

Type OS/66 Slam-Shut Controller

SUMMARY

Introduction	1
Characteristics	1
Labelling	2
Dimensions and Weights	2
Installation	2
Startup	2
Periodical Checks	2
SEP Statement	2
ATEX Requirements	2
Maintenance	3
Spare Parts	4
Troubleshooting	4
Parts List	5
Schematic Assemblies	6

INTRODUCTION

Scope of Manual

This manual provides installation, startup, maintenance, troubleshooting, and spare parts for the slam-shut controller series OS/66.

Product Description

Designed for pressure regulators and slam-shut valves control, the following types are available:

- **OS/66, OS/66-AP**
Spring loaded.

Tightness cover version available on request.

The full range of OS/66 slam-shut controller can be installed in the following equipments:

M Series - A/100 Series - A/140 Series - B/240 Series - RP Series
BM7 Series



Figure 1. Slam-Shut Controller Type OS/66

This product has been designed to be used with fuel gases of 1st and 2nd family according to EN 437, and with other non aggressive and non fuel gases. For any other gases, other than natural gas, please contact your local sales agent.

CHARACTERISTICS

Table 1. OS/66 Characteristics

MODEL	BODY RESISTANCE bar	OVERPRESSURE SET RANGE W_{do} bar		UNDERPRESSURE SET RANGE W_{du} bar	
		Min.	Max.	Min.	Max.
OS/66	6	0.022	0.6	0.007	0.45
OS/66-AP		0.2	5	0.1	2.5

1/4" NPT female threaded connections.

Materials

Body: Aluminium
Cover: Aluminium
Diaphragm: Nitrile (NBR) rubber

OS/66 Series

LABELLING


		APPARECCHIO TIPO / DEVICE TYPE	
MTRICOLA		Note 1	
SERIAL Nr.	DN1		
ANNO	DN2		
YEAR	Note 2		
NORME ARMONIZ.	EN	Wa	Note 4
HARMONIZED STD.			bar
CLASSE DI PERDITA		Wao	Note 5
LEAKAGE CLASS			bar
CLASSE FUNZIONALE	Cg	Wau	Note 5
FUNCTIONAL CLASS			bar
FLUIDO GRUPPO	1	pmax	
FLUID GROUP			bar
TS	Note 3	PS body	
		PS covers	- bar PT= 1.5 x PS bar

Figure 2. OS/66 Series Label

Note 1: See “Characteristics”

Note 2: Year of Manufacture

Note 3: Class 1: -10° to 60°C
Class 2: -20° to 60°C

Note 4: Specific set-point according to order

Note 5: See “Characteristics”

DIMENSIONS AND WEIGHT

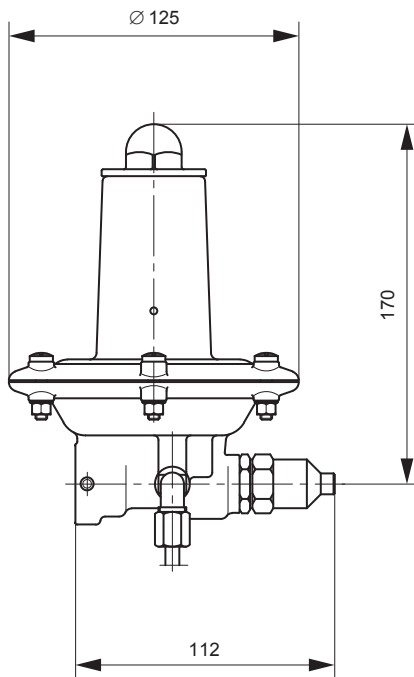


Figure 3. OS/66 Series Dimensions (mm)

OS/66 SERIES FULL RANGE WEIGHT: 1 kg

INSTALLATION

- Install the actuator in a covered area and, in any case, protect it against weather agents.
- Make sure that data shown on actuator label is compatible with actual operating requirements.
- In case of impulse line not being incorporated in the pressure regulator, connect the (A) from the pipe downstream of the actuator to a straight pipe section possibly away from restrictions, curves or branches in order to avoid any variations in device triggering values which might be caused by gas turbulence.

STARTUP

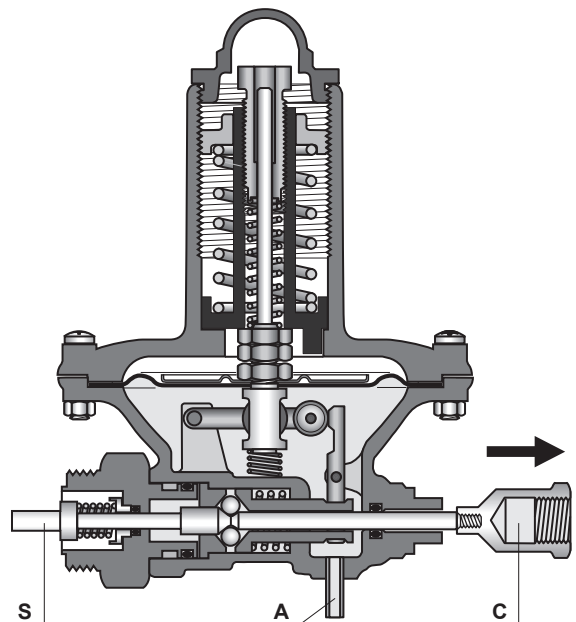


Figure 4. OS/66 Series Startup

- Carefully follow the instructions contained in the Bulletin relating to the regulator or to the slam-shut valve on which the actuator has been installed.
- Remove cap (C) reverse and screw it onto stem (S).
- Pull cap and keep it pulled several seconds until outlet pressure stabilizes, then release it.
- Repeat the above procedure, making sure that actuator remains properly latched, then mount cap back in its original position.

PERIODICAL CHECKS

It is recommended that slam-shut controller efficiency be checked periodically.

Cut-off Test

- a. Close inlet and outlet valves and disconnect impulse line (A). The controller should trigger at minimum pressure (only if so set).
- b. Using a small pump or other appropriate means, raise pressure in the line to normal operating level. Relatch actuator in case it has triggered following on step a. above.
- c. Simulate pressure increase until maximum triggering pressure is reached.
- d. Connect the impulse line (A) and bring the line back to full operating conditions as described in Startup paragraph.

Valve-seal Check

- a. Slowly close the valve located downstream.
- b. Loosen cap (key 1) and trip the controller by exerting a slight pressure on stem unit (key 41).
- c. Loosen one fitting in the line downstream of the slam-shut valve and apply soapy water in order to make sure that there are no leaks. In case of any leak being detected, proceed with the necessary maintenance of the slam-shut valve.

SEP STATEMENT

Emerson Process declares this product conforms to Pressure Equipment Directive (PED) 97/23/EC.

Article 3 section 3 and was designed and manufactured in accordance with sound engineering practice (SEP).

Per Article 3 section 3, this "SEP" product must not bear the CE marking.

ATEX REQUIREMENTS

WARNING

If the provisions of EN 12186 & EN 12279, national regulations, if any, and specific manufacturer recommendations are not put into practice before installation and if purge by inert gas is not carried out before equipment's start-up and shut-down operations, a potential external and internal explosive atmosphere can be present in equipment & gas pressure regulating/measuring stations/installations.

If a presence of foreign material in the pipelines is foreseen and purge by inert gas is not carried out, the following procedure is recommended to avoid any possible external ignition source inside the equipment due to mechanical

generated sparks:

- drainage to safe area via drain lines of foreign materials, if any, by inflow of fuel gas with low velocity in the pipe-work (5m/sec)

In any case,

- provisions of Directive 1999/92/EC and 89/655/EC shall be enforced by gas pressure regulating/measuring station/installation's end user
- with a view to preventing and providing protection against explosions, technical and/or organizational measures appropriate to the nature of the operation shall be taken (e.g. : filling/exhausting of fuel gas of internal volume of the isolated part/entire installation with vent lines to safe area - 7.5.2 of EN 12186 & 7.4 of EN 12279 ; monitoring of settings with further exhaust of fuel gas to safe area ; connection of isolated part/entire installation to downstream pipeline;)
- provision in 9.3 of EN 12186 & 12279 shall be enforced by pressure regulating/measuring station/installation's end user
- external tightness test shall be carried out after each reassembly at installation site using testing pressure in accordance with national rules
- periodical check/maintenance for surveillance shall be carried out complying with national regulations, if any, and specific manufacturer recommendations.

MAINTENANCE



WARNING

For a successful job it is indispensable to use qualified personnel, possibly calling on our Technical Support Representatives.

Before starting maintenance, disconnect impulse connection (A) to make sure there is no gas under pressure in the pilot.

When maintenance operations are finished check the tightness with suds.

General Maintenance



WARNING

Do not bend or otherwise damage stem (S) when disassembling and reassembling.

- a. Remove impulse line (A) and make sure that controller is not latched by exerting a slight pressure on stem unit (key 41).

OS/66 Series

- b. Loosen screws (key 29) and slide out the controller.
- c. Remove cap (key 1), adjusting screw (key 2), ring nut (key 4), spring (key 5), spring holder (key 3) and spring (key 6).
- d. Remove screws (key 27) nuts (key 25) and washers (key 26), take off cover (key 7).
- e. Slide out diaphragm unit and remove spring (key 23).
- f. In order to replace diaphragm (key 36), unscrew nuts (key 39 and 40) and disassemble the components. Check O-ring (key 34) and replace it if worn.
- g. Check that plate unit (key 8) and lever (key 24) can move freely and are not worn, otherwise replace them together with pins (key 22 and 9).
- h. Loosen balls holder (key 12) using the appropriate tool and check O-ring (key 11).
- i. Remove the balls (key 12), the spring holder (key 13) and the spring (key 14). Clean with petrol and check surfaces if worn or scored, replace.
- j. Unscrew guide (key 20) and check O-rings (key 18 and 19), replace if necessary.

Reassembling

Reassemble by reversing the above steps.

As you proceed, make sure that parts move freely and without friction.

In addition:

- a. Lubricate all seals with "MOLYKOTE 55 M" and be very careful not to damage them when reassembling.
- b. Place the balls holder (key 10) on the special tool, grease it thoroughly to prevent balls from falling out and lodge the balls (key 12) in their seats. Hold the special tool in a vertical position and tighten the balls holder.
- c. Adjust the position of balls holder (key 10) so that, with lever (key 24) held down at travel end, plate unit (key 8) moves freely and has a clearance of 0,2 to 0,3 mm.
- d. Place the adjusting nut (key 40) back in its original position as shown in Figure 4.
- e. Hold stem unit (key 41) slightly pressed to ensure proper fitting of diaphragm (key 36). Mount cover (key 7) and check that stem unit (key 41) is duly centered.
- f. Tighten cover screws (key 27) nuts (key 25) and washers (key 26) to ensure proper sealing.
- g. Check that all movements are smooth and friction free.
- h. Fit the mounting stem in order to prevent balls from falling out and to facilitate remounting of the controller on the sam-shut valve.

- i. Remount the controller and secure it by means of screws (key 29).

Setting

- a. Use ring nut (key 4) to completely load maximum pressure spring (key 5). Loosen adjusting screw (key 2) to completely relieve minimum pressure spring (key 6).
- b. Disconnect impulse line (A).
- c. Use a small pump or other appropriate means to raise pressure to normal operating level.
- d. Relatch controller and allow pressure to drop to minimum pressure triggering level.
- e. Using adjusting screw (key 2), slowly load minimum pressure spring (key 6) until actuator triggers.
- f. Repeat steps c. and d. above, making any necessary adjustments in setting.
- g. Bring pressure back to normal values.
- h. Relatch controller and raise pressure until it reaches maximum pressure triggering level.
- i. Using ring nut (key 4), slowly unload spring (key 5) until actuator triggers.
- j. Repeat steps g. and h. above, making any necessary adjustments in setting.



CAUTION

Whenever minimum or maximum pressure triggering is not required, omit corresponding steps.

It should be borne in mind that minimum pressure triggering can be eliminated by simply removing spring (key 6) and that maximum pressure triggering can be eliminated by fully loading spring (key 5).

SPARE PARTS

Spare parts storage shall be done by proper procedures according to national standard/rules to avoid over aging or any damage.

TROUBLESHOOTING

Table 2. Troubleshooting for OS/66 Series Slam-Shut Controller

SYMPTOMS	CAUSE	ACTIONS
Controller does not remain latched	The impulse intake (A) is not connected properly	Check connection (A)
	Downstream pressure coincides with the maximum or minimum slam-shut settings	Check settings
	Minimum or maximum pressure setting is above or below required values	Check settings
	Diaphragm (key 36) is damaged (minimum pressure triggering)	Replace diaphragm
	Gap between plate unit (key 8) and lever (key 24) is not as required	Check gap

PARTS LIST

Type OS/66 Slam-Shut Controller (See Figure 5)

Key	Description	Key	Description
1	Cap	26	Washer
2	Adjusting screw	27	Screw
3	Spring holder	28	Label
4	Ring nut	29	Screw
5	Maximum pressure spring	30	Screw
6	Minimum pressure spring	32	Screw
7	Cover	33	Screw
8	Plate unit	34*	O-ring
9	Pin	35	Washer
10	Balls holder	36*	Diaphragm
11*	O-ring	37	Plate
12	Ball	38	Washer
13	Spring holder	39	Nut
14	Spring	40	Adjusting nut
15	Body	41	Stem unit
17	Pipe	200	Proximity switch
18*	O-ring	201	Disc
19*	O-ring	202	Nut
20	Guide	203	Bracket
21	Cover		
22	Pin		
23	Spring		
24	Lever		
25	Nut		

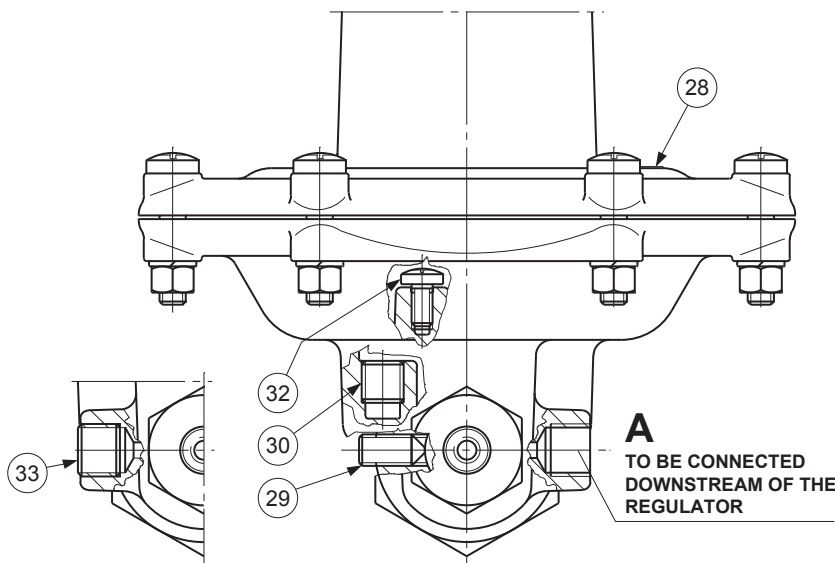
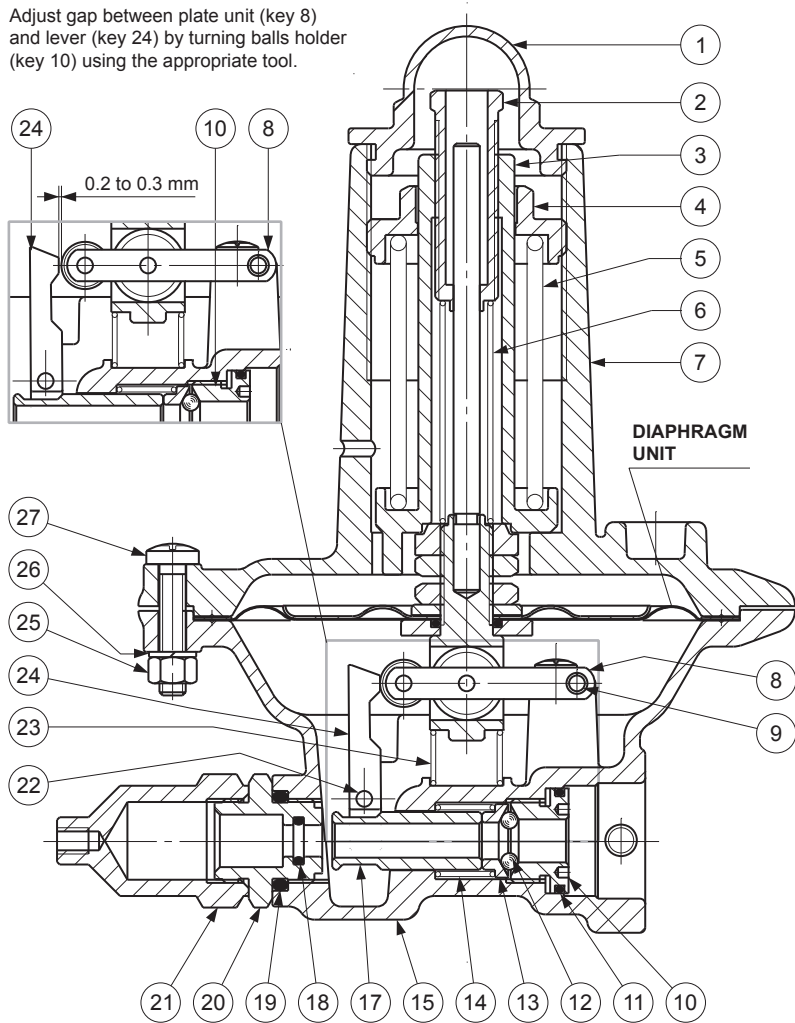
Rubber parts marked with (*) are supplied in the "spare parts kit", recommended as stock.

To order the kit it is necessary to communicate to us the type of the controller and its serial number.

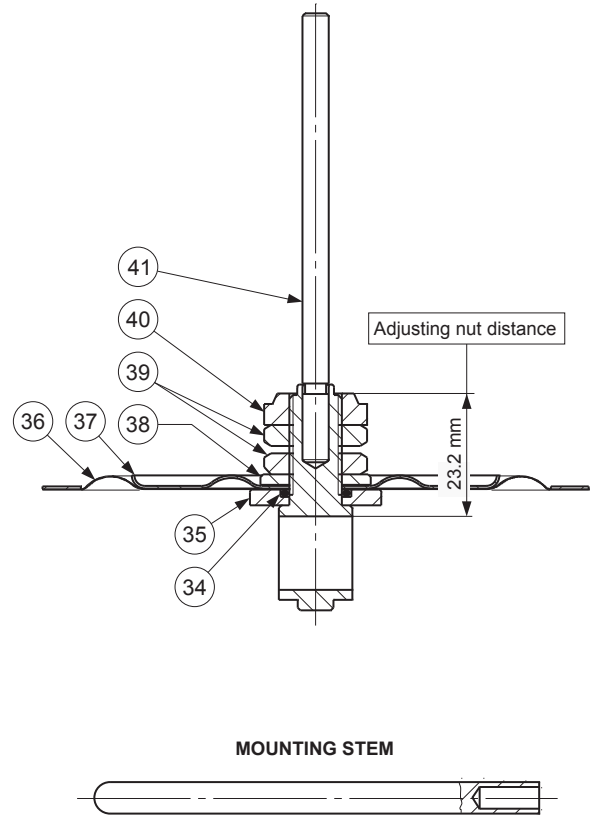
OS/66 Series

SCHEMATIC ASSEMBLIES

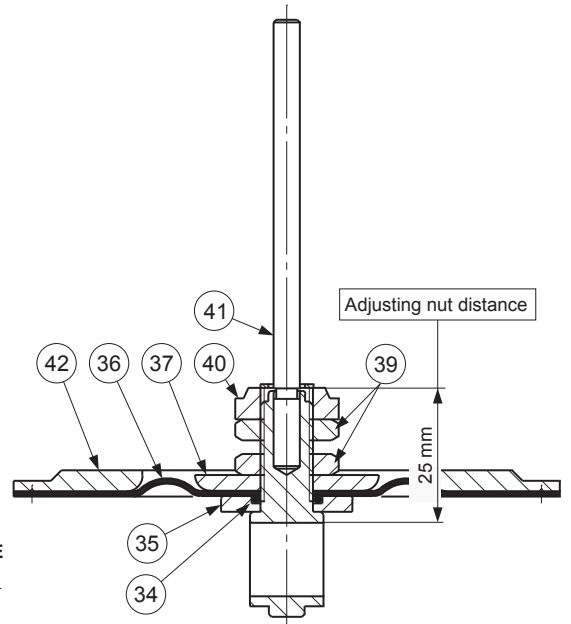
Adjust gap between plate unit (key 8) and lever (key 24) by turning balls holder (key 10) using the appropriate tool.



DIAPHRAGM UNIT OS/66



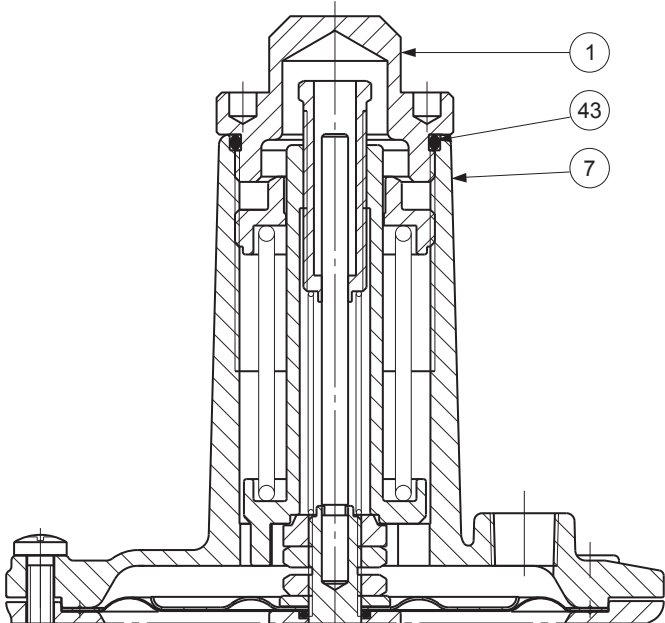
DIAPHRAGM UNIT OS/66-AP



LM/1345

Figure 5. OS/66 Series Slam-Shut Controller

TIGHTNESS COVER VERSION



PROXIMITY VERSION

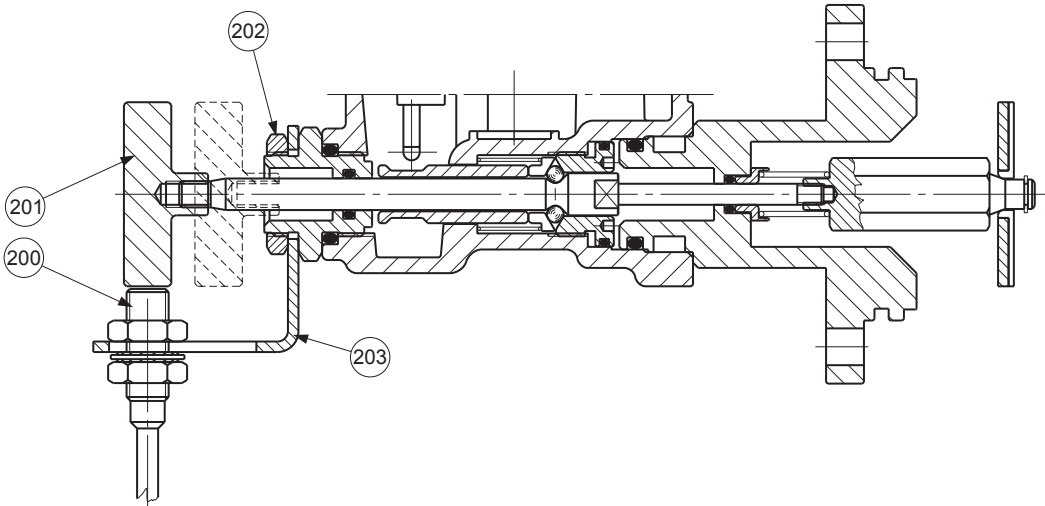


Figure 5. OS/66 Series Slam-Shut Controller (continued)

OS/66 Series

Industrial Regulators

Emerson Process Management Regulator Technologies, Inc.

USA - Headquarters
McKinney, Texas 75070, USA
Tel: +1 800 558 5853
Outside U.S. +1 972 548 3574

Asia-Pacific
Shanghai 201206, China
Tel: +86 21 2892 9000

Europe
Bologna 40013, Italy
Tel: +39 051 419 0611

Middle East and Africa
Dubai, United Arab Emirates
Tel: +971 4811 8100

Natural Gas Technologies

Emerson Process Management Regulator Technologies, Inc.

USA - Headquarters
McKinney, Texas 75070, USA
Tel: +1 800 558 5853
Outside U.S. +1 972 548 3574

Asia-Pacific
Singapore 128461, Singapore
Tel: +65 6777 8337

Europe
O.M.T. Tartarini s.r.l. Via P. Fabbri 1,
I-40013 Castel Maggiore (Bologna), Italy
Tel: +39 051 419 0611
Francel SAS, 3 ave Victor Hugo,
CS 80125 - Chartres 28008, France
Tel: +33 2 37 33 47 00

Middle East and Africa
Dubai, United Arab Emirates
Tel: +971 4811 8100

TESCOM

Emerson Process Management Tescom Corporation

USA - Headquarters
Elk River, Minnesota 55330-2445, USA
Tels: +1 763 241 3238
+1 800 447 1250

Asia-Pacific
Shanghai 201206, China
Tel: +86 21 2892 9499

Europe
Selmsdorf 23923, Germany
Tel: +49 38823 31 287

For further information visit www.emersonprocess.com/regulators

The Emerson logo is a trademark and service mark of Emerson Electric Co. All other marks are the property of their prospective owners. Tartarini is a mark of O.M.T. Officina Meccanica Tartarini s.r.l., a business of Emerson Process Management.

The contents of this publication are presented for informational purposes only, and while every effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. We reserve the right to modify or improve the designs or specifications of such products at any time without notice.

Emerson Process Management Regulator Technologies, Inc., does not assume responsibility for the selection, use or maintenance of any product. Responsibility for proper selection, use and maintenance of any Emerson Process Management Regulator Technologies, Inc., product remains solely with the purchaser.

O.M.T. Officina Meccanica Tartarini S.R.L., R.E.A 184221 BO Cod. Fisc. 00623720372 Part. IVA 00519501209 N° IVA CEE IT 00519501209,
Cap. Soc. 1.548 000 Euro i.v. R.I. 00623720372 - M BO 020330

Francel SAS, SIRET 552 068 637 00057 APE 2651B, N° TVA : FR84552068637, RCS Chartres B 552 068 637, SAS capital 534 400 Euro