

BV

BUTTERFLY VALVES

and

ACTUATORS



TECHNICAL CATALOG
ASSEMBLY-MAINTENANCE CATALOG
SPARE PARTS CATALOG



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This document provides the operating principles, maintenance requirements, and troubleshooting guidance for the valves and actuators.

All products described in this catalog are manufactured in accordance with our quality management procedures.

This catalog may not be reproduced, in whole or in part, without the prior written consent of the manufacturer.

This catalog can not be changed without informing the manufacturer. The latest version of the catalog is accessible at our web site www.ozb-usa.com.

Certificate

Standard **ISO 9001:2015**

Certificate Registr. No. **01 100 1815882**

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Standard **ISO 14001:2015**

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Standard **ISO 45001:2018**

Certificate Registr. No. **01 213 2115861**

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1. TECHNICAL CATALOG



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1.1 BASIC SAFETY WARNINGS:

This manual has been prepared with great care to include all essential considerations regarding operation, calibration, and maintenance under normal working conditions.

1.1.1.General Responsibilities

Buyers and users are solely responsible for ensuring full compliance with all local laws, regulations, and occupational safety requirements applicable in their country or region.

In all cases not specifically covered by this manual, applicable environmental, process, health, and safety regulations shall take precedence.

The manufacturer assumes no responsibility for non-compliance with local legislation or for unsafe operating conditions beyond its control.

1.1.2.Use of this Manual

This manual provides general instructions and recommendations for setup, start-up, operation, and maintenance of the valves and actuators.

It must be kept in an accessible location near the equipment for all operators and maintenance personnel.

The owner or user is responsible for ensuring that this manual is delivered to every person involved in the operation of the system.

1.1.3. Intended Use and Modifications

The system shall be used only for its intended purpose and under normal operating conditions.

Any alteration, modification, or use beyond the stated application without prior written approval of the manufacturer voids all warranties and releases the manufacturer from liability for resulting damages or malfunctions.

1.1.4.Occupational Health and Safety

The user must provide and enforce the use of appropriate personal protective equipment (PPE) such as helmets, gloves, safety glasses, and protective footwear.

During assembly, repair, or cleaning, all necessary measures must be taken to ensure public and workplace safety, prevent environmental harm, and avoid risks to third parties.

The user is responsible for supplying all protective devices and ensuring that the unit is securely fixed before operation.

1.1.5.Electrical Safety

Electrical connections, adjustments, and troubleshooting shall only be carried out by qualified and authorized electricians.

All electrical installations must comply with the applicable electrical standards in the country of use (e.g., IEC, UL, or equivalent).

Before performing maintenance or calibration, switch off electrical power and compressed air supplies.

The power switch must be operated only by authorized personnel to prevent uncontrolled start-up.

The user must ensure that voltage and frequency conform to the system specifications, and that the equipment is properly grounded.

Safety labels and electrical warnings on the control panel must remain clean, visible, and legible at all times.

Electrical faults and their consequences are beyond the manufacturer's control and are not covered by warranty.

1.1.6.Mechanical and Operational Safety

Do not start the unit if it is incomplete, damaged, or improperly installed.

Never reach into or approach the operating area while the system is running.

Keep hands, tools, and objects away from moving parts.

In case further technical information or spare parts are required, always provide the unit's serial number and type as indicated on its identification plate.

1.1.7.Lifting and Transport

All lifting, handling, and transportation operations must be carried out in accordance with this manual and applicable lifting standards.

Use only certified lifting accessories rated for the system's weight and dimensions.

1.1.8.Product Modifications and Updates

The manufacturer reserves the right to modify product specifications without prior notice.

Dimensions and features are nominal and may vary according to project type and configuration.

The latest version of this manual is available upon request from the manufacturer or authorized distributor.

Disclaimer

Unauthorized reproduction or modification of this manual is prohibited.

Always refer to the latest available version to ensure safe and correct operation.

1.2. WARRANTY LIMITATIONS & LIABILITY DISCLAIMER

The manufacturer warrants that the product has been designed and manufactured in accordance with applicable technical standards and quality management procedures.

This warranty is limited to defects in materials and workmanship under normal and intended use, provided that installation, operation, and maintenance are carried out in strict accordance with this manual.

The manufacturer shall not be held liable, and warranty coverage shall be void, in the following cases:

1.2.1.Exclusions from Warranty

The warranty does **not** cover damages, malfunctions, or performance deviations resulting from:

- **Use of non-original or non-approved spare parts**
(including third-party valves, sensors, loadcells, pneumatic components, or electrical accessories)
- **Unauthorized modifications or interventions**
Any mechanical, electrical, pneumatic, or software modification performed without prior written approval of the manufacturer
- **Improper installation**
Including incorrect foundation preparation, piping loads transferred to the tank, incorrect electrical connection, or insufficient pneumatic air quality/pressure
- **Incorrect electrical or pneumatic supply**
 - Voltage, frequency, or phase mismatch
 - Inadequate grounding or missing protective earth
 - Insufficient compressed air pressure, contaminated air, or absence of required FRL units
- **Operation outside defined limits**
Use of the system beyond specified capacity, pressure, temperature, or environmental conditions
- **Lack of preventive maintenance**
Failure to perform routine inspections, cleaning, lubrication, and maintenance as described in this manual
- **External causes**
Including power surges, lightning, flooding, freezing damage, fire, chemical exposure, or force majeure events

1.2.2.Limitation of Liability

The manufacturer shall not be liable for:

- Indirect or consequential damages, including production losses, downtime, or loss of profit
- Damage to third-party equipment or batching plant systems arising from incorrect integration or misuse
- Environmental or safety incidents caused by operation contrary to this manual or applicable regulations

The user is solely responsible for ensuring compliance with all local laws, safety regulations, and environmental requirements applicable at the installation site.

1.2.3.Responsibility of the User

The user shall ensure that:

- Only trained and authorized personnel operate, service, or calibrate the system
- All maintenance and calibration activities are properly documented
- The system is operated exclusively within the limits and procedures defined in this manual

Failure to comply with these requirements releases the manufacturer from any responsibility for resulting damages or malfunctions.

1.3. SAFETY SYMBOLS

These signs are of a warning nature and do not eliminate the risk. These instructions and/or warnings are recommendations, which should be run in conjunction with the latest health and safety directives in accident prevention.



WARNING DANGER

Special indication, provision and prohibition to prevent injury to personnel.



ELECTRICAL POWER DANGER

1.4. UNIT DESCRIPTIONS

OZB butterfly valves can be used in silos, bins, weighing hoppers, inlet and outlet of screw conveyors, and other similar applications for discharging and/or controlling the flow of bulk solid materials.

1.4.1. BV.F Type Butterfly Valves

OZB butterfly valves are designed as single or double flange types and are supplied with patented O-ring channel and seal for maximum impermeability.

- BV1F model: Single flange butterfly valves are designed for use with flexible bellows and similar connections.
- BV2F model: Double flange butterfly valves have the same upper and lower flanges and are designed to be used in systems that have fixed connection with each other.

Butterfly Valves;

- BV.F...NN: with EDPM disc, EPDM seal
- BV.F...CN: with Steel disc, EPDM seal
- BV.F...AF: with Stainless steel disc, Nitrile seal
- BV.F...CV: with Steel disc, Viton seal
- BV.F...AV: with Stainless steel disc, Viton seal valves are available.

1.4.2. BV.FF Type Butterfly Valves

These are mostly used as manual exit valves for silos with cement, gypsum, building chemicals and similar bulk solids.

- BV2FF model: Double flange valve with square upper flange and round bottom flange.
- BV1FF model: Single flange valve with square upper flange while bottom is without flange for sleeve connection.

BVFF type butterfly valves are available in 10" and 12" diameter.

1.5. OPERATION CONDITIONS

Products are not designed to operate in explosive, flammable, toxic, hazardous viral or dangerous bacterial environments and/or materials. If the machine has to operate in these conditions, the manufacturer must be informed.

The appropriate use of the unit according to the food norms should be reported to the manufacturer at order although the unit must be produced accordingly.

Butterfly valves are designed for dry powders. Butterfly valves are not designed to remove the weight of screw feeders, belt conveyors, vibrating feeders, etc. The maximum working pressure of the butterfly valves is 2.9 psi, and the maximum working temperature varies according to type of valve.

Operating temperatures:

- BV.F...NN: -40 / + 248 °F
- BV.F...CN: -40 / + 248 °F
- BV.F...AF: -22 / + 212 °F
- BV.F...CV: -40 / + 392 °F
- BV.F...AV: -40 / + 392 °F

1.6. PRODUCT LABEL

Every unit is supplied with identification plates showing;

- Manufacturer's information
- Manufacturer's web site
- CE and ISO 9001 markings logo
- Product code
- Production place

Do not throw away the labels on the unit and do not change the information on the label. Make sure that labels are clean and legible.



1.7. CODE KEY

1	2	3	4	5
BV	2F	300	N	N

1	Unit Code
---	-----------

2	Type
---	------

3	Diameter
---	----------

4	Disc Type
---	-----------

5	Seal Type
---	-----------

BV	Butterfly Valve
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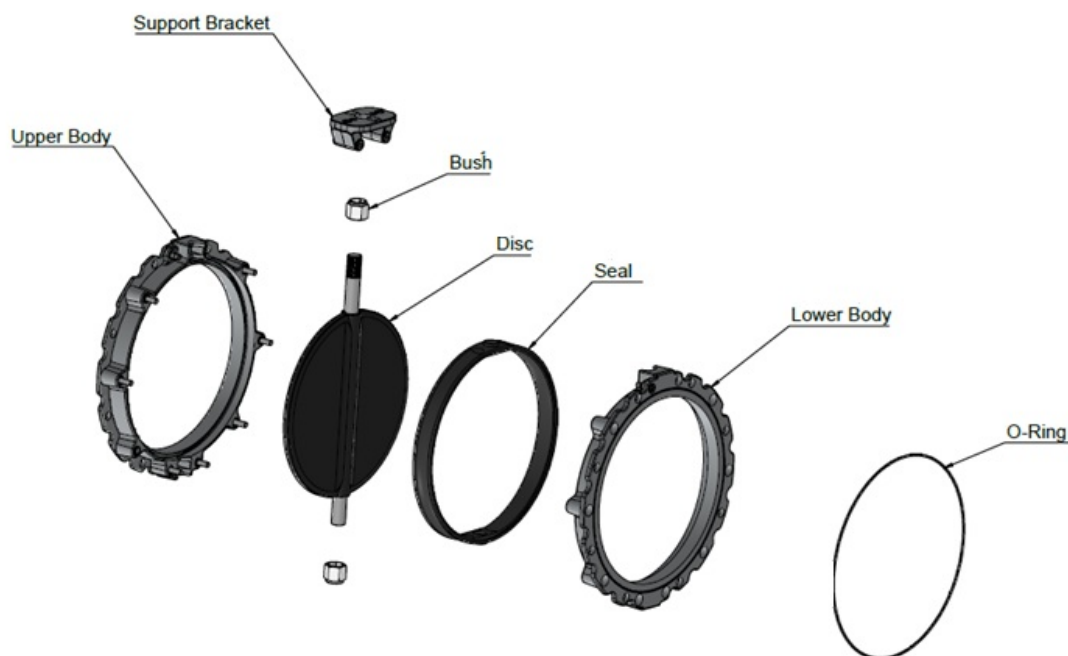
1F	Single Flange
2F	Double Flange

100	4" - 100 mm
150	6" - 150 mm
200	8" - 200 mm
250	10" - 250 mm
300	12" - 300 mm
350	14" - 350 mm
400	16" - 400 mm

N	Complete shaft covered EPDM
A	AISI 304 stainless steel
C	Fe Carbon Steel

N	EPDM
F	Nitrile
V	Viton

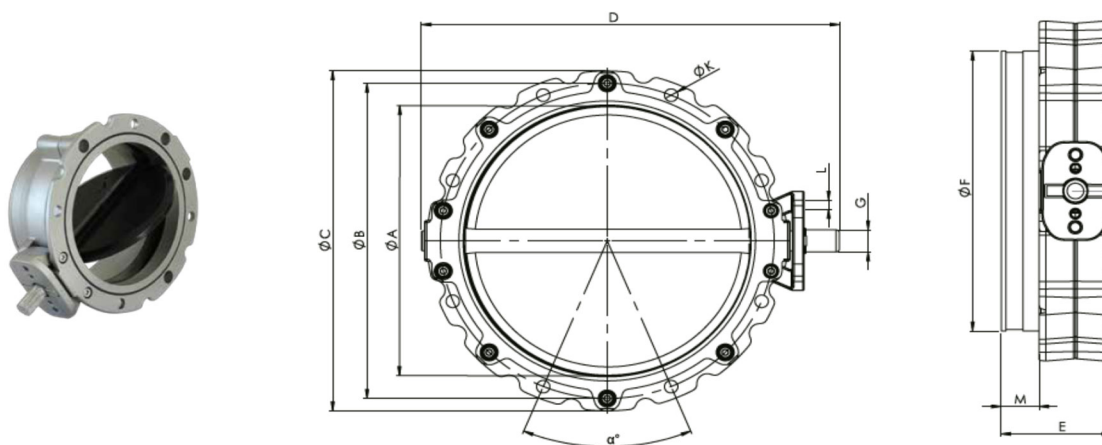
1.8. COMPOSITION



Valve Type	Upper Flange	Lower Flange	Disc	Seal	Bush	Support Bracket
BV.F...NN	Aluminum injection molded alloy	Aluminum injection molded alloy with o-ring channels	Complete disc shaft coated with EPDM	EPDM	Plastic	Aluminum injection molded alloy
BV.F...CN	Aluminum injection molded alloy	Aluminum injection molded alloy with o-ring channels	Carbon Steel	EPDM	Plastic	Aluminum injection molded alloy
BV.F...AF	Aluminum injection molded alloy	Aluminum injection molded alloy with o-ring channels	Stainless Steel	Nitrile	Plastic	Aluminum injection molded alloy
BV.F...CV	Aluminum injection molded alloy	Aluminum injection molded alloy with o-ring channels	Carbon Steel	Viton	Plastic	Aluminum injection molded alloy
BV.F...AV	Aluminum injection molded alloy	Aluminum injection molded alloy with o-ring channels	Stainless Steel	Viton	Plastic	Aluminum injection molded alloy

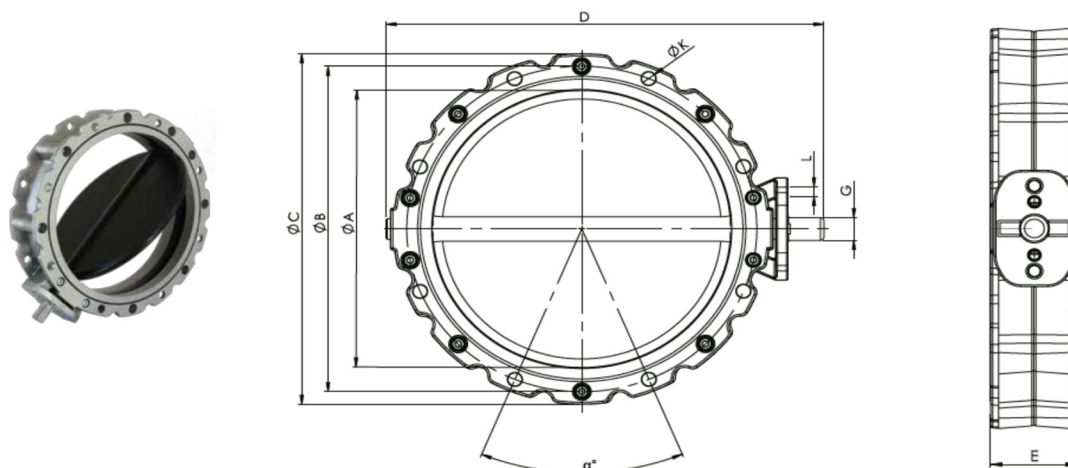
1.9. OVERALL DIMENSIONS

1.9.1. BV1F SINGLE FLANGE BUTTERFLY VALVES



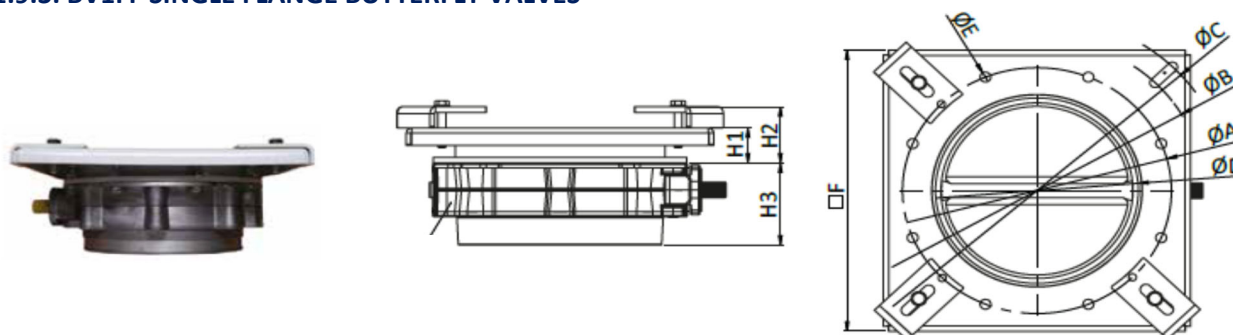
Type	ØA (in)	ØB (in)	ØC (in)	D (in)	E (in)	ØF (in)	M (in)	ØK (in)	L	α	G DIN 5482	Weight (lbs)
BV1F100	4	7.1	8.4	9.8	4.5	4.1	1.5	4 x Ø14	M12	90°	22 x 19	8.8
BV1F150	6	7.9	8.9	11.3	4.5	6.4	1.6	4 x Ø14	M12	90°	22 x 19	9.0
BV1F200	8	9.8	10.9	13.2	4.5	8.4	1.6	4 x Ø14	M12	90°	22 x 19	12.1
BV1F250	10	11.8	12.9	15.2	4.5	10.4	1.6	8 x Ø14	M12	45°	22 x 19	15.7
BV1F300	12	13.8	14.9	17.2	4.5	12.3	1.6	8 x Ø14	M12	45°	22 x 19	20.3
BV1F350	14	15.7	17.2	20.7	4.9	14.3	1.5	8 x Ø14	M12	45°	28 x 25	36.4
BV1F400	16	18.5	19.9	22.8	4.9	16.3	1.5	8 x Ø14	M12	45°	28 x 25	46.3

1.9.2. BV2F DOUBLE FLANGE BUTTERFLY VALVES



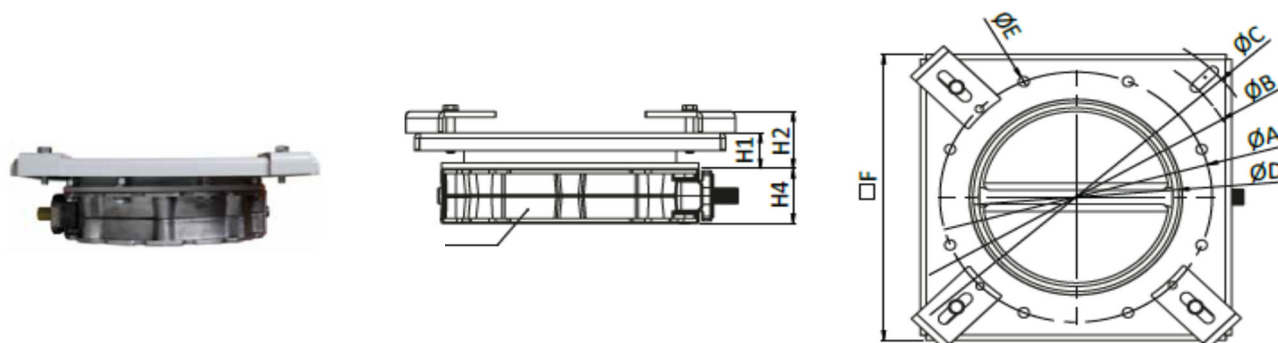
Type	ØA (in)	ØB (in)	ØC (in)	D (in)	E (in)	ØK (in)	L	α	G DIN 5482	Weight (lbs)
BV2F100	4	7.1	8.4	9.8	3.0	4 x Ø14	M12	90°	22 x 19	9.3
BV2F150	6	7.9	8.9	11.3	3.0	4 x Ø14	M12	90°	22 x 19	8.8
BV2F200	8	9.8	10.9	13.2	3.0	4 x Ø14	M12	90°	22 x 19	11.9
BV2F250	10	11.8	12.9	15.2	3.0	8 x Ø14	M12	45°	22 x 19	15.0
BV2F300	12	13.8	14.9	17.2	3.0	8 x Ø14	M12	45°	22 x 19	19.0
BV2F350	14	15.7	17.2	20.7	3.4	8 x Ø14	M12	45°	28 x 25	35.7
BV2F400	16	18.5	19.9	22.8	3.4	8 x Ø14	M12	45°	28 x 25	44.5

1.9.3. BV1FF SINGLE FLANGE BUTTERFLY VALVES



Tip Type	Ø A (in)	Ø B (in)	Ø C (in)	Ø D (in)	Ø E (in)	F (in)	H1 (in)	H2 (in)	H4 (in)	Weight (lbs)
BV1FF250NN	14	17.1	19.7	10.4	0.6	15.7	2.0	3.1	4.5	41.9
BV1FF300NN	16	19.3	21.9	12.4	0.6	17.7	2.0	3.1	4.5	46.3

1.9.4. BV2FF DOUBLE FLANGE BUTTERFLY VALVES



Tip Type	Ø A (in)	Ø B (in)	Ø C (in)	Ø D (in)	Ø E (in)	F (in)	H1 (in)	H2 (in)	H4 (in)	Weight (lbs)
BV2FF250NN	14	17.1	19.7	10.4	0.6	15.7	2.0	3.1	3.0	41.2
BV2FF300NN	16	19.3	21.9	12.4	0.6	17.7	2.0	3.1	3.0	45.9

1.10. ACTUATORS

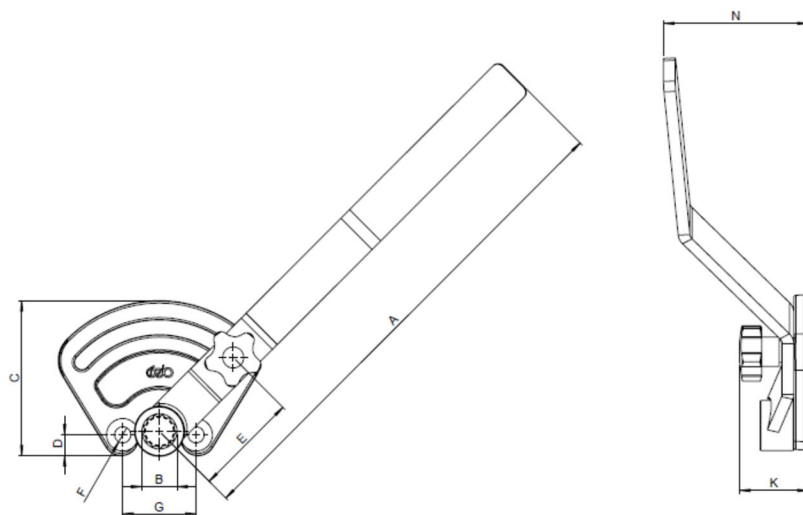
Actuators are used to control the opening and closing of the valves. Butterfly valves can be used with manual or pneumatic actuators as needed. For BVFF type butterfly valves only manual actuator is available.

Actuator Type		Manual		Pneumatic		Microswitch
		ACM13	ACM34	ACP13	ACP34	MS13
BV Butterfly Valves	BV.F100..	X		X		X
	BV.F150..	X		X		X
	BV.F200..	X		X		X
	BV.F250..	X		X		X
	BV.F300..	X		X		X
	BV.F350..		X		X	X
	BV.F400..		X		X	X
BV.FF Butterfly Valves	BV.FF250..	X				
	BV.FF300..	X				

1.10.1. MANUAL ACTUATORS

Specially designed for butterfly valves, ACM series manual levers offers an electro-galvanized coated carbon steel frame for easy and ergonomic grip

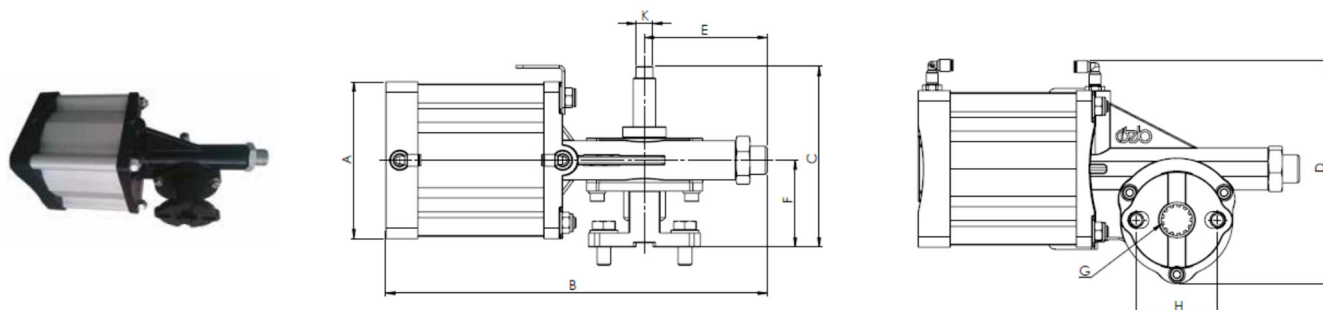
- ACM13 Manual Actuators: For use with butterfly valves of 4" to 12" diameters.
- ACM34 Manual Actuators: For use with butterfly valves of 14" and 16" diameters.



Type	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	G (in)	K (in)	N (in)	Weight (lbs)	
ACM13	13.7	22x19	4.1	0.6	2.8	M10	2.0	1.9	3.9	2.9	
ACM34	13.7	28x25	4.4	0.8	2.8	M12	3.1	1.9	3.9	6.0	

1.10.2. PNEUMATIC ACTUATORS

- **ACP13 Pneumatic Actuators:** It is suitable for use with butterfly valves of 4" – 12" diameters.



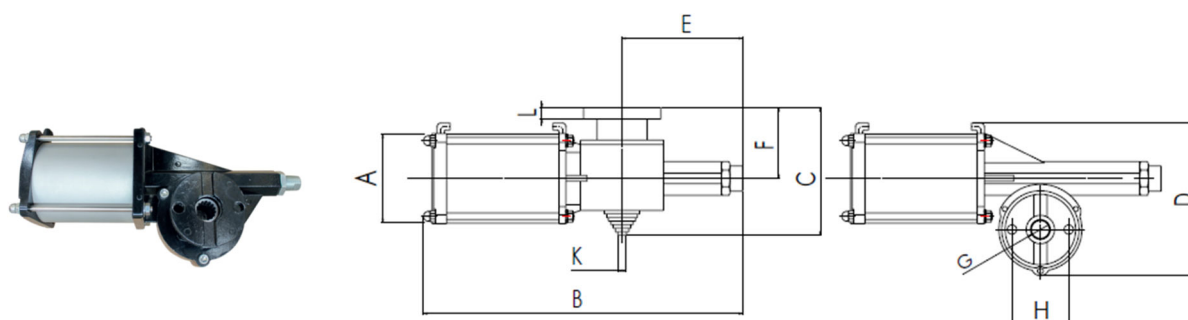
Type	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	G (in)	H (in)	K (in)	Weight (lbs)	Air Consumption @ 87 psi Nlt/Cycle
ACP13	4.4	10.8	5.1	6.3	3.4	2.4	22x19	2.3	0.5	7.9	4,4(x2)

Ambient temperature: -4° F / 176° F

Recommended supply pressure: 87 psi

Max. working pressure: 145 psi

- **ACP34 Pneumatic Actuators:** It is suitable for use with butterfly valves of 14" and 16" diameters



Type	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	G (in)	H (in)	K (in)	ØL (in)	Weight (lbs)	Air Consumption @ 87 psi Nlt/Cycle
ACP34	4.9	17.7	7.1	8.5	6.7	3.9	28x25	3.1	0.5	0.6	18.5	7,1(x2)

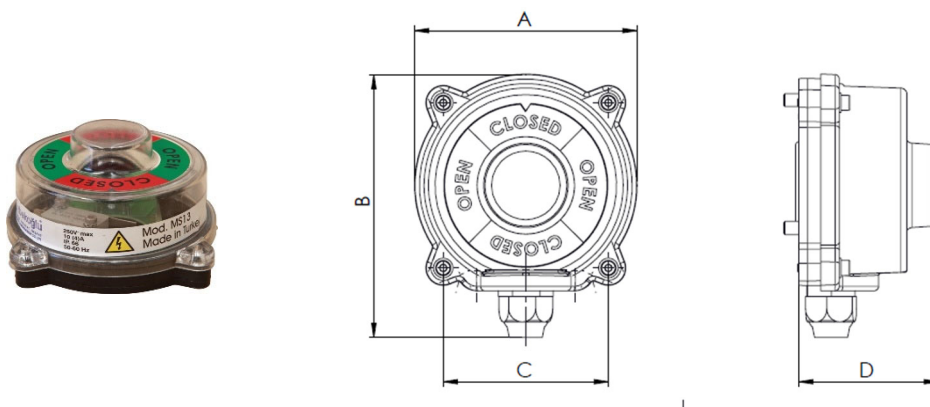
Ambient temperature: -4° F / 176° F

Recommended supply pressure: 87 psi

Max. working pressure: 116 psi

1.10.3 MS MICROSWITCHES

Microswitches are used to detect the physical motion of valve shafts. With their single-piece cam, OZB microswitches offer easy adjustment and reduced risk of adjustment failures.



Type	A (in)	B (in)	C (in)	D (in)	Weight (lbs)
MS13	4.1	4.8	3.0	2.6	0.9

1.11 PACKAGING DIMENSIONS AND WEIGHTS

Package sizes and weights of the units are given below.

When receiving the units; check if the unit code and quantity are compatible with your order. Possible damages must be reported/informed to the authorized person of cargo/transportation company before taking the goods. The manufacturer is not responsible for any damage that may occur during

Type	L (in)	W (in)	H (in)	Weight (lbs)
BV1F100	9.3	9.3	4.7	8.8
BV1F150	9.4	9.4	4.7	9.0
BV1F200	11.2	11.2	5.1	12.1
BV1F250	13.8	13.8	5.1	15.7
BV1F300	15.4	15.4	5.1	20.3
BV1F350	17.9	17.9	5.5	36.4
BV1F400	21.9	21.9	6.1	46.3
BV2F100	9.3	9.3	3.5	9.3
BV2F150	9.4	9.4	3.5	8.8
BV2F200	11.2	11.2	3.5	11.9
BV2F250	13.8	13.8	3.9	15.0
BV2F300	15.4	15.4	3.9	19.0
BV2F350	17.9	17.9	4.1	35.7
BV2F400	21.9	21.9	4.3	44.5
BV1FF250	17.7	17.7	7.1	41.9
BV1FF300	21.7	21.7	7.1	46.3
BV2FF250	17.7	17.7	7.1	41.2
BV2FF300	21.7	21.7	7.1	15.9
ACM13	15.4	5.1	1.8	2.9
ACM34	21.3	6.1	1.8	6.0
ACP13	11.4	5.7	5.3	7.9
ACP34	14.6	6.7	10.6	18.5
MS13	4.7	4.7	3.0	0.4



2.

ASSEMBLY-MAINTENANCE CATALOG



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2.1 SAFETY CONDITIONS AND PROTECTIONS

This section provides essential safety rules and protective measures to be observed during installation, operation, maintenance, and repair of the unit.

This manual must be kept in a location easily accessible to all personnel involved in these activities.

2.1.1. General Safety Responsibilities

The user is responsible for taking all necessary precautions to ensure occupational and public safety in compliance with national laws, EU Directives, and local regulations.

During assembly, repair, or cleaning operations, the requirements of **Machinery Directive 2006/42/EC**, **Low Voltage Directive 2014/35/EU** (replacing 2006/95/EC), and **EMC Directive 2014/30/EU** (replacing 2004/108/EC) must be met.

If hot materials above 140 °F are handled, barriers and warning signs must be installed to protect personnel.

The unit may operate with electrical energy, pressurized air, and dynamic mechanical forces. All related hazards must be controlled before beginning work.

2.1.2. Personnel Requirements

All personnel must be trained, authorized, and qualified for their specific tasks.

- Before performing any operation other than normal use, electrical power and compressed air supplies must be disconnected, all movements stopped, and the system placed in a safe (park) position.
- Only certified electricians are allowed to perform electrical works in accordance with **EN 60204-1:2018**.
- Electrical faults and damages caused by improper workmanship are beyond the manufacturer's responsibility and warranty.

2.1.3. Electrical and Pneumatic Safety

- Verify voltage and frequency compatibility before connection.
- Ensure proper earthing of the product and clean, visible safety labels.
- All operations must comply with **EN 60204-1:2018** requirements
- Pneumatic lines must be assembled to meet the specifications provided in the Technical Catalog.

2.1.4. Personal Protective Equipment (PPE)

Personnel performing maintenance or cleaning must wear the following equipment:

- Antistatic protective clothing
- Protective helmets
- Antistatic cut-resistant gloves
- Safety masks
- Antistatic protective shoes

2.1.5. Safety During Assembly, Maintenance and RepairPost-Assembly Checks

- After assembly, ensure all bolts and connections are tightened, warning labels are in place, and barriers and safety accessories are properly installed.
- Do not start operation if the unit is incomplete or improperly mounted.
- Never approach or interfere with the system while it is operating.

Maintenance Safety

- All maintenance work must be carried out only when the product is in a safe condition.
- Qualified personnel must use proper lifting and stabilizing equipment.
- No person should be present under or near the product during lifting or transportation.
- Always use original spare parts or certified equivalents.
- Failure to comply with these safety requirements may lead to personal injury, equipment damage, or loss of warranty coverage.

General Electrical Requirements

- All wiring must comply with **EN 60204-1:2018** and national electrical standards.
- Ensure correct **phase sequence** and protective **earth (PE)** connection before energizing.
- Use field cables rated $\geq 250 \text{ V AC}$ and $\geq 90 \text{ °C (194 °F)}$ temperature rating.
- Protect the power circuit with a **fuse or circuit breaker** suitable for the nominal load.
- Provide **surge suppression** for relay contacts and inductive loads.
- Verify the voltage and frequency using a voltmeter before applying power.
- Route signal and communication cables separately from power lines to prevent interference.
- Seal all cable glands tightly to maintain **IP protection** level.
- Install a **disconnect switch** close to the device for local isolation.
- Ensure proper **earthing** to avoid static charge, especially when used with non-metallic containers or pneumatic conveying.
- Refer to the connection diagrams below for the specific locations of the Main Power Supply input and External Connection terminals.

2.2 INSTALLATION AND ASSEMBLY

Purpose

This section describes the correct installation procedure of the unit, including mechanical positioning, electrical and pneumatic connections and pre-commissioning checks.

The installation must be carried out only by qualified and authorized personnel, in compliance with applicable local and international safety regulations.

Preparation Before Assembly

- Ensure that all components listed in the packing list have been received and inspected for shipping damage.
- Read the *Safety Conditions and Protections* section before beginning installation.
- Confirm that all personnel are trained and authorized to handle electrical and mechanical assembly tasks.
- Verify that energy sources (electricity, compressed air) are disconnected and secured before any work.

2.2.1. Butterfly Valve Assembly

Butterfly valves are not designed to remove the weight of screw feeders, belt conveyors, vibrating feeders, etc. Please use the deflection which can pass through from upper connector flange, valve, and lower flange to occur form as a sandwich for assembly. Fix the bolts but do not tighten them too much, thus there is no weightlifting function of inside bolts.

Valves with O-ring do not need additional gasket.

Please open or close the butterfly valve only during the materials flow.

Clean the wipe regularly with air or water. This is especially important if the material being worked is to be dried during long pauses and in the case of a chemical reaction.

Butterfly valves have been designed for maximum 100°C temperature.

Material weight on the disk should never be heavier than its static torque. It is difficult to calculate weight due to the variable material specifications. In the standard cone and silos; smaller than 1.3t/m³ bulk density will occur less problems.

For grained, lumpy, and fibrous materials, it is recommended to use a stainless-steel disc.

It is advisable to place a Chinese roof over the valves inside the silo in the ascending product columns.

2.2.2 ACM Manual Actuator Assembly

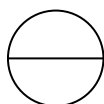
ACM13 is suitable for use with butterfly valves of 4" – 12" diameters, ACM34 is suitable for use with butterfly valves of 14"-16" diameters.

Manual actuator must be assembled when valves disc is completely open or close condition. If not, leakage may occur.

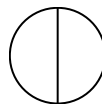
If line on the valve disc shaft in a horizontal position is close, vertical position is open.

The directions of the milled part on the disc shaft on the actuator linkage side are important. The male cutter must be on the top before the actuator is mounted.

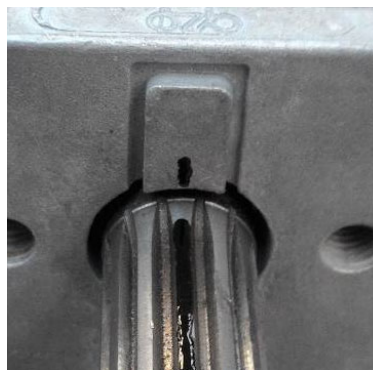
Valve is closed



Valve is opened



The actuator is connected to the valve by bolt with the help of the connection block. The actuator is actuated to check whether the valve is fully open or closed.

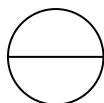


2.2.3 ACP Pneumatic Actuator Assembly

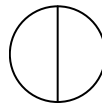
Pneumatic actuator must be assembled when valve disc is completely open or close condition. If not leakage may occur.

If line on the valve disc shaft in a horizontal position is close, vertical position is open.

Valve is closed



Valve is opened



The direction of the milled part on the disc shaft on the actuator linkage side is important. The male cutter must be on the top before the actuator is mounted.



The actuator is connected to the valve by bolt with the help of the connection block.

The incoming compressed air must be dry and clean.

Direction valve must be connected to ACP with bolts.

Incoming air pressure should be maximum 116 psi.

Operating pressure; It is in the range of 65 psi for 4" - 8" diameter valves and 87 – 116 psi for 10" 16" diameter valves.

The actuator is actuated to check whether the valve is fully open or closed.

2.2.4 MS13 Assembly

IP 66 10-250v 16A

Connection: 2 x 14 AWG

Content: Main frame, plastic cover, circuit board, cam assembly parts.

- Open the supply box.
- Dissassemble the actuator covers screws.
- Insert the o-ring into the o-ring channel at the back side of the black plastic body and place the circuit board on the cover.
- Assemble and bolt the body to the actuator body that the shaft is kept inside.

- Insert the two-way cam on the shaft ensuring contact on one of the microswitches, tighten with setscrew.
- Connect the cable as shown on the circuit board.
- Move sure the shaft in the direction of the motion and ensure that the cam register sits on the other microswitch.
- Press the red pointer on shaft to fit properly.
- Close the cover and tighten.

2.3. START-UP

Install the unit properly to the system. Make sure the electrical connection is made properly and tightly. Setting on the assembled unit is not recommended.

Before starting up the unit, make sure that no foreign bodies have entered during assembly if they have, remove them.

Run the machine for max 2-3 minutes to observe and listen. Re-check the product and observe if heating has occurred on any component and/or abnormal noise, vibration occurs.

IMPORTANT: All connections should be undertaken by qualified electrical personnel only. Occupational safety and employee health requirements must be complied with. Before carrying out any operation on the motor, make sure that the electrical supply is disconnected. The constructor declines to take any responsibility for any damages to property or persons, arising from poor electrical workmanship.

2.4. MAINTENANCE

Before maintenance procedures, all power lines must be disconnected.

Prior to each action, check that the energy lines are cut. It is vitally important to take precautions in order to prevent the on/off button of the power supply from being operated without authorization or control.

In case modifications are done without written consent of the manufacturer, no responsibility will be assumed by the manufacturer in case of damages and their consequences.

The product may display different wear and results according to material used and working conditions. Therefore the user is required to develop practices other than those given in this manual.

During the practice of below maintenance notes, situations that may result in harm to humans or machines or which prevent the product from working may occur. All inspections and maintenance must be done when product is in safe position.

Supply and use safety equipment and tools that may be required for worker safety.

Maintenance staff must be fully qualified. Tools for lifting and stabilizing must be used. No humans must be present during lifting and carrying operations.

It is important to use original parts or parts that have the required specifications.

It is possible that problems may occur and the product may be declared out of warranty in case maintenance work is carried out without full compliance to this maintenance guideline.

Before each shift;

Check the unit visually.

Check that the warning labels on the machine are present and in good condition.

Check all the bolts and nuts present and they are tightened.

Check the electric motor cable and the energy connections.

Weekly maintenance;

Check the unit visually.

Check the cables and pneumatic lines, correct any defect.

Check all mechanical functions, abnormal vibrations, sounds and similar.

Yearly Maintenance;

Check the seals for wear, if necessary replace it.

2.5. LUBRICATION

There are not any parts required lubrication.

2.6. REPLACEMENT OF COMPONENTS

If you require spares for your unit, please contact the manufacturer and it is necessary to inform all data such as serial number, type etc. which are written on the machine's plate. Do not use non-original parts.

2.6.1. Replacement Of Seal and Disc



1- Fit the seal on the two sides of disc.



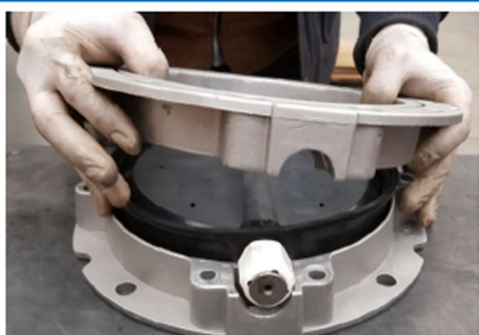
2- Apply oil to the two sides of disc's shaft.



3- Fit bushes on the two sides of disc's shaft.



4- Fit the disc on the lower body of valve.



5- Fit the upper body of valve.



6- Fit the support bracket.



7- Fix bolts and nuts and tighten.

2.7. DEFINING PROBLEMS AND TROUBLE SHOOTING

Below are some guidelines regarding problems that may occur during the operation of the product.

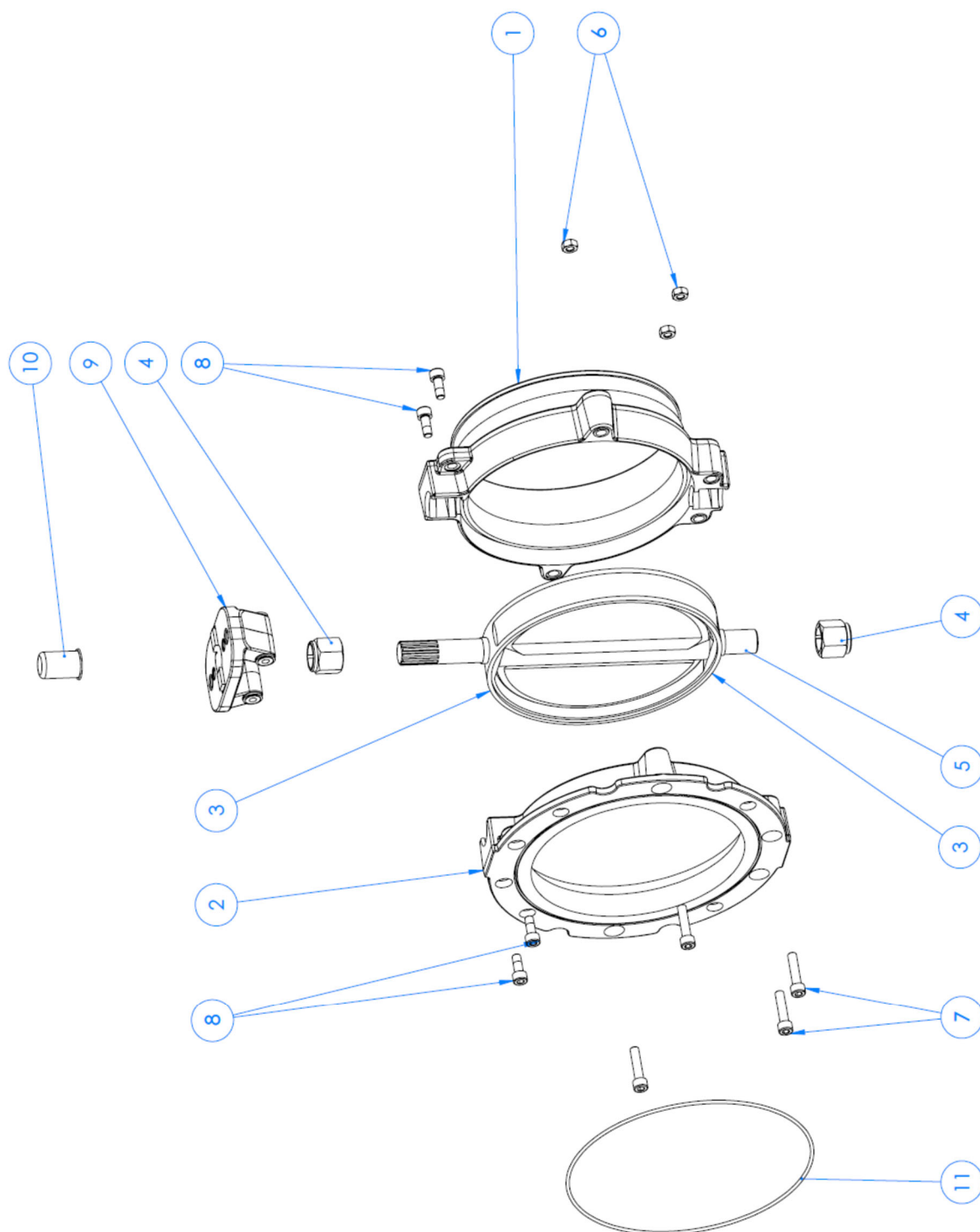
PROBLEM	POSSIBLE CAUSE	SOLUTION
Valve does not open or stays always open	Material has formed a block Material weight is too high Insufficient air pressure Drive unit too weak	Dismantle, clean and reassemble Provide weight relief above valve Check compressed air mains Check mains supply and gear motor
Valve leaks	Valve stays always completely or partly open	Dismantle, clean and reassemble
Valve opens and closes with difficulty	Material has formed a block Material weight is too high Insufficient air pressure Drive unit too weak	Ensure valve works in axis

3.

SPARE PARTS CATALOG

If you should require spares for your unit, please contact with manufacturer and it is necessary to inform all datas such as serial number, type etc. which are written on the machine's plate. Do not use non-original parts.

3.1. BV1F SINGLE FLANGE BUTTERFLY VALVES



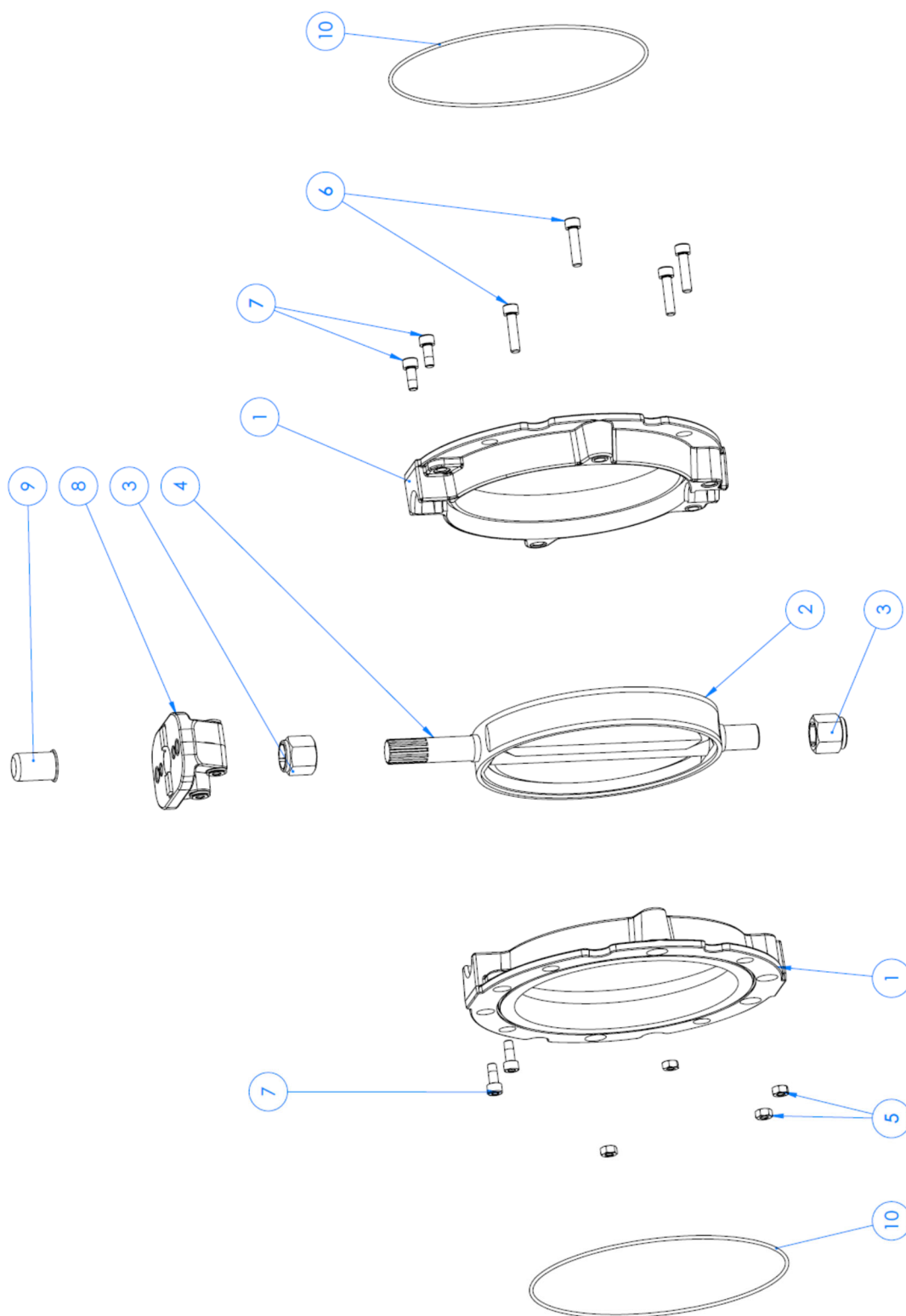
No: 1 Lower Flange	Code		Suitable Valve	No: 2 Upper Flange	Code		Suitable Valve
	BV1F14000020	BVF100N	BV1F100..		BV1F10000010	BVF100S	BV1F100..
	BV1F15000020	BVF150N	BV1F150..		BV1F15000010	BVF150S	BV1F150..
	BV1F20000020	BVF200N	BV1F200..		BV1F20000010	BVF200S	BV1F200..
	BV1F25000020	BVF250N	BV1F250..		BV1F25000010	BVF250S	BV1F250..
	BV1F30000020	BVF300N	BV1F300..		BV1F30000010	BVF300S	BV1F300..
	BV1F35000020	BVF350N	BV1F350..		BV1F35000010	BVF350S	BV1F350..
	BV1F40000020	BVF400N	BV1F400..		BV1F40000010	BVF400S	BV1F400..

No: 3 EPDM Seal	Code		Suitable Valve	No: 3 Nitrile Seal	Kod Code		Suitable Valve	No: 3 Viton Seal	Code		Suitable Valve
	BV1F10000030	BVS100N	BV1F100NN		BV1F10000030F	BVS100F	BV1F100AF		BV1F10000030V	BVS100V	BV1F100AV BV1F100CV
	BV1F15000030	BVS150N	BV1F150NN		BV1F15000030F	BVS150F	BV1F150AF		BV1F15000030V	BVS150V	BV1F150AV BV1F150CV
	BV1F12000030	BVS200N	BV1F200NN		BV1F20000030F	BVS200F	BV1F200AF		BV1F20000030V	BVS200V	BV1F200AV BV1F200CV
	BV1F25000030	BVS250N	BV1F250NN		BV1F25000030F	BVS250F	BV1F250AF		BV1F25000030V	BVS250V	BV1F250AV BV1F250CV
	BV1F30000030	BVS300N	BV1F300NN		BV1F30000030F	BVS300F	BV1F300AF		BV1F30000030V	BVS300V	BV1F300AV BV1F300CV
	BV1F35000030	BVS350N	BV1F350NN		BV1F35000030F	BVS350F	BV1F350AF		BV1F35000030V	BVS350V	BV1F350AV BV1F350CV
	BV1F40000030	BVS400N	BV1F400NN		BV1F40000030F	BVS400F	BV1F400AF		BV1F40000030V	BVS400V	BV1F400AV BV1F400CV

No: 5 EPDM Disc	Code		Suitable Valve	No: 5 Fe Disc	Code		Suitable Valve	No: 5 AISI Disc	Code		Suitable Valve
	BV1F10010000	BVD100N	BV1F100NN		BV1F10031000	BVD100C	BV1F100CN BV1F100CV		BV1F10021001	BVD100A	BV1F100AF BV1F100AV
	BV1F15010000	BVD150N	BV1F150NN		BV1F15031000	BVD150C	BV1F150CN BV1F150CV		BV1F15021001	BVD150A	BV1F150AF BV1F150AV
	BV1F25010000	BVD200N	BV1F200NN		BV1F20031000	BVD200C	BV1F200CN BV1F200CV		BV1F20021001	BVD200A	BV1F200AF BV1F200AV
	BV1F25010000	BVD250N	BV1F250NN		BV1F25031000	BVD250C	BV1F250CN BV1F250CV		BV1F25021001	BVD250A	BV1F250AF BV1F250AV
	BV1F30010000	BVD300N	BV1F300NN		BV1F30031000	BVD300C	BV1F300CN BV1F300CV		BV1F30021001	BVD300A	BV1F300AF BV1F300AV
	BV1F35010001	BVD350N	BV1F350NN		BV1F35031000	BVD350C	BV1F350CN BV1F350CV		BV1F35021001	BVD350A	BV1F350AF BV1F350AV
	BV1F40010001	BVD400N	BV1F400NN		BV1F40031000	BVD400C	BV1F400CN BV1F400CV		BV1F40021001	BVD400A	BV1F400AF BV1F400AV

No: 4 Bush	Code		Suitable Valve	No: 9 Support Bracket For Actuator	Code		Suitable Valve
	620022		BV1F100..		BVR022		BV1F100..
			BV1F150..				BV1F150..
			BV1F200..				BV1F200..
			BV1F250..				BV1F250..
			BV1F300..				BV1F300..
	620028		BV1F350..		BVR028		BV1F350..
			BV1F400..				BV1F400..

3.2 BV2F DOUBLE FLANGE BUTTERFLY VALVES



No: 1 Lower & Upper Flange	Code		Suitable Valve
	BV1F10000010	BVF100S	BV2F100..
	BV1F15000010	BVF150S	BV2F150..
	BV1F20000010	BVF200S	BV2F200..
	BV1F25000010	BVF250S	BV2F250..
	BV1F30000010	BVF300S	BV2F300..
	BV1F35000010	BVF350S	BV2F350..
	BV1F40000010	BVF400S	BV2F400..

No: 2 EPDM Seal	Code		Suitable Valve
	BV1F10000030	BVS100N	BV2F100NN
	BV1F15000030	BVS150N	BV2F150NN
	BV1F12000030	BVS200N	BV2F200NN
	BV1F25000030	BVS250N	BV2F250NN
	BV1F30000030	BVS300N	BV2F300NN
	BV1F35000030	BVS350N	BV2F350NN
	BV1F40000030	BVS400N	BV2F400NN

No: 2 Nitrile Seal	Code		Suitable Valve
	BV1F10000030F	BVS100F	BV2F100AF
	BV1F15000030F	BVS150F	BV2F150AF
	BV1F20000030F	BVS200F	BV2F200AF
	BV1F25000030F	BVS250F	BV2F250AF
	BV1F30000030F	BVS300F	BV2F300AF
	BV1F35000030F	BVS350F	BV2F350AF
	BV1F40000030F	BVS400F	BV2F400AF

No: 2 Viton Seal	Code		Suitable Valve
	BV1F10000030V	BVS100V	BV2F100AV BV2F100CV
	BV1F15000030V	BVS150V	BV2F150AV BV2F150CV
	BV1F20000030V	BVS200V	BV2F200AV BV2F200CV
	BV1F25000030V	BVS250V	BV2F250AV BV2F250CV
	BV1F30000030V	BVS300V	BV2F300AV BV2F300CV
	BV1F35000030V	BVS350V	BV2F350AV BV2F350CV
	BV1F40000030V	BVS400V	BV2F400AV BV2F400CV

No: 4 EPDM Disc	Code		Suitable Valve
	BV1F10010000	BVD100N	BV2F100NN
	BV1F15010000	BVD150N	BV2F150NN
	BV1F25010000	BVD200N	BV2F200NN
	BV1F25010000	BVD250N	BV2F250NN
	BV1F30010000	BVD300N	BV2F300NN
	BV1F35010001	BVD350N	BV2F350NN
	BV1F40010001	BVD400N	BV2F400NN

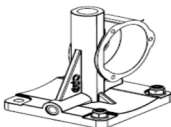
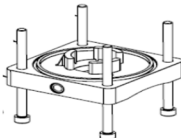
No: 4 Fe Disc	Code		Suitable Valve
	BV1F10031000	BVD100C	BV2F100CN BV2F100CV
	BV1F15031000	BVD150C	BV2F150CN BV2F150CV
	BV1F20031000	BVD200C	BV2F200CN BV2F200CV
	BV1F25031000	BVD250C	BV2F250CN BV2F250CV
	BV1F30031000	BVD300C	BV2F300CN BV2F300CV
	BV1F35031000	BVD350C	BV2F350CN BV2F350CV
	BV1F40031000	BVD400C	BV2F400CN BV2F400CV

No: 4 AISI Disc	Code		Suitable Valve
	BV1F10021001	BVD100A	BV2F100AF BV2F100AV
	BV1F15021001	BVD150A	BV2F150AF BV2F150AV
	BV1F20021001	BVD200A	BV2F200AF BV2F200AV
	BV1F25021001	BVD250A	BV2F250AF BV2F250AV
	BV1F30021001	BVD300A	BV2F300AF BV2F300AV
	BV1F35021001	BVD350A	BV2F350AF BV2F350AV
	BV1F40021001	BVD400A	BV2F400AF BV2F400AV

No: 3 Bush	Code	Suitable Valve
	620022	BV2F100..
		BV2F150..
		BV2F200..
		BV2F250..
		BV2F300..
	620028	BV2F350..
		BV2F400..

No: 8 Support Bracket For Actuator	Code	Suitable Valve
	BVR022	BV2F100..
		BV2F150..
		BV2F200..
		BV2F250..
		BV2F300..
	BVR028	BV2F350..
		BV2F400..

3.3 ACTUATORS

UPPER COVER		
Code	Actuator	
ACP1330000	ACP13	
LOWER COVER		
Code	Actuator	
ACP1340000	ACP13	
SUPPORT BRACKET FOR VALVE		
Code	Actuator	
ACP1300111	ACP13	
BODY PIPE		
Code	Actuator	
ACP1300052	ACP13	
PISTON		
Code	Actuator	
ACP1300040	ACP13	