Part-Turn Valve Actuator Attachment

FA Flange and Driving Component Dimensions and Performance Characteristics

Standard Practice
Developed and Approved by the
Manufacturers Standardization Society of the
Valve and Fittings Industry, Inc.
127 Park Street, NE
Vienna, Virginia 22180-4602
Phone: (703) 281-6613
Fax: (703) 281-6671
E-mail: standards@mss-hq.org

www.mss-hq.org

This MSS Standard Practice was developed under the consensus of the MSS Technical Committee 408 and the MSS Coordinating Committee. The content of this Standard Practice is the resulting efforts of competent and experienced volunteers to provide an effective, clear, and non-exclusive standard that will benefit the industry as a whole. This MSS Standard Practice describes minimal requirements and is intended as a basis for common practice by the manufacturer, the user, and the general public. The existence of an MSS Standard Practice does not in itself preclude the manufacture, sale, or use of products not conforming to the Standard Practice. Mandatory conformance to this Standard Practice is established only by reference in other documents such as a code, specification, sales contract, or public law, as applicable. MSS has no power, nor does it undertake, to enforce or certify compliance with this document. Any certification or other statement of compliance with the requirements of this Standard Practice shall not be attributable to MSS and is solely the responsibility of the certifier or maker of the statement.

> *"Unless otherwise specifically noted in this MSS Standard Practice, other standards documents referred to herein are identified by the date of issue that was applicable to this Standard Practice at the date of issue of this Standard Practice (see Annex A). This Standard Practice shall remain silent on the applicability of those other standards of prior or subsequent dates of issue even though applicable provisions may not have changed. References contained herein which are bibliographic in nature are noted as 'supplemental' in the text."*

By publication of this Standard Practice, no position is taken with respect to the validity of any potential claim(s) or of any patent rights in connection therewith. MSS shall not be held responsible for identifying any patent rights. Users are expressly advised that determination of patent rights and the risk of infringement of such rights are entirely their responsibility.

In this Standard Practice, all text, notes, annexes, tables, figures, and references are construed to be essential to the understanding of the message of the standard, and are considered normative unless indicated as "supplemental". All appendices, if included, that appear in this document are construed as "supplemental". Note that supplemental information does not include mandatory requirements.

The SI (metric) units and U.S. customary units in this Standard Practice are regarded separately as the standard; each should be used independently of the other. Combining or converting values between the two systems may result in non-conformance with this Standard Practice.

> **This document has been substantively revised from the previous 1989 (R 2001) edition. It is suggested that if the user is interested in knowing what changes have been made, direct page by page comparison should be made of this document and that of the previous edition.**

Non-toleranced dimensions in this Standard Practice are nominal, and, unless otherwise specified, shall be considered "for reference only".

Originally Approved: June 1989
Originally Published: July 1989
Current Edition Approved: June 2014
Current Edition Published: December 2014

FOREWORD

This MSS Standard Practice is based, in part, on ISO International Standard 5211, Industrial Valves – Part-turn Actuator Attachments. It also reflects the current practice of the valve and valve actuator industries in markets where Unified “UN” Thread Forms are the norm. Therefore, the ratings, sizes, and/or number of flange types in the MSS Standard Practice may differ from those of ISO 5211. The MSS flange types use the ISO designation with the addition of an "A", to distinguish them for markets where the UN Thread Form is the customary standard.

When assembling an actuator to a valve, a user is concerned with performance and mechanical interface. In regards to performance, the user needs in part:

- Adequate output torque for valve breakaway and seating loads, and for dynamic loads at rated flow.
- A specified speed so closing and opening can be accomplished in a prescribed time.
- Sufficient power rating of the actuator so the valve may be cycled as required.
- Input power requirements.

For mechanical interface, the user is concerned in part with:

- The dimensional mating of the actuator's mounting surface to the "valve" mounting flange.
- The dimensional compatibility of the actuator's driving components with the valve stem (shaft).
- Size and location of electrical and/or pressure connections.
- Sufficient space and capability to install and service the actuator.

This Standard Practice will only concern itself with flange and driving component dimensions and performance characteristics.

Dimensions and performance characteristics are shown in both U.S. customary and SI (metric) units; however, they must be regarded separately as the standard and each should be used independently of the other. The dimensions for products designated as “A” (UN) are shown in U.S. customary (i.e., inches) with the SI (metric) equivalent in parenthesis. Common conversion factors utilized within this Standard Practice, include:

Conversion	Factor
Inches to Millimeters	25.4
Pound Feet to Newton Meters	1.356
Pounds to Kilonewtons	0.0044
Psi to Newton/mm^2	0.006895

See MSS SP-86 for additional information and guidance for determining SI (metric) units and numbers when needed for MSS Standard Practices.

The figures contained herein are for the purpose of illustration and nomenclature only.

TABLE OF CONTENTS

PART-TURN VALVE ACTUATOR ATTACHMENT – FA FLANGE AND DRIVING COMPONENT DIMENSIONS AND PERFORMANCE CHARACTERISTICS

1. SCOPE

1.1 ***General*** This Standard Practice provides a basis for the standardization of part-turn actuator mounting dimensions and performance characteristics necessary for their attachment to general purpose industrial valves. It covers only those actuators supplied by manufacturers as separate components.

2. REFERENCES

2.1 ***Referenced Standards*** External standards incorporated by reference in this Standard Practice are detailed in Annex A for convenience of identifying edition, date, and source of supply.

3. DEFINITIONS

3.1 ***Actuator*** Any device designed for attachment to general purpose industrial valves in order to provide for the operation of the valve. Motive energy to the actuator can be electrical, pneumatic, manual, etc., or a combination of these. The movement is limited by travel, torque, thrust, or a combination of these.

3.2 ***Part-Turn Actuator*** An actuator which transmits a torque to the valve for less than one revolution.

3.3 ***Torque*** A turning moment transmitted through the mounting flanges and driving components, expressed in Pound Force-Foot (lbf-ft) or Newton Meters (Nm).

4. FLANGE TYPE/SIZE DESIGNATION

4.1 ***General*** Flange types addressed by this Standard Practice are designated by the letters "FA". The next two digits in the classification represent the bolt circle diameter (i.e., size), expressed in millimeters, appropriately rounded and divided by ten (10). The designation may be used to describe an actuator, a valve and any intermediate supports.

Additional designations may be appended for more complete identification as follows:

Flange Type/Size	Pilot	Drive	Nominal Shaft Diameter (D7) (inches)
FA*xx*	-Y	-V (single key)	*x.xx*
	-N	-W (two key)	
	-M	-L (square)	
	-P14	-H (flat)	

Where the pilot designations:

-Y indicates a female valve pilot in accordance with this Standard Practice

-N indicates no pilot

-M indicates a male valve pilot (requires an intermediate support between valve and actuator)

-P14 indicates a pilot in accordance with earlier editions of this Standard Practice (will be eliminated in next revision)

As an example, a flange designated "FA30-Y-V-4.5" represents:

a) One intended for markets where UN Thread Form is customary.

b) One with a bolt circle diameter (BCD) (D3) of approximately 300 mm (exactly 298.5 mm or 11.75 in.).

c) One with a pilot, a single key and suitable for a 4.5 inch nominal shaft.

NOTE: The designation is not a marking requirement.

5. ACTUATOR/VALVE INTERFACE REQUIREMENTS

5.1 ***General*** When mating an actuator with a valve flange, the primary features of concern are the bolt pattern, type of bolt, the pilot, the performance, and the dimensions of the driving components.