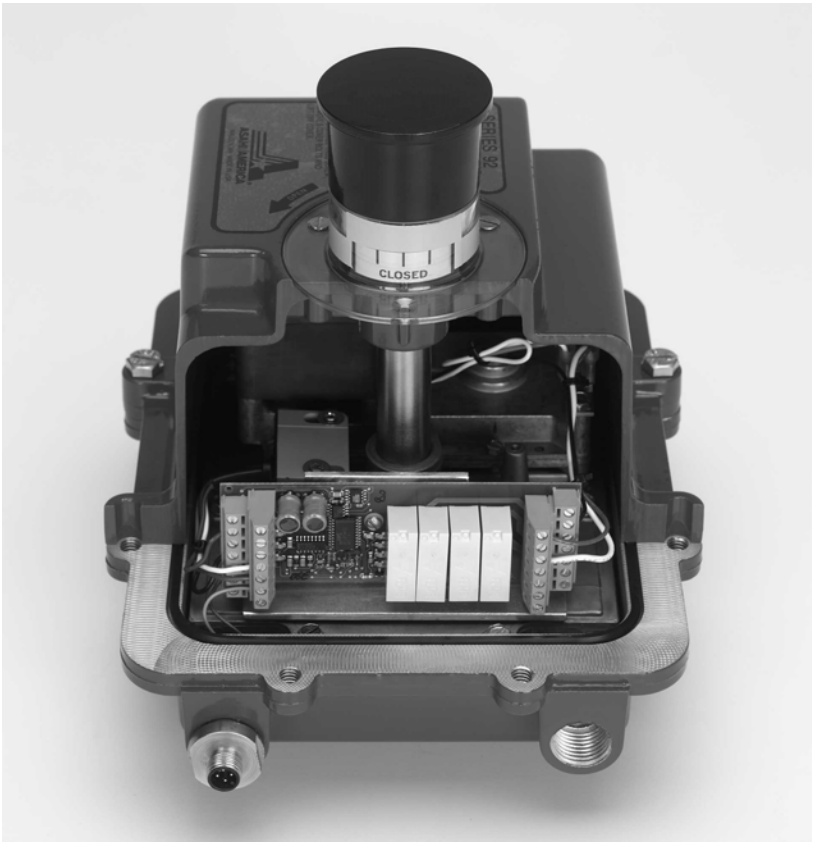
ASAHI / AMERICA, Inc.®

Thermoplastic Valves and Piping Systems

35 GREEN STREET PO BOX 653 MALDEN, MA. 02148



AS-Interface Installation Manual

Electric Installation

AS-I Operation

The internally mounted sensor has two proximity switches located in a compact sealed housing which are triggered by the standard cams mounted on the actuator shaft. As the actuator cycles, the cams align with the sensor and activate the proximity switch. When the valve is open, the top cam is directly in front of the sensor and an open valve status is shown. When the valve is closed, the bottom cam is directly in front of the sensor and a close status is shown. This sensor is wired to one side of the internally mounted AS-I communications PCB. The other side of the communications PCB accepts the actuator supply voltage (115 VAC, 230 VAC, etc). The AS-I master communicates with the PCB; and when commanded by the master, relays inside the PCB change states and cycles the actuator.

AS-I Installation

Reference drawing # 289S92 for actuator internal modifications and drawing #'s 0015PB and 0016PB for AS-I accessory installation

Disconnect wiring from terminal strip #24 and limit switches #25 (capacitor wiring will be modified later). Now remove terminal strip #24 and switches #25, as they are not required (do not discard screws). Install sensor and spacer to limit switch posts using limit switch screws and supplied washers (make sure gap between sensor and cam is approximately 1/16"). Install PCB bracket onto base plate using screws from terminal strip (make sure that bracket screws and base plate screws are facing the conduits). Mount PCB and shield to bracket using supplied screws, nuts, and spacers; making sure NOT to over-tighten as PCB damage will occur. Install M12 conduit connector in the left side conduit for wiring to PCB. Remove connectors from capacitor wires where they connected to the limit switch and terminate to PCB as shown on dwg #0016PB. Continue terminating sensor and conduit (as per dwg# 0016PB); installation of components is complete.

AS-I Maintenance

There is no maintenance to be performed for the AS-I components. The Series 92 electric actuators are manufactured with lubricating 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 #17, mfg. by Shell Oil Co. Consult our technical department before replenishing lubricant.

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

CAUTION:

Before any maintenance is performed, and to reduce the chance of electrical shock,
NEVER remove actuator cover while circuits are live.

Spare Parts

The following should be kept on hand as spare parts.

1 --- Capacitor (Part #27 or #28)

Sensor Specifications

Electrical Design	AC / DC
Output	Normally Open
Operating Voltage	20-140 AC / 10-140 DC
Current Rating (Continuous)	200 mA
Minimum Load Current	5mA
Short-circuit Protection	—
Reverse Polarity Protection	—
Overload Protection	—
Leakage Current	<.8mA
Real Sensing Range	.16 +/- 10%
Operating Distance	0 - .13 in
Function Display Switching Status LED	2 x Red
Operating Temperature	0º F - 176º F
Protection	IP67
Housing Material	Pocan; PC
Connection	PVC Cable/6ft

Communication PCB Specifications

Reverse Polarity Protection	AS-I Power Only
Sensor Supply Short Circuit Protected	Yes (current limit at 200mA) *
Current Consumption	<130 mA with Above Sensor
AS-I Voltage Range	26.5…31.6 VDC
Indication of AS-I Power	LED (Green)
Output	Relay
Output (Supply) Voltage	?
Maximum Current Load Per Output	?
Switching Status	4 LEDs (Yellow)
Operating Temperature	0º F - 125º F

*** A short circuit at the output supply is not signaled to the AS-I Master**

Series 92 Description

Asahi/America Series 92 reversing electric actuators feature capacitor run motors, permanently lubricated gear train, and hardened steel spur gears. These units can provide from 400 in-lbs up to 2000 in-lbs. of output torque.

The Series 92 models feature a Nema-4 (7)* enclosure as a standard and are available in 115VAC, 220VAC, 12VDC, 24VDC, 12VAC, and 24VAC voltages.
***Consult factory for NEMA 7**

AS-Interface models are equipped with integral thermal overload protection with automatic reset (AC models), an independently adjustable limit switch sensor, declutchable manual override, position indicating beacon, baked powder epoxy coating, stainless steel trim and an ISO bolt circle.

Series 92 Installation

Reference drawing# 289S92

1. To gain access to terminal strip it is necessary to remove manual override knob (Part #18 for Models S-92, A92, B92 or Hand wheel Part #18A for Model C-92) by loosening slotted setscrew (Part #39). Remove cam (Part #51) by loosening 2 set screws. Remove 2 cover screws, the remaining 6 cover screws are packaged inside the actuator.

2. Install conduit fitting (1/2" NPT) to actuator base. **Note: Proper conduit fitting must be used to maintain enclosure rating (weatherproof, explosion proof or combination weather proof/explosion proof). See actuator serial# tag located on housing for NEMA rating.**

3. Make electrical connections to terminal strip as shown on wiring schematic #0016PB (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. No internal adjustments should be required.

4. We recommend sealing conduit openings on units installed outdoors or exposed to large temperature swings (15ºF or more). We also recommend the heater option in these applications.

5. Replace actuator cover, and gasket if removed. Install 8 cap screws supplied and tighten securely. 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.

Manual Override Operation

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 for Models S92, A92, B92. For Model C92 push down on hand wheel (Part #18A) and rotate within labeled limits

To re-engage simply rotate actuator shaft in the opposite direction until declutching knob drops back down into position (Models S92, A92, B92). For Model C92 rotate 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

Electrical Requirements

Model	Torque (in-lbs)	115 Vac		220 Vac		12 Vdc		24 Vdc		12 Vac		24 Vac		Cycle Time/90° (sec)	Weight (lbs)
		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	.50	100%	.8	75%	2.0	75%	4.0	75%	2.0	75%	3.0	75%	10	15.3
A92	700	.75	75%	.8	50%	2.0	75%	4.0	75%	2.0	75%	3.0	75%	10	15.3
B92	1100	.50	100%	.8	75%	2.0	75%	4.0	75%	2.0	75%	3.0	75%	25	15.5
C92	2000	1.00	50%	.8	50%	2.0	75%	4.0	75%	2.0	75%	3.0	75%	25	18.3

Notes: All Amp ratings are considered locked rotor.
Duty cycles are for ambient temperature (73° F).

Mounting Instructions

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

Ball Valves

1. **<u>Multi Port Ball Valves:</u> Reference Drawing #0110BV for 1/2" - 2"**

Install plate #8 to actuator #2 using screws #7 (1-1/2" and 2" only). Mount saddle #5 onto valve #1, (Saddle is an interference fit over neck of valve press down tight), then tighten setscrews #3 to secure in place. Insert coupling #6 onto stem of valve #1 and bolt actuator #2 onto assembly tightening bolts #4 evenly.

2. **<u>Multi Port Ball Valves:</u> Reference Drawing #0111BV for 2-1/2" – 4"**

Install plate #6 to actuator #2 using screws #8. Mount saddle #5 onto valve #1, (Saddle is an interference fit over neck of valve press down tight must also be solvent cemented to valve body), then tighten setscrews #3 to secure in place. Insert coupling #7 onto stem of valve #1 and bolt actuator #2 onto assembly tightening bolts #4 evenly.

<u>Note:</u> Due to the torque required on sizes 3" and 4", we recommend that saddle #5 be solvent cemented to valve as well as using set screws #3.

3. **<u>Type 21 Ball Valves:</u> Reference Drawing #0107BV for 1/2"-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 #6, and washers #7.

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

4. **Type 21 Ball Valves: Reference Drawing #0113BV for 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 #6, and washers #7.

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

Butterfly Valves

1. **Type 56 Butterfly Valves: Reference Drawing # 0204BF for sizes 1-1/2" thru 6"**

All 1-1/2" – 6" Type 56 butterfly valves as a standard feature conform to an ISO 5211/I-5211/II-DIN-3.337 specification standard. No Specially machined stem or valve body drilling required. Remove handle (remove handle cap & hex head bolt) to expose throttle plate screws. Remove throttle plate and retaining washer to expose existing (F) series bolt pattern.

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

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 #6, and washers #7. Keeping in mind line scribed in top of valve stem indicates disc orientation before mounting and actuator flats indicate disc orientation after mounting.

2. **Type 56 Butterfly Valves: Reference Drawing # 0168BF for size 8"**

All 8" Type 56 butterfly valves as a standard feature conform to an ISO 5211/I-5211/II-DIN-3.337 specification standard. No Specially machined stem or valve body drilling required. Remove handle (remove handle cap & hex head bolt) to expose throttle plate screws. Remove throttle plate and retaining washer (or gear-operator) to expose existing (F) series bolt pattern.

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

Install mounting bracket #2 to actuator #10 using bolts #7 and washers #8. Insert coupling #9 on stem of valve #1 and then bolt valve #1 to mounting bracket #2 using

bolts #3, nuts #6, and washers #4 & 5. Keeping in mind line scribed in top of valve stem indicates disc orientation before mounting and actuator flats indicate disc orientation after mounting.

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.

NOTE: When ordering replacement motor parts, and/or options, model # and voltage must be specified.

Attachments: 10 drawings: 0016PB, 0015PB, 0168BF, 0130BV, 0200BF, 0107BV, 0110BV, 0111BV, 0113BV, 289S92

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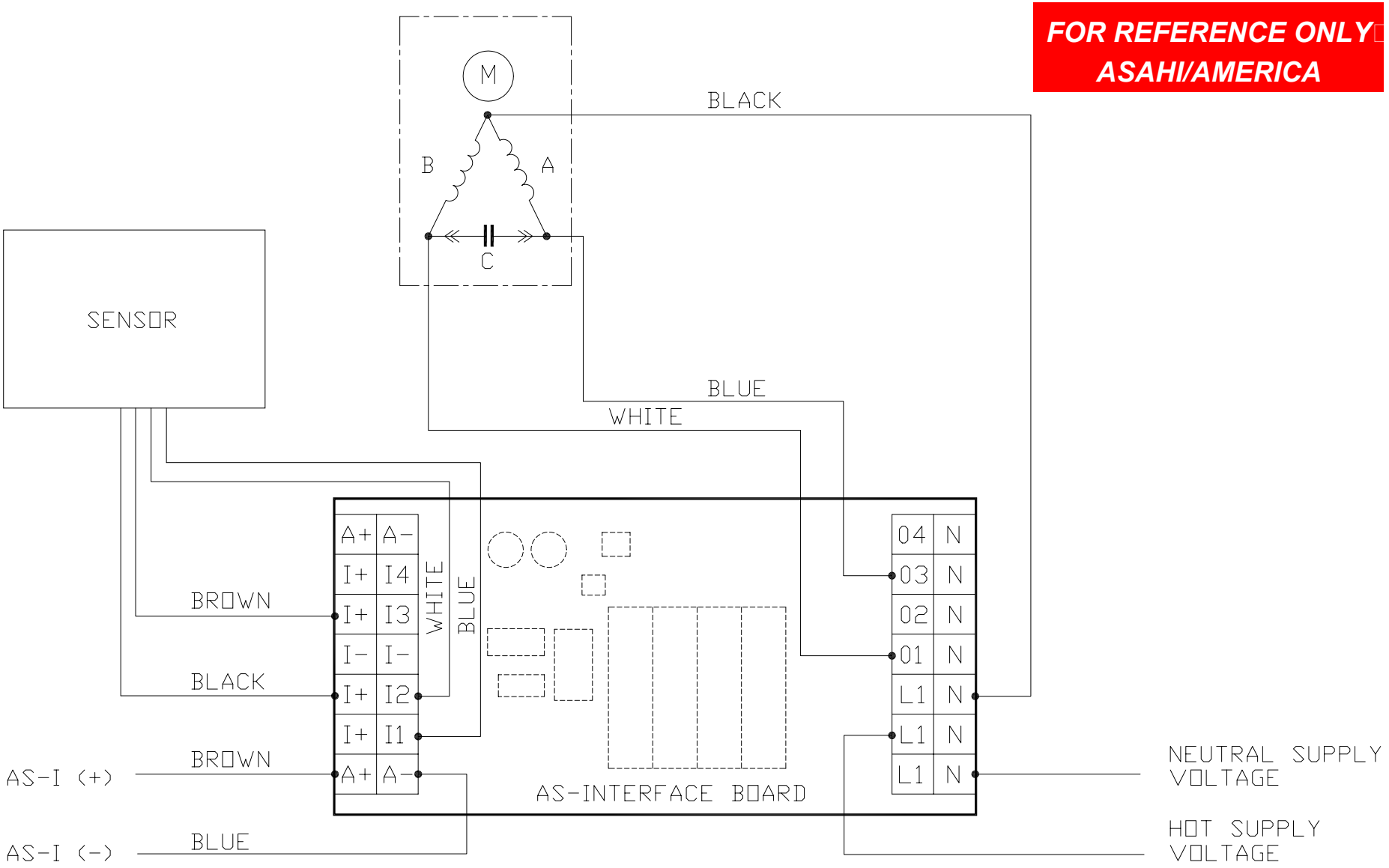

NOTE:
NONE OF THE FOLLOWING TERMINALS I-, I+, I1, I2, I3, I4 SHALL BE CONNECTED WITH AN EXTERNAL POTENTIAL, AS THEY ARE NOT ELECTRICALLY ISOLATED FROM THE AS-I NETWORK.

	NAME	DATE
DR	KENICHI MIYAZAKI	4/28/03
APPD	KENNEY BLYSTONE	4/28/03
PROD	LEO LESTER	4/28/03
WO#/CO#		
FILE		

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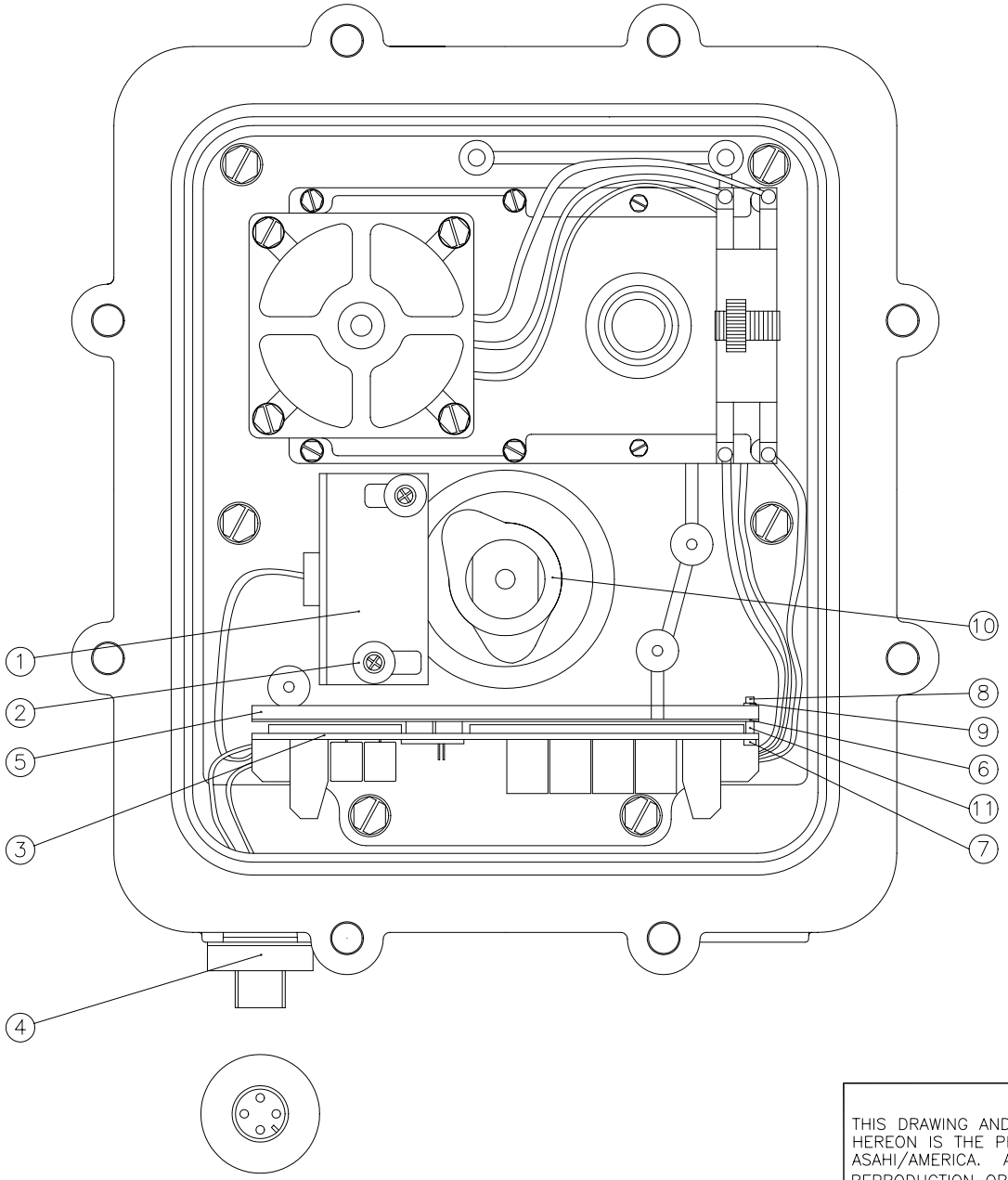
SERIES92 WITH ASI BUS SYSTEM WIRING DIAGRAM

SIZE	DWG. NO.	REV
A	0016PB	A

SCALE NTS

SHEET 1 OF 1



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* CONSULT FACTORY FOR NEMA-7

ITEM	DESCRIPTION	QTY
11	SPACER	2
10	CAM	2
9	LOCK WASHER	2
8	NUT	2
7	BOLT	2
6	SHIELD	1
5	BRACKET	1
4	AS-I M12 CONNECTOR *	1
3	AS-I PCB	1
2	FLAT WASHER	2
1	SENSOR	1

	NAME	DATE
DR	KENICHI MIYAZAKI	4/28/03
APPD	KENNEY BLYSTONE	4/28/03
PROD	LEO LESTER	4/28/03
WO#/CO#		
FILE		

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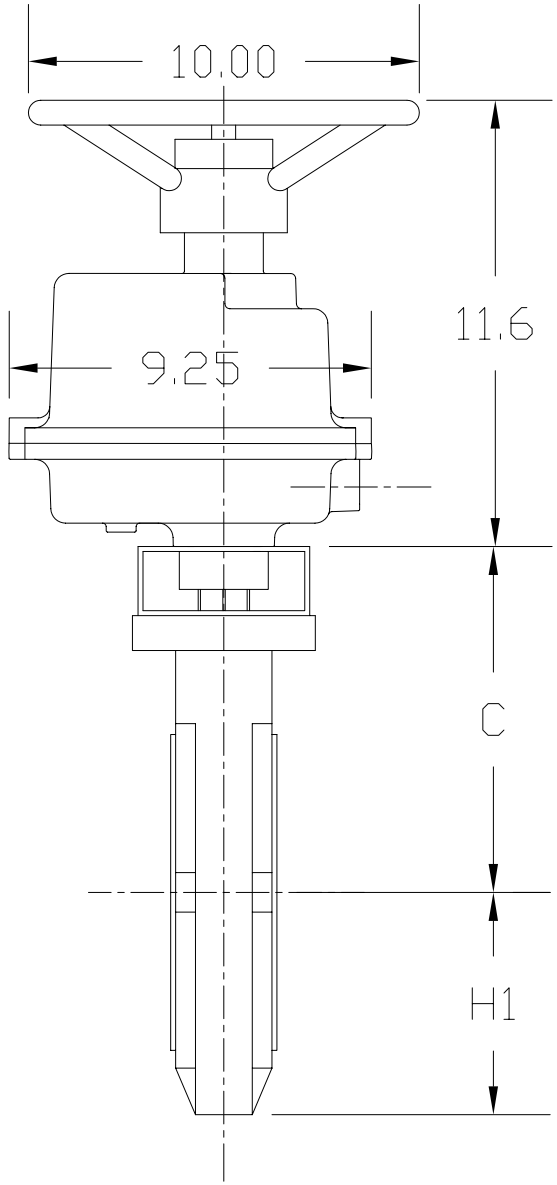
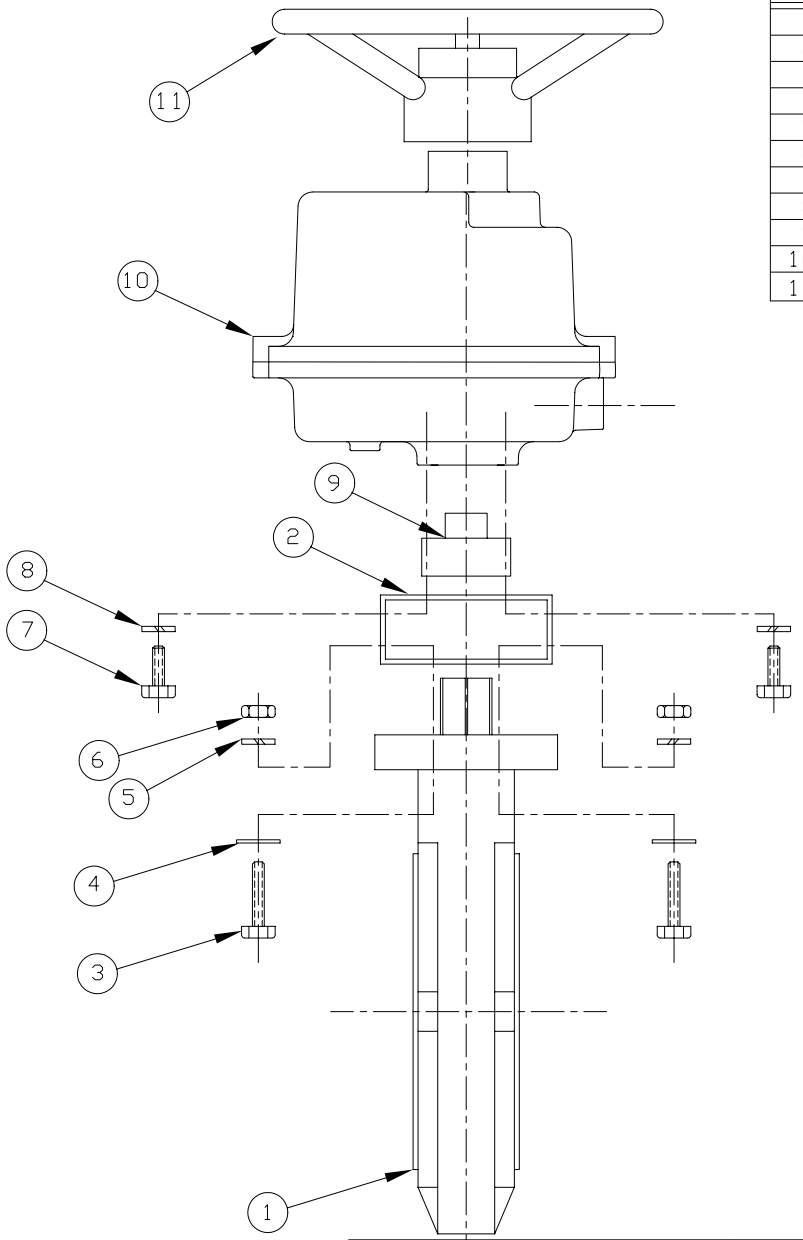
SERIES92 WITH ASI BUS SYSTEM TOP VIEW

SIZE	DWG. NO.	REV
A	0015PB	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	N BRADLEY	6/26/00
APPD	DAVE HURLEY	6/26/00
PROD	LEO LESTER	6/26/00
PATH		
WO#/CO#		

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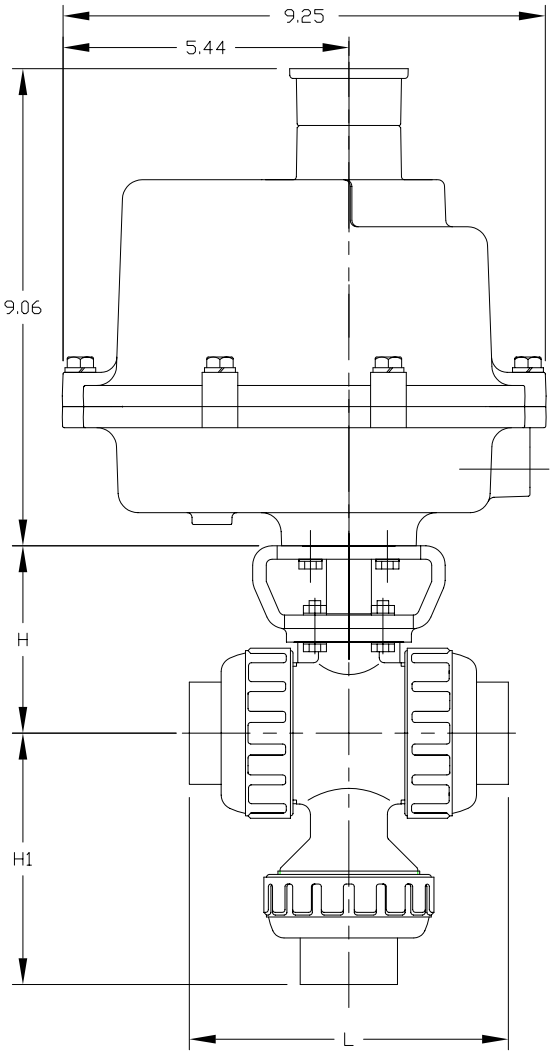
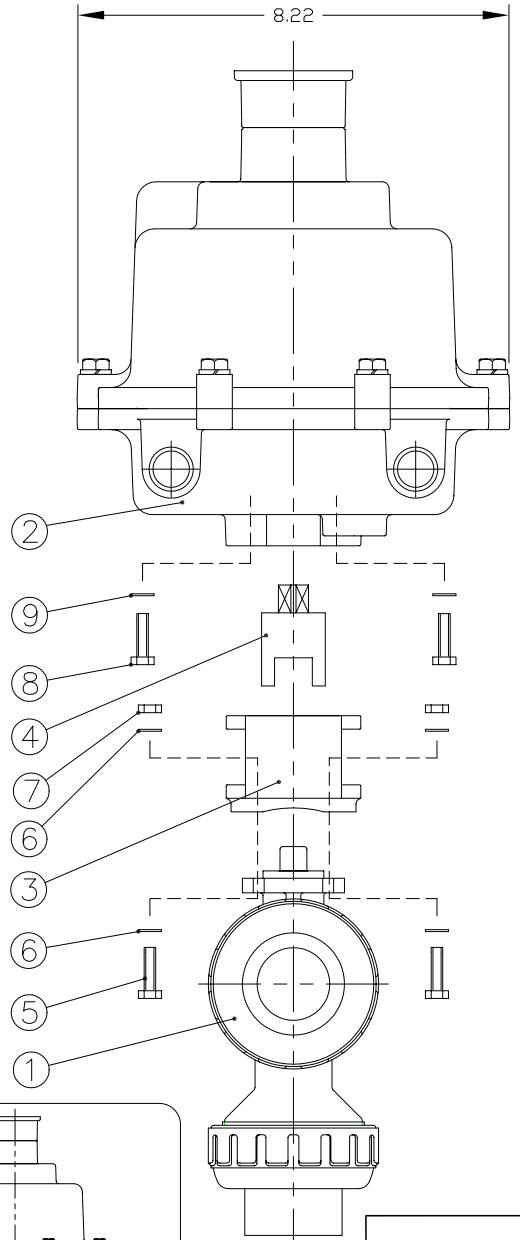
TYPE56 BF VALVE SERIES
92 2000 IN/LB ELECTRIC ACT

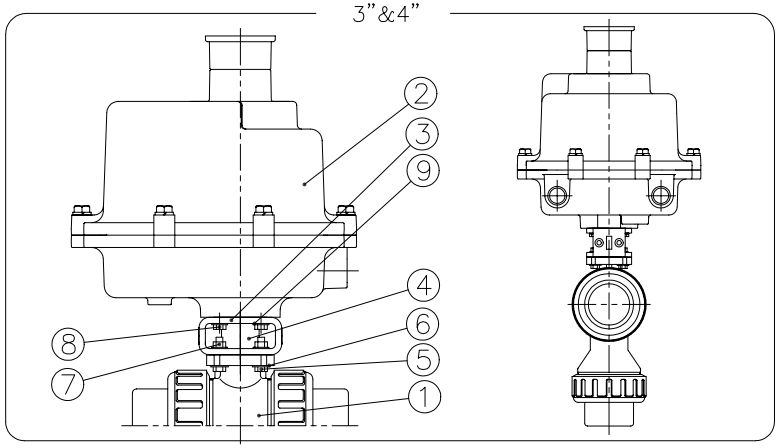
SIZE	DWG. NO.	REV
A	0168BF	A

SCALE NONE

SHEET 1 OF 1







DIMENSIONS TABLE — UNIT: inch

NOMINAL SIZE		H	FLANGED H1	FLANGED L	THREADED H1	THREADED L	SOCKET PVC,CPVC H1	SOCKET PVC,CPVC L	SOCKET PP,PVDF (DIN) H1	SOCKET PP,PVDF (DIN) L	SOCKET PP,PVDF (IPS) H1	SOCKET PP,PVDF (IPS) L	SPIGOT (BUTT END) H1	SPIGOT (BUTT END) L
½"	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
¾	20	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	25	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
1½	40	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	50	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	80	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	100	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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ITEM	DESCRIPTION	MATERIAL	QTY
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	MULTIPORT BALL VALVE TYPE23	PVC,CPVC,PP,PVDF	1

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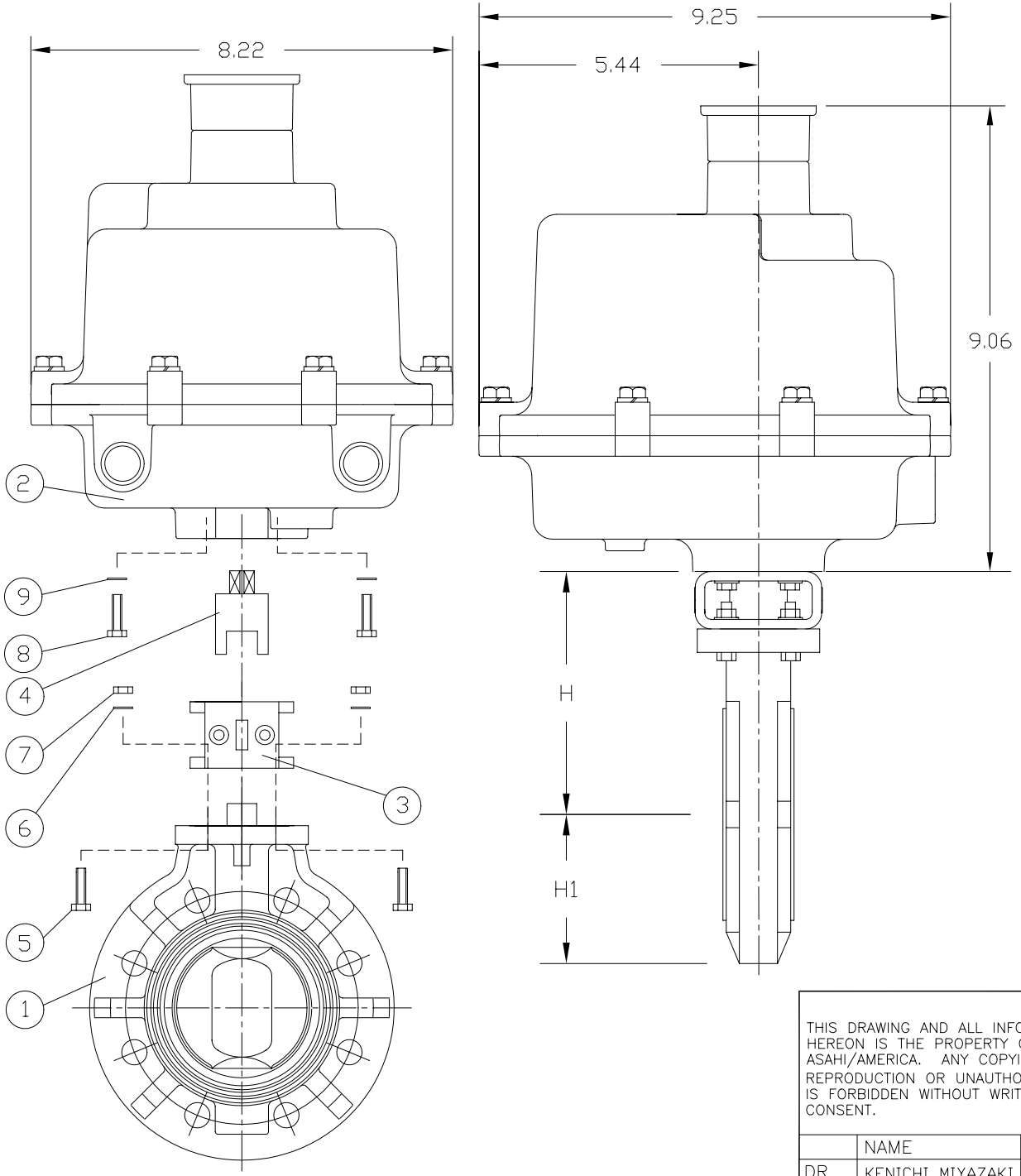
MULTI PORT BALL VALVE TYPE23 WITH SERIES92 ACT. 1/2" THRU 4"

SIZE	DWG. NO.	REV
A	0130BV	A

SCALE NTS

SHEET 1 OF 1



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

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ITEM	DESCRIPTION	MATERIAL	QTY
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 56	PVC,PP,PVDF	1

	NAME	DATE
DR	KENICHI MIYAZAKI	8/28/01
APPD	DAVE HURLEY	8/28/01
PROD	LEO LESTER	8/28/01
WO#/CO#		
FILE		

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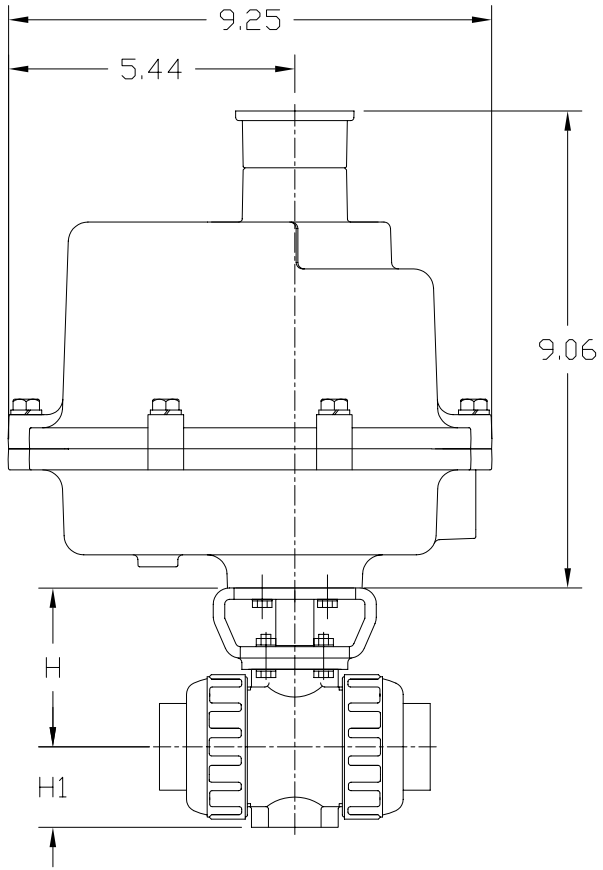
35 GREEN STREET, P.O. BOX 653, MALDEN, MA.

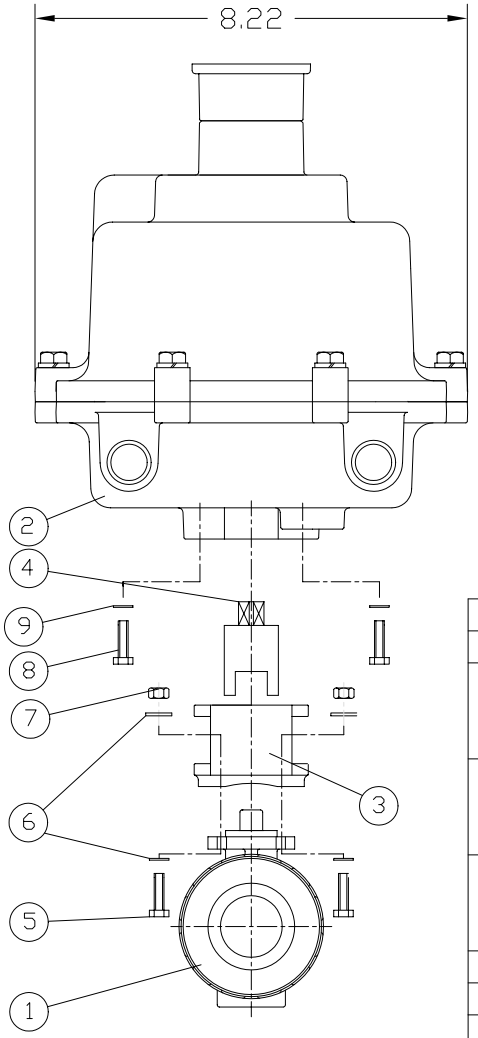
BUTTERFLY VALVE TYPE56 SERIES92 ELECTRIC ACTUATOR 1-1/2" THRU 6"

SIZE	DWG. NO.	REV
A	0200BF	A

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.

ITEM	DESCRIPTION	MATERIAL	QTY
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″ : M5.0x.8) (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″ : M5.0x.8-16LG) (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

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

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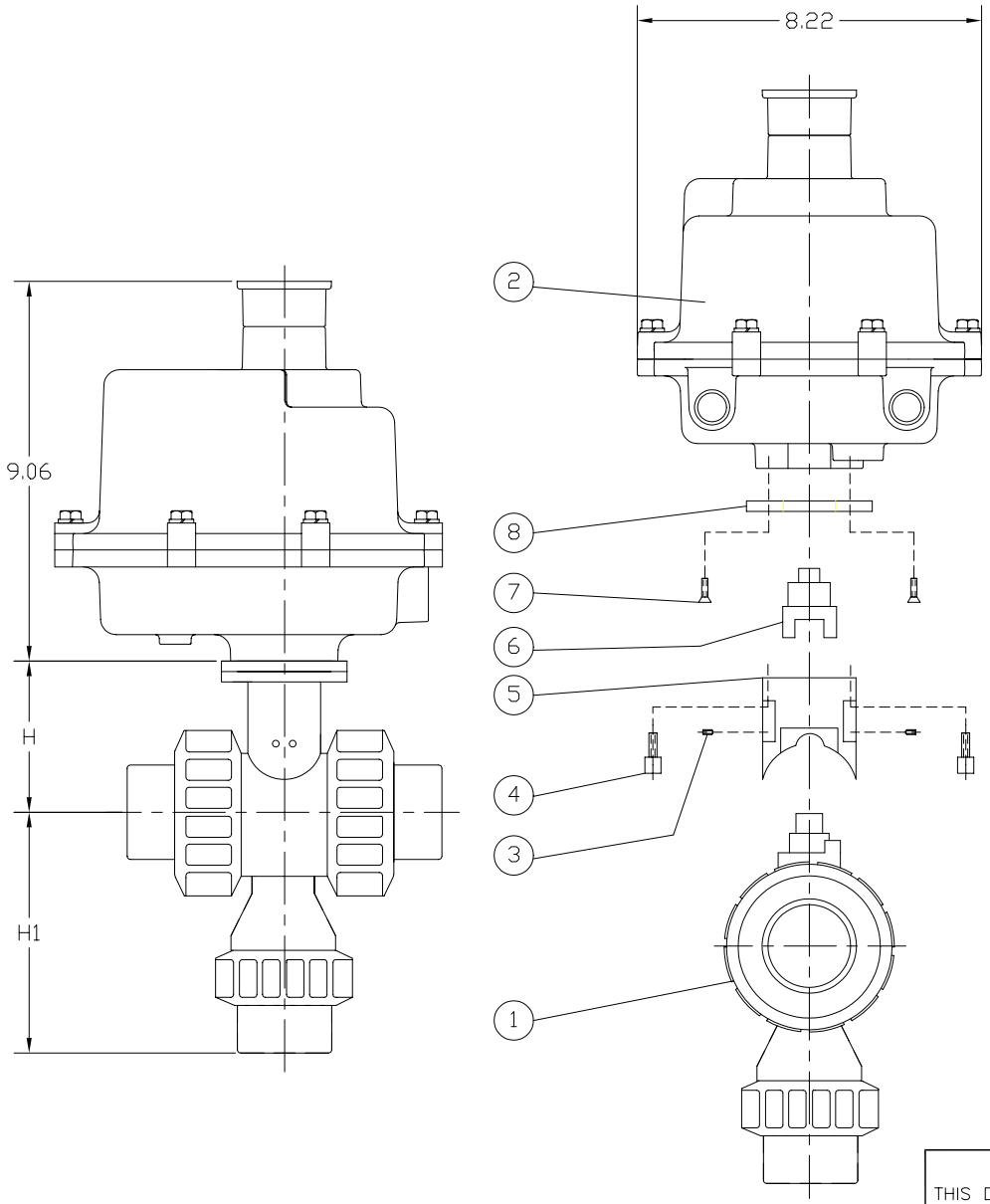
35 GREEN STREET, P.O. BOX 653, MALDEN, MA.

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

SIZE	DWG. NO.	REV
A	0107BV	A

SCALE NTS

SHEET 1 OF 1



VALVE SIZE	1/2″	3/4″	1″	1-1/4″	1-1/2″	2″
H	1.95	2.31	2.46	2.92	3.85	4.00
H1	3.33	3.88	4.81	6.61	6.61	7.57

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

ITEM	DESCRIPTION	MATERIAL	QTY
8	PLATE MOUNTING (FOR 11/2″ AND 2″ ONLY)	ANODIZED ALUM.	1
7	SCREW FLAT HD (FOR 11/2″ AND 2″ ONLY)	300 SS	4
6	COUPLING	ANODIZED ALUM.	1
5	SADDLE	ANODIZED ALUM.	1
4	SCREW SOC HD (M8x12)	300 SS	4
3	SET SCREW (10-32X1/4″)	300 SS	2
2	ACTUATOR SERIES 92	ZYTEL	1
1	MULTI PORT BALL VALVE	PVC,CPVC,PP,PVDF	1

	NAME	DATE
DR	DAN CAMERON	8/3/01
APPD	DAVE HURLEY	8/3/01
PROD	LEO LESTER	8/3/01
WO#/CO#		
FILE		

FOR REFERENCE ONLY
ASAHI/AMERICA

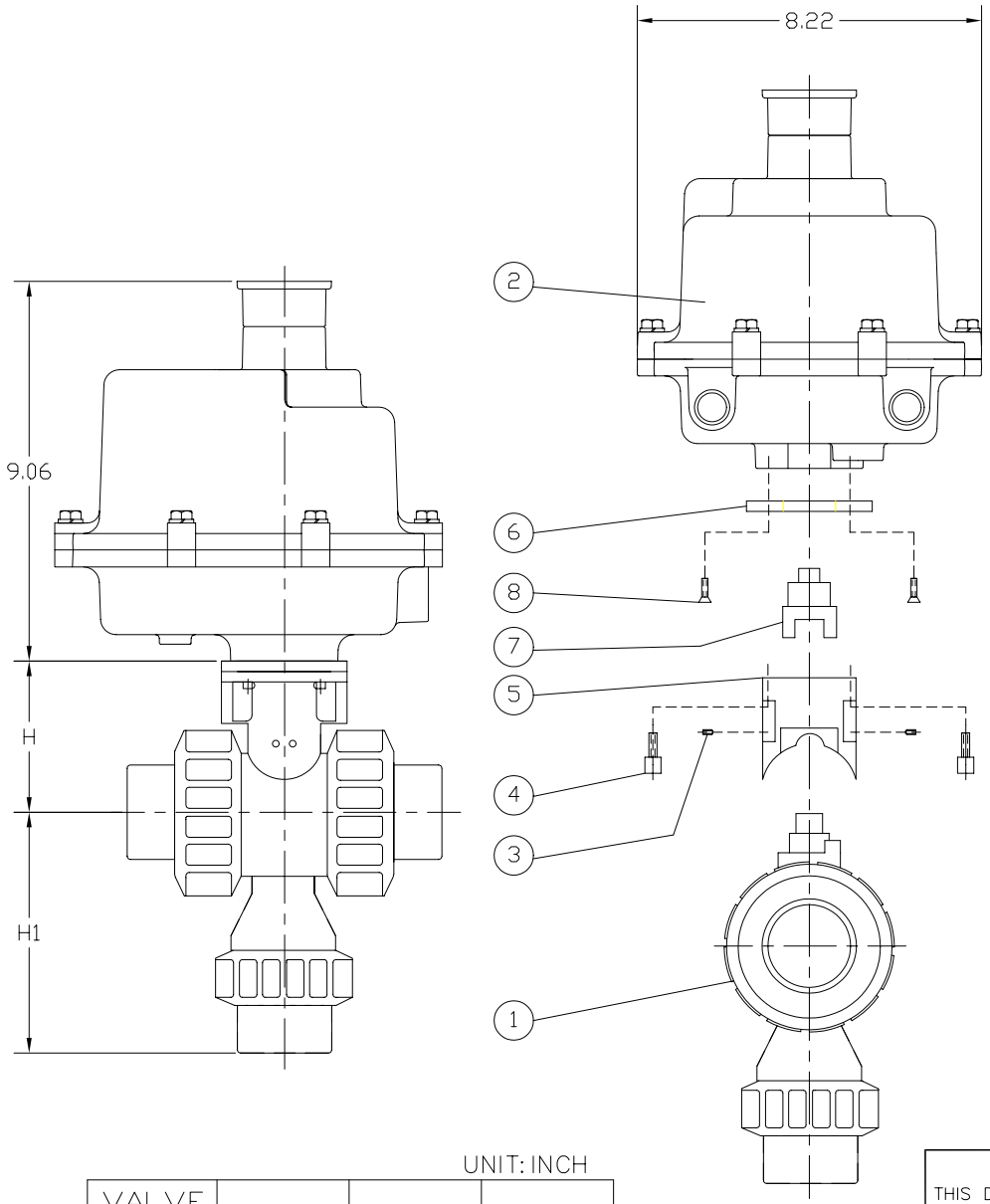
ASAHI/AMERICA
ISO 9001 CERTIFIED
35 GREEN STREET, P.O. BOX 653, MALDEN, MA.

MULTI PORT BALL VALVE SERIES92 ELECTRIC ACTUATOR 1/2″ THRU 2″

SIZE	DWG. NO.	REV
A	0110BV	A

SCALE NTS

SHEET 1 OF 1



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ITEM	DESCRIPTION	MATERIAL	QTY
8	SCREW FLAT HD (M8.0x1.25-12LG)	300 SS	4
7	COUPLING	ANODIZED ALUM.	1
6	PLATE MOUNTING	ANODIZED ALUM.	1
5	SADDLE	PVC	1
4	SCREW SOC HD (1/4-20x11/4)	300 SS	4
3	SET SCREW (1/4-20x3/4)	300 SS	4
2	ACTUATOR SERIES 92	ZYTEL	1
1	MULTI PORT BALL VALVE	PVC,CPVC,PP,PVDF	1

UNIT: INCH

VALVE SIZE	2-1/2"	3"	4"
H	5.12	5.50	6.88
H1	10.34	10.34	12.24

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

	NAME	DATE
DR	DAN CAMERON	8/3/01
APPD	DAVE HURLEY	8/3/01
PROD	LEO LESTER	8/3/01
WO#/CO#		
FILE		

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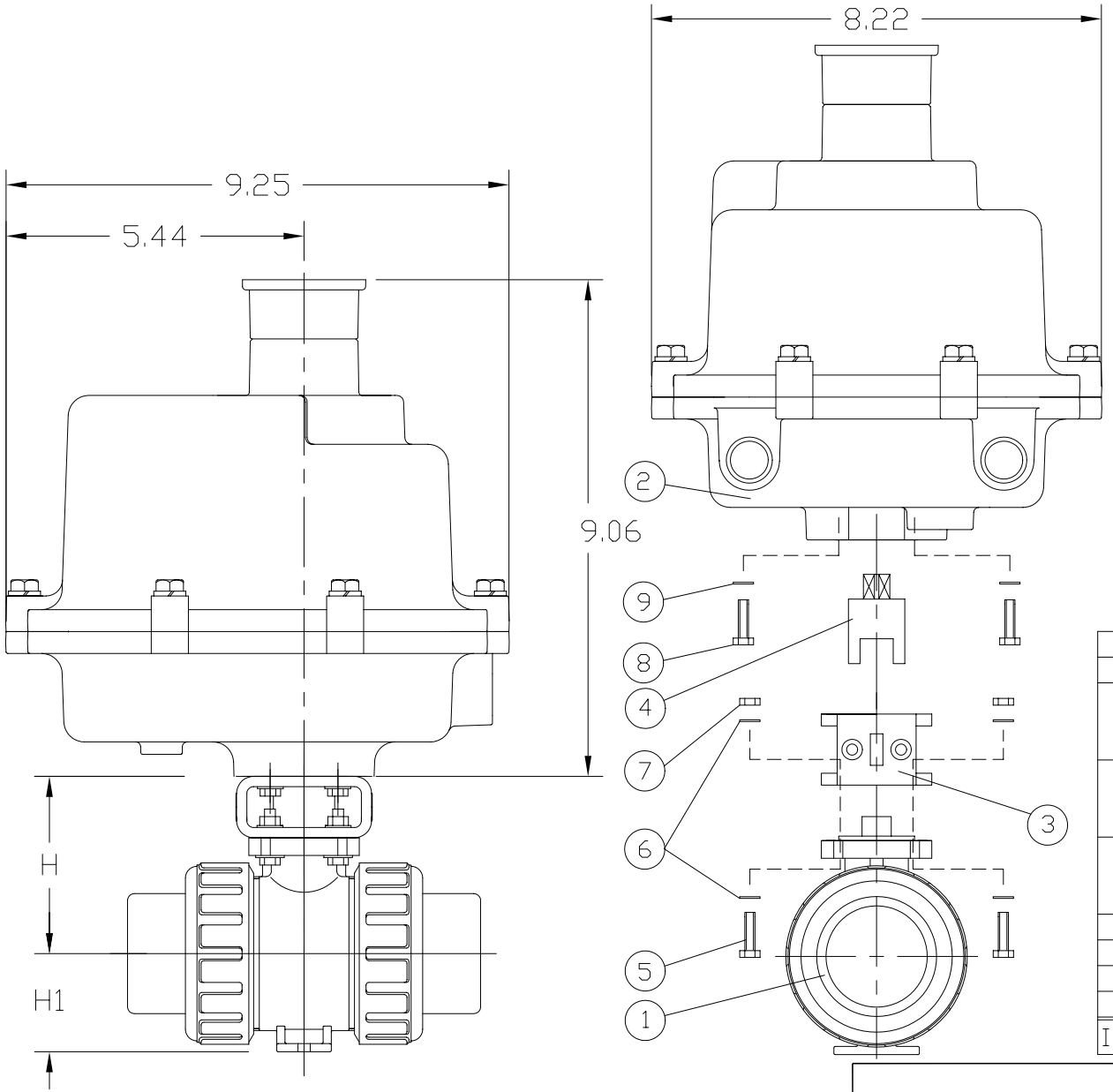
35 GREEN STREET, P.O. BOX 653, MALDEN, MA.

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

SIZE	DWG. NO.	REV
A	0111BV	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.

ITEM	DESCRIPTION	MATERIAL	QTY
9	FLAT WASHER (M8.0)	STAINLESS STEEL	4
8	BOLT (M8.0×1.25-16LG)	STAINLESS STEEL	4
7	NUT (FOR 2-1/2″ AND 3″ : M8.0×1.25) (FOR 4″ : M10.0×1.50)	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″ : M8.0×1.25-35LG) (FOR 4″ : M10.0×1.50-40LG)	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

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

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

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

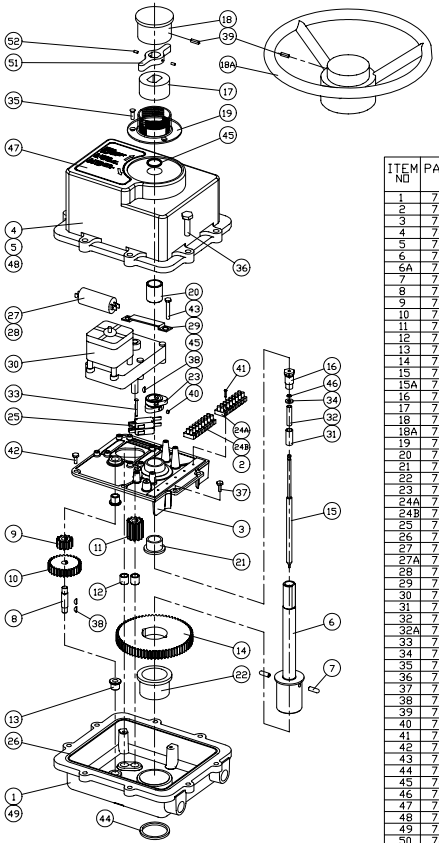
SIZE	DWG. NO.	REV
A	0113BV	A

SCALE NTS

SHEET 1 OF 1

SERIES 92

PARTS LIST & MATERIALS OF CONSTRUCTION



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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	SWITCH ACTUATOR
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	CLAMP CAPACITOR
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	7401620	2	2	2	2	SCREW ROUND HD. 4-40 x 1.00 LG
34	7401240	1	1	1	1	WASHER, FLAT #10 Ø.450 x .06 THK
35	7401680	3	3	3	3	SCREW FLAT HD. 8-32 x .25 LG. SS.
36	7401640	8	8	8	8	SCREW HEX HD. 5/16-18 x 1.00 LG. SS.
37	7401521	1	1	1	1	SCREW SELF TAP (GREEN) #10 x .50 LG.
38	7401880	1	1	3	3	KEY, WOODRUF 3/32
39	7401700	1	1	1	1	SCREW SLOT SET 8-32 x .50 LG. SS.
40	7401740	4	4	4	4	SCREW SET 8-32 x .12 LG.
41	7401600	4	4	4	4	SCREW SELF TAP #4 x .50 LG.
42	7401660	5	5	5	5	SCREW SELF TAP SLOT/HEX #10 x .50 LG.
43	7401720	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	8100179	-	-	-	2	CAM SCREW SET 1/4-20 x .250 LG.

	NAME	DATE
DR	A.SELEZNEV	2/17/98
CHK	DAVE HURLEY	2/17/98
APPD	LEO LESTER	2/17/98
PATH	\ACAD11\S92	
	DO NOT SCALE DRAWING	

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

SERIES 92 EXPLODED VIEW

SIZE	DWG. NO.	REV
A	289S92	3

SCALE NTS

SHEET 1 OF 1