

# Replacement of Fisher™ A11 High-Performance Butterfly Valves with Fisher 8590 High-Performance Butterfly Valves

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## Management of Change

Management of Change (MOC) is a procedure used to proactively manage changes that have the potential to impact safety or the process within a plant. Evaluating new techniques for improving MOC approval procedures can have an impact on plant efficiency. Historically, upgrading obsolete products or replacing existing process control equipment had been delayed or abandoned due to the extensive paperwork involved in completing a complex MOC approval sheet.

## Background

Emerson introduces the Fisher 8590 high-performance butterfly valve. It is a redesign of the NPS 3 to 24 Class 600 Fisher A11 high-performance butterfly valve. The A11 valve has been used across multiple industries and applications for many years. The 8590 valve will continue to serve those same applications.

## Question & Answer Checklist

- 1**    **Q:** Does the proposed modification cause any changes to the piping and instrumentation diagram (P&ID)?  
**A:** No.
  
- 2**    **Q:** Does the proposed modification change process chemistry, technology, or operating and control philosophies?  
**A:** No.
  
- 3**    **Q:** Does the proposed modification change how the existing plant is operated?  
**A:** Maybe. Review capacity information to ensure no issues will take place.
  
- 4**    **Q:** Does the proposed modification change process flows?  
**A:** Maybe. Review capacity information to ensure no issues will take place.
  
- 5**    **Q:** Does the proposed modification change existing pressure relief cases?  
**A:** No.
  
- 6**    **Q:** Does the proposed modification change the process description?  
**A:** No.

- 7** **Q:** Have the codes and standards to which the new equipment was designed changed?
- A:** The 8590 valve is still designed in accordance with ASME-B16.34. It now meets additional industry standards, such as the face-to-face lengths per API 609.
- 8** **Q:** Does the proposed modification change the materials of construction, such as a change in material form (cast, forged, or alloy)?
- A:** No.
- 9** **Q:** Does the proposed modification introduce new equipment items that require periodic predictive maintenance?
- A:** No. The new equipment items will require the same periodic maintenance as required by the previous equipment items.
- 10** **Q:** Does the proposed modification change existing operator training requirements?
- A:** No.
- 11** **Q:** Does the proposed modification introduce new equipment items that require spare parts, training manuals, maintenance procedures or training to teach the maintenance department how to maintain them?
- A:** Yes. The new equipment requires 8590 valve instruction manuals, maintenance procedures, and training for the maintenance department. However, if your staff have been trained or are familiar with the A11, 8580, and A81 valves, they won't require more training.
- 12** **Q:** Does the proposed modification introduce new equipment items that require spares or obsolete spares for existing equipment?
- A:** Yes. New spares will be required for the 8590 valve, which are not compatible with the A11 valve. Spare trim parts will continue to be available for the A11 valve until the end of 2025.
- 13** **Q:** Does the proposed modification permanently remove the spares for existing pieces of equipment?
- A:** Spare parts for existing A11 valve will remain unchanged. The 8590 valve will require different spare parts.

- 14 Q:** Does the proposed modification change the inspection scope or inspection interval?
- A:** No.
- 15 Q:** Does the proposed modification require welding work to be performed?
- A:** No.
- 16 Q:** Have the materials of construction been reviewed to ensure that the metallurgy is correct?
- A:** Yes. The 8590 valve is available in the same materials of construction as the A11 valve.

## Comparison of the Fisher A11 to 8590 Valve

The 8590 valve is less complex, easier to select, use, and maintain than the A11 valve it replaces. However, some items need to be considered when replacing an A11 valve with an 8590 valve..

### Scope, Size, and Class

Only the NPS 3 through 24 Class 600 A11 valves will be replaced by the 8590 valve. The large (NPS 30 and higher) and high-pressure (Class 900 and Class 1500) A11 valves will remain.

The 8590 valve will only be available with a lugged (single flange) valve body. In cases where a wafer (flangeless) valve body is preferred, an option is available for drilled-through flange holes that will install between pipe flanges with the same bolting as a wafer-style body.

### Capacity

Some minor geometry changes, as well as increased analysis and testing capabilities, cause the 8590 valve to have different flow coefficients than the A11 valve. Please refer to the 8590 valve product literature for the 8590 valve flow coefficients.

### Face-to-Face Dimensions

Some sizes of the A11 valve did not conform to industry standards for face-to-face length. All sizes of the 8590 valve meet the API 609 face-to-face dimensions for lugged category B valves. See Table 1 for the dimensions of the two valve types. In most sizes, the face-to-face difference is less than 0.10 inch (2.5mm) and an option is available to provide the 8590 valve with the A11 face-to-face length for three sizes highlighted in the below table which have changed more.

| Valve Type | NPS 3 |      | NPS 4 |      | NPS 6 |      | NPS 8 |      | NPS 10 |      | NPS 12 |      |
|------------|-------|------|-------|------|-------|------|-------|------|--------|------|--------|------|
|            | mm    | inch | mm    | inch | mm    | inch | mm    | inch | mm     | inch | mm     | inch |
| A11        | 46    | 1.81 | 60    | 2.38 | 73    | 2.88 | 89    | 3.50 | 114    | 4.50 | 140    | 5.50 |
| 8590       | 52    | 2.04 | 62    | 2.44 | 76    | 2.98 | 102   | 4.00 | 116    | 4.56 | 140    | 5.50 |

| Valve Type | NPS 12 |      | NPS 14 |      | NPS 16 |      | NPS 18 |      | NPS 20 |      | NPS 24 |      |
|------------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|
|            | mm     | inch | mm     | inch | mm     | inch | mm     | inch | mm     | inch | mm     | inch |
| A11        | 140    | 5.50 | 159    | 6.25 | 178    | 7.00 | 197    | 7.75 | 229    | 9.00 | 229    | 9.00 |
| 8590       | 140    | 5.50 | 157    | 6.18 | 178    | 7.00 | 198    | 7.81 | 216    | 8.50 | 230    | 9.06 |

Table 1. Face-to-Face Dimensions

### Actuator Mounting Dimensions

The NPS 3 to 6 A11 valves use a circular actuator mounting bolt pattern and the NPS 8 to 24 A11 valves use a rectangular actuator mounting bolt pattern. These bolt patterns require special brackets, yokes, or adapter pieces to mount Fisher actuators. The 8590 valve uses the Fisher style F mounting pattern and a spline shaft, as standard, which will mount easily to Fisher actuators. Square (NPS 3 to 12) and keyed (NPS 14 to 24) shaft options are available for mounting ISO 5211 actuators.

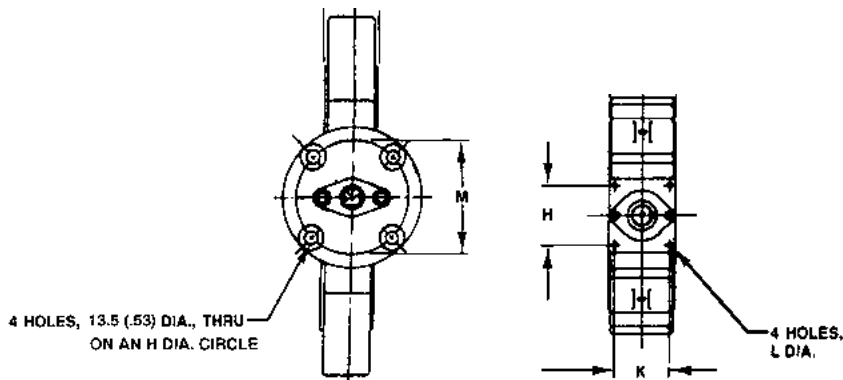


Figure 1. Fisher A11 Valve

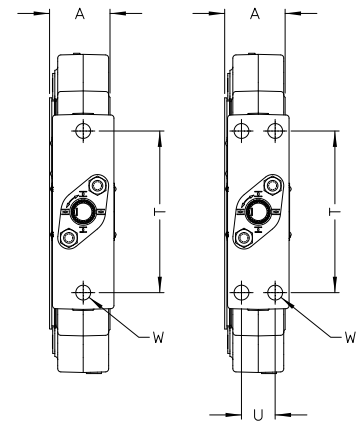


Figure 2. Fisher 8590 Valve

| Valve Size |      | H     |       | K    |      | L       |         |
|------------|------|-------|-------|------|------|---------|---------|
|            |      | A11   | 8590  | A11  | 8590 | A11     | 8590    |
| NPS 3      | mm   | 89    | 117   | --   | --   | 14      | 1/2-13  |
|            | inch | 3.50  | 4.62  | --   | --   | 0.53    |         |
| NPS 4      | mm   | 114   | 152   | --   | 32   | 14      | 1/2-13  |
|            | inch | 4.50  | 6.00  | --   | 1.25 | 0.53    |         |
| NPS 6      | mm   | 114   | 235   | --   | 46   | 14      | 5/8-11  |
|            | inch | 4.50  | 9.25  | --   | 1.81 | 0.53    |         |
| NPS 8      | mm   | 127   | 235   | 51   | 46   | 1/2-13  | 5/8-11  |
|            | inch | 5.00  | 9.25  | 2.00 | 1.81 |         |         |
| NPS 10     | mm   | 127   | 273   | 51   | 51   | 3/4-10  | 3/4-10  |
|            | inch | 5.00  | 10.75 | 2.00 | 2.00 |         |         |
| NPS 12     | mm   | 273   | 273   | 51   | 51   | 3/4-10  | 3/4-10  |
|            | inch | 10.75 | 10.75 | 2.00 | 2.00 |         |         |
| NPS 14     | mm   | 337   | 337   | 76   | 76   | 7/8-9   | 7/8-9   |
|            | inch | 13.25 | 13.25 | 2.00 | 3.00 |         |         |
| NPS 16     | mm   | 337   | 337   | 76   | 76   | 7/8-9   | 7/8-9   |
|            | inch | 13.25 | 13.25 | 2.00 | 3.00 |         |         |
| NPS 18     | mm   | 305   | 533   | 152  | 127  | 1 1/4-7 | 1 1/4-8 |
|            | inch | 12.00 | 21.00 | 3.00 | 5.00 |         |         |
| NPS 20     | mm   | 305   | 533   | 152  | 127  | 1 1/4-7 | 1 1/4-8 |
|            | inch | 12.00 | 21.00 | 3.00 | 5.00 |         |         |
| NPS 24     | mm   | 508   | 533   | 203  | 127  | 1 1/4-7 | 1 1/4-8 |
|            | inch | 20.00 | 21.00 | 8.00 | 5.00 |         |         |

Table 2. Actuator Mounting Dimensions

## Shaft Size

The 8590 valve will have a spline shaft, as standard. Some shaft diameters have changed. Also, some square and spline sizes have changed.

| Valve Size | Splined Diameter |       |      |       | Square Size |       |      |      | Keyed Diameter |      |      |      |
|------------|------------------|-------|------|-------|-------------|-------|------|------|----------------|------|------|------|
|            | A11              |       | 8590 |       | A11         |       | 8590 |      | A11            |      | 8590 |      |
|            | mm               | in    | mm   | in    | mm          | in    | mm   | in   | mm             | in   | mm   | in   |
| NPS 3      | 16               | 5/8   | 16   | 5/8   | 10.3        | 13/32 | 11   | 0.43 | 25             | 1    | --   | --   |
| NPS 4      | 19               | 3/4   | 19   | 3/4   | 15.9        | 5/8   | 14   | 0.55 | 38             | 1.5  | --   | --   |
| NPS 6      | 32               | 1 1/4 | 32   | 1 1/4 | 22.2        | 7/8   | 22   | 0.87 | 44             | 1.75 | --   | --   |
| NPS 8      | 38               | 1 1/2 | 38   | 1 1/2 | 25.4        | 1     | 27   | 1.06 | 57             | 2.25 | --   | --   |
| NPS 10     | 44               | 1 3/4 | 44   | 1 3/4 | 34.9        | 1 3/8 | 36   | 1.42 | 57             | 2.25 | --   | --   |
| NPS 12     | 44               | 1 3/4 | 51   | 2     | 34.9        | 1 3/8 | 36   | 1.42 | 70             | 2.75 | --   | --   |
| NPS 14     | 51               | 2     | 64   | 2 1/2 | --          | --    | --   | --   | 57             | 2.75 | 57   | 2.25 |
| NPS 16     | 64               | 2 1/2 | 64   | 2 1/2 | --          | --    | --   | --   | 70             | 2.75 | 70   | 2.75 |
| NPS 18     | --               | --    | 76   | 3     | --          | --    | --   | --   | 70             | 2.75 | 70   | 2.75 |
| NPS 20     | --               | --    | 76   | 3     | --          | --    | --   | --   | 70             | 2.75 | 70   | 2.75 |
| NPS 24     | --               | --    | 76   | 3     | --          | --    | --   | --   | 70             | 2.75 | 70   | 2.75 |

Table 3. Shaft Size

## Material Availability

Generally, material availability is unchanged. Standard valve body materials remain WCC and CF8M with additional alloys available.

## Conclusion

The Fisher 8590 valve is part of the 8500 series of Fisher high-performance butterfly valves. The 8590 valve retains and adds to the capabilities of the Fisher A11 valve, while incorporating the features of current Fisher products, making it a straightforward replacement of legacy products.

## Additional Resources

[8590 Product Bulletin \(D104017X012\)](#)

[8590 Instruction Manual \(D104016X012\)](#)



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