

Instructions for Completing this Form

Dimensions A, B, & C relate to the existing valve stem. **Dim A** is the stem diameter where it is NOT threaded (Style A), or grooved (Style B). **Dim B** refers to the length of the threaded region on the valve stem or top region of the grooved stem. **Dim C** is the actual thread specification for the threaded style stem (1/4-28, 5/16-24, 3/8-24, 7/16-20 & 1/2-20 are typical). Dim C for the grooved style is the measurement of the stem groove height. This information is used to design a stem adapter which will connect the valve stem to the new linkage drive rack. It is important to specify the correct thread pattern, as incorrect data will prevent the stem adapter from attaching to your valve. If you cannot determine the correct thread spec, you can send a nut from the valve stem and we will match the correct specification. In some cases where older valves are concerned, some valve stems must be trimmed in the field to allow attachment of the linkage system. In these cases, a stem adapter is designed to “bite” into the smooth surface of the valve stem itself.

Dimensions D1, D2 & D3 are used to determine the height of the linkage assembly required to clear the valves’ full stroke. A minimum of **two** dimensions are required to manufacture the correct linkage system for your valve. These dimensions also provide the information necessary to determine valve stroke. The **maximum stroke** from Belimo globe valve retrofit systems is 1.500”.

Dimension E refers to the valve bonnet diameter (regardless if threads are present or not). Over time, impurities will react to the bonnet threads and corrode them to the point where they no longer meet the original thread specification. Because of this, we manufacture **slip fit** collars designed to **slide over** the bonnet threads, and locking setscrews are provided which “bite” into the original threads. All retrofit systems are designed to work with the raw valve body and do not account for previous actuation components which **must** be removed from the valve body before attaching the new linkage system.

Dimension F refers to the thread specification on threaded bonnets, and refers to the minor diameter on slip on bonnets (Landis type). This information helps us determine the length of the locking devices required to hold the collar onto the bonnet.

Dimensions G & H are used to determine working height of the bonnet region of your globe valve, while **Dim I** is used in calculating the minimum ID of the collar that will fit over the packing nut. Additionally, information about the environment and process in which this linkage system will be utilized should be provided.

All the requested information contained on this form is required to guarantee the complete, perfect fit of your retrofit system. Keep in mind that retrofit kits are designed with close-tolerance components which afford the most efficient linkage systems. Measurements rounded to the nearest 1/8 or 1/16 inch will not perform as well as a kit designed around careful measurements using proper equipment. Our designs are typically +.005” tolerance.

Required Tools - calipers, thread gauge, and retrofit form

DISCLAIMER:

We will do our best to provide a linkage system designed around your specifications and measurements. However, we cannot be held responsible for linkages which do not fit as a result of incorrect data given to Belimo. We will re-work components which do not fit properly for a nominal fee.

To reduce the possibility of incorrect linkage solutions, we respectfully request that you fill out the retrofit form completely and forward that information with your order. This will serve as a double check between your valve and the actuator/linkage package designed for your application.

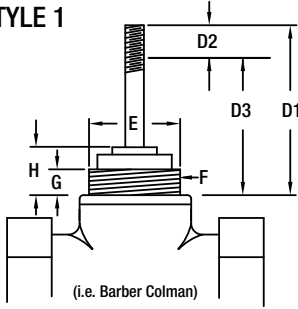
Actuation, weather shields and linkages cannot be pre-assembled at the Belimo factory prior to your receipt. The linkages are designed to be attached onto the valve body first, then optional weather shields, and finally actuation products.

Close-off pressures are calculated using actuator torque, valve stroke, and valve area. Other factors may affect the rated close-off pressures, including flow rates, system maintenance schedules, chemicals used in the shot feeder process, vicinity to pumps, condition of valve stem seals, and assembly of linkage material in the field.

Valves that are being considered for retrofit of actuation should be analyzed for their life expectancy before the retrofit has taken place. Valves that leak through stem seals or casings will continue to leak with the new linkage system in place, maybe even more so. Rebuilding the packing on these valves may be more costly than replacing the valves themselves. In some instances, older valve stem heights will require field modifications to the valve in order to utilize the retrofit kit. Belimo takes no responsibility for the operation of these valves after they have been modified.

Tech.Doc - 07/14 - Subject to change. © Belimo Aircontrols (USA), Inc.

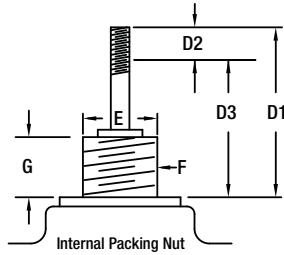
VALVE STYLE 1



(i.e. Barber Colman)

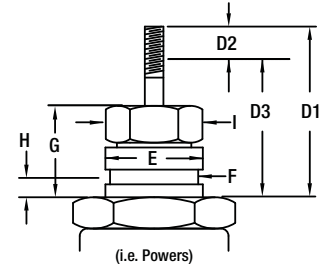
NOTE:
Nut "F" rotates on
valve bonnet!!

VALVE STYLE 2



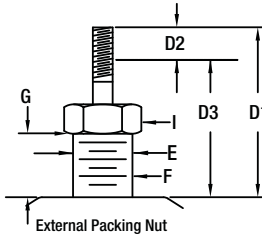
Internal Packing Nut

VALVE STYLE 3



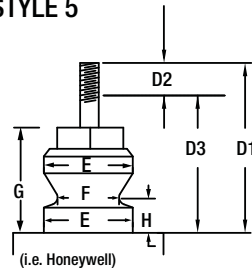
(i.e. Powers)

VALVE STYLE 4



External Packing Nut

VALVE STYLE 5



(i.e. Honeywell)

VALVE STYLE DIMENSIONS

VALVE STYLE:

DIM D1*:
Stem up, length to base mount surface

DIM D2: max. 1.500"
Stem stroke, stem up vs. stem down (D1-D3)

DIM D3:
Stem down, length to base mount surface

DIM E:
Bonnet major diameter

DIM F:
Thread spec or bonnet minor diameter

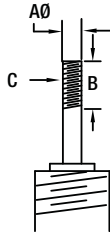
DIM G:
Bonnet mount height

DIM H:
Bonnet minor diameter height

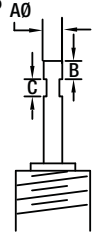
DIM I:
External packaging nut, across points

*MAXIMUM LENGTH LINKAGE FRAME WILL ACCOMMODATE UP TO 6.500" D1 MEASUREMENT
VALVE STEMS LONGER THAN THIS NEED TO BE CUT.

STEM STYLE A



STEM STYLE B



STEM STYLE STEM DIAMETER THREAD LENGTH TO STEM GROOVE THREADS PER INCH STEM GROOVE HEIGHT
A or B: DIM A: DIM B: DIM C: DIM C:

ACTUATOR

EXISTING ACTUATOR MODEL: _____ CONTROL TYPE: ON/OFF FLOATING POINT VDC PWM
 FAIL SAFE: YES NO Range: _____ Range: _____
 FAIL POSITION: NO NC INDOOR OUTDOOR
 VOLTAGE _____

COMPANY: _____ VALVE MANUFACTURE: _____ 2 WAY/3 WAY: _____
 JOB NAME: _____ VALVE SERIES: _____ VALVE SIZE: _____
 PO#: _____ VALVE MODEL: _____ MEDIA TEMP: _____
 PHONE: _____ VALVE TAG/LOCATION: _____ MEDIA TYPE: _____
 EMAIL: _____ QUANTITY: _____ SYSTEM PRESSURE: _____

NOTE: THIS INFORMATION WILL BE UTILIZED IN THE FABRICATION OF A CUSTOM LINKAGE SYSTEM FOR YOUR VALVE REQUIREMENT; THEREFORE, IT IS ESSENTIAL THAT THE ABOVE DIMENSIONS BE FURNISHED WITH READINGS TAKEN TO THE NEAREST .001". ANY ERRONEOUS DIMENSIONS FURNISHED WHICH RESULT IN IMPROPER FIT OF THIS LINKAGE SYSTEM ARE NOT THE RESPONSIBILITY OF BELIMO AIRCONTROLS. ANY REWORK REQUIRED WILL RESULT IN AN EXTRA CHARGE.

CUSTOM KITS ARE DESIGNED TO YOUR UNIQUE SPECIFICATIONS AND ARE NOT RETURNABLE.

COMPANY CONTACT/DIMENSIONS PROVIDED BY: _____ DATE: _____

Instructions for Completing this Form

Please keep in mind that all dimensions should be taken with ALL original actuation and hardware components removed from the valve body.

Examples of dimensions A & B (**Dim A and Dim B**) relate to the TOP mounting holes on the butterfly valve body. These holes are usually arranged on the body in either an "X" pattern (**MOUNT STYLE 1**), or a cross pattern (**MOUNT STYLE 2**). This information is entered on the UFSP Series Butterfly Valve Retrofit Form in the **MOUNT STYLE** section. The length of the valve stem sticking out of the top of the valve body is recorded under **Dim C**. The TOP mounting holes are usually drilled through the top flange, but sometimes are threaded. Enter this information on the form next to the mount style information previously recorded.

Next is the valve stem data. The five styles of valve stems cover 98% of the butterfly valves ever produced. Examine the valve being retrofitted to establish which shaft style matches the diagrams above. Use caution when recording these dimensions. Careless use of calipers will result in a sloppy and possibly dysfunctional linkage system. **Dim D** refers to the valve stem diameter and should be measured at several points up and down as well as around the stem itself. **Dim E** refers to the length of the drive surface available, whether it be a key, flatted surface, or the distance a drive hole is from the top of the stem. There are two types of keys (Keyway-Shaft Style 4 and Woodruff Key-Shaft Style 5). Please select the key size as noted in the column "For Shaft Style 4 & 5". **Dim F** refers to the width of the drive surface. This is the most critical dimension for correct linkage operation. Please measure accordingly.

In addition, we require information about the environment and process in which this linkage system will be utilized.

The form must be completed in its entirety to guarantee the complete, perfect fit of your retrofit system. Keep in mind that retrofit kits are designed with close-tolerance components which afford the most efficient linkage system for the facility. Measurements rounded to the nearest $\frac{1}{8}$ or $\frac{1}{16}$ inch will not perform as well (sometimes not at all) as a kit designed around careful measurements using proper equipment. Our designs are typically $\pm .005$ " tolerance.

Required tools - calipers and retrofit form.

DISCLAIMER

We will do our best to provide a linkage system designed around your specifications and measurements. However, we cannot be held responsible for linkages which do not fit as a result of incorrect data given to Belimo. We will re-work components which do not fit properly for a nominal fee.

To reduce the possibility of incorrect linkage solutions, we respectfully request that you fill out the retrofit form completely and forward that information with your order. This will serve as a double check between your valve and the actuator/linkage package designed for your application.

Actuation, weather shields and linkages cannot be pre-assembled at the Belimo factory prior to your receipt. The linkages are designed to be attached onto the valve body first, then optional weather shields, and finally actuation products.

Close-off pressures are calculated using actuator torque, valve stroke, and valve area. Other factors may affect the rated close-off pressures, including flow rates, system maintenance schedules, chemicals used in the shot feeder process, vicinity to pumps, condition of valve stem seals, and assembly of linkage material in the field.

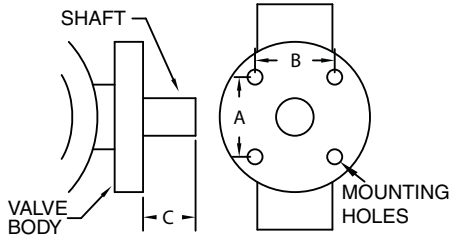
Valves that are being considered for retrofit of actuation should be analyzed for their life expectancy before the retrofit has taken place. Valves that leak through stem seals or casings will continue to leak with the new linkage system in place, maybe even more so. Rebuilding the packing on these valves may be more costly than replacing the valves themselves. In some instances, older valve stem heights will require field modifications to the valve in order to utilize the retrofit kit. Belimo takes no responsibility for the operation of these valves after they have been modified.

Custom Butterfly Valve Retrofit Solution Form

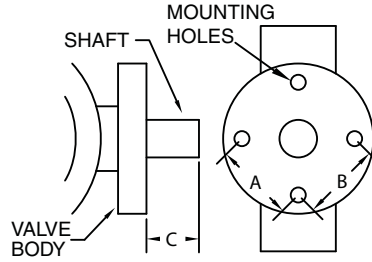
UFSP Series



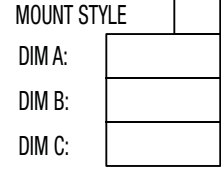
MOUNT STYLE 1



MOUNT STYLE 2

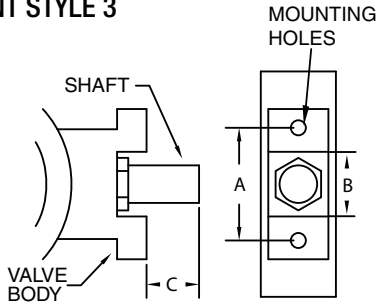


MOUNT STYLE DIMENSIONS



DIM. A & B MEASURED FROM CENTER OF HOLE

MOUNT STYLE 3



MOUNT STYLE 4

SKETCH YOUR MOUNT STYLE USING MOUNT STYLE EXAMPLES.

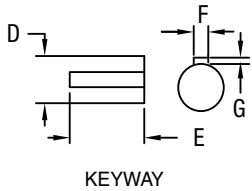
MOUNTING HOLES:

DIA Ø: DRILLED Ex: 0.437"

THREAD: TAPPED

SPEC.: Ex: 1/2-20

SHAFT STYLE 4

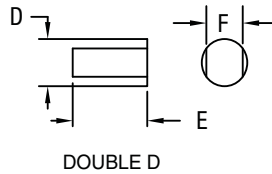


KEY SIZE

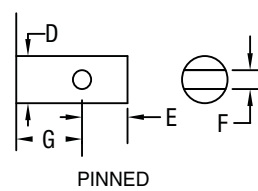
- .125"
- .1875"
- .250"
- .3125"
- .375"
- .4375"
- .500"

CHECK ONE

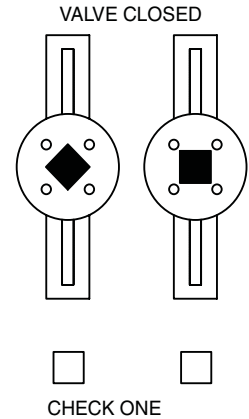
SHAFT STYLE 6



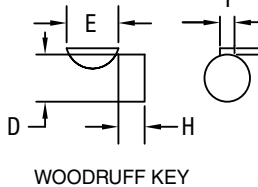
SHAFT STYLE 8



SHAFT STYLE 9

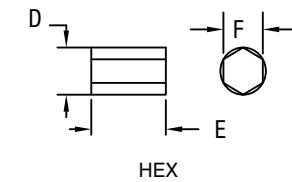


SHAFT STYLE 5

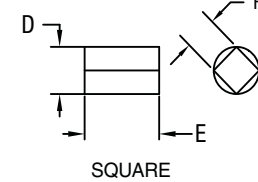


WOODRUFF KEY

SHAFT STYLE 7



SHAFT STYLE 9



SHAFT STYLE

DIM D:

DIM E:

DIM F:

DIM G:

DIM H:

ACTUATOR

EXISTING ACTUATOR MODEL: _____ CONTROL TYPE: ON/OFF FLOATING POINT VDC PWM
 FAIL SAFE: YES NO Range: _____ Range: _____
 FAIL POSITION: NO NC INDOOR OUTDOOR
 VOLTAGE _____

COMPANY: _____
 JOB NAME: _____
 PO#: _____
 PHONE: _____
 EMAIL: _____

VALVE MANUFACTURE: _____
 VALVE SERIES: _____
 VALVE MODEL: _____
 VALVE TAG/LOCATION: _____
 QUANTITY: _____

2 WAY/3 WAY: _____
 VALVE SIZE: _____
 MEDIA TEMP: _____
 MEDIA TYPE: _____
 SYSTEM PRESSURE: _____

NOTE: THIS INFORMATION WILL BE UTILIZED IN THE FABRICATION OF A CUSTOM LINKAGE SYSTEM FOR YOUR VALVE REQUIREMENT; THEREFORE, IT IS ESSENTIAL THAT THE ABOVE DIMENSIONS BE FURNISHED WITH READINGS TAKEN TO THE NEAREST .001". ANY ERRONEOUS DIMENSIONS FURNISHED WHICH RESULT IN IMPROPER FIT OF THIS LINKAGE SYSTEM ARE NOT THE RESPONSIBILITY OF BELIMO AIRCONTROLS. ANY REWORK REQUIRED WILL RESULT IN AN EXTRA CHARGE.

CUSTOM KITS ARE DESIGNED TO YOUR UNIQUE SPECIFICATIONS AND ARE NOT RETURNABLE.

COMPANY CONTACT/DIMENSIONS PROVIDED BY: _____ DATE: _____

800-543-9038 USA

866-805-7089 CANADA

203-791-8396 LATIN AMERICA/CARIBBEAN

Instructions for Completing this Form

Ball valves with-out a mounting flange are typically not designed for installing actuation, therefore the valve design may not support modulation outside of manual usage. Belimo does not recommend retrofitting these types of ball valves.

All dimensions should be taken with ALL original actuation and hardware components removed from the valve body.

An example using **Mounting Style 3**: Dimensions A & B (**Dim A and Dim B**) relate to the TOP mounting holes on the ball valve body. These holes are usually arranged on the body in a “X” pattern (**MOUNT STYLE 3**). This information is entered on the UBSP Series Ball Valve Retrofit Form in the **MOUNT STYLE** section. The length of the valve stem sticking out of the top of the valve body is recorded under **Dim D and E**. The TOP mounting holes are usually drilled through the top flange, but sometimes are threaded. Enter this information on the form next to the mount style information previously recorded.

MOUNT STYLE 3: Dimensions A & B (**Dim A and Dim B**) relate to the TOP mounting holes on the ball valve body. These holes are usually arranged on the body in a “X” pattern (**MOUNT STYLE 3**). This information is entered on the UBSP Series Ball Valve Retrofit Form in the **MOUNT STYLE** section. The length of the valve stem sticking out of the top of the valve body is recorded under **Dim D and E**. The TOP mounting holes are usually drilled through the top flange, but sometimes are threaded. Enter this information on the form next to the mount style information previously recorded.

STEM STYLE: Examine the valve being retrofitted to establish which stem style matches the diagrams above. Use caution when recording these dimensions. **Dim H** refers to the valve stem diameter and should be measured at several points up and down as well as around the stem itself. **Dim E** refers to the length of the drive surface available, whether it is a key or flatted surface. **Dim F** refers to the width of the drive surface or the distance across the flats. This is the most critical dimension for correct linkage operation. Please measure accordingly. Lastly please specify the desired actuator orientation in reference to the valve body using the ports as reference, i.e. over the “A” port etc. We have also includes an ISO-5211 standard dimension chart for reference. If the valve is labeled please specify its “F” number so that we may confirm the dimensions per the ISO spec.

In addition, we require information about the environment and process in which this linkage system will be utilized. As well as the frequency of use the current actuator runs. This will help to ensure the longevity of the new linkage and actuator. Having the prior actuator spec and model will help.

The form must be completed in its entirety to guarantee the complete, perfect fit of your retrofit system. Keep in mind that retrofit kits are designed with close-tolerance components which afford the most efficient linkage systems. Measurements rounded to the nearest 1/8 or 1/16 inch will not perform as well (sometimes not at all) as a kit designed around careful measurements using proper equipment. Our designs are typically $\pm .005$ tolerance.

Required tools - calipers and retrofit form.

DISCLAIMER

We will do our best to provide a linkage system designed around your specifications and measurements. However, we cannot be held responsible for linkages which do not fit as a result of incorrect data given to Belimo. We will re-work components which do not fit properly for a nominal fee.

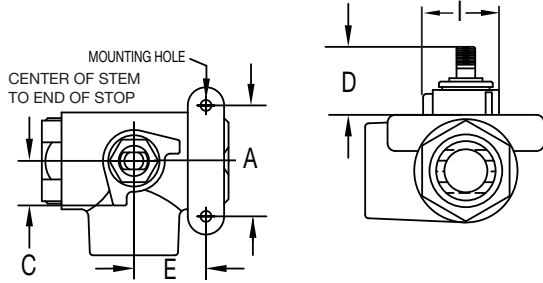
To reduce the possibility of incorrect linkage solutions, we respectfully request that you fill out the retrofit form completely and forward that information with your order. This will serve as a double check between your valve and the actuator/linkage package designed for your application.

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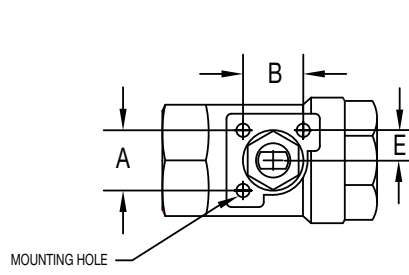
Close-off pressures are calculated using actuator torque, valve stroke, and valve area. Other factors may affect the rated close-off pressures, including flow rates, system maintenance schedules, chemicals used in the shot feeder process, vicinity to pumps, condition of valve stem seals, and assembly of linkage material in the field.

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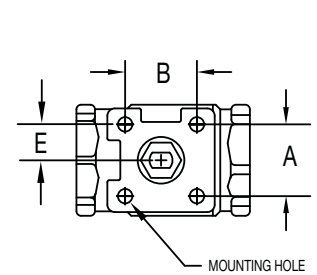
MOUNT STYLE 1



MOUNT STYLE 2



MOUNT STYLE 3



MOUNT STYLE 4

SKETCH YOUR MOUNT STYLE USING EXAMPLES ABOVE

MOUNT STYLE DIMENSIONS

MOUNT STYLE

DIM A:

DIM B:

DIM C:

DIM D:

DIM E:

MOUNTING HOLES: DRILLED TAPPED

DIA Ø:

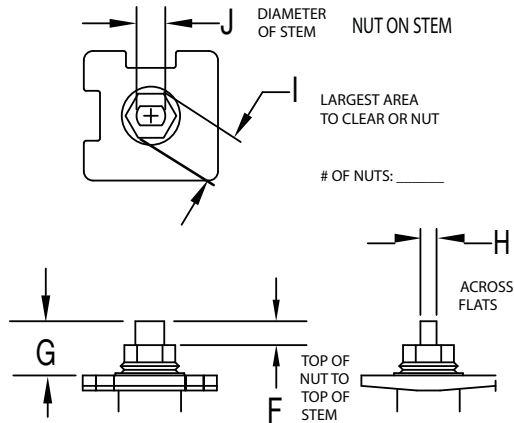
THREAD SPEC.

DIM. A & B MEASURED FROM CENTER OF HOLE

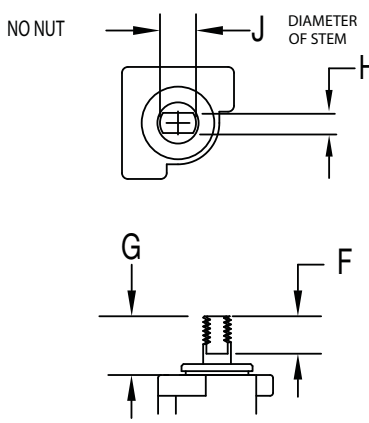
ISO STANDARD

ISO	BOLT SQUARE	BOLT SIZE Ø	CHECK ONE
F03	1.002	M5	<input type="checkbox"/>
F04	1.169	M5	<input type="checkbox"/>
F05	1.392	M6	<input type="checkbox"/>
F07	1.949	M8	<input type="checkbox"/>
F10	2.840	M10	<input type="checkbox"/>
F12	3.480	M12	<input type="checkbox"/>
F14	3.879	M16	<input type="checkbox"/>
F16	4.593	M20	<input type="checkbox"/>
F25	7.071	M16	<input type="checkbox"/>

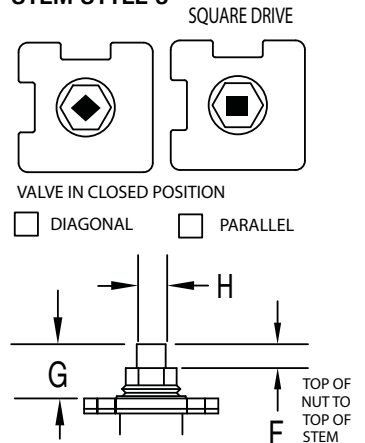
STEM STYLE 1



STEM STYLE 2



STEM STYLE 3



STEM STYLE

DIM F: DIM G: DIM H: DIM I: DIM J:

ACTUATOR

EXISTING ACTUATOR MODEL: _____ CONTROL TYPE: ON/OFF FLOATING POINT VDC PWM

FAIL SAFE: YES NO Range: _____ Range: _____

FAIL POSITION: NO NC INDOOR OUTDOOR

FREQUENCY OF OPERATION (specify how often): DAILY _____ WEEKLY _____ MONTHLY _____ VOLTAGE: _____

ACTUATOR ORIENTATION:



COMPANY: _____ VALVE MANUFACTURE: _____ 2 WAY/3 WAY: _____

JOB NAME: _____ VALVE SERIES: _____ VALVE SIZE: _____

PO#: _____ VALVE MODEL: _____ MEDIA TEMP: _____

PHONE: _____ VALVE TAG/LOCATION: _____ MEDIA TYPE: _____

EMAIL: _____ QUANTITY: _____ SYSTEM PRESSURE: _____

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