

# Concentric Butterfly Valve to DIN/EN Lug Type

## PN10, DN40 ~ DN500

## Series 81L(E)-PN10

### Features

- Suitable for use in HVAC, irrigation, industrial applications where positive shutoff is required
- Single through-put shaft provides most economical pricing
- 10 position lever or gear operation
- Alloy material available on request

PMA: See Table A

TMA: See Table B

Selection:

Material of Body:  
CF8M/CF8/CI/DI

### Standards

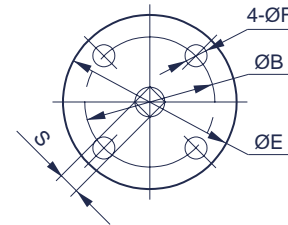
- End dimensions acc. to DIN2633
- Inspection & test acc. to EN12266

### Limitation

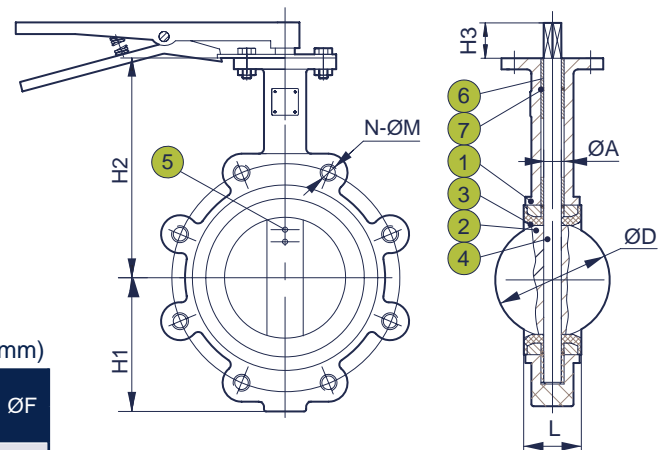
- Do not use EPDM when hydrocarbons are present.
- Kindly anticipate increased torque for PTFE coated disc + PTFE seat option; gear operation recommended for sizes  $\geq 4"$ .
- End-of-line service at half rating

### Options

- Double "half pin" style available for increased performance and lifecycle
- Coated disc available in: rubber, PTFE, nylon



DN40-DN500



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Materials List		
NO	PARTS NAME	MATERIAL
1	BODY	CF8M / CF8 / CI / DI
2	DISC*	CF8M / CF8 / CI / DI
3	SEAT	NBR / EPDM / VITON
4	STEM	SS410
5	TAPER PIN	SS
6	BUSHING	PTFE
7	O-RING	EPDM

\*Coated disc option available.  
Enclosed a condensed table, for complete options, contact DIE ERSTE directly.

Dimensions (mm)

Size		H1	H2	H3	L	ØD	ØC	N-ØM	ØA	S	ØE	ØB	ØF
IN	DN												
1½"	40	70	110	32	35	42.4	110	4-M16	12.7	9	92	70	9
2"	50	76	162	32	45	52.9	125	4-M16	12.7	9	92	70	9
2½"	65	80	175	32	48	64.6	145	4-M16	12.7	9	92	70	9
3"	80	95	181	32	49	79.04	160	4-M16	12.7	9	92	70	9
4"	100	114	200	32	55	104.4	180	8-M16	15.8	11	92	70	9
5"	125	127	213	32	58	129.5	210	8-M16	19.05	14	92	70	9
6"	150	140	225	32	59	155.8	240	8-M20	19.05	14	92	70	9
8"	200	173	260	36	64	202.7	295	8-M20	22.2	17	125	102	11
10"	250	203	292	36	70	250.7	350	12-M20	28.6	22	125	102	11
12"	300	237	337	36	80	301.9	400	12-M20	31.8	22	150	125	13
14"	350	279	368	45	80	333.3	460	16-M20	31.8	22	150	125	13
16"	400	304	400	51	90	389.6	515	16-M20	33.3	22	210	165	22
18"	450	362	422	51	109	439.9	565	20-M24	38.0	27	210	165	22
20"	500	368	479	64	135	491.6	620	20-M24	41.15	27	210	165	22

Table B: Temperature Rating

SEAT	APPLICABLE TEMPERATURE
NBR	-20°C to +80°C(-4°F to 176°F)
EPDM	-20°C to +120°C(-4°F to 248°F)
VITON	-10°C to +200°C(+14°F to 392°F)
PTFE	-20°C to +150°C(-4°F to 302°F)

# Concentric Butterfly Valve to DIN/EN Lug Type

## PN10, DN600 ~ DN1000

## Series 81L(E)-PN10

### Features

- Suitable for use in HVAC, irrigation, industrial applications where positive shutoff is required
- Single through-put shaft provides most economical pricing
- 10 position lever or gear operation
- Alloy material available on request

### Standards

- End dimensions acc. to DIN2633
- Inspection & test acc. to EN12266

### Limitation

- Do not use EPDM when hydrocarbons are present.
- Kindly anticipate increased torque for PTFE coated disc + PTFE seat option; gear operation recommended for sizes  $\geq 4"$ .
- End-of-line service at half rating

### Options

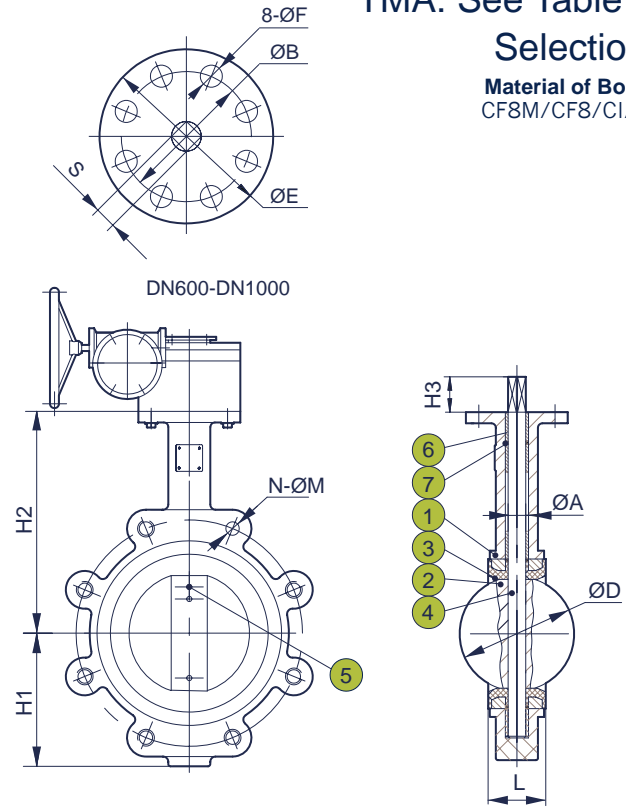
- Double "half pin" style available for increased performance and lifecycle
- Coated disc available in: rubber, PTFE, nylon

PMA: See Table A

TMA: See Table B

**Selection:**

**Material of Body:**  
CF8M/CF8/CI/DI



Materials List		
NO	PARTS NAME	MATERIAL
1	BODY	CF8M / CF8 / CI / DI
2	DISC*	CF8M / CF8 / CI / DI
3	SEAT	NBR / EPDM / VITON
4	STEM	SS410
5	TAPER PIN	SS
6	BUSHING	PTFE
7	O-RING	EPDM

\*Coated disc option available.  
Enclosed a condensed table, for complete options, contact DIE ERSTE directly.

Table A: Maximum Pressure Rating			
SIZE	RUBBER SEAT	PTFE SEAT	PTFE SEAT+ PTFE COATED DISC
$\leq$ DN150 (6")	13.7 bar (200psi)	13.7 bar (200psi)	10.3 bar (150 psi)
DN200 (8")	13.7 bar (200psi)	10.3 bar (150 psi)	10.3 bar (150 psi)
DN250(10")~ DN300(12")	13.7 bar (200psi)	10.3 bar (150 psi)	6.9 bar (100 psi)
DN350(14")~ DN600(24")	10.3 bar (150 psi)	6.9 bar (100 psi)	6.9 bar (100 psi)
$\geq$ DN600 (24")	6.9 bar (100 psi)	-	-
Gear Operation Recommendation	$\geq$ DN300 (12")	$\geq$ DN150 (6")	$\geq$ DN100 (4")

Size		Dimensions (mm)											
IN	DN	H1	H2	H3	L	ØD	ØC	N-ØM	ØA	S	ØE	ØB	ØF
24"	600	444	562	70	156	592.3	725	20-M27	50.65	36	300	254	18
28"	700	520	630	70	156	694.1	840	24-M27	63.35	40	300	254	18
30"	750	621	648	72	169	744.2	-	-	63.35	40	300	254	18
32"	800	590	690	72	169	794.2	950	24-M30	63.35	40	300	254	18
36"	900	623	768	77	211	863.4	1050	28-M30	74.25	53	300	254	18
40"	1000	670	850	77	211	963.4	1160	28-M33	84.2	60	300	254	18

Table B: Temperature Rating	
SEAT	APPLICABLE TEMPERATURE
NBR	-20°C to +80°C(-4°F to 176°F )
EPDM	-20°C to +120°C(-4°F to 248°F )
VITON	-10°C to +200°C(+14°F to 392°F )
PTFE	-20°C to +150°C(-4°F to 302°F )

# Concentric Butterfly Valve to DIN/EN Lug Type

## PN16, DN40 ~ DN500

## Series 81L(E)-PN16

### Features

- Suitable for use in HVAC, irrigation, industrial applications where positive shutoff is required
- Single through-put shaft provides most economical pricing
- 10 position lever or gear operation
- Alloy material available on request

PMA: See Table A

TMA: See Table B

Selection:

Material of Body:  
CF8M/CF8/CI/DI

### Standards

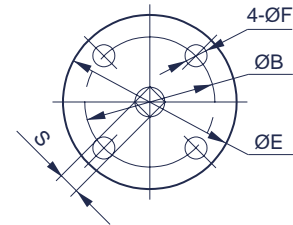
- End dimensions acc. to DIN2633
- Inspection & test acc. to EN12266

### Limitation

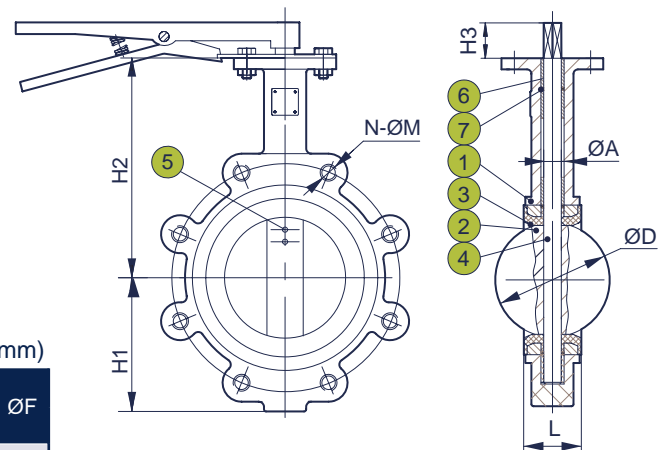
- Do not use EPDM when hydrocarbons are present.
- Kindly anticipate increased torque for PTFE coated disc + PTFE seat option; gear operation recommended for sizes  $\geq 4"$ .
- End-of-line service at half rating

### Options

- Double "half pin" style available for increased performance and lifecycle
- Coated disc available in: rubber, PTFE, nylon



DN40-DN500



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Materials List		
NO	PARTS NAME	MATERIAL
1	BODY	CF8M / CF8 / CI / DI
2	DISC*	CF8M / CF8 / CI / DI
3	SEAT	NBR / EPDM / VITON
4	STEM	SS410
5	TAPER PIN	SS
6	BUSHING	PTFE
7	O-RING	EPDM

\*Coated disc option available.  
Enclosed a condensed table, for complete options, contact DIE ERSTE directly.

Dimensions (mm)

Size		H1	H2	H3	L	ØD	ØC	N-ØM	ØA	S	ØE	ØB	ØF
IN	DN												
1½"	40	70	110	32	35	42.4	110	4-M16	12.7	9	92	70	9
2"	50	76	162	32	45	52.9	125	4-M16	12.7	9	92	70	9
2½"	65	80	175	32	48	64.6	145	4-M16	12.7	9	92	70	9
3"	80	95	181	32	49	79.04	160	8-M16	12.7	9	92	70	9
4"	100	114	200	32	55	104.4	180	8-M16	15.8	11	92	70	9
5"	125	127	213	32	58	129.5	210	8-M16	19.05	14	92	70	9
6"	150	140	225	32	59	155.8	240	8-M20	19.05	14	92	70	9
8"	200	173	260	36	64	202.7	295	12-M20	22.2	17	125	102	11
10"	250	203	292	36	70	250.7	355	12-M24	28.6	22	125	102	11
12"	300	237	337	36	80	301.9	410	12-M24	31.8	22	150	125	13
14"	350	279	368	45	80	333.3	470	16-M24	31.8	22	150	125	13
16"	400	304	400	51	90	389.6	525	16-M27	33.3	22	210	165	22
18"	450	362	422	51	109	439.9	585	20-M27	38.0	27	210	165	22
20"	500	368	479	64	135	491.6	650	20-M30	41.15	27	210	165	22

Table B: Temperature Rating

SEAT	APPLICABLE TEMPERATURE
NBR	-20°C to +80°C(-4°F to 176°F)
EPDM	-20°C to +120°C(-4°F to 248°F)
VITON	-10°C to +200°C(+14°F to 392°F)
PTFE	-20°C to +150°C(-4°F to 302°F)

# Concentric Butterfly Valve to DIN/EN Lug Type

## PN16, DN600 ~ DN1000

## Series 81L(E)-PN16

### Features

- Suitable for use in HVAC, irrigation, industrial applications where positive shutoff is required
- Single through-put shaft provides most economical pricing
- 10 position lever or gear operation
- Alloy material available on request

### Standards

- End dimensions acc. to DIN2633
- Inspection & test acc. to EN12266

### Limitation

- Do not use EPDM when hydrocarbons are present.
- Kindly anticipate increased torque for PTFE coated disc + PTFE seat option; gear operation recommended for sizes  $\geq 4"$ .
- End-of-line service at half rating

### Options

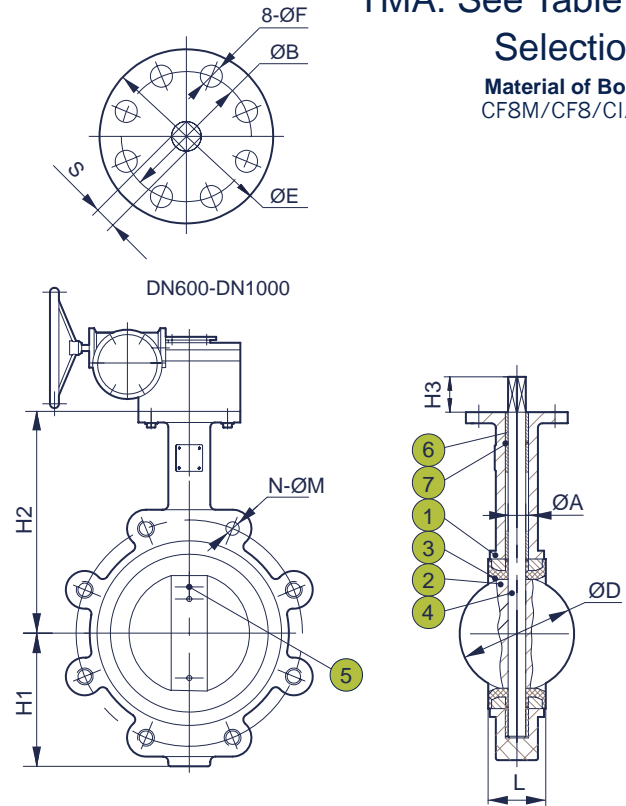
- Double "half pin" style available for increased performance and lifecycle
- Coated disc available in: rubber, PTFE, nylon

PMA: See Table A

TMA: See Table B

**Selection:**

**Material of Body:**  
CF8M/CF8/CI/DI



Materials List		
NO	PARTS NAME	MATERIAL
1	BODY	CF8M / CF8 / CI / DI
2	DISC*	CF8M / CF8 / CI / DI
3	SEAT	NBR / EPDM / VITON
4	STEM	SS410
5	TAPER PIN	SS
6	BUSHING	PTFE
7	O-RING	EPDM

\*Coated disc option available.  
Enclosed a condensed table, for complete options, contact DIE ERSTE directly.

Table A: Maximum Pressure Rating			
SIZE	RUBBER SEAT	PTFE SEAT	PTFE SEAT+ PTFE COATED DISC
$\leq$ DN150 (6")	13.7 bar (200psi)	13.7 bar (200psi)	10.3 bar (150 psi)
DN200 (8")	13.7 bar (200psi)	10.3 bar (150 psi)	10.3 bar (150 psi)
DN250(10")~ DN300(12")	13.7 bar (200psi)	10.3 bar (150 psi)	6.9 bar (100 psi)
DN350(14")~ DN600(24")	10.3 bar (150 psi)	6.9 bar (100 psi)	6.9 bar (100 psi)
$\geq$ DN600 (24")	6.9 bar (100 psi)	-	-
Gear Operation Recommendation	$\geq$ DN300 (12")	$\geq$ DN150 (6")	$\geq$ DN100 (4")

Size		Dimensions (mm)											
IN	DN	H1	H2	H3	L	ØD	ØC	N-ØM	ØA	S	ØE	ØB	ØF
24"	600	444	562	70	156	592.3	770	20-M33	50.65	36	300	254	18
28"	700	520	630	70	156	694.1	840	24-M33	63.35	40	300	254	18
30"	750	621	648	72	169	744.2	-	-	63.35	40	300	254	18
32"	800	590	690	72	169	794.2	950	24-M36	63.35	40	300	254	18
36"	900	623	768	77	211	863.4	1050	28-M36	74.25	53	300	254	18
40"	1000	670	850	77	211	963.4	1170	28-M39	84.2	60	300	254	18

Table B: Temperature Rating	
SEAT	APPLICABLE TEMPERATURE
NBR	-20°C to +80°C(-4°F to 176°F )
EPDM	-20°C to +120°C(-4°F to 248°F )
VITON	-10°C to +200°C(+14°F to 392°F )
PTFE	-20°C to +150°C(-4°F to 302°F )

# Concentric Butterfly Valve to ANSI/ASME Lug Type

## CLASS125/CLASS150, 1½" ~ 20"

## Series 81L(E)-CL125/CL150

### Features

- Suitable for use in HVAC, irrigation, industrial applications where positive shutoff is required
- Single through-put shaft provides most economical pricing
- 10 position lever or gear operation
- Alloy material available on request

PMA: See Table A

TMA: See Table B

Selection:

Material of Body:  
CF8M/CF8/CI/DI

### Standards

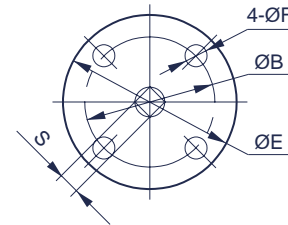
- End dimensions acc. to B16.5 (<28") and B16.47A (≥28")
- Inspection & test acc. to API598

### Limitation

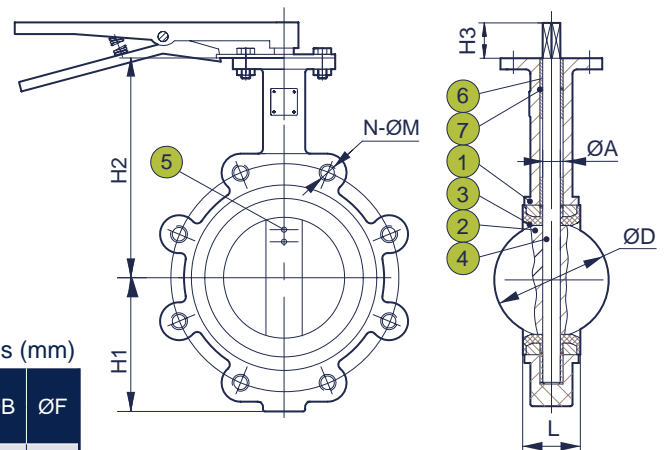
- Do not use EPDM when hydrocarbons are present.
- Kindly anticipate increased torque for PTFE coated disc + PTFE seat option; gear operation recommended for sizes ≥ 4".
- End-of-line service at half rating

### Options

- Double "half pin" style available for increased performance and lifecycle
- Coated disc available in: rubber, PTFE, nylon



DN40-DN500



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Materials List		
NO	PARTS NAME	MATERIAL
1	BODY	CF8M / CF8 / CI / DI
2	DISC*	CF8M / CF8 / CI / DI
3	SEAT	NBR / EPDM / VITON
4	STEM	SS410
5	TAPER PIN	SS
6	BUSHING	PTFE
7	O-RING	EPDM

\*Coated disc option available.  
Enclosed a condensed table, for complete options, contact DIE ERSTE directly.

Dimensions (mm)

Size		H1	H2	H3	L	ØD	ØC	N-ØM	ØA	S	ØE	ØB	ØF
IN	DN												
1½"	40	70	110	32	35	42.4	98.5	4-1/2"-13	12.7	9	92	70	9
2"	50	76	162	32	45	52.9	120.5	4-5/8"-11	12.7	9	92	70	9
2½"	65	80	175	32	48	64.6	139.5	4-5/8"-11	12.7	9	92	70	9
3"	80	95	181	32	49	79.04	152.5	4-5/8"-11	12.7	9	92	70	9
4"	100	114	200	32	55	104.4	190.5	8-5/8"-11	15.8	11	92	70	9
5"	125	127	213	32	58	129.5	216.0	8-3/4"-10	19.05	14	92	70	9
6"	150	140	225	32	59	155.8	241.5	8-3/4"-10	19.05	14	92	70	9
8"	200	173	260	36	64	202.7	298.5	8-3/4"-10	22.2	17	125	102	11
10"	250	203	292	36	70	250.7	362.0	12-7/8"-9	28.6	22	125	102	11
12"	300	237	337	36	80	301.9	432.0	12-7/8"-9	31.8	22	150	125	13
14"	350	279	368	45	80	333.3	476.0	12-1"-8	31.8	22	150	125	13
16"	400	304	400	51	90	389.6	539.5	16-1"-8	33.3	22	210	165	22
18"	450	362	422	51	109	439.9	578.0	16-1½"-7	38.0	27	210	165	22
20"	500	368	479	64	135	491.6	635.0	20-1½"-7	41.15	27	210	165	22

Table B: Temperature Rating

SEAT	APPLICABLE TEMPERATURE
NBR	-20°C to +80°C (-4°F to 176°F )
EPDM	-20°C to +120°C (-4°F to 248°F )
VITON	-10°C to +200°C (+14°F to 392°F )
PTFE	-20°C to +150°C (-4°F to 302°F )

# Concentric Butterfly Valve to ANSI/ASME Lug Type

## CLASS125/CLASS150, 24" ~ 40"

## Series 81L(E)-PN125/CL150

### Features

- Suitable for use in HVAC, irrigation, industrial applications where positive shutoff is required
- Single through-put shaft provides most economical pricing
- 10 position lever or gear operation
- Alloy material available on request

### Standards

- End dimensions acc. to B16.5 (<28") and B16.47A (≥28")
- Inspection & test acc. to API598

### Limitation

- Do not use EPDM when hydrocarbons are present.
- Kindly anticipate increased torque for PTFE coated disc + PTFE seat option; gear operation recommended for sizes ≥ 4".
- End-of-line service at half rating

### Options

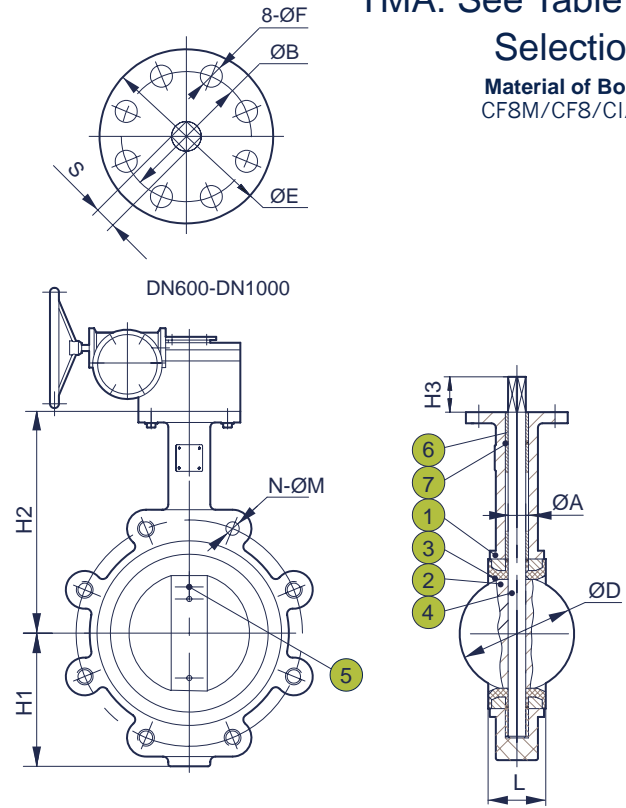
- Double "half pin" style available for increased performance and lifecycle
- Coated disc available in: rubber, PTFE, nylon

PMA: See Table A

TMA: See Table B

**Selection:**

**Material of Body:**  
CF8M/CF8/CI/DI



Materials List		
NO	PARTS NAME	MATERIAL
1	BODY	CF8M / CF8 / CI / DI
2	DISC*	CF8M / CF8 / CI / DI
3	SEAT	NBR / EPDM / VITON
4	STEM	SS410
5	TAPER PIN	SS
6	BUSHING	PTFE
7	O-RING	EPDM

\*Coated disc option available.  
Enclosed a condensed table, for complete options, contact DIE ERSTE directly.

Table A: Maximum Pressure Rating			
SIZE	RUBBER SEAT	PTFE SEAT	PTFE SEAT+ PTFE COATED DISC
≤ DN150 (6")	13.7 bar (200psi)	13.7 bar (200psi)	10.3 bar (150 psi)
DN200 (8")	13.7 bar (200psi)	10.3 bar (150 psi)	10.3 bar (150 psi)
DN250(10")~ DN300(12")	13.7 bar (200psi)	10.3 bar (150 psi)	6.9 bar (100 psi)
DN350(14")~ DN600(24")	10.3 bar (150 psi)	6.9 bar (100 psi)	6.9 bar (100 psi)
≥ DN600 (24")	6.9 bar (100 psi)	-	-
Gear Operation Recommendation	≥ DN300 (12")	≥ DN150 (6")	≥ DN100 (4")

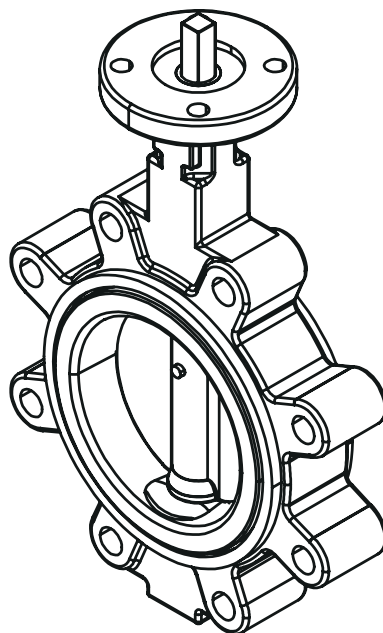
Size		Dimensions (mm)											
IN	DN	H1	H2	H3	L	ØD	ØC	N-ØM	ØA	S	ØE	ØB	ØF
24"	600	444	562	70	156	592.3	749.5	20-1¼"-7	50.65	36	300	254	18
28"	700	520	630	70	156	694.1	-	-	63.35	40	300	254	18
30"	750	621	648	72	169	744.2	914.5	28-1¼"-7	63.35	40	300	254	18
32"	800	590	690	72	169	794.2	-	-	63.35	40	300	254	18
36"	900	623	768	77	211	863.4	1086.0	32-1½"-6	74.25	53	300	254	18
40"	1000	670	850	77	211	963.4	-	-	84.2	60	300	254	18

Table B: Temperature Rating	
SEAT	APPLICABLE TEMPERATURE
NBR	-20°C to +80°C(-4°F to 176°F)
EPDM	-20°C to +120°C(-4°F to 248°F)
VITON	-10°C to +200°C(+14°F to 392°F)
PTFE	-20°C to +150°C(-4°F to 302°F)

# Concentric Butterfly Valve

## Series 81W(E)/81L(E)/81F(E)

Installation, Operation,  
& Maintenance Manual





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## Chapter I

# Introduction

The manual is provided to ensure proper installation, operation & maintenance for Concentric Butterfly Valve, Series 81L(E)/81W(E)/81F(E), manufactured and supplied by Die Erste Industry Co., Ltd. The valves are identified by marking on the body or on a name plate or both.

### 1.1 Contact Information

For information concerning warranties, or for questions pertaining to installation, operation or maintenance of DIE ERSTE products, contact:

DIE ERSTE INDUSTRY CO., LTD.  
5F-1, No.936, Sec. 4, Wen-Xin Road,  
Taichung City, Taiwan 406

Phone: +886 4 22310059  
Fax: +886 4 22360236  
Email: sales@die-erste.com

To order replacement parts, contact DIE ERSTE sales at address listed above.

### 1.2 General Notes

The following instructions refer to DIE ERSTE Series Concentric Butterfly Valve, Series 81L(E)/81W(E)/81F(E) (81(E)L for Lug Type End, 81W(E) for Wafer Type End and 81F(E) for Double Flanged End) as described in the DIE ERSTE current catalog.

Keep the protective covers in place until the valve is ready for installation. Valve performance depends upon prevention of damage to the disc and seat surfaces. After removing the cover make sure that the valve is completely open and free of obstructions, dirt, particles or any materials that may cause seat or seal damage.

Valves may contain a silicon-based lubricant for transportation, which aids in the assembly of the valve. Lubricant may be removed with a solvent if found objectionable. Alternatively valves can be ordered free of lubricants upon request.

Certain ferrous valves contain phosphate material,

and are oil dipped during the course of manufacture. However, the processes used are completely non-toxic.

### 1.3 Precautions and Warnings

Choose the correct material of valve for different applications before obtaining the valve. The user should be aware of the operating situation, fluid properties, and the possible outcomes when implementing valves into the pipeline system. DIE ERSTE suggests that the user should make estimation beforehand.

Exceeding the pressure or temperature limitations marked on the name plate may cause damage and lead to uncontrolled pressure release. The practical and safe use of the valve is determined by both the body and seat ratings due to variety of seat and body materials. Please check both rating before installing to prevent valve damage and possible injury of personals.

For safety concern, unstable fluid should not be used in the pipeline system, unless otherwise specified with the category III in Declaration of conformity.

#### CAUTION:

Before removing valve from pipeline, operator should be aware of that: media flowing through the valve may be corrosive, toxic, flammable, or of a contaminant nature. Where there is evidence of harmful fluids having flowed through the valve, the utmost care must be taken. It is suggested that the following safety precautions should be taken when handling valves.

- 1) Always wear eye shields.
- 2) Always wear gloves and footwear.
- 3) Wear protective headgear.
- 4) Ensure that running water is readily accessible.
- 5) Fire extinguisher must be obtainable if media is flammable.

Check the line gauge to ensure that no pressure is present at the valve. Ensuring media is released by operating valve slowly to the half open position. Ideally, the valve should be decontaminated when the disc is in the half open position.

**1.4 Storage**

If the valves are not to be installed immediately, please store the valve carefully before installation, preferably indoors in a dry and clean place.

Also, the valve ports should be sealed by caps or plastic paper to prevent dirt from entering and damaging inner parts.

**Note:**

Place the disc flap approximately five (5) degrees to the open position. Open storage is not allowed.

**Chapter II**  
**Installation**

Flush the pipeline carefully before installing the valve. The particles of dirt or debris or welding may damage the disc sealing surface and seats. Also, before installing, check all valve and mating flanges to ensure gasket surfaces are free from defects.

The butterfly valve shall be installed between two mating flanges. Before installing the valve in the line, fully close the valve to prevent the damage of collision between disc and mating flanges.

**⚠ CAUTION:**  
 Do not exceed the valve performance limitation.

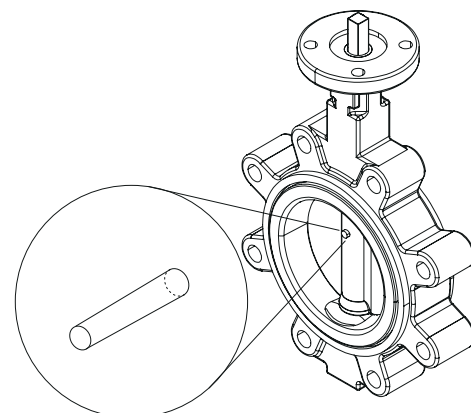
**⚠ CAUTION:**  
 Before installing, make sure the line pressure has been relieved, and any hazardous fluids have been drained or purged from the system.

**⚠ CAUTION:**  
 Before installation, check that the media used is consistent with the performance of the butterfly valve.

**2.1 General Notes**

1) Direction

Standard 81(E) Series Butterfly Valves are generally bi-directionally sealed unless otherwise specified. If possible, we recommend that the larger side of the taper pin cross section be oriented upstream to avoid unnecessarily leakage.



**Figure 2.1. Taper pin on the Disc**

**Note:**

An upside-down position may cause the particles or dirt to enter the body cavity, and thus damage the stem packing.

**2) Position**

The butterfly valve is mostly recommended to be installed with the stem in the vertical position.

**3) Fittings**

Select the correct size of fittings according to the pipeline specification. Tighten the valve to the pipeline adequately with appropriate bolts. Do not attempt to correct pipeline misalignment by means of flanged bolting.

**4) Systems hydrostatic test**

Before delivery, valves are tested 1.5 times the allowable pressure at ambient temperature in OPEN position. However, after installation, the piping system may be subject to system tests, as condition not to exceed the marking pressure.

**5) Pre-Installation Wash**

Before the valve installation, clean the pipeline system to remove any foreign deposits by water. Clean the connecting flanged end surfaces as well to ensure tight sealing.

**2.2 Installation of Ends**

**1) Wafer Ends (81W(E))**

The wafer type butterfly valve should be centered between flanges to prevent any damage to the disc or shaft which could be caused by the disc striking the pipe wall.

Some sizes of Series 81W(E) with wafer ends, contain holes on valve body to ONLY help to align to mating flanges properly when installing to the pipeline. Note that the alignment holes or grooves do not apply to any pipe pressure.

The flange or pipe, if required, must be welded prior to the installation of the valve. If it cannot be done, a protective cover screen should be placed between the valve and welding part.

**2) Lug Ends (81L(E))**

Do not disassemble lug end valves before installation. Note that the taper threaded fitting should not be over tightened.

**⚠ CAUTION:**

If the lug end valve is installed at the end of the pipeline, it is necessary to mate the corresponding flange at the downstream end to make the force on the resilient seat uniform and symmetrical. If the seat is not uniformly loaded, it may lead to valve failure and leakage.

**3) Double Flanged Ends (81F(E))**

The general installation guides are the following:

1. Before installing the valves, make sure the flanges and the pipe are free from grit, dirt or burrs.
2. The flanges must be aligned and parallel with the correct distance to allow the valve face-to-face dimension and gaskets to fit between.
3. Tighten the flange bolts, with a torque value determined by the gasket manufacturer, other variables like gasket type and material, bolt, flange and lubricant affect the tightening torque values.
4. Note: bolts tightening must be uniform in order to create a parallel movement of the two flanges and uniform deformation of the gasket in between them.
5. Before pressure testing the valves, bring the valves to the half OPEN position to ensure pressure reaches the stem seals and to avoid unnecessary loading of the seats. Fail-to-close actuated valves should be brought to the half-OPEN position.

**2.5 Pneumatic and Electrical Connections**

Although there is a ISO 5211 mounting pad on the Series 81(E) Butterfly Valve, it is mainly designed for manual and gearbox operation. We don't recommend the valve is applied to actuation automation. If frequent ON/OFF operation is required in the application of the valve, we recommend that you use our Standard 81 Series Butterfly Valves, or contact your DIE ERSTE personnel.

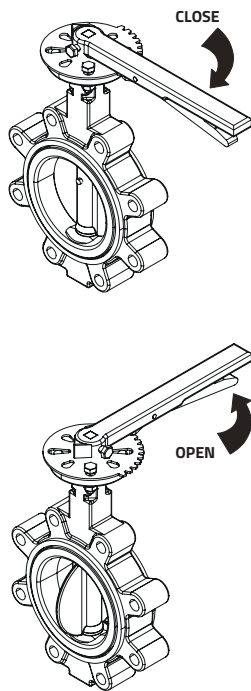
## Chapter III

# Operation

For manual operation, shift the handle in counter-clockwise direction for CLOSED and clockwise for OPEN.

If the handle is in parallel position with the flow direction, the valve is OPEN. If the handle is in right angle position with the flow direction, the valve is CLOSED.

When installing actuator or the valve is operated with removable handle, the user should ensure the position of the valve whether open or close. The below Figure 3.1 provides the visual understanding of above explanation.



**Figure 3.1** Rotation Direction for CLOSED and OPEN position

**Note:**

Please identify the ON/OFF status of the valve according to the direction of the disc, and then place the handle in the corresponding position. Never install the handle in the pipeline without knowing the valve ON/OFF status. The wrong installation of the handle may lead to safety incidents.

### 3.1 Handling

During the butterfly valve installation, it must follow the procedure to handle at the both side of the bodies. If using cable for big size valve, make sure the cable must be strong enough to ensure the safety during the installation.

Never lift the valve package by the actuator, positioner, limit switch or their piping. Valve damage or personal injury may occur from falling parts.

### 3.2 Cleaning

Even though the valves were transported under a clean environment, operator must check if there is any foreign body or dusts inside the bore. If present, clean the valve before installation. Operator may clean the valves by water, compression air, or steam. However, valve automation devices shall be cleaned only with water or steam, using compression air to clean the valve automation devices is strictly prohibited. For cleaning operation, first step is put the valve bore perpendicular to the ground and clean, ensure all the dusts are removed from the bore. The second step is to check and clean all the connecting pipe bore and connection area. No flush, rust and foreign bodies are allowed to avoid the blocking and leakage.

### 3.3 Manual Operation

DIE ERSTE Concentric Butterfly Valve, Series 81L(E)/81W(E)/81F(E) have ¼ turn operation opening in a counter-clockwise direction. When the handle is positioned across the pipeline, this indicates that the valve is closed. When the handle is positioned parallel with the pipeline, this indicates the valve is open.

### 3.4 Remote Operation

Although there is a ISO 5211 mounting pad on the Series 81(E) Butterfly Valve, it is mainly designed for manual and gearbox operation. We don't recommend the valve is applied to actuation automation. If frequent ON/OFF operation is required in the application of the valve, we recommend that you use our Standard 81 Series Butterfly Valves, or contact your DIE ERSTE personnel.

# Chapter IV: Maintenance

**⚠ CAUTION:**  
Do not dismantle the valve or remove it from the pipeline while the valve is pressurized.

## 4.1 General Notes

Routine maintenance includes regular valve opening and closing. Long-term closed status without opening may cause the valve too much torque to open properly.

## 4.2 Maintenance Frequency

The maintenance frequency is determined based upon the application of the valve. User should consider the following factors when determining the maintenance time internally: fluid type, flow velocity, operation frequency, pressure and temperature.

**Note:**  
For the Concentric Butterfly Valve, Series 81L(E)/81W(E)/81F(E), DIE ERSTE recommends inspecting the valve at least every (1) year.

**Note:**  
Please use the original spare parts to ensure the valve functions well.

**Note:**  
When sending back the valve to DIE ERSTE for investigation, do not disassemble it. Clean the valve carefully and flush the valve internals. If possible, inform us about the medium used in the valve.

**⚠ CAUTION:**  
Pipeline and valve must be depressurized by shutting off the valve and bleed line, cycle the valve once and leave it half open to relieve the pressure from the body cavity.

## 4.3 Assembly

1. Place valve in its full open position, remove handle or operator.
2. Remove Taper Pin (5). (Pins will have to be re-

placed).

3. Remove the Stem (4) from Body (1).
4. Remove the Disc (2) from Seat (3) and store in such a manner so as to not to damage its sealing surface. (If damaged, disc and stem must be replaced.)
5. Remove the Seat (3) from body.

## 4.4 Reassembly

1. Inspect and clean all parts to be used.
2. Insert the Disc (2) into the Seat (3) with aligning stem holes.
3. Press the Seat (3) into the Body (1) with aligning stem holes.
4. Insert the Stem (4). Take care not to dislodge and or damage the Seat (3).
5. Close the valve and align the pin hole on center part of the Disc (2) and the pin hole on the Stem (4).
6. Place Taper the Pin (5) and knock the pin into place.
7. Clean valve free of shavings.

## 4.5 Troubleshooting

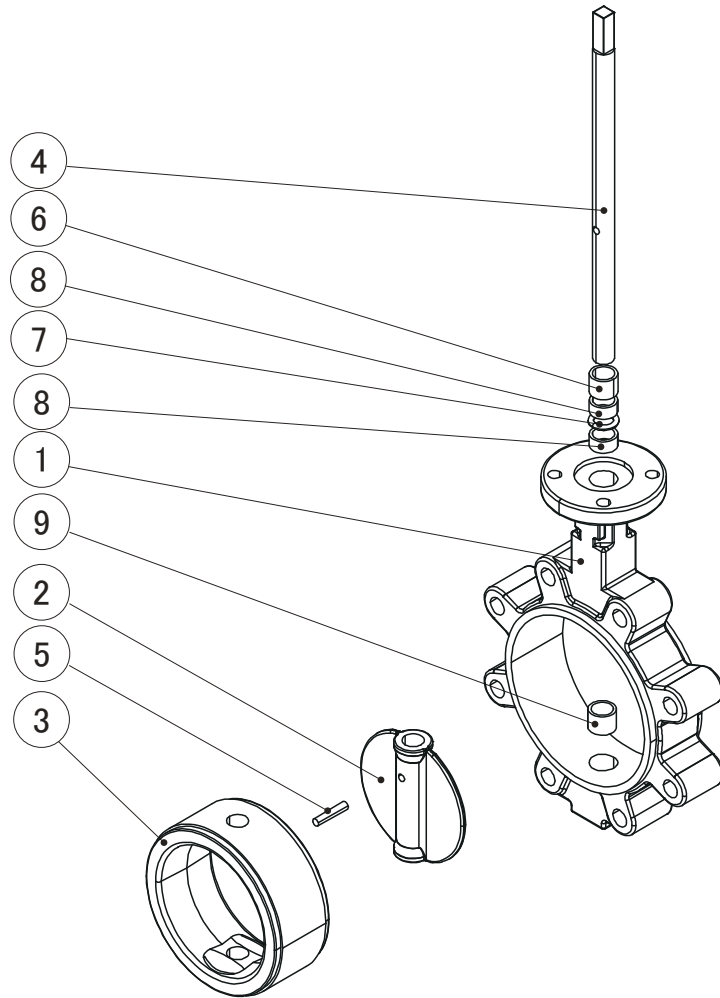
The following table lists the possible malfunctions.

**Table 4.1 Troubleshooting Table**

Symptom	Possible fault	Actions
Leakage through a closed Valve (Internal Leakage)	Disc edge wear or damage	Clean and/or repair disc edge
	Seat wear or damage	Adjust or replace valve seat
Valve leaking from shaft (External Leakage)	O-ring is worn or damaged	Clean stem bore and replace O-Ring
	Pin off	Knock the pin into place
Valve too hard to operate	Foreign material in valve	Remove obstructions
Operator fails	Adaptor is sheared	Replace the adaptor and check the torque of operator
	Taper pin is sheared	Replace the pin and check the torque of operator
	Gear Operator fails	See the manual of gear operator

**4.6 Technical Data and Product Information**

**Series 81(E)**



NO	PART NAME	MATERIAL
1	Body	
2	Disc	
3	Seat	
4	Stem	
5	Taper Pin	
6	Upper Bushing	
7	O-Ring	
8	O-Ring Bushing	
9	Lower Bushing	

NO	PART NAME	MATERIAL