Product Data Sheet
VCPDS-16072-US Rev. 1
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Biffi PLA/PLAS Series

Double-Acting and Spring-Return Pneumatic Actuators

Double-acting and single acting pneumatic linear actuators for ON-OFF and regulating service.

BIFFI

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General Application

Biffi PLA/PLAS pneumatic actuators are designed for the automation of gate, globe and all other linear valves.

Technical Data

Design pressure (MAWP):	According to customer specification (max. 174 psi) Contact factory
Supply medium:	Air, nitrogen or sweet gas Sour gas version available

Output thrust:

Biffi PLA:	Double-acting thrust up to 360000 lb / 1600000 N
Biffi PLAS:	Spring ending thrust up to 101000 lb / 450000 N Spring starting thrust 121000 lb / 540000 N
Ambient temperature:	From -76 to 212 °F / -60 to 100 °C

Multi-spring version available on request.

MAWP:	Maximum Allowable Working Pressure is the pressure defined for the design of the actuator pressure containing parts.
MOP:	Maximum Operating Pressure is the pressure that generates the torque used to engineer the mechanical loaded parts of the actuator and it is the one required to produce the Maximum Operating Torque (MOT) of the actuator.

Features

- Electroless nickel plated and polished cylinder for corrosion resistance and minimal friction.
- Hard chromium plated and polished piston rod in stainless steel for corrosion resistance and minimum friction.
- Piston rod support bushing in bronze with sintered Polytetrafluoroethylene (PTFE) provides minimal friction and extended service life.
- Biffi PLAS totally enclosed spring cartridge ensures personnel safety during assembly or disassembly.
- Compact design available to allow space footprint reduction without reducing requested thrust value.
- Fabricated carbon steel adapter spool with accessories provision designed specifically for adaptation to any type of valve.
- Accept an extensive range of accessories:
  - Complete control panel
  - Emergency tank
  - Manual handpump
  - Partial Stroke Test (PST) device
- Special coatings for offshore or corrosive environments.
- Special versions with built-in dump valve and damper for “quick spring operation”.
- Double cylinder available to increase output capability.
- Housing in painted carbon steel.
- Spool in painted carbon steel or unpainted SS316 as option.

Approvals

Safety Integrity Level:	IEC61508 -1÷7 2010 Suitable for use in SIL 3 applications
Area Classifications:	(ATEX) II2GD
Enclosure Standard:	(IEC60529)-IP67M ANSI/NEMA250 NEMA 4-4X-6
Pressure Equipment Directive:	2014/68/UE
Machinery Directive:	2006/42/EC

The following technical information is necessary in order to efficiently select a Biffi PLA or PLAS linear actuator. The thrust table contained in this document represents only an example of the available product range. Please send a request for quotation to biffisales@emerson.com.

Table 1.

Type of valve
Solid wedge
Flexible wedge
Slab gate
Expanding gate
Globe (flow closes)
Globe (flow opens)
Ball (e.g., Orbit)
Others
Stem movement required for closing (*)
Rising valve stem (UPWARDS)
Reverse acting
Descending valve stem (DOWNWARDS)
Direct acting
Required Thrust (*)
Break to Open (BTO)
Running to Open (RTO)
End to Open (ETO)
Break to Close (BTC)
Running to Close (RTC)
End to Close (ETC)
Max. acceptable stem thrust CLOSING
Max. acceptable stem thrust OPENING
Units of measure
Actuator to stop (*)
OPEN position
by THRUST
in POSITION
CLOSE position
by THRUST
in POSITION
Valve total stroke (*)
Units of measure
Minimum BTO/ETC ratio (if required)
Safety factor to be applied to declared thrust values (*)

Actuator supply pressure (*)
Minimum
Normal
Maximum
Units of measure
Actuator fed medium
Air/Sweet gas
Oil
Sour gas (ppm of H_2S)
Type of actuator (*)
Double-acting
Spring-return
Spring action (if applicable) (*)
Close
Open
Failure mode on loss of medium pressure power
Close
Open
Last
Failure mode on loss of control signal
Close
Open
Last
Manual Override
Not required
Jackscrew type
Hydraulic with handpump
Type of valve

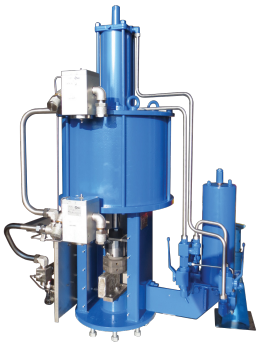
NOTE:
* Mandatory data

Actuator Main Options

MHP Hydraulic Manual Override

The MHP hydraulic manual override is used to manually operate the actuator in lack of air supply. It also allows to accurately adjust the actuator operating times, independently in opening and in closing, by way of the hydraulic regulators which work on the oil flow from one chamber to the other of the hydraulic cylinder during pneumatic operation. Moreover, it permits a smooth angular speed all along the stroke.

Figure 1.



MHW Manual Handwheel (Option)

The handwheel manual override is mounted on the end flange of the pneumatic cylinder and consists of a jackscrew which is screwed into the bronze screw nut mounted in the cylinder end flange.

Mounting Interface

The mounting interface is customizable according to the valve top mounting and control accessories requirements.

Figure 2.

Accessories

Biffi linear valve actuators can be supplied as a basic actuator or can be configured with various control accessories and related features.

Figure 3.

Quick acting version

Special configuration for fast fail action with the IQEV.

Figure 4.

Biffi PLAS Spring-Return Actuator

Figure 5.

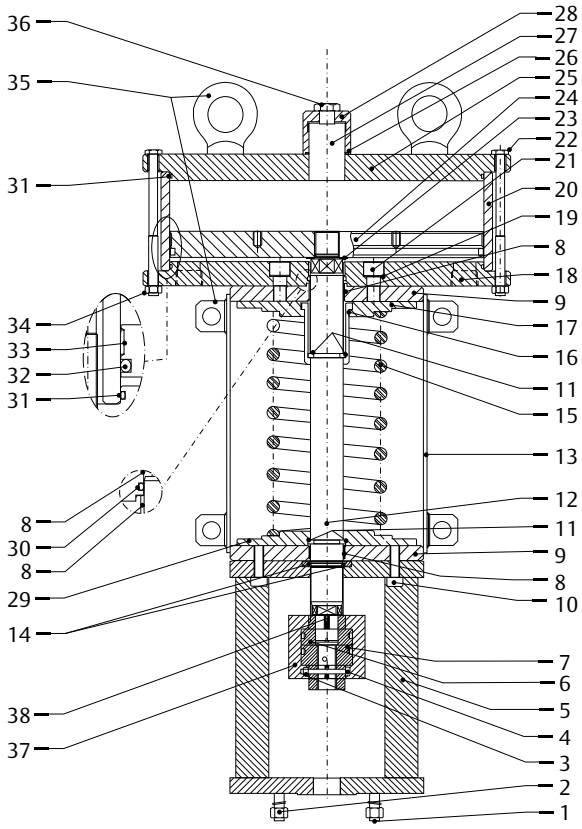


Table 2. Parts List

Item	Description	Item	Description
1	Stud bolt	20	Cylinder tube
2	Nut	21	Screw
3	Nut	22	Screw
4	Screw	23	Connecting device
5	Pedestal	24	Piston
6	Actuator joint	25	End flange
7	Stem valve joint	26	O-ring
8	Bushing	27	Adjusting screw
9	Flange	28	Adjusting screw cover
10	Screw	29	Lower spring flange
11	Retainer ring	30	O-ring
12	Piston rod	31	O-ring
13	External tube	32	O-ring
14	Scraper ring with support	33	Guide sliding piston ring
15	Internal spring	34	Nut
16	Piston rod guide tube	35	Eyebolt
17	Upper spring flange	36	Plug for adj. screw cover
18	Head flange	37	Shell joint
19	Seal washer	38	Spacer

Biffi PLA/PLAS
Selection Guide

Table 3. Pneumatic Double-Acting Actuator

Example		PLA	250K	135	300	MHP/MHW
PLA	Actuator series					
250K	Max. allowable thrust (N)					
135	Cylinder diameter (mm)					
300	Stroke (mm)					
MHP	Manual override					

Table 4. Pneumatic Spring-Return Actuator

Example		PLAS	250K	135	100K	CL	300	MHP/MHW
PLAS	Actuator series							
250K	Max. allowable thrust (N)							
135	Cylinder diameter (mm)							
100K	Spring ending thrust (N)							
CL	Spring action							
300	Stroke (mm)							
MHP	Manual override							

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