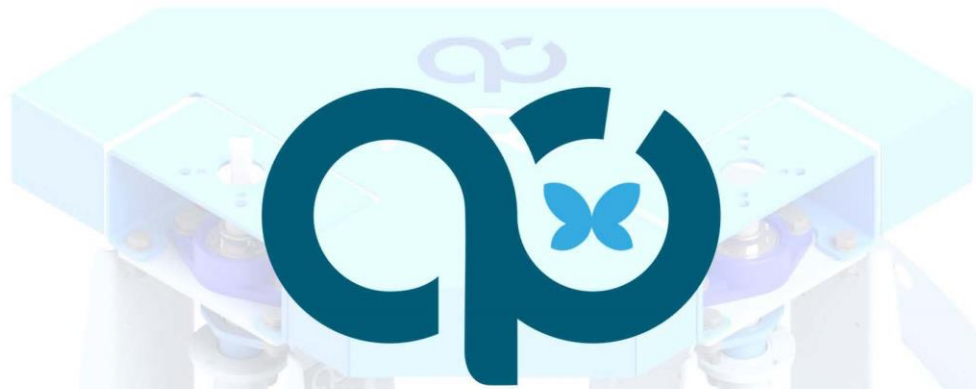


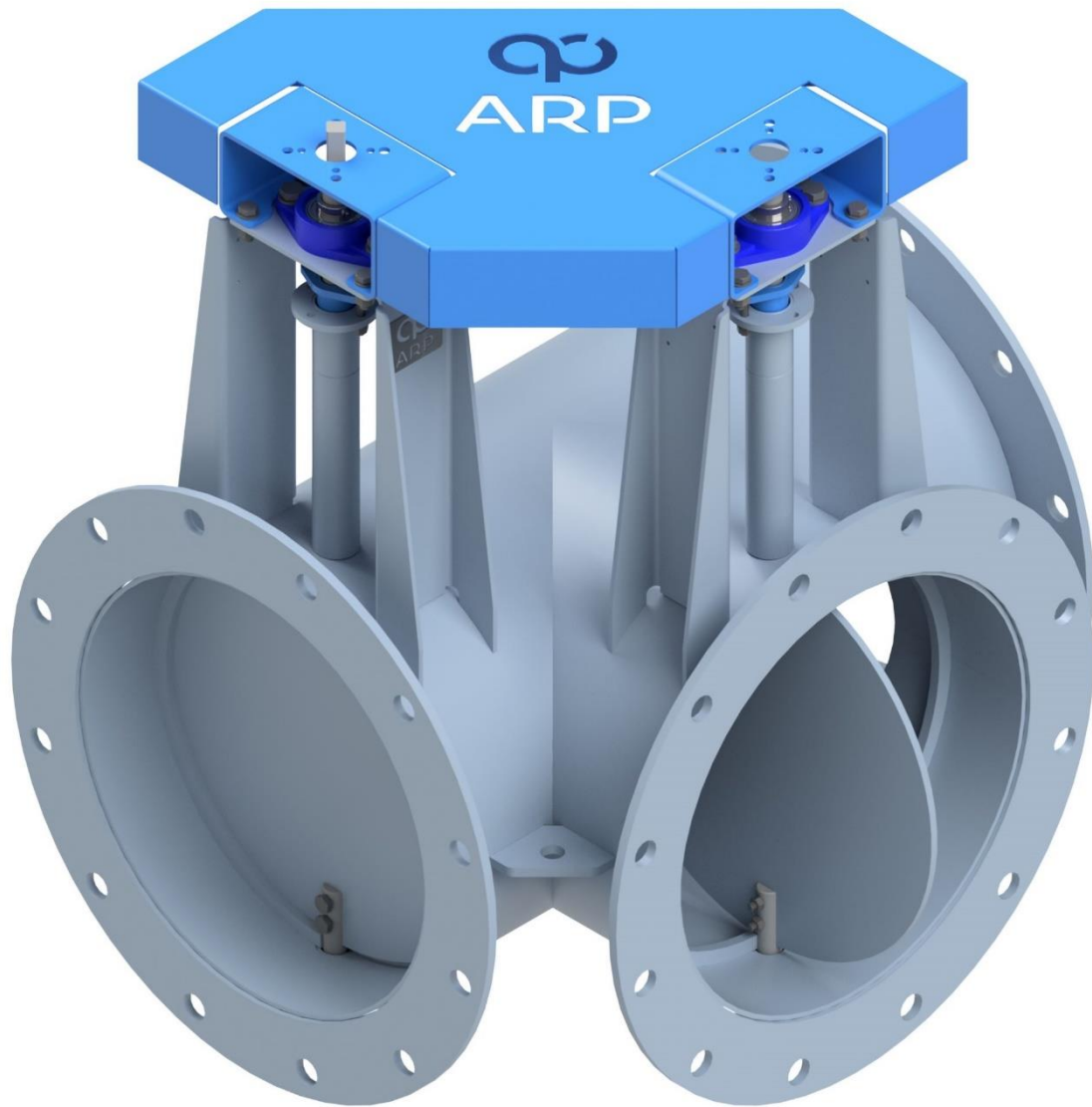
# BY-PASS DAMPER VALVE



**ARP**  
**INDUSTRY**  
VALVE TECHNOLOGY

**TYPE**

**CBM11 – CBM21** (Heavy duty)



**CBM** is a tree way damper valves with controlled leakage that allows the engine exhaust to be rerouted towards the chimney or towards the boiler. Intermediate position can be used for regulation or preheating.

They are used extensively for gas isolation or control application, are suitable for max. 600°C working temperature and low pressure. The heavy duty version is characterized by a reinforced blade and double external bearings.

Their construction allows easy maintenance with replacement of push packing and bearings. Mild steel or stainless steel construction.

Leakage classes in compliance with ANSI FCI 70-2.

Actuation can be added to all sizes and flanges can be designed to suit customised requirements. Shop tested for proper mechanical operation.

# Type: CBM11

## TECHNICAL CHARACTERISTICS:

- Diameter range DN150 ÷ DN1500
- Max Temperature 600°C
- Max pressure up to 3 barg
- Interception or modulating service
- Designed for 200 mm insulation
- Max Leakage Class III / IV (FCI 70-2)
- Option perfect tightness with air sealing chamber

## MATERIALS:

- CORTEN A
- EN 10028-2 steel for high temperature
- Ferritic, and austenitic, stainless steel

## SHAFT PACKING:

- Graphite braid packing
- Braid packing with lantern ring and air sealing
- Braid Packing air sealing shaft cleaning

## SEAT PACKING:

- No Seat
- Metal to Metal Seat
- Harmonic Stainless steel lamellas
- Soft Sealing

## APPLICABLE STANDARD:

- Design EN 593, EN 12516, ASME B16.34
- Flanges EN 1092-1, ASME B16.5,
- Testing EN12266, ANSI / FCI70-2

# Type: CBM21 (Heavy duty)

## TECHNICAL CHARACTERISTICS:

- Diameter range DN150 ÷ DN2000
- Max Temperature 600°C
- Max pressure up to 3 barg
- Interception or modulating service
- Designed for 200 mm insulation
- Max Leakage Class III / IV (FCI 70-2)
- Option perfect tightness with air sealing chamber

## MATERIALS:

- CORTEN A
- EN 10028-2 steel for high temperature
- Ferritic, and austenitic, stainless steel

## SHAFT PACKING:

- Graphite braid packing
- Braid packing with lantern ring and air sealing
- Braid Packing air sealing shaft cleaning

## SEAT PACKING:

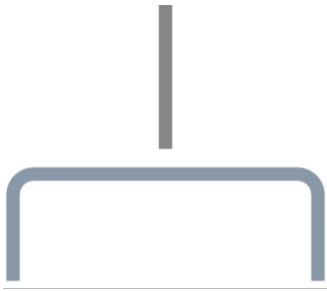
- No Seat
- Metal to Metal Seat
- Harmonic Stainless steel lamellas
- Soft Sealing

## APPLICABLE STANDARD:

- Design EN 593, EN 12516, ASME B16.34
- Flanges EN 1092-1, ASME B16.5,
- Testing EN12266, ANSI / FCI70-2

# BLADE SEALING DESIGNS:

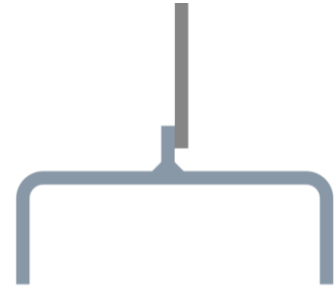
## NO SEAT



CODE BS1		
DIAMETER	CLASS	(FCI 70-2)
150 - 1500	I	Relative Tightness
-	-	-
-	-	-

No contact between disc and valve body.  
Relative tightness.  
Suitable when no specific tightness with closed disc is required.

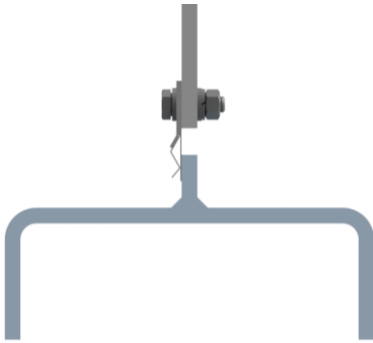
## METAL / METAL SEAT



CODE BS2		
DIAMETER	CLASS	(FCI 70-2)
150 - 200	I	Relative Tightness
250 - 1500	II	< 0,5% Kvs
-	-	-

Metal seat with rigid rim between body and disc.  
This sealing option is widely used where a good shut off capability is required. It admits a percentage of leakage.

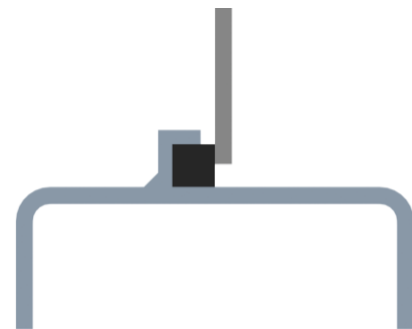
## STAINLESS STEEL LAMELLAS



CODE BS3		
DIAMETER	CLASS	(FCI 70-2)
150 - 200	I	Relative Tightness
250 - 1500	II	< 0,5% Kvs
1550-2500	III	< 0,1% Kvs

Metal seat with lamella profile.  
Ideal for improved tightness requirements.  
It provides better strength and resilience.  
A degree of leakage is admitted.

## SOFT SEALING



CODE BS4		
DIAMETER	CLASS	(FCI 70-2)
150 - 200	II	< 0,5% Kvs
250 - 1000	III	< 0,1% Kvs
1100 - 1500	III / IV	< 0,05% Kvs

Soft gasket or braided seat between disc and valve body.  
It is designed to cater an improved tightness class requirement.

Soft seat material depends on specific application. Understanding your process conditions is key to determining the right seat for your application.

If the selection is still unclear, speak with our engineer who is well versed in valve selection to help determine the right solution.

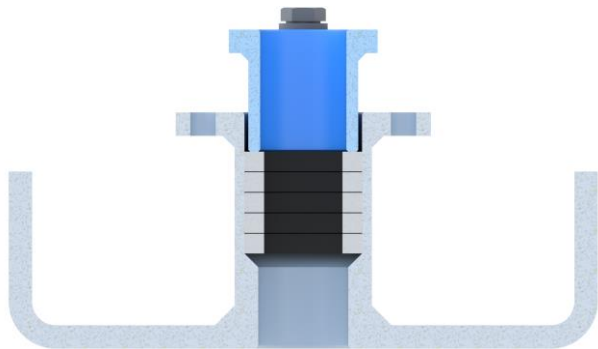
Our standard materials are as follows:

- FIBERGLASS BRAID
- GRAPHITE BRAID
- CERAMIC BRAID

Additional sealing materials are available upon request.

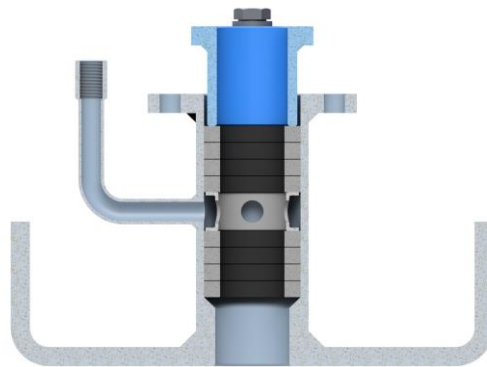
# SHAFT SEALING:

## STANDARD BRAID PACKING CODE SS02



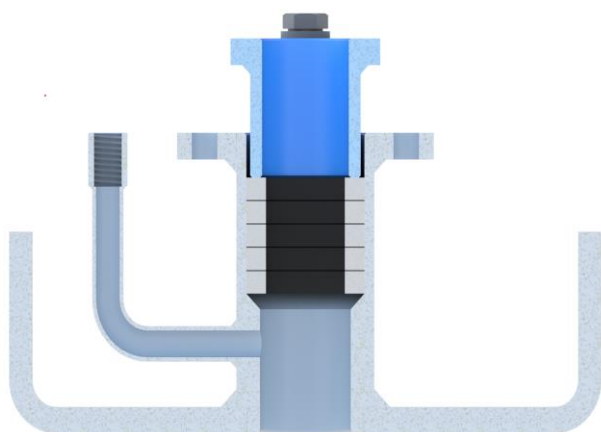
Seal tightness between the cover and the stem is achieved by pressing a pushpacking to fill the existing gap.

## BRAID PACKING WITH LANTERN RING AIR PURGE SEALS CODE SS03



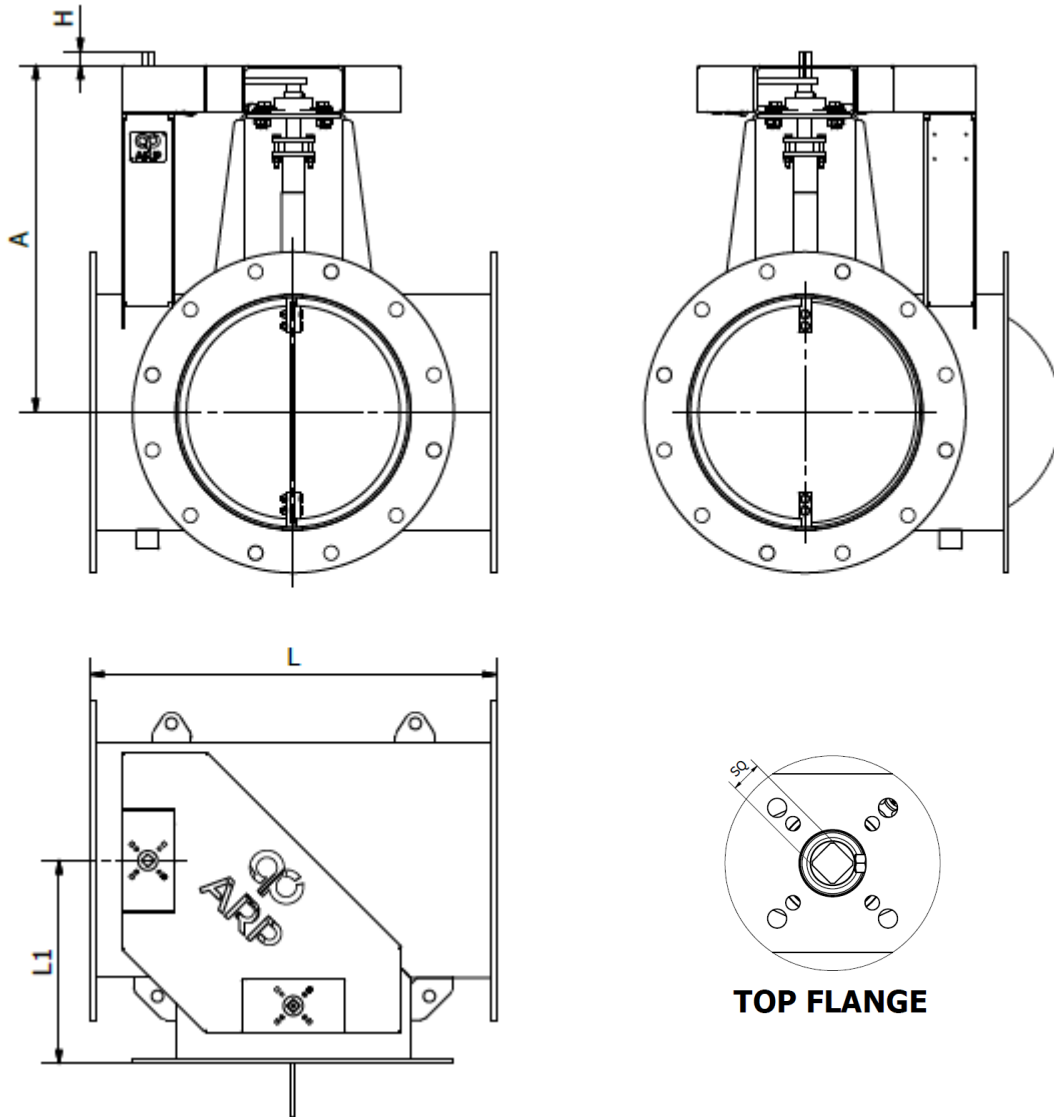
Lantern ring is a perforated hollow ring. It is placed between packing rings in each set and it extends the life of packing offering maximum corrosion resistance.

## BRAID PACKING PURGING PORTS SHAFT CLEANING CODE SS04



The Shaft Seal Air Purge Kit provides compressed air to the shaft seals, keeping these areas clear of material buildup.

# DIMENSIONAL DRAWINGS Type CBM11:



**TOP FLANGE**

DN		Ø Int	A	L	L1	SQ	H	TOP FLANGE		WEIGHT	Max diff. Press. [bar]	Torque +40% [Nm]
mm	inch							ISO 5211	FLANGED			
150	6	160.3	441	400	200	14	17	F07	F05	34	3	39
200	8	211.1	467	450	225	14	17	F07	F05	41	3	49
250	10	265.8	493	500	250	14	17	F07	F05	48	3	59
300	12	315.9	518	550	275	14	17	F07	F05	58	2	71
350	14	350	535	590	295	14	17	F07	F05	67	1	77
400	16	400	560	640	320	22	22	F07	F05	113	1	86
450	18	450	613	830	415	22	22	F10	F07	148	1	94
500	20	500	655	880	440	22	22	F10	F07	165	1	104
600	24	600	705	980	490	22	22	F10	F07	204	0.5	124
700	28	700	766	1080	540	22	22	F10	F07	302	0.5	144
800	32	800	827	1180	590	27	27	F10	F07	358	0.5	180
900	36	900	890	1380	690	27	27	F14	F12	435	0.2	208
1000	40	1000	953	1700	850	27	27	F14	F12	550	0.2	244
1100	44	1100	1015	1840	920	27	27	F14	F12	706	0.2	284
1200	48	1200	1078	1980	990	27	27	F14	F12	822	0.2	328
1300	52	1300	1132	2120	1060	27	27	F14	F12	926	0.2	380
1400	56	1400	1187	2260	1130	27	27	F14	F12	1049	0.1	423
1500	60	1500	1272	2420	1210	27	27	F14	F12	1175	0.1	492

\*ARP INDUSTRY reserves the right to make changes to its products at any time

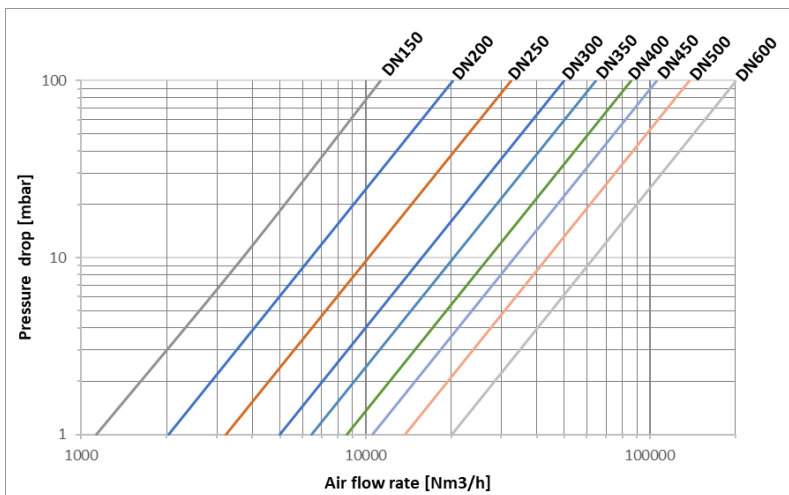
\* DN above 1500 available upon request



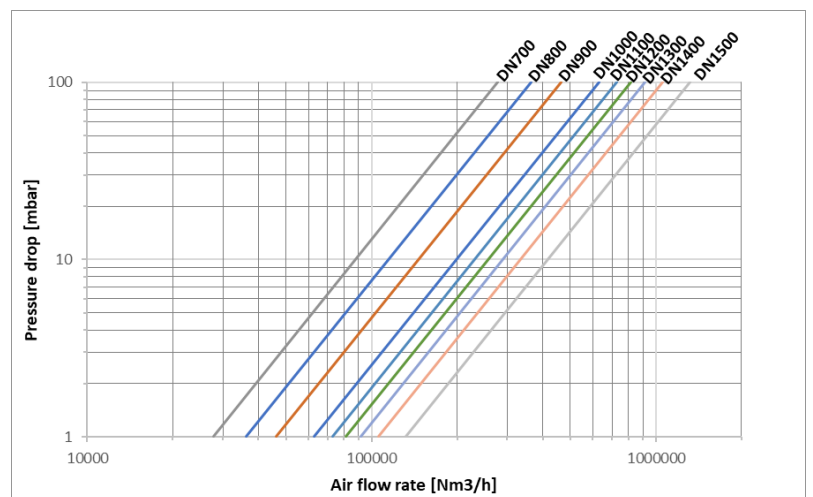
# FLOW COEFFICIENT (Kv VALUE) Type CBM11:

DN	NPS	OPENING ANGLE								
		90°	80°	70°	60°	50°	40°	30°	20°	10°
150	6"	1333	1135	804	513	327	191	103	49	9
200	8"	2394	2111	1463	887	608	356	215	99	19
250	10"	3813	3391	2292	1464	942	516	287	129	33
300	12"	5890	5026	3506	2268	1489	908	518	218	50
350	14"	7603	6525	4739	2978	1859	1074	651	267	57
400	16"	10118	8599	6248	3860	2423	1480	838	374	67
450	18"	12418	10681	8066	5196	3119	1763	1127	480	94
500	20"	16259	13476	10157	6402	4159	2344	1359	562	119
600	24"	23723	20259	14033	9341	5736	3510	2109	865	287
700	28"	32795	28048	19211	12448	8002	4835	2886	1171	489
800	32"	42761	37582	25226	17263	11669	6052	3628	1696	613
900	36"	54547	48690	32396	21254	14302	7582	4541	2095	778
1000	40"	74106	63582	41957	27737	18248	10656	5844	2565	1067
1100	44"	85838	70359	47849	31522	20432	12659	6932	3150	1165
1200	48"	96015	78125	56283	37353	23879	15236	8621	3534	1337
1300	52"	108116	90222	64750	41961	26410	15883	9316	4309	1524
1400	56"	124200	104740	71263	47593	28386	16896	10222	5353	1641
1500	60"	155757	129985	90178	59602	37208	22551	13094	6218	2163

Flow rate of air at 20°C and atmospheric downstream pressure (P<sub>2</sub>):



Note: The flow coefficient Kv refers only to the inlet blade: when calculating the pressure drops, the pressure loss in the branch and the variation in flow rate due to the flow deviation must also be considered.



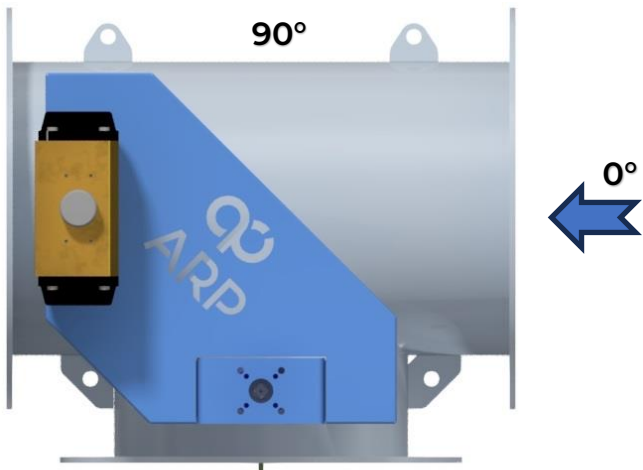
The pressure drop across the valve can be calculated with the following formula:

$$\Delta p = \frac{Q_N^2 \cdot S \cdot G_N \cdot T_1}{Kv^2 \cdot 457^2 \cdot p_2} \quad (\text{Valid for } P_2 \geq P_1/2)$$

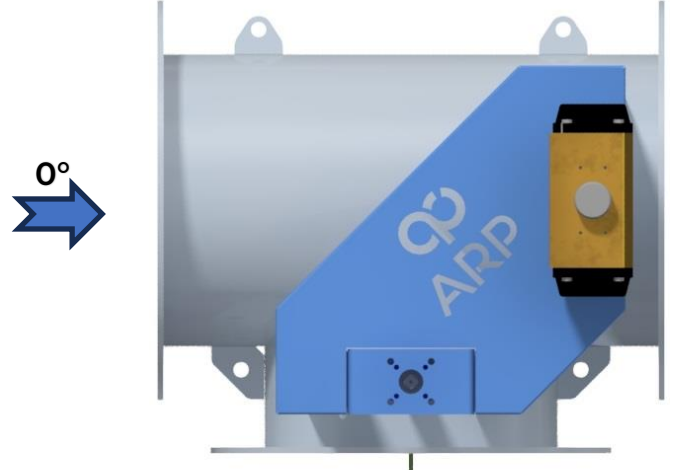
Q<sub>N</sub> [Nm<sup>3</sup>/h] is the volumetric flow  
 Kv is the flow coefficient for a given disc position  
 S.G.<sub>N</sub> is the specific gravity of the gas (relative to air)

P<sub>1</sub> [bar] is the fluid absolute upstream pressure  
 p<sub>2</sub> [bar] is the fluid absolute downstream pressure  
 T<sub>1</sub> [K] is the fluid absolute temperature at the valve inlet

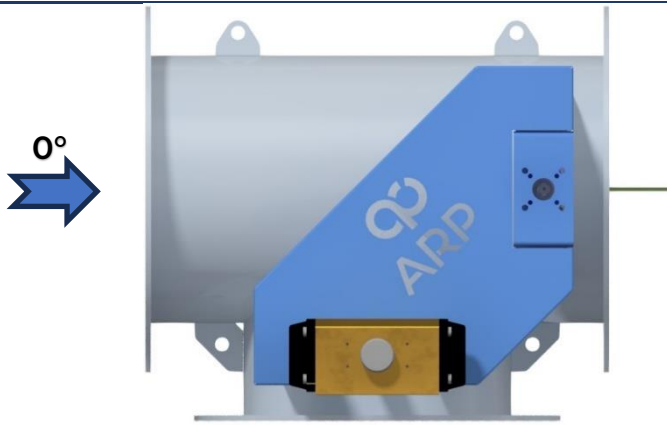
# BY-PASS LAYOUT



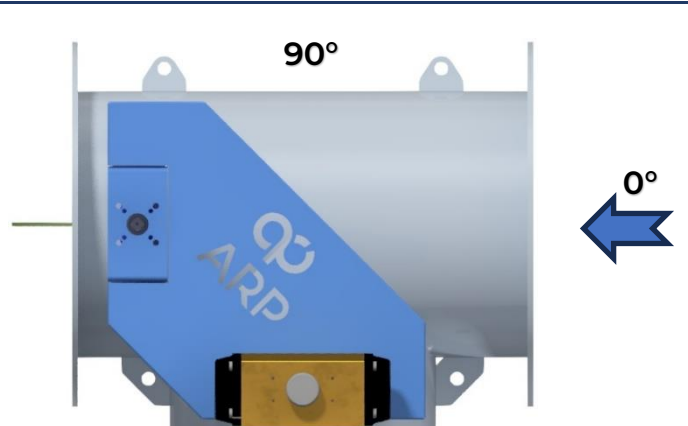
A180-C270



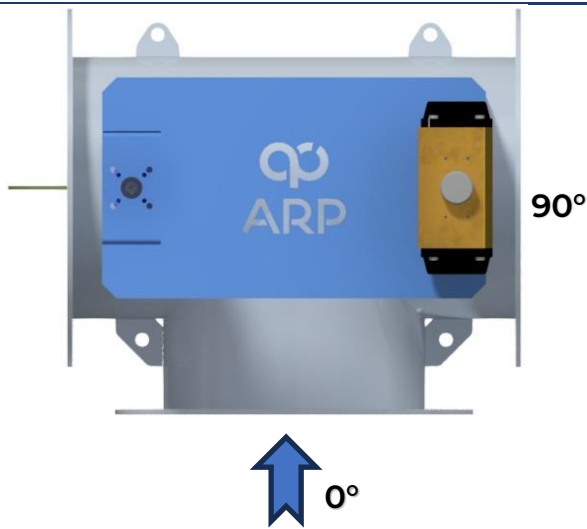
A180-C90



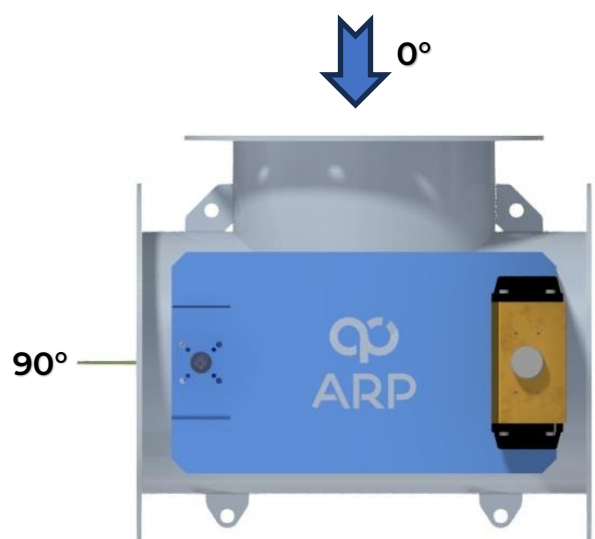
A90-C180



A270-C180



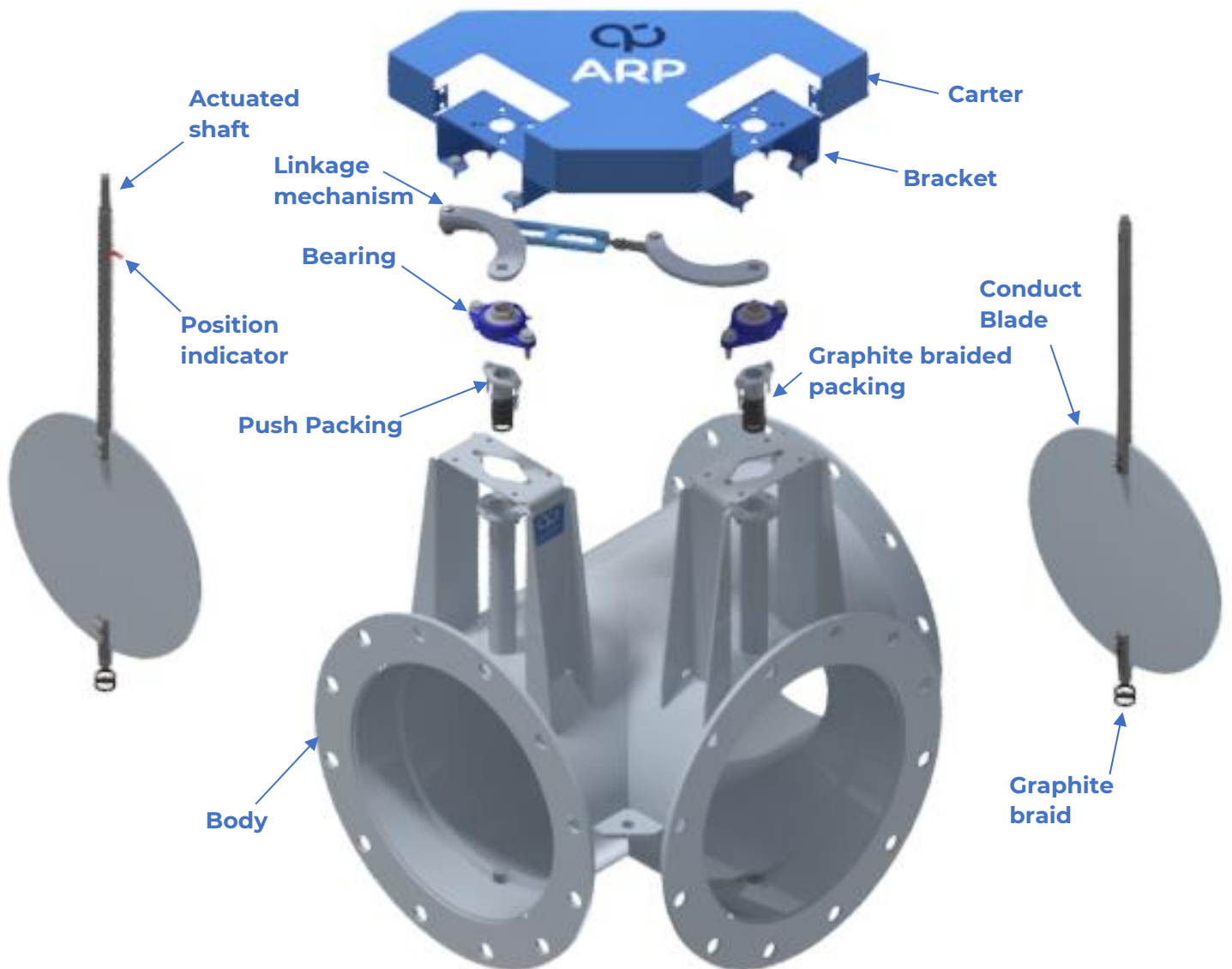
A90-C270



A270-C90



# EXPLODED VIEW Type CBM11:



		<a href="http://www.arpindustry.com">www.arpindustry.com</a>
TYPE:		YEAR:
SERIAL NUMBER:		DN:
END CONNECTION:		
Max Ts [°C]:	Max Ps [barg]:	
BODY:	DISC:	
SHAFT:	SEAT:	
PUSH PACKING:		
TAG:		

**Name Plate**

# CONTACT



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