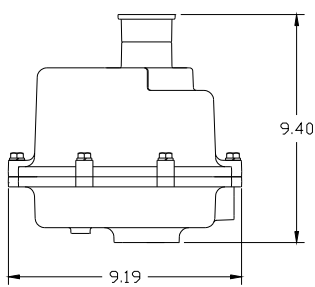
Butterfly Valves (See Drawing #0168BF57 8" size)

No specially machined stem or valve body drilling required. Remove gear operator by removing 4 thru bolts in body of valve to gear operator and lift off. Mount bracket #2 to actuator #10 using bolts #7 and washers #8. Insert actuator shaft adapter #9 into actuator #10. Install valve #1 to mounting bracket #2 and align stem of valve to engage with coupling. (Line scribed on top of stem indicates disc orientation). Install bolts #3, washers #4 & #5 and nuts #6 and tighten evenly. Flats on actuator shaft indicate valve position. (Disc Orientation)

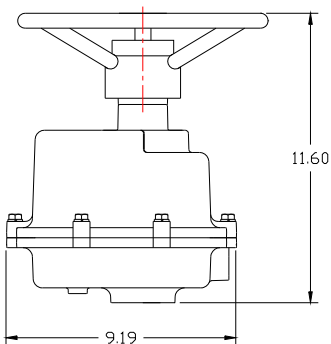
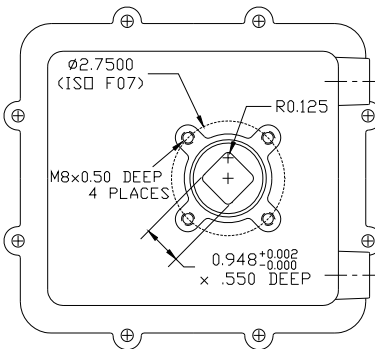
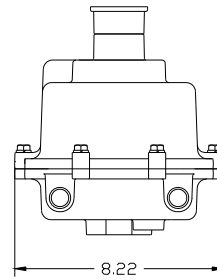


CAUTION: If mounted unit is installed other than straight up, the actuator should be supported independently to prevent side loading and loosening up of fasteners.

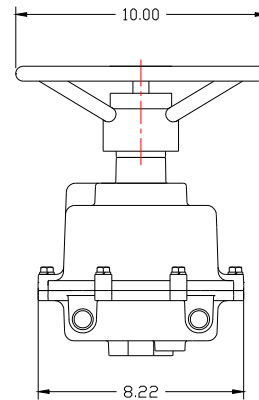
Actuator Mounting Dimensions



S92, A92, & B92



C92



Operation

Manual Override Operation Reference Drawing #289S92

Models S-92, A92, & B92

Pull up the declutching knob (Part #18) and apply a 5/8" open end wrench to exposed flats and rotate within labeled limits as indicated by arrows.

To re-engage simply rotate actuator shaft in the opposite direction until declutching knob drops back down into position.

Model C92

Push down on hand wheel (Part #18A) and rotate within labeled limits.

To re-engage simply rotate actuator hand wheel until it moves up and re-engages.

CAUTION: The manual override should only be used when there is no power applied to actuator. When power is restored the actuator will automatically resume normal operation.

Setting Limit Switches Reference Drawing #289S92



Disconnect power!

Open Travel Limit Switch (Top Switch Part #25):

Using declutchable manual override, move the valve into a full open position. Then loosen set screws on top cam (Part #40) and rotate cam (CCW) into limit switch arm until a click is heard, this designates the switch circuit has opened and defines a full open position. Tighten 2 set screws (Part #40) on cam.

Close Travel Limit Switch (Bottom Switch Part #25):

Using declutchable manual override, move the valve to a full closed position, loosen set screws on bottom cam (Part #40) and rotate cam (CW) into limit switch arm until a click is heard, this designates the switch circuit has opened and defines a full closed position. Tighten 2 set screws (Part #40) on cam.

Manually position valve to midstroke. Reapply power to actuator and drive to open or closed position. Actuator motor will run. The shaft will not turn until drive pins (Part #7) reseat in drive gear. This could take up to 25 seconds.

Options

Models S92, A92, B92, C92

Single Limit Switch

Install additional limit switch on posts on opposite side of standard limit switches using screws provided.

Wiring for switch is as follows:

Pink = Common to Terminal #6
Purple = NC to Terminal #7
Blue = NO to Terminal #8

Cam must be set so that this switch is tripped just ahead of Closed limit switch.

Wire tie loose wiring and check operation before installing cover.

Double Limit Switch

Installation and wiring is the same as for the single limit switch, with the addition of wiring of the second switch as follows:

Brown = Common to Terminal #9
Green = NC to Terminal #10
Orange = NO to Terminal #11

Cam must be set so that this switch is tripped just ahead of Open limit switch.

Wire tie loose wiring and check operation before installing cover.

Heater and Thermostat

Models S92 & A92

Install Heater into threaded hole located between actuator base gasket and motor module.

Wiring is as follows:

Heater lead = Terminal #12
Thermostat lead = Terminal #13

Wire tie loose wiring and check operation before installing cover.

Models B92 & C92

Install Heater into threaded hole located between actuator shaft and motor module.

Wiring is as follows:

Heater lead = Terminal #12
Thermostat lead = Terminal #13

Wire tie loose wiring and check operation before installing cover.

Mechanical Brake

Loosen two (2) motor screws diagonally from each other and install bracket with tabs facing upward. Tighten screws

Install hexagonal adapter over armature shaft and tighten set screws.

NOTE: The adapter should be resting on the step of the armature shaft.

Install brake assembly onto hexagonal adapter making sure that the brake assembly is sitting flush on the bracket. Tighten with supplied screws.

Remove motor leads "A" & "B" from capacitor and install "piggy back connectors to capacitor, the re-install motor leads to their original locations.

Connect brake leads to piggy back connectors on capacitor (orientation does not matter)

Wire tie loose wiring and check operation before installing cover.

Feedback Potentiometer

Using 4-40 x 3/8 hardware, install potentiometer and bracket on standoffs by limit switches, with potentiometer gear facing output shaft.

Install drive gear face down over output shaft.

Wiring for potentiometer as follows:

| | |
|-----------------------------|------------------------|
| #1 on potentiometer (black) | #14 on terminal strip. |
| #2 on potentiometer (white) | #15 on terminal strip. |
| #3 on potentiometer (red) | #16 on terminal strip. |

Using multimeter set at 2k ohms, calibrate potentiometer with leads from meter connected to terminals #15 and #16. With actuator in closed position multimeter should read between 95 and 100 ohms.

Rotate actuator 90 degrees (open position).

Connect leads from multimeter to terminal #14 and #15; multimeter should read 95 to 100 ohms.

If necessary adjust open limit switch cam so that multimeter will read 95-100 ohms.

Series 92 Options Codes for Serial # Tags

| | |
|-----|--------------------------------|
| M1 | 1 extra limit switch |
| M2 | 2 extra limit switches |
| HT | Heater & thermostat |
| P | Feedback potentiometer |
| DP | Dual feedback potentiometers |
| C1 | 4-20 mA Positioner |
| C3 | 4-20mA Output Transmitter |
| BR | Mechanical brake |
| L2 | 2-Position Indicating Lights |
| CO | Center off |
| CL | Cycle length control |
| 2W | 2-wire control |
| FS | Failsafe Battery Pak |
| A4 | 4-12mA Input Signal Positioner |
| B12 | Split Range Positioner |
| ASI | AS-I Bus Network Card |

Example 1: S92**HTPXWJ**

Heater & thermostat and feedback potentiometer installed.

Example 2: A92**BRM1XWJ**

Mechanical brake and 1 extra limit switch installed.

Troubleshooting

WARNING: Do not open actuator cover while circuits are energized.

Q: *What if there is no output, but the motor runs?*

A: Manual override possibly engaged.

When the manual override is engaged, the motor will run, but no output will be observed until the manual override re-engages with the output shaft.

A: Valve stem broken. When the valve stem is broken, there will not be a change in fluid movement, making it seem as if the actuator has no output..

Q: *What if valve does not cycle?*

A: No power source to actuator. Check for power.

A: Power source disconnected. Check for broken wire, loose connection or no connection as per appropriate wiring diagram.

A: Low or wrong power source. Check for proper voltage.

A: Mechanical Brake jammed or misaligned. Check alignment of brake assembly.

This could occur during installation when someone would rest their hand on the Mechanical Brake to steady themselves.

Q: *What if there is water and/or moisture inside of the unit?*

A: Conduit fitting installed improperly. Re-install correctly.

A: Cover and/or base seal damaged. Replace damaged seal(s).

A: Base gasket damaged or installed improperly. Check gasket and replace if necessary.

A: Temperature swings of more than 15 degrees F. Install heater and thermostat to eliminate condensation.

When these temperature swings occur, the unit will “sweat” on the inside causing internal corrosion unless the actuator is equipped with a heater and thermostat to keep a constant temperature inside of the housing.

A: Unit has been submerged. Raise unit above liquid level.

An actuator that is to be submerged MUST meet NEMA 6 for the proper protection of the actuator and the elimination of a potential hazard. We do not recommend submerging the Series 92 Actuator as the electrical rating does not meet NEMA 6.

Q: *What if unit is oscillating?*

A: Valve torque exceeds output torque of actuator. Check for chemical compatibility of valve, and flange torque.

Q: *What if thermal overload frequently cuts out motor?*

A: Frequency of operation exceeds duty cycle rating. Check cycling period.

A: Unit is oscillating. Refer to above.

Q: *What if motor hums and no output is observed?*

A: Foreign material caught in valve. Remove material and inspect valve for damaged and/or worn parts. Replace parts as necessary.

A: Unit wired incorrectly (simultaneously powering open and closed). Check wiring as per appropriate wiring diagram.

A: Capacitor worn. Replace.

Q: *What if actuator “over-shoots” limit switches without stopping?*

A: Actuator wired in parallel to each other. Please note that each actuator requires it's own set of switch contacts.

Maintenance

Disconnect power!



WARNING: Do not open actuator cover while circuits are energized.

CAUTION: It is imperative for reducing the chance of electrical shock, and to prevent ignition of hazardous atmospheres that you

Disconnect power
before any maintenance or repairs are performed.

Series 92 actuators are virtually maintenance free. We do however, recommend that periodic checks are made to ensure that all fasteners are tight and properly torqued to extend the life of the actuator and valve.

Series 92 Actuators are manufactured with factory lubricated grease in the gear case and gearbox. In most cases, this lubricant should never have to be replenished, however if deemed necessary, we recommend using Aeroshell Grease #33 MS, mfg. by Shell Oil Co.

Consult our technical department before replenishing lubricant.

For outdoor or wet locations keep top and bottom seals coated with a silicone based grease.

ATEX Requirements

ATEX Standard EEx d IIB Directive II 2 G Certified Units Service/Maintenance/Inspection Requirements

Above directive for hazardous location service electric actuators, for use throughout the European Union.

All electric actuators are to be used for remote operation of a valve to open or closed positions. Any other uses are not approved by Asahi/America, Inc.

Every 250,000 cycles or 10 years whichever comes first, the actuator must be removed from service and sent back to Asahi/America, Inc. for inspection of wear of bearings as they relate to joints and gaps in accordance with above directive. Any units not within normal tolerances, will need to be re-built or replaced at the users expense.

Spare Parts
Reference Drawing #289S92

We recommend that the following be kept on hand as spare parts.

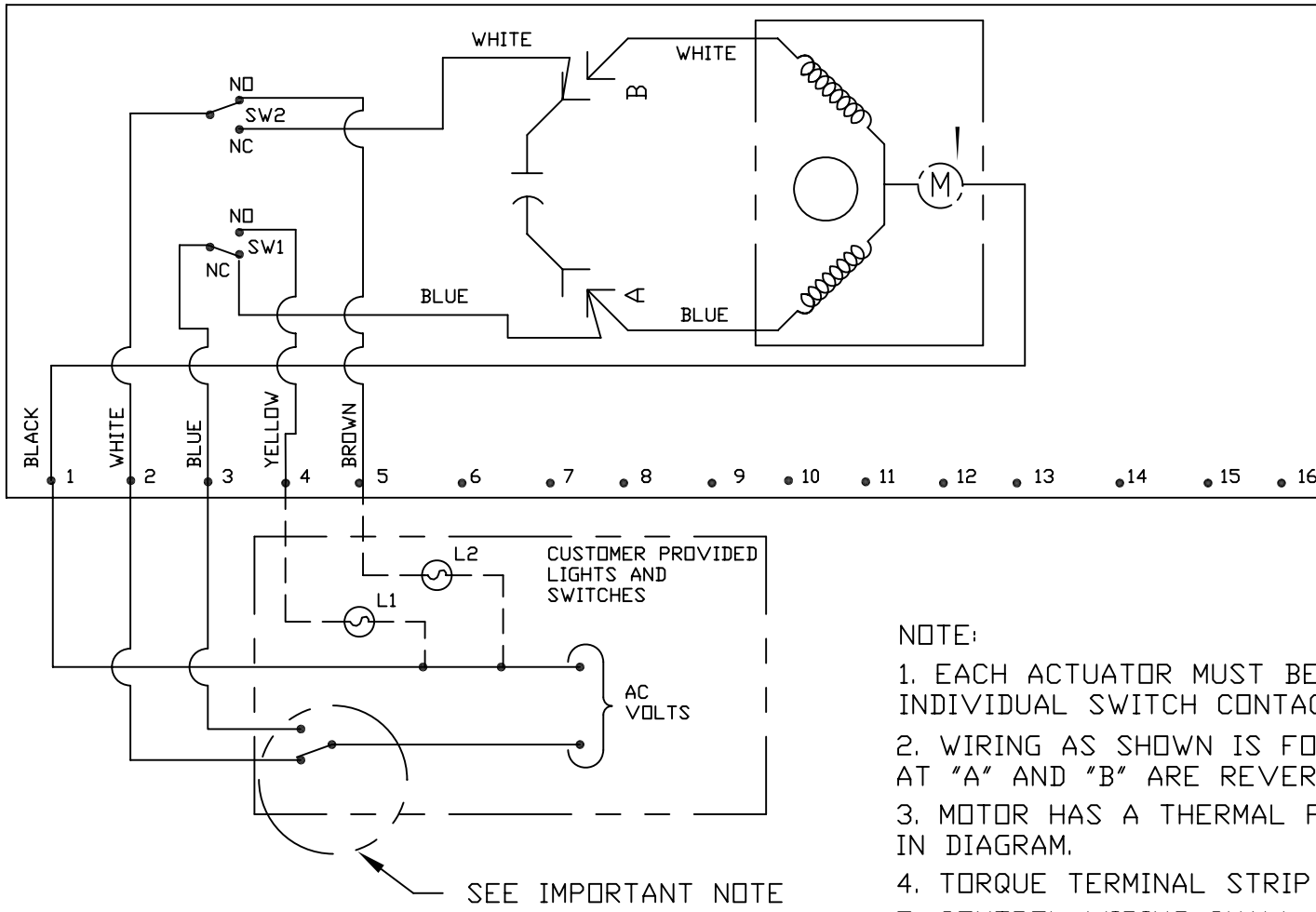
- 1 --- Limit Switch (Part #25)
- 1 --- Capacitor (Part #27 or #28)

NOTE: When ordering replacement motor parts and/or options specify model # and voltage.

Attachments:

9 drawings: 0043EL, 0044EL, 0042EL, 0107BV, 0113BV,
0130BV, 0168BF57, 0200BF57, 289S92

WIRING DIAGRAM FOR 115 VAC AND 220 VAC ONLY
 ACTUATOR SHOWN IN COUNTER-CLOCKWISE EXTREME OF TRAVEL, OR "OPEN" POSITION



NOTE:

1. EACH ACTUATOR MUST BE POWERED THRU ITS OWN INDIVIDUAL SWITCH CONTACTS TO AVOID CROSS FEED.
2. WIRING AS SHOWN IS FOR S92 & A92 MOTOR LEADS AT "A" AND "B" ARE REVERSED FOR B92 AND C92.
3. MOTOR HAS A THERMAL PROTECTOR AS SHOWN BY (M) IN DIAGRAM.
4. TORQUE TERMINAL STRIP WIRING TO 5 IN-LBS.
5. CONTROL WIRING SHALL BE INSULATED WITH CONDUCTORS RATED 105°C, 300V MINIMUM.
6. 75°C COPPER SUPPLY WIRES ONLY.

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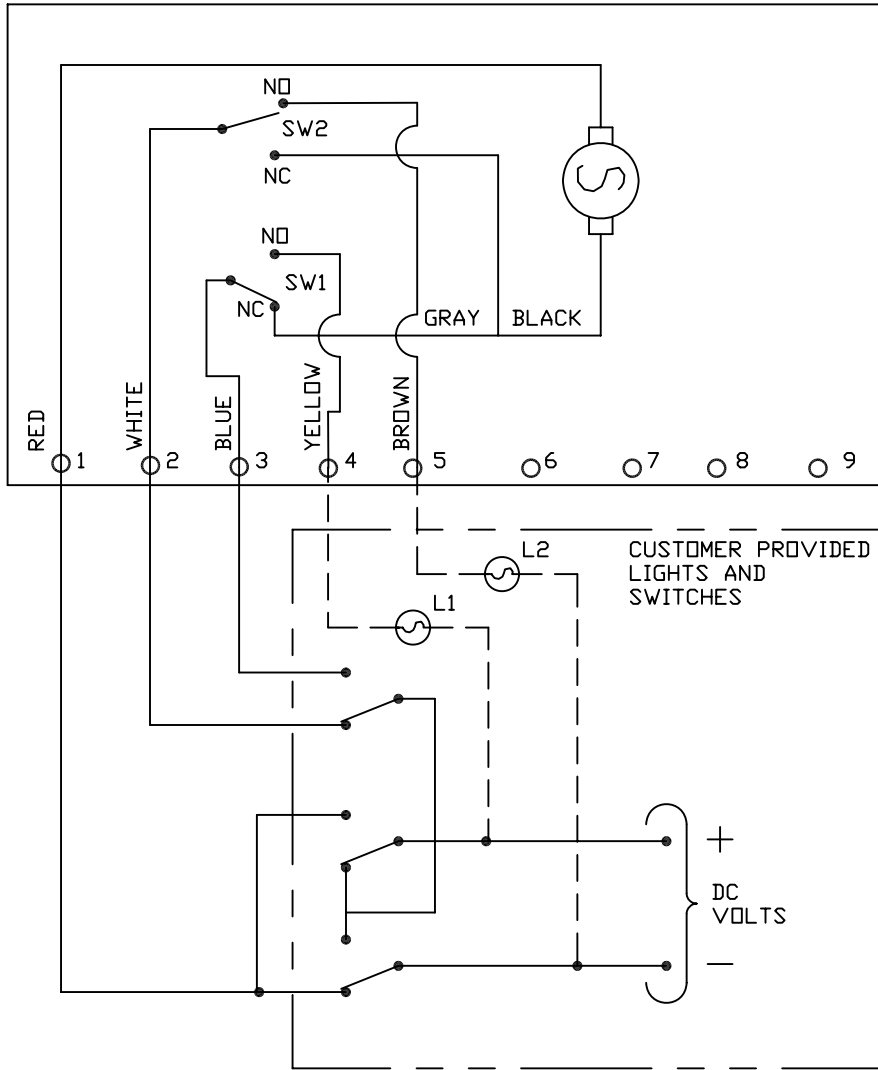
| | NAME | DATE |
|---------|----------------|---------|
| DR | JOHN GLASSFORD | 6/18/07 |
| APPD | DAVE HURLEY | 6/18/07 |
| PROD | LED LESTER | 6/18/07 |
| WO#/CO# | | |
| FILE | | |

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 ISO 9001 CERTIFIED
 35 GREEN STREET, P.O. BOX 653, MALDEN, MA.

SERIES 92 WIRING DIAGRAM
 120/220 VAC

| | | |
|-----------|-----------------|-------|
| SIZE A | DWG. NO. 0043EL | REV B |
| SCALE NTS | SHEET 1 OF 1 | |

DC WIRING DIAGRAM



NOTES:

1. ACTUATOR SHOWN IN COUNTER CLOCKWISE EXTREME OF TRAVEL OR "OPEN" POSITION
2. MOTOR LEADS REVERSED FOR 1100 & 2000 IN*LBS.
3. TORQUE TERMINAL STRIP WIRING TO 5 IN-LBS.
4. CONTROL WIRING SHALL BE INSULATED WITH CONDUCTORS RATED 105°C, 300V MINIMUM.
5. 75°C COPPER SUPPLY WIRES ONLY.

1 2 3
 - + = OPEN
 + - = CLOSE

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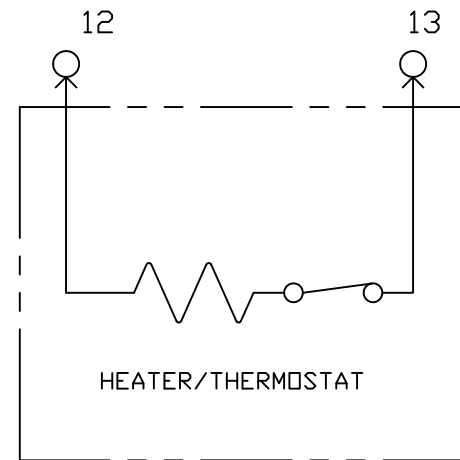
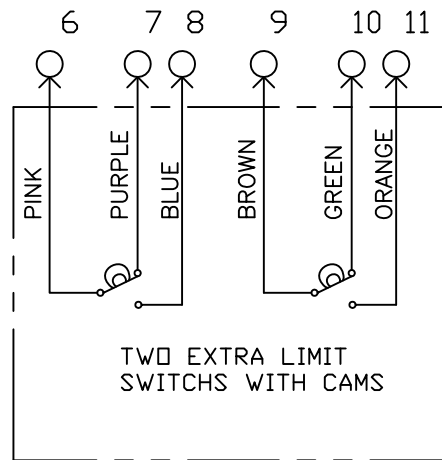
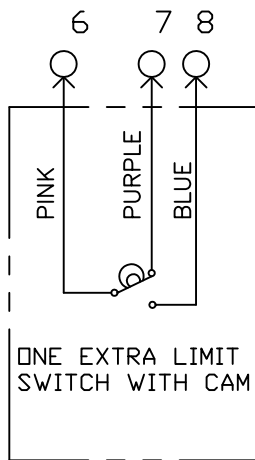
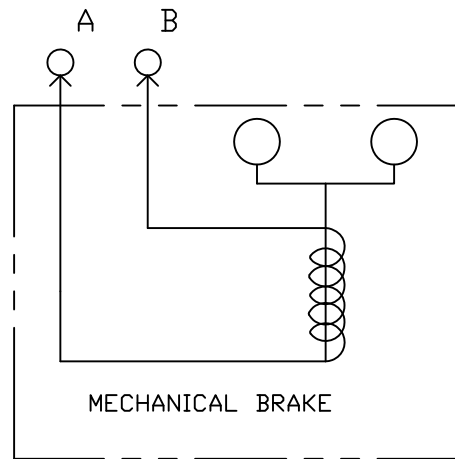
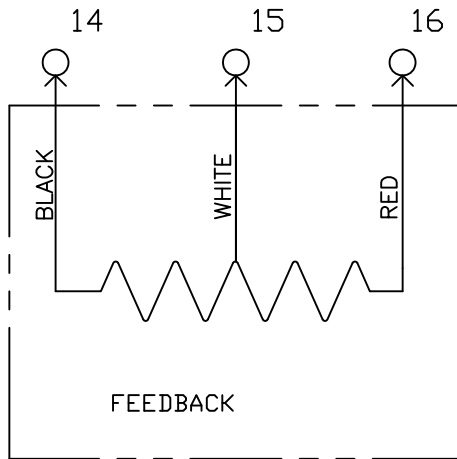
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SERIES 92 WIRING DIAGRAM
 12/24 VDC

| | NAME | DATE |
|---------|----------------|---------|
| DR | JOHN GLASSFORD | 6/18/07 |
| APPD | DAVE HURLEY | 6/18/07 |
| PROD | LEO LESTER | 6/18/07 |
| WO#/CO# | | |
| FILE | | |

| | | | | | |
|-------|-----|----------|--------------|-----|---|
| SIZE | A | DWG. NO. | 0044EL | REV | B |
| SCALE | NTS | | SHEET 1 OF 1 | | |



NOTES:

1. TORQUE TERMINAL STRIP WIRING TO 5 IN-LBS.
2. CONTROL WIRING SHALL BE INSULATED WITH CONDUCTORS RATED 105°C, 300V MINIMUM.
3. 75°C COPPER SUPPLY WIRES ONLY.

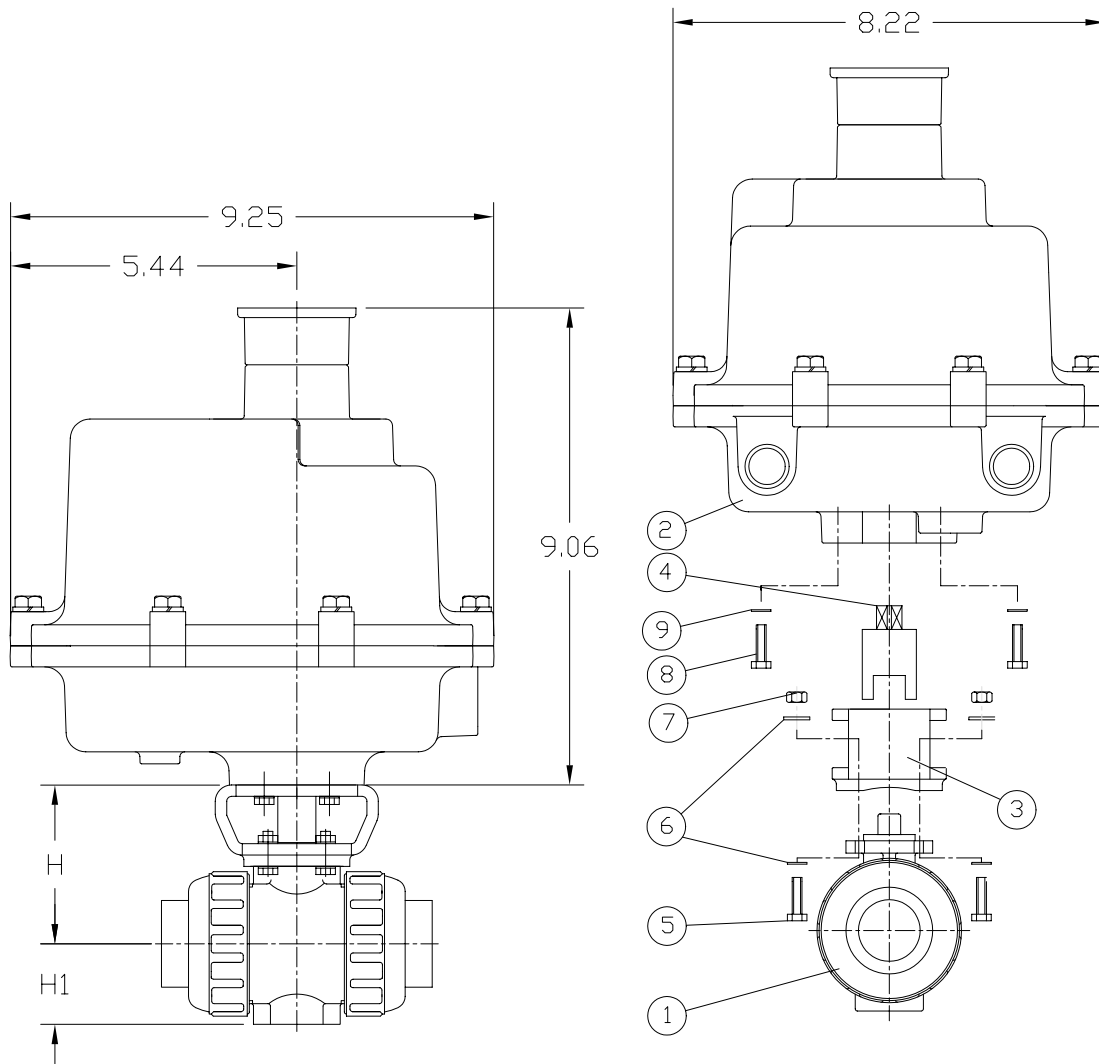
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| NAME | DATE | |
| DR JOHN GLASSFORD | 6/18/07 | |
| APPD DAVE HURLEY | 6/18/07 | |
| PROD LEO LESTER | 6/18/07 | |
| WO#/CO# | | |
| FILE | | |

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SERIES 92 WIRING DIAGRAM
 OPTIONS

| | | |
|-----------|-----------------|-------|
| SIZE A | DWG. NO. 0042EL | REV C |
| SCALE NTS | SHEET 1 OF 1 | |



UNIT: INCH

| VALVE SIZE | 1/2" | 3/4" | 1" | 1-1/4" | 1-1/2" | 2" |
|------------|------|------|------|--------|--------|------|
| H | 2.76 | 3.01 | 3.29 | 3.64 | 3.98 | 4.43 |
| H1 | 1.14 | 1.38 | 1.54 | 1.85 | 2.17 | 2.60 |

NOTE. The shape and appearance of assembly differ a little with nominal size compared to this drawing.

| 9 | FLAT WASHER (M8.0) | STAINLESS STEEL | 4 |
|------|--|-----------------------|-----|
| 8 | BOLT (M8.0x1.25-16LG) | STAINLESS STEEL | 4 |
| 7 | NUT (FOR 1/2" THRU 1-1/4" : M5.0x8) (FOR 1-1/2" THRU 2" : M6.0x1) | STAINLESS STEEL | 4 |
| 6 | FLAT WASHER (FOR 1/2" THRU 1-1/4" : M5.0) (FOR 1-1/2" THRU 2" : M6.0) | STAINLESS STEEL | 8 |
| 5 | BOLT (FOR 1/2" THRU 1-1/4" : M5.0x8-16LG) (FOR 1-1/2" THRU 2" : M6.0x1-20LG) | STAINLESS STEEL | 4 |
| 4 | COUPLING | STAINLESS STEEL 303 | 1 |
| 3 | MOUNTING BRACKET | PPG | 1 |
| 2 | ACTUATOR SERIES 92 | EPOXY COATED ALUMINUM | 1 |
| 1 | BALL VALVE TYPE 21 | PVC,CPVC,PP,PVDF | 1 |
| ITEM | DESCRIPTION | MATERIAL | QTY |

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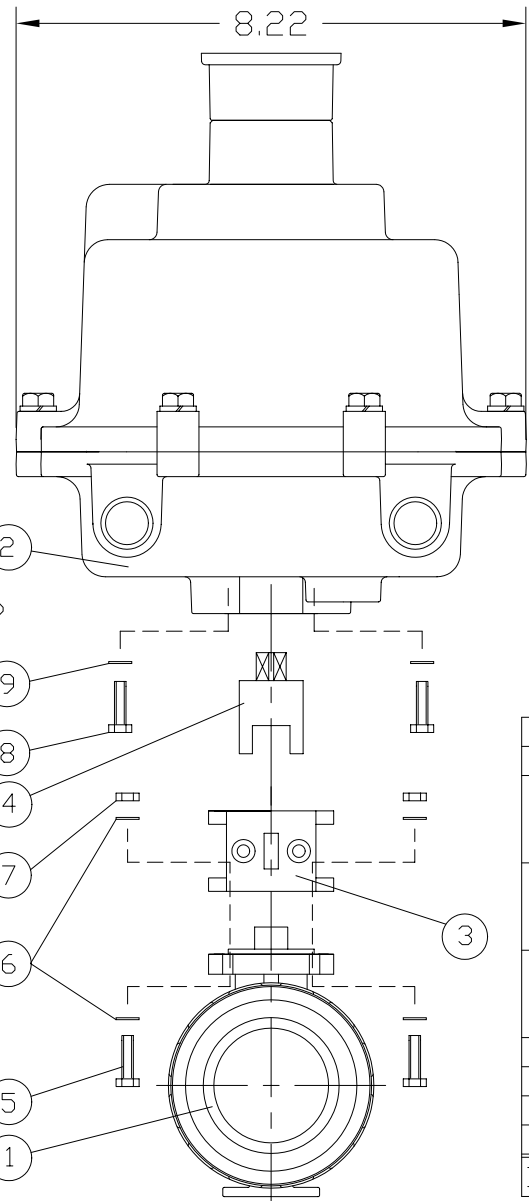
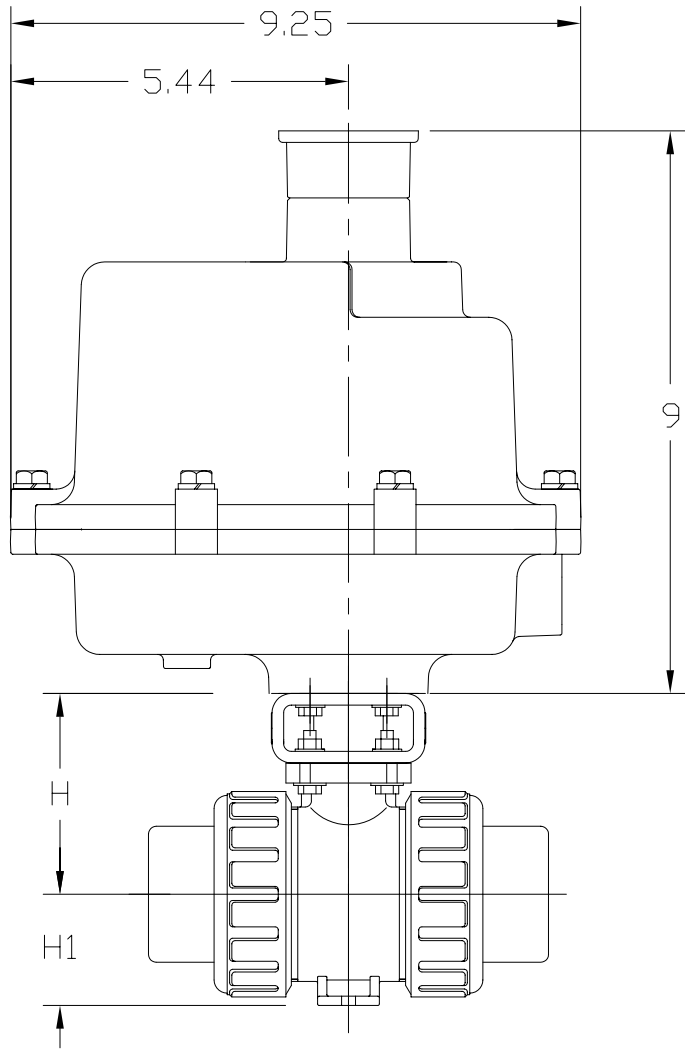
35 GREEN STREET, P.O. BOX 653, MALDEN, MA.



BALL VALVE TYPE21
SERIES92 ELECTRIC ACTUATOR
1/2" THRU 2"

| | NAME | DATE |
|---------|-------------|---------|
| DR | DAN CAMERON | 8/02/01 |
| APPD | DAVE HURLEY | 8/2/01 |
| PROD | LED LESTER | 8/2/01 |
| WO#/CO# | | |
| FILE | | |

| | | | | | |
|-------|-----|----------|---------|-----|------|
| SIZE | A | DWG. NO. | 0107BV | REV | A |
| SCALE | NTS | | SHEET 1 | | OF 1 |



UNIT: INCH

| VALVE SIZE | 2-1/2" | 3" | 4" |
|------------|--------|------|------|
| H | 5.12 | 5.47 | 6.97 |
| H1 | 2.83 | 3.35 | 4.33 |

NOTE. The shape and appearance of assembly differ a little with nominal size compared to this drawing.

| 9 | FLAT WASHER (M8.0) | STAINLESS STEEL | 4 |
|------|--|-----------------------|-----|
| 8 | BOLT (M8.0x1.25-16LG) | STAINLESS STEEL | 4 |
| 7 | NUT (FOR 2-1/2" AND 3" : M8.0x1.25) (FOR 4" : M10.0x1.50) | STAINLESS STEEL | 4 |
| 6 | FLAT WASHER (FOR 2-1/2" AND 3" : M8.0) (FOR 4" : M10.0) | STAINLESS STEEL | 8 |
| 5 | BOLT (FOR 2-1/2" AND 3" : M8.0x1.25-35LG) (FOR 4" : M10.0x1.50-40LG) | STAINLESS STEEL | 4 |
| 4 | COUPLING | STAINLESS STEEL 303 | 1 |
| 3 | MOUNTING BRACKET | PPG | 1 |
| 2 | ACTUATOR SERIES 92 | EPOXY COATED ALUMINUM | 1 |
| 1 | BALL VALVE TYPE 21 | PVC,CPVC,PP,PVDF | 1 |
| ITEM | DESCRIPTION | MATERIAL | QTY |

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| | NAME | DATE |
|---------|------------------|---------|
| DR | KENICHI MIYAZAKI | 8/14/01 |
| APPD | DAVE HURLEY | 8/14/01 |
| PROD | LED LESTER | 8/14/01 |
| WO#/CO# | | |
| FILE | | |

ASAHI/AMERICA

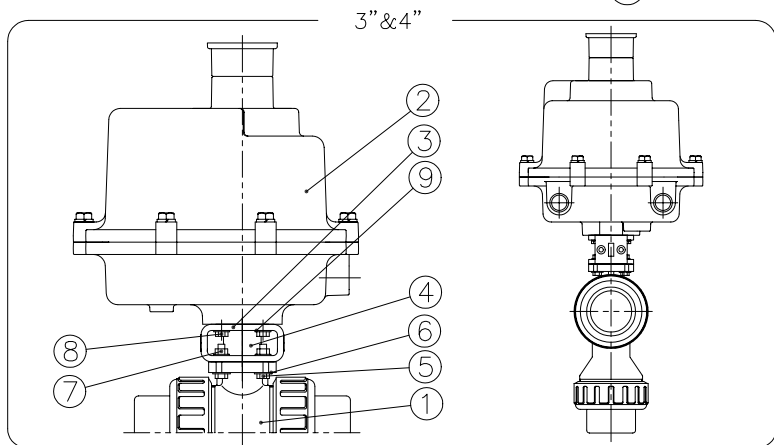
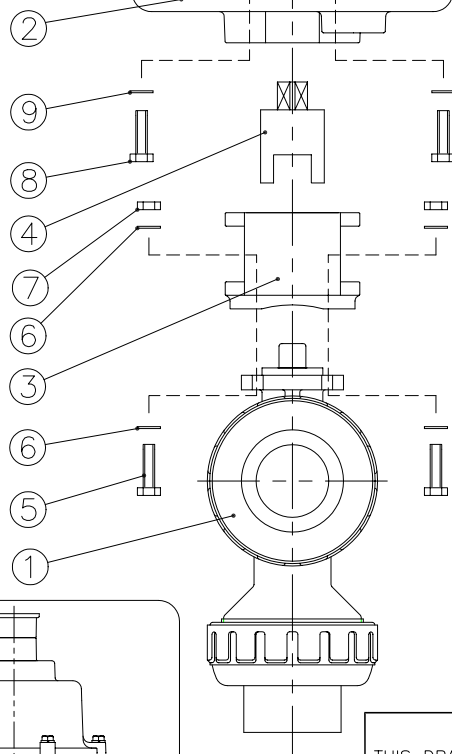
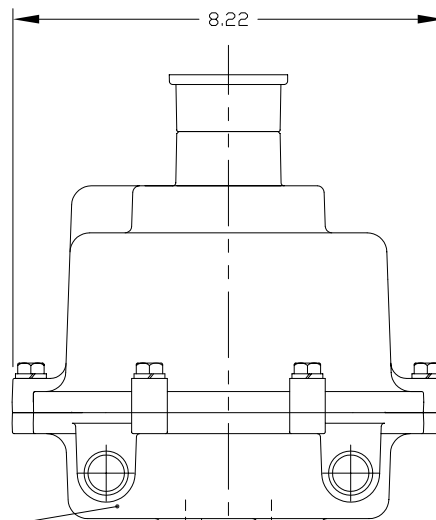
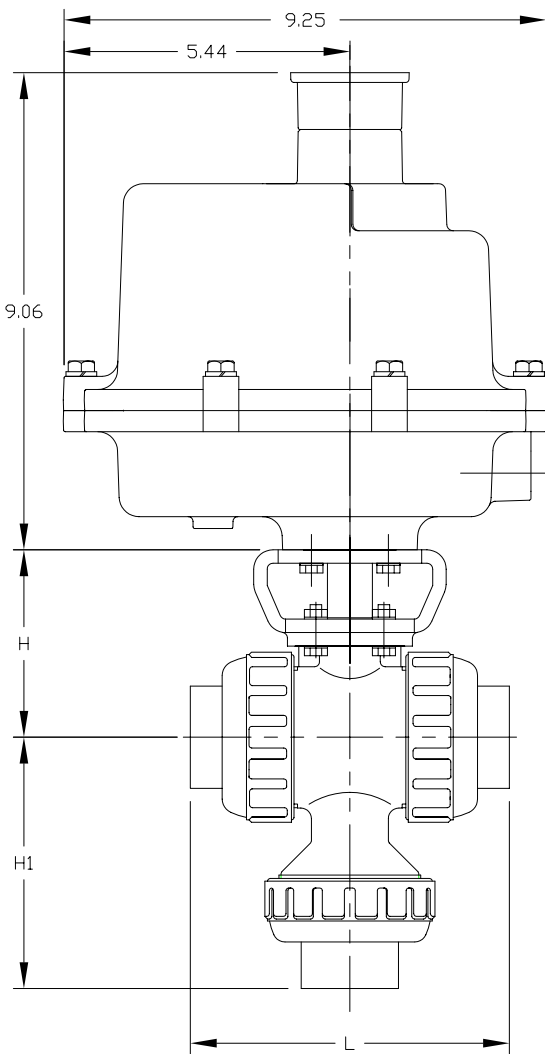
ISO 9001 CERTIFIED

35 GREEN STREET, P.O. BOX 653, MALDEN, MA.



BALL VALVE TYPE21
SERIES92 ELECTRIC ACTUATOR
2-1/2" THRU 4"

| | | | | | |
|-------|-----|----------|--------------|-----|---|
| SIZE | A | DWG. NO. | 0113BV | REV | A |
| SCALE | NTS | | SHEET 1 OF 1 | | |



DIMENSIONS TABLE

UNIT: inch

| NOMINAL SIZE | H | FLANGED | | THREADED | | SOCKET | | | | | | SPIGOT (BUTT END) | |
|--------------|------|---------|-------|----------|-------|----------|-------|---------------|-------|---------------|-------|-------------------|-------|
| | | H1 | L | H1 | L | PVC,CPVC | | PP,PVDF (DIN) | | PP,PVDF (IPS) | | H1 | L |
| | | | | | | H1 | L | H1 | L | H1 | L | | |
| 1/2" 15mm | 2.76 | 3.70 | 5.63 | 2.89 | 4.02 | 3.08 | 4.45 | 2.80 | 3.90 | 3.09 | 4.45 | 3.27 | 4.88 |
| 3/4 | 3.01 | 4.50 | 6.77 | 3.48 | 4.72 | 3.56 | 5.08 | 3.27 | 4.49 | 3.61 | 5.08 | 3.90 | 5.67 |
| 1 | 3.29 | 5.24 | 7.36 | 4.13 | 5.16 | 4.32 | 5.75 | 3.94 | 4.84 | 4.37 | 5.75 | 4.53 | 6.06 |
| 1 1/2 | 3.98 | 6.50 | 8.35 | 5.53 | 6.42 | 5.71 | 7.24 | 5.16 | 5.83 | 5.85 | 7.24 | 6.02 | 6.85 |
| 2 | 4.43 | 7.34 | 9.21 | 6.61 | 7.76 | 6.66 | 8.23 | 6.06 | 6.93 | 6.76 | 8.23 | 7.01 | 8.82 |
| 3 | 5.47 | 10.06 | 11.97 | 9.25 | 10.39 | 9.59 | 11.10 | 8.82 | 9.88 | 11.10 | 11.10 | 9.69 | 11.61 |
| 4 | 6.97 | 12.01 | 14.65 | 11.77 | 14.17 | 11.58 | 13.90 | 10.98 | 12.20 | 14.37 | 14.37 | 11.85 | 12.72 |

NOTE; 1) THE SHAPE AND APPEARANCE OF ASSEMBLY DIFFER A LITTLE WITH NOMINAL SIZE COMPARED TO THIS DRAWING.

2) FOR DETAILED VALVE DIMENSIONS, REFER TO DWG. NO. 0126BV, 0127BV, 0128BV.
 L-PORT : DWG. NO. 0126BV
 DOUBLE L-PORT : DWG. NO. 0127BV
 CROSS PORT : DWG. NO. 0128BV

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| | | | |
|------|---|---------------------|-----|
| 9 | FLAT WASHER (M6.0) | STAINLESS STEEL | 4 |
| 8 | BOLT (M6.0x1-16LG) | STAINLESS STEEL | 4 |
| 7 | NUT (FOR 1/2" THRU 1-1/4" : M5.0x.8) (FOR 1-1/2" THRU 2" : M6.0x1) (FOR 3" : M8.0x1.25) (FOR 4" : M10.0x1.50) | STAINLESS STEEL | 4 |
| 6 | FLAT WASHER (FOR 1/2" THRU 1-1/4" : M5.0) (FOR 1-1/2" THRU 2" : M6.0) (FOR 3" : M8.0) (FOR 4" : M10.0) | STAINLESS STEEL | 8 |
| 5 | BOLT (FOR 1/2" THRU 1" : M5.0x.8-16LG) (FOR 1-1/2" THRU 2" : M6.0x1-20LG) (FOR 3" : M8.0x1.25-35LG) (FOR 4" : M10.0x1.50-40LG) | STAINLESS STEEL | 4 |
| 4 | COUPLING | STAINLESS STEEL 303 | 1 |
| 3 | MOUNTING BRACKET | PPG | 1 |
| 2 | ACTUATOR SERIES 92 | ZYTEL | 1 |
| 1 | MULTI PORT BALL VALVE TYPE23 | PVC,CPVC,PP,PVDF | 1 |
| ITEM | DESCRIPTION | MATERIAL | QTY |

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| | NAME | DATE |
|---------|------------------|---------|
| DR | KENICHI MIYAZAKI | 1/28/03 |
| APPD | DAVE HURLEY | 1/28/03 |
| PROD | LEO LESTER | 1/28/03 |
| WO#/CO# | | |
| FILE | | |

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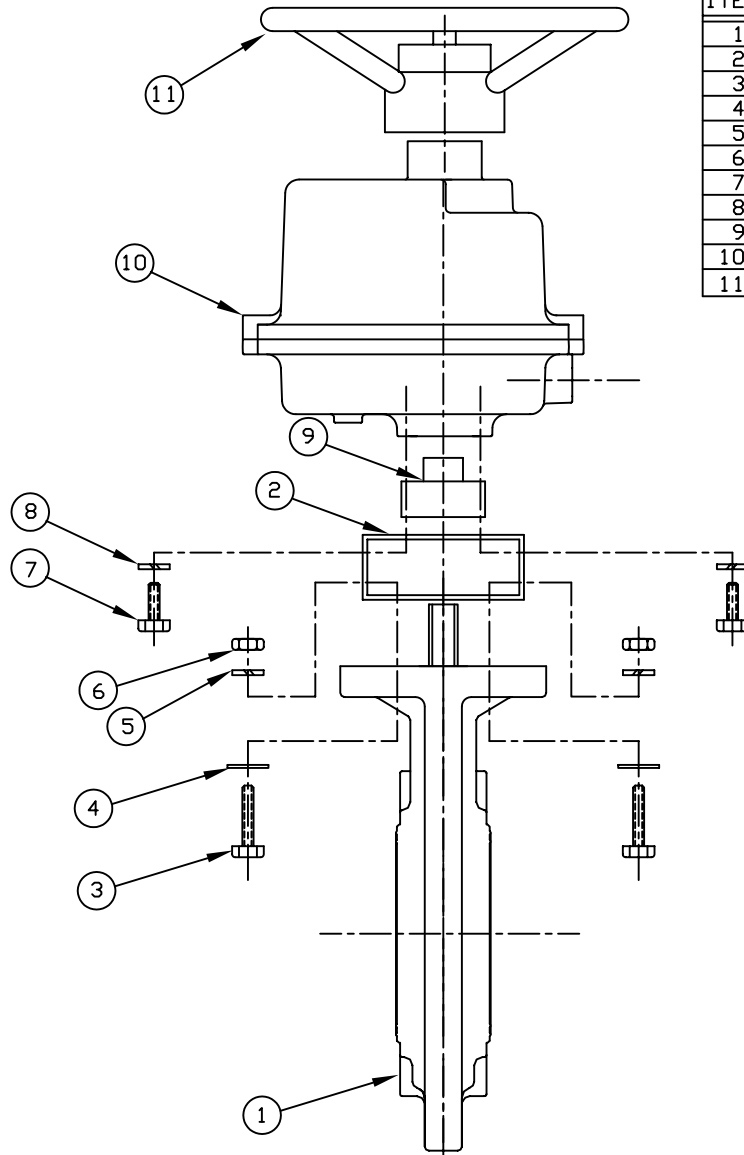
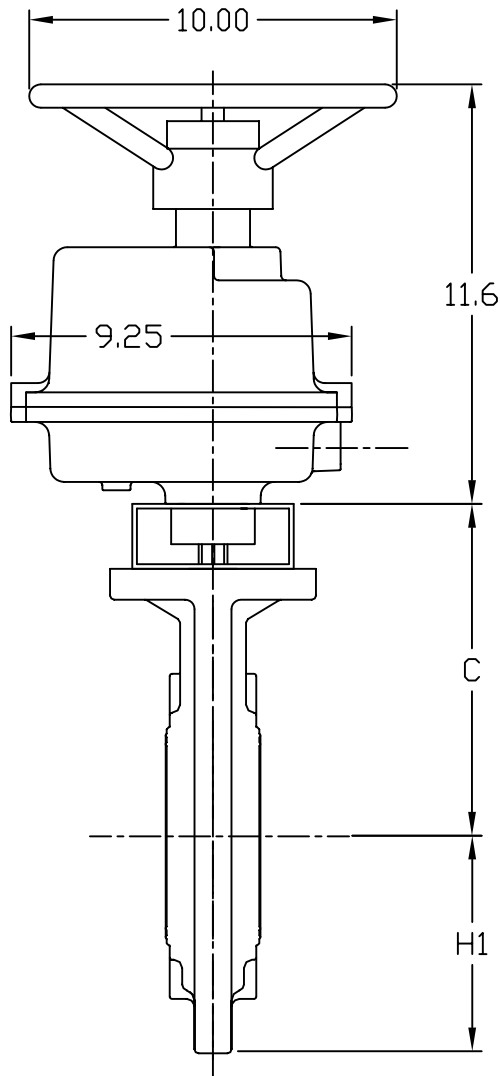
35 GREEN STREET, P.O. BOX 653, MALDEN, MA.



MULTI PORT BALL VALVE
 TYPE23 WITH SERIES92 ACT.
 1/2" THRU 4"

| | | | | | |
|-------|-----|--------------|--------|-----|---|
| SIZE | A | DWG. NO. | 0130BV | REV | A |
| SCALE | NTS | SHEET 1 OF 1 | | | |

| VALVE SIZE | H1 | C |
|------------|------|-------|
| 1 1/2' | 3.74 | 5.00 |
| 2' | 3.86 | 5.00 |
| 2 1/2' | 3.66 | 5.58 |
| 3' | 3.94 | 5.78 |
| 4' | 4.53 | 6.56 |
| 5' | 5.00 | 8.05 |
| 6' | 5.63 | 8.76 |
| 8' | 6.70 | 11.25 |



| ITEM | DESCRIPTION | MATERIAL | QTY |
|------|------------------|--------------------|-----|
| 1 | BUTTERFLY VALVE | | 1 |
| 2 | BRACKET MOUNTING | 300 SS | 1 |
| 3 | SCREW | 300 SS | 4 |
| 4 | WASHER FLAT | 300 SS | 4 |
| 5 | WASHER LOCK | 300 SS | 4 |
| 6 | NUT HEX | 300 SS | 4 |
| 7 | SCREW | 300 SS | 4 |
| 8 | WASHER LOCK | 300 SS | 4 |
| 9 | SHAFT ADAPTER | 300 SS | 1 |
| 10 | ACTUATOR | ALUM. EPOXY COATED | 1 |
| 11 | HANDWHEEL | ALUM. EPOXY COATED | 1 |

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| | NAME | DATE |
|---------|----------------|---------|
| DR | JOHN GLASSFORD | 6/10/05 |
| APPD | DAVE HURLEY | 6/10/05 |
| PROD | LEO LESTER | 6/10/05 |
| PATH | | |
| WO#/CO# | | |

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35 GREEN STREET, P.O. BOX 653, MALDEN, MA.

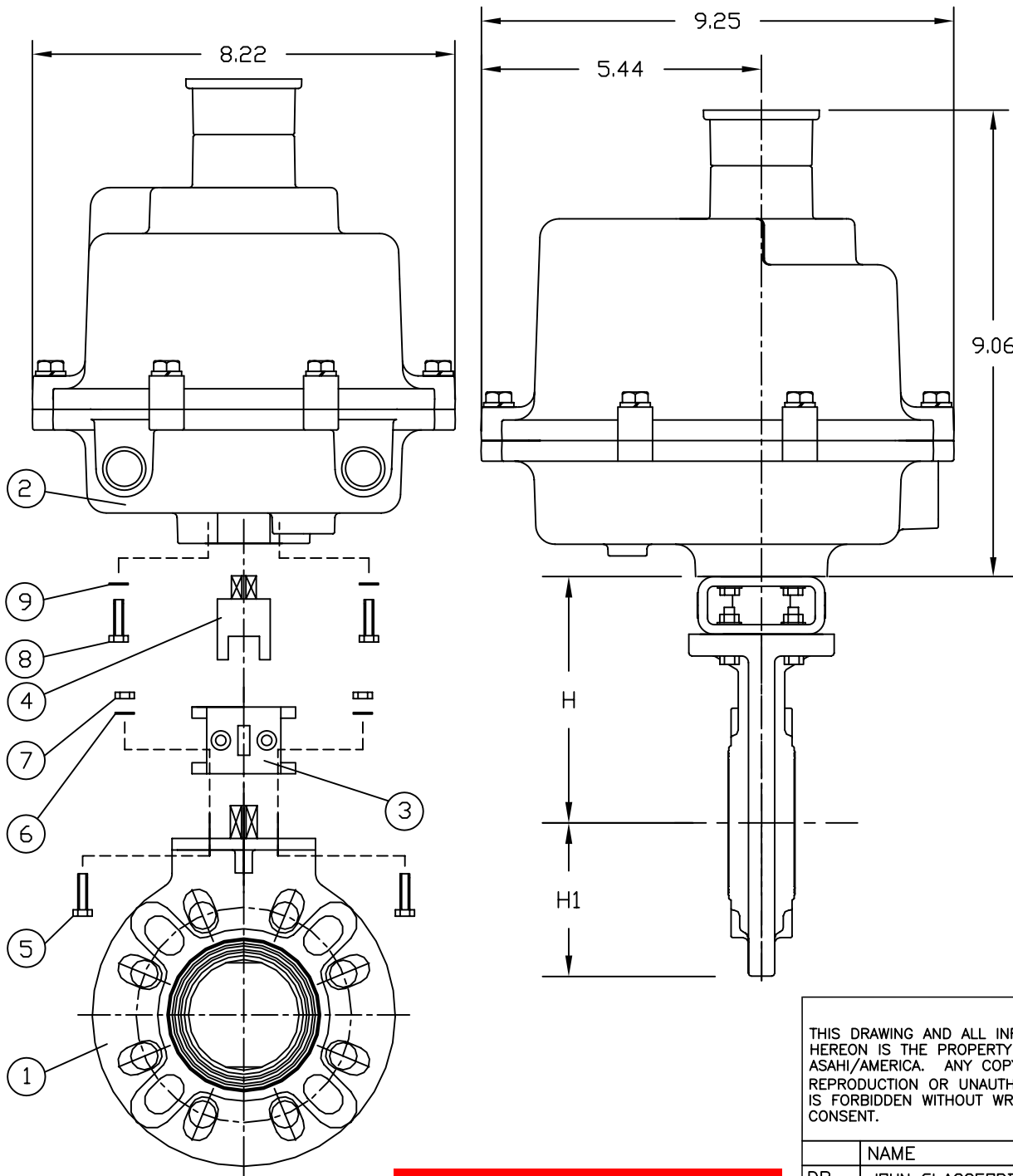


| | | |
|--|--------------|-----|
| TYPE57 BF VALVE SERIES 92 2000 IN/LB ELECTRIC ACT | | |
| SIZE | DWG. NO. | REV |
| A | 0168BF57 | A |
| SCALE | SHEET 1 OF 1 | |
| NONE | | |

UNIT: INCH

| VALVE SIZE | 1-1/2" | 2" | 2-1/2" | 3" | 4" | 5" | 6" |
|------------|--------|------|--------|------|------|------|------|
| H | 5.51 | 5.75 | 6.18 | 6.46 | 7.16 | 8.46 | 8.97 |
| H1 | 2.95 | 3.27 | 3.66 | 3.94 | 4.53 | 5.00 | 5.63 |

NOTE: 1.The shape and appearance of assembly differ a little with nominal size compared to this drawing.
 2. For 1-1/2" thru. 4" Mounting Bracket : F7 x F05,F07
 For 5" and 6" Mounting Bracket : F10 x F07,F10



| 9 | FLAT WASHER (M8.0) | STAINLESS STEEL | 4 |
|------|---|-----------------------|-----|
| 8 | BOLT (M8.0x1.25-16LG) | STAINLESS STEEL | 4 |
| 7 | NUT (FOR 1-1/2' THRU. 4' : M8.0x1.25) (FOR 5' AND 6' : M10.0x1.50) | STAINLESS STEEL | 4 |
| 6 | FLAT WASHER (FOR 1-1/2' THRU. 4' : M8.0) (FOR 5' AND 6' : M10.0) | STAINLESS STEEL | 8 |
| 5 | BOLT (FOR 1-1/2' THRU. 4' : M8.0x1.25-35LG) (FOR 5' AND 6' : M10.0x1.50-40LG) | STAINLESS STEEL | 4 |
| 4 | COUPLING | STAINLESS STEEL 303 | 1 |
| 3 | MOUNTING BRACKET | PPG | 1 |
| 2 | ACTUATOR SERIES 92 | EPOXY COATED ALUMINUM | 1 |
| 1 | BUTTERFLY VALVE TYPE 57 | U-PVC,PP,PVDF | 1 |
| ITEM | DESCRIPTION | MATERIAL | QTY |

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35 GREEN STREET, P.O. BOX 653, MALDEN, MA.



BUTTERFLY VALVE TYPE57
 SERIES92 ELECTRIC ACTUATOR
 1-1/2" THRU 6"

| | NAME | DATE |
|---------|----------------|---------|
| DR | JOHN GLASSFORD | 6/13/05 |
| APPD | DAVE HURLEY | 6/13/05 |
| PROD | LED LESTER | 6/13/05 |
| WO#/CO# | | |
| FILE | | |

| | | | | | |
|-------|-----|----------|--------------|-----|---|
| SIZE | A | DWG. NO. | 0200BF57 | REV | A |
| SCALE | NTS | | SHEET 1 OF 1 | | |

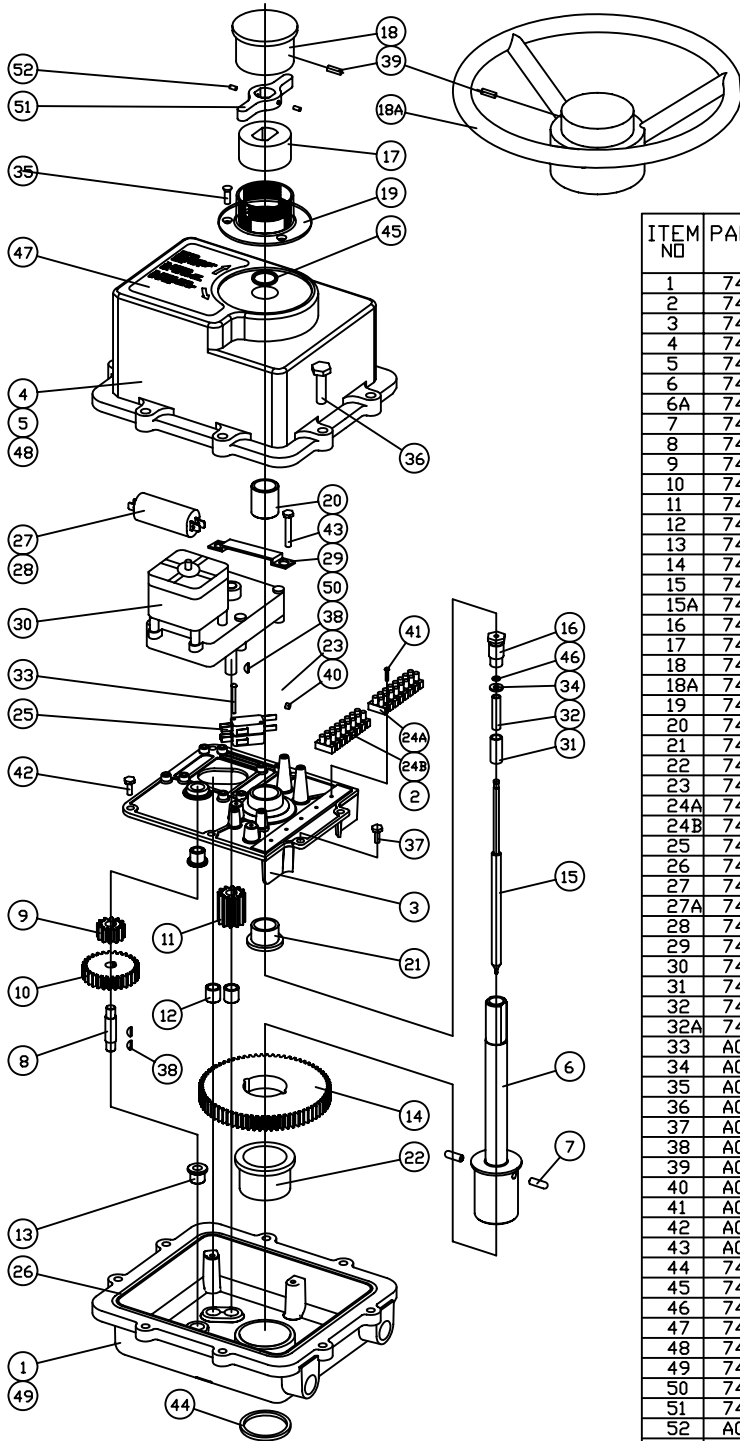
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SERIES 92

PARTS LIST & MATERIALS OF CONSTRUCTION

CERTIFIED PRODUCT
NO MODIFICATIONS
PERMITTED WITHOUT
REFERENCE TO ATEX
SCHEDULE DRAWING

S92= 400 IN*LBS
A92= 700 IN*LBS
B92=1100 IN*LBS
C92=2000 IN*LBS



| ITEM NO | PART NO | QUANTITY | | | | DESCRIPTION |
|---------|---------|----------|-----|-----|-----|---------------------------------------|
| | | S92 | A92 | B92 | C92 | |
| 1 | 7401920 | 1 | 1 | 1 | 1 | BASE |
| 2 | 7401440 | 1 | 1 | 1 | 1 | WIRING HARNESS - 4 PCS |
| 3 | 7401060 | 1 | 1 | 1 | 1 | BASE PLATE |
| 4 | 7401940 | 1 | 1 | 1 | 1 | COVER |
| 5 | 7401925 | 1 | 1 | 1 | 1 | WIRING DIAGRAM LABEL |
| 6 | 7401900 | 1 | 1 | 1 | - | SHAFT MAIN |
| 6A | 7401905 | - | - | - | 1 | SHAFT MAIN |
| 7 | 7401360 | 2 | 2 | 2 | 2 | PIN |
| 8 | 7401280 | - | - | 1 | 1 | SHAFT STUB |
| 9 | 7402003 | - | - | 1 | 1 | SPUR GEAR 1B |
| 10 | 7402002 | - | - | 1 | 1 | SPUR GEAR 1A |
| 11 | 7401400 | 1 | 1 | 1 | 1 | GEAR PINION |
| 12 | 7401540 | 1 | 1 | 1 | 1 | BEARING PINION |
| 13 | 7402006 | - | - | 2 | 2 | BEARING FL - SPUR GEAR |
| 14 | 7401380 | 1 | 1 | 1 | 1 | GEAR MAIN |
| 15 | 7401200 | 1 | 1 | 1 | - | SHAFT INNER |
| 15A | 7401210 | - | - | - | 1 | SHAFT INNER |
| 16 | 7401180 | 1 | 1 | 1 | 1 | SHAFT RETAINER |
| 17 | 7401300 | 1 | 1 | 1 | 1 | KNOB LOWER |
| 18 | 7401320 | 1 | 1 | 1 | - | KNOB UPPER |
| 18A | 7401995 | - | - | - | 1 | HANDWHEEL |
| 19 | 7401260 | 1 | 1 | 1 | 1 | COLLAR |
| 20 | 7401120 | 1 | 1 | 1 | 1 | BEARING UPPER COVER |
| 21 | 7401080 | 1 | 1 | 1 | 1 | BASE PLATE BEARING |
| 22 | 7401020 | 1 | 1 | 1 | 1 | BASE BEARING |
| 23 | 7401480 | 2 | 2 | 2 | 2 | CAM |
| 24A | 7401420 | 2 | 2 | 2 | 2 | TERMINAL BLOCK 1-8 |
| 24B | 7401425 | 2 | 2 | 2 | 2 | TERMINAL BLOCK 9-16 |
| 25 | 7401460 | 2 | 2 | 2 | 2 | MICRO SWITCH (V7-6C13D8-132) |
| 26 | 7401560 | 1 | 1 | 1 | 1 | O-RING BASE/COVER |
| 27 | 7401948 | 1 | - | 1 | - | CAPACITOR 4.2 MFD |
| 27A | 7402004 | - | 1 | - | - | CAPACITOR 6.7 MFD |
| 28 | 7403008 | - | - | - | 1 | CAPACITOR 7.6 MFD |
| 29 | 7401520 | 1 | 1 | 1 | 1 | CAPACITOR BRACKET |
| 30 | 7401340 | 1 | 1 | 1 | 1 | MOTOR |
| 31 | 7401250 | 1 | 1 | 1 | 1 | SHELL |
| 32 | 7401220 | 1 | 1 | 1 | - | SPRING |
| 32A | 7401230 | - | - | - | 1 | SPRING |
| 33 | ACTMSC | 2 | 2 | 2 | 2 | SCREW ROUND HD. 4-40 x 1.00 LG |
| 34 | ACTMSC | 1 | 1 | 1 | 1 | WASHER, FLAT #10 Ø.450 x .06 THK |
| 35 | ACTMSC | 3 | 3 | 3 | 3 | SCREW FLAT HD. 8-32 x .25 LG. SS. |
| 36 | ACTMSC | 8 | 8 | 8 | 8 | SCREW HEX HD. 5/16-18 x 1.00 LG. SS. |
| 37 | ACTMSC | 1 | 1 | 1 | 1 | SCREW SELF TAP (GREEN) #10 x .50 LG. |
| 38 | ACTMSC | 1 | 1 | 3 | 3 | KEY, WOODRUF 3/32 |
| 39 | ACTMSC | 1 | 1 | 1 | 1 | SCREW SLOT SET 8-32 x .50 LG. SS. |
| 40 | ACTMSC | 4 | 4 | 4 | 4 | SCREW SET 8-32 x .12 LG. |
| 41 | ACTMSC | 4 | 4 | 4 | 4 | SCREW SELF TAP #4 x .50 LG. |
| 42 | ACTMSC | 5 | 5 | 5 | 5 | SCREW SELF TAP SLOT/HEX #10 x .50 LG. |
| 43 | ACTMSC | 4 | 4 | 4 | 4 | SCREW SLOT/HEX 10-32 x 1.62 LG. |
| 44 | 7401040 | 1 | 1 | 1 | 1 | SEAL BASE |
| 45 | 7401140 | 1 | 1 | 1 | 1 | SEAL COVER |
| 46 | 7401580 | 1 | 1 | 1 | 1 | O-RING SHAFT |
| 47 | 7401950 | 1 | 1 | 1 | 1 | OVERRIDE LABEL |
| 48 | 7401960 | 1 | 1 | 1 | 1 | COVER NAMEPLATE |
| 49 | 7401970 | 1 | 1 | 1 | 1 | BASE NAMEPLATE |
| 50 | 7401430 | 1 | 1 | 1 | 1 | CAPACITOR HARNESS- 2 PCS |
| 51 | 7401485 | - | - | - | 1 | HANDWHEEL CAM |
| 52 | ACTMSC | - | - | - | 2 | CAM SCREW SET 1/4-20 x /250 LG. |
| 53 | 7401971 | 1 | 1 | 1 | 1 | OPTION WIRING DIAGRAM |

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35 GREEN STREET, P.O. BOX 653, MALDEN, MA.



SERIES 92 EXPLODED VIEW

| | | |
|----------------------|-------------|---------|
| | NAME | DATE |
| DR | J.GLASSFORD | 4/18/07 |
| CHK | | |
| APPD | | |
| DO NOT SCALE DRAWING | | |

| | | |
|-------|----------|--------------|
| SIZE | DWG. NO. | REV |
| A | 289S92_A | A |
| SCALE | NTS | SHEET 1 OF 1 |